



## **TEST REPORT**

**No. I19D00153-EMC01**

*For*

**Client : Doro AB**

**Production : 2G Clamshell Feature Phone**

**Model Name : DFC-0240**

**Brand Name: Doro**

**FCC ID: WS5DFC0240**

**Hardware Version: V01(HW code:3021/3051)**

**Software Version: DFC0250\_0240\_UF290\_N\_S01A\_V01\_M190906\_SMP**

**Issued date: 2019-10-11**

## NOTE

1. The test results in this test report relate only to the devices specified in this report.
2. This report shall not be reproduced except in full without the written approval of East China Institute of Telecommunications
3. The measurement uncertainty is not taken into account when deciding conformity, and the results of measurement (or the average of measurement results) are directly used as the criterion for the stating conformity.

**Test Laboratory:**

East China Institute of Telecommunications

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**Revision Version**

<b>Report Number</b>	<b>Revision</b>	<b>Date</b>	<b>Memo</b>
I19D00153-EMC01	00	2019-10-11	Initial creation of test report

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## 1. Test Laboratory

### 1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
Fax:	(+86)-021-63843301
FCC registration No:	958356

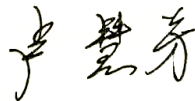
### 1.2. Testing Environment

Normal Temperature:	15-35°C
Relative Humidity:	30-60% RH
Supply Voltage	120V/60Hz

### 1.3. Project data

Project Leader:	Xu Yuting
Testing Start Date:	2019-09-26
Testing End Date:	2019-10-08

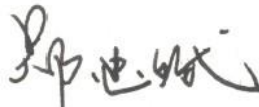
### 1.4. Signature



Lu Huifang  
(Prepared this test report)



You Jinjun  
(Reviewed this test report)



Zheng Zhongbin  
(Approved this test report)

## 2. Client Information

### 2.1. Applicant Information

Company Name	Doro AB
Address	Doro AB, Jörgen Kocksgatan 1B, SE 211 20 MALMÖ, SWEDEN
Telephone	+46 46 280 50 76
Postcode	/

### 2.2. Manufacturer Information

Company Name	Doro AB
Address	Doro AB, Jörgen Kocksgatan 1B, SE 211 20 MALMÖ, SWEDEN
Telephone	+46 46 280 50 76
Postcode	/

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

#### 3.1. About EUT

EUT Description	2G Clamshell Feature Phone
Model name	DFC-0240
GSM Frequency Band	GSM1900
Additional Communication Function	BT3.0;GPS;FM;

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

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N04 (Main supply)	357507100015760/ 357507100015778	V01(HW code: 3021)	DFC0250_0240_UF 290_N_S01A_V01_ M190906_SMP	2019-09-23
N06 (Secondary supply)	357507100015588/ 357507100015596	V01(HW code: 3051)	DFC0250_0240_UF 290_N_S01A_V01_ M190906_SMP	2019-09-23

\*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	Model	SN
CB06	Adapter	A31A-050055U-EU1	NA
CC02	Adapter	S003ATB0500055	NA
CD03	Adapter	A2-501000	NA
CE02	Adapter	A806A-050100U-UK1	NA
CF05	Adapter	UT-133E-5100	NA
CA04	Adapter Cradle	DFC-0240/0270	NA
UA01	USB Cable	M039B0800150	NA
AC05	Earphone	JWEP0782-M01	NA
AB05	Earphone	JWEP0944-M01R	NA
BA05	Battery	DBO-1000A	41981V9051003906
AE1	Desktop PC	OptiPlex 790 DT	X8RP1 A01 APCC
AE2	Notebook PC	DELL Latitude E6510	NA
AE3	LAN Cable	NA	NA
AE4	VGA Cable	NA	NA
AE5	RS232 Cable	NA	NA
AE6	Keyboard	KB212-B	CN-0Y88XT-65890-12I-005Q-A00
AE7	Mouse	MS111-P	CN-011D3V-71581-19J-1A64
AE8	Monitor	Dell E1709Wc	NA
AE9	SanDisk Ultra32GB	Kingston SDC4/4GB 77	NA

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

\*The AE were provided by the lab.



### 3.4. Difference Between Main supply and Secondary supply

Item	Configure 1	Configure 2
HW code	3021	3051
LCD	LCD SANLONG(28LS124-04)	LCD Holitech(QTB2D8096)
FLASH	Flash GD(GD25LQ128)	Flash DOS(FM25M4AA)

Note: Customer declaration, two configures is the same, except for LCD and FLASH. There are more than one Configure, each one should be applied throughout the compliance test respectively, however, only the worst case (Configure 1&2) will be recorded in this report.

#### Main Supply

Part Name	Model Name	supplier	Remark
ZIF connector	FP270H-025T1DM	JXT	
Earphone jack	11-0561136-A	LETCON	
Memory card socket	T11-BB09F150	HRD	
Micro USB	U11-1B05G252	HRD	
Battery connector	BAC5540306	VELA	

#### Secondary Supply

Part Name	Model Name	supplier	Remark
ZIF connector	4.001A0-025-1R0	HAIWEISI	
Earphone jack	PH20-0A38F38M JAF00-05382-010101	HRD LCN	
Micro USB	UBM9250516 UAF95-05254-S135-A	VELA LCN	
Memory card socket	TFJ1150903	VELA	
Battery connector	B29-BB03F540 02-032116B	HRD LETCON	

## 4. Reference Documents

### 4.1 Reference Documents for testing

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

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices	2019/9/24
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	2014

## 5. Test Results

### 5.1 Summary of Test Results

Items	Test List	Clause in FCC rules	Verdict
1	Radiated Emission	15.109(a)	Pass
2	AC Conducted Emission	15.107(a)	Pass

### 5.2 Statements

The DFC-0240 manufactured by Doro AB is a variant model for testing. ECIT only performed test cases which identified with Pass/Fail/Inc result in section 5.1.

ECIT has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 of this test report.

Note: This project is a variant project based on the original report I19D00066-EMC01, with two configuration sample (Main supply and Secondary supply). Main supply sample has been tested again, The sample of Secondary supply tests the worst mode of Main supply. Refer to original reports for additional information.

## 6. Test Equipment Utilized

### 6.1 Radiated Emission Equipment list

Item	Instrument Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Universal Radio Communication Tester	CMU200	123126	R&S	2019-05-10	1 year
2	Test Receiver	ESU40	100307	R&S	2019-05-10	1 year
3	Trilog Antenna	VULB9163	VULB9163-5 15	Schwarzbeck	2017-02-25	3 years
4	Double Ridged Guide	ETS-3117	00135885	ETS	2017-01-11	3 years
5	EMI Test Software	EMC32 V9.15	NA	R&S	NA	NA
6	Signal Generator	SMF 100A	102314	R&S	2019-05-10	1 year
7	GPS Simulator	GSS 4200	1182	SPIRENT	2018-12-17	1 year

### 6.1 AC Conducted Emission Equipment list

Item	Instrument Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	2019-05-10	1 year
2	Test Receiver	ESCI	101235	R&S	2019-05-10	1 year
3	2-Line V-Network	ENV216	101380	R&S	2019-05-10	1 year
4	EMI Test Software	EMC32 V10.35.02	NA	R&S	NA	NA
5	Signal Generator	SMF 100A	102314	R&S	2019-05-10	1 year
6	GPS Simulator	GSS 4200	1182	SPIRENT	2018-12-17	1 year

## 7. System Configuration during Test

### 7.1 Test Mode

#### Main supply\_N04:

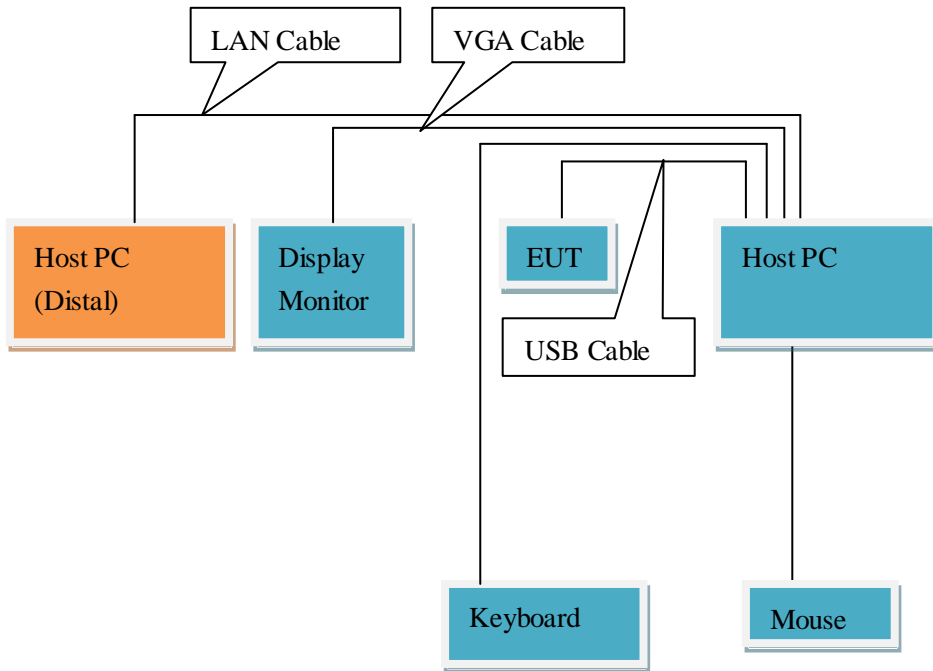
Test Item	Function Type
AC Conducted Emission	Mode 1:GSM1900 idle mode+Camera+CB06+AB05<Figure 2> Mode 2:Charging mode+Camera+CC02+AC05<Figure 2> Mode 3:Charging mode+Camera+CD03+UA01+AB05<Figure 2> Mode 4:Charging mode+Camera+CE02+UA01+AC05<Figure 2> Mode 5:Charging mode+Camera+CF05+UA01+AB05<Figure 2> Mode 6:Charging mode+Camera+CC02+CA04+AB05<Figure 2> Mode 7:USB cable (Data Link with PC) <Figure 1> Mode 8:FM mode + AB05 <Figure 2> Mode 9:FM mode + AC05<Figure 2> Mode 10:GPS mode<Figure 2>
Radiated Emission	Mode 1:GSM1900 idle mode+Camera+CB06+AB05<Figure 2> Mode 2:Charging mode+Camera+CC02+AC05<Figure 2> Mode 3:Charging mode+Camera+CD03+UA01+AB05<Figure 2> Mode 4:Charging mode+Camera+CE02+UA01+AC05<Figure 2> Mode 5:Charging mode+Camera+CF05+UA01+AB05<Figure 2> Mode 6:Charging mode+Camera+CC02+CA04+AB05<Figure 2> Mode 7:USB cable (Data Link with PC) <Figure 1> Mode 8:FM mode + AB05 <Figure 2> Mode 9:FM mode + AC05<Figure 2> Mode 10:GPS mode<Figure 2>
Remark: 1. All test modes are performed, only the worst cases test data are recorded in this report. 2. Data Link with PC means data application transferred mode between EUT and PC. 3. The test specification for FM function: the EUT is synchronized to a FM signal generator. The EUT is keeping on demodulating the FM signal and outputting the audio signal through the headset. 4. EUT and GPS simulator (GSS4200) connection is established.	

#### Secondary supply\_N06:

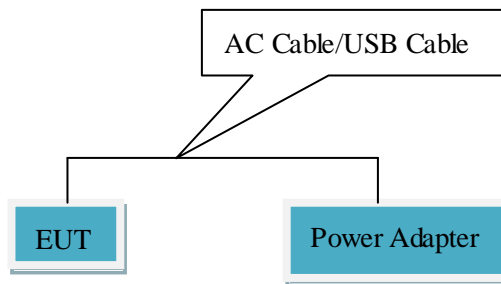
Test Item	Function Type
AC Conducted Emission	Mode 6:Charging mode+Camera+CC02+CA04+AB05<Figure 2>
Radiated Emission	Mode 2:Charging mode+Camera+CC02+AC05<Figure 2> Mode 3:Charging mode+Camera+CD03+UA01+AB05<Figure 2>
Remark: 1. All test modes are performed, only the worst cases test data are recorded in this report.	

2. Data Link with PC means data application transferred mode between EUT and PC.
3. The test specification for FM function: the EUT is synchronized to a FM signal generator. The EUT is keeping on demodulating the FM signal and outputting the audio signal through the headset.
4. EUT and GPS simulator (GSS4200) connection is established.

### 7.2 Connection Diagram of Test System



<Figure 1>



<Figure 2>

## 8. Measurement Results

Only the worst test result was shown in this report.

### 8.1 Radiated Emission 30MHz-18GHz

#### Method of Measurement

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. Tested in accordance with the procedures of ANSI C63.4-2014, section 8.3.

For 1000MHz-18000MHz, The maximal emission value was acquired by adjusting the antenna height, The table was rotated 360 degree to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement.

#### Limits for Radiated Emission at a measuring distance of 3m

Frequency Range (MHz)	Quasi-Peak (dBuV/m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Frequency Range (MHz)	Peak (dBuV/m)	Average (dBuV/m)
Above 1000	74	54

#### Test conditions

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

#### Uncertainty Measurement

The measurement uncertainty (30MHz-1000MHz) is 4.98 dB (k=2).

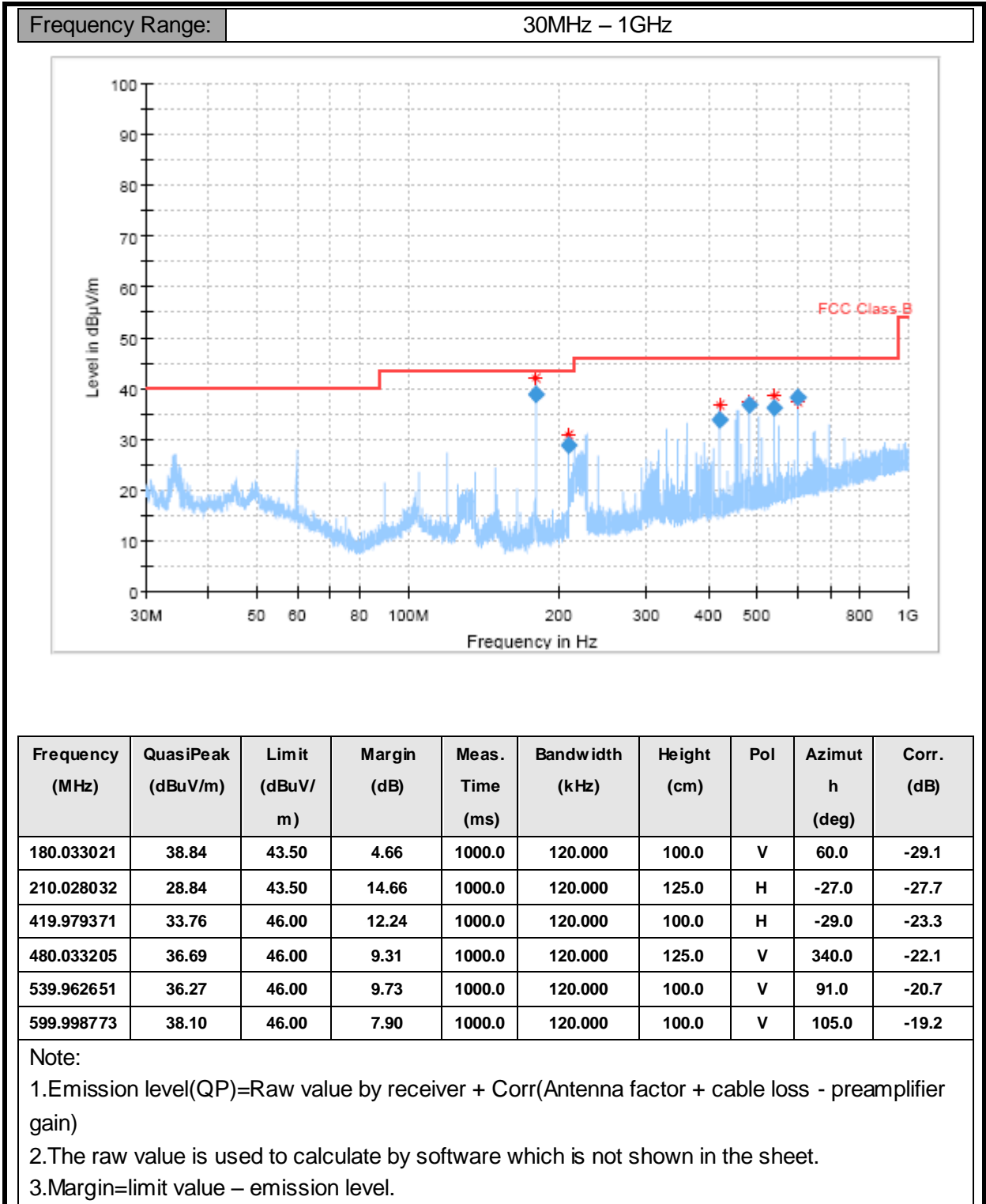
The measurement uncertainty (1000MHz-18000MHz) is 5.06 dB (k=2).



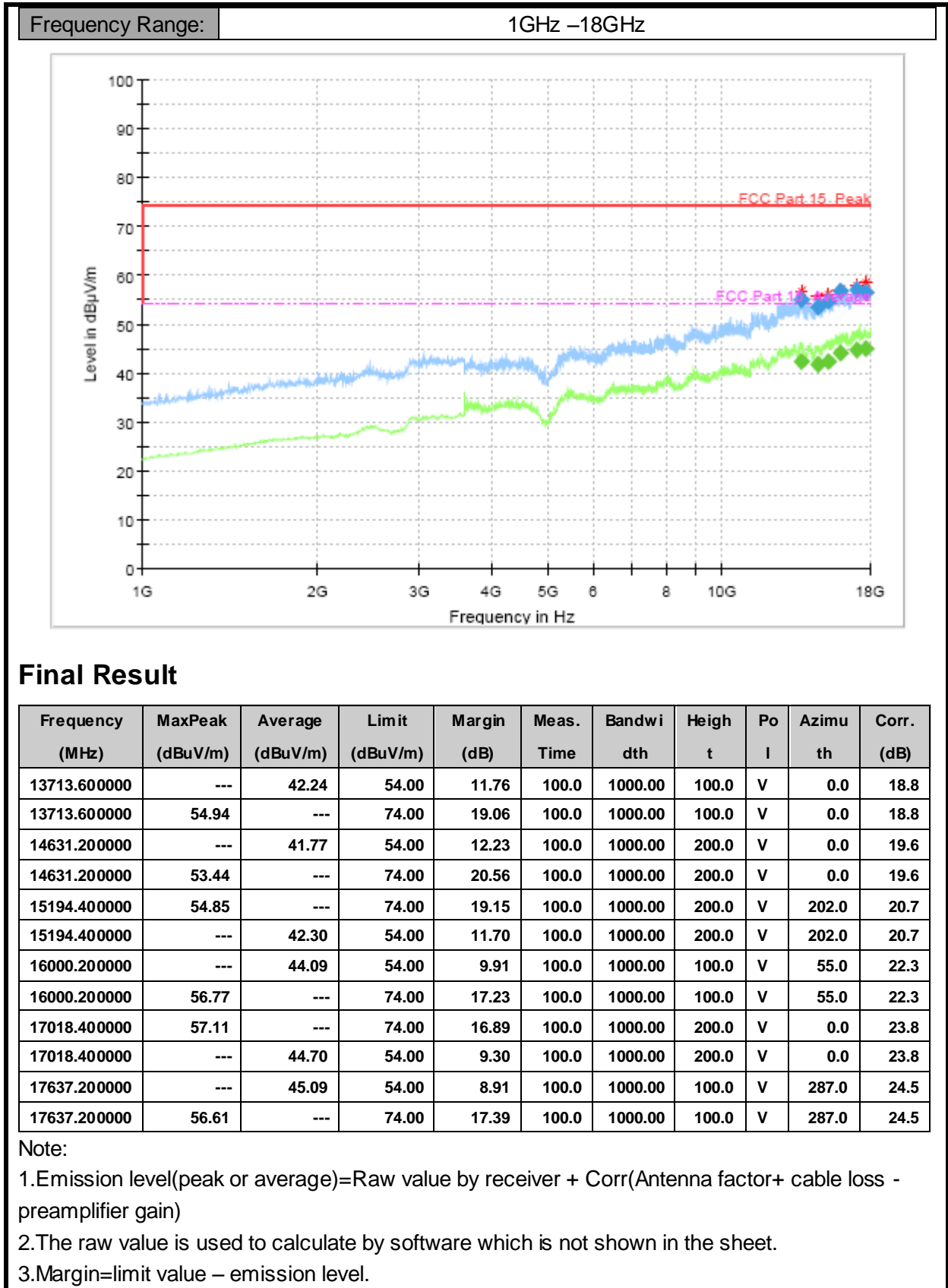
**Test Results**

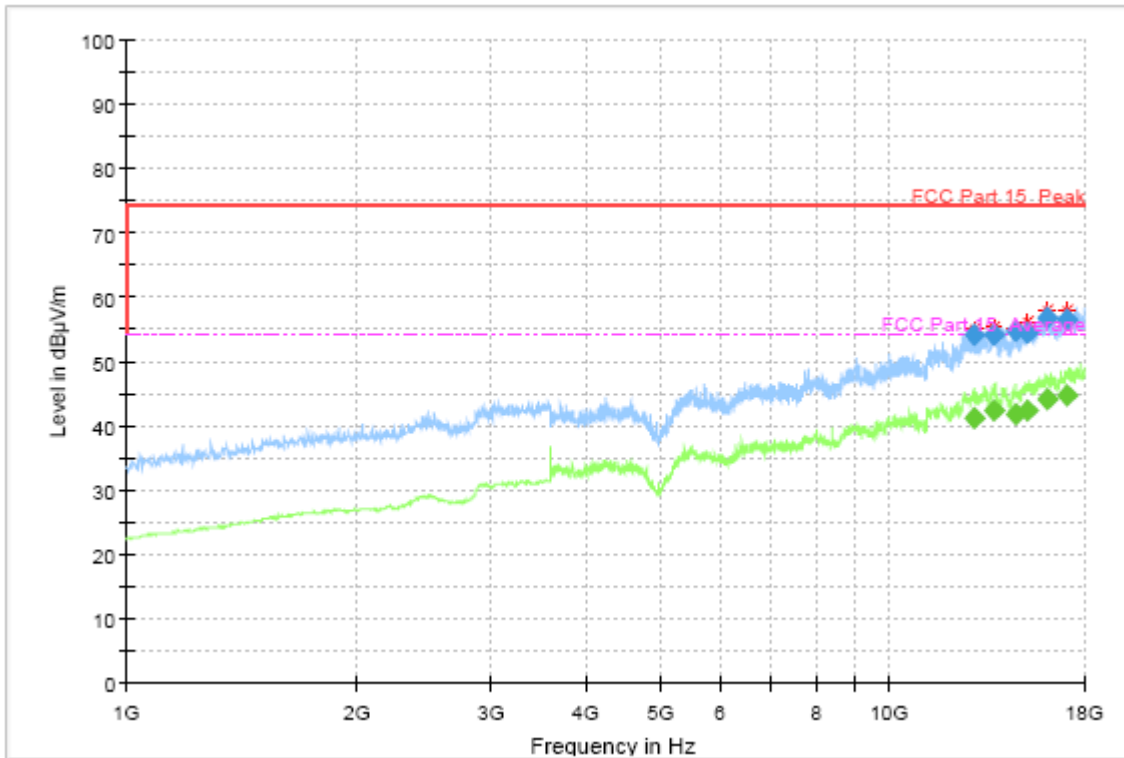
Sweep the whole frequency band through the range from 30MHz to the 5<sup>th</sup> harmonic of the carrier, the Emissions in the frequency band 18GHz-40GHz is more than 20dB below the limit are not report.

Main supply\_N04: Mode 3: Charging mode+Camera+CD03+UA01+AB05<Figure 2>



Main supply\_N04: Mode 2: Charging mode+Camera+CC02+AC05&lt;Figure 2&gt;





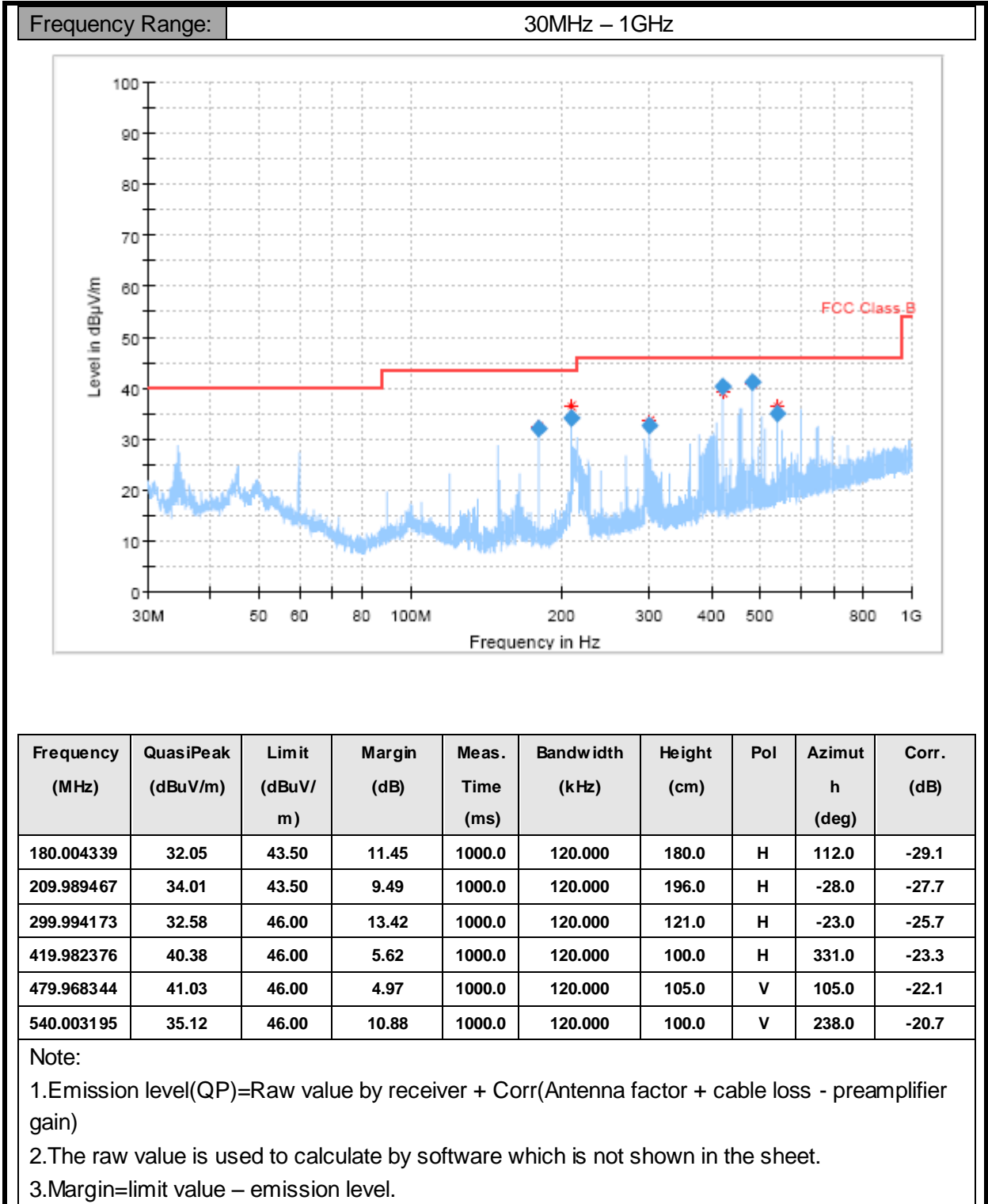
### Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time	Bandwidth	Height	Polarization	Azimuth	Corr. (dB)
12883.200000	54.09	---	74.00	19.91	100.0	1000.00	200.0	H	183.0	17.5
12883.200000	---	41.13	54.00	12.87	100.0	1000.00	200.0	H	183.0	17.5
13732.200000	54.11	---	74.00	19.89	100.0	1000.00	100.0	H	236.0	18.8
13732.200000	---	42.36	54.00	11.64	100.0	1000.00	100.0	H	236.0	18.8
14644.200000	---	41.80	54.00	12.20	100.0	1000.00	200.0	H	359.0	19.7
14644.200000	54.56	---	74.00	19.44	100.0	1000.00	200.0	H	359.0	19.7
15161.400000	---	42.36	54.00	11.64	100.0	1000.00	100.0	H	53.0	20.7
15161.400000	54.28	---	74.00	19.72	100.0	1000.00	100.0	H	53.0	20.7
16058.600000	---	44.26	54.00	9.74	100.0	1000.00	200.0	H	329.0	22.5
16058.600000	56.86	---	74.00	17.14	100.0	1000.00	200.0	H	329.0	22.5
17112.600000	---	44.62	54.00	9.38	100.0	1000.00	100.0	H	94.0	24.0
17112.600000	56.44	---	74.00	17.56	100.0	1000.00	100.0	H	94.0	24.0

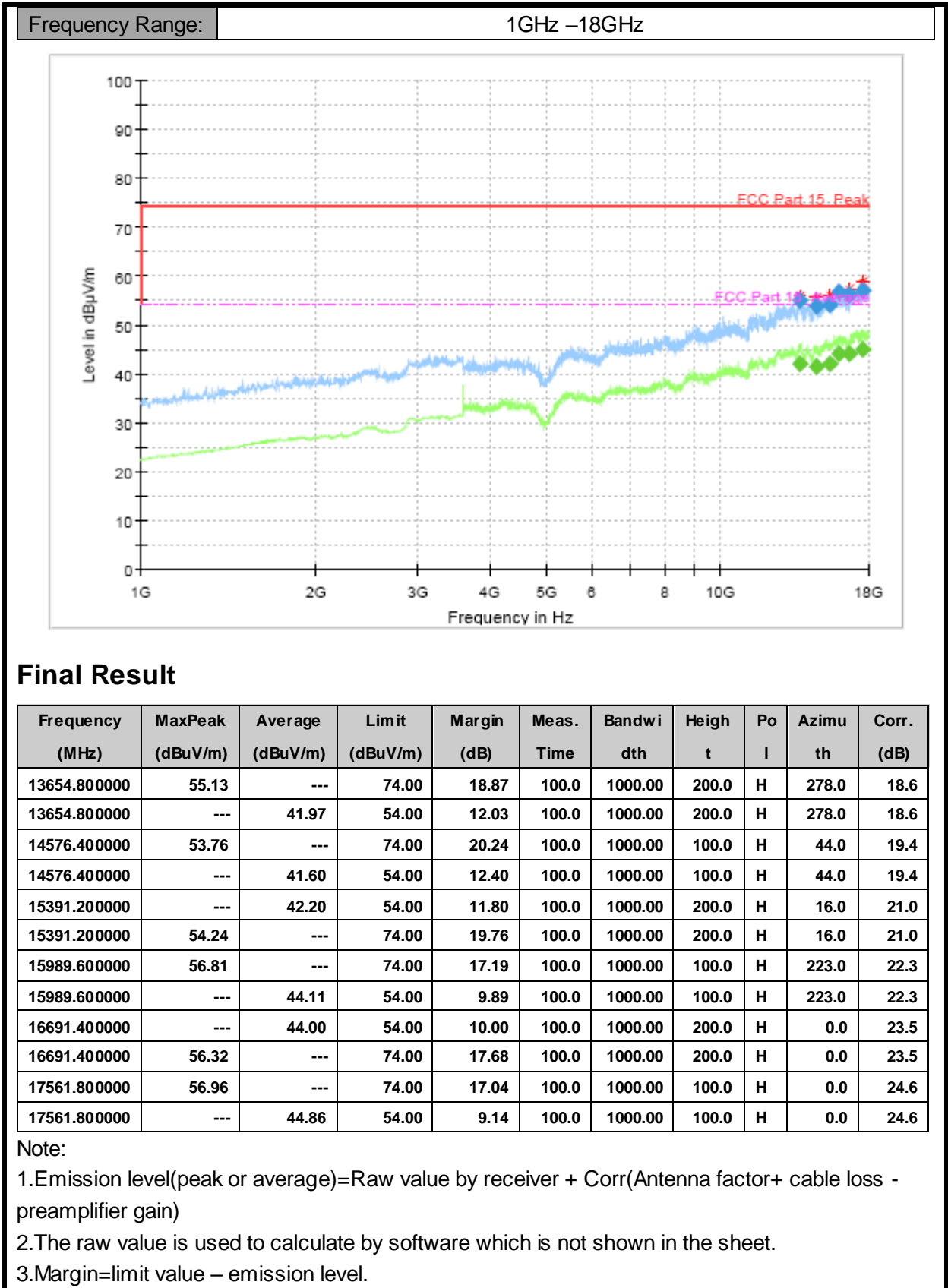
Note:

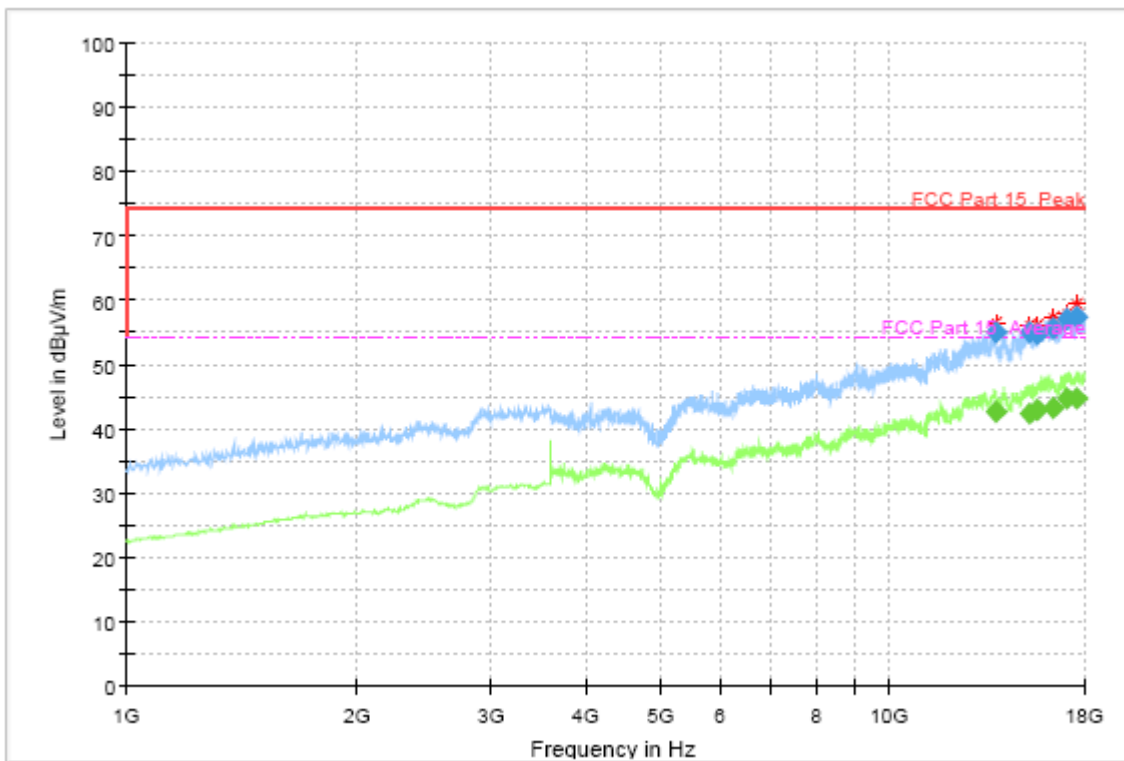
1. Emission level(peak or average)=Raw value by receiver + Corr(Antenna factor+ cable loss - preamplifier gain)
2. The raw value is used to calculate by software which is not shown in the sheet.
3. Margin=limit value – emission level.

Secondary supply\_N06: Mode 3: Charging mode+Camera+CD03+UA01+AB05&lt;Figure 2&gt;



Secondary supply\_N06: Mode 2: Charging mode+Camera+CC02+AC05<Figure 2>





### Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time	Bandwidth	Height	Polarization	Azimuth	Corr. (dB)
13747.400000	55.14	---	74.00	18.86	100.0	1000.00	200.0	V	303.0	18.8
13747.400000	---	42.55	54.00	11.45	100.0	1000.00	200.0	V	303.0	18.8
15228.400000	---	42.36	54.00	11.64	100.0	1000.00	200.0	V	283.0	20.7
15228.400000	54.94	---	74.00	19.06	100.0	1000.00	200.0	V	283.0	20.7
15644.800000	54.69	---	74.00	19.31	100.0	1000.00	200.0	V	194.0	21.5
15644.800000	---	42.95	54.00	11.05	100.0	1000.00	200.0	V	194.0	21.5
16348.200000	55.51	---	74.00	18.49	100.0	1000.00	200.0	V	0.0	22.8
16348.200000	---	43.30	54.00	10.70	100.0	1000.00	200.0	V	0.0	22.8
17033.800000	---	44.71	54.00	9.29	100.0	1000.00	200.0	V	354.0	23.9
17033.800000	57.11	---	74.00	16.89	100.0	1000.00	200.0	V	354.0	23.9
17572.600000	57.40	---	74.00	16.60	100.0	1000.00	100.0	V	217.0	24.6
17572.600000	---	44.77	54.00	9.23	100.0	1000.00	100.0	V	217.0	24.6

Note:

- 1.Emission level(peak or average)=Raw value by receiver + Corr(Antenna factor+ cable loss - preamplifier gain)
- 2.The raw value is used to calculate by software which is not shown in the sheet.
- 3.Margin=limit value – emission level.

## 8.2 AC Conducted Emission

### 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 with the band 150 kHz to 30MHz shall not exceed the limits. Both lines of the power mains connected to the EUT were checked for maximum conducted interference. Tested in accordance with the procedures of ANSI C63.4-2014, section 7.3

### Limit of Conducted Emission

Frequency Range (MHz)	Conducted Limit (dBuV)	
	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

### Test Condition in Charging Mode

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

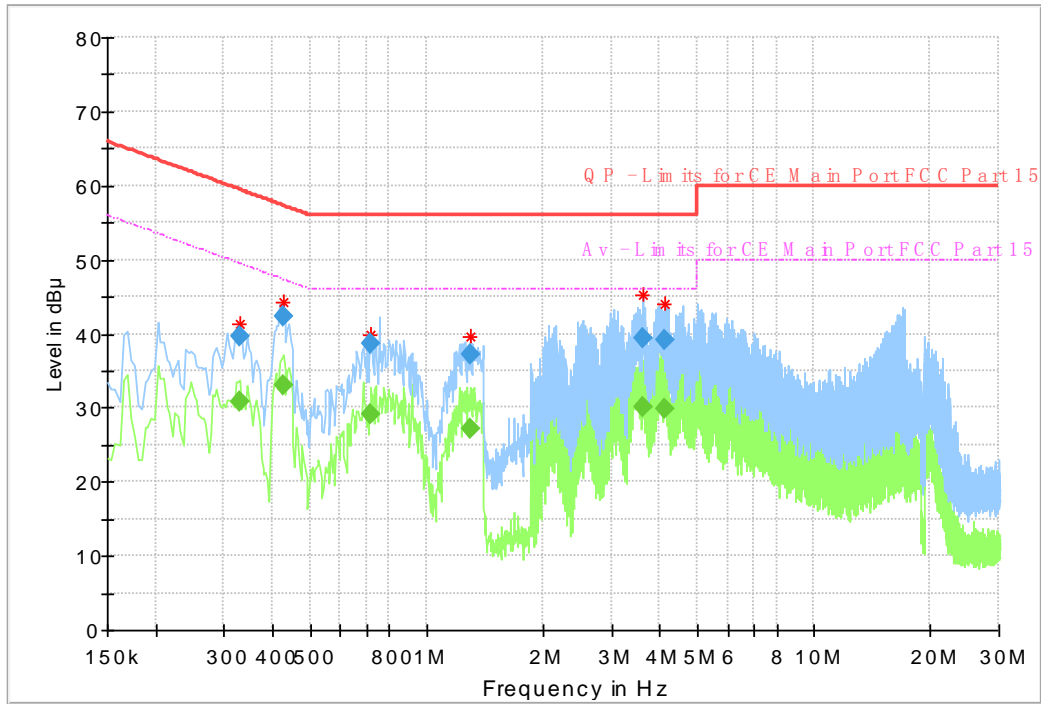
### Uncertainty Measurement

The measurement uncertainty is 3.66dB (k=2).

### Test Results

Main supply\_N04: Mode 6: Charging mode+Camera+CC02+CA04+AB05<Figure 2>

Frequency Range: 150kHz – 30MHz



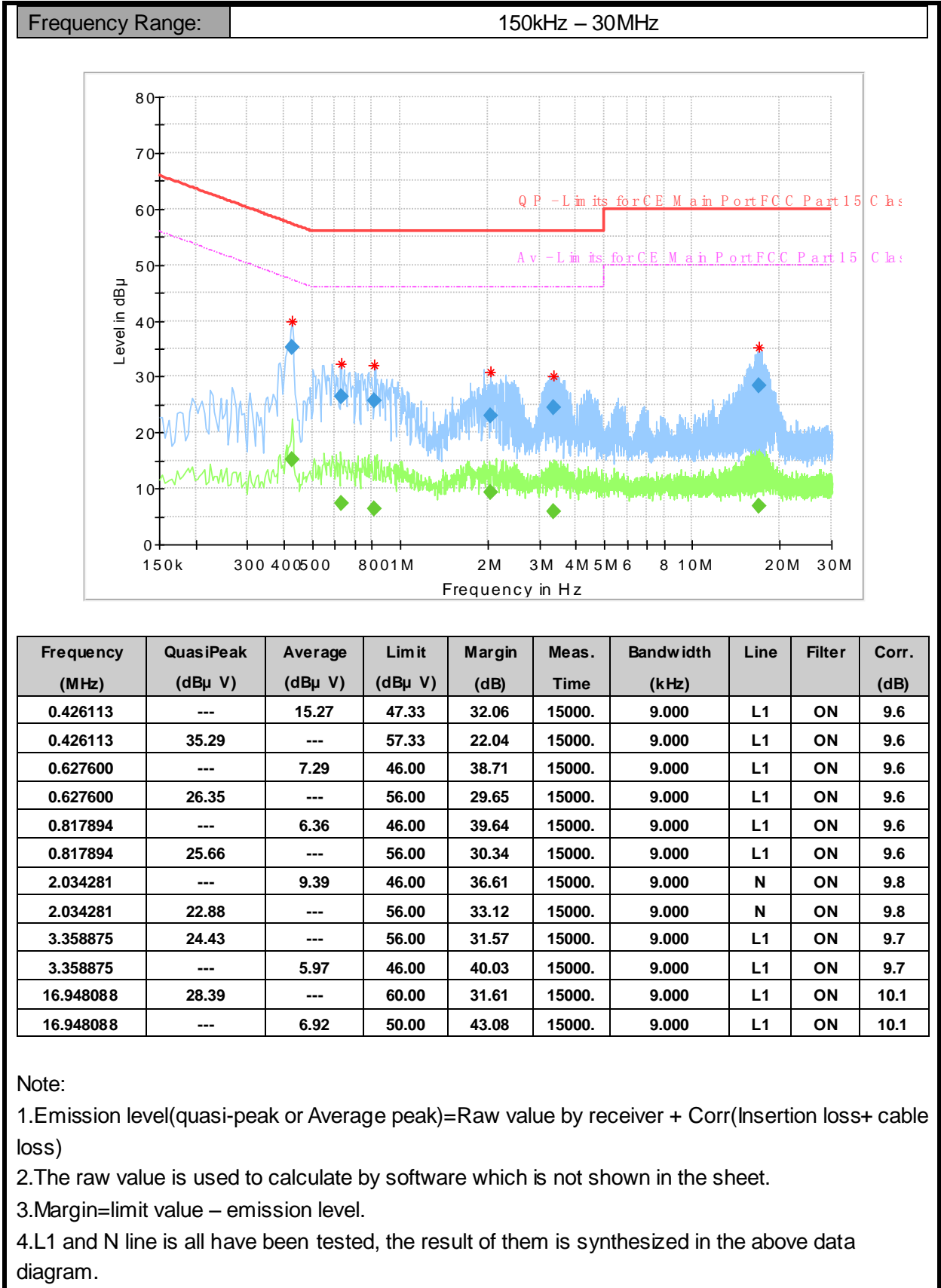
Frequency (MHz)	QuasiPeak (dBµ V)	Average (dBµ V)	Limit (dBµ V)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.329100	---	30.86	49.47	18.62	15000.	9.000	L1	ON	9.6
0.329100	39.67	---	59.47	19.80	15000.	9.000	L1	ON	9.6
0.426113	---	32.92	47.33	14.41	15000.	9.000	L1	ON	9.6
0.426113	42.35	---	57.33	14.98	15000.	9.000	L1	ON	9.6
0.713419	---	29.20	46.00	16.80	15000.	9.000	L1	ON	9.6
0.713419	38.69	---	56.00	17.31	15000.	9.000	L1	ON	9.6
1.295494	---	27.16	46.00	18.84	15000.	9.000	L1	ON	9.7
1.295494	37.08	---	56.00	18.92	15000.	9.000	L1	ON	9.7
3.605138	---	30.19	46.00	15.81	15000.	9.000	L1	ON	9.7
3.605138	39.39	---	56.00	16.61	15000.	9.000	L1	ON	9.7
4.120050	---	29.85	46.00	16.15	15000.	9.000	L1	ON	9.8
4.120050	39.23	---	56.00	16.77	15000.	9.000	L1	ON	9.8

Note:

- 1.Emission level(quasi-peak or Average peak)=Raw value by receiver + Corr(Insertion loss+ cable loss)
- 2.The raw value is used to calculate by software which is not shown in the sheet.
- 3.Margin=limit value – emission level.
- 4.L1 and N line is all have been tested, the result of them is synthesized in the above data diagram.



## Secondary supply\_N06: Mode 6: Charging mode+Camera+CC02+CA04+AB05&lt;Figure 2&gt;



**Annex A Accreditation Certificate**

**Accredited Laboratory**

A2LA has accredited

**EAST CHINA INSTITUTE OF TELECOMMUNICATIONS**  
*Shanghai, People's Republic of China*

for technical competence in the field of  
**Electrical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017  
*General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates  
technical competence for a defined scope and the operation of a laboratory quality management system  
(refer to joint ISO-ILAC-IAF Communiqué dated April 2017).*



Presented this 6<sup>th</sup> day of May 2019.



Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 3682.01  
Valid to February 28, 2021

*For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.*

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