EMC TEST REPORT

Report Number: C21T00052-EMC01-V00

Applicant	Mobiwire Mobiles (Ningbo) Co.,Ltd
Product Name	4G Clamshell Feature Phone
Model Name	DFC-0380
Brand Name	Doro
FCC ID	WS5DFC0380

Industrial Internet Innovation Center (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in FCC Part 15, Subpart B, ANSI C63.4-2014.

Prepared by		Reviewed by	
Approved by		Issue Date	2021-09-29

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

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Test Laboratory:
Industrial Internet Innovation Center (Shanghai) Co., Ltd.
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Tel: +86 21 68866880

Revision Version

Report Number	Revision	Date	Memo
C21T00052-EMC01-V00	00	2021-09-29	Initial creation of test report

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1. Test Laboratory

1.1. Testing Location

Primary Lab:

Company Name	Industrial Internet Innovation Center (Shanghai) Co., Ltd.
Address	Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China
FCC Registration No.	958356
FCC Designation No.	CN1177

Subcontracting Lab #1:

Company Name	N/A
Address	N/A

1.2. Testing Environment

Normal Temperature	15℃~35℃
Relative Humidity	30%RH~60%RH
Supply Voltage	120V/60Hz

1.3. Project Information

Project Leader	Xu Yuting
Testing Start Date	2021-08-06
Testing End Date	2021-09-10

2. Client Information

2.1. Applicant Information

Company Name	Mobiwire Mobiles (Ningbo) Co.,Ltd
Address	No.999,Dacheng East Road,Fenghua City,Zhejiang Province,China
Telephone	+86 574 59555707

2.2. Manufacturer Information

Company Name	Doro AB
Address	Jörgen Kocksgatan 1B, SE 211 20 MALMÖ, SWEDEN
Telephone	+46 46 280 50 00

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

3.1. About EUT

Product Name	4G Clamshell Feature Phone
Model name	DFC-0380
Supported Radio Technology and Bands	GSM900/GSM1800/GSM1900 WCDMA BAND I / VIII LTE BAND 1/3/7/8/20/28/38 BT5.0, BR, EDR FM
Hardware Version	V01(HW2011/2021/2031/2041)
Software Version	DFC-0380_SF296_N_S01A_V01_M210607_CE

Note: Photographs of EUT are shown in ANNEX B of this test report.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of Receipt
N08 (Main Supply)	352683990007913	V01(HW2011)	DFC-0380_SF296_N_S01A_V01_M210607_CE	2021/08/02
N59 (Main Supply for Radiated Emission test）	352683990010743	V01(HW2011)	DFC-0380_SF296_N_S01A_V01_M210607_CE	2021/08/29
N13 (Secondary Supply)	352683990008531	V01(HW2021)	DFC-0380_SF296_N_S01A_V01_M210607_CE	2021/08/02
N14 (Thirdly Supply)	352683990010651	V01(HW2031)	DFC-0380_SF296_N_S01A_V01_M210607_CE	2021/08/02
N15 (Fourth Supply)	352683990011022	V01(HW2041)	DFC-0380_SF296_N_S01A_V01_M210607_CE	2021/08/02

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

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	SN/Remark
CA03	Adapter	A31A-050055U-EU1	N/A
CB06	Adapter	S003ATB0500055	N/A

CC01	Adapter	A806A-050100U-UK1	N/A
CD01	Cradle	DFC-0380	N/A
UA02	USB Cable	M039B0800150	N/A
AA08	Earphone	1317-3277-3.5MM	N/A
AB06	Earphone	JWEP0944-M01R	N/A
BA12	Battery	DBO-1000A	N/A
BB12	Battery	DBAA-1000A	N/A
AE1	Notebook PC	DELL Latitude E6510	N/A
AE2	Desktop PC	OptiPlex 790 DT	X8RP1 A01 APCC
AE3	LAN Cable	N/A	N/A
AE4	VGA Cable	N/A	N/A
AE5	RS232 Cable	N/A	N/A
AE6	Keyboard	KB212-B	CN-0Y88XT-65890-12I-005Q-A00
AE7	Mouse	MS111-P	CN-011D3V-71581-19J-1A64
AE8	Monitor	Dell E1709Wc	N/A
AE9	Micro SD Card	Kingston SDC4/4GB 77	N/A

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

*The AE is provided by the lab.

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	2020/10/1
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 Summary

5.1. Summary of Test Results

Items	Test List	Standard	Verdict
1	Radiated Emission	15.109(a)	Pass
2	AC Conducted Emission	15.107(a)	Pass

5.2. Statements

The DFC-0380, manufactured by Doro AB is a new product for testing.

There are four configuration samples in this project. We mainly test Main supply, and the other configuration samples test the worst mode of the Main supply, and record the test data of the worst mode respectively in the report.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 5.1.

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

The description of the differences between the models is updated as follows:

DFB-0380 (doro6820)	Configure 1	Configure 2	Configure 3	Configure 4
Item	2011	2021	2031	2041
LCD	Sanglong 28QS195-03 (CTC glass, ST7789V3)	Sanglong 28QS195-03 (CTC glass, ST7789V3)	Digital LCM-Y88531(CTC, IC GC9306)	Digital LCM-Y88531(CTC, IC GC9306)
Flash	DOS DS35M1GA-IB	ESMT F50D1G41LB-83YG2ME	DOS DS35M1GA-IB	ESMT F50D1G41LB-83YG2ME

5.3. Decision of final test mode

The EUT was tested together with the above additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The test configuration modes are as the following:

N08&N59 (Mainly Supply):

Test Item	Test setup and operating modes
Radiated emission	Mode 1: GSM1900 idle mode+Camera+CA03+AA08+BA12+N59 Mode 2: GSM1900 idle mode+Camera+CB06+AB06+BB12+N59 Mode 3: LTE BAND 7 idle mode+Camera+CA03+AB06+BB12+N59 Mode 4: LTE BAND 7 idle mode+Camera+CC01+UA02+AA08+BA12+N59 Mode 5: LTE BAND 38 idle mode+camera+CB06+AA08+BA12+N59 Mode 6: LTE BAND 38 idle mode+Camera+CC01+UA02+AB06+BB12+N59 Mode 7: LTE BAND 38 idle mode+Camera+CC01+UA02+CD01+AB06+BB12+N59 Mode 8: DATA LINK mode+UA02+BA12+N59 Mode 9: DATA LINK mode+UA02+BB12+N59 Mode 10: FM mode+ AA08+N59 Mode 11: FM mode+ AB06+N59
AC Conducted Emission	Mode 1: GSM1900 idle mode+Camera+CA03+AA08+BA12+N08 Mode 2: GSM1900 idle mode+Camera+CB06+AB06+BB12+N08 Mode 3: LTE BAND 7 idle mode+Camera+CA03+AB06+BB12+N08 Mode 4: LTE BAND 7 idle mode+Camera+CC01+UA02+AA08+BA12+N08 Mode 5: LTE BAND 38 idle mode+camera+CB06+AA08+BA12+N08 Mode 6: LTE BAND 38 idle mode+Camera+CC01+UA02+AB06+BB12+N08 Mode 7: LTE BAND 38 idle mode+Camera+CC01+UA02+CD01+AB06+BB12+N08 Mode 8: DATA LINK mode+UA02+BA12+N08 Mode 9: DATA LINK mode+UA02+BB12+N08

N13 (Secondary Supply):

Test Item	Test setup and operating modes
Radiated emission	Mode 3: LTE BAND 7 idle mode+Camera+CA03+AB06+BB12 Mode 9: DATALINK mode+UA02+BB12
AC Conducted Emission	Mode 6: LTE BAND 38 idle mode+Camera+CC01+UA02+AB06+BB12

N14 (Thirdly Supply):

Test Item	Test setup and operating modes
Radiated emission	Mode 3: LTE BAND 7 idle mode+Camera+CA03+AB06+BB12 Mode 9: DATALINK mode+UA02+BB12
AC Conducted Emission	Mode 6: LTE BAND 38 idle mode+Camera+CC01+UA02+AB06+BB12

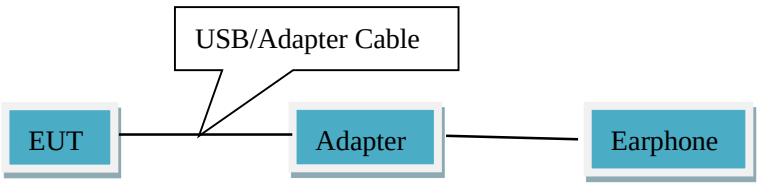
N15 (Fourth Supply):

Test Item	Test setup and operating modes
Radiated emission	Mode 3: LTE BAND 7 idle mode+Camera+CA03+AB06+BB12 Mode 9: DATALINK mode+UA02+BB12
AC Conducted Emission	Mode 6: LTE BAND 38 idle mode+Camera+CC01+UA02+AB06+BB12

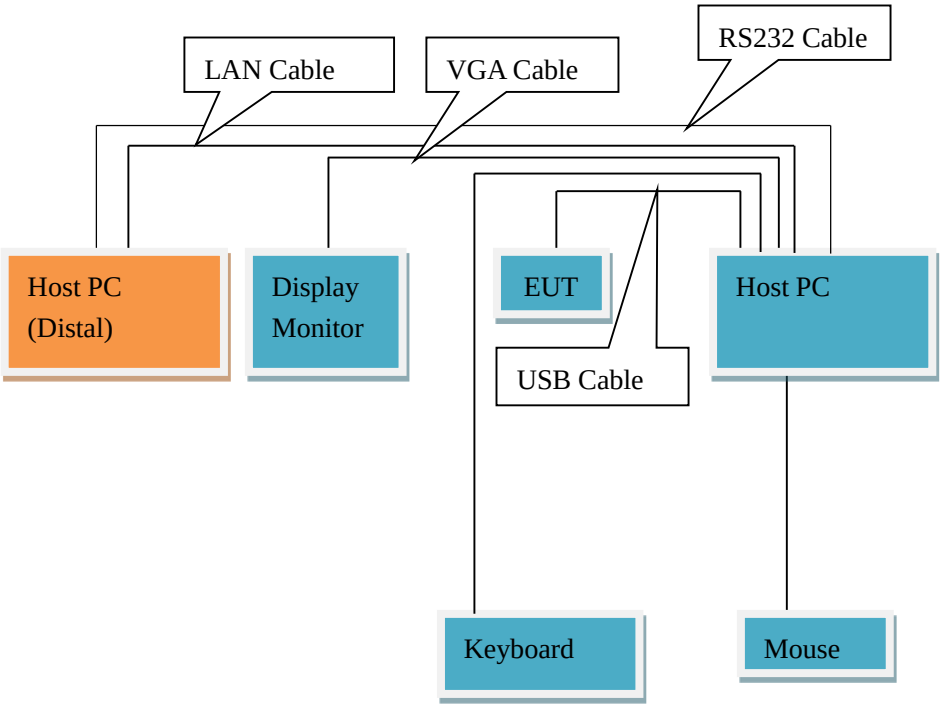
5.4. EUT System Operation

1. Connect the EUT with AE.
2. Setup the EUT according to the standard.
3. DATALINK mode: Data application transferred mode between EUT and PC through USB Cable.
4. Start testing and monitoring the function
5. 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.

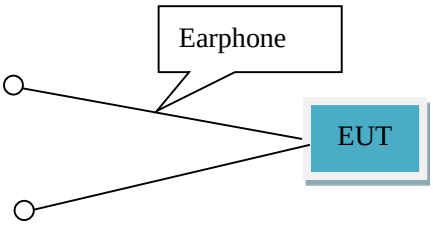
5.5. EUT Connection Diagram of Test System



<Figure 1> Mode 1-7



<Figure 2> Mode 8-9



<Figure 3> Mode 10~11

6. Measurement Results

6.1. Radiated Emission

Method of Measurement

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

b. For 1000MHz-18000MHz, the 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

Table 1:

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

Table 2:

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

Table 3:

Test conditions

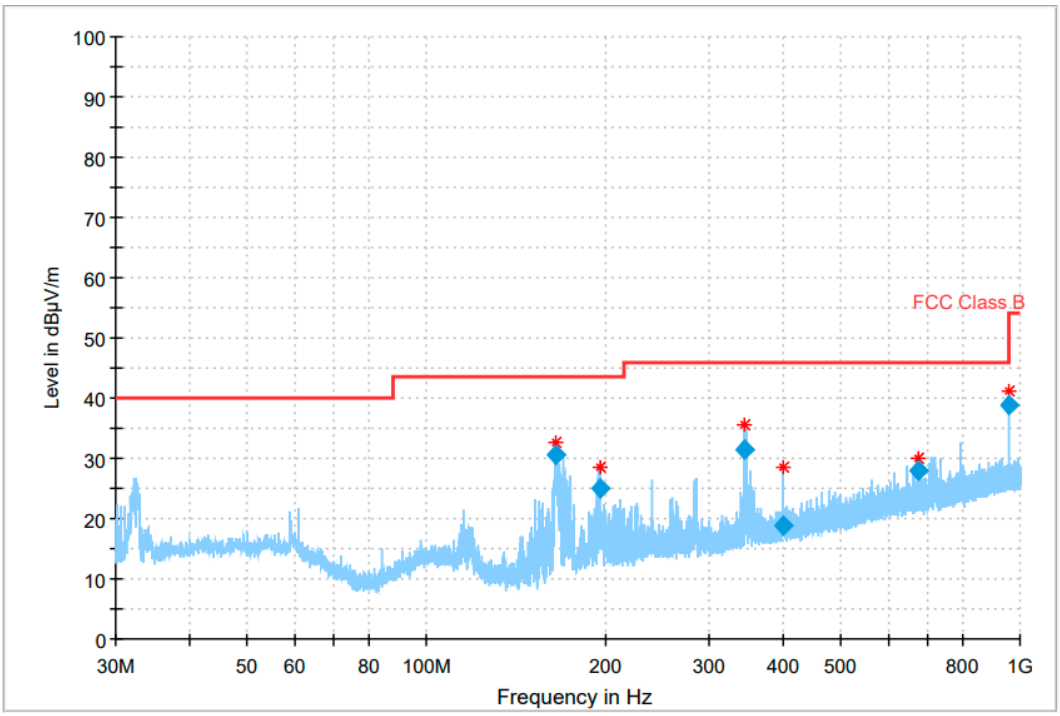
Frequency Range (MHz)	RBW/VBW	Sweep Time (s)
30-1000	120kHz/300kHz	Auto
1000-18000	1MHz/3MHz	Auto

Test Results

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

N59 (Main Supply):

Mode 8: DATA LINK mode+UA02+BA12+N59 (30M-1GHz)



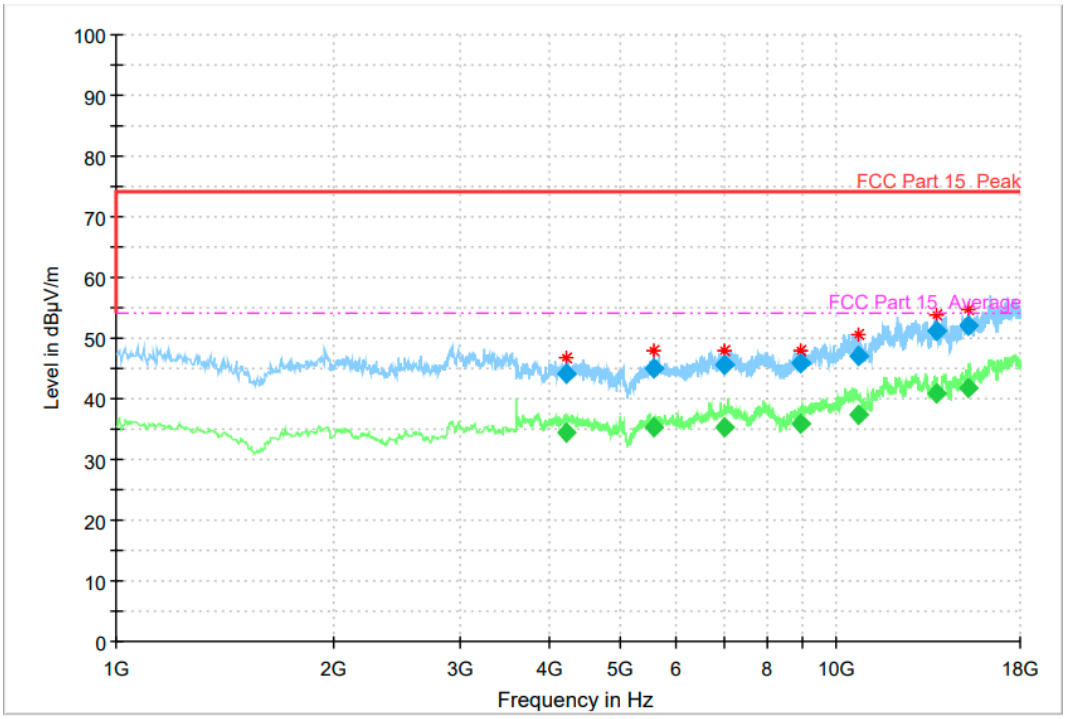
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
165.762339	30.63	43.50	12.87	1000.0	120.000	100.0	V	147.0	-15.9
195.929739	24.97	43.50	18.53	1000.0	120.000	100.0	V	352.0	-14.1
344.626813	31.59	46.00	14.41	1000.0	120.000	105.0	H	119.0	-9.7
399.198312	18.95	46.00	27.05	1000.0	120.000	100.0	H	-2.0	-8.3
676.197595	27.82	46.00	18.18	1000.0	120.000	104.0	V	225.0	-3.4
959.980680	38.71	46.00	7.29	1000.0	120.000	105.0	H	23.0	0.3

Note:

1. Emission level(QP)=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.

Mode 5: LTE BAND 38 idle mode+Camera+CB06+AA08+BA12+N59 (1GHz –18GHz)

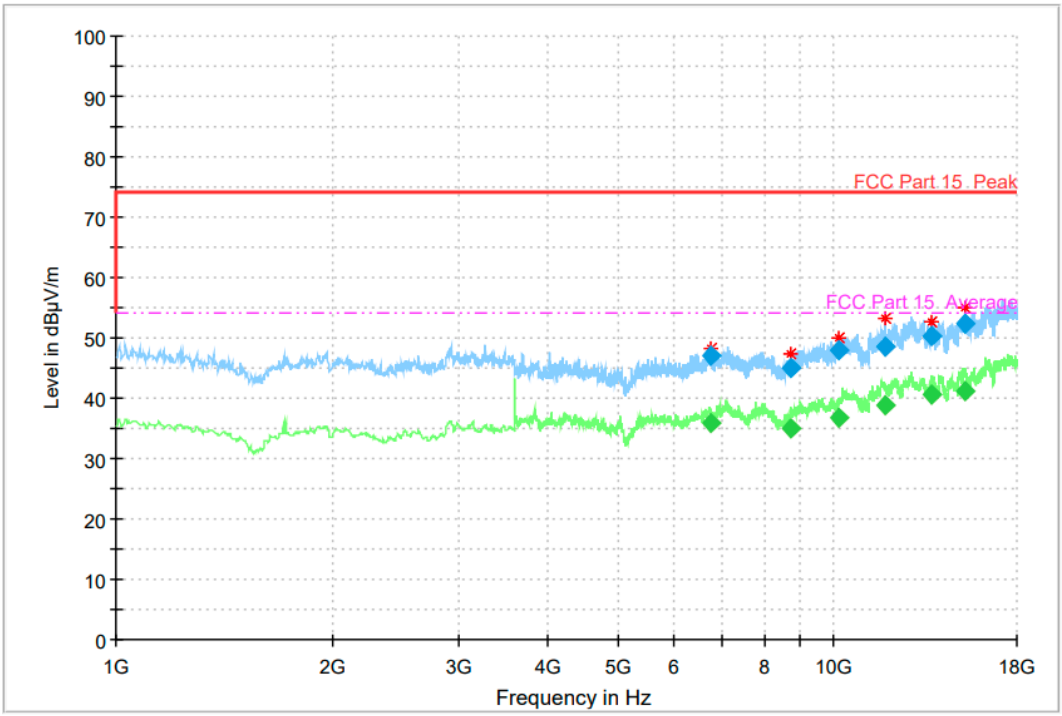


Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Band width (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4218.80000	43.98	---	74.00	30.02	1.0	1000.	100.0	H	229.0	1.2
4218.80000	---	34.35	54.00	19.65	1.0	1000.	100.0	H	229.0	1.2
5565.80000	45.07	---	74.00	28.93	1.0	1000.	100.0	H	340.0	2.5
5565.80000	---	35.32	54.00	18.68	1.0	1000.	100.0	H	340.0	2.5
7012.00000	45.67	---	74.00	28.33	1.0	1000.	200.0	H	324.0	4.3
7012.00000	---	35.43	54.00	18.57	1.0	1000.	200.0	H	324.0	4.3
8931.40000	46.01	---	74.00	27.99	1.0	1000.	100.0	H	324.0	4.5
8931.40000	---	36.01	54.00	17.99	1.0	1000.	100.0	H	324.0	4.5
10760.4000	---	37.47	54.00	16.53	1.0	1000.	200.0	H	40.0	7.3
10760.4000	47.19	---	74.00	26.81	1.0	1000.	200.0	H	40.0	7.3
13780.8000	51.32	---	74.00	22.68	1.0	1000.	100.0	H	202.0	11.7
13780.8000	---	40.79	54.00	13.21	1.0	1000.	100.0	H	202.0	11.7

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.



Final Result 1

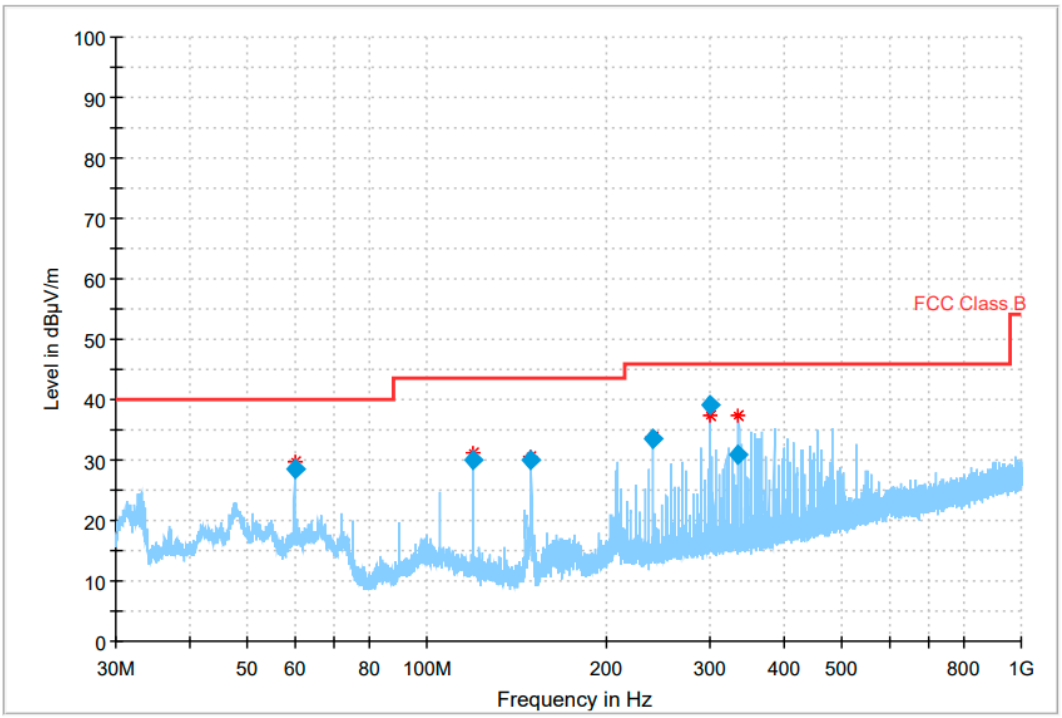
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Band width (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6733.00000	47.00	---	74.00	27.00	1.0	1000.	200.0	V	236.0	3.7
6733.00000	---	35.93	54.00	18.07	1.0	1000.	200.0	V	236.0	3.7
8734.80000	---	34.99	54.00	19.01	1.0	1000.	100.0	V	55.0	3.9
8734.80000	45.12	---	74.00	28.88	1.0	1000.	100.0	V	55.0	3.9
10165.8000	---	36.89	54.00	17.11	1.0	1000.	200.0	V	288.0	6.8
10165.8000	47.93	---	74.00	26.07	1.0	1000.	200.0	V	288.0	6.8
11825.8000	48.61	---	74.00	25.39	1.0	1000.	200.0	V	347.0	9.8
11825.8000	---	38.91	54.00	15.09	1.0	1000.	200.0	V	347.0	9.8
13682.0000	50.44	---	74.00	23.56	1.0	1000.	200.0	V	347.0	11.6
13682.0000	---	40.67	54.00	13.33	1.0	1000.	200.0	V	347.0	11.6
15212.2000	52.41	---	74.00	21.59	1.0	1000.	100.0	V	231.0	14.0
15212.2000	---	41.21	54.00	12.79	1.0	1000.	100.0	V	231.0	14.0

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.

N13 (Secondary Supply):

Mode 3: LTE BAND 7 idle mode+Camera+CA03+AA08+BB12 (30M-1GHz)



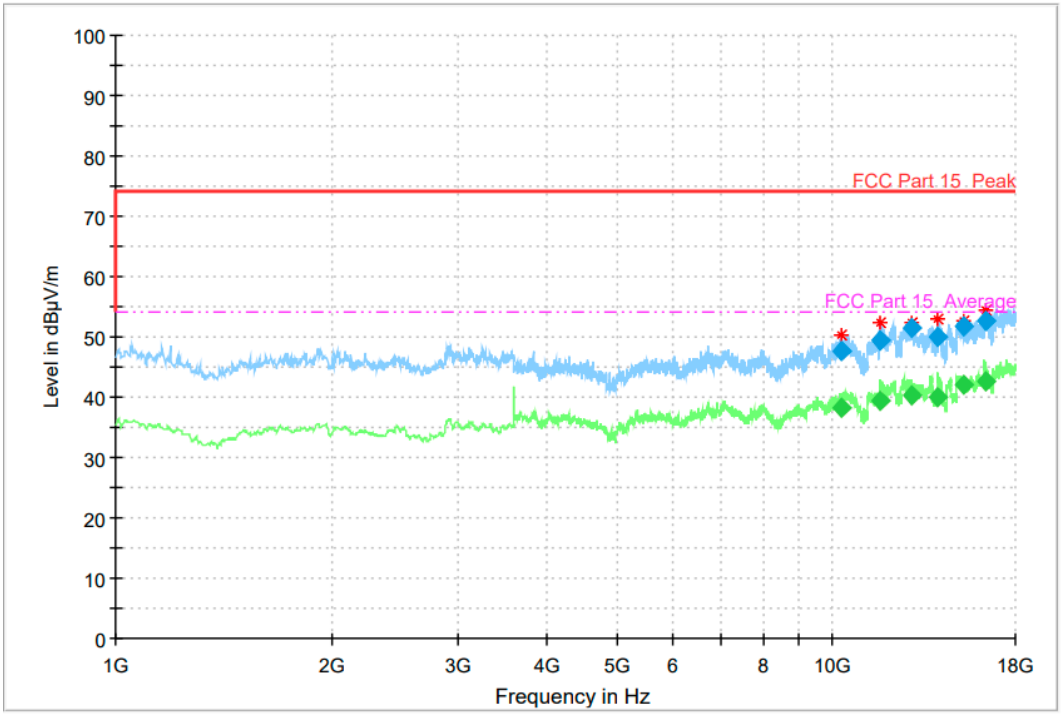
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
60.005720	28.40	40.00	11.60	1000.0	120.000	100.0	V	28.0	-12.3
120.002891	29.94	43.50	13.56	1000.0	120.000	225.0	H	-1.0	-15.6
150.011451	30.03	43.50	13.47	1000.0	120.000	100.0	V	331.0	-17.1
240.004608	33.39	46.00	12.61	1000.0	120.000	104.0	H	140.0	-12.5
300.008101	38.99	46.00	7.01	1000.0	120.000	100.0	H	258.0	-11.0
334.927728	30.88	46.00	15.12	1000.0	120.000	100.0	H	139.0	-9.9

Note:

1. Emission level(QP)=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.

Mode 3: LTE BAND 7 idle mode+Camera+CA03+AA08+BB12 (1GHz –18GHz)

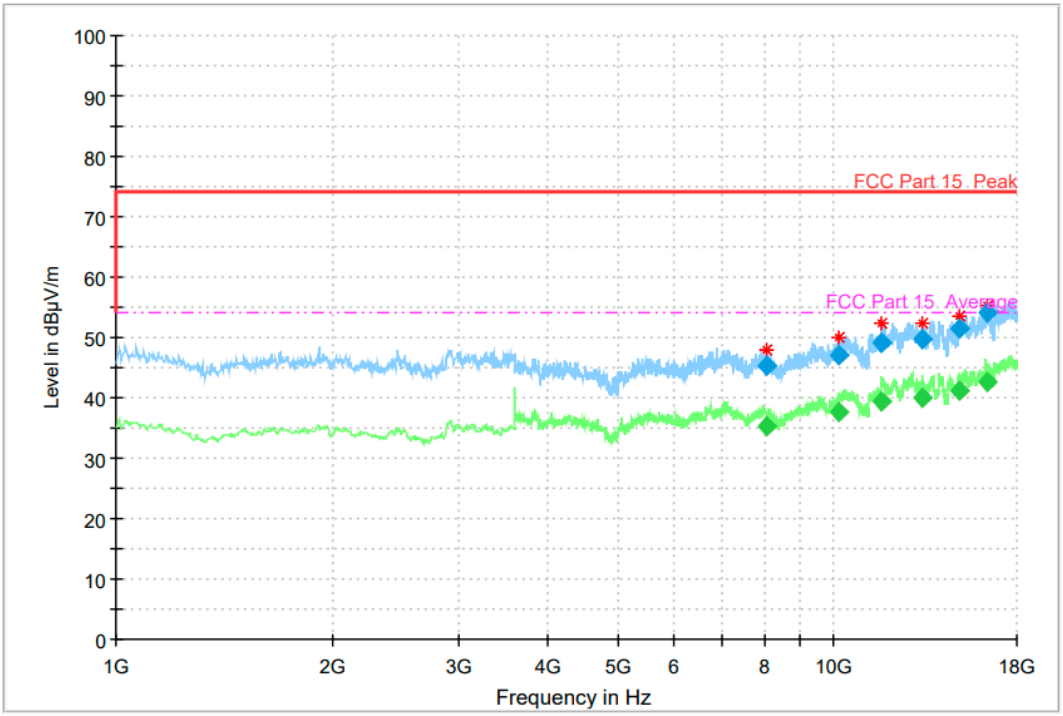


Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Band width (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
10312.4000	---	38.11	54.00	15.89	1.0	1000.	200.0	H	29.0	7.7
10312.4000	47.73	---	74.00	26.27	1.0	1000.	200.0	H	29.0	7.7
11671.8000	---	39.45	54.00	14.55	1.0	1000.	200.0	H	46.0	9.9
11671.8000	49.28	---	74.00	24.72	1.0	1000.	200.0	H	46.0	9.9
12870.0000	51.53	---	74.00	22.47	1.0	1000.	200.0	H	328.0	11.2
12870.0000	---	40.34	54.00	13.66	1.0	1000.	200.0	H	328.0	11.2
14009.2000	---	40.12	54.00	13.88	1.0	1000.	100.0	H	166.0	12.4
14009.2000	50.08	---	74.00	23.92	1.0	1000.	100.0	H	166.0	12.4
15241.6000	---	42.00	54.00	12.00	1.0	1000.	200.0	H	268.0	14.2
15241.6000	51.75	---	74.00	22.25	1.0	1000.	200.0	H	268.0	14.2
16358.4000	52.74	---	74.00	21.26	1.0	1000.	200.0	H	116.0	16.3
16358.4000	---	42.70	54.00	11.30	1.0	1000.	200.0	H	116.0	16.3

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.



Final Result 1

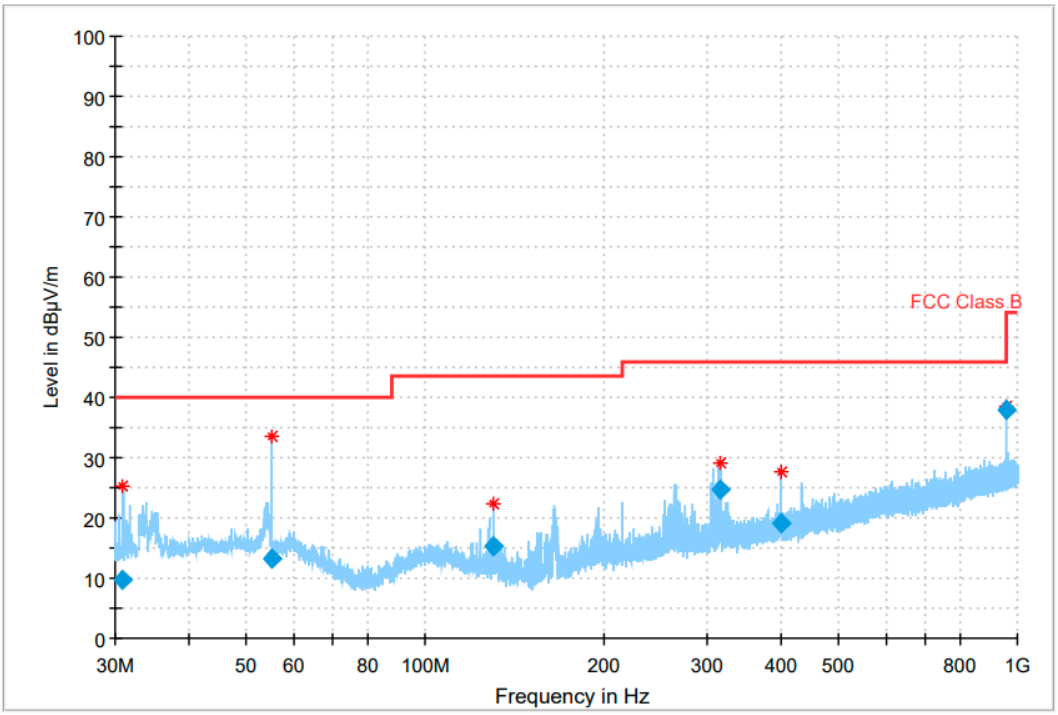
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Band width (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
8071.80000	---	35.27	54.00	18.73	1.0	1000.	100.0	V	358.0	4.4
8071.80000	45.37	---	74.00	28.63	1.0	1000.	100.0	V	358.0	4.4
10190.4000	47.10	---	74.00	26.90	1.0	1000.	200.0	V	334.0	6.9
10190.4000	---	37.56	54.00	16.44	1.0	1000.	200.0	V	334.0	6.9
11649.4000	49.03	---	74.00	24.97	1.0	1000.	100.0	V	0.0	9.9
11649.4000	---	39.40	54.00	14.60	1.0	1000.	100.0	V	0.0	9.9
13267.4000	---	40.06	54.00	13.94	1.0	1000.	200.0	V	266.0	11.1
13267.4000	49.85	---	74.00	24.15	1.0	1000.	200.0	V	266.0	11.1
14946.4000	51.48	---	74.00	22.52	1.0	1000.	200.0	V	148.0	13.8
14946.4000	---	41.15	54.00	12.85	1.0	1000.	200.0	V	148.0	13.8
16345.0000	54.13	---	74.00	19.87	1.0	1000.	100.0	V	160.0	16.3
16345.0000	---	42.76	54.00	11.24	1.0	1000.	100.0	V	160.0	16.3

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.

N14 (Thirdly Supply):

Mode 9: DATA LINK mode+UA02+BB12 (30M-1GHz)



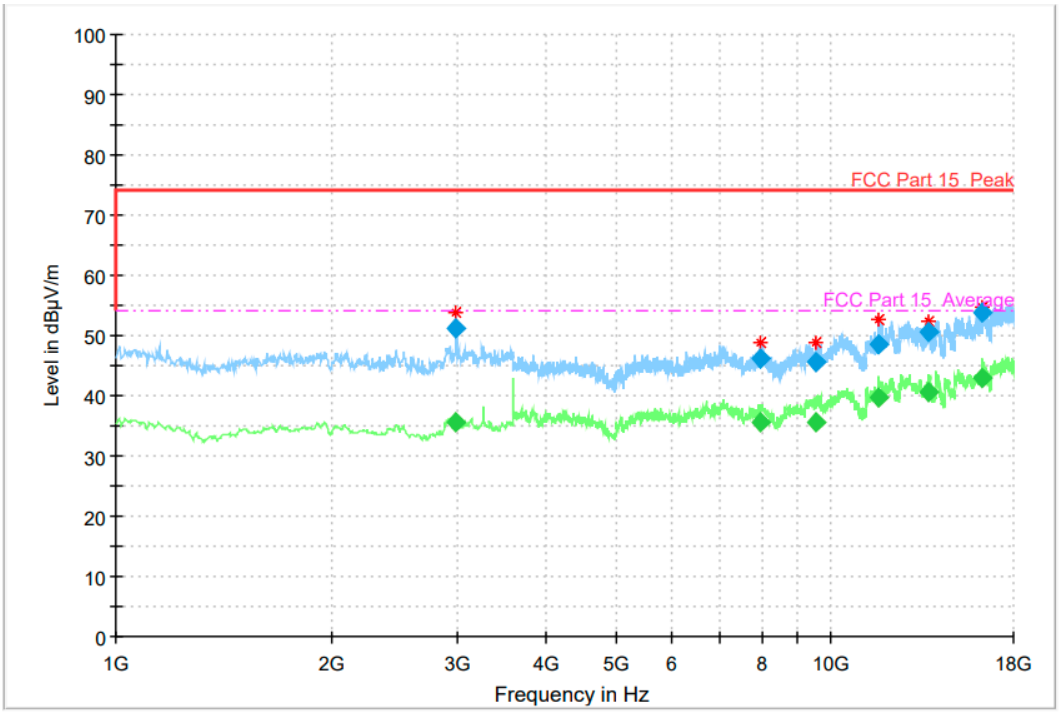
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.941997	9.57	40.00	30.43	1000.0	120.000	100.0	V	256.0	-14.5
55.037973	13.18	40.00	26.82	1000.0	120.000	175.0	V	309.0	-12.2
130.710485	15.43	43.50	28.07	1000.0	120.000	125.0	H	193.0	-16.5
314.703571	24.70	46.00	21.30	1000.0	120.000	100.0	H	278.0	-10.4
399.816080	19.17	46.00	26.83	1000.0	120.000	100.0	H	231.0	-8.3
959.999403	37.90	46.00	8.10	1000.0	120.000	100.0	H	114.0	0.3

Note:

1. Emission level(QP)=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.

Mode 9: DATA LINK mode+UA02+BB12 (1GHz –18GHz)

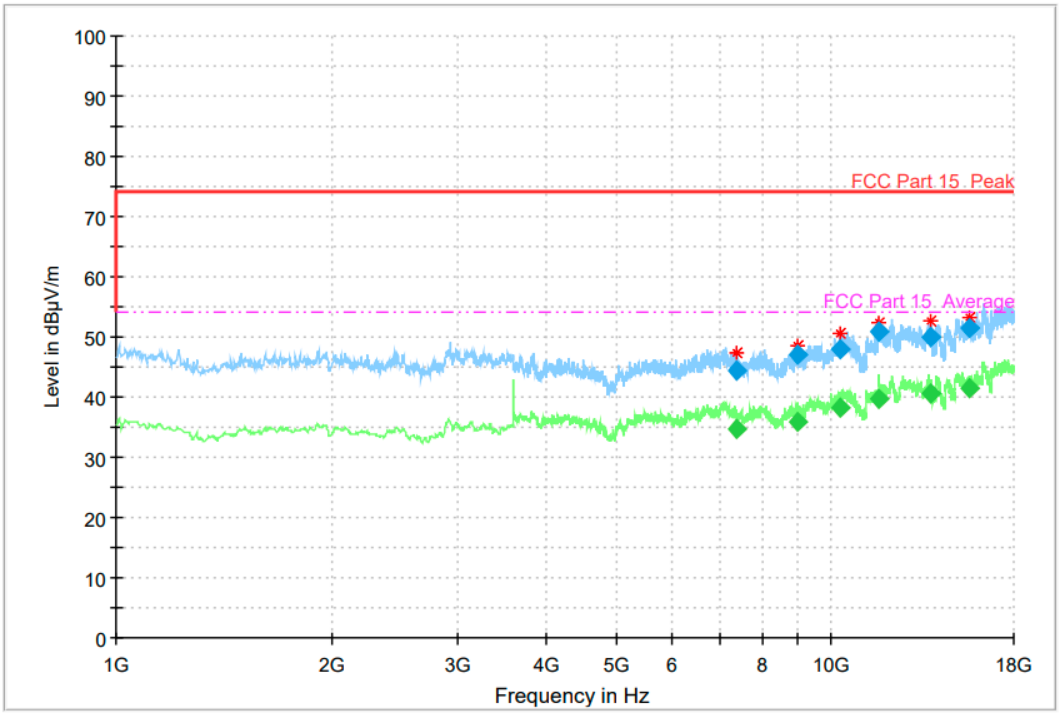


Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Band width (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2989.00000	---	35.45	54.00	18.55	1.0	1000.	100.0	H	225.0	1.9
2989.00000	51.31	---	74.00	22.69	1.0	1000.	100.0	H	225.0	1.9
7953.00000	---	35.57	54.00	18.43	1.0	1000.	100.0	H	82.0	4.5
7953.00000	46.21	---	74.00	27.79	1.0	1000.	100.0	H	82.0	4.5
9533.00000	45.46	---	74.00	28.54	1.0	1000.	100.0	H	193.0	5.8
9533.00000	---	35.62	54.00	18.38	1.0	1000.	100.0	H	193.0	5.8
11645.2000	---	39.57	54.00	14.43	1.0	1000.	200.0	H	158.0	9.9
11645.2000	48.56	---	74.00	25.44	1.0	1000.	200.0	H	158.0	9.9
13681.2000	---	40.55	54.00	13.45	1.0	1000.	100.0	H	56.0	11.6
13681.2000	50.48	---	74.00	23.52	1.0	1000.	100.0	H	56.0	11.6
16302.4000	53.70	---	74.00	20.30	1.0	1000.	200.0	H	123.0	16.1
16302.4000	---	42.93	54.00	11.07	1.0	1000.	200.0	H	123.0	16.1

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.



Final Result 1

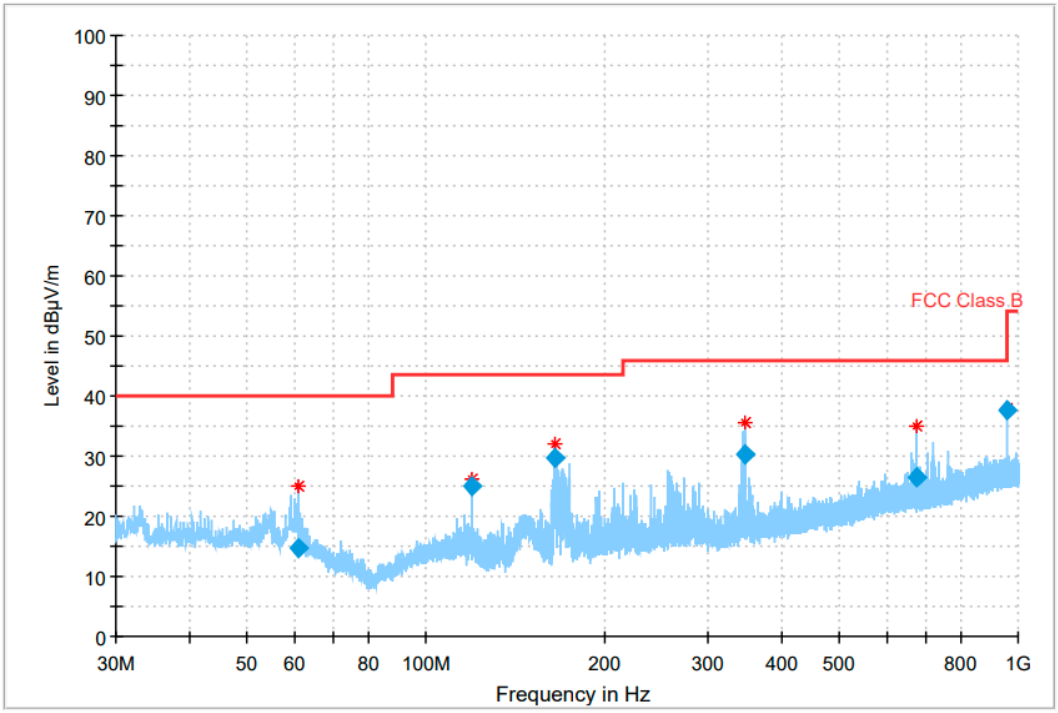
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Band width (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
7396.40000	44.33	---	74.00	29.67	1.0	1000.	100.0	V	155.0	3.7
7396.40000	---	34.84	54.00	19.16	1.0	1000.	100.0	V	155.0	3.7
8996.60000	---	36.01	54.00	17.99	1.0	1000.	200.0	V	357.0	4.7
8996.60000	46.99	---	74.00	27.01	1.0	1000.	200.0	V	357.0	4.7
10309.4000	---	38.10	54.00	15.90	1.0	1000.	100.0	V	155.0	7.6
10309.4000	48.04	---	74.00	25.96	1.0	1000.	100.0	V	155.0	7.6
11658.2000	---	39.77	54.00	14.23	1.0	1000.	200.0	V	290.0	9.9
11658.2000	50.94	---	74.00	23.06	1.0	1000.	200.0	V	290.0	9.9
13746.4000	---	40.67	54.00	13.33	1.0	1000.	200.0	V	60.0	11.7
13746.4000	50.05	---	74.00	23.95	1.0	1000.	200.0	V	60.0	11.7
15586.8000	51.48	---	74.00	22.52	1.0	1000.	200.0	V	348.0	14.4
15586.8000	---	41.46	54.00	12.54	1.0	1000.	200.0	V	348.0	14.4

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.

N15 (Fourth Supply):

Mode 9: DATA LINK mode+UA02+BB12 (30M-1GHz)



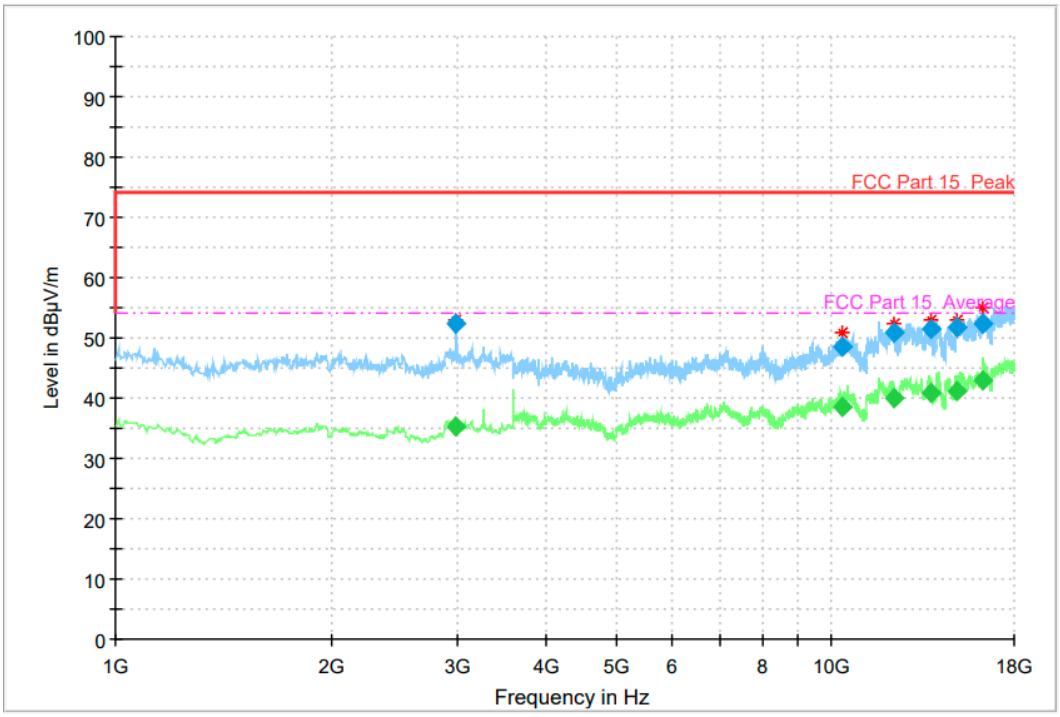
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
61.002373	14.81	40.00	25.19	1000.0	120.000	196.0	V	294.0	-12.7
120.009843	25.12	43.50	18.38	1000.0	120.000	100.0	V	327.0	-15.6
165.647387	29.70	43.50	13.80	1000.0	120.000	100.0	V	52.0	-16.0
344.891533	30.40	46.00	15.60	1000.0	120.000	100.0	H	103.0	-9.7
675.696936	26.59	46.00	19.41	1000.0	120.000	100.0	V	41.0	-3.4
959.996803	37.67	46.00	8.33	1000.0	120.000	100.0	H	23.0	0.3

Note:

1. Emission level(QP)=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.

Mode 9: DATA LINK mode+UA02+BB12 (1GHz –18GHz)

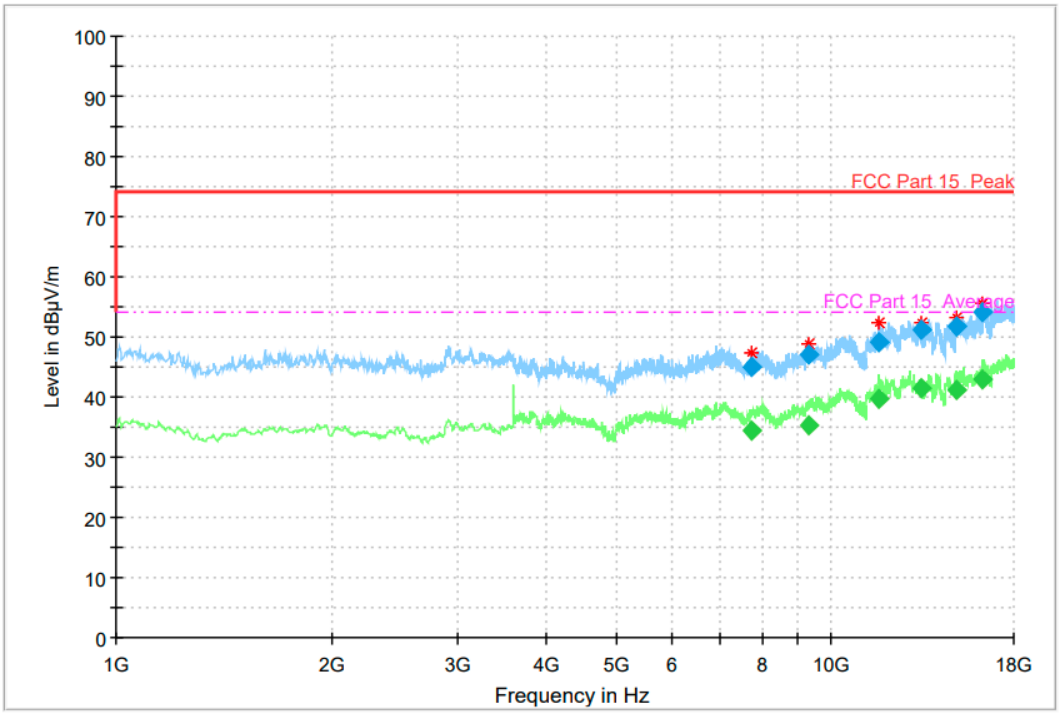


Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Band width (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2986.40000	52.43	---	74.00	21.57	1.0	1000.	200.0	H	266.0	1.9
2986.40000	---	35.40	54.00	18.60	1.0	1000.	200.0	H	266.0	1.9
10369.4000	48.50	---	74.00	25.50	1.0	1000.	100.0	H	0.0	7.8
10369.4000	---	38.39	54.00	15.61	1.0	1000.	100.0	H	0.0	7.8
12193.4000	50.89	---	74.00	23.11	1.0	1000.	100.0	H	35.0	10.7
12193.4000	---	40.12	54.00	13.88	1.0	1000.	100.0	H	35.0	10.7
13739.4000	51.51	---	74.00	22.49	1.0	1000.	100.0	H	53.0	11.7
13739.4000	---	40.86	54.00	13.14	1.0	1000.	100.0	H	53.0	11.7
15000.6000	51.77	---	74.00	22.23	1.0	1000.	100.0	H	69.0	13.7
15000.6000	---	41.20	54.00	12.80	1.0	1000.	100.0	H	69.0	13.7
16306.6000	52.39	---	74.00	21.61	1.0	1000.	200.0	H	105.0	16.1
16306.6000	---	42.84	54.00	11.16	1.0	1000.	200.0	H	105.0	16.1

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.



Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Band width (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
7722.80000	45.01	---	74.00	28.99	1.0	1000.	100.0	V	62.0	3.8
7722.80000	---	34.45	54.00	19.55	1.0	1000.	100.0	V	62.0	3.8
9285.00000	46.97	---	74.00	27.03	1.0	1000.	200.0	V	0.0	5.2
9285.00000	---	35.33	54.00	18.67	1.0	1000.	200.0	V	0.0	5.2
11663.4000	49.26	---	74.00	24.74	1.0	1000.	100.0	V	195.0	9.9
11663.4000	---	39.56	54.00	14.44	1.0	1000.	100.0	V	195.0	9.9
13353.2000	---	41.45	54.00	12.55	1.0	1000.	100.0	V	135.0	11.3
13353.2000	51.18	---	74.00	22.82	1.0	1000.	100.0	V	135.0	11.3
14967.2000	---	41.05	54.00	12.95	1.0	1000.	100.0	V	170.0	13.8
14967.2000	51.88	---	74.00	22.12	1.0	1000.	100.0	V	170.0	13.8
16311.2000	54.01	---	74.00	19.99	1.0	1000.	200.0	V	139.0	16.1
16311.2000	---	42.81	54.00	11.19	1.0	1000.	200.0	V	139.0	16.1

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.

6.2. 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 AC 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		

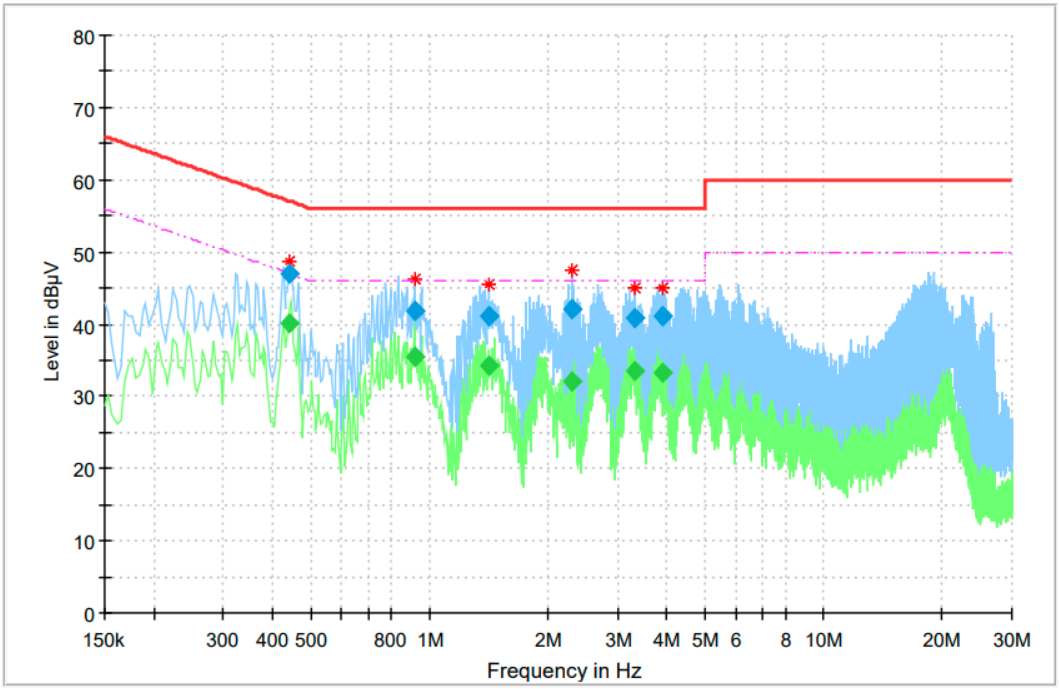
Test Condition in Charging Mode

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

Test Results

N08 (Main Supply):

Mode 6: LTE BAND 38 traffic mode+Camera+CC01+UA02+AB06+BB12



Final Result 1

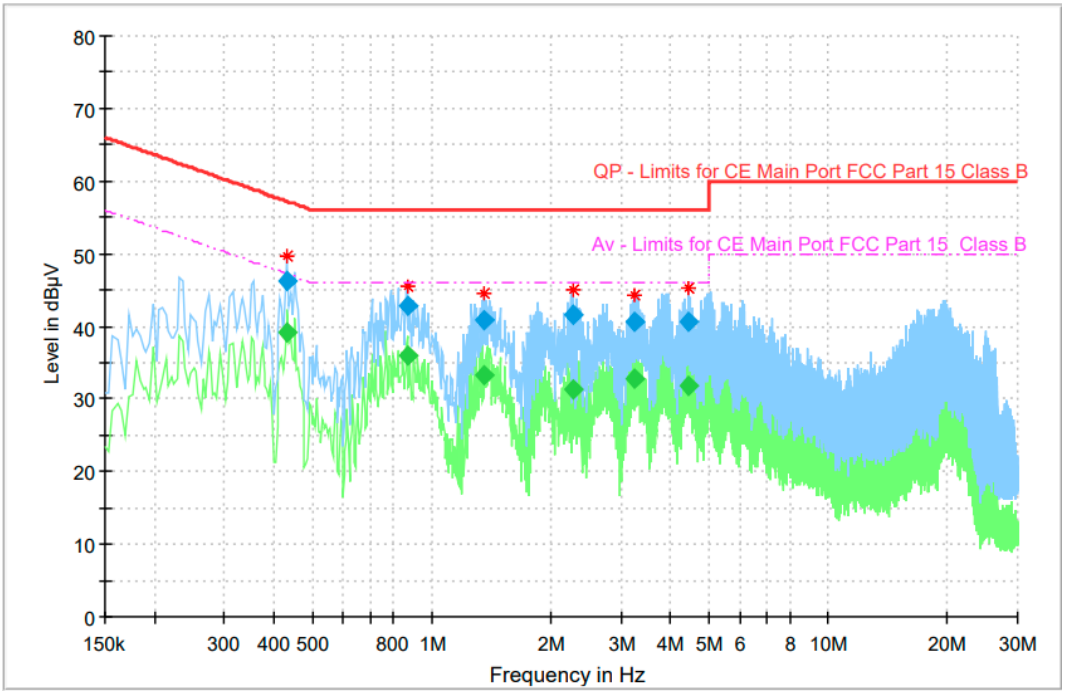
Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.441038	46.91	---	57.04	10.13	15000.0	9.000	N	ON	10.0
0.441038	---	40.16	47.04	6.88	15000.0	9.000	N	ON	10.0
0.918638	41.94	---	56.00	14.06	15000.0	9.000	N	ON	10.0
0.918638	---	35.53	46.00	10.47	15000.0	9.000	N	ON	10.0
1.418625	41.06	---	56.00	14.94	15000.0	9.000	N	ON	10.1
1.418625	---	34.37	46.00	11.63	15000.0	9.000	N	ON	10.1
2.291738	42.12	---	56.00	13.88	15000.0	9.000	N	ON	10.2
2.291738	---	32.05	46.00	13.95	15000.0	9.000	N	ON	10.2
3.336488	40.91	---	56.00	15.09	15000.0	9.000	N	ON	10.3
3.336488	---	33.45	46.00	12.55	15000.0	9.000	N	ON	10.3
3.896175	41.10	---	56.00	14.90	15000.0	9.000	N	ON	10.3
3.896175	---	33.34	46.00	12.66	15000.0	9.000	N	ON	10.3

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.

N13 (Secondary Supply):

Mode 6: LTE BAND 38 traffic mode+Camera+CC01+UA02+AB06+BB12



Final Result 1

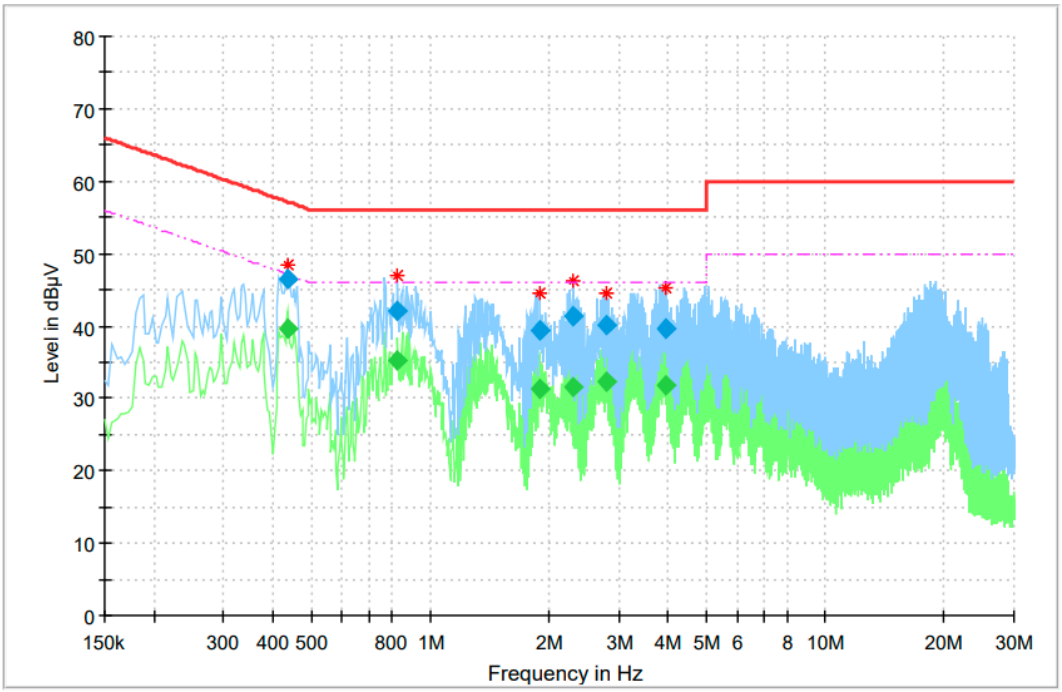
Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.429844	---	39.16	47.26	8.09	15000.0	9.000	N	ON	9.6
0.429844	46.23	---	57.26	11.03	15000.0	9.000	N	ON	9.6
0.866400	---	36.02	46.00	9.98	15000.0	9.000	N	ON	9.6
0.866400	42.80	---	56.00	13.20	15000.0	9.000	N	ON	9.6
1.362656	---	33.36	46.00	12.64	15000.0	9.000	N	ON	9.6
1.362656	40.74	---	56.00	15.26	15000.0	9.000	N	ON	9.6
2.280544	---	31.31	46.00	14.69	15000.0	9.000	N	ON	9.7
2.280544	41.49	---	56.00	14.51	15000.0	9.000	N	ON	9.7
3.243206	---	32.80	46.00	13.20	15000.0	9.000	N	ON	9.7
3.243206	40.67	---	56.00	15.33	15000.0	9.000	N	ON	9.7
4.440938	---	31.78	46.00	14.22	15000.0	9.000	N	ON	9.7
4.440938	40.64	---	56.00	15.36	15000.0	9.000	N	ON	9.7

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.

N14 (Thirdly Supply):

Mode 6: LTE BAND 38 traffic mode+Camera+CC01+UA02+AB06+BB12



Final Result 1

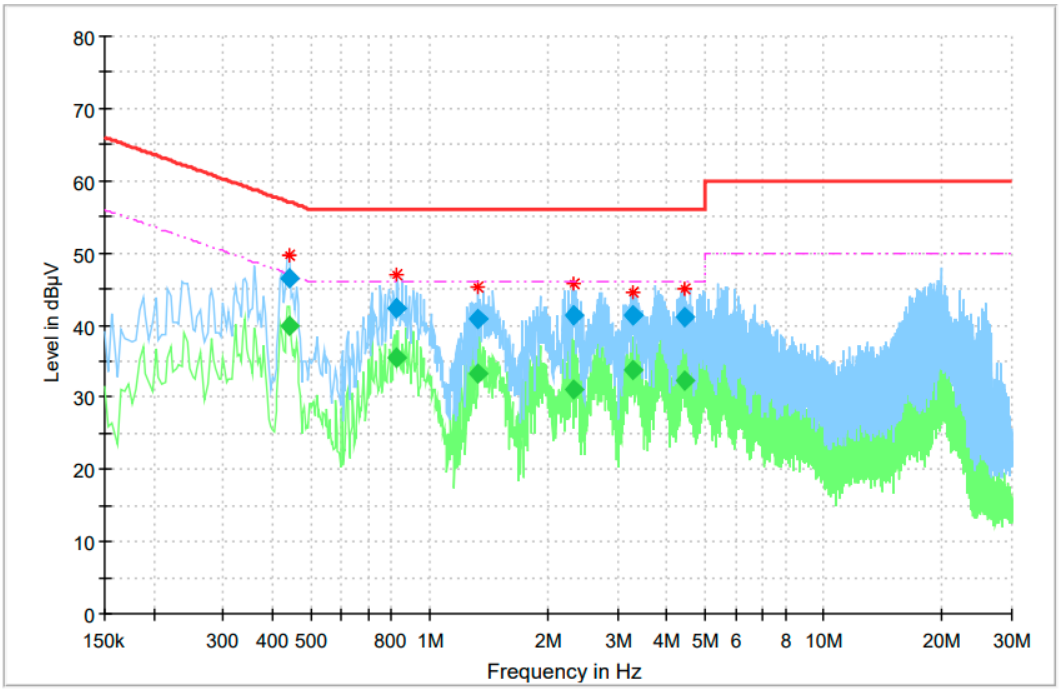
Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.437306	46.47	---	57.11	10.65	15000.0	9.000	N	ON	10.0
0.437306	---	39.64	47.11	7.47	15000.0	9.000	N	ON	10.0
0.829088	42.06	---	56.00	13.94	15000.0	9.000	N	ON	10.0
0.829088	---	35.24	46.00	10.76	15000.0	9.000	N	ON	10.0
1.885031	39.27	---	56.00	16.73	15000.0	9.000	N	ON	10.1
1.885031	---	31.35	46.00	14.65	15000.0	9.000	N	ON	10.1
2.306663	41.30	---	56.00	14.70	15000.0	9.000	N	ON	10.2
2.306663	---	31.45	46.00	14.55	15000.0	9.000	N	ON	10.2
2.791725	40.01	---	56.00	15.99	15000.0	9.000	N	ON	10.2
2.791725	---	32.36	46.00	13.64	15000.0	9.000	N	ON	10.2
3.948413	39.75	---	56.00	16.25	15000.0	9.000	N	ON	10.3
3.948413	---	31.91	46.00	14.09	15000.0	9.000	N	ON	10.3

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.

N15 (Fourth Supply):

Mode 6: LTE BAND 38 traffic mode+Camera+CC01+UA02+AB06+BB12



Final Result 1

Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.441038	46.59	---	57.04	10.45	15000.0	9.000	N	ON	10.0
0.441038	---	39.89	47.04	7.15	15000.0	9.000	N	ON	10.0
0.829088	42.39	---	56.00	13.61	15000.0	9.000	N	ON	10.0
0.829088	---	35.50	46.00	10.50	15000.0	9.000	N	ON	10.0
1.325344	40.90	---	56.00	15.10	15000.0	9.000	N	ON	10.1
1.325344	---	33.37	46.00	12.63	15000.0	9.000	N	ON	10.1
2.325319	41.33	---	56.00	14.67	15000.0	9.000	N	ON	10.2
2.325319	---	31.19	46.00	14.81	15000.0	9.000	N	ON	10.2
3.269325	41.33	---	56.00	14.67	15000.0	9.000	N	ON	10.3
3.269325	---	33.72	46.00	12.28	15000.0	9.000	N	ON	10.3
4.455863	41.04	---	56.00	14.96	15000.0	9.000	N	ON	10.4
4.455863	---	32.41	46.00	13.59	15000.0	9.000	N	ON	10.4

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.

7. Test Equipment List

7.1. Radiated Emission Equipment list

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Test Receiver	ESU40	100307	R&S	2021-03-03	1 year
2	Universal Radio Communication Tester	CMU200	123102	R&S	2021-05-10	1 year
3	Universal Radio Communication Tester	CMW500	104178	R&S	2021-05-10	1 year
4	Trilog Antenna	VULB9163	VULB9163-515	Schwarzbeck	2021-02-03	2 years
5	Double Ridged Guide Antenna	ETS-3117	00135890	ETS	2020-02-28	2 years
6	Signal Generator	SMF 100A	102314	R&S	2021-05-10	1 year
7	EMI Test Software	EMC32 V9.15	N/A	R&S	N/A	N/A

7.2. AC Conducted Emission Equipment list

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Test Receiver	ESCI	101235	R&S	2021-05-10	1 year
2	Universal Radio Communication Tester	CMU200	123102	R&S	2021-05-10	1 year
3	Universal Radio Communication Tester	CMW500	104178	R&S	2021-05-10	1 year
4	2-Line V-Network	ENV216	101380	R&S	2021-03-20	1 year
5	EMI Test Software	EMC32 V10.35.02	N/A	R&S	N/A	N/A

Annex A: Measurement Uncertain

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of *k*=2.

Case	Uncertainty
Radiated Emission 30MHz-1000MHz	4.96 dB
Radiated Emission 1000MHz-18000MHz	5.18 dB
AC Conducted Emission	3.66 dB

Annex B: Accreditation Certificate

Accredited Laboratory

A2LA has accredited

INDUSTRIAL INTERNET INNOVATION CENTER (SHANGHAI) CO., LTD.

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 12th day of April 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2023

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

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