TEST REPORT

No.I22N02494-BLE

for

Honor Device Co., Ltd.

Smart Phone

Model Name: CRT-LX3

with

Hardware Version: HL3CRTM

Software Version: 6.1.0.90(C900E21R1P2)

FCC ID: 2AYGCCRT-LX3

Issued Date: 2022-12-09

Designation Number: CN1210

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of SAICT.

Test Laboratory:

SAICT, Shenzhen Academy of Information and Communications Technology

Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 518000.

Tel:+86(0)755-33322000, Fax:+86(0)755-33322001

Email: yewu@caict.ac.cn. www.saict.ac.cn

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22N0-2494-BLE	Rev.0	1st edition	2022-12-09

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

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1. Summary of Test Report

1.1. Test Items

Description	Smart Phone
Model Name	CRT-LX3
Applicant's name	Honor Device Co., Ltd.
Manufacturer's Name	Honor Device Co., Ltd.

1.2. Test Standards

FCC Part15-2021; ANSI C63.10-2013.

1.3. Test Result

Pass

Please refer to "5.2. Test Results"

1.4. Testing Location

Address: EMC Laboratory, Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China

1.5. Project data

Testing Start Date:	2022-12-01
Testing End Date:	2022-12-09

1.6. Signature

Liu Xiangzhou	**Liang Yong**
(Prepared this test report)	**(Reviewed this test report)**

Cao Junfei

(Approved this test report)

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2. Client Information

2.1. Applicant Information

Company Name:	Honor Device Co., Ltd.
Address:	Suite 3401, Unit A, Building 6, Shum Yip Sky Park, No. 8089, Hongli West Road, Xiangmihu Street, Futian District, Shenzhen, P.R.China
Contact Person	Li Ming
E-Mail	liming136@hihonor.com
Telephone:	0755-61886688
Fax:	/

2.2. Manufacturer Information

Company Name:	Honor Device Co., Ltd.
Address:	Suite 3401, Unit A, Building 6, Shum Yip Sky Park, No. 8089, Hongli West Road, Xiangmihu Street, Futian District, Shenzhen, P.R.China
Contact Person	Li Ming
E-Mail	liming136@hihonor.com
Telephone:	0755-61886688
Fax:	/

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

3.1. About EUT

Description	Smart Phone
Model Name	CRT-LX3
Frequency Range	ISM 2400MHz~2483.5MHz
Equipment type	Bluetooth® Low Energy
Type of Modulation	GFSK
PHY	LE 1M/2M
Number of Channels	40
Antenna Type	Integrated antenna
Power Supply	3.89V DC by Battery
FCC ID	2AYGCCRT-LX3
Condition of EUT as received	No abnormality in appearance

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Shenzhen Academy of Information and Communications Technology.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of Receipt
UT04aa	866902060024650	HL3CRTM	6.1.0.90(C900E21R1P2)	2022-12-01

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

3.3. Internal Identification of AE used during the test

AE No.	Description	AE ID*
AE1	Battery	
AE2	Adapter	
AE3	Data Cable	
AE4	Headset	
AE5	Earphone, USB Type-C to 3.5mm Adapter Assembly	

AE1-1

Model	HB416594EGW
Manufacturer	Honor Device Co., Ltd.(SCUD)
Capacity	4400mAh
Nominal Voltage	3.89 V

AE1-2

Model	HB416594EGW
Manufacturer	Honor Device Co., Ltd.(Desay)
Capacity	4400mAh
Nominal Voltage	3.89 V

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AE2-1

Model	HN-100225E00
Manufacturer	Honor Device Co., Ltd.（Huntkey/Salcomp）

AE2-2

Model	HN-100225U00
Manufacturer	Honor Device Co., Ltd.（Huntkey/Salcomp）

AE2-3

Model	HW-100225E00
Manufacturer	Honor Device Co., Ltd.（Huntkey）

AE2-4

Model	HW-100225U00
Manufacturer	Honor Device Co., Ltd.（Huntkey）

AE2-5

Model	HW-100225B00
Manufacturer	Honor Device Co., Ltd.（Huntkey）

AE2-6

Model	HN-100225B00
Manufacturer	Honor Device Co., Ltd.（Huntkey/Salcomp）

AE3-1

Model	CUDU01B-HC451-EH
Manufacturer	04072295(FF)

AE3-2

Model	AU2-CRO013HF
Manufacturer	04072295(LJ)

AE3-3

Model	L125UC007-CS-H
Manufacturer	04072295(LX)

AE3-4

Model	2120-00001-0
Manufacturer	04072295(MG)

AE3-5

Model	RY0002
Manufacturer	04072295(NB)

AE4-1

Model	1331-3301-6001-TC-347
Manufacturer	22070347（QC）

AE4-2

Model	MEND1532B528C00
Manufacturer	22040339（LC）

AE4-3

Model	1293-3283-3.5MM-339
Manufacturer	22040339（QC）

AE5

Model	USB042020090AW7

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Manufacturer 22040348(LC)

*AE ID: is used to identify the test sample in the lab internally.
AE: ancillary equipment.
AE2：The circuit boards of AE2-2 and AE2-6 are the same, the circuit boards of AE2-4 and AE2-5 are the same.

3.4. General Description

The Equipment under Test (EUT) is a model of Smart Phone with integrated antenna and battery.
It consists of normal options: Battery, Adapter, Data Cable, Headset.
Manual and specifications of the EUT were provided to fulfil the test.
Samples undergoing test were selected by the client.

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4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

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

Reference	Title	Version
FCC Part 15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz	2021
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013

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5. Test Results

5.1. Testing Environment

Normal Temperature: 15~35°C

Relative Humidity: 20~75%

5.2. Test Results

No	Test cases	Sub-clause of Part 15C	Verdict
1	Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	**P**
2	AC Power line Conducted Emission	15.107, 15.207	**P**

See **ANNEX A** for details.

5.3. Statements

SAICT has evaluated the test cases requested by the applicant/manufacturer as listed in section 5.2 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

Disclaimer:

A. After confirmation with the customer, the sample information provided by the customer may affect the validity of the measurement results in this report, and the impact and consequences arising therefrom shall be borne by the customer.

B. The samples in this report are provided by the customer, and the test results are only applicable to the samples received.

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6. Measuring Apparatus Utilized

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Test Receiver	ESR7	101676	Rohde & Schwarz	2023-11-23	1 year
2	BiLog Antenna	3142E	0224831	ETS-Lindgren	2024-05-27	3 years
3	Horn Antenna	3117	00066577	ETS-Lindgren	2025-04-17	3 years
4	Anechoic Chamber	FACT3-2.0	1285	ETS-Lindgren	2023-05-29	2 years
5	Spectrum Analyzer	FSV40	101192	Rohde & Schwarz	2023-01-12	1 year
6	Loop Antenna	HLA6120	35779	TESEQ	2025-05-10	3 years
7	Horn Antenna	QSH-SL-18-26-S-20	17013	Q-par	2023-01-06	3 years
8	Test Receiver	ESCI	100702	Rohde & Schwarz	2023-01-12	1 year
9	LISN	ENV216	102067	Rohde & Schwarz	2023-07-14	1 year

Test software

No.	Equipment	Manufacturer	Version
2	EMC32	Rohde & Schwarz	10.50.40

EUT is engineering software provided by the customer to control the transmitting signal.
The EUT was programmed to be in continuously transmitting mode.

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7. Laboratory Environment

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> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4Ω

Anechoic chamber (FACT3-2.0) did not exceed following limits along the EMC testing:

9.10m×6.10m×5.60m (L×W×H)

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ±4 dB, 3 m distance, from 30 to 1000 MHz
Voltage Standing Wave Ratio （VSWR）	≤ 6 dB, from 1 to 18 GHz，3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

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8. Measurement Uncertainty

Test Name	Uncertainty (*k*=2)	
Transmitter Spurious Emission - Radiated	9kHz≤f<30MHz	1.79dB
	30MHz≤f<1GHz	4.86dB
	1GHz≤f<18GHz	4.82dB
	18GHz≤f≤40GHz	2.90dB
AC Power line Conducted Emission	150kHz≤f≤30MHz	2.62dB

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ANNEX A: Detailed Test Results

Test Configuration

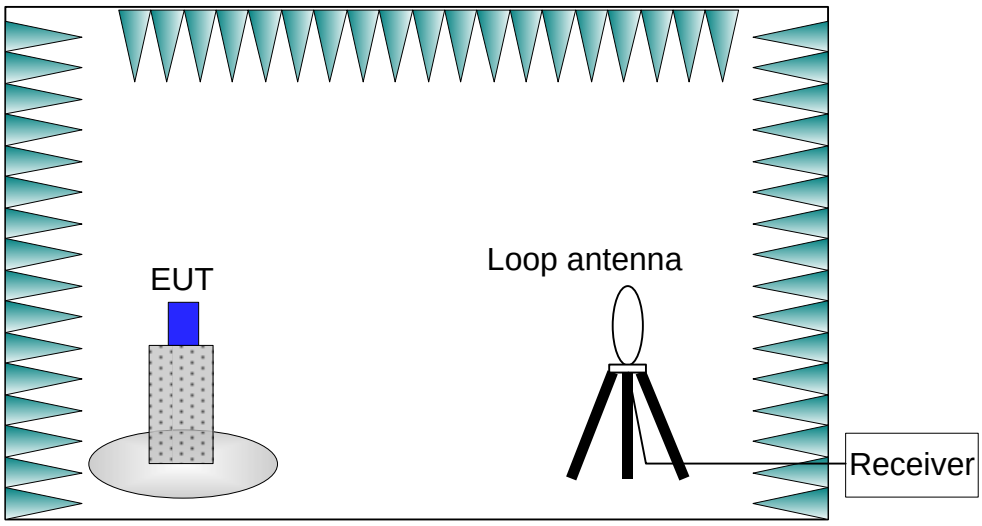
The measurement is made according to ANSI C63.10.

1) Radiated Measurements

Test setup:

9kHz-30MHz：

The EUT are measured in a anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The center of the receiving loop antenna is 1.0 meter above the ground. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT and adjusting the receiver antenna polarization.



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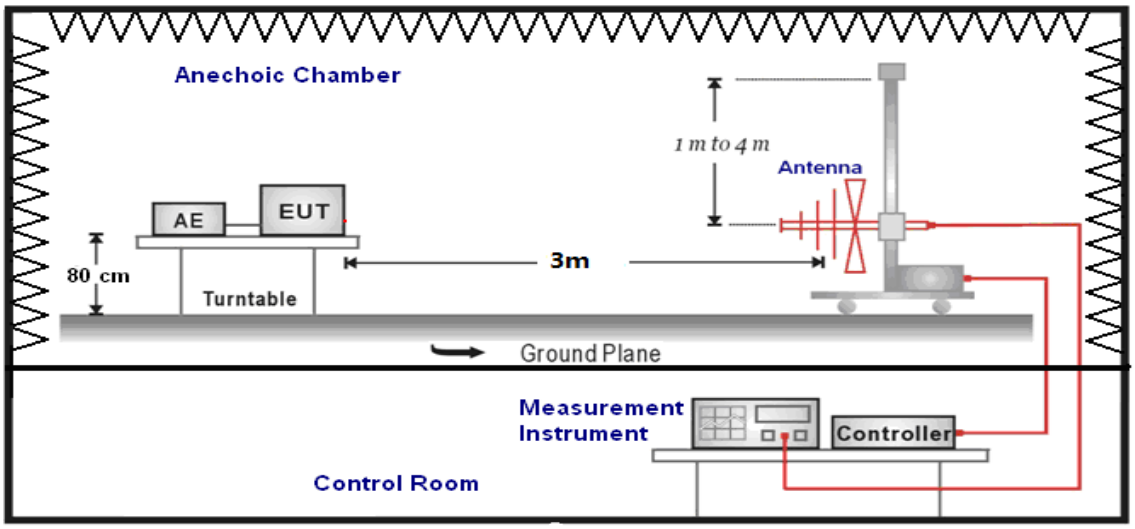
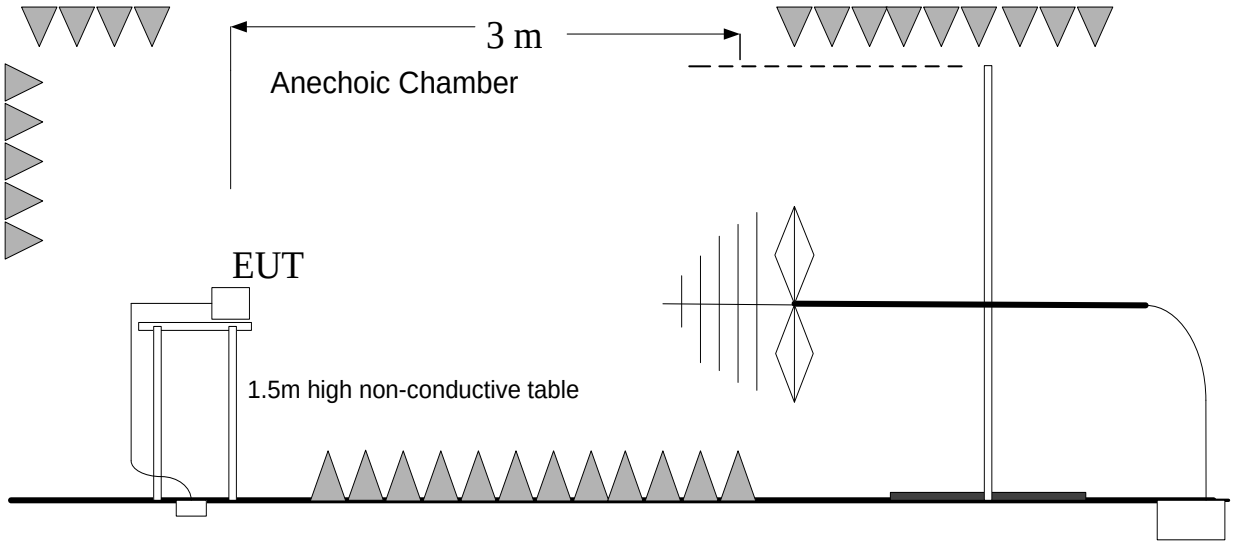
30MHz-26.5GHz:

The EUT are measured in a anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The center of the receiving antenna is 1.0 meter to 4.0 meter above the ground. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT and adjusting the receiver antenna polarization.

30MHz-1GHz:



1GHz-3GHz:



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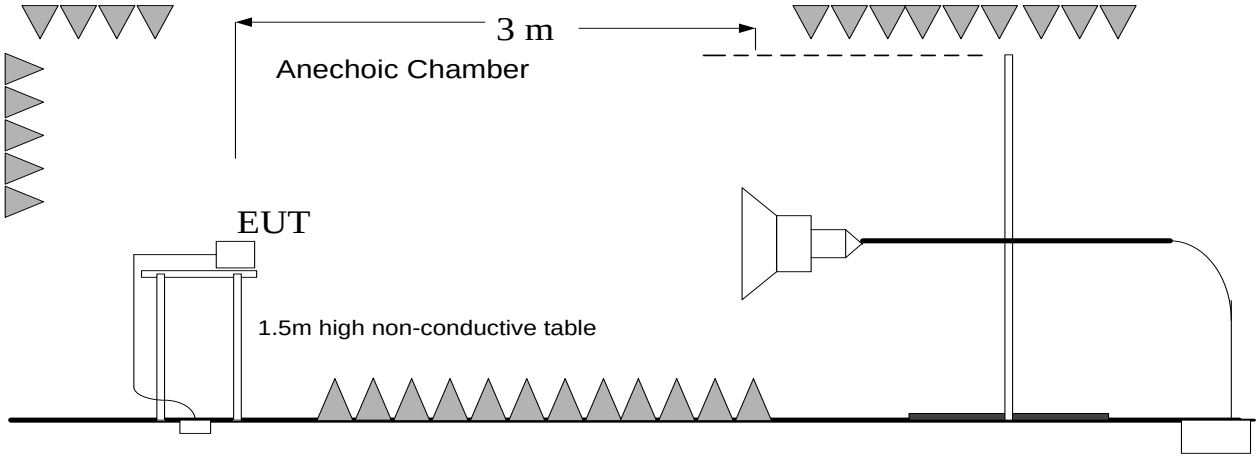
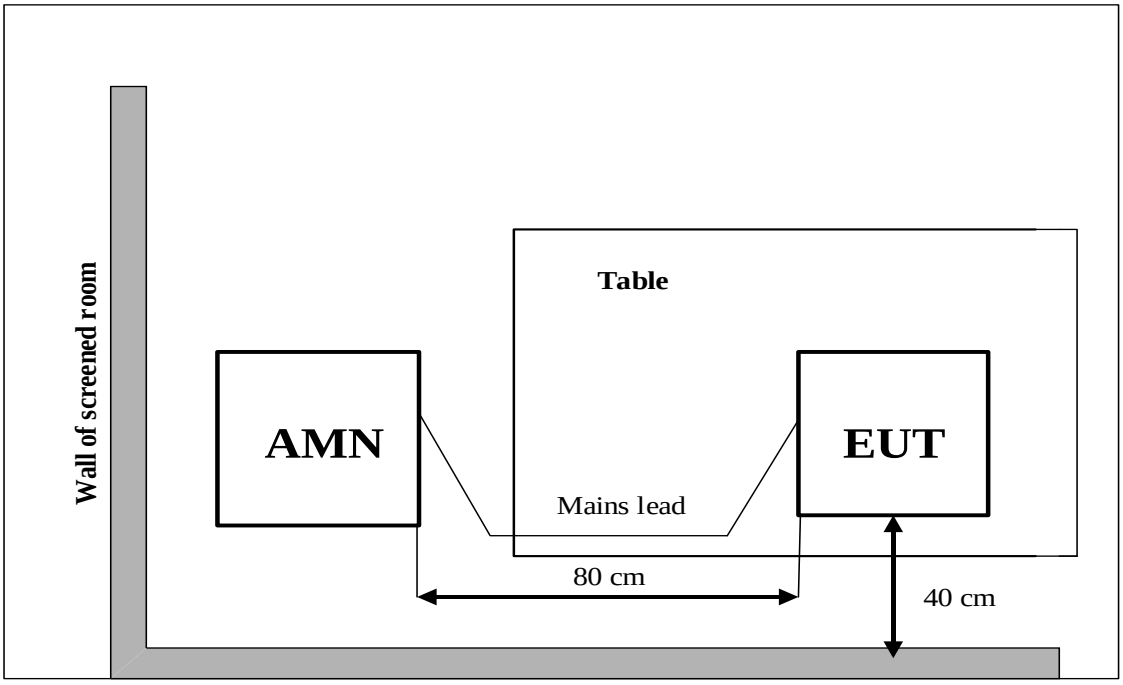
3GHz-26.5GHz:



2) AC Power line Conducted Emission Measurement

For Bluetooth LE, the EUT is working under test mode. The EUT is commanded to operate at maximum transmitting power.



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A.1 Transmitter Spurious Emission - Radiated

Method of Measurement: See ANSI C63.10-clause 11.11&11.12.

Measurement Limit:

Standard	Limit (dBm)
FCC 47 CFR Part 15.247, 15.205, 15.209	20dBm below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength(μV/m)	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

Test Condition:

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 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.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Note: According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band from 9kHz to 30MHz.Therefore, the measurement starts from 30MHz to tenth harmonic. The measurement results include the horizontal polarization and vertical polarization measurements. For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

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Measurement Results:

Mode	Frequency (MHz)	Frequency Range	Test Results	Conclusion
LE 1M	2402(CH0)	1 GHz ~18 GHz	Fig.1	**P**
	2440(CH19)	1 GHz ~18 GHz	Fig.2	**P**
	2480(CH39)	1 GHz ~18 GHz	Fig.3	**P**
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.4	**P**
	Restricted Band(CH39)	2.45 GHz ~ 2.5 GHz	Fig.5	**P**
	All channels	9 kHz ~30 MHz	Fig.6	**P**
		30 MHz ~1 GHz	Fig.7	**P**
		18 GHz ~ 26.5 GHz	Fig.8	**P**
LE 2M	2402(CH0)	1 GHz ~18 GHz	Fig.9	**P**
	2440(CH19)	1 GHz ~18 GHz	Fig.10	**P**
	2480(CH39)	1 GHz ~18 GHz	Fig.11	**P**
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.12	**P**
	Restricted Band(CH39)	2.45 GHz ~ 2.5 GHz	Fig.13	**P**
	All channels	9 kHz ~30 MHz	Fig.14	**P**
		30 MHz ~1 GHz	Fig.15	**P**
		18 GHz ~ 26.5 GHz	Fig.16	**P**

Worst Case Result：

For LE 1M:

CH19 (1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
2975.357143	51.50	74.00	22.50	H	6.8
5933.700000	47.68	74.00	26.32	H	4.6
10282.285714	46.93	74.00	27.07	V	8.5
14904.428572	52.03	74.00	21.97	H	13.0
16867.714286	54.08	74.00	19.92	H	18.0
17938.714286	54.07	74.00	18.93	V	19.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
2975.357143	39.47	54.00	14.53	H	6.8
5933.700000	35.61	54.00	18.39	H	4.6
10282.285714	34.44	54.00	19.56	V	8.5
14904.428572	38.92	54.00	15.08	H	13.0
16867.714286	41.98	54.00	12.02	H	18.0
17938.714286	42.66	54.00	11.34	V	19.0

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For LE 2M:

CH19 (1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
2965.357143	51.85	74.00	22.15	V	6.7
4665.900000	47.59	74.00	26.41	H	4.6
10467.428572	47.62	74.00	26.38	V	9.0
12459.857143	48.95	74.00	25.05	H	11.4
16934.571429	54.73	74.00	19.27	H	18.2
17919.428571	54.84	74.00	19.16	V	18.9

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
2965.357143	39.51	54.00	14.49	V	6.7
4665.900000	34.73	54.00	19.27	H	4.6
10467.428572	35.88	54.00	19.12	V	9.0
12459.857143	37.28	54.00	17.72	H	11.4
16934.571429	42.39	54.00	11.61	H	18.2
17919.428571	42.74	54.00	11.26	V	18.9

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and Antenna Factor, the gain of the preamplifier, the cable loss. P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

Result= P_{Mea} +Cable Loss +Antenna Factor-Gain of the preamplifier.

See below for test graphs.

Conclusion: Pass

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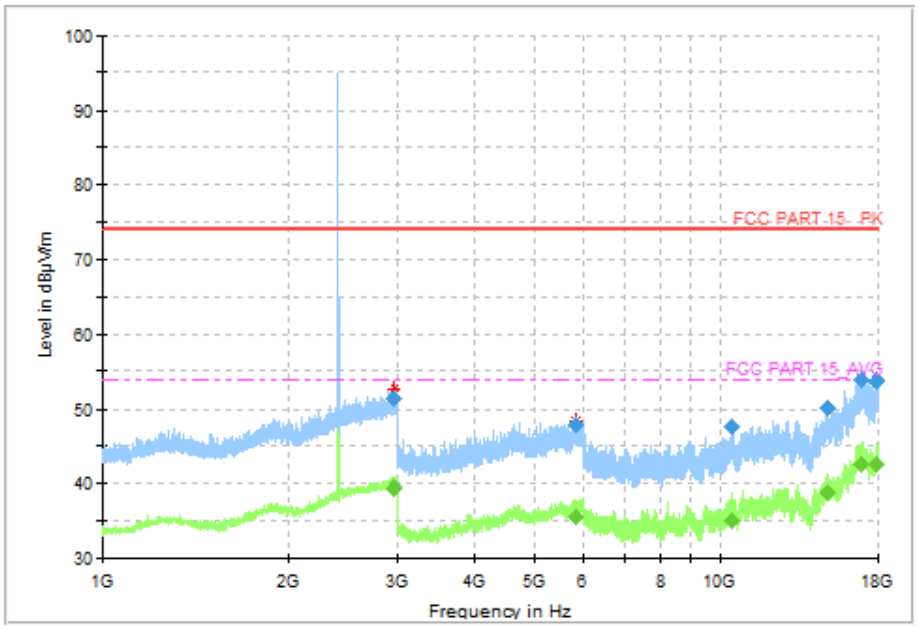

Fig.1 Radiated Spurious Emission (CH0, 1GHz ~18GHz), LE 1M

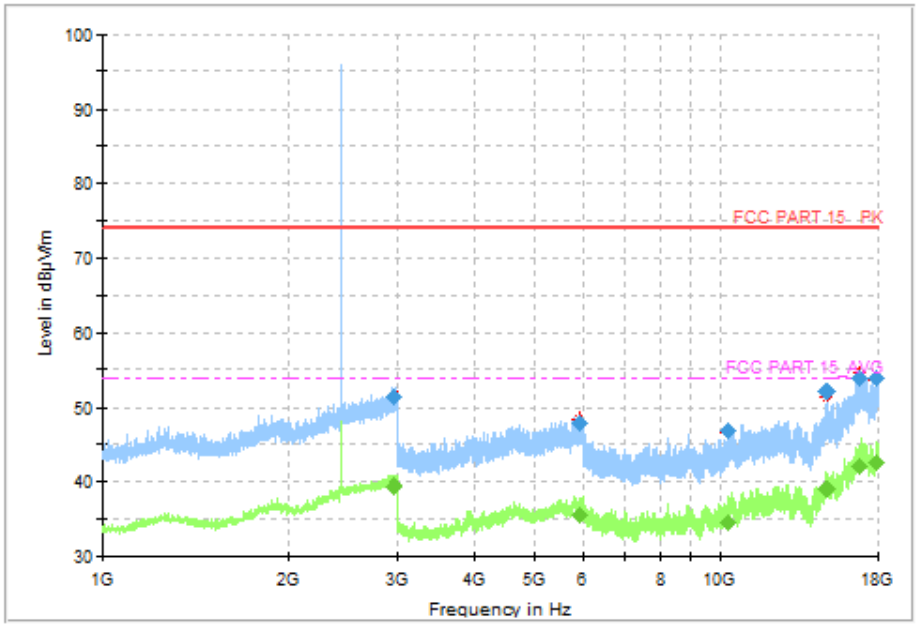

Fig.2 Radiated Spurious Emission (CH19, 1GHz ~18GHz), LE 1M

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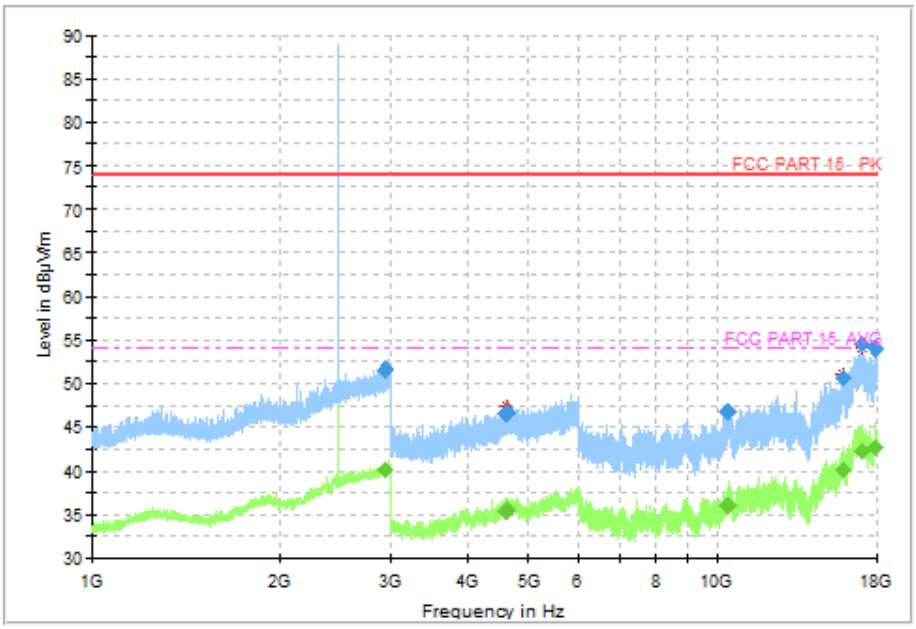

Fig.3 Radiated Spurious Emission (CH39, 1GHz ~18GHz), LE 1M

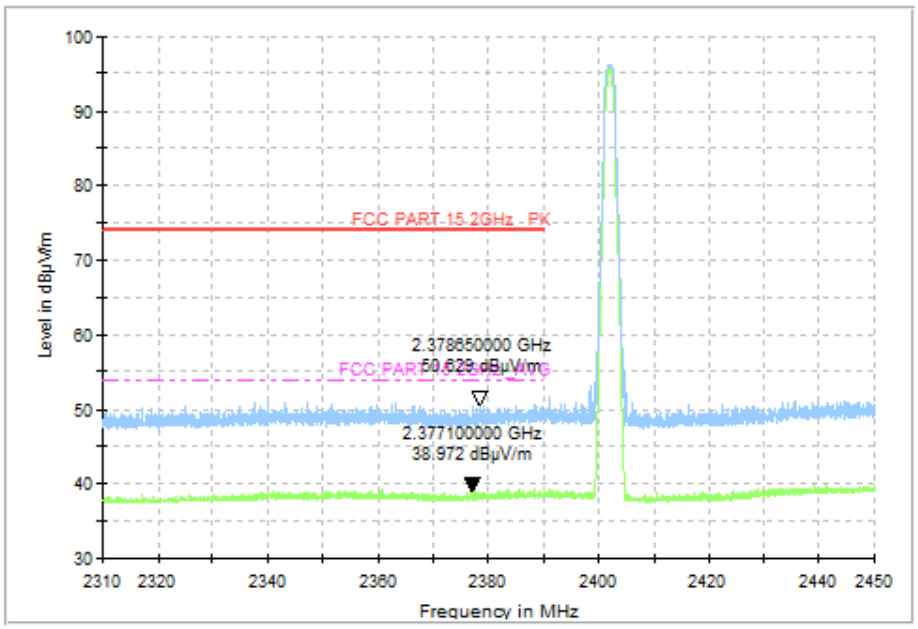

Fig.4 Radiated Band Edges (CH0, 2.38GHz~2.45GHz), LE 1M

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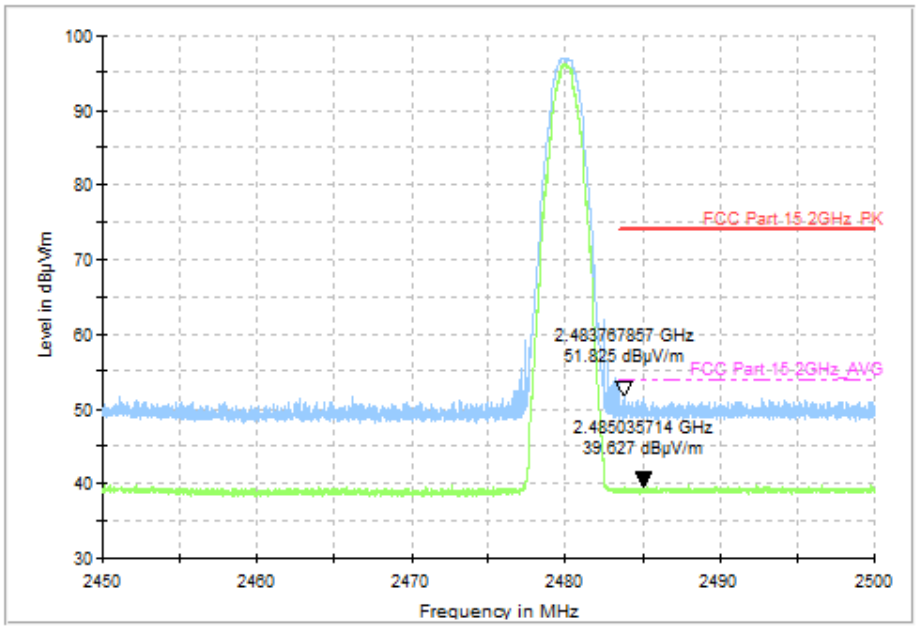

Fig.5 Radiated Band Edges (CH39, 2.45GHz~2.50GHz), LE 1M

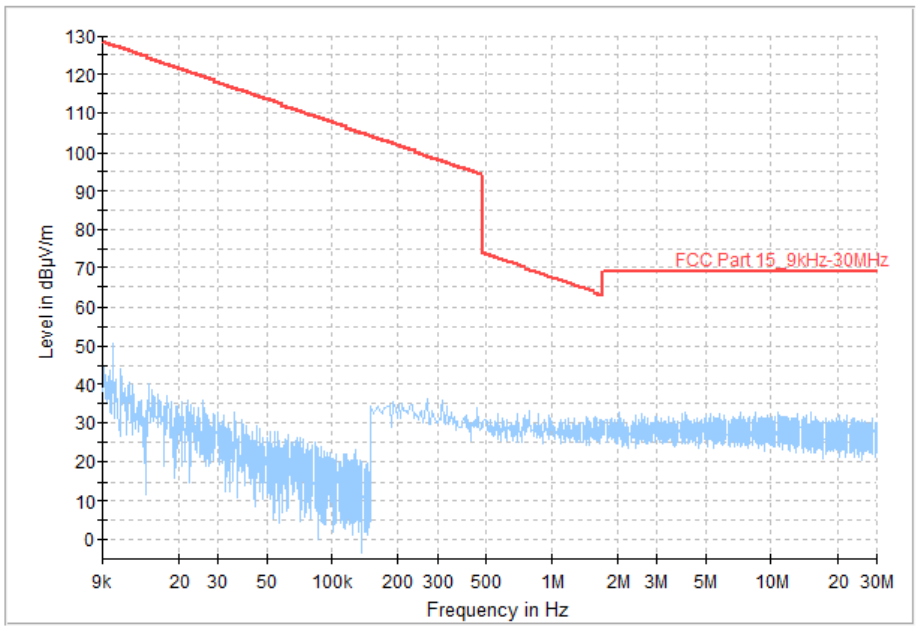

Fig.6 Radiated Spurious Emission (All Channels, 9kHz-30MHz), LE 1M

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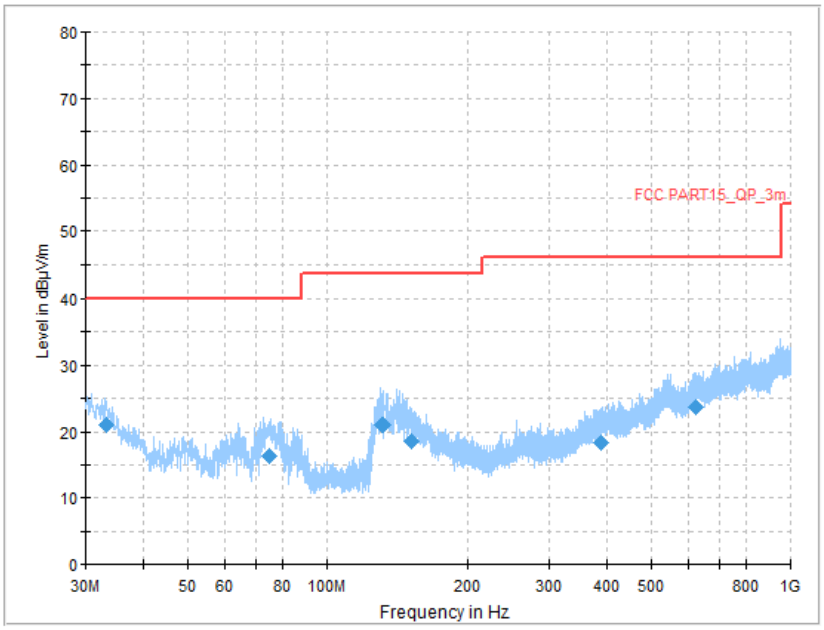

Fig.7 Radiated Spurious Emission (All Channels, 30MHz-1GHz), LE 1M

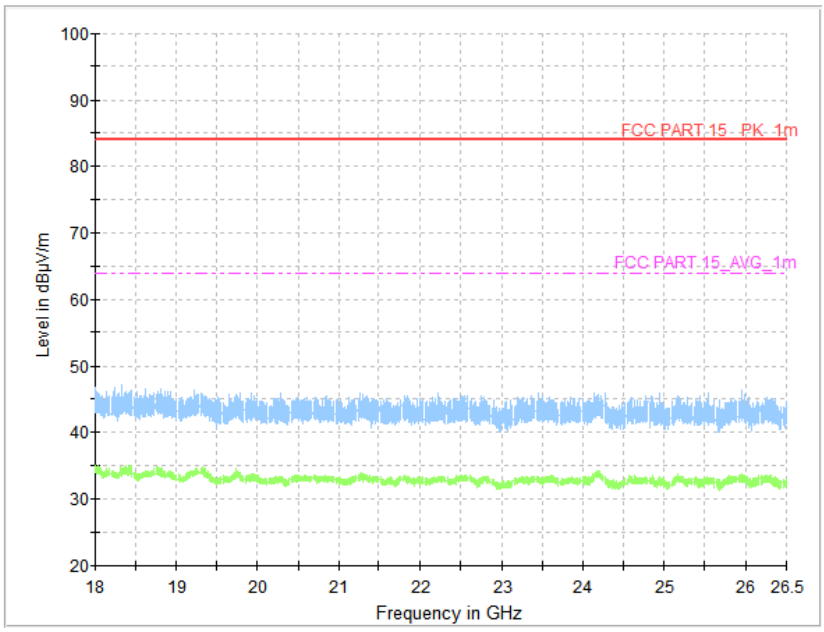

Fig.8 Radiated Spurious Emission (All Channels, 18GHz-26.5GHz), LE 1M

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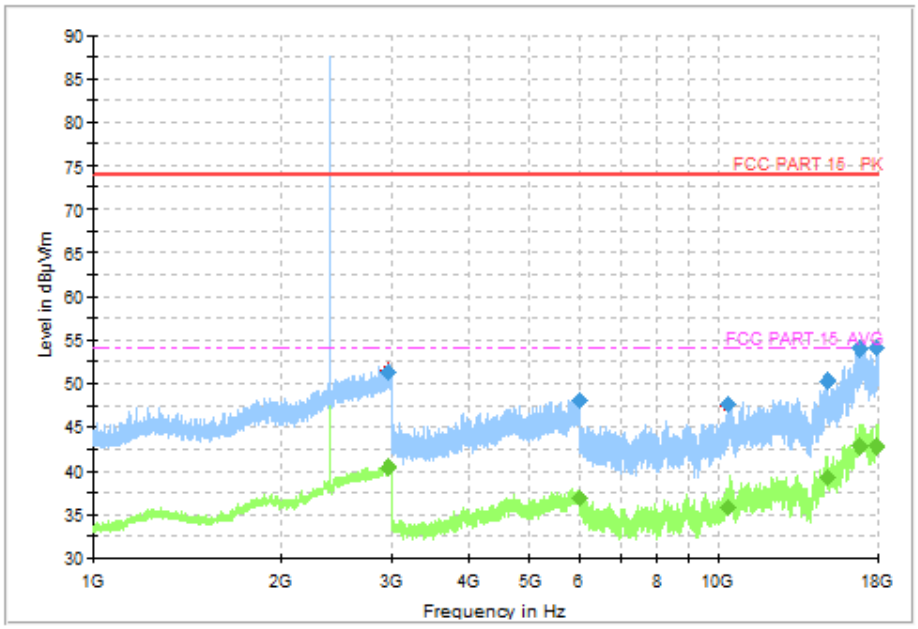

Fig.9 Radiated Spurious Emission (CH0, 1GHz ~18GHz), LE 2M

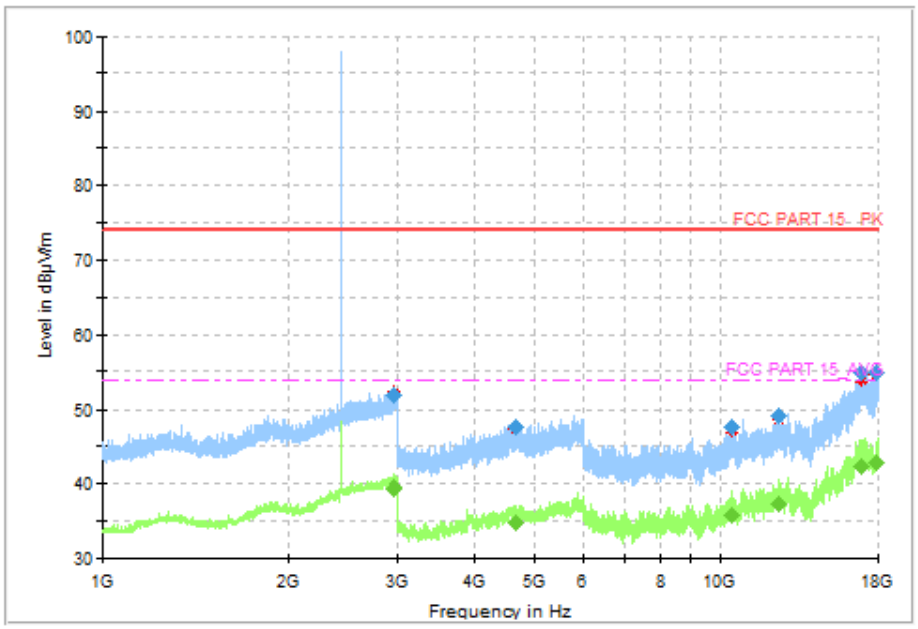

Fig.10 Radiated Spurious Emission (CH19, 1GHz ~18GHz), LE 2M

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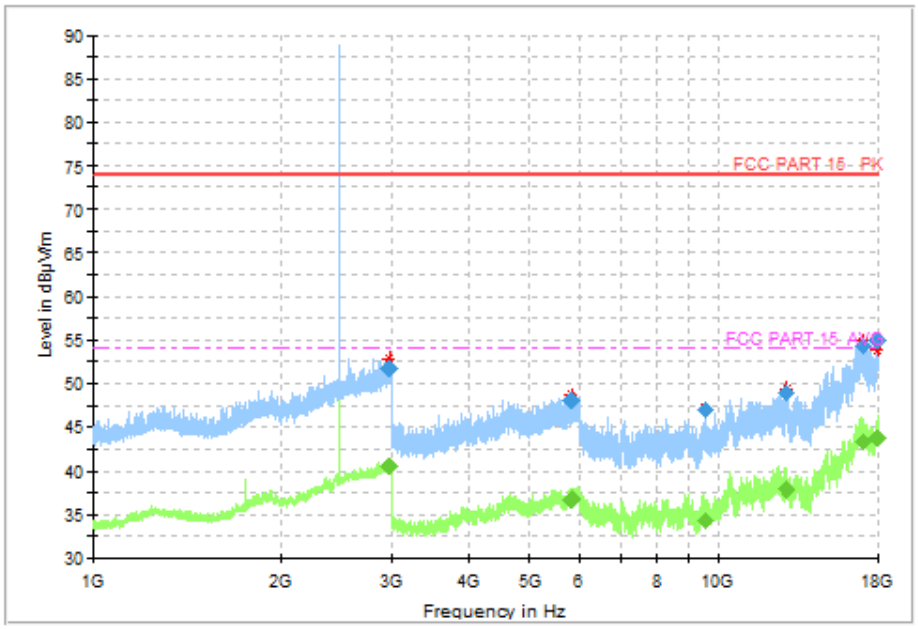

Fig.11 Radiated Spurious Emission (CH39, 1GHz ~18GHz), LE 2M

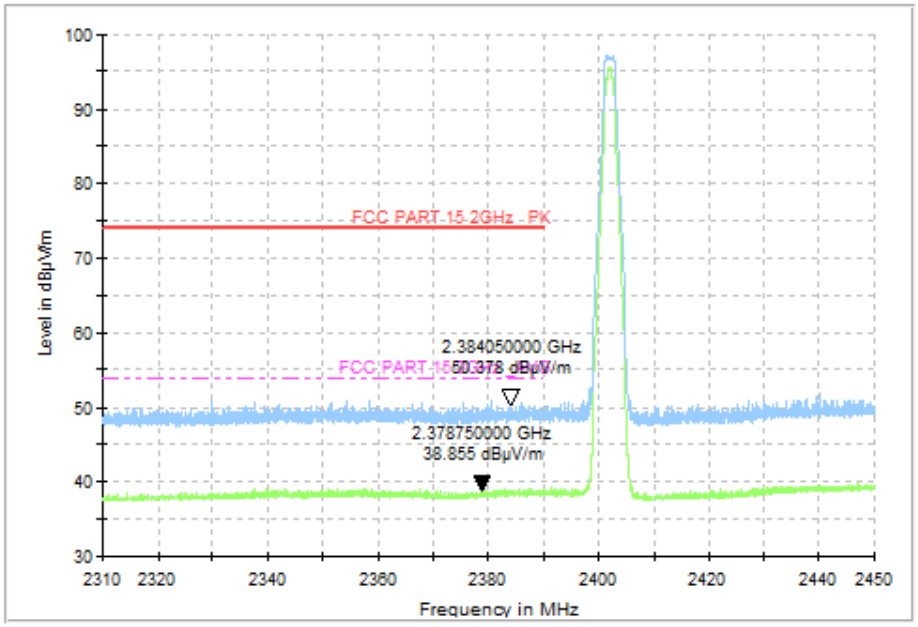

Fig.12 Radiated Band Edges (CH0, 2.38GHz~2.45GHz), LE 2M

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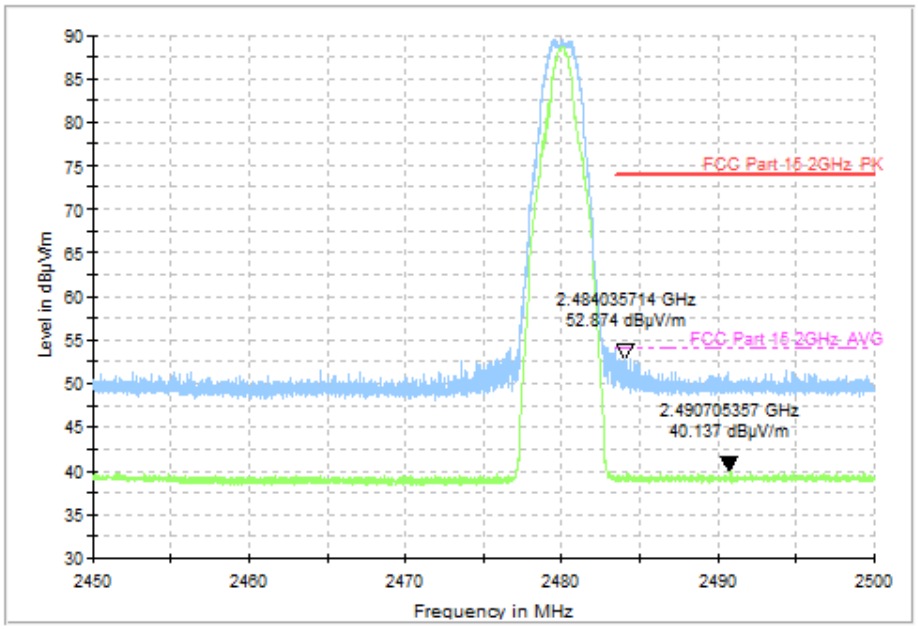

Fig.13 Radiated Band Edges (CH39, 2.45GHz~2.50GHz), LE 2M

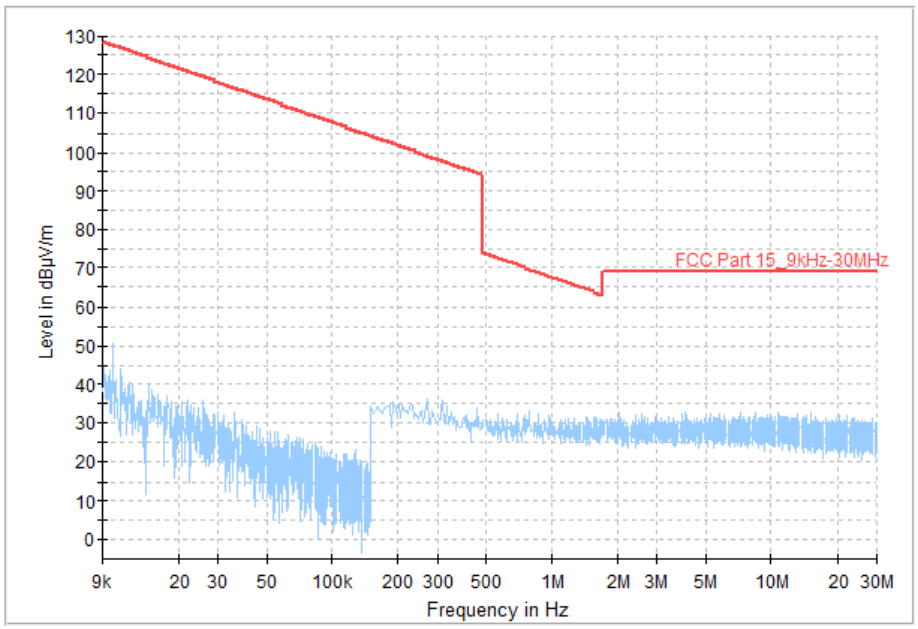

Fig.14 Radiated Spurious Emission (All Channels, 9kHz-30MHz), LE 2M

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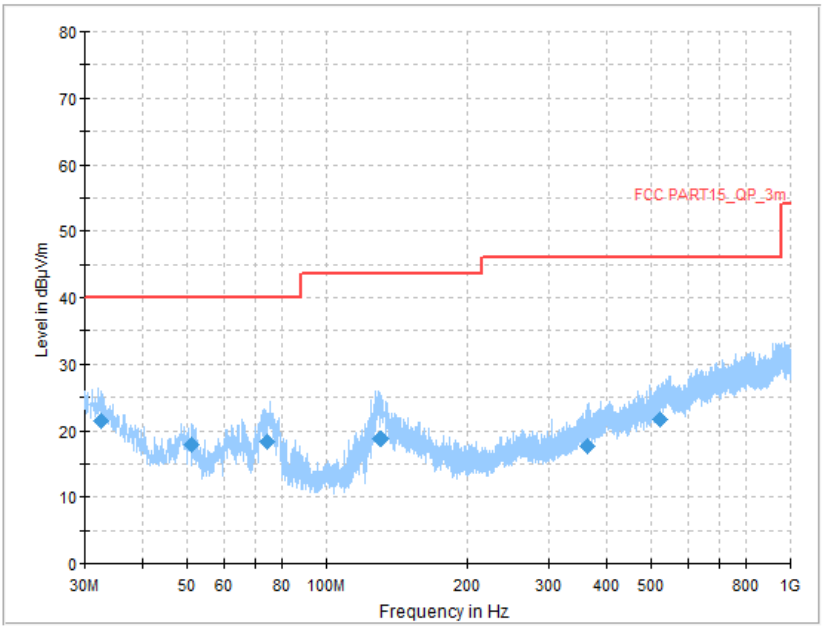

Fig.15 Radiated Spurious Emission (All Channels, 30MHz-1GHz), LE 2M

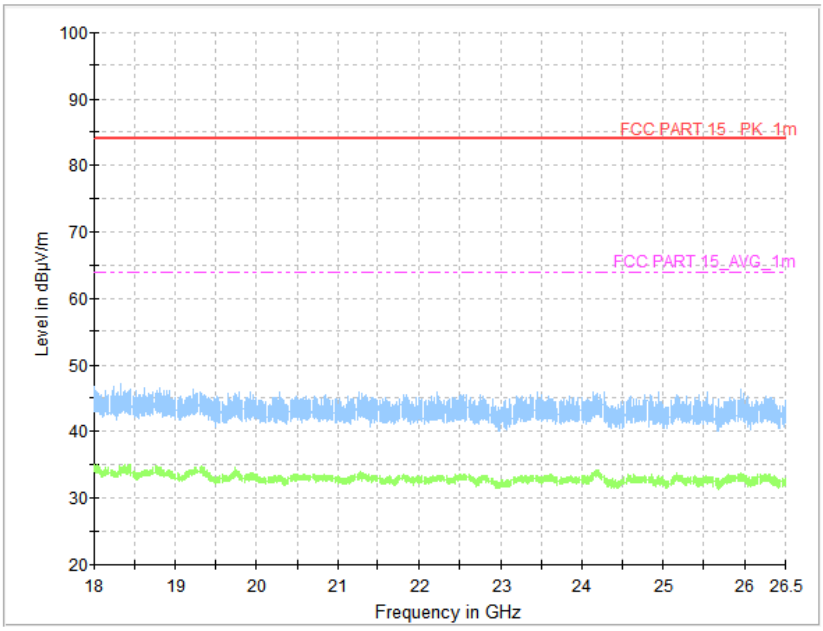

Fig.16 Radiated Spurious Emission (All Channels, 18GHz-26.5 GHz), LE 2M

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A.2 AC Power line Conducted Emission

Method of Measurement: See ANSI C63.10-clause 6.2.

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

BLE-AE2, AE3

Frequency range (MHz)	Quasi-peak Limit (dBµV)	Average-peak Limit (dBµV)	Result (dBµV)		Conclusion
			Traffic	Idle	
0.15 to 0.5	66 to 56	56 to 46	Fig.17	Fig.18	**P**
0.5 to 5	56	46			
5 to 30	60	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.					

Note: The measurement results include the L1 and N measurements.

See below for test graphs.

Conclusion: Pass

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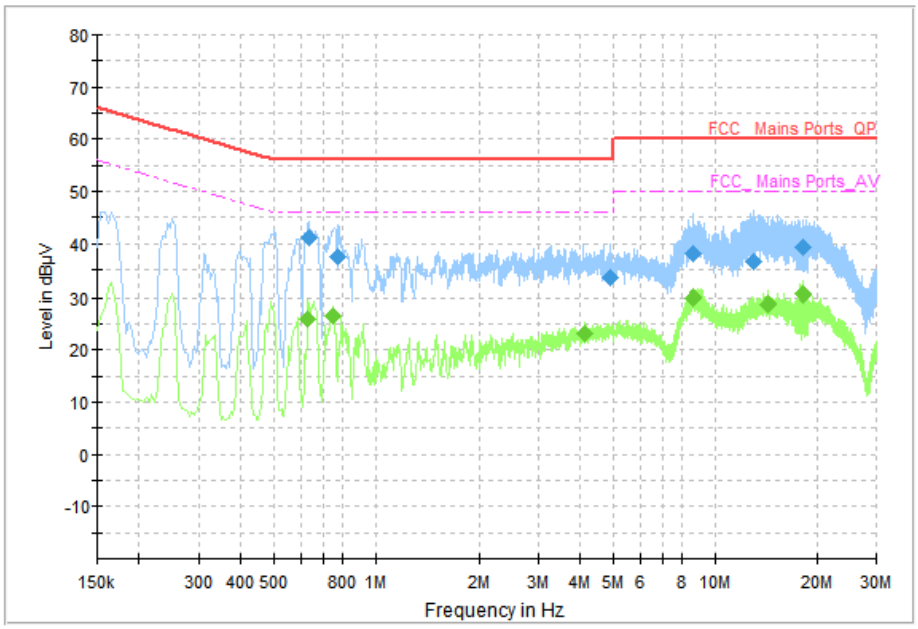

Fig.17 AC Power line Conducted Emission (Traffic)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.634000	41.10	56.00	14.90	L1	ON	10
0.774000	37.36	56.00	18.64	L1	ON	10
4.878000	33.53	56.00	22.47	L1	ON	10
8.642000	38.06	60.00	21.94	L1	ON	10
12.986000	36.72	60.00	23.28	L1	ON	10
18.282000	39.21	60.00	20.79	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.630000	25.90	46.00	20.10	L1	ON	10
0.746000	26.52	46.00	19.48	L1	ON	10
4.118000	23.25	46.00	22.75	L1	ON	10
8.646000	29.70	50.00	20.30	L1	ON	10
14.374000	28.77	50.00	21.23	L1	ON	10
18.114000	30.59	50.00	19.41	L1	ON	10

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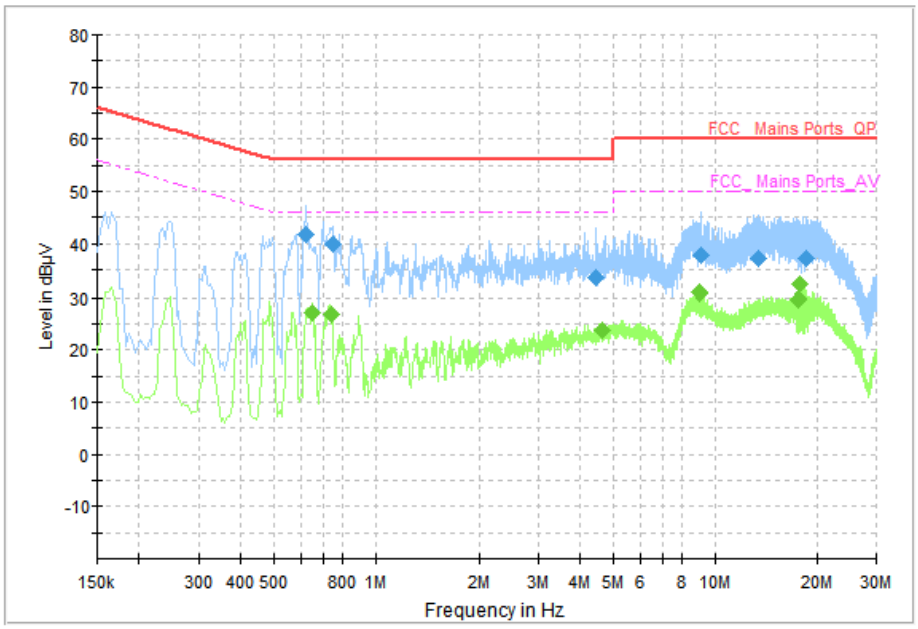

Fig.18 AC Power line Conducted Emission (Idle)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.622000	41.65	56.00	14.35	N	ON	10
0.750000	40.07	56.00	15.93	N	ON	10
4.434000	33.44	56.00	22.56	N	ON	10
9.058000	37.86	60.00	22.14	N	ON	10
13.398000	37.18	60.00	22.82	N	ON	10
18.534000	37.18	60.00	22.82	N	ON	11

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.650000	27.11	46.00	18.89	N	ON	10
0.742000	26.71	46.00	19.29	N	ON	10
4.630000	23.66	46.00	22.34	N	ON	10
8.942000	30.81	50.00	19.19	N	ON	10
17.638000	29.66	50.00	20.34	N	ON	11
17.878000	32.15	50.00	17.85	N	ON	11

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

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