TEST REPORT

No.B23N00005-RSE-BLE

for

HONOR Device Co., Ltd.

Smart Phone

Model Name: RBN-NX3

with

Hardware Version: HN1RBNM

Software Version: 6.1.0.100（C900E100R1P1）

FCC ID: 2AYGCRBN-NX3

Issued Date: 2023-02-17

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

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
B23N00005-RSE-BLE	Rev.0	1st edition	2023-02-17

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

CONTENTS

1. Summary of Test Report

1.1. Test Items

Description	Smart Phone
Model Name	RBN-NX3
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:	2023-01-10
Testing End Date:	2023-02-10

1.6. Signature

Huang Kaiyang
(Prepared this test report)

Huang Yuqing
(Reviewed this test report)

Cao Junfei
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: HONOR Device Co., Ltd.
Address: Shum Yip Sky Park, No. 8089, Hongli West Road, Shenzhen, China

2.2. Manufacturer Information

Company Name: HONOR Device Co., Ltd.
Address: Shum Yip Sky Park, No. 8089, Hongli West Road, Shenzhen, China

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

3.1. About EUT

Description	Smart Phone
Model Name	RBN-NX3
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	3.87V DC by Battery
FCC ID	2AYGCRBN-NX3
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
UT01aa	861571060013230	HN1RBNM	6.1.0.100（C900E100R1P1）	2023-01-06
UT03aa	861571060012547	HN1RBNM	6.1.0.100（C900E100R1P1）	2023-01-06

*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	Charger	
AE3	USB Cable	
AE4	Headset	

AE1-1

Model	HB496590EFW
Manufacturer	Honor Device Co., Ltd.(SCUD)
Capacity	4900mAh
Nominal Voltage	3.87 V

AE1-2

Model	HB496590EFW-F
Manufacturer	Honor Device Co., Ltd.(SCUD)
Capacity	4900mAh
Nominal Voltage	3.87 V

AE1-3

Model	HB496590EFW
Manufacturer	Honor Device Co., Ltd.(NVT)
Capacity	4900mAh
Nominal Voltage	3.87 V

AE1-4

Model	HB496590EFW-F
Manufacturer	Honor Device Co., Ltd.(NVT)
Capacity	4900mAh
Nominal Voltage	3.87 V

AE2-1

Model	HN-100225E00
Manufacturer	Honor Device Co., Ltd. (Factory: Salcomp)

AE2-2

Model	HN-100225U00
Manufacturer	Honor Device Co., Ltd. (Factory: Salcomp)

AE2-3

Model	HN-100225B00
Manufacturer	Honor Device Co., Ltd. (Factory: Salcomp)

AE2-4

Model	HN-100225E00
Manufacturer	Honor Device Co., Ltd. (Factory: Huntkey)

AE2-5

Model	HN-100225U00
Manufacturer	Honor Device Co., Ltd. (Factory: Huntkey)

AE2-6

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

AE2-7

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

AE2-8

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

AE2-9

Model	HN-100225B00

Manufacturer	Honor Device Co., Ltd. (Factory: Huntkey)

AE3-1

Model	CUDU01B-HC451 -EH
Manufacturer	Fuding Precision Components (Shenzhen) Co., Ltd.

AE3-2

Model	AU2-CRO013 HF
Manufacturer	Freeport Ji an Electronics Co.,Ltd.

AE3-3

Model	L125UC007-CS-H
Manufacturer	Luxshare Precision Industry Co.,Ltd.

AE3-4

Model	2120-00001-0
Manufacturer	Guangdong Mingji Hi-Tech Electronics Co.,Ltd.

AE3-5

Model	RY0002
Manufacturer	Guangxi Broad Telecommunication Co.,Ltd.

AE4-1

Model	1293-3283-3.5mm-339
Manufacturer	BOLUO COUNTY QUANCHENG ELECTRONIC CO.,LTD.

AE4-2

Model	EPAB542-2WH05-DH
Manufacturer	FOXCONN INTERCONNECT TECHNOLOGY LIMITED

AE4-3

Model	MEND1532B528C00
Manufacturer	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.

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

AE: ancillary equipment.

AE2：The circuit boards of AE2-2 and AE2-3 are the same, the circuit boards of AE2-5 and AE2-9 are the same, the circuit boards of AE2-7 and AE2-8 are the same.

EUT Set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT+AE1-1+AE2-1+AE3-1+AE4-1	
Set.2	EUT+AE1-1+AE2-2+AE3-2+AE4-2	
Set.3	EUT+AE1-1+AE2-4+AE3-3+AE4-3	
Set.4	EUT+AE1-1+AE2-5+AE3-4+AE4-1	
Set.5	EUT+AE1-1+AE2-6+AE3-1+AE4-2	
Set.6	EUT+AE1-1+AE2-7+AE3-2+AE4-3	

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, Charger, USB Cable and Headset.
Manual and specifications of the EUT were provided to fulfil the test.
Samples undergoing test were selected by the client.

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

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.

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	2024-01-11	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	2026-01-30	3 years
8	Test Receiver	ESCI	100702	Rohde & Schwarz	2024-01-11	1 year
9	LISN	ENV216	102067	Rohde & Schwarz	2023-07-14	1 year

Test software

No.	Equipment	Manufacturer	Version
1	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.

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

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

ANNEX A: Detailed Test Results

Test Configuration

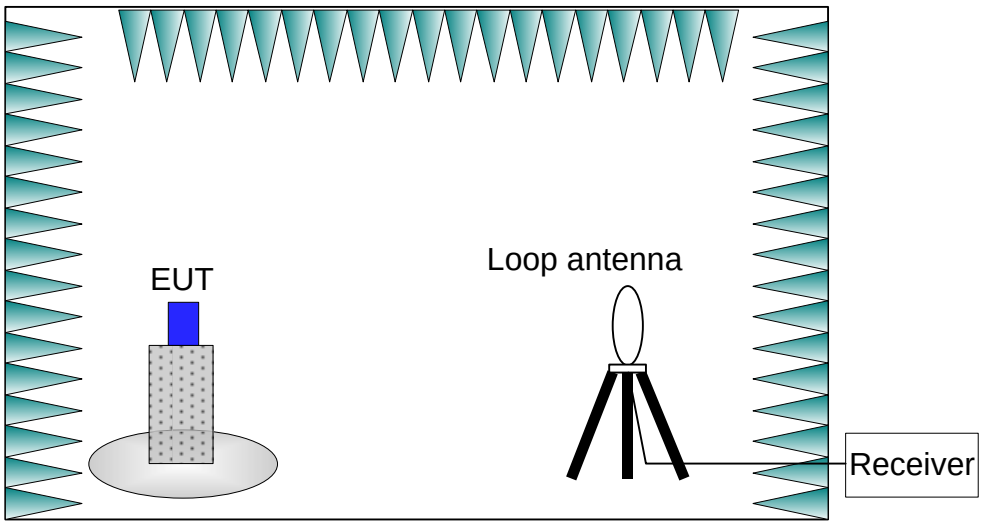
The measurement is made according to ANSI C63.10.

1) Radiated Measurements

Test setup:

9kHz-30MHz：

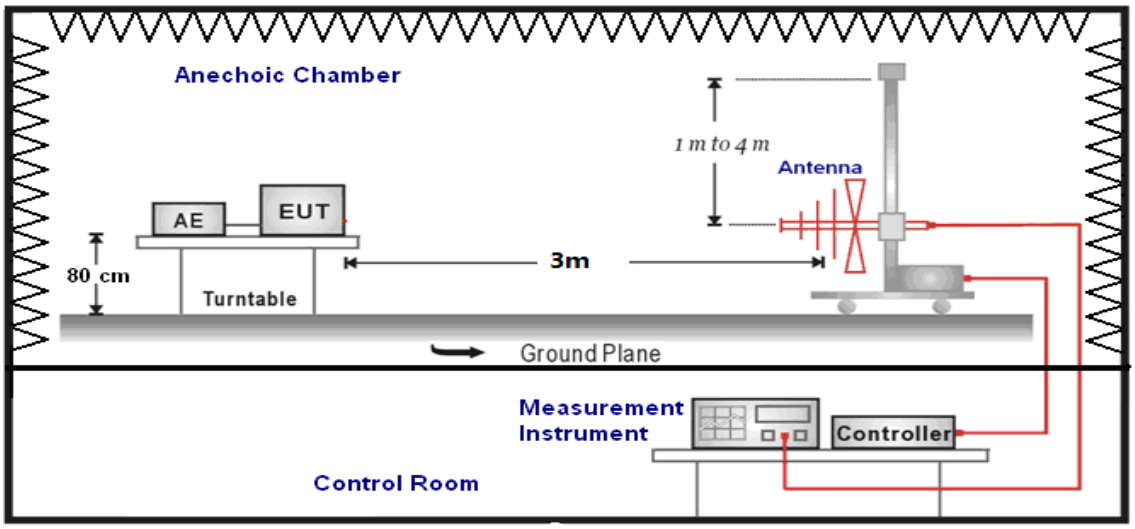
The EUT are measured in a anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The center of the receiving loop antenna is 1.0 meter above the ground. The test setup refers to figure below. Detected emissions were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



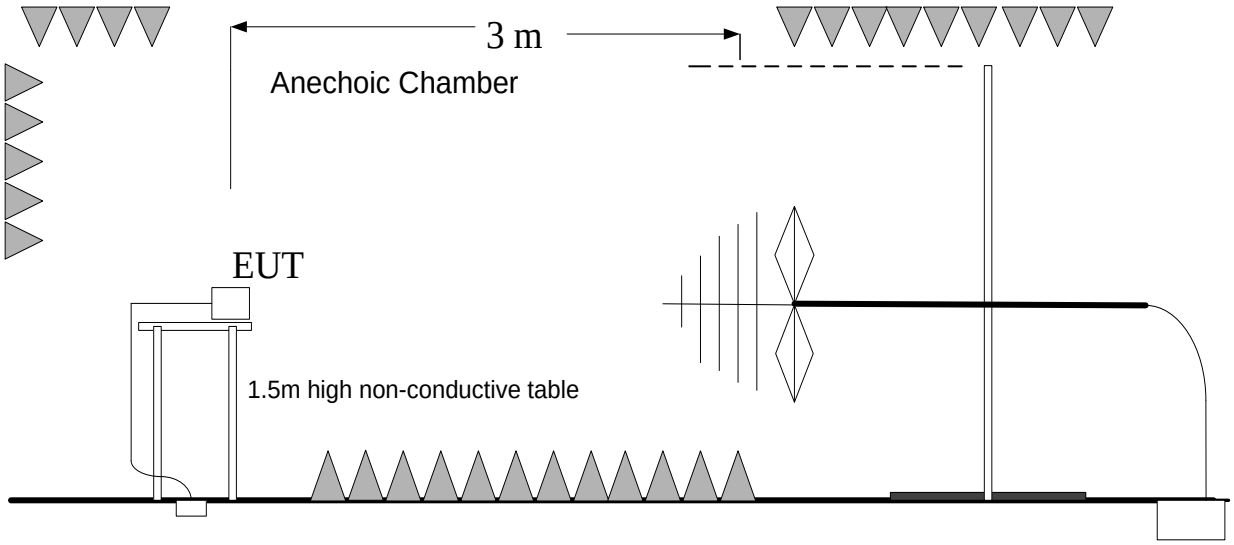
30MHz-26.5GHz:

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.

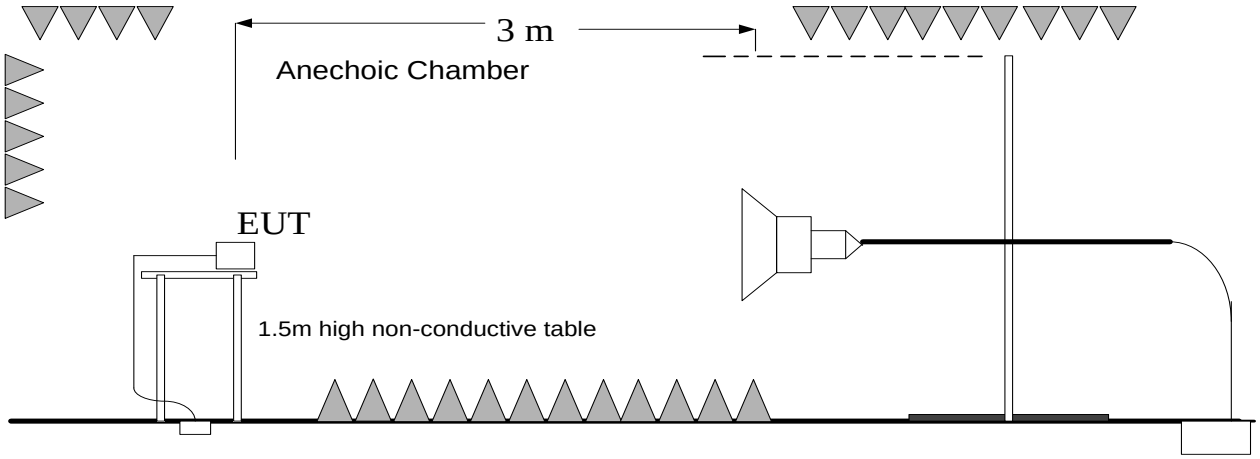
30MHz-1GHz:



1GHz-3GHz:

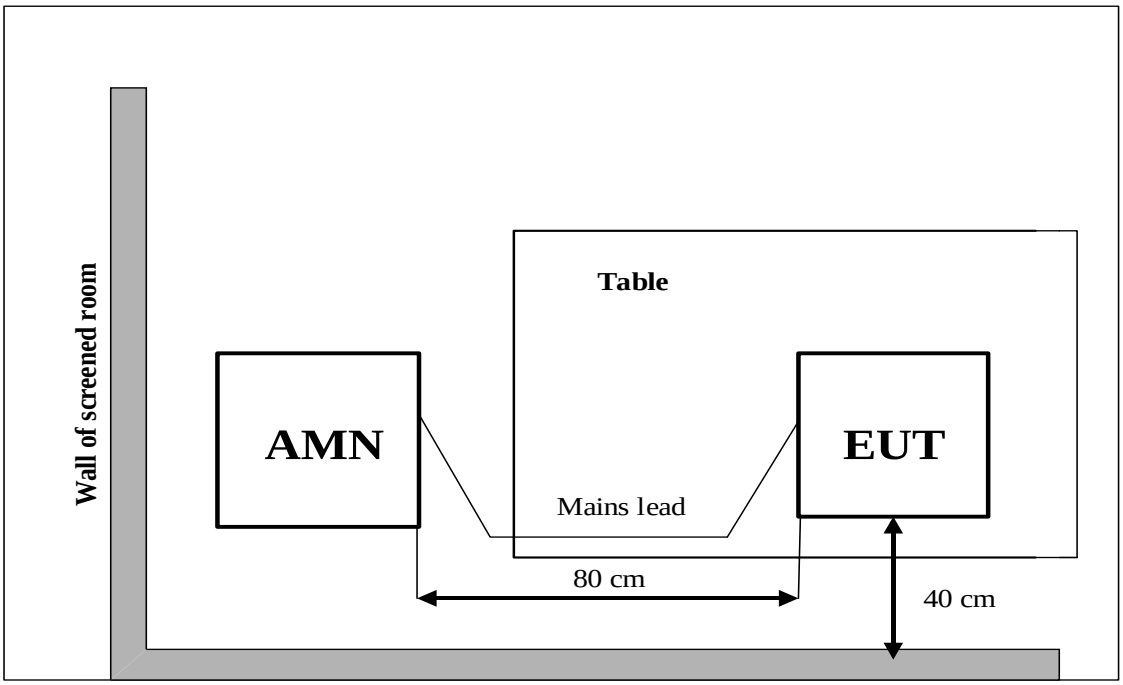


3GHz-26.5GHz:



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.



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 1: 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.

Note 2: All the EUT set-ups in section 3.4 tests conditions are both been validated, and Set.1 is the worst result，showed in this report.

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:

CH39 (1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
8849.571429	45.32	74.00	28.68	H	6.5
10446.857143	47.83	74.00	26.17	H	9.0
11878.714286	46.35	74.00	27.65	V	10.1
14904.000000	50.71	74.00	23.29	V	13.0
15885.857143	51.86	74.00	22.14	V	14.0
16971.857143	54.93	74.00	19.07	H	18.3

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
8849.571429	34.92	54.00	19.08	H	6.5
10446.857143	37.00	54.00	17.00	H	9.0
11878.714286	36.13	54.00	17.87	V	10.1
14904.000000	38.31	54.00	15.69	V	13.0
15885.857143	39.57	54.00	14.43	V	14.0
16971.857143	43.95	54.00	9.05	H	18.3

For LE 2M:

CH39(1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
3950.700000	45.79	74.00	28.21	V	2.2
5560.500000	47.20	74.00	26.80	H	3.8
8274.428572	45.03	74.00	28.97	H	6.0
10886.142857	47.19	74.00	26.81	H	9.3
15861.428571	52.43	74.00	21.57	H	14.0
17944.714286	54.56	74.00	19.44	H	19.0

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
3950.700000	35.65	54.00	18.35	V	2.2
5560.500000	36.92	54.00	17.08	H	3.8
8274.428572	34.94	54.00	19.06	H	6.0
10886.142857	36.65	54.00	17.35	H	9.3
15861.428571	39.65	54.00	14.35	H	14.0
17944.714286	42.48	54.00	11.52	H	19.0

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

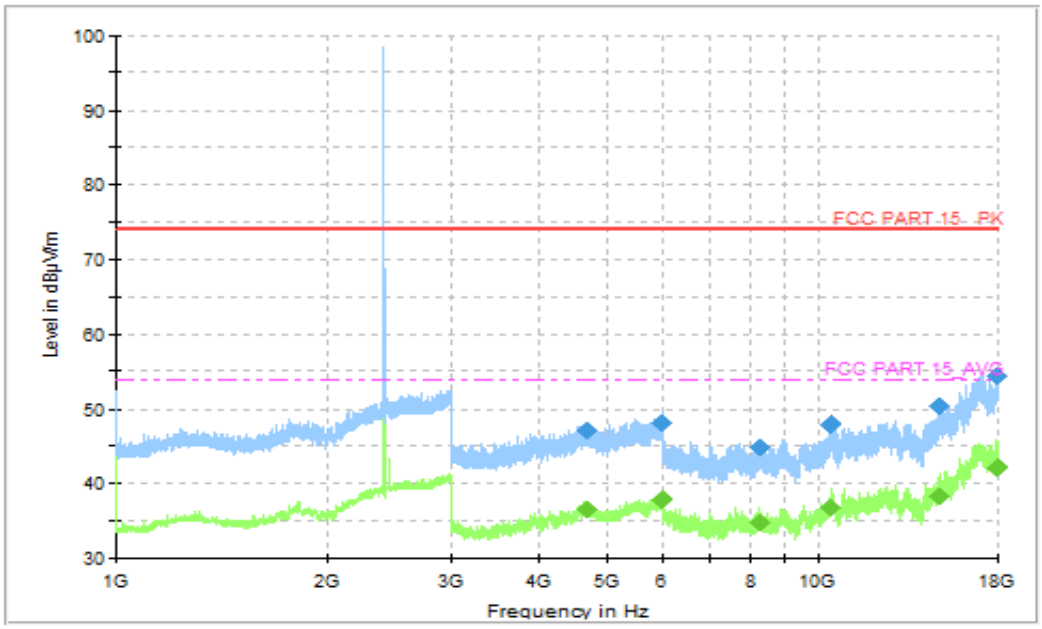


Fig.1 Radiated Spurious Emission (CH0, 1GHz ~18GHz), LE 1M

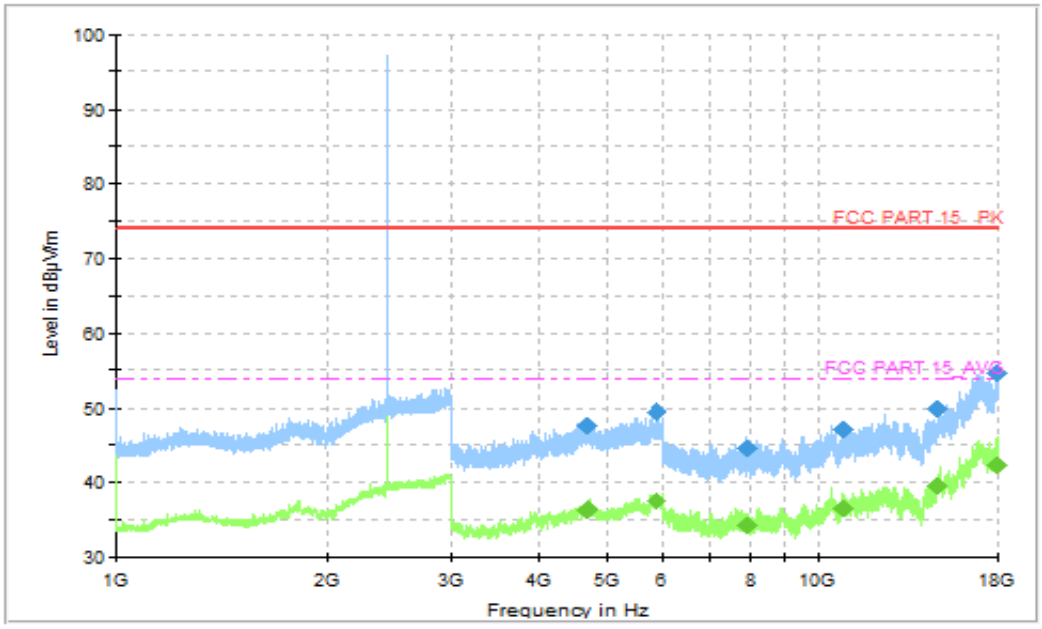


Fig.2 Radiated Spurious Emission (CH19, 1GHz ~18GHz), LE 1M

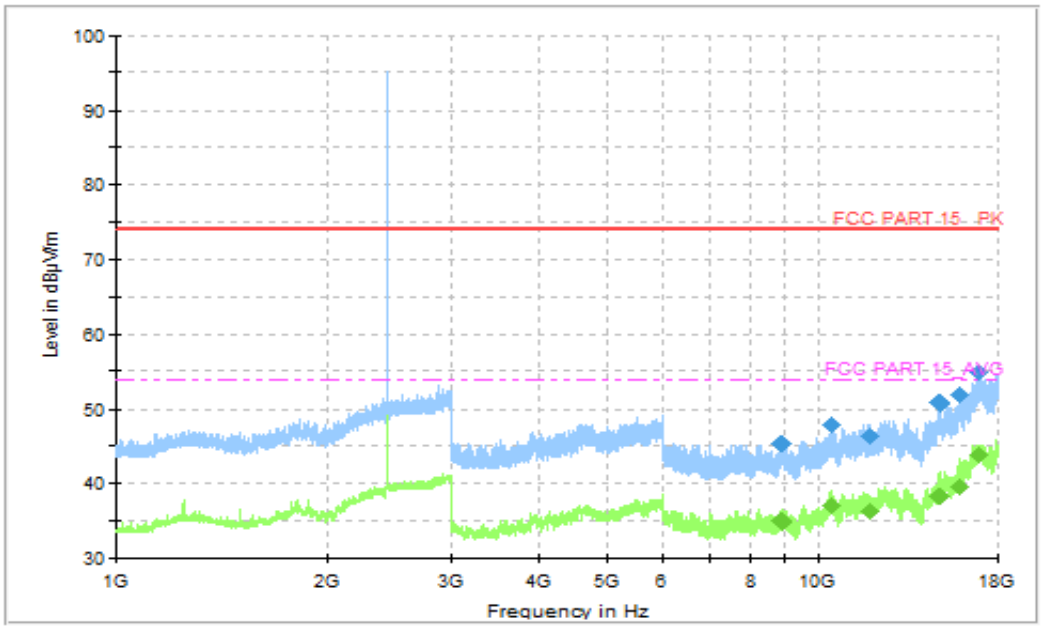


Fig.3 Radiated Spurious Emission (CH39, 1GHz ~18GHz), LE 1M

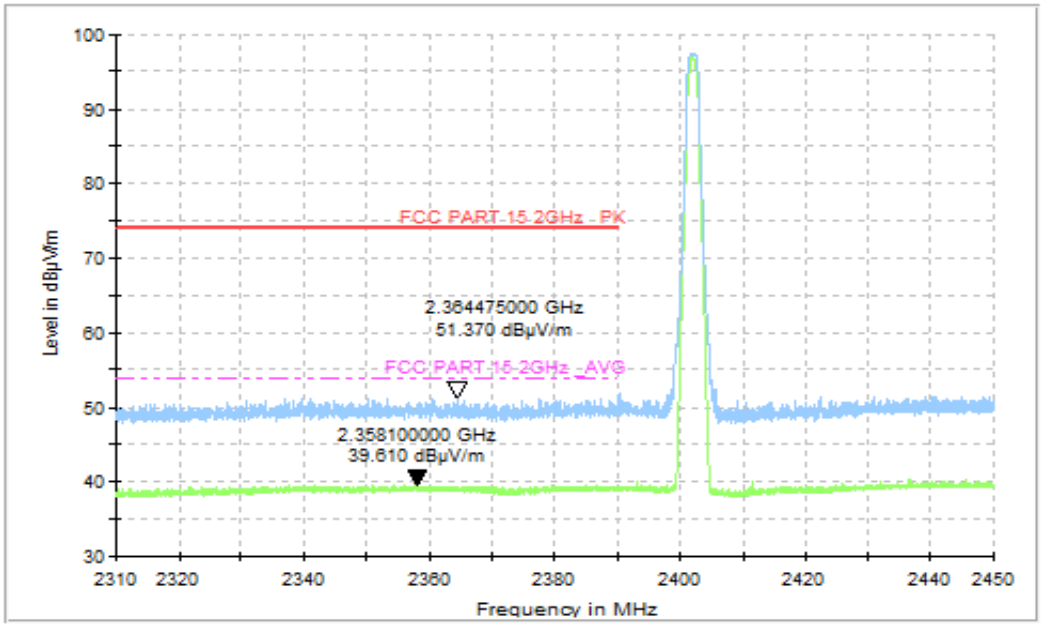


Fig.4 Radiated Band Edges (CH0, 2.38GHz~2.45GHz), LE 1M

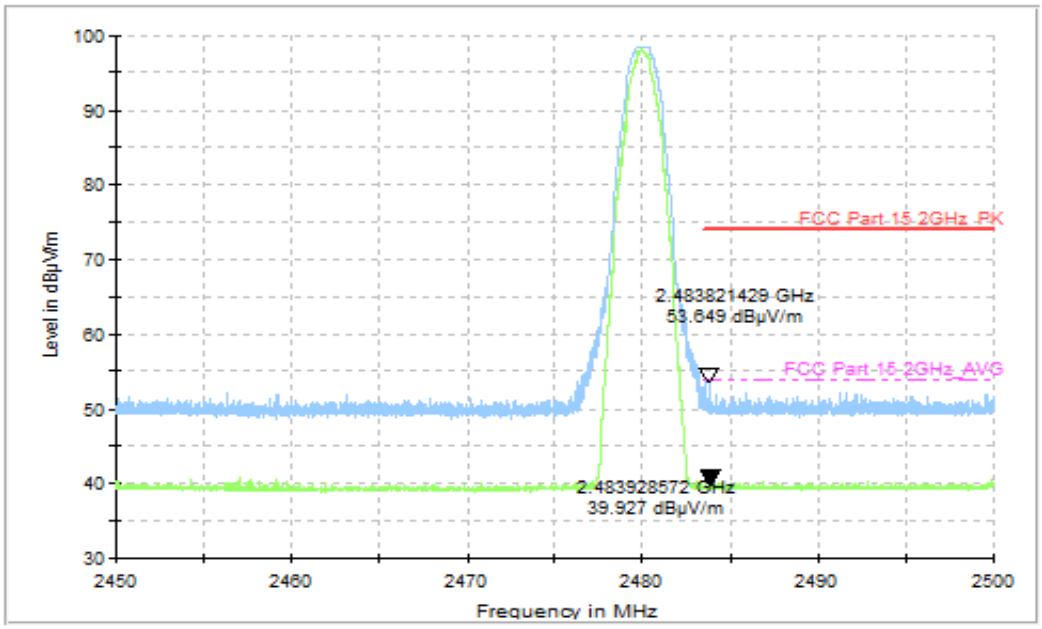


Fig.5 Radiated Band Edges (CH39, 2.45GHz~2.50GHz), LE 1M

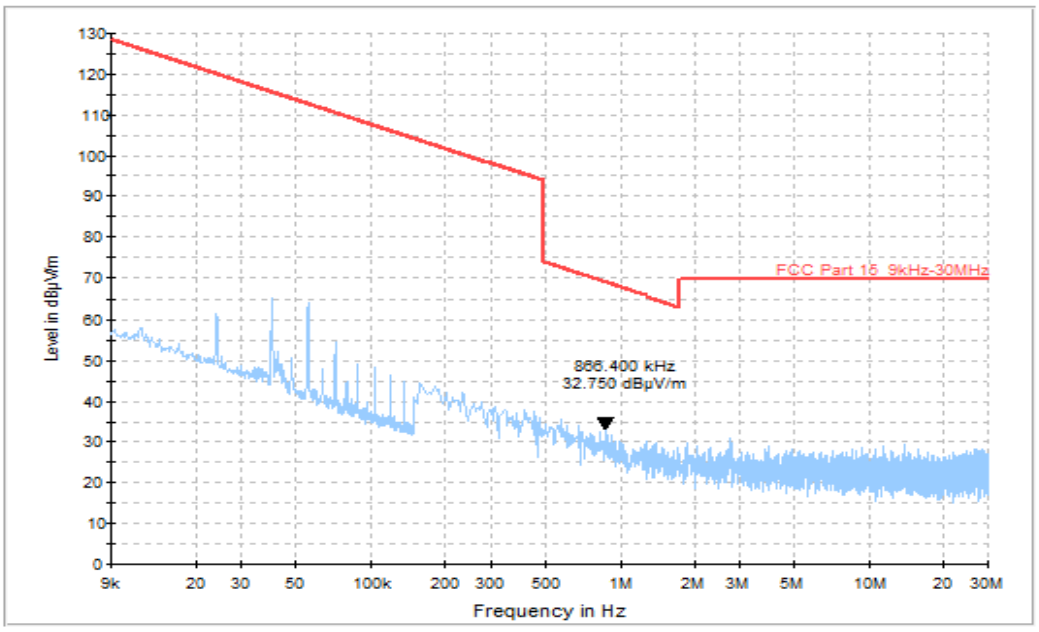


Fig.6 Radiated Spurious Emission (All Channels, 9kHz-30MHz), LE 1M

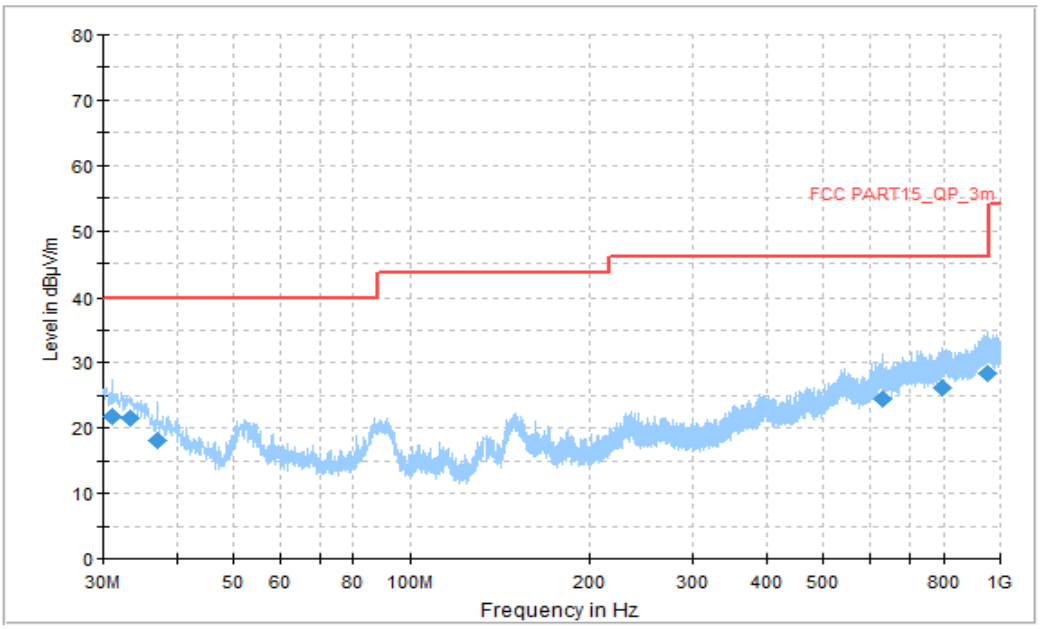


Fig.7 Radiated Spurious Emission (All Channels, 30MHz-1GHz), LE 1M

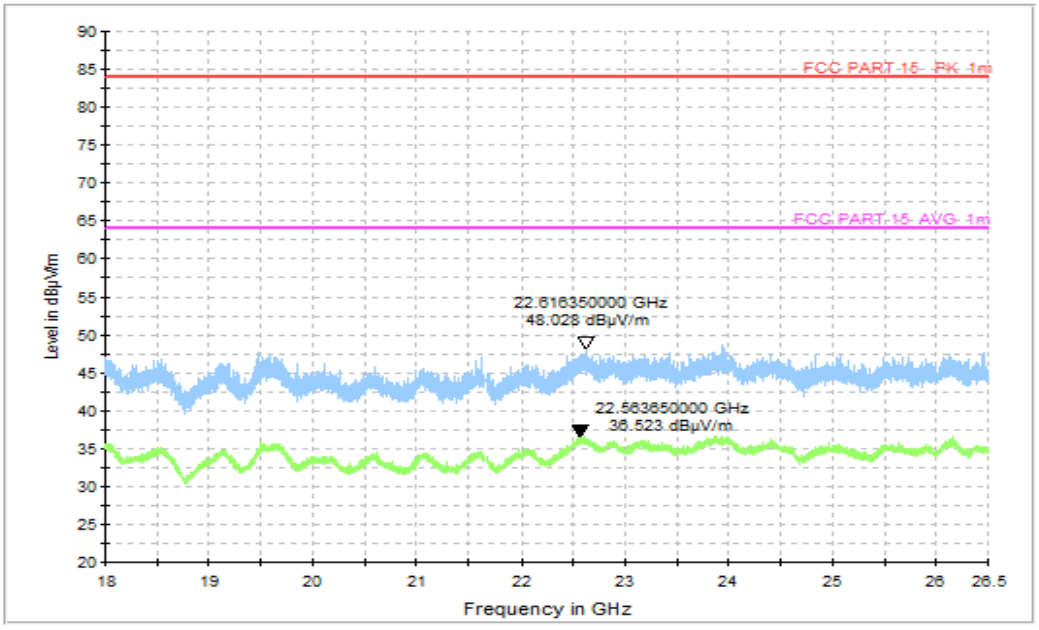


Fig.8 Radiated Spurious Emission (All Channels, 18GHz-26.5GHz), LE 1M

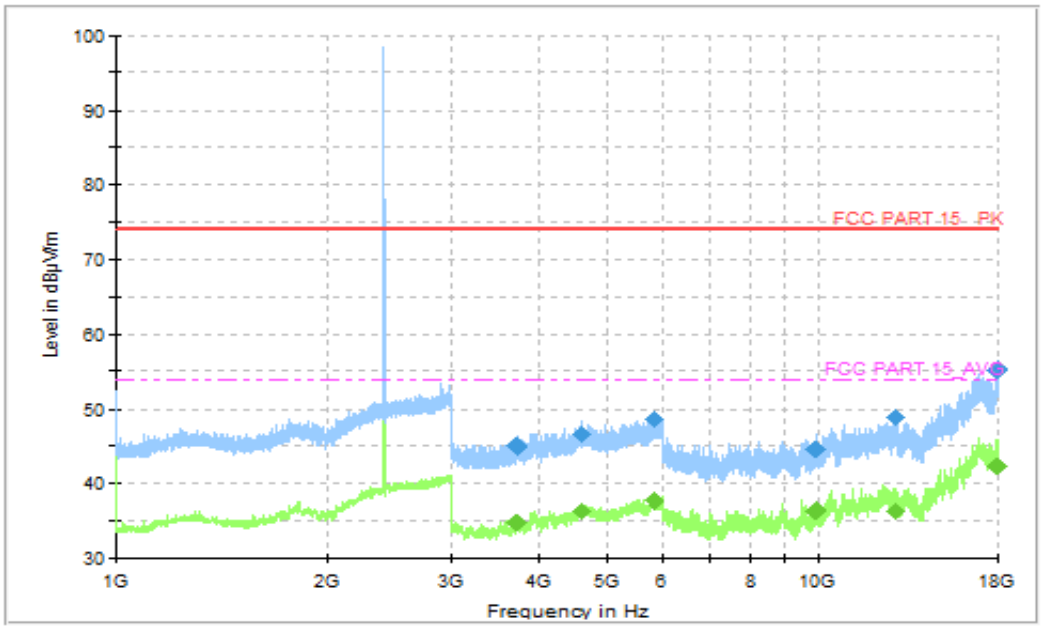


Fig.9 Radiated Spurious Emission (CH0, 1GHz ~18GHz), LE 2M

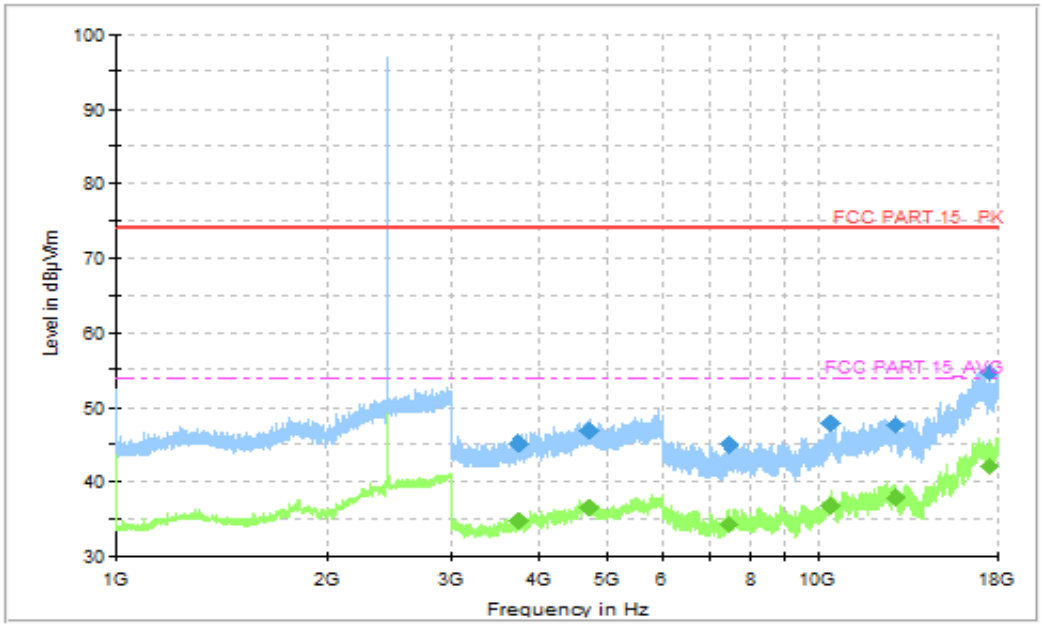


Fig.10 Radiated Spurious Emission (CH19, 1GHz ~18GHz), LE 2M

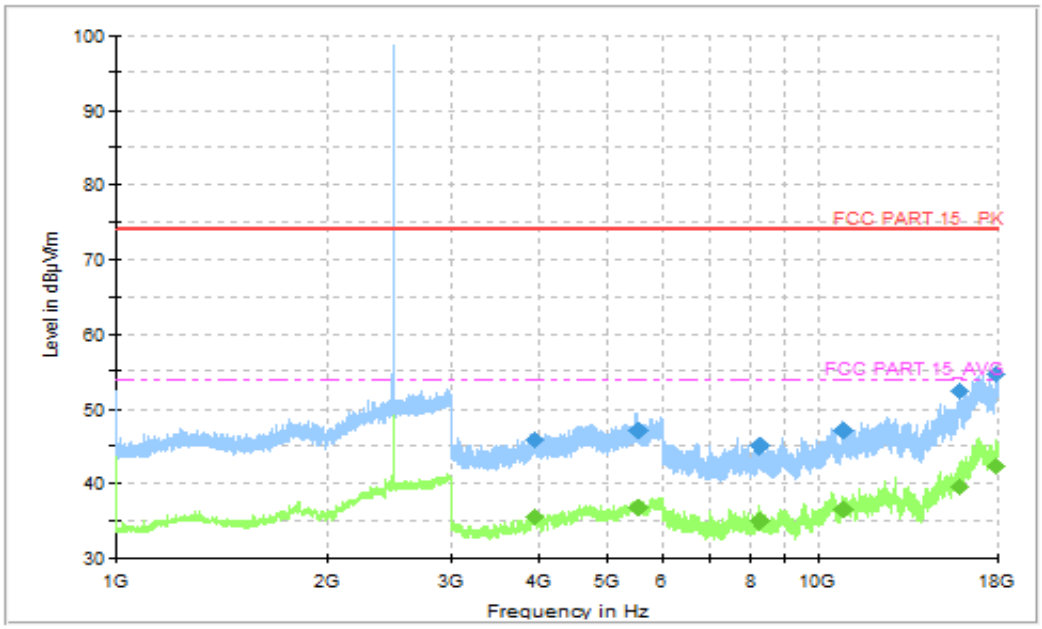


Fig.11 Radiated Spurious Emission (CH39, 1GHz ~18GHz), LE 2M

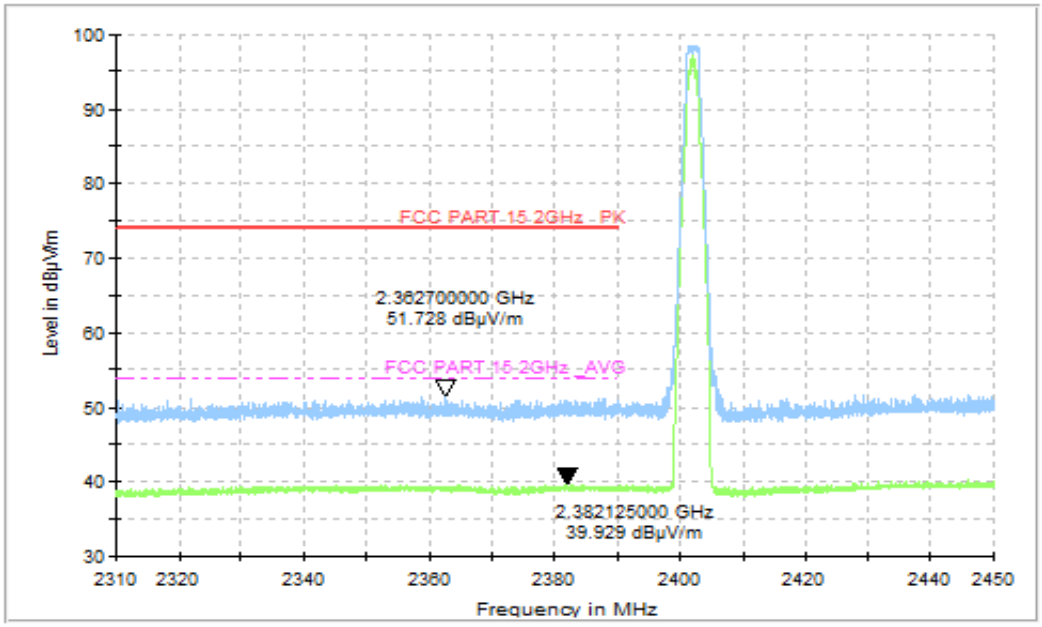


Fig.12 Radiated Band Edges (CH0, 2.38GHz~2.45GHz), LE 2M

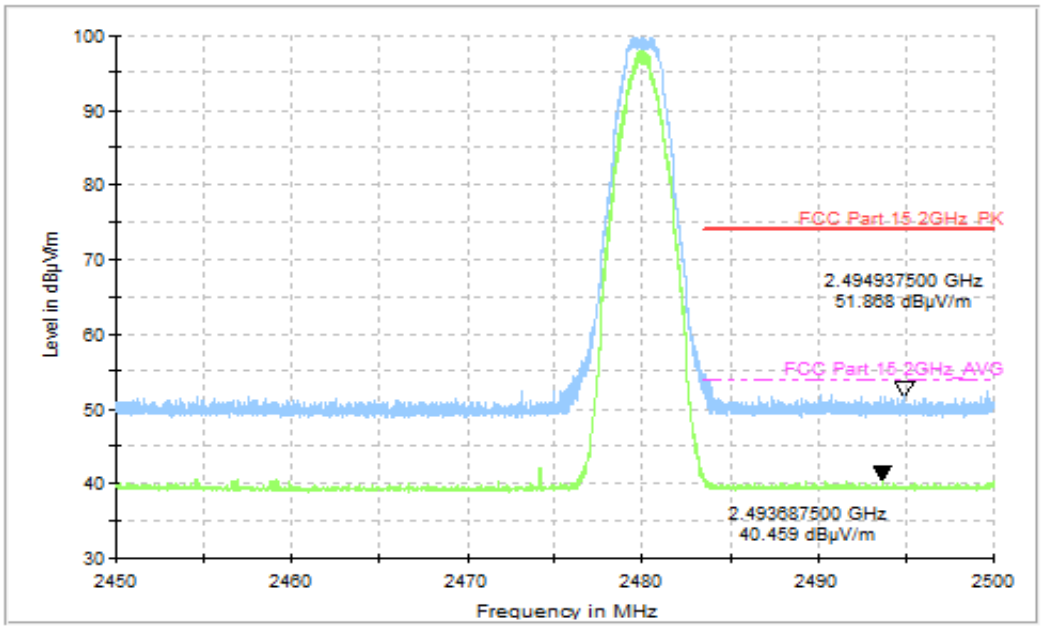


Fig.13 Radiated Band Edges (CH39, 2.45GHz~2.50GHz), LE 2M

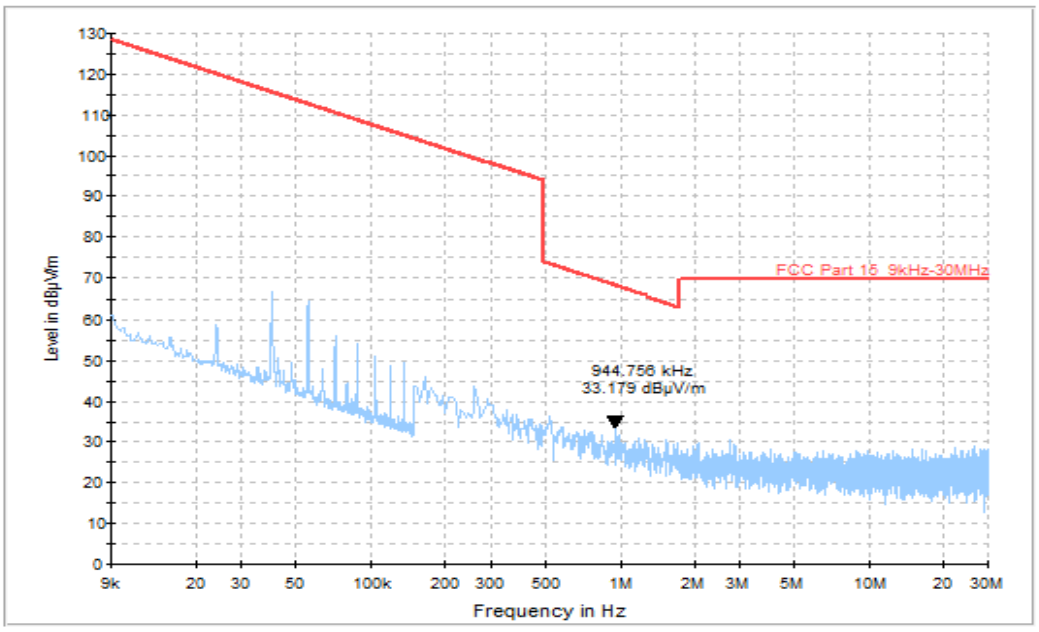


Fig.14 Radiated Spurious Emission (All Channels, 9kHz-30MHz), LE 2M

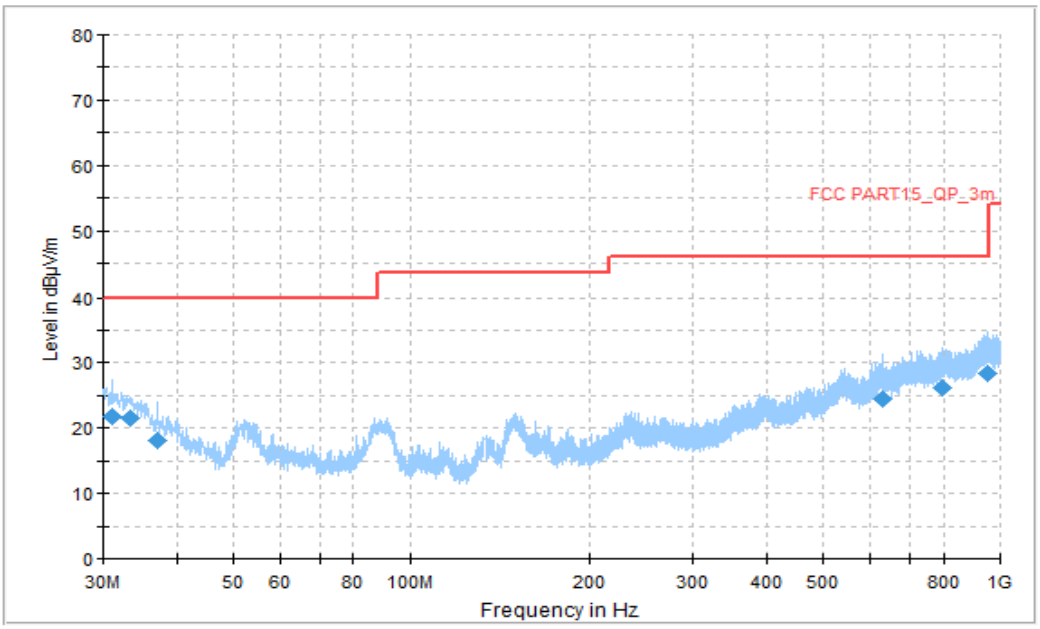


Fig.15 Radiated Spurious Emission (All Channels, 30MHz-1GHz), LE 2M

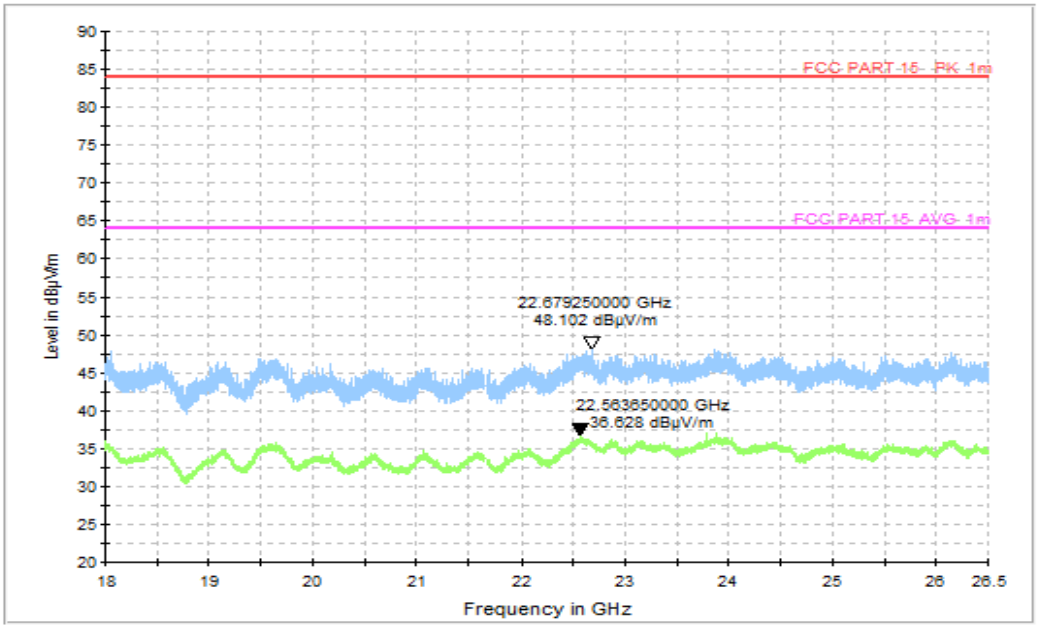


Fig.16 Radiated Spurious Emission (All Channels, 18GHz-26.5 GHz), LE 2M

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.					

Note1: The measurement results include the L1 and N measurements.

Note 2: All the EUT set-ups in section 3.4 tests conditions are both been validated, and Set.2 is the worst result，showed in this report.

See below for test graphs.

Conclusion: Pass

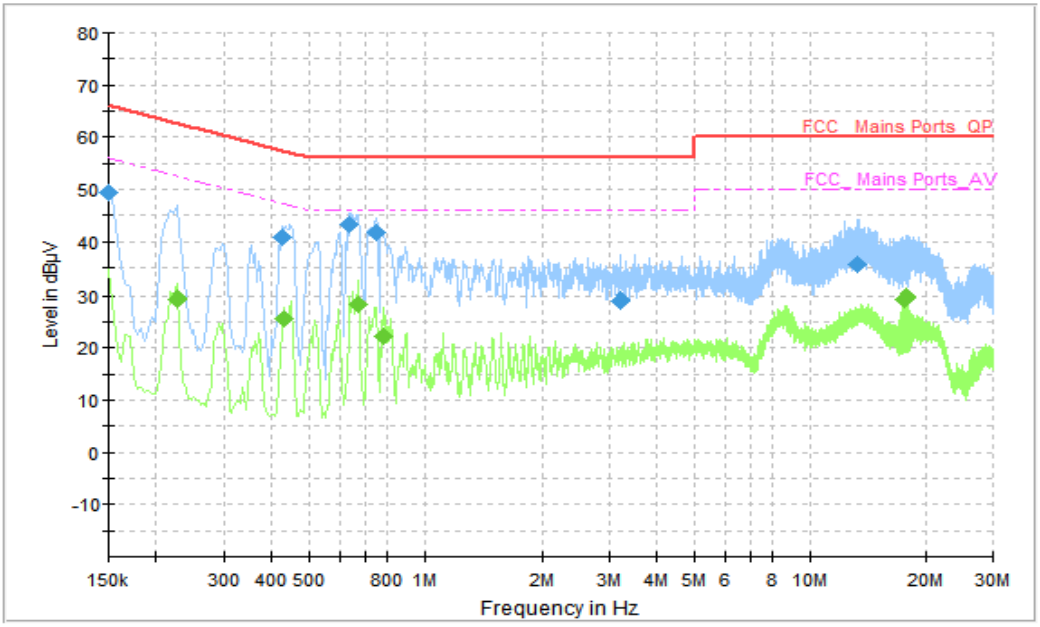


Fig.17 AC Power line Conducted Emission (Traffic)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	49.36	66.00	16.64	L1	ON	10
0.426000	40.81	57.33	16.52	L1	ON	10
0.638000	43.30	56.00	12.70	L1	ON	10
0.750000	41.65	56.00	14.35	L1	ON	10
3.218000	28.78	56.00	27.22	L1	ON	10
13.318000	35.78	60.00	24.22	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.226000	29.20	52.60	23.40	L1	ON	10
0.430000	25.51	47.25	21.74	L1	ON	10
0.674000	28.27	46.00	17.73	L1	ON	10
0.778000	22.28	46.00	23.72	L1	ON	10
17.654000	29.30	50.00	20.70	L1	ON	10
17.730000	29.39	50.00	20.61	L1	ON	10

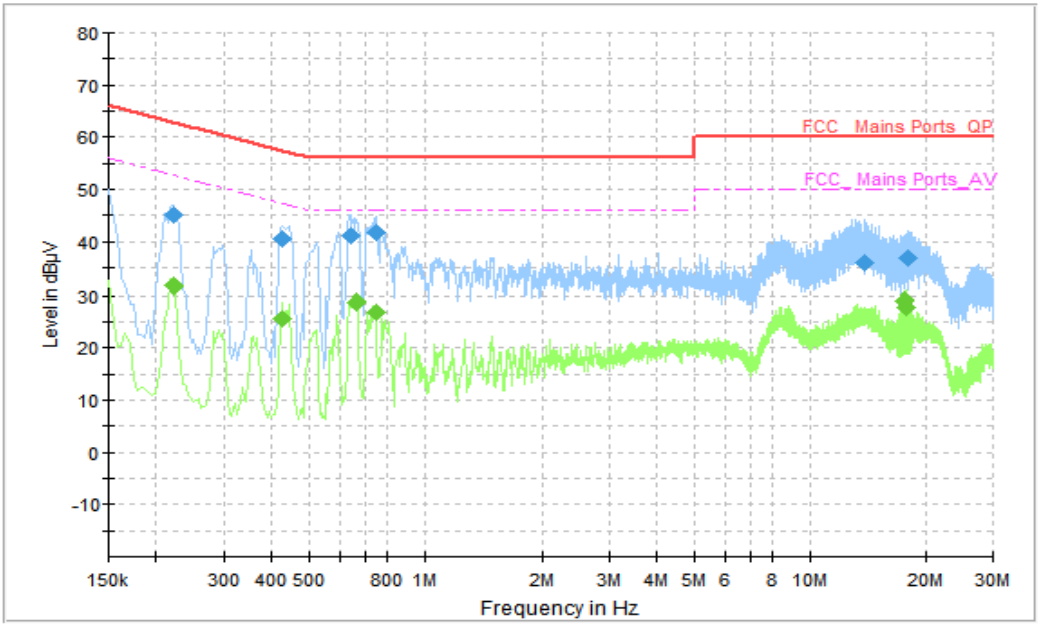


Fig.18 AC Power line Conducted Emission (Idle)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.222000	45.29	62.74	17.45	L1	ON	10
0.426000	40.55	57.33	16.78	L1	ON	10
0.642000	41.23	56.00	14.77	L1	ON	10
0.746000	41.89	56.00	14.11	L1	ON	10
13.858000	36.10	60.00	23.90	L1	ON	10
18.102000	36.93	60.00	23.07	L1	ON	11

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.222000	31.62	52.74	21.13	L1	ON	10
0.426000	25.71	47.33	21.62	L1	ON	10
0.666000	28.68	46.00	17.32	L1	ON	10
0.746000	26.86	46.00	19.14	L1	ON	10
17.586000	29.05	50.00	20.95	L1	ON	11
17.734000	27.65	50.00	22.35	L1	ON	11

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