



# FCC PART 15C TEST REPORT No.I22Z60151-EMC02

for

**Honor Device Co., Ltd.**

**Smart Phone**

**Model Name: VNE-N41**

**FCC ID: 2AYGCVNE-N41**

with

**Hardware Version: HN2VNEM**

**Software Version: 4.2.0.55(C900E55R1P1)**

**Issued Date: 2022-06-15**

**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 CTTL.

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

**Test Laboratory:**

**CTTL, Telecommunication Technology Labs, CAICT**

No.52, HuayuanNorth Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62304633-2512,Fax:+86(0)10-62304633-2504

Email:[cttl\\_terminals@caict.ac.cn](mailto:cttl_terminals@caict.ac.cn), website: [www.chinattl.com](http://www.chinattl.com)



## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I22Z60151-EMC02	Rev.0	1 <sup>st</sup> edition	2022-06-15

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## 1. Test Laboratory

### 1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

### 1.2. Testing Location

Test Location: CTTL (Huayuan North Road)

Address: No. 52 Huayuan North Road, Haidian District, Beijing 100191, P.R. China

### 1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

### 1.4. Project data

Testing Start Date: 2022-04-27

Testing End Date: 2022-05-25

### 1.5. Signature



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An Hui

(Prepared this test report)



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Zhang Ying

(Reviewed this test report)



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Zhang Xia

(Approved this test report)



## **2. Client Information**

### **2.1. Applicant Information**

Company Name: Honor Device Co., Ltd.  
Suite 3401,Unit A,Building 6,Shum Yip Sky Park,No.8089,Hongli  
Address /Post: West Road,Xiangmihu Street,Futian District,Shenzhen,Guangdong  
518040,People's Republic of China  
Contact: /  
Email: /  
Telephone: /

### **2.2. Manufacturer Information**

Company Name: Honor Device Co., Ltd.  
Suite 3401,Unit A,Building 6,Shum Yip Sky Park,No.8089,Hongli  
Address /Post: West Road,Xiangmihu Street,Futian District,Shenzhen,Guangdong  
518040,People's Republic of China  
Contact: /  
Email: /  
Telephone: /

### 3. PRODUCT INFORMATION

#### 3.1. About EUT

Description	Smart Phone
Model name	VNE-N41
FCC ID	2AYGCVNE-N41

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

#### 3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version
UT22a	864258060052700/864258060067179	HN2VNEM	4.2.0.55(C900E55R1P1)
UT25a	864258060053740/864258060068219	HN2VNEM	4.2.0.55(C900E55R1P1)
UT27a	864258060054268/864258060068730	HN2VNEM	4.2.0.55(C900E55R1P1)
UT29a	864258060052007/864258060066478	HN2VNEM	4.2.0.55(C900E55R1P1)

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

#### 3.3. Internal Identification of AE

AE ID*	Description	Note
AE1-1	Adapter	HN-100225U00 (Salcomp)
AE1-2	Adapter	HN-100225E00 (Salcomp)
AE1-3	Adapter	HW-100225U00 (Huntkey)
AE1-4	Adapter	HW-100225E00 (Huntkey)
AE1-5	Adapter	HW-100225B00 (Huntkey)
AE2-1	USB Cable	CUDU01B-HC451 -EH (FF)
AE2-2	USB Cable	AU2-CRO013 HF (LJ)
AE2-3	USB Cable	L125UC007-CS-H (LX)
AE2-4	USB Cable	2120-00001-0 (MG)
AE2-5	USB Cable	RY0002 (NB)
AE3-1	Headset	1293-3283-3.5mm-339
AE3-2	Headset	EPAB542-2WH05-DH
AE3-3	Headset	MEND1532B528A11
AE4-1	Battery	HB496590EFW (SCUD)
AE4-2	Battery	HB496590EFW-F (SCUD)
AE4-3	Battery	HB496590EFW (NVT)
AE4-4	Battery	HB496590EFW-F (NVT)

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

### 3.4. General Description

Equipment Under Test (EUT) is a model of Smart Phone with integrated antenna.

It has MP3, MP4, Camera, USB memory, Bluetooth 5.1, Wi-Fi (802.11b/g/n/ac/ax ) , GNSS functions.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

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

### 3.5. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor  $k=2$ .

#### Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

## 4. Reference Documents

### 4.1. Documents supplied by applicant

EUT parameters, referring to Annex A for detailed information, is supplied by the client 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 Part15	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 Federal Communications Commission Office of Engineering and Technology Laboratory Division	2013
KDB 558074 D01	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES	2019

Note: The test methods have no deviation with standards.



## 5. Test Results

### 5.1. Summary of Test Results

Abbreviations used in this clause:

- P** Pass, The EUT complies with the essential requirements in the standard.
- F** Fail, The EUT does not comply with the essential requirements in the standard
- NA** Not Applicable, The test was not applicable
- NP** Not Performed, The test was not performed by CTTL

<b>SUMMARY OF MEASUREMENT RESULTS</b>	<b>Sub-clause of Part15C</b>	<b>Verdict</b>
Radiated Spurious Emission	15.247, 15.205, 15.209	<b>P</b>
AC Power line Conducted Emission	15.107, 15.207	<b>P</b>

Please refer to **ANNEX C** for detail.

The measurement is made according to ANSI C63.10.

### 5.2. Statements

CTTL has evaluated the test cases requested by the applicant /manufacturer as listed in section 5.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.2

### 5.3. Test Conditions

For this report, if the test cases listed above are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	Normal Temperature	26°C
Voltage	Normal Voltage	4.0V
Humidity	Normal Humidity	20-75%

## 6. Test Facilities Utilized

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Loop Antenna	HFH2-Z2	829324/007	R&S	1 year	2022-12-22
2	EMI Antenna	3115	00167250	ETS-Lindgren	1 year	2022-07-01
3	EMI Antenna	VULB9163	9163-302	Schwarzbeck	1 year	2022-12-28
4	Test Receiver	ESW44	103023	R&S	1 year	2022-10-28
5	EMI Antenna	3116	2663	ETS-Lindgren	1 year	2022-08-11
6	Universal Radio Communication Tester	CBT	Rohde & Schwarz	101042	1 year	2022-12-23

### AC Powerline Conducted Emission

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	LISN	ENV216	101200	Rohde & Schwarz	1 year	2022-05-30
2	Test Receiver	ESCI 7	100344	Rohde & Schwarz	1 year	2023-02-21
3	Universal Radio Communication Tester	CBT	101042	Rohde & Schwarz	1 year	2022-12-23

## 7. Measurement Uncertainty

### Radiated Spurious Emission

#### Measurement Uncertainty:

Frequency Range	Uncertainty(dBm) (k=2)
9kHz-30MHz	4.92
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.15
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.54
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.26

### AC Power-line Conducted Emission

Measurement Uncertainty (k=2)	3.08dB
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## **ANNEX A: EUT parameters**

Disclaimer: The antenna gain and setting power provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

## **ANNEX B: Antenna Requirements**

According to FCC 47 CFR § 15.203:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- (1) The antennas of the EUT are permanently attached.
- (2) The EUT complies with the requirement of §15.203

## **ANNEX C: Detailed Test Results**

### **C.1. Radiated Spurious Emission**

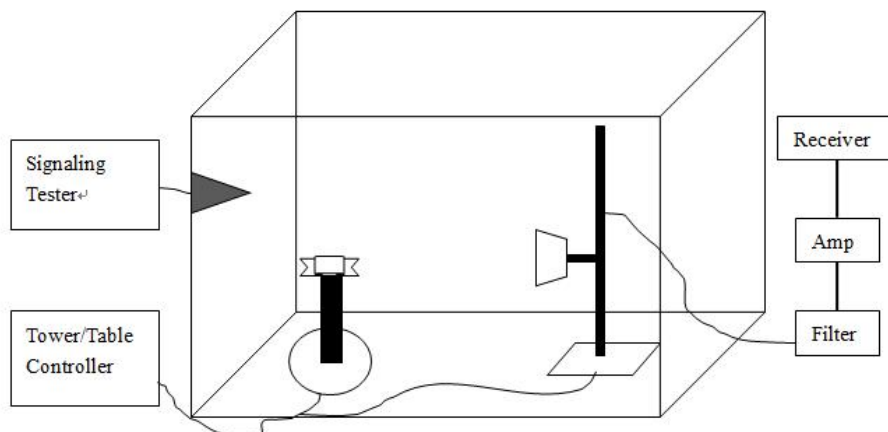
#### **Specification Reference**

FCC 47 CFR Part 15.247, 15.205, 15.209

#### **Method of Measurement**

Testing was performed in accordance with ANSI C63.10-2013 and KDB 558074.

The radiated emission test is performed in a semi-anechoic chamber. The distance from the EUT to the reference point of the measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only the maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.



#### **Measurement Limit**

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB 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 (MHz)	Field strength( $\mu\text{V}/\text{m}$ )	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30

Frequency of emission (MHz)	Field strength (uV/m)	Field strength (dBuV/m)	Measurement distance (m)
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

### **Test settings**

Frequency of emission (MHz)	RBW/VBW
30-1000	100kHz/300kHz
1000-4000	1MHz/3MHz
4000-18000	1MHz/3MHz
18000-26500	1MHz/3MHz

### **Sample Calculation**

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + \text{Cable Loss} + \text{Antenna Factor}$$

A "reference path loss" is established and the  $A_{\text{Rpl}}$  is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

$P_{\text{Mea}}$  is the field strength recorded from the instrument.

### **Test Notes**

1. The EUT is operating at its maximum duty cycle and its maximum power control level.
2. Investigation has been done on all channel, modes and modulations/data rates. Only the radiated emissions of the configurations that produced the worst case emissions are reported in this section.
3. For EUT1 and EUT2 the measurements were performed separately in Chain A, Chain B and only the worst cases are shown in this report.

### C.1.1 Radiated Spurious Emission- above 1GHz

EUT set-up No.	Combination of EUT and AE
Set.1-1	EUT1 + AE1-1 + AE2-1

For EUT1 and EUT2 the measurements were performed separately in Chain A, Chain B and only the worst cases are shown in this report.

#### Results Set.1-1

#### Peak Measurement results

##### GFSK Ch 0

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17405.0	53.50	-26.90	45.20	35.10	74.00	20.50	V
13780.5	50.36	-29.10	40.90	38.56	74.00	23.64	V
12874.5	48.27	-30.70	39.10	39.77	74.00	25.73	V
9151.0	46.28	-33.80	38.10	42.08	74.00	27.72	V
7903.5	44.57	-34.90	37.10	42.37	74.00	29.43	V
2345.3	54.61	-20.10	28.00	46.71	74.00	19.39	V

##### GFSK Ch 39

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17882.0	52.27	-25.50	46.70	31.07	74.00	21.73	H
13658.5	50.31	-29.50	40.40	39.41	74.00	23.69	V
12376.5	48.10	-31.10	38.90	40.30	74.00	25.90	H
9631.0	45.59	-33.10	38.00	40.69	74.00	28.41	V
7252.0	45.05	-35.00	36.50	43.45	74.00	28.95	V
4971.0	39.30	-36.60	33.40	42.50	74.00	34.70	H

##### GFSK Ch 78

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17672.0	52.88	-25.70	46.00	32.68	74.00	21.12	H
14194.0	50.31	-29.00	42.00	37.31	74.00	23.69	H
12848.0	48.05	-30.70	39.10	39.55	74.00	25.95	V
9710.5	46.46	-33.00	38.00	41.46	74.00	27.54	H
7014.0	44.33	-35.20	36.10	43.43	74.00	29.67	V
2494.2	55.06	-20.00	28.30	46.76	74.00	18.94	H

**$\pi/4$  DQPSK Ch 0**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17975.0	53.58	-25.50	46.70	32.38	74.00	20.42	H
13662.5	49.72	-29.50	40.40	38.82	74.00	24.28	H
12887.0	47.85	-30.70	39.10	39.35	74.00	26.15	H
8858.5	45.61	-33.50	38.10	41.01	74.00	28.39	V
7061.5	44.26	-35.40	36.20	43.36	74.00	29.74	H
2314.7	55.25	-20.10	27.90	47.35	74.00	18.75	H

 **$\pi/4$  DQPSK Ch 39**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17761.0	52.64	-25.50	46.70	31.44	74.00	21.36	H
13611.0	50.27	-29.50	40.40	39.37	74.00	23.73	H
12826.0	47.89	-30.70	39.10	39.39	74.00	26.11	V
8804.5	45.11	-33.90	38.10	40.91	74.00	28.89	V
7717.5	44.19	-34.80	37.00	42.09	74.00	29.81	V
4960.0	39.37	-37.10	33.30	43.17	74.00	34.63	V

 **$\pi/4$  DQPSK Ch 78**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17592.5	52.73	-25.70	46.00	32.53	74.00	21.27	H
13551.0	50.30	-29.60	40.00	39.90	74.00	23.70	H
12377.5	47.96	-31.10	38.90	40.16	74.00	26.04	V
8729.5	46.42	-34.40	38.00	42.82	74.00	27.58	H
7240.5	44.74	-35.50	36.40	43.84	74.00	29.26	V
2498.5	55.45	-20.00	28.40	47.05	74.00	18.55	V



**8DPSK Ch 0**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17985.5	52.85	-25.50	46.70	31.65	74.00	21.15	H
13695.5	50.39	-29.10	40.90	38.59	74.00	23.61	H
12695.0	48.05	-30.50	39.10	39.45	74.00	25.95	V
9503.5	45.79	-33.20	37.90	41.09	74.00	28.21	H
7910.5	45.16	-34.90	37.10	42.96	74.00	28.84	V
2371.9	55.21	-20.10	28.00	47.21	74.00	18.79	H

**8DPSK Ch 39**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17617.0	52.93	-25.70	46.00	32.73	74.00	21.07	H
13692.0	49.93	-29.50	40.40	39.03	74.00	24.07	V
12927.5	48.25	-30.50	39.20	39.55	74.00	25.75	V
8692.5	45.70	-34.40	38.00	42.10	74.00	28.30	V
7408.5	44.00	-35.20	36.70	42.40	74.00	30.00	V
4861.5	39.47	-37.50	33.10	43.77	74.00	34.53	V

**8DPSK Ch 78**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17986.5	52.33	-25.50	46.70	31.13	74.00	21.67	H
13655.5	50.36	-29.50	40.40	39.46	74.00	23.64	V
12802.5	48.02	-30.70	39.10	39.52	74.00	25.98	V
8809.5	45.61	-33.90	38.10	41.41	74.00	28.39	V
7920.5	44.54	-34.90	37.10	42.34	74.00	29.46	H
2492.6	55.37	-20.00	28.30	47.07	74.00	18.63	H

**Average Measurement results**
**GFSK Ch 0**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17743.5	41.17	-25.50	46.70	19.97	54.00	12.83	V
13538.0	38.79	-29.60	40.00	28.39	54.00	15.21	H
12848.5	36.66	-30.70	39.10	28.16	54.00	17.34	H
9128.0	34.40	-33.80	38.10	30.20	54.00	19.60	V
7233.0	33.13	-35.50	36.40	32.23	54.00	20.87	V
2355.5	42.50	-20.10	28.00	34.50	54.00	11.50	H

**GFSK Ch 39**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17709.5	41.30	-25.70	46.00	21.10	54.00	12.70	V
13585.5	39.06	-29.50	40.40	28.16	54.00	14.94	V
12764.0	36.58	-30.50	39.10	27.98	54.00	17.42	V
9125.0	34.64	-33.80	38.10	30.44	54.00	19.36	V
7236.5	32.95	-35.50	36.40	32.05	54.00	21.05	V
4948.0	27.90	-37.10	33.30	31.70	54.00	26.10	H

**GFSK Ch 78**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17606.0	42.01	-25.70	46.00	21.81	54.00	11.99	H
13662.5	39.07	-29.50	40.40	28.17	54.00	14.93	V
12926.0	37.06	-30.50	39.20	28.36	54.00	16.94	V
9161.5	34.56	-33.80	38.10	30.36	54.00	19.44	V
7233.5	33.20	-35.50	36.40	32.30	54.00	20.80	H
2495.9	42.69	-20.00	28.30	34.39	54.00	11.31	H

**$\pi/4$  DQPSK Ch 0**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17313.0	41.39	-25.90	44.40	22.99	54.00	12.61	V
13625.0	38.74	-29.50	40.40	27.84	54.00	15.26	V
12842.0	36.75	-30.70	39.10	28.25	54.00	17.25	H
9162.0	34.46	-33.80	38.10	30.26	54.00	19.54	H
7999.5	33.22	-34.80	37.10	30.92	54.00	20.78	H
2384.8	42.54	-20.00	28.10	34.54	54.00	11.46	H

 **$\pi/4$  DQPSK Ch 39**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17769.0	41.30	-25.50	46.70	20.10	54.00	12.70	V
13578.5	38.93	-29.50	40.40	28.03	54.00	15.07	V
12913.0	36.63	-30.50	39.20	27.93	54.00	17.37	H
9144.5	34.18	-33.80	38.10	29.98	54.00	19.82	V
7804.5	33.22	-35.10	37.00	31.32	54.00	20.78	V
4768.0	28.04	-37.30	33.00	32.34	54.00	25.96	V

 **$\pi/4$  DQPSK Ch 78**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17607.0	41.42	-25.70	46.00	21.22	54.00	12.58	H
13658.5	39.15	-29.50	40.40	28.25	54.00	14.85	H
12923.0	36.76	-30.50	39.20	28.06	54.00	17.24	H
9134.5	34.21	-33.80	38.10	30.01	54.00	19.79	V
7998.0	33.41	-34.80	37.10	31.11	54.00	20.59	V
2487.7	42.88	-20.00	28.30	34.58	54.00	11.12	V

**8DPSK Ch 0**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17776.5	41.16	-25.50	46.70	19.96	54.00	12.84	H
13666.0	38.71	-29.50	40.40	27.81	54.00	15.29	V
12361.0	36.88	-31.10	38.90	29.08	54.00	17.12	H
9718.5	34.23	-33.00	38.00	29.23	54.00	19.77	H
7313.0	33.16	-35.00	36.50	31.56	54.00	20.84	V
2389.9	42.27	-20.00	28.10	34.27	54.00	11.73	H

**8DPSK Ch 39**

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17984.5	41.16	-25.50	46.70	19.96	54.00	12.84	V
13539.0	38.89	-29.60	40.00	28.49	54.00	15.11	V
12454.0	36.78	-31.20	38.90	29.08	54.00	17.22	V
9132.5	34.26	-33.80	38.10	30.06	54.00	19.74	H
7237.0	33.41	-35.50	36.40	32.51	54.00	20.59	H
4824.0	27.99	-37.50	33.10	32.29	54.00	26.01	V

**8DPSK Ch 78**

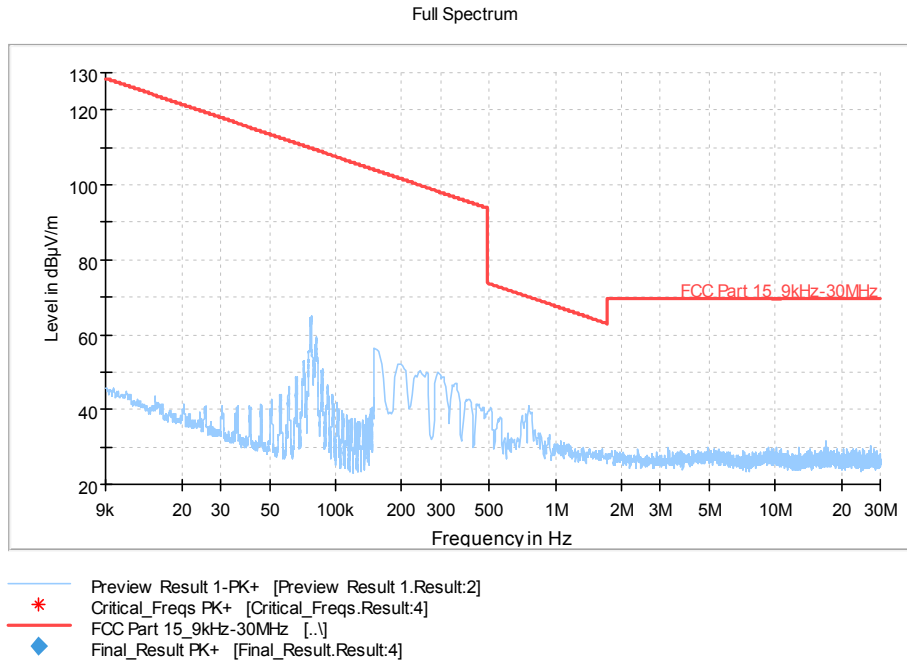
Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17702.0	41.59	-25.70	46.00	21.39	54.00	12.41	H
13665.0	38.95	-29.50	40.40	28.05	54.00	15.05	H
12854.5	36.61	-30.70	39.10	28.11	54.00	17.39	V
9105.0	34.23	-33.80	38.10	29.83	54.00	19.77	V
7991.5	33.20	-34.80	37.10	30.90	54.00	20.80	V
2487.8	42.82	-20.00	28.30	34.52	54.00	11.18	H

The EUT is no radiated spurious emission above 18GHz, all the signals are background noise.

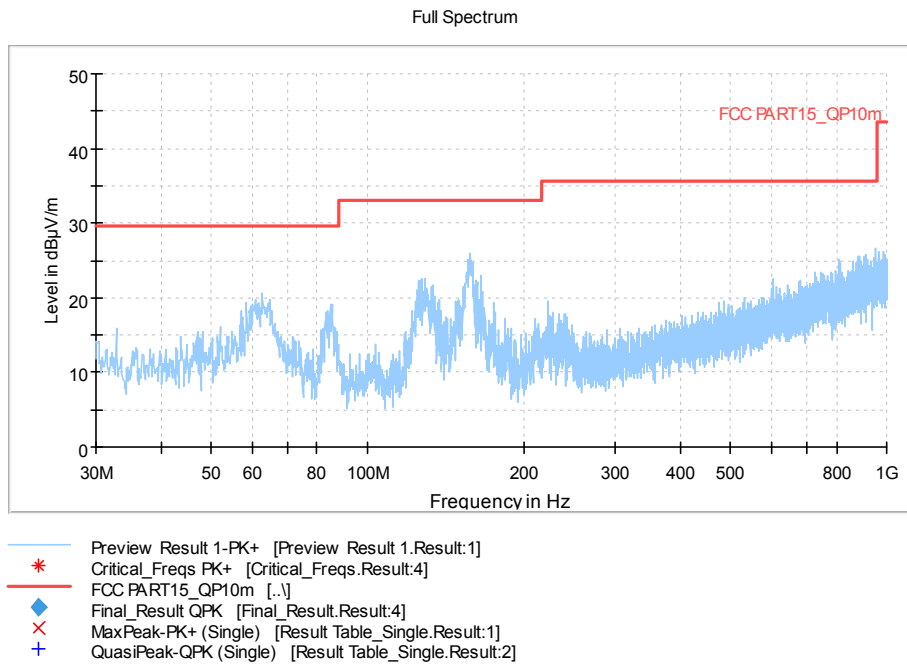
**Conclusion: Pass**

### C.1.2 Radiated Spurious Emission-BELOW 1GHz

#### WOSRT CASE BELOW 30MHz (GFSK Ch 0)



#### WOSRT CASE BELOW 1GHz (GFSK Ch 0)



### C.1.3 Band Edges Compliance– Radiated

EUT set-up No.	Combination of EUT and AE
Set.1-1	EUT1 + AE1-1+AE2-1

#### Results Set.1-1

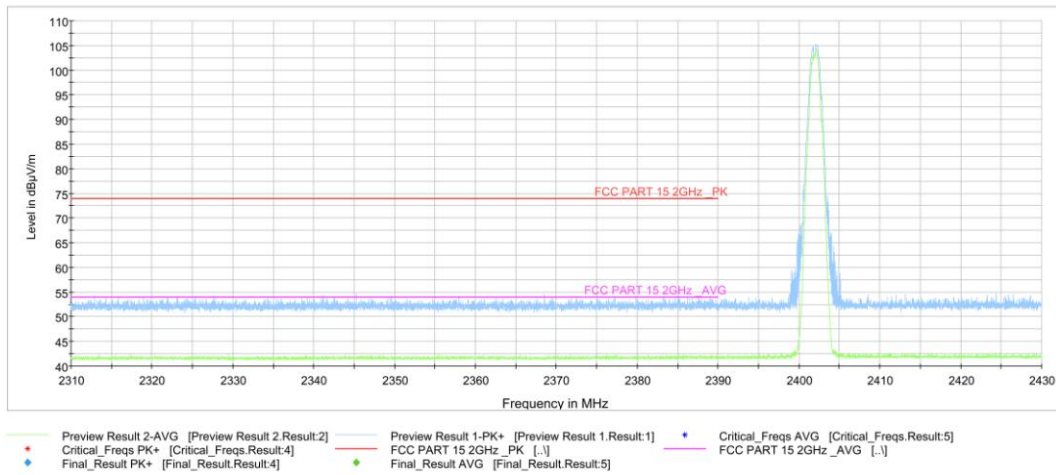
Mode	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	2.31GHz ~2.43GHz	Fig.1	P
	78	2.45GHz ~2.5GHz	Fig.2	P

Mode	Channel	Frequency Range	Test Results	Conclusion
$\pi/4$ DQPSK	0	2.31GHz ~2.43GHz	Fig.3	P
	78	2.45GHz ~2.5GHz	Fig.4	P

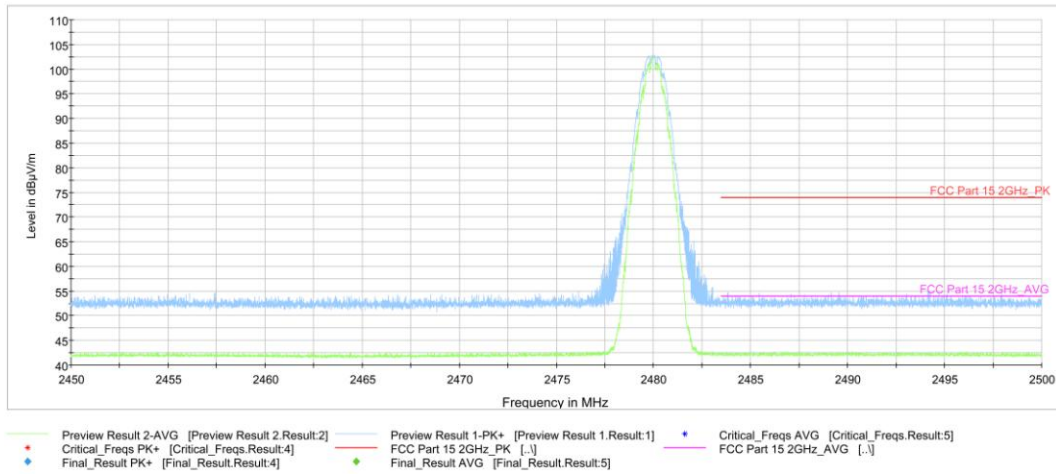
Mode	Channel	Frequency Range	Test Results	Conclusion
8DPSK	0	2.31GHz ~2.43GHz	Fig.5	P
	78	2.45GHz ~2.5GHz	Fig.6	P

**Conclusion: PASS**

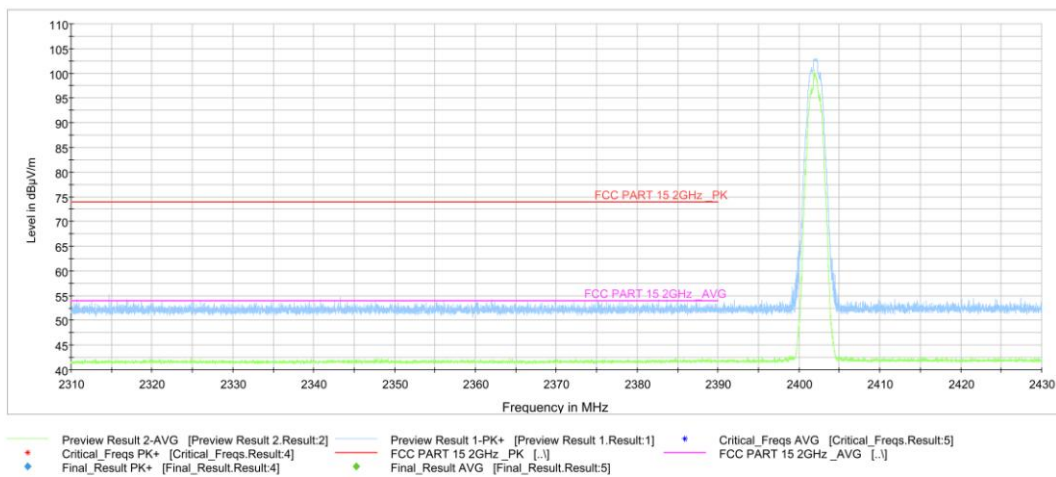
**Test graphs as below**



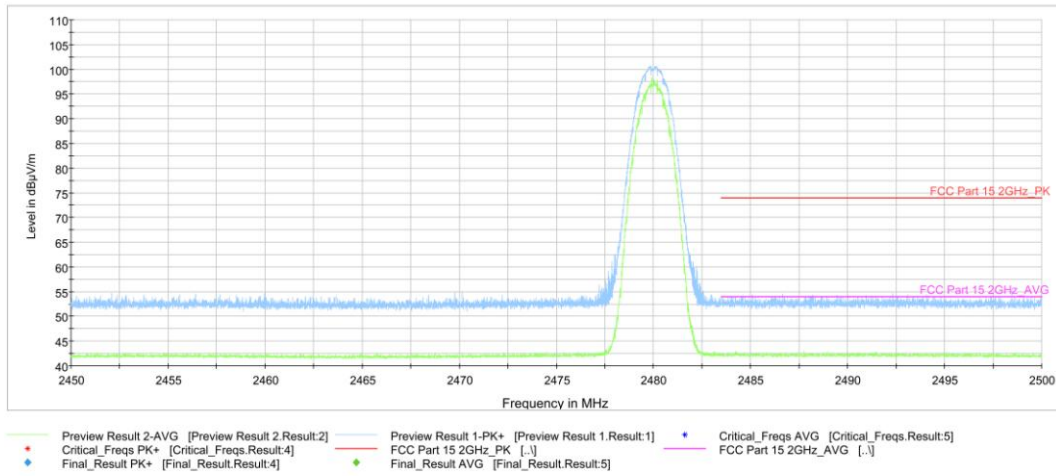
**Fig.1. Frequency Band Edges: GFSK, Channel 0, 2.31 GHz – 2.43GHz**



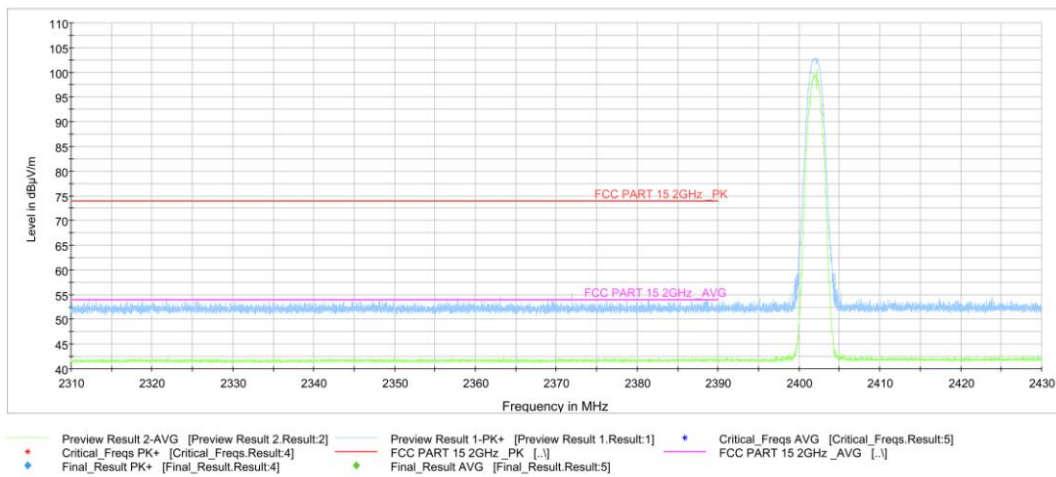
**Fig.2. Frequency Band Edges: GFSK, Channel 78, 2.45 GHz - 2.50GHz**



**Fig.3. Frequency Band Edges:  $\pi/4$  DQPSK, Channel 0, H2.31 GHz - 2.43GHz**

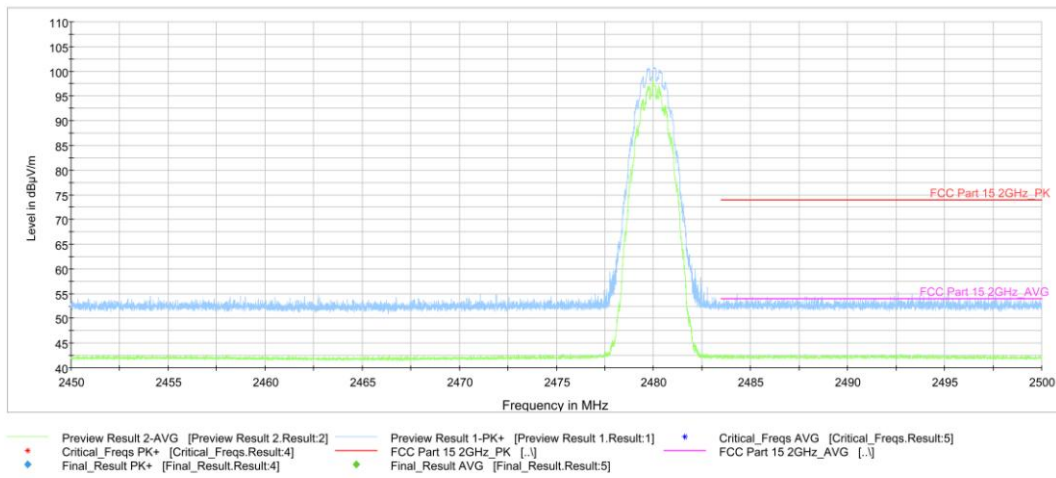


**Fig.4. Frequency Band Edges:  $\pi/4$  DQPSK, Channel 78, 2.45 GHz - 2.50GHz**



**Fig.5. Frequency Band Edges: 8DPSK, Channel 0, 2.31 GHz - 2.43GHz**





**Fig.6. Frequency Band Edges: 8DPSK, Channel 78, 2.45 GHz - 2.50GHz**

## C.2. AC Powerline Conducted Emission

### Specification Reference

FCC 47 CFR Part 15.207, 15.107

### Method of Measurement:

See Clause 6.2 of ANSI C63.10-2013 specifically.

See Clause 4 and Clause 5 of ANSI C63.10-2013 generally.

The conducted emissions from the AC port of the EUT are measured in a shielding room. The EUT is connected to a Line Impedance Stabilization Network (LISN). An overview sweep with peak detection was performed. The measurements were performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detector of the test receiver: Quasi-Peak / Average Detector.

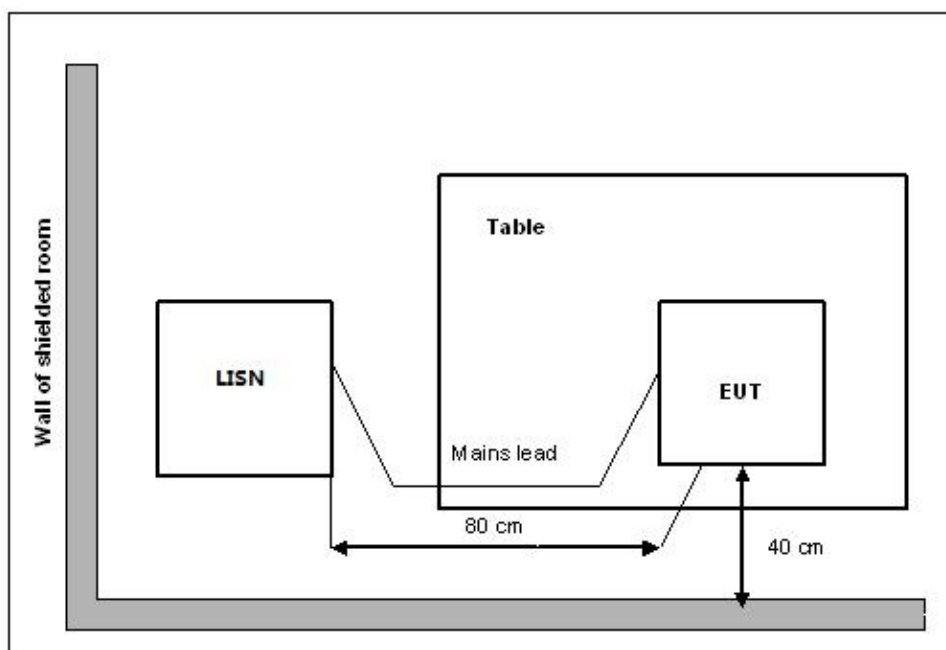
The measurement bandwidth is:

Frequency of Emission (MHz)	RBW/IF bandwidth	Sweep Time(s)
0.15-30	9kHz	1

### Test Condition:

Voltage (V)	Frequency (Hz)
120	60

### Measurement Setup



### EUT Operating Mode and Test Conditions

The measurement of EUT is carried out under the transmit state.

The EUT is powered by an AC/travel adapter.

**Measurement Result and limit:**

EUT set-up No.	Combination of EUT and AE
Set.1-2	EUT1 + AE1-1 + AE2-1 + AE3-3

This configuration is the worst result of Set.1-1-Set.1-4 and Set.3-1-Set.3-4 in 15B.

**Results Set.1-2, GFSK,  $\pi/4$  DQPSK, 8DPSK.**

Note: all modes have been tested and the worst results shown here.

**Bluetooth (Quasi-peak Limit)**

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		bluetooth	Idle	
0.15 to 0.5	66 to 56	Fig.C.2.1	Fig.C.2.2	<b>P</b>
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

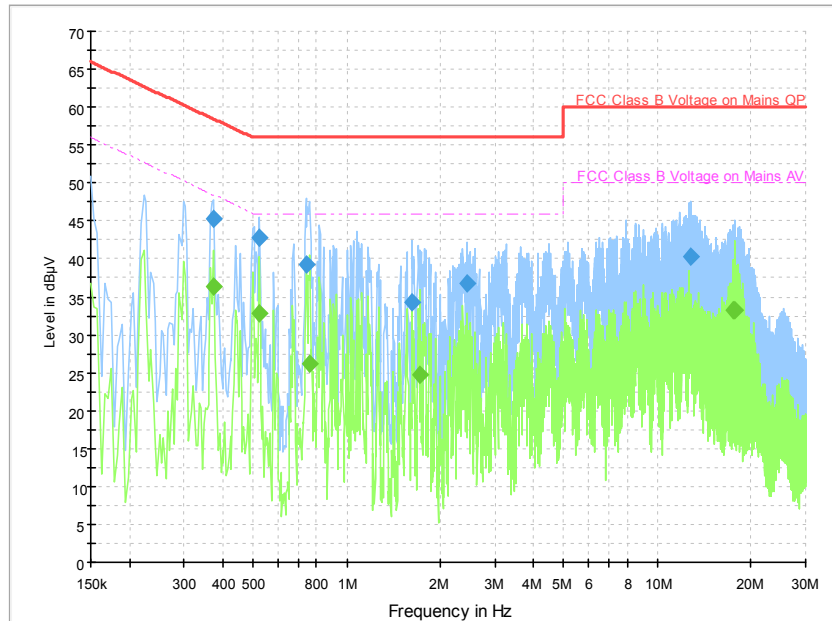
**Bluetooth (Average Limit)**

Frequency range (MHz)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		bluetooth	Idle	
0.15 to 0.5	56 to 46	Fig.C.2.1	Fig.C.2.2	<b>P</b>
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

**Conclusion: Pass**

**Test graphs as below:**

**Set.1-2, GFSK Ch 39**

**Fig.C.2.1 AC Power line Conducted Emission- Bluetooth**

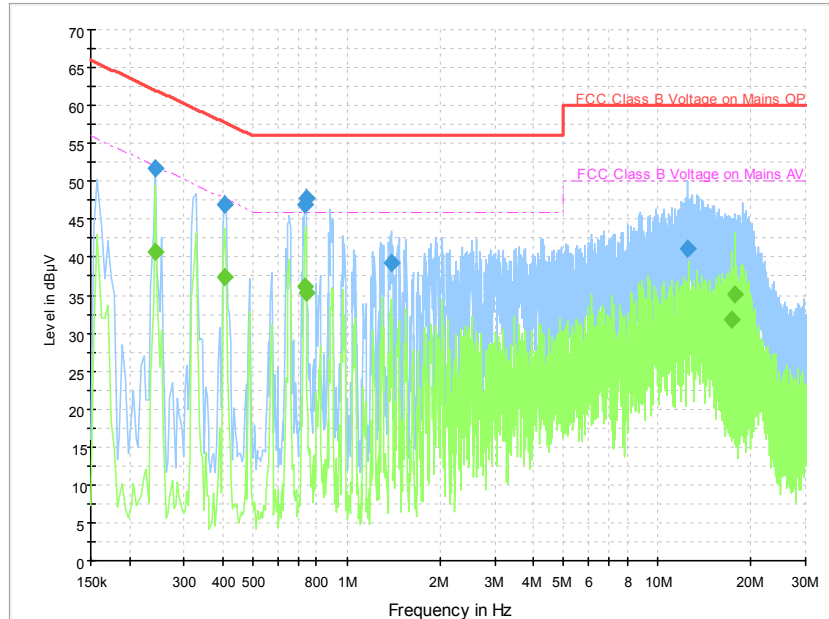
Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.374000	45.4	5000.0	9.000	On	N	19.8	13.0	58.4
0.522000	42.9	5000.0	9.000	On	N	19.8	13.1	56.0
0.738000	39.4	5000.0	9.000	On	N	19.6	16.6	56.0
1.622000	34.3	5000.0	9.000	On	L1	19.7	21.7	56.0
2.446000	36.8	5000.0	9.000	On	L1	19.6	19.2	56.0
12.826000	40.3	5000.0	9.000	On	L1	19.7	19.7	60.0

**Final Result 2**

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.374000	36.4	5000.0	9.000	On	N	19.8	12.0	48.4
0.522000	32.9	5000.0	9.000	On	N	19.8	13.1	46.0
0.762000	26.3	5000.0	9.000	On	L1	19.6	19.7	46.0
1.714000	24.8	5000.0	9.000	On	N	19.6	21.2	46.0
17.550000	33.2	5000.0	9.000	On	L1	19.7	16.8	50.0
17.770000	33.2	5000.0	9.000	On	L1	19.7	16.8	50.0



**Fig.C.2.2 AC Power line Conducted Emission-Idle**

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.242000	51.6	5000.0	9.000	On	N	19.7	10.4	62.0
0.406000	47.0	5000.0	9.000	On	N	19.8	10.7	57.7
0.730000	46.9	5000.0	9.000	On	L1	19.6	9.1	56.0
0.738000	47.8	5000.0	9.000	On	N	19.6	8.2	56.0
1.390000	39.2	5000.0	9.000	On	L1	19.7	16.8	56.0
12.434000	41.2	5000.0	9.000	On	N	19.6	18.8	60.0

**Final Result 2**

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.242000	40.7	5000.0	9.000	On	N	19.7	11.3	52.0
0.406000	37.3	5000.0	9.000	On	N	19.8	10.4	47.7
0.730000	36.1	5000.0	9.000	On	L1	19.6	9.9	46.0
0.738000	35.4	5000.0	9.000	On	N	19.6	10.6	46.0
17.354000	31.8	5000.0	9.000	On	N	19.9	18.2	50.0
17.762000	35.0	5000.0	9.000	On	L1	19.7	15.0	50.0

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