# FCC PART 15C
# TEST REPORT
## No.I22Z62328-EMC02

**for**

**Honor Device Co., Ltd.**

**Smart Phone**

**Model Name: RBN-NX1**

**FCC ID: 2AYGCRBN-NX1**

**with**

**Hardware Version: HN2VNEM**

**Software Version: 6.1.0.9(C900E9R1P1)**

**Issued Date: 2023-01-03**

**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**

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# REPORT HISTORY

| Report Number | Revision | Description | Issue Date |
|---|---|---|---|
| I22Z62328-EMC02 | Rev.0 | 1st edition | 2023-01-03 |

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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℃

Relative Humidity: 20-75%

## 1.4. Project data

Testing Start Date: 2022-04-27

Testing End Date: 2022-05-25

## 1.5. Signature

张颖

**Zhang Ying**

**(Prepared this test report)**

安辉

**An Hui**

**(Reviewed this test report)**

史瑞兰

**Shi Suolan**

**(Approved this test report)**

# 2. Client Information

## 2.1. Applicant Information

| | |
|---|---|
| Company Name: | Honor Device Co., Ltd. |
| Address /Post: | Suite 3401,Unit A,Building 6,Shum Yip Sky Park,No.8089,Hongli 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. |
| Address /Post: | Suite 3401,Unit A,Building 6,Shum Yip Sky Park,No.8089,Hongli 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 | RBN-NX1 |
| FCC ID | 2AYGCRBN-NX1 |

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 | / | / | / |
| UT25a | / | / | / |
| UT27a | / | / | / |
| UT29a | / | / | / |

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

## 3.3. Internal Identification of AE

| AE ID* | Name | Model | Manufacturer |
|---|---|---|---|
| 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 | Fuding Precision Components (Shenzhen) Co., Ltd. |
| AE2-2 | USB Cable | AU2-CRO013 HF | Freeport Ji an Electronics Co.,Ltd. |
| AE2-3 | USB Cable | L125UC007-CS-H | Luxshare Precision Industry Co.,Ltd. |
| AE2-4 | USB Cable | 2120-00001-0 | Guangdong Mingji Hi-Tech Electronics Co.,Ltd. |
| AE2-5 | USB Cable | RY0002 | Guangxi Broad Telecommunication Co.,Ltd. |
| AE3-1 | Headset | 1293-3283-3.5mm-339 | BOLUO COUNTY QUANCHENG ELECTRONIC CO.,LTD. |
| AE3-2 | Headset | EPAB542-2WH05-DH | FOXCONN INTERCONNECT TECHNOLOGY LIMITED |
| AE3-3 | Headset | MEND1532B528A11 | Jiangxi Lianchuang Hongsheng Electronic Co., LTD. |
| 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.

Note: Smart Phone RBN-NX1 manufactured by Honor Device Co., Ltd. is a variant model based on VNE-N41 for conformance test. According to the declaration of changes, all the results are cited from the initial model. The report number for initial model is I22Z60667-EMC02.

## 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:<br>15.205 Restricted bands of operation;<br>15.209 Radiated emission limits, general requirements;<br>15.247 Operation within the bands 902-928MHz,<br>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 |
| KDB 558074 D01 | Federal Communications Commission Office of Engineering and Technology Laboratory Division<br>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

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

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℃ |
| 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 |
| 30MHz ≤ f ≤ 1GHz | 5.15 |
| 1GHz ≤ f ≤18GHz | 5.54 |
| 18GHz ≤ f ≤40GHz | 5.26 |

## AC Power-line Conducted Emission

| | |
|---|---|
| Measurement Uncertainty (k=2) | 3.08dB |

# 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

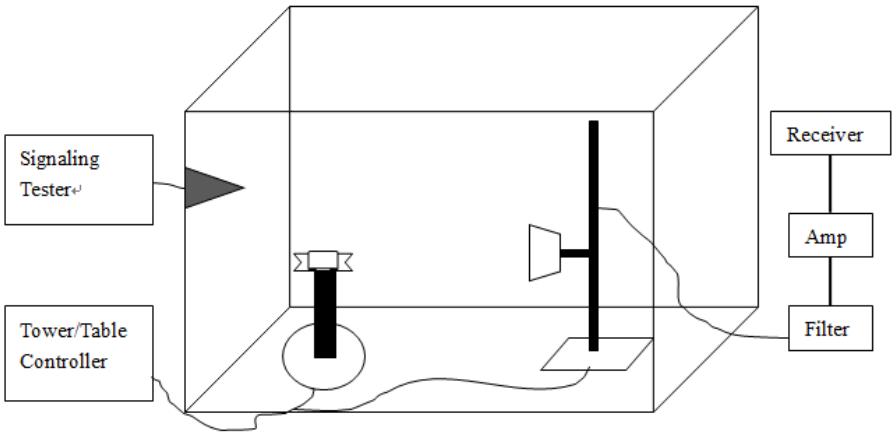
## C.1. Radiated Spurious Emission

### Specification Reference

FCC 47 CFR Part 15.247, 15.205, 15.209

### Method of Measurement

Testing was performed in according with ANSI C63.10-2013 and KDB 558074.
The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only 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(μV/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:

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

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

$P_{Mea}$ 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 | UT22a + AE1-1 + AE2-1 |

For UT22a and UT25a 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**

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| 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 |

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| 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 |

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| 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 |

**π/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 |

**π/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 |

**π/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 |

**π/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 |

**π/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 |

**π/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**

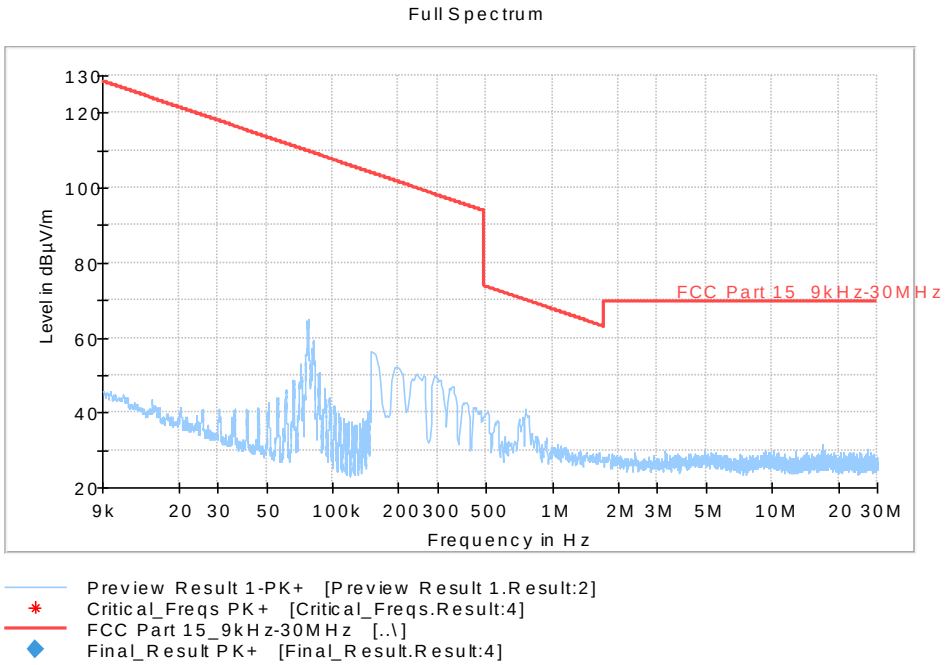
| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 17702.0 | 41.59 | -25.70 | 46.00 | 21.39 | 54.00 | 12.41 | H |
| 13665.0 | 38.95 | -29.50 | 40.40 | 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.

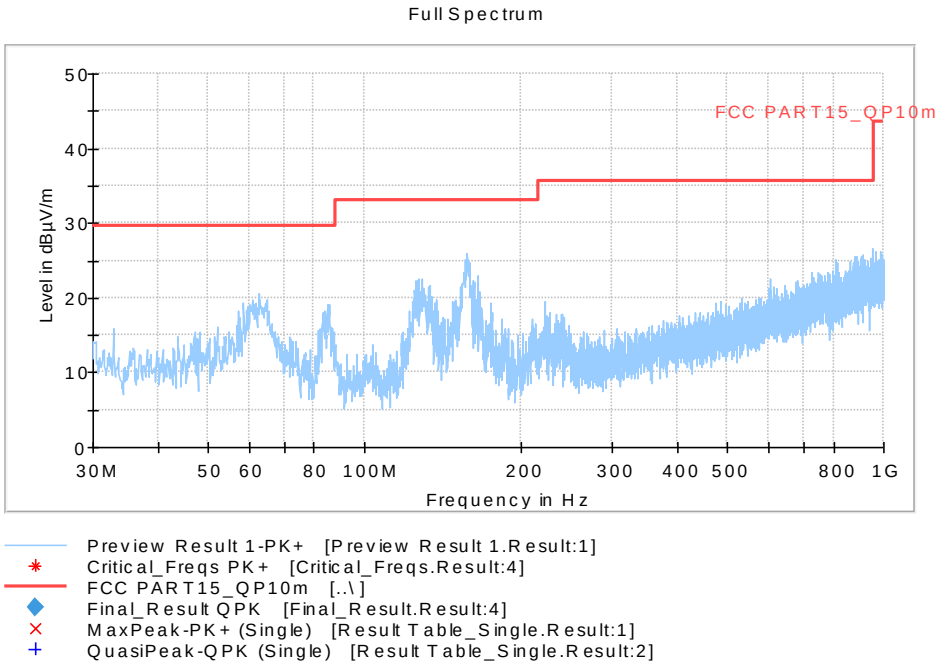
**Conclusion: Pass**

## 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 | UT22a + 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 |
|---|---|---|---|---|
| π/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**

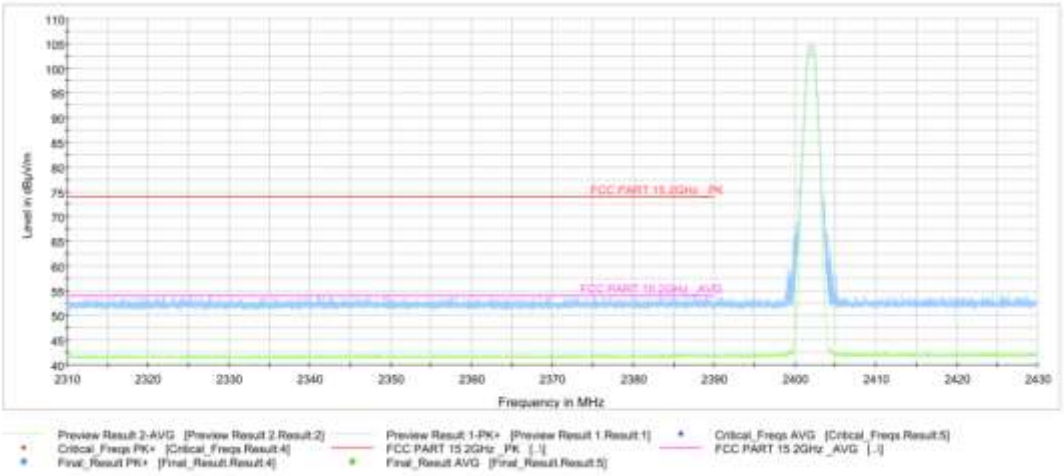



**Fig.1. Frequency Band Edges: GFSK, Channel 0, 2.31 GHz – 2.43GHz**

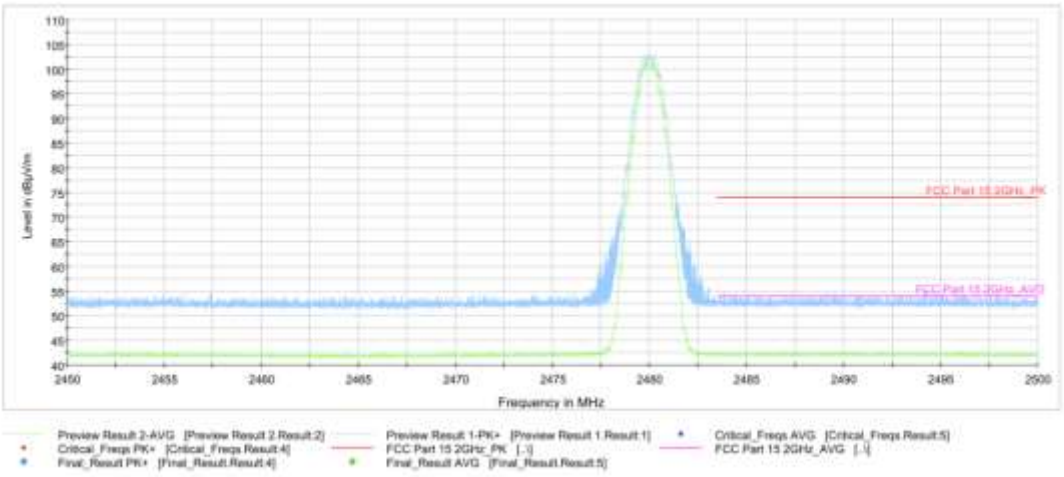



**Fig.2. Frequency Band Edges: GFSK, Channel 78, 2.45 GHz - 2.50GHz**

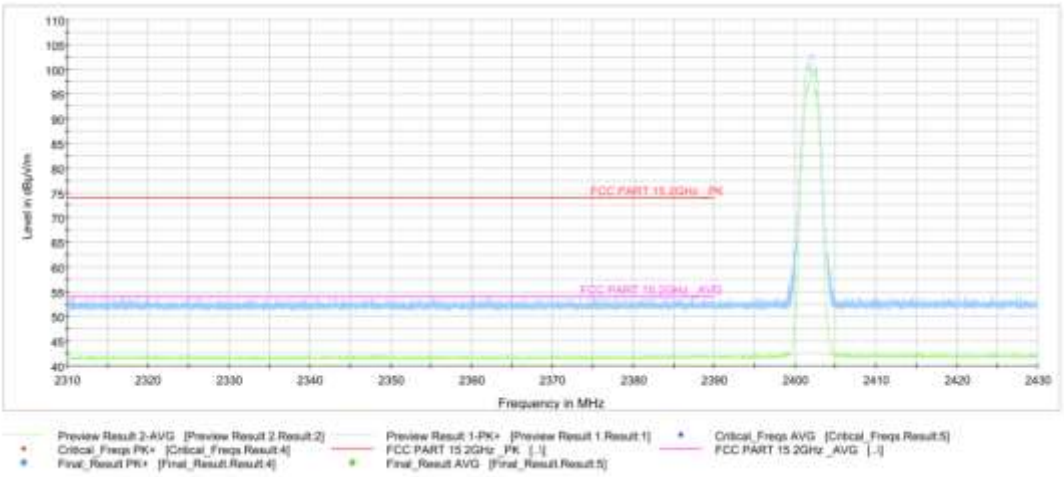



**Fig.3. Frequency Band Edges: π/4 DQPSK, Channel 0, H2.31 GHz - 2.43GHz**

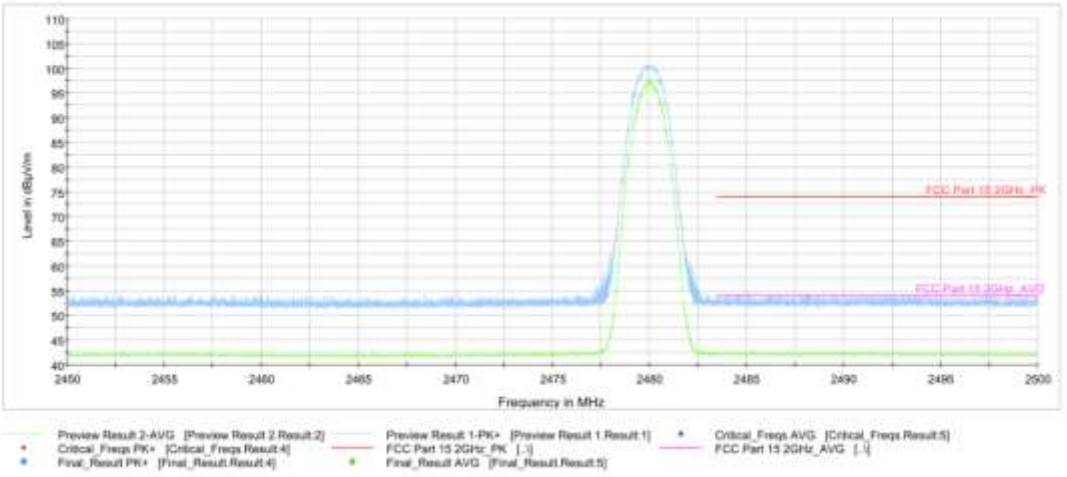



**Fig.4. Frequency Band Edges: π/4 DQPSK, Channel 78, 2.45 GHz - 2.50GHz**

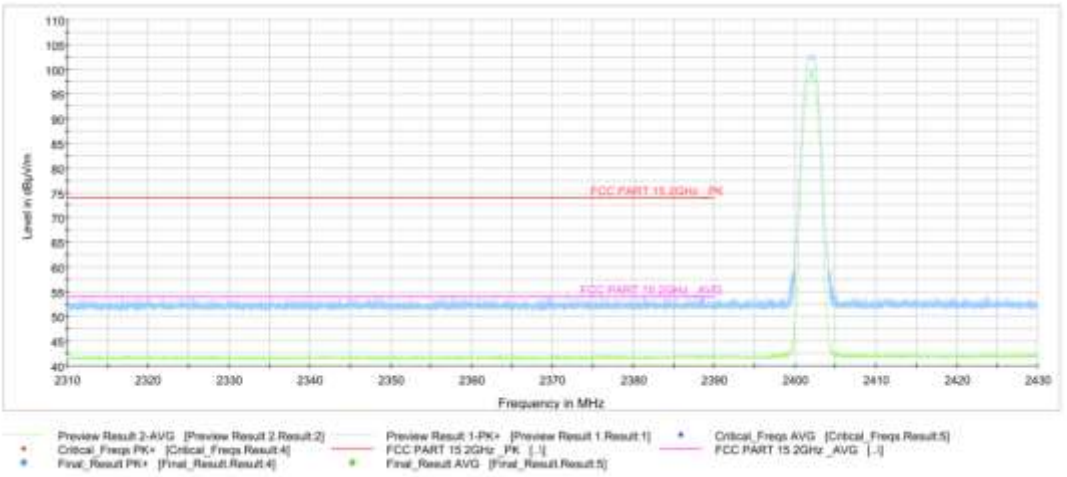



**Fig.5. Frequency Band Edges: 8DPSK, Channel 0, 2.31 GHz - 2.43GHz**

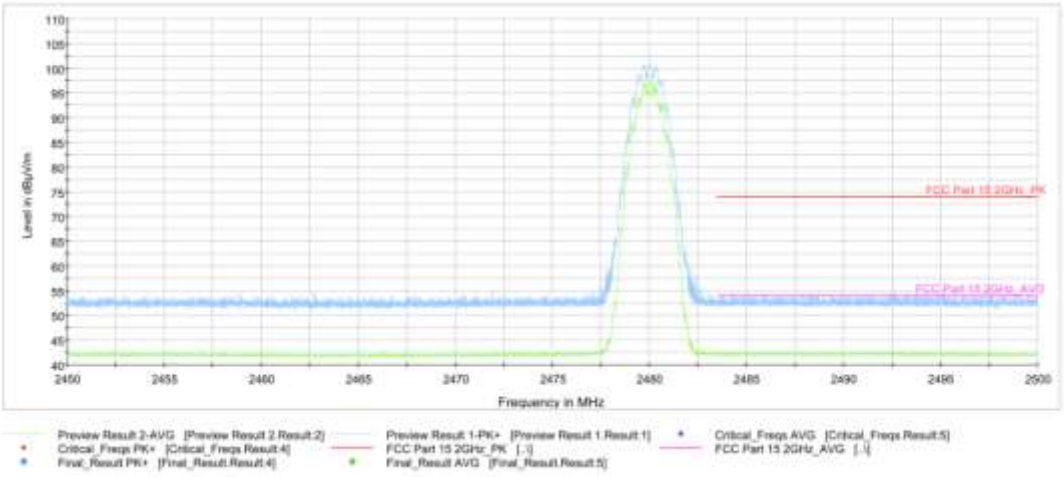



**Fig.6. Frequency Band Edges: 8DPSK, Channel 78, 2.45 GHz - 2.50GHz**

## 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.

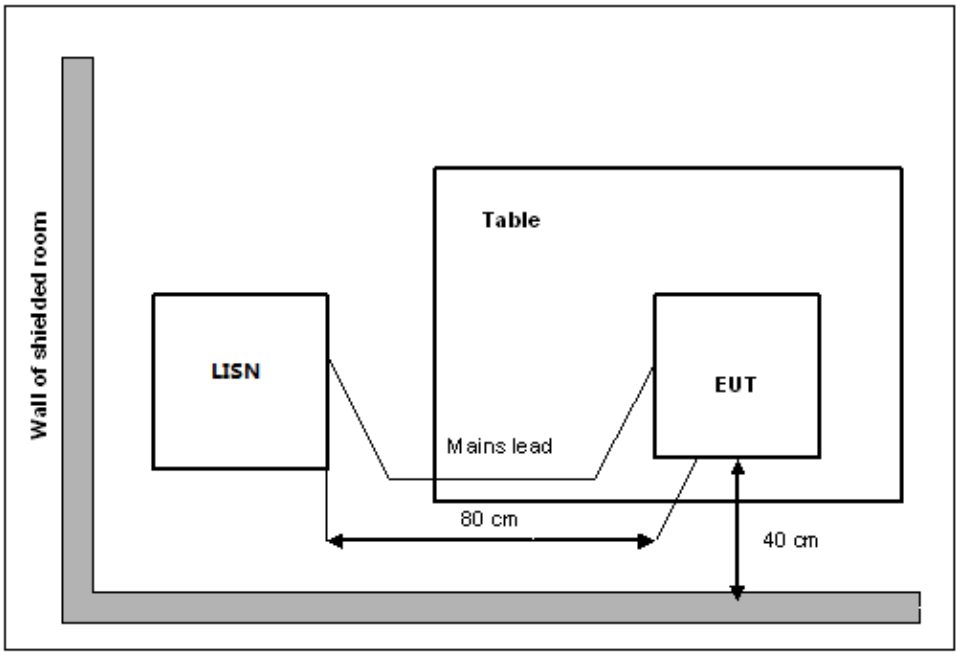
The measurement bandwidth is:

| 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, π/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 (dBμV) | Result (dBμV) | | Conclusion |
|---|---|---|---|---|
| | | With charger | | |
| | | bluetooth | Idle | |
| 0.15 to 0.5 | 66 to 56 | Fig.C.2.1 | Fig.C.2.2 | P |
| 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 (dBμV) | Result (dBμV) | | Conclusion |
|---|---|---|---|---|
| | | With charger | | |
| | | bluetooth | Idle | |
| 0.15 to 0.5 | 56 to 46 | Fig.C.2.1 | Fig.C.2.2 | P |
| 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**

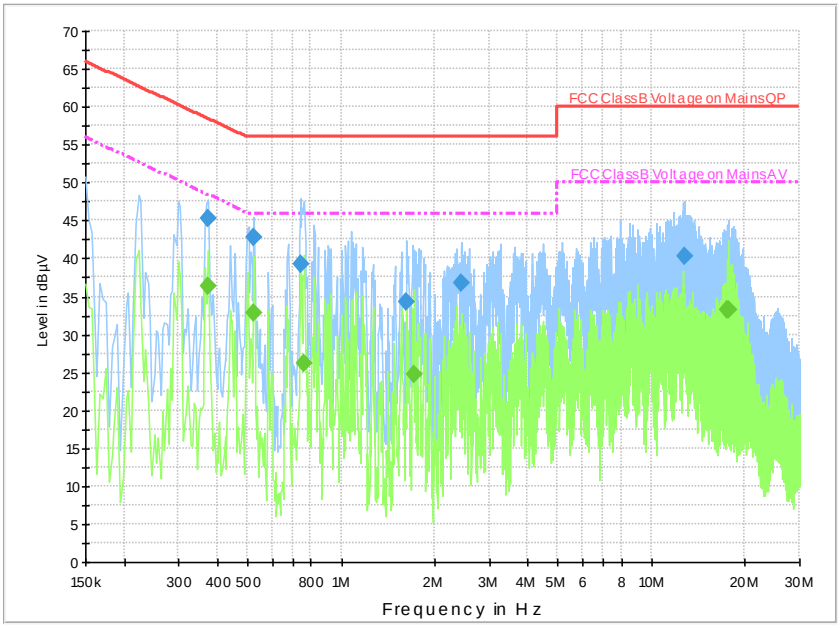



**Fig.C.2.1 AC Power line Conducted Emission- Bluetooth**

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 |

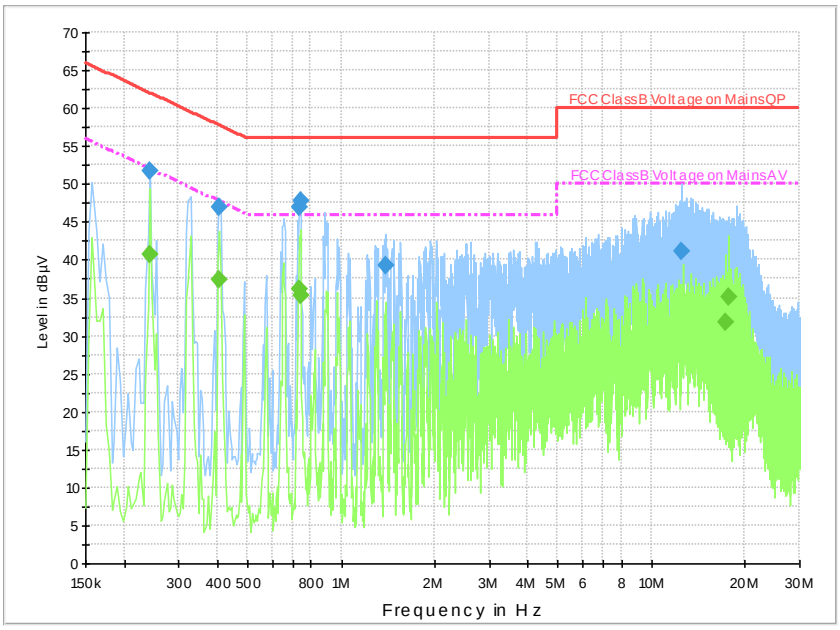



**Fig.C.2.2 AC Power line Conducted Emission-Idle**

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*****