# FCC Test Report

| | |
|---|---|
| **Application No.:** | DNT2505190383R5222-07470 |
| **Applicant:** | Shenzhen JiaYuXiang Acoustics Electronic Co.,Ltd |
| **Address of Applicant:** | Floor 2-5, Building 7, Houhai Industrial Park, Liyuhe Industrial Zone,Loucun Community,Xinhu Street, Guangming District, Shenzhen City ,China |
| **EUT Description:** | Wireless microphone |
| **Model No.:** | U50, U60 |
| **FCC ID:** | 2BC75-U50 |
| **Power Supply:** | Input:DC 5V & DC 3.7V From Battery |
| **Trade Mark:** | / |
| **Standards:** | 47 CFR FCC Part 2, Subpart J<br>47 CFR Part 15, Subpart C<br>ANSI C63.10: 2013<br>ETSI EN 300 422-1 V2.2.1 (2021-11) |
| **Date of Receipt:** | 2025/05/20 |
| **Date of Test:** | 2025/05/23 to 2025/07/04 |
| **Date of Issue:** | 2025/07/04 |
| **Test Result:** | **PASS** |

**Prepared By:** Wayne.Lin (Testing Engineer)

**Reviewed By:** Pencils.Chen (Project Engineer)

**Approved By:** Steve Zhan (Manager)

Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

**Dongguan DN Testing Co., Ltd.**

Add: No. 1, West Fourth Street, Xingfa South Road, Wusha Community, Chang 'an Town, Dongguan City, Guangdong P.R.China

Web: www.dn-testing.com Tel:+86-769-88087383 E-mail: service@dn-testing.com

**Report Revise Record**

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|---|---|---|---|---|
| V2.0 | / | July.04, 2025 | Valid | Original Report |

# 1 Test Summary

| Test Item | Test Requirement | Test Method | Test Result | Result |
|---|---|---|---|---|
| Maximum Radiated Power | 15.236(d) | ANSI C63.10 :2013 | Clause 3.2 | PASS |
| Occupied Bandwidth | 15.236(f)(1) | ANSI C63.10 :2013 | Clause 3.3 | PASS |
| Emissions within the band | 15.236(g)(1) | ETSI EN 300 422-1 V2.2.1 Section 4.2.4.2.2 | Clause 3.4 | PASS |
| Spurious Emissions | 15.236(g)(4) | ETSI EN 300 422-1 V2.2.1 Section 4.2.4.1.2 | Clause 3.5 | PASS |
| Frequency Stability | 15.236(f)(1)(iii) | 15.236(f)(1)(iii) | Clause 3.6 | PASS |
| AC Power Line Conducted Emissions | 15.207 | ANSI C63.10 :2013 | Clause 3.7 | PASS |

Note:
1. “N/A” denotes test is not applicable in this test report.

# Contents

# 2 General Information

## 2.1 Test Location

| | |
|---|---|
| Company: | Dongguan DN Testing Co., Ltd |
| Address: | No. 1, West Fourth Street, South Xinfa Road, Wusha Liwu, Chang ' an Town, Dongguan City, Guangdong P.R.China |
| Test engineer: | Wayne Lin |

## 2.2 General Description of EUT

| | |
|---|---|
| Manufacturer: | Shenzhen JiaYuXiang Acoustics Electronic Co.,Ltd |
| Address of Manufacturer: | Floor 2-5, Building 7, Houhai Industrial Park, Liyuhe Industrial Zone,Loucun Community,Xinhu Street, Guangming District, Shenzhen City ,China |
| EUT Description: | Wireless microphone |
| Test Model No.: | U50 |
| Additional Model(s): | U60 |
| Chip Type: | KT0641 |
| Serial Number | PR2505190384R5221 |
| Power Supply | Input:DC 5V & DC 3.7V From Battery |
| Trade Mark: | N/A |
| Hardware Version: | V1.0 |
| Software Version: | V1.0 |
| Operation Frequency: | 658.81MHz-662.33MHz |
| Declared Channel Bandwidth: | 75KHz |
| Type of Modulation: | FSK |
| Sample Type: | ☒ Portable Device, ☐ Module, ☐ Mobile Device |
| Antenna Type: | ☐ External, ☒ Integrated |
| Antenna Ports | ☒ Ant 1, ☐ Ant 2, ☐ Ant 3 |
| Antenna Gain*: | ☒ Provided by applicant |
| | -1.26dBi |
| RF Cable*: | ☒ Provided by applicant |
| | 0.5dB(0.6~1GHz); 0.8dB(1.4~2GHz); 1.0dB(2.1~2.7GHz); 1.5dB(3~4GHz); 1.8dB(4.4~6GHz); |

Remark:

*All models are just appearance colors different, motherboard, PCB circuit board, chip, electronic components is all the same.

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

## 2.3 Channel List

| Operation Frequency of each channel | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel** | **Frequency** | **Channel** | **Frequency** | **Channel** | **Frequency** | **Channel** | **Frequency** |
| 1 | 658.81MHz | 2 | 658.93MHz | 3 | 659.23MHz | 4 | 661.73MHz |
| 5 | 662.33MHz | | | | | | |

## 2.4 Test Environment and Mode

| **Operating Environment:** | |
|---|---|
| Temperature: | -20~50 ℃ |
| Humidity: | 45~56 % RH |
| Atmospheric Pressure: | 101.0~101.30 KPa |
| **Test mode:** | |
| Transmitting mode: | Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate. |

## 2.5 Power Setting of Test Software

| Software Name | N/A | | |
|---|---|---|---|
| Frequency(MHz) | 658.81 | 659.23 | 662.33 |
| Setting | Default | Default | Default |

## 2.6 Description of Support Units

The EUT has been tested independent unit.

## 2.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

**Lab A:**

**• FCC, USA**

Designation Number: CN1348

**• A2LA (Certificate No. 7050.01)**

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

**• Innovation, Science and Economic Development Canada**

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.

IC#: 30755.

## 2.8 Measurement Uncertainty (95% confidence levels, k=2)

| No. | Item | Measurement Uncertainty |
|---|---|---|
| 1 | Occupied Bandwidth | ±0.0196% |
| 2 | Maximum Conducted Output Power | ±0.686 dB |

| No. | Item | Measurement Uncertainty |
|---|---|---|
| 1 | Conduction Emission | ± 3.0dB (150kHz to 30MHz) |
| 2 | Radiated Emission | ± 4.8dB (Below 1GHz) |
| | | ± 4.8dB (1GHz to 6GHz) |
| | | ± 4.5dB (6GHz to 18GHz) |
| | | ± 5.02dB (Above 18GHz) |

## 2.9 Equipment List

| For Connect EUT Antenna Terminal Test | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Serial Number | Cal date | Due date |
| Signal Generator | Keysight | N5181A-6G | MY48180415 | 2024-10-23 | 2025-10-22 |
| Signal Generator | Keysight | N5182B | MY57300617 | 2024-10-23 | 2025-10-22 |
| Power supply | Keysight | E3640A | ZB2022656 | 2024-10-23 | 2025-10-22 |
| Radio Communication Tester | R&S | CMW500 | 105082 | 2024-10-23 | 2025-10-22 |
| Spectrum Analyzer | Aglient | N9010A | MY52220200 | 2024-10-23 | 2025-10-22 |
| BT/WIFI Test Software | Tonscend | JS1120 V3.1.83 | NA | NA | NA |
| RF Control Unit | Tonscend | JS0806-2 | 22F8060581 | NA | NA |
| Power Sensor | Anritsu | ML2495A | 2129005 | 2024-10-23 | 2025-10-22 |
| Pulse Power Sensor | Anritsu | MA2411B | 1911397 | 2024-10-23 | 2025-10-22 |
| temperature and humidity box | SCOTEK | SCD-C40-80PRO | 6866682020008 | 2024-10-23 | 2025-10-22 |
| RF Cable | ETS-LINDGREN | RFC-NMS-100-NMS-350-IN | NA | 2024-10-23 | 2025-10-22 |

| Test Equipment for Conducted Emission | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Serial Number | Cal Date | Due Date |
| Receiver | R&S | ESCI3 | 101152 | 2024-10-23 | 2025-10-22 |
| LISN | R&S | ENV216 | 102874 | 2024-10-23 | 2025-10-22 |
| ISN | R&S | ENY81-CA6 | 1309.8590.03 | 2024-10-23 | 2025-10-22 |
| RF Cable | ETS-LINDGREN | Cable-CE TS01 | / | 2024-10-23 | 2025-10-22 |

| Test Equipment for Radiated Emission(30MHz-1000MHz) | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Serial Number | Cal Date | Due Date |
| Receiver | R&S | ESR7 | 102497 | 2024-10-23 | 2025-10-22 |
| Test Software | ETS-LINDGREN | TiLE-FULL | NA | NA | NA |
| RF Cable | ETS-LINDGREN | RE Cable-TS01 | NA | 2024-10-23 | 2025-10-22 |
| Log periodic antenna | ETS-LINDGREN | VULB 9168 | 01475 | 2022-11-28 | 2025-11-27 |

| | | | | | |
|---|---|---|---|---|---|
| Pre-amplifier | Schwarzbeck | BBV9743B | 00423 | 2024-10-23 | 2025-10-22 |
| Attenuator 1 | Shanghai Huaxiang | TS2-6-18-A | 22061803 | 2025-5-6 | 2026-5-5 |
| Attenuator 2 | Shanghai Huaxiang | TS2-6-6-A | 230927163 | 2025-5-6 | 2026-5-5 |

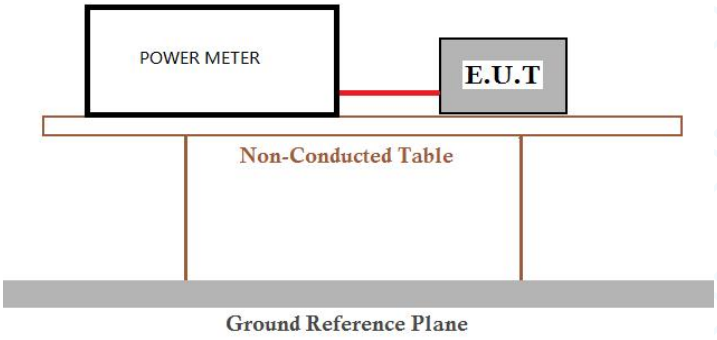
| Test Equipment for Radiated Emission(Above 1000MHz) | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Serial Number | Cal Date | Due Date |
| Frequency analyser | Keysight | N9010A | MY52221458 | 2024-10-23 | 2025-10-22 |
| RF Cable | ETS-LINDGREN | RE Cable-TS02 | NA | 2024-10-23 | 2025-10-22 |
| Horn Antenna | ETS-LINDGREN | 3117 | 00252567 | 2022-11-28 | 2025-11-27 |
| Double ridged waveguide antenna | ETS-LINDGREN | 3116C | 00251780 | 2022-11-28 | 2025-11-27 |
| Test Software | ETS-LINDGREN | TiLE-FULL | NA | NA | NA |
| Pre-amplifier | ETS-LINDGREN | 3117-PA | 252567 | 2024-10-23 | 2025-10-22 |
| Pre-amplifier | ETS-LINDGREN | 3116C-PA | 251780 | 2024-10-23 | 2025-10-22 |

## 2.10 Assistant equipment used for test

| Code | Equipment | Manufacturer | Model No. | Equipment No. |
|---|---|---|---|---|
| 1 | / | | | |

# 3 Test results and Measurement Data

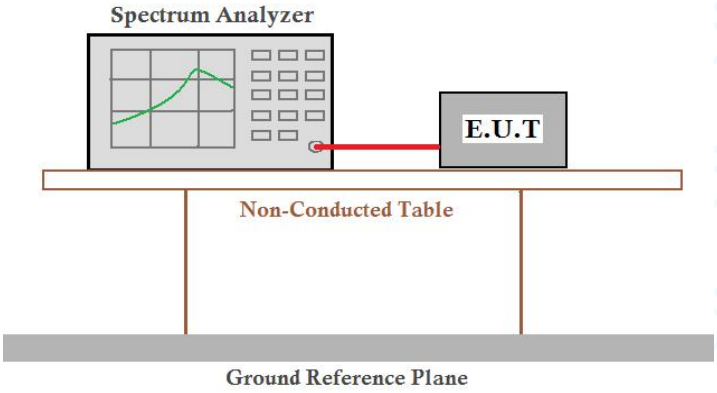
## 3.1 Maximum Radiated Power

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.236(d) |
| Test Method: | ANSI C63.10: 2013 Section 11.9.1.3 |
| Test Setup: |  |
| Instruments Used: | Refer to section 2.9 for details |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Through Pre-scan, find the the worst case of FSK |
| Limit: | In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW(13.01dBm) EIRP. |
| Test Results: | Pass |

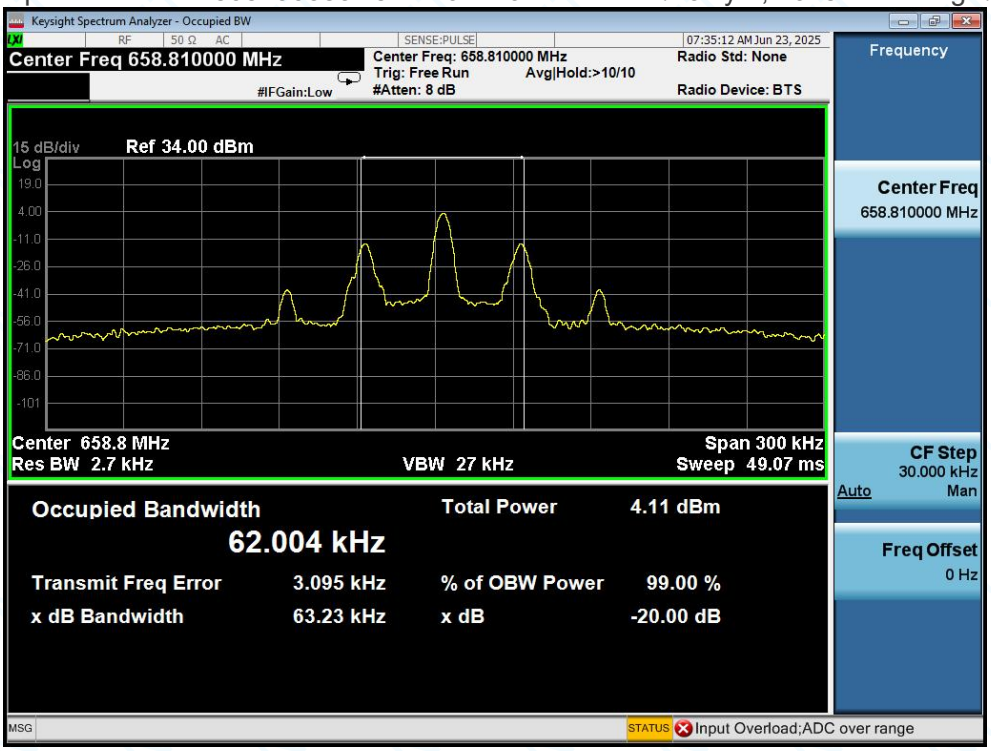
**Test Data**

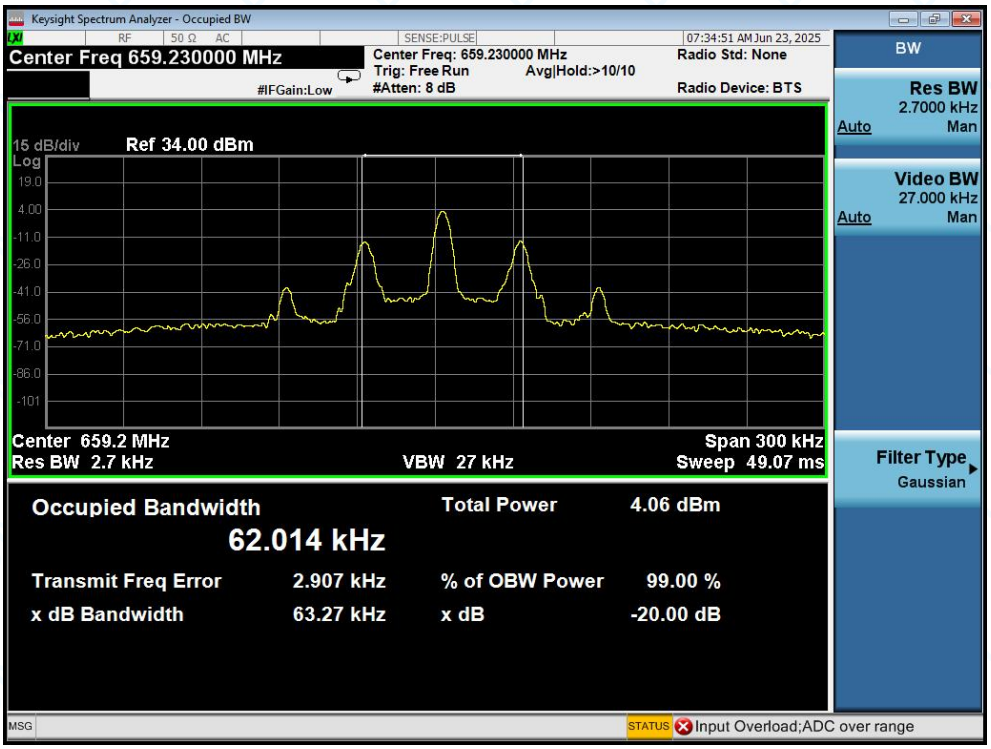
| Test Mode | Antenna | Freq(MHz) | Conducted Power [dBm] | Gain (dBi) | EIRP | Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|
| FSK | Ant1 | 658.81 | -18.35 | -1.26 | -19.61 | ≤13.01 | PASS |
| | | 659.23 | -19.93 | -1.26 | -21.19 | ≤13.01 | PASS |
| | | 662.33 | -19.94 | -1.26 | -21.2 | ≤13.01 | PASS |

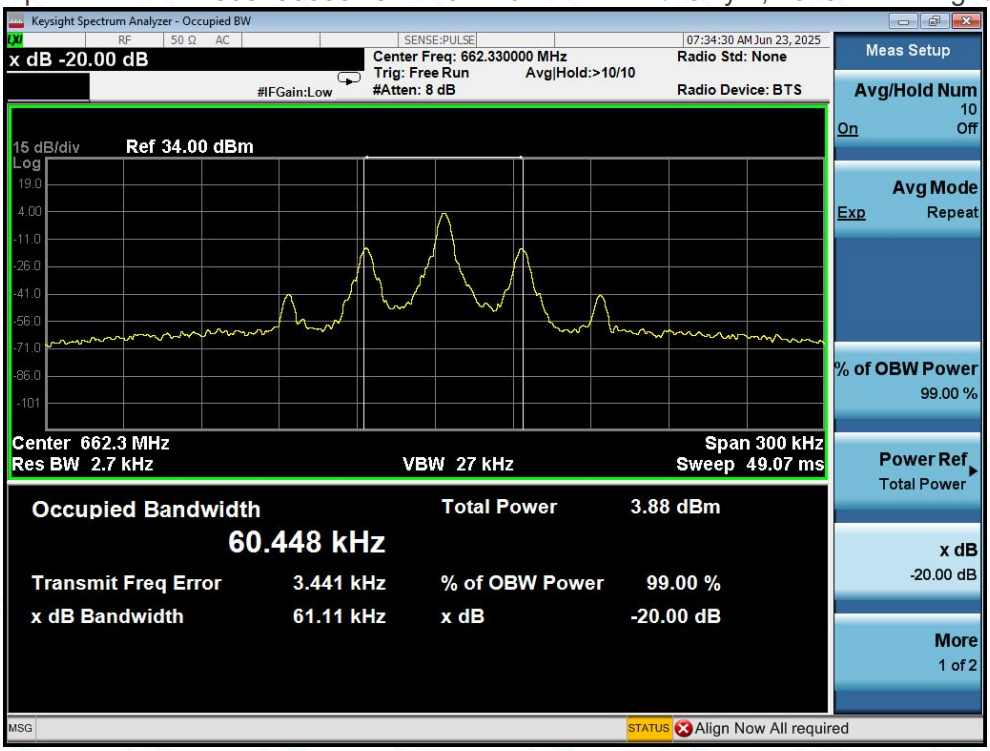
## 3.2 Occupied Bandwidth

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.236(f)(1) |
| Test Method: | ANSI C63.10 :2013 Section 6.9.3 |
| Test Setup: |  |
| Test Instruments: | Refer to section 2.9 for details |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Through Pre-scan, find the the worst case of FSK |
| Limit: | 200KHz |
| Test Results: | Pass |

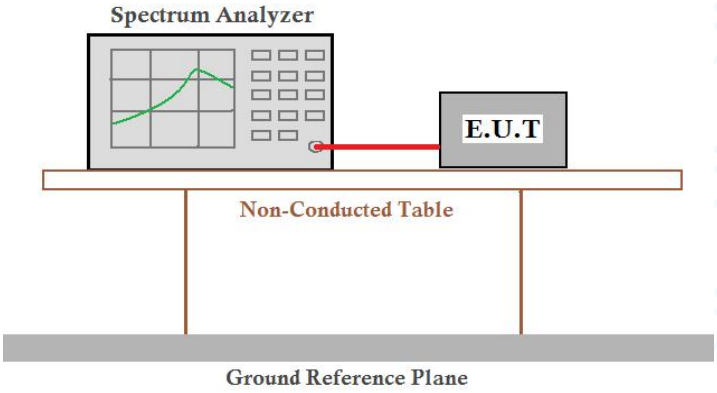
| Frequency(MHz) | OCB(KHZ) | Limit(KHz) | Verdict |
|---|---|---|---|
| 658.81 | 62.004 | 200 | PASS |
| 659.23 | 62.014 | 200 | PASS |
| 662.33 | 60.448 | 200 | PASS |


Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:PULSE
07:35:12 AM Jun 23, 2025
Center Freq 658.810000 MHz
Center Freq: 658.810000 MHz
Trig: Free Run Avg|Hold:>10/10
#IFGain:Low #Atten: 8 dB
Radio Std: None
Radio Device: BTS
Frequency
15 dB/div Ref 34.00 dBm
Log
19.0
4.00
-11.0
-26.0
-41.0
-56.0
-71.0
-86.0
-101
Center 658.8 MHz
Res BW 2.7 kHz
VBW 27 kHz
Span 300 kHz
Sweep 49.07 ms
Occupied Bandwidth
62.004 kHz
Total Power 4.11 dBm
Transmit Freq Error 3.095 kHz
% of OBW Power 99.00 %
x dB Bandwidth 63.23 kHz
x dB -20.00 dB
Center Freq
658.810000 MHz
CF Step
30.000 kHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS Input Overload;ADC over range


Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:PULSE
07:34:51 AM Jun 23, 2025
Center Freq 659.230000 MHz
Center Freq: 659.230000 MHz
Trig: Free Run Avg|Hold:>10/10
#IFGain:Low #Atten: 8 dB
Radio Std: None
Radio Device: BTS
BW
15 dB/div Ref 34.00 dBm
Log
19.0
4.00
-11.0
-26.0
-41.0
-56.0
-71.0
-86.0
-101
Center 659.2 MHz
Res BW 2.7 kHz
VBW 27 kHz
Span 300 kHz
Sweep 49.07 ms
Occupied Bandwidth
62.014 kHz
Total Power 4.06 dBm
Transmit Freq Error 2.907 kHz
% of OBW Power 99.00 %
x dB Bandwidth 63.27 kHz
x dB -20.00 dB
Res BW
2.7000 kHz
Auto Man
Video BW
27.000 kHz
Auto Man
Filter Type
Gaussian
MSG
STATUS Input Overload;ADC over range

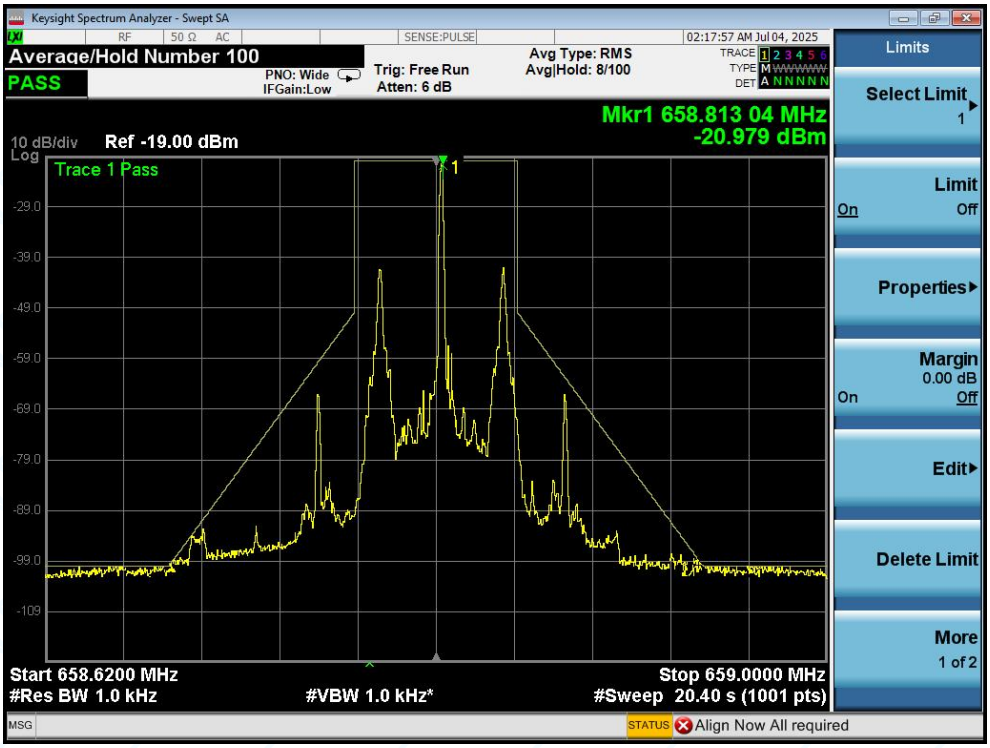

Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:PULSE
07:34:30 AM Jun 23, 2025
x dB -20.00 dB
Center Freq: 662.330000 MHz
Trig: Free Run Avg|Hold:>10/10
#IFGain:Low #Atten: 8 dB
Radio Std: None
Radio Device: BTS
Meas Setup
Avg/Hold Num
10
On Off
Avg Mode
Exp Repeat
% of OBW Power
99.00 %
Power Ref
Total Power
x dB
-20.00 dB
More
1 of 2
15 dB/div
Ref 34.00 dBm
Log
19.0
4.00
-11.0
-26.0
-41.0
-56.0
-71.0
-86.0
-101
Center 662.3 MHz
Res BW 2.7 kHz
VBW 27 kHz
Span 300 kHz
Sweep 49.07 ms
Occupied Bandwidth
60.448 kHz
Total Power 3.88 dBm
Transmit Freq Error 3.441 kHz
% of OBW Power 99.00 %
x dB Bandwidth 61.11 kHz
x dB -20.00 dB
MSG
STATUS
Align Now All required

## 3.3 Emissions within the band

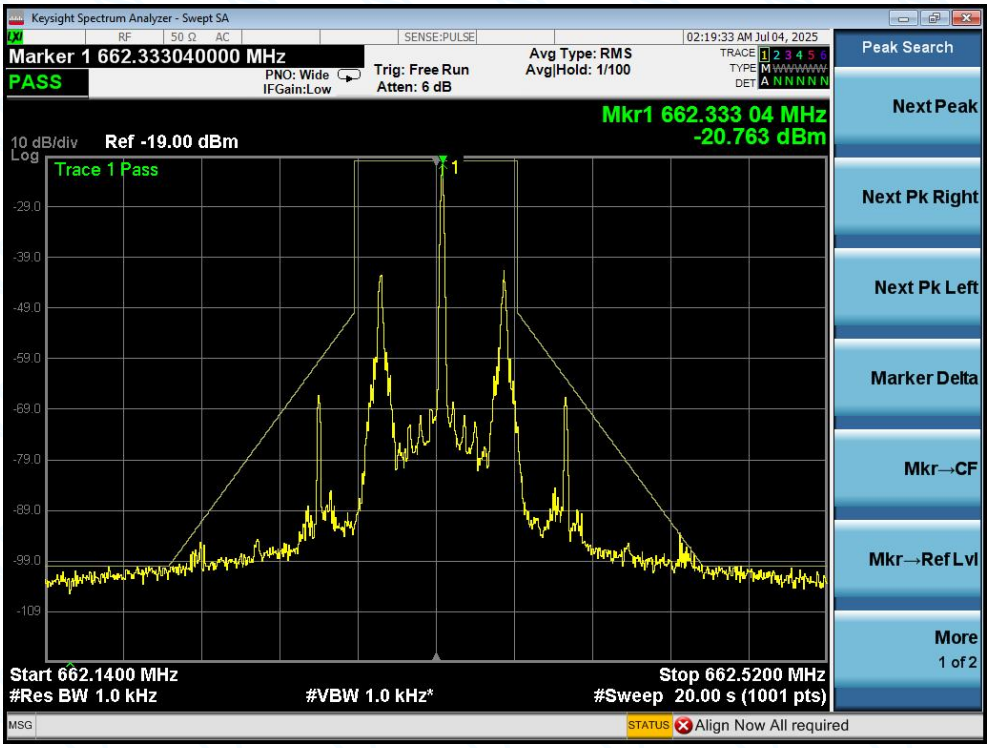
| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.236(g) |
| Test Method: | ETSI EN 300 422-1 V2.2.1 Section 4.2.4.2.2 |
| Test Setup: |  |
| Test Instruments: | Refer to section 2.9 for details |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Through Pre-scan, find the the worst case of FSK |
| Limit: |  <br>**Figure 2: Transmit spectral power mask for equipment employing digital modulation, except WMAS, RBW = 1 kHz** |
| Test Results: | Pass |

**Test data**

**658.81MHz**




**662.33MHz**



## 3.4 Spurious Emissions

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.236(g) |
| Test Method: | ETSI EN 300 422-1 V2.2.1 Section 4.2.4.1.2 |
| Measurement Distance: | 3m |
| Limit: | |

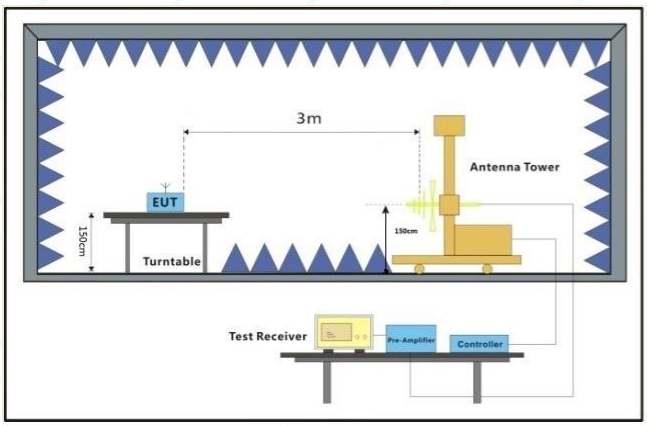
**Table 4: Transmitter unwanted emission limits (from ERC Recommendation 74-01 [2])**

| Frequency range | Maximum power | RBW |
|---|---|---|
| 9 kHz - 150 kHz | -36 dBm | 1 kHz |
| 150 kHz - 30 MHz | -36 dBm | 10 kHz |
| 30 MHz - 1 GHz | -36 dBm | $F_c$ + 2,5 B ≤ f ≤ $f_c$ + 4 B: 1 kHz<br>$F_c$ + 4 B < f ≤ $f_c$ + 10 B: 10 kHz<br>f > $f_c$ + 10 B: 100 kHz<br>f < $f_c$ - 10 B: 100 kHz<br>$f_c$ - 10 B ≤ f < $f_c$ - 4 B: 10 kHz<br>$f_c$ - 4 B ≤ f ≤ $f_c$ - 2,5 B: 1 kHz |
| except: | | |
| 47 MHz - 74 MHz<br>87,5 MHz - 118 MHz | -54 dBm | 100 kHz |
| 174 MHz - 230 MHz<br>470 MHz - 862 MHz | -54 dBm | $F_c$ + 2,5 B ≤ f ≤ $f_c$ + 4 B: 1 kHz<br>$F_c$ + 4 B < f ≤ $f_c$ + 10 B: 10 kHz<br>f > $f_c$ + 10 B: 100 kHz<br>f < $f_c$ - 10 B: 100 kHz<br>$f_c$ - 10 B ≤ f < $f_c$ - 4 B: 10 kHz<br>$f_c$ - 4 B ≤ f ≤ $f_c$ - 2,5 B: 1 kHz |
| | | |
| 1 GHz < f ≤ $F_{upper}$ | -30 dBm | $F_c$ + 2,5 B ≤ f ≤ $f_c$ + 10 B: 30 kHz<br>$F_c$ + 10 B < f ≤ $f_c$ + 12 B: 300 kHz<br>f > $f_c$ + 12 B: 1 MHz<br>f < $f_c$ - 12 B: 1 MHz<br>$f_c$ - 12 B ≤ f < $f_c$ - 10 B: 300 kHz<br>$f_c$ - 10 B ≤ f ≤ $f_c$ - 2,5 B: 30 kHz |

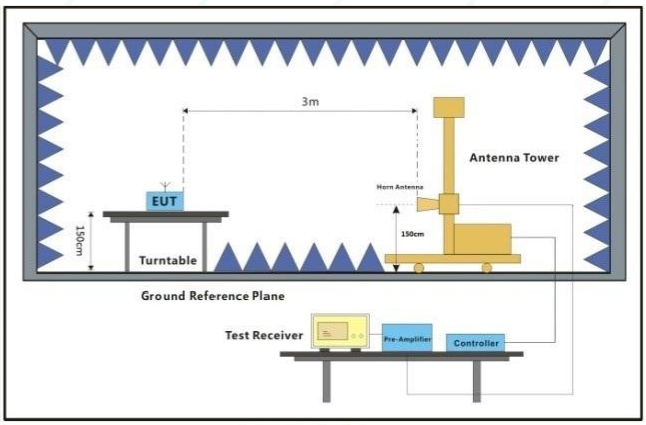
### 3.4.1 E.U.T. Operation

| Operating Environment: | | | | | |
|---|---|---|---|---|---|
| Temperature: | 22.5°C | Humidity: | 47% RH | Atmospheric Pressure: | 101.0 kPa |
| Test mode: | | | | | |
| Test mode: Through Pre-scan, find the the worst case of FSK | | | | | |

### 3.4.2 Test Setup Diagram




30MHz-1GHz




Above 1GHz

### 3.4.3 Measurement Procedure and Data

1. The measurement procedure follows the clause 5.4.4 of the EN 300 422-1 V2.2.1
2. The EUT was placed on a turntable with 1.5m height.
3. The test distance between the receiving antenna and the EUT is 3meter below 1GHz frequency range, and 3 meter which is in far field test condition for measured frequency above 1GHz, while the receiving (test) antenna scanning from 1m to 4m height in an OATS or SAR (or in a FAR the height scan is omitted).
4. Set EUT in continuous transmitting with maximum output power.
5. The table was rotated from 0 to 360 degree to search the highest radiated emission.
6. Repeating step 2 and 5 for each polarization and channel to find the worst emission level.
7.The results obtained are compared to the limits in order to prove compliance with the requirement.

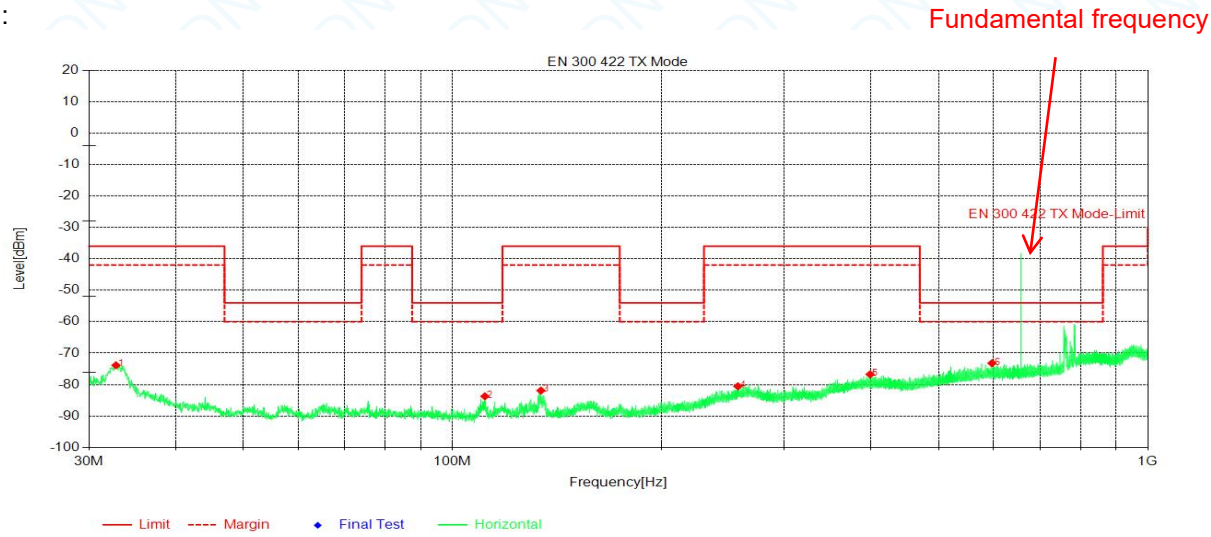
Remark:General,substitution method is used for calibration. For test sites with a fixed setup of the measurement antenna(s) and a reproducible positioning of the UUT, correction values from a verified site calibration may be used alternatively. So using Pre-Test Site Calibration Correction Factor to Determine EUT Emission Power. The system correction factor for each frequency in dB using the following equation:
Correction Factor [CF] = Pref [dBm] – Prec [dBm]

**Test Data**

**For 30-1000MHz**

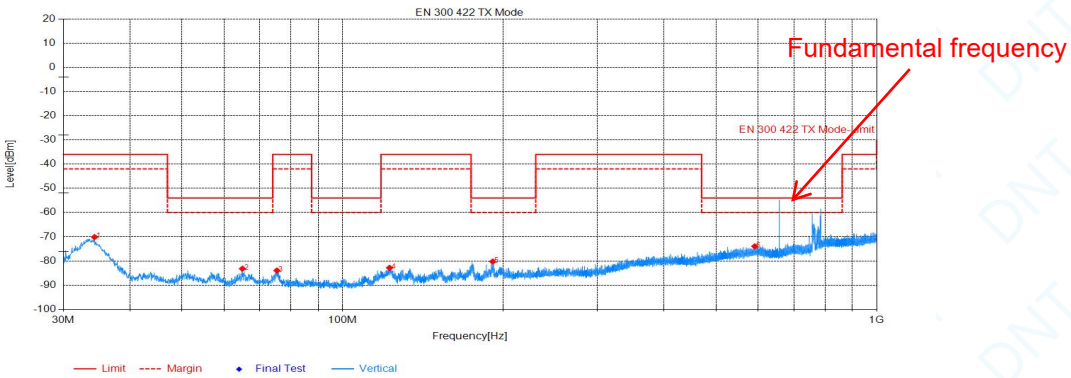
**658.8MHz**

Horizontal:




| NO. | Freq. [MHz] | Reading Level [dBm] | Correct Factor [dB/m] | Result Level [dBm] | Limit [dBm] | Margin [dB] | Height [cm] | Angle [°] |
|---|---|---|---|---|---|---|---|---|
| 1 | 32.81 | -74.61 | 0.74 | -73.87 | -36.00 | 37.87 | 150 | 360 |
| 2 | 111.34 | -75.78 | -7.96 | -83.74 | -54.00 | 29.74 | 150 | 285 |
| 3 | 134.04 | -74.64 | -7.27 | -81.91 | -36.00 | 45.91 | 150 | 85 |
| 4 | 257.38 | -79.80 | -0.76 | -80.56 | -36.00 | 44.56 | 150 | 306 |
| 5 | 398.67 | -79.34 | 2.58 | -76.76 | -36.00 | 40.76 | 150 | 347 |
| 6 | 596.85 | -79.57 | 6.36 | -73.21 | -54.00 | 19.21 | 150 | 162 |

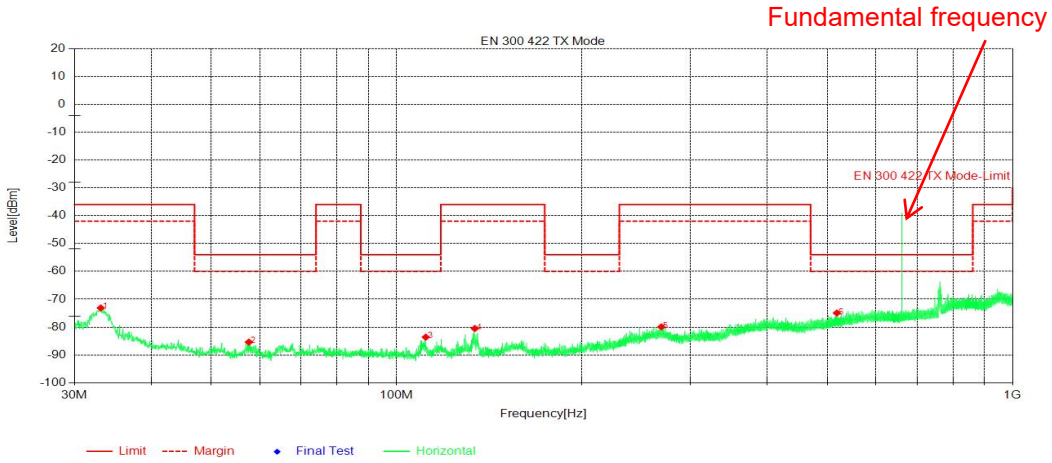
Vertical:




| NO. | Freq. [MHz] | Reading Level [dBm] | Correct Factor [dB/m] | Result Level [dBm] | Limit [dBm] | Margin [dB] | Height [cm] | Angle [°] |
|---|---|---|---|---|---|---|---|---|
| 1 | 34.32 | -69.11 | -1.05 | -70.16 | -36.00 | 34.16 | 150 | 91 |
| 2 | 64.92 | -76.46 | -6.77 | -83.23 | -54.00 | 29.23 | 150 | 153 |
| 3 | 75.35 | -76.77 | -7.21 | -83.98 | -36.00 | 47.98 | 150 | 346 |
| 4 | 122.45 | -76.09 | -6.79 | -82.88 | -36.00 | 46.88 | 150 | 302 |
| 5 | 191.03 | -75.69 | -4.60 | -80.29 | -54.00 | 26.29 | 150 | 279 |
| 6 | 591.12 | -80.32 | 6.33 | -73.99 | -54.00 | 19.99 | 150 | 197 |

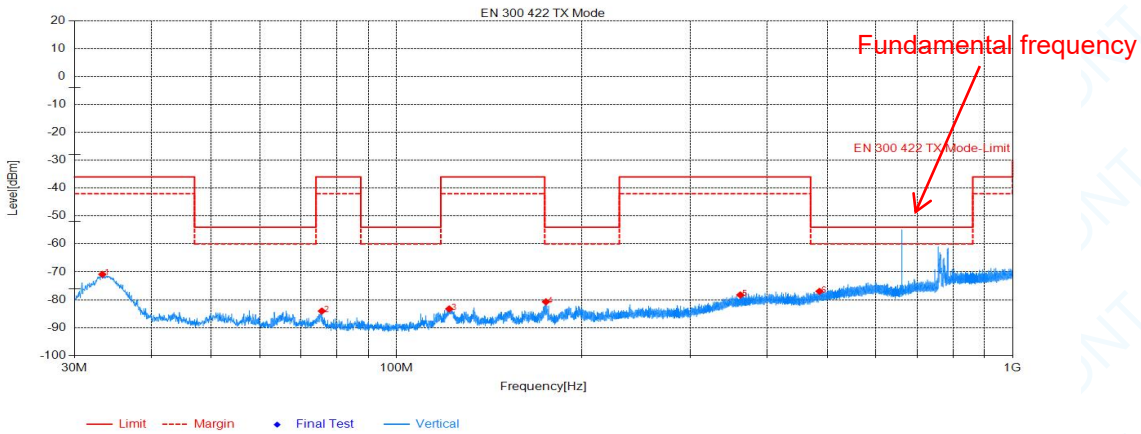
**662.3MHz**

Horizontal:




| NO. | Freq. [MHz] | Reading Level [dBm] | Correct Factor [dB/m] | Result Level [dBm] | Limit [dBm] | Margin [dB] | Height [cm] | Angle [°] |
|---|---|---|---|---|---|---|---|---|
| 1 | 33.10 | -73.62 | 0.47 | -73.15 | -36.00 | 37.15 | 150 | 202 |
| 2 | 57.60 | -77.70 | -7.71 | -85.41 | -54.00 | 31.41 | 150 | 132 |
| 3 | 111.53 | -75.64 | -7.98 | -83.62 | -54.00 | 29.62 | 150 | 321 |
| 4 | 133.99 | -73.25 | -7.28 | -80.53 | -36.00 | 44.53 | 150 | 85 |
| 5 | 269.02 | -79.81 | -0.13 | -79.94 | -36.00 | 43.94 | 150 | 360 |
| 6 | 518.52 | -79.19 | 4.22 | -74.97 | -54.00 | 20.97 | 150 | 360 |

Vertical:

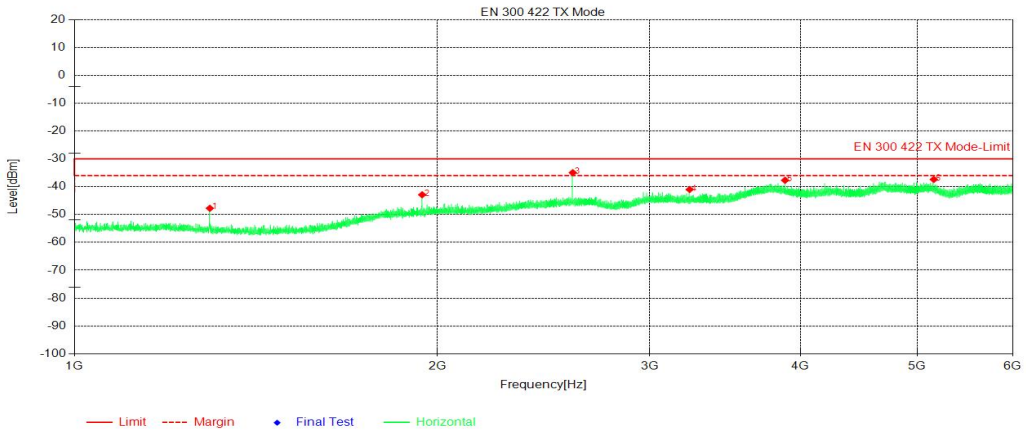



| NO. | Freq. [MHz] | Reading Level [dBm] | Correct Factor [dB/m] | Result Level [dBm] | Limit [dBm] | Margin [dB] | Height [cm] | Angle [°] |
|---|---|---|---|---|---|---|---|---|
| 1 | 33.30 | -70.75 | -0.15 | -70.90 | -36.00 | 34.90 | 150 | 50 |
| 2 | 75.64 | -76.83 | -7.23 | -84.06 | -36.00 | 48.06 | 150 | 50 |
| 3 | 121.77 | -76.48 | -6.82 | -83.30 | -36.00 | 47.30 | 150 | 301 |
| 4 | 174.78 | -75.84 | -4.92 | -80.76 | -54.00 | 26.76 | 150 | 349 |
| 5 | 361.51 | -79.66 | 1.36 | -78.30 | -36.00 | 42.30 | 150 | 50 |
| 6 | 485.83 | -80.41 | 3.41 | -77.00 | -54.00 | 23.00 | 150 | 122 |

**For 1000-12750MHz**

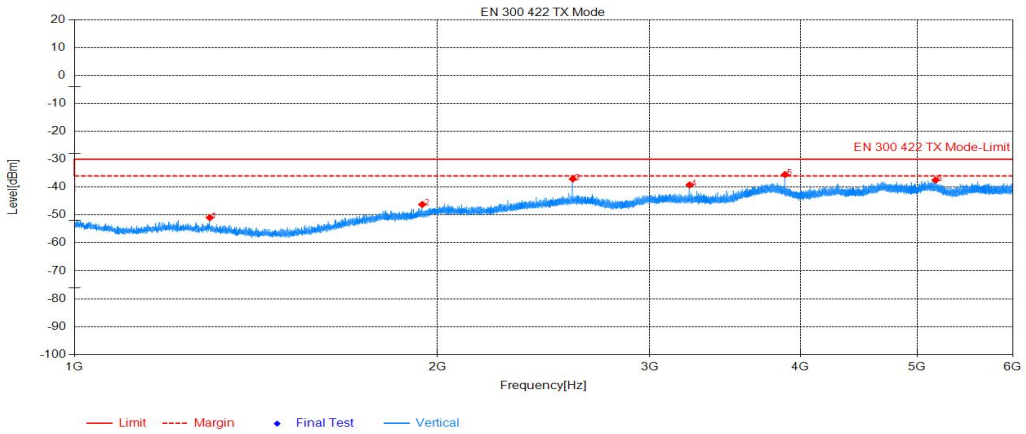
**658.8MHz**

Horizontal:




| NO. | Freq. [MHz] | Reading Level [dBm] | Correct Factor [dB/m] | Result Level [dBm] | Limit [dBm] | Margin [dB] | Height [cm] | Angle [°] |
|---|---|---|---|---|---|---|---|---|
| 1 | 1295.21 | -42.80 | -4.96 | -47.76 | -30.00 | 17.76 | 150 | 327 |
| 2 | 1942.84 | -43.17 | 0.27 | -42.90 | -30.00 | 12.90 | 150 | 44 |
| 3 | 2590.46 | -37.48 | 2.51 | -34.97 | -30.00 | 4.97 | 150 | 327 |
| 4 | 3237.89 | -43.92 | 2.89 | -41.03 | -30.00 | 11.03 | 150 | 183 |
| 5 | 3885.32 | -43.27 | 5.57 | -37.70 | -30.00 | 7.70 | 150 | 20 |
| 6 | 5161.57 | -44.36 | 6.94 | -37.42 | -30.00 | 7.42 | 150 | 114 |

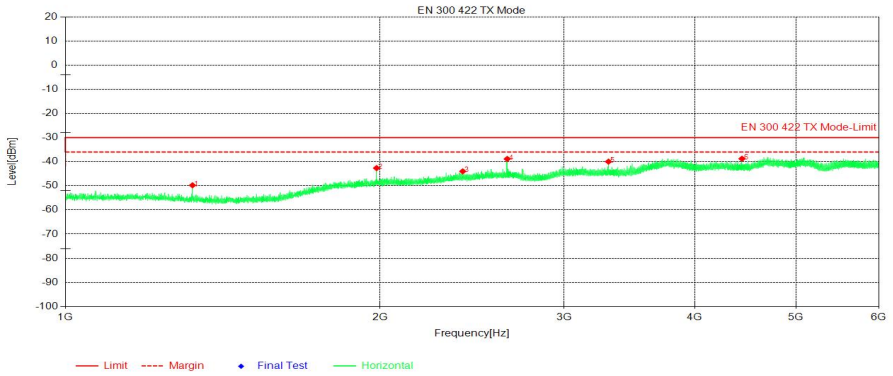
Vertical:




| NO. | Freq. [MHz] | Reading Level [dBm] | Correct Factor [dB/m] | Result Level [dBm] | Limit [dBm] | Margin [dB] | Height [cm] | Angle [°] |
|---|---|---|---|---|---|---|---|---|
| 1 | 1295.01 | -46.45 | -4.48 | -50.93 | -30.00 | 20.93 | 150 | 333 |
| 2 | 1943.04 | -46.03 | -0.20 | -46.23 | -30.00 | 16.23 | 150 | 360 |
| 3 | 2590.66 | -40.29 | 3.21 | -37.08 | -30.00 | 7.08 | 150 | 34 |
| 4 | 3238.09 | -42.27 | 3.05 | -39.22 | -30.00 | 9.22 | 150 | 175 |
| 5 | 3885.72 | -40.98 | 5.47 | -35.51 | -30.00 | 5.51 | 150 | 219 |
| 6 | 5179.57 | -45.29 | 7.82 | -37.47 | -30.00 | 7.47 | 150 | 360 |

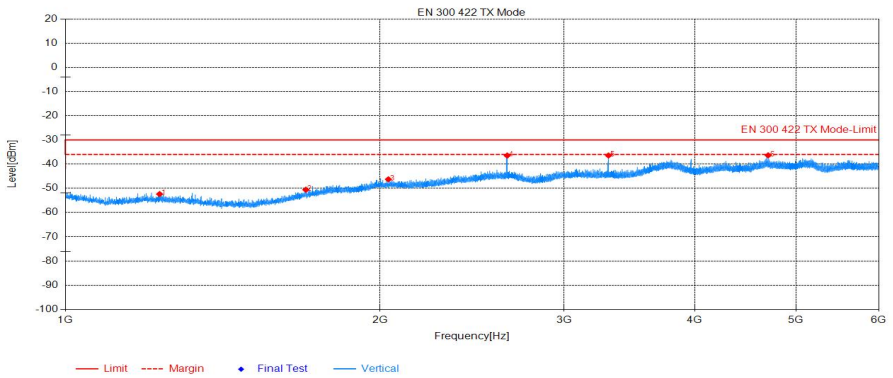
**662.3MHz**

Horizontal:



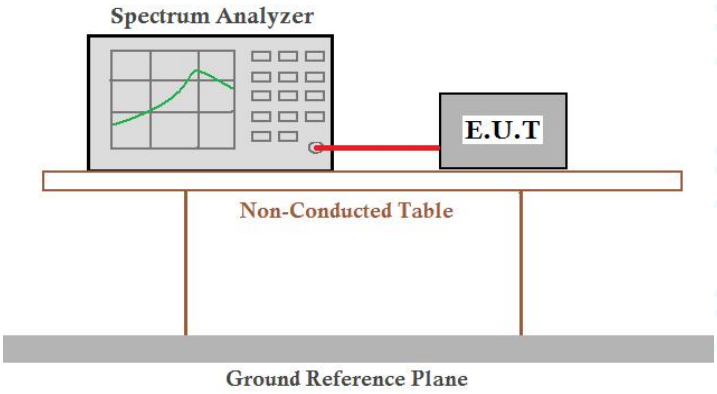

| NO. | Freq. [MHz] | Reading Level [dBm] | Correct Factor [dB/m] | Result Level [dBm] | Limit [dBm] | Margin [dB] | Height [cm] | Angle [°] |
|---|---|---|---|---|---|---|---|---|
| 1 | 1323.41 | -44.63 | -5.16 | -49.79 | -30.00 | 19.79 | 150 | 60 |
| 2 | 1985.24 | -43.05 | 0.39 | -42.66 | -30.00 | 12.66 | 150 | 35 |
| 3 | 2399.86 | -45.63 | 1.63 | -44.00 | -30.00 | 14.00 | 150 | 319 |
| 4 | 2647.07 | -41.17 | 2.29 | -38.88 | -30.00 | 8.88 | 150 | 299 |
| 5 | 3308.49 | -43.10 | 3.13 | -39.97 | -30.00 | 9.97 | 150 | 202 |
| 6 | 4439.94 | -44.71 | 5.93 | -38.78 | -30.00 | 8.78 | 150 | 128 |

Vertical:




| NO. | Freq. [MHz] | Reading Level [dBm] | Correct Factor [dB/m] | Result Level [dBm] | Limit [dBm] | Margin [dB] | Height [cm] | Angle [°] |
|---|---|---|---|---|---|---|---|---|
| 1 | 1230.81 | -48.08 | -4.31 | -52.39 | -30.00 | 22.39 | 150 | 320 |
| 2 | 1698.63 | -47.87 | -2.71 | -50.58 | -30.00 | 20.58 | 150 | 11 |
| 3 | 2037.44 | -46.91 | 0.63 | -46.28 | -30.00 | 16.28 | 150 | 157 |
| 4 | 2647.07 | -39.39 | 2.92 | -36.47 | -30.00 | 6.47 | 150 | 180 |
| 5 | 3308.69 | -39.66 | 3.22 | -36.44 | -30.00 | 6.44 | 150 | 207 |
| 6 | 4703.75 | -43.19 | 6.81 | -36.38 | -30.00 | 6.38 | 150 | 157 |

## 3.5 Frequency Stability

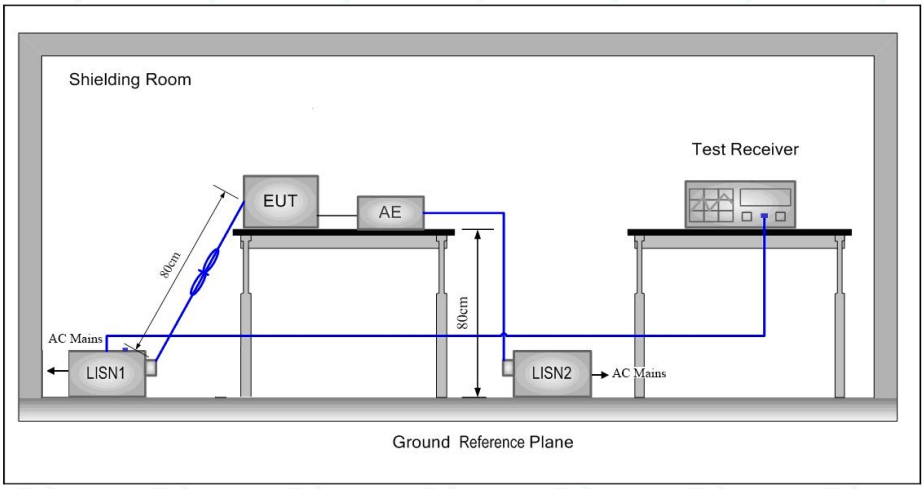
| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.236(f)(1)(iii) |
| Test Method: | 47 CFR Part 15C Section 15.236(f)(1)(iii) |
| Test Setup: |  |
| Test Instruments: | Refer to section 2.9 for details |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Through Pre-scan, find the the worst case of FSK |
| Limit: | The frequency tolerance of the carrier signal shall be maintained within ±0.005% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery. |

Reference Frequency:658.81MHz

| Power supply | Temperature(℃) | Frequency Error（Hz） | FrequencyError (ppm) |
|---|---|---|---|
| DC 3.15V | 25 | 3125 | 5.36 |
| DC 3.7V | 25 | 3163 | 5.43 |
| DC 4.26V | 25 | 3115 | 5.34 |

| Temperature(℃) | Frequency Error（Hz） | FrequencyError (ppm) | Limit(ppm) | Result |
|---|---|---|---|---|
| 50 | 3124 | 5.36 | 50 | PASS |
| 40 | 3139 | 5.39 | | |
| 30 | 3158 | 5.42 | | |
| 20 | 3161 | 5.42 | | |
| 10 | 3128 | 5.37 | | |
| 0 | 3134 | 5.38 | | |
| -10 | 3158 | 5.42 | | |
| -20 | 3169 | 5.44 | | |

## 3.6 AC Power Line Conducted Emissions

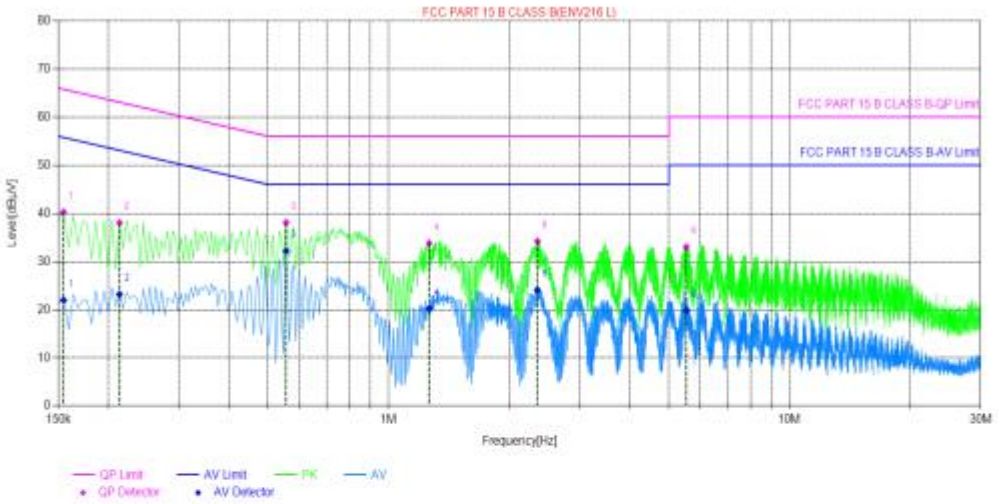
| | | | |
|---|---|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.207 | | |
| Test Method: | ANSI C63.10: 2013 | | |
| Test Frequency Range: | 150kHz to 30MHz | | |
| Limit: | Frequency range (MHz) | Limit (dBuV) | |
| | | Quasi-peak | Average |
| | 0.15-0.5 | 66 to 56* | 56 to 46* |
| | 0.5-5 | 56 | 46 |
| | 5-30 | 60 | 50 |
| | * Decreases with the logarithm of the frequency. | | |
| Test Procedure: | 1) The mains terminal disturbance voltage test was conducted in a shielded room.<br>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.<br>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,<br>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 2013 on conducted measurement. | | |
| Test Setup: |  | | |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.<br>Charge + Transmitting mode. | | |

| | |
|---|---|
| Final Test Mode: | Charge + Transmitting mode.<br>Only the worst case is recorded in the report. |
| Instruments Used: | Refer to section 2.9 for details |
| Test Results: | Pass |

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

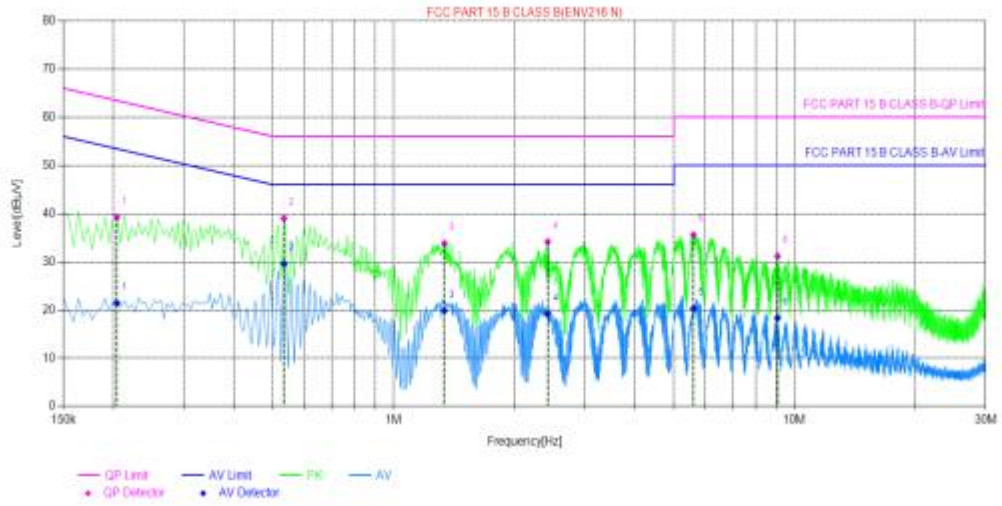
Live Line:




Final Data List

| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBµV] | QP Limit [dBuV] | QP Margin [dB] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1545 | 9.90 | 40.27 | 65.75 | 25.48 | 21.96 | 55.75 | 33.79 | PASS |
| 2 | 0.213 | 9.93 | 38.05 | 63.09 | 25.04 | 23.19 | 53.09 | 29.90 | PASS |
| 3 | 0.555 | 9.84 | 38.07 | 56.00 | 17.93 | 32.20 | 46.00 | 13.80 | PASS |
| 4 | 1.2615 | 9.73 | 33.80 | 56.00 | 22.20 | 20.29 | 46.00 | 25.71 | PASS |
| 5 | 2.3505 | 9.74 | 34.21 | 56.00 | 21.79 | 24.08 | 46.00 | 21.92 | PASS |
| 6 | 5.5275 | 9.81 | 33.01 | 60.00 | 26.99 | 19.77 | 50.00 | 30.23 | PASS |

Neutral Line:




| Final Data List | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBuV] | QP Limit [dBuV] | QP Margin [dB] | AV Value [dBuV] | AV Limit [dBuV] | AV Margin [dB] | Verdict |
| 1 | 0.204 | 9.86 | 39.24 | 63.45 | 24.21 | 21.41 | 53.45 | 32.04 | PASS |
| 2 | 0.5325 | 9.73 | 39.03 | 56.00 | 16.97 | 29.57 | 46.00 | 16.43 | PASS |
| 3 | 1.338 | 9.71 | 33.83 | 56.00 | 22.17 | 19.86 | 46.00 | 26.14 | PASS |
| 4 | 2.4225 | 9.82 | 34.16 | 56.00 | 21.84 | 19.23 | 46.00 | 26.77 | PASS |
| 5 | 5.5995 | 9.98 | 35.60 | 60.00 | 24.40 | 20.26 | 50.00 | 29.74 | PASS |
| 6 | 9.0735 | 9.86 | 31.21 | 60.00 | 28.79 | 18.35 | 50.00 | 31.65 | PASS |

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe including LISN Factor and the Cable Factor etc.), The basic equation is as follows:

Result Level= Reading Level + Correct Factor(including LISN Factor, Cable Factor etc. )

---The End Report---