



RADIO TEST REPORT

FCC ID : TVE-241101
Equipment : Secured Wireless Access Point
Brand Name : FORTINET
Model Name : FAP-23JKxxxxxxxxxx, FortiAP 23JKxxxxxxxxxx,
FORTIAP-23JKxxxxxxxxxx
(Please refer to section 1.1.5 for detailed information.)
Applicant : Fortinet, Inc.
909 Kifer Road, Sunnyvale, CA 94086, USA
Manufacturer : Fortinet, Inc.
909 Kifer Road, Sunnyvale, CA 94086, USA
Standard : 47 CFR FCC Part 15.247

The product was received on Nov. 26, 2024, and testing was started from Dec. 03, 2024 and completed on Feb. 13, 2025. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.



Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A10_9 Ver1.3



Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---------------|-----------------|---|--------------------|--------|
| 1.1.2 | 15.203 | Antenna Requirement | PASS | - |
| 3.1 | 15.207 | AC Power-line Conducted Emissions | PASS | - |
| 3.2 | 15.247(a) | DTS Bandwidth | PASS | - |
| 3.3 | 15.247(b) | Maximum Conducted Output Power | PASS | - |
| 3.4 | 15.247(e) | Power Spectral Density | PASS | - |
| 3.5 | 15.247(d) | Emissions in Non-restricted Frequency Bands | PASS | - |
| 3.6 | 15.247(d) | Emissions in Restricted Frequency Bands | PASS | - |

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

1. The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.
2. The test configuration, test mode and test software were written in this test report are declared by the manufacturer.

Reviewed by: Sam Chen
Report Producer: Sandy Chuang



1 General Description

1.1 Information

1.1.1 RF General Information

| Frequency Range (MHz) | IEEE Std. | Ch. Frequency (MHz) | Channel Number |
|-----------------------|-----------|---------------------|----------------|
| 2400-2483.5 | 802.15.4 | 2405-2480 | 11-26[16] |

| Band | Mode | BWch (MHz) | Nant |
|------|--------|------------|------|
| 2.4G | Zigbee | 3 | 1 |

Note:

- ♦ Zigbee uses a O-QPSK (250kbps) modulation.
- ♦ BWch is the nominal channel bandwidth.

**1.1.2 Antenna Information**

| Ant. | Port | | | | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-------------|-----------|-----------|------------------|-------|--------------|--------------|-----------|------------|
| | WLAN 2.4GHz | WLAN 5GHz | WLAN 6GHz | Bluetooth Zigbee | | | | | |
| 1 | 2 | 2 | - | - | WNC | 95XPAD15.G78 | Dipole | IPEX MHF1 | Note 1 |
| 2 | 1 | 1 | - | - | WNC | 95XPAD15.G79 | Dipole | IPEX MHF1 | |
| 3 | - | - | 2 | 1 | WNC | 95XPAD15.G82 | Dipole | IPEX MHF1 | |
| 4 | - | - | 1 | - | WNC | 95XPAD15.G83 | Dipole | IPEX MHF1 | |

Note 1:

| Ant. | Gain (dBi) | | | |
|------|-------------|-------------------|-------------------|------------------|
| | WLAN 2.4GHz | WLAN 5GHz UNII1~4 | WLAN 6GHz UNII5~8 | Bluetooth Zigbee |
| 1 | 3.6 | 6.3 | - | - |
| 2 | 3.6 | 6.3 | - | - |
| 3 | - | - | 4.2 | 4.2 |
| 4 | - | - | 4.2 | - |

Note 2: The above information was declared by manufacturer.

Note 3: Directional gain information

<For 2.4GHz and 5GHz>

| Type | Maximum Output Power | Power Spectral Density |
|--------|---|--|
| Non-BF | Directional gain = Max.gain + array gain. For power measurements on IEEE 802.11 devices Array Gain = 0 dB (i.e., no array gain) for N ANT ≤ 4 | $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left(\sum_{k=1}^{N_{ch}} \xi_{j,k} \right)^2}{N_{ANT}} \right]$ |
| BF | $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left(\sum_{k=1}^{N_{ch}} \xi_{j,k} \right)^2}{N_{ANT}} \right]$ | $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left(\sum_{k=1}^{N_{ch}} \xi_{j,k} \right)^2}{N_{ANT}} \right]$ |

Ex.

Directional Gain (NSS1) formula :

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left(\sum_{k=1}^{N_{ch}} \xi_{j,k} \right)^2}{N_{ANT}} \right]$$

$$NSS1(g1,1) = 10^{G1/20} ; NSS1(g1,2) = 10^{G2/20} ; NSS1(g1,3) = 10^{G3/20} ; NSS1(g1,4) = 10^{G4/20}$$

$$g_{j,k} = (NSS1(g1,1) + NSS1(g1,2) + NSS1(g1,3) + NSS1(g1,4))^2$$

$$DG = 10 \log[(NSS1(g1,1) + NSS1(g1,2) + NSS1(g1,3) + NSS1(g1,4))^2 / N_{ANT}] => 10$$

$$\log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / N_{ANT}]$$

Where ;

$$2.4G \ G1 = 3.6 \text{ dBi} ; G2 = 3.6 \text{ dBi} ;$$

$$5G \text{ UNII-1} \ G1 = 6.3 \text{ dBi} ; G2 = 6.3 \text{ dBi} ;$$

$$5G \text{ UNII-2A} \ G1 = 6.3 \text{ dBi} ; G2 = 6.3 \text{ dBi} ;$$

$$5G \text{ UNII-2C} \ G1 = 6.3 \text{ dBi} ; G2 = 6.3 \text{ dBi} ;$$

$$5G \text{ UNII-3} \ G1 = 6.3 \text{ dBi} ; G2 = 6.3 \text{ dBi} ;$$

$$5G \text{ UNII-4} \ G1 = 6.3 \text{ dBi} ; G2 = 6.3 \text{ dBi} ;$$

$$2.4G \ DG = 6.61 \text{ dBi}$$

$$5G \text{ UNII-1} \ DG = 9.31 \text{ dBi}$$

$$5G \text{ UNII-2A} \ DG = 9.31 \text{ dBi}$$

$$5G \text{ UNII-2C} \ DG = 9.31 \text{ dB}$$

$$5G \text{ UNII-3} \ DG = 9.31 \text{ dBi}$$

$$5G \text{ UNII-4} \ DG = 9.31 \text{ dBi}$$

**<For WLAN 2.4GHz>****For IEEE 802.11b/g/n/VHT/ax/be mode (2TX/2RX)**

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

<For WLAN 5GHz UNII1~4>**For IEEE 802.11a/n/ac/ax/be mode (2TX/2RX)**

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

<For WLAN 6GHz UNII 5~8>**For IEEE 802.11ax/be mode (2TX/2RX)**

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

<For Bluetooth or Zigbee> mode (1TX/1RX)

Only Port 1 can be used as transmitting/receiving antenna.

1.1.3 Mode Test Duty Cycle

| Mode | DC | DCF (dB) | T (s) | VBW (Hz)_1/T |
|--------------|----|-------------|----------------|-----------------|
| Zigbee_Nss 1 | 1 | 0 | n/a (DC>=0.98) | n/a (DC>=0.98) |

Note:

- ♦ DC is Duty Cycle.
- ♦ DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

| | | | | |
|-----------------------|-------------------------------------|---------------------|--------------------------|----------------|
| EUT Power Type | From Power Adapter or PoE | | | |
| Function | <input checked="" type="checkbox"/> | Point-to-multipoint | <input type="checkbox"/> | Point-to-point |
| Test Software Version | QSPR (Version 6.00.00142.1) | | | |

Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

| Model Name | Description |
|---|---|
| FAP-23JKxxxxxxxxxx, FortiAP 23JKxxxxxxxxxx, FORTIAP-23JKxxxxxxxxxx | Where "x" can be used as "A-Z", or "0-9", or "-", or blank for software changes or marketing purposes only |

Note 1: From the above models, model: FAP-23JK was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.



1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15.247
- ♦ ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF.

- ♦ FCC KDB 558074 D01 v05r02
- ♦ FCC KDB 414788 D01 v01r01

1.3 Testing Location Information

| Testing Location Information | |
|---|--|
| Test Lab. : Sporton International Inc. Hsinchu Laboratory | |
| Hsinchu (TAF: 3787) | ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) TEL: 886-3-656-9065 FAX: 886-3-656-9085 Test site Designation No. TW3787 with FCC. Conformity Assessment Body Identifier (CABID) TW3787 with ISED. |

| Test Condition | Test Site No. | Test Engineer | Test Environment (°C / %) | Test Date |
|-------------------------|------------------------|---------------|--|---------------------------------|
| RF Conducted | TH03-CB | Serway Lee | 22.7~24.6 / 61~65 | Dec. 05, 2024~ Jan. 09, 2025 |
| Radiated Below 1GHz | 03CH03-CB 03CH05-CB | Gordon Hung | 22.2-22.6 / 59-61 21.9-22.4 / 60-62 | Dec. 03, 2024~ Feb. 13, 2025 |
| Radiated Above 1GHz | 03CH03-CB 03CH04-CB | Gordon Hung | 22.2-22.6 / 59-61 22.7-23.8 / 58-60 | Dec. 03, 2024~ Feb. 13, 2025 |
| Radiated Co-location | 03CH01-CB | Gordon Hung | 22.1-23.1 / 60-62 | Dec. 03, 2024~ Feb. 13, 2025 |
| AC Conduction | CO01-CB | Elvin Yeh | 23~24 / 52~53 | Dec. 30, 2024 |



1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

| Test Items | Uncertainty | Remark |
|--------------------------------------|-------------|--------------------------|
| Conducted Emission (150kHz ~ 30MHz) | 3.8 dB | Confidence levels of 95% |
| Radiated Emission (9kHz ~ 30MHz) | 4.1 dB | Confidence levels of 95% |
| Radiated Emission (30MHz ~ 1,000MHz) | 4.2 dB | Confidence levels of 95% |
| Radiated Emission (1GHz ~ 18GHz) | 4.2 dB | Confidence levels of 95% |
| Radiated Emission (18GHz ~ 40GHz) | 4.0 dB | Confidence levels of 95% |
| Conducted Emission | 3.1 dB | Confidence levels of 95% |
| Output Power Measurement | 0.8 dB | Confidence levels of 95% |
| Power Density Measurement | 3.1 dB | Confidence levels of 95% |
| Bandwidth Measurement | 2.1 % | Confidence levels of 95% |



2 Test Configuration of EUT

2.1 Test Channel Mode

| Mode |
|---------|
| Zigbee |
| 2405MHz |
| 2440MHz |
| 2475MHz |
| 2480MHz |

2.2 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| Tests Item | AC power-line conducted emissions |
| Condition | AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz |
| Operating Mode | Normal Link |
| 1 | EUT_WLAN 2.4GHz+WLAN 5GHz+WLAN 6GHz+Bluetooth+powered by Adapter |
| 2 | EUT_WLAN 2.4GHz+WLAN 5GHz+WLAN 6GHz+Zigbee (TX)+powered by Adapter |
| 3 | EUT_WLAN 2.4GHz+WLAN 5GHz+WLAN 6GHz+Zigbee (RX)+powered by Adapter |
| Mode 2 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4~5 will follow this same test mode. | |
| 4 | EUT_WLAN 2.4GHz+WLAN 5GHz+WLAN 6GHz+Zigbee (TX)+powered by PT out port with PoE |
| 5 | EUT_WLAN 2.4GHz+WLAN 5GHz+WLAN 6GHz+Zigbee (TX)+powered by WAN/PoE IN 10G with PoE |
| For operating mode 5 is the worst case and it was record in this test report. | |

| The Worst Case Mode for Following Conformance Tests | |
|---|--|
| Tests Item | DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands |
| Test Condition | Conducted measurement at transmit chains |



| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| Tests Item | Emissions in Restricted Frequency Bands |
| Test Condition | Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type. |
| Operating Mode < 1GHz | CTX |
| After evaluating, the worst case was found at Y axis, so it was selected to perform test and its test result was written in the report. | |
| 1 | EUT in Y axis_WLAN 2.4GHz+powered by Adapter |
| 2 | EUT in Y axis_WLAN 2.4GHz+powered by PT out port with PoE |
| 3 | EUT in Y axis_WLAN 2.4GHz+powered by WAN/PoE IN 10G with PoE |
| Mode 2 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4~7 will follow this same test mode. | |
| 4 | EUT in Y axis_WLAN 5GHz+powered by PT out port with PoE |
| 5 | EUT in Y axis_WLAN 6GHz+powered by PT out port with PoE |
| 6 | EUT in Y axis_Bluetooth+powered by PT out port with PoE |
| 7 | EUT in Y axis_Zigbee+powered by PT out port with PoE |
| For operating mode 2 is the worst case and it was record in this test report. | |
| Operating Mode > 1GHz | CTX |
| After evaluating, the worst case was found at Y axis, so it was selected to perform test and its test result was written in the report. | |
| 1 | EUT in Y axis |

| The Worst Case Mode for Following Conformance Tests | |
|---|--|
| Tests Item | Simultaneous Transmission Analysis - Radiated Emission Co-location |
| Test Condition | Radiated measurement |
| Operating Mode | Normal Link |
| After evaluating, the worst case was found at Y axis, so it was selected to perform test and its test result was written in the report. | |
| 1 | EUT in Y axis_WLAN 2.4GHz+WLAN 5GHz |
| 2 | EUT in Y axis_WLAN 6GHz+Bluetooth |
| 3 | EUT in Y axis_WLAN 6GHz+Zigbee |
| For operating mode 1 is the worst case and it was record in this test report. | |
| Refer to Appendix G for Radiated Emission Co-location. | |



| The Worst Case Mode for Following Conformance Tests | |
|--|---|
| Tests Item | Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation |
| Operating Mode | |
| 1 | EUT_WLAN 2.4GHz+WLAN 5GHz+WLAN 6GHz+Bluetooth |
| 2 | EUT_WLAN 2.4GHz+WLAN 5GHz+WLAN 6GHz+Zigbee |
| Refer to Sporton Test Report No.: FA4N2218 for Co-location RF Exposure Evaluation. | |

Note: The Adapter and PoE below are for measurement only, would not be marketed.

The Adapter and PoE information as below:

| Support Unit | Brand | Model Name |
|--------------|-----------|----------------|
| Adapter | FSP | FSP065-DWAN3 |
| PoE | Microsemi | PD9501-10GC/AC |

2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link Mode:

During the test, the EUT operation to normal function.

2.4 Accessories

Wall-mounted*1



2.5 Support Equipment

For AC Conduction:

| Support Equipment | | | | |
|-------------------|-------------------|------------|----------------|---------------|
| No. | Equipment | Brand Name | Model Name | FCC ID |
| A | WAN/PoE IN 10G PC | ASUS | S300TA | TX2-RTL8821CE |
| B | 2.4G NB | DELL | E6430 | N/A |
| C | 5G NB | DELL | E6430 | N/A |
| D | 6G Device | MediaTek | MT7927 | N/A |
| E | 6G NB | DELL | E7240 | N/A |
| F | LAN1 NB | DELL | E6430 | N/A |
| G | Device | FORTINET | FAP-23JK | N/A |
| H | PoE | Microsemi | PD9501-10GC/AC | N/A |

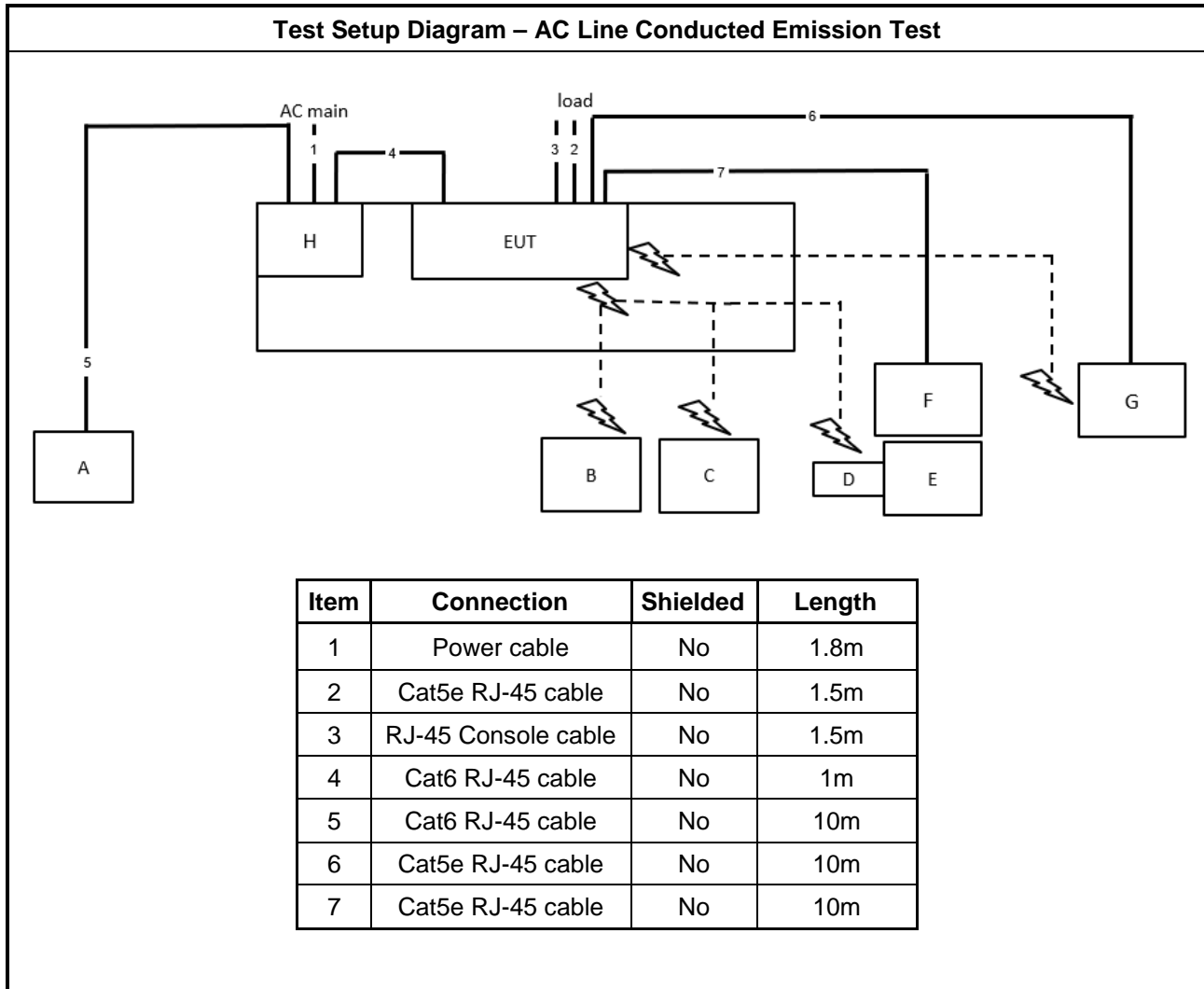
For Radiated:

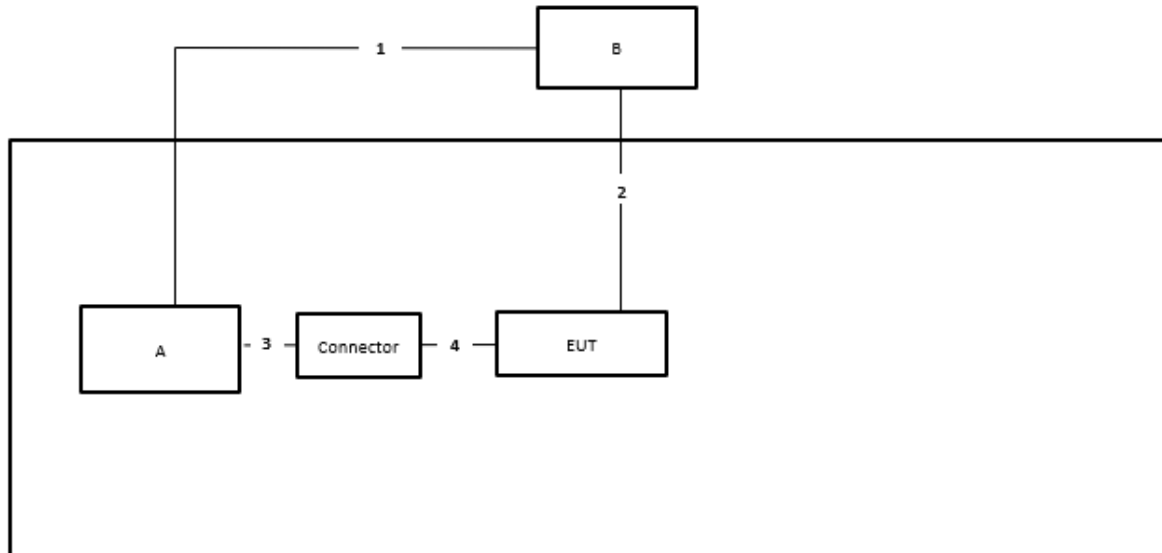
| Support Equipment | | | | |
|-------------------|-----------|------------|----------------|--------|
| No. | Equipment | Brand Name | Model Name | FCC ID |
| A | Notebook | DELL | E4300 | N/A |
| B | PoE | Microsemi | PD9501-10GC/AC | N/A |

For RF Conducted:

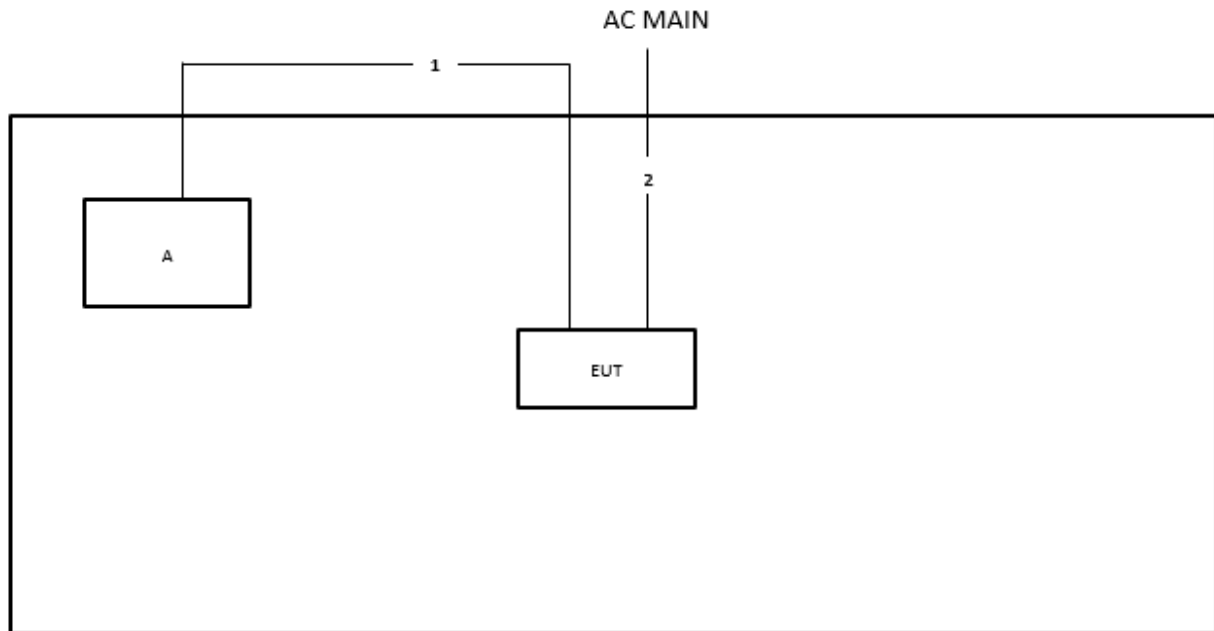
| Support Equipment | | | | |
|-------------------|-----------|------------|--------------|--------|
| No. | Equipment | Brand Name | Model Name | FCC ID |
| A | Notebook | DELL | E4300 | N/A |
| B | Adapter | FSP | FSP065-DWAN3 | N/A |

2.6 Test Setup Diagram



Test Setup Diagram - Radiated Test < 1GHz


| Item | Connection | Shielded | Length |
|------|----------------------------------|----------|--------|
| 1 | RJ-45 cable | No | 10m |
| 2 | RJ-45 cable | No | 10m |
| 3 | Console cable (RS232 to USB) | No | 1m |
| 4 | Console cable (RS232 to RJ45) | No | 1m |

Test Setup Diagram - Radiated Test > 1GHz


| Item | Connection | Shielded | Length |
|------|-------------|----------|--------|
| 1 | RJ-45 cable | No | 1m |
| 2 | Power cable | No | 1.2m |



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

| AC Power-line Conducted Emissions Limit | | |
|---|------------|-----------|
| Frequency Emission (MHz) | Quasi-Peak | Average |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

Note 1: * Decreases with the logarithm of the frequency.

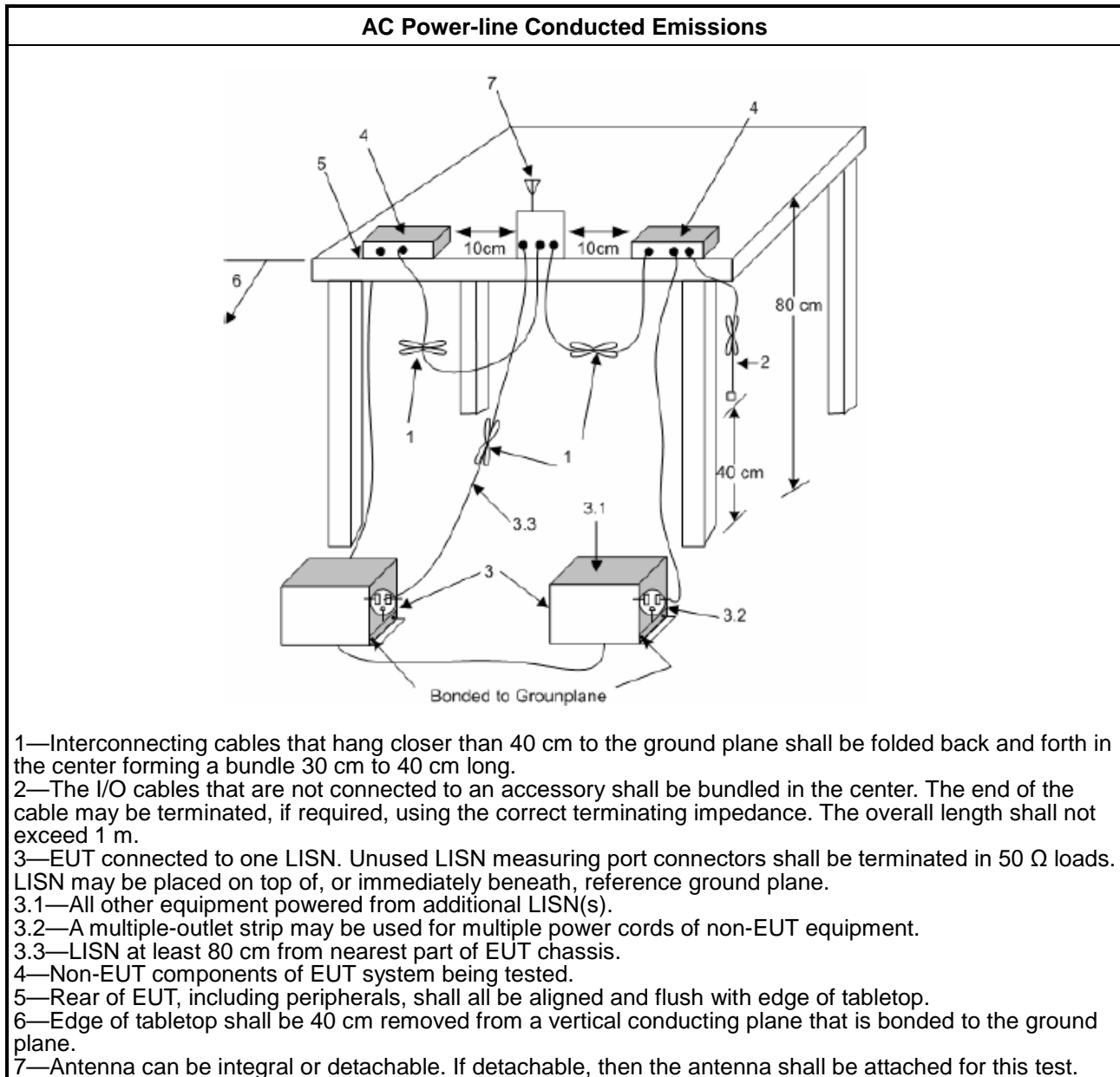
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

| Test Method |
|--|
| <input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions. |

3.1.4 Test Setup



3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- b. Margin = -Limit + Level

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

| 6dB Bandwidth Limit |
|---|
| Systems using digital modulation techniques: |
| <ul style="list-style-type: none"> 6 dB bandwidth \geq 500 kHz. |

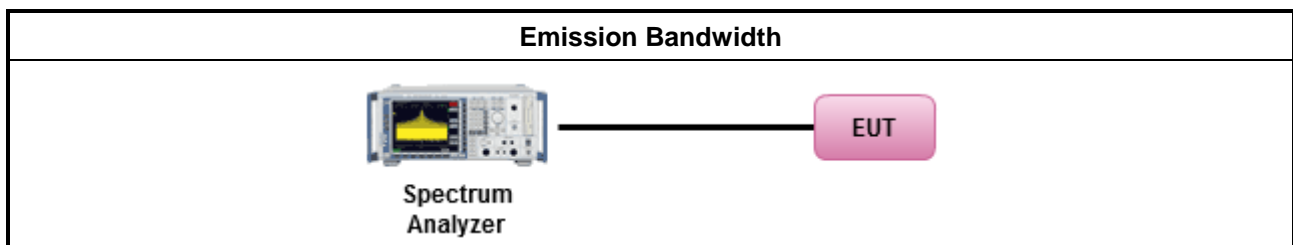
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

| Test Method |
|---|
| <ul style="list-style-type: none"> For the emission bandwidth shall be measured using one of the options below: |
| <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement. |
| <input type="checkbox"/> Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement. |
| <input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing. |

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

| Maximum Conducted Output Power Limit | |
|---|--|
| | ▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W) |
| | ▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm |
| | ▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm |
| | ▪ Smart antenna system (SAS): |
| | - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm |
| | - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm |
| | - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm |
| P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi. | |

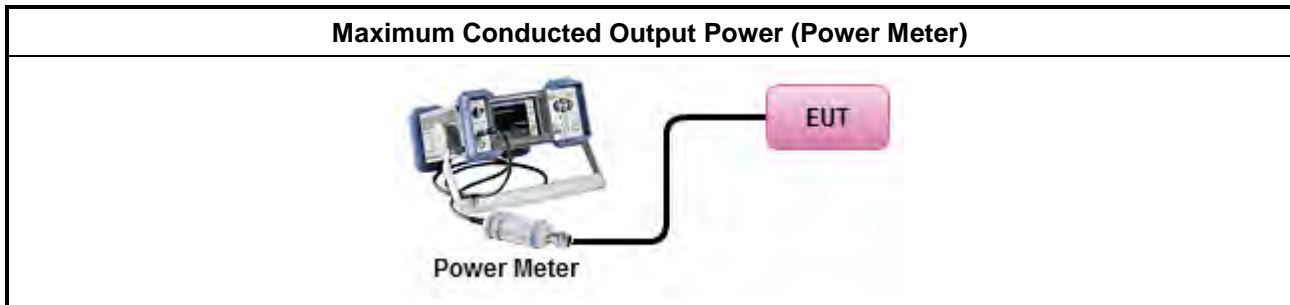
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

| Test Method | |
|--|---|
| <ul style="list-style-type: none"> Maximum Peak Conducted Output Power | |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method). |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter). |
| <ul style="list-style-type: none"> Maximum Conducted Output Power | |
| [duty cycle ≥ 98% or external video / power trigger] | |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1. |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative) |
| duty cycle < 98% and average over on/off periods with duty factor | |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2. |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative) |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3 |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative) |
| Measurement using a power meter (PM) | |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter). |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter). |
| <ul style="list-style-type: none"> For conducted measurement. | |
| <ul style="list-style-type: none"> If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them. | |
| <ul style="list-style-type: none"> If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$ | |

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

| Power Spectral Density Limit |
|--|
| ▪ Power Spectral Density (PSD) ≤ 8 dBm/3kHz |

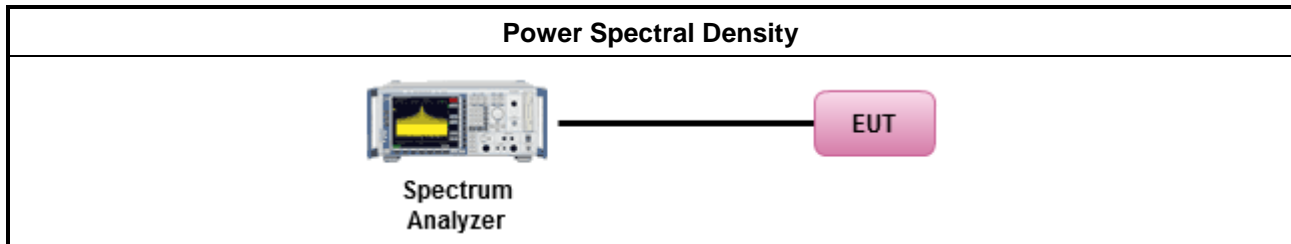
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

| Test Method | |
|--|--|
| ▪ Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option). | |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD. |
| ▪ For conducted measurement. | |
| ▪ If The EUT supports multiple transmit chains using options given below: | |
| <input type="checkbox"/> | Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace. |
| <input type="checkbox"/> | Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits, |
| <input type="checkbox"/> | Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit. |

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

| Un-restricted Band Emissions Limit | |
|---|-------------|
| RF output power procedure | Limit (dBc) |
| Peak output power procedure | 20 |
| Average output power procedure | 30 |
| <p>Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.</p> <p>Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.</p> | |

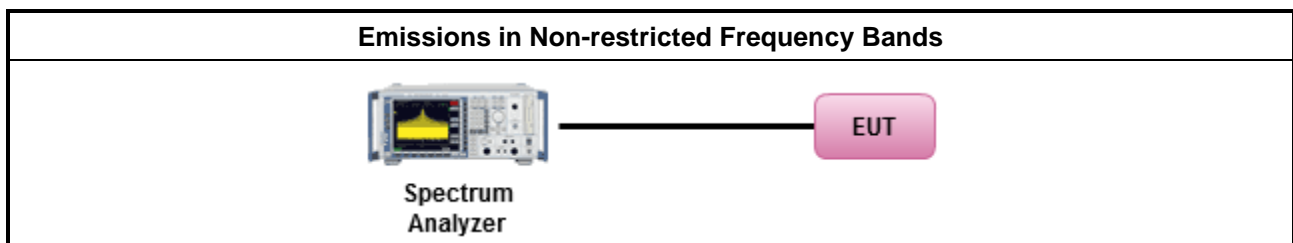
3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

| Test Method |
|---|
| <ul style="list-style-type: none"> Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands. |

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

| Restricted Band Emissions Limit | | | |
|---------------------------------|-----------------------|-------------------------|----------------------|
| Frequency Range (MHz) | Field Strength (uV/m) | Field Strength (dBuV/m) | Measure Distance (m) |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

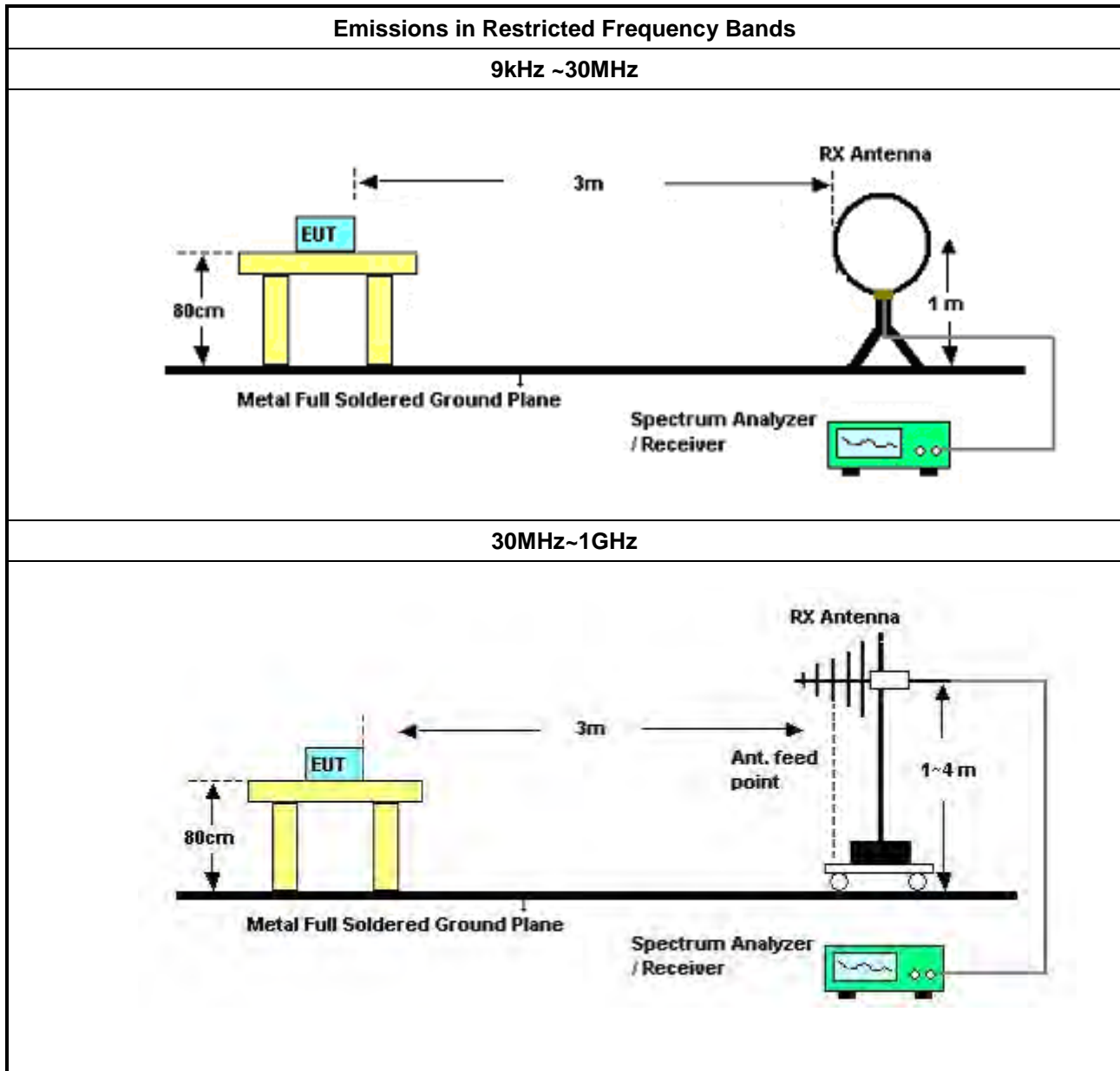
3.6.2 Measuring Instruments

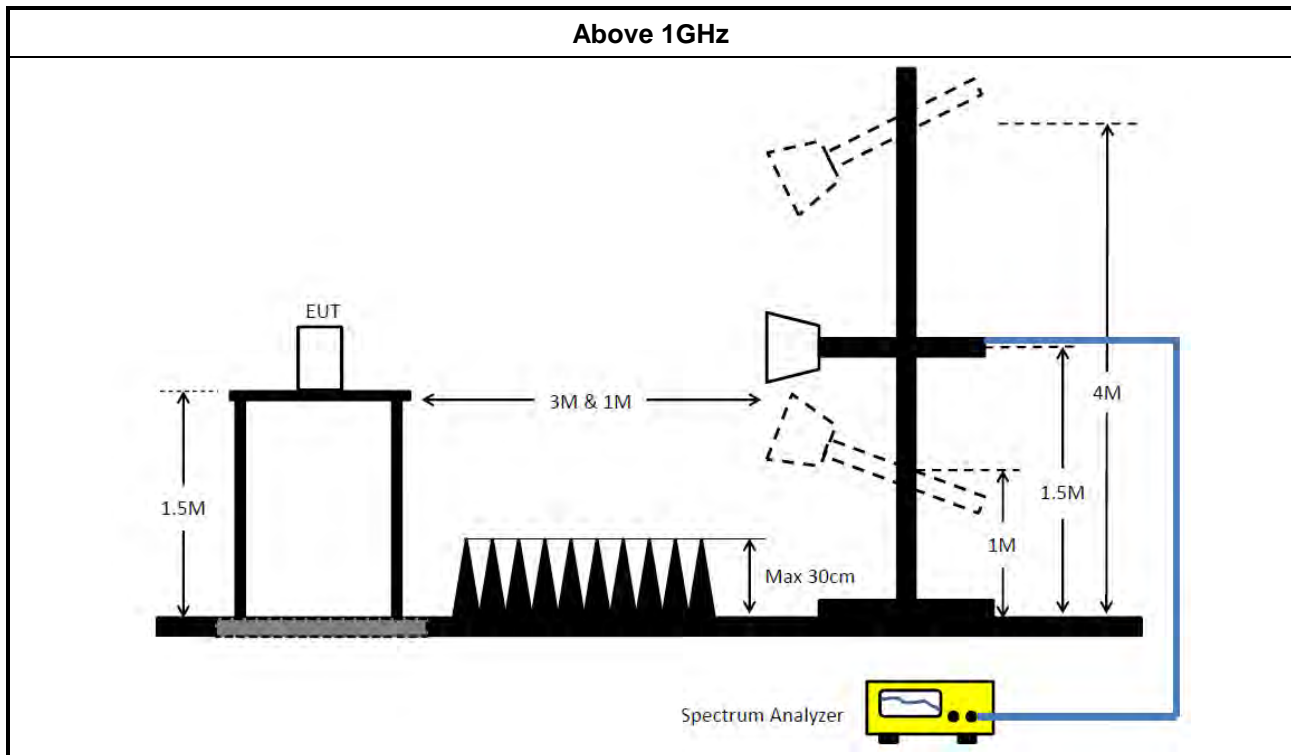
Refer a test equipment and calibration data table in this test report.

**3.6.3 Test Procedures**

| Test Method | |
|---|--|
| ▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor]. | |
| ▪ Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band. | |
| ▪ For the transmitter unwanted emissions shall be measured using following options below: | |
| | ▪ Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands. |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle $\geq 98\%$). |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor). |
| | <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW $\geq 1/T$). |
| | <input type="checkbox"/> Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time. |
| | <input type="checkbox"/> Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions. |
| | <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit. |
| ▪ For the transmitter band-edge emissions shall be measured using following options below: | |
| | ▪ Refer as FCC KDB 558074 clause 8.7 & c63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below. |
| | ▪ Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements. |
| | ▪ Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz). |
| | ▪ For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB |
| | ▪ For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred. |

3.6.4 Test Setup





3.6.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.6.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



4 Test Equipment and Calibration Data

| Instrument | Brand | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date | Remark |
|-----------------------------------|------------------|------------------|------------------|-----------------|------------------|----------------------|-----------------------|
| EMI Receiver | Agilent | N9038A | My52260123 | 9kHz ~ 8.4GHz | Mar. 01, 2024 | Feb. 28, 2025 | Conduction (CO01-CB) |
| LISN | F.C.C. | FCC-LISN-50-16-2 | 04083 | 150kHz ~ 100MHz | Feb. 19, 2024 | Feb. 18, 2025 | Conduction (CO01-CB) |
| LISN | Schwarzbeck | NSLK 8127 | 8127647 | 9kHz ~ 30MHz | Apr. 24, 2024 | Apr. 23, 2025 | Conduction (CO01-CB) |
| Pulse Limiter | Rohde& Schwarz | ESH3-Z2 | 100430 | 9kHz ~ 30MHz | Oct. 16, 2024 | Oct. 15, 2025 | Conduction (CO01-CB) |
| COND Cable | Woken | Cable | Low cable-CO01 | 9kHz ~ 30MHz | Oct. 16, 2024 | Oct. 15, 2025 | Conduction (CO01-CB) |
| Test Software | SPORTON | SENSE-EMI | V5.11 | 150kHz-30MHz | N.C.R. | N.C.R. | Conduction (CO01-CB) |
| Loop Antenna | Teseq | HLA 6121 | 65417 | 9kHz ~ 30 MHz | Oct. 16, 2024 | Oct. 15, 2025 | Radiation (03CH03-CB) |
| 3m Semi Anechoic Chamber NSA | TDK | SAC-3M | 03CH03-CB | 30 MHz ~ 1 GHz | Jan. 18, 2024 | Jan. 17, 2025 | Radiation (03CH03-CB) |
| 3m Semi Anechoic Chamber NSA | TDK | SAC-3M | 03CH03-CB | 30 MHz ~ 1 GHz | Jan. 17, 2025 | Jan. 16, 2026 | Radiation (03CH03-CB) |
| Bilog Antenna with 6dB Attenuator | Schaffner & EMCI | CBL6112B& N-6-06 | 2888&AT-N0605 | 30MHz ~ 1GHz | Jan. 18, 2024 | Jan. 17, 2025 | Radiation (03CH03-CB) |
| Bilog Antenna with 6dB Attenuator | Schaffner & EMCI | CBL6112B& N-6-06 | 2888&AT-N0605 | 30MHz ~ 1GHz | Jan. 17, 2025 | Jan. 16, 2026 | Radiation (03CH03-CB) |
| Amplifier | SGH | SGH301 | 20240606-1 | 30MHz ~ 1GHz | Jun. 04, 2024 | Jun. 03, 2025 | Radiation (03CH03-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100019 | 9kHz ~ 40GHz | Jun. 11, 2024 | Jun. 10, 2025 | Radiation (03CH03-CB) |
| EMI Test Receiver | R&S | ESR7 | 102172 | 9kHz ~ 7GHz | Oct. 21, 2024 | Oct. 20, 2025 | Radiation (03CH03-CB) |
| RF Cable-low | Woken | RG402 | Low Cable-02+29 | 30MHz ~ 1GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH03-CB) |
| Test Software | SPORTON | SENSE-EMI | V5.11.8 | 30MHz-40GHz | N.C.R. | N.C.R. | Radiation (03CH03-CB) |
| 3m Semi Anechoic Chamber VSWR | TDK | SAC-3M | 03CH03-CB | 1GHz ~18GHz 3m | May 03, 2024 | May 02, 2025 | Radiation (03CH03-CB) |
| Horn Antenna | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1370 | 1GHz~18GHz | Jul. 11, 2024 | Jul. 10, 2025 | Radiation (03CH03-CB) |
| Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170252 | 15GHz ~ 40GHz | Sep. 23, 2024 | Sep. 22, 2025 | Radiation (03CH03-CB) |
| Pre-Amplifier | Agilent | 8449B | 3008A02097 | 1GHz ~ 26.5GHz | Jun. 29, 2024 | Jun. 28, 2025 | Radiation (03CH03-CB) |
| Pre-Amplifier | SGH | SGH184 | 20221107-3 | 18GHz ~ 40GHz | Nov. 25, 2024 | Nov. 24, 2025 | Radiation (03CH03-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100019 | 9kHz ~ 40GHz | Jun. 11, 2024 | Jun. 10, 2025 | Radiation (03CH03-CB) |
| RF Cable-high | Woken | RG402 | High Cable-20+29 | 1GHz ~ 18GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH03-CB) |



| Instrument | Brand | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date | Remark |
|-----------------------------------|--------------|--------------------|------------------|------------------|------------------|----------------------|-----------------------|
| RF Cable-high | Woken | RG402 | High Cable-29 | 1GHz ~ 18GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH03-CB) |
| Test Software | SPORTON | SENSE-15247_DTS | V5.11.18 | 2.4GHz-2.4835GHz | N.C.R. | N.C.R. | Radiation (03CH03-CB) |
| Loop Antenna | Teseq | HLA 6121 | 65417 | 9kHz - 30 MHz | Oct. 16, 2024 | Oct. 15, 2025 | Radiation (03CH05-CB) |
| 3m Semi Anechoic Chamber NSA | TDK | SAC-3M | 03CH05-CB | 30 MHz ~ 1 GHz | Aug. 01, 2024 | Jul. 31, 2025 | Radiation (03CH05-CB) |
| Bilog Antenna with 6dB Attenuator | TESEQ & EMCI | CBL 6112D & N-6-06 | 35236 & AT-N0610 | 30MHz ~ 2GHz | Mar. 23, 2024 | Mar. 22, 2025 | Radiation (03CH05-CB) |
| Amplifier | EMCI | EMC330N | 980331 | 20MHz ~ 3GHz | May 02, 2024 | May 01, 2025 | Radiation (03CH05-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100304 | 9kHz ~ 40GHz | Apr. 17, 2024 | Apr. 16, 2025 | Radiation (03CH05-CB) |
| EMI Test Receiver | R&S | ESR7 | 102172 | 9kHz ~ 7GHz | Oct. 21, 2024 | Oct. 20, 2025 | Radiation (03CH05-CB) |
| RF Cable-low | Woken | RG402 | Low Cable-04+23 | 30MHz~1GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH05-CB) |
| Test Software | SPORTON | SENSE-EMI | V5.11.8 | 30MHz-40GHz | N.C.R. | N.C.R. | Radiation (03CH05-CB) |
| 3m Semi Anechoic Chamber VSWR | TDK | SAC-3M | 03CH01-CB | 1GHz ~18GHz 3m | May 04, 2024 | May 03, 2025 | Radiation (03CH01-CB) |
| Horn Antenna | ETS-Lindgren | 3115 | 00143147 | 750MHz~18GHz | Oct. 18, 2024 | Oct. 17, 2025 | Radiation (03CH01-CB) |
| Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170252 | 15GHz ~ 40GHz | Sep. 23, 2024 | Sep. 22, 2025 | Radiation (03CH01-CB) |
| Pre-Amplifier | Agilent | 8449B | 3008A02121 | 1GHz ~ 26.5GHz | May 17, 2024 | May 16, 2025 | Radiation (03CH01-CB) |
| Pre-Amplifier | SGH | SGH184 | 20221107-3 | 18GHz ~ 40GHz | Nov. 25, 2024 | Nov. 24, 2025 | Radiation (03CH01-CB) |
| Signal Analyzer | R&S | FSV40 | 101904 | 9kHz ~ 40GHz | Apr. 26, 2024 | Apr. 25, 2025 | Radiation (03CH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-16 | 1 GHz ~ 18 GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH01-CB) |
| RF Cable-high | Woken | RG402 | High Cable-16+17 | 1 GHz ~ 18 GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH01-CB) |
| High Cable | Woken | WCA0929M | 40G#5+6 | 1GHz ~ 40 GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH01-CB) |
| Test Software | SPORTON | SENSE-15247_DTS | V5.11.18 | 2.4GHz-2.4835GHz | N.C.R. | N.C.R. | Radiation (03CH01-CB) |
| Test Software | SPORTON | SENSE-EMI | V5.11 | 30MHz-40GHz | N.C.R. | N.C.R. | Radiation (03CH01-CB) |
| 3m Semi Anechoic Chamber VSWR | TDK | SAC-3M | 03CH04-CB | 1GHz ~18GHz 3m | Feb. 22, 2024 | Feb. 21, 2025 | Radiation (03CH04-CB) |
| Horn Antenna | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1370 | 1GHz~18GHz | Jul. 11, 2024 | Jul. 10, 2025 | Radiation (03CH04-CB) |
| Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170252 | 15GHz ~ 40GHz | Sep. 23, 2024 | Sep. 22, 2025 | Radiation (03CH04-CB) |



| Instrument | Brand | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date | Remark |
|-------------------|---------|-----------------|------------------|------------------|------------------|----------------------|-----------------------|
| Pre-Amplifier | SGH | SGH5265 | 20211115-1 | 1~ 26.5GHz | Jan. 17, 2024 | Jan. 16, 2025 | Radiation (03CH04-CB) |
| Pre-Amplifier | SGH | SGH5265 | 20211115-1 | 1~ 26.5GHz | Jan. 16, 2025 | Jan. 15, 2026 | Radiation (03CH04-CB) |
| Pre-Amplifier | SGH | SGH184 | 20221107-3 | 18GHz ~ 40GHz | Nov. 25, 2024 | Nov. 24, 2025 | Radiation (03CH04-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100142 | 9kHz~40GHz | Mar. 19, 2024 | Mar. 18, 2025 | Radiation (03CH04-CB) |
| RF Cable-high | Woken | RG402 | High Cable-21 | 1GHz - 18GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH04-CB) |
| RF Cable-high | Woken | RG402 | High Cable-21+67 | 1GHz - 18GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH04-CB) |
| High Cable | Woken | WCA0929M | 40G#5+6 | 1GHz ~ 40 GHz | Oct. 01, 2024 | Sep. 30, 2025 | Radiation (03CH04-CB) |
| Test Software | SPORTON | SENSE-15247_DTS | V5.11.18 | 2.4GHz-2.4835GHz | N.C.R. | N.C.R. | Radiation (03CH04-CB) |
| Signal Analyzer | R&S | FSV40 | 101903 | 9kHz ~ 40GHz | Jun. 11, 2024 | Jun. 10, 2025 | Conducted (TH03-CB) |
| Power Sensor | Anritsu | MA2411B | 1726195 | 300MHz~40GHz | Sep. 06, 2024 | Sep. 05, 2025 | Conducted (TH03-CB) |
| Power Meter | Anritsu | ML2495A | 1035008 | 300MHz~40GHz | Sep. 06, 2024 | Sep. 05, 2025 | Conducted (TH03-CB) |
| RF Cable | Woken | RG402 | High Cable-11 | 30MHz ~18 GHz | Oct. 01, 2024 | Sep. 30, 2025 | Conducted (TH03-CB) |
| RF Cable | Woken | RG402 | High Cable-12 | 30MHz ~18 GHz | Oct. 01, 2024 | Sep. 30, 2025 | Conducted (TH03-CB) |
| RF Cable | Woken | RG402 | High Cable-13 | 30MHz ~18 GHz | Oct. 01, 2024 | Sep. 30, 2025 | Conducted (TH03-CB) |
| RF Cable-high | Woken | RG402 | High Cable-14 | 1 GHz ~18 GHz | Oct. 01, 2024 | Sep. 30, 2025 | Conducted (TH03-CB) |
| RF Cable-high | Woken | RG402 | High Cable-15 | 1 GHz ~18 GHz | Oct. 01, 2024 | Sep. 30, 2025 | Conducted (TH03-CB) |
| Switch | SPTCB | SP-SWI | SWI-03 | 1~18GHz | Oct. 02, 2024 | Oct. 01, 2025 | Conducted (TH03-CB) |
| Test Software | SPORTON | SENSE-15247_DTS | V5.11.23 | 2.4GHz-2.4835GHz | N.C.R. | N.C.R. | Conducted (TH03-CB) |

Note: Calibration Interval of instruments listed above is one year.

NCR means Non-Calibration required.



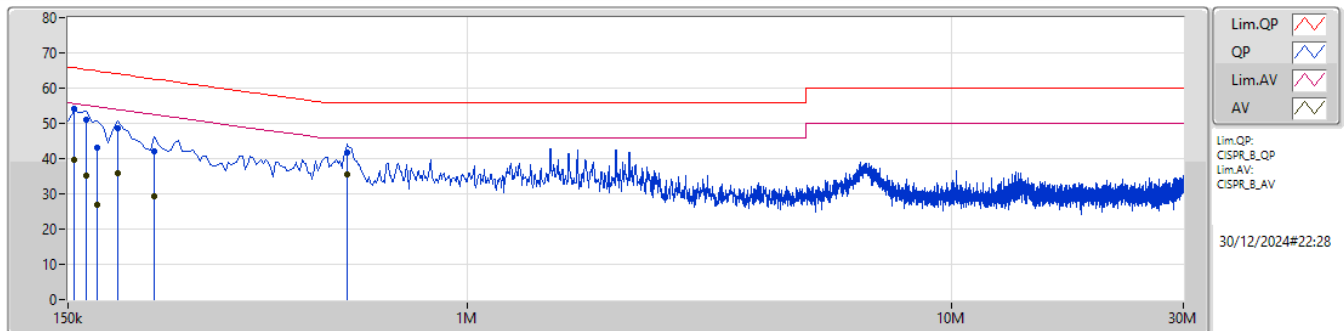
Conducted Emissions at Powerline

Appendix A

Summary

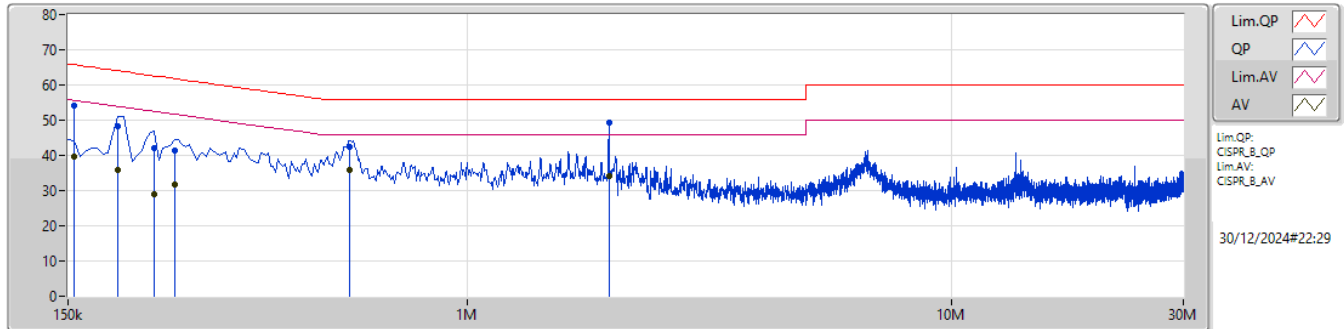
| Mode | Result | Type | Freq (Hz) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Condition |
|--------|--------|------|--------------|-----------------|-----------------|----------------|-----------|
| Mode 5 | Pass | QP | 1.959M | 49.34 | 56.00 | -6.66 | Neutral |

Mode 5



| Type | Freq (Hz) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Factor (dB) | Condition | Comment | Raw (dBuV) | LISN (dB) | CL (dB) | AT (dB) | | | | | | |
|------|--------------|-----------------|-----------------|----------------|----------------|-----------|---------|---------------|--------------|------------|------------|--|--|--|--|--|--|
| QP | 154.5k | 54.12 | 65.75 | -11.63 | 10.04 | Line | - | 44.08 | 0.04 | 0.08 | 9.92 | | | | | | |
| AV | 154.5k | 39.64 | 55.75 | -16.11 | 10.04 | Line | - | 29.60 | 0.04 | 0.08 | 9.92 | | | | | | |
| QP | 163.5k | 51.03 | 65.27 | -14.24 | 10.04 | Line | - | 40.99 | 0.04 | 0.08 | 9.92 | | | | | | |
| AV | 163.5k | 35.18 | 55.27 | -20.09 | 10.04 | Line | - | 25.14 | 0.04 | 0.08 | 9.92 | | | | | | |
| QP | 172.5k | 43.16 | 64.83 | -21.67 | 10.04 | Line | - | 33.12 | 0.04 | 0.07 | 9.93 | | | | | | |
| AV | 172.5k | 26.95 | 54.83 | -27.88 | 10.04 | Line | - | 16.91 | 0.04 | 0.07 | 9.93 | | | | | | |
| QP | 190.5k | 48.51 | 64.01 | -15.50 | 10.05 | Line | - | 38.46 | 0.04 | 0.07 | 9.94 | | | | | | |
| AV | 190.5k | 35.95 | 54.01 | -18.06 | 10.05 | Line | - | 25.90 | 0.04 | 0.07 | 9.94 | | | | | | |
| QP | 226.5k | 42.23 | 62.58 | -20.35 | 10.09 | Line | - | 32.14 | 0.04 | 0.08 | 9.97 | | | | | | |
| AV | 226.5k | 29.25 | 52.58 | -23.33 | 10.09 | Line | - | 19.16 | 0.04 | 0.08 | 9.97 | | | | | | |
| QP | 564k | 41.86 | 56.00 | -14.14 | 10.26 | Line | - | 31.60 | 0.06 | 0.10 | 10.10 | | | | | | |
| AV | 564k | 35.67 | 46.00 | -10.33 | 10.26 | Line | "Worst" | 25.41 | 0.06 | 0.10 | 10.10 | | | | | | |

Mode 5



| Type | Freq (Hz) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Factor (dB) | Condition | Comment | Raw (dBuV) | LISN (dB) | CL (dB) | AT (dB) | | | | | | |
|------|--------------|-----------------|-----------------|----------------|----------------|-----------|---------|---------------|--------------|------------|------------|--|--|--|--|--|--|
| QP | 154.5k | 54.02 | 65.75 | -11.73 | 10.06 | Neutral | - | 43.96 | 0.06 | 0.08 | 9.92 | | | | | | |
| AV | 154.5k | 39.74 | 55.75 | -16.01 | 10.06 | Neutral | - | 29.68 | 0.06 | 0.08 | 9.92 | | | | | | |
| QP | 190.5k | 48.41 | 64.01 | -15.60 | 10.07 | Neutral | - | 38.34 | 0.06 | 0.07 | 9.94 | | | | | | |
| AV | 190.5k | 35.79 | 54.01 | -18.22 | 10.07 | Neutral | - | 25.72 | 0.06 | 0.07 | 9.94 | | | | | | |
| QP | 226.5k | 42.13 | 62.58 | -20.45 | 10.11 | Neutral | - | 32.02 | 0.06 | 0.08 | 9.97 | | | | | | |
| AV | 226.5k | 29.12 | 52.58 | -23.46 | 10.11 | Neutral | - | 19.01 | 0.06 | 0.08 | 9.97 | | | | | | |
| QP | 249k | 41.53 | 61.79 | -20.26 | 10.12 | Neutral | - | 31.41 | 0.06 | 0.08 | 9.98 | | | | | | |
| AV | 249k | 31.84 | 51.79 | -19.95 | 10.12 | Neutral | - | 21.72 | 0.06 | 0.08 | 9.98 | | | | | | |
| QP | 573k | 42.53 | 56.00 | -13.47 | 10.27 | Neutral | - | 32.26 | 0.07 | 0.10 | 10.10 | | | | | | |
| AV | 573k | 36.02 | 46.00 | -9.98 | 10.27 | Neutral | - | 25.75 | 0.07 | 0.10 | 10.10 | | | | | | |
| QP | 1.959M | 49.34 | 56.00 | -6.66 | 10.20 | Neutral | "Worst" | 39.14 | 0.10 | 0.14 | 9.96 | | | | | | |
| AV | 1.959M | 34.03 | 46.00 | -11.97 | 10.20 | Neutral | - | 23.83 | 0.10 | 0.14 | 9.96 | | | | | | |

Summary

| Mode | Max-N dB | Max-OBW | ITU-Code | Min-N dB | Min-OBW |
|---------------|----------|---------|----------|----------|---------|
| | (Hz) | (Hz) | | (Hz) | (Hz) |
| 2.4-2.4835GHz | - | - | - | - | - |
| Zigbee | 1.729M | 2.243M | 2M24G1D | 1.568M | 2.231M |

Max-N dB = Maximum 6dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

Result

| Mode | Result | Limit | Port 1-N dB | Port 1-OBW |
|---------|--------|-------|-------------|------------|
| | | (Hz) | (Hz) | (Hz) |
| Zigbee | - | - | - | - |
| 2405MHz | Pass | 500k | 1.568M | 2.243M |
| 2440MHz | Pass | 500k | 1.729M | 2.232M |
| 2480MHz | Pass | 500k | 1.639M | 2.231M |

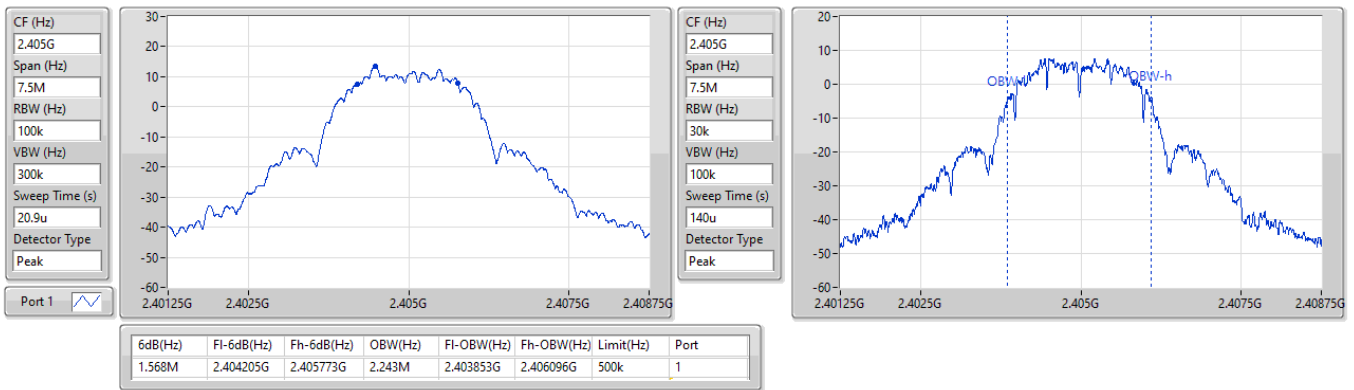
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_Zigbee

EBW

2405MHz

05/12/2024

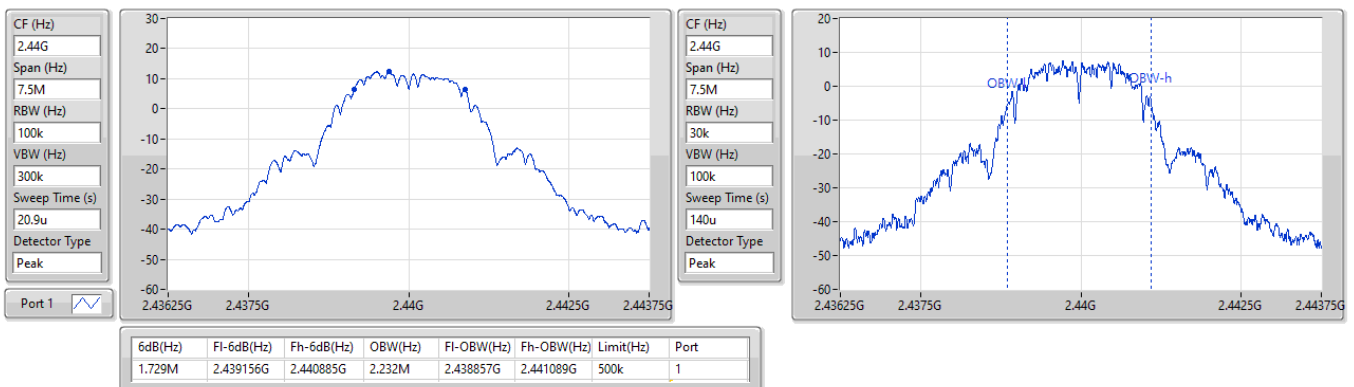


2.4-2.4835GHz_Zigbee

EBW

2440MHz

05/12/2024

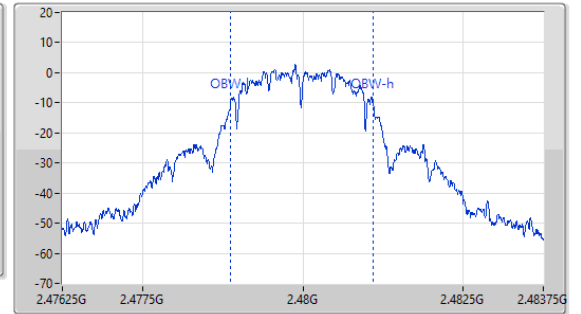
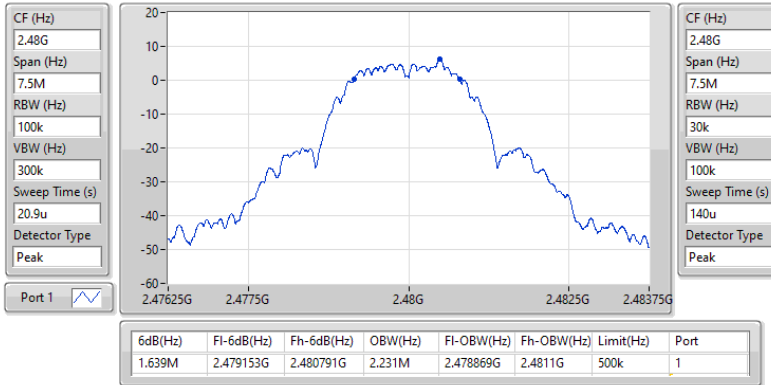


2.4-2.4835GHz_Zigbee

EBW

2480MHz

05/12/2024





Summary

| Mode | Total Power (dBm) | Total Power (W) |
|---------------|----------------------|--------------------|
| 2.4-2.4835GHz | - | - |
| Zigbee | 17.36 | 0.05445 |



Result

| Mode | Result | DG | Port 1 | Total Power | Power Limit |
|---------|--------|-------|--------|-------------|-------------|
| | | (dBi) | (dBm) | (dBm) | (dBm) |
| Zigbee | - | - | - | - | - |
| 2405MHz | Pass | 4.20 | 17.36 | 17.36 | 30.00 |
| 2440MHz | Pass | 4.20 | 17.17 | 17.17 | 30.00 |
| 2475MHz | Pass | 4.20 | 16.93 | 16.93 | 30.00 |
| 2480MHz | Pass | 4.20 | 11.16 | 11.16 | 30.00 |

DG = Directional Gain; Port X = Port X output power;
Inf = There's no restriction for the limit.

Summary

| Mode | PD (dBm/RBW) |
|---------------|-----------------|
| 2.4-2.4835GHz | - |
| Zigbee | 1.15 |

RBW = 3kHz;

Result

| Mode | Result | DG | Port 1 | PD | PD Limit |
|---------|--------|-------|-----------|-----------|-----------|
| | | (dBi) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| Zigbee | - | - | - | - | - |
| 2405MHz | Pass | 4.20 | 1.15 | 1.15 | 8.00 |
| 2440MHz | Pass | 4.20 | -0.12 | -0.12 | 8.00 |
| 2480MHz | Pass | 4.20 | -5.49 | -5.49 | 8.00 |

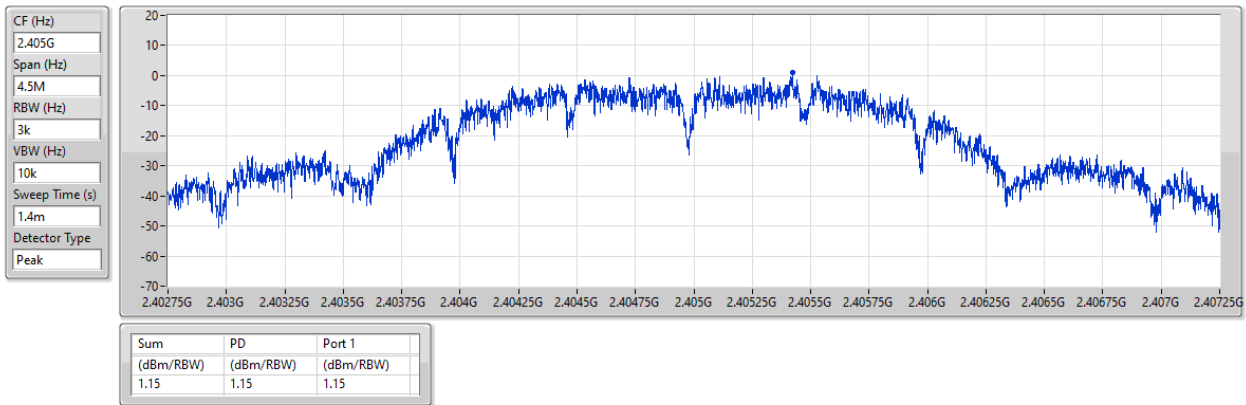
DG = Directional Gain; RBW = 3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;
Inf = There's no restriction for the limit.

2.4-2.4835GHz_Zigbee

PSD

2405MHz

05/12/2024

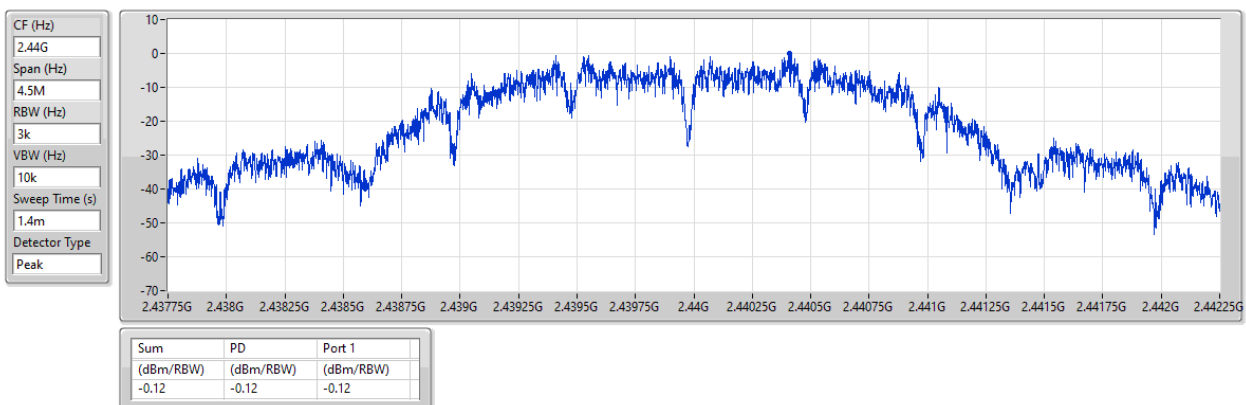


2.4-2.4835GHz_Zigbee

PSD

2440MHz

05/12/2024

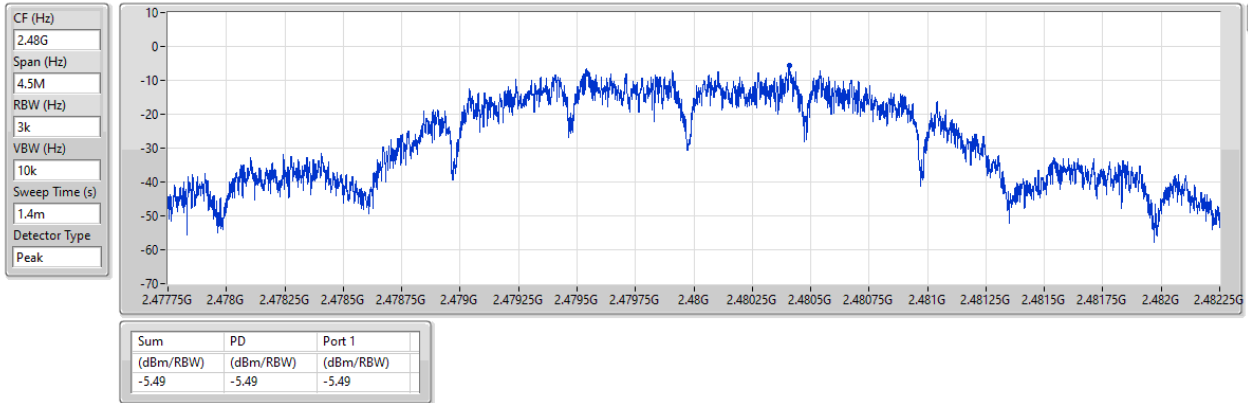


2.4-2.4835GHz_Zigbee

PSD

2480MHz

05/12/2024





Summary

| Mode | Result | Ref | Ref | Limit | Freq | Level | Freq | Level | Freq | Level | Freq | Level | Port |
|---------------|--------|----------|-------|--------|--------|--------|----------|--------|------|--------|-----------|--------|------|
| | | (Hz) | (dBm) | (dBm) | (Hz) | (dBm) | (Hz) | (dBm) | (Hz) | (dBm) | (Hz) | (dBm) | |
| 2.4-2.4835GHz | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Zigbee | Pass | 2.40468G | 13.57 | -16.43 | 2.394G | -52.35 | 2.39999G | -40.10 | 2.4G | -41.08 | 21.64875G | -44.87 | 1 |



Result

| Mode | Result | Ref | Ref | Limit | Freq | Level | Freq | Level | Freq | Level | Freq | Level | Port |
|---------|--------|----------|-------|--------|----------|--------|----------|--------|------|--------|-----------|--------|------|
| | | (Hz) | (dBm) | (dBm) | (Hz) | (dBm) | (Hz) | (dBm) | (Hz) | (dBm) | (Hz) | (dBm) | |
| Zigbee | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2405MHz | Pass | 2.40468G | 13.57 | -16.43 | 2.394G | -52.35 | 2.39999G | -40.10 | 2.4G | -41.08 | 21.64875G | -44.87 | 1 |
| 2440MHz | Pass | 2.40468G | 13.57 | -16.43 | 1.74154G | -55.16 | 2.39926G | -50.84 | 2.4G | -57.86 | 21.4968G | -45.13 | 1 |
| 2480MHz | Pass | 2.40468G | 13.57 | -16.43 | 2.13514G | -54.58 | 2.39534G | -52.24 | 2.4G | -56.20 | 21.75005G | -45.18 | 1 |

2.4-2.4835GHz Zigbee

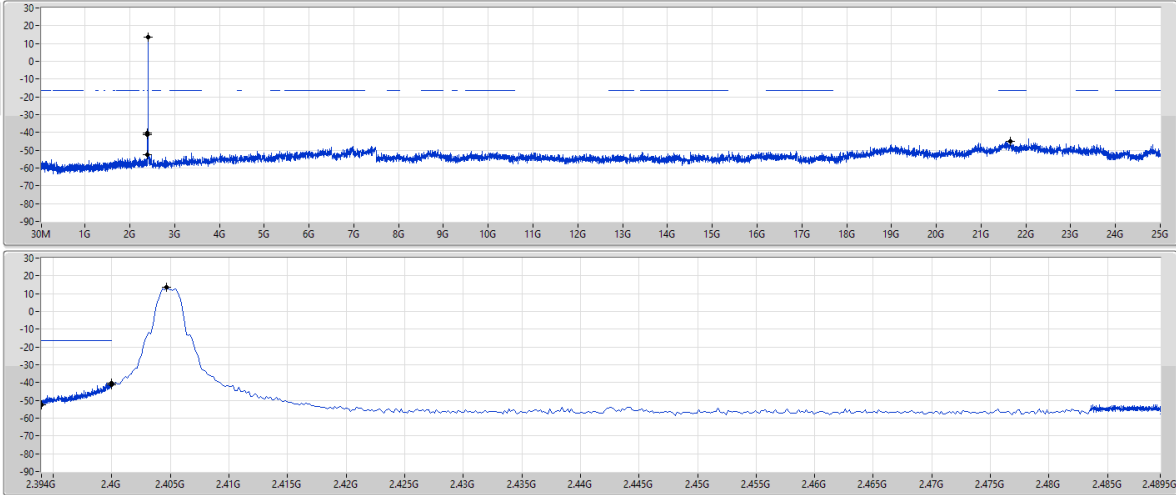
CSEndB

2405MHz

05/12/2024

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Port 1



2.4-2.4835GHz Zigbee

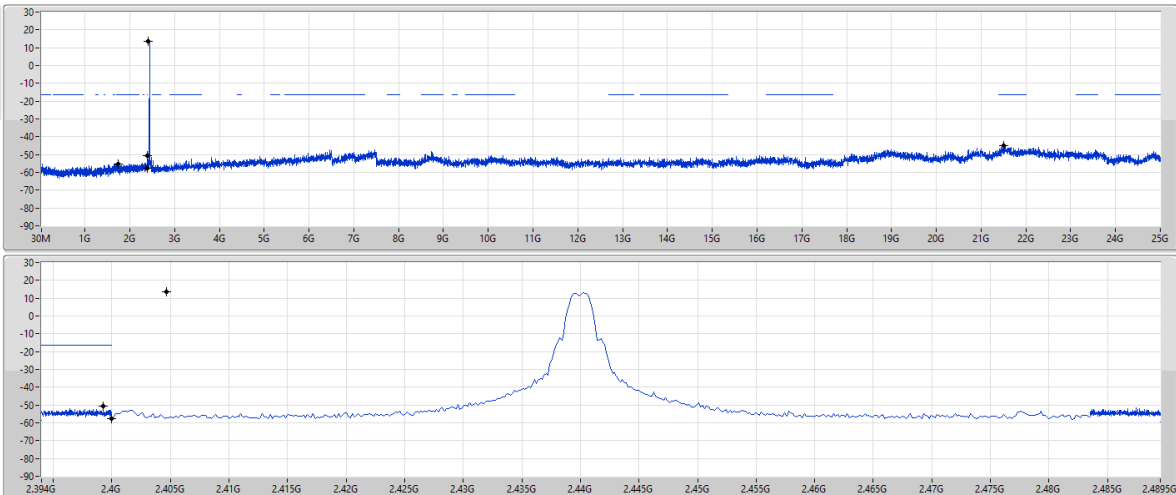
CSEndB

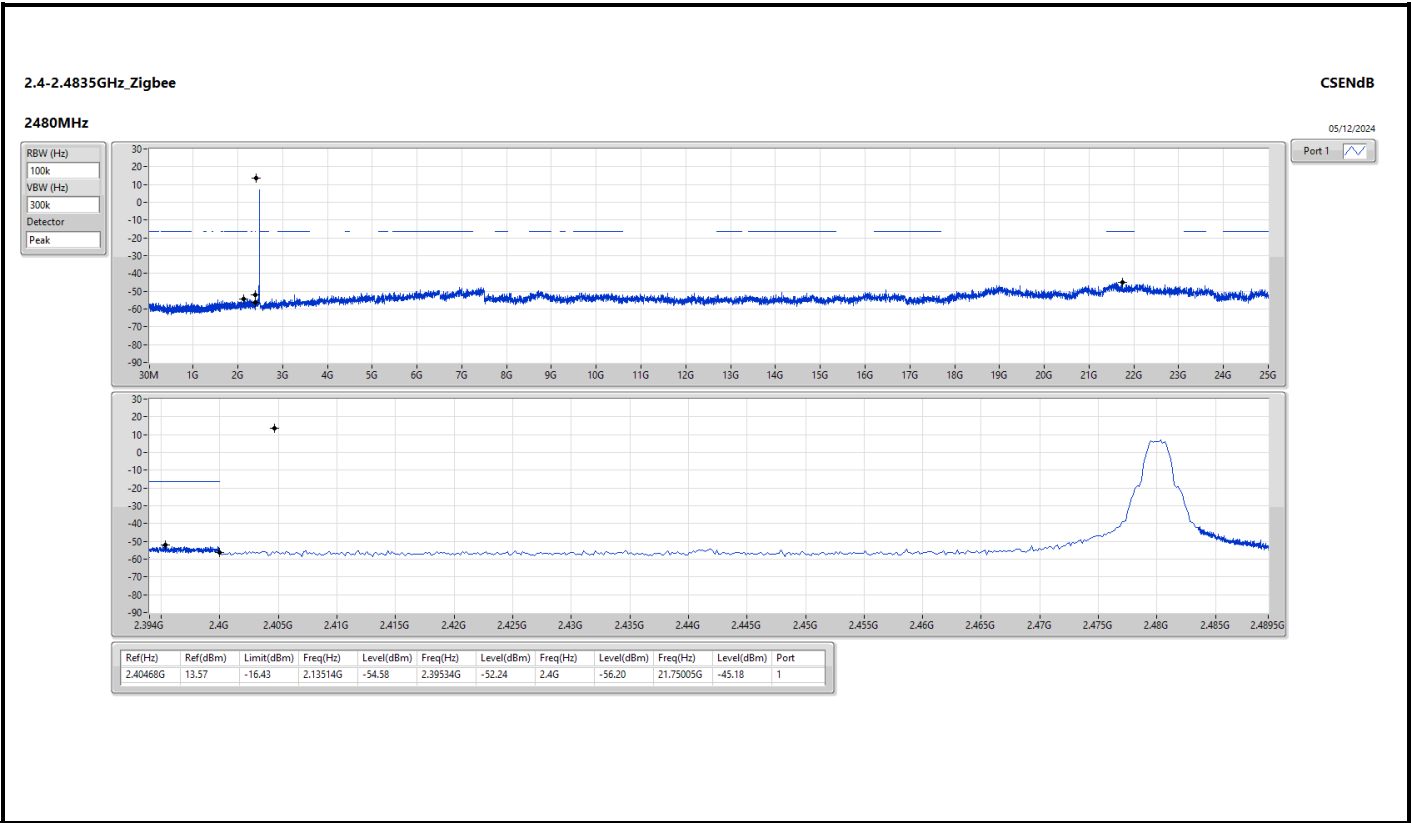
2440MHz

05/12/2024

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Port 1







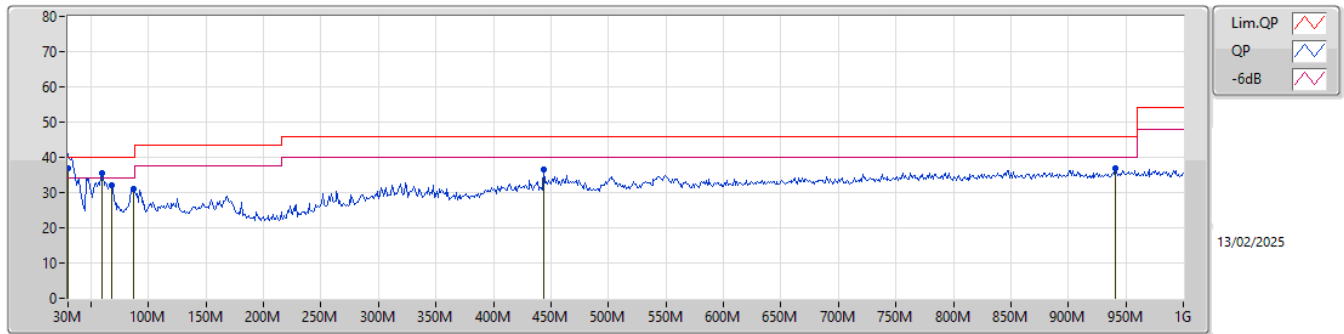
Radiated Emissions below 1GHz

Appendix F.1

Summary

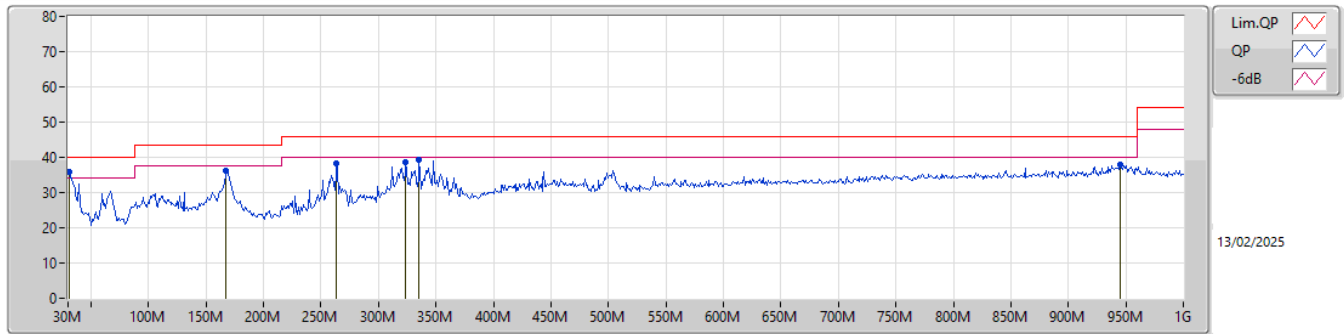
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|--------|--------|------|--------------|-------------------|-------------------|----------------|-----------|
| Mode 2 | Pass | PK | 30M | 36.74 | 40.00 | -3.26 | Vertical |

Mode 2



| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Factor (dB/m) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | Raw (dBuV) | AF (dB/m) | CL (dB) | PA (dB) | | |
|------|--------------|-------------------|-------------------|----------------|------------------|-------------|-----------|----------------|---------------|---------|---------------|--------------|------------|------------|--|--|
| PK | 30M | 36.74 | 40.00 | -3.26 | -19.15 | 3 | Vertical | 112 | 1.25 | "Worst" | 55.89 | 23.86 | 1.15 | 44.16 | | |
| PK | 59.1M | 35.50 | 40.00 | -4.50 | -30.32 | 3 | Vertical | 9 | 1.50 | - | 65.82 | 12.46 | 1.62 | 44.40 | | |
| PK | 67.83M | 32.06 | 40.00 | -7.94 | -30.54 | 3 | Vertical | 360 | 1.00 | - | 62.60 | 12.25 | 1.65 | 44.44 | | |
| PK | 87.23M | 31.14 | 40.00 | -8.86 | -27.98 | 3 | Vertical | 134 | 1.50 | - | 59.12 | 14.68 | 1.85 | 44.51 | | |
| PK | 444.19M | 36.59 | 46.00 | -9.41 | -16.70 | 3 | Vertical | 198 | 1.25 | - | 53.29 | 22.60 | 4.55 | 43.85 | | |
| PK | 940.83M | 36.95 | 46.00 | -9.05 | -10.34 | 3 | Vertical | 214 | 1.00 | - | 47.29 | 26.53 | 6.57 | 43.44 | | |

Mode 2



| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Factor (dB/m) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | Raw (dBuV) | AF (dB/m) | CL (dB) | PA (dB) | | |
|------|--------------|-------------------|-------------------|----------------|------------------|-------------|------------|----------------|---------------|---------|---------------|--------------|------------|------------|--|--|
| PK | 30.97M | 35.98 | 40.00 | -4.02 | -19.80 | 3 | Horizontal | 244 | 1.50 | "Worst" | 55.78 | 23.23 | 1.15 | 44.18 | | |
| PK | 167.74M | 36.04 | 43.50 | -7.46 | -25.85 | 3 | Horizontal | 105 | 2.00 | - | 61.89 | 15.86 | 2.73 | 44.44 | | |
| PK | 263.77M | 38.40 | 46.00 | -7.60 | -21.28 | 3 | Horizontal | 316 | 1.25 | - | 59.68 | 19.50 | 3.50 | 44.28 | | |
| PK | 323.91M | 38.51 | 46.00 | -7.49 | -20.84 | 3 | Horizontal | 321 | 1.00 | - | 59.35 | 19.40 | 3.92 | 44.16 | | |
| PK | 335.55M | 39.29 | 46.00 | -6.71 | -20.57 | 3 | Horizontal | 321 | 1.00 | - | 59.86 | 19.58 | 3.98 | 44.13 | | |
| PK | 944.71M | 37.80 | 46.00 | -8.20 | -10.20 | 3 | Horizontal | 202 | 1.50 | - | 48.00 | 26.66 | 6.58 | 43.44 | | |

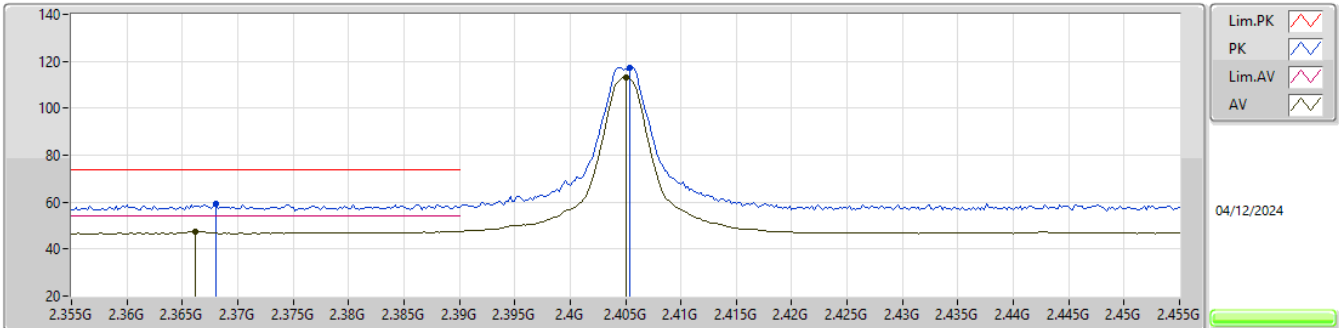


Summary

| Mode | Result | Type | Freq | Level | Limit | Margin | Dist | Condition | Azimuth | Height | Comments |
|---------------|--------|------|--------|----------|----------|--------|------|-----------|---------|--------|----------|
| | | | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (m) | | (°) | (m) | |
| 2.4-2.4835GHz | - | - | - | - | - | - | - | - | - | - | - |
| Zigbee | Pass | AV | 2.484G | 53.98 | 54.00 | -0.02 | 3 | Vertical | 75 | 1.38 | BP 1MHz |

2.4-2.4835GHz_Zigbee

2405MHz_TX

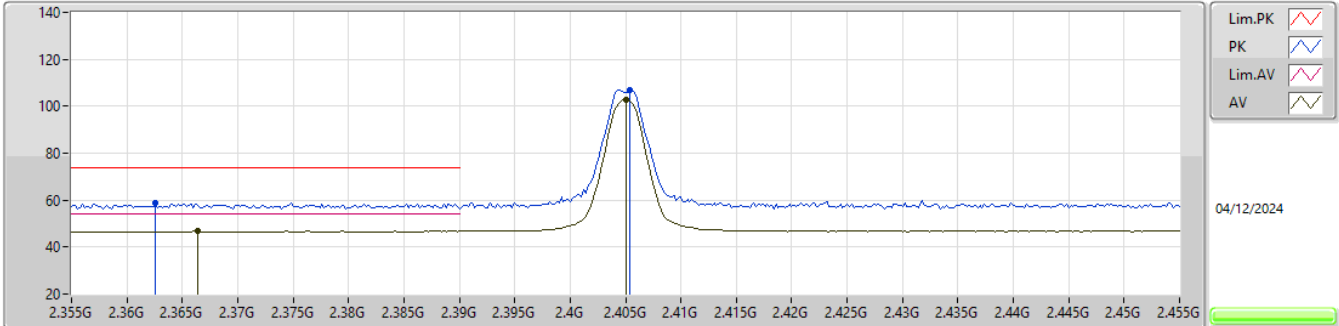


EUT_Y_1TX
Setting 20
03-V-M-2

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|--|--|--|--|
| PK | 2.368G | 59.33 | 74.00 | -14.67 | 26.35 | 3 | Vertical | 76 | 1.04 | - | 28.20 | 4.78 | - | | | | |
| AV | 2.3662G | 47.66 | 54.00 | -6.34 | 14.69 | 3 | Vertical | 76 | 1.04 | - | 28.20 | 4.77 | - | | | | |
| PK | 2.4054G | 117.11 | Inf | -Inf | 83.98 | 3 | Vertical | 76 | 1.04 | - | 28.30 | 4.83 | - | | | | |
| AV | 2.405G | 113.30 | Inf | -Inf | 80.17 | 3 | Vertical | 76 | 1.04 | - | 28.30 | 4.83 | - | | | | |

2.4-2.4835GHz_Zigbee

2405MHz_TX

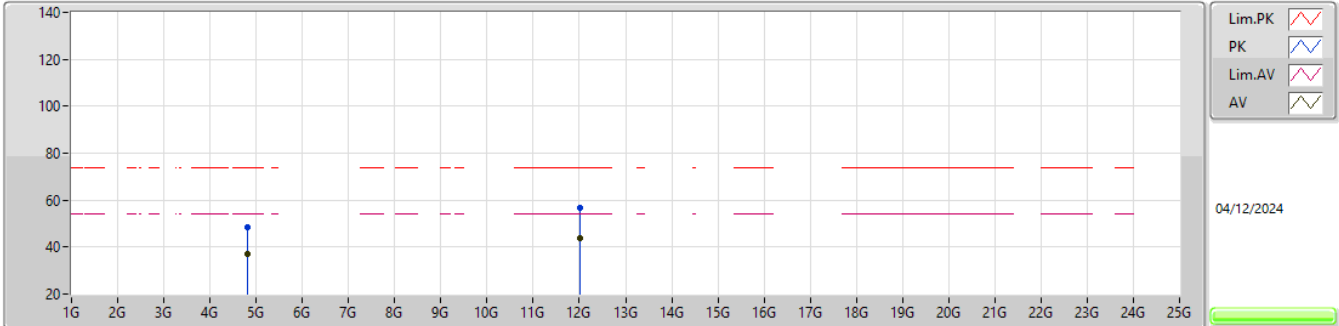


EUT_Y_1TX
Setting 20
03-V-M-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA | | | | |
|------|---------|----------|----------|--------|--------|------|------------|---------|--------|---------|-------|------|------|--|--|--|--|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) | | | | |
| PK | 2.3626G | 58.65 | 74.00 | -15.35 | 25.68 | 3 | Horizontal | 133 | 1.78 | - | 28.20 | 4.77 | - | | | | |
| AV | 2.3664G | 46.72 | 54.00 | -7.28 | 13.75 | 3 | Horizontal | 133 | 1.78 | - | 28.20 | 4.77 | - | | | | |
| PK | 2.4054G | 106.68 | Inf | -Inf | 73.55 | 3 | Horizontal | 133 | 1.78 | - | 28.30 | 4.83 | - | | | | |
| AV | 2.405G | 102.84 | Inf | -Inf | 69.71 | 3 | Horizontal | 133 | 1.78 | - | 28.30 | 4.83 | - | | | | |

2.4-2.4835GHz_Zigbee

2405MHz_TX

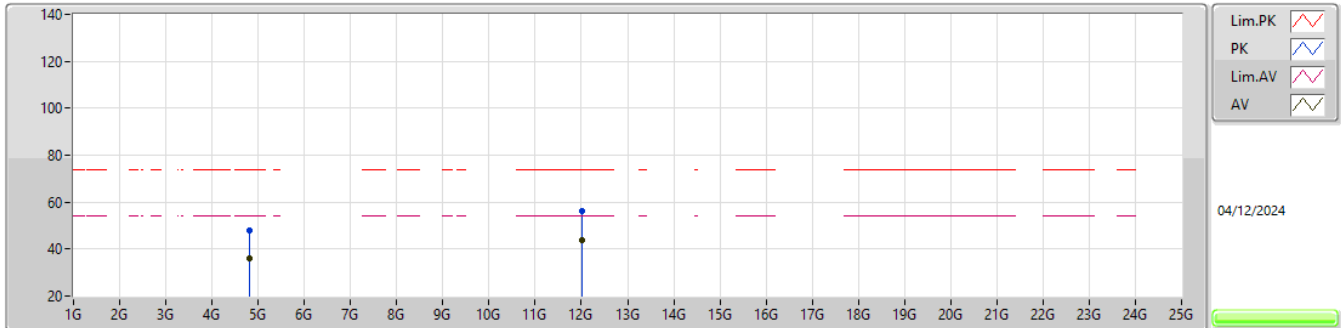


EUT_Y_1TX
Setting 20
03-V-M-2

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|--|--|--|--|
| PK | 4.81096G | 48.20 | 74.00 | -25.80 | 43.10 | 3 | Vertical | 327 | 2.03 | - | 33.22 | 7.21 | 35.33 | | | | |
| AV | 4.80894G | 37.05 | 54.00 | -16.95 | 31.95 | 3 | Vertical | 327 | 2.03 | - | 33.22 | 7.21 | 35.33 | | | | |
| PK | 12.02054G | 56.68 | 74.00 | -17.32 | 40.56 | 3 | Vertical | 261 | 1.64 | - | 39.06 | 11.83 | 34.77 | | | | |
| AV | 12.02056G | 43.65 | 54.00 | -10.35 | 27.53 | 3 | Vertical | 261 | 1.64 | - | 39.06 | 11.83 | 34.77 | | | | |

2.4-2.4835GHz_Zigbee

2405MHz_TX

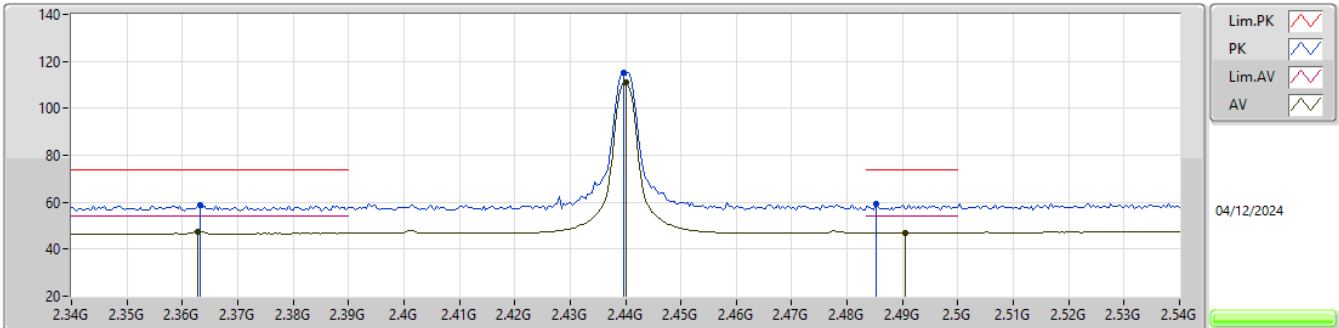


EUT_Y_1TX
Setting 20
03-V-M-2

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|--|--|--|--|
| PK | 4.80914G | 47.71 | 74.00 | -26.29 | 42.61 | 3 | Horizontal | 245 | 1.10 | - | 33.22 | 7.21 | 35.33 | | | | |
| AV | 4.80894G | 36.10 | 54.00 | -17.90 | 31.00 | 3 | Horizontal | 245 | 1.10 | - | 33.22 | 7.21 | 35.33 | | | | |
| PK | 12.02546G | 55.99 | 74.00 | -18.01 | 39.87 | 3 | Horizontal | 74 | 2.83 | - | 39.05 | 11.83 | 34.76 | | | | |
| AV | 12.02522G | 43.64 | 54.00 | -10.36 | 27.52 | 3 | Horizontal | 74 | 2.83 | - | 39.05 | 11.83 | 34.76 | | | | |

2.4-2.4835GHz_Zigbee

2440MHz_TX

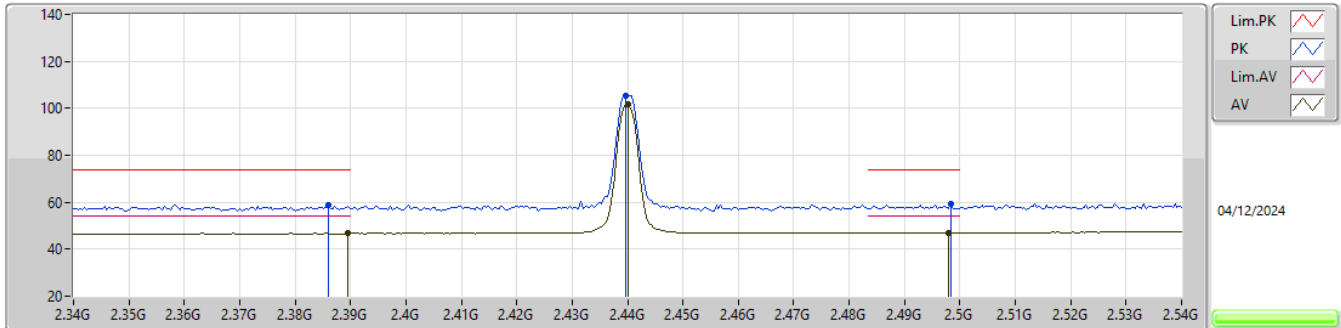


EUT_Y_1TX
Setting 20
03-V-M-2

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|--|--|--|--|
| PK | 2.3632G | 58.76 | 74.00 | -15.24 | 25.79 | 3 | Vertical | 74 | 1.35 | - | 28.20 | 4.77 | - | | | | |
| AV | 2.3628G | 47.58 | 54.00 | -6.42 | 14.61 | 3 | Vertical | 74 | 1.35 | - | 28.20 | 4.77 | - | | | | |
| PK | 2.4396G | 114.97 | Inf | -Inf | 81.81 | 3 | Vertical | 74 | 1.35 | - | 28.30 | 4.86 | - | | | | |
| AV | 2.44G | 111.11 | Inf | -Inf | 77.95 | 3 | Vertical | 74 | 1.35 | - | 28.30 | 4.86 | - | | | | |
| PK | 2.4852G | 59.42 | 74.00 | -14.58 | 26.16 | 3 | Vertical | 74 | 1.35 | - | 28.35 | 4.91 | - | | | | |
| AV | 2.4904G | 47.10 | 54.00 | -6.90 | 13.78 | 3 | Vertical | 74 | 1.35 | - | 28.40 | 4.92 | - | | | | |

2.4-2.4835GHz_Zigbee

2440MHz_TX

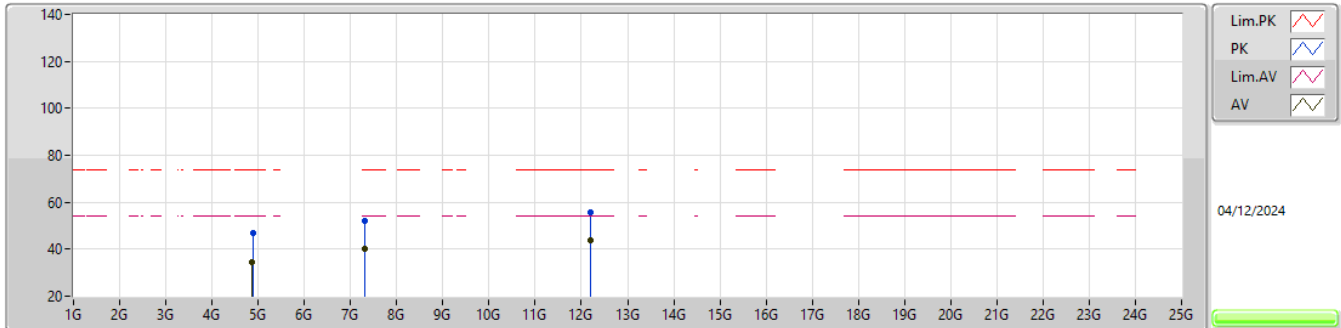


EUT_Y_1TX
Setting 20
03-V-M-2

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|--|--|--|--|
| PK | 2.386G | 58.79 | 74.00 | -15.21 | 25.73 | 3 | Horizontal | 14 | 1.77 | - | 28.26 | 4.80 | - | | | | |
| AV | 2.3896G | 46.78 | 54.00 | -7.22 | 13.67 | 3 | Horizontal | 14 | 1.77 | - | 28.30 | 4.81 | - | | | | |
| PK | 2.4396G | 105.55 | Inf | -Inf | 72.39 | 3 | Horizontal | 14 | 1.77 | - | 28.30 | 4.86 | - | | | | |
| AV | 2.44G | 101.68 | Inf | -Inf | 68.52 | 3 | Horizontal | 14 | 1.77 | - | 28.30 | 4.86 | - | | | | |
| PK | 2.4984G | 59.25 | 74.00 | -14.75 | 25.92 | 3 | Horizontal | 14 | 1.77 | - | 28.40 | 4.93 | - | | | | |
| AV | 2.498G | 47.07 | 54.00 | -6.93 | 13.74 | 3 | Horizontal | 14 | 1.77 | - | 28.40 | 4.93 | - | | | | |

2.4-2.4835GHz_Zigbee

2440MHz_TX

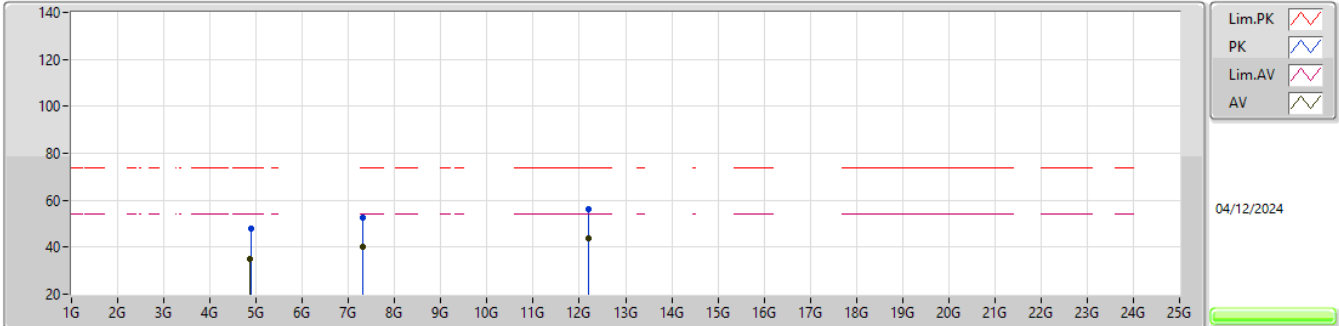


EUT_Y_1TX
Setting 20
03-V-M-2

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|--|--|--|
| PK | 4.88168G | 47.06 | 74.00 | -26.94 | 41.85 | 3 | Vertical | 114 | 2.45 | - | 33.36 | 7.18 | 35.33 | | | |
| AV | 4.87504G | 34.70 | 54.00 | -19.30 | 29.50 | 3 | Vertical | 114 | 2.45 | - | 33.35 | 7.18 | 35.33 | | | |
| PK | 7.31116G | 52.14 | 74.00 | -21.86 | 41.94 | 3 | Vertical | 266 | 2.25 | - | 36.74 | 8.61 | 35.15 | | | |
| AV | 7.31736G | 39.99 | 54.00 | -14.01 | 29.76 | 3 | Vertical | 266 | 2.25 | - | 36.77 | 8.62 | 35.16 | | | |
| PK | 12.19936G | 55.84 | 74.00 | -18.16 | 39.76 | 3 | Vertical | 234 | 2.11 | - | 38.70 | 11.82 | 34.44 | | | |
| AV | 12.20708G | 43.64 | 54.00 | -10.36 | 27.54 | 3 | Vertical | 234 | 2.11 | - | 38.71 | 11.81 | 34.42 | | | |

2.4-2.4835GHz_Zigbee

2440MHz_TX

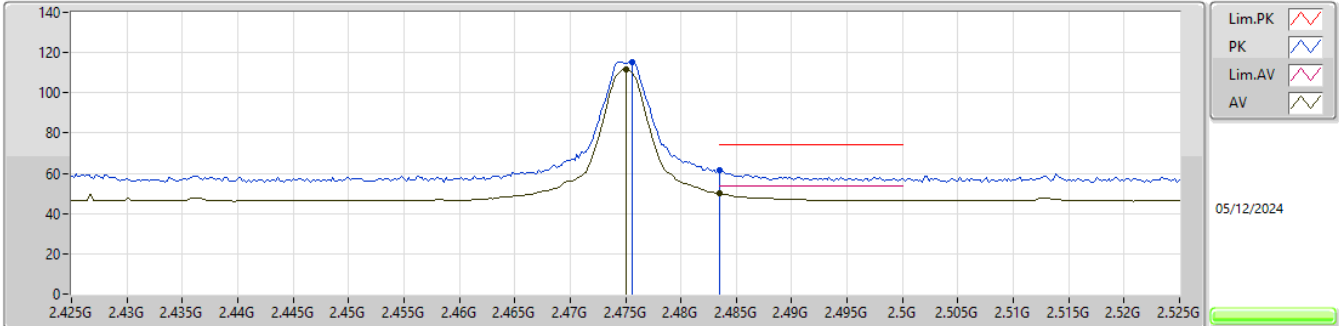


EUT_Y_1TX
Setting 20
03-V-M-2

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|--|--|--|
| PK | 4.88712G | 47.76 | 74.00 | -26.24 | 42.54 | 3 | Horizontal | 142 | 1.70 | - | 33.37 | 7.18 | 35.33 | | | |
| AV | 4.87432G | 34.81 | 54.00 | -19.19 | 29.61 | 3 | Horizontal | 142 | 1.70 | - | 33.35 | 7.18 | 35.33 | | | |
| PK | 7.31264G | 52.43 | 74.00 | -21.57 | 42.23 | 3 | Horizontal | 206 | 2.42 | - | 36.75 | 8.61 | 35.16 | | | |
| AV | 7.31864G | 39.96 | 54.00 | -14.04 | 29.73 | 3 | Horizontal | 206 | 2.42 | - | 36.77 | 8.62 | 35.16 | | | |
| PK | 12.19536G | 56.22 | 74.00 | -17.78 | 40.13 | 3 | Horizontal | 205 | 2.71 | - | 38.71 | 11.82 | 34.44 | | | |
| AV | 12.20144G | 43.65 | 54.00 | -10.35 | 27.57 | 3 | Horizontal | 205 | 2.71 | - | 38.70 | 11.81 | 34.43 | | | |

2.4-2.4835GHz_Zigbee

2475MHz_TX

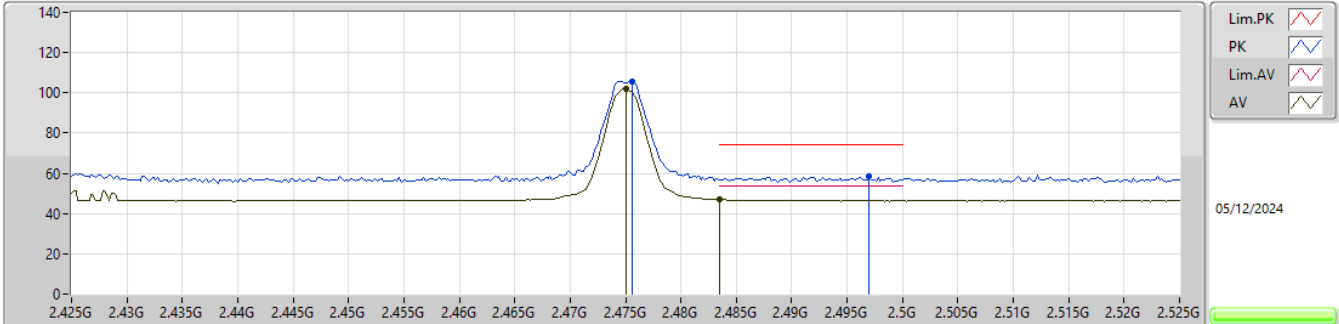


EUT_Y_1TX
Setting 20
04-H-M-2

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|--|--|--|--|
| PK | 2.4756G | 115.32 | Inf | -Inf | 84.32 | 3 | Vertical | 82 | 1.74 | - | 27.46 | 3.54 | - | | | | |
| AV | 2.475G | 111.60 | Inf | -Inf | 80.61 | 3 | Vertical | 82 | 1.74 | - | 27.45 | 3.54 | - | | | | |
| PK | 2.4835G | 61.50 | 74.00 | -12.50 | 30.46 | 3 | Vertical | 82 | 1.74 | - | 27.50 | 3.54 | - | | | | |
| AV | 2.4835G | 49.97 | 54.00 | -4.03 | 18.93 | 3 | Vertical | 82 | 1.74 | - | 27.50 | 3.54 | - | | | | |

2.4-2.4835GHz_Zigbee

2475MHz_TX

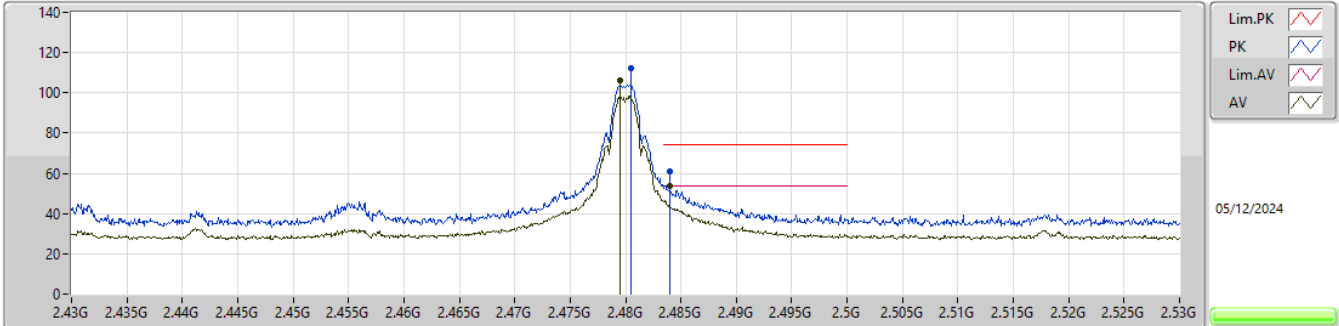


EUT_Y_1TX
Setting 20
04-H-M-2-10

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA | | | | |
|------|---------|----------|----------|--------|--------|------|------------|---------|--------|---------|-------|------|------|--|--|--|--|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) | | | | |
| PK | 2.4756G | 105.57 | Inf | -Inf | 74.57 | 3 | Horizontal | 338 | 1.30 | - | 27.46 | 3.54 | - | | | | |
| AV | 2.475G | 101.87 | Inf | -Inf | 70.88 | 3 | Horizontal | 338 | 1.30 | - | 27.45 | 3.54 | - | | | | |
| PK | 2.497G | 58.60 | 74.00 | -15.40 | 27.55 | 3 | Horizontal | 338 | 1.30 | - | 27.50 | 3.55 | - | | | | |
| AV | 2.4835G | 46.90 | 54.00 | -7.10 | 15.86 | 3 | Horizontal | 338 | 1.30 | - | 27.50 | 3.54 | - | | | | |

2.4-2.4835GHz_Zigbee

2480MHz_TX

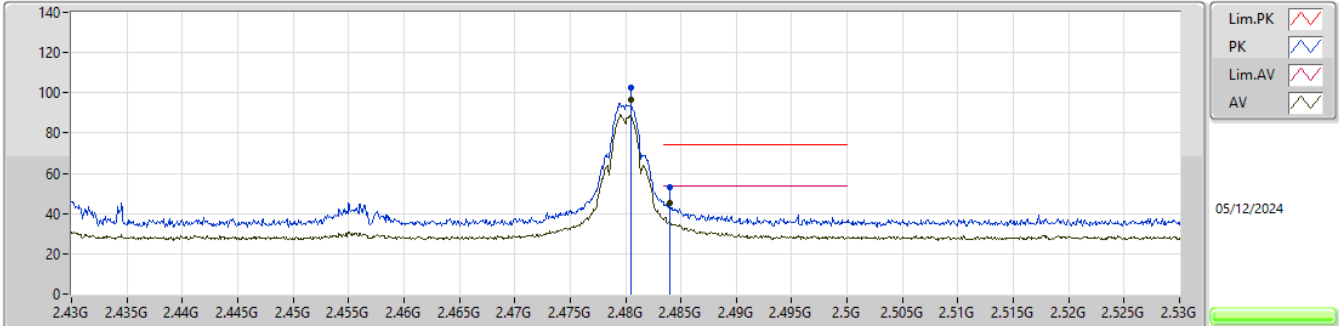


EUT_Y_1TX
Setting 12
04-H-M-2-10

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|--|--|--|--|
| PK | 2.4805G | 112.02 | Inf | -Inf | 125.08 | 3 | Vertical | 75 | 1.38 | BP 1MHz | 27.50 | 4.04 | 44.60 | | | | |
| AV | 2.4795G | 106.17 | Inf | -Inf | 119.24 | 3 | Vertical | 75 | 1.38 | BP 1MHz | 27.49 | 4.04 | 44.60 | | | | |
| PK | 2.484G | 61.22 | 74.00 | -12.78 | 74.28 | 3 | Vertical | 75 | 1.38 | BP 1MHz | 27.50 | 4.04 | 44.60 | | | | |
| AV | 2.484G | 53.98 | 54.00 | -0.02 | 67.04 | 3 | Vertical | 75 | 1.38 | BP 1MHz | 27.50 | 4.04 | 44.60 | | | | |

2.4-2.4835GHz_Zigbee

2480MHz_TX

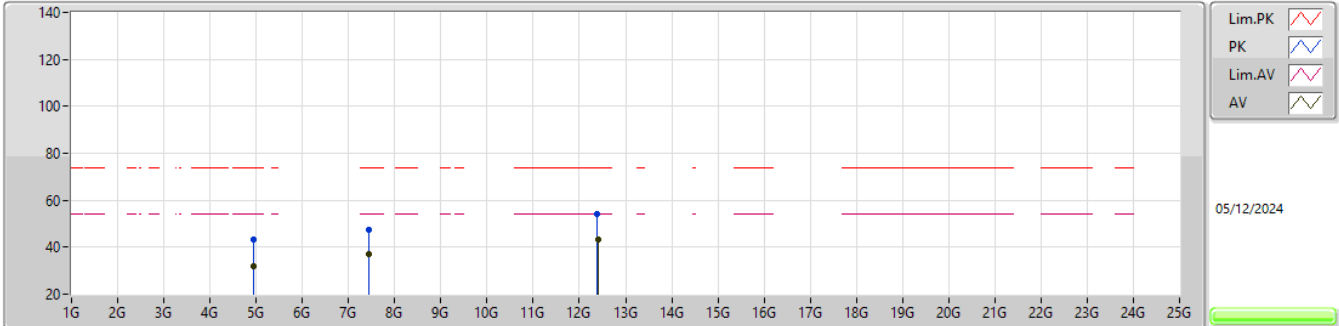


EUT_Y_1TX
Setting 12
04-H-M-2-10

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|--|--|--|
| PK | 2.4805G | 102.38 | Inf | -Inf | 115.44 | 3 | Horizontal | 334 | 1.61 | BP 1MHz | 27.50 | 4.04 | 44.60 | | | |
| AV | 2.4805G | 96.47 | Inf | -Inf | 109.53 | 3 | Horizontal | 334 | 1.61 | BP 1MHz | 27.50 | 4.04 | 44.60 | | | |
| PK | 2.484G | 53.02 | 74.00 | -20.98 | 66.08 | 3 | Horizontal | 334 | 1.61 | BP 1MHz | 27.50 | 4.04 | 44.60 | | | |
| AV | 2.484G | 45.49 | 54.00 | -8.51 | 58.55 | 3 | Horizontal | 334 | 1.61 | BP 1MHz | 27.50 | 4.04 | 44.60 | | | |

2.4-2.4835GHz_Zigbee

2480MHz_TX

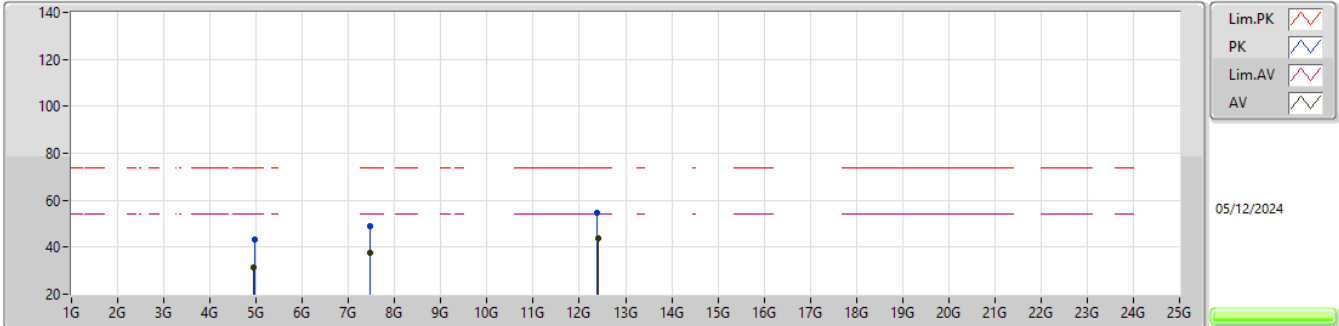


EUT_Y_1TX
Setting 12
04-H-M-2

| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|--|--|--|
| PK | 4.95514G | 43.33 | 74.00 | -30.67 | 50.21 | 3 | Vertical | 173 | 2.97 | - | 31.52 | 5.50 | 43.90 | | | |
| AV | 4.9558G | 31.77 | 54.00 | -22.23 | 38.65 | 3 | Vertical | 173 | 2.97 | - | 31.52 | 5.50 | 43.90 | | | |
| PK | 7.43448G | 47.50 | 74.00 | -26.50 | 46.87 | 3 | Vertical | 326 | 2.74 | - | 36.31 | 7.26 | 42.94 | | | |
| AV | 7.43508G | 37.31 | 54.00 | -16.69 | 36.69 | 3 | Vertical | 326 | 2.74 | - | 36.31 | 7.26 | 42.95 | | | |
| PK | 12.39346G | 54.06 | 74.00 | -19.94 | 47.02 | 3 | Vertical | 291 | 2.12 | - | 38.81 | 11.26 | 43.03 | | | |
| AV | 12.39616G | 43.36 | 54.00 | -10.64 | 36.32 | 3 | Vertical | 291 | 2.12 | - | 38.81 | 11.26 | 43.03 | | | |

2.4-2.4835GHz_Zigbee

2480MHz_TX



EUT_Y_1TX
Setting 12
04-H-M-2

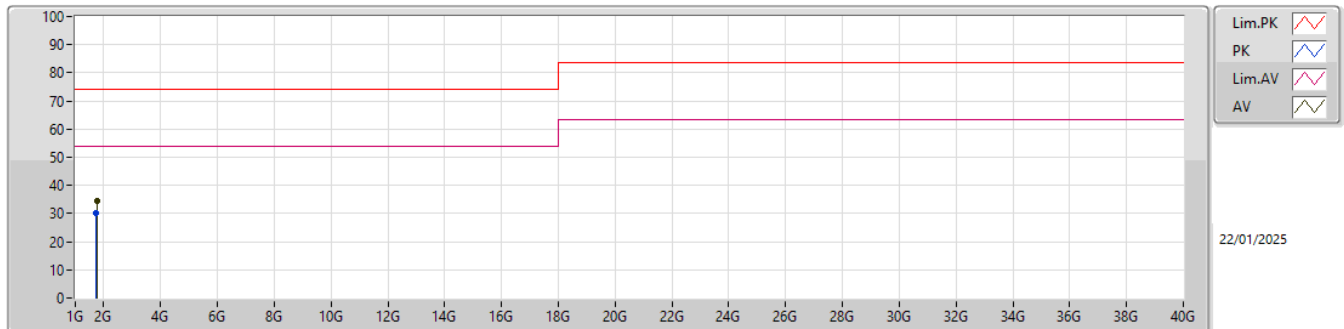
| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Raw (dBuV) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | AF (dB) | CL (dB) | PA (dB) | | | |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|--|--|--|
| PK | 4.96168G | 43.03 | 74.00 | -30.97 | 49.88 | 3 | Horizontal | 83 | 2.21 | - | 31.55 | 5.50 | 43.90 | | | |
| AV | 4.94692G | 31.59 | 54.00 | -22.41 | 38.50 | 3 | Horizontal | 83 | 2.21 | - | 31.49 | 5.50 | 43.90 | | | |
| PK | 7.45446G | 48.78 | 74.00 | -25.22 | 48.08 | 3 | Horizontal | 297 | 1.72 | - | 36.39 | 7.28 | 42.97 | | | |
| AV | 7.45928G | 37.64 | 54.00 | -16.36 | 36.95 | 3 | Horizontal | 297 | 1.72 | - | 36.38 | 7.29 | 42.98 | | | |
| PK | 12.3949G | 54.66 | 74.00 | -19.34 | 47.62 | 3 | Horizontal | 171 | 1.57 | - | 38.81 | 11.26 | 43.03 | | | |
| AV | 12.40468G | 43.57 | 54.00 | -10.43 | 36.57 | 3 | Horizontal | 171 | 1.57 | - | 38.77 | 11.27 | 43.04 | | | |



Summary

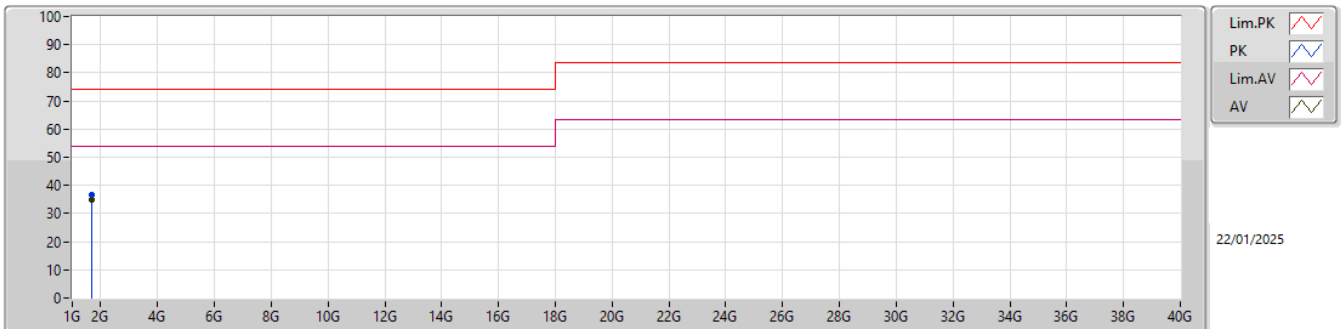
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|--------|--------|------|--------------|-------------------|-------------------|----------------|------------|
| Mode 1 | Pass | AV | 1.70178G | 35.04 | 54.00 | -18.96 | Horizontal |

Radiated Emissions above 1GHz_Mode 1



| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Factor (dB/m) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | Raw (dBuV/m) | AF (dB/m) | CL (dB) | PA (dB) | | |
|------|--------------|-------------------|-------------------|----------------|------------------|-------------|-----------|----------------|---------------|---------|-----------------|--------------|------------|------------|--|--|
| PK | 1.7131G | 30.33 | 74.00 | -43.67 | -3.47 | 3 | Vertical | 33 | 180 | - | 33.80 | 25.60 | 4.15 | 33.22 | | |
| AV | 1.751G | 34.36 | 54.00 | -19.64 | -3.56 | 3 | Vertical | 33 | 180 | "Worst" | 37.92 | 25.41 | 4.21 | 33.18 | | |

Radiated Emissions above 1GHz_Mode 1



| Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Factor (dB/m) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comment | Raw (dBuV/m) | AF (dB/m) | CL (dB) | PA (dB) | | |
|------|--------------|-------------------|-------------------|----------------|------------------|-------------|------------|----------------|---------------|---------|-----------------|--------------|------------|------------|--|--|
| PK | 1.6867G | 36.60 | 74.00 | -37.40 | -3.59 | 3 | Horizontal | 48 | 1.80 | - | 40.19 | 25.53 | 4.12 | 33.24 | | |
| AV | 1.70178G | 35.04 | 54.00 | -18.96 | -3.64 | 3 | Horizontal | 48 | 1.80 | "Worst" | 38.68 | 25.44 | 4.14 | 33.22 | | |