



Solutions

**FCC 47 CFR PART 15 SUBPART C
ISED RSS-247 ISSUE 3**

TEST REPORT

For

LED Device

MODEL NUMBER: 929003858301, 929003858401, 929003858501

ALTERNATIVE MODEL NUMBER: 9290038583, 9290038584, 9290038585

PROJECT NUMBER: 4791649191

REPORT NUMBER: 4791649191-1

FCC ID: 2AGBW9290038583X

IC: 20812-38583X

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Prepared for

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Form-ULID-008536-14 V4.0

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Revision History

| Rev. | Issue Date | Revisions | Revised By |
|------|------------|---------------|------------|
| V0 | 04/06/2025 | Initial Issue | |

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Signify (China) Investment Co., Ltd.
Address: Building 9, Lane 888, Tianlin Road, Minhang District, Shanghai 200233 China

Manufacturer Information-1

Company Name: Dongguan ZOYO Electronics Technology Co., Ltd.
Address: 1st Building, NO.11, Nange west Road, Nanya Village, Daojiao Town, Dongguan, Guangdong

Manufacturer Information-2

Company Name: Silver Age Vietnam Technology Company Limited
Address: Lot A2, Gia Le industrial zone, Xuan Quang Dong commune, Dong Hung district, Thai Binh province, VN

EUT Description

Product Name: LED Device
Model Number: 929003858301, 929003858401, 929003858501
Alternative Model Number: 9290038583, 9290038584, 9290038585
Model Difference:
1. 9290038583, 9290038584, 9290038585 are alternative models of the main models 929003858301, 929003858401, 929003858501. The alternative models and the main models are identical, the only difference is model number.
2. Their electrical circuit design, layout, components used and internal wiring are identical, only the size of LED device is different.
Sample Number: 8056478
Data of Receipt Sample: Jan. 22, 2025
Test Date: Jan. 22, 2025~ Feb. 30, 2024

APPLICABLE STANDARDS

| STANDARD | TEST RESULTS |
|--------------------------|--------------|
| CFR 47 Part 15 Subpart C | PASS |
| ISED RSS-247 Issue 3 | PASS |
| ISED RSS-GEN Issue 5 | PASS |

| Summary of Test Results | | | |
|-------------------------|---|---|--------------|
| Clause | Test Items | FCC and ISED Rules | Test Results |
| 1 | 6 dB Bandwidth and 99% Occupied Bandwidth | FCC 15.247 (a) (2) RSS-247 Clause 5.2 (a) RSS-Gen Clause 6.7 | PASS |
| 2 | Conducted Power | FCC 15.247 (b) (3) RSS-247 Clause 5.4 (d) RSS-Gen Clause 6.12 | PASS |
| 3 | Power Spectral Density | FCC 15.247 (e) RSS-247 Clause 5.2 (b) | PASS |
| 4 | Conducted Band edge And Spurious emission | FCC 15.247 (d) RSS-247 Clause 5.5 RSS-GEN Clause 6.13 | PASS |
| 5 | Radiated Band edges and Spurious emission | FCC 15.247 (d) FCC 15.209 FCC 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9 RSS-GEN Clause 6.13 | PASS |
| 6 | Conducted Emission Test for AC Power Port | FCC 15.207 RSS-GEN Clause 8.8 | PASS |
| 7 | Antenna Requirement | FCC 15.203 RSS-GEN Clause 6.8 | PASS |

Note:
The measurement result for the sample received is <Pass> according to < ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15C, ISED RSS-GEN, ISED RSS-247> when <Accuracy Method> decision rule is applied.

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Kevin Shen

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 15.247 Meas Guidance v05r02, 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part 2, CFR 47 FCC Part 15, ANSI C63.10-2013, ISED RSS-247 Issue 3 and ISED RSS-GEN Issue 5.

3. FACILITIES AND ACCREDITATION

| | |
|---------------------------|--|
| Accreditation Certificate | <p>A2LA (Certificate No.: 4829.01) UL-CCIC COMPANY LIMITED has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1247) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.</p> <p>IC (IC Designation No.: 25056; CAB No.: CN0073) UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.</p> |
|---------------------------|--|

Note 1: All tests measurement facilities use to collect the measurement data are located at No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China

Note 2: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. These measurements below 30MHz had been correlated to measurements performed on an OFS.

Note 3: The test anechoic chamber in UL-CCIC COMPANY LIMITED had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| Test Item | Uncertainty |
|---|--|
| Conduction emission | 3.1 dB |
| DTS Bandwidth | 1.9 % |
| Maximum Conducted Output Power | 1.3 dB |
| Maximum Power Spectral Density Level | 1.5 dB |
| Band-edge Compliance | 1.9% |
| Unwanted Emissions in Non-restricted Freq Bands | 9kHz-30MHz: ± 0.90 dB 30MHz-1GHz: ± 1.5 dB 1GHz-12.75GHz: ± 1.9 dB 12.75GHz-26.5GHz: ± 2.1 dB |
| Radiation Emission test (include Fundamental emission) (9kHz-30MHz) | 3.4dB |
| Radiation Emission test (include Fundamental emission) (30MHz-1GHz) | 3.4dB |
| Radiation Emission test (1GHz to 26GHz) (include Fundamental emission) | 3.5dB (1GHz-18GHz) 3.9dB (18GHz-26.5GHz) |
| Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. | |

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

| | |
|---------------------------|--|
| Equipment: | LED Device |
| Model Name: | 929003858301 |
| Transmit Frequency Range: | 2405 MHz ~ 2480 MHz |
| Modulation: | O-QPSK |
| Test software of EUT: | HueApprobationTool (manufacturer declare) |
| Antenna Type: | PCB PIFA Antenna |
| Antenna Gain: | -6.08 dBi Note: This data is provided by customer and our lab isn't responsible for this data. |

5.2. MAXIMUM OUTPUT POWER

| Mode | Frequency (MHz) | Channel Number | Max. Output Power(dBm) |
|--------|-----------------|----------------|------------------------|
| Zigbee | 2405-2480 | 11-26 [16] | 7.26 |

5.3. CHANNEL LIST

| Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| 11 | 2405 | 12 | 2410 | 13 | 2415 | 14 | 2420 |
| 15 | 2425 | 16 | 2430 | 17 | 2435 | 18 | 2440 |
| 19 | 2445 | 20 | 2450 | 21 | 2455 | 22 | 2460 |
| 23 | 2465 | 24 | 2470 | 25 | 2475 | 26 | 2480 |

5.4. TEST CHANNEL CONFIGURATION

| Test Mode | Test Channel | | Frequency |
|-----------|----------------|-------|-----------|
| O-QPSK | Low Channel | CH 11 | 2405MHz |
| | Middle Channel | CH 18 | 2440MHz |
| | High Channel | CH 26 | 2480MHz |

5.5. THE WORSE CASE POWER SETTING PARAMETER

| The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band | | | | |
|--|-------------------------|---------------------|-----|-----|
| Test Software | | HueAppprobationTool | | |
| Modulation Type | Transmit Antenna Number | Test Channel | | |
| | | LCH | MCH | HCH |
| GFSK | 1 | 8 | 8 | 8 |

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

| Ant. | Frequency (MHz) | Antenna Type | Antenna Gain (dBi) |
|------|-----------------|------------------|--------------------|
| 1 | 2400-2483.5 | PCB PIFA Antenna | -6.08 |

Note: This data is provided by customer and our lab isn't responsible for this data.

| Test Mode | Transmit and Receive Mode | Description |
|-----------|--|---|
| Zigbee | <input checked="" type="checkbox"/> 1TX, 1RX | Antenna1 can be used as transmitting/receiving antenna independently. |

5.7. THE WORSE CASE CONFIGURATIONS

| Model | Alternative Models | Size of LED Device |
|--------------|--------------------|-----------------------|
| 929003858301 | 9290038583 | 7-meter light string |
| 929003858401 | 9290038584 | 14-meter light string |
| 929003858501 | 9290038585 | 28-meter light string |

The six models have the same RF module, only the size of LED device is different, all the models had been test, only the worst case was recorded in this report.

5.8. TEST ENVIRONMENT

| Environment Parameter | Selected Values During Tests | |
|-----------------------|------------------------------|-----------|
| Relative Humidity | 55 ~ 65% | |
| Atmospheric Pressure: | 101kPa | |
| Temperature | TN | 23 ~ 28°C |
| Voltage: | VL | N/A |
| | VN | AC 120V |
| | VH | N/A |

Note: VL= Lower Extreme Test Voltage

VN= Nominal Voltage

VH= Upper Extreme Test Voltage

TN= Normal Temperature

5.9. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

| Item | Equipment | Brand Name | Model Name | Description |
|------|-----------------------|------------|------------|----------------------|
| 1 | Laptop | ThinkPad | E580 | / |
| 2 | Fixed Frequency Board | / | / | Supplied by customer |

I/O PORT

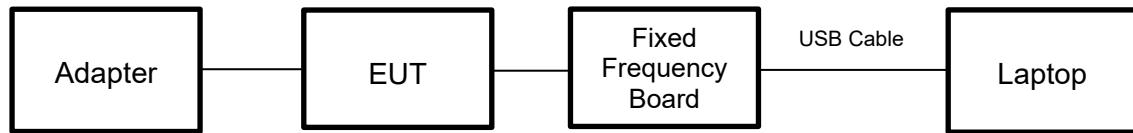
| Cable No | Port | Connector Type | Cable Type | Cable Length(m) | Remarks |
|----------|------|----------------|------------|-----------------|---------|
| 1 | USB | USB | USB | 100cm Length | / |

ACCESSORY

| Item | Accessory | Brand Name | Model Name | Description |
|------|-----------|------------|------------|-------------|
| 1 | / | / | / | / |

TEST SETUP

The EUT can work in an engineer mode with a software through a laptop.

SETUP DIAGRAM FOR TESTS

5.10. MEASURING INSTRUMENT AND SOFTWARE USED

| Conducted Emissions Test (Instrument) | | | | | | | |
|---------------------------------------|---------------------------------------|--------------|----------------------------------|----------------------|-----------------|------------|------------|
| Used | Equipment | Manufacturer | Model No. | Serial No. | Upper Last Cal. | Last Cal. | Next Cal. |
| <input checked="" type="checkbox"/> | EMI Test Receiver | R&S | ESR3 | 126700 | 2023-11-25 | 2024-11-02 | 2025-11-01 |
| <input checked="" type="checkbox"/> | Two-Line V-Network | R&S | ENV216 | 126701 | 2023-11-25 | 2024-11-02 | 2025-11-01 |
| Conducted Emissions Test (Software) | | | | | | | |
| Used | Description | | Manufacturer | Name | | Version | |
| <input checked="" type="checkbox"/> | Software for Conducted Emissions Test | | R&S | EMC32 | | 9.25.00 | |
| Radiated Emissions Test (Instrument) | | | | | | | |
| Used | Equipment | Manufacturer | Model No. | Serial No. | Upper Last Cal. | Last Cal. | Next Cal. |
| <input checked="" type="checkbox"/> | EMI test receiver | R&S | ESR7 | 222993 | 2024-03-23 | 2025-03-22 | 2026-03-14 |
| <input checked="" type="checkbox"/> | EMI test receiver | R&S | ESR26 | 126703 | 2023-11-25 | 2024-11-02 | 2025-11-01 |
| <input checked="" type="checkbox"/> | Spectrum Analyzer | R&S | FSV3044 | 222992 | 2024-03-23 | 2025-03-22 | 2026-03-14 |
| <input checked="" type="checkbox"/> | Receiver Antenna (9kHz-30MHz) | Schwarzbeck | FMZB 1513 | 155456 | 2021-06-03 | 2024-05-27 | 2027-05-26 |
| <input checked="" type="checkbox"/> | Receiver Antenna (30MHz-1GHz) | Schwarzbeck | VULB 9168 | 171952 | 2021-07-05 | 2024-07-04 | 2027-07-03 |
| <input checked="" type="checkbox"/> | Receiver Antenna (1GHz-18GHz) | R&S | HF907 | 126705 | 2022-02-28 | 2025-02-17 | 2028-02-16 |
| <input checked="" type="checkbox"/> | Receiver Antenna (18GHz-26.5GHz) | Schwarzbeck | BBHA9170 | 126706 | 2022-02-28 | 2025-02-17 | 2028-02-16 |
| <input checked="" type="checkbox"/> | Pre-amplification (To 18GHz) | Tonscned | TAP01018050 | 224539 | 2023-10-10 | 2024-10-10 | 2025-10-09 |
| <input checked="" type="checkbox"/> | Pre-amplification (To 18GHz) | R&S | SCU-18D | 134667 | 2023-11-25 | 2024-11-02 | 2025-11-01 |
| <input checked="" type="checkbox"/> | Pre-amplification (To 26.5GHz) | R&S | SCU-26D | 135391 | 2023-11-25 | 2024-11-02 | 2025-11-01 |
| <input checked="" type="checkbox"/> | Band Reject Filter | Wainwright | WRCGV12-2375-2400-2485-2510-40SS | 1 | 2023-12-18 | 2024-11-02 | 2025-11-01 |
| <input checked="" type="checkbox"/> | High Pass Filter | COM-MW | ZBF13-3-18G-01 | 2 | 2023-12-18 | 2024-11-02 | 2025-11-01 |
| Radiated Emissions Test (Software) | | | | | | | |
| Used | Description | | Manufacturer | Name | | Version | |
| <input checked="" type="checkbox"/> | Software for Radiated Emissions Test | | Tonscend | JS32-RE | | 5.0.0.2 | |
| Antenna Port Test (Instrument) | | | | | | | |
| Used | Equipment | Manufacturer | Model No. | Serial No. | Upper Last Cal. | Last Cal. | Next Cal. |
| <input checked="" type="checkbox"/> | Spectrum Analyzer | Keysight | N9010B | 155368 | 2024-03-23 | 2025-03-22 | 2026-03-14 |
| <input checked="" type="checkbox"/> | Power Meter | MWT | MW100-RFCB | 221694 | 2024-03-23 | 2025-03-22 | 2026-03-14 |
| <input checked="" type="checkbox"/> | Power Meter | Anritsu | MA24406A | 12896 | 2024-03-23 | 2025-03-22 | 2026-03-14 |
| <input checked="" type="checkbox"/> | Attenuator | PASTERNACK | PE7087-6 | 1624 | / | 2024-11-04 | 2025-11-03 |
| Antenna Port Test (Software) | | | | | | | |
| Used | Description | | Manufacturer | Name | | Version | |
| <input checked="" type="checkbox"/> | Software for Antenna Port Test | | Tonscend | JS1120-3 Test System | | V3.2.22 | |

6. MEASUREMENT METHODS

| No. | Test Item | KDB Name | Section |
|-----|---|---|--|
| 1 | 6 dB Bandwidth and 99% Occupied Bandwidth | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.2 |
| 2 | Output Power | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.3.1.3 (11.9.1.3 PKPM1 Peak power meter method of ANSI C63.10) |
| 3 | Power Spectral Density | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.4 (11.10.2 Method PKPSD of ANSI C63.10) |
| 4 | Out-of-band emissions in non-restricted bands | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.5 |
| 5 | Out-of-band emissions in restricted bands | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.6 |
| 6 | Band-edge | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.7 |
| 7 | Conducted Emission Test for AC Power Port | ANSI C63.10-2013 | 6.2 |

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

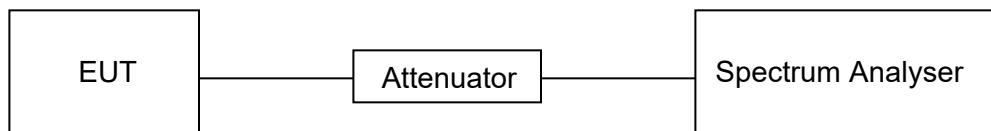
LIMITS

None; for reporting purposes only

PROCEDURE

FCC KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

| | | | |
|---------------------|--------|-------------------|---------|
| Temperature | 22°C | Relative Humidity | 56% |
| Atmosphere Pressure | 101kPa | Test Voltage | AC 120V |

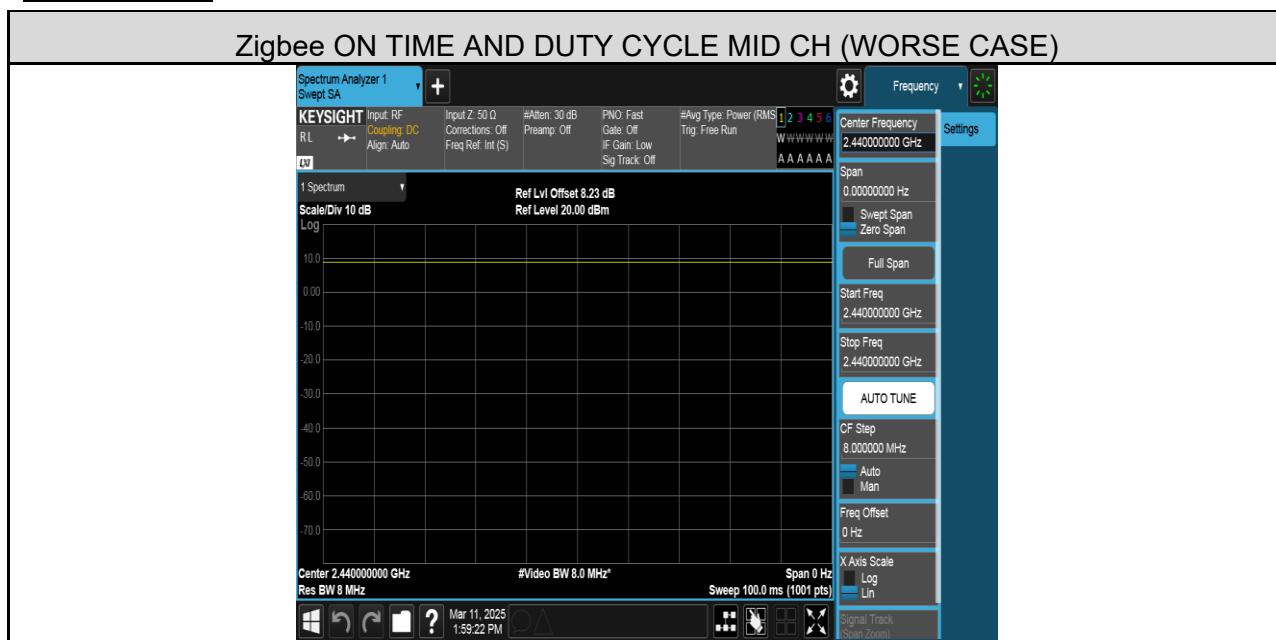
TEST RESULTS TABLE

| Mode | On Time (msec) | Period (msec) | Duty Cycle x (Linear) | Duty Cycle (%) | Duty Cycle Correction Factor (db) | 1/T Minimum VBW (kHz) | Final VBW (kHz) |
|--------|----------------|---------------|-----------------------|----------------|-----------------------------------|-----------------------|-----------------|
| Zigbee | 100 | 100 | 1 | 100% | 0 | 0.01 | 0.01 |

Note: 1) Duty Cycle Correction Factor=10log(1/x).

2) Where: x is Duty Cycle (Linear)

3) Where: T is On Time (transmit duration)

TEST GRAPHS


7.2. 6 dB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

LIMITS

| FCC Part15 (15.247), Subpart C | | | |
|---|-------------------------|-----------------------------|-----------------------|
| Section | Test Item | Limit | Frequency Range (MHz) |
| CFR 47 FCC 15.247(a)(2) ISED RSS-247 5.2 (a) | 6dB Bandwidth | >= 500kHz | 2400-2483.5 |
| ISED RSS-Gen Clause 6.7 | 99 % Occupied Bandwidth | For reporting purposes only | 2400-2483.5 |

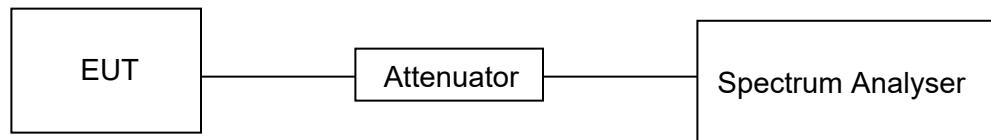
TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.8 for DTS bandwidth and clause 6.9 for Occupied Bandwidth.

Connect the EUT to the spectrum analyser and use the following settings:

| | |
|------------------|---|
| Center Frequency | The centre frequency of the channel under test |
| Frequency Span | For 6 dB Bandwidth: enough to capture all products of the modulation carrier emission For 99 % Occupied Bandwidth: Between 1.5 times and 5 times the OBW |
| Detector | Peak |
| RBW | For 6 dB Bandwidth: 100 kHz For 99 % Occupied Bandwidth: 1 % to 5 % of the occupied bandwidth |
| VBW | For 6 dB Bandwidth: $\geq 3 \times$ RBW For 99 % Occupied Bandwidth: $\geq 3 \times$ RBW |
| Trace | Max hold |
| Sweep | Auto couple |

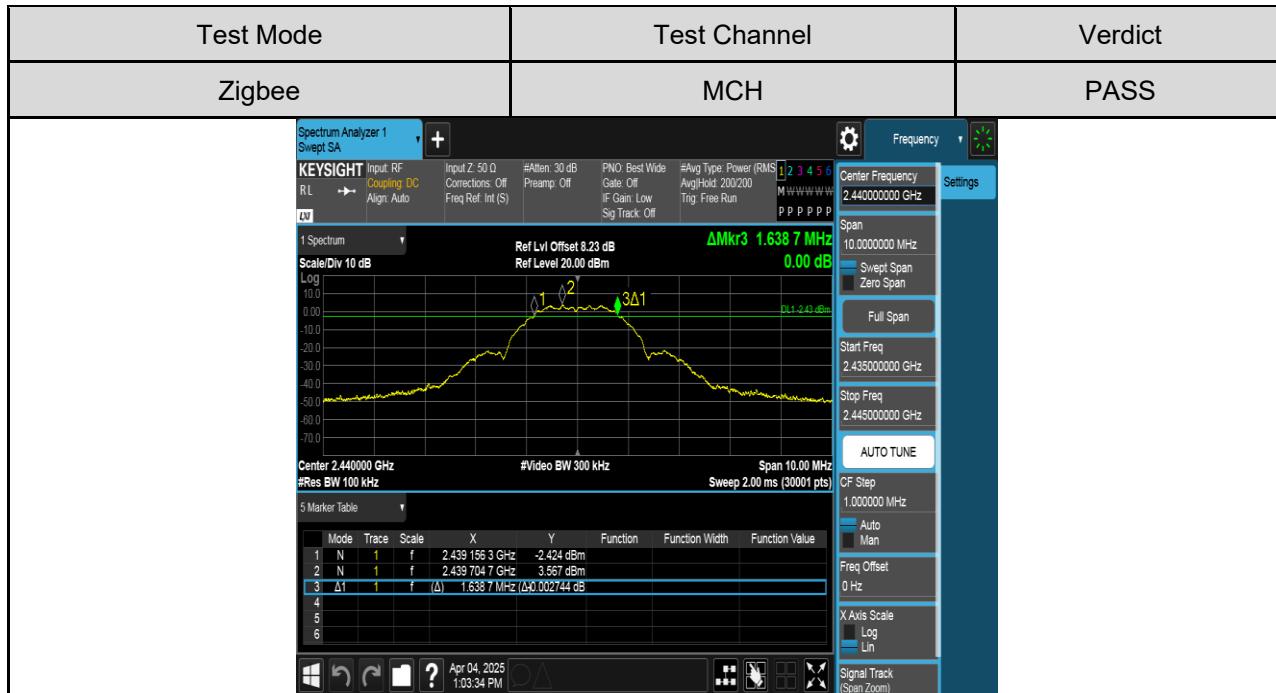
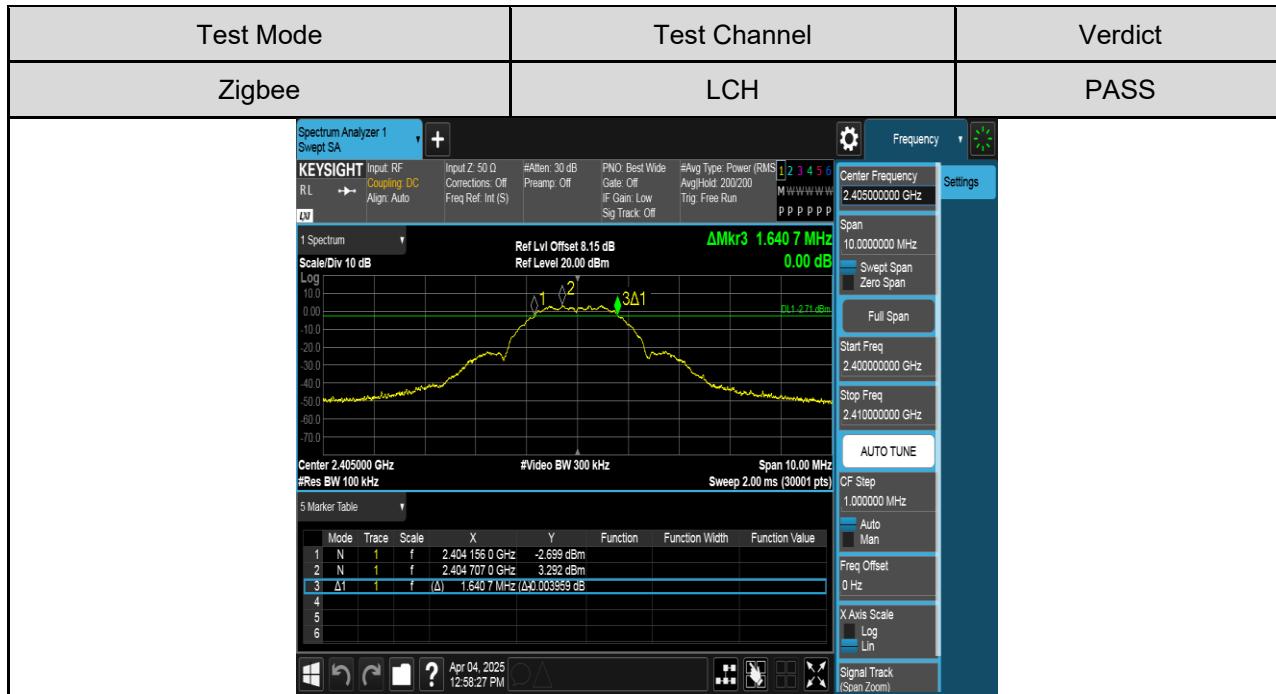
- Use the 99 % power bandwidth function of the instrument, allow the trace to stabilize and report the measured bandwidth.
- Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP**TEST ENVIRONMENT**

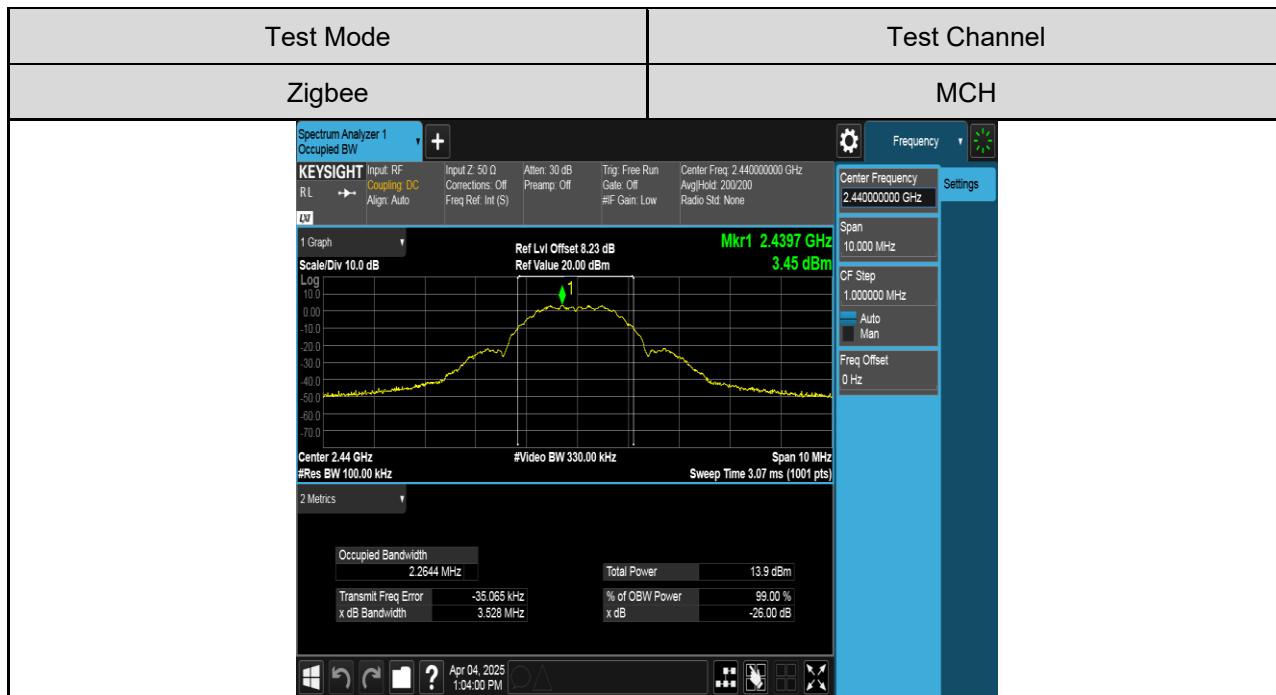
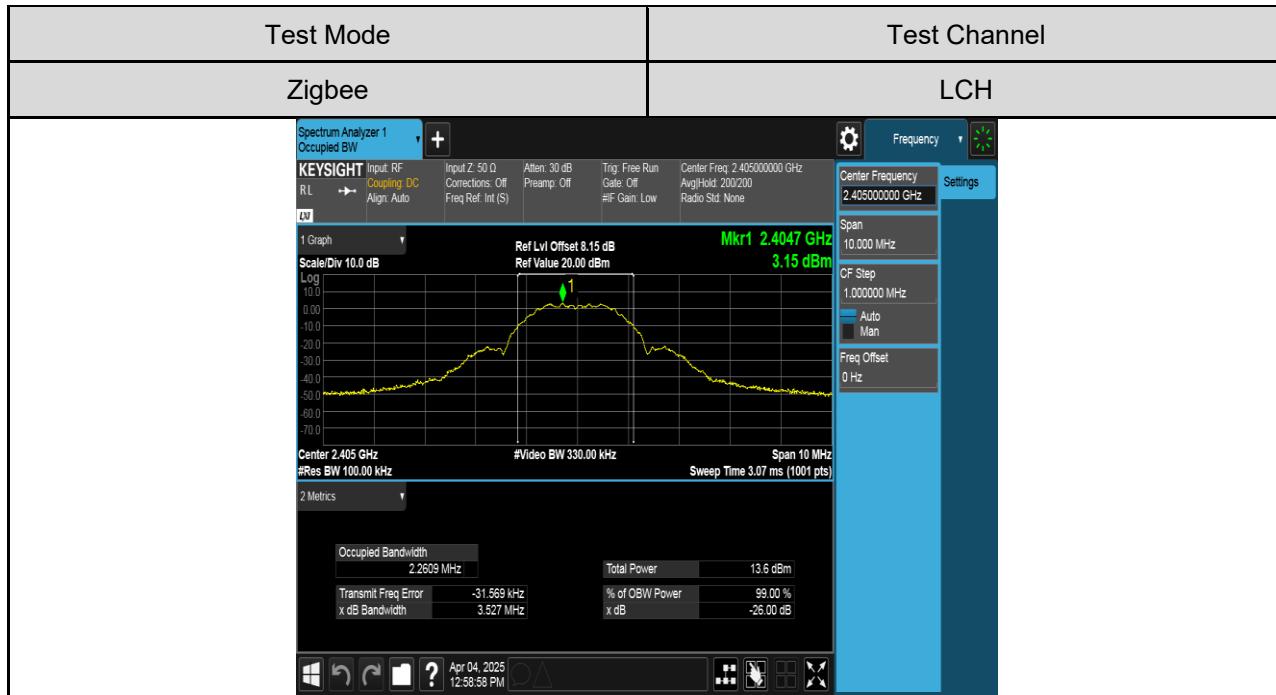
| | | | |
|---------------------|--------|-------------------|---------|
| Temperature | 22°C | Relative Humidity | 56% |
| Atmosphere Pressure | 101kPa | Test Voltage | AC 120V |

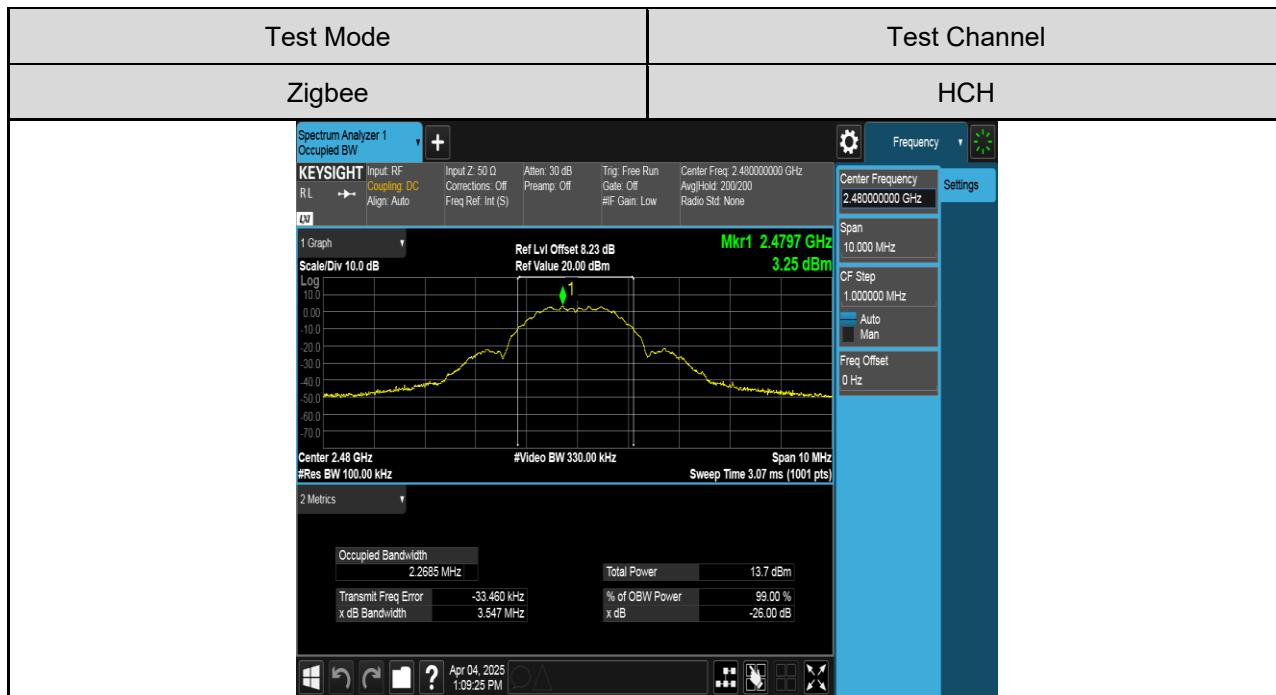
TEST RESULTS TABLE

| Test Mode | Test Channel | 6dB bandwidth (MHz) | 99% bandwidth (MHz) | Result |
|-----------|--------------|---------------------|---------------------|--------|
| Zigbee | LCH | 1.6407 | 2.2609 | Pass |
| | MCH | 1.6387 | 2.2644 | Pass |
| | HCH | 1.6420 | 2.2685 | Pass |

TEST GRAPHS
6dB Bandwidth


| Test Mode | Test Channel | Verdict |
|--|--------------|---------|
| Zigbee | HCH | PASS |
|  | | |

99% Bandwidth




7.3. CONDUCTED OUTPUT POWER

LIMITS

| FCC Part15 (15.247), Subpart C | | | |
|--------------------------------|--------------|-----------------|-----------------------|
| Section | Test Item | Limit | Frequency Range (MHz) |
| FCC 15.247(b)(3) | Output Power | 1 watt or 30dBm | 2400-2483.5 |

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.

Measure the power of each channel.

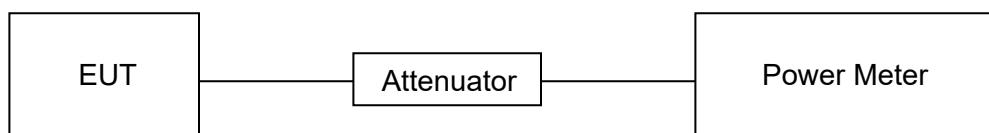
PK Detector used for PK result.

Peak Detector used for Peak result.

TEST ENVIRONMENT

| | | | |
|---------------------|--------|-------------------|---------|
| Temperature | 22°C | Relative Humidity | 56% |
| Atmosphere Pressure | 101kPa | Test Voltage | AC 120V |

TEST SETUP



TEST RESULTS TABLE

| Test Mode | Test Channel | Maximum Conducted Output Power (PK) | | LIMIT |
|------------------|---------------------|--|------------|--------------|
| | | dBm | dBm | |
| Zigbee | LCH | 6.97 | | 30 |
| | MCH | 7.26 | | 30 |
| | HCH | 7.01 | | 30 |

7.4. POWER SPECTRAL DENSITY

LIMITS

| FCC Part15 (15.247), Subpart C | | | |
|--------------------------------|------------------------|-------------|-----------------------|
| Section | Test Item | Limit | Frequency Range (MHz) |
| FCC §15.247 (e) | Power Spectral Density | 8 dBm/3 kHz | 2400-2483.5 |

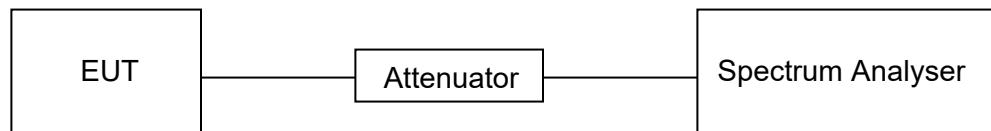
TEST PROCEDURE

Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following settings:

| | |
|------------------|--|
| Center Frequency | The centre frequency of the channel under test |
| Detector | Peak |
| RBW | $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ |
| VBW | $\geq 3 \times \text{RBW}$ |
| Span | 1.5 x DTS bandwidth |
| Trace | Max hold |
| Sweep time | Auto couple. |

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.

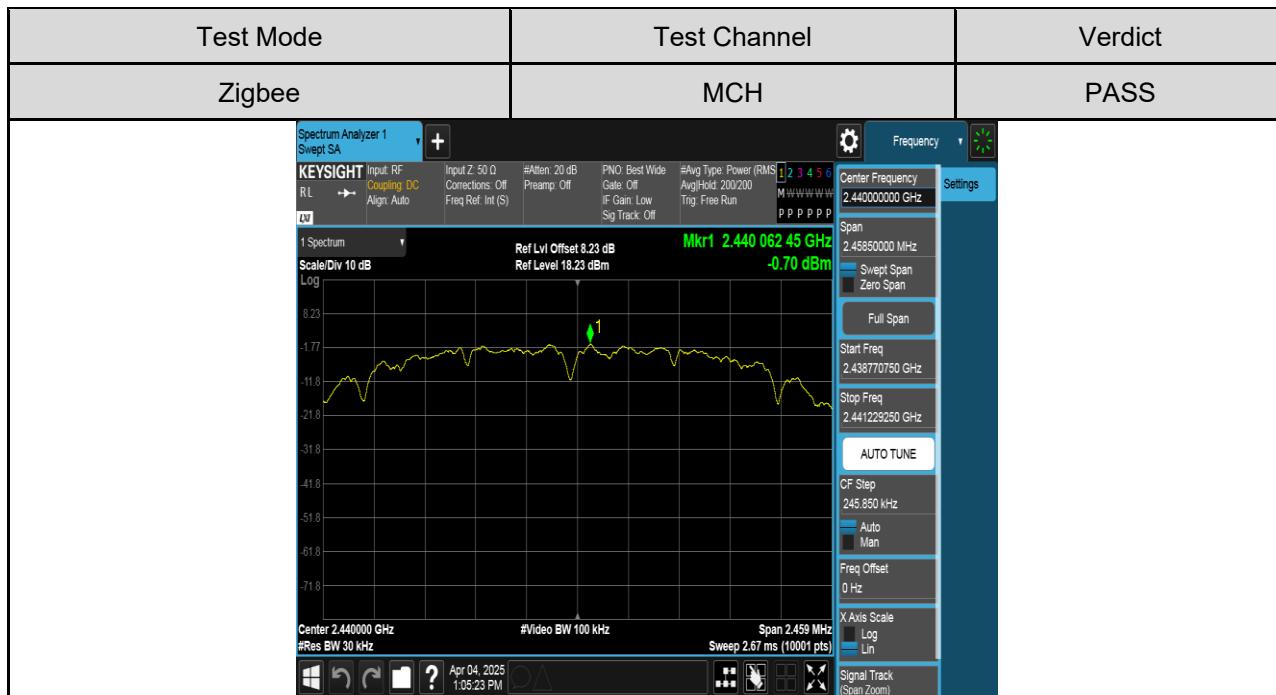
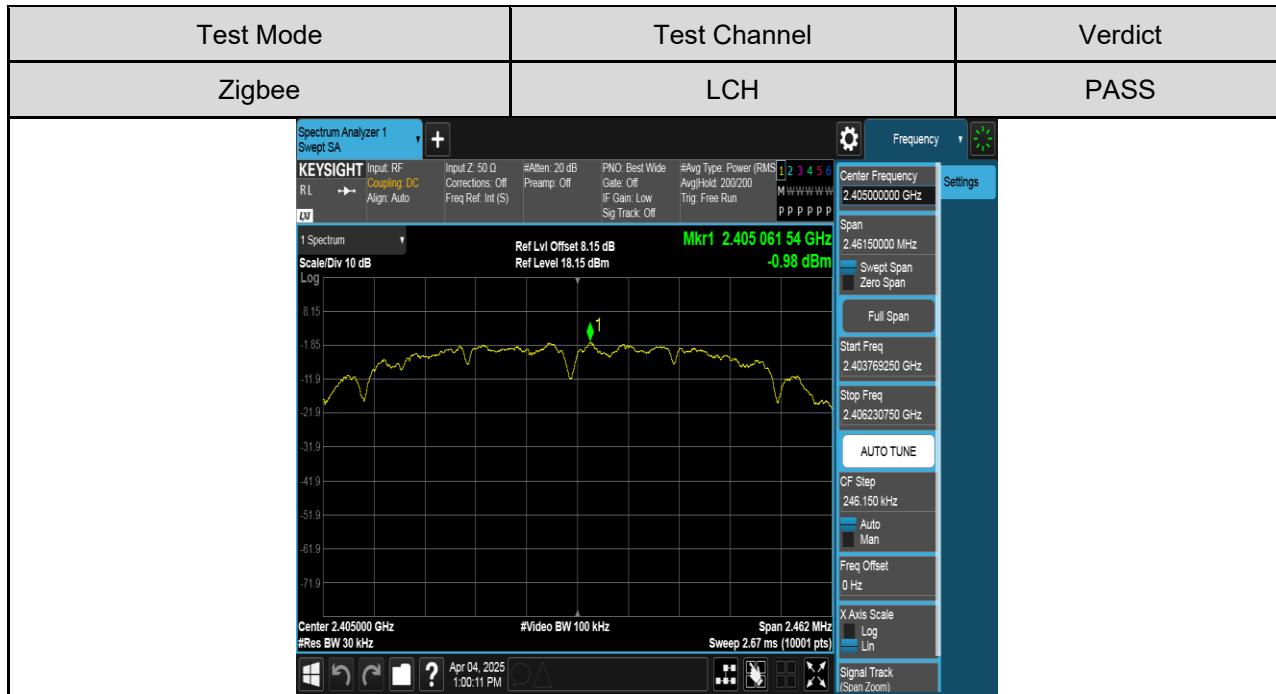
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST SETUP**TEST ENVIRONMENT**

| | | | |
|---------------------|--------|-------------------|---------|
| Temperature | 22°C | Relative Humidity | 56% |
| Atmosphere Pressure | 101kPa | Test Voltage | AC 120V |

TEST RESULTS TABLE

| Test Mode | Test Channel | Maximum Peak power spectral density (dBm/30kHz) | Result |
|-----------|--------------|---|--------|
| Zigbee | LCH | -0.98 | 30 |
| | MCH | -0.70 | 30.00 |
| | HCH | -0.93 | 30.00 |

TEST GRAPHS


| Test Mode | Test Channel | Verdict |
|--|--------------|---------|
| Zigbee | HCH | PASS |
|  | | |

7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

| FCC Part15 (15.247), Subpart C | | |
|--------------------------------|---|--|
| Section | Test Item | Limit |
| FCC §15.247 (d) | Conducted Bandedge and Spurious Emissions | 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power |

TEST PROCEDURE

Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following settings:

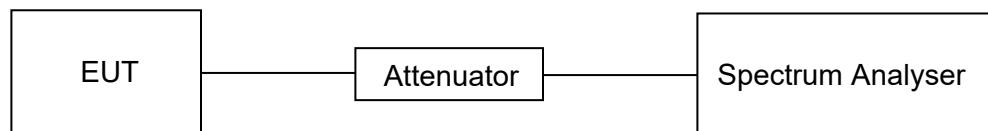
| | |
|------------------|--|
| Center Frequency | The centre frequency of the channel under test |
| Detector | Peak |
| RBW | 100 kHz |
| VBW | $\geq 3 \times$ RBW |
| Span | 1.5 x DTS bandwidth |
| Trace | Max hold |
| Sweep time | Auto couple. |

Use the peak marker function to determine the maximum PSD level.

| | |
|--------------------|---|
| Span | Set the center frequency and span to encompass frequency range to be measured |
| Detector | Peak |
| RBW | 100 kHz |
| VBW | $\geq 3 \times$ RBW |
| measurement points | \geq span/RBW |
| Trace | Max hold |
| Sweep time | Auto couple. |

Use the peak marker function to determine the maximum amplitude level.

TEST SETUP



TEST ENVIRONMENT

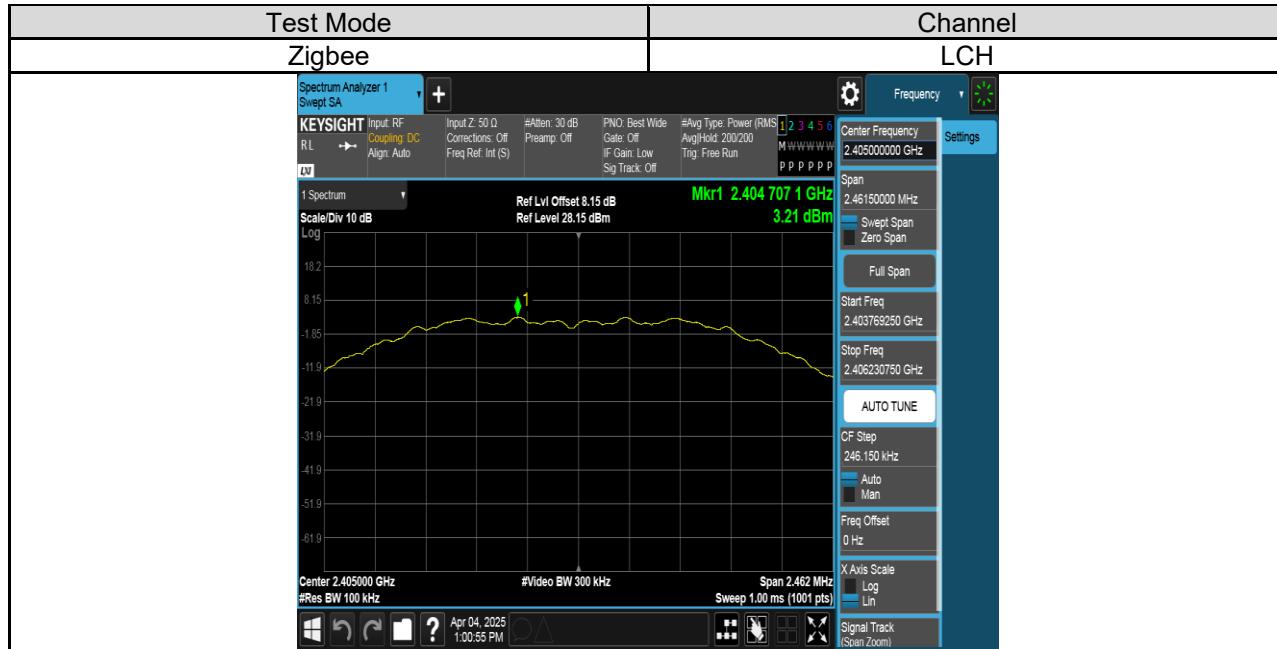
| | | | |
|---------------------|--------|-------------------|---------|
| Temperature | 22°C | Relative Humidity | 56% |
| Atmosphere Pressure | 101kPa | Test Voltage | AC 120V |

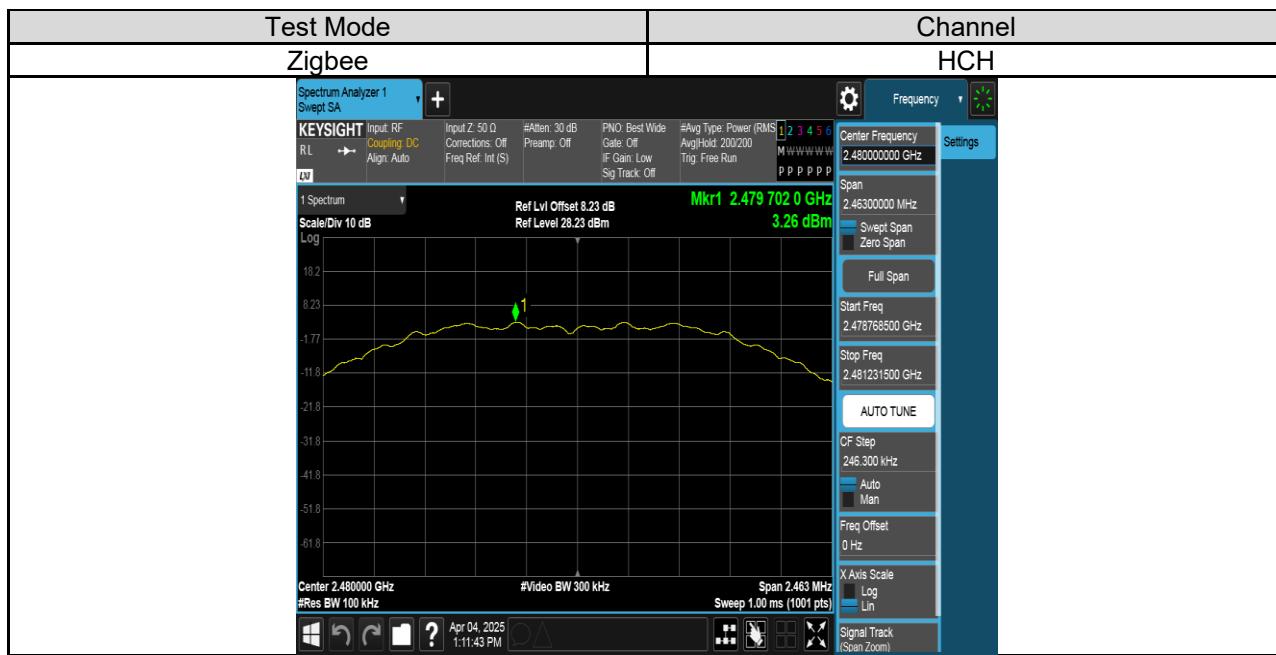
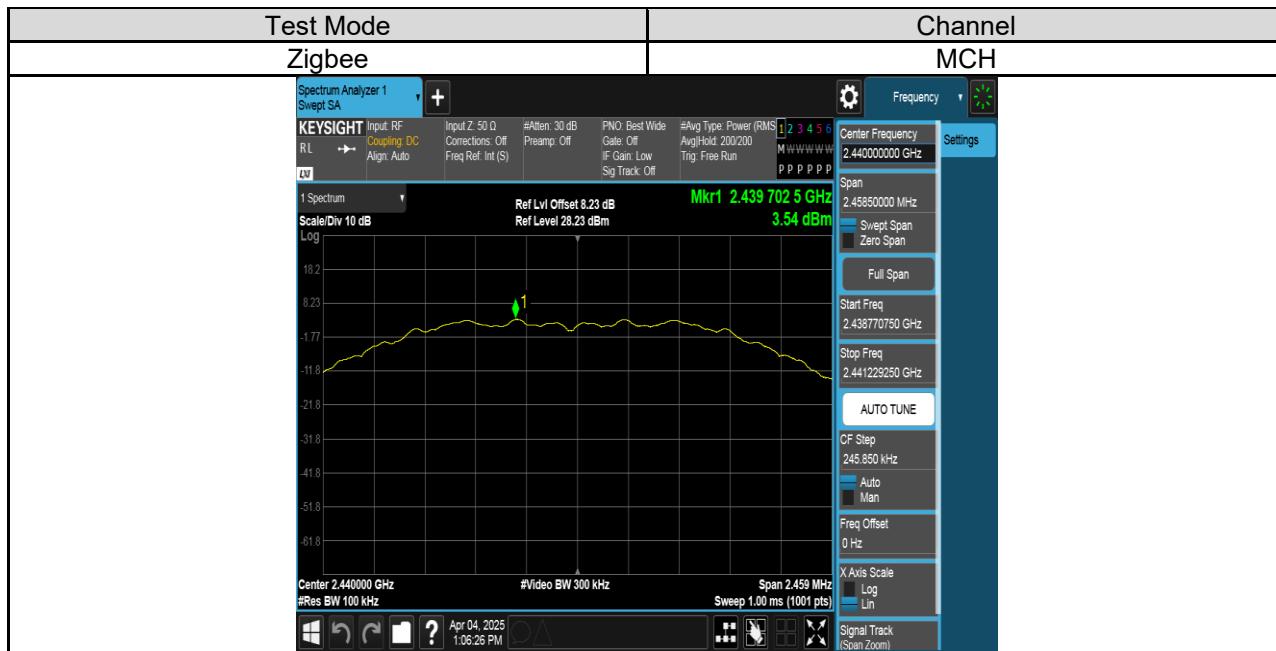
PART 1: REFERENCE LEVEL MEASUREMENT

TEST RESULTS TABLE

| Test Mode | Test Channel | Result[dBm] |
|-----------|--------------|-------------|
| Zigbee | LCH | 3.21 |
| | MCH | 3.54 |
| | HCH | 3.26 |

TEST GRAPHS



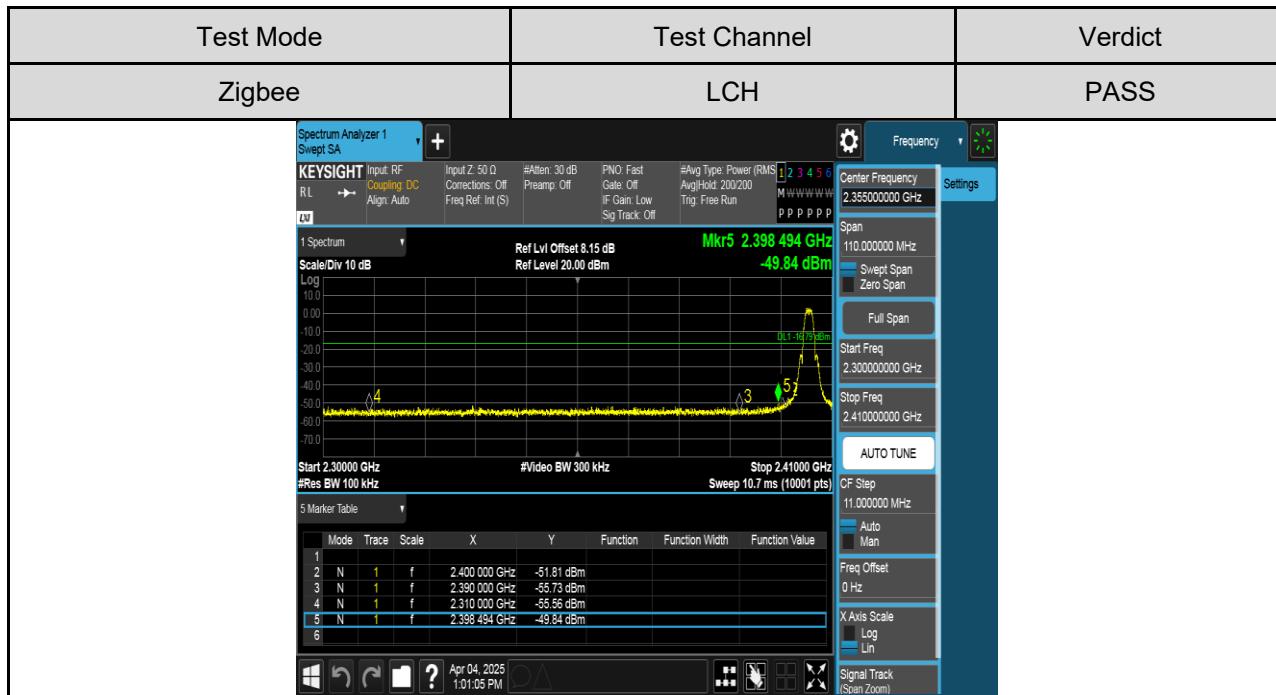


PART 2: CONDUCTED BANDEDGE

TEST RESULTS TABLE

| Test Mode | Test Channel | Result | Verdict |
|-----------|--------------|-------------------------|---------|
| Zigbee | LCH | Refer to the Test Graph | PASS |
| | HCH | Refer to the Test Graph | PASS |

TEST GRAPHS



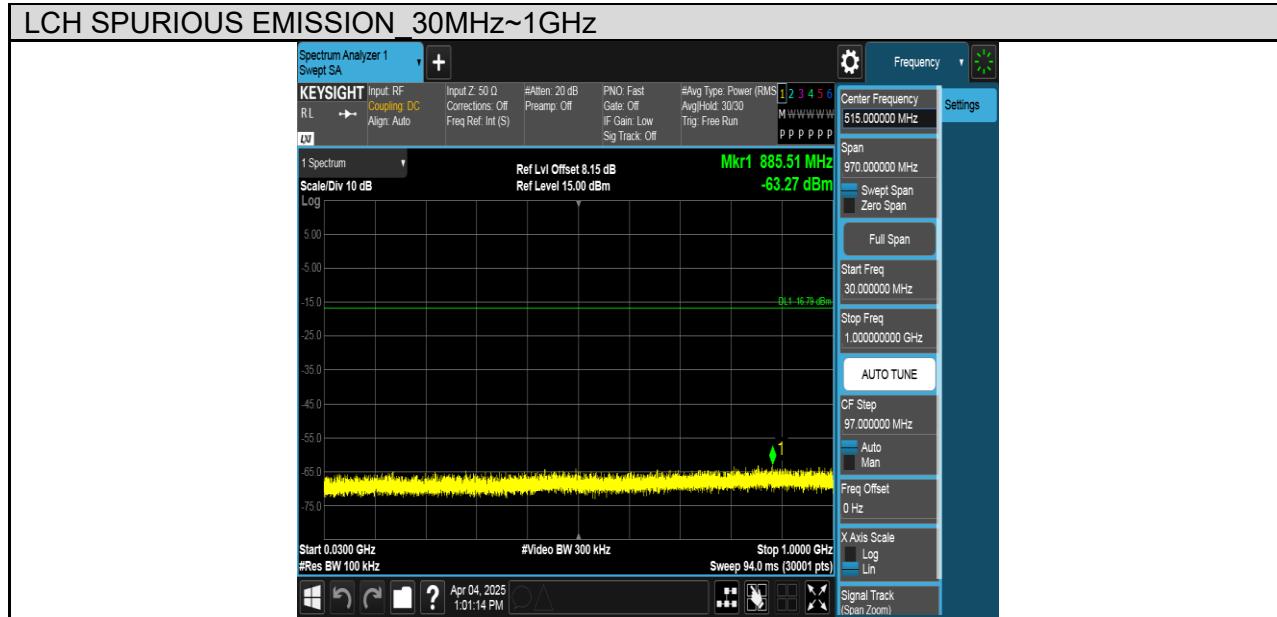
| Test Mode | Test Channel | Verdict |
|--|--------------|---------|
| Zigbee | HCH | PASS |
|  | | |

PART 3: CONDUCTED SPURIOUS EMISSION**TEST RESULTS TABLE**

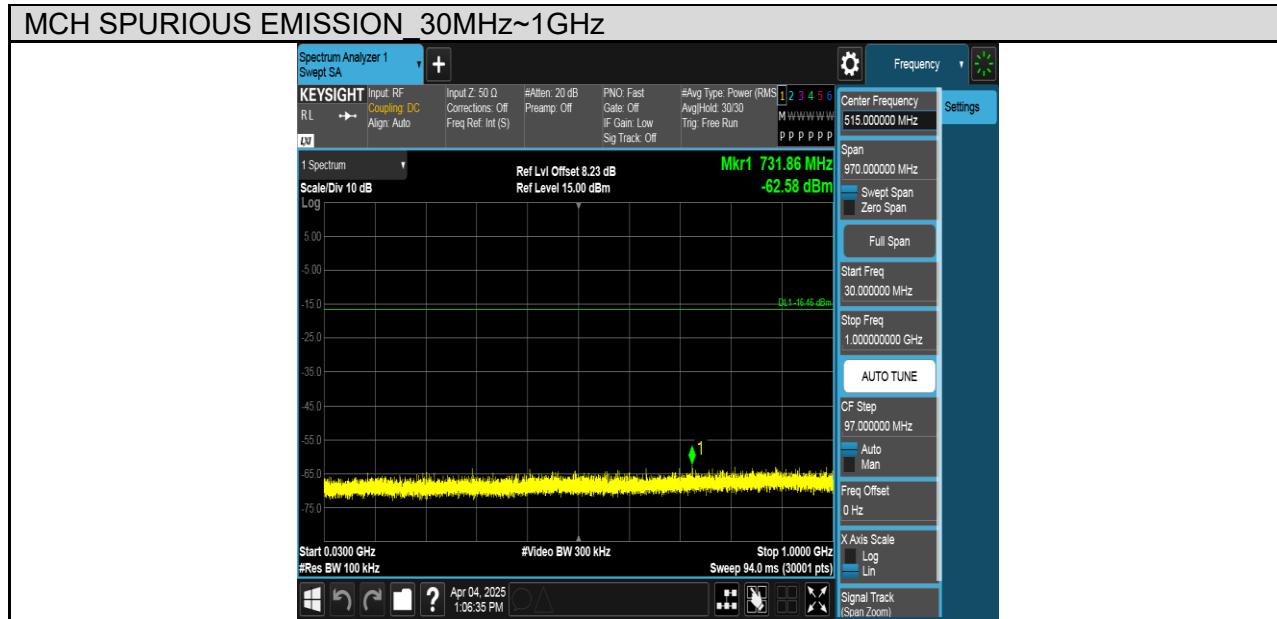
| Test Mode | Test Channel | Result | Verdict |
|-----------|--------------|-------------------------|---------|
| Zigbee | LCH | Refer to the Test Graph | PASS |
| | MCH | Refer to the Test Graph | PASS |
| | HCH | Refer to the Test Graph | PASS |

TEST GRAPHS

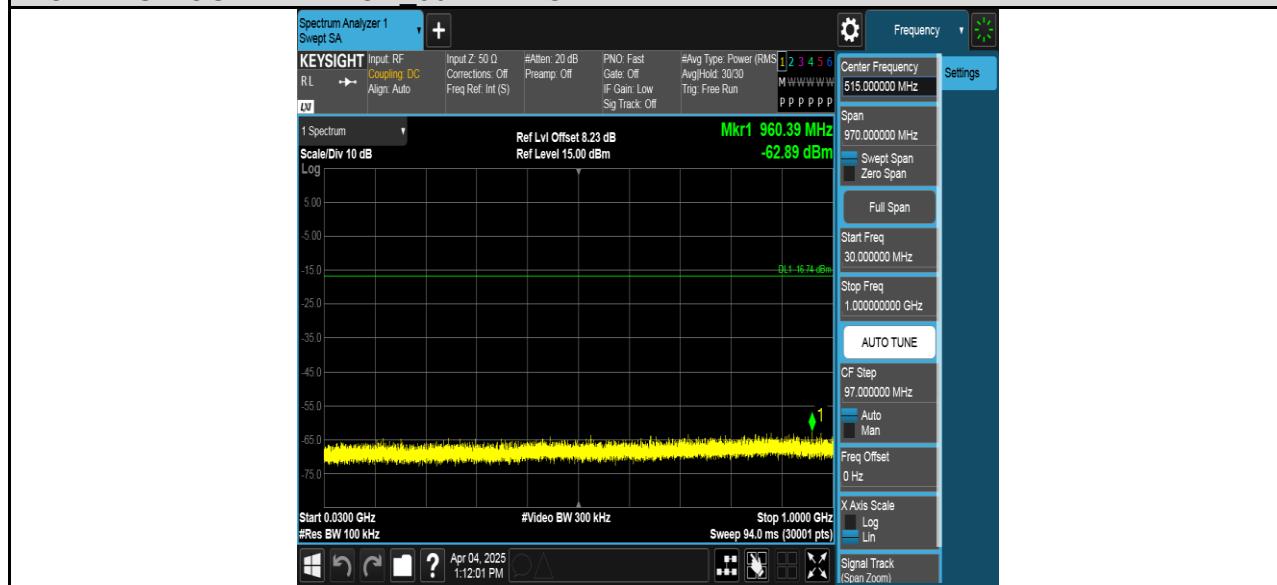
| Test Mode | Channel | Verdict |
|-----------|---------|---------|
| Zigbee | LCH | PASS |



| Test Mode | Channel | Verdict |
|-----------|---------|---------|
| Zigbee | MCH | PASS |



| Test Mode | Channel | Verdict |
|-----------|---------|---------|
| Zigbee | HCH | PASS |

HCH SPURIOUS EMISSION 30MHz~1GHz

HCH SPURIOUS EMISSION 1GHz~26.5GHz


8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

Please refer to FCC §15.205 and §15.209, ISED RSS-247 Clause 5.5, ISED RSS-GEN Clause 8.9&6.13 (Transmitter)

Radiation Disturbance Test Limit for ISED (9kHz-1GHz)

Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Table 5 – General field strength limits at frequencies above 30 MHz

| Frequency (MHz) | Field strength (μ V/m at 3 m) |
|-----------------|------------------------------------|
| 30 – 88 | 100 |
| 88 – 216 | 150 |
| 216 – 960 | 200 |
| Above 960 | 500 |

Table 6 – General field strength limits at frequencies below 30 MHz

| Frequency | Magnetic field strength (H-Field) (μ A/m) | Measurement distance (m) |
|-------------------------------|--|--------------------------|
| 9 - 490 kHz ^{Note 1} | $6.37/F$ (F in kHz) | 300 |
| 490 - 1705 kHz | $63.7/F$ (F in kHz) | 30 |
| 1.705 - 30 MHz | 0.08 | 30 |

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

Please refer to FCC KDB 558074

Radiation Disturbance Test Limit for FCC (Class B) (9kHz-1GHz)

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009~0.490 | 2400/F(kHz) | 300 |
| 0.490~1.705 | 24000/F(kHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| 960~1000 | 500 | 3 |

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. 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 linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two 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). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

Radiation Disturbance Test Limit for FCC (Above 1G)

| Frequency (MHz) | dB(uV/m) (at 3 meters) | |
|-----------------|------------------------|---------|
| | Peak | Average |
| Above 1000 | 74 | 54 |

Restricted bands of operation

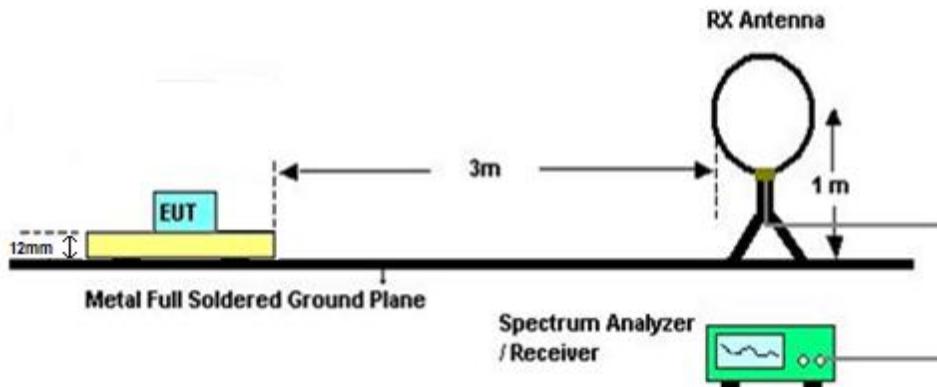
| MHz | MHz | MHz | GHz |
|--------------------------|---------------------|---------------|------------------|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| ¹ 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (²) |
| 13.36-13.41 | | | |

Note: ¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

²Above 38.6c

TEST SETUP AND PROCEDURE

Below 30MHz

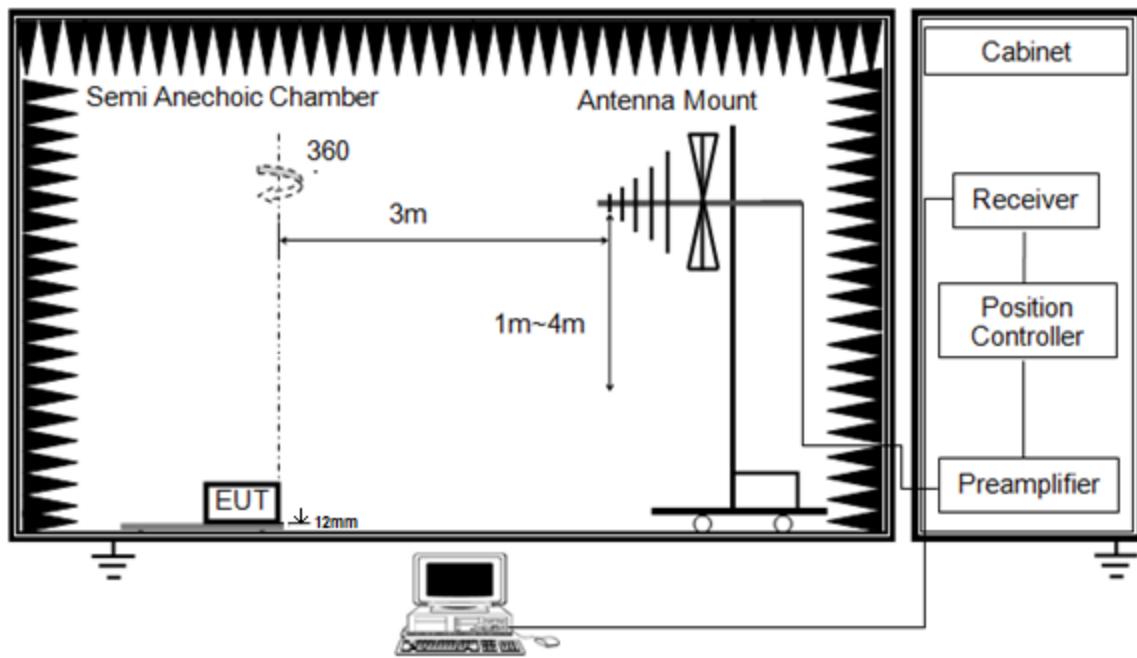


The setting of the spectrum analyser

| | |
|----------|--|
| RBW | 200 Hz (From 9kHz to 0.15MHz) / 9kHz (From 0.15MHz to 30MHz) |
| VBW | 200 Hz (From 9kHz to 0.15MHz) / 9kHz (From 0.15MHz to 30MHz) |
| Sweep | Auto |
| Detector | Peak/QP/Average |
| Trace | Max hold |

1. The testing follows the guidelines in ANSI C63.10-2013
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 12 mm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1m height antenna tower.
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector
6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. For the actual test configuration, please refer to the related item in this test report
(Photographs of the Test Configuration)
8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω . For example, the measurement frequency X kHz resulted in a level of Y dB V/m , which is equivalent to $Y - 51.5 = Z$ dB A/m , which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Below 1G

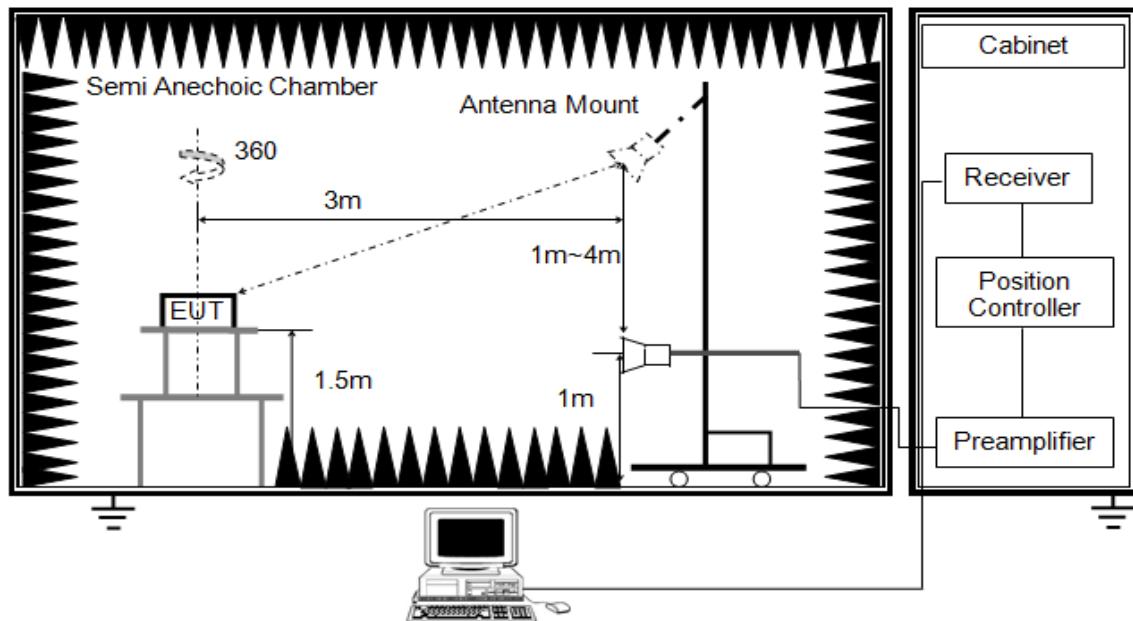


The setting of the spectrum analyser

| | |
|----------|----------|
| RBW | 120 kHz |
| VBW | 300 kHz |
| Sweep | Auto |
| Detector | Peak/QP |
| Trace | Max hold |

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 12 mm above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
6. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

Above 1G

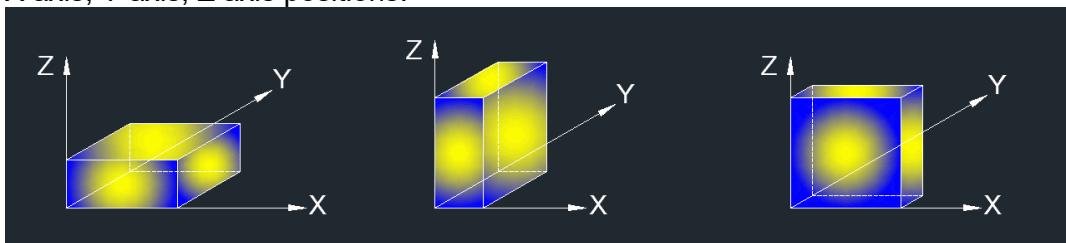


The setting of the spectrum analyser

| | |
|----------|------------------------------|
| RBW | 1 MHz |
| VBW | PEAK:3 MHz AVG: See note6 |
| Sweep | Auto |
| Detector | Peak |
| Trace | Max hold |

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 1.5m above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.
6. For measurements above 1 GHz, the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements; and 1 MHz resolution bandwidth with video bandwidth $\geq 1/T$ but not less than the setting list in section 7.1 when use peak detector, max hold to be run for at least $[50 * (1/\text{Duty Cycle})]$ traces for average measurements. For the Duty Cycle need to refer the results in section 7.1.
7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

X axis, Y axis, Z axis positions:



Note: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worse case (X axis) data recorded in the report.

8.2. TEST ENVIRONMENT

| | | | |
|---------------------|--------|-------------------|---------|
| Temperature | 22°C | Relative Humidity | 56% |
| Atmosphere Pressure | 101kPa | Test Voltage | AC 120V |

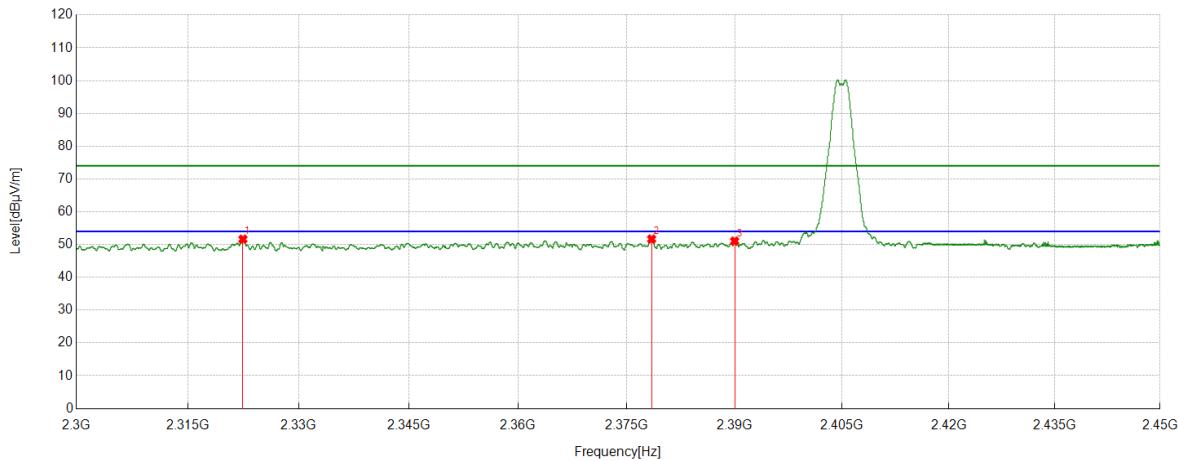
8.3. RESTRICTED BANDEDGE

TEST RESULT TABLE

| Test Mode | Channel | Puw(dBm) | Verdict |
|-----------|---------|----------|---------|
| Zigbee | LCH | <Limit | PASS |
| | HCH | <Limit | PASS |

TEST GRAPHS

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | LCH | Horizontal | PASS |

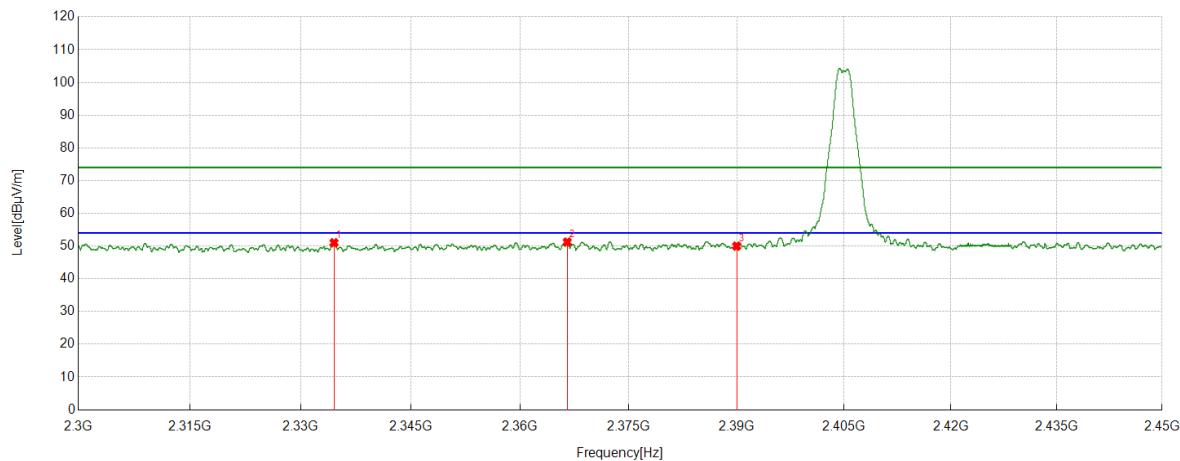


PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|--------|-------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | | | | |
| 1 | 2322.4653 | 38.22 | 13.40 | 51.62 | 74.00 | -22.38 | Horizontal |
| 2 | 2378.4598 | 37.91 | 13.76 | 51.67 | 74.00 | -22.33 | Horizontal |
| 3 | 2390.0000 | 37.33 | 13.72 | 51.05 | 74.00 | -22.95 | Horizontal |

Note: 1. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
3. Measurement = Reading Level + Correct Factor.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | LCH | Vertical | PASS |

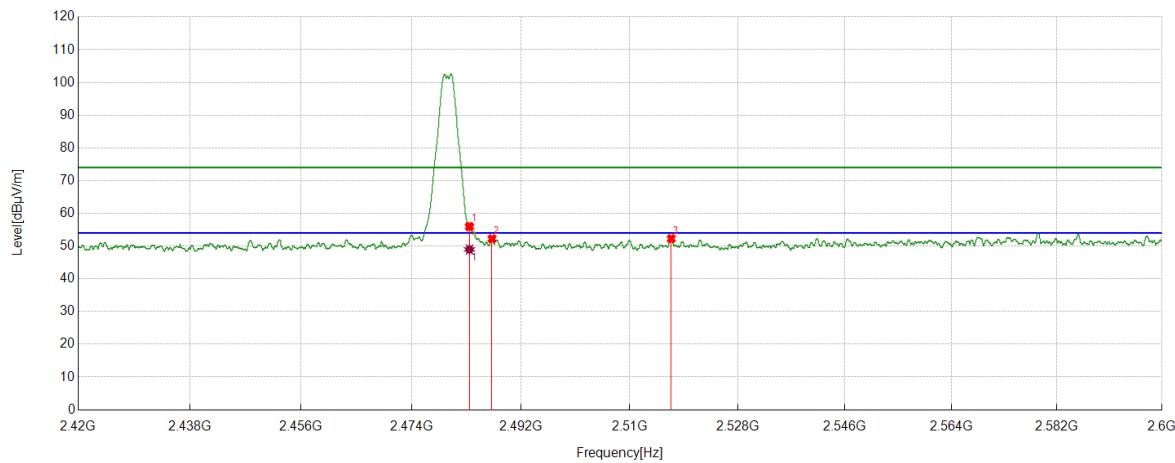

PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 2334.5606 | 37.63 | 13.39 | 51.02 | 74.00 | -22.98 | Vertical |
| 2 | 2366.5146 | 37.61 | 13.62 | 51.23 | 74.00 | -22.77 | Vertical |
| 3 | 2390.0000 | 36.26 | 13.72 | 49.98 | 74.00 | -24.02 | Vertical |

Note:

1. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
3. Measurement = Reading Level + Correct Factor.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | HCH | Horizontal | PASS |


PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 2483.5000 | 41.85 | 14.12 | 55.97 | 74.00 | -18.03 | Horizontal |
| 2 | 2487.2159 | 38.03 | 14.20 | 52.23 | 74.00 | -21.77 | Horizontal |
| 3 | 2516.8971 | 37.79 | 14.48 | 52.27 | 74.00 | -21.73 | Horizontal |

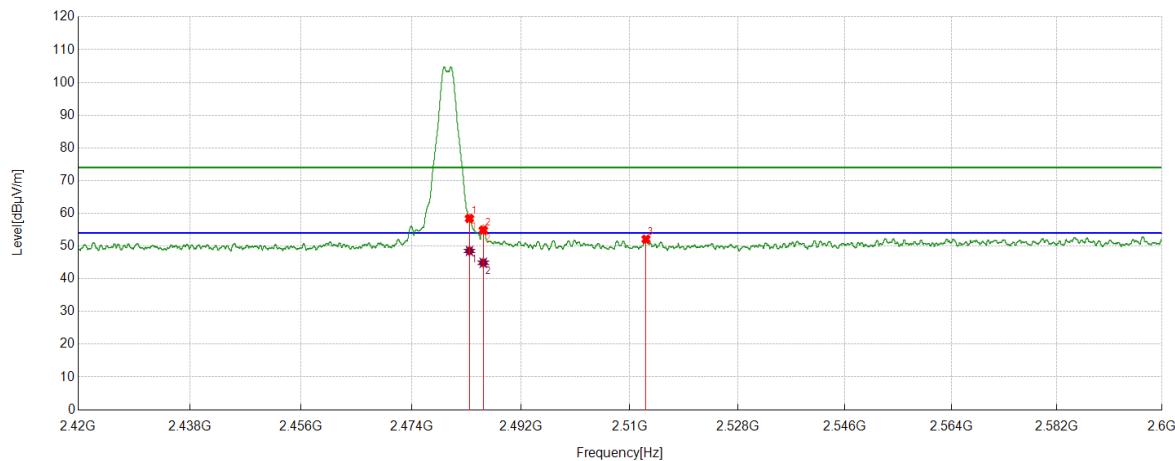
AV Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 2483.5000 | 34.84 | 14.12 | 48.96 | 54.00 | -5.04 | Horizontal |

Note:

1. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
3. Measurement = Reading Level + Correct Factor.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | HCH | Vertical | PASS |


PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 2483.5000 | 44.32 | 14.12 | 58.44 | 74.00 | -15.56 | Vertical |
| 2 | 2485.7757 | 40.70 | 14.17 | 54.87 | 74.00 | -19.13 | Vertical |
| 3 | 2512.6891 | 37.65 | 14.44 | 52.09 | 74.00 | -21.91 | Vertical |

AV Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 2483.5000 | 34.40 | 14.12 | 48.52 | 54.00 | -5.48 | Vertical |
| 2 | 2485.7757 | 30.72 | 14.17 | 44.89 | 54.00 | -9.11 | Vertical |

Note:

1. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
2. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
3. Measurement = Reading Level + Correct Factor.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

8.4. SPURIOUS EMISSIONS

TEST RESULTS TABLE

1) For 1GHz~18GHz

| Test Mode | Channel | Puw(dBm) | Verdict |
|-----------|---------|----------|---------|
| Zigbee | LCH | <Limit | PASS |
| | MCH | <Limit | PASS |
| | HCH | <Limit | PASS |

Note:

Through pre-testing all the test modes and test channels, but only the data of the worst case is included in this test report.

2) For 9kHz~30MHz

| Test Mode | Channel | Puw(dBm) | Verdict |
|-----------|---------|----------|---------|
| Zigbee | MCH | <Limit | PASS |

Note:

Through pre-testing all the test modes and test channels, but only the data of the worst case is included in this test report.

3) For 30MHz~1GHz

| Test Mode | Channel | Puw(dBm) | Verdict |
|-----------|---------|----------|---------|
| Zigbee | MCH | <Limit | PASS |

Note:

Through pre-testing all the test modes and test channels, but only the data of the worst case is included in this test report.

4) For 18GHz~26.5GHz

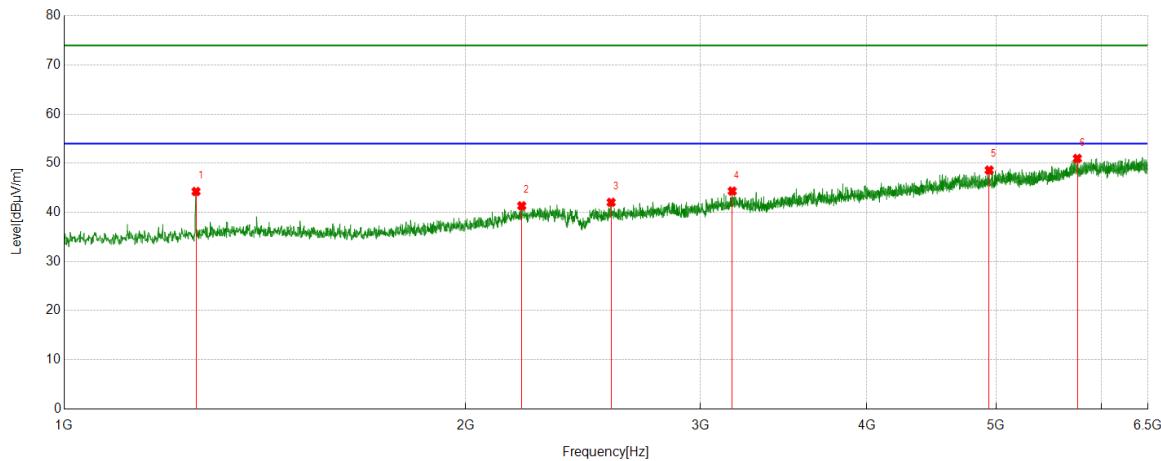
| Test Mode | Channel | Puw(dBm) | Verdict |
|-----------|---------|----------|---------|
| Zigbee | MCH | <Limit | PASS |

Note:

Through pre-testing all the test modes and test channels, but only the data of the worst case is included in this test report.

Part 1: 1GHz~6.5GHz
HARMONICS AND SPURIOUS EMISSIONS

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | LCH | Horizontal | PASS |

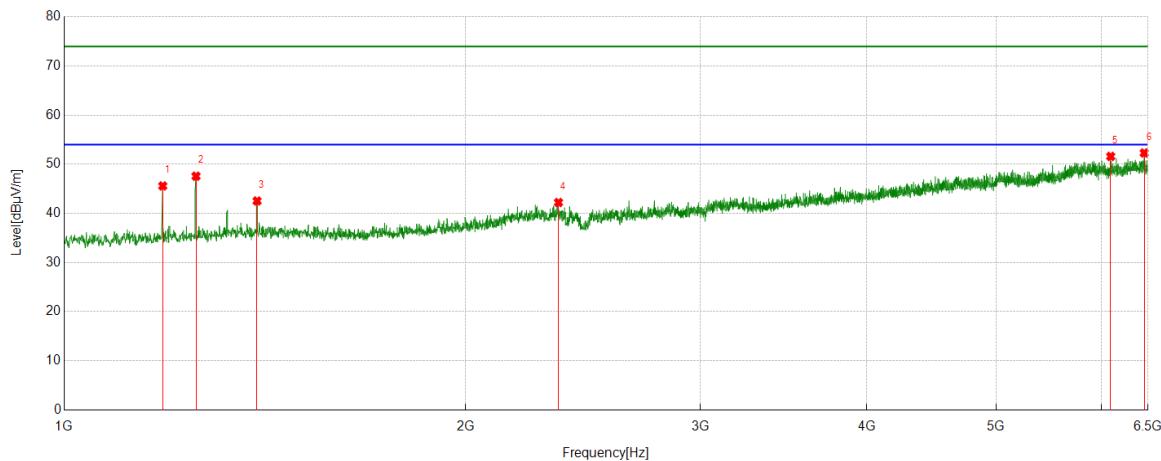

PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 1255.7820 | 45.10 | -0.86 | 44.24 | 74.00 | -29.76 | Horizontal |
| 2 | 2203.9630 | 37.48 | 3.84 | 41.32 | 74.00 | -32.68 | Horizontal |
| 3 | 2571.8215 | 38.54 | 3.49 | 42.03 | 74.00 | -31.97 | Horizontal |
| 4 | 3170.0213 | 37.96 | 6.36 | 44.32 | 74.00 | -29.68 | Horizontal |
| 5 | 4940.5551 | 36.21 | 12.38 | 48.59 | 74.00 | -25.41 | Horizontal |
| 6 | 5753.2817 | 35.38 | 15.59 | 50.97 | 74.00 | -23.03 | Horizontal |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. Peak: Peak detector.
5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | LCH | Vertical | PASS |

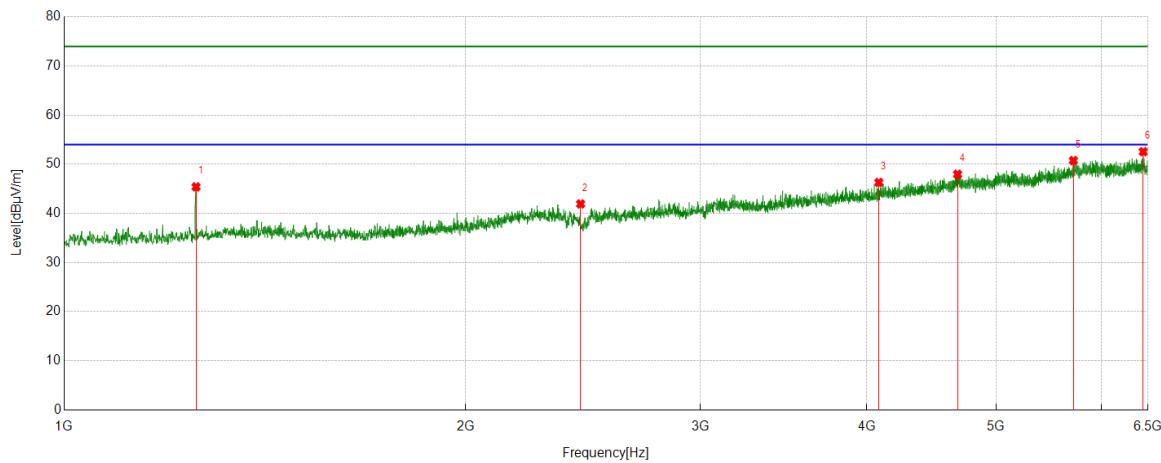

PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 1185.6482 | 46.79 | -1.21 | 45.58 | 74.00 | -28.42 | Vertical |
| 2 | 1255.7820 | 48.43 | -0.86 | 47.57 | 74.00 | -26.43 | Vertical |
| 3 | 1395.3619 | 42.95 | -0.43 | 42.52 | 74.00 | -31.48 | Vertical |
| 4 | 2348.3560 | 38.29 | 3.92 | 42.21 | 74.00 | -31.79 | Vertical |
| 5 | 6094.3243 | 35.86 | 15.74 | 51.60 | 74.00 | -22.40 | Vertical |
| 6 | 6457.3697 | 34.74 | 17.56 | 52.30 | 74.00 | -21.70 | Vertical |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. Peak: Peak detector.
5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | MCH | Horizontal | PASS |

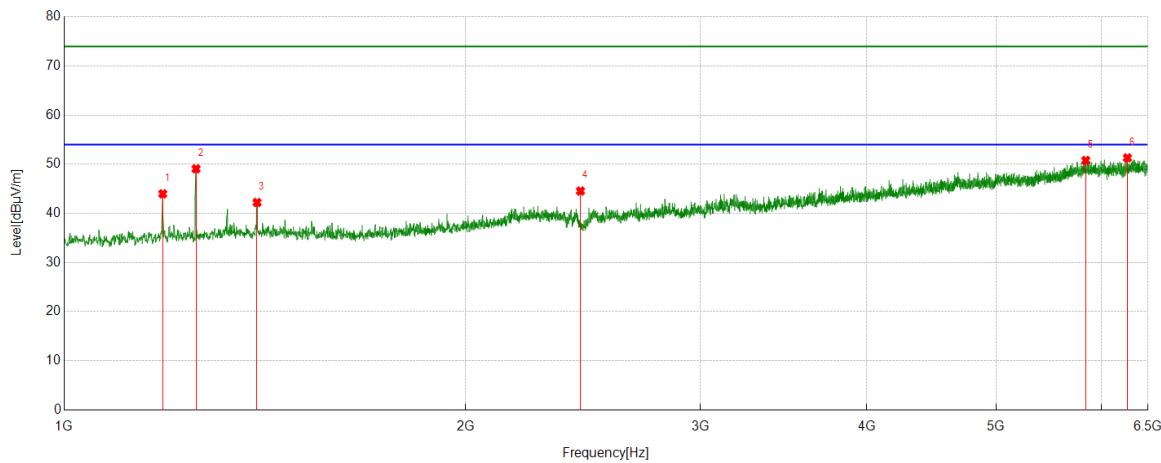

PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 1255.7820 | 46.25 | -0.86 | 45.39 | 74.00 | -28.61 | Horizontal |
| 2 | 2439.8050 | 38.16 | 3.75 | 41.91 | 74.00 | -32.09 | Horizontal |
| 3 | 4083.1354 | 37.21 | 9.08 | 46.29 | 74.00 | -27.71 | Horizontal |
| 4 | 4677.8972 | 35.61 | 12.34 | 47.95 | 74.00 | -26.05 | Horizontal |
| 5 | 5714.0893 | 35.62 | 15.13 | 50.75 | 74.00 | -23.25 | Horizontal |
| 6 | 6447.0559 | 35.05 | 17.51 | 52.56 | 74.00 | -21.44 | Horizontal |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. Peak: Peak detector.
5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | MCH | Vertical | PASS |

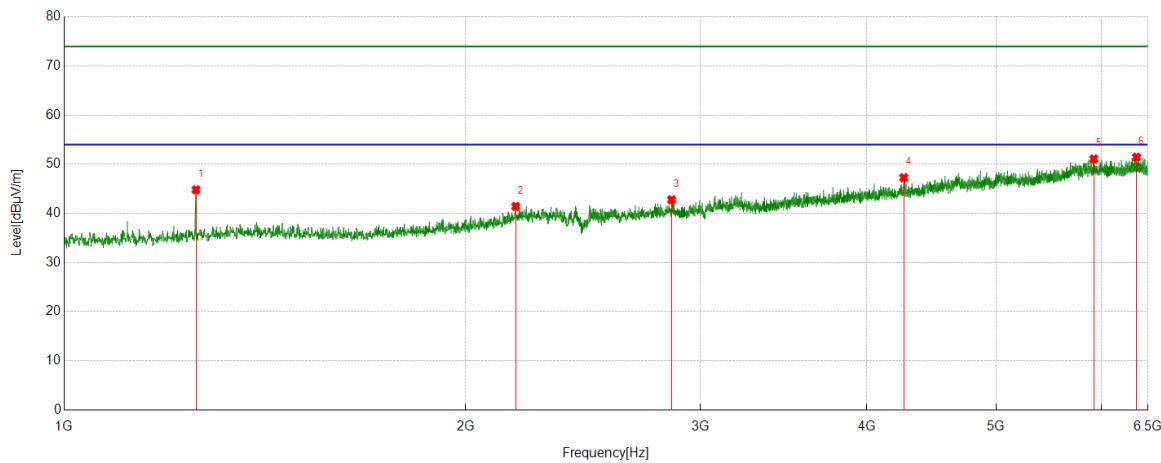

PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|--------|-------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | | | | |
| 1 | 1185.6482 | 45.18 | -1.21 | 43.97 | 74.00 | -30.03 | Vertical |
| 2 | 1255.7820 | 49.93 | -0.86 | 49.07 | 74.00 | -24.93 | Vertical |
| 3 | 1395.3619 | 42.65 | -0.43 | 42.22 | 74.00 | -31.78 | Vertical |
| 4 | 2439.1174 | 40.80 | 3.75 | 44.55 | 74.00 | -29.45 | Vertical |
| 5 | 5837.1671 | 34.69 | 16.09 | 50.78 | 74.00 | -23.22 | Vertical |
| 6 | 6272.4091 | 34.61 | 16.69 | 51.30 | 74.00 | -22.70 | Vertical |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. Peak: Peak detector.
5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | HCH | Horizontal | PASS |

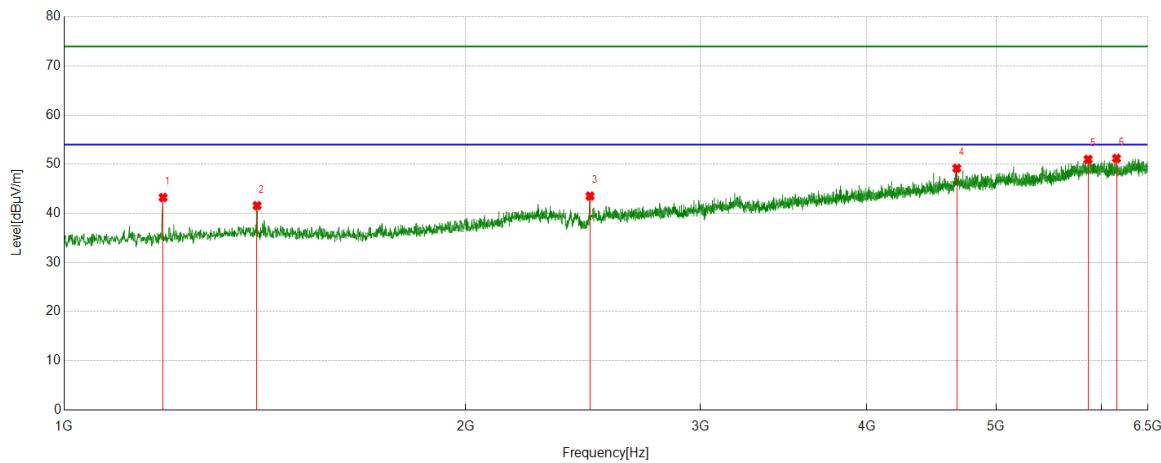

PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 1255.7820 | 45.65 | -0.86 | 44.79 | 74.00 | -29.21 | Horizontal |
| 2 | 2181.2727 | 37.53 | 3.88 | 41.41 | 74.00 | -32.59 | Horizontal |
| 3 | 2855.1069 | 37.21 | 5.53 | 42.74 | 74.00 | -31.26 | Horizontal |
| 4 | 4263.2829 | 37.07 | 10.18 | 47.25 | 74.00 | -26.75 | Horizontal |
| 5 | 5918.9899 | 34.82 | 16.24 | 51.06 | 74.00 | -22.94 | Horizontal |
| 6 | 6372.1090 | 33.90 | 17.54 | 51.44 | 74.00 | -22.56 | Horizontal |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. Peak: Peak detector.
5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | HCH | Vertical | PASS |


PK Result:

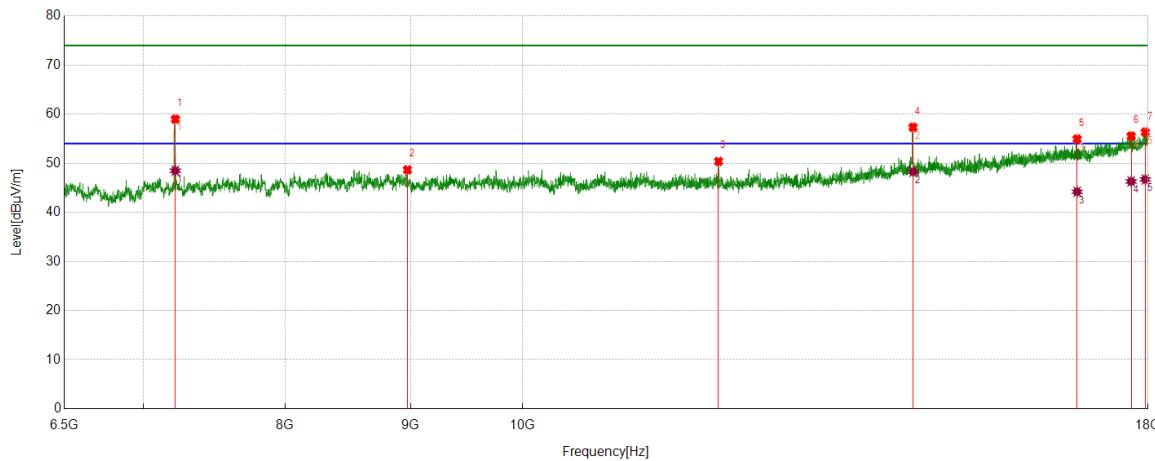
| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 1186.3358 | 44.45 | -1.22 | 43.23 | 74.00 | -30.77 | Vertical |
| 2 | 1395.3619 | 42.00 | -0.43 | 41.57 | 74.00 | -32.43 | Vertical |
| 3 | 2479.6850 | 39.60 | 3.91 | 43.51 | 74.00 | -30.49 | Vertical |
| 4 | 4671.7090 | 36.78 | 12.40 | 49.18 | 74.00 | -24.82 | Vertical |
| 5 | 5861.2327 | 35.44 | 15.56 | 51.00 | 74.00 | -23.00 | Vertical |
| 6 | 6155.5194 | 34.93 | 16.26 | 51.19 | 74.00 | -22.81 | Vertical |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. Peak: Peak detector.
5. For below 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band Reject Filter losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Part 2: 6.5GHz~18GHz
HARMONICS AND SPURIOUS EMISSIONS

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | LCH | Horizontal | PASS |


PK Result:

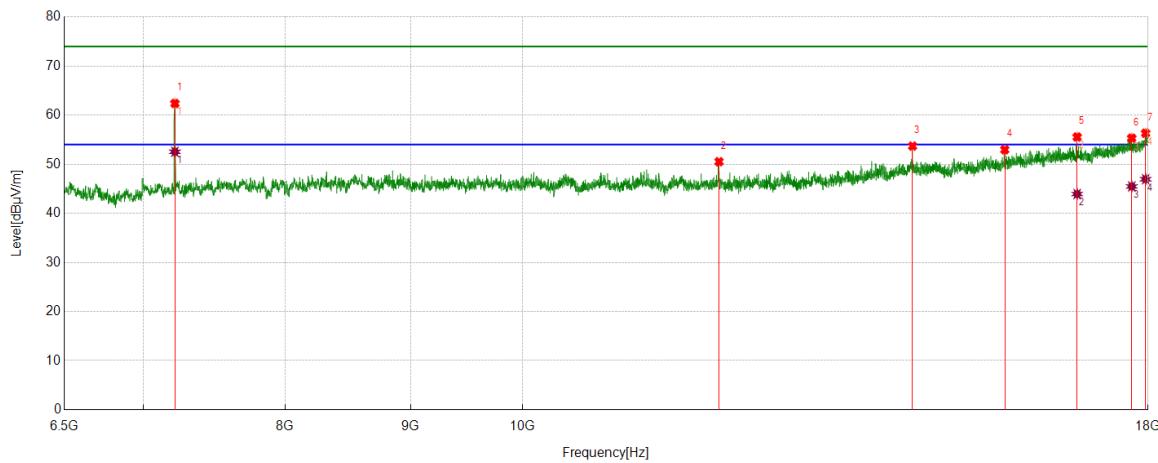
| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7215.9645 | 54.91 | 4.07 | 58.98 | 74.00 | -15.02 | Horizontal |
| 2 | 8974.2468 | 42.30 | 6.36 | 48.66 | 74.00 | -25.34 | Horizontal |
| 3 | 12022.1278 | 42.34 | 8.04 | 50.38 | 74.00 | -23.62 | Horizontal |
| 4 | 14433.1166 | 44.33 | 13.01 | 57.34 | 74.00 | -16.66 | Horizontal |
| 5 | 16839.7925 | 37.96 | 16.97 | 54.93 | 74.00 | -19.07 | Horizontal |
| 6 | 17716.7771 | 36.09 | 19.44 | 55.53 | 74.00 | -18.47 | Horizontal |
| 7 | 17953.9942 | 35.85 | 20.48 | 56.33 | 74.00 | -17.67 | Horizontal |

AV Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7215.9645 | 44.41 | 4.07 | 48.48 | 54.00 | -5.52 | Horizontal |
| 2 | 14433.1166 | 35.25 | 13.01 | 48.26 | 54.00 | -5.74 | Horizontal |
| 3 | 16839.7925 | 27.22 | 16.97 | 44.19 | 54.00 | -9.81 | Horizontal |
| 4 | 17716.7771 | 26.86 | 19.44 | 46.30 | 54.00 | -7.70 | Horizontal |
| 5 | 17953.9942 | 26.22 | 20.48 | 46.70 | 54.00 | -7.30 | Horizontal |

Note: 1. Measurement = Reading Level + Correct Factor.
2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | LCH | Vertical | PASS |


PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7213.0891 | 58.33 | 4.06 | 62.39 | 74.00 | -11.61 | Vertical |
| 2 | 12027.8785 | 42.41 | 8.11 | 50.52 | 74.00 | -23.48 | Vertical |
| 3 | 14427.3659 | 40.69 | 13.01 | 53.70 | 74.00 | -20.30 | Vertical |
| 4 | 15732.7791 | 38.55 | 14.41 | 52.96 | 74.00 | -21.04 | Vertical |
| 5 | 16839.7925 | 38.58 | 16.97 | 55.55 | 74.00 | -18.45 | Vertical |
| 6 | 17726.8409 | 35.80 | 19.51 | 55.31 | 74.00 | -18.69 | Vertical |
| 7 | 17959.7450 | 35.78 | 20.55 | 56.33 | 74.00 | -17.67 | Vertical |

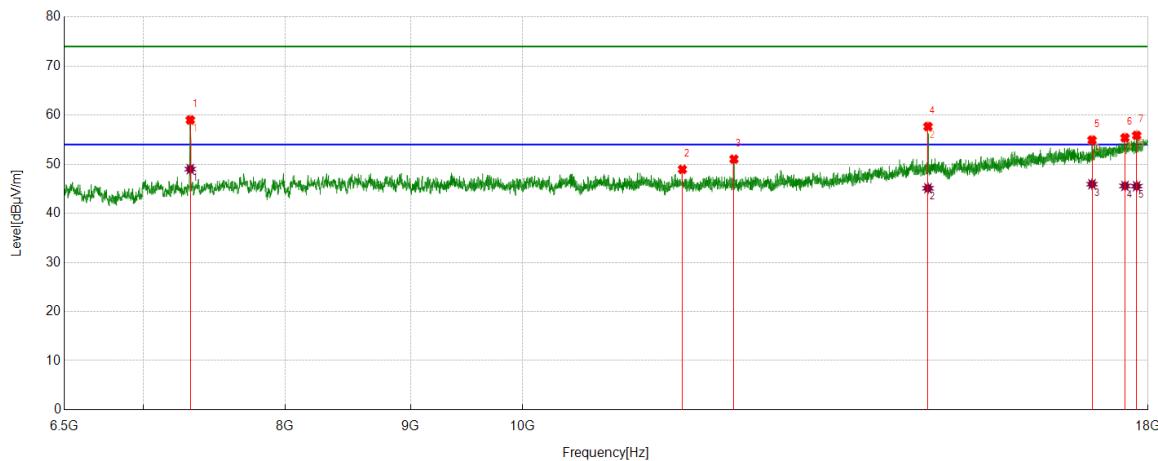
AV Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7213.0891 | 48.48 | 4.06 | 52.54 | 54.00 | -1.46 | Vertical |
| 2 | 16839.7925 | 26.96 | 16.97 | 43.93 | 54.00 | -10.07 | Vertical |
| 3 | 17726.8409 | 25.97 | 19.51 | 45.48 | 54.00 | -8.52 | Vertical |
| 4 | 17959.7450 | 26.40 | 20.55 | 46.95 | 54.00 | -7.05 | Vertical |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | MCH | Horizontal | PASS |


PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7318.0398 | 55.04 | 3.98 | 59.02 | 74.00 | -14.98 | Horizontal |
| 2 | 11621.0151 | 41.27 | 7.68 | 48.95 | 74.00 | -25.05 | Horizontal |
| 3 | 12197.5247 | 42.52 | 8.52 | 51.04 | 74.00 | -22.96 | Horizontal |
| 4 | 14637.2672 | 45.07 | 12.61 | 57.68 | 74.00 | -16.32 | Horizontal |
| 5 | 17077.0096 | 37.97 | 16.95 | 54.92 | 74.00 | -19.08 | Horizontal |
| 6 | 17614.7018 | 36.54 | 18.85 | 55.39 | 74.00 | -18.61 | Horizontal |
| 7 | 17808.7886 | 36.18 | 19.70 | 55.88 | 74.00 | -18.12 | Horizontal |

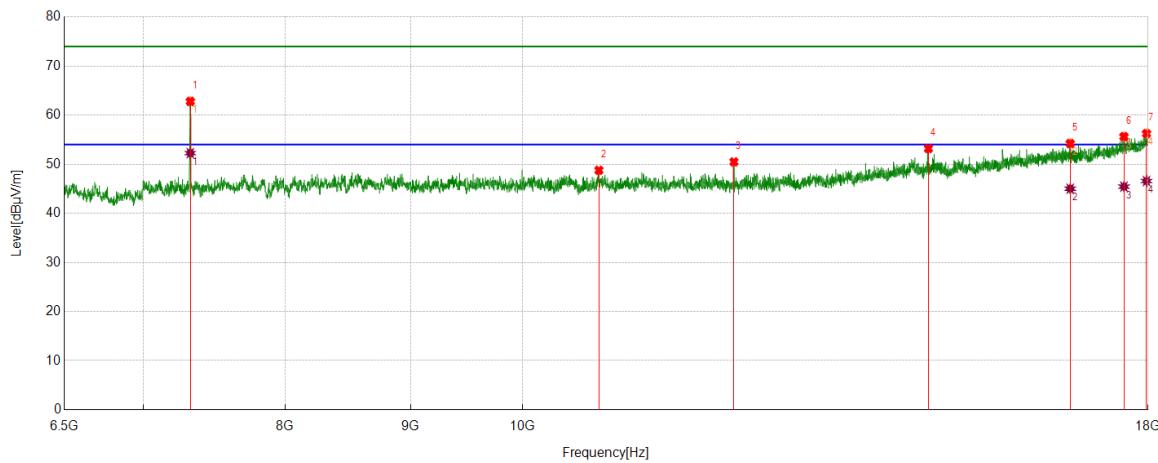
AV Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7318.0398 | 45.03 | 3.98 | 49.01 | 54.00 | -4.99 | Horizontal |
| 2 | 14637.2672 | 32.50 | 12.61 | 45.11 | 54.00 | -8.89 | Horizontal |
| 3 | 17077.0096 | 28.99 | 16.95 | 45.94 | 54.00 | -8.06 | Horizontal |
| 4 | 17614.7018 | 26.73 | 18.85 | 45.58 | 54.00 | -8.42 | Horizontal |
| 5 | 17808.7886 | 25.82 | 19.70 | 45.52 | 54.00 | -8.48 | Horizontal |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | MCH | Vertical | PASS |


PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7318.0398 | 58.82 | 3.98 | 62.80 | 74.00 | -11.20 | Vertical |
| 2 | 10744.0305 | 41.68 | 7.09 | 48.77 | 74.00 | -25.23 | Vertical |
| 3 | 12197.5247 | 41.96 | 8.52 | 50.48 | 74.00 | -23.52 | Vertical |
| 4 | 14643.0179 | 40.60 | 12.60 | 53.20 | 74.00 | -20.80 | Vertical |
| 5 | 16730.5288 | 37.53 | 16.70 | 54.23 | 74.00 | -19.77 | Vertical |
| 6 | 17597.4497 | 36.80 | 18.83 | 55.63 | 74.00 | -18.37 | Vertical |
| 7 | 17974.1218 | 35.67 | 20.58 | 56.25 | 74.00 | -17.75 | Vertical |

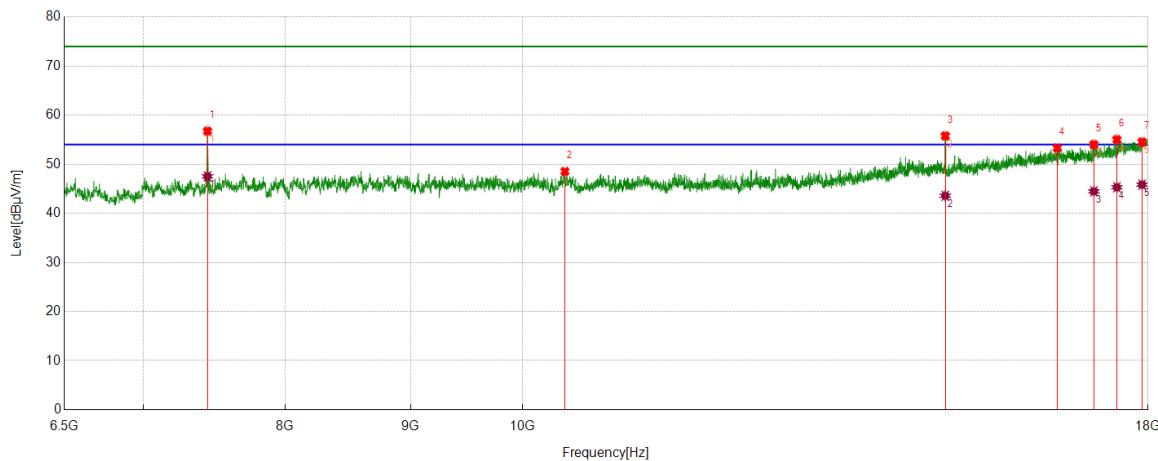
AV Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7318.0398 | 48.29 | 3.98 | 52.27 | 54.00 | -1.73 | Vertical |
| 2 | 16730.5288 | 28.32 | 16.70 | 45.02 | 54.00 | -8.98 | Vertical |
| 3 | 17597.4497 | 26.61 | 18.83 | 45.44 | 54.00 | -8.56 | Vertical |
| 4 | 17974.1218 | 26.00 | 20.58 | 46.58 | 54.00 | -7.42 | Vertical |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | HCH | Horizontal | PASS |


PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7437.3672 | 52.54 | 4.21 | 56.75 | 74.00 | -17.25 | Horizontal |
| 2 | 10406.1758 | 41.76 | 6.77 | 48.53 | 74.00 | -25.47 | Horizontal |
| 3 | 14877.3597 | 43.06 | 12.71 | 55.77 | 74.00 | -18.23 | Horizontal |
| 4 | 16527.8160 | 36.85 | 16.45 | 53.30 | 74.00 | -20.70 | Horizontal |
| 5 | 17107.2009 | 37.01 | 17.00 | 54.01 | 74.00 | -19.99 | Horizontal |
| 6 | 17480.9976 | 36.59 | 18.43 | 55.02 | 74.00 | -18.98 | Horizontal |
| 7 | 17899.3624 | 34.74 | 19.79 | 54.53 | 74.00 | -19.47 | Horizontal |

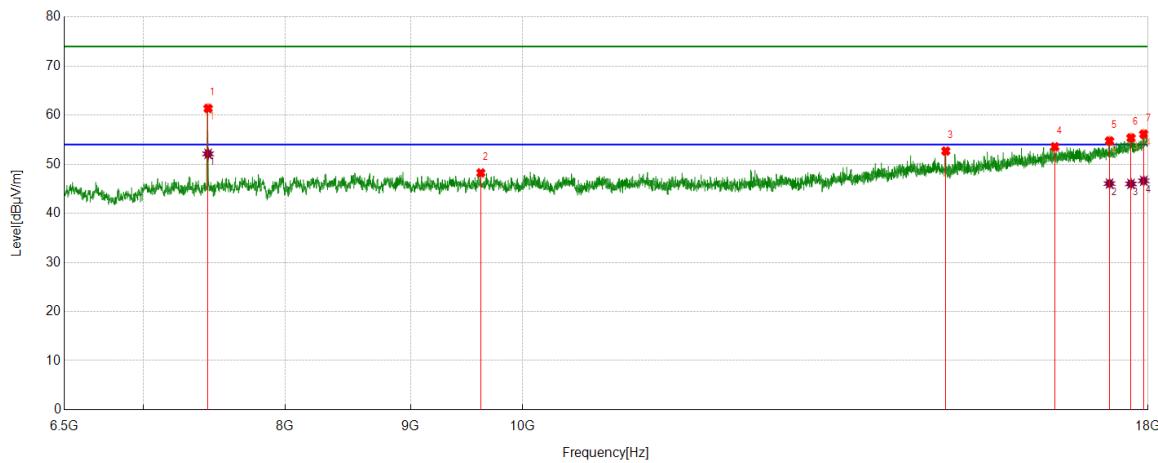
AV Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7437.3672 | 43.32 | 4.21 | 47.53 | 54.00 | -6.47 | Horizontal |
| 2 | 14877.3597 | 30.87 | 12.71 | 43.58 | 54.00 | -10.42 | Horizontal |
| 3 | 17107.2009 | 27.47 | 17.00 | 44.47 | 54.00 | -9.53 | Horizontal |
| 4 | 17480.9976 | 26.87 | 18.43 | 45.30 | 54.00 | -8.70 | Horizontal |
| 5 | 17899.3624 | 26.05 | 19.79 | 45.84 | 54.00 | -8.16 | Horizontal |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz (refer to clause 7.1.).
5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | HCH | Vertical | PASS |


PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7441.6802 | 57.20 | 4.18 | 61.38 | 74.00 | -12.62 | Vertical |
| 2 | 9615.4519 | 41.85 | 6.38 | 48.23 | 74.00 | -25.77 | Vertical |
| 3 | 14884.5481 | 39.95 | 12.74 | 52.69 | 74.00 | -21.31 | Vertical |
| 4 | 16490.4363 | 36.88 | 16.68 | 53.56 | 74.00 | -20.44 | Vertical |
| 5 | 17360.2325 | 36.75 | 18.00 | 54.75 | 74.00 | -19.25 | Vertical |
| 6 | 17713.9017 | 35.96 | 19.41 | 55.37 | 74.00 | -18.63 | Vertical |
| 7 | 17928.1160 | 35.98 | 20.16 | 56.14 | 74.00 | -17.86 | Vertical |

AV Result:

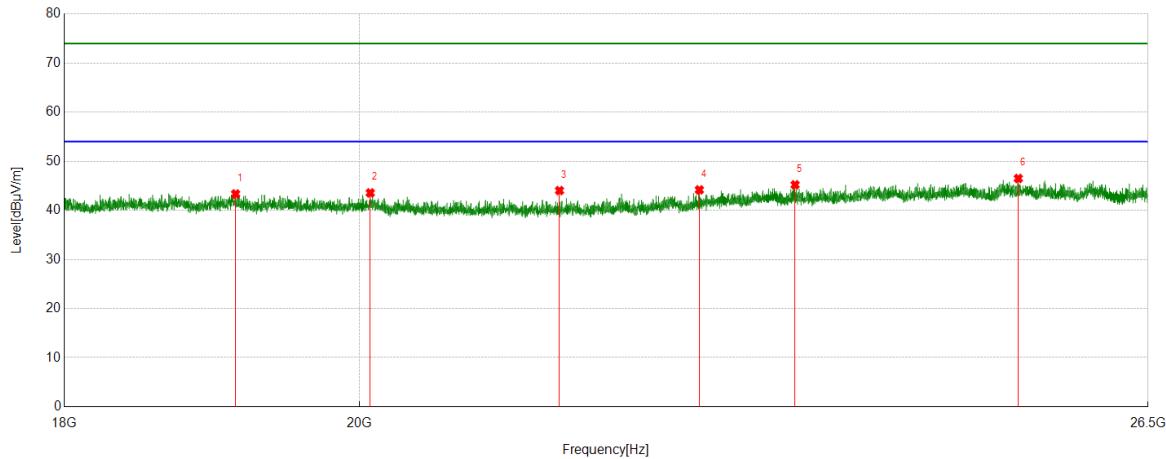
| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 7441.6802 | 47.94 | 4.18 | 52.12 | 54.00 | -1.88 | Vertical |
| 2 | 17360.2325 | 28.06 | 18.00 | 46.06 | 54.00 | -7.94 | Vertical |
| 3 | 17713.9017 | 26.60 | 19.41 | 46.01 | 54.00 | -7.99 | Vertical |
| 4 | 17928.1160 | 26.46 | 20.16 | 46.62 | 54.00 | -7.38 | Vertical |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If peak result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak result: Peak detector, RBW: 1 MHz, VBW: 3 MHz.
4. Average result: Peak detector, RBW: 1 MHz, VBW: 1/T MHz(refer to clause 7.1.).
5. For above 3GHz part, filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
6. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Part 3: 18GHz~26.5GHz
SPURIOUS EMISSIONS 18GHz ~ 26.5GHz (WORST-CASE CONFIGURATION)

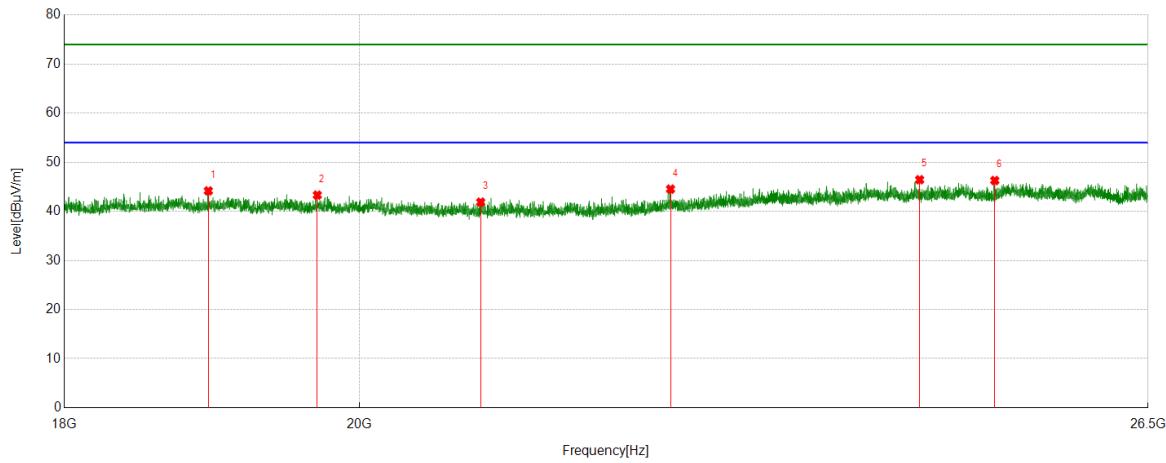
| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | MCH | Horizontal | PASS |


PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|------------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 19135.7136 | 49.20 | -5.85 | 43.35 | 74.00 | -30.65 | Horizontal |
| 2 | 20077.6078 | 48.68 | -5.13 | 43.55 | 74.00 | -30.45 | Horizontal |
| 3 | 21480.2480 | 49.87 | -5.84 | 44.03 | 74.00 | -29.97 | Horizontal |
| 4 | 22579.4079 | 48.64 | -4.47 | 44.17 | 74.00 | -29.83 | Horizontal |
| 5 | 23364.0364 | 48.47 | -3.26 | 45.21 | 74.00 | -28.79 | Horizontal |
| 6 | 25301.3801 | 49.81 | -3.32 | 46.49 | 74.00 | -27.51 | Horizontal |

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. Measurement = Reading Level + Correct Factor.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | MCH | Vertical | PASS |

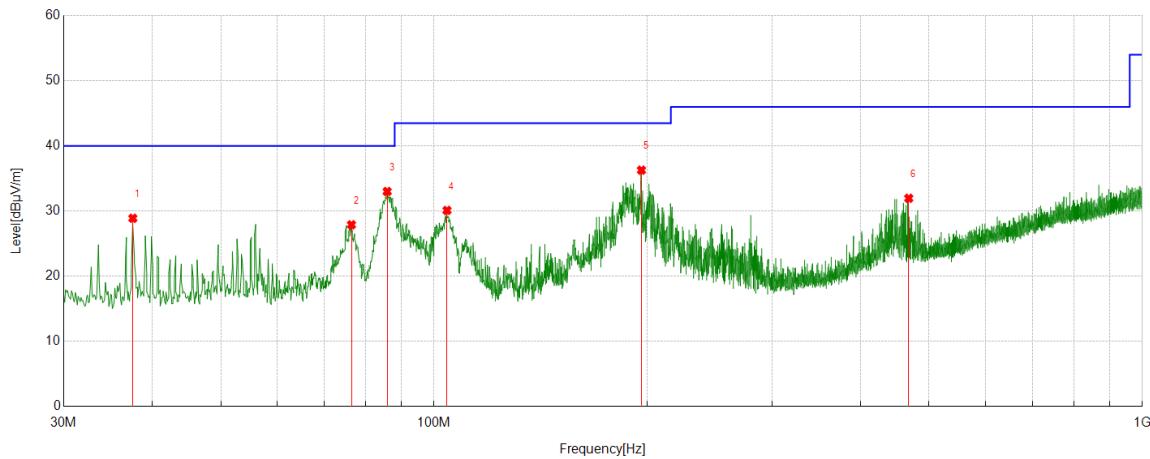

PK Result:

| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|------------|---------------|----------------|----------|----------|--------|----------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 18950.3950 | 50.29 | -6.12 | 44.17 | 74.00 | -29.83 | Vertical |
| 2 | 19701.8702 | 48.71 | -5.40 | 43.31 | 74.00 | -30.69 | Vertical |
| 3 | 20884.3384 | 47.82 | -5.95 | 41.87 | 74.00 | -32.13 | Vertical |
| 4 | 22348.1848 | 49.58 | -5.05 | 44.53 | 74.00 | -29.47 | Vertical |
| 5 | 24425.7926 | 49.38 | -2.94 | 46.44 | 74.00 | -27.56 | Vertical |
| 6 | 25089.7090 | 49.80 | -3.52 | 46.28 | 74.00 | -27.72 | Vertical |

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. Measurement = Reading Level + Correct Factor.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Part 4: 30MHz~1GHz
SPURIOUS EMISSIONS 30MHz ~ 1GHz (WORST-CASE CONFIGURATION)

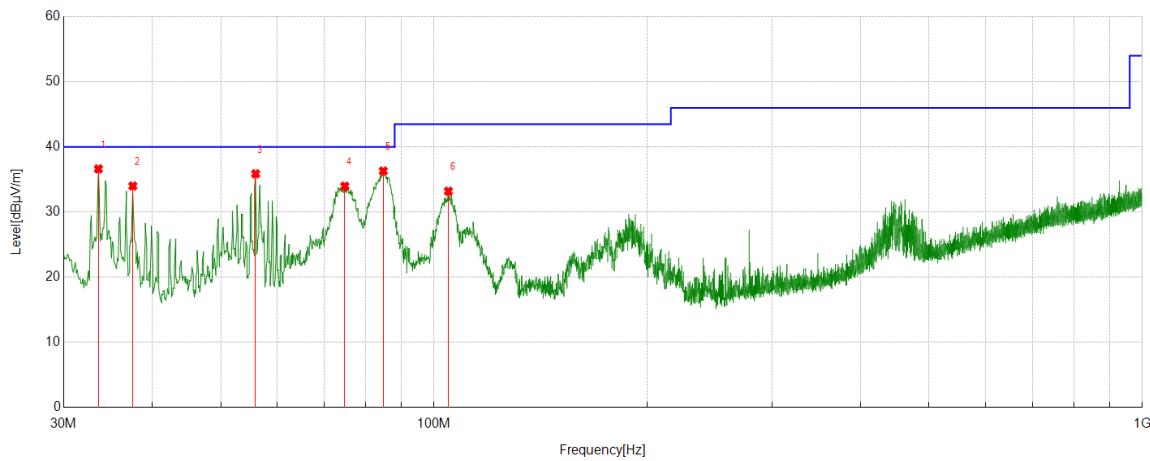
| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | MCH | Horizontal | PASS |



| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|--------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 37.5668 | 9.67 | 19.22 | 28.89 | 40.00 | -11.11 | Peak |
| 2 | 76.4676 | 11.40 | 16.49 | 27.89 | 40.00 | -12.11 | Peak |
| 3 | 85.8776 | 18.67 | 14.33 | 33.00 | 40.00 | -7.00 | Peak |
| 4 | 104.3094 | 13.80 | 16.30 | 30.10 | 43.50 | -13.40 | Peak |
| 5 | 196.2746 | 19.00 | 17.28 | 36.28 | 43.50 | -7.22 | Peak |
| 6 | 467.9988 | 6.61 | 25.35 | 31.96 | 46.00 | -14.04 | Peak |

Note: 1. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
3. Measurement = Reading Level + Correct Factor.

| Test Mode | Channel | Polarization | Verdict |
|-----------|---------|--------------|---------|
| Zigbee | MCH | Vertical | PASS |

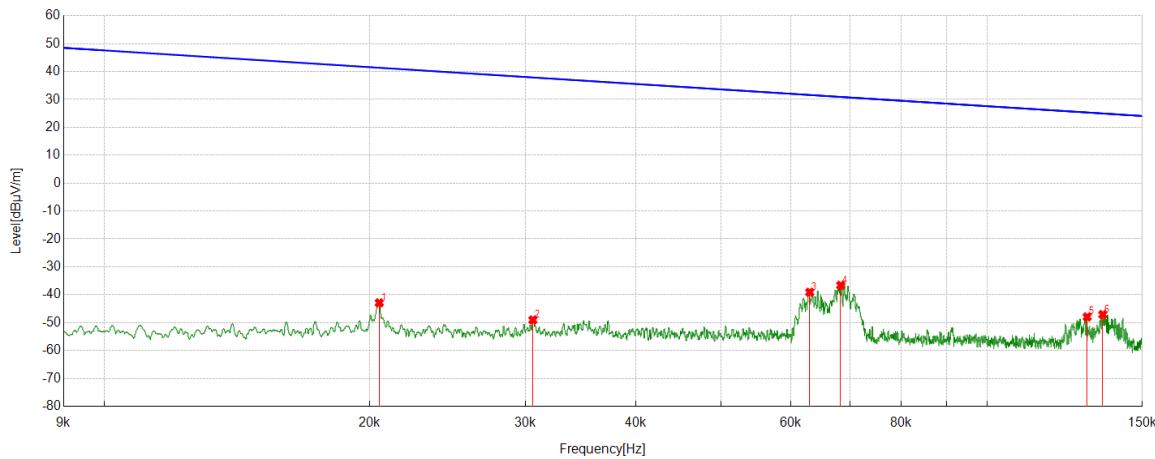


| No. | Frequency | Reading Level | Correct Factor | Result | Limit | Margin | Remark |
|-----|-----------|---------------|----------------|----------|----------|--------|--------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | |
| 1 | 33.5894 | 17.82 | 18.81 | 36.63 | 40.00 | -3.37 | Peak |
| 2 | 37.5668 | 14.78 | 19.22 | 34.00 | 40.00 | -6.00 | Peak |
| 3 | 55.9986 | 15.52 | 20.36 | 35.88 | 40.00 | -4.12 | Peak |
| 4 | 74.8185 | 17.15 | 16.82 | 33.97 | 40.00 | -6.03 | Peak |
| 5 | 84.8105 | 21.85 | 14.45 | 36.30 | 40.00 | -3.70 | Peak |
| 6 | 104.7945 | 16.80 | 16.40 | 33.20 | 43.50 | -10.30 | Peak |

Note: 1. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
3. Measurement = Reading Level + Correct Factor.

Part 5: 9kHz~30MHz
SPURIOUS EMISSIONS 9kHz ~ 30MHz (WORST CASE CONFIGURATION-FACE ON)

| Test Mode | Channel | Frequency Range | Verdict |
|-----------|---------|-----------------|---------|
| Zigbee | MCH | 9kHz~150kHz | PASS |

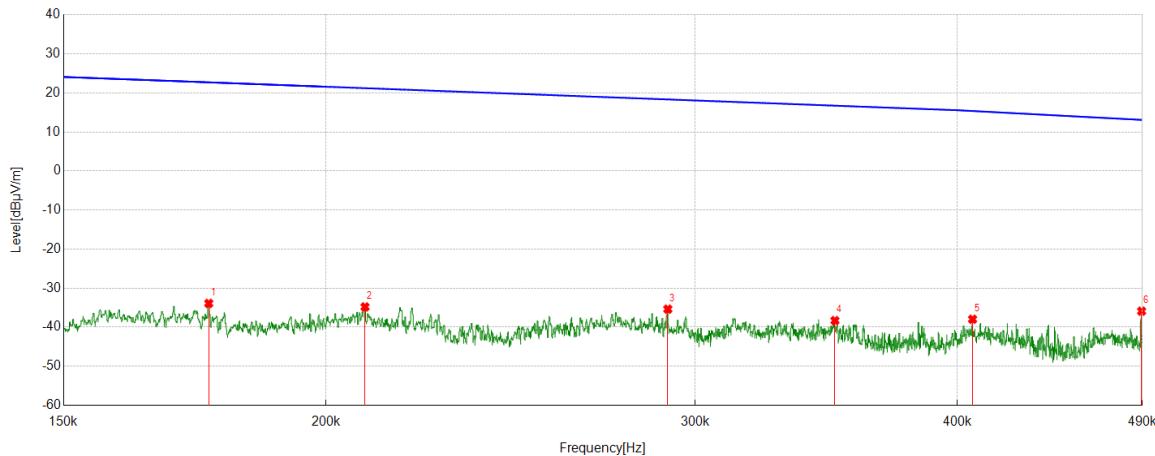


| No. | Frequency | Reading Level | Correct Factor | FCC Result | FCC Limit | ISED Result | ISED Limit | Margin | Remark |
|-----|-----------|---------------|----------------|------------|-----------|-------------|------------|--------|--------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dBuA/m] | [dBuA/m] | [dB] | |
| 1 | 0.0205 | 18.81 | -61.74 | -42.93 | 41.38 | -94.43 | -10.12 | -84.31 | Peak |
| 2 | 0.0306 | 12.55 | -61.60 | -49.05 | 37.87 | -100.55 | -13.63 | -86.92 | Peak |
| 3 | 0.0630 | 22.48 | -61.61 | -39.13 | 31.61 | -90.63 | -19.89 | -70.74 | Peak |
| 4 | 0.0683 | 24.96 | -61.61 | -36.65 | 30.92 | -88.15 | -20.58 | -67.57 | Peak |
| 5 | 0.1299 | 13.75 | -61.72 | -47.97 | 25.34 | -99.47 | -26.16 | -73.31 | Peak |
| 6 | 0.1353 | 14.62 | -61.73 | -47.11 | 24.98 | -98.61 | -26.52 | -72.09 | Peak |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

| Test Mode | Channel | Frequency Range | Verdict |
|-----------|---------|-----------------|---------|
| Zigbee | MCH | 150kHz~490kHz | PASS |

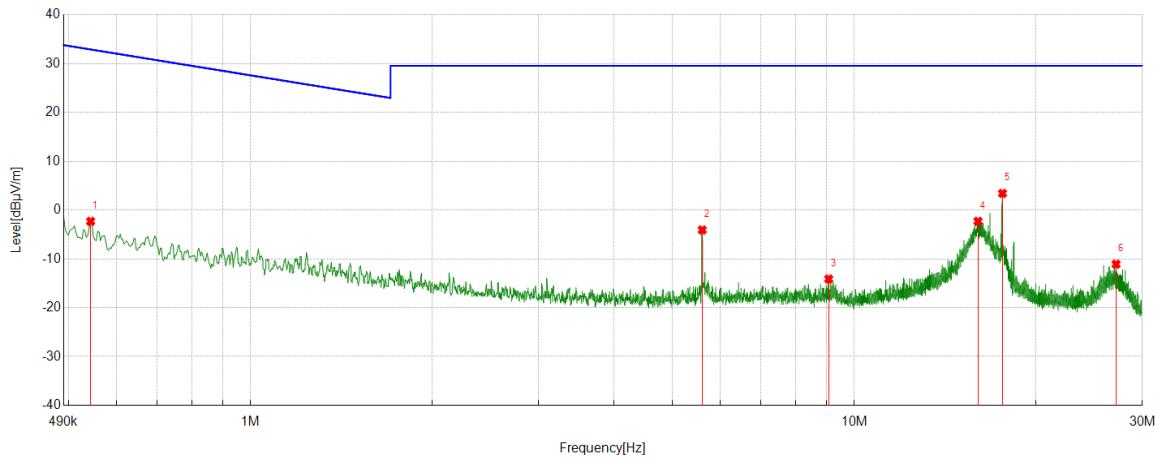


| No. | Frequency | Reading Level | Correct Factor | FCC Result | FCC Limit | ISED Result | ISED Limit | Margin | Remark |
|-----|-----------|---------------|----------------|------------|-----------|-------------|------------|--------|--------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dBuA/m] | [dBuA/m] | [dB] | |
| 1 | 0.1759 | 27.86 | -61.76 | -33.90 | 22.70 | -85.40 | -28.80 | -56.60 | Peak |
| 2 | 0.2088 | 26.96 | -61.77 | -34.81 | 21.21 | -86.31 | -30.29 | -56.02 | Peak |
| 3 | 0.2911 | 26.44 | -61.82 | -35.38 | 18.32 | -86.88 | -33.18 | -53.70 | Peak |
| 4 | 0.3497 | 23.52 | -61.83 | -38.31 | 16.73 | -89.81 | -34.77 | -55.04 | Peak |
| 5 | 0.4067 | 23.87 | -61.84 | -37.97 | 15.36 | -89.47 | -36.14 | -53.33 | Peak |
| 6 | 0.4896 | 25.98 | -61.88 | -35.90 | 13.09 | -87.40 | -38.41 | -48.99 | Peak |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

| Test Mode | Channel | Frequency Range | Verdict |
|-----------|---------|-----------------|---------|
| Zigbee | MCH | 490kHz~30MHz | PASS |



| No. | Frequency | Reading Level | Correct Factor | FCC Result | FCC Limit | ISED Result | ISED Limit | Margin | Remark |
|-----|-----------|---------------|----------------|------------|-----------|-------------|------------|--------|--------|
| | [MHz] | [dBuV/m] | [dB] | [dBuV/m] | [dBuV/m] | [dBuA/m] | [dBuA/m] | [dB] | |
| 1 | 0.5431 | 19.57 | -21.89 | -2.32 | 32.91 | -53.82 | -18.59 | -35.23 | Peak |
| 2 | 5.5987 | 17.75 | -21.83 | -4.08 | 29.54 | -55.58 | -21.96 | -33.62 | Peak |
| 3 | 9.0694 | 7.54 | -21.67 | -14.13 | 29.54 | -65.63 | -21.96 | -43.67 | Peak |
| 4 | 16.0286 | 19.23 | -21.54 | -2.31 | 29.54 | -53.81 | -21.96 | -31.85 | Peak |
| 5 | 17.5987 | 24.92 | -21.51 | 3.41 | 29.54 | -48.09 | -21.96 | -26.13 | Peak |
| 6 | 27.1431 | 10.57 | -21.66 | -11.09 | 29.54 | -62.59 | -21.96 | -40.63 | Peak |

Note:

1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

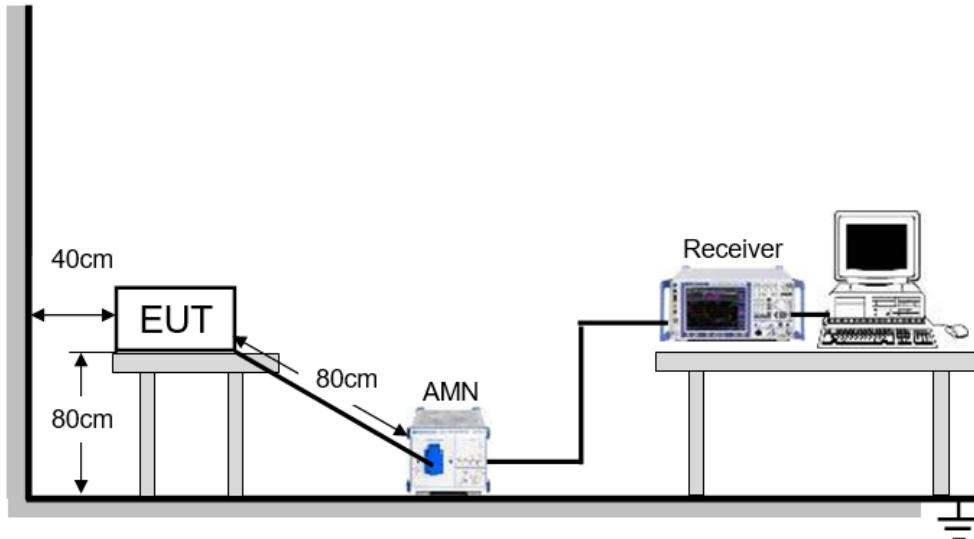
Please refer to FCC §15.207 (a)

| FREQUENCY (MHz) | Limit (dBuV) | |
|-----------------|--------------|-----------|
| | Quasi-peak | Average |
| 0.15 -0.5 | 66 - 56 * | 56 - 46 * |
| 0.50 -5.0 | 56.00 | 46.00 |
| 5.0 -30.0 | 60.00 | 50.00 |

TEST ENVIRONMENT

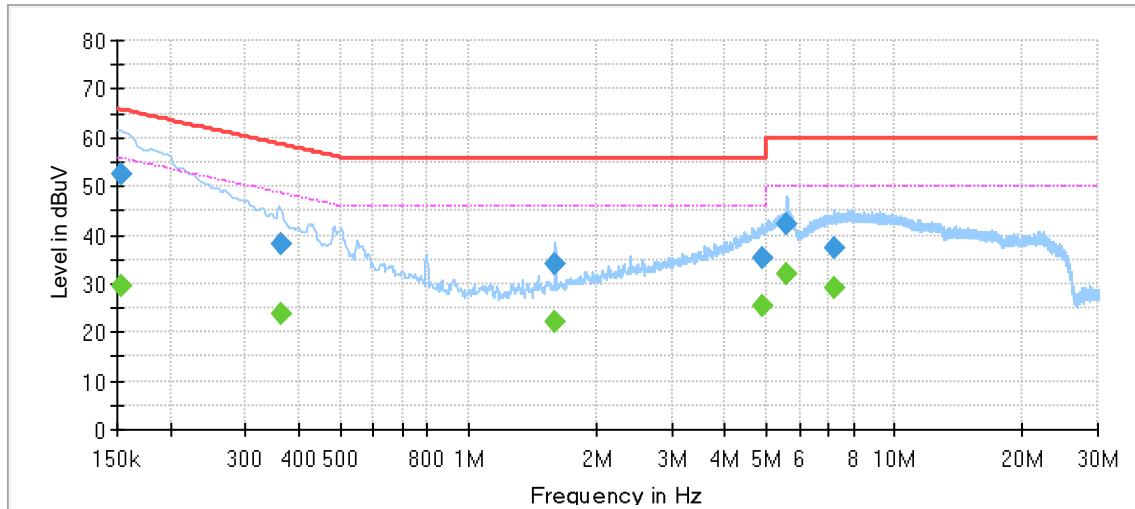
| | | | |
|---------------------|--------|-------------------|---------|
| Temperature | 22°C | Relative Humidity | 56% |
| Atmosphere Pressure | 101kPa | Test Voltage | AC 120V |

TEST SETUP AND PROCEDURE



The EUT is put on a table of non-conducting material that is 12 mm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.

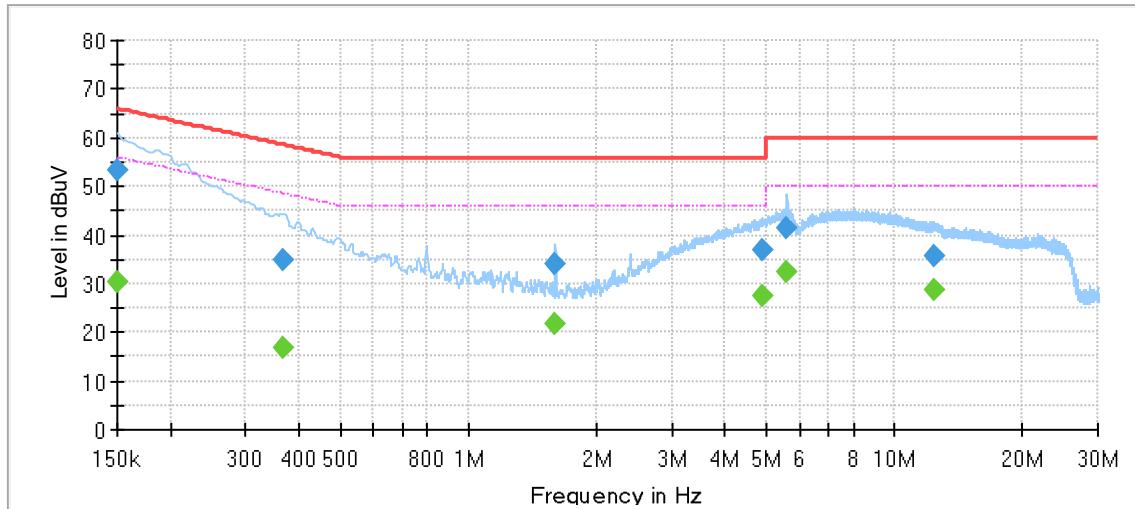
The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

LINE L RESULTS (WORST-CASE CONFIGURATION)

Final Result

| Frequency [MHz] | QuasiPeak [dB μ V] | Average [dB μ V] | Limit [dB μ V] | Margin [dB] | Meas. Time [ms] | Bandwidth [kHz] | Line | Filter | Corr. [dB] |
|-----------------|------------------------|----------------------|--------------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.152488 | --- | 29.74 | 55.86 | 26.13 | 1500.0 | 9.000 | L1 | OFF | 9.6 |
| 0.152488 | 52.59 | --- | 65.86 | 13.27 | 1500.0 | 9.000 | L1 | OFF | 9.6 |
| 0.363925 | --- | 23.77 | 48.64 | 24.87 | 1500.0 | 9.000 | L1 | OFF | 9.6 |
| 0.363925 | 38.19 | --- | 58.64 | 20.45 | 1500.0 | 9.000 | L1 | OFF | 9.6 |
| 1.597725 | --- | 22.12 | 46.00 | 23.88 | 1500.0 | 9.000 | L1 | OFF | 9.6 |
| 1.597725 | 34.02 | --- | 56.00 | 21.98 | 1500.0 | 9.000 | L1 | OFF | 9.6 |
| 4.876250 | --- | 25.52 | 46.00 | 20.48 | 1500.0 | 9.000 | L1 | OFF | 9.7 |
| 4.876250 | 35.13 | --- | 56.00 | 20.87 | 1500.0 | 9.000 | L1 | OFF | 9.7 |
| 5.600113 | --- | 32.01 | 50.00 | 17.99 | 1500.0 | 9.000 | L1 | OFF | 9.7 |
| 5.600113 | 42.42 | --- | 60.00 | 17.58 | 1500.0 | 9.000 | L1 | OFF | 9.7 |
| 7.202063 | --- | 29.21 | 50.00 | 20.79 | 1500.0 | 9.000 | L1 | OFF | 9.7 |
| 7.202063 | 37.45 | --- | 60.00 | 22.55 | 1500.0 | 9.000 | L1 | OFF | 9.7 |

Note:

1. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
3. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.
4. The extension cord/outlet strip was calibrated with the LISN as required by ANSI C63.10:2013 Clause 6.2.2.
5. Pre-testing all test modes and channels and find the MCH of Zigbee which is the worst case, so only the worst case is included in this test report.

LINE N RESULTS (WORST-CASE CONFIGURATION)

Final Result

| Frequency [MHz] | QuasiPeak [dB μ V] | Average [dB μ V] | Limit [dB μ V] | Margin [dB] | Meas. Time [ms] | Bandwidth [kHz] | Line | Filter | Corr. [dB] |
|-----------------|------------------------|----------------------|--------------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.150000 | --- | 30.26 | 56.00 | 25.74 | 1500.0 | 9.000 | N | OFF | 9.5 |
| 0.150000 | 53.27 | --- | 66.00 | 12.73 | 1500.0 | 9.000 | N | OFF | 9.5 |
| 0.368900 | --- | 16.79 | 48.53 | 31.73 | 1500.0 | 9.000 | N | OFF | 9.6 |
| 0.368900 | 34.96 | --- | 58.53 | 23.57 | 1500.0 | 9.000 | N | OFF | 9.6 |
| 1.597725 | --- | 21.63 | 46.00 | 24.37 | 1500.0 | 9.000 | N | OFF | 9.6 |
| 1.597725 | 34.07 | --- | 56.00 | 21.93 | 1500.0 | 9.000 | N | OFF | 9.6 |
| 4.898638 | --- | 27.52 | 46.00 | 18.48 | 1500.0 | 9.000 | N | OFF | 9.6 |
| 4.898638 | 37.08 | --- | 56.00 | 18.92 | 1500.0 | 9.000 | N | OFF | 9.6 |
| 5.600113 | --- | 32.29 | 50.00 | 17.71 | 1500.0 | 9.000 | N | OFF | 9.7 |
| 5.600113 | 41.62 | --- | 60.00 | 18.38 | 1500.0 | 9.000 | N | OFF | 9.7 |
| 12.408400 | --- | 28.85 | 50.00 | 21.15 | 1500.0 | 9.000 | N | OFF | 9.8 |
| 12.408400 | 35.84 | --- | 60.00 | 24.16 | 1500.0 | 9.000 | N | OFF | 9.8 |

Note:

1. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
3. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.
4. The extension cord/outlet strip was calibrated with the LISN as required by ANSI C63.10:2013 Clause 6.2.2.
5. Pre-testing all test modes and channels and find the HCH of Zigbee which is the worst case, so only the worst case is included in this test report.

10. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

ANTENNA GAIN

The antenna gain of EUT is less than 6 dBi

END OF REPORT