

TEST REPORT

Test Report No. : UL-RPT-RP14994595JD02B

Customer : Apple Inc.

Model No. / HVIN : A3113

PMN : MacBook Air

FCC ID : BCGA3113

ISED Certification No. : IC: 579C-A3113

Technology : *Bluetooth* – BDR & EDR (Low Power Mode)

Test Standard(s) : FCC Parts 15.209(a) & 15.247
Innovation, Science and Economic Development Canada
RSS-247 Issue 2 February 2017
RSS-Gen Issue 5 February 2021

Test Laboratory : UL International (UK) Ltd, Basingstoke, Hampshire, RG24 8AH,
United Kingdom

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5. Version 1.0.

Date of Issue: 08 November 2023

Checked by:



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Customer Information

| | |
|----------------------|---|
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| Address: | One Apple Park Way Cupertino, California 95014 U.S.A. |
| Contact Name: | Stuart Thomas |

Report Revision History

| Version Number | Issue Date | Revision Details | Revised By |
|-----------------------|-------------------|-------------------------|-------------------|
| 1.0 | 08/11/2023 | Initial Version | Sarah Williams |

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1 Attestation of Test Results

1.1 Description of EUT

The equipment under test (EUT) was a portable laptop computer.

1.2 General Information

| | |
|----------------------------------|---|
| Specification Reference: | 47CFR15.247 |
| Specification Title: | Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) – Section 15.247 |
| Specification Reference: | 47CFR15.209 |
| Specification Title: | Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) – Section 15.209 |
| Specification Reference: | RSS-Gen Issue 5 February 2021 |
| Specification Title: | General Requirements for Compliance of Radio Apparatus |
| Specification Reference: | RSS-247 Issue 2 February 2017 |
| Specification Title: | Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices |
| Site Registration: | FCC: 685609, ISEDC: 20903 |
| FCC Lab. Designation No.: | UK2011 |
| ISEDC CABID: | UK0001 |
| Location of Testing: | Units 3 & 4 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom |
| Test Dates: | 30 August 2023 to 19 October 2023 |

1.3 Summary of Test Results

| FCC Reference (47CFR) | ISED Canada Reference | Measurement | Result |
|----------------------------------|----------------------------------|--|---------------|
| N/A | RSS-Gen 6.7 | Transmitter 99% Occupied Bandwidth | Complied |
| Part 15.247(a)(1) | RSS-Gen 6.7 / RSS-247 5.1(a) | Transmitter 20 dB Bandwidth | Complied |
| Part 15.247(a)(1) | RSS-247 5.1(b) | Transmitter Carrier Frequency Separation | Complied |
| Part 15.247(a)(1)(iii) | RSS-247 5.1(d) | Transmitter Number of Hopping Frequencies and Average Time of Occupancy | Complied |
| Part 15.247(b)(1) | RSS-Gen 6.12 / RSS-247 5.4(b) | Transmitter Maximum Peak Output Power | Complied |
| Part 15.247(d) & 15.209(a) | RSS-Gen 6.13 / RSS-247 5.5 | Transmitter Radiated Emissions | Complied |
| Part 15.247(d) & 15.209(a) | RSS-Gen 6.13 / RSS-247 5.5 | Transmitter Band Edge Radiated Emissions | Complied |

1.4 Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

2 Summary of Testing

2.1 Facilities and Accreditation

The test site and measurement facilities used to collect data are located at Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom. The following table identifies which facilities were utilised for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| | |
|---------|---|
| Site 1 | X |
| Site 2 | - |
| Site 17 | X |
| Site 32 | - |
| Site 33 | - |

UL International (UK) Ltd is accredited by the United Kingdom Accreditation Service (UKAS). UKAS is one of the signatories to the International Laboratory Accreditation Co-operation (ILAC) Arrangement for the mutual recognition of test reports. The tests reported herein have been performed in accordance with its terms of accreditation.

2.2 Methods and Procedures

| | |
|-------------------|--|
| Reference: | ANSI C63.10-2013 |
| Title: | American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices |
| Reference: | KDB 558074 D01 15.247 Meas Guidance v05r02, April 2, 2019 |
| Title: | Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under Section 15.247 of the FCC Rules |
| Reference: | KDB 662911 D01 Multiple Transmitter Output v02r01 October 31, 2013 |
| Title: | Emissions Testing of Transmitters with Multiple Outputs in the Same Band |

2.3 Calibration and Uncertainty

Measuring Instrument Calibration

In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

Measurement Uncertainty & Decision Rule

Overview

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

Decision Rule

Measurement system instrumentation shall be used with an accuracy specification meeting the accuracy specification limits according to IEC/IECEE OD-5014.

As applicable, unless specified otherwise in this quotation, the compliance "Decision Rule" is based on Simple Acceptance. If the measured value is on the limit, the result is defined as a pass. In this case the risk of a false positive is 50%. For further information regarding risk assessment refer to ILAC G8:09/2019.

Measurement Uncertainty

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

| Measurement Type | Range | Confidence Level (%) | Calculated Uncertainty |
|-------------------------------------|-----------------------|----------------------|------------------------|
| 99% Occupied Bandwidth | 2.4 GHz to 2.4835 GHz | 95% | ±3.92 % |
| 20 dB Bandwidth | 2.4 GHz to 2.4835 GHz | 95% | ±4.59 % |
| Carrier Frequency Separation | 2.4 GHz to 2.4835 GHz | 95% | ±4.59 % |
| Average Time of Occupancy | 2.4 GHz to 2.4835 GHz | 95% | ±3.53 ns |
| Conducted Maximum Peak Output Power | 2.4 GHz to 2.4835 GHz | 95% | ±0.58 dB |
| Radiated Spurious Emissions | 9 kHz to 30 MHz | 95% | ±5.32 dB |
| Radiated Spurious Emissions | 30 MHz to 1 GHz | 95% | ±3.30 dB |
| Radiated Spurious Emissions | 1 GHz to 25 GHz | 95% | ±3.16 dB |

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

2.4 Test and Measurement Equipment

Test Equipment Used for Transmitter Conducted Tests

| Asset No. | Instrument | Manufacturer | Type No. | Serial No. | Date Calibration Due | Cal. Interval (Months) |
|------------------|-------------------|---------------------|-----------------|-------------------|-----------------------------|-------------------------------|
| M2042 | Thermohygrometer | Testo | 608-H1 | 45124926 | 09 Dec 2023 | 12 |
| M231907 | Signal Analyser | Keysight | N9020B | MY63430178 | 03 Dec 2023 | 12 |
| A227116 | Attenuator | Pasternack | PE7013-10 | #1 | Calibrated before use | - |
| A227117 | Attenuator | Pasternack | PE7013-10 | #2 | Calibrated before use | - |
| M215600 | Power Sensor | Boonton | RTP5008 | 11837 | 09 June 2024 | 12 |
| M215598 | Power Sensor | Boonton | RTP5008 | 11821 | 08 June 2024 | 12 |
| A231994 | Switching Unit | Mini-Circuits | ZT-400 | 12211020019 | Calibrated before use | - |
| M1725 | Network Analyser | Keysight | E5071C | MY46316169 | 09 Nov 2023 | 12 |

Test Measurement Software/Firmware Used for Transmitter Conducted Tests

| Name | Version | Release Date |
|-------------|----------------|---------------------|
| Phoenix | 1.4.3 | 02/10/2023 |

Test and Measurement Equipment (continued)**Test Equipment Used for Transmitter Radiated Emissions Tests**

| Asset No. | Instrument | Manufacturer | Type No. | Serial No. | Date Calibration Due | Cal. Interval (Months) |
|-----------|-----------------------|--------------------|---------------------|-------------|----------------------|------------------------|
| M2040 | Thermohygrometer | Testo | 608-H1 | 45124934 | 09 Dec 2023 | 12 |
| K0001 | 3m RSE Chamber | Rainford EMC | N/A | N/A | 06 Sep 2024 | 12 |
| M236226 | Test Receiver | Rohde & Schwarz | ESW26 | 103134 | 21 Apr 2024 | 12 |
| A3154 | Pre-Amplifier | Com-Power | PAM-103 | 18020012 | 21 Aug 2024 | 12 |
| A3165 | Magnetic Loop Antenna | ETS-Lindgren | 6502 | 00224383 | 13 Apr 2024 | 12 |
| A231925 | Antenna | Teseq, Inc | CBL6111D | 63584 | 27 Apr 2024 | 12 |
| A3085 | Low Pass Filter | AtlanTecRF | AFL-02000 | 18051600014 | 26 Jan 2024 | 12 |
| M2003 | Thermohygrometer | Testo | 608-H1 | 45046641 | 09 Dec 2023 | 12 |
| K0017 | 3m RSE Chamber | Rainford EMC | N/A | N/A | 08 Nov 2023 | 12 |
| M1995 | Test Receiver | Rohde & Schwarz | ESU40 | 100428 | 02 Nov 2023 | 12 |
| A2863 | Pre-Amplifier | Agilent | 8449B | 3008A02100 | 07 Nov 2023 | 12 |
| A223628 | Pre-Amplifier | Atlantic Microwave | A-LNAKX-380116-S5S5 | 210837001 | 03 Nov 2023 | 12 |
| A3265 | Pre-Amplifier | Schwarzbeck | BBV 9721 | 9721-069 | 31 Oct 2023 | 12 |
| A2889 | Antenna | Schwarzbeck | BBHA 9120 B | 00653 | 02 Nov 2023 | 12 |
| A2890 | Antenna | Schwarzbeck | HWRD 750 | 014 | 02 Nov 2023 | 12 |
| A2892 | Antenna | Schwarzbeck | BBHA 9170 | 9170-727 | 31 Oct 2023 | 12 |
| A2916 | Attenuator | AtlanTecRF | AN18W5-10 | 832827#2 | 25 Jan 2024 | 12 |
| A2914 | High Pass Filter | AtlanTecRF | AFH-03000 | 2155 | 25 Jan 2024 | 12 |
| A2947 | High Pass Filter | AtlanTecRF | AFH-07000 | 1601900001 | 25 Jan 2024 | 12 |

Test Equipment Used for Transmitter Band Edge Radiated Emissions Tests

| Asset No. | Instrument | Manufacturer | Type No. | Serial No. | Date Calibration Due | Cal. Interval (Months) |
|-----------|------------------|-----------------|-------------|------------|----------------------|------------------------|
| M2003 | Thermohygrometer | Testo | 608-H1 | 45046641 | 09 Dec 2023 | 12 |
| K0017 | 3m RSE Chamber | Rainford EMC | N/A | N/A | 08 Nov 2023 | 12 |
| M1995 | Test Receiver | Rohde & Schwarz | ESU40 | 100428 | 02 Nov 2023 | 12 |
| A2863 | Pre-Amplifier | Agilent | 8449B | 3008A02100 | 07 Nov 2023 | 12 |
| A2889 | Antenna | Schwarzbeck | BBHA 9120 B | 00653 | 02 Nov 2023 | 12 |
| A2916 | Attenuator | AtlanTecRF | AN18W5-10 | 832827#2 | 25 Jan 2024 | 12 |

3 Equipment Under Test (EUT)

3.1 Identification of Equipment Under Test (EUT)

| | |
|-----------------------------------|---|
| Brand Name: | Apple |
| Model Name or Number / HVIN: | A3113 |
| PMN: | MacBook Air |
| Test Sample Serial Number: | GP042Q7C9V (<i>Conducted sample #1</i>) |
| Hardware Version: | REV 1.0 |
| Software Version: | 23A32771a |
| FCC ID: | BCGA3113 |
| ISED Canada Certification Number: | IC: 579C-A3113 |
| Date of Receipt: | 06 October 2023 |

| | |
|-----------------------------------|--|
| Brand Name: | Apple |
| Model Name or Number / HVIN: | A3113 |
| PMN: | MacBook Air |
| Test Sample Serial Number: | C6LTYQVMQ4 (<i>Radiated sample #1</i>) |
| Hardware Version: | REV 1.0 |
| Software Version: | 23A32770p |
| FCC ID: | BCGA3113 |
| ISED Canada Certification Number: | IC: 579C-A3113 |
| Date of Receipt: | 17 August 2023 |

| | |
|-----------------------------------|--|
| Brand Name: | Apple |
| Model Name or Number / HVIN: | A3113 |
| PMN: | MacBook Air |
| Test Sample Serial Number: | T2HJWP7F92 (<i>Radiated sample #2</i>) |
| Hardware Version: | REV 1.0 |
| Software Version: | 23A32771a |
| FCC ID: | BCGA3113 |
| ISED Canada Certification Number: | IC: 579C-A3113 |
| Date of Receipt: | 19 September 2023 |

3.2 Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.3 Additional Information Related to Testing

| | | | |
|---------------------------------|---------------------------------------|--------------------|-------------------------|
| Technology Tested: | Bluetooth | | |
| Type of Unit: | Transceiver | | |
| Channel Spacing: | 1 MHz | | |
| Mode: | Basic Rate | Enhanced Data Rate | |
| Modulation: | GFSK | $\pi/4$ -DQPSK | 8DPSK |
| Packet Type (Maximum Payload): | DH5 | 2DH5 | 3DH5 |
| Data Rate (Mbps): | 1 | 2 | 3 |
| Power Supply Requirement(s): | 12 VDC via 120 VAC 60 Hz AC/DC supply | | |
| Maximum Conducted Output Power: | 16.72 dBm | | |
| Transmit Frequency Range: | 2400 MHz to 2483.5 MHz | | |
| Transmit Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) |
| | Bottom | 0 | 2402 |
| | Middle | 39 | 2441 |
| | Top | 78 | 2480 |

3.4 Description of Available Antennas

The radio utilizes two integrated antennas, with the following maximum gains:

| Antenna Port | Frequency Range (MHz) | Antenna Gain (dBi) |
|--------------|-----------------------|--------------------|
| Core 0 | 2400 to 2480 | 4.78 |
| Core 1 | 2400 to 2480 | 5.11 |

The EUT also supports TxBF with unequal gains and equal transmit powers. Calculations for directional gain were in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i). Directional gain of Core 0 & Core 1 was calculated as:

$N_{ANT}=2$, $G_1 = G_{Core\ 0} = 4.78$ dBi, $G_2 = G_{Core\ 1} = 5.11$ dBi:

$$\begin{aligned}
 \text{Directional Gain} &= 10 \log \left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + \dots + 10^{\frac{G_N}{10}}}{N} \right] = 10 \log \left[\frac{10^{\frac{4.78}{10}} + 10^{\frac{5.11}{10}}}{2} \right] \\
 &= 10 \log \left[\frac{10^{0.478} + 10^{0.511}}{2} \right] = 7.96 \text{ dBi}
 \end{aligned}$$

3.5 Description of Test Setup

Support Equipment

The following support equipment was used to exercise the EUT during testing:

| | |
|------------------------------|--------------|
| Description: | Test Laptop |
| Brand Name: | Apple |
| Model Name or Number: | MacBook Pro |
| Serial Number: | C02VN1N8HV22 |

| | |
|------------------------------|----------------------|
| Description: | USB Diagnostic Cable |
| Brand Name: | Apple |
| Model Name or Number: | Chimp |
| Serial Number: | 439503 |

| | |
|------------------------------|--------------|
| Description: | Test Laptop |
| Brand Name: | Apple |
| Model Name or Number: | MacBook Pro |
| Serial Number: | FVFDH03JQ05G |

| | |
|------------------------------|--------------|
| Description: | Test Laptop |
| Brand Name: | Apple |
| Model Name or Number: | MacBook Pro |
| Serial Number: | C02C800FP0CW |

| | |
|------------------------------|----------------------|
| Description: | USB Diagnostic Cable |
| Brand Name: | Apple |
| Model Name or Number: | Chimp |
| Serial Number: | 30A99B |

| | |
|------------------------------|----------------------|
| Description: | USB Diagnostic Cable |
| Brand Name: | Apple |
| Model Name or Number: | Chimp |
| Serial Number: | 428CEB |

| | |
|------------------------------|------------------------|
| Description: | AC to DC Power Adaptor |
| Brand Name: | Apple |
| Model Name or Number: | A2164 |
| Serial Number: | Not marked or stated |

Support Equipment (continued)

| | |
|------------------------------|----------------------------|
| Description: | USB-C Dock Termination Hub |
| Brand Name: | Lenovo |
| Model Name or Number: | LDC-G2 |
| Serial Number: | ZKW1XQRO |

| | |
|------------------------------|----------------------|
| Description: | Personal Hands Free |
| Brand Name: | Not marked or stated |
| Model Name or Number: | Not marked or stated |
| Serial Number: | Not marked or stated |

| | |
|------------------------------|-------------------------------------|
| Description: | USB-A to USB-C Adaptor. Quantity 2. |
| Brand Name: | Not marked or stated |
| Model Name or Number: | Not marked or stated |
| Serial Number: | Not marked or stated |

| | |
|------------------------------|-------------------------------------|
| Description: | USB-A Cable. Quantity 2. Length 3 m |
| Brand Name: | Not marked or stated |
| Model Name or Number: | Not marked or stated |
| Serial Number: | Not marked or stated |

Operating Modes

The EUT was tested in the following operating mode(s):

- Continuously transmitting at maximum power on bottom, middle and top channels in BDR (DH5 packets) or EDR (2DH5 or 3DH5 packets) as required.
- Continuously transmitting at maximum power in hopping mode on all channels in BDR (DH5 packets) or EDR (2DH5 or 3DH5 packets) as required.

Configuration and Peripherals

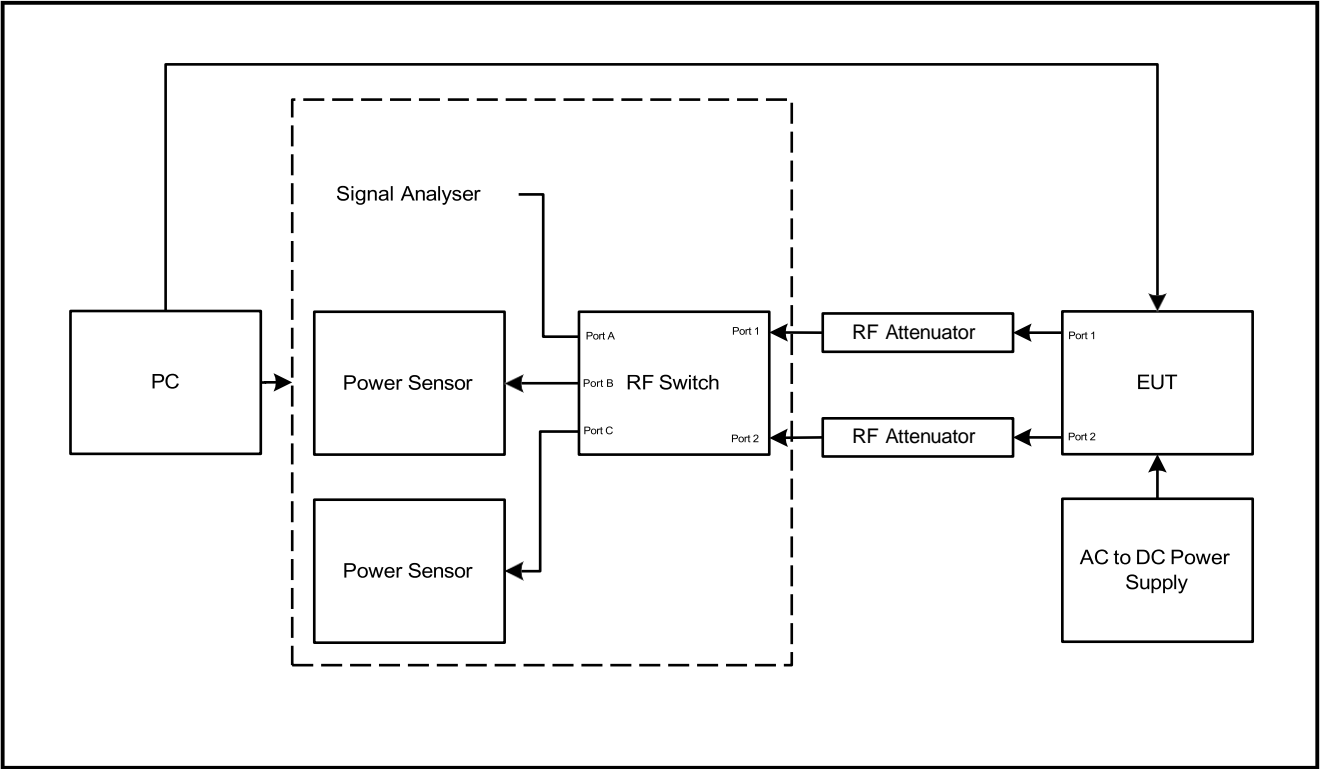
The EUT was tested in the following configuration(s):

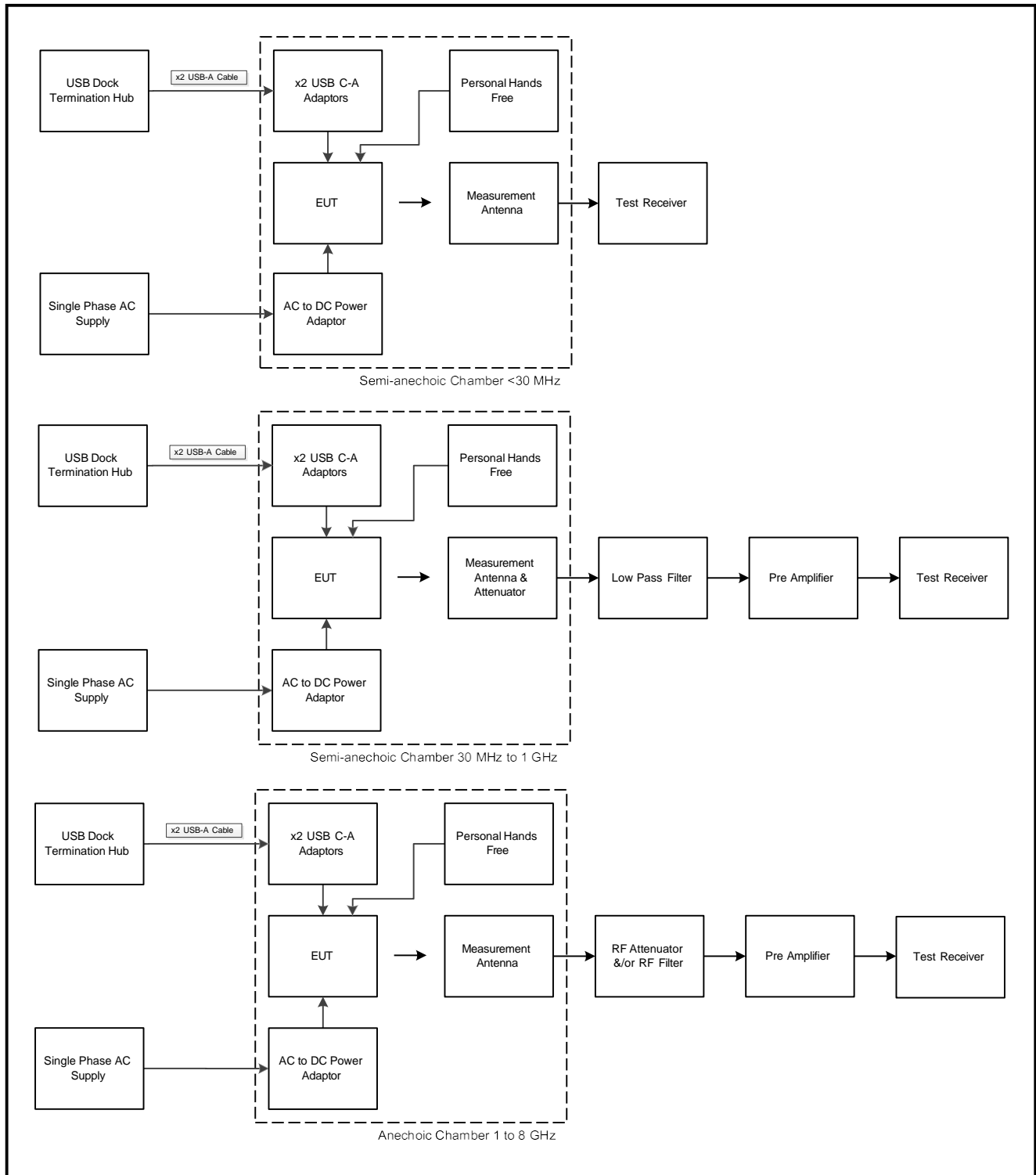
- Controlled in test mode using a set of commands entered into a terminal application on the test laptop supplied by the customer. The commands were used to enable a continuous transmission and to select the test channels as required.
- The EUT has two cores which operate in both SISO and TxBF modes. Core 0 & Core 1 are identical but have unequal gains therefore conducted tests have been performed on the Core with the highest antenna gain. Modes tested were:
 - DH5 / SISO / Core 1
 - 2DH5 / SISO / Core 1
 - 3DH5 / SISO / Core 1
 - DH5 / Beamforming / Core 0 + Core 1
 - 2DH5 / Beamforming / Core 0 + Core 1
 - 3DH5 / Beamforming / Core 0 + Core 1
- The customer supplied U.FL RF cables with the EUT in order to perform conducted measurements. This measured additional path loss was included in any path loss calculations.
- The EUT was powered from a 120 VAC 60 Hz single phase mains supply.
- Transmitter radiated spurious emissions tests were performed with the EUT transmitting in DH5 Beamforming Core 0 + Core 1 mode as this mode was found to transmit the highest power.
- Radiated band edge and spurious emissions were performed with the EUT in the normal position of operation. Tests were performed with the EUT connected to its AC to DC power adaptor, PHF and USB adaptors. All ports were terminated with suitable terminations.

Test Setup Diagrams

Conducted Tests:

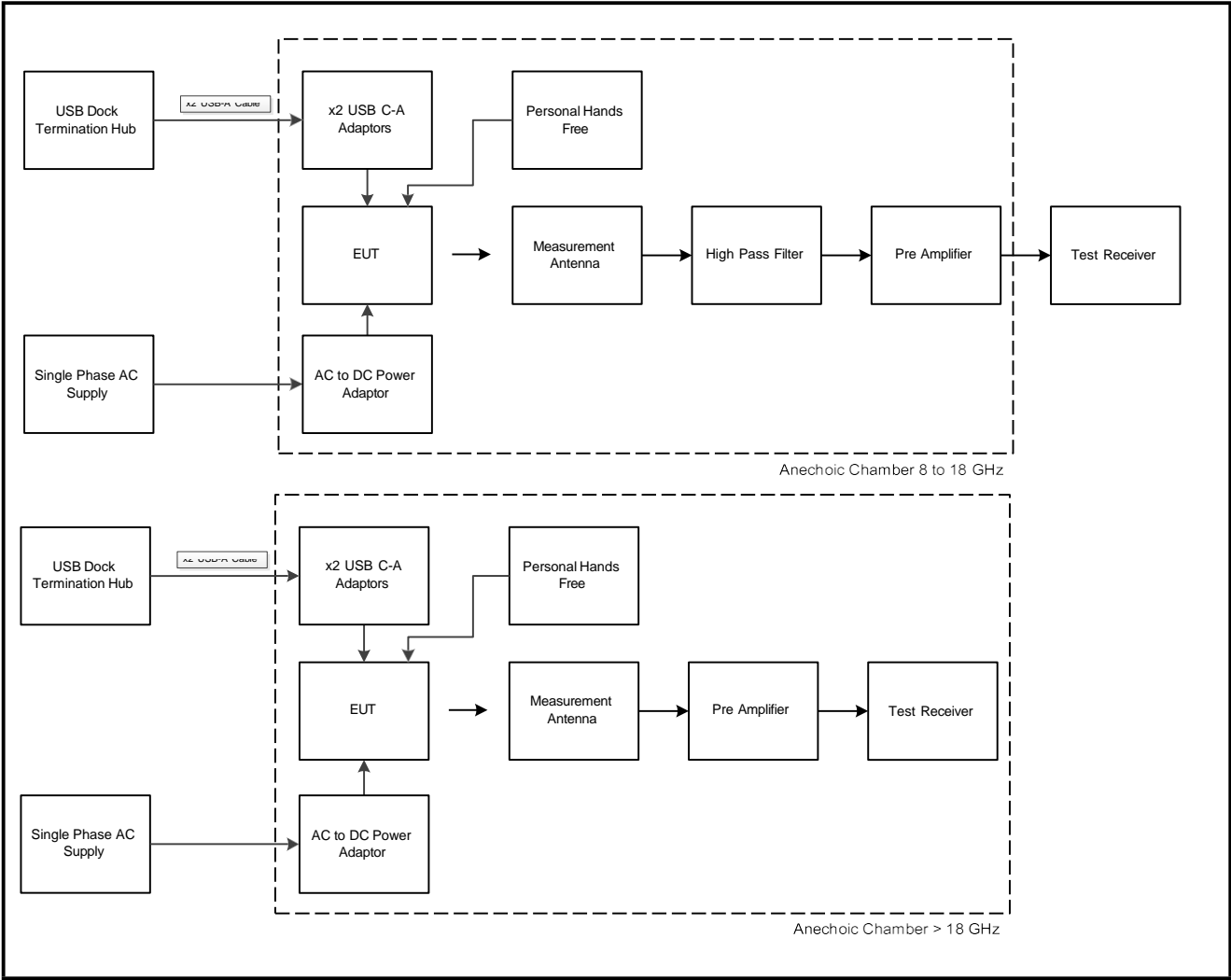
Test Setup for Transmitter Conducted Tests



Test Setup Diagrams (continued)**Radiated Tests:****Test Setup for Transmitter Radiated Emissions**

Test Setup Diagrams (continued)

Test Setup for Transmitter Radiated Emissions (continued)



4 Antenna Port Test Results

4.1 Transmitter 99% Emission Bandwidth

Test Summary:

| | | | |
|-----------------------------------|-------------|--------------------|--------------------------------------|
| Test Engineer: | Max Passell | Test Dates: | 12 October 2023 & 13 October 2023 |
| Test Sample Serial Number: | GP042Q7C9V | | |

Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperature (°C): | 21 |
| Relative Humidity (%): | 55 to 58 |

Note(s):

1. The 99% emission bandwidth was calculated by the test system using the raw trace data from the signal analyser. The resolution bandwidth was set in the range of 1% to 5% of the occupied bandwidth and the video bandwidth set to 3 times the resolution bandwidth. The span was set to capture all products of the modulation process including emission skirts.
2. Example plots of each modulation on middle channel, for one antenna configuration, can be seen below to show setting parameters comply with testing method/procedure. All other plots are archived on the UL IT server and available for inspection if required.

Transmitter 99% Emission Bandwidth (continued)

Results:

| | | | |
|------------------|-----------------|--------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | RSS-Gen 6.7 | Test Method: | ANSI C63.10 6.9.3 |

| | | | |
|------------------------|---------------|------------------|------------|
| Antenna Configuration: | SISO | Mode: | BDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | DH5 (GFSK) |

| Test Frequency (MHz) | 99% Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | - | 0.855 | - | - | - |
| 2441 | - | 0.858 | - | - | - |
| 2480 | - | 0.861 | - | - | - |



Middle Channel

Transmitter 99% Emission Bandwidth (continued)

| | | | |
|------------------|-----------------|--------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | RSS-Gen 6.7 | Test Method: | ANSI C63.10 6.9.3 |

| | | | |
|------------------------|---------------|------------------|------------------------|
| Antenna Configuration: | SISO | Mode: | EDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | 2-DH5 ($\pi/4$ DQPSK) |

| Test Frequency (MHz) | 99% Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | - | 1.188 | - | - | - |
| 2441 | - | 1.184 | - | - | - |
| 2480 | - | 1.188 | - | - | - |



Middle Channel

Transmitter 99% Emission Bandwidth (continued)

| | | | |
|------------------|-----------------|--------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | RSS-Gen 6.7 | Test Method: | ANSI C63.10 6.9.3 |

| | | | |
|------------------------|---------------|------------------|----------------|
| Antenna Configuration: | SISO | Mode: | EDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | 3-DH5 (8-DPSK) |

| Test Frequency (MHz) | 99% Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | - | 1.192 | - | - | - |
| 2441 | - | 1.188 | - | - | - |
| 2480 | - | 1.192 | - | - | - |



Middle Channel

Transmitter 99% Emission Bandwidth (continued)

| | | | |
|-------------------------|-----------------|---------------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | RSS-Gen 6.7 | Test Method: | ANSI C63.10 6.9.3 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|------------|
| Antenna Configuration: | Beamforming | Mode: | BDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | DH5 (GFSK) |

| Test Frequency (MHz) | 99% Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | 0.852 | 0.860 | - | - | - |
| 2441 | 0.855 | 0.856 | - | - | - |
| 2480 | 0.855 | 0.855 | - | - | - |

| | | | |
|-------------------------|-----------------|---------------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | RSS-Gen 6.7 | Test Method: | ANSI C63.10 6.9.3 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|------------------------|
| Antenna Configuration: | Beamforming | Mode: | EDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | 2-DH5 ($\pi/4$ DQPSK) |

| Test Frequency (MHz) | 99% Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | 1.184 | 1.184 | - | - | - |
| 2441 | 1.184 | 1.184 | - | - | - |
| 2480 | 1.184 | 1.188 | - | - | - |

| | | | |
|-------------------------|-----------------|---------------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | RSS-Gen 6.7 | Test Method: | ANSI C63.10 6.9.3 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|----------------|
| Antenna Configuration: | Beamforming | Mode: | EDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | 3-DH5 (8-DPSK) |

| Test Frequency (MHz) | 99% Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|---------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | 1.192 | 1.192 | - | - | - |
| 2441 | 1.188 | 1.192 | - | - | - |
| 2480 | 1.192 | 1.192 | - | - | - |

4.2 Transmitter 20 dB Bandwidth

Test Summary:

| | | | |
|-----------------------------------|-------------|--------------------|--------------------------------------|
| Test Engineer: | Max Passell | Test Dates: | 12 October 2023 & 13 October 2023 |
| Test Sample Serial Number: | GP042Q7C9V | | |

Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperature (°C): | 21 |
| Relative Humidity (%): | 55 to 58 |

Note(s):

1. The test system signal analyser resolution bandwidth was set in the range of 1% to 5% of the OBW and video bandwidth is 3 times of RBW. A peak detector was used, sweep time was set to auto and the trace mode was Max Hold. The span was set to capture all products of the modulation process including emission skirts. Normal and delta markers were placed 20 dB down from the peak of the carrier.
2. Example plots of each modulation on middle channel, for one antenna configuration, can be seen below to show setting parameters comply with testing method/procedure. All other plots are archived on the UL IT server and available for inspection if required.

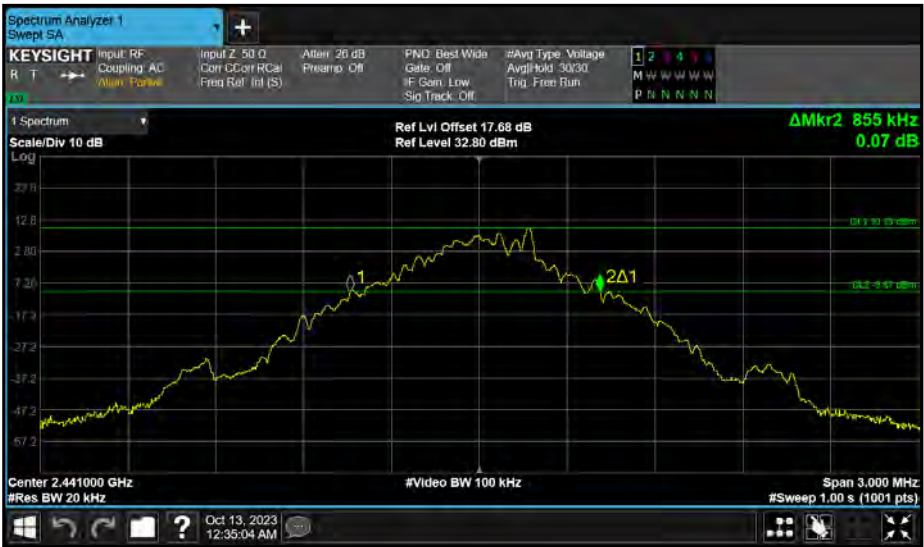
Transmitter 20 dB Bandwidth (continued)

Results:

| | | | |
|------------------|--|--------------|---------------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (a)(1) RSS-247 5.1 (a) / RSS-Gen 6.7 | Test Method: | ANSI C63.10 Section 6.9.2 |

| | | | |
|------------------------|---------------|------------------|------------|
| Antenna Configuration: | SISO | Mode: | BDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | DH5 (GFSK) |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|-----------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | - | 0.855 | - | - | - |
| 2441 | - | 0.855 | - | - | - |
| 2480 | - | 0.858 | - | - | - |



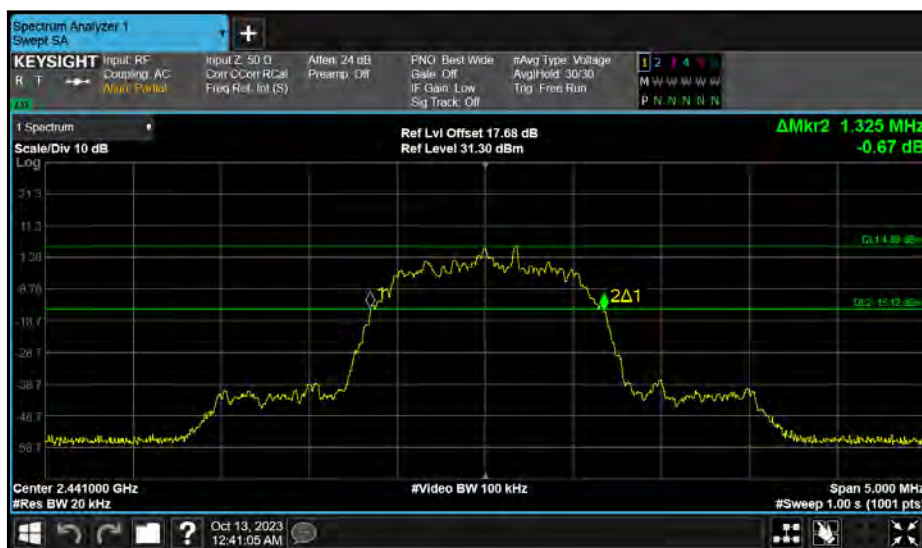
Middle Channel

Transmitter 20 dB Bandwidth (continued)

| | | | |
|-------------------------|--|---------------------|---------------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (a)(1) RSS-247 5.1 (a) / RSS-Gen 6.7 | Test Method: | ANSI C63.10 Section 6.9.2 |

| | | | |
|-------------------------------|---------------|-------------------------|------------------------|
| Antenna Configuration: | SISO | Mode: | EDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | 2-DH5 ($\pi/4$ DQPSK) |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|-----------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | - | 1.325 | - | - | - |
| 2441 | - | 1.325 | - | - | - |
| 2480 | - | 1.330 | - | - | - |



Middle Channel

Transmitter 20 dB Bandwidth (continued)

| | | | |
|-------------------------|--|---------------------|---------------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (a)(1) RSS-247 5.1 (a) / RSS-Gen 6.7 | Test Method: | ANSI C63.10 Section 6.9.2 |

| | | | |
|-------------------------------|---------------|-------------------------|----------------|
| Antenna Configuration: | SISO | Mode: | EDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | 3-DH5 (8-DPSK) |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|-----------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | - | 1.260 | - | - | - |
| 2441 | - | 1.260 | - | - | - |
| 2480 | - | 1.265 | - | - | - |



Middle Channel

Transmitter 20 dB Bandwidth (continued)

| | | | |
|-------------------------|--|---------------------|---------------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (a)(1) RSS-247 5.1 (a) / RSS-Gen 6.7 | Test Method: | ANSI C63.10 Section 6.9.2 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|------------|
| Antenna Configuration: | Beamforming | Mode: | BDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | DH5 (GFSK) |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|-----------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | 0.855 | 0.855 | - | - | - |
| 2441 | 0.855 | 0.855 | - | - | - |
| 2480 | 0.858 | 0.858 | - | - | - |

| | | | |
|-------------------------|--|---------------------|---------------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (a)(1) RSS-247 5.1 (a) / RSS-Gen 6.7 | Test Method: | ANSI C63.10 Section 6.9.2 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|------------------------|
| Antenna Configuration: | Beamforming | Mode: | EDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | 2-DH5 ($\pi/4$ DQPSK) |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) | | | | Limit (kHz) |
|----------------------|-----------------------|-------|---|---|-------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | 1.325 | 1.325 | - | - | - |
| 2441 | 1.325 | 1.330 | - | - | - |
| 2480 | 1.325 | 1.325 | - | - | - |

Transmitter 20 dB Bandwidth (continued)

| | | | |
|-------------------------|--|---------------------|---------------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (a)(1) RSS-247 5.1 (a) / RSS-Gen 6.7 | Test Method: | ANSI C63.10 Section 6.9.2 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|----------------|
| Antenna Configuration: | Beamforming | Mode: | EDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | 3-DH5 (8-DPSK) |

| Test Frequency (MHz) | 20 dB Bandwidth (MHz) | | | | Limit (kHz) |
|-------------------------|-----------------------|-------|---|---|----------------|
| | 1 | 2 | 3 | 4 | |
| 2402 | 1.260 | 1.260 | - | - | - |
| 2441 | 1.260 | 1.260 | - | - | - |
| 2480 | 1.265 | 1.260 | - | - | - |

4.3 Transmitter Carrier Frequency Separation

Test Summary:

| | | | |
|-----------------------------------|-------------|--------------------|--------------------------------------|
| Test Engineer: | Max Passell | Test Dates: | 12 October 2023 & 13 October 2023 |
| Test Sample Serial Number: | GP042Q7C9V | | |

Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperature (°C): | 21 |
| Relative Humidity (%): | 55 to 58 |

Note(s):

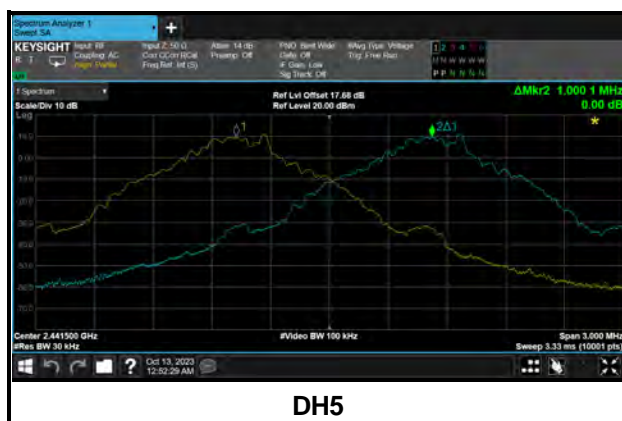
1. The 20 dB bandwidth measured for the middle channel operating at 2441 MHz was used to calculate the limit.
2. The signal analyser resolution bandwidth was set to 30 kHz and video bandwidth 100 kHz for DH5. The resolution bandwidth was set to 51 kHz and video bandwidth 200 kHz for EDR. A peak detector was used, sweep time was set to auto and trace mode was Max Hold. The span was set to 3 MHz for DH5 and 4 MHz for EDR. A marker was placed at the centre of one signal and then a delta marker was placed in the same place on the second signal.
3. Example plots of each modulation, for one antenna configuration, can be seen below to show setting parameters comply with testing method/procedure. All other plots are archived on the UL IT server and available for inspection if required.

Transmitter Carrier Frequency Separation (continued)**Results:**

| | | | |
|-------------------------|--------------------------------------|---------------------|---------------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (a)(1) RSS-247 5.1 (b) | Test Method: | ANSI C63.10 Section 7.8.2 |

| | | | |
|-------------------------------|---------------|-------------------------|-----------|
| Antenna Configuration: | SISO | Mode: | BDR - EDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | - |

| Packet Type / Modulation | Hopping Frequency (MHz) | | F _{HS} (MHz) | 20 dB Bandwidth (MHz) | Limit (MHz) | Margin (MHz) |
|--------------------------|-------------------------|----------|-----------------------|-----------------------|-------------|--------------|
| | F1 | F2 | | | | |
| DH5 (GFSK) | 2441.026 | 2442.026 | 1.000 | 0.855 | 0.570 | 0.430 |
| 2-DH5 ($\pi/4$ DQPSK) | 2441.008 | 2442.007 | 1.000 | 1.325 | 0.883 | 0.117 |
| 3-DH5 (8-DPSK) | 2441.015 | 2442.015 | 1.000 | 1.260 | 0.840 | 0.160 |



Transmitter Carrier Frequency Separation (continued)

| | | | |
|-------------------------|--------------------------------------|---------------------|---------------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (a)(1) RSS-247 5.1 (b) | Test Method: | ANSI C63.10 Section 7.8.2 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|-----------|
| Antenna Configuration: | Beamforming | Mode: | BDR - EDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | - |

| Packet Type / Modulation | Hopping Frequency (MHz) | | F _{HS} (MHz) | 20 dB Bandwidth (MHz) | Limit (MHz) | Margin (MHz) |
|-----------------------------|-------------------------|----------|--------------------------|-----------------------------|----------------|-----------------|
| | F1 | F2 | | | | |
| DH5 (GFSK) | 2441.025 | 2442.025 | 1.000 | 0.855 | 0.570 | 0.430 |
| 2-DH5 ($\pi/4$ DQPSK) | 2441.007 | 2442.007 | 1.000 | 1.325 | 0.883 | 0.117 |
| 3-DH5 (8-DPSK) | 2441.015 | 2442.015 | 1.000 | 1.260 | 0.840 | 0.160 |

4.4 Transmitter Number of Hopping Frequencies and Average Time of Occupancy

Test Summary:

| | | | |
|-----------------------------------|-------------|--------------------|--------------------------------------|
| Test Engineer: | Max Passell | Test Dates: | 12 October 2023 & 13 October 2023 |
| Test Sample Serial Number: | GP042Q7C9V | | |

Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperature (°C): | 21 |
| Relative Humidity (%): | 55 to 58 |

Note(s):

1. Tests were performed to identify the average time of occupancy in number of channels (79) x 0.4 seconds. The calculated period is 31.6 seconds.
2. The test system signal analyser was set up for the Number of Hopping Frequencies measurement as follows: the resolution bandwidth was set to 100 kHz and video bandwidth of 300 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold. The span was set to 83.5 MHz.
3. The test system signal analyser was set up for the Average Time of Occupancy measurement as follows: the resolution bandwidth was set to 100 kHz and video bandwidth of 300 kHz. A peak detector was used and sweep time was set to 31.6 seconds. The EUT was set to transmit in a hopping mode with zero span. The total number of hopping frequencies were recorded in the table below.
4. Example plots of each modulation, for one antenna configuration, can be seen below to show setting parameters comply with testing method/procedure. All other plots are archived on the UL IT server and available for inspection if required.

Transmitter Number of Hopping Frequencies and Average Time of Occupancy (continued)**Results:**

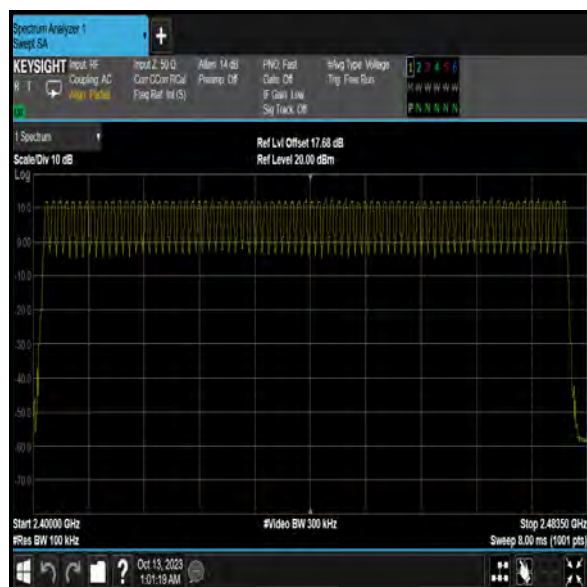
| | | | |
|-------------------------|--|---------------------|--|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247(a)(1)(iii) RSS-247 5.1 (d) | Test Method: | ANSI C63.10 7.8.3 ANSI C63.10 7.8.4 |

| | | | |
|-------------------------------|---------------|-------------------------|------------|
| Antenna Configuration: | SISO | Mode: | BDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | DH5 (GFSK) |

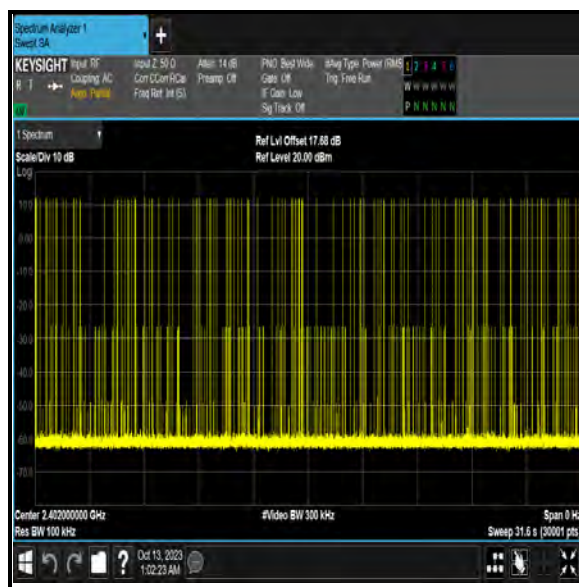
| | | | | |
|-----------------|------------------------|-----------------------|--------------------|-------------------|
| Burst Tx | Stability: < $\pm 2\%$ | Duty Cycle (%): 77.00 | Period (ms): 3.750 | Width (ms): 2.888 |
|-----------------|------------------------|-----------------------|--------------------|-------------------|

| | |
|--------------------------------------|--------------|
| Number of Hopping Frequencies | Limit |
| 79 | ≥ 15 |

| Hopping Frequency Investigated (MHz) | Emission Width (ms) | Number of Hops | Average Time of Occupancy (ms) | Limit (ms) | Margin (ms) |
|--------------------------------------|---------------------|----------------|--------------------------------|--------------|-------------|
| 2402 | 2.888 | 118 | 340.8 | ≤ 400.0 | 59.2 |



Number of Hopping Frequencies



Number of Hopping Frequencies in 31.6 s

Transmitter Number of Hopping Frequencies and Average Time of Occupancy (continued)

| | | | |
|-------------------------|--|---------------------|--|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247(a)(1)(iii) RSS-247 5.1 (d) | Test Method: | ANSI C63.10 7.8.3 ANSI C63.10 7.8.4 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|------------|
| Antenna Configuration: | Beamforming | Mode: | BDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | DH5 (GFSK) |

| | | | | |
|-----------------|------------------------|-----------------------|--------------------|-------------------|
| Burst Tx | Stability: < $\pm 2\%$ | Duty Cycle (%): 77.00 | Period (ms): 3.750 | Width (ms): 2.888 |
|-----------------|------------------------|-----------------------|--------------------|-------------------|

| | |
|--------------------------------------|--------------|
| Number of Hopping Frequencies | Limit |
| 79 | ≥ 15 |

| Hopping Frequency Investigated (MHz) | Emission Width (ms) | Number of Hops | Average Time of Occupancy (ms) | Limit (ms) | Margin (ms) |
|--------------------------------------|---------------------|----------------|--------------------------------|--------------|-------------|
| 2402 | 2.888 | 111 | 320.6 | ≤ 400.0 | 79.4 |

4.5 Transmitter Maximum Peak Output Power

Test Summary:

| | | | |
|-----------------------------------|-------------|--------------------|--------------------------------------|
| Test Engineer: | Max Passell | Test Dates: | 12 October 2023 & 13 October 2023 |
| Test Sample Serial Number: | GP042Q7C9V | | |

Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperature (°C): | 21 |
| Relative Humidity (%): | 55 to 58 |

Note(s):

1. Tests were performed using a peak power sensor.
2. For beamforming modes, conducted power was measured on Core 0 & Core 1 and then combined using the measure-and-sum technique stated in FCC KDB 662911 D01 Section E)1). For EIRP, the directional antenna gain was added to the conducted output power.
3. For beamforming modes, the limit for conducted output power has been reduced by the same amount in dB that the directional gain of the antenna exceeds 6 dBi, in accordance with 15.247(b)(4).

Results:

| | | | |
|-------------------------|--------------------------------------|---------------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (b)(1) RSS-247 5.4 (b) | Test Method: | ANSI C63.10 7.8.5 |

| | | | |
|-------------------------------|---------------|-------------------------|------------|
| Antenna Configuration: | SISO | Mode: | BDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | DH5 (GFSK) |

| | | | | |
|-----------------|------------------|-----------------------|--------------------|-------------------|
| Burst Tx | Stability: < ±2% | Duty Cycle (%): 77.00 | Period (ms): 3.750 | Width (ms): 2.888 |
|-----------------|------------------|-----------------------|--------------------|-------------------|

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) | | | | | Limit (dBm) | Margin (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|---|-------------|-------------|--------------------|------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | Σ | | | | | | |
| 2402 | - | 13.34 | - | - | - | 30.00 | 16.66 | 5.11 | 18.45 | 36.00 | 17.55 |
| 2441 | - | 13.18 | - | - | - | 30.00 | 16.82 | 5.11 | 18.29 | 36.00 | 17.71 |
| 2480 | - | 13.53 | - | - | - | 30.00 | 16.47 | 5.11 | 18.64 | 36.00 | 17.36 |

Transmitter Maximum Peak Output Power (continued)

| | | | |
|-------------------------|--------------------------------------|---------------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (b)(1) RSS-247 5.4 (b) | Test Method: | ANSI C63.10 7.8.5 |

| | | | |
|-------------------------------|---------------|-------------------------|------------------------|
| Antenna Configuration: | SISO | Mode: | EDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | 2-DH5 ($\pi/4$ DQPSK) |

| | | | | |
|-----------------|------------------------|-----------------------|--------------------|-------------------|
| Burst Tx | Stability: < $\pm 2\%$ | Duty Cycle (%): 77.07 | Period (ms): 3.750 | Width (ms): 2.890 |
|-----------------|------------------------|-----------------------|--------------------|-------------------|

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) | | | | | Limit (dBm) | Margin (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|-------------|-------------|--------------------|------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | Σ | | | | | | |
| 2402 | - | 11.86 | - | - | - | 30.00 | 18.14 | 5.11 | 16.97 | 36.00 | 19.03 |
| 2441 | - | 11.74 | - | - | - | 30.00 | 18.26 | 5.11 | 16.85 | 36.00 | 19.15 |
| 2480 | - | 11.91 | - | - | - | 30.00 | 18.09 | 5.11 | 17.02 | 36.00 | 18.98 |

| | | | |
|-------------------------|--------------------------------------|---------------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (b)(1) RSS-247 5.4 (b) | Test Method: | ANSI C63.10 7.8.5 |

| | | | |
|-------------------------------|---------------|-------------------------|----------------|
| Antenna Configuration: | SISO | Mode: | EDR |
| Test Port: | 2 (Core 1-C1) | Rate/Modulation: | 3-DH5 (8-DPSK) |

| | | | | |
|-----------------|------------------------|-----------------------|--------------------|-------------------|
| Burst Tx | Stability: < $\pm 2\%$ | Duty Cycle (%): 77.13 | Period (ms): 3.750 | Width (ms): 2.892 |
|-----------------|------------------------|-----------------------|--------------------|-------------------|

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) | | | | | Limit (dBm) | Margin (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|-------------|-------------|--------------------|------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | Σ | | | | | | |
| 2402 | - | 12.28 | - | - | - | 30.00 | 17.72 | 5.11 | 17.39 | 36.00 | 18.61 |
| 2441 | - | 12.21 | - | - | - | 30.00 | 17.79 | 5.11 | 17.32 | 36.00 | 18.68 |
| 2480 | - | 12.18 | - | - | - | 30.00 | 17.82 | 5.11 | 17.29 | 36.00 | 18.71 |

Transmitter Maximum Peak Output Power (continued)

| | | | |
|-------------------------|--------------------------------------|---------------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (b)(1) RSS-247 5.4 (b) | Test Method: | ANSI C63.10 7.8.5 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|------------|
| Antenna Configuration: | Beamforming | Mode: | BDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | DH5 (GFSK) |

| | | | | |
|-----------------|------------------|-----------------------|--------------------|-------------------|
| Burst Tx | Stability: < ±2% | Duty Cycle (%): 77.00 | Period (ms): 3.750 | Width (ms): 2.888 |
|-----------------|------------------|-----------------------|--------------------|-------------------|

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) | | | | | Antenna Gain (dBi) | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|-------|--------------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | Σ | | | |
| 2402 | 13.76 | 13.73 | - | - | 16.72 | 7.96 | 28.04 | 11.32 |
| 2441 | 13.26 | 13.27 | - | - | 16.25 | 7.96 | 28.04 | 11.79 |
| 2480 | 13.09 | 12.98 | - | - | 16.02 | 7.96 | 28.04 | 12.02 |

FCC Maximum Conducted (peak) Output Power Results

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) | | | | | Limit (dBm) | Margin (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|-------|-------------|-------------|--------------------|------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | Σ | | | | | | |
| 2402 | 13.76 | 13.73 | - | - | 16.72 | 30.00 | 13.28 | 7.96 | 24.68 | 36.00 | 11.32 |
| 2441 | 13.26 | 13.27 | - | - | 16.25 | 30.00 | 13.75 | 7.96 | 24.21 | 36.00 | 11.79 |
| 2480 | 13.09 | 12.98 | - | - | 16.02 | 30.00 | 13.98 | 7.96 | 23.98 | 36.00 | 12.02 |

ISED Maximum Conducted (peak) Output Power Results

Transmitter Maximum Peak Output Power (continued)

| | | | |
|-------------------------|--------------------------------------|---------------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (b)(1) RSS-247 5.4 (b) | Test Method: | ANSI C63.10 7.8.5 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|------------------------|
| Antenna Configuration: | Beamforming | Mode: | EDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | 2-DH5 ($\pi/4$ DQPSK) |

| | | | | |
|-----------------|------------------------|-----------------------|--------------------|-------------------|
| Burst Tx | Stability: < $\pm 2\%$ | Duty Cycle (%): 77.07 | Period (ms): 3.750 | Width (ms): 2.890 |
|-----------------|------------------------|-----------------------|--------------------|-------------------|

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) | | | | | Antenna Gain (dBi) | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|--------------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | Σ | | | |
| 2402 | 11.74 | 11.85 | - | - | 14.77 | 7.96 | 28.04 | 13.27 |
| 2441 | 11.74 | 11.80 | - | - | 14.72 | 7.96 | 28.04 | 13.32 |
| 2480 | 11.72 | 11.94 | - | - | 14.78 | 7.96 | 28.04 | 13.26 |

FCC Maximum Conducted (peak) Output Power Results

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) | | | | | Limit (dBm) | Margin (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|-------------|-------------|--------------------|------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | Σ | | | | | | |
| 2402 | 11.74 | 11.85 | - | - | 14.77 | 30.00 | 15.23 | 7.96 | 22.73 | 36.00 | 13.27 |
| 2441 | 11.74 | 11.80 | - | - | 14.72 | 30.00 | 15.28 | 7.96 | 22.68 | 36.00 | 13.32 |
| 2480 | 11.72 | 11.94 | - | - | 14.78 | 30.00 | 15.22 | 7.96 | 22.74 | 36.00 | 13.26 |

ISED Maximum Conducted (peak) Output Power Results

Transmitter Maximum Peak Output Power (continued)

| | | | |
|-------------------------|--------------------------------------|---------------------|-------------------|
| Frequency Range: | 2400-2483.5 MHz | Band: | 2.4 GHz |
| Limit Clause: | FCC 15.247 (b)(1) RSS-247 5.4 (b) | Test Method: | ANSI C63.10 7.8.5 |

| | | | |
|-------------------------------|-----------------------------|-------------------------|----------------|
| Antenna Configuration: | Beamforming | Mode: | EDR |
| Test Port: | 1+2 (Core 0-C0 + Core 1-C1) | Rate/Modulation: | 3-DH5 (8-DPSK) |

| | | | | |
|-----------------|------------------|-----------------------|--------------------|-------------------|
| Burst Tx | Stability: < ±2% | Duty Cycle (%): 77.12 | Period (ms): 3.750 | Width (ms): 2.892 |
|-----------------|------------------|-----------------------|--------------------|-------------------|

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) | | | | | Antenna Gain (dBi) | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|-------|--------------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | Σ | | | |
| 2402 | 12.14 | 12.27 | - | - | 15.20 | 7.96 | 28.04 | 12.84 |
| 2441 | 12.16 | 12.26 | - | - | 15.17 | 7.96 | 28.04 | 12.87 |
| 2480 | 12.16 | 12.33 | - | - | 15.23 | 7.96 | 28.04 | 12.82 |

FCC Maximum Conducted (peak) Output Power Results

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) | | | | | Limit (dBm) | Margin (dB) | Antenna Gain (dBi) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|-------|-------------|-------------|--------------------|------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | Σ | | | | | | |
| 2402 | 12.14 | 12.27 | - | - | 15.20 | 30.00 | 14.80 | 7.96 | 23.16 | 36.00 | 12.84 |
| 2441 | 12.16 | 12.26 | - | - | 15.17 | 30.00 | 14.83 | 7.96 | 23.13 | 36.00 | 12.87 |
| 2480 | 12.16 | 12.33 | - | - | 15.23 | 30.00 | 14.77 | 7.96 | 23.18 | 36.00 | 12.82 |

ISED Maximum Conducted (peak) Output Power Results

5 Radiated Test Results

5.1 Transmitter Radiated Emissions <1 GHz

Test Summary:

| | | | |
|-----------------------------------|----------------|-------------------|-----------------|
| Test Engineer: | Andrew Harding | Test Date: | 17 October 2023 |
| Test Sample Serial Number: | T2HJWP7F92 | | |

| | |
|-------------------------------|---------------------------------------|
| FCC Reference: | Parts 15.247(d) & 15.209(a) |
| ISED Canada Reference: | RSS-Gen 6.13 / RSS-247 5.5 |
| Test Method Used: | ANSI C63.10 Sections 6.3, 6.4 and 6.5 |
| Frequency Range | 9 kHz to 1000 MHz |

Environmental Conditions:

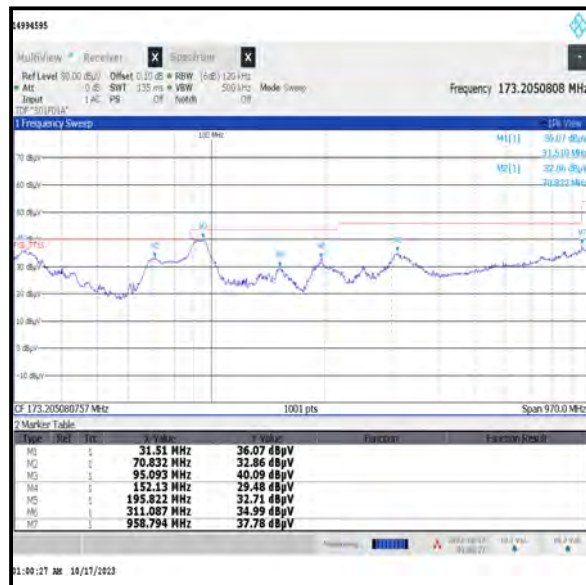
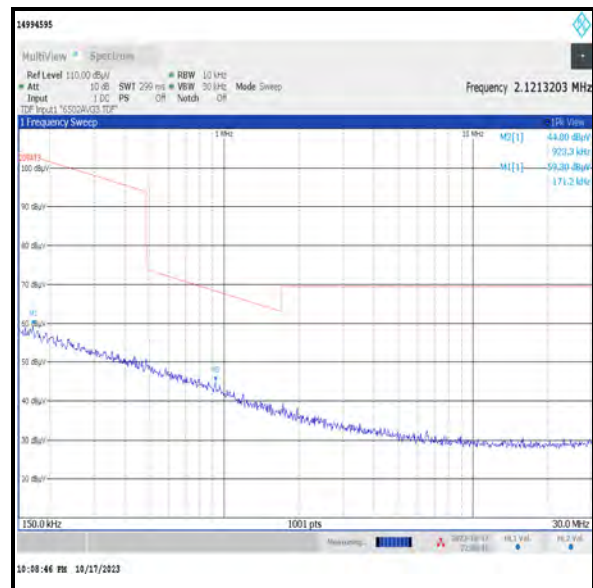
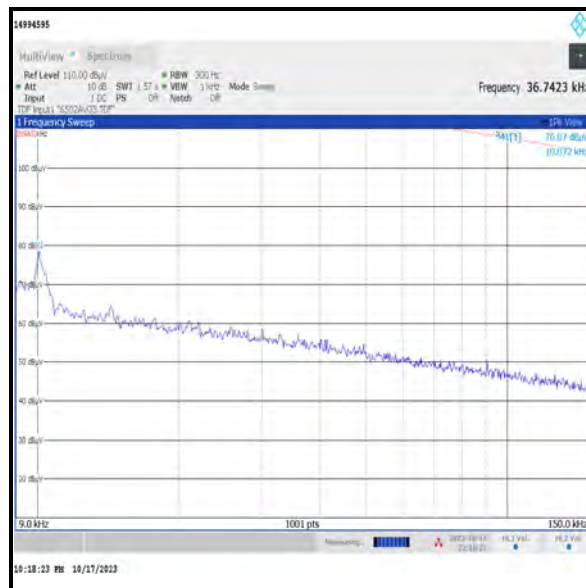
| | |
|-------------------------------|----------|
| Temperature (°C): | 21 to 22 |
| Relative Humidity (%): | 45 to 46 |

Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the middle channel only.
3. All emissions shown on the pre-scans were investigated and found to be ambient, or > 20 dB below the appropriate limit or below the noise floor of the measurement system. Therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
4. Measurements below 30 MHz were performed in a semi-anechoic chamber (Asset Number K0001) at 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. The limit was extrapolated to 3 metres in accordance with ANSI C63.10 clause 6.4.3 using the method described in clause 6.4.4.2. ANSI C63.10 clause 5.2 states an alternative test site that can demonstrate equivalence to an open area test site may be used for measurements below 30 MHz. Therefore, measurements were performed in a semi-anechoic chamber. The correlation data between semi-anechoic chamber and an open field test site is available upon request.
5. Measurements from 30 MHz to 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
6. Pre-scans were performed and markers placed on the highest measured levels. The test receiver was configured as follows: For 9 kHz to 150 kHz, the resolution bandwidth was set to 300 Hz and video bandwidth 1 kHz. A peak detector was used and trace mode was Max Hold. For 150 kHz to 30 MHz, the resolution bandwidth was set to 10 kHz and video bandwidth 30 kHz, trace mode was Max Hold. For 30 MHz to 1 GHz, the resolution bandwidth was set to 120 kHz and video bandwidth 500 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold.

Transmitter Radiated Emissions (continued)**Results: Peak / Middle Channel / DH5 / Beamforming / Core 0 + Core 1**

| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 958.794 | Vertical | 37.8 | 46.0 | 8.2 | Complied |



5.2 Transmitter Radiated Emissions >1 GHz

Test Summary:

| | | | |
|----------------------------|------------------------------|-------------|-----------------------------------|
| Test Engineers: | Andrew Harding & Jose Bayona | Test Dates: | 13 October 2023 & 19 October 2023 |
| Test Sample Serial Number: | T2HJWP7F92 | | |

| | |
|------------------------|----------------------------------|
| FCC Reference: | Parts 15.247(d) & 15.209(a) |
| ISED Canada Reference: | RSS-Gen 6.13 / RSS-247 5.5 |
| Test Method Used: | ANSI C63.10 Sections 6.3 and 6.6 |
| Frequency Range | 1 GHz to 25 GHz |

Environmental Conditions:

| | |
|------------------------|----------|
| Temperature (°C): | 23 to 24 |
| Relative Humidity (%): | 47 to 50 |

Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak and average noise floor readings of the measuring receiver were recorded as shown in the tables below.
3. The emission shown on the 1 GHz to 3 GHz plot at approximately 2441 MHz is the EUT fundamental.
4. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
5. Pre-scans were performed and a marker placed on the highest measured level of the appropriate plot. The test receiver resolution bandwidth was set to 1 MHz and video bandwidth 3 MHz. The sweep time was set to auto. Peak and average measurements were performed with their own appropriate detectors during the pre-scan measurements.

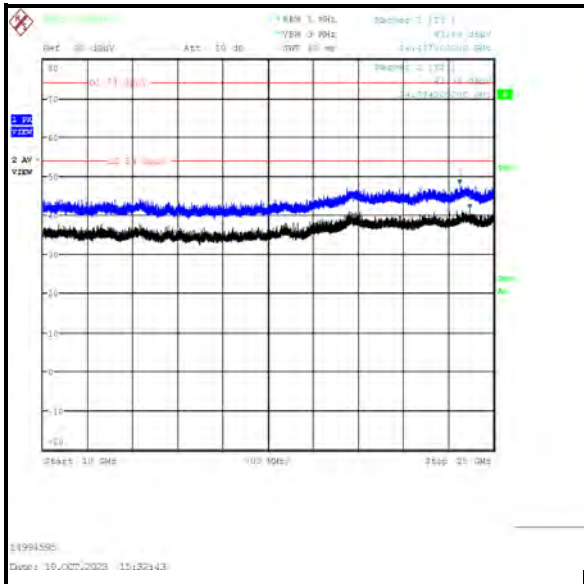
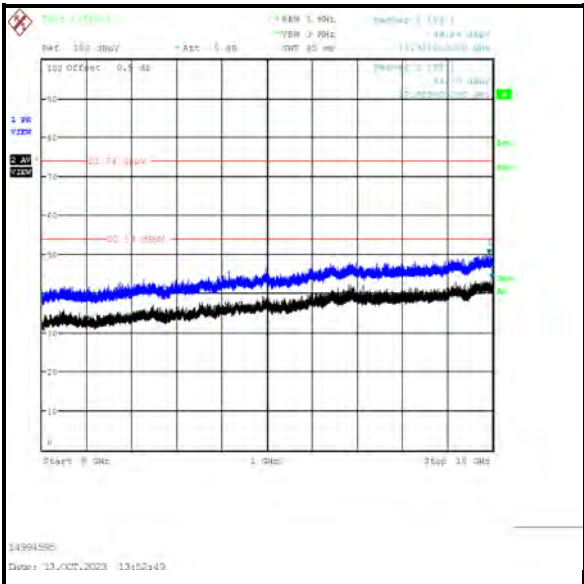
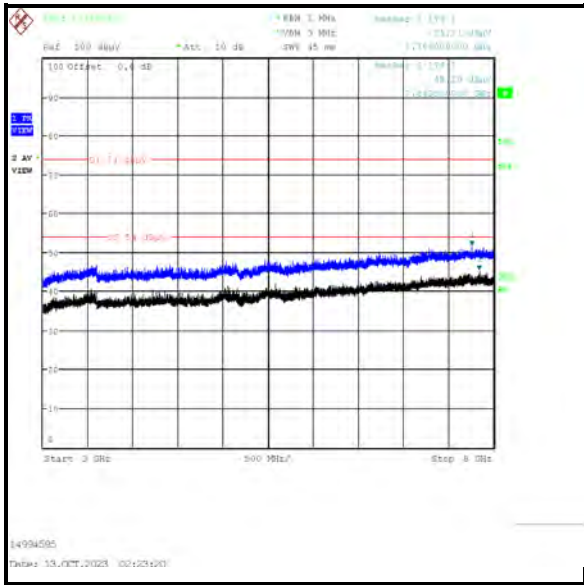
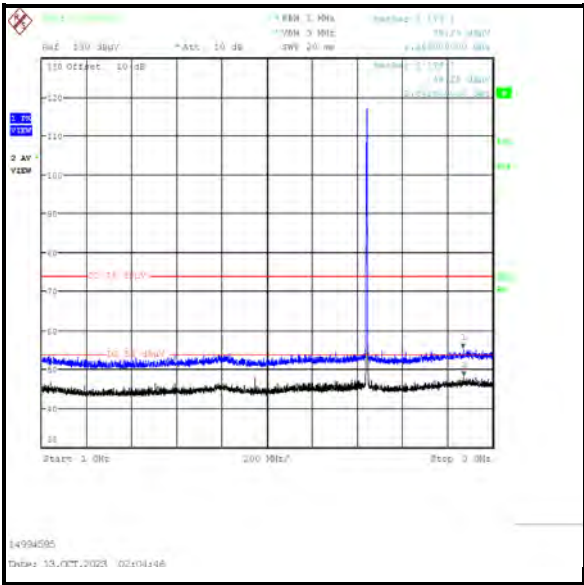
Results: Peak / Middle Channel / DH5 / Beamforming / Core 0 + Core 1

| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2869.000 | Vertical | 55.3 | 74.0 | 18.7 | Complied |

Results: Average / Middle Channel / 3DH5 / Beamforming / Core 0 + Core 1

| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2872.000 | Vertical | 48.3 | 54.0 | 5.7 | Complied |

Transmitter Radiated Emissions (continued)



5.3 Transmitter Band Edge Radiated Emissions

Test Summary:

| | | | |
|-----------------------------------|--|--------------------|--|
| Test Engineers: | John Ferdinand, Andrew Harding & Nick Steele | Test Dates: | 30 August 2023 to 06 September 2023 |
| Test Sample Serial Number: | C6LTYQVMQ4 | | |

| | |
|-------------------------------|--|
| FCC Reference: | Parts 15.247(d) & 15.209(a) |
| ISED Canada Reference: | RSS-Gen 6.13 / RSS-247 5.5 |
| Test Method Used: | ANSI C63.10 Section 6.10 & FCC KDB 558074 Section 9 b) |

Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperature (°C): | 26 to 27 |
| Relative Humidity (%): | 45 to 51 |

Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. The lower band edge is adjacent to a non-restricted band. The test receiver resolution bandwidth was set to 100 kHz and video bandwidth 300 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold. The test receiver was left to sweep for a sufficient length of time in order to maximise the carrier level and out-of-band emissions. A marker and corresponding reference level line were placed on the peak of the carrier. A marker was placed on the band edge spot frequencies and a second marker placed on the highest emission level in the adjacent band (where a higher level emission was present). Marker frequencies and levels were recorded.
3. The upper band edge is adjacent to a restricted band. The test receiver resolution bandwidth was set to 1 MHz and video bandwidth 3 MHz. Peak and average measurements were performed with their respective detectors, sweep time was set to auto and trace mode was Max Hold. The test receiver was left to sweep for a sufficient length of time in order to maximise the carrier level and out-of-band emissions. A marker was placed on the band edge spot frequencies and a second marker placed on the highest emission level in the adjacent band (where a higher level emission was present). Marker frequencies and levels were recorded.
4. There is a restricted band 10 MHz below the lower band edge. The test receiver was set up as follows: the RBW set to 1 MHz, the VBW set to 3 MHz, with the sweep time set to auto couple. Peak and average measurements were performed with their respective detectors. Markers were placed on the highest point on each trace.
5. * -20 dBc limit.
6. ** For the upper band edge average measurements: The corrected average level has been obtained by subtracting the calculated duty cycle correction factor from the measured peak level for any restricted band emissions related to the fundamental. See Appendix 1 for further information.

Transmitter Band Edge Radiated Emissions (continued)**Results: Static Mode / DH5 / SISO / Core 0**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2399.359 | Vertical | 45.3 | 90.6* | 45.3 | Complied |
| 2400.0 | Vertical | 43.6 | 90.6* | 47.0 | Complied |
| 2483.5 | Vertical | 53.9 | 74.0 | 20.1 | Complied |
| 2483.901 | Vertical | 54.2 | 74.0 | 19.8 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 34.9** | 54.0 | 19.1 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

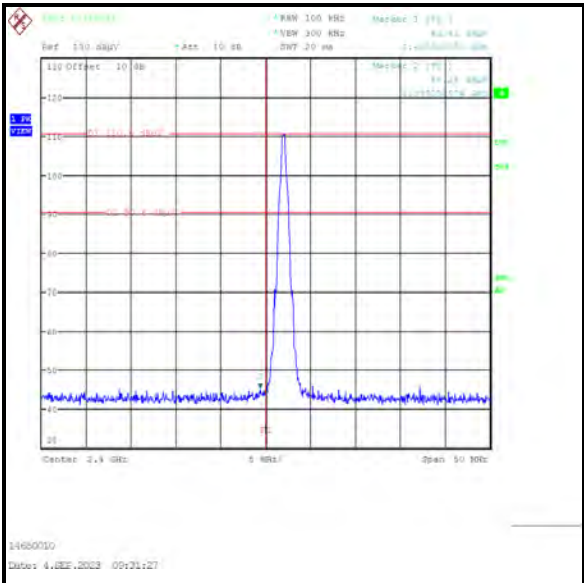
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2343.333 | Vertical | 53.4 | 74.0 | 20.6 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

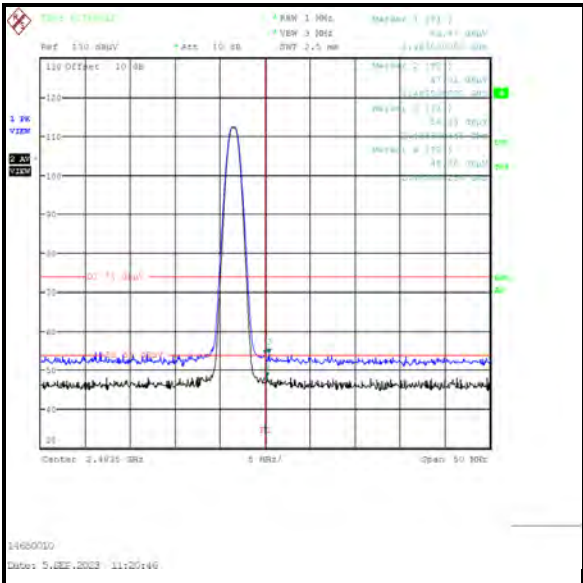
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2361.410 | Vertical | 47.6 | 54.0 | 6.4 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

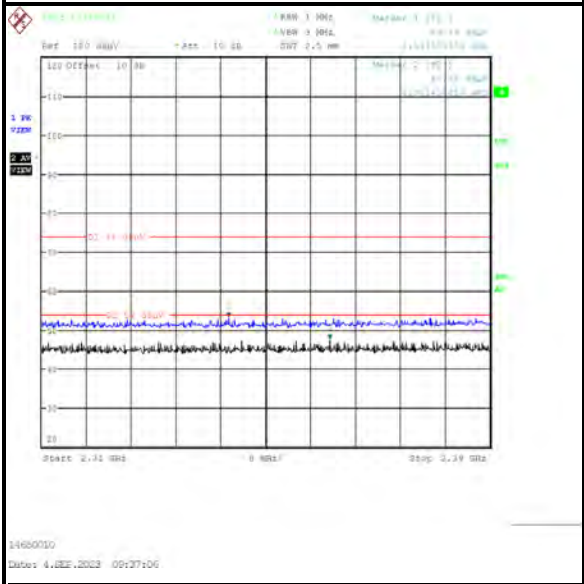
Results: Static Mode / DH5 / SISO / Core 0



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / DH5 / SISO / Core 0**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2400.0 | Vertical | 53.8 | 92.2* | 38.4 | Complied |
| 2483.5 | Vertical | 51.7 | 74.0 | 22.3 | Complied |
| 2484.782 | Vertical | 54.2 | 74.0 | 19.8 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 32.7** | 54.0 | 21.3 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

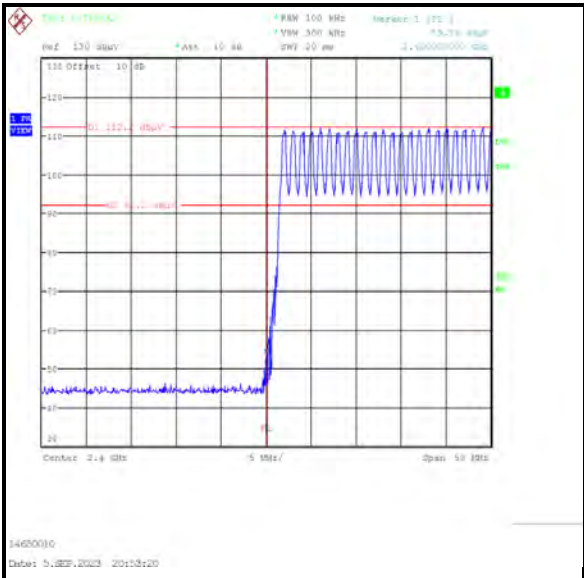
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2336.538 | Vertical | 53.3 | 74.0 | 20.7 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

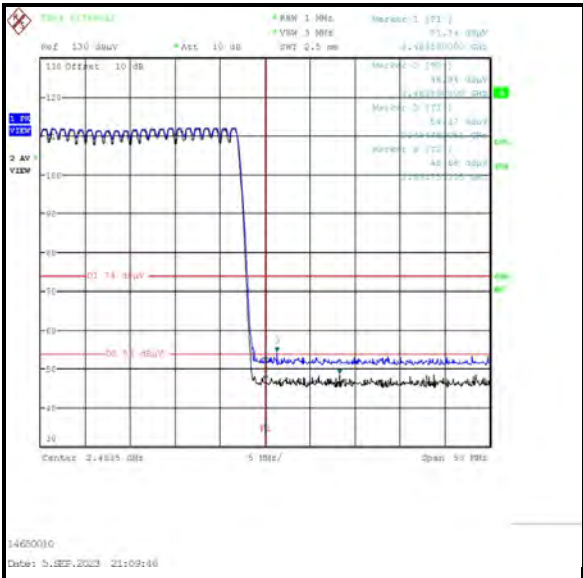
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2317.051 | Vertical | 48.0 | 54.0 | 6.0 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

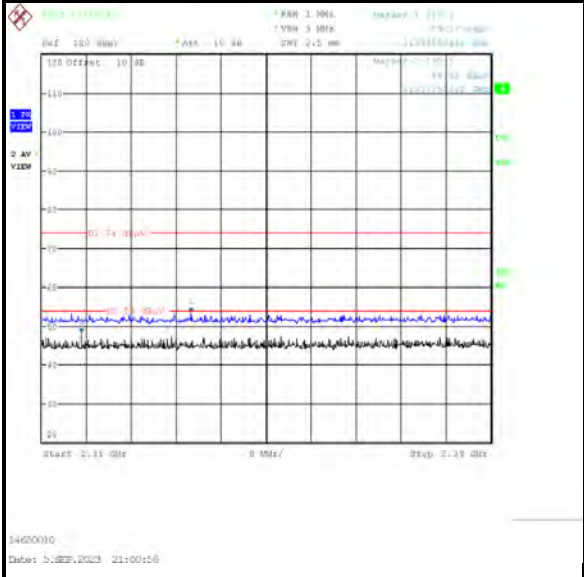
Results: Hopping Mode / DH5 / SISO / Core 0



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Static Mode / 2DH5 / SISO / Core 0**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2399.500 | Vertical | 46.9 | 86.7* | 39.8 | Complied |
| 2400.0 | Vertical | 45.8 | 86.7* | 40.9 | Complied |
| 2483.5 | Vertical | 53.6 | 74.0 | 20.4 | Complied |
| 2491.513 | Vertical | 53.9 | 74.0 | 20.1 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 34.6** | 54.0 | 19.4 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

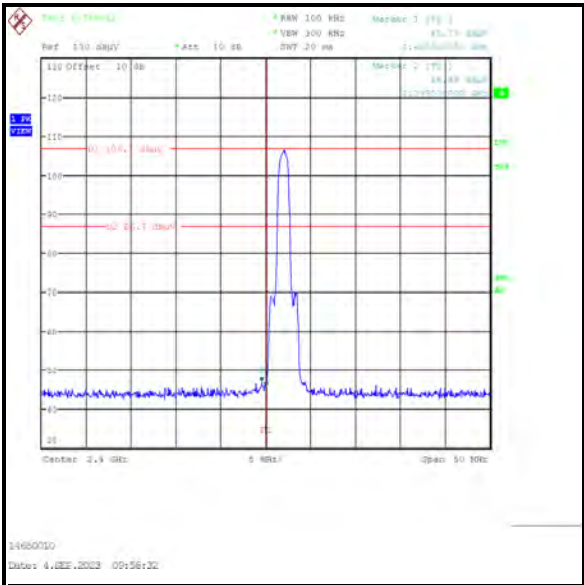
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2389.615 | Vertical | 53.4 | 74.0 | 20.6 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

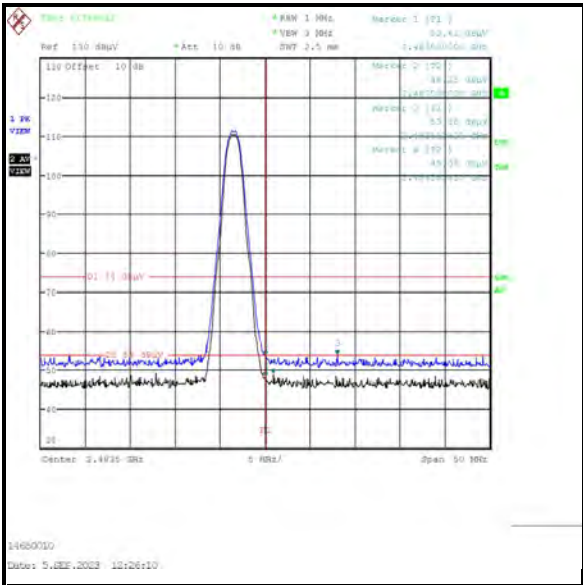
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2356.538 | Vertical | 47.8 | 54.0 | 6.2 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

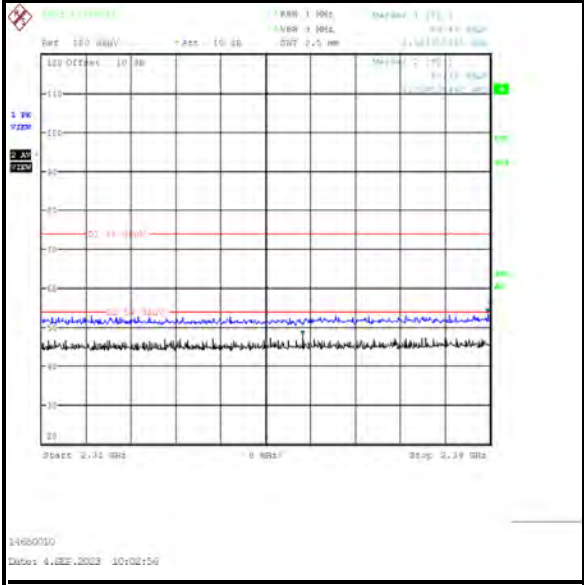
Results: Static Mode / 2DH5 / SISO / Core 0



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / 2DH5 / SISO / Core 0**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2397.000 | Vertical | 46.3 | 89.2* | 42.9 | Complied |
| 2400.0 | Vertical | 45.5 | 89.2* | 43.7 | Complied |
| 2483.5 | Vertical | 53.2 | 74.0 | 20.8 | Complied |
| 2483.660 | Vertical | 54.8 | 74.0 | 19.2 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 34.2** | 54.0 | 19.8 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

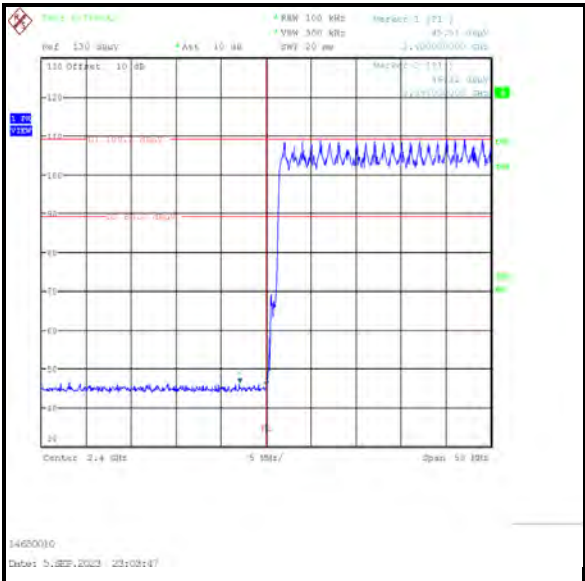
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2364.487 | Vertical | 53.7 | 74.0 | 20.3 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

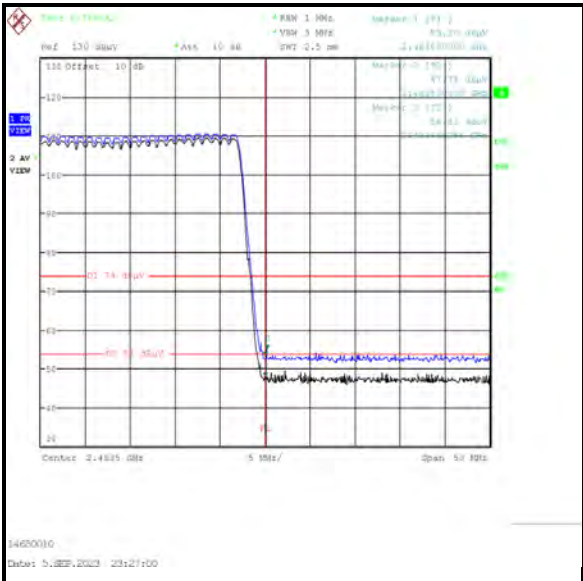
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2381.923 | Vertical | 48.0 | 54.0 | 6.0 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

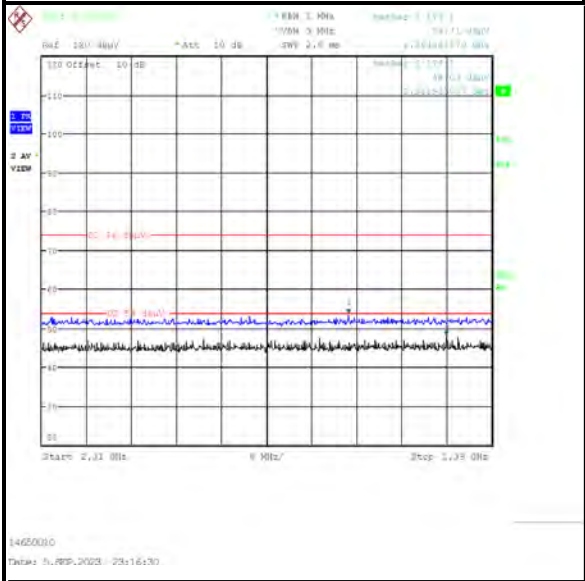
Results: Hopping Mode / 2DH5 / SISO / Core 0



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Static Mode / 3DH5 / SISO / Core 0**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2399.850 | Vertical | 47.3 | 86.6* | 39.3 | Complied |
| 2400.0 | Vertical | 45.8 | 86.6* | 40.8 | Complied |
| 2483.5 | Vertical | 54.7 | 74.0 | 19.3 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 35.7** | 54.0 | 18.3 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

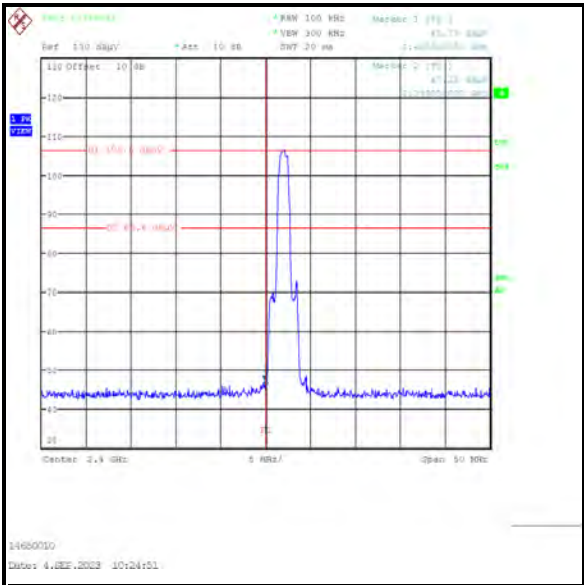
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2378.718 | Vertical | 53.8 | 74.0 | 20.2 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

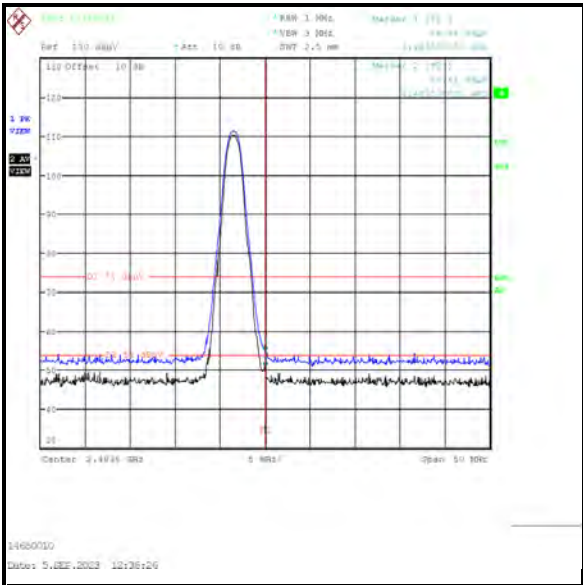
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2372.949 | Vertical | 47.8 | 54.0 | 6.2 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

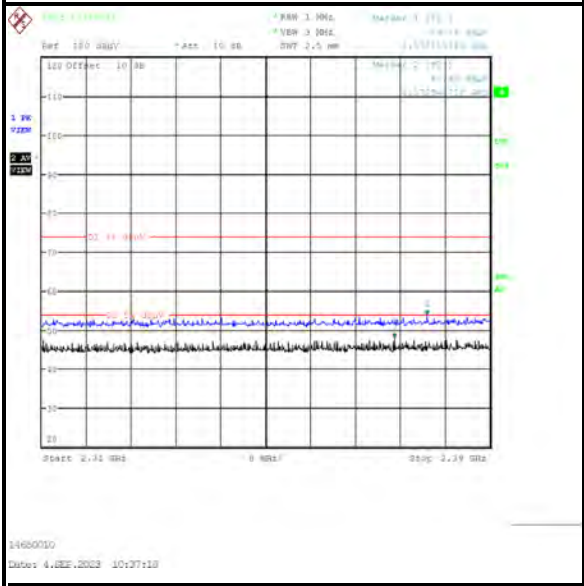
Results: Static Mode / 3DH5 / SiSO / Core 0



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / 3DH5 / SISO / Core 0**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2397.000 | Vertical | 46.5 | 89.2* | 42.7 | Complied |
| 2400.0 | Vertical | 45.4 | 89.2* | 43.8 | Complied |
| 2483.5 | Vertical | 51.9 | 74.0 | 22.1 | Complied |
| 2492.394 | Vertical | 54.6 | 74.0 | 19.4 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 32.9** | 54.0 | 21.1 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

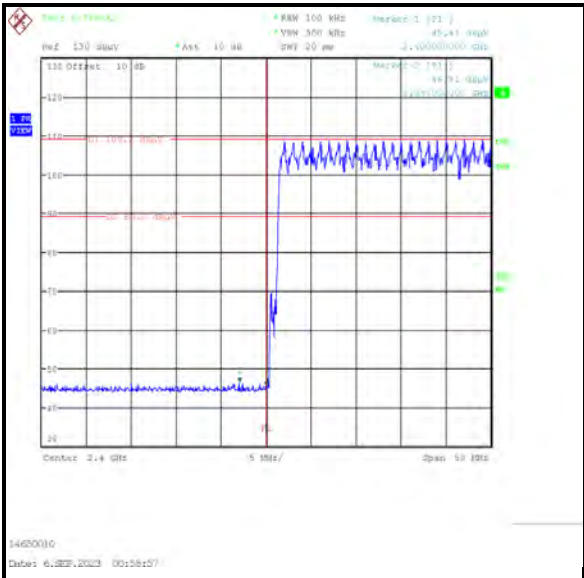
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2330.128 | Vertical | 53.4 | 74.0 | 20.6 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

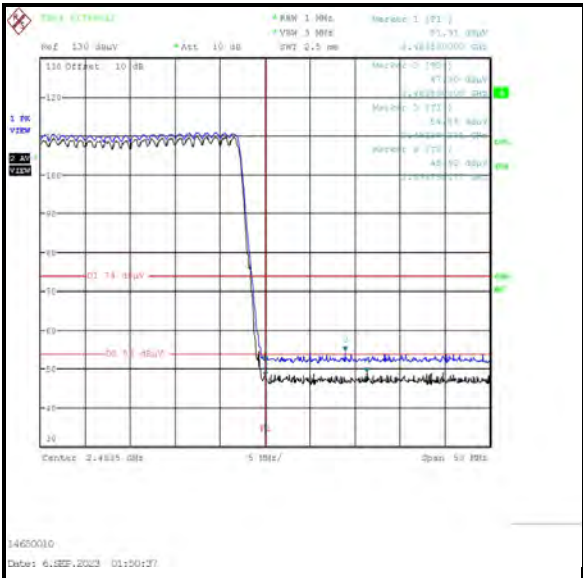
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2388.590 | Vertical | 48.1 | 54.0 | 5.9 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

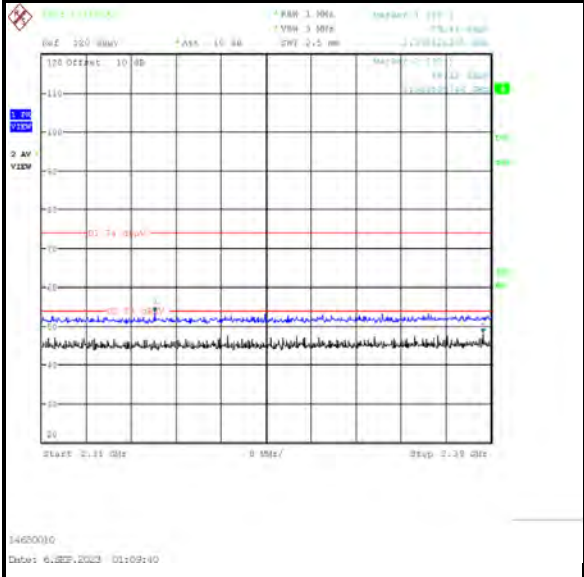
Results: Hopping Mode / 3DH5 / SISO / Core 0



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Static Mode / DH5 / SISO / Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2400.0 | Vertical | 45.6 | 90.3* | 44.7 | Complied |
| 2483.5 | Vertical | 52.1 | 74.0 | 21.9 | Complied |
| 2489.029 | Vertical | 53.8 | 74.0 | 20.2 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 33.1** | 54.0 | 20.9 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

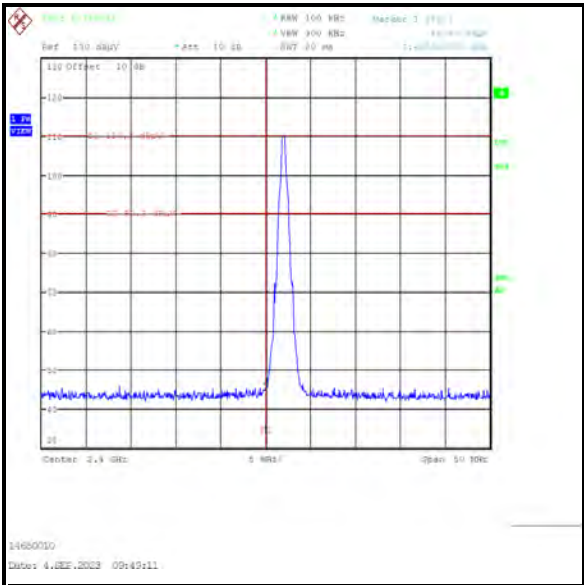
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2379.103 | Vertical | 53.0 | 74.0 | 21.0 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

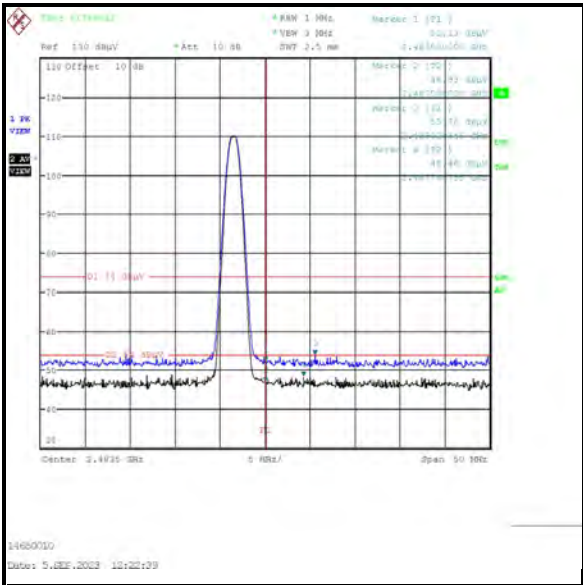
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2385.641 | Vertical | 48.2 | 54.0 | 5.8 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

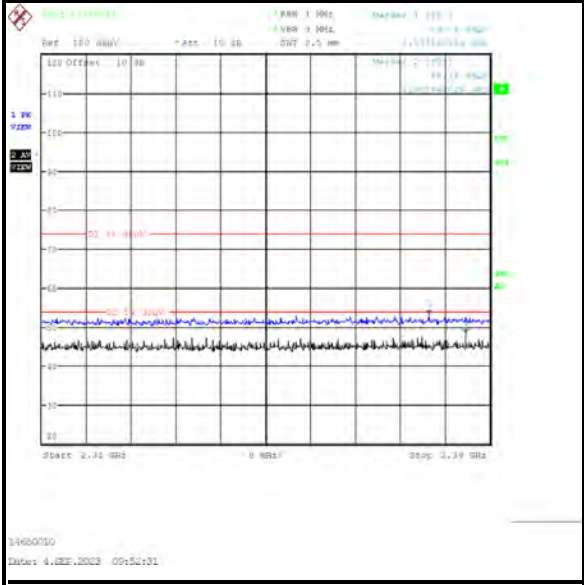
Results: Static Mode / DH5 / SISO / Core 1



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / DH5 / SISO / Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2399.700 | Vertical | 47.9 | 90.9* | 43.0 | Complied |
| 2400.0 | Vertical | 45.0 | 90.9* | 45.9 | Complied |
| 2483.5 | Vertical | 51.8 | 74.0 | 22.2 | Complied |
| 2485.824 | Vertical | 53.9 | 74.0 | 20.1 | Complied |

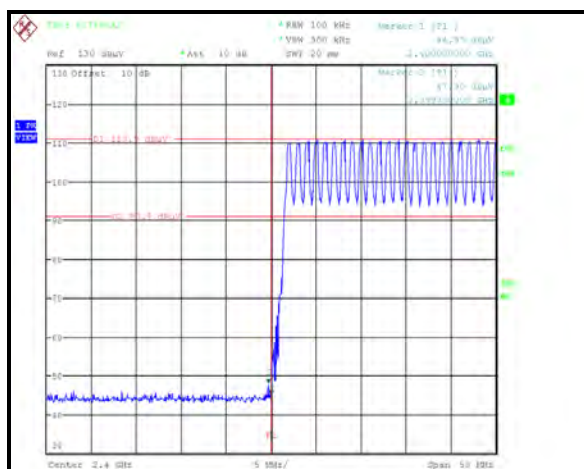
| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 32.8** | 54.0 | 21.2 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

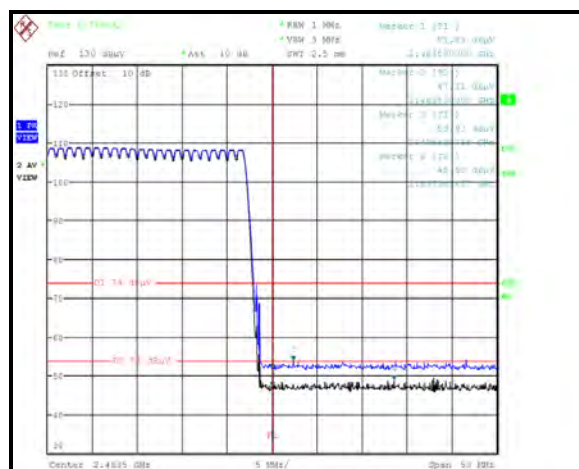
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2354.103 | Vertical | 53.2 | 74.0 | 20.8 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

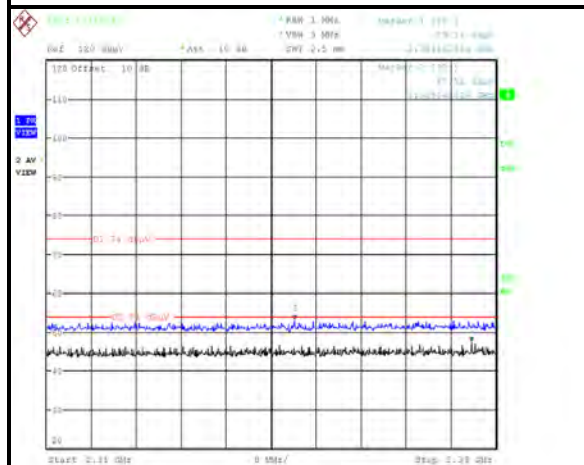
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2385.642 | Vertical | 47.5 | 54.0 | 6.5 | Complied |

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / DH5 / SISO / Core 1**

14620010
Date: 5.08.2023 21:27:07

Lower Band Edge

14620010
Date: 5.08.2023 21:28:59

Upper Band Edge

14620010
Date: 5.08.2023 21:29:53

2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Static Mode / 2DH5 / SISO / Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2399.850 | Vertical | 51.8 | 86.9* | 35.1 | Complied |
| 2400.0 | Vertical | 51.5 | 86.9* | 35.4 | Complied |
| 2483.5 | Vertical | 53.6 | 74.0 | 20.4 | Complied |
| 2486.224 | Vertical | 53.7 | 74.0 | 20.3 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 34.6** | 54.0 | 19.4 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

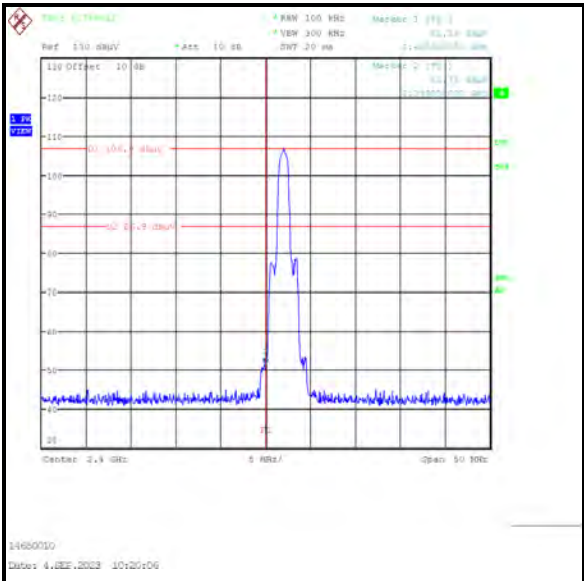
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2366.538 | Vertical | 53.1 | 74.0 | 20.9 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

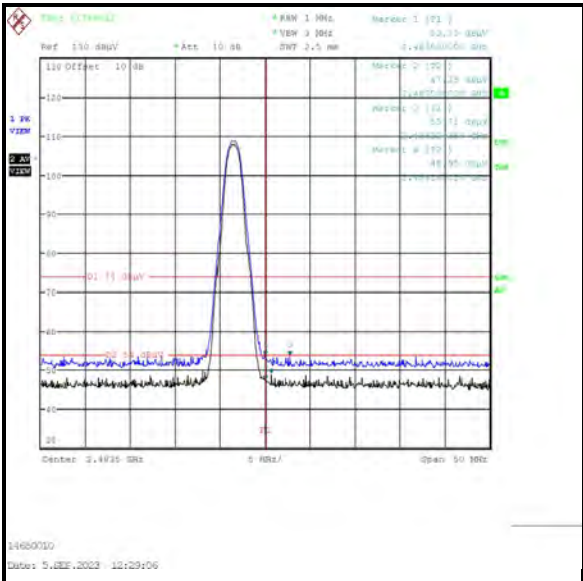
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2369.231 | Vertical | 49.1 | 54.0 | 4.9 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

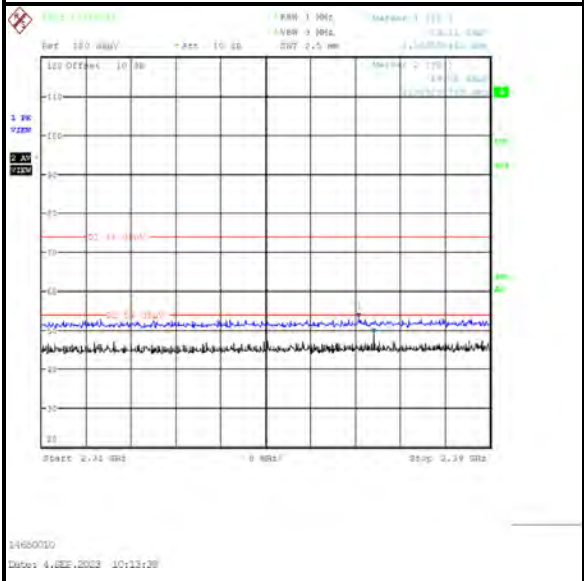
Results: Static Mode / 2DH5 / SISO / Core 1



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / 2DH5 / SISO / Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2400.0 | Vertical | 52.5 | 88.5* | 36.0 | Complied |
| 2483.5 | Vertical | 52.8 | 74.0 | 21.2 | Complied |
| 2488.949 | Vertical | 54.3 | 74.0 | 19.7 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 33.8** | 54.0 | 20.2 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

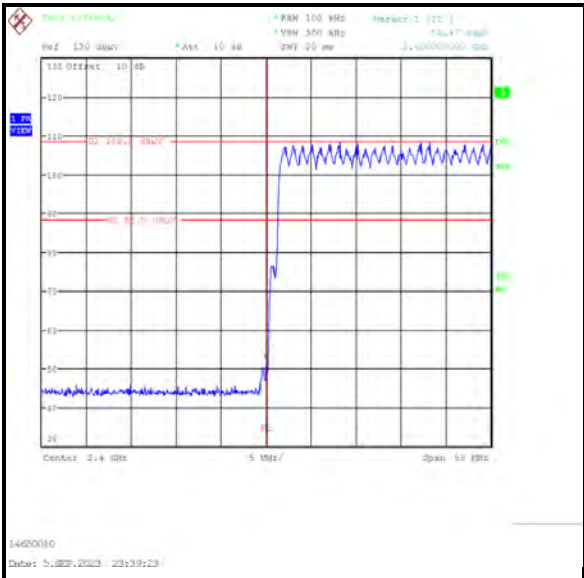
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2346.282 | Vertical | 53.2 | 74.0 | 20.8 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

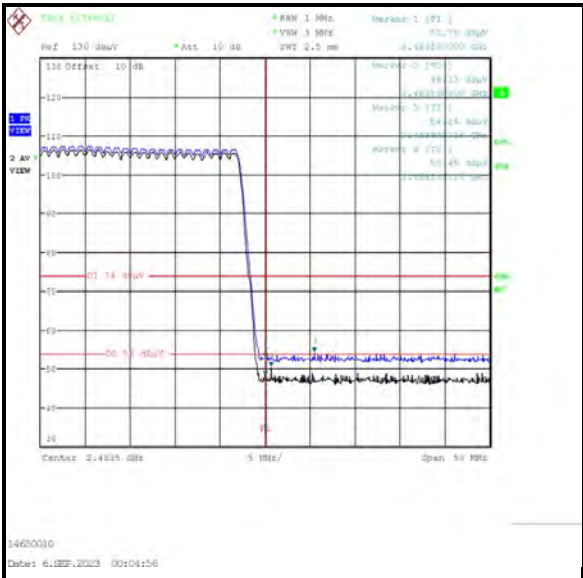
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2387.564 | Vertical | 47.9 | 54.0 | 6.1 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

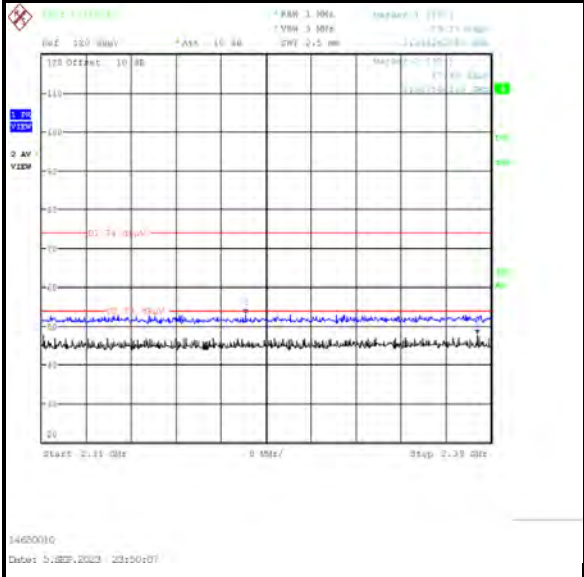
Results: Hopping Mode / 2DH5 / SISO / Core 1



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Static Mode / 3DH5 / SISO / Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2399.650 | Vertical | 52.9 | 87.0* | 34.1 | Complied |
| 2400.0 | Vertical | 51.4 | 87.0* | 35.6 | Complied |
| 2483.5 | Vertical | 52.1 | 74.0 | 21.9 | Complied |
| 2493.356 | Vertical | 54.1 | 74.0 | 19.9 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 33.1** | 54.0 | 20.9 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

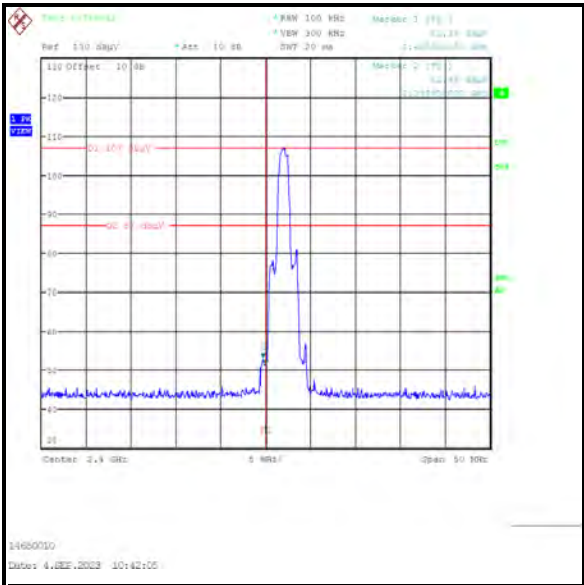
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2385.513 | Vertical | 53.3 | 74.0 | 20.7 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

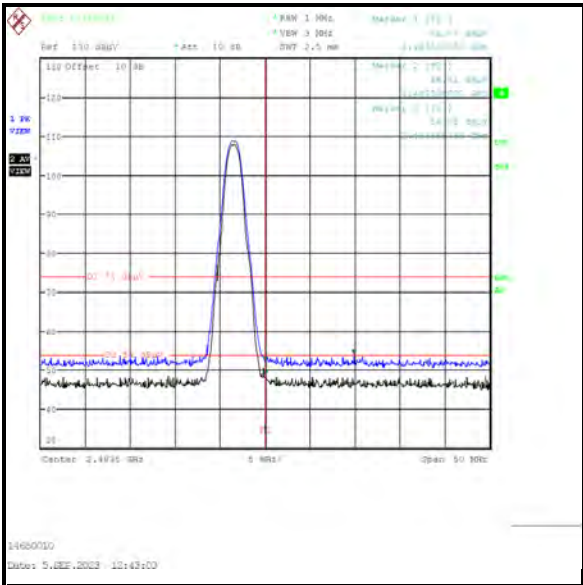
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2385.641 | Vertical | 47.7 | 54.0 | 6.3 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

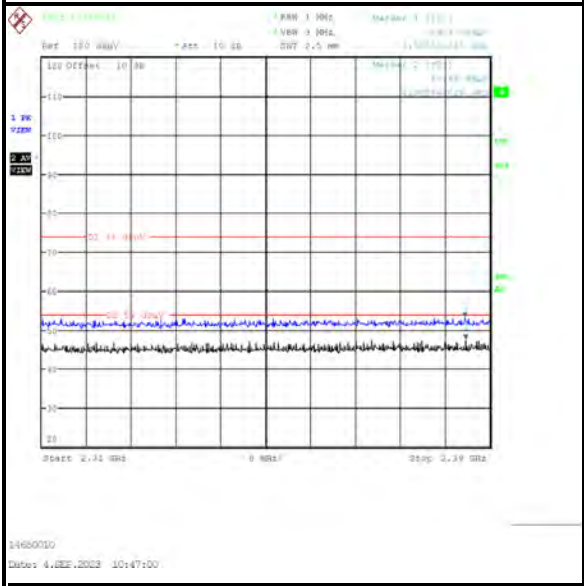
Results: Static Mode / 3DH5 / SISO / Core 1



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / 3DH5 / SISO / Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2399.650 | Vertical | 52.9 | 88.7* | 35.8 | Complied |
| 2400.0 | Vertical | 48.4 | 88.7* | 40.3 | Complied |
| 2483.5 | Vertical | 53.1 | 74.0 | 20.9 | Complied |
| 2493.596 | Vertical | 54.1 | 74.0 | 19.9 | Complied |

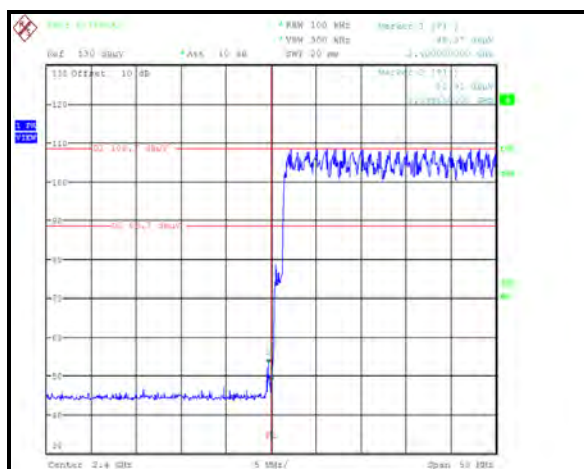
| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 34.1** | 54.0 | 19.9 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

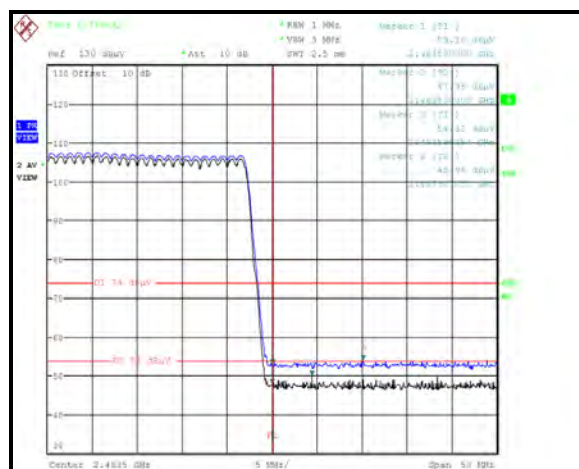
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2348.205 | Vertical | 53.7 | 74.0 | 20.3 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

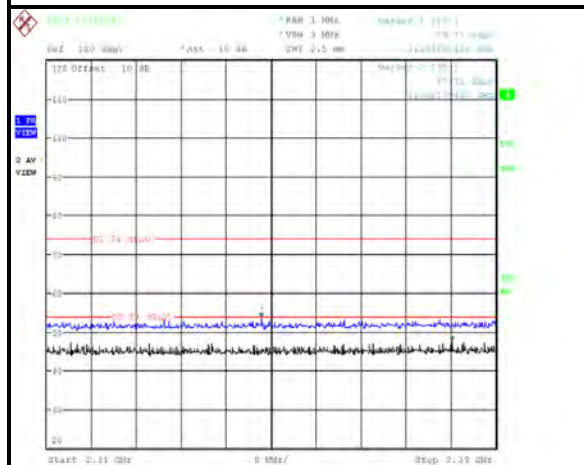
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2382.179 | Vertical | 47.7 | 54.0 | 6.3 | Complied |

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / 3DH5 / SISO / Core 1**

14620010
Date: 6.08.2023 02:04:34

Lower Band Edge

14620010
Date: 6.08.2023 02:05:36

Upper Band Edge

14620010
Date: 6.08.2023 02:17:21

2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Static Mode / DH5 / Beamforming / Core 0 + Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2400.0 | Vertical | 50.0 | 96.6* | 46.6 | Complied |
| 2483.5 | Vertical | 55.6 | 74.0 | 18.4 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 36.6** | 54.0 | 17.4 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

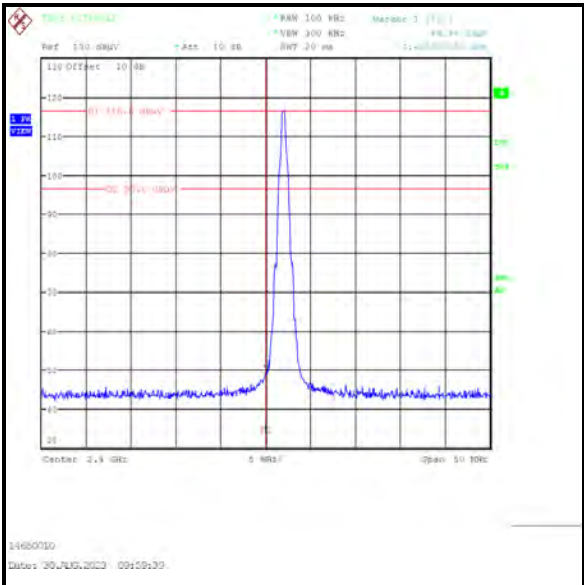
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2337.821 | Vertical | 53.8 | 74.0 | 20.2 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

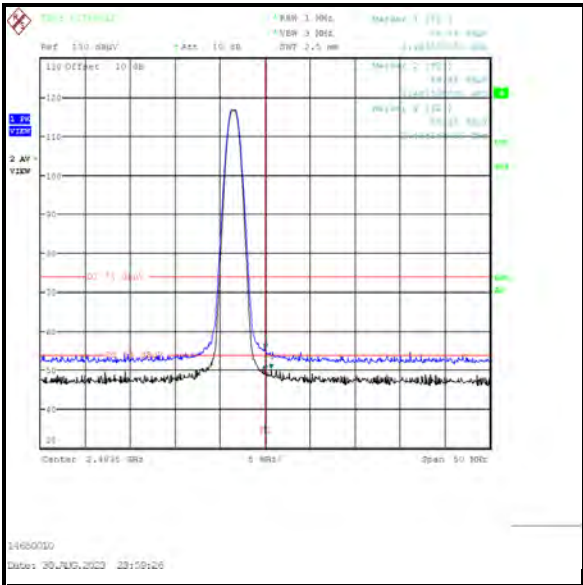
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2357.949 | Vertical | 47.7 | 54.0 | 6.3 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

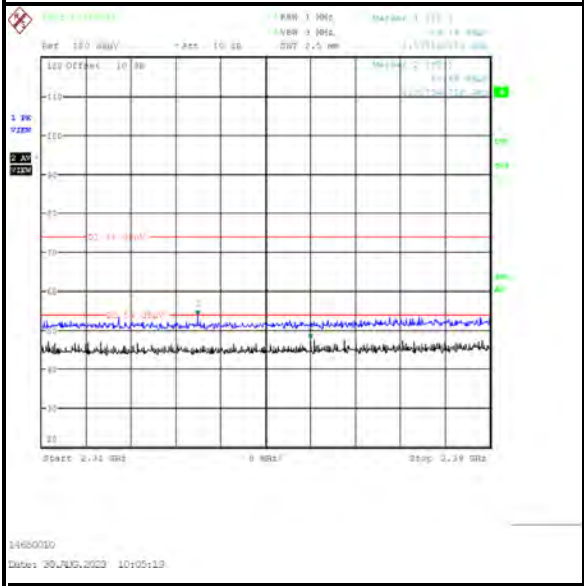
Results: Static Mode / DH5 / Beamforming / Core 0 + Core 1



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / DH5 / Beamforming / Core 0 + Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2400.0 | Vertical | 55.5 | 96.3* | 40.8 | Complied |
| 2483.5 | Vertical | 52.6 | 74.0 | 21.4 | Complied |
| 2491.272 | Vertical | 54.2 | 74.0 | 19.8 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 33.6** | 54.0 | 20.4 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

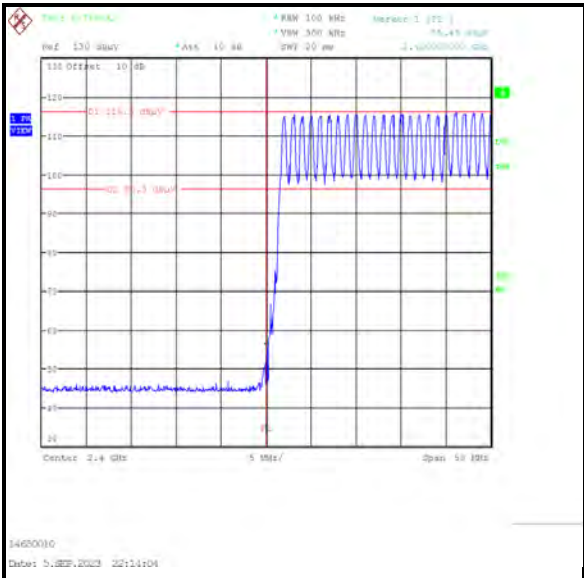
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2363.846 | Vertical | 53.4 | 74.0 | 20.6 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

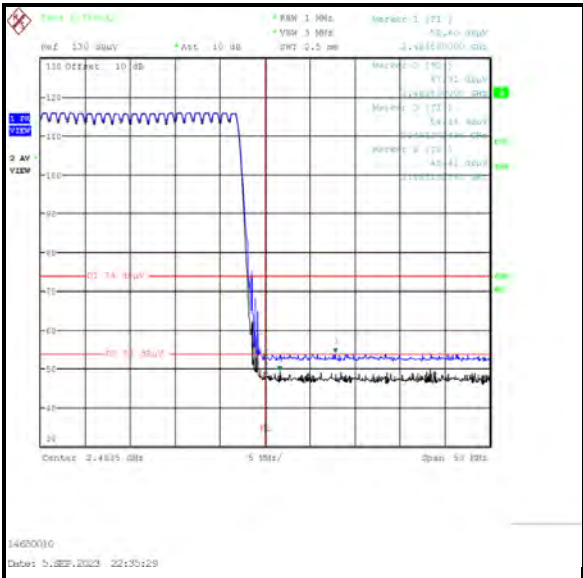
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2310.256 | Vertical | 48.0 | 54.0 | 6.0 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

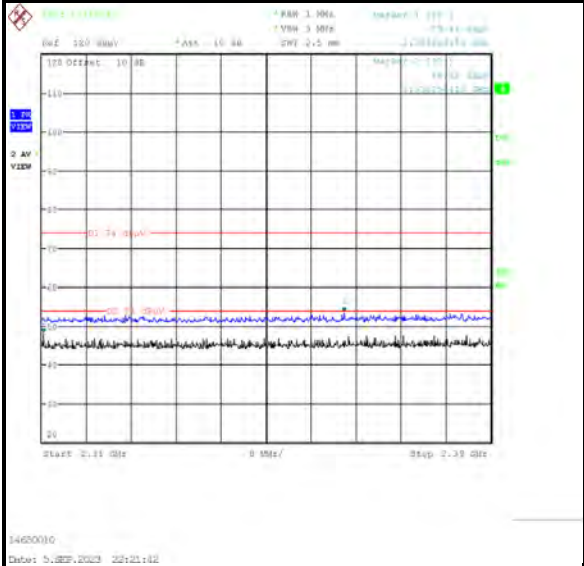
Results: Hopping Mode / DH5 / Beamforming / Core 0 + Core 1



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Static Mode / 2DH5 / Beamforming / Core 0 + Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2400.0 | Vertical | 55.0 | 93.1* | 38.1 | Complied |
| 2483.5 | Vertical | 57.5 | 74.0 | 16.5 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 38.5** | 54.0 | 15.5 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

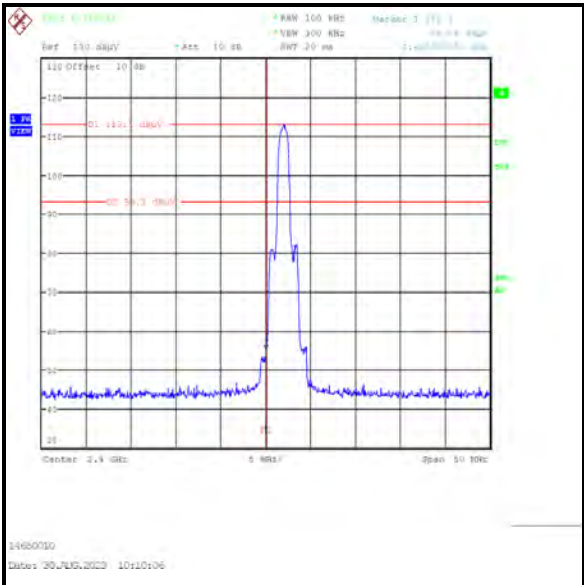
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2377.436 | Vertical | 53.6 | 74.0 | 20.4 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

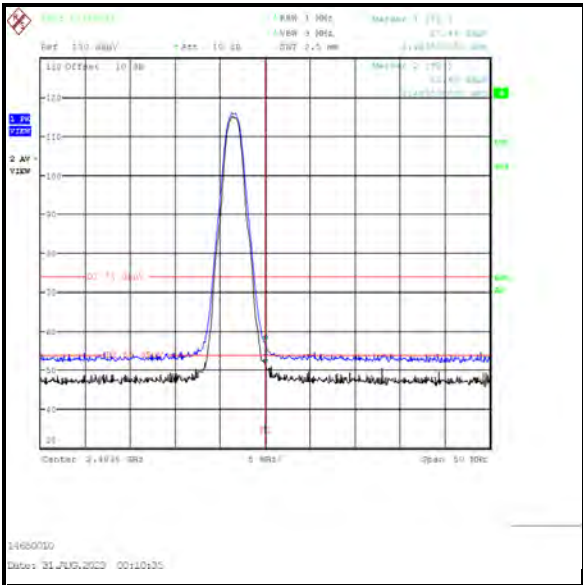
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2380.513 | Vertical | 48.1 | 54.0 | 5.9 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

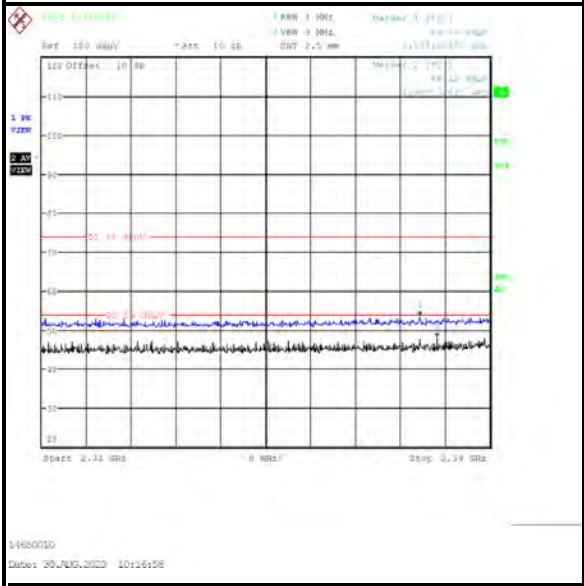
Results: Static Mode / 2DH5 / Beamforming / Core 0 + Core 1



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / 2DH5 / Beamforming / Core 0 + Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2400.0 | Vertical | 53.2 | 93.4* | 40.2 | Complied |
| 2483.5 | Vertical | 52.6 | 74.0 | 21.4 | Complied |
| 2495.279 | Vertical | 54.5 | 74.0 | 19.5 | Complied |

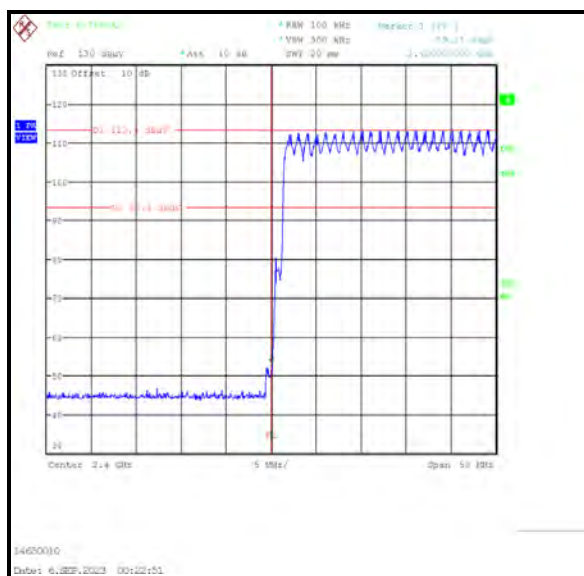
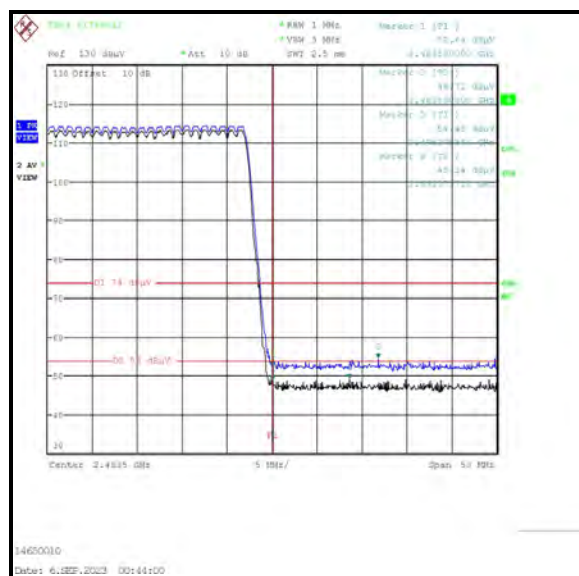
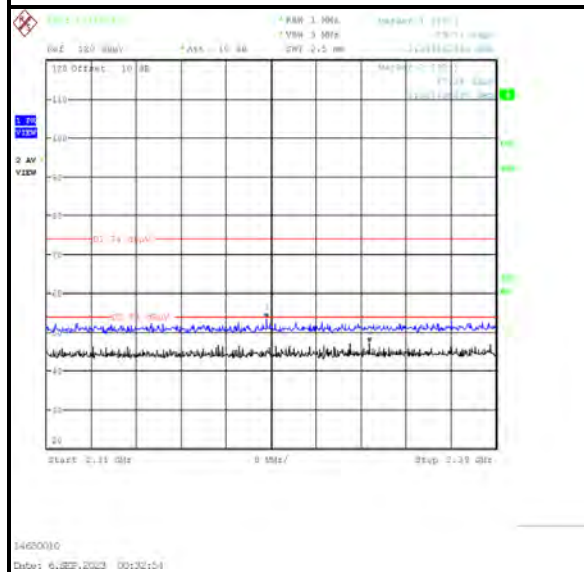
| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 33.6** | 54.0 | 20.4 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2349.103 | Vertical | 53.5 | 74.0 | 20.5 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2367.436 | Vertical | 47.3 | 54.0 | 6.7 | Complied |

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / 2DH5 / Beamforming / Core 0 + Core 1****Lower Band Edge****Upper Band Edge****2310 MHz to 2390 MHz Restricted Band**

Transmitter Band Edge Radiated Emissions (continued)**Results: Static Mode / 3DH5 / Beamforming / Core 0 + Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2399.600 | Vertical | 55.1 | 92.9* | 37.8 | Complied |
| 2400.0 | Vertical | 53.5 | 92.9* | 39.4 | Complied |
| 2483.5 | Vertical | 55.6 | 74.0 | 18.4 | Complied |
| 2483.821 | Vertical | 56.0 | 74.0 | 18.0 | Complied |

| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 36.6** | 54.0 | 17.4 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

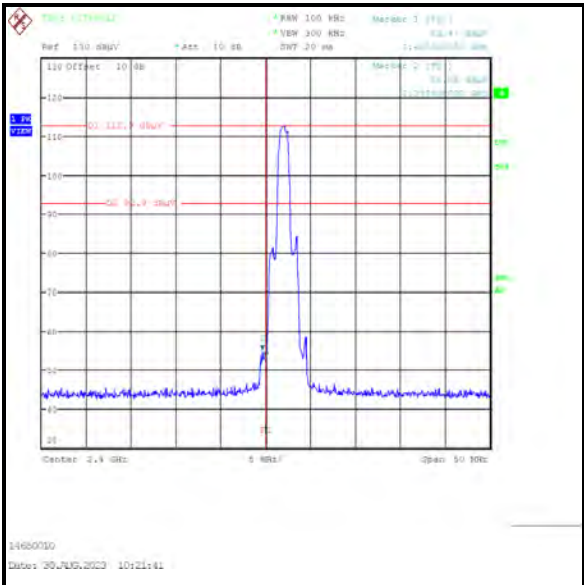
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2368.077 | Vertical | 53.8 | 74.0 | 20.2 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

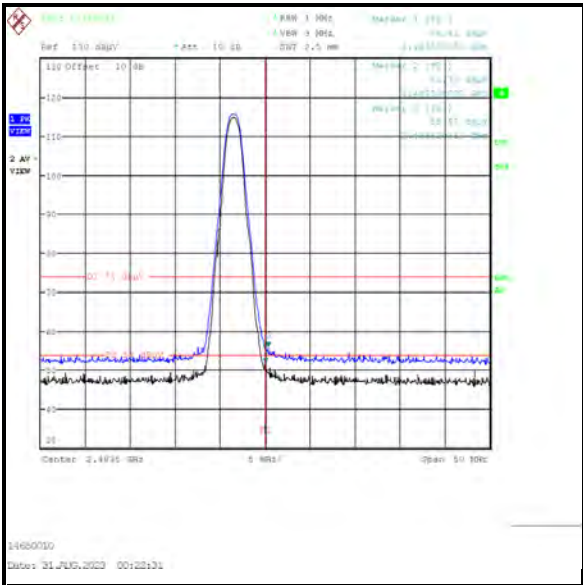
| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2386.282 | Vertical | 47.5 | 54.0 | 6.5 | Complied |

Transmitter Band Edge Radiated Emissions (continued)

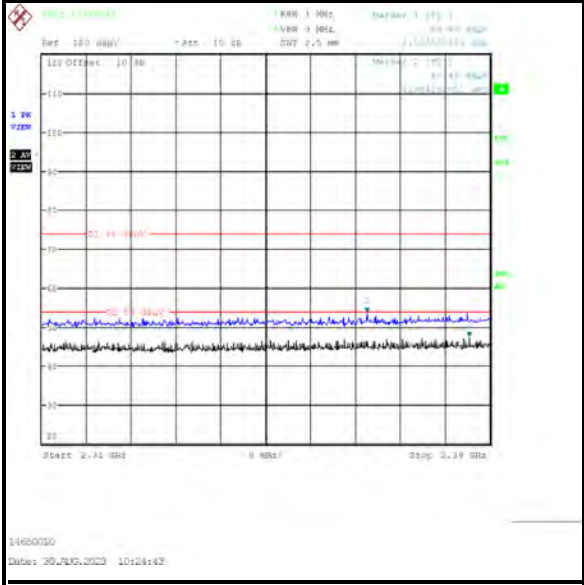
Results: Static Mode / 3DH5 / Beamforming / Core 0 + Core 1



Lower Band Edge



Upper Band Edge



2310 MHz to 2390 MHz Restricted Band

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / 3DH5 / Beamforming / Core 0 + Core 1**

| Frequency (MHz) | Antenna Polarity | Peak Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|---------------------------|----------------------|-------------|----------|
| 2399.700 | Vertical | 53.0 | 93.5* | 40.5 | Complied |
| 2400.0 | Vertical | 48.6 | 93.5* | 44.9 | Complied |
| 2483.5 | Vertical | 52.9 | 74.0 | 21.1 | Complied |
| 2495.199 | Vertical | 54.1 | 74.0 | 19.9 | Complied |

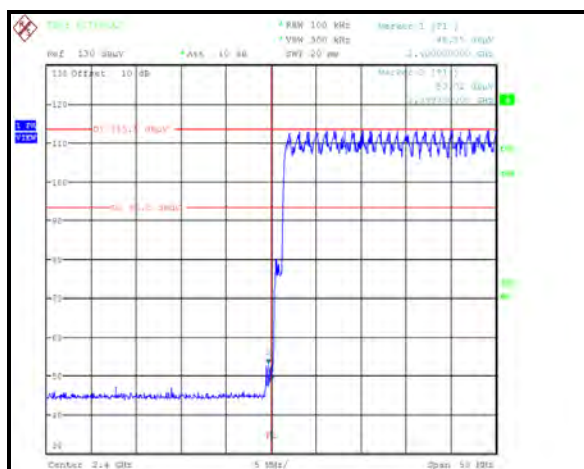
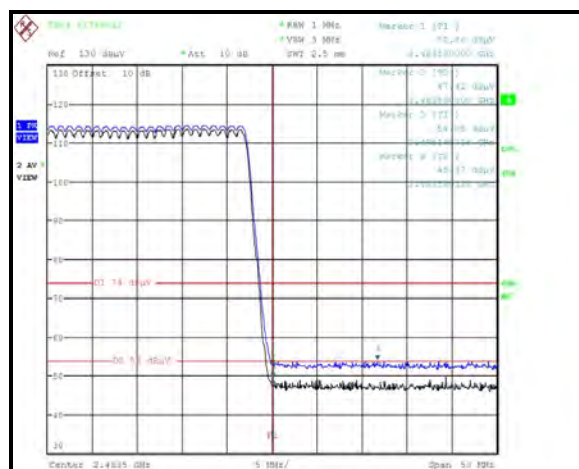
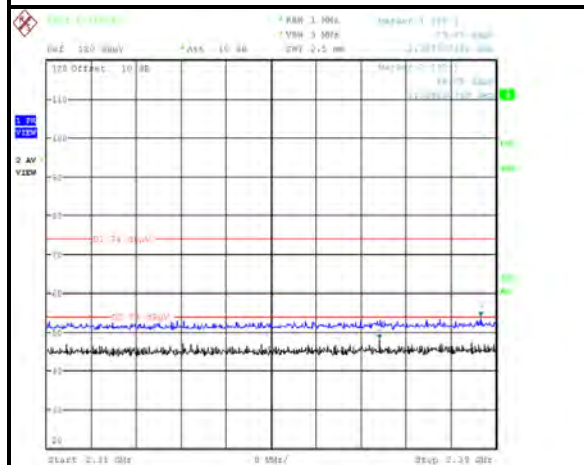
| Frequency (MHz) | Antenna Polarity | Average Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|------------------------------|----------------------|-------------|----------|
| 2483.5 | Vertical | 33.9** | 54.0 | 20.1 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Peak

| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2387.308 | Vertical | 53.8 | 74.0 | 20.2 | Complied |

Results: 2310 MHz to 2390 MHz Restricted Band / Average

| Frequency (MHz) | Antenna Polarity | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|----------------------|----------------------|-------------|----------|
| 2369.231 | Vertical | 48.1 | 54.0 | 5.9 | Complied |

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode / 3DH5 / Beamforming / Core 0 + Core 1****Lower Band Edge****Upper Band Edge****2310 MHz to 2390 MHz Restricted Band**

Appendix 1

FHSS Duty Cycle Correction Factor Calculation

In accordance with KDB 558074 section 9 and ANSI C63.10 section 7.5, a duty cycle correction factor may be applied to calculate the average radiated field strength emission levels for an FHSS device.

The following values were taken from the *Bluetooth* Core Specification V5.0 to give the worst case correction:

| Modulation | DH5, 2DH5 and 3DH5 |
|---|--------------------|
| Channel Hopping Rate (Hops/s) | 1600 |
| Tx Timeslots | 5 |
| Rx Timeslots | 1 |
| Adjusted Hopping Rate for Adaptive Frequency Hopping (Hops/s) | 266.667 |
| Time per Hop (ms) | 3.75 |
| Minimum Number of Channels | 20 |
| Time per Hop Sequence (ms) | 75 |
| Maximum Number of Hops on One Channel in any 100 ms Observation Period | 3 |
| Maximum Dwell Time on One Channel in any 100 ms Observation Period (ms) | 11.25 |
| Calculated Duty cycle correction factor applied (dB) | 19.0 |
| Maximum Duty cycle correction factor applied (dB) | 19.0 |

The duty cycle correction factor was calculated based on the above values:

$$DH5, 2DH5 \text{ and } 3DH5: 20 * \text{Log}(11.25 \text{ ms} / 100 \text{ ms}) = 19.0 \text{ dB}$$

--- END OF REPORT ---