

**TEST REPORT****Report No.: 23051484HKG-003**

Nacon (HK) Limited

Application For Certification  
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www.intertek.com**FCC ID: 2AVPR-900MAX**

This report contains the data of Bluetooth 5.2 portion only

**Prepared and Checked by:****Approved by:**

Signed on File

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Date: Aug 12, 2024

## TEST REPORT

### GENERAL INFORMATION

|                              |  |
|------------------------------|--|
| <b>Grantee:</b>              | Nacon (HK) Limited                             |
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| <b>Manufacturer:</b>         | Nacon (HK) Limited                             |
| <b>Manufacturer Address:</b> | 17/F. 148 Electric Road,North Point, Hong Kong |
| <b>Brand Name:</b>           | RIG  |
| <b>Model:</b>                | RIG 900 MAX                                    |

|                                  |   |
|----------------------------------|---|
| <b>Type of EUT:</b>              | Transceiver   |
| <b>Description of EUT:</b>       | Gaming Headset  |
| <b>FCC ID:</b>                   | 2AVPR-900MAX  |
| <b>Date of Sample Submitted:</b> | June 08, 2023   |
| <b>Date of Test:</b>             | June 08, 2023 to July 06, 2023  |
| <b>Report No.:</b>               | 23051484HKG-003   |
| <b>Report Date:</b>              | Aug 12, 2024  |
| <b>Environmental Conditions:</b> | Temperature: +10 to 40°C<br>Humidity: 10 to 90%   |
| <b>Conclusion:</b>               | Test was conducted by client submitted sample. The submitted sample as received complied with the 47 CFR Part 15 Certification. |

This report contains the data of Bluetooth 5.2 portion only

**TEST REPORT****SUMMARY OF TEST RESULT**

| Test Items                                 | FCC Part 15 Section | Results  |
|--|---------------------|----------|
| Transmitter Power Line Conducted Emissions | 15.207              | Complied |
| Radiated Emission                          | 15.249, 15.209      | Complied |
| Radiated Emission on the Bandedge          |                     | Complied |
| Radiated Emission in Restricted Bands      | 15.205              | Complied |

The equipment under test is found to be complying with the following standards:

FCC Part 15, October 1, 2022 Edition

Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is considered sufficient to comply with the provisions of this section.  
2. Pursuant to FCC part 15 Section 15.215(c), the 20 dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered.

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## TEST REPORT

### 1.0 GENERAL DESCRIPTION

#### 1.1 Product Description

The Equipment Under Test (EUT), is a 2.4GHz and Bluetooth 5.2 Transceiver for a Gaming headset. For the Bluetooth 5.2 mode, the sample supplied operated on 79 channels, normally at 2402 - 2480MHz. The channels are separated with 1MHz spacing. For the 2.4GHz mode, the sample supplied operated on 40 channels, normally at 2402 - 2480MHz. The channels are separated with 2MHz spacing. The EUT is powered by 3.7V rechargeable battery.

Antenna Type: Internal, Integral

Maximum Antenna Gain: 0 dBi

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

#### 1.2 Related Submittal(s) Grants

This is a single application for certification of a transceiver.

#### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). All radiated measurements were performed in an 3m Chamber. Preliminary scans were performed in the 3m Chamber only to determine worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **“Justification Section”** of this Application.

#### 1.4 Test Facility

The 3m Chamber and conducted measurement facility used to collect the radiated data is located at Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong SAR, China. This test facility and site measurement data have been placed on file with the FCC and IC No. 2042H, CABID is “HKAP01”.

## TEST REPORT

### 2.0 SYSTEM TEST CONFIGURATION

#### 2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.10 (2013).

There are three powering methods for the Gaming headset (EUT).

Case 1) Powered by Internal 3.7V rechargeable battery.

Case 2) Powered by Notebook USB port (5VDC).

Case 3) Powered by Notebook USB port (5VDC) with Docking (Cradle).

All powering methods were tested. For Bluetooth portion, worst case data (Case 3) is shown only.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a plastic stand if necessary and placed on the wooden turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

#### 2.2 EUT Exercising Software

The EUT exercise program (AB1565/68 Lab Test Tool-2.11.2) used during radiated testing was designed to exercise the various system components in a manner similar to a typical use.

#### 2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

#### 2.4 Measurement Uncertainty

Decision Rule for compliance: For FCC/IC standard, the measured value must be within the limits of applicable standard without accounting for the measurement uncertainty. For EN/IEC/HKTA/HKTC standard, conformity rules will be used as per standard directly excepted EN/IEC 61000-3-2, EN/IEC 61000-3-3, HKTA1004, HKCA1008, HKTA1019, HKTA1020, HKTA1041 and HKTA1044.

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

**TEST REPORT**

## 2.5 Support Equipment List and Description

| Description             | Remark                |
|-------------------------|-----------------------|
| HP 820G1 Notebook       | Provided by Intertek  |
| 9HX Dongle              | Provided by Applicant |
| 66.5cm USB Type-C Cable | Provided by Applicant |
| Charging Cradle         | Provided by Applicant |

**TEST REPORT****3.0 EMISSION RESULTS**

Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

**3.1 Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG - AV$$

where FS = Field Strength in  $\text{dB}\mu\text{V}/\text{m}$

RA = Receiver Amplitude (including preamplifier) in  $\text{dB}\mu\text{V}$

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

AV = Average Factor in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$FS = RR + LF$$

where FS = Field Strength in  $\text{dB}\mu\text{V}/\text{m}$

RR = RA - AG - AV in  $\text{dB}\mu\text{V}$

LF = CF + AF in dB

Assume a receiver reading of 52.0  $\text{dB}\mu\text{V}$  is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27  $\text{dB}\mu\text{V}/\text{m}$ . This value in  $\text{dB}\mu\text{V}/\text{m}$  was converted to its corresponding level in  $\mu\text{V}/\text{m}$ .

$$RA = 52.0 \text{ dB}\mu\text{V}/\text{m}$$

$$AF = 7.4 \text{ dB}$$

$$RR = 18.0 \text{ dB}\mu\text{V}$$

$$CF = 1.6 \text{ dB}$$

$$LF = 9.0 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$AV = 5.0 \text{ dB}$$

$$FS = RR + LF$$

$$FS = 18 + 9 = 27 \text{ dB}\mu\text{V}/\text{m}$$

$$\text{Level in } \mu\text{V}/\text{m} = \text{Common Antilogarithm} [(27 \text{ dB}\mu\text{V}/\text{m})/20] = 22.4 \mu\text{V}/\text{m}$$

**TEST REPORT****3.2 Radiated Emission Configuration Photograph**

The worst case in radiated emission was found at 467.955 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

**3.3 Radiated Emission Data**

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgment: Passed by 0.4 dB

**3.4 Conducted Emission Configuration Photograph**

The worst case in line-conducted emission was found at 0.177 MHz

For electronic filing, the worst-case line-conducted configuration photographs are saved with filename: conducted photo.pdf.

**3.5 Conducted Emission Data**

For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgment: Pass by 11.3 dB

## TEST REPORT

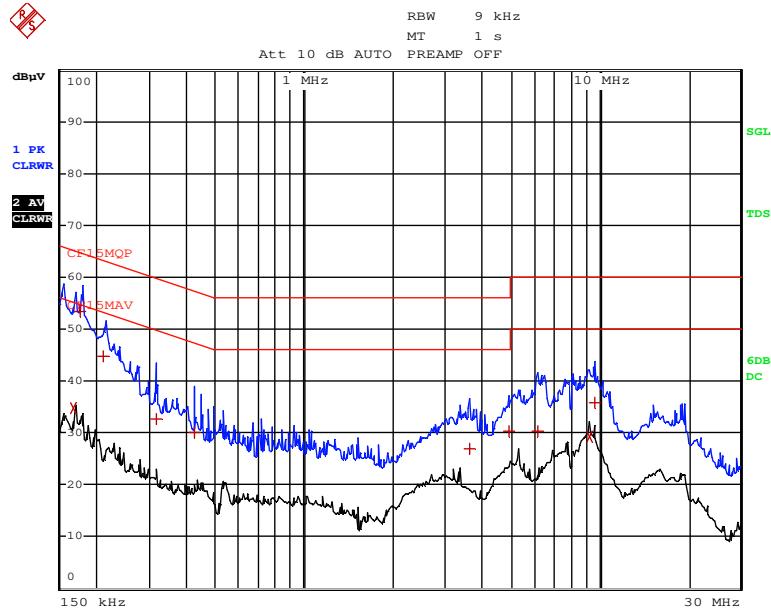
### CONDUCTED EMISSION

Model: RIG 900 MAX

Date of Test: July 06, 2023

Worst-Case Operating Mode: Transmitting (Powered by Notebook USB port with Docking Base)

| EDIT PEAK LIST (Final Measurement Results) |            |                  |        |          |
|--|------------|------------------|--------|----------|
| Trace1:                                    | CF15MQP    |                  |        |          |
| Trace2:                                    | CF15MAV    |                  |        |          |
| Trace3:                                    | ---        |                  |        |          |
| TRACE                                      | FREQUENCY  | LEVEL dB $\mu$ V | DELTA  | LIMIT dB |
| 2 CISPR Average                            | 168 kHz    | 34.77 N          | -20.28 |          |
| 1 Quasi Peak                               | 177 kHz    | 53.33 N          | -11.29 |          |
| 1 Quasi Peak                               | 213 kHz    | 44.86 L1         | -18.22 |          |
| 1 Quasi Peak                               | 316.5 kHz  | 32.76 N          | -27.03 |          |
| 1 Quasi Peak                               | 424.5 kHz  | 29.95 L1         | -27.40 |          |
| 1 Quasi Peak                               | 3.651 MHz  | 26.80 L1         | -29.19 |          |
| 1 Quasi Peak                               | 4.956 MHz  | 30.28 N          | -25.71 |          |
| 1 Quasi Peak                               | 6.162 MHz  | 30.29 N          | -29.71 |          |
| 2 CISPR Average                            | 9.2535 MHz | 29.33 N          | -20.66 |          |
| 1 Quasi Peak                               | 9.6135 MHz | 35.84 L1         | -24.15 |          |


 Note: Measurement Uncertainty is  $\pm 4.2\text{dB}$  at a level of confidence of 95%.

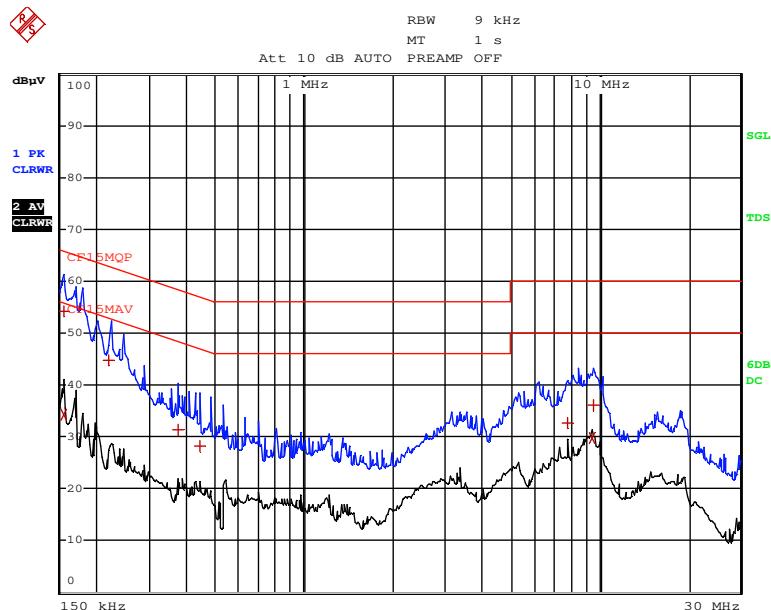
## TEST REPORT

Model: RIG 900 MAX

Date of Test: July 06, 2023

## Worst-Case Operating Mode: Transmitting (Powered by Notebook USB port)

| EDIT PEAK LIST (Final Measurement Results) |               |            |       |                  |        |          |
|--|---------------|------------|-------|------------------|--------|----------|
| TRACE                                      |               | FREQUENCY  | LEVEL | dB <sub>PV</sub> | DELTA  | LIMIT dB |
| 1  | Quasi Peak    | 154.5 kHz  | 54.23 | L1               | -11.51 |          |
| 2  | CISPR Average | 154.5 kHz  | 34.37 | L1               | -21.37 |          |
| 1  | Quasi Peak    | 222 kHz    | 44.68 | N                | -18.05 |          |
| 1  | Quasi Peak    | 375 kHz    | 31.45 | N                | -26.93 |          |
| 1  | Quasi Peak    | 442.5 kHz  | 28.33 | N                | -28.68 |          |
| 1  | Quasi Peak    | 7.8045 MHz | 32.71 | N                | -27.28 |          |
| 2  | CISPR Average | 9.402 MHz  | 29.85 | L1               | -20.14 |          |
| 1  | Quasi Peak    | 9.5955 MHz | 36.04 | N                | -23.95 |          |



Note: Measurement Uncertainty is  $\pm 4.2\text{dB}$  at a level of confidence of 95%.

## TEST REPORT

### RADIATED EMISSIONS

Model: RIG 900 MAX

Date of Test: July 06, 2023

Worst-Case Operating Mode: Transmitting (Bluetooth 5.2)

**Table 1**  
**Pursuant to FCC Part 15 Section 15.249 / RSS-210 B10.0 Requirement**

Lowest Channel

| Polarization | Frequency (MHz) | Reading (dB $\mu$ V) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Average (dB $\mu$ V/m) | Average Limit at 3m (dB $\mu$ V/m) | Margin (dB) |
|--------------|-----------------|----------------------|-------------------|---------------------|------------------------------------|------------------------------------|-------------|
| V            | 2402.000        | 87.1                 | 33                | 29.4                | 83.5                               | 94.0                               | -10.5       |
| V            | 4804.000        | 41.8                 | 33                | 34.9                | 43.7                               | 54.0                               | -10.3       |
| V            | 7206.000        | 33.0                 | 33                | 37.9                | 37.9                               | 54.0                               | -16.1       |
| H            | 9608.000        | 32.7                 | 33                | 40.4                | 40.1                               | 54.0                               | -13.9       |
| V            | 12010.000       | 35.4                 | 33                | 40.5                | 42.9                               | 54.0                               | -11.1       |
| V            | 14412.000       | 41.8                 | 33                | 40.0                | 48.8                               | 54.0                               | -5.2        |

| Polarization | Frequency (MHz) | Reading (dB $\mu$ V) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dB $\mu$ V/m) | Peak Limit at 3m (dB $\mu$ V/m) | Margin (dB) |
|--------------|-----------------|----------------------|-------------------|---------------------|---------------------------------|---------------------------------|-------------|
| V            | 2402.000        | 108.4                | 33                | 29.4                | 104.8                           | 114.0                           | -9.2        |
| V            | 4804.000        | 51.8                 | 33                | 34.9                | 53.7                            | 74.0                            | -20.3       |
| V            | 7206.000        | 46.0                 | 33                | 37.9                | 50.9                            | 74.0                            | -23.1       |
| H            | 9608.000        | 41.8                 | 33                | 40.4                | 49.2                            | 74.0                            | -24.8       |
| V            | 12010.000       | 45.8                 | 33                | 40.5                | 53.3                            | 74.0                            | -20.7       |
| V            | 14412.000       | 54.4                 | 33                | 40.0                | 61.4                            | 74.0                            | -12.6       |

NOTES:

1. Peak Detector Data unless otherwise stated.
2. Average detector is applied according to ANSI C63.10.
3. All measurements were made at 3 meters.
4. Negative value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emissions within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.
7. Measurement Uncertainty is  $\pm 5.3$ dB at a level of confidence of 95%.

## TEST REPORT

Model: RIG 900 MAX

Date of Test: July 06, 2023

Worst-Case Operating Mode: Transmitting (Bluetooth 5.2)

**Table 2**  
**Pursuant to FCC Part 15 Section 15.249 / RSS-210 B10.0 Requirement**

Middle Channel

| Polarization | Frequency (MHz) | Reading (dB $\mu$ V) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Average (dB $\mu$ V/m) | Average Limit at 3m (dB $\mu$ V/m) | Margin (dB) |
|--------------|-----------------|----------------------|-------------------|---------------------|------------------------------------|------------------------------------|-------------|
| V            | 2440.000        | 86.2                 | 33                | 29.4                | 82.6                               | 94.0                               | -11.4       |
| V            | 4880.000        | 40.0                 | 33                | 34.9                | 41.9                               | 54.0                               | -12.1       |
| V            | 7320.000        | 36.7                 | 33                | 37.9                | 41.6                               | 54.0                               | -12.4       |
| H            | 9760.000        | 28.8                 | 33                | 40.4                | 36.2                               | 54.0                               | -17.8       |
| V            | 12200.000       | 32.6                 | 33                | 40.5                | 40.1                               | 54.0                               | -13.9       |
| V            | 14640.000       | 39.4                 | 33                | 38.4                | 44.8                               | 54.0                               | -9.2        |

| Polarization | Frequency (MHz) | Reading (dB $\mu$ V) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dB $\mu$ V/m) | Peak Limit at 3m (dB $\mu$ V/m) | Margin (dB) |
|--------------|-----------------|----------------------|-------------------|---------------------|---------------------------------|---------------------------------|-------------|
| V            | 2440.000        | 108.1                | 33                | 29.4                | 104.5                           | 114.0                           | -9.5        |
| V            | 4880.000        | 50.6                 | 33                | 34.9                | 52.5                            | 74.0                            | -21.5       |
| V            | 7320.000        | 48.9                 | 33                | 37.9                | 53.8                            | 74.0                            | -20.2       |
| H            | 9760.000        | 41.3                 | 33                | 40.4                | 48.7                            | 74.0                            | -25.3       |
| V            | 12200.000       | 46.1                 | 33                | 40.5                | 53.6                            | 74.0                            | -20.4       |
| V            | 14640.000       | 51.6                 | 33                | 38.4                | 57.0                            | 74.0                            | -17.0       |

NOTES:

1. Peak Detector Data unless otherwise stated.
2. Average detector is applied according to ANSI C63.10.
3. All measurements were made at 3 meters.
4. Negative value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emissions within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.
7. Measurement Uncertainty is  $\pm 5.3$ dB at a level of confidence of 95%.

## TEST REPORT

Model: RIG 900 MAX

Date of Test: July 06, 2023

Worst-Case Operating Mode: Transmitting (Bluetooth 5.2)

**Table 3**  
**Pursuant to FCC Part 15 Section 15.249 / RSS-210 B10.0 Requirement**

Highest Channel

| Polarization | Frequency (MHz) | Reading (dB $\mu$ V) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Average (dB $\mu$ V/m) | Average Limit at 3m (dB $\mu$ V/m) | Margin (dB) |
|--------------|-----------------|----------------------|-------------------|---------------------|------------------------------------|------------------------------------|-------------|
| V            | 2480.000        | 85.8                 | 33                | 29.4                | 82.2                               | 94.0                               | -11.8       |
| V            | 4960.000        | 37.3                 | 33                | 34.9                | 39.2                               | 54.0                               | -14.8       |
| V            | 7440.000        | 34.0                 | 33                | 37.9                | 38.9                               | 54.0                               | -15.1       |
| H            | 9920.000        | 30.2                 | 33                | 40.4                | 37.6                               | 54.0                               | -16.4       |
| V            | 12400.000       | 34.1                 | 33                | 40.5                | 41.6                               | 54.0                               | -12.4       |
| V            | 14880.000       | 40.1                 | 33                | 38.4                | 45.5                               | 54.0                               | -8.5        |

| Polarization | Frequency (MHz) | Reading (dB $\mu$ V) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dB $\mu$ V/m) | Peak Limit at 3m (dB $\mu$ V/m) | Margin (dB) |
|--------------|-----------------|----------------------|-------------------|---------------------|---------------------------------|---------------------------------|-------------|
| V            | 2480.000        | 107.8                | 33                | 29.4                | 104.2                           | 114.0                           | -9.8        |
| V            | 4960.000        | 49.6                 | 33                | 34.9                | 51.5                            | 74.0                            | -22.5       |
| V            | 7440.000        | 46.4                 | 33                | 37.9                | 51.3                            | 74.0                            | -22.7       |
| H            | 9920.000        | 42.1                 | 33                | 40.4                | 49.5                            | 74.0                            | -24.5       |
| V            | 12400.000       | 47.2                 | 33                | 40.5                | 54.7                            | 74.0                            | -19.3       |
| V            | 14880.000       | 54.5                 | 33                | 38.4                | 59.9                            | 74.0                            | -14.1       |

NOTES:

1. Peak Detector Data unless otherwise stated.
2. Average detector is applied according to ANSI C63.10.
3. All measurements were made at 3 meters.
4. Negative value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emissions within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.
7. Measurement Uncertainty is  $\pm 5.3$ dB at a level of confidence of 95%.

**TEST REPORT**

Model: RIG 900 MAX

Date of Test: July 06, 2023

Worst-Case Operating Mode: Transmitting  
(Powered by Notebook USB port)

Table 4  
**Pursuant to FCC Part 15 Section 15.209 / RSS-GEN 8.9 Requirement**

| Polarization | Frequency (MHz) | Reading (dB $\mu$ V) | Pre-amp (dB) | Antenna Factor (dB) | Net at 3m (dB $\mu$ V/m) | Limit at 3m (dB $\mu$ V/m) | Margin (dB) |
|--------------|-----------------|----------------------|--------------|---------------------|--------------------------|----------------------------|-------------|
| V            | 32.568          | 24.8                 | 16           | 10.0                | 18.8                     | 40.0                       | -21.2       |
| H            | 150.328         | 22.5                 | 16           | 14.0                | 20.5                     | 43.5                       | -23.0       |
| H            | 280.254         | 16.5                 | 16           | 22.0                | 22.5                     | 46.0                       | -23.5       |
| H            | 400.234         | 20.8                 | 16           | 24.0                | 28.8                     | 46.0                       | -17.2       |
| H            | 444.202         | 20.6                 | 16           | 26.0                | 30.6                     | 46.0                       | -15.4       |
| H            | 456.628         | 15.5                 | 16           | 26.0                | 25.5                     | 46.0                       | -20.5       |
| H            | 468.254         | 34.2                 | 16           | 26.0                | 44.2                     | 46.0                       | -1.8        |
| H            | 480.325         | 26.2                 | 16           | 26.0                | 36.2                     | 46.0                       | -9.8        |

NOTES:

1. Quasi-Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emissions within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.
6. Measurement Uncertainty is  $\pm 5.3$ dB at a level of confidence of 95%.

**TEST REPORT**

Model: RIG 900 MAX

Date of Test: July 06, 2023

Worst-Case Operating Mode: Transmitting

(Powered by Notebook USB port with Docking Base)

**Table 5**  
**Pursuant to FCC Part 15 Section 15.209 / RSS-GEN 8.9 Requirement**

| Polarization | Frequency (MHz) | Reading (dB $\mu$ V) | Pre-amp (dB) | Antenna Factor (dB) | Net at 3m (dB $\mu$ V/m) | Limit at 3m (dB $\mu$ V/m) | Margin (dB) |
|--------------|-----------------|----------------------|--------------|---------------------|--------------------------|----------------------------|-------------|
| V            | 31.819          | 25.2                 | 16           | 10.0                | 19.2                     | 40.0                       | -20.8       |
| H            | 149.674         | 23.2                 | 16           | 14.0                | 21.2                     | 43.5                       | -22.3       |
| H            | 280.018         | 18.6                 | 16           | 22.0                | 24.6                     | 46.0                       | -21.4       |
| H            | 397.752         | 20.8                 | 16           | 25.0                | 29.8                     | 46.0                       | -16.2       |
| H            | 443.948         | 23.4                 | 16           | 26.0                | 33.4                     | 46.0                       | -12.6       |
| H            | 455.952         | 26.8                 | 16           | 26.0                | 36.8                     | 46.0                       | -9.2        |
| H            | 467.955         | 35.6                 | 16           | 26.0                | 45.6                     | 46.0                       | -0.4        |
| H            | 479.958         | 25.2                 | 16           | 26.0                | 35.2                     | 46.0                       | -10.8       |

NOTES:

1. Quasi-Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emissions within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.
6. Measurement Uncertainty is  $\pm 5.3$ dB at a level of confidence of 95%.

## TEST REPORT

### 4.0 EQUIPMENT PHOTOGRAPHS

For electronic filing, the photographs are saved with filename: external photos.pdf and internal photos.pdf.

### 5.0 PRODUCT LABELLING

For electronics filing, the FCC ID & IC label artwork and the label location are saved with filename: label.pdf.

### 6.0 TECHNICAL SPECIFICATIONS

For electronic filing, the block diagram and schematic of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

### 7.0 INSTRUCTION MANUAL

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States and Canada.

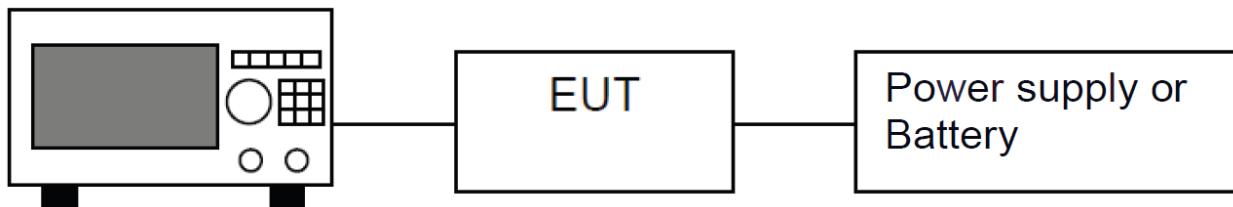
**TEST REPORT****8.0 MISCELLANEOUS INFORMATION**

The miscellaneous information includes details of the test procedure and measured bandwidth / calculation of factor such as pulse desensitization and averaging factor (calculation and timing diagram).

**8.1 Radiated Emission on the Bandedge**

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz to 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.10 (2013) for frequency being measured.

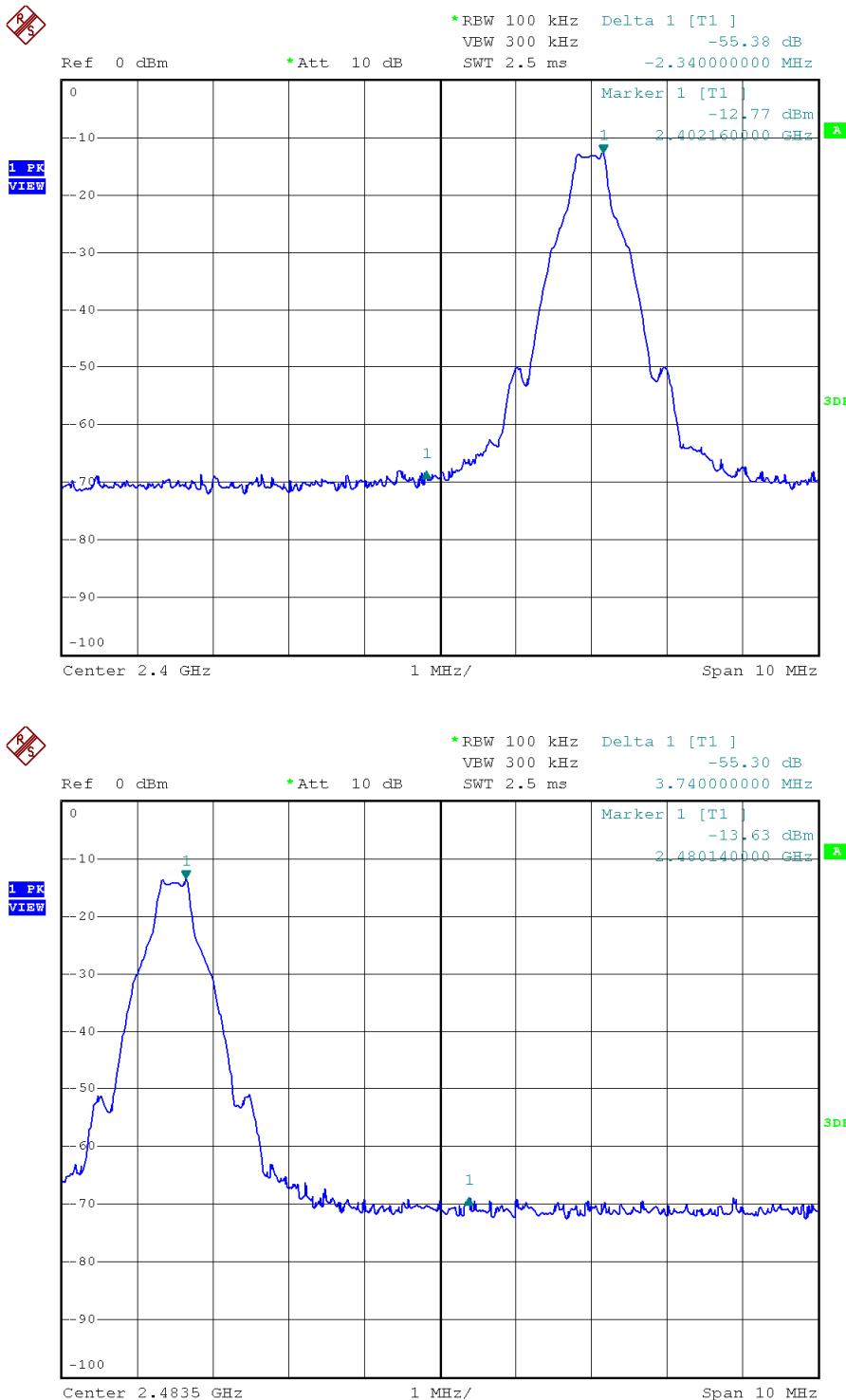
Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50dB below the level of the fundamental or to the general radiated emissions limits in Section 15.209 / RSS-Gen 8.9, whichever is the lesser attenuation, which meet the requirement of Part 15.249(d) / RSS-210 B.10.



Spectrum Analyzer

## TEST REPORT

### PEAK MEASUREMENT (Bluetooth 5.2)



**TEST REPORT****PEAK MEASUREMENT (Bluetooth 5.2)**

Bandedge compliance is determined by applying marker-delta method, i.e. (Bandedge Plot).

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 104.8 \text{ dB}\mu\text{V/m} - 55.4 \text{ dB} \\ &= 49.4 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 83.5 \text{ dB}\mu\text{V/m} - 55.4 \text{ dB} \\ &= 28.1 \text{ dB}\mu\text{V/m} \end{aligned}$$

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

$$\begin{aligned} &= 104.2 \text{ dB}\mu\text{V/m} - 55.3 \text{ dB} \\ &= 48.9 \text{ dB}\mu\text{V/m} \end{aligned}$$

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

$$\begin{aligned} &= 82.2 \text{ dB}\mu\text{V/m} - 55.3 \text{ dB} \\ &= 26.9 \text{ dB}\mu\text{V/m} \end{aligned}$$

The resultant field strength meets the general radiated emission limit in Section 15.209 / RSS-Gen 8.9, which does not exceed 74 dB $\mu$ V/m (Peak Limit) and 54 dB $\mu$ V/m (Average Limit).

## TEST REPORT

### 8.2 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device. The effective period (Teff) is approximately 625 $\mu$ s for a digital “1” bit which illustrated on technical specification, with a resolution bandwidth (3dB) of 3MHz, so the pulse desensitivity factor is 0dB.

### 8.3 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of transmitter operating under the Part 15, Subpart C rules.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately 0.8m in height above the ground plane for emission measurement at or below 1GHz and 1.5m in height above the ground plane for emission measurement above 1GHz. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements were made as described in ANSI C63.10 (2013).

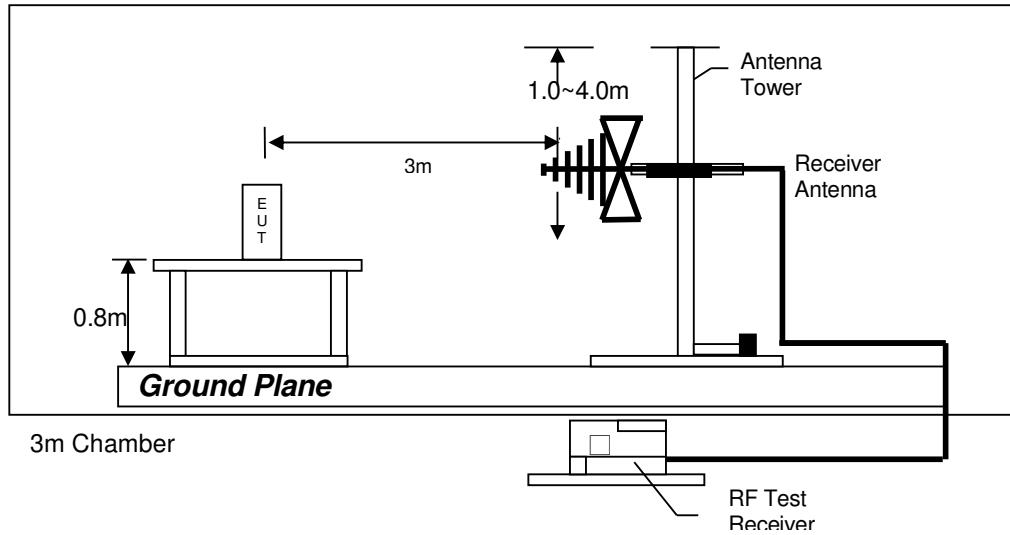
The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.1). Above 1000 MHz, a resolution bandwidth of 3 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.

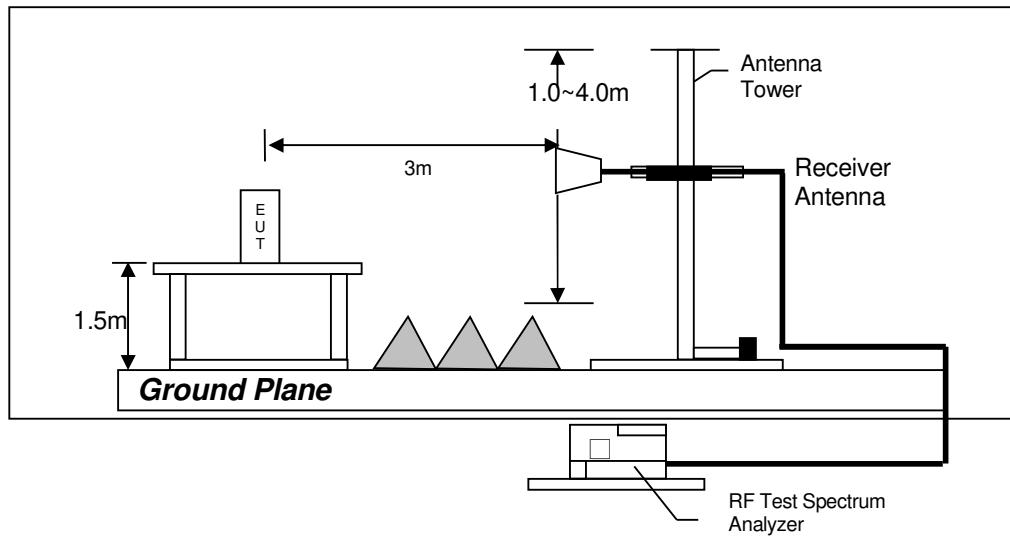
## TEST REPORT

### 8.3.1 Radiated Emission Test Setup

The figure below shows the test setup, which is utilized to make these measurements.



Test setup of radiated emissions up to 1GHz

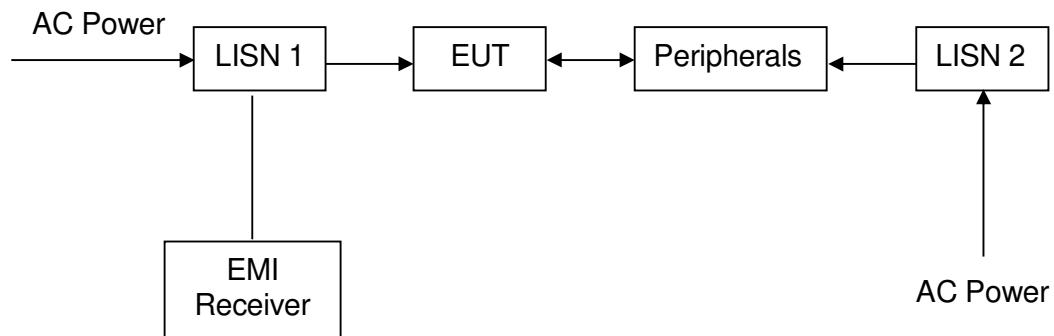


Test setup of radiated emissions above 1GHz

**TEST REPORT****8.3.2 Conducted Emission Test Procedures**

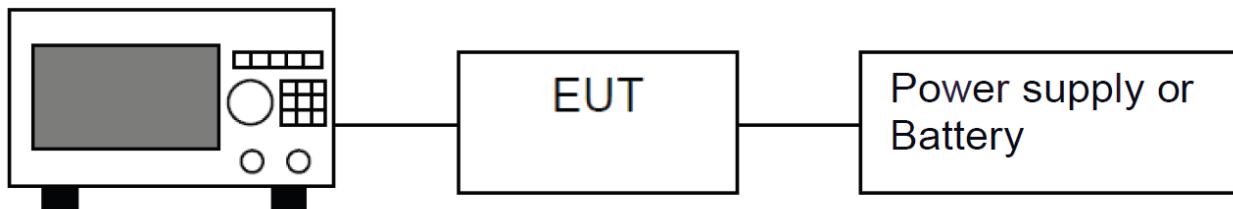
For tabletop equipment, the EUT along with its peripherals were placed on a 1.0m(W)×1.5m(L) and 0.8m in height wooden table. For floor-standing equipment, the EUT and all cables were insulated, if required, from the ground plane by up to 12 mm of insulating material. The EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were moved to find the maximum emission.

**8.3.3 Conducted Emission Test Setup**

## TEST REPORT

### 8.4 Occupied Bandwidth

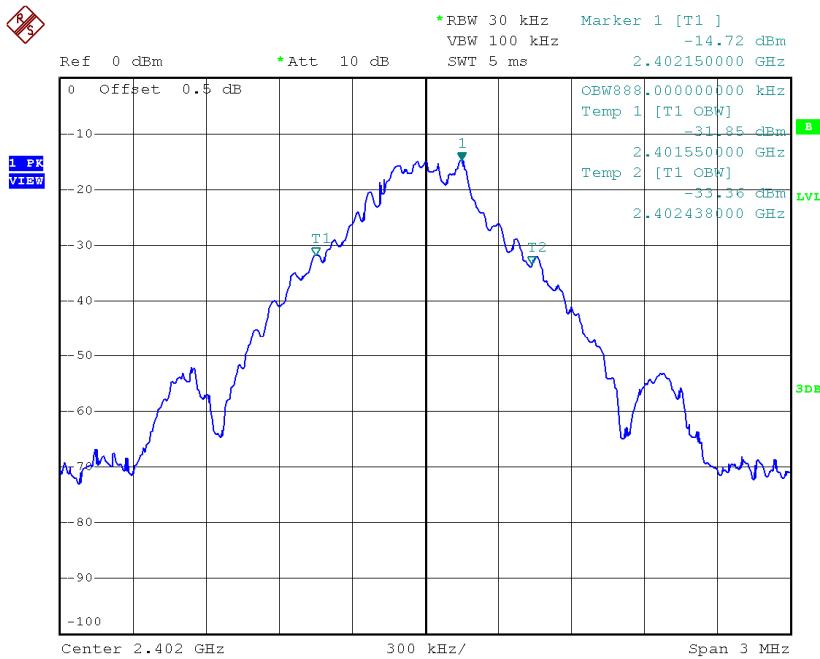


### Spectrum Analyzer

#### Occupied Bandwidth Results: (Bluetooth 5.2)

| Occupied Bandwidth (kHz) |     |
|--------------------------|-----|
| Low Channel: 2402        | 888 |
| Middle Channel: 2440     | 888 |
| High Channel: 2480       | 888 |

The worst case is shown as below



## TEST REPORT

### 9.0 EQUIPMENT LIST

#### Radiated Emissions Test

| Equipment            | Signal and Spectrum Analyzer (10Hz to 40GHz) | Biconical Antenna (30MHz to 300MHz)        | EMI Test Receiver 7GHz                   |
|----------------------|--|--|--|
| Registration No.     | EW-3016                                      | EW-3242                                    | EW-3481                                  |
| Manufacturer         | ROHDE SCHWARZ                                | EMCO                                       | ROHDE SCHWARZ                            |
| Model No.            | FSV40  | 3110C                                      | ESR7                                     |
| Calibration Date     | January 29, 2022                             | May 26, 2021                               | December 21, 2021                        |
| Calibration Due Date | July 29, 2023                                | August 26, 2023                            | September 21, 2023                       |
| Equipment            | Log Periodic Antenna                         | Double Ridged Guide Antenna                | Active Loop H-field (9kHz to 30MHz)      |
| Registration No.     | EW-3243                                      | EW-1133                                    | EW-3302                                  |
| Manufacturer         | EMCO   | EMCO                                       | EMCO                                     |
| Model No.            | 3148B  | 3115                                       | 6502                                     |
| Calibration Date     | June 03, 2021                                | May 26, 2021                               | September 08, 2022                       |
| Calibration Due Date | September 30, 2023                           | August 26, 2023                            | September 08, 2023                       |
| Equipment            | RF Preamplifier (9kHz to 6000MHz)            | 2.4GHz Notch Filter                        | 14m Double Shield RF Cable (9kHz - 6GHz) |
| Registration No.     | EW-3006b                                     | EW-3435                                    | EW-2376                                  |
| Manufacturer         | SCHWARZBECK                                  | MICROWAVE                                  | RADIALL                                  |
| Model No.            | BBV9718                                      | N0324413                                   | n m/br56/bnc m 14m                       |
| Calibration Date     | February 15, 2022                            | June 16, 2022                              | January 26, 2022                         |
| Calibration Due Date | August 15, 2023                              | September 16, 2022                         | July 26, 2023                            |
| Equipment            | RF Cable 14m (1GHz to 26.5GHz)               | 14m Double Shield RF Cable (20MHz to 6GHz) | Pyramidal Horn Antenna                   |
| Registration No.     | EW-2781                                      | EW-2074                                    | EW-0905                                  |
| Manufacturer         | GREATBILLION                                 | RADIALL                                    | EMCO                                     |
| Model No.            | SMA m/SHF5MPU /SMA m<br>ra14m,26G            | N(m)-RG142-BNC(m)<br>L=14M                 | 3160-09                                  |
| Calibration Date     | November 24, 2021                            | December 10, 2021                          | July 20, 2021                            |
| Calibration Due Date | July 24, 2023                                | September 10, 2023                         | August 20, 2023                          |

## TEST REPORT

### Conducted Emissions Test

| Equipment            | RF Cable 240cm (RG142)<br>(9kHz to 30MHz) | Artificial Mains<br>Network | EMI Test Receiver<br>7GHz |
|----------------------|---|-----------------------------|---------------------------|
| Registration No.     | EW-2454                                   | EW-2501                     | EW-3481                   |
| Manufacturer         | RADIALL                                   | ROHDE SCHWARZ               | ROHDE SCHWARZ             |
| Model No.            | Bnc m st / 142 / bnc mra<br>240cm         | ENV-216                     | ESR7                      |
| Calibration Date     | January 26, 2022                          | September 11, 2021          | December 21, 2021         |
| Calibration Due Date | July 26, 2023                             | September 11, 2023          | September 21, 2023        |

### Bandedge Measurement

| Equipment            | 5m RF Cable (40GHz) | EMI Test Receiver<br>7GHz |
|----------------------|---------------------|---------------------------|
| Registration No.     | EW-2701             | EW-3481                   |
| Manufacturer         | RADIALL             | ROHDE SCHWARZ             |
| Model No.            | Sma m-m 5m 40G      | ESR7                      |
| Calibration Date     | November 24, 2021   | December 21, 2021         |
| Calibration Due Date | August 24, 2023     | September 21, 2023        |

### OBW Measurement

| Equipment            | 5m RF Cable (40GHz) | EMI Test Receiver 7GHz |
|----------------------|---------------------|------------------------|
| Registration No.     | EW-2701             | EW-3481                |
| Manufacturer         | RADIALL             | ROHDE SCHWARZ          |
| Model No.            | Sma m-m 5m 40G      | ESR7                   |
| Calibration Date     | November 24, 2021   | December 21, 2021      |
| Calibration Due Date | August 24, 2023     | September 21, 2023     |

### Control Software for Radiated Emission

| Software Information |               |
|----------------------|---------------|
| Software Name        | EMC32         |
| Manufacturer         | ROHDE SCHWARZ |
| Software version     | 10.50.40      |

**END OF TEST REPORT**