



# SAR REFERENCE WAVEGUIDE CALIBRATION REPORT

Ref.: ACR.53.31.24.BES.A

## 7 LIST OF EQUIPMENT

| Equipment Summary Sheet            |                         |                    |                                               |                                               |
|------------------------------------|-------------------------|--------------------|-----------------------------------------------|-----------------------------------------------|
| Equipment Description              | Manufacturer / Model    | Identification No. | Current Calibration Date                      | Next Calibration Date                         |
| SAM Phantom                        | MVG                     | SN 13/09 SAM68     | Validated. No cal required.                   | Validated. No cal required.                   |
| COMOSAR Test Bench                 | Version 3               | NA                 | Validated. No cal required.                   | Validated. No cal required.                   |
| Network Analyzer                   | Rohde & Schwarz ZVM     | 100203             | 08/2021                                       | 08/2024                                       |
| Network Analyzer – Calibration kit | Rohde & Schwarz ZV-Z235 | 101223             | 07/2022                                       | 07/2025                                       |
| Calipers                           | Mitutoyo                | SN 0009732         | 11/2022                                       | 11/2025                                       |
| Reference Probe                    | MVG                     | 3623-EPGO-431      | 11/2023                                       | 11/2024                                       |
| Multimeter                         | Keithley 2000           | 4013982            | 02/2023                                       | 02/2026                                       |
| Signal Generator                   | Rohde & Schwarz SMB     | 106589             | 03/2022                                       | 03/2025                                       |
| Amplifier                          | MVG                     | MODU-023-C-0002    | Characterized prior to test. No cal required. | Characterized prior to test. No cal required. |
| Power Meter                        | NI-USB 5680             | 170100013          | 06/2021                                       | 06/2024                                       |
| Power Meter                        | Keysight U2000A         | SN: MY62340002     | 10/2022                                       | 10/2025                                       |
| Directional Coupler                | Krytar 158020           | 131467             | Characterized prior to test. No cal required. | Characterized prior to test. No cal required. |
| Temperature / Humidity Sensor      | Testo 184 H1            | 44225320           | 06/2021                                       | 06/2024                                       |

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## Appendix E. Justification of the extended calibration

If dipoles are verified in return loss ( $<-20\text{dB}$ , within 20% of prior calibration for below 3GHz, and  $<-8\text{dB}$ , within 20% of prior calibration for 5GHz to 6GHz), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

### <Head 835MHz>

| Return Loss (dB) | Delta (%) | Impedance | Delta(ohm) | Date of Measurement |
|------------------|-----------|-----------|------------|---------------------|
| -42.84           | -         | 50.5      | -          | Feb. 21, 2024       |
| -42.803          | 0.09      | 50.592    | 0.092      | Feb. 20, 2025       |

The return loss is  $<-20\text{dB}$ , within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

### <Head 1800MHz>

| Return Loss (dB) | Delta (%) | Impedance | Delta(ohm) | Date of Measurement |
|------------------|-----------|-----------|------------|---------------------|
| -24.53           | -         | 44.8      | -          | Feb. 21, 2024       |
| -24.545          | 0.06      | 44.809    | 0.009      | Feb. 20, 2025       |

The return loss is  $<-20\text{dB}$ , within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

### <Head 1900MHz>

| Return Loss (dB) | Delta (%) | Impedance | Delta(ohm) | Date of Measurement |
|------------------|-----------|-----------|------------|---------------------|
| -23.28           | -         | 46.2      | -          | Feb. 21, 2024       |
| -23.518          | 1.02      | 46.516    | 0.316      | Feb. 20, 2025       |

The return loss is  $<-20\text{dB}$ , within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

### <Head 2450MHz>

| Return Loss (dB) | Delta (%) | Impedance | Delta(ohm) | Date of Measurement |
|------------------|-----------|-----------|------------|---------------------|
| -29.27           | -         | 53.6      | -          | Feb. 21, 2024       |
| -29.39           | 0.41      | 53.742    | 0.142      | Feb. 20, 2025       |

The return loss is  $<-20\text{dB}$ , within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

### <Head 2600MHz>

| Return Loss (dB) | Delta (%) | Impedance | Delta(ohm) | Date of Measurement |
|------------------|-----------|-----------|------------|---------------------|
|------------------|-----------|-----------|------------|---------------------|

|         |      |        |       |               |
|---------|------|--------|-------|---------------|
| -25.57  | -    | 54.5   | -     | Feb. 21, 2024 |
| -25.248 | 1.26 | 54.653 | 0.153 | Feb. 20, 2025 |

The return loss is <-20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

#### <Head 5200MHz>

| Return Loss (dB) | Delta (%) | Impedance | Delta(ohm) | Date of Measurement |
|------------------|-----------|-----------|------------|---------------------|
| -9.64            | -         | 25.80     | -          | Feb. 21, 2024       |
| -9.1819          | 4.75      | 25.891    | 0.091      | Feb. 20, 2025       |

The return loss is <-20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

#### <Head 5800MHz>

| Return Loss (dB) | Delta (%) | Impedance | Delta(ohm) | Date of Measurement |
|------------------|-----------|-----------|------------|---------------------|
| -14.91           | -         | 38.53     | -          | Feb. 21, 2024       |
| -14.349          | 3.76      | 38.715    | 0.185      | Feb. 20, 2025       |

The return loss is <-20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

※※END OF THE REPORT※※