

SAR Test Report

Part 1 of 3

Project Number: 4942239

Quotation Number: SUW-202112002041

Report Number: 4942239EMC05.1

Revision Level: 1

Client: Riskband LLC

Equipment Under Test: Wearable Emergency Device

Host Model Name: ARIES

Host Model Number: RBD30060

Host FCC ID: 2AHZ7-300602022

Host IC: 21986-300602022

Module FCC ID: 2AHZ7-R20082B00

Module IC: 21986-R20082B00

Applicable Standards: IEC 62209-1528

Report issued on: 15 November 2022


Test Result: Compliant



FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER: 3212.01

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1 SUMMARY OF RESULTS

| RF Exposure Conditions | General Population/Uncontrolled | | Compliance to RSS – 102, FCC 2.1093 |
|------------------------|----------------------------------|---------------------------------|-------------------------------------|
| | Localized SAR 1g (Head and Body) | Localized SAR 10g (Extremities) | |
| | | 1.6 W/kg | NA |

| Equipment Class | Band | Highest SAR values (W/kg) | | | | |
|----------------------|-----------------------------|---------------------------|-----|------|-----|-----------|
| | | Head | | Body | | Extremity |
| | | 1g | 10g | 1g | 10g | 10g |
| PCB | LTE Band 2 1850-1910 MHz | NA | NA | 1.20 | NA | NA |
| PCB | LTE Band 4 1710-1755 MHz | NA | NA | 0.76 | NA | NA |
| PCB | LTE Band 5 824-849 MHz | NA | NA | 0.57 | NA | NA |
| PCB | LTE Band 12 699-716 MHz | NA | NA | 0.51 | NA | NA |
| DSS | Bluetooth 2402-2480 MHz | NA | NA | 0.00 | NA | NA |
| DTS | WLAN 2401-2495 MHz | NA | NA | 0.00 | NA | NA |
| Simultaneous Results | | NA | NA | 1.20 | NA | NA |

2 GENERAL INFORMATION

2.1 CLIENT INFORMATION

Name: Riskband LLC
 Address: 1000 Johnnie Dodds Blvd., Suite 103-312
 City, State, Zip, Country: Mt. Pleasant, South Carolina, 29464, USA

2.2 TEST LABORATORY

Name: SGS North America, Inc.
 Address: 620 Old Peachtree Road NW, Suite 100
 City, State, Zip, Country: Suwanee, GA 30024, USA

2.3 GENERAL INFORMATION OF EUT

Equipment Under Test: Wearable Emergency Device
 Host Model Name: ARIES
 Host Model Number: RBD30060
 Hardware Version: 3.5.1
 Software Version: NA
 Firmware Version: 350
 Sample ID Number: SAR Radiated:

221003-00001
 221003-00002
 221003-00003
 221003-00004
 220924-00003

Conducted:
 220512-00013

Frequencies of Operation: 1850 – 1910 MHz (LTE Band 2)
 1710 – 1755 MHz (LTE Band 4)
 824 – 849 MHz (LTE Band 5)
 699 – 716 MHz (LTE Band 12)

LTE Uplink Modulations: QPSK, 16QAM
 Bluetooth Modulations: $\pi/4$ DQPSK, 8DPSK
 WLAN: DSSS, OFDM
 Maximum Conducted Power: See Section 2.4 of this report

Battery Model: CND-783287P (Shenzhen Chanda Energy Co., Ltd.)
 Bluetooth/WLAN Antenna Model: A5839 (Antenova)
 *Antenna Gain: 2.4GHz: 2.1 dBi
 Cellular Antenna Model: P822601 (Ethertronics)
 *Antenna Gain: Band 2: 4.4 dBi
 Band 4: 4.4 dBi
 Band 5: 2.6 dBi
 Band 12: 2.6 dBi

Dates of testing: 14-20 October 2022

**Data was not measured by SGS laboratory and therefore not responsible for accuracy. Data obtained via customer, specification sheet, previous regulatory filing or other.*

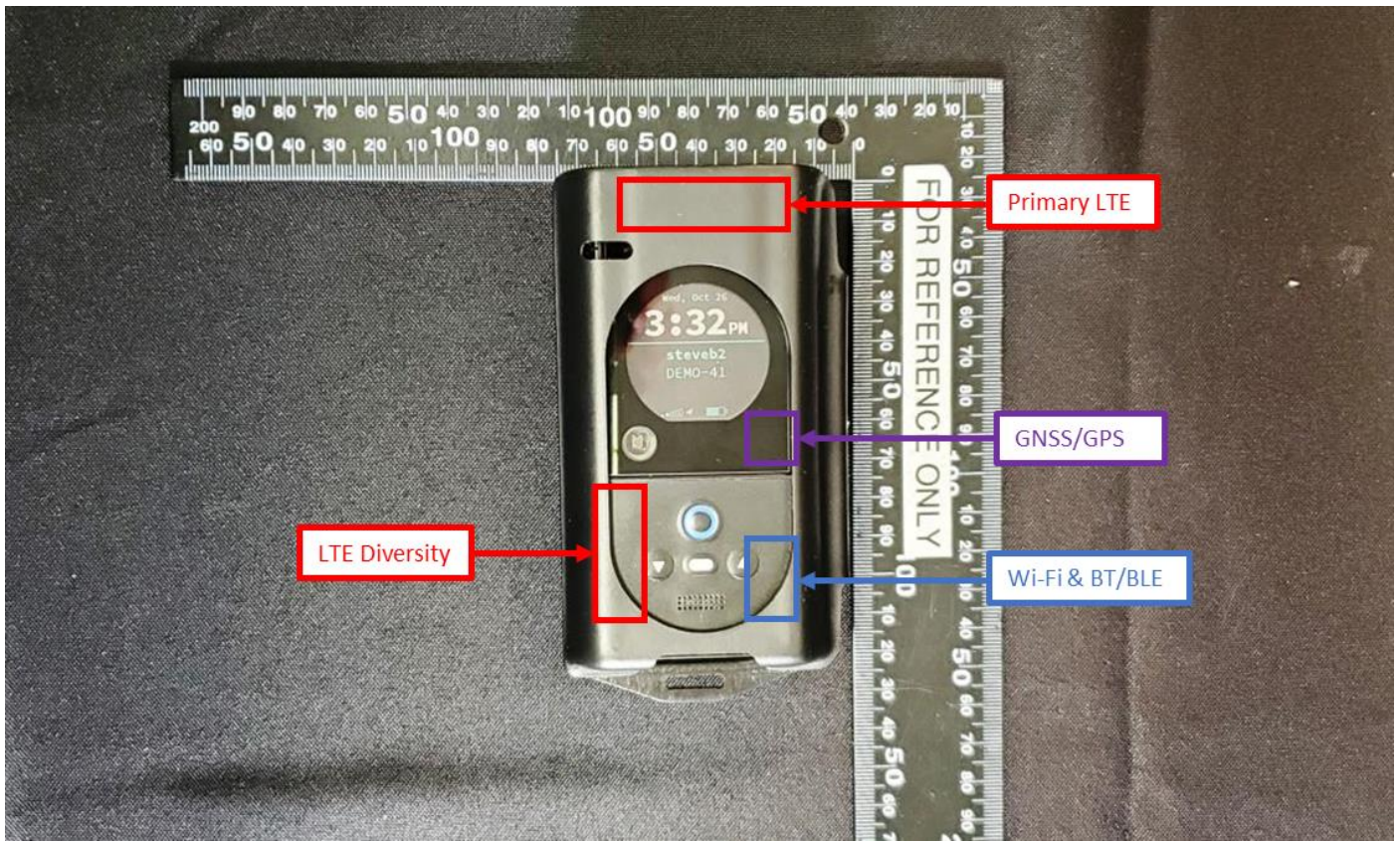
2.4 TX FREQUENCY BANDS

| Band / Mode | | Maximum Power dBm | Frequency Range MHz | Channel Bandwidths MHz |
|-------------------|----------------------|-------------------|---------------------|------------------------|
| Band 2 | LTE | 21.86 | 1850 to 1910 | 1.4, 3, 5, 10, 15, 20 |
| Band 4 | LTE | 22.24 | 1710 to 1755 | 1.4, 3, 5, 10, 15, 20 |
| Band 5 | LTE | 23.21 | 824 to 849 | 1.4, 3, 5, 10 |
| Band 12 | LTE | 22.0 | 699 to 716 | 1.4, 3, 5, 10 |
| WLAN 2.4GHz | 802.11 b/g/n | 22.09 | 2401 to 2495 | 22, 20 |
| Bluetooth Classic | GFSK/8DPSK | 11.35 | 2400 to 2483 | 1 |
| Bluetooth LE | GFSK (1M Data Rates) | 8.5 | 2402bt to 2480 | 2 |

2.5 EQUIPMENT UNDER TEST

| | |
|-----------------------------|---|
| Device Description | Wearable Emergency Device |
| Device Category | Portable |
| Stage of production | Pre-production unit |
| Intended Use | EUT is worn on the body with holster |
| Antennas | BLE/WLAN: A5839 (Antenova) LTE: P822601 (Ethertronics) |
| Battery | CND-783287P (Shenzhen Chanda Energy Co., Ltd.) |
| Optional Accessories | Holster |

2.6 ANTENNA LOCATION



2.7 TEST METHODOLOGY AND REFERENCED STANDARDS AND GUIDELINES

Tests were conducted in accordance with the following applicable standards and guidelines.

IEC62209-1528 Edition 1.0 2020-10, Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices –

Part 1528: Human models, instrumentation, and procedures
 (Frequency Range of 4 MHz to 10 GHz)

Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, FCC, Washington, D.C.: 1997.

RSS – 102 Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus

FCC KDB – 447498 D01 General RF Exposure Guidance v06

FCC KDB – 941225 D05 SAR for LTE Devices v02r05

FCC KDB – 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04

FCC KDB – 248227 D01 802.11 WiFi SAR v02r02

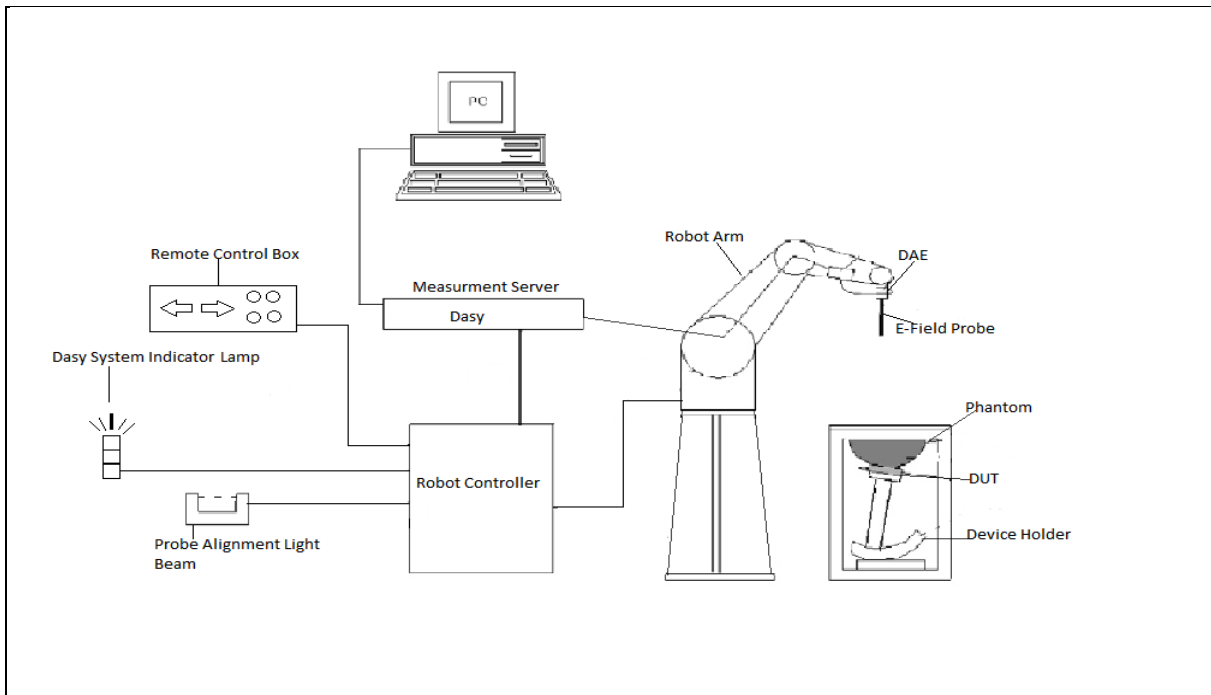
FCC KDB – 996369 D01 Module Equip Auth Guide v02

3 TEST EQUIPMENT AND MEASUREMENT SYSTEM

3.1 TEST EQUIPMENT

| Equipment | Model | Manufacturer | Asset | Cal Date | Cal Due Date |
|----------------------------|----------------|--------------------------|---------|-------------|--------------|
| SIGNAL GENERATOR (TS8997) | SMB 100A | ROHDE & SCHWARZ | B094876 | 30-Nov-2020 | 30-Nov-2023 |
| POWER METER | E4419B | AGILENT | B079628 | 22-Sep-2021 | 30-Nov-2022 |
| POWER SENSOR | 8481A | AGILENT | B079679 | 22-Sep-2021 | 30-Nov-2022 |
| POWER SENSOR | 8481A | AGILENT | B086132 | 29-Sep-2021 | 30-Nov-2022 |
| DIRECTIONAL COUPLER | 778D | HEWLETT PACKARD | B087456 | 28-Jul-2020 | 28-Jul-2023 |
| ATTENUATOR, 20DB 100W | BW-20N100W+ | MINI-CIRCUITS | 20143 | 16-Mar-2022 | 16-Mar-2023 |
| ATTENUATOR, 10DB | BW-N10W20+ | MINI-CIRCUITS | 17023 | 9-Aug-2022 | 9-Aug-2023 |
| RF CABLE NM TO NM, 0.01- | 90-088-079 | TELEDYNE STORM MICROWAVE | 20134 | 16-Mar-2022 | 16-Mar-2023 |
| RF CABLE RIGHT ANGLE NM | 90-076-020 | TELEDYNE STORM MICROWAVE | 20133 | 16-Mar-2022 | 16-Mar-2023 |
| RF CABLE | CBL-25FT-NMNM | MINI-CIRCUITS | B094941 | 25-Aug-2022 | 25-Aug-2023 |
| SIGNAL GENERATOR (TS8997) | SMB 100A | ROHDE & SCHWARZ | B094876 | 30-Nov-2020 | 30-Nov-2023 |
| POWER AMPLIFIER 0.8-2.7GHZ | AS0827-55 | MILMEGA | B079820 | 1-Jul-2011 | CNR |
| SAR DOSIMETRIC E-FIELD | ES3DV3 | SPEAG | B079815 | 1-Mar-2022 | 1-Mar-2023 |
| TEMPERATURE AND HUMIDITY | ITHX-SD | OMEGA | B079586 | 14-May-2022 | 14-May-2023 |
| DIGITAL THERMOMETER | DTM3000SPEZIAL | LKM ELECTRONIC | B079798 | 7-Dec-2021 | 7-Dec-2022 |
| DIELECTRIC PROBE KIT | DAK-3.5 | SPEAG | B079797 | 28-Feb-2022 | 28-Feb-2023 |
| SAR DIPOLE | D1750V2 | SPEAG | B079806 | 25-Jan-2022 | 25-Jan-2023 |
| SAR DIPOLE | D2450V2 | SPEAG | B079805 | 18-Jan-2022 | 18-Jan-2023 |
| SAR DIPOLE | D835V2 | SPEAG | B079808 | 18-Jan-2022 | 18-Jan-2023 |
| SAR DIPOLE | D1900V2 | SPEAG | B079809 | 18-Jan-2022 | 18-Jan-2023 |
| SAR DIPOLE | D750V3 | SPEAG | B085750 | 18-Jan-2022 | 18-Jan-2023 |
| 85MHZ-14GHZ VECTOR | R140 | COPPER MOUNTAIN | 20149 | 16-Mar-2022 | 16-Mar-2023 |
| POWER AMPLIFIER 0.8-2.7GHZ | AS0827-55 | MILMEGA | B079820 | 1-Jul-2011 | CNR |

3.2 MEASUREMENT SYSTEM BLOCK DIAGRAM



The Dasy52 SAR test system version 52.10 (4) consists of:

- 1 TX60L Stäubli Robot and system controller cabinet
- 1 Electro Optical Converter mounted on robot's arm
- Robot stand
- Robot remote controller
- Light beam for E-field probe alignment
- DASY5 measurement server
- SAM Twin Phantom or Oval
- Hand-Held/ Laptop device holder
- PC with DASY5 software
- Data Acquisition Electronics (DAE)
- System validation dipole kit
- HBBL600-10000V6 Head Simulating Liquid
- E-field probe
- Warning lamps

3.3 MEASUREMENT SYSTEM PHANTOM DESCRIPTIONS

| Type | Dimensions | Frequency Range | Dielectric (ϵ_r) | Loss Tangent | Material Thickness |
|-----------|--------------|-----------------|-----------------------------|--------------|--------------------|
| Oval ELI5 | 600x400x190 | 300MHz - 6GHz | 4 ± 1 | <0.05 | 2mm \pm 0.2mm |
| SAM | Human Shaped | | < 5 | | |

3.4 MEASUREMENT SYSTEM TISSUE DESCRIPTION

Broadband tissue simulation liquid HBBL600-10000V6 was used for SAR testing. Manufactured by Speag and main ingredients are water and oil.

Dielectric Assessment Kit (DAK) was used to measure tissue parameters daily.

4 SYSTEM VALIDATIONS AND VERIFICATIONS

4.1 SYSTEM VALIDATIONS

System validations were completed following KDB 856664 and are summarized in table below.

| Dates | Probe Calibration Point | | Probe SN | Measured Tissue Parameters | | Validation | | |
|-----------|-------------------------|------|----------|----------------------------|--------------|-------------|-----------|----------|
| | | | | σ | ϵ_r | Sensitivity | Linearity | Isotropy |
| CW | | | | | | | | |
| 3/8/2022 | Head | 750 | 3272 | 0.923047 | 39.4451 | Pass | Pass | Pass |
| 3/9/2022 | Head | 900 | 3272 | 0.97708 | 38.6292 | Pass | Pass | Pass |
| 3/9/2022 | Head | 1750 | 3272 | 1.34674 | 36.8909 | Pass | Pass | Pass |
| 3/9/2022 | Head | 1900 | 3272 | 1.42739 | 36.6829 | Pass | Pass | Pass |
| LTE | | | | | | | | |
| 3/10/2022 | Head | 750 | 3272 | 0.875522 | 38.4611 | Pass | Pass | Pass |
| 3/10/2022 | Head | 900 | 3272 | 0.925784 | 38.003 | Pass | Pass | Pass |
| 3/10/2022 | Head | 1750 | 3272 | 1.30322 | 36.3868 | Pass | Pass | Pass |
| 3/10/2022 | Head | 1900 | 3272 | 1.38611 | 36.1598 | Pass | Pass | Pass |
| 802.11 | | | | | | | | |
| 5/4/2022 | Head | 2450 | 3272 | 1.81295 | 39.0094 | Pass | Pass | Pass |

4.2 SYSTEM VERIFICATIONS

System verification is required for the probe calibration points used to measure SAR. The measured results are normalized to 1W and compared to the results from applicable dipole calibration certificates. Results must be within $\pm 10\%$ of target values.

System verifications were completed within 24 hours of SAR testing and results are summarized in table below.

| Date | Dipole | Zoom SAR (1g) | Zoom SAR Normalized (1W) | 1W Dipole Target SAR (1g) | % Error from Validation Target |
|------------|---------|---------------|--------------------------|---------------------------|--------------------------------|
| 10/14/2022 | D1900V2 | 1.94 | 38.80 | 39.60 | -2.02% |
| 10/17/2022 | D1750V2 | 1.79 | 35.80 | 36.30 | -1.38% |
| 10/17/2022 | D835V2 | 0.49 | 9.84 | 9.80 | 0.41% |
| 10/18/2022 | D750V3 | 0.42 | 8.32 | 8.50 | -2.12% |
| 10/20/2022 | D2450V2 | 2.78 | 55.60 | 52.30 | 6.31% |

4.3 TISSUE MEASUREMENT RESULTS

The tissue dielectric parameters were measured at the beginning of the test or within 24 hours of the first SAR test. All measured dielectric parameters are within $\pm 10\%$ tolerance values shown in Table 1. The $\pm 10\%$ tolerance is permitted when using SAR correction formula for deviation from target dielectric values.

| Date | Frequency MHz | Measured | | Target | | Deviation | |
|------------|------------------|------------------------------|--------------------------|------------------------------|--------------------------|------------------------------|--------------------------|
| | | Permittivity ϵ_r | Conductivity σ | Permittivity ϵ_r | Conductivity σ | Permittivity ϵ_r | Conductivity σ |
| 10/14/2022 | 1880 | 36.27 | 1.40 | 40.00 | 1.40 | -3.73 | 0.00 |
| | 1900 | 36.24 | 1.41 | 40.00 | 1.40 | -3.76 | 0.01 |
| | 1909.3 | 36.22 | 1.41 | 40.00 | 1.40 | -3.78 | 0.01 |
| | 1850.7 | 36.31 | 1.38 | 40.00 | 1.40 | -3.69 | -0.02 |
| 10/17/2022 | 835 | 38.23 | 0.90 | 41.55 | 0.91 | -3.32 | -0.01 |
| | 836.5 | 38.23 | 0.90 | 41.55 | 0.91 | -3.32 | -0.01 |
| | 848.3 | 38.19 | 0.90 | 41.51 | 0.92 | -3.31 | -0.01 |
| | 1750 | 36.37 | 1.31 | 40.08 | 1.37 | -3.71 | -0.06 |
| | 1754.3 | 36.36 | 1.31 | 40.07 | 1.37 | -3.71 | -0.06 |
| 10/18/2022 | 750 | 39.23 | 0.89 | 41.94 | 0.89 | -2.71 | 0.00 |
| | 699.7 | 39.46 | 0.88 | 42.20 | 0.89 | -2.75 | -0.01 |
| | 715.3 | 39.39 | 0.88 | 42.12 | 0.89 | -2.73 | -0.01 |
| 10/20/2022 | 2450 | 35.95 | 1.74 | 39.20 | 1.80 | -3.25 | -0.06 |
| | 2412 | 36.00 | 1.72 | 39.27 | 1.77 | -3.27 | -0.05 |
| | 2480 | 35.90 | 1.76 | 39.16 | 1.83 | -3.26 | -0.07 |

5 ENVIRONMENTAL CONDITIONS

The SAR Laboratory is controlled environment. The ambient temperature is maintained between 18 – 25°C and tissue temperatures are monitored to ensure $\pm 2^\circ\text{C}$ is maintained otherwise tissue parameters are remeasured. The tissue level is confirmed to be $\geq 15\text{cm}$.

| Date | Tissue Type | Tissue Temp. Range C° | Lab Temp. Range C° |
|------------|-------------|-----------------------|--------------------|
| 10/14/2022 | Head | 21.58 – 22.08 | 23.1 – 23.9 |
| 10/17/2022 | Head | 21.39 – 21.78 | 22.9 – 23.5 |
| 10/18/2022 | Head | 20.77 – 22.39 | 22.5-22.8 |
| 10/20/2022 | Head | 20.87 – 21.52 | 23.1 – 23.8 |

RF ambient noise is monitored by conducting a noise cube scan during system verification. A spectrum analyzer is used to monitor unwanted signals that might influence measurements.

The tissue depth was verified to be $\geq 15\text{cm}$.

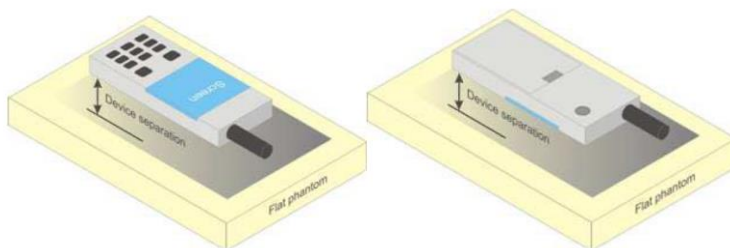
6 MEASUREMENT PROCEDURES

6.1 HEAD CONFIGURATION

NA

6.2 BODY-WORN CONFIGURATION

A body-worn device is a battery-operated wireless device with the ability to transmit while mounted on the body using a strap approved by the device manufacturer. Photos of EUT are included in Part 2 of this report.



6.3 LIMB-WORN CONFIGURATION

NA

6.4 SAR PROCEDURES SETUP

- **Area Scan** is used for a fast scan in two dimensions to find the area of high field values before any finer measurement around the hotspot. The routines implemented in the DASY5 software can find the maximum locations.
- **Zoom Scan** is used to assess the peak spatial values within a cubic averaging volume containing 1g and 10g of simulated tissue. The scan measures points within the cube. Once measurement is done the values are displayed within the job's label.
- **Power Drift** will measure the field at the same location as the most recent power reference measurement within the same procedure and settings. The Power Drift Measurement gives the field difference in dB.
- **Z- Scan** measure points along a straight vertical line. The lines run along the z-axis of a one-dimension grid.

The area and zoom scan resolutions specified in KDB 865664 are in table below.

| Description | | ≤ 3 GHZ | > 3 GHZ |
|--|------------------------------------|---|---|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | | 5 mm ± 1 mm | $\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm ± 0.5 mm |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location | | 30° ± 1° | 20° ± 1° |
| Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area} | | ≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm | 3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm |
| | | When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device. | |
| Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom} | | ≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm* | 3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm* |
| Maximum zoom scan spatial resolution, normal to phantom surface | uniform grid: $\Delta z_{Zoom}(n)$ | ≤ 5 mm | 3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm |
| <p>Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.</p> <p>* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</p> | | | |

7 LTE OUTPUT POWER MEASUREMENTS

The following tables include LTE power measurement configurations as defined in KBD 941225 D05.

7.1 LTE BAND 2 (1850-1910 MHz)

| Test Band: 2 _ 20MHz Bandwidth | | | | | |
|--------------------------------|---------------|--------|-----------------------|--------------|--------------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 19.36 | 20.01 | 19.35 |
| | | 50 | 18.69 | 19.7 | 18.96 |
| | | 99 | 19.31 | 19.01 | 19.54 |
| | 50 | 0 | 18.53 | 19.93 | 18.65 |
| | | 25 | 18.44 | 19.67 | 18.69 |
| | | 50 | 18.86 | 19.17 | 18.91 |
| 100 | 0 | 18.73 | 19.55 | 18.89 | |
| 16QAM | 1 | 0 | 19.53 | 19.74 | 19.26 |
| | | 50 | 18.86 | 19.56 | 18.65 |
| | | 99 | 19.49 | 18.76 | 19.16 |
| | 50 | 0 | 18.38 | 19.37 | 18.47 |
| | | 25 | 18.23 | 19.01 | 18.27 |
| | | 50 | 18.34 | 18.67 | 18.53 |
| | 100 | 0 | 18.49 | 18.9 | 18.31 |

| Test Band: 2 _ 5MHz Bandwidth | | | | | |
|-------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 19.02 | 20.31 | 19.58 |
| | | 13 | 18.47 | 20.03 | 19.67 |
| | | 24 | 18.42 | 19.7 | 19.35 |
| | 12 | 0 | 18.43 | 19.93 | 19.2 |
| | | 6 | 18.27 | 19.7 | 19.27 |
| | | 13 | 18.06 | 19.51 | 19.15 |
| 25 | 0 | 18.19 | 19.58 | 19.24 | |
| 16QAM | 1 | 0 | 18.85 | 19.83 | 18.81 |
| | | 13 | 18.5 | 19.67 | 18.99 |
| | | 24 | 18.2 | 19.37 | 18.69 |
| | 12 | 0 | 18.28 | 19.16 | 18.76 |
| | | 6 | 18.17 | 19.11 | 18.86 |
| | | 13 | 18.04 | 19.05 | 18.79 |
| | 25 | 0 | 18.16 | 19.08 | 18.85 |

| Test Band: 2 _ 15MHz Bandwidth | | | | | |
|--------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 19.29 | 20.31 | 19.02 |
| | | 38 | 18.61 | 20.06 | 19.29 |
| | | 74 | 19.14 | 19.33 | 19.67 |
| | 36 | 0 | 18.66 | 20 | 18.88 |
| | | 18 | 18.39 | 19.73 | 18.95 |
| | | 39 | 18.63 | 19.47 | 19.07 |
| 75 | 0 | 18.59 | 19.73 | 18.95 | |
| 16QAM | 1 | 0 | 19.51 | 20.09 | 19.37 |
| | | 38 | 18.67 | 19.82 | 19.21 |
| | | 74 | 19.02 | 19.38 | 19.59 |
| | 36 | 0 | 18.45 | 19.43 | 18.63 |
| | | 18 | 18.15 | 19.2 | 18.5 |
| | | 39 | 18.29 | 18.9 | 18.73 |
| | 75 | 0 | 18.36 | 19.22 | 18.5 |

| Test Band: 2 _ 3MHz Bandwidth | | | | | |
|-------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 19.19 | 20.45 | 19.9 |
| | | 7 | 18.93 | 20.35 | 19.72 |
| | | 14 | 18.7 | 20.1 | 19.52 |
| | 8 | 0 | 18.69 | 19.99 | 19.55 |
| | | 4 | 18.64 | 19.94 | 19.39 |
| | | 7 | 18.55 | 19.96 | 19.32 |
| 15 | 0 | 18.64 | 19.99 | 19.46 | |
| 16QAM | 1 | 0 | 19 | 20.06 | 19.84 |
| | | 7 | 18.76 | 19.89 | 19.73 |
| | | 14 | 18.48 | 19.78 | 19.52 |
| | 8 | 0 | 18.45 | 19.09 | 19.08 |
| | | 4 | 18.42 | 19.08 | 18.93 |
| | | 7 | 18.37 | 19 | 18.96 |
| | 15 | 0 | 18.34 | 19.06 | 18.8 |

| Test Band: 2 _ 10MHz Bandwidth | | | | | |
|--------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 18.39 | 20.81 | 19.49 |
| | | 25 | 19.14 | 20.59 | 19.86 |
| | | 49 | 19.04 | 19.9 | 19.83 |
| | 25 | 0 | 19.13 | 20.26 | 19.2 |
| | | 13 | 18.73 | 20.11 | 19.3 |
| | | 25 | 18.69 | 20.04 | 19.6 |
| 50 | 0 | 18.87 | 20.13 | 19.23 | |
| 16QAM | 1 | 0 | 18.48 | 19.55 | 18.65 |
| | | 25 | 18.15 | 19.29 | 19.07 |
| | | 49 | 18.02 | 18.89 | 19.03 |
| | 25 | 0 | 18.02 | 19.24 | 18.31 |
| | | 13 | 17.47 | 19 | 18.42 |
| | | 25 | 17.41 | 18.65 | 18.63 |
| | 50 | 0 | 17.51 | 19 | 18.44 |

| Test Band: 2 _ 1.4MHz Bandwidth | | | | | |
|---------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 19.27 | 20.51 | 19.71 |
| | | 2 | 19.2 | 20.46 | 19.67 |
| | | 5 | 19.08 | 20.42 | 19.58 |
| | 3 | 0 | 19.19 | 20.44 | 19.83 |
| | | 2 | 19.12 | 20.41 | 19.76 |
| | | 3 | 19.11 | 20.44 | 19.69 |
| 6 | 0 | 18.87 | 19.94 | 19.43 | |
| 16QAM | 1 | 0 | 18.99 | 19.94 | 19.56 |
| | | 2 | 18.98 | 19.85 | 19.46 |
| | | 5 | 18.88 | 19.86 | 19.42 |
| | 3 | 0 | 19.03 | 20.05 | 19.37 |
| | | 2 | 19 | 19.92 | 19.35 |
| | | 3 | 18.96 | 19.9 | 19.36 |
| | 6 | 0 | 18.5 | 19.02 | 19.01 |

7.2 LTE BAND 4 (1710-1755 MHz)

| Test Band: 4 _ 20MHz Bandwidth | | | | | |
|--------------------------------|---------------|--------|-----------------------|-------|--------------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 20.91 | 20.86 | 21.06 |
| | | 50 | 20.56 | 20.36 | 20.37 |
| | | 99 | 20.39 | 20.4 | 20.73 |
| | 50 | 0 | 20.38 | 20.31 | 20.41 |
| | | 25 | 20.06 | 20.02 | 20.04 |
| | | 50 | 19.98 | 20.06 | 20.13 |
| 100 | 0 | 20.2 | 20.18 | 20.17 | |
| 16QAM | 1 | 0 | 20.97 | 20.75 | 20.85 |
| | | 50 | 20.38 | 20.13 | 20.17 |
| | | 99 | 20.43 | 20.33 | 20.36 |
| | 50 | 0 | 19.36 | 19.59 | 19.66 |
| | | 25 | 18.98 | 19.23 | 19.26 |
| | | 50 | 19.14 | 19.36 | 19.36 |
| | 100 | 0 | 19.18 | 19.48 | 19.44 |

| Test Band: 4 _ 5MHz Bandwidth | | | | | |
|-------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 21.15 | 21.02 | 21.17 |
| | | 13 | 21.08 | 20.99 | 21.27 |
| | | 24 | 21.02 | 20.93 | 21.25 |
| | 12 | 0 | 20.08 | 20.31 | 20.43 |
| | | 6 | 20 | 20.24 | 20.34 |
| | | 13 | 20.03 | 20.23 | 20.37 |
| 25 | 0 | 20.07 | 20.26 | 20.38 | |
| 16QAM | 1 | 0 | 20.19 | 20.43 | 20.17 |
| | | 13 | 20.17 | 20.37 | 20.11 |
| | | 24 | 20.09 | 20.35 | 20.1 |
| | 12 | 0 | 19.06 | 19.43 | 19.45 |
| | | 6 | 19.04 | 19.4 | 19.41 |
| | | 13 | 19.08 | 19.41 | 19.47 |
| | 25 | 0 | 19.09 | 19.34 | 19.41 |

| Test Band: 4 _ 15MHz Bandwidth | | | | | |
|--------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 21.09 | 21.08 | 21.13 |
| | | 38 | 20.75 | 20.39 | 20.72 |
| | | 74 | 20.68 | 20.7 | 20.9 |
| | 36 | 0 | 20.25 | 20.35 | 20.51 |
| | | 18 | 20 | 20.24 | 20.17 |
| | | 39 | 20.05 | 20.17 | 20.34 |
| 75 | 0 | 20.11 | 20.26 | 20.24 | |
| 16QAM | 1 | 0 | 20.87 | 20.83 | 21.16 |
| | | 38 | 20.3 | 20.28 | 20.61 |
| | | 74 | 20.4 | 20.49 | 20.89 |
| | 36 | 0 | 19.35 | 19.59 | 19.62 |
| | | 18 | 19.07 | 19.35 | 19.34 |
| | | 39 | 19.11 | 19.4 | 19.43 |
| | 75 | 0 | 19.21 | 19.46 | 19.42 |

| Test Band: 4 _ 3MHz Bandwidth | | | | | |
|-------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 20.94 | 20.87 | 21.26 |
| | | 7 | 21.09 | 20.91 | 21.43 |
| | | 14 | 21.07 | 20.9 | 21.35 |
| | 8 | 0 | 20.01 | 20.22 | 20.38 |
| | | 4 | 19.95 | 20.23 | 20.35 |
| | | 7 | 19.98 | 20.22 | 20.34 |
| 15 | 0 | 19.95 | 20.26 | 20.31 | |
| 16QAM | 1 | 0 | 20.14 | 20.46 | 20.82 |
| | | 7 | 20.09 | 20.31 | 20.82 |
| | | 14 | 20.1 | 20.39 | 20.68 |
| | 8 | 0 | 19.14 | 19.34 | 19.61 |
| | | 4 | 19.13 | 19.32 | 19.57 |
| | | 7 | 19.12 | 19.3 | 19.57 |
| | 15 | 0 | 19.07 | 19.32 | 19.43 |

| Test Band: 4 _ 10MHz Bandwidth | | | | | |
|--------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 21.15 | 21.06 | 21.15 |
| | | 25 | 21.08 | 20.74 | 21.02 |
| | | 49 | 21.15 | 20.82 | 21.15 |
| | 25 | 0 | 20.2 | 20.35 | 20.39 |
| | | 13 | 20.04 | 20.23 | 20.29 |
| | | 25 | 20.02 | 20.24 | 20.3 |
| 50 | 0 | 20.1 | 20.3 | 20.4 | |
| 16QAM | 1 | 0 | 20.46 | 20.74 | 21.06 |
| | | 25 | 20.18 | 20.41 | 20.79 |
| | | 49 | 20.18 | 20.51 | 20.84 |
| | 25 | 0 | 19.3 | 19.44 | 19.48 |
| | | 13 | 19.15 | 19.33 | 19.36 |
| | | 25 | 19.12 | 19.33 | 19.4 |
| | 50 | 0 | 19.2 | 19.38 | 19.45 |

| Test Band: 4 _ 1.4MHz Bandwidth | | | | | |
|---------------------------------|---------------|--------|-----------------------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | |
| | Size | Offset | LCH | MCH | HCH |
| QPSK | 1 | 0 | 21.08 | 20.96 | 21.26 |
| | | 2 | 21.11 | 20.94 | 21.32 |
| | | 5 | 21.05 | 20.89 | 21.35 |
| | 3 | 0 | 21.07 | 20.99 | 21.37 |
| | | 2 | 21.07 | 21.01 | 21.37 |
| | | 3 | 21.02 | 20.93 | 21.35 |
| 6 | 0 | 19.93 | 20.23 | 20.32 | |
| 16QAM | 1 | 0 | 20.21 | 20.47 | 20.48 |
| | | 2 | 20.15 | 20.4 | 20.38 |
| | | 5 | 20.18 | 20.41 | 20.41 |
| | 3 | 0 | 20.08 | 20.27 | 20.48 |
| | | 2 | 20.03 | 20.25 | 20.52 |
| | | 3 | 20.02 | 20.25 | 20.48 |
| | 6 | 0 | 19.01 | 19.27 | 19.45 |

7.3 LTE BAND 5 (824-849 MHz)

| Test Band: 5 _ 10MHz Bandwidth | | | | | | |
|--------------------------------|---------------|--------|-----------------------|--------------|--------------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | | |
| | Size | Offset | LCH | MCH | HCH | |
| QPSK | 1 | 0 | 21.32 | 21.64 | 21.12 | |
| | | 25 | 21.6 | 20.97 | 21.21 | |
| | | 49 | 21.38 | 20.91 | 21.37 | |
| | 25 | 0 | 20.57 | 20.53 | 20.59 | |
| | | 13 | 20.5 | 20.38 | 20.55 | |
| | | 25 | 20.44 | 20.47 | 20.49 | |
| | 50 | 0 | 20.47 | 20.43 | 20.55 | |
| | 16QAM | 1 | 0 | 20.72 | 20.89 | 21.06 |
| | | | 25 | 20.65 | 20.61 | 20.99 |
| 49 | | | 20.57 | 20.7 | 20.87 | |
| 25 | | 0 | 19.76 | 19.61 | 19.74 | |
| | | 13 | 19.64 | 19.5 | 19.67 | |
| | | 25 | 19.58 | 19.58 | 19.68 | |
| 50 | | 0 | 19.62 | 19.48 | 19.66 | |

| Test Band: 5 _ 3MHz Bandwidth | | | | | | |
|-------------------------------|---------------|--------|-----------------------|-------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | | |
| | Size | Offset | LCH | MCH | HCH | |
| QPSK | 1 | 0 | 21.41 | 21.53 | 21.5 | |
| | | 7 | 21.54 | 21.44 | 21.52 | |
| | | 14 | 21.6 | 21.31 | 21.47 | |
| | 8 | 0 | 20.6 | 20.51 | 20.58 | |
| | | 4 | 20.55 | 20.38 | 20.56 | |
| | | 7 | 20.59 | 20.41 | 20.57 | |
| | 15 | 0 | 20.63 | 20.39 | 20.55 | |
| | 16QAM | 1 | 0 | 20.99 | 20.92 | 20.65 |
| | | | 7 | 20.78 | 20.9 | 20.66 |
| 14 | | | 20.97 | 20.78 | 20.63 | |
| 8 | | 0 | 19.73 | 19.69 | 19.71 | |
| | | 4 | 19.7 | 19.7 | 19.66 | |
| | | 7 | 19.69 | 19.67 | 19.7 | |
| 15 | | 0 | 19.65 | 19.56 | 19.62 | |

| Test Band: 5 _ 5MHz Bandwidth | | | | | | |
|-------------------------------|---------------|--------|-----------------------|-------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | | |
| | Size | Offset | LCH | MCH | HCH | |
| QPSK | 1 | 0 | 21.5 | 21.58 | 21.43 | |
| | | 13 | 21.67 | 21.33 | 21.64 | |
| | | 24 | 21.5 | 21.02 | 21.58 | |
| | 12 | 0 | 20.58 | 20.46 | 20.55 | |
| | | 6 | 20.51 | 20.38 | 20.52 | |
| | | 13 | 20.6 | 20.45 | 20.55 | |
| | 25 | 0 | 20.5 | 20.36 | 20.56 | |
| | 16QAM | 1 | 0 | 20.68 | 20.55 | 20.41 |
| | | | 13 | 20.66 | 20.51 | 20.38 |
| 24 | | | 20.6 | 20.56 | 20.44 | |
| 12 | | 0 | 19.63 | 19.73 | 19.64 | |
| | | 6 | 19.67 | 19.69 | 19.63 | |
| | | 13 | 19.76 | 19.73 | 19.68 | |
| 25 | | 0 | 19.63 | 19.56 | 19.61 | |

| Test Band: 5 _ 1.4MHz Bandwidth | | | | | | |
|---------------------------------|---------------|--------|-----------------------|-------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | | |
| | Size | Offset | LCH | MCH | HCH | |
| QPSK | 1 | 0 | 21.44 | 21.58 | 21.58 | |
| | | 2 | 21.44 | 21.52 | 21.6 | |
| | | 5 | 21.62 | 21.56 | 21.61 | |
| | 3 | 0 | 21.51 | 21.57 | 21.52 | |
| | | 2 | 21.51 | 21.54 | 21.52 | |
| | | 3 | 21.59 | 21.56 | 21.42 | |
| | 6 | 0 | 20.57 | 20.51 | 20.62 | |
| | 16QAM | 1 | 0 | 20.71 | 20.69 | 20.72 |
| | | | 2 | 20.69 | 20.66 | 20.69 |
| 5 | | | 20.77 | 20.65 | 20.85 | |
| 3 | | 0 | 20.61 | 20.43 | 20.6 | |
| | | 2 | 20.6 | 20.45 | 20.61 | |
| | | 3 | 20.58 | 20.43 | 20.57 | |
| 6 | | 0 | 19.65 | 19.5 | 19.53 | |

7.4 LTE BAND 12 (699-716 MHz)

| Test Band: 12 _ 10MHz Bandwidth | | | | | | |
|---------------------------------|---------------|--------|-----------------------|-------|--------------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | | |
| | Size | Offset | LCH | MCH | HCH | |
| QPSK | 1 | 0 | 21.15 | 21.39 | 21.53 | |
| | | 25 | 21.55 | 21.54 | 20.99 | |
| | | 49 | 21.37 | 20.99 | 21.38 | |
| | 25 | 0 | 20.48 | 20.57 | 20.64 | |
| | | 13 | 20.41 | 20.47 | 20.52 | |
| | | 25 | 20.43 | 20.53 | 20.51 | |
| | 50 | 0 | 20.48 | 20.48 | 20.47 | |
| | 16QAM | 1 | 0 | 20.53 | 20.97 | 20.99 |
| | | | 25 | 20.6 | 20.86 | 20.85 |
| 49 | | | 20.42 | 20.94 | 20.92 | |
| 25 | | 0 | 19.65 | 19.73 | 19.66 | |
| | | 13 | 19.56 | 19.5 | 19.55 | |
| | | 25 | 19.65 | 19.61 | 19.58 | |
| 50 | | 0 | 19.49 | 19.63 | 19.65 | |

| Test Band: 12 _ 5MHz Bandwidth | | | | | | |
|--------------------------------|---------------|--------|-----------------------|-------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | | |
| | Size | Offset | LCH | MCH | HCH | |
| QPSK | 1 | 0 | 21.09 | 21.64 | 21.13 | |
| | | 13 | 21.36 | 21.58 | 21.15 | |
| | | 24 | 21.46 | 21.33 | 21.58 | |
| | 12 | 0 | 20.45 | 20.46 | 20.59 | |
| | | 6 | 20.43 | 20.42 | 20.56 | |
| | | 13 | 20.43 | 20.41 | 20.52 | |
| | 25 | 0 | 20.44 | 20.38 | 20.56 | |
| | 16QAM | 1 | 0 | 20.53 | 20.34 | 20.7 |
| | | | 13 | 20.58 | 20.22 | 20.62 |
| 24 | | | 20.46 | 20.24 | 20.65 | |
| 12 | | 0 | 19.58 | 19.55 | 19.88 | |
| | | 6 | 19.57 | 19.57 | 19.8 | |
| | | 13 | 19.57 | 19.59 | 19.75 | |
| 25 | | 0 | 19.56 | 19.56 | 19.74 | |

| Test Band: 12 _ 3MHz Bandwidth | | | | | | |
|--------------------------------|---------------|--------|-----------------------|-------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | | |
| | Size | Offset | LCH | MCH | HCH | |
| QPSK | 1 | 0 | 21.35 | 21.58 | 21.31 | |
| | | 7 | 21.45 | 21.62 | 21.41 | |
| | | 14 | 21.41 | 21.54 | 21.59 | |
| | 8 | 0 | 20.39 | 20.52 | 20.53 | |
| | | 4 | 20.46 | 20.47 | 20.46 | |
| | | 7 | 20.47 | 20.49 | 20.49 | |
| | 15 | 0 | 20.51 | 20.44 | 20.55 | |
| | 16QAM | 1 | 0 | 20.45 | 20.96 | 20.57 |
| | | | 7 | 20.62 | 20.89 | 20.55 |
| 14 | | | 20.75 | 20.85 | 20.67 | |
| 8 | | 0 | 19.56 | 19.72 | 19.84 | |
| | | 4 | 19.56 | 19.66 | 19.79 | |
| | | 7 | 19.56 | 19.7 | 19.77 | |
| 15 | | 0 | 19.57 | 19.62 | 19.61 | |

| Test Band: 12 _ 1.4MHz Bandwidth | | | | | | |
|----------------------------------|---------------|--------|-----------------------|-------|-------|-------|
| Modulation | RB Allocation | | Conducted Power (dBm) | | | |
| | Size | Offset | LCH | MCH | HCH | |
| QPSK | 1 | 0 | 21.27 | 21.38 | 21.43 | |
| | | 2 | 21.25 | 21.47 | 21.54 | |
| | | 5 | 21.34 | 21.53 | 21.7 | |
| | 3 | 0 | 21.21 | 21.47 | 21.48 | |
| | | 2 | 21.22 | 21.48 | 21.64 | |
| | | 3 | 21.24 | 21.45 | 21.54 | |
| | 6 | 0 | 20.41 | 20.48 | 20.51 | |
| | 16QAM | 1 | 0 | 20.48 | 20.73 | 20.7 |
| | | | 2 | 20.51 | 20.7 | 20.74 |
| 5 | | | 20.61 | 20.66 | 20.76 | |
| 3 | | 0 | 20.46 | 20.54 | 20.66 | |
| | | 2 | 20.43 | 20.56 | 20.79 | |
| | | 3 | 20.39 | 20.55 | 20.74 | |
| 6 | | 0 | 19.44 | 19.49 | 19.64 | |

8 WLAN OUTPUT POWER MEASUREMENTS

| Test Mode | Frequency (MHz) | Measured Peak Output Power (dBm) |
|---------------|-----------------|----------------------------------|
| 802.11b | 2412 | 16.41 |
| | 2437 | 16.19 |
| | 2462 | 16.20 |
| 802.11g | 2412 | 21.75 |
| | 2437 | 21.46 |
| | 2462 | 22.09 |
| 802.11n(HT20) | 2412 | 21.59 |
| | 2437 | 21.70 |
| | 2462 | 21.81 |

Note:

802.11B attenuation set to 24. 802.11g and 802.11n(HT20) attenuation set to 10.

9 BT OUTPUT POWER MEASUREMENTS

| Test Mode | Frequency (MHz) | Measured Peak Output Power (dBm) |
|-----------|-----------------|----------------------------------|
| GFSK | 2402 | 7.94 |
| | 2441 | 8.04 |
| | 2480 | 8.62 |
| 8DPSK | 2402 | 10.53 |
| | 2441 | 10.85 |
| | 2480 | 11.35 |

Note:

Power set to 5.

10 BLE OUTPUT POWER MEASUREMENTS

| Test Mode | Frequency (MHz) | Measured Peak Output Power (dBm) |
|-----------|-----------------|----------------------------------|
| 1M | 2402 | 8.04 |
| | 2440 | 8.48 |
| | 2480 | 8.5 |

Note:

Power set to 5.

Bluetooth LE was not tested for SAR due to the higher power with Bluetooth Classic.

11 SAR RESULTS

Scaled SAR results include scaling up to maximum tune-up tolerance and negative drift.

LTE SAR Test Reduction Procedure:

KDB 941225 D05 SAR for LTE Devices:

Section 4.1 note 3 - For LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing; therefore, the requirement for H, M, and L channels may not fully apply.

Section 5.2.1 - Start with the largest channel bandwidth then measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle, and lower edge of each required test channel. When the reported SAR is $\leq 50\%$ of applied limit, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is $> 90\%$ of applied limit, SAR is required for all three RB offset configurations for that required test channel.

Section 5.2.2 - The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.

Section 5.2.3 - For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations, and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are $\leq 50\%$ of limit. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is $> 90\%$ of limit, the remaining required test channels must also be tested.

Section 5.2.4 - For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in 5.2.1, 5.2.2, and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is $> \frac{1}{2}$ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is $> 90\%$ of limit.

Section 5.3 - For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in 5.2 to determine the channels and RB configurations that need SAR testing, then only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is $> \frac{1}{2}$ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration, or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg. The equivalent channel configuration for the RB allocation, RB offset and modulation, etc., is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth. For example, 50 RB in 10 MHz channel bandwidth does not apply to 5 MHz channel bandwidth; therefore, this cannot be tested in the smaller channel bandwidth. However, 50% RB allocation in 10 MHz channel bandwidth is equivalent to 100% RB allocation in 5 MHz channel bandwidth; therefore, these are the equivalent configurations to be compared to determine the specific channel and configuration in the smaller channel bandwidth that need SAR testing.

11.1 LTE BAND 2 (1850-1910 MHz)

| Test Position | Test Mode | Channel | Frequency | Top (mm) | Middle (mm) | Bottom (mm) | Max Power (dBm) | Meas. Power (dBm) | Power Scaling factor | Drift (dB) | Drift Scaling factor | Mes. SAR 1g | Mes. SAR 10g | Scaled SAR 1g | Scaled SAR 10g | Plot No. |
|---------------|----------------------------------|---------|-----------|----------|-------------|-------------|-----------------|-------------------|----------------------|------------|----------------------|-------------|--------------|---------------|----------------|----------|
| Back | 20MHz BW 1 RB Low Offset | 18900 | 1880 | 13 | 0 | 11 | 21.86 | 20.01 | 1.53 | -0.39 | 1.09 | 0.716 | 0.749 | 1.20 | 1.25 | 1 |
| Back | 20MHz BW 1 RB Low Offset | 18607 | 1850.7 | 13 | 0 | 11 | 21.86 | 19.36 | 1.78 | -0.11 | 1.03 | 0.332 | 0.202 | 0.61 | 0.37 | |
| Back | 20MHz BW 1 RB Low Offset | 19193 | 1909.3 | 13 | 0 | 11 | 21.86 | 19.54 | 1.71 | 0 | 1.00 | 0.573 | 0.347 | 0.98 | 0.59 | |
| Back | 20MHz BW 50 RB Low Offset | 18900 | 1880 | 13 | 0 | 11 | 21.86 | 19.93 | 1.56 | -0.25 | 1.06 | 0.45 | 0.273 | 0.74 | 0.45 | |
| Back | 20MHz BW 100 RB Low Offset | 18900 | 1880 | 13 | 0 | 11 | 21.86 | 19.55 | 1.70 | -0.3 | 1.07 | 0.517 | 0.31 | 0.94 | 0.57 | |

Additional testing not required per LTE SAR Test Reduction Procedure.

11.2 LTE BAND 4 (1710-1755 MHz)

| Test Position | Test Mode | Channel | Frequency | Top (mm) | Middle (mm) | Bottom (mm) | Max Power (dBm) | Meas. Power (dBm) | Power Scaling factor | Drift (dB) | Drift Scaling factor | Mes. SAR 1g | Mes. SAR 10g | Scaled SAR 1g | Scaled SAR 10g | Plot No. |
|---------------|---------------------------------|---------|-----------|----------|-------------|-------------|-----------------|-------------------|----------------------|------------|----------------------|-------------|--------------|---------------|----------------|----------|
| Back | 20MHz BW 1 RB Low Offset | 20393 | 1754.3 | 13 | 0 | 11 | 22.24 | 21.06 | 1.31 | -0.25 | 1.06 | 0.546 | 0.348 | 0.76 | 0.48 | 2 |
| Back | 20MHz BW 50 RB Low Offset | 20393 | 1754.3 | 13 | 0 | 11 | 22.24 | 20.41 | 1.52 | -0.07 | 1.02 | 0.364 | 0.23 | 0.56 | 0.36 | |

Additional testing not required per LTE SAR Test Reduction Procedure.

11.3 LTE BAND 5 (824-849 MHz)

| Test Position | Test Mode | Channel | Frequency | Top (mm) | Middle (mm) | Bottom (mm) | Max Power (dBm) | Meas. Power (dBm) | Power Scaling factor | Drift (dB) | Drift Scaling factor | Mes. SAR 1g | Mes. SAR 10g | Scaled SAR 1g | Scaled SAR 10g | Plot No. |
|---------------|---------------------------------|---------|-----------|----------|-------------|-------------|-----------------|-------------------|----------------------|------------|----------------------|-------------|--------------|---------------|----------------|----------|
| Back | 10MHz BW 1 RB Low Offset | 20525 | 836.5 | 13 | 0 | 11 | 23.21 | 21.64 | 1.44 | -0.02 | 1.00 | 0.325 | 0.235 | 0.47 | 0.34 | |
| Back | 10MHz BW 25 RB Low Offset | 20643 | 848.3 | 13 | 0 | 11 | 23.21 | 20.59 | 1.83 | -0.04 | 1.01 | 0.31 | 0.223 | 0.57 | 0.41 | 3 |

Additional testing not required per LTE SAR Test Reduction Procedure.

11.4 LTE BAND 12 (699-716 MHz)

| Test Position | Test Mode | Channel | Frequency | Top (mm) | Middle (mm) | Bottom (mm) | Max Power (dBm) | Meas. Power (dBm) | Power Scaling factor | Drift (dB) | Drift Scaling factor | Mes. SAR 1g | Mes. SAR 10g | Scaled SAR 1g | Scaled SAR 10g | Plot No. |
|---------------|---------------------------------|---------|-----------|----------|-------------|-------------|-----------------|-------------------|----------------------|------------|----------------------|-------------|--------------|---------------|----------------|----------|
| Back | 10MHz BW 1 RB Mid Offset | 23017 | 699.7 | 13 | 0 | 11 | 22 | 21.55 | 1.11 | -0.24 | 1.06 | 0.397 | 0.289 | 0.47 | 0.34 | |
| Back | 10MHz BW 25 RB Low Offset | 23173 | 715.3 | 13 | 0 | 11 | 22 | 20.64 | 1.37 | 0 | 1.00 | 0.371 | 0.27 | 0.51 | 0.37 | 4 |

Additional testing not required per LTE SAR Test Reduction Procedure.

11.5 WLAN 2.4GHZ

| Test Position | Test Mode | Channel | Frequency | Top (mm) | Middle (mm) | Bottom (mm) | Max Power (dBm) | Meas. Power (dBm) | Power Scaling factor | Drift (dB) | Drift Scaling factor | Mes. SAR 1g | Mes. SAR 10g | Scaled SAR 1g | Scaled SAR 10g | Plot No. |
|---------------|------------------|---------|-----------|----------|-------------|-------------|-----------------|-------------------|----------------------|------------|----------------------|-------------|--------------|---------------|----------------|----------|
| Back | 802.11b 1Mbps | 1 | 2412 | 13 | 0 | 11 | 16.41 | 16.41 | 1.00 | -0.89 | 1.23 | 0.00246 | 0.000962 | 0.00 | 0.00 | 5 |

SAR not required for OFDM: 802.11b adjusted SAR $\leq 1.2W/kg$

11.6 BLUETOOTH CLASSIC

| Test Position | Test Mode | Channel | Frequency | Top (mm) | Middle (mm) | Bottom (mm) | Max Power (dBm) | Meas. Power (dBm) | Power Scaling factor | Drift (dB) | Drift Scaling factor | Mes. SAR 1g | Mes. SAR 10g | Scaled SAR 1g | Scaled SAR 10g | Plot No. |
|---------------|-----------------------|---------|-----------|----------|-------------|-------------|-----------------|-------------------|----------------------|------------|----------------------|-------------|--------------|---------------|----------------|----------|
| Back | 8DPSK 3Mbps DH5 | 78 | 2480 | 13 | 0 | 11 | 11.35 | 11.35 | 1.00 | -5.04 | 3.19 | 7.96E-05 | 9.15E-06 | 0.00 | 0.00 | 6 |

12 VARIABILITY ASSESSMENT

Per the guidelines in KDB 865664 SAR variability assessment is not required because SAR results are below 50% threshold of applicable limit.

13 SIMULTANEOUS TRANSMISSION

This device does support simultaneous transmissions.

| | | Freq (MHz) | CH | Modulation | SAR |
|-------------------------------|------|------------|-------|------------|------|
| Body | WWAN | 1880 | 18900 | QPSK | 1.20 |
| | WLAN | 2412 | 1 | DSSS | 0.00 |
| Total Simultaneous SAR | | | | | 1.20 |

14 SYSTEM UNCERTAINTY

A System uncertainty analysis per KDB 865664 is not required since reported SAR is < 93.75% of applicable limit.

Per guidelines of ISO 17025 and RSS - 102 reported system uncertainty is required and therefore included in Part 3.

15 REVISION HISTORY

| Revision Level | Description of changes | Revision Date |
|----------------|---|------------------|
| 0 | Initial release | 15 November 2022 |
| 1 | Cover Page - Module FCC/IC IDs were added. Section 2.3 – Bluetooth/WLAN antenna gain was added. Section 2.7 – KDB 996369 D01 v02 was added. | 26 January 2023 |
| | | |