



HAC T-Coil Test Report

For

Applicant Name: Xwireless LLC
Address: 11565 Old Georgetown Road, Rockville, MD, USA
EUT Name: Mobile Phone
Brand Name: Vortex
Model Number: HD67

Issued By

Company Name: BTF Testing Lab (Shenzhen) Co., Ltd.
Address: F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

Report Number: BTF231220R00502
Test Standards: ANSI C63.19-2019 FCC 47 CFR §20.19 KDB 285076 D01v06
KDB 285076 D02v04 KDB 285076 D03v01r05
FCC ID: 2ADLJ-HD67

Test Conclusion: Pass
Test Date: 2024-1-25 to 2024-1-26
Date of Issue: 2024-1-29

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Date: 2024-1-29

Approved By: Ryan.CJ
Ryan.CJ / EMC Manager

Date: 2024-1-29



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| Revision History | | |
|------------------|---|-------------------|
| Version | Issue Date | Revisions Content |
| R_V0 | 2024-1-29 | Original |
| | | |
| <i>Note:</i> | <i>Once the revision has been made, then previous versions reports are invalid.</i> | |

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1. Introduction

1.1 Identification of Testing Laboratory

| | |
|---------------|---|
| Company Name: | BTF Testing Lab (Shenzhen) Co., Ltd. |
| Address: | F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China |
| Phone Number: | +86-0755-23146130 |
| Fax Number: | +86-0755-23146130 |

1.2 Identification of the Responsible Testing Location

| | |
|-------------------------|---|
| Test Location: | BTF Testing Lab (Shenzhen) Co., Ltd. |
| Address: | F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China |
| Description: | All measurement facilities used to collect the measurement data are located at F101,201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China |
| FCC Registration Number | 518915 |
| Designation Number | CN1330 |

1.3 Laboratory Condition

| | |
|----------------------------|--------------------|
| Ambient Temperature: | 21°C to 25°C |
| Ambient Relative Humidity: | 48% to 59% |
| Ambient Pressure: | 100 kPa to 102 kPa |

1.4 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2. Product Information

2.1 Application Information

| | |
|---------------|---|
| Company Name: | Xwireless LLC |
| Address: | 11565 Old Georgetown Road, Rockville, MD, USA |

2.2 Manufacturer Information

| | |
|---------------|---|
| Company Name: | Xwireless LLC |
| Address: | 11565 Old Georgetown Road, Rockville, MD, USA |

2.3 Factory Information

| | |
|---------------|--|
| Company Name: | ZTECH COMMUNICATION(SZ) CO LTD |
| Address: | FL 7 BLOCK D BAO' AN ZHIGU INNOVATION PARK YIN' TIAN ROAD NO. 4 XI' XIANG STR' BAO' AN DISTRICT SZ CHINA |

2.4 General Description of Equipment under Test (EUT)

| | |
|-----------------------|--------------------|
| EUT Name | Mobile Phone |
| Under Test Model Name | HD67 |
| Sample No. | BTFSN231220005-1/4 |

2.5 Equipment under Test Ancillary Equipment

| | | |
|-----------------------|----------------------|---------|
| Ancillary Equipment 1 | Rechargeable Battery | |
| | Capacity | 4000mAh |
| | Rated Voltage | 3.85V |

2.6 Technical Information

| | |
|-----------------------------------|--|
| Network and Wireless connectivity | 2G Network GSM/GPRS 850/1900 3G Network WCDMA/HSDPA/HSUPA Band 2/5 4G Network FDD LTE Band 2/4/5/12/13/25/26/66/71 TDD LTE Band 41 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) BT (EDR+BLE) |
|-----------------------------------|--|

2.7 Air Interfaces / Bands Indicating Operating Modes

| Air Interface | Band | Type | Simultaneous Transmitter | Name of Service |
|---------------|------------|------|--------------------------|-----------------|
| GSM | 850 | VO | WLAN & BT | CMRS Voice |
| | 1900 | VO | WLAN & BT | CMRS Voice |
| | GPRS/EGPRS | DT | N/A | N/A |
| WCDMA | Band II | VO | WLAN & BT | CMRS Voice |
| | Band V | VO | WLAN & BT | CMRS Voice |
| | HSPA | DT | N/A | N/A |
| LTE | Band 2 | VD | WLAN & BT | VoLTE |
| | Band 4 | VD | WLAN & BT | VoLTE |
| | Band 5 | VD | WLAN & BT | VoLTE |
| | Band 12 | VD | WLAN & BT | VoLTE |
| | Band 13 | VD | WLAN & BT | VoLTE |
| | Band 25 | VD | WLAN & BT | VoLTE |
| | Band 26 | VD | WLAN & BT | VoLTE |
| | Band 41 | VD | WLAN & BT | VoLTE |
| | Band 66 | VD | WLAN & BT | VoLTE |
| | Band 71 | VD | WLAN & BT | VoLTE |
| WLAN | 2.4g & 5g | DT | WWAN | N/A |
| BT | 2450 | DT | WWAN | N/A |

NA: Not Applicable
VO: Voice Only
VD: CMRS and IP Voice Service over Digital Transport
DT: Digital Transport Only

* HAC Rating was not based on concurrent voice and data modes; Noncurrent mode was found to represent worst case rating for both M and T rating.

3. Summary of Test Results

3.1 Test Standards

| No. | Identity | Document Title |
|-----|----------------------|--|
| 1 | ANSI C63.19-2019 | American National Standard for Methods of Measurement of Compatibility between Wireless Communication Devices and Hearing Aids |
| 2 | FCC 47 CFR §20.19 | Hearing Aid Compatible Mobile Headsets |
| 3 | KDB 285076 D01v06 | Equipment Authorization Guidance for Hearing Aid Compatibility |
| 4 | KDB 285076 D02v04 | Guidance for performing T-Coil tests for air interfaces supporting voice over IP (e.g., LTE and WiFi) to support CMRS based telephone services |
| 5 | KDB 285076 D03v01r05 | Hearing aid compatibility frequently asked questions |

3.2 Attestation of Testing Summary

| Frequency Band | T-rating |
|--|----------|
| GSM 850 | T4 |
| GSM 1900 | T4 |
| WCDMA II | T4 |
| WCDMA V | T4 |
| LTE Band 2 | T4 |
| LTE Band 4 | T4 |
| LTE Band 5 | T4 |
| LTE Band 12 | T4 |
| LTE Band 13 | T4 |
| LTE Band 25 | T4 |
| LTE Band 26 | T4 |
| LTE Band 41 | T3 |
| LTE Band 66 | T4 |
| LTE Band 71 | T4 |
| HAC Rate Category: T3 | |

Notes:

1. It is compliance with HAC limits for this device that specified in FCC 47 CFR Part 20.19 and ANSI C63.19.
2. When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% risk level.

4. Test Uncertainty

| UNCERTAINTY EVALUATION FOR AUDIO HAC MEASUREMENT | | | | | |
|---|------------|-------------|------------|------------------|-----------------|
| Uncertainty Component | Tol (+- %) | Prob. Dist. | Div. | Uncertainty (dB) | Uncertainty (%) |
| Measurement System | | | | | |
| RF reflections | 0.1 | R | $\sqrt{3}$ | 0.06 | |
| Acoustic noise | 0.1 | R | $\sqrt{3}$ | 0.06 | |
| Probe coil sensitivity | 0.49 | R | $\sqrt{3}$ | 0.28 | |
| Reference signal level | 0.25 | R | $\sqrt{3}$ | 0.14 | |
| Positioning accuracy | 0.4 | R | $\sqrt{3}$ | 0.23 | |
| Cable loss | 0.1 | N | 2 | 0.05 | |
| Frequency analyzer | 0.15 | R | $\sqrt{3}$ | 0.09 | |
| System repeatability | 0.2 | N | 1 | 0.20 | |
| Repeatability of the WD | 0.4 | N | 1 | 0.40 | |
| Combined Standard Uncertainty | | N | 1 | 0.61 | |
| Expanded uncertainty (confidence level of 95%,k = 2) | | N | K=2 | 1.22 | 15.05 |
| REPORTED Expanded uncertainty (confidence level of 95%, k = 2) | | N | K=2 | 1.20 | 15.00 |

5. Measurement System

5.1 Definition of Hearing Aid Compatibility (HAC)

The purpose of this standard is to establish categories for hearing aids and for WD (wireless communications devices) that can indicate to health care practitioners and hearing aid users which hearing aids are compatible with which WD, and to provide tests that can be used to assess the electromagnetic characteristics of hearing aids and WD and assign them to these categories. The various parameters required, in order to demonstrate compatibility and accessibility are measured. The design of the standard is such that when a hearing aid and WD achieve one of the categories specified, as measured by the methodology of this standard, the indicated performance is realized.

In order to provide for the usability of a hearing aid with a WD, several factors must be coordinated:

- a) Radio frequency (RF) measurements of the near-field electric and magnetic fields emitted by a WD to categorize these emissions for correlation with the RF immunity of a hearing aid.
- b) Magnetic field measurements of a WD emitted via the audio transducer associated with the T-coil mode of the hearing aid, for assessment of hearing aid performance.
- c) Measurements with the hearing aid and a simulation of the categorized WD T-coil emissions to assess the hearing aid RF immunity in the T-coil mode.

The WD radio frequency (RF) and audio band emissions are measured. Hence, the following are measurements made for the WD:

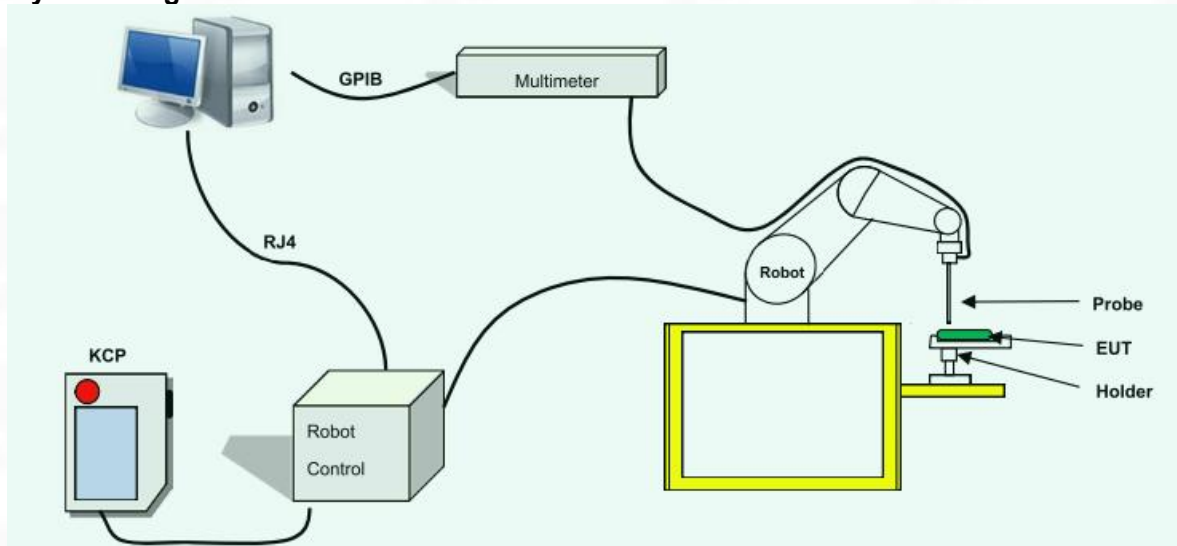
- a) RF E-Field emissions
- b) T-coil mode, magnetic signal strength in the audio band
- c) T-coil mode, magnetic signal and noise articulation index
- d) T-coil mode, magnetic signal frequency response through the audio band

Corresponding to the WD measurements, the hearing aid is measured for:

- a) RF immunity in microphone mode
- b) RF immunity in T-coil mode

5.2 MVG HAC System

MVG HAC System Diagram



5.2.1 Robot



A standard high precision 6-axis robot (Denso) with te aches pendant with Scanning System

- It must be able to scan all the volume of the phantom to evaluate the tridimensional distribution of SAR.
- Must be able to set the probe orthogonal of the surface of the phantom ($\pm 30^\circ$).
- Detects stresses on the probe and stop itself if necessary to keep the integrity of the probe.

5.2.2 T-coil Probe

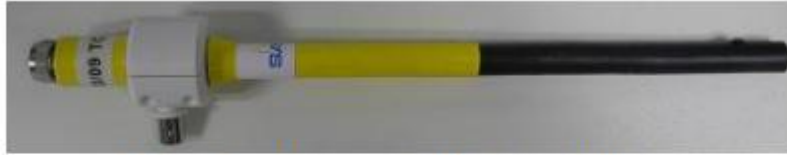


Figure 1 – MVG COMOHAC T-coil Probe

| | |
|---------------------|-----------------------------------|
| Coil Dimension | 6.55 mm length * 2.29 mm diameter |
| DC resistance | 860.6 Ω |
| Wire size | 51AWG |
| Inductance at 1 kHz | 132.1 mH at 1 kHz |

| Device Under Test | |
|--------------------------------|----------------------|
| Device Type | COMOHAC T-COIL PROBE |
| Manufacturer | MVG |
| Model | STCOIL |
| Serial Number | SN 07/17 TCP38 |
| Product Condition (new / used) | New |
| Frequency Range of Probe | 200-5000 Hz |

This probe is designed to fulfill ANSI recommendations for the measurement of audio frequency magnetic fields radiated by mobile phones. The T-Coil probe has two connectors:

- the 6 male wires connector enables to fix the probe on the robot
- the BNC connector enables to link the probe to the audio DAQ

This probe was designed for a 6-axis robot. The coil is oriented with a 45 degree angle so that used with a 6-axis robot, both radial and axial measurements can be performed with one probe.

5.2.3 TMFS

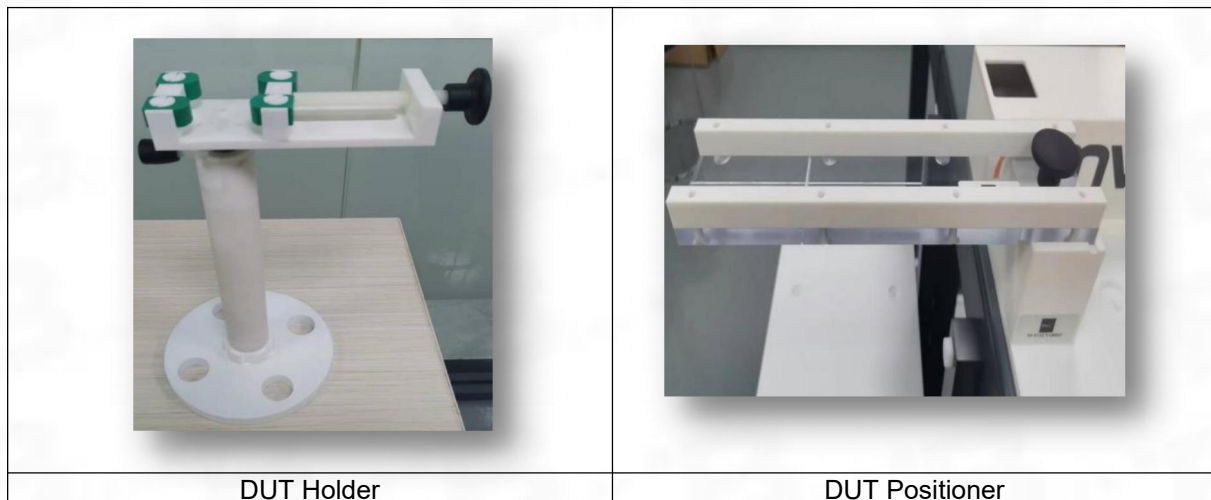


MVG COMOHAC Magnetic Simulator

| Device Under Test | |
|--------------------------------|----------------------------------|
| Device Type | COMOHAC Magnetic Field Simulator |
| Manufacturer | MVG |
| Model | STMFS |
| Serial Number | SN 13/22 TMFS30 |
| Product Condition (new / used) | New |
| Frequency Range | 200-5000 Hz |

All methods used to perform the measurements and calibrations comply with the ANSI C63.19. All measurements were performed with the TMFS in the standard device test configuration, with the TMFS in free space, 10 mm below the coil center.

5.2.4 Device Holder/DUT positioner



During test, use DUT positioner to check if the Speaker is aligned with the positioner center.

5.3 T-Coil Measurement Set-up

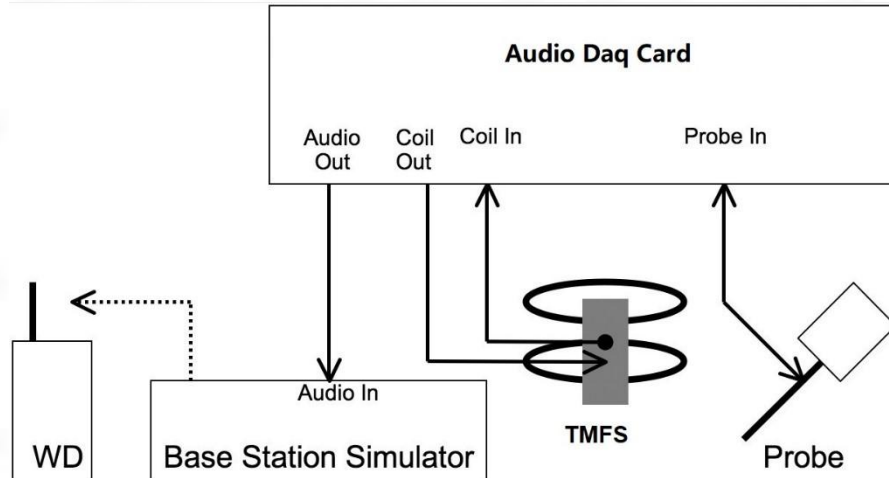


Fig. 2. T-coil signal measurement test setup

The sequence of the measurement is T-Coil testing procedure over a wireless communication device:

1. Confirm Geometry & signal check. Probe phantom alignment and check of accuracy.
2. Background noise measurement in the area of the WD.
3. Perform 50x50mm area scan with narrow band signal to determine ABM1, ABM2 and SNR for axial and radial orientation positions.
4. For Axial position, perform optimal SNR point measurement with a broadband signal – determine Frequency Response
5. Define the all applicable input audio level according to ANSI C63.19-2019 and KDB 285076 D02v03.

Note:

- #. The EUT do not use the special HAC SW.
- #. Setting the maximum volume for EUT during the measurement.
- #. For the measurement, it don't use the "post-test measurement processing of results".
- #. Per KDB 285076 D01v05, handsets that that have the ability to support concurrent connections using simultaneous transmissions shall be independently tested for each air interface/band given in ANSI C63.19-2019. At the present time ANSI C63.19 does not provide simultaneous transmission test procedures.

5.4 System Calibration

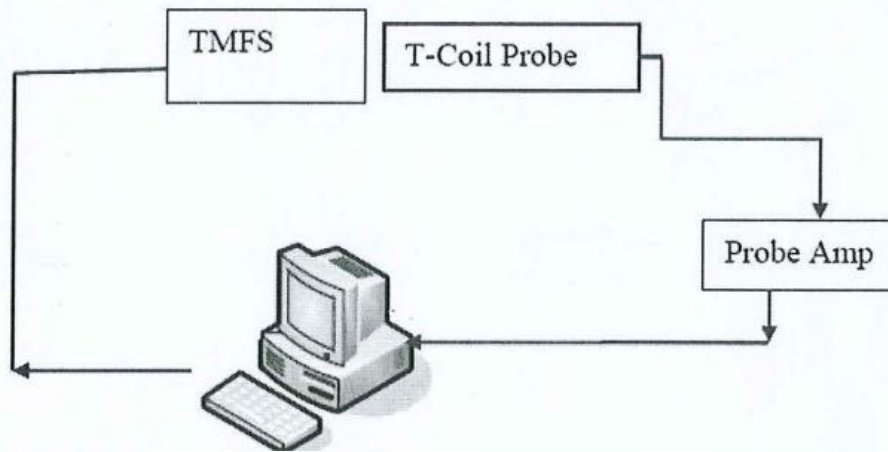
For correct and calibrated measurement of the voltages and ABM field, Denso will perform a calibration job as below.

for cable loss calibration:

- a) Use Audio Generator to determine the loss between Audio Generator and TMFS
- b) Audio output power to TMFS: 1025Hz, 500mV.
- c) adjust the audio signal output power to check the cable loss, and use front panel of Multimeter to show target level: 1025Hz, 500mW. (for example, set the audio output power to TMFS: 1025Hz, 0.5924V)

for system verification:

- a) Place TMFS properly—the distance between the center of TMFS and T-coil probe is 10mm.
- b) send the signal to TMFS, and use probe to measure the ABM1 over the TMFS.



6. HAC (T-Coil) Measurement

6.1 T-Coil Performance Requirements

In order to be rated for T-Coil use, a WD shall meet the requirements for signal level and signal quality contained in this part.

1) T-Coil coupling field intensity

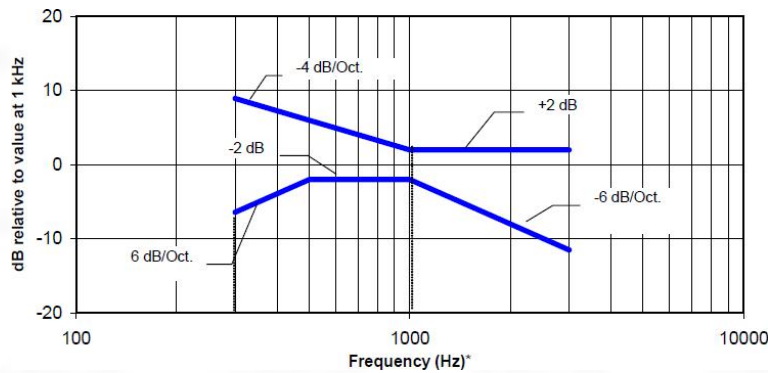
When measured as specified in ANSI C63.19, the T-Coil signal shall be ≥ -18 dB (A/m) at 1 kHz, in a 1/3 octave band filter for all orientations.

2) Frequency response

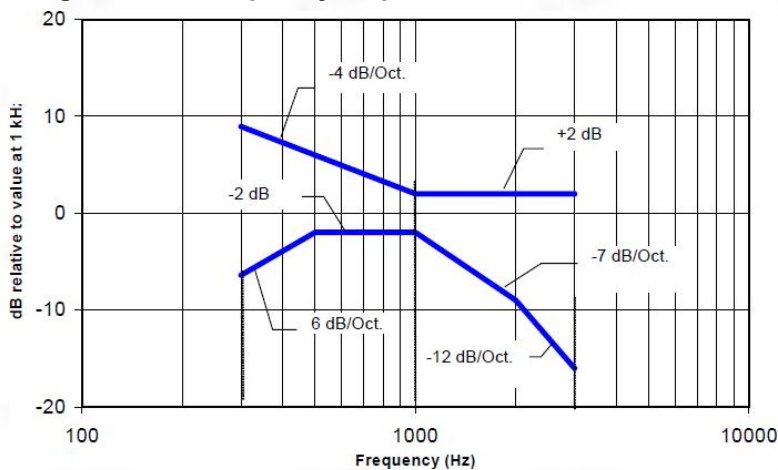
The frequency response of the axial component of the magnetic field, measured in 1/3 octave bands, shall follow the response curve specified in this sub-clause, over the frequency range 300 Hz to 3000 Hz.

Figure 1 and Figure 2 provide the boundaries for the specified frequency.

These response curves are for true field strength measurements of the T-Coil signal. Thus the 6 dB/octave probe response has been corrected from the raw readings.



Magnetic field frequency response for WDs with a field ≤ -15 dB (A/m) at 1 kHz



Magnetic field frequency response for WDs with a field that exceeds -15 dB(A/m) at 1 kHz

3) Signal quality

This part provides the signal quality requirement for the intended T-Coil signal from a WD. Only the RF immunity of the hearing aid is measured in T-Coil mode. It is assumed that a hearing aid can have no immunity to an interference signal in the audio band, which is the intended reception band for this mode. So, the only criteria that can be measured is the RF immunity in T-Coil mode. This is measured using the same procedure as for the audio coupling mode and at the same levels.

The worst signal quality of the three T-Coil signal measurements shall be used to determine the T-Coil mode category per Table 3

| Category | Telephone parameters WD signal quality [(signal + noise) – to – noise ratio in decibels] |
|-------------|--|
| Category T1 | 0 dB to 10 dB |
| Category T2 | 10 dB to 20 dB |
| Category T3 | 20 dB to 30 dB |
| Category T4 | > 30 dB |

Table 3: T-Coil signal quality categories

6.2 T-Coil measurement points and reference plane

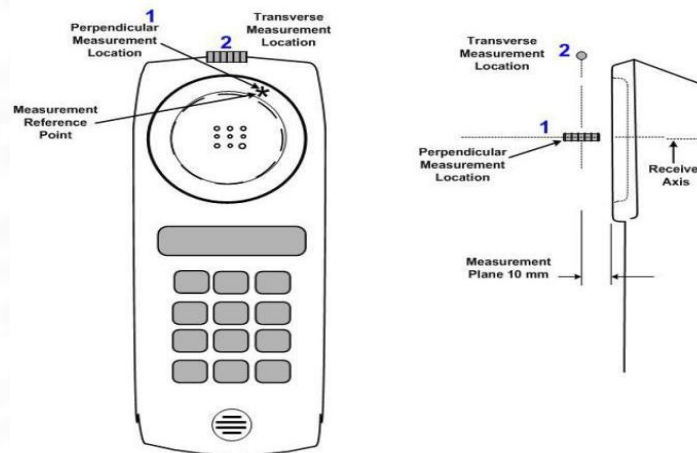
Figure 3 illustrate the references and reference plane that shall be used in a typical EUT emissions measurement. The principle of this section is applied to EUT with similar geometry. Please refer to Appendix C for the setup photographs.

The area is 5 cm by 5 cm.

The area is centered on the audio frequency output transducer of the EUT.

The area is in a reference plane, which is defined as the planar area that contains the highest point in the area of the phone that normally rests against the user's ear. It is parallel to the centerline of the receiver area of the phone and is defined by the points of the receiver-end of the EUT handset, which, in normal handset use, rest against the ear.

The measurement plane is parallel to, and 10 mm in front of, the reference plane.



Axis and planes for WD audio frequency magnetic field measurements

6.3 T-Coil Measurement Procedure

According to ANSI C63.19-2019, section 7.4:

This section describes the procedures used to measure the ABM (T-Coil) performance of the WD. In addition to measuring the absolute signal levels, the A-weighted magnitude of the unintended signal shall also be determined. To assure that the required signal quality is measured, the measurement of the intended signal and the measurement of the unintended signal must be made at the same location for each measurement position. In addition, the RF field strength at each measurement location must be at or below that required for the assigned category.

Measurements shall not include undesired properties from the WD's RF field; therefore, use of a coaxial connection to a base station simulator or nonradiating load might be necessary. However, even with a coaxial connection to a base station simulator or nonradiating load, there might still be RF leakage from the WD, which can interfere with the desired measurement. Premeasurement checks should be made to avoid this possibility. All measurements shall be performed with the WD operating on battery power with an appropriate normal speech audio signal input level given in ANSI C63.19-2019 Table 7.1. If the device display can be turned off during a phone call, then that may be done during the measurement as well.

Measurements shall be performed at two locations specified in ANSI C63.19-2019 A.3, with the correct probe orientation for a particular location, in a multistage sequence by first measuring the field intensity of the desired T-Coil signal (ABM1) that is useful to a hearing aid T-Coil. The undesired magnetic components (ABM2) shall be examined for each probe orientation to determine the possible effects from the WD display and battery current paths that might disrupt the desired T-Coil signal. The undesired magnetic signal (ABM2) must be measured at the same location as the desired ABM or T-Coil signal (ABM1), and the ratio of desired to undesired ABM signals must be calculated. For the perpendicular field location, only the ABM1 frequency response shall be determined in a third measurement stage.

The following steps summarize the basic test flow for determining ABM1 and ABM2. These steps assume that a sine-wave or narrowband 1/3 octave signal can be used for the measurement of ABM1.

- a) A validation of the test setup and instrumentation may be performed using a TMFS or Helmholtz coil. Measure the emissions and confirm that they are within the specified tolerance.
- b) Position the WD in the test setup and connect the WD RF connector to a base station simulator or a nonradiating load as shown in ANSI C63.19-2019 Figure 7.1 or Figure 7.2. Confirm that the equipment that requires calibration has been calibrated and that the noise level meets the requirements of ANSI C63.19-2019 clause 7.3.1.
- c) The drive level to the WD is set such that the reference input level specified in ANSI C63.19-2019 Table 7.1 is input to the base station simulator (or manufacturer's test mode equivalent) in the 1 kHz, 1/3 octave band. This drive level shall be used for the T-Coil signal test (ABM1) at $f = 1$ kHz. Either a sine wave at 1025 Hz or a voice-like signal, band-limited to the 1 kHz 1/3 octave, as defined in C63.19-2011 clause 7.4.2, shall be used for the reference audio signal. If interference is found at 1025 Hz, an alternative nearby reference audio signal frequency may be used.⁴⁷ The same drive level shall be used for the ABM1 frequency response measurements at each 1/3 octave band center frequency. The WD volume control may be set at any level up to maximum, provided that a signal at any frequency at maximum modulation would not result in clipping or signal overload.
- d) Determine the magnetic measurement locations for the WD device (A.3), if not already specified by the manufacturer, as described in C63.19-2011 clause 7.4.4.1.1 and 7.4.4.2.
- e) At each measurement location, measure and record the desired T-Coil magnetic signals (ABM1 at f_i) as specified in C63.19-2011 clause 7.4.4.2 in each ISO 266-1975 R10 standard 1/3 octave band. The desired audio band input frequency (f_i) shall be centered in each 1/3 octave band maintaining the same drive level as determined in item c) and the reading taken for that band.
- f) Equivalent methods of determining the frequency response may also be employed, such as fast Fourier transform (FFT) analysis using noise excitation or input-output comparison using simulated speech. The full-band integrated or half-band integrated probe output, as specified in D.9, may be used, as long as the

appropriate calibration curve is applied to the measured result, so as to yield an accurate measurement of the field magnitude. (The resulting measurement shall be an accurate measurement in dB A/m.)

- g) All measurements of the desired signal shall be shown to be of the desired signal and not of an undesired signal. This may be shown by turning the desired signal ON and OFF with the probe measuring the same location. If the scanning method is used, the scans shall show that all measurement points selected for the ABM1 measurement meet the ambient and test system noise criteria in C63.19-2011 clause 7.3.1.
- h) At the measurement location for each orientation, measure and record the undesired broadband audio magnetic signal (ABM2) as specified in C63.19-2011 clause 7.4.4.4 with no audio signal applied (or digital zero applied, if appropriate) using A-weighting⁴⁹ and the half-band integrator. Calculate the ratio of the desired to undesired signal strength (i.e., signal quality).
- i) Determine the category that properly classifies the signal quality, based on C63.19-2011 Table 8.5.

7. Max. Conducted RF Output Power

2G

| Mode: GSM850 | Maximum Tune-up(dBm) | Burst Average Power (dBm) | | |
|--------------|----------------------|---------------------------|----------|----------|
| | | CH128 | CH190 | CH251 |
| | | 824.2MHz | 836.6MHz | 848.8MHz |
| GSM | 31.50 | 31.14 | 31.09 | 30.80 |

| Mode: GSM1900 | Maximum Tune-up(dBm) | Burst Average Power (dBm) | | |
|---------------|----------------------|---------------------------|-----------|-----------|
| | | CH512 | CH661 | CH810 |
| | | 1850.2MHz | 1880.0MHz | 1909.8MHz |
| GSM | 29.50 | 29.07 | 29.05 | 29.02 |

3G

| Mode | Maximum Tune-up(dBm) | WCDMA Band II | | |
|-----------|----------------------|-----------------------|--------|--------------|
| | | Conducted Power (dBm) | | |
| | | CH9262 | CH9400 | CH9538 |
| RMC 12.2K | 22.00 | 21.73 | 21.64 | 21.79 |

| Mode | Maximum Tune-up(dBm) | WCDMA Band V | | |
|-----------|----------------------|-----------------------|--------------|--------|
| | | Conducted Power (dBm) | | |
| | | CH4132 | CH4183 | CH4233 |
| RMC 12.2K | 22.00 | 21.83 | 21.84 | 21.84 |

4G

Band 2

| Bandwidth | Modulation | RB allocation | RB offset | Maximum Tune-up(dBm) | 18700 | 18900 | 19100 | |
|-----------|------------|---------------|-----------|----------------------|--------------|-----------|-----------|-------|
| | | | | | 1860.0MHz | 1880.0MHz | 1900.0MHz | |
| 20MHz | QPSK | 1 | 0 | 23.00 | 22.86 | 22.52 | 22.75 | |
| | | | 50 | 23.00 | 22.63 | 22.51 | 22.66 | |
| | | | 99 | 23.00 | 22.63 | 22.71 | 22.81 | |
| | | 50 | 0 | 22.00 | 21.82 | 21.55 | 21.68 | |
| | | | 25 | 22.00 | 21.70 | 21.61 | 21.79 | |
| | | | 50 | 22.00 | 21.82 | 21.68 | 21.62 | |
| | 16QAM | 1 | 0 | 22.00 | 21.73 | 21.67 | 21.78 | |
| | | | 50 | 0 | 23.00 | 22.21 | 21.73 | 22.52 |
| | | | | 50 | 23.00 | 22.02 | 21.63 | 22.56 |
| | | 99 | | 23.00 | 22.02 | 21.72 | 22.56 | |
| | | 50 | 0 | 21.50 | 21.00 | 20.78 | 20.84 | |
| | | | 25 | 21.00 | 20.98 | 20.77 | 20.73 | |
| 50 | 21.00 | | 20.93 | 20.76 | 20.80 | | | |
| 100 | 0 | 21.00 | 20.85 | 20.77 | 20.84 | | | |

Band 4

| Bandwidth | Modulation | RB allocation | RB offset | Maximum Tune-up(dBm) | 20050 | 20175 | 20300 | |
|-----------|------------|---------------|-----------|----------------------|--------------|-----------|-----------|-------|
| | | | | | 1720.0MHz | 1732.5MHz | 1745.0MHz | |
| 20MHz | QPSK | 1 | 0 | 23.50 | 22.96 | 23.09 | 23.12 | |
| | | | 50 | 23.50 | 22.93 | 23.13 | 23.00 | |
| | | | 99 | 23.50 | 23.17 | 23.11 | 22.93 | |
| | | 50 | 0 | 22.50 | 21.99 | 22.16 | 22.09 | |
| | | | 25 | 22.50 | 21.98 | 22.15 | 22.08 | |
| | | | 50 | 22.50 | 22.09 | 22.05 | 22.13 | |
| | 16QAM | 100 | 0 | 22.50 | 21.98 | 22.15 | 22.05 | |
| | | | 1 | 0 | 23.00 | 22.38 | 22.21 | 22.90 |
| | | | | 50 | 23.00 | 22.41 | 22.22 | 22.83 |
| | | 99 | | 23.00 | 22.49 | 22.14 | 22.84 | |
| | | 50 | 0 | 21.50 | 21.31 | 21.29 | 21.12 | |
| | | | 25 | 21.50 | 21.25 | 21.29 | 21.14 | |
| 50 | 21.50 | | 21.26 | 21.28 | 21.19 | | | |
| 100 | 0 | 21.50 | 21.19 | 21.19 | 21.20 | | | |

Band 5

| Bandwidth | Modulation | RB allocation | RB offset | Maximum Tune-up(dBm) | 20450 | 20525 | 20600 | |
|-----------|------------|---------------|-----------|----------------------|----------|--------------|----------|-------|
| | | | | | 829.0MHz | 836.5MHz | 844.0MHz | |
| 10MHz | QPSK | 1 | 0 | 23.00 | 22.53 | 22.41 | 22.40 | |
| | | | 25 | 22.50 | 22.34 | 22.43 | 22.47 | |
| | | | 49 | 23.00 | 22.44 | 22.81 | 22.50 | |
| | | 25 | 0 | 22.00 | 21.84 | 21.40 | 21.76 | |
| | | | 13 | 22.00 | 21.78 | 21.43 | 21.47 | |
| | | | 25 | 22.00 | 21.33 | 21.80 | 21.51 | |
| | | 50 | 0 | 22.00 | 21.70 | 21.61 | 21.44 | |
| | | 16QAM | 1 | 0 | 22.50 | 21.27 | 22.17 | 21.91 |
| | | | | 25 | 22.50 | 21.28 | 22.14 | 21.48 |
| | 49 | | | 23.00 | 21.01 | 22.54 | 21.57 | |
| | 25 | | 0 | 21.00 | 20.90 | 20.58 | 20.83 | |
| | | | 13 | 21.00 | 20.96 | 20.50 | 20.61 | |
| | | | 25 | 21.00 | 20.57 | 20.86 | 20.84 | |
| | 50 | 0 | 21.50 | 20.77 | 20.64 | 21.05 | | |

Band 12

| Bandwidth | Modulation | RB allocation | RB offset | Maximum Tune-up(dBm) | 23060 | 23095 | 23130 | |
|-----------|------------|---------------|-----------|----------------------|--------------|----------|----------|-------|
| | | | | | 704.0MHz | 707.5MHz | 711.0MHz | |
| 10MHz | QPSK | 1 | 0 | 23.50 | 23.27 | 23.20 | 23.38 | |
| | | | 25 | 24.00 | 23.50 | 23.45 | 23.43 | |
| | | | 49 | 24.00 | 23.68 | 23.45 | 23.50 | |
| | | 25 | 0 | 23.00 | 22.51 | 22.53 | 22.70 | |
| | | | 13 | 23.00 | 22.70 | 22.66 | 22.49 | |
| | | | 25 | 23.00 | 22.39 | 22.40 | 22.63 | |
| | | 50 | 0 | 23.00 | 22.72 | 22.75 | 22.50 | |
| | | 16QAM | 1 | 0 | 23.00 | 22.57 | 22.60 | 22.06 |
| | | | | 25 | 23.00 | 22.66 | 22.70 | 22.20 |
| | 49 | | | 23.00 | 22.84 | 22.64 | 22.27 | |
| | 25 | | 0 | 22.00 | 21.67 | 21.75 | 21.76 | |
| | | | 13 | 22.00 | 21.78 | 21.62 | 21.64 | |
| | | | 25 | 22.00 | 21.84 | 21.58 | 21.89 | |
| | 50 | 0 | 22.00 | 21.71 | 21.72 | 21.51 | | |

Band 13

| Bandwidth | Modulation | RB allocation | RB offset | Maximum Tune-up(dBm) | 23230 | |
|-----------|------------|---------------|-----------|----------------------|--------------|--|
| | | | | | 782.0MHz | |
| 10MHz | QPSK | 1 | 0 | 21.50 | 21.43 | |
| | | | 25 | 22.00 | 21.75 | |
| | | | 49 | 22.00 | 21.72 | |
| | | 25 | 0 | 21.00 | 20.75 | |
| | | | 13 | 21.00 | 20.73 | |
| | | | 25 | 21.00 | 20.81 | |
| | 50 | 0 | 21.00 | 20.76 | | |
| | 16QAM | 1 | 0 | 21.50 | 21.46 | |
| | | | 25 | 21.50 | 21.43 | |
| | | | 49 | 22.00 | 21.51 | |
| | | 25 | 0 | 20.00 | 19.79 | |
| | | | 13 | 20.00 | 19.83 | |
| | | | 25 | 20.00 | 19.85 | |
| | | 50 | 0 | 20.00 | 19.81 | |

Band 25

| Bandwidth | Modulation | RB allocation | RB offset | Maximum Tune-up(dBm) | 26140 | 26365 | 26590 |
|-----------|------------|---------------|-----------|----------------------|-----------|-----------|--------------|
| | | | | | 1860.0MHz | 1882.5MHz | 1905.0MHz |
| 20MHz | QPSK | 1 | 0 | 22.50 | 22.22 | 22.09 | 22.29 |
| | | | 50 | 22.50 | 22.22 | 22.06 | 22.17 |
| | | | 99 | 22.50 | 22.11 | 22.15 | 22.24 |
| | | 50 | 0 | 21.50 | 21.19 | 21.14 | 21.03 |
| | | | 25 | 21.50 | 21.22 | 21.06 | 21.16 |
| | | | 50 | 21.50 | 21.28 | 21.07 | 21.06 |
| | 100 | 0 | 21.50 | 21.12 | 21.00 | 21.19 | |
| | 16QAM | 1 | 0 | 22.00 | 21.98 | 21.12 | 21.07 |
| | | | 50 | 22.00 | 21.86 | 21.05 | 21.02 |
| | | | 99 | 22.00 | 21.89 | 21.17 | 21.19 |
| | | 50 | 0 | 20.50 | 20.38 | 20.18 | 20.18 |
| | | | 25 | 20.50 | 20.34 | 20.20 | 20.20 |
| | | | 50 | 20.50 | 20.30 | 20.30 | 20.32 |
| | | 100 | 0 | 20.50 | 20.37 | 20.14 | 20.28 |

Band 26

| LTE-TDD Band 26c | | | | Maximum Tune-up(dBm) | Conducted Power(dBm) | | |
|------------------|------------|---------------|-----------|----------------------|----------------------|----------|--------------|
| Bandwidth | Modulation | RB allocation | RB offset | | 26765 | 26865 | 26965 |
| | | | | | 821.5MHz | 831.5MHz | 841.5MHz |
| 15MHz | QPSK | 1 | 0 | 22.00 | 21.51 | 21.53 | 21.50 |
| | | | 38 | 22.00 | 21.43 | 21.51 | 21.49 |
| | | | 74 | 22.00 | 21.47 | 21.49 | 21.57 |
| | | 36 | 0 | 22.00 | 21.49 | 21.49 | 21.57 |
| | | | 18 | 22.00 | 21.62 | 21.51 | 21.57 |
| | | | 39 | 22.00 | 21.48 | 21.50 | 21.57 |
| | 75 | 0 | 22.00 | 21.46 | 21.50 | 21.56 | |
| | 16QAM | 1 | 0 | 22.00 | 21.44 | 21.50 | 21.56 |
| | | | 38 | 22.00 | 21.42 | 21.49 | 21.55 |
| | | | 74 | 22.00 | 21.42 | 21.50 | 21.55 |
| | | 36 | 0 | 22.00 | 21.58 | 21.52 | 21.55 |
| | | | 18 | 22.00 | 21.57 | 21.52 | 21.55 |
| | | | 39 | 22.00 | 21.56 | 21.61 | 21.54 |
| | | 75 | 0 | 22.00 | 21.55 | 21.60 | 21.54 |

Band 41

| Bandwidth | Modulation | RB allocation | RB offset | Maximum Tune-up(dBm) | 39750 | 40620 | 41490 |
|-----------|------------|---------------|-----------|----------------------|-----------|-----------|--------------|
| | | | | | 2506.0MHz | 2593.0MHz | 2680.0MHz |
| 20MHz | QPSK | 1 | 0 | 19.00 | 18.44 | 18.30 | 18.80 |
| | | | 50 | 19.00 | 18.43 | 18.27 | 18.71 |
| | | | 99 | 19.00 | 18.41 | 18.48 | 18.71 |
| | | 50 | 0 | 19.00 | 18.50 | 18.46 | 18.78 |
| | | | 25 | 19.00 | 18.54 | 18.36 | 18.70 |
| | | | 50 | 19.00 | 18.52 | 18.35 | 18.70 |
| | 100 | 0 | 19.00 | 18.51 | 18.35 | 18.70 | |
| | 16QAM | 1 | 0 | 19.00 | 18.50 | 18.34 | 18.70 |
| | | | 50 | 19.00 | 18.49 | 18.34 | 18.77 |
| | | | 99 | 19.00 | 18.49 | 18.43 | 18.70 |
| | | 50 | 0 | 19.00 | 18.56 | 18.33 | 18.77 |
| | | | 25 | 19.00 | 18.47 | 18.33 | 18.70 |
| | | | 50 | 19.00 | 18.55 | 18.32 | 18.77 |
| | | 100 | 0 | 19.00 | 18.47 | 18.32 | 18.70 |

Band 66

| Bandwidth | Modulation | RB allocation | RB offset | Maximum Tune-up(dBm) | 132072 | 132322 | 132572 |
|-----------|------------|---------------|-----------|----------------------|-----------|--------------|-----------|
| | | | | | 1720.0MHz | 1745.0MHz | 1770.0MHz |
| 20MHz | QPSK | 1 | 0 | 23.50 | 23.01 | 23.11 | 22.92 |
| | | | 50 | 23.50 | 22.84 | 23.12 | 22.91 |
| | | | 99 | 23.50 | 23.02 | 22.95 | 22.83 |
| | | 50 | 0 | 22.50 | 21.88 | 22.07 | 21.91 |
| | | | 25 | 22.50 | 22.04 | 22.19 | 21.99 |
| | | | 50 | 22.50 | 22.02 | 22.05 | 21.98 |
| | 100 | 0 | 22.50 | 21.95 | 22.05 | 21.88 | |
| | 16QAM | 1 | 0 | 22.50 | 22.07 | 22.11 | 22.00 |
| | | | 50 | 22.50 | 22.05 | 22.10 | 22.00 |
| | | | 99 | 22.50 | 22.15 | 22.03 | 21.96 |
| | | 50 | 0 | 21.50 | 21.15 | 21.14 | 21.12 |
| | | | 25 | 21.50 | 21.24 | 21.26 | 21.03 |
| | | | 50 | 21.50 | 21.19 | 21.13 | 21.14 |
| | | 100 | 0 | 21.50 | 21.04 | 21.28 | 20.97 |

Band 71

| Bandwidth | Modulation | RB allocation | RB offset | Maximum Tune-up(dBm) | 133222 | 133322 | 133372 |
|-----------|------------|---------------|-----------|----------------------|----------|----------|--------------|
| | | | | | 673.0MHz | 683.0MHz | 688.0MHz |
| 20MHz | QPSK | 1 | 0 | 22.00 | 21.34 | 21.52 | 21.29 |
| | | | 50 | 21.50 | 21.40 | 21.36 | 21.43 |
| | | | 99 | 22.00 | 21.38 | 21.57 | 21.75 |
| | | 50 | 0 | 21.00 | 20.51 | 20.40 | 20.54 |
| | | | 25 | 21.00 | 20.45 | 20.64 | 20.55 |
| | | | 50 | 21.00 | 20.42 | 20.58 | 20.49 |
| | 100 | 0 | 21.00 | 20.46 | 20.60 | 20.49 | |
| | 16QAM | 1 | 0 | 20.50 | 19.95 | 20.46 | 20.11 |
| | | | 50 | 20.50 | 20.11 | 20.48 | 20.46 |
| | | | 99 | 21.00 | 20.59 | 20.64 | 20.67 |
| | | 50 | 0 | 20.00 | 19.57 | 19.50 | 19.55 |
| | | | 25 | 20.00 | 19.59 | 19.60 | 19.50 |
| | | | 50 | 20.00 | 19.67 | 19.67 | 19.71 |
| | | 100 | 0 | 20.00 | 19.56 | 19.56 | 19.53 |

8. T-Coil Test Result

| Air Interface Investigation | | | | | | | | | | | |
|-----------------------------|-----------------|------------------|-----------------|----------------|---------------|---------------|---------------------|----------|------------------------|-------------------------------|--------------------|
| Plot No. | Mode | Channel/Freq. | BW | Probe Position | ABM1 (dB A/m) | ABM2 (dB A/m) | Signal Quality (dB) | T Rating | Ambient Noise (dB A/m) | Freq. Response Variation (dB) | Frequency Response |
| 1 | GSM850 | 128/824.2MHz | / | Axial(Z) | 21.88 | -16.00 | 37.88 | T4 | -50.37 | 1.85 | Pass |
| | | | | Transversal(Y) | 7.55 | -25.59 | 33.14 | T4 | -50.24 | | |
| 2 | PCS1900 | 512/1850.2MHz | / | Axial(Z) | 22.02 | -19.71 | 41.73 | T4 | -50.39 | 1.15 | Pass |
| | | | | Transversal(Y) | 8.17 | -27.93 | 36.10 | T4 | -50.26 | | |
| 3 | WCDMA Band II | 9538/1907.6MHz | / | Axial(Z) | 18.32 | -33.08 | 51.40 | T4 | -50.38 | 1.03 | Pass |
| | | | | Transversal(Y) | 4.54 | -32.89 | 37.43 | T4 | -50.23 | | |
| 5 | WCDMA Band V | 4183/836.6MHz | / | Axial(Z) | 18.63 | -32.31 | 50.94 | T4 | -50.38 | 1.37 | Pass |
| | | | | Transversal(Y) | 6.34 | -32.49 | 38.83 | T4 | -50.25 | | |
| 6 | LTE FDD Band 2 | 18700/1860.0MHz | 20MHz_QPSK_1_0 | Axial(Z) | 21.29 | -33.44 | 54.73 | T4 | -50.35 | 1.69 | Pass |
| | | | | Transversal(Y) | 7.08 | -32.84 | 39.92 | T4 | -50.29 | | |
| 7 | LTE FDD Band 4 | 20050/1720.0MHz | 20MHz_QPSK_1_99 | Axial(Z) | 21.03 | -31.91 | 52.94 | T4 | -50.34 | 1.55 | Pass |
| | | | | Transversal(Y) | 7.64 | -33.37 | 41.01 | T4 | -50.29 | | |
| 8 | LTE FDD Band 5 | 20525/836.5MHz | 10MHz_QPSK_1_49 | Axial(Z) | 20.84 | -31.29 | 52.13 | T4 | -50.35 | 1.72 | Pass |
| | | | | Transversal(Y) | 7.28 | -32.38 | 39.66 | T4 | -50.27 | | |
| 9 | LTE FDD Band 12 | 23060/704.0MHz | 10MHz_QPSK_1_49 | Axial(Z) | 20.81 | -32.94 | 53.75 | T4 | -50.36 | 1.04 | Pass |
| | | | | Transversal(Y) | 7.28 | -31.10 | 38.38 | T4 | -50.25 | | |
| 10 | LTE FDD Band 13 | 23230/782.0MHz | 10MHz_QPSK_1_25 | Axial(Z) | 20.62 | -31.53 | 52.15 | T4 | -50.37 | 1.02 | Pass |
| | | | | Transversal(Y) | 5.60 | -31.69 | 37.29 | T4 | -50.22 | | |
| 11 | LTE FDD Band 25 | 26590/1905.0MHz | 20MHz_QPSK_1_0 | Axial(Z) | 21.42 | -31.63 | 53.05 | T4 | -50.38 | 1.03 | Pass |
| | | | | Transversal(Y) | 4.36 | -31.15 | 35.51 | T4 | -50.25 | | |
| 12 | LTE FDD Band 26 | 26965/841.5MHz | 15MHz_QPSK_1_74 | Axial(Z) | 21.70 | -32.27 | 53.97 | T4 | -50.38 | 1.06 | Pass |
| | | | | Transversal(Y) | 7.27 | -31.83 | 39.10 | T4 | -50.26 | | |
| 13 | LTE TDD Band 41 | 41490/2680.0MHz | 20MHz_QPSK_1_50 | Axial(Z) | 21.63 | -15.90 | 37.53 | T4 | -50.38 | 1.16 | Pass |
| | | | | Transversal(Y) | 7.23 | -21.28 | 28.51 | T3 | -50.22 | | |
| 14 | LTE FDD Band 66 | 132322/1745.0MHz | 20MHz_QPSK_1_50 | Axial(Z) | 21.68 | -29.71 | 51.39 | T4 | -50.39 | 1.42 | Pass |
| | | | | Transversal(Y) | 7.28 | -31.68 | 38.96 | T4 | -50.25 | | |
| 15 | LTE FDD Band 71 | 133372/688.0MHz | 20MHz_QPSK_1_99 | Axial(Z) | 21.70 | -32.28 | 53.98 | T4 | -50.37 | 1.40 | Pass |
| | | | | Transversal(Y) | 7.29 | -30.74 | 38.03 | T4 | -50.27 | | |

Remark:
 1. There is special HAC mode software on this EUT.
 2. The volume was adjusted to maximum level and the backlight turned off during T-Coil testing

9. Test Equipment List

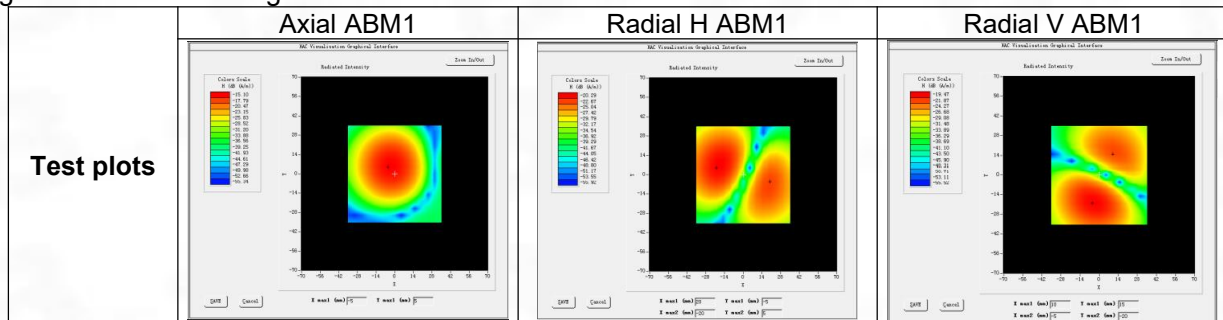
| Description | Manufacturer | Model | Serial No./Version | Cal. Date | Cal. Due |
|-------------------------------------|----------------------|-------------|--------------------|------------|------------|
| PC | Dell | N/A | N/A | N/A | N/A |
| Test Software | MVG | N/A | OpenHAC V5.1.3 | N/A | N/A |
| 6 1/2 Multimeter | Keithley | DMM6500 | 4527164 | 2023/11/16 | 2024/11/15 |
| Audio Card | National Instruments | NI PCI-4461 | 01C4B4EB | N/A | N/A |
| WIDEBAND RADIO COMMUNICATION TESTER | ROHDE&SCHWARZ | CMW500 | 161997 | 2023/11/16 | 2024/11/15 |
| COMOHAC T-Coil Probe | MVG | STCOIL | 07/17 TCP38 | 2023/02/06 | 2024/02/05 |
| TMFS | MVG | STMFS | SN 13/22 TMFS30 | N/A | N/A |
| Antenna network emulator | MVG | ANTA 74 | 07/22 ANTA 74 | / | / |

ANNEX A System Validation Result

| Input Level (mV) | Axial Description | Location | Magnetic Field(dBA/m) |
|------------------|-------------------|----------|-----------------------|
| 500 | Axial | Max | -15.22 |
| | | Right | -22.32 |
| | Radial H | Left | -20.21 |
| | | Upper | -22.50 |
| | Radial V | Lower | -19.66 |

Note: The tolerance limit of System validation $\pm 25\%$

Note: Target value was referring to the Measurement value in the calibration certificate of reference TMFS.



ANNEX B Test Data

Measurement at GSM850

Date of measurement: 25/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | GSM |
| Band | GSM850 |
| Channels | low |
| Channels Number | 128 |
| Frequency (MHz) | 824.20 |

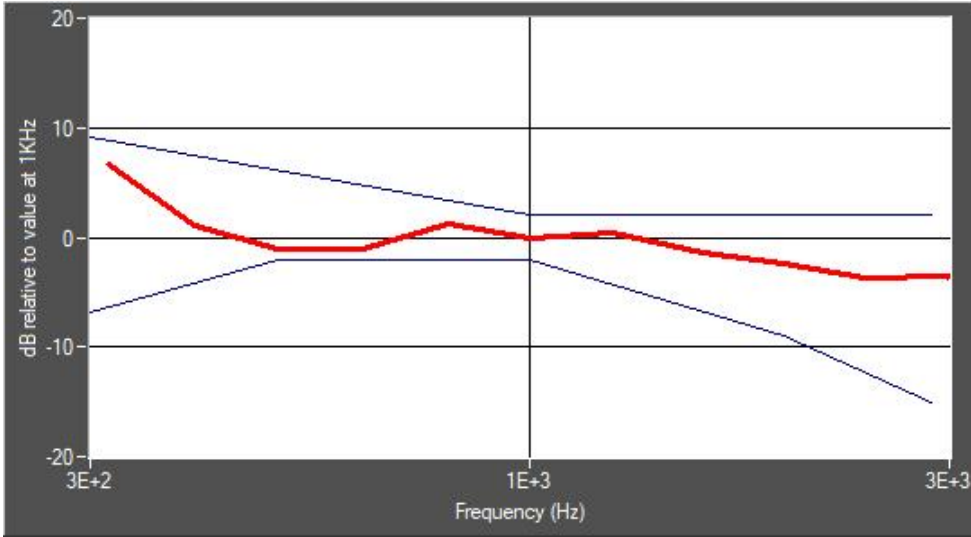
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

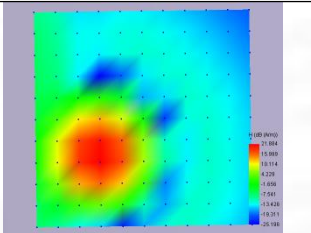
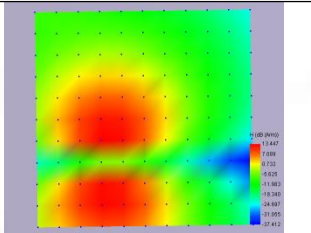
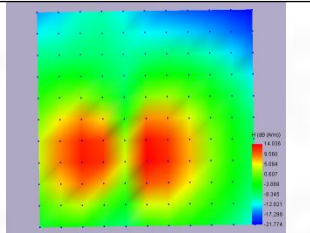
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|---------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | GSM | GSM 850 | Intensity, Axial | -18 | Max | 21.88 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 7.55 | - | PASS |
| | | | | -18 | Left side | 13.45 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.99 | - | PASS |
| | | | | -18 | Lower side | 14.04 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 37.88 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 33.14 | T4 | PASS |
| | | | | 20 | Left side | 37.11 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 29.27 | T3 | PASS |
| | | | | 20 | Lower side | 37.83 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|---|-----------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 21.88 | 13.45 | 7.55 | 12.99 | 14.04 |
| ABM2 dB(A/m) | -16.00 | -23.66 | -25.59 | -16.28 | -23.79 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 37.88 | 37.11 | 33.14 | 29.27 | 37.83 |
| S+N/N per orientation (dB) | 37.88 | 33.14 | | 29.27 | |
| Test plots | Axial ABM1 | Radial H ABM1 | Radial V ABM1 | | |
| |  |  |  | | |

Measurement at GSM1900

Date of measurement: 25/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | GSM |
| Band | GSM1900 |
| Channels | Low |
| Channels Number | 512 |
| Frequency (MHz) | 1850.20 |

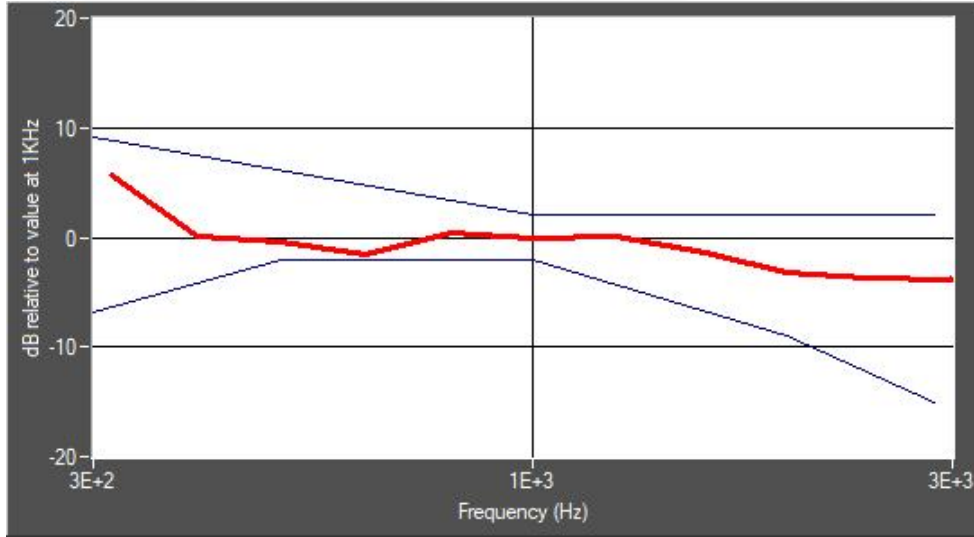
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

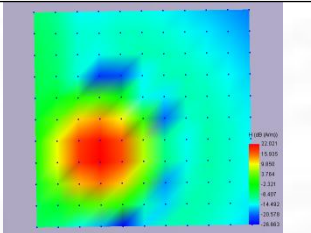
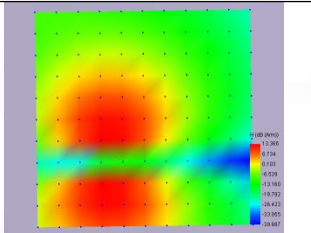
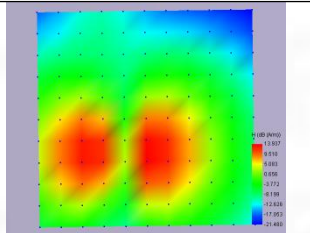
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|----------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | GSM | GSM 1900 | Intensity, Axial | -18 | Max | 22.02 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 8.17 | - | PASS |
| | | | | -18 | Left side | 13.37 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.98 | - | PASS |
| | | | | -18 | Lower side | 13.94 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 41.73 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 36.10 | T4 | PASS |
| | | | | 20 | Left side | 39.88 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 33.17 | T4 | PASS |
| | | | | 20 | Lower side | 40.69 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|--------|---|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 22.02 | 13.37 | 8.17 | 12.98 | 13.94 |
| ABM2 dB(A/m) | -19.71 | -26.51 | -27.93 | -20.19 | -26.75 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 41.73 | 39.88 | 36.10 | 33.17 | 40.69 |
| S+N/N per orientation (dB) | 41.73 | 36.10 | | 33.17 | |
| Test plots | Axial ABM1 | Radial H ABM1 | | Radial V ABM1 | |
| |  |  | |  | |

Measurement at WCDMA Band 2 (1900)

Date of measurement: 25/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | W-CDMA |
| Band | Band 2 (1900) |
| Channels | High |
| Channels Number | 9538 |
| Frequency (MHz) | 1907.60 |

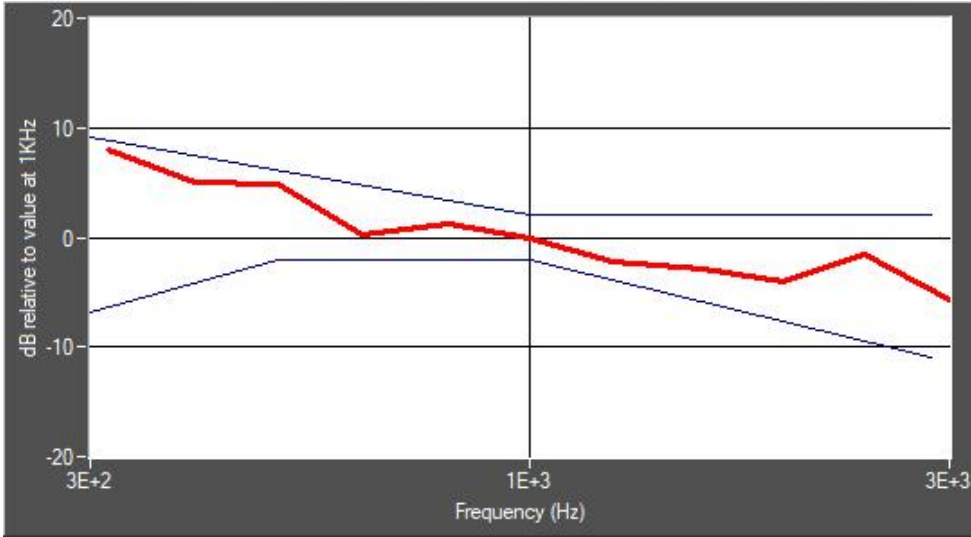
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

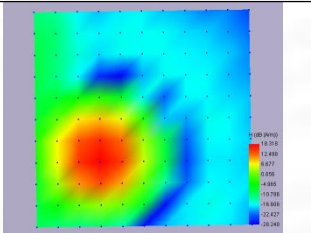
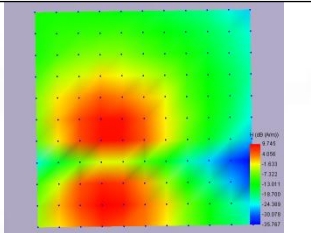
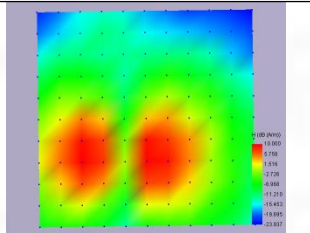
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|-------|--------------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | WCDMA | Band 2_W CDM A1900 | Intensity, Axial | -18 | Max | 18.32 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 4.54 | - | PASS |
| | | | | -18 | Left side | 9.74 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 10.00 | - | PASS |
| | | | | -18 | Lower side | 9.73 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 51.40 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 37.43 | T4 | PASS |
| | | | | 20 | Left side | 43.05 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 38.81 | T4 | PASS |
| | | | | 20 | Lower side | 41.19 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|--------|---|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 18.32 | 9.74 | 4.54 | 10.00 | 9.73 |
| ABM2 dB(A/m) | -33.08 | -33.31 | -32.89 | -28.81 | -31.46 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 51.40 | 43.05 | 37.43 | 38.81 | 41.19 |
| S+N/N per orientation (dB) | 51.40 | 37.43 | | 38.81 | |
| Test plots | Axial ABM1 | Radial H ABM1 | | Radial V ABM1 | |
| |  |  | |  | |

Measurement at WCDMA Band 5 (850)

Date of measurement: 25/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | W-CDMA |
| Band | Band 5 (850) |
| Channels | middle |
| Channels Number | 4182 |
| Frequency (MHz) | 836.40 |

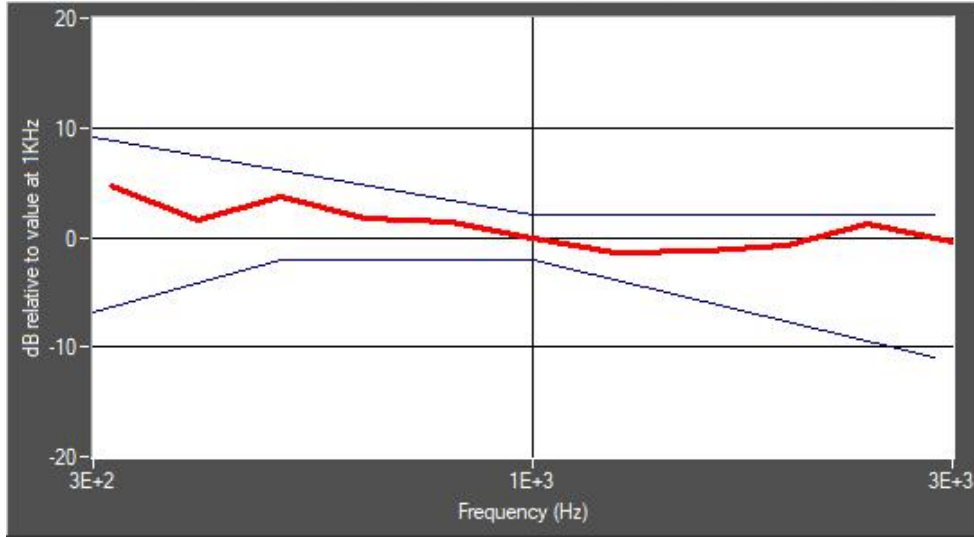
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|-------|-------------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | WCDMA | Band 5_W CDM A850 | Intensity, Axial | -18 | Max | 18.63 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 6.34 | - | PASS |
| | | | | -18 | Left side | 11.66 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 9.77 | - | PASS |
| | | | | -18 | Lower side | 10.80 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 50.94 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 38.83 | T4 | PASS |
| | | | | 20 | Left side | 44.08 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 38.72 | T4 | PASS |
| | | | | 20 | Lower side | 41.50 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|--------------|-----------------|---------------|-----------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 18.63 | 11.66 | 6.34 | 9.77 | 10.80 |
| ABM2 dB(A/m) | -32.31 | -32.42 | -32.49 | -28.95 | -30.70 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 50.94 | 44.08 | 38.83 | 38.72 | 41.50 |
| S+N/N per orientation (dB) | 50.94 | 38.83 | | 38.72 | |
| Test plots | Axial ABM1 | Radial H ABM1 | Radial V ABM1 | | |
| | | | | | |

Measurement at LTE Band 2

Date of measurement: 25/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE FDD |
| Band | LTE band 2 |
| Channels | low |
| Channels Number | 18700 |
| Frequency (MHz) | 1860.00 |

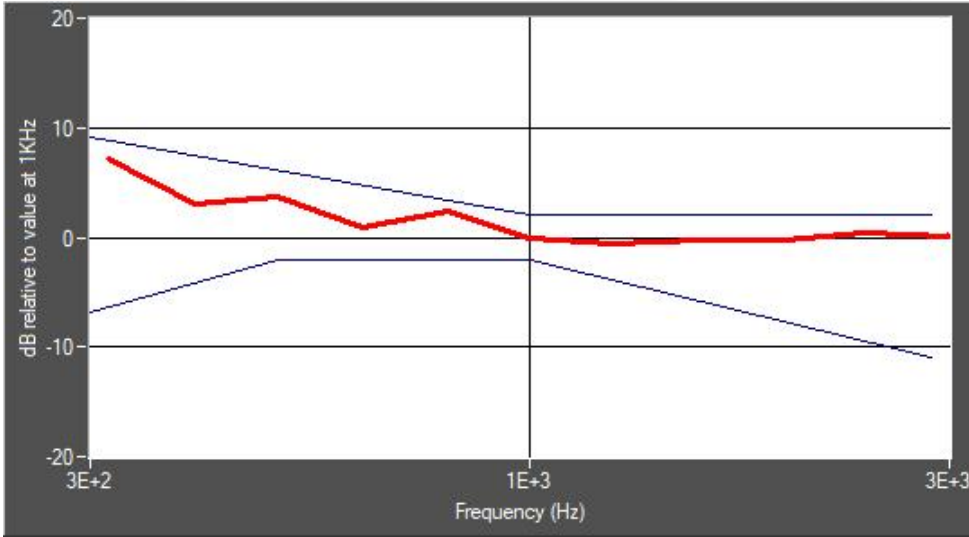
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

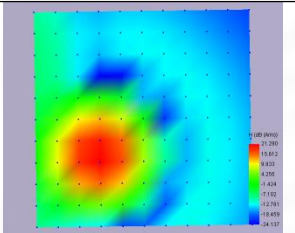
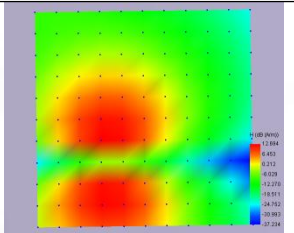
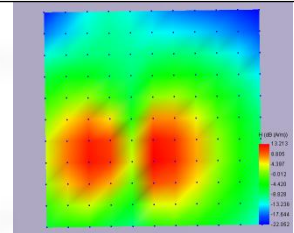
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|----------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE FDD Band 2 | Intensity, Axial | -18 | Max | 21.29 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 7.08 | - | PASS |
| | | | | -18 | Left side | 12.69 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.37 | - | PASS |
| | | | | -18 | Lower side | 13.21 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 54.73 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 39.92 | T4 | PASS |
| | | | | 20 | Left side | 45.92 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 40.31 | T4 | PASS |
| | | | | 20 | Lower side | 45.07 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|--------|---|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 21.29 | 12.69 | 7.08 | 12.37 | 13.21 |
| ABM2 dB(A/m) | -33.44 | -33.23 | -32.84 | -27.94 | -31.86 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 54.73 | 45.92 | 39.92 | 40.31 | 45.07 |
| S+N/N per orientation (dB) | 54.73 | 39.92 | | 40.31 | |
| Test plots | Axial ABM1 | Radial H ABM1 | | Radial V ABM1 | |
| |  |  | |  | |

Measurement at LTE Band 4

Date of measurement: 25/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE FDD |
| Band | LTE band 4 |
| Channels | Low |
| Channels Number | 20050 |
| Frequency (MHz) | 1720.00 |

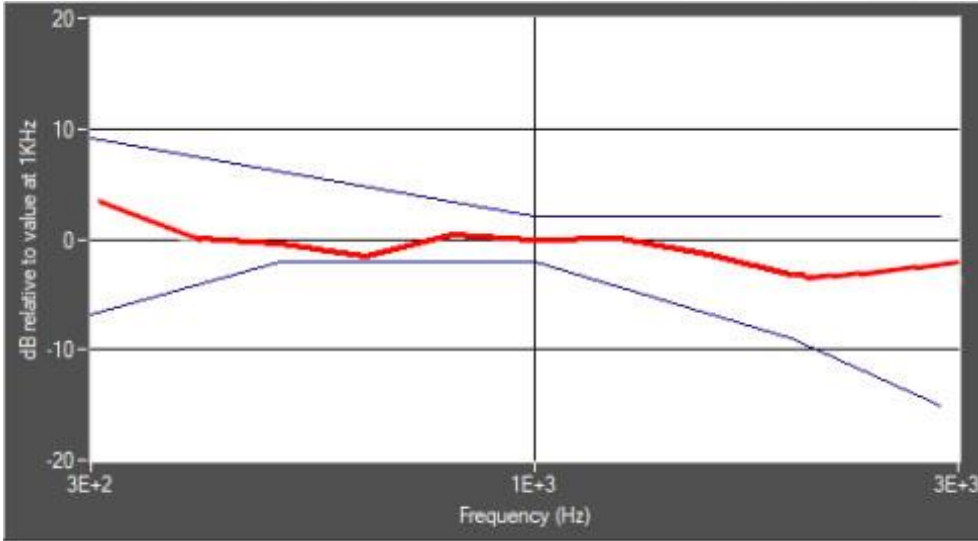
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

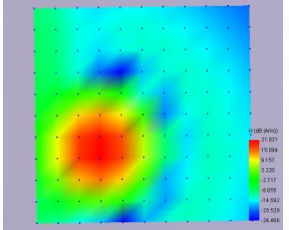
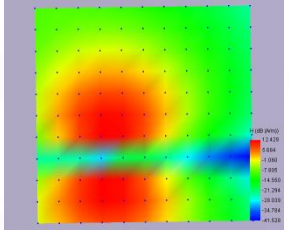
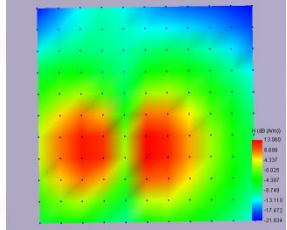
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|----------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE FDD Band 4 | Intensity, Axial | -18 | Max | 21.03 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 7.64 | - | PASS |
| | | | | -18 | Left side | 12.43 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.17 | - | PASS |
| | | | | -18 | Lower side | 13.06 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 52.94 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 41.01 | T4 | PASS |
| | | | | 20 | Left side | 44.95 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 39.39 | T4 | PASS |
| | | | | 20 | Lower side | 44.50 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|---|-----------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 21.03 | 12.43 | 7.64 | 12.17 | 13.06 |
| ABM2 dB(A/m) | -31.91 | -32.52 | -33.37 | -27.22 | -31.44 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 52.94 | 44.95 | 41.01 | 39.39 | 44.50 |
| S+N/N per orientation (dB) | 52.94 | 41.01 | | 39.39 | |
| Test plots | Axial ABM1 | Radial H ABM1 | Radial V ABM1 | | |
| |  |  |  | | |

Measurement at LTE Band 5

Date of measurement: 25/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE FDD |
| Band | LTE band 5 |
| Channels | middle |
| Channels Number | 20525 |
| Frequency (MHz) | 836.50 |

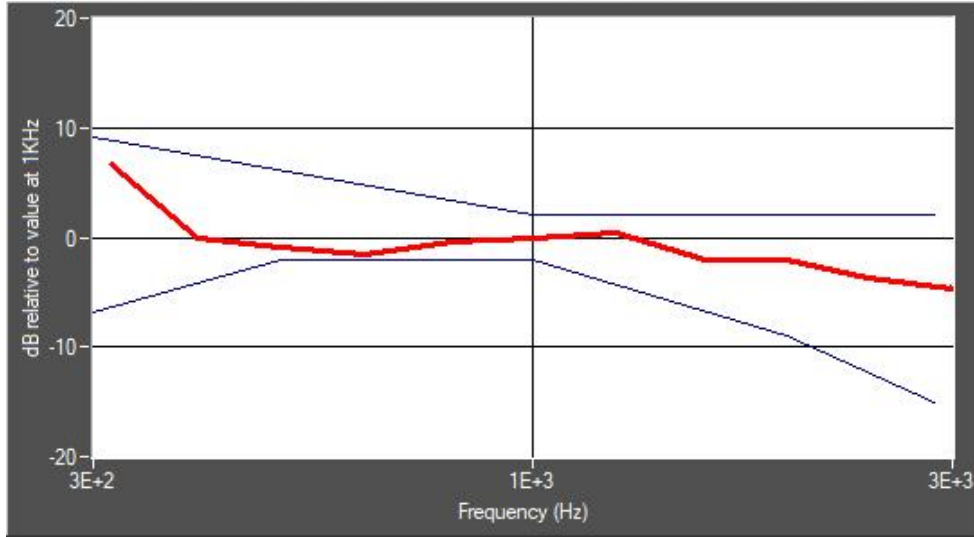
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

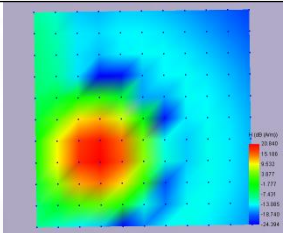
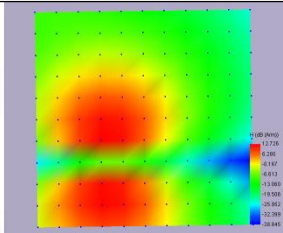
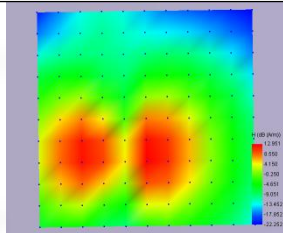
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|----------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE FDD Band 5 | Intensity, Axial | -18 | Max | 20.84 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 7.28 | - | PASS |
| | | | | -18 | Left side | 12.73 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.18 | - | PASS |
| | | | | -18 | Lower side | 12.95 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 52.13 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 39.66 | T4 | PASS |
| | | | | 20 | Left side | 44.15 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 40.39 | T4 | PASS |
| | | | | 20 | Lower side | 43.65 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|---|----------------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 20.84 | 12.73 | 7.28 | 12.18 | 12.95 |
| ABM2 dB(A/m) | -31.29 | -31.42 | -32.38 | -28.21 | -30.70 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 52.13 | 44.15 | 39.66 | 40.39 | 43.65 |
| S+N/N per orientation (dB) | 52.13 | 39.66 | | 40.39 | |
| Test plots | Axial ABM1 | Radial H ABM1 | | Radial V ABM1 | |
| |  |  |  | | |

Measurement at LTE Band 12

Date of measurement: 26/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE FDD |
| Band | LTE band 12 |
| Channels | low |
| Channels Number | 23060 |
| Frequency (MHz) | 704.00 |

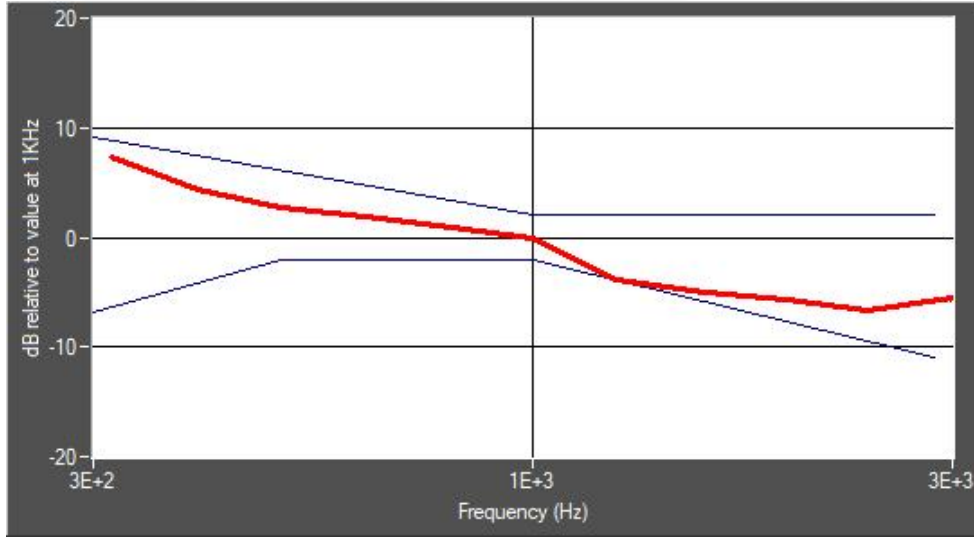
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

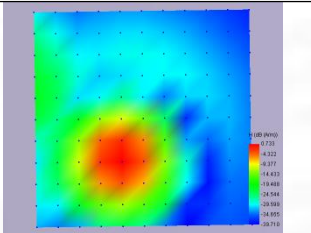
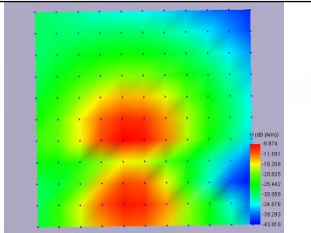
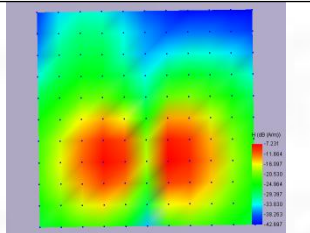
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|-----------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE FDD Band 12 | Intensity, Axial | -18 | Max | 20.81 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 7.28 | - | PASS |
| | | | | -18 | Left side | 12.29 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.02 | - | PASS |
| | | | | -18 | Lower side | 12.88 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 53.75 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 38.38 | T4 | PASS |
| | | | | 20 | Left side | 44.90 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 39.94 | T4 | PASS |
| | | | | 20 | Lower side | 43.80 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|---|-----------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 20.81 | 12.29 | 7.28 | 12.02 | 12.88 |
| ABM2 dB(A/m) | -32.94 | -32.61 | -31.10 | -27.92 | -30.92 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 53.75 | 44.90 | 38.38 | 39.94 | 43.80 |
| S+N/N per orientation (dB) | 53.75 | 38.38 | | 39.94 | |
| Test plots | Axial ABM1 | Radial H ABM1 | Radial V ABM1 | | |
| |  |  |  | | |

Measurement at LTE Band 13

Date of measurement: 26/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE FDD |
| Band | LTE band 13 |
| Channels | Middle |
| Channels Number | 23230 |
| Frequency (MHz) | 782.00 |

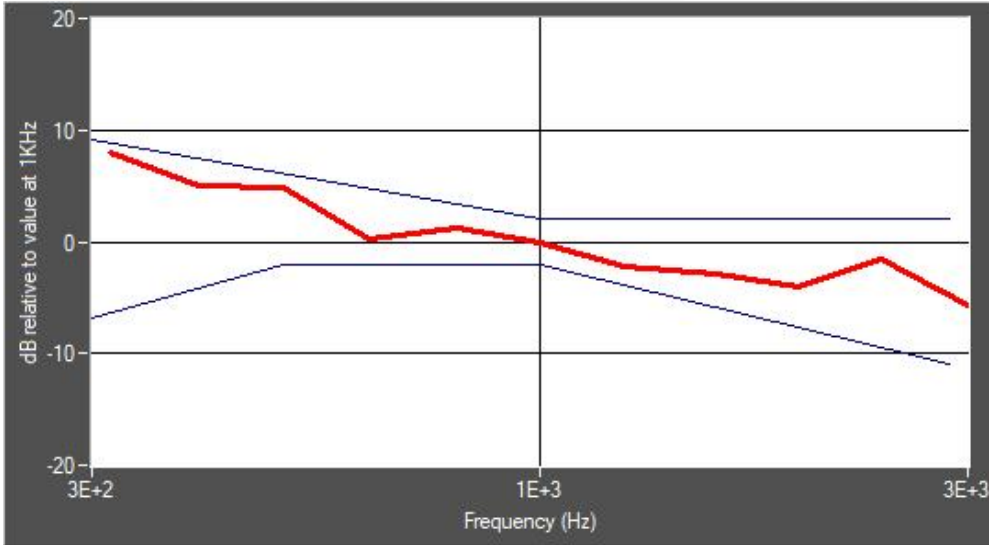
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

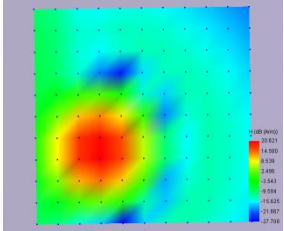
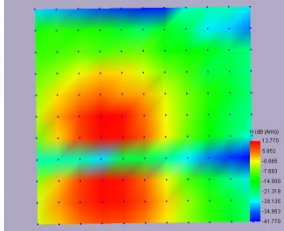
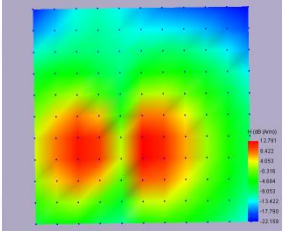
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|-----------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE FDD Band 13 | Intensity, Axial | -18 | Max | 20.62 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 5.60 | - | PASS |
| | | | | -18 | Left side | 12.77 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 11.93 | - | PASS |
| | | | | -18 | Lower side | 12.79 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 52.15 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 37.29 | T4 | PASS |
| | | | | 20 | Left side | 44.84 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 38.60 | T4 | PASS |
| | | | | 20 | Lower side | 42.40 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|---|---|--|---|----------------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 20.62 | 12.77 | 5.60 | 11.93 | 12.79 |
| ABM2 dB(A/m) | -31.53 | -32.07 | -31.69 | -26.67 | -29.61 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 52.15 | 44.84 | 37.29 | 38.60 | 42.40 |
| S+N/N per orientation (dB) | 52.15 | 37.29 | | 38.60 | |
| Test plots | Axial ABM1 | Radial H ABM1 | | Radial V ABM1 | |
| |  |  |  | | |

Measurement at LTE Band 25

Date of measurement: 26/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE FDD |
| Band | LTE band 25 |
| Channels | high |
| Channels Number | 26590 |
| Frequency (MHz) | 1905.00 |

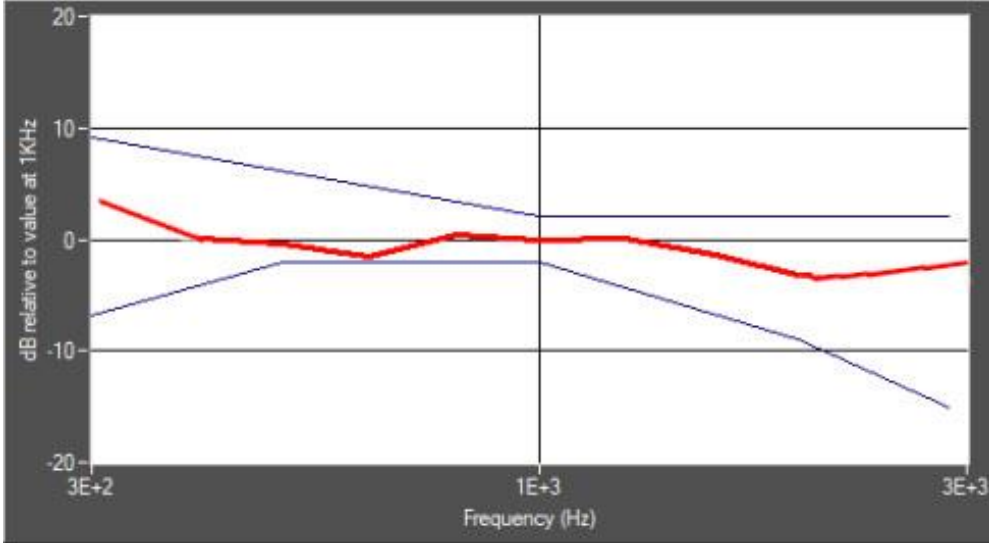
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

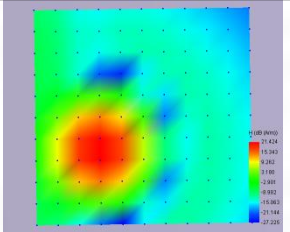
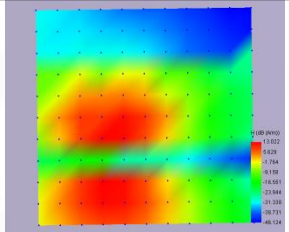
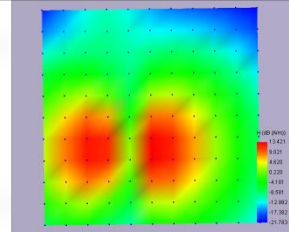
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|-----------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE FDD Band 25 | Intensity, Axial | -18 | Max | 21.42 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 4.36 | - | PASS |
| | | | | -18 | Left side | 13.02 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.46 | - | PASS |
| | | | | -18 | Lower side | 13.42 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 53.05 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 35.51 | T4 | PASS |
| | | | | 20 | Left side | 44.79 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 38.24 | T4 | PASS |
| | | | | 20 | Lower side | 43.86 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|---|----------------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 21.42 | 13.02 | 4.36 | 12.46 | 13.42 |
| ABM2 dB(A/m) | -31.63 | -31.77 | -31.15 | -25.78 | -30.44 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 53.05 | 44.79 | 35.51 | 38.24 | 43.86 |
| S+N/N per orientation (dB) | 53.05 | 35.51 | | 38.24 | |
| Test plots | Axial ABM1 | Radial H ABM1 | | Radial V ABM1 | |
| |  |  |  | | |

Measurement at LTE Band 26

Date of measurement: 26/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE FDD |
| Band | LTE band 26 |
| Channels | high |
| Channels Number | 26965 |
| Frequency (MHz) | 841.05 |

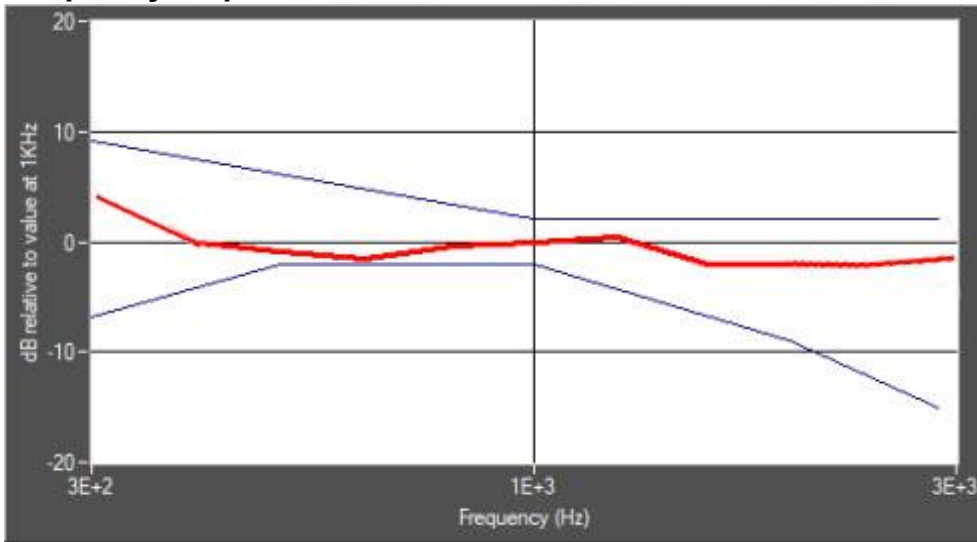
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

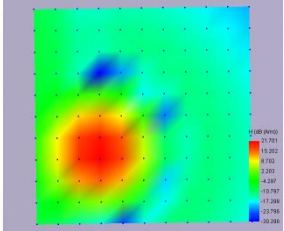
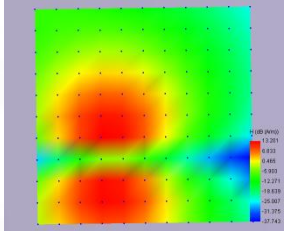
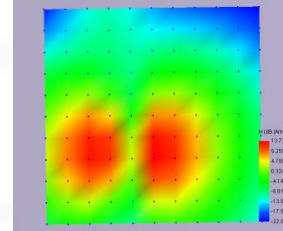
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|-----------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE FDD Band 26 | Intensity, Axial | -18 | Max | 21.70 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 7.27 | - | PASS |
| | | | | -18 | Left side | 13.20 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.79 | - | PASS |
| | | | | -18 | Lower side | 13.73 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 53.97 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 39.10 | T4 | PASS |
| | | | | 20 | Left side | 43.17 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 39.45 | T4 | PASS |
| | | | | 20 | Lower side | 44.20 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|--------|---|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 21.70 | 13.20 | 7.27 | 12.79 | 13.73 |
| ABM2 dB(A/m) | -32.27 | -29.97 | -31.83 | -26.66 | -30.47 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 53.97 | 43.17 | 39.10 | 39.45 | 44.20 |
| S+N/N per orientation (dB) | 53.97 | 39.10 | | 39.45 | |
| Test plots | Axial ABM1 | Radial H ABM1 | | Radial V ABM1 | |
| |  |  | |  | |

Measurement at LTE Band 41

Date of measurement: 26/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE TDD |
| Band | LTE band 41 |
| Channels | High |
| Channels Number | 41490 |
| Frequency (MHz) | 2680.00 |

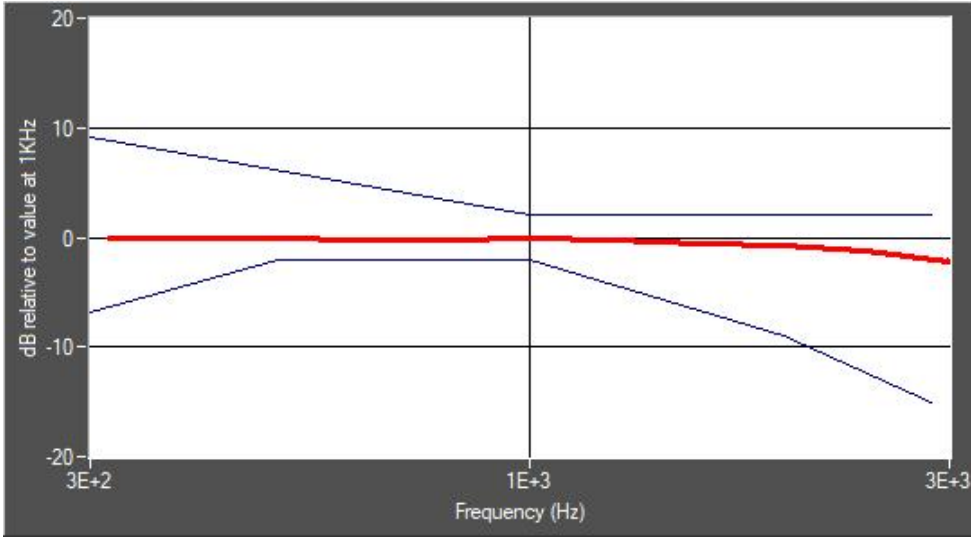
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|-----------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE TDD Band 41 | Intensity, Axial | -18 | Max | 21.63 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 7.23 | - | PASS |
| | | | | -18 | Left side | 13.15 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.66 | - | PASS |
| | | | | -18 | Lower side | 13.57 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 37.53 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 28.51 | T4 | PASS |
| | | | | 20 | Left side | 38.02 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 27.67 | T4 | PASS |
| | | | | 20 | Lower side | 31.13 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|--------------|-----------------|---------------|-----------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 21.63 | 13.15 | 7.23 | 12.66 | 13.57 |
| ABM2 dB(A/m) | -15.9 | -24.87 | -21.28 | -15.01 | -17.56 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 37.53 | 38.02 | 28.51 | 27.67 | 31.13 |
| S+N/N per orientation (dB) | 37.53 | 28.51 | | 27.67 | |
| Test plots | Axial ABM1 | Radial H ABM1 | Radial V ABM1 | | |
| | | | | | |

Measurement at LTE Band 66

Date of measurement: 26/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE FDD |
| Band | LTE band 66 |
| Channels | middle |
| Channels Number | 132322 |
| Frequency (MHz) | 1745.00 |

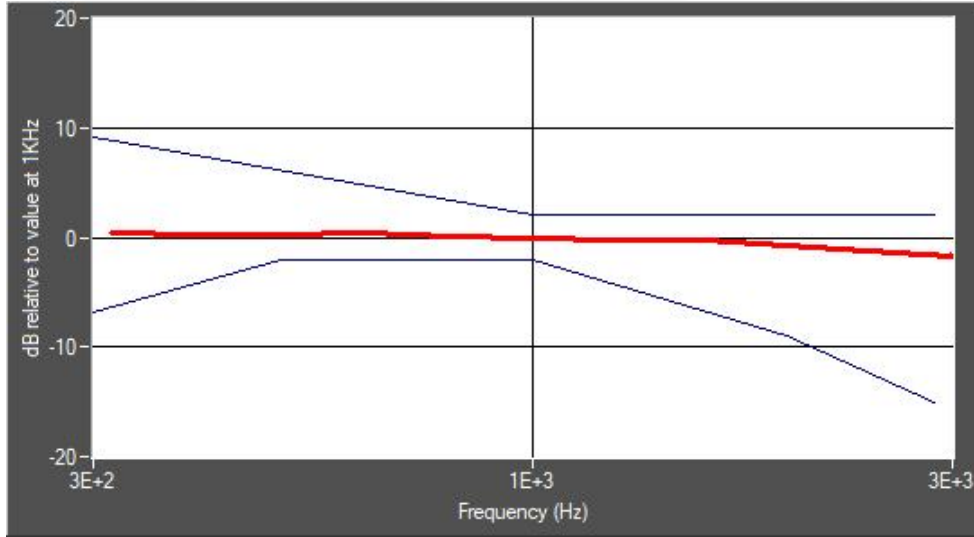
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|-----------------|--------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE FDD Band 66 | Intensity, Axial | -18 | Max | 21.68 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 7.28 | - | PASS |
| | | | | -18 | Left side | 13.23 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 13.04 | - | PASS |
| | | | | -18 | Lower side | 13.99 | - | PASS |
| 7.3.3 | | | Signal to noise/noise, Axial | 20 | Max | 51.39 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialH | 20 | Right side | 38.96 | T4 | PASS |
| | | | | 20 | Left side | 44.81 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise, RadialV | 20 | Upper side | 40.13 | T4 | PASS |
| | | | | 20 | Lower side | 43.54 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|--------------|-----------------|---------------|-----------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 21.68 | 13.23 | 7.28 | 13.04 | 13.99 |
| ABM2 dB(A/m) | -29.71 | -31.58 | -31.68 | -27.09 | -29.55 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 51.39 | 44.81 | 38.96 | 40.13 | 43.54 |
| S+N/N per orientation (dB) | 51.39 | 38.96 | | 40.13 | |
| Test plots | Axial ABM1 | Radial H ABM1 | Radial V ABM1 | | |
| | | | | | |

Measurement at LTE Band 71

Date of measurement: 26/1/2024

Experimental Conditions

| | |
|-----------------|---------------|
| Probe | SN_0717_TCP38 |
| Signal | LTE FDD |
| Band | LTE band 71 |
| Channels | high |
| Channels Number | 133372 |
| Frequency (MHz) | 688.00 |

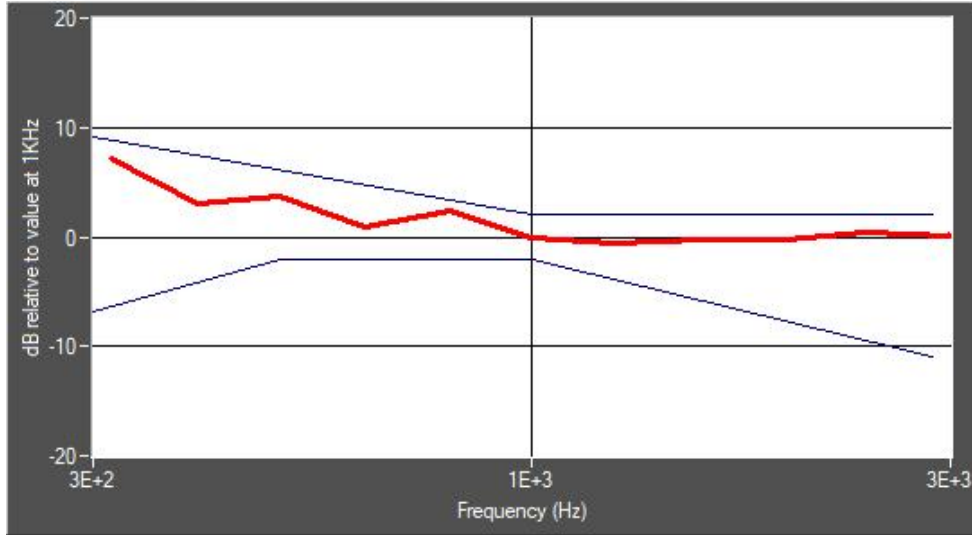
Results

| | |
|--------------------|----------|
| Device compliant | Yes |
| Measurement status | Complete |

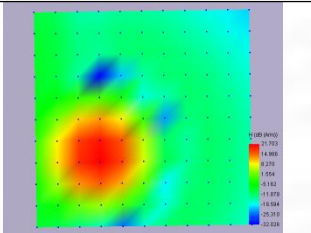
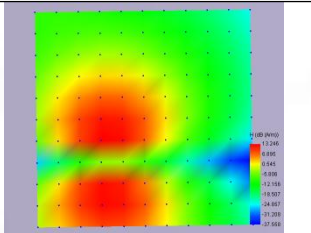
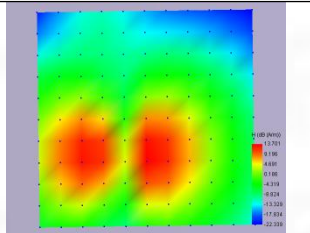
Requirement verification

| C63.19 | Mode | Band | Test Description | Minimum Limit (dBA/m) | Location | Measured (dBA/m) | Category | Verdict |
|---------|------|-----------------|---------------------------------|-----------------------|------------|------------------|----------|---------|
| 7.3.1.1 | LTE | LTE FDD Band 71 | Intensity, Axial | -18 | Max | 21.70 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialH | -18 | Right side | 7.29 | - | PASS |
| | | | | -18 | Left side | 13.25 | - | PASS |
| 7.3.1.2 | | | Intensity, RadialV | -18 | Upper side | 12.77 | - | PASS |
| | | | | -18 | Lower side | 13.70 | - | PASS |
| 7.3.3 | | | Signal to noise/noise , Axial | 20 | Max | 53.98 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise , RadialH | 20 | Right side | 38.03 | T4 | PASS |
| | | | | 20 | Left side | 44.88 | T4 | PASS |
| 7.3.3 | | | Signal to noise/noise , RadialV | 20 | Upper side | 40.08 | T4 | PASS |
| | | | | 20 | Lower side | 44.36 | T4 | PASS |
| 7.3.2 | | | Frequency reponse, Axial | 0 | - | 2.00 | - | PASS |

Frequency response (field that exceeds -15 dB)



Raw data result

| | Axial | Radial H | | Radial V | |
|-----------------------------------|---|--|---|-----------------|--------|
| | Max | Left | Right | Up | Down |
| ABM1 dB(A/m) | 21.70 | 13.25 | 7.29 | 12.77 | 13.70 |
| ABM2 dB(A/m) | -32.28 | -31.63 | -30.74 | -27.31 | -30.66 |
| Ambient noise, dB(A/m) | -50.00 | -50.00 | -50.00 | -50.00 | -50.00 |
| Freq Reponse Margin (dB) | 2.00 | - | - | - | - |
| S+N/N(dB) | 53.98 | 44.88 | 38.03 | 40.08 | 44.36 |
| S+N/N per orientation (dB) | 53.98 | 38.03 | | 40.08 | |
| Test plots | Axial ABM1 | Radial H ABM1 | Radial V ABM1 | | |
| |  |  |  | | |

ANNEX C Test Setup Photo



ANNEX D EUT External & Internal Photos

Please refer to RF Report.

ANNEX E Calibration Information

Please refer to the document "Calibration.pdf".



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--END OF REPORT--