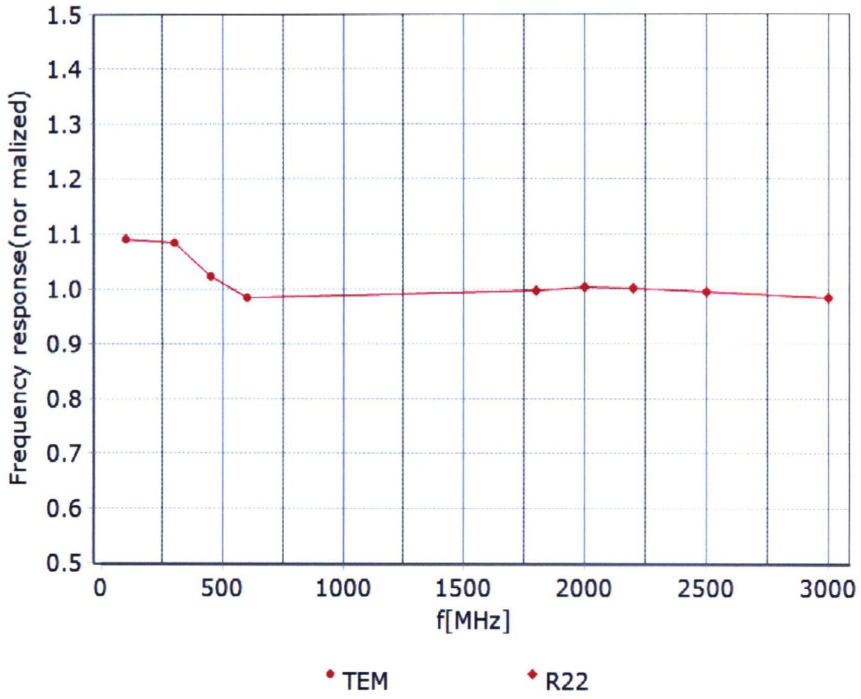
In Collaboration with
s p e a g
CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

# Frequency Response of E-Field
## (TEM-Cell: ifi110 EXX, Waveguide: R22)




**Uncertainty of Frequency Response of E-field: ±7.4% (*k*=2)**

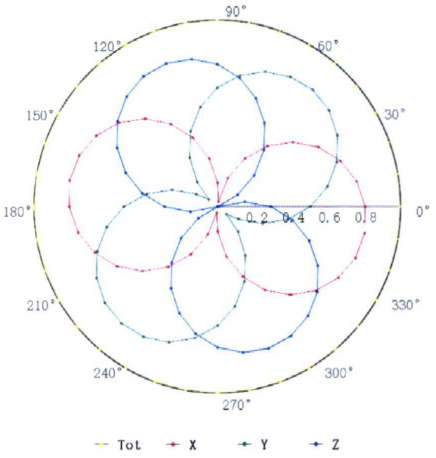


©Copyright. All rights reserved by CTTL.

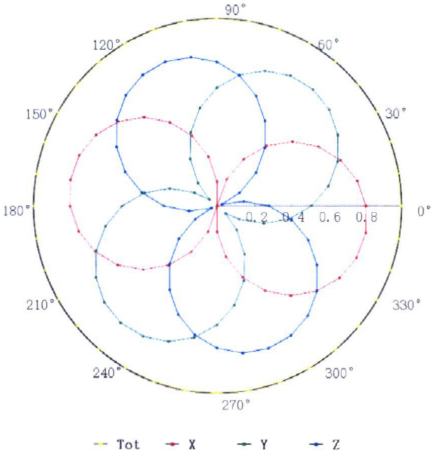
In Collaboration with
CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

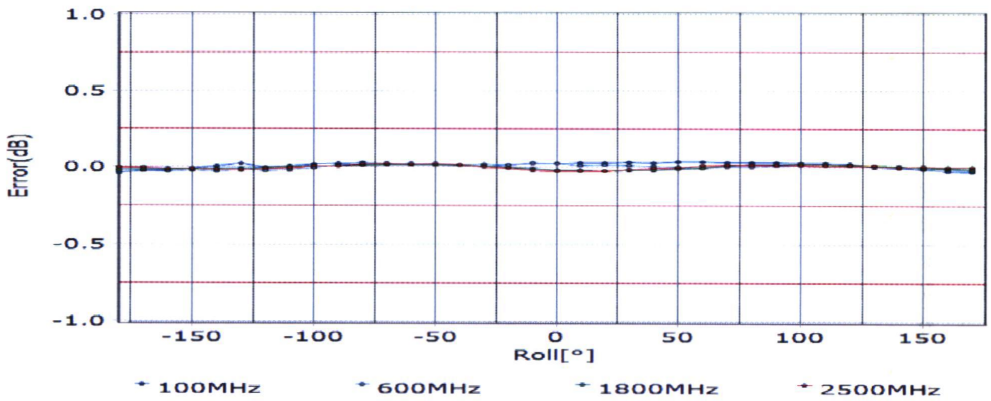
# Receiving Pattern (Φ), θ=0°

## f=600 MHz, TEM




## f=1800 MHz, R22



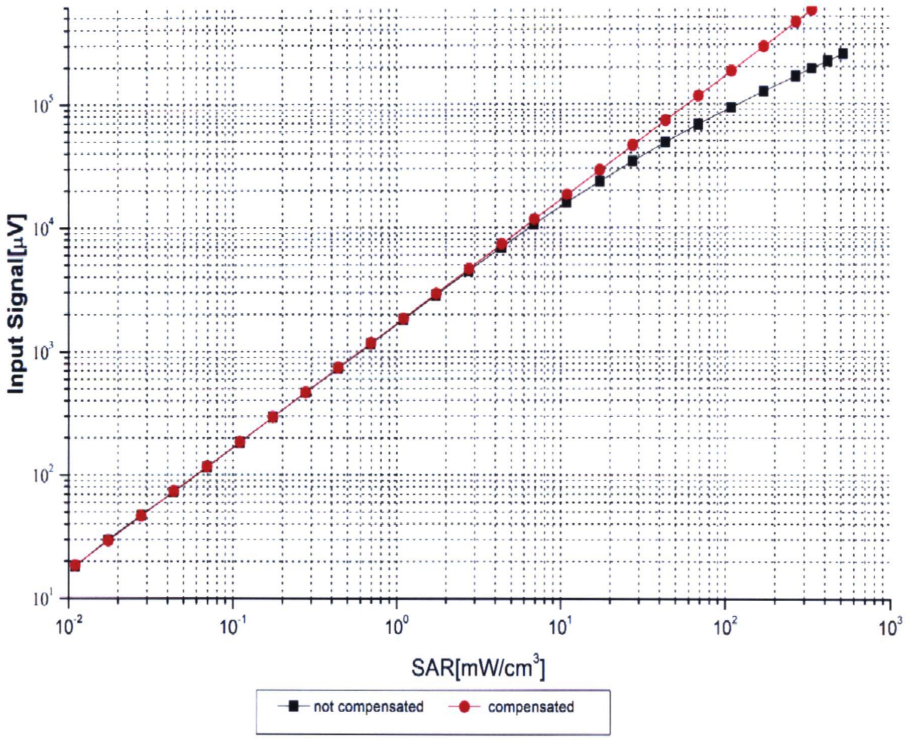

Uncertainty of Axial Isotropy Assessment: ±1.2% (*k*=2)

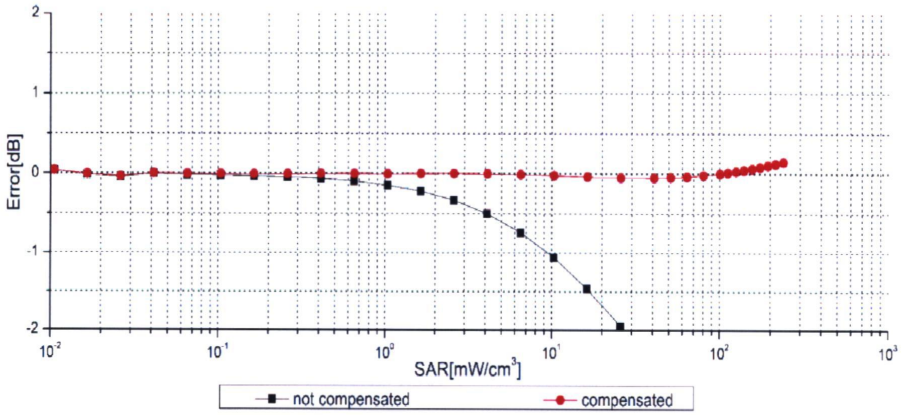


©Copyright. All rights reserved by CTTL.

In Collaboration with
s p e a g
CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

## Dynamic Range f($SAR_{head}$)
## (TEM cell, f = 900 MHz)




**Uncertainty of Linearity Assessment: ±0.9% (*k*=2)**

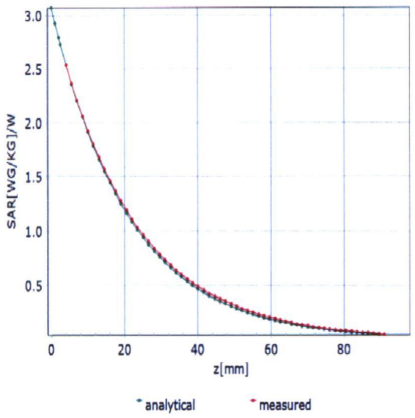


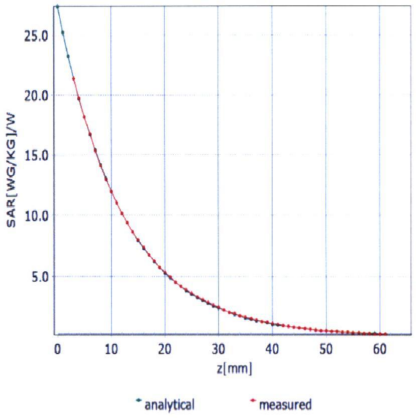
©Copyright. All rights reserved by CTTL.

In Collaboration with
s p e a g
CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

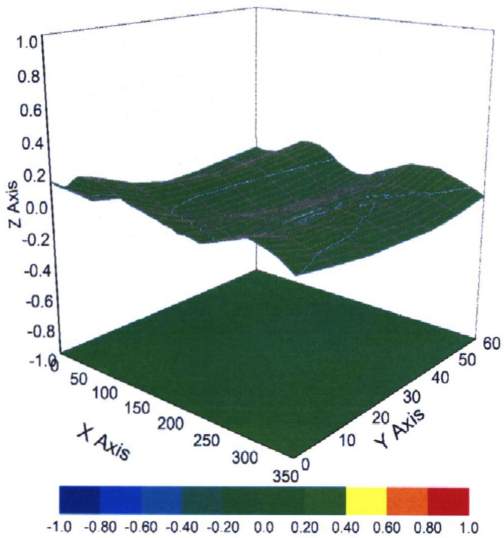
# Conversion Factor Assessment

**f=750 MHz,WGLS R9(H_convF)** **f=1750 MHz,WGLS R22(H_convF)**




# Deviation from Isotropy in Liquid




**Uncertainty of Spherical Isotropy Assessment: ±3.2% (*k*=2)**



©Copyright. All rights reserved by CTTL.

In Collaboration with
s p e a g
CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

# DASY/EASY – Parameters of Probe: EX3DV4 – SN:7464

## Other Probe Parameters

| | |
|---|---|
| Sensor Arrangement | Triangular |
| Connector Angle (°) | 30.7 |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disable |
| Probe Overall Length | 337mm |
| Probe Body Diameter | 10mm |
| Tip Length | 10mm |
| Tip Diameter | 2.5mm |
| Probe Tip to Sensor X Calibration Point | 1mm |
| Probe Tip to Sensor Y Calibration Point | 1mm |
| Probe Tip to Sensor Z Calibration Point | 1mm |
| Recommended Measurement Distance from Surface | 1.4mm |



©Copyright. All rights reserved by CTTL.

# ANNEX H Dipole Calibration Certificate

## 750 MHz Dipole Calibration Certificate

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
**Zeughausstrasse 43, 8004 Zurich, Switzerland**

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

**Accreditation No.: SCS 0108**

**Client** CTTL (Auden) **Certificate No: D750V3-1017_Jul21**

## CALIBRATION CERTIFICATE

Object D750V3 - SN:1017

Calibration procedure(s) QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: July 12, 2021

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 09-Apr-21 (No. 217-03291/03292) | Apr-22 |
| Power sensor NRP-Z91 | SN: 103244 | 09-Apr-21 (No. 217-03291) | Apr-22 |
| Power sensor NRP-Z91 | SN: 103245 | 09-Apr-21 (No. 217-03292) | Apr-22 |
| Reference 20 dB Attenuator | SN: BH9394 (20k) | 09-Apr-21 (No. 217-03343) | Apr-22 |
| Type-N mismatch combination | SN: 310982 / 06327 | 09-Apr-21 (No. 217-03344) | Apr-22 |
| Reference Probe EX3DV4 | SN: 7349 | 28-Dec-20 (No. EX3-7349_Dec20) | Dec-21 |
| DAE4 | SN: 601 | 02-Nov-20 (No. DAE4-601_Nov20) | Nov-21 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter E4419B | SN: GB39512475 | 30-Oct-14 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (in house check Oct-20) | In house check: Oct-22 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Oct-20) | In house check: Oct-22 |
| Network Analyzer Agilent E8358A | SN: US41080477 | 31-Mar-14 (in house check Oct-20) | In house check: Oct-21 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Jeffrey Katzman | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: July 15, 2021

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D750V3-1017_Jul21 Page 1 of 6

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

**835 MHz Dipole Calibration Certificate**

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

**1750 MHz Dipole Calibration Certificate**

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

**1900 MHz Dipole Calibration Certificate**

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

**2450 MHz Dipole Calibration Certificate**

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

**2600 MHz Dipole Calibration Certificate**

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

**3500 MHz Dipole Calibration Certificate**

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

**3700M Dipole Calibration Certificate**

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

**5G Dipole Calibration Certificate**

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

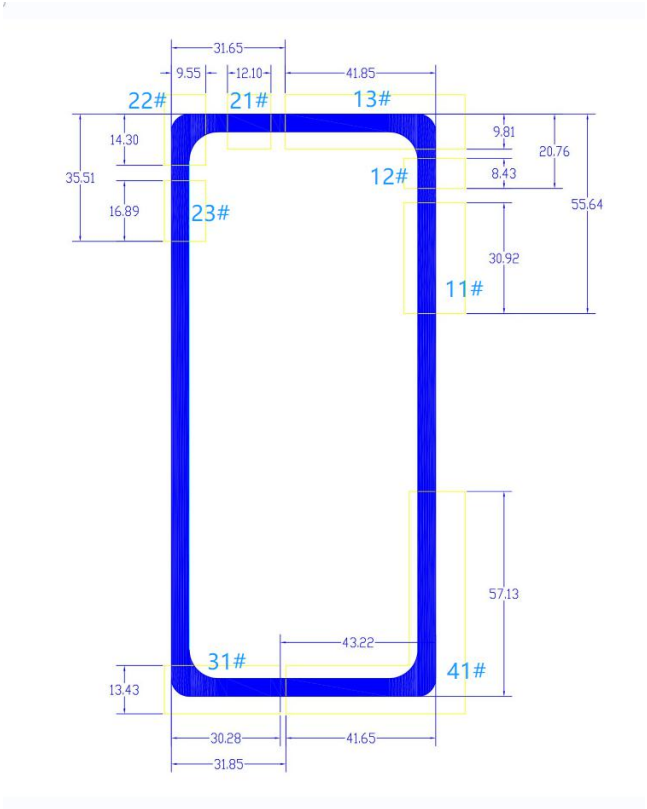
©Copyright. All rights reserved by CTTL.

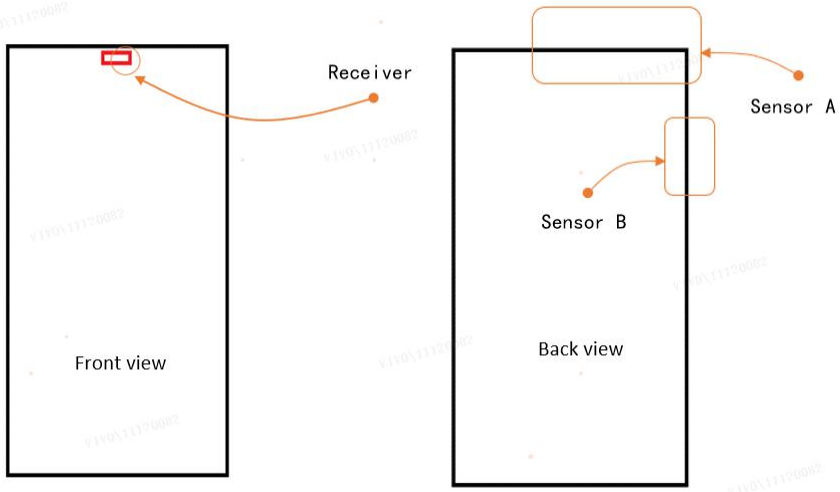
©Copyright. All rights reserved by CTTL.

©Copyright. All rights reserved by CTTL.

# ANNEX I Sensor Triggering Data Summary

The DUT has the proximity sensors to reduce the output power. The position of the sensor and antenna are as shown in the graphic.

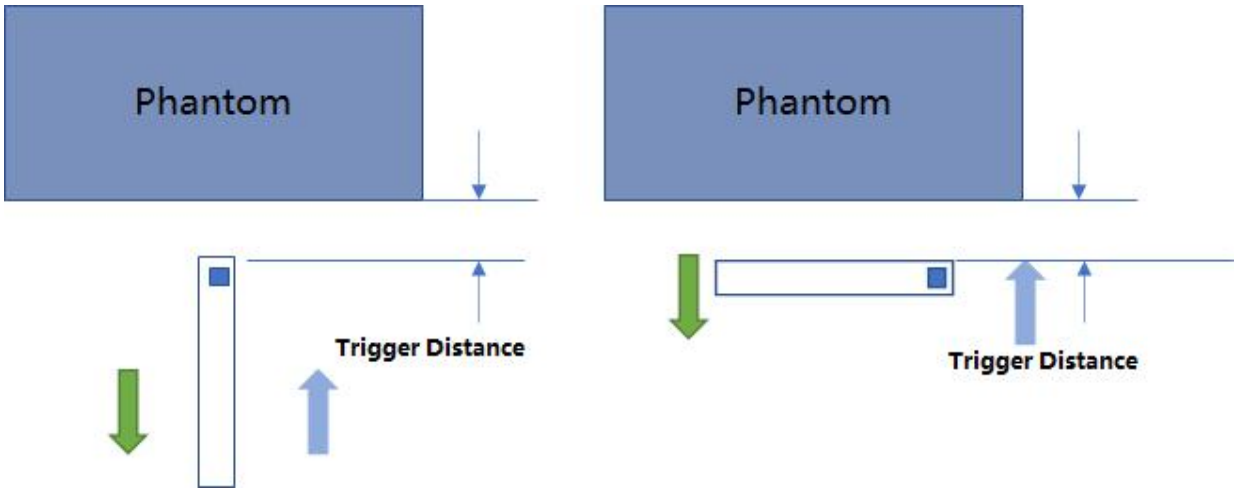



©Copyright. All rights reserved by CTTL.

Rear, Front, Bottom and Top of the DUT was placed directly below the flat phantom. The DUT was moved toward the phantom in accordance with the steps outlined in KDB 616217 to determine the trigger distance for enabling power reduction. The DUT was moved away from the phantom to determine the trigger distance for resuming full power.

The DUT featured a visual indicator on its display that showed the status of the proximity sensor (Triggered or not triggered). This was used to determine the status of the sensor during the proximity sensor assessment as monitoring the output power directly was not practical without affecting the measurement. It was confirmed separately that the output power according to locking the proximity sensor status.




Blue arrow : Direction of DUT travel for determination of power reduction triggering point.

Green arrow: Direction of DUT travel for determination of normal power triggering point

When the visual indicator display is “CS0 turn green”, indicates that the status of the proximity sensor B is triggered, when the visual indicator display is “CS4 turn green”, indicates that the status of the proximity sensor A is triggered (see the figure below)

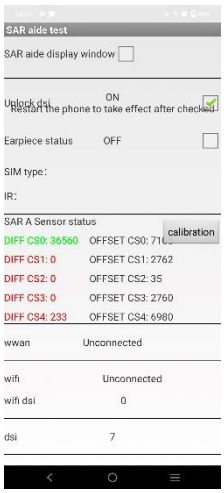



Fig1.sensor B is triggered

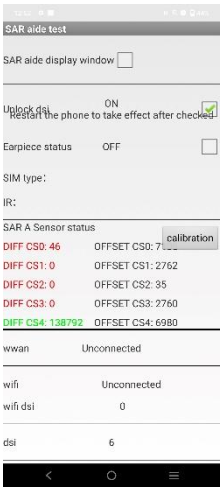



Fig2.Sensor A is triggered

©Copyright. All rights reserved by CTTL.

When the visual indicator display is “CS0 and CS4 tune red”, indicates that the status of the proximity sensor B and sensor A is not triggered

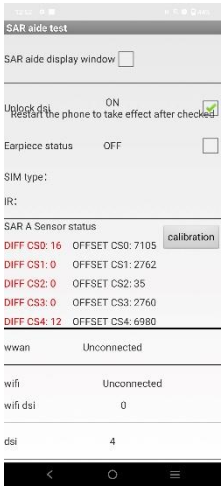



Fig3. sensor B and sensor A is not triggered

©Copyright. All rights reserved by CTTL.

**ANT 11**

**Rear Edge**

Moving device toward the phantom:

| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **19** | **18** | **17** | **16** | **15** | **14** | **13** | **12** | **11** | **10** | **9** |
| ANT11 | NO | NO | NO | NO | NO | YES | YES | YES | YES | YES | YES |

Moving device away from the phantom:

| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** |
| ANT11 | YES | YES | YES | YES | YES | YES | NO | NO | NO | NO | NO |

**Back right Edge**

Moving device toward the phantom:

| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **22** | **21** | **20** | **19** | **18** | **17** | **16** | **15** | **14** | **13** | **12** |
| ANT11 | NO | NO | NO | NO | NO | NO | YES | YES | YES | YES | YES |

Moving device away from the phantom:

| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** |
| ANT11 | YES | YES | YES | YES | YES | NO | NO | NO | NO | NO | NO |

**ANT 13**

**Front Edge**

Moving device toward the phantom:

| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **15** | **14** | **13** | **12** | **11** | **10** | **9** | **8** | **7** | **6** | **5** |
| ANT13 | NO | NO | NO | NO | NO | YES | YES | YES | YES | YES | YES |

©Copyright. All rights reserved by CTTL.

Moving device away from the phantom:

| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| ANT13 | YES | YES | YES | YES | YES | YES | NO | NO | NO | NO | NO |

**Rear Edge**

Moving device toward the phantom:

| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **19** | **18** | **17** | **16** | **15** | **14** | **13** | **12** | **11** | **10** | **9** |
| ANT13 | NO | NO | NO | NO | NO | YES | YES | YES | YES | YES | YES |

Moving device away from the phantom:

| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** |
| ANT13 | YES | YES | YES | YES | YES | YES | NO | NO | NO | NO | NO |

**Top Edge**

Moving device toward the phantom:

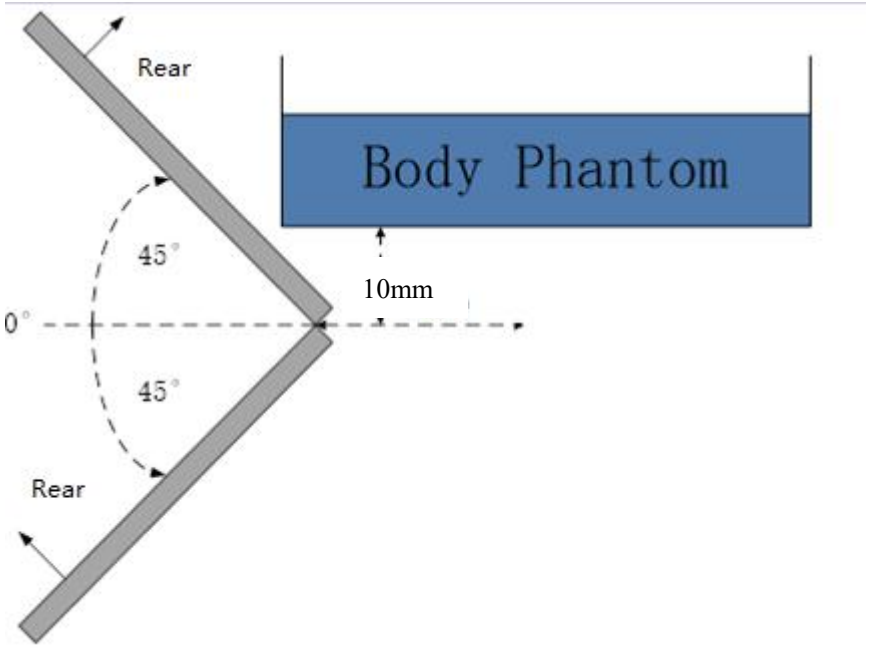
| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **25** | **24** | **23** | **22** | **21** | **20** | **19** | **18** | **17** | **16** | **15** |
| ANT13 | NO | NO | NO | NO | NO | YES | YES | YES | YES | YES | YES |

Moving device away from the phantom:

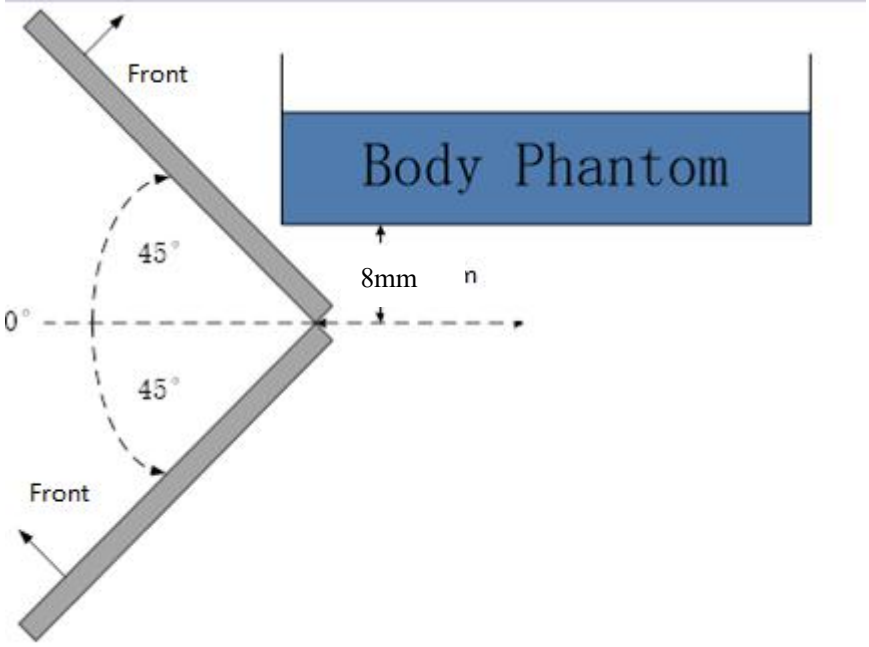
| sensor triggered (YES or NO) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Distance [mm]** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
| 2 | YES | YES | YES | YES | YES | YES | NO | NO | NO | NO | NO |

©Copyright. All rights reserved by CTTL.

Per FCC KDB Publication 616217 D04v01r02, the influence of table tilt angles to proximity sensor triggering is determined by positioning each edge that contains a transmitting antenna, perpendicular to the flat phantom, at the smallest sensor triggering test distanceby rotating the device around the edge next to the phantom in ≤ 10° increments until the tablet is ±45° or more from the vertical position at 0°.

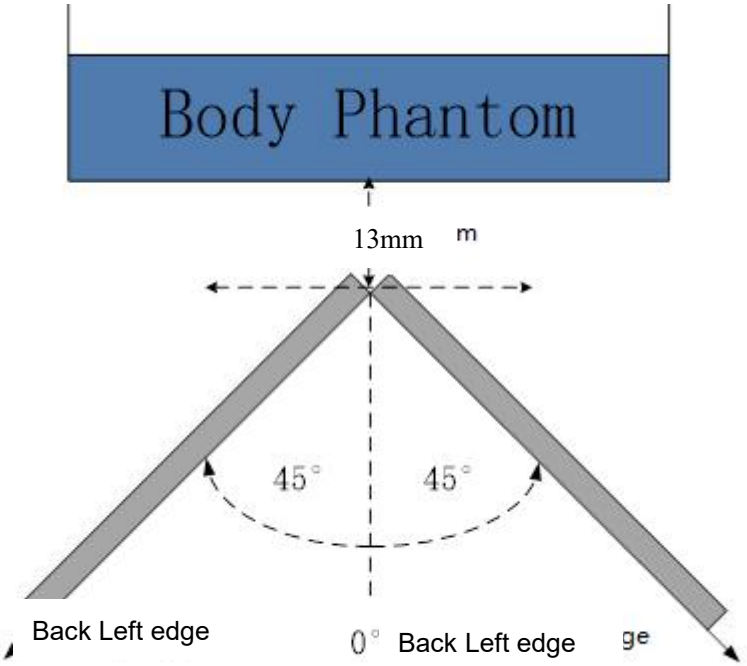



**The Rear evaluation**

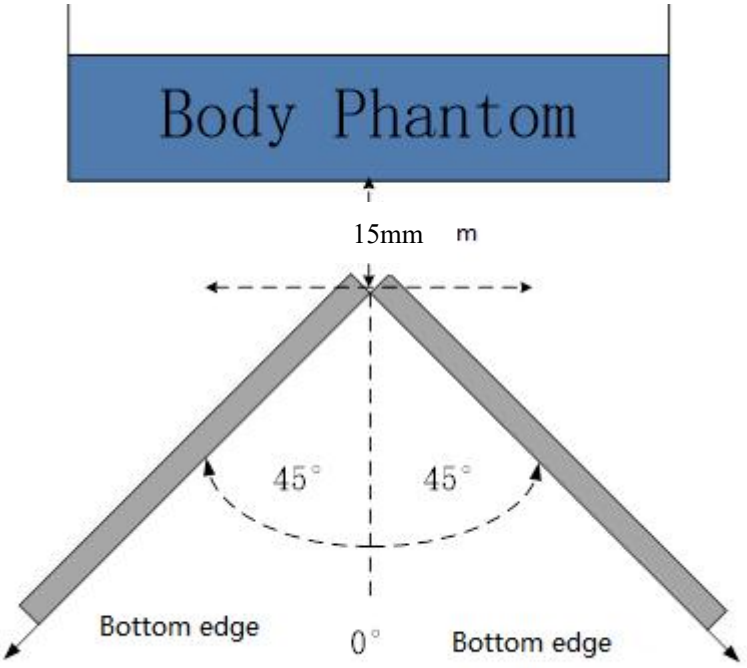



**The Front edge evaluation**

©Copyright. All rights reserved by CTTL.




**The Back Right edge evaluation**




**The Top edge evaluation**

Based on the above evaluation, we come to the conclusion that the sensor triggering is not released and normal maximum output power is not restored within the ±45° range at the smallest sensor triggering test distance declared by manufacturer.

©Copyright. All rights reserved by CTTL.

# ANNEX J Accreditation Certificate

©Copyright. All rights reserved by CTTL.