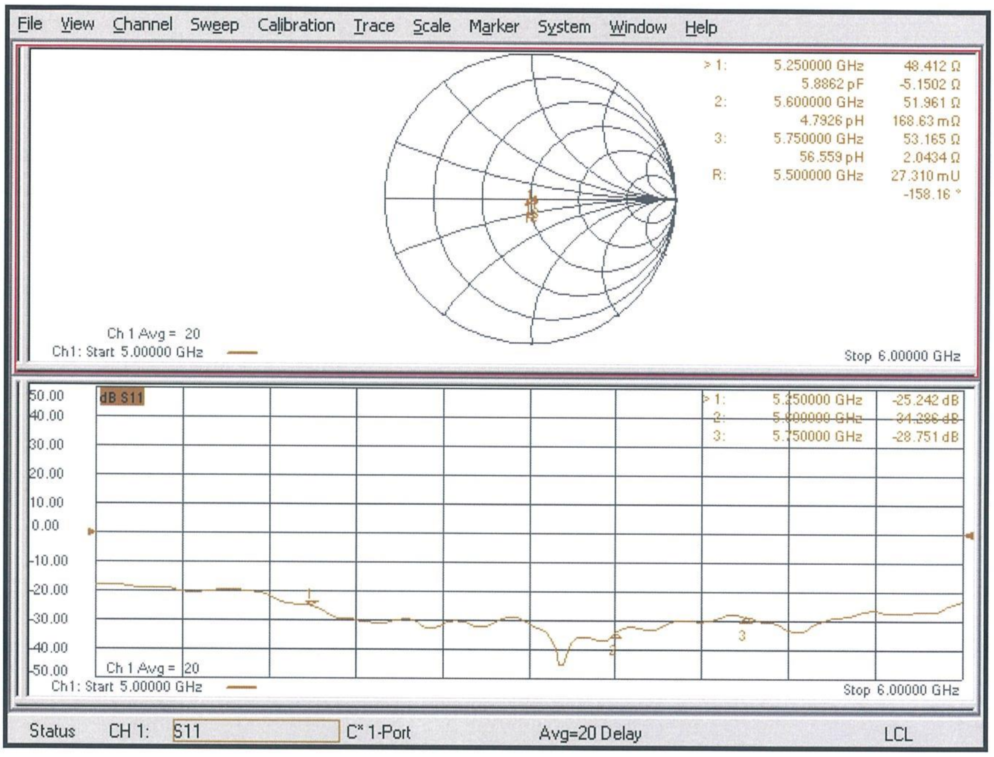
Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 31.01.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1262

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz
Medium parameters used: f = 5250 MHz; σ = 5.43 S/m; ε_r = 47.2; ρ = 1000 kg/m^3,
Medium parameters used: f = 5600 MHz; σ = 5.9 S/m; ε_r = 46.6; ρ = 1000 kg/m^3,
Medium parameters used: f = 5750 MHz; σ = 6.11 S/m; ε_r = 46.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

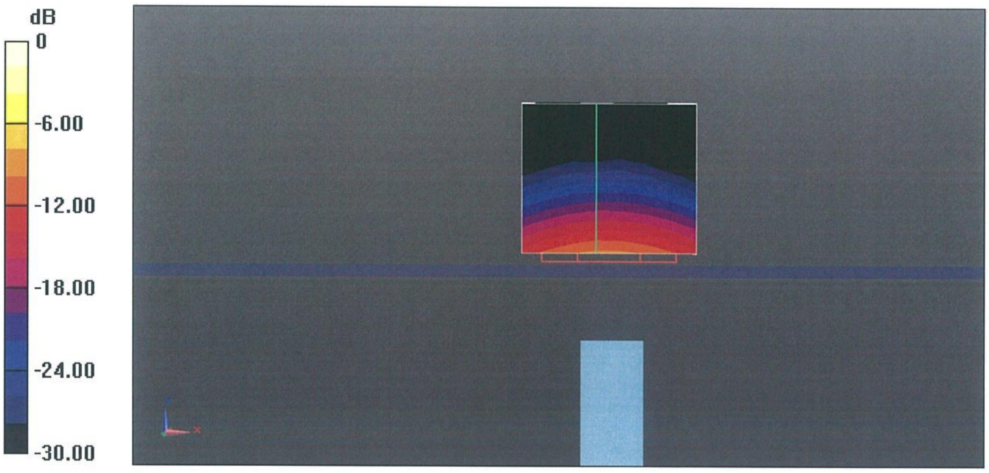
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.26, 5.26, 5.26) @ 5250 MHz, ConvF(4.7, 4.7, 4.7) @ 5600 MHz, ConvF(4.62, 4.62, 4.62) @ 5750 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 68.34 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 29.6 W/kg
SAR(1 g) = 7.58 W/kg; SAR(10 g) = 2.12 W/kg
Maximum value of SAR (measured) = 17.6 W/kg

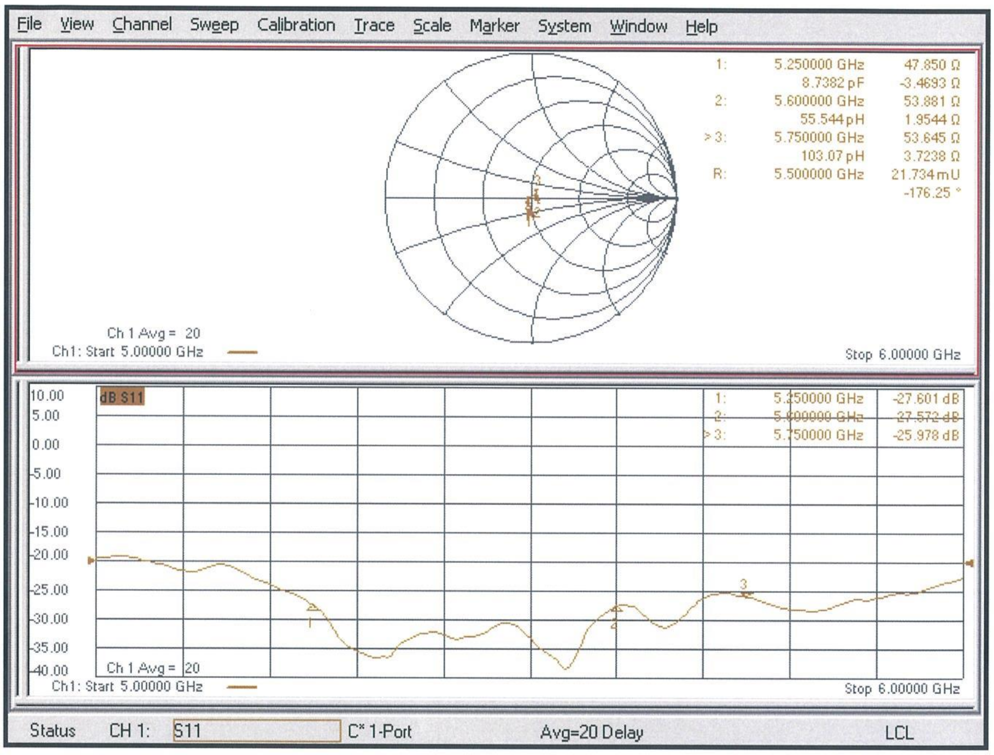
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.75 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 33.7 W/kg
SAR(1 g) = 7.87 W/kg; SAR(10 g) = 2.2 W/kg
Maximum value of SAR (measured) = 18.9 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.01 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 33.2 W/kg
SAR(1 g) = 7.58 W/kg; SAR(10 g) = 2.1 W/kg
Maximum value of SAR (measured) = 18.4 W/kg

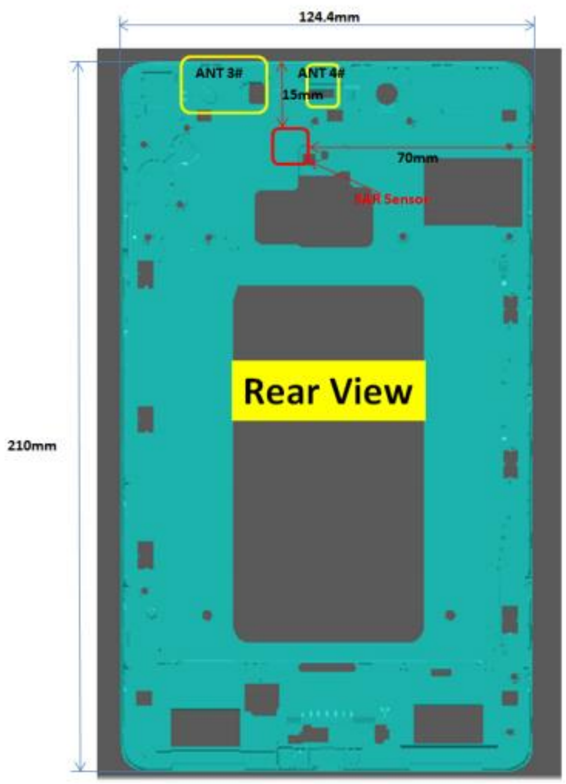


0 dB = 18.4 W/kg = 12.65 dBW/kg

Impedance Measurement Plot for Body TSL



ANNEX I Sensor Triggering Data Summary



Antenna	Band	Conducted power reduced (dB)
3# (WIFI 2.4G)	2.4G	9.5
4# (WIFI 5G)	5G	3.5

Antenna	Trigger position	Trigger distance (mm)
3# (WIFI 2.4G)	Back	10
	Top	5
	Front	8
4# (WIFI 5G)	Back	10
	Top	5
	Front	8

According to the above description, this device was tested by the manufacturer to determine the SAR sensor triggering distances for the rear and bottom edge of the device. The measured power state within ±5mm of the triggering points (or until touching the phantom) is included for rear and each applicable edge.

To ensure all production units are compliant it is necessary to test SAR at a distance 1mm less than the smallest distance from the device and SAR phantom with the device at maximum output power without power reduction.

We tested the power and got the different proximity sensor triggering distances for rear, left edge and top edge. But the manufacturer has declared 20mm (rear) / 15mm (left edge) / 30mm (top edge) are the most conservative triggering distance for main antenna and 10mm (rear) / 5mm (top edge) for wifi antenna. Therefore base on the most conservative triggering distances as above, additional SAR measurements were required at 9mm (rear) / 4mm (top edge) for wifi antenna.

Rear of wifi antenna

Moving device toward the phantom:

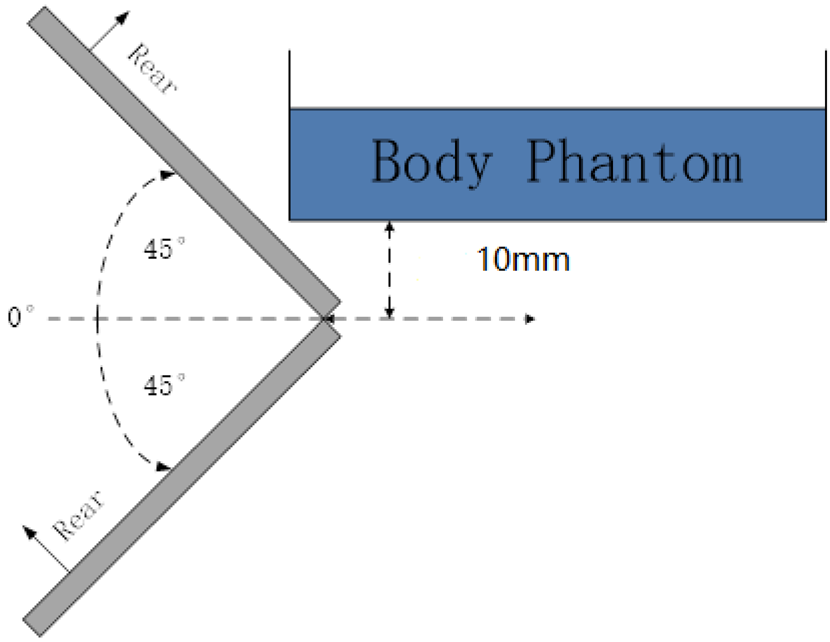
The power state											
Distance [mm]	**15**	**14**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Top Edge of wifi antenna

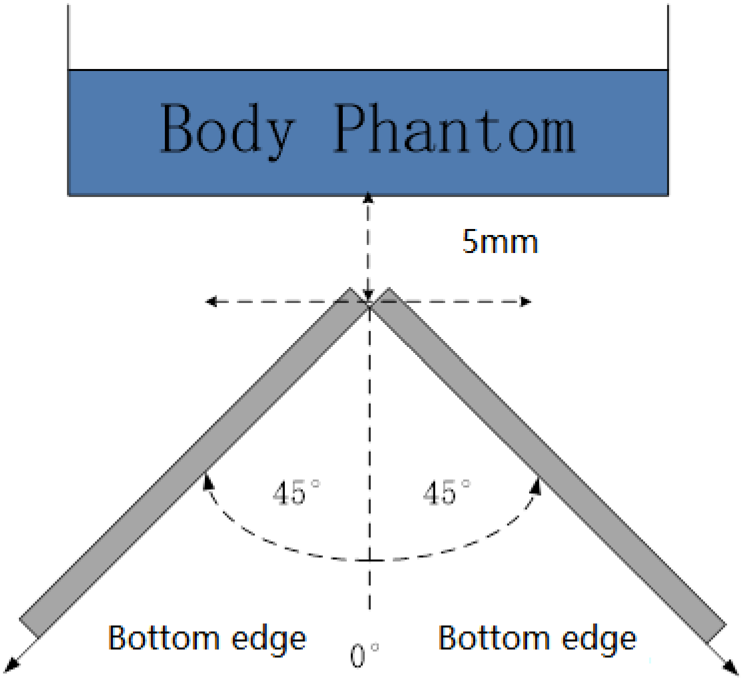
Moving device toward the phantom:

The power state											
Distance [mm]	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

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 distance by 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 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.

ANNEX J Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 600118-0

Telecommunication Technology Labs, CAICT
Beijing
China

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2018-09-28 through 2019-09-30
Effective Dates

DEPARTMENT OF COMMERCE · UNITED STATES OF AMERICA

For the National Voluntary Laboratory Accreditation Program