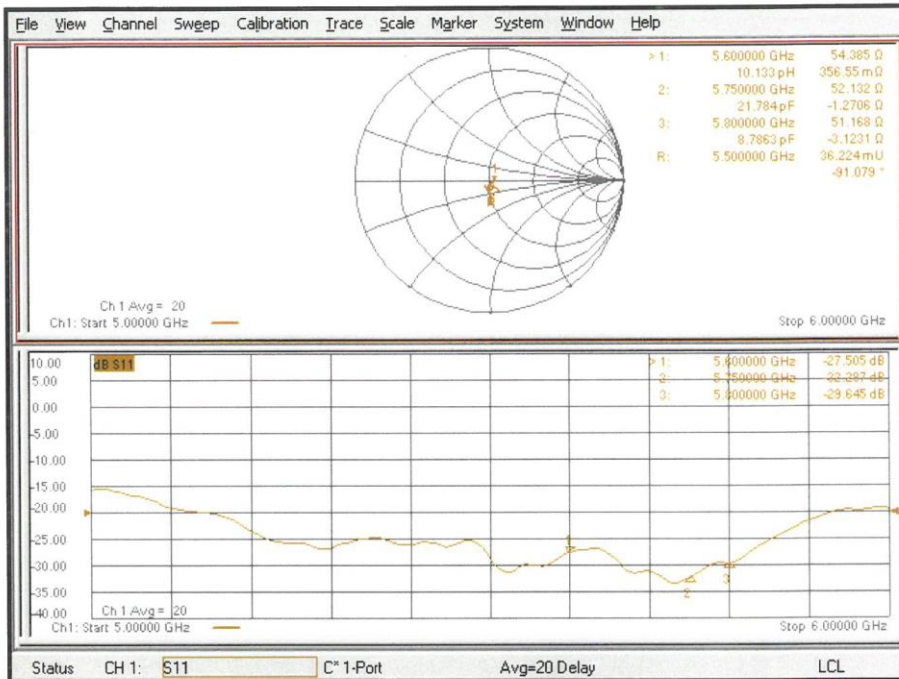


Impedance Measurement Plot for Head TSL (5600, 5750, 5800 MHz)



**DASY5 Validation Report for Body TSL**

Date: 27.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1060**

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5250 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz, Frequency: 5800 MHz  
Medium parameters used: f = 5200 MHz;  $\sigma = 5.46$  S/m;  $\epsilon_r = 47.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>,  
Medium parameters used: f = 5250 MHz;  $\sigma = 5.53$  S/m;  $\epsilon_r = 47.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>,  
Medium parameters used: f = 5300 MHz;  $\sigma = 5.6$  S/m;  $\epsilon_r = 47.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>,  
Medium parameters used: f = 5500 MHz;  $\sigma = 5.87$  S/m;  $\epsilon_r = 47.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>,  
Medium parameters used: f = 5600 MHz;  $\sigma = 6.01$  S/m;  $\epsilon_r = 47$ ;  $\rho = 1000$  kg/m<sup>3</sup>,  
Medium parameters used: f = 5750 MHz;  $\sigma = 6.22$  S/m;  $\epsilon_r = 46.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>,  
Medium parameters used: f = 5800 MHz;  $\sigma = 6.29$  S/m;  $\epsilon_r = 46.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section  
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

## DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.29, 5.29, 5.29) @ 5200 MHz, ConvF(5.26, 5.26, 5.26) @ 5250 MHz, ConvF(5.23, 5.23, 5.23) @ 5300 MHz, ConvF(4.84, 4.84, 4.84) @ 5500 MHz, ConvF(4.79, 4.79, 4.79) @ 5600 MHz, ConvF(4.66, 4.66, 4.66) @ 5750 MHz, ConvF(4.62, 4.62, 4.62) @ 5800 MHz; Calibrated: 31.12.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 67.58 V/m; Power Drift = -0.08 dB  
Peak SAR (extrapolated) = 27.8 W/kg  
**SAR(1 g) = 7.3 W/kg; SAR(10 g) = 2.04 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 67.4%  
Maximum value of SAR (measured) = 17.0 W/kg

**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 = 67.59 V/m; Power Drift = -0.08 dB  
Peak SAR (extrapolated) = 29.0 W/kg  
**SAR(1 g) = 7.45 W/kg; SAR(10 g) = 2.09 W/kg**  
Smallest distance from peaks to all points 3 dB below = 6.9 mm  
Ratio of SAR at M2 to SAR at M1 = 66.5%  
Maximum value of SAR (measured) = 17.4 W/kg

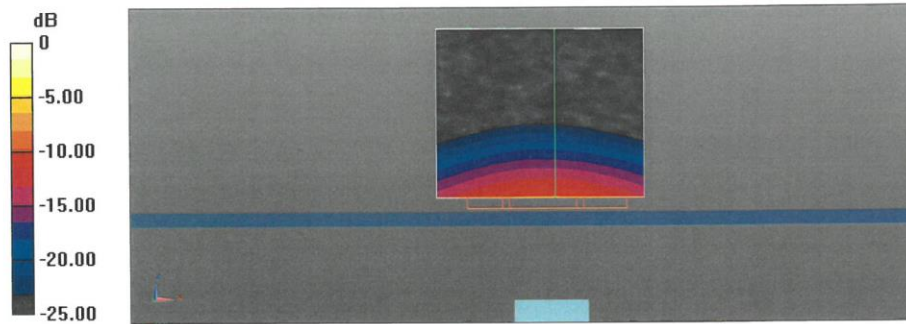
**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 67.12 V/m; Power Drift = -0.07 dB  
Peak SAR (extrapolated) = 29.1 W/kg  
**SAR(1 g) = 7.36 W/kg; SAR(10 g) = 2.06 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 66.1%  
Maximum value of SAR (measured) = 17.3 W/kg

**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 68.41 V/m; Power Drift = -0.05 dB  
Peak SAR (extrapolated) = 33.0 W/kg  
**SAR(1 g) = 7.86 W/kg; SAR(10 g) = 2.17 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 64.2%  
Maximum value of SAR (measured) = 19.0 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 = 67.25 V/m; Power Drift = -0.08 dB  
Peak SAR (extrapolated) = 33.2 W/kg  
**SAR(1 g) = 7.72 W/kg; SAR(10 g) = 2.15 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 63.4%  
Maximum value of SAR (measured) = 18.7 W/kg

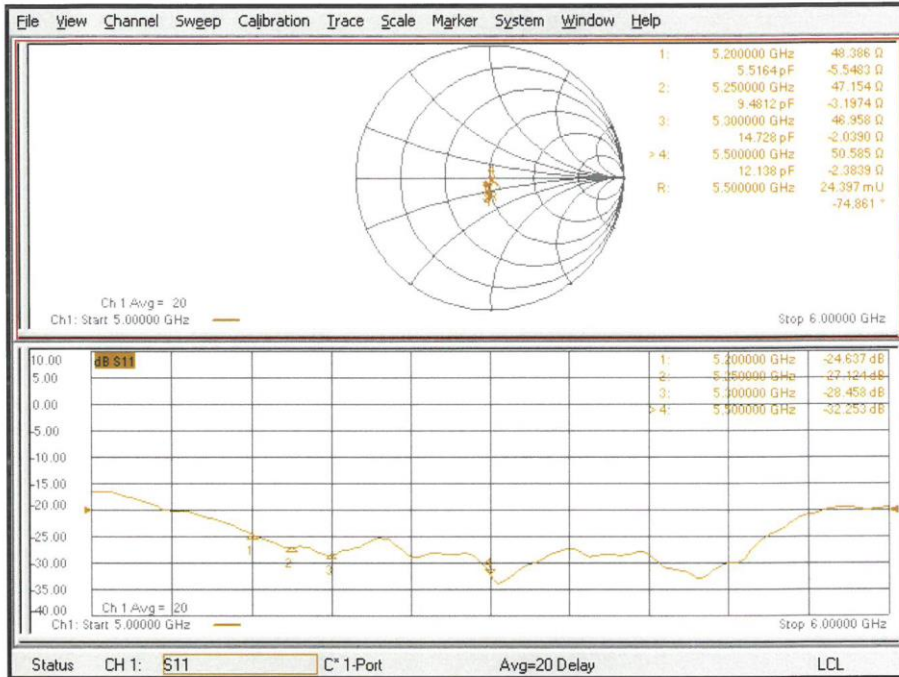
**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 65.67 V/m; Power Drift = -0.06 dB  
Peak SAR (extrapolated) = 34.2 W/kg  
**SAR(1 g) = 7.61 W/kg; SAR(10 g) = 2.11 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 62%  
Maximum value of SAR (measured) = 18.7 W/kg

**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm  
Reference Value = 65.55 V/m; Power Drift = -0.06 dB  
Peak SAR (extrapolated) = 32.7 W/kg  
**SAR(1 g) = 7.42 W/kg; SAR(10 g) = 2.04 W/kg**  
Smallest distance from peaks to all points 3 dB below = 7.2 mm  
Ratio of SAR at M2 to SAR at M1 = 62.5%  
Maximum value of SAR (measured) = 18.2 W/kg

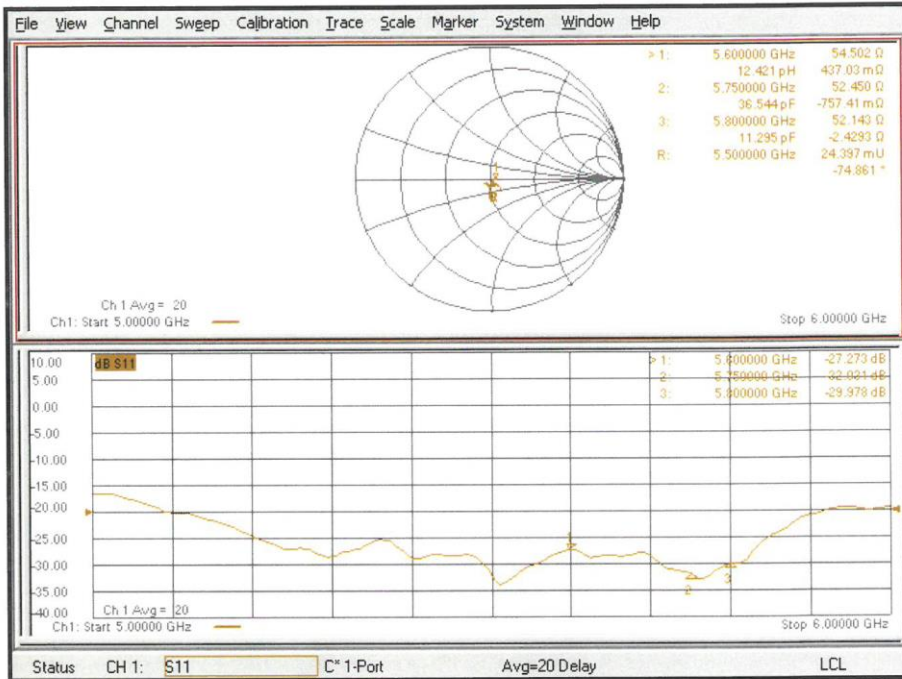


0 dB = 19.0 W/kg = 12.79 dBW/kg

Impedance Measurement Plot for Body TSL (5200, 5250, 5300, 5500 MHz)



Impedance Measurement Plot for Body TSL (5600, 5750, 5800 MHz)



## ANNEX I Sensor Triggering Data Summary

WIFI Antenna SAR sensor triggering distance	
Front	14mm
Rear	8mm
top	13mm

According to the above description, this device was tested by the manufacturer to determine the SAR sensor triggering distances for the rear, front, and top edge of the device. The measured power state within  $\pm 5$ mm 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, front and top edge. But the manufacturer has declared 14mm (front edge) 8mm (rear edge) / 13mm (top edge) are the most conservative triggering distance for wifi antenna. Therefore base on the most conservative triggering distances as above, additional SAR measurements were required at 13mm (front edge) 7mm (rear edge) / 12mm (top edge) for WiFi antenna.

### Rear of WiFi antenna

Moving device toward the phantom:

The power state											
Distance [mm]	13	12	11	10	9	8	7	6	5	4	3
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	3	4	5	6	7	8	9	10	11	12	13
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

**Front of WiFi antenna**

Moving device toward the phantom:

The power state											
Distance [mm]	19	18	17	16	15	14	13	12	11	10	9
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	9	10	11	12	13	14	15	16	17	18	19
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

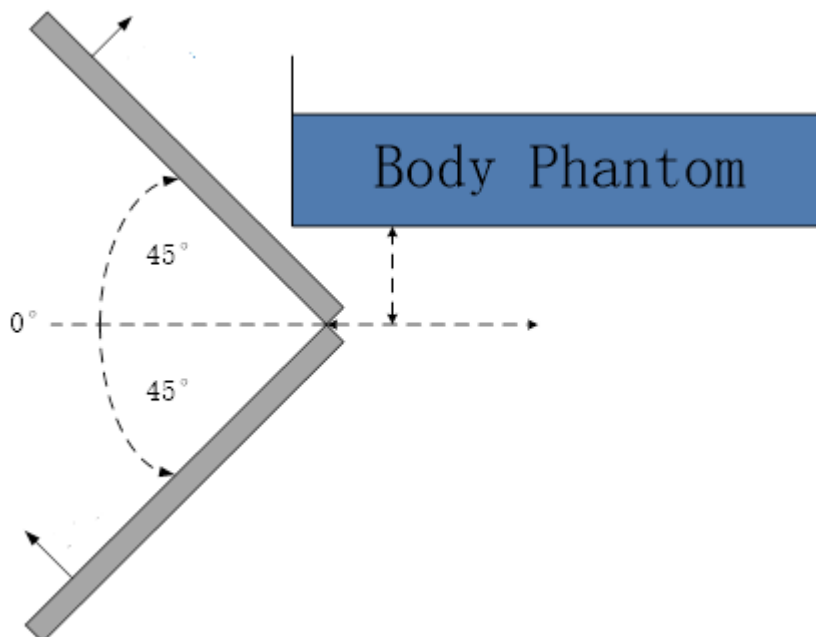
**Top of Wifi antenna**

The power state											
Distance [mm]	18	17	16	15	14	13	12	11	10	9	8
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

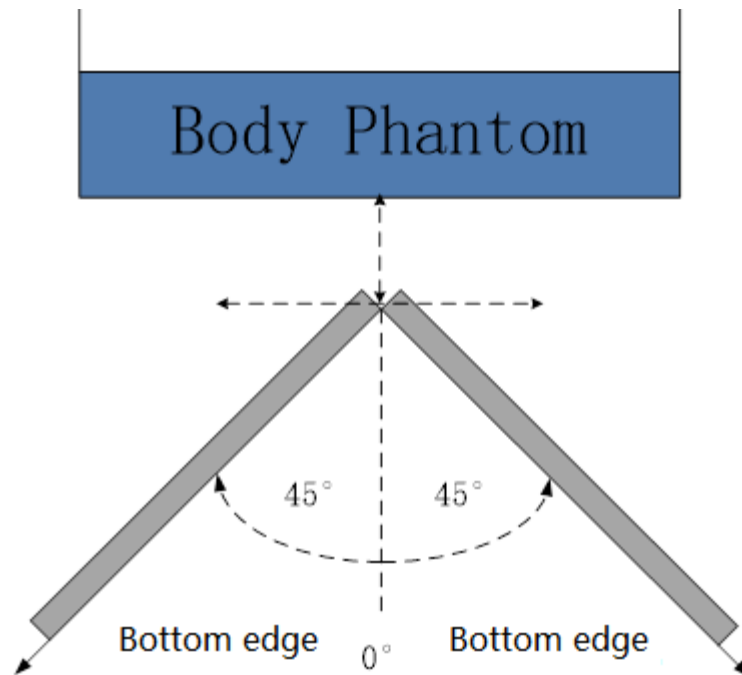
Moving device away from the phantom:

The power state											
Distance [mm]	8	9	10	11	12	13	14	15	16	17	18
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

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  $\leq 10^\circ$  increments until the tablet is  $\pm 45^\circ$  or more from the vertical position at  $0^\circ$ .


**The Front/Rear 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  $\pm 45^\circ$  range at the smallest sensor triggering test distance declared by manufacturer.

**ANNEX J Accreditation Certificate**

<b>United States Department of Commerce National Institute of Standards and Technology</b>	
	
<hr/> <b>Certificate of Accreditation to ISO/IEC 17025:2017</b> <hr/>	
NVLAP LAB CODE: 600118-0	
<b>Telecommunication Technology Labs, CAICT</b> Beijing China	
<i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i>	
<b>Electromagnetic Compatibility &amp; Telecommunications</b>	
<i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. 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).</i>	
<hr/> 2020-09-29 through 2021-09-30 Effective Dates	 For the National Voluntary Laboratory Accreditation Program