Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 3700 MHz

Impedance, transformed to feed point	47.5 Ω - 6.8 jΩ
Return Loss	- 22.6 dB

Antenna Parameters with Head TSL at 3800 MHz

Impedance, transformed to feed point	57.9 Ω - 6.3 jΩ
Return Loss	- 20.6 dB

Antenna Parameters with Body TSL at 3700 MHz

Impedance, transformed to feed point	47.8 Ω - 4.1 jΩ
Return Loss	- 26.4 dB

Antenna Parameters with Body TSL at 3800 MHz

Impedance, transformed to feed point	58.9 Ω - 4.1 jΩ
Return Loss	- 20.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.139 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 23.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 3700 MHz; Type: D3700V2; Serial: D3700V2 - SN: 1004

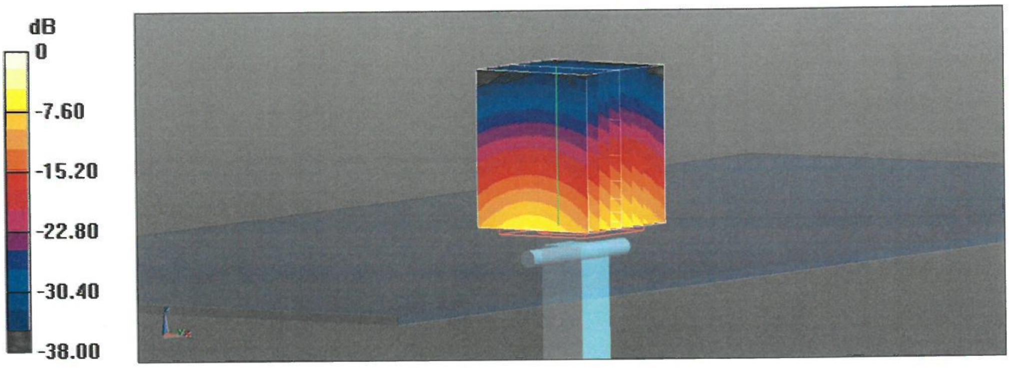
Communication System: UID 0 - CW; Frequency: 3700 MHz, Frequency: 3800 MHz
Medium parameters used: f = 3700 MHz; σ = 3.05 S/m; ε_r = 37.4; ρ = 1000 kg/m^3,
Medium parameters used: f = 3800 MHz; σ = 3.13 S/m; ε_r = 37.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(7.73, 7.73, 7.73) @ 3700 MHz, ConvF(7.73, 7.73, 7.73) @ 3800 MHz; Calibrated: 31.12.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

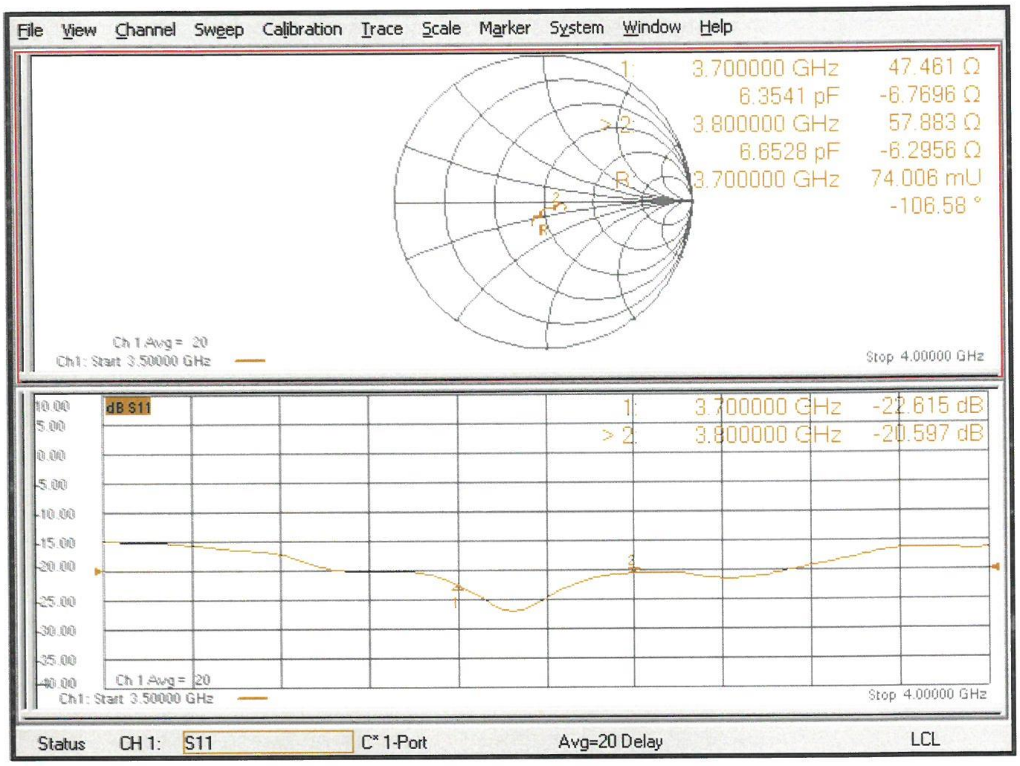
Dipole Calibration for Head Tissue/Pin=100 mW, d=10mm, f=3700MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.79 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 19.2 W/kg
SAR(1 g) = 6.69 W/kg; SAR(10 g) = 2.41 W/kg
Smallest distance from peaks to all points 3 dB below = 8 mm
Ratio of SAR at M2 to SAR at M1 = 73.5%
Maximum value of SAR (measured) = 13.0 W/kg

Dipole Calibration for Head Tissue/Pin=100 mW, d=10mm, f=3800MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 68.69 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 18.8 W/kg
SAR(1 g) = 6.55 W/kg; SAR(10 g) = 2.39 W/kg
Smallest distance from peaks to all points 3 dB below = 8.6 mm
Ratio of SAR at M2 to SAR at M1 = 73.2%
Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 13.0 W/kg = 11.15 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 27.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 3700 MHz; Type: D3700V2; Serial: D3700V2 - SN: 1004

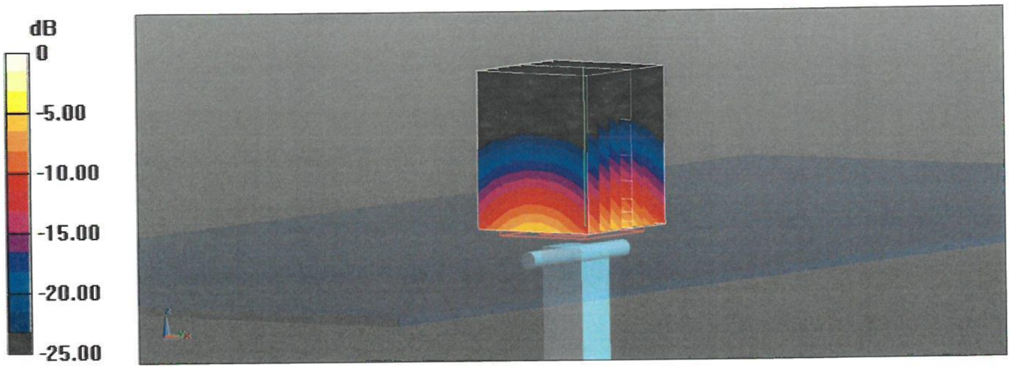
Communication System: UID 0 - CW; Frequency: 3700 MHz, Frequency: 3800 MHz
Medium parameters used: f = 3700 MHz; σ = 3.54 S/m; ε_r = 50.3; ρ = 1000 kg/m^3,
Medium parameters used: f = 3800 MHz; σ = 3.65 S/m; ε_r = 50.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(7.31, 7.31, 7.31) @ 3700 MHz, ConvF(7.31, 7.31, 7.31) @ 3800 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)

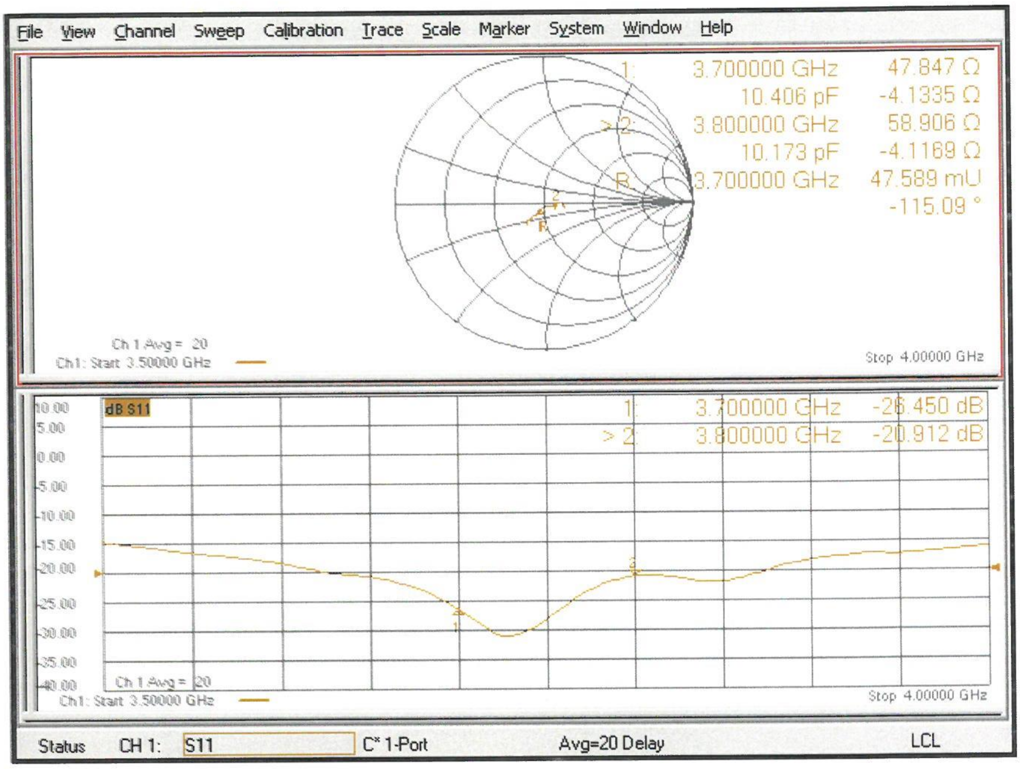
Dipole Calibration for Body Tissue/Pin=100 mW, d=10mm, f=3700MHz/Zoom Scan , dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.62 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 17.7 W/kg
SAR(1 g) = 6.37 W/kg; SAR(10 g) = 2.28 W/kg
Smallest distance from peaks to all points 3 dB below = 8 mm
Ratio of SAR at M2 to SAR at M1 = 74.4%
Maximum value of SAR (measured) = 12.3 W/kg

Dipole Calibration for Body Tissue/Pin=100 mW, d=10mm, f=3800MHz/Zoom Scan , dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 61.65 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 6.12 W/kg; SAR(10 g) = 2.21 W/kg
Smallest distance from peaks to all points 3 dB below = 8 mm
Ratio of SAR at M2 to SAR at M1 = 73.7%
Maximum value of SAR (measured) = 11.9 W/kg



0 dB = 12.3 W/kg = 10.90 dBW/kg

Impedance Measurement Plot for Body TSL



Certificate No: D3700V2-1004_Jul20 Page 11 of 11

ANNEX I Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

NVLAP® ilac-MRA

Certificate of Accreditation to ISO/IEC 17025:2017

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 17025:2017. 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).

DEPARTMENT OF COMMERCE • UNITED STATES OF AMERICA

2020-09-29 through 2021-09-30
Effective Dates

For the National Voluntary Laboratory Accreditation Program