## Measurement Conditions

DASY system configuration, as far as not given on page 1.
DASY system configuration, as far as not given on page 1.

| DASY Version | DASY52 | V52.10.4 |
| :--- | :---: | :---: |
| Extrapolation | Advanced Extrapolation |  |
| Phantom | Modular Flat Phantom |  |
| Distance Dipole Center - TSL | 10 mm | with Spacer |
| Zoom Scan Resolution | $\mathrm{dx}, \mathrm{dy}, \mathrm{dz}=5 \mathrm{~mm}$ |  |
| Frequency | $1900 \mathrm{MHz} \pm 1 \mathrm{MHz}$ |  |

Head TSL parameters
The following parameters and calculations were applied.

|  | Temperature | Permittivity | Conductivity |
| :--- | :---: | :---: | :---: |
| Nominal Head TSL parameters | $22.0^{\circ} \mathrm{C}$ | 40.0 | $1.40 \mathrm{mho} / \mathrm{m}$ |
| Measured Head TSL parameters | $(22.0 \pm 0.2)^{\circ} \mathrm{C}$ | $39.4 \pm 6 \%$ | $1.38 \mathrm{mho} / \mathrm{m} \pm 6 \%$ |
| Head TSL temperature change during test | $<0.5^{\circ} \mathrm{C}$ | $\ldots--$ | --- |

## SAR result with Head TSL

| SAR averaged over $\mathbf{1} \mathbf{~ c m}^{\mathbf{3}} \mathbf{( 1 \mathbf { g } )}$ of Head TSL | Condition |  |
| :--- | :---: | :---: |
| SAR measured | 250 mW input power | $9.89 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{3 9 . 8} \mathbf{~ W} / \mathbf{k g} \pm \mathbf{1 7 . 0} \%(\mathbf{k}=\mathbf{2})$ |


| SAR averaged over $\mathbf{1 0} \mathbf{c m}^{\mathbf{3}} \mathbf{( 1 0 ~ \mathbf { ~ } )}$ of Head TSL | condition |  |
| :--- | :---: | :---: |
| SAR measured | $\mathbf{2 5 0} \mathbf{~ m W}$ input power | $5.17 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{2 0 . 7} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 6 . 5} \%(\mathbf{k}=\mathbf{2})$ |

## Appendix (Additional assessments outside the scope of SCS 0108)

## Antenna Parameters with Head TSL

| Impedance, transformed to feed point | $51.5 \Omega+3.9 \mathrm{j} \Omega$ |
| :--- | :---: |
| Return Loss | -27.7 dB |

## General Antenna Parameters and Design

| Electrical Delay (one direction) | 1.203 ns |
| :--- | :--- |

After long term use with 100 W 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

## Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2-SN: 5d101
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: $\mathrm{f}=1900 \mathrm{MHz} ; \sigma=1.38 \mathrm{~S} / \mathrm{m} ; \varepsilon_{\mathrm{r}}=39.4 ; \rho=1000 \mathrm{~kg} / \mathrm{m}^{3}$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY52 Configuration:

- Probe: EX3DV4 - SN7349; $\operatorname{ConvF}(8.35,8.35,8.35) @ 1900 \mathrm{MHz}$; Calibrated: 10.01.2023
- Sensor-Surface: 1.4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 19.12.2022
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)


## Dipole Calibration for Head Tissue/Pin=250 mW, $\mathbf{d = 1 0 m m} /$ Zoom Scan ( $7 \times 7 \times 7$ )/Cube 0:

Measurement grid: $\mathrm{dx}=5 \mathrm{~mm}, \mathrm{dy}=5 \mathrm{~mm}, \mathrm{dz}=5 \mathrm{~mm}$
Reference Value $=109.1 \mathrm{~V} / \mathrm{m}$; Power Drift $=-0.01 \mathrm{~dB}$
Peak SAR $($ extrapolated $)=18.1 \mathrm{~W} / \mathrm{kg}$
$\operatorname{SAR}(1 \mathrm{~g})=9.89 \mathrm{~W} / \mathrm{kg} ; \operatorname{SAR}(10 \mathrm{~g})=5.17 \mathrm{~W} / \mathrm{kg}$
Smallest distance from peaks to all points 3 dB below $=9.8 \mathrm{~mm}$
Ratio of SAR at M2 to SAR at M1 $=55.1 \%$
Maximum value of SAR (measured) $=15.2 \mathrm{~W} / \mathrm{kg}$


## Impedance Measurement Plot for Head TSL



## 2450 MHz Dipole Calibration Certificate



Certificate No: D2450V2-853_Jul23
Page 1 of 6

## Calibration Laboratory of

Schmid \& Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
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
Glossary:
TSL
ConvF
N/A
tissue simulating liquid sensitivity in TSL / NORM $x, y, z$ not applicable or not measured

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
C Servizio svizzero di taratura
Swiss Calibration Service
Accreditation No.: SCS 0108

## Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz )", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz "

## Additional Documentation:

c) DASY System Handbook

## Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $\mathrm{k}=2$, which for a normal distribution corresponds to a coverage probability of approximately $95 \%$.

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| DASY Version | DASY52 | V52.10.4 |
| :--- | :---: | :---: |
| Extrapolation | Advanced Extrapolation |  |
| Phantom | Modular Flat Phantom |  |
| Distance Dipole Center - TSL | 10 mm | with Spacer |
| Zoom Scan Resolution | $\mathrm{dx}, \mathrm{dy}, \mathrm{dz}=5 \mathrm{~mm}$ |  |
| Frequency | $2450 \mathrm{MHz} \pm 1 \mathrm{MHz}$ |  |

## Head TSL parameters

The following parameters and calculations were applied.

|  | Temperature | Permittivity | Conductivity |
| :--- | :---: | :---: | :---: |
| Nominal Head TSL parameters | $22.0^{\circ} \mathrm{C}$ | 39.2 | $1.80 \mathrm{mho} / \mathrm{m}$ |
| Measured Head TSL parameters | $(22.0 \pm 0.2)^{\circ} \mathrm{C}$ | $37.8 \pm 6 \%$ | $1.85 \mathrm{mho} / \mathrm{m} \pm 6 \%$ |
| Head TSL temperature change during test | $<0.5^{\circ} \mathrm{C}$ | -- | -- |

SAR result with Head TSL

| SAR averaged over $\mathbf{1} \mathbf{c m}^{\mathbf{3}} \mathbf{( 1 \mathbf { g } )}$ of Head TSL | Condition |  |
| :--- | :---: | :---: |
| SAR measured | 250 mW input power | $13.3 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{5 2 . 1} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 7 . 0} \%(\mathbf{k}=\mathbf{2})$ |


| SAR averaged over $\mathbf{1 0} \mathbf{c m}^{\mathbf{3}} \mathbf{( 1 0 ~ \mathbf { g } ) \text { of Head TSL }}$ | condition |  |
| :--- | :---: | :---: |
| SAR measured | $\mathbf{2 5 0} \mathrm{mW}$ input power | $6.25 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{2 4 . 7} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 6 . 5} \%$ (k=2) |

## Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

| Impedance, transformed to feed point | $54.3 \Omega+4.2 \mathrm{j} \Omega$ |
| :--- | :---: |
| Return Loss | -24.8 dB |

## General Antenna Parameters and Design

| Electrical Delay (one direction) | 1.164 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

Test Laboratory: SPEAG, Zurich, Switzerland

## DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:853

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: $\mathrm{f}=2450 \mathrm{MHz} ; \sigma=1.85 \mathrm{~S} / \mathrm{m} ; \varepsilon_{\mathrm{r}}=37.8 ; \rho=1000 \mathrm{~kg} / \mathrm{m}^{3}$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)
DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.9, 7.9, 7.9) @ 2450 MHz ; Calibrated: 10.01.2023
- Sensor-Surface: 1.4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 19.12.2022
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration for Head Tissue/Pin=250 mW, $\mathbf{d = 1 0 m m / Z o o m ~ S c a n ~ ( 7 x 7 x 7 ) / C u b e ~ 0 : ~}$
Measurement grid: $\mathrm{dx}=5 \mathrm{~mm}, \mathrm{dy}=5 \mathrm{~mm}, \mathrm{dz}=5 \mathrm{~mm}$
Reference Value $=115.1 \mathrm{~V} / \mathrm{m}$; Power Drift $=0.00 \mathrm{~dB}$
Peak SAR $($ extrapolated $)=25.8 \mathrm{~W} / \mathrm{kg}$
$\operatorname{SAR}(1 \mathrm{~g})=13.3 \mathrm{~W} / \mathrm{kg} ; \operatorname{SAR}(10 \mathrm{~g})=6.25 \mathrm{~W} / \mathrm{kg}$
Smallest distance from peaks to all points 3 dB below $=9 \mathrm{~mm}$
Ratio of SAR at M2 to SAR at M1 $=51.7 \%$
Maximum value of SAR (measured) $=21.6 \mathrm{~W} / \mathrm{kg}$


Impedance Measurement Plot for Head TSL


TTL

## 5GHz Dipole Calibration Certificate



Certificate No: D5GHzV2-1060_Jun23
Page 1 of 12

## Calibration Laboratory of

S Schweizerischer Kalibrierdienst
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland


C Service suisse d'étalonnage
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
Accreditation No.: SCS 0108
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

## Glossary:

TSL tissue simulating liquid
ConvF sensitivity in TSL / NORM $x, y, z$
N/A not applicable or not measured

## Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz )", October 2020.
b) KDB 865664 , "SAR Measurement Requirements for 100 MHz to 6 GHz "

## Additional Documentation:

c) DASY System Handbook

## Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The source is mounted in a touch configuration below the center marking of the flat phantom.
- Return Loss: This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $\mathrm{k}=2$, which for a normal distribution corresponds to a coverage probability of approximately $95 \%$.

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| DASY Version | DASY52 | V52.10.4 |
| :--- | :---: | :---: |
| Extrapolation | Advanced Extrapolation |  |
| Phantom | Modular Flat Phantom V5.0 |  |
| Distance Dipole Center - TSL | 10 mm | with Spacer |
| Zoom Scan Resolution | $\mathrm{dx}, \mathrm{dy}=4.0 \mathrm{~mm}, \mathrm{dz}=1.4 \mathrm{~mm}$ | Graded Ratio $=1.4$ (Z direction) |
|  | $5200 \mathrm{MHz} \pm 1 \mathrm{MHz}$ |  |
|  | $5250 \mathrm{MHz} \pm 1 \mathrm{MHz}$ |  |
| Frequency | $5300 \mathrm{MHz} \pm 1 \mathrm{MHz}$ |  |
|  | $5500 \mathrm{MHz} \pm 1 \mathrm{MHz}$ |  |
|  | $5600 \mathrm{MHz} \pm 1 \mathrm{MHz}$ |  |
|  | $5750 \mathrm{MHz} \pm 1 \mathrm{MHz}$ |  |

## Head TSL parameters at $5200 \mathbf{M H z}$

The following parameters and calculations were applied.

|  | Temperature | Permittivity | Conductivity |
| :--- | :---: | :---: | :---: |
| Nominal Head TSL parameters | $22.0^{\circ} \mathrm{C}$ | 36.0 | $4.66 \mathrm{mho} / \mathrm{m}$ |
| Measured Head TSL parameters | $(22.0 \pm 0.2)^{\circ} \mathrm{C}$ | $35.5 \pm 6 \%$ | $4.53 \mathrm{mho} / \mathrm{m} \pm 6 \%$ |
| Head TSL temperature change during test | $<0.5^{\circ} \mathrm{C}$ | $\ldots--$ | $\ldots--$ |

## SAR result with Head TSL at $5200 \mathbf{M H z}$

| SAR averaged over $\mathbf{1} \mathbf{~ m}^{\mathbf{3}} \mathbf{( 1 \mathbf { g } )}$ of Head TSL | Condition |  |
| :--- | :---: | :---: |
| SAR measured | $\mathbf{1 0 0 ~ \mathrm { mW }}$ input power | $\mathbf{7 . 9 2 \mathrm { W } / \mathbf { k g }}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{7 8 . 9} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 9 . 9} \%(\mathbf{k}=\mathbf{2})$ |


| SAR averaged over $\left.\mathbf{1 0} \mathbf{~ c m}^{\mathbf{3}} \mathbf{( 1 0 ~ g}\right)$ of Head TSL | condition |  |
| :--- | :---: | :---: |
| SAR measured | 100 mW input power | $2.27 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{2 2 . 6} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 9 . 5} \%(\mathbf{k}=\mathbf{2})$ |

## Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

|  | Temperature | Permittivity | Conductivity |
| :--- | :---: | :---: | :---: |
| Nominal Head TSL parameters | $22.0^{\circ} \mathrm{C}$ | 35.9 | $4.71 \mathrm{mho} / \mathrm{m}$ |
| Measured Head TSL parameters | $(22.0 \pm 0.2)^{\circ} \mathrm{C}$ | $35.5 \pm 6 \%$ | $4.60 \mathrm{mho} / \mathrm{m} \pm 6 \%$ |
| Head TSL temperature change during test | $<0.5{ }^{\circ} \mathrm{C}$ | ---- | ---- |

SAR result with Head TSL at $5250 \mathbf{~ M H z}$

| SAR averaged over $\mathbf{1} \mathbf{c m}^{\mathbf{3}} \mathbf{( 1 \mathbf { g } )}$ of Head TSL | Condition |  |
| :--- | :---: | :---: |
| SAR measured | 100 mW input power | $\mathbf{7 . 9 8} \mathrm{W} / \mathrm{kg}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{7 9 . 6} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 9 . 9} \%(\mathbf{k}=\mathbf{2})$ |


| SAR averaged over $\left.\mathbf{1 0} \mathbf{~ c m}^{\mathbf{3}} \mathbf{( 1 0} \mathbf{g}\right)$ of Head TSL | condition |  |
| :--- | :---: | :---: |
| SAR measured | 100 mW input power | $2.29 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{2 2 . 8} \mathbf{~ W} / \mathbf{k g} \pm \mathbf{1 9 . 5} \%(\mathbf{k}=\mathbf{2})$ |

Head TSL parameters at $5300 \mathbf{M H z}$
The following parameters and calculations were applied.
The following parameters and calculations were applied.

|  | Temperature | Permittivity | Conductivity |
| :--- | :---: | :---: | :---: |
| Nominal Head TSL parameters | $22.0^{\circ} \mathrm{C}$ | 35.9 | $4.76 \mathrm{mho} / \mathrm{m}$ |
| Measured Head TSL parameters | $(22.0 \pm 0.2)^{\circ} \mathrm{C}$ | $35.5 \pm 6 \%$ | $4.67 \mathrm{mho} / \mathrm{m} \pm 6 \%$ |
| Head TSL temperature change during test | $<0.5^{\circ} \mathrm{C}$ | --- | --- |

## SAR result with Head TSL at $5300 \mathbf{~ M H z}$

| SAR averaged over $\mathbf{1} \mathbf{~ c m}^{\mathbf{3}} \mathbf{( 1 \mathbf { g } )}$ of Head TSL | Condition |  |
| :--- | :---: | :---: |
| SAR measured | 100 mW input power | $8.24 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{8 2 . 1} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 9 . 9} \% \mathbf{( k = 2 )}$ |


| SAR averaged over $\mathbf{1 0} \mathbf{c m}^{\mathbf{3}} \mathbf{( 1 0 ~ \mathbf { g } )}$ of Head TSL | condition |  |
| :--- | :---: | :---: |
| SAR measured | 100 mW input power | $2.35 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{2 3 . 4} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 9 . 5} \% \mathbf{( k = 2 )}$ |

## Head TSL parameters at $5500 \mathbf{M H z}$

The following parameters and calculations were applied.

|  | Temperature | Permittivity | Conductivity |
| :--- | :---: | :---: | :---: |
| Nominal Head TSL parameters | $22.0^{\circ} \mathrm{C}$ | 35.6 | $4.96 \mathrm{mho} / \mathrm{m}$ |
| Measured Head TSL parameters | $(22.0 \pm 0.2)^{\circ} \mathrm{C}$ | $35.4 \pm 6 \%$ | $4.89 \mathrm{mho} / \mathrm{m} \pm 6 \%$ |
| Head TSL temperature change during test | $<0.5^{\circ} \mathrm{C}$ | --- | --- |

## SAR result with Head TSL at $5500 \mathbf{~ M H z}$

| SAR averaged over $\mathbf{1} \mathbf{c m}^{\mathbf{3}} \mathbf{( 1 \mathbf { g } )}$ of Head TSL | Condition |  |
| :--- | :---: | :---: |
| SAR measured | 100 mW input power | $\mathbf{8 . 5 6 ~ W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{8 5 . 5} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 9 . 9} \%(\mathbf{k}=\mathbf{2})$ |


| SAR averaged over $\mathbf{1 0} \mathbf{c m}^{\mathbf{3}} \mathbf{( 1 0 ~ \mathbf { ~ g } )}$ of Head TSL | condition |  |
| :--- | :---: | :---: |
| SAR measured | $\mathbf{1 0 0} \mathbf{~ m W}$ input power | $2.42 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{2 4 . 1} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 9 . 5} \%(\mathbf{k}=\mathbf{2})$ |

## Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

|  | Temperature | Permittivity | Conductivity |
| :--- | :---: | :---: | :---: |
| Nominal Head TSL parameters | $22.0^{\circ} \mathrm{C}$ | 35.5 | $5.07 \mathrm{mho} / \mathrm{m}$ |
| Measured Head TSL parameters | $(22.0 \pm 0.2)^{\circ} \mathrm{C}$ | $35.3 \pm 6 \%$ | $4.97 \mathrm{mho} / \mathrm{m} \pm 6 \%$ |
| Head TSL temperature change during test | $<0.5^{\circ} \mathrm{C}$ | $\ldots--$ | $\ldots-$ |

## SAR result with Head TSL at $5600 \mathbf{M H z}$

| SAR averaged over $\mathbf{1} \mathbf{c m}^{\mathbf{3}} \mathbf{( 1 \mathbf { g } )}$ of Head TSL | Condition |  |
| :--- | :---: | :---: |
| SAR measured | 100 mW input power | $8.38 \mathrm{~W} / \mathrm{kg}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{8 3 . 6} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 9 . 9} \%(\mathbf{k}=\mathbf{2})$ |


| SAR averaged over $\mathbf{1 0} \mathbf{c m}^{\mathbf{3}} \mathbf{( 1 0 ~ \mathbf { g } )}$ of Head TSL | condition |  |
| :--- | :---: | :---: |
| SAR measured | 100 mW input power | $2.38 \mathrm{~W} / \mathbf{k g}$ |
| SAR for nominal Head TSL parameters | normalized to 1 W | $\mathbf{2 3 . 8} \mathbf{W} / \mathbf{k g} \pm \mathbf{1 9 . 5} \%(\mathbf{k}=\mathbf{2})$ |

