

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.0 Ω - 5.6 j Ω
Return Loss	- 23.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.6 Ω - 4.4 j Ω
Return Loss	- 22.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.152 ns
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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
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DASY5 Validation Report for Head TSL

Date: 21.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1012

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.01$ S/m; $\epsilon_r = 37.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.54, 7.54, 7.54) @ 2600 MHz; Calibrated: 29.06.2020
- 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=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 121.2 V/m; Power Drift = -0.04 dB

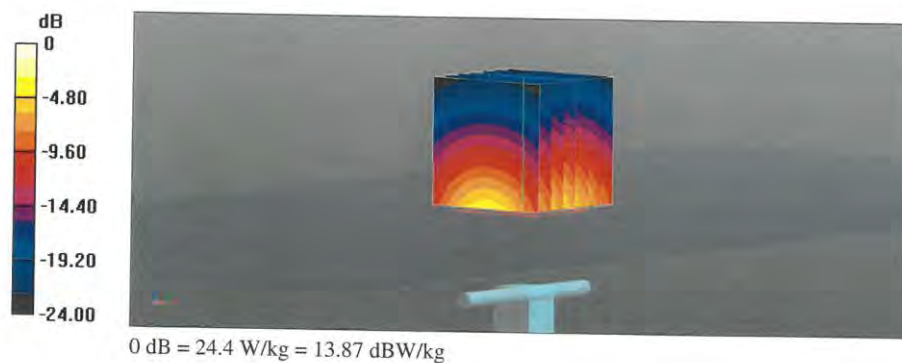
Peak SAR (extrapolated) = 29.3 W/kg

SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.40 W/kg

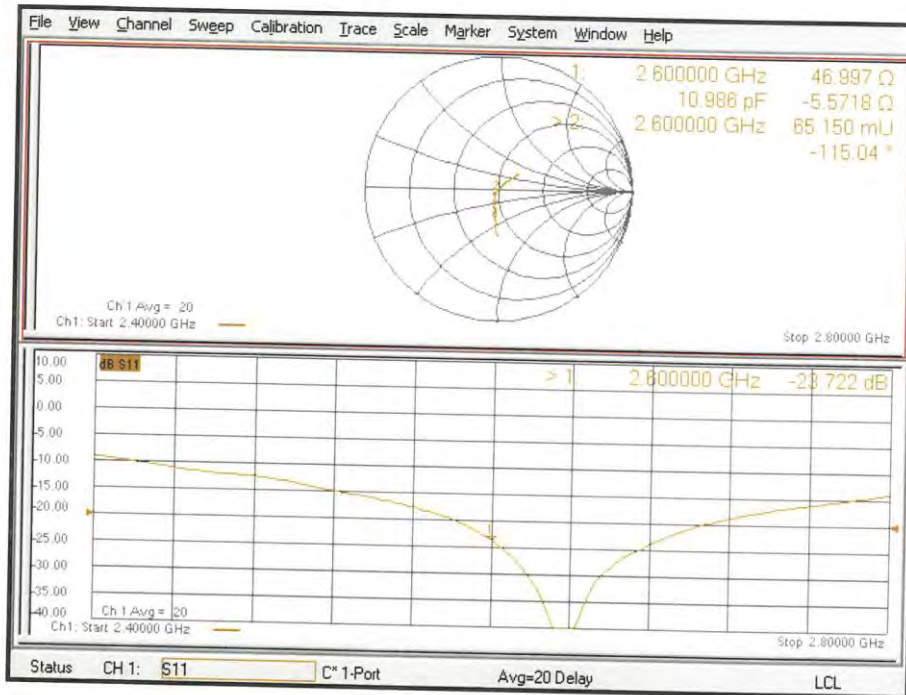
Smallest distance from peaks to all points 3 dB below = 8.9 mm

Ratio of SAR at M2 to SAR at M1 = 49.4%

Maximum value of SAR (measured) = 24.4 W/kg



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1012

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 2.20$ S/m; $\epsilon_r = 51.0$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.68, 7.68, 7.68) @ 2600 MHz; Calibrated: 29.06.2020
- 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=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 110.5 V/m; Power Drift = -0.09 dB

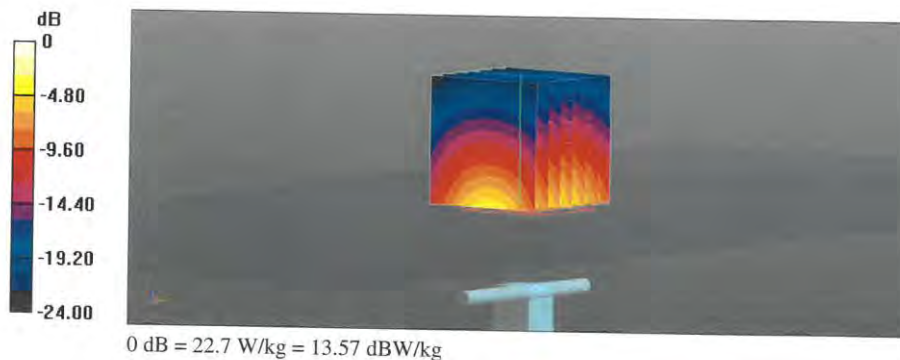
Peak SAR (extrapolated) = 28.0 W/kg

SAR(1 g) = 14.0 W/kg; SAR(10 g) = 6.20 W/kg

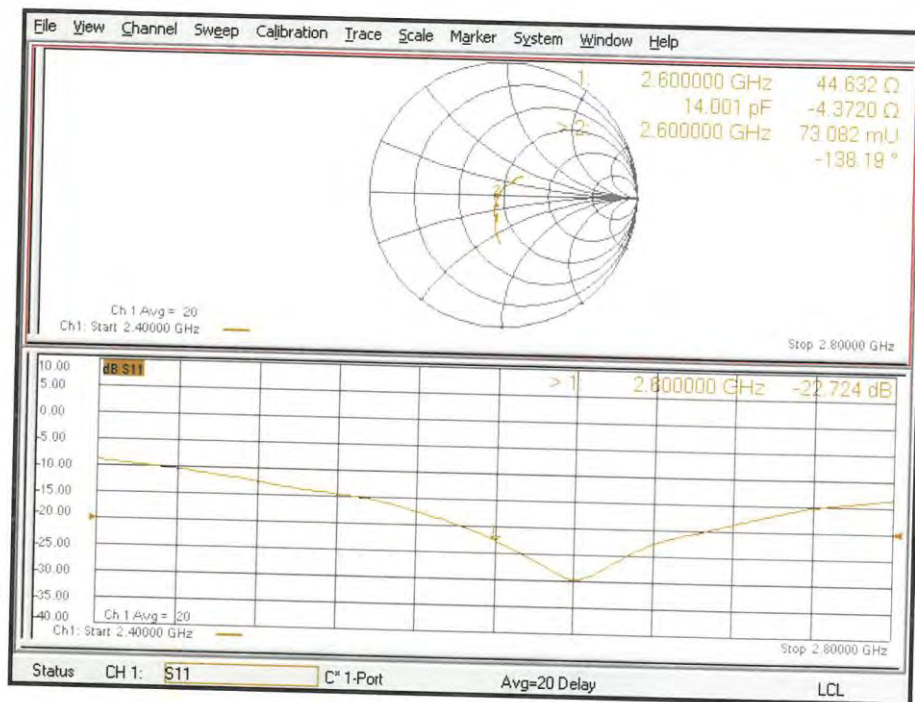
Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 50.8%

Maximum value of SAR (measured) = 22.7 W/kg



Impedance Measurement Plot for Body TSL





3700 MHz Dipole Calibration Certificate



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CNAS L0570

Add: No.52 HuanYuanBei Road, Haidian District, Beijing, 100191, CI
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com http://www.chinattl.cn

Client **AUDEN**Certificate No: **Z21-60065****CALIBRATION CERTIFICATE**Object **D3700V2 - SN: 1074**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **March 23, 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(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
ReferenceProbe EX3DV4	SN 3617	27-Jan-21(SPEAG,No.EX3-3617_Jan21)	Jan-22
DAE4	SN 777	08-Jan-21(CTTL-SPEAG,No.Z21-60003)	Jan-22
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	01-Feb-21 (CTTL, No.J21X00593)	Jan-22
NetworkAnalyzerE5071C	MY46110673	14-Jan-21 (CTTL, No.J21X00232)	Jan-22

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: March 28, 2021

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Certificate No: Z21-60065

Page 1 of 6



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Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: ettl@chinattl.com <http://www.chinattl.cn>

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:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- DASY4/5 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 dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. 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 $k=2$, which for a normal distribution Corresponds to a coverage probability of approximately 95%.



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Add: No.52 HuanYuanBei Road, Haidian District, Beijing, 100191, China
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E-mail: cttl@chinattl.com http://www.chinattl.cn

Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	3700 MHz $\pm$ 1 MHz	

Head TSL parameters at 3700 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	37.7	3.12 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	38.1 $\pm$ 6 %	3.10 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	---	----

SAR result with Head TSL at 3700 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	6.72 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	67.4 W/kg $\pm$ 24.4 % ($k=2$)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.47 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.8 W/kg $\pm$ 24.2 % ($k=2$)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL at 3700 MHz

Impedance, transformed to feed point	44.3Ω - 0.33jΩ
Return Loss	- 24.4dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.044 ns
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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

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Add: No.52 HuanYuanBei Road, Haidian District, Beijing, 100191, China
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E-mail: cttl@chinattl.com http://www.chinattl.cn

DASY5 Validation Report for Head TSL

Date: 03.23.2021

Test Laboratory: CTTL, Beijing, China

DUT: Dipole D3700V2; Type: D3700V2; Serial: D3700V2 - SN: 1074

Communication System: CW; Frequency: 3700 MHz, Frequency: 3800 MHz,
Medium parameters used: $f = 3700$ MHz; $\sigma = 3.095$ S/m; $\epsilon_r = 38.05$; $\rho = 1000$ kg/m³,
Phantom section: Center Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(6.8, 6.8, 6.8) @ 3700 MHz; Calibrated: 2021-01-27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn777; Calibrated: 2021-01-08
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Dipole Calibration /Pin=100mW, d=10mm, f=3700 MHz/Zoom Scan, dist=1.4mm
(8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 66.66 V/m; Power Drift = 0.04 dB

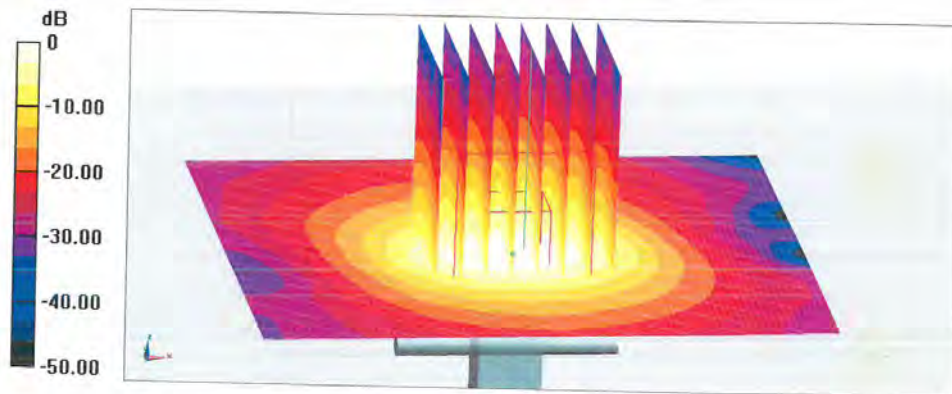
Peak SAR (extrapolated) = 18.7 W/kg

SAR(1 g) = 6.72 W/kg; SAR(10 g) = 2.47 W/kg

Smallest distance from peaks to all points 3 dB below = 8.8 mm

Ratio of SAR at M2 to SAR at M1 = 73.7%

Maximum value of SAR (measured) = 13.1 W/kg



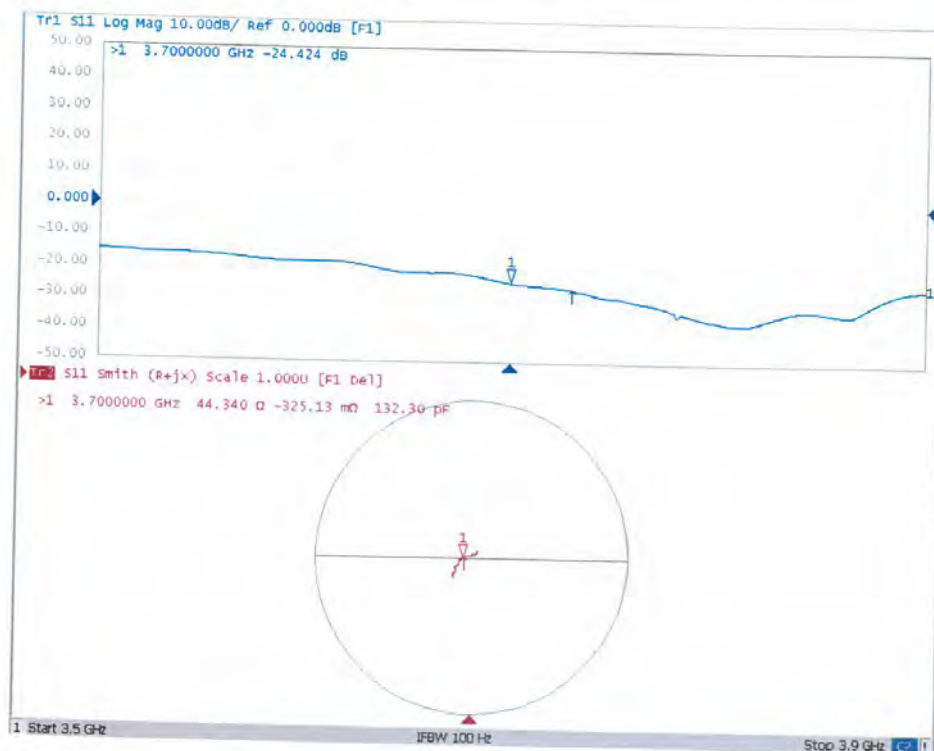
0 dB = 13.1 W/kg = 11.17 dBW/kg



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Impedance Measurement Plot for Head TSL





3900 MHz Dipole Calibration Certificate



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Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com http://www.chinattl.cn

Client **AUDEN**Certificate No: **Z21-60066****CALIBRATION CERTIFICATE**Object **D3900V2 - SN: 1045**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **March 24 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(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	12-May-20 (CTTL, No.J20X02965)	May-21
Power sensor NRP6A	101369	12-May-20 (CTTL, No.J20X02965)	May-21
ReferenceProbe EX3DV4	SN 3617	27-Jan-21(SPEAG,No.EX3-3617_Jan21)	Jan-22
DAE4	SN 777	08-Jan-21(CTTL-SPEAG,No.Z21-60003)	Jan-22
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	01-Feb-21 (CTTL, No.J21X00593)	Jan-22
NetworkAnalyzerE5071C	MY46110673	14-Jan-21 (CTTL, No.J21X00232)	Jan-22

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: March 28, 2021

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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:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- DASY4/5 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 dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. 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 $k=2$, which for a normal distribution Corresponds to a coverage probability of approximately 95%.



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E-mail: cttl@chinattl.com http://www.chinattl.cn

Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	3900 MHz $\pm$ 1 MHz 4100 MHz $\pm$ 1 MHz	

Head TSL parameters at 3900 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	37.5	3.32 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	38.1 $\pm$ 6 %	3.33 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	-----

SAR result with Head TSL at 3900 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	6.79 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	68.1 W/kg $\pm$ 24.4 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	100 mW input power	2.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.0 W/kg $\pm$ 24.2 % (k=2)

Head TSL parameters at 4100 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	37.2	3.53 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	37.6 $\pm$ 6 %	3.50 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	-----

SAR result with Head TSL at 4100 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 Mw input power	6.78 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	68.0 W/kg $\pm$ 24.4 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	100 Mw input power	2.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.8 W/kg $\pm$ 24.2 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)**Antenna Parameters with Head TSL at 3900 MHz**

Impedance, transformed to feed point	47.5Ω - 8.37 jΩ
Return Loss	- 21.0dB

Antenna Parameters with Head TSL at 4100 MHz

Impedance, transformed to feed point	57.4Ω - 1.39jΩ
Return Loss	- 23.1dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.008 ns
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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

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Add: No.52 HuanYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: ctfl@chinattl.com http://www.chinattl.cn

DASY5 Validation Report for Head TSL

Date: 03.24.2021

Test Laboratory: CTTL, Beijing, China

DUT: Dipole D3900V2; Type: D3900V2; Serial: D3900V2 - SN: 1045

Communication System: CW; Frequency: 3900 MHz, CW; Frequency: 4100 MHz,
Medium parameters used: $f = 3900$ MHz; $\sigma = 3.332$ S/m; $\epsilon_r = 38.06$; $\rho = 1000$
kg/m³, $f = 4100$ MHz; $\sigma = 3.504$ S/m; $\epsilon_r = 37.55$; $\rho = 1000$ kg/m³,
Phantom section: Center Section

DASY5 Configuration:

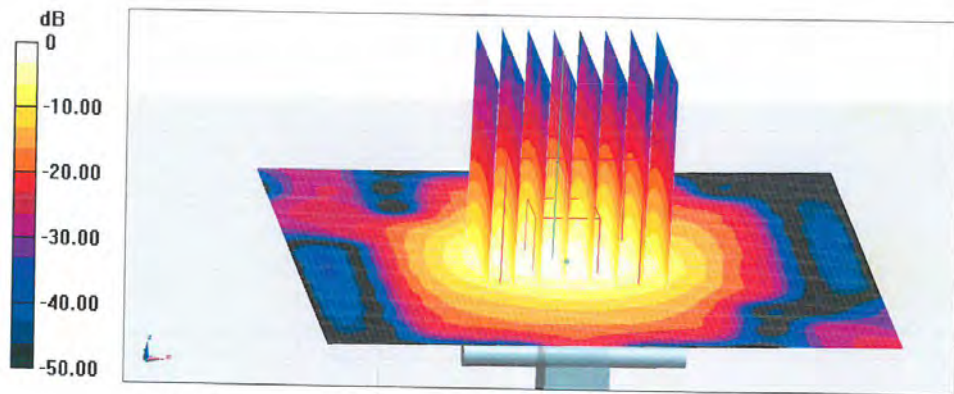
- Probe: EX3DV4 - SN3617; ConvF(6.78, 6.78, 6.78) @ 3900 MHz;
ConvF(6.75, 6.75, 6.75) @ 4100 MHz; Calibrated: 2021-01-27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn777; Calibrated: 2021-01-08
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial:
1062
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version
14.6.14 (7483)

Dipole Calibration /Pin=100mW, d=10mm, f=3900 MHz/Zoom Scan,
dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.72 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 20.0 W/kg
SAR(1 g) = 6.79 W/kg; SAR(10 g) = 2.39 W/kg
Smallest distance from peaks to all points 3 dB below = 8.4 mm
Ratio of SAR at M2 to SAR at M1 = 72.7%
Maximum value of SAR (measured) = 13.6 W/kg

Dipole Calibration /Pin=100mW, d=10mm, f=4100 MHz/Zoom Scan,
dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.97 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 20.9 W/kg
SAR(1 g) = 6.78 W/kg; SAR(10 g) = 2.37 W/kg
Smallest distance from peaks to all points 3 dB below = 8 mm
Ratio of SAR at M2 to SAR at M1 = 71.2%
Maximum value of SAR (measured) = 14.0 W/kg



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 Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
 E-mail: cttl@chinattl.com http://www.chinattl.cn



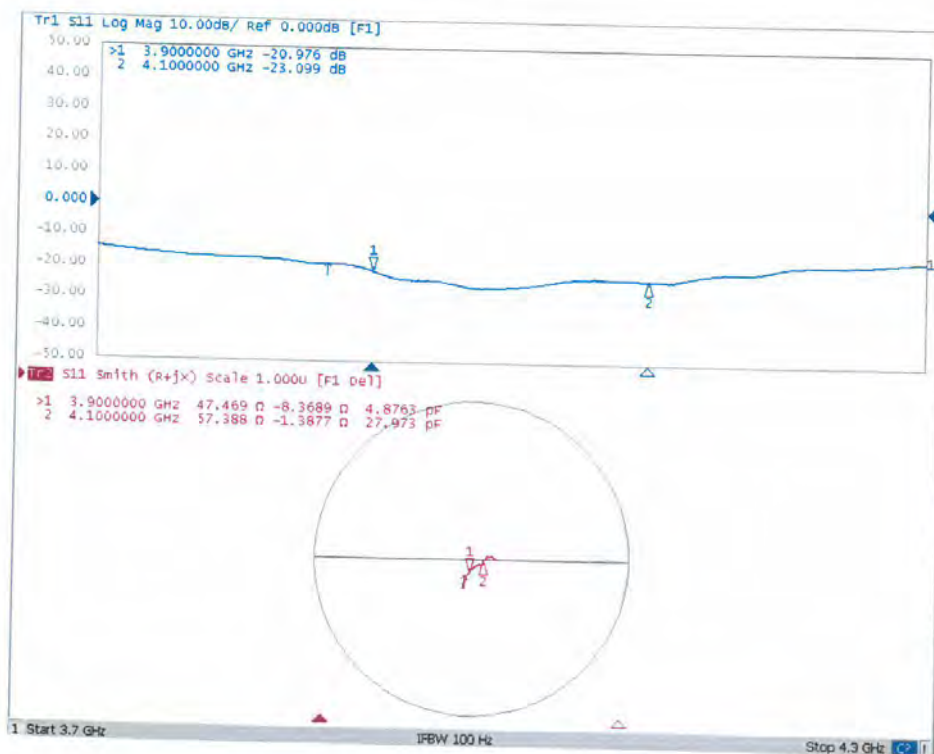
0 dB = 14.0 W/kg = 11.46 dBW/kg



In Collaboration with
s p e a g
CALIBRATION LABORATORY

Add: No.52 HuanYuanBei 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

Impedance Measurement Plot for Head TSL



ANNEX I Sensor Triggering Data Summary

ANT0/6:

SAR Sensor	Back	12(mm)
SAR Sensor	Top	18(mm)

ANT1:

SAR Sensor	Back	11(mm)
SAR Sensor	Top	16(mm)
SAR Sensor	Left	14(mm)

ANT10:

SAR Sensor	Back	9 (mm)
SAR Sensor	Top	11(mm)

ANT9:

SAR Sensor	Back	9(mm)
SAR Sensor	Top	11(mm)
SAR Sensor	Left	11(mm)

According to the above description, this device was tested by the manufacturer to determine the SAR sensor triggering distances for the rear, Left edge and top edge for main antenna and rear, Left edge and top edge for WIFI antenna of the device. The measured power state within ± 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.

ANT0/6

Rear

Moving device toward the phantom:

The power state											
Distance [mm]	17	16	15	14	13	12	11	10	9	8	7
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	7	8	9	10	11	12	13	14	15	16	17
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

Top

Moving device toward the phantom:

The power state											
Distance [mm]	23	22	21	20	19	18	17	16	15	14	13
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	13	14	15	16	17	18	19	20	21	22	23
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

ANT1

Rear

Moving device toward the phantom:

The power state											
Distance [mm]	16	15	14	13	12	11	10	9	8	7	6
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	6	7	8	9	10	11	12	13	14	15	16
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

Top

Moving device toward the phantom:

The power state											
Distance [mm]	21	20	19	18	17	16	15	14	13	12	11
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	11	12	13	14	15	16	17	18	19	20	21
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

Left

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

ANT9

Rear

Moving device toward the phantom:

The power state											
Distance [mm]	14	13	12	11	10	9	8	7	6	5	4
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	4	5	6	7	8	9	10	11	12	13	14
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

Top

Moving device toward the phantom:

The power state											
Distance [mm]	16	15	14	13	12	11	10	9	8	7	6
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	6	7	8	9	10	11	12	13	14	15	16
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

Left

Moving device toward the phantom:

The power state											
Distance [mm]	16	15	14	13	12	11	10	9	8	7	6
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	6	7	8	9	10	11	12	13	14	15	16
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

ANT10

Rear

Moving device toward the phantom:

The power state											
Distance [mm]	14	13	12	11	10	9	8	7	6	5	4
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

The power state											
Distance [mm]	4	5	6	7	8	9	10	11	12	13	14
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

Top

Moving device toward the phantom:

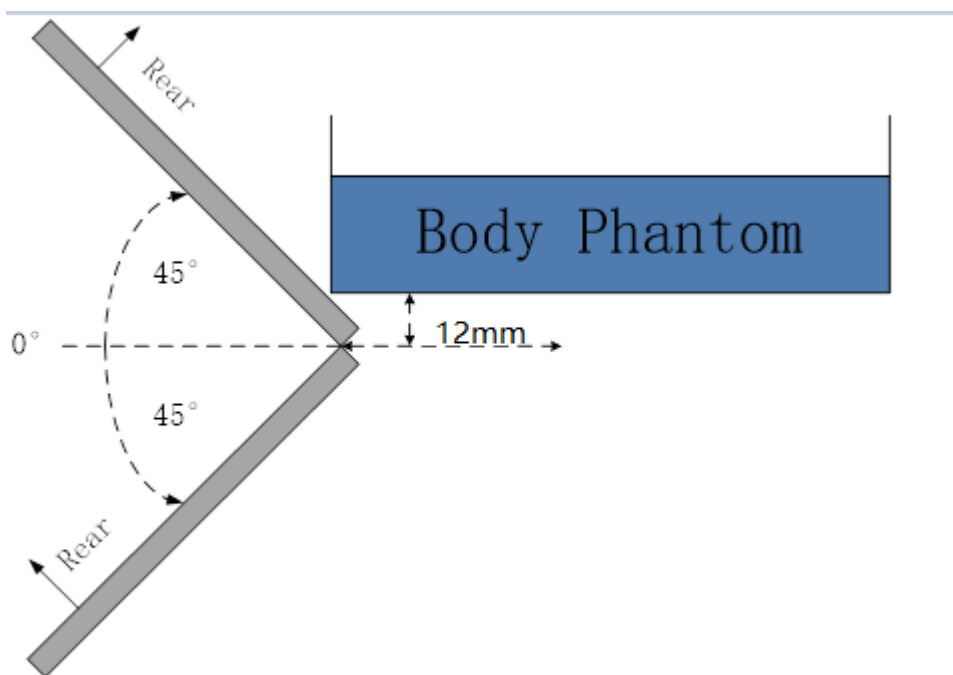
The power state											
Distance [mm]	16	15	14	13	12	11	10	9	8	7	6
Main antenna	Normal	Normal	Normal	Normal	Normal	Low	Low	Low	Low	Low	Low

Moving device away from the phantom:

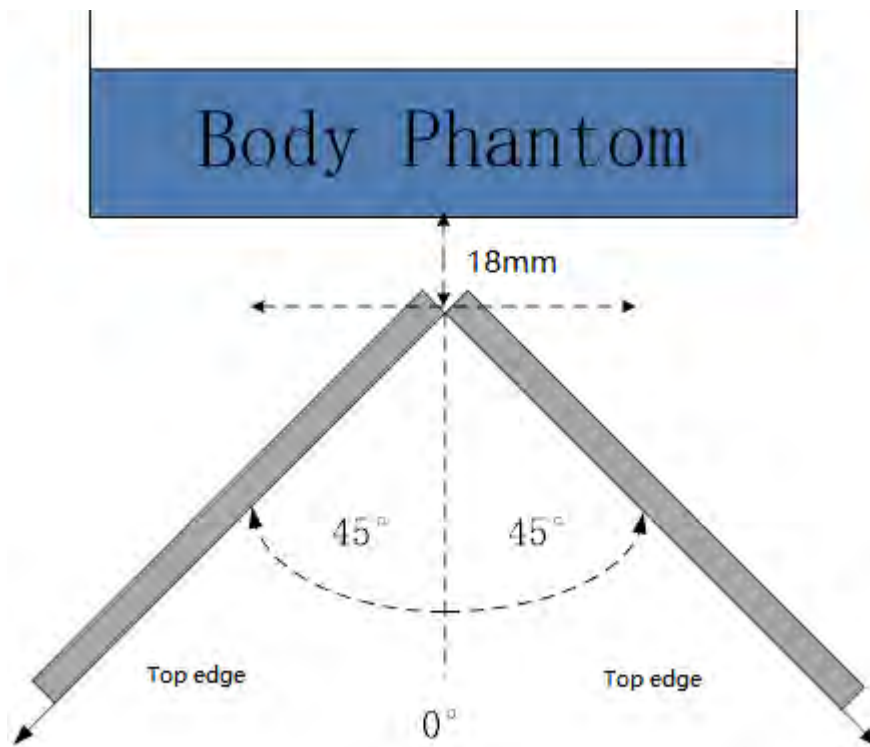
The power state											
Distance [mm]	6	7	8	9	10	11	12	13	14	15	16
Main antenna	Low	Low	Low	Low	Low	Low	Normal	Normal	Normal	Normal	Normal

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° .

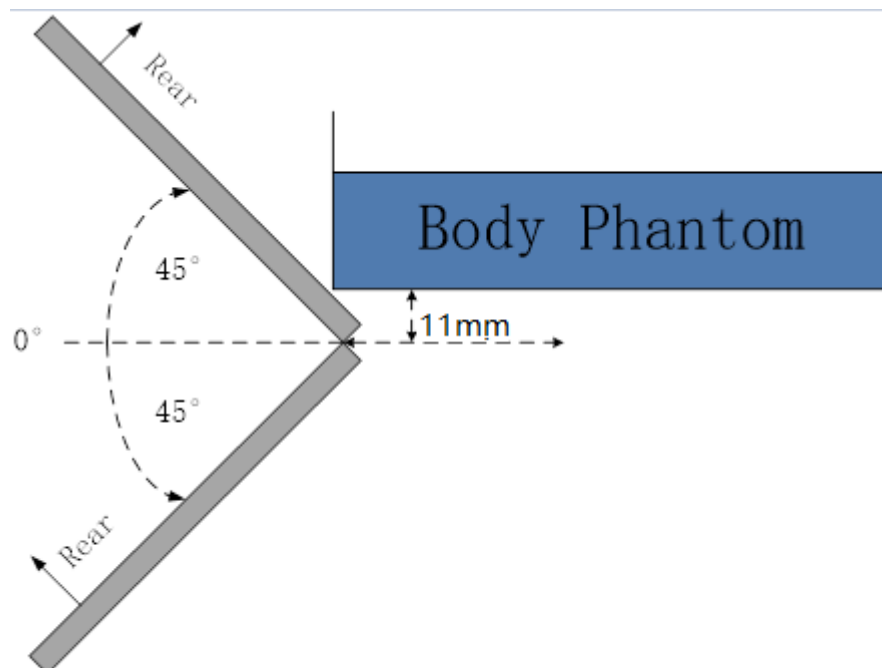
ANT0/1



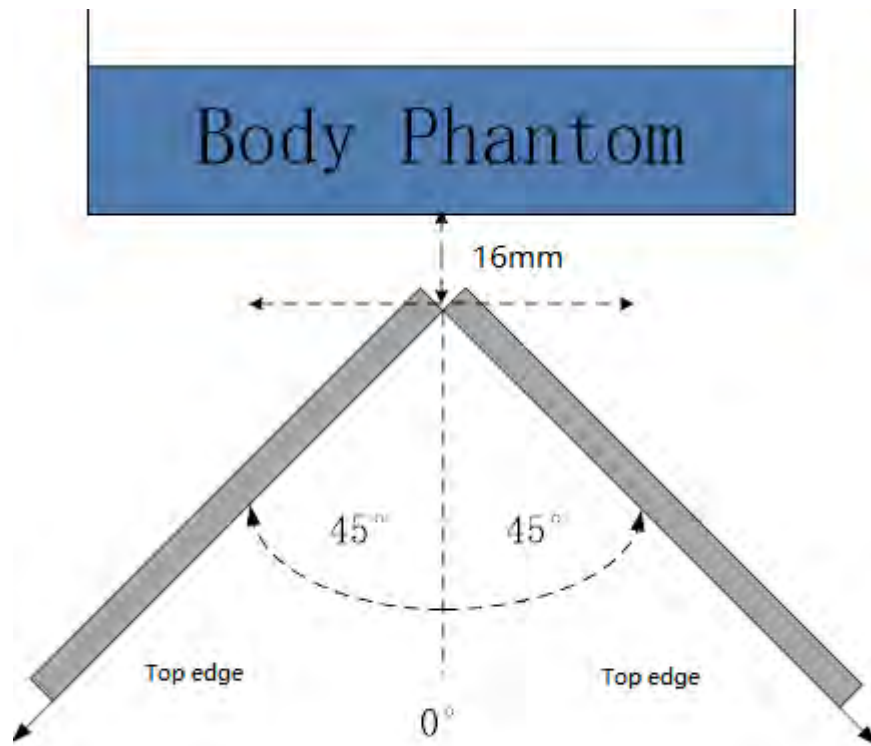
The rear evaluation for ANT0/6



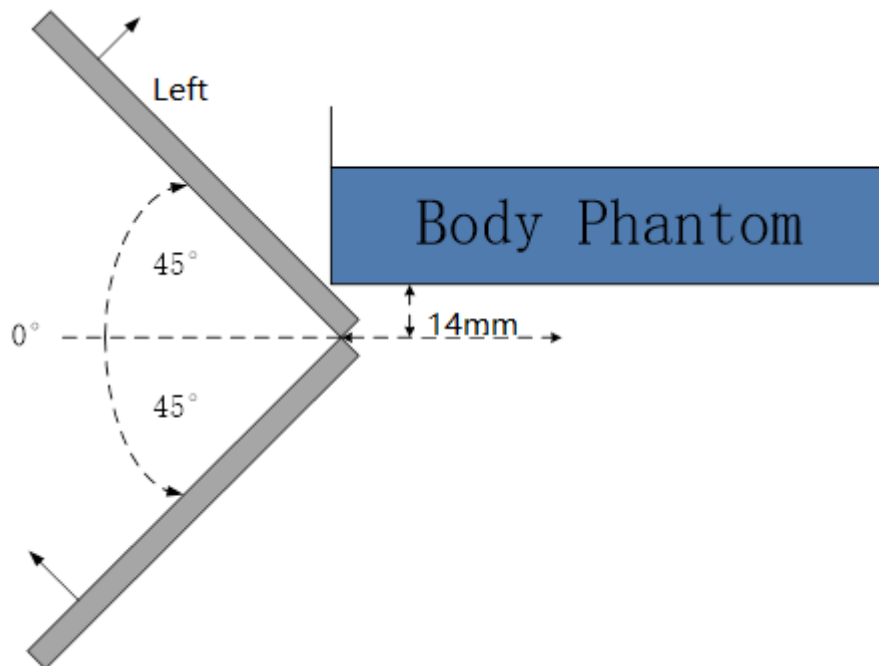
The top edge evaluation for ANT0/6



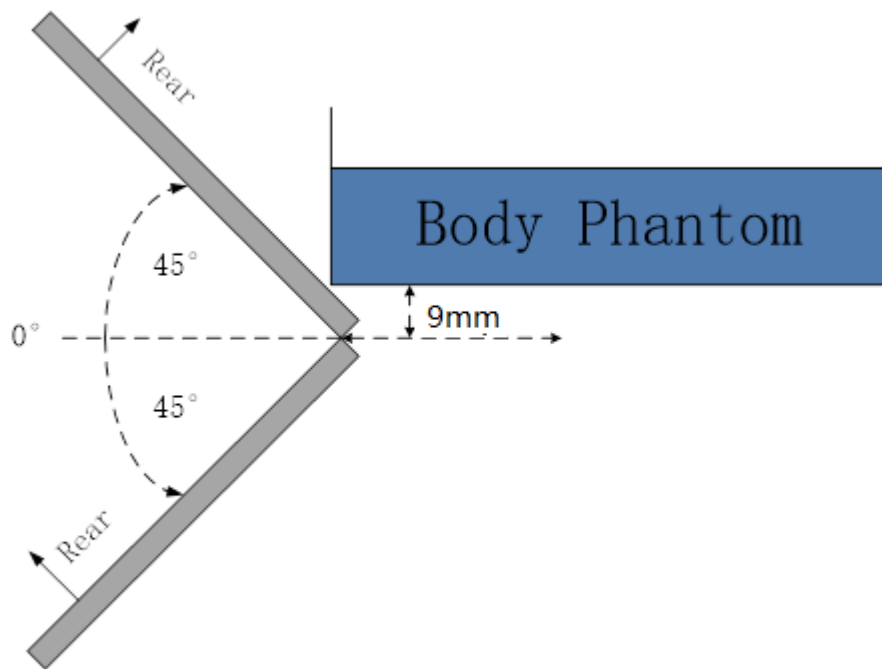
The rear evaluation for ANT1



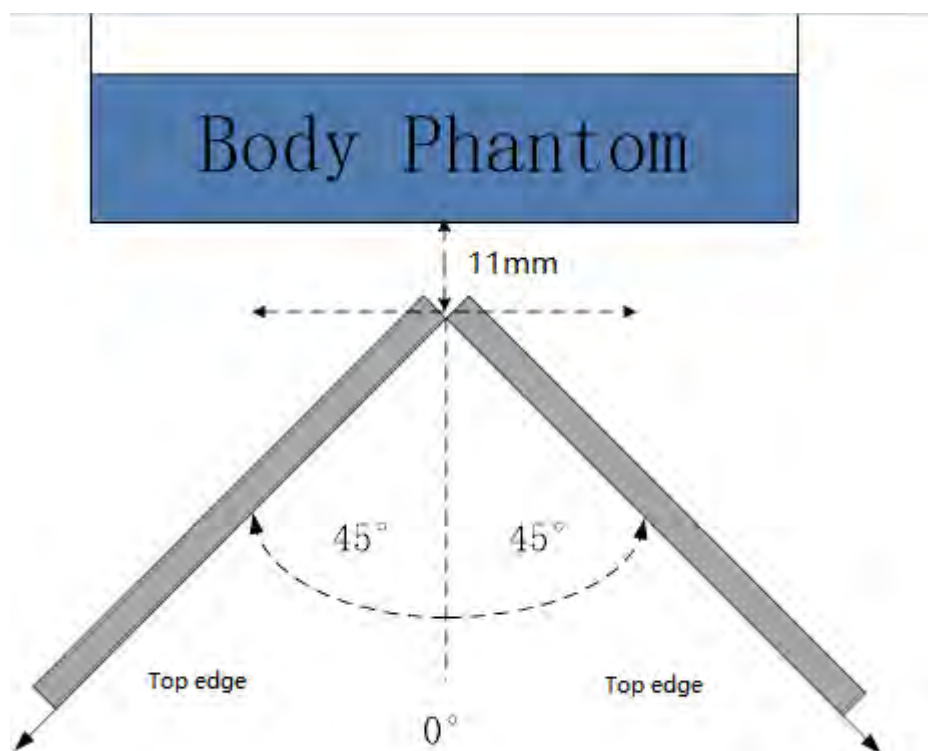
The top edge evaluation for ANT1



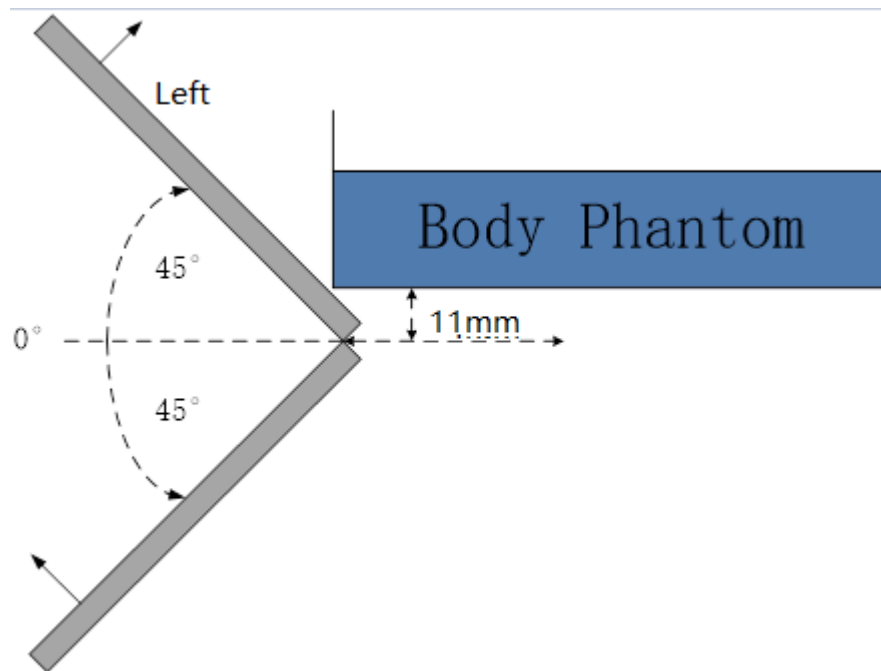
The Left edge evaluation for ANT1



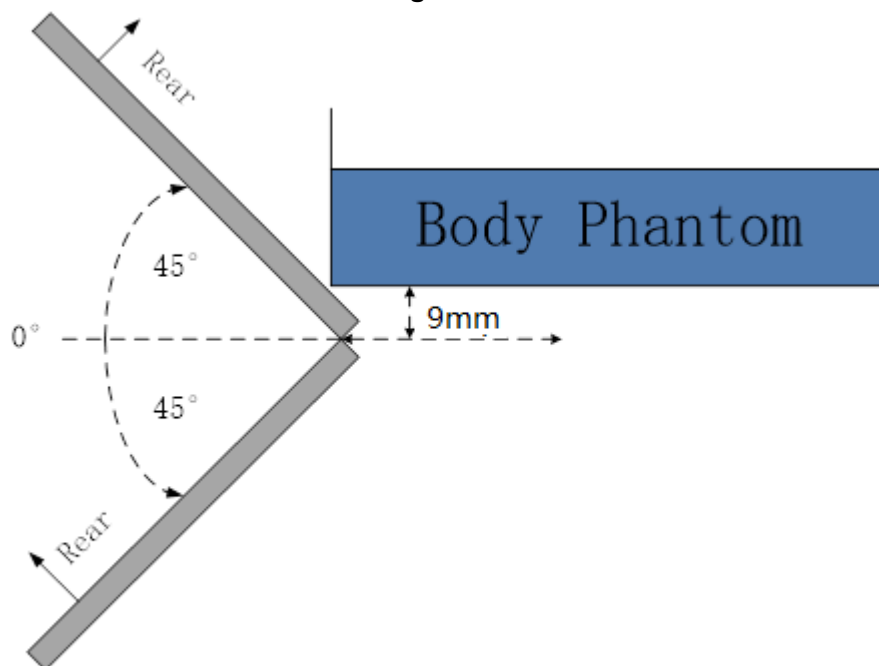
The rear evaluation for ANT9



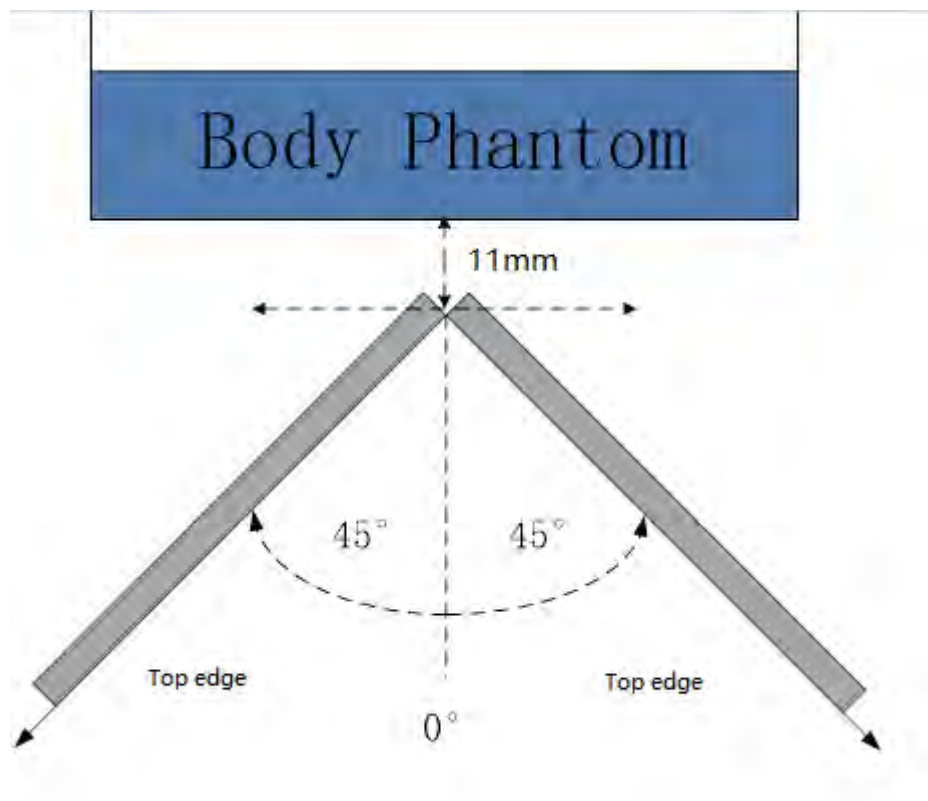
The top edge evaluation for ANT9



The Left edge evaluation for ANT9



The rear evaluation for ANT10



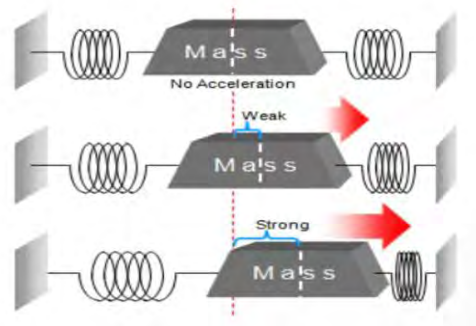
The top edge evaluation for ANT10

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.

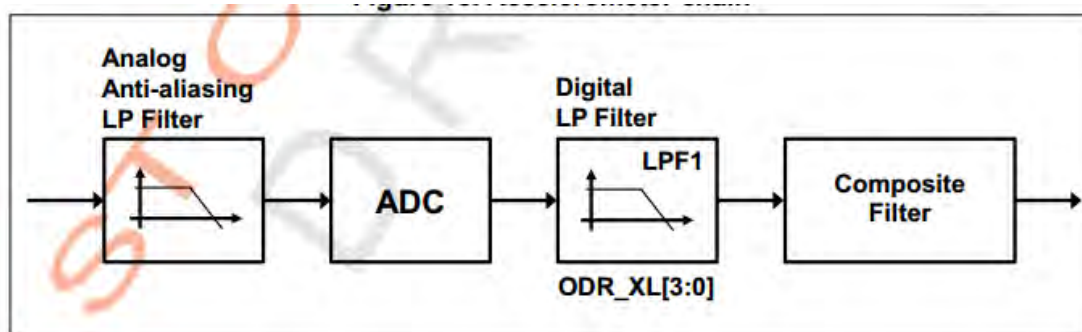
ANNEX J G-Sensor and Hall-Sensor

G-Sensor mechanism and algorithms

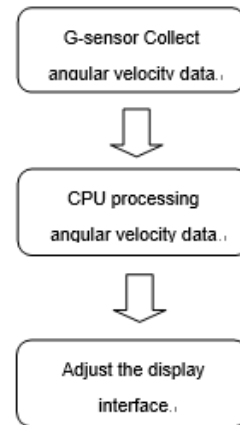
There are finger sets inside the G-sensor, which are used to measure the displacement of the mass when the acceleration is generated. Each finger set is equivalent to two capacitor plates. When there is acceleration, the mass will move relative to each other, and the change of displacement will cause the change of the differential capacitance.



G-sensor block diagram



Collect the current gravitational acceleration data, send the data to the CPU through I2C, and the CPU processes the data provided by the G sensor, judges the current angle of the tablet, and adjusts the humanized horizontal interface. For example, if the device is rotated more than 60 degrees from the vertical screen, the device's LCD display will change from portrait to landscape to meet the best customer experience.



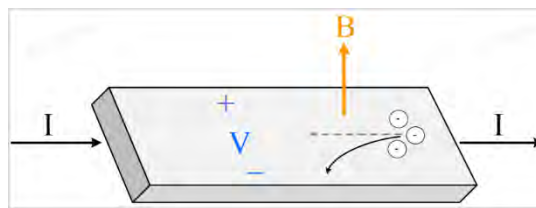
For the Gravity Sensor, the conducted power is monitored in 45 degree steps during rotating degrees from the vertical screen .The test results are as follows. There is no significant difference in conducted power when the angle changes. Thus Gravity Sensor has no effect on conducted power, additional SAR test is not required.

The power state										
Band	Mode	0°	45°	90°	135°	180°	225°	270°	315°	360°
LTE Band5 Full Power (dBm)	10M 1RB-Middle	23.73	23.75	23.76	23.72	23.75	23.71	23.76	23.74	23.76

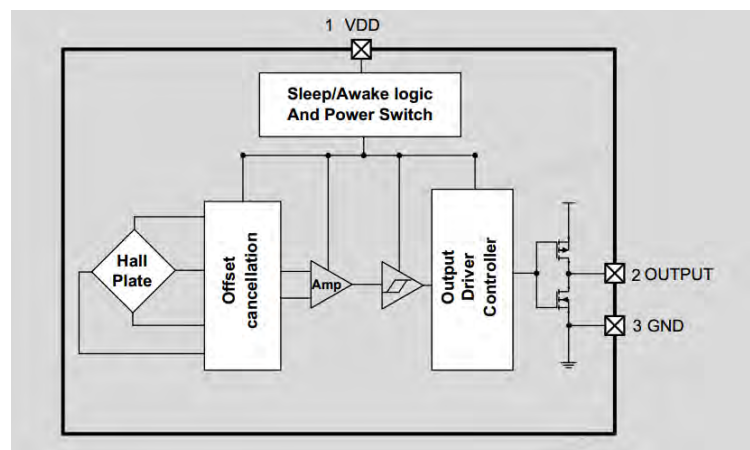
Hall-Sensor mechanism and algorithms

There is a Hall semiconductor chip in the magnetic field, and a constant current I flows from A to B. Under the action of the Lorentz force, the electron flow of I moves to one side when passing through the Hall semiconductor, causing the chip to generate a potential difference in the CD direction, which is the so-called Hall voltage.

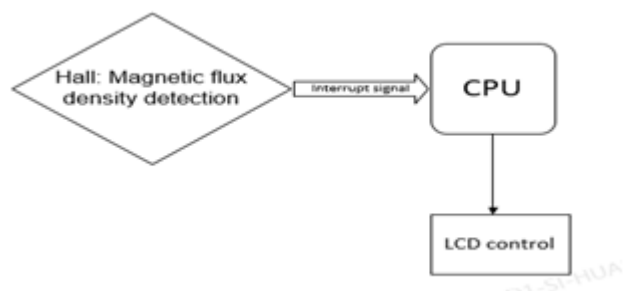
The Hall voltage varies with the strength of the magnetic field. The stronger the magnetic field, the higher the voltage, and the weaker the magnetic field, the lower the voltage. The Hall voltage value is very small, usually only a few millivolts, but it is amplified by the amplifier in the integrated circuit. The voltage can be amplified enough to output a stronger signal.



Hall IC block diagram



The Hall Plate senses changes in the magnetic field around the device. When the change of the surrounding magnetic field reaches the threshold of 3.0mT of the Hall sensor, the Hall sensor will send an interrupt signal to the CPU to notify the terminal that the current magnetic field environment has changed.

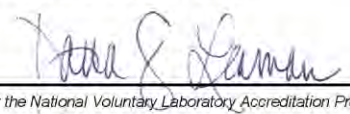
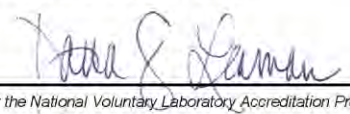
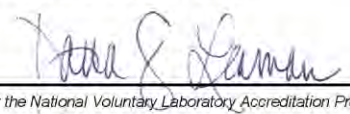


The leather case used as an accessory is not included when the product is shipped. At the same time, there is no applicable leather case in the third-party market.

For the Hall-Sensor, when the sensor is triggered or not triggered, the conducted power is monitored respectively, The test results are as follows. There is no significant difference in conducted power when the sensor state changes. Thus Hall-Sensor has no effect on conducted power, additional SAR test is not required.

The power state			
Band	Mode	Hall-Sensor triggered	Hall-Sensor not triggered
LTE Band5 Full Power (dBm)	10M 1RB-Middle	23.74	23.77

ANNEX K Accreditation Certificate

United States Department of Commerce National Institute of Standards and Technology NVLAP[®]  Certificate of Accreditation to ISO/IEC 17025:2017 NVLAP LAB CODE: 600118-0 Telecommunication Technology Labs, CAICT Beijing China <i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i> Electromagnetic Compatibility & Telecommunications <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> <table><tr><td> 2020-09-29 through 2021-09-30 Effective Dates </td><td></td><td>  For the National Voluntary Laboratory Accreditation Program </td></tr></table>		2020-09-29 through 2021-09-30 Effective Dates		 For the National Voluntary Laboratory Accreditation Program
2020-09-29 through 2021-09-30 Effective Dates		 For the National Voluntary Laboratory Accreditation Program		