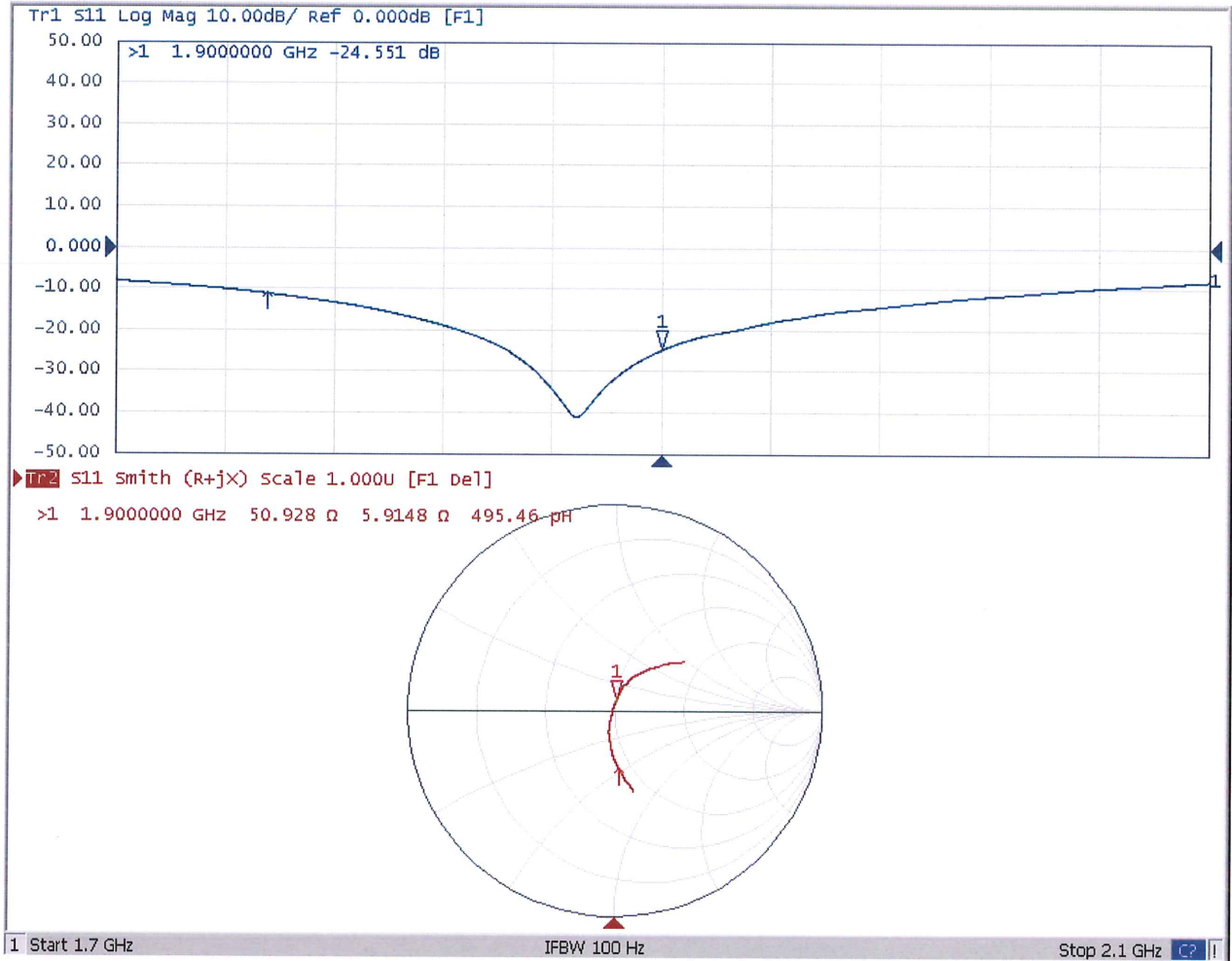




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Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: cttl@chinattl.com http://www.chinattl.cn

### Impedance Measurement Plot for Head TSL





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## DASY5 Validation Report for Body TSL

Date: 06.11.2019

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d208**

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.499$  S/m;  $\epsilon_r = 52.18$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7514; ConvF(7.53, 7.53, 7.53) @ 1900 MHz; Calibrated: 8/27/2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 8/20/2018
- Phantom: MFP\_V5.1C ; Type: QD 000 P51CA; Serial: 1062
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:**

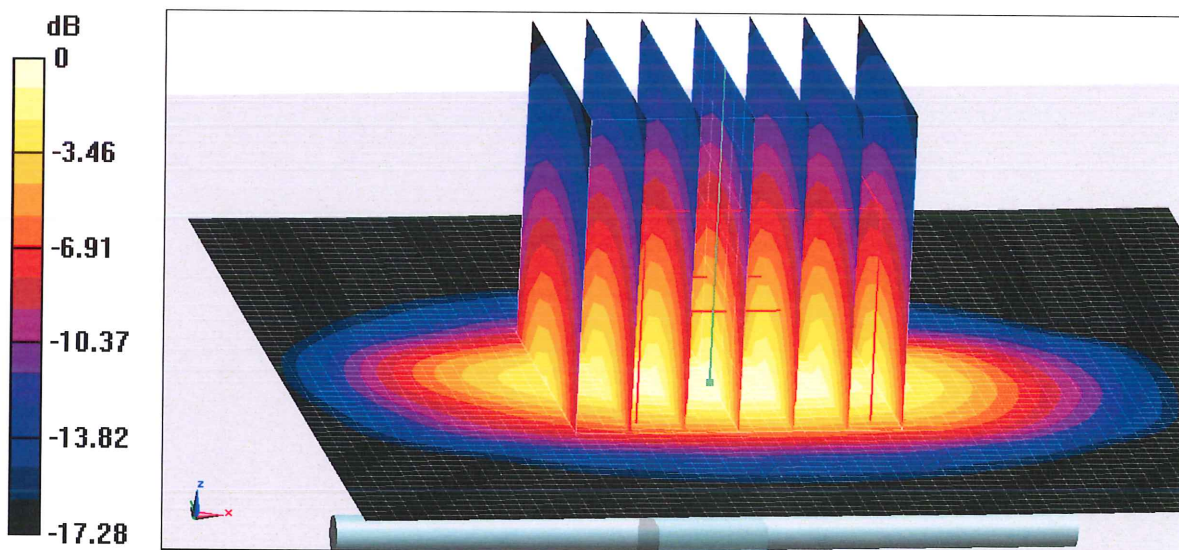
$dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 89.17 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 18.9 W/kg

**SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.25 W/kg**

Maximum value of SAR (measured) = 15.6 W/kg

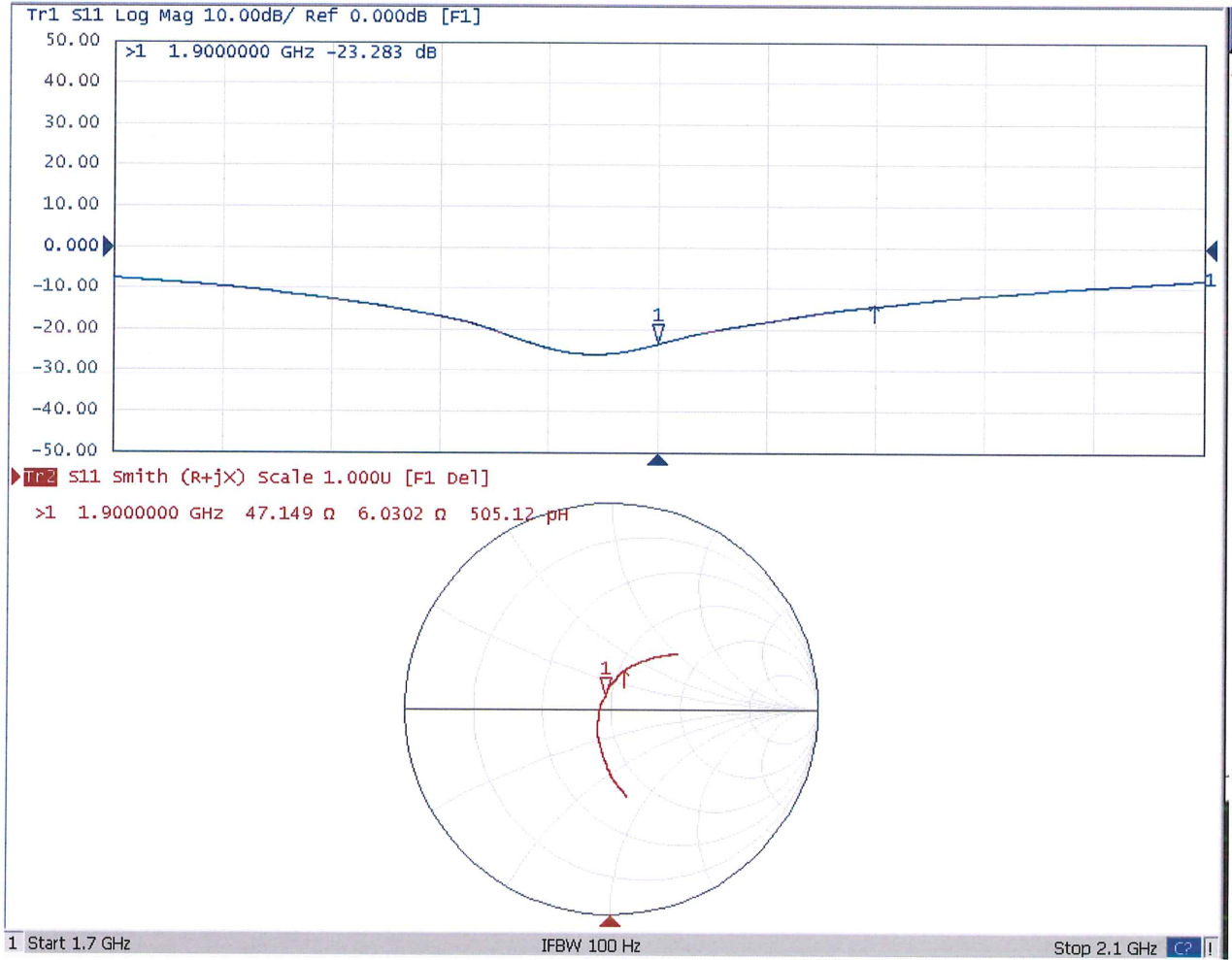


**0 dB = 15.6 W/kg = 11.93 dBW/kg**



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### Impedance Measurement Plot for Body TSL





## Dipole Internal Calibration Record

Asset No. :	E-431	Model No. :	D1900V2	Serial No. :	5d208
Environmental	23.5°C, 55 %	Original Cal. Date :	June 11, 2019	Next Cal. Date :	June 11, 2022

### Standard List

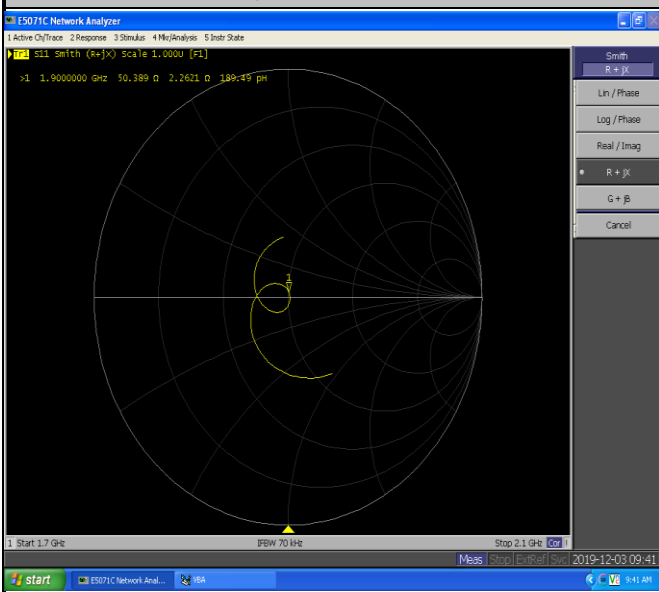
1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

### Equipment Information

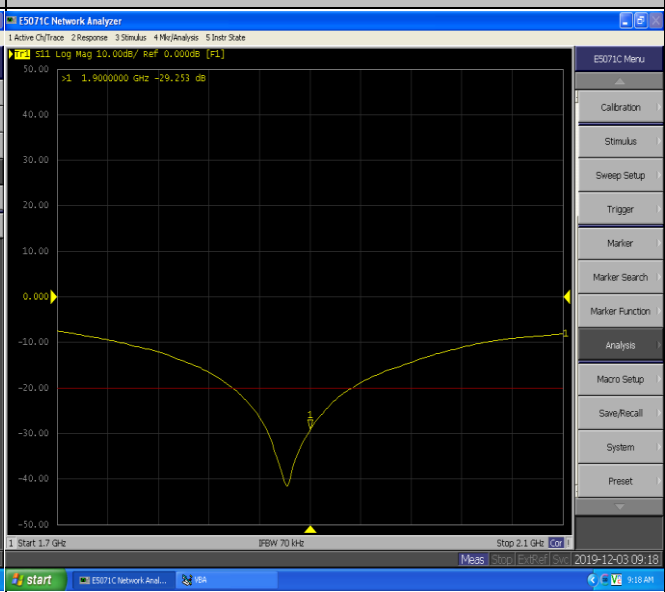
Equipment :	Manufacturer :	Model No. :	Serial No. :	Cal.Organization :	Cal. Date :
Power Amplifier	Mini-Circuits	ZHL-42W+	QA1333003	NA	February 25, 2019
DC Source	Iteck	OT6154	M00157	NA	August 3, 2019
P-series power meter	Agilent	N1911A	MY45100473	NA	September 23, 2019
wideband power	Agilent	N1921A	MY51100041	NA	September 23, 2019
Smart Power Sensor	R&S	NRP-Z21	102209	NA	March 1, 2019
Dual directional	Woken	TS-PCC0M-05	107090019	NA	March 10, 2019
Signal Generator	Agilent	E4438C	MY4907131	NA	Mar. 10, 2019
ENA Network Analyzer	Agilent	E5071C	MY46102965	NA	March 10, 2019

Model No	For Head Tissue					
	Item	Originak Cal. Result	Verified on 2019/12/3	Deviation	Result	
D1900V2	Impedance, transformed to feed	50.9Ω+5.91jΩ	50.389Ω+2.26jΩ	<5Ω	Pass	
	Return Loss(dB)	-24.6	-29.253	18.9%	Pass	
	SAR Value for 1g(mW/g)	9.96	9.46	-5.0%	Pass	
	SAR Value for 10g(mW/g)	5.21	4.95	-5.0%	Pass	
	For Body Tissue					
		Item	Originak Cal. Result	Verified on 2019/12/3	Deviation	Result
		Impedance, transformed to feed	47.1Ω+6.03jΩ	46.903Ω+3.48jΩ	<5Ω	Pass
		Return Loss(dB)	-23.3	-26.162	12.3%	Pass
		SAR Value for 1g(mW/g)	10.2	10.3	1.0%	Pass
		SAR Value for 10g(mW/g)	5.29	5.35	1.1%	Pass

Impedance Test-Head

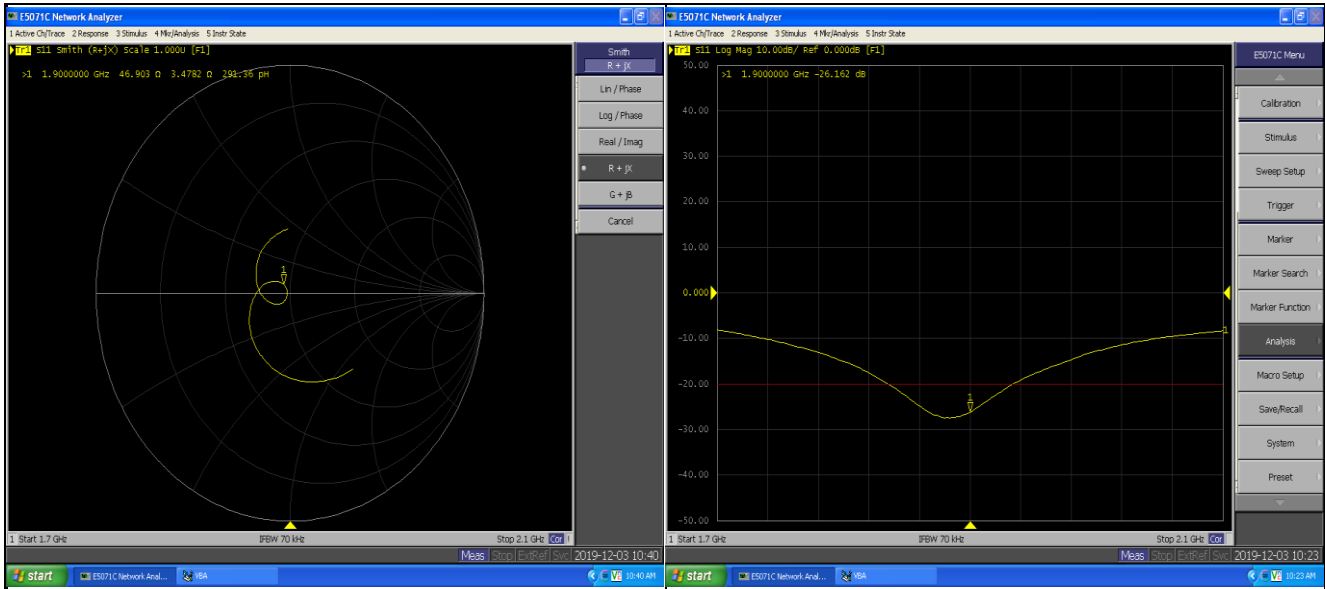


Return Loss-Head



Impedance Test-Body

Return Loss-Body



### Validation Report for Head TSL

Test Laboratory: BTL Inc.      Date: 2019/12/03

**System Check\_H1900\_1203**

DUT: Dipole 1900 MHz D1900V2;SN:5d179;

Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.379$  S/m;  $\epsilon_r = 39.603$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Ambient Temperature : 23.2 °C; Liquid Temperature : 22.4 °C

DASY Configuration:

- Probe: EX3DV4 - SN7544; ConvF(8.26, 8.26, 8.26) @ 1900 MHz; Calibrated: 2019/9/9
- Sensor-Surface: 4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- Electronics: DAE4 Sn1390; Calibrated: 2019/10/29
- Phantom: SAM Front; Type: Twin SAM; Serial: 1784
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

**Area Scan (6x7x1):** Interpolated grid: dx=15 mm, dy=15 mm  
 Maximum value of SAR (interpolated) = 13.3 W/kg

**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 108.8 V/m; Power Drift = -0.03 dB  
 Peak SAR (extrapolated) = 17.0 W/kg  
 SAR(1 g) = 9.46 W/kg; SAR(10 g) = 4.95 W/kg  
 Maximum value of SAR (measured) = 11.9 W/kg

### Validation Report for Body TSL

Test Laboratory: BTL Inc.      Date: 2019/12/03

**System Check\_B1900\_1203**

DUT: Dipole 1900 MHz D1900V2;SN:5d179;

Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.513$  S/m;  $\epsilon_r = 51.305$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Ambient Temperature : 23.3 °C; Liquid Temperature : 22.2 °C

DASY Configuration:

- Probe: EX3DV4 - SN7544; ConvF(7.9, 7.9, 7.9) @ 1900 MHz; Calibrated: 2019/9/9
- Sensor-Surface: 4mm (Mechanical Surface Detection),  $z = 1.0, 31.0$
- Electronics: DAE4 Sn1390; Calibrated: 2019/10/29
- Phantom: SAM Front; Type: Twin SAM; Serial: 1784
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

**Area Scan (6x7x1):** Interpolated grid: dx=15 mm, dy=15 mm  
 Maximum value of SAR (interpolated) = 15.2 W/kg

**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
 Reference Value = 111.0 V/m; Power Drift = -0.03 dB  
 Peak SAR (extrapolated) = 19.3 W/kg  
 SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.35 W/kg  
 Maximum value of SAR (measured) = 13.6 W/kg

Calibrator: *Rot - Liang*

Approver: *Herbert Liu*



## Dipole Internal Calibration Record

Asset No. :	E-431	Model No. :	D1900V2	Serial No. :	5d208
Environmental condition :	23.0°C, 44.2 %	Original Cal. Date :	June 11, 2019	Next Cal. Date :	June 10, 2021

### Standard List

1	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate(SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques, June 2013
2	IEC 62209-2	Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body(frequency range of 30 MHz to 6 GHz), March 2010
3	KDB865664	SAR Measurement Requirements for 100 MHz to 6 GHz

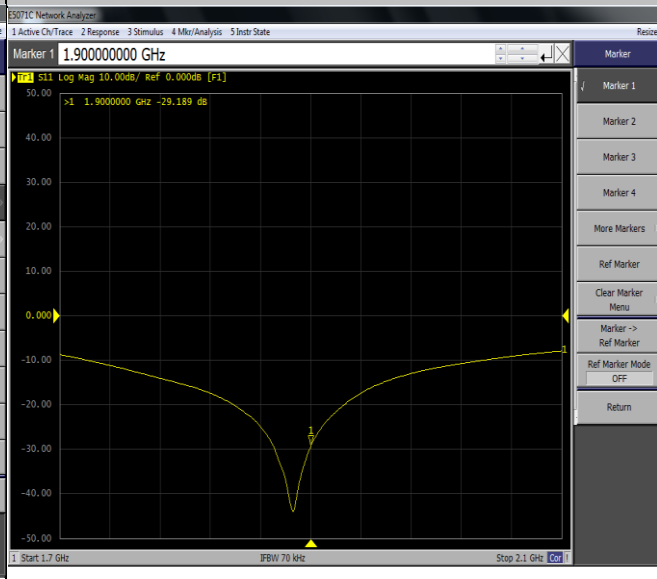
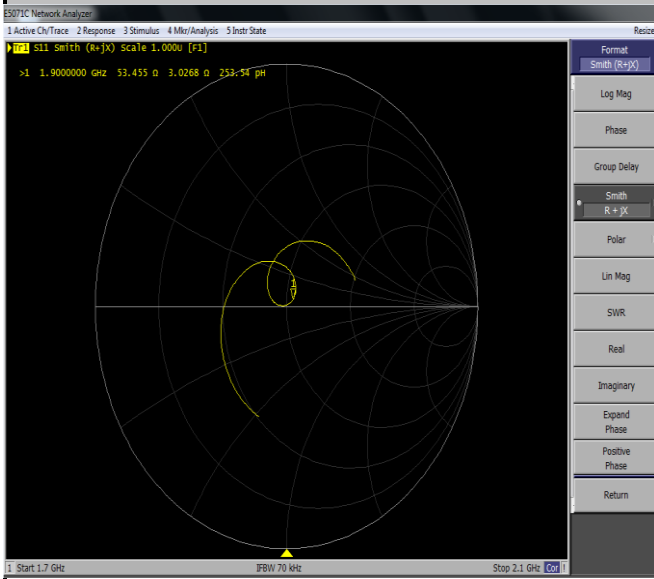
### Equipment Information

Equipment :	Manufacturer :	Model No. :	Serial No. :	Cal.Organization :	Cal. Date :
Power Amplifier	Mini-Circuits	ZHL-42W+	QA1333003	N/A	March 10, 2020
DC Source metter	Iteck	IT6154	006104126768201001	N/A	July 25, 2020
Power Meter	Anritsu	ML2495A	1128008	N/A	June 11, 2020
Power Sensor	Anritsu	MA2411B	1126001	N/A	June 11, 2020
Power Meter	Anritsu	MA2487A	6K00004714	N/A	September 3, 2020
Power Sensor	Anritsu	MA2491A	1725282	N/A	September 3, 2020
Directional Coupler	Woken	TS-PCC0M-05	107090019	N/A	March 1, 2020
Signal Generator	R & S	N5172B	MY53051229	N/A	June 20, 2020
ENA Network Analyzer	Agilent	E5071C	MY46524658	N/A	April 7, 2020

Model No	For Head Tissue				
	Item	Original Cal. Result	Verified on 2021/1/15	Deviation	Result
D1900V2	Impedance, transformed to feed point	50.9Ω+5.91jΩ	53.455Ω+3.0268jΩ	<5Ω	Pass
	Return Loss(dB)	-29.7	-29.189	-1.7%	Pass
	SAR Value for 1g(mW/g)	9.8	9.26	-5.5%	Pass
	SAR Value for 10g(mW/g)	5.07	4.7	-7.3%	Pass

### Impedance Test-Head

### Return Loss-Head



Test Laboratory: BTL

Date: 2021/1/15

**System Check\_H1900**

Frequency: 1900 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 23.0°C; Liquid Temperature: 22.0°C

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.406$  S/m;  $\epsilon_r = 40.658$ ;  $\rho = 1000$  kg/m<sup>3</sup>

DASY5 Configuration:

-Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg

-Electronics: DAE4 Sn1486; Calibrated: 2020/6/4

-Probe: EX3DV4 - SN7369; Conf: (8.32, 8.32, 8.32) @ 1900 MHz; Calibrated: 2020/5/29

-Sensor-Surface: 1.4mm (Mechanical Surface Detection)

-Phantom: SAM Twin Phantom V5.0; Type: QD 000 P40 C; Serial: TP-1897

**Configuration/Pin=250mW/Area Scan (7x7x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (measured) = 13.8 W/kg

**Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:

$dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm

Reference Value = 96.24 V/m; Power Drift = 0.01 dB

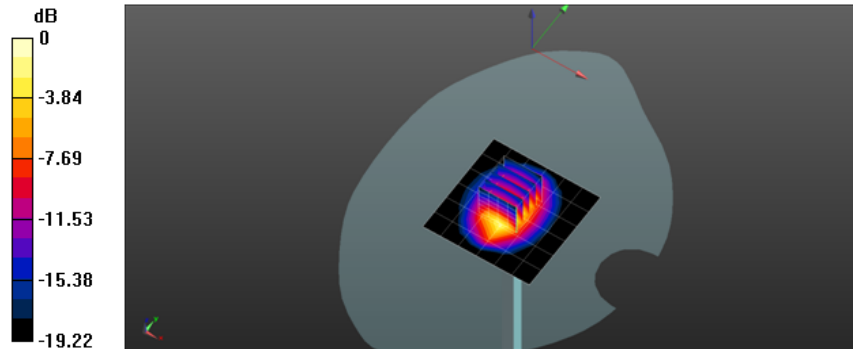
Peak SAR (extrapolated) = 17.8 W/kg

**SAR(1 g) = 9.26 W/kg; SAR(10 g) = 4.7 W/kg**

Smallest distance from peaks to all points 3 dB below = 10.1 mm

Ratio of SAR at M2 to SAR at M1 = 51.6%

Maximum value of SAR (measured) = 14.8 W/kg



0 dB = 14.8 W/kg = 11.70 dBW/kg

Calibrator:

*Aven Jo*

Approver:

*Peter Chen*