In Collaboration with
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CALIBRATION LABORATORY

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3789

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (*k*=2)
Norm(μV/(V/m)^2) [A]	0.45	0.50	0.51	±10.0%
DCP(mV) [B]	104.9	102.3	101.3	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc [E] (*k*=2)
0	CW	X	0.0	0.0	1.0	0.00	178.8	±2.2%
		Y	0.0	0.0	1.0		183.9	
		Z	0.0	0.0	1.0		186.6	

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%.

[A] The uncertainties of Norm X, Y, Z do not affect the E^2-field uncertainty inside TSL (see Page 4).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz][C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unct. (*k*=2)
750	41.9	0.89	8.81	8.81	8.81	0.40	0.80	±12.1%
835	41.5	0.90	8.53	8.53	8.53	0.18	1.20	±12.1%
1750	40.1	1.37	7.61	7.61	7.61	0.26	1.03	±12.1%
1900	40.0	1.40	7.32	7.32	7.32	0.28	1.01	±12.1%
2000	40.0	1.40	7.40	7.40	7.40	0.23	1.14	±12.1%
2300	39.5	1.67	7.16	7.16	7.16	0.62	0.69	±12.1%
2450	39.2	1.80	6.92	6.92	6.92	0.62	0.70	±12.1%
2600	39.0	1.96	6.79	6.79	6.79	0.66	0.69	±12.1%

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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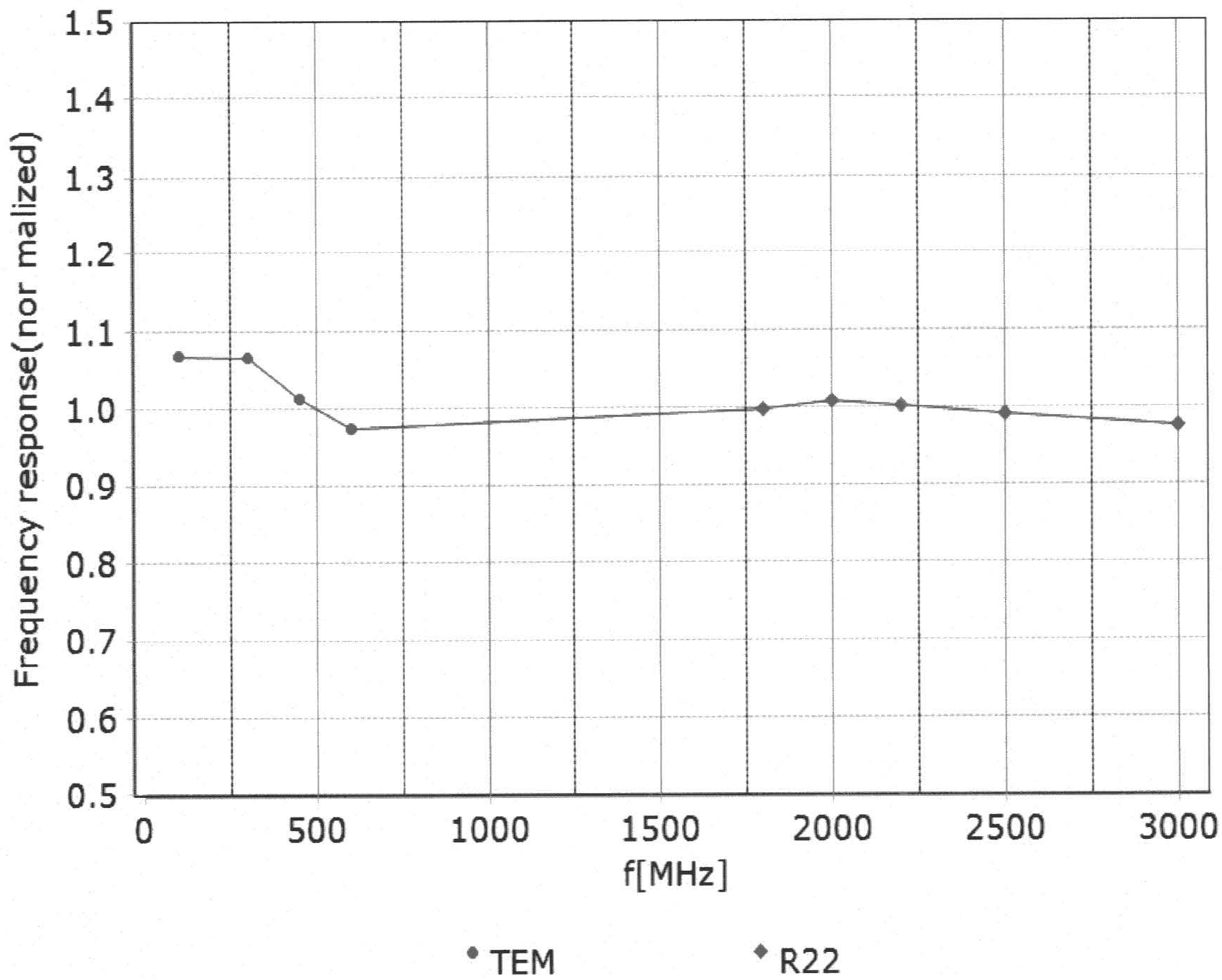
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.4% (*k*=2)

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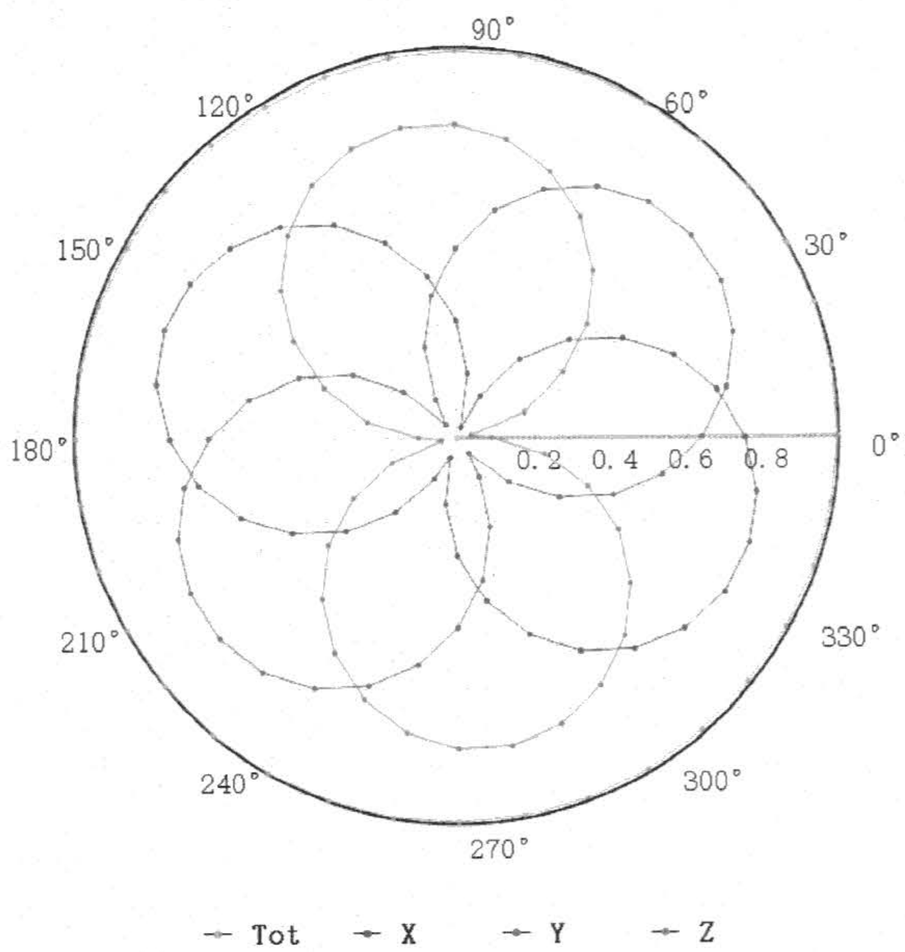
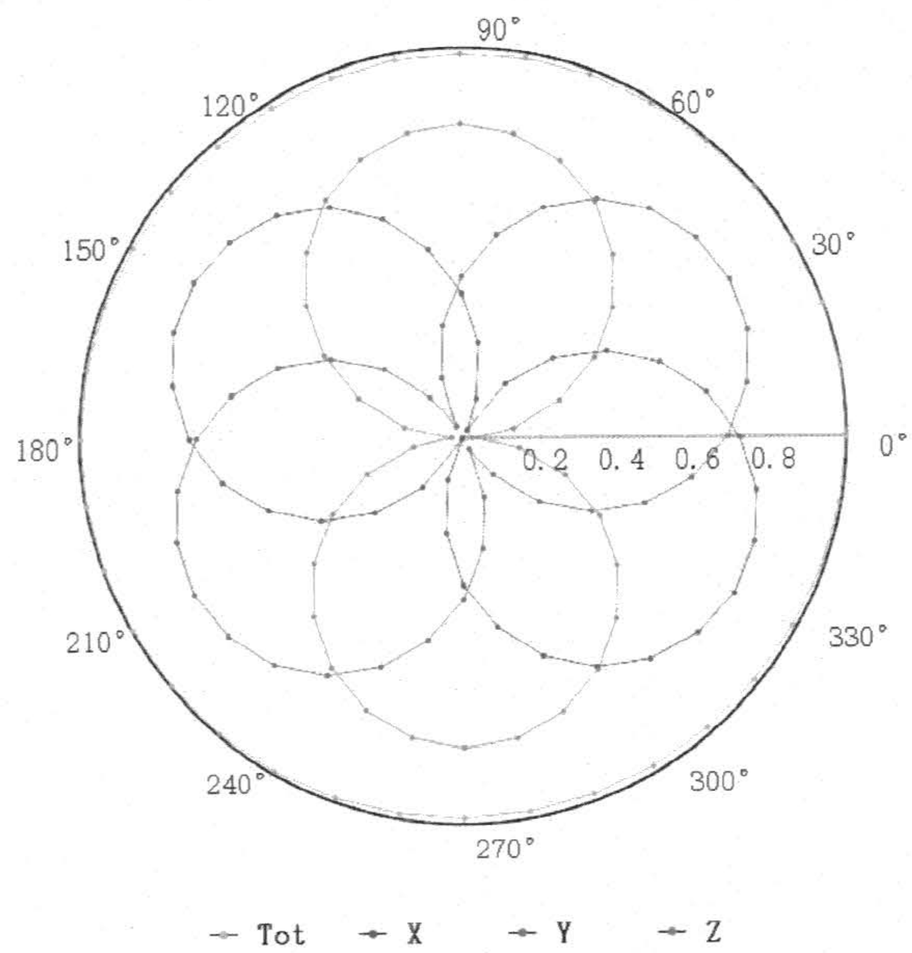
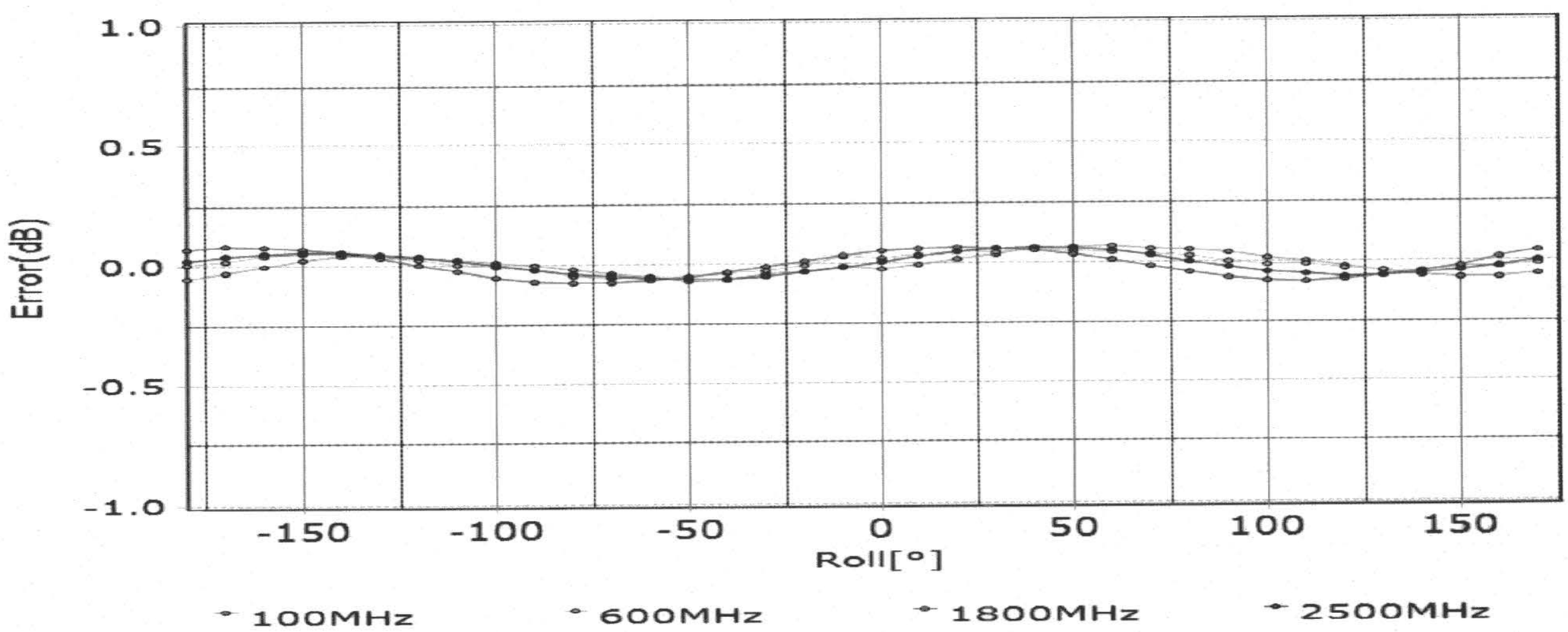
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM



f=1800 MHz, R22





Uncertainty of Axial Isotropy Assessment: ±1.2% (*k*=2)

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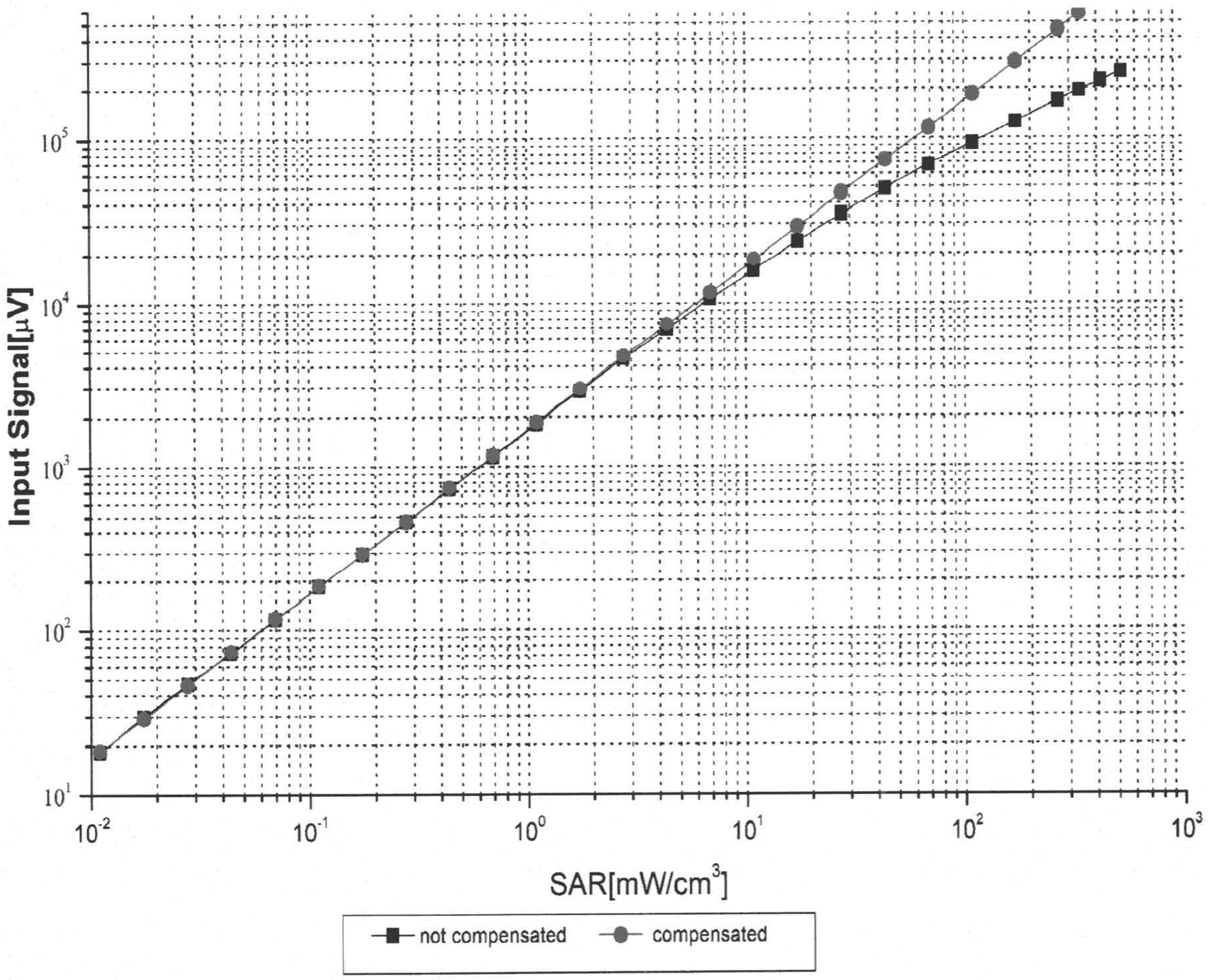
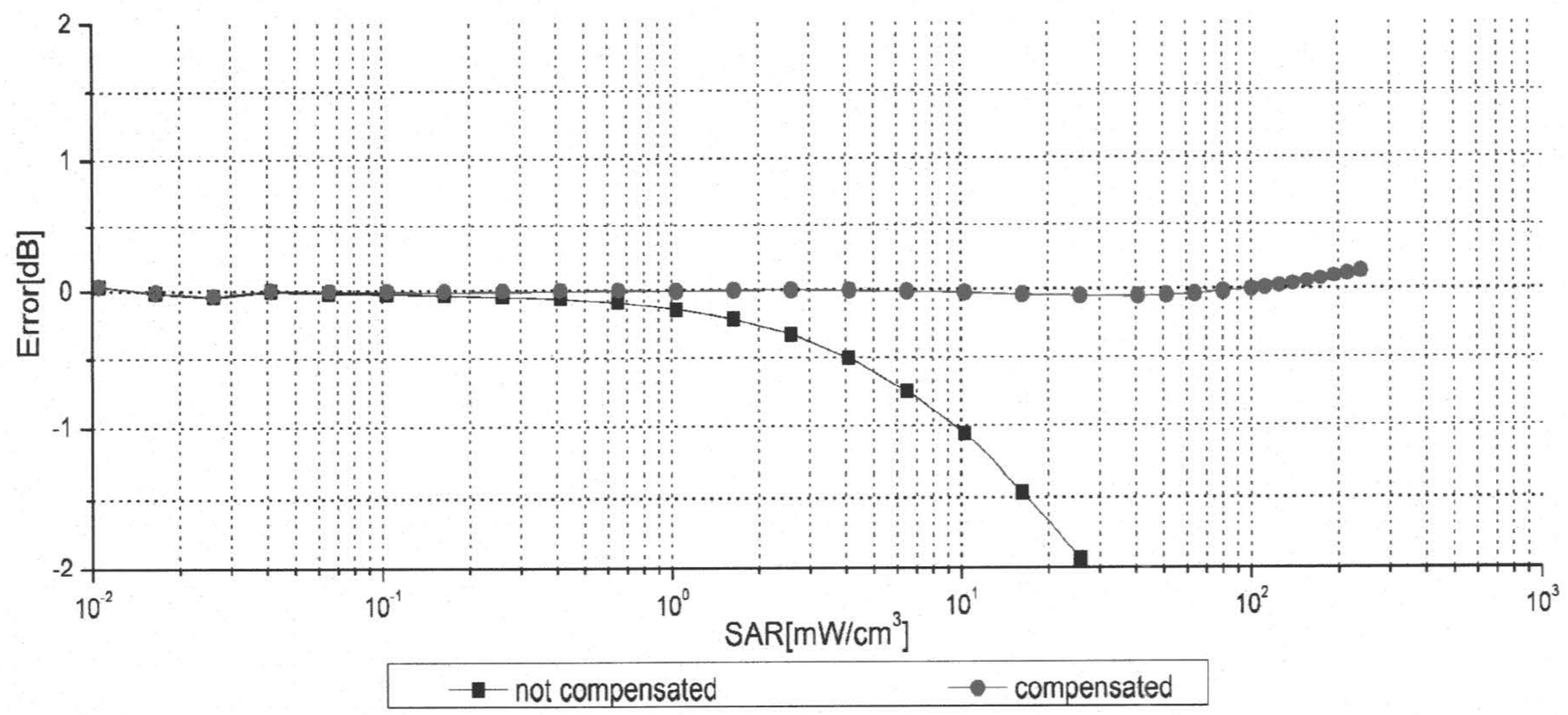
Dynamic Range f(SAR_{head})
(TEM cell, f = 900 MHz)





Uncertainty of Linearity Assessment: ±0.9% (*k*=2)

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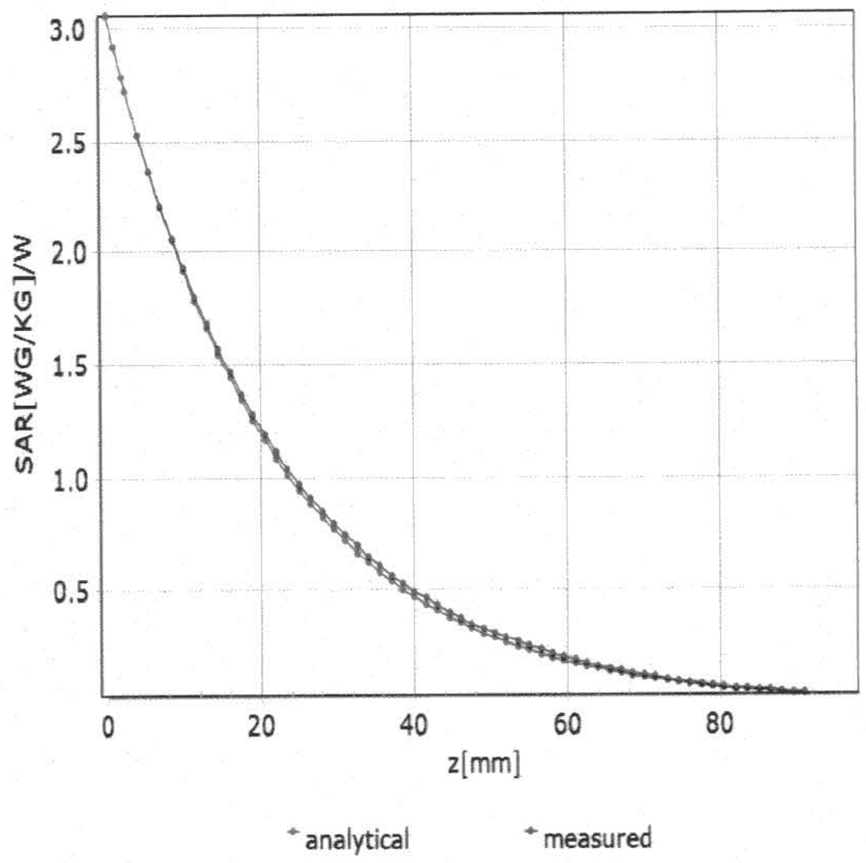
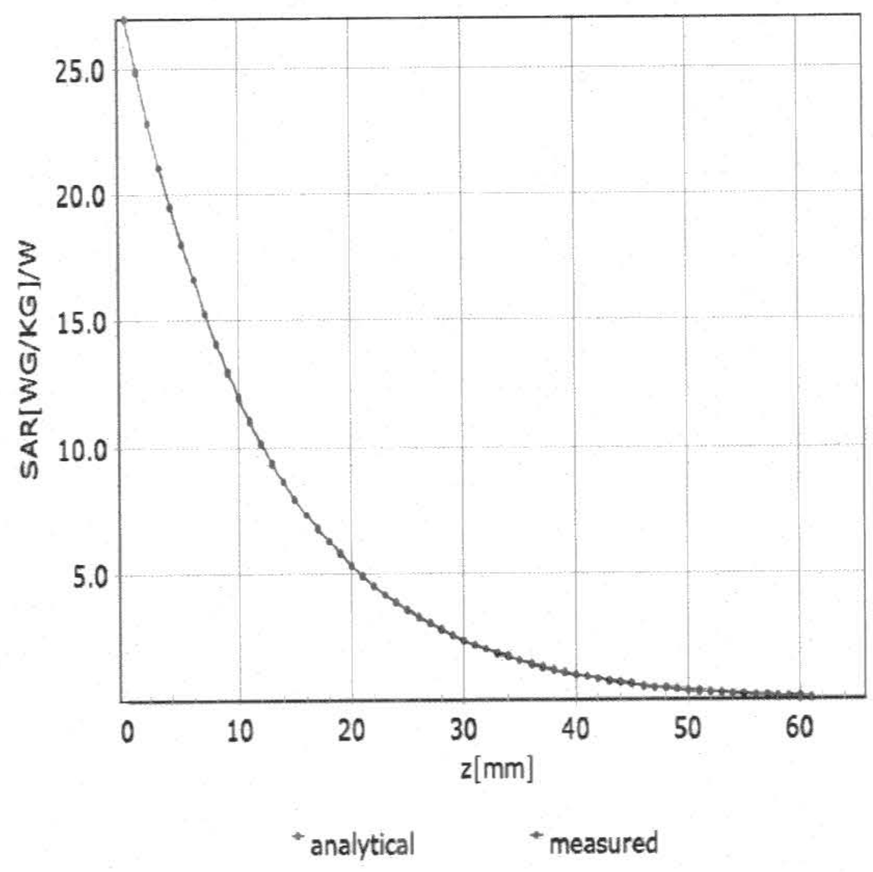
Conversion Factor Assessment

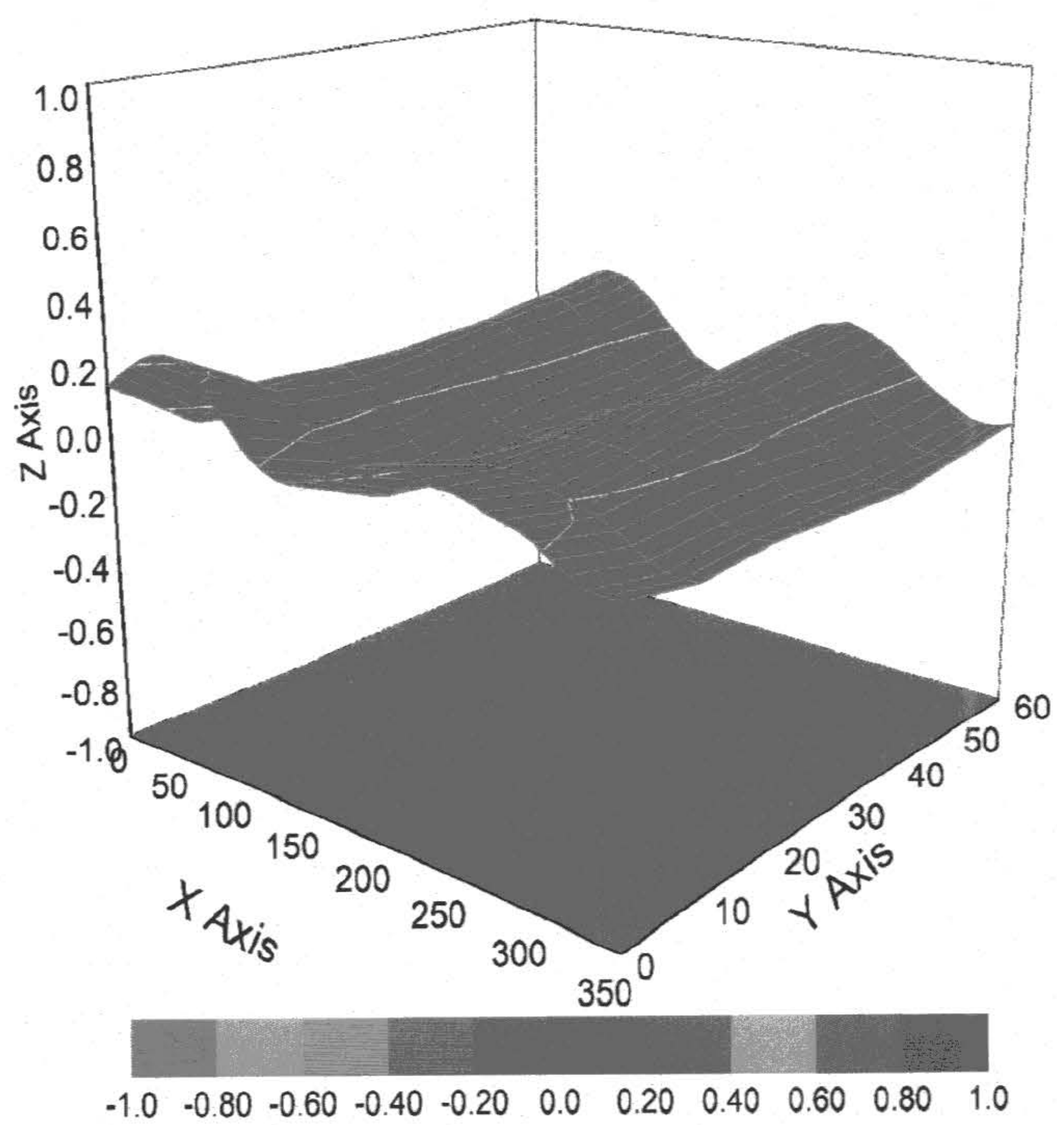
f=750 MHz,WGLS R9(H_convF)



f=1750 MHz,WGLS R22(H_convF)



Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: ±3.2% (*k*=2)

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Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	45.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	10mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

Dipole D750V3 SN 1160				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2019-05-22	-29.1	/	51.8	/
2020-05-21	-29.4	1.03%	52.2	0.4Ω

Dipole D835V2 SN 4d105				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2019-12-17	-26.0	/	49.5	/
2020-12-16	-27.0	3.85%	51.4	1.9Ω

Dipole D1750V2 SN 1149				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2019-05-21	-31.8	/	47.6	/
2020-05-20	-32.3	1.57%	48.9	1.3Ω

Dipole D1900V2 SN 5d028				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2019-12-17	-22.2	/	51.2	/
2020-12-16	-23.0	3.60%	53.3	2.1Ω

Dipole D2450V2 SN 733				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2019-12-17	-27.2	/	52.2	/
2020-12-16	-27.8	2.21%	53.4	1.2Ω

Dipole D2600V2 SN 1125				
Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2019-05-20	-25.7	/	48.9	/
2020-05-19	-26.6	3.50%	50.8	1.9Ω

Dipole D5GHzV2 SN 1165				
5250MHz Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2019-12-20	-25.5	/	45.2	/
2020-12-19	-26.3	3.14%	47.1	1.9Ω
5600MHz Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2019-12-20	26.8	/	52.0	/
2020-12-19	-27.6	2.99%	53.7	1.7Ω
5750MHz Head Liquid				
Date of Measurement	Return Loss(dB)	Δ %	Impedance (Ω)	ΔΩ
2019-12-20	-27.5	/	50.0	/
2020-12-19	-28.4	3.27%	52.6	2.6Ω