In Collaboration with
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CALIBRATION LABORATORY

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3982

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (*k*=2)
Norm(μV/(V/m)²)[A]	0.55	0.56	0.50	±10.0%
DCP(mV)[B]	102.2	104.8	102.5	

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	176.8	±2.3%
		Y	0.0	0.0	1.0		181.5	
		Z	0.0	0.0	1.0		167.8	

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.

Probe shall not be used for SAR compliance testing if measured SAR value of the DUT is below 0.025 mW/g.

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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	10.73	10.73	10.73	0.40	0.75	±12.1%
835	41.5	0.90	10.32	10.32	10.32	0.28	1.03	±12.1%
1750	40.1	1.37	8.78	8.78	8.78	0.22	1.05	±12.1%
1900	40.0	1.40	8.40	8.40	8.40	0.26	0.98	±12.1%
3300	38.2	2.71	7.41	7.41	7.41	0.40	1.01	±13.3%
3500	37.9	2.91	7.10	7.10	7.10	0.45	0.93	±13.3%
3700	37.7	3.12	6.78	6.78	6.78	0.41	1.05	±13.3%
4100	37.2	3.53	6.71	6.71	6.71	0.40	1.20	±13.3%
4400	36.9	3.84	6.48	6.48	6.48	0.35	1.35	±13.3%
4600	36.7	4.04	6.34	6.34	6.34	0.45	1.25	±13.3%
4800	36.4	4.25	6.30	6.30	6.30	0.45	1.30	±13.3%
4950	36.3	4.40	5.99	5.99	5.99	0.45	1.30	±13.3%
5250	35.9	4.71	5.70	5.70	5.70	0.45	1.30	±13.3%
5600	35.5	5.07	5.12	5.12	5.12	0.50	1.20	±13.3%
5750	35.4	5.22	5.14	5.14	5.14	0.50	1.20	±13.3%

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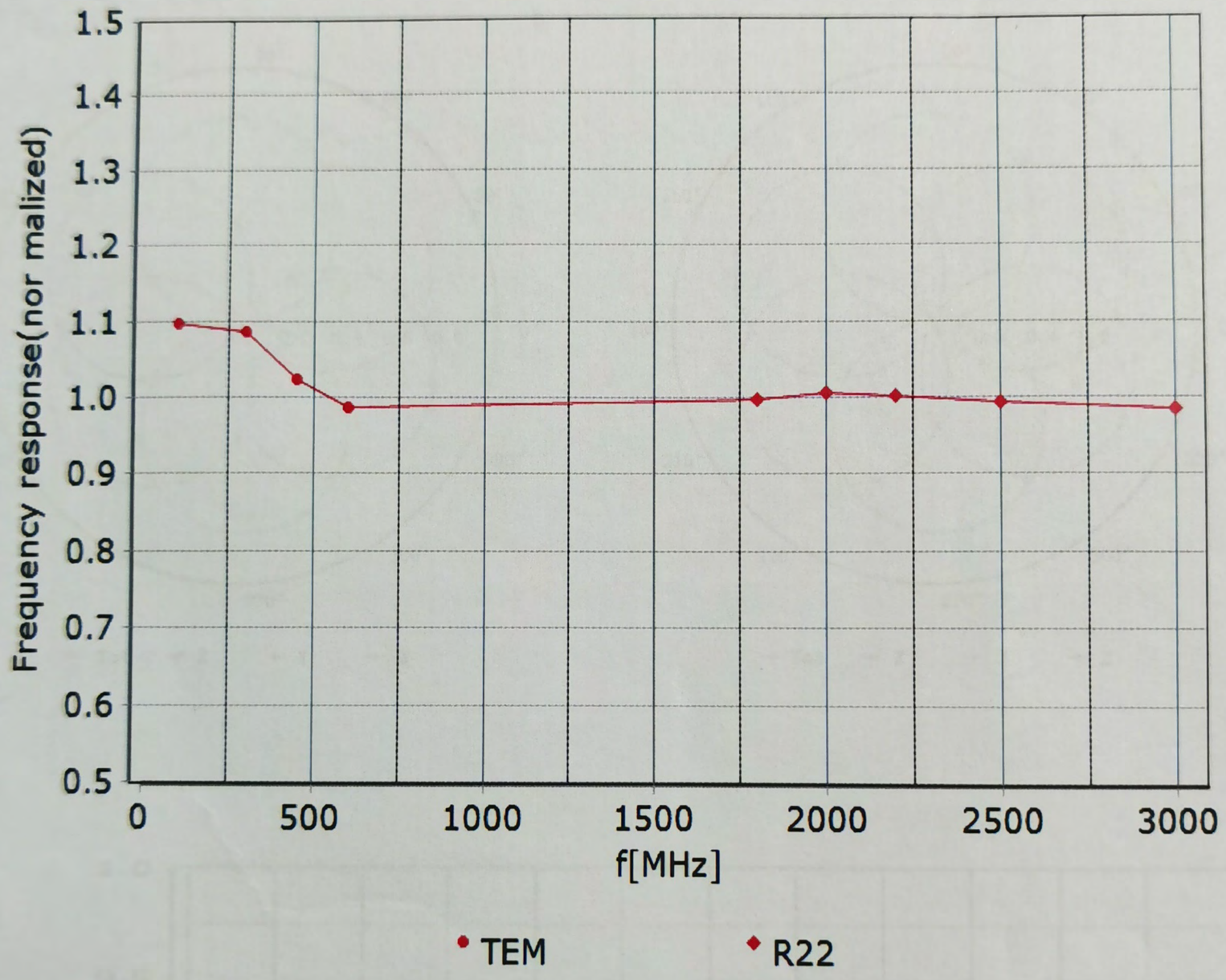
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



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

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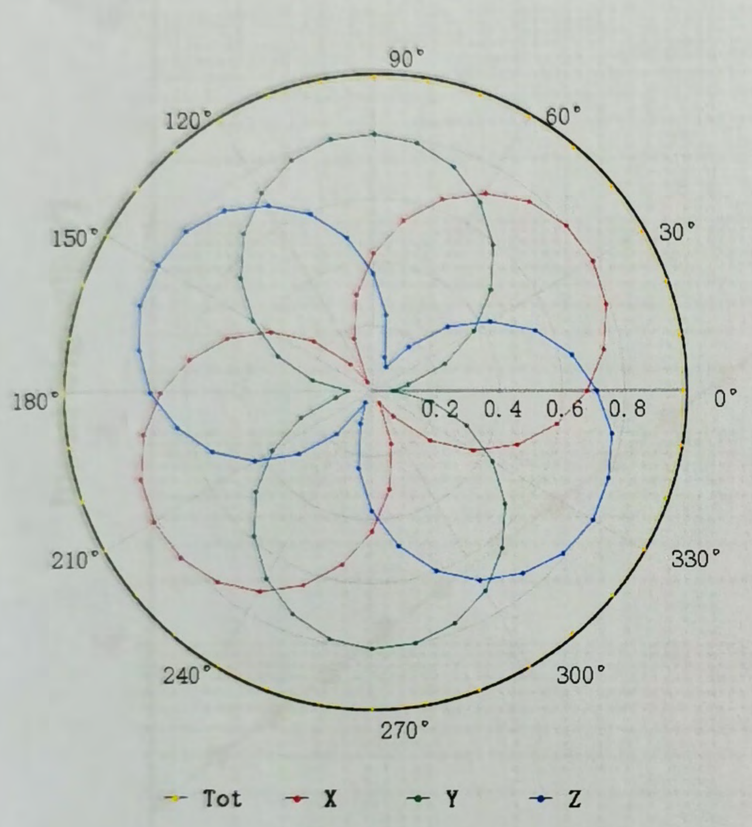
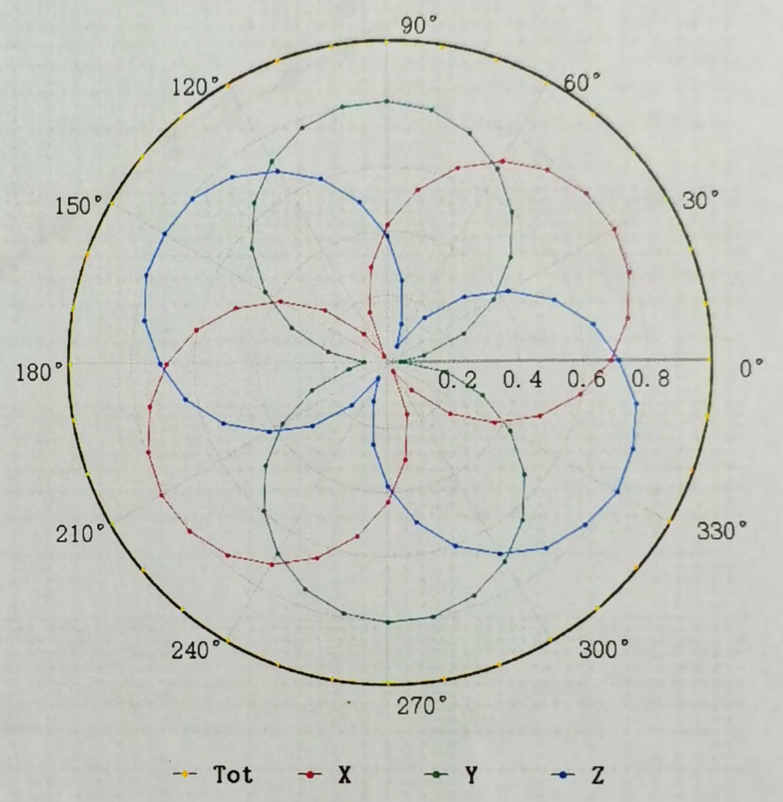
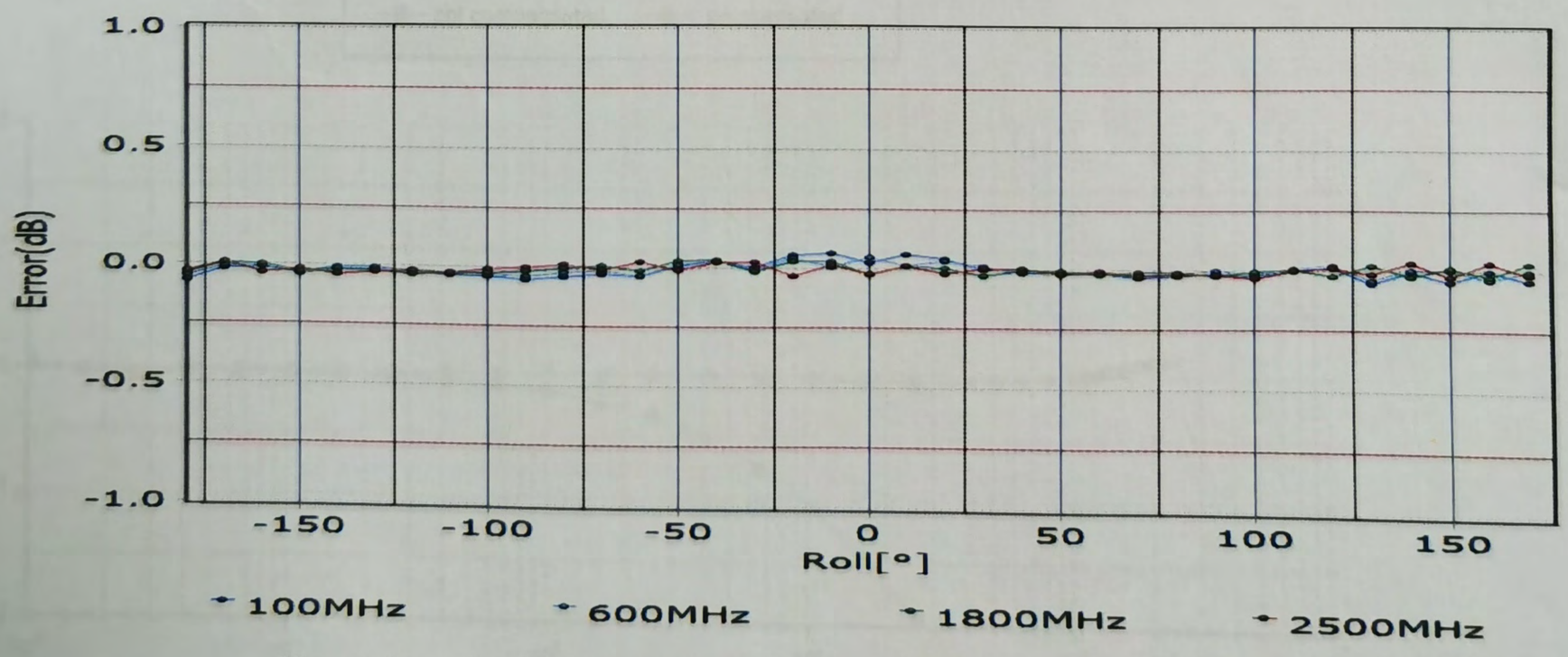
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM



f=1800 MHz, R22





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

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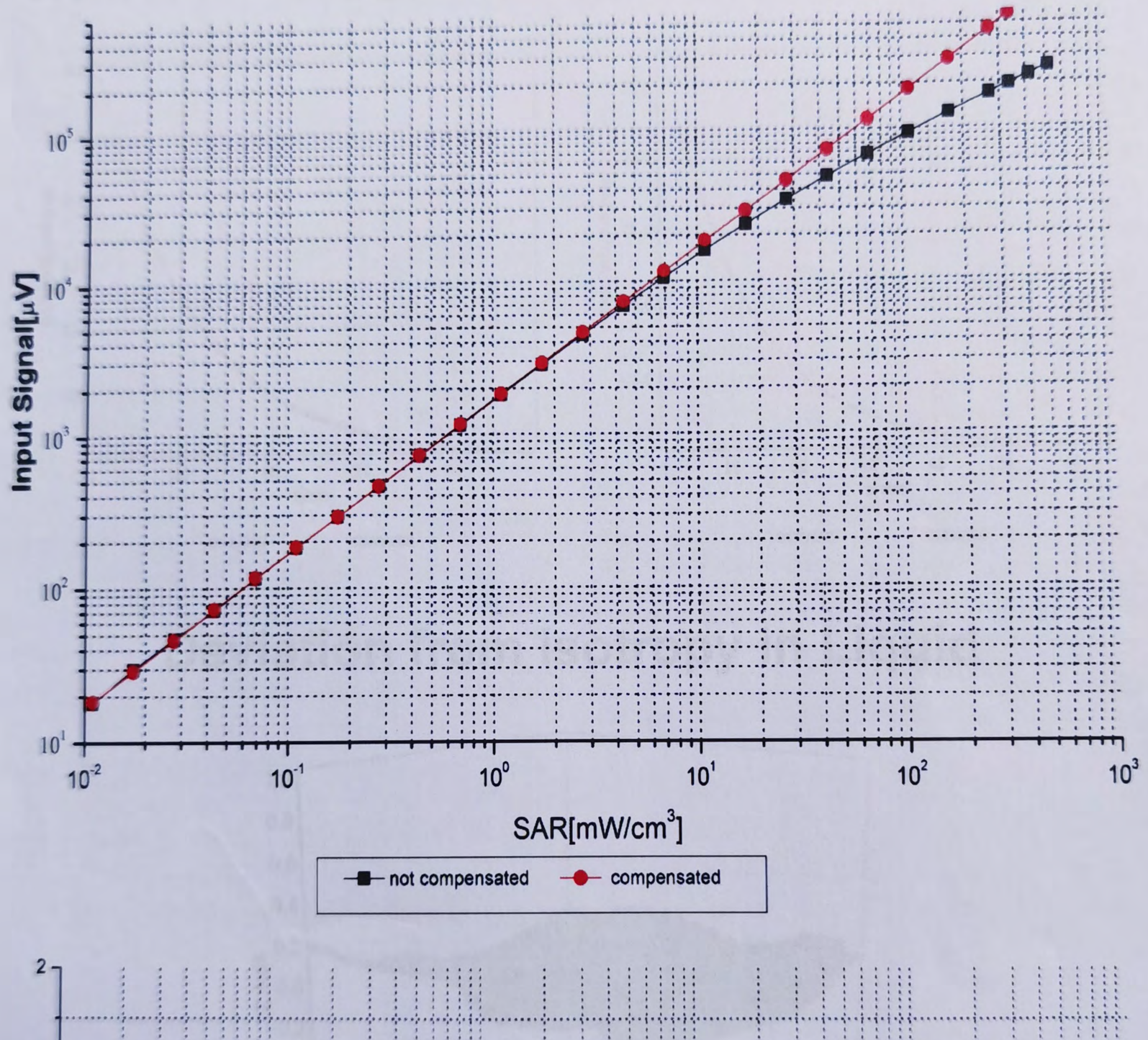
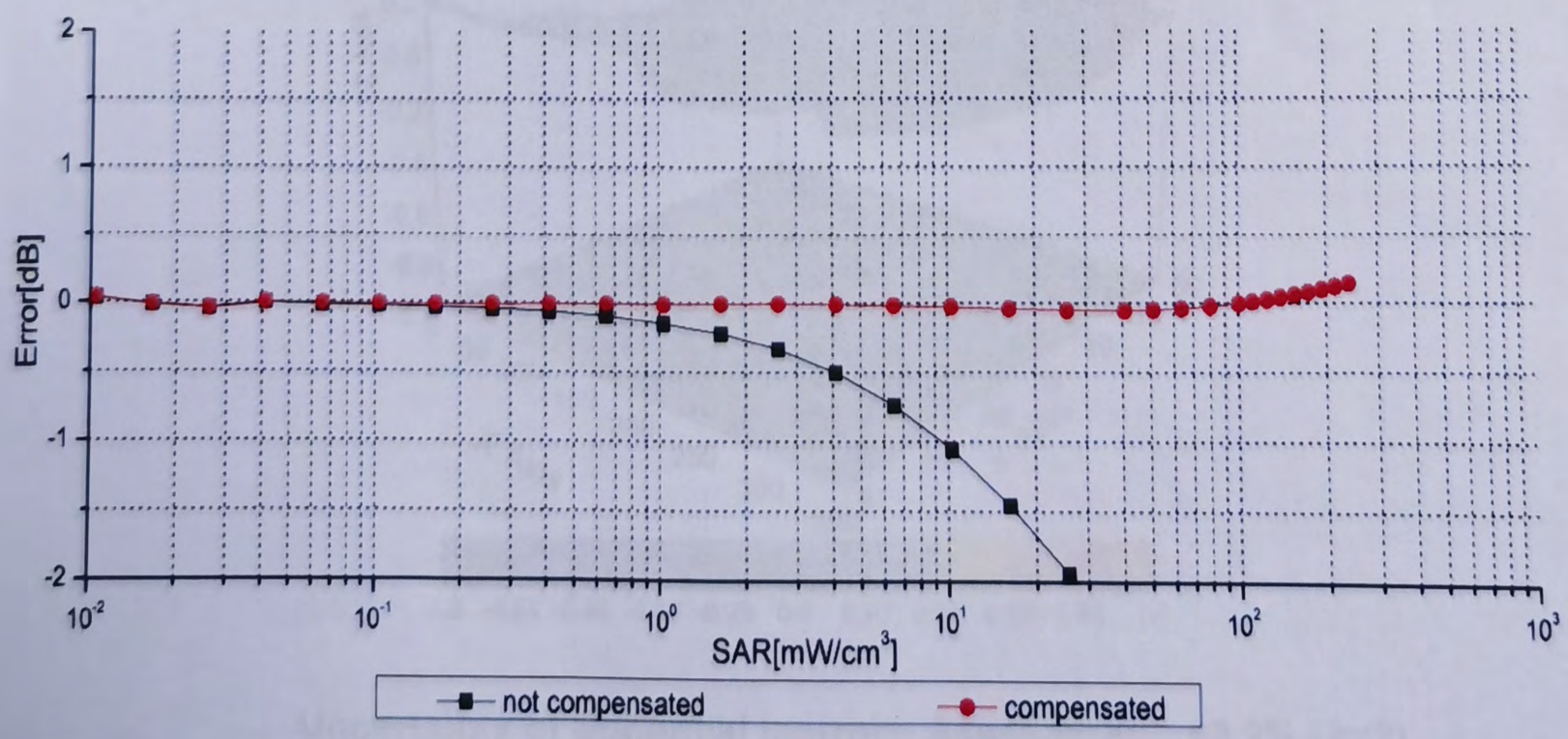
Dynamic Range f(SAR_{head})
(TEM cell, f = 900 MHz)





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

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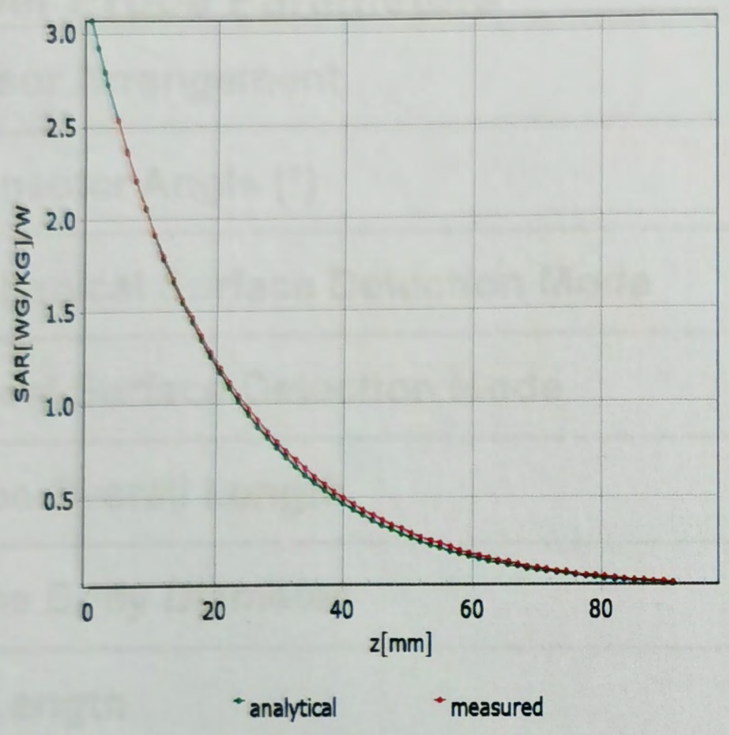
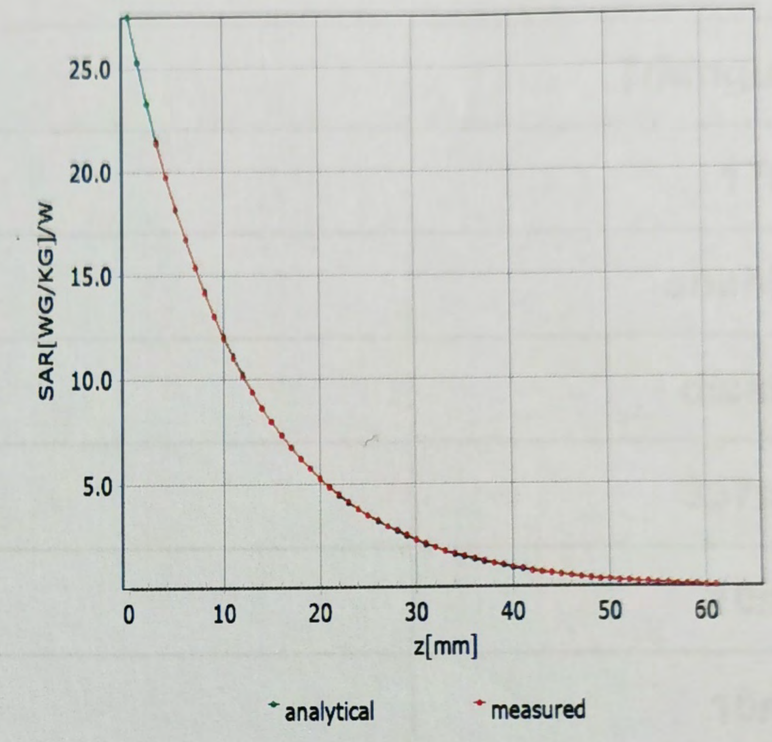
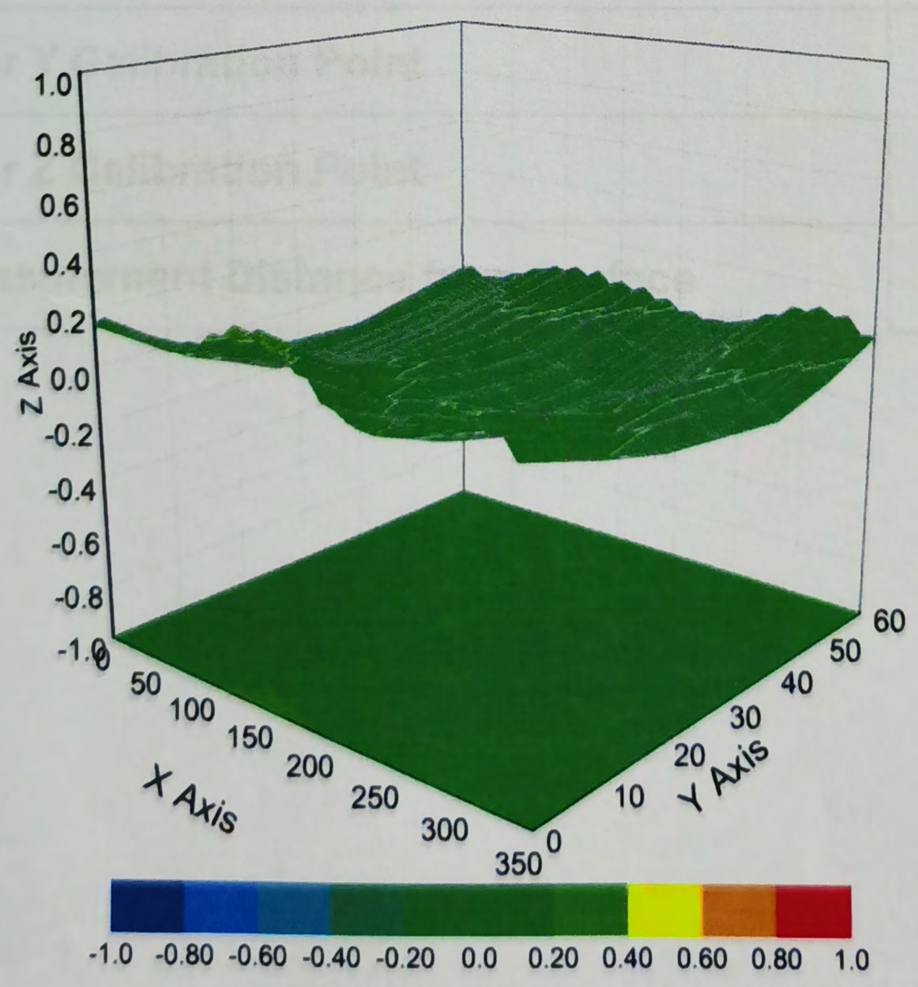
Conversion Factor Assessment

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 (°)	170.7
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