



Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 7745

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.54	0.55	0.58	±10.0%
DCP(mV) ^B	113.7	115.2	113.5	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Max Dev.	Max Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	200.4	±2.1%	±4.7%
		Y	0.0	0.0	1.0		200.7		
		Z	0.0	0.0	1.0		202.4		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	2.00	62.00	7.00	10.00	60	±2.5%	±9.6%
		Y	1.43	60.00	6.12		60		
		Z	2.00	62.00	7.00		60		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	0.87	60.00	4.66	6.99	80	±2.7%	±9.6%
		Y	0.84	60.00	4.82		80		
		Z	0.88	60.00	4.89		80		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	78.00	74.00	7.00	3.98	95	±2.2%	±9.6%
		Y	20.00	72.00	7.00		95		
		Z	24.00	72.00	7.00		95		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	13.79	152.35	10.86	2.22	120	±1.9%	±9.6%
		Y	17.46	141.75	7.58		120		
		Z	16.46	101.70	0.36		120		
10387-AAA	QPSK Waveform, 1 MHz	X	0.41	60.40	8.77	1.00	150	±3.8%	±9.6%
		Y	0.41	60.00	7.87		150		
		Z	0.44	60.00	7.62		150		
10388-AAA	QPSK Waveform, 10 MHz	X	1.08	63.08	11.29	0.00	150	±1.4%	±9.6%
		Y	0.94	60.97	9.25		150		
		Z	0.97	60.81	9.08		150		
10396-AAA	64-QAM Waveform, 100 kHz	X	1.83	65.85	16.67	3.01	150	±1.1%	±9.6%
		Y	1.73	63.65	14.80		150		
		Z	1.75	63.51	14.45		150		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	3.71	65.98	14.72	0.00	150	±4.1%	±9.6%
		Y	3.47	64.92	13.70		150		
		Z	3.53	64.76	13.58		150		

Note: For details on UID parameters see Appendix

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 5).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty 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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Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	8.88	61.82	30.93	3.75	0.00	4.90	0.46	0.00	1.01
Y	7.83	54.88	30.82	2.44	0.00	4.90	0.41	0.00	1.01
Z	8.42	59.58	31.24	3.58	0.00	4.90	0.53	0.00	1.01

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	31.2
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
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



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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	9.71	9.71	9.71	0.16	1.35	± 12.7%
835	41.5	0.90	9.33	9.33	9.33	0.16	1.34	± 12.7%
1750	40.1	1.37	8.18	8.18	8.18	0.21	1.10	± 12.7%
1900	40.0	1.40	7.88	7.88	7.88	0.27	1.00	± 12.7%
2100	39.8	1.49	7.80	7.80	7.80	0.22	1.11	± 12.7%
2300	39.5	1.67	7.74	7.74	7.74	0.52	0.70	± 12.7%
2450	39.2	1.80	7.50	7.50	7.50	0.54	0.71	± 12.7%
2600	39.0	1.96	7.33	7.33	7.33	0.64	0.65	± 12.7%
3300	38.2	2.71	7.00	7.00	7.00	0.44	0.88	± 13.9%
3500	37.9	2.91	6.85	6.85	6.85	0.39	1.03	± 13.9%
3700	37.7	3.12	6.70	6.70	6.70	0.37	1.07	± 13.9%
3900	37.5	3.32	6.56	6.56	6.56	0.35	1.35	± 13.9%
4100	37.2	3.53	6.54	6.54	6.54	0.30	1.38	± 13.9%
4600	36.7	4.04	6.26	6.26	6.26	0.40	1.30	± 13.9%
4800	36.4	4.25	6.16	6.16	6.16	0.40	1.35	± 13.9%
4950	36.3	4.40	5.95	5.95	5.95	0.45	1.25	± 13.9%
5250	35.9	4.71	5.34	5.34	5.34	0.40	1.40	± 13.9%
5600	35.5	5.07	4.65	4.65	4.65	0.40	1.52	± 13.9%
5750	35.4	5.22	4.77	4.77	4.77	0.40	1.52	± 13.9%

^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.

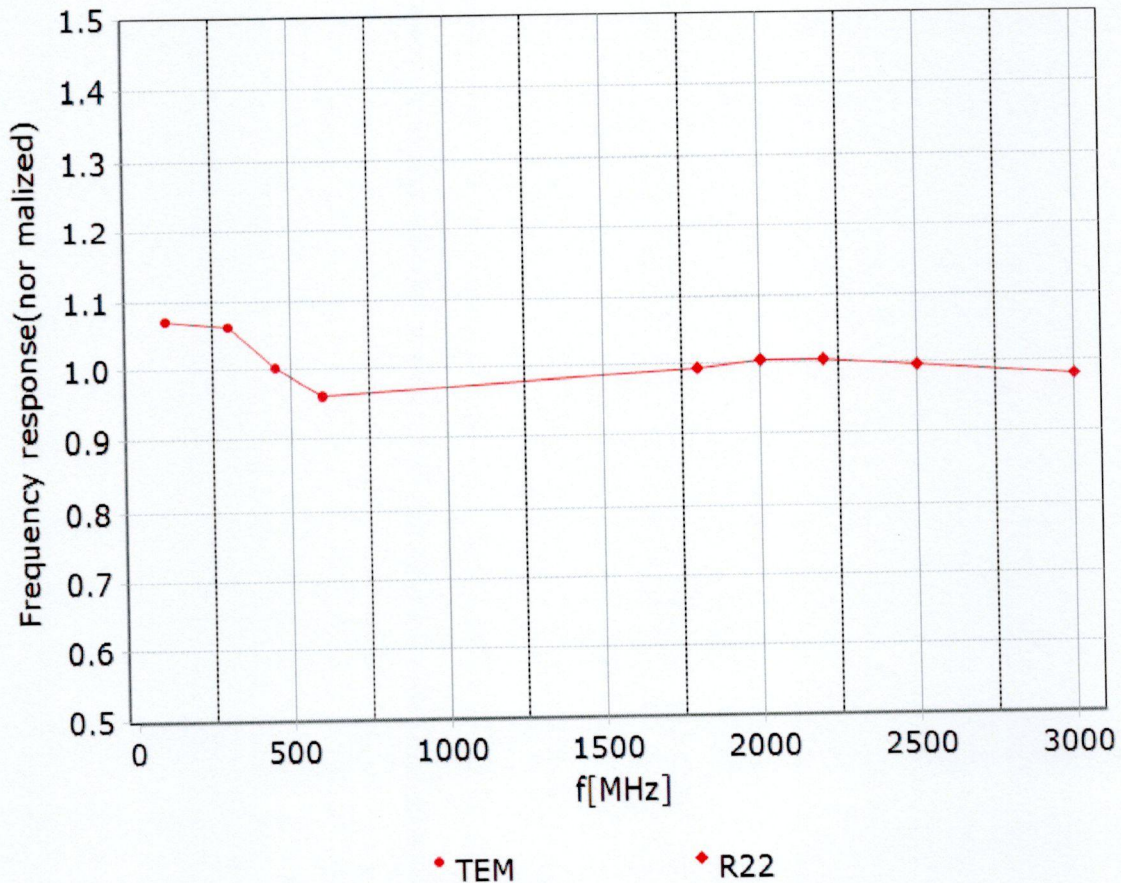
^F At frequency up to 6 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^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: $\pm 7.4\%$ ($k=2$)

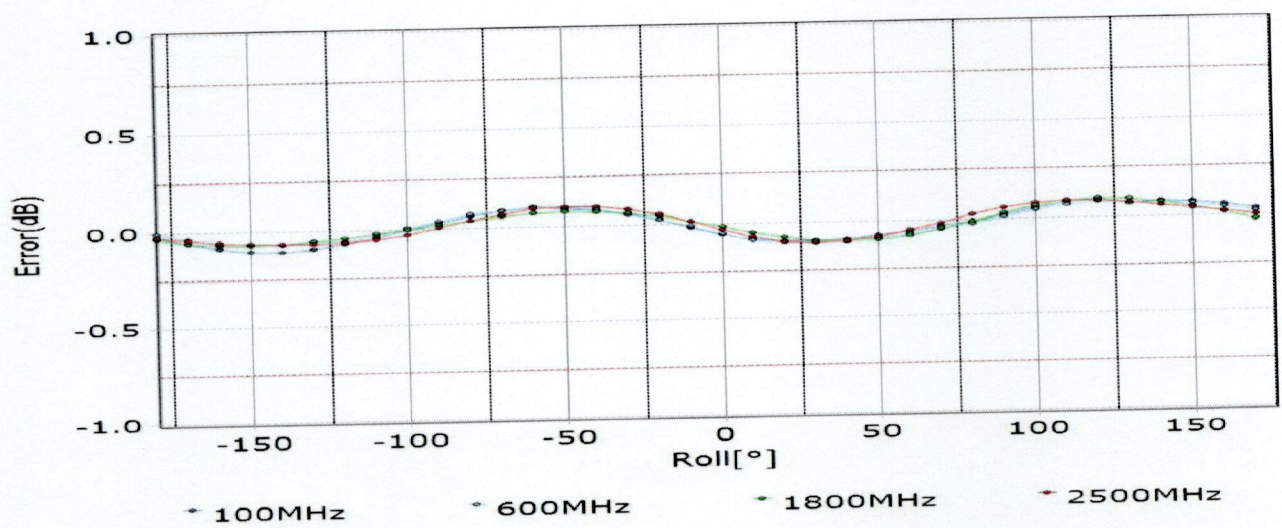
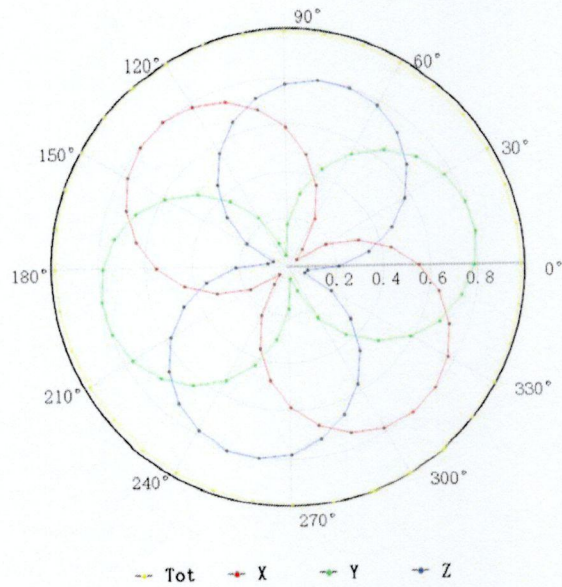
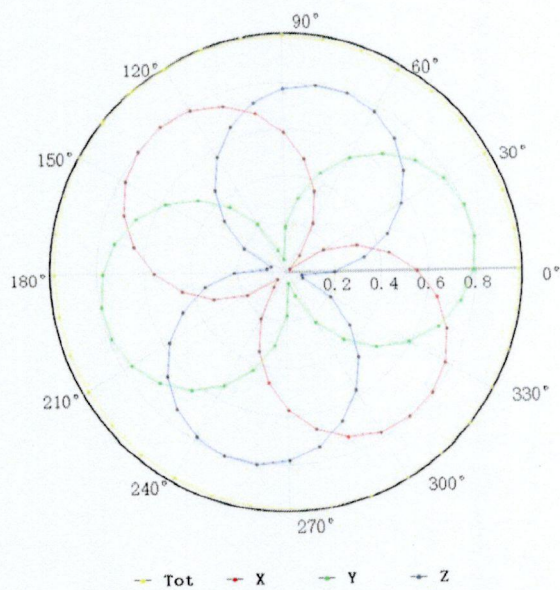


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Receiving Pattern (Φ), $\theta=0^\circ$

f=600 MHz, TEM

f=1800 MHz, R22

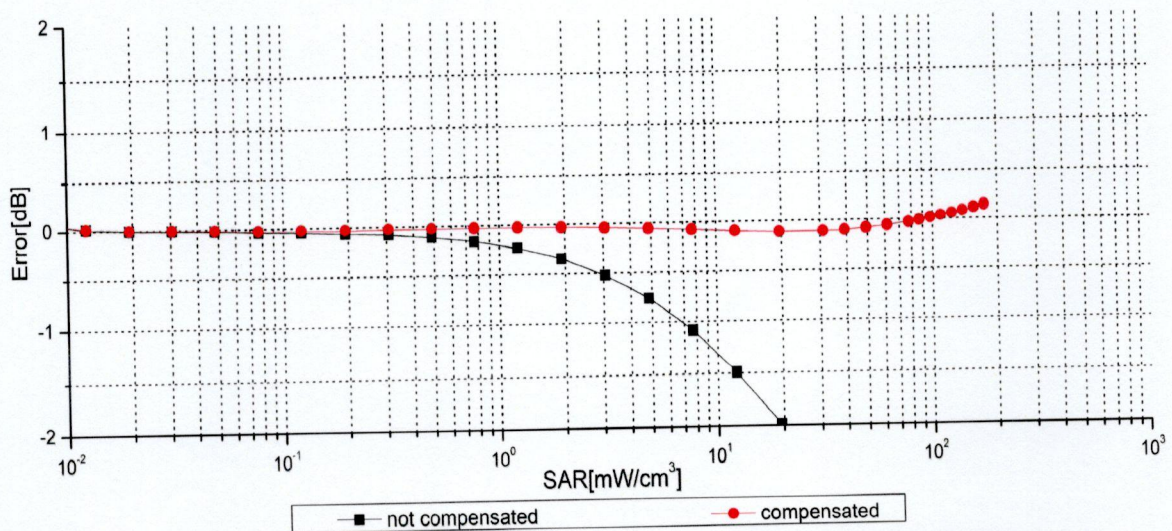
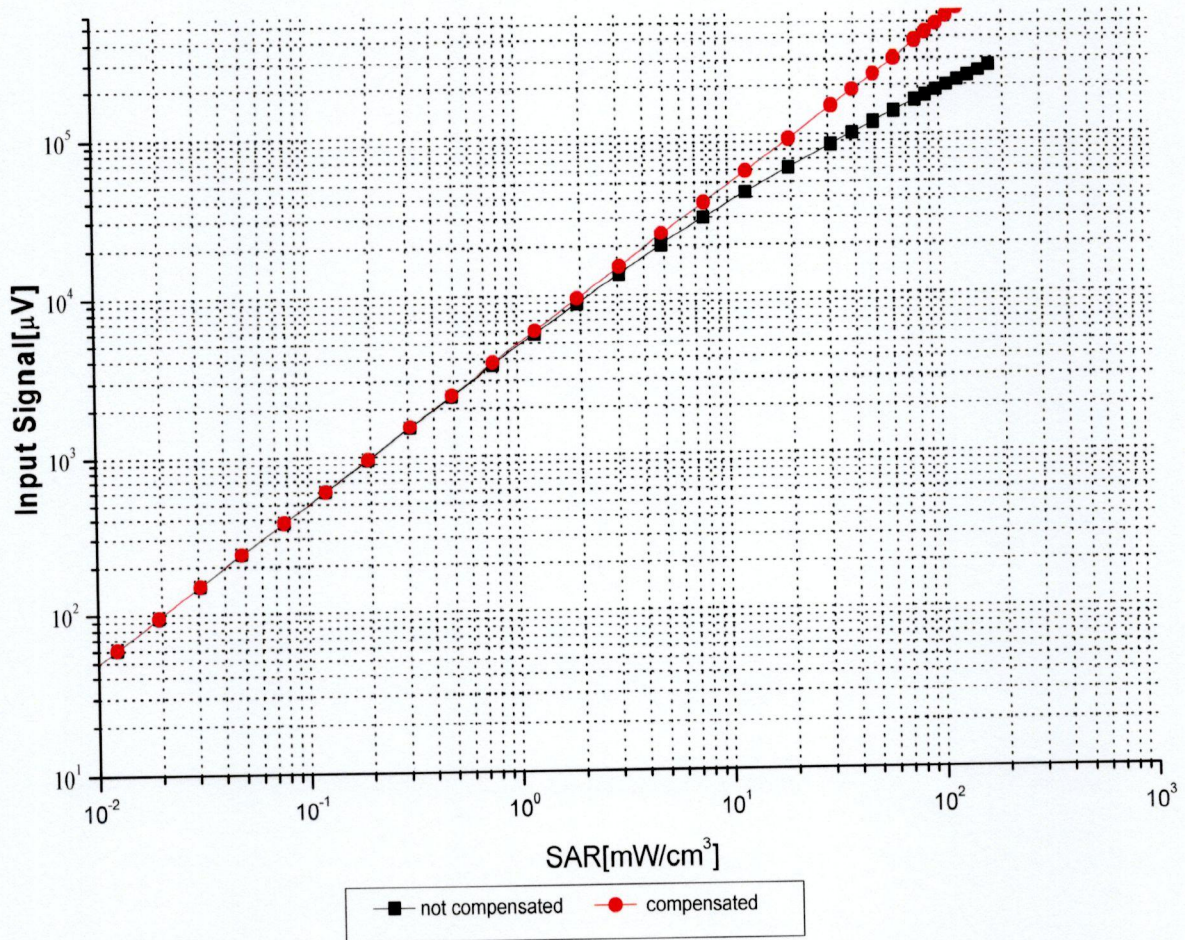


Uncertainty of Axial Isotropy Assessment: $\pm 1.2\%$ ($k=2$)



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



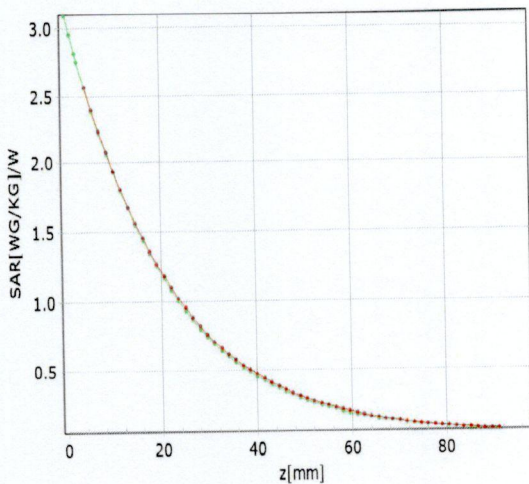
Uncertainty of Linearity Assessment: ±0.9% (k=2)

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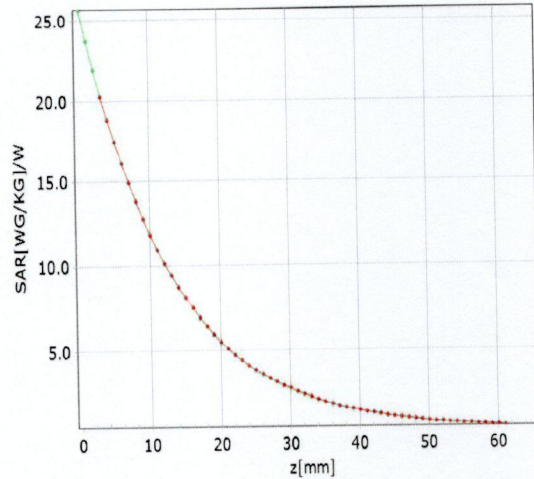
Conversion Factor Assessment

f=750 MHz,WGLS R9(H_convF)

f=1750 MHz,WGLS R22(H_convF)

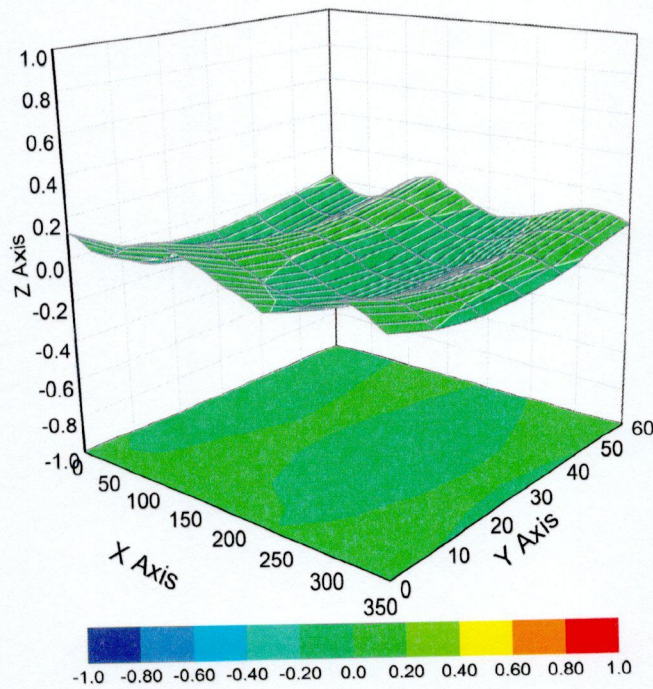


* analytical * measured



* analytical * measured

Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: $\pm 3.2\%$ ($k=2$)