

## SAR Measurement Uncertainty

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	$e = f(d,k)$	<i>f</i>	<i>g</i>	$h = c \times f / e$	$i = c \times g / e$	<i>k</i>
Uncertainty Component	Sec.	Tol. (± %)	Prob. Dist.	Div.	$c_i$ (1-g)	$c_i$ (10-g)	1-g $u_i$ (±%)	10-g $u_i$ (±%)	$v_i$
<b>Measurement System</b>									
Probe Calibration	E1.1	2.6	N	1	1	1	3.0	3.0	∞
Axial Isotropy	E1.2	4.88	R	$\sqrt{3}$	$(1-cp)^{1/2}$	$(1-cp)^{1/2}$	2.0	2.0	∞
Hemispherical Isotropy	E1.2	9.6	R	$\sqrt{3}$	$\sqrt{c_p}$	$\sqrt{c_p}$	3.9	3.9	∞
Boundary Effect	E1.3	11.0	R	$\sqrt{3}$	1	1	6.4	6.4	∞
Linearity	E1.4	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
System Detection Limits	E1.5	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Readout Electronics	E1.6	1.0	N	1	1	1	1.0	1.0	∞
Response Time	E1.7	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
Integration Time	E1.8	1.8	R	$\sqrt{3}$	1	1	1.1	1.1	∞
RF Ambient Conditions	E5.1	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E5.2	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E5.3	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E4.2	3.9	R	$\sqrt{3}$	1	1	2.3	2.3	∞
<b>Test sample Related</b>									
Test Sample Positioning	E3.2.1		R	$\sqrt{3}$	1	1	8.0	8.0	11
Device Holder Uncertainty	E3.1.1		R	$\sqrt{3}$	1	1	6.0	6.0	8
Output Power Variation - SAR drift measurement	5.6.2	5	R	$\sqrt{3}$	1	1	2.9	2.9	∞
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty (shape and thickness tolerances)	E2.1	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E2.2	5.0	R	$\sqrt{3}$	0.7	0.5	2.0	1.4	∞
Liquid Conductivity - measurement uncertainty	E2.2	10.0	R	$\sqrt{3}$	0.7	0.5	4.0	2.9	∞
Liquid Permittivity - deviation from target values	E2.2	5.0	R	$\sqrt{3}$	0.6	0.5	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E2.2	5.0	R	$\sqrt{3}$	0.6	0.5	1.7	1.4	∞
<b>Combined Standard Uncertainty</b>				RSS			14.4	14.0	
<b>Expanded Uncertainty (95% CONFIDENCE LEVEL)</b>							28.8	28.0	