Uncertainty Budget per IEEE P1528

Error Description	Uncertainty value ±%	Probability distribution	divisor	c_i 1g	Standard unc. (1g) ±%	v_i or v_{eff}
Measurement System						
Probe calibration	± 4.8	normal	1	1	± 4.8	∞
Axial isotropy of the probe	± 4.7	rectangular	√3	$(1-c_p)^{1/2}$	± 1.9	∞
Sph. isotropy of the probe	± 9.6	rectangular	√3	$(c_p)^{1/2}$	± 3.9	∞
Probe linearity	± 4.7	rectangular	√3	1	± 2.7	∞
Detection limit	± 1.0	rectangular	√3	1	± 0.6	∞
Boundary effects	± 8.3	rectangular	√3	1	± 4.8	∞
Readout electronics	± 1.0	normal	1	1	± 1.0	∞
Response time	± 0.8	rectangular	√3	1	± 0.5	∞
Integration time	± 1.4	rectangular	√3	1	± 0.8	∞
Mech. constrains of robot	± 0.4	rectangular	√3	1	± 0.2	∞
Probe positioning	± 2.9	rectangular	√3	1	± 1.7	∞
Extrap. and integration	± 3.9	rectangular	√3	1	± 2.3	∞
RF ambient conditions	± 0.75	rectangular	√3	1	± 0.43	∞
Test Sample Related						
Device positioning	± 2.23	normal	1	1	± 2.23	11
Device holder uncertainty	± 5.0	normal	1	1	± 5.0	7
Power drift	± 5.0	rectangular	√3	1	± 2.9	∞
Phantom and Setup						
Phantom uncertainty	± 4.0	rectangular	√3	1	± 2.3	∞
Liquid conductivity (target)	± 5.0	rectangular	√3	0.6	± 1.7	∞
Liquid conductivity (meas.)	± 10.0/5.0	rectangular	√3	0.6	± 3.5/1.73	∞
Liquid permittivity (target)	± 5.0	rectangular	√3	0.6	± 1.7	∞
Liquid permittivity (meas.)	± 5.0	rectangular	√3	0.6	± 1.7	∞
Combined Standard Uncertainty					± 12.14/11.76	
Coverage Factor for 95%		**kp = 2**				
Expanded Standard Uncertainty					**± 24.29/23.51**	

Note: Due to the different spec for liquid above 2G (+/- 10%) and below the 2G (+/- 5%), the uncertainty budget is different accordingly.