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## BxDiff – WP1

### *Measurement uncertainty for BRDF comparison at METAS*

# Measurement uncertainty for BRDF comparison at METAS

Uncertainty source		Uncertainty / %		
		Labsphere BRDF-99-020	Labsphere BRDF-50-020	NCS 5A
Repeatability	(45°, 0°) : (0°, 0°)	0.17	0.042	0.19
	(0°, 0°) : (45°, 180°)	0.36	0.28	0.19
	(45°, 0°) : (60°, 180°)	0.23	0.11	1.1
	(45°, 0°) : (45°, 90°)	0.23	0.62	0.72
	(45°, 0°) : (50.1°, 146.6°)	0.38	0.13	0.29
Signal		0.023	0.023	0.023
Light source stability	Sample	0.035	0.038	0.037
	White standard	0.035		
Wavelength		0.045	0.41	0.16
Inhomogeneity of sample surface and uniformity of irradiation on sample surface	(45°, 0°) : (0°, 0°)	0.0051	0.013	0.0066
	(0°, 0°) : (45°, 180°)	0.0051	0.0076	0.0059
	(45°, 0°) : (60°, 180°)	0.010	0.015	0.024
	(45°, 0°) : (45°, 90°)	0.0061	0.014	0.0071
	(45°, 0°) : (50.1°, 146.6°)	0.0072	0.015	0.0080
Polarization dependence	(45°, 0°) : (0°, 0°)	0.0018	0.0018	0.0099
	(0°, 0°) : (45°, 180°)	0.0018	0.0018	0.0031
	(45°, 0°) : (60°, 180°)	0.0039	0.0039	0.0073
	(45°, 0°) : (45°, 90°)	0.0039	0.0039	0.0073
	(45°, 0°) : (50.1°, 146.6°)	0.0039	0.0039	0.0073
White standard uncertainty		0.20	0.20	0.20
<b>Combined uncertainty (k=2)</b>	(45°, 0°) : (0°, 0°)	<b>0.54</b>	<b>0.92</b>	<b>0.65</b>
	(0°, 0°) : (45°, 180°)	<b>0.84</b>	<b>1.08</b>	<b>0.65</b>
	(45°, 0°) : (60°, 180°)	<b>0.63</b>	<b>0.95</b>	<b>2.26</b>
	(45°, 0°) : (45°, 90°)	<b>0.63</b>	<b>1.54</b>	<b>1.53</b>
	(45°, 0°) : (50.1°, 146.6°)	<b>0.87</b>	<b>0.96</b>	<b>0.78</b>