SINGAPORE LABORATORY
ACCREDITATION SCHEME

ACCREDITED LABORATORY
SAC-SINGLAS

Schedule

Singapore Test Services Pte Ltd
Block 4010 Techplace 1
Ang Mo Kio Ave 10 #03 – 8 to 12
Singapore 569626

Certificate No. : LA-1987-0012-C

Issue No. : 25

Date : 28 November 2017

FIELD OF TESTING : Calibration and Measurement

MEASURED QUANTITIES/ RANGE/ INSTRUMENTS TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (*)
A. MECHANICAL **A.I. Pressure**		
Vacuum a. -30 in.Hg to 0 in.Hg		0.013 in.Hg
Pressure b. 0 inH_2O to 1.0 inH_2O c. 1 inH_2O to 20 inH_2O d. 20 inH_2O to 64 inH_2O	STS In-house Procedure T-WI-CMD-003-02 Rev 06	0.0044 in.H_2O 0.011 in.H_2O 0.055 in.H_2O
e. 0 psi to 500 psi f. 500 psi to 2 000 psi g. 2 000 psi to 16 000 psi	STS In-house Procedure T-WI-CMD-003-01 Rev 10	0.077 psi 0.37 psi 8.8 psi
h. 11 psi abs to 17 psi abs	STS In-house Procedure T-WI-CMD-003-27 Rev 04	0.0025 psi abs
i. 0 psi abs to 50 psi abs j. 0.5 psi abs to 500 psi abs k. 0.5 psi abs to 2000 psi abs	STS In-house Procedure T-WI-CMD-003-01 Rev 10	0.016 psi abs 0.091 psi abs 0.21 psi abs
Differential Pressure l. - 2500 Pa to 2500 Pa	STS In-house Procedure T-WI-CMD-003-02 Rev 06	1.6 Pa

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A.II FORCE MEASUREMENT		
1. Force Measurement Device (Tension/Compression)		
a. Up to 5 kgf (Tension)	STS in-house procedure T-WI-CMD-003-04 Rev 11	0.00084 kgf
Up to 5 kgf (Compression)		0.00084 kgf
b. Up to 20 kgf (Tension)		0.0070 kgf
Up to 20 kgf (Compression)		0.0070 kgf
c. Up to 50 kgf (Tension)		0.014 kgf
Up to 50 kgf (compression)		0.014 kgf
d. Up to 500 kgf (Tension)		0.090 kgf
Up to 500 kgf (Compression)		0.12 kgf
e. Up to 10 kN (Tension)		0.011 kN
Up to 10 kN (Compression)		0.011 kN
f. Up to 10 000 kgf (Tension)		1.2 kgf
Up to 10 000 kgf Compression)		14.8 kgf
g Up to 30 000 kgf (Tension)		1.6 kN
Up to 30 000 kgf(Compression)		1.6 kN
h Up to 1000 kN (Compression)		1.4 kN
2. Platform Balance Calibration Up to 4000 kg	STS in-house procedure T-WI-CMD-003-14 Rev 06	0.9 kg
3. Balances and weighing scales		
a. 0.5 to 5 g	STS in-house procedure T-WI-CMD-003-05 Rev 08	0.13 mg
b. 5 to 50 g		0.25 mg
c. 50 to 200 g		0.77 mg
d. 200 to 600 g		0.0027 g
e. 600 to 2000 g		0.0076 g
f. 2 to 6 kg		0.023 g
g. 6 to 10 kg		0.035 g
h. 10 to 30 kg		0.14 g
i. 30 to 60 kg		0.0013 kg
j. 60 to 100 kg		0.013 kg
k. 100 to 150 kg		0.046 kg
l. 150 to 500 kg		0.093 kg

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A.II FORCE MEASUREMENT		
4. Torque		
a. Torque Measuring Devices		
0 - 1.5 ozf.in	BS 7882 : 2008 STS in-house procedure T-WI-CMD-003-07 Rev 07	0.0059 ozf.in
0 - 10 ozf.in		0.041 ozf.in
0 - 18 ozf.in		0.076 ozf.in
0 - 60 cN.m		0.12 cN.m
0 - 15 kgf.cm		0.043 kgf.cm
0 - 5 N.m		0.0017 N.m
0 - 442.6 lbf.in		0.32 lbf.in
0 - 250 lbf.ft		0.14 lbf.ft
b. Torque Wrench		
0.0200 N.m to 1.0000 N.m	BS EN 6789 : 2003 STS in-house procedure T-WI-CMD-003-06 Rev 06	0.72 % F.S.
0.1250 N.m to 6.2500 N.m		0.66 % F.S.
0.250 N.m to 12.500 N.m		0.67 % F.S.
1.750 N.m to 35.000 N.m		0.61 % F.S.
3.500 N.m to 70.000 N.m		0.69 % F.S.
7.50 N.m to 150.00 N.m		0.66 % F.S.
17.50 N.m to 350.00 N.m		0.59 % F.S.
35.00 N.m to 700.00 N.m		0.61 % F.S.
30.0 N.m to 1500.0 N.m		0.59 % F.S.
339.0 N.m to 2500 N.m		0.60 % F.S.
5. Extensometer		
a. Gauge Length up to 50 mm	STS in-house procedure T-WI-CMD-001-50 Rev 08	4.2 μm
b. Classification Limit up to ASTM E83-16 Class B1 for Gauge Length 25 mm and 50 mm	STS in-house procedure T-WI-CMD-001-50 Rev 08	Calibrator accuracy (12.5 mm) = 0.6 μm Calibrator accuracy (25 mm) = 0.6 μm
c. Strain Displacement Measurement up to 25 mm	ASTM E83-16	0.000023 mm/mm

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A.II FORCE MEASUREMENT		
6. Standard Weights		
a. 1 mg	OIML R111-1:2004 STS in-house procedure T-WI-CMD-003-08 Rev 07	0.02 mg
b. 2 mg		0.05 mg
c. 5 mg		0.02 mg
d. 10 mg		0.02 mg
e. 20 mg		0.02 mg
f. 50 mg		0.03 mg
g. 100 mg		0.03 mg
h. 200 mg		0.04 mg
i. 500 mg		0.05 mg
j. 1 g		0.07 mg
k. 2 g		0.08 mg
l. 5 g		0.11 mg
m. 10 g		0.13 mg
n. 20 g		0.17 mg
o. 50 g		0.20 mg
p. 100 g		0.34 mg
q. 200 g		0.80 mg
r. 500 g		0.024 g
s. 1 kg		0.025 g
t. 2 kg		0.029 g
u. 5 kg		0.24 g
v. 10 kg		0.25 g
w. 20 kg		0.26 g
x. 30 kg		0.24 g

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A.II FORCE MEASUREMENT		
7. Hardness Testing Machine		
a. Force Verification of Brinell Testing Machine	BS EN ISO 6506-2 : 2014 EN ISO 7500-1-2015	
Range 0 – 500 kgf	BS EN 376 : 2011	0.55 kgf
Range 0 – 3000 kgf	STS in-house procedure T-WI-CMD-003-09 Rev 05	3.3 kgf
b. Force Verification of Vickers Testing Machine	BS EN ISO 6507-2 : 2005 EN ISO 7500-1-2015	
Range 0 – 100 kgf	BS EN 376: 2011 STS in-house procedure T-WI-CMD-003-10 Rev 05	3.3 N
c. Force Verification of Rockwell Testing Machine	BS EN ISO 6508-2 : 2015 EN ISO 7500-1-2015	
Range 0 – 150 kgf	BS EN 376: 2011 STS in-house procedure T-WI-CMD-003-11 Rev 05	0.17 kg
8. Tension/Compression Testing Machine		
a. 0 to 100 N (compression)	BS EN ISO 376 : 2011 BS EN ISO 7500-1 : 2015 STS In-house procedure T-WI-CMD-003-12 Rev 04	0.11 N
b. 100 to 2000 N (Tension)		2.3 N
100 to 2000 N (Compression)		2.2 N
c. 2 to 10 kN (Tension)		0.011 KN
2 to 10 kN (Compression)		0.011 KN
d. 10 to 100 KN (Tension)		0.12 KN
10 to 100 KN (Compression)		0.12 KN
e. 100 to 1000 KN (Tension)		1.1 KN
100 to 1000 KN (Compression)		1.1 KN
9. Calibration of Cable Tensiometer		
Up to 300 lbf	STS in-house procedure T-WI-CMD-003-17 Rev 05	1.6 lbf

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A.II FORCE MEASUREMENT		
10 Calibration of Durometer (Verification of the test force)		
a. ASTM D 2240:2015 Type A	STS in-house procedure T-WI-CMD-003-19 Rev 10	0.0080 N
b. ASTM D 2240:2015 Type D		0.026 N
c. BS EN ISO 868:2003 Type A		8.7 mN
d. BS EN ISO 868:2003 Type D		51.4 mN
e. JIS 6301:1995 Type A		0.46 gf
f. JIS 6301:1995 Type C		5.1 gf
g. JIS 6301:1995 Type C2		0.23 gf
h. JIS K 7215:2006 Type A		0.88 gf
11 Calibration of Metallic / Non Metallic Objects		
a. 0 – 210 g	STS in-house procedure T-WI-CMD-003-20 Rev 06	0.01 g
b. 200 g – 3 kg		0.02 g
c. 3 kg – 30 kg		0.3 g
A.III Flow Measurement		
1. Calibration of Fluid (Gas) Flow Measurement Instrument		
a. 0 to 300 cc/min	STS in-house procedure T-WI-CMD-003-16 Rev 05	4.5 cc/min
b. 0 to 6000 cc/min		142 cc/min
c. 0 to 30000 cc/min		400 cc/min
2. Calibration of Fluid (Liquid) Flow Measurement Instrument		
0.3 to 50 GPM (US)	STS in-house procedure T-WI-CMD-003-18 Rev 05	0.15 % reading

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A.IV Rotational Speed Measurement		
1 Calibration of Rotational Speed of Rotating Equipment	STS in-house procedure T-WI-CMD-004-14 Rev03	
a. 6 to 11 999 rpm		1.5 rpm
b. 12 000 to 29 999 rpm		2.7 rpm
c. 30 000 to 49 999 rpm		5 rpm
d. 50 000 to 200 000 rpm		0.012 %
2 Tachometer and RPM / Speed indicator	STS in-house procedure	
a. 6 rpm to 6000 rpm	T-WI-CMD-004-15 Rev04	1.6 rpm
b. 6000 rpm to 200 000 rpm		5.3 rpm
A.V Vibration & Acoustic		
1. Accelerometers / Vibration	STS in-house procedure T-WI-CMD-004-16 Rev06	
a. 0.1 to 1000 mV/g b. 0.1 to 1000 pC/g	10 Hz to 99 Hz	4.2%
c. 0.1 to 1000 mV/g d. 0.1 to 1000 pC/g	100 Hz to 2500 Hz	4.2 %
e. 0.1 to 1000 mV/g f. 0.1 to 1000 pC/g	2501 Hz to 9000 Hz	6.7%
2. Sound Level Meter	STS in-house procedure T-WI-CMD-004-20 Rev 05	
94 dB at 1 kHz		0.15dB
114 dB at 1 kHz		0.15dB

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B. DIMENSIONAL METROLOGY		
B.I Limit Gauges		
1. Plain Plug Gauges	ASME B89.1.5-1998	
a. Up to 10 mm	STS in-house procedure	0.2 μm
b. 10 mm to 50 mm	T-WI-CMD-001-01 Rev07	0.4 μm
c. 50 mm to 150 mm		0.7 μm
d. 150 mm to 300 mm		0.9 μm
2. Plain Ring Gauges	BS 4064 : 1966, BS 4065:1966	
a. 1.5 mm to 25 mm	and ASME B89.1.6-2002	0.3 μm
b. 25 mm to 150 mm	STS in-house procedure	0.7 μm
c. 150 mm to 300 mm	T-WI-CMD-001-02 Rev08	1.0 μm
3. Plain Gap Gauges	STS in-house procedure	
a. 0.5 mm to 50 mm	T-WI-CMD-001-03 Rev07	2 μm
b. 50 mm to 300mm		3 μm
4. Profile Gauges	STS in-house procedure	
a. Up to 200 mm	T-WI-CMD-001-04 Rev07	1.3 μm
b Over 200 mm to 500 mm		2.6 μm
c Over 500 mm to 900 mm		4.0 μm
d Over 900 mm to 1400 mm		5.6 μm
E Over 1400 mm to 1800 mm		6.9 μm
5. Calibration and inspection of Jig , Fixture, Gauges, Tools and Parts etc for Size, Height, Length, Depth, Position, Angle and Geometric Dimensioning and Tolerancing. (GD&T).	STS in-house procedure T-WI-CMD-001-05 Rev07	
a Up to 200 mm		1.3 μm
b Over 200 mm to 500 mm		2.6 μm
c Over 500 mm to 900 mm		4.0 μm
d Over 900 mm to 1400 mm		5.6 μm
e Over 1400 mm to 1800 mm		6.9 μm
6. Radius Gauge (Up to 900 mm)	STS in-house procedure T-WI-CMD-001-06 Rev07	4.0μm

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B.II Measuring Instruments and Tools		
1. Surface Plates	BS 817 : 2008	
Size up to 2 x 2 ft	STS in-house procedure	1.6μm
Size up to 3 x 3 ft	T-WI-CMD-001-07 Rev 08	2.1μm
Size up to 4 x 4 ft		2.1μm
Size up to 6.5 x 5 ft		4.4μm
2. Bevel Protractors	BS 1685 : 2008 STS in-house procedure T-WI-CMD-001-08 Rev 08	3 minute
3. External Micrometer	BS EN ISO 3611:2010	
0.0001mm Resolution	STS in-house procedure	0.22 μm
0.001mm Resolution	T-WI-CMD-001-09 Rev 10	1 μm
4. Internal Micrometer	BS 959 : 2008 STS in-house procedure T-WI-CMD-001-10 Rev 06	1.8 μm
5. Depth Micrometers Up to 300 mm	BS 6468 : 2008 STS in-house procedure T-WI-CMD-001-11 Rev 06	1 μm
6. Calibration of Displacement Sensor, Dial, Electrical Gauge and Indicator and Thickness Gauge	BS EN ISO 463 : 2006	
Up to 30 mm	ASME B 89.1.10M-2001	0.4 μm
Up to 100 mm	STS in-house procedure	1.0 μm
Up to 600 mm	T-WI-CMD-001-12 Rev 09	2.5 μm
7. Dial Test Indicators Up to 30 mm	BS EN ISO 9493:2010 ASME ANSI B89.1.10M-2001 STS in-house procedure T-WI-CMD-001-13 Rev 07	0.4 μm
8. Electronic and Mechanical Height Gauges	BS 1643 : 2008 STS in-house procedure T-WI-CMD-001-14 Rev 07	
up to 300 mm		0.9 μm
up to 600 mm		1.6 μm
up to 1000 mm		2.6 μm

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B.II Measuring Instruments and Tools		
9. Feeler Gauges	BS 957 : 2008 STS in-house procedure T-WI-CMD-001-15 Rev 06	0.3 μm
10. Vee Blocks	BS 3731 : 1987 STS in-house procedure T-WI-CMD-001-16 Rev 06	1.8 μm
11. Engineer's Parallel	BS 906 : 1972 STS in-house procedure T-WI-CMD-001-17 Rev 05	4.1 μm
12. Engineer's Square	BS 939 : 2007 STS in-house procedure T-WI-CMD-001-18 Rev 06	2.2 μm
13. Right Angle and Box Angle Plates	BS 5535 : 1978 STS in-house procedure T-WI-CMD-001-19 Rev 06	2.2 μm
14. Straight Edge	BS 5204 Part 1 : 1975 and BS 5204 Part 2 : 1977 , STS in-house procedure T-WI-CMD-001-20 Rev 07	4.1 μm
15. Height Setting Micrometer Up to 300 mm Up to 600 mm	ISO 7863 : 1984 STS in-house procedure T-WI-CMD-001-21 Rev 07	 1.0 μm 1.8 μm
16. Steel Rule Up to 300 mm Up to 1000 mm Up to 2000 mm	JIS B 7516 : 2005 STS in-house procedure T-WI-CMD-001-22 Rev 08	 1.3 μm 6 μm 13 um
17. Glass Scale Up to 50mm Up to 300mm	STS in-house procedure T-WI-CMD-001-23 Rev 08	 1.1 μm 1.3 μm

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B.II Measuring Instruments and Tools		
18. Measuring Tape	JIS B 7512 : 2005	
Up to 5 m	STS in-house procedure	16 μm
Up to 10 m	T-WI-CMD-001-24 Rev 09	22 μm
Up to 20 m		30 μm
Up to 30 m		37 μm
19. Inside micro-Checker	STS in-house procedure	2.8 μm
Up to 600mm	T-WI-CMD-001-25 Rev 05	
20. Caliper Checker	STS in-house procedure	
Up to 300 mm	T-WI-CMD-001-26 Rev 05	1.3 μm
Up to 600 mm		1.8μm
21. Depth Micro-Checker	STS in-house procedure	1.3 μm
Up to 300 mm	T-WI-CMD-001-27 Rev 05	
22. Toolmaker's Straight edge	BS 852 : 1939	2.0 μm
	STS in-house procedure	
	T-WI-CMD-001-28 Rev 05	
23. Bore Gauge	STS in-house procedure	1 μm
(Three-leg Micrometer)	T-WI-CMD-001-29 Rev 07	
24 Electronic and Mechanical Calipers	BS EN ISO 13385-1:2011 JIS B 7507 : 2016	
Up to 150 mm	STS In-house procedure	2 μm
Up to 300 mm	T-WI-CMD-001-30 Rev 08	10 μm
Up to 600 mm		10 μm
Up to 1000 mm		10 μm
Up to 2000 mm		20 μm
25. Electronic/Mechanical Depth Gauge	BS EN ISO 13385-2-2011 STS in-house procedure	
Up to 300 mm	T-WI-CMD-001-31 Rev 07	10 μm
Up to 600 mm		10 μm
Up to 1000 mm		10 μm

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B.II Measuring Instruments and Tools		
26. Optical Projector	JIS B 7184 : 1999 STS in-house procedure T-WI-CMD-001-32 Rev 08	2.1 μm
27. Toolmaker Microscope	JIS B 7153 : 1995 STS in-house procedure T-WI-CMD-001-33 Rev 06	2.2 μm
28. Universal Measuring Machine Up to 10 mm Up to 20 mm Up to 50 mm Up to 70 mm Up to 100 mm	STS in-house procedure T-WI-CMD-001-48 Rev 09	 0.09 μm 0.11 μm 0.14 μm 0.18 μm 0.23 μm
29. Dial Gauge Calibrator 0 – 30 mm	STS in-house procedure T-WI-CMD-001-47 Rev 07	 0.3 μm
30. Clinometer / Digital Protractor	STS in-house procedure T-WI-CMD-001-52 Rev 07	0.02 deg
31. Spirit Level	BS 958 : 1968 STS in-house procedure T-WI-CMD-001-53 Rev 06	0.50 arc sec
32. Electronic Comparator (Mu-Checker)	STS in-house procedure T-WI-CMD-001-41 Rev 06	0.2 μm
33. Cylinder Gauges	JIS B 7545 : 1982 STS in-house procedure T-WI-CMD-001-54 Rev 06	0.6 μm
34. Square Master Up to 600 mm	STS in-house procedure T-WI-CMD-001-55 Rev 06	 3.9 μm
35. Test Sieve 0.02 mm to 20 mm	ASTM E11-17 and ISO 3310-1:2016 STS in-house procedure T-WI-CMD-001-57 Rev 09	 2.3 μm

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B.II Measuring Instruments and Tools		
36. Calibration of Film Thickness And Thickness Gauge	STS in-house procedure T-WI-CMD-001-64 Rev 03	
a Film Thickness up to 25mm		0.4 μm
b Thickness Gauge Up to 25mm		3.0 μm
Over 25 to 150mm		15 μm
37 Linear Measurement Machine	STS in-house procedure	
Up to 1000 mm	T-WI-CMD-001-66 Rev 01	10 μm
Over 1000 to 2000 mm		16 μm
38 Co-ordinate Measuring Machine (Contact)	ISO10360-2 : 2009 ISO10360-4 : 2000 ISO10360-5 : 2010	
Measuring Linear Dimension		
Up to 500 mm	STS in-house procedure	1.0 μm
Over 500 to 900 mm	T-WI-CMD-001-37 Rev 07	1.7 μm
Over 900 to 1200 mm		2.2 μm
Over 1200 to 1800 mm		2.6 μm
Single and Multiple stylus contacting probing and scaning systems		
III Form		
1. Roundness (up to 300 mm dia.)	STS in-house procedure T-WI-CMD-001-02 Rev08	0.18 μm
IV. Screw Thread Measurement		
1. Parallel Screw Plug Gauge		
a Measurement pitches from 0.5 – 6 mm	For compliance with ISO 1502, Fed Std H28 and equivalent Standards	2.5 μm for sizes from 1 mm to 50 mm
b For sizes from 1 – 150 mm	T-WI-CMD-001-59 Rev 07	3.5 μm for sizes from 50 mm to 150mm
2. Parallel Screw Ring Gauge		
a Measurement pitches	For compliance with ISO 1502, Fed Std H 28 and equivalent standards	2 μm for sizes from 4 mm to 10 mm
from 0.5 mm – 6 mm	STS In-house procedure	2.5 μm for sizes from 10 mm to 50 mm
b For sized from 4 mm – 100 mm	T-WI-CMD-001-60 Rev 06	3.5 μm for sizes from 50 mm to 100mm

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C. TEMPERATURE		
1. Temperature Enclosure	STS in-house procedure	
a -80 °C to 0 °C	T-WI-CMD-002-01 Rev.16	1.5 °C
b 0 °C to 100 °C		1.4°C
c 100 °C to 200 °C		1.6°C
d 200 °C to 1000 °C		2.1 °C
2. PT 100 Sensor	STS in-house procedure	
a -80 °C to 0 °C	T-WI-CMD-002-03 Rev 13	0.43°C
b 0 °C to 50 °C		0.11 °C
c 50 °C to 200 °C		0.37 °C
3. Temperature Indicator c/w Sensor PT100 / Thermistor	STS in-house procedure T-WI-CMD-002-05 Rev 15	
a -80 °C to 0 °C		0.43 °C
b 0 °C to 50 °C		0.11 °C
c 50 °C to 200 °C		0.37 °C
Base Metal: Type E, K, J, N & T		
Noble Metal: Type B, R & S		
a -80 °C to 0 °C		0.43 °C
b 0 °C to 100 °C		0.11 °C
c 100 °C to 260 °C		0.39°C
d 260 °C to 500 °C		2.6 °C
e 500°C to 1000 °C		3.7 °C
4. Liquid in Glass Thermometer Graduation 0.1°C	STS in-house procedure	
a 0 °C to 200 °C (Partial Immersion)	T-WI-CMD-002-07 Rev 13	0.6 °C
b 0 °C to 200 °C (Total Immersion)		0.59 °C
5. Calibration Bath - Liquid Bath	STS in-house procedure	
a -80 °C to 260 °C	T-WI-CMD-002-02 Rev 12	0.68°C
6. Temperature Block Calibrator	STS In-house procedure	
a. -45 °C to 140 °C	T-WI-CMD-002-13 Rev 07	0.86 °C
b. 140 °C to 650 °C		3.7 °C
c. 650°C to 1000 °C		4.1°C

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C. TEMPERATURE		
7. Thermocouple Sensor Base Metal: Type E, K, J, N & T Noble Metal: Type B, R & S	STS in-house procedure T-WI-CMD-002-04 Rev 12	
a -80°C to 0°C		0.43 °C
b 0 °C to 100 °C		0.11 °C
c 100 °C to 260 °C		0.39°C
d 260 °C to 500 °C		2.6 °C
e 500 °C to 800°C		3.6 °C
f 800 °C to 1000°C		3.7°C
8a Temperature Indicator (Measure)	STS in-house procedure T-WI-CMD-002-06 Rev 10	
i. Type K -200 °C to 1300 ° C		0.22 °C
ii. Type T -200 °C to 400 °C		0.09 °C
iii. Type J -200 °C to 1200 °C		0.18 °C
iv. Type N -200 °C to 1300 °C		0.29 °C
v. Type E -200 °C to 1000 °C		0.22 °C
vi. Type R 0 °C to 1700 °C		0.67 °C
vii. Type S 0 °C to 1700 °C		0.67 °C
viii. RTD 100Ω (Pt(385) -200 °C to 800 °C		0.079 °C

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8b Temperature Simulator (Source)	STS in-house procedure T-WI-CMD-002-06 Rev 10	
i. Type K -200 °C to 1300 ° C		0.10 °C
ii. Type T -200 °C to 400 °C		0.09 °C
iii. Type J -200 °C to 1200 °C		0.18 °C
iv. Type N -200 °C to 1300 °C		0.14 ºC
v. Type E -200 °C to 1000 °C		0.13 ºC
vi. Type R 0 °C to 1700 °C		0.72 ºC
vii. Type S 0 °C to 1700 °C		0.72 ºC
viii RTD 100Ω (Pt(385) -200 °C to 800 °C		0.079 ºC
C. TEMPERATURE		
9. Thermo-Hygrometer/Thermo-Hygrograph a. 20 °C to 50 °C	STS in-house procedure T-WI-CMD-002-08 Rev 10	0.18°C
b. 30 % rh to 95 % rh		2.0% relative humidity

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10. Humidity Chamber		
a 30 % rh at 20 °C	STS in-house procedure	1.4 % relative humidity
b 30 % rh to 50 % rh at 20 °C	T-WI-CMD-002-09 Rev 11	2.1 % relative humidity
c 50 % rh to 70 % rh at 20 °C		2.9 % relative humidity
d 70 % rh to 95 % rh at 20 °C		4.1 % relative humidity
e 30 % rh at 30 °C		1.2 % relative humidity
f 30 % rh to 50 % rh at 30 °C		1.7 % relative humidity
g 50 % rh to 70 % rh at 30 °C		2.3 % relative humidity
h 70 % rh to 95 % rh at 30 °C		3.8 % relative humidity
i 30 % rh at 50 °C		1.9% relative humidity
j 30 % rh to 50 % rh at 50 °C		1.9% relative humidity
k 50 % rh to 70 % rh at 50 °C		2.6 % relative humidity
l 70 % rh to 95 % rh at 50 °C		2.9 % relative humidity
% rh - % relative humidity		
D. ELECTRICAL		
1. DC Voltage Measuring Instrument	STS In-house procedure	
a. 0.01mV to 0.09999mV	T-WI-CMD-004-03 Rev 08	4.2%
b. 0.1mV to 0.99999mV		0.42%
c. 1mV to 9.99999mV		0.042%
d. 10mV to 99.99999mV		50 ppm
e. 100mV to 199.99999mV		12 ppm
f. 200mV to 219.99999mV		9.6 ppm
g. 0.22V to 2.1999999V		8.3 ppm
h. 2.2V to 10.999999V		4.7 ppm
i. 11V to 21.999999V		4 ppm
j. 22V to 219.99999V		6.9 ppm
k. 220V to 1100V		8.4 ppm

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2 AC Voltage Measuring Instrument	STS In-house procedure T-WI-CMD-004-03 Rev 08	
a. 0.50001 mV - 1 mV	10Hz to 20Hz	0.9%
	20Hz to 40Hz	0.9%
	40Hz to 20kHz	0.9%
	20kHz to 50kHz	1.1%
	50kHz to 100kHz	1.1%
	100kHz to 300kHz	2.4 %
	300kHz to 500kHz	4.2 %
b. 1.000001 mV - 2.19999 mV	10Hz to 20Hz	0.43 %
	20Hz to 40Hz	0.43 %
	40Hz to 20kHz	0.42 %
	20kHz to 50kHz	0.43 %
	50kHz to 100kHz	0.56 %
	100kHz to 300kHz	1.2 %
	300kHz to 500kHz	2.2 %
	500kHz to 1MHz	2.3 %
c. 2.2 mV - 5 mV	10Hz to 20Hz	0.21 %
	20Hz to 40Hz	0.2 %
	40Hz to 20kHz	0.21 %
	20kHz to 50kHz	0.21 %
	50kHz to 100kHz	0.28 %
	100kHz to 300kHz	0.56 %
	300kHz to 500kHz	1.1 %
	500kHz to 1MHz	1.2 %

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D. ELECTRICAL		
2 AC Voltage Measuring Instrument		
d. 5.00001 mV - 10 mV	10Hz to 20Hz	0.11 %
	20Hz to 40Hz	0.09 %
	40Hz to 20kHz	0.092 %
	20kHz to 50kHz	0.11 %
	50kHz to 100kHz	0.16 %
	100kHz to 300kHz	0.31 %
	300kHz to 500kHz	0.54 %
	500kHz to 1MHz	0.68 %
e. 10.00001 mV - 21.99999 mV	10Hz to 20Hz	0.065 %
	20Hz to 40Hz	0.052 %
	40Hz to 20kHz	0.05 %
	20kHz to 50kHz	0.061 %
	50kHz to 100kHz	0.11 %
	100kHz to 300kHz	0.21 %
	300kHz to 500kHz	0.35 %
	500kHz to 1MHz	0.48 %
f. 22 mV - 50 mV	10 Hz - 20 Hz	0.059 %
	20 Hz - 40 Hz	0.049 %
	40 Hz - 20 kHz	0.029 %
	20 kHz - 50 kHz	0.041 %
	50 kHz - 100 kHz	0.095 %
	100 kHz - 300 kHz	0.16 %
	300 kHz - 500 kHz	0.24 %
	500 kHz - 1 MHz	0.4 %
g. 50.00001 mV - 100 mV	10 Hz - 20 Hz	0.054 %
	20 Hz - 40 Hz	0.049 %
	40 Hz - 20 kHz	0.024 %
	20 kHz - 50 kHz	0.035 %
	50 kHz - 100 kHz	0.14%
	100 kHz - 300 kHz	0.14 %
	300 kHz - 500 kHz	0.2 %
	500 kHz - 1 MHz	0.37 %

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D. ELECTRICAL		
2 AC Voltage Measuring Instrument		
h. 0.1V - 0.21999999 V	10 Hz - 20 Hz	0.037 %
	20 Hz - 40 Hz	0.037 %
	40 Hz - 20 kHz	0.017 %
	20 kHz - 50 kHz	0.028 %
	50 kHz - 100 kHz	0.064 %
	100 kHz - 300 kHz	0.12 %
	300 kHz - 500 kHz	0.32 %
	500 kHz - 1 MHz	0.32 %
i. 0.22V - 0.5 V	10 Hz - 20 Hz	0.045 %
	20 Hz - 40 Hz	0.043 %
	40 Hz - 20 kHz	0.017 %
	20 kHz - 50 kHz	0.013 %
	50 kHz - 100 kHz	0.025 %
	100 kHz - 300 kHz	0.079 %
	300 kHz - 500 kHz	0.2 %
	500 kHz - 1 MHz	0.31 %
j. 0.5000001 V - 1 V	10 Hz - 20 Hz	0.033 %
	20 Hz - 40 Hz	0.033 %
	40 Hz - 20 kHz	0.013 %
	20 kHz - 50 kHz	96 ppm
	50 kHz - 100 kHz	0.018 %
	100 kHz - 300 kHz	0.058 %
	300 kHz - 500 kHz	0.14 %
	500 kHz - 1 MHz	0.24 %
k. 1.00001 V - 2.1999999 V	10 Hz - 20 Hz	0.029 %
	20 Hz - 40 Hz	0.029 %
	40 Hz - 20 kHz	0.011 %
	20 kHz - 50 kHz	85 ppm
	50 kHz - 100 kHz	0.015 %
	100 kHz - 300 kHz	0.051 %
	300 kHz - 500 kHz	0.13 %
	500 kHz - 1 MHz	0.21 %

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D. ELECTRICAL 2 AC Voltage Measuring Instrument		
l. 2.2 V - 5 V	10 Hz - 20 Hz 20 Hz - 40 Hz 40 Hz - 20 kHz 20 kHz - 50 kHz 50 kHz - 100 kHz 100 kHz - 300 kHz 300 kHz - 500 kHz 500 kHz - 1 MHz	0.043 % 0.043 % 0.016 % 0.013 % 0.02 % 0.055 % 0.2 % 0.3 %
m. 5.000001 V - 10 V	10 Hz - 20 Hz 20 Hz - 40 Hz 40 Hz - 20 kHz 20 kHz - 50 kHz 50 kHz - 100 kHz 100 kHz - 300 kHz 300 kHz - 500 kHz 500 kHz - 1 MHz	0.033 % 0.033 % 0.013 % 96 ppm 0.015 % 0.04 % 0.15 % 0.22 %
n. 10.000001 V - 21.999999 V	10 Hz - 20 Hz 20 Hz - 40 Hz 40 Hz - 20 kHz 20 kHz - 50 kHz 50 kHz - 100 kHz 100 kHz - 300 kHz 300 kHz - 500 kHz 500 kHz - 1 MHz	0.029 % 0.029 % 0.011 % 86 ppm 0.013 % 0.034 % 0.13 % 0.19 %
o. 22 V - 50 V	10 Hz - 20 Hz 20 Hz - 40 Hz 40 Hz - 20 kHz 20 kHz - 50 kHz 50 kHz - 100 kHz 100 kHz - 300 kHz	0.043 % 0.043 % 0.016 % 0.013 % 0.027 % 0.17 %

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D. ELECTRICAL		
2 AC Voltage Measuring Instrument		
p. 50.00001 V - 100 V	10 Hz - 20 Hz	0.033 %
	20 Hz - 40 Hz	0.033 %
	40 Hz - 20 kHz	0.013 %
	20 kHz - 50 kHz	0.011 %
	50 kHz - 100 kHz	0.021 %
q. 100.00001 V - 219.99999 V	10 Hz - 20 Hz	0.031 %
	20 Hz - 40 Hz	0.031 %
	40 Hz - 20 kHz	0.019 %
	20 kHz - 50 kHz	91 ppm
	50 kHz - 100 kHz	0.018 %
r. 220 V - 249.9999 V	15 Hz - 50 Hz	0.041 %
s. 220 V - 500 V	50 Hz - 1 kHz	0.032 %
t. 501 V - 1000 V	50 Hz - 1 kHz	78 ppm
3 DC Current Measuring Instrument	STS In-house procedure	
a. 0.1uA to 0.9999uA	T-WI-CMD-004-03 Rev 08	6.1 %
b. 1uA to 9.9999uA		0.61 %
c. 10uA to 99.9999uA		0.065 %
d. 100uA to 199.9999uA		0.011 %
e. 200uA to 219.9999uA		71 ppm
f. 0.22mA to 2.19999mA		67 ppm
g. 2.2mA to 21.9999mA		40 ppm
h. 22mA to 219.9999mA		53 ppm
i. 0.22A to 2.2A		0.039 %
j. 2.2A to 10 A		0.059 %
k. 10.1A to 550A		0.79 %
l. 551A to 1000A		0.82 %

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D. ELECTRICAL		
4 AC Current Measuring Instrument	T-WI-CMD-004-03 Rev 08	
a. 9μA – 99.999 μA	10Hz to 20Hz	0.21 %
	20Hz to 40Hz	0.21 %
	40Hz to 1kHz	0.13 %
	1kHz to 5kHz	0.17 %
	5kHz to 10kHz	0.84 %
b. 100μA – 199.999 μA	10Hz to 20Hz	0.045 %
	20Hz to 40Hz	0.045 %
	40Hz to 1kHz	0.03 %
	1kHz to 5kHz	0.041 %
	5kHz to 10kHz	0.18 %
c. 200 μA – 219.999 μA	10Hz to 20Hz	0.037 %
	20Hz to 40Hz	0.037 %
	40Hz to 1kHz	0.023 %
	1kHz to 5kHz	0.035 %
	5kHz to 10kHz	0.15 %
d. 0.22 mA – 2.19999 mA	10Hz to 20Hz	0.036 %
	20Hz to 40Hz	0.036 %
	40Hz to 1kHz	0.028 %
	1kHz to 5kHz	0.034 %
	5kHz to 10kHz	0.18 %
e. 2.2 mA – 21.9999 mA	10Hz to 20Hz	0.034 %
	20Hz to 40Hz	0.034 %
	40Hz to 1kHz	0.027 %
	1kHz to 5kHz	0.026 %
	5kHz to 10kHz	0.17 %
f. 22 mA – 219.999 mA	10Hz to 20Hz	0.034 %
	20Hz to 40Hz	0.034 %
	40Hz to 1kHz	0.027 %
	1kHz to 5kHz	0.024 %
	5kHz to 10kHz	0.14 %

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D. ELECTRICAL		
4 AC Current Measuring Instrument		
g. 0.22 A – 2.19999 A	20Hz to 5kHz	0.69 %
h. 2.2 A – 20 A	45Hz to 1kHz	0.33 %
i. 20 A – 550 A	45Hz to 65Hz	0.71 %
j. 551 A – 1000 A	40Hz to 60Hz	0.6 %
5 Resistance Measuring Instrument Range Values	STS In-house procedure T-WI-CMD-004-03 Rev 08	
a. 1Ω to 10.99Ω		0.64 %
b. 11Ω to 32.999Ω		0.12 %
c. 33Ω to 109.999Ω		0.043%
d. 110Ω to 329.999Ω		0.018 %
e. 0.33kΩ to 1.09999kΩ		0.021%
f. 1.1kΩ to 3.29999kΩ		0.012 %
g. 3.3kΩ to 10.9999kΩ		0.022 %
h. 11kΩ to 32.9999kΩ		0.012 %
i. 33kΩ to 109.999kΩ		0.023 %
j. 110kΩ to 329.999kΩ		0.014 %
k. 0.33MΩ to 0.99999MΩ		0.025 %
l. 1MΩ to 10MΩ		0.057 %
m. 10MΩ to 15.9999MΩ		0.081 %
n. 16MΩ to 20MΩ		0.081 %
o. 20MΩ to 32.9999MΩ		0.081 %
p. 33MΩ to 1.1GΩ		1.3 %
q. 1.2GΩ to 111GΩ		2.4 %

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D. ELECTRICAL		
6 Resistance Measuring Instrument Fixed values	STS In-house procedure T-WI-CMD-004-03 Rev 08	
a. 1 Ω, 1.9 Ω		97 ppm
b. 10 Ω, 19 Ω		29 ppm
c. 100 Ω, 190 Ω		18 ppm
d. 1 kΩ, 1.9 kΩ, 10 kΩ, 19 kΩ		14 ppm
e. 100 kΩ, 190 kΩ		15 ppm
f. 1 MΩ		21 ppm
g. 1.9 MΩ		25 ppm
h. 10 MΩ		44 ppm
i. 19 MΩ		56 ppm
j. 100 MΩ		0.013 %
7 Capacitance Measuring Instrument Range Values	STS In-house procedure T-WI-CMD-004-03 Rev 08	
a. 0.33nF to 10.999nF	50 Hz to 1 kHz	58 pF
b. 11nF to 109.99nF	50 Hz to 1 kHz	0.33 nF
c. 110nF to 329.99nF	50 Hz to 1 kHz	0.43 nF
d. 0.33uF to 1.0999uF	50 Hz to 1 kHz	0.0033 uF
e. 1.1uF to 3.2999uF	50 Hz to 1 kHz	0.013 uF
f. 3.3uF to 10.999uF	50 Hz to 400 Hz	0.044 uF
g. 11uF to 32.999uF	50 Hz to 400 Hz	0.15 uF
h. 33uF to 109.99uF	50 Hz to 200 Hz	0.58 uF
i. 110uF to 329.99uF	50 Hz to 100 Hz	2.4 uF
j. 0.33mF to 1.1mF	50 Hz to 100 Hz	0.010 mF
8 Capacitance Measuring Instrument Fixed Values	STS In-house procedure T-WI-CMD-004-03 Rev 08	
a. 1 pF	1 kHz	0.13 %
b. 10 pF	1 kHz	0.12 %
c. 100 pF	1 kHz	0.12 %
d. 1000 F	1 kHz	0.12 %
9 Inductance Measuring Instrument Ranged values	STS In-house procedure T-WI-CMD-004-13 Rev 03	
a 1 mH - 1000 mH	1 kHz	1.2 %

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D. ELECTRICAL		
10 DC Voltage Source	STS In-house procedure	
a. 0.01mV to 0.1mV	T-WI-CMD-004-09 Rev 08	3.6%
b. 0.10001mV to 1mV	T-WI-CMD-004-06 Rev 04	0.37%
c. 1.00001mV to 10mV		0.037%
d. 10.00001mV to 100mV		49 ppm
e. 100.00001mV to 120mV		16 ppm
f. 0.12000001V to 1.2V		15 ppm
g. 1.2000001V to 12V		17 ppm
h. 12.000001V to 120V		17 ppm
i. 120.00001V to 1000V		20 ppm
j. 1000V to 2000V		0.091%
k. 2000V to 15000V		0.28%
11 AC Voltage Source	STS In-house procedure T-WI-CMD-004-09 Rev 08 T-WI-CMD-004-06 Rev 04	
a. 1.0001mV - 12 mV	40 Hz - 1 kHz	0.39 %
	1 kHz - 20 kHz	0.17 %
	20 kHz - 50 kHz	0.25 %
	50 kHz - 100 kHz	0.71 %
b. 12.0001mV - 120 mV	40 Hz - 1 kHz	0.047 %
	1 kHz - 20 kHz	0.036 %
	20 kHz - 50 kHz	0.055 %
	50 kHz - 100 kHz	0.12 %
	100 kHz - 300 kHz	0.45 %
c. 0.120001V - 1.2 V	40 Hz - 1 kHz	0.047 %
	1 kHz - 20 kHz	0.036 %
	20 kHz - 50 kHz	0.055 %
	50 kHz - 100 kHz	0.12 %
	100 kHz - 300 kHz	0.45 %
d. 1.20001 V - 12 V	40 Hz - 1 kHz	0.062 %
	1 kHz - 20 kHz	0.043 %
	20 kHz - 50 kHz	0.06 %
	50 kHz - 100 kHz	0.16 %
e. 12.0001 V - 120 V	40 Hz - 1 kHz	0.063 %
	1 kHz - 20 kHz	0.043 %

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D. ELECTRICAL		
f. 120.001 V - 700 V	50 Hz - 1 kHz	0.085 %
	1 kHz - 20 kHz	0.089 %
11 AC Voltage Source		
g. 700 V to 750 V	50 Hz to 1 kHz	0.13 %
h. 750 V to 2000 V	50 Hz to 1 kHz	0.13 %
i. 2000 V to 10000 V	50Hz	2.3 %
12 DC Current Source	STS In-house procedure	
a. 1nA to 10nA	T-WI-CMD-004-09 Rev 08	4.7 %
b. 10.001nA to 100nA	T-WI-CMD-004-06 Rev 04	0.46 %
c. 110nA to 120nA		0.047 %
d. 0.1201uA to 1.2uA		0.043 %
e. 1.2001uA to 12uA		0.013 %
f. 12.0001uA to 120uA		0.011 %
g. 0.1200001mA to 1.2mA		78 ppm
h. 1.200001mA to 12mA		95 ppm
i. 12.00001mA to 120mA		95 ppm
j. 0.1200001A to 1.05A		0.023 %
k. 1.20001A to 3A		0.18 %
l. 3A to 3.6A		0.21 %
m. 3.60001A to 10 A		0.2 %
13 AC Current Source	STS In-house procedure T-WI-CMD-004-09 Rev 08 T-WI-CMD-004-06 Rev 04	
a. 10.0001μA - 120 μA	10Hz to 20Hz	0.81 %
	20Hz to 45Hz	0.81 %
	45Hz to 100Hz	0.53 %
	100Hz to 1kHz	0.42 %
	1kHz to 5 kHz	0.42 %
	5kHz to 10 kHz	2.4 %
b. 0.12001mA – 1.2 mA	10Hz to 20Hz	0.66 %
	20Hz to 45Hz	0.66 %
	45Hz to 100Hz	0.37 %
	100Hz to 1kHz	0.27 %
	1kHz to 5kHz	0.23 %
	5kHz to 10kHz	0.27 %

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D. ELECTRICAL		
c. 1.20001 mA – 12 mA	10Hz to 20Hz	0.66 %
	20Hz to 45Hz	0.66 %
	45Hz to 100Hz	0.37 %
	100Hz to 1kHz	0.27 %
	1kHz to 5kHz	0.23 %
	5kHz to 10kHz	0.27 %
d. 12.0001 mA – 120 mA	10Hz to 20Hz	0.66 %
	20Hz to 45Hz	0.66 %
	45Hz to 100Hz	0.38 %
	100Hz to 1kHz	0.31 %
	1kHz to 5kHz	0.31 %
	5kHz to 10kHz	0.54 %
e. 0.120001 A – 1.00000 A	10Hz to 20Hz	0.66 %
	20Hz to 45Hz	0.66 %
	45Hz to 100Hz	0.38 %
	100Hz to 1kHz	0.31 %
	1kHz to 5kHz	0.31 %
	5kHz to 10kHz	0.54 %
f. 1.00001 A – 3.00000 A	45Hz to 1kHz	0.67%
g. 3.00001 A – 3.60000 A	45Hz to 1 kHz	0.7 %
h. 3.60001 A – 10 A	45Hz to 1kHz	0.64%
14 Resistance Source	STS In-house procedure	
a. 0.001Ω to 0.01Ω	T-WI-CMD-004-09 Rev 08	6.4 %
b. 0.011Ω to 0.1Ω	T-WI-CMD-004-06 Rev 04	0.62 %
c. 0.11Ω to 10Ω		0.068 %
d. 10.001Ω to 100Ω		76 ppm
e. 100.001Ω to 1kΩ		0.06 %
f. 1.001kΩ to 10kΩ		17 ppm
g. 10.001kΩ to 100kΩ		21 ppm
h. 100.001kΩ to 1MΩ		44 ppm
i. 1.00001MΩ to 12MΩ		0.068 %
j. 12.0001MΩ to 120MΩ		0.068 %
k. 0.121GΩ to 1GΩ		0.067 %

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D. ELECTRICAL		
15 Capacitance Source	STS In-house procedure T-WI-CMD-004-09 Rev 08	
a. 1nF to 10nF	1 Vac @ 1kHz	0.12 %
b. 10.0001nF to 100nF	1 Vac @ 1kHz	0.12 %
c. 100.001nF to 1000nF	1 Vac @ 1kHz	0.12 %
d. 1.0001uF to 10uF	1 Vac @ 1kHz	0.35 %
16 Frequency Measuring Instrument 100mHz to 1.3GHz	STS In-house procedure T-WI-CMD-004-03 Rev 08	2.4 ppm
17 Stopwatch / Timer	STS In-house procedure	
a. 1s to 24hr	T-WI-CMD-004-10 Rev 06	0.13s
18 Frequency and Time standard (RF)	STS In-house procedure	
a. 5 MHz	T-WI-CMD-004-04 Rev 06	3.9×10^{-10}
b. 10 MHz	T-WI-CMD-004-09 Rev 08	4.1×10^{-10}
c. 100 kHz – 20 GHz		2.4×10^{-9}
19 RF Power	STS In-house procedure	
a. 20 dBm to -20 dBm at 1 GHz	T-WI-CMD-004-04 Rev 05	0.17 dB
b. 10 dBm to -20 dBm at 10 GHz		0.36 dB
c. 10 dBm to -20 dBm at 18 GHz		0.36 dB
20 Amplitude Modulation	STS In-house procedure T-WI-CMD-004-04 Rev 05	
5% to 95% depth	Carrier Frequency at	
50 Hz – 10 kHz	150 kHz – 10 MHz	2.7 %
50 Hz – 50 kHz	10 MHz – 1.3 GHz	2.1 %
50 Hz – 50 kHz	1.3 GHz – 10 GHz	2.1 %
21. Frequency Modulation	STS In-house procedure T-WI-CMD-004-04 Rev 05 Carrier Frequency at	
a. 20 Hz - 10 kHz	250 kHz – 10 MHz, dev 40kHz	3 %
b. 50 Hz - 100 kHz	10 MHz – 1.3 GHz, dev 400kHz	1.2 %
c. 20 Hz - 200 kHz	10 MHz – 1.3 GHz, dev 400kHz	5.9 %
d. 50 Hz - 100 kHz	10 MHz – 18 GHz, dev 100kHz	1.3 %

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MEASURED QUANTITIES/ RANGE/ INSTRUMENTS TO BE CALIBRATED	METHOD	CALIBRATION & MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (*)
D. ELECTRICAL		
22 Phase Modulation (Modulation rate with peak phase deviation)	STS In-house procedure T-WI-CMD-004-04 Rev 05 Carrier Frequency at	
a. 200 Hz - 10 kHz @ up to 4 radians	150 kHz- 10 MHz	5 %
b. 200 Hz - 20 kHz @ up to 20 radians	10 MHz – 1.3 GHz	4.1 %
c. 200 Hz - 20 kHz @ up to 20 radians	1.3 GHz – 20 GHz	4.1 %
23 Oscilloscope	STS In-house procedure T-WI-CMD-004-11 Rev 05	
a. Vertical Deflection 2mV – 30V		2 %
b. Horizontal Deflection 2ns – 4s		0.15 %
c. Bandwidth (-3dB) 50 kHz – 500 MHz		4.6 %
E OPTICAL		
1. Light Meter	STS in-house procedure T-WI-CMD-004-18 Rev 04	
10 lx – 99 lx		6.4%
100 lx – 4000 lx		6.1%

* CMC is expressed as an expanded uncertainty estimated at a level of confidence of approximately 95%.

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Approved signatories

Name	Cat. A Mechanical	Cat. B Dimensional	Cat. C Temperature	Cat. D Electrical	Cat. E Optical
Mr Mohd Haron B. Junaidi	A(I), A(II 1 to 3)	All	-	-	-
Mr Law Eng Soon	A(I), A(II 1 to 5)	All	-	-	-
Mr Pek Leong Beng, Joseph	A(I), A(II), A(III)	-	All	-	-
Mr Toh Kheng Leong	A(I), A(II – excluding 5,7 to 8), A(III 2)	-	-	-	-
Mr Yap Hwee Soon	A(I), A(II), A(III), A(IV),A(V1).	-	All	All- excluding 7,8, 18 to 22	-
Mr Wong Sai Kee, Frankie	A(IV)	-	C (excluding 4 & 7)	1, 2, 3a to 3j, 4a to 4h, 5 to 9, 16, 17	-
Mr Ang Zhong Li	-	-	-	1, 2, 3a to 3j, 4a to 4h, 5	-
Mr Yip Hang Ming, Sam	A(V)	-	-	All	All
Mr Lee Boon Chong, Alvin	-	(I)1, 2, 5, (II)1, 3 to 11, 15 to 18, 20, 21, 23 to 28, 32, 33, 36, 37, 38, (III)1.	-	-	-
Ms Ong Yok Khuan	-	(I) 1,2,5 (II)3,6 to 8, 24	-	-	-
Mr Teo Tong Nee, Anthony	-	(I) 1,2,5 (II)3,6 to 8, 24	-	-	-

Note :

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid test results. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.