

LA 1402-2

Issue 3, 25-July-08

File ref. no.: JSM/AD-700/01/04/256

Date: 23 March 2009

Sime-SIRIM Technologies Sdn Bhd
Bangunan SIRIM, Lot Pt 483. MK.6
Jalan Permatang Pauh
13500 Permatang Pauh
Pulau Pinang

(Att: Mr. Mohd Zaini Bin Ismail)

Dear Sir,

SKIM AKREDITASI MAKMAL MALAYSIA (SAMM) - Continuation of Accreditation

With reference to the continuity of SAMM accreditation certificate, a surveillance assessment was conducted on your laboratory by an assessment team on 12 and 13 May 2008.

The assessment report was analysed and found to be complete and in order. Based on this report, your laboratory has fulfilled all MS ISO/IEC 17025:2005 and SAMM requirements.

As a result of this assessment, we are pleased to inform you that the Director General of Department of Standards Malaysia (STANDARDS MALAYSIA) has approved that your laboratory's accreditation under the SAMM, be continued. However, this is subject to your organisation's continuous compliance with the accreditation criteria, policies and requirements of STANDARDS MALAYSIA.

We would like to thank you for your participation and interest in SAMM Accreditation.

Yours faithfully,

(RIDZWAN KASIM)

Director of Accreditation

for the Director General

Department of Standards Malaysia

NO: SAMM 141

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LABORATORY LOCATION:
(PERMANENT LABORATORY)

SIME-SIRIM TECHNOLOGIES SDN BHD
BANGUNAN SIRIM, LOT PT 483, MUKIM 6
JALAN PERMATANG PAUH
13500 PERMATANG PAUH
PULAU PINANG, MALAYSIA

The standard used for assessment of this laboratory is MS ISO/IEC 17025:2005

FIELD OF CALIBRATION: TEMPERATURE

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Liquid-in-glass Thermometer (Total immersion)	- 30 °C to 70 °C 70 °C to 300 °C	0.1 °C 0.3 °C
Temperature Sensor 1) Thermocouple 2) Platinum Resistance Thermometer	- 30 °C to 70 °C 70 °C to 400 °C	0.1 °C 0.3 °C
Temperature Indicating Instruments (by electrical simulation) Thermocouple: (with cold junction compensation)	K Type -100 °C to 1300 °C J Type -100 °C to 1100 °C T Type -100 °C to 400 °C E Type -100 °C to 800 °C	0.5 °C 0.4 °C 0.6 °C 0.5 °C
Resistance Temperature Detector	PT100 -100 °C to 900 °C	0.6 °C
Dry Block Calibrator	0 °C to 400 °C	0.2 °C
Temperature Switch	0 °C to 400 °C	2.5 °C
Mechanical Thermometer	30 °C to 300 °C	2.5 °C
Thermohygrograph / Thermohygrometer	25 % RH to 95 % RH 15 °C to 50 °C	5 % RH 0.8 °C

*** The uncertainties are based on an estimated confidence probability of not less than 95% unless otherwise stated.**

Signatories:

1. Mohamad Zaini bin Ismail

I/C No. : 660102-07-5737

2. Mahmuddin bin Daud

I/C No. : 580623-02-5735



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FIELD OF CALIBRATION: TEMPERATURE

SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Temperature Indicating Instruments (by Electrical Simulation)	K Type -100 °C to 1300 °C	0.5 °C
	J Type -100 °C to 1100 °C	0.4 °C
Thermocouple : (with cold junction compensation)	T Type -100 °C to 400 °C	0.6 °C
	E Type -100 °C to 800 °C	0.5 °C
	R Type 0 °C to 1700 °C	1.5 °C
	S Type 0 °C to 1700 °C	1.5 °C
	PT100 -200 °C to 800 °C	0.6 °C
Resistance Temperature Detector		
Temperature Controlled Enclosures	-30 °C to 200 °C	0.6 °C
	200 °C to 400 °C	1.5 °C

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FIELD OF CALIBRATION: DIMENSIONAL

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Digital Thickness Gauge	1 mm to 50 mm	1.4 μ m
Depth Micro-Checker	0 mm to 300 mm	5.8 μ m
Height Gauge	5 mm to 600 mm	11 μ m
Standard Rod	0 mm to 300 mm 301 mm to 600 mm	5.9 μ m 11 μ m
Micrometer (External)	0 mm to 25 mm	1.3 μ m
Caliper (Vernier, Dial, Digital)	1 mm to 600 mm	15 μ m
Caliper Checker	20 mm to 300 mm 300 mm to 600 mm	5.9 μ m 11 μ m

Signatories:

- | | |
|-----------------------------|--------------------------|
| 1. Mohamad Zaini bin Ismail | I/C No. : 660102-07-5737 |
| 2. Mahmuddin bin Daud | I/C No. : 580623-02-5735 |

FIELD OF CALIBRATION: DIMENSIONAL

SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Profile Projector - Linear scale only	0 mm to 80 mm 80 mm to 200 mm	3 μ m 4 μ m

Signatory:

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|-----------------------|--------------------------|
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FIELDS OF CALIBRATION: MASS

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Standard Weights And Weight Blocks	1 mg	0.003 mg
	2 mg	0.003 mg
	5 mg	0.003 mg
	10 mg	0.003 mg
	20 mg	0.004 mg
	50 mg	0.004 mg
	100 mg	0.004 mg
	200 mg	0.005 mg
	500 mg	0.005 mg
	1 g	0.01 mg
	2 g	0.01 mg
	5 g	0.01 mg
	10 g	0.02 mg
	20 g	0.02 mg
	50 g	0.04 mg
	100 g	0.05 mg
	200 g	1.2 mg
	500 g	1.3 mg
	1 kg	1.3 mg
	2 kg	13 mg
	5 kg	13 mg
	10 kg	26 mg
	20 kg	28 mg
	50 kg	30 mg
	60 kg	41 mg

Signatories:

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FIELD OF CALIBRATION: MASS

SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Analytical Balance	1 mg to 200 mg	0.12 mg
Balance/Scale (Mechanical, Electronic)	1 mg to 30 kg	30 mg
	30 kg to 100 kg	6 g
	100 kg to 500 kg	40 g
	500 kg to 1000 kg	60 g

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FIELDS OF CALIBRATION: PRESSURE MEASUREMENT

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Pressure Measuring Device (Oil Medium)	10 psi to 100 psi	0.03 psi
	100 psi to 200 psi	0.06 psi
	200 psi to 400 psi	0.14 psi
	400 psi to 1000 psi	0.26 psi
	1000 psi to 2000 psi	0.5 psi
	2000 psi to 5000 psi	1.2 psi
	5000 psi to 10000 psi	2.5 psi
	10000 psi to 16000 psi	5.7 psi
Pressure Measuring Device (Air Medium)	0 psi to 30 psi	0.003 psi
	30 psi to 60 psi	0.02 psi
	60 psi to 100 psi	0.03 psi
	100 psi to 800 psi	0.15 psi
	800 psi to 1600 psi	0.30 psi
Vacuum	13.5 psi	0.06 psi

FIELDS OF CALIBRATION: PRESSURE MEASUREMENT

SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Vacuum	13.5 psi	0.06 psi
Pressure Measuring Device (Air Medium)	0 psi to 30 psi	0.01 psi
	30 psi to 600 psi	0.2 psi
Pressure Measuring Device (Oil Medium)	0 psi to 30 psi	0.01psi
	30 psi to 600 psi	0.2 psi
	600 psi to 6000 psi	2.3 psi
	6000 psi to 10000 psi	4.0 psi

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FIELDS OF CALIBRATION: FORCE MEASUREMENT

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Tension Gauge	0 gf to 100 gf	0.6 gf
	100 gf to 350 gf	2.5 gf
	350 gf to 1000 gf	6.0 gf

FIELDS OF CALIBRATION: FORCE MEASUREMENT

SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Tensile and Compression Testing Machine	0 kgf to 20 kgf	1 gf
	20 kgf to 100 kgf	100 gf
	100 kgf to 500 kgf	710 gf
	500 kgf to 1000 kgf	920 gf

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I/C No. : 580623-02-5735



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FIELD OF CALIBRATION: ELECTRICAL
SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
A. Measuring Instruments		
1. Multimeter/ Indicating Meter DC Voltage	0 mV to 330 mV	72 $\mu\text{V/V}$
	0 V to 3.3 V	63 $\mu\text{V/V}$
	0 V to 33 V	63 $\mu\text{V/V}$
	33 V to 330 V	66 $\mu\text{V/V}$
	334 V to 1000 V	66 $\mu\text{V/V}$
Resistance	0 Ω to 11 Ω	0.2 m Ω/Ω
	11 Ω to 33 Ω	0.2 m Ω/Ω
	33 Ω to 110 Ω	0.2 m Ω/Ω
	110 Ω to 330 Ω	0.2 m Ω/Ω
	0.330 k Ω to 1.1 k Ω	0.2 $\mu\Omega/\Omega$
	1.1 k Ω to 3.3 k Ω	0.2 $\mu\Omega/\Omega$
	3.3 k Ω to 11 k Ω	0.2 $\mu\Omega/\Omega$
	11 k Ω to 33 k Ω	0.2 $\mu\Omega/\Omega$
	33 k Ω to 110 k Ω	0.3 $\mu\Omega/\Omega$
	110 k Ω to 330 k Ω	0.2 $\mu\Omega/\Omega$
	0.330 M Ω to 1.1 M Ω	0.3 m Ω/Ω
	1.1 M Ω to 3.3 M Ω	0.2 m Ω/Ω
	3.3 M Ω to 11 M Ω	0.7 m Ω/Ω
	11 M Ω to 33 M Ω	0.4 m Ω/Ω
	33 M Ω to 109.999 M Ω	1.4 m Ω/Ω
	110 M Ω to 330 M Ω	3.8 m Ω/Ω
DC Current	0 mA to 3.3 mA	0.2 mA/A
	0 mA to 33 mA	0.2 mA/A
	0 mA to 330 mA	0.3 mA/A
	0 A to 2.2 A	0.5 mA/A
	0 A to 11 A	0.4 mA/A



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FIELD OF CALIBRATION: ELECTRICAL

SCOPE OF ACCREDITATION:

Instrument Calibrated/ Measurement Parameter	Range	Best measurement capability expressed as an uncertainty (\pm) *
A. Measuring Instruments		
1. Multimeter/Indicating Meter	<u>1 mV to 30.00 mV</u>	(of reading)
AC Voltage	10 Hz to 45 Hz	0.3 mV/V
	45 Hz to 10 kHz	0.2 mV/V
	10 kHz to 20 kHz	0.2 mV/V
	20 kHz to 50 kHz	0.2 mV/V
	50 kHz to 100 kHz	0.4 mV/V
	100 kHz to 500 kHz	1.0 mV/V
	<u>33 mV to 330 mV</u>	
	10 Hz to 45 Hz	0.3 mV/V
	45 Hz to 10 kHz	38 μ V/V
	10 kHz to 20 kHz	38 μ V/V
	20 kHz to 50 kHz	57 μ V/V
	50 kHz to 100 kHz	86 μ V/V
	100 kHz to 500 kHz	0.4 mV/V
	<u>0.33 V to 3.3 V</u>	
	10 Hz to 45 Hz	1.8 mV/V
	45 Hz to 10 kHz	0.4 mV/V
	10 kHz to 20 kHz	0.4 mV/V
	20 kHz to 50 kHz	1.6 mV/V
	50 kHz to 100 kHz	2.8 mV/V
	100 kHz to 500 kHz	8.0 mV/V
	<u>3.3 V to 33 V</u>	
	10 Hz to 45 Hz	1.8 mV/V
	45 Hz to 10 kHz	0.5 mV/V
	10 kHz to 20 kHz	0.5 mV/V
	20 kHz to 50 kHz	2.2 mV/V
	50 kHz to 500 kHz	2.2 mV/V
	<u>33 V to 330 V</u>	
	10 Hz to 45 Hz	1.7 mV/V
	45 Hz to 10 kHz	1.0 mV/V
	10 kHz to 20 kHz	1.1 mV/V
	<u>330 V to 1020 V</u>	
	10 Hz to 45 Hz	9.1 mV/V
	45 Hz to 10 kHz	9.1 mV/V



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FIELD OF CALIBRATION: ELECTRICAL

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
A.Measuring Instruments		(of reading)
1. Multimeter/Indicating Meter	<u>0.03 mA to 0.33 mA</u>	
AC Current	10 Hz to 20 Hz	1.7 mA/A
	20 Hz to 45 Hz	1.7mA/A
	45 Hz to 1 kHz	1.7 mA/A
	1 to 5 kHz	1.7 mA/A
	<u>0.33 mA to 3.3 mA</u>	
	10 Hz to 45 Hz	1.5 mA/A
	45 Hz to 1 kHz	1.5 mA/A
	1 to 5 kHz	1.5 mA/A
	<u>3.3 mA to 33 mA</u>	
	10 Hz to 45 Hz	1.5 mA/A
	45 Hz to 1 kHz	1.5 mA/A
	1 to 10 kHz	1.5 mA/A
	<u>33 mA to 330 mA</u>	
	10 Hz to 45 Hz	1.8 mA/A
	45 Hz to 1 kHz	1.8 mA/A
	1 kHz to 10 kHz	1.8 mA/A
	<u>0.33 A to 2.2 A</u>	
	10 to 45 Hz	2.1 mA/A
	45 Hz to 1 kHz	2.1 mA/A
	1 kHz to 5 kHz	3.6 mA/A
	<u>2.2 A to 11 A</u>	
	45 Hz to 1 kHz	1.5 mA/A



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FIELD OF CALIBRATION: ELECTRICAL

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
A. Measuring Instruments		
2. Impedance Meter	Supply at 1 kHz	
Capacitance	1 μ F	0.7 nF
	10 nF	6.4 pF
	100 nF	64 pF
	1000 pF	0.6 pF
	100 pF	69 fF
	10 pF	6.9 fF
	1 pF	1.3 fF
Inductance	Supply at 1 kHz	
	100 μ H	0.3 μ H
	1 mH	1.3 μ H
	10 mH	10 μ H
	100 mH	0.2 mH
	1 H	1.3 mH
	10 H	13 mH
Resistance	10 Ω	0.3 m Ω
	100 Ω	2.5 m Ω
	1 k Ω	20 m Ω
	10 k Ω	0.2 Ω
	100 k Ω	5.8 Ω
	1 M Ω	30 Ω
3. Low Current Meter		
DC Current	1 nA	7.5 pA
	10 nA	52 pA
	100 nA	0.5 pA
	1 μ A	6.4 nA
	10 μ A	22 nA
	100 μ A	0.2 μ A
	1 mA	1.8 μ A
		(of reading)
4. High Voltage Type		
High Voltage Meter	DCV : 0 kV to 10 kV	6.2 mV/V
	ACV (50 Hz) : 0 kV to 10 kV	15 mV/V
High Voltage Probe	DCV : 0 kV to 10 kV	6.2 mV/V
	ACV (50 Hz) : 0 kV to 10 kV	15 mV/V



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FIELD OF CALIBRATION: ELECTRICAL
SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
A. Measuring Instruments		
5. Frequency Counter Frequency	0.1 Hz to 2 GHz	61 nHz/Hz
6. Oscilloscope	Volt/Div (1 V to 20 V) Volt/Div (10 mV to 500 mV) Time/Div (5 ns to 500 ns) Time/Div (1 μ s to 500 μ s) Time/Div (1 ms to 500 ms) Time/Div (1 s to 5 s) Bandwidth (3 MHz to 1 GHz) Risetime	60 mV 600 μ V 60 μ s 600 ns 0.6 μ s 60 ms 0.62 MHz 0.012 ns
B. Generating Instruments		
1. Calibrator DC Voltage	100 mV 1 V 10 V 100 V 1000 V	22 μ V/V 14 μ V/V 13 μ V/V 16 μ V/V 17 μ V/V
Resistance	10 Ω 100 Ω 1 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω 100 M Ω	0.4 m Ω 2.8 m Ω 19 m Ω 0.2 Ω 2.0 Ω 30 Ω 0.9 k Ω 60 k Ω
DC Current	100 μ A 1 mA 10 mA 100 mA 1 A	0.2 mA/A 77 μ A/A 75 μ A/A 92 μ A/A 0.3 mA/A



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FIELD OF CALIBRATION: ELECTRICAL
SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
B. Generating Instruments		
		(of reading)
1. Calibrator AC Voltage	<u>100 mV</u>	
	1 kHz to 20 kHz	0.3 mV/V
	100 kHz	1.5 mV/V
	300 kHz	3.8 mV/V
	1 MHz	4.6 mV/V
	<u>1 V</u>	
	45 Hz to 20 kHz	0.2 mV/V
	50 kHz	0.4 mV/V
	100 kHz	0.4 mV/V
	300 kHz	3.6 mV/V
	500 kHz	12 mV/V
	1 MHz	12 mV/V
	<u>10 V</u>	
	45 Hz to 20 kHz	0.2 mV/V
	50 kHz	0.2 mV/V
	100 kHz	1.0 mV/V
	300 kHz	3.6 mV/V
	500 kHz	12 mV/V
	1 MHz	14 mV/V
	<u>100 V</u>	
	45 Hz to 20 kHz	0.3 mV/V
	50 kHz	0.5 mV/V
	100 kHz	1.6 mV/V
	<u>1000 V</u>	
	45 Hz to 1 kHz	0.5 μ V/V
Frequency	<u>Input Signal 1 mV to 700 V</u>	
	1 Hz	0.6 mHz/Hz
	10 MHz	0.2 mHz/Hz



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SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
B. Generating Instrument		
2. Standard Impedance Capacitance	Measured at 1 kHz 10 pF 100 pF 1000 pF 1 μ F 100 nF 10 nF	6.9 fF 69 fF 0.7 pF 0.7 pF 65 pF 6.5 pF
Inductance	Measured at 1 kHz 100 μ H 1 mH 10 mH 100 mH 1 H 10 H	0.3 μ H 1.3 μ H 13 μ H 0.2 mH 1.3 mH 13 mH
Resistance	10 Ω 100 Ω 1 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω 100 M Ω	0.3 m Ω 2.4 m Ω 20 m Ω 0.2 Ω 5.8 Ω 30 Ω 0.9 k Ω 60 k Ω (of reading)
3. High Voltage Type Generate	DCV : 0 kV to 20 kV ACV (50Hz): 0 kV to 20 kV	6.2 mV/V 15 mV/V (of reading)
4. Signal Generator Frequency	0.1 Hz to 5 GHz	61 nHz/Hz (of reading)
5. Oscilloscope Calibrator (Calibration Generator, Time Mark Generator and Levelled Sine Wave Generator)	Frequency : 0.1 Hz to 5 GHz <u>Amplitude 100 mV to 10 V</u> 40 Hz to 1 kHz 1 kHz to 20 kHz 50 kHz to 100 kHz	61 nHz/Hz 0.2 mV/V 0.2 mV/V 1 mV/V



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FIELD OF CALIBRATION: ELECTRICAL

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
B. Generating Instrument		
6. DC Current Source		(of reading)
	1 A to 10 A	3.0 mA/A
7. AC Current Source		(of reading)
	1 A to 10 A (50 Hz to 10 kHz)	4.5 mA/A

Signatories:

- | | |
|-----------------------------|--------------------------|
| 1. Mohamad Zaini bin Ismail | I/C No. : 660102-07-5737 |
| 2. Aminuddin bin Ahmad | I/C No. : 680711-09-5029 |



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SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
1. Noise Source		
Frequency	10 MHz to 26.5 GHz	
Noise Floor	-2 ENR to +20ENR(dB)	0.1 dB
2. Noise Figure Analyzer		
Frequency	10 MHz to 26.5 GHz	
Noise Floor	- 2 ENR to +20 ENR(dB)	0.4 dB
3. Noise Figure Meter		
Frequency	10 MHz to 26.5 GHz	
Noise Floor	- 2 ENR to +20 ENR(dB)	0.4 dB
4. Network Analyzer		
Frequency	9 kHz to 26.5 GHz	0.18 Hz
Power Level	- 5 dBm to +20 dBm	0.1 dB
5. Signal Generator		
RF Power : Measure	<u>Frequency</u>	
+30 dBm to -20 dBm	9 kHz to 50 GHz	0.3 dB
- 30 dBm to +20 dBm		
6. Spectrum Analyzer		
Power Level	<u>Frequency</u>	
	9 kHz to 40 GHz	1.2 dB

Signatories:

1. Azlina Mohd Sukaimi

I/C No. : 670801 – 05 – 5590



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FIELD OF CALIBRATION: ELECTRICAL

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
7. Timer	1 s to 50 s	0.11 s
	50s to 10 minutes	0.12 s
	10 minutes to 1 hour	0.57 s
	1 hour to 3 hours	0.57 s

Signatories:

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|-------------------------|--------------------------|
| 1. Mohamad Zaini Ismail | I/C No. : 660102-07-5737 |
| 2. Aminuddin Ahmad | I/C No. : 680711-09-5029 |
| 3. Azlina Mohd Sukaimi | I/C No. : 670801-05-5590 |



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SITE CALIBRATION - CATEGORY 1
SCOPE OF ACCREDITATION:
**Instrument Calibrated/
Measurement Parameter**
Range
**Best measurement capability
expressed as an uncertainty (\pm) ***
A. Measuring Instruments
1. DC Voltage

(0 to 330)	m V	13.4	μ V
(0 to 3.3)	V	0.13	m V
(0 to 33)	V	0.6	m V
(30 to 330)	V	8.0	m V
(100 to 1000)	V	30	m V

2. Resistance

(0 to 11)	Ω	12	m Ω
(11 to 33)	Ω	18	m Ω
(33 to 110)	Ω	20	m Ω
(110 to 330)	Ω	32	m Ω
(0.330 to 1.1)	k Ω	55	m Ω
(1.1 to 3.3)	k Ω	0.3	Ω
(3.3 to 11 0)	k Ω	0.4	Ω
(11 to 33)	k Ω	2.1	Ω
(33 to 110)	k Ω	4.4	Ω
(110 to 330)	k Ω	22	Ω
(0.330 to 1.1)	M Ω	48	Ω
(1.1 to 3.3)	M Ω	0.4	k Ω
(3.3 to 11)	M Ω	1.8	k Ω
(11 to 33)	M Ω	12	k Ω
(33 to 110)	M Ω	61	k Ω
(110 to 330)	M Ω	1.2	M Ω
(330 to 1100)	M Ω	18	M Ω



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SITE CALIBRATION - CATEGORY 1
SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (±) *</u>	
A. Measuring Instruments			
3. DC Current	(0 to 300) μ A	74	n A
	(0 to 3.3) m A	0.4	μ A
	(0 to 33) m A	3.8	μ A
	(0 to 330) m A	39	μ A
	(0 to 1.1) A	70	μ A
	(0 to 3) A	0.2	m A
	(0 to 11) A	1.0	m A
	(11 to 20.5) A	3.1	m A
4. AC Voltage	<u>1 to 30.00 mV</u>		
	10 to 45 Hz	8	μ V
	45 Hz to 10 kHz	6	μ V
	10 to 20 kHz	6	μ V
	20 kHz to 50 kHz	7	μ V
	50 kHz to 100 kHz	10	μ V
	100 kHz to 500 kHz	19	μ V
	<u>33 to 330 mV</u>		
	10 to 45 Hz	30	μ V
	45 Hz to 10 kHz	12	μ V
	10 to 20 kHz	12	μ V
	20 kHz to 50 kHz	16	μ V
	50 kHz to 100 kHz	27	μ V
	100 kHz to 500 kHz	74	μ V



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SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>	
A. Measuring Instruments			
4. AC Voltage (continue)	<u>0.33 to 3.3 V</u>		
	10 to 45 Hz	1.1	m V
	45 Hz to 10 kHz	0.6	m V
	10 to 20 kHz	0.6	m V
	20 kHz to 50 kHz	1.1	m V
	50 kHz to 100 kHz	2.5	m V
	100 kHz to 500 kHz	8.8	m V
	<u>3.3 to 33 V</u>		
	10 to 45 Hz	11	m V
	45 Hz to 10 kHz	6	m V
	10 to 20 kHz	13	m V
	20 kHz to 50 kHz	13	m V
	50 kHz to 90 kHz	33	m V
	<u>33 to 330 V</u>		
	10 to 45 Hz	68	m V
	45 Hz to 10 kHz	76	m V
	10 kHz to 20 kHz	93	m V
	20 kHz to 50 kHz	111	m V
	50 kHz to 100 kHz	741	m V
	<u>330 to 1020 V</u>		
	45 Hz to 10 kHz	347	m V



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FIELD OF CALIBRATION: ELECTRICAL

SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (±) *</u>	
A. Measuring Instruments			
5. AC Current	<u>29 μA to 330 μA</u>		
	45 Hz to 1 kHz	0.5	μ A
	(1 to 5) kHz	1.2	μ A
	(5 to 10) kHz	2.9	μ A
	<u>0.33 mA to 3.33 mA</u>		
	45 Hz to 1 kHz	3.6	μ A
	(1 to 5) kHz	7.1	μ A
	(5 to 10) kHz	17	μ A
	<u>3.3 mA to 33 mA</u>		
	45 Hz to 1 kHz	17	μ A
	(1 to 5) kHz	30	μ A
	(5 to 10) kHz	72	μ A
	<u>33 to 330 mA</u>		
	45 Hz to 1 kHz	0.2	m A
	(1 to 5) kHz	0.4	m A
	(5 to 10) kHz	0.8	m A
	<u>0.33 A to 1.1 A</u>		
	45 Hz to 1 kHz	0.7	m A
(1 to 5) kHz	7.9	m A	
(5 to 10) kHz	34	m A	



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SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (±) *</u>		
A. Measuring Instruments				
5. AC Current (cont)	<u>1.1 A to 3 A</u>			
	45 Hz to 1 kHz	2.2	m A	
	(1 to 5) kHz	22	m A	
	(5 to 10) kHz	91	m A	
	<u>3 A to 11 A</u>			
	45 Hz to 1 kHz	14	m A	
	<u>11 A to 20 A</u>			
	45 Hz to 1 kHz	40	m A	
	6. Frequency	0.01 Hz to 120 Hz	0.01	Hz
		120 Hz to 1200 Hz	1	Hz
12 kHz to 120 kHz		0.1	k Hz	
7. Capacitance		0.19 nF to 3.3 nF	14	p F
	3.3 nF to 33 nF	0.2	n F	
	33 nF to 330 nF	1.2	n F	
	0.33 μF to 3.3 μF	12	n F	
	3.3 μF to 33 μF	0.2	μ F	
	33 μF to 110 μF	0.6	μ F	

Signatories :

1. Aminudin Ahmad

I/C No. : 680711-09-5029

2. Azlina Mohd Sukaimi

I/C No. : 670801-05-5590



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SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>		<u>Best measurement capability expressed as an uncertainty (±) *</u>	
B. Generating Instrument				
1.DC Voltage	100	m V	36	μ V
	1000	m V	0.4	m V
	10	V	3.6	m V
	100	V	36	m V
	1000	V	0.4	m V
2. DC Current	100	m A	63	μ A
	10	A	23	m A
	100	A	1.2	A

Signatories :

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SITE CALIBRATION - CATEGORY 1

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
1. Noise Source		
Frequency	10 MHz to 26.5 GHz	
Noise Floor	-2 ENR to +20ENR(dB)	0.1 dB
2. Noise Figure Analyzer		
Frequency	10 MHz to 26.5 GHz	
Noise Floor	- 2 ENR to +20 ENR(dB)	0.4 dB
3. Noise Figure Meter		
Frequency	10 MHz to 26.5 GHz	
Noise Floor	- 2 ENR to +20 ENR(dB)	0.4 dB
4. Network Analyzer		
Frequency	9 kHz to 26.5 GHz	0.18 Hz
Power Level	- 5 dBm to +20 dBm	0.1 dB
5. Signal Generator		
RF Power : Measure	<u>Frequency</u>	
+30 dBm to -20 dBm	9 kHz to 50 GHz	0.3 dB
- 30 dBm to +20 dBm		
6. Spectrum Analyzer		
Power Level	<u>Frequency</u>	
	9 kHz to 40 GHz	1.2 dB

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SITE CALIBRATION - CATEGORY 2
SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
1. Measuring Instruments		
DC Voltage	<u>100 mV</u> 0 mV to 100 mV -100 mV to 0 mV	(of reading) 0.1 μ V/V 0.1 μ V/V
	<u>1 V</u> 0.0 V to +1.0 V -1.0 V to 0.0 V	7.3 μ V/V 7.3 μ V/V
	<u>10 V</u> 1.0 V to +10.0 V -10 V to -1.0 V	9.2 μ V/V 9.2 μ V/V
	<u>100 V</u> 10.0 V to +100.0 V -100.0 V to -10.0 V	0.1 mV/V 0.1 mV/V
	<u>1000 V</u> 100.0 V to +1000.0 V -1000.0 V to -100.0 V	0.6 mV/V 0.6 mV/V
Resistance (4 Wire)	10 Ω 100 Ω 1 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω 100 M Ω	30 $\mu\Omega$ 58 $\mu\Omega$ 11 $\mu\Omega$ 12 $\mu\Omega$ 58 $\mu\Omega$ 31 $\mu\Omega$ 61 $\mu\Omega$ 0.2 m Ω
Resistance (2 Wire)	10 Ω 100 Ω 1 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω 100 M Ω	2.6 m Ω 0.3 m Ω 0.3 m Ω 0.3 m Ω 0.3 m Ω 0.3 m Ω 0.3 m Ω 0.4 m Ω
DC Current	0 μ A to 100 μ A 100 μ A to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A	130 μ A/A 48 μ A/A 48 μ A/A 75 μ A/A 119 μ A/A



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SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
1. Measuring Instruments		(of reading)
AC Voltage	<u>0.1 mV to 1 mV</u>	
	10 Hz to 30 Hz	2.2 mV/V
	30 Hz to 300 Hz	2.2 mV/V
	300 Hz to 1 kHz	2.2 mV/V
	1 kHz to 10 kHz	2.2 mV/V
	10 kHz to 30 kHz	2.6 mV/V
	30 kHz to 100 kHz	2.8 mV/V
	100 kHz to 300 kHz	3.8 mV/V
	300 kHz to 1 MHz	3.8 mV/V
	<u>1 mV to 10 mV</u>	
	10 Hz to 30 Hz	0.4 mV/V
	30 Hz to 300 Hz	0.4 mV/V
	300 Hz to 1 kHz	0.3 mV/V
	1 kHz to 10 kHz	0.4 mV/V
	10 kHz to 30 kHz	0.6 mV/V
	30 kHz to 100 kHz	0.7 mV/V
	100 kHz to 300 kHz	1.6 mV/V
	100 kHz to 1 MHz	2.6 mV/V
	<u>10 mV to 100 mV</u>	
	10 Hz to 30 Hz	0.3 mV/V
	30 Hz to 300 Hz	0.2 mV/V
	300 Hz to 1 kHz	0.2 mV/V
	1 kHz to 10 kHz	0.2 mV/V
	10 kHz to 30 kHz	0.4 mV/V
	30 kHz to 100 kHz	0.5 mV/V
	100 kHz to 300 kHz	1.3 mV/V
	100 kHz to 1 MHz	2.5 mV/V
	<u>100 mV to 1 V</u>	
	10 Hz to 30 Hz	0.1 mV/V
	30 Hz to 300 Hz	70.7 μ V/V
	300 Hz to 1 kHz	57.1 μ V/V
	1 kHz to 10 kHz	57.1 μ V/V
	10 kHz to 30 kHz	57.1 μ V/V
	30 kHz to 100 kHz	113.6 μ V/V
	100 kHz to 300 kHz	0.5 mV/V
	100 kHz to 1 MHz	2.8 mV/V



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SITE CALIBRATION - CATEGORY 2

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
1. Measuring Instruments AC Voltage (Continue)	<u>1 V to 10 V</u>	
	10 Hz to 30 Hz	0.2 mV/V
	30 Hz to 300 Hz	0.1 mV/V
	300 Hz to 1 kHz	0.1 mV/V
	1 kHz to 10 kHz	0.1 mV/V
	10 kHz to 30 kHz	0.1 mV/V
	30 kHz to 100 kHz	0.1 mV/V
	100 kHz to 300 kHz	0.3 mV/V
	100 kHz to 1 MHz	1.8 mV/V
	<u>10 V to 100 V</u>	
	10 Hz to 30 Hz	0.2 mV/V
	30 Hz to 300 Hz	0.1 mV/V
	300 Hz to 1 kHz	0.1 mV/V
	1 kHz to 10 kHz	0.1 mV/V
	10 kHz to 30 kHz	0.1 mV/V
	30 kHz to 100 kHz	0.3 mV/V
	<u>100 V to 1000 V</u>	
	55 Hz to 1 kHz	0.1 mV/V
	1 kHz to 10 kHz	0.2 mV/V
	10 kHz to 30 kHz	0.2 mV/V
	30 kHz to 100 kHz	1.4 mV/V
AC Current	<u>100 μA to 1 mA</u>	
	10 Hz to 300 Hz	0.2 mA/A
	300 Hz to 1 kHz	0.3 mA/A
	1 kHz to 5 kHz	0.3 mA/A
	<u>1 mA to 10 mA</u>	
	10 Hz to 300 Hz	0.2 mA/A
	300 Hz to 1 kHz	0.2 mA/A
	1 kHz to 5 kHz	0.3 mA/A
	<u>10 mA to 100 mA</u>	
	10 Hz to 300 Hz	0.6 mA/A
	300 Hz to 1 kHz	0.6 mA/A
	1 kHz to 5 kHz	0.6 mA/A
	<u>100 mA to 1 A</u>	
	10 Hz to 300 Hz	0.4 mA/A
	300 Hz to 1 kHz	0.4 mA/A
	1 kHz to 5 kHz	0.6 mA/A



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SITE CALIBRATION - CATEGORY 2

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
2. Source/Generating Instrument		
DC Voltage	<u>100 mV</u>	(of reading)
	+ 100 μ V to + 100 mV	22 μ V/V
	- 100 mV to -100 μ V	22 μ V/V
	<u>1 V</u>	
	+100 mV to 1V	13 μ V/V
	-1 V to -100 mV	13 μ V/V
	<u>10 V</u>	
	+1 V to +10 V	12 μ V/V
	-10 V to -1 V	12 μ V/V
	<u>100 V</u>	
	+10 V to +100 V	15 μ V/V
	-100 V to -10 V	15 μ V/V
	<u>1000 V</u>	
	+ 100 V to + 1000 V	16 μ V/V
	-1000 V to -100 V	16 μ V/V
Resistance	10 Ω	0.4 m Ω
	100 Ω	2.8 m Ω
	1 k Ω	19 m Ω
	10 k Ω	0.2 Ω
	100 k Ω	2.0 Ω
	1 M Ω	25 Ω
	10 M Ω	0.8 k Ω
	100 M Ω	59 k Ω



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SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
DC Current		(of reading)
	<u>100μA</u>	
	+10 μ A to +100 μ A	0.2 mA/A
	-100 μ A to -10 μ A	0.2 mA/A
	<u>1mA</u>	
	+100 μ A to +1 mA	74 μ A/A
	-1 mA to -100 μ A	74 μ A/A
	<u>10mA</u>	
	+1 mA to +10 mA	74 μ A/A
	-10 mA to -1 mA	74 μ A/A
	<u>100 mA</u>	
	+10 mA to +100 mA	91 μ A/A
	-100 mA to -10 mA	91 μ A/A
	<u>1 A</u>	
	+100 mA to +1 A	0.2 mA/A
	-1 A to -100 mA	0.2 mA/A
AC Voltage	<u>0 mV to 10 mV</u>	
	40 Hz to 1 kHz	0.8 mV/V
	1 kHz to 20 kHz	0.8 mV/V
	20 kHz to 100 kHz	46 mV/V
	100 kHz to 300 kHz	46 mV/V
	<u>10 mV to 100 mV</u>	
	40 Hz to 1 kHz	0.3 mV/V
	1 kHz to 20 kHz	0.4 mV/V
	20 kHz to 100 kHz	3.7 mV/V
	100 kHz to 300 kHz	12 mV/V
	300 kHz to 1 MHz	18 mV/V
	<u>100 mV to 1 V</u>	
	40 Hz to 1 kHz	0.2 mV/V
	1 kHz to 20 kHz	0.4 mV/V
	20 kHz to 50 kHz	0.4 mV/V
	50 kHz to 100 kHz	3.5 mV/V
	100 kHz to 300 kHz	11 mV/V
	300 kHz to 500 kHz	12 mV/V
	500 kHz to 1 MHz	17 mV/V



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SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
2. Sourcing/Generating Instrument		(of reading)
AC Voltage (Continued)	<u>1 V to 10 V</u>	
	10 Hz to 20 Hz	0.2 mV/V
	20 Hz to 40 Hz	0.2 mV/V
	40 Hz to 1 kHz	0.2 mV/V
	1 kHz to 10 kHz	0.2 mV/V
	10 kHz to 20 kHz	0.2 mV/V
	20 kHz to 50 kHz	0.4 mV/V
	50 kHz to 100 kHz	1.0 mV/V
	100 kHz to 300 kHz	3.6 mV/V
	300 kHz to 500 kHz	12 mV/V
	500 kHz to 1 MHz	18 mV/V
	<u>10V to 100 V</u>	
	40 Hz to 1 kHz	0.3 mV/V
	1 kHz to 20 kHz	0.3 mV/V
	20 kHz to 50 kHz	0.5 mV/V
	50 kHz to 100 kHz	1.5 mV/V
	<u>100 V to 700 V</u>	
	40 Hz to 1 kHz	0.5 mV/V
3. High Current Generating DC Current	1 A to 10 A	9.7 mA/A

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SCOPE OF ACCREDITATION:

<u>Instrument calibrated/ Measurement parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm)*</u>
1. Signal Generator		
Amplitude Modulation Depth : 10% to 90%	<u>Frequency Range</u>	
Rate : 20Hz to 10kHz	150 kHz to 10 MHz	4 % of reading
Rate : 20Hz to 100kHz	10 MHz to 1300 MHz	4 % of reading
Frequency Modulation – Rate : 20Hz to 10kHz (Dev. : \leq 40 kHz peak)	<u>Frequency Range</u> 150 kHz to 10 MHz	1.2 kHz
Rate : 50Hz to 200kHz (Dev. : \leq 400 kHz peak)	10 MHz to 1300 MHz	8 kHz
RF Power : Measure +30dBm to -20dBm - 30dBm to +20dBm	<u>Frequency</u> 100 kHz to 2.6 GHz 2.6 GHz to 4 GHz	1 dB 1 dB
	Tune Freq : 2.5 MHz to 1300 MHz [+ 20dBm to -127 dBm]	2 dB
Audio Distortion: (-80 dB to 0 dB)	Frequency 400 Hz 1 kHz	1 dB 1 dB
2. Function Generator	Frequency: 0.01 Hz to 60 MHz	2.5 x 10-11 MHz
	Amplitude : 1 mV to 10 Vp-p (+23.98 dBm to -56.02 dBm)	0.1 Vp-p 1 dB



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SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Measuring Equipment :		
1. Frequency Counter		
Time Base	5 MHz	2.5×10^{-11} MHz
Frequency Range	100 Hz to 60 MHz	2.5×10^{-11} MHz
	0.1 MHz to 2.1 GHz	2.5×10^{-11} MHz
	10 MHz to 20 GHz	2.5×10^{-11} MHz
2. Modulation Analyzer		
Power Level:		
-25 dBm to 20 dBm (3 μ W to 100mW)		0.06 dBm
FM , Flatness:		
20 Hz to 100 kHz rates		0.1 kHz
100 kHz to 200 kHz rates		0.5 kHz
AM , Flatness		
50 Hz to 50 kHz		0.05 kHz
20 Hz to 100 kHz		0.25 kHz
Distortion		
Audio Distortion		
-70 dB minimum		1 dB
3. RF Power Meter		
Power Level	-25dBm to 20dBm (3 μ W to 100mW)	0.06 dBm



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SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Measuring Equipment:		
4. RF Power Sensor		(of reading)
Calibration Factor in a 50ohm system at	<u>Power Level</u> -30 dBm to +20 dBm	
Freq : 100 kHz to 4.2 GHz	100 kHz to 300kHz 300 kHz to 1 MHz 3 MHz to 30 MHz 100 MHz to 3.5 GHz 3.7 GHz to 4.2 GHz	(% , rss) 1 1 1 1 1
Freq : 10 MHz to 18 GHz	<u>Power Level</u> -30 dBm to +20 dBm 10 MHz to 300 MHz 300 MHz to 1.5 GHz 1.5 GHz to 8.0 GHz 8.0 GHz to 13.0 GHz 13.0 GHz to 18.0 GHz	 1 1 2 2 4
Freq : 100 kHz to 4.0 GHz	<u>Power Level</u> -10 dBm to +35 dBm 100 kHz to 500 kHz 500 kHz to 10 MHz 10 MHz to 50 MHz 50 MHz to 2 GHz 2 GHz to 4 GHz	 1 1 1 1 1
5. Spectrum Analyzer		
Frequency Range	9 kHz to 20 GHz	1.0×10^{-4} Hz
Resolution Bandwidth	1 kHz to 3 MHz	1 MHz
Reference Level	-90 dBm to 0 dBm	1 dB



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FIELD OF CALIBRATION: ELECTRICAL

SITE CALIBRATION - CATEGORY 2

SCOPE OF ACCREDITATION:

<u>Instrument Calibrated/ Measurement Parameter</u>	<u>Range</u>	<u>Best measurement capability expressed as an uncertainty (\pm) *</u>
Measuring Equipment :		
6. Network Analyzer		
Frequency	300 kHz to 3 GHz	0.06 MHz
Power Level	- 5 dBm to +20 dBm	1 dB
7. Audio Analyzer	Frequency :	
	20 Hz to 150 kHz	0.006 kHz
	Amplitude :	
	1 mV to 300 V	0.11 V
	Residual Distortion :	
	(-99.00 to 0 dB)	
	20 Hz to 20 kHz	1 dB
	20 kHz to 100 kHz	1 dB
8. Oscilloscope		
Period	5 ns/div. to 5 s/div.	0.0065 s
Squarewave :		
Amplitude – 1 M Ω @ 1kHz	1 mV/div to 20 V/div	0.052 V
Amplitude – 50 Ω @ 1kHz	1 mV/div to 2 V/div Risetime / Falltime	0.02 V 0.032 ns
Sinewave		
Amplitude –	10Hz to 50kHz :	
1 M Ω @ 50 kHz Ref.	1mV/div to 20V/div	0.2 V
Amplitude –	50kHz to 250MHz :	
50 Ω @ 50 kHz Ref	1mV/div to 2V/div	0.04 V
Bandwidth:	Freq : 10Hz to 250 MHz	0.12 MHz

Signatories:

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