	INDIAN INSTITUTE OF TECHNOLOGY BOMBAY **MATERIALS MANAGEMENT DIVISION** **Powai, Mumbai 400076.**

PR No. 1000052588 Rfx No. 6100002750:

Specification for RF Measurement Upgrade for HEMT Characterisation

(Qty: 01 No)

Sr. No.	Description	Value / Range	Technical Compliance (Yes / No)	Additional information (if any)
RF Measurement Upgrade For HEMT Characterization				
Technical Specifications				
1.a	Parameters to be measured on a single integrated platform:	Turn-on Delay time, Turn-off Delay Time, Rise Time, Fall Time, Turn-On time, Turn-off time, Reverse recovery charge, Reverse Recovery Time of Wide Band Gap devices like SiC & GaN, Gate charge, Dynamic Ron (Rds (on)), Switching characteristics		
1.b	Type of Devices to be tested:	Discrete Devices		
2.	Test Methodology	Double Pulse Test		
3.	Maximum Voltage Range:	'better or equal to 1200V		
4.	Drain/Collector Channel DC Voltage Programming Resolution:	'25 mV		
5.	Drain/Collector Channel DC Voltage Voltage Measurement Accuracy	3% of range (typical)		
6.	Drain/Collector Channel DC Voltage Current Measurement Accuracy:	5% of range (typical)		
7.	Maximum Current Range:	better or equal to 200A		
8.	Integrated Oscilloscope Sample Rate:	better or equal to 10 Gsa/s		
9.	Integrated Oscilloscope Sampling Accuracy:	better or equal to 12ppb + 75 ppb/year		

10.	Integrated Oscilloscope Deskew Accuracy:	better or equal to 200 ps		
11.	Drain/Collector Channel AC Voltage probe bandwidth:	better or equal to 500 MHz		
12.	Drain/Collector Channel AC current shunt bandwidth (compensated):	better or equal to 400 MHz		
13.	Drain/Collector Channel AC voltage transition time:	< 10 ns		
14.	Gate DC Voltage Source High/Low voltage level :	0 to 28 / -28 to 0 V		
15.	Gate DC Voltage Source resolution:	< 0.1 V		
16.	Gate DC Maximum current range:	upto > 10 Amperes		
17.	Gate DC Voltage Measurement Accuracy:	3% of range (typical)		
18.	Gate DC Current Measurement Accuracy:	5% of range (typical)		
19.	Gate AC source timing resolution/ accuracy:	better or equal to 100 ps / 200ps		
20.	Gate AC source first pulse maximum width:	better or equal to 60 us		
21.	Gate AC source minimum pulse width of first pulse:	better or equal to 1 us		
22.	Gate AC source maximum allowed off time between first and second pulse:	better or equal to 25 us		
23.	Gate AC source minimum allowed off time between first and second pulse:	better or equal to 200ns		
24.	Gate AC source maximum pulse width of second pulse:	better or equal to 10 us		
25.	Gate AC source minimum pulse width of second pulse:	better or equal to 200 ns		
26.	Gate AC voltage probe bandwidth :	better or equal to 500 MHz		

27.	Gate AC current probe bandwidth:	better or equal to 800 MHz		
28.	Load Inductors required:	typical 16.7 µH / 120 µH		
29.	Measurement Techniques:	a. Probe Compensation b. Gain/Offset adjustment c. De-skewing d. Common-Mode Noise Rejection		
30.	System calibration:	Semi-automated routine for gain and offset correction		
31.	Safety:	Built-in protection for high- voltage/ current operations		
32.	Compliance:	Should meet JEDEC testing standards (JESD24-2, JEP 192, JESD24-10, JEP201, IEC-60747-8(FET), IEC-60747-9(IGBT)		
33.	Temperature Test:	Should be able to test characteristics over temperature with in-built heater		
34.	Emergency Off:	A button should be available to disconnect high voltages when pressed		
35.	User Interface:	A simple and flexible GUI should be available to provide test setup, execution, display and data logging.		
36.	Ethernet Interface:	10/100/1000 Base-T Ethernet		
37.	Operating Temperature:	20 ˚C to 30 ˚C		
38.	Storage Temperature:	0 to 40 ˚C		
39.	Line Power & Power Consumption:	200 V to 240 V, ± 10% 50/60 Hz & 600 VA		
40.	Fixture:	Si, SiC and GaN Fixture		
41.	DUT Boards:	a. TO-247 DUT Board for 3-pin and 4-pin TO-247 packages b. D2P DUT Board for 7-pin D2PAK packages		
42.	Heater:	temperature ranging from Ambient temperature to 175 ˚C		
43.	Coaxial Shunt :	Required for Id measurement		

44.	Clamp Circuit Board:	Required for Rds(on) measurement		
45	Gate Driver Board :	Pair of boards to drive gates of the high and low devices with various Rg values; Rg as blank, 0 Ohm, 10.1 Ohm, 100 Ohm		
46	Fully automated measurement software:	License Required		
47	Control software for DPT measurement:	License Required		
48	Full Instrument installation			
49.	Hands on training on the instrument:	Minimum 3 days training		