



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
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Desirable Technical Specifications for Portable GPR System

Sr.No	Parameters	Specification
1	Frequency Range	30kHz to 26.5GHz
2	Measurements	S11,S21,S12,S22 Full two port S-Parameter measurements with single connection without requiring disconnection or turning the DUT or changing cables
3	Initial calibration accuracy	± 0.4 ppm(typ)
4	Aging rate	± 1ppm per year for 20 years
5	Frequency resolution	<3 Hz for entire frequency range
6	Number of Data points	10,001 points or better, selectable
7	IF bandwidth	10Hz to 100kHz
8	Dynamic range upto 20GHz	>=90dB
9	Output Power range	-45dBm to +3dBm
10	Directivity	>=32dB over entire range
11	Maximum Input Level	i) RF: +27dBm or better,ii) DC Voltage: +/- 50 VDC
12	Calibration Types	PI quote suitable for field and lab use for full frequency
13	Output data file type	Should be able to save S parameter file to csv, snp, image & file types for further analysis
14	Battery backup	atleast 3.5 hrs Li-Ion rechargeable & removable battery
15	Trigger input	10 MHz, SMA (f), 50 Ω
16	Trigger output	10 MHz, SMB (m), 50 Ω
17	Parameters displayed	Log Amplitude , phase, SWR, Smith

		chart, Polar chart, group delay. Ability to display S11, S21 or more measurements simultaneously should be available.
Also quote for following capabilities with given specifications and be provided as part of equipment only		
18	Cable and antenna analyser having	Distance-to-fault (dB), Return loss (dB), VSWR, Distance-to-fault (VSWR), Cable loss (1-port), Insertion loss (2-port), Distance-to-fault (Lin). Dual display mode
19	GPS Receiver	Inbuilt GPS receiver with GPS antenna must be present
20	Preamplifier	0.1 to 18GHz, 25dB gain, with SMA connectors, 50 ohm, must operate within -45° C to +55° C temperature with triple output DC Power supply, <=350uVrms output ripple, +-25V/1A, 4.3" Color Display, USB interface
21	Switch Driver with SPDT switch	Switch should be programmable via USB & LAN interface and control atleast 2 SPDT switches. The SPDT switch must have inbuilt port matching, 2 million switching lifecycle, range upto 26.5GHz, 60dB Isolation, SWR<1.6 over entire range and must operate within -25 to +75 °C temperature
General Specifications		
22	Connector type	3.5mm (male) on both ports

23	Input Impedance	50 ohm
24	Display	6.5" transfective color LCD-LED backlit with different modes - Outdoor,Night,etc for field use
25	Connectivity	High speed USB 2.0 , LAN (100/10 base-T)
26	Internal storage	4GB internal storage to more than 1000 states & traces storage facility
27	External storage	Two-USB 2.0 ports, One -SD/SDHC memory card slots
28	Safety	Complies with the essential requirements of the European LV Directive as well as IEC/EN 61010-1
29	EMC	Complies to IEC/EN 61326-1, CISPR Pub 11 Group 1, class B, AS/NZS CISPR 11
30	Environmental	Complies to MIL-PRF-28800F Class 2 & MIL-STD-810G
31	Operating Temperature	-10°C to 50°C
32	Warranty	3 years on main unit
33	After sales & support	The vendor or OEM must have NABL lab & dedicated service centre in India
34	Included accessories	The Vendor must provide all the foll accessories and demonstrate after supply : AC adapter, LAN cable, User manual, Calibration certificate, Carrying case, SPDT switches- 2 nos, Preamplifier- 2 nos, LXI switch-1 nos DC supply-1nos, connecting cables, SMA cables & adapters.
35	Other features required	The same unit should be upgradable in future for RTSA, Noise figure measurements, Spectrum

		measurements, etc
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