# MCP-Based Physical Layer Tester (PLT-M)


## Overview

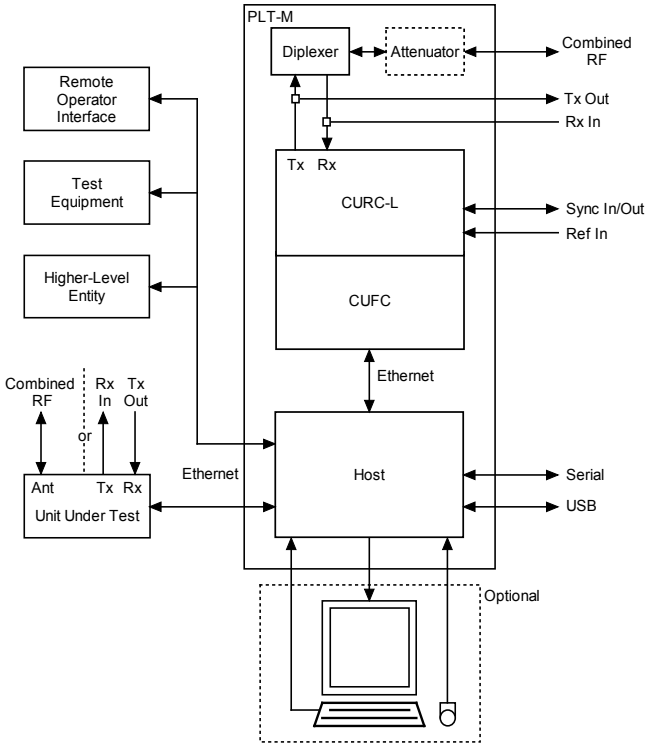
Square Peg Communications Inc.'s fourth-generation Physical Layer Tester (PLT-M) is a generic PC based test tool which supports the testing and type approval of mobile terminals and base stations for various satellite or wireless communications networks. The PLT-M is based on Square Peg's Multi-Channel Platform (MCP) Channel Unit, a software-defined radio providing baseband-to-RF functionality.

The generic PLT-M hardware platform runs software specific to the equipment type under test.

| Product | Inmarsat Standards |
|---|---|
| BGAN Physical Layer Tester (BMCP) | BGAN, FleetBroadband, SwiftBroadband, SB-SAT |
| IsatData Pro Physical Layer Tester (DMCP) | IsatData Pro |
| Aeronautical Ground Data Unit (GMCP) | Classic Aero |

## Platform

The PTL-M implements the communication channels at L-band. Up to four transmit and four receive channels are supported. It communicates with an optional Protocol Tester or network emulator as well as external test equipment and the unit under test over a LAN or serial connection. The PLT-M includes a high stability 10 MHz frequency reference and provides a local or remote Windows-based Operator Interface.



# SPECIFICATIONS

## RF

| | |
|---|---|
| Connector | **Combined RF: N female**<br>**Rx In / Tx Out: SMA female** |
| Impedance | **50 ohms nominal** |
| Receive frequency | **1626.5 to 1675.0 MHz** |
| Receive frequency step size | **1 Hz** |
| Receive level (Rx In) | **–35 to +16 dBm per channel**<br>**+16 dBm max total** |
| Receive level (Combined RF) | **–34 to +17 dBm per channel**<br>**+17 dBm max total** |
| Receive level (Combined RF, with optional high power attenuator) | **–4 to +43 dBm per channel**<br>**+43 dBm max total** |
| Receive level measurement resolution | **0.01 dB** |
| Receive level measurement accuracy | **± 1.0 dB** |
| Receive spurious signals | **≤ –55 dBc** |
| Receive phase noise density | **@ 10 Hz: ≤ –55 dBc/Hz**<br>**@ 100 Hz: ≤ –75 dBc/Hz**<br>**@ 1 kHz: ≤ –85 dBc/Hz**<br>**@ 10 kHz: ≤ –90 dBc/Hz**<br>**@ 100 kHz: ≤ –100 dBc/Hz** |
| Receive 3rd order intermodulation | **≤ –55 dBc (two carriers at 3 dB below maximum, receive path attenuation adjusted optimally)** |
| Receive I/Q amplitude and phase imbalance | **Negligible** |
| Transmit frequency | **1518.0 to 1559.0 MHz** |
| Transmit frequency step size | **1 Hz** |
| Transmit level (Tx Out) | **–90 to –25 dBm per carrier** |
| Transmit level (Combined RF) | **–91 to –26 dBm per carrier** |
| Transmit level (Combined RF, with optional high-power attenuator) | **–121 to –56 dBm per carrier** |
| Transmit level resolution | **0.01 dB** |
| Transmit level accuracy | **± 1.0 dB** |
| Transmit phase noise density | **@ 10 Hz: ≤ –50 dBc/Hz**<br>**@ 100 Hz: ≤ –70 dBc/Hz**<br>**@ 1 kHz: ≤ –87 dBc/Hz**<br>**@ 10 kHz: ≤ –90 dBc/Hz**<br>**@ 100 kHz: ≤ –100 dBc/Hz** |
| Transmit spurious | **≤ larger of –55 dBc or –90 dBm** |
| Transmit 3rd order intermodulation | **≤ –55 dBc with two carriers at 3 dB below maximum** |
| Transmit frequency accuracy | **± 1 × $10^{-7}$** |
| Transmit I/Q amplitude and phase imbalance | **Negligible** |

## REFERENCE

| | |
|---|---|
| Source | **Internal / External** |
| Connector | **BNC female** |
| Impedance | **50 ohms** |
| Frequency | **10 MHz** |
| Level | **0 dBm ± 2 dB** |
| Frequency error (internal) | **≤ $10^{-7}$ (with yearly calibration)** |

## BASEBAND INTERFACES

| | |
|---|---|
| Sync | **TTL, configurable as input or output**<br>**Input impedance: ≥ 1000 ohms**<br>**Load impedance: ≥ 100 ohms** |
| Ethernet | **2 x 10/100/1000 Base T** |
| Serial | **1 x RS-232, 1 x RS-232/422/485** |
| USB | **4 x USB 2.0, 2 x USB 3.0** |
| Video | **VGA, DVI** |
| Audio | **Standard PC audio** |

## MECHANICAL/ENVIRONMENTAL

| | |
|---|---|
| Form factor | **19" / 2.5U rack mount**<br>**(optional 0.5U filler plate available)** |
| Size (with bumpers) | **L 51 cm x W 51.75 cm x H 12.07 cm**<br>**L 20 in x W 20.38 in x H 4.75 in** |
| Weight (with internal high-power attenuator) | **≈ 7 kg (15 lb)** |
| Power connector | **IEC 320 male** |
| Voltage | **100-240 VAC, 50/60 Hz** |
| Current (typical, with four 600 MHz DSPs) | **≈ 1.5 A rms at 115 VAC** |
| Operating temperature | **10°C to 35°C** |
| Operating humidity | **20% to 75% relative humidity, non-condensing** |
| Regulatory | **FCC, CE and RoHS compliant**<br>**Safety: EN61010-1**<br>**Emissions & immunity: EN61326-1 Class A** |

## PROCESSING

| | |
|---|---|
| Host | **Core i7** |
| DSPs | **4 to 8 TigerSHARC, 500/600 MHz** |
| FPGA | **Virtex-5, Kintex-7** |

# CONTACT US

For more information contact:

**Square Peg Communications Inc.**
**4017 Carling Avenue, Suite 200**
**Ottawa, Ontario K2K 2A3**
**CANADA**
**Tel: +1 613 271 0044 Fax: +1 613 271 3007**
**Web: www.squarepeg.ca**
**Email: sales@squarepeg.ca**