



Microcom Design, Inc.

# Model GDTx-TS GOES Satellite Transmitter Test Set P/N: TS-101-GOES



## Description

The purpose of the Model **GDTx-TS** GOES DCS Transmitter Test Set is to allow users to perform operational tests and analyses on the signals transmitted from GOES DCP's. The **GDTx-TS** may also be used with related satellite systems such as GMS and METEOSAT. The Microcom **GDTx-TS** is the commercial version of the NOAA GOES Certification Test Set used for all DCP certification.

The Test Set is based on the same DSP technology as used in the NOAA Wallops CDAS DAPS receive system. DSP technology allows software updates to the Test Set permitting changes in both the user interface and message demodulation. This provides the ability to adapt the Test Set to changes in GOES message formats and allows future enhancements for use with other satellite systems such as ARGOS, SCD, and INSAT.

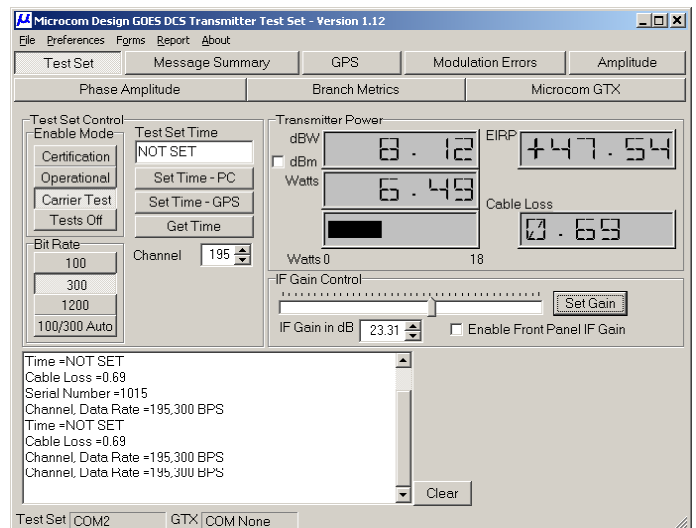
The **GDTx-TS** may be applied to four operating modes and applications :

- DCPRS certification preparation
- Lab or depot maintenance and repair
- Field trip preparation
- Field operational checks and verification

In the certification test application, all certification parameters except spectra are measured. For lab or maintenance work, performance may be verified after repair. In field work, signals may be received directly from the transmit antenna by using the low

power 402 MHz input with supplied antenna. The **GDTx-TS** may be used with a PDA, Laptop or PC.

Although the **GDTx-TS** may be operated using its RS-232 Terminal Menu System, a GUI is supplied that provides simple controls and many displays. The figure below shows the GUI's main application screen.



The Transmitter Power section shows the real time display of received power at 402 MHz and the power measured at the demodulator. The IF gain control is used to match the demodulator power to that which would be received by NOAA for the antenna used. The left hand section provides controls for selecting operating mode, channel, and data rate for the Test Set.

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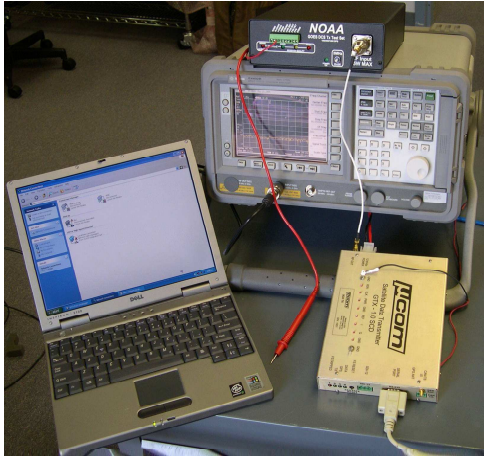
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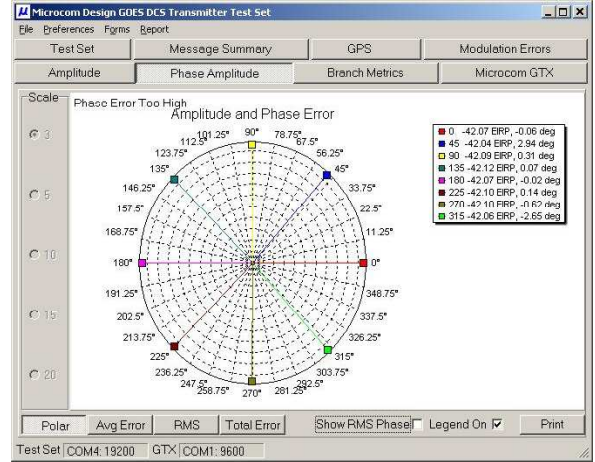
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# Satellite Transmitter Test Set

## Complete Certification Test Set Up



The **GDTx-TS** is the commercial version of the NOAA GOES Certification Test Set.



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Live Messages
CP=+48.8
101000001011001110N
7710061A20
FIELD INITIATED TEST TRANSMISSION
EOT RECEIVED
BER = 0
Par Errs = 0
Freq Dev = -43.7, -43.5
Avg Power = +50.6
Sym Total = 172
Car RMS = -0.17, 129
Branch Metrics
14 0 0 0 0 0 0 0 0 15
8 0 0 0 0 0 0 0 0 5
16 0 0 0 0 0 0 0 0 14
14 0 0 0 0 0 0 0 0 13
3 0 0 0 0 0 0 0 0 13
7 0 0 0 0 0 0 0 0 9
9 0 0 0 0 0 0 0 0 2
10 0 0 0 0 0 0 0 0 12
Good Phases 164 of 164, 100.0%
P 0 = +0.04, 0.27 RMS, 26, +50.60
P 45 = -0.09, 0.38 RMS, 23, -0.01
P 90 = +0.23, 0.26 RMS, 21, +0.02
P 135 = +0.01, 0.30 RMS, 28, +0.01
P 180 = -0.28, 0.26 RMS, 16, +0.00
P 225 = -0.10, 0.25 RMS, 20, -0.01
P 270 = +0.01, 0.32 RMS, 18, -0.01
P 315 = +0.15, 0.31 RMS, 12, +0.01
P Avg = -0.01, 0.29 RMS, +0.28
Msg Car = 212.09:44:23.467
Msg Sym = 212.09:44:23.717
Msg Frame = 212.09:44:23.747
Msg End = 212.09:44:24.034
Msg Lng = 00:00.567
Car Time = 0.250
Clk Bits = 3
Sym Rate = +600.0260
  
```

The **GDTx-TS** provides a host of analysis information, which is presented both in text and in graphics.

The screen shot above shows the received symbol information presented in a polar graphical format.

The screen shot on the left from the GUI shows a received message and the signal analysis.

- Frequency offset from the channel center to 0.1 Hertz.
- Power measurements made on the carrier and on the individual symbols are in dBm EIRP to 0.01 dB.
- Information on all 8 phases is shown to 0.01 degrees.
- The time of reception of the various message format points is shown to the nearest millisecond.
- Symbol rate measured to 0.0001 Hertz

Both the text and the graphical analysis information can be captured in a hard copy report.

### Specifications

- Operating Modes: GOES 100, 300, 1200 BPS.
- All GOES Message Formats
- Power Measurement: < 0.25 dB
- Power Input, High power: 25 watts
- Power Input Low Power : -10 dBm to -80 dBm
- Frequency: Full GOES channel range and may be expanded with firmware updates.
- Frequency Resolution:  $\pm 0.1$  Hz
- Frequency Accuracy:  $\pm 1$  Hz
- Frequency Stability:  $\pm 10$  Hz per year uncorrected
- GPS Input: Time to 100  $\mu$ s accuracy and  $\pm 1$  millisecond resolution.
- Phase: To  $\pm 0.01$  degrees
- Symbol Rate: To  $\pm 0.0001$  Hz (1000 symbol message minimum)

### Standard Lab Operation Includes

- 200 - 300C for Certification Measurements
- AC / DC Power Supply , 110 VDC
- N Type High Power Input
- Low Power Input 1/4 Wave rubber whip antenna
- Terminal Mode Menu Operation
- PC GUI Operation and reports
- IRIG-B Time Reference Input (Available from laboratory Time Standards such as available from True Time)

### Optional Internal Portable GPS

- Integral GPS Receiver
- External GPS Bullet Antenna with 50 feet of low loss cable
- External Magnetic Mount Patch Antenna with 16 feet of cable
- 12.6V DC Vehicle power source cable and connector.