STI Field Test 6 for Aeroflex

Geographic Signal Coverage with 3920 and 3500 Radio Test Sets

The first step toward improving system coverage is to understand current system performance..

What does STI FT6 do?

- Automated control of receiving hardware during signal measurement tests.
- Graphical real-time display of signal measurements during data acquisition.
- Graphical real-time display of the position of measurements.
- Graphical analysis of individual data records and geographic groups of records.
- Quick creation of color plots of signal parameter contours over the area of data acquisition.

What you need with FT6

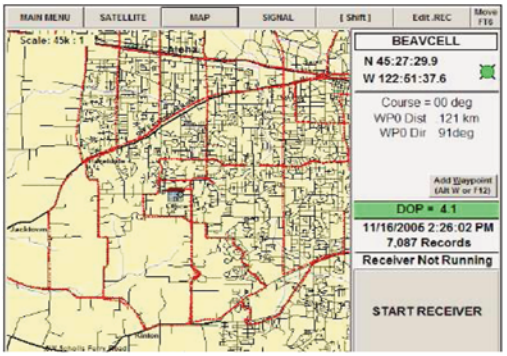
- STI Field Test 6 package including:
  - ✓ FT6 software.
  - ✓ GPS receiver – Holux USB with driver.
  - ✓ Ethernet/RS232 cables.
  - ✓ 3900/3500 drivers.
- MapInfo compatible Maps (*.TAB).
- 3920 or 3500A Radio Test Set.
- Laptop PC with USB/Ethernet.
- Accessories : Antenna, cable and adapter.

STI Field Test 6 is automated signal measurement and analysis software that can be interfaced with most Aeroflex Radio Test Sets, particularly the new 3920 Digital PMR and 3500A portable test sets. STI Field Test 6 consists of a GPS receiver, measurement and analysis software, and the Radio Test Set driver of your choice, allowing you to utilize your laptop PC to integrate a Field Test System that meets your drive test requirements. The types of signal measurements taken are limited only by the capabilities of the RF measurement instrument used. This unique feature ensures a long and useful life for your STI system. From digital P25 or Tetra BER to analog SINAD signal strength, or Tetra Network identification data. STI Field Test 6 is the automated field measurement and analysis kit.

Getting started with FT6

Follow these simple steps to setup your STI Field Test 6 Software:

Within the setup mode, you may either create a new project or select an existing project to continue data collection. To create a new project, select a driver from the menu for the Test Set you intend to use. A separate driver is needed for each Test Set used. Select a Test Set setup file containing the test commands the instrument requires and the list of frequencies to be measured. Aeroflex provides a default project for you to use as a starting point. It's easy to select the default setup then add or change settings to tailor the measurement cycle to your current project requirements.



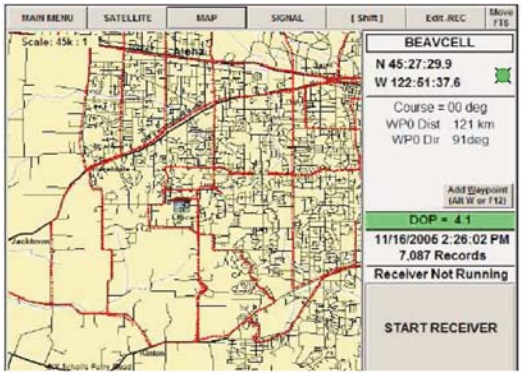
Graphical real-time display

```
[Compatibility]
Driver=A_3900.exe
File Version 6=True
[Global Settings]
Measurement Type(P25,RSSI,TETRA)=TETRA
[Freq List]
;Format is LineNum=Name,Frequency(MHz),[Signals Bottom],[Signals Top]
1=Ch1107_RSSI,427.6875MHz
;2=Ch1107_MNC,MNC,0,100
3=Ch1151_RSSI,428.7875MHz
4=Ch1151_MNC,MNC,0,100
;8=Ch1151_BCC,BCC,0,70
;9=Ch3_LA,LA,0,16383
[TETRA Initial Commands]
1=:RF:ANAlyzer:Port ANT
2=:RF:ANAlyzer:RECeiver:AMP ON
3=:CONFigure:CHPlan:load"No Plan"
[TETRA Measurement Commands]
1=:RF:ANAlyzer:FREQuency <F>
2=:RF:ANAlyzer:FREQuency? <F>
3=Wait 2000
4=:FETCh:POWer:SYNC? <M4>
;5=:PROTocol:BSIDentity? <M3>
```

Example of 3920 REC configuration file for Tetra

Signal Acquisition

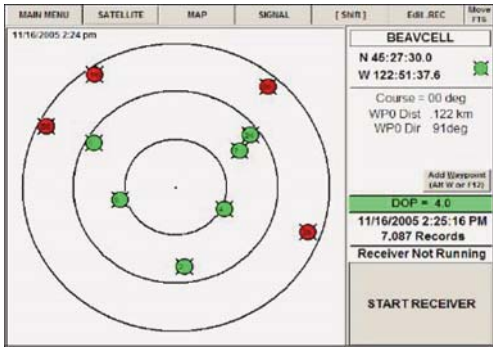
Simply start the signal measurement process and drive your STI Field Test System throughout an area of interest, acquiring an adequate density of measurements. STI Field Test 6 will automate signal strength measurements at each specified frequency, average the measurements according to your setup, combine latitude and longitude information from the GPS and create a Microsoft Access™ measurement database. Measurement data can be exported as Excel, comma or tab delimited files for further manipulation or imported into coverage prediction applications.



Map Display

Geographic Maps

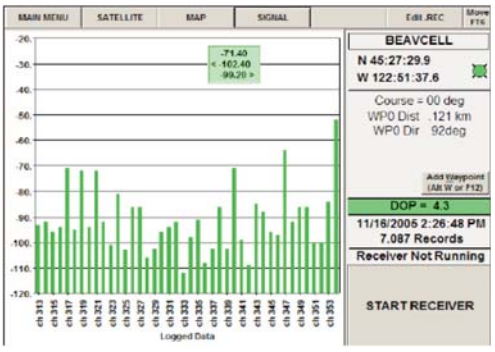
The Field Test 6 software provides compatibility with Map Info Corporation .TAB file map format. MapInfo .TAB files are a collection of files that compose a map layer. The minimum layers for a Field Test 6 map display is three. These are WayPoints, DataPoints and Rectangles. These layers are required by the Field Test 6 software and are automatically installed during operation for each project. Other map layers are added and configured as required by the user using the GeoSet Manager and Layer Control dialogs.



GPS Display

Acquisition Displays

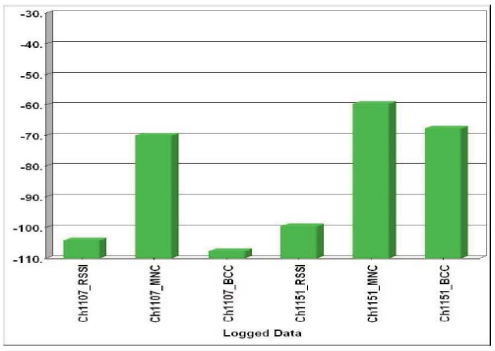
As measurements are taken, signal readings and their locations are displayed in real time. The Map Display in STI Field Test 6 is a real-time display showing measurement positions during the drive test. The Signal Display is also a real-time display showing the results of each signal measurement cycle. Channel names and the “y” axis of this screen are entered in the initiation file for each project. The GPS Display is generated from GPS receiver information and shows the constellation of satellites and the level of reception from each.



Signal Display

Tetra specific measurements

When using the Aeroflex 3920, STI Field Test 6 can also display and record decoded information from the Tetra Base Station; like MCC, MNC, BCC and LA to verify cell identity or identify interfering stations.



Tetra Signal display showing RSSI, MNC and BCC

Signal Analysis (Macro): Contour Plot

The primary form of signal coverage analysis is a contour plot generated from measurements taken during the drive test. Contour plots are the best method to graphically display large amounts of data in an easy-to-understand format. Blend and Custom are the two types of contour plots.

-Blend Plots display signal strength variation across geography. Blend Plot Signal strength contours are displayed at periodic levels such as 5 dB and can be converted to the units of your choice, such as dBuV, dBm or dBu.

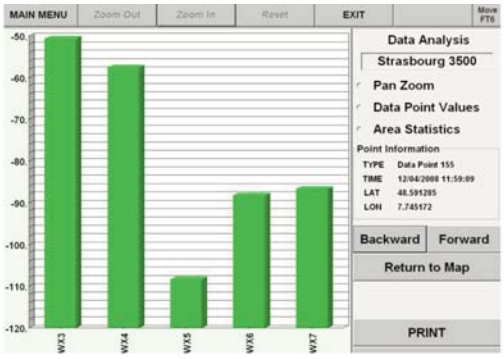
-Custom Plots demonstrate coverage as grades of service. Contour plots can either be saved to graphic file or text data base, printed or exported in KML format to be displayed in Google Earth.

Blend plot of single carrier coverage

Custom Plot Best Server

Signal Analysis (Micro): Point & Area

Once signal anomalies have been identified with a contour plot, point and area analysis allows the raw data to be recalled and analyzed in detail. In area analysis mode a rectangle can be scribed over a subset of data points to view signal value statistics within that region. With data point analysis, select a single data point to recall and display measured values graphically in bar chart form. You may step forward or backward along the drive path recalling information specific to each measurement point.

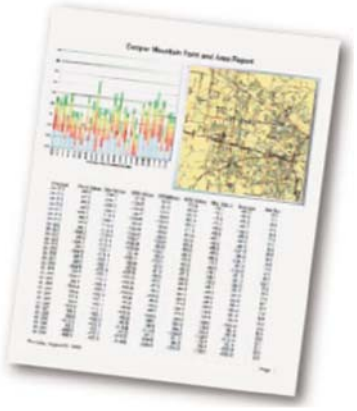


Single plot analysis

Area Statistics

Signal Analysis (Micro): Point & Area

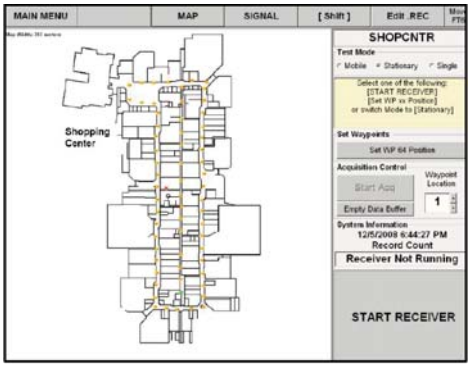
STI Field Test 6 automates the field testing process and translates large amounts of signal measurements into clear concise reports in a cost effective manner. This type of system verification is critical for new site set-up, coverage verification, system optimization and ongoing maintenance.



Point and Area analysis report

Tile Analysis and Report

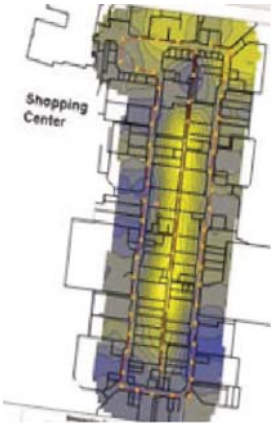
Tiling is a function of STI Field Test 6 that provides a means of quantifying signal coverage for system acceptance and proof of performance testing. In this mode, a region of interest is divided into equal-size geographic areas called tiles. Data acquisition is conducted as usual. The grid of geographic tiles is displayed during data acquisition to indicate to the operator when a qualifying number of measurements have been made in each tile area. After data collection, the area of interest can be analyzed statistically. A verifiable specification statement for a communications system using this quantitative form of analysis might read, "Tile sizes will be 1 minute rectangles. After qualifying 80% of the tiles in this geographic area with at least 10 measurement samples, at least 95% of the qualified tiles must have 100% of their measurements above –95 dBm." You can automatically produce tile reports indicating the number of measurements in every tile, the percent of measurements above the threshold level for every tile and summary statistics for the entire area of measurement.



Setup indoor map and WP

Indoor measurement:

An STI Field Test System equipped with the indoor measurement option allows you to import a building floor plan for referencing measurement locations during mobile or stationary indoor tests.



Contour plot of indoor map

VERSIONS AND ACCESSORIES

Ordering Numbers	Versions
IFR3920	**Advanced Radio Test System**
390XOPT111	**TETRA BS (Base Station)**
390XOPT200	**P25 Conventional**

For more details:

http://www.aeroflex.com/ats/products/category/Communications_Test/Radio_Test_Sets_-_PMR_Test.html

Select 3920 Radio Test Set

3500A	**Portable Radio Test Set**

For more details:

http://www.aeroflex.com/ats/products/category/Communications_Test/Radio_Test_Sets_-_PMR_Test.html

Select 3500A Radio Test Set

AC25081	**Site Survey Software (FTI Field Test 6 package)**

For information on MapInfo TAB files : http://www.mapinfo.com/

CHINA Beijing
Tel: [+86] (10) 6539 1166
Fax: [+86] (10) 6539 1778

CHINA Shanghai
Tel: [+86] (21) 5109 5128
Fax: [+86] (21) 5150 6112

FINLAND
Tel: [+358] (9) 2709 5541
Fax: [+358] (9) 804 2441

FRANCE
Tel: [+33] 1 60 79 96 00
Fax: [+33] 1 60 77 69 22

GERMANY
Tel: [+49] 8131 2926-0
Fax: [+49] 8131 2926-130

HONG KONG
Tel: [+852] 2832 7988
Fax: [+852] 2834 5364

INDIA
Tel: [+91] (0) 80 4115 4501
Fax: [+91] (0) 80 4115 4502

JAPAN
Tel: [+81] 3 3500 5591
Fax: [+81] 3 3500 5592

KOREA
Tel: [+82] (2) 3424 2719
Fax: [+82] (2) 3424 8620

SCANDINAVIA
Tel: [+45] 9614 0045
Fax: [+45] 9614 0047

SPAIN
Tel: [+34] (91) 640 11 34
Fax: [+34] (91) 640 06 40

UK Cambridge
Tel: [+44] (0) 1763 262277
Fax: [+44] (0) 1763 285353

UK Stevenage
Tel: [+44] (0) 1438 742200
Fax: [+44] (0) 1438 727601
Freephone: 0800 282388

USA
Tel: [+1] (316) 522 4981
Fax: [+1] (316) 522 1360
Toll Free: 800 835 2352

AEROFLEX
A passion for performance.

www.aeroflex.com

info-test@aeroflex.com

Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.

Part No. 46891/349, Issue 1, 01/09