

## 2001 Technical Specification Issue 3

**R·D·S**

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## T980A FM Broadcast Monitor RDS decoder



### Signals measured:

- Deviation measurement 0 to 100kHz
- RSSI measurement 0 to 83dB
- Pilot 19kHz measurement
- RDS 57kHz sub-carrier measurement
- Multipath measurement
- Aerial -20,-30dB attenuator

### Signals monitored via BNC connectors:

- Pilot 19KHz
- RDS 57KHz sub-carrier
- MPX output
- MPX input
- IF input
- Limiter output
- Deviation output
- Multipath output
- AF unbalanced

### Signals monitored via XLR connectors:

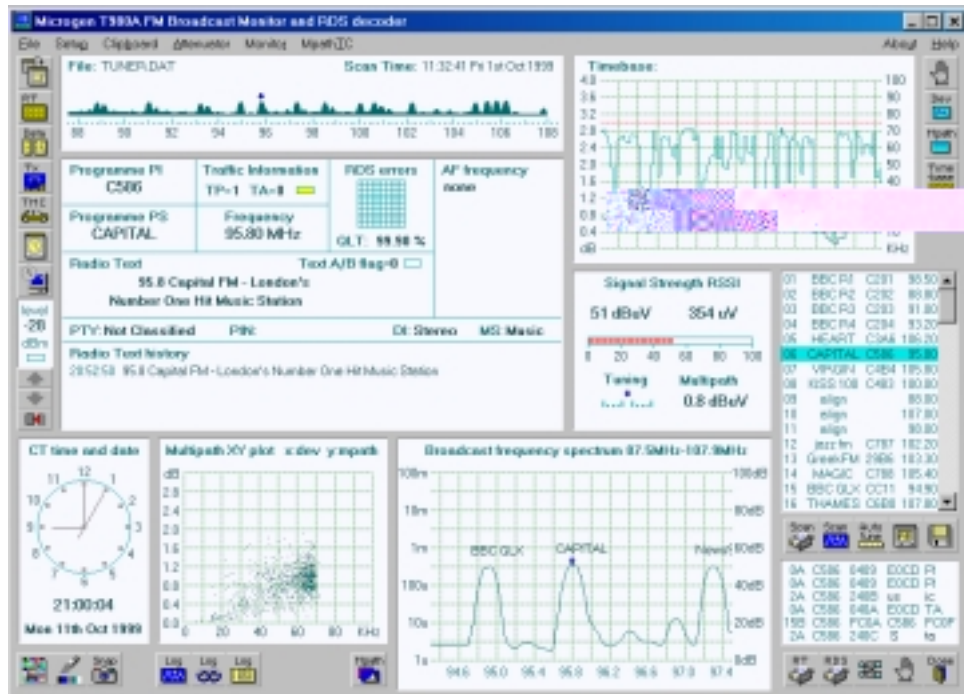
- AF balanced output, for line or loudspeaker
- Low impedance headphone

### Windows Control Software

Advanced control software runs under the Windows operating system. Utilizing the RS232 serial port, all hardware functions are accessible from this application, allowing remote tuning, scanning and AF level setting. A continuous stream of RDS, RSSI, signal deviation, pilot, RDS sub-carrier, multipath and tuning data, is sent back to the PC. Any window displaying data, can be instantly copied to the clipboard, from where it can be pasted to any application. This system is compatible with Windows95/98/Me



## Software



### Control Software

The above screen capture shows, the T980A operating interface running at 1024\*768 resolution. This can be user set to 800\*600 to suit the screen in use. All data is still available through separate user accessible windows

### RDS decode

Groups decoded are PI,PS,PTY,PIN,RT,TA,TP,CT,AF,DI,MS and EON. There are separate windows for displaying EON data and RT history. Group data can be viewed in real time and can be held for inspection. Group repetition rates are calculated and RDS signal quality is given as a percentage.

### EON and AF data

A continuous update of EON data is available for all networks received. When all data has been captured, it can be stepped through for inspection, or printed out for hard copy. Alternate frequencies are displayed on the main screen or if methodB is in use, the AF data can be continuously monitored in a separate window.

### CT time and date

This can be viewed with the analog clock or digital readout. The PC clock can be synchronized to RDS clock.

### Scanning

The FM Broadcast frequency spectrum can be scanned and displayed graphically. A fine tune window allows for accurate station location in 10KHz increments.

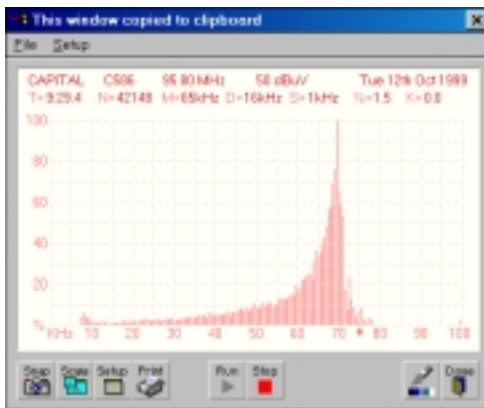
### Frequency deviation

A continuous scrolling chart, displays frequency deviation. A user adjustable timebase, with peak and mean filters, can be applied to the signal.

### Data logging

RDS and scan data can be logged with a single mouse click. The captured data can be saved to hard disk as a standard text file. These files can be edited by a word processor.

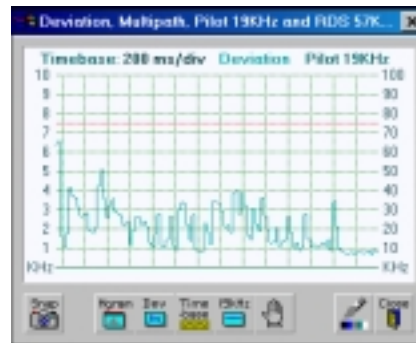
## Frequency Deviation and Multipath



### Deviation Histogram

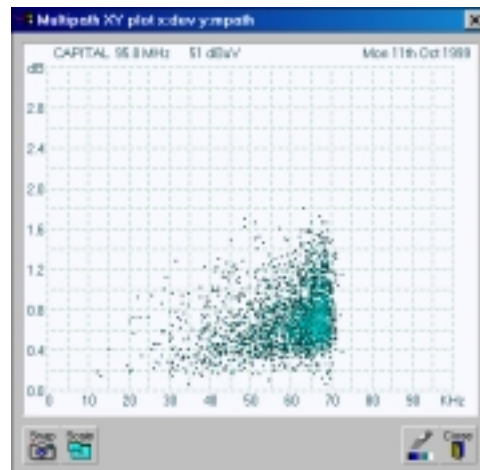
A deviation histogram can be viewed in real time, from this window. The following variables are calculated from the collected data.

- T Lapse time measured in minutes and seconds
- N The number of samples taken
- M The mean value of deviation
- D The quadratic mean value of deviation
- S The mean of samples above 75KHz
- % The percentage of samples above 75KHz
- K Equals S\*%



### Frequency deviation

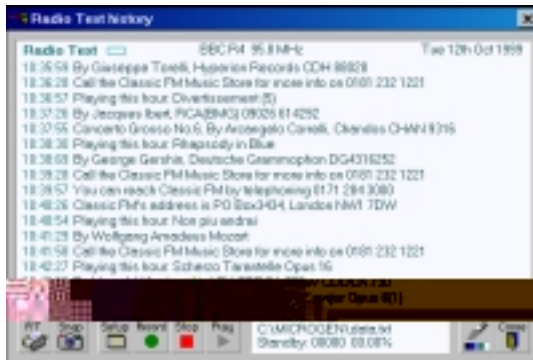
A continuous scrolling chart, displays frequency deviation. A user adjustable timebase, with a mean filter, can be applied to the signal.



### Multipath

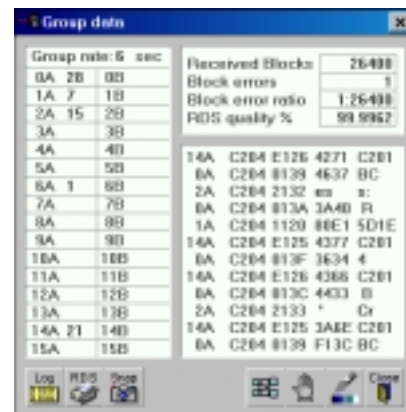
A Multipath menu is provided to set the peak filter time constant. The digital readout is the mean value taken from the peak filter. Alternatively, multipath can be displayed in XY format as shown above.

## RDS data



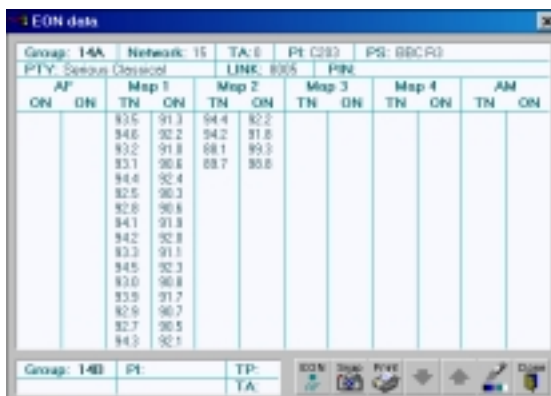
### RT history

16 previous RT messages are displayed in the RT window. These messages can be logged directly to hard disk. The number of messages can be set and they will be stored in ASCII text. These can be cut and pasted into any text file. Repeat messages can be ignored.



### Group data

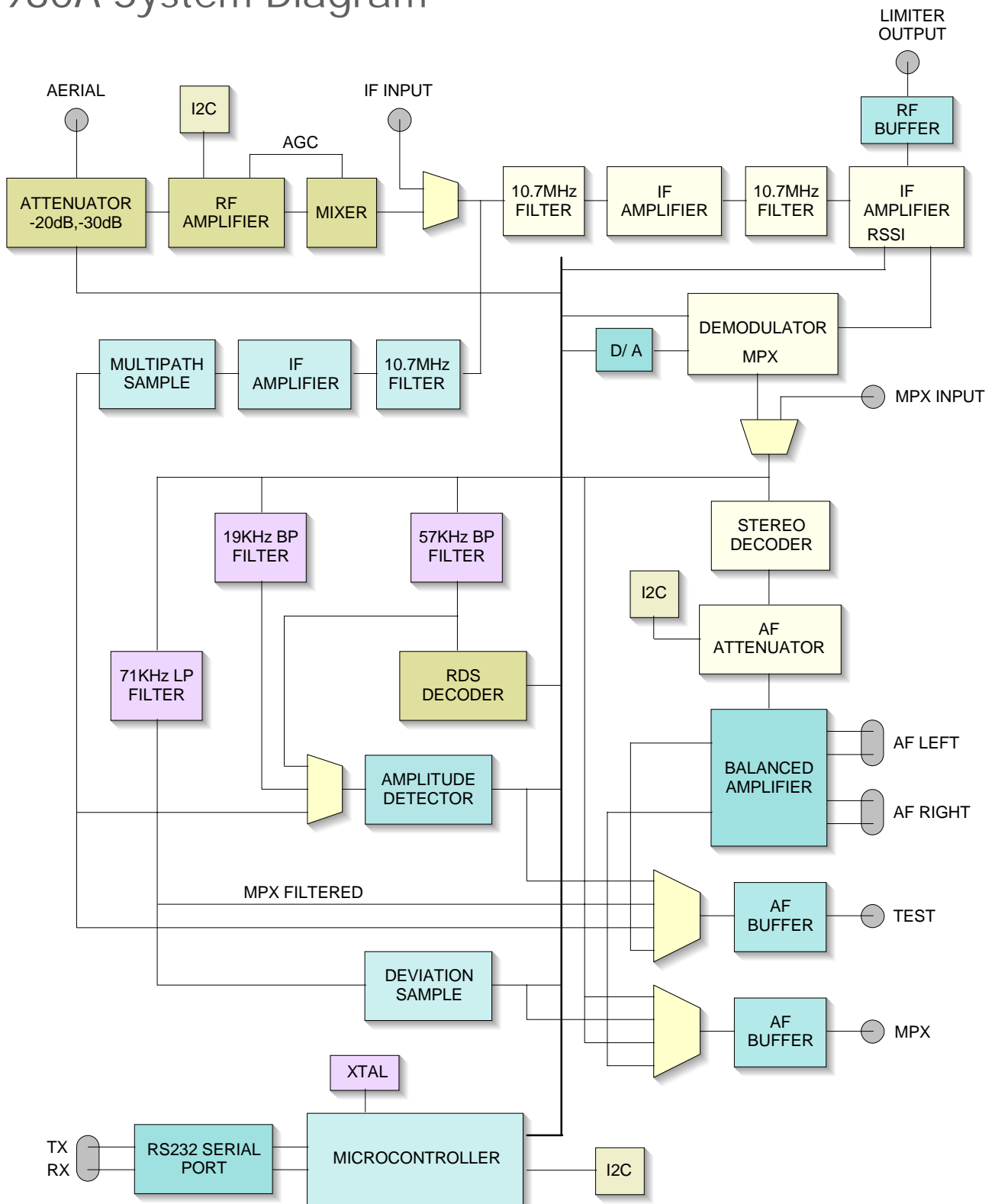
Undecoded continuous RDS data is displayed in this window. Group repetition rates are calculated over a sixty second period. RDS quality is given to four decimal places.



### EON data

A continuous update of EON data is available for all networks received. When all data has been captured, it can be stepped through for inspection, or printed out for hard copy.

## T980A System Diagram



## Specification

### Special features

Low noise dual-gate MOSFET front end. Double tuned RF stage. 4 stage 10.7MHz IF filter. Crystal synthesized tuning in 10KHz steps. RSSI signal strength display in 1.0 dB increments. Self calibrating discriminator. RISC microcontroller design. Internal I2C interface. Standard RS232C serial interface 4800 baud. Software supplied to run under Microsoft Windows95/98/Me. Requires a minimum of 486/66MHz with 8 Mbytes ram. Recommended Pentium 200 MHz with 16 Mbytes ram 2 Mbyte free hard disk space. Software supplied on CD disk.

### RS232C serial data to 9 pin 'D' type socket

Pin 2. Tx data out

Pin 3. Rx data in

Pin 5. GND

### DC power to 4pin DIN

Pin1 GND

Pin2 -

Pin3 +12 volts

Pin4 +12 volts (reverse polarity protected)

### Balanced Line/Loudspeaker output to 3pin XLR

Pin1 GND

Pin2 +ve output

Pin3 -ve output

### Headphones to 6.25 mm jack

35 to 600 ohm impedance

Tuner RF:	Typical
Frequency band	87.5-107.9 MHz
Input impedance	50 ohms
Noise Figure	5.5 dB
Image rejection	58 dB
IF rejection	87 dB
AM suppression	56 dB
RF bandwidth	1.7 MHz
IF bandwidth	240 kHz
Sensitivity	1.5 $\mu$ V
THD	0.2 %
Stereo separation	40 dB

Audio AF:	Value
Balanced line	4.0 volts RMS
LS class B into 8 ohms	4.0 watts
Digital volume/level	6 bit

Interface:	Type
Internal	I2C
Serial(half duplex)	4800 baud

Power requirements:	Typical
AC supply *	230 v
Standby power	8 w
Maximum power	15 w
DC supply	12 v
DC supply range	11 to 15 v
Quiescent current	350 mA
Maximum current	1000 mA

Connections:	Connector type
Aerial	BNC 50 ohm
Serial data	9 pin 'D' type
DC supply	4 pin DIN
Balanced audio	3 pin XLR
Loudspeaker	3 pin XLR
Headphone	6.25 mm jack

Hardware:	Dimensions
ABS enclosure **	290*200*62 mm
Weight	1100gm

\* To the supplied mains adaptor

\*\* Internally screened

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