

# TS9000A



## FM Broadcast Analyser

www.microgenelectronics.com

NAB2004 Radio World 'Cool Stuff' and The Radio Magazine 'Pick Hit' award winner

### FM Receiver and RDS/RBDS decoder:

- The TS9000A is a high performance FM receiver and Modulation Analyser providing Broadcast measurements of the band 87.5 to 107.9 MHz in 10kHz steps
- The USB port allows for on-site and mobile monitoring. The unit samples the Multiplex signal at 240kHz at 12bits precision, with all measurements and calculations performed by Windows software
- Modulation Power calculated with 32bit floating-point precision
- Full RDS/RBDS decoding, with 57KHz sub-carrier measurement and quality check

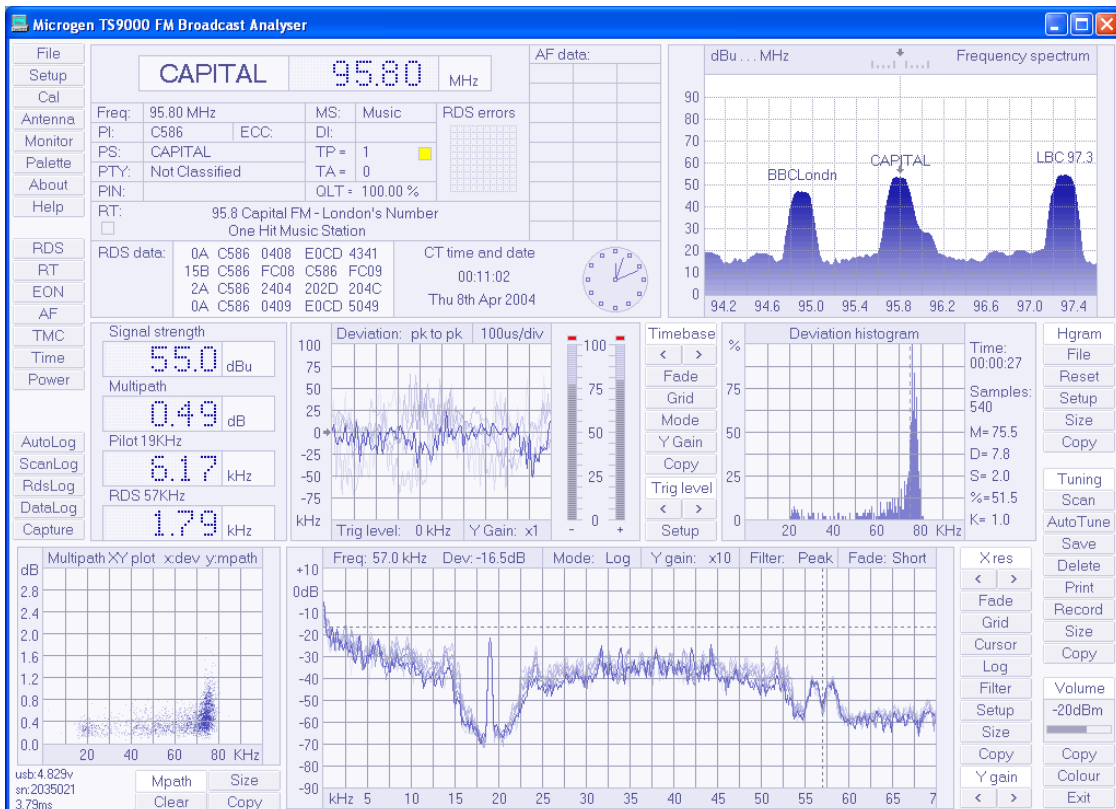


The new TS9000A featuring MultiSite monitoring



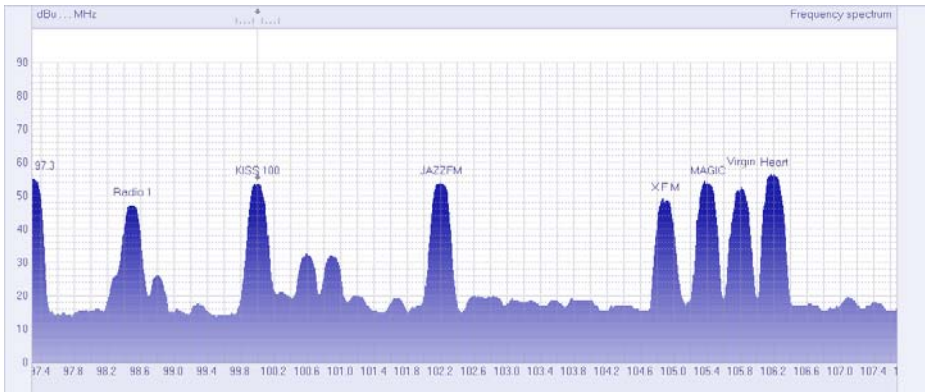
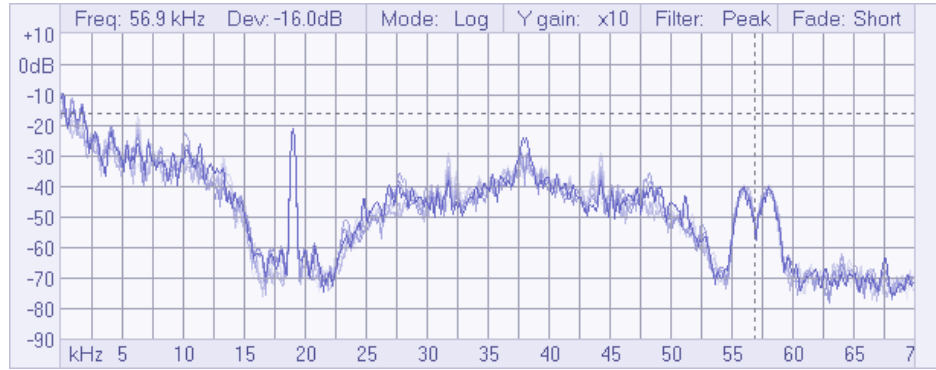
### FFT Spectrum Analyser:

- The unit includes a precision base-band FFT Spectrum Analyser covering 10Hz to 100kHz
- With a dynamic range of 90dB and a resolution of 20Hz, the unit can analyse the Multiplex signal or be used as a stand-alone audio analyser using the external BNC input
- The spectrum analyser window can be configured with a linear or logarithmic scale with full cursor measurement



## FFT SPECTRUM

- The FFT Spectrum Analyser covers the base-band from 10kHz to 100kHz with a dynamic range >90dB.
- Various sample windows can be applied i.e. Hanning, Hamming, Blackman-Harris etc, providing a versatile measuring instrument
- The spectrum showing is 10Hz to 70kHz of an 'off-air' FM multiplex signal. Note the L+R signal, the pilot at 19kHz and the L-R sidebands at 38kHz. The RDS sub-carrier is clearly visible at 57kHz.



## RF SPECTRUM

- The FM Broadcast frequency band can be scanned from 87.5 MHz to 107.9 MHz. This window can be resized to view any particular frequency. If the Radio station is transmitting it's PS name then this will be automatically displayed
- The AutoTune feature provides a completely automatic station search and save function
- Extensive logging, manual or automatic, with an alarm on error. An output signal is available on the EXP-TEST socket.

## TECHNICAL DATA

### Measurements:

Deviation: +100kHz to -100kHz  
 Modulation Power: -8dB to +12dB (0dB ref 19kHz)  
 Pilot 19kHz: dB or %  
 RDS carrier 57kHz: dB or %  
 Signal Strength: 85dBu range  
 Multipath: 4dBu range

### Multiplex signal accuracy:

A new IF equalization circuit ensures a flat frequency response, with a 4 pole Butterworth filter providing out of band suppression

Bandwidth: 20Hz to 80kHz < -0.4dB 100kHz < -1.5dB  
 Deviation: 0 to 75kHz < +/-1.5% (1kHz test sinusoid)

### RDS decoding:

Decoded groups: PI,PTY,PS,RT,CT,PIN,AF,TA,TP,DI,MS,EON

### Audio:

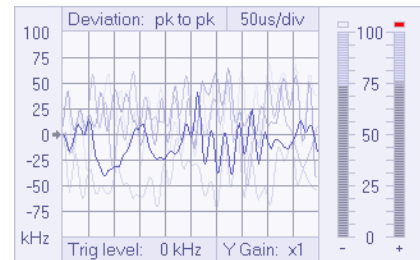
High quality stereo audio monitoring is provided via balanced outputs

Line output: -59dBm to +4dBm via XLR  
 Loudspeaker: 0.4 watt/channel  
 Headphone: 0dBm on 3.5mm jack

System parameters	Min	Typical	Max	Units
Bandwidth	87.5	-	107.95	MHz
Input impedance		50		ohms
Noise figure		5.5		dB
Sensitivity		3.5		uV
RSSI range	83	85		dB
Antenna attenuator		+/-1.0	+/-3.0	dB
Multipath range		4.0		dB
Pilot 19kHz range	18.95		19.05	kHz
RDS 57kHz range	55.5		58.5	kHz
THD		0.2	0.3	%
Stereo cross-talk	36	40		dB
Balanced line		1.0		v RMS
LS classB 8 ohms		0.4		watt
Digital volume		6		bit

- The Multiplex signal can be viewed in the time domain with an oscilloscope type display
- The time-base can be set from 10ms/div to 10us/div. The Y-axis has a x10 function. The trigger point can be user set or automatic
- The deviation window shows a typical trace with the positive and negative deviation bar graphs. These can also be set for absolute readings

## FREQUENCY DEVIATION



### Signal connections:

BNC Antenna input 50ohms  
 BNC IF input at 10.7MHz  
 BNC Analyser input 27K 0dBm (Multiplex in or Spectrum analyser)  
 BNC Multiplex output 50ohms 0dBm at 75kHz  
 XLR Audio left and right, balanced. Line or loudspeaker.  
 Jack 3.5mm for headphones or sound card driving  
 USB 1.1 and USB 2 compatible (Not suitable for non-powered hubs)

### System requirements:

TS9000A software runs under Windows98/2, Me, 2000 and XP. Minimum usable system: Windows98/2 running on a 300MHz Pentium/Athlon  
 Recommended system: Windows2000/XP 800MHz Pentium/Athlon