TES AMERICA

Design by TES America

Brochure

CONTENTS

INTRODUCTION

TAILOR MADE SOLUTION

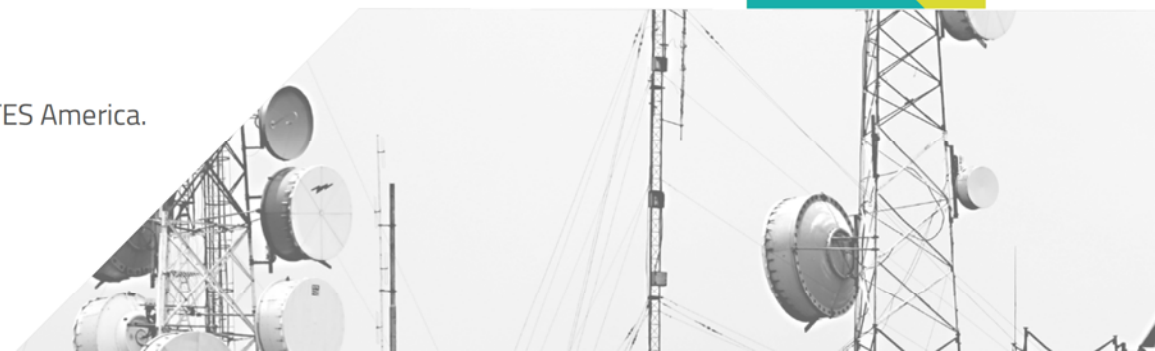
TES America launches a new generation of portable monitoring systems TESMonitor ZM, a high performance solution, easy deployment and operation, able to perform measurements in line with the International Telecommunication Union (ITU). At the same time allowing a nationwide monitoring network.

INNOVATION: SIMPLE AND ELEGANT

The new TESMonitor ZM combines the latest developments in software defined radio (SDR) with the advantages of super heterodyne spectrum analyzers, offering great portability and cost effective high specification system.

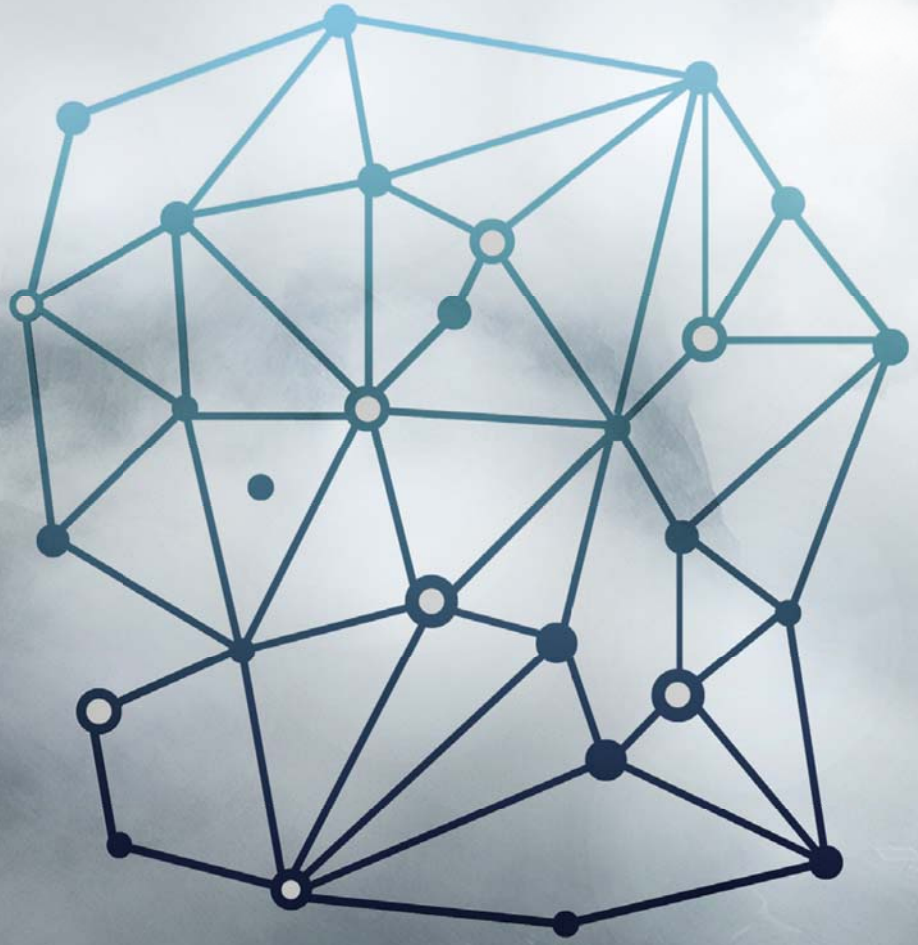
BENEFITS

- Allow to get done the spectrum inventory to one tenth of the cost and in half the time.
- Portability: easy transportation and deployment.
- Easy to operate and program.
- Works as Mobile or Fixed monitoring station.
- Allow to build up a nationwide monitoring network.
- Automatically generates statistical and graphical analysis.
- Allows measurements of spectrum occupancy.
- It can be controlled from a mobile device.
- It supports TESIntegra, a unified monitoring platform from TES America.



TESMonitor ZM portable system, easy to transport, deploy and operate, can measure and monitoring in line with the ITU.

MONITORING NETWORK



IoT

Once strategically placed several ZM , each node captures the information and initiates the measurement ; this information is sent to the main control center for display and analysis .

ALL MEASUREMENTS IN ONE SYSTEM

TES Monitor ZM performs the following measurements in line with the ITU

MEASUREMENTS (UIT-R SM.1392-2)		RECOMMENDATION	TASKS OF A MONITORING SERVICE (UIT-R SM.1050-2)
Frequency measurements		ITU-R SM.377 and SPECTRUM MONITORING HANDBOOK 2011 chapter 4.2	Matters relating to verification of the correct use of frequency assignments issued and of station characteristics
Bandwidth Measurements		UIT-R SM.443 and SPECTRUM MONITORING HANDBOOK 2011 chapter 4.5	Measurement of signal parameters and characteristics that may infringe on national or international standards or regulations
Field strength and power-flux density measurements		UIT-R SM.378 and SPECTRUM MONITORING HANDBOOK 2011 chapter 4.4	Field strength and power flux-density values to assist spectrum managers in verifying: – propagation or frequency assignment studies, – calculations of carrier-to-interference ratios, – sharing criteria, – interference prediction analyses, etc.
Modulation measurements	Modulation depth (AM)	SPECTRUM MONITORING HANDBOOK 2011 chapter 4.5 4.6.3.1 and 6.6.2.1	Measurement of signal parameters and characteristics that may infringe on national or international standards or regulations.
	Frequency deviation (FM)	UIT-R SM.1268 and SPECTRUM MONITORING HANDBOOK 2011 chapter 4.6.3.2 and 6.6.2.2	
Spectrum Occupancy Measurements		And SPECTRUM MONITORING HANDBOOK 2011 chapter 4.10 and UIT-R SM.1809 and UIT-R SM.1880	Determination of occupancy of frequency bands, within certain defined parameters.
Signal analysis and transmitter identification		UIT-R SM.1052 and SPECTRUM MONITORING HANDBOOK 2011 chapter 4.8	Assist in identifying sources of harmful interference. Identify Special technical characteristics for a particular type of service.
Direction finding and location determination.		UIT-R SM.854 and SPECTRUM MONITORING HANDBOOK 2011 chapter 4.7	Direction finding, position fixing or homing in order to locate sources of harmful interference or transmitting stations operating in non-compliance with national or international standards or regulations

TECHNICAL SPECIFICATIONS

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(RBW) Resolution bandwidth	10 Hz to 20 MHz (1-2-3-5 steps), -3 dB nom.
(VBW) Video bandwidth	0.2 Hz to 2 MHz (1-2-3-5 steps) or off VBW range = RBW/10 ... RBW/1000
Phase noise (SSB)	fc / df = 10 kHz / df =100kHz 57.5 MHz / ≤ -121 dBc/Hz / ≤ -126 dBc/Hz 2.1405 GHz / ≤ -92 dBc/Hz / ≤ -100 dBc/Hz 4.5005 GHz / ≤ -97 dBc/Hz / ≤ -100 dBc/Hz
Reference Frequency	Initial deviation < 1 ppm Aging < 1 ppm/year, < 5 ppm over 15 years Thermal drift < 1.5 ppm (-10 °C to +50 °C)
Filter Type	Gaussian
Filter Shape factor (-60 dB/ -3 dB)	<3.8 (typ.)
Sweep time (typ.), 50 MHz Span	ASCII: < 21 ms (@ RBW = 0.5 MHz, 201 bins) BINARY: < 17 ms (@ RBW = 0.5 MHz, 201 bins)
Sweep time (typ.), 1 GHz Span	ASCII: < 119 ms (@ RBW = 1 MHz, 2001 bins) BINARY: < 88 ms (@ RBW = 1 MHz, 2001 bins)
Sweep time (typ.), 6 GHz Span	ASCII: < 875 ms BINARY: < 500 ms (@ RBW = 0.5 MHz, 24001 bins)
Traces	ACT: Reads out the actual measured spectrum AVG: RMS averaging over a selectable number of spectra (4 to 256) or a selectable time period of 1 to 30 minutes MAX: Maximum hold function MAX_AVG: Maximum hold function after averaging MIN: Minimum hold function MIN_ AVG: Minimum hold function after averaging.

INTERFACE

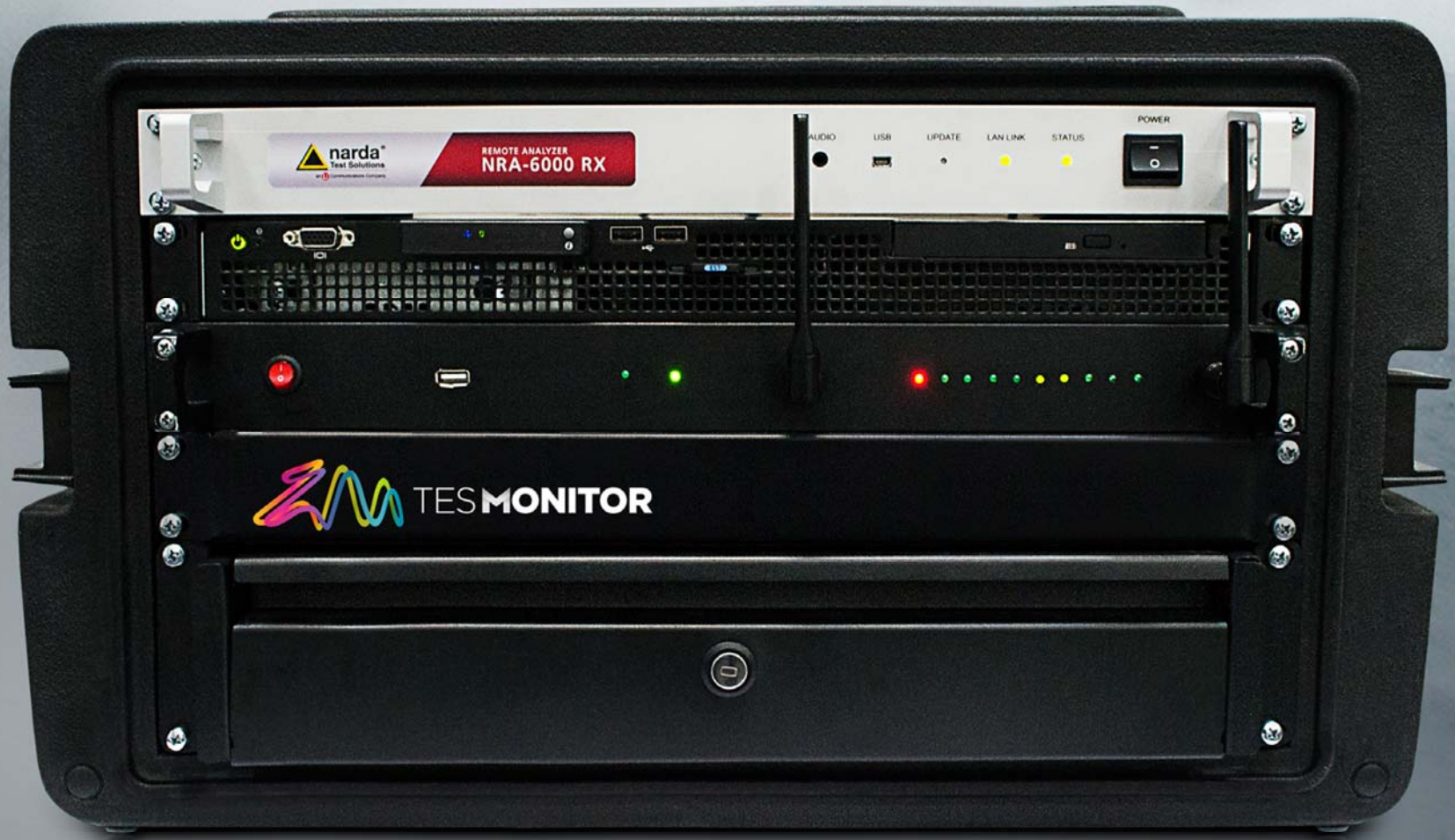
Remote access	ASCII based command sets, response in ASCII or fast Binary Mode (selectable).
Interface USB	USB mini B (USB 2.0) - for programming/debugging and updates.
Ethernet	Ethernet (100BaseT) - for measurement control.
Web server	Web applications "NRA Web Terminal" and "NRA Live Display Viewer" based on Java Applets and HTML. For web terminal Java "Version 7 Update 79" or previous version required.
Result units	Measurement results can be displayed in one of the following units: dBm, dBV, dBmV, dBuV

SPECIFICATIONS IN BRIEF AS SYSTEM

Frequency range	9 kHz to 6 GHz
RF switch	2 in: 1 out; scalable up to 8 in: 1 out. N connector
Dimensions W × H × D,	LAN, Wireless GSM/3G/4G, Wi-Fi, WLAN
Dimensiones (Ancho × Altura × Fondo)	60cm x 37cm x 57 cm (inch 23,6 x 14,6 37cm x 22,4 cm)
Weight	With full options 33kg
Antennas	-Omnidirectional 400 MHz to 4 GHz as option up to 6 GHz, in RF Switch input 1 -Omnidirectional 30 kHz to 2 GHz, in RF switch input 2
Hard case	With handle and wheels for easy transportatio

TESMONITOR ZM

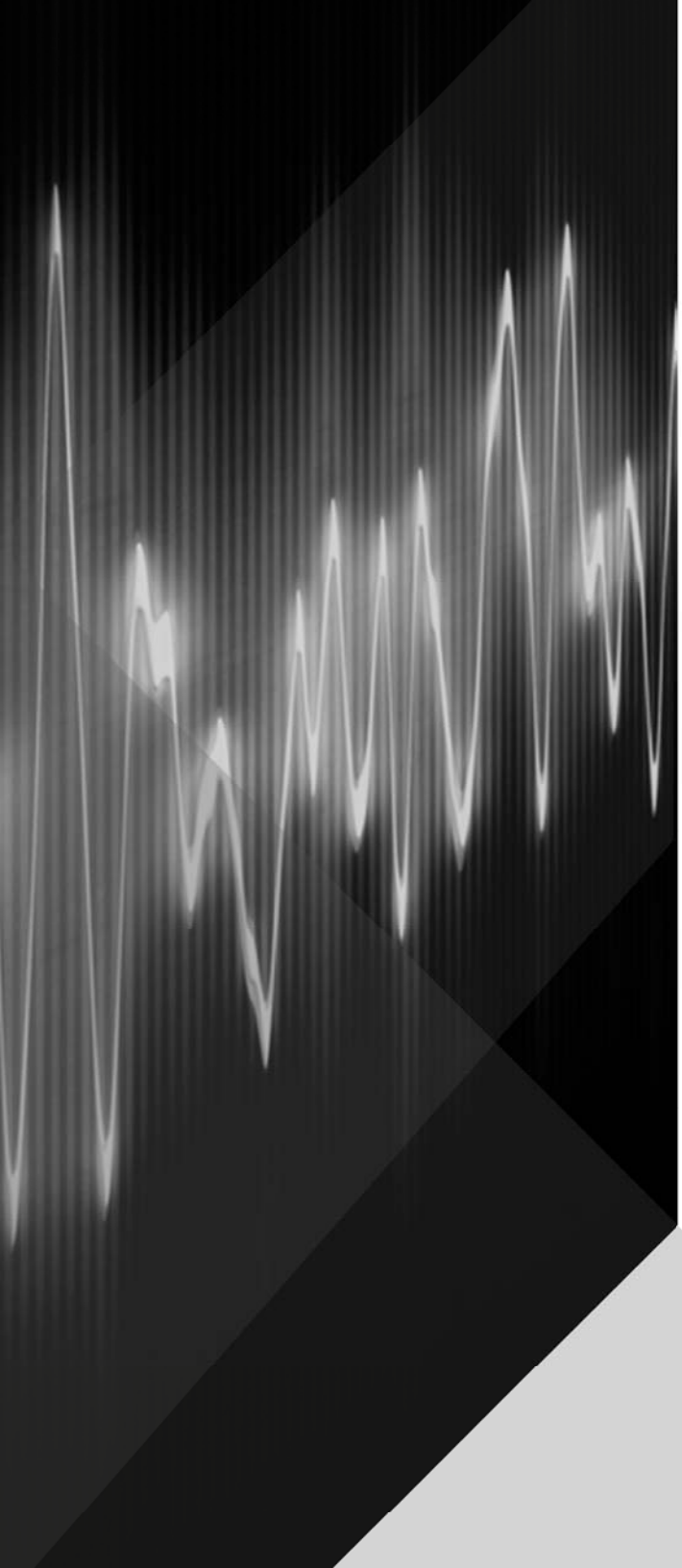

USB
UPDATE
LAN LINK
STATUS
POWER


narda
Test Solutions
REMOTE ANALYZER
NRA-6000 RX
AUDIO
USB
UPDATE
LAN LINK
STATUS
POWER
TESMONITOR

MULTI- CHANNEL POWER

3

Measurement Principle	Spectrum analysis, followed by Channel Power evaluation.
Number of Channels	1 to 500 channels can be defined in a channel list.
Channel Lists	Creation by remote commands or by PC configuration software (NRA Tools). User definable channel names (15 characters max.) can be assigned. <Others> summarizes results of all frequency gaps within the list of channels.
Channel bandwidth CBW (-3 dB nom.)	Individually selectable for each channel, from 40 Hz to 6 GHz.
Applied resolution bandwidth (RBW) (for filter specification see Spectrum Analysis)	AUTO: Each channel will be measured using a dedicated and automatically determined RBW setting. CBW / 4, (RBW ≤ 20 MHz) MANUAL: All channels will be measured using the same RBW. 10 Hz to 20 MHz (1-2-3-5 steps), (RBW ≤ CBW / 4) INDIVIDUAL: Each channel will be measured using a dedicated and manually defined RBW setting. Only available for <Others> = OFF
Detection	Root mean square value (RMS). The effective integration time is T ≈ 1 / RBW
Traces (separate result values for each channel)	ACT: Actual measured value AVG: RMS averaging over a selectable number of actual results (4 to 256) or a selectable time period of 1 to 30 minutes MAX: Maximum hold function MAX_AVG: Maximum hold function after averaging MIN: Minimum hold function MIN_ AVG: Minimum hold function after averaging



GENERAL SPECIFICATIONS

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EMC	European Union	Complies with EMC Directive 2014/30/EU (previously 2004/108/EC) and IEC/EN 61326-1: 2013
	Immunity	IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-11
	Emissions	IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CIS-PR 11) Class B
Safety		Complies with European Low Voltage Directive 2014/35/EU (previously 2006/95/EC) and IEC/EN 61010-1: 2010
Operating Temperature		-10 °C to +50 °C
Humidity		< 29 g/m³ (< 93 % RH at +30 °C), non-condensing
Weight		< 5 kg (11lbs)
Power consumption		< 20 W
Dimensions (W x H x D)		Standard EIA Rack Unit (1RU): 482 mm x 45 mm x 362 mm (19" x 1,75" x 14,3")
Recommended Calibration Interval		24 months

a) RF data apply in the temperature range of 20 °C to 26 °C and a relative humidity between 25 % and 75 %. Valid only for remote control using the Ethernet (100 BaseTx) interface.

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