FMT350(9KHz-3.1GHz)/FMT450(9KHz-4.4GHz)/FMT650(9KHz-6GHz) Series Handheld Spectrum Analyzer

1. Main Functions

1.1 Spectrum Analysis

Basic spectrum, channel power, harmonic analysis, occupied bandwidth, field strength, FM/AM, ACLR

1.2 Interference Analysis

Spectrogram, interference location, digital afterglow, RSSI, signal identification, differential spectrum, signal strength

1.3 Base Station Analysis

TDD-LTE/FDD-LTE/TD-SCDMA/EVDO/WCDMA/CDMA2000/GSM demodulation analysis

1.4 Drive Test Coverage

Indoor coverage, outdoor coverage, clear network, FDD-LTE coverage, TDD-LTE coverage

1.5 Channel Scan

1.6 Tracking Source

1.7 Power Meter

2. Product Features

2.1 Equipped with fast scan mode, the scan time can be set in the range of 10us-1000s, and the average noise level is -164dBm/Hz

2.2 One-click power measurement: channel power, occupied bandwidth, adjacent channel power, field strength measurement

2.3 Powerful interference analysis functions: spectrogram, signal strength, received signal strength indication, channel scanning, signal identification, differential spectrum, interference positioning (optional), digital afterglow

2.4 Supports demodulation analysis of mainstream wireless communication systems: FDD-LTE / TDD-LTE / WCDMA / HSDPA+ / TD-SCDMA / HSDPA+ / CDMA / EVDO / GSM / EDGE multiple demodulation modes (option)

2.5 Indoor and outdoor signal coverage and network clearing test (optional)

2.6 has 20MHz resolution bandwidth

2.7 It has time domain measurement function and can support video trigger, time slot trigger and external trigger.

2.8 Remote real-time control is possible, and data import and export are supported.

2.9 can provide 100KHz-3.1GHz/25MHz-6GHz tracking source (option)

2.10 Optional positioning antenna locking interference source device with GPS and electronic compass (optional)

2.11 The weight of the whole machine is less than 3KG, and the continuous use time under full power is more than 3.5 hours.

2.12 6.5-inch high-brightness LCD, suitable for operation under strong light in the field

3. Function Introduction

3.1 Digital Afterglow

It provides a more effective method for spectrum monitoring and troubleshooting interference than ordinary spectrum scanning, achieving seamless monitoring of signals, especially when capturing burst signals, discovering co-channel interference, applying interference while performing direction finding, etc. More advantages.

3.2 Spectral Chart Measurement

It can continuously record and detect changes in spectrum over time, which is very effective for analyzing intermittent and burst interference.

3.3 Signal Strength

By using a directional antenna, a buzzer function is built in. Determining the location based on the strength of the interference signal is especially effective for finding illegal privately installed repeaters in urban villages and densely built areas.

3.4 Interference Positioning

Using "Interference Location" can help you quickly find the location of the interference source. The instrument has a built-in map, and the optional directional antenna with GPS and electronic compass can lock the location of the current interference source.

3.5 Signal Recognition

Quickly identify the signal type in the current spectrum. Mainstream wireless communication systems can be identified. It can help users identify useful signals and interference signals in the spectrum.

3.6 Base Station Analysis and Measurement

Base station RF testing includes channel power, occupied bandwidth (OBW), adjacent channel leakage ratio (ACLR), spectrum emission mask (SEM) and power time (PVT) measurements.

3.7 Base Station Signal Demodulation Analysis

Measure FDD/TDD-LTE error vector magnitude (EVM), constellation diagram, resource block (RB) control channel power, uplink interference, co-channel interference and other tests.

3.8 The air interface test provides frequency scanner function, LTE signal demodulation coverage and LTE multi-antenna test.

3.9 Map Overlay Option

Provides indoor drive test, outdoor drive test and network clearing test functions.

4 Technical Specifications

Model	FMT350	FMT450	FMT650
Frequency Index			
Frequency Range	9KHz-3100MHz	9KHz-4400MHz	9KHz-6000MHz
Frequency Parameters			
Aging Degree	<±1 ×10-6/year		
Temperature Stability	<±0.5 ×10-6 (0 ~ 50)℃		
Frequency Counting Accuracy (SNR 25 dB, resolution bandwidth (RBW)/span = 0.01)			
Frequency Count	±1 ×10-6±1		
Frequency Resolution	1Hz		
Span	Zero Span		
	1KHz-3100MHz	1KHz-4400MHz	1KHz-6000MHz
Scan Time and Triggering Method			
Scan Time	20ms ~ 250s(≥200 Hz)； 10μs ~1000s(zero span)； 1ms~250s (quick scan mode)		
Time Accuracy	<±0.2%		
Trigger Mode	Free trigger; Video trigger; Time slot trigger; External trigger		
Resolution Bandwidth			
Range	1Hz ~ 3 MHz 10% step by step		
Resolution Wide Accuracy	<±10%		
Selective	(60dB/3dB bandwidth)： <5:1		
Video Bandwidth			
Range	1Hz ~ 3 MHz 10% step by step		

Spectrum Stability			
Phase Noise	**Typical < -105 dBc/Hz @ offset 100kHz** **Typical < -95 dBc/Hz @ offset 10 kHz** **Typical < -85 dBc/Hz @ offset 1 kHz**	**Typical < -110 dBc/Hz @ offset 100kHz** **Typical < -100 dBc/Hz @ offset 10 kHz** **Typical < -90 dBc/Hz @ offset 1 kHz**	**Typical < -110 dBc/Hz @ offset 100kHz** **Typical < -100 dBc/Hz @ offset 10 kHz** **Typical < -90 dBc/Hz @ offset 1 kHz**
Amplitude Index			
Range	**0dB-55dB**		
Step	**1dB**		
Preamplifier	**20dB**		
Maximum Safe Input Level	**+30dBm（Peak power/Entrance attenuation >15dB）；+50VDC**		
Third-order Intermodulation Interception Point	**Typical value > +15dBm**		
Average Noise Level (no signal input, 0dB attenuation, 100Hz RBW, normalized 1Hz, sampled value detection)			
Amplifier Off	**≤ -151dBm，1 MHz ～ 1GHz** **≤ -148dBm，1GHz ～ 3.1GHz**	**≤ -150dBm，2 MHz ～ 1GHz** **≤ -142dBm，1GHz ～ 3.0GHz** **≤ -142dBm，3.1GHz ～ 4.4GHz**	**≤ -150dBm，1 MHz ～ 1GHz** **≤ -140dBm，1GHz ～ 3GHz** **≤ -140dBm 3.1GHz ～ 6GHz**
Amplifier On	**≤ -161dBm，1 MHz ～ 1GHz** **≤ -158dBm，1GHz ～ 3.1GHz**	**≤ -165dBm，10 MHz ～ 1GHz** **≤ -160dBm，1GHz ～ 3.0GHz** **≤ -158dBm，3.1GHz ～ 4.4GHz**	**≤ -162dBm，1 MHz ～ 1GHz** **≤ -158dBm，1GHz ～ 3GHz** **≤ -152dBm，3.1GHz ～ 6GHz**
Spurious Signal Response Range			
Second Harmonic Suppression	**<-70 dBc -20dBm mono mixer input, amplifier off**		
Third Order Intermodulation	**<-70 dBc -20dBm Dual mono mixer inputs, ≥ 1MHz between signals, amplifier off**		
Remaining Responses	**≤ -85dBm 1MHz ~ 6000MHz (no signal input, attenuator is 0)**		
Reference Level Range			
Logarithmic Scale	**0.1 -0.9 dB/div, 0.1dB step**		
	1-40dB/div, 1dB step		
Number of Rasters	**10 squares**		
Unit	**dBm， dBmV， dBμV， mV**		
Frequency Scale Reading Resolution	**0.03 dB log; 0.03% linear**		
Trajectory	**6 items**		
Detection Mode	**Sample value/positive peak value/negative peak value/average value/root mean square/quasi-peak value/normal value**		
Frequency Mark Function	**Peak, Next Peak, Marker to Center, Marker to Reference, etc.**		
Frequency Mark Display	**Normal, difference frequency scale, fixed frequency scale, frequency count, frequency scale noise, difference noise**		
Reference Level Range	**-167 dBm ～ +35dBm**		
Level Accuracy	**Typical Value ≤ ± 0.5dB@+25 ± 5 ℃**		

Resolution Bandwidth Switching Accuracy	Typical Value <0.1dB		
Attenuator Switching Accuracy	Typical Value <0.3dB		
Input and Output Indicators			
Input Interface	N type		
Input Resistance	50Ω		
Standing Wave Ratio	Typical value <1.8 (10MHz~3100MHz, attenuator setting ≥ 10dB)	Typical value <1.8 (10MHz~4400MHz, attenuator ≥ 10dB)	Typical value <1.8 (10MHz~6000MHz, attenuator ≥ 10dB)
USB Interface	1 USB2.0，1 mini USB		
LAN	10M/100M Adaptive		
Tracking Generator			
RF Input Interface	N Type		
Output Interface Impedance	50Ω		
Standing Wave Ratio	< 2.0		
Output Frequency Range	100kHz ～ 3100MHz	25MHz ~ 4400MHz	25MHz ~ 6000MHz
Frequency Stability	±2ppm		
Output Level Frequency Range	-30dBm ～ 0dBm		
Operating Mode	Dot frequency / Sweep frequency		
Level Resolution	1dB		
Level Accuracy	±1.5dB	±2dB	
Harmonic Distortion	-20dBc		
Non-harmonic Distortion	-30dBc		
Power Indicators			
Battery	Lithium battery 11.1V / 5.2Ah rechargeable		
Adapter	19V /3.42A		
Charging Time	>4.5 hours		
Continuous Use Time Under Full Power	>3.5 hours; >3.0 hours (with tracking source option)	>3.0 hours; >2.5 hours (with tracking source option)	>3.0 hours; >2.5 hours (with tracking source option)
Other Indicators			
Operating Temperature	-10°C ~ +55°C		
Stored Temperature	-40°C ~ +80°C		
Volume (Bare metal)	257mm × 75mm × 185mm		
Weight	<3kg		
Display	6.5-inch TFT color LCD		
Display Resolution	640 x 480		
LTE Demodulation Analysis Indicators			
Frequency Range		10 MHz ~ 4400MHz	10MHz~6000MHz
Bandwidth		1.4MHz，3MHz，5MHz，10MHz，15MHz，20 MHz	
EVM Mode		BTS mode (RS/P-SS/S-SS/PDSCH), OTA mode (RS)	
Test Information Summary		RF measurements, modulated signal quality, all measurement information	
RF Measurement Accuracy		± 1.0 dB typical (input range –50 dBm ~ +10	

		dBm) LTE-FDD
		± 1.0 dB typical (input range –30 dBm ~ +10 dBm) LTE-TDD
Modem Measurements		
Frequency Deviation		± 10 Hz + Reference clock deviation
EVM (Root Mean Square) Accuracy FDD-LTE		2.0% typical (E-UTRA Test Model 3.1, input range –50 dBm ~ +10 dBm)
EVM (Root Mean Square) Accuracy TDD-LTE		2.0% typical (E-UTRA Test Model 3.1, input range –50 dBm ~ +10 dBm)
Air Interface Measurement		
Signal Scan		Scan up to 6 strongest cells
		Measure S-SS, RSRP, RSRQ, SINR
		Automatically saves GPS information, SS power and modulation measurements
Multiple Antenna Testing		Support MIMO 2X2, 4X4
		Display RS power and multi-antenna delay
TDD/FDD-LTE map coverage test		Can scan PCI, SS power, RSRP, RSRQ and other information of the strongest cell
		Measurement data can be exported to KML format and CSV format