Quality&**Precise**

MAXWELLON TW4401

10MHz~13.5GHz/26.5GHz/43.5GHz/50GHz/67GHz

Microwave Multifunctional Analyzer

2023

Maxwellon

Maxwellon TW4401 series Microwave Multifunctional Analyzer has the wide frequency range from 30kHz to 18GHz/26.5GHz/40GHz. It integrates multiple functions such as dual-port vector network analysis, cable and antenna feeder test, vector voltage measurement, spectrum analysis,field strength measurement power measurement, providing you with powerful comprehensive test capabilities. TW4401 series microwave analyzer is widely used in the radar performance test and cable TV, wireless communication field.

Key Feature

- **Dual-port vector network analysis** can make comprehensive RF network parameters measurement quickly and accurately, providing logarithmic, linear, phase, group delay, impedance chart, polar coordinate, SWR and other display formats, and providing time domain measurement options.
- **Cable and antenna feeder** test can measure the SWR, return loss, impedance, cable loss and other parameters of microwave networks such as antenna feeders, transmission lines and cables, and can conveniently measure impedance discontinuity points in feeders and cables, with DTF function.
- **Vector voltage measurement** adopts an integrated solution instead of the traditional vector voltmeter to accurately test the electrical length of cables and some other devices under test.
- **Spectrum analysis** is a spectrum analyzer with standard functions, which can measure the spectrum characteristics comprehensively in an electromagnetic environment.
- **Field strength measurement** has a friendly user interface and high test sensitivity. With the corresponding test antenna, it can effectively monitor the electromagnetic spectrum and is widely used in space electromagnetic environment monitoring and radio management.
- **USB power sensor** is configured to achieve large dynamic range and high-precision power measurement, and can also carry out power monitoring through the spectrum input port.
- Data storage, playback and comparison functions
- Intergrate USB, LAN and other interfaces

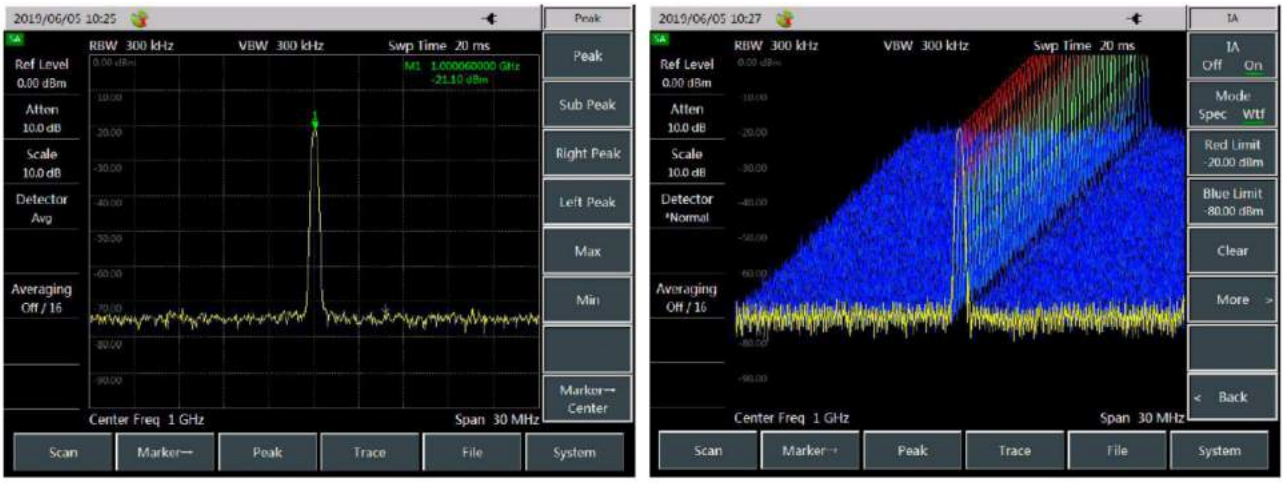
Features To Boost Your Efficiency

1. Network Parameter Measurement

With the frequency range of network analysis of 30kHz - 18GHz/ 26.5GHz and 50MHz- 40GHz, TW4401D/E/F microwave analyzers can realize standard vector network analysis and measurement of full 4S parameters, and can test full S parameters of amplifier, filter, attenuator, duplexer and other devices, providing logarithmic, linear, phase, group delay, impedance, polar coordinate, SWR and other display formats.

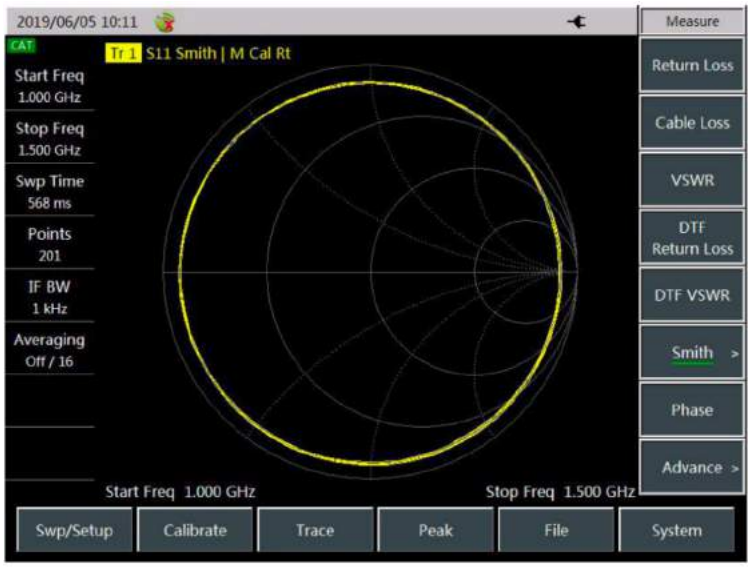
2. Spectrum Analysis

With the frequency range of the spectrum analysis function (spectrum analysis, field strength, channel power, occupied bandwidth, adjacent channel power ratio, interference analysis, frequency counting) of 100kHz - 18GHz/26.5GHz/40GHz, TW4401D/E/F microwave analyzers have such features as wide frequency band, high sensitivity, wide dynamic range and good phase noise, can realize fast and efficient signal detection and measurement, can display three traces at the same time, have different optional detector modes such as standard, sample, positive peak, negative peak and mean, and have interference analysis, spectrogram, waterfall plot, data recording and playback functions.



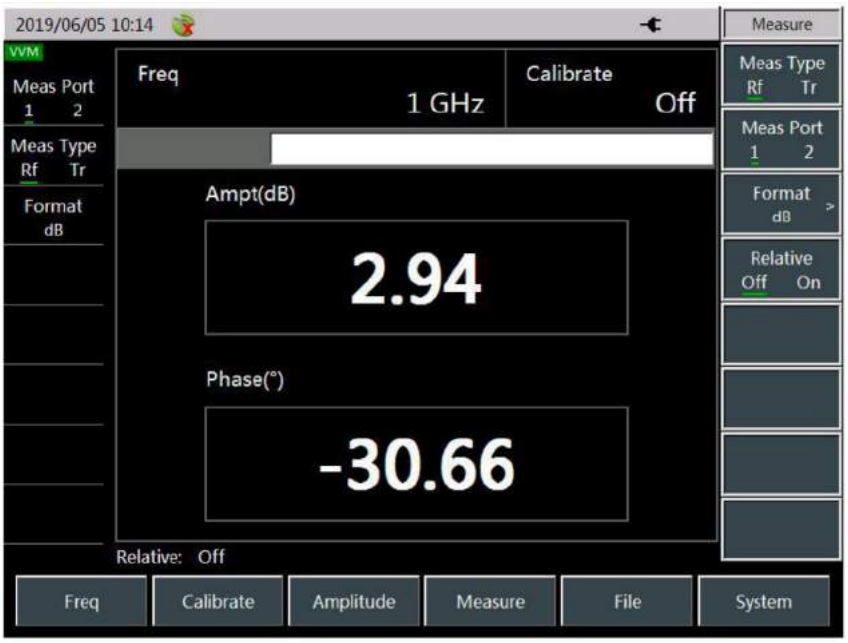
3. Cable and Antenna Test

As cable and antenna feeder testers, TW4401D/E/F microwave analyzers can be used to measure the return loss, VSWR, impedance, cable loss and distance to fault of cables, feeders and other devices under test. The measurement of return loss and distance to fault will help you determine the specific cause of performance degradation of the overall system in the cable and antenna feeder system. In addition, some common cable and feeder parameters are built in for convenient use.



4. Vector Voltage Measurement (Option)

With the frequency range of vector voltage measurement of 30kHz - 18GHz/26.5GHz and 50MHz - 26.5GHz, TW4401D/E/F microwave analyzers can accurately measure the electrical length and phase shift of devices under test, and can perform reflection and transmission test.



5. Power Measurement Based on USB Power Sensor (Option)

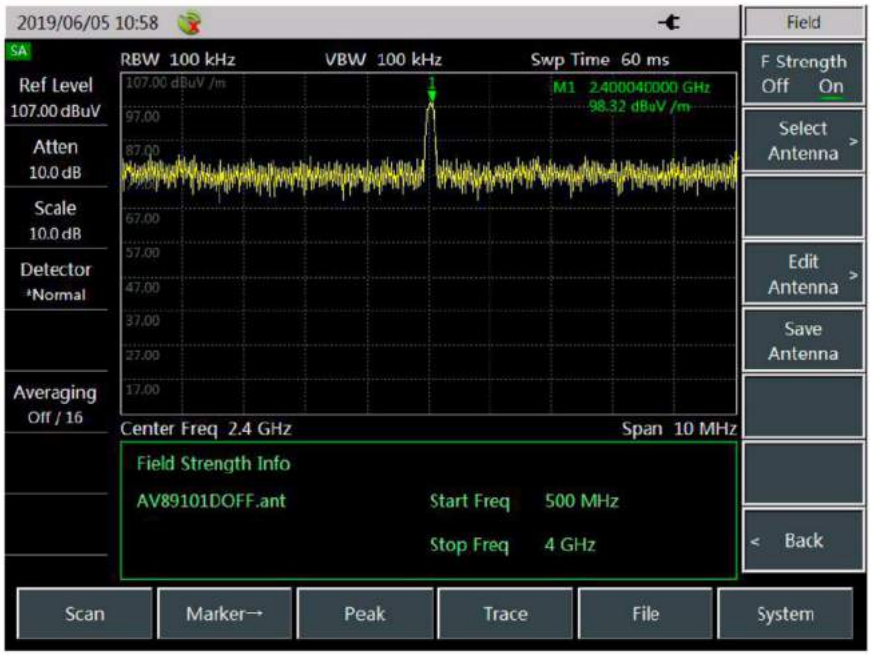
TW4401D/E/F microwave analyzers can use S8723X series USB Continuous Wave Power Sensors of Maxwellon to measure power, and can test RF/microwave power up to 40GHz.

6. Power Monitoring (Option)

TW4401D/E/F microwave analyzers can also carry out power monitoring and measurement through the spectrum input port, with frequency range of 100kHz - 18GHz/26.5GHz/40GHz.

7. Field Strength Measurement (Option)

TW4401D/E/F microwave analyzers can also be used for field strength measurement together with the corresponding test antennas, and are widely used in space electromagnetic environment monitoring and radio management. The testers support user antennas, allowing users to define their own antennas.



8. Supporting List Sweep

In addition to frequency sweeping, spectrum analysis, antenna feeder test and network analysis also support list sweep. Parameters in each band are independent.

9. Supporting Upper and Lower Limit Lines

Spectrum analysis, antenna feeder test and network analysis support the limit line test. The limit line can be used as a visual reference, and can also be used as the basis for PASS/FAIL judgment. If the test data exceed the upper limit line or fall below the lower limit line, the loudspeaker will sound "dripping" to remind the user that the data have exceeded the limit line.

10. Sleep Energy-saving Function

The analyzer has a sleep energy-saving function, and the sleep time can be set. When the sleep function is activated, the testers will automatically turn off the display or shut down if they are not operated for a certain period of time, thus saving electric energy and effectively extending the working time and service life of battery.

11. More Cursors

Six independent cursors are provided, which can display the parameters of the cursor position and can also search for maximum, minimum or peak values. All cursors have the △ mode, making the test reading easier. In addition, the scale on the left side of the display can facilitate the judgment of the test results.

12. Automatic Software Upgrade of USB Disk

TW4401D/E/F analyzers have USB interfaces that can be used for intelligent software upgrade and data backup. You can easily use the USB disk to perform software upgrade and maintenance on the instrument. It takes only a few steps and is simple and quick. You can restart the instrument after the upgrade.

Applications

TW4401D/E/F microwave analyzers are compact and portable. With many test parameters and comprehensive test functions, they are very suitable for multi-parameter test occasions, and can be battery-powered. As a powerful tool for field engineering installation, debugging, daily maintenance and repair of various microwave electronics, the testers can be widely used in various fields such as radar, communication, radio & television and radio management, and are also a good choice for teaching in colleges and universities.

Test of Main Performance Parameters of Radar

With full functions, TW4401D/E/F analyzers can test the main performance parameters of radar antenna feeder, transmitting/receiving subsystem and other subsystems up to18GHz/26.5GHz/40GHz, including the SWR, reflectance, insertion loss, return loss and impedance characteristics of antenna feeder subsystem, the transmitting signal frequency and spectrum characteristics of transmitting subsystem, and the center frequency, gain, differential loss, bandwidth and dynamic range of receiving subsystem.

Multi-parameter Test in Such Fields as Cable TV and Wireless Communication

Cable TV, cellular telephone system, digital mobile communication operators and equipment manufacturers use TW4401D/E/F testers to perform integrated test on spectrum distribution, antenna feeder contact performance, S parameters of components and parts and feedthrough power in the field.

Specification

Vector Network Analysis(Standard Configuration)	
Frequency Range	TW4401D: 30 kHz to 18 GHz, TW4401E: 30 kHz to 26.5 GHz, TW4401F: 50 MHz to 40 GHz
Frequency Accuracy	$\pm 1\times 10^{-6}$
Power Range	Big, small, manual
Output power accuracy	TW4401D:±2.5dB, 10MHz~18GHz TW4401E:±2.5dB, 10MHz~26.5GHz TW4401F:±2.5dB, 10MHz~26.5GHz; ±3.0dB 26.5GHz~40GHz
Effective Source Match	TW4401D: ≥37 dB 2MHz~500MHz ≥30 dB 500MHz~9GHz ≥28 dB 9GHz~18GHz TW4401E: ≥37 dB 2MHz~500MHz ≥30 dB 500MHz~9GHz ≥28 dB 9GHz~18GHz ≥25dB 18GHz~26.5GHz TW4401F: ≥30 dB 50MHz~500MHz ≥25 dB 500MHz~18GHz ≥22 dB 18GHz~26.5GHz ≥18dB 26.5GHz~40GHz
Transmission Tracking	TW4401D: ±0.25dB 2MHz~500MHz ±0.29dB 500MHz~9GHz ±0.33dB 9GHz~18GHz TW4401E: ±0.25dB 2MHz~500MHz ±0.29dB 500MHz~9GHz ±0.33dB 9GHz~18GHz ±0.35dB 18GHz~26.5GHz TW4401F: ±0.25dB 50MHz~500MHz ±0.29dB 500MHz~9GHz ±0.33dB 9GHz~18GHz ±0.35dB 18GHz~26.5GHz ±0.40dB 26.5GHz~33GHz ±0.50dB 26.5GHz~40GHz
Reflection tracking	TW4401D: ±0.10dB 2MHz~500MHz ±0.13dB 500MHz~9GHz ±0.14dB 9GHz~18GHz TW4401E: ±0.10dB 2MHz~500MHz ±0.13dB 500MHz~9GHz ±0.14dB 9GHz~18GHz ±0.21dB 18GHz~26.5GHz TW4401F: ±0.10dB 50MHz~500MHz ±0.13dB 500MHz~9GHz ±0.14dB 9GHz~18GHz ±0.21dB 18GHz~26.5GHz ±0.25dB 26.5GHz~33GHz ±0.30dB 33GHz~40GHz

Vector Network Analysis(Standard Configuration)	
System dynamic range	TW4401D: ≥85 dB 2MHz~18GHz TW4401E: ≥85 dB 2MHz~18GHz ≥80 dB 18GHz~26.5GHz TW4401F: ≥85 dB 50MHz~18GHz ≥80 dB 18GHz~26.5GHz ≥75 dB 26.5GHz~33GHz ≥65 dB 33GHz~40GHz
Effective Directivity	TW4401D: 32dB – 40dB, TW4401E: 30dB – 40dB, TW4401F: 28dB – 35dB
Spectrum Analysis(Standard Configuration)	
Frequency Range	TW4401D: 100 kHz to 18 GHz, TW4401E: 100 kHz to 26.5 GHz, TW4401F: 100 kHz to 40 GHz
Resolution Bandwidth	1Hz – 5MHz (step by 1,3,10)
Video Bandwidth	1Hz – 5MHz (step by 1,3,10)
Displayed Average Noise Level (Preamplifier On)	TW4401D: -140dBm to -151dBm, TW4401E: -138dBm to -151dBm, TW4401F: -135dBm to -151dBm
Displayed Average Noise Level (Preamplifier Off)	TW4401D: -120dBm to -135dBm, TW4401E: -116dBm to -135dBm, TW4401F: -113dBm to -135dBm
Noise Sideband (CF=1GHz)	≤ -99dBc/Hz@100kHz ≤ -110dBc/Hz@1MHz
Total absolute amplitude accuracy	TW4401D: ±2.0dB 10MHz~18GHz TW4401E: ±2.0dB 10MHz~18GHz ±2.3dB 18GHz~26.5GHz TW4401F: ±2.0dB 10MHz~18GHz ±2.3dB 18GHz~26.5GHz ±2.7dB 26.5GHz~40GHz
Residual Response	TW4401D: ≤-80dBm, TW4401E: ≤-80dBm, TW4401F: ≤-70dBm
Max. Safety Input Level	+27dBm
Cable & Antenna Feeder Test(Optional)	
Frequency Range	TW4401D: 30 kHz to 18 GHz, TW4401E: 30 kHz to 26.5 GHz, TW4401F: 50 MHz to 40 GHz
Frequency Accuracy	$\pm 1\times10^{-6}$
Power Level	Big, small
Data Points	11 – 10001
Effective Directivity	TW4401D: 32dB – 40dB, TW4401E: 30dB – 40dB, TW4401F: 28dB – 35dB
Power Monitoring(Optional)	
Frequency Range	TW4401D: 100 kHz to 18 GHz, TW4401E: 100 kHz to 26.5 GHz, TW4401F: 100 kHz to 40 GHz
Power Range	TW4401D: -60dBm to +20dBm, TW4401E: -60dBm to +20dBm, TW4401F: -50dBm to +20dBm

General Specificaitons	
Test Port	TW4401D: Type-N (f) TW4401E: 3.5mm (m) TW4401F: 2.4mm (m)
Power Supply	Rechargable lithium-ion battery or power adapter
Dimension	315mm × 220mm × 102mm (excluding the handle and bracket)
Weight	5.3kg (excluding battery)

Ordering Infroamtion

Model

Part No.	Name	Description
TW4401D	Microwave Multifunctional Analyzer	100 kHz / 30 kHz to 18 GHz
TW4401E	Microwave Multifunctional Analyzer	100 kHz / 30 kHz to 26.5 GHz
TW4401F	Microwave Multifunctional Analyzer	100 kHz / 50 MHz to 40 GHz

Options

Part No.	Name	Description
TW4401-H01	Rechargeable Lithium-ion Battery	Backup
TW4401-H02	AC-DC Adapter	Backup
TW4401-H04	M31101A N-type Male Calibration Kit	DC - 18GHz, Calibrate for vector network analysis, antenna test and vector
TW4401-H05	S31101B N-type Female Calibration Kit	DC - 18GHz, Calibrate for vector network analysis, antenna test and vector
TW4401-H06	M 31121 3.5mm Calibration Kit	DC - 26.5GHz, Calibrate for vector network analysis, antenna test and vector
TW4401-H07	M 31123 2.4mm Calibration Kit	DC - 40GHz, Calibrate for vector network analysis, antenna test and vector
TW4401-H08	N (M-M) Calibration Cable	Calibration or Cable test
TW4401-H09	N (F-M) Calibration Cable	Calibration or Cable test
TW4401-H10	3.5mm (F-F) Calibration Cable	Calibration or Cable test
TW4401-H12	2.4mm (F-F) Calibration Cable	Calibration or Cable test
TW4401-H13	2.4mm (F-M) Calibration Cable	Calibration or Cable test
TW4401-H14	M 87230 USB Power Sensor	9kHz - 6GHz, For high-precision power measurement
TW4401-H15	M 87231 USB Power Sensor	10MHz - 18GHz, For high-precision power measurement
TW4401-H16	M 87232 USB Power Sensor	50MHz - 26.5GHz, For high-precision power measurement
TW4401-H17	M 87233 USB Power Sensor	50MHz - 40GHz, For high-precision power measurement
TW4401-H18	M 89101A Antenna	10kHz - 20MHz, For Field Strength Measurement
TW4401-H19	M 89101B Antenna	20MHz - 200MHz, For Field Strength Measurement
TW4401-H20	M 89101C Antenna	200MHz - 500MHz, For Field Strength Measurement
TW4401-H21	M 89101D Antenna	500MHz - 4000MHz, For Field Strength Measurement
TW4401-H22	M 89901 Antenna	1GHz - 18GHz, For Field Strength Measurement
TW4401-H23	M 89401 Antenna Amplifier	10kHz - 4GHz, For Field Strength Measurement
TW4401-H24	M 71522D Attenuator	(40dB,25W), For high power measurement
TW4401-H25	M 71523C Attenuator	(40dB,50W), For high power measurement
TW4401-H26	M 71524C Attenuator	(40dB,100W), For high power measurement
TW4401-H27	M 71101 Adapter	N(F)-N(F), For switching between connectors
TW4401-H28	M 71115 Adapter	3.5mm(M)-N(F), For switching between connectors
TW4401-H29	M 71116 Adapter	3.5mm(M)-N(M), For switching between connectors
TW4401-H30	M 71117 Adapter	3.5mm(F)-N(M), For switching between connectors
TW4401-H31	M 81101 Adapter	N(M)-N(F), For switching between connectors

Part No.	Name	Description
TW4401-H32	Soft Backpack	For carrying
TW4401-H33	Aluminum Carrying Case	For transportation
TW4401-H34	Waterproof Safety Box	For transportation
TW4401-H35	M 89901 Antenna Handle	Used with option H22 antenna
TW4401-H36	20402 Electronic Calibration Kit	300kHz~18GHz
TW4401-H37	20403 Electronic Calibration Kit	10MHz~26.5GHz
TW4401-H38	20404 Electronic Calibration Kit	10MHz~50GHz
TW4401-H39	87302FZ Flexible Test Cable	3.5/3.5-KK Test Cable(0.6m)
TW4401-H40	87302FE Flexible Test Cable	3.5/3.5-KJ Test Cable(0.6m)
TW4401-H41	87302AZ Flexible Test Cable	N/N-JJ Test Cable(0.6m)
TW4401-H42	87302BA Flexible Test Cable	N/N-KJ Test Cable(0.6m)
TW4401-H43	87234D USB peak/average power meter	50MHz~18GHz, For peak power measurement
TW4401-H44	87234E USB peak/average power meter	50MHz~26.5GHz, For peak power measurement
TW4401-H45	87234F USB peak/average power meter	50MHz~40GHz, For peak power measurement
TW4401-S02	Antenna Test	For testing RL, VSWR, Breakpoint of cable and antenna
TW4401-S03	Vector Voltmeter	For testing cable phase shift and electrical length
TW4401-S04	USB Power Measurement	External USB power probes can conduct precise measurement of continuous wave signal (need additional USB power sensors)
TW4401-S05	Power Detection	Receiving external signal at spectrum input port in order to measure signal power
TW4401-S06	Field Strength Measurement	Measure the field strength with the corresponding antenna (need additional antenna)
TW4401-S07	GPS Positioning	Provide geographical information such as longitude, latitude and altitude (including GPS antenna)
TW4401-S08	Electronic calibration	Used for calibration of vector network analyzers, antenna feeder tests, vector voltmeters, etc. (software, additional electronic calibration parts are required)

Maxwellon Electronic Instruments Co.,LTD.

Factory: No.6 XiangJiang Road, Qingdao 266000, China
Tel: 0086 13816527810

Sales Office: NO.153 Zhuzhou Rd.,Laoshan District, Qingdao 266100, China.
Tel: 0086-532-80977508
Fax: 0086-532-80977508

Sales: Sales@Maxwellon.com
Web: www.maxwellon.com