MODEL MP5000

Introduction

The MP5000 deploys state-of-the-art Software Designed Radio (SDR) architecture that consists of full extendibility to all current and future Wi-Fi / Bluetooth standards. By upgrading firmware and hardware, it will be capable to support LTE and other wireless standards in the future.

The MP5000 contains high quality VSA (Vector Signal Analyzer) & VSG (Vector Signal Generator) to provide a complete and versatile test environment. A highly integrated GUI is both intuitive and user-friendly which can run simple test of Wi-Fi / Bluetooth signal within few clicks. Supported measurement items include EVM, power, frequency error, IQ imbalance, 20dB Bandwidth, FM Demodulator Output, etc.

MP5500 comes with fully programmed test waveforms for Wi-Fi 802.11a/b/g/n/ac & Bluetooth V.1.x/2.x/3.x EDR/4.xBLE/5.0 allowing immediate testing for DUTs. Moreover, a built-in waveform generator utility allows users to establish arbitrary Wi-Fi / Bluetooth test signals. Automatic mass production turnkey software is also available upon request.

Features

- Software defined radio architecture of extensibility to future wireless standards
- Wi-Fi 802.11 ac/ax, a/b/g/n, p/af/ah
- Bluetooth v1.x/v2.x/v3.x/v4.x/v5.0
- Zigbee/Z-Wave/DECT
- User friendly GUI for R&D/QA applications
- API for production automation programming
- Turn-key production automation software support upon request



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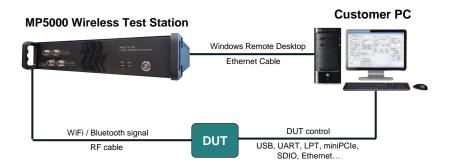
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Wireless Test Station



MP5000 R&D Graphic Program

MP5000 Full Test Setup for R&D/QA



MP5000 is a Windows-based industrial computer. GUI application that runs on MP5000 is accessible to a user who applies Windows Remote Desktop from a separate customer PC. This customer PC requires no additional software installation.

MP5000 Automated Test Setup for Mass Production

MP5000 WLAN Tester **Ethernet Cable** RF cable Combiner Combiner Combiner Combiner MP5000 Manufacture Automation AP DUT 2 AP DUT 3 AP DUT 4 AP DUT 1 program **Shielding Box Ethernet Cable**

Router

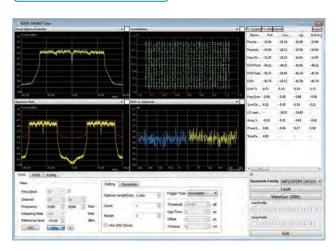


MP5000 General Technical Specifications

Input frequency range 2150 MHz ~ 2600 MHz 4900 MHz ~ 6000 MHz IF bandwidth 120 MHz Maximum input power 130 dBm peak +20 dBm average Input power accuracy (a) (+20 to -75 dBm) Phase noise LO leakage (DC offset) (a) after self-calibration Sideband image (IQ-imbalance) (a) after self-calibration IMD3 (Third order input inter-modulation distortion) Input return loss ADC resolution ADC sampling rate ADC sampling rate Input requency accuracy 2150 MHz ~ 2600 MHz 4900 MH	>> VSA (Vector Signal Analyzer)	
Input frequency range 4900 MHz ~ 6000 MHz IF bandwidth 120 MHz As dBm peak +20 dBm average Input power accuracy (e) (+20 to -75 dBm) Phase noise LO leakage (DC offset) (e) after self-calibration Sideband image (IQ-imbalance) (e) after self-calibration IMD3 (Third order input inter-modulation distortion) Input return loss ADC resolution ADC sampling rate 160 MS/s +/-50 ppb maximum (OCXO) Initial frequency accuracy (e) 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) (e) 0 ~ 50 °C Frequency aging The day maximum (OCXO) (f) 4-1 ppb / day maximum (OCXO) (f) 50 °C Storage temperature Doperating voltage	Parameter	Value
Section Sect	Input frequency range	2150 MHz ~ 2600 MHz
Haximum input power Hard Box		4900 MHz ~ 6000 MHz
Haximum input power	IF bandwidth	120 MHz
Input power accuracy @ (+20 to -75 dBm) Phase noise	Maximum input power	+30 dBm peak
 ② (+20 to -75 dBm) Phase noise LO leakage (DC offset) ② after self-calibration Sideband image (IQ-imbalance) ② after self-calibration IMD3 (Third order input inter-modulation distortion) Input return loss ADC resolution ADC sampling rate Ho MS/s +/-50 ppb maximum (OCXO) ② 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) ② 0 ~ 50 °C Frequency aging Prequency temperature Operating temperature Operating voltage +/-5%) 		+20 dBm average
@ (+20 to -75 dBm) Phase noise	Input power accuracy	+/-0.75 dB (+/-0.5 dB Typical)
Phase noise Comparison of the properties of th	@ (+20 to -75 dBm)	47-0.73 db (47-0.3 db Typical)
4-95 dBc 1 KHz offset @ 5.8 GHz LO leakage (DC offset) @ after self-calibration Sideband image (IQ-imbalance) @ after self-calibration IMD3 (Third order input inter-modulation distortion) Input return loss ADC resolution ADC sampling rate 160 MS/s +/-50 ppb maximum (OCXO) @ 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) © 0 ~ 50 °C Frequency aging +/-100 ppb / year maximum (OCXO) Operating temperature Coperating voltage 10 C Storage temperature -25 ~ 60 °C 100 ~ 240 V AC (+/-10%) 50 ~ 60 Hz (+/-5%)	Phase noise	< -100 dBc
@ after self-calibration < -50 dBc @ -10 dBm		< -95 dBc 1 KHz offset @ 5.8 GHz
@ after self-calibration Sideband image (IQ-imbalance) @ after self-calibration IMD3 (Third order input inter-modulation distortion) Input return loss ADC resolution ADC sampling rate ADC sampling rate ADC sampling rate Initial frequency accuracy Frequency temperature stability Frequency aging	LO leakage (DC offset)	< -50 dBc @ -10 dBm
@ after self-calibration IMD3 (Third order input inter-modulation distortion) Input return loss ADC resolution ADC sampling rate ADC sampling rate 160 MS/s +/-50 ppb maximum (OCXO) @ 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) @ 0 ~ 50 °C Frequency temperature stability Frequency aging -/-100 ppb / year maximum (OCXO) Operating temperature -25 ~ 60 °C Storage temperature -25 ~ 60 °C Operating voltage		
IMD3 (Third order input inter-modulation distortion) Input return loss ADC resolution ADC sampling rate Initial frequency accuracy Frequency temperature stability Frequency aging	,	< -50 dBc @ -10 dBm
inter-modulation distortion) Input return loss ADC resolution ADC sampling rate 160 MS/s +/-50 ppb maximum (OCXO) (a) 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) (a) 0 ~ 50 °C Frequency aging +/-1 ppb / day maximum (OCXO) +/-100 ppb / year maximum (OCXO) Operating temperature -25 ~ 60 °C Storage temperature -25 ~ 60 °C Operating voltage -70 dBc (a) -10 dBm -70 dBc (a) -10 dB		
Input return loss < -12 dB ADC resolution 16-bit ADC sampling rate 160 MS/s +/-50 ppb maximum (OCXO) @ 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) @ 0 ~ 50 °C Frequency aging +/-1 ppb / day maximum (OCXO) +/-100 ppb / year maximum (OCXO) Operating temperature 0 ~ 50 °C Storage temperature -25 ~ 60 °C Operating voltage 100 ~ 240 V AC (+/-10%) 50 ~ 60 Hz (+/-5%)	,	< -70 dBc @ -10 dBm
ADC resolution ADC sampling rate 160 MS/s +/-50 ppb maximum (OCXO) ② 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) ③ 0 ~ 50 °C Frequency aging +/-1 ppb / day maximum (OCXO) +/-100 ppb / year maximum (OCXO) Operating temperature 0 ~ 50 °C Storage temperature -25 ~ 60 °C Operating voltage	,	
ADC sampling rate 160 MS/s +/-50 ppb maximum (OCXO) ② 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) ③ 0 ~ 50 °C Frequency aging +/-1 ppb / day maximum (OCXO) +/-100 ppb / year maximum (OCXO) Operating temperature 0 ~ 50 °C Storage temperature -25 ~ 60 °C Operating voltage 100 ~ 240 V AC (+/-10%) 50 ~ 60 Hz (+/-5%)	•	
+/-50 ppb maximum (OCXO) @ 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) @ 0 ~ 50 °C Frequency aging +/-1 ppb / day maximum (OCXO) +/-100 ppb / year maximum (OCXO) Operating temperature 0 ~ 50 °C Storage temperature -25 ~ 60 °C Operating voltage +/-50 ppb maximum (OCXO) -/-20 ppb maximum (OCXO) 0 ~ 50 °C -25 ~ 60 °C 100 ~ 240 V AC (+/-10%) 50 ~ 60 Hz (+/-5%)	ADC resolution	16-bit
Initial frequency accuracy @ 25 °C, after 30 minutes warm up +/-20 ppb maximum (OCXO) @ $0 \sim 50$ °C Frequency aging +/-1 ppb / day maximum (OCXO) +/-100 ppb / year maximum (OCXO) Operating temperature 0 ~ 50 °C Storage temperature -25 ~ 60 °C Operating voltage 100 ~ 240 V AC (+/-10%) 50 ~ 60 Hz (+/-5%)	ADC sampling rate	160 MS/s
### Weight of the image of the	Initial frequency accuracy	+/-50 ppb maximum (OCXO)
Frequency temperature stability @ $0 \sim 50 ^{\circ}\text{C}$ Frequency aging +/-1 ppb / day maximum (OCXO) +/-100 ppb / year maximum (OCXO) Operating temperature $0 \sim 50 ^{\circ}\text{C}$ Storage temperature $-25 \sim 60 ^{\circ}\text{C}$ Operating voltage $100 \sim 240 ^{\circ}\text{V AC (+/-10\%)} \atop 50 \sim 60 ^{\circ}\text{Hz (+/-5\%)}$		@ 25 °C, after 30 minutes warm up
Frequency aging +/-1 ppb / day maximum (OCXO) +/-100 ppb / year maximum (OCXO) Operating temperature 0 ~ 50 °C Storage temperature -25 ~ 60 °C 100 ~ 240 V AC (+/-10%) 50 ~ 60 Hz (+/-5%)	Frequency temperature stability	+/-20 ppb maximum (OCXO)
Frequency aging $+/-100 \text{ ppb / year maximum}$ (OCXO) Operating temperature $0 \sim 50 ^{\circ}\text{C}$ Storage temperature $-25 \sim 60 ^{\circ}\text{C}$ Operating voltage $100 \sim 240 ^{\circ}\text{V AC (+/-10\%)} + 100 ^{\circ}\text{C}$		@ 0 ~ 50 °C
1/-100 ppb / year maximum (OCXO) Operating temperature 0 ~ 50 °C	Frequency aging	+/-1 ppb / day maximum (OCXO)
Storage temperature		+/-100 ppb / year maximum (OCXO)
Operating voltage 100 ~ 240 V AC (+/-10%) 50 ~ 60 Hz (+/-5%)	Operating temperature	0 ~ 50 °C
Operating voltage 50 ~ 60 Hz (+/-5%)	Storage temperature	−25 ~ 60 °C
50 ~ 60 Hz (+/-5%)	Operating voltage	100 ~ 240 V AC (+/-10%)
Warm-up time > 30 minutes		50 ~ 60 Hz (+/-5%)
	Warm-up time	> 30 minutes

Parameter	Value
Output frequency range	2150 MHz ~ 2600 MHz
	4900 MHz ~ 6000 MHz
IF bandwidth	120 MHz
Maximum output power @ CW	+0.00 dBm
Minimum output power @ CW	-130.00 dBm
Output power accuracy @ (0 to -95 dBm)	+/-0.75 dB (+/-0.5 dB Typical)
Phase noise	< -100 dBc 1 KHz offset @ 2.4 GHz < -95 dBc 1 KHz offset @ 5.8 GHz
LO leakage (DC offset) @ after self-calibration	< -50 dBc @ -10 dBm
Sideband image (IQ-imbalance) @ after self-calibration	< -50 dBc @ -10 dBm
IMD3 (Third order input inter-modulation distortion)	< -60 dBc @ -10 dBm (two -13 dBm tone)
Output return loss	< -12 dB
DAC resolution	16-bit
DAC sampling rate	960 MS/s
Initial frequency accuracy	+/-50 ppb maximum (OCXO) @ 25 °C, after 30 minutes warm up
Frequency temperature stability	+/-20 ppb maximum (OCXO) @ 0 ~ 50 °C
Frequency aging	+/-1 ppb / day maximum (OCXO) +/-100 ppb / year maximum (OCXO)
Operating temperature	0 ~ 50 ℃
Storage temperature	−25 ~ +60 °C
Operating voltage	100 ~ 240 V AC (+/-10%) 50 ~ 60 Hz (+/-5%)
Warm-up time	> 30 minutes

MP5000 GUI outlook (Wi-Fi)



MP5000 automated mass-production turnkey software

