# MTP200B WLAN / BT LE Tester





# Introduction

Tescom's MTP200B is a non-signaling test-based WLAN or BT LE (Low Energy) tester. As one-body equipment incorporating both Signal Generator and Signal Analyzer, MTP200B is designed to provide effective and stable performance for generating and analyzing WLAN and BT LE waveforms. It can be effectively used in a mass production for testing the RF performance of products with WLAN and BT LE functions such as smart phones. In addition, the best efficiency can be expected at a lower cost thanks to the simple installation and operation of the product.

- > One-body equipment incorporating both Signal Generator and Signal Analyzer
- WLAN waveform generation and analysis
- BT LE waveform generation and analysis
- > BT LE Direct Test with a remote control program
- > Creation of various WLAN test files using Waveform Creator
- CW Mode supported
- > Measurement result display through Color LCD.
- Easy control through frontal keypad without PC
- Remote control through USB Port (USB to Serial) and GPIB
- > Easy firmware upgrade through USB Port (USB to Serial)
- Compact, lightweight (Half Rack/2U size)

# **Benefits and Key features**

#### WLAN Test System

MTP200B's WLAN Test System provides both Analyzer (ANL) mode and Generator (GEN) mode; WLAN IEEE 802.11 a/g/n standard is supported.

#### WLAN Analyzer

For signals transmitted by WLAN devices, measurements of RMS EVM, Power, Frequency Error, and Clock Error can be made through MTP200B's Signal Analyzer; the results of the measurements can be readily checked through the built-in LCD without separate connection to PC

CONFIG	MEAS	LOSS	
PARAMETER		VALUE	
MODE		WIFI_11n	
CH_NUM		1	
FREQUENCY		2412.000	MHz
NUM_FRAME		10	
GEN	ANL	INFO	





#### WLAN Generator

MTP200B's Signal Generator can transmit a user-defined WLAN signal to DUT so that the DUT can check its reception performance by checking whether the transmitted signal by MTP200B is successfully received. MTP200B can store up to 40 different user-defined WLAN signals, and the stored information can be readily checked through UI.

SG A. W. G		SG A. W. G	
PARAMETER	VALUE	PARAMETER	VALUE
MODE CH_NUM FREQUENCY POWER RUN FILE_SEL	WIFI 1 2412.000 MHz -60.0 dBm ON MCS7.twf	FORMAT FREE_MEM FILE_SEL PSDU_LENGTH DATA_RATE DATA_TYPE	FILE_SEL MCS4.twf ↔ MCS5.twf MCS6.twf MCS7.twf ↔
GEN ANI	_ INFO	POPUP	

#### Tescom Waveform Creator

Using Tescom Waveform Creator, user can create various WLAN test files by directly editing the parameters related to WLAN 802.11 a/g/n protocol. In addition, the created WLAN test files can be easily downloaded to the equipment.



#### BT LE Test System

MTP200B's BT LE Test system provides a non-signaling-based test for BT LE RF test cases defined by BT LE test standard. In addition, since advertising test mode is supported, it is possible to check the simple RF characteristics of BT LE devices in finished product condition with no separate test mode.

BT LE Direct test is also available in MTP200B by using a remote control program. MTP200B can be simply applied to mass production because the remote control program not only supports the automatic batch measurements for RF test case but also provides pass/fail judgements for the measurement results

#### BT LE Analyzer

With MTP200B's BT LE Signal Analyzer, Output power, Modulation characteristics, Carrier frequency offset, and drift as defined in the BT LE Transmitter Test Case can be measured by analyzing the signals transmitted by a BT LE devices. Additionally, a function with which Power, Modulation, and Initial carrier frequency offset can be simultaneously tested is provided in advertising mode, making it possible to determine easily whether or not the RF performance of a device can meet the test standard.

CONFIG MEAS		LOSS	
PARAMETER		VALUE	
MODE		BT_LE	
CH_NUM		0	
FREQUENCY		2402.000	MHz
TEST_METHOD		TEST_MODE	
TEST_CASE		POW+MOD+Fc	
NUM_PACKET		1	
GEN ANI		INFO	

CONFIG	MER	IS LOSS		;			
TEST CA POWER Pek-Paus dF1 dF2 fTX-f[n] f[0]-f[n] f[0]-f[n]	SE dBm dB dB dB zz kHzz kHzz kHzz zz	MAX -1. 0. 218. -1. 1.	26 7300	AUG -1.9 0.6 218.7 1.3 1.0	MII -2 0 218 -1 1	.56 7300	DATA 1010 CH Ø N_PKT 1
f[n]-f[n-5] GEN	KHZ I kHz	-1. ANL	1	1.0 1.1	-1 NFO	. 0	100.0

- BT LE Transmitter Test (TRM-LE) that can be measured with MTP200A
  - Output power(TRM-LE/CA/01/C)
  - Modulation characteristics(TRM-LE/CA/05/C)
  - Carrier frequency offset and drift(TRM-LE/CA/06/C)
  - Output power + Modulation characteristics + Initial carrier frequency tolerance (at Advertising test mode )

#### BT LE Generator

MTP200B's Signal Generator can create and transmit BT LE signal defined in BT LE test standard to DUT so that the DUT can check its reception performance by checking whether the transmitted signal by MTP200B is successfully received.

BT_LE 0 02.000 MHz
0 02.000 MHz
02.000 MHz
-5.0 dBm
OFF
PRBS9

- BT LE Receiver Tests (RCV-LE) that can be measured with MTP200A
- Receiver sensitivity (RCV-LE/CA/01/C)
- Maximum input signal level (RCV-LE/CA/06/C)

#### Remote Control Interface

With MTP200B's built-in USB to Serial interface, it is possible to control equipment remotely using a USB port in a PC. MTP200B also supports the GPIB interface for remote control. Using the remote commands that provided with the equipment, all functions of the equipment can be operated and user can make an automation program for mass production.

#### WLAN & BT LE Remote Control Program

The measurment can be done more convenientely and easily if a WLAN/BT LE remote control program is used.

- Carry out automatic measurement of Bluetooth LE RF Test Cases all at once
- Chip Vendors test Control Software included
- Easy to change measurement criteria and conditions.
- Display test results and save test results as an Excel file

gnal Analyzer	Signal G	enerator	Auto T	est Dir	ect Test Mode	2. Prof. 107, 107, 10, 2000	
[Condition]	от					Direct Test Mode Settings	Mode
Date&Time : 2	0151118_	115215				HCI-UART	BILLE
Test Mode : D	irect Tes	t Mode				COM Port	
Path Loss : 0						com3	Configuration
TX Output Pow	/er]					Paud Pata	Deft Less
						115200	Path Loss
Test Item	Lower	Upper	Value	Unit	Verdict	(nado	Preset
Pavg_CH0	-20	10	2,6	dBm	Pass	Configure	
Ppk-Pav_CH0		3	0.5	dBm	Pass	V Output Power	
Pavg_CH19	-20	10	27	dBm	Pass	Set	
Pavg_CH39	-20	10	2.6	dBm	Pass	Medulation Characteristics	
Ppk-Pav_CH39		3	0.5	dBm	Pass	modulation Characteristics	
Teet Time : 2	202.000					Set	
Total Time : 3,1	37 sec					Carrier Frequency Offset and Drift	
						Set	
						Receiver Sensitivity	
						Set	

#### Firmware Upgrade

For MTP200A, firmware upgrade can be done quickly and easily through PC using a simple upgrade program.

#### Provide a total solution necessary for production lines

Tescom can provide a total solution for production that ranges from the shield box designed for electromagnetic wave shielding, TEM CELL for wireless test and antenna couplers to measurement software programs for production automation to help solving the difficulties involving measurement systems that are complicated and difficult to operate.



# **Ordering Information**

Order No.	Description
MTP200B Basic Model	
B200B-00	WLAN / BT LE Tester, Basic
S/W Option	
S200-10	WLAN Option
S200-20	BT LE Option

# Specification

# General Specification

Generator	
Frequency Range	(1) 2400 ~ 2500 MHz (2) 4900 ~ 5875 MHz
Frequency Accuracy	< ±1.0 ppm/year @ operating temperature
Frequency Resolution	1.0 kHz
Output Power Range	-5.0 dBm ~ -70.0 dBm
Output Power Accuracy	< ±1.0 dB
Output Power Resolution	0.1 dB
VSWR	< 1.4
Harmonics	Out-of-band: < -40.0 dB
	In-band: < -50.0 dB (100 kHz resolution BW)
Phase Noise	< 1.0 degrees (2.4 GHz < f < 2.5 GHz)
	< 1.5 degrees (4.9 GHz < f < 6 GHz)

Analyzer	
Frequency Range	(1) 2400 ~ 2500 MHz (2) 4900 ~ 5875 MHz
Frequency Accuracy	< ±1.0 ppm/year @ operating temperature
Input Power Range	+20.0 dBm ~ -50.0 dBm
Input Power Accuracy	< ±1.0 dB
Input Power Resolution	0.1 dB
VSWR	< 1.6



# WLAN Specification

Standard	
Generator	IEEE 802.11a, IEEE 802.11g, IEEE 802.11n
Analyzer	IEEE 802.11a, IEEE 802.11g, IEEE 802.11n

WLAN Generator	
Frequency Range	(1) 2400 ~ 2500 MHz (2) 4900 ~ 5850 MHz
Frequency Accuracy	< ±1.0 ppm/year @ operating temperature
Output Power Range	-5.0 dBm ~ -70.0 dBm
Output Power Accuracy	< ±1.0 dB
Output Power Resolution	0.1 dB
	* IEEE 802.11a/g
	(1) < -34.0 dB (2.0 %) (2) < -32.0 dB (2.5 %)
	* IEEE 802.11n
	(1) < -32.0 dB (2.5 %) (2) < -30.0 dB (3.2 %)
Center Frequency Error	< ±1.0 ppm
Symbol Clock Error	< ±5.0 ppm
Spectrum Flatness	< +1.0 dB, -2.5 dB

Waveform Creator	
Arbitrary Waveform Files	IEEE 802.11a/g/n Signal

WLAN Analyzer	
Frequency Range	(1) 2400 ~ 2500 MHz (2) 4900 ~ 5850 MHz
Frequency Accuracy	< ±1.0 ppm/year @ operating temperature
Input Power Range	(1) 2400 ~ 2500 MHz : +15.0 dBm ~ -40.0 dBm (2) 4900 ~ 5850 MHz : +12.0 dBm ~ -40.0 dBm
Input Power Accuracy	< ±1.0 dB
Input Power Resolution	0.1 dB
Residual EVM	<ul> <li>(1) +15.0 dBm ~ -40.0 dBm: &lt; -32 dB (2.5 %)</li> <li>(2) +12.0 dBm ~ -35.0 dBm: &lt; -32 dB (2.5 %)</li> <li>-35.0 dBm ~ -40.0 dBm: &lt; -30 dB (3.2 %)</li> </ul>
Center Frequency Error	< ±1.0 ppm
Symbol Clock Error	< ±5.0 ppm

Modulation Analysis	
Bandwidth	20 MHz



Channel / Frequency	
	(1) 1/2412, 2/2417, 3/2422, 4/2427, 5/2432, 62437, 7/2442, 8/2447, 9/2452,
	10/2457, 11/2462, 12/2467, 13/2472, 14/2484
	(2) 34/5170, 36/5180, 38/5190, 40/5200, 42/5210, 44/5220, 46/5230,
Channel / Frequency	48/5240, 52/5260, 56/5280, 60/5300, 64/5320
	100/5500, 104/5520, 108/5540, 112/5560, 116/5580, 120/5600,
	124/5620, 128/5640, 132/5660, 136/5680, 140/5700, 149/5745,
	153/5765, 157/5785, 161/5805, 165/5825

## BT LE Specification

Standard	
Standard	Bluetooth Core Specification, Version 4.2(Low Energy)



BT LE Generator	
Frequency Range	2400 ~ 2500 MHz
Frequency Accuracy	< ±1.0 ppm/year @ operating temperature
Output Power Range	-5.0 dBm ~ -70.0 dBm
Output Power Accuracy	< ±1.0 dB
Output Power Resolution	0.1 dB

BT LE Signal Type	
	ALL_ZEROS
Signal Type	ALL_ONES
( BT4.0 2 MHz,	10101010
GFSK Modulation)	11110000
	PRBS9

BT LE Analyzer	
Frequency Range	2400 ~ 2500 MHz
Frequency Accuracy	< ±1.0 ppm/year @ operating temperature
Input Power Range	+20.0 dBm ~ -50.0 dBm
Input Power Accuracy	< ±1.0 dB
Input Power Resolution	0.1 dB

odulation Analysis	
Analysis Modes	TEST_MODE
	ADVERTISING MODE
	Power (dBm)
	Frequency deviation df1
	Frequency deviation df2
	Frequency accuracy
Measured Parameters	Frequency offset
	Initial frequency drift
	Frequency drift
	Max drift rate
	df2 max rate 99.9 %

Channel / Frequency	
Channel /Frequency	0 / 2402 MHz ~ 39 / 2480 MHz

## Remote Control

Port	
	USB to Serial (Virtual COM Port)
USB	USB Driver (Silicon Laboratories CP210x USB to UART Bridge)
	(http://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx
GPIB	

#### Interface

Front / Rear Panel	
FIFE200A         FIFE200A	<complex-block></complex-block>
RF Port	
IN/OUT	N Type , 50 Ohm, DC isolated
Reference Port	
IN	BNC Type, 10 MHz, +10 dBm ~ 0 dBm @ 50 Ohm

## Miscellaneous

Physical	
Dimension	210(w) x 342(d) x 88(h) mm
Weight	4.1 kg
* Packing Size	350(w) x 460(d) x 170(h) mm
* Packing Weight	Approx. 5.0 kg
* The size or weight of a package may vary on how to pack a package.	
Line Voltage	
Input	100 - 240 VAC, 50 ~ 60 Hz
Input Power(Typ.)	100 - 240 VAC, 50 ~ 60 Hz < 45 W (Typ. 26 W)
Input Power(Typ.) AC Current(Typ.)	100 - 240 VAC, 50 ~ 60 Hz < 45 W (Typ. 26 W) 1.1 A / 115 VAC (Typ. 0.65 A / 230 VAC)
Input Power(Typ.) AC Current(Typ.) Operation Temperature	100 - 240 VAC, 50 ~ 60 Hz < 45 W (Typ. 26 W) 1.1 A / 115 VAC (Typ. 0.65 A / 230 VAC)
Input Power(Typ.) AC Current(Typ.) <b>Operation Temperature</b> Operation	100 - 240 VAC, 50 ~ 60 Hz < 45 W (Typ. 26 W) 1.1 A / 115 VAC (Typ. 0.65 A / 230 VAC) 25 ± 10 ℃