

# Bluetooth Test Set MT8852B





### Introduction

This document provides specifications for the Bluetooth® Test Set MT8852B and lists ordering information and option and accessory codes.

The MT8852B brochure is also available. The brochure provides in-depth descriptions of MT8852B applications, features, and benefits when testing a wide range of Bluetooth products.

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## **Specifications**

All measurements made in compliance with Bluetooth Core Specification v5.2.

#### **Basic Rate Measurements**

Basic Rate measurements made in compliance with Bluetooth RF Test Specification RF. TS. p30.

#### Output Power (RF/TRM/CA/BV-01-C)

Measurement Configuration

Hopping: Off or On - measure at defined, all, or any frequencies

Loopback or Tx mode

Pavload: PRBS9

Packet type: DH1, DH3, DH5

Displayed Results: Average power, Peak power

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Measurement Range: -50 to +22 dBm (average power), +23 dBm (peak power)

Resolution: 0 1 dF

Accuracy:  $\pm 1.0 \text{ dB } (-35 \text{ to } +20 \text{ dBm}), \pm 1.5 \text{ dB } (+20 \text{ to } +22 \text{ dBm})$ 

#### Power Control (RF/TRM/CA/BV-03-C)

Measurement Configuration

Hopping: Off

Loopback or Tx mode

Payload: PRBS9

Packet type: DH1, DH3, DH5

Displayed Result: Maximum power, Minimum power, Maximum step size, Minimum step size, Power at each power step

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Measurement Range: -35 to +22 dBm (average power), +23 dBm (peak power)

Resolution: 0.1 dB

Accuracy:  $\pm 1.0 \text{ dB } (-35 \text{ to } + 20 \text{ dBm}), \pm 1.5 \text{ dB } (+20 \text{ to } +22 \text{ dBm})$ 

#### Enhanced Power Control (RF/TRM/CA/BV-14-C)

Measurement Configuration

Hopping: Off

Loopback or Tx mode

Payload: PRBS9

Packet type: DH1, DH3, DH5, 2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3 and 3-DH5

Displayed Result

Maximum power for each packet type, Minimum power for each packet type, Maximum power step for each packet type,

Minimum power step for each packet type, Maximum power difference at any step between DHn and 2DHn or 3DHn packets

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Measurement Range: -35 to +22 dBm (average power), +23 dBm (peak power)

Resolution: 0.1 dB

Accuracy:  $\pm 1.0 \text{ dB } (-35 \text{ to } + 20 \text{ dBm}), \pm 1.5 \text{ dB } (+20 \text{ to } +22 \text{ dBm})$ 

#### Initial Carrier Frequency Tolerance (RF/TRM/CA/BV-08-C)

Measurement Configuration

Hopping: Off or On – measure at defined, all, or any frequencies

Loopback or Tx mode

Payload: PRBS9

Packet type: DH1

Displayed Results: Average initial frequency error, Maximum positive frequency error, Maximum negative frequency error

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

RF Input Measurement Range: -35 to +20 dBm

Initial Frequency Error Measurement Range: 0 to ±150 kHz

Frequency Resolution: 1 kHz

Accuracy: 500 Hz ±frequency standard

#### Carrier Frequency Drift (RF/TRM/CA/BV-09-C)

Measurement Configuration

Hopping: Off or On – measure at defined, all, or any frequencies

Loopback or Tx mode Payload: 10101010 Packet type: DH1, DH3, DH5

Displayed Results: Carrier frequency drift, Drift rate

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

RF Input Measurement Range: -35 to +20 dBm

Frequency Drift Measurement Range: 0 to 200 kHz, and > 2000  $\mu$ s/50  $\mu$ s

Frequency Resolution: 1 kHz

#### Sensitivity - single slot packets (RF/RCV/CA/BV-01-C)

Measurement Configuration

Hopping: Off or On, user selectable

Loopback only Payload: PRBS9 Packet type: DH1

Dirty transmitter (as defined in the RF test spec): On or Off, user defined

Displayed Results: BER (percentage), Total number of bit errors and FER

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Number of Measured Bits: 1 to 10,000 packets (216 bits to 2,160,000 bits)

Output Power Range: –90 to 0 dBm, resolution: 0.1 dB Output Power Accuracy: ±1 dB (–80 to 0 dBm) BER/FER Measurement Range: 0 to 100%

BER/FER Resolution: 0.001%

#### Sensitivity - multi-slot packets (RF/RCV/CA/BV-02-C)

Measurement Configuration

Hopping: Off or On, user selectable

Loopback only Payload: PRBS9 Packet type: DH3, DH5

Dirty transmitter (as defined in RF test spec): On or Off, user defined

Displayed Results: BER (percentage), Total number of bit errors and FER

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Number of Measured Bits: 1 to 10,000 packets (for DH3, 1,464 bits to 14,640,000 bits), (for DH5, 2,712 bits to 27,120,000 bits)

Output Power Range: –90 to 0 dBm, resolution: 0.1 dB

Output Power Accuracy: ±1 dB (-80 to 0 dBm) BER/FER Measurement Range: 0 to 100%

BER/FER Resolution: 0.001%

#### Modulation Characteristics (RF/TRM/CA/BV-07-C)

Measurement Configuration

Hopping: Off Loopback, Tx mode

Payload: 11110000 and 10101010 Packet type: DH1, DH3, DH5

Displayed Results

Frequency deviation:  $\Delta$ f1 max,  $\Delta$ f2 max,  $\Delta$ f1 avg,  $\Delta$ f2 avg,  $\Delta$ f2 avg,  $\Delta$ f2 avg,  $\otimes$  of  $\Delta$ f2 max < 115 kHz

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

RF Input Measurement Range: -35 to +20 dBm

Deviation Measurement Range: 0 to 350 kHz (peak power)

Deviation Resolution: 1 kHz

Accuracy: 1% for modulation index 0.32

#### Maximum Input Level (RF/RCV/CA/BV-06-C)

Measurement Configuration

Hopping: Off Loopback only Payload: PRBS9 Packet type: DH1

Displayed Results: BER (percentage), total number of bit errors and FER

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Number of Measured Bits: 1 to 10,000 packets (216 bits to 2,160,000 bits)

Output Power Range: -90 to 0 dBm, resolution: 0.1 dB

Output Power Accuracy: ± 1 dB (-80 to 0 dBm)

#### **Enhanced Data Rate (EDR) Measurements**

Enhanced Data Rate measurements made in compliance with Bluetooth RF Test Specification RF. TS. p30.

#### EDR Relative Transmit Power (RF/TRM/CA/BV-10-C)

Measurement Configuration

Hopping: Off and On – measure at defined, all, or any frequencies

Modulations: π/4 DQPSK and 8 DPSK

Packet type: 2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3 and 3-DH5

Loopback or Tx mode

EUT power level: Max. and Min.

Displayed Results:

Max. differential power (2-DH1, 2-DH3, 2-DH5 and 3-DH1, 3-DH3 and 3-DH5), Min. differential power (2-DH1, 2-DH3, 2-DH5 and 3-DH1, 3-DH3 and 3-DH5), average differential power (2-DH1, 2-DH3, 2-DH5 and 3-DH1, 3-DH3 and 3-DH5)

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Measurement Range: -35 to +20 dBm (average power), +23 dBm (peak power)

Relative Power Resolution: 0.01 dB, GFSK to  $\pi/4$  DQPSK and 8 DPSK

Relative Power Accuracy

Relative power measurement accuracy between GFSK and  $\pi/4$  DQPSK or 8 DPSK, 0.2 dB typical for a power difference of < 6 dB Relative Power Measurement Range

Relative power measurement range between GFSK and  $\pi/4$  DQPSK or 8 DPSK, (Pgfsk - 8 dB) < Pppsk < (Pgfsk + 4 dB)

## EDR Carrier Frequency Stability and Modulation Accuracy (RF/TRM/CA/BV-11-C)

Measurement Configuration

Hopping: Off and On – measure at defined, all, or any frequencies

Modulations: π/4 DQPSK and 8 DPSK

Packet type: 2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3 and 3-DH5

Loopback or Tx mode

EUT power level: Max. and Min.

Displayed Results: Initial frequency error  $\omega_i$ , Frequency error  $\omega_o$ , Frequency error  $\omega_i + \omega_o$ , RMS DEVM (block with greatest DEVM value displayed), Peak DEVM, 99% DEVM, Average RMS DEVM (average DEVM for all blocks measured)

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Carrier Frequency Stability Measurement Range: 0 to ± 100 kHz

Carrier Frequency Stability Accuracy: 500 Hz ±frequency standard

Carrier Frequency Stability Resolution: 1 kHz RMS DEVM Range:  $30\% \, \pi/4 \, DQPSK$ ,  $20\% \, 8 \, DPSK$  RMS DEVM Resolution:  $0.1\% \, \pi/4 \, DQPSK$  and  $8 \, DPSK$  Peak DEVM Range:  $0 \, to \, 50\% \, \pi/4 \, DQPSK$ ,  $0 \, to \, 30\% \, 8 \, DPSK$  Peak DEVM Resolution:  $0.1\% \, \pi/4 \, DQPSK$  and  $8 \, DPSK$ 

## EDR Differential Phase Encoding (RF/TRM/CA/BV-12-C)

Measurement Configuration

Hopping: Off and On, user selectable Modulations:  $\pi/4$  DQPSK and 8 DPSK

Packet type: 2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3 and 3-DH5

Number of test packets: default 100

Tx mode only

Displayed Results: Number of packets received, Number of packets with payload data errors, Percentage of errored packets

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

## EDR Sensitivity (RF/RCV/CA/BV-07-C)

Measurement Configuration

Hopping: Off and On, user selectable Modulations: π/4 DOPSK and 8 DPSK

Packet type: 2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3 and 3-DH5

Bit threshold control: Threshold 1, 1.6 million bits, Threshold 2, 16 million bits (user editable)

Loopback only

Dirty transmitter (as defined in RF test spec): On or Off, user selectable

Displayed Results: Overall BER (displayed in exponential format), Number of bits in error, Number of packets sent by test set,

Number of packets received in error by EUT

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Output Power Range: -90 to 0 dBm, resolution: 0.1 dB

Output Power Accuracy: ±1 dB (-80 to 0 dBm)

#### EDR BER Floor Performance (RF/RCV/CA/BV-08-C)

Measurement Configuration

Hopping: Off and On, user selectable

Modulations:  $\pi/4$  DQPSK and 8 DPSK

Packet type: 2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3 and 3-DH5

Bit threshold control: Threshold 1, 8 million bits, Threshold 2, 160 million bits (user editable)

Loopback only

Displayed Results: Overall BER (displayed in exponential format), Number of bits in error, Number of packets sent by test set,

Number of packets received in error by EUT

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Output Power Range: -90 to 0 dBm, resolution: 0.1 dB

Output Power Accuracy: ± 1 dB (-80 to 0 dBm)

#### EDR Maximum Input Level (RF/RCV/CA/BV-10-C)

Measurement Configuration

Hopping: Off and On, user selectable Modulations:  $\pi/4$  DQPSK and 8 DPSK

Packet type: 2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3 and 3-DH5

Number of bits: default 1.6 million (user editable)

Loopback only

Displayed Results: Overall BER (displayed in exponential format), Number of bits in error, Number of packets sent by test set,

Number of packets received in error by EUT

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Output Power Range: -90 to 0 dBm, resolution: 0.1 dB

Output Power Accuracy: ± 1 dB (-80 to 0 dBm)

## **Bluetooth low energy Measurements**

Bluetooth low energy measurements made in compliance with Bluetooth RF Test Specification RF-PHY. TS. p15.

#### Output power (RF-PHY/TRM/BV-01-C, RF-PHY/TRM/BV-15-C)

Measurement Configuration

EUT configured to transmit test reference packets

Packet payload: PRBS9

**AoA Constant Tone Extensions** 

Displayed Results: Average power, Peak to average power

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Measurement Range: -50 to +22 dBm (average power), +23 dBm (peak power)

Resolution: 0.1 dB

Accuracy:  $\pm 1.0 \text{ dB } (-35 \text{ to } +20 \text{ dBm}), \pm 1.5 \text{ dB } (+20 \text{ to } +22 \text{ dBm})$ 

#### **Modulation characteristics**

#### [RF-PHY/TRM/BV-05-C (BLE), RF-PHY/TRM/BV-10-C (2LE), RF-PHY/TRM/BV-13-C (BLR S = 8)]

Measurement Configuration

EUT configured to transmit test reference packets

BLE/2LE Packet payload: 11110000 and 10101010

BLE Packet payload: 11111111

Displayed Results

Frequency deviation:  $\Delta$ f1 max,  $\Delta$ f2 max,  $\Delta$ f1 avg,  $\Delta$ f2 avg,  $\Delta$ f2 avg,  $\Delta$ f1 avg comparison, % of  $\Delta$ f2 max < frequency deviation limit

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Measurement Range

RF input: -35 to +20 dBm

Deviation: 0 to 500 kHz (peak power)

Resolution

Deviation: 1 kHz

Accuracy: 1% for modulation index 0.5

#### Carrier frequency offset and drift

# [RF-PHY/TRM/BV-06-C (BLE), RF-PHY/TRM/BV-12-C (2LE), RF-PHY/TRM/BV-14-C (BLR S = 8), RF-PHY/TRM/BV-16-C (BLE CTE), RF-PHY/TRM/BV-17-C (2LE CTE)]

Measurement Configuration

EUT configured to transmit test reference packets

BLE/2LE Packet payload: 10101010 BLR Packet payload: 11111111

BLE/2LE CTE Packet payload: 11110000

AoA Constant Tone Extensions

Displayed Results: Carrier frequency error, Frequency drift, Drift rate

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Measurement Range

RF input: -35 to +20 dBm

Frequency: 500 kHz

Frequency Resolution: 1 kHz

Accuracy: 500 Hz ±frequency standard

#### Receiver sensitivity

# [RF-PHY/RCV/BV-01-C (BLE), RF-PHY/RCV/BV-08-C (2LE), RF-PHY/RCV/BV-26-C (BLR S=2), RF-PHY/RCV/BV-27-C (BLR S=8)]

Measurement Configuration

EUT configured to receive test reference packets

Packet payload: PRBS9

Full support of dirty transmitter as defined in test specification

Displayed Results: Receiver PER. Requires EUT to support HCI or 2-Wire interface for automated PER results

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Output Power Range: -90 to 0 dBm, resolution: 0.1 dB

Output Power Accuracy: ± 1 dB (-80 to 0 dBm)

#### Maximum input signal level

#### [RF-PHY/RCV/BV-06-C (BLE), RF-PHY/RCV/BV-12-C (2LE)]

Measurement Configuration

EUT configured to receive test reference packets

Packet payload: PRBS 9

Displayed Results: Receiver PER. Requires EUT to support HCl or 2-Wire interface for automated PER results

Number of Measurement Frequencies: Three, default to RF Test Specification or user defined

Output Power Range: -90 to 0 dBm, resolution: 0.1 dB

Output Power Accuracy: ± 1 dB (-80 to 0 dBm)

#### **PER report integrity**

# [RF-PHY/RCV/BV-07-C (BLE), RF-PHY/RCV/BV-13-C (2LE), RF-PHY/RCV/BV-30-C (BLR S = 2), RF-PHY/RCV/BV-31-C (BLR S = 8)]

Measurement Configuration

EUT configured to receive test reference packets

Packet payload: PRBS9

CRC corruption: Alternate packets

Number of test packets: Random [100 ≤ RND ≤ 1500]

Displayed Results: Receiver PER. Requires EUT to support HCI or 2-Wire interface for automated PER results

Number of Measurement Frequencies: One, default to RF Test Specification or user defined

Output Power Range: -90 to 0 dBm, resolution: 0.1 dB

Output Power Accuracy: ±1 dBm (-80 to 0 dBm)

#### **BLE Tx Power Stability**

## [RF-PHY/TRM/PS/BV-01-C, RF-PHY/TRM/PS/BV-02-C, RF-PHY/TRM/PS/BV-03-C, RF-PHY/TRM/PS/BV-04-C]

Measurement Configuration

**EUT** configured to transmit Test Reference Packets

No payload

AoD Constant Tone Extensions

Displayed results

Maximum deviation to average power during reference period

Maximum deviation to average power for each transmit slot

Number of measurement frequencies: Three, default to RF Test Specification or user defined

Measurement Range: -50 to +22 dBm (average power), +23 dBm (peak power)

Resolution: 0.01 dB

#### MT8852B Signal Generator

#### Frequency

Frequency Range: 2.4 GHz to 2.5 GHz

Frequency Resolution: 1 kHz

Frequency Accuracy: As frequency standard ±500 Hz

#### Level

Amplitude Range: -90 to 0 dBm

Amplitude Accuracy: ±1 dB (-80 to 0 dBm)

Amplitude Resolution:  $\pm 0.1$  dB Output Impedance:  $50\Omega$  (nominal)

Output VSWR: 1.5:1, 1.3:1 (typical), Adjacent channels 3 or higher -40 dBc

#### **GFSK Modulation**

Modulation Index: Variable, 0.25 to 0.50 (125 kHz to 250 kHz)

Modulation Index Resolution: 0.01

Modulation Index Accuracy: 1% (nominal) for modulation index = 0.32

Baseband Filter: BT = 0.5

\*: Supports low energy signal generator compliant with Bluetooth Core Specification v5.2

#### π/4 DQPSK Modulation

Modulation Index Accuracy: <5% RMS DEVM

Baseband Filter: BT = 0.4

#### **8 DPSK Modulation**

Modulation Index Accuracy: <5% RMS DEVM

Baseband Filter: BT = 0.4

#### MT8852B Measuring Receiver

#### Frequency

Frequency Range: 2.4 GHz to 2.5 GHz

Frequency Resolution: 1 kHz

Frequency Accuracy: As frequency standard ±500 Hz

#### Level

Range: -55 to +22 dBm (average power)

Power Measurement Accuracy: ±1 dB (-35 to +20 dBm)

Input VSWR: 1.5:1 Damage Level: +25 dBm Resolution: 0.1 dB

#### **GFSK Modulation**

Deviation Measurement Range: 0 to 350 kHz (peak power)

Accuracy: 1% for modulation index 0.32

#### **EUT Control Interface**

RS232 HCI Commands

The EUT control interface provides RS 232 HCI commands to the EUT through a standard RS 232 interface.

The interface meets the requirements of the Bluetooth specification for HCI UART transport layer.

An RS 232 cable is supplied.

**USB HCI Commands** 

The EUT control interface provides USB HCI commands to the EUT through a standard USB interface.

The interface meets the requirements of the Bluetooth specification section H:2.

A USB cable is supplied.

2-Wire Control: For test control of Bluetooth low energy devices the EUT control interface supports the 2-Wire specification

USB to RS232 HCI Command: For use with EUTs fitted with USB to RS232 FTDI chips

USB to 2-Wire Command: For use with EUTs fitted with USB to RS232 FTDI chips that support 2-Wire control

#### **Audio Specifications**

Number of SCO Channels Supported: 3

Codec Air Interfaces Supported: CVSD, A-Law, µ-Law

Frequency Response

(-3 dB) measured CODEC in to CODEC out: 160 Hz to 3.5 kHz.

Measured with  $50\Omega$  source impedance and  $10M\Omega$  load impedance

Maximum Input/Output Signal Level: 3.4 Vpk-pk = 1.2 V RMS

Distortion/Noise

A law: -37 dB (typical) (1 kHz, 1 V RMS)

μ law: -37 dB (typical) (1 kHz, 1 V RMS)

CVSD: -30 dB (typical) (300 Hz, 1 V RMS)

Input/Output Connectors: 3.5 mm audio jack plugs (one for each SCO channel)

Input Impedance:  $20\,k\Omega$  Minimum Output Load:  $600\,\Omega$ 

Internal Audio Source: 1 kHz fixed frequency

#### Adaptive Frequency Hopping (MT8852B-015)

Supported in ACL and SCO connections

Displays: Active channel vs. time, FER vs. time

Other Features: ACL connection timer, resolution: 1 ms

#### **Electrical Characteristics**

### **Frequency Standard**

Frequency: 10 MHz

Temperature Stability:  $\pm 0.5$  ppm ( $-10^{\circ}$  to  $+85^{\circ}$ C)

Aging (1st year):  $\pm 1.0$  ppm

Aging (over 10 years): ±2.5 ppm (including year 1)

#### **Rear Panel Connectors**

External Frequency Standard Input: Rear panel, BNC connector,  $50\Omega$ , 1 V

Output 1: TTL output for TX ON, TX DATA, RX DATA, and correlator

Output 2: TTL output for RX ON, TX DATA, RX DATA, and correlator

Input 1: For service use only

#### **GPIB**

IEEE 488.2: Offers full instrument control as standard

#### **RS232**

RS232: Offers full instrument control as standard

#### General

#### **Power Supply**

Rated Voltage: 100 Vac to 120 Vac/200 Vac to 240 Vac

Rated Frequency: 50 Hz/60 Hz Power Consumption: 150 VA max.

#### **Environmental**

Operating Temperature: +5° to +40°C

Operating Humidity: 20 to 75%

#### **EU Standards (CE Marking)**

EMC: EN61326-1, EN61000-3-2

LVD: EN61010-1 RoHS: EN50581

#### **Dimensions and Mass**

Dimensions: 216.5 (W)  $\times$  88 (H)  $\times$  380 (D) mm

Mass: < 3.8 kg

## **Ordering Information**

Please specify the model/order number, name and quantity when ordering. The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

Model/Order No	Name
	Main Frame
MT8852B	Bluetooth Test Set
MT8852B-040	Bluetooth Test Set
MT8852B-041	Bluetooth Test Set
MT8852B-042	Bluetooth Test Set
MT8852B-043	Bluetooth Test Set
	Standard Accessories
	MT8852B Bluetooth Test Set Operation Manual
	MT8852B Bluetooth Test Set Operation Manual
	Remote Control
J1783A	USB HCI control interface lead
J1784A	RS232 HCI Control Interface Lead
J1785A	RS232 Cable for Firmware Updates
	Power Cord
	BlueSuite Software
	Bluetooth Low Energy Measurement Software
	application
	MT8852B Bootloader
J1786A	3.5 mm Jack Plugs (Qty. 3)
	Options and Accessories
MT8852B-015	Adaptive Frequency Hopping option
MT8852B-017	IQ data output
MT8852B-027	Bluetooth low energy measurements
MT8852B-034*1	BLE Data Length Extension Option
MT8852B-035*1, *2	BLE 2LE Option
MT8852B-036*1, *2, *3	BLE BLR Option
MT8852B-037*1, *2, *3	BLE AoA/AoD Option
	(Angle of Arrival/Angle of Departure)
MT8852B-070	Platform Enhancement Option

- \*1: MT8852B-034 (334) requires MT8852B-027 (327) or MT8852B-043.
- \*2: MT8852B-035 (335), MT8852B-036 (336) and MT8852B-037 (337) requires MT8852B-034 (334).
- \*3: MT8852B-036 (336) and MT8852B-037 (337) requires MT8852B-070 (270, 370).
- \*4: When installing MT8852B-315/317/319/325 to MT8852B-043, MT8852B-330 is necessary.



Specifications are subject to change without notice.

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