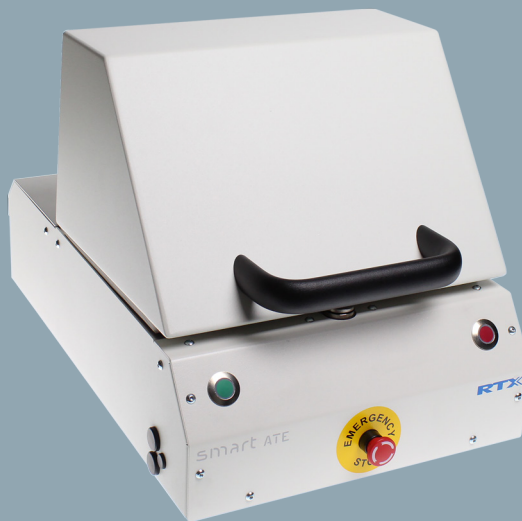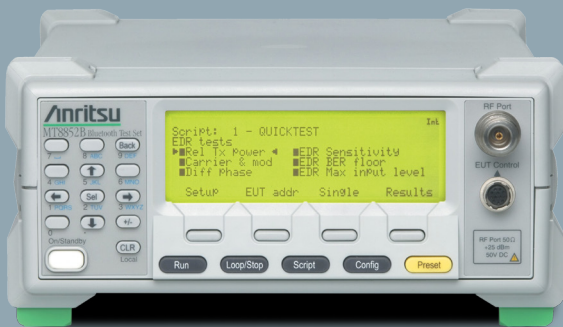# Bluetooth Low Energy Test System

Leaflet

Bluetooth® Low Energy

This is a great addition to the *Bluetooth*® Core specification and has been even further enhanced by Bluetooth 5, which provides higher data rates and longer range. It is designed specifically for small, button-cell battery powered devices for which low power consumption and low cost are the primary concerns. Bluetooth low energy is designed to coexist with existing Bluetooth devices.

It operates in the 2.4 GHz ISM band and offers data rates of 125 kbps/500 kbps/1 Mbps/2 Mbps. Bluetooth low energy devices are ideally suited to wireless health care equipment such as blood sugar monitors, fitness performance equipment such as heart rate monitors, and remote displays (such as a wrist watch display) for displaying data from sensing devices.

Anritsu/RTX Partnership

The Bluetooth Low Energy Test System is a joint solution developed by Anritsu and RTX. It was designed for engineers who are developing Bluetooth low energy enabled products and need a turn-key solution for testing and programming. It is flexible, scalable, and allows users to grow their testing capabilities as their needs change.

Anritsu produces a range of Bluetooth test equipment, which support all versions of the Core Specification

RTX is a preferred partner to major enterprise, industrial, and consumer oriented OEMs, focused on the development and production of advanced wireless solutions.
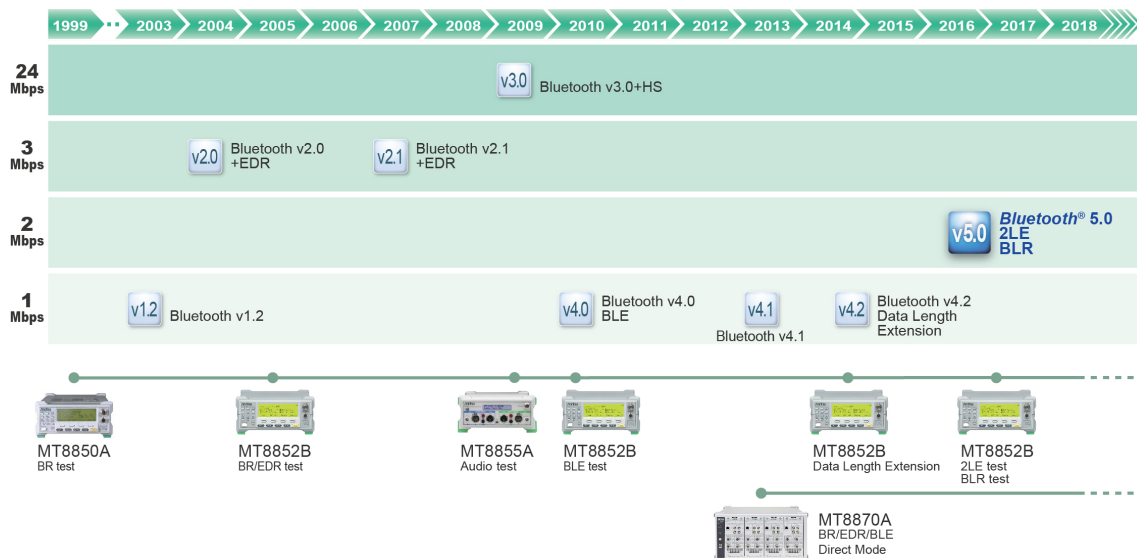

❅ Bluetooth®

Anritsu's Contribution to Bluetooth Technology

Anritsu has been at the forefront of developments in Bluetooth technology since 1999. We are an Associate Member of the Bluetooth Special Interest Group (Bluetooth SIG) and have been influential in the development of the specification.

We produce a range of Bluetooth test equipment for Basic Rate (BR), Enhanced Data Rate (EDR), and Bluetooth low energy (BLE) products.
The MT8852B is a Bluetooth test set used to verify that devices using Bluetooth technology comply with the RF Test Specification.

Product Test Needs Checklist

- Turn-key solution

- Cost effective

- Quick installation

- Scalable

- Future proof

- Easy to use

- Highly customizable

Bluetooth Low Energy Turn-key Solution

- Everything you need to start testing a Bluetooth low energy device out of the box

- Flash programming, baseband testing, clock alignment and radiated RF measurements

- Programming of the required unique Bluetooth device address (BD_ADDR)

- Supports Bluetooth Core Specification 4.0 and 4.1 (4.2 optional)

- Includes pre-defined Bluetooth low energy test cases

- Based on validated RTX and Anritsu equipment

- .NET based software platform (RTX Testgear)

Target Customer

IoT

- Small companies with great ideas they want to bring to market as soon as possible
- Software-focused with limited RF expertise
- Looking for a turn-key solution that is easy to use

Traditional manufacturers

- Established companies (power tools, lawn mowers, actuators, etc.)
- Adding wireless functionality to current products and need an easy to use wireless testing solution
- Resource constrained or lack experience with RF development

Turn-key solution that addresses all needs
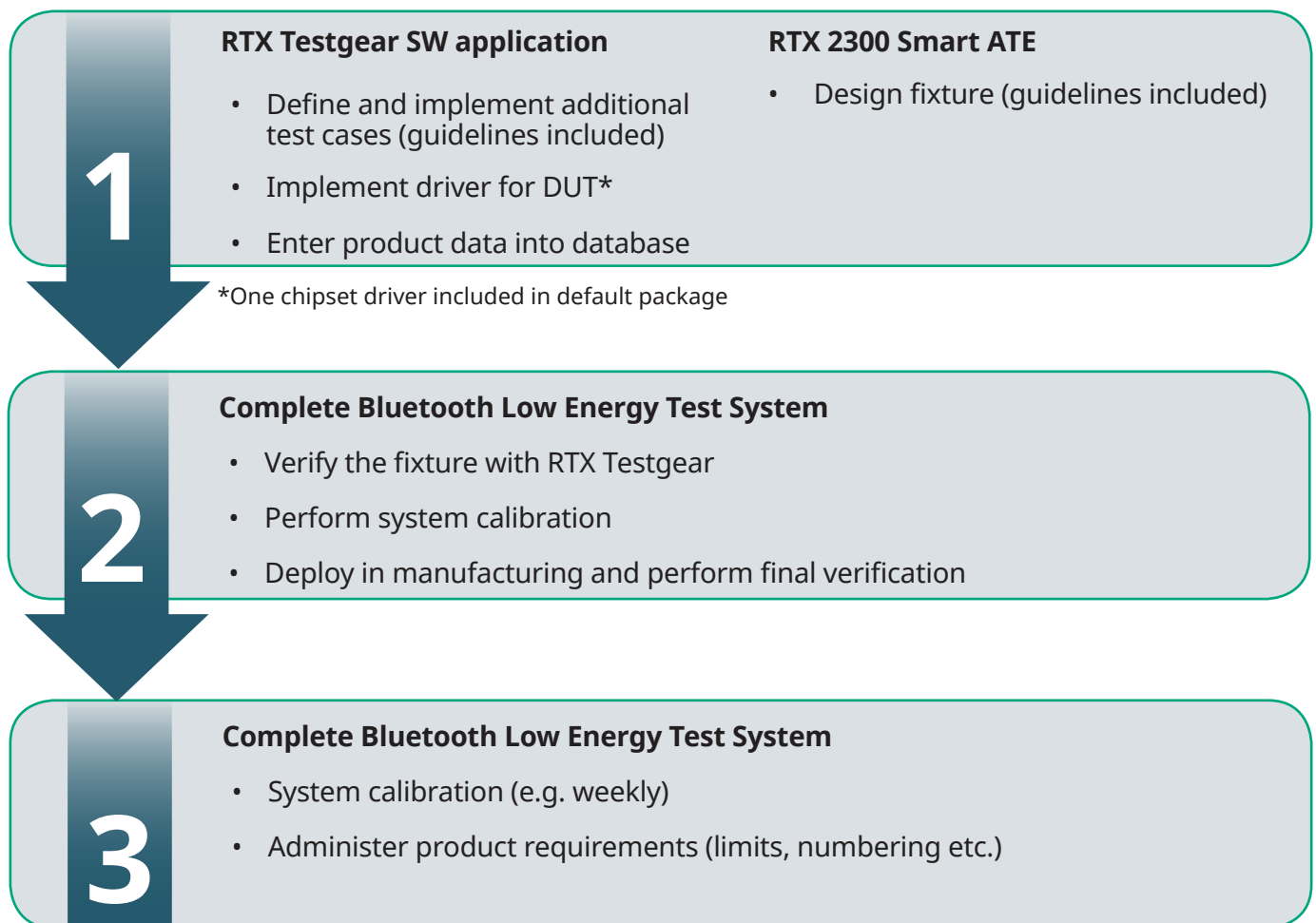
Perfect for companies with limited RF expertise

Combined "test and programming" of Bluetooth low energy devices

Solution

The new validated test solution is based on the Anritsu MT8852B Bluetooth test set and the RTX2300 Smart ATE production test system. The MT8852 series has been used worldwide since more than a decade and supports all Bluetooth standards from 1.2 to 5.

It comes with pre-configured test scripts for single-button testing. The Device Under Test (DUT) can be controlled directly from the MT8852B through UART or 2-wire, Calibrate the oscillator/XTAL frequency ("clock alignment") and program chipset with adjustment coefficient.

One solution for everything — development to manufacturing

1

RTX Testgear SW application

- Define and implement additional test cases (guidelines included)
- Implement driver for DUT*
- Enter product data into database

RTX 2300 Smart ATE

- Design fixture (guidelines included)

*One chipset driver included in default package

2

Complete Bluetooth Low Energy Test System

- Verify the fixture with RTX Testgear
- Perform system calibration
- Deploy in manufacturing and perform final verification

3

Complete Bluetooth Low Energy Test System

- System calibration (e.g. weekly)
- Administer product requirements (limits, numbering etc.)

Programming

- Download chipset firmware
- Program unique Bluetooth device address (BD_ADDR)
- Calibrate the oscillator/XTAL frequency ("clock alignment") and program chipset with adjustment coefficient

Data

- Sort by batches, dates, operators, etc.
- Export to CSV
- Powerful tool for tracking all testing information

Testing

- Includes pre-defined Bluetooth test cases
- Tests do not need to be developed from scratch
- Just click a button and you can run a complete test sequence
- Radiated RF tests
- Central database for data collection and product variant specifications
- Embedded revision control of product specifications
- Flexible, can adapt to additional equipment
- Warnings for calibration of equipment

Examples

- Sequence testing
- Use a barcode scanner with the software
- Track operators (access control/logging) for situations such as if an operator causes failures due to insufficient training

Bluetooth Test Specifications (Bluetooth Low Energy PHY)

Transmitter Tests (TRM-LE)

TP/TRM-LE/CA/BV-01 (Output power)

TP/TRM-LE/CA/BV-05-C (Modulation characteristics; uncoded data at 1 Ms/s)

TP/TRM-LE/CA/BV-06-C (Carrier frequency offset and drift; uncoded data at 1 Ms/s)

Receiver Tests (RCV-LE)

TP/RCV-LE/CA/BV-01-C (Receiver sensitivity; uncoded data at 1 Ms/s)
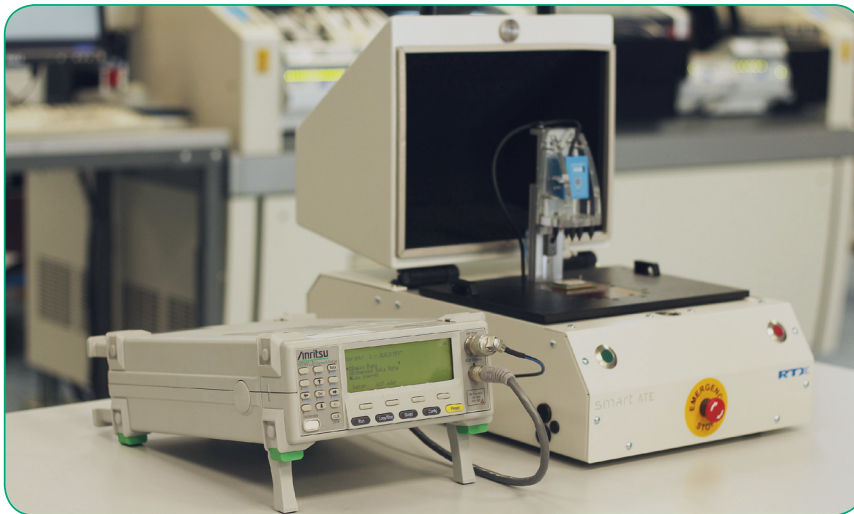
TP/RCV-LE/CA/BV-06-C (Maximum input signal level; uncoded data at 1 Ms/s)

TP/RCV-LE/CA/BV-07-C (PER report integrity; uncoded data at 1 Ms/s)

Hardware

Package

- Anritsu MT8852B-043 (Bluetooth low energy only)

- RTX2300 Smart ATE (Incl. programmable PSU, Quick Swap Kit, etc.)

- RTX Testgear SW development platform

- RF cables, DUT interface cables

- Drivers for 1 Bluetooth chipset

MT8852B

The MT8852B Bluetooth test set is used to verify that devices using Bluetooth technology comply with the RF Test Specification.

It has a small size (half rack), light weight (≤3.8 kg), and single-button testing is possible with one click of the "Run" key.

It also has built-in support for Bluetooth low energy, UART, USB*, USB-Adapter*, and 2-wire control interfaces.

* Supported by MT8852B stand-alone

RTX2300 Smart ATE

The RTX2300 Smart ATE is a cost-effective, automated test solution for production testing of any wireless device. It integrates numerous test components found in traditional "rack and stack" wireless test systems.

It incorporates a range of modular instruments which makes it highly configurable, such as a programmable power supply (PSU), digital voltmeter (DVM), signal multiplexer, and pneumatic control.

It's been used in production tests for the past decade, is highly customizable, and it includes an RF shielded fixture bay that allows for a device-specific fixture.

Software

RTX Testgear

RTX Testgear is a test software application development platform (since 2012).
It consists of the following:

Configuration Tool: Configure everything for your tests including tests cases and how equipment is handled.

Test Application: Use to access data during your tests including logs, test status, and debug mode.

Presentation Tool: Extract test results in CSV format and filter data.

Features

- .NET based SW development platform for automatic test sequences

- Central database for data collection and product requirements

- Includes pre-defined RF test cases and support for baseband/customized test cases

Premium (optional)

- Powerful statistical data analysis tools including trend lines, validation charts, and live views.

- Show measurement data distribution over time which is very helpful during troubleshooting.

Bluetooth Low Energy Test System - Ordering Information

The Bluetooth Low Energy Test System includes the following items:

NAME	DESCRIPTION
STANDARD	
MT8852B-043	Bluetooth Test Set with low energy measurements only
RTX2300 Smart ATE	Incl. Programmable PSU, DVM, Signal multiplexer, GPIO, shielded fixture bay, pneumatic control
STANDARD ACCESSORIES	
RTX Testgear	
Cabling Kit	RS232 HCI Control Interface Lead with adapter for RTX2300 Smart ATE, USB 2.0 cable (USB-A male to USB-B male), and NI USB-GPIB adapter
RS232 Cable	For MT8852B Firmware Updates
RF Cable	Between MT8852B and RTX2300 Smart ATE (SMA)
Quick Swap Kit	
Customization board	
Power Cords	For Destination Country
Certificate of Calibration	
Device Driver	For one Bluetooth chipset
OPTIONS	
MT8852B-034	Data length extension (Retrofit: MT8852B-334)
Development Fixture	
Range of Fixture Kits	
RTX Testgear Premium	
Bluetooth Measurement Antenna	Design specific or customer may have own antenna

Anritsu envision : ensure

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