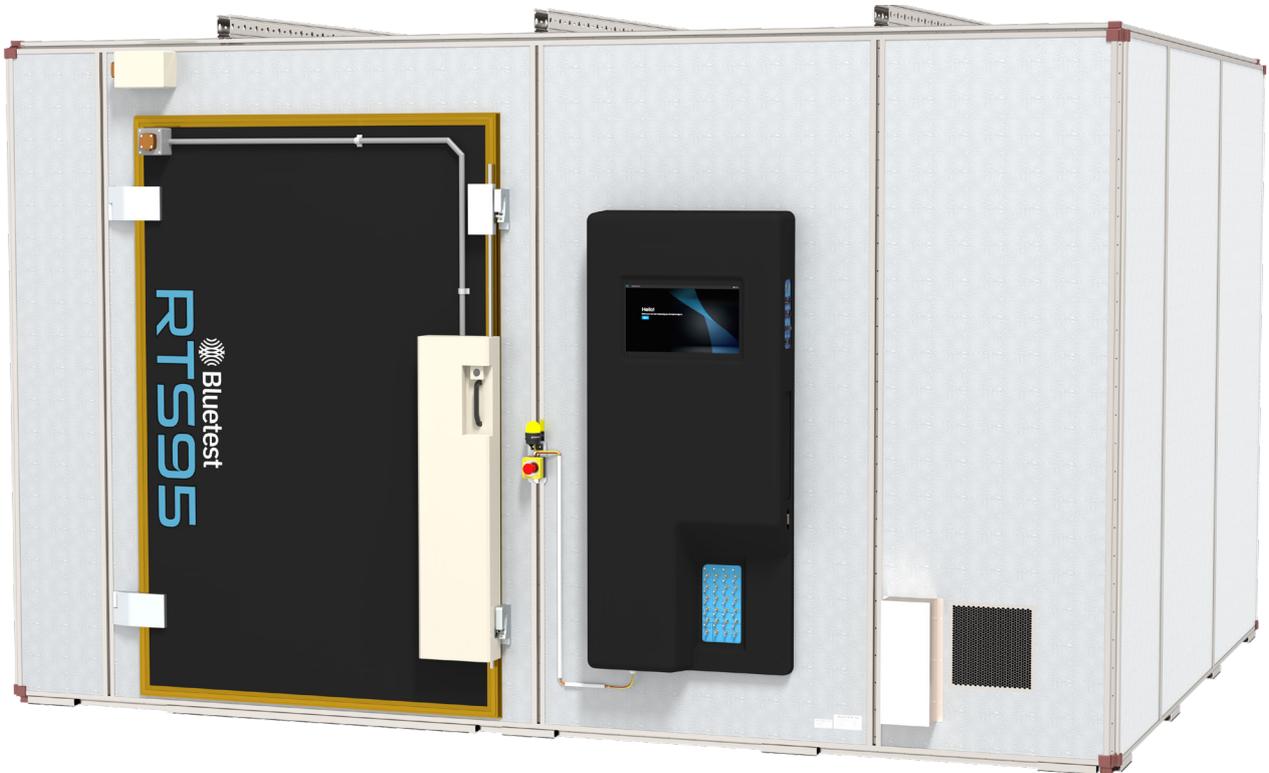# Bluetest

RTS95B

REVERBERATION TEST SYSTEM

PERFECT FOR YOUR LARGE FORM FACTOR DEVICE

It has never been easier to verify large wireless devices over-the-air (OTA). Bluetest's larger reverberation test system, RTS95B, is designed to reduce the time you spend on measurements. It is also excellent for radio performance measurements of smart home appliances, TV screens, machine-to-machine (M2M) communication equipment, body worn antennas, or any measurements down to 400 MHz. It does not have to be complicated, unless you want it to be. We want you to focus on your results, not the test equipment.

MULTIPATH ENVIRONMENT

The RTS95B consists of a shielded reverberation chamber with reflecting walls. The device under test (DUT) is placed on a turntable. The reflective walls and the turntable in combination with moving reflectors (mode stirrers) create a Rayleigh faded rich isotropic multipath environment (RIMP) inside the chamber. This environment is very well suited for antenna and radio performance evaluation of modern multi-antenna (MIMO) devices. The multi-path environment is enabled by default and does not require any additional external expensive equipment. More complex radio environments with Doppler shift, different delay profiles or MIMO channel correlation can however still be supported by adding an external channel emulator. We support the most popular brands of channel emulators on the market.

Bluetest's long experience in reverberation chamber technology development has resulted in a well proven, highly accurate and robust OTA test system.

RADIO MEASUREMENTS

The measurements are done using a vector network analyzer, or radio communication tester, connected to one or several of the chamber measurement antennas. The entire measurement system is controlled by the integrated Bluetest measurement server. Typical measurements include Antenna Efficiency and MIMO/Diversity

gain, Total Radiated Power (TRP), Total Isotropic Sensitivity (TIS) and Data Throughput vs received power.

READY FOR LTE-ADVANCED AND 5G NR

LTE-Advanced and 5G NR make it possible to communicate with a device on multiple LTE and/or 5G NR carriers simultaneously. At the same time the number of streams on one carrier is increased by going from 2x2 MIMO to 4x4 MIMO. This significantly change the test conditions and requirements on the OTA environment. Bluetest's RTS95B can be configured with up to 16 sub-12 GHz measurement antennas for maximum flexibility and support of the latest LTE and 5G standards. Moving from SISO to realistic evaluation of LTE, WLAN or 5G MIMO devices typically only requires the connection of some additional cables between the chamber and the radio communication tester. The RTS95B can in addition be prepared for measurements all the way up to 43.5 GHz to support of 5G NR measurements in the mmWave (FR2) frequency bands.

LARGE TEST VOLUME

A usable test volume of up to 2m x 2m x 2m enables measurements on wireless devices carried by real persons such as smart watches, wireless wristbands or any other devices with body worn antennas. The test volume combined with the optional heavy duty 1,2m or 1.5m turntables make it possible to measure
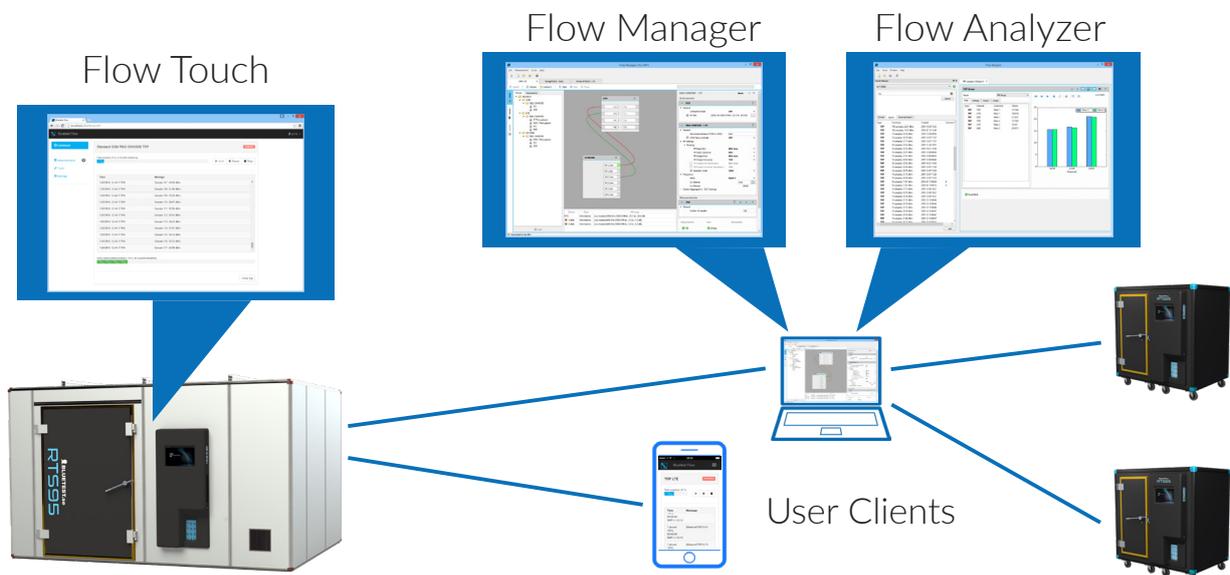
RTS95B Applications

- **Large form factor devices**
- **IoT & M2M communication equipment**
- **Body worn antennas**
- **Automotive sub-systems**
- **Connected home appliances**
- **Devices with frequencies down to 400 MHz**
- **Live person measurements**

the wireless performance of larger TV screens, M2M devices or smart home appliances. Other areas where a larger test volume is beneficial is when testing wireless car subsystems or car antennas.

BLUETEST FLOW SOFTWARE PLATFORM

The RTS95B comes with a measurement and analysis software platform: *Bluetest Flow*. This integrated test environment offers functionality for testing complex wireless solutions. It builds upon years of research and development expertise. Already well proven measurement methods and algorithms are included in the Flow platform. The Flow platform consists of *Flow Manager*, *Flow Analyzer* and *Flow Touch*.

Flow Touch

Flow Manager

Flow Analyzer

User Clients

ANALYSIS AND COMPARISON

The integrated result database collects all results in one place and enables easy and powerful search functions using Bluetest Flow Analyzer. Organize your results by adding metadata to them in form of tags or additional DUT information. You can combine results and make customized comparison plots. Export your data and create HTML reports from any kind of results. Multiple results can be combined from different devices, wireless standards, measurements types and then exported into one single report. The high resolution chamber camera adds the possibility to document your measurement and attach the picture or video with the result your legacy files can also be imported to Flow Analyzer and the result database.

WIRELESS FORMATS

Whether you need support for Bluetooth, WLAN, 2G, 3G, 4G LTE, NB-IoT or the latest 5G NR standards, we cover the whole range of wireless communication and the most commonly used communication testers and vector network analyzers.

CALIBRATION

Calibration of the system is easily done by yourself in less than 15 minutes and is normally only performed when changing

FLEXIBLE SYSTEM MANAGEMENT

All measurements are executed by the built-in Flow measurement server. There is no need to be concerned about incompatible computers or conflicting programs causing time consuming troubleshooting. Measurement configuration is done remotely with Bluetest Flow Manager installed on any regular office PC. It provides in-depth measurement configuration and setup while retaining direct chamber control. Flow Touch is available on the built-in touch screen or any mobile device with a web browser. It allows you to start, stop and monitor measurements from anywhere.

EASY OR ADVANCED – IT IS UP TO YOU

Flow Manager combined with Flow Touch gives you all the functionality you need for your OTA measurements whether it is basic or advanced. Get started fast with predefined setup settings according to standard bodies or operator specifications. Intelligent parameters are implemented so that ranges and dependencies are corrected automatically. In Flow Manager, you visually setup the measurements by connecting the cables and instruments, just like you do it in reality. The user interface supports a simplified view for the new user and an advanced view with access to more parameter

settings for the advanced and experienced user.

BATCH MEASUREMENTS – THE TIME SAVER

For the engineer with a long list of mixed measurements it is possible to run all of them in one go. You can mix your measurements as you want. Combine measurement types, wireless standards and even instruments. Create batch measurements with TRP, TIS, and then TRP again with another communication tester.

FLOW PLATFORM OVERVIEW

FLOW TOUCH

Flow Touch is a touch interface that can be used on any device with a web browser. Flow Touch allows you to control and monitor your measurements remotely. Start, stop and pause the measurements are just a few examples of the possibilities. Flow touch comes with the touch screen included in your RTS.

FLOW MANAGER

Flow Manager is the desktop client in which you configure your measurements. You set up your measurements, create batches and add multi-parameter sweeps. Define your measurements as you want whether you are a beginner or advanced user. You are guided in Flow Manager by the built in manual.

FLOW ANALYZER

Flow Analyzer is the result and data processing tool that gives you endless opportunities to plot your data as you want. Search in the built-in database and compare your measurements. Create your own design for plots and graphs, put them in a report format and export your results.

The same way you reuse the measurement setup you can reuse different calibration data. This minimizes disturbing down time for calibration.

DUT INTERFACING

The chamber design supports multiple DUT power and communication interface options. The device can, if not operated on battery, be powered with AC power, DC power, or through a USB charger interface. Ethernet, USB and RS-232 interfaces enables wired communication with the device and up to 4 interfaces can be mounted in the standard turntable.

SUPPORTING ACCESSORIES

Bluetest provides a wide range of smart accessories to improve and simplify the work with your measurements. Check out our website for more details.

MAINTENANCE

We will not leave you after the installation of your RTS95B. System operation training is tailored to your level of experience as well as previous knowledge of our systems and software. After-installation service offers includes for example measurement customizations, upgrades, or software and hardware maintenance plans. Our support and service solutions provide an upgrade path for both hardware and software platforms to ensure that the capabilities of your RTS95 stay ahead of tomorrow's wireless technologies.

TECHNICAL SPECIFICATIONS

Model	RTS95B
Frequency Range	400 MHz - 12 GHz (43.5 GHz w. 5G option)
Measurement Antennas	
400 MHz - 12 GHz	4, 8 or 16
6 GHz - 43.5 GHz	Up to 2
Shielding	
400 MHz - 6 GHz	Typ.>100 dB
6 GHz - 43.5 GHz	Typ.>80 dB
Power Consumption	Typical 160-220 W (depending on installed options)
Weight	1750 kg (3858 lb) (depending on installed options)
External Dimensions	Width: 4430 mm (174.4")
	Height: 2610 mm (102.8")
	Depth: 3340 mm (131.5")
Door opening (h x w)	2.1 m x 0.9 m or 1.4 m (optional)
Turntable size	0.6 m (default), 1.2 m or 1.5m (optional)
Max DUT size (w x d xh)	1.5 m x 1.5 m x 2 m
Max DUT weight	Up to 500 kg (with optional 1.5 m turntable)
Chamber uncertainty	0.3 dB (STD)
Repeatability	0.1 dB (STD)

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