

RF mérőegység DECT/DECT 6.0/CAT-iq & Japan DECT egységekhez széleskörű mérési lehetőségekkel

The RTX2012HS RF Test Platform for DECT/DECT 6.0/CAT-iq/Japan DECT supports a wide range of RF tests in connected mode. Its high-performance measurement capability makes it ideal for high-throughput manufacturing applications. Its extended measurement capabilities make it a perfect tool in the R&D environment as well.

The tester can be setup as either a handset or a base station, with added test capabilities. Used in fixed part testing, the RTX2012HS acts as a handset and the Device Under Test (DUT) acts as a base station and vice versa.

Portable Part Test: The RTX2012HS has the ability to act as a base station Fixed Part (FP). In this mode the tester lets the DUT (handset) lock onto the applied dummy signal. The tester can then establish a test mode connection to the DUT in order to perform measurements of the RF characteristics.

Fixed Part Test: The RTX2012HS also has the ability to act as a Portable Part (PP), locking onto a base station under test. With the base station test mode enabled, the RF characteristics can be measured. The tester can be operated using the supplied Windows® based user interface or by sending SCPI

format commands, either in the Windows environment or from within a test executer. Using the Windows based MMI, all transmitter and receiver measurements are shown in a separate window, with bars and graphs for identifying pass/fail limits.

In addition to the RF IN/OUT port on the front panel for connection to the DUT, several additional rear panel connections are provided.

The basic version of the RTX2012HS supports DECT/DECT 6.0/Japan DECT). The basic version can be upgraded with options which enhance measurement capabilities. See pages 3 and 4 for details.

DECT

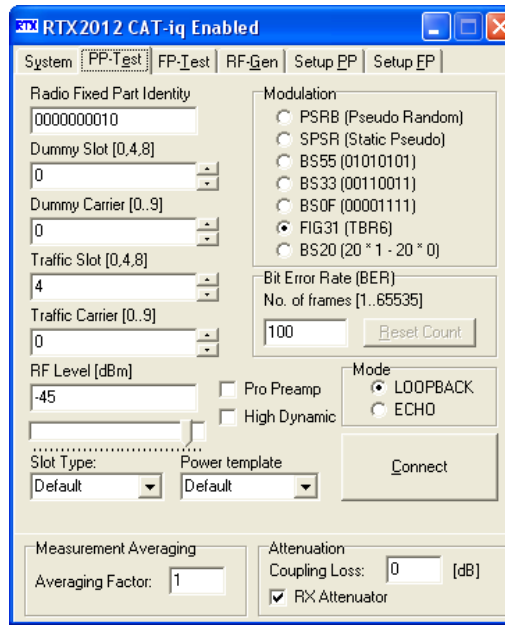
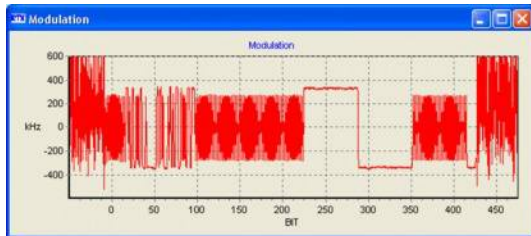


J-DECT

SIGNALING MODE

The RTX2012HS uses loop-back signalling, hence transmitting data to the DUT and receiving the looped data for RF analysis.

Applying this approach enables easy measurement of several RF parameters of the DUT, as well as being able to determine the DUT receiver sensitivity.



Extract of the Windows User Interface showing a portable part test

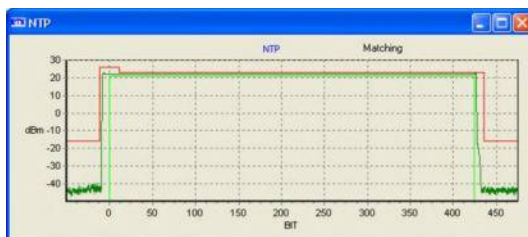
RF MEASUREMENTS

The following measurements are available with the tester:

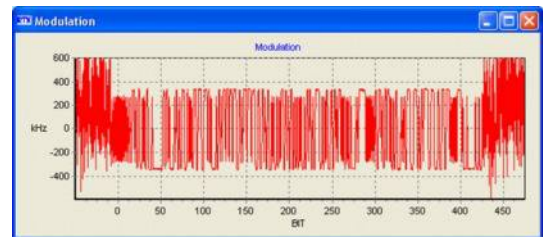
- Verification of accuracy and stability of RF carriers (TC 1 of EN 301 406)
- Transmission burst
- RF carrier modulation part 4: frequency drift (TC 8 part 4 of EN 301 406)
- Other RF-related tests
- Bit Error Ratio
- Frame Error Ratio
- Frequency error (FP)
- Jitter
- Packet delay

The following results can be shown graphically using the MMI:

- NTP (Power template)
- Modulation



NTP graph window



Modulation graph window

MODULATION

Several different RF test signal modulations can be selected to obtain accurate measurements:

- PSRB - Pseudo random bit sequence, similar to the signals sent in a real-life operation
- SPSR - Static pseudo-random bit sequence
- BS55 - Alternating zeroes and ones. Has the smallest deviation
- BS33 - Alternating double zeroes and ones
- BS0F - Four times zeroes and four times ones repeatable
- FIG31 - TBR6 test pattern¹
- BS20 - Twenty times ones and twenty times zeros repeatable²

RF LEVEL

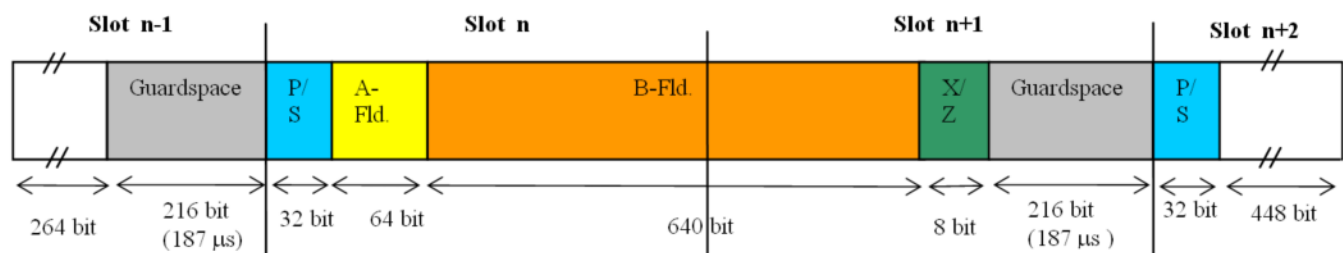
The RF output level can be adjusted “on-the-fly” for determining sensitivity of the device under test. The RF Level output range is between -100 to -40 dBm.

AUDIO

The RTX2012HS supports audio loop-back by returning received audio signal to DUT (PP or FP).

AVAILABLE OPTIONS

- CAT-iq support: This option adds CAT-iq specific RF testing³ for CAT-iq phase 1 (TS 102 527-1) the long slot type P00j (j=640 with 4 bit CRC) outlined in the above figure is mandatory and the tester supports easy verification of this new slot format. The RTX2012HS is a flexible solution for easy testing of a wide range of different CAT-iq devices. Furthermore, the RF test platform supports RF tests of DECT GAP (EN 300 444) and DECT 6.0 (TS 102 497) devices.
- R&D functionalities: This option enables the use of an external 10 MHz reference clock generator and the transmission offset (Dirty Transmit) feature.
- Extended channel numbering: This option enables the use of region-specific DECT carrier channels in the range from 0 to 27 instead of the RF frequency offset handling (DECT carrier channels 0 to 10) as supported in the basic RF test platform.



Overview of the CAT-iq long-slot frame structure

¹ Refers to old TBR 6 standard and is the same as Figure 37 and 37a in EN 301 406 V2.1.1 (2009-07).

² This modulation scheme is essential for measuring DC drift in closed loop systems.

³ Only applies to testers with CAT-iq support (i.e. basic version including CAT-iq upgrade package or advanced version).

TECHNICAL SPECIFICATIONS

SIGNAL GENERATOR		SPECIFICATIONS
Frequency range		1785.888 MHz to 1801.440 MHz
Frequency accuracy		±1.0 ppm
Aging		±0.5 ppm / year
Output level		-100 dBm to -40 dBm
Resolution		0.1 dB
Level error		≤ ±1.6 dB (-95 dBm to -40 dBm) ≤ ±2.2 dB (-100 dBm to -95 dBm)
Modulation		GFSK (B x T = 0.5)
Modulation error		Approx. 20 kHz (at max. deviation)
ANALYZER		SPECIFICATIONS
Frequency range		Same as signal generator
Measurement range		+30 dBm to -40 dBm
FM demodulator		
Frequency range		0 Hz to ±450 kHz
Frequency resolution		1 kHz
Level meter (NTP):		
Range		+30 dBm to -40 dBm
Resolution		0.1 dB
Accuracy		≤ ±1.5 dB for NTP ≥ -30 dBm ≤ ±2.0 dB for NTP < -30 dBm
FP frequency error		±0.1 ppm + time base uncertainty (after settle time of 2 seconds)
GENERAL DATA		SPECIFICATIONS
Operating temperature range		15°C to 35°C (59° F to 95° F)
Storage temperature range		-20°C to 60°C (38° F to 140° F)
Operating humidity		Up to 95% relative humidity at 40°C (104° F) - non-condensing
Power supply		200 V AC to 250 V AC / 100 V AC to 120 V AC; 50 Hz to 60 Hz
Power consumption		15 VA max.
Dimensions (WxHxD)		484 x 92 x 280 mm (approx. 19 x 3½ x 11 in)
Weight		3.0 kg (6 lb 10 oz)
CONNECTIONS		SPECIFICATIONS
RF in/out		50 Ω N(f) connector
USB		2.0 type B device connector
Analogue outputs		Receive data (inverted); Power envelope
Digital outputs		Timeslot BNC; CLK 100 BNC
Digital input		External 10 Mhz reference (Option B)

ORDERING DETAILS

RTX NO.	BASIC UNIT	DESCRIPTION
95101343	RTX2012HS DECT RF Test Platform	Basic unit
RTX NO.	OPTIONS	DESCRIPTION
95200897	Option A: CAT-iq support	Support P64 & PP64
95200898	Option B: R&D functionalities	±50 KHz carrier offset & 10 Mhz external reference
95200903	Option C: Extended channel numbering	EN 300 175-2 V 2.6.6 Table F.1 - Channels 0 to 27