R&S®CMU 200 Universal Radio Communication Tester WCDMA/HSDPA data applications

Two new options expand the functionality of the R&S®CMU200 to enable it to test WCDMA/HSDPA data applications (data end-to-end) in development and production.

Test setup made very easy

The new V4.20 version of the WCDMA firmware and the two new options R&S®CMU-K64 and -K60 now enable the R&S®CMU200 to handle HSDPA data applications in addition to WCDMA data applications. In HSDPA data end-toend operation, the same extensive setting capabilities as in the HSDPA test mode are thus available. Depending on the options installed on the mobile radio tester and the capabilities of the DUT, transmission rates in the megabit range are achieved in the downlink.

The R&S[®]CMU 200 includes the ping and FTP server data applications for providing initial results quickly. The DUT is connected to the tester and to a PC that handles network dial-in. A dial-up connection that addresses the DUT as a modem is established on the PC. In the case of successful dial-in and thus setup of a data end-to-end connection, you can already send an echo request with a ping command to the R&S[®]CMU 200. If the connection has been set up properly, the tester responds to the request accordingly.

With the FTP server in the R&S[®]CMU 200 (FIG 1), you can then exchange large files. Since the FTP server allows you to access some files in the tester, it is possible to immediately start download without previously uploading a file. This simple test setup is sufficient for testing downlink transmission rates in the megabit range.

For further data applications, the tester is connected to a network. Since all TCP/IP settings can be easily adapted, you can integrate the R&S®CMU 200 into a network (FIGs 2 and 3) without any problems. This setup allows you to use data applications available from your own network, e.g. HTTP transfer, video streaming, and MMS, thus enabling the R&S®CMU 200 to also test DUT-internal applications such as web browser, multimedia player, and the MMS function (FIG 4).

Extensive measurements

Extensive setting and measurement capabilities are also available for HSDPA data end-to-end connections. Handover to another frequency or band can be performed, for example, and the various RF parameters can be configured. In addition to the transmitter measurements you are already familiar with, you can also carry out HSDPA measure-

FIG 1

File transmission from the internal FTP server of the R&S[®]CMU 200. The downlink transmission rate here is 2 Mbit/s.

💾 Total Commander 6.53 - Ri	OHDE & SCI	HWARZ G	imbH & Co. KG	i					- 0	x
Files Mark Commands Net :	Show Conf	iguration	Start						H	Help
FTP Transfer mode Binary (ar	chives, doc	etc.)	Disconnec) pening BINARY mode data conne nload: 6.329.664 bytes, 254.5 k.byte		t-phy.rt (85	513448 bytes)		+
[·c·] ▼ [os] 23.113,3 M of 31.329	[-0-] T ftp://192.168.168.170				15					
c:\ftp*.*				* •	0:7*.*				*	-
1 Name	Ext	Size	Date	Attr	†Name	Ext	Size	Date	A	Attr
1 []		<dir></dir>	01.09.2006 13:	56	6 []		<dir></dir>	00.00.1980	00:00	
3g-generic	rtf	848,2 k	01.09.2006 13:	55 -a	3g-generic	rtf	627,6 k	01.01.2006	00:49 -6	64
					3g-net-phy	rt	8,1 M	22.08.2006	00:00 -7	7
					a_asp	bin	1,0 M	01.01.2006	00:49 -6	6.
		- 🗆 ×		01.01.2006						
Download: 6.329.664 bytes, 254.5 kbytes/s, 8 s 2.8 k 13.07.200 J: From: 3g-net-phy.rt 7.8 k 13.07.200 To : c:\ftp\3g-net-phy.rt 3.6 k 13.07.200										
75 %							-/	13.07.2006		
								13.07.2006		
Cancel								13.07.2006		
								13.07.2006		
					CellUpdateConfirm CCCH	smi		13.07.2006		
					econfigurator_net	xml		18.01.2006		
					Configurator net all	sml		02.11.2005		
					Crrcfilelist	xml	6,5 k	01.09.2006	00:00 -7	7;
					🔮 datagen	sml	1,0 k	30.07.2004	00:00 -7	7
1					efaults	xml	16.5 k	03 07 2006	00.00 -3	7: 💌
0 b / 848,2 k in 0 / 1 files					8,7 M / 15,7 M in 2 / 161 files					

ments. For example, the Receiver Quality / HSDPA ACK measurement enables the tester to display the current data throughput for layer 1 as well as the ACK, NACK and DTX values of the data end-to-end connection. Since the Receiver Quality / RLC BLER measurement has been expanded significantly, it is now possible to display data throughput versus time (FIG 5). At the same time, the tester displays statistics about the transmitted protocol data units (PDUs) and service data units (SDUs) of the radio link controller (RLC). This provides you with an informative analysis of data transmission in the downlink and uplink at a glance. Peter Steinseifer



FIG 2 IP settings for application testing: The virtual IP address is required for data transport between the WCDMA protocol stack and the Ethernet interface of the R&S°CMU-B21v14 universal signaling unit. The UE IP address is assigned to the DUT during connection setup with the R&S°CMU200.

FIG 4 Example of test setup for checking the video stream application between a mobile phone and an external video streaming server.





FIG 3 The IP settings of the R&S[®]CMU-B21v14 universal signaling unit.

FIG 5 Example of Receiver Quality / RLC BLER measurement during an HSDPA data end-to-end connection.

	NCDMA	FDD Band	Receiver G	uality Hsp	PA 🛃 🖥	Connect Control
kBit/s	xLevel: Auto	Low noise Fr Q:	req.Offset: + 0.000 / Off		612 / 1922.4 MHz / Off PDU	RLC BLER
+4500 +4000 +3500 +3000 +2500	a and a second to be a second	i lathanna an hanna dar	her officer and the second by the		Curr.	Appli- cation
+2000 +1500 +1000 +500 +0		1	,	1 1 1		Analyzer Level
0	20 40 60 DL PDU	DL SDU	120 140 UL PDU	160 180 20 UL SDU	— Downlink	UE Signal Ana.Set. <mark>/</mark>
Blocks Bytes Thro.(kBit/s	1096119 110708019	108116843	33899 1423758	1117449	— Uplink	BS Signal Level
– Cur – Avg	2933.018	1977.400 2920.717	36.000 36.643	29.467 30.199	0.000 %	BS Signal Settings
L Max	3623.400 1046.100	5020.433 615.800	46.667 6.400	52.733 2.880		Marker
RECNACK:	-1	RLC Resets	0 Igram Force Type DL		296030 ime	Menus