CMU200 HSDPA 手机测试步骤

所有测试基于3GPP TS34.121V7.2.0(2006-10)。CMU200 中WCDMA 固件版本为V4.22

5. 发射机测试项目：

- ✓ **5.2A Maximum Output Power with HS-DPCCH (Release 5 only)**
- ✓ **5.7A HS-DPCCH**
- ✓ **5.9A Spectrum Emission Mask with HS-DPCCH**
- ✓ **5.10A Adjacent Channel Leakage Power Ratio (ACLR) with HSDPCCH**
- ✓ **5.13.1A Error Vector Magnitude (EVM) with HS-DPCCH**

发射机测试前的设置

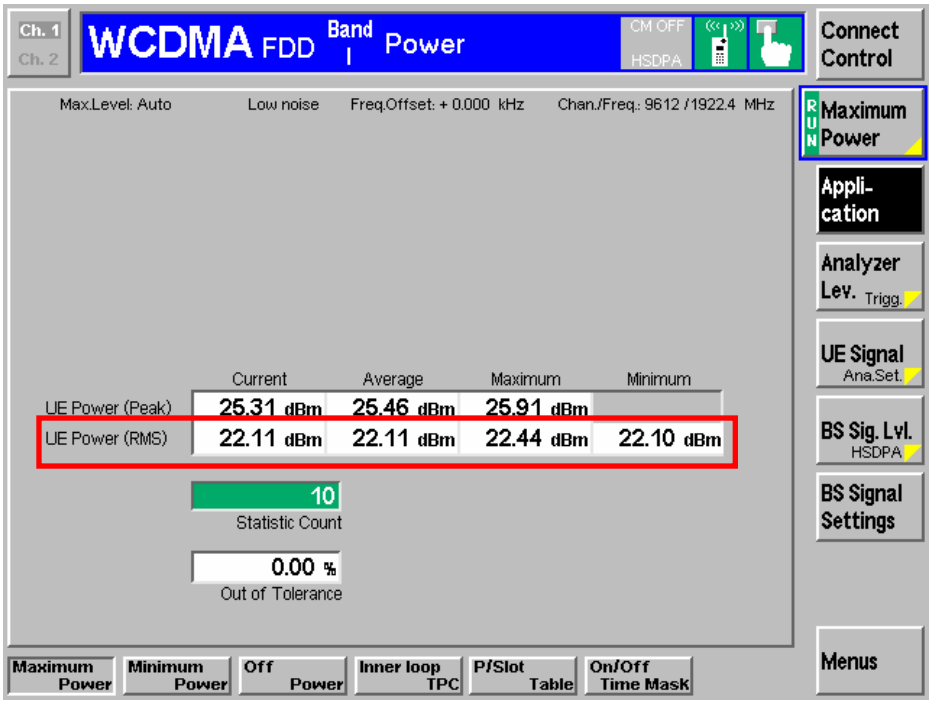
1. 关闭手机电源。
2. 按“Reset” 键初始化 CMU200。
3. 按“Menu Select”键，选择“WCDMA FDD – Signaling”，这时CMU200以应该处于“Connection Control”界面，如果不是，则可以按“Connect Control”软键（屏幕右上）切换到该界面。
4. 按一次“Signal Off”软键（屏幕右上），关闭 CMU200的输出。这时CMU200右上的状态显示为灰色的“CS：Signal Off”。
5. 按“AF/RF”软键（屏幕下部），设置“RF Output”为RF2，在“Ext. Att. Output”设置输出衰减值，设置“RF Input”为RF2，在“Ext. Att. Input”设置输入衰减值。
6. 按“BS Signal”软键（屏幕下部），进入“Node-B Settings”，选择“Level Reference”，设置成“Output Channel Power”。
7. 进入“Downlink physical channels”，根据34.121附录E.5.1的表E.5.10（如下）设置CMU的各个码道的信号功率。（CMU默认设置，该设置可省，只需检查）。各个码道相对于总信道功率的Ec/Ior为：P-CPICH：-10dB；P-CCPCH：-12dB；P-SCH：-15.3dB；S-SCH：-15.3dB；PICH：-15dB。DPDCH level：-9dB；HS-SCCH1：-8dB；HS-PDSCH1：-3dB；
8. 进入“Packet Switched”，选择“HSDPA+RMC12.2”。(CMU默认设置，该设置可省，只需检查)。进入“HS-DSCH”中，在“Channel configuration Type”中，选择“Fixed Reference Channel”；并在“Fixed Reference Channel”的“H-Set”中，选择“H-Set 1 QPSK”
9. 按“1| 2”软键（下部最右测），进入第2分屏，按“Trigger”软键，选择“Trigger”为“HS-DPCCH”
10. 按“1| 2”软键（下部最右测），返回第1分屏，按“Connection”软键（下部），按“Downlink Power”软键（屏幕左），在“Output Ch. Power”里设置CMU200的输出总信道功率为-86dBm（Ior）。
11. 根据手机的频段和频率，可以在“Band Select”选择不同的频段，在“RF Chn. Downlink”和“RF Chn. Uplink”设置频点。
12. 按一次“Signal On”软键（屏幕右上），打开 CMU200的输出。这时CMU200右上的状态显示由灰色的“Signal Off”变为绿色的“CS：Signal On”。
13. 把手机连接到CMU200的RF2端口，打开手机电源，等待手机注册完（在CMU上的状态由“PS：IDLE”变成“PS：attached”）。这时，如果需要，可以再按一次“Connection”软键（屏幕下，该键可以切换两个不同的显示界面）来查看一些手机汇报的信息。通过旋转和推旋钮可以选择和打开每一个细节。如在“UE Radio Access Capability”下的“PHY Uplink”下的“Physical Channel FDD”里的“UE Power Class”显示手机的功率类别。

14. 按“Connect UE(PS)”软键（右上），CMU200会呼叫手机，确认手机已经进入连接状态。通常CMU200在建立连接后会自动进入测试界面。

5.2A Maximum Output Power with HS-DPCCH (Release 5 only)

1. 确认手机已经进入连接状态。
2. 按“Menus”软键（右下），选择“Power”软键（下部），然后“Application”软键（右上），选择“Maximum Power”软键（下部）。
3. 按“UE Signal”软键（右中），选择“Beta”值，根据下表(Table 5.2A.2)设置设置“Beta C = 2”，“Beta C = 15” “Beta ACK = 8”， “Beta NACK = 8”， “Beta CQI = 8”
4. 读取Max power测量值（读取RMS值）。
5. 分别按照下表，设置
   “Beta C = 12”， “Beta C = 15” “Beta ACK = 8”， “Beta NACK = 8”， “Beta CQI = 8”
   “Beta C = 15”， “Beta C = 8” “Beta ACK = 8”， “Beta NACK = 8”， “Beta CQI = 8”
   “Beta C = 15”， “Beta C = 4” “Beta ACK = 8”， “Beta NACK = 8”， “Beta CQI = 8”
   重复3，4步骤。

测量结果：



Minimum Requirements in 3GPP TS34.121

Table 5.2A.1: Maximum Output Powers with HS-DPCCH

Ratio of β_c to β_d for all values of β_{hs}	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1/15 ≤ βc/βd ≤ 12/15	+24	+1/-3	+21	+2/-2
13/15 ≤ βc/βd ≤ 15/8	+23	+2/-3	+20	+3/-2
15/7 ≤ βc/βd ≤ 15/0	+22	+3/-3	+19	+4/-2

Test Requirements in 3GPP TS34.121

Table 5.2A.2: Maximum Output Powers with HS-DPCCH for test

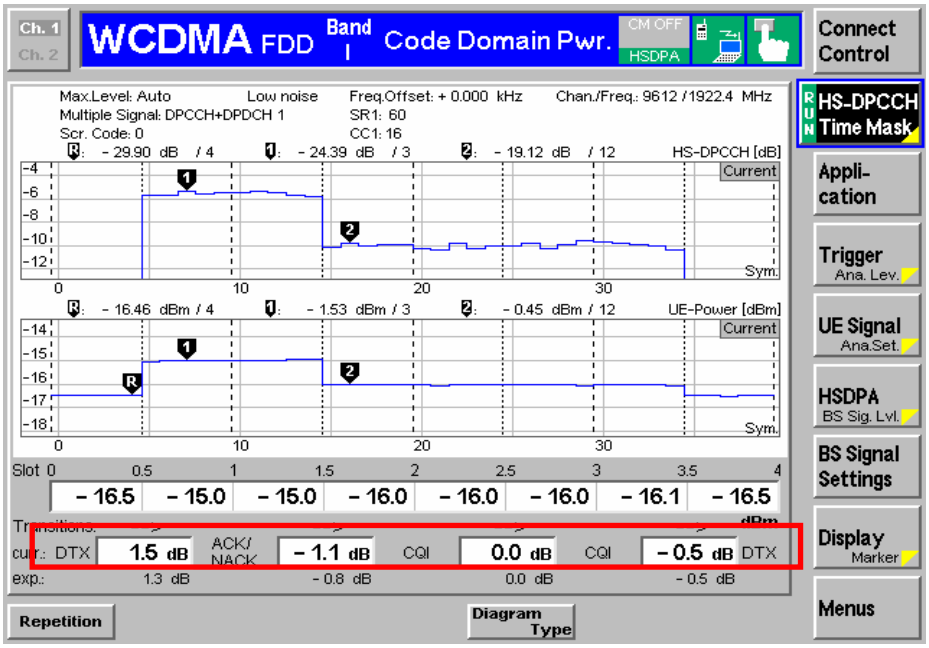
Ratio of β_c to β_d for all values of β_{hs}	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
βc/βd = 2/15, 12/15	+24	+1.7/-3.7	+21	+2.7/-2.7
βc/βd = 15/8	+23	+2.7/-3.7	+20	+3.7/-2.7
βc/βd = 15/4	+22	+3.7/-3.7	+19	+4.7/-2.7
Note: For the purpose of the test Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.				

5.7A HS-DPCCH

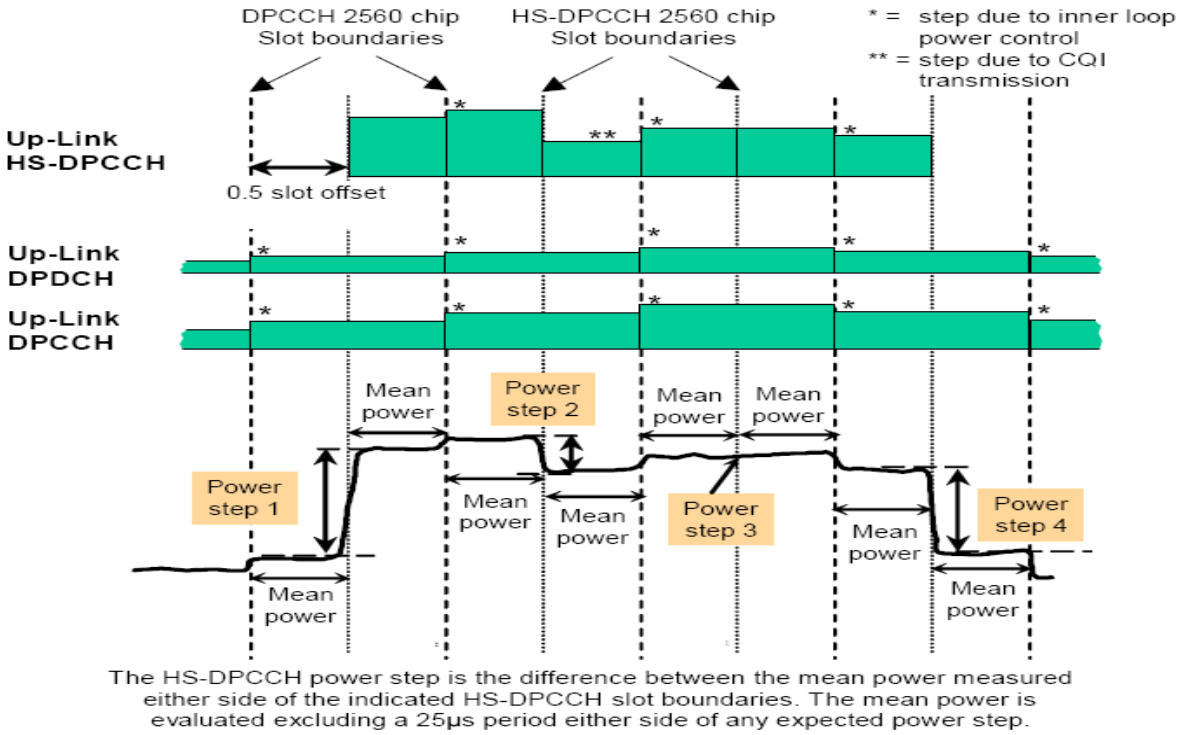
1. 按“Disconnetct”断开手机与CMU200的连接
2. 按“Connection Control”软键，进入“ BS Signal ” 设置“Downlink Physical Channels” 中的 “DL DPCH Timing Offset”为“ 6 ”。
3. 按“UE Signal ”软键，进入“TPC Power control”中，分别设置“ UE Gain factors ”中的“HSDPA Test Mode”中的“Beta C、Beta D、ACK、NACK、CQI” 为 “15、8、8、8、7”。
4. 按“Base Signal”软键，进入“HS-DSCH”中，在“Channel configuration Type”中，选择“User Defined channel”，设置“CQI Feedback Cycle”为“4ms”，设置“Inter TTI distance”为“ 2”
5. 按“Menus”软键（右下），选择“Modulation”软键（下部），然后“Applic.1”软键（右上），选择“Overview WCDMA”软键（下部）。
6. 按“Connection”键，按“Connect UE(PS)”，与手机建立连接。
7. 按 “MENU”软键（右下），进入“Code Domain”（下步），按“Application”（右上）进入“HS-DPCCH Time Mask”。
8. 按“BS. Signal Settings”软键（右下），再按“TPC Pattern Config”软键（下部），设置“Set 1”中的“Pattern Type”为“Closed Loop”；并设置其“Value”为“0dBm”
9. 按“HS-DPCCH Time Mask”软键（右上），再连续按两次“ON/OFF”键（位于数字按键区的下方），重新开始HS-DPCCH Time Mask测量。（注：当按一次“ON/OFF”键（位于数字按键区的下方）时，“HS-DPCCH Time Mask”软键左边的状态条会由绿色变为红色，表示测量已经关闭。而再按一次“ON/OFF”键（位于数字按键区的下方）后，“HS-DPCCH Time Mask”软键左边的状态条由红色

变为绿色，表示测量已经打开，测量重新开始）。读取红线中的测试值。

测量结果：



Minimum Requirements in 3GPP TS34.121



The HS-DPCCH power step is the difference between the mean power measured either side of the indicated HS-DPCCH slot boundaries. The mean power is evaluated excluding a 25µs period either side of any expected power step.

Figure 5.7A.2: Transmit power template during HS-DPCCH transmission measurements

Table 5.7A.1: Transmitter power step tolerance

Power step size (Up or down) ΔP [dB]	Transmitter power step tolerance [dB]
0	+/- 0.5
1	+/- 0.5
2	+/- 1.0
3	+/- 1.5
$4 \leq \Delta P \leq 7$	+/- 2.0

Test Requirements in 3GPP TS34.121

Table 5.7A.2: Transmitter power test requirements

Sub-test in table C.10.1.4	Power step	Power step slot boundary	Power step size, ΔP [dB]	Transmitter power step tolerance [dB]
3	1	Start of Ack/Nack	6	+/- 2.3
	2	Start of CQI	1	+/- 0.6
	3	Middle of CQI	0	+/- 0.6
	4	End of CQI	5	+/- 2.3

5.9A Spectrum Emission Mask with HS-DPCCH

1. 确认手机已经进入连接状态。
2. 按“Menus”软键（右下），选择“Spectrum”软键（下部），然后“Application”软键（右上），选择“Emission Mask”软键（下部）。
3. 按“UE Signal ”软键，进入“TPC Power control”中，分别设置“ UE Gain factors ”中的“HSDPA Test Mode”中的“Beta C、Beta D、ACK、NACK、CQI” 为 “2、15、8、8、8”。
4. 按“BS. Signal Settings”软键（右下），再按“TPC Pattern Config”软键（下部），设置“Set 1”中的“Pattern Type”为“All 1”；并确认“TPC Pattern Set.”为“Set 1”。等待片刻，使手机达到最大功率。
5. 读取Spectrum emission mask测量值。
6. 分别按照下表，设置

   “Beta C = 12”，“Beta C = 15” “Beta ACK = 8”，“Beta NACK = 8”，“Beta CQI = 8”

   “Beta C = 15”，“Beta C = 8” “Beta ACK = 8”，“Beta NACK = 8”，“Beta CQI = 8”

   “Beta C = 15”，“Beta C = 4” “Beta ACK = 8”，“Beta NACK = 8”，“Beta CQI = 8”

   重复3，4步骤。

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d (Note1, Note 2)	β_{HS}	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

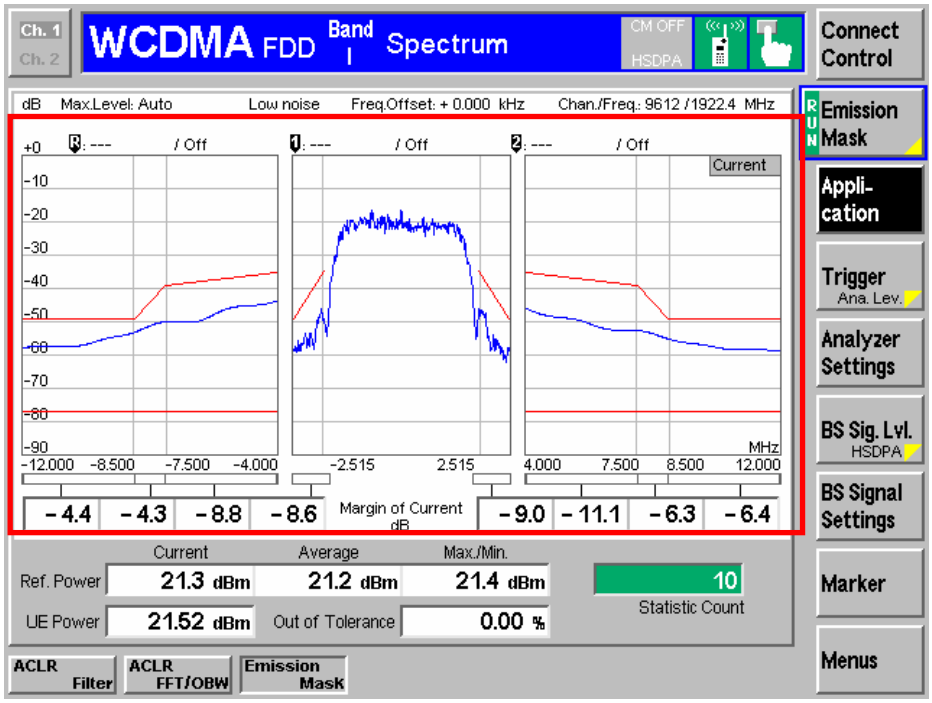
Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13A.1, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

测量结果：



Minimum Requirements in 3GPP TS34.121

Table 5.9A.1: Spectrum Emission Mask Requirement

Δf in MHz (Note 1)	Minimum requirement (Note 2)		Additional requirements Band II, Band IV and Band V (Note 3)	Measurement bandwidth (Note 6)
	Relative requirement	Absolute requirement		
2.5 to 3.5	$\left\{-35-15\cdot\left(\frac{\Delta f}{MHz}-2.5\right)\right\}dBc$	-71.1 dBm	-15 dBm	30 kHz (Note 4)
3.5 to 7.5	$\left\{-35-1\cdot\left(\frac{\Delta f}{MHz}-3.5\right)\right\}dBc$	-55.8 dBm	-13 dBm	1 MHz (Note 5)
7.5 to 8.5	$\left\{-39-10\cdot\left(\frac{\Delta f}{MHz}-7.5\right)\right\}dBc$	-55.8 dBm	-13 dBm	1 MHz (Note 5)
8.5 to 12.5 MHz	-49 dBc	-55.8 dBm	-13 dBm	1 MHz (Note 5)

Note 1: Δf is the separation between the carrier frequency and the centre of the measurement bandwidth.
Note 2: The minimum requirement is calculated from the relative requirement or the absolute requirement, whichever is the higher power.
Note 3: For operation in Band II, Band IV and Band V only, the minimum requirement is calculated from the minimum requirement calculated in Note 2 or the additional requirement for band II, whichever is the lower power.
Note 4: The first and last measurement position with a 30 kHz filter is at Δf equals to 2.515 MHz and 3.485 MHz.
Note 5: The first and last measurement position with a 1 MHz filter is at Δf equals to 4 MHz and 12 MHz.
Note 6: As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

Test Requirements in 3GPP TS34.121

Table 5.9A.3: Spectrum Emission Mask Requirement

Δf in MHz (Note 1)	Minimum requirement (Note 2)		Additional requirements Band II, Band IV and Band V (Note 3)	Measurement bandwidth (Note 6)
	Relative requirement	Absolute requirement		
2.5 to 3.5	$\left\{-33.5-15\cdot\left(\frac{\Delta f}{MHz}-2.5\right)\right\}dBc$	-69.6 dBm	-15 dBm	30 kHz (Note 4)
3.5 to 7.5	$\left\{-33.5-1\cdot\left(\frac{\Delta f}{MHz}-3.5\right)\right\}dBc$	-54.3 dBm	-13 dBm	1 MHz (Note 5)
7.5 to 8.5	$\left\{-37.5-10\cdot\left(\frac{\Delta f}{MHz}-7.5\right)\right\}dBc$	-54.3 dBm	-13 dBm	1 MHz (Note 5)
8.5 to 12.5 MHz	-47.5 dBc	-54.3 dBm	-13 dBm	1 MHz (Note 5)

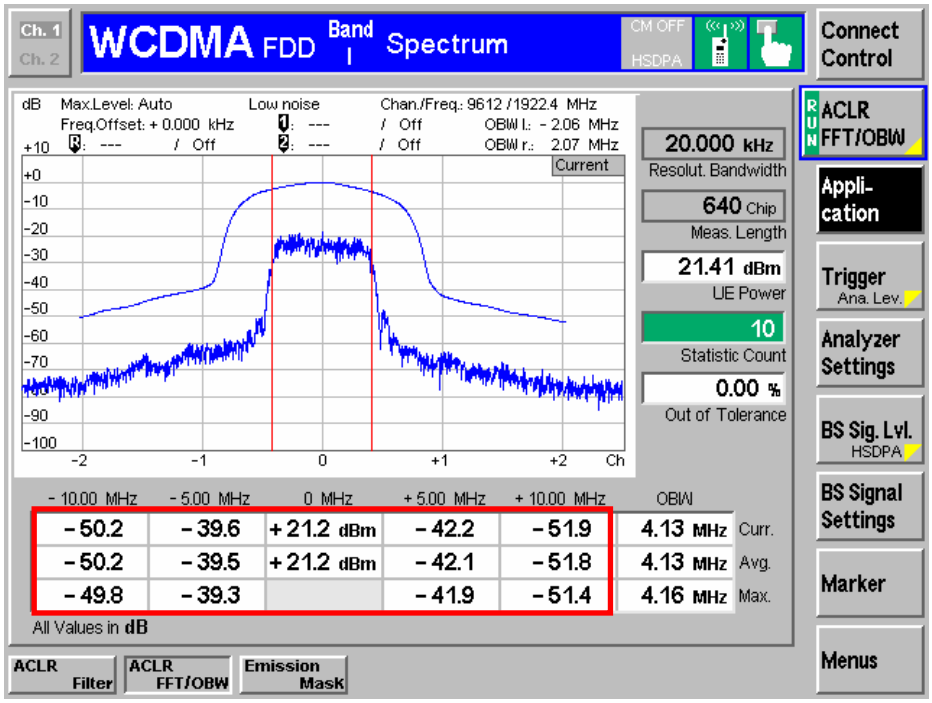
Note 1: Δf is the separation between the carrier frequency and the centre of the measurement bandwidth.
Note 2: The minimum requirement is calculated from the relative requirement or the absolute requirement, whichever is the higher power.
Note 3: For operation in Band II, Band IV and Band V only, the minimum requirement is calculated from the minimum requirement calculated in Note 2 or the additional requirement for band II, whichever is the lower power.
Note 4: The first and last measurement position with a 30 kHz filter is at Δf equals to 2.515 MHz and 3.485 MHz.
Note 5: The first and last measurement position with a 1 MHz filter is at Δf equals to 4 MHz and 12 MHz.
Note 6: As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in clause F.4.

5.10A Adjacent Channel Leakage Power Ratio (ACLR) with HSDPCCH

1. 确认手机已经进入连接状态。
2. 按“Menus”软键（右下），选择“Spectrum”软键（下部），然后“Application”软键（右上），选择“ACLR FFT/OBW”软键（下部）。
3. 按“UE Signal ”软键，进入“TPC Power control”中，分别设置“ UE Gain factors ”中的“HSDPA Test Mode”中的“Beta C、Beta D、ACK、NACK、CQI” 为 “2、15、8、8、8”。
4. 按“BS. Signal Settings”软键（右下），再按“TPC Pattern Config”软键（下部），设置“Set 1”中的“Pattern Type”为“All 1”；并确认“TPC Pattern Set.”为“Set 1”。等待片刻，使手机达到最大功率。
5. 读取ACLR测量值。
6. 分别按照下表，设置
7. “Beta C = 12”，“Beta C = 15”“Beta ACK = 8”，“Beta NACK = 8”，“Beta CQI = 8”
8. “Beta C = 15”，“Beta C = 8”“Beta ACK = 8”，“Beta NACK = 8”，“Beta CQI = 8”
9. “Beta C = 15”，“Beta C = 4”“Beta ACK = 8”，“Beta NACK = 8”，“Beta CQI = 8”
10. 重复3，4步骤。

测量结果：



Minimum Requirements in 3GPP TS34.121

Table 5.10A.1: UE ACLR

Power Class	UE channel	ACLR limit
3	+5 MHz or –5 MHz	33 dB
3	+10 MHz or –10 MHz	43 dB
4	+5 MHz or –5 MHz	33 dB
4	+10 MHz or –10 MHz	43 dB

Test Requirements in 3GPP TS34.121

Table 5.10A.3: UE ACLR

Power Class	UE channel	ACLR limit
3	+5 MHz or –5 MHz	32.2 dB
3	+10 MHz or –10 MHz	42.2 dB
4	+5 MHz or –5 MHz	32.2 dB
4	+10 MHz or –10 MHz	42.2 dB

5.13.1A Error Vector Magnitude (EVM) with HS-DPCCH

1. 确认手机已经进入连接状态。
2. 按“Menus”软键（右下），选择“Modulation”软键（下部），然后“Application”软键（右上），选择“Overview WCDMA”软键（下部）。
3. 按“UE Signal ”软键，进入“TPC Power control”中，分别设置“ UE Gain factors ”中的“HSDPA Test Mode”中的“Beta C、Beta D、ACK、NACK、CQI” 为 “15、8、8、8、7”。
4. 按“BS. Signal Settings”软键（右下），再按“TPC Pattern Config”软键（下部），设置“Set 1”中的“Pattern Type”为“All 1”；并确认“TPC Pattern Set.”为“Set 1”。等待片刻，使手机达到最大功率。
5. 先按“Overview WCDMA”软键（右上），再连续按两次“ON/OFF”键（位于数字按键区的下方），重新开始EVM测量。读取EVM测量值（读取RMS值）。
6. 按“BS. Signal Settings”软键（右下），再按“TPC Pattern Config”软键（下部），设置“Set 1”中的“Pattern Type”为“Closed Loop”；并设置“UL Target Power”为-18dBm。确认“TPC Pattern Set.”为“Set 1”，以及“TPC Step Size”为“1dB”。等待片刻，使手机功率被调整为-18dBm +/- 2dB。
7. 重复步骤4。

Minimum Requirements in 3GPP TS34.121

The EVM shall not exceed 17,5 % for the parameters specified in table 5.13.1.

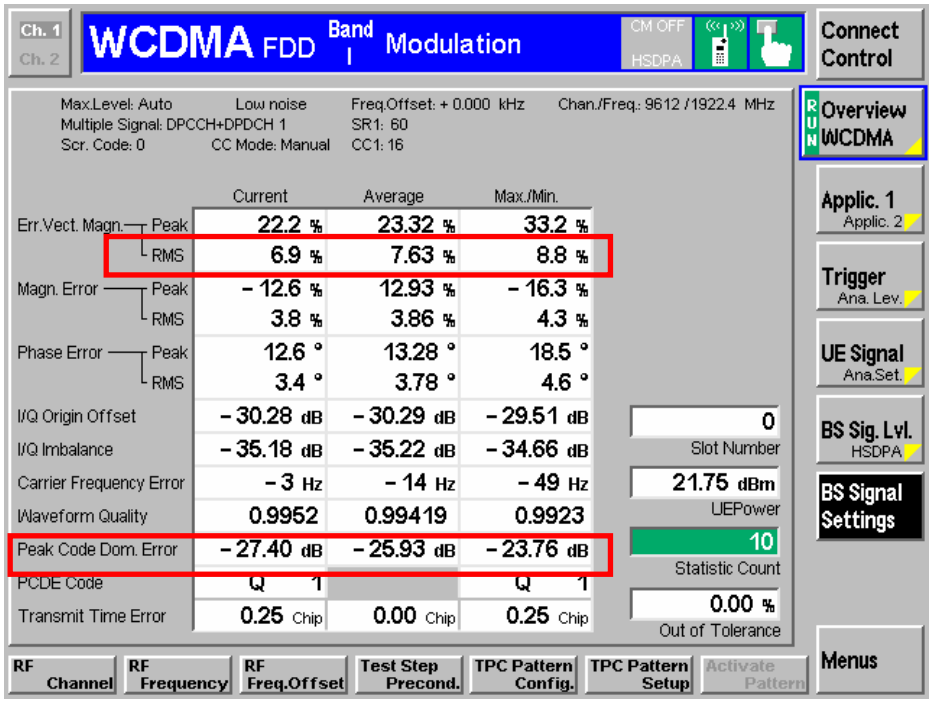
Table 5.13.1A.1: Parameters for EVM

Parameter		Level / Status	Unit
Output power		≥ –20	dBm
Operating conditions		Normal conditions	
Power control step size		1	dB
Measurement period[1]	PRACH	3904	Chips
	Any DPCH	From 1280 to 2560[2]	
Note 1: Less any 25µs transient periods Note 2: The longest period over which the nominal power remains constant			

Test Requirements in 3GPP TS34.121

The measured EVM shall not exceed 17,5 %. for parameters specified in table 5.13.1A.1 Parameters for EVM.

测量结果：



6. 接收机测试项目：

✓ **6.3A Maximum Input Level for HS-PDSCH Reception (16QAM)**

接收机测试前的设置

1. 关闭手机电源。
2. 按“Reset” 键初始化 CMU200。
3. 按“Menu Select”键，选择“WCDMA FDD – Signaling”，这时CMU200以应该处于“Connection Control”界面，如果不是，则可以按“Connect Control”软键（屏幕右上）切换到该界面。
4. 按一次“Signal Off”软键（屏幕右上），关闭 CMU200的输出。这时CMU200右上的状态显示为灰色的“CS：Signal Off”。
5. 按“AF/RF”软键（屏幕下部），设置“RF Output”为RF2，在“Ext. Att. Output”设置输出衰减值，设置“RF Input”为RF2，在“Ext. Att. Input”设置输入衰减值。
6. 按“BS Signal”软键（屏幕下部），进入“Node-B Settings”，选择“Level Reference”，设置成“Output Channel Power”。
7. 进入“Downlink physical channels”，根据34.121附录E.5.1的表E.5.10（如下）设置CMU的各个码道的信号功率。（CMU默认设置，该设置可省，只需检查）。各个码道相对于总信道功率的Ec/Ior为：

   P-CPICH：-10dB；P-CCPCH：-12dB；P-SCH：-15.3dB；S-SCH：-15.3dB；PICH：-15dB。

   DPDCH level：-13dB；HS-SCCH1：-13dB；HS-PDSCH1：-3dB；
8. 进入“Packet Switched”，选择“HSDPA+RMC12.2”。(CMU默认设置，该设置可省，只需检查)。进入“HS-DSCH”中，在“Channel configuration Type”中，选择“Fixed Reference Channel”；并在“Fixed Reference Channel”的“H-Set”中，选择“H-Set 1 16QAM”

9. 按“Downlink Power”软键（屏幕左），在“Output Ch. Power”里设置CMU200的输出总信道功率为-86dBm（Ior）。
10. 根据手机的频段和频率，可以在“Band Select”选择不同的频段，在“RF Chn. Downlink”和“RF Chn. Uplink”设置频点。
11. 按一次“Signal On”软键（屏幕右上），打开 CMU200的输出。这时CMU200右上的状态显示由灰色的“Signal Off”变为绿色的“CS：Signal On”。
12. 把手机连接到CMU200的RF2端口，打开手机电源，等待手机注册完（在CMU上的状态由“PS：IDLE”变成“PS：attached”）。这时，如果需要，可以再按一次“Connection”软键（屏幕下，该键可以切换两个不同的显示界面）来查看一些手机汇报的信息。通过旋转和推旋钮可以选择和打开每一个细节。如在“UE Radio Access Capability”下的“PHY Uplink”下的“Physical Channel FDD”里的“UE Power Class”显示手机的功率类别。
13. 按“Connect UE(PS)”软键（右中），CMU200会呼叫手机，确认手机已经进入连接状态。通常CMU200在建立连接后会自动进入测试界面。

6.3A Maximum Input Level for HS-PDSCH Reception (16QAM)

1. 确认手机已经进入连接状态。（在建立呼叫前，在Connection control里，按“Downlink Power”软键（屏幕左），设置CMU200的输出总信道功率Ior ＝ - 86dBm）
2. 按“Menus”软键（右下），选择“Receiver Quality”软键（下部），按“Application”软键，选择“HSDPA ACK”软键（下部）。
3. 按“BS. Sig.Lvl”软键（右部），选择“Level”软键（下部），根据表6.3A.4设置CMU的功率，设置“Channel Power”为-25.7dBm。
4. 按“BS. Signal Settings”软键（右下），再按“TPC Pattern Config”软键（下部），设置“Set 1”中的“Pattern Type”为“Closed loop”,并把“Value”设为“－20dBm”；并确认“TPC Pattern Set.”为“Set 1”。等待片刻，使手机功率达到“- 20 +/- 1dB”。
5. 按 ”HSDPA ACK” 软键（右部），按两次“On/Off”键，启动一次新的Throughput测量，读取测量值。

Test Requirements in 3GPP TS34.121

The measured throughput, as derived in step 4), shall meet or exceed 700Kbit/second. The minimum number of measurements required for a statistically significant result to this test are clarified in annex F.6.3, Table F.6.3.5.1.

Table 6.3A.4: Test requirement parameters for 16QAM Maximum Input Level

Parameter	Unit	Value
Phase reference		P-CPICH
$\hat{I}_{or}$	dBm/3.84 MHz	-25.7
UE transmitted mean power	dBm	20 (for Power class 3) 18 (for Power class 4)
DPCH_Ec/Ior	dB	-13
HS-SCCH_1_Ec/Ior	dB	-13
Redundancy and constellation version		6
Maximum number of HARQ transmissions		1

Note: The HS-SCCH and corresponding HS-DSCH shall be transmitted continuously with constant power but the HS-SCCH shall only use the identity of the UE under test every third TTI.

NOTE: If the above Test Requirement differs from the Minimum Requirement then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in clause F.2 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in clause F.4.

Table F.6.3.5.1 Maximum Input Level for HS-PDSCH Reception (16QAM)

Maximum Input Level for HS-PDSCH Reception (16QAM) 16 QAM H-Set 1	Absolute Test requirement (kbps)	Relative test requirement (normalized to ideal=777 kbps) No of events/No of samples in %	Test limit expressed as No of events/min No of samples (Bad DUT factor)	Min No of samples (number of events to pass) Mandatory if applicable	Test time in s Mandatory if fading Informative and approx. if statistical	BL / RT
	700	10%	58/467 (M=1.5)	467 (≤58)	2.8s (stat)	BL

9 Performance requirements for HSDPA

9.3.1 Single Link Performance - AWGN Propagation Conditions

1. 关闭手机电源。
2. 按“Reset” 键初始化 CMU200。
3. 按“Menu Select”键，选择“WCDMA FDD – Signaling”，这时CMU200以应该处于“Connection Control”界面，如果不是，则可以按“Connect Control”软键（屏幕右上）切换到该界面。
4. 按一次“Signal Off”软键（屏幕右上），关闭 CMU200的输出。这时CMU200右上的状态显示为灰色的“CS：Signal Off”。
5. 按“AF/RF”软键（屏幕下部），设置“RF Output”为RF2，在“Ext. Att. Output”设置输出衰减值，设置“RF Input”为RF2，在“Ext. Att. Input”设置输入衰减值。
6. 按“BS Signal”软键（屏幕下部），进入“Node-B Settings”，选择“Level Reference”，设置成“Output Channel Power”。
7. 进入“Downlink physical channels”，根据34.121附录E.5.1设置CMU的各个码道的信号功率。（CMU默认设置，该设置可省，只需检查）。各个码道相对于总信道功率的Ec/Ior为：

P-CPICH：-10dB；P-CCPCH：-12dB；P-SCH：-15dB；S-SCH：-15dB；PICH：-15dB。
DPDCH level：-10dB；HS-SCCH1：-10dB；HS-PDSCH1：-3dB；

8. 进入“Packet Switched”，选择“HSDPA+RMC12.2”。(CMU默认设置，该设置可省，只需检查)。
9. 进入“HS-DSCH”中，设置“CQI Feedback Cycle”为“2ms”，在“Channel configuration Type”中，选择“CQI”；选择“CQI Channel Configuration”，设置“CQI Table Index”为“Conformance test”
10. 按“Downlink Power”软键（屏幕左），在“Output Ch. Power”里设置CMU200的输出总信道功率为-86dBm（Ior）。
11. 根据手机的频段和频率，可以在“Band Select”选择不同的频段，在“RF Chn. Downlink”和“RF Chn. Uplink”设置频点。
12. 按一次“Signal On”软键（屏幕右上），打开 CMU200的输出。这时CMU200右上的状态显示由灰色的“Signal Off”变为绿色的“CS：Signal On”。
13. 把手机连接到CMU200的RF2端口，打开手机电源，等待手机注册完（在CMU上的状态由“PS：IDLE”变成“PS：attached”）。这时，如果需要，可以再按一次“Connection”软键（屏幕下，该键可以切换两个不同的显示界面）来查看一些手机汇报的信息。通过旋转和推旋钮可以选择和打开每一个细节。如在“UE Radio Access Capability”下的“PHY Uplink”下的“Physical Channel FDD”里的“UE Power Class”显示手机的功率类别。
14. 按“Connect UE（PS）”软键（右中），CMU200呼叫手机，确认手机进入连接状态。
15. 按“Menus”软键（右下），选择“Receiver Quality”（下部），按“Application”，选择“HSDPA CQI”测试，按“BS Signal Settings”软键（右中），选择“Level”软键（下部），设置“Output Chn. Pwr.(Ior)”为“－60dBm”，设置“AWGN Noise Pwr”为“－60dBm”。
16. 按“HSDPA CQI”软键（右上），设置“Monitored H-ARQ”（下部）为“1”，选择“Measure Subframes”设置“CQI”为“2000”，设置“BLER”为“1000”（CMU默认值，只需检查）。
17. 选择“HSDPA CQI”软键（右上），按两次“ON/OFF”按键，重新启动测量，读取测量值。
18. 按“BS Signal Settings”软键（右中），选择“Level”软键（下部），按照表Table 9.3.1.1(下附)，设置“Output Chn. Pwr.(Ior)”为“－55dBm”，重复16步。
19. 按“BS Signal Settings”软键（右中），选择“Level”软键（下部），设置“Output Chn. Pwr.(Ior)”为“－50dBm”，重复16步。
20. 如果CMU测试结果显示“Pass”，即为通过此项测试

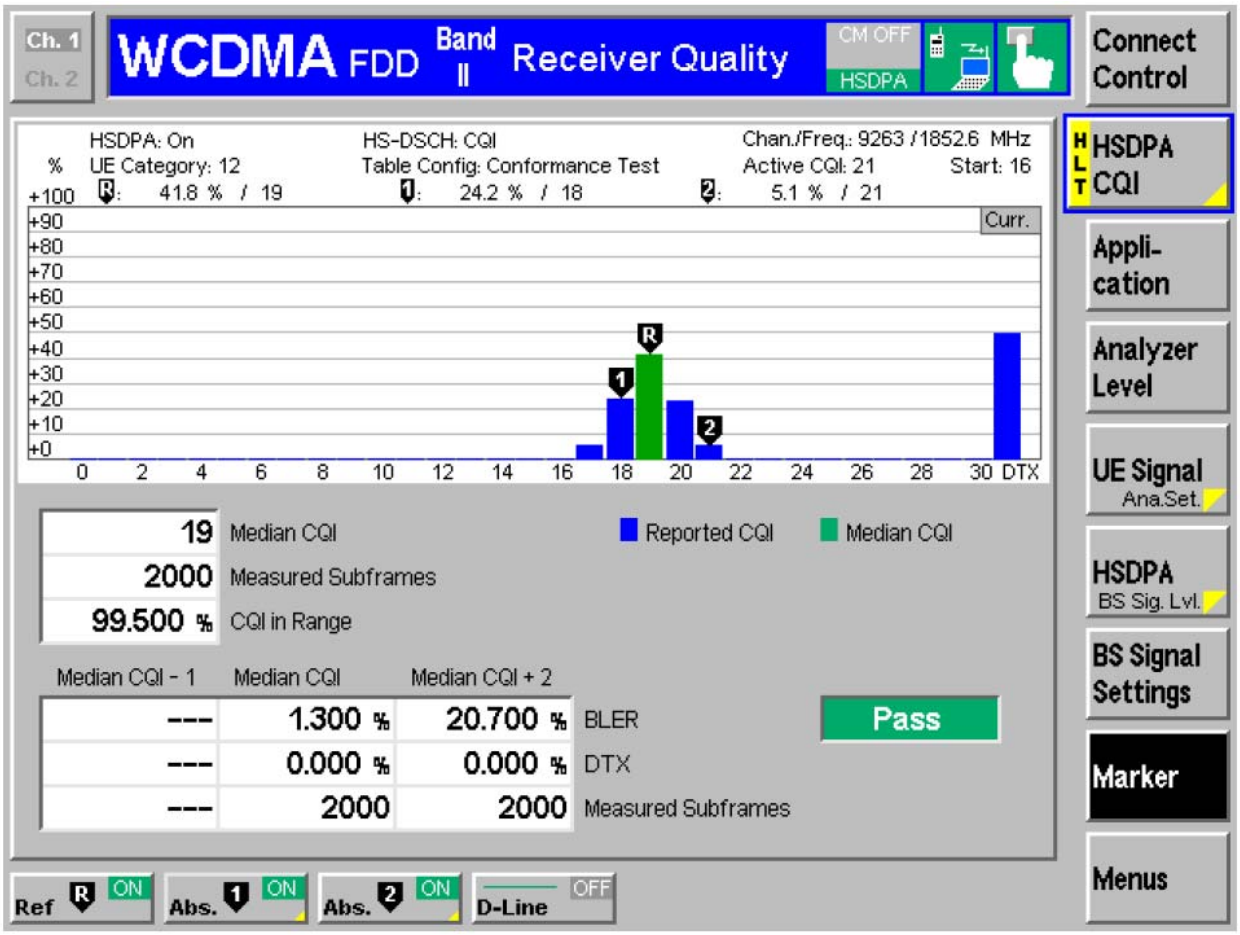

Ch. 1
Ch. 2
WCDMA FDD Band II Receiver Quality
CM OFF
HSDPA
Connect Control
HSDPA: On
UE Category: 12
HS-DSCH: CQI
Table Config: Conformance Test
Chan./Freq.: 9263 / 1852.6 MHz
Active CQI: 21
Start: 16
R: 41.8 % / 19
1: 24.2 % / 18
2: 5.1 % / 21
HSDPA CQI
Curr.
Appli-cation
Analyzer Level
UE Signal Ana.Set.
HSDPA BS Sig. Lvl.
BS Signal Settings
Marker
Menus
19 Median CQI
2000 Measured Subframes
99.500 % CQI in Range
Reported CQI
Median CQI
Median CQI - 1
Median CQI
Median CQI + 2
--- 1.300 % 20.700 % BLER
--- 0.000 % 0.000 % DTX
--- 2000 2000 Measured Subframes
Pass
Ref R ON
Abs. 1 ON
Abs. 2 ON
D-Line OFF

Table 9.3.1.1: Test Parameters for CQI test in AWGN – single link

Parameter	Unit	Test 1	Test 2	Test 3
$\hat{I}_{or}/I_{oc}$	dB	0	5	10
I_{oc}	dBm/3.84 MHz	-60		
Phase reference	-	P-CPICH		
HS-PDSCH E_c/I_{or}	dB	-3		
HS-SCCH_1 E_c/I_{or}	dB	-10		
DPCH E_c/I_{or}	dB	-10		
Maximum number of H-ARQ transmission	-	1		
Number of HS-SCCH set to be monitored	-	1		
CQI feedback cycle	ms	2		
CQI repetition factor	-	1		
HS-SCCH-1 signalling pattern	-	To incorporate inter-TTI=3 the six sub-frame HS-SCCH-1 signalling pattern shall be "…XOOXOO…", where "X" indicates TTI in which the HS-SCCH-1 uses the identity of the UE under test, and "O" indicates TTI in which the HS-SCCH-1 uses a different UE identity.		

Note1: Measurement power offset "Γ" is configured by RRC accordingly and as defined in [8].
Note2: TF for HS-PDSCH is configured according to the reported CQI statistics. TF based on median CQI, median CQI -1, median CQI+2 are used. Other physical channel parameters are configured according to the CQI mapping table described in TS25.214
Note 3: HS-PDSCH Ec/Ior is decreased according to reference power adjustment Δ described in TS 25.214.
Note 4: For any given transport format the power of the HS-SCCH and HS-PDSCH shall be transmitted continuously with constant power.

Minimum Requirements in 3GPP TS34.121

9.3.1.2 Minimum requirements

For the parameters specified in Table 9.3.1.1, and using the downlink physical channels specified in table E.5.1 the reported CQI value shall be in the range of +/-2 of the reported median more than 90% of the time. If the HS-PDSCH BLER using the transport format indicated by median CQI is less than or equal to 0.1, the BLER using the transport format indicated by the (median CQI +2) shall be greater than 0.1. If the HS-PDSCH BLER using the transport format indicated by the median CQI is greater than 0.1, the BLER using transport format indicated by (median CQI -1) shall be less than or equal to 0.1.

Test Requirements in 3GPP TS34.121

9.3.1.5 Test Requirements

Table 9.3.1.2: Additional Test Parameters for CQI test

Parameter	Unit	Test 1	Test 2	Test 3
Number of HARQ processes		2		
MAC-d PDU size	Bits	112(Note 1)		
Note 1: For UE Categories 7 and above the MAC-d PDU size is FFS.				

The pass fail decision is as specified in the test procedure in clause 9.3.1.4.2.

5) If 1800 or more of the CQI values are in the range (Median CQI - 2) ≤ Median CQI ≤ (Median CQI + 2) then continue with step 6), otherwise fail the UE.

Note: The following part of the procedure will test if BLER versus CQI has the correct sense.

6) The SS shall transmit the TF according to the median-CQI value and shall not react to the UE's CQI reports. For any HSDPA block transmitted by the SS, record the associated ACK, NACK and statDTX responses. The responses are then filtered as follows: for the sequence of responses for each HARQ process, discard all the statDTX responses. If the number of consecutive discarded statDTX for any one process is an odd number including one, also discard the next response for that HARQ process regardless whether it is an ACK or NACK. Continue to gather data until the number of filtered ACK+NACK responses reaches 1000.

For the filtered ACK and NACK responses if the ratio (NACK / ACK + NACK) < 0.1 then goto step 7), otherwise goto step 8)

7) The SS shall transmit the TF according to the median-CQI+2 value and shall not react to the UE's CQIreports. For any HSDPA block, transmitted by the SS, record and filter the ACK, NACK and statDTX responses as in step 6 until 1000 filtered ACK+NACK responses are gathered.

   If the ratio (NACK /ACK + NACK) ≥ 0.1

   then pass the UE, otherwise fail the UE

8) The SS shall transmit the TF according to the median-CQI-1 value and shall not react to the UE's CQI value. For any HSDPA block, transmitted by the SS, record and filter the ACK, NACK and statDTX responses as in step 6 until 1000 filtered ACK+NACK responses are gathered.

If the ratio (NACK / ACK + NACK) < 0.1

then pass the UE, otherwise fail the UE.

附：

针对最大流量为3.6M的HSDPA设备（Category 6 ）的最大流量测试：

1. 关闭手机电源。
2. 按“Reset” 键初始化 CMU200。
3. 按“Menu Select”键，选择“WCDMA FDD – Signaling”，这时CMU200以应该处于“Connection Control”界面，如果不是，则可以按“Connect Control”软键（屏幕右上）切换到该界面。
4. 按一次“Signal Off”软键（屏幕右上），关闭 CMU200的输出。这时CMU200右上的状态显示为灰色的“CS：Signal Off”。
5. 按“AF/RF”软键（屏幕下部），设置“RF Output”为RF2，在“Ext. Att. Output”设置输出衰减值，设置“RF Input”为RF2，在“Ext. Att. Input”设置输入衰减值。
6. 按“BS Signal”软键（屏幕下部），进入“Node-B Settings”，选择“Level Reference”，设置成“Output Channel Power”，并设置“Output Channel Power”为“-25.7dBm”。
7. 进入“Packet Switched”，选择“HSDPA+RMC12.2”。(CMU默认设置，该设置可省，只需检查)。进入“HSDPA HS-DSCH”,设置“T1 Release Timer”为“200ms”；设置“Channel Configuration Type”为“User Defined”；进入“User Defined Channel”，分别设置以下参数：“Inter-TTI Distance ”为“1”，“No. of H-ARQ Processes” 为“5”，“Transport Block Size”为“48”；“No. of Phys. Channel Codes”为“5”，“Modulation”为“16QAM”（如为1.8M的产品，此处设为“QPSK”）。
8. 进入“Connection”软键（下部），根据手机的频段和频率，可以在“Band Select”选择不同的频段，在“RF Chn. Downlink”和“RF Chn. Uplink”设置频点。
9. 按一次“Signal On”软键（屏幕右上），打开 CMU200的输出。这时CMU200右上的状态显示由灰色的“Signal Off”变为绿色的“CS：Signal On”。
10. 把手机连接到CMU200的RF2端口，打开手机电源，等待手机注册完（在CMU上的状态由“PS：IDLE”变成“PS：attached”）。
11. 按“Connect UE（PS）”软键（右中），CMU200呼叫手机，确认手机进入连接状态。
12. 按“Menus”软键（右下），选择“Receiver Quality”（下部），按“Application”，选择“HSDPA ACK”测试。读取实际测试值。