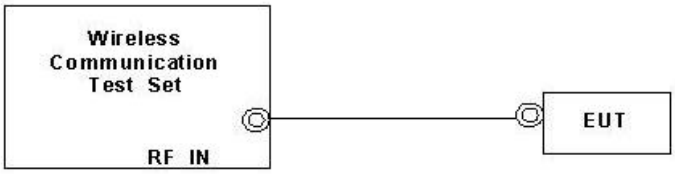
Appendix F. FCC 3G SAR Measurement Procedures

HSPA+ 16QAM Setup Configuration:

a. The EUT was connected to Base Station referred to the drawing of Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting
   i. Data rates: Varied from HSPA
   ii. RMC Test Loop = Loop Mode 1
   iii. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.



Setup Configuration

HSPA 16QAM Setup Configuration:

a. The EUT was connected to Base Station referred to the drawing of Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2E:HSPA+:UL with 16QAM
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.4, quoted from the TS 34.121-1 s5.2E
   iii. Set Channel Parms
   iv. Set Cell Power = -86 dBm
   v. Set Channel Type = HSPA
   vi. Set UE Target Power =21 dBm
   vii. Power Ctrl Mode= All Up Bits
   viii. Set Manual Uplink DPCH Bc/Bd = Manual
   ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 tableC11.1.4 sub-test 1)
   x. Set HSPA Conn DL Channel Levels
   xi. Set HS-SCCH Configs
   xii. Set RB Test Mode Setup
   xiii. Set Common HSUPA Parameters
   xiv. Set Serving Grant
   xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

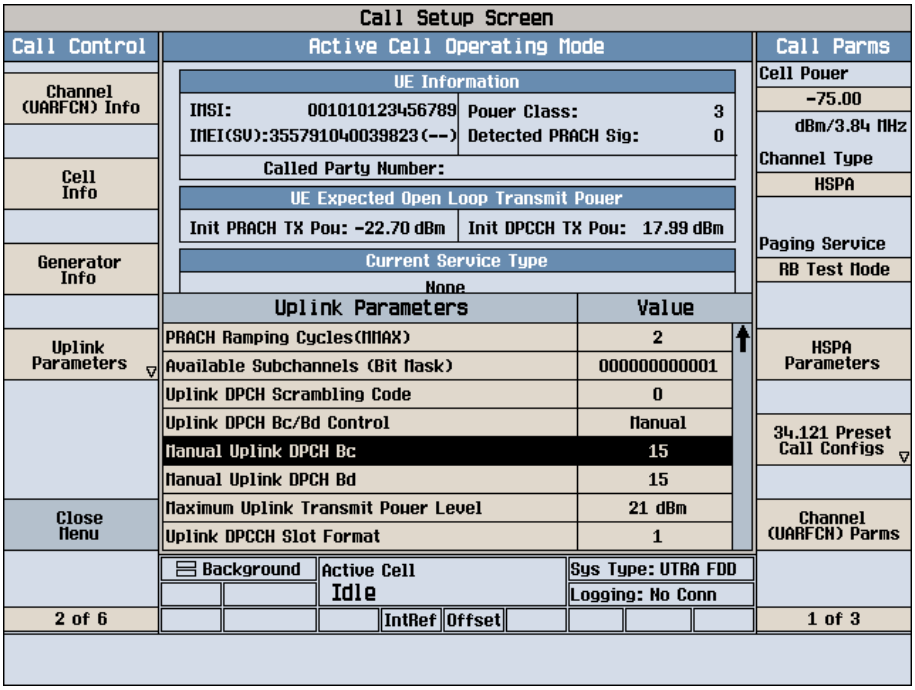
Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	$\beta_{ed}1$: 30/15 $\beta_{ed}2$: 30/15	$\beta_{ed}3$: 24/15 $\beta_{ed}4$: 24/15	3.5	2.5	14	105	105

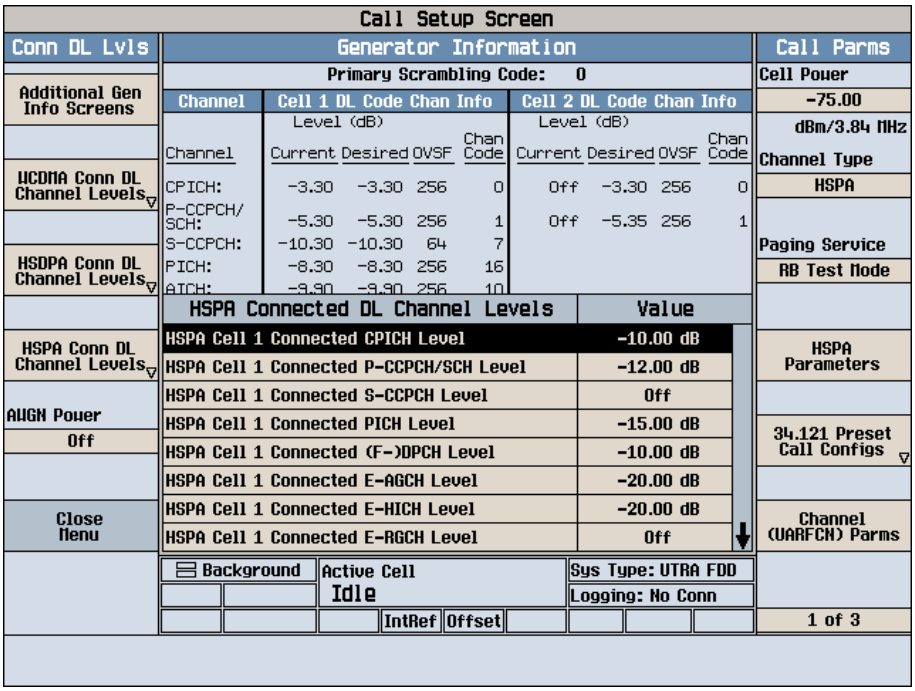
Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

Setup Configuration

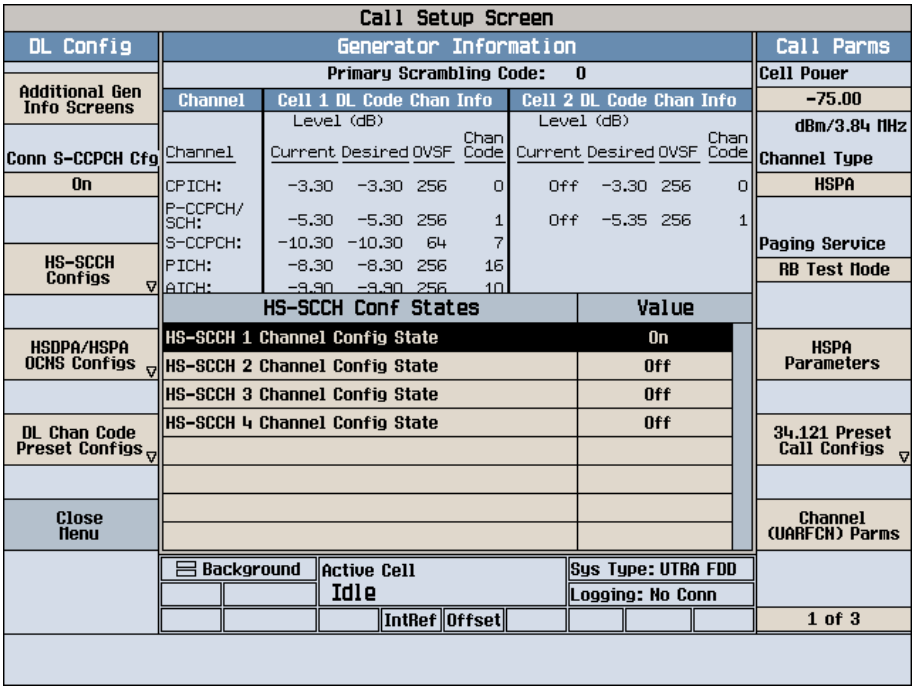
Note: For details settings in the Agilent 8960 test equipment, please refer to the user guide "16QAM Measurement User Guide rev2"



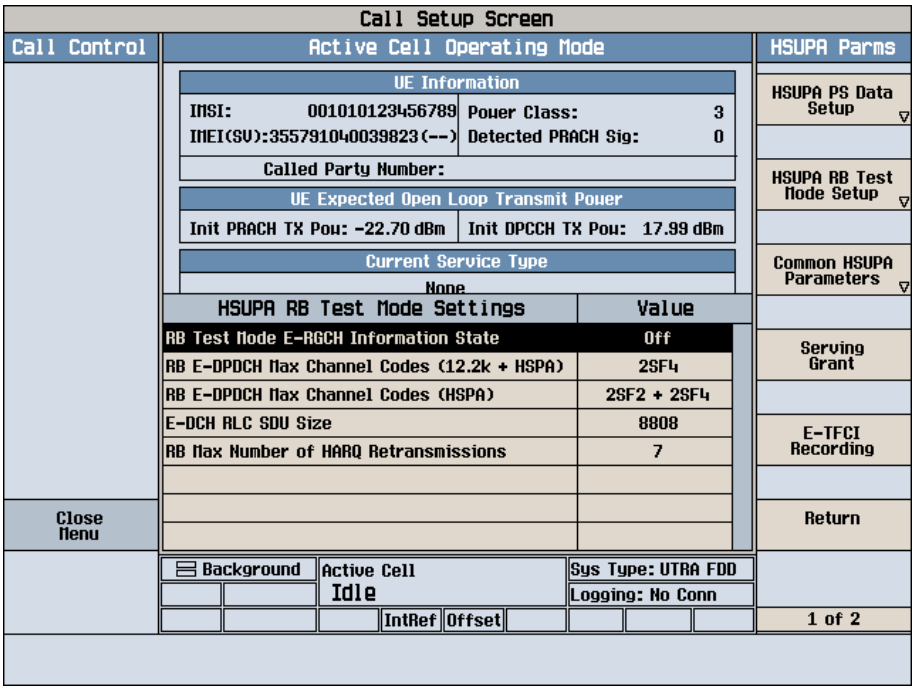
Example for HSPA Subtest 1, and other subtests following table, C11.1.4 (Gain Factors (β_c = 15 and β_d = 15))



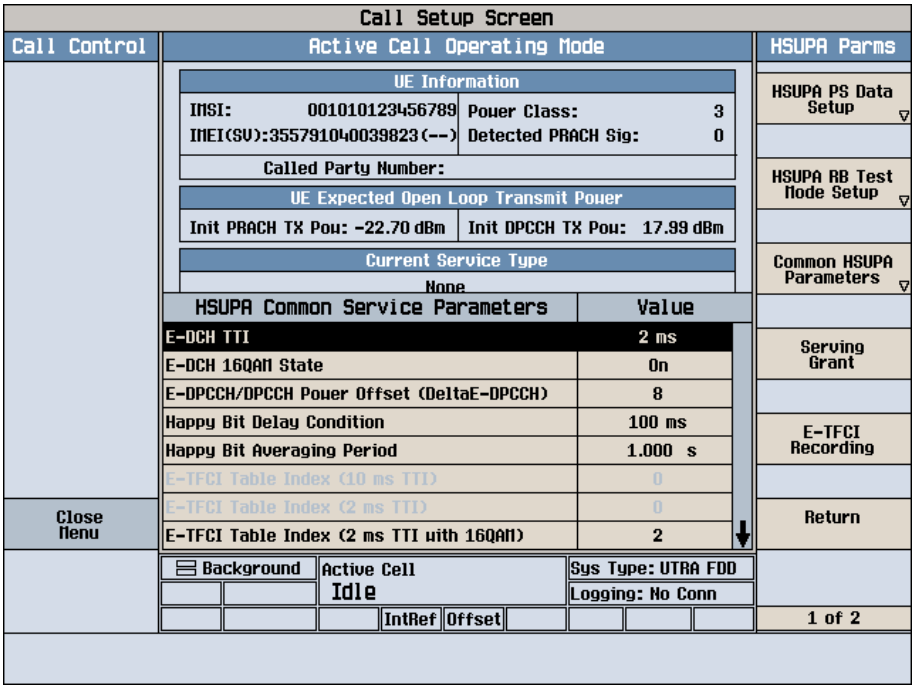
Set HSPA Conn DL Channel Levels : CPICH =10dBm，P-CCPCH/SCH=-12dBm，PICH=15，(F-)DPCH=-10，E-AGCH=-20，E-HICH=-20，E-RGCH=off，HS-PDSCHs=-3dBm，HS-SCCH 1=-8dBm



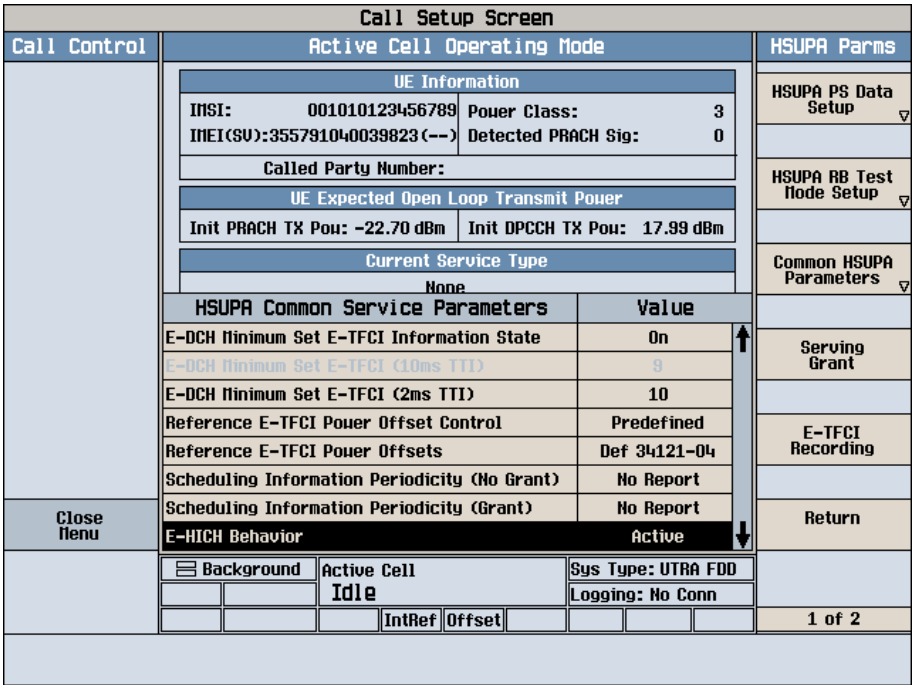
Set HS-SCCH Configs : HS-SCCH 2=off，HS-SCCH 3=off，HS-SCCH 4=off



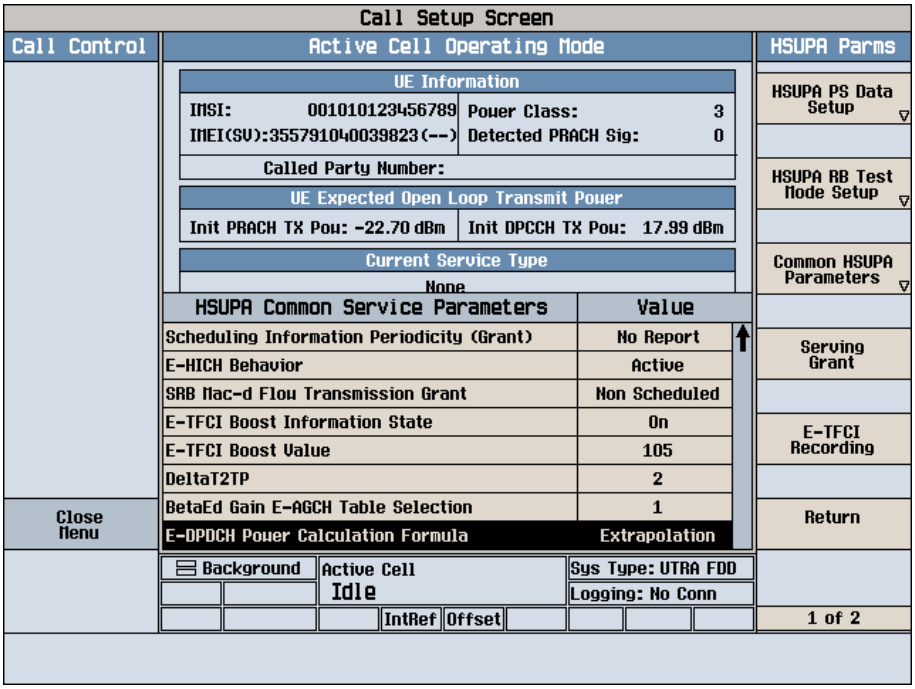
Set RB Test Mode Setup : E-RGCH Information State to Off，Set RB E-DPDCH Max Channel Codes (HSPA) to 2SF2 + 2SF4，Set E-DCH RLC SDU Size to 8808



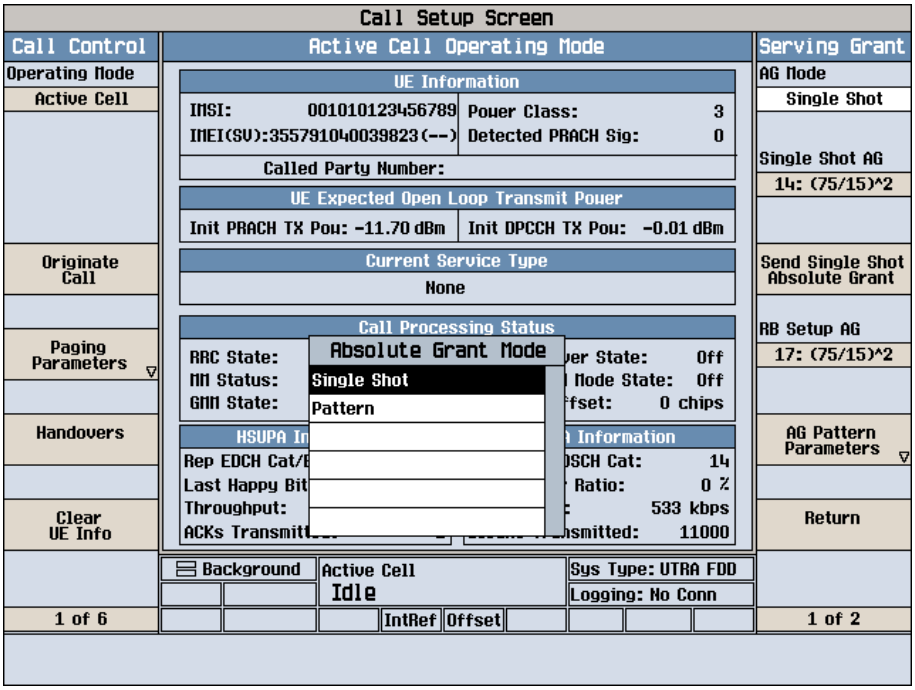
Set Common HSUPA Parameters : E-DCH TTI to 2 ms ，E-DCH 16QAM State to On，E-DPCCH/DPCCH Power Offset (DeltaE-DPCCH)=8，E-TFCI Table Index=2ms



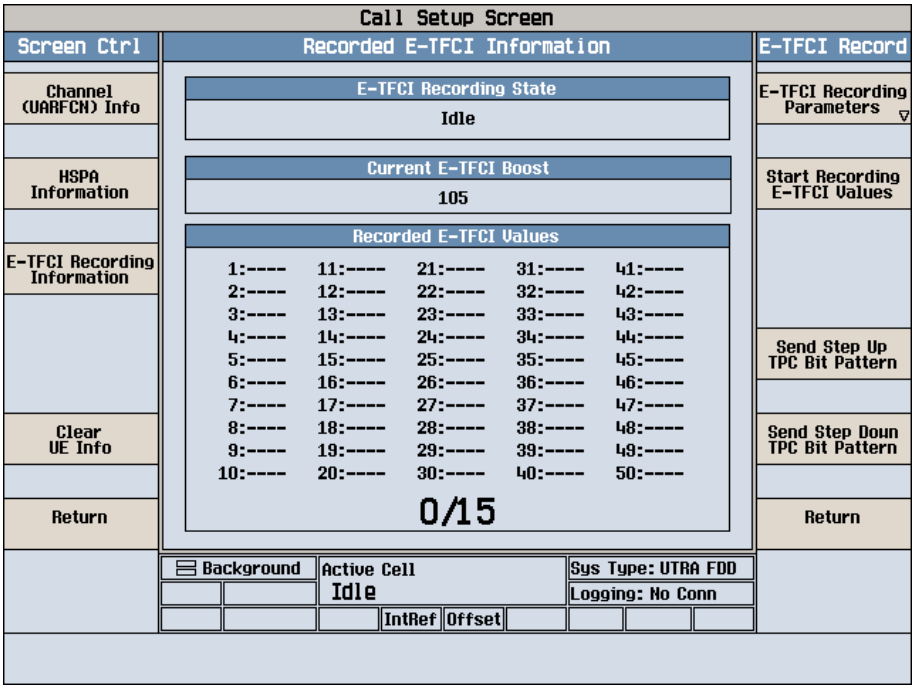
Set Common HSUPA Parameters : Reference E-TFCI Power Offset Control to Predefined Reference E-TFCI Power Offsets to Definition 34.121-04



Set Common HSUPA Parameters : E-TFCI Boost Information State to On，
E-TFCI Boost Value to 105，DeltaT2TP to 2，
BetaEd Gain E-AGCH Table Selection to 1
E-DPDCH Power Calculation Formula to Extrapolation



Set Serving Grant : AG Mode= Single Shot，Set RB Setup AG=74(75/15)



Example: Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1

Reference:

[1] 941225 D01 SAR test for 3G devices v02, SAR Measurement Procedures for 3G Devices CDMA 2000/Ev-Do/WCDMA/HSDPA/HSPA Oct. 2007 Laboratory Division Office of Engineering and Technology Federal Communications Commission

[2.] TS 34.121 Universal Mobile Telecommunications System (UMTS); Terminal Conformance Specification, Radio Transmission and Reception (FDD)

[3.] HSUPA Measurement Guide with 8960 V7.5.0 Release 7 (2007-06) Ver.: v.02.18