

Appendix F. FCC 3G SAR Measurement Procedures

Conducted Output Power:

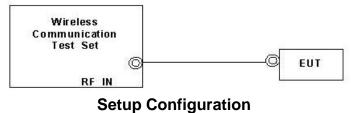
The EUT was tested according to the requirements of the FCC 3G procedures and the TS 34.121. The EUT's WCDMA and HSPA function is Release 6 version supporting HSDPA Category 8, and HSUPA Category 5. A detailed analysis of the output power for all WCDMA and HSPA (HSUPA & HSDPA) modes is provided in the tables below. According to the FCC 3G procedures, handsets with both HSDPA and HSUPA should be tested according to Release 6 HSPA test procedures, and the EUT does not support VOIP function over the HSPA function. Device was tested according to procedure KDB941225 - section Release 6 HSPA Data Devices as documented/evaluated in the following table.

WCDMA SAR Test mode - Conducted Power							
		AWS band (1700)					
Mode	Setup	CH1312	CH1413	CH1513			
WOUE	Setup	1712.4	1732.6	1752.6			
		(MHz)	(MHz)	(MHz)			
WCDMA	RMC 12.2Kbps	22.43	22.31	22.76			
	Subtest 1	22.27	22.03	22.71			
HSDPA	Subtest 2	22.21	22.03	22.78			
HODFA	Subtest 3	21.10	20.95	21.58			
	Subtest 4	21.16	21.00	21.57			
	Subtest 1	22.01	22.02	22.18			
	Subtest 2	19.90	20.35	20.43			
HSUPA	Subtest 3	20.86	20.55	21.21			
	Subtest 4	20.80	20.86	21.40			
	Subtest 5	22.22	22.05	22.27			



WCDMA 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 RMC 12.2Kbps
 - ii. RMC Test Loop = Loop Mode 1
 - iii. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.





HSDPA 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. Set Gain Factors (β_c and β_d) and parameters were set according to each
 - ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - iii. Set RMC12.2Kbps + HSDPA mode.
 - iv. Set Cell Power = -86 dBm
 - v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
 - vi. Select HSDPA Uplink Parameters
 - vii. Set DeltaACK, DeltaNACK and DeltaCQI = 8
 - viii. Set Ack-Nack Repetition Factor to 3
 - ix. Set CQI Feedback Cycle (k) to 4 ms
 - x. Set CQI Repetition Factor to 2
 - xi. Power Ctrl Mode = All Up bits

= 15/15.

d. The transmitted maximum output power was recorded.

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

Sub-test	βc	βa	βα (SF)	βc/βd	βнs (Note1, Note 2)	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	15/15	64	12/15	24/15	1.0	0.0
	(Note 4)	(Note 4)		(Note 4)			
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
	2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, 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:	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:				or the TFC during factors for the ref			

Setup Configuration



HSPA (HSUPA & HSPDA) 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 = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - 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, C11.1.3, quoted from the TS 34.121
 - iii. Set Cell Power = -86 dBm
 - iv. Set Channel Type = 12.2k + HSPA
 - v. Set UE Target Power
 - vi. Power Ctrl Mode= Alternating bits
 - vii. Set and observe the E-TFCI
 - viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

T 04440 0 (
Lable (11113 R value for	transmitter characteristics tests with HS-DPCCH and E-DCH	

Sub- test	βc	βd	β _d (SF)	βc/βd	βнs (Note1)	β _{ec}	β _{ed} (Note 5) (Note 6)	β _{ed} (SF)	β _{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E- TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/2 25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β _{ed} 1: 47/15 β _{ed} 2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81
Note 1:	Δ _{ACK} ,	ANACK and	d Δ _{CQI} =	= 30/15 v	vith $eta_{\scriptscriptstyle hs}$	= 30/15 *	β_c .						
Note 2:							her combinatio CM difference		DPDCH, [OPCCH,	HS- DPC	CCH, E-D	PDCH
Note 3							during the mo te TFC (TF1, T						by
Note 4	4: For subtest 5 the β_c/β_d ratio of 15/15 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 = 14/15 and β_d = 15/15.												
Note 5		In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.											
Note 6:	β _{ed} can not be set directly, it is set by Absolute Grant Value.												

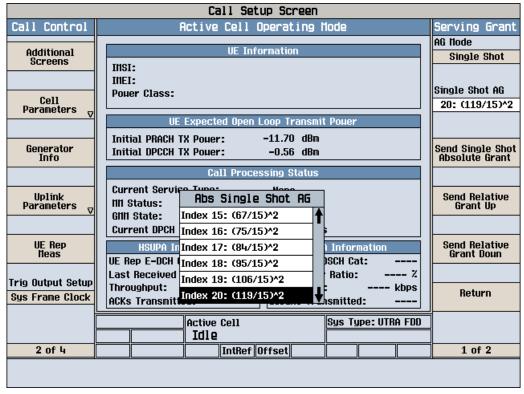
Setup Configuration

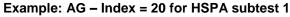
Note: For details settings in the Agilent 8960 test equipment, please refer to the user guide "HSUPA Measurement Guide with 8960 V7.5.0 Release 7 (2007-06) Ver.: v.02.18"



	Call Setup Screen			
Call Control	Active Cell Operating Mo	Call Parms		
Channel (UARFCN) Info	UE Information INSI: INEI:	Cell Роџег -86.00 dBm/3.84 ПНz		
Cell Parameters _⊽	Pouer Class:	Channel Type 12.2k + HSPA		
Generator Info	Initial PRACH TX Pouer: -11.70 dBm Initial DPCCH TX Pouer: -0.56 dBm	TUACI	Paging Service RB Test Node	
	Uplink Parameters	Value		
Uplink	PRACH Preambles	64 🛉	HSPA	
	PRACH Ramping Cycles(111AX)	2	Parameters	
	Available Subchannels (Bit Nask)	00000000001		
UE Rep	Uplink DPCH Scrambling Code	0	34.121 Preset	
	Uplink DPCH Bc/Bd Control	llanual	Call Configs ,	
	Nanual Uplink DPCH Bc	11		
Close	Manual Uplink DPCH Bd	15	Channel	
	Naximum Uplink Transmit Pouer Level	21 dBm	(UARFCN) Parms	
	Active Cell S	ys Type: UTRA FDD		
2 of 4	IntRef Offset		1 of 3	

Example for HSPA Subtest 1, and other subtests following table, C11.1.3 (Gain Factors ($\beta_c = 11$ and $\beta_d = 15$))





SPORTON INTERNATIONAL INC. TEL : 886-3-327-3456 FAX : 886-3-328-4978 FCC ID : NM8PB81120 Page Number: F5 of F7Report Issued Date: Jan. 05, 2010Report Version: Rev. 01



	Call Setup Screen	
Screen Ctrl	Recorded E-TFCI Information	E-TFCI Record
		E-TFCI Rec Count
Channel (UABECN) Info	E-TFCI Recording State	15
	Idle	
HSPA Information	Recorded E-TFCI Values	Start Recording E-TFCI Values
	1: 75 11: 75 21: 31: 41:	
	2: 75 12: 75 22: 32: 42:	
E-TFCI Recording Information	3: 75 13: 75 23: 33: 43:	
	4: 75 14: 75 24: 34: 44:	
	5: 75 15: 75 25: 35: 45:	
	6: 75 16: 26: 36: 46:	Send Step Up
	7: 75 17: 27: 37: 47:	TPC Bit Pattern
	8: 75 18: 28: 38: 48:	
	9: 75 19: 29: 39: 49:	
Clear UE Info	10: 75 20: 30: 40: 50:	Send Step Doun TPC Bit Pattern
	15/15	
Return		Return
	Background Active Cell Sys Type: UTRA FDD	1
	Connected	1
	IntRef Offset	1

Example: Confirm that E-TFCI is equal to the target E-TFCI of 75 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