

Appendix E. FCC 3G SAR Measurement Procedures

Conducted Output Power:

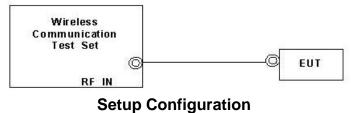
The EUT was tested according to the requirements of the FCC 3G procedures and the TS 34.121. The EUT's WCDMA and HSPA function is Release 6 version supporting HSDPA Category 8, and HSUPA Category 5. A detailed analysis of the output power for all WCDMA, HSPDA, and HSPA (HSUPA & HSDPA) modes is provided 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. 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								
		Ce	ll band (8	50)	PCS band (1900)			
Mode	Setup	CH4132	CH4182	CH4233	CH9262	CH9400	CH9538	
WOUE		826.4	836.4	846.6	1852.4	1880.0	1907.6	
		(MHz)	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)	
WCDMA	RMC 12.2Kbps	23.02	23.10	23.06	23.28	23.06	23.23	
	Subtest 1	22.96	23.08	23.01	22.58	22.15	22.46	
HSDPA	Subtest 2	22.82	22.98	22.86	22.62	22.22	22.48	
HOUFA	Subtest 3	22.42	22.53	22.46	22.65	22.18	22.42	
	Subtest 4	22.37	22.51	22.41	22.68	22.21	22.44	
	Subtest 1	22.06	22.05	22.34	22.53	22.69	22.47	
HSUPA	Subtest 2	21.00	20.84	20.86	21.25	21.35	21.48	
	Subtest 3	21.34	21.36	21.57	22.16	21.88	21.97	
	Subtest 4	21.06	20.95	21.12	21.47	21.36	21.54	
	Subtest 5	22.14	22.09	22.28	22.52	22.39	22.59	



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
- 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 (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 2:	Magnitude (EVM) with H in clause 5.	S-DPCCH te	irement test in class in class in clause 5.13. and $\Delta_{NACK} = 30/1$	1A, and HSDP	A EVM with ph	ase
Note 3: Note 4:	DPCCH the support HSD	MPR is base PA in releas	ed on the related on the related on the related on the relation of the relatio	. For all other con tive CM differenc releases. or the TFC during	e. This is appli	cable for only l	JEs that
NOLE 4.				factors for the re	•	•	· · · · ·

achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

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.

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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							during the more the more the more the more the second second second second second second second second second s						by
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:	0	n not ho	not dire	ALC: 14-14	4 I A	· · · · · · · · · · · · · · · · · · ·	Grant Value.						

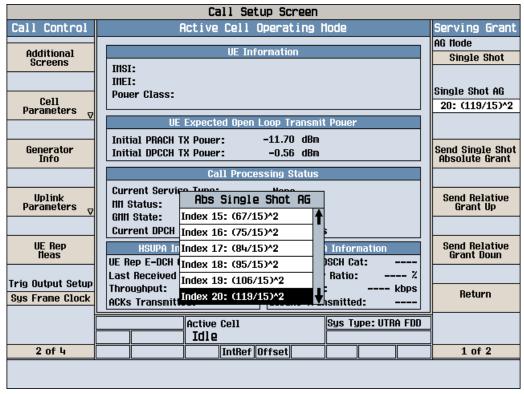
Setup Configuration

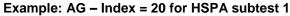
Note: For details settings in the Agilent 8960 test equipment, please refer to the user guide "HSUPA Measurement Guide with 8960 V7.5.0 Release 7 (2007-06) Ver.: v.02.18"



Call Setup Screen							
Call Control	Active Cell Operating Mo	Call Parms					
Channel (UARFCN) Info	UE Information INSI: INFI:	Cell Pouer -86.00 dBm/3.84 11Hz					
Cell Parameters _⊽	Pouer Class: UE Expected Open Loop Transmit	Channel Type 12.2k + HSPA					
Generator Info	Initial PRACH TX Pouer: -11.70 dBm Initial DPCCH TX Pouer: -0.56 dBm	Paging Service RB Test flode					
	Uplink Parameters	Value	1				
Uplink	PRACH Preambles	64 🛉	HSPA				
	PRACH Ramping Cycles(IIIAX)	2	Parameters				
	Available Subchannels (Bit Nask)	000000000001					
UE Rep	Uplink DPCH Scrambling Code	0	34.121 Preset				
lleas	Uplink DPCH Bc/Bd Control	llanual	Call Configs _V				
	Manual Uplink DPCH Bc	11					
Close	Manual Uplink DPCH Bd	15	Channel				
Henu	Haximum Uplink Transmit Poµer Level	21 dBm	(UARFCN) Parms				
	Active Cell S	Sys 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 IC : 1754F-DME320NFC



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

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