

Appendix E. FCC WCDMA SAR Measurement Procedures

Conducted Output Power:

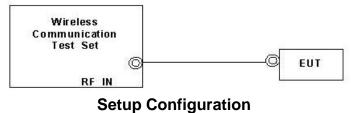
The EUT was tested according to the requirements of the FCC 3G procedures and the TS 34.121. The EUT's WCDMA and HSPA function is Release 6 version supporting HSDPA Category 8, and HSUPA Category 5. A detailed analysis of the output power for all WCDMA, HSPDA, and HSPA (HSUPA & HSDPA) modes is provided 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, 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 | | | | | | | | |
|---------------------------------------|--------------|--------|------------|--------|-----------------|--------|--------|--|
| | | Ce | II 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 | 23.33 | 23.38 | 23.44 | 23.32 | 23.23 | 23.49 | |
| | Subtest 1 | 22.87 | 22.91 | 22.94 | 22.84 | 22.81 | 23.11 | |
| HSDPA | Subtest 2 | 22.95 | 22.94 | 22.99 | 22.88 | 22.82 | 23.05 | |
| | Subtest 3 | 22.31 | 22.44 | 22.45 | 22.33 | 22.27 | 22.55 | |
| | Subtest 4 | 22.47 | 22.45 | 22.48 | 22.33 | 22.24 | 22.49 | |
| | Subtest 1 | 22.58 | 22.70 | 22.64 | 22.31 | 22.87 | 22.58 | |
| HSUPA | Subtest 2 | 21.22 | 21.41 | 21.27 | 21.19 | 21.39 | 21.46 | |
| | Subtest 3 | 21.61 | 21.63 | 21.46 | 21.51 | 21.68 | 22.10 | |
| | Subtest 4 | 21.71 | 21.64 | 21.70 | 21.71 | 21.66 | 21.90 | |
| | Subtest 5 | 22.41 | 22.66 | 22.49 | 22.79 | 22.59 | 22.51 | |



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 | |
| | e 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 $\beta_{hs} = 24/15 * \beta_c$. | | | | | | | |
| 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 | e 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 | e 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. | | | | | | | | | | | | |
| NI I - 0 | bte 6: β _{ed} can not be set directly, it is set by Absolute Grant Value. | | | | | | | | | | | | |

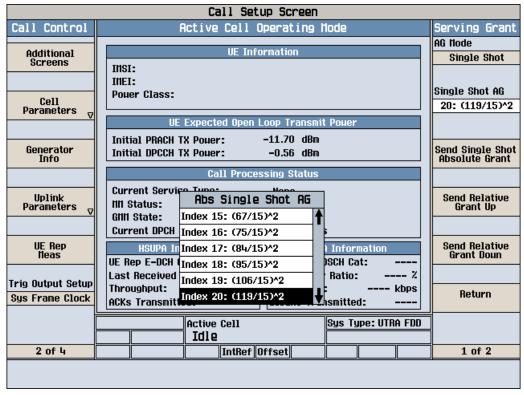
Setup Configuration

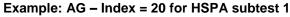
Note: For details settings in the Agilent 8960 test equipment, please refer to the user guide "HSUPA Measurement Guide with 8960 V7.5.0 Release 7 (2007-06) Ver.: v.02.18"



| | Call Setup Screen | | | | | | | |
|--------------------------|-------------------------------------|--------------------|----------------|--|--|--|--|--|
| Call Control | Active Cell Operating Mo | Call Parms | | | | | | |
| 011 | UE Information | | | | | | | |
| Channel (UARFCN) Info | | -86.00 | | | | | | |
| | INSI: IMEI: | dBm/3.84 MHz | | | | | | |
| | Poyer Class: | | Channel Type | | | | | |
| Cell Parameters _ | | | 12.2k + HSPA | | | | | |
| | UE Expected Open Loop Transmit I | Pouer | | | | | | |
| | Initial PRACH TX Pouer: -11.70 dBm | | Paging Service | | | | | |
| Generator Info | Initial DPCCH TX Pouer: -0.56 dBm | | RB Test flode | | | | | |
| | Uplink Parameters | Value | | | | | | |
| Uplink | PRACH Preambles | 64 🛉 | HSPA | | | | | |
| Parameters _V | PRACH Ramping Cycles(MNAX) | 2 | Parameters | | | | | |
| | Available Subchannels (Bit Nask) | 000000000001 | | | | | | |
| UE Rep | Uplink DPCH Scrambling Code | 0 | 34.121 Preset | | | | | |
| fleas | Uplink DPCH Bc/Bd Control | Manual | Call Configs , | | | | | |
| | Nanual Uplink DPCH Bc | 11 | | | | | | |
| Close | Manual Uplink DPCH Bd | 15 | Channel | | | | | |
| llenu | Haximum Uplink Transmit Pouer 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 FCC ID : NM8PC40210

Page Number: E5 of E7Report Issued Date: Mar. 18, 2011Report Version: Rev. 01



| | 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 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 | Ī |
| | | |
| | 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