using the highest body SAR configuration in 12.2 kbps RMC without HSDPA.
HSDPA should be configured according to the UE category of a test device.The number of HSDSCH/ HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(βc, βd), and HS-DPCCH power offset parameters (ΔACK, ΔNACK, ΔCQI) should be set according to values indicated in the Table below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Table 8: Subtests for UMTS Release 5 HSDPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (note 1, note 2)	CM(dB) (note 3)	MPR(dB)
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

Note1: $\triangle_{ACK}$, $\triangle_{NACK}$ and $\triangle_{CQI}$= 8 ⇔ $A_{hs} = \beta_{hs}/\beta_c$=30/15 ⇔ β_{hs}=30/15*β_c

Note2: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 5.13.1.A,and HSDPA EVM with phase discontinuity in clause 5.13.1AA, $\triangle_{ACK}$ and $\triangle_{NACK}$= 8 (A_{hs}=30/15) with β_{hs}=30/15*β_c,and $\triangle_{CQI}$= 7 (A_{hs}=24/15) with β_{hs}=24/15*β_c.

Note3: CM=1 forβ_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 $\beta_c\beta_d$ ratio of 12/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC (TFC1,TF1) to β_c=11/15 and β_d=15/15.

Table 9: Settings of required H-Set 1 QPSK in HSDPA mode

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	534
Inter-TTI Distance	TTI's	3
Number of HARQ Processes	Processes	2
Information Bit Payload (N_{INF})	Bits	3202
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	4800
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	9600
Coding Rate	/	0.67
Number of Physical Channel Codes	Codes	5
Modulation	/	QPSK

For the HSDPA Test configuration:
Body SAR is also measured for HSPA when the maximum average output of each RF channel with HSPA

active is at least ¼ dB higher than that measured without HSPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is above 75% of the SAR limit. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 with power control algorithm 2, according to the highest body SAR configuration in 12.2 kbps RMC without HSPA.
Due to inner loop power control requirements in HSPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E- DCH configurations for HSPA should be configured according to the β values indicated below as well as other applicable procedures described in the 'WCDMA Handset' and 'Release 5 HSDPA Data Devices' sections of 3 G device.

Table 10: Sub-Test 5 Setup for Release 6 HSUPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM (2) (dB)	MPR (dB)	AG (4) Index	E-TFCI
1	11/15 (3)	15/15 (3)	64	11/15 (3)	22/15	209/225	1039/225	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_{ed1}:47/15 β_{ed2}:47/15	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 (4)	15/15 (4)	64	15/15 (4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, ΔNACK and Δ_{CQI} = 8 ⇔ A_{hs} = β_{hs}/β_c = 30/15 ⇔ β_{hs}= 30/15 *β_c.
Note 2: CM = 1 for βc/βd =12/15, β_{hs}/β_c =24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-
DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the βc/βd ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the
signaled gain factors for the reference TFC (TF1, TF1) to βc = 10/15 and βd = 15/15.
Note 4: For subtest 5 the βc/βd ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the
signaled gain factors for the reference TFC (TF1, TF1) to βc = 14/15 and βd = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Figure 5.1g.
Note 6: βed can not be set directly; it is set by Absolute Grant Value.

Table 11: HSUPA UE category

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI (ms)	Minimum Spreading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	11484	5.76
	4	4	10		20000	2.00
7 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	22996	?
	4	4	10		20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.
UE Categories 1 to 6 supports QPSK only. UE Category 7 supports QPSK and 16QAM. (TS25.306-7.3.0)

11.2 MEASUREMENT VARIABILITY

Per FCC KDB Publication 865664 D01, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.

2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

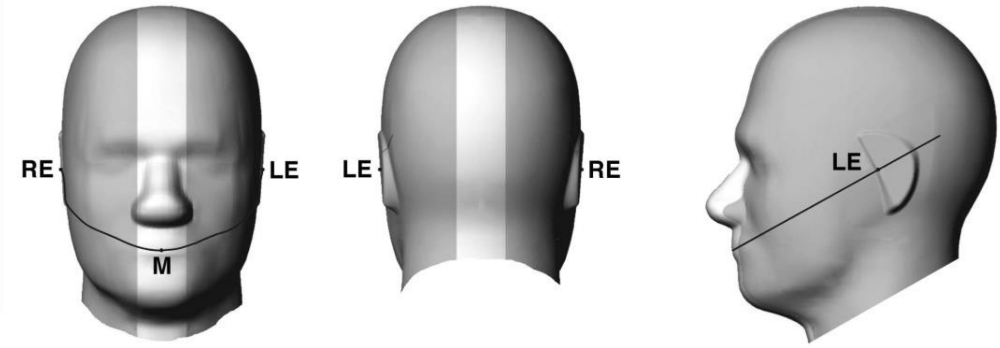
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg.

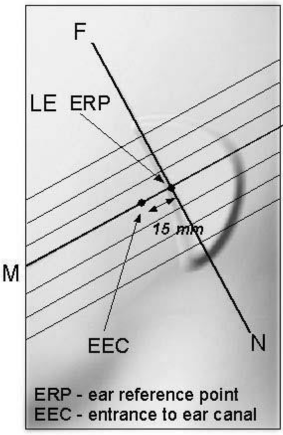
11.3 TEST POSITIONS REQUIREMENTS

(1) Ear and handset reference point

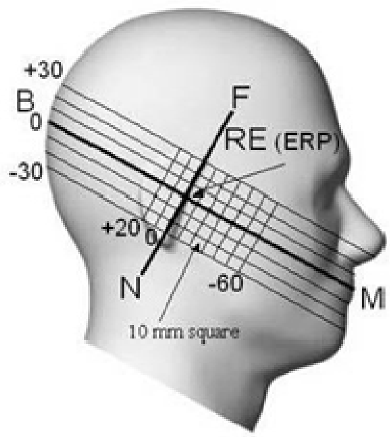
Picture11 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Picture12.The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Picture13). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Picture12. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.



Picture11 Front, back, and side views of SAM twin phantom



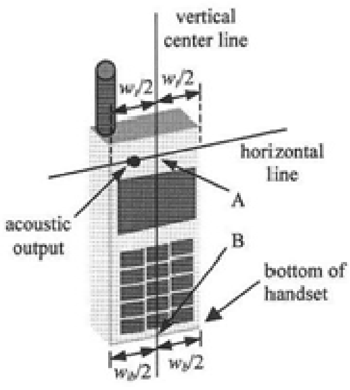
Picture12 Close-up side view of phantom showing the ear region.

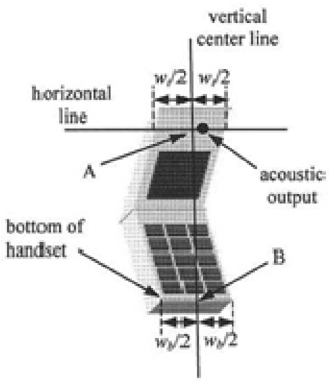


Picture13 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

(2) Definition of the cheek position

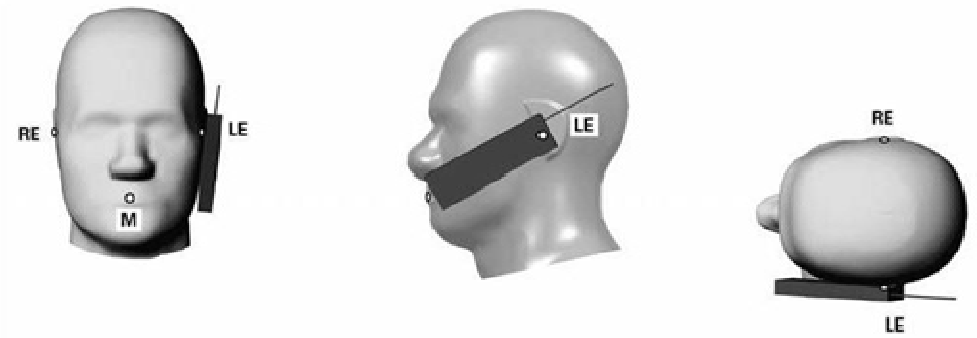
1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Picture 14 and Picture 15), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Picture 14). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Picture 15), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Picture 16), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Picture 16. The actual rotation angles should be documented in the test report.





Picture14 Handset vertical and horizontal reference lines—"fixed case

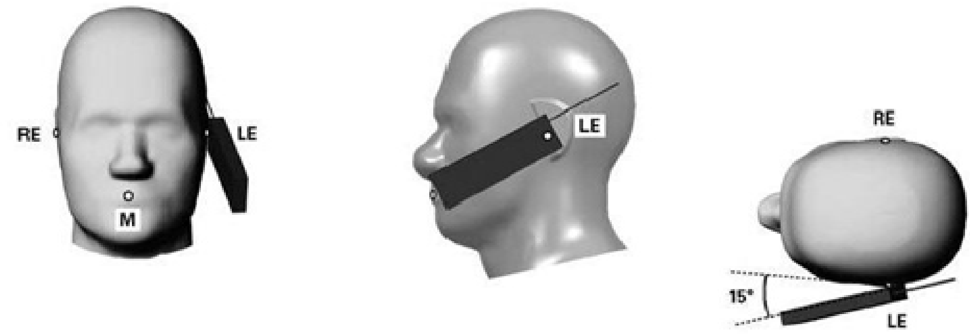
Picture15 Handset vertical and horizontal reference lines—"clam-shell case"



Picture16 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

(3) Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Picture 17. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

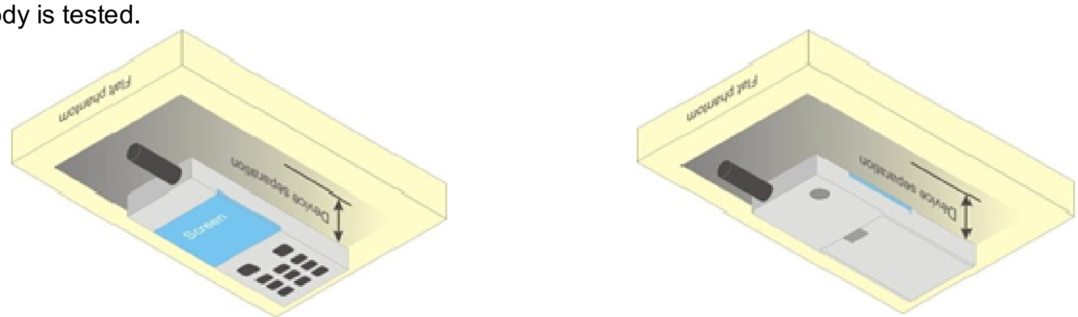


Picture17 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

(4)Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Picture 18). Per KDB 648474 D04v01r02, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v05r02 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is < 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.



Picture18 Body Worn Position

(5)Wireless Router
Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC HDB Publication 941225 D06v01r01 where SAR test considerations for handsets (L x W ⩾ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.
When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v05r02 publication procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

11.4 TEST RESULTS

11.4.1 Conducted Power Results

The output average power of WiFi 2.4G is as following:

Mode	Channel	Data rate (Mbps)	Power Setting	AV Power (dBm)
11b	1	1	36	14.04
	6	1	36	14.07
	11	1	36	14.42
11g	1	6	36	12.13
	6	6	36	11.29
	11	6	36	11.35
11n HT20	1	MCS0	36	11.15
	6	MCS0	36	11.13
	11	MCS0	36	11.43

The output average power of BT (DSS) is as following:

Mode	Channel 0 (dBm)	Channel 39 (dBm)	Channel 78 (dBm)
1Mbps	2.30	4.06	4.06
2Mbps	2.89	4.71	4.52
3Mbps	2.78	4.6	4.43

The output average power of BT (DTS) is as following:

Mode	Channel 0 (dBm)	Channel 19 (dBm)	Channel 39 (dBm)
GFSK	2.35	4.08	4

For SIM 1 Card:

The Averaged conducted power for GSM 850/1900 is as following:
Burst Average Power test result as bellowing:

Band	GSM 850			GSM 1900		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880	1909.8
GSM Voice	32.44	32.43	32.45	29.60	29.61	29.34
GPRS Multi-Slot Class8 (1 Uplink)	32.36	32.38	32.43	29.58	29.59	29.33
GPRS Multi-Slot Class10 (2 Uplink)	29.00	28.99	29.02	26.38	26.43	26.39
GPRS Multi-Slot Class11 (3 Uplink)	26.91	26.95	27.01	24.46	24.69	24.63
GPRS Multi-Slot Class12 (4 Uplink)	25.55	25.57	25.62	23.13	23.38	23.34
Note: GPRS, CS1 coding scheme. Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 6 working link Multi-Slot Class 11 , Support Max 4 downlink, 3 uplink , 7 working link Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 8 working link						

Source-based Time Averaged Burst Power as bellowing:

Band	GSM 850				GSM 1900			
Channel	128	189	251	Time average factor	512	699	885	Time average factor
Frequency(MHz)	824.2	836.4	848.8		1850.2	1880	1909.8	
GSM Voice	23.44	23.43	23.45	-9.03	20.60	20.61	20.34	-9.03
GPRS Multi-Slot Class8 (1 Uplink)	23.36	23.38	23.43	-9.03	20.58	20.59	20.33	-9.03
GPRS Multi-Slot Class10 (2 Uplink)	23.00	22.99	23.02	-6.02	20.38	20.43	20.39	-6.02
GPRS Multi-Slot Class11 (3 Uplink)	22.65	22.69	22.75	-3.26	20.20	20.43	20.37	-3.26
GPRS Multi-Slot Class12 (4 Uplink)	22.55	22.57	22.62	-3.01	20.13	20.38	20.34	-3.01
Note: 1 uplink , Time average factor =10*log(1/8)=-9.03dB, 2 uplink , Time average factor =10*log(2/8)=-6.02dB, 3 uplink, Time average factor =10*log(3/8)=-4.26dB, 4 uplink, Time average factor =10*log(4/8)=-3.01dB, Source based time average power = Burst Average power + Time Average factor								

The Averaged conducted power for UMTS Band V is as following:

Band			WCDMA V		
TX Channel			4132	4182	4233
Frequency (MHz)			826.4	836.4	846.6
3GPP MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	23.55	23.43	22.98
	3GPP Rel 99	RMC 12.2Kbps	23.57	23.47	22.99
0	3GPP Rel 6	HSDPA Subtest-1	23.13	23.05	22.52
0	3GPP Rel 6	HSDPA Subtest-2	23.09	23.01	22.56
0.5	3GPP Rel 6	HSDPA Subtest-3	22.75	22.65	22.19
0.5	3GPP Rel 6	HSDPA Subtest-4	22.64	22.51	22.08
0	3GPP Rel 6	HSUPA Subtest-1	23.03	22.94	22.47
2	3GPP Rel 6	HSUPA Subtest-2	21.66	21.53	21.06
1	3GPP Rel 6	HSUPA Subtest-3	22.11	22.06	21.57
2	3GPP Rel 6	HSUPA Subtest-4	21.68	21.56	21.07
0	3GPP Rel 6	HSUPA Subtest-5	23.10	23.02	22.61

The Averaged conducted power for UMTS Band II is as following:

Band			WCDMA II		
TX Channel			9262	9400	9538
Frequency (MHz)			1852.4	1880	1907.6
3GPP MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	22.41	22.07	22.95
	3GPP Rel 99	RMC 12.2Kbps	22.45	22.09	22.98
0	3GPP Rel 6	HSDPA Subtest-1	22.02	21.65	22.60
0	3GPP Rel 6	HSDPA Subtest-2	21.98	21.67	22.56
0.5	3GPP Rel 6	HSDPA Subtest-3	21.61	21.26	22.16
0.5	3GPP Rel 6	HSDPA Subtest-4	21.52	21.15	22.05
0	3GPP Rel 6	HSUPA Subtest-1	22.00	21.61	22.49
2	3GPP Rel 6	HSUPA Subtest-2	20.54	20.24	21.02
1	3GPP Rel 6	HSUPA Subtest-3	20.95	20.59	21.57
2	3GPP Rel 6	HSUPA Subtest-4	20.53	20.14	21.04
0	3GPP Rel 6	HSUPA Subtest-5	22.03	21.64	22.54

For SIM 2 Card:

The Averaged conducted power for GSM 850/1900 is as following:
Burst Average Power test result as bellowing:

Band	GSM 850			GSM 1900		
Channel	128	189	251	512	661	810
Frequency(MHz)	824.2	836.4	848.8	1850.2	1880	1909.8
GSM Voice	32.40	32.39	32.42	29.56	29.57	29.31
GPRS Multi-Slot Class8 (1 Uplink)	32.35	32.36	32.37	29.53	29.54	29.30
GPRS Multi-Slot Class10 (2 Uplink)	28.97	28.97	29.01	26.37	26.44	26.43
GPRS Multi-Slot Class11 (3 Uplink)	26.89	26.92	26.98	24.46	24.68	24.60
GPRS Multi-Slot Class12 (4 Uplink)	25.53	25.54	25.60	23.11	23.37	23.32

Note:
GPRS, CS1 coding scheme.
Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link
Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 6 working link
Multi-Slot Class 11 , Support Max 4 downlink, 3 uplink , 7 working link
Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 8 working link

Source-based Time Averaged Burst Power as bellowing:

Band	GSM 850				GSM 1900			
Channel	128	189	251	Time average factor	512	699	885	Time average factor
Frequency(MHz)	824.2	836.4	848.8		1850.2	1880	1909.8	
GSM Voice	23.40	23.39	23.42	-9.03	20.56	20.57	20.31	-9.03
GPRS Multi-Slot Class8 (1 Uplink)	23.35	23.36	23.37	-9.03	20.53	20.54	20.30	-9.03
GPRS Multi-Slot Class10 (2 Uplink)	22.97	22.97	23.01	-6.02	20.37	20.44	20.43	-6.02
GPRS Multi-Slot Class11 (3 Uplink)	22.63	22.66	22.72	-3.26	20.20	20.42	20.34	-3.26
GPRS Multi-Slot Class12 (4 Uplink)	22.53	22.54	22.60	-3.01	20.11	20.37	20.32	-3.01

Note: 1 uplink , Time average factor =10*log(1/8)=-9.03dB,
2 uplink , Time average factor =10*log(2/8)=-6.02dB,
3 uplink, Time average factor =10*log(3/8)=-4.26dB,
4 uplink, Time average factor =10*log(4/8)=-3.01dB,
Source based time average power = Burst Average power + Time Average factor

The Averaged conducted power for UMTS Band V is as following:

Band			WCDMA V		
TX Channel			4132	4182	4233
Frequency (MHz)			826.4	836.4	846.6
3GPP MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	23.41	23.40	22.97
	3GPP Rel 99	RMC 12.2Kbps	23.45	23.43	22.98
0	3GPP Rel 6	HSDPA Subtest-1	23.12	23.02	22.47
0	3GPP Rel 6	HSDPA Subtest-2	23.05	22.98	22.47
0.5	3GPP Rel 6	HSDPA Subtest-3	22.76	22.61	22.18
0.5	3GPP Rel 6	HSDPA Subtest-4	22.56	22.49	22.05
0	3GPP Rel 6	HSUPA Subtest-1	23.06	22.90	22.45
2	3GPP Rel 6	HSUPA Subtest-2	21.64	21.50	21.05
1	3GPP Rel 6	HSUPA Subtest-3	22.13	22.04	21.55
2	3GPP Rel 6	HSUPA Subtest-4	21.60	21.53	21.01
0	3GPP Rel 6	HSUPA Subtest-5	23.09	22.98	22.58

The Averaged conducted power for UMTS Band II is as following:

Band			WCDMA II		
TX Channel			9262	9400	9538
Frequency (MHz)			1852.4	1880	1907.6
3GPP MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	22.37	22.06	22.92
	3GPP Rel 99	RMC 12.2Kbps	22.40	22.08	22.97
0	3GPP Rel 6	HSDPA Subtest-1	22.00	21.70	22.54
0	3GPP Rel 6	HSDPA Subtest-2	21.95	21.66	22.53
0.5	3GPP Rel 6	HSDPA Subtest-3	21.64	21.19	22.08
0.5	3GPP Rel 6	HSDPA Subtest-4	21.49	21.12	22.08
0	3GPP Rel 6	HSUPA Subtest-1	21.93	21.64	22.51
2	3GPP Rel 6	HSUPA Subtest-2	20.45	20.15	21.03
1	3GPP Rel 6	HSUPA Subtest-3	20.93	20.53	21.56
2	3GPP Rel 6	HSUPA Subtest-4	20.52	20.12	21.09
0	3GPP Rel 6	HSUPA Subtest-5	21.99	21.61	22.52

11.4.2 SAR TEST RESULTS

SAR Values

Plot No.	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
GSM850_Head_20150807											
1	GSM Voice	Right Cheek	-	251	848.8	32.45	33.00	1.135	-0.02	0.168	0.191
	GSM Voice	Right Tilted	-	251	848.8	32.45	33.00	1.135	-0.05	0.089	0.101
	GSM Voice	Left Cheek	-	251	848.8	32.45	33.00	1.135	0.03	0.157	0.178
	GSM Voice	Left Tilted	-	251	848.8	32.45	33.00	1.135	0.07	0.0707	0.080
GSM1900_Head_20150808											
17	GSM Voice	Right Cheek	-	661	1880	29.61	30.00	1.094	-0.07	0.021	0.023
	GSM Voice	Right Tilted	-	661	1880	29.61	30.00	1.094	0.1	0.0098	0.011
	GSM Voice	Left Cheek	-	661	1880	29.61	30.00	1.094	-0.02	0.0189	0.021
	GSM Voice	Left Tilted	-	661	1880	29.61	30.00	1.094	-0.06	0.00827	0.009
WCDMA V_Head_20150807											
5	RMC 12.2K	Right Cheek	-	4132	826.4	23.57	24.00	1.104	-0.07	0.187	0.206
	RMC 12.2K	Right Tilted	-	4132	826.4	23.57	24.00	1.104	-0.03	0.103	0.114
	RMC 12.2K	Left Cheek	-	4132	826.4	23.57	24.00	1.104	0.06	0.141	0.156
	RMC 12.2K	Left Tilted	-	4132	826.4	23.57	24.00	1.104	0.11	0.0935	0.103
WCDMA II_Head_20150808											
21	RMC 12.2K	Right Cheek	-	9538	1907.6	22.98	23.50	1.127	-0.04	0.047	0.053
	RMC 12.2K	Right Tilted	-	9538	1907.6	22.98	23.50	1.127	-0.11	0.026	0.029
	RMC 12.2K	Left Cheek	-	9538	1907.6	22.98	23.50	1.127	0.08	0.043	0.048
	RMC 12.2K	Left Tilted	-	9538	1907.6	22.98	23.50	1.127	-0.05	0.021	0.024
GSM850_Body_20150808											
	GPRS (1Tx slots)	Front	1	251	848.8	32.43	33.00	1.140	-0.11	0.258	0.294
26	GPRS (1Tx slots)	Back	1	251	848.8	32.43	33.00	1.140	-0.08	0.472	0.538
	GPRS (1Tx slots)	Left Side	1	251	848.8	32.43	33.00	1.140	0.07	0.102	0.116
	GPRS (1Tx slots)	Bottom Side	1	251	848.8	32.43	33.00	1.140	-0.02	0.223	0.254
GSM1900_Body_20150807											
	GPRS (1Tx slots)	Front	1	661	1880	29.59	30.00	1.099	-0.06	0.0507	0.056
10	GPRS (1Tx slots)	Back	1	661	1880	29.59	30.00	1.099	-0.06	0.069	0.076
	GPRS (1Tx slots)	Left Side	1	661	1880	29.59	30.00	1.099	-0.09	0.0308	0.034

	GPRS (1Tx slots)	Bottom Side	1	661	1880	29.59	30.00	1.099	0.04	0.044	0.048
WCDMA V_Body_20150808											
	RMC 12.2K	Front	1	4132	826.4	23.57	24.00	1.104	0.01	0.279	0.308
30	RMC 12.2K	Back	1	4132	826.4	23.57	24.00	1.104	0.03	0.503	0.555
	RMC 12.2K	Left Side	1	4132	826.4	23.57	24.00	1.104	-0.05	0.137	0.151
	RMC 12.2K	Bottom Side	1	4132	826.4	23.57	24.00	1.104	-0.07	0.258	0.285
WCDMA II_Body_20150807											
	RMC 12.2K	Front	1	9538	1907.6	22.98	23.50	1.127	-0.03	0.143	0.161
14	RMC 12.2K	Back	1	9538	1907.6	22.98	23.50	1.127	-0.03	0.221	0.249
	RMC 12.2K	Left Side	1	9538	1907.6	22.98	23.50	1.127	0.06	0.098	0.110
	RMC 12.2K	Bottom Side	1	9538	1907.6	22.98	23.50	1.127	-0.07	0.131	0.148

Plot No.	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Power Setting	Data Rate	Average Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
WLAN2.4G_802.11b_Head_20150809												
33	Right Cheek	-	11	2462	36	1Mbps	14.42	15.00	1.143	-0.07	0.438	0.501
	Right Tilted	-	11	2462	36	1Mbps	14.42	15.00	1.143	-0.12	0.356	0.407
	Left Cheek	-	11	2462	36	1Mbps	14.42	15.00	1.143	0.05	0.417	0.477
	Left Tilted	-	11	2462	36	1Mbps	14.42	15.00	1.143	0.03	0.335	0.383
WLAN2.4G_802.11b_Body_20150809												
	Front	1	11	2462	36	1Mbps	14.42	15.00	1.143	0.03	0.046	0.053
38	Back	1	11	2462	36	1Mbps	14.42	15.00	1.143	-0.06	0.057	0.065
	Right Side	1	11	2462	36	1Mbps	14.42	15.00	1.143	-0.09	0.027	0.031
	Top Side	1	11	2462	36	1Mbps	14.42	15.00	1.143	0.04	0.0102	0.012

Note:
1. The value with blue color is the maximum SAR Value of each test band.
2. SAR test reduction and exclusion guidance
   (1) The SAR exclusion threshold for distances <50mm is defined by the following equation:

   (max. power of channel, including tune-up tolerance, mW)/ (min. test separation distance, mm).

   $\sqrt{\text{Frequency(GHz)}}$ ≤3.0

   (2) The SAR exclusion threshold for distances >50mm is defined by the following equation, as illustrated in KDB 447498 D01 Appendix B:

   a) at 100 MHz to 1500 MHz

   [(Power allowed at numeric Threshold at 50 mm in step 1) + (test separation distance- 50 mm) · (f (MHz)/150)] mW

   b) at > 1500 MHz and ≤ 6 GHz

   [Power allowed at numeric Threshold at 50 mm in step 1) + (test separation distance-50 mm) ·10] mW

   Evaluation (BT) = [10^(5/10)/5] *($2.480^{1/2}$) =0.992＜3.0, so SAR is not required for Bluetooth.
3. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum

tune-up tolerance.

a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.

b. Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor.

4. Per KDB 447498 D01v05r02, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   a. ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   b. ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   c. ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
5. Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg.
6. SAR is not required for the following 2.4 GHz OFDM conditions.
   1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
   2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
7. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body SAR test reduction for GSM and GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
8. WCDMA mode were tested under RMC 12.2kbps without HSPA (HSDPA/HSUPA) inactive per KDB Publication 941225 D01. HSPA (HSDPA/HSUPA) SAR for body was required since the maximum SAR for 12.2kbps RMC was above 75% SAR limit.
9. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ 1/4 dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA /HSUPA.

Access to the World

11.4.3 MAXIMUM GRAPH RESULTs

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 07.08.2015

01-GSM850-GSM Voice-Right Cheek-Ch251

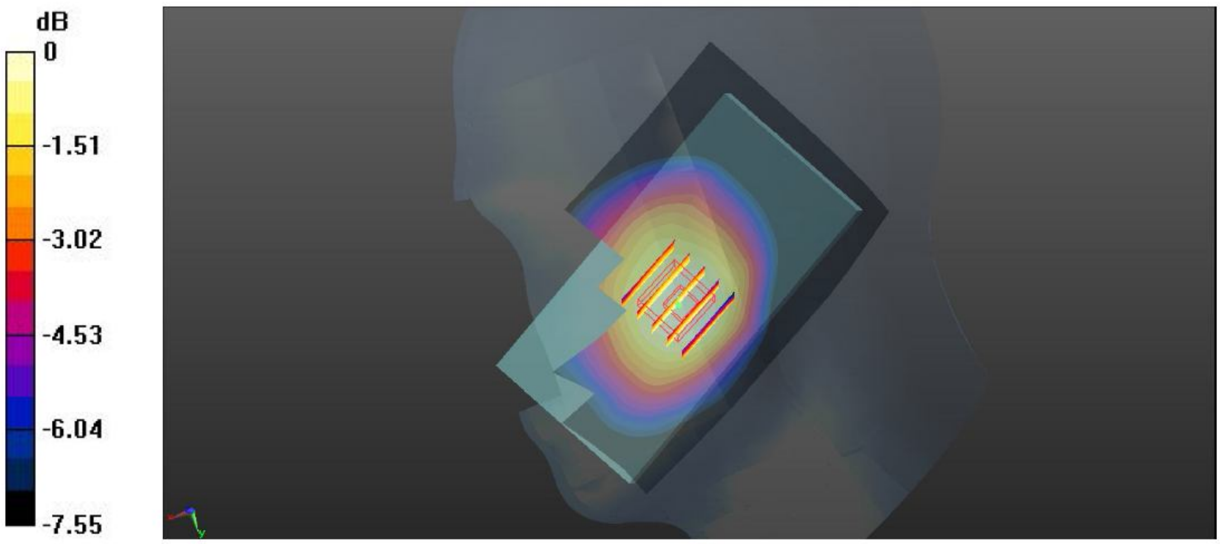
Communication System: UID 0, Generic GSM (0); Frequency: 848.6 MHz;Duty Cycle: 1:8.3
Medium: HSL_835_150807
Medium parameters used: f = 849 MHz; σ = 0.935 S/m; ε_r = 42.444; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.6 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(10.08, 10.08, 10.08); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch251/Area Scan (71x111x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.181 W/kg

Configuration/Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.438 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.187 W/kg
SAR(1 g) = 0.168 W/kg; SAR(10 g) = 0.143 W/kg
Maximum value of SAR (measured) = 0.178 W/kg



0 dB = 0.178 W/kg = -7.50 dBW/kg

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 08.08.2015

17-GSM1900-GSM Voice-Right Cheek-Ch661

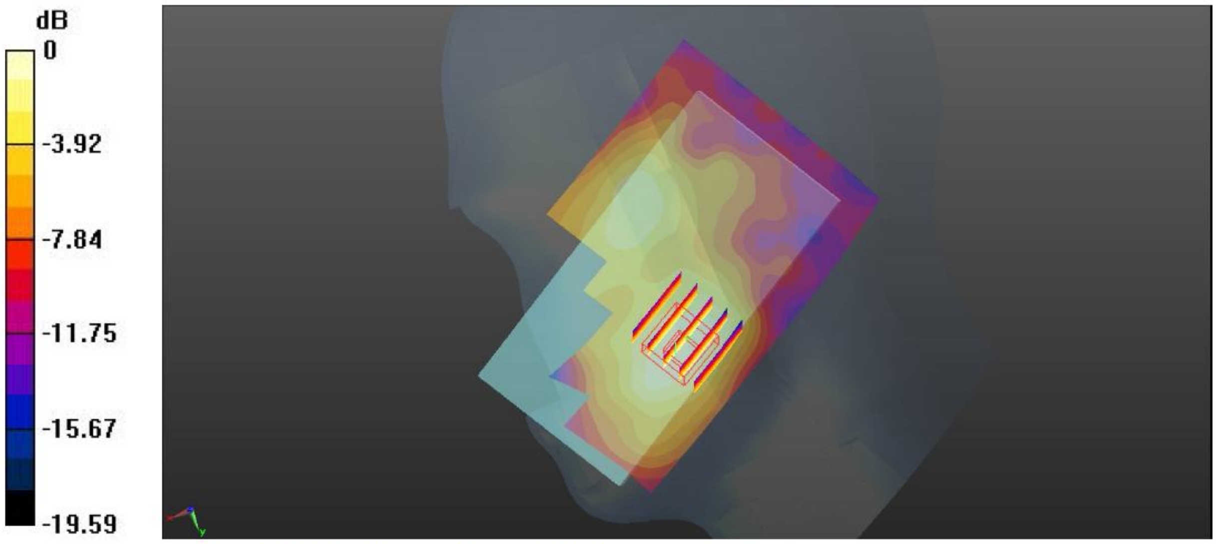
Communication System: UID 0, Generic GSM (0); Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900_150808
Medium parameters used: f = 1880 MHz; σ = 1.413 S/m; ε_r = 39.879; ρ = 1000 kg/m^3
Ambient Temperature: 23.4 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(8.18, 8.18, 8.18); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch661/Area Scan (71x111x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.0283 W/kg

Configuration/Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.637 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.0340 W/kg
SAR(1 g) = 0.021 W/kg; SAR(10 g) = 0.013 W/kg
Maximum value of SAR (measured) = 0.0272 W/kg



0 dB = 0.0272 W/kg = -15.65 dBW/kg

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 07.08.2015

05-WCDMA V-RMC 12.2K-Right Cheek-Ch4132

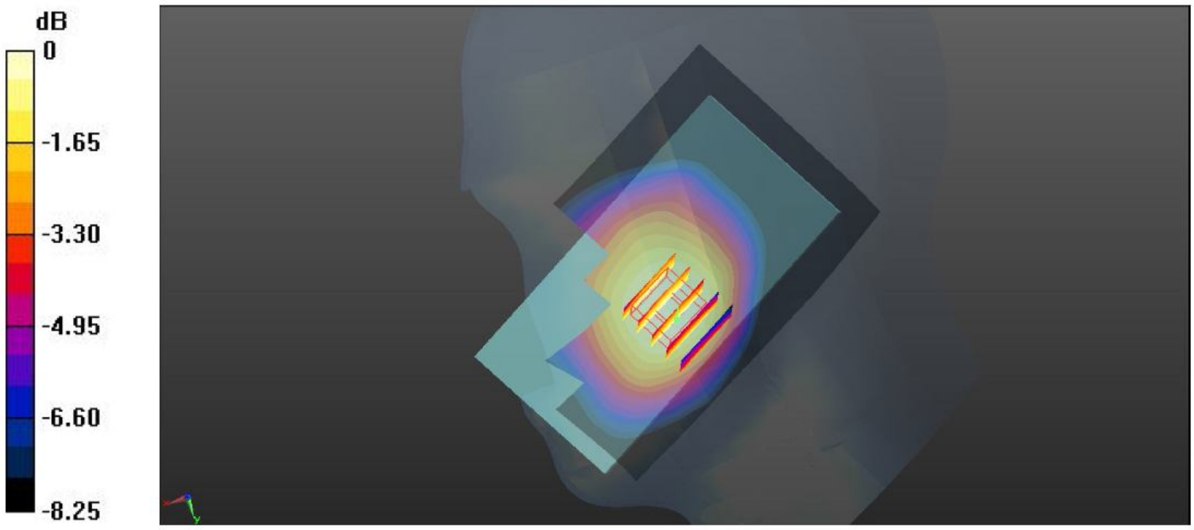
Communication System: UID 0, UMTS-FDD (WCDMA) (0); Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: HSL_835_150807
Medium parameters used: f = 826.4 MHz; σ = 0.914 S/m; ε_r = 42.707; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.6 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(10.08, 10.08, 10.08); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch4132/Area Scan (71x111x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.206 W/kg

Configuration/Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.471 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.214 W/kg
SAR(1 g) = 0.187 W/kg; SAR(10 g) = 0.155 W/kg
Maximum value of SAR (measured) = 0.200 W/kg



0 dB = 0.200 W/kg = -6.99 dBW/kg

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 08.08.2015

21-WCDMA II-RMC 12.2K-Right Cheek-Ch9538

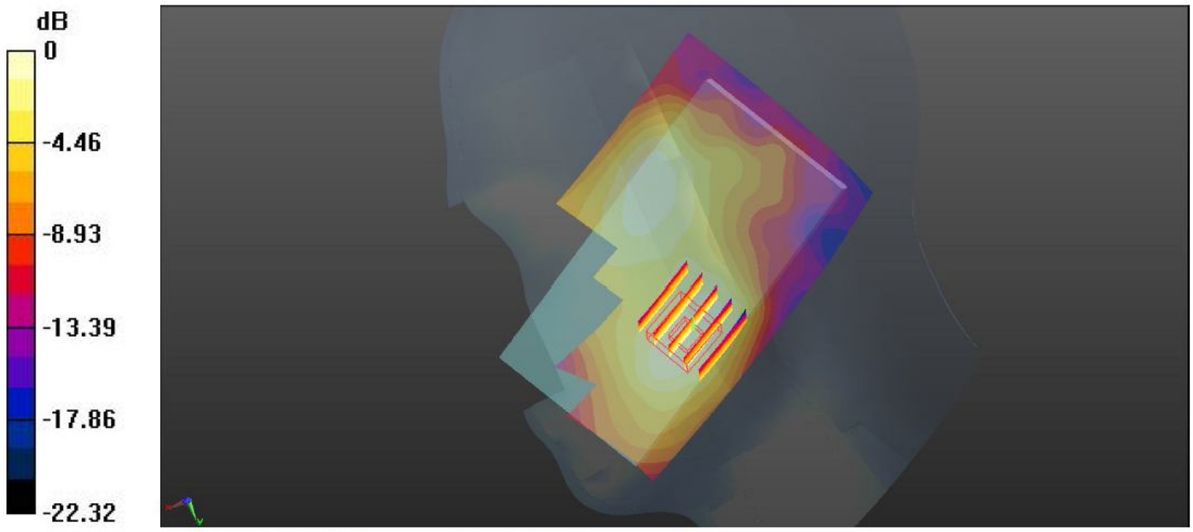
Communication System: UID 0, UMTS-FDD (WCDMA) (0); Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150808
Medium parameters used: f = 1908 MHz; $\sigma = 1.441$ S/m; $\varepsilon_r = 39.767$; $\rho = 1000$ kg/m^3
Ambient Temperature: 23.4 ℃; Liquid Temperature: 22.5 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(8.18, 8.18, 8.18); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch9538/Area Scan (71x111x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.0614 W/kg

Configuration/Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.474 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.0710 W/kg
SAR(1 g) = 0.047 W/kg; SAR(10 g) = 0.029 W/kg
Maximum value of SAR (measured) = 0.0597 W/kg



0 dB = 0.0597 W/kg = -12.24 dBW/kg

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 08.08.2015

26-GSM850-GPRS(1Tx slots)-Back-1cm-Ch251

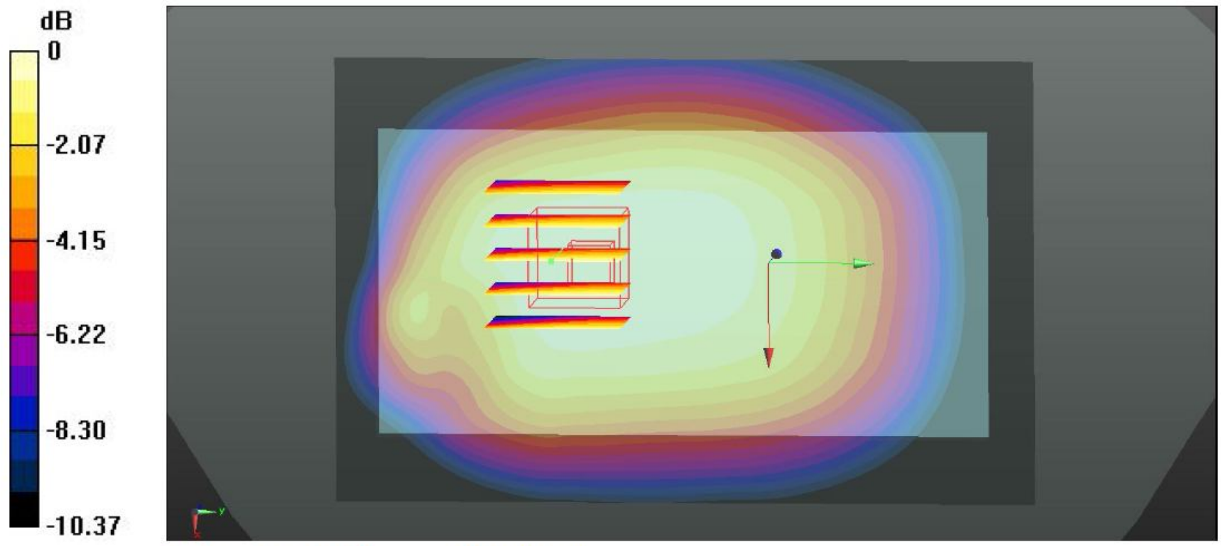
Communication System: UID 0, Generic GSM (0); Frequency: 848.6 MHz;Duty Cycle: 1:8.3
Medium: MSL_835_150808
Medium parameters used: f = 849 MHz; σ = 1.006 S/m; ε_r = 55.43; ρ = 1000 kg/m^3
Ambient Temperature: 23.5 ℃; Liquid Temperature: 22.6 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(10.27, 10.27, 10.27); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch251/Area Scan (71x111x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.527 W/kg

Configuration/Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.674 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.568 W/kg
SAR(1 g) = 0.472 W/kg; SAR(10 g) = 0.379 W/kg
Maximum value of SAR (measured) = 0.524 W/kg



0 dB = 0.524 W/kg = -2.81 dBW/kg

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 07.08.2015

10-GSM1900-GPRS(1Tx slots)-Back-1cm-Ch661

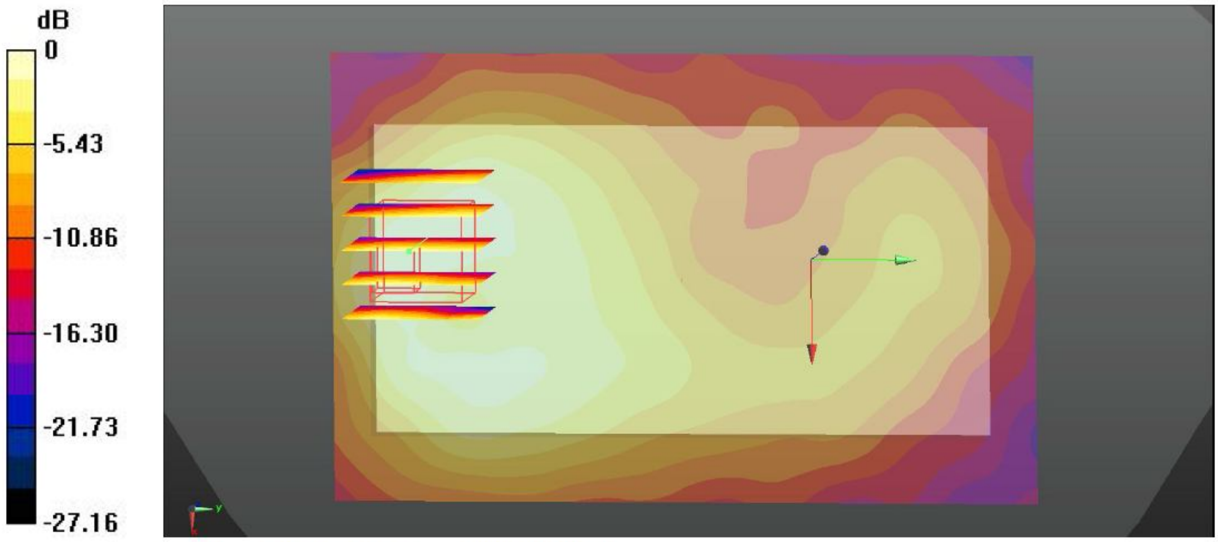
Communication System: UID 0, Generic GSM (0); Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: MSL_1900_150807
Medium parameters used: f = 1880 MHz; σ = 1.491 S/m; ε_r = 53.752; ρ = 1000 kg/m^3
Ambient Temperature: 23.6 ℃; Liquid Temperature: 22.8 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(8.06, 8.06, 8.06); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch661/Area Scan (71x111x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.102 W/kg

Configuration/Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.371 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.128 W/kg
SAR(1 g) = 0.069 W/kg; SAR(10 g) = 0.036 W/kg
Maximum value of SAR (measured) = 0.0973 W/kg



0 dB = 0.0973 W/kg = -10.12 dBW/kg

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 08.08.2015

30-WCDMA V-RMC 12.2K-Back-1cm-Ch4132

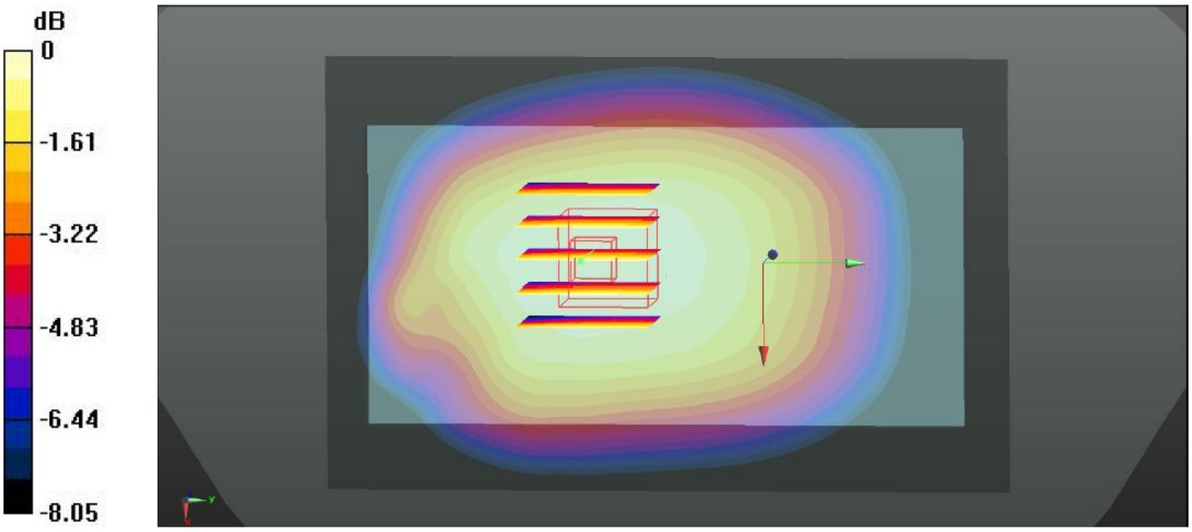
Communication System: UID 0, UMTS-FDD (WCDMA) (0); Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_150808
Medium parameters used: f = 826.4 MHz; σ = 0.983 S/m; ε_r = 55.665; ρ = 1000 kg/m^3
Ambient Temperature: 23.5 ℃; Liquid Temperature: 22.6 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(10.27, 10.27, 10.27); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch4132/Area Scan (71x111x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.548 W/kg

Configuration/Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.977 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.596 W/kg
SAR(1 g) = 0.503 W/kg; SAR(10 g) = 0.412 W/kg
Maximum value of SAR (measured) = 0.556 W/kg



0 dB = 0.556 W/kg = -2.55 dBW/kg

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 07.08.2015

14-WCDMA II-RMC 12.2K-Back-1cm-Ch9538

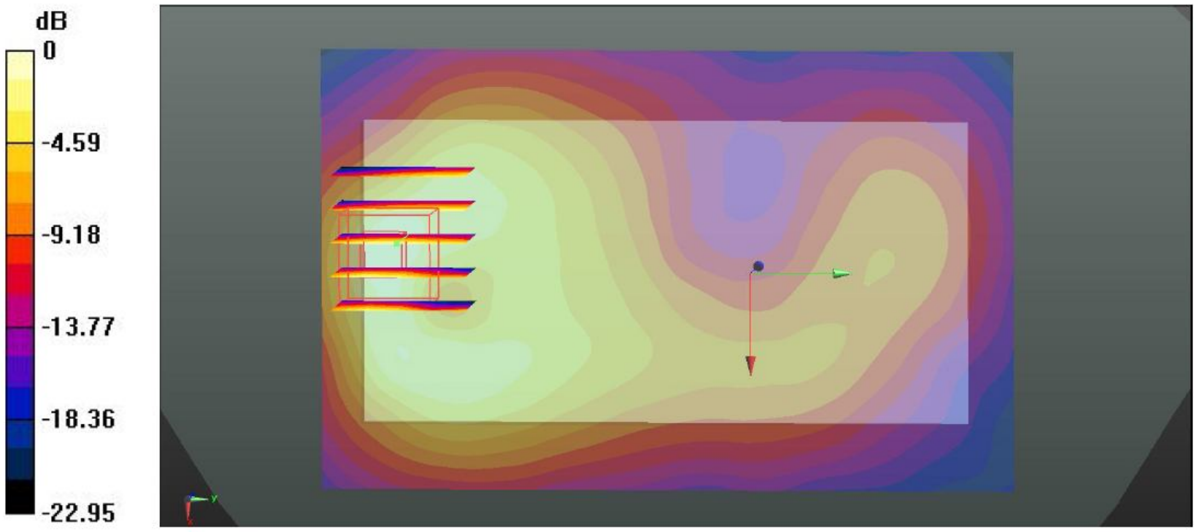
Communication System: UID 0, UMTS-FDD (WCDMA) (0); Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150807
Medium parameters used: f = 1908 MHz; σ = 1.525 S/m; ε_r = 53.657; ρ = 1000 kg/m^3
Ambient Temperature: 23.6 ℃; Liquid Temperature: 22.8 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(8.06, 8.06, 8.06); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch9538/Area Scan (71x111x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.338 W/kg

Configuration/Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.956 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.430 W/kg
SAR(1 g) = 0.221 W/kg; SAR(10 g) = 0.107 W/kg
Maximum value of SAR (measured) = 0.319 W/kg



0 dB = 0.319 W/kg = -4.96 dBW/kg

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 09.08.2015

33-WLAN2.4G-802.11b 1Mbps-Right Cheek-Ch11

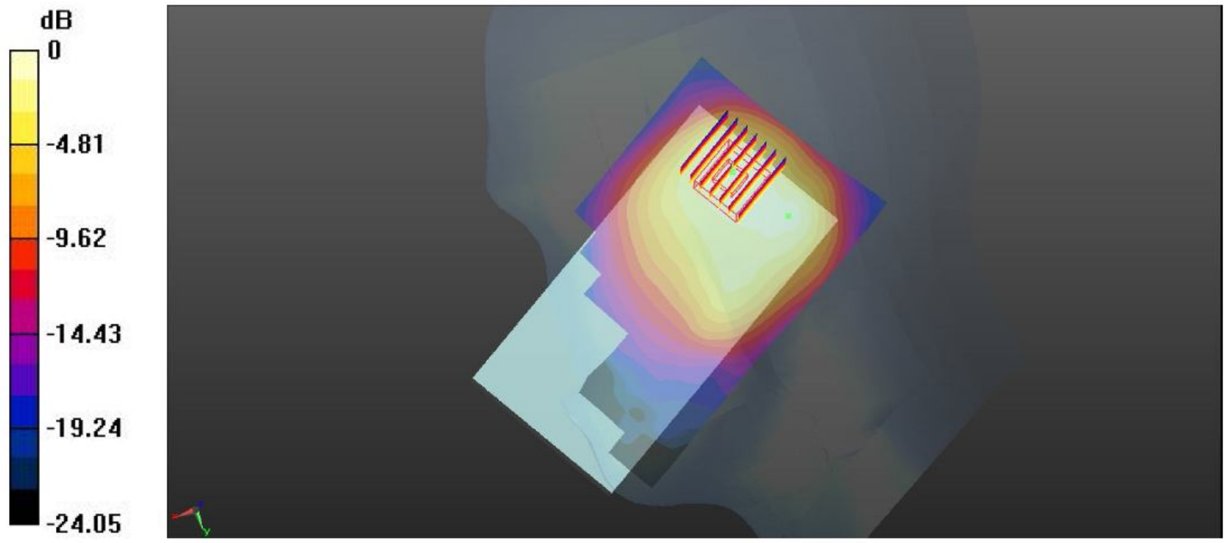
Communication System: UID 0, WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: HSL_2450_150809
Medium parameters used: f = 2462 MHz; σ = 1.802 S/m; ε_r = 40.157; ρ = 1000 kg/m^3
Ambient Temperature: 23.6 ℃; Liquid Temperature: 22.7 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(7.36, 7.36, 7.36); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch11/Area Scan (81x141x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.633 W/kg

Configuration/Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.117 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.786 W/kg
SAR(1 g) = 0.438 W/kg; SAR(10 g) = 0.241 W/kg
Maximum value of SAR (measured) = 0.607 W/kg



0 dB = 0.607 W/kg = -2.17 dBW/kg

Test Laboratory: Shenzhen EMTEK Co.,Ltd. Date/Time: 09.08.2015

38-WLAN2.4G-802.11b 1Mbps-Back-1cm-Ch11

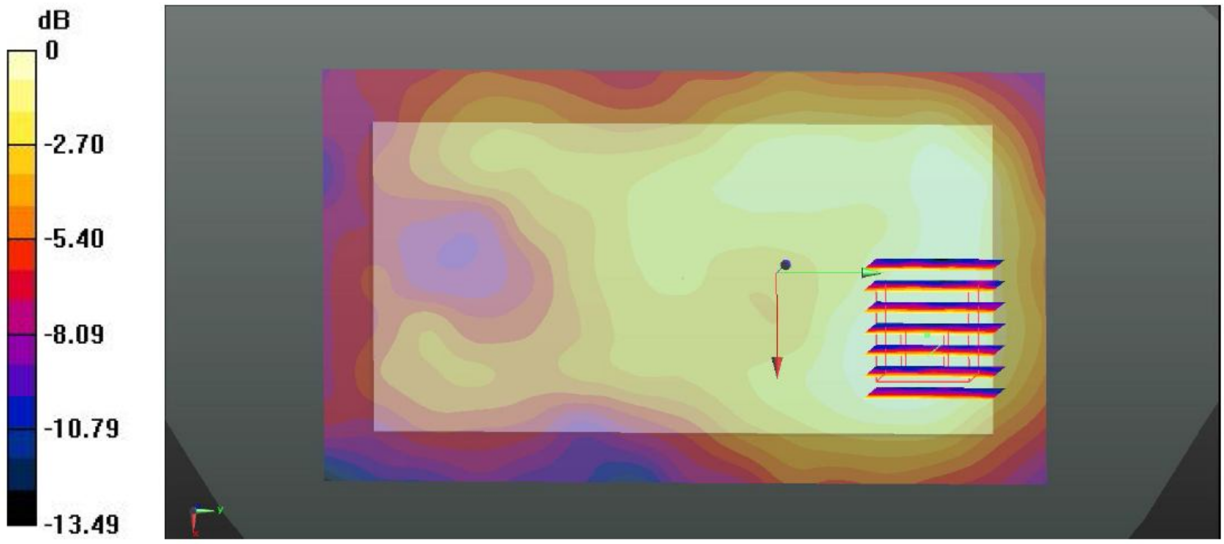
Communication System: UID 0, WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_150809
Medium parameters used: f = 2462 MHz; σ = 2.043 S/m; ε_r = 53.021; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃; Liquid Temperature: 22.7 ℃

DASY Configuration:

- Probe: EX3DV4 - SN3970; ConvF(7.66, 7.66, 7.66); Calibrated: 10.07.2015;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1418; Calibrated: 23.06.2015
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1794
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Configuration/Ch11/Area Scan (81x141x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.0988 W/kg

Configuration/Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.355 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.113 W/kg
SAR(1 g) = 0.057 W/kg; SAR(10 g) = 0.035 W/kg
Maximum value of SAR (measured) = 0.0814 W/kg



0 dB = 0.0814 W/kg = -10.89 dBW/kg

11.4.4 Simultaneous Transmission Conditions

When standalone SAR is not required to be measured per FCC KDB 447498 D01v05 4.3.2 2), the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

Estimated SAR=(max. power of channel, including tune-up tolerance, mW)/(min. test separation

distance, mm)*($\sqrt{\text{Frequency (GHz)}}$ /7.5)

Per FCC KDB 447498 D01v05 IV.C.1.iii, simultaneous transmission SAR test exclusion may be applied when
the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration
is ≤1.6 W/kg. When the sum is greater than the SAR limit, SAR test exclusion is determined by the SAR to peak
location separation ratio.
Ration=(SAR1 + SAR2)1.5/Ri ≤ 0.04

Simultaneous Transmission Configurations	Head	Body	Note
GSM850/1900/WCDMA Band V/II + 2.4GHz WLAN	Yes	Yes	
GSM850/1900/WCDMA Band V/II + 2.4GHz BT	Yes	Yes	

Note: Wlan2.4G and Bluetooth share the same antenna, So the Simultaneous SAR are not required for BT and wifi antenna.

Estimated $SAR_{BT(Head)}$= [10^(5/10)/5]*(√2.48)/7.5=0.132W/kg
Estimated $SAR_{BT(Body)}$= [10^(5/10)/10]*(√2.48)/7.5=0.066W/kg

	WWAN Band	Exposure Position	1	2	3	1+2 Summed SAR (W/kg)	1+3 Summed SAR (W/kg)
			WWAN	2.4GHz WLAN	2.4GHz BT		
			SAR(W/kg)	SAR(W/kg)	SAR(W/kg)		
Head	GSM850	Right Cheek	0.191	0.501	0.132	0.692	0.323
		Right Tilted	0.101	0.407	0.132	0.508	0.233
		Left Cheek	0.178	0.477	0.132	0.655	0.310
		Left Tilted	0.08	0.383	0.132	0.463	0.212
	GSM1900	Right Cheek	0.023	0.501	0.132	0.524	0.155
		Right Tilted	0.011	0.407	0.132	0.418	0.143
		Left Cheek	0.021	0.477	0.132	0.498	0.153
		Left Tilted	0.009	0.383	0.132	0.392	0.141
	WCDMA Band V	Right Cheek	0.206	0.501	0.132	0.707	0.338
		Right Tilted	0.114	0.407	0.132	0.521	0.246
		Left Cheek	0.156	0.477	0.132	0.633	0.288
		Left Tilted	0.103	0.383	0.132	0.486	0.235
	WCDMA Band II	Right Cheek	0.053	0.501	0.132	0.554	0.185
		Right Tilted	0.029	0.407	0.132	0.436	0.161
		Left Cheek	0.048	0.477	0.132	0.525	0.180
		Left Tilted	0.024	0.383	0.132	0.407	0.156

Body (Hotspot)	GSM850	Front	0.294	0.053	0.066	0.347	0.360
		Back	0.538	0.065	0.066	0.603	0.604
		Left Side	0.116			0.116	0.116
		Right Side		0.031	0.066	0.031	0.066
		Top Side		0.012	0.066	0.012	0.066
		Bottom Side	0.254			0.254	0.254
	GSM1900	Front	0.056	0.053	0.066	0.109	0.122
		Back	0.076	0.065	0.066	0.141	0.142
		Left Side	0.034			0.034	0.034
		Right Side		0.031	0.066	0.031	0.066
		Top Side		0.012	0.066	0.012	0.066
		Bottom Side	0.048			0.048	0.048
	WCDMA Band V	Front	0.308	0.053	0.066	0.361	0.374
		Back	0.555	0.065	0.066	**0.620**	0.621
		Left Side	0.151			0.151	0.151
		Right Side		0.031	0.066	0.031	0.066
		Top Side		0.012	0.066	0.012	0.066
		Bottom Side	0.285			0.285	0.285
	WCDMA Band II	Front	0.161	0.053	0.066	0.214	0.227
		Back	0.249	0.065	0.066	0.314	0.315
		Left Side	0.11			0.110	0.110
		Right Side		0.031	0.066	0.031	0.066
		Top Side		0.012	0.066	0.012	0.066
		Bottom Side	0.148			0.148	0.148
Body (Body worn)	GSM850	Front	0.294	0.053	0.066	0.347	0.360
		Back	0.538	0.065	0.066	0.603	0.604
	GSM1900	Front	0.056	0.053	0.066	0.109	0.122
		Back	0.076	0.065	0.066	0.141	0.142
	WCDMA Band V	Front	0.308	0.053	0.066	0.361	0.374
		Back	0.555	0.065	0.066	**0.620**	0.621
	WCDMA Band II	Front	0.161	0.053	0.066	0.214	0.227
		Back	0.249	0.065	0.066	0.314	0.315

12 700MHZ TO 3GHZ MEASUREMENT UNCERTAINTY

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangluar	Triangular	U-Shape
Multi-plying Factor[(a)]	1/K[(b)]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity
(b) K is the coverage factor

Table 12 Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

No.	Description	Type	Uncertainty Value(%)	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	5.5	N	1	1	1	5.5	5.5	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
continue										
Combined standard uncertainty		$u_c' = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						9.25	9.12	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						18.5	18.2	\

13 MAIN TEST INSTRUMENTS

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Signal Generator	Agilent	N5181A	MY50145187	2015-5-16	1year
2	RF Power Meter. Dual Channel	BOONTON	4232A	10539	2015-5-16	1year
3	Power Sensor	BOONTON	51011EMC	34236/34238	2015-5-16	1year
4	Wideband Radio Communication Tester	R&S	CMW500	1201.0002K50-140 822zk	2015-5-16	1year
5	Signal Analyzer	Agilent	N9010A	My53470879	2015-5-16	1year
6	Network Analyzer	Agilent	E5071C	MY46316645	2015-5-16	1year
7	E-Field Probe	SPEAG	EX3DV4	3970	2015-7-10	1year
8	DAE	SPEAG	DAE4	1418	2015-6-23	1year
9	Validation Kit 900MHz	SPEAG	D900V2	1d162	2014-1-14	2year
11	Validation Kit 1950MHz	SPEAG	D1950V3	1151	2014-1-10	2year
12	Validation Kit 2450MHz	SPEAG	D2450V2	927	2014-1-13	2year
13	Dual Directional Coupler	Agilent	EE393	TW5451008	2015-5-16	1year
14	10dB Attenuator	Mini-Circuits	15542	3 1344	2015-5-16	1year
15	10dB Attenuator	Mini-Circuits	15542	3 1415	2015-5-16	1year
16	30dB Attenuator	Mini-Circuits	15542	3 1420	2015-5-16	1year
17	Power Amplifier	MILMEGA	80RF1000-175	1059345	2015-5-16	1 Year
18	Power Amplifier	MILMEGA	AS0102-55	1018770	2015-5-16	1 Year
19	Power Amplifier	MILMEGA	AS1860-50	1059346	2015-5-16	1 Year
20	Power Meter	Agilent	N1918A	MY54180006	2015-5-16	1 Year
21	Twin SAM V5.0	SPEAG	QD 000 P40 CD	1794	N/A	N/A
22	Device Holder	SPEAG	N/A	N/A	N/A	N/A

END OF REPORT BODY