

TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: LT29i

FCC ID: PY7PM-0010

To: OET Bulletin 65 Supplement C: (2001-01)
IEEE 1528: 2003

Test Report Serial No: RFI-SAR-RP86767JD02A V1.0

This Test Report Is Issued Under The Authority
Of Chris Guy, Head of Global Approvals:



(APPROVED SIGNATORY)

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(APPROVED SIGNATORY)

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1. Customer Information

Company Name:	Sony Mobile Communications AB
Address:	Nya Vattentornet 22188 Lund Sweden

2. Equipment Under Test (EUT)

2.1. Identification of Equipment Under Test (EUT)

Description:	Mobile Handset
Brand Name:	Sony
Model Name or Number:	LT29i
Type Number:	PM-0010-BV
Serial Number:	CB5A1JYLXM
IMEI Number:	00440214-538350-5
Hardware Version Number:	AP1
Software Version Number:	7.0.A.0.474
Hardware Revision of GSM Module:	None Specified
Software Revision of GSM Module:	None Specified
FCC ID Number:	PY7PM-0010
Country of Manufacture:	China
Date of Receipt:	17 April 2012

Note(s):

This sample was used to perform WWAN SAR evaluation measurements only. The sample supports simultaneous transmission with the WWAN and WLAN antenna > 5 cm apart. Wireless Personal Hotspot is also supported and was evaluated as per KDB 941225 D06 "Hot Spot SAR v01"

Description:	Mobile Handset
Brand Name:	Sony
Model Name or Number:	LT29i
Type Number:	PM-0010-BV
Serial Number:	CB5A1JYMO
IMEI Number:	00440214-538349-7
Hardware Version Number:	AP1
Software Version Number:	7.0.A.0.474
Hardware Revision of GSM Module:	None Specified
Software Revision of GSM Module:	None Specified
FCC ID Number:	PY7PM-0010
Country of Manufacture:	China
Date of Receipt:	17 April 2012

Note(s):

This sample was used to perform WWAN conducted measurements only. The sample supports simultaneous transmission with the WWAN and WLAN antenna > 5 cm apart. Wireless Personal Hotspot is also supported and was evaluated as per KDB 941225 D06 "Hot Spot SAR v01"

Identification of Equipment Under Test (EUT) (Continued)	
Description:	Mobile Handset
Brand Name:	Sony
Model Name or Number:	LT29i
Type Number:	PM-0010-BV
Serial Number:	CB5A1JYLWN
IMEI Number:	00440214-538346-3
Hardware Version Number:	AP1
Software Version Number:	ETS0.0.37b
Hardware Revision of GSM Module:	None Specified
Software Revision of GSM Module:	None Specified
FCC ID Number:	PY7PM-0010
Country of Manufacture:	China
Date of Receipt:	17 April 2012

Note(s):

This sample was used to perform WLAN SAR evaluation and conducted power measurements only. The sample supports simultaneous transmission with the WWAN and WLAN antenna > 5 cm apart. Wireless Personal Hotspot is also supported and was evaluated as per KDB 941225 D06 "Hot Spot SAR v01"

2.2. Description of EUT

The Equipment Under Test is a Smart Mobile Phone with GSM 2G Quad Band, 3G Penta band and Wi-Fi bands. The EUT has GPRS Class 12 / EDGE Class 12, UMTS FDD I, II, IV, V, VIII With HSPA, WLAN 802.11 a/b/g/n, *Bluetooth Class 1, 'Wi-Fi Hotspot'* mode capabilities.

2.3. Modifications Incorporated in the EUT

EUT (IMEI: 00440214-538350-5) was used for WWAN SAR measurements only.

EUT (IMEI: 00440214-538349-7) was used for WWAN conducted power measurements only

EUT (IMEI: 00440214-538346-3) was used for WLAN SAR measurements and conducted measurements only.

2.4. Accessories

The following accessories were supplied with the EUT during testing:

Description:	Personal Hands-Free Kit (PHF)
Brand Name:	Sony
Model Name or Number:	MH750
Serial Number:	12120C1C008C3E8
Cable Length and Type:	~1.2 m
Country of Manufacture:	None Stated
Connected to Port	3.5mm Audio jack and custom type

Description:	Battery
Brand Name:	Sony
Model Name or Number:	BA900
Serial Number:	001857SWBBRS
Cable Length and Type:	Not Applicable
Country of Manufacture:	China
Connected to Port	5 Pin contact

Description:	Memory Card
Brand Name:	None Stated (Generic)
Model Name or Number:	None Stated
Serial Number:	None Stated
Cable Length and Type:	Not Applicable
Country of Manufacture:	China
Connected to Port	Dedicated Micro SD Slot

2.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Wireless Communication Test Set
Brand Name:	Agilent
Model Name or Number:	8960 Series 10
Serial Number:	GB46311280
Cable Length and Type:	~4.0m Utiflex Cable
Connected to Port:	RF (Input / Output) Air Link

Description:	Wireless Communication Test Set
Brand Name:	Agilent
Model Name or Number:	8960 Series 10
Serial Number:	GB462000666
Cable Length and Type:	~4.0m Utiflex Cable
Connected to Port:	RF (Input / Output) Air Link

2.6. Additional Information Related to Testing

Equipment Category	GSM/GPRS/EDGE850, EGSM/GPRS/EDGE900, DCS/GPRS1800, PCS/GPRS/EDGE1900, UMTS FDD I, II, IV, V, VIII, WiFi802.11a/b/g/n, Bluetooth.	
Type of Unit	Portable Transceiver	
Intended Operating Environment:	Within GSM, UMTS, Wi-Fi and <i>Bluetooth</i> Coverage	
Transmitter Maximum Output Power Characteristics:	GSM850	Communication Test Set was configured to allow the EUT to transmit at a maximum power using Power Control Level (PCL) setting of 5.
	PCS1900	Communication Test Set was configured to allow the EUT to transmit at a maximum power using Power Control Level (PCL) setting of 0.
	UMTS Band II	Communication Test Set configured to allow to EUT to transmit at a maximum power as per KDB 941225 D01.
	UMTS Band IV	Communication Test Set configured to allow to EUT to transmit at a maximum power as per KDB 941225 D01.
	UMTS Band V	Communication Test Set configured to allow to EUT to transmit at a maximum power as per KDB 941225 D01.
	2.4 GHz Wi-Fi 802.11b/g/n	Communication Test Set was configured to allow the EUT to transmit at a maximum power of up to 12.0 dBm.
	5.0 GHz Wi-Fi 802.11a/n (HT20 / HT40)	:= 6.0 dBm
Transmitter Frequency Range:	Bluetooth	< 8.0 dBm
	GSM850	824 to 849 MHz
	PCS1900	1850 to 1910 MHz
	UMTS Band II	1852 to 1908 MHz
	UMTS Band IV	1712 to 1753 MHz
	UMTS Band V	826 to 847 MHz
	2.4 GHz Wi-Fi 802.11b/g/n	2412 to 2462 MHz
	5.0 GHz Wi-Fi 802.11a/n (HT20 / HT40)	5180 to 5825 MHz

Additional Information Related to Testing (Continued)**Transmitter Frequency Allocation of EUT When Under Test:**

Channel Number	Channel Description	Frequency (MHz)
128	Low	824.2
190	Middle	836.6
251	High	848.8
512	Low	1850.2
661	Middle	1880.0
810	High	1909.8
9262	Low	1852.4
9400	Middle	1880.0
9538	High	1907.6
1312	Low	1712.4
1412	Middle	1732.4
1513	High	1752.6
4132	Low	826.4
4183	Middle	836.6
4233	High	846.6
1	Low	2412.0
6	Middle	2437.0
11	High	2462.0
36	Low	5180.0
40	Middle	5200.0
48	High	5240.0
52	Low	5260.0
60	Middle	5300.0
64	High	5320.0
100	Low	5500.0
120	Middle	5600.0
140	High	5700.0
149	Low	5745.0
157	Middle	5785.0
165	High	5825.0

Additional Information Related to Testing (Continued)	
Modulation(s):	GMSK (GSM/ GPRS/EDGE): 217 Hz QPSK(UMTS / HSDPA/HSPA):0Hz DBPSK, CCK (Wi-Fi): 0 Hz
Modulation Scheme (Crest Factor):	GSMK (GSM): 8.3 GMSK (GPRS/EDGE): 2 QPSK(UMTS FDD / HSDPA): 1 DBPSK, CCK (Wi-Fi): 1
Antenna Type:	Internal integral
Antenna Length:	Unknown
Number of Antenna Positions:	2 fixed (WWAN and WLAN/Bluetooth)
Power Supply Requirement:	3.7V
Battery Type(s):	Li-ion

3. Test Specification, Methods and Procedures

3.1. Test Specification

Reference:	OET Bulletin 65 Supplement C: (2001-01)
Title:	Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
Purpose of Test:	To determine whether the equipment met the basic restrictions as defined in OET Bulletin 65 Supplement C: (2001-01) using the SAR averaging method as described in the test specification above.

3.2. Methods and Procedures Reference Documentation

The methods and procedures used were as detailed in:

Federal Communications Commission, "Evaluating compliance with FCC Guidelines for human exposure to radio frequency electromagnetic fields", OET Bulletin 65 Supplement C, FCC, Washington, D.C, 20554, 2001.

Thomas Schmid, Oliver Egger and Neils Kuster, "Automated E-field scanning system for dosimetric assessments", IEEE Transaction on microwave theory and techniques, Vol. 44, pp. 105-113, January 1996.

Neils Kuster, Ralph Kastle and Thomas Schmid, "Dosimetric evaluation of mobile communications equipment with known precision", IEICE Transactions of communications, Vol. E80-B, No.5, pp. 645-652, May 1997.

EN 62209-1: 2006

Title: Basic standard for the measurement of specific absorption rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz).

EN 62209-2:2010

Human exposure to radio frequency fields from handheld and body mounted wireless communication devices — Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz) (IEC 62209-2:2010)

KDB 248227 D01 "SAR measurements for 802.11a/b/g v01r02"

KDB 447498 D01 "Mobile Portable RF Exposure v04"

KDB 450824 D01 "SAR Prob Cal and Ver Meas v01r01"

KDB 648474 D01 SAR Handsets Multi Xmitter and Ant v01r05"

KDB 941225 D01 "SAR test for 3G v02"

KDB 941225 D03 " SAR Test Reduction GSM/GPRS/EDGE v01"

KDB 941225 D06 "Hot Spot SAR v01"

The version of DASY system used by RFI for SAR measurements is v4.7.

The SAR probe for the DASY v4.4 and higher has a validity of +/- 100 MHz from the spot frequency at which the system is calibrated.

The system validation performed at 900 MHz is valid for 800 MHz to 1000 MHz which covers the 850 MHz band. The probe calibration for SN3814 was performed at the spot frequencies of 750 MHz and 900 MHz. The SAR software selects the conversion factor based on the following attributes; 1. The operating frequency 2. The measured permittivity imported to the software and 3. The measured conductivity imported to the software.

The 900 MHz system check is applicable for the 850 band as this is within 100 MHz of the 850 MHz spot frequency.

As per FCC KDB pub 450824 for SAR probe calibration; The following procedures are recommended for DUT measurements at 150 MHz to 3 GHz to minimize probe calibration and tissue dielectric parameter discrepancies. Measurements exceeding 50 % of these intervals, in this case +/- 50 MHz, EUT frequency greater than or equal to 300 MHz, shall apply method 1 of the steps.

1) When the actual tissue dielectric parameters used for probe calibration are available the differences for relative permittivity and conductivity between probe calibration and routine measurements should each be less than or equal to 5 % while also satisfying the required +/- 5 % tolerances in target dielectric parameters.

The simulation liquid used satisfies both 835 MHz and 900 MHz target values for all channels in the GSM850 band. The SAR probe coverage and conversion factor has been calibrated to ensure this condition is met and the appropriate conversion factor is used in the frequency range for up to +/- 100 MHz.

3.3. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Appendix 1 contains a list of the test equipment used.

Deviations from the Test Specification

Test was performed as per KDB 248227 D01 "SAR measurements for 802.11a/b/g v01r02", KDB 447498 D01 "Mobile Portable RF Exposure v04", KDB 450824 D01 "SAR Prob Cal and Ver Meas v01r01", KDB 648474 D01 SAR Handsets Multi Xmter and Ant v01r05", KDB 941225 D01 "SAR test for 3G v02", KDB 941225 D03 " SAR Test Reduction GSM/GPRS/EDGE v01", KDB 941225 D06 "Hot Spot SAR v01" according to the handset procedures in IEEE Std 1528-2003 and OET Bulletin 65 Supplement C 01-01. The assessment for Personal Wireless Hotspot was also evaluated as per the FCC KDB 941225 D06 "Hot Spot SAR v01".

For technologies bands supporting personal hotspot mode, SAR was evaluated on all the sides and surfaces within 25mm of the transmitting antenna (WWAN or WLAN) as per FCC KDB 941225 D06 "Hot Spot SAR v01".

SAR test was performed in the middle channels for WWAN and WLAN. The most conservative configuration for both Head and Body test was evaluated in the low and high channels for all technology bands even if the test reduction requirement were met as per FCC pub. 447498 D01. This was a requirement by the customer.

The measured maximum conducted power for WLAN 2.45GHz 802.11g/n is 11.1dBm (equivalent to 12.88 mW) and for WLAN 5GHz is 6.0dBm (equivalent to 3.98 mW).

As per FCC kdb pub. *SAR Handsets Multi Xmter and Ant, v01r05*; when there is simultaneous transmission occurring, stand- alone SAR evaluation is not required when the output power measured is ≤ 2 .Pref for the particular band and antenna separation is ≥ 5.0 cm from other antenna.

Output power thresholds for Unlicensed Transmitters

Pref	2.45	5.15 – 5.35	5.47	GHz
	12	6	5	mW

As per table 1 above, since output power measured for;

2.45 GHz 802.11g/n maximum output power = 12.88mW < 24 mW (2*Pref)

5.15 to 5.35 GHz maximum output power = 3.98mW < 12 mW (2*Pref)

5.47 to 5.85 GHz maximum output power = 3.80mW < 10 mW (2*Pref)

Stand Alone SAR evaluation is not required for 2.4 GHz WLAN 802.11g/n and 5.0 GHz WLAN802.11a/n modes.

Simultaneous transmission was not evaluated as the sum of the individual SAR for WWAN and WLAN was < 1.6 W/kg.

GPRS class12 / uplink setup of 1-uplink; 2-uplink, 3-uplink and 4-uplink were all evaluated to find the setting with the highest power reference point (unit v/m) as per the DASY4 system. 4-uplink was found to give the highest power reference point measurement on the DASY4 system (unit v/m). All settings were performed with the device in a fixed position Back facing phantom at 0mm separation to ensure there were no positioning errors. The following values were measured relative to the uplink settings:

GPRS Mode	GPRS850 Power (v/m)	GPRS1900 Power (v/m)
1 uplink	15.77	6.48
2 uplink	17.82	6.75
3 uplink	17.67	6.68
4 uplink	17.85	6.89

Note: Power reference point measurements are from the DASY4 system and used to check the device power drift although the units are v/m. For informational purpose to ensure the worst case uplink time slot is also verified by the DASY4 SAR system, this was use as per above comment at a fixed point.

4. Operation and Configuration of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s) unless otherwise stated:

- GSM850 – Voice allocated mode with Communication Test Set configured to allow the EUT to transmit at a maximum power using Power Control Level (PCL) setting of 5.
- GPRS850 – Data allocated mode with Communication Test Set configured to allow the EUT to transmit at a maximum power using Power Control Level (PCL) setting of 5. Tested using 4 Uplink time slots with CS1 for GPRS.
- PCS1900 – Voice allocated mode with Communication Test Set configured to allow the EUT to transmit at a maximum power using Power Control Level (PCL) setting of 0.
- GPRS1900 – Data allocated mode with Communication Test Set configured to allow the EUT to transmit at a maximum power using Power Control Level (PCL) setting of 0. Tested using 4 Uplink time slots with CS1 for GPRS.

GSM850 – Power Table Settings used for Test Set	
Power Control Level PCL	Nominal Power (dBm)
0 ... 2	39
3	37
4	35
5	33
6	31
7	29
8	27
9	25
10	23
11	21
12	19
13	17
14	15
15	13
16	11
17	9
18	7
19 ... 31	5

PCS1900 – Power Table Settings used for Test Set	
Power Control Level PCL	Nominal Power (dBm)
22 ... 29	Reserved
30	33
31	32
0	30
1	28
2	26
3	24
4	22
5	20
6	18
7	16
8	14
9	12
10	10
11	8
12	6
13	4
14	2
15	0
16 ... 21	Reserved

- UMTS FDD II, IV, V Call allocated mode with Communication Test Set configured to allow the EUT to transmit at a maximum as per KDB 941225 D01.
- UMTS FDD II, IV, V - RMC 12.2kbps + HSUPA With Test loop mode 1 and TPC bits configured to all "1's", Sub-test 5, AG Index set to 21 and E-TFCI set to 81 with Communication Test Set configured to allow to EUT to transmit at a maximum power as per KDB 941225 D01.
- UMTS FDD II, IV, V - RMC 12.2kbps + HSDPA With Test loop mode 1 and TPC bits configured to all "1's", Sub-test 1 with Communication Test Set configured to allow to EUT to transmit at a maximum power as per KDB 941225 D01.

Operating Modes (Continued)

- 2.4 GHz WiFi802.11b/g/n Data allocated mode using 'HyperTerminal' software to excise mode 'a' 'b', 'g' and 'n', with maximum power of up to 12.0 dBm for 'b' mode and 11.1 dBm for 'g' and 10.6 dBm for 'n' modes
- 5.0 GHz WiFi802.11a/n Data allocated mode using 'HyperTerminal' software to excise mode 'a', 'n HT20' and 'n HT40', with maximum power of up to 5.9 dBm for 'a' mode and 6.0 dBm for 'n HT20' and 5.9 dBm for 'n HT40' modes.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s) unless otherwise stated:

- Standalone fully charged battery powered.
- Head and Body-worn configurations were evaluated.
- The applied FCC Personal Hotspot orientations where the corresponding edge(s) closest to the user with the most conservative exposure condition were all evaluated at 10 mm from the flat phantom section. For body-worn configuration that did not overlap with Personal hotspot, SAR evaluation was performed at 15mm separation.
- GPRS class 12 / EDGE class 12 uplink setup of 1-uplink; 2-uplink, 3-uplink and 4-uplink were all evaluated to find the setting with the highest Power density (power reference (unit v/m) as per the DASY4 system) and conducted power measurements. 4-uplink was found to give the highest reference measurement on the DASY4 system (unit v/m). All settings were performed with the device in a fixed position 'Back facing phantom' at 0mm separation to ensure there were no positioning errors.
- GSM, GPRS and EDGE power measurement were all measured as per FCC pubs. 941225 D03 and 941225 D04. Although power reduction was allowed SAR test was performed on GPRS using GMSK. Test reduction was applied to EDGE using GMSK and 8PSK modulation scheme for conducted power measurements.

Head Configuration

- a) The EUT was placed in a normal operating position with the centre of the ear-piece aligned with the ear canal on the phantom.
- b) With the ear-piece touching the phantom the centre line of the EUT was aligned with an imaginary plane (X and Y axis) consisting of three lines connecting both ears and the mouth.
- c) For the cheek position the EUT was gradually moved towards the cheek until any point of the mouth-piece or keypad touched the cheek.
- d) For the tilted position the EUT was positioned as for the cheek position, and then the horizontal angle was increased by fifteen degrees (the phone keypad was moved away from the cheek by fifteen degrees).
- e) SAR measurements were evaluated at maximum power and the unit was operated for an appropriate period prior to the evaluation in order to minimise the drift.
- f) The device was keyed to operate continuously in the transmit mode for the duration of the test.
- g) The location of the maximum spatial SAR distribution (hot spot) was determined relative to the EUT and its antenna.
- h) The EUT was transmitting at full power throughout the duration of the test powered by a fully charged battery.

Body Configuration

- a) The EUT was placed in a normal operating position where the centre of EUT was aligned with the centre reference point on the flat section of the 'SAM' phantom.
- b) With the EUT touching the phantom at an imaginary centre line. The EUT was aligned with a marked plane (X and Y axis) consisting of two lines.
- c) For the touch-safe position the EUT was gradually moved towards the flat section of the 'SAM' phantom until any point of the EUT touched the phantom.
- d) For position(s) greater than 0mm separation the EUT was positioned as per the touch-safe position, and then the vertical height was decreased/adjusted as required.
- e) SAR measurements were evaluated at maximum power and the unit was operated for an appropriate period prior to the evaluation in order to minimise the drift.
- f) The device was keyed to operate continuously in the transmit mode for the duration of the test.
- g) The location of the maximum spatial SAR distribution (hot spot) was determined relative to the EUT and its antenna.
- h) The EUT was transmitting at full power throughout the duration of the test powered by a fully charged battery.

5. Summary of Test Results

Test Name	Specification Reference	Result
Specific Absorption Rate-GSM 850 Head Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-GPRS 850 Hotspot Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-GSM 850 Body-Worn Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-PCS 1900 Head Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-GPRS 1900 Hotspot Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-PCS 1900 Body-Worn Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS-FDD II Head Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS-FDD II Hotspot Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS-FDD II Body-Worn Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS-FDD IV Head Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS-FDD IV Hotspot Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS-FDD IV Body-Worn Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS-FDD V Head Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS-FDD V Hotspot Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-UMTS-FDD V Body-Worn Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-Wi-Fi 2450 802.11b Head Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied
Specific Absorption Rate-Wi-Fi 2450 802.11b Hotspot Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	Complied

Summary of Test Results (Continued)						
SAR Individual Transmitter Evaluation						
device, mode	Frequency, (MHz)	Phantom Configuration	P _x (mW)	P _{REF} (mW)	single SAR, W/kg	Remarks
WWAN, GSM	850	Left Hand Side	324	60/f	0.862	Routine Evaluation
WWAN, GSM	1900	Back	166	60/f	0.855	Routine Evaluation
WWAN, UMTS	850	Left Hand Side	282	60/f	0.965	Routine Evaluation
WWAN, UMTS	1800	Front	186	60/f	1.420	Routine Evaluation
WWAN, UMTS	1900	Touch Left	178	60/f	1.080	Routine Evaluation
WLAN, WiFi802.11b	2450	Touch Right	16	60/f	0.207	Routine Evaluation
WLAN, WiFi802.11g/n	2450	N/A	~13	12	:=0	{P _{BT} ≤ 2P _{REF} } {d _{WWAN, WLAN} > 5cm}
WLAN, WiFi802.11a/n	5150 - 5350	N/A	~4	6	:=0	{P _{BT} ≤ 2P _{REF} } {d _{WWAN, WLAN} > 5cm}
WLAN, WiFi802.11a/n	5470 - 5850	N/A	~4	5	:=0	{P _{BT} ≤ 2P _{REF} } {d _{WWAN, WLAN} > 5cm}
BT, Bluetooth	2400	N/A	~ 8	12	:=0	{P _{BT} ≤ 2P _{REF} } {d _{WWAN, BT} > 5cm}

Note(s):

1. Simultaneous transmission was not evaluated as the sum of the individual SAR for WWAN and WLAN was < 1.6 W/kg.
2. *Bluetooth* transmitter thresholds output power “P_{Ref} = 12 mW as listed in KDB 648474.
3. P_x: power level measured by RFI.
4. Single SAR value measured by RFI.
5. The “Antenna-to-Antenna distance and Antenna-to-User distance were provided by the customer.

SAR Simultaneous Transmitter Evaluation					
(x,y)	D(x,y) cm	L(x,y) cm	SPLSR _{xy}	Sim-Tx SAR	Remarks
(WWAN _{GSM} , BT)	>5	N/A	N/A	N/A	{no stand-alone SAR for BT}
(WWAN _{GSM} , Wi-Fi)	>5	N/A	N/A	N/A	{D(x,y) > 5 } & {Σ _{WWAN, WLAN} < 1.6 W/kg}

Summary of Test Results (Continued)**Specific Absorption Rate Scale-Up Measurements:**

Technology Mode	Configuration	Channel Number	Communication Mode	Measured output power [dBm]	Maximum Rated Power [dBm]	Measured SAR(W/kg)	Calculated SAR(W/kg)
						1g mass	1g mass
GSM850	Head	190	Voice	25.20	24.97	0.620	0.588
	Hotspot	251	Data	25.10	25.09	0.862	0.860
	Body-worn	190	Voice	25.20	24.97	0.731	0.693
PCS1900	Head	810	Voice	21.70	21.67	0.836	0.830
	Hotspot	512	Data	22.20	22.09	0.855	0.834
	Body-worn	661	Voice	21.80	21.67	0.396	0.384
UMTS Band II	Head	9400	Data RMC	22.50	23.00	1.080	1.212
	Hotspot	9538	Data RMC	22.30	23.00	0.932	1.095
	Body-worn	9400	Data RMC	22.50	23.00	0.590	0.662
UMTS FDD IV	Head	1513	Data RMC	22.70	23.0	0.744	0.797
	Hotspot	1513	Data RMC	22.70	23.0	1.420	1.522 [#]
	Body-worn	1513	Data RMC	22.70	23.0	0.843	0.903
UMTS Band V	Head	4183	Data RMC	24.50	24.60	0.529	0.541
	Hotspot	4132	Data RMC	24.50	24.60	0.965	0.987
	Body-worn	4132	Data RMC	24.50	24.60	0.645	0.660
Wi-Fi 802.11b	Head	1	Data	12.00	14.00	0.207	0.328
	Body-worn	1	Data	12.00	14.00	0.183	0.290 [†]

Front of EUT Facing Phantom

† Top-Edge of EUT Facing Phantom

*Maximum tolerance of $\pm 5\%$ corresponds to 0.2dB included in Maximum rated power.**Note(s):**

1. Measured output power (Source Base average power) level measured by RFI.
2. Max Rated power (Source Base average power) level measured by manufacturer.
3. Measured SAR value measured by RFI.
4. The "Maximum Rated Power" was provided by the customer.

5.1. Location of Tests

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire, RG23 8BG United Kingdom

6. Measurements, Examinations and Derived Results

6.1. General Comments

This section contains test results only.

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to section 8 for details of measurement uncertainties.

6.2. Test Results**For All SAR measurement in this report the SAR limit tested to is 1.6 W/kg****6.2.1. Specific Absorption Rate - GSM 850 Head Configuration 1g****Test Summary:**

Tissue Volume:	1g
Maximum Level (W/kg):	0.620

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	23.0 to 23.0

Results:

EUT Position	Phantom Configuration	Channel Number	Uplink Meas. Burst Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Touch	Left	190	25.2	N/A	0.620	1	GMSK
Tilt	Left	190	25.2	N/A	0.409	1	GMSK
Touch	Right	190	25.2	N/A	0.579	1	GMSK
Tilt	Right	190	25.2	N/A	0.350	1	GMSK
Touch	Left	128	25.1	N/A	0.611	1	GMSK
Touch	Left	251	25.2	N/A	0.575	1	GMSK

Note(s):

1. Voice

6.2.2. Specific Absorption Rate - GPRS 850 Hotspot Mode Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.862

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.5 to 22.5

Results:

EUT Position	Phantom Configuration	Channel Number	Uplink Meas. Burst Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (SAM)	190	25.0	N/A	0.607	1, 2	GMSK
Back of EUT Facing Phantom	Flat (SAM)	190	25.0	N/A	0.622	1, 2	GMSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	190	25.0	N/A	0.732	1, 2	GMSK
Right Hand Side of EUT Facing Phantom	Flat (SAM)	190	25.0	N/A	0.699	1, 2	GMSK
Bottom of EUT Facing Phantom	Flat (SAM)	190	25.0	N/A	0.100	1, 2	GMSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	128	25.0	N/A	0.706	1, 2	GMSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	251	25.1	N/A	0.862	1, 2	GMSK

Note(s):

1. Data- SAR measurements were performed using 4 uplink timeslots.
2. EUT supports Hotspot: As per FCC KDB procedure SAR measurements were performed with the EUT at a separation distance of 10mm from the 'SAM' phantom flat section.

*KDB 941225 - SAR is not required for EDGE technology when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding GPRS channels.

6.2.3. Specific Absorption Rate - GSM 850 Body-Worn Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.731

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.5 to 22.5

Results:

EUT Position	Phantom Configuration	Channel Number	Uplink Meas. Burst Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (SAM)	190	25.2	N/A	0.643	1, 2	GMSK
Back of EUT Facing Phantom With PHF	Flat (SAM)	190	25.2	N/A	0.731	1, 2, 3	GMSK

Note(s):

1. Voice- Back of EUT is worst case configuration of GPRS hotspot mode and is applied to GSM Body-worn.
2. SAR measurements were performed with the closest edge of the EUT at a separation distance of 15mm from the 'SAM' phantom flat section.
3. Personal Hands-Free Kit attached, using the worst-case configuration acquired.

6.2.4. Specific Absorption Rate - PCS 1900 Head Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.836

Environmental Conditions:

Temperature Variation in Lab (°C):	23.0 to 23.0
Temperature Variation in Liquid (°C):	23.0 to 23.0

Results:

EUT Position	Phantom Configuration	Channel Number	Uplink Meas. Burst Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Touch	Left	661	21.8	N/A	0.833	1	GMSK
Touch	Left	512	21.7	N/A	0.769	1	GMSK
Touch	Left	810	21.7	N/A	0.836	1	GMSK
Tilt	Left	661	21.8	N/A	0.354	1	GMSK
Touch	Right	661	21.8	N/A	0.392	1	GMSK
Tilt	Right	661	21.8	N/A	0.269	1	GMSK

Note(s):

1. Voice

6.2.5. Specific Absorption Rate - GPRS 1900 Hotspot Mode Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.855

Environmental Conditions:

Temperature Variation in Lab (°C):	23.0 to 23.0
Temperature Variation in Liquid (°C):	23.0 to 23.0

Results:

EUT Position	Phantom Configuration	Channel Number	Uplink Meas. Burst Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (SAM)	661	22.3	N/A	0.780	1, 2	GMSK
Back of EUT Facing Phantom	Flat (SAM)	661	22.3	N/A	0.848	1, 2	GMSK
Back of EUT Facing Phantom	Flat (SAM)	512	22.2	N/A	0.855	1, 2	GMSK
Back of EUT Facing Phantom	Flat (SAM)	810	21.8	N/A	0.762	1, 2	GMSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	661	22.3	N/A	0.678	1, 2	GMSK
Right Hand Side of EUT Facing Phantom	Flat (SAM)	661	22.3	N/A	0.272	1, 2	GMSK
Bottom of EUT Facing Phantom	Flat (SAM)	661	22.3	N/A	0.287	1, 2	GMSK

Note(s):

1. Data- SAR measurements were performed using 4 uplink timeslots.
2. EUT supports Hotspot: As per FCC KDB procedure SAR measurements were performed with the EUT at a separation distance of 10mm from the 'SAM' phantom flat section.

*KDB 941225 - SAR is not required for EDGE technology when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding GPRS channels.

6.2.6. Specific Absorption Rate - PCS 1900 Body-Worn Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.396

Environmental Conditions:

Temperature Variation in Lab (°C):	23.0 to 23.0
Temperature Variation in Liquid (°C):	23.0 to 23.0

Results:

EUT Position	Phantom Configuration	Channel Number	Uplink Meas. Burst Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (SAM)	661	21.8	N/A	0.382	1, 2	GMSK
Back of EUT Facing Phantom With PHF	Flat (SAM)	661	21.8	N/A	0.396	1, 2, 3	GMSK

Note(s):

1. Voice- Back of EUT is worst case configuration of GPRS hotspot mode and is applied to PCS Body-worn.
2. SAR measurements were performed with the closest edge of the EUT at a separation distance of 15mm from the 'SAM' phantom flat section.
3. Personal Hands-Free Kit attached, using the worst-case configuration acquired.

6.2.7. Specific Absorption Rate - UMTS-FDD II Head Configuration 1g**Test Summary:**

Tissue Volume:	1g
Maximum Level (W/kg):	1.080

Environmental Conditions:

Temperature Variation in Lab (°C):	23.0 to 23.0
Temperature Variation in Liquid (°C):	21.7 to 21.7

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Touch	Left	9400	22.5	N/A	1.080	1	QPSK
Touch	Left	9262	22.5	N/A	0.916	1	QPSK
Touch	Left	9538	22.3	N/A	1.070	1	QPSK
Tilt	Left	9400	22.5	N/A	0.451	1	QPSK
Touch	Right	9400	22.5	N/A	0.519	1	QPSK
Tilt	Right	9400	22.5	N/A	0.370	1	QPSK

Note(s):

1. Circuit Switch (CS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's".

6.2.8. Specific Absorption Rate - UMTS-FDD II Hotspot Mode Configuration 1g
Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.932

Environmental Conditions:

Temperature Variation in Lab (°C):	23.0 to 23.0
Temperature Variation in Liquid (°C):	21.9 to 21.9

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (SAM)	9400	22.5	N/A	0.915	1, 2	QPSK
Front of EUT Facing Phantom	Flat (SAM)	9262	22.5	N/A	0.808	1, 2	QPSK
Front of EUT Facing Phantom	Flat (SAM)	9538	22.3	N/A	0.849	1, 2	QPSK
Back of EUT Facing Phantom	Flat (SAM)	9400	22.5	N/A	0.923	1, 2	QPSK
Back of EUT Facing Phantom	Flat (SAM)	9262	22.5	N/A	0.878	1, 2	QPSK
Back of EUT Facing Phantom	Flat (SAM)	9538	22.3	N/A	0.932	1, 2	QPSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	9400	22.5	N/A	0.673	1, 2	QPSK
Right Hand Side of EUT Facing Phantom	Flat (SAM)	9400	22.5	N/A	0.237	1, 2	QPSK
Bottom of EUT Facing Phantom	Flat (SAM)	9400	22.5	N/A	0.382	1, 2	QPSK

Note(s):

1. Circuit Switch (CS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's"
2. SAR measurements were performed with the closest edge of the EUT at a separation distance of 10mm from the 'SAM' phantom flat section.

*KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

6.2.9. Specific Absorption Rate - UMTS-FDD II Body-Worn Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.590

Environmental Conditions:

Temperature Variation in Lab (°C):	23.0 to 23.0
Temperature Variation in Liquid (°C):	21.9 to 21.9

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (SAM)	9400	22.5	N/A	0.590	1, 2, 3	QPSK
Back of EUT Facing Phantom	Flat (SAM)	9262	22.5	N/A	0.510	1, 2, 3	QPSK
Back of EUT Facing Phantom	Flat (SAM)	9538	22.3	N/A	0.544	1, 2, 3	QPSK
Back of EUT Facing Phantom With PHF	Flat (SAM)	9400	22.5	N/A	0.590	1, 2, 3, 4	QPSK

Note(s):

1. Circuit Switch (CS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's"
2. Back of EUT, is worst case configuration from Hotspot mode and used for Body-worn Configuration.
3. SAR measurements were performed with the closest edge of the EUT at a separation distance of 15mm from the 'SAM' phantom flat section.
4. Personal Hands-Free Kit attached, using the worst-case configuration acquired.

*KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

6.2.10. Specific Absorption Rate - UMTS-FDD IV Head Configuration 1g**Test Summary:**

Tissue Volume:	1g
Maximum Level (W/kg):	0.744

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	23.8 to 23.8

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Touch	Left	1412	22.8	N/A	0.545	1	QPSK
Tilt	Left	1412	22.8	N/A	0.248	1	QPSK
Touch	Right	1412	22.8	N/A	0.318	1	QPSK
Tilt	Right	1412	22.8	N/A	0.213	1	QPSK
Touch	Left	1312	22.8	N/A	0.529	1	QPSK
Touch	Left	1513	22.7	N/A	0.744	1	QPSK

Note(s):

1. Circuit Switch (CS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's".

6.2.11. Specific Absorption Rate - UMTS-FDD IV Hotspot Mode Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	1.420

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	23.2 to 23.2

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (SAM)	1412	22.8	N/A	0.957	1, 2	QPSK
Front of EUT Facing Phantom	Flat (SAM)	1312	22.8	N/A	1.060	1, 2	QPSK
Front of EUT Facing Phantom	Flat (SAM)	1513	22.7	N/A	1.420	1, 2	QPSK
Back of EUT Facing Phantom	Flat (SAM)	1412	22.8	N/A	1.030	1, 2	QPSK
Back of EUT Facing Phantom	Flat (SAM)	1312	22.8	N/A	1.080	1, 2	QPSK
Back of EUT Facing Phantom	Flat (SAM)	1513	22.7	N/A	1.350	1, 2	QPSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	1412	22.8	N/A	0.586	1, 2	QPSK
Right Hand Side of EUT Facing Phantom	Flat (SAM)	1412	22.8	N/A	0.095	1, 2	QPSK
Bottom of EUT Facing Phantom	Flat (SAM)	1412	22.8	N/A	0.497	1, 2	QPSK

Note(s):

1. Circuit Switch (CS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's"
2. SAR measurements were performed with the closest edge of the EUT at a separation distance of 10mm from the 'SAM' phantom flat section.

*KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

6.2.12. Specific Absorption Rate - UMTS-FDD IV Body-Worn Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.843

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	23.2 to 23.2

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (SAM)	1412	22.8	N/A	0.606	1, 2, 3	QPSK
Front of EUT Facing Phantom	Flat (SAM)	1312	22.8	N/A	0.641	1, 2, 3	QPSK
Front of EUT Facing Phantom	Flat (SAM)	1513	22.7	N/A	0.843	1, 2, 3	QPSK
Front of EUT Facing Phantom With PHF	Flat (SAM)	1513	22.7	N/A	0.813	1, 2, 3, 4	QPSK

Note(s):

1. Circuit Switch (CS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's"
2. Front of EUT is worst case configuration from Hotspot mode and used for Body-worn Configuration.
3. SAR measurements were performed with the closest edge of the EUT at a separation distance of 15mm from the 'SAM' phantom flat section.
4. Personal Hands-Free Kit attached, using the worst-case configuration acquired.

*KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

6.2.13. Specific Absorption Rate - UMTS-FDD V Head Configuration 1g**Test Summary:**

Tissue Volume:	1g
Maximum Level (W/kg):	0.529

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	23.0 to 23.0

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Touch	Left	4183	24.5	N/A	0.529	1	QPSK
Tilt	Left	4183	24.5	N/A	0.316	1	QPSK
Touch	Right	4183	24.5	N/A	0.517	1	QPSK
Tilt	Right	4183	24.5	N/A	0.270	1	QPSK
Touch	Left	4132	24.5	N/A	0.486	1	QPSK
Touch	Left	4233	24.4	N/A	0.519	1	QPSK

Note(s):

1. Circuit Switch (CS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's".

6.2.14. Specific Absorption Rate - UMTS-FDD V Hotspot Mode Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.965

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.5 to 22.5

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (SAM)	4183	24.5	N/A	0.665	1, 2	QPSK
Back of EUT Facing Phantom	Flat (SAM)	4183	24.5	N/A	0.719	1, 2	QPSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	4183	24.5	N/A	0.846	1, 2	QPSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	4132	24.5	N/A	0.965	1, 2	QPSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	4233	24.4	N/A	0.857	1, 2	QPSK
Right Hand Side of EUT Facing Phantom	Flat (SAM)	4183	24.5	N/A	0.907	1, 2	QPSK
Right Hand Side of EUT Facing Phantom	Flat (SAM)	4132	24.5	N/A	0.951	1, 2	QPSK
Right Hand Side of EUT Facing Phantom	Flat (SAM)	4233	24.4	N/A	0.880	1, 2	QPSK

Specific Absorption Rate - UMTS-FDD V Hotspot Mode Configuration 1g (Continued)							
EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Bottom of EUT Facing Phantom	Flat (SAM)	4183	24.5	N/A	0.110	1, 2	QPSK

Note(s):

1. Circuit Switch (CS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's"
2. SAR measurements were performed with the closest edge of the EUT at a separation distance of 10mm from the 'SAM' phantom flat section.

*KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

6.2.15. Specific Absorption Rate - UMTS-FDD V Body-Worn Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.645

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.5 to 22.5

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (SAM)	4183	24.5	N/A	0.574	1, 2, 3	QPSK
Back of EUT Facing Phantom	Flat (SAM)	4132	24.5	N/A	0.584	1, 2, 3	QPSK
Back of EUT Facing Phantom	Flat (SAM)	4233	24.4	N/A	0.543	1, 2, 3	QPSK
Back of EUT Facing Phantom With PHF	Flat (SAM)	4132	24.5	N/A	0.645	1, 2, 3, 4	QPSK

Note(s):

1. Circuit Switch (CS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's"
2. Back of EUT is worst case configuration from Hotspot mode and used for Body-worn Configuration.
3. SAR measurements were performed with the closest edge of the EUT at a separation distance of 15mm from the 'SAM' phantom flat section.
4. Personal Hands-Free Kit attached, using the worst-case configuration acquired.

*KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

6.2.16. Specific Absorption Rate - Wi-Fi 2450 Head Configuration 1g**Test Summary:**

Tissue Volume:	1g
Maximum Level (W/kg):	0.207

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.8 to 22.8

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Touch	Left	6	12.0	N/A	0.126	1	DBPSK
Tilt	Left	6	12.0	N/A	0.129	1	DBPSK
Touch	Right	6	12.0	N/A	0.149	1	DBPSK
Tilt	Right	6	12.0	N/A	0.140	1	DBPSK
Touch	Right	1	12.0	N/A	0.207	1	DBPSK
Touch	Right	11	11.9	N/A	0.109	1	DBPSK

Note(s):

- 802.11b 1Mbps

*KDB 248227 - SAR is not required for 802.11g/n channels when the maximum average output power is equal to that measured on the corresponding 802.11b channels.

*The measured maximum conducted power for WLAN 2.45GHz 802.11g/n is 11.1 (equivalent to 12.88 mW) and for WLAN 5GHz is 6.0dBm (equivalent to 3.98 mW).

As per FCC kdb pub. SAR Handsets Multi Xmitter and Ant, v01r05; when there is simultaneous transmission occurring, stand- alone SAR evaluation is not required when the output power measured is ≤ 2 .Pref for the particular band and antenna separation is ≥ 5.0 cm from other antenna.

Output power thresholds for Unlicensed Transmitters

Pref	2.45	5.15 – 5.35	5.47	GHz
	12	6	5	mW

As per table 1 above, since output power measured for;

2.45 GHz 802.11g/n maximum output power = 12.88mW < 24mW (2*Pref)

5.15 to 5.35 GHz maximum output power = 3.98mW < 12mW (2*Pref)

5.47 to 5.85 GHz maximum output power = 3.80mW < 10mW (2*Pref)

Stand Alone SAR evaluation is not required for 2.4 GHz WLAN 802.11g/n and 5.0 GHz WLAN802.11a/n modes.

6.2.17. Specific Absorption Rate - Wi-Fi 2450 Hotspot Mode Configuration 1g

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.183

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	23.2 to 23.2

Results:

EUT Position	Phantom Configuration	Channel Number	Meas. Avg. Power (dBm)	Power Back-Off (dB)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (SAM)	6	12.0	N/A	0.026	1, 2	DBPSK
Back of EUT Facing Phantom	Flat (SAM)	6	12.0	N/A	0.076	1, 2	DBPSK
Left Hand Side of EUT Facing Phantom	Flat (SAM)	6	12.0	N/A	0.002	1, 2	DBPSK
Right Hand Side of EUT Facing Phantom	Flat (SAM)	6	12.0	N/A	0.002	1, 2	DBPSK
Top of EUT Facing Phantom	Flat (SAM)	6	12.0	N/A	0.108	1, 2	DBPSK
Top of EUT Facing Phantom	Flat (SAM)	1	12.0	N/A	0.114	1, 2	DBPSK
Top of EUT Facing Phantom	Flat (SAM)	11	11.9	N/A	0.080	1, 2	DBPSK
Top of EUT Facing Phantom with PHF	Flat (SAM)	1	12.0	N/A	0.183	1, 2, 3	DBPSK

Specific Absorption Rate - Wi-Fi 2450 Hotspot Mode Configuration 1g (continued)
Note(s):

1. 802.11b 1Mbps
2. EUT Supports Hotspot; SAR measurements were performed with the closest edge of the EUT at a separation distance of 10mm from the 'SAM' phantom flat section.
3. Personal Hands-Free Kit attached, using the worst-case configuration acquired.

*KDB 248227 - SAR is not required for 802.11g/n channels when the maximum average output power is equal to that measured on the corresponding 802.11b channels.

*The measured maximum conducted power for WLAN 2.45GHz 802.11g/n is 11.1 (equivalent to 12.88 mW) and for WLAN 5GHz is 6.0dBm (equivalent to 3.98 mW).

As per FCC kdb pub. *SAR Handsets Multi Xmitter and Ant, v01r05*; when there is simultaneous transmission occurring, stand- alone SAR evaluation is not required when the output power measured is $\leq 2.\text{Pref}$ for the particular band and antenna separation is $\geq 5.0\text{cm}$ from other antenna.

Output power thresholds for Unlicensed Transmitters

Pref	2.45	5.15 – 5.35	5.47	GHz
	12	6	5	mW

As per table 1 above, since output power measured for;

2.45 GHz 802.11g/n maximum output power = 12.88mW < 24mW (2*Pref)

5.15 to 5.35 GHz maximum output power = 3.98mW < 12mW (2*Pref)

5.47 to 5.85 GHz maximum output power = 3.80mW < 10mW (2*Pref)

Stand Alone SAR evaluation is not required for 2.4 GHz WLAN 802.11g/n and 5.0 GHz WLAN802.11a/n modes.

6.2.18.Conducted Average Power Measurement 2G: GSM850

Channel Number	Frequency (MHZ)	GSM TX Power (dBm)	Avg. Burst Power with consideration for uplink time slot (dBm)	Note
128	824.2	34.1	25.1	Conducted, GMSK
190	836.6	34.2	25.2	Conducted, GMSK
251	848.8	34.2	25.2	Conducted, GMSK

GPRS850 - Measured Average Power without consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
128	824.2	34.1	31.2	29.3	28.0	Conducted, GMSK
190	836.6	34.2	31.1	29.2	28.0	Conducted, GMSK
251	848.8	34.2	31.0	29.3	28.1	Conducted, GMSK

GPRS850 - Calculated Value with consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
128	824.2	25.1	25.2	25.0	25.0	Conducted, GMSK
190	836.6	25.2	25.1	24.9	25.0	Conducted, GMSK
251	848.8	25.2	25.0	25.0	25.1	Conducted, GMSK

EDGE850 - Measured Average Power without consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
128	824.2	34.1	31.2	29.3	28.0	Conducted, GMSK
190	836.6	34.2	31.1	29.2	28.0	Conducted, GMSK
251	848.8	34.2	31.0	29.3	28.1	Conducted, GMSK

EDGE850 - Calculated Value with consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
128	824.2	25.1	25.2	25.0	25.0	Conducted, GMSK
190	836.6	25.2	25.1	24.9	25.0	Conducted, GMSK
251	848.8	25.2	25.0	25.0	25.1	Conducted, GMSK

Note:

Scale factor for uplink time slot:

- 1 Uplink: time slot ratio = 8:1 => $10 \log(8/1) = 9.03 \text{ dB}$
- 2 Uplink: time slot ratio = 8:2 => $10 \log(8/2) = 6.02 \text{ dB}$
- 3 Uplink: time slot ratio = 8:3 => $10 \log(8/3) = 4.26 \text{ dB}$
- 4 Uplink: time slot ratio = 8:4 => $10 \log(8/4) = 3.01 \text{ dB}$

EDGE (MCS9 ~ 8PSK)**EDGE850 - Measured Average Power without consideration for Uplink time slots:**

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
128	824.2	26.3	25.6	24.7	22.7	Conducted, 8PSK
190	836.6	26.4	25.7	24.8	22.7	Conducted, 8PSK
251	848.8	26.4	25.7	24.8	22.7	Conducted, 8PSK

EDGE850 - Calculated Value with consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
128	824.2	17.0	19.6	20.4	19.7	Conducted, 8PSK
190	836.6	17.1	19.7	20.5	19.7	Conducted, 8PSK
251	848.8	17.1	19.7	20.5	19.7	Conducted, 8PSK

Note:**Scale factor for uplink time slot:**

- 1 Uplink: time slot ratio = 8:1 => $10 \log(8/1) = 9.03 \text{ dB}$
- 2 Uplink: time slot ratio = 8:2 => $10 \log(8/2) = 6.02 \text{ dB}$
- 3 Uplink: time slot ratio = 8:3 => $10 \log(8/3) = 4.26 \text{ dB}$
- 4 Uplink: time slot ratio = 8:4 => $10 \log(8/4) = 3.01 \text{ dB}$

6.2.19.Conducted Average Power Measurement 2G: PCS1900

Channel Number	Frequency (MHZ)	GSM TX Power (dBm)	Avg. Burst Power with consideration for uplink time slot (dBm)	Note
512	1850.2	30.7	21.7	Conducted, GMSK
661	1880.0	30.8	21.8	Conducted, GMSK
810	1909.8	30.7	21.7	Conducted, GMSK

GPRS1900 - Measured Average Power without consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
512	1850.2	30.7	28.2	26.2	25.2	Conducted, GMSK
661	1880.0	30.8	28.3	26.3	25.3	Conducted, GMSK
810	1909.8	30.7	27.9	26.0	24.8	Conducted, GMSK

GPRS1900 - Calculated Value with consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
512	1850.2	21.7	22.2	21.9	22.2	Conducted, GMSK
661	1880.0	21.8	22.3	22.0	22.3	Conducted, GMSK
810	1909.8	21.7	21.9	21.7	21.8	Conducted, GMSK

EDGE1900 - Measured Average Power without consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
512	1850.2	30.7	28.2	26.2	25.2	Conducted, GMSK
661	1880.0	30.8	28.3	26.3	25.3	Conducted, GMSK
810	1909.8	30.7	27.9	26.0	24.8	Conducted, GMSK

EDGE1900 - Calculated Value with consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
512	1850.2	21.7	22.2	21.9	22.2	Conducted, GMSK
661	1880.0	21.8	22.3	22.0	22.3	Conducted, GMSK
810	1909.8	21.7	21.9	21.7	21.8	Conducted, GMSK

Note:**Scale factor for uplink time slot:**

- 1 Uplink: time slot ratio = 8:1 => $10 \log(8/1) = 9.03 \text{ dB}$
- 2 Uplink: time slot ratio = 8:2 => $10 \log(8/2) = 6.02 \text{ dB}$
- 3 Uplink: time slot ratio = 8:3 => $10 \log(8/3) = 4.26 \text{ dB}$
- 4 Uplink: time slot ratio = 8:4 => $10 \log(8/4) = 3.01 \text{ dB}$

EDGE (MCS9 ~ 8PSK):**EDGE1900 - Measured Average Power Without consideration for Uplink time slots:**

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
512	1850.2	25.4	24.5	23.7	22.5	Conducted, 8PSK
661	1880.0	25.5	24.5	23.7	22.5	Conducted, 8PSK
810	1909.8	25.3	24.3	23.5	22.3	Conducted, 8PSK

EDGE1900 - Calculated Value with consideration for Uplink time slots:

Channel Number	Frequency (MHZ)	Power (dBm) 1Uplink	Power (dBm) 2Uplink	Power (dBm) 3Uplink	Power (dBm) 4Uplink	Note
512	1850.2	16.4	18.5	19.4	19.5	Conducted, 8PSK
661	1880.0	16.5	18.5	19.4	19.5	Conducted, 8PSK
810	1909.8	16.3	18.3	19.2	19.3	Conducted, 8PSK

Note:**Scale factor for uplink time slot:**

- 1 Uplink: time slot ratio = 8:1 => $10 \log(8/1) = 9.03 \text{ dB}$
- 2 Uplink: time slot ratio = 8:2 => $10 \log(8/2) = 6.02 \text{ dB}$
- 3 Uplink: time slot ratio = 8:3 => $10 \log(8/3) = 4.26 \text{ dB}$
- 4 Uplink: time slot ratio = 8:4 => $10 \log(8/4) = 3.01 \text{ dB}$

6.2.20.Conducted Average Power Measurement 3G:

Modes		HSDPA					HSPA					WCDMA
Sets		1	2	3	4	1	2	3	4	5	Voice / RMC 12.2kbps	
Band	Channel	Power [dBm]										
1900 (Band II)	9262	22.4	22.1	21.6	21.6	22.1	22.2	21.6	22.5	21.6	22.5	
	9662											
	9400	22.5	22.1	21.6	21.6	22.1	22.2	21.6	22.5	21.6	22.5	
	9800											
1700 (Band IV)	9538	22.1	21.8	21.3	21.3	21.8	22.0	21.4	22.3	21.4	22.3	
	9938											
	1312	22.7	22.5	21.9	21.9	22.3	22.6	21.9	22.9	22.0	22.8	
	1537											
850 (Band V)	1412	22.8	22.3	21.7	21.7	22.3	22.4	21.7	22.7	21.8	22.8	
	1637											
	1513	22.6	22.4	21.8	21.8	22.4	22.4	21.7	22.7	21.8	22.7	
	1738											
Modes		HSDPA					HSPA					WCDMA
Sets		1	2	3	4	1	2	3	4	5	Voice / RMC 12.2kbps	
β_c		2	12	15	15	11	6	15	2	15		
β_d		15	15	8	4	15	15	9	15	15		
Δ ACK, Δ NACK, Δ CQI		8	8	8	8	8	8	8	8	8		
AGV		-	-	-	-	20	12	15	17	21		

The module power levels were measured in both HSPA and 3G RMC 12.2kbps modes and compared to ensure the correct mode of operation had been established.

The following tables taken from FCC 3G SAR procedures (KDB 941225 D01 SAR test for 3G devices v02) below were applied using an Agilent 8960 series 10 wireless communications test set which supports 3G / HSDPA release 5 / HSPA release 6.

Sub-test Setup for Release 5 HSDPA

Sub-test	β_c	β_d	B_d (SF)	β_c / β_d	$\beta_{hs}^{(1)}$	SM (dB) ⁽²⁾
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 ⁽³⁾	15/15 ⁽³⁾	64	12/15 ⁽³⁾	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c / \beta_d = 12/15, B_{hs}/\beta_c = 24/15$

Note 3: For subtest 2 the β_c / β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

Sub-test Setup for Release 6 HSPA

Sub-test	β_c	β_d	B_d (SF)	β_c / β_d	$\beta_{hs}^{(1)}$	B_{oc}	B_{od}	B_{od} (SF)	B_{od} (codes)	CM ⁽²⁾ (dB)	POWER BACK OFF (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	31/15	B _{alt1} : 47/15 B _{alt2} : 47/15	4	1	2.0	1.0	15	92
4	2/15	15/15	64	2/15	2/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 ⁽⁴⁾	15/15 ⁽⁴⁾	64	15/15 ⁽⁴⁾	24/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c / \beta_d = 12/15, B_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH AND E-DPCCH for the POWER BACK OFF is based on the relative CM difference.

Note 3: For subtest 1 the β_c / β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 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 $\beta_c = 14/15$ and $\beta_d = 15/15$.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

Note 6: B_{od} can not be set directly; it is set by Absolute Grant Value.

**6.2.21.Conducted Power Measurements Wi-Fi802.11b/g/n (2.4 GHz)
802.11b/g (2.4 GHz)**

Channel Number	Frequency (MHz)	TX Power before Test (dBm)	Note
1	2412.0	12.0	2.4GHz 802.11b (1Mbps)
6	2437.0	12.0	
11	2462.0	11.9	
1	2412.0	11.1	2.4GHz 802.11b (11Mbps)
6	2437.0	11.0	
11	2462.0	10.6	
1	2412.0	11.1	2.4GHz 802.11g (6Mbps)
6	2437.0	11.0	
11	2462.0	10.8	
1	2412.0	10.3	2.4GHz 802.11g (54Mbps)
6	2437.0	9.7	
11	2462.0	9.9	

802.11n (2.4 GHz)

Channel Number	Frequency (MHz)	TX Power before Test (dBm)	Note
1	2412.0	10.6	2.4GHz 802.11n (MCS0 6.5Mbps)
6	2437.0	10.3	
11	2462.0	10.0	
1	2412.0	9.3	2.4GHz 802.11n (MCS7 65Mbps)
6	2437.0	8.6	
11	2462.0	8.5	

**6.2.22. Conducted Power Measurements Wi-Fi802.11a/n (5.0 GHz)
802.11a (5.0 GHz)**

Channel Number	Frequency (MHz)	TX Power before Test (dBm) 6 Mbps	TX Power before Test (dBm) 54 Mbps	Note
36	5180.0	4.8	4.6	5.2 GHz
40	5200.0	5.7	4.7	
48	5240.0	5.9	4.4	
52	5260.0	4.0	4.0	
60	5300.0	5.5	4.5	5.3 GHz
64	5320.0	5.0	4.1	
100	5500.0	5.3	4.2	5.6 GHz
120	5600.0	4.7	4.1	
140	5700.0	5.0	4.5	
149	5745.0	5.2	4.7	5.8 GHz
157	5785.0	5.4	5.0	
165	5825.0	5.8	5.3	

Conducted Power Measurements Wi-Fi802.11a/n (5.0 GHz) (Continued)
802.11n (5.0 GHz) (HT20)

Channel Number	Frequency (MHz)	TX Power before Test (dBm) 6.5 Mbps	TX Power before Test (dBm) 65 Mbps	Note
36	5180.0	5.1	4.5	5.2 GHz 802.11n
40	5200.0	5.7	4.1	
48	5240.0	5.4	2.2	
52	5260.0	3.4	2.0	
60	5300.0	6.0	4.8	5.3 GHz 802.11n
64	5320.0	4.5	5.1	
100	5500.0	3.5	2.3	
120	5600.0	4.6	3.5	5.6 GHz 802.11n
140	5700.0	4.9	3.8	
149	5745.0	5.2	4.0	
157	5785.0	5.5	4.3	5.8 GHz 802.11n
165	5825.0	4.9	4.6	

802.11n (5.0 GHz) (HT40)

Channel Number	Frequency (MHz)	TX Power before Test (dBm) 13.5 Mbps	TX Power before Test (dBm) 135 Mbps	Note
36	5180.0	5.6	5.6	5.2 GHz 802.11n
40	5200.0	5.7	5.7	
48	5240.0	2.9	5.4	
52	5260.0	3.3	3.3	
60	5300.0	5.9	6.0	5.3 GHz 802.11n
64	5320.0	4.5	4.9	
100	5500.0	3.5	3.9	
120	5600.0	4.6	4.6	5.6 GHz 802.11n
140	5700.0	5.0	5.0	
149	5745.0	5.2	5.2	
157	5785.0	5.5	5.5	5.8 GHz 802.11n
165	5825.0	5.8	5.8	

7. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Test Name	Confidence Level	Calculated Uncertainty
Specific Absorption Rate-GSM 850/ UMTS FDD V Head Configuration 1g	95%	19.94
Specific Absorption Rate-GSM / GPRS / EDGE 850 / UMTS FDD V Body Configurations 1g	95%	20.07
Specific Absorption Rate-PCS 1900 / UMTS FDD II Head Configuration 1g	95%	20.72
Specific Absorption Rate-GSM / GPRS / EDGE 1900 / UMTS FDD II Body Configuration 1g	95%	20.00
Specific Absorption Rate-UMTS FDD IV Head Configuration 1g	95%	18.49
Specific Absorption Rate- UMTS FDD IV Body Configuration 1g	95%	18.27
Specific Absorption Rate-Wi-Fi 2450 Head Configuration 1g	95%	19.47
Specific Absorption Rate-Wi-Fi 2450 Body Configuration 1g	95%	19.90

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

7.1. Specific Absorption Rate Uncertainty -GSM 850 / UMTS FDD V Head Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	c _i (10 ³)	Standard Uncertainty		v _i or v _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	2.400	2.400	normal (k=1)	1.0000	1.0000	2.400	2.400	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.920	4.920	normal (k=1)	1.0000	0.6400	3.149	3.149	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.970	4.970	normal (k=1)	1.0000	0.6000	2.982	2.982	5
	Combined standard uncertainty			t-distribution			10.17	10.17	>250
	Expanded uncertainty			k = 1.96			19.94	19.94	>250

7.2. Specific Absorption Rate-GSM / GPRS / EDGE 850 / UMTS FDD V Body Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	c _i (10 ³)	Standard Uncertainty		v _i or v _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration /Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	2.900	2.900	normal (k=1)	1.0000	1.0000	2.900	2.900	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.690	4.690	normal (k=1)	1.0000	0.6400	3.002	3.002	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.860	4.860	normal (k=1)	1.0000	0.6000	2.916	2.916	5
	Combined standard uncertainty			t-distribution			10.24	10.24	>250
	Expanded uncertainty			k = 1.96			20.07	20.07	>250

7.3. Specific Absorption Rate-PCS 1900 / UMTS FDD II Head Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	c _i (10g)	Standard Uncertainty		v _i or v _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with Regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	3.800	3.800	normal (k=1)	1.0000	1.0000	3.800	3.800	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.900	4.900	normal (k=1)	1.0000	0.6400	3.136	3.136	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.880	4.880	normal (k=1)	1.0000	0.6000	2.928	2.928	5
	Combined standard uncertainty			t-distribution			10.57	10.57	>200
	Expanded uncertainty			k = 1.96			20.72	20.72	>200

7.4. Specific Absorption Rate-PCS / GPRS / EDGE 1900 / UMTS FDD II Body Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	c _i (10 ³)	Standard Uncertainty		v _i or v _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	2.500	2.500	normal (k=1)	1.0000	1.0000	2.500	2.500	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.940	4.940	normal (k=1)	1.0000	0.6400	3.162	3.162	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.980	4.980	normal (k=1)	1.0000	0.6000	2.988	2.988	5
	Combined standard uncertainty			t-distribution			10.20	10.20	>250
	Expanded uncertainty			k = 1.96			20.00	20.00	>250

7.5. Specific Absorption Rate-UMTS FDD IV Head Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	C _i (10g)	Standard Uncertainty		v _i or v _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration/ Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	1.700	1.700	normal (k=1)	1.0000	1.0000	1.700	1.700	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.4300	1.241	1.241	∞
A	Liquid Conductivity (measured value)	4.980	4.980	normal (k=1)	1.0000	0.4300	2.141	2.141	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.4900	1.415	1.415	∞
A	Liquid Permittivity (measured value)	4.770	4.770	normal (k=1)	1.0000	0.4900	2.337	2.337	5
	Combined standard uncertainty			t-distribution			9.43	9.43	>500
	Expanded uncertainty			k = 1.96			18.49	18.49	>500

7.6. Specific Absorption Rate-UMTS FDD IV Body Configuration 10g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	C _i (10g)	Standard Uncertainty		v _i or v _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	1.730	1.730	Rectangular	1.7321	1.0000	0.999	0.999	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration/ Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	1.000	1.000	normal (k=1)	1.0000	1.0000	1.000	1.000	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.4300	1.241	1.241	∞
A	Liquid Conductivity (measured value)	4.990	4.990	normal (k=1)	1.0000	0.4300	2.146	2.146	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.4900	1.415	1.415	∞
A	Liquid Permittivity (measured value)	4.660	4.660	normal (k=1)	1.0000	0.4900	2.283	2.283	5
	Combined standard uncertainty			t-distribution			9.32	9.32	>500
	Expanded uncertainty			k = 1.96			18.27	18.27	>500

7.7. Specific Absorption Rate-Wi-Fi 2450 Head Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	C _i (10g)	Standard Uncertainty		v _i or v _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	2.000	2.000	normal (k=1)	1.0000	1.0000	2.000	2.000	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.410	4.410	normal (k=1)	1.0000	0.6400	2.822	2.822	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.930	4.930	normal (k=1)	1.0000	0.6000	2.958	2.958	5
	Combined standard uncertainty			t-distribution			9.93	9.93	>300
	Expanded uncertainty			k = 1.96			19.47	19.47	>300

7.8. Specific Absorption Rate-Wi-Fi 2450 Body Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	C _i (10 ³)	Standard Uncertainty		v _i or v _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	2.570	2.570	normal (k=1)	1.0000	1.0000	2.570	2.570	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.900	4.900	normal (k=1)	1.0000	0.6400	3.136	3.136	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.920	4.920	normal (k=1)	1.0000	0.6000	2.952	2.952	5
	Combined standard uncertainty			t-distribution			10.15	10.15	>250
	Expanded uncertainty			k = 1.96			19.90	19.90	>250