

SAR VALIDATION REPORT

Project Name:KS060320A01

Model: SKYPE 101

Trade Name: NETGEAR

6/4/2006

INDEX

<u>FREQUENCY</u>	<u>TYPE</u>	<u>PARAMETERS</u>
<u>AMPS850</u>	<u>Noise</u>	--
	<u>Validation</u>	--
	<u>Phone</u>	--
<u>GSM900</u>	<u>Noise</u>	--
	<u>Validation</u>	--
	<u>Phone</u>	--
<u>DCS1800</u>	<u>Noise</u>	--
	<u>Validation</u>	--
	<u>Phone</u>	--
<u>PCS1900</u>	<u>Noise</u>	--
	<u>Validation</u>	--
	<u>Phone</u>	--
<u>IMT2000</u>	<u>Noise</u>	--
	<u>Validation</u>	--
	<u>Phone</u>	--
<u>CUSTOM</u>	<u>Noise</u>	--
	<u>Validation</u>	<u>Measurement 1</u> : Validation Plane with Dipole device position (band Bluetooth)
	<u>Phone</u>	--

SAR MEASUREMENT UNCERTAINTIES

UNCERTAINTY EVALUATION FOR HANDSET SAR TEST

a	b	c	d	e= f(d,k)	f	g	h= cxf/e	i= cxg/e	k
Uncertainty Component	Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i (1 g)	c_i (10 g)	1 g u_i (± %)	10 g u_i (± %)	v_i
Measurement System									
Probe Calibration	E.2.1.	7	N	1	1	1	7	7	∞
Axial Isotropy	E.2.2.	2,5	R	$\sqrt{3}$	$(1-c_p)^{1/2}$	$(1-c_p)^{1/2}$	1,02062	1,02062	∞
Hemispherical Isotropy	E.2.2.	4	R	$\sqrt{3}$	$\sqrt{c_p}$	$\sqrt{c_p}$	1,63299	1,63299	∞
Boundary Effect	E.2.3.	1	R	$\sqrt{3}$	1	1	0,57735	0,57735	∞
Linearity	E.2.4.	5	R	$\sqrt{3}$	1	1	2,88675	2,88675	∞
System Detection Limits	E.2.5.	1	R	$\sqrt{3}$	1	1	0,57735	0,57735	∞
Readout Electronics	E.2.6.	0,02	N	1	1	1	0,02	0,02	∞
Response Time	E.2.7.	3	R	$\sqrt{3}$	1	1	1,73205	1,73205	∞
Integration Time	E.2.8.	2	R	$\sqrt{3}$	1	1	1,1547	1,1547	∞
RF Ambient Conditions	E.6.1.	3	R	$\sqrt{3}$	1	1	1,73205	1,73205	∞
Probe Positioner Mechanical Tolerance	E.6.2.	2	R	$\sqrt{3}$	1	1	1,1547	1,1547	∞
Probe Positioning with respect to Phantom Shell	E.6.3.	0,05	R	$\sqrt{3}$	1	1	0,02887	0,02887	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5.2.	5	R	$\sqrt{3}$	1	1	2,88675	2,88675	∞
Test sample Related									
Test Sample Positioning	E.4.2.1.	0,03	N	1	1	1	0,03	0,03	N-1
Device Holder Uncertainty	E.4.1.1.	5	N	1	1	1	5	5	N-1
Output Power Variation - SAR drift measurement	6.6.2.	3	R	$\sqrt{3}$	1	1	1,73205	1,73205	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (shape and thickness tolerances)	E.3.1.	0,05	R	$\sqrt{3}$	1	1	0,02887	0,02887	∞
Liquid Conductivity - deviation from target values	E.3.2.	5	R	$\sqrt{3}$	0,64	0,43	1,84752	1,2413	∞
Liquid Conductivity - measurement uncertainty	E.3.3.	5	N	1	0,64	0,43	3,2	2,15	M
Liquid Permittivity - deviation from target values	E.3.2.	3	R	$\sqrt{3}$	0,6	0,49	1,03923	0,8487	∞
Liquid Permittivity - measurement uncertainty	E.3.3.	10	N	1	0,6	0,49	6	4,9	M
Combined Standard Uncertainty			RSS				11,1265	10,5799	
Expanded Uncertainty (95% CONFIDENCE INTERVAL)			k				21,8079	20,7366	

VALIDATON MEASUREMENT UNCERTAINTIES

UNCERTAINTY FOR SYSTEM PERFORMANCE CHECK

a	b	c	d	e= f(d,k)	f	g	h= cx/f/e	i= cxg/e	k
Uncertainty Component	Sec.	Tol. (± %)	Prob. Dist.	Div.	c _i (1 g)	c _i (10 g)	1 g u _i (± %)	10 g u _i (± %)	v _i
Measurement System									
Probe Calibration	E.2.1.	7	N	1	1	1	7	7	∞
Axial Isotropy	E.2.2.	2,5	R	√3	(1-c _p) ^{1/2}	(1-c _p) ^{1/2}	1,02062	1,02062	∞
Hemispherical Isotropy	E.2.2.	4	R	√3	√C _p	√C _p	1,63299	1,63299	∞
Boundary Effect	E.2.3.	1	R	√3	1	1	0,57735	0,57735	∞
Linearity	E.2.4.	5	R	√3	1	1	2,88675	2,88675	∞
System Detection Limits	E.2.5.	1	R	√3	1	1	0,57735	0,57735	∞
Readout Electronics	E.2.6.	0,02	N	1	1	1	0,02	0,02	∞
Response Time	E.2.7.	3	R	√3	1	1	1,73205	1,73205	∞
Integration Time	E.2.8.	2	R	√3	1	1	1,1547	1,1547	∞
RF Ambient Conditions	E.6.1.	3	R	√3	1	1	1,73205	1,73205	∞
Probe Positioner Mechanical Tolerance	E.6.2.	2	R	√3	1	1	1,1547	1,1547	∞
Probe Positioning with respect to Phantom Shell	E.6.3.	0,05	R	√3	1	1	0,02887	0,02887	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5.2.	5	R	√3	1	1	2,88675	2,88675	∞
Dipole									
Dipole Axis to Liquid Distance	8, E.4.2.	1	N	√3	1	1	0,57735	0,57735	N-1
Input Power and SAR drift measurement	8, 6.6.2.	2	R	√3	1	1	1,1547	1,1547	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (shape and thickness tolerances)	E.3.1.	0,05	R	√3	1	1	0,02887	0,02887	∞
Liquid Conductivity - deviation from target values	E.3.2.	5	R	√3	0,64	0,43	1,84752	1,2413	∞
Liquid Conductivity - measurement uncertainty	E.3.3.	5	N	1	0,64	0,43	3,2	2,15	M
Liquid Permittivity - deviation from target values	E.3.2.	3	R	√3	0,6	0,49	1,03923	0,8487	∞
Liquid Permittivity - measurement uncertainty	E.3.3.	10	N	1	0,6	0,49	6	4,9	M
Combined Standard Uncertainty			RSS				9,87239	9,25204	
Expanded Uncertainty (95% CONFIDENCE INTERVAL)			k				19,3499	18,134	

MEASUREMENT 1

2450MHz Head Liquid Validation

Type: Validation measurement (Complete)

Date of measurement: 31/3/2006

Length of measurement: 8 minutes 31 seconds

Number of maxima: 1

Mobile Phone IMEI number: --

A. Experimental conditions.

Phantom File	surf_sam_plan.txt, Adaptative 1 max
Phantom	Validation plane
Device Position	Dipole
Band	CUSTOM (Bluetooth)
Channels	--
Signal	Duty Cycle: 1.00

B. Instrumentations.

PC	HP (Pentium(R) V 3.06GHz375052-AA1, SN:375052-AA1)
Network Emulator	Agilent (E5071B, SN:B23-03291)
Voltmeter	Keithley (2000, SN:1015843)
Synthetizer	Agilent (E8257C, SN:MY43321570)
Amplifier	Mini-Circuits (ZHL-42, SN:110405)
Power Meter	Agilent (E4416A, SN:QB41292714)
Probe	Antennessa (SN:SN_1205_EP_45)
Phantom	Antennessa (SN:SN41_05_SAM29)
Liquid	Antennessa (Last Calibration:02/2006)

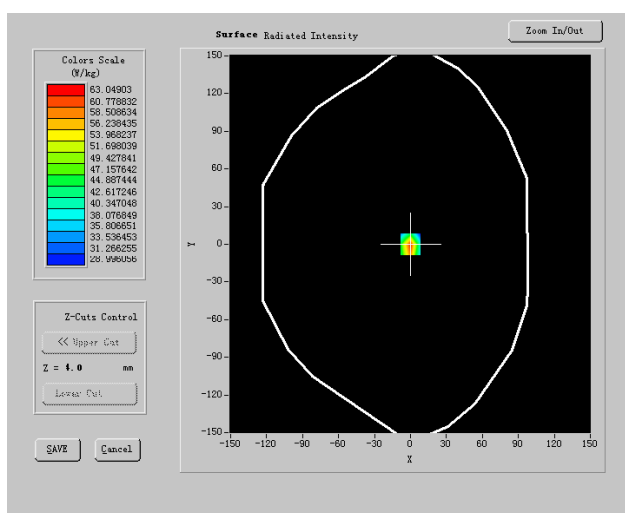
C. SAR Measurement Results

Frequency (MHz)	2442.000000
Relative permittivity (real part)	39.382000
Relative permittivity (imaginary part)	13.567050
Conductivity (S/m)	1.840596

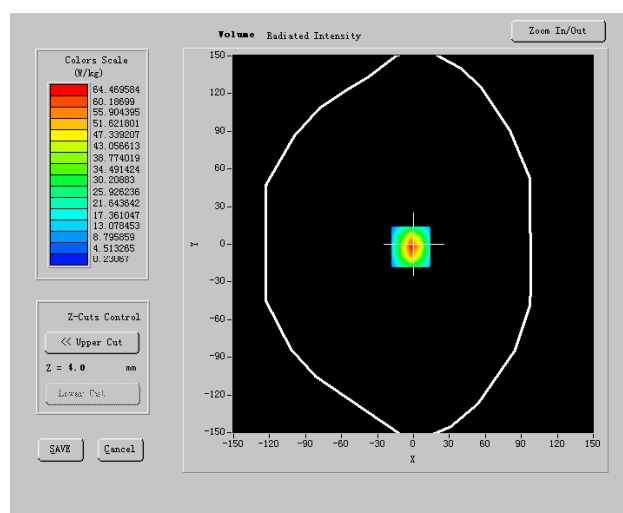
Variation (%)

-0.450000

SURFACE SAR



VOLUME SAR



SAR (W/kg)	Internal Surface	External Surface	Average
SAR 10g	21.602158	25.818960	23.710560
SAR 1g	47.052917	56.267227	51.660072
SAR 10g Contiguous	33.015491	37.139771	35.077633

MEASUREMENT 2

2450MHz Body Liquid Validation

Type: Validation measurement (Complete)

Date of measurement: 6/4/2006

Length of measurement: 8 minutes 35 seconds

Number of maxima: 1

Mobile Phone IMEI number: --

A. Experimental conditions.

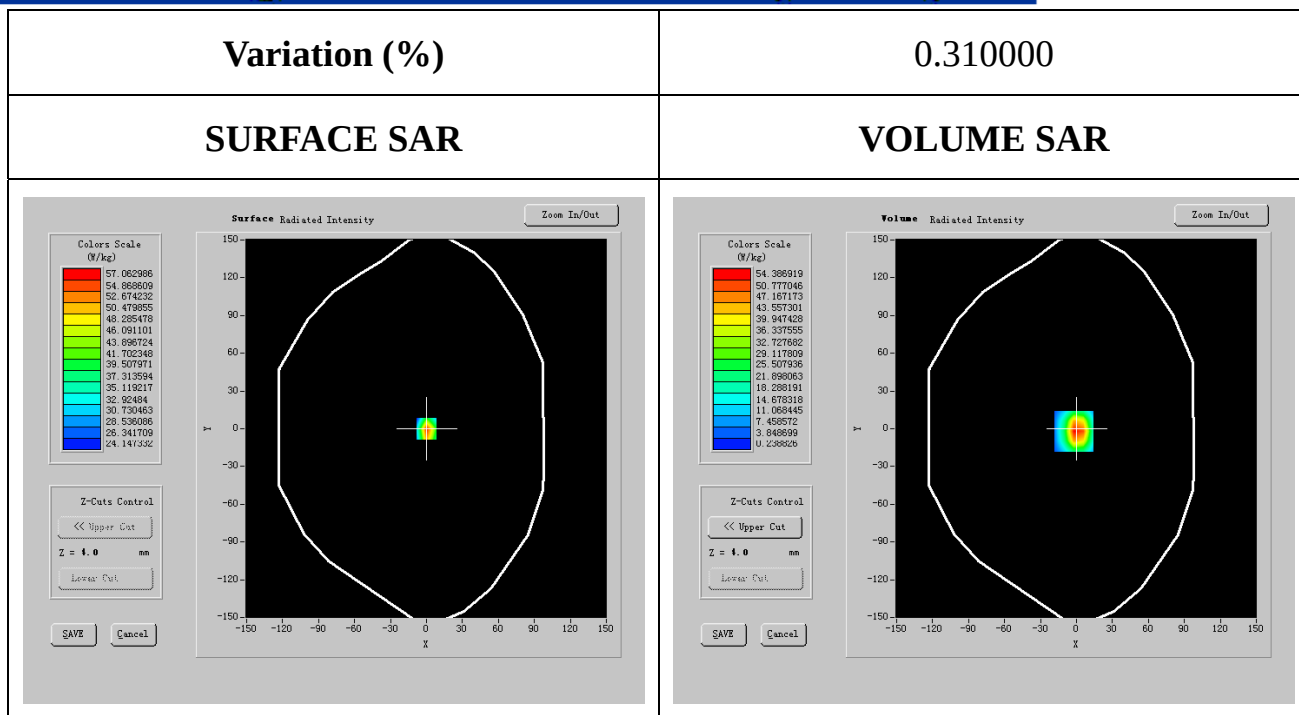
Phantom File	surf_sam_plan.txt, Adaptive 1 max
Phantom	Validation plane
Device Position	Dipole
Band	CUSTOM (Bluetooth)
Channels	--
Signal	Duty Cycle: 1.00

B. Instrumentations.

PC	HP (Pentium(R) V 3.06GHz375052-AA1, SN:375052-AA1)
Network Emulator	Agilent (E5071B, SN:B23-03291)
Voltmeter	Keithley (2000, SN:1015843)
Synthetizer	Agilent (E8257C, SN:MY43321570)
Amplifier	Mini-Circuits (ZHL-42, SN:110405)
Power Meter	Agilent (E4416A, SN:QB41292714)
Probe	Antennessa (SN:SN_1205_EP_45)
Phantom	Antennessa (SN:SN41_05_SAM29)
Liquid	Antennessa (Last Calibration:02/2006)

C. SAR Measurement Results

Frequency (MHz)	2442.000000
Relative permittivity (real part)	39.382000
Relative permittivity (imaginary part)	13.567050
Conductivity (S/m)	1.840596



SAR (W/kg)	Internal Surface	External Surface	Average
SAR 10g	20.449385	24.161308	22.305346
SAR 1g	44.624596	52.687782	48.656189
SAR 10g Contiguous	29.944296	33.788982	31.866638