FCC OET BULLETIN 65 SUPPLEMENT C
IC RSS-102 ISSUE 2

SAR EVALUATION REPORT

FOR

HANDHELD TERMINAL

MODEL NUMBER: CK3

FCC ID: EHA-CK3DDIB
IC: 1223A-CK3DDIB

REPORT NUMBER: 08U12283-1 REV A

ISSUE DATE: JANUARY 6, 2009

Prepared for

INTERMEC TECHNOLOGIES CORPORATION
6001 – 36TH AVENUE WEST
EVERETT, WA 98203, USA

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	December 23 , 2008	Initial Issue	--
A	January 6 , 2009	Additional Testing for PTT	Sunny Shih

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1 ATTESTATION OF TEST RESULTS

COMPANY NAME:	INTERMEC TECHNOLOGIES CORPORATION 6001 – 36TH AVENUE WEST EVERETT, WA 98203, USA
EUT DESCRIPTION:	Handheld Terminal CK3 with EHA-CK3DDIB dual 802.11abg and BT radio.
MODEL:	CK3
FCC ID:	EHA-CK3DDIB
IC:	1223A-CK3DDIB
DEVICE CATEGORY:	Portable
EXPOSURE CATEGORY:	General Population/Uncontrolled Exposure
DATE TESTED:	December 18, 19, and 22, 2008, January 5 and 6 2009
THE HIGHEST SAR VALUES:	See Table below

FCC / IC Rule Parts	Frequency Range [MHz]	The Highest SAR Values (1g_mW/g)	Limit (mW/g)
15.247 / RSS-102	2400 - 2483.5	Body: 0.223 mW Head (PTT): 0.054 mW	1.6
	5725 - 5850	Body: 0.286 mW Head (PTT): 0.139 mW	
15.407 / RSS-102	5150 - 5250	Body: 0.116 mW Head (PTT): 0.075 mW	1.6
	5250 - 5350	Body: 0.141 mW Head (PTT): 0.115 mW	
	5470 - 5725	Body: 0.298 mW Head (PTT): 0.168 mW	

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC OET BULLETIN 65 SUPPLEMENT C	Pass
RSS-102 ISSUE 2	Pass

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Sunny Shih

SUNNY SHIH
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

Carol Baumann

CAROL BAUMANN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

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2 TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C, Specific FCC Procedures KDB 447498_RF Exposure Requirements and Procedures for mobile and portable devices, KDB 248227 SAR Measurement Procedure for 820.11abg Transmitters, KDB 648474 SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas and IC RSS 102 Issue 2: NOVEMBER 2005.

3 FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.
CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4 CALIBRATION AND UNCERTAINTY

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

5 MEASUREMENT UNCERTAINTY

Measurement uncertainty for 300 MHz – 3000 MHz

Uncertainty component	Tol. (±%)	Probe Dist.	Div.	Ci (1g)	Ci (10g)	Std. Unc.(±%)	
						Ui (1g)	Ui(10g)
Measurement System							
Probe Calibration	4.80	N	1	1	1	4.80	4.80
Axial Isotropy	4.70	R	1.732	0.707	0.707	1.92	1.92
Hemispherical Isotropy	9.60	R	1.732	0.707	0.707	3.92	3.92
Boundary Effects	1.00	R	1.732	1	1	0.58	0.58
Linearity	4.70	R	1.732	1	1	2.71	2.71
System Detection Limits	1.00	R	1.732	1	1	0.58	0.58
Readout Electronics	1.00	N	1	1	1	1.00	1.00
Response Time	0.80	R	1.732	1	1	0.46	0.46
Integration Time	2.60	R	1.732	1	1	1.50	1.50
RF Ambient Conditions - Noise	1.59	R	1.732	1	1	0.92	0.92
RF Ambient Conditions - Reflections	0.00	R	1.732	1	1	0.00	0.00
Probe Positioner Mechnical Tolerance	0.40	R	1.732	1	1	0.23	0.23
Probe Positioning With Respect to Phantom Shell	2.90	R	1.732	1	1	1.67	1.67
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	3.90	R	1.732	1	1	2.25	2.25
Test sample Related							
Test Sample Positioning	1.10	N	1	1	1	1.10	1.10
Device Holder Uncertainty	3.60	N	1	1	1	3.60	3.60
Power and SAR Drift Measurement	5.00	R	1.732	1	1	2.89	2.89
Phantom and Tissue Parameters							
Phantom Uncertainty	4.00	R	1.732	1	1	2.31	2.31
Liquid Conductivity - Target	5.00	R	1.732	0.64	0.43	1.85	1.24
Liquid Conductivity - Meas.	8.60	N	1	0.64	0.43	5.50	3.70
Liquid Permittivity - Target	5.00	R	1.732	0.6	0.49	1.73	1.41
Liquid Permittivity - Meas.	3.30	N	1	0.6	0.49	1.98	1.62
Combined Standard Uncertainty	RSS					11.44	10.49
Expanded Uncertainty (95% Confidence Interval)	K=2					22.87	20.98

Notesfor table
1. Tol. - tolerance in influence quaitity
2. N - Nomal
3. R - Rectangular
4. Div. - Divisor used to obtain standard uncertainty
5. Ci - is te sensitivity coefficient

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Measurement uncertainty for 3 GHz – 6 GHz

Uncertainty component	Tol. (±%)	Probe Dist.	Div.	Ci (1g)	Ci (10g)	Std. Unc.(±%)	
						Ui (1g)	Ui(10g)
Measurement System							
Probe Calibration	4.80	N	1	1	1	4.80	4.80
Axial Isotropy	4.70	R	1.732	0.707	0.707	1.92	1.92
Hemispherical Isotropy	9.60	R	1.732	0.707	0.707	3.92	3.92
Boundary Effects	1.00	R	1.732	1	1	0.58	0.58
Linearity	4.70	R	1.732	1	1	2.71	2.71
System Detection Limits	1.00	R	1.732	1	1	0.58	0.58
Readout Electronics	1.00	N	1	1	1	1.00	1.00
Response Time	0.80	R	1.732	1	1	0.46	0.46
Integration Time	2.60	R	1.732	1	1	1.50	1.50
RF Ambient Conditions - Noise	3.00	R	1.732	1	1	1.73	1.73
RF Ambient Conditions - Reflections	3.00	R	1.732	1	1	1.73	1.73
Probe Positioner Mechnical Tolerance	0.40	R	1.732	1	1	0.23	0.23
Probe Positioning With Respect to Phantom Shell	2.90	R	1.732	1	1	1.67	1.67
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	3.90	R	1.732	1	1	2.25	2.25
Test sample Related							
Test Sample Positioning	1.10	N	1	1	1	1.10	1.10
Device Holder Uncertainty	3.60	N	1	1	1	3.60	3.60
Power and SAR Drift Measurement	5.00	R	1.732	1	1	2.89	2.89
Phantom and Tissue Parameters							
Phantom Uncertainty	4.00	R	1.732	1	1	2.31	2.31
Liquid Conductivity - Target	5.00	R	1.732	0.64	0.43	1.85	1.24
Liquid Conductivity - Meas.	8.60	N	1	0.64	0.43	5.50	3.70
Liquid Permittivity - Target	5.00	R	1.732	0.6	0.49	1.73	1.41
Liquid Permittivity - Meas.	3.30	N	1	0.6	0.49	1.98	1.62
Combined Standard Uncertainty	RSS					11.66	10.73
Expanded Uncertainty (95% Confidence Interval)	K=2					23.32	21.46

Notesfor table
1. Tol. - tolerance in influence quaitity
2. N - Nomal
3. R - Rectangular
4. Div. - Divisor used to obtain standard uncertainty
5. Ci - is te sensitivity coefficient

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6 DEVICE UNDER TEST (DUT) DESCRIPTION

Handheld Terminal CK3 with EHA-CK3DDIB dual 802.11abg and BT radio	
Normal Operation:	Worn on body and hand-held
Body Worn Accessories:	• Scan Handle (P/N 714-698-001) • Holster (P/N 825-198-001)
Duty Cycle:	802.11b mode: 97% (crest factor = 1.03) 802.11a mode: 85% (crest factor = 1.15)
Host Device:	Handheld Terminal CK3
Battery:	Li-Ion Rechargeable Battery with the following alternate types: 1) +3.7 Li-Ion – AB17 (318-033-001) – 2000 mAh 2) +3.7 Li-Ion – AB18 (318-034-001) – 5100 mAh 3) +3.7 Li-Ion – AB26 (318-034-002) – 4800 mAh Notes: Battery capacity does not affect SAR values in the configurations tested. +3.7 Li-Ion – AB18 (318-034-001) – 5100 mAh was used for testing.
Simultaneously Transmission:	802.11abg and Bluetooth can not transmit simultaneously Bluetooth conducted average power is below Pref/12mW, stand alone SAR evaluation is not required

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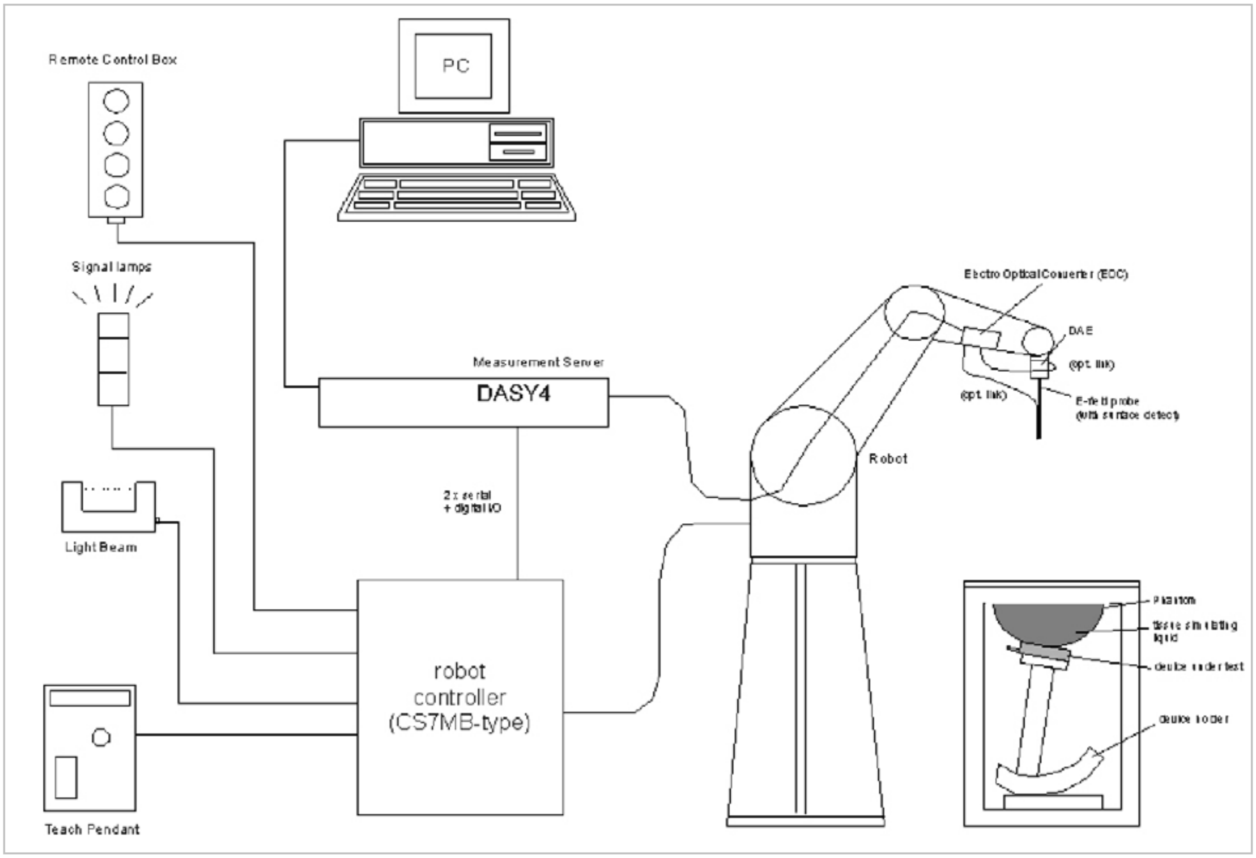
7 SYSTEM DESCRIPTION



The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY4 software.
- Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

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7.1 COMPOSITION OF INGREDIENTS FOR TISSUE SIMULATING LIQUIDS

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Salt: 99+% Pure Sodium Chloride Sugar: 98+% Pure Sucrose
Water: De-ionized, 16 MΩ+ resistivity HEC: Hydroxyethyl Cellulose
DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1, 3, 3-tetramethylbutyl)phenyl]ether

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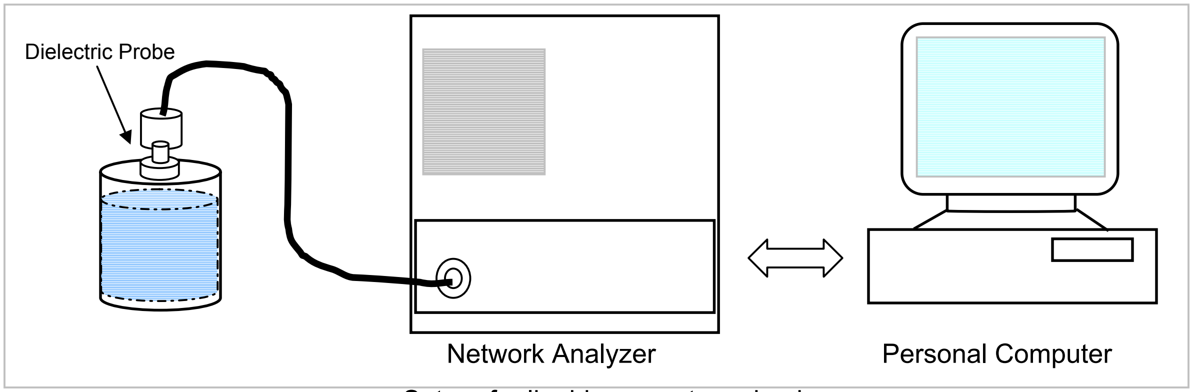
8 SIMULATING LIQUID CHECK

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameters are within the tolerances of the specified target values. The relative permittivity and conductivity of the tissue material should be within ± 5% of the values given in the table below.



Set-up for liquid parameters check

Reference Values of Tissue Dielectric Parameters for Head and Body Phantom (for 150 – 3000 MHz and 5800 MHz)

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in IEEE Standard 1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in IEEE Standard 1528.

Target Frequency (MHz)	**Head**		**Body**	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	**55.0**	**1.05**
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	**53.3**	**1.52**
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

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8.1 SIMULATING LIQUID PARAMETER CHECK RESULT

Simulating Liquid Dielectric Parameter Check Result @ Muscle 2450 MHz

Room Ambient Temperature = 25°C; Relative Humidity = 29% Measured By: Carol Baumann

Simulating Liquid		Parameters			Measured	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)							
2450	15	e'	51.3940	Relative Permittivity (ε_r):	51.3940	52.7	-2.48	± 5
		e"	14.1996	Conductivity (σ):	1.93536	1.95	-0.75	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
December 18, 2008 09:23 AM

Frequency	e'	e"
2400000000.	51.6211	14.3386
2405000000.	51.6711	14.3187
2410000000.	51.5447	14.0898
2415000000.	51.5624	13.9987
2420000000.	51.5279	14.0242
2425000000.	51.4019	14.0116
2430000000.	51.3548	13.9789
2435000000.	51.4124	14.0269
2440000000.	51.3123	14.0317
2445000000.	51.2977	14.0923
2450000000.	**51.3940**	**14.1996**
2455000000.	51.3042	14.2886
2460000000.	51.4641	14.5100
2465000000.	51.4381	14.5190
2470000000.	51.5003	14.6822
2475000000.	51.4180	14.7966
2480000000.	51.4539	14.8022
2485000000.	51.3983	14.9777
2490000000.	51.4565	14.8909
2495000000.	51.3823	14.8800
2500000000.	51.4483	14.8927

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target $f * 10^6$
$\varepsilon_0 = 8.854 * 10^{-12}$

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Simulating Liquid Dielectric Parameter Check Result @ Muscle 2450 MHz

Room Ambient Temperature = 25°C; Relative humidity = 33% Measured by: Carol Baumann

Simulating Liquid		Parameters			Measured	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)							
2450	15	e'	51.7719	Relative Permittivity (ε_r):	51.7719	52.7	-1.76	± 5
		e"	14.3576	Conductivity (σ):	1.95689	1.95	0.35	± 5

Liquid Check

Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C

January 06, 2009 12:33 PM

Frequency	e'	e"
2400000000.	51.8963	14.5815
2405000000.	52.0865	14.5372
2410000000.	51.9728	14.4089
2415000000.	51.8693	14.3694
2420000000.	51.9034	14.3382
2425000000.	51.8327	14.2476
2430000000.	51.8220	14.3177
2435000000.	51.7818	14.3464
2440000000.	51.6941	14.3490
2445000000.	51.6903	14.3286
2450000000.	**51.7719**	**14.3576**
2455000000.	51.7034	14.5701
2460000000.	51.7302	14.6915
2465000000.	51.6825	14.7123
2470000000.	51.7593	14.7708
2475000000.	51.7934	14.9110
2480000000.	51.7857	14.9796
2485000000.	51.7572	15.0374
2490000000.	51.8190	15.0702
2495000000.	51.7073	15.0305
2500000000.	51.8623	15.0988

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where $f = target\ f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

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Simulating Liquid Dielectric Parameter Check Result @ Head 2450 MHz

Room Ambient Temperature = 25°C; Relative humidity = 33% Measured by: Carol Baumann

Simulating Liquid		Parameters			Measured	Target	Deviation (%)	Limit (%)
f (MHz)	Depth (cm)							
2450	15	e'	38.3128	Relative Permittivity (ε_r):	38.3128	39.2	-2.26	± 5
		e"	13.0566	Conductivity (σ):	1.77957	1.80	-1.13	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
January 06, 2009 02:03 PM

Frequency	e'	e"
2400000000.	38.5372	13.3787
2405000000.	38.6071	13.2508
2410000000.	38.5817	13.2896
2415000000.	38.5158	13.2457
2420000000.	38.4225	13.1780
2425000000.	38.3895	13.0502
2430000000.	38.3229	13.1178
2435000000.	38.2639	13.0451
2440000000.	38.3294	13.0666
2445000000.	38.2553	13.0780
2450000000.	**38.3128**	**13.0566**
2455000000.	38.1412	13.1603
2460000000.	38.2731	13.2738
2465000000.	38.2337	13.2403
2470000000.	38.2475	13.3813
2475000000.	38.2254	13.4400
2480000000.	38.1979	13.4622
2485000000.	38.3287	13.4994
2490000000.	38.2930	13.5700
2495000000.	38.2392	13.5568
2500000000.	38.3194	13.6335

The conductivity (σ) can be given as:

$$\sigma = \omega\varepsilon_0 e'' = 2\pi f \varepsilon_0 e''$$

where $f = \text{target } f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

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Simulating Liquid Parameter Check Result @ Muscle 5GHz

Room Ambient Temperature = 25°C; Relative Humidity = 38% Measured By: Carol Baumann

Simulating Liquid f (MHz)	Parameters			Measured	Target	Deviation (%)	Limit (%)
5200	e'	45.0832	Relative Permittivity (ϵ_r):	45.0832	49.0	-7.99	± 10
	e"	18.7940	Conductivity (σ):	5.43678	5.30	2.58	± 5
5500	e'	44.7098	Relative Permittivity (ϵ_r):	44.7098	48.6	-8.00	± 10
	e"	18.5377	Conductivity (σ):	5.67202	5.65	0.39	± 5
5800	e'	44.1506	Relative Permittivity (ϵ_r):	44.1506	48.2	-8.40	± 10
	e"	19.3589	Conductivity (σ):	6.24637	6.00	4.11	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
December 19, 2008 08:41 AM

Frequency	e'	e"
4600000000.	46.1429	17.8935
4650000000.	46.4114	17.7470
4700000000.	45.8363	17.6881
4750000000.	46.2491	18.2906
4800000000.	45.8617	17.6473
4850000000.	45.9059	18.4341
4900000000.	45.8377	17.9213
4950000000.	45.4081	18.3288
5000000000.	45.6217	18.3461
5050000000.	45.0749	18.1683
5100000000.	45.3008	18.7162
5150000000.	45.0069	17.9349
5200000000.	**45.0832**	**18.7940**
5250000000.	45.1880	18.1886
5300000000.	44.6346	18.7820
5350000000.	45.1739	18.8180
5400000000.	44.4942	18.5660
5450000000.	44.9030	19.2340
5500000000.	**44.7098**	**18.5377**
5550000000.	44.6964	19.4353
5600000000.	44.8007	18.8662
5650000000.	44.2552	19.1037
5700000000.	44.7663	19.1347
5750000000.	44.0729	18.7845
5800000000.	**44.1506**	**19.3589**
5850000000.	43.6785	18.7076
5900000000.	43.6394	19.3909
5950000000.	43.3137	18.7095
6000000000.	42.9866	19.4442

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target $f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

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Simulating Liquid Parameter Check Result @ Muscle 5GHz

Room Ambient Temperature = 25°C; Relative Humidity = 40% Measured By: Carol Baumann

Simulating Liquid f (MHz)	Parameters			Measured	Target	Deviation (%)	Limit (%)
5200	e'	44.824	Relative Permittivity (ϵ_r):	44.8240	49.0	-8.52	± 10
	e"	18.2497	Conductivity (σ):	5.27932	5.30	-0.39	± 5
5500	e'	44.5378	Relative Permittivity (ϵ_r):	44.5378	48.6	-8.36	± 10
	e"	17.8568	Conductivity (σ):	5.46368	5.65	-3.30	± 5
5800	e'	44.0601	Relative Permittivity (ϵ_r):	44.0601	48.2	-8.59	± 10
	e"	18.8607	Conductivity (σ):	6.08562	6.00	1.43	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
December 22, 2008 08:43 AM

Frequency	e'	e"
4600000000.	45.9771	17.3880
4650000000.	46.2529	17.2464
4700000000.	45.6670	17.1232
4750000000.	46.0921	17.8171
4800000000.	45.6987	17.0753
4850000000.	45.7323	17.9479
4900000000.	45.6518	17.3228
4950000000.	45.2527	17.7861
5000000000.	45.4140	17.7794
5050000000.	44.8538	17.5496
5100000000.	45.0837	18.1999
5150000000.	44.7949	17.2903
5200000000.	**44.8240**	**18.2497**
5250000000.	45.0110	17.5501
5300000000.	44.3642	18.2002
5350000000.	45.0689	18.2089
5400000000.	44.2323	17.8933
5450000000.	44.7187	18.6467
5500000000.	**44.5378**	**17.8568**
5550000000.	44.5393	18.8999
5600000000.	44.6179	18.2540
5650000000.	44.0164	18.5003
5700000000.	44.7112	18.5491
5750000000.	43.8715	18.1058
5800000000.	**44.0601**	**18.8607**
5850000000.	43.5281	18.0274
5900000000.	43.4262	18.8592
5950000000.	43.2067	18.0526
6000000000.	42.7759	18.9047

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target $f * 10^6$
$\varepsilon_0 = 8.854 * 10^{-12}$

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Simulating Liquid Parameter Check Result Head @ 5GHz

Room Ambient Temperature = 25°C; Relative humidity = 33% Measured by: Carol Baumann

Simulating Liquid f (MHz)	Parameters			Measured	Target	Deviation (%)	Limit (%)
5200	e'	37.1905	Relative Permittivity (ε_r):	37.1905	36.0	3.31	± 10
	e"	16.5404	Conductivity (σ):	4.78485	4.66	2.68	± 5
5500	e'	36.7218	Relative Permittivity (ε_r):	36.7218	35.6	3.15	± 10
	e"	16.6909	Conductivity (σ):	5.10695	4.96	2.96	± 5
5800	e'	36.2717	Relative Permittivity (ε_r):	36.2717	35.3	2.75	± 10
	e"	16.8280	Conductivity (σ):	5.42975	5.27	3.03	± 5

Liquid Check
Ambient temperature: 25 deg. C; Liquid temperature: 24 deg. C
January 05, 2009 04:46 PM

Frequency	e'	e"
4600000000.	38.0836	16.2235
4650000000.	37.9874	16.2602
4700000000.	37.9512	16.2904
4750000000.	37.8573	16.3143
4800000000.	37.7972	16.3444
4850000000.	37.7255	16.3653
4900000000.	37.6751	16.3980
4950000000.	37.5772	16.4462
5000000000.	37.4870	16.4505
5050000000.	37.4259	16.4835
5100000000.	37.3351	16.5045
5150000000.	37.2720	16.5399
5200000000.	**37.1905**	**16.5404**
5250000000.	37.0892	16.5886
5300000000.	37.0307	16.5987
5350000000.	36.9457	16.6316
5400000000.	36.8745	16.6413
5450000000.	36.7941	16.6731
5500000000.	**36.7218**	**16.6909**
5550000000.	36.6354	16.7144
5600000000.	36.5541	16.7267
5650000000.	36.5054	16.7636
5700000000.	36.4289	16.7665
5750000000.	36.3248	16.7875
5800000000.	**36.2717**	**16.8280**
5850000000.	36.2115	16.8315
5900000000.	36.1239	16.8644
5950000000.	36.0404	16.8753
6000000000.	35.9486	16.9077

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target f * 10^6
$\varepsilon_0 = 8.854 * 10^{-12}$

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9 SYSTEM PERFORMANCE CHECK

The system performance check is performed prior to any usage of the system in order to guarantee reproducible results. The system performance check verifies that the system operates within its specifications of ±10%.

System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the SAM twin phantom filled with Body simulating liquid of the following parameters.
- The DASY4 system with an Isotropic E-Field Probe EX3DV3-SN: 3531 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (2.4 GHz) fine cube was chosen for cube integration and Special 8x8x10 (5 GHz) fine cube was chosen for cube integration
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 250 mW±3%.
- The results are normalized to 1 W input power.

450 to 2450 MHz Reference SAR Values for Body-Tissue

In the table below, the numerical reference SAR values of a SPEAG validation dipoles placed below the flat phantom filled with body-tissue simulating liquid are given. The reference SAR values were calculated using the finite-difference time-domain method and the geometry parameters.

Dipole Type	Distance (mm)	Frequency (MHz)	SAR (1g) [W/kg]	SAR (10g) [W/kg]	SAR (peak) [W/kg]
D1450V2	10	1450	29.6	16.6	49.8
D1800V2	10	1800	**38.5**	**20.3**	67.5
D1900V2	10	1900	39.8	20.8	69.6
D2000V2	10	2000	**40.9**	**21.2**	71.5
D2450V2	10	2450	51.2	23.7	97.6

Note: All SAR values normalized to 1 W forward power.

5 GHz Reference SAR Values for Body-Tissue

In the table below, the numerical reference SAR values of a SPEAG validation dipoles placed below the flat phantom filled with body-tissue simulating liquid are given. The reference SAR values were calculated using finite-difference time-domain FDTD method (feed point-impedance set to 50 ohms) and the mechanical dimensions of the D5GHzV2 dipole (manufactured by SPEAG).

f (MHz)	Head Tissue		Body Tissue		
	SAR_{1g}	SAR_{10g}	SAR_{1g}	SAR_{10g}	SAR_{Peak}
5000	72.9	20.7	68.1	19.2	260.3
5100	74.6	21.1	78.8	19.6	272.3
5200	76.5	21.6	71.8	20.1	284.7
5500	83.3	23.4	79.1	22.0	326.3
5800	78.0	21.9	74.1	20.5	324.7

Note: All SAR values normalized to 1 W forward power.

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9.1 SYSTEM PERFORMANCE CHECK RESULTS

System Validation Dipole: D2450V2 SN: 748

The dipole input power (forward power): 250 mW

Results

Date: December 18, 2008

Ambient Temperature = 25°C; Relative humidity = 29% Measured by: Carol Baumann

Body Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
2450	24	15	1g	51.7	51.2	0.98	± 10
			10g	23.4	23.7	-1.27	± 10

Date: January 6, 2008

Ambient Temperature = 25°C; Relative humidity = 33% Measured by: Carol Baumann

Body Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
2450	24	15	1g	48.1	51.2	-6.05	± 10
			10g	21.7	23.7	-8.44	± 10

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System Validation Dipole: D5GHzV2 SN 1003

The dipole input power (forward power): 250 mW

Results

Date: December 19, 2008

Ambient Temperature = 25 °C; Relative humidity = 38% Measured by: Carol Baumann

Body Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
5200	24	15	1g	74.5	71.8	3.76	± 10
			10g	20.9	20.1	3.98	± 10

Body Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
5500	24	15	1g	78.3	79.1	-1.01	± 10
			10g	21.7	22.0	-1.36	± 10

Body Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
5800	24	15	1g	74.7	74.1	0.81	± 10
			10g	20.8	20.5	1.46	± 10

Date: December 22, 2008

Ambient Temperature = 25 °C; Relative humidity = 40% Measured by: Carol Baumann

Body Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
5200	24	15	1g	70.6	71.8	-1.67	± 10
			10g	19.9	20.1	-1.00	± 10

Body Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
5500	24	15	1g	77.6	79.1	-1.90	± 10
			10g	21.6	22.0	-1.82	± 10

Body Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
5800	24	15	1g	70.9	74.1	-4.32	± 10
			10g	19.8	20.5	-3.41	± 10

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System Validation Dipole: D5GHzV2 SN 1003

Date: January 5, 2008

Ambient Temperature = 25 °C; Relative humidity = 33% Measured by: Carol Baumann

Head Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
5200	24	15	1g	69.2	76.5	-9.54	± 10
			10g	19.6	21.6	-9.26	± 10

Head Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
5500	24	15	1g	82.7	83.3	-0.72	± 10
			10g	23.4	23.4	0.00	± 10

Head Simulating Liquid			Normalized to 1 W		Target	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)					
5800	24	15	1g	71.8	78.0	-7.95	± 10
			10g	20.4	21.9	-6.85	± 10

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10 DASY4 SAR MEASURMENT PROCEDURE

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties (for example, 1.2 mm for an EX3DV3 probe type).

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY4 software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures 7 x 7 x 9 points within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

For 5 GHz band – Same as above except the Zoom Scan measures 7 x 7 x 9 points.

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation, the extrapolated distance should not be larger than the step size in Z-direction.

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11 OUTPUT POWER VERIFICATION

The following procedures had been used to prepare the EUT for the SAR test.

The client provided a special driver and program, FCC Test Utility (version 1.01) which enables a user to control the frequency and output power of the module.

The cable assembly insertion loss of 20.73 dB (including cable loss including 19.83 dB attenuator and 0.9 dB cable and connectors) was entered as an offset in the power meter to allow for direct reading of power.

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	
			Main	Aux
802.11b	1	2412	19.3	18.6
	6	2437	19.4	18.5
	11	2462	19.6	18.4
802.11g	1	2412	13.6	12.9
	6	2437	13.9	12.7
	11	2462	14.0	12.6

The cable assembly insertion loss of 20.80 dB (including cable loss including 19.90 dB attenuator and 0.9 dB cable and connectors) was entered as an offset in the power meter to allow for direct reading of power.

802.11a Band	Channel	Frequency (MHz)	Average Output Power (dBm)	
			Main	Aux
5.2 GHz	36	5180	12.5	9.3
	40	5200	12.5	8.9
	48	5240	12.9	10.3
5.3 GHz	52	5260	13.1	10.7
	60	5300	13.1	10.2
	64	5320	13.2	11.0
5.5 GHz	100	5500	13.6	10.5
	120	5600	13.4	11.2
	140	5700	15.5	13.9
5.8 GHz	149	5745	14.9	13.7
	157	5785	14.6	13.8
	165	5825	14.5	13.9

11.1 DUTY CYCLE

Mode	Tx on (msec)	Tx on + Tx off (msec)	Duty Cycle (%)
802.11bg	8.7	9	96.67
802.11a	1.433	1.683	85.15

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12 SAR MEASURMENT RESULTS

12.1 2.4 GHZ BAND

12.1.1 BODY WORN – LEFT HAND SIDE

Mode	Antenna	Channel	Frequency (MHz)	1g SAR (mW/g)	Limit (mW/g)
802.11b	Aux	1	2412	0.175	1.6
	Aux	6	2437	0.178	1.6
	Main	6	2437	0.124	1.6
	Main	11	2462	0.140	1.6

Notes:

1) 802.11g mode was skipped due to output power ≤ ¼ dB than 802.11b mode.
2) The modes with highest output power channel were chosen for the testing.
3) The SAR measured at the middle channel for this configuration is at least 3 dB lower (0.8 mW/g) than SAR limit (1.6 mW/g), thus testing at low & high channel is optional.
4) Please see attachments for the detailed measurement data and plots showing the maximum SAR location of the EUT.

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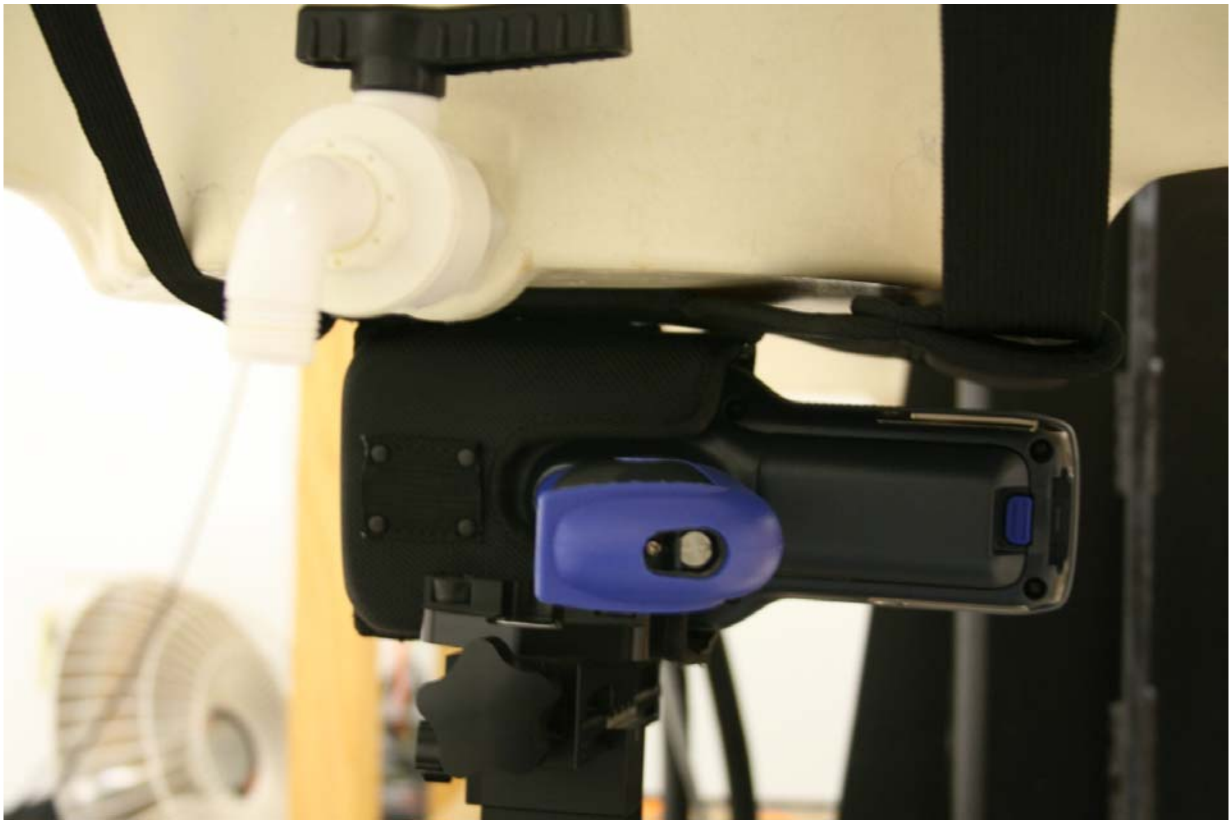
12.1.2 BODY WORN – RIGHT HAND SIDE



Mode	Antenna	Channel	Frequency (MHz)	1g SAR (mW/g)	Limit (mW/g)
802.11b	Aux	6	2437	0.102	1.6
	Main	6	2437	**0.223**	1.6
	Main	11	2462	0.219	1.6

Notes:

1) 802.11g mode was skipped due to output power ≤ ¼ dB than 802.11b mode.
2) The modes with highest output power channel were chosen for the testing.
3) The SAR measured at the middle channel for this configuration is at least 3 dB lower (0.8 mW/g) than SAR limit (1.6 mW/g), thus testing at low & high channel is optional.
4) Please see attachments for the detailed measurement data and plots showing the maximum SAR location of the EUT.

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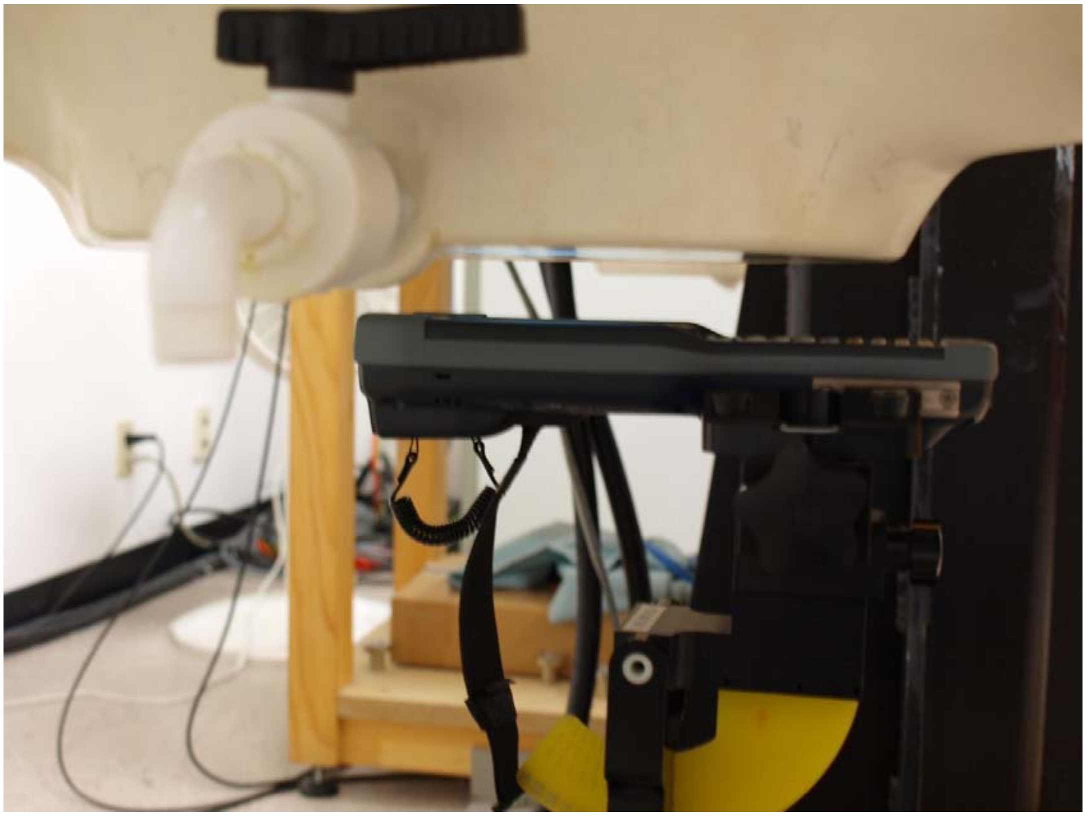
12.1.3 PUSH TO TALK



Mode	Separation Distance (mm)	Antenna	Channel	Frequency (MHz)	1g SAR (mW/g)	Limit (mW/g)
802.11b	25	Aux	6	2437	Noise only[5)]	1.6
		Main	6	2437	0.054	1.6

Notes:

1) 802.11g mode was skipped due to output power ≤ ¼ dB than 802.11b mode.
2) The modes with highest output power channel were chosen for the testing.
3) The SAR measured at the middle channel for this configuration is at least 3 dB lower (0.8 mW/g) than SAR limit (1.6 mW/g), thus testing at low & high channel is optional.
4) Please see attachments for the detailed measurement data and plots showing the maximum SAR location of the EUT.
5) SAR testing was skipped after pre-scan showed no hot spots.

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Worst Case SAR Test Plot for Right Hand Side Configuration

Date/Time: 12/18/2008 3:19:14 PM

Test Laboratory: Compliance Certification Services

Body Worn - Right Hand Side

DUT: Intermec; Type: CK3; Serial: N/A

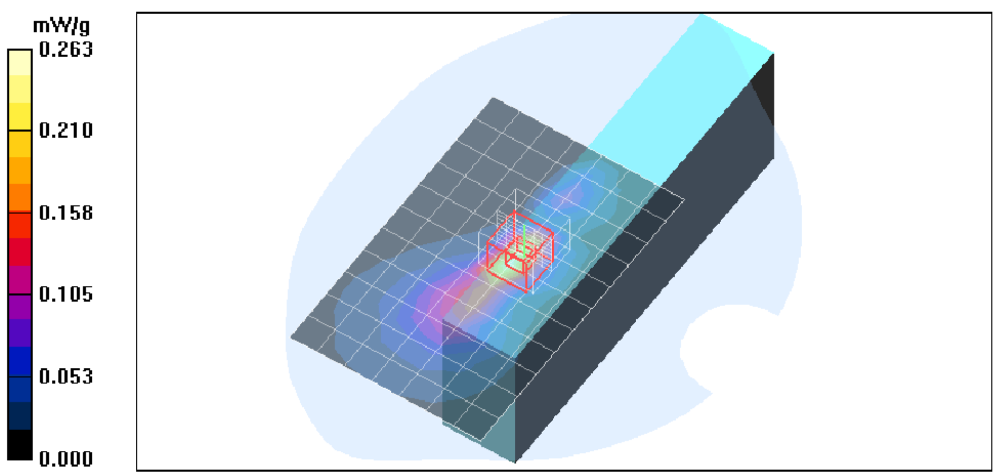
Communication System: 802.11bg; Frequency: 2437 MHz;Duty Cycle: 1:1.03
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.9 mho/m; ε_r = 51.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.0 deg. C; Liquid Temperature: 24.0 deg. C

DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV3 - SN3531; ConvF(7.91, 7.91, 7.91); Calibrated: 4/23/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

802.11b_M-ch Main Antenna/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.263 mW/g

802.11b_M-ch Main Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 6.64 V/m; Power Drift = 0.762 dB
Peak SAR (extrapolated) = 0.451 W/kg
SAR(1 g) = 0.223 mW/g; SAR(10 g) = 0.100 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.302 mW/g



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12.2 5 GHZ BAND

12.2.1 BODY WORN – LEFT HAND SIDE

Band (GHz)	Antenna	Channel	Frequency (MHz)	1g SAR (mW/g)	Limit (mW/g)
5.2	Aux	40	5200	0.115	1.6
	Aux	48	5240	**0.116**	1.6
	Main	40	5200	noise only[4)]	1.6
5.3	Aux	60	5300	0.134	1.6
	Aux	64	5320	**0.141**	1.6
5.5	Aux	120	5600	0.229	1.6
	Aux	140	5700	**0.298**	1.6
5.8	Aux	149	5745	**0.286**	1.6
	Aux	157	5785	0.268	1.6

Notes:
1) The modes with highest output power channel were chosen for the testing.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower (0.8 mW/g) than SAR limit (1.6 mW/g), thus testing at low & high channel is optional.
3) Please see attachments for the detailed measurement data and plots showing the maximum SAR location of the EUT.
4) SAR testing was skipped after pre-scan showed no hot spots.

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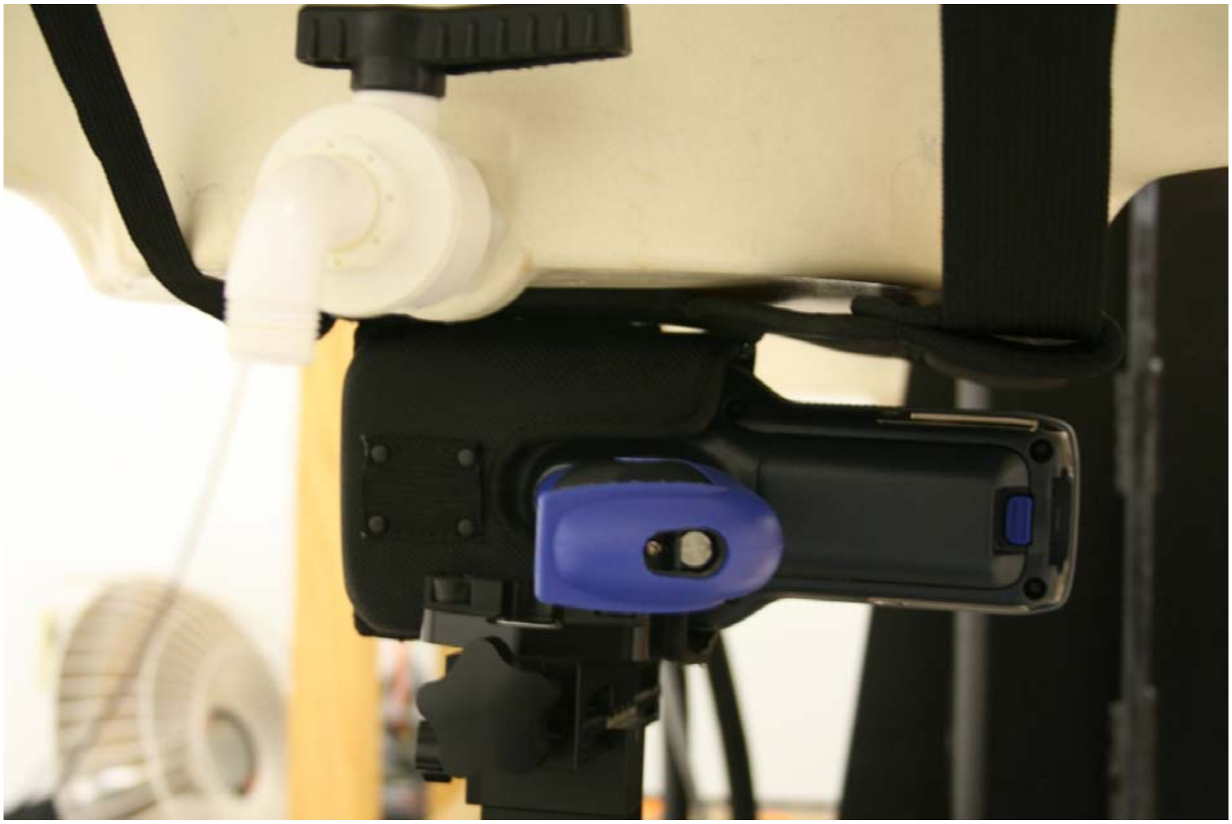
12.2.2 BODY WORN – RIGHT HAND SIDE



Band (GHz)	Antenna	Channel	Frequency (MHz)	1g SAR (mW/g)	Limit (mW/g)
5.2	Main	40	5200	0.037	1.6
	Main	48	5240	0.043	1.6
5.3	Main	60	5300	0.055	1.6
	Main	64	5320	0.061	1.6
5.5	Main	120	5600	0.098	1.6
	Main	140	5700	0.162	1.6
5.8	Main	149	5745	0.143	1.6
	Main	157	5785	0.133	1.6

Notes:
1) The modes with highest output power channel were chosen for the testing.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower (0.8 mW/g) than SAR limit (1.6 mW/g), thus testing at low & high channel is optional.
3) Please see attachments for the detailed measurement data and plots showing the maximum SAR location of the EUT.
4) SAR testing was skipped after pre-scan showed no hot spots.

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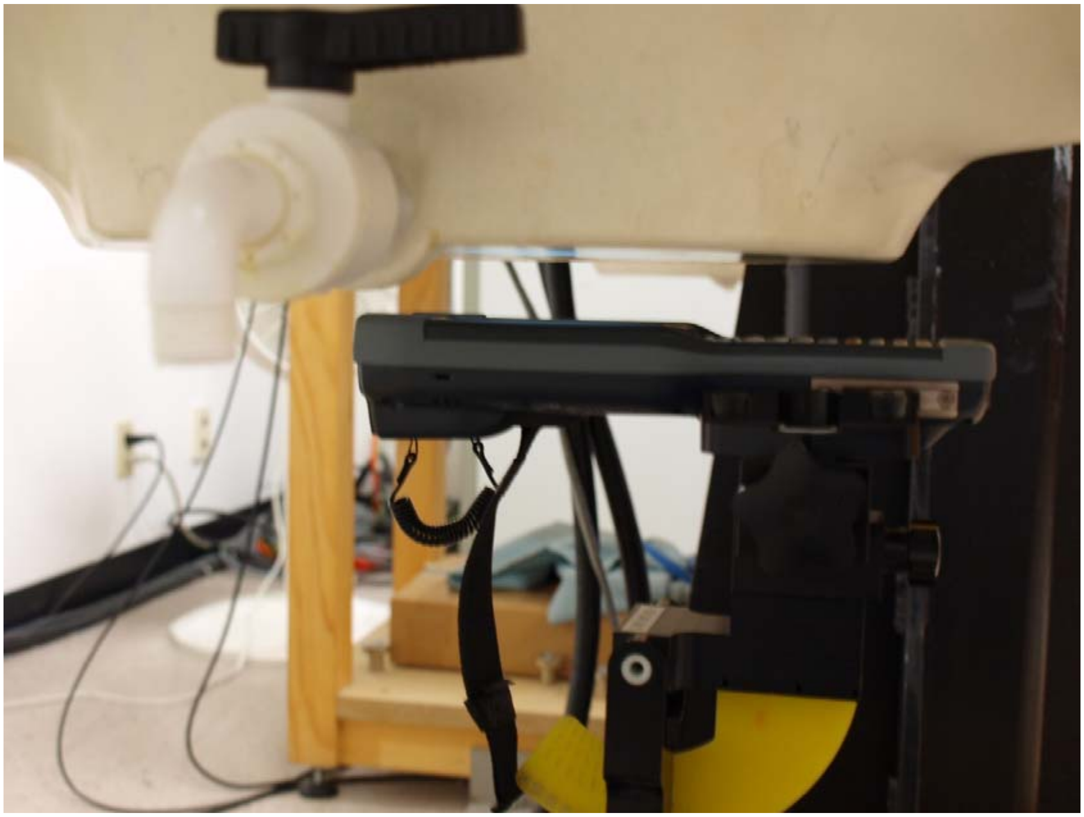
12.2.3 PUSH TO TALK



Band (GHz)	Separation Distance (mm)	Antenna	Channel	Frequency (MHz)	1g SAR (mW/g)	Limit (mW/g)
5.2	25	Aux	40	5200	Noise only[4)]	1.6
		Main	40	5200	0.075	1.6
5.3	25	Main	60	5300	0.115	1.6
5.5	25	Main	140	5700	0.168	1.6
5.8	25	Main	157	5785	0.139	1.6

Notes:

1) The modes with highest output power channel were chosen for the testing.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower (0.8 mW/g) than SAR limit (1.6 mW/g), thus testing at low & high channel is optional.
3) Please see attachments for the detailed measurement data and plots showing the maximum SAR location of the EUT.
4) SAR testing was skipped after pre-scan showed no hot spots.

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Worst Case SAR Test Plot for 5.2 GHz Band (Left Hand Side Configuration)

Date/Time: 12/19/2008 12:55:27 PM

Test Laboratory: Compliance Certification Services

Body Worn - Left Hand Side

DUT: Intermec; Type: CK3; Serial: N/A

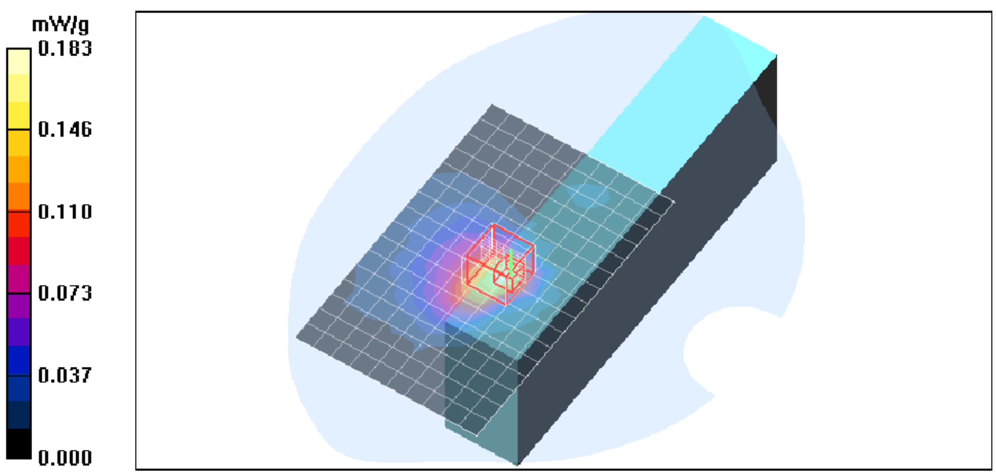
Communication System: 802.11abgn; Frequency: 5240 MHz;Duty Cycle: 1:1.15
Medium parameters used (interpolated): f = 5240 MHz; σ = 5.34 mho/m; ε_r = 45.2; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.0 deg. C; Liquid Temperature: 24.0 deg. C

DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV3 - SN3531; ConvF(4.21, 4.21, 4.21); Calibrated: 4/23/2008
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

802.11a_H-ch 5.2 GHz Aux Antenna/Area Scan (11x17x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.183 mW/g

802.11a_H-ch 5.2 GHz Aux Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.12 V/m; Power Drift = -1.03 dB
Peak SAR (extrapolated) = 0.379 W/kg
SAR(1 g) = 0.116 mW/g; SAR(10 g) = 0.045 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.196 mW/g



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Worst Case SAR Test Plot for 5.3 GHz Band (Left Hand Side Configuration)

Date/Time: 12/19/2008 3:15:31 PM

Test Laboratory: Compliance Certification Services

Body Worn - Left Hand Side

DUT: Intermec; Type: CK3; Serial: N/A

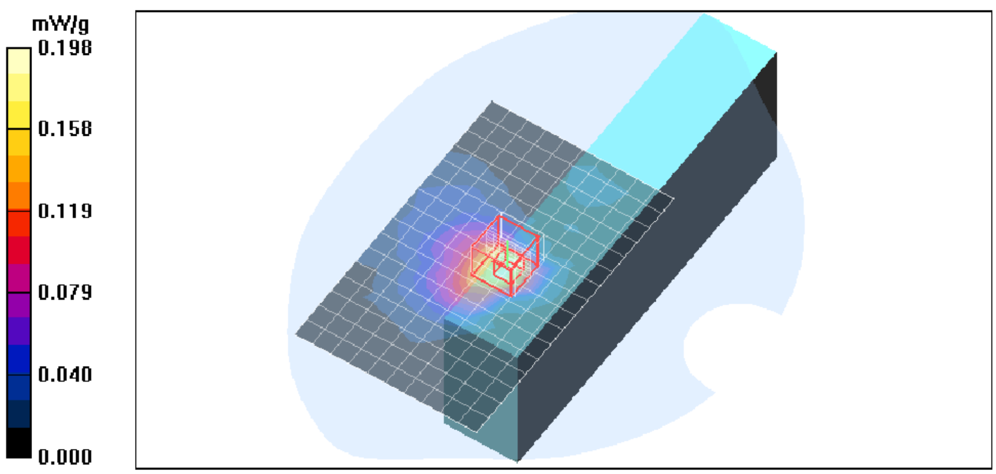
Communication System: 802.11abgn; Frequency: 5320 MHz;Duty Cycle: 1:1.15
Medium parameters used (interpolated): f = 5320 MHz; σ = 5.56 mho/m; ε_r = 44.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.0 deg. C; Liquid Temperature: 24.0 deg. C

DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV3 - SN3531; ConvF(3.92, 3.92, 3.92); Calibrated: 4/23/2008
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

802.11a_H-ch 5.3 GHz Aux Antenna/Area Scan (11x17x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.198 mW/g

802.11a_H-ch 5.3 GHz Aux Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.07 V/m; Power Drift = 0.760 dB
Peak SAR (extrapolated) = 0.594 W/kg
SAR(1 g) = 0.141 mW/g; SAR(10 g) = 0.052 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.220 mW/g



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Worst Case SAR Test Plot for 5.5 GHz Band (Left Hand Side Configuration)

Date/Time: 12/19/2008 4:32:37 PM

Test Laboratory: Compliance Certification Services

Body Worn - Left Hand Side

DUT: Intermec; Type: CK3; Serial: N/A

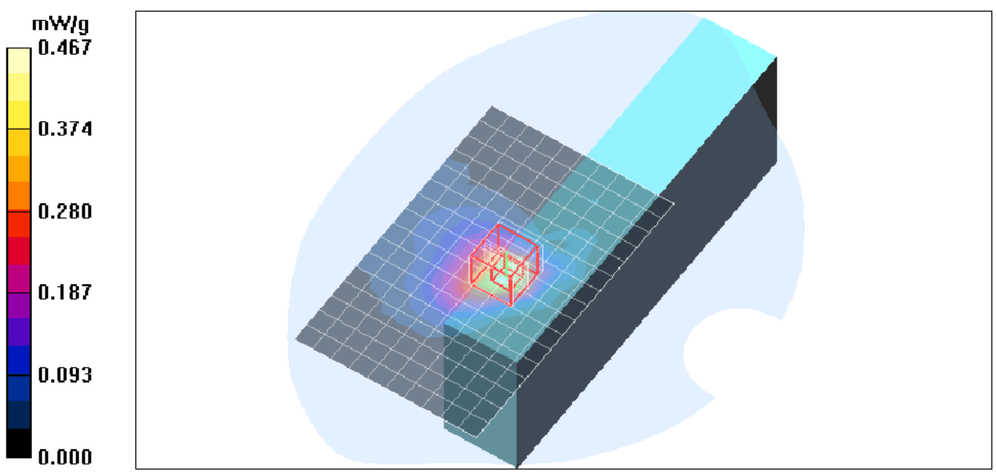
Communication System: 802.11abgn; Frequency: 5700 MHz;Duty Cycle: 1:1.15
Medium parameters used: f = 5700 MHz; σ = 6.07 mho/m; ε_r = 44.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.0 deg. C; Liquid Temperature: 24.0 deg. C

DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV3 - SN3531; ConvF(3.5, 3.5, 3.5); Calibrated: 4/23/2008
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

802.11a_H-ch 5.5 GHz Aux Antenna/Area Scan (11x17x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.467 mW/g

802.11a_H-ch 5.5 GHz Aux Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.84 V/m; Power Drift = -1.82 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.298 mW/g; SAR(10 g) = 0.109 mW/g
Maximum value of SAR (measured) = 0.498 mW/g



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Worst Case SAR Test Plot for 5.8 GHz Band (Left Hand Side Configuration)

Date/Time: 12/19/2008 5:08:51 PM

Test Laboratory: Compliance Certification Services

Body Worn - Left Hand Side

DUT: Intermec; Type: CK3; Serial: N/A

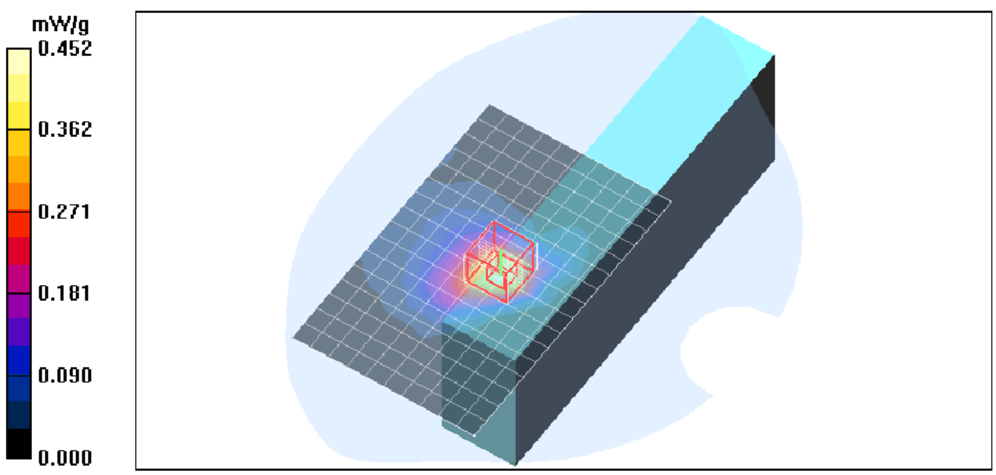
Communication System: 802.11abgn; Frequency: 5745 MHz;Duty Cycle: 1:1.15
Medium parameters used (interpolated): f = 5745 MHz; σ = 6.01 mho/m; ε_r = 44.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

Room Ambient Temperature: 25.0 deg. C; Liquid Temperature: 24.0 deg. C

DASY4 Configuration:
- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Probe: EX3DV3 - SN3531; ConvF(3.7, 3.7, 3.7); Calibrated: 4/23/2008
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn427; Calibrated: 10/20/2008
- Phantom: SAM 2 (Twin); Type: SAM 2; Serial: 1050
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

802.11a_L-ch 5.8 GHz Aux Antenna/Area Scan (11x17x1): Measurement grid: dx=10mm, dy=10mm
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.452 mW/g

802.11a_L-ch 5.8 GHz Aux Antenna/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.83 V/m; Power Drift = -1.60 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.286 mW/g; SAR(10 g) = 0.114 mW/g
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.466 mW/g



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13 ATTACHMENTS

No.	Contents	No. Of Pages
1	System Performance Check Plots	22
2-1	SAR Plots for 2.4 GHz Band	10
2-2	SAR Plots for 5 GHz Band	24
3	Certificate of E-Field Probe - EX3DV3SN3531	10
4	Certificate of System Validation Dipole - D2450V2 SN:748	6
5	Certificate of System Validation Dipole - D5GHzV2 SN:1003	15

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14 PHOTOS

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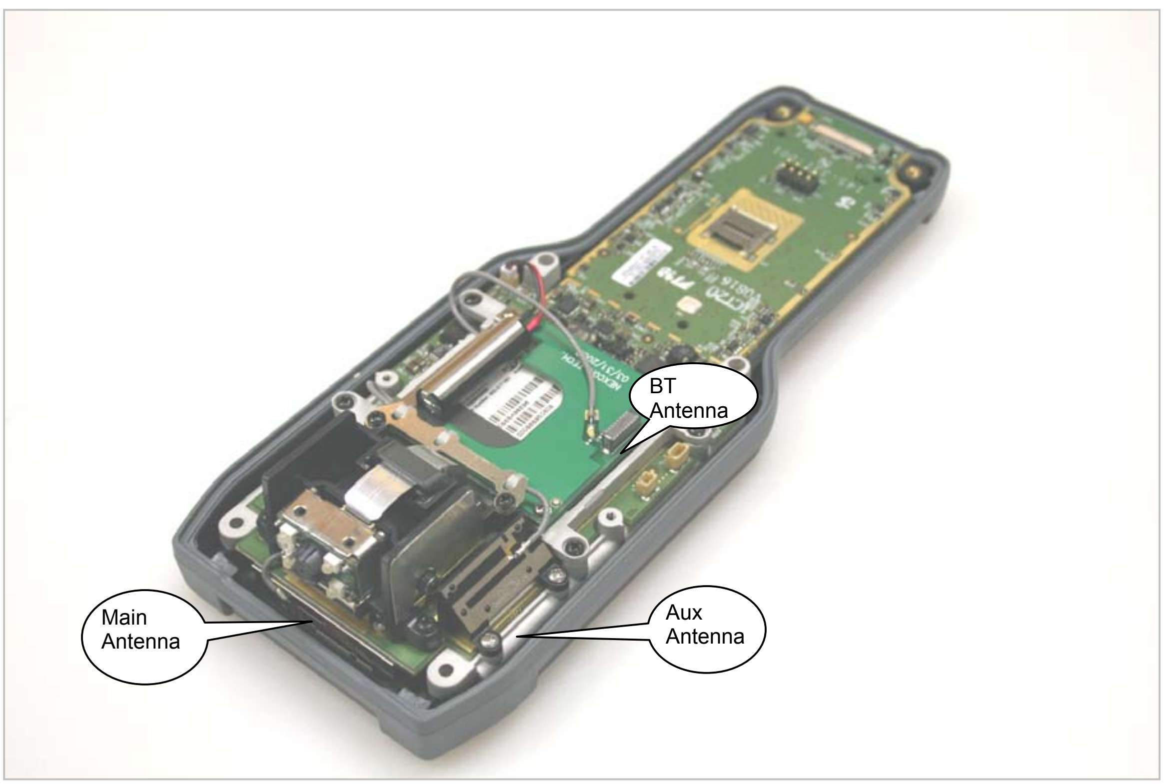

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SCANNER WITH SCAN HANDLE (1)

SCANNER WITH SCAN HANDLE (2)

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BODY-WORN (HOSTER) – LEFT HAND SIDE

BODY-WORN (HOSTER) – RIGHT HAND SIDE

END OF REPORT

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