Certificate Number: 1449-01

MOTOROLA

ELECTROMAGNETIC EXPOSURE (EME) TESTING LABORATORY

8000 West Sunrise Blvd
Fort Lauderdale, Florida

S.A.R. TEST REPORT

FCC ID: AZ489FT4853
NUE2990A

December 20, 2001- Rev. O

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REVISION HISTORY

Date	Revision	Comments
12/20/01	O	Original release.

1.0 Introduction

This report details the test setup, test equipment, and test results of the Specific Absorption Rate (SAR) measurement performed at the Motorola Florida Research Lab (MFRL) EME laboratory for T7200 Portable Radio Product, model number NUE2990A (FCC ID: AZ489FT4853).

The applicable exposure environment is General Population/Uncontrolled.

The test results included herein represent the highest SAR levels applicable to this product and clearly demonstrate compliance with FCC Occupational/Controlled RF Exposure limits of 1.6 W/kg per the requirements of 47 CFR 2.1093(d).

2.0 Reference Standards and Guidelines

This product is designed to comply with the following national and international standards and guidelines.

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- National Council on Radiation Protection and Measurements (NCRP) of the United States, Report 86, 1986
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Radiocommunications (Electromagnetic Radiation - Human Exposure) Standard 1999 (applicable to wireless phones only).

3.0 Description of Test Sample

The T7200 Portable Radio, Model number NUE2990A is a handheld transceiver, which operates as a traditional simplex 2-way radio. The intended use positions are "at the face" with the microphone 1 to 3 inches (2 to 3 inches for best audio quality) from the mouth or "at the waist or abdomen" secured to the user's belt. When operated at the waist or abdomen, the audio and push-to-talk functions are routed to a remote accessory, which connects to the side of the radio. The transmit duty cycle, 50% maximum for this type of device, is controlled by the user via the push – to – talk button.

This device transmits in both the GMRS (General Mobile Radio Services) and FRS (Family Radio Service) bands. The GMRS band covers 461.0375 – 469.5625MHz with 15 channels. The maximum conducted power, as defined by the production line final test station upper limit, is 2.1 watts. The FRS band covers 467.5625 – 467.7125 MHz with 7 channels and a max conducted power of 0.58 W. See section 5.0 for more detailed information on the maximum conducted power.

The sample unit tested for this report is an identical prototype to intended production units.

The T7200 product is offered with a fixed non-removable antenna, and various accessories, listed below. (Refer to appendix D for a complete illustration of Body - worn accessories.)

Antenna:

Fixed	¼ wave 60mm helical, fixed non-retractable, freq. range 462-470MHz.

Battery:

AA	COTS (Commercial Off The Shelf) Alkaline
NTN8971B	NiMH Rechargeable Battery Pack (53871)

Body-worn accessory:

NNTN4106A	XTN Series Carry Case

Audio/push-to-talk:

Many different audio / push–to–talk accessories are available. They can generally be grouped into categories of 1) microphones, 2) earpieces, and 3) headsets depending on how they are used relative to the body. Representative samples were chosen as being typical within each group:

NTN8867A	Remote Speaker Mic (53724A)
NTN8868A	Headset with Swivel Boom Mic (53725A)
NTN8869A	Earbud (53726A)
NTN8870A	Earbud with PTT Mic (53727A)
NTN8891A	Flexible Ear Receiver (53728A)

3.1 Test Signal

Test Signal Source:

Test Mode [ ] Base Station [ ] Simulator [ ] Native Transmission Mode [X]

Signal Modulation:

CW	**X**
TDMA	
Other	

3.2 Test Output Power

The conducted output power was measured across the transmit band using a HP RF Communication test set model 8920B.

4.0 Description of Test Equipment

4.1 Descriptions of SAR Measurement System

The laboratory utilizes a Dosimetric Assessment System (DASY™) SAR measurement system manufactured by Schmid & Partner Engineering AG (SPEAG™), of Zurich Switzerland. The SAR measurements were conducted with the probe ET3DV6 serial number 1418. The system performance check was conducted daily and within 24 hours prior to testing. Copies of the probe calibration certificates are included in Appendix C and the DASY output files of all of the system performance test results are included in Appendix B. The table below summarizes the average and range of all system performance checks.

Date	Probe S/N	Tissue	Probe Cal Date	Dipole S/N	System Perf. Result Normalized to 1W	Target Normalized SAR	Difference
12/7/01	1418	Body	5/23/01	450-001	4.26	4.28	-0.5%
12/10/01	1418	Body	5/23/01	450-001	4.18	4.28	-2.3%
12/11/01	1418	Head	5/23/01	450-001	4.22	4.2	0.5%

The DASY™ system is operated per the instructions in the DASY™ Users Manual. The entire manual is available directly from SPEAG™.

4.2 Description of Phantom

4.2.1 Body and Face Phantom:

Flat Phantom:
A rectangular shaped box made of plexi - glass and mounted on a supporting non-metallic structure that has an opening at the center for positioning the device.

Length	80 cm
Width	60 cm
Bottom Shell Thickness	0.2 cm

4.3 Simulated Tissue Properties:

4.3.1 Type of Simulated Tissue

The simulated tissue used is compliant to that specified in FCC Supplement C (Edition 01 - 01) to OET Bulletin 65 (Edition 97 - 01).

Simulated Tissue	Body Position
Body	Abdomen
Head	Face

4.3.2 Simulated Tissue Composition

	Frequency (450MHz)	
	Body	**Head**
Di-Water	53.06 %	40.45 %
Sugar	44.9 %	57 %
Salt	0.94 %	1.45 %
HEC	1.0 %	1.0 %
Dowicil75	0.1 %	0.1 %

Note: HEC (HYDROXYETHYL CELLULOSE) is a gelling agent and Dowicil 75 is anti bacterial compound.

Characterization of Simulated tissue materials and ambient conditions:
Simulated tissue prepared for SAR measurements is measured daily and within 24 hours prior to actual SAR testing to verify tissue is within 5% of target parameters at the test frequency. This measurement is done using the Agilent (HP) probe kit model 85070C and a HP8753D Network Analyzer.

Target tissue parameters

Frequency(MHz)	Body		Head	
	Di-electric Constant	Conductivity – S/m	Di-electric Constant	Conductivity – S/m
462	56.7	0.94	43.4	0.87
467	56.6	0.94	43.4	0.87

4.4 Test conditions:

The EME Laboratory ambient environment is well controlled resulting in very stable simulated tissue temperature and therefore stable dielectric properties. Simulated tissue temperature is measured prior to each scan to insure it is within +/ - 2^{o}C of the temperature at which the dielectric properties were determined. Additional precautions are routinely taken to ensure the stability of the simulated tissue such as covering the phantoms when scans are not actively in process in order to minimize evaporation. The lab environment is continuously monitored and the table below represents typical environmental conditions during the SAR tests reported herein:

Ambient Temperature	23 ± 1^{o}C
Relative Humidity	39 ± 4 %
Tissue Temperature	23 ± 1^{o}C

The actual measurements of the environmental conditions at the time of test are recorded on each Data Result sheet.

The EME Lab RF environment is monitored with a Spectrum Analyzer to preclude extraneous large signal RF contaminants that could possibly affect the test results. If such unwanted signals are discovered the SAR scans are repeated however the lab environment is sufficiently protected that no SAR impacting interference has ever been experienced.

5.0 Description of Test Procedure

All antennas, batteries, and accessories listed in section 3.0 were included in the SAR test plan at the 462.5625MHz transmit frequency to determine the highest SAR levels. The transmit power of the test sample was pre-adjusted, per production alignment procedures, to the maximum transmit power, defined as the production line final test station upper limit, which in this case is 2.1 watts. However, due to the higher than nominal initial voltage typical with a fully charged NiMH battery, and the difference in series impedance based on the battery chemistry, the maximum transmit power used is based on the maximum

power achievable with each individual battery type. In this case, the maximum transmit power of the T7200 radio with the NiMH NTN8971B (53871) rechargeable battery is 2.43W and with the AA alkaline batteries is 2.33W. The radio was always placed in continuous transmit mode (100% duty cycle) for the duration of the scan and each SAR scan was initiated with fresh AA Alkaline or fully charged NiMH battery as indicated.

In FRS mode, the production line final test station upper limit is 0.58 W. The measured maximum transmit power of the T7200 radio with the NiMH NTN8971B (53871) rechargeable battery is 0.671W and with the AA alkaline batteries is 0.668W.

The antenna used on the T7200 radio is fixed and not removable. This does not facilitate taking conducted power measurements before and after taking SAR readings. Instead, the power measurements were taken by disassembling the radio and connecting a coax cable directly to the antenna port. All battery combinations were used and the power readings recorded versus time, with the radio in continuous transmit mode (100% duty cycle). This data was used for the initial and end power measurements for each SAR scan and varied only by the type of battery used.

The majority of the SAR measurements were focused with the radio in the higher power GMRS mode. Two additional tests in the worst conditions were repeated in FRS mode.

5.0.1 Abdomen

At the abdomen each combination of battery, and body-worn accessory was tested at the test frequency. Since the transmit band of the T7200 radio is less than 10 MHz, the radio was only tested at one channel. (The transmit band in GPRS mode is 8.5 MHz, 0.150 MHz in FRS mode.) The test plan had the following rationale (steps 1-4 were in GPRS mode, 5 in FRS mode):

1. The radio was tested to determine the higher of each of the batteries, using the remote speaker mic. (Runs 01120702, 01120704)
2. The radio was tested with the headset-type audio accessory, using both batteries. (Runs 01120706, 01120707)
3. The radio was tested at 5 cm without the carry accessory to test the 5 cm minimal separation required by the user manual if no carry case is used. Tests were run with both the front and back of the radio facing the phantom. (Runs 01120708. 01120709)
4. With the highest condition, the other audio accessories were tested. (Runs 01121002 – 01121004)
5. With the highest condition, the radio was tested with each battery in FRS mode. (Runs 01121005, 01121006)

All abdomen tests were conducted with an audio/push - to - talk accessory connected to the radio. All of the scans described above incorporated the NTN8867A Remote Speaker Microphone. Although SAR is not expected to be influenced by different audio accessories additional tests were included to cover the different categories of audio accessories: Headset w/ Boom Mic, Earbud, Earbud with PTT Mic, Flexible Ear Receiver. There was little variation between the tested audio accessories and was concluded that the Earpiece w/ Boom Mic was similar enough to the tested audio accessories that testing was not necessary.

5.0.2 Face

At the face each battery type was tested at the test frequency. There were no audio or body-worn accessories used. The radio was tested with the two batteries. (Runs 01121103, 01121104)

5.1 Device Test Positions

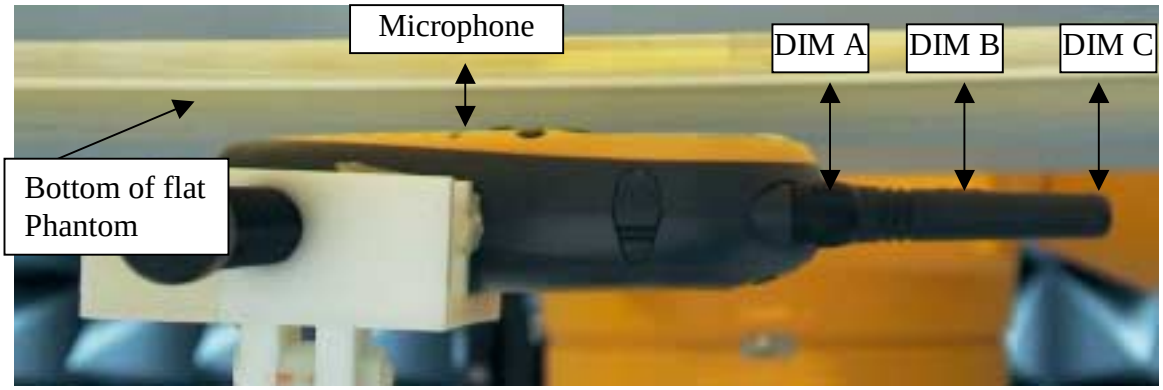
This device allows the use of a headset or remote speaker mic. Tests were run in both the abdomen and face positions as described below.

Abdomen - The test sample is positioned in a body - worn accessory and positioned under a flat phantom with the back of the body - worn accessory adjacent and parallel to the phantom. An audio/push-to-talk accessory and cable is connected to the radio with the cable routed orthogonal to and away from the radio towards the floor at the point of connection to the radio.

Face - The test sample is positioned under a flat phantom with radio housing parallel to the phantom with the radio's microphone spaced 2.5cm from the bottom of the phantom surface.

Reference *Figure 1* and *Figure 2* for portable radio antenna orientation and distances relative to phantoms. *Figure 3* provides an overall perspective of the phantom and support structure. Actual measurements for each individual test can be found on the test reports found in Appendix A.

Figure 1: Facial Position



Dim A = Distance from surface of antenna base to phantom surface
Dim B= Distance from surface of antenna center to phantom surface
Dim C= Distance from antenna surface tip to phantom

Note: Radio is positioned with microphone 2.5cm from the bottom of the flat body phantom.

Figure 2: Abdominal Position

Dim A = Distance from surface of antenna base to phantom surface
Dim B= Distance from surface of antenna center to phantom surface
Dim C= Distance from antenna surface tip to phantom

Figure 3: Robot Test System

5.2 Probe Scan Procedures

The E-field probe is first scanned in a coarse grid over a large area inside the phantom in order to locate the interpolated maximum SAR distribution. After the coarse scan measurement, the probe is automatically moved to a position at the interpolated maximum. The subsequent scan can directly use this position for reference for the cube evaluations.

6.0 Measurement Uncertainty:

The table below lists the uncertainty estimate of the possible errors that are associated with the measurement system.

Uncertainty Description	Standard Uncertainty
Probe Uncertainty	
- Axial Isotropy	± 2.4 %
- Spherical Isotropy	± 4.8 %
- Spatial Resolution	± 0.5 %
- Linearity Error	± 2.7 %
- Calibration Error	± 8 %
Evaluation Uncertainty	
- Data Acquisition Error	± 0.60 %
- ELF and RF Disturbances	± 0.25 %
- Conductivity Assessment	± 5 %
Spatial Peak SAR Evaluation Uncertainty	
- Extrapolation and boundary effects	± 3%
- Probe positioning	± 1 %
- Integration and cube orientation	± 3 %
- Cube shape inaccuracies	± 1.2 %
- Device positioning	± 1.0 %

The Total Measurement Uncertainty is ± 12.1 %. The Expanded Measurement Uncertainty is ± 24.2 % (k=2)

7.0 SAR Test Results:

All SAR results yielded by the tests described in Section 5.0 are listed in the tables below for each body position. The DASY™ measurement system's output files for the highest data indicated in the tables below (indicated in **bold**) are provided in appendix A.

7.1 SAR results at the abdomen:

Run Number	Antenna	Freq. (MHz)	Battery	Carry Acc	Audio Acc	Initial Pwr (W)	End Pwr (W)	Measured SAR (100% Duty cycle)	SAR (50% duty cycle)
01120702	Fixed	462.5625	53871	NNTN4106AF	NTN8867A	2.432	1.914	**2.3**	**1.15**
01120704	Fixed	462.5625	AA-Alkaline	NNTN4106AF	NTN8867A	2.333	1.614	1.77	0.89
01120706	Fixed	462.5625	53871	NNTN4106AF	NTN8868A	2.432	1.914	2.02	1.01
01120707	Fixed	462.5625	AA-Alkaline	NNTN4106AF	NTN8868A	2.333	1.614	1.54	0.77
01120708	Fixed	462.5625	53871	None - 5cm-F	NTN8867A	2.432	1.914	0.944	0.47
01120709	Fixed	462.5625	53871	None - 5cm-B	NTN8867A	2.432	1.914	0.865	0.43
01121002	Fixed	462.5625	53871	NNTN4106AF	NTN 8869A	2.432	1.914	1.96	0.98
01121003	Fixed	462.5625	53871	NNTN4106AF	NTN 8870A	2.432	1.914	1.88	0.94
01121004	Fixed	462.5625	53871	NNTN4106AF	NTN8891A	2.432	1.914	2.0	1.00
01121005	Fixed	467.5625	53871	NNTN4106AF	NTN8867A	0.671	0.640	0.97	0.49
01121006	Fixed	467.5625	AA-Alkaline	NNTN4106AF	NTN8867A	0.668	0.684	0.97	0.49

The configuration that yielded the highest SAR results for the abdomen consisted of the fixed antenna, 53871 NiMH rechargeable battery, NNTN4106A carry case and 53724A (NTN8867A) audio accessory.

The SAR measurement of the 100% duty cycle was divided by two to determine the 50% duty cycle to account for the push-to-talk operation.

Tests in the green font (Run Numbers: 01121005 and 01121006) were performed in FRS mode, all others were in GMRS mode.

7.2 SAR results at the Face:

Antenna	Freq.	Battery	Carry Acc	Audio Acc	Init. Power (W)	End Power (W)	Measured SAR (100% duty cycle)	SAR (50% duty cycle)
Fixed/ 01121103	462.5625Mhz	53871	NONE	NONE	2.432	1.914	2.19	**1.10**
Fixed/ 01121104	462.5625Mhz	AA Alkaline	NONE	NONE	2.333	1.614	2.0	1.00

The configuration that yielded the highest SAR results for the face consisted of the fixed antenna and the 53871 NiMH rechargeable battery.

7.3 Peak SAR location

Refer to Appendix A for the detailed SAR scan distributions. Probe retraction measurements at the peak of the highest conditions of the face and abdomen measurements can be found at the end of Appendix A.

8.0 Conclusion

The highest Operational Maximum 1-gram average SAR values found for the portable radio model number NUE2990A based on a 50% duty cycle were:

At the abdomen: **1.15** mW/g
At the face: **1.10** mW/g

These test results clearly demonstrate compliance with FCC General Population / Uncontrolled RF Exposure limits of 1.6 W/kg per the requirements of 47 CFR 2.1093(d)

Appendix A: Data Results

Talkabout-T7200; Test Date:12/07/01

PRODUCT: T7200 (NUE2990A) DATE: 011207
RUN NUMBER: 01120702 RUN TIME:19min
MODEL NUMBER: (NUE2990A) SERIAL NUMBER: 158ABY0027
TX FREQ: 462MHz ANTENNA POSITION: Fixed
ACCESSORIES: Antenna(Fixed), Battery(NTN8971B), Carrycase(NNTN4106A), Audio assy(NTN8867A)
ANTENNA DISTANCE: A(base):38mm B(center):43mm C(tip):51mm
Start Power: End Power:
ROOM TEMP:23C TISSUE TEMP:21C RH:39%
PROBE CALIBRATION DATE:010523

Probe: - SN1418; ConvF(6.74,6.74,6.74); Crest factor: 1.0; BODY 450: σ = 0.91 mho/m ε_r = 56.1 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 2.30 mW/g, SAR (10g): 1.69 mW/g, (Worst-case extrapolation), Peak: 3.24 mW/g,
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

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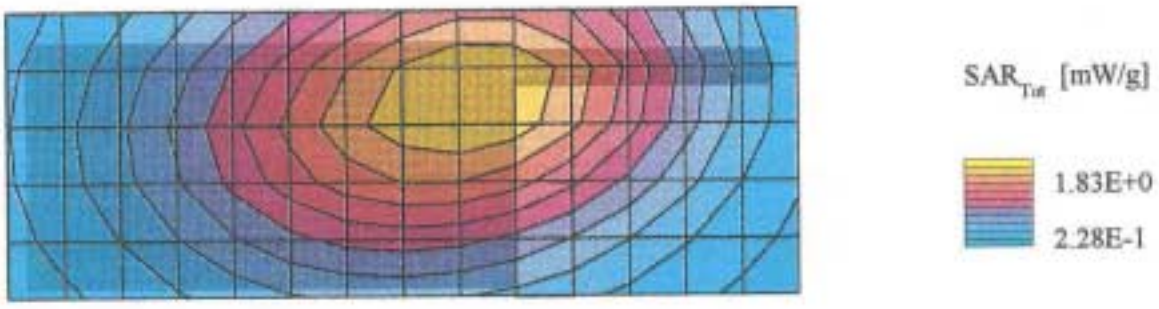
Talkabout-T7200; Test Date:

PRODUCT: T7200(NUE2990A) DATE: 011211
RUN NUMBER: 01121103 RUN TIME:19min
MODEL NUMBER: (NUE2990A) SERIAL NUMBER: 158ABY0027
TX FREQ: 462MHz ANTENNA POSITION: Fixed
ACCESSORIES: Antenna(Fixed), Battery(NTN8971B)
ANTENNA DISTANCE: A(base):35mm B(center):37mm C(tip):39mm
Start Power: End Power:
ROOM TEMP:23C TISSUE TEMP:22.8C RH:39%
PROBE CALIBRATION DATE:010523

Probe: - SN1418; ConvF(6.81,6.81,6.81); Crest factor: 1.0; head 450: σ = 0.85 mho/m ε_r = 43.4 ρ = 1.00 g/cm³
Cube 7x7x7: SAR (1g): 2.19 mW/g, SAR (10g): 1.59 mW/g, (Worst-case extrapolation), Peak: 3.11 mW/g,
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

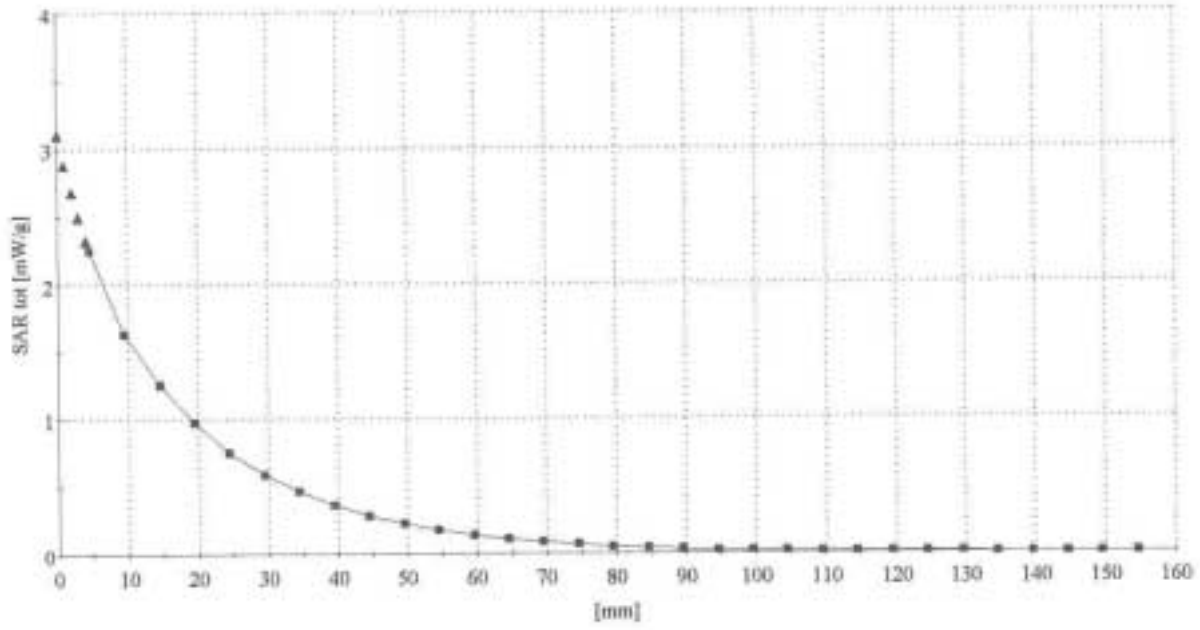


MFRL

Talkabout-T7200; Test Date:12/07/01

PRODUCT: T7200 (NUE2990A) DATE: 011207
RUN NUMBER: 01120702 RUN TIME:19min
MODEL NUMBER: (NUE2990A) SERIAL NUMBER: 158ABY0027
TX FREQ: 462MHz ANTENNA POSITION: Fixed
ACCESSORIES: Antenna(Fixed), Battery(NTN8971B), Carrycase(NNTN4106A), Audio assy(NTN8867A)
ANTENNA DISTANCE: A(base):38mm B(center):43mm C(tip):51mm
Start Power: End Power:
ROOM TEMP:23C TISSUE TEMP:21C RH:39%
PROBE CALIBRATION DATE:010523

Probe: - SN1418; ConvF(6.74,6.74,6.74); Crest factor: 1.0; BODY 450: σ = 0.91 mho/m ε_r = 56.1 ρ = 1.00 g/cm^3
:, 0, ,
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0



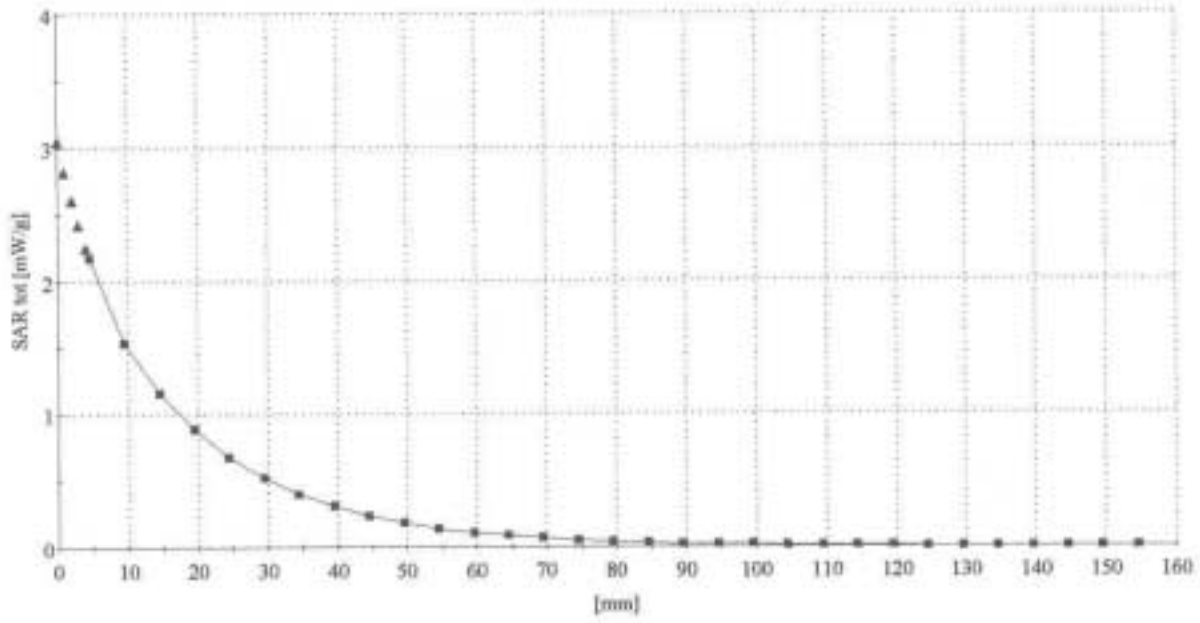
MFRL

12/10/01

Talkabout-T7200; Test Date:12/10/01

PRODUCT: T7200(NUE2990A) DATE: 011211
RUN NUMBER: 01121103 RUN TIME:19min
MODEL NUMBER: (NUE2990A) SERIAL NUMBER: 158ABY0027
TX FREQ: 462MHz ANTENNA POSITION: Fixed
ACCESSORIES: Antenna(Fixed), Battery(NTN8971B)
ANTENNA DISTANCE: A(base):35mm B(center):37mm C(tip):39mm
Start Power: End Power:
ROOM TEMP:23C TISSUE TEMP:22.8C RH:39%
PROBE CALIBRATION DATE:010523

Probe: - SN1418; ConvF(6.81,6.81,6.81); Crest factor: 1.0; head 450: σ = 0.85 mho/m ε_r = 43.4 ρ = 1.00 g/cm³
: , 0, ,
Z-Axis: Dx = 0.0, Dy = 0.0, Dz = 5.0



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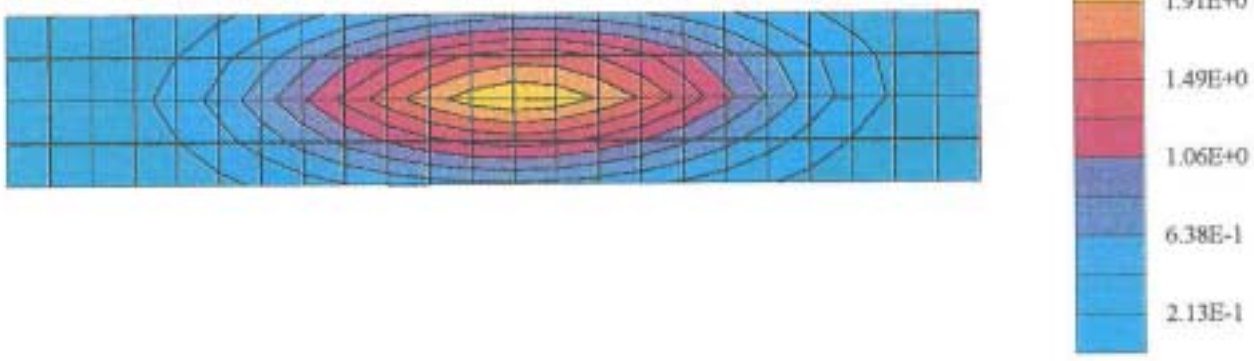
Appendix B: Dipole Validation Data Results

dipole 450
Run Number:01120701 TEST DATE: 12/07/01
Input power 500mW
Target value normalized to 1W- 4.4mW/g
RT:23C TT:21C RH:39%

Probe: - SN1418; ConvF(6.74,6.74,6.74); Crest factor: 1.0; BODY 450: σ = 0.90 mho/m ε_r = 56.3 ρ = 1.00 g/cm³
Cube 7x7x7: SAR (1g): 2.13 mW/g, SAR (10g): 1.44 mW/g, (Worst-case extrapolation), Peak: 3.25 mW/g,Max at 28.5, 181.5, 4.5
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.02 dB



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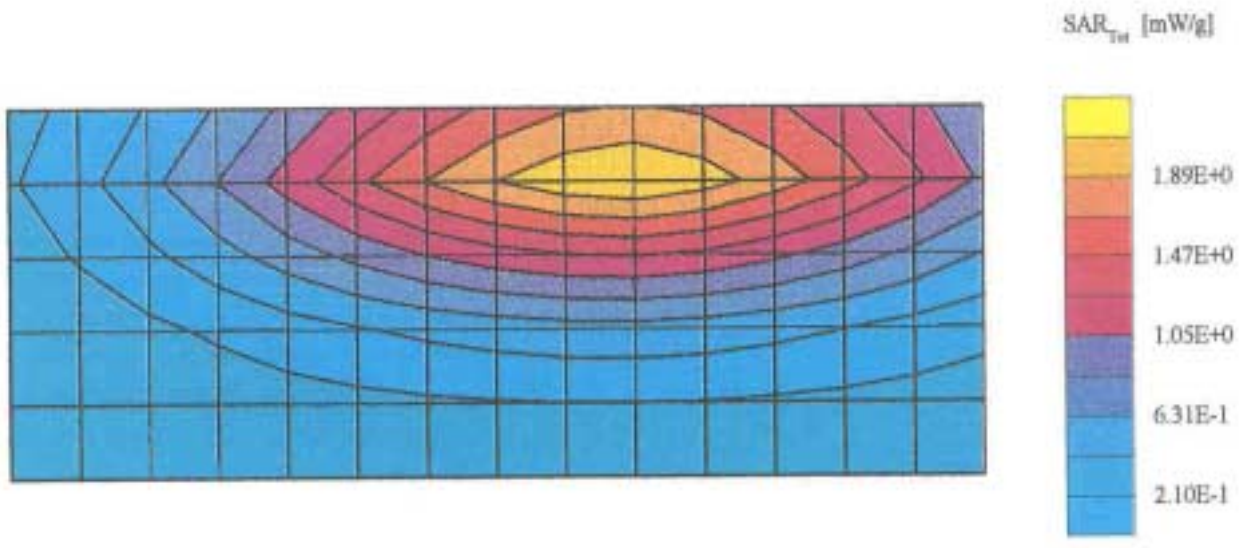
dipole 450

Run Number:01121001 TEST DATE: 12/10/01
Input power 500mW
Target value normalized to 1W- 4.4mW/g
RT:24C TT:23C RH:39%

Probe: - SN1418; ConvF(6.74,6.74,6.74); Crest factor: 1.0; BODY 450: σ = 0.90 mho/m ε_r = 56.1 ρ = 1.00 g/cm^3
Cube 7x7x7: SAR (1g): 2.09 mW/g, SAR (10g): 1.41 mW/g, (Worst-case extrapolation), Peak: 3.19 mW/g,Max at 10.5, 133.5, 4.5
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.00 dB



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dipole 450

Run Number:01121101 TEST DATE: 12/11/01

Input power 500mW

Target value normalized to 1W- 4.4mW/g

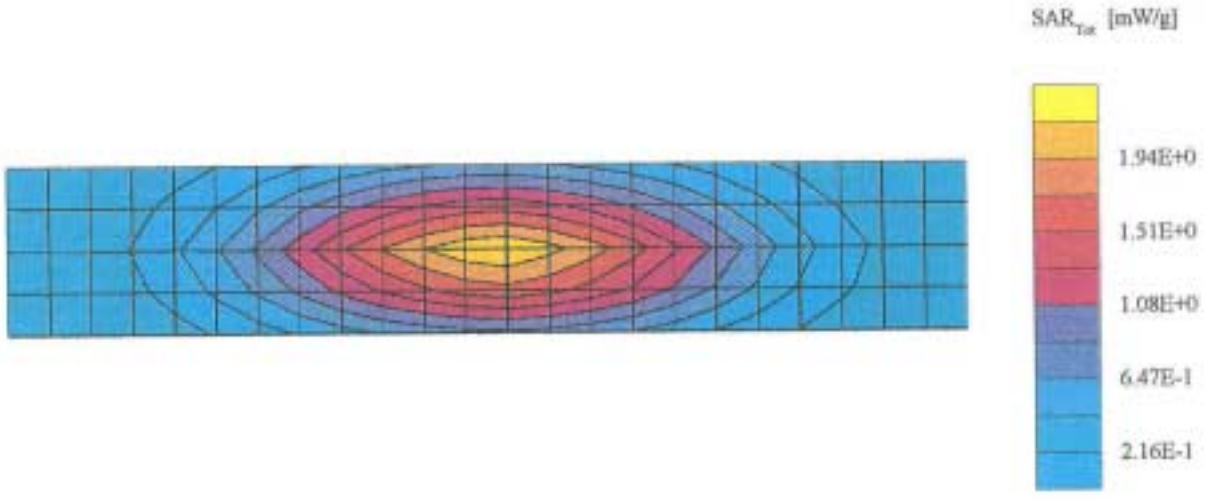
RT:23C TT:22.8C RH:39%

Probe: - SN1418; ConvF(6.81,6.81,6.81); Crest factor: 1.0; head 450: σ = 0.84 mho/m ε_r = 43.6 ρ = 1.00 g/cm^3

Cube 7x7x7: SAR (1g): 2.11 mW/g, SAR (10g): 1.41 mW/g, (Worst-case extrapolation), Peak: 3.24 mW/g,Max at 31.5, 177.0, 4.5

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Powerdrift: -0.02 dB



MFRL

Appendix C: Measurement Probe Calibration Certificate

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

Calibration Certificate

Dosimetric E-Field Probe

Type:	ET3DV6R
Serial Number:	1418
Place of Calibration:	Zurich
Date of Calibration:	May 23, 2001
Calibration Interval:	12 months

Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

Wherever applicable, the standards used in the calibration process are traceable to international standards. In all other cases the standards of the Laboratory for EMF and Microwave Electronics at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland have been applied.

Calibrated by:	Nikolai E. Nevzorov
Approved by:	Jelusic Katja

DASY3 - Parameters of Probe: ET3DV6R SN:1418

Sensitivity in Free Space

NormX	2.32 $\mu V/(V/m)^2$	DCP X	97 mV
NormY	2.15 $\mu V/(V/m)^2$	DCP Y	97 mV
NormZ	2.39 $\mu V/(V/m)^2$	DCP Z	97 mV

Sensitivity in Tissue Simulating Liquid

B|a1 correction

Head	450 MHz		ε_r = 43.5 ± 5%	σ = 0.87 ± 10% mho/m	
	ConvF X	6.18	extrapolated	Boundary effect:	
	ConvF Y	6.18	extrapolated	Alpha	1.00
	ConvF Z	6.18	extrapolated	Depth	1.56
Head	900 MHz		ε_r = 42 ± 5%	σ = 0.97 ± 10% mho/m	
	ConvF X	5.81	± 7% (k=2)	Boundary effect:	
	ConvF Y	5.81	± 7% (k=2)	Alpha	0.92
	ConvF Z	5.81	± 7% (k=2)	Depth	1.64
Head	1500 MHz		ε_r = 40.4 ± 5%	σ = 1.23 ± 10% mho/m	
	ConvF X	5.31	interpolated	Boundary effect:	
	ConvF Y	5.31	interpolated	Alpha	0.82
	ConvF Z	5.31	interpolated	Depth	1.75
Head	1800 MHz		ε_r = 40 ± 5%	σ = 1.40 ± 10% mho/m	
	ConvF X	5.06	± 7% (k=2)	Boundary effect:	
	ConvF Y	5.06	± 7% (k=2)	Alpha	0.77
	ConvF Z	5.06	± 7% (k=2)	Depth	1.81

Sensor Offset

Probe Tip to Sensor Center	2.7	mm

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Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	ET3DV6R
Serial Number:	1418
Place of Assessment:	Zurich
Date of Summary:	November 28, 2001
Probe Calibration Date:	May 23, 2001

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. Since the evaluation is coupled with measured conversion factors, it has to be recalculated yearly, i.e., following the re-calibration schedule of the probe. The uncertainty of the numerical assessment is based on the extrapolation from measured value at 900 MHz or at 1800 MHz.

Assessed by:

Dosimetric E-Field Probe ET3DV6R SN:1418

Conversion factor (± standard deviation)

150 MHz	ConvF	**8.0 ± 8%**	**ε_r = 52.3 ±5%** **σ = 0.76 ±5% mho/m** **(head tissue)**
300 MHz	ConvF	**7.0 ± 8%**	ε_r = 45.3 ±5% σ = 0.87 ±5% mho/m (head tissue)
368 MHz	ConvF	**6.8 ± 8%**	ε_r = 44.5 ±5% σ = 0.87 ±5% mho/m (head tissue)
450 MHz	ConvF	**6.6 ± 8%**	ε_r = 43.5 ±5% σ = 0.87 ±5% mho/m (head tissue)
1750 MHz	ConvF	**5.1 ± 8%**	**ε_r = 40.0 ±5%** **σ = 1.37 ±5% mho/m** **(head tissue)**
1900 MHz	ConvF	**4.9 ± 8%**	**ε_r = 40.0 ±5%** **σ = 1.40 ±5% mho/m** **(head tissue)**
2000 MHz	ConvF	**4.8 ± 8%**	ε_r = 37.0 ±5% σ = 1.40 ±5% mho/m (head tissue)
2450 MHz	ConvF	**4.4 ± 8%**	**ε_r = 32.0 ±5%** **σ = 1.80 ±5% mho/m** **(head tissue)**

Dosimetric E-Field Probe ET3DV6R SN:1418

Conversion factor (± standard deviation)

35 MHz	**ConvF**	**8.0 ± 15%**	ε_r = 78.0 ±5% σ = 0.65 ±5% mho/m (body tissue)
75 MHz	**ConvF**	**7.9 ± 10%**	ε_r = 70.0 ±5% σ = 0.70 ±5% mho/m (body tissue)
150 MHz	**ConvF**	**7.7 ± 8%**	ε_r = 61.9 ±5% σ = 0.80 ±5% mho/m (body tissue)
300 MHz	**ConvF**	**7.1 ± 8%**	ε_r = 58.2 ±5% σ = 0.92 ±5% mho/m (body tissue)
368 MHz	**ConvF**	**6.9 ± 8%**	ε_r = 57.5 ±5% σ = 0.93 ±5% mho/m (body tissue)
450 MHz	**ConvF**	**6.7 ± 8%**	ε_r = 56.7 ±5% σ = 0.94 ±5% mho/m (body tissue)
835 MHz	**ConvF**	**5.7± 8%**	ε_r = 55.2 ±5% σ = 0.97 ±5% mho/m (body tissue)
900 MHz	**ConvF**	**5.6 ± 8%**	ε_r = 55.0 ±5% σ = 1.05 ±5% mho/m (body tissue)
925 MHz	**ConvF**	**5.6 ± 8%**	ε_r = 55.0 ±5% σ = 1.06 ±5% mho/m (body tissue)
1500 MHz	**ConvF**	**5.1 ± 8%**	ε_r = 53.9 ±5% σ = 1.33 ±5% mho/m (body tissue)

Appendix D: Illustrations of Body-worn Accessories

The purpose of this appendix is to illustrate the body-worn carry accessories for the T7200 FM Portable Radio.

Photos 1, 2 and 3 illustrate the 1585176C03 plastic carry holder with a swivel belt clip.