Appendix 4. Photographs

This appendix contains the following photographs:

Photo Reference Number	Title
PHT/72838JD03/001	Test configuration for the measurement of Specific Absorption Rate (SAR)
PHT/72838JD03/002	Touch Left Antenna Retracted
PHT/72838JD03/003	Touch Left Antenna Extended
PHT/72838JD03/004	Tilt Left Antenna Retracted
PHT/72838JD03/005	Tilt Left Antenna Extended
PHT/72838JD03/006	Touch Right Antenna Retracted
PHT/72838JD03/007	Touch Right Antenna Extended
PHT/72838JD03/008	Tilt Right Antenna Retracted
PHT/72838JD03/009	Tilt Right Antenna Extended
PHT/72838JD03/010	Front Of EUT Open Antenna Extended Facing Phantom With 15mm Separation
PHT/72838JD03/011	Rear Of EUT Open Antenna Extended Facing Phantom With 15mm Separation
PHT/72838JD03/012	Rear Of EUT Open Antenna Extended Facing Phantom With 15mm Separation
PHT/72838JD03/013	Rear Of EUT Open With PHF Antenna Extended Facing Phantom With 15mm Separation
PHT/72838JD03/014	Front Of EUT Closed
PHT/72838JD03/015	Rear Of EUT Closed
PHT/72838JD03/016	Front Of EUT Open
PHT/72838JD03/017	Rear Of EUT Open
PHT/72838JD03/018	Internal View Of EUT
PHT/72838JD03/019	Battery View Of EUT
PHT/72838JD03/020	Fluid Level 1900 MHz Body
PHT/72838JD03/021	Fluid Level 1900 MHz Head
PHT/72838JD03/022	Personal Handsfree Kit

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/001: Test configuration for the measurement of Specific Absorption Rate (SAR)

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

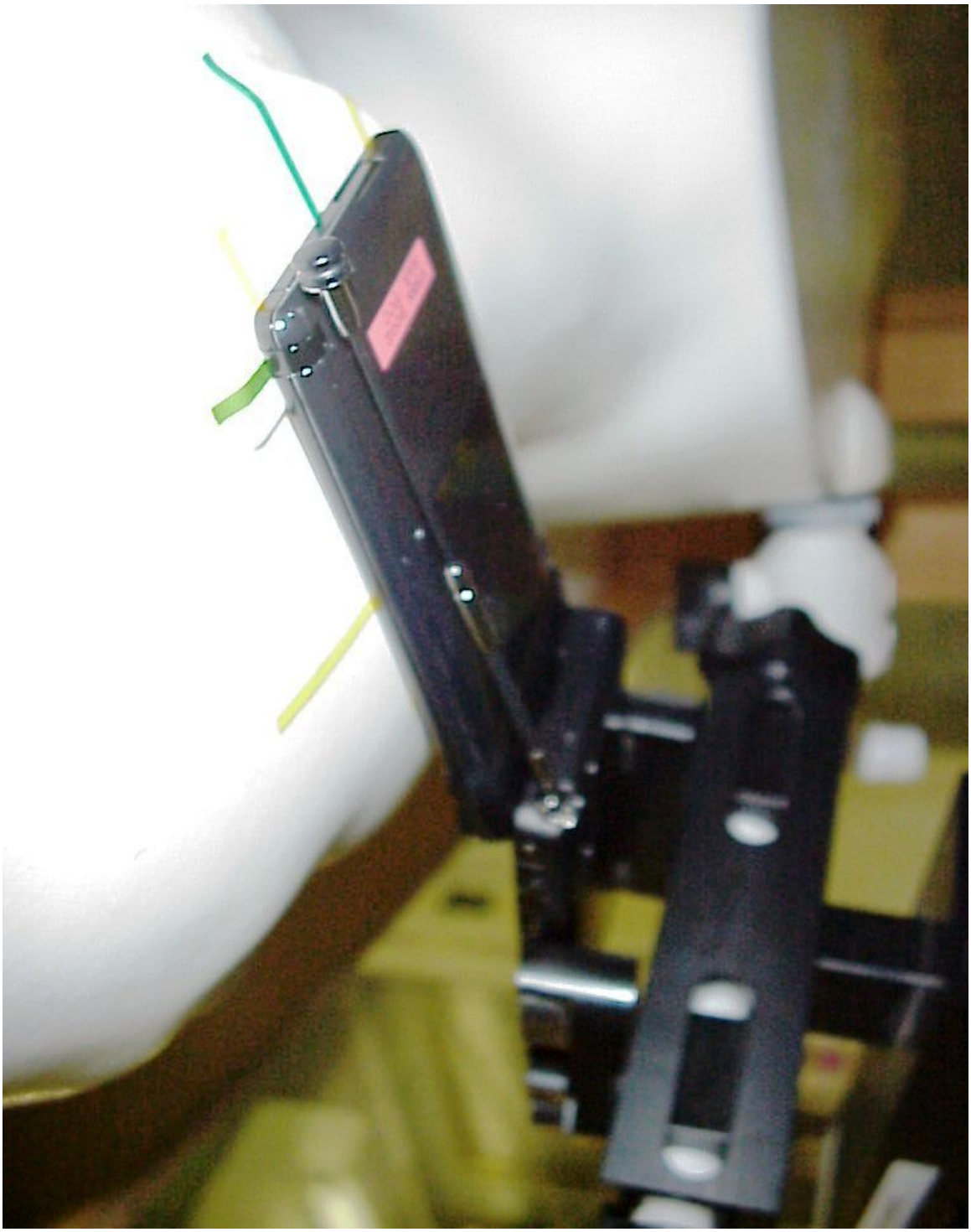
To: OET Bulletin 65 Supplement C: (2001-01)

PHT/72838JD03/002: Touch Left Antenna Retracted

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/003: Touch Left Antenna Extended



Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

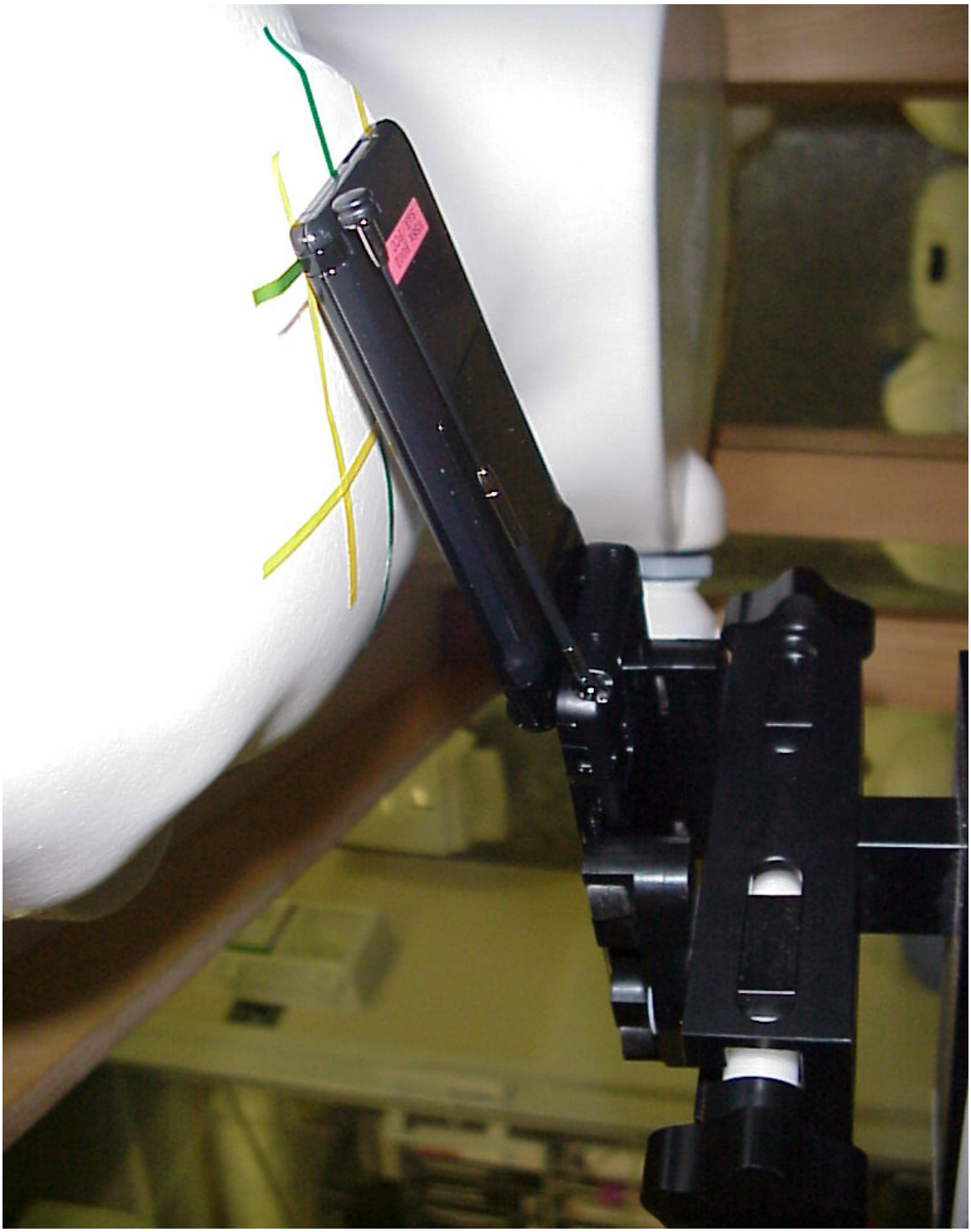
To: OET Bulletin 65 Supplement C: (2001-01)

PHT/72838JD03/004: Tilt Left Antenna Retracted

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

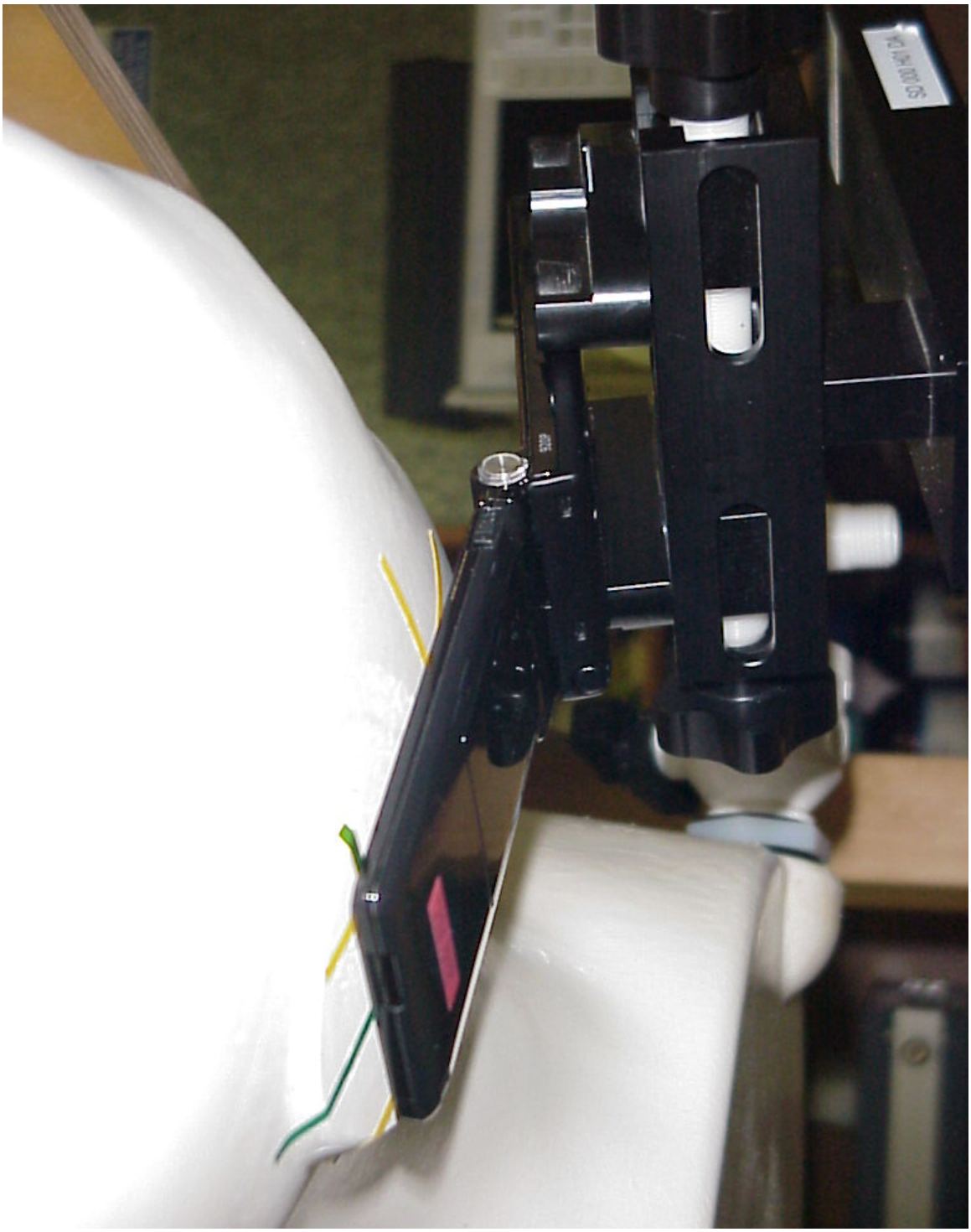
PHT/72838JD03/005: Tilt Left Antenna Extended



Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

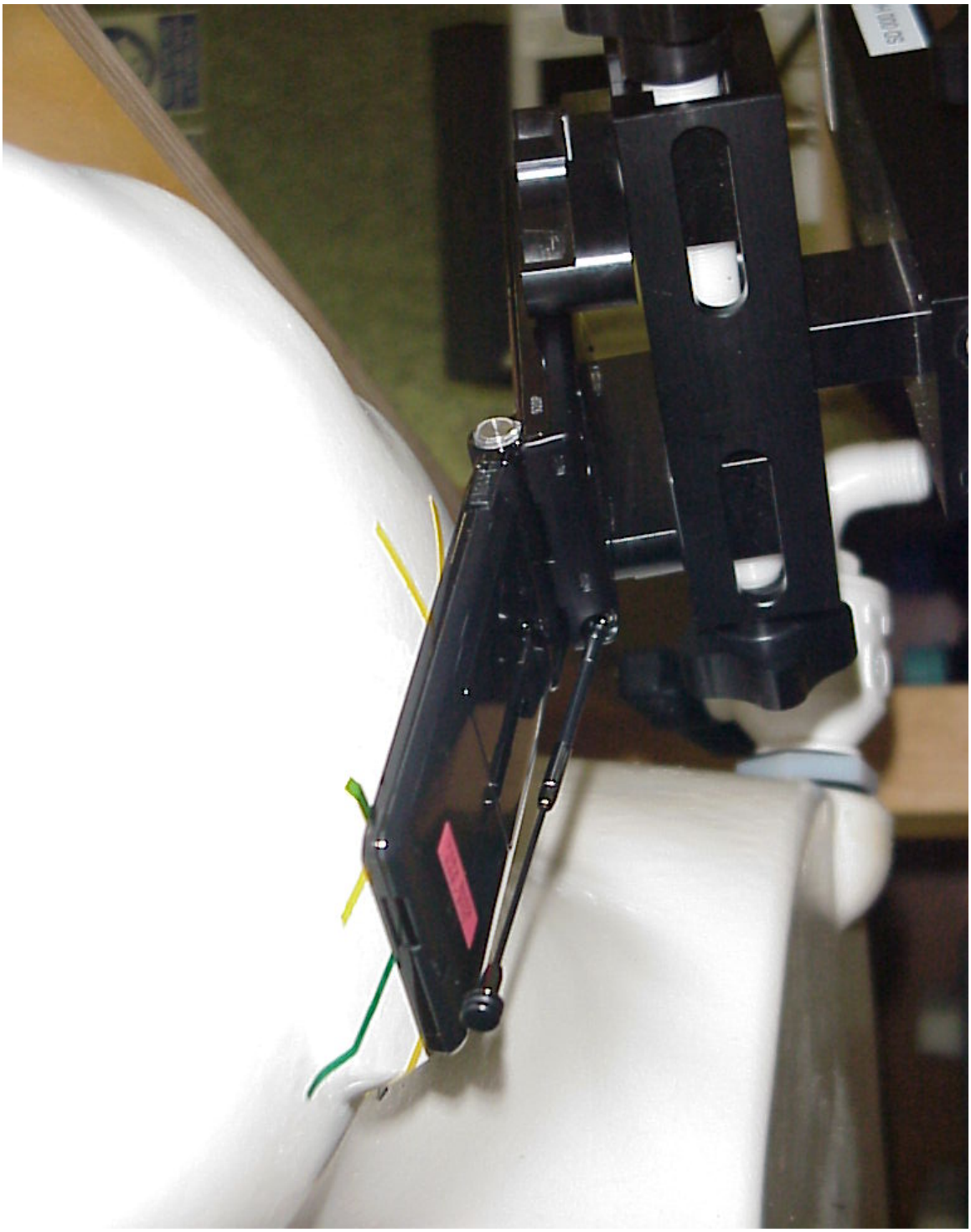
PHT/72838JD03/006: Touch Right Antenna Retracted



Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

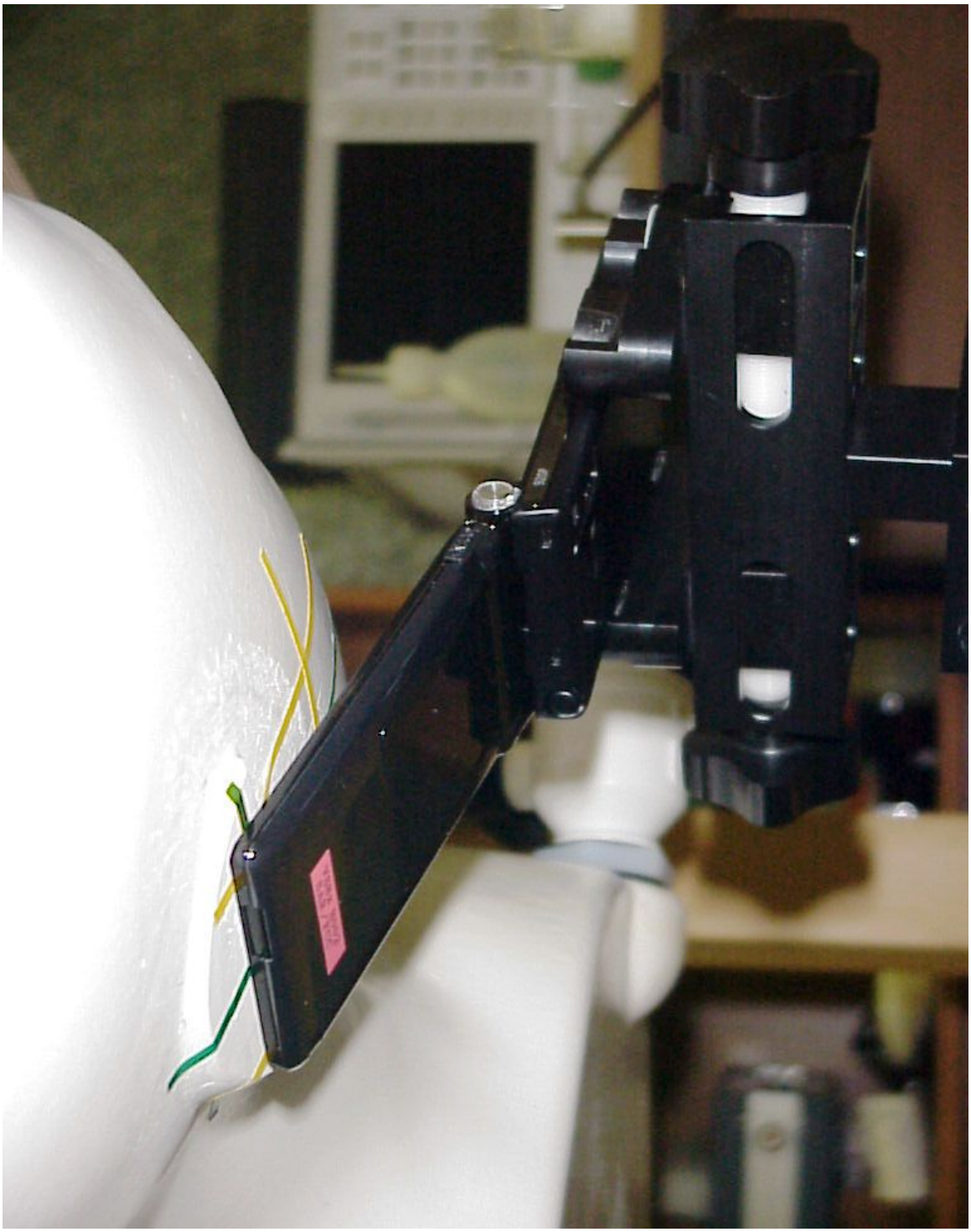
PHT/72838JD03/007: Touch Right Antenna Extended



Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

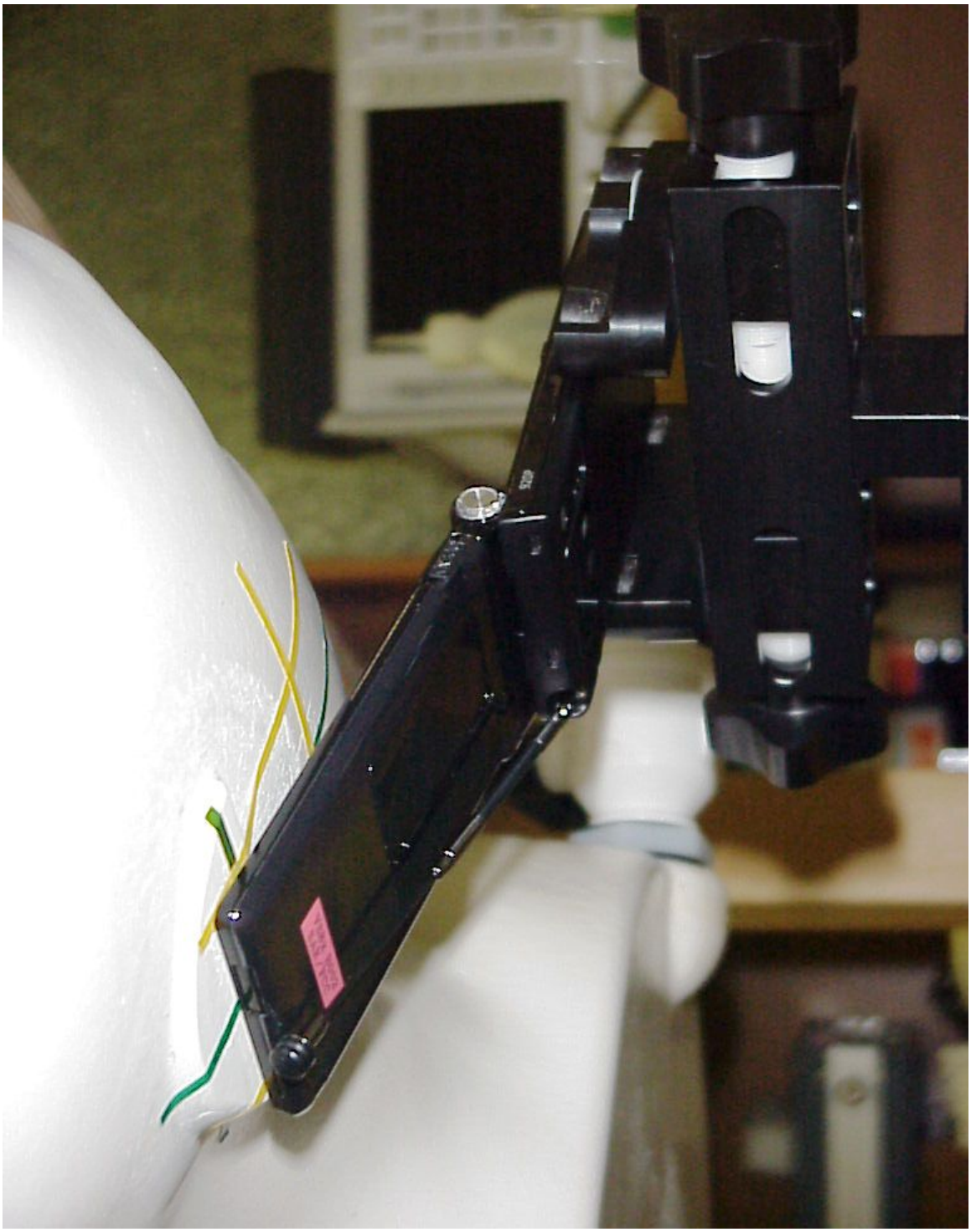
PHT/72838JD03/008: Tilt Right Antenna Retracted



Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/009: Tilt Right Antenna Extended



Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/010: Front Of EUT Open Antenna Extended Facing Phantom With 15mm Separation

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

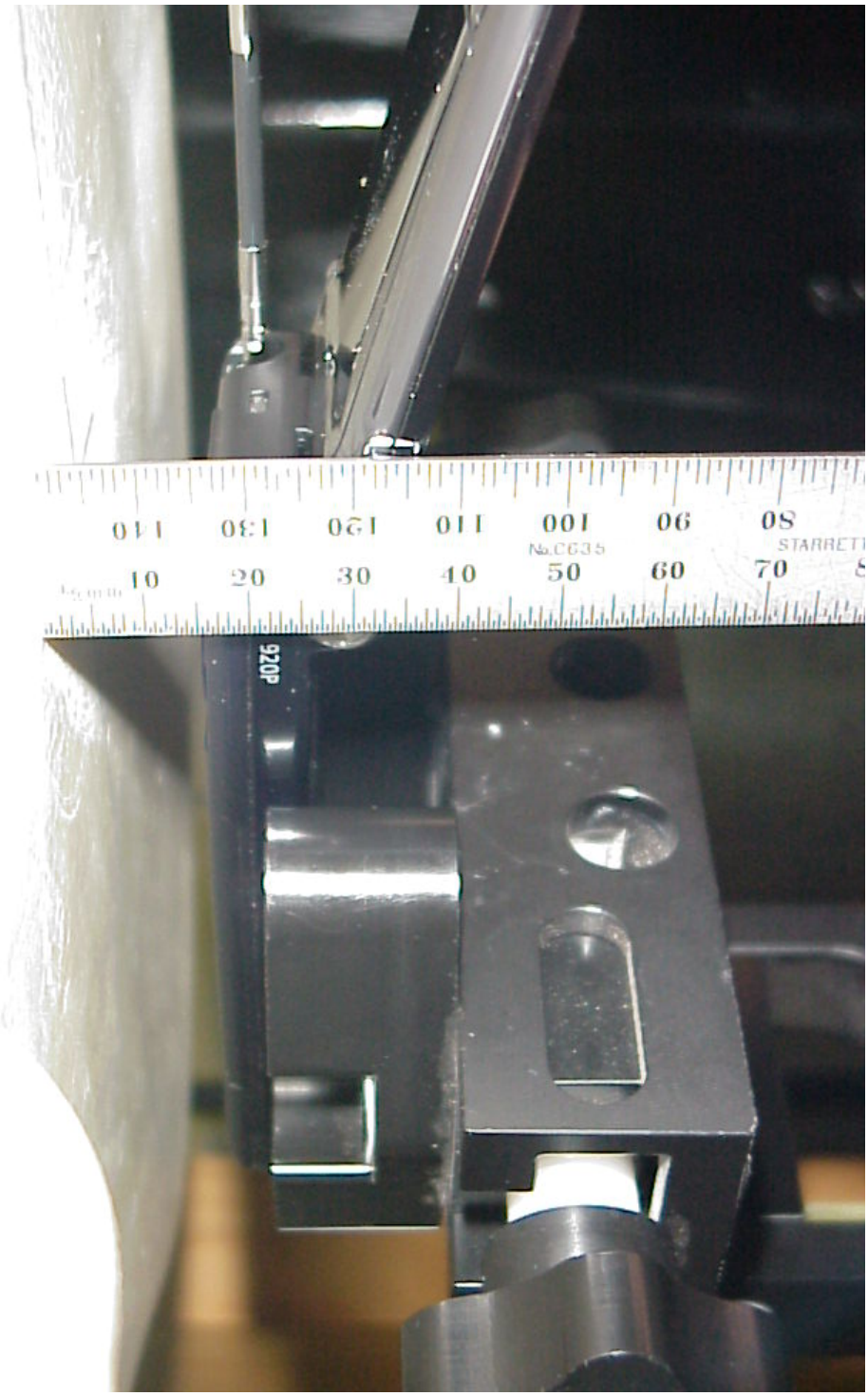
To: OET Bulletin 65 Supplement C: (2001-01)

PHT/72838JD03/011: Rear Of EUT Open Antenna Extended Facing Phantom With 15mm Separation

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/012: Rear Of EUT Open Antenna Extended Facing Phantom With 15mm Separation



Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/013: Rear Of EUT Open With PHF Antenna Extended Facing Phantom With 15mm Separation

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/014: Front Of EUT Closed

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/015: Rear Of EUT Closed

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/016: Front Of EUT Open

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/017: Rear Of EUT Open

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/018: Internal View Of EUT

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/019: Battery View Of EUT

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

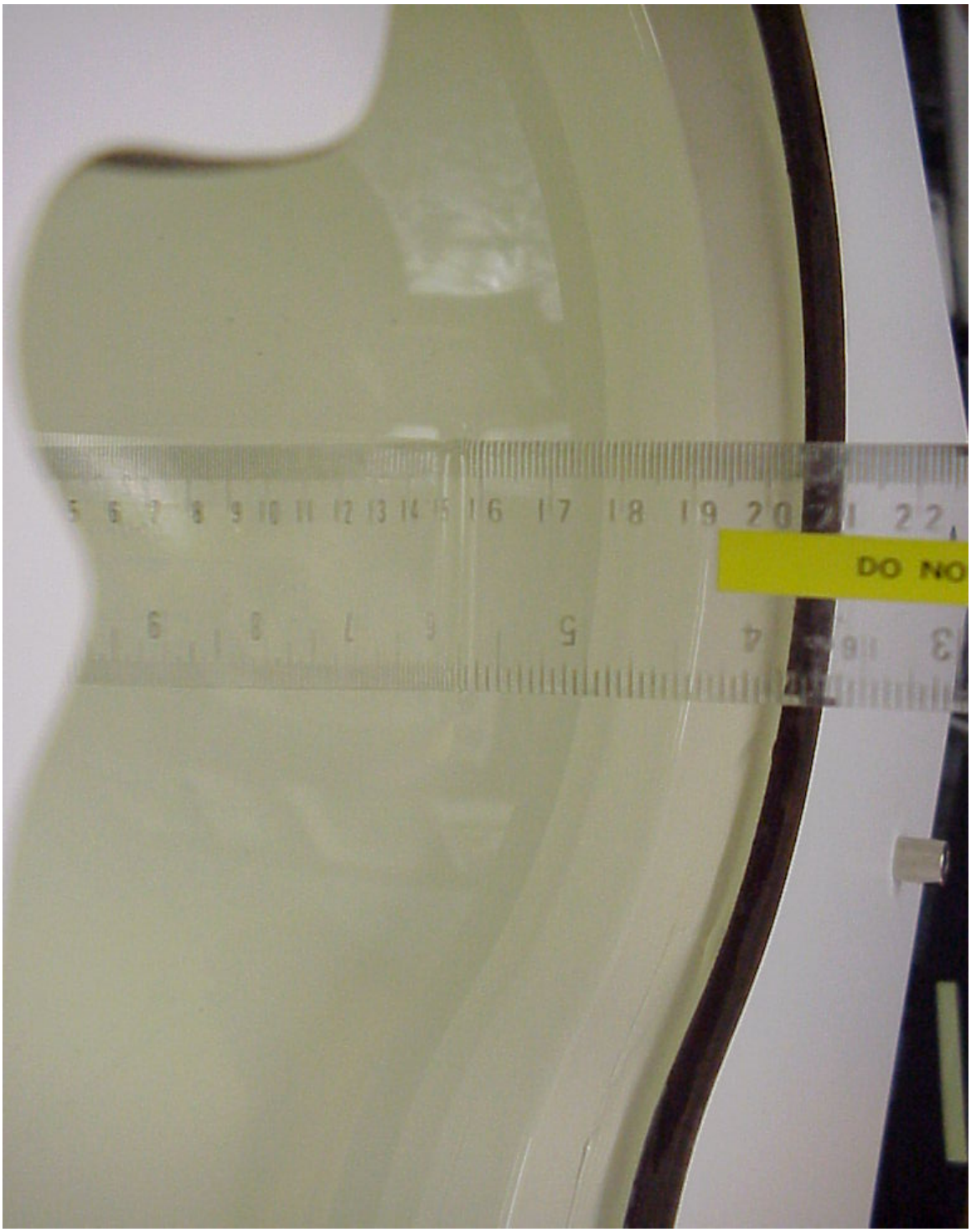
To: OET Bulletin 65 Supplement C: (2001-01)

PHT/72838JD03/020: Fluid Level 1900 MHz Body

Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

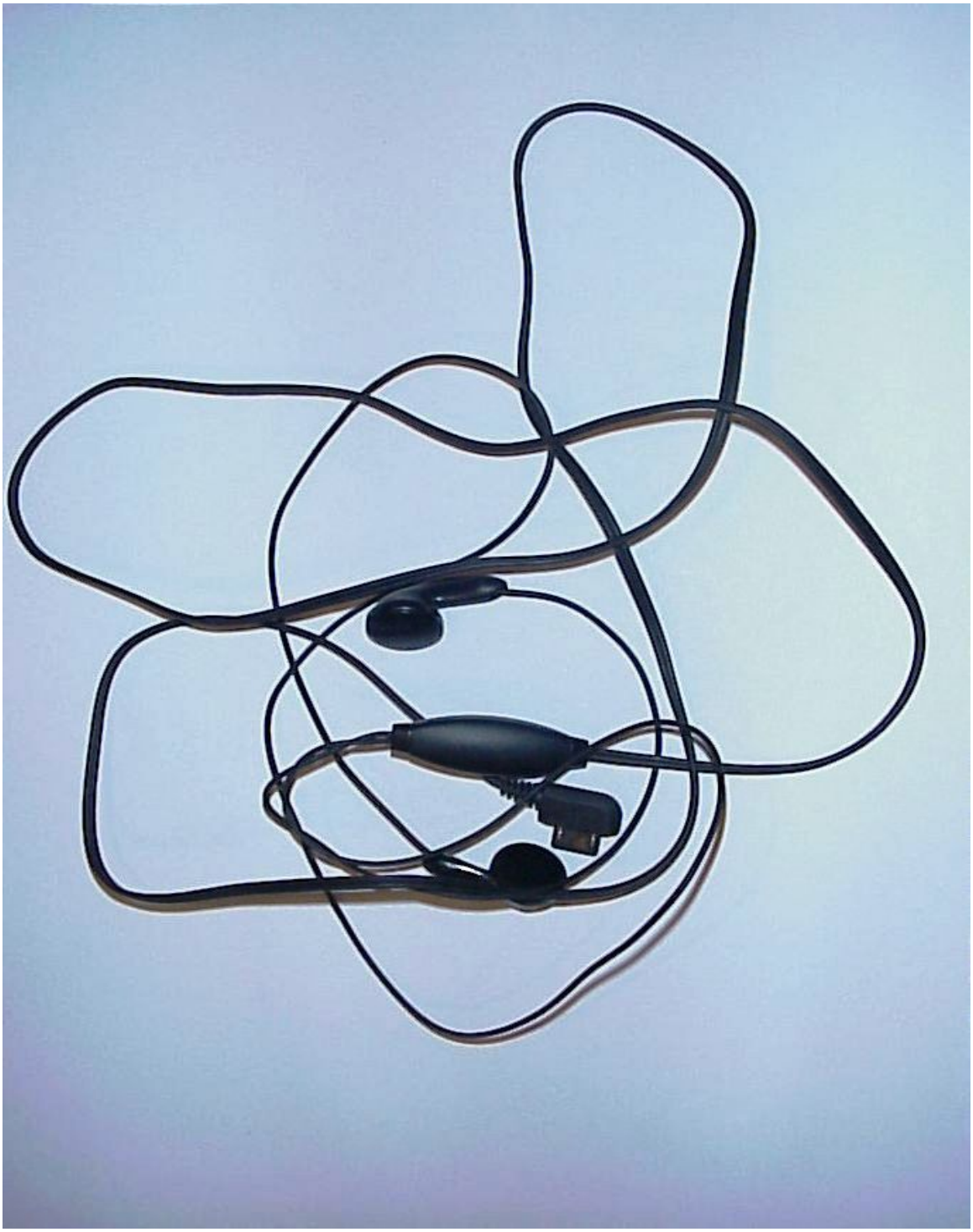
PHT/72838JD03/021: Fluid Level 1900 MHz Head



Test of: Panasonic Mobile Comms Dev of Europe Ltd
VS8x

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

PHT/72838JD03/022: Personal Handsfree Kit



Appendix 5. Validation of System

Prior to the assessment, the system was verified in the flat region of the phantom.
A 1900 MHz dipole was used. A forward power of 250 mW was applied to the dipole and the system was verified to a tolerance of ±5% for the 1900 MHz dipole. The applicable verification (normalised to 1 Watt).

Date: 26/10/2007

Validation Dipole and Serial Number: D1900V2:SN:540

Simulant	Frequency (MHz)	Room Temperature	Liquid Temperature	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Head	1900	23.0 ºC	23.0 ºC	ε_r	40.00	38.66	-0.03	5.00
				σ	1.40	1.44	0.03	5.00
				1g SAR	36.10	36.00	-0.28	5.00
				10g SAR	19.30	18.92	-1.97	5.00

Date: 26/10/2007

Validation Dipole and Serial Number: D1900V2:SN:540

Simulant	Frequency (MHz)	Room Temperature	Liquid Temperature	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	1900	23.0 ºC	23.0 ºC	ε_r	53.30	50.71	-0.05	5.00
				σ	1.52	1.56	0.03	5.00
				1g SAR	38.00	38.72	1.89	5.00
				10g SAR	20.70	20.04	-3.19	5.00

Date: 27/10/2007

Validation Dipole and Serial Number:D1900V2:SN:540

Simulant	Frequency (MHz)	Room Temperature	Liquid Temperature	Parameters	Target Value	Measured Value	Deviation (%)	Limit (%)
Body	1900	23.0 ºC	23.0 ºC	ε_r	53.30	50.71	-0.05	5.00
				σ	1.52	1.56	0.03	5.00
				1g SAR	38.00	38.00	0.00	5.00
				10g SAR	20.70	19.72	-4.73	5.00

Appendix 6. Simulated Tissues

The body mixture consists of water and glycol. Visual inspection is made to ensure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.

Ingredient	Frequency
	1800/1900 MHz Body
De-Ionised Water	69.79%
Diglycol Butyl Ether (DGBE)	30.00%
Salt	0.20%

Ingredient	Frequency
	1800/1900 MHz Head
De-Ionised Water	55.41%
Diglycol Butyl Ether (DGBE)	44.51%
Salt	0.08%

Appendix 7. DASY4 System Details

A.7.1. DASY4 SAR Measurement System

RFI Global Services Ltd, SAR measurement facility utilises the Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY4 system is comprised of the robot controller, computer, near-field probe, probe alignment sensor, and the SAM phantom containing brain or muscle equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller; teach pendant (Joystick), and remote control. This is used to drive the robot motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. The data acquisition electronics (DAE) performs signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection etc. The DAE is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card. The DAE3 utilises a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching mulitplexer, a fast 16-bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

A.7.2. DASY4 SAR System Specifications

Robot System

Positioner:	Stäubli Unimation Corp. Robot Model: RX90L
Repeatability:	0.025 mm
No. of Axis:	6
Serial Number:	F00/SD89A1/A/01
Reach:	1185 mm
Payload:	3.5 kg
Control Unit:	CS7
Programming Language:	V+

Data Acquisition Electronic (DAE) System

Serial Number:	DAE3 SN:394

Cell Controller

PC:	Dell Precision 340
Operating System:	Windows 2000
Data Card:	DASY4 Measurement Server
Serial Number:	1080

Data Converter

Features:	Signal Amplifier, multiplexer, A/D converted and control logic.
Software:	DASY4 Software
Connecting Lines:	Optical downlink for data and status info. Optical uplink for commands and clock.

PC Interface Card

Function:	24 bit (64 MHz) DSP for real time processing Link to DAE3 16 nit A/D converter for surface detection system serial link to robot direct emergency stop output for robot.

DASY4 SAR System Specifications (Continued)

E-Field Probe

Model:	ET3DV6
Serial No:	1528
Construction:	Triangular core fibre optic detection system
Frequency:	10 MHz to 3 GHz
Linearity:	±0.2 dB (30 MHz to 3 GHz)
Probe Length (mm):	337
Probe Diameter (mm):	12
Tip Length (mm):	10
Tip Diameter (mm):	6.8
Sensor X Offset (mm):	2.7
Sensor Y Offset (mm):	2.7
Sensor Z Offset (mm):	2.7

Phantom

Phantom:	SAM Phantom
Shell Material:	Fibreglass
Thickness:	2.0 ±0.1 mm