Prüfbericht-Nr.: *Test report no.:*	**ULR-TC568820300000054F**	**Auftrags-Nr.:** *Order no.:*	**166489005 0070**
Kunden-Referenz-Nr.: *Client reference no.:*	NA	**Auftragsdatu** *Order date:*	2020-10-08
Auftraggeber: *Client:*	GE Vingmed Ultrasound AS Strandpromenaden 45, N-3183, Horten, Norway		
Prüfgegenstand: *Test item:*	Vscan Air CL		
Bezeichnung.: *Identification.:*	A1		
Auftrags-Inhalt: *Order content*:	Testing and issue of Test Report and Grant Certificate		
Prüfgrundlage: *Test specification:*	FCC 47 CFR Part 2 subpart 2.1093 RSS-102 Issue 5 IEEE Std 1528-2013 KDB 447498 D01 / KDB 248227 D01		
Wareneingangsdatum: *Date of sample receipt:*	2020-10-23		
Prüfmuster-Nr & Serien-Nr.: *Test sample no & serial no.*:	A002935536-001 A002935536-002 & VA004000417		
Prüfzeitraum: *Testing period:*	2020-10-26 - 2020-10-27		
Ort der Prüfung: *Place of testing:*	Wireless laboratory, Bangalore		
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (India) Pvt. Ltd. 27/B,2nd cross road, Electronic city Phase1, Banglore-560100, India FCC Test Site Registration No: 496599 ISED Test Site Registration No.: 3466E-1		
Prüfergebnis*: *Test result*:*	Pass		

geprüft von: *tested by:*		**genehmigt von:** *authorized by:*	
Datum: *Date:* 2020-11-27		**Ausstellatum:** *Issue date:* 2020-12-11	
Stellung / *Position:*	**Rajesh M Gowda** Engineer	**Stellung** / *Position:*	**Mahammadgouse Kaladagi** Assistant Manager

Sonstiges / *Other:*	FCC ID: YOM-VSCANAIR IC ID: 9136A-VSCANAIR
Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

TEST SUMMARY

Mode	Band	Position	Extremity	Measured SAR Value (1g) W/kg	Measured SAR Value (10g) W/kg	Adjusted SAR Value (1g) W/kg	Adjusted SAR Value (10g) W/kg	Limit 1g (W/kg	Limit 10g (W/kg)	Result
Wi-Fi IEEE 802.11 (b/g/n)	2.4 GHz	Edge Bottom	Trunk	0.052	0.024	0.082	0.038	1.6	-	PASS
		Front	Limb	0.463	0.21	0.734	0.333	-	4.0	PASS
Wi-Fi IEEE 802.11 (a/n)	5 GHz	Edge Bottom	Trunk	0.341	0.123	0.540	0.195	1.6	-	PASS
		Front	Limb	1.44	0.538	2.282	0.853	-	4.0	PASS

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) and (4 W/kg) specified in FCC 47 CFR Subpart 2.1093 and ANSI/IEEE C95.1-1999. Testing is performed with measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

Discipline: Electronics Testing
Group: EMC Test Facility

REVISION HISTORY OF THIS REPORT

Report Number	Version	Description	Issue date
ULR-TC568820300000054F	01	Initial issue of report	2020-11-27
ULR-TC568820300000054F	02	Reviewer comments updated	2020-12-11

Table of Contents

1 GENERAL REMARKS

1.1 Attachments

All attachments are part of this test report and are issued in separate document

1. Appendix A: PLOTS FOR SAR MEASUREMENT
2. APPENDIX B: PLOTS FOR SYSTEM VERIFICATION
3. APPENDIX C: CALIBRATION CERTIFICATE FOR PROBE AND DIPOLE

Bellow attachments are common to other test reports as well

1. TEST SETUP PHOTOS
2. EUT EXTERNAL PHOTOS
3. EUT INTERNAL PHOTOS
4. FCC LABEL AND LABEL LOCATION
5. BLOCK DIAGRAM
6. SPECIFICATION OF EUT
7. SCHEMATIC DIAGRAM
8. BILL OF MATERIAL
9. USER MANUAL
10. MAXIMUM PERMISSIBLE EXPOSURE INFORMATION

2 TEST SITES

2.1 Testing Facilities

TUV Rheinland (India) Private Limited
27/B, 2nd Cross Road,
Electronic City Phase 1,
Bangalore – 560 100.
India

2.2 List of Test and Measurement Instruments

Table 1: Test and measurement instruments used

Equipment	Manufacturer	Model Name	Serial Number	Firmware Versions	Calibration Due Date	Periodicity	Test Facility
System Validation Dipole	Schmid & Partner Engineering AG	D2450V2	902	-	10.02.2021	Yearly	System Performance Check
System Validation Dipole	Schmid & Partner Engineering AG	D5GHzV2	1109	-	11.10.2021	Yearly	
Power Sensor	Agilent	E4412A	MY50360055	-	01.08.2021	Yearly	
Power Meter	Agilent	N1913A	MY50000459	A1.01.15	01.08.2021	Yearly	
USB Peak Power Sensor	AIMIL Ltd	55006	10231	3.0.12.0	09.01.2021	Yearly	
RF and microwave Signal Generator	Rohde & Schwarz	SMB100A	108788	3.01.203.32	30-12-2020	Yearly	
Isotropic E-Field	Schmid & Partner Engineering AG	EX3DV4	7374	-	28-10-2020	Yearly	SAR Measurement
Data Acquisition Electronics	Schmid & Partner Engineering AG	DAE4	640	-	11-10-2021	Yearly	
SAR Chamber	Lindgren RF Enclosures	-	-	-	-	-	
DAK-3.5	Schmid & Partner Engineering AG	SMDAK 040 CA	1100	-	13-02-2021	Yearly	Liquid Validation
Network Analyzer	Rohde & Schwarz	ZVL-6	102433	3.32	15-02-2021	Yearly	

Table 2: Instrument application Software versions

Sl. No	Test Type	Application software	Version
1	SAR Measurement	cDSY6	6.10

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

Vscan Air CL consists of a dual headed probe which integrates both, curved and linear array transducers, and an app which can be installed on Android or iOS mobile devices.

Vscan Air CL is a battery-operated software-based general-purpose ultrasound imaging system for use by qualified and trained healthcare professionals or practitioners that are legally authorized or licensed by law in the country, state or other local municipality in which he or she practices. The users may or may not be working under supervision or authority of a physician. Users may also include Medical Students working under the supervision or authority of a physician during their education / training. The device is enabling visualization and measurement of anatomical structures and fluid including blood flow.

3.2 Ratings and System Details of Equipment Under Test

Table 3: Ratings and System Details as declared by client*

Radio Protocol		Wi-Fi (5GHz)	Wi-Fi (2.4GHz)	BLE
Operating Frequency Range		UNII-1 Band - 5150MHz to 5250MHz UNII-3 Band - 5725MHz to 5825MHz	2412MHz to 2462MHz	2402MHz to 2480MHz
No. of Channels		4 (Refer Table 5)	13 (Refer Table 6)	40 (Refer Table 7)
Channel Spacing		20 MHz	5 MHz	2 MHz
Max Conducted power in dBm		13.59 dBm (MCS4 5240MHz)	14.31 dBm (at 6Mbps 2437MHz)	5.08 dBm (at 2480MHz)
Modulation		802.11a/n : OFDM (BPSK / QPSK / 16-QAM / 64-QAM)	802.11b: DSSS (DBPSK/DQPSK/CCK) 802.11g/n: OFDM (BPSK/QPSK/16QAM/ 64QAM)	GFSK
Number of antennas		1		
Antenna Gain		UNII-1 = 4.00 dBi UNII-3 = 4.68 dBi	2.53 dBi	
Antenna Type		PCB Antenna		
Supply Voltage to Product		3.6V DC Li-Ion battery		
Environmental conditions	Storage	-40°C to + 70°C relative humidity<95%		
	Operating	0°C to + 35°C relative humidity<95%		
EUT Dimension		131.34 mm x 63.84 mm x 31.33 mm (L x W x H)		

***Disclaimer:**
The information/data is supplied by the client and the same is considered to arrive at the final value.
Any changes made apart from the specified specification, can directly impact on the tests results. Refer the products user manual for more details.

3.3 Measurement Uncertainty:

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$

Table 4: Measurement Uncertainty

Worst-Case uncertainty budget for DASY6 assessed according to IEEE 1528, IEC 62209-1 & IEC 62209-2. The budget is valid for the frequency range 300MHz - 6GHz and represents a worst-case analysis. For specific tests and configurations, the uncertainty could be considerably smaller.

Error Description	Uncert. Value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)
Measurement System							
Probe Calibration	6.30%	N	2	1	1	3.2%	3.2%
Axial Isotropy	4.70%	R	SQRT(3)	0.7	0.7	1.9%	1.9%
Hemispherical Isotropy	9.60%	R	SQRT(3)	0.7	0.7	3.9%	3.9%
Boundary Effects	2.00%	R	SQRT(3)	1	1	1.2%	1.2%
Linearity	4.70%	R	SQRT(3)	1	1	2.7%	2.7%
System Detection Limits	1.00%	R	SQRT(3)	1	1	0.6%	0.6%
Modulation Response	2.40%	R	SQRT(3)	1	1	1.4%	1.4%
Readout Electronics	0.30%	N	1	1	1	0.3%	0.3%
Response Time	0.80%	R	SQRT(3)	1	1	0.5%	0.5%
Integration Time	2.60%	R	SQRT(3)	1	1	1.5%	1.5%
RF Ambient Noise	3.00%	R	SQRT(3)	1	1	1.7%	1.7%
RF Ambient Reflections	3.00%	R	SQRT(3)	1	1	1.7%	1.7%
Probe Positioner mechanical tolerance	0.04%	R	SQRT(3)	1	1	0.0%	0.0%
Probe Positioning with respect to phantom shell	0.80%	R	SQRT(3)	1	1	0.5%	0.5%
Max. SAR Eval.	4.00%	R	SQRT(3)	1	1	2.3%	2.3%
Test Sample Related							
Device Positioning	2.90%	N	1	1	1	2.9%	2.9%
Device Holder	3.60%	N	1	1	1	3.6%	3.6%
Power Drift	5.00%	R	SQRT(3)	1	1	2.9%	2.9%
Power Scaling	0%	R	SQRT(3)	1	1	0.0%	0.0%
Phantom and Setup							
Phantom Uncertainty	7.60%	R	SQRT(3)	1	1	4.4%	4.4%
SAR correction	1.90%	N	1	1	0.84	1.9%	1.6%
Liquid Conductivity (mea.)DAK	2.50%	N	1	0.78	0.71	2.0%	1.8%
Liquid Permittivity (mea.) DAK	2.50%	N	1	0.23	0.26	0.6%	0.7%
Temp. unc. - Conductivity	3.40%	R	SQRT(3)	0.78	0.71	1.5%	1.4%
Temp. unc. - Permittivity	0.40%	R	SQRT(3)	0.23	0.26	0.1%	0.1%
Combined Std. Uncertainty						10.6%	10.5%
Expanded STD Uncertainty						**21.2%**	**21.0%**

Note: The listed uncertainties are the worst case uncertainties for the entire range of measurements and are for the reporting purpose only and are not used in determining the PASS/FAIL of the results.

4 TEST SET-UP AND OPERATION MODE

4.1 Principle of Configuration Selection

Transmission was enabled with highest possible duty cycle on low, mid and high channels.

This product operates in 2 mode (Linear and Convex) as described in below table of this test report, these mode of operations are related to analog circuitry and do not affect the RF characteristics.

4.1.1 EUT Mode of operation

Mode	**Description**
Convex / Curved	Deep scanning uses curved transduser, with Wi-Fi in Tx and Rx mode and BLE is used for initial paring
Linear	Shallow scanning uses Linear transduser with Wi-Fi in Tx and Rx mode and BLE is used for initial paring
Charging mode	Probe will automatically turn off during charging, i.e. Wi-Fi and BLE are turned off

4.1.2 Following configurations are used for testing

Test cases	**Mode of operation**
SAR Measurement	Special configuration tool is used to enable the Wi-Fi and BLE continuous transmission as needed

4.2 Test Operation and Test Software

Hardware Version of Vscan Air CL: GP000010 Rev7
Hardware Version of Digital board: GP200400 Rev7
Hardware Version of HV board: GP200401 Rev6
Hardware Version of Analog board: GP200402 Rev5
Hardware Version of USB flex: GP200109 Rev1

Software Version of Vscan Air: 1.0.14.289
APP Software name: Vscan Air
APP Software Version: 1.0.14.14997

EUT can be configured for different test conditions using calibrator tool commands
Calibrator tool version = 0.80

Medical Device name of the probe: Vscan Air CL
Medical Device name of the application SW (app): Vscan Air

Brand	Model	REF	Part Number
Vscan	Air for Android	Vscan Air for Android	GP000240
	Air for iOS	Vscan Air for iOS	GP000250

Wireless Charging Pad - Anker A2503
AC/DC Power adapter - XP Power VEU10US050

4.3 Special Accessories and Auxiliary Equipment

- None

4.4 Countermeasures to achieve EMC Compliance

- None

4.5 List of Frequencies

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
UNII-1:5150-5250 MHz	36	5180
	38	5190
	46	5230
	48	5240
UNII-3:5725-5825 MHz	149	5745
	151	5755
	159	5795
	165	5825

Table 5: List of center Frequencies (Wi-Fi 5 GHz)

Channel used for Wi-Fi testing

UNII-1

Channel Bandwidth 20MHz

Channel low : 5180MHz

Channel Mid: 5200MHz

Channel High : 5240MHz

Channel Bandwidth 40MHz

Channel low : 5190MHz

Channel High: 5230 MHz

UNII-3

Channel Bandwidth 20MHz

Channel low : 5745MHz

Channel Mid: 5785 MHz

Channel High : 5825MHz

Channel Bandwidth 40MHz

Channel low : 5755MHz

Channel High : 5795MHz

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
2412 – 2462	**1**	**2412**
	2	2417
	3	**2422**
	4	2427
	5	2432
	6	2437
	7	**2442**
	8	2447
	9	**2452**
	10	2457
	11	**2462**

Table 6: List of Wi-Fi Frequiences (Wi-Fi 2.4 GHz)

Channel used for Wi-Fi testing

Channel Bandwidth 20MHz

Channel low : 2412MHz

Channel mid : 2437MHz

Channel high : 2462MHz

Channel Bandwidth 40MHz

Channel low : 2422MHz

Channel Mid: 2437 MHz

Channel high : 2452MHz

Frequency Band (GHz)	Channel No.	Frequency (MHz)
BLE (2.4-2.4835)	**0**	**2402**
	1	2404
	2	2406
	3	2408
	:	:
	:	:
	18	2438
	19	**2440**
	20	2437
	:	:
	:	:
	36	2474
	37	2476
	38	2478
	39	**2480**

Table 7: List of BLE Frequiences of the EUT

Channel used for BLE testing

Channel low : 2402MHz

Channel mid : 2440MHz

Channel High : 2480MHz

Note:

TUV Sample Identification number : A002935536-002-Radiated & SAR test Sample
A002935536-001– Conducted test Sample

4.6 Report referances

Note: Product Vscan Air CL has multiple protocols. All the supported wireless protocols and their respective test results are issued in saparate test reports, following table lists the report numbers.

Radio Protocol	Report Number
RF test report for Wi-Fi (2.4GHz) & BLE (2.4GHz)	ULR-TC568820300000049F
RF test report for Wi-Fi (5GHz)	ULR-TC568820300000050F
SAR test report for Wi-Fi (2.4 & 5GHz) – (This report)	ULR-TC568820300000054F
RF test report for Wireless power transmission systems, Wireless charger (111 kHz to 205 kHz)	ULR-TC568820300000053F

5 TEST METHODOLOGY

The Specific Absorption Rate (SAR) measurement specifications, methods, and procedures for this device are in accordance with the following standards:

- IEEE 1528-2013 — IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
- FCC KDB 447498 D01 — General RF Exposure Guidance v06
- FCC KDB 248227 D01 — 802.11 Wi-Fi SAR v02r02
- FCC KDB 865664 D01 — SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 — RF Exposure Reporting v01r02

6 Statement of Compliance

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Subpart 2.1093 and ANSI/IEEE C95.1-1999. Testing is performed with measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

7 RF Exposure Limits

7.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. because of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location, where the exposure levels may be higher than the general population/uncontrolled limits. However, the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Guideline /Standard	Limits for Occupational/ Controlled Exposure		Limits for General Population/ Uncontrolled Exposure	
	Head, trunk, arms, legs (W/kg)	Hands, wrists, feet and ankles (W/kg)	Head, trunk, arms, legs (W/kg)	Hands, wrists, feet and ankles (W/kg)
ANSI/IEEE C95.1-1999	8 (1g)	20 (10g)	1.6 (1g)	4 (10g)

7.2.1 Applicable Limits for EUT planes

Position	Extremity	Limit 1 g (W/kg)	Limit 10g (W/kg)
Edge Top & Edge Bottom	Trunk	1.6	-
Front , Back , Edge Right , Edge Left	Limb	-	4

8 SAR Measurement System

8.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modelling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dv}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be related to the electrical field in the tissue by

$$SAR = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue,

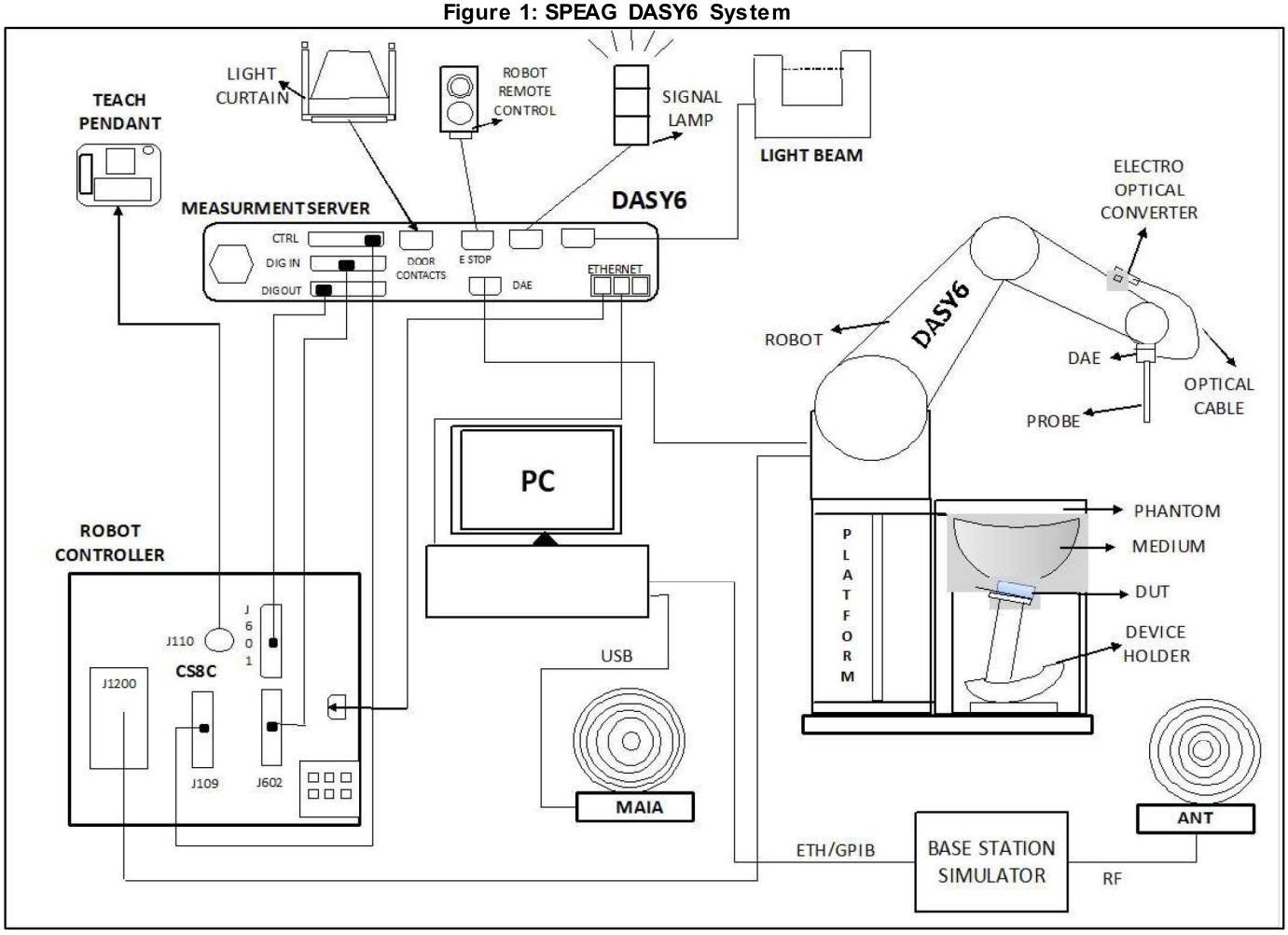
ρ is the mass density of the tissue

E is the RMS electrical field strength.

8.2 SPEAG DASY System

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY6 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

Figure 1: SPEAG DASY6 System



Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY6: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

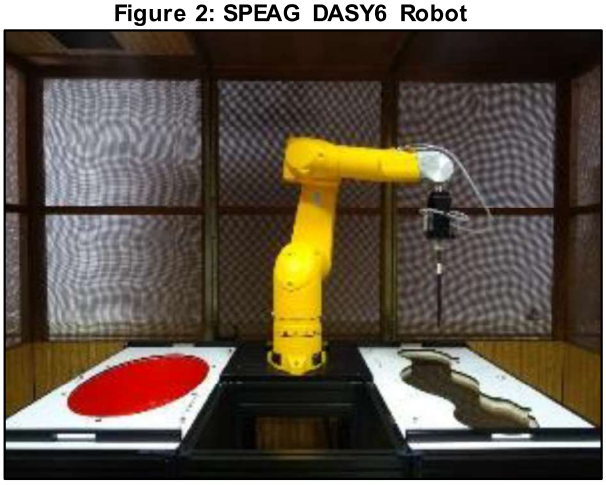
· High precision (repeatability ±0.02 mm)

· High reliability (industrial design)

· Jerk-free straight movements(brushless synchron motors, no stepper motors)

· Low ELF interference (motor control fields are shielded by the closed metallic construction)

Figure 2: SPEAG DASY6 Robot



Probes

The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

Figure 3: EX3DV4 Probe

Model	EX3DV4
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).
Frequency	4 MHz – 10 GHz Linearity: ±0.2 dB (30 MHz – 10 GHz)
Directivity	±0.1 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

Data Acquisition Electronics (DAE)

Figure 4: DAE4

Model	DAE4
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)
Input Offset Voltage	< 5µV (with auto zero)
Input Bias Current	< 50 fA
Dimensions	60 x 60 x 68 mm

Phantoms

Figure 5: Twin SAM Phantom

Model	Twin SAM
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.
Material	Vinylester, glass fiber reinforced (VE-GF)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx. 25 liters

Figure 6: ELI Phantom

Model	ELI
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.
Material	Vinylester, glass fiber reinforced (VE-GF)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters

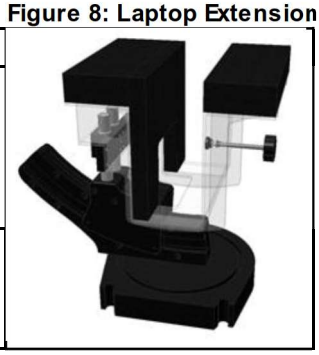
Device Holder

Model	Mounting Device
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).
Material	POM

Figure 7: Mounting Device

Model	Laptop Extensions Kit
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.
Material	POM, Acrylic glass, Foam

Figure 8: Laptop Extension



System Validation Dipoles

Model	D-Serial
Construction	Symmetrical dipole with λ/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.
Frequency	750 MHz to 5800 MHz
Return Loss	> 20 dB
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)

Figure 9: D-Serial Dipole