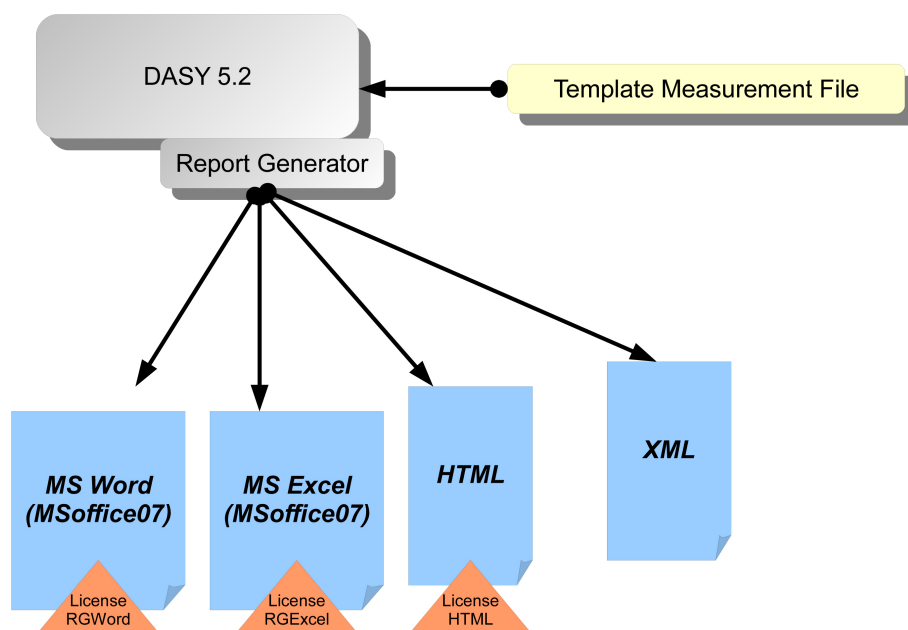


Chapter 29

DASY5 Report Generator

29.1 DASY5.2 Report Generator

The great advantage of the new DASY5.2 structure is that all measurements required to demonstrate compliance with SAR or HAC regulations are collected in a single container, i.e., there is one .da52 measurement file per phone. In addition, all information essential for the report but not generated by measurement can be entered or imported (e.g., Excel file), and photos to be included can be collected in a dedicated folder. By all information being available in one place, SPEAG has implemented a feature that simplifies the task of archiving and saves considerable time, namely, the automatic generation of the company-specific reports. Based on your report template SPEAG will develop the 'RGtemplate' according to which the report will be automatically generated as an editable MS Word file. As an example, the standard report of the IT'IS Foundation is included below.



In addition, we also provide an exporter that generates a database entry for each of the measurements following a customer-specified format.

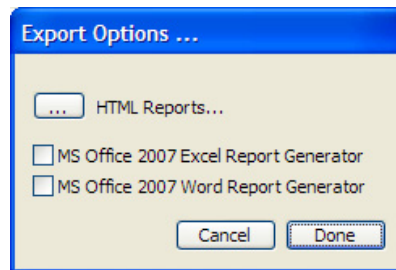
If you are interested in receiving an offer for these features that simplify the task of archiving and save considerable time, please contact info@speag.com.


29.2 Generation of the Report

Go to 'File — DASY5.2 Report Generator', and the dialog shown in Figure 29.2 will appear. Three different report generator formats are offered:

- *Produce Excel*: Produces an excel file containing all information associated with one measurements. This file can serve as a data base for any measurements conducted for future reference. On special request, customer-specified formats can be provided.
- *Word Report Generator*: Produces a MS Word document out of a template previously provided by the customer.
- *HTML*: HTML summary of the measures contained in the *.da52 RGtemplate file.

The prerequisite conditions are that the RGTemplate has been properly configured, the measurement completed, corresponding files imported and attributes properly filled out. All of it can be completed with a few clicks. The manual 'How to Generate a Customer-Specific Report' will be provided together with the RGTemplate.





Foundation for Research on Information Technologies in Society

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Dosimetric Test Report

| | |
|---------------------------|--------------------------------|
| Device | Mobile Phone |
| Manufacturer | XM |
| Model: | Brick Type |
| Serial/IMEI Number | IMEI: 00460101-869342-5 |
| Report No: | IT'IS-0012 |

In accordance with the requirements of

IEC 62209-1
IEEE 1528
FCC OET Bulletin 65 Supplement C

| | | |
|----------------|---------------------|-----------|
| Place, Date: | Zürich, Switzerland | 15-7-2009 |
| Prepare by: | Sven Kühn | |
| Authorized by: | Niels Kuster | |

The names of the IT'IS Foundation and any of the researchers involved may be mentioned only in connection with statements or results from this report. The mention of names to third parties other than certification bodies may be done only after written approval from Prof. N. Kuster.

Figure 29.1: Example report based on the RGTemplate of the IT'IS Foundation

Dosimetric Test Report of Generic Phone

Executive Summary

The purpose of this study is to evaluate the exposure of

Device: Mobile Phone
Manufacturer: XM
Model: Commercially bought phone
Serial/IMEI Number: IMEI: 00460101-869342-5

with applicable limits defined in terms of the peak 1g and peak 10g spatial average SAR.

In accordance with the following standards and guidelines:

- IEC 62209-1 [1]
- IEEE 1528-2003 [2]
- FCC OET Bulletin 65 Supplement C [3]

The results can be summarized such that:

- The maximum spatial peak SAR values for the samples of the EUT averaged over 10 g assessed in all the positions were **0.754 mW/g ±19.8%** for the GSM-FDD (TDMA, GMSK), channel 251 which is in compliance with the requirements defined in IEC 62209-1.
- The maximum spatial peak SAR values for the samples of the EUT averaged over 1 g assessed in all the positions were **1.090 mW/g ±19.9%** for the GSM-FDD (TDMA, GMSK), channel 251 which is in compliance with the requirements defined in IEEE 1528 and FCC OET Supplement C.

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Figure 29.2: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

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Figure 29.3: Example report based on the RGTTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

1 Purpose of Study

The purpose of this study is to evaluate the compliance of the equipment under test (EUT) as defined in Section 3 with applicable limits defined in terms of the peak 1g and peak 10g spatial average SAR.

2 Applicable Standards

- IEC 62209-1, Specific Absorption Rate (SAR) in the Frequency Range of 300 to 3 GHz – Measurement Procedure, Part 1: Hand-held mobile wireless communication devices, February 2005 [1]
- IEEE 1528-2003, Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body from Wireless Communications Devices: Experimental Techniques, December 2003 [2]
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65 [3]

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Figure 29.4: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

3 Equipment under Test (EUT)

| | |
|---------------------|---------------------------------|
| Device | Mobile Phone |
| Manufacturer | XM |
| Model: | Brick Type |
| Serial Number | IMEI: 00460101-869342-5 |
| Sample Version | Commercially bought phone |
| Frequency Range : | 824.2 ~ 848.8 MHz (GSM 850) |
| | 1710.2 ~ 17.84.8 MHz (GSM 1800) |
| Power | 33 dBm (GSM 850) |
| | 30 dBm (GSM 1800) |
| Traffic Channel | 128, 189, 251 (GSM 850) |
| | 512, 698, 885 (GSM 1800) |
| Antenna Type: | Internal |
| Antenna Dimensions: | 0 mm |
| Antenna Location: | Internal |
| Data Mode | [Not Supported] |

Figure 29.5: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

4 Test Laboratory

| | |
|-----------------|-------------------------------|
| Location | IT'IS Foundation Laboratory |
| Certification | Dosimetric Evaluation Class C |
| Certification # | SCS xxx |
| Test Engineer | Sven Kühn |
| QA Manager | Niels Kuster |

5 Measurement System

The measurements were performed with the latest equipment for near-field evaluations. The test procedure applied corresponds to the ones defined in QA document of the Accreditation. A photograph of the setup is provided in Figure 1. The detailed equipment description is given in Table 2 and Table 3.



Figure 1: DASY5 dosimetric assessment system (SPEAG, Zurich)

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Figure 29.6: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

| Manufacturer | Type | Serial Number | Calibration Due Date |
|--------------|------------------------|--------------------------|----------------------|
| Stäubli | TX90 XL | F99/5A80A1/A/02 | Not Required |
| SPEAG | System Software | DASY5, V5.2 Build 133 | Not Required |
| | | SEMCAD-X, V14.0 Build 41 | |
| SPEAG | Twin-SAM Phantom | TP-1085 | Not Required |
| SPEAG | Probe - EX3DV3 | 3515 | mar-10 |
| SPEAG | DAE4 | 355 | apr-10 |
| SPEAG | Dipole - D835V2 | 465 | mar-10 |
| SPEAG | Dipole - D1800V2 | 2d092 | mar-10 |
| | | | |
| | | | |
| Manufacturer | Type | Serial Number | Calibration Due Date |
| R&S | Power Meter | NRP | oct-09 |
| R&S | Power Sensor | NRP-Z91 | oct-09 |
| Agilent | Signal Generator | E8251A | oct-09 |
| R&S | Base Station Simulator | CMU 200 | Not Required |
| AR | Amplifier | 10S1G4A | Not Required |
| Agilent | Directional Coupler | 778D | Not Required |

Table 2: List of System Equipment

Figure 29.7: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

6 Test Conditions and System Verification

6.1 Ambient Environment

The ambient environment is regulated using the HIROSS air-conditioning system. The noise level is periodically verified by conducting measurements without the EUT. The parameters displayed in Table 4 were recorded.

| | |
|---------------------------|-------------|
| Temperature (environment) | 22° ±1° C |
| Humidity: | 20 – 50% |
| Noise: | < 12 µW / g |

Table 4: Ambient environment

6.2 Tissue Simulating Liquid

The dielectric parameters of the head simulating liquid were controlled prior to assessment using the HP85070A dielectric probe kit. The dielectric parameters were measured for the frequency range 300 MHz - 6 GHz with 50 MHz steps between the measurement points. Then polynomials of the fifth order were calculated through the results for each dielectric parameter. These polynomials were used to calculate the dielectric parameters for the test frequencies. Table 5 shows that the dielectric parameters and the temperature of the liquid were within the required 10% tolerances.

| Liquid | Freq[MHz] | Target Rel. Permittivity | Measured Rel. Permittivity | Diff[%] | Target Conductivity[S/m] | Measured Conductivity[S/m] | Diff[%] | Liquid Temp(C) |
|--------|-----------|--------------------------|----------------------------|---------|--------------------------|----------------------------|---------|----------------|
| Head | 1710.20 | 40.14 | 39.62 | 1.29 | 1.346 | 1.353 | 0.56 | 22.1 |
| Head | 1747.40 | 40.08 | 39.60 | 1.20 | 1.368 | 1.368 | 0.02 | 22.1 |
| Head | 1784.80 | 40.02 | 39.59 | 1.07 | 1.390 | 1.391 | 0.04 | 22.1 |
| Head | 1800 | 40.00 | 39.59 | 1.02 | 1.400 | 1.400 | 0.06 | 22.1 |
| Head | 824.20 | 41.55 | 42.27 | 1.72 | 0.900 | 0.935 | 3.93 | 22.1 |
| Head | 835 | 41.50 | 42.24 | 1.79 | 0.900 | 0.935 | 3.97 | 22.1 |
| Head | 836.60 | 41.50 | 42.24 | 1.78 | 0.902 | 0.935 | 3.73 | 22.1 |
| Head | 848.60 | 41.50 | 42.21 | 1.71 | 0.918 | 0.936 | 1.97 | 22.1 |

Table 5: Tissue Simulating Parameters

Figure 29.8: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

6.3 System Performance Check

Prior to the assessment, the system validation kit (calibrated standard dipole) was used to test whether the system was operating within its specifications. The validation was performed corresponding bands and the data were compared to the calibrated data. The results are summarized in Table 6 and 7. The deviation is less than 10% for all cases, indicating that the system performance check was within tolerance.

| System Validation Kit | Tissue | Targeted SAR _{1g} (mW/g) | Measured SAR _{1g} (mW/g) | Deviation (%) | Date | Liquid Temperature(°C) |
|-----------------------|--------|-----------------------------------|-----------------------------------|---------------|-----------|------------------------|
| Dipole 835 MHz 465 | Head | 0.960 | 0.971 | 1.18 | 15/7/2009 | 22.1 |
| Dipole 1800 MHz 2d092 | Head | 3.840 | 3.92 | 2.16 | 15/7/2009 | 22.1 |

Table 6: System Performance Check

Figure 29.9: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

7 Test Results

| Mode | Ch[MHz] | Level | Side | Position | SAR1g[W/Kg] | Unc% | SAR10g[W/Kg] | Unc% | Config | Date |
|-----------------------------|--------------|----------|-------------|--------------|--------------|-------------|--------------|-------------|------------|------------------|
| GSM-FDD (TDMA, GMSK) | 824.2 | 5 | Right | Touch | 1.010 | 19.9 | 0.702 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 836.6 | 5 | Right | Touch | 1.010 | 19.9 | 0.706 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 836.6 | 5 | Right | Tilt | 0.507 | 19.9 | 0.361 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 848.6 | 5 | Right | Touch | 1.030 | 19.9 | 0.716 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 824.2 | 5 | Left | Touch | 1.070 | 19.9 | 0.738 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 836.6 | 5 | Left | Touch | 1.070 | 19.9 | 0.742 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 836.6 | 5 | Left | Tilt | 0.539 | 19.9 | 0.381 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 848.6 | 5 | Left | Touch | 1.090 | 19.9 | 0.754 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 1747.4 | 0 | Right | Touch | 0.655 | 19.9 | 0.415 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 1747.4 | 0 | Right | Tilt | 0.645 | 19.9 | 0.389 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 1747.4 | 0 | Left | Touch | 0.764 | 19.9 | 0.453 | 19.8 | OFF | 16/7/2009 |
| GSM-FDD (TDMA, GMSK) | 1747.4 | 0 | Left | Tilt | 0.772 | 19.9 | 0.452 | 19.8 | OFF | 16/7/2009 |

Table 7: SAR Measurements of the Generic Phone device

Figure 29.10: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

8 Uncertainty Budget

The uncertainty has been determined according to the specific evaluation based on the approximation provided in [2] and [3]. The worst-case uncertainty for any measurement between 300 MHz and 6 GHz is provided in Annex C.

9 Compliance Statement

The maximum spatial peak SAR values for the samples of the EUT averaged over 10 g assessed in all the positions were **0.754 mW/g ±19.8%** for the GSM-FDD (TDMA, GMSK), channel 251 which is in compliance with the requirements defined in IEC 62209-1.

The maximum spatial peak SAR values for the samples of the EUT averaged over 1 g assessed in all the positions were **1.090 mW/g ±19.9%** for the GSM-FDD (TDMA, GMSK), channel 251 which is in compliance with the requirements defined in IEEE 1528.

10 References

- [1] IEC 62209-1, Specific Absorption Rate (SAR) in the Frequency Range of 300 to 3 GHz – Measurement Procedure, Part 1: Hand-held mobile wireless communication devices, February 2005
- [2] IEEE 1528-2003, Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body from Wireless Communications Devices: Experimental Techniques, December 2003
- [3] FCC OET Bulletin 65 Supplement C, Federal Communications Commission Office of Engineering & Technology (FCC OET), “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions”, Supplement C (Edition 01-01) to Bulletin 65

Figure 29.11: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

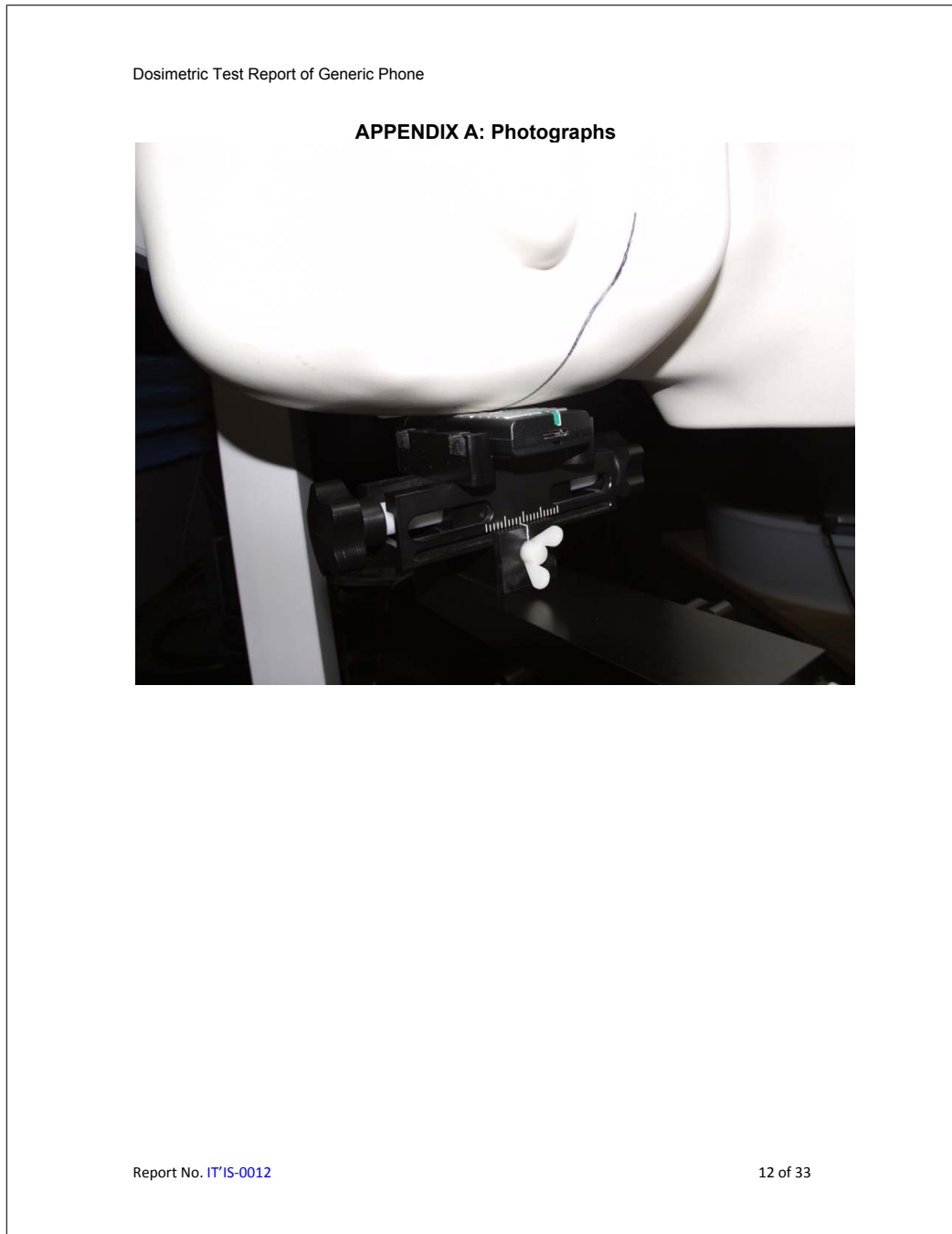


Figure 29.12: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

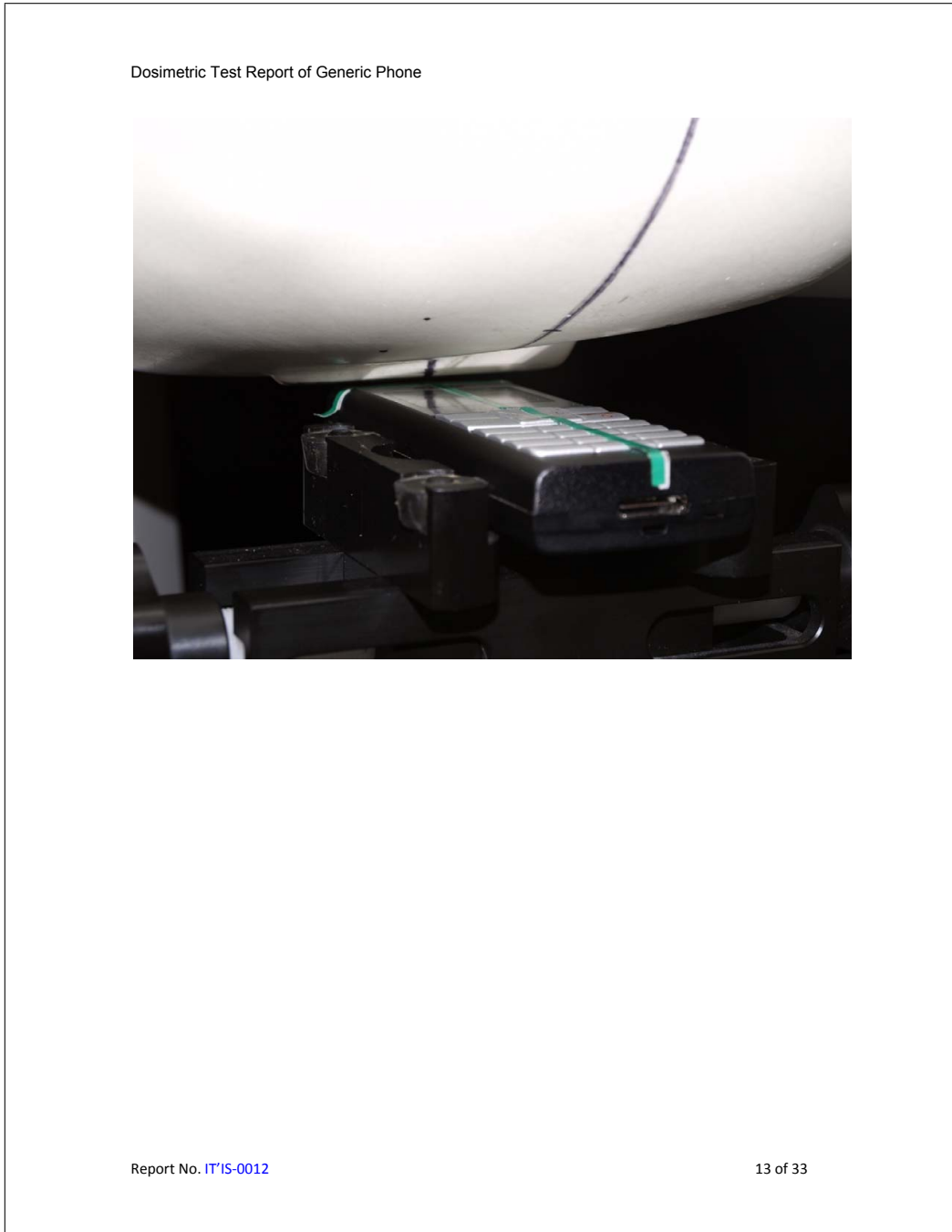


Figure 29.13: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

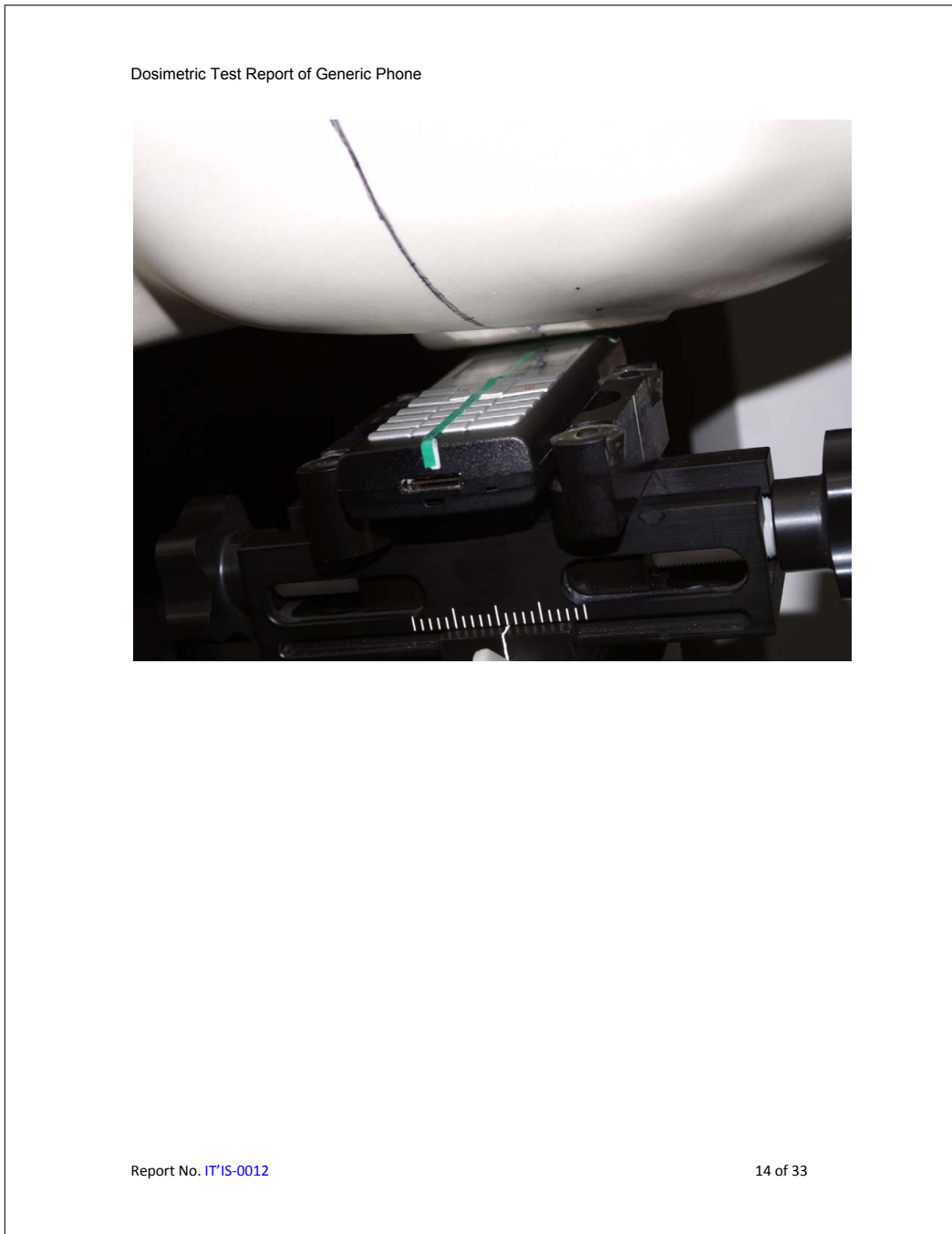


Figure 29.14: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

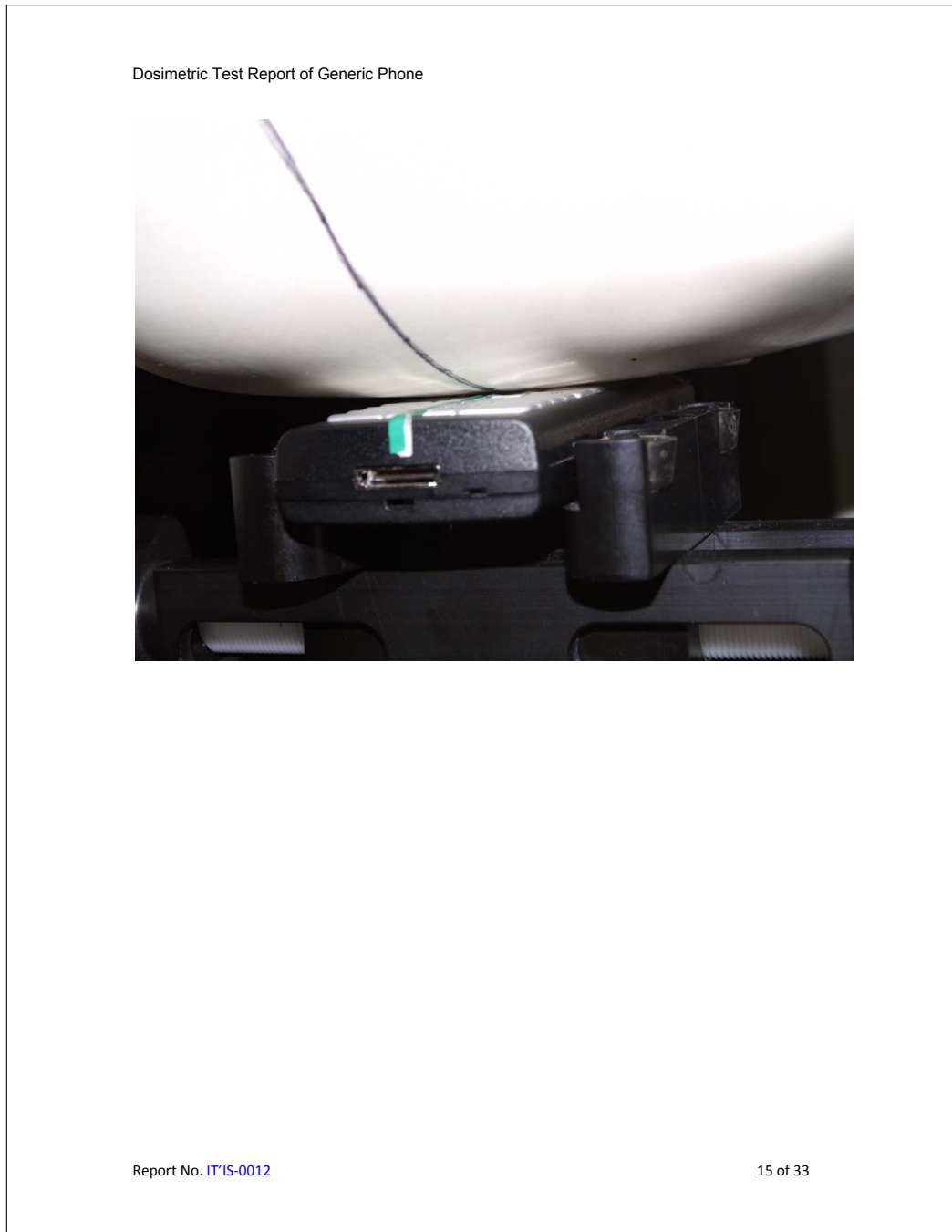


Figure 29.15: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

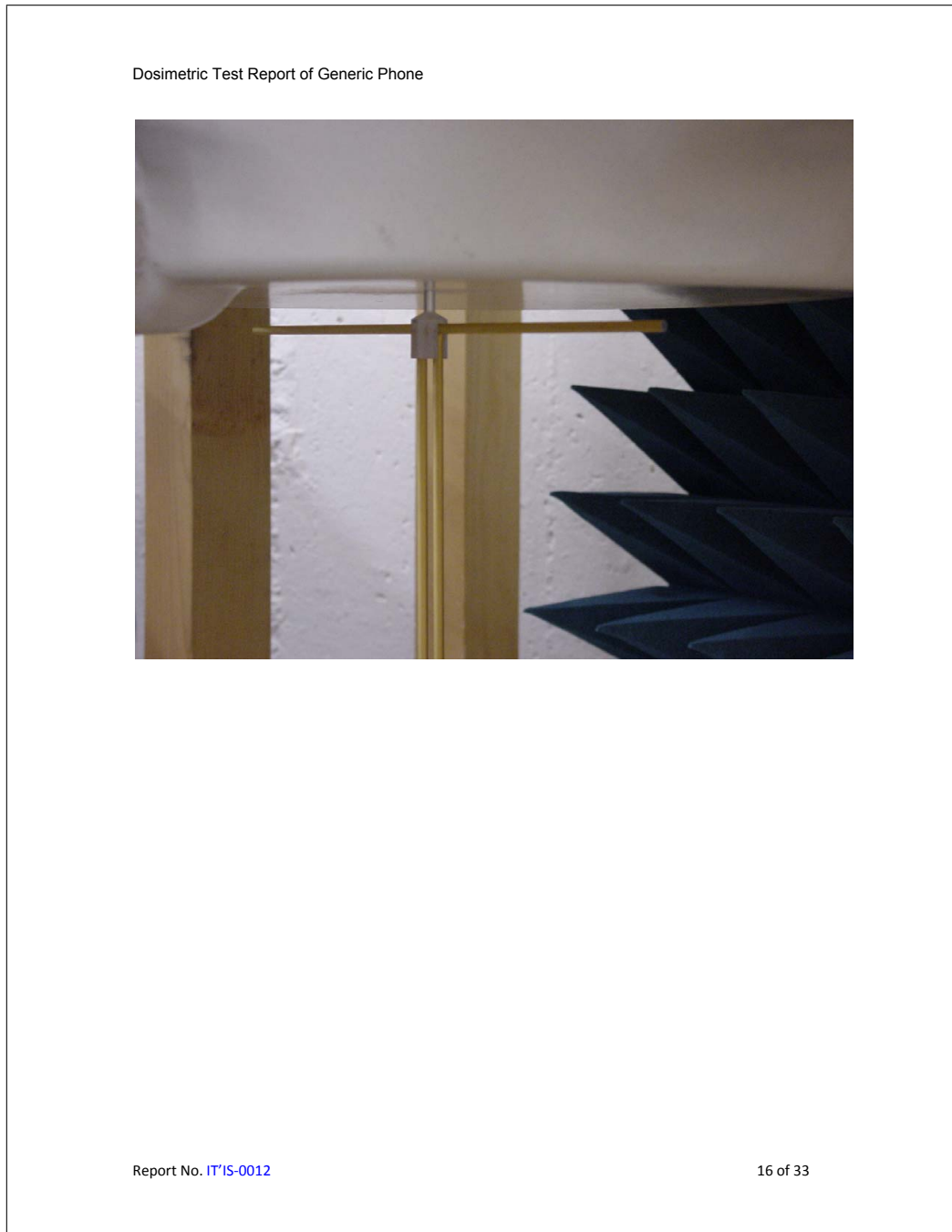


Figure 29.16: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

APPENDIX B: Uncertainty Tables

Worst-Case Uncertainty 0.3 - 3 GHz

| Error Description | Unc. ±% | Prob. dist. | div | c _i ¹ (1g) | c _i ¹ (10g) | Std.Unc. (1g) | Std.Unc. (10g) | v _i ² or v _{eff} |
|---|---------|-------------|-----|----------------------------------|-----------------------------------|---------------|----------------|---|
| Measurement System | | | | | | | | |
| Probe Calibration | 5.50% | N | 1 | 1 | 1 | 5.5% | 5.5% | ∞ |
| Axial Isotropy | 4.70% | R | √3 | 0.9 | 0.9 | 2.4% | 2.4% | ∞ |
| Hemispherical Isotropy | 9.60% | R | √3 | 0.4 | 0.4 | 2.4% | 2.4% | ∞ |
| Boundary Effects | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Linearity | 4.70% | R | √3 | 1 | 1 | 2.7% | 2.7% | ∞ |
| Modulation | 2.40% | R | √3 | 1 | 1 | 1.4% | 1.4% | ∞ |
| System Detection Limit | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Readout Electronics | 0.30% | N | 1 | 1 | 1 | 0.3% | 0.3% | ∞ |
| Response Time | 0.80% | R | √3 | 1 | 1 | 0.5% | 0.5% | ∞ |
| Integration Time | 2.60% | R | √3 | 1 | 1 | 1.5% | 1.5% | ∞ |
| RF Ambient Noise | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| RF Ambient Reflections | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Probe Positioner | 0.40% | R | √3 | 1 | 1 | 0.2% | 0.2% | ∞ |
| Probe Positioning | 2.90% | R | √3 | 1 | 1 | 1.7% | 1.7% | ∞ |
| Max. SAR Eval. | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Test Sample Related | | | | | | | | |
| Device Positioning | 2.90% | N | 1 | 1 | 1 | 2.9% | 2.9% | 145 |
| Device Holder | 3.60% | N | 1 | 1 | 1 | 3.6% | 3.6% | 5 |
| Power Drift | 5.00% | R | √3 | 1 | 1 | 2.9% | 2.9% | ∞ |
| Phantom and Setup | | | | | | | | |
| Phantom Uncertainty | 4.00% | R | √3 | 1 | 1 | 2.3% | 2.3% | ∞ |
| SAR correction for deviations in conductivity and permittivity (target) | 1.90% | R | √3 | 1 | 0.84 | 1.1% | 0.9% | ∞ |
| Liquid Conductivity (meas.) | 2.50% | N | 1 | 0.78 | 0.71 | 2.0% | 1.8% | ∞ |
| Liquid Permittivity (meas.) | 2.50% | N | 1 | 0.23 | 0.26 | 0.6% | 0.7% | ∞ |
| Liquid conductivity – temperature uncertainty | 1.70% | R | √3 | 0.78 | 0.71 | 0.8% | 0.7% | |
| Liquid permittivity – temperature uncertainty | 0.30% | R | √3 | 0.23 | 0.26 | 0.0% | 0.0% | |
| Combined Std. Uncertainty | | | | | | 10.0% | 9.9% | 283 |
| Expanded Std. Uncertainty | | | | | | 19.9% | 19.8% | |

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Figure 29.17: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

Worst-Case Uncertainty 3 - 6 GHz

| Error Description | Unc. ±% | Prob. dist. | div | c_1^1 (1g) | c_1^1 (10g) | Std.Unc. (1g) | Std.Unc. (10g) | v_1^2 or v_{eff} |
|---|---------|-------------|-----|--------------|---------------|---------------|----------------|----------------------|
| Measurement System | | | | | | | | |
| Probe Calibration | 6.55% | N | 1 | 1 | 1 | 6.6% | 6.6% | ∞ |
| Axial Isotropy | 4.70% | R | √3 | 0.9 | 0.9 | 2.4% | 2.4% | ∞ |
| Hemispherical Isotropy | 9.60% | R | √3 | 0.4 | 0.4 | 2.4% | 2.4% | ∞ |
| Boundary Effects | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Linearity | 4.70% | R | √3 | 1 | 1 | 2.7% | 2.7% | ∞ |
| Modulation | 2.40% | R | √3 | 1 | 1 | 1.4% | 1.4% | ∞ |
| System Detection Limit | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Readout Electronics | 0.30% | N | 1 | 1 | 1 | 0.3% | 0.3% | ∞ |
| Response Time | 0.80% | R | √3 | 1 | 1 | 0.5% | 0.5% | ∞ |
| Integration Time | 2.60% | R | √3 | 1 | 1 | 1.5% | 1.5% | ∞ |
| RF Ambient Noise | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| RF Ambient Reflections | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Probe Positioner | 0.80% | R | √3 | 1 | 1 | 0.5% | 0.5% | ∞ |
| Probe Positioning | 6.70% | R | √3 | 1 | 1 | 3.9% | 3.9% | ∞ |
| Max. SAR Eval. | 4.00% | R | √3 | 1 | 1 | 2.3% | 2.3% | ∞ |
| Test Sample Related | | | | | | | | |
| Device Positioning | 2.90% | N | 1 | 1 | 1 | 2.9% | 2.9% | 145 |
| Device Holder | 3.60% | N | 1 | 1 | 1 | 3.6% | 3.6% | 5 |
| Power Drift | 5.00% | R | √3 | 1 | 1 | 2.9% | 2.9% | ∞ |
| Phantom and Setup | | | | | | | | |
| Phantom Uncertainty | 4.00% | R | √3 | 1 | 1 | 2.3% | 2.3% | ∞ |
| SAR correction for deviations in conductivity and permittivity (target) | 1.90% | R | √3 | 1 | 0.84 | 1.1% | 0.9% | ∞ |
| Liquid Conductivity (meas.) | 2.50% | N | 1 | 0.78 | 0.71 | 2.0% | 1.8% | ∞ |
| Liquid Permittivity (meas.) | 2.50% | N | 1 | 0.23 | 0.26 | 0.6% | 0.7% | ∞ |
| Liquid conductivity – temperature uncertainty | 1.70% | R | √3 | 0.78 | 0.71 | 0.8% | 0.7% | |
| Liquid permittivity – temperature uncertainty | 0.30% | R | √3 | 0.23 | 0.26 | 0.0% | 0.0% | |
| Combined Std. Uncertainty | | | | | | 11.4% | 11.4% | 491 |
| Expanded Std. Uncertainty | | | | | | 22.8% | 22.7% | |

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Figure 29.18: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

**Worst-Case Uncertainty for System Validation 0.3
- 6 GHz**

| Error Description | Unc. ±% | Prob. dist. | div | c _i ¹ (1g) | c _i ¹ (10g) | Std. Unc. (1g) | Std. Unc. (10g) | v _i ² or v _{eff} |
|---|---------|-------------|-----|----------------------------------|-----------------------------------|----------------|-----------------|---|
| Measurement System | | | | | | | | |
| Probe Calibration | 6.55% | N | 1 | 1 | 1 | 6.6% | 6.6% | ∞ |
| Axial Isotropy | 4.70% | R | √3 | 1 | 1 | 2.7% | 2.7% | ∞ |
| Hemispherical Isotropy | 9.60% | R | √3 | 0 | 0 | 0.0% | 0.0% | ∞ |
| Boundary Effects | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Linearity | 4.70% | R | √3 | 1 | 1 | 2.7% | 2.7% | ∞ |
| Modulation | 0.00% | R | √3 | 1 | 1 | 0.0% | 0.0% | ∞ |
| System Detection Limit | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Readout Electronics | 0.30% | N | 1 | 1 | 1 | 0.3% | 0.3% | ∞ |
| Response Time | 0.00% | R | √3 | 1 | 1 | 0.0% | 0.0% | ∞ |
| Integration Time | 0.00% | R | √3 | 1 | 1 | 0.0% | 0.0% | ∞ |
| RF Ambient Noise | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| RF Ambient Reflections | 1.00% | R | √3 | 1 | 1 | 0.6% | 0.6% | ∞ |
| Probe Positioner | 0.80% | R | √3 | 1 | 1 | 0.5% | 0.5% | ∞ |
| Probe Positioning | 6.70% | R | √3 | 1 | 1 | 3.9% | 3.9% | ∞ |
| Max. SAR Eval. | 2.00% | R | √3 | 1 | 1 | 1.2% | 1.2% | ∞ |
| Dipole Related | | | | | | | | |
| Deviation from exp. dipole | 5.50% | R | √3 | 1 | 1 | 3.2% | 3.2% | ∞ |
| Dipole axis to liquid distance | 2.00% | R | √3 | 1 | 1 | 1.2% | 1.2% | ∞ |
| Dipole input power and SAR drift | 3.40% | R | √3 | 1 | 1 | 2.0% | 2.0% | ∞ |
| Phantom and Setup | | | | | | | | |
| Phantom Uncertainty | 4.00% | R | √3 | 1 | 1 | 2.3% | 2.3% | ∞ |
| SAR correction for deviations in conductivity and permittivity (target) | 1.90% | R | √3 | 1 | 0.84 | 1.1% | 0.9% | ∞ |
| Liquid Conductivity (meas.) | 2.50% | N | 1 | 0.78 | 0.71 | 2.0% | 1.8% | ∞ |
| Liquid Permittivity (meas.) | 2.50% | N | 1 | 0.23 | 0.26 | 0.6% | 0.7% | ∞ |
| Liquid conductivity – temperature uncertainty | 1.70% | R | √3 | 0.78 | 0.71 | 0.8% | 0.7% | |
| Liquid permittivity – temperature uncertainty | 0.30% | R | √3 | 0.23 | 0.26 | 0.0% | 0.0% | |
| Combined Std. Uncertainty | | | | | | 10.1% | 10.1% | |
| Expanded Std. Uncertainty | | | | | | 20.2% | 20.1% | |

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Figure 29.19: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

APPENDIX C: Measurements

DUT: Dipole 835 MHz; Type: D835V2; Serial: 465
Procedure Name: System Performance Check Pin = 20dBm

Measured Ambient Temperature (Celsius)=22.0; Liquid Temperature (Celsius)=22.1
 Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 835 \text{ MHz}$; $\sigma = 0.936 \text{ mho/m}$; $\epsilon_r = 42.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Flat Section

DASY5 Configuration:

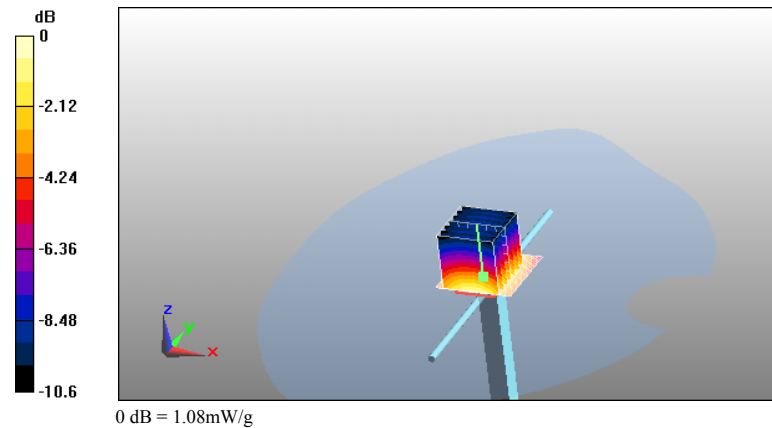
- Probe: EX3DV3 - SN3515; ConvF (6.09, 6.09, 6.09); Calibrated: 3/1/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn355; Calibrated: 4/16/2009
- Phantom: SAM MIC #2000-93 with CRP; ; Serial: TP-1085
- Measurement SW: DASY5, V5.2 Build 133; SEMCAD X Version 14.0 Build 41

System Performance Check Pin = 20dBm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 34.4 V/m; Power Drift = -0.026 dB
 Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.971 mW/g; SAR(10 g) = 0.640 mW/g

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.08 mW/g



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Figure 29.20: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

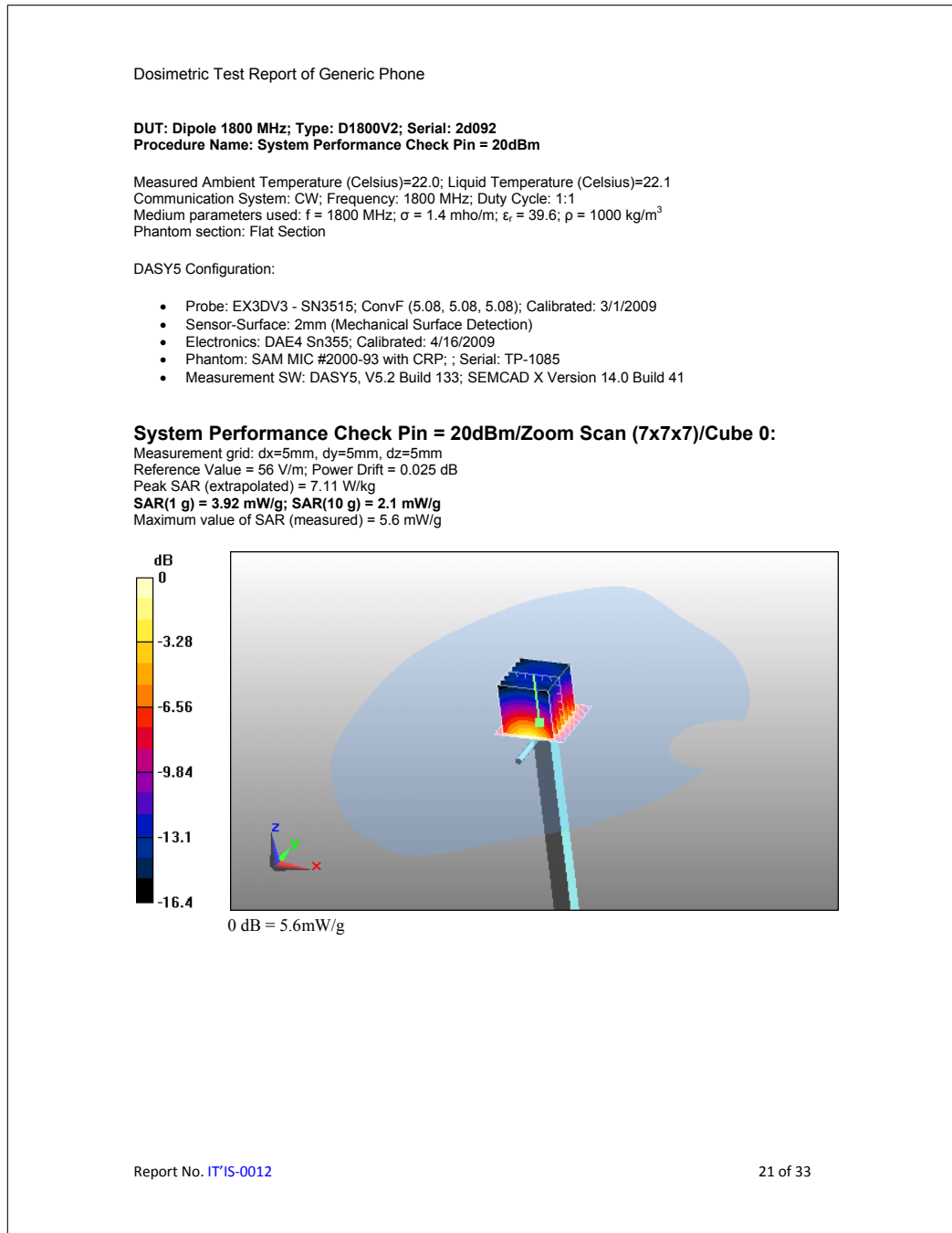


Figure 29.21: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

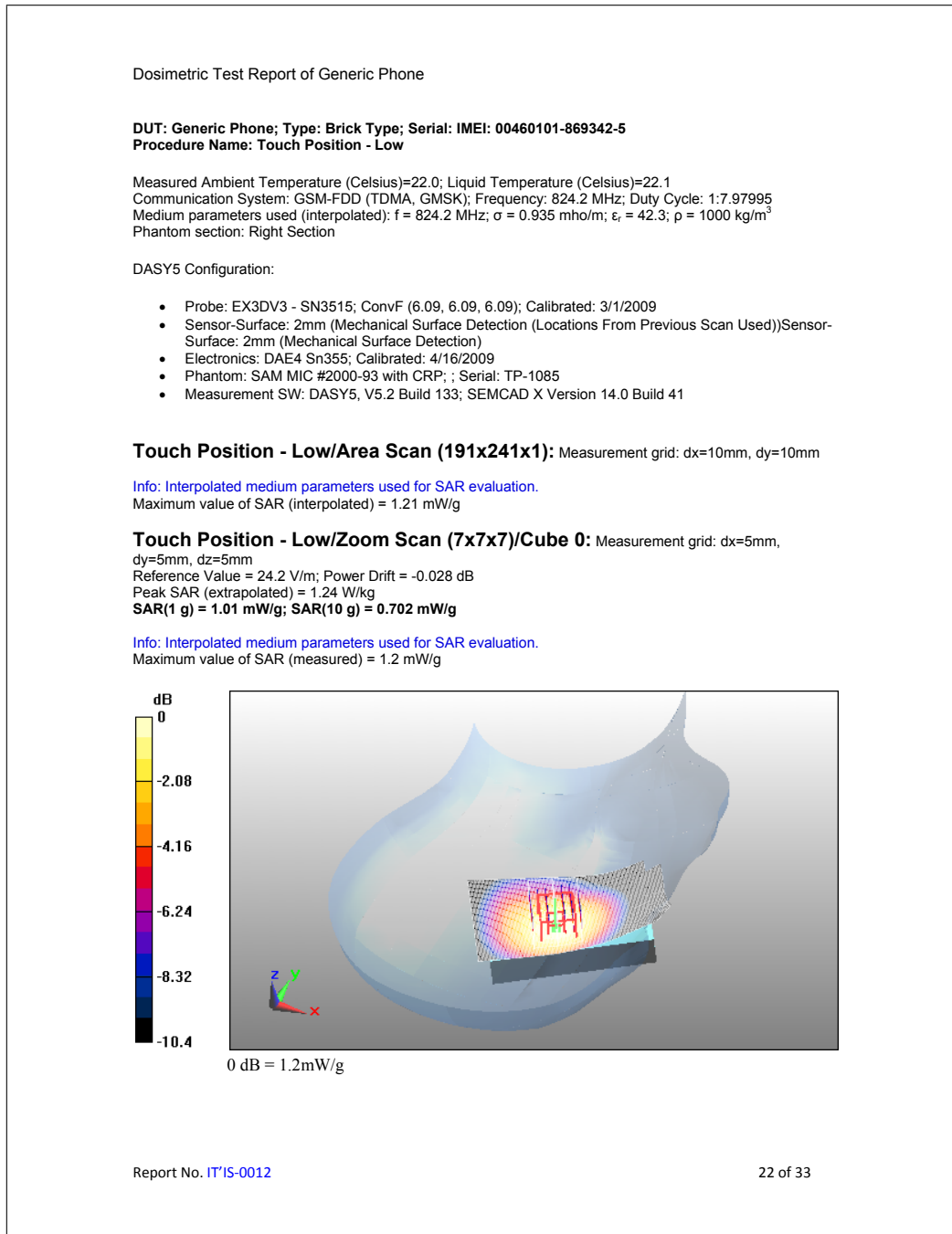


Figure 29.22: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

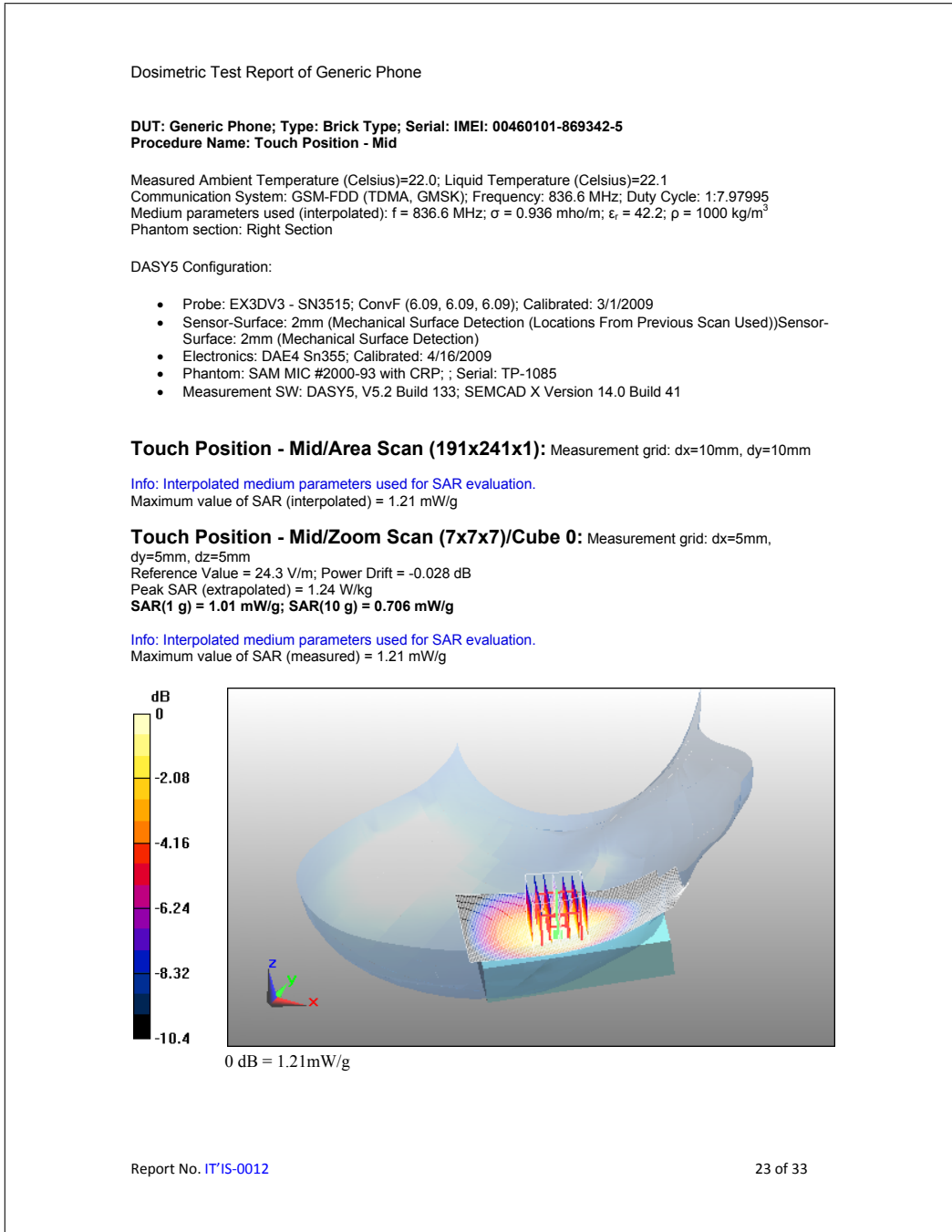


Figure 29.23: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

Dosimetric Test Report of Generic Phone

DUT: Generic Phone; Type: Brick Type; Serial: IMEI: 00460101-869342-5
Procedure Name: Tilt Position - Mid

Measured Ambient Temperature (Celsius)=22.0; Liquid Temperature (Celsius)=22.1
 Communication System: GSM-FDD (TDMA, GMSK); Frequency: 836.6 MHz; Duty Cycle: 1:7.97995
 Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.936$ mho/m; $\epsilon_r = 42.2$; $\rho = 1000$ kg/m³
 Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV3 - SN3515; ConvF (6.09, 6.09, 6.09); Calibrated: 3/1/2009
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn355; Calibrated: 4/16/2009
- Phantom: SAM MIC #2000-93 with CRP; ; Serial: TP-1085
- Measurement SW: DASY5, V5.2 Build 133; SEMCAD X Version 14.0 Build 41

Tilt Position - Mid/Area Scan (191x241x1): Measurement grid: dx=10mm, dy=10mm

Info: [Interpolated medium parameters used for SAR evaluation.](#)
 Maximum value of SAR (interpolated) = 0.592 mW/g

Tilt Position - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 21.4 V/m; Power Drift = -0.075 dB
 Peak SAR (extrapolated) = 0.615 W/kg
SAR(1 g) = 0.507 mW/g; SAR(10 g) = 0.361 mW/g

Info: [Interpolated medium parameters used for SAR evaluation.](#)
 Maximum value of SAR (measured) = 0.593 mW/g

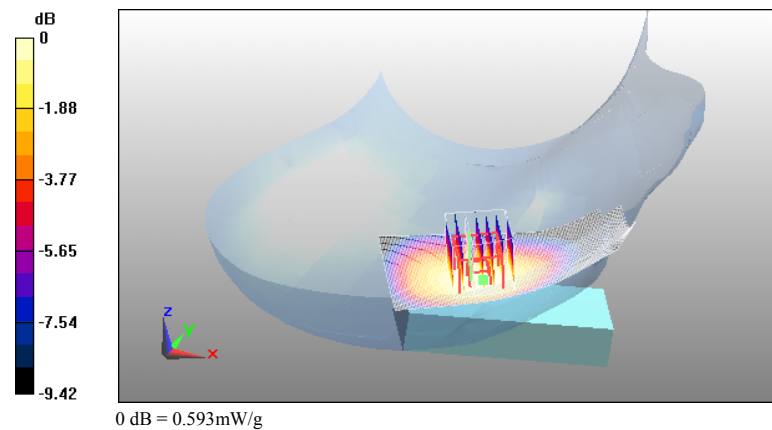


Figure 29.24: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

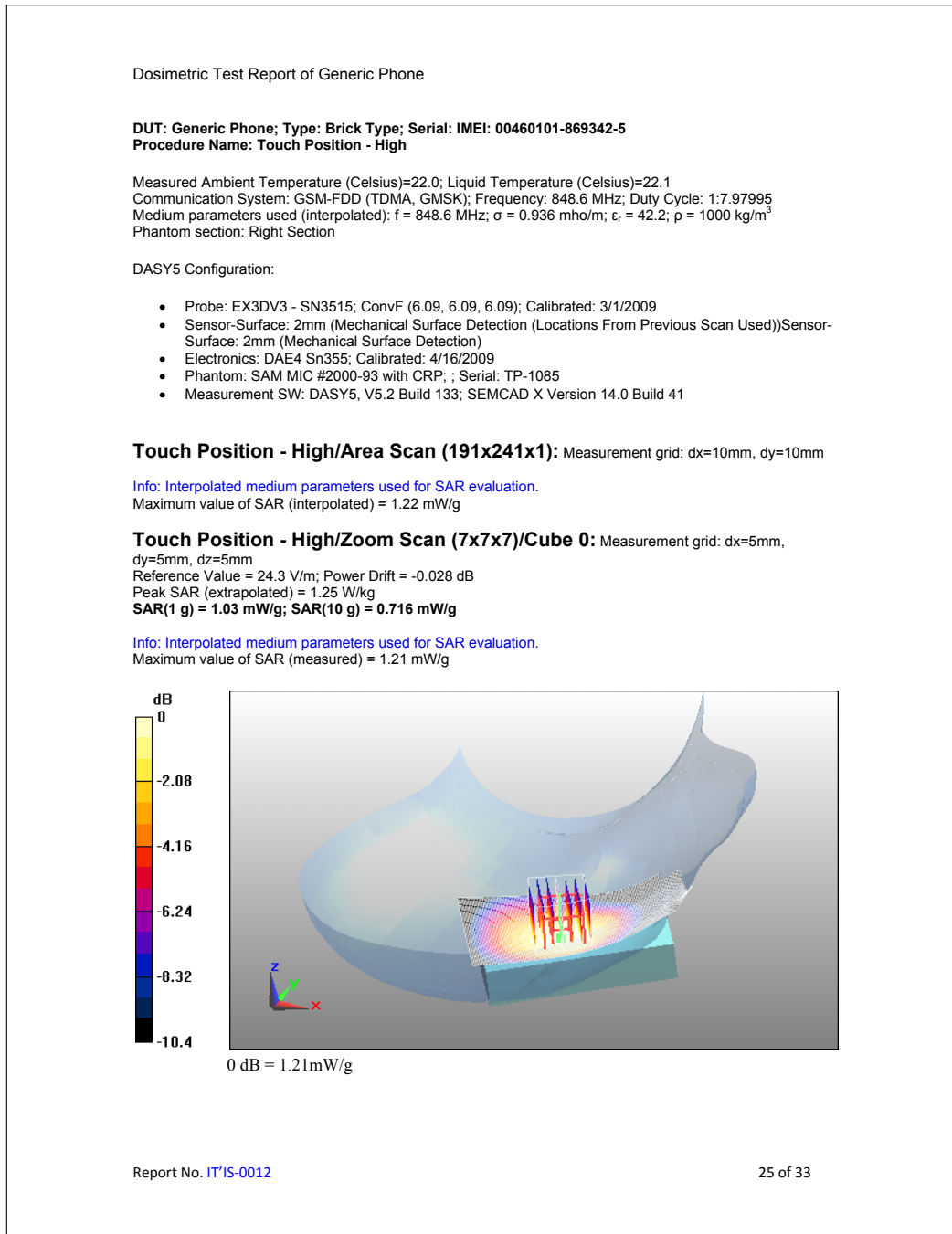


Figure 29.25: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

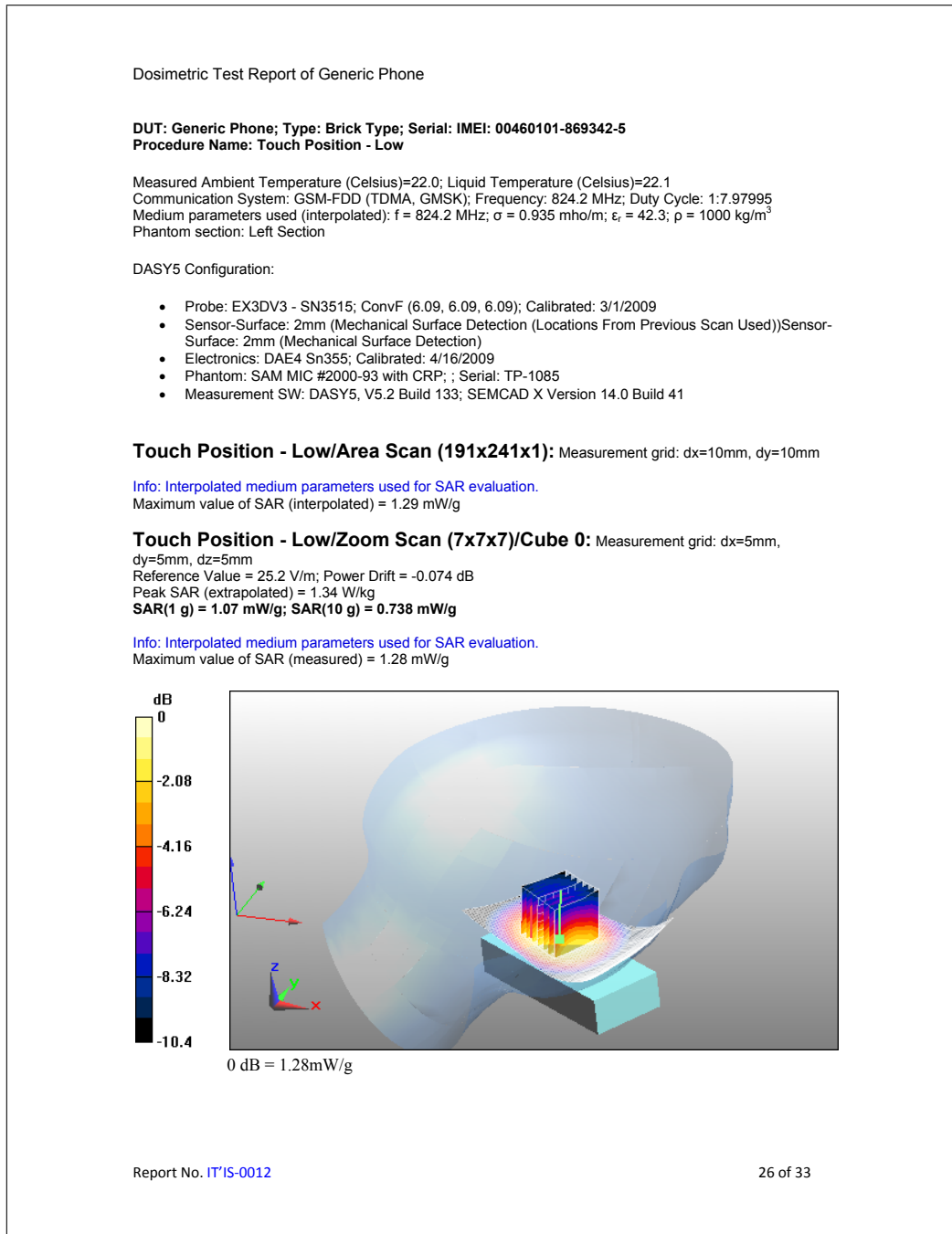


Figure 29.26: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

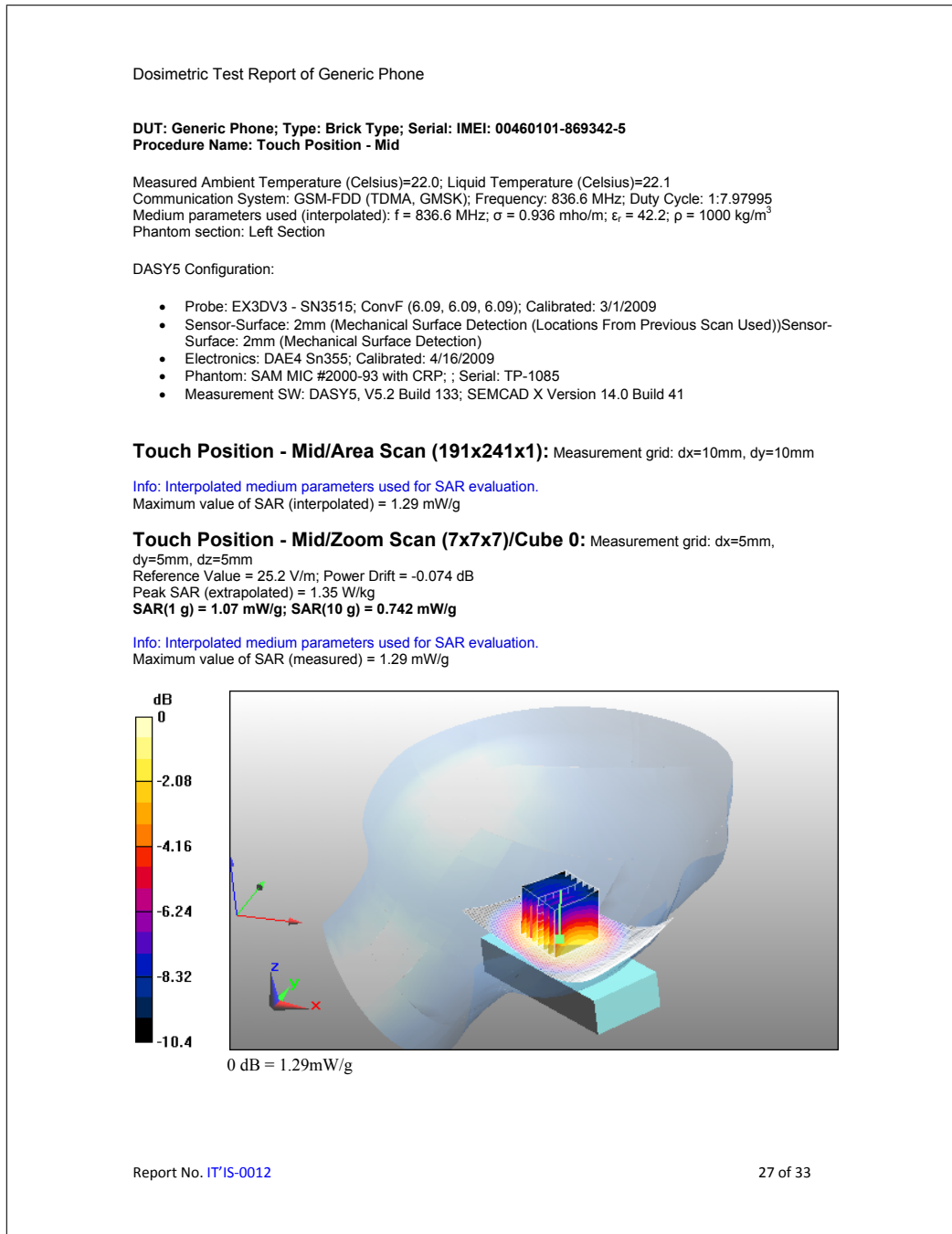


Figure 29.27: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

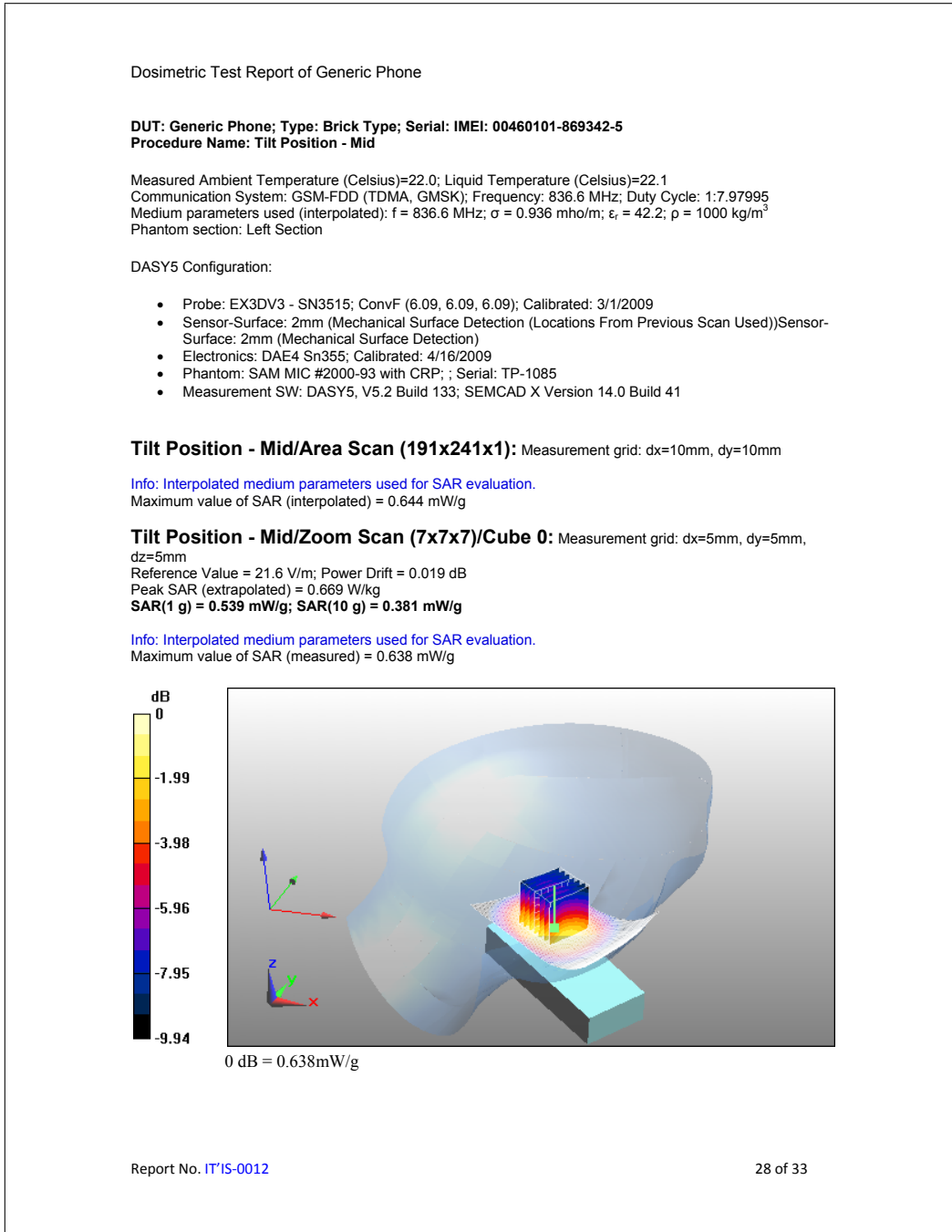


Figure 29.28: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

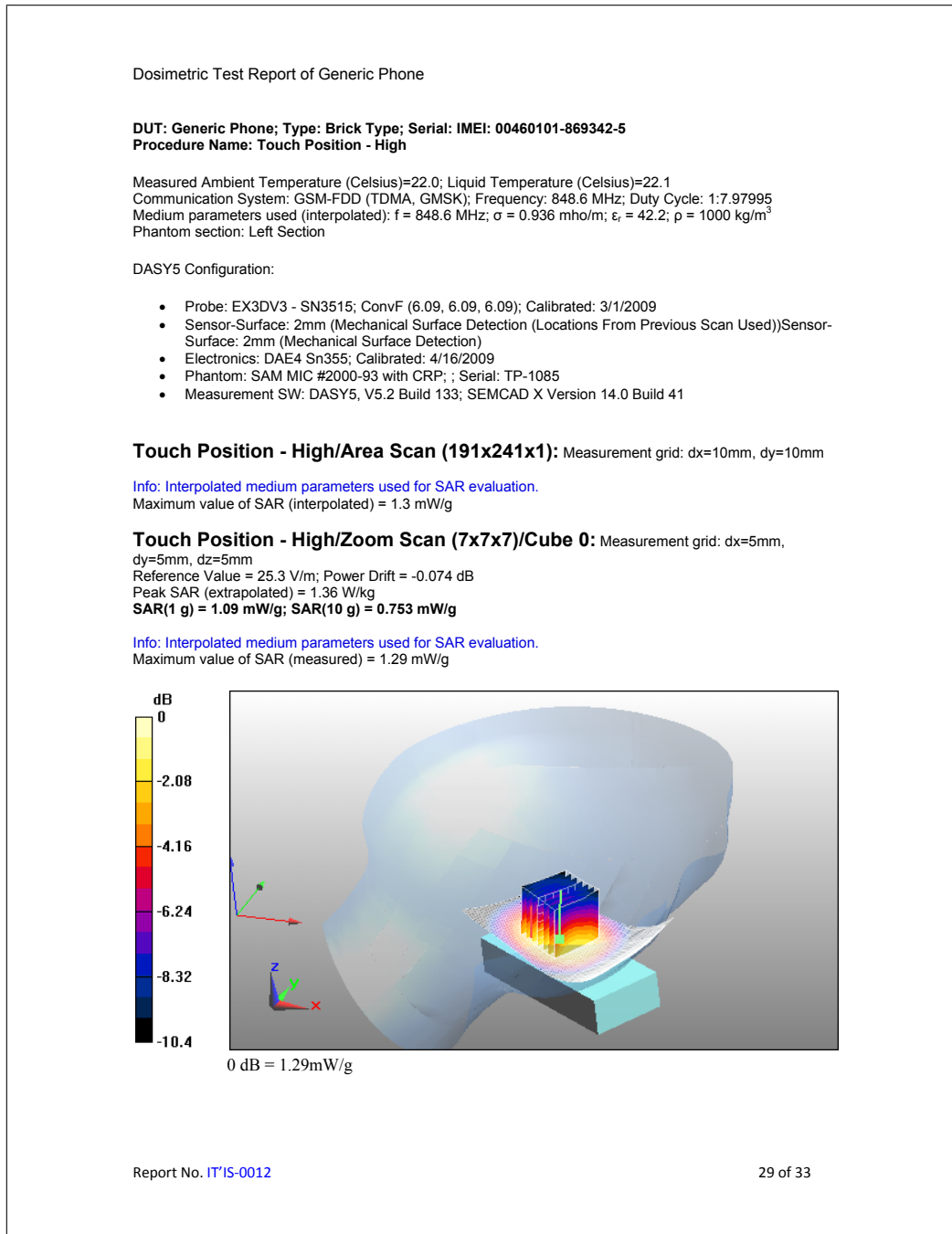


Figure 29.29: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

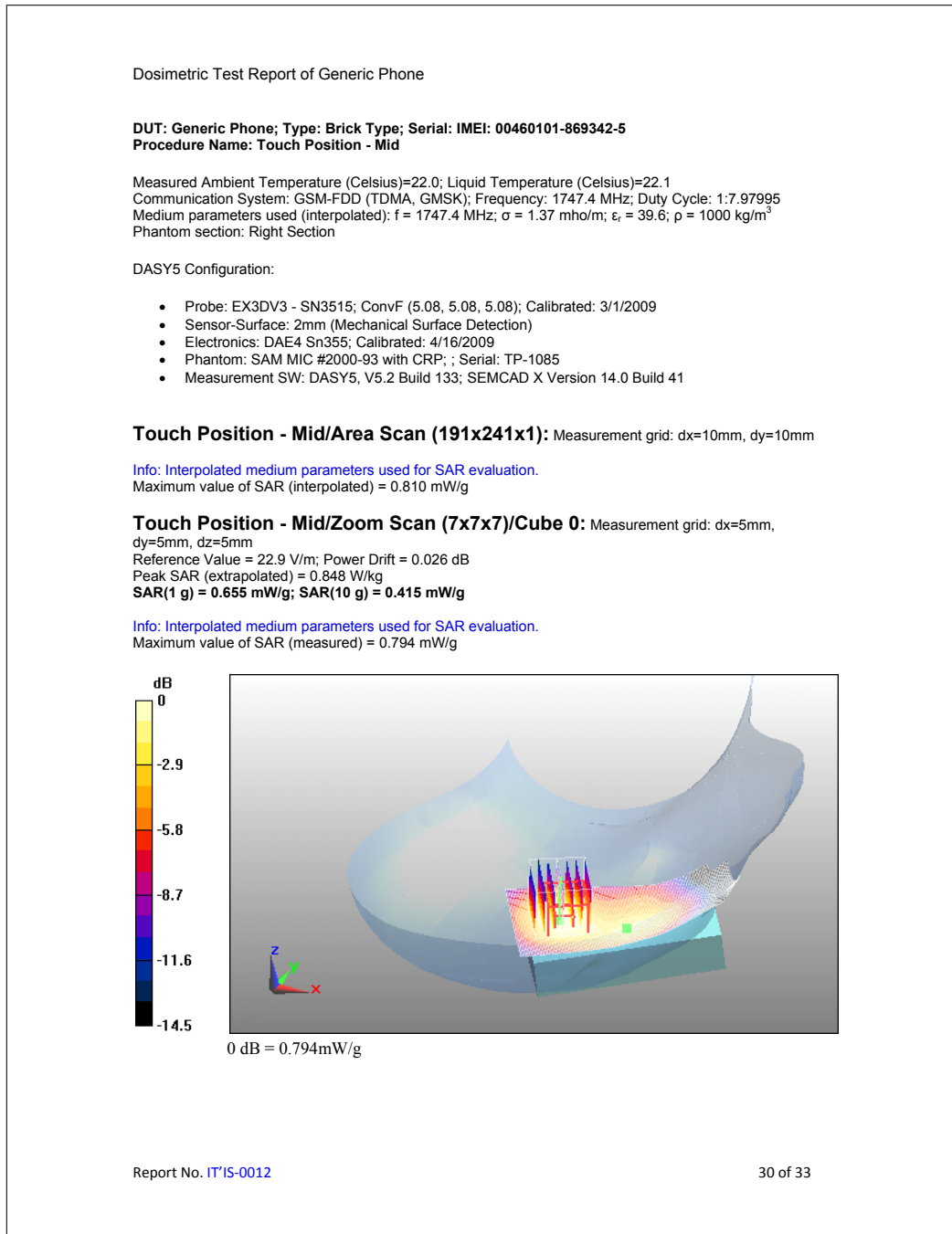


Figure 29.30: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

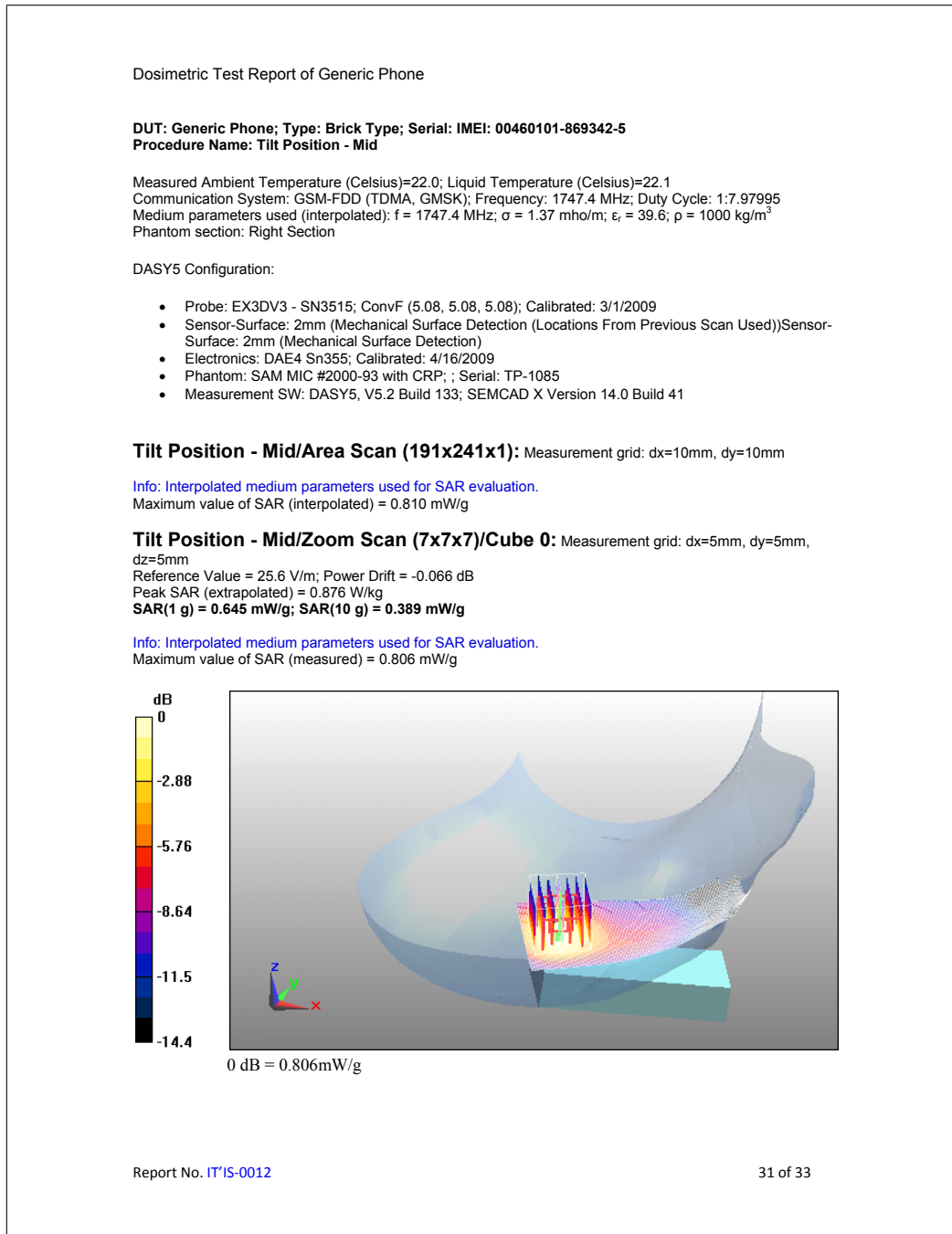


Figure 29.31: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

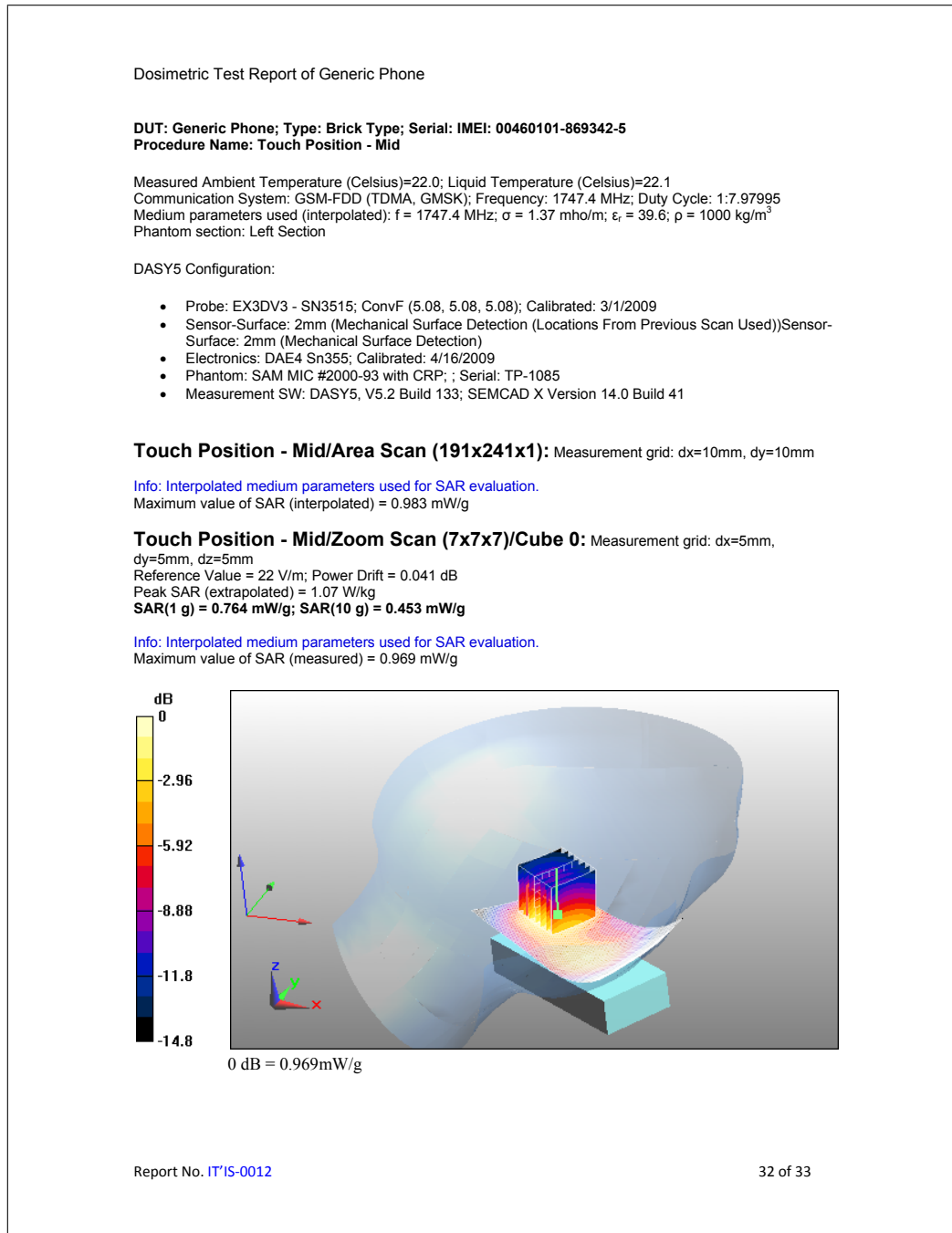


Figure 29.32: Example report based on the RGTemplate of the IT'IS Foundation (cont.)

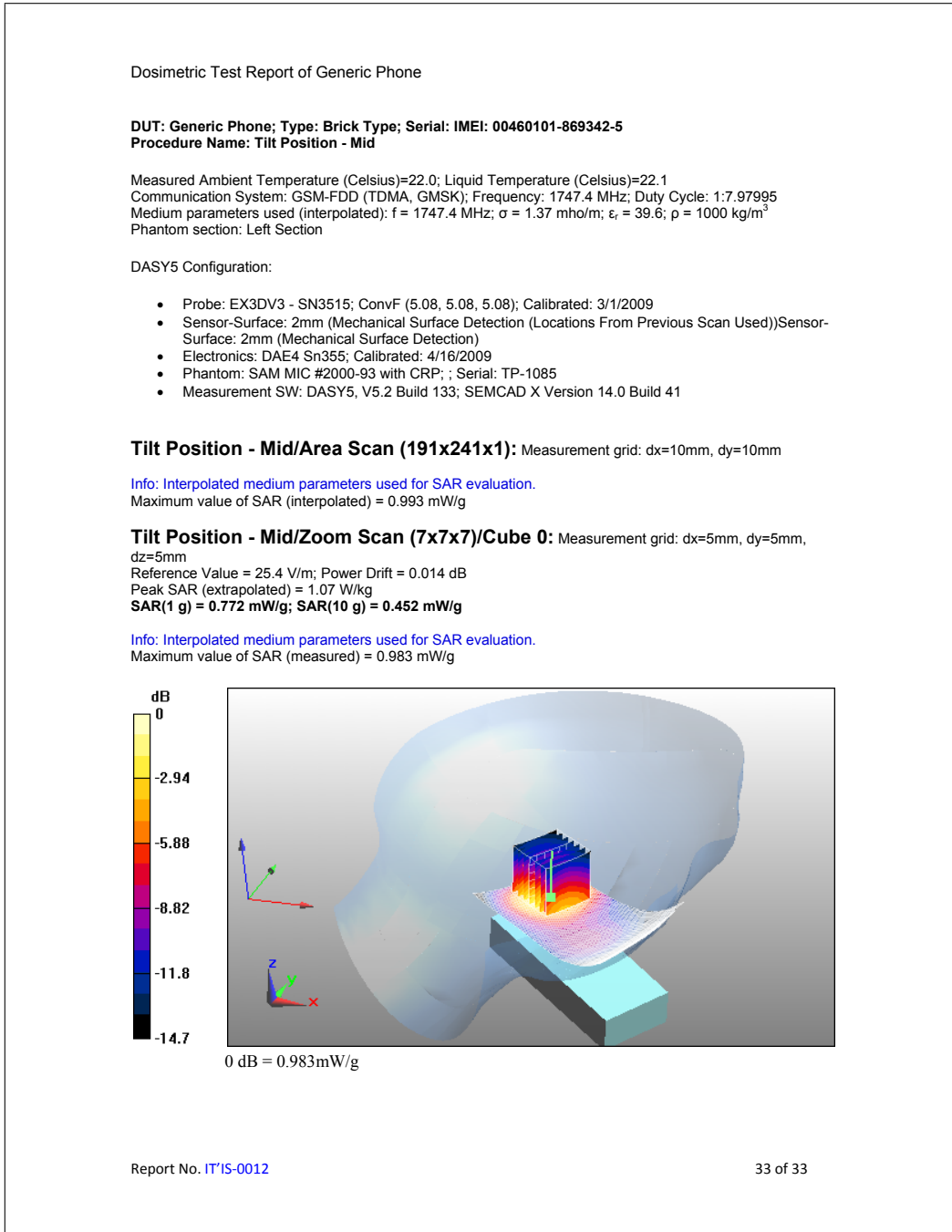


Figure 29.33: Example report based on the RGTemplate of the IT'IS Foundation (cont.)