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**APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)**



Accredited by the Swiss Federal Office of Metrology and Accreditation  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: **ET3-1395\_Jul07**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1395**

Calibration procedure(s) **QA CAL-01.v6 and QA CAL-12.v5  
Calibration procedure for dosimetric E-field probes**

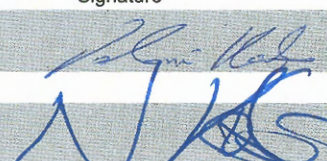
Calibration date: **July 18, 2007**

Condition of the calibrated item **In Tolerance**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

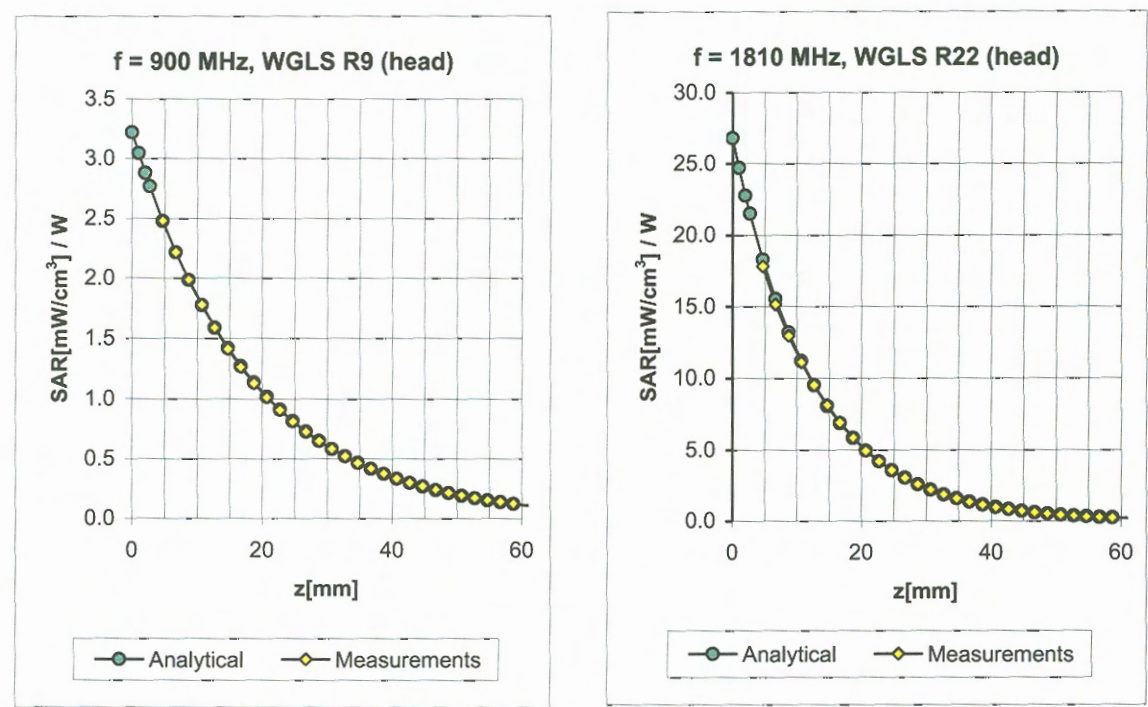
Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID #                  | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration                                                                              |
|----------------------------|-----------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------|
| Power meter E4419B         | GB41293874            | 29-Mar-07 (METAS, No. 217-00670)          | Mar-08                                                                                             |
| Power sensor E4412A        | MY41495277            | 29-Mar-07 (METAS, No. 217-00670)          | Mar-08                                                                                             |
| Power sensor E4412A        | MY41498087            | 29-Mar-07 (METAS, No. 217-00670)          | Mar-08                                                                                             |
| Reference 3 dB Attenuator  | SN: S5054 (3c)        | 10-Aug-06 (METAS, No. 217-00592)          | Aug-07                                                                                             |
| Reference 20 dB Attenuator | SN: S5086 (20b)       | 29-Mar-07 (METAS, No. 217-00671)          | Mar-08                                                                                             |
| Reference 30 dB Attenuator | SN: S5129 (30b)       | 10-Aug-06 (METAS, No. 217-00593)          | Aug-07                                                                                             |
| Reference Probe ES3DV2     | SN: 3013              | 4-Jan-07 (SPEAG, No. ES3-3013_Jan07)      | Jan-08                                                                                             |
| DAE4                       | SN: 654               | 20-Apr-07 (SPEAG, No. DAE4-654_Apr07)     | Apr-08                                                                                             |
| Secondary Standards        | ID #                  | Check Date (in house)                     | Scheduled Check                                                                                    |
| RF generator HP 8648C      | US3642U01700          | 4-Aug-99 (SPEAG, in house check Nov-05)   | In house check: Nov-07                                                                             |
| Network Analyzer HP 8753E  | US37390585            | 18-Oct-01 (SPEAG, in house check Oct-06)  | In house check: Oct-07                                                                             |
| Calibrated by:             | Name<br>Katja Pokovic | Function<br>Technical Manager             | Signature<br> |
| Approved by:               | Name<br>Niels Kuster  | Function<br>Quality Manager               | Signature<br> |

Issued: July 18, 2007

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Conversion Factor Assessment



| f [MHz] | Validity [MHz] <sup>c</sup> | TSL  | Permittivity | Conductivity | Alpha | Depth | ConvF Uncertainty  |
|---------|-----------------------------|------|--------------|--------------|-------|-------|--------------------|
| 450     | ± 50 / ± 100                | Head | 43.5 ± 5%    | 0.87 ± 5%    | 0.40  | 1.96  | 6.74 ± 13.3% (k=2) |
| 900     | ± 50 / ± 100                | Head | 41.5 ± 5%    | 0.97 ± 5%    | 0.37  | 2.43  | 6.10 ± 11.0% (k=2) |
| 1810    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.57  | 2.62  | 4.85 ± 11.0% (k=2) |
| 1950    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.62  | 2.49  | 4.65 ± 11.0% (k=2) |
| 2450    | ± 50 / ± 100                | Head | 39.2 ± 5%    | 1.80 ± 5%    | 0.88  | 1.75  | 4.35 ± 11.8% (k=2) |
| 450     | ± 50 / ± 100                | Body | 56.7 ± 5%    | 0.94 ± 5%    | 0.34  | 2.02  | 7.20 ± 13.3% (k=2) |
| 900     | ± 50 / ± 100                | Body | 55.0 ± 5%    | 1.05 ± 5%    | 0.40  | 2.89  | 5.69 ± 11.0% (k=2) |
| 1810    | ± 50 / ± 100                | Body | 53.3 ± 5%    | 1.52 ± 5%    | 0.75  | 2.26  | 4.51 ± 11.0% (k=2) |
| 1950    | ± 50 / ± 100                | Body | 53.3 ± 5%    | 1.52 ± 5%    | 0.96  | 2.08  | 4.28 ± 11.0% (k=2) |
| 2450    | ± 50 / ± 100                | Body | 52.7 ± 5%    | 1.95 ± 5%    | 0.87  | 2.00  | 3.96 ± 11.8% (k=2) |

<sup>c</sup> The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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Client **Nokia Salo TCC**

Certificate No: **ET3-1766\_Oct07**

## CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1766**

Calibration procedure(s) **QA CAL-01.v6  
Calibration procedure for dosimetric E-field probes**

Calibration date: **October 24, 2007**

Condition of the calibrated item **In Tolerance**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate

All calibrations have been conducted in the closed laboratory facility: environment temperature ( $22 \pm 3$ )°C and humidity < 70%.

### Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID #            | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|-------------------------------------------|-----------------------|
| Power meter E4419B         | GB41293874      | 29-Mar-07 (METAS, No. 217-00670)          | Mar-08                |
| Power sensor E4412A        | MY41495277      | 29-Mar-07 (METAS, No. 217-00670)          | Mar-08                |
| Power sensor E4412A        | MY41498087      | 29-Mar-07 (METAS, No. 217-00670)          | Mar-08                |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 8-Aug-07 (METAS, No. 217-00719)           | Aug-08                |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 29-Mar-07 (METAS No 217-00671)            | Mar-08                |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 8-Aug-07 (METAS, No. 217-00720)           | Aug-08                |
| Reference Probe ES3DV2     | SN: 3013        | 4-Jan-07 (SPEAG, No. ES3-3013_Jan07)      | Jan-08                |
| DAE4                       | SN: 654         | 20-Apr-07 (SPEAG, No. DAE4-654_Apr07)     | Apr-08                |

| Secondary Standards       | ID #         | Check Date (in house)                    | Scheduled Check        |
|---------------------------|--------------|------------------------------------------|------------------------|
| RF generator HP 8648C     | US3642U01700 | 4-Aug-99 (SPEAG, in house check Nov-05)  | In house check: Nov-07 |
| Network Analyzer HP 8753E | US37390585   | 18-Oct-01 (SPEAG, in house check Oct-06) | In house check: Oct-07 |

|                |                              |                                      |                                                                                                   |
|----------------|------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------|
| Calibrated by: | Name<br><b>Katja Pokovic</b> | Function<br><b>Technical Manager</b> | Signature<br> |
| Approved by:   | Name<br><b>Niels Kuster</b>  | Function<br><b>Quality Manager</b>   |               |

Issued: October 29, 2007

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DASY - Parameters of Probe: ET3DV6 SN:1766

| Sensitivity in Free Space <sup>A</sup> |              |                       | Diode Compression <sup>B</sup> |       |
|----------------------------------------|--------------|-----------------------|--------------------------------|-------|
| NormX                                  | 1.99 ± 10.1% | μV/(V/m) <sup>2</sup> | DCP X                          | 91 mV |
| NormY                                  | 1.70 ± 10.1% | μV/(V/m) <sup>2</sup> | DCP Y                          | 91 mV |
| NormZ                                  | 1.89 ± 10.1% | μV/(V/m) <sup>2</sup> | DCP Z                          | 92 mV |

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

| TSL                                       | 900 MHz                      | Typical SAR gradient: 5 % per mm |        |  |
|-------------------------------------------|------------------------------|----------------------------------|--------|--|
| Sensor Center to Phantom Surface Distance |                              | 3.7 mm                           | 4.7 mm |  |
| SAR <sub>be</sub> [%]                     | Without Correction Algorithm | 6.3                              | 3.3    |  |
| SAR <sub>be</sub> [%]                     | With Correction Algorithm    | 0.3                              | 0.1    |  |

| TSL                                       | 1810 MHz                     | Typical SAR gradient: 10 % per mm |        |  |
|-------------------------------------------|------------------------------|-----------------------------------|--------|--|
| Sensor Center to Phantom Surface Distance |                              | 3.7 mm                            | 4.7 mm |  |
| SAR <sub>be</sub> [%]                     | Without Correction Algorithm | 12.5                              | 8.3    |  |
| SAR <sub>be</sub> [%]                     | With Correction Algorithm    | 0.3                               | 0.7    |  |

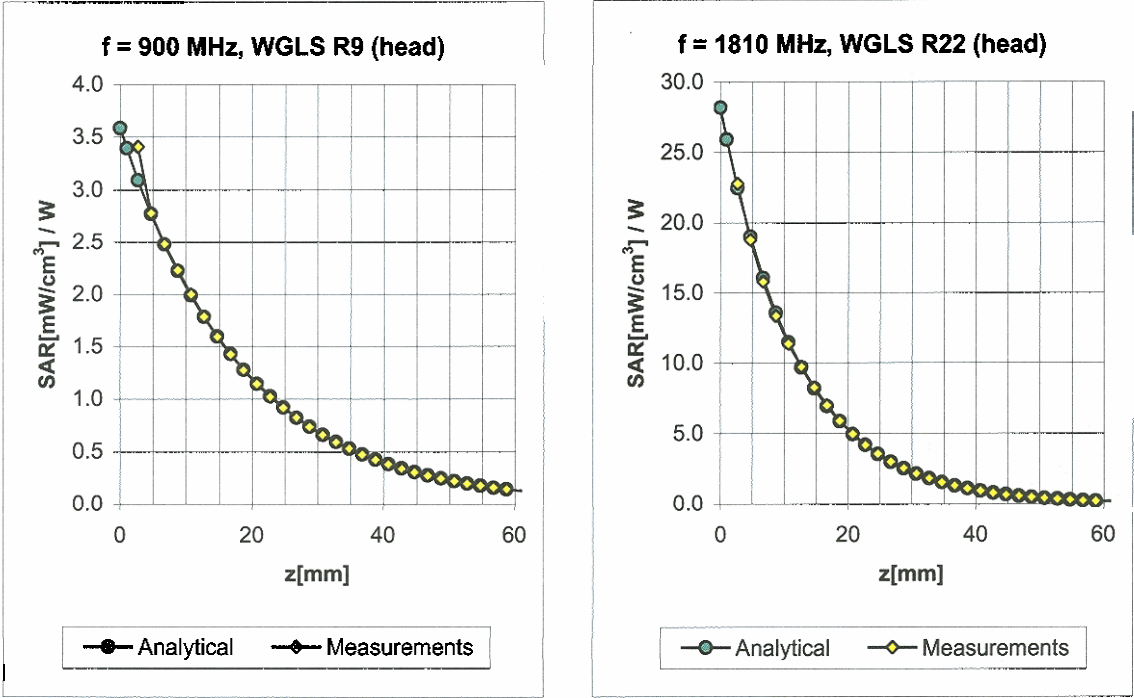
Sensor Offset

|                            |        |
|----------------------------|--------|
| Probe Tip to Sensor Center | 2.7 mm |
|----------------------------|--------|

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of NormX,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Page 8).  
<sup>B</sup> Numerical linearization parameter: uncertainty not required.

Conversion Factor Assessment



| f [MHz] | Validity [MHz] <sup>c</sup> | TSL  | Permittivity | Conductivity | Alpha | Depth | ConvF Uncertainty  |
|---------|-----------------------------|------|--------------|--------------|-------|-------|--------------------|
| 900     | ± 50 / ± 100                | Head | 41.5 ± 5%    | 0.97 ± 5%    | 0.25  | 3.20  | 6.21 ± 11.0% (k=2) |
| 1810    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.66  | 2.12  | 5.12 ± 11.0% (k=2) |
| 1950    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.70  | 2.06  | 4.85 ± 11.0% (k=2) |
| 900     | ± 50 / ± 100                | Body | 55.0 ± 5%    | 1.05 ± 5%    | 0.37  | 2.52  | 5.78 ± 11.0% (k=2) |
| 1810    | ± 50 / ± 100                | Body | 53.3 ± 5%    | 1.52 ± 5%    | 0.74  | 2.27  | 4.63 ± 11.0% (k=2) |
| 1950    | ± 50 / ± 100                | Body | 53.3 ± 5%    | 1.52 ± 5%    | 0.93  | 1.95  | 4.36 ± 11.0% (k=2) |

<sup>c</sup> The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.



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Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **ES3-3131\_Apr08**

## CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3131**

Calibration procedure(s) **QA CAL-01.v6 and QA CAL-23.v3  
Calibration procedure for dosimetric E-field probes**

Calibration date: **April 22, 2008**

Condition of the calibrated item **In Tolerance**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^\circ\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID #            | Cal Date (Certificate No.)    | Scheduled Calibration |
|----------------------------|-----------------|-------------------------------|-----------------------|
| Power meter E4419B         | GB41293874      | 1-Apr-08 (No. 217-00788)      | Apr-09                |
| Power sensor E4412A        | MY41495277      | 1-Apr-08 (No. 217-00788)      | Apr-09                |
| Power sensor E4412A        | MY41498087      | 1-Apr-08 (No. 217-00788)      | Apr-09                |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 8-Aug-07 (No. 217-00719)      | Aug-08                |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 31-Mar-08 (No. 217-00787)     | Apr-09                |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 8-Aug-07 (No. 217-00720)      | Aug-08                |
| Reference Probe ES3DV2     | SN: 3013        | 2-Jan-08 (No. ES3-3013_Jan08) | Jan-09                |
| DAE4                       | SN: 660         | 3-Sep-07 (No. DAE4-660_Sep07) | Sep-08                |

| Secondary Standards       | ID #         | Check Date (in house)             | Scheduled Check        |
|---------------------------|--------------|-----------------------------------|------------------------|
| RF generator HP 8648C     | US3642U01700 | 4-Aug-99 (in house check Oct-07)  | In house check: Oct-09 |
| Network Analyzer HP 8753E | US37390585   | 18-Oct-01 (in house check Oct-07) | In house check: Oct-08 |

Calibrated by: **Katja Pokovic** Technical Manager

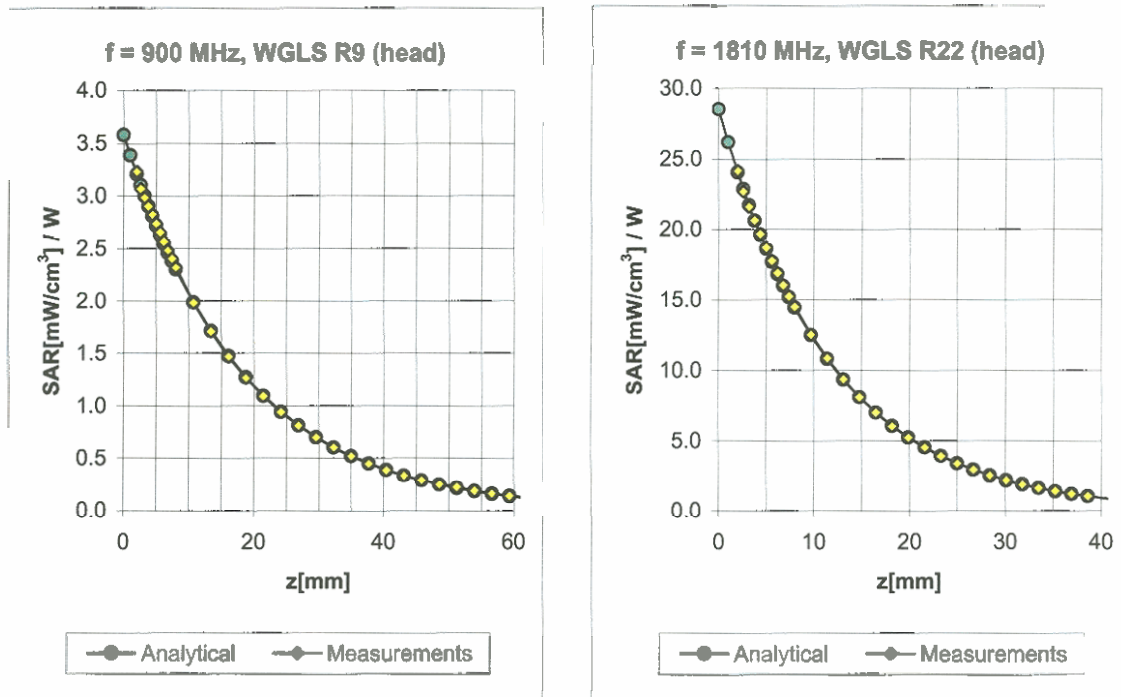
Approved by: **Niels Kuster** Quality Manager

Signature

Issued: April 22, 2008

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## Conversion Factor Assessment



| f [MHz] | Validity [MHz] <sup>c</sup> | TSL  | Permittivity | Conductivity | Alpha | Depth | ConvF Uncertainty  |
|---------|-----------------------------|------|--------------|--------------|-------|-------|--------------------|
| 900     | ± 50 / ± 100                | Head | 41.5 ± 5%    | 0.97 ± 5%    | 0.92  | 1.17  | 6.14 ± 11.0% (k=2) |
| 1810    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.60  | 1.58  | 5.02 ± 11.0% (k=2) |
| 1950    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.94  | 1.13  | 4.78 ± 11.0% (k=2) |
| 2450    | ± 50 / ± 100                | Head | 39.2 ± 5%    | 1.80 ± 5%    | 0.72  | 1.30  | 4.48 ± 11.0% (k=2) |
| 900     | ± 50 / ± 100                | Body | 55.0 ± 5%    | 1.05 ± 5%    | 1.00  | 1.17  | 5.68 ± 11.0% (k=2) |
| 1810    | ± 50 / ± 100                | Body | 53.3 ± 5%    | 1.52 ± 5%    | 0.58  | 1.61  | 5.15 ± 11.0% (k=2) |
| 1950    | ± 50 / ± 100                | Body | 53.3 ± 5%    | 1.52 ± 5%    | 0.87  | 1.19  | 4.85 ± 11.0% (k=2) |
| 2450    | ± 50 / ± 100                | Body | 52.7 ± 5%    | 1.95 ± 5%    | 0.68  | 1.42  | 4.16 ± 11.0% (k=2) |

<sup>c</sup> The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.