# **Important Product Records**

e. g. Calibration Certificate, License Keys List

MLD



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R0HDE&SCHWARZ



Material Mo,

1173**.**6506.02

Serial No.

102419

GU DCV-ZP DCV-PAPIERAUSDRUCK

DCV-ZP

###### Certificate Number 20-502371

Zertifikatsnummer

### Calibration Certificate

##### Kalibrierschein

Ref. No.20-502371

|  |  |
| --- | --- |
| Cal. | Custom. Due Date |
| 2014-03-12 |  |

**This calibration certificate documents, that the named item is tested and measured against defined specifications. .**

**Measurement results are located usually in the corresponding interval with a probability of approx. 95% (coverage factor k = 2).**

**Calibration is performed with test equipment and standards directly or indirectly traceable by means of approved calibration techniques to the PTB/DKD or other national / international standards, which realize the physical units of measurement according to the International System of Units (SI).**

**In all cases where no standards are available, measurements are referenced to standards of the R&S laboratories.**

**Principles and methods of calibration correspond and are conformant with EN ISO/IEC 17025, ANSI/NCSL Z540.1-1994 and ANSI/NCSL Z540.3-2006. The applied quality system is certified to EN ISO 9001.**

**This calibration certificate may not be reproduced other than in full. Calibration certificates without signatures are not valid.**

**The user is obliged to have the object recalibrated at appropriate intervals.**

Dieser Kalibrierschein dokumentiert, dass der genannte Gegenstand nach festgelegten Vorgaben geprijft und gemessen wurde. Die Messwerte lagen im Regelfall mit einer Wahrscheinlichkeit von annahemd 95% im zugeordneten Werteintervall (Erweiterte Messunsicherheit mit k = 2).

Die Kalibrierung erfolgte mit Messmitteln und Normalen, die direkt Oder indirekt durch Ableitung mittels anerkannter Kalibriertechniken riickgefuhrt sind auf Normale der PTB/DKD Oder anderer nationaler/internationaler Standards zur Darstellung der physikalischen Einheiten in Ubereinstimmung mit dem Internationalen Einheitensystem (SI). Wenn keine Normale existieren, erfolgt die Riickfuhrung auf Bezugsnormale der R&S- Laboratorien.

Grundsatze und Verfahren der Kalibrierung beziehen sich auf und entsprechen EN ISO/IEC 17025, ANSI/ NCSL Z540.1-1994 und ANSI/NCSL Z540.3-2006.

Das angewandte Quaiitatsmanagement- System ist zertifiziert nach EN ISO 9001. Dieser Kalibrierschein darf nur vollstandig und unverandert weiterverbreitet werden. Kalibrierscheine ohne Signifizierungen sind ungiiltig.

Fur die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

Rohde & Schwarz Messgeratebau GmbH

**Date of Issue**

Ausstellungsdatum

2014-08-12

Head of Laboratory

rorieitung



**Person Responsible**

Bearbeiter

Gerald Nickel

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ver9815/MB0707

Rohde & Schwarz Messgeratebau GmbH • Postfach 1652 D-87686 Memmingen • Rohde-und-Schwarz-Str. 1 D-87700 Memmingen  
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Geschaftsftihrer: Jurgen Steigmulfer • Aufsichtsratsvorsitzender: Roland Steffen  
Sitz der Gesellschaft: Munchen • Registereintrag: Amtsgericht Munchen HRB 1059

|  |  |  |
| --- | --- | --- |
| Unit Data |  |  |
| **Item**  Gegenstand | **TSML-CW RADIO NETWORK ANALYZER** | |
| **Manufacturer**  Hersteller | **ROHDE & SCHWARZ** |  |
| **Type**  Typ | **TSML-CW** |  |
| **Material Number**  Materialnummer | **1153.6000.15 Serial Number**  Seriennummer | **100126** |
| **Asset Number**  Inventarnummer |  |  |

|  |  |
| --- | --- |
| Order Data |  |
| **Customer**  Auftraggeber |  |
| **Order Number 0000292442**  Bestellnummer |  |
| **Date of Receipt 2014-08-12**  Eingangsdatum |  |
| Performance |  |
| **Place and Date of Calibration**  Ort und Datum der Kalibrierung | **Memmingen, 2014-08-12** |
| **Scope of Calibration**  Umfang der Kalibrierung | **Standard Calibration** |
| **Statement of Compliance (Incoming)**  Konformitatsaussage  (Anlieferung) | **New device** |
| **Statement of Compliance (Outgoing)**  Konformitatsaussage  (Auslieferung) | **Measurement results within specifications** |
| **Extent of Calibration Documents**  Umfang des Kalibrierdokuments | **2 Pages Calibration Certificate 5 Pages Outgoing Results** |

**Material Number 1153.6000.15**

**Serial Number 100126**

###### Certificate Number 20-502371

**Calibration Method** 1153.6000.01 -T- 08.01

Kalibrieranweisung

**Ambient Temperature (23 +3)°C**

Umgebungstemperatur

**Relative Humidity 20%-60%**

Relative Luftfeuchte

**Notes**

Anmerkungen

Installed options are included in calibration. Depending on installed options, numbers of pages of the record are not consecutive.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Working standards used (having a significant effect on the accuracy)**  Verwendete Gebrauchsnormale (mit signifikantem Einfluss auf die Genauigkeit) | | | | |
| **Item** | **Type** | **Serial Number** | **Calibration Certificate Number** | **Cai. Due** |
| Gegenstand | Typ | Seriennummer | Kalibrierscheinnummer | Kalibr. bis |
| **Average Power Sensor** | **NRP-Z11** | **100473** | **0410-D-K-15195-01-00-2013-07** | **2015-07-31** |
| **Vector Signal Generator** | **SMIQ06B** | **838341/040** | **0082-DKD-K-15195-2013-05** | **2016-04-30** |

**Conformity statements take the measurement uncertainties into account.**

Die Konformitatsaussagen berucksichtigen die Messunsicherheiten.

Outgoing Results

|  |  |
| --- | --- |
| **Designation:** | **Radio Network Analyzer** |
| **Type:**  **Material No.: Serial No.:** | **TSML-CW**  **1153.6000.15**  **100126** |
| **Referring to Test Documentation:** | **1153.6000.01-T-08.01** |

|  |  |
| --- | --- |
| **Test Department: ME1A Name: Nickel**  **Date: 2014-08-12** |  |

|  |  |
| --- | --- |
| **ROHDE&SCHWARZ** | **Page**  **1/5** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type** | **TSML-CW** | **Serial No.** | **100126** |  |
| **Test System** | **T10010** | **Material No.** | **1153.6000.15** | **ROHDE&SCHWARZ** |
| **Temperature** | **(23 -3/+7)°C** | **Date** | **2014-06-12** |
| **File** | **1153.6000.15\_100126\_10- .M F** |  |  |  |
| **Page** | **2/5** |  |  |  |

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1. Protocol

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Type TSML-CW Serial No. 100126

Test System T10010 Material No. 1153.6000.15

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ROHDE&SCHWARZ

Temperature (23-3/+7)°C Date 2014-08-12

File 1153.6000.15\_100126\_10-.MF

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|  |  |  |  |
| --- | --- | --- | --- |
| **Software used for measurement**  **Item** | **Type** | **Version** | **Remark** |
| Suite  Test Program (010121\_) | Setup  Component | V10.10  V08.01 | Test Management Software G5 |

**Type**

**Test System Temperature File Page**

**TSML-CW T10010 (23 -3/+7)°C**

**1153.6000.15\_100126\_10-.MF**

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**Serial No. 100126**

**Material No. 1153.6000.15**

**Date 2014-08-12**

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###### 1. Protocol

Report generated with mask: Skript5\_TSML-CW Begin:

Level Accuracy

Start Frequency 0080 MHz

Stop Frequency 3921 MHz

Frequency Step 0001 MHz

Calculation Interval 0500 MHz

Amplifier Setting Pre-Amp on, IF-Amp 15db

Input Power -50.00 dBm

|  |  |  |
| --- | --- | --- |
| Program Version | 7.00 |  |
| Calibrat ion Version | 1.04 |  |
| Auto Power On Mode | O.K. |  |
| Power Off Mode | O.K. |  |
| IEEE1394 Communication | O.K. |  |
| IF-Filter Adjustment | O.K. |  |
| Level Calibration | O.K. |  |
| Bandwidth 3dB IF-Filter | 4.443 MHz | |
| Valid Range | 4.275 MHz to 4.725 MHz | |

Frequency Measured Accuracy [dB/100]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Average | Max | Frequ.[MHz] | Rated | Uncertainty |
| 0080 . | . . 0500 MHz | + /-00 | + 03 | 0101 | + /-70 | + /-30 |
| 0501 . | . . 1000 MHz | + /-00 | + 02 | 0528 | + /-70 | + /-30 |
| 1001 . | . . 1500 MHz | + /-00 | + 02 | 1061 | + /-70 | + /-30 |
| 1501 . | . . 2000 MHz | + /-00 | -03 | 1974 | + /-70 | + /-30 |
| 2001 . | . .2500 MHz | + /-00 | -02 | 2029 | + /-70 | + /-30 |
| 2501 . | . .3000 MHz | + /-00 | -02 | 2589 | + /-70 | + /-30 |
| 3001 . | . .3500 MHz | + /-00 | -02 | 3008 | + /-70 | + /-30 |
| 3501 . | . .4000 MHz | + /-00 | -02 | 3584 | + /-70 | + /-30 |
| Amplifier Setting | | Pre-Amp off IF-Amp 15db | | |  |  |
| Input | Power | -40.00 dBm |  |  |  |  |
| Frequency | | Measured Accuracy | | [dB/100] |  |  |
|  |  | Average | Max | Frequ.[MHz] | Rated | Uncertainty |
| 0080 . | . . 0500 MHz | + /-00 | + 03 | 0402 | + /-70 | + /-30 |
| 0501 . | . . 1000 MHz | + /-00 | + 02 | 0751 | + /-70 | + /-30 |
| 1001 . | . . 1500 MHz | + /-00 | + 02 | 1027 | + /-70 | + /-30 |
| 1501 . | . . 2000 MHz | + /-00 | + 03 | 1602 | + /-70 | + /-30 |
| 2001 . | . .2500 MHz | + /-00 | -02 | 2019 | + /-70 | + /-30 |
| 2501 . | . . 3000 MHz | + /-00 | -03 | 2778 | + /-70 | + /-30 |
| 3001 . | . . 3500 MHz | + /-00 | + 03 | 3057 | + /-70 | + /-30 |
| 3501 . | . .4000 MHz | + /-00 | + 02 | 3511 | + /-70 | + /-30 |

TSML-CW T10010 (23 -3/+7)°C

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ROHDE&SCHWARZ

**Type**

**Test System Temperature File Page**

**Serial No. Material No. Date**

**100126**

**1153.6000.15**

**2014-08-12**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Amplifier Setting | | Pre-Amp off, IF-Amp 5db | | | | | |  |  |  |
| Input | Power | -30.00 dBm | |  |  |  |  |  |  |  |
| Frequency | | Measured Accuracy | | | | [dB/100] | |  |  |  |
|  |  | Average |  | Max |  |  | Frequ. | [MHz] | Rated | Uncertainty |
| 0080 . . | .0500 MHz | + /-01 |  | +04 |  |  | 0324 |  | + / - 7 0 | + /-30 |
| 0501 . . | .1000 MHz | + /-01 |  | +04 |  |  | 0564 |  | + /-70 | + /-30 |
| 1001 . . | .1500 MHz | + /-01 |  | +05 |  |  | 1099 |  | + /-70 | + /-30 |
| 1501 . . | .2000 MHz | + /-01 |  | -06 |  |  | 1819 |  | + /-70 | + /-30 |
| 2001 . . | .2500 MHz | + /-02 |  | -06 |  |  | 2244 |  | + /-70 | + /-30 |
| 2501 . . | .3000 MHz | + /-03 |  | +10 |  |  | 2962 |  | + /-70 | + /-30 |
| 3001 . . | .3500 MHz | + /-03 |  | -10 |  |  | 3118 |  | + /-70 | + /-30 |
| 3501 . . | .4000 MHz | + /-04 |  | +12 |  |  | 3846 |  | + / - 7 0 | + /-30 |
| Amplifier Setting | | Pre-Amp off, IF-Amp off | | | | | |  |  |  |
| Input | Power | -25.00 dBm | |  |  |  |  |  |  |  |
| Frequency | | Measured Accuracy | | | | [dB/100] | |  |  |  |
|  |  | Average |  | Max |  |  | Frequ. | [MHz] | Rated | Uncertainty |
| 0080 . . | .0500 MHz | + /-01 |  | -04 |  |  | 0241 |  | + /-70 | + /-30 |
| 0501 . . | .1000 MHz | + /-03 |  | -08 |  |  | 0726 |  | + /-70 | + /-30 |
| 1001 . . | .1500 MHz | + /-03 |  | -10 |  |  | 1246 |  | + /-70 | + /-30 |
| 1501 . . | .2000 MHz | + /-02 |  | -11 |  |  | 1878 |  | + /-70 | + /-30 |
| 2001 . . | .2500 MHz | + /-07 |  | -23 |  |  | 2361 |  | + /-70 | + /-30 |
| 2501 . . | .3000 MHz | + /-07 |  | -21 |  |  | 2836 |  | + /-70 | + /-30 |
| 3001 . . | .3500 MHz | + /-04 |  | -19 |  |  | 3297 |  | + /-70 | + /-30 |
| 3501 . . | .4000 MHz | + /-02 |  | -06 |  |  | 3801 |  | + /-70 | + /-30 |
| Amplifier Setting | | Low Level Meas: Pre Amp on, IF-Amp 15db | | | | | | | |  |
| Input | Power | -69.70 dBm | |  |  |  |  |  |  |  |
| Frequency | | Measured Accuracy | | | | [dB/100] | |  |  |  |
|  |  | Average |  | Max |  |  | Frequ. | [MHz] | Rated | Uncertainty |
| 0080 . . | .0500 MHz | + /-05 |  | +19 |  |  | 0402 |  | + /-70 | + /-70 |
| 0501 . . | .1000 MHz | + /-05 |  | +11 |  |  | 0584 |  | + /-70 | + /- 70 |
| 1001 . . | .1500 MHz | + /-04 |  | +12 |  |  | 1233 |  | + /-70 | + /-70 |
| 1501 . . | .2000 MHz | + /-02 |  | +09 |  |  | 1744 |  | + /-70 | + /-70 |
| 2001 . . | .2500 MHz | + /-02 |  | +11 |  |  | 2349 |  | + /-70 | + /-70 |
| 2501 . . | .3000 MHz | + /-02 |  | -10 |  |  | 2753 |  | + /-70 | + / - 110 |
| 3001 . . | .3500 MHz | + /-02 |  | +13 |  |  | 3264 |  | + /-70 | +/-110 |
| 3501 . . | .4000 MHz | + /-02 |  | -15 |  |  | 3525 |  | + /-70 | +/-110 |

Filter Calibration O.K.

End: