\

# **Important Product Records**

e. g. Calibration Certificate, License Keys List

**Service that adds value**

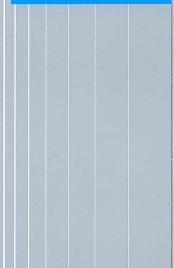
I Worldwide

I Local and personalized

I Customized and flexible

i Uncompromising quality

I Long-term dependability



###### ROHDE&SCHWARZ



GU DCV-ZP DCV-PAPiERAUSDRUCK

DCV-ZP

1 /1

Material No.

### 1173**.**6506.02

MLD

Serial No.

#### 102417

Calibration Certificate

Kalibrierschein

**Certificate Number 20-502127**

###### Zertifikatsnummer

Unit Data

**Item** TSML-CW RADIO NETWORK ANALYZER

Gegenstand

**Manufacturer** ROHDE & SCHWARZ

Hersteller

**Type** TSML-CW

Typ

**Material Number 1153.6000.15 Serial Number 100125**

Materialnummer Seriennummer

**Asset Number**

Inventarnummer

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

**Measurement results are located usually in the correspohding 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 annahernd 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 ruckgefuhrt 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 Ruckfuhrung 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 Z540.3-2005.

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

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

Rohde & Schwarz Messgeratebau GmbH

**Date of Issue**

Ausstellungsdatum

2014-08-11

Head of Laboratory

lorleitung



**Person Responsible**

Bearbeiter

Gerald Nickel

**Page 1/2**

ver9815/MB0707

Rohde & Schwarz Messgeratebau GmbH • Postfach 1652 D-87686 Memmingen • Rohde-und-Schwarz-Str. 1 D-87700 Memmingen  
Telefon national: 08331/10-80; international: 0049 8331/10-80; Fax: 08331/10-811 24  
Geschaftsfuhrer: Jurgen Steigmuller • Aufsichtsratsvorsitzender: Roland Steffen  
Sitz der Gesellschaft: Munchen • Registereintrag: Amtsgericht Munchen HRB 1059

Order Data

**Customer**

Auftraggeber

|  |  |
| --- | --- |
| Order Number 0000291929  Bestellnummer |  |
| Date of Receipt 2014-08-11  Eingangsdatum |  |
| Performance |  |
| Place and Date of Calibration  Ort und Datum der Kalibrierung | Memmingen, 2014-08-11 |
| 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 |

Ref. No.20-502127

|  |  |
| --- | --- |
| Cal. | Custom. Due Date |
| 2014-08-11 |  |

**Material Number 1153.6000.15**

**Serial Number 100125**

**Certificate Number 20-502127**

**Calibration Method** 1153.6000.01-T-08.01

Kalibrieranweisung

**Ambient Temperature (23 \*3)°C**

Umgebungstemperatur

**Relative Humidity 20%-60%**

Relative Luftfeuchte

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 | Cal. 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 beriicksichtigen die Messunsicherheiten.

**Notes**

Anmerkungen

Outgoing Results

|  |  |
| --- | --- |
| Designation: | Radio Network Analyzer |
| Type:  Material No.:  Serial No.: | TSML-CW  1153.6000.15  100125 |
| Referring to Test Documentation: | 1153.6000.01 -T-08.01 |

|  |  |
| --- | --- |
| Test Department: ME1A  Name: Nickel  Date: 2014-08-11 |  |

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

**Type**

**Test System Temperature File Page**

TSML-CW T10010 (23 -3/+7)°C

1153.6000.15\_100125\_10- .M F 2/5

ROHDE&SCHWARZ

## Table of contents

3

1. Protocol

4

Software used for measurement

Type TSML-CW Serial No. 100125

Test System T10010 Material No. 1153.6000.15

Temperature (23 -3/+7)°C Date 2014-08-11

File 1153.6000.15\_100125\_10-.MF

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

Page 3/5

TSML-CW T10010 (23 -3/+7)°C

1153.6000.15\_100125\_10- .M F 4/5

**Type**

**Test System Temperature File Page**

1. Protocol

Report generated with mask: Skript5\_TSML-CW

Begin:

|  |  |  |
| --- | --- | --- |
| Program Version | 7.00 |  |
| Calibration 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 | |

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 | |  |  |  |  |  |
| Frequency | | Measured Accuracy | | | | [dB/100 ] |  |  |
|  |  | Average |  | Max |  | Frequ.[MHz] | Rated | Uncertainty |
| 0080 . . | .0500 MHz | + /-03 |  | + 06 |  | 0124 | + /-70 | + /-30 |
| 0501 . . | .1000 MHz | + /-03 |  | + 05 |  | 0509 | + /-70 | + /-30 |
| 1001 . . | .1500 MHz | + /-03 |  | + 06 |  | 1380 | + /-70 | + /-30 |
| 1501 . . | .2000 MHz | + /-03 |  | + 06 |  | 1550 | + /-70 | + /-30 |
| 2001 . . | .2500 MHz | + /-02 |  | + 05 |  | 2338 | + /-70 | + /-30 |
| 2501 . . | .3000 MHz | + /-03 |  | + 06 |  | 2646 | + /-70 | + /-30 |
| 3001 . . | .3500 MHz | + /-02 |  | + 05 |  | 3219 | + /-70 | + /-30 |
| 3501 . . | .4000 MHz | + /-01 |  | + 05 |  | 3525 | + /-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 | + /-01 |  | + 04 |  | 0313 | + /-70 | + /-30 |
| 0501 . . | .1000 MHz | + /-01 |  | + 04 |  | 0509 | + /-70 | + /-30 |
| 1001 . . | .1500 MHz | + /-02 |  | + 04 |  | 1026 | + /-70 | + /-30 |
| 1501 . . | .2000 MHz | + /-01 |  | + 04 |  | 1537 | + /-70 | + /-30 |
| 2001 . . | .2500 MHz | + /-01 |  | + 04 |  | 2452 | + /-70 | + /-30 |
| 2501.. | .3000 MHz | + /-01 |  | + 05 |  | 2734 | + /-70 | + /-30 |
| 3001 . . | .3500 MHz | + /-01 |  | + 03 |  | 3013 | + /-70 | + /-30 |
| 3501 . . | .4000 MHz | + /-00 |  | + 03 |  | 3508 | + /-70 | + /-30 |

Type

Test System Temperature File

Page

TSML-CW T10010 (23 -3/+7)°C

1153.6000.15\_100125\_10-.M F 5/5

Filter Calibration End:

O.K.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 | |  | | + /-70 | + /-30 | | |
| 0501 . . | . 1000 MHz | + /-01 |  | + 04 |  |  | 0590 | |  | | + /-70 | + /-30 | | |
| 1001 . . | .1500 MHz | + /-01 |  | + 05 |  |  | 1284 | |  | | + /-70 | + /-30 | | |
| 1501 . . | .2000 MHz | + /-01 |  | -06 |  |  | 1654 | |  | | + /-70 | + /-30 | | |
| 2001 . . | .2500 MHz | + /-02 |  | -06 |  |  | 2237 | |  | | + /-70 | + /-30 | | |
| 2501 . . | .3000 MHz | + /-03 |  | +10 |  |  | 2958 | |  | | + /-70 | + /-30 | | |
| 3001 . . | .3500 MHz | + /-03 |  | -11 |  |  | 3108 | |  | | + /-70 | + /-30 | | |
| 3501 . . | .4000 MHz | + /-04 |  | -12 |  |  | 3998 | |  | | + /-70 | + /-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 |  |  | 0218 | |  | | + 1-10 | + /-30 | | |
| 0501 . . | .1000 MHz | + /-03 |  | -10 |  |  | 0933 | |  | | + /-70 | + /-30 | | |
| 1001 . . | .1500 MHz | + /-03 |  | -10 |  |  | 1245 | |  | | + /-70 | + /-30 | | |
| 1501 . . | .2000 MHz | + /-02 |  | -11 |  |  | 1870 | |  | | + /-70 | + /-30 | | |
| 2001 . . | .2500 MHz | + /-07 |  | -25 |  |  | 2361 | |  | | + /-70 | + /-30 | | |
| 2501 . . | .3000 MHz | + /-08 |  | -20 |  |  | 2833 | |  | | + 1-10 | + /-30 | | |
| 3001.. | .3500 MHz | + /-05 |  | -22 |  |  | 3297 | |  | | + 1-10 | + /-30 | | |
| 3501.. | .4000 MHz | + /-03 |  | -09 |  |  | 3815 | |  | | + 1-10 | + /-30 | | |
| Amplifier Setting | | Low Level Meas: Pre Amp on, IF-Amp 15db | | | | | | | | | | |  |
| Input | Pov;er | -69.70 dBm | |  |  |  |  |  | |  | | |  |
| Frequency | | Measured  Accuracy | | | | [dB/100] | |  | |  | | |  |
|  |  | Average |  | Max |  |  | Frequ. | [MHz] | | Rated | | | Uncertainty |
| 0080 . . | .0500 MHz | + /-09 |  | +17 |  |  | 0087 |  | | + 1-10 | | | + 1-10 |
| 0501 . . | .1000 MHz | + /-09 |  | +17 |  |  | 0800 |  | | + /-70 | | | + 1-10 |
| 1001 . . | .1500 MHz | + /-09 |  | +20 |  |  | 1423 |  | | + 1-10 | | | + 1-10 |
| 1501 . . | .2000 MHz | + /-06 |  | +13 |  |  | 1752 |  | | + 1-10 | | | + 1-10 |
| 2001 . . | .2500 MHz | + /-05 |  | +15 |  |  | 2369 |  | | + 1-10 | | | + 1-10 |
| 2501 . . | .3000 MHz | + /-07 |  | +14 |  |  | 2818 |  | | + /-10 | | | +/-110 |
| 3001 . . | .3500 MHz | + /-04 |  | +16 |  |  | 3275 |  | | + 1-10 | | | +/-110 |
| 3501 . . | .4000 MHz | + /-02 |  | +15 |  |  | 3525 |  | | + 1-10 | | | +/-110 |