

Electromagnetic Compatibility Test Report

Prepared in accordance with

FCC Part 15

On

DRX-1 Radio

DRX-1

Prepared for:

Carestream Health Inc.



150 Verona St

Rochester NY, 14608

Prepared by:

TUV Rheinland of North America, Inc.

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| | | | | | |
|---|---|---|--|--|--|
| Auftraggeber: <i>Client:</i> | | Carestream Health Inc. 150 Verona St Rochester NY, 14608 | | Ronald Cain 585-627-8321 / 585-477-2718 ronald.cain@carestreamhealth.com | |
| Bezeichnung: <i>Identification:</i> | DRX-1 Radio | | Serien-Nr.: <i>Serial No.</i> | 00403 | |
| Gegenstand der Prüfung: <i>Test item:</i> | DRX-1 | | Prüfdatum: <i>Date tested:</i> | 03/12/2010 | |
| Prüfört: <i>Testing location:</i> | TUV Rheinland of North America 336 Initiative Drive Rochester, NY 14624 U.S.A. | | | | |
| Prüfgrundlage: <i>Test specification:</i> | Emissions: FCC Part 15.407 Subpart E FCC Part 15.209(a) FCC part 15.407(a)(2), FCC Part 15.407(a)(5) RSS-210 Issue 7, FCC Part 15.407(a)(6), FCC Part 15.407(b)(8), FCC Part 15.205, FCC Part 15.407(g), FCC Part 15.203, RSS-210 | | | | |
| Prüfergebnis: <i>Test Result</i> | Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage. The above product was found to be Compliant to the above test standard(s) | | | | |
| geprüft / tested by: Randall Masline | | | reviewed by: Cecil Gittens | | |
| <u>20 April 2010</u> Datum <i>Date</i> | | | <u>20 April 2010</u> Date | | |
| Name <i>Name</i> | | | Name <i>Name</i> | | |
| Unterschrift <i>Signature</i> | | | Signature <i>Signature</i> | | |
| Sonstiges : <i>Other Aspects:</i> | None | | | | |
| Abkürzungen: OK, Pass, Compliant, Complies = entspricht Prüfgrundlage Fail, Not Compliant, Does not Comply = entspricht nicht Prüfgrundlage N/A = nicht anwendbar | | | Abbreviations: OK, Pass, Compliant, Complies = passed Fail, Not Compliant, Does Not Comply = failed N/A = not applicable | | |
|  | |  | | Industry Canada | |
| US5253 | | NVLAP CODE 200313-0 | | 3466C-1 | |
| | | | | BSMI | |
| | | | | SL2-IN-E-050R | |

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TABLE OF CONTENTS

| | | |
|----------|---|-----------|
| 1 | GENERAL INFORMATION | 4 |
| 1.1 | SCOPE | 4 |
| 1.2 | PURPOSE | 4 |
| 1.3 | SUMMARY OF TEST RESULTS | 5 |
| 2 | LABORATORY INFORMATION | 6 |
| 2.1 | ACCREDITATIONS & ENDORSEMENTS | 6 |
| 2.2 | MEASUREMENT UNCERTAINTY | 7 |
| 2.3 | CALIBRATION TRACEABILITY | 7 |
| 2.4 | MEASUREMENT EQUIPMENT USED | 8 |
| 3 | PRODUCT INFORMATION | 9 |
| 3.1 | PRODUCT DESCRIPTION | 9 |
| 3.2 | EQUIPMENT MODIFICATIONS | 9 |
| 3.3 | TEST PLAN | 9 |
| 4 | EMISSIONS..... | 11 |
| 4.1 | RADIATED EMISSIONS | 11 |
| 4.2 | CONDUCTED EMISSIONS | 15 |
| 4.3 | CONDUCTED OUTPUT POWER LIMITS | 15 |
| 4.4 | PEAK POWER SPECTRAL DENSITY | 17 |
| 4.5 | PEAK POWER EXCURSION | 34 |
| 4.6 | BAND EDGE | 51 |
| 4.7 | -26 DB BANDWIDTH | 53 |
| 4.8 | RESTRICTED BANDS OF OPERATION | 55 |
| 4.9 | DISCONTINUANCE OF TRANSMISSION IN ABSENCE OF INFORMATION..... | 55 |
| 4.10 | FREQUENCY STABILITY | 56 |
| 4.11 | ANTENNA REQUIREMENTS | 58 |
| 4.12 | 99% BANDWIDTH | 59 |
| | APPENDIX A | 61 |
| 5 | TEST PLAN..... | 61 |
| 5.1 | GENERAL INFORMATION | 61 |
| 5.2 | MODEL(S) NAME | 61 |
| 5.3 | TYPE OF PRODUCT | 61 |
| 5.4 | EUT ELECTRICAL POWERED INFORMATION | 62 |
| 5.5 | ELECTRICAL SUPPORT EQUIPMENT | 62 |
| 5.6 | EUT TEST PROGRAM..... | 62 |

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1 General Information

1.1 Scope

This report is intended to document the status of conformance with the requirements of the FCC Part 15, based on the results of testing performed on 03/12/2010 on the DRX-1 Radio, Model No. DRX-1, manufactured by Carestream Health Inc.. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT (Equipment Under Test) in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

1.3 Summary of Test Results

| Applicant | Carestream Health Inc. 150 Verona St Rochester NY, 14608 | Tel | 585-627-8321 | Contact | Ronald Cain |
|---|---|--------------------------------------|-----------------|---------------------------------|----------------------------------|
| | | Fax | 585-477-2718 | e-mail | ronald.cain@carestreamhealth.com |
| Description | DRX-1 Radio | Model Number | DRX-1 | | |
| Serial Number | 00403 | Test Voltage/Freq. | Battery 14.4VDC | | |
| Test Date Completed: | 03/12/2010 | Test Engineer | Randall Masline | | |
| Standards | Description | Severity Level or Limit | | Measurement | Test Result |
| RSS-210 Issue 7 | Industry Canada - Low-power License-exempt Radiocommunication Devices | See called out basic standards below | | See Below | Complies |
| FCC Part 15.407 Subpart E 5.25-5.35 GHz | Unlicensed National Information Infrastructure Devices | See called out basic standards below | | See Below | Complies |
| FCC Part 15.209(a) | Radiated Emissions | Class B, 30 - 1000 MHz | | | Complies |
| FCC Part 15.207(c) | Conducted Emissions | Class B, 0.15 - 30 MHz | | Not Required Battery Powered | Complies |
| FCC Part 15.407(a) (2) | Conducted Output Power | 250 mw Maximum | | 15.9 dBm | Complies |
| FCC part 15.407(a)(2) | -26 dB Bandwidth | | | 26 MHz | Complies |
| FCC Part 15.407(a)(5) | Peak Power Spectral Density | | | | Complies |
| FCC Part 15.407(a)(6) | Peak Power Excursion | | | | Complies |
| FCC Part 15.407(b)(8) | Band Edge | | | | Complies |
| FCC Part 15.205 | Restricted Bands | | | | Complies |
| FCC Part 15.407(c) | Discontinuance Of Transmission | | | | Complies |
| FCC Part 15.407(g) | Frequency Stability | | | | Complies |
| FCC Part 15.203 | Antenna Requirements | | | | Complies |
| RSS-210 | 99% Bandwidth | | | | Complies |

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2 Laboratory Information

2.1 Accreditations & Endorsements

2.1.1 US Federal Communications Commission

TUV Rheinland of North America located at 336 Initiative Dr, Rochester NY is accredited by the commission for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Registration No US90575). The laboratory scope of accreditation includes: Title 47 CFR Part 15, and 18. The accreditation is updated every 3 years.

2.1.2 NIST / NVLAP

Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Lab code: 200313-0). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 VCCI

VCCI Accredited test lab. Registration numbers R-1065, C-1120, C-1121

2.1.4 Industry Canada

Registration No.: 3466C-1. The OATS has been accepted by Industry Canada to perform testing to 3 and to 10m, based on the test procedures described in ANSI C63.4-2003.

2.1.5 BSMI

Registration No.: SL2-IN-E-050R. The BSMI accreditation was obtained by NIST MRA with the BSMI.

2.2 Measurement Uncertainty

General

| | |
|-------------------------------------|--|
| <input type="checkbox"/> | The estimated combined standard uncertainty for ESD immunity measurements is $\pm 0.43\%$. |
| <input type="checkbox"/> | The estimated combined standard uncertainty for radiated immunity measurements is $\pm 2.0\text{dB}$. |
| <input type="checkbox"/> | The estimated combined standard uncertainty for EFT fast transient immunity measurements is $\pm 6.0\%$. |
| <input type="checkbox"/> | The estimated combined standard uncertainty for surge immunity measurements is $\pm 5.0\%$. |
| <input type="checkbox"/> | The estimated combined standard uncertainty for conducted immunity measurements is $\pm 2.0\text{dB}$. |
| <input type="checkbox"/> | The estimated combined standard uncertainty for power frequency magnetic field immunity measurements is $\pm 2.57\%$. |
| <input type="checkbox"/> | The estimated combined standard uncertainty for voltage variation and interruption measurements is $\pm 4.89\%$. |
| <input checked="" type="checkbox"/> | The estimated combined standard uncertainty for radiated emissions measurements is $\pm 4.6\text{ dB}$. |
| <input type="checkbox"/> | The estimated combined standard uncertainty for conducted emissions measurements is $\pm 2.6\text{ dB}$. |
| <input type="checkbox"/> | The estimated combined standard uncertainty for harmonic current $\pm 7.27\%$ and flicker measurements is $\pm 3.87\%$. |

2.3 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005. Equipment calibration records are kept on file at the test facility.

2.4 Measurement Equipment Used

| Equipment | Manufacturer | Model # | Ref. | Serial # | Last Cal dd/mm/yy | Next Cal dd/mm/yy | Test |
|--|-----------------|---------------|------|-------------|----------------------|----------------------|-----------|
| Biconical Antenna | EMCO | 3110 | C004 | 1502 | 13 Feb 10 | 13 Feb 12 | RE |
| Log Periodic Antenna | EMCO | 3147 | C023 | 1369 | 13 Feb 10 | 13 Feb 12 | RE |
| Horn | EMCO | 3115 | C025 | 9812-4630 | 30-Jun 09 | 30-Jun-11 | RE |
| BiLog | Chase | CBL6111 | C017 | 1169 | 9-Jul-09 | 9-Jul-10 | RE |
| EMI Receiver | Rohde & Schwarz | ESVS 30 | C310 | 826006/015 | 17-Dec-09 | 17-Dec-10 | RE |
| Analyzer w RF Filter Section 85460A | HP | 8546A | C311 | 3325A00127 | 30-Jul-09 | 30-Jul-10 | RE, CE |
| Receiver (20Hz-40GHz) | Rohde & Schwarz | ESI 40 | C320 | 839283/005 | 29-Jul-09 | 29-Jul-10 | RE,CE |
| EMI Receiver | Rohde & Schwarz | ESHS 30 | C323 | 831954/012 | 17-Dec-09 | 17-Dec-10 | CE |
| Amplifier (18-26.5GHz) | Rohde & Schwarz | TS-PR26 | C443 | 100005 | 30-Jul-09 | 30-Jul-11 | RE |
| Digital Pressure/Temp/RH | Davis | Perception II | C444 | 40917 | 09-Feb10 | 09-Feb-12 | All tests |
| Horn | EMCO | 3160-09 | C447 | 03-0338-018 | 16-Sep-08 | 16-Sep-10 | RE |
| BiLog | Chase | CBL6111B | C448 | 2081 | 21-Nov-09 | 21-Nov-10 | RE |
| Multimeter | Fluke | 8062A | C452 | 4715199 | 17-Dec-09 | 17-Dec-10 | All tests |
| Analyzer w RF Filter Section 85460A | HP | 8546A | D004 | 3625A00356 | 29-Jul-09 | 29-Jul-10 | RE, CE |
| Temp Chamber | Tenney | T-14 Special | | 9928 | 20-Nov-09 | 20-Nov-10 | RE |

Note: CE = Conducted Emissions, CI= Conducted Immunity, DP=Disturbance Power, EFT=Electrical Fast Transients, ESD = Electrostatic Discharge, FLI=Flicker, HAR=Harmonics, MF=Magnetic Field Immunity, RE=Radiated Emissions, RI=Radiated Immunity, SI=Surge Immunity, VDSI=Voltage Dips and Short Interruptions

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3 Product Information

3.1 Product Description

See Appendix A

| Channel | Operating Frequency (MHz) | Rated Power (dBm) |
|---------|---------------------------|-------------------|
| 52 | 5260 | +23.9 |
| 56 | 5280 | +23.9 |
| 60 | 5300 | +23.9 |
| 64 | 5320 | +23.9 |

3.2 Equipment Modifications

No modifications were needed to bring product into compliance.

3.3 Test Plan

The EUT product information, test configuration, mode of operation, test types, test procedures, test levels, pass/failure criteria, in this report were carried out per the product test plan located in appendix A of this report.

There were no deviations, adaptations or exclusions made to the standards shown on page 2 during the testing of the DRX-1 radio. There were no options selected in any of the standards during the DRX-1 radio tests.

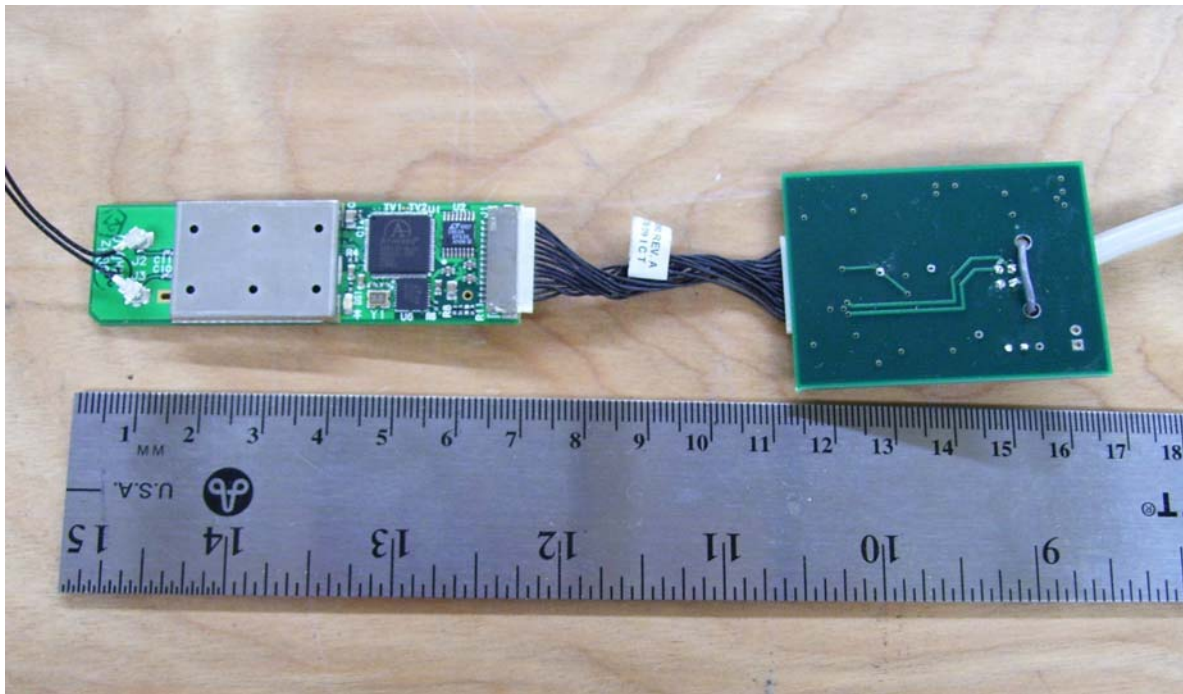


Figure 1 – Internal Photo of EUT

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4 Emissions

4.1 Radiated Emissions

This test measures the electromagnetic levels of spurious signals generated by the EUT that radiated from the EUT and may affect the performance of other nearby electronic equipment.

4.1.1 Over View of Test

| | | | | | | | | |
|-----------------|---|------|------|--------------------|---------|----------------------|-----------|--|
| Results | Complies (as tested per this report) | | | | | Date | 3/11/2010 | |
| Standard | FCC Part 15.209(a) | | | | | | | |
| Product Model | DRX-1 | | | | Serial# | 00403 | | |
| Configuration | See test plan for details | | | | | | | |
| Test Set-up | Tested on 10m O.A.T.S. placed on turn-table, see test plans for details | | | | | | | |
| EUT Powered By | Battery 14.4VDC | Temp | 24°C | Humidity | 54% | Pressure | 1013mbar | |
| Frequency Range | 30 - 1000 MHz @ 10m | | | | | | | |
| Criteria | Class B. (Below Limit) | | | Perf. Verification | | Readings Under Limit | | |
| Mod. to EUT | None | | | Test Performed By | | Randall Masline | | |

4.1.2 Test Procedure(s)

Radiated and FCC emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 30 - 1000 MHz was investigated for radiated emissions.

Radiated emission testing was first performed at a distance of 3 meters in the semi-anechoic chamber in order to identify the specific frequencies for which these measurements will be made on the 10 m OATS.

In accordance with FCC Public Notice DA 02-2138 Measurement Procedure updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands.

The transmitter was transmitting continuously at maximum power for all tests. Therefore; method 2 was used to measure peak power..

4.1.3 Deviations

There were no deviations from the test methodology listed in the test plan for the radiated emission test.

4.1.4 Final Test

All final radiated emissions measurements were below (in compliance) the limits.

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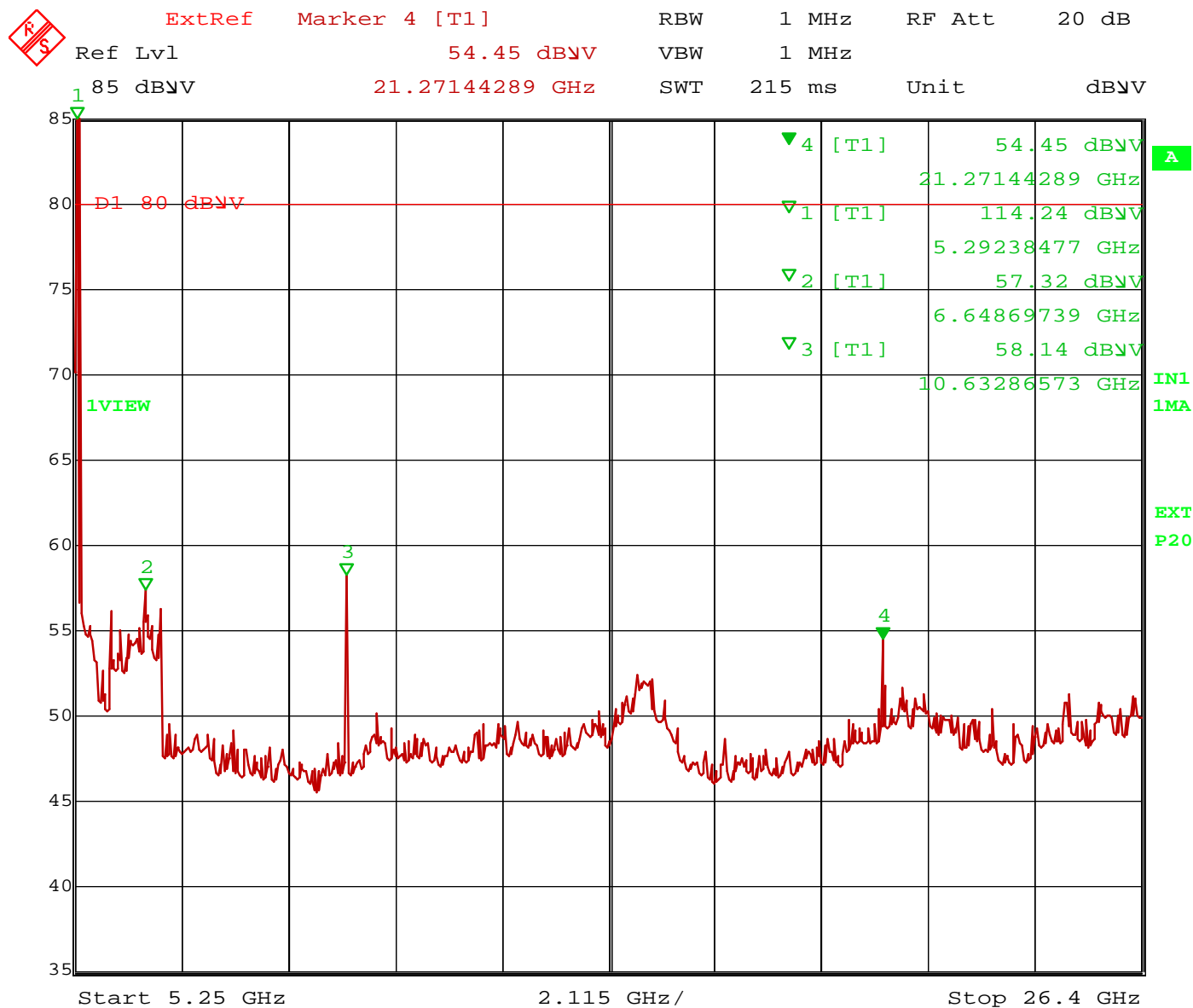
4.1.5 Final Tabulated Data

| Radiated Emissions Measurements | | | | | | | | | |
|--|---------------------------|------------|------------------|--------------|----------|--------------|-----------------|-------------------------|---------|
| Standard: | 47 CFR 15.209(a), Class B | | | | Final | | Date: | 3/11/2010 | |
| Device Tested: | DRX1 | Radio | | | 3.0m | | File: | | |
| | | | | | | | | | |
| | Measured Level | | | | | | | | |
| Meas # | Freq (MHz) | Quasi-Peak | Quasi-Peak Limit | Quasi-Peak Δ | Result | Polarization | Angle (degrees) | Antenna Height (meters) | Comment |
| 1 | 33.4680 | 32.10 | 40.00 | -7.90 | Complied | Vertical | 0 | 1.00 | |
| 2 | 80.0640 | 29.70 | 40.00 | -10.30 | Complied | Vertical | 0 | 1.00 | |
| 3 | 133.0200 | 31.50 | 43.50 | -12.00 | Complied | Vertical | 0 | 1.00 | |
| 4 | 163.1280 | 28.60 | 43.50 | -14.90 | Complied | Vertical | 0 | 1.00 | |
| 5 | 672.0000 | 37.30 | 46.00 | -8.70 | Complied | Vertical | 0 | 1.00 | |
| 6 | 242.0000 | 37.40 | 46.00 | -8.60 | Complied | Horizontal | 0 | 1.00 | |
| 7 | 472.0000 | 41.10 | 46.00 | -4.90 | Complied | Horizontal | 0 | 1.00 | |
| 8 | 484.0000 | 42.30 | 46.00 | -3.70 | Complied | Horizontal | 0 | 1.00 | |

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Spurious Emissions

Spurious emissions were investigated to the 10th harmonic or in this case to 40 GHz, measurements were taken on the highest channel, channel 64 5320 MHz at 24 Mbits/s.



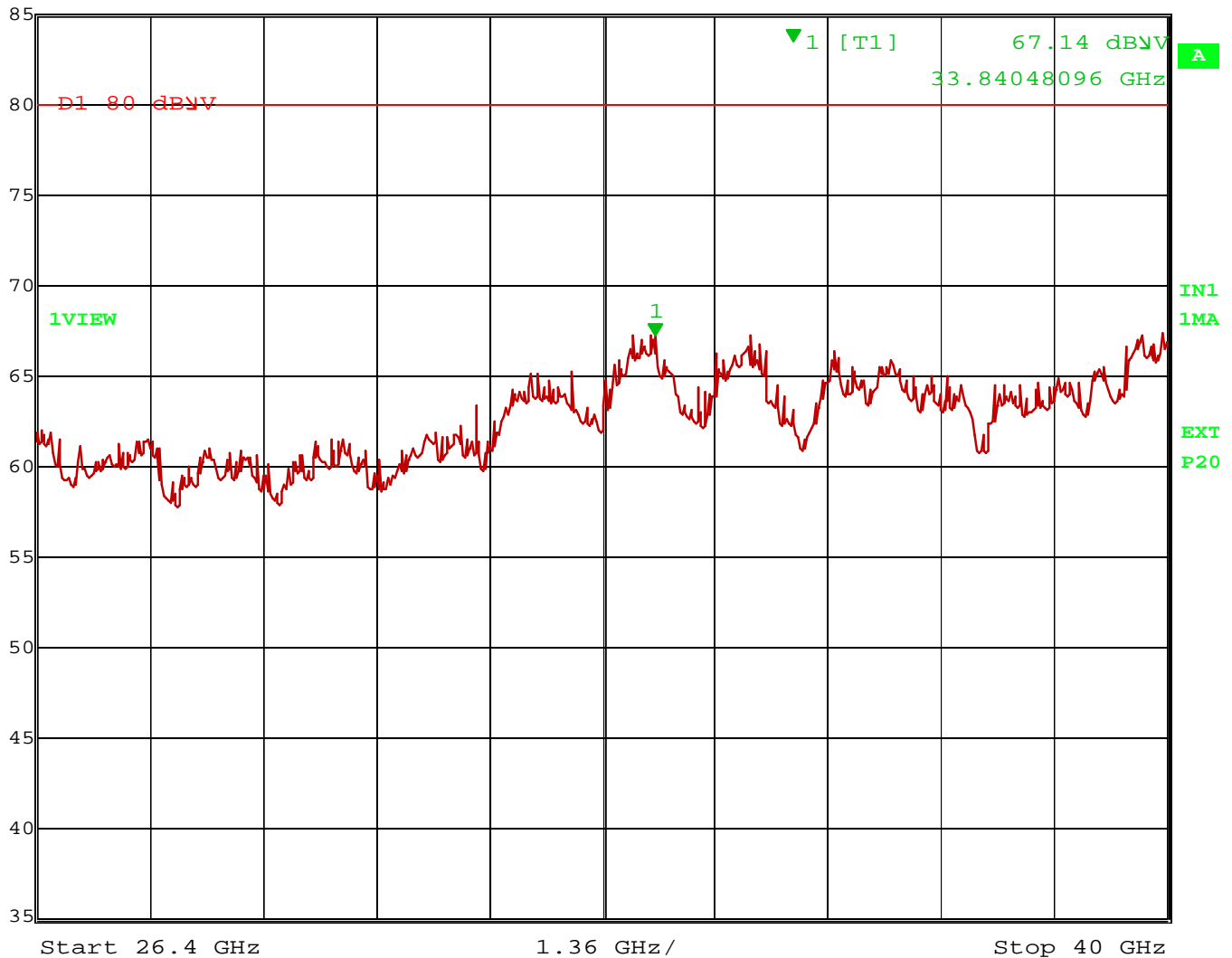
Date: 7.APR.2010 15:25:01

Figure 2 – Spurious Emissions from 5.25 GHz to 26.4 GHz

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ExtRef Marker 1 [T1] RBW 1 MHz RF Att 20 dB
 Ref Lvl 67.14 dBμV VBW 1 MHz
 85 dBμV 33.84048096 GHz SWT 205 ms Unit dBμV



Date: 7.APR.2010 15:27:37

Figure 3 – Spurious Emissions from 25.4 GHz to 40 GHz

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4.2 Conducted Emissions

This test measures the electromagnet levels of spurious signals generated by the EUT on the AC power line that may affect the performance of other near by electronic equipment.

The EUT operated on 12VDC battery only, therefore testing was not performed.

4.3 Conducted Output Power Limits

Testing has been carried out on the EUT in accordance with 47 CFR Part 15.407(a)(2) in order to determine the -26 dB emission bandwidth of the transmitted signal. It has been determined that the -26 dB emission bandwidth is 26 MHz.

The peak transmit power limit based on the -26dB emission bandwidth in the frequency band of 5250 – 5350 MHz can be calculated as follows:

+11 dBm + 10 log B where B is the -26 dB emission Bandwidth in MHz

+11 dBm + 10 log 26 = +11 dBm + 14.14 = 25.14 dBm (326mW)

In accordance with 47 CFR Part 15.404(a)(2) the peak transmit power in the frequency band of 5250 – 5350 MHz shall not exceed the lesser of 250 mW or +11 dBm + 10log B, where B is the -26 dB emission bandwidth in MHz.

In accordance with 47 CFR Part 15.407(a)(2), the peak transmit power limit, in the frequency band of 5250 – 5350 MHz, has been determined at +23.9 dBm (250mW)

4.3.1 Maximum Peak Transmit Power Test Results

| Transmission Bitrate (Mbits/s) | Maximum Peak Transmit Power (dBm) | | | | Limit (dBm) Antena gain < 6 dBi |
|--------------------------------------|-----------------------------------|----------|----------|----------|---------------------------------------|
| | Ch 52 | Ch 56 | Ch 60 | Ch 64 | |
| | 5260 MHz | 5280 MHz | 5300 MHz | 5320 MHz | |
| 6 | 15.8 | 15.8 | 15.9 | 15.9 | 23.9 |
| 12 | 15.7 | 15.7 | 15.8 | 15.8 | 23.9 |
| 24 | 15.6 | 15.6 | 15.7 | 15.6 | 23.9 |
| 54 | 15.3 | 15.7 | 15.6 | 15.6 | 23.9 |

Table 1 – Maximum Peak transmit power at 20MHz Bandwidth

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4.4 Peak Power Spectral Density

The results of the testing on the EUT, carried out in accordance with 47 CFR Part 15.407(a)(5), are depicted in the table 2 below. The limits have been derived from 47 CFR Part 15.407(a)(1)

In accordance with FCC Public Notice DA 02-2138 Measurement Procedure updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands. Method #1 was used

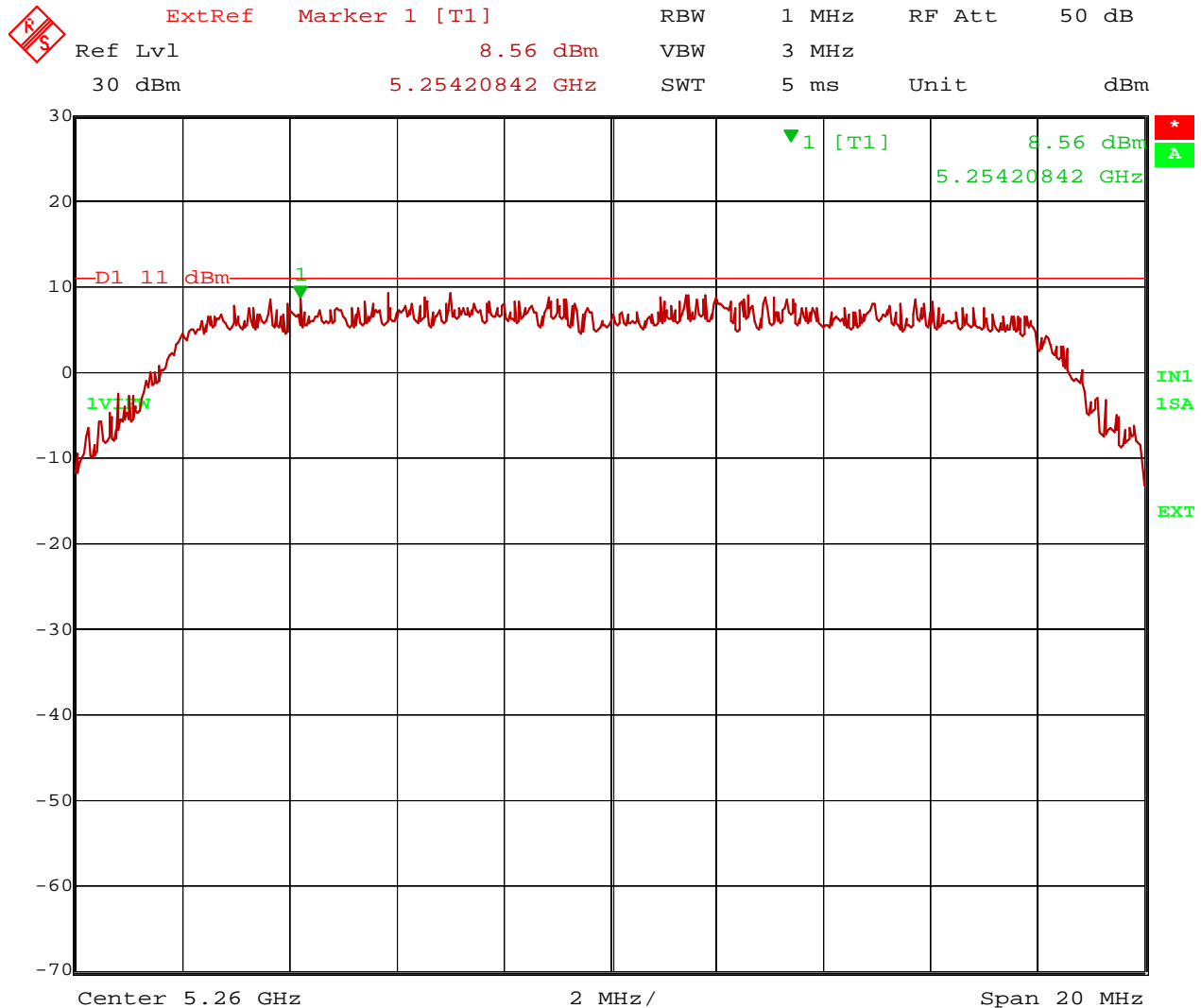
4.4.1 Test Results

| Transmission Bitrate (Mbits/s) | Peak power Spectral Density (dBm) | | | | Limit (dBm) |
|--------------------------------------|-----------------------------------|-------------------|-------------------|-------------------|-------------|
| | Conducted in any 1 MHz band | | | | |
| | Ch 52 5260 MHz | Ch 56 5280 MHz | Ch 60 5230 MHz | Ch 64 5320 MHz | |
| 6 | 8.56 | 9.58 | 10.03 | 9.01 | +11 |
| 12 | 8.88 | 9.72 | 8.80 | 9.53 | +11 |
| 24 | 8.92 | 9.13 | 9.47 | 9.38 | +11 |
| 54 | 8.89 | 9.31 | 9.35 | 9.61 | +11 |

Table 2 – Peak Power Spectral Density at 20MHz Bandwidth

4.4.2 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

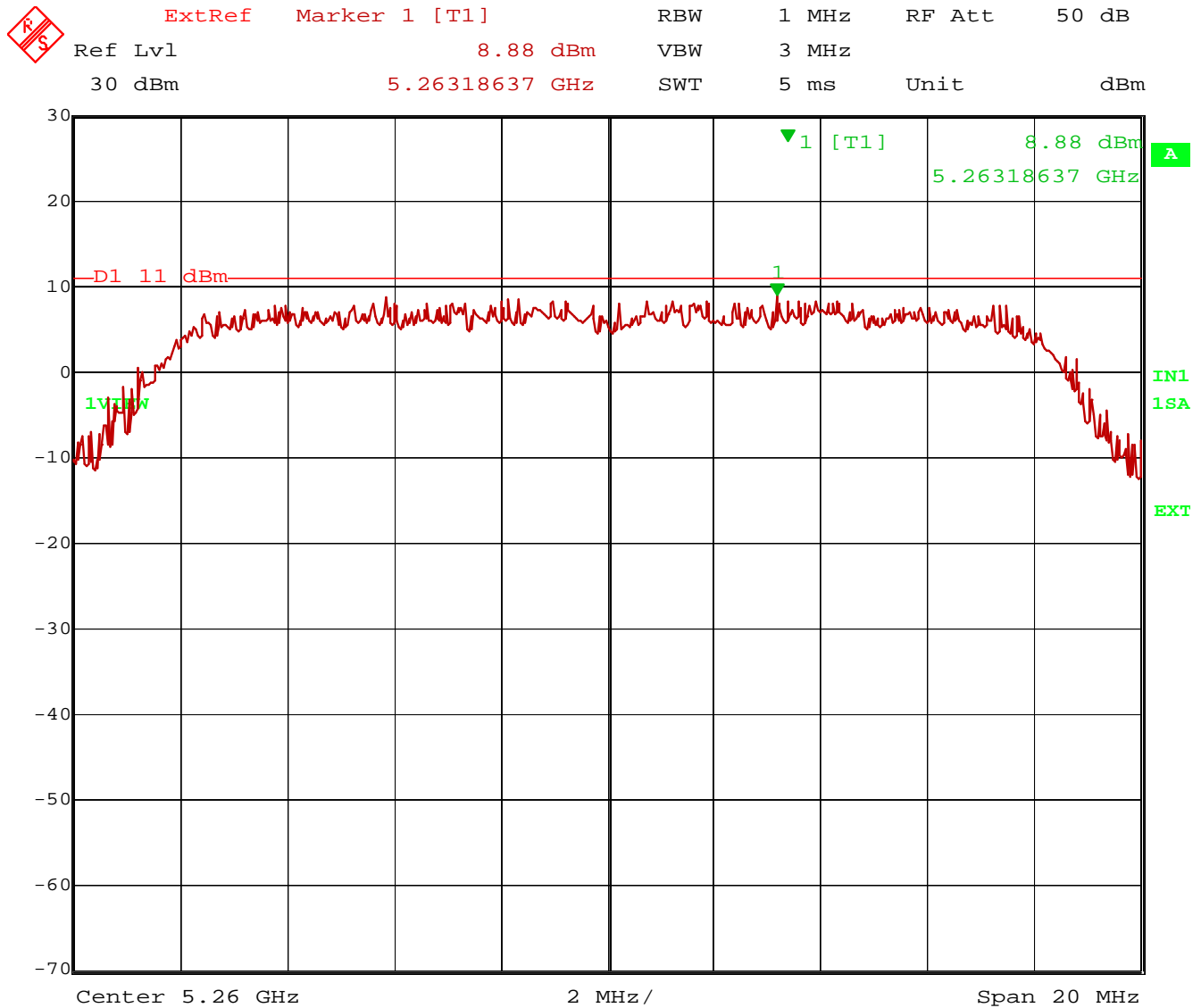


Date: 18.FEB.2010 14:23:12

Plot 1– Peak Power Spectral Density (conducted) in any 1 MHz band

EUT operating on Ch 52 (5260 MHz) at a Transmission rate of 6 Mbits/s

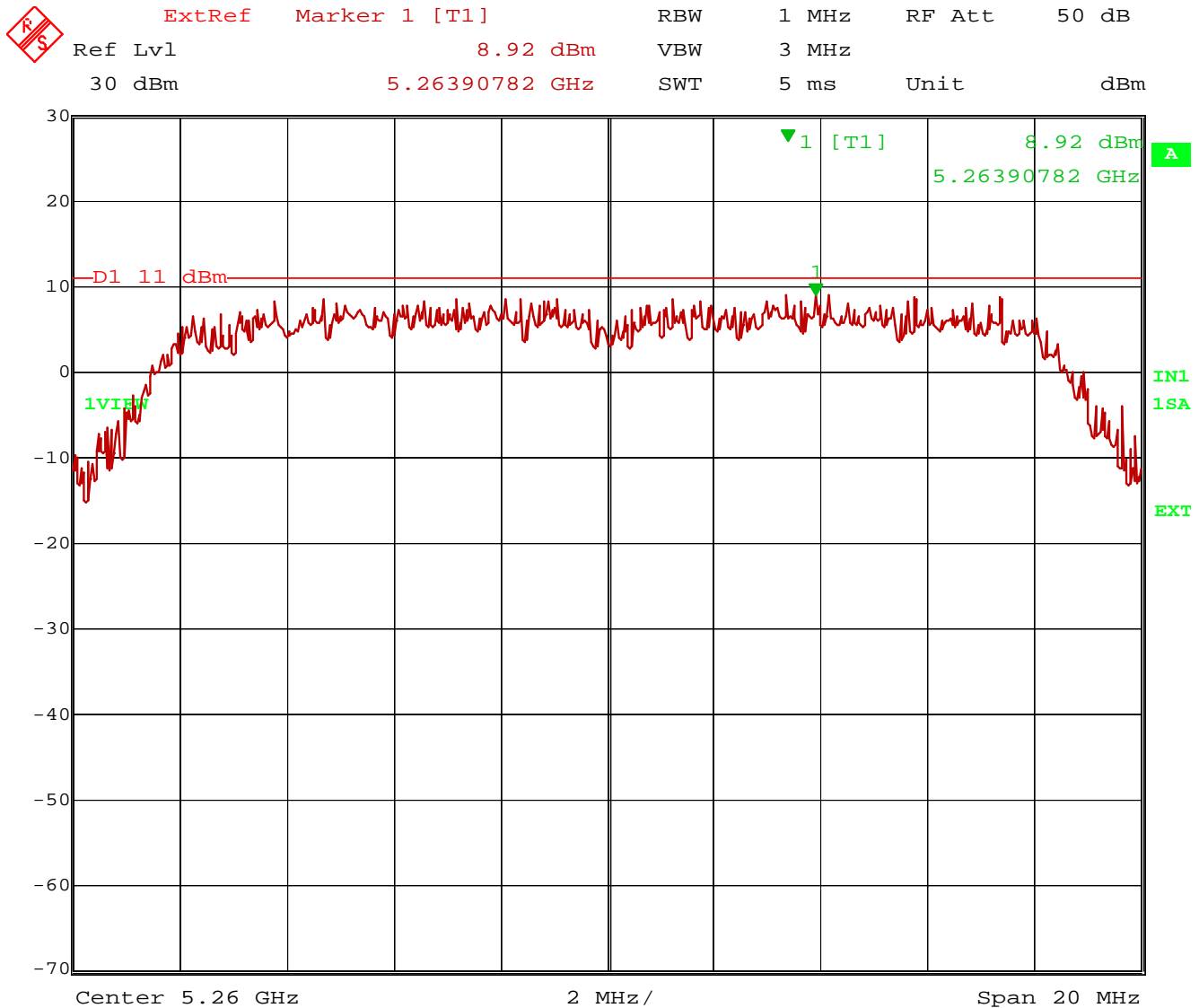
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Date: 18.FEB.2010 14:29:00

Plot 2- Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 52 (5260 MHz) at a Transmission rate of 12 Mbits/s

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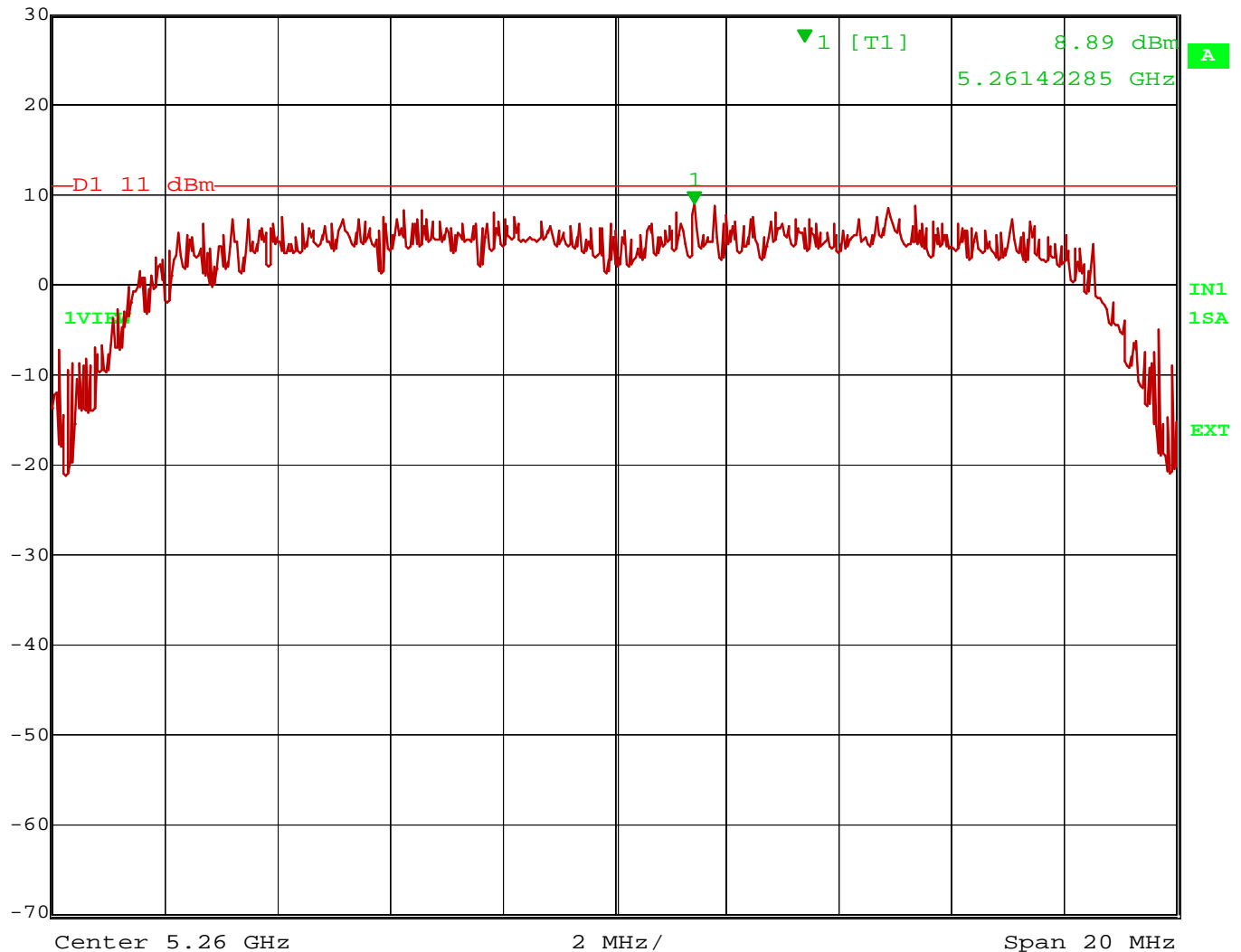
Date: 18.FEB.2010 14:55:24

Plot 3– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 52 (5260 MHz) at a Transmission rate of 24 Mbits/s

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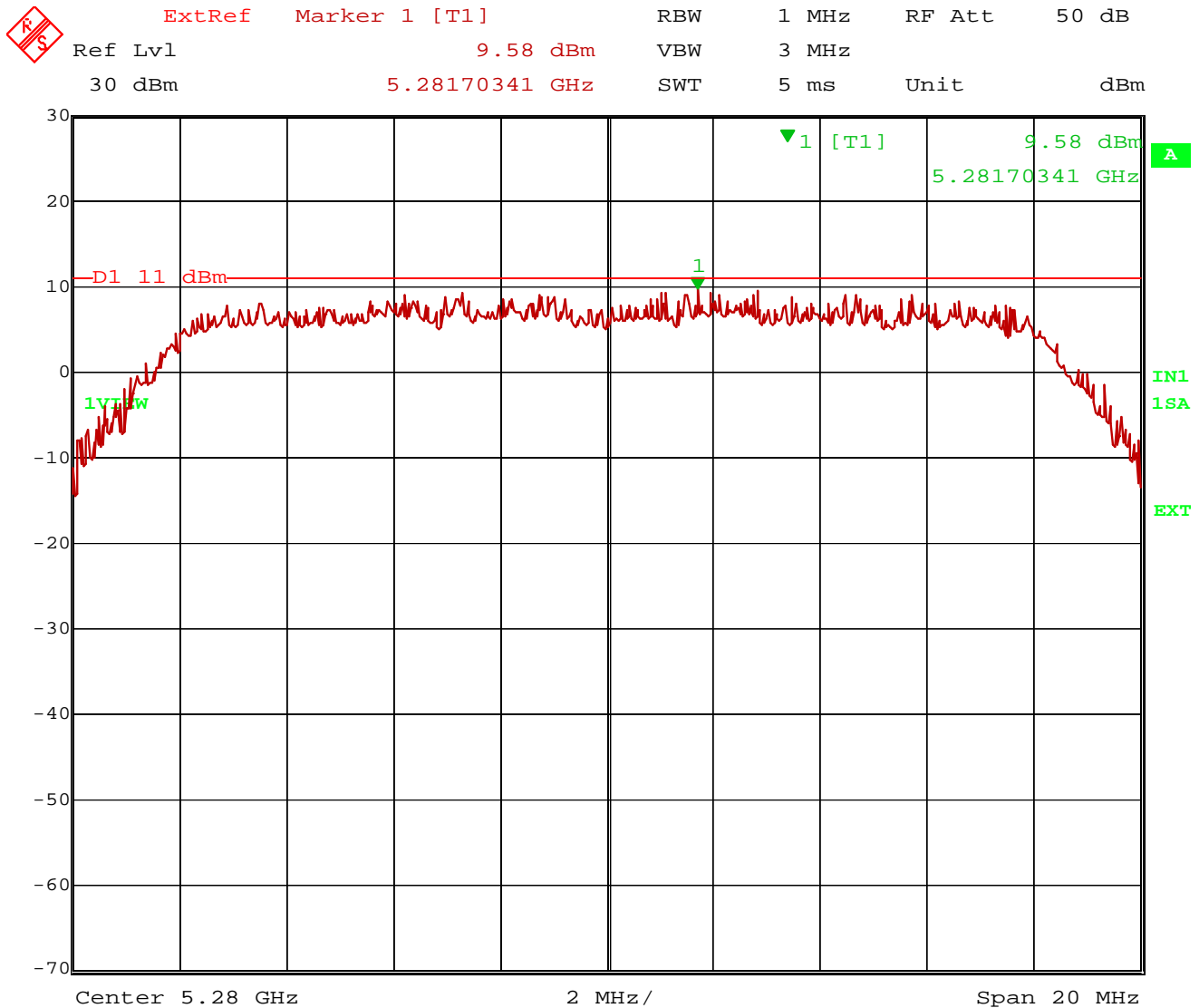
ExtRef Marker 1 [T1] RBW 1 MHz RF Att 50 dB
 Ref Lvl 8.89 dBm VBW 3 MHz
 30 dBm 5.26142285 GHz SWT 5 ms Unit dBm



Date: 18.FEB.2010 15:00:21

Plot 4– Peak Power Spectral Density (conducted) in any 1 MHz band
 EUT operating on Ch 52 (5260 MHz) at a Transmission rate of 54 Mbits/s

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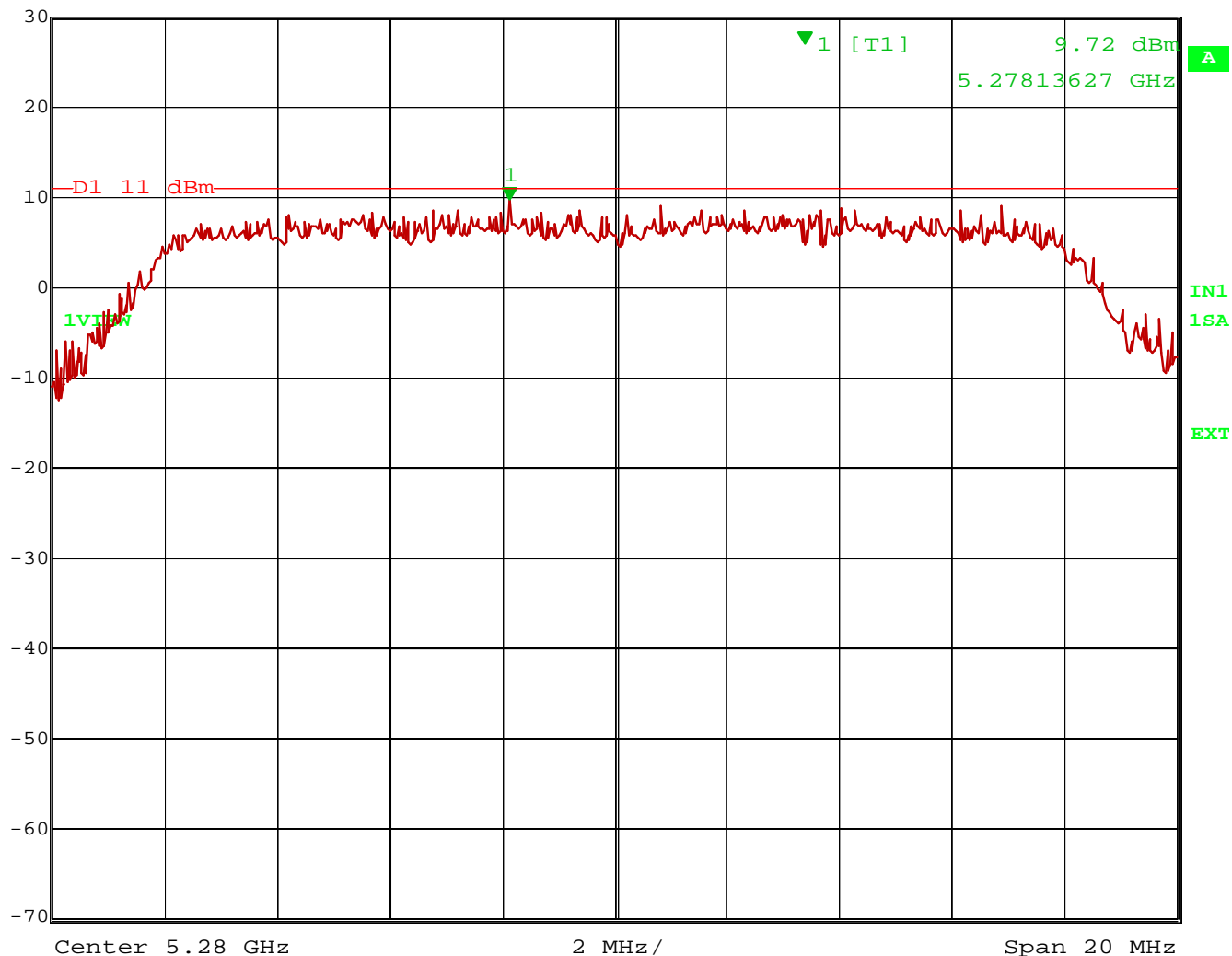
Date: 18.FEB.2010 14:24:34

Plot 5– Peak Power Spectral Density (conducted) in any 1 MHz band
 EUT operating on Ch 56 (5280 MHz) at a Transmission rate of 6 Mbits/s

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ExtRef Marker 1 [T1] RBW 1 MHz RF Att 50 dB
 Ref Lvl 9.72 dBm VBW 3 MHz
 30 dBm 5.27813627 GHz SWT 5 ms Unit dBm



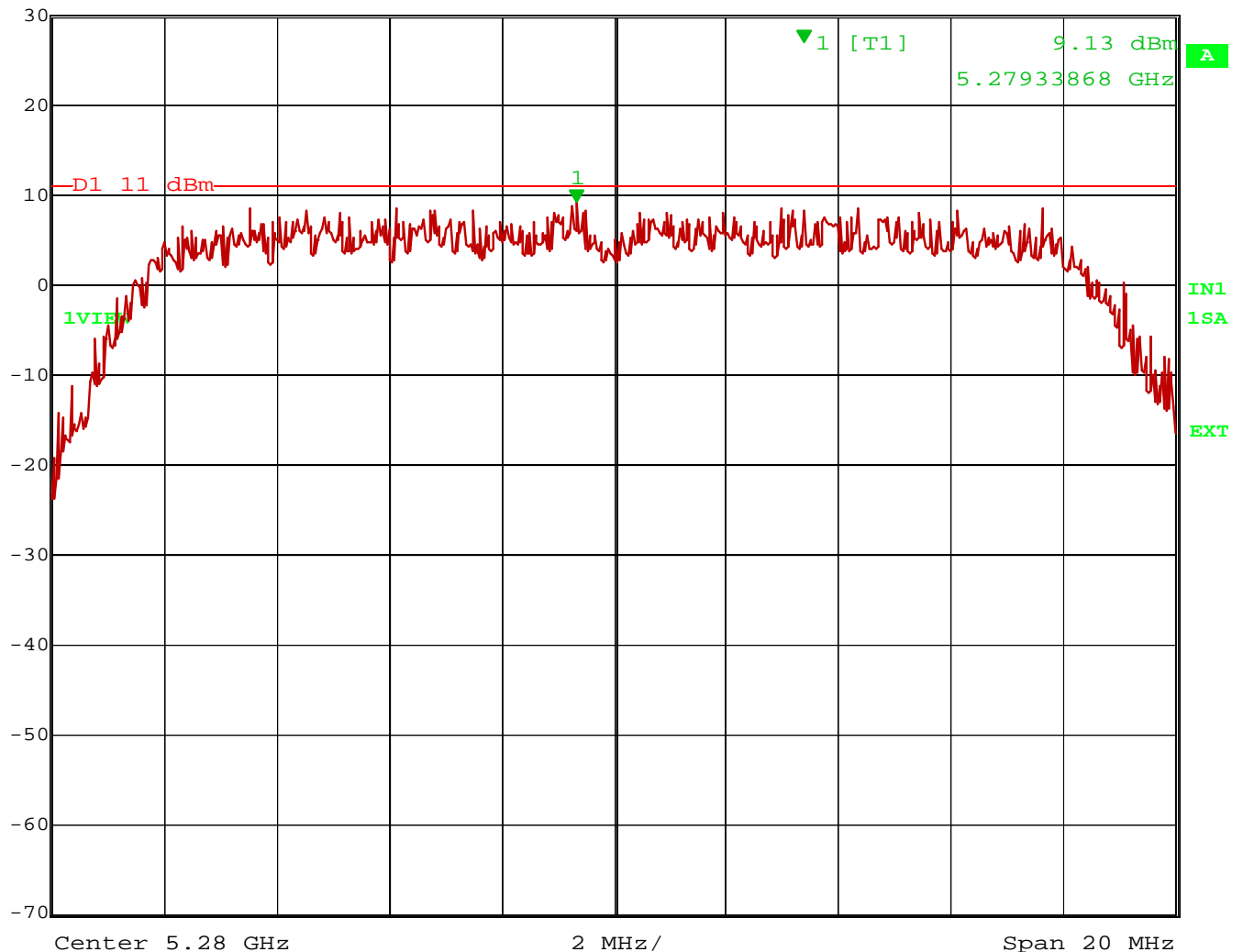
Date: 18.FEB.2010 14:28:21

Plot 6– Peak Power Spectral Density (conducted) in any 1 MHz band
 EUT operating on Ch 56 (5280 MHz) at a Transmission rate of 12 Mbits/s

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



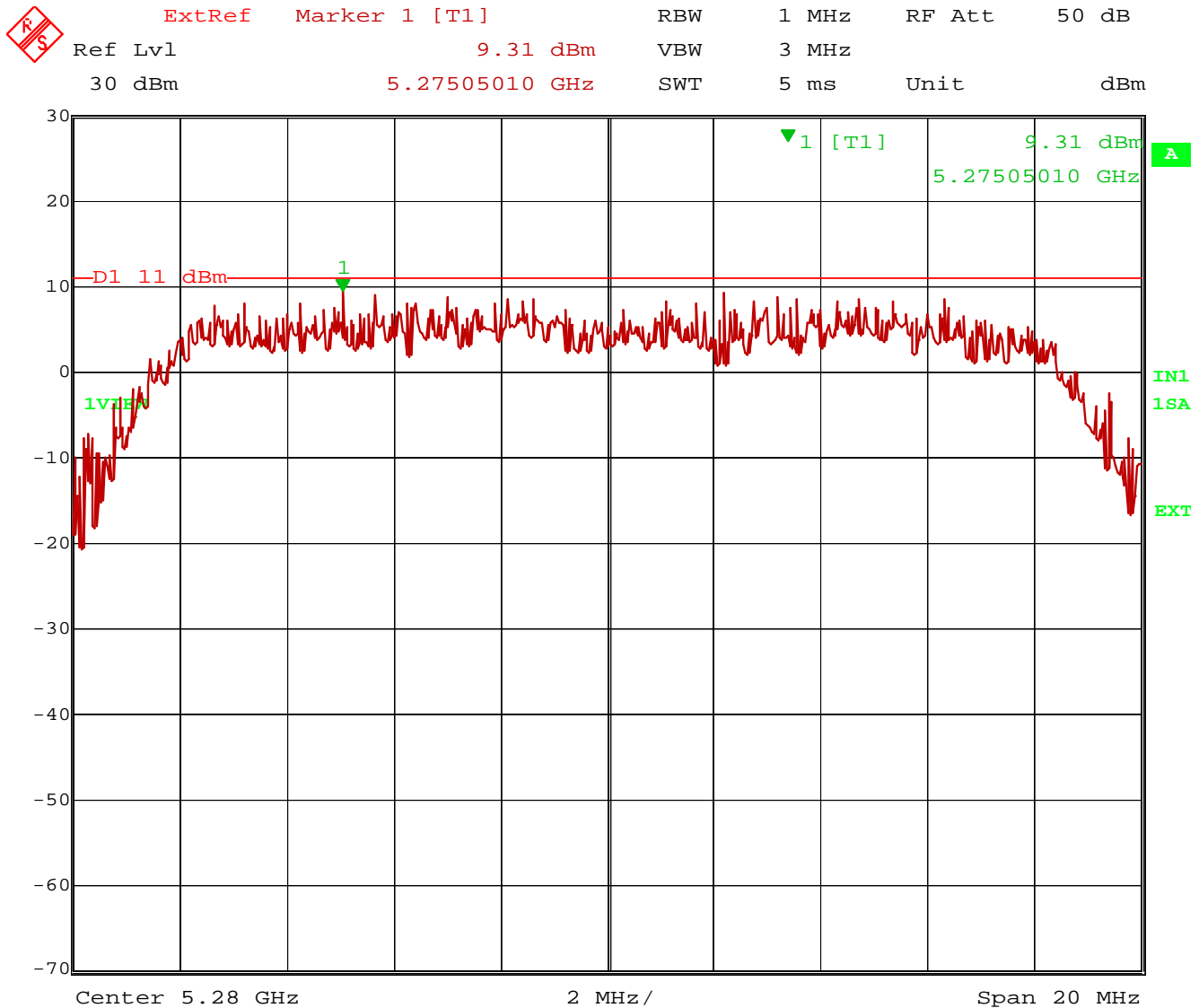
ExtRef Marker 1 [T1] RBW 1 MHz RF Att 50 dB
Ref Lvl 9.13 dBm VBW 3 MHz
30 dBm 5.27933868 GHz SWT 5 ms Unit dBm



Date: 18.FEB.2010 14:56:13

Plot 7– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 56 (5280 MHz) at a Transmission rate of 24 Mbits/s

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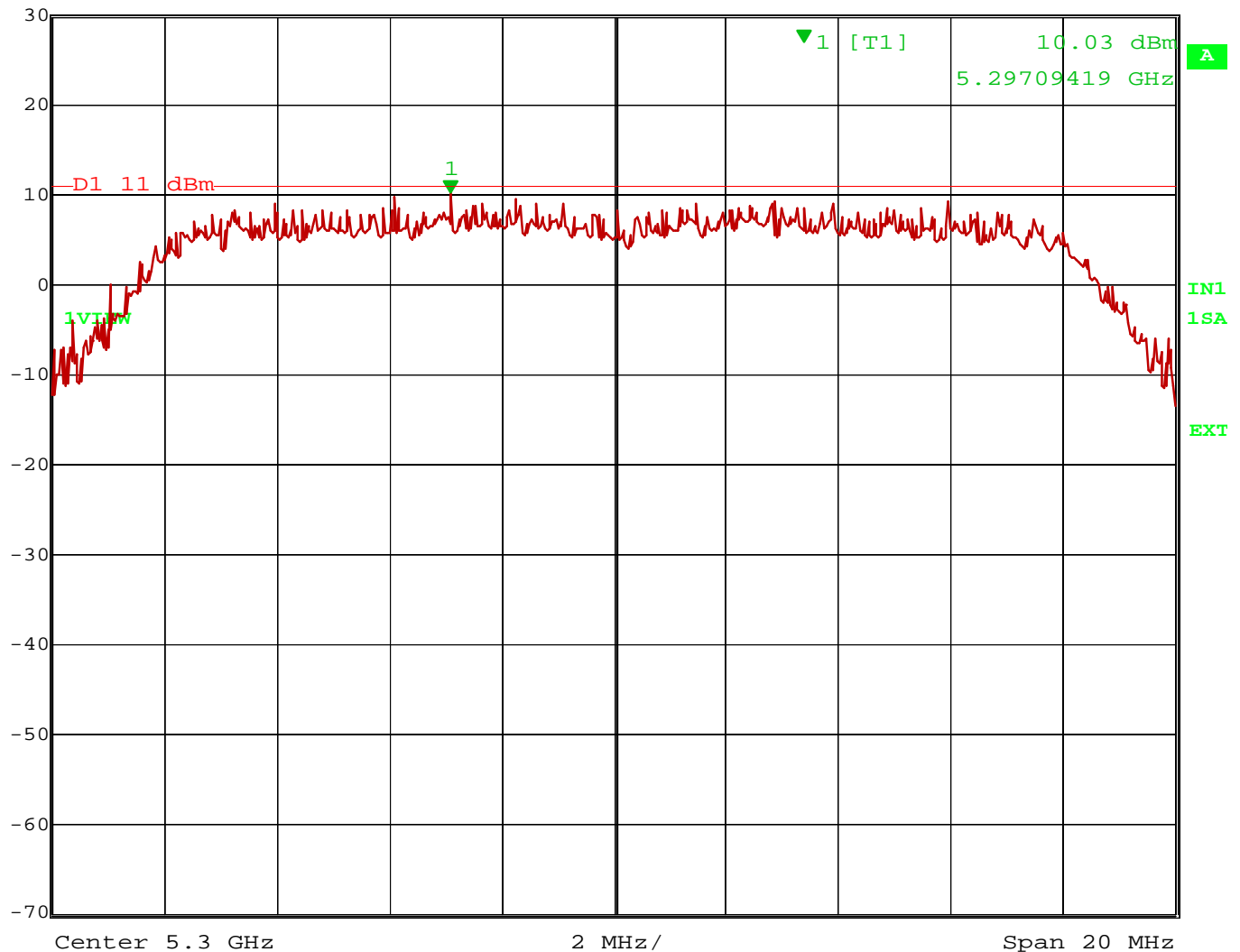
Date: 18.FEB.2010 14:59:39

Plot 8– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 56 (5280 MHz) at a Transmission rate of 54 Mbits/s

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



ExtRef Marker 1 [T1] RBW 1 MHz RF Att 50 dB
Ref Lvl 10.03 dBm VBW 3 MHz
30 dBm 5.29709419 GHz SWT 5 ms Unit dBm



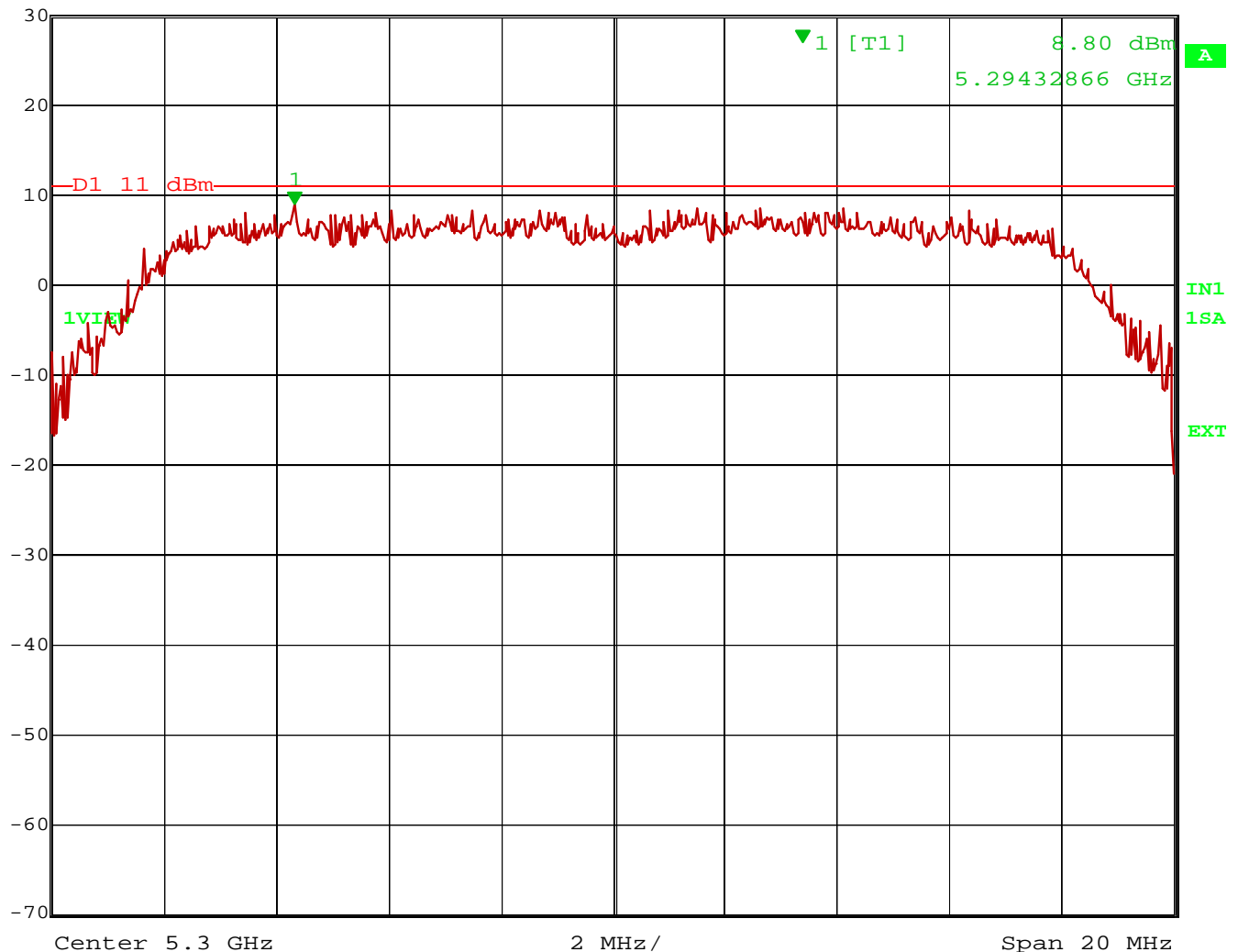
Date: 18.FEB.2010 14:25:16

Plot 9– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 60 (5300 MHz) at a Transmission rate of 6 Mbits/s

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ExtRef Marker 1 [T1] RBW 1 MHz RF Att 50 dB
 Ref Lvl 8.80 dBm VBW 3 MHz
 30 dBm 5.29432866 GHz SWT 5 ms Unit dBm



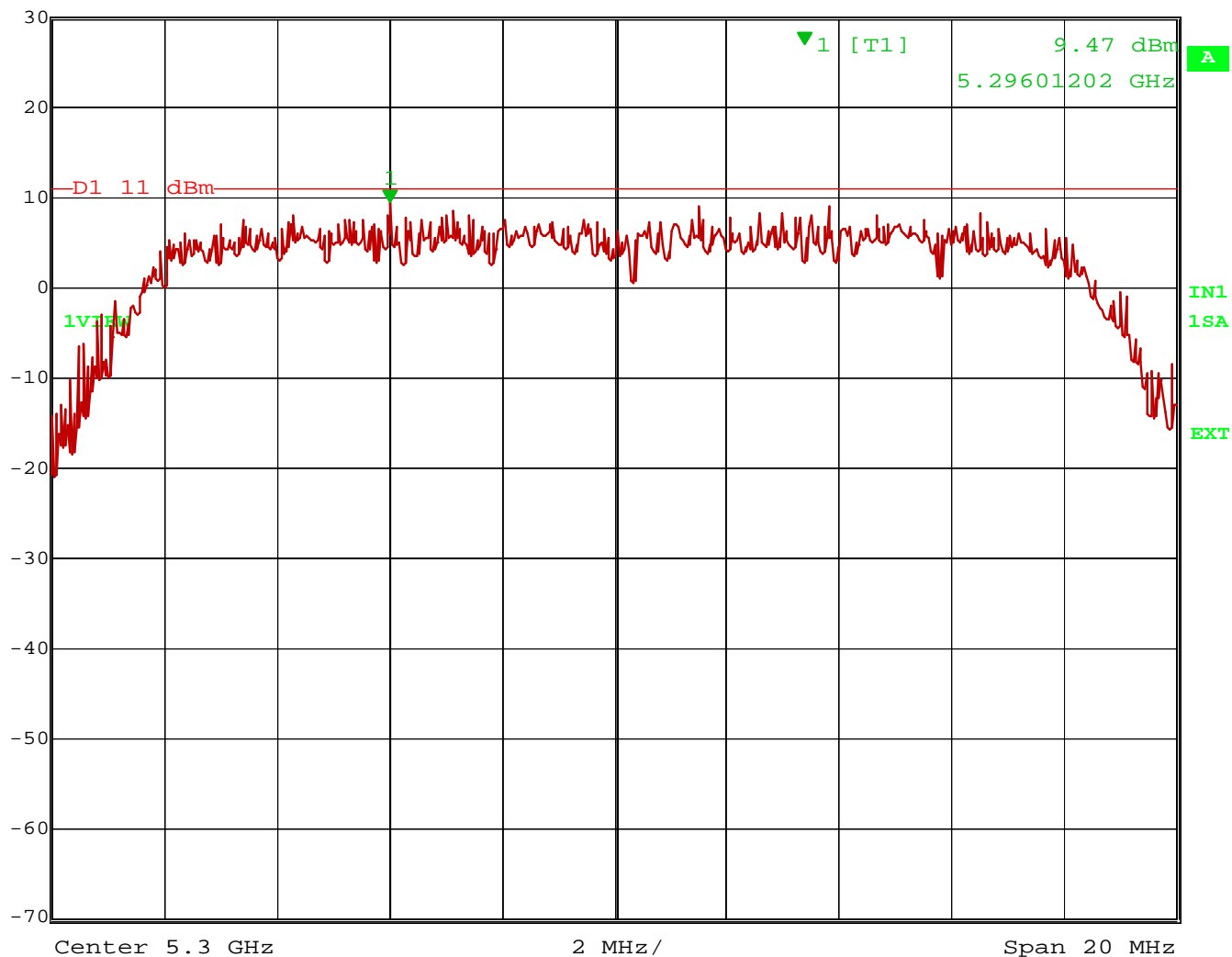
Date: 18.FEB.2010 14:27:44

Plot 10– Peak Power Spectral Density (conducted) in any 1 MHz band
 EUT operating on Ch 60 (5300 MHz) at a Transmission rate of 12 Mbits/s

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



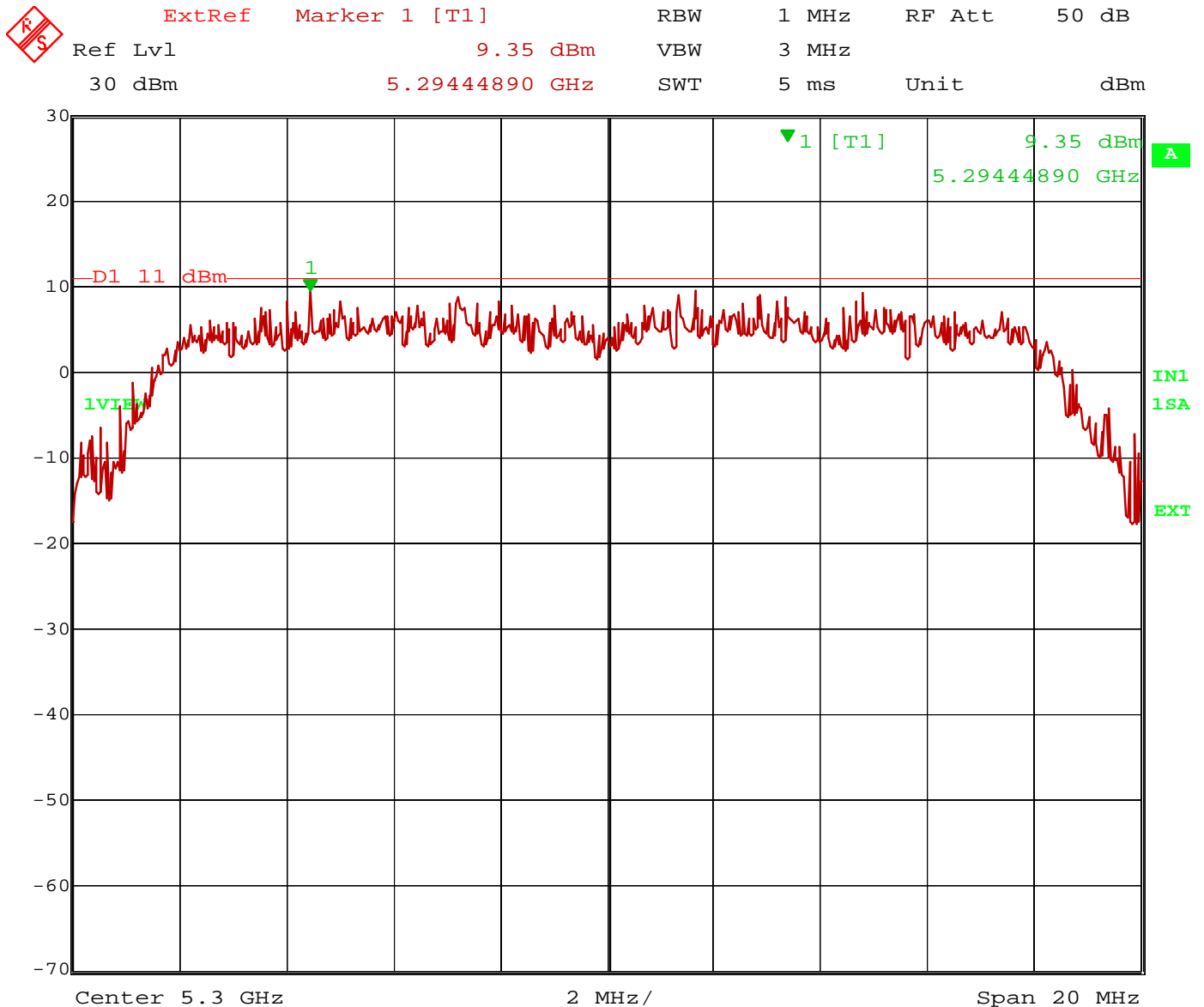
ExtRef Marker 1 [T1] RBW 1 MHz RF Att 50 dB
Ref Lvl 9.47 dBm VBW 3 MHz
30 dBm 5.29601202 GHz SWT 5 ms Unit dBm



Date: 18.FEB.2010 14:56:49

Plot 11– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 60 (5300 MHz) at a Transmission rate of 24 Mbits/s

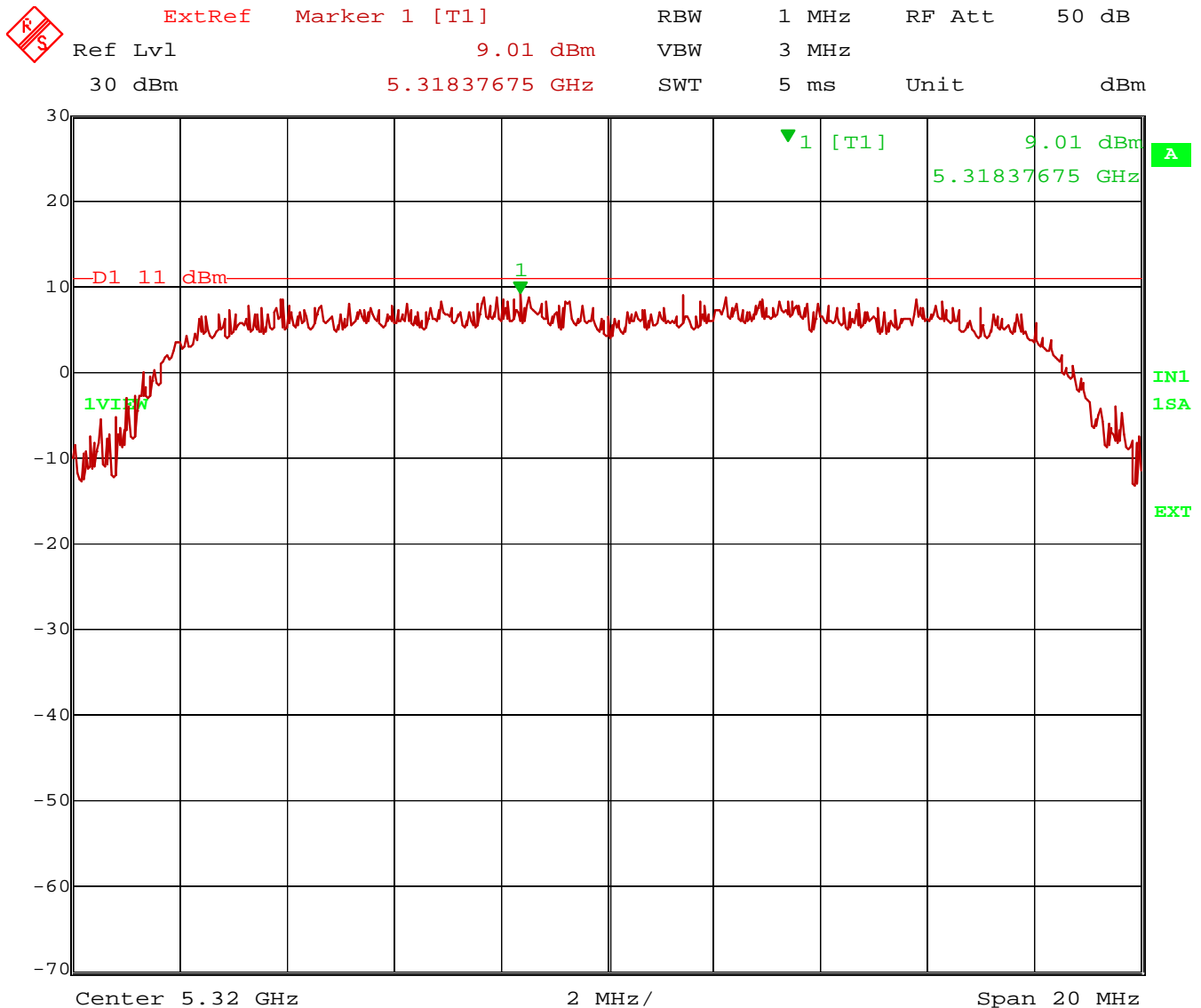
The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



Date: 18.FEB.2010 14:58:58

Plot 12– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 60 (5300 MHz) at a Transmission rate of 54 Mbits/s

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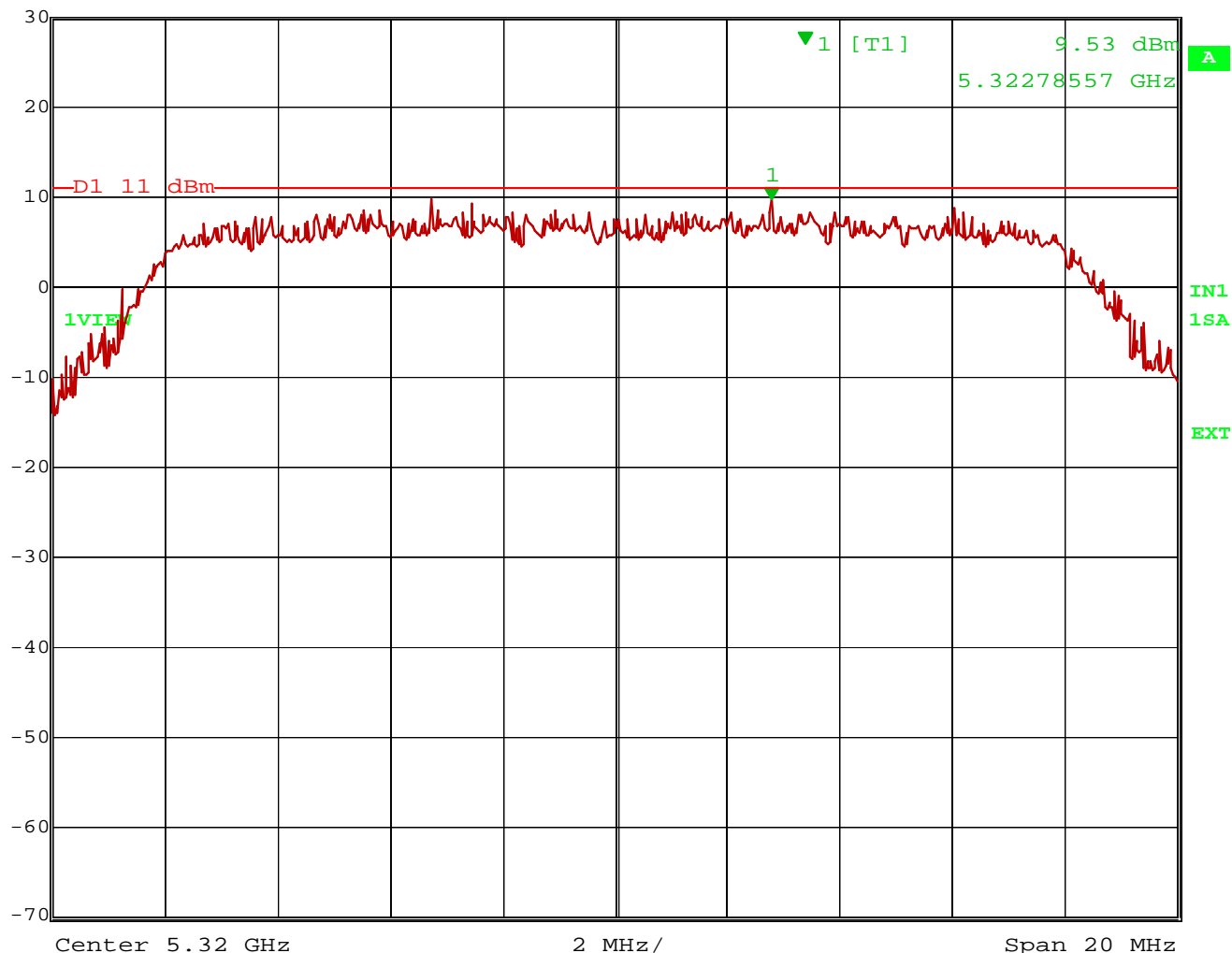
Date: 18.FEB.2010 14:26:28

Plot 13– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 64 (5320 MHz) at a Transmission rate of 6 Mbits/s

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



ExtRef Marker 1 [T1] RBW 1 MHz RF Att 50 dB
Ref Lvl 9.53 dBm VBW 3 MHz
30 dBm 5.32278557 GHz SWT 5 ms Unit dBm



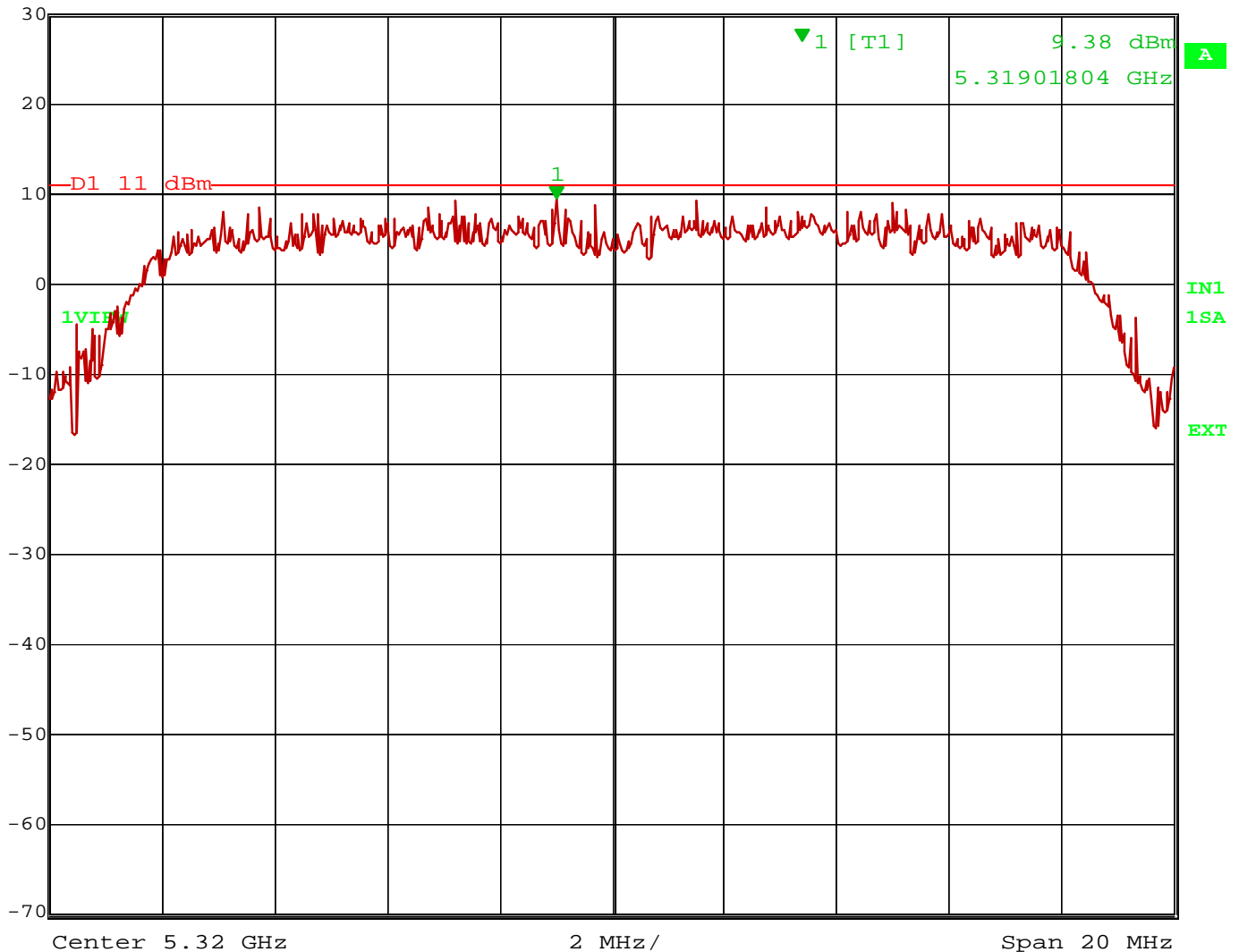
Date: 18.FEB.2010 14:27:07

Plot 14– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 64 (5320 MHz) at a Transmission rate of 12 Mbits/s

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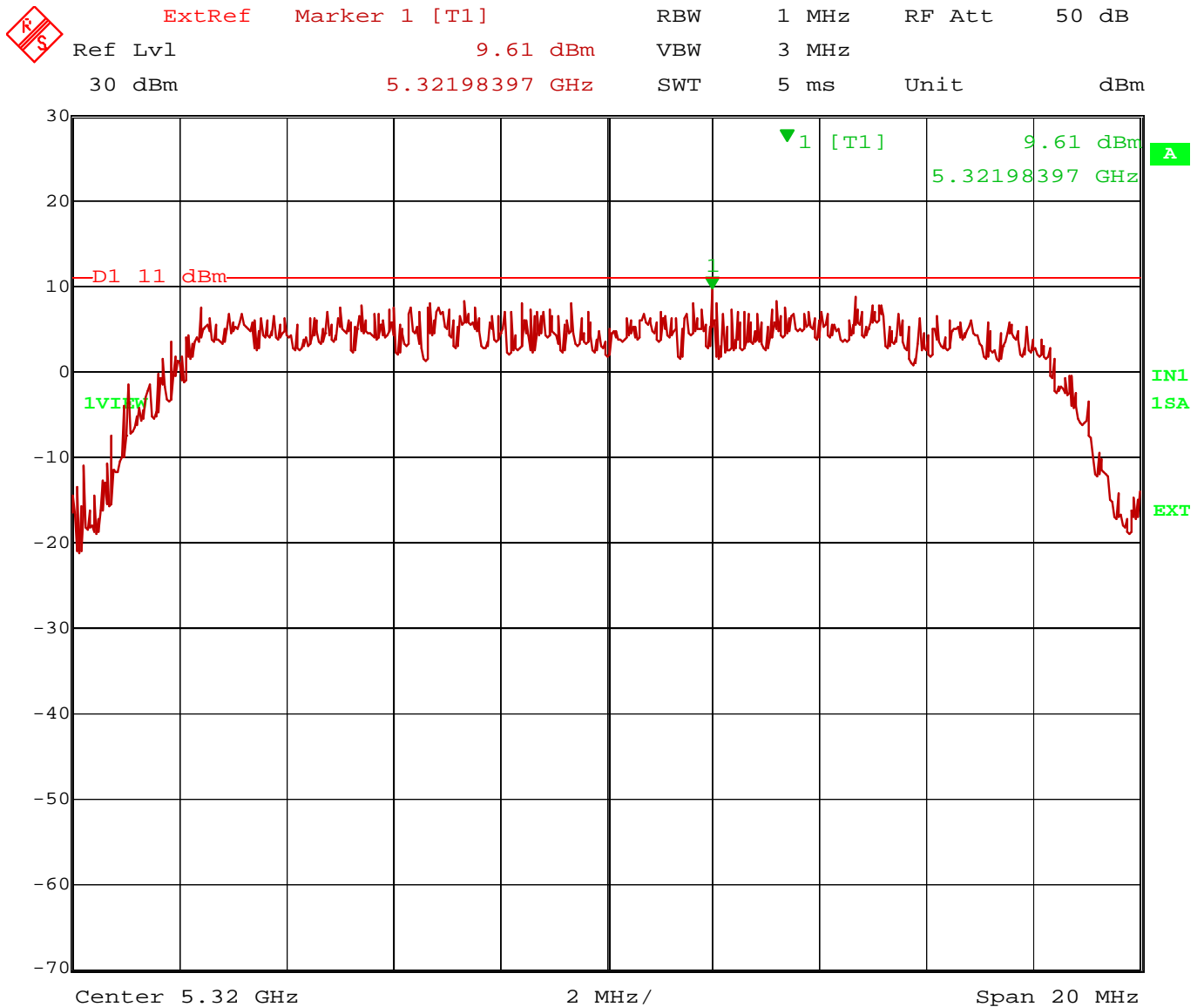
ExtRef Marker 1 [T1] RBW 1 MHz RF Att 50 dB
Ref Lvl 9.38 dBm VBW 3 MHz
30 dBm 5.31901804 GHz SWT 5 ms Unit dBm



Date: 18.FEB.2010 14:57:24

Plot 15– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 64 (5320 MHz) at a Transmission rate of 24 Mbits/s

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Date: 18.FEB.2010 14:58:18

Plot 16– Peak Power Spectral Density (conducted) in any 1 MHz band
EUT operating on Ch 64 (5320 MHz) at a Transmission rate of 54 Mbits/s

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4.5 Peak Power Excursion

The results of the testing on the EUT, carried out in accordance with 47 CFR Part 15.407(a)(6), are depicted in table 3 below.

4.5.1 Test Results

| Transmission | | | | | |
|----------------------|--|-------------------|-------------------|-------------------|------------|
| Bitrate (Mbits/s) | Ratio of Peak Excursion of the Modulation Envelope | | | | Limit (dB) |
| | Ch 52 5260 MHz | Ch 56 5280 MHz | Ch 60 5230 MHz | Ch 64 5320 MHz | |
| 6 | -7.69 | -7.74 | -7.46 | -8.22 | ≤13.0 |
| 12 | -8.01 | -8.06 | -8.09 | -8.44 | ≤13.0 |
| 24 | -8.38 | -8.25 | -9.13 | -8.05 | ≤13.0 |
| 54 | -8.85 | -7.78 | -7.94 | -7.41 | ≤13.0 |

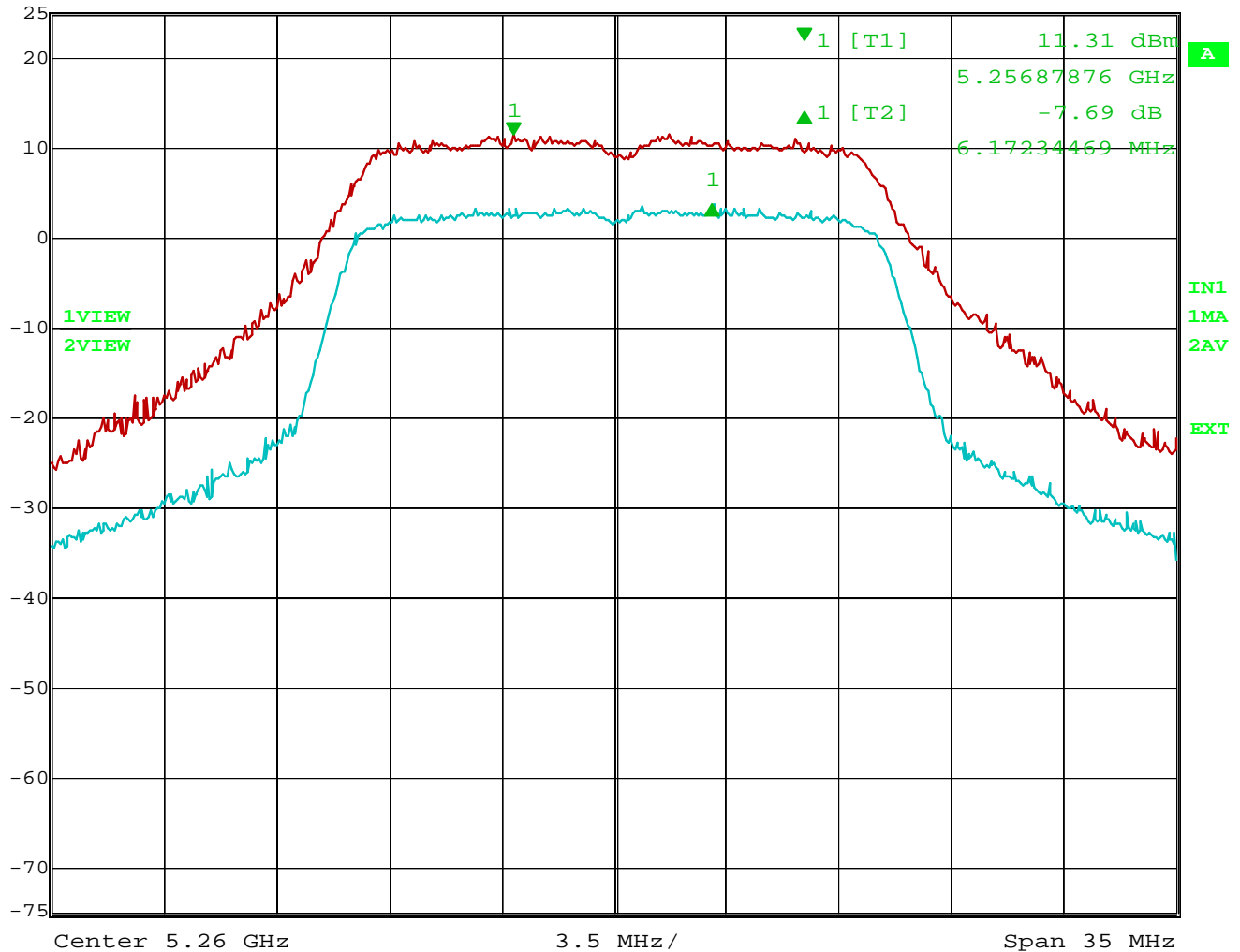
Table 3 – Ratio of the peak excursion of the modulation envelope

4.5.2 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.



ExtRef Delta 1 [T2] RBW 1 MHz RF Att 50 dB
 Ref Lvl -7.69 dB VBW 3 MHz
 25 dBm 6.17234469 MHz SWT 5 ms Unit dBm



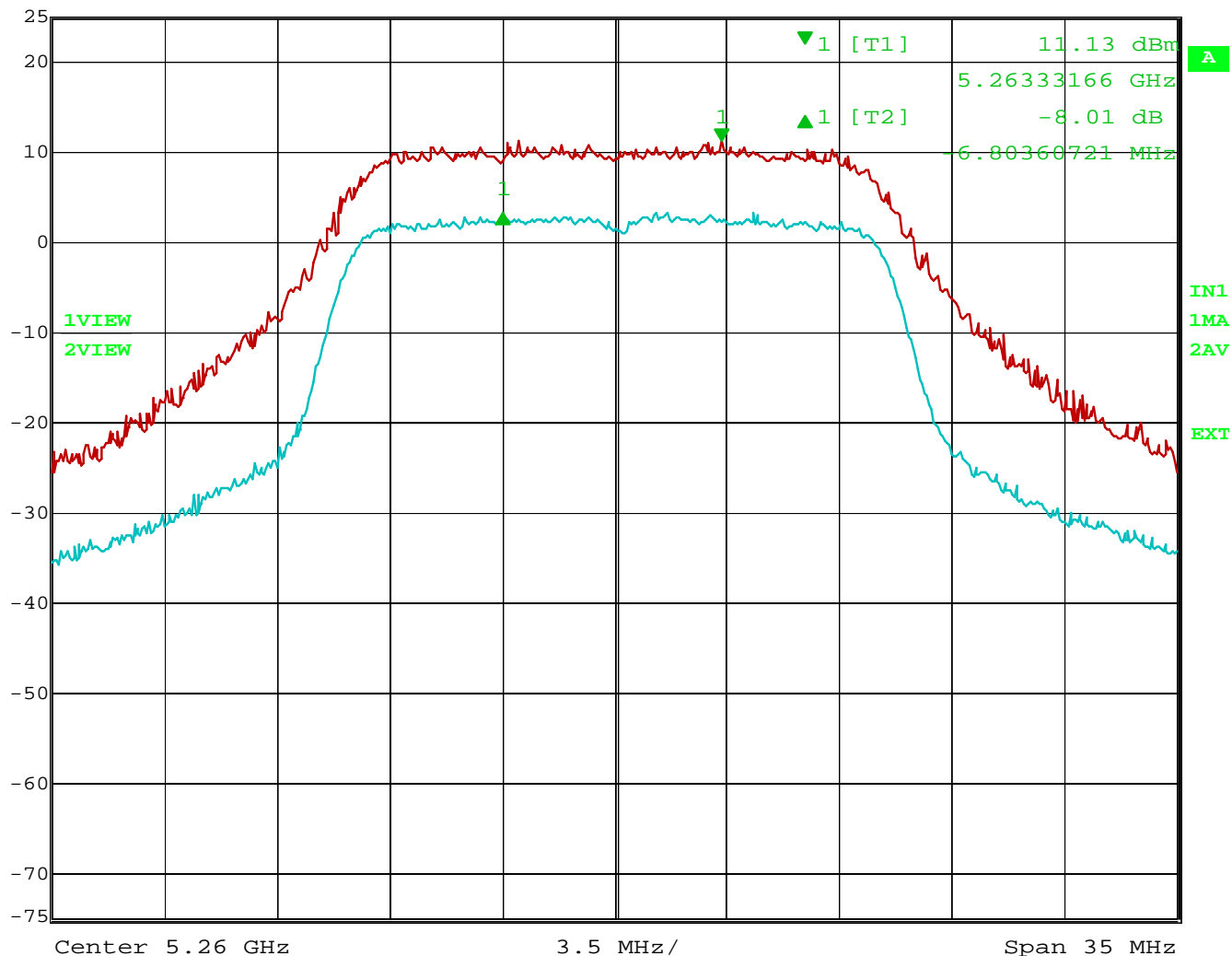
Date: 18.FEB.2010 13:26:16

Plot 17- Ratio of Peak Excursion of the Modulation Envelope
 EUT operating on Ch 52 (5260 MHz) at a Transmission rate of 6 Mbits/s

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ExtRef Delta 1 [T2] RBW 1 MHz RF Att 50 dB
 Ref Lvl -8.01 dB VBW 3 MHz
 25 dBm -6.80360721 MHz SWT 5 ms Unit dBm



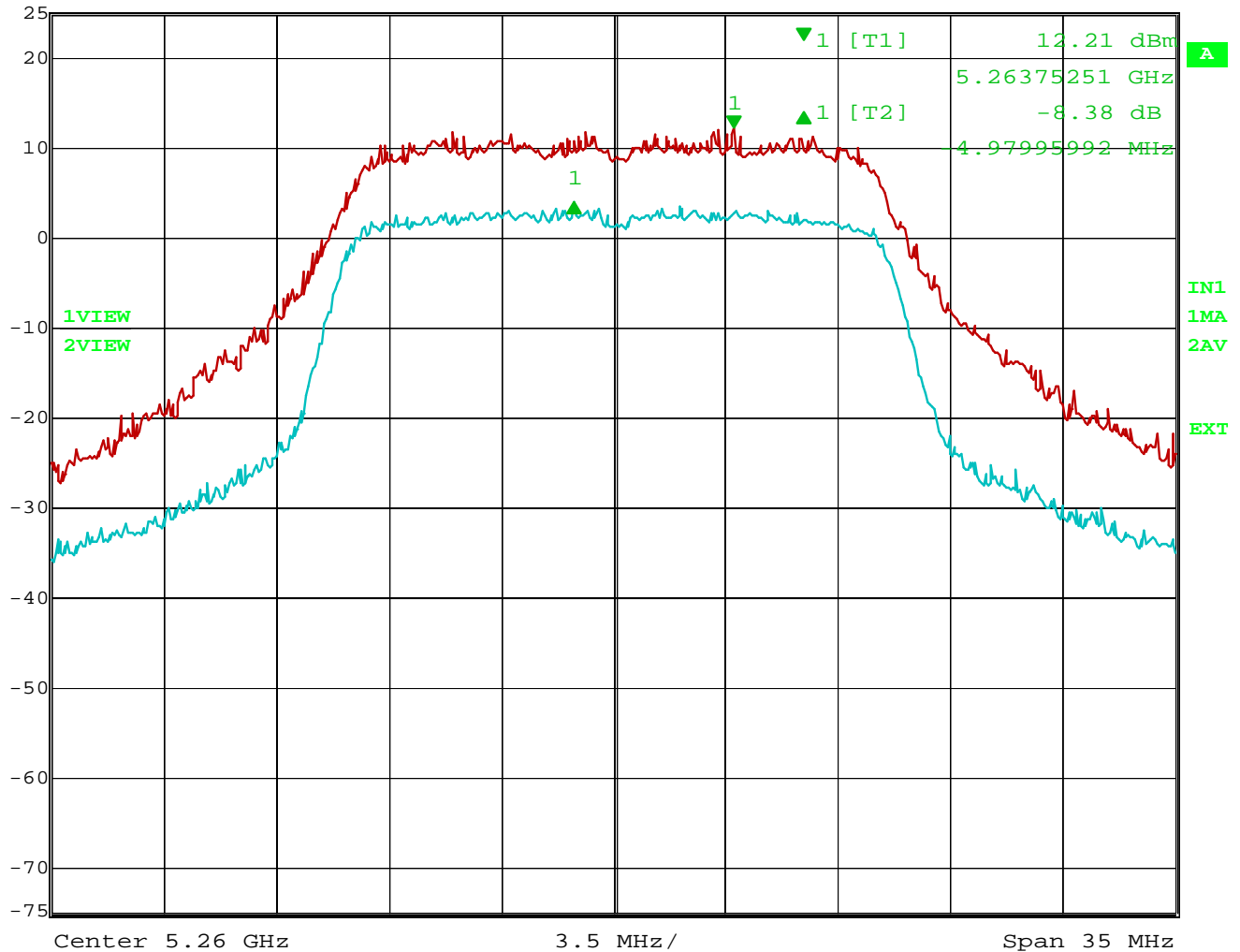
Date: 18.FEB.2010 13:34:16

Plot 18- Ratio of Peak Excursion of the Modulation Envelope
 EUT operating on Ch 52 (5260 MHz) at a Transmission rate of 12 Mbits/s

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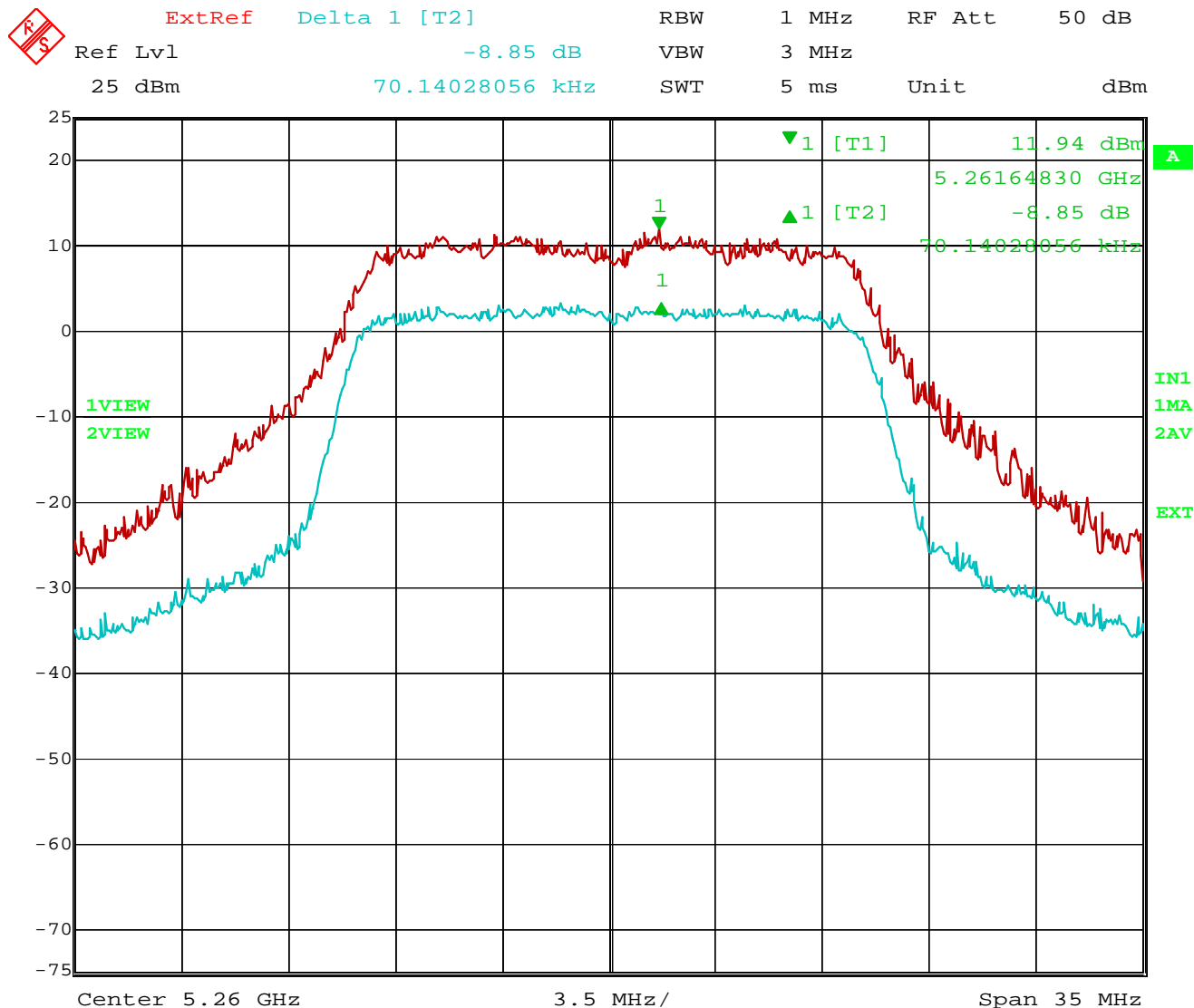
ExtRef Delta 1 [T2] RBW 1 MHz RF Att 50 dB
Ref Lvl -8.38 dB VBW 3 MHz
25 dBm -4.97995992 MHz SWT 5 ms Unit dBm



Date: 18.FEB.2010 13:37:12

Plot 19- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 52 (5260 MHz) at a Transmission rate of 24 Mbits/s

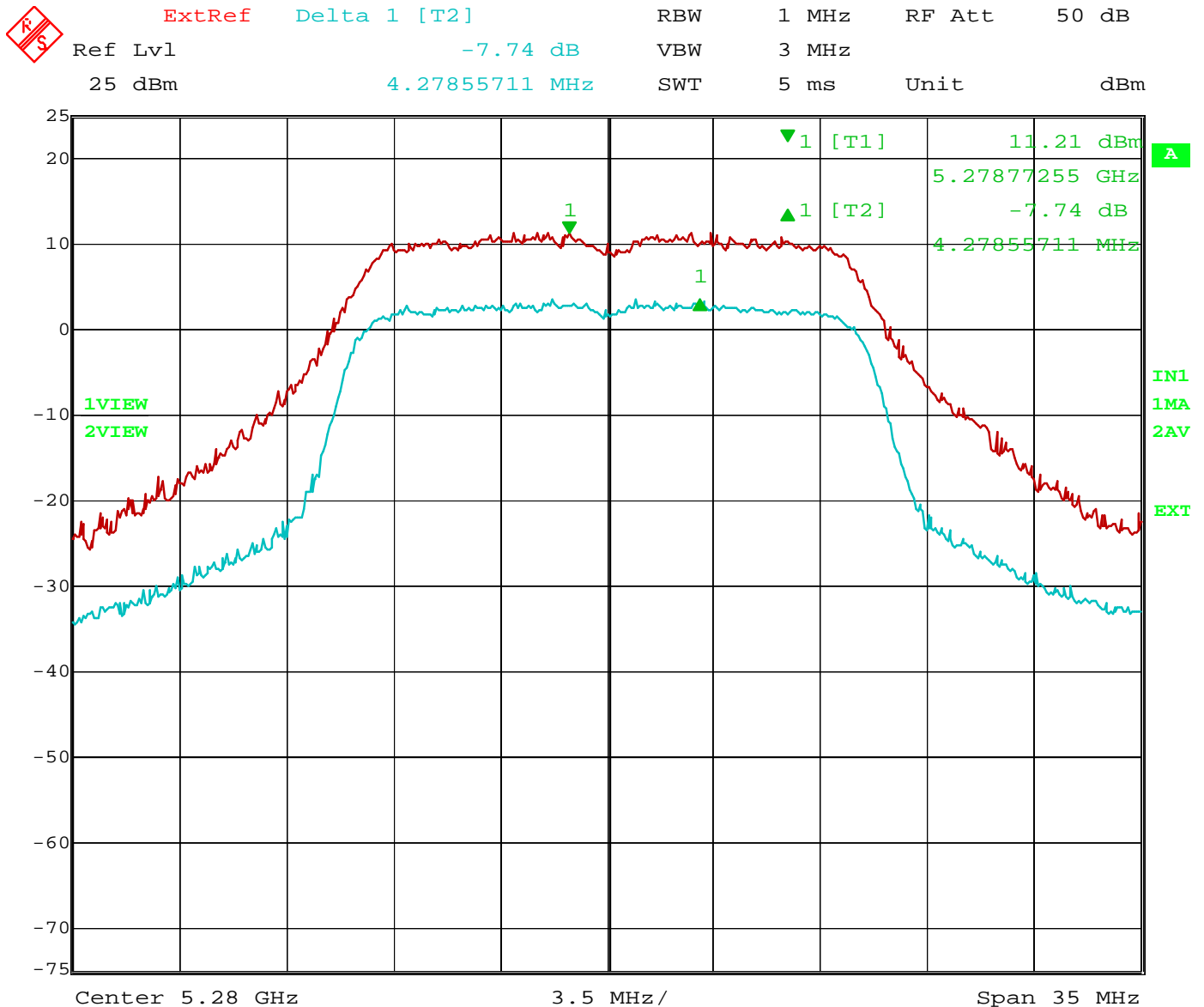
The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



Date: 18.FEB.2010 13:47:58

Plot 20- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 52 (5260 MHz) at a Transmission rate of 54 Mbits/s

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Date: 18.FEB.2010 13:27:25

Plot 21- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 56 (5280 MHz) at a Transmission rate of 6 Mbits/s

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ExtRef Delta 1 [T2]

RBW 1 MHz RF Att 50 dB

Ref Lvl -8.06 dB

VBW 3 MHz

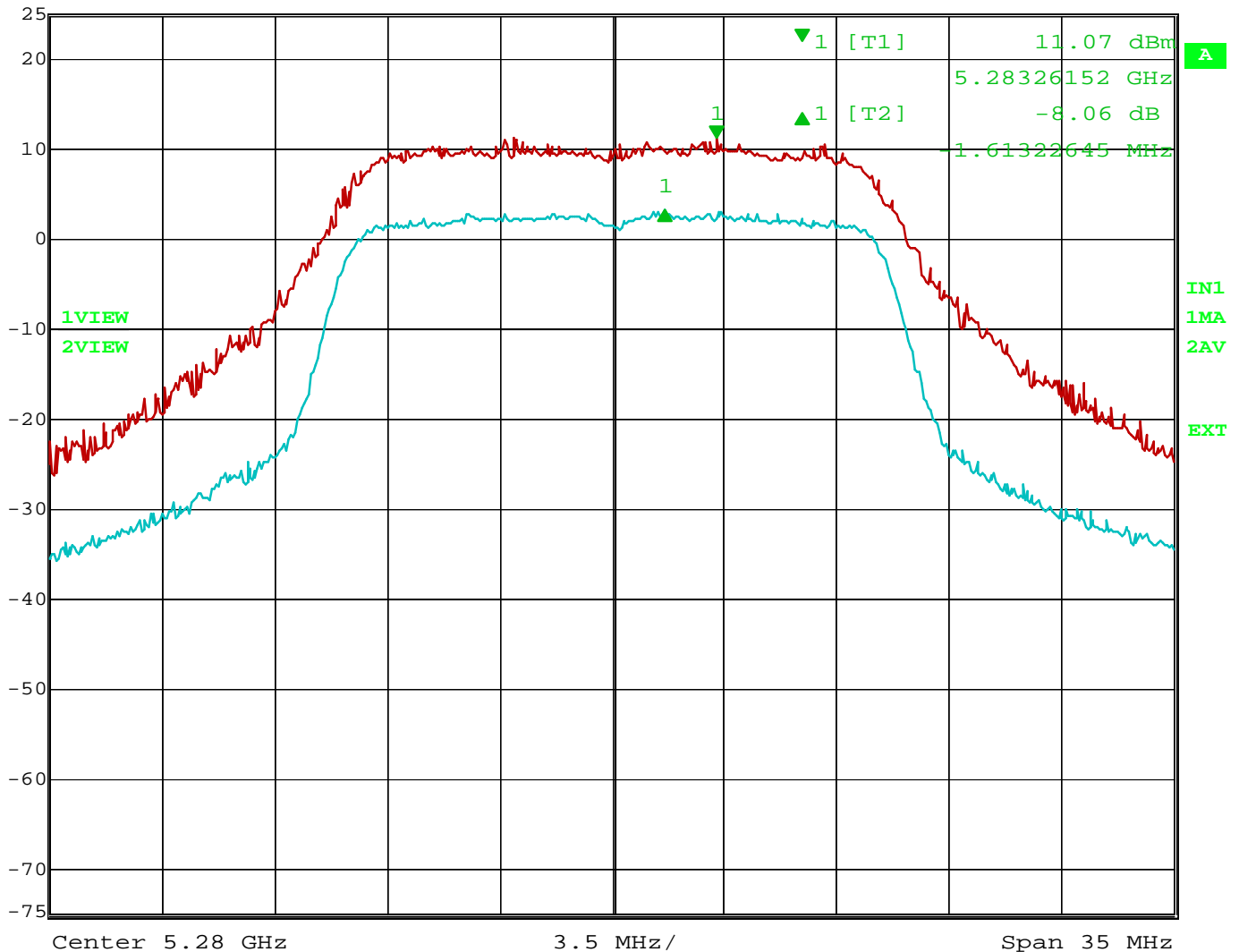
25 dBm

-1.61322645 MHz

SWT 5 ms

Unit

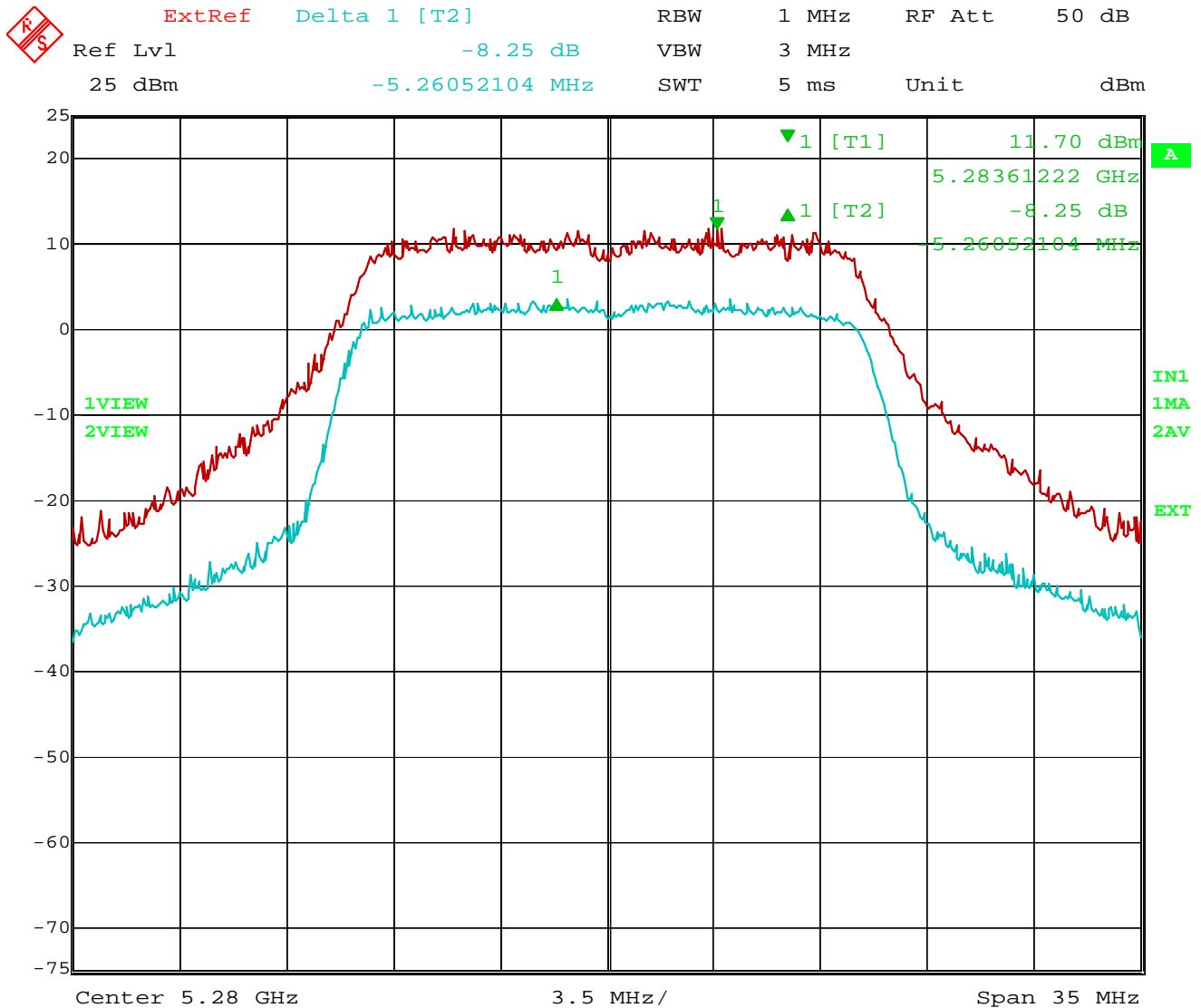
dBm



Date: 18.FEB.2010 13:33:05

Plot 22- Ratio of Peak Excursion of the Modulation Envelope
 EUT operating on Ch 56 (5280 MHz) at a Transmission rate of 24 Mbits/s

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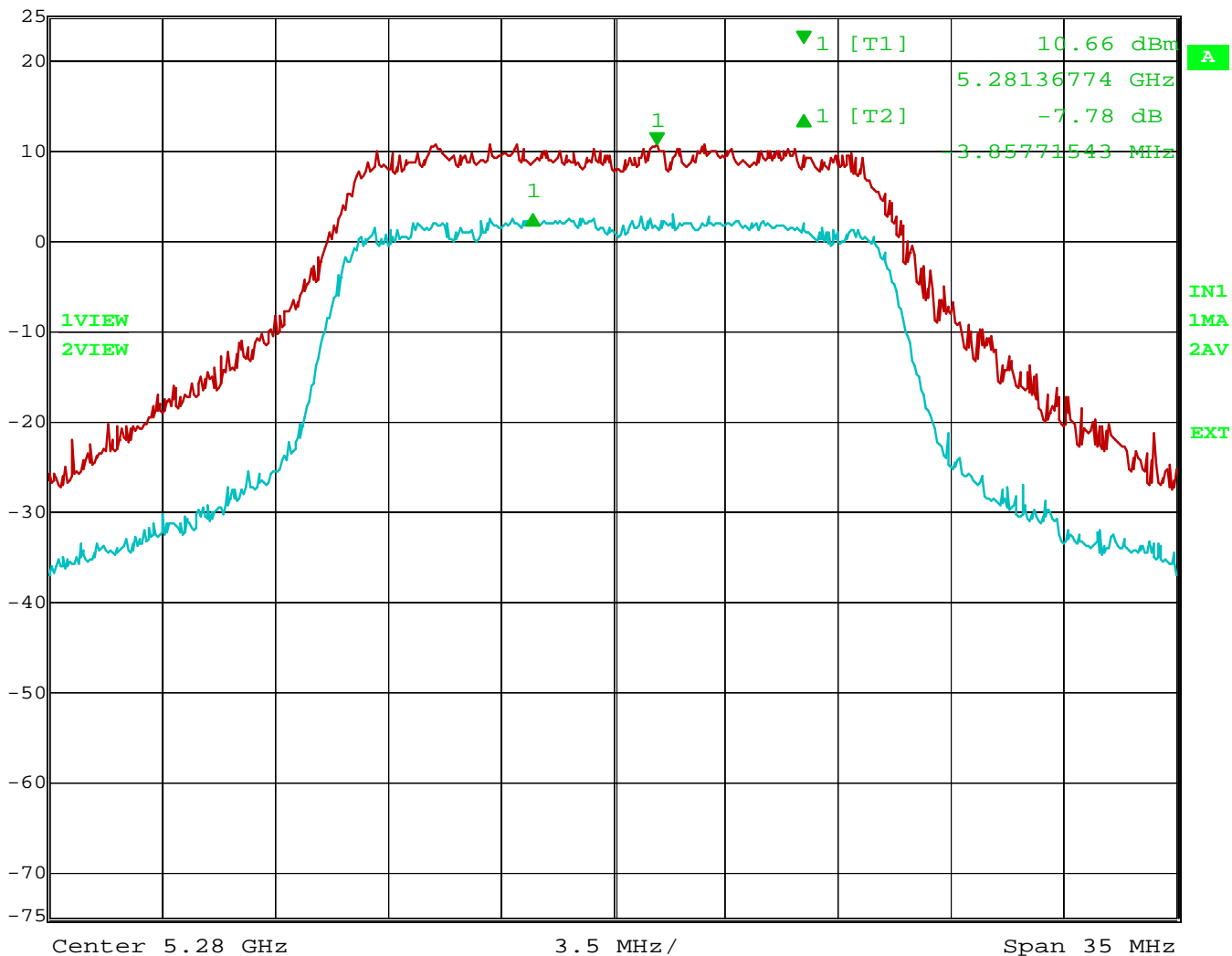
Date: 18.FEB.2010 13:38:21

Plot 23- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 56 (5280 MHz) at a Transmission rate of 24 Mbits/s

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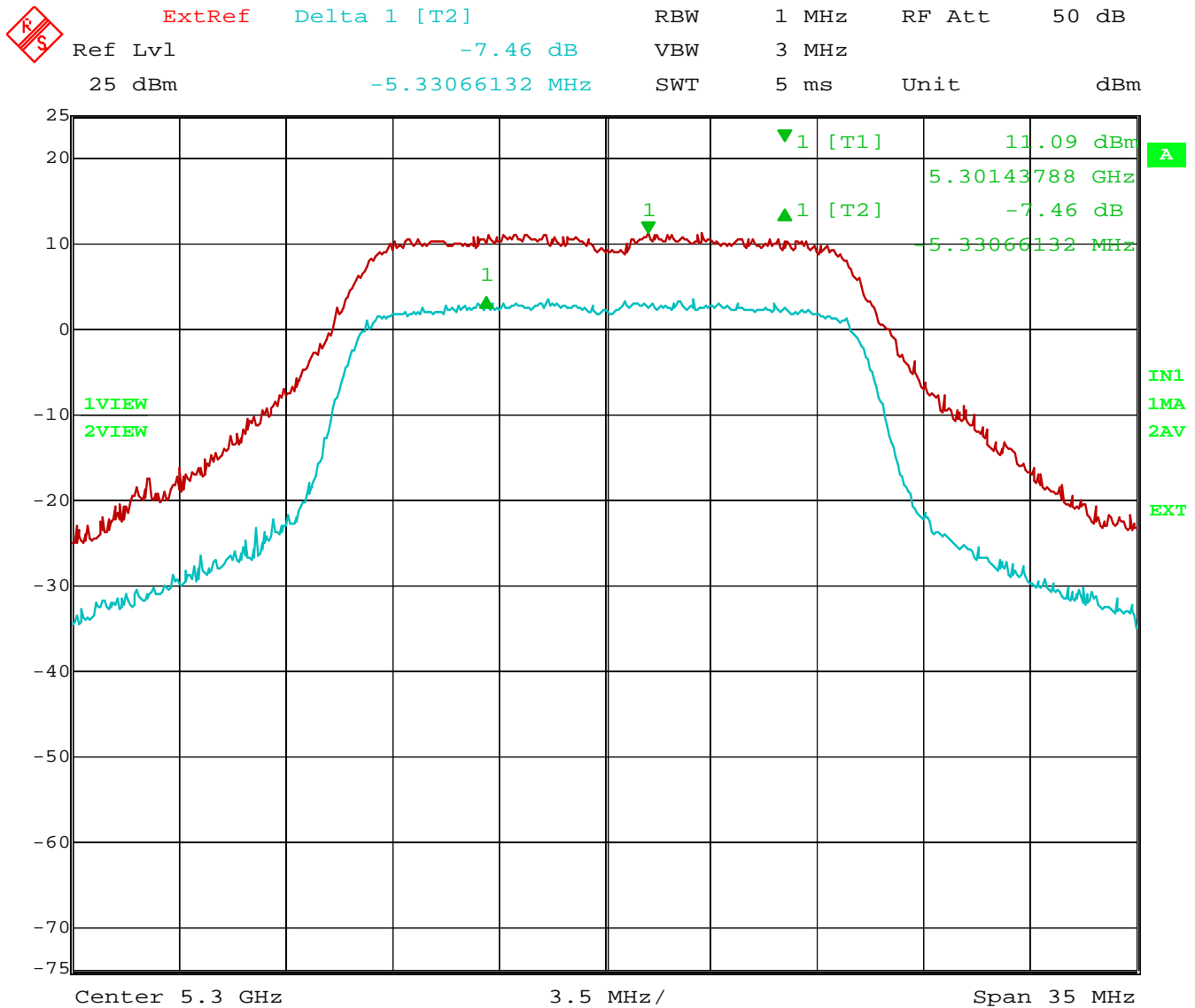
ExtRef Delta 1 [T2] RBW 1 MHz RF Att 50 dB
Ref Lvl -7.78 dB VBW 3 MHz
25 dBm -3.85771543 MHz SWT 5 ms Unit dBm



Date: 18.FEB.2010 13:44:11

Plot 24- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 56 (5280 MHz) at a Transmission rate of 54 Mbits/s

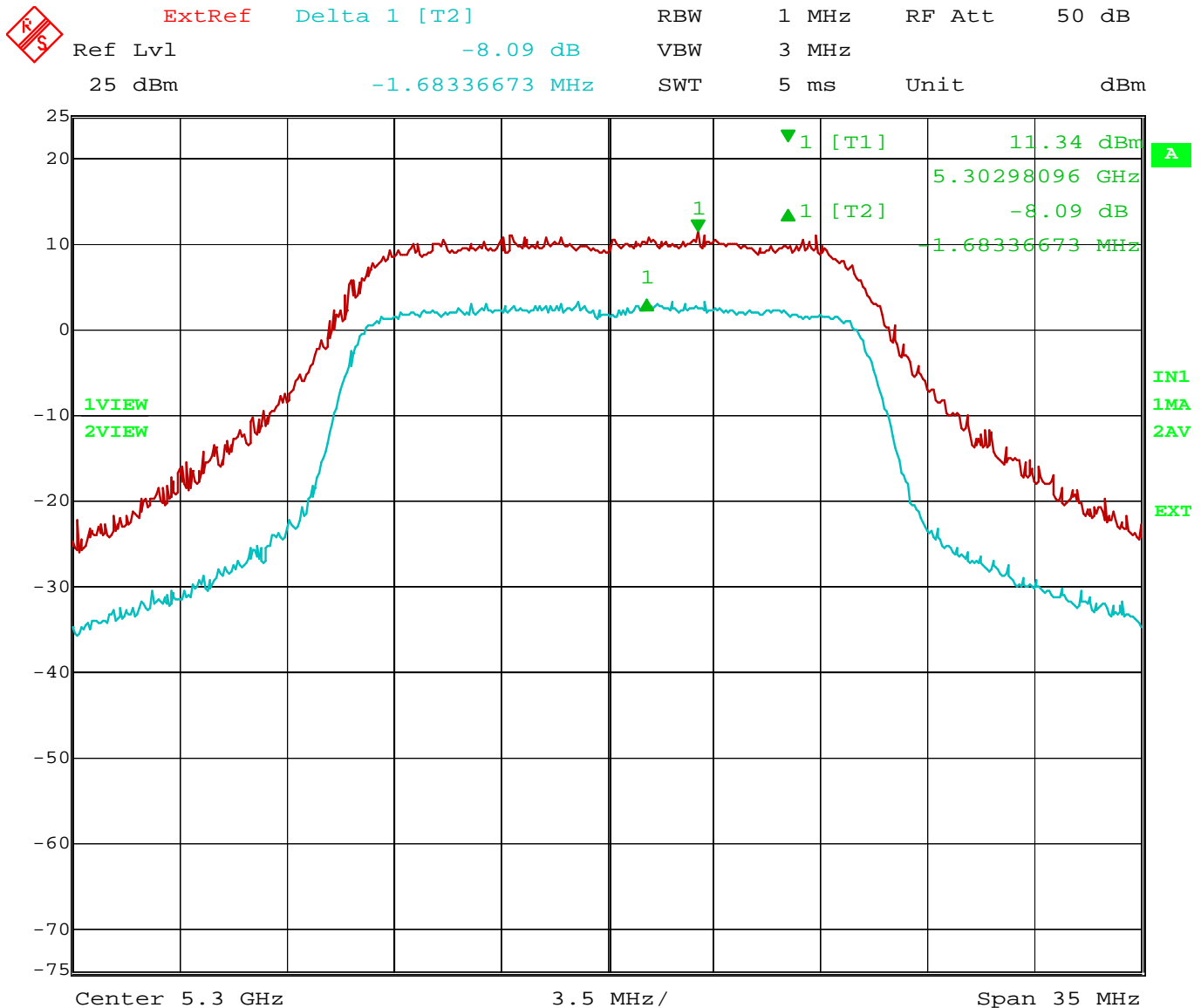
The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



Date: 18.FEB.2010 13:28:55

Plot 25- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 60 (5320 MHz) at a Transmission rate of 6 Mbits/s

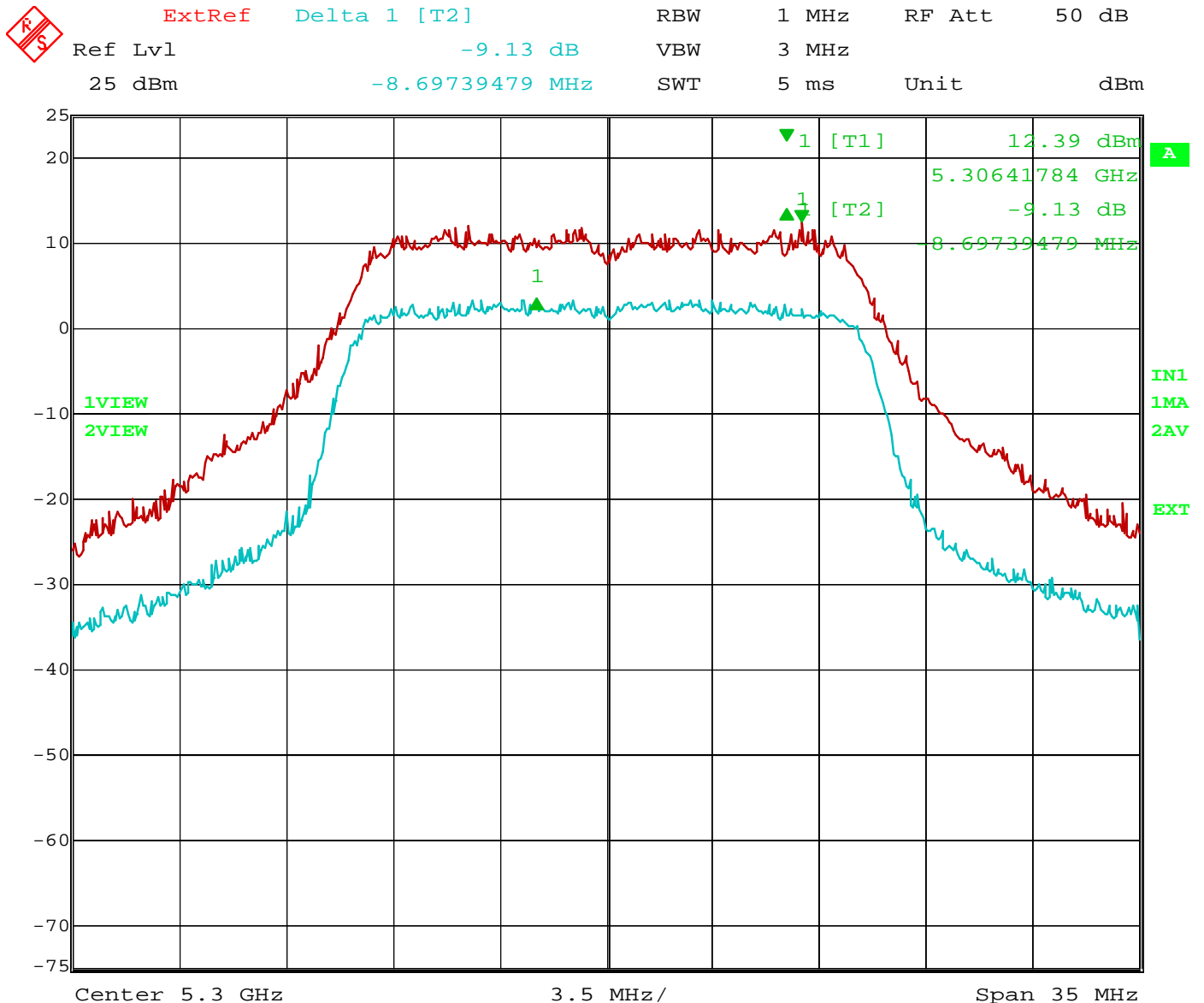
The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



Date: 18.FEB.2010 13:31:53

Plot 26- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 60 (5300 MHz) at a Transmission rate of 12 Mbits/s

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



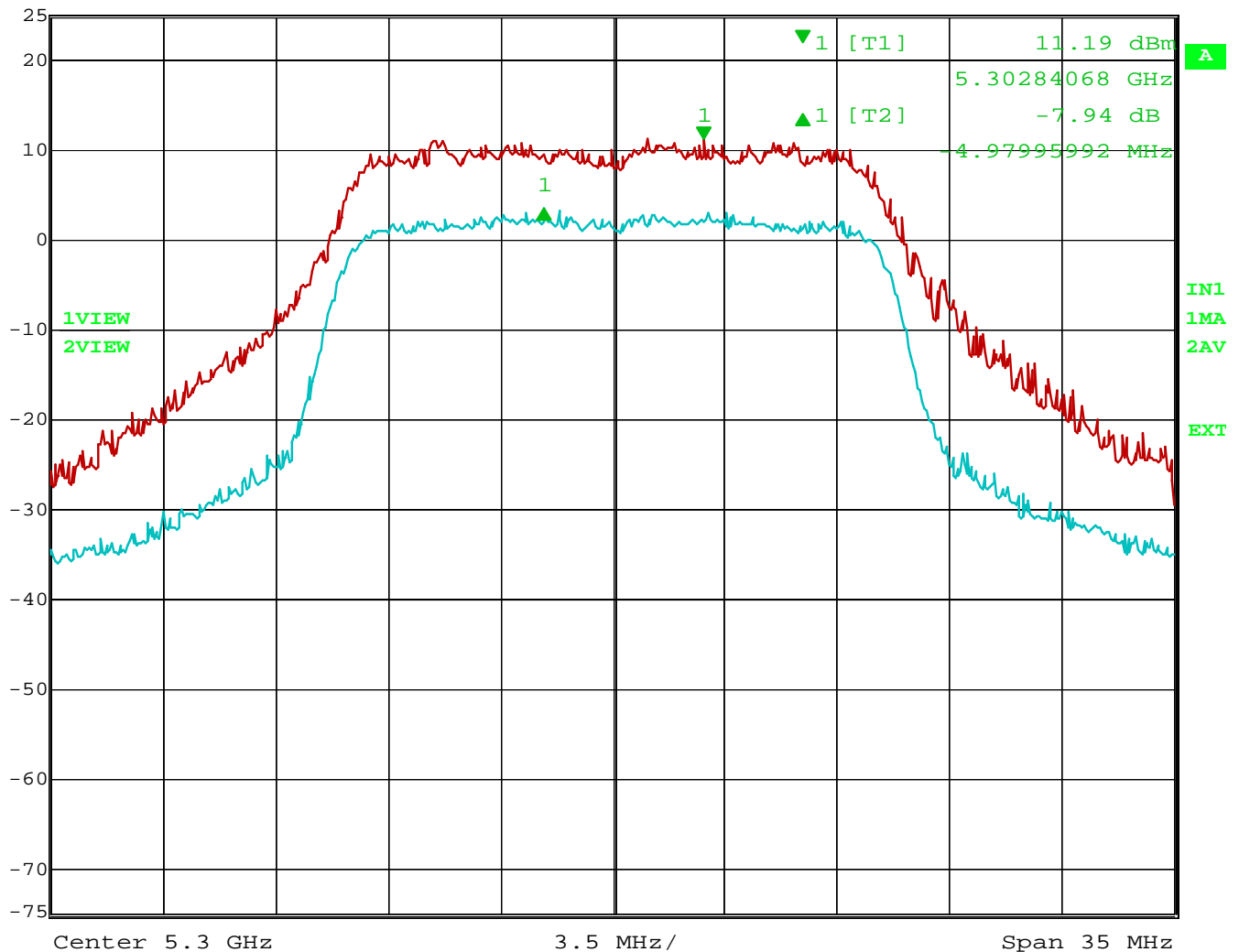
Date: 18.FEB.2010 13:39:46

Plot 27- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 60 (5300 MHz) at a Transmission rate of 24 Mbits/s

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



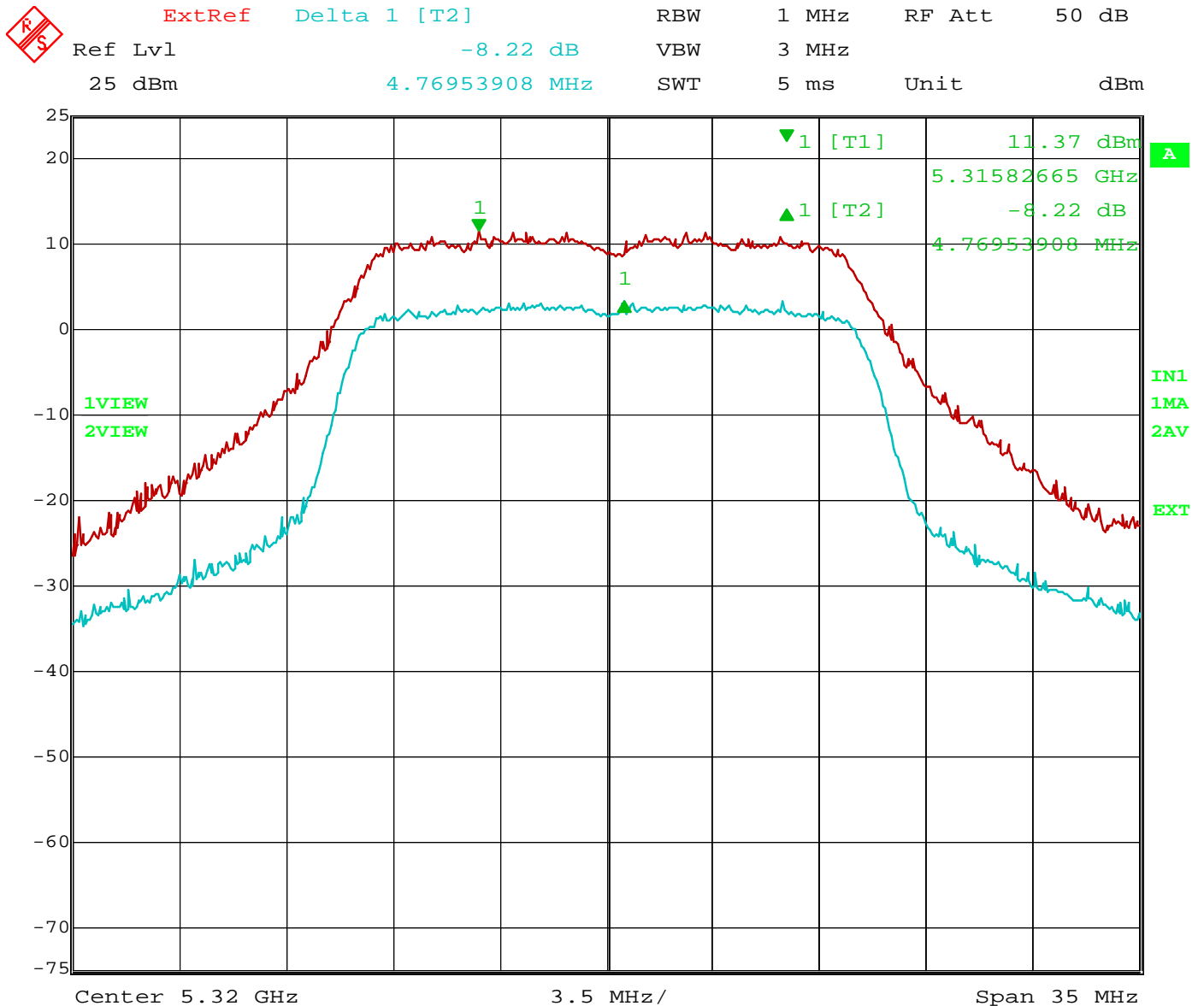
ExtRef Delta 1 [T2] RBW 1 MHz RF Att 50 dB
Ref Lvl -7.94 dB VBW 3 MHz
25 dBm -4.97995992 MHz SWT 5 ms Unit dBm



Date: 18.FEB.2010 13:43:04

Plot 28- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 60 (5300 MHz) at a Transmission rate of 54 Mbits/s

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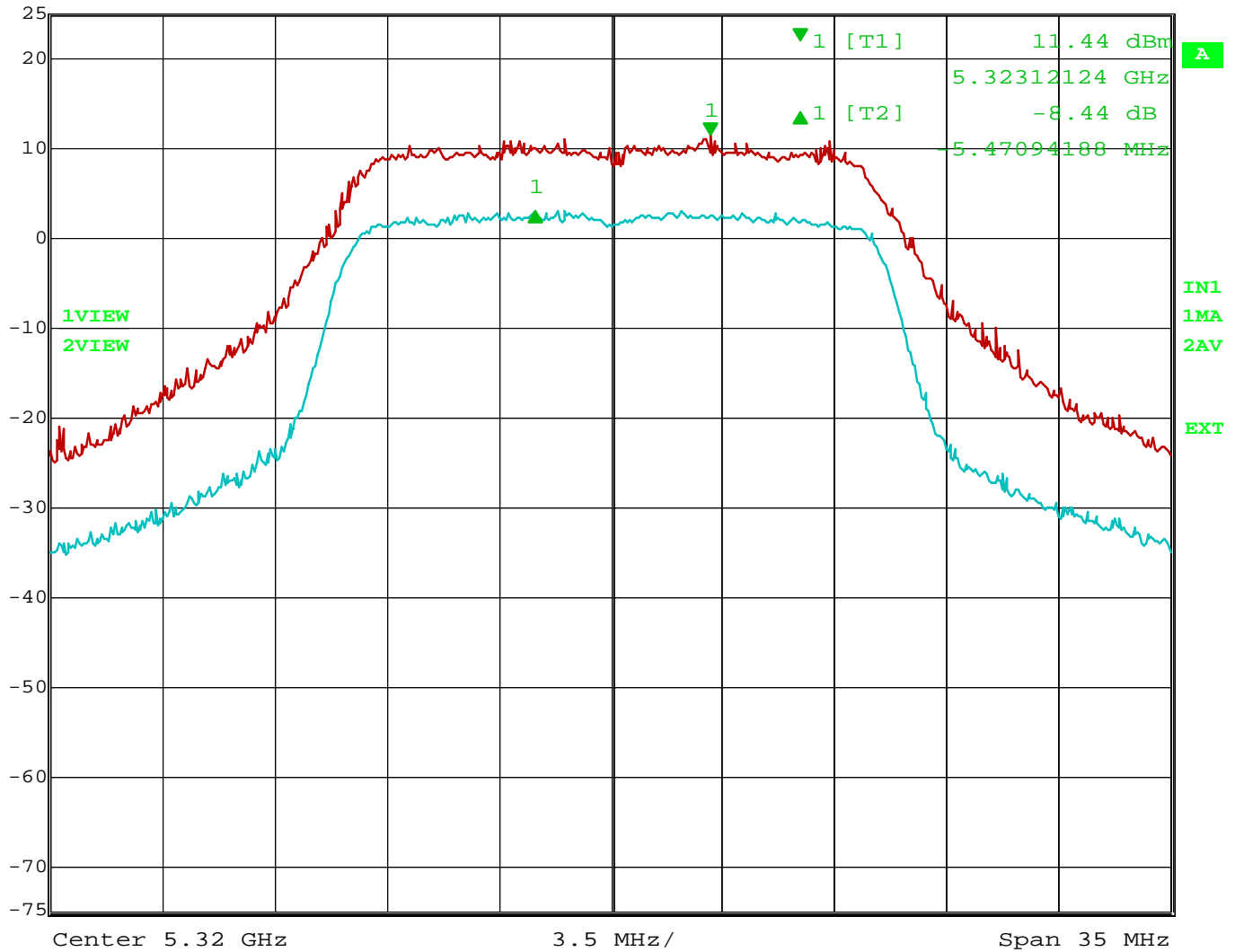
Date: 18.FEB.2010 13:29:52

Plot 29- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 64 (5320 MHz) at a Transmission rate of 6 Mbits/s

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ExtRef Delta 1 [T2] RBW 1 MHz RF Att 50 dB
Ref Lvl -8.44 dB VBW 3 MHz
25 dBm -5.47094188 MHz SWT 5 ms Unit dBm



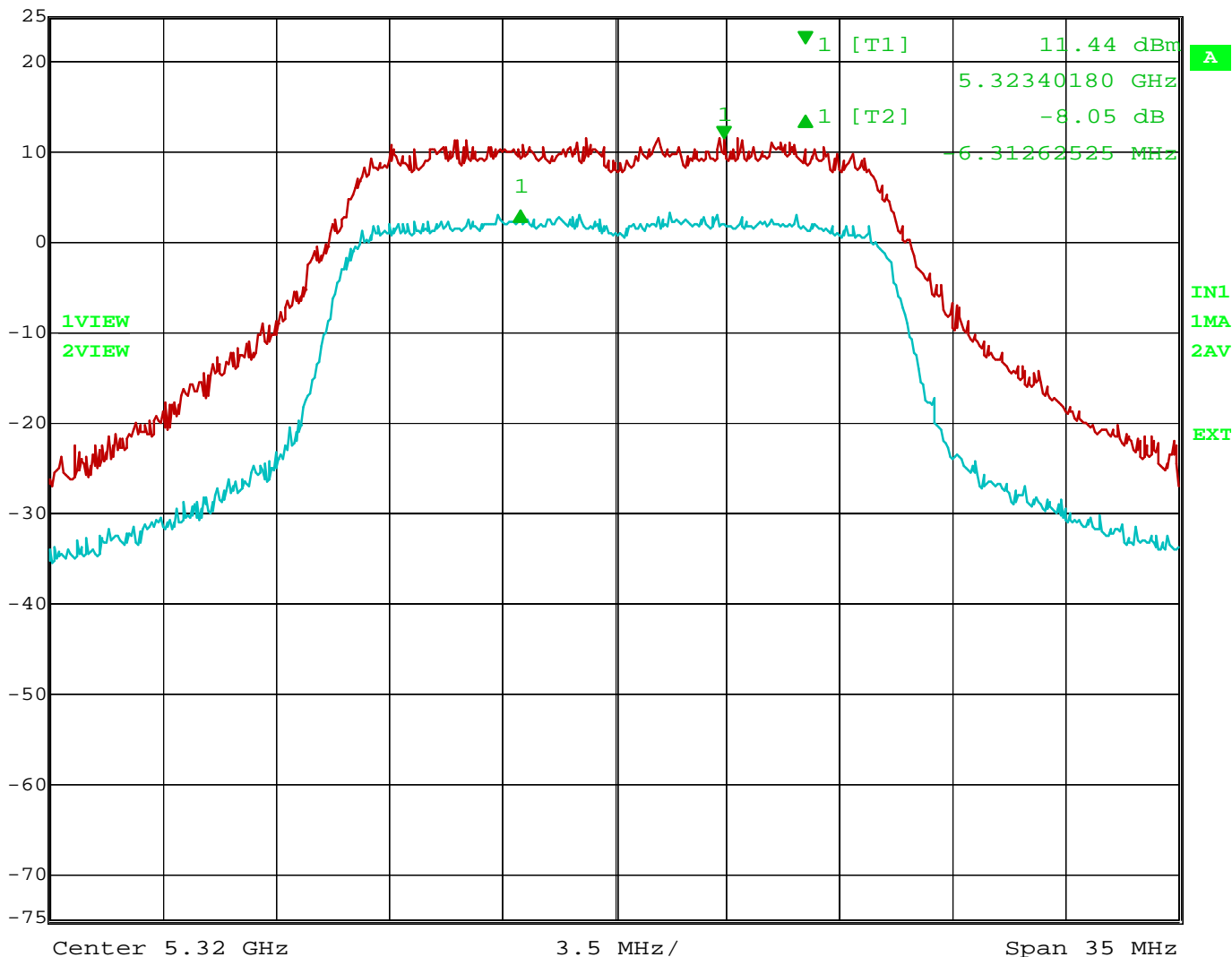
Date: 18.FEB.2010 13:30:51

Plot 30- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 64 (5320 MHz) at a Transmission rate of 12 Mbits/s

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ExtRef Delta 1 [T2] RBW 1 MHz RF Att 50 dB
Ref Lvl -8.05 dB VBW 3 MHz
25 dBm -6.31262525 MHz SWT 5 ms Unit dBm



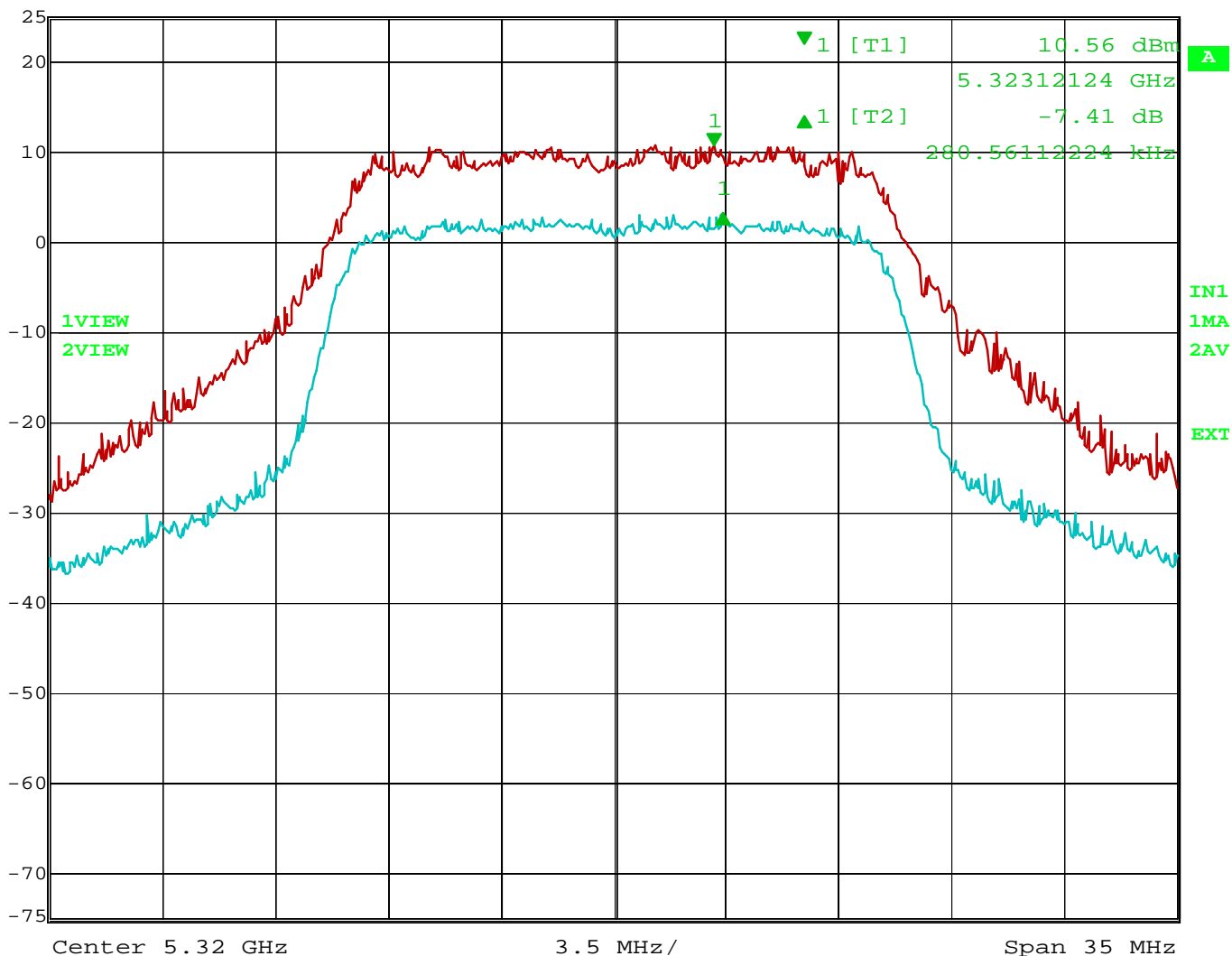
Date: 18.FEB.2010 13:40:53

Plot 31- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 64 (5320 MHz) at a Transmission rate of 24 Mbits/s

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.



ExtRef Delta 1 [T2] RBW 1 MHz RF Att 50 dB
Ref Lvl -7.41 dB VBW 3 MHz
25 dBm 280.56112224 kHz SWT 5 ms Unit dBm



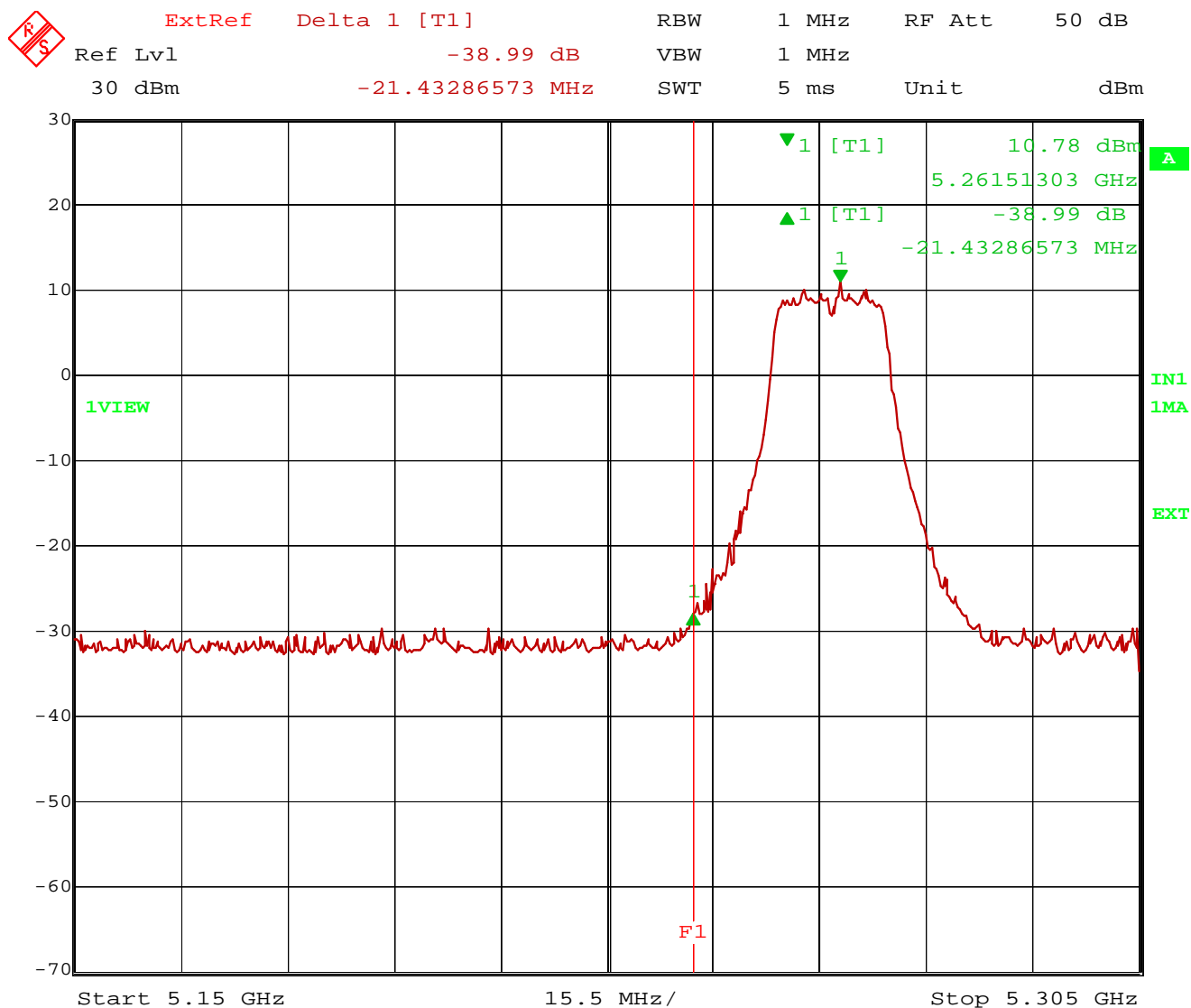
Date: 18.FEB.2010 13:41:58

Plot 32- Ratio of Peak Excursion of the Modulation Envelope
EUT operating on Ch 64 (5320 MHz) at a Transmission rate of 54 Mbits/

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.

4.6 Band Edge

In accordance with 47 CFR Part 15.407(b)(2) All emissions outside of the 5.25 – 5.35 GHz Band shall not exceed an EIRP of -27dBm/MHz.



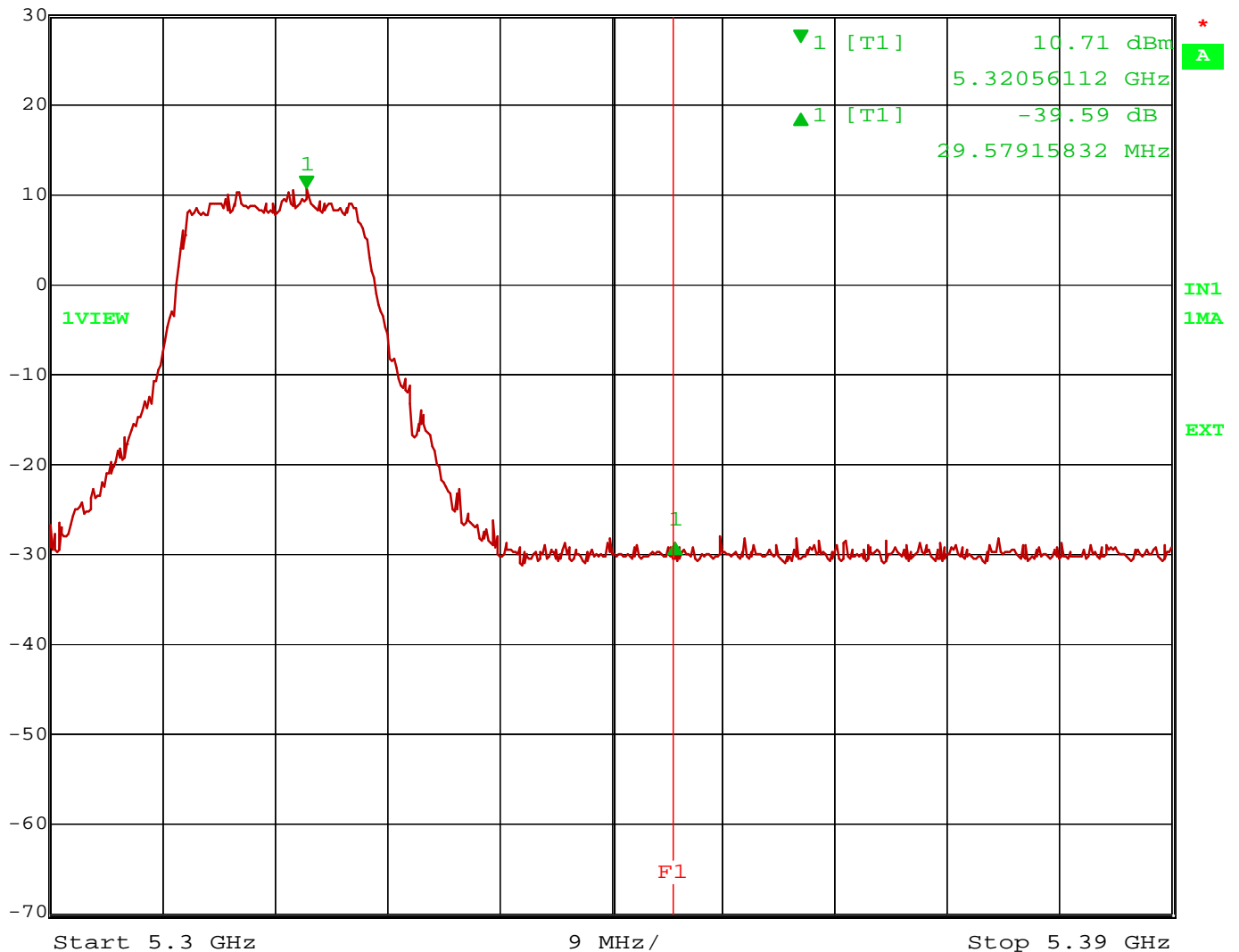
Date: 18.FEB.2010 16:39:53

Plot 33 – Lower Band edge at 5250 MHz

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ExtRef Delta 1 [T1] RBW 1 MHz RF Att 50 dB
Ref Lvl -39.59 dB VBW 1 MHz
30 dBm 29.57915832 MHz SWT 5 ms Unit dBm



Date: 18.FEB.2010 16:37:10

Plot 34 – Upper Band edge at 5350 MHz

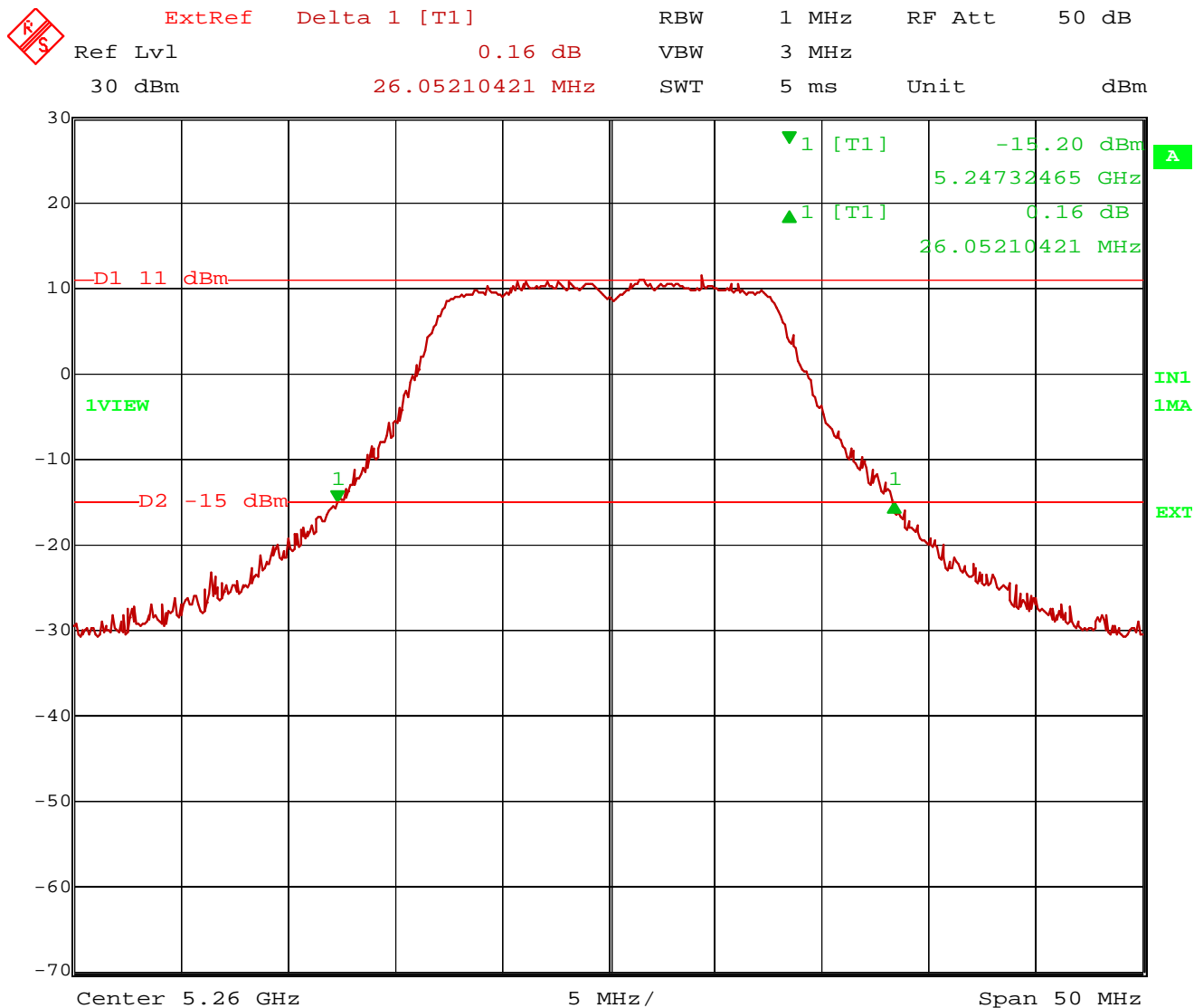
4.6.1 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.

4.7 -26 dB Bandwidth

In accordance with 47 CFR Part 15.407(a) (2)



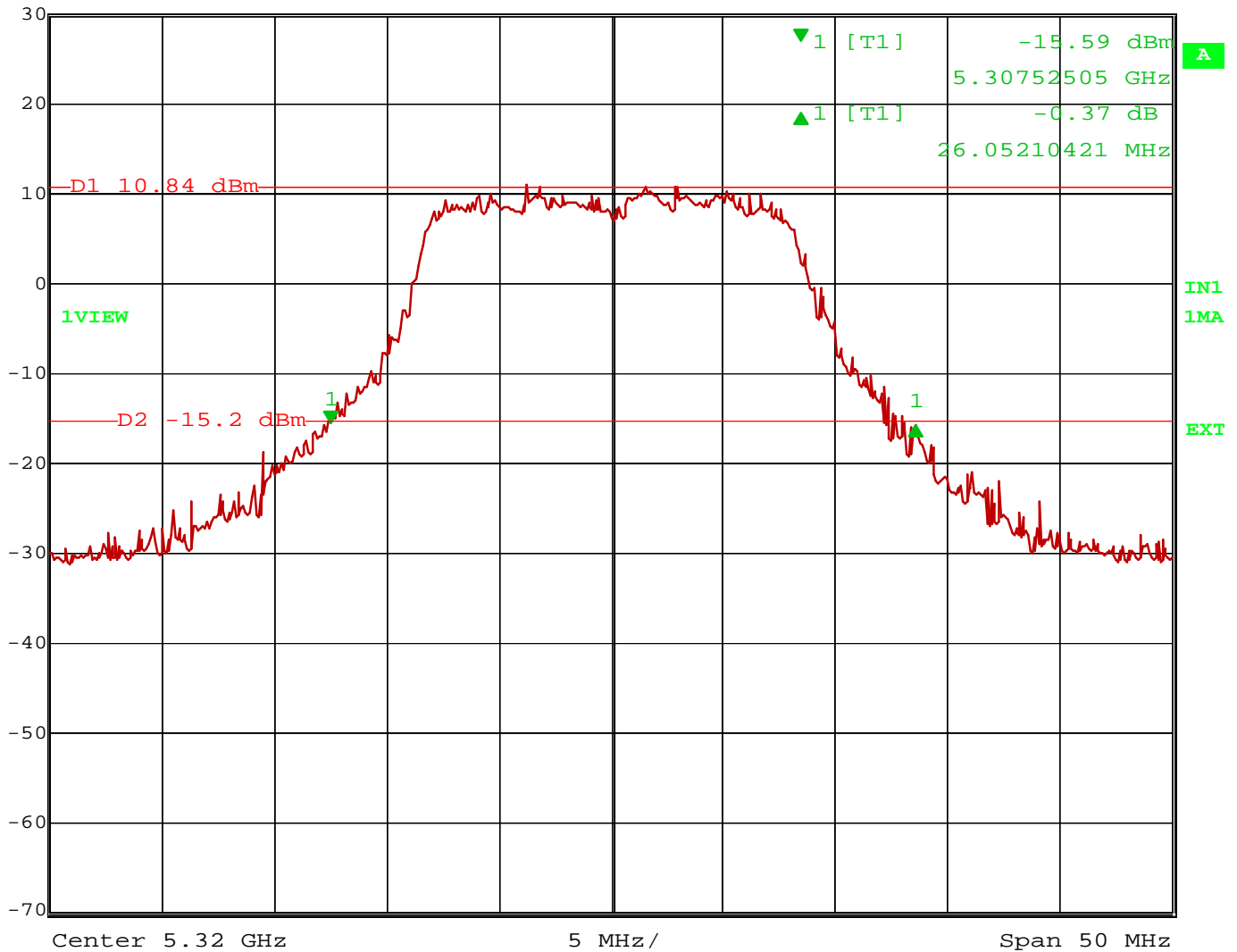
Date: 18.FEB.2010 16:42:33

Plot 35 – (-26) dB Bandwidth of EUT operating on Ch 52

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| | | | | | |
|---------|-----------------|-----|-------|--------|-------|
| ExtRef | Delta 1 [T1] | RBW | 1 MHz | RF Att | 50 dB |
| Ref Lvl | -0.37 dB | VBW | 3 MHz | | |
| 30 dBm | 26.05210421 MHz | SWT | 5 ms | Unit | dBm |



Date: 18.FEB.2010 16:32:39

Plot 36 – (-26) dB Bandwidth of EUT operating on Ch 64

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.

4.7.1 Final Test

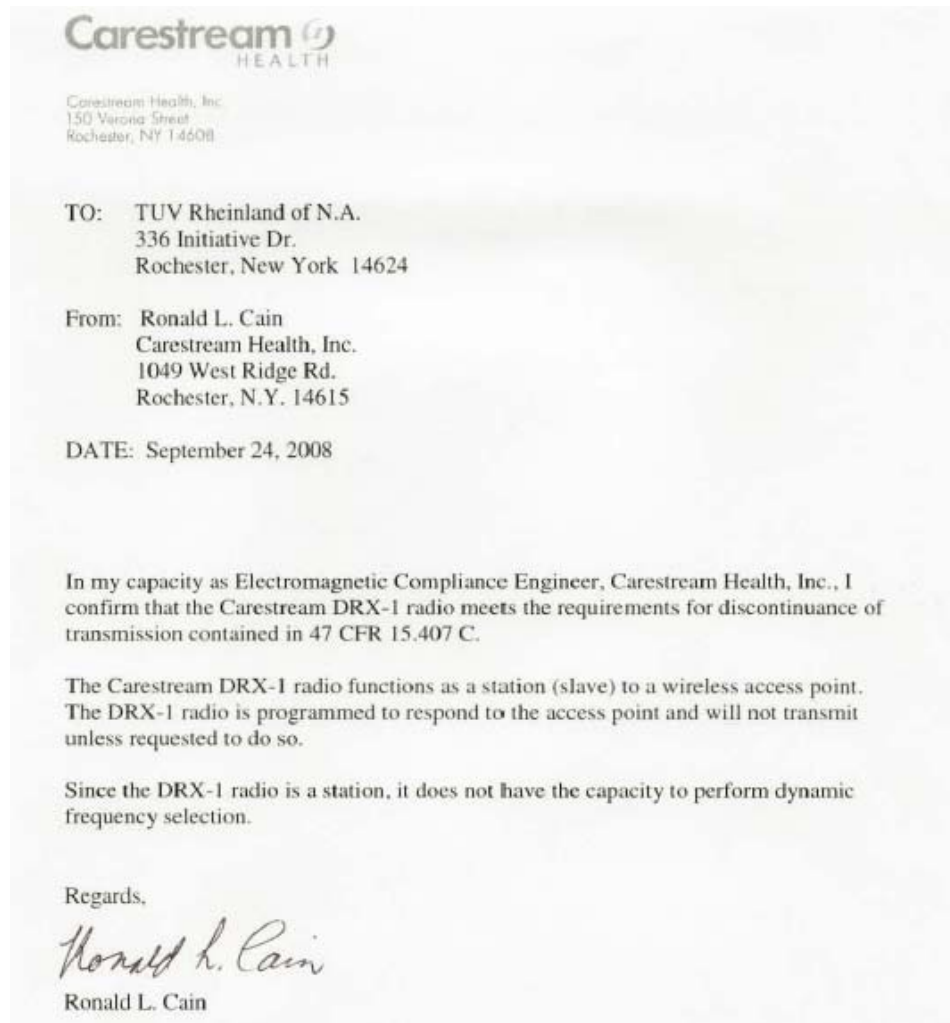
The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

4.8 Restricted Bands of Operation

In accordance with 47 CFR Part 15.407(b)(7) Intentional radiators need to comply with the provisions of 47 CFR Part 15.205. The results of these measurements can be found in section 4.1

4.9 Discontinuance of transmission in absence of Information

In accordance with 47 CFR part 15.407(c) applicants shall include in their application of how this requirement is met.



4.10 Frequency Stability

In accordance with 47 CFR Part 15.407(g) the frequency stability of U-NII devices must be such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual. The Manufacturer calls out operating temperature ranges of +10° to +30° C

4.10.1 Test results

Testing was performed on the original certification of the DRX-1 Radio for band 1 and was not repeated for this addition of band 2 to the original radio since there were no hardware changes made.

| Temperature Stability Test | | | | | | | | | | |
|--|---|----------|----------|----------|----------|----------|----------|----------|----------------------------|----------|
| Standard: | Part 15.407 | | | | | | | Date: | 8/18/2008 | |
| Device Tested: | DRX-1 Radio Ch 36 5180 MHz | | | | | | | File: | 10102409.00 | |
| Customer: | Carestream Health Inc. | | | | | | | | | |
| | | | | | | | | | | |
| Temperature | Frequency in MHz measured 20dB below Peak | | | | | | | | Permitted Band Edge in MHz | Results |
| | Start-up | | 2min | | 5min | | 10min | | | |
| | -dB26 | +26dB | -dB26 | +26dB | -dB26 | +26dB | -dB26 | +26dB | | |
| | | | | | | | | | | |
| -10°C | 5,166.00 | 5,194.00 | 5,166.00 | 5,194.00 | 5,166.00 | 5,194.00 | 5,166.00 | 5,194.00 | 5150 - 5250 MHz | Complied |
| 0° C | 5,166.00 | 5,194.00 | 5,166.00 | 5,194.00 | 5,166.00 | 5,194.00 | 5,166.00 | 5,194.00 | 5150 - 5250 MHz | Complied |
| + 30° C | 5,166.00 | 5,194.00 | 5,166.00 | 5,194.00 | 5,166.00 | 5,194.00 | 5,166.00 | 5,194.00 | 5150 - 5250 MHz | Complied |
| | | | | | | | | | | |
| Tested by: | Dieter Baldamus | | | | | | | | | |
| TUV Rheinland of North America, Inc. 12 Commerce Road Newtown, CT 06470 Tel:(203) 426-0888 Fax: (203) 426-4009 | | | | | | | | | | |
| | | | | | | | | | | |

FCC TempStab.xlsk Revised 24APR00

FCC TempStab.xls Revised 24APR08

Table 4 – Frequency Stability

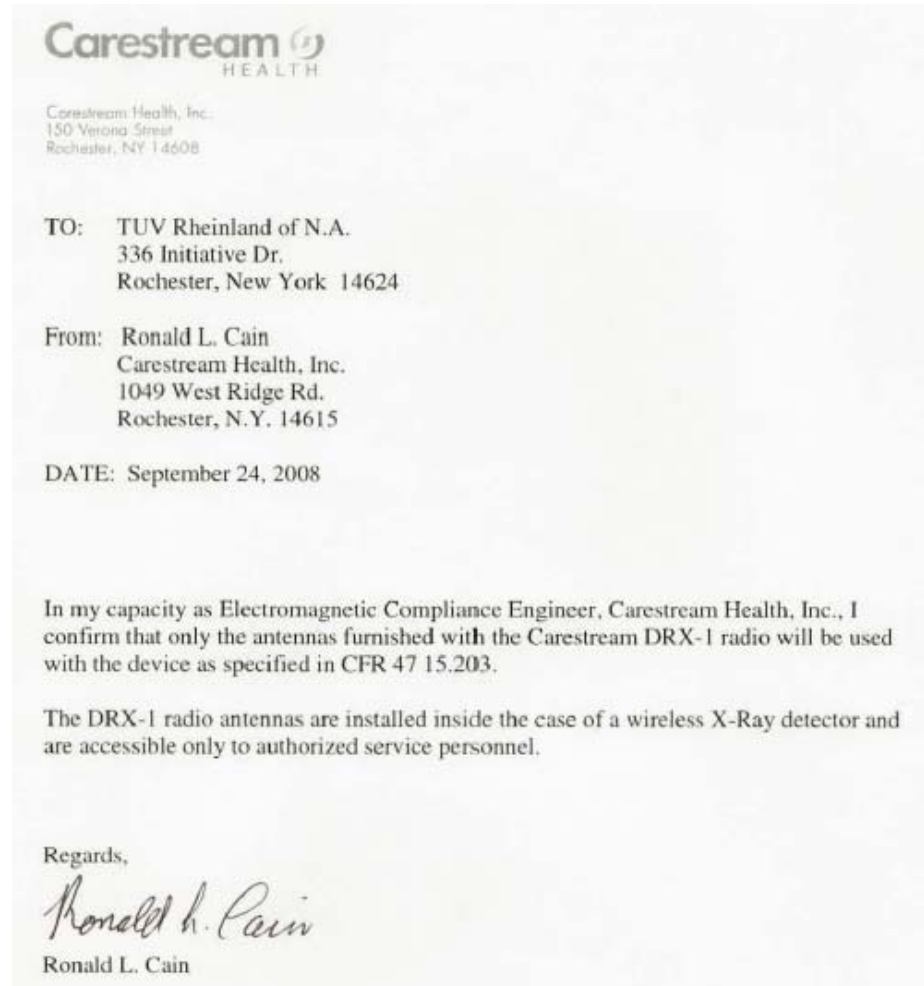
4.10.2 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the United States Government.

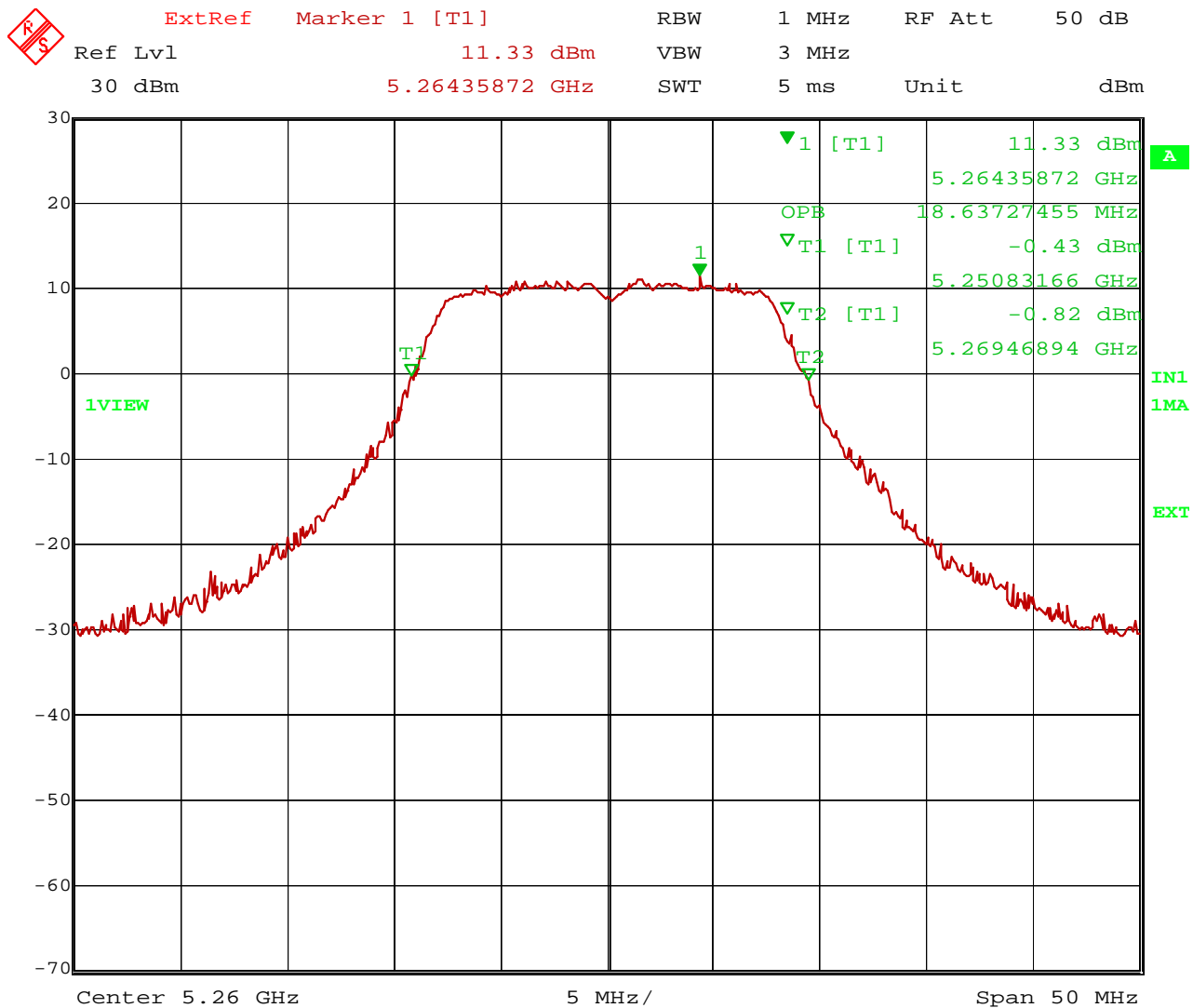
4.11 Antenna Requirements

In accordance with 47 CFR Part 15.203 an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.



4.12 99% Bandwidth

In accordance with Industry Canada's RSS-210 Issue 7 Annex 9.2(1)



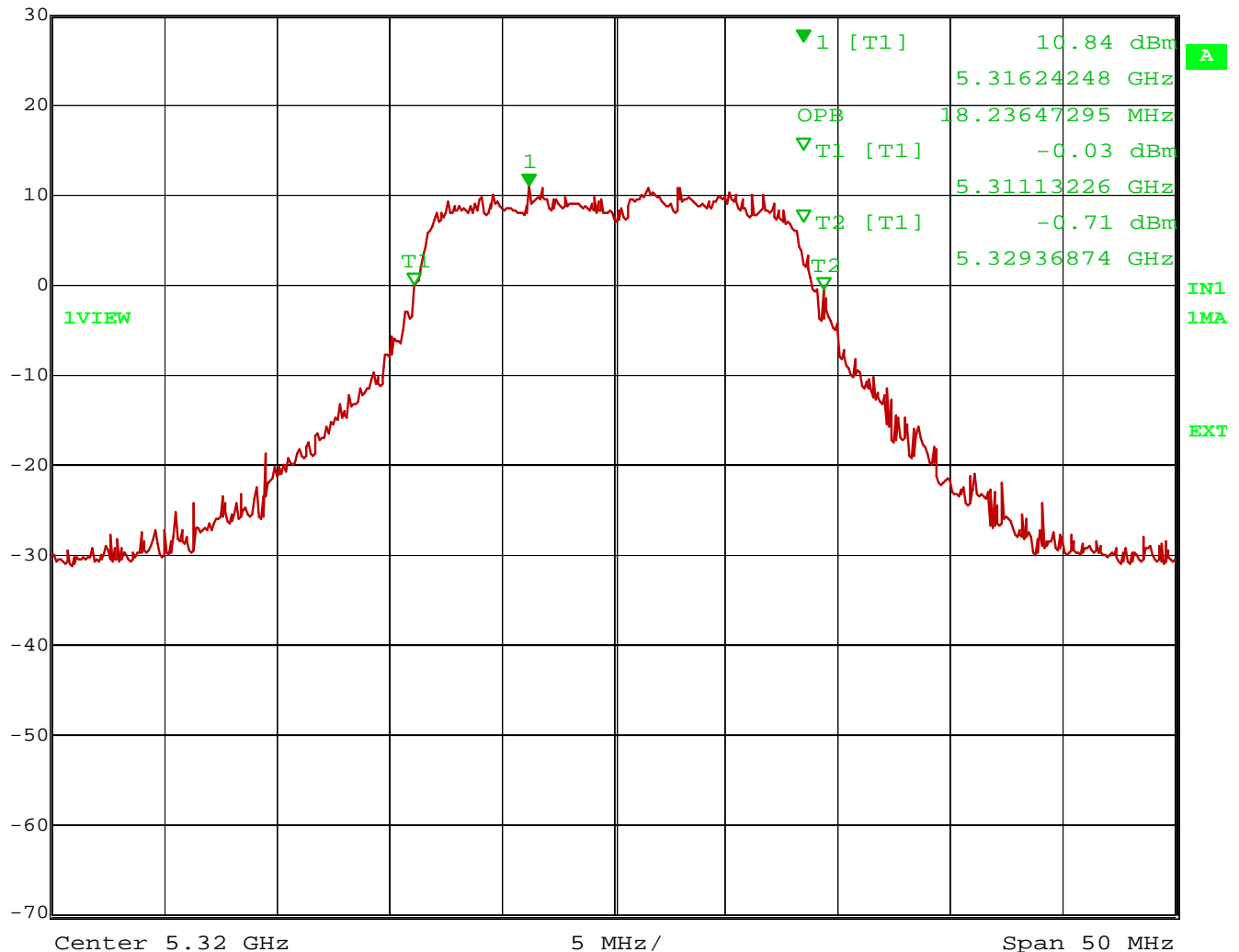
Date: 18.FEB.2010 16:43:14

Plot 37 – 99% Bandwidth Ch 52

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ExtRef Marker 1 [T1] RBW 1 MHz RF Att 50 dB
Ref Lvl 10.84 dBm VBW 3 MHz
30 dBm 5.31624248 GHz SWT 5 ms Unit dBm



Center 5.32 GHz

5 MHz /

Span 50 MHz

Date: 18.FEB.2010 16:33:23

Plot 38 – 99% Bandwidth Ch 64

4.12.1 Final Test

The EUT met the performance criteria requirement as specified in the test plan of this report and in the standards.

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Appendix A

5 Test Plan

This test report is intended to follow this test plan outlined here in unless other wise stated in this here report. The following test plan will give details on product information, standards to be used, test set ups and refer to TUV test procedures. The test procedures will give the steps to be taken when performing the stated test. The product information below came via client, product manual, product itself and or the internet.

5.1 General Information

| | |
|-----------------------|----------------------------------|
| Client | Carestream Health Inc. |
| Address | 150 Verona St |
| Address | Rochester NY, 14608 |
| Contact Person | Ronald Cain |
| Telephone | 585-627-8321 |
| Fax | 585-477-2718 |
| e-mail | ronald.cain@carestreamhealth.com |

5.2 Model(s) Name

DRX-1

5.3 Type of Product

DRX-1 Radio

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5.4 EUT Electrical Powered Information

5.4.1 Electrical Power Type

| | | | | | | | |
|--------------------------|----|--------------------------|----|-------------------------------------|-----------|--------------------------|--------|
| <input type="checkbox"/> | AC | <input type="checkbox"/> | DC | <input checked="" type="checkbox"/> | Batteries | <input type="checkbox"/> | Host - |
|--------------------------|----|--------------------------|----|-------------------------------------|-----------|--------------------------|--------|

5.5 Electrical Support Equipment

| Type | Manufacture | Model | Connected To |
|--------|-------------|--------------|--------------|
| Laptop | IBM | Thinkpad T30 | Radio |
| | | | |
| | | | |

5.6 EUT Test Program

ART V80 – Revision 8.0 Build #39 ART_11N

Customer Version (ANWI Build)