



**Nemko Test Report:** 131640-7

**Applicant:** TEKO Telecom S.p.A.  
Via Meucci, 24/a  
I-40024 Castel S. Pietro Terme (BO)

**Equipment Under Test:  
(E.U.T.)** TRU8S19AWWL/48-WS  
( + Master Unit composed by:  
SUB-TRX+TPSU/AC+TPSU/48+TSPV-R+TTRC4W-S)

**In Accordance With:** **CFR 47 Part 90, Subpart I**  
Private Land Mobile Repeater

**Tested By:** Nemko Italy S.p.A..  
Via Carroccio, 4  
I-20046 Biassono (Italy)

**G. Curioni**

**TESTED BY:** \_\_\_\_\_ *Curioni G.* **DATE:** 18-25 September, 2009

*Barbieri P.*  
**P. Barbieri**

**APPROVED BY:** \_\_\_\_\_ **DATE:** 28 September, 2009

**Number of Pages: 43**


## Table of Contents

|                                   |   |      |
|-----------------------------------|---|------|
| Section 1.                        | Summary of Test Results .....                 | 3    |
| Section 2.                        | General Equipment Specification .....         | 5    |
| Section 3.                        | RF Power Output .....                         | 8    |
| Section 4.                        | Occupied Bandwidth.....                       | 10   |
| Section 5.                        | Spurious Emissions at Antenna Terminals ..... | 15   |
| Section 6.                        | Field Strength of Spurious Emissions.....     | 23   |
| Section 7.                        | Filter Frequency Response.....                | 235  |
| Section 8.                        | Test Equipment List.....                      | 277  |
| Section 9.                        | PHOTOS .....                                  | 299  |
| ANNEX A - TEST METHODOLOGIES..... |   | 344  |
| ANNEX B - TEST DIAGRAMS.....      |   | 4040 |

*EQUIPMENT:*  
**TRU8S19AWWL/48-WS**

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**Section 1. Summary of Test Results**

Manufacturer: TEKO Telecom 

Model No.: TRU8S19AWWL/48-WS

Serial No.: 090668001

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with CFR Part 90, Subpart I.

- |                                     |                            |                                     |                     |
|-------------------------------------|----------------------------|-------------------------------------|---------------------|
| <input checked="" type="checkbox"/> | New Submission             | <input checked="" type="checkbox"/> | Production Unit     |
| <input type="checkbox"/>            | Class II Permissive Change | <input type="checkbox"/>            | Pre-Production Unit |

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.  
See " Summary of Test Data".

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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*

**TRU8S19AWWL/48-WS**

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**Summary Of Test Data**

| <b>NAME OF TEST</b>                     | <b>PARA. NO.</b> | <b>SPEC.</b>   | <b>RESULT</b> |
|---|------------------|----------------|---------------|
| RF Power Output                         | 90.635           | 1 kW ERP       | Complies      |
| Occupied Bandwidth                      | 90.210           | Input/Output   | Complies      |
| Spurious Emissions at Antenna Terminals | 90.210           | -13 dBm        | Complies      |
| Field Strength of Spurious Emissions    | 90.210           | -13 dBm<br>erp | Complies      |
| Frequency Stability                     | 90.213           | 1 ppm          | NA            |

**Footnotes For N/A's:**

Frequency Stability testing was not performed since the E.U.T. does not contain modulation circuitry.

**Section 2. General Equipment Specification**

|  |  |  |   |   |  |
|--|--|--|---|---|--|
| <b>Supply Voltage Input:</b>                     | 48 Vdc   |  |   |   |  |
| <b>Frequency Range:</b> <input type="checkbox"/> | <b>Downlink:</b>                               | 851 to 869 MHz                                     |   |   |  |
| <b>Frequency Range:</b> <input type="checkbox"/> | <b>Uplink:</b>                                 | 806 to 824 MHz                                     |   |   |  |
| <b>Type of Modulation and Designator:</b>        | <b>F3E (Voice)</b><br><input type="checkbox"/> | <b>F1D</b><br><input type="checkbox"/>             | <b>F2D</b><br><input type="checkbox"/>                          | <b>D7W (QAM)</b><br><input checked="" type="checkbox"/> | <b>Other</b><br><input type="checkbox"/> |
| <b>Output Impedance:</b>                         | 50 ohms  |  |   |   |  |
| <b>RF Output (Rated):</b>                        | <b>Downlink:</b>                               | 0.8 W<br>29 dBm                                    |   |   |  |
|  | <b>Uplink:</b>                                 | 0.0025 W typical<br>4 dBm typical                  |   |   |  |
| <b>Gain:</b>                                     | <b>Downlink:</b>                               | 34 dB  |   |   |  |
|  | <b>Uplink:</b>                                 | 47 dB  |   |   |  |
| <b>Frequency Translation:</b>                    | <b>F1-F1</b><br><input type="checkbox"/>       | <b>F1-F2</b><br><input type="checkbox"/>           | <b>N/A</b><br><input checked="" type="checkbox"/>               |   |  |
| <b>Band Selection:</b>                           | <b>Software</b><br><input type="checkbox"/>    | <b>Duplexer Change</b><br><input type="checkbox"/> | <b>Fullband Coverage</b><br><input checked="" type="checkbox"/> |   |  |

**Description of EUT**

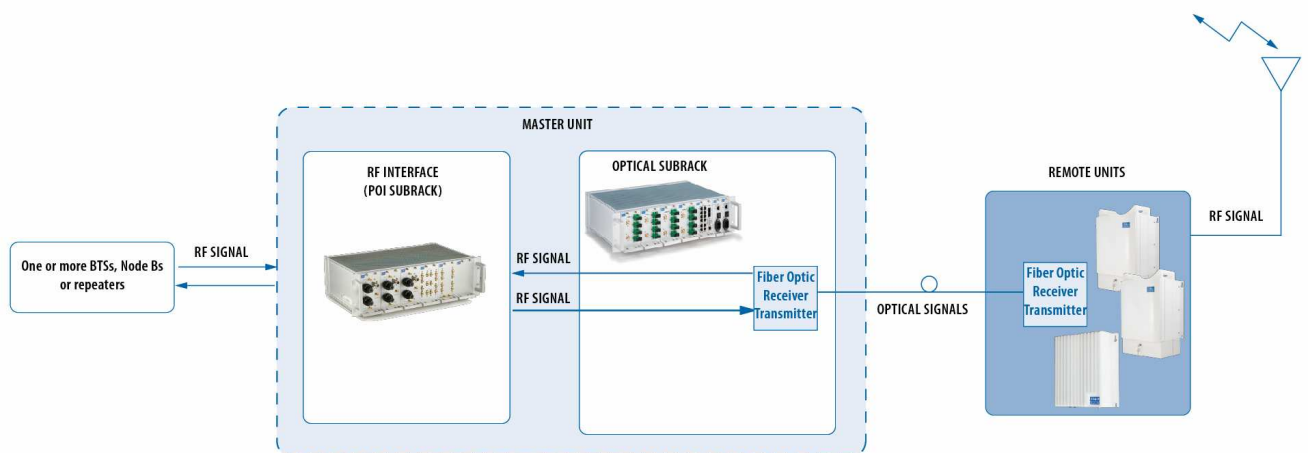
The EUT is a low power multi-operator optical Remote Unit. It is used in conjunction with a Master Unit in the optical distribution system.

The EUT is a tri-band system; it is able to transport a wide frequency range simultaneously (SMR800, PCS and AWS bands). Single amplifier modules can be combined each other to obtain the following equipment:

| <i>Commercial name</i>       | <i>Description</i> |  |
|------------------------------|--------------------|--|
| <b>REMOTE UNIT LOW POWER</b> |                    |  |
| <b>TRUxxxxxcL/zz-kkkj</b>    | <b>TRU</b>         | Teko Telecom Remote Unit   |
|                              | <b>xxxxx =</b>     | <p><b>Operating band:</b></p> <p>7S: SMR700 (UL: 698-716+776-787MHz)<br/>DL: 728-757MHz)</p> <p>7P: Public Safety 700 (DL: 763-775MHz; UL: 793-805MHz)</p> <p>8S: SMR800 (DL: 851-869MHz; UL: 806-824MHz)</p> <p>8A: AMPS (DL: 869-894MHz; UL: 824-849MHz)</p> <p>9S: SMR900 (DL: 935-941MHz; UL: 896-902MHz)</p> <p>19: PCS1900 (DL: 1930-1995MHz; UL: 1850-1915MHz)</p> <p>AW: AWS2100 (DL: 2110-2155MHz; UL: 1710-1755MHz)</p> <p><i>and combination of these</i></p> |
|                              | <b>c =</b>         | <p><b>RF Connector:</b></p> <p>W: wideband<br/>D: duplexed<br/>B: bi duplexed<br/>N: no duplexed<br/>S: single connector</p>   |
|                              | <b>L =</b>         | L: low power   |
|                              | <b>zz =</b>        | <p><b>Power supply:</b></p> <p>AC: Power Supply: 85-264Vac, 50-60Hz<br/>48: Power Supply: 36-72Vdc</p>   |

|  |              |   |
|--|--------------|---|
|  | <p>kkk =</p> | <p><b>Laser version:</b></p> <p>Without option: NO WDM</p> <p>Termocontrolled laser version:</p> <p>W21: <math>\lambda = 1560,61\text{nm}</math><br/> W23: <math>\lambda = 1558,98\text{nm}</math><br/> W25: <math>\lambda = 1557,36\text{nm}</math><br/> W27: <math>\lambda = 1555,75\text{nm}</math><br/> W29: <math>\lambda = 1554,13\text{nm}</math><br/> W31: <math>\lambda = 1552,52\text{nm}</math><br/> W: <math>\lambda = 1550,92\text{nm}</math><br/> W35: <math>\lambda = 1549,32\text{nm}</math><br/> W37: <math>\lambda = 1547,72\text{nm}</math></p> <p>No termocontrolled laser version:</p> <p>M11: <math>\lambda = 1470 \pm 3\text{ nm}</math><br/> M12: <math>\lambda = 1490 \pm 3\text{ nm}</math><br/> M13: <math>\lambda = 1510 \pm 3\text{ nm}</math><br/> M14: <math>\lambda = 1530 \pm 3\text{ nm}</math><br/> W : <math>\lambda = 1550 \pm 3\text{ nm}</math> (standard version)<br/> M16: <math>\lambda = 1570 \pm 3\text{ nm}</math><br/> M17: <math>\lambda = 1590 \pm 3\text{ nm}</math><br/> M18: <math>\lambda = 1610 \pm 3\text{ nm}</math></p> |
|  | <p>j =</p>   | <p><b>Optical connector:</b></p> <p>S: SC-APC<br/> E: E-2000</p>  |

System Diagram



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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*  
**TRU8S19AWWL/48-WS**

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**Section 3. RF Power Output**

|                               |                         |
|-------------------------------|-------------------------|
| NAME OF TEST: RF Power Output | PARA. NO.: 2.985        |
| TESTED BY: G. Curioni         | DATE: 24 September 2009 |

**Test Results:** Complies.

**Measurement Data:**

| Direction | Modulation | Output per Channel (dBm) | Output per Channel Power (W) |
|-----------|------------|--------------------------|------------------------------|
| Uplink    | iDEN       | 4,43                     | 0.0028                       |
| Downlink  | iDEN       | 29,26                    | 0.82                         |

**Equipment Used:** 1-2-3b-4

**Measurement Uncertainty:** +/- 1.9 dB

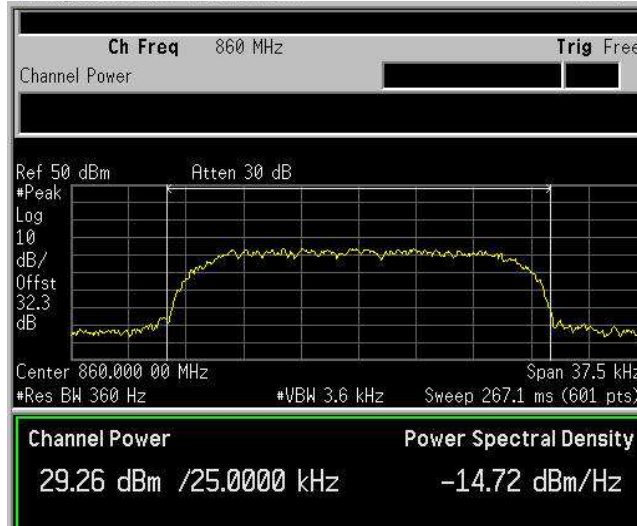
**Temperature:** 24 °C

**Relative Humidity:** 50 %

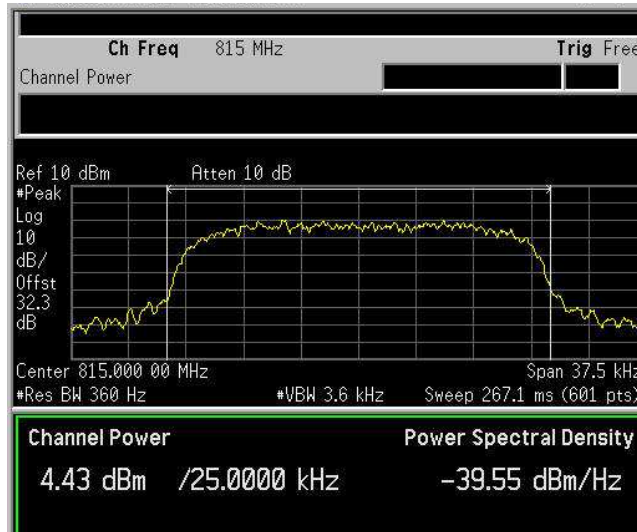


EQUIPMENT:  
**TRU8S19AWWL/48-WS**

RF Power Output D.L. mod. QAM



RF Power Output U.L. mod. QAM



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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*  
**TRU8S19AWWL/48-WS**

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#### **Section 4. Occupied Bandwidth**

|                                  |                         |
|----------------------------------|-------------------------|
| NAME OF TEST: Occupied Bandwidth | PARA. NO.: 2.989        |
| TESTED BY: G. Curioni            | DATE: 24 September 2009 |

**Test Results:** Complies.

**Test Data:** See attached plot(s).

**Equipment Used:** 1 – 2 – 3b - 4

**Measurement Uncertainty:** 1X10<sup>-7</sup>

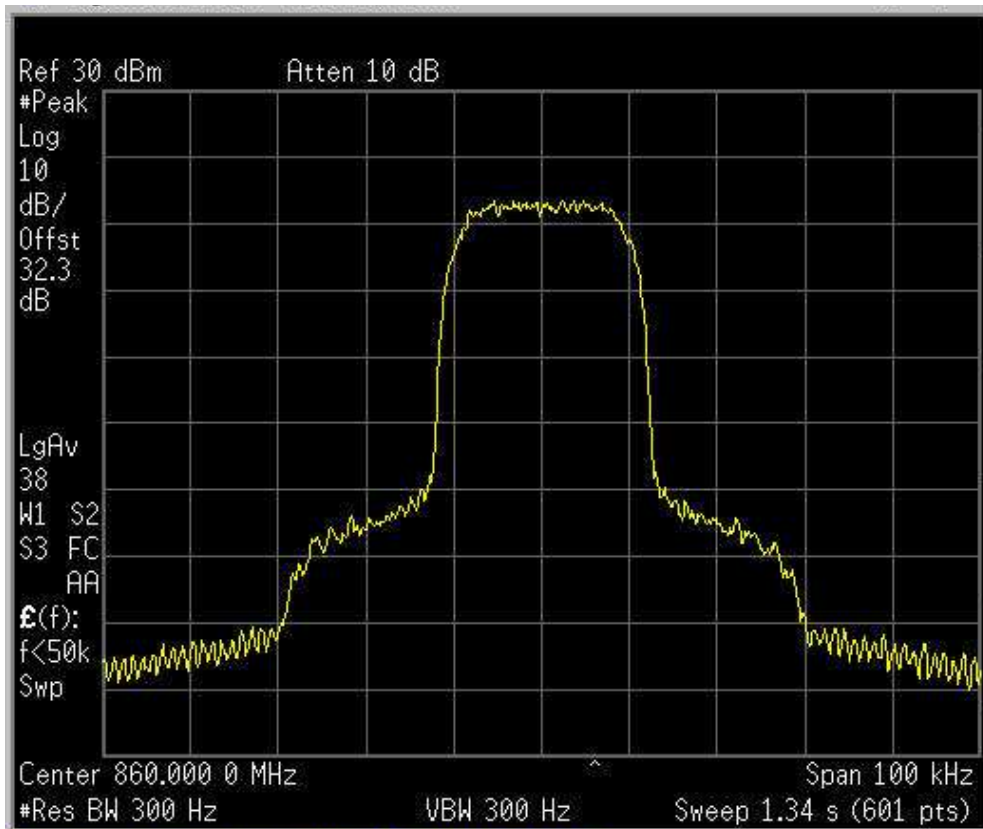
**Temperature:** 24 °C

**Relative Humidity:** 50 %

EQUIPMENT:  
**TRU8S19AWWL/48-WS**

**Test Data – Occupied Bandwidth**

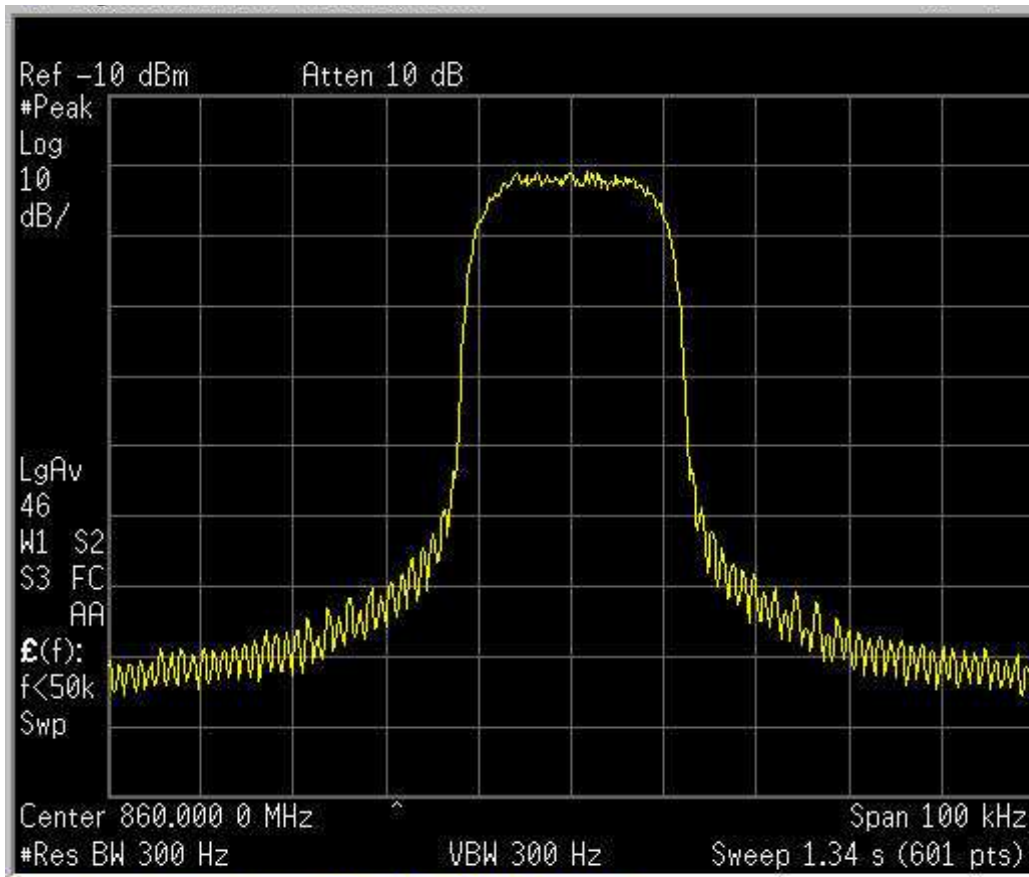
iDEN - Output  
Downlink



EQUIPMENT:  
**TRU8S19AWWL/48-WS**

**Test Data – Occupied Bandwidth**

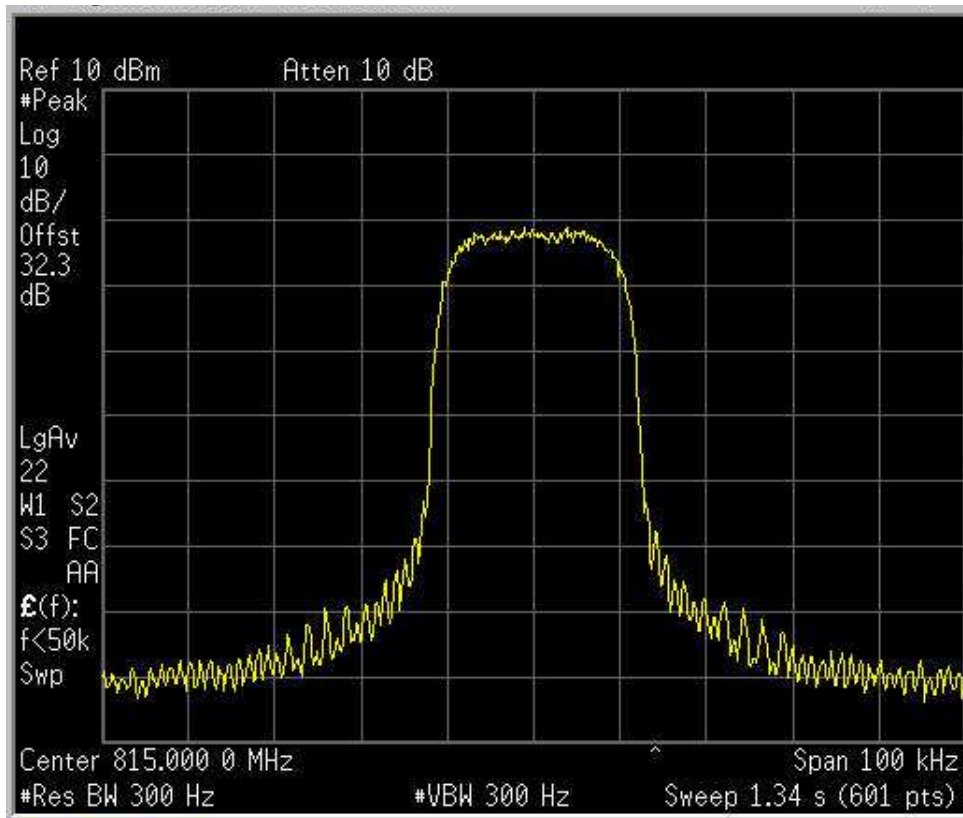
iDEN - Input  
Downlink



EQUIPMENT:  
**TRU8S19AWWL/48-WS**

**Test Data – Occupied Bandwidth**

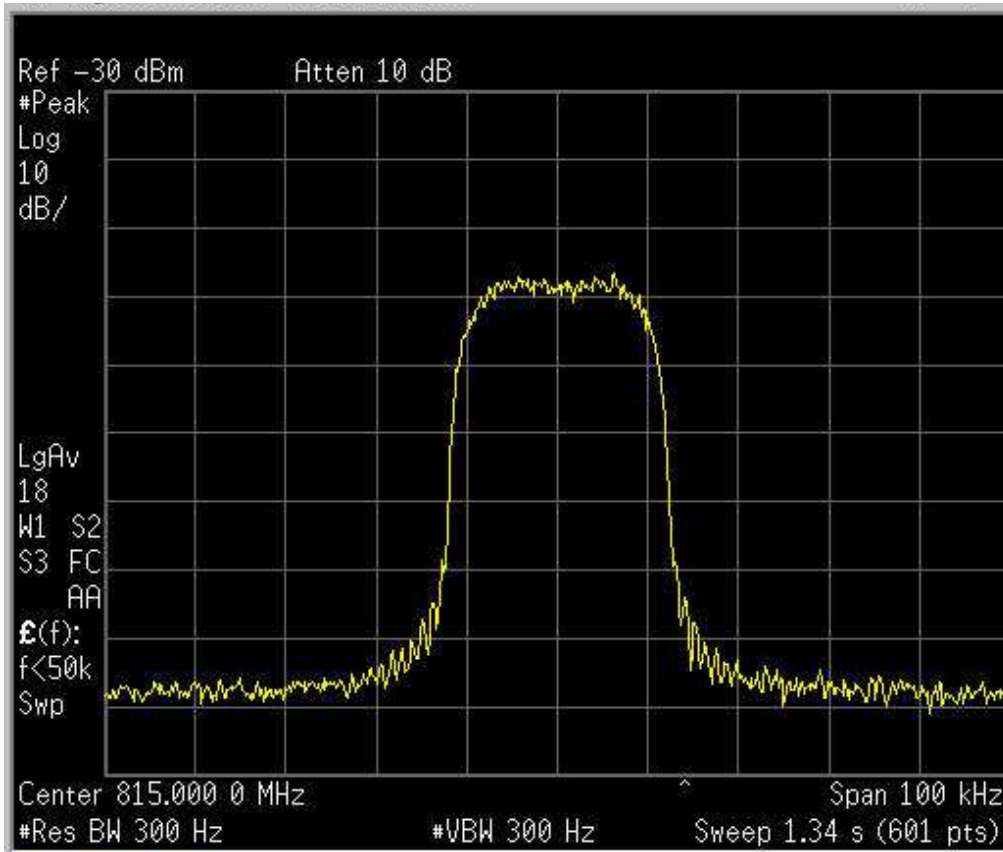
iDEN - Output  
Uplink



EQUIPMENT:  
**TRU8S19AWWL/48-WS**

**Test Data – Occupied Bandwidth**

iDEN - Input  
Uplink



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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*

**TRU8S19AWWL/48-WS**

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## **Section 5. Spurious Emissions at Antenna Terminals**

|  |                            |
|--|----------------------------|
| NAME OF TEST: Spurious Emissions @ Antenna Terminals | PARA. NO.: 2.991           |
| TESTED BY: G. Curioni                                | DATE: 24 September<br>2009 |

**Test Results:** Complies.

**Test Data:** See attached plot(s).

**Equipment Used:** 1 – 2 – 3b - 4

**Measurement Uncertainty:** +/- 1.9 dB

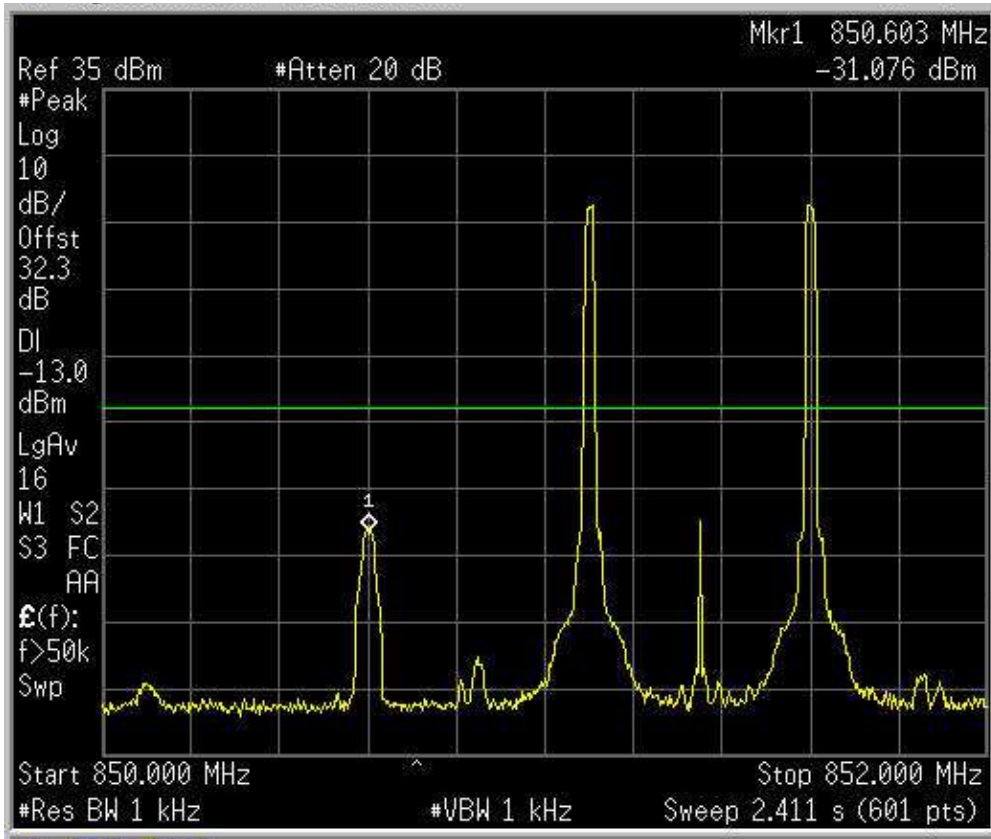
**Temperature:** 24 °C

**Relative Humidity:** 50 %

EQUIPMENT:  
**TRU8S19AWWL/48-WS**

**Test Data – Spurious Emissions at Antenna Terminals**

Lower Bandedge Intermodulation  
iDEN  
Downlink

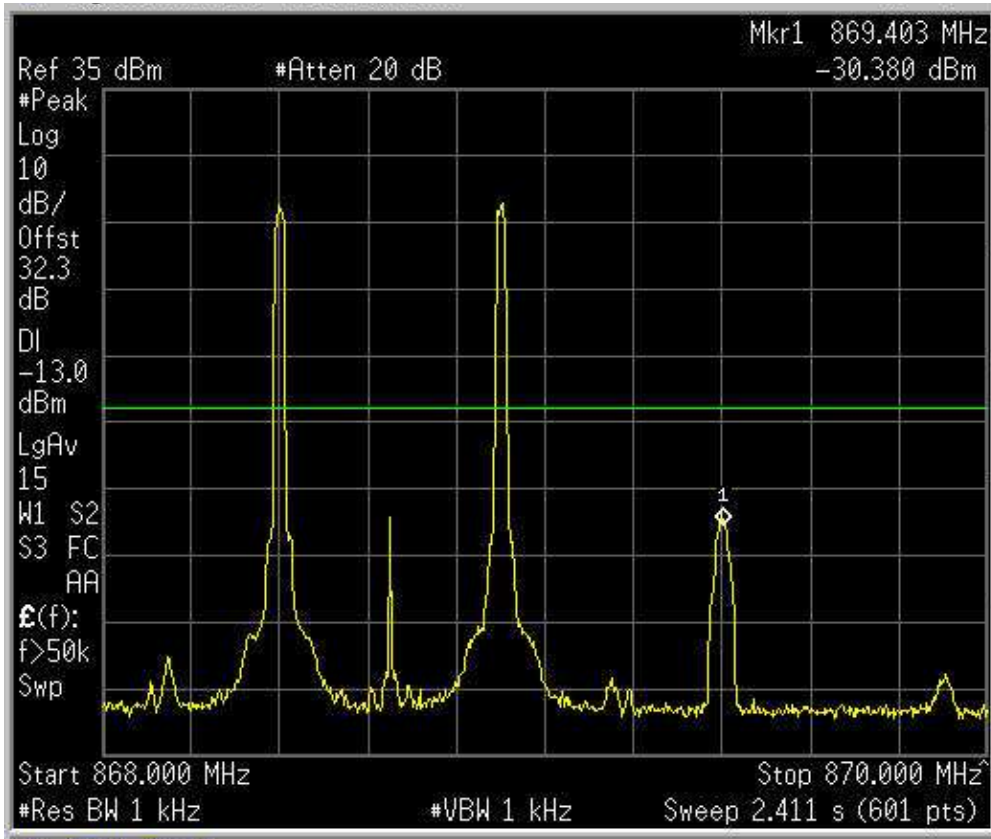




EQUIPMENT:  
**TRU8S19AWWL/48-WS**

**Test Data – Spurious Emissions at Antenna Terminals**

Upper Bandedge Intermodulation  
iDEN  
Downlink





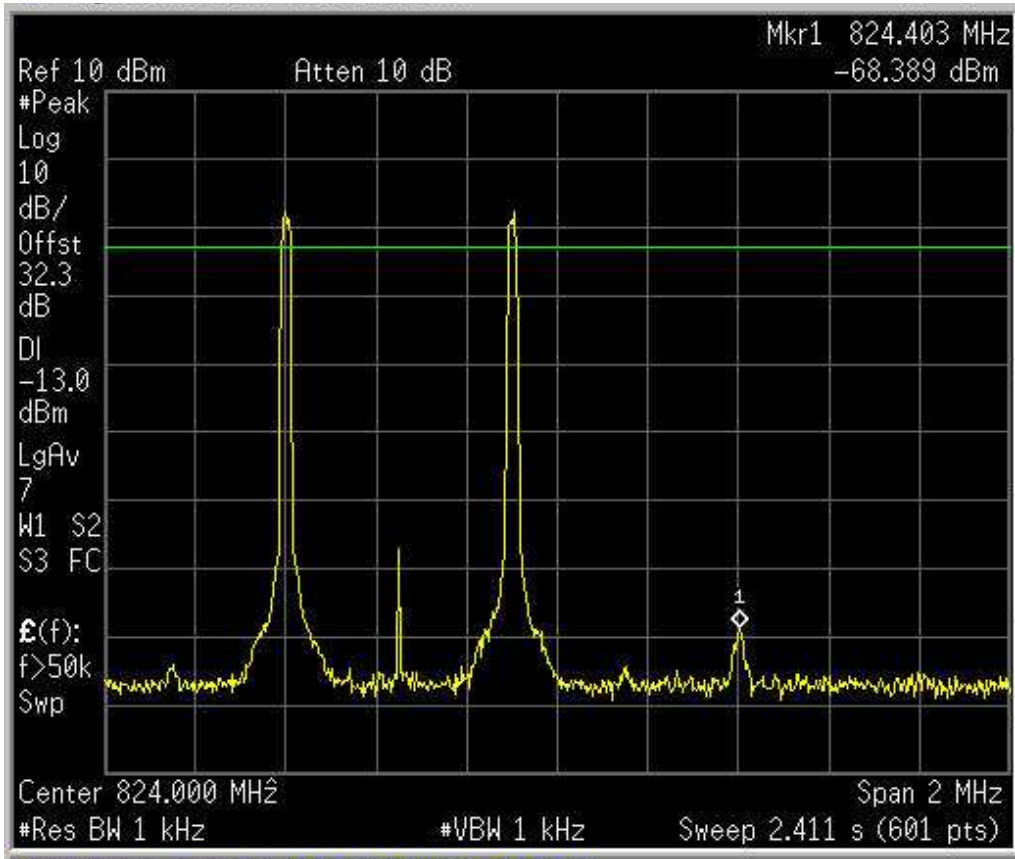
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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

EQUIPMENT:  
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**Test Data – Spurious Emissions at Antenna Terminals**

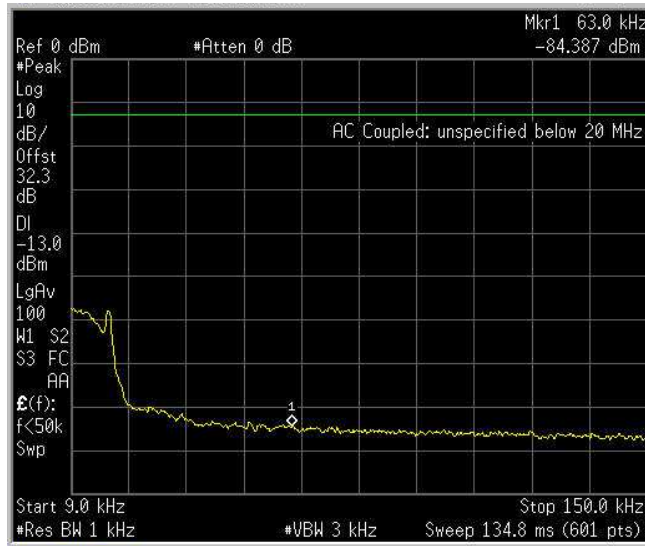
Upper Bandedge Intermodulation  
iDEN  
Uplink



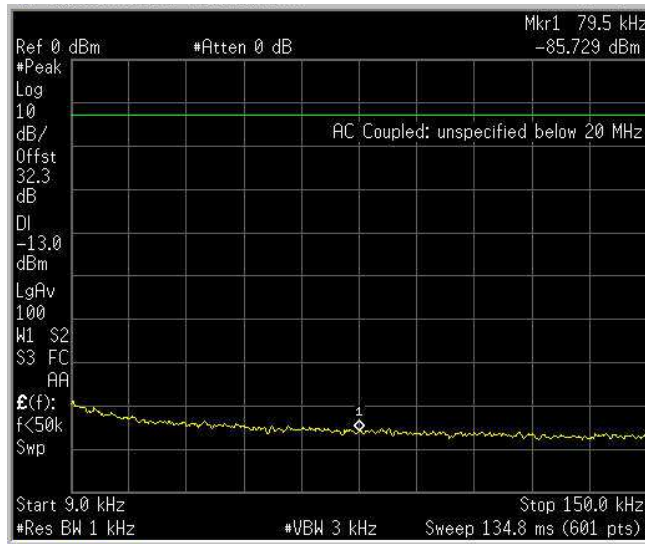
EQUIPMENT:  
**TRU8S19AWWL/48-WS**

**Test Data – Spurious Emissions at Antenna Terminals**

Spurs  
Downlink 9 – 150 kHz  
IDEN



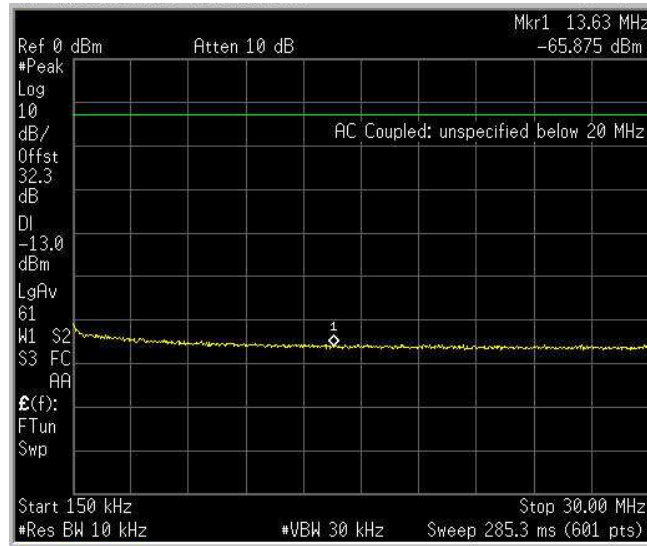
Spurs  
Uplink 9 – 150 kHz  
IDEN



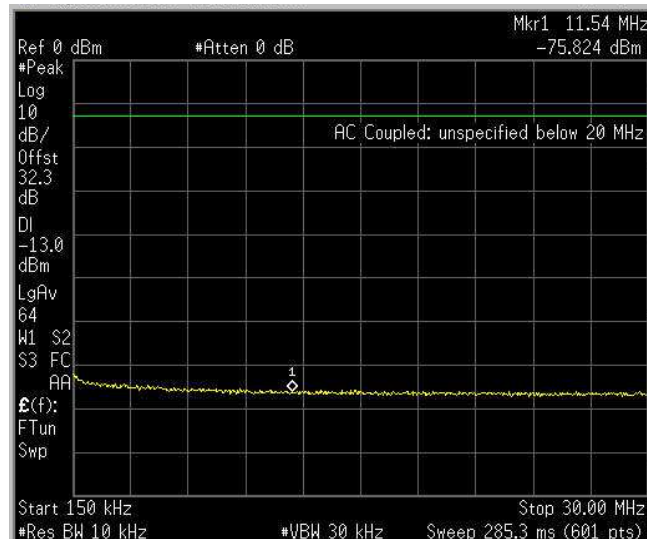
EQUIPMENT:  
**TRU8S19AWWL/48-WS**

**Test Data – Spurious Emissions at Antenna Terminals**

Spurs  
Downlink  
IDEN 150 kHz – 30 MHz



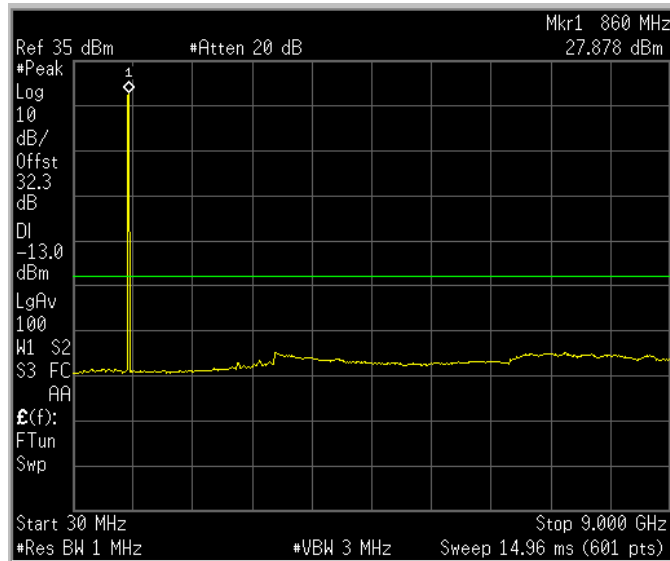
Spurs  
Uplink  
IDEN 150 kHz – 30 MHz



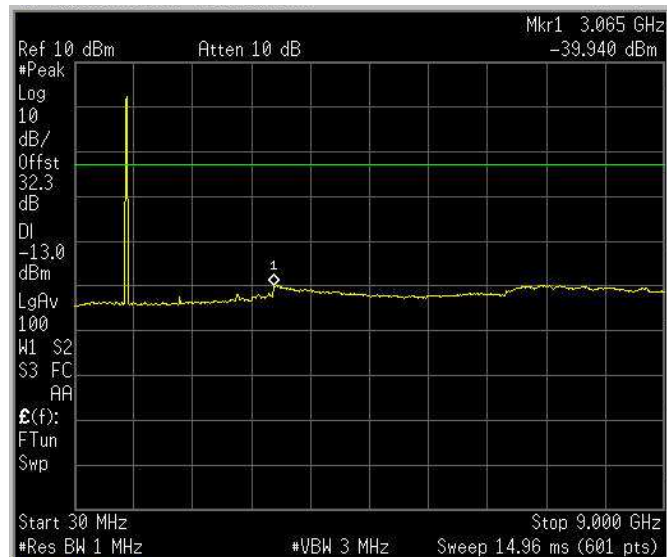
EQUIPMENT:  
**TRU8S19AWWL/48-WS**

**Test Data – Spurious Emissions at Antenna Terminals**

Spurs  
Downlink  
IDEN 30 MHz – 10 GHz



Spurs  
Uplink  
IDEN 30 MHz – 10 GHz



*EQUIPMENT:*  
**TRU8S19AWWL/48-WS**

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**Section 6. Field Strength of Spurious Emissions**

|  |                         |
|--|-------------------------|
| NAME OF TEST: Field Strength of Spurious Emissions | PARA. NO.: 2.993        |
| TESTED BY: G. Curioni                              | DATE: 24 September 2009 |

**Test Results:** Complies.

**Test Data:** The spectrum was searched from 30 MHz to the tenth harmonic of the carrier. There were no emissions detected above the noise floor, which was at least 20 dB below the specification limit of -13 dBm.

| SMR800 band - Master/remote 120 Vac/48 Vdc |                                   |   |         |
|--|-----------------------------------|---|---------|
| Frequency range                            | D.L. & U.L.                       | Result [dBm]<br>Max. field strength pol.<br>V/H | Limit   |
| 30 – 1000 MHz                              | 33.9 MHz<br>78.6 MHz<br>140.8 MHz | -61.8 dBm V<br>-66.1 dBm V<br>-60.6 dBm V       | -13 dBm |
| 1 – 10 GHz                                 |                                   | negligible                                      | -13dBm  |

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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*

**TRU8S19AWWL/48-WS**

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**Equipment Used:** 5 – 6 – 7 – 8 – 9 -10 – 11 – 12 - 13

**Measurement Uncertainty:**  +/-5  dB

**Temperature:**  24  °C

**Relative Humidity:**  50  %



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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*  
**TRU8S19AWWL/48-WS**

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## **Section 7. Filter Frequency Response**

|   |                              |
|---|------------------------------|
| NAME OF TEST: Filter Frequency Response | PARA. NO.:<br>2-11-04/EAB/RF |
| TESTED BY: G. Curioni                   | DATE: 23 January 2010        |

**Test Results:** Complies.

**Test Data:** See attached plot(s).

**Equipment Used:** 3a

**Measurement Uncertainty:** +/-1,9 dB

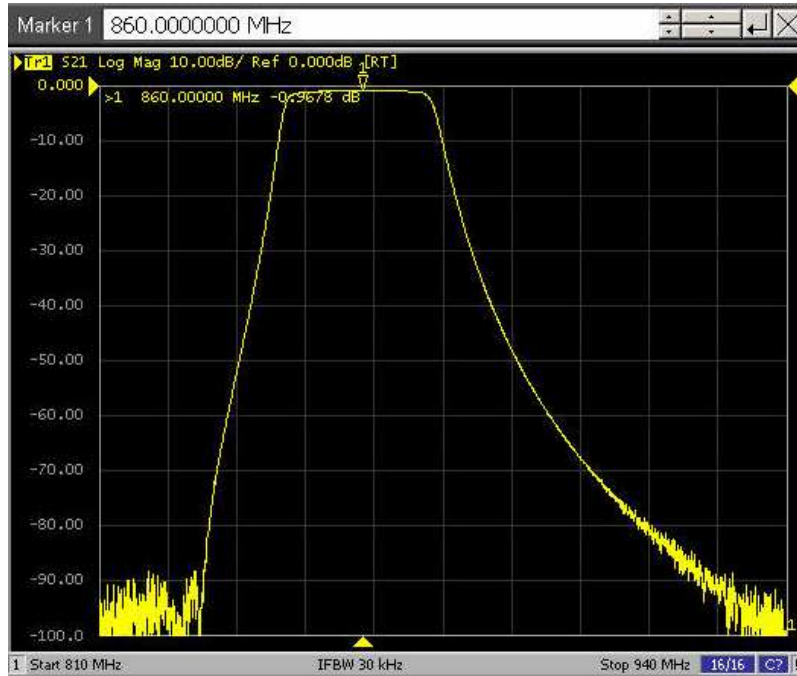
**Temperature:** 24 °C

**Relative Humidity:** 55 %

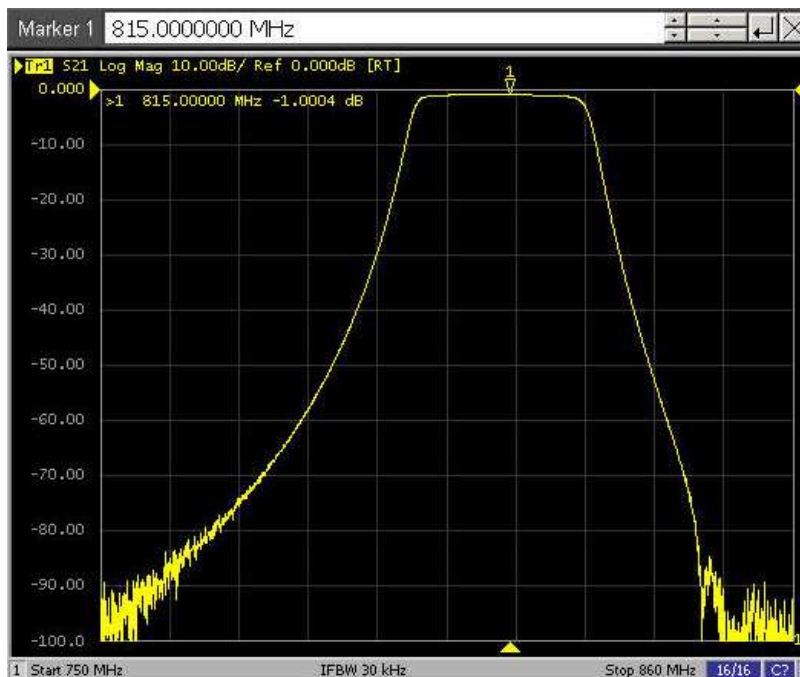
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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

EQUIPMENT:  
TRU8S19AWWL/48-WS



Down-link



Up-link

**Section 8. Test Equipment List**

| <i>Identification number</i> | <i>Description</i>                     | <i>Manufacturer model</i> | <i>s/n</i> | <i>Cal. Due</i> |
|------------------------------|--|---------------------------|------------|-----------------|
| 1                            | Vector Signal Generator                | Agilent H.P. E4438C       | MY45094485 | July 2010       |
| 2                            | Spectrum Analyzer                      | Agilent H.P. E4440A       | US40420470 | December 2009   |
| 3a                           | Network Analyzer                       | Agilent H.P. E5062A       | MY44101829 | November 2012   |
| 3b                           | Network Analyzer                       | Hewlett Packard 8753D     | 3410A04850 | March 2010      |
| 4                            | 2xcables+directional coupler+dummyload |                           |            |                 |

Client's property

|  |        |                      |                    |  |
|--|--------|----------------------|--------------------|--|
| Coupling Factor                        | SMR800 | UL 815.0<br>DL 869.0 | 32.3 dB<br>32.3 dB |  |
| 2xcables+directional coupler+dummyload |        |                      |                    |  |

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PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

EQUIPMENT:

**TRU8S19AWWL/48-WS**

| <i>Identification number</i> | <i>Equipment</i>             | <i>Manufacturer</i> | <i>Model</i>             | <i>Serial N°</i> | <i>Cal. due</i> |
|------------------------------|------------------------------|---------------------|--------------------------|------------------|-----------------|
| 5                            | Trilog Broadband Antenna     | Schwarzbeck         | VULB 9163                | VULB 9163-286    | 04/2010         |
| 6                            | Bilog antenna                | Schwarzbeck         | STLP 9148-123            | 123              | 09/2011         |
| 7                            | Broadband preamplifier       | Schwarzbeck         | BBV 9718                 | 9718-137         | 05/2011         |
| 8                            | Spectrum Analyzer 9kHz-40GHz | R&S                 | FSEK                     | 848255/005       | 09/2010         |
| 9                            | Controller                   | EMCO                | 2090                     | 9511-1099        | NSC             |
| 10                           | Antenna Tower                | EMCO                | 2071-2                   | 9601-1940        | NSC             |
| 11                           | Turning table Controller     | EMCO                | 1061-1.521               | 9012-1508        | NSC             |
| 12                           | Semi-anechoic chamber        | Nemko               | 3m semi-anechoic chamber | 70               | 04/2010         |
| 13                           | Trilog Broadband Antenna     | Siemens             | 3m control room          | 3                | NSC             |

Property of Nemko Italy

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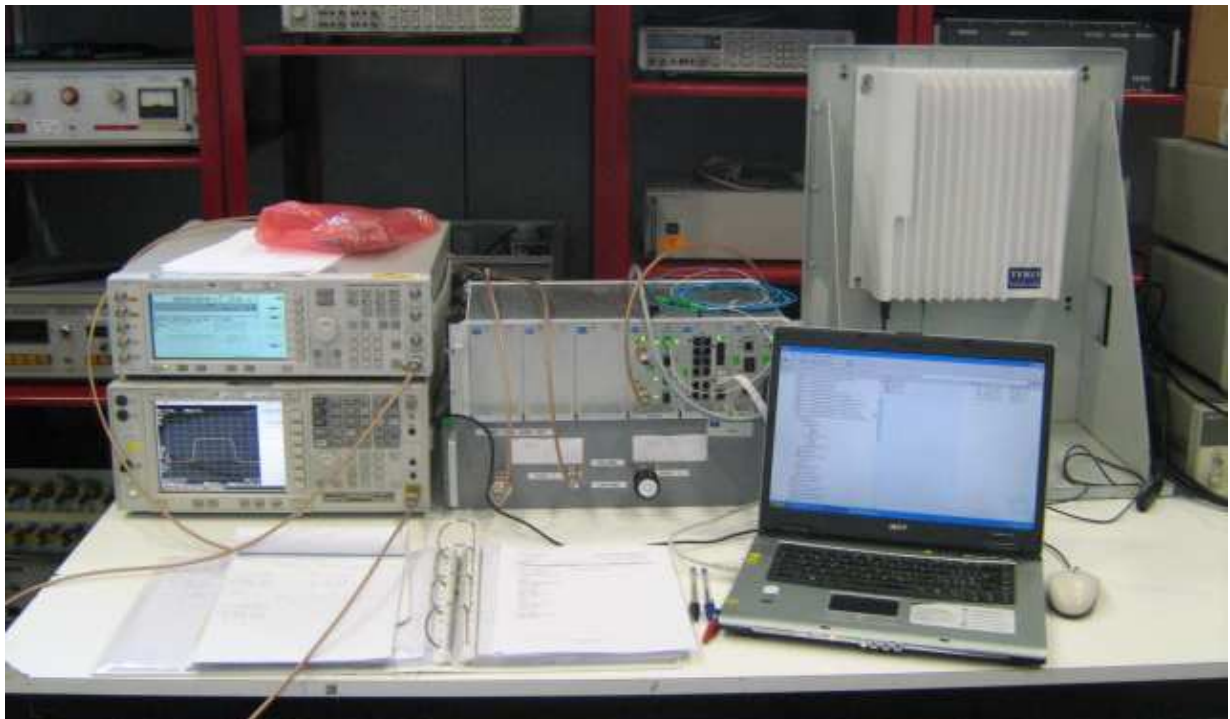
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PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*  
**TRU8S19AWWL/48-WS**

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## **Section 9. PHOTOS**

### **SETUP**

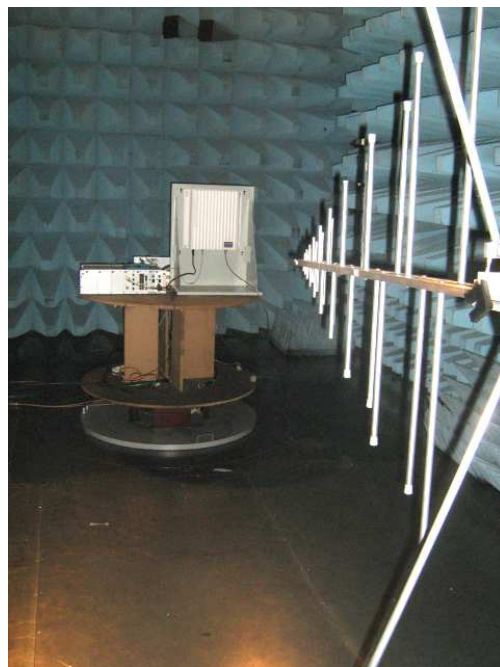


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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*  
**TRU8S19AWWL/48-WS**

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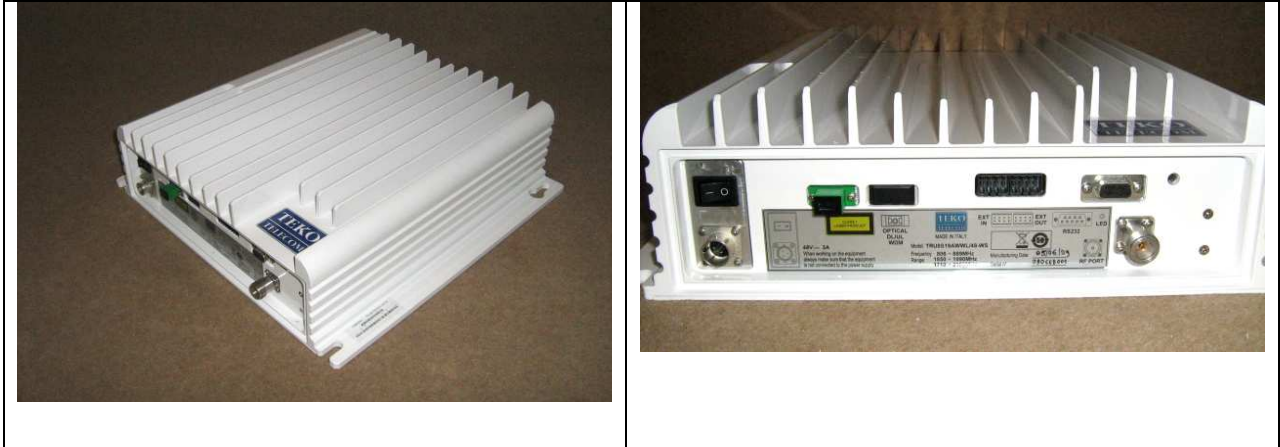


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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

**EQUIPMENT:**  
**TRU8S19AWWL/48-WS**

**REMOTE**



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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

**EQUIPMENT:**  
**TRU8S19AWWL/48-WS**

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**MASTER**



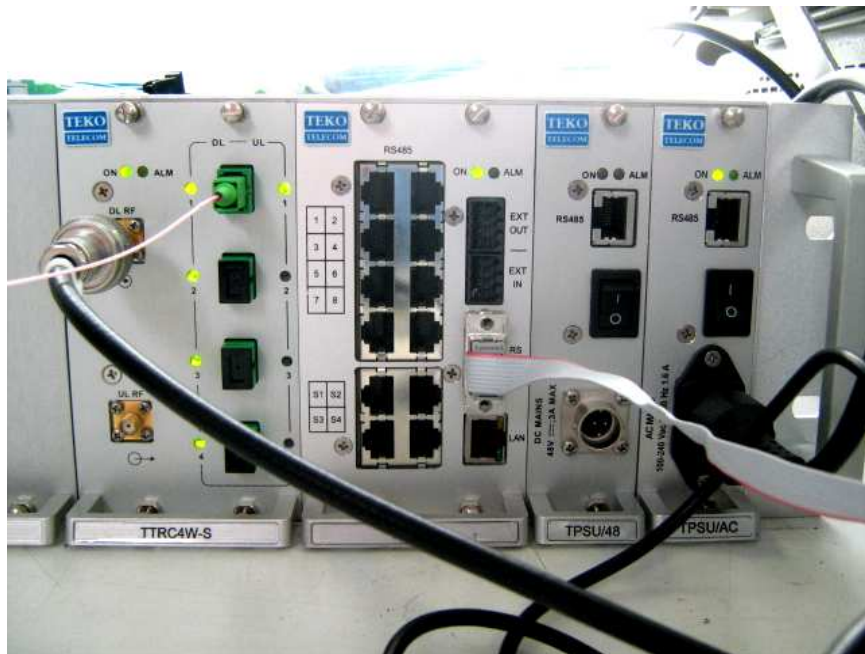


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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

**EQUIPMENT:**  
**TRU8S19AWWL/48-WS**

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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*

**TRU8S19AWWL/48-WS**

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## **ANNEX A - TEST METHODOLOGIES**

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CFR 47 PART 90, SUBPART I  
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**NAME OF TEST: RF Power Output**

**PARA. NO.: 2.985**

**Minimum Standard:** Para. No. 90.205(a). The maximum allowable station ERP is dependent upon the stations HAAT and required service area and will be authorized in accordance with Table 1 of 90.205(d).

**Method Of Measurement:**

Detachable Antenna:

The peak power at antenna terminals is measured using an in-line peak power meter. Power output is measured with the maximum rated input level.

Integral Antenna:

The antenna substitution method is used to determine the equivalent radiated power at spurious frequencies. The spurious emissions are measured at a distance of 3 meters. The EUT is then replaced with a reference substitution antenna with a known gain referenced to an isotropic radiator. This antenna is fed with a signal at the spurious frequency. The level of the signal is adjusted to repeat the previously measured level. The resulting eirp is the signal level fed to the reference antenna corrected for gain referenced to an isotropic radiator.

|  |                         |
|--|-------------------------|
| <b>NAME OF TEST: Spurious Emissions at Antenna Terminals</b> | <b>PARA. NO.: 2.991</b> |
|--|-------------------------|

**Minimum Standard:** 90.210, Table 1

**Table 1**

| Frequency Band (MHz) | Mask for equipment with Low Pass Filter | Mask for equipment without Low Pass Filter |
|----------------------|---|--|
| Below 25             | A or B                                  | A or C                                     |
| 25 - 50              | B                                       | C  |
| 72 - 76              | B                                       | C  |
| 150 - 174            | B, D or E                               | C, D or E                                  |
| 150 Paging only      | B                                       | C  |
| 220 - 222            | F                                       | F  |
| 421 - 512            | B, D or E                               | C, D or E                                  |
| 450 paging only      | B                                       | H  |
| 806 - 821/ 851 - 866 | B                                       | G  |
| 821 - 824/ 866 - 869 | B                                       | H  |
| 896 - 901/ 935 - 940 | I                                       | J  |
| 902 - 928            | K                                       | K  |
| 929 - 930            | B                                       | G  |
| Above 940            | B                                       | C  |
| All other bands      | B                                       | C  |

| MASK        | Spurious Limit | FS Limit Below 1 GHz | FS Limit Above 1 GHz |
|-------------|----------------|----------------------|----------------------|
| A,B,C,G,H,I | -13dBm         | 84.4 dB $\mu$ V/m@3m | 82.2 dB $\mu$ V/m@3m |
| D,J         | -20dBm         | 77.4 dB $\mu$ V/m@3m | 75.2 dB $\mu$ V/m@3m |
| E,F,K       | -25dBm         | 72.4 dB $\mu$ V/m@3m | 70.2 dB $\mu$ V/m@3m |

**Test Method:** RBW: 1% of emission bandwidth in the 0 - 1 GHz range.  
1 MHz at frequencies above 1 GHz.  
VBW:  $\Rightarrow$  RBW

The spectrum is searched up to 10 times the fundamental frequency.

**Nemko Italy S.p.A..**

CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
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**NAME OF TEST: Occupied Bandwidth**

**PARA. NO.: 2.989**

**Minimum Standard:**

Not defined. Input/Output

**Method Of Measurement:**

Analog

Spectrum analyzer settings:

RBW=VBW=300 Hz

Span: 100 kHz

Sweep: Auto

iDEN

RBW=VBW= 300 Hz

Span: 100 kHz

Sweep: Auto

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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*

**TRU8S19AWWL/48-WS**

**NAME OF TEST: Field Strength of Spurious**

**PARA. NO.: 2.993**

**Minimum Standard:** Para. No. 90.210, see table 1 for applicable mask.

**Method Of Measurement:** TIA/EIA-603-1992

The antenna substitution method is used to determine the equivalent radiated power at spurious frequencies. The spurious emissions are measured at a distance of 3 meters. The EUT is then replaced with a reference substitution antenna with a known gain referenced to an isotropic radiator. This antenna is fed with a signal at the spurious frequency. The level of the signal is adjusted to repeat the previously measured level. The resulting eirp is the signal level fed to the reference antenna corrected for gain referenced to an isotropic radiator.

| <b>MASK</b> | <b>Spurious Limit</b> | <b>FS Limit Below 1 GHz</b> | <b>FS Limit Above 1 GHz</b> |
|-------------|-----------------------|-----------------------------|-----------------------------|
| A,B,C,G,H,I | -13dBm                | 84.4 dB $\mu$ V/m@3m        | 82.2 dB $\mu$ V/m@3m        |
| D,J         | -20dBm                | 77.4 dB $\mu$ V/m@3m        | 75.2 dB $\mu$ V/m@3m        |
| E,F,K       | -25dBm                | 72.4 dB $\mu$ V/m@3m        | 70.2 dB $\mu$ V/m@3m        |

**Nemko Italy S.p.A..**

CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

**EQUIPMENT:**  
**TRU8S19AWWL/48-WS**

**NAME OF TEST: Frequency Stability**

**PARA. NO.: 2.995**

**Minimum Standard:** Para. No. 990.213. The transmitter carrier frequency shall remain

within the assigned frequency below in ppm.

**Table 2**

| Frequency Band (MHz) | Fixed And Base Stations | Mobile Stations   |                   |
|----------------------|-------------------------|-------------------|-------------------|
|                      |                         | > 2 Watts o/p pwr | < 2 Watts o/p pwr |
| Below 25             | 100                     | 100               | 200               |
| 25 - 50              | 20                      | 20                | 50                |
| 72 - 76              | 5                       | -                 | 50                |
| 150 - 174            | 5                       | 5                 | 5                 |
| 220 - 222            | 0.1                     | 1.5               | 1.5               |
| 421 - 512            | 2.5                     | 5                 | 5                 |
| 806 - 821            | 1.5                     | 2.5               | 2.5               |
| 821 - 824            | 1.0                     | 1.5               | 15                |
| 851 - 866            | 1.5                     | 2.5               | 2.5               |
| 866 - 869            | 1.0                     | 1.5               | 1.5               |
| 869 - 901            | 0.1                     | 1.5               | 1.5               |
| 902 - 928            | 2.5                     | 2.5               | 2.5               |
| 929 - 930            | 1.5                     | -                 | -                 |
| 935 - 940            | 0.1                     | 1.5               | 1.5               |
| 1427 - 1435          | 300                     | 300               | 300               |
| Above 2450           | -                       | -                 | -                 |

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CFR 47 PART 90, SUBPART I  
PRIVATE LAND MOBILE REPEATER  
PROJECT NO.: 131640-7

*EQUIPMENT:*

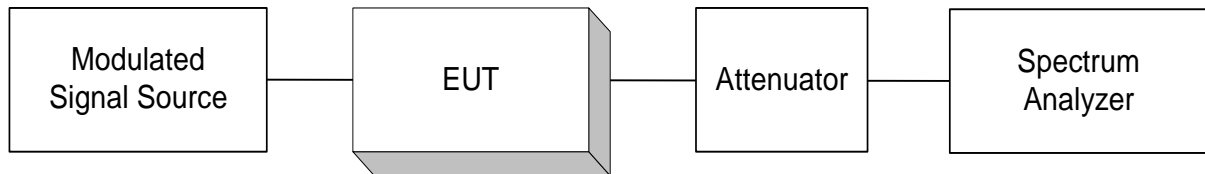
**TRU8S19AWWL/48-WS**

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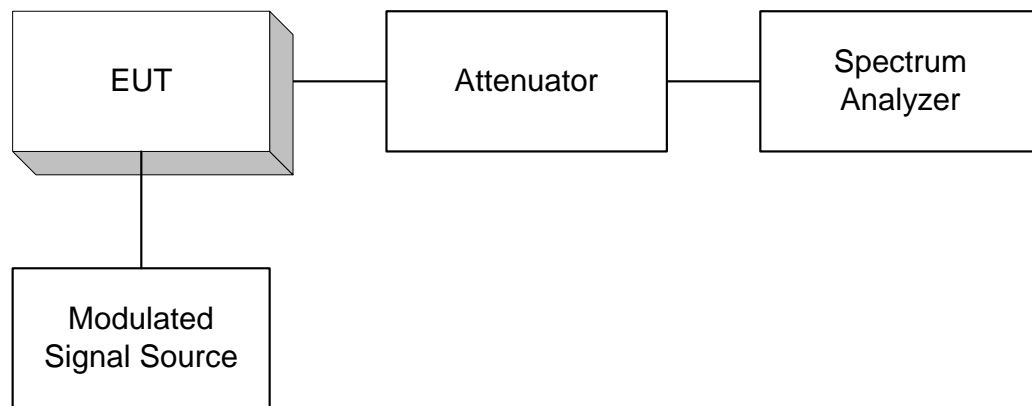
## **ANNEX B - TEST DIAGRAMS**



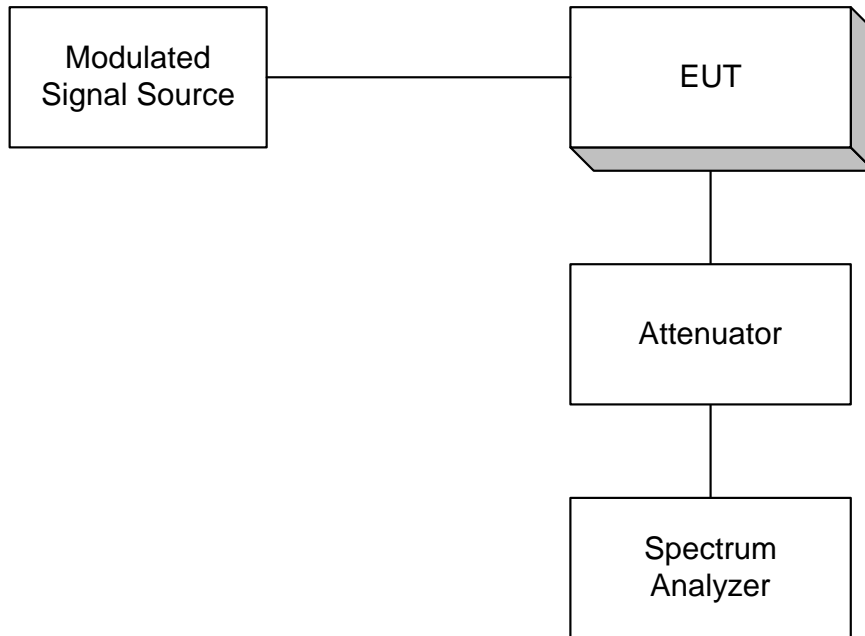
**Para. No. 2.985 - R.F. Power Output**



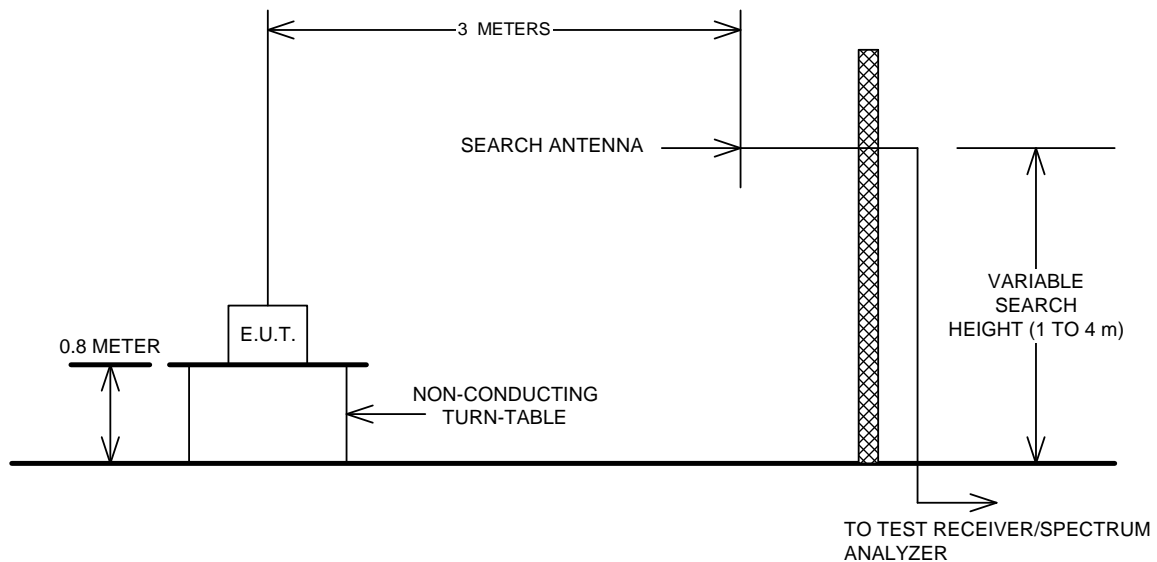
**Para. No. 2.989 - Occupied Bandwidth**



**Para. No. 2.991 - Spurious Emissions at Antenna Terminals**



**Para. No. 2.993 - Field Strength of Spurious Radiation**



**Para. No. 2.995 - Frequency Stability**

