

**Nemko Test Report:** 3L0250RUS1

**Applicant:** Allen Telecom  
108 Rand Park Drive  
Garner, NC 27529

**Equipment Under Test:  
(E.U.T.)** Britecell UHF

**FCC ID:** BCR-BCEL-400

**In Accordance With:** **FCC Part 90, Subpart I**  
Private Land Mobile Transmitter

**Tested By:** Nemko Dallas Inc.  
802 N. Kealy  
Lewisville, TX 75057-3136

**Authorized By:**



Tom Tidwell, Frontline Manager

**Date:** 7/31/03

**Total No. of Pages:** 33



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*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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## **Section 1.        Summary of Test Results**

Manufacturer:        Allen Telecom

Model No.:            Britecell UHF

Serial No.:            Remote:        014203287  
                              Local:            014203292

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 FCC Part 90, Subpart I.



New Submission



Production Unit



Class II Permissive Change



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. NONE

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EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

### Summary Of Test Data

| NAME OF TEST                            | PARA. NO.         | RESULT   |
|-----------------------------------------|-------------------|----------|
| RF Power Output                         | 90.205            | Complies |
| Audio Frequency Response                | TIA EIA-603.3.2.6 | NA       |
| Audio Low-Pass Filter Response          | TIA EIA-603.3.2.6 | NA       |
| Modulation Limiting                     | TIA EIA-603.3.2.6 | NA       |
| Occupied Bandwidth                      | 90.210            | Complies |
| Spurious Emissions at Antenna Terminals | 90.210            | Complies |
| Field Strength of Spurious Emissions    | 90.210            | Complies |
| Frequency Stability                     | 90.213            | Complies |
| Transient Frequency Behavior            | 90.214            | NA       |

### Footnotes:

This equipment does not provide a means to modulate the input signal.

The device does not have an audio low pass filter

This equipment does not provide audio modulation capability and therefore does not limit modulation.

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*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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## **Section 2.        General Equipment Specification**

### **Transmitter**

|                                            |             |                                                |                          |                          |                          |                          |
|--------------------------------------------|-------------|------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Supply Voltage Input:                      | Remote Unit | -72 to -36 Vdc                                 |                          |                          |                          |                          |
|                                            | Local unit  | 120 Vac to rack (12 Vdc proprietary backplane) |                          |                          |                          |                          |
| Frequency Range:                           |             | 406.0055 MHz to 511.992 MHz                    |                          |                          |                          |                          |
| Tunable Bands:                             |             | Full band coverage                             |                          |                          |                          |                          |
| Necessary Bandwidth:                       |             | 16 kHz (2 x 3 kHz + 2 x 5 kHz)                 |                          |                          |                          |                          |
| Type(s) of Modulation:                     |             | F3E (FM)                                       | F1D                      | F2D                      | D7W (QAM)                | Other                    |
|                                            |             | <input checked="" type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Data Rate(s)                               |             | NA                                             |                          |                          |                          |                          |
| Internal/External Data Source:             |             | NA                                             |                          |                          |                          |                          |
| Emission Designator:                       |             | 16K0F3E                                        |                          |                          |                          |                          |
| Output Impedance:                          |             | 50 ohms                                        |                          |                          |                          |                          |
| RF Power Output (rated):                   |             | 20 dBm (100 mW)                                |                          |                          |                          |                          |
| Duty Cycle:                                |             | None                                           |                          |                          |                          |                          |
| Channel Spacing(s):                        |             | 6.25 kHz                                       |                          |                          |                          |                          |
| Operator Selection of Operating Frequency: |             | None                                           |                          |                          |                          |                          |
| Power Output Adjustment Capability:        |             | None                                           |                          |                          |                          |                          |

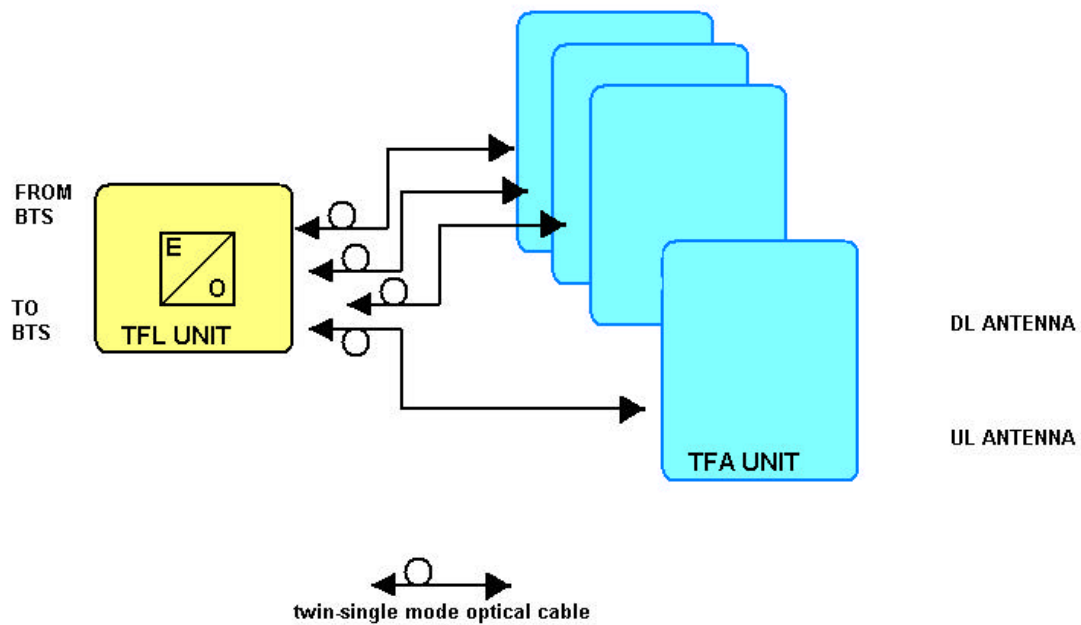
EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

## System Description

BRITECELL™ UHF is a plug and play fibre optic distributed antenna kit.

## System Diagram



EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

### Section 3. RF Power Output

|                               |                  |
|-------------------------------|------------------|
| NAME OF TEST: RF Power Output | PARA. NO.: 2.985 |
| TESTED BY: David Light        | DATE: 7/19/03    |

**Measurement Results:**      Complies.

#### Measurement Data:

| Frequency<br>(MHz) | Measured Power<br>(dBm) | Rated Power<br>(dBm) | Measured/Rated<br>(dB) |
|--------------------|-------------------------|----------------------|------------------------|
| 460                | 20                      | 20                   | 0                      |
|                    |                         |                      |                        |
|                    |                         |                      |                        |

Note: The device was tested at voltage extremes with no effect on output power.

**Measurement Uncertainty:**    +/- 1.7 dB

*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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## **Section 4.        Occupied Bandwidth**

|                                  |                  |
|----------------------------------|------------------|
| NAME OF TEST: Occupied Bandwidth | PARA. NO.: 2.989 |
| TESTED BY: David Light           | DATE: 7/19/03    |

**Measurement Results:**     Complies.

**Measurement Data:**        See attached data

**Measurement Uncertainty:**     +/-  $1 \times 10^{-7}$  ppm

Necessary Bandwidth = (2 x deviation) + (2 x highest modulating freq.)  
= 2 x 3 kHz + 2 x 5 kHz = 6 kHz + 10 kHz = 16 kHz

EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

## Test Data – Occupied Bandwidth



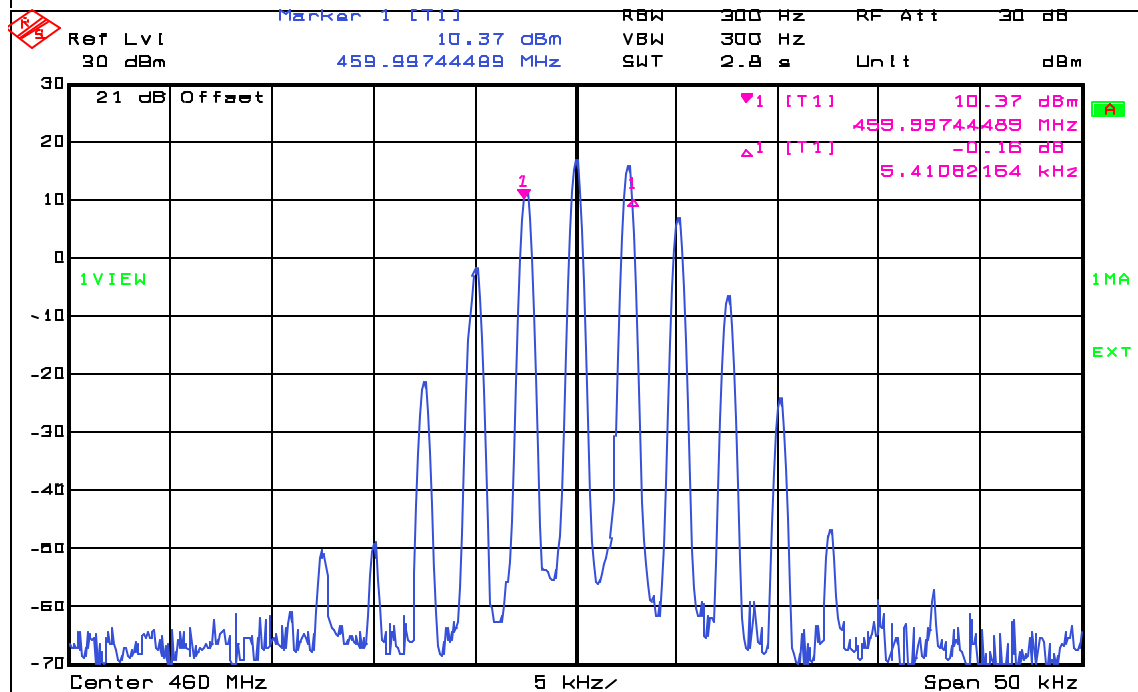
Dallas Headquarters:  
802 N. Kealy  
Lewisville, TX 75057  
Tel: (972) 436-9600  
Fax: (972) 436-2667

Nemko Dallas, Inc.

### Test Plot: OCCUPIED BANDWIDTH

Page 6 of 7

Job No.: 3L0250 Date: 7/19/2003  
Specification: PT 90 Temperature(°C): 22  
Tested By: David Light Relative Humidity(%) 50  
E.U.T.: BRITECELL UHF  
Configuration: TX FULL POWER



Date: 19.JUL.2003 09:51:02

Notes: RF OUTPUT - FULL POWER  
2.5 kHz Input w/ 3 kHz Deviation

EQUIPMENT: **UHF Britecell**

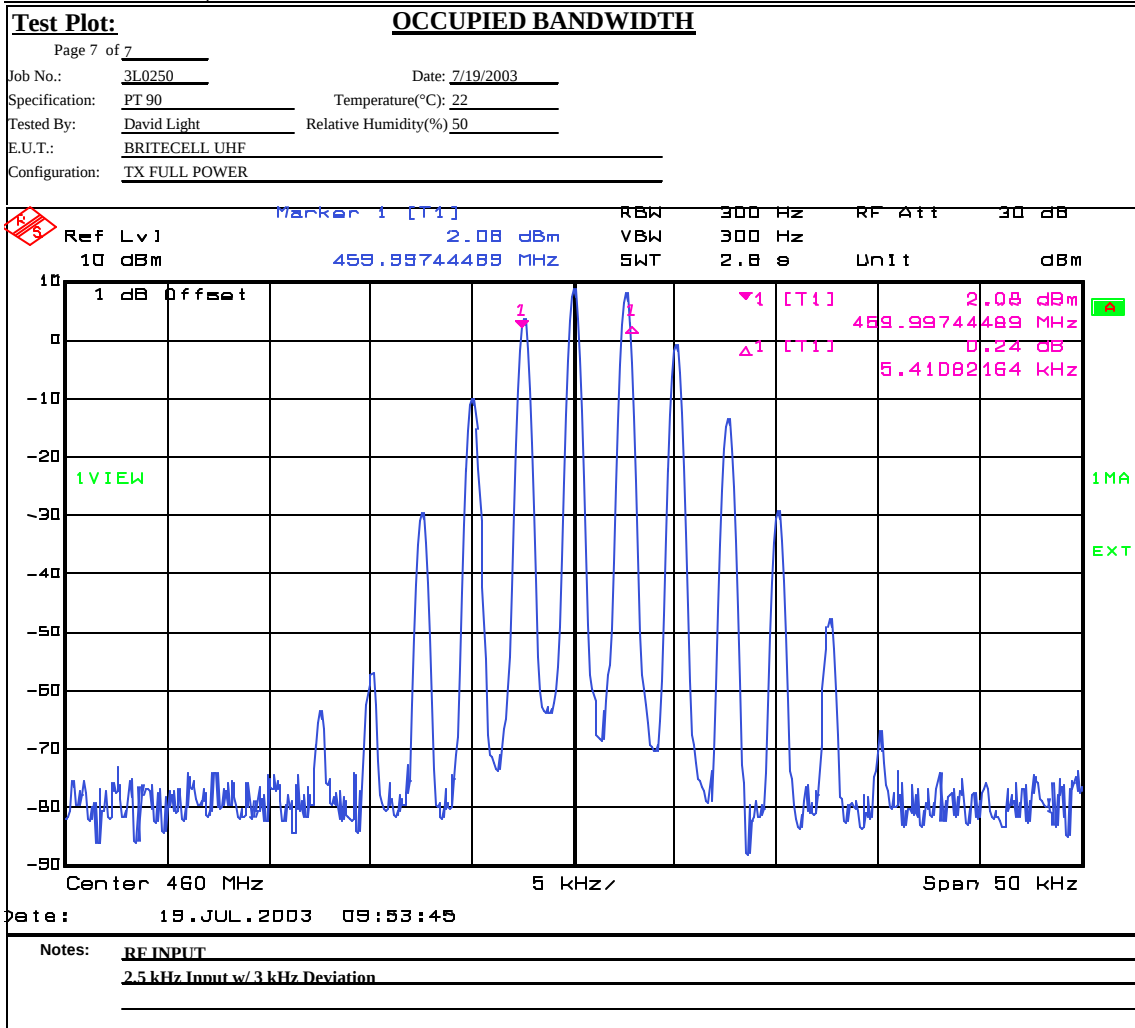
TEST REPORT NO.: **3L0250RUS1**

## Test Data – Occupied Bandwidth



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*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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

|                                                      |                  |
|------------------------------------------------------|------------------|
| NAME OF TEST: Spurious Emissions @ Antenna Terminals | PARA. NO.: 2.991 |
| TESTED BY: David Light                               | DATE: 7/19/03    |

**Measurement Results:**     Complies.

**Measurement Data:**        See attached data

**Measurement Uncertainty:**    +/- 1.7 dB

TEST REPORT NO.: **3L0250RUS1**

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| <b>Data Plot</b>                                                                                                                                |  |                                 |  | <b><u>Spurious Emissions at Antenna Terminals</u></b> |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------|--|-------------------------------------------------------|--|--|--|
| Page <u>1</u> of <u>2</u>                                                                                                                       |  |                                 |  | Complete _____                                        |  |  |  |
| Job No.: <u>3L0250</u>                                                                                                                          |  | Date: <u>7/19/2003</u>          |  | Preliminary: _____                                    |  |  |  |
| Specification: <u>PT 90</u>                                                                                                                     |  | Temperature(°C): <u>22</u>      |  |                                                       |  |  |  |
| Tested By: <u>David Light</u>                                                                                                                   |  | Relative Humidity(%): <u>50</u> |  |                                                       |  |  |  |
| E.U.T.: <u>BRITECELL UHF</u>                                                                                                                    |  |                                 |  |                                                       |  |  |  |
| Configuration: <u>TX FULL POWER</u>                                                                                                             |  |                                 |  |                                                       |  |  |  |
| Sample Number: <u>1</u>                                                                                                                         |  |                                 |  |                                                       |  |  |  |
| Location: <u>Lab 1</u>                                                                                                                          |  | RBW: <u>Refer to plots</u>      |  | Measurement                                           |  |  |  |
| Detector Type: <u>Peak</u>                                                                                                                      |  | VBW: <u>Refer to plots</u>      |  | Distance: <u>NA</u> m                                 |  |  |  |
| <b><u>Test Equipment Used</u></b>                                                                                                               |  |                                 |  |                                                       |  |  |  |
| Antenna: _____                                                                                                                                  |  | Directional Coupler: _____      |  |                                                       |  |  |  |
| Pre-Amp: _____                                                                                                                                  |  | Cable #1: <u>1626</u>           |  |                                                       |  |  |  |
| Filter: _____                                                                                                                                   |  | Cable #2: _____                 |  |                                                       |  |  |  |
| Receiver: <u>1036</u>                                                                                                                           |  | Cable #3: _____                 |  |                                                       |  |  |  |
| Attenuator #1: <u>1064</u>                                                                                                                      |  | Cable #4: _____                 |  |                                                       |  |  |  |
| Attenuator #2: _____                                                                                                                            |  | Mixer: _____                    |  |                                                       |  |  |  |
| Additional equipment used: _____                                                                                                                |  |                                 |  |                                                       |  |  |  |
| Measurement Uncertainty: <u>+/-1.7 dB</u>                                                                                                       |  |                                 |  |                                                       |  |  |  |
|                                                                                                                                                 |  |                                 |  |                                                       |  |  |  |
| <b>Notes:</b> <u>LOWER BAND EDGE - LOWEST PERMISSIBLE FREQUENCY</u><br><u>20 dBm OUTPUT (100 mW)</u><br><u>2.5 kHz Input w/ 3 kHz Deviation</u> |  |                                 |  |                                                       |  |  |  |

EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

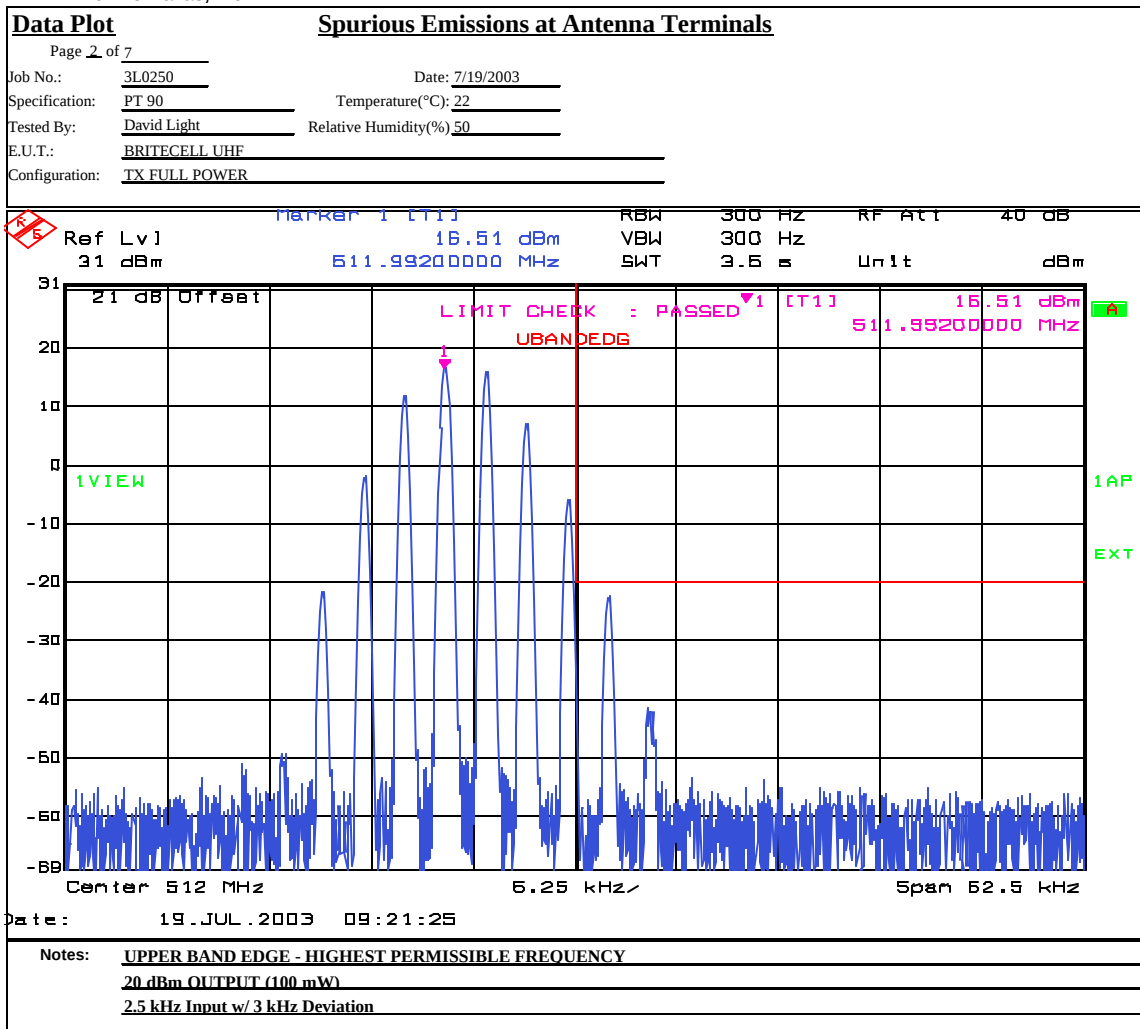
# Test Data – Spurious Emissions at Antenna Terminals



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Fax: (972) 436-2667

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EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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



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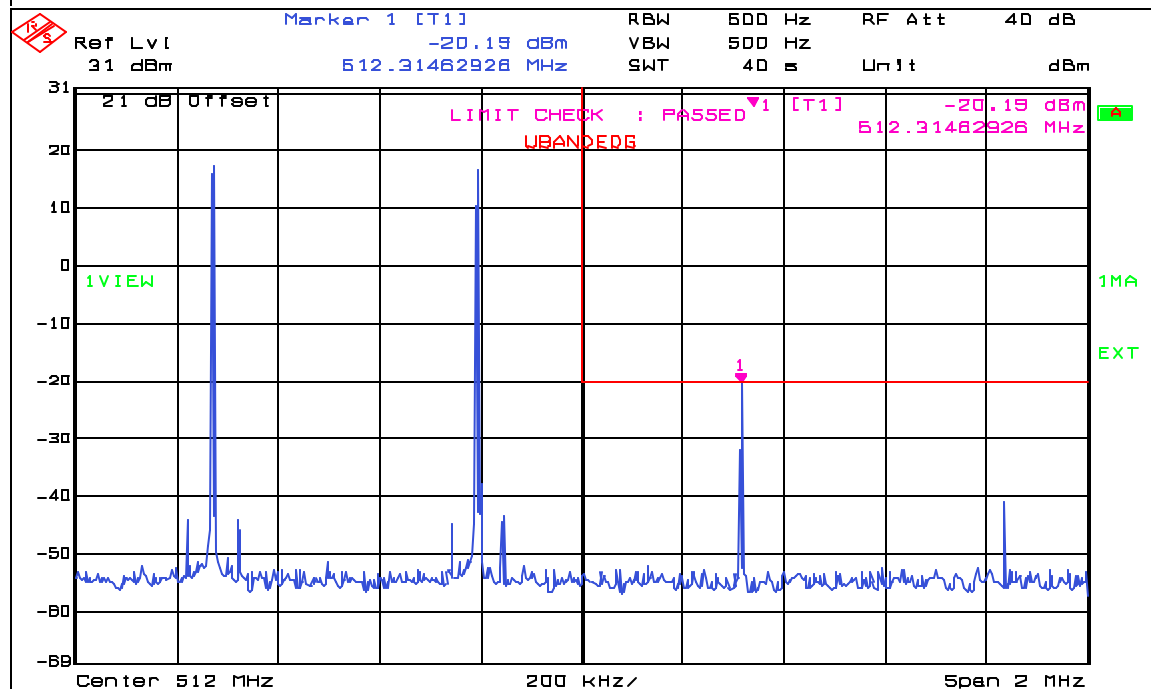
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**Data Plot**

**Spurious Emissions at Antenna Terminals**

Page 3 of 7

Job No.: 3L0250 Date: 7/19/2003  
Specification: PT 90 Temperature(°C): 22  
Tested By: David Light Relative Humidity(%) 50  
E.U.T.: BRITECELL UHF  
Configuration: TX FULL POWER



Date: 19 JUL 2003 09:32:52

Notes: INTERMOD CHARACTERISTICS - OUTPUT @ 17 dBm EACH

EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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



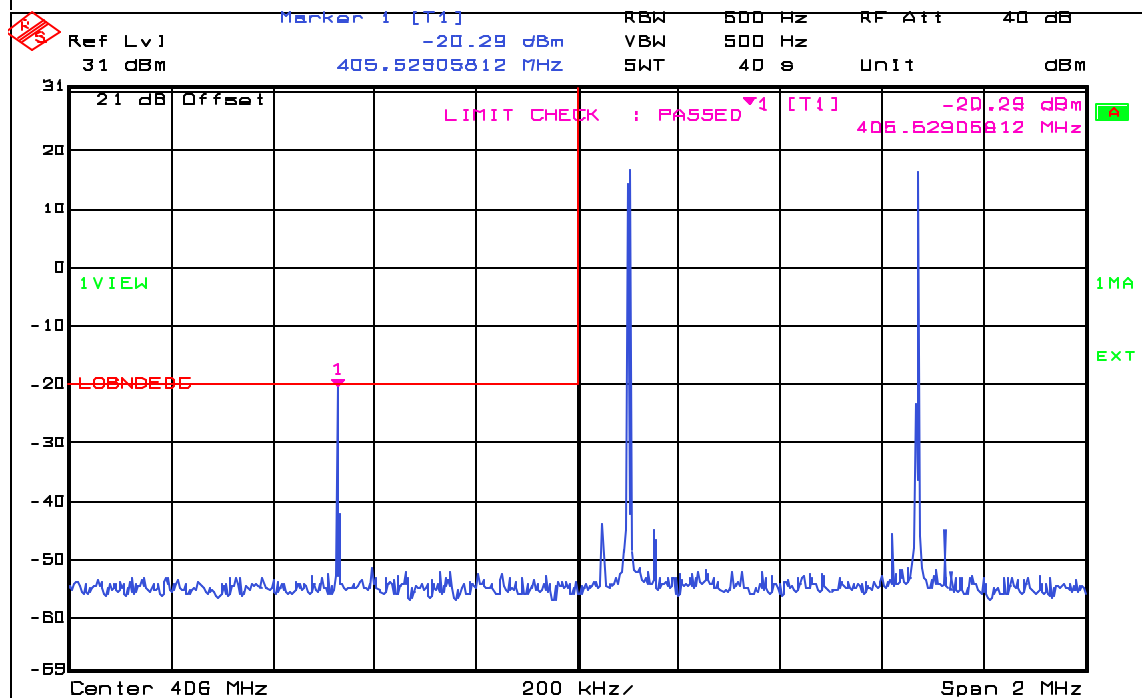
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**Test Plot: Spurious Emissions at Antenna Terminals**

Page 4 of 7

Job No.: 3L0250 Date: 7/19/2003  
Specification: PT 90 Temperature(°C): 22  
Tested By: David Light Relative Humidity(%) 50  
E.U.T.: BRITECELL UHF  
Configuration: TX FULL POWER



Date: 19.JUL.2003 09:38:56

Notes: INTERMOD CHARACTERISTICS - OUTPUT @ 17 dBm EACH

EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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



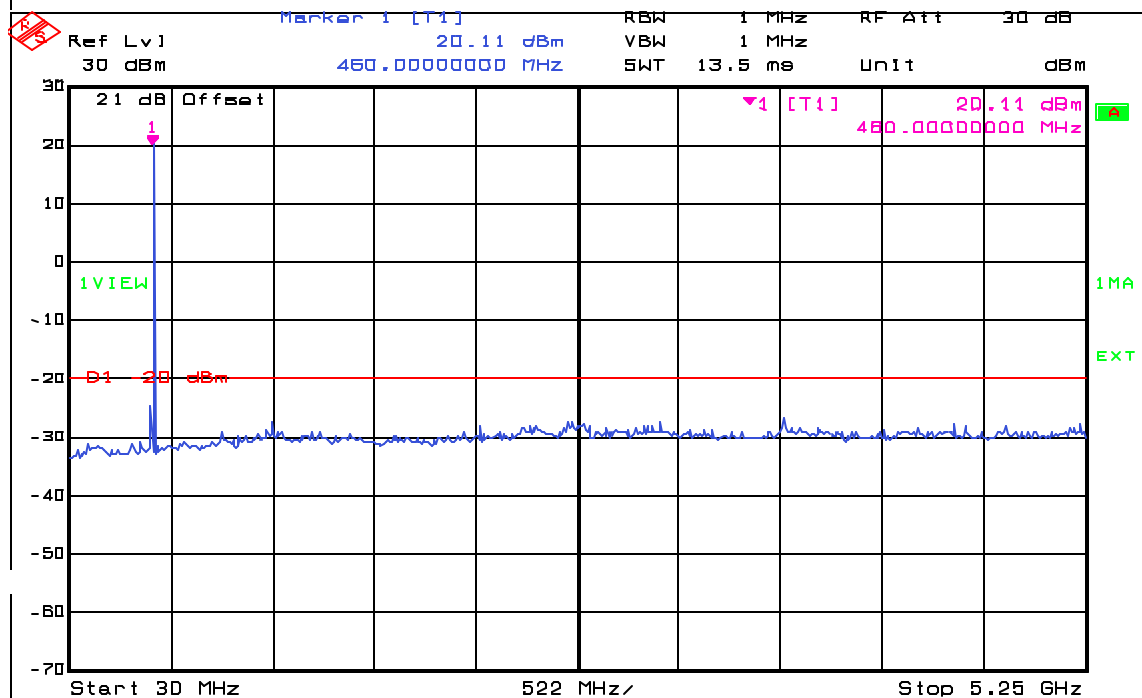
Dallas Headquarters:  
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Lewisville, TX 75057  
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Fax: (972) 436-2667

Nemko Dallas, Inc.

**Test Plot: Spurious Emissions at Antenna Terminals**

Page 5 of 7

Job No.: 3L0250 Date: 7/19/2003  
Specification: PT 90 Temperature(°C): 22  
Tested By: David Light Relative Humidity(%) 50  
E.U.T.: BRITECELL UHF  
Configuration: TX FULL POWER



Date: 19.JUL.2003 09:44:41

Notes: MARKER INDICATES CARRIER

**Nemko**  
**Dallas**

FCC PART 90, SUBPART I  
PRIVATE LAND MOBILE TRANSMITTER

*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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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: David Light                             | DATE: 7/21/03    |

**Measurement Results:**     Complies.

**Measurement Data:**        See attached data

EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

## Test Data - Radiated Emissions



Nemko Dallas, Inc.

**Dallas Headquarters:**

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Lewisville, TX 75057  
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Fax: (972) 436-2667

### ERP Substitution Method

Page 1 of 1

Job No.: 3L0250 Date: 7/21/03 Complete X  
Specification: PT 90 Temperature(°C): 22 Preliminary \_\_\_\_\_  
Tested By: David Light Relative Humidity(%) 45  
E.U.T.: BRITECELL UHF  
Configuration: TX FULL POWER @ 460 MHz  
Sample No: 1  
Location: AC 3 RBW: 1 MHz Measurement  
Detector Type: Peak VBW: 1 MHz Distance: 3 m

### Test Equipment Used

Antenna: 1304 Directional Coupler: \_\_\_\_\_  
Pre-Amp: \_\_\_\_\_ Cable #1: 1484  
Filter: \_\_\_\_\_ Cable #2: 1485  
Receiver: 1464 Cable #3: \_\_\_\_\_  
Attenuator #1: \_\_\_\_\_ Cable #4: \_\_\_\_\_  
Attenuator #2: \_\_\_\_\_ Mixer: \_\_\_\_\_  
Additional equipment used: \_\_\_\_\_  
Measurement Uncertainty: +/-1.7 dB

| Frequency<br>(MHz) | Meter<br>Reading<br>(dBm) | Substitution<br>Level<br>(dBm) |  | Pre-Amp<br>Gain<br>(dB) | Substitution<br>Antenna Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Polarity | Comments    |
|--------------------|---------------------------|--------------------------------|--|-------------------------|---------------------------------------|--------------|----------------|----------------|----------|-------------|
| 920                | -77.0                     | -47.7                          |  | 0                       | 5.0                                   | -42.7        | -20.0          | -22.7          | V        | Noise floor |
| 1380               | -75.5                     | -44.0                          |  | 0                       | 4.9                                   | -39.2        | -20.0          | -19.2          | V        | Noise floor |
| 4140               | -78.0                     | -32.7                          |  | 0                       | 8.2                                   | -24.5        | -20.0          | -4.5           | V        | Noise floor |
| 4600               | -77.8                     | -33.8                          |  | 0                       | 8.7                                   | -25.2        | -20.0          | -5.2           | V        | Noise floor |
| 920                | -77.0                     | -46.0                          |  | 0                       | 5.0                                   | -41.0        | -20.0          | -21.0          | H        | Noise floor |
| 1380               | -75.5                     | -44.8                          |  | 0                       | 4.9                                   | -40.0        | -20.0          | -20.0          | H        | Noise floor |
| 4140               | -78.0                     | -43.2                          |  | 0                       | 8.2                                   | -35.0        | -20.0          | -15.0          | H        | Noise floor |
| 4600               | -77.8                     | -42.3                          |  | 0                       | 8.7                                   | -33.7        | -20.0          | -13.7          | H        | Noise floor |
|                    |                           |                                |  |                         |                                       |              |                |                |          |             |
|                    |                           |                                |  |                         |                                       |              |                |                |          |             |
|                    |                           |                                |  |                         |                                       |              |                |                |          |             |

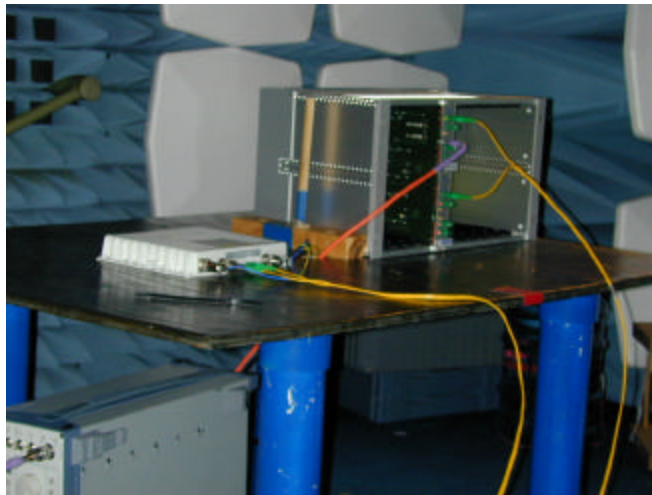
Notes: Searched spectrum to 10th harmonic

*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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**Photographs of Test Setup**



*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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## **Section 7.        Frequency Stability**

|                                   |                  |
|-----------------------------------|------------------|
| NAME OF TEST: Frequency Stability | PARA. NO.: 2.995 |
| TESTED BY: David Light            | DATE: 7/15/03    |

**Measurement Results:**     Complies.

**Measurement Data:**        See attached data

**Measurement Uncertainty:**     +/-  $1 \times 10^{-7}$  ppm

EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

**Test Data – Frequency Stability**



**Dallas Headquarters:**

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Lewisville, TX 75057  
Tel: (972) 436-9600  
Fax: (972) 436-2667

**Frequency Stability**

Client: Allen Telecom W.O.# 3L0250R

EUT: BRITECELL UHF S/N: None

Date: 7/15/03 Tech: D. LIGHT

Test Equipment used: 1026, 1629, 1053, 1626, 1604

| Temperature | Voltage (Vdc) | Frequency  | Frequency Error |
|-------------|---------------|------------|-----------------|
|             |               | (MHz)      | (Hz)            |
| 20 °C       | -40.8         | 460.000000 | 0               |
| 20 °C       | -48           | 460.000000 | 0               |
| 20 °C       | -55.2         | 460.000000 | 0               |
|             |               |            |                 |
| 10 °C       | -48           | 460.000000 | 0               |
| 0 °C        | -48           | 460.000000 | 0               |
| -10 °C      | -48           | 460.000000 | 0               |
| -20 °C      | -48           | 460.000000 | 0               |
| -30 °C      | -48           | 460.000000 | 0               |
|             |               |            |                 |
| 30 °C       | -48           | 460.000000 | 0               |
| 40 °C       | -48           | 460.000000 | 0               |
| 50 °C       | -48           | 460.000000 | 0               |
|             |               |            |                 |
|             |               |            |                 |

EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

## Section 8. Test Equipment List

| Nemko ID | Description       | Manufacturer Model Number | Serial No. | Cal. Date | Cal. Due |
|----------|-------------------|---------------------------|------------|-----------|----------|
| 1036     | Spectrum Analyzer | Rohde & Schwarz FSEK30    | 830844/006 | 12/18/01  | 12/18/03 |
| 1304     | Horn Antenna      | Electrometrics RGA-60     | 6151       | 07/30/01  | 07/30/03 |
| 1016     | Pre-Amp           | Hewlett Packard 8449A     | 2749A00159 | 07/15/03  | 07/15/04 |
| 1484     | Cable             | Storm PR90-010-072        | N/A        | 07/15/03  | 07/15/04 |
| 1485     | Cable             | Storm PR90-010-216        | N/A        | 07/15/03  | 07/15/04 |
| 1464     | Spectrum Analyzer | Hewlett Packard 8563E     | 3551A04428 | 02/11/03  | 02/11/05 |
| 1626     | Cable             | Megaphase 10311 1GVT4     | N/A        | CBU       | N/A      |
| 1064     | Attenuator        | Narda 776B-20             | None       | CBU       | N/A      |
| 1026     | Frequency Counter | Hewlett Packard 5350B     | 8232A01493 | 08/13/02  | 08/13/03 |
| 1629     | Cable             | Megaphase 10311 1GVT4     | N/A        | CBU       | N/A      |
| 1053     | Signal Generator  | Rohde & Schwarz SMIQ 03   | DE22081    | 06/10/03  | 06/09/04 |
| 1626     | Cable             | Megaphase 10311 1GVT4     | N/A        | CBU       | N/A      |
| 1604     | Attenuator        | Narda 776B-20             | None       | N/A       | N/A      |

*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

---

## **ANNEX A - TEST METHODOLOGIES**

**Nemko**  
**Dallas**

FCC PART 90, SUBPART I  
PRIVATE LAND MOBILE TRANSMITTER

*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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|                                      |                         |
|--------------------------------------|-------------------------|
| <b>NAME OF TEST: RF Power Output</b> | <b>PARA. NO.: 2.985</b> |
|--------------------------------------|-------------------------|

**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:**

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.

*EQUIPMENT:*     **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

|                                               |                            |
|-----------------------------------------------|----------------------------|
| <b>NAME OF TEST: Audio Frequency Response</b> | <b>PARA. NO.: 2.987(a)</b> |
|-----------------------------------------------|----------------------------|

**Test Method:**                      TIA/EIA-603

**Minimum Standard:**            TIA/EIA-603, Para. 3.2.6 from 300 Hz to 3000 Hz. The transmitter audio frequency response shall have a nominal 6 dB per octave pre-emphasis characteristic.

|                                                               |                            |
|---------------------------------------------------------------|----------------------------|
| <b>NAME OF TEST: Audio Low-Pass Filter Frequency Response</b> | <b>PARA. NO.: 2.987(a)</b> |
|---------------------------------------------------------------|----------------------------|

**Test Method:**                      TIA/EIA-603

**Minimum Standard:**            TIA/EIA-603

|                                          |                            |
|------------------------------------------|----------------------------|
| <b>NAME OF TEST: Modulation Limiting</b> | <b>PARA. NO.: 2.987(a)</b> |
|------------------------------------------|----------------------------|

**Test Method:**                      TIA/EIA-603

**Minimum Standard:**            TIA/EIA-603

*EQUIPMENT:*      **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

**NAME OF TEST: Occupied Bandwidth**

**PARA. NO.: 2.989**

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

**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                                          |

**Test Method:**

RBW: 1% of emission bandwidth in 0 - 1 GHz range. 1 MHz at frequencies above 1 GHz.

VBW: ? RBW

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

*EQUIPMENT:*      **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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

**PARA. NO.: 2.993**

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

**Test Method:**

The effective radiated power was measured using the substitution antenna method as described in EIA/TIA 603B. The device under test is placed on a turntable and a receive antenna is placed at a distance of 3 meters. At each detected emission frequency, the antenna height and test sample azimuth are adjusted to maximize the emission amplitude. The device under test is then replaced with a substitution antenna of known gain. A signal is fed to the substitution and the level is adjusted to match the previously measured level. The erp is the rf input level to the substitution antenna plus the antenna gain.

| <b>MASK</b> | <b>Spurious Limit</b> |
|-------------|-----------------------|
| A,B,C,G,H,I | -13dBm                |
| D,J         | -20dBm                |
| E,F,K       | -25dBm                |

EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

**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<br>(MHz) | Fixed And Base<br>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              | -                          | -                 | -                 |

**NAME OF TEST: Transient Frequency Behaviour**

**PARA. NO.: 2.214**

**Minimum Standard:**

**Transient Frequency Behaviour for Equipment Designed to Operate on 25 kHz Channels**

|                               | Maximum                                    | Frequency ranges (MHz) All equipment |                   |                   |                   |                   |                   |
|-------------------------------|--------------------------------------------|--------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                               |                                            | Base station and portable radios     |                   |                   | Mobile Radios     |                   |                   |
| Time intervals <sup>1,2</sup> | Frequency difference <sup>3</sup><br>(kHz) | 150 - 174<br>(ms)                    | 450 - 500<br>(ms) | 500 - 512<br>(ms) | 150 - 174<br>(ms) | 450 - 500<br>(ms) | 500 - 512<br>(ms) |
| t <sub>1</sub> <sup>4</sup>   | ? 25                                       | 5.0                                  | 10.0              | 20.0              | 5.0               | 10.0              | 5.0               |
| t <sub>2</sub>                | ? 12                                       | 20.0                                 | 25.0              | 50.0              | 20.0              | 25.0              | 20.0              |
| t <sub>3</sub> <sup>4</sup>   | ? 25                                       | 5.0                                  | 10.0              | 10.0              | 5.0               | 10.0              | 5.0               |

**Transient Frequency Behaviour for Equipment Designed to Operate on 12.5 kHz & 6.25 kHz Channels**

|                               | Maximum                                    | Frequency ranges (MHz) All equipment |                   |                   |
|-------------------------------|--------------------------------------------|--------------------------------------|-------------------|-------------------|
|                               |                                            | 150 - 174<br>(ms)                    | 450 - 500<br>(ms) | 500 - 512<br>(ms) |
| Time intervals <sup>1,2</sup> | Frequency difference <sup>3</sup><br>(kHz) |                                      |                   |                   |
| t <sub>1</sub> <sup>4</sup>   | ? 12.5 / ? 6.25                            | 5.0                                  | 10.0              | 20.0              |
| t <sub>2</sub>                | ? 6.25 / ? 3.125                           | 20.0                                 | 25.0              | 50.0              |
| t <sub>3</sub> <sup>4</sup>   | ? 12.5 / ? 6.25                            | 5.0                                  | 10.0              | 10.0              |

**Nemko**  
**Dallas**

FCC PART 90, SUBPART I  
PRIVATE LAND MOBILE TRANSMITTER

*EQUIPMENT:*    **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

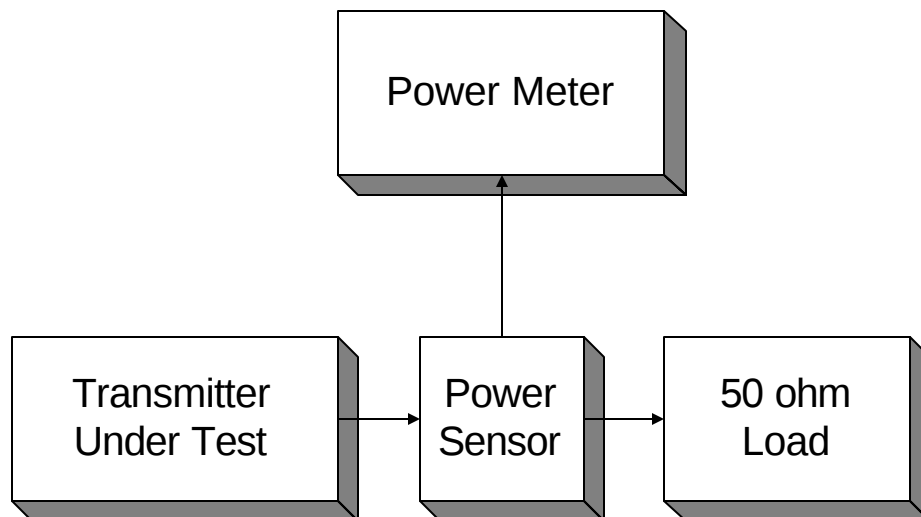
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## **ANNEX B - TEST DIAGRAMS**

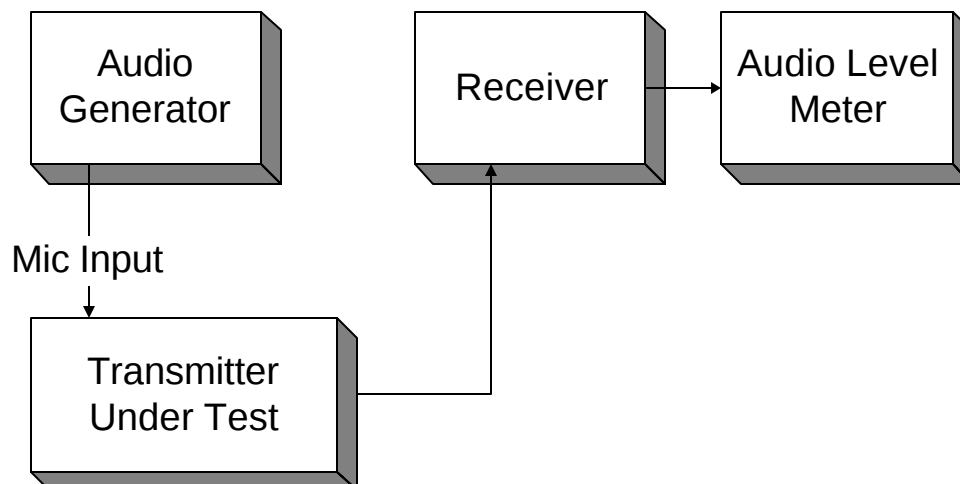
EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

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



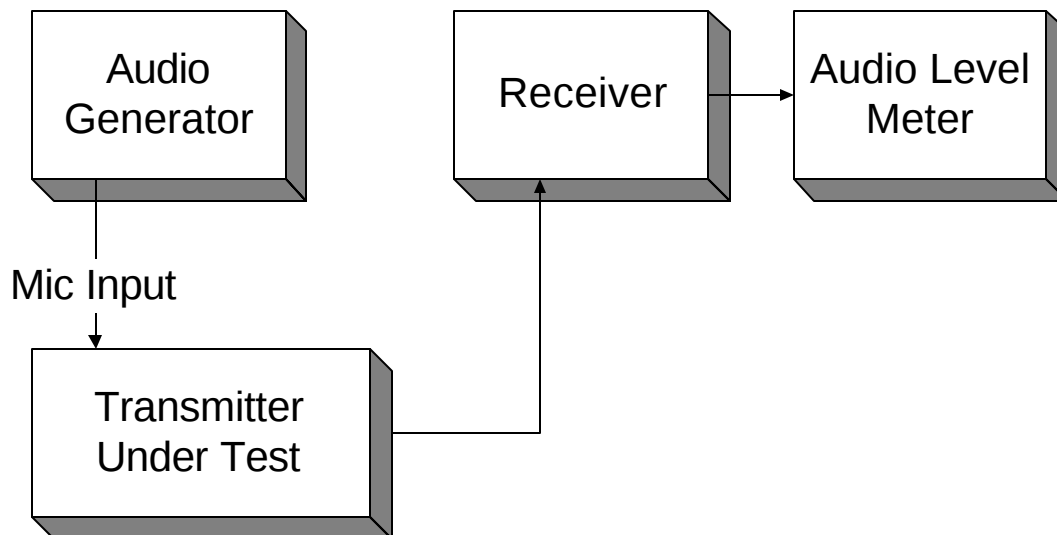
**Para. No. 2.987(a) - Audio Frequency Response**



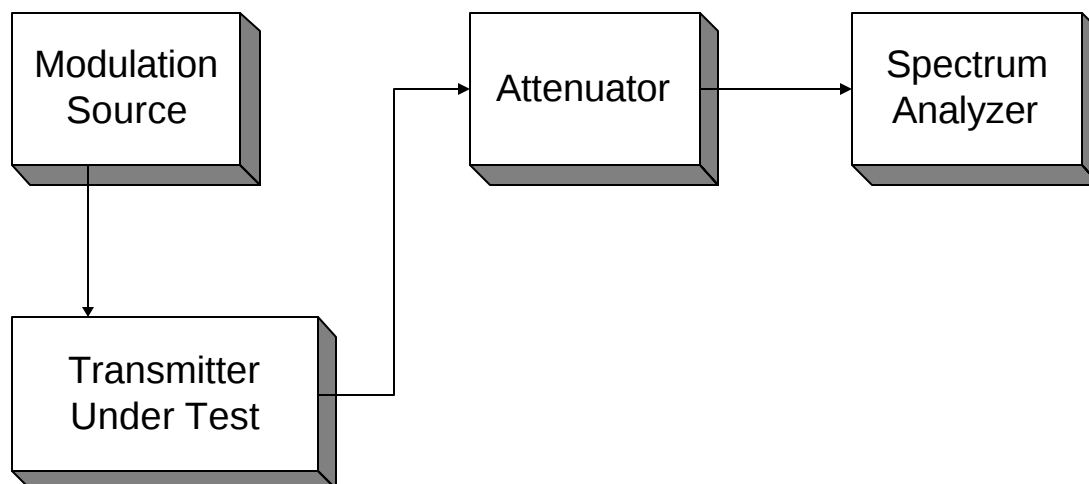
EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

**Para. No. 2.987(b) - Modulation Limiting**



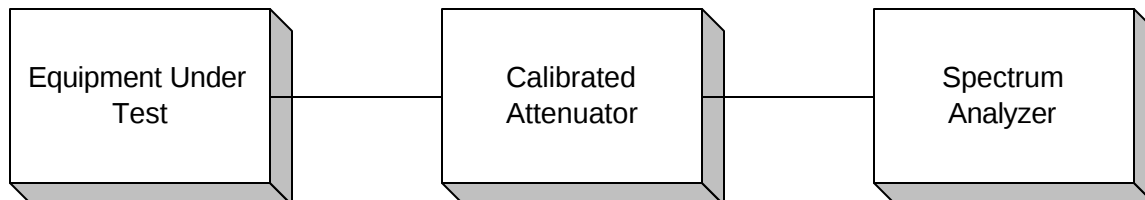
**Para. No. 2.989 - Occupied Bandwidth**



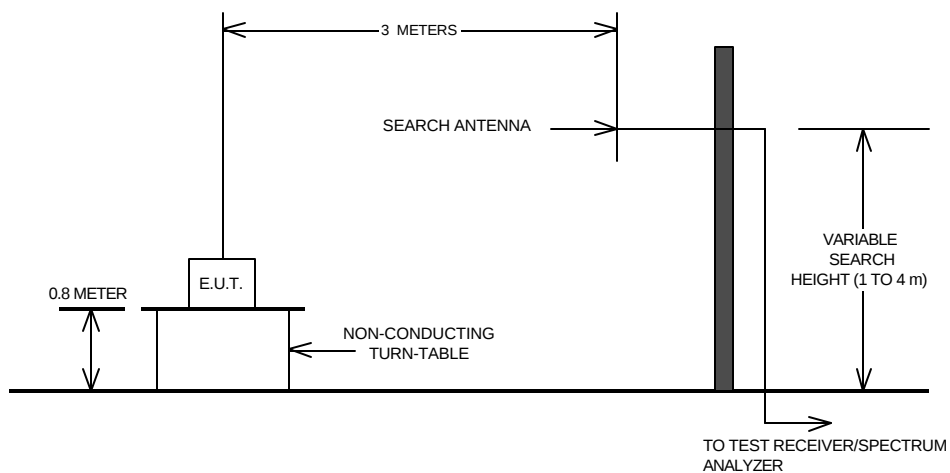
EQUIPMENT: **UHF Britecell**

TEST REPORT NO.: **3L0250RUS1**

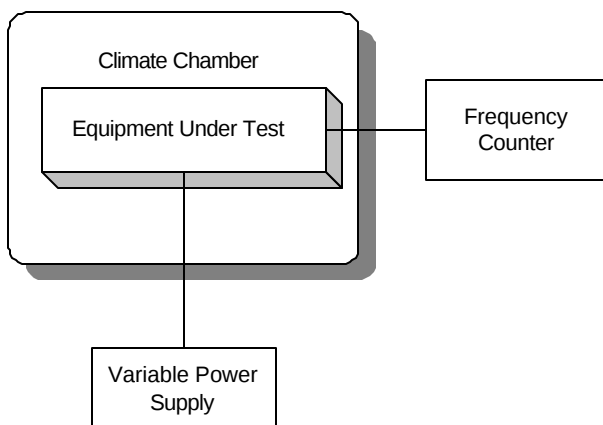
**Para. No. 2.991 - Spurious Emissions at Antenna Terminals**



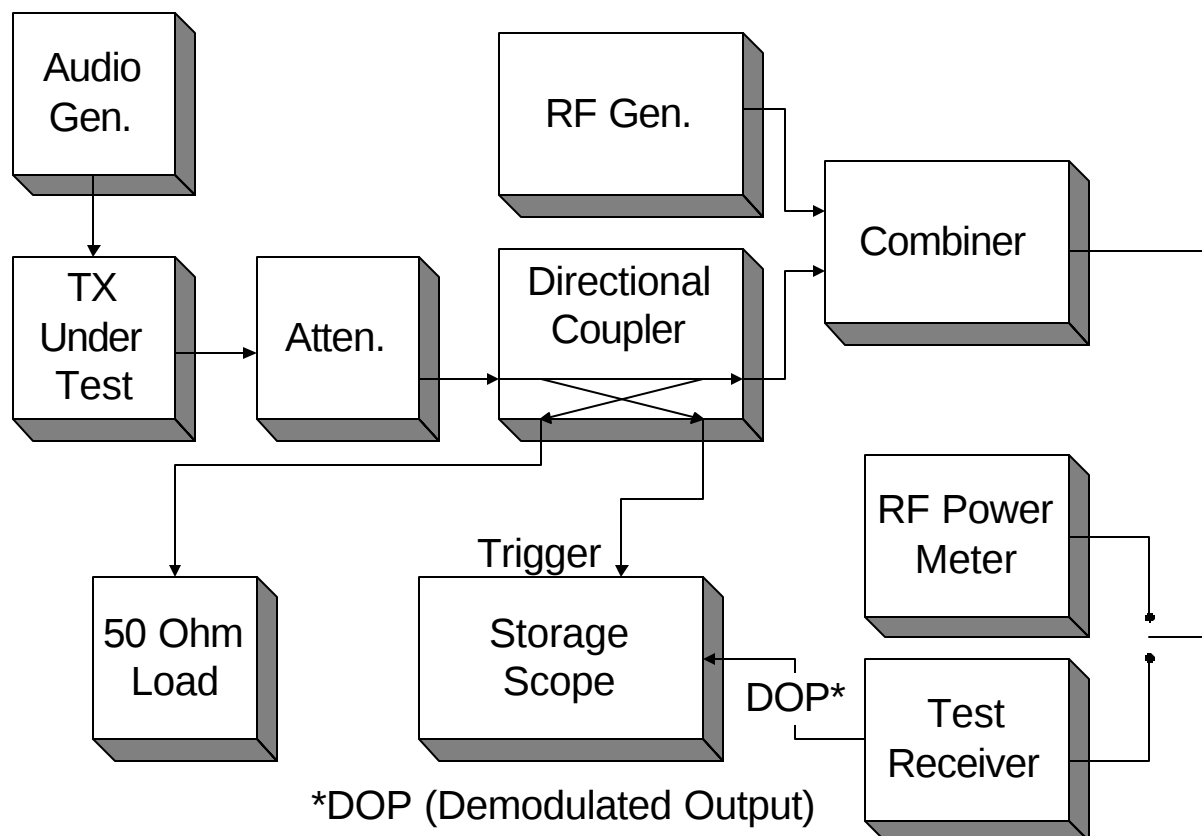
**Para. No. 2.993 - Field Strength of Spurious Radiation**



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



**Para. No. 90.214 - Transient Frequency Behaviour**



**Voice**

This measurement was made using measurement procedure TIA/EIA Land Mobile FM or PM Communications Equipment Measurement and Performance Standards TIA/EIA-603 February 1993 Telecommunications Industry Association (American National Standard ANSI/TIA/EIA-603-1992 Approved: October 27, 1992) Para. no. 2.2 Methods of Measurement for Transmitters Para. no. 2.2.19 Transient Frequency Behaviour (page no. 83).

**Data**

This measurement was made using measurement procedure TIA/EIA Digital C4FM/CQPSK Transceiver Measurement Methods TSB102.CAAA Para. no. 2.2.17 Transient Frequency Behaviour (page no. 74).