



Nemko Test Report: 40098RUS1

Applicant: Andrew Corporation
620 N. Greenfield Parkway
Garner, NC 27529
USA

**Equipment Under Test:
(E.U.T.)** TFBM7

FCC Identifier: BCR-TFBM7

In Accordance With: **CFR 47, Part 27, Subpart C**
Miscellaneous Wireless Communication Services

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

TESTED BY:

David Light, Senior Wireless Engineer

DATE: 05 November 2009

APPROVED BY:

Tom Tidwell, Telecom Direct

DATE: 12 November 2009

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Section 1. Summary of Test Results

Manufacturer Andrew Corporation

Model No.: TFBM7

Serial No.: 000000001

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 47, Part 27, Subpart C.



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.

See "Summary of Test Data".



NVLAP Lab Code 100426-0

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Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	27.50(d)	1000 Watts ERP	Complies
Occupied Bandwidth	2.1049	Input/Output	Complies
Spurious Emissions at Antenna Terminals	27.53(c)	-13 dBm	Complies
Field Strength of Spurious Emissions	27.53(c)	-13 dBm E.I.R.P.	Complies
Frequency Stability	27.54	Must stay in band	NA ¹

¹Frequency stability testing was not performed since the device does not translate the frequency of the input signal.

Section 2. General Equipment Specification

Supply Voltage Input:	120 Vac		
Frequency Bands: Downlink:	728 to 757 Mhz		
Frequency Bands: Uplink:	NA		
Type of Modulation and Designator:	LTE (F9W)		
System Gain:	60.5 dB		
Output Impedance:	50 ohms		
RF Output (Rated): Downlink	$\frac{0.400}{26}$ W dBm		
RF Output (Rated): Uplink	$\frac{NA}{NA}$ W dBm		
Frequency Translation:	F1-F1 <input checked="" type="checkbox"/>	F1-F2 <input type="checkbox"/>	N/A <input type="checkbox"/>
Band Selection:	Software <input type="checkbox"/>	Duplexer <input type="checkbox"/>	Fullband <input checked="" type="checkbox"/>

Description of EUT

The TFBM7 is a single band medium power booster designed to distribute 700MHz Commercial band signals using the built-in auxiliary channel of a remote unit. The Automatic Level Control (ALC) compensates for level variations of the auxiliary channel.

Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 27.50
TESTED BY: David Light	DATE: 05 November 2009

Test Results: Complies.

Measurement Data:

Direction	Composite Power (dBm)	Composite Power (W)
Downlink	26.0	0.400
Uplink	NA	NA

Equipment Used: 1036-1082-1472

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 48 %

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1049
TESTED BY: David Light	DATE: 05 November 2009

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1082-1472

Measurement Uncertainty: 1X10⁻⁷ ppm

Temperature: 22 °C

Relative Humidity: 48 %

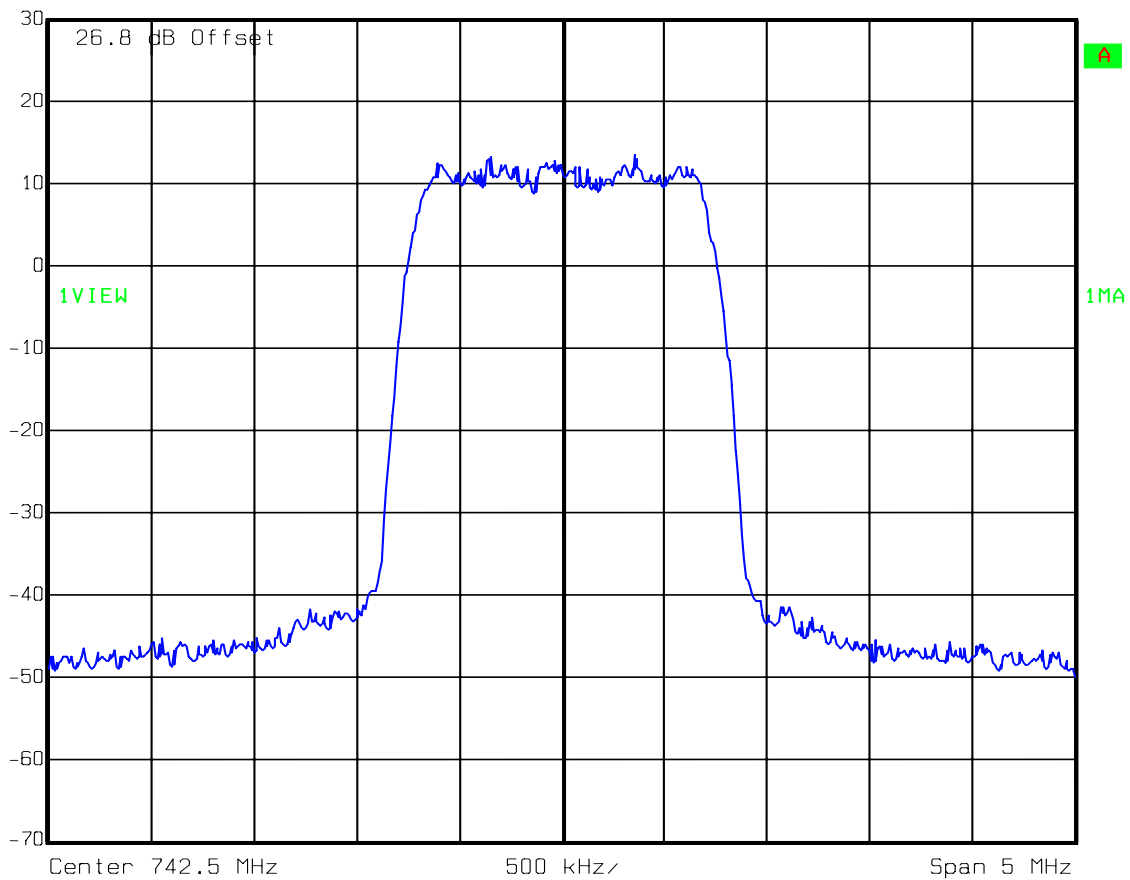
Test Data – Occupied Bandwidth

Output
Downlink



Ref Lvl
30 dBm

RBW	30 kHz	RF Att	30 dB
VBW	30 kHz		
SWT	14 ms	Unit	dBm



Date: 05.NOV.2009 10:51:01

Test Data – Occupied Bandwidth

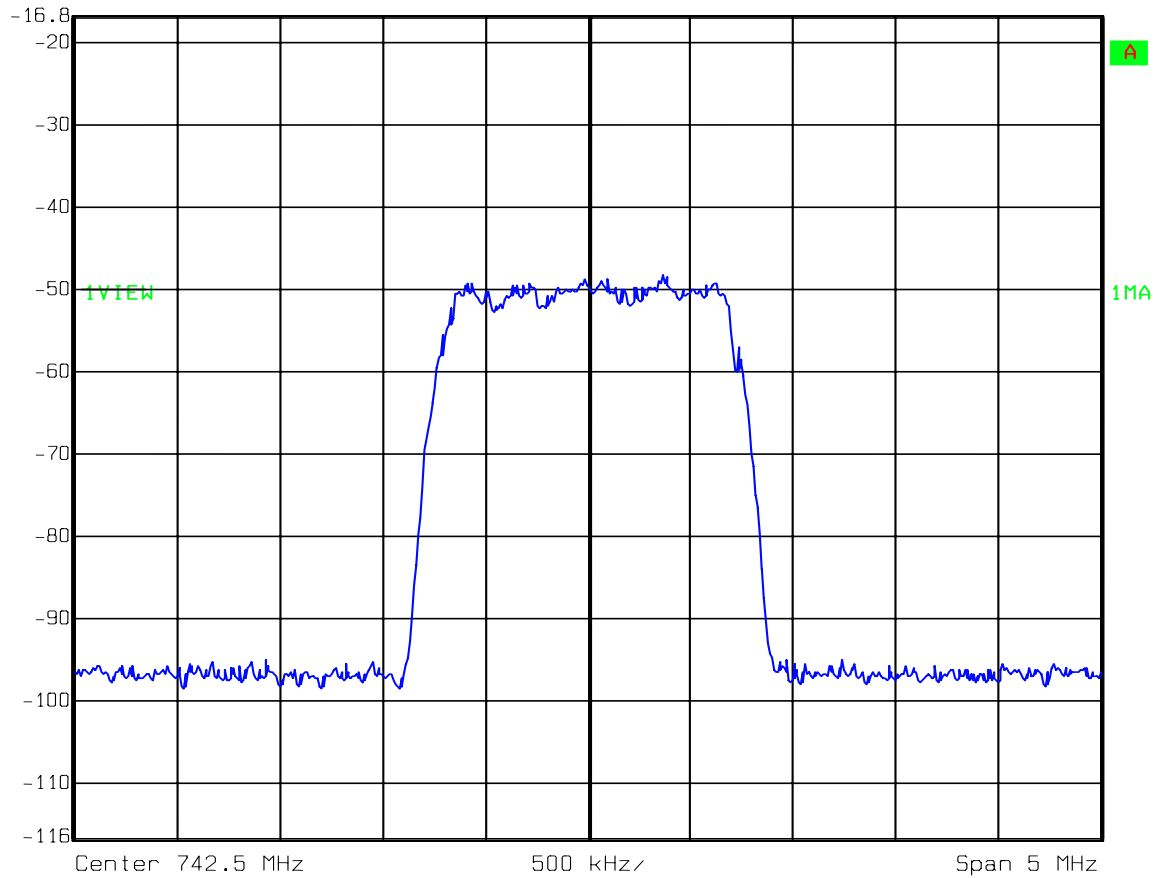
Input

Downlink



Ref Lvl
-16.8 dBm

RBW	30 kHz	RF Att	10 dB
VBW	30 kHz		
SWT	14 ms	Unit	dBm



Date: 05.NOV.2009 10:52:47

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals PARA. NO.: 27.53

TESTED BY: David Light

DATE: 05 November 2009

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1082-1472

Measurement Uncertainty: +/- 1.7 dB

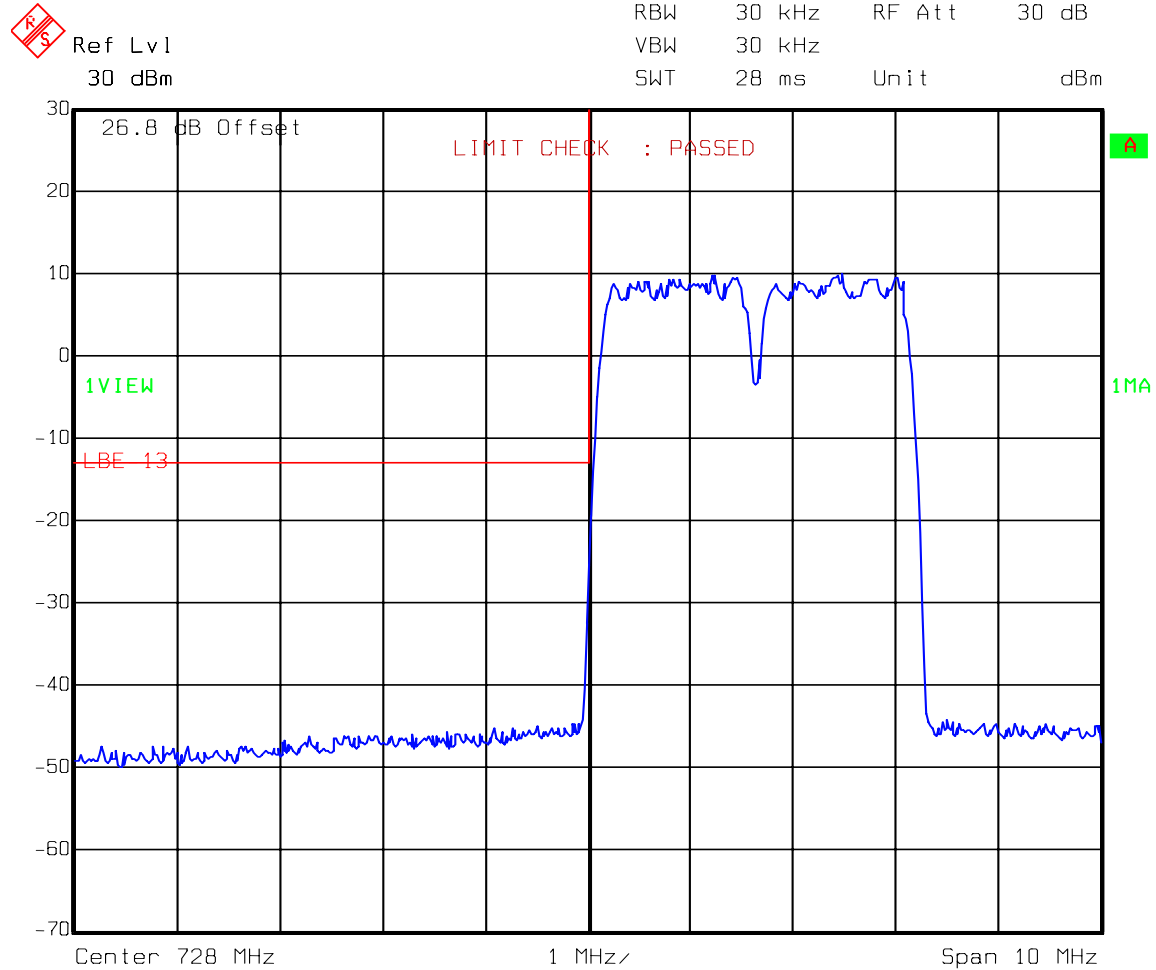
Temperature: 22 °C

Relative Humidity: 48 %

Test Data – Spurious Emissions at Antenna Terminals

Low Band Edge

Downlink

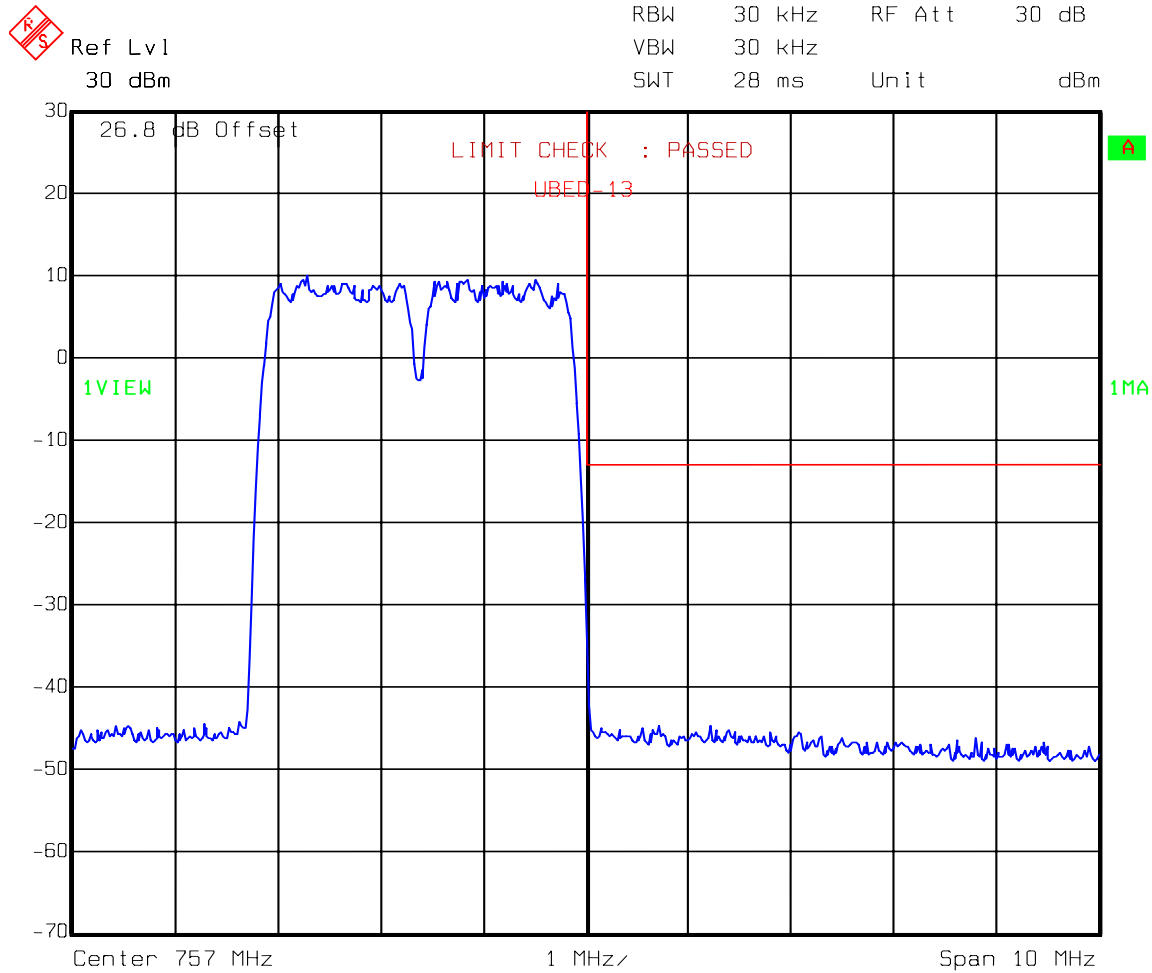


Date: 05.NOV.2009 10:58:41

Test Data – Spurious Emissions at Antenna Terminals

High Band Edge

Downlink

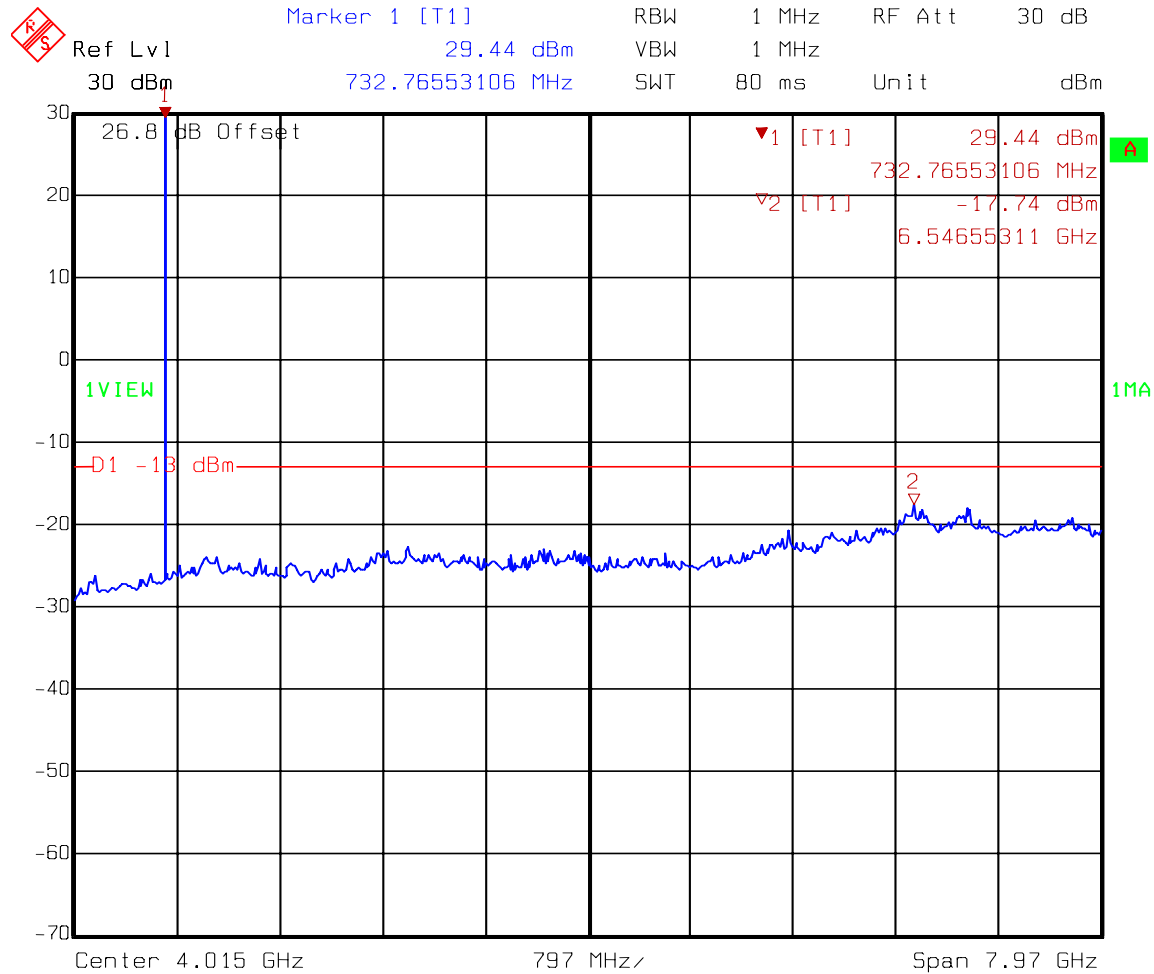


Date: 05.NOV.2009 11:00:02

Test Data – Spurious Emissions at Antenna Terminals

SPURS

Downlink



Date: 05.NOV.2009 11:02:00

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 27.53
TESTED BY: David Light	DATE: 04 November 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.

Equipment Used: 1464-1484-1485-1016-993-791-1763

Measurement Uncertainty: +/-1.7 dB

Temperature: 22 °C

Relative Humidity: 48 %

RBW=VBW=100 kHz below 1000 MHz
RBW=VBW=1 MHz above 1000 MHz
Peak detector

Section 7. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	01/19/09	01/20/11
1082	CABLE 2m	Astrolab 32027-2-29094-72TC	N/A	CBU	N/A
1472	20db Attenuator DC 18 Ghz	Omni Spectra 20600-20db	NONE	CBU	N/A
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	02/27/09	02/28/11
1484	Cable	Storm PR90-010-072	N/A	06/23/09	06/23/10
1485	Cable	Storm PR90-010-216	N/A	06/23/09	06/23/10
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	06/23/09	06/23/10
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/31/09	08/31/10
791	PREAMP, 25dB	Nemko USA, Inc. LNA25	398	05/28/09	05/28/10
1763	Bilog Antenna	Schaffner CBL 6111D	22926	11/04/08	11/04/09

ANNEX A - TEST DETAILS

NAME OF TEST: RF Power Output

Method Of Measurement:

Detachable Antenna:

The channel power integrated across the carrier's bandwidth at antenna terminals is measured using a spectrum analyzer. 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.

NAME OF TEST: Occupied Bandwidth

Method Of Measurement:

CDMA

Spectrum analyzer settings:

RBW=VBW=30 kHz

Span: 5 MHz

Sweep: Auto

GSM / EDGE

RBW=VBW= 3 kHz

Span: 1 MHz

Sweep: Auto

TDMA

RBW=VBW= 1 kHz

Span: 1 MHz

Sweep: Auto

W-CDMA

RBW=VBW= 50 kHz

Span: 10 MHz

Sweep: Auto

NAME OF TEST: Spurious Emission at Antenna Terminals**Method Of Measurement:**

Spectrum analyzer settings:

CDMA

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 30 kHz (< 1MHz from Band Edge)
VBW: \geq RBW
Sweep: Auto
Video Avg: 6 Sweeps

GSM / EDGE

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 3 kHz (< 1 MHz from Band Edge)
VBW: \geq RBW
Sweep: Auto
Video Avg: Disabled

TDMA

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 3 kHz (< 1 MHz from Band Edge)
VBW: \geq RBW
Sweep: Auto
Video Avg: Disabled

W-CDMA

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 50 kHz (< 1MHz from Band Edge)
VBW: \geq RBW
Sweep: Auto
Video Avg: 6 Sweeps

To demonstrate compliance at band edges the frequency of the input signal is set to the lowest and highest assigned channel and the center frequency of the spectrum analyzer is set to the upper and lower edges of the appropriate frequency block.

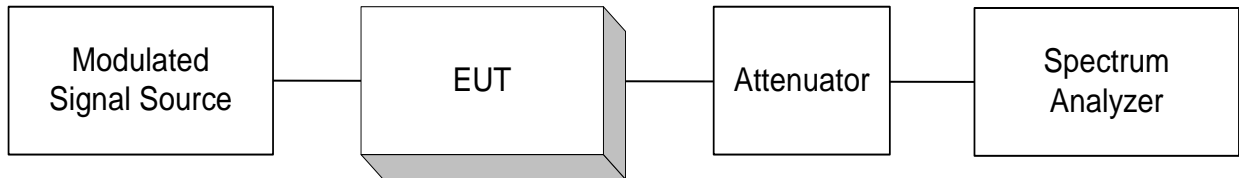
NAME OF TEST: Field Strength of Spurious Radiation**Method of Measurement**

TIA/EIA-603C

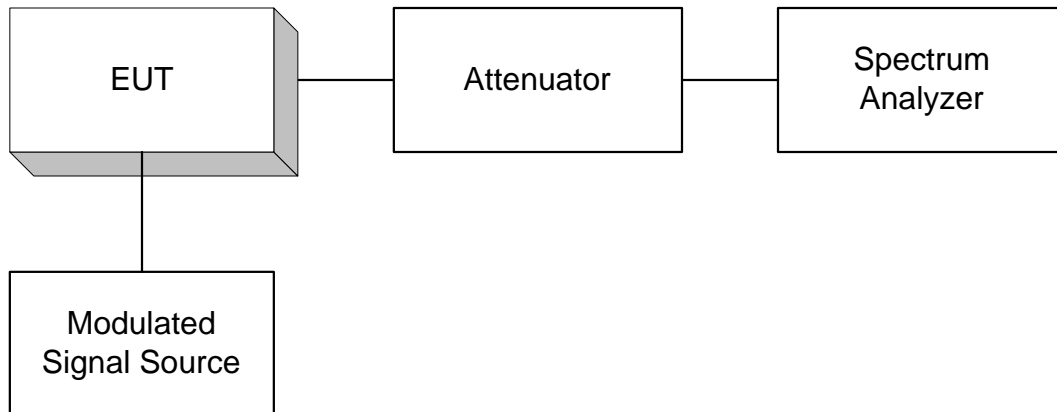
The antenna substitution method is used to determine the equivalent radiated power at spurious frequencies. The spurious emissions are measured at a distance of 3 meters. The EUT is then replaced with a reference substitution antenna with a known gain referenced to an isotropic radiator. This antenna 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.

ANNEX B - TEST DIAGRAMS

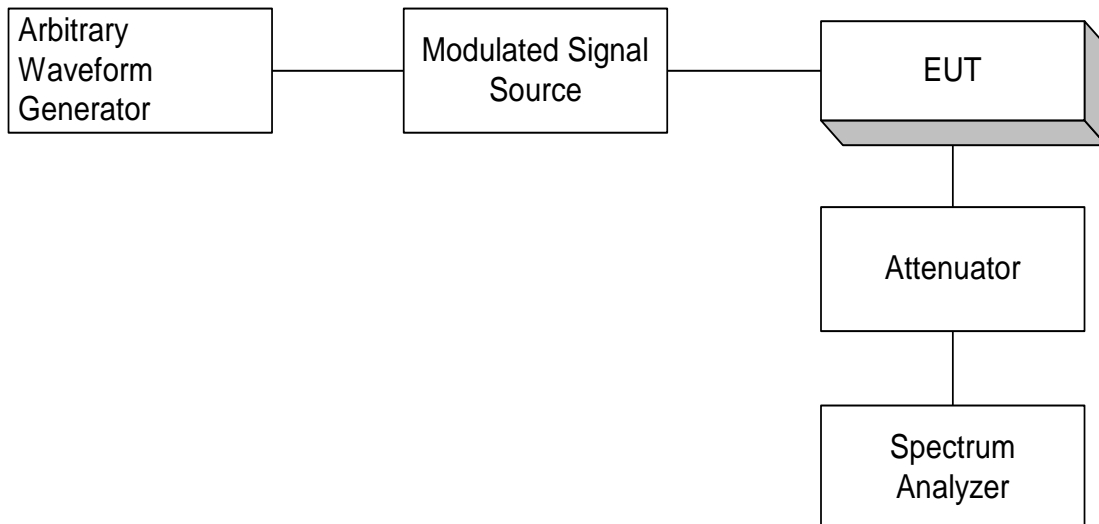
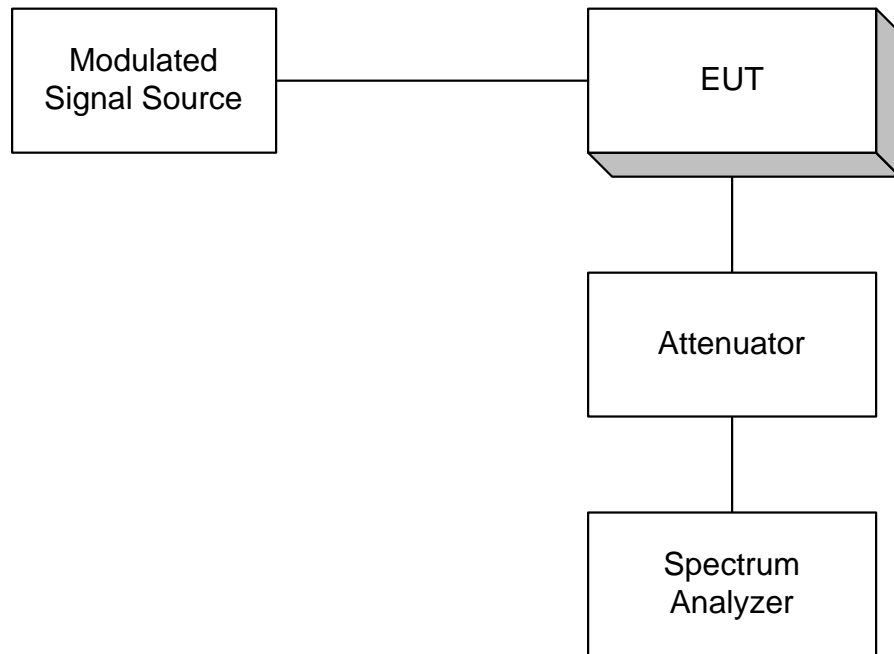
Para. No. 2.985 - R.F. Power Output



Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation

