Test Report:	3W07671
Applicant:	Spotwave Wireless Inc. 1 Hines Rd. Ottawa, Ontario K2K 3C7
Equipment Under Test: **(EUT)**	SpotCell 163 iDEN, (CU) Low Power Cellular Band Repeater
In Accordance With:	**FCC Part 90**
FCC I.D.:	P3YSPOTCELL0010
Tested By:	Nemko Canada Inc. 303 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	Kevin Carr, EMC Specialist
Date:	28 January 2004
Total Number of Pages:	18

Table of Contents

Section 1. Summary of Test Results

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.

☒	New Submission	☒	Production Unit
☐	Class II Permissive Change	☐	Pre-Production Unit

A	M	P	Equipment Code

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".

TESTED BY: _____ DATE: 28 January 2004
Glen Westwell, Wireless Technologist

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	2.1046	Complies
Occupied Bandwidth	2.1049	Complies
Spurious Emissions at Antenna Terminals	2.1051	Complies
Field Strength of Spurious Emissions	2.1053	Complies
Frequency Stability	2.1055	N/A

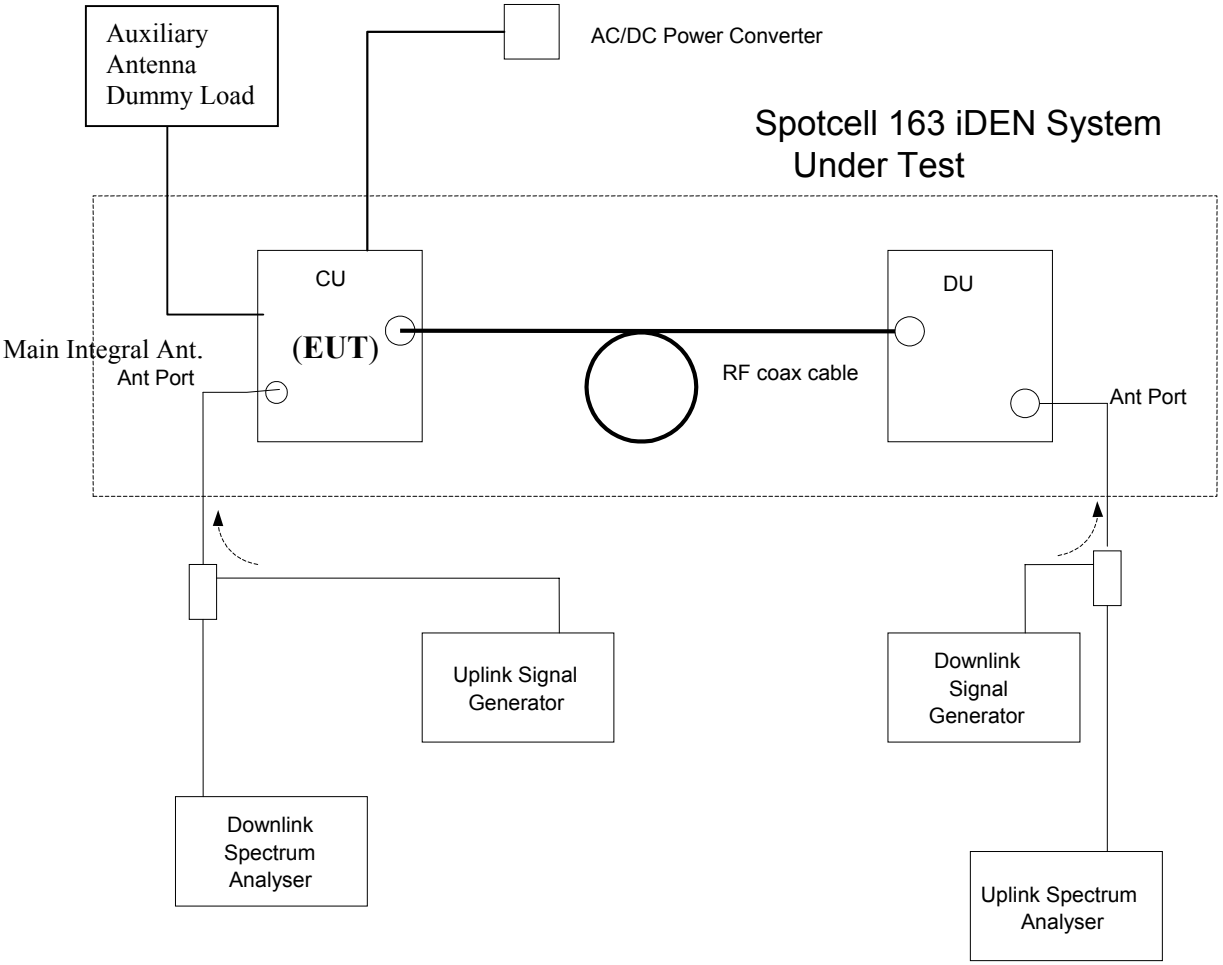
Footnotes For N/A's:
The EUT is an f1-f1 amplifier, as such frequency stability was not performed.

Deviation
A QAM signal was substituted for IDen Modulation

Indoor Temperature: 23°C
Humidity: 15%

Outdoor Temperature: 7°C
Humidity: 80%

Test Set Up Configuration



Section 2. General Equipment Specification

Manufacturer:	Spotwave Wireless Inc.
Model No.	SpotCell 163 (iDEN)
Serial No:	CU: SPO-0300101900014
Date Received In Laboratory:	08 Dec. 2003
Nemko Identification No.:	#1& #2
Supply Voltage:	120VAC, 60Hz
Frequency Range:	Downlink**:** 851-866MHz
RF Output Power (Rated):	Downlink: +14.0dBm
Modulation:	iDen
Emission Designator:	G7W

Section 3. RF Power Output

Para. No.: 2.1046

Test Performed By: Glen Westwell	**Date of Test: 11 Dec 2003**

Minimum Standard: Para. No. 90.205(a).

Test Results: Complied.
The maximum RF output power is within the manufacturer's rating. The RF output power is de-rated according to the number of channels via AGC and is equal to Pmax –10LogN.

Pmax = Maximum RF Output Power
N = Number Of Channels

Measurement Data:

Power was measured at the external antenna port and at the integral antenna port and found to be less than 0.5dB of each. The maximum power level was recorded.

Frequency (MHz)	Measured Power (dBm)	Rated Power (dBm)
851	13.7	14.0
858	14.0	14.0
865	11.0	14.0

The DL output has –6dBm per Iden carrier for a total composite output power of +14.0dBm. The maximum antenna gain of the CU is +3dBi and the nominal antenna gain is 0dBi. The DL output has also a second RF port for extended coverage. The RF output at the second RF port is same as in the main RF port.
The UL output power has a range of -24dBm to a maximum of +40dBm EIRP. The maximum RF output is +30dBm and the antenna gain is +10dBi, hence the maximum radiated power is +40dBm EIRP.

Section 4. Occupied Bandwidth

Para. No.: 2.1049

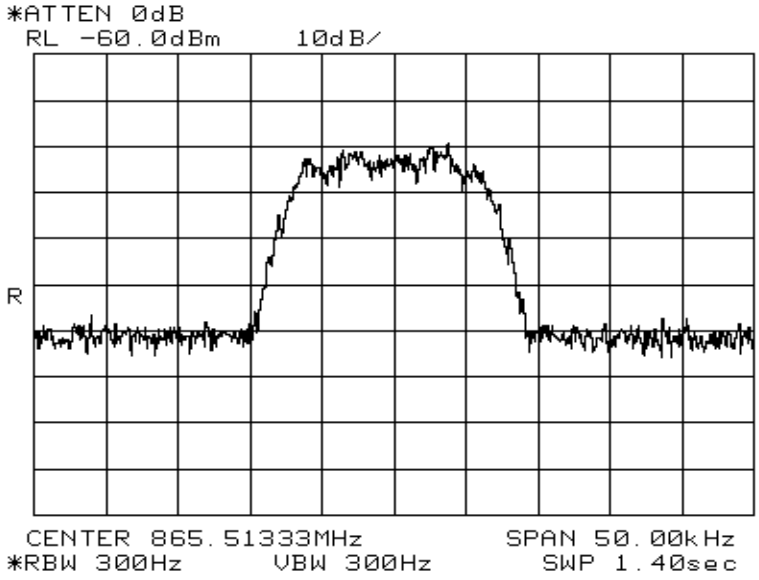
Test Performed By: Glen Westwell	**Date of Test: 11 Dec 2003**

Minimum Standard: Para. No. 90.210

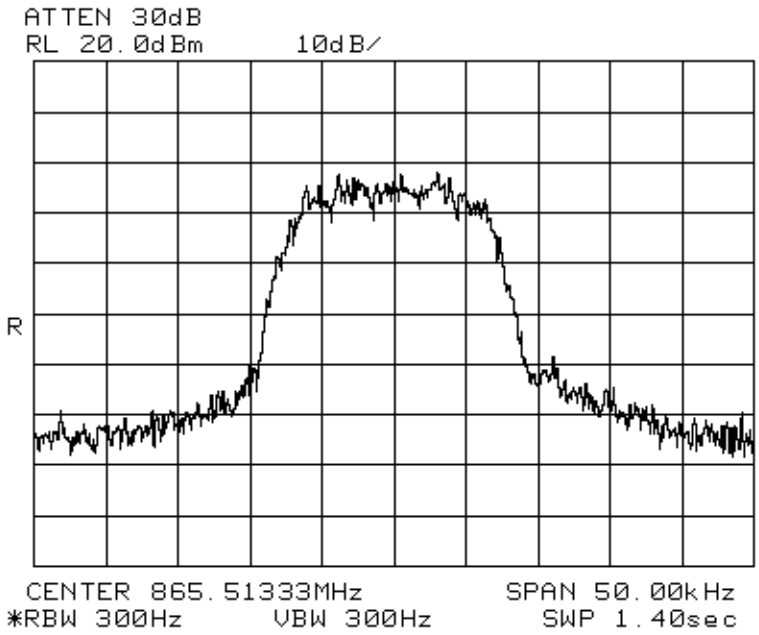
Test Results: Complied.

Measurement Data: See attached graphs.

The occupied bandwidth was measured by comparison of input to the output signal. This was done in order to determine if there was any degradation to the output signal due to the amplification through the repeater.



iDen Input Reference Signal



iDen Downlink Output

Section 5. Spurious Emissions at Antenna Terminals

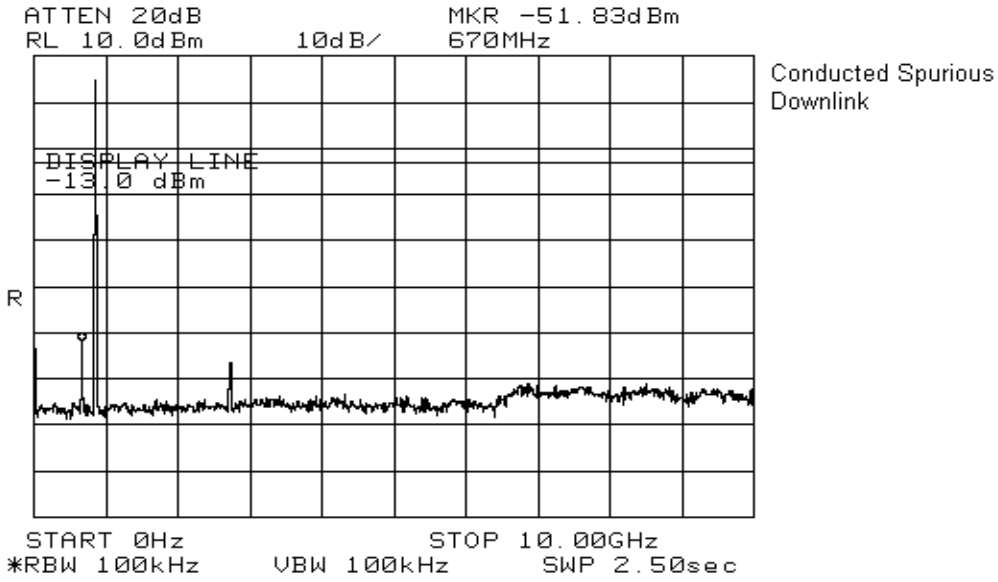
Para. No.: 2.1051

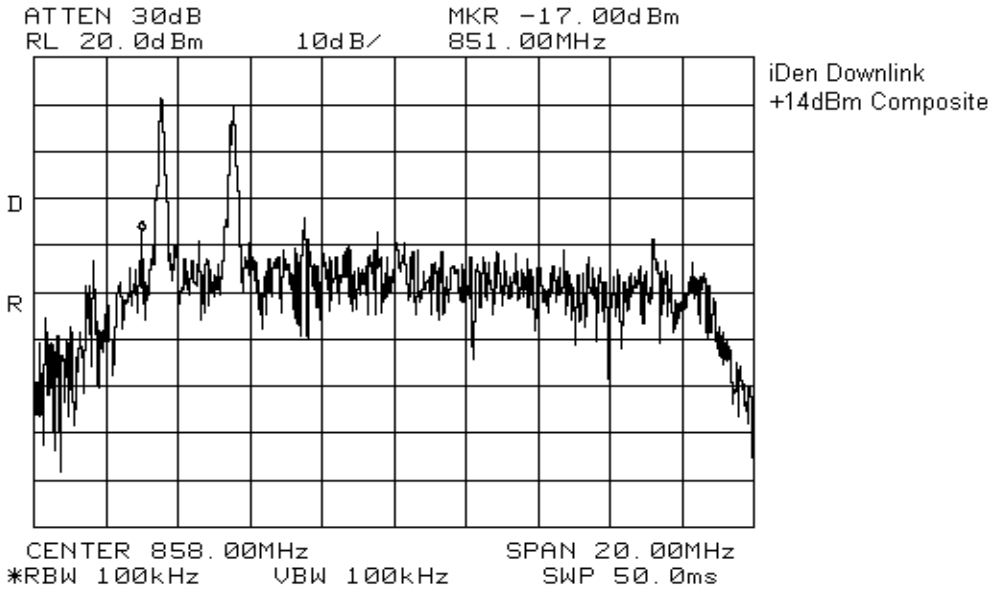
Test Performed By: Glen Westwell	**Date of Test: 11 Dec 2003**

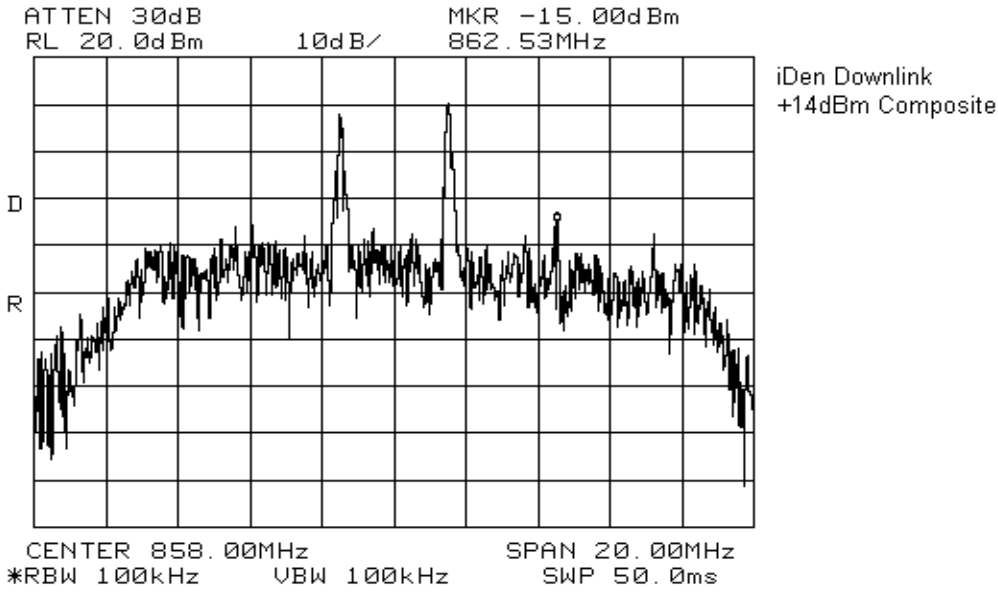
Minimum Standard: -13 dBm

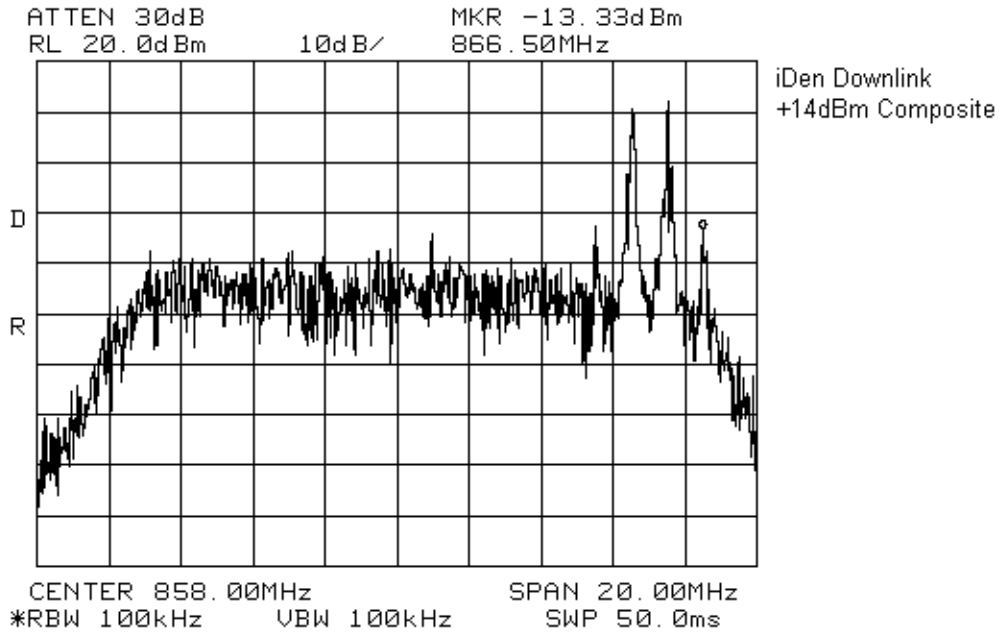
Test Results: Complied.

Measurement Data: See attached graph(s).


ATTEN 20dB
RL 10.0dBm
10dB/
MKR -51.83dBm
670MHz
Conducted Spurious
Downlink
DISPLAY LINE
-13.0 dBm
R
START 0Hz
STOP 10.00GHz
*RBW 100kHz
VBW 100kHz
SWP 2.50sec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -17.00dBm
851.00MHz
iDen Downlink
+14dBm Composite
D
R
CENTER 858.00MHz
SPAN 20.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -15.00dBm
862.53MHz
iDen Downlink
+14dBm Composite
D
R
CENTER 858.00MHz
SPAN 20.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -13.33dBm
866.50MHz
iDen Downlink
+14dBm Composite
D
R
CENTER 858.00MHz
SPAN 20.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

Section 6. Field Strength of Spurious Emissions

Para. No.: 2.1053

Test Performed By: Glen Westwell	**Date of Test: 12 Dec 2003**

Minimum Standard: Para. No. 90.210

Test Results: Complied.
No emissions detected.

Measurement Data: All emissions were searched to the 10^{th} harmonic.

The EUT was searched for both uplink and downlink configurations. No Emissions within 20dB of the limit were detected.

Photographs of Test Setup

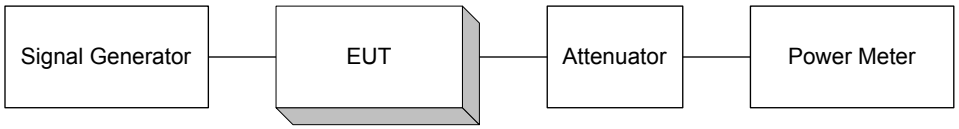
Section 7. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	03 Jul 03	03 Jul 04
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	June. 05/03	June. 05/04
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	June. 05/03	June. 05/04
NCR	Bilog	Schaffner	CBL6112B	FA001504	NCR	NCR
1 Year	Horn Antenna	EMCO #1	3115	FA000649	23 Dec 02	23 Dec 03
1 Year	RF AMP	JCA	4-8 GHz	FA001497	18 June 03	18 June 04
1 Year	RF AMP	JCA	2-4 GHz	FA001496	18 June 03	18 June 04
1 Year	RF AMP	JCA	1-2 GHz	FA001498	18 June 03	18 June 04
3 Year	Signal Generator	Rhode & Schwarz	SM1Q03E	FA001269	06 Dec 02	06 Dec 05
3 Year	Signal Generator	Rohde & Schwarz	SM1Q03	FA001091	25 Sep 03	25 Sep 06
1 Year	Power Meter	Hewlett Packard	E4418B	FA001678	01 Apr 03	01 Apr 04
1 Year	Power Sensor	Hewlett Packard	8487A	FA001741	28 Mar 03	28 Mar 04

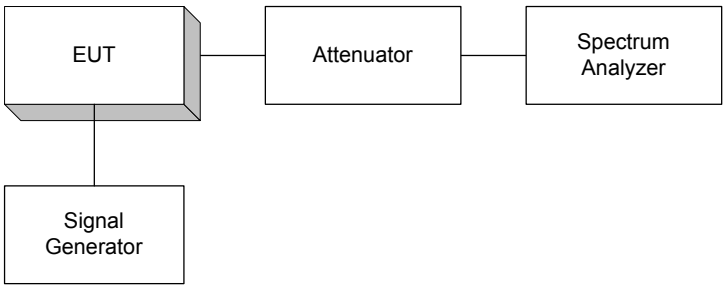
NA: Not Applicable
NCR: No Cal Required
COU: CAL On Use

Section 8. Block Diagrams

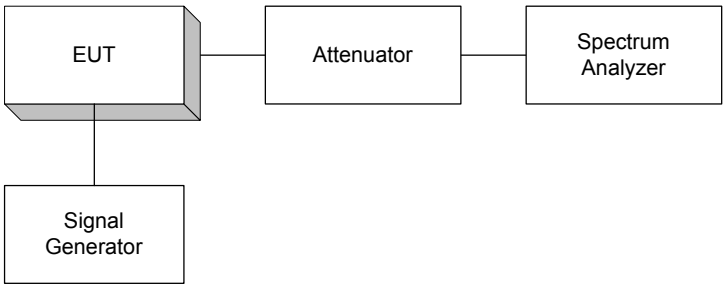
Para. No. 2.1046 - R.F. Power Output



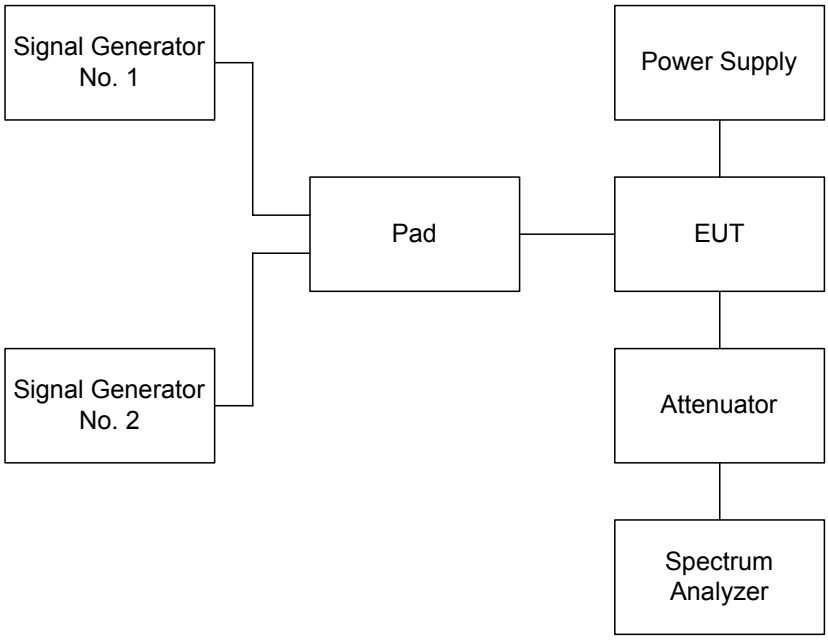
Para. No. 2.1049 - Occupied Bandwidth



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation

TIA/EIA 603
Effective Radiated Power
Spurious Emissions