KTL Test Report:	9R01580
Applicant:	Allen Telecom Inc. 140 Vista Centre Drive Forrest, Virginia 24551
Equipment Under Test: (E.U.T.)	RF Booster System
FCC ID:	BCR-MRB-CELL
In Accordance With:	**FCC Part 22, Subpart H** 800 MHz Cellular Subscriber Units
Tested By:	KTL Ottawa Inc. 3325 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	
	R. Grant, Senior RF Specialist
Date:	
Total Number of Pages:	111

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Section 1. Summary of Test Results

Manufacturer: Allen Telecom Inc.

Model No.: None

Serial No.: None

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 22, Subpart H.

☒ 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".

NVLAP LAB CODE: 100351-0

TESTED BY: _____ DATE: _____
Kevin Carr, Technologist

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	MEAS.	RESULT
RF Power Output	2.1046	7W ERP	Chart	Complies
Audio Frequency Response	2.1047	6dB/Octave	N/A	N/A
Audio Low Pass Filter Response	2.1047	Graph	N/A	N/A
Modulation Limiting	2.1047	Graph	N/A	N/A
Occupied Bandwidth (Voice & SAT)	2.1049	Mask	Plot	Complies
Occupies Bandwidth (WB Data & SAT)	2.1049	Mask	Plot	Complies
Occupied Bandwidth (ST)	2.1049	Mask	Plot	Complies
Occupied Bandwidth (SAT)	2.1049	Mask	Plot	Complies
Spurious Emissions at Antenna Terminals	2.1051	-13 dBm	Plot	Complies
Field Strength of Spurious Emissions	2.1053	82.3 dBµV/m	Chart	Complies
Frequency Stability	2.1055	2.5 ppm	Chart	N/A

Footnotes For N/A's:

Test Conditions:

Indoor Temperature: 27 °C
Humidity: 45 %

Outdoor Temperature: 35 °C
Humidity: 70 %

.

Section 2. General Equipment Specification

Frequency Range:	UL: Not tested, hardwired to base station. DL: 869 MHz – 894 MHz
Tunable Bands:	Not Applicable
Necessary Bandwidth:	
Type of Modulation and Designator:	AMPS (F8W, F1D) CDMA (F9W0 TDMA (DXW)
Data Source:	Internal
Output Impedance:	50 ohms
RF Power Output (rated):	See Page 10
Number of Channels:	1023
Duty Cycle:	Continuous
Channel Spacing:	30 kHz
Operator Selection of Frequency:	Software Controlled
Power Output Adjustment Capability:	Software Controlled

Description of Modifications For Class II Permissive Change

NOT APPLICABLE

Modifications Made During Testing

NOT APPLICABLE

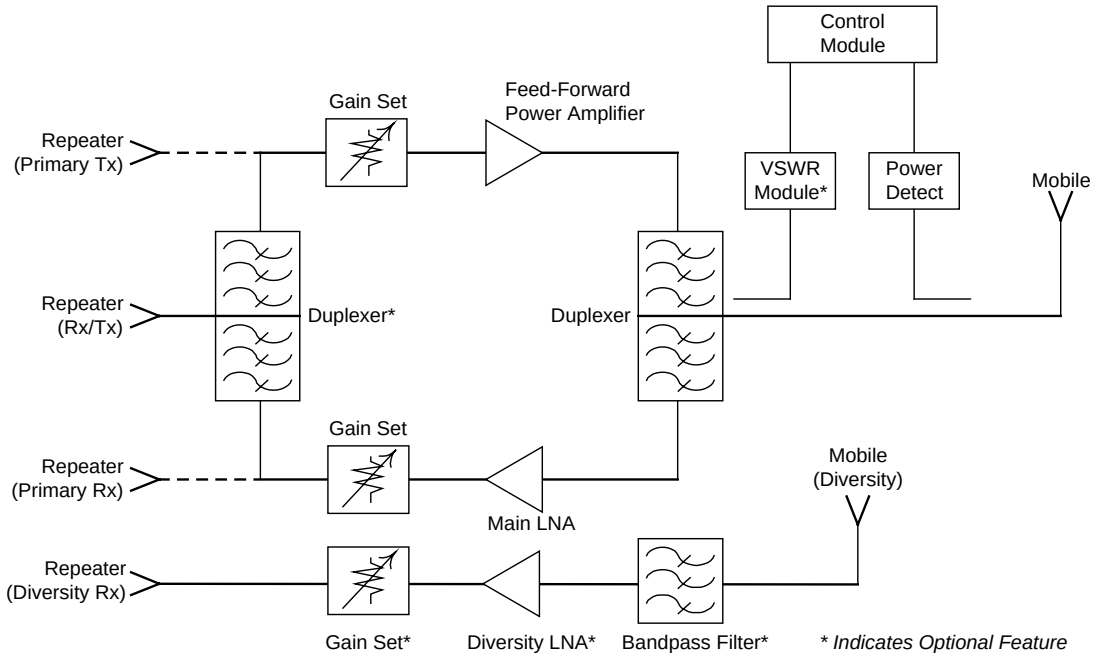
Theory of Operation

The RF Booster is a band selective device which will increase the maximum output power of a signal from a repeater in the downlink. In addition, an integrated LNA will reduce the noise figure in the uplink so as to maintain balance in both paths. It is employed wherever additional signal strength is need and isolation requirements allow it. It can be ordered initially with a repeater or retrofitted to an existing product in the field.

The RF Booster is available for most frequency bands including PCS1900, GSM1800, GSM900, AMPS800 and LMR800. As it is a band selective amplifier, it can be used with all technologies, including GSM, CDMA, TDMA, iDEN and Analog.

The RF Booster passes alarms back through the repeater it is attached to. The operator may monitor the RF Booster through the repeater as well, via terminal emulation program or the MIKOM OMC software platform. The same communication language that is used for the repeater supports the operator when querying status reports or changing settings.

System Diagram



Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Kevin Carr	DATE: June 29, 1999

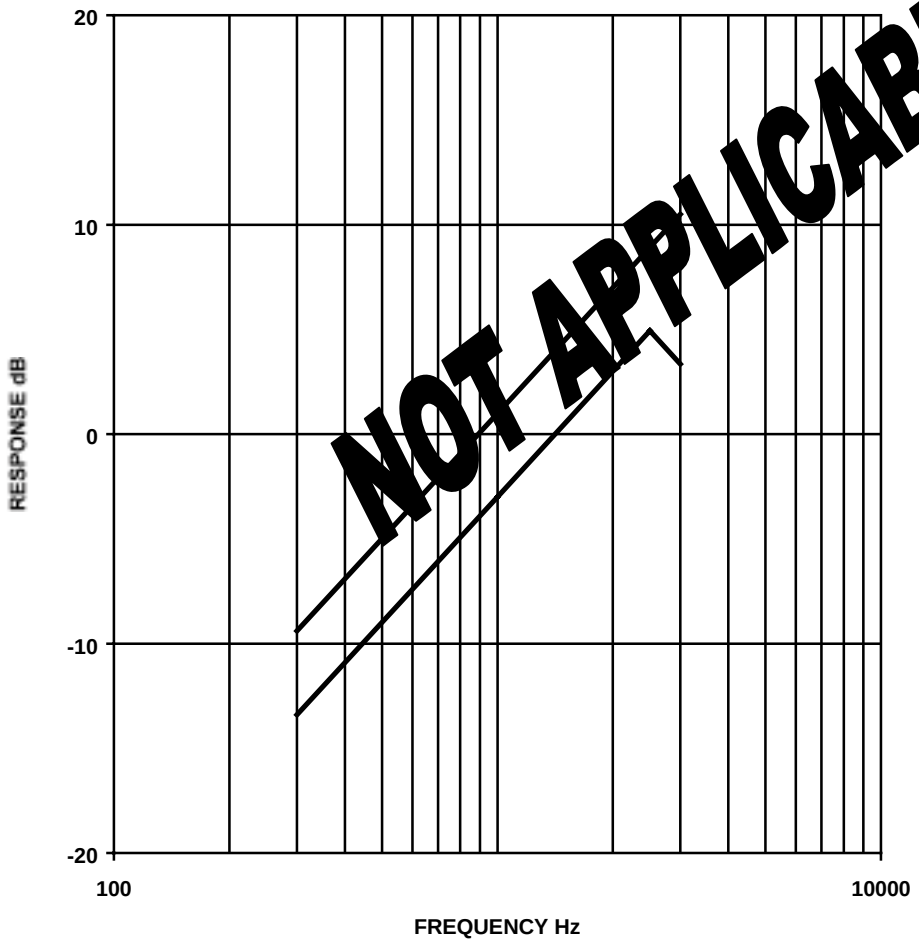
Test Results: Complies.

Measurement Data:

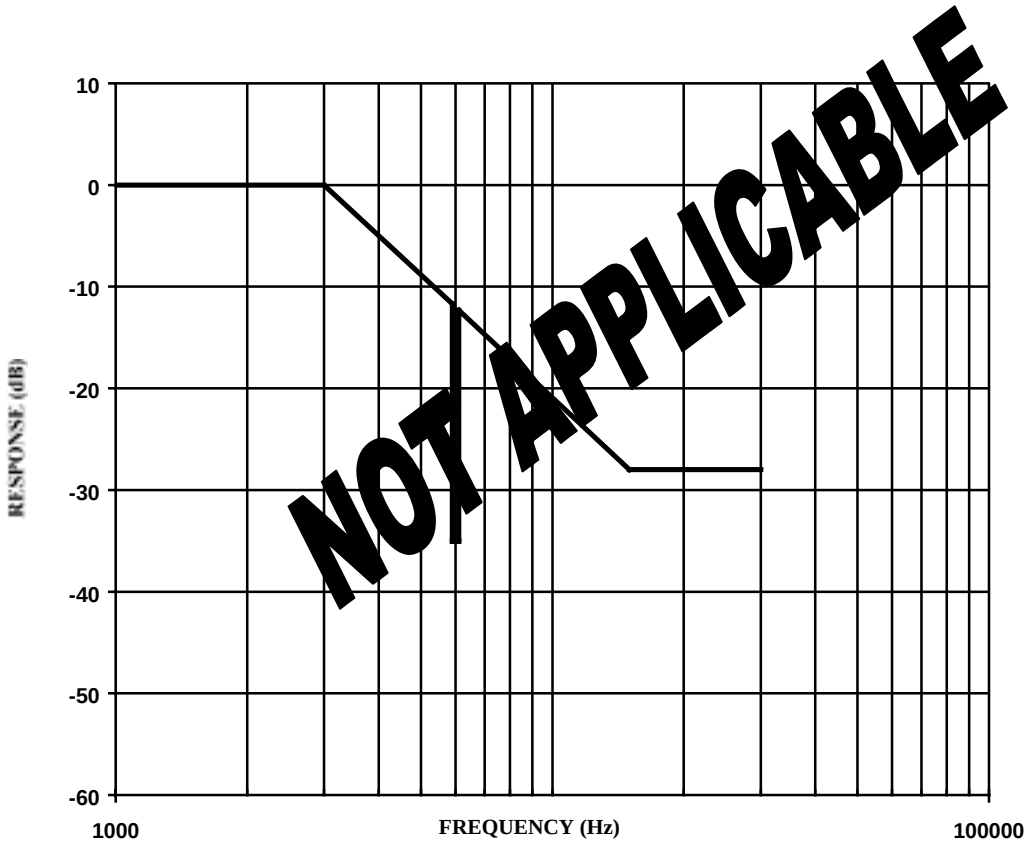
High Power Configuration		
Dual Channel	**Output Power (dBm)**	**Output Power (W)**
CDMA, 2 Channel	40.7	11.7
TDMA, 2 Channel	43.1	20.4
Analog, 2 Channel	46.3	42.7
High Power Configuration		
Single Channel Power	**Output Power (dBm)**	**Output Power (W)**
CDMA, 1 Channel	44.8	30.2
TDMA, 1 Channel	44.8	30.2
Analog, 1 Channel	46.3	42.7

Low Power Configuration		
Channel	**Output Power (dBm)**	**Output Power (W)**
CDMA, 2 Channel	38.9	7.8
TDMA, 2 Channel	40.8	12.0
Analog, 2 Channel	43.7	23.4
Low Power Configuration		
Single Channel Power	**Output Power (dBm)**	**Output Power (W)**
CDMA, 1 Channel	39.1	8.1
TDMA, 1 Channel	42.0	15.8
Analog, 1 Channel	43.7	23.4

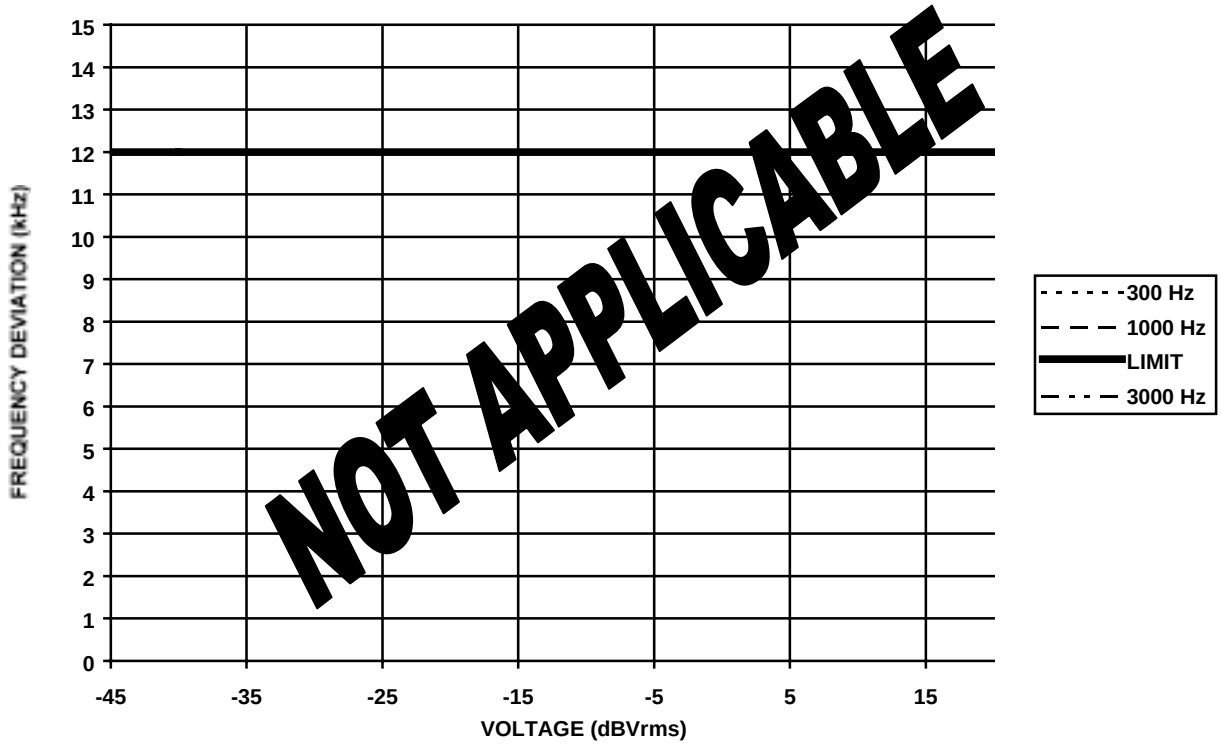
NAME OF TEST: Audio Frequency Response	PARA. NO.: 2.1047
TESTED BY:	DATE:



NAME OF TEST: Audio Low-Pass Filter Response	PARA. NO.: 2.1047
TESTED BY:	DATE:



NAME OF TEST: Modulation Limiting	PARA. NO.: 2.1047
TESTED BY:	DATE:



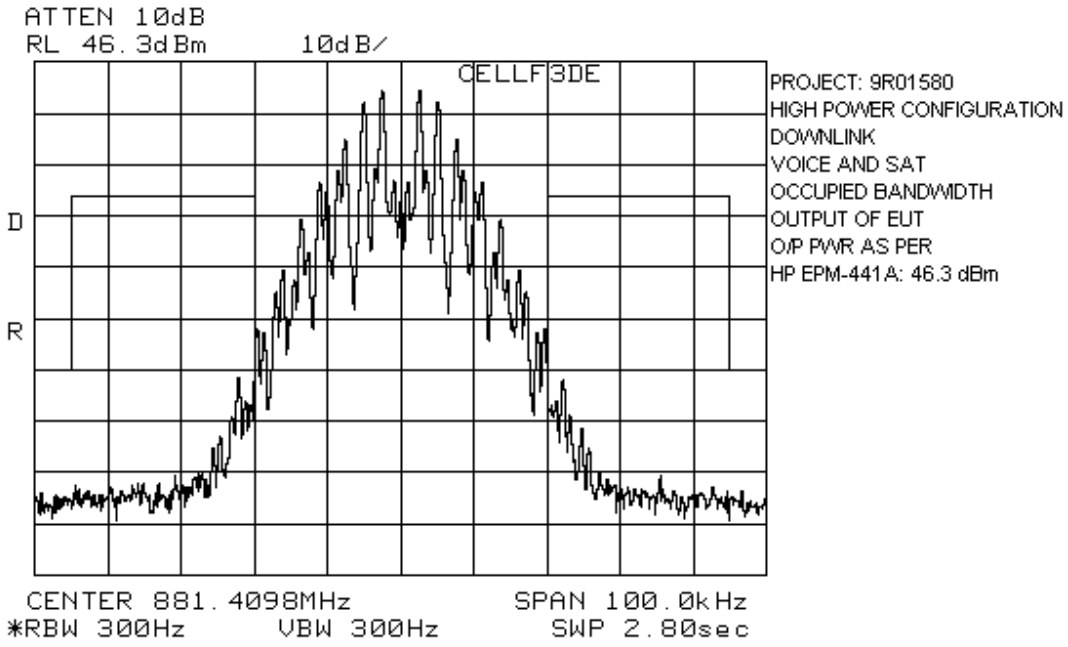
SAT Deviation:
WB Data Deviation:
ST Deviation:

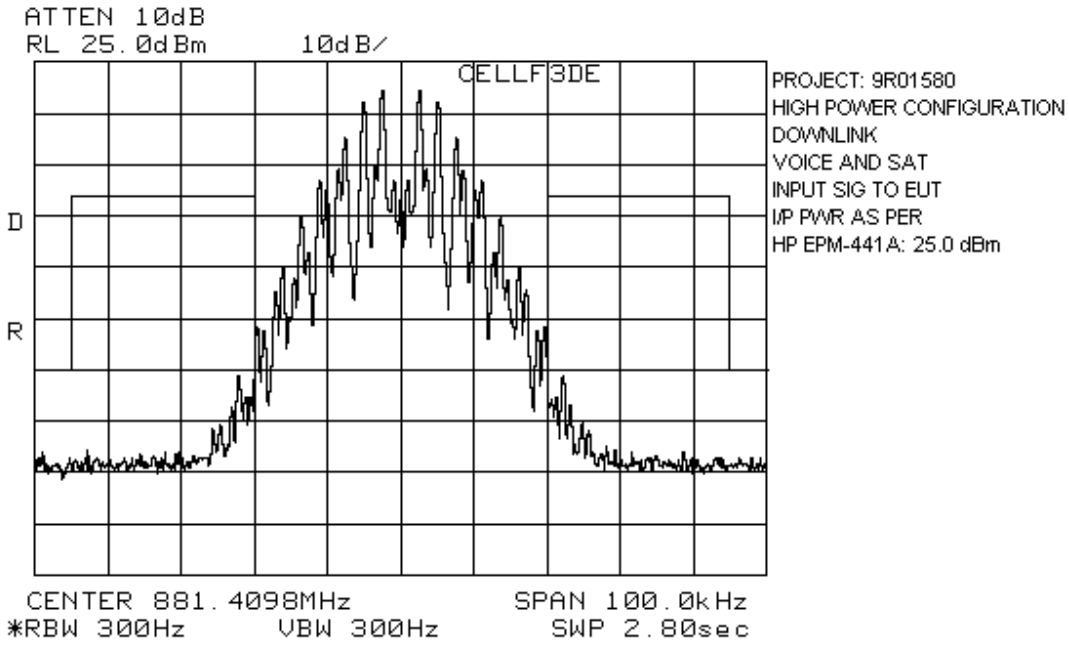
Section 4. Occupied Bandwidth

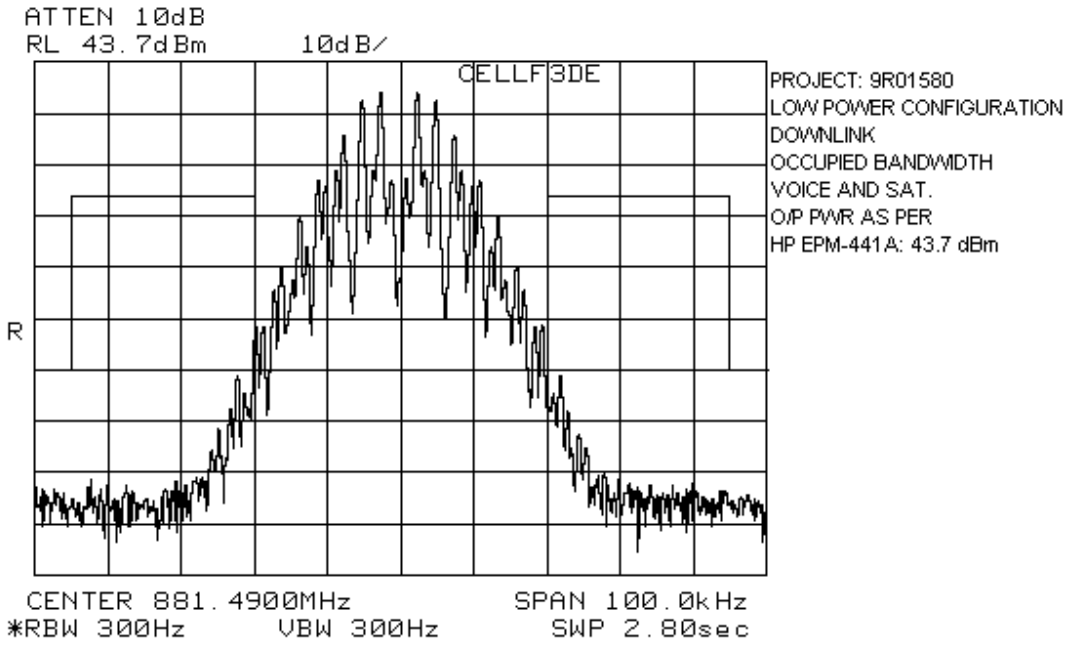
NAME OF TEST: Occupied Bandwidth (Voice + SAT)	PARA. NO.: 2.1049
TESTED BY: Kevin Carr	DATE: June 29, 1999

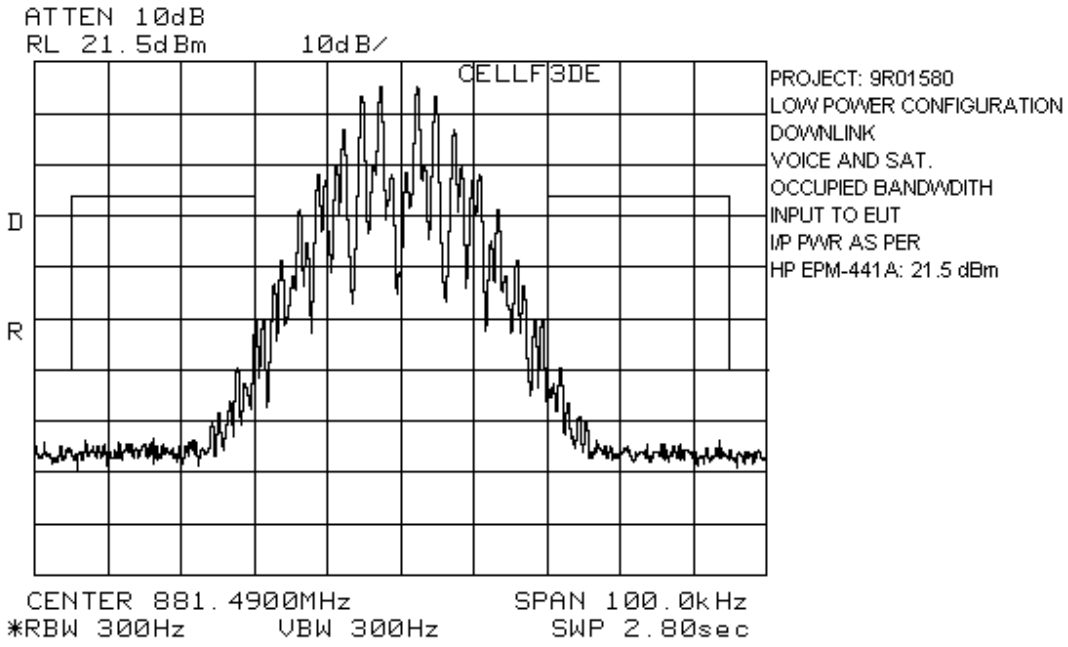
Test Results: Complies.

Test Data: See attached graph(s).


ATTEN 10dB
RL 46.3dBm
10dB/
CELLF3DE
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
VOICE AND SAT
OCCUPIED BANDWIDTH
OUTPUT OF EUT
O/P PWR AS PER
HP EPM-441A: 46.3 dBm
D
R
CENTER 881.4098MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec


ATTEN 10dB
RL 25.0dBm
10dB/
CELLF3DE
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
VOICE AND SAT
INPUT SIG TO EUT
I/P PWR AS PER
HP EPM-441A: 25.0 dBm
D
R
CENTER 881.4098MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

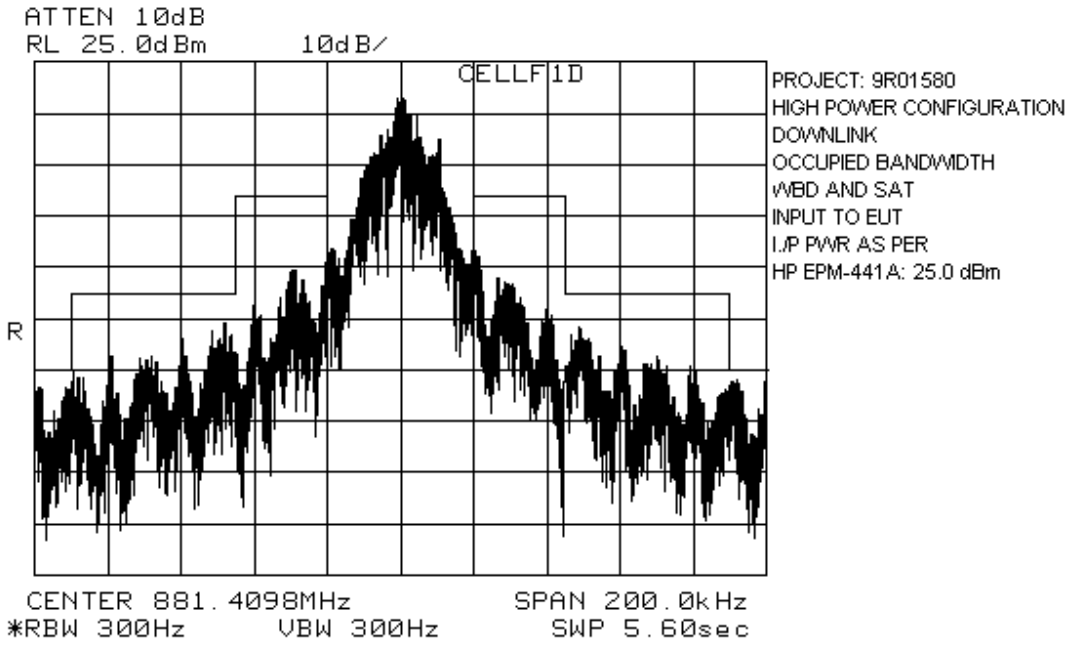

ATTEN 10dB
RL 43.7dBm
10dB/
CELLF3DE
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
OCCUPIED BANDWIDTH
VOICE AND SAT.
O/P PWR AS PER
HP EPM-441A: 43.7 dBm
R
CENTER 881.4900MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

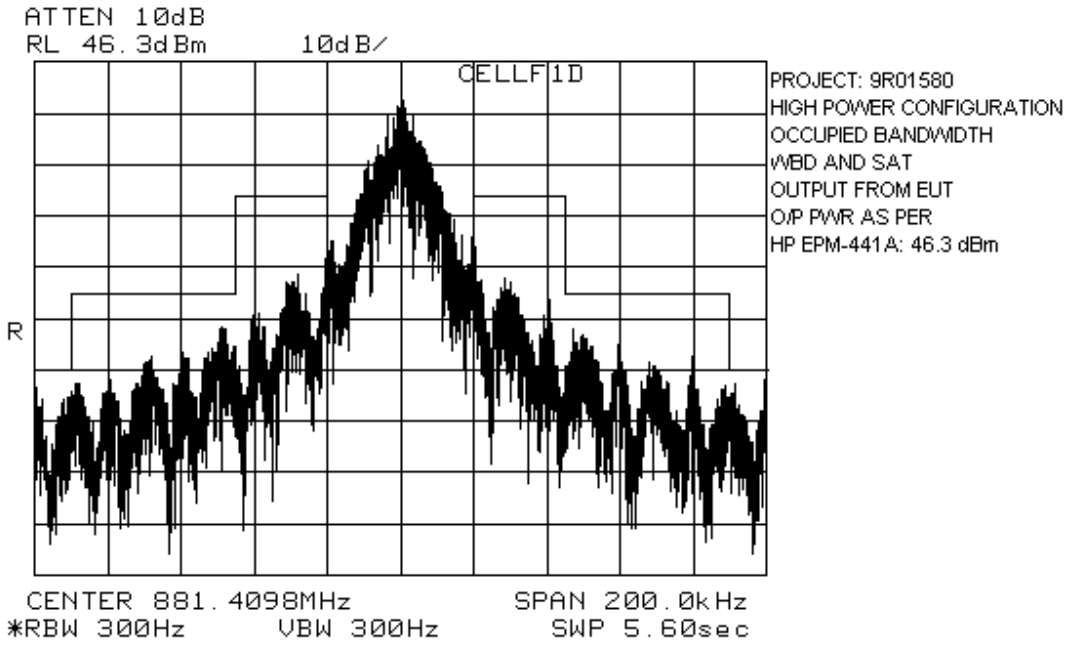

ATTEN 10dB
RL 21.5dBm
10dB/
CELLF3DE
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
VOICE AND SAT.
OCCUPIED BANDWIDTH
INPUT TO EUT
I/P PWR AS PER
HP EPM-441A: 21.5 dBm
D
R
CENTER 881.4900MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

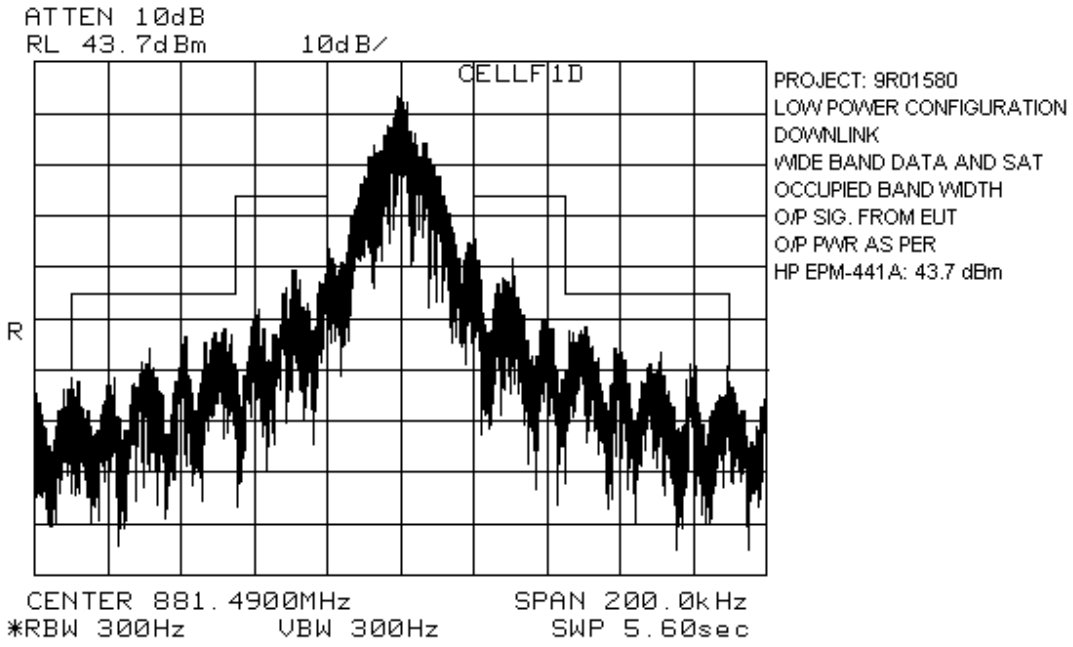
NAME OF TEST: Occupied Bandwidth (WB Data & SAT)	PARA. NO.: 2.1049
TESTED BY: Kevin Carr	DATE: June 29, 1999

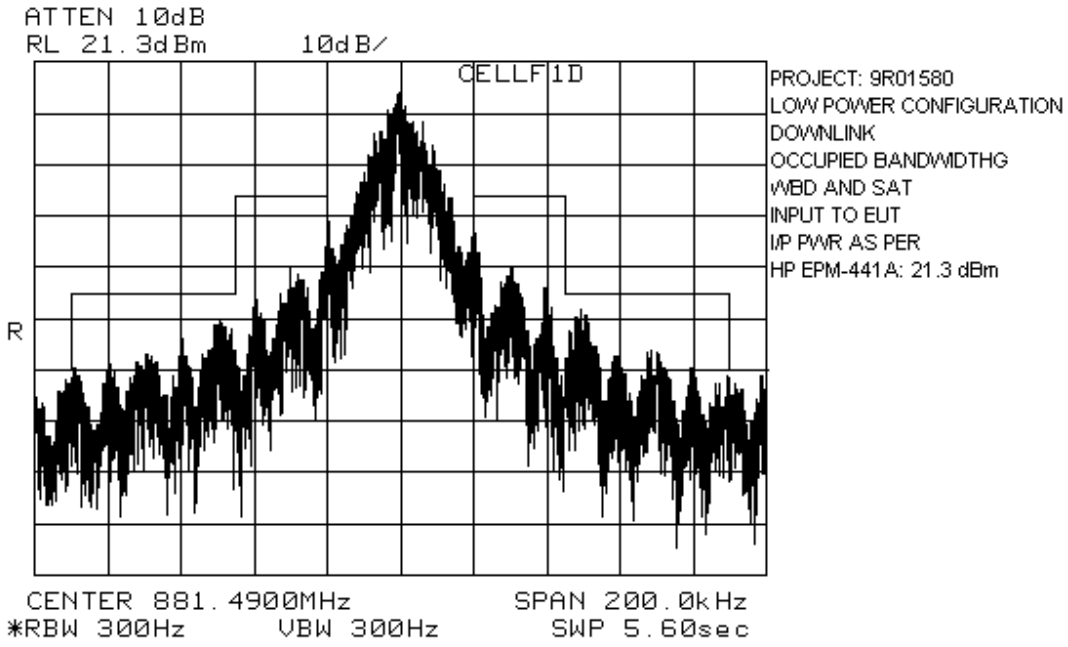
Test Results: Complies.

Test Data: See attached graph(s).


ATTEN 10dB
RL 25.0dBm
10dB/
CELLF1D
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
OCCUPIED BANDWIDTH
WBD AND SAT
INPUT TO EUT
I/P PWR AS PER
HP EPM-441A: 25.0 dBm
R
CENTER 881.4098MHz
SPAN 200.0kHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec


ATTEN 10dB
RL 46.3dBm
10dB/
CELLF1D
PROJECT: 9R01580
HIGH POWER CONFIGURATION
OCCUPIED BANDWIDTH
WBD AND SAT
OUTPUT FROM EUT
O/P PWR AS PER
HP EPM-441A: 46.3 dBm
R
CENTER 881.4098MHz
SPAN 200.0kHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec

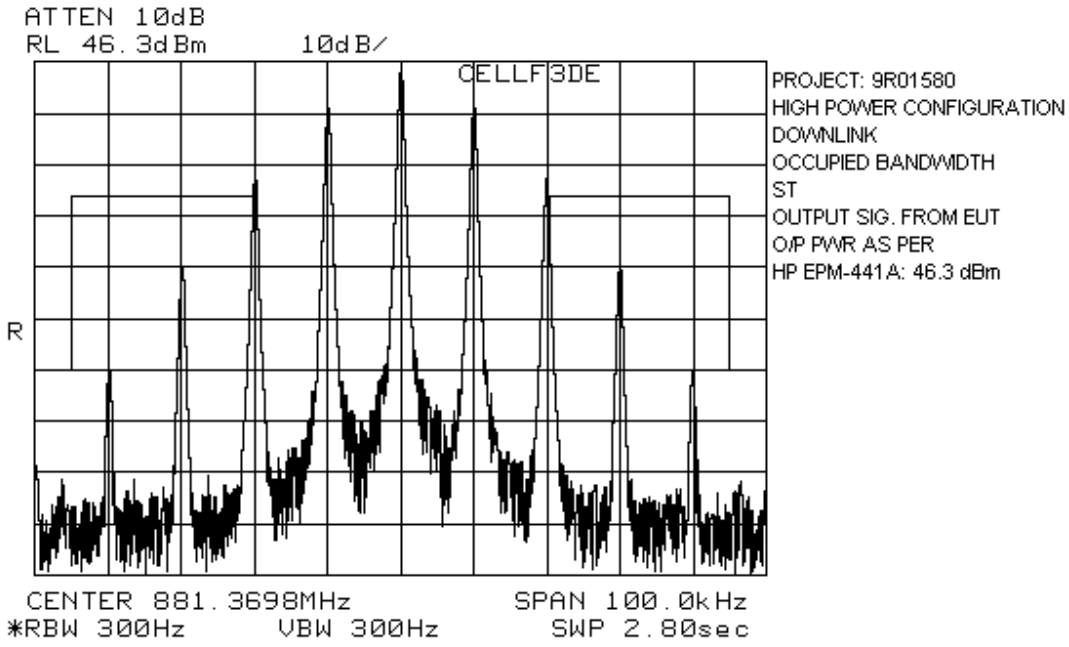

ATTEN 10dB
RL 43.7dBm
10dB/
CELLF1D
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
WIDE BAND DATA AND SAT
OCCUPIED BAND WIDTH
O/P SIG. FROM EUT
O/P PWR AS PER
HP EPM-441A: 43.7 dBm
R
CENTER 881.4900MHz
SPAN 200.0kHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec

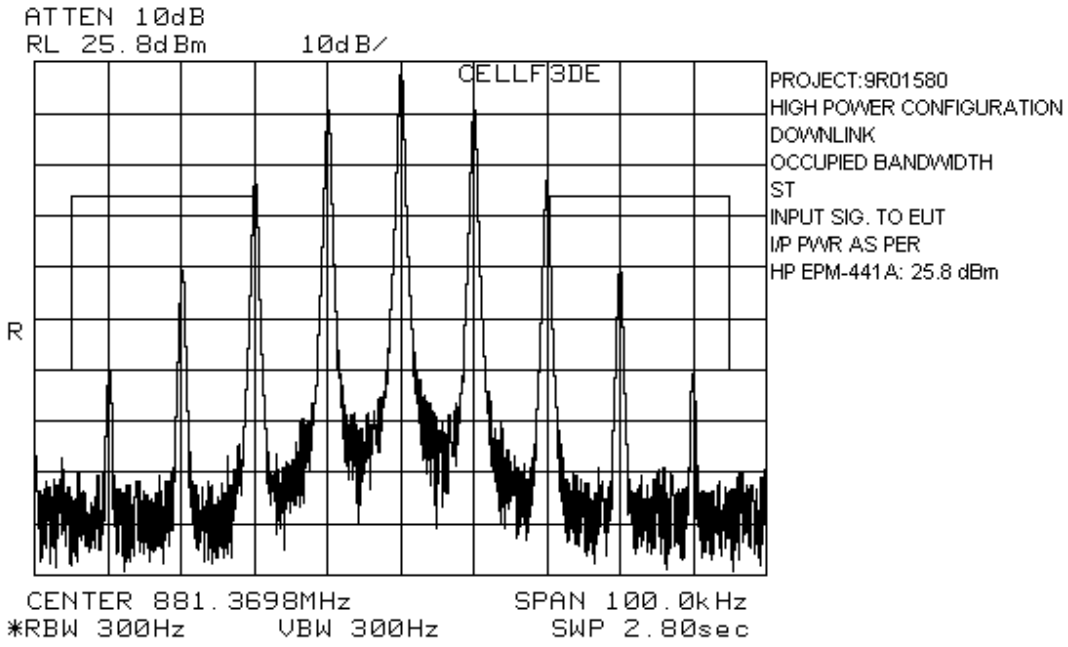

ATTEN 10dB
RL 21.3dBm
10dB/
CELLF1D
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
OCCUPIED BANDWIDTHG
WBD AND SAT
INPUT TO EUT
I/P PWR AS PER
HP EPM-441A: 21.3 dBm
R
CENTER 881.4900MHz
SPAN 200.0kHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec

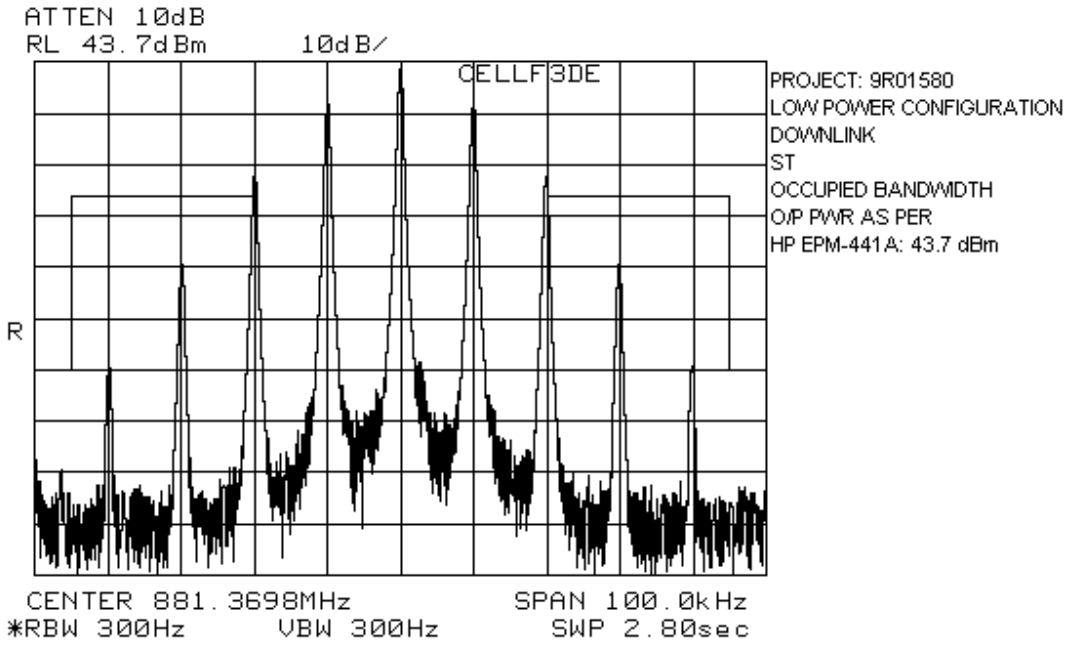
NAME OF TEST: Occupied Bandwidth (ST)	PARA. NO.: 2.1049
TESTED BY: Kevin Carr	DATE: July 12, 1999

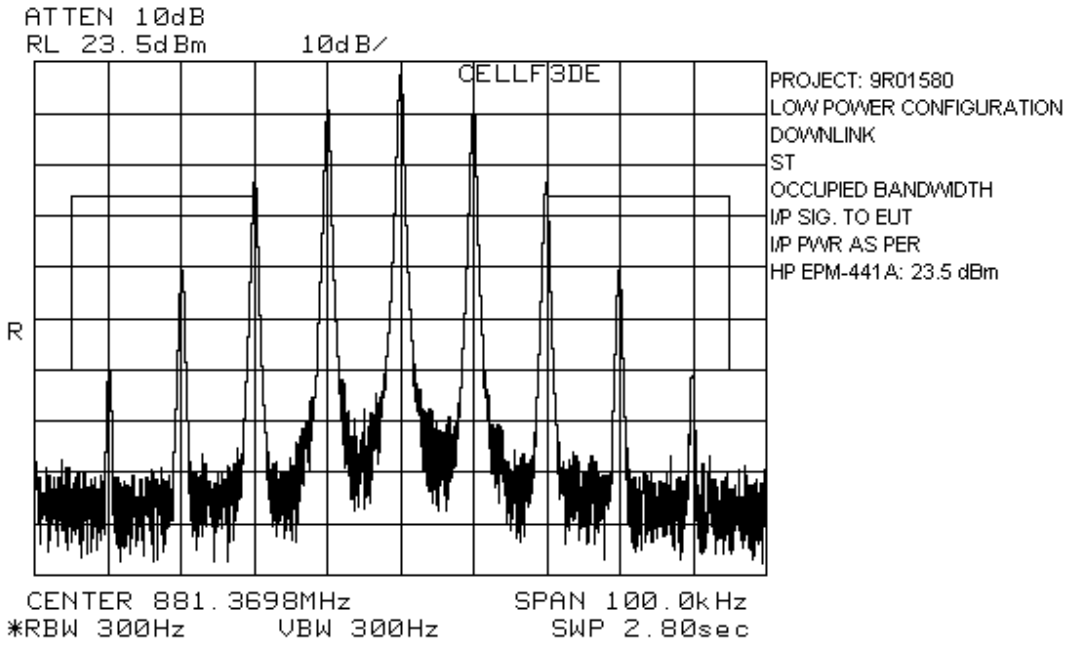
Test Results: Complies.

Test Data: See attached graph(s).


ATTEN 10dB
RL 46.3dBm
10dB/
CELLF3DE
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
OCCUPIED BANDWIDTH
ST
OUTPUT SIG. FROM EUT
O/P PWR AS PER
HP EPM-441A: 46.3 dBm
R
CENTER 881.3698MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec


ATTEN 10dB
RL 25.8dBm
10dB/
CELLF3DE
PROJECT:9R01580
HIGH POWER CONFIGURATION
DOWNLINK
OCCUPIED BANDWIDTH
ST
INPUT SIG. TO EUT
I/P PWR AS PER
HP EPM-441A: 25.8 dBm
R
CENTER 881.3698MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

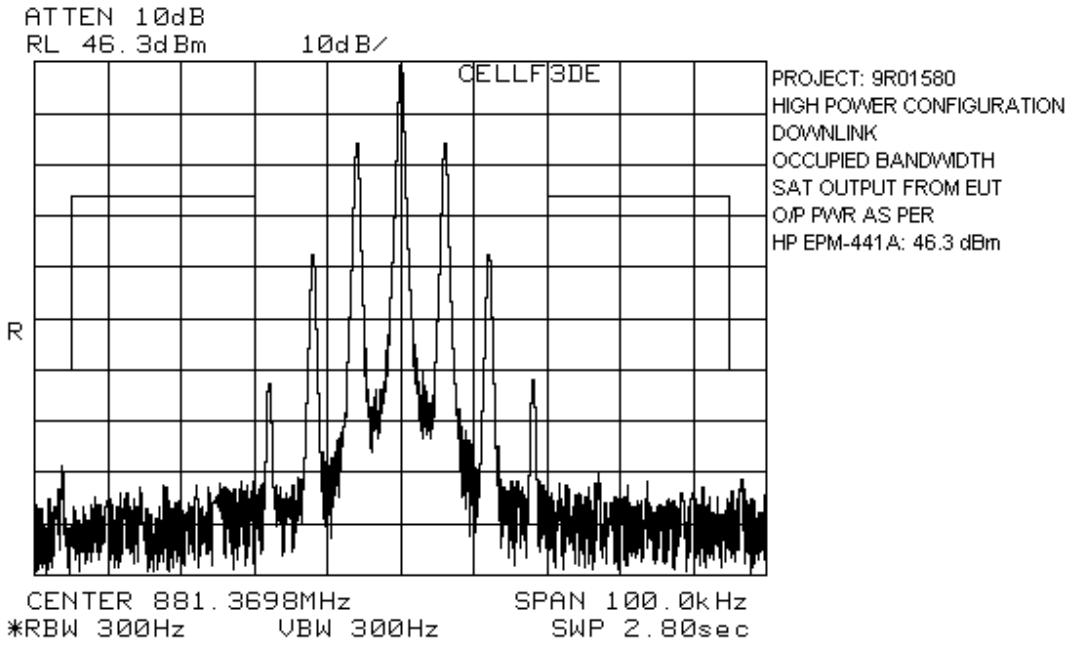

ATTEN 10dB
RL 43.7dBm
10dB/
CELLF3DE
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
ST
OCCUPIED BANDWIDTH
O/P PWR AS PER
HP EPM-441A: 43.7 dBm
R
CENTER 881.3698MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

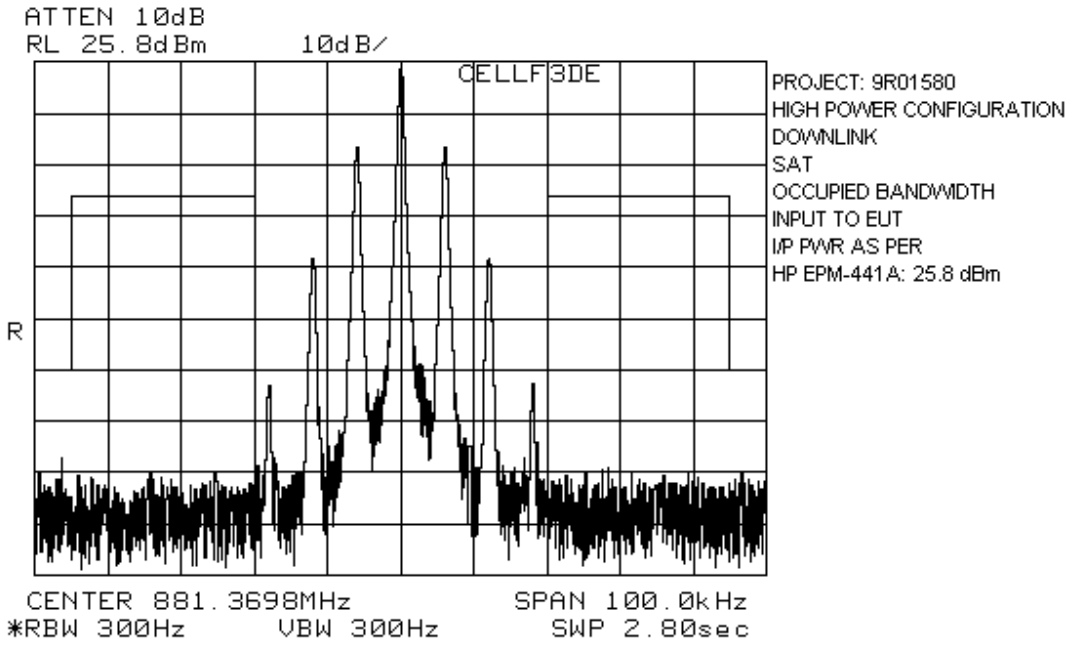

ATTEN 10dB
RL 23.5dBm
10dB/
CELLF3DE
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
ST
OCCUPIED BANDWIDTH
I/P SIG. TO EUT
I/P PWR AS PER
HP EPM-441A: 23.5 dBm
R
CENTER 881.3698MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

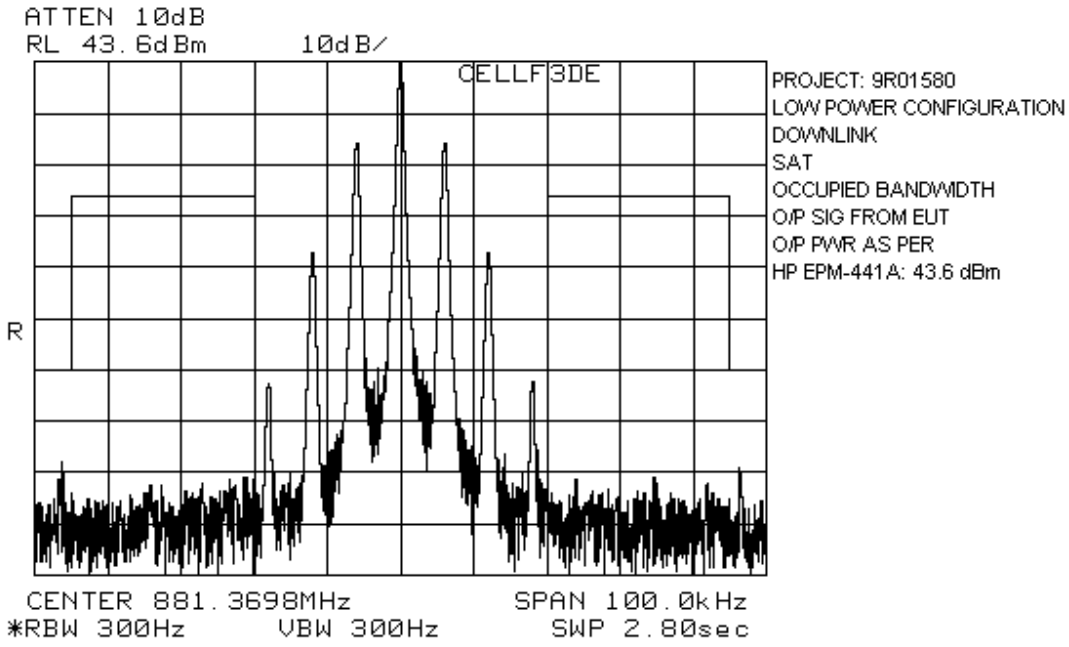
NAME OF TEST: Occupied Bandwidth (SAT)	PARA. NO.: 2.1049
TESTED BY: Kevin Carr	DATE: July 12, 1999

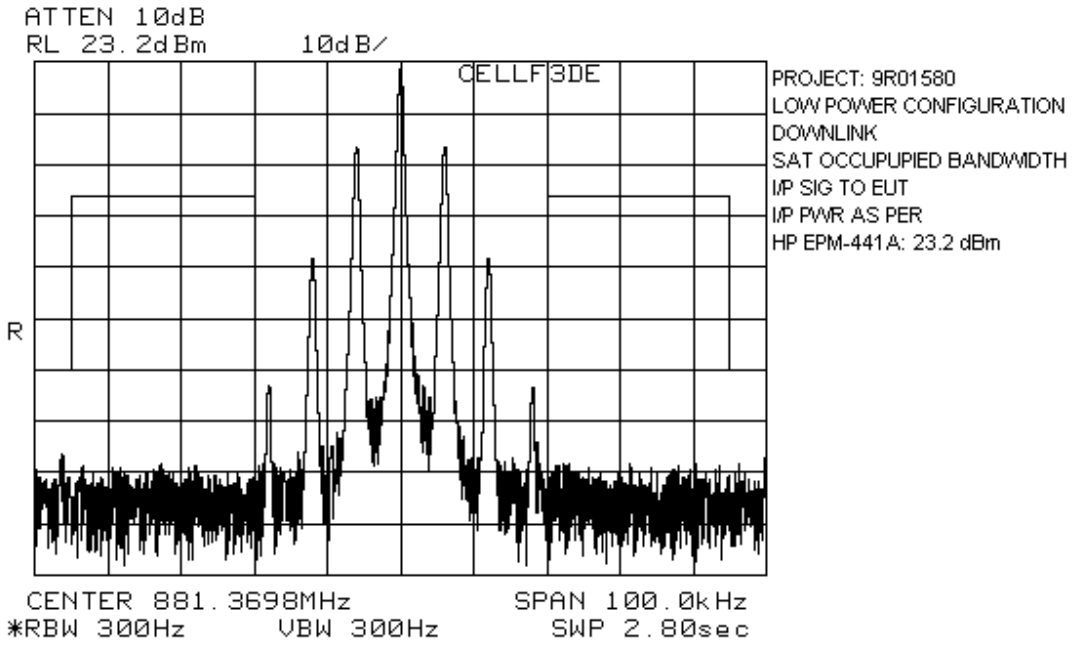
Test Results: Complies.

Test Data: See attached graph(s).


ATTEN 10dB
RL 46.3dBm
10dB/
CELLF3DE
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
OCCUPIED BANDWIDTH
SAT OUTPUT FROM EUT
O/P PWR AS PER
HP EPM-441A: 46.3 dBm
R
CENTER 881.3698MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec


ATTEN 10dB
RL 25.8dBm
10dB/
CELLF3DE
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
SAT
OCCUPIED BANDWIDTH
INPUT TO EUT
I/P PWR AS PER
HP EPM-441A: 25.8 dBm
R
CENTER 881.3698MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec


ATTEN 10dB
RL 43.6dBm
10dB/
CELLF3DE
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
SAT
OCCUPIED BANDWIDTH
O/P SIG FROM EUT
O/P PWR AS PER
HP EPM-441A: 43.6 dBm
R
CENTER 881.3698MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

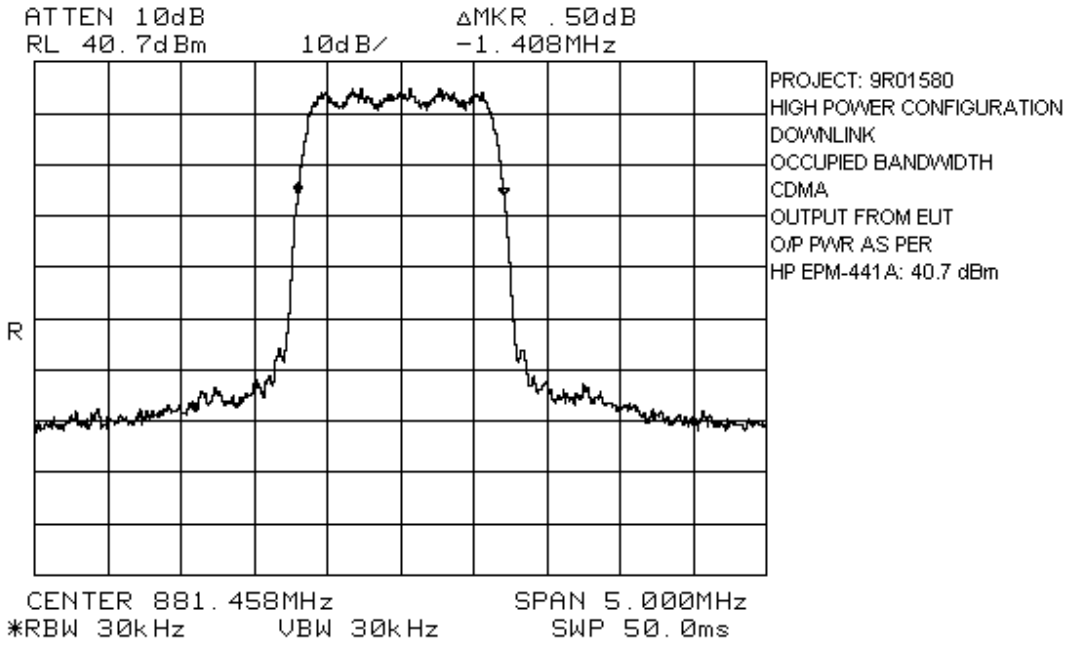

ATTEN 10dB
RL 23.2dBm
10dB/
CELLF3DE
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
SAT OCCUPUPIED BANDWIDTH
I/P SIG TO EUT
I/P PWR AS PER
HP EPM-441A: 23.2 dBm
R
CENTER 881.3698MHz
SPAN 100.0kHz
*RBW 300Hz
VBW 300Hz
SWP 2.80sec

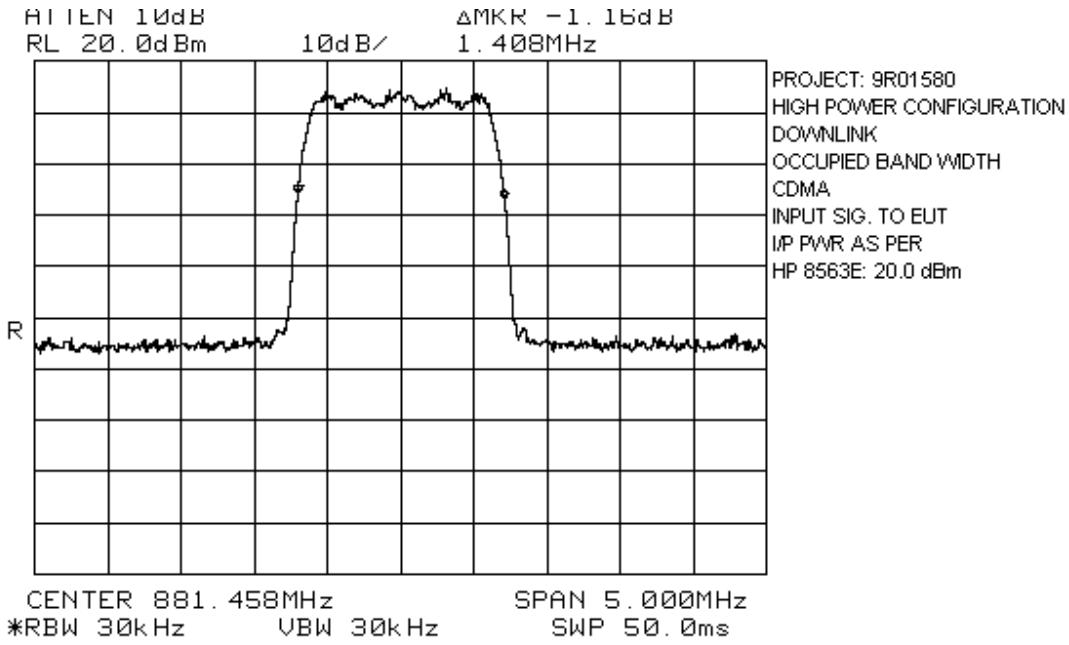
NAME OF TEST: Occupied Bandwidth (Digital Modulation)	PARA. NO.:
TESTED BY: Kevin Carr	DATE: June 25, 1999

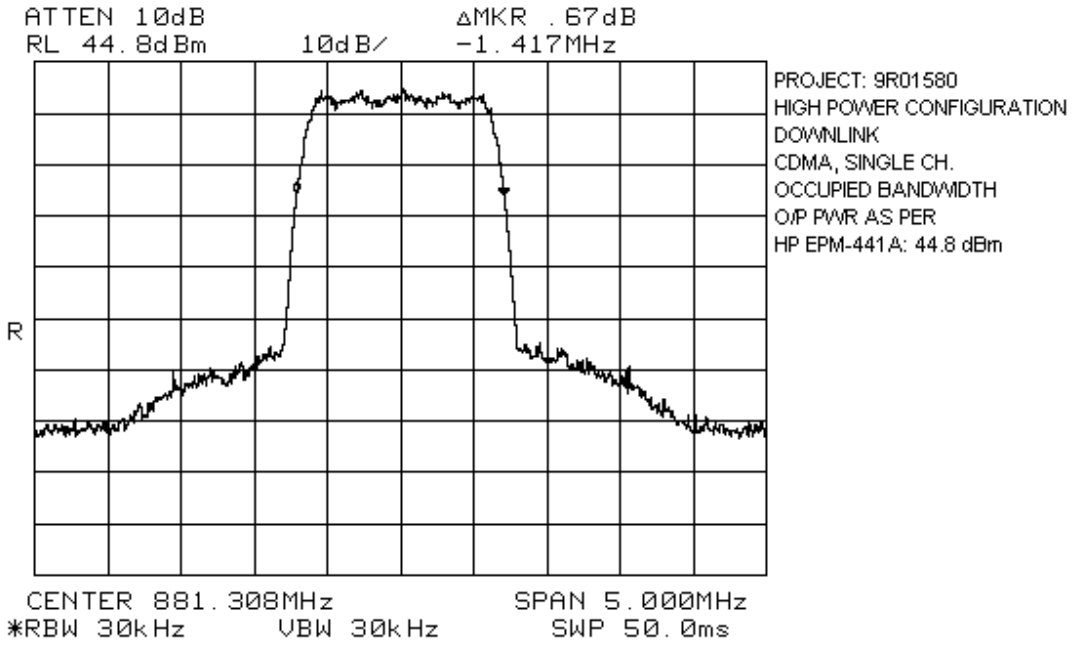
Test Results: Complies.

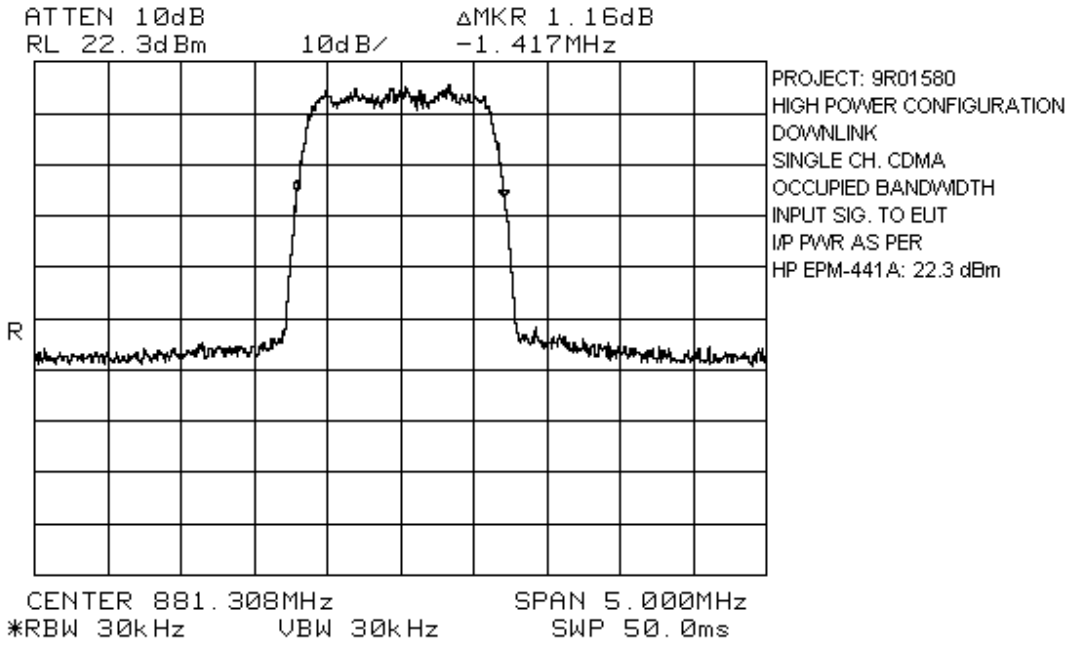
Test Data: See attached graph(s).

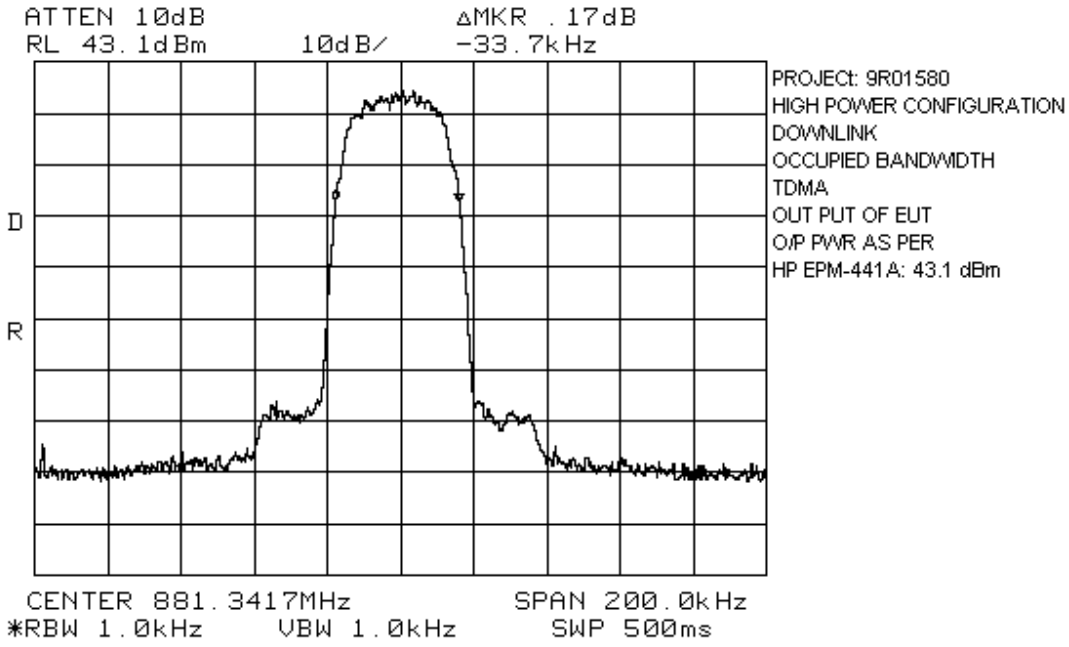
Digital Modulation – High Power

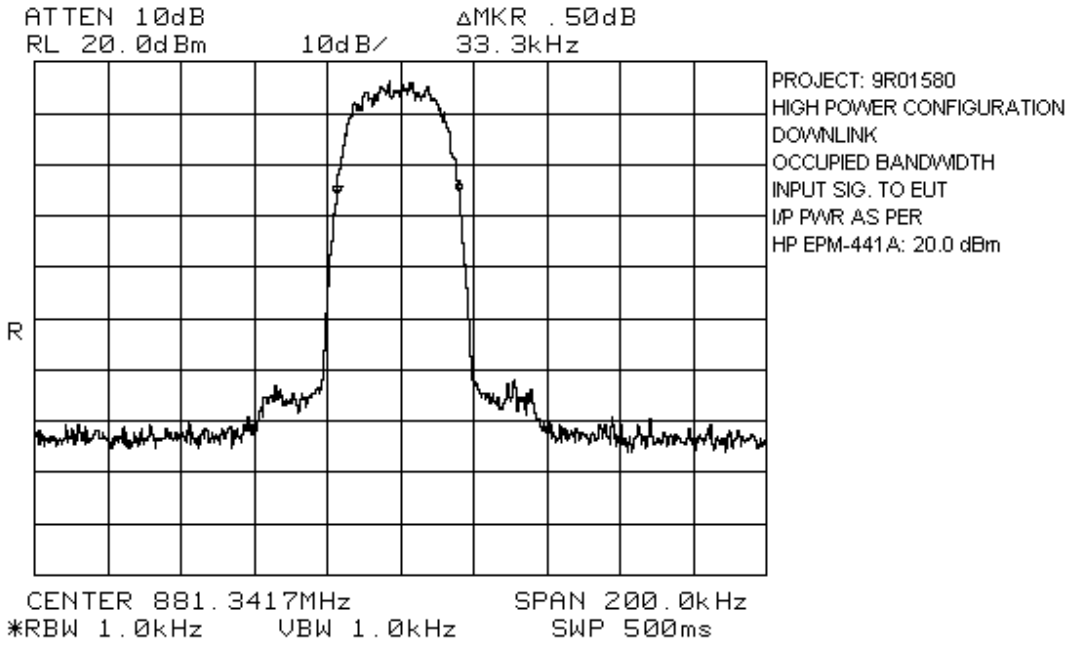


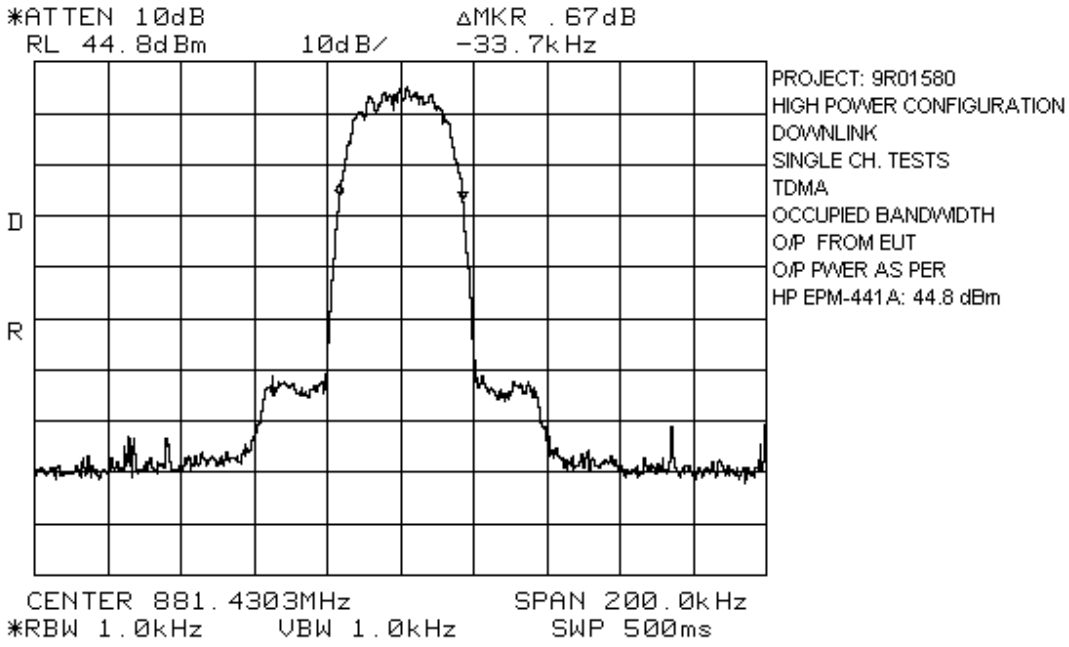

ATTEN 10dB
ΔMKR -1.16dB
RL 20.0dBm
10dB/
1.408MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
OCCUPIED BAND WIDTH
CDMA
INPUT SIG. TO EUT
I/P PWR AS PER
HP 8563E: 20.0 dBm
R
CENTER 881.458MHz
SPAN 5.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

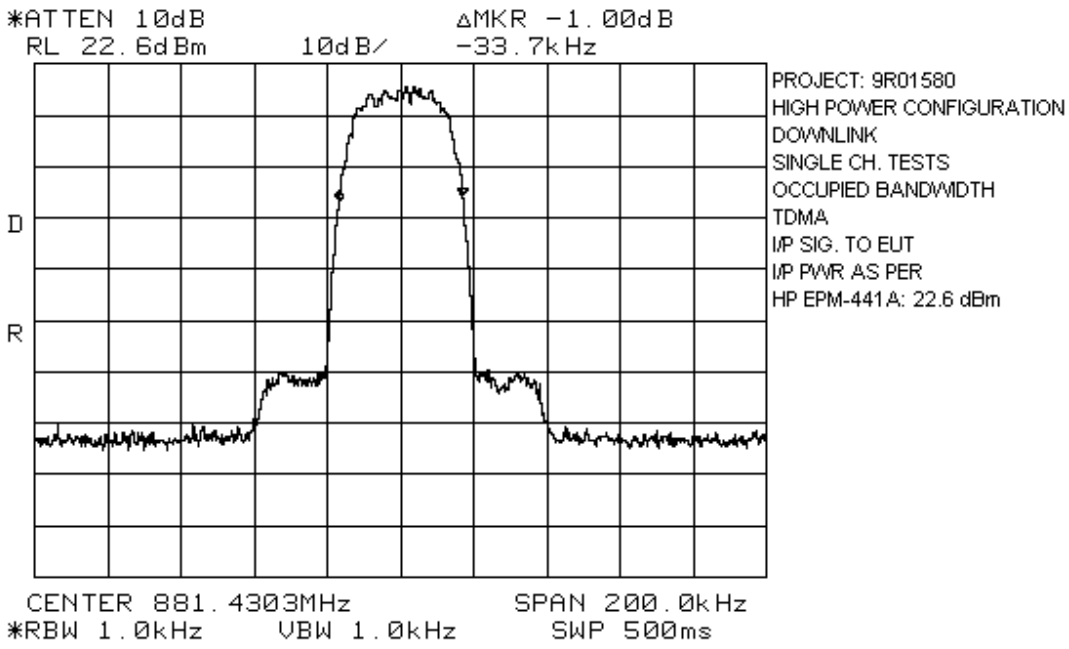

ATTEN 10dB
RL 44.8dBm
10dB/
ΔMKR .67dB
-1.417MHz
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
CDMA, SINGLE CH.
OCCUPIED BANDWIDTH
O/P PWR AS PER
HP EPM-441A: 44.8 dBm
CENTER 881.308MHz
SPAN 5.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms


ATTEN 10dB
RL 22.3dBm
10dB/
ΔMKR 1.16dB
-1.417MHz
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
SINGLE CH. CDMA
OCCUPIED BANDWIDTH
INPUT SIG. TO EUT
I/P PWR AS PER
HP EPM-441A: 22.3 dBm
CENTER 881.308MHz
SPAN 5.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

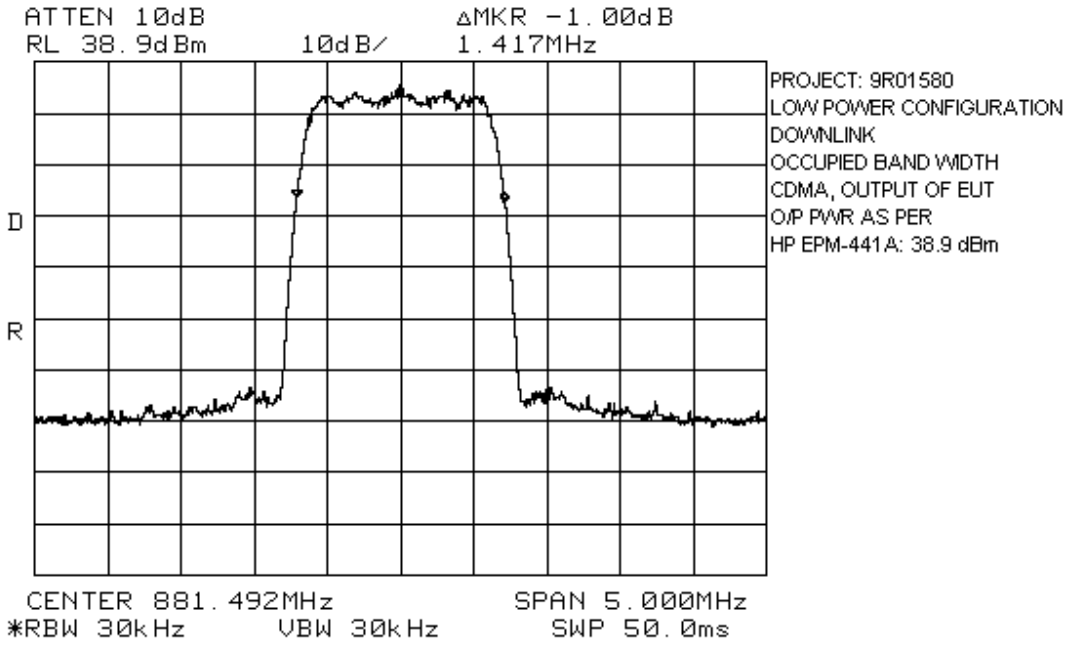

ATTEN 10dB
RL 43.1dBm
10dB/
ΔMKR .17dB
-33.7kHz
D
R
PROJECt: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
OCCUPIED BANDWIDTH
TDMA
OUT PUT OF EUT
O/P PWR AS PER
HP EPM-441A: 43.1 dBm
CENTER 881.3417MHz
SPAN 200.0kHz
*RBW 1.0kHz
VBW 1.0kHz
SWP 500ms

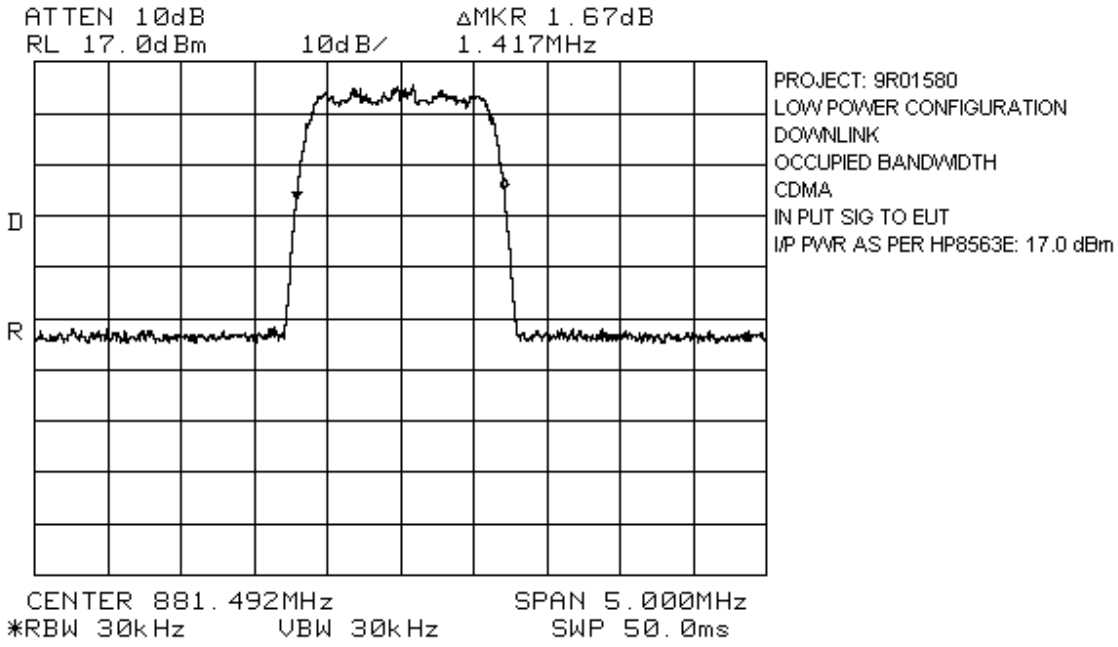

ATTEN 10dB
RL 20.0dBm
10dB/
ΔMKR .50dB
33.3kHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
OCCUPIED BANDWIDTH
INPUT SIG. TO EUT
I/P PWR AS PER
HP EPM-441A: 20.0 dBm
R
CENTER 881.3417MHz
SPAN 200.0kHz
*RBW 1.0kHz
VBW 1.0kHz
SWP 500ms

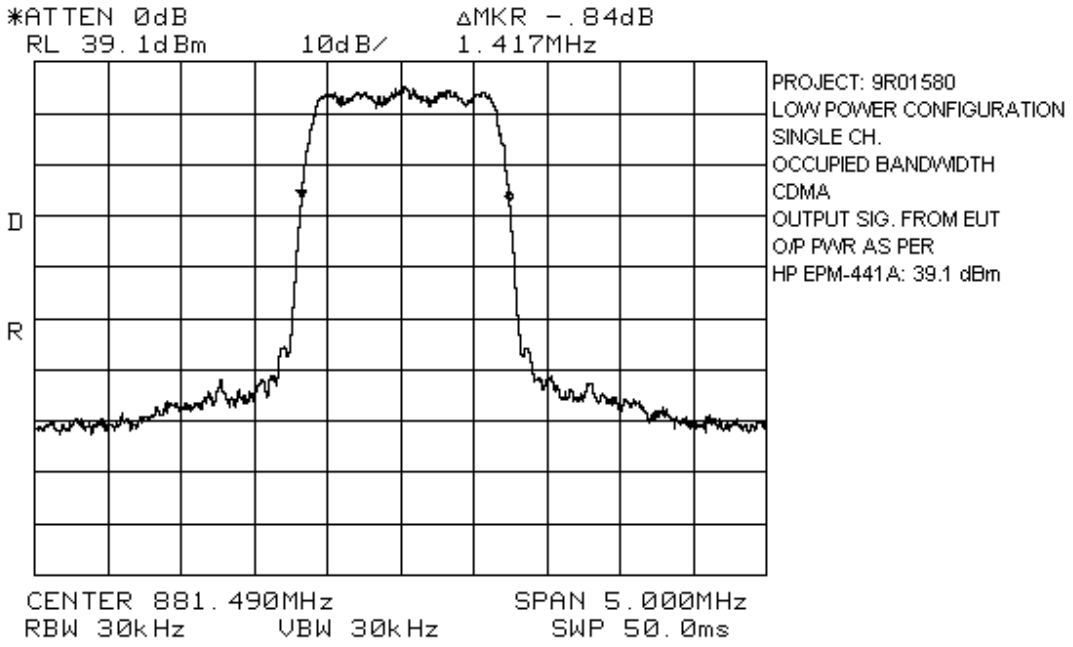

*ATTEN 10dB
RL 44.8dBm
10dB/
ΔMKR .67dB
-33.7kHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
SINGLE CH. TESTS
TDMA
OCCUPIED BANDWIDTH
O/P FROM EUT
O/P PWER AS PER
HP EPM-441A: 44.8 dBm
CENTER 881.4303MHz
SPAN 200.0kHz
*RBW 1.0kHz
VBW 1.0kHz
SWP 500ms

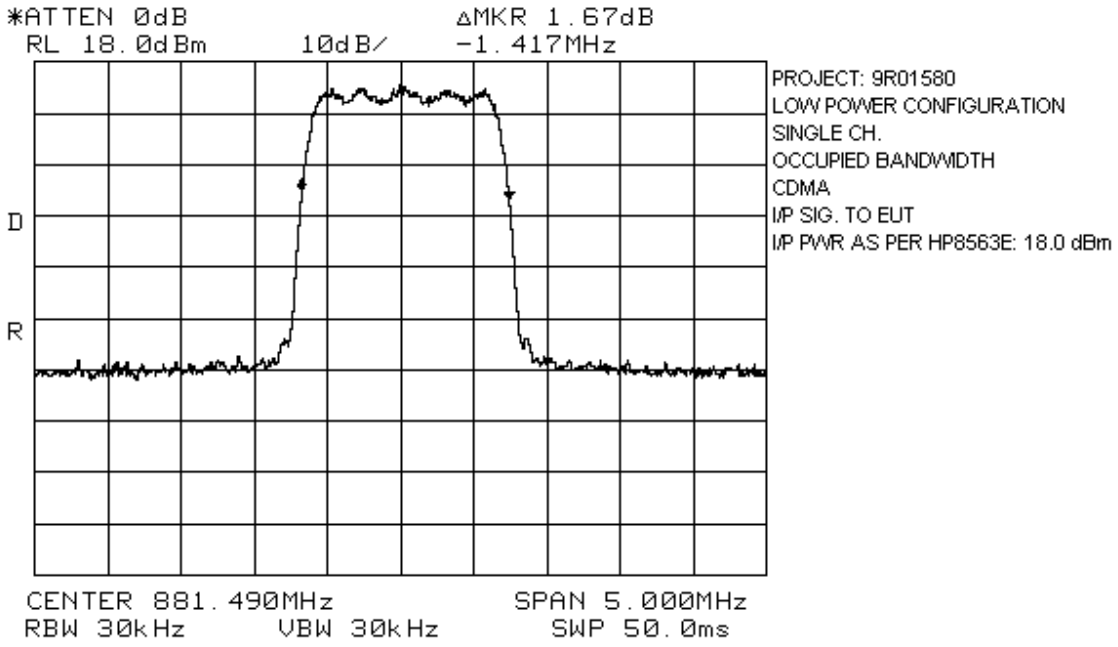

*ATTEN 10dB
RL 22.6dBm
10dB/
ΔMKR -1.00dB
-33.7kHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
SINGLE CH. TESTS
OCCUPIED BANDWIDTH
TDMA
I/P SIG. TO EUT
I/P PWR AS PER
HP EPM-441A: 22.6 dBm
CENTER 881.4303MHz
SPAN 200.0kHz
*RBW 1.0kHz
VBW 1.0kHz
SWP 500ms

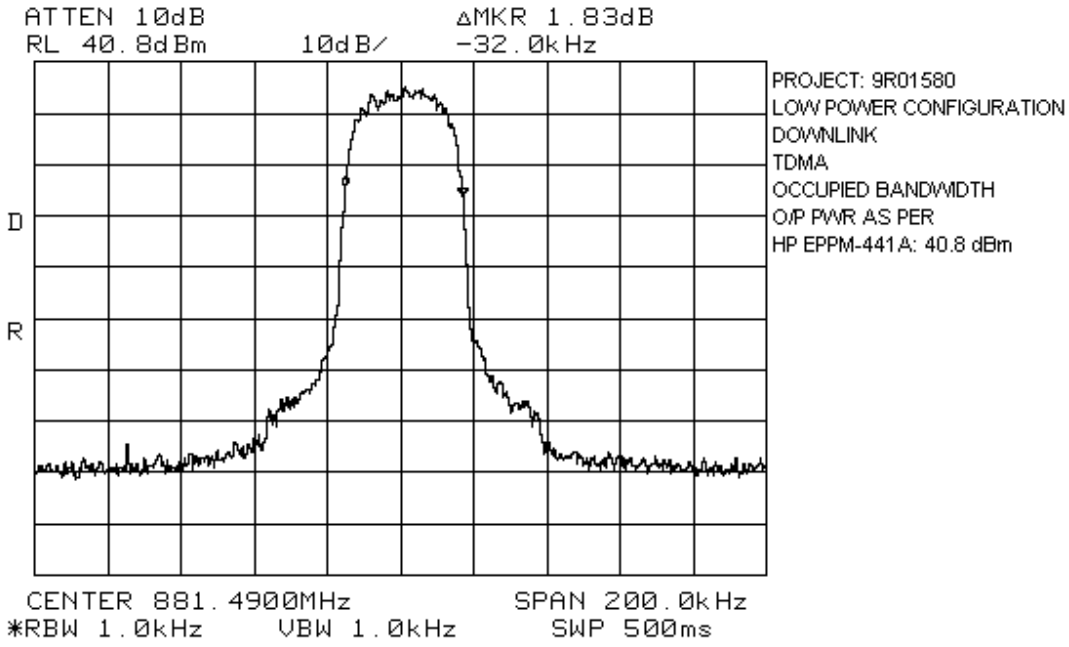
Digital Modulation – Low Power

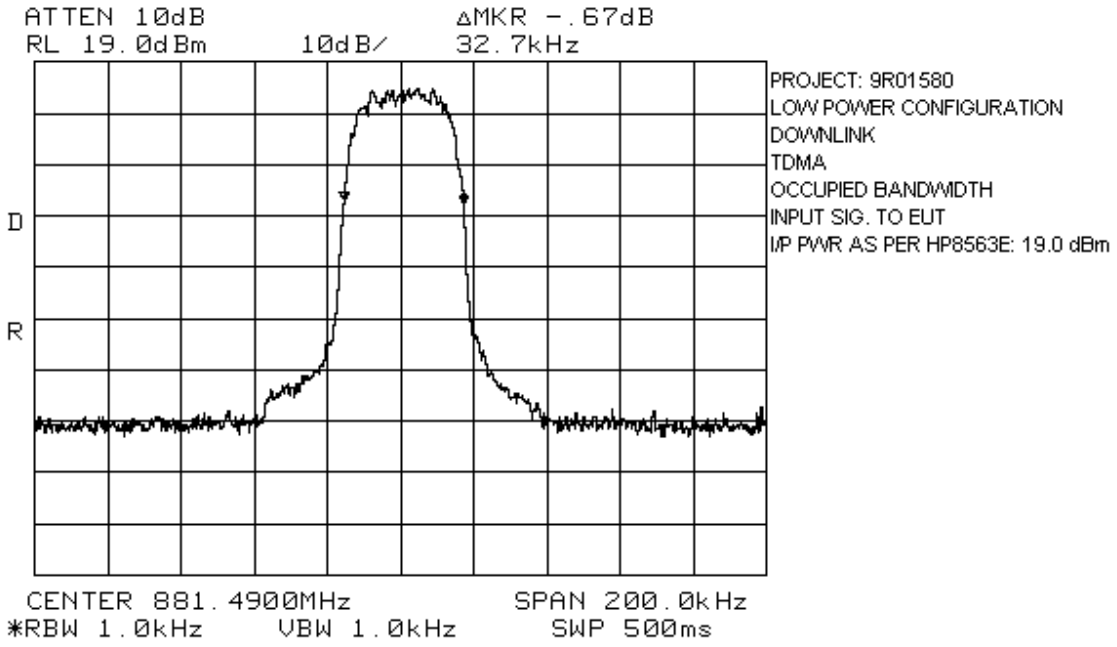


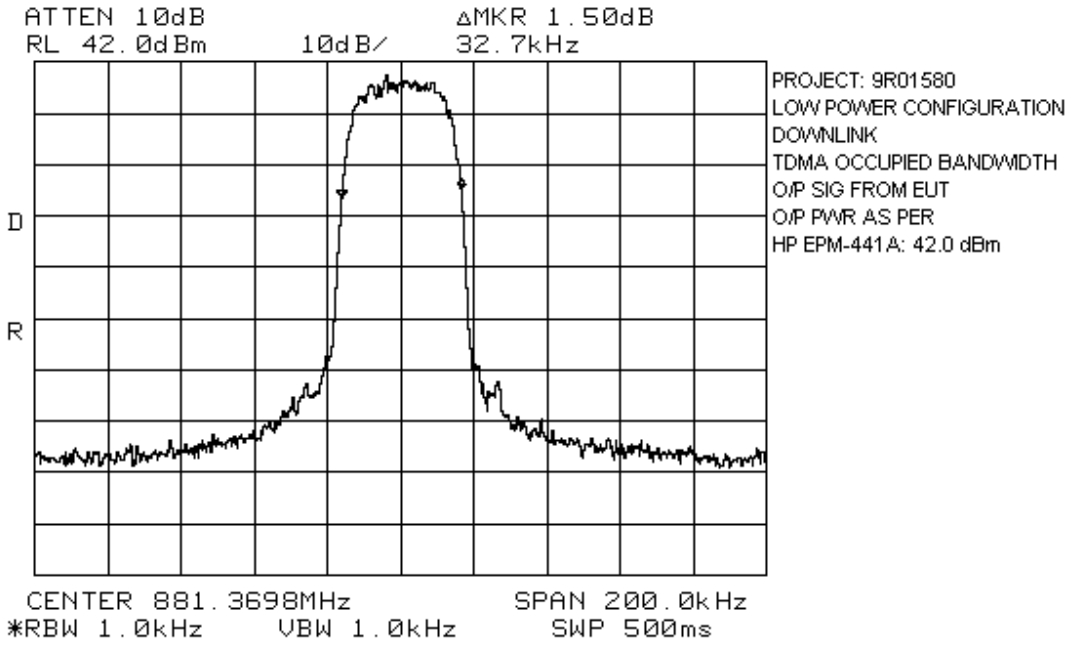

ATTEN 10dB
RL 17.0dBm
10dB/
ΔMKR 1.67dB
1.417MHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
OCCUPIED BANDWIDTH
CDMA
IN PUT SIG TO EUT
I/P PWR AS PER HP8563E: 17.0 dBm
CENTER 881.492MHz
SPAN 5.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

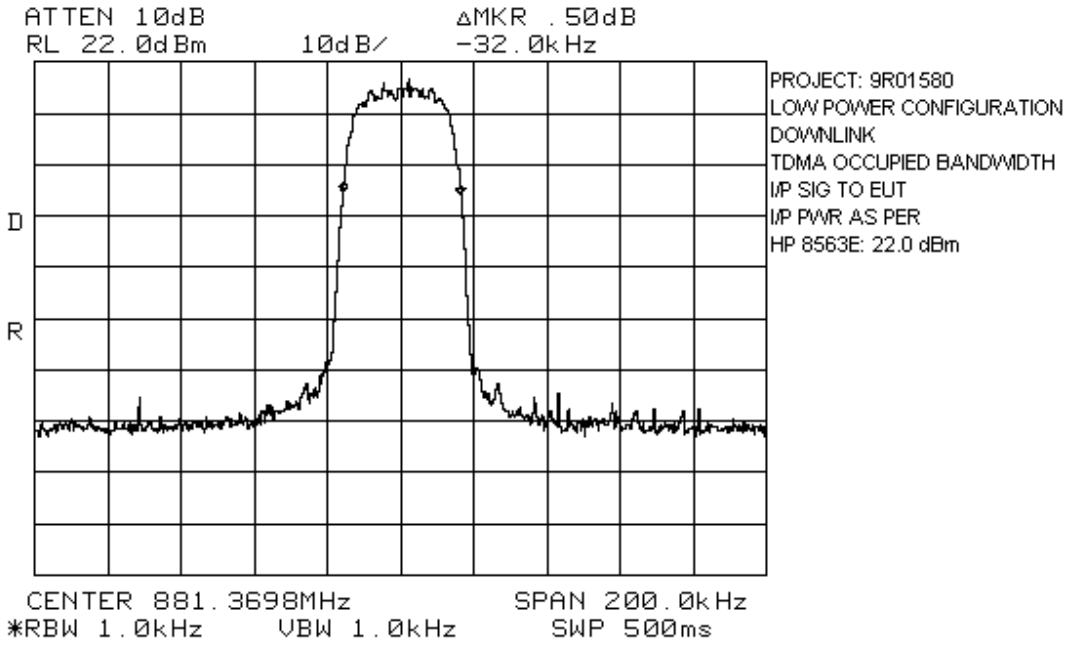

*ATTEN 0dB
RL 39.1dBm
10dB/
ΔMKR -.84dB
1.417MHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
SINGLE CH.
OCCUPIED BANDWIDTH
CDMA
OUTPUT SIG. FROM EUT
O/P PWR AS PER
HP EPM-441A: 39.1 dBm
CENTER 881.490MHz
SPAN 5.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms


*ATTEN 0dB
RL 18.0dBm
10dB/
ΔMKR 1.67dB
-1.417MHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
SINGLE CH.
OCCUPIED BANDWIDTH
CDMA
I/P SIG. TO EUT
I/P PWR AS PER HP8563E: 18.0 dBm
CENTER 881.490MHz
SPAN 5.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms


ATTEN 10dB
RL 40.8dBm
10dB/
ΔMKR 1.83dB
-32.0kHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
TDMA
OCCUPIED BANDWIDTH
O/P PWR AS PER
HP EPPM-441A: 40.8 dBm
CENTER 881.4900MHz
SPAN 200.0kHz
*RBW 1.0kHz
VBW 1.0kHz
SWP 500ms


ATTEN 10dB
RL 19.0dBm
10dB/
ΔMKR -.67dB
32.7kHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
TDMA
OCCUPIED BANDWIDTH
INPUT SIG. TO EUT
I/P PWR AS PER HP8563E: 19.0 dBm
CENTER 881.4900MHz
SPAN 200.0kHz
*RBW 1.0kHz
VBW 1.0kHz
SWP 500ms


ATTEN 10dB
RL 42.0dBm
10dB/
ΔMKR 1.50dB
32.7kHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
TDMA OCCUPIED BANDWIDTH
O/P SIG FROM EUT
O/P PWR AS PER
HP EPM-441A: 42.0 dBm
CENTER 881.3698MHz
SPAN 200.0kHz
*RBW 1.0kHz
VBW 1.0kHz
SWP 500ms


ATTEN 10dB
RL 22.0dBm
10dB/
ΔMKR .50dB
-32.0kHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
TDMA OCCUPIED BANDWIDTH
I/P SIG TO EUT
I/P PWR AS PER
HP 8563E: 22.0 dBm
CENTER 881.3698MHz
SPAN 200.0kHz
*RBW 1.0kHz
VBW 1.0kHz
SWP 500ms

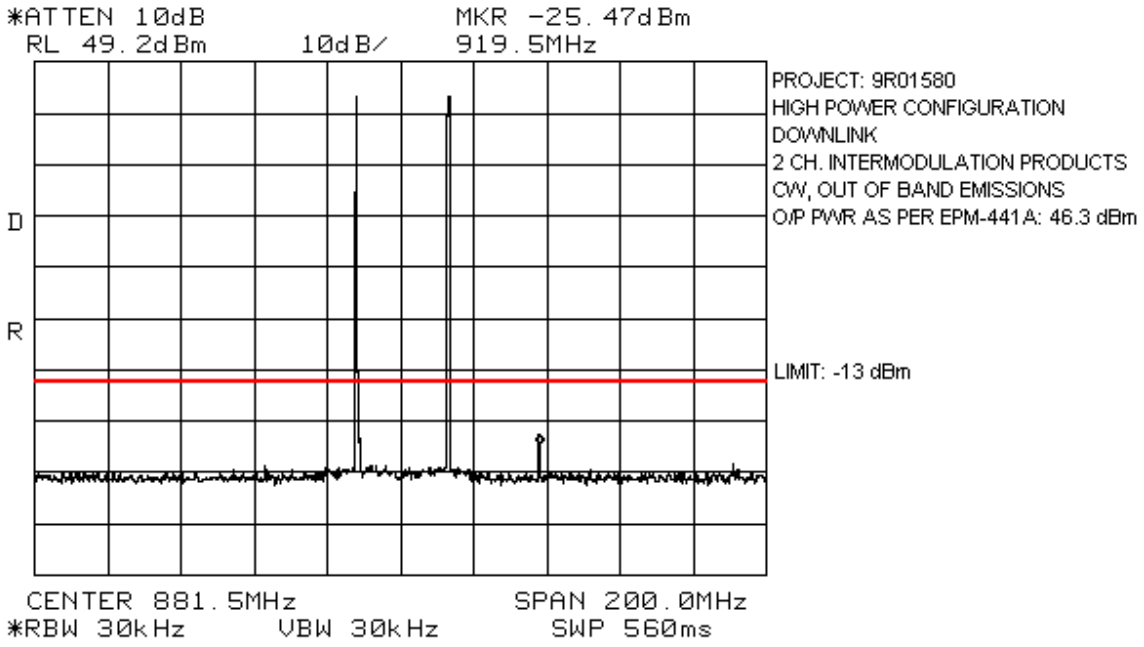
Section 5. Spurious Emissions At Antenna Terminals

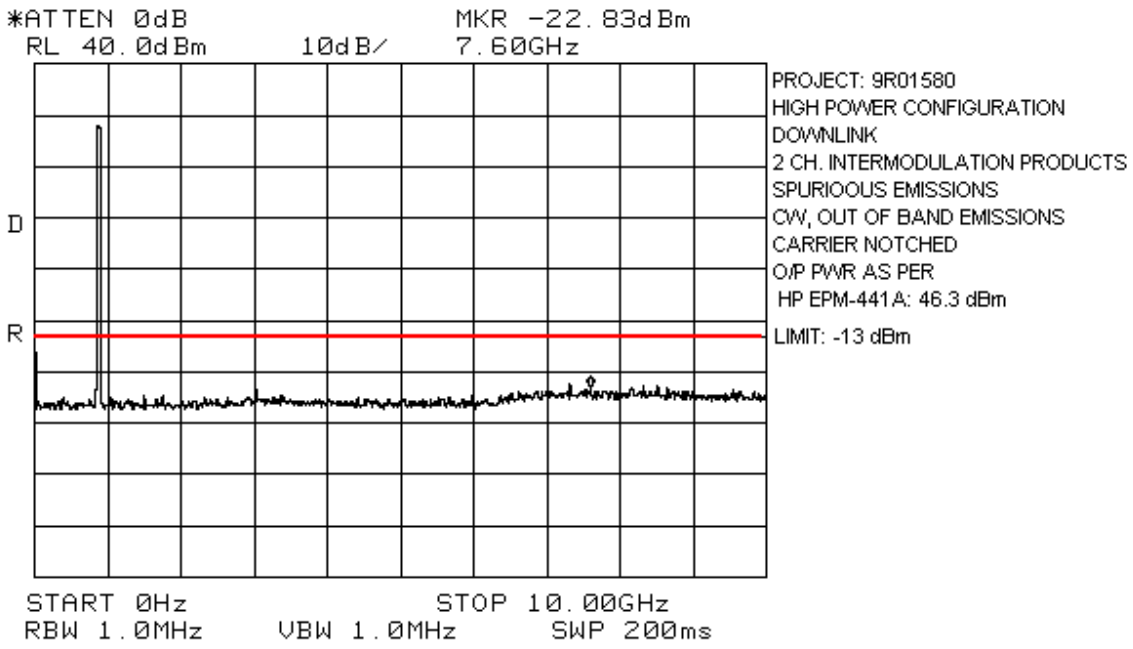
NAME OF TEST: Spurious Emissions At Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Kevin Carr	DATE: June 25, 1999

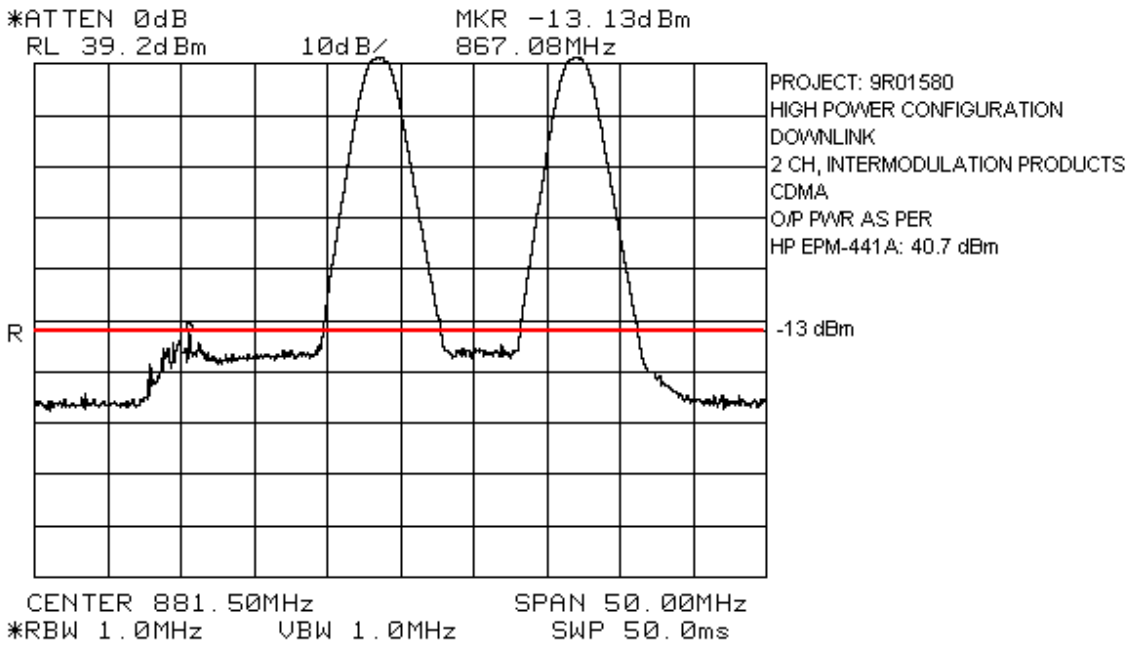
Test Results: Complies.

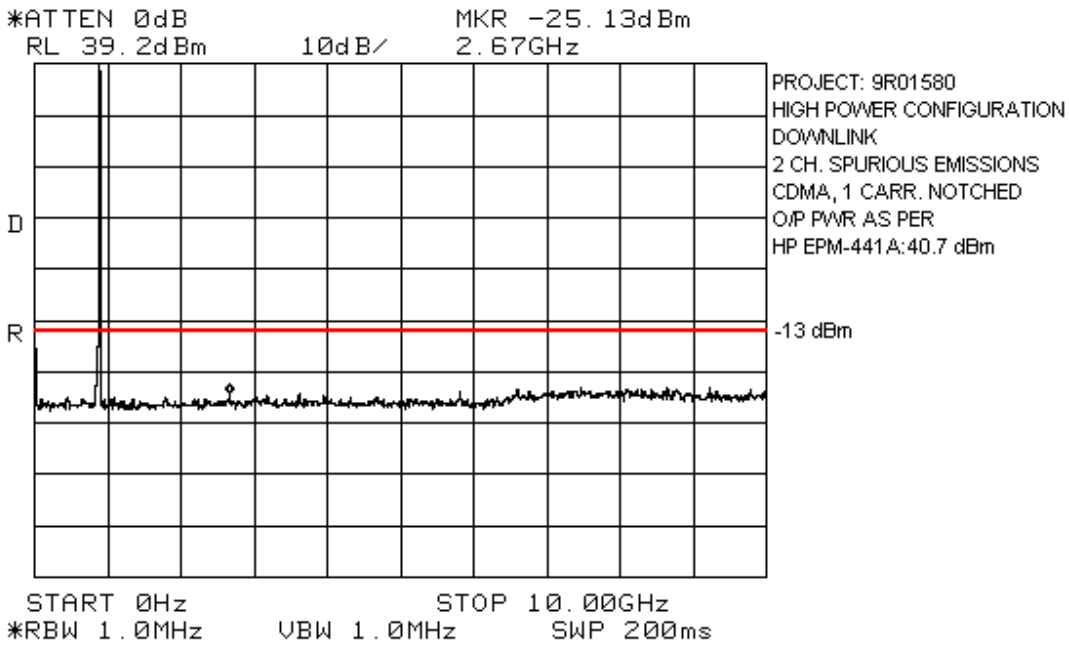
Test Data: See attached graphs.

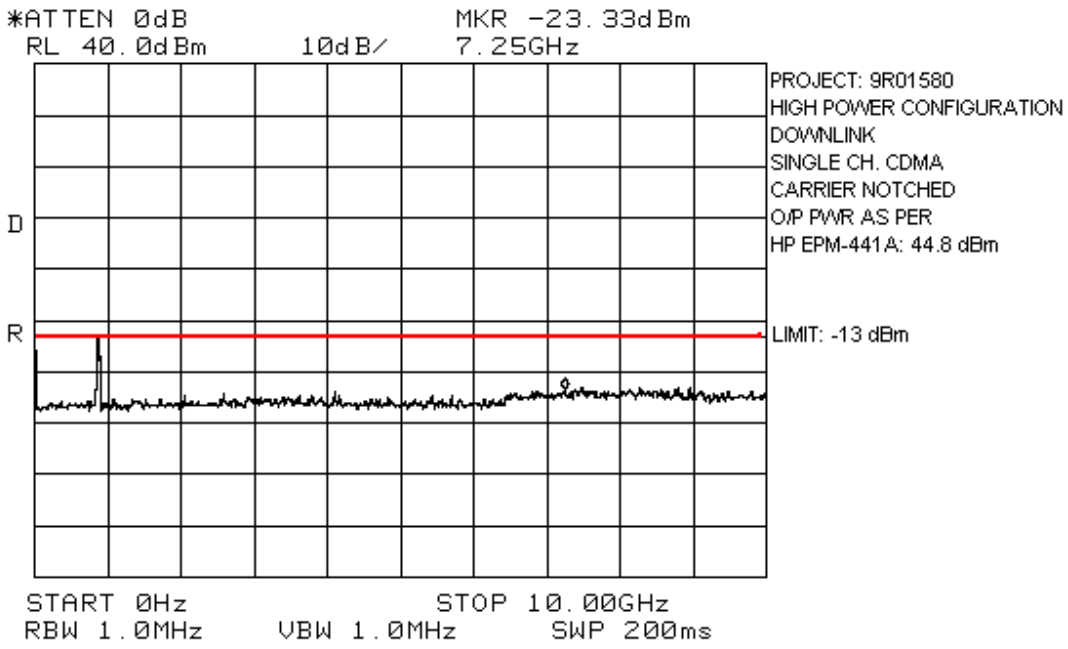
Spurious Emissions At Antenna Terminals: High Power

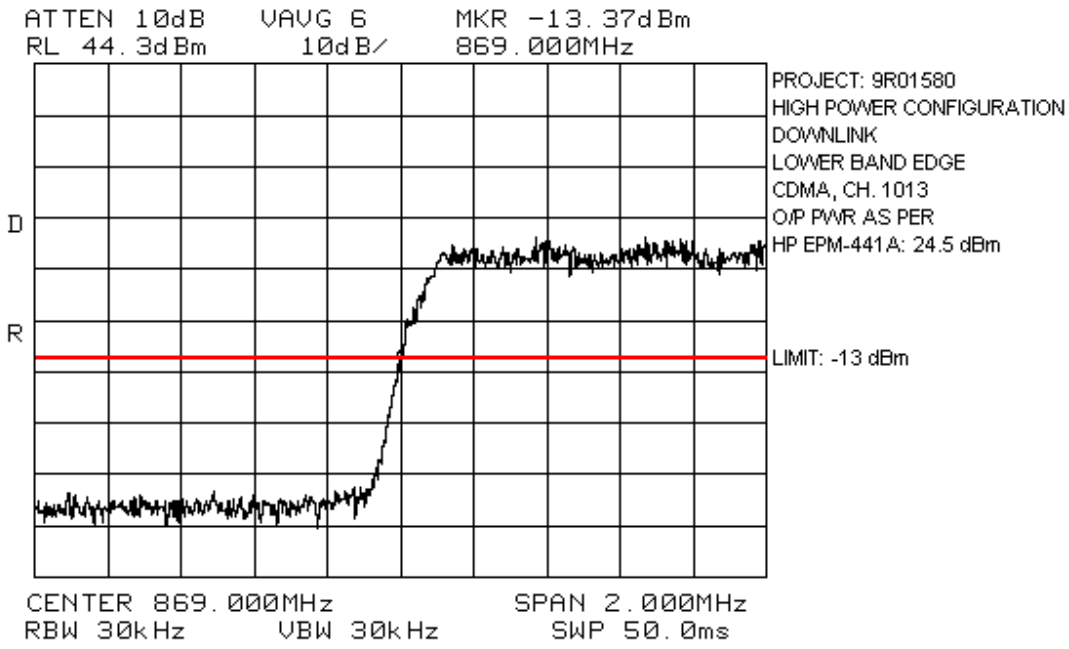


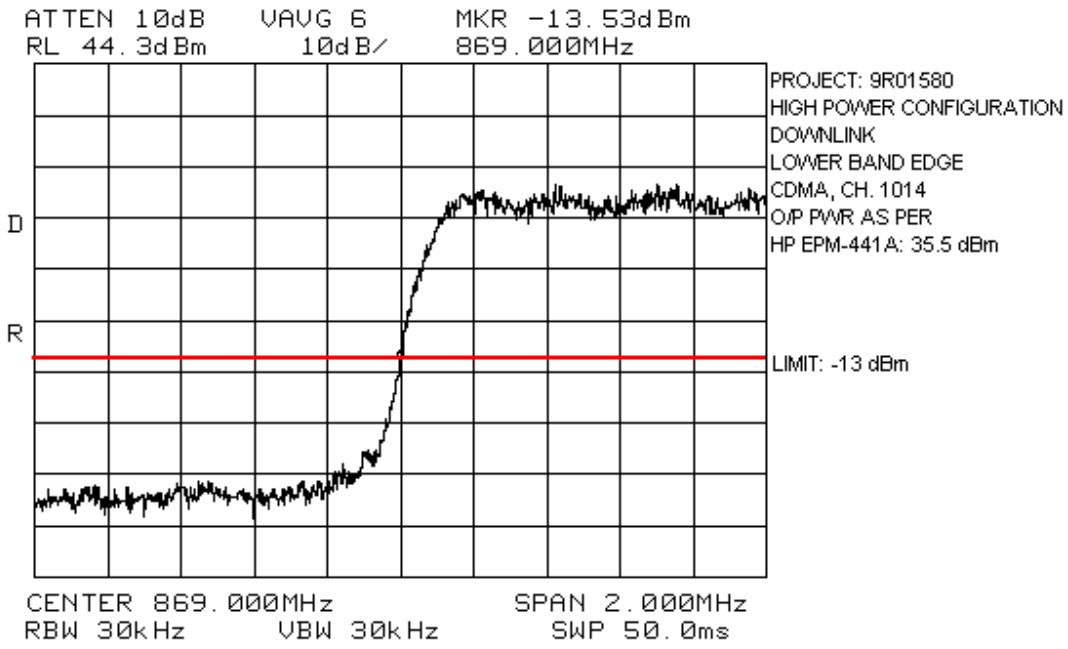

*ATTEN 0dB
MKR -22.83dBm
RL 40.0dBm
10dB/
7.60GHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
2 CH. INTERMODULATION PRODUCTS
SPURIOOUS EMISSIONS
CW, OUT OF BAND EMISSIONS
CARRIER NOTCHED
O/P PWR AS PER
HP EPM-441A: 46.3 dBm
LIMIT: -13 dBm
START 0Hz
STOP 10.00GHz
RBW 1.0MHz
VBW 1.0MHz
SWP 200ms

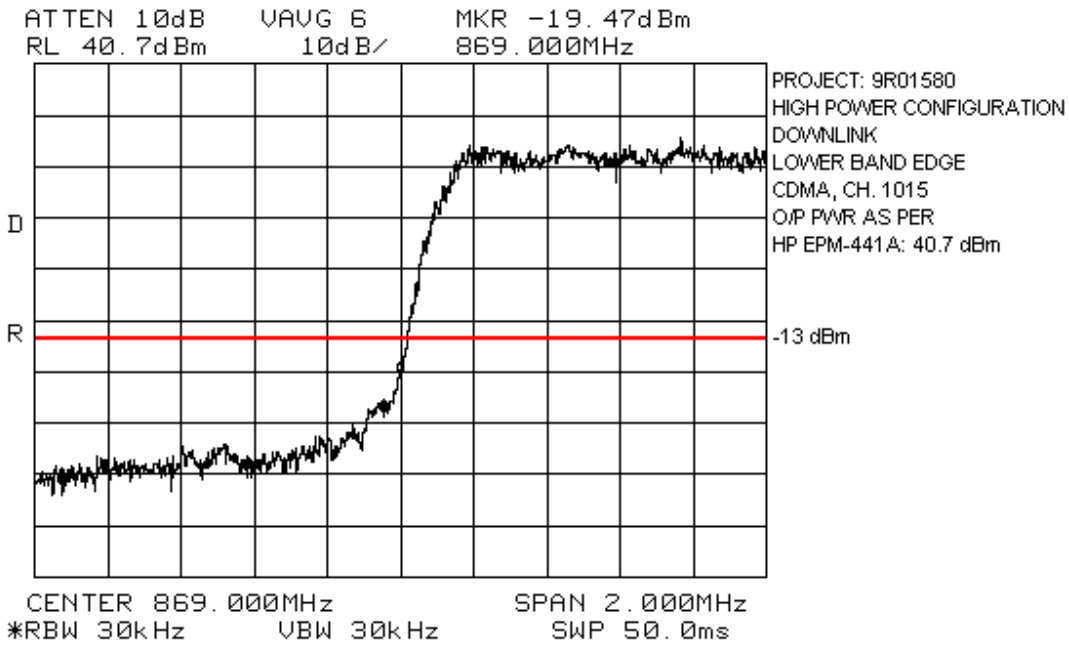

*ATTEN 0dB
RL 39.2dBm
10dB/
MKR -13.13dBm
867.08MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
2 CH, INTERMODULATION PRODUCTS
CDMA
O/P PWR AS PER
HP EPM-441A: 40.7 dBm
R
-13 dBm
CENTER 881.50MHz
SPAN 50.00MHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms

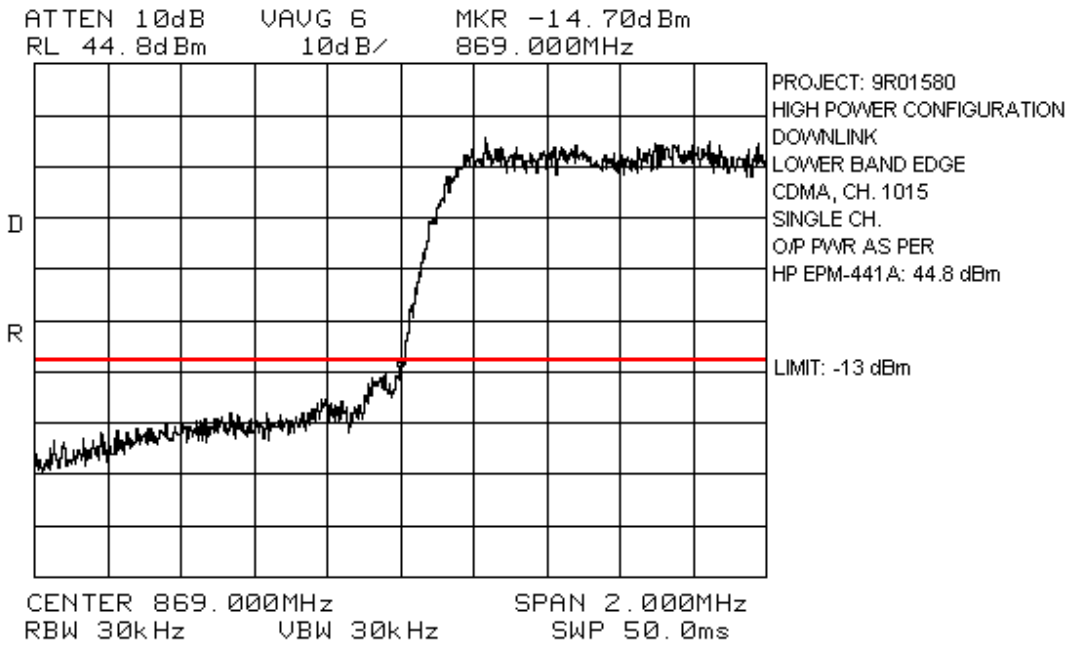

*ATTEN 0dB
MKR -25.13dBm
RL 39.2dBm
10dB/
2.67GHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
2 CH. SPURIOUS EMISSIONS
CDMA, 1 CARR. NOTCHED
O/P PWR AS PER
HP EPM-441A:40.7 dBm
D
R
-13 dBm
START 0Hz
STOP 10.00GHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 200ms

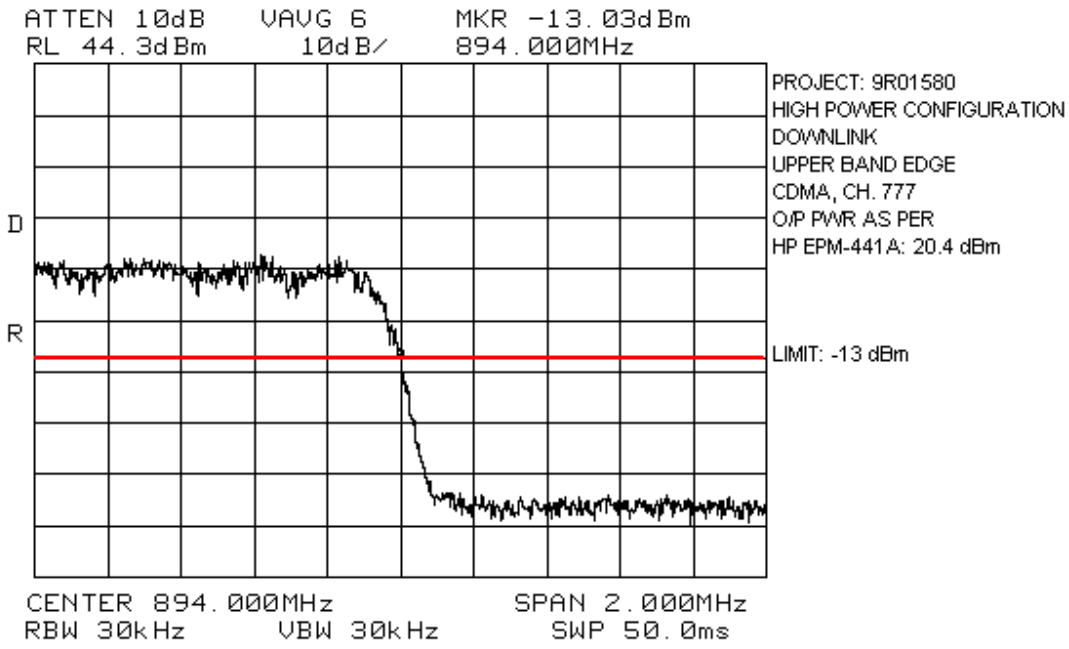

*ATTEN 0dB
MKR -23.33dBm
RL 40.0dBm
10dB/
7.25GHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
SINGLE CH. CDMA
CARRIER NOTCHED
O/P PWR AS PER
HP EPM-441A: 44.8 dBm
LIMIT: -13 dBm
START 0Hz
STOP 10.00GHz
RBW 1.0MHz
VBW 1.0MHz
SWP 200ms

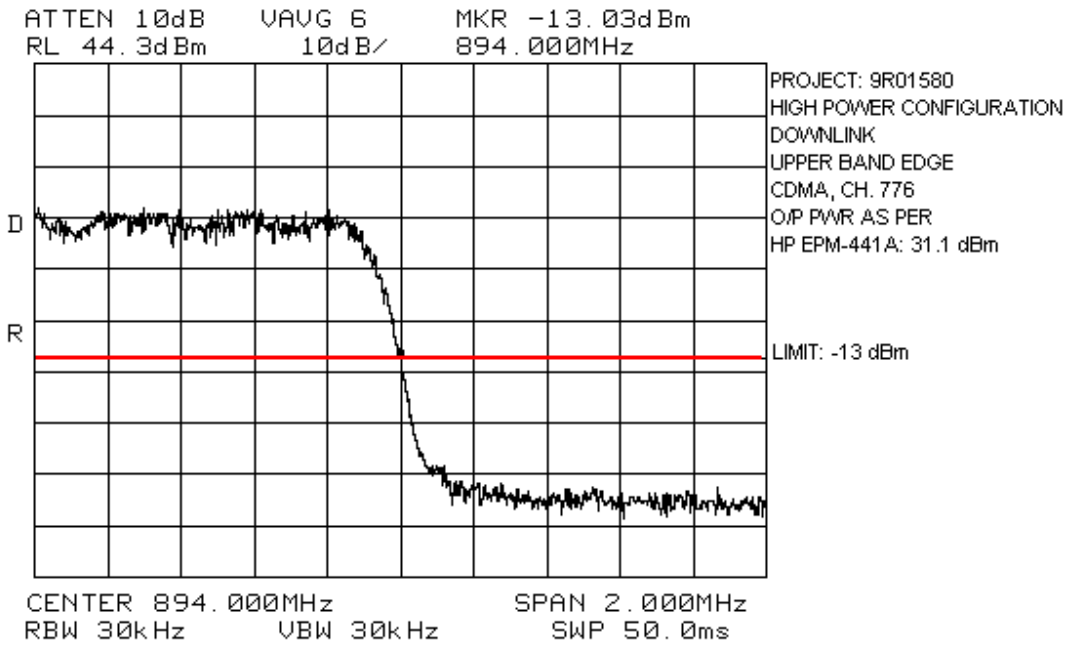

ATTEN 10dB
RL 44.3dBm
VAVG 6
10dB/
MKR -13.37dBm
869.000MHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
LOWER BAND EDGE
CDMA, CH. 1013
O/P PWR AS PER
HP EPM-441A: 24.5 dBm
LIMIT: -13 dBm
CENTER 869.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

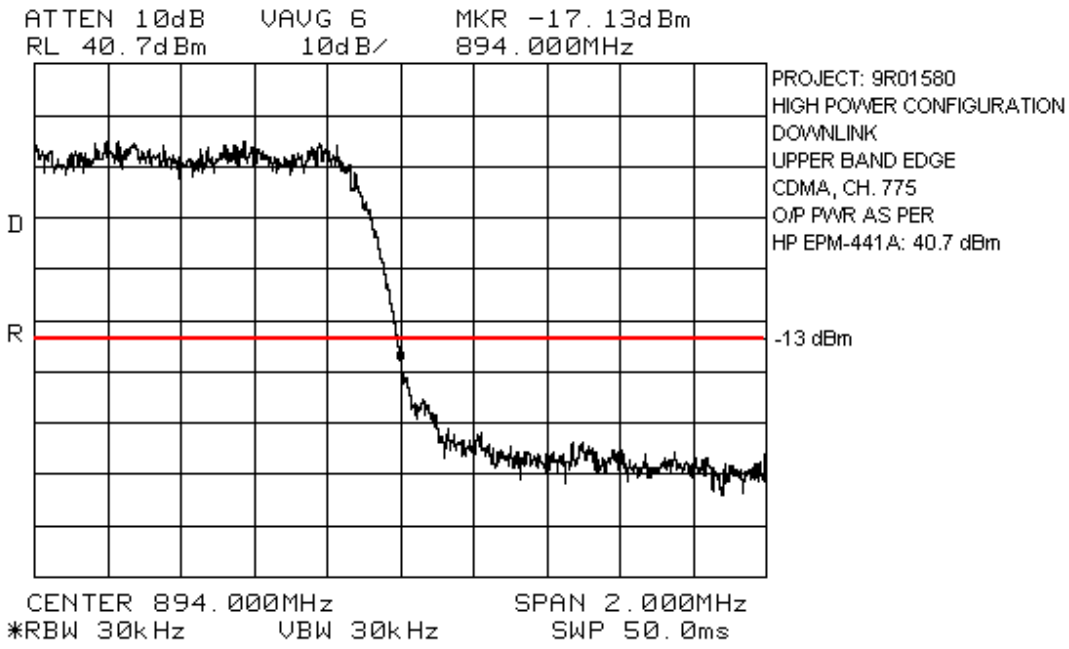

ATTEN 10dB
RL 44.3dBm
VAVG 6
10dB/
MKR -13.53dBm
869.000MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
LOWER BAND EDGE
CDMA, CH. 1014
O/P PWR AS PER
HP EPM-441A: 35.5 dBm
D
R
LIMIT: -13 dBm
CENTER 869.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

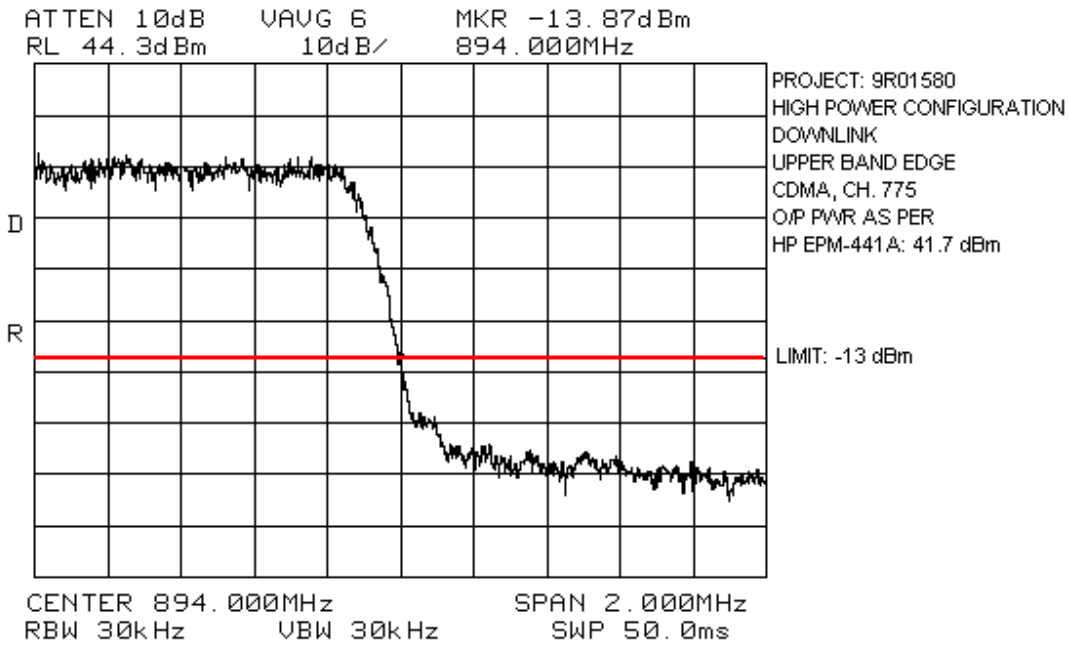

ATTEN 10dB
RL 40.7dBm
VAVG 6
10dB/
MKR -19.47dBm
869.000MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
LOWER BAND EDGE
CDMA, CH. 1015
O/P PWR AS PER
HP EPM-441A: 40.7 dBm
D
R
-13 dBm
CENTER 869.000MHz
SPAN 2.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

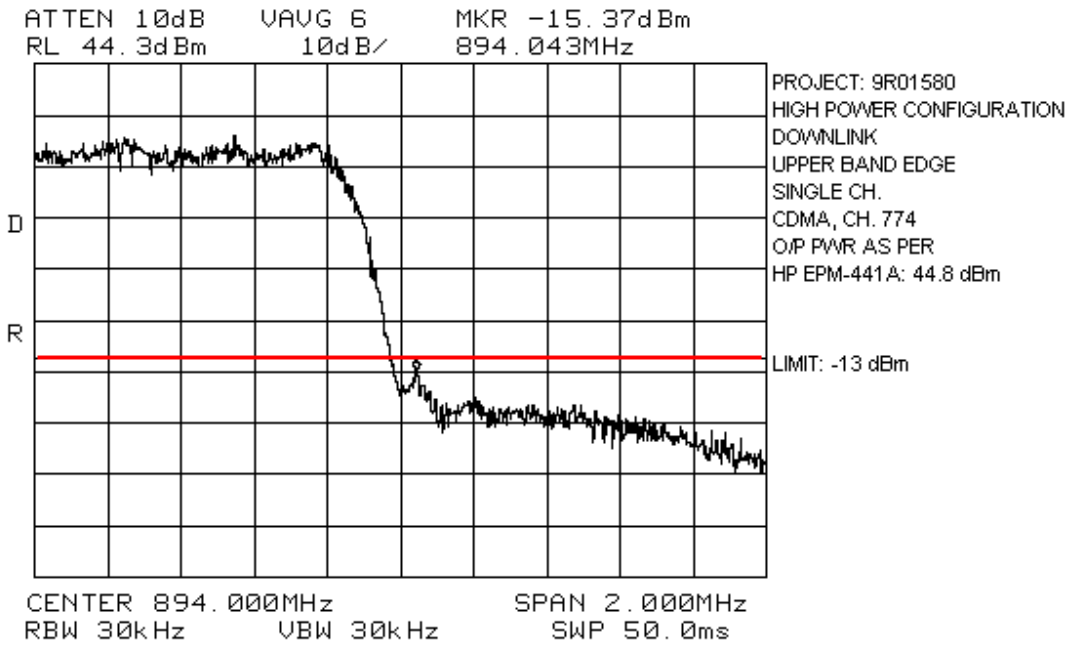

ATTEN 10dB
RL 44.8dBm
VAVG 6
10dB/
MKR -14.70dBm
869.000MHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
LOWER BAND EDGE
CDMA, CH. 1015
SINGLE CH.
O/P PWR AS PER
HP EPM-441A: 44.8 dBm
LIMIT: -13 dBm
CENTER 869.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

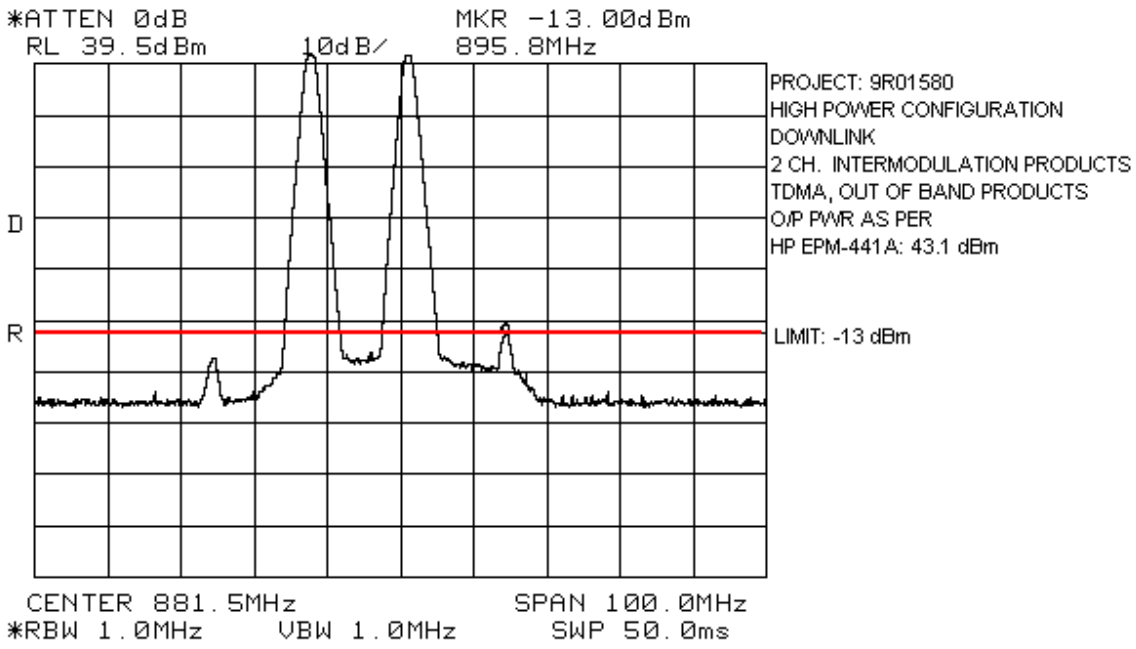

ATTEN 10dB
RL 44.3dBm
VAVG 6
10dB/
MKR -13.03dBm
894.000MHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
UPPER BAND EDGE
CDMA, CH. 777
O/P PWR AS PER
HP EPM-441A: 20.4 dBm
LIMIT: -13 dBm
CENTER 894.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

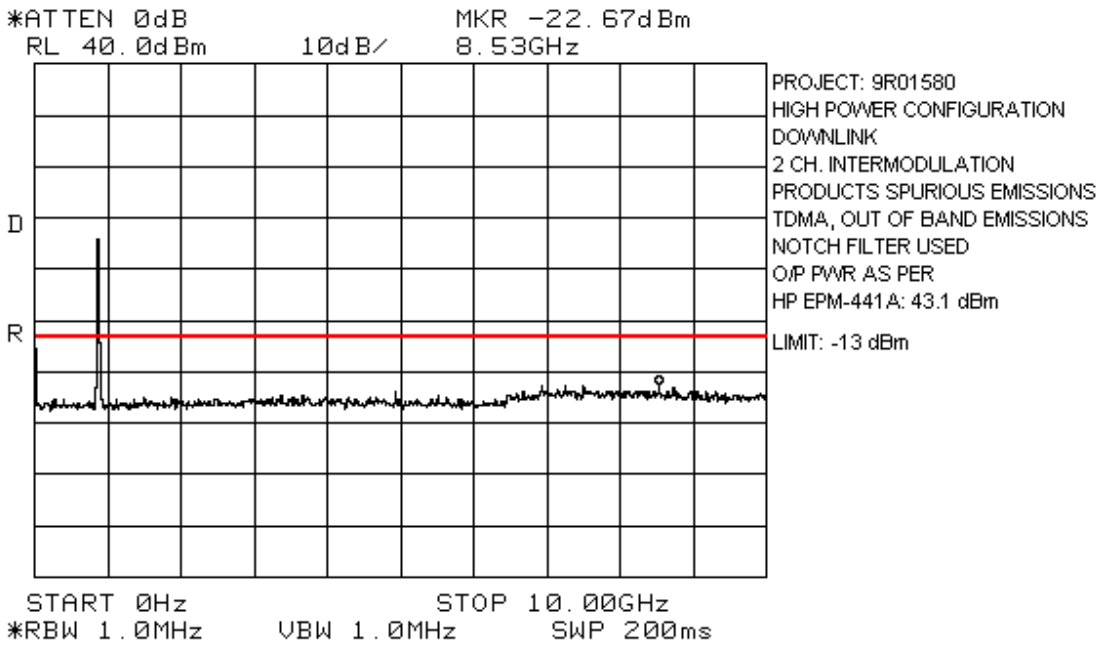

ATTEN 10dB
VAVG 6
MKR -13.03dBm
RL 44.3dBm
10dB/
894.000MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
UPPER BAND EDGE
CDMA, CH. 776
O/P PWR AS PER
HP EPM-441A: 31.1 dBm
D
R
LIMIT: -13 dBm
CENTER 894.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

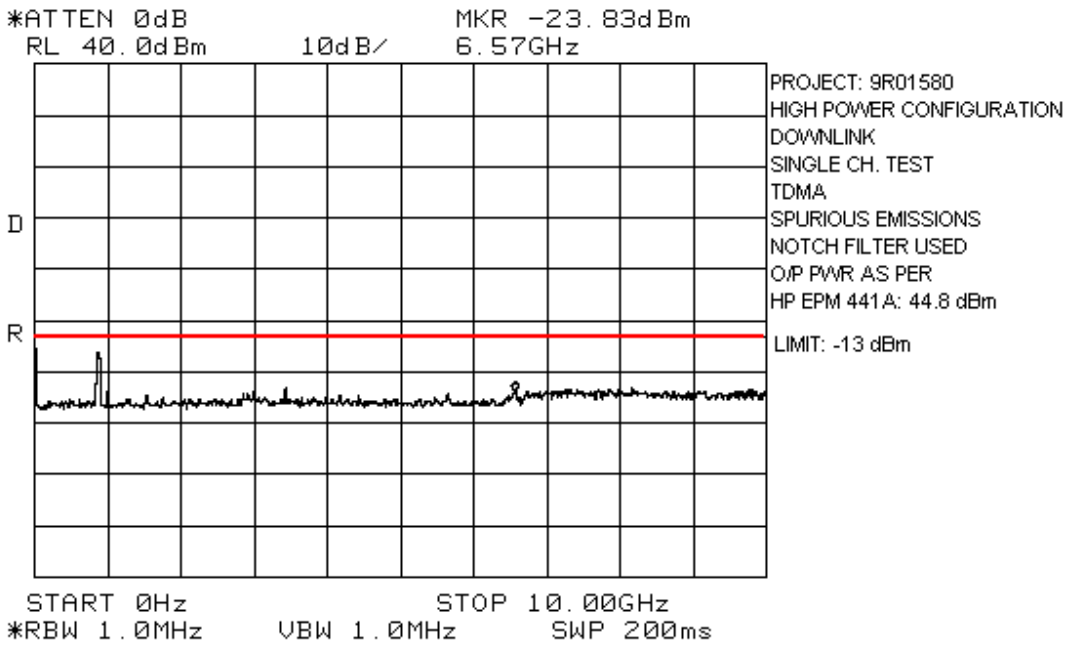

ATTEN 10dB
RL 40.7dBm
VAVG 6
10dB/
MKR -17.13dBm
894.000MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
UPPER BAND EDGE
CDMA, CH. 775
O/P PWR AS PER
HP EPM-441A: 40.7 dBm
D
R
-13 dBm
CENTER 894.000MHz
SPAN 2.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

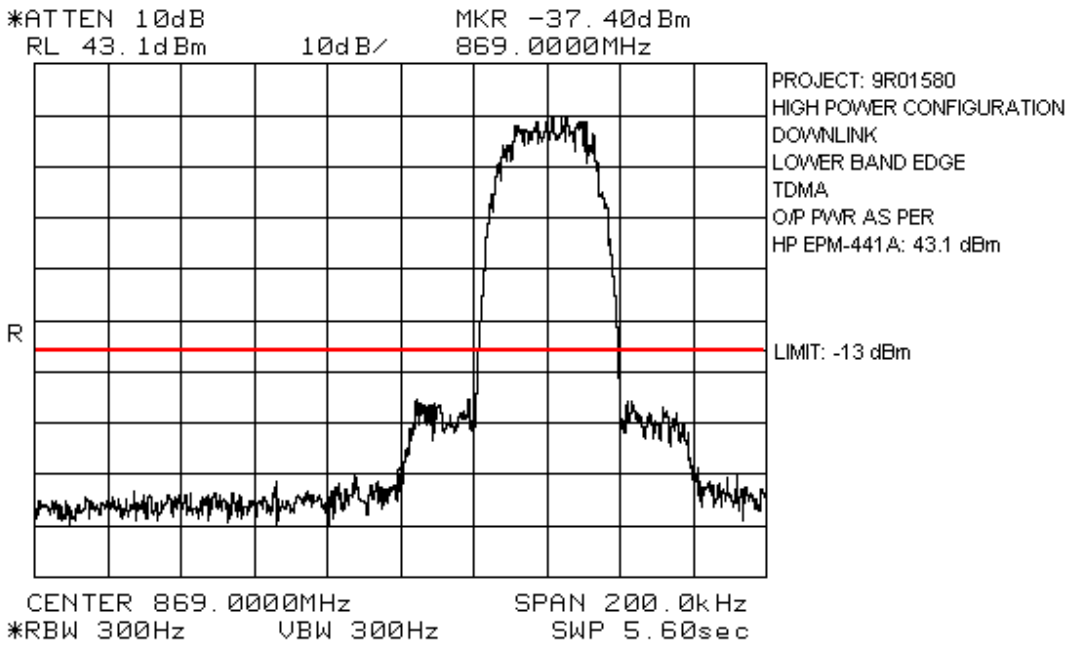

ATTEN 10dB
VAVG 6
MKR -13.87dBm
RL 44.3dBm
10dB/
894.000MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
UPPER BAND EDGE
CDMA, CH. 775
O/P PWR AS PER
HP EPM-441A: 41.7 dBm
D
R
LIMIT: -13 dBm
CENTER 894.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

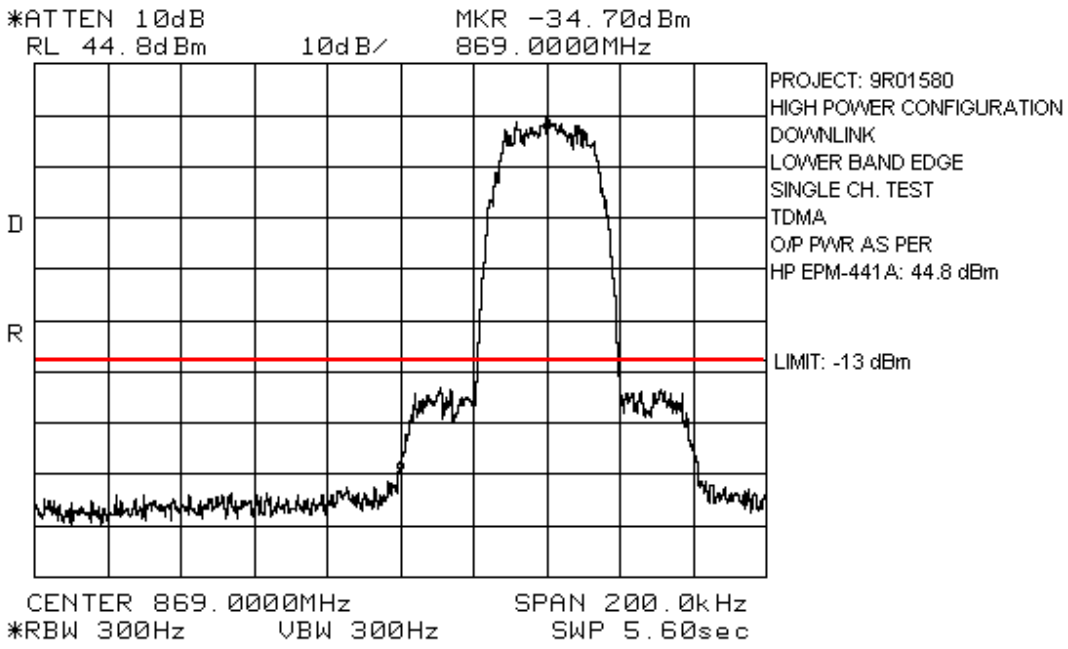

ATTEN 10dB
RL 44.3dBm
VAVG 6
10dB/
MKR -15.37dBm
894.043MHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
UPPER BAND EDGE
SINGLE CH.
CDMA, CH. 774
O/P PWR AS PER
HP EPM-441A: 44.8 dBm
LIMIT: -13 dBm
CENTER 894.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

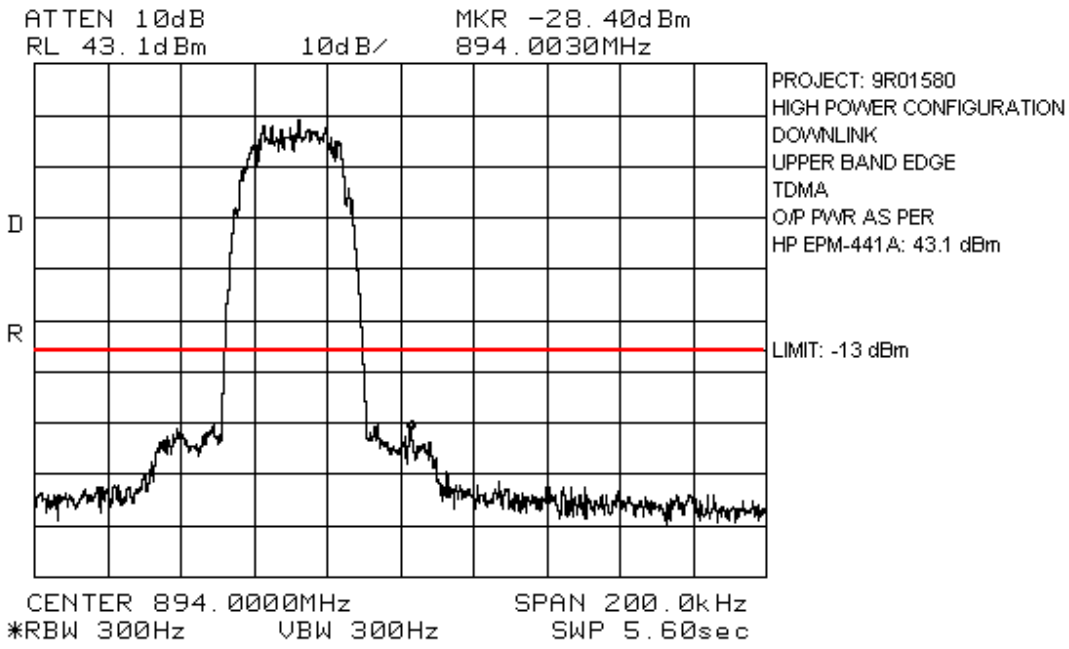

*ATTEN 0dB
RL 39.5dBm
10dB/
MKR -13.00dBm
895.8MHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
2 CH. INTERMODULATION PRODUCTS
TDMA, OUT OF BAND PRODUCTS
O/P PWR AS PER
HP EPM-441A: 43.1 dBm
LIMIT: -13 dBm
CENTER 881.5MHz
SPAN 100.0MHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms

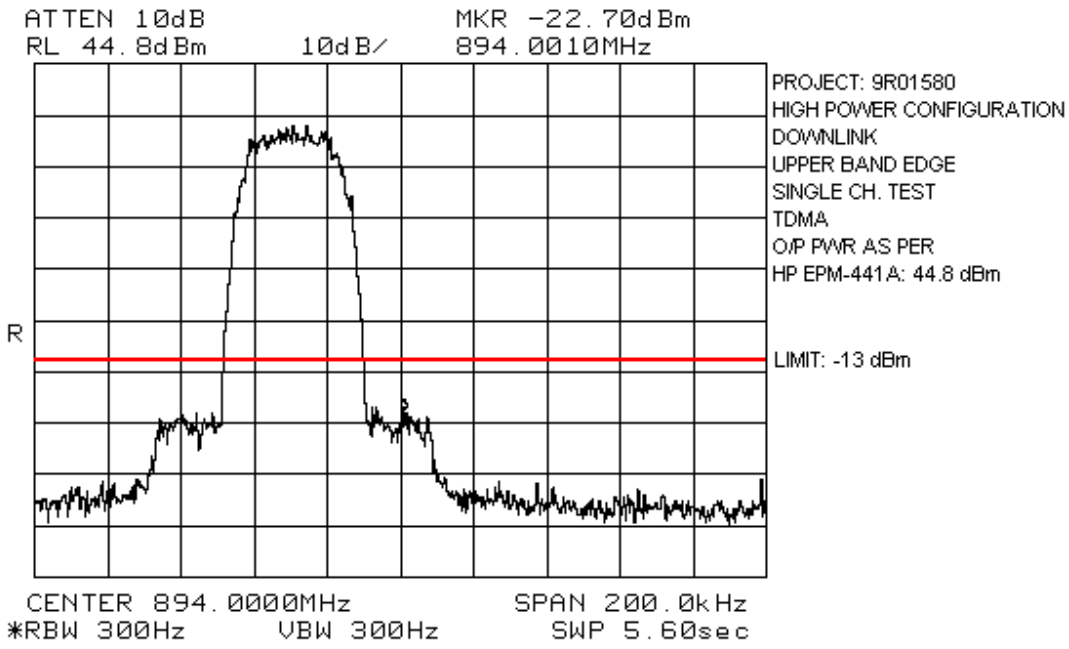

*ATTEN 0dB
MKR -22.67dBm
RL 40.0dBm
10dB/
8.53GHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
2 CH. INTERMODULATION
PRODUCTS SPURIOUS EMISSIONS
TDMA, OUT OF BAND EMISSIONS
NOTCH FILTER USED
O/P PWR AS PER
HP EPM-441A: 43.1 dBm
LIMIT: -13 dBm
START 0Hz
STOP 10.00GHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 200ms


*ATTEN 0dB
MKR -23.83dBm
RL 40.0dBm
10dB/
6.57GHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
SINGLE CH. TEST
TDMA
SPURIOUS EMISSIONS
NOTCH FILTER USED
O/P PWR AS PER
HP EPM 441A: 44.8 dBm
LIMIT: -13 dBm
START 0Hz
STOP 10.00GHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 200ms

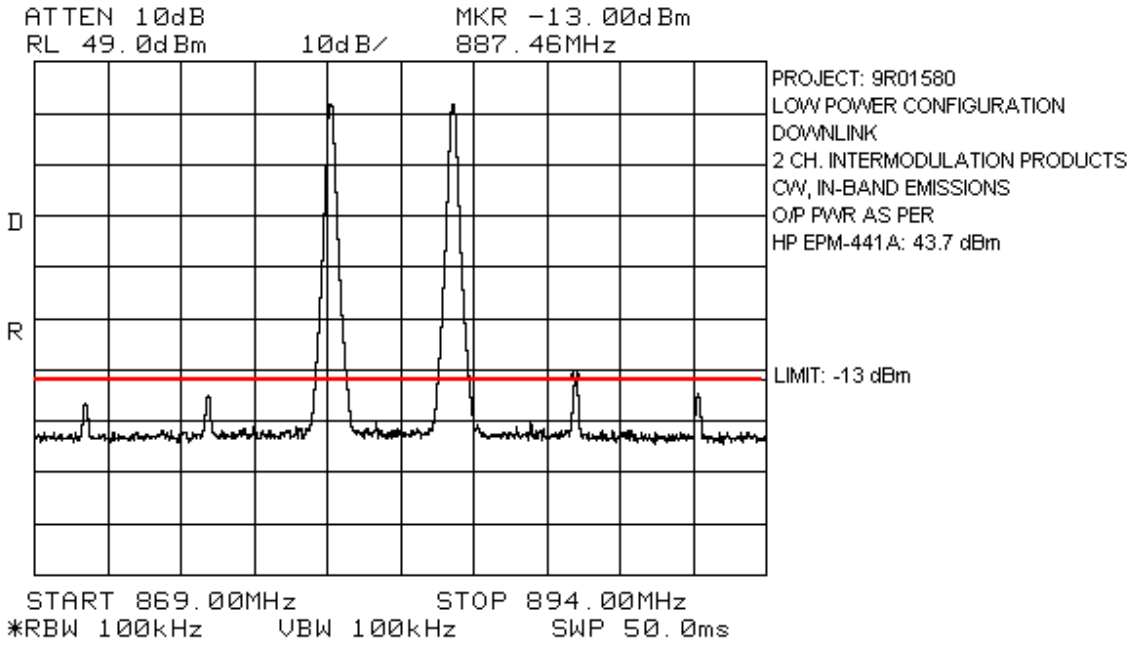

*ATTEN 10dB
RL 43.1dBm
10dB/
MKR -37.40dBm
869.0000MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
LOWER BAND EDGE
TDMA
O/P PWR AS PER
HP EPM-441A: 43.1 dBm
R
LIMIT: -13 dBm
CENTER 869.0000MHz
SPAN 200.0kHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec

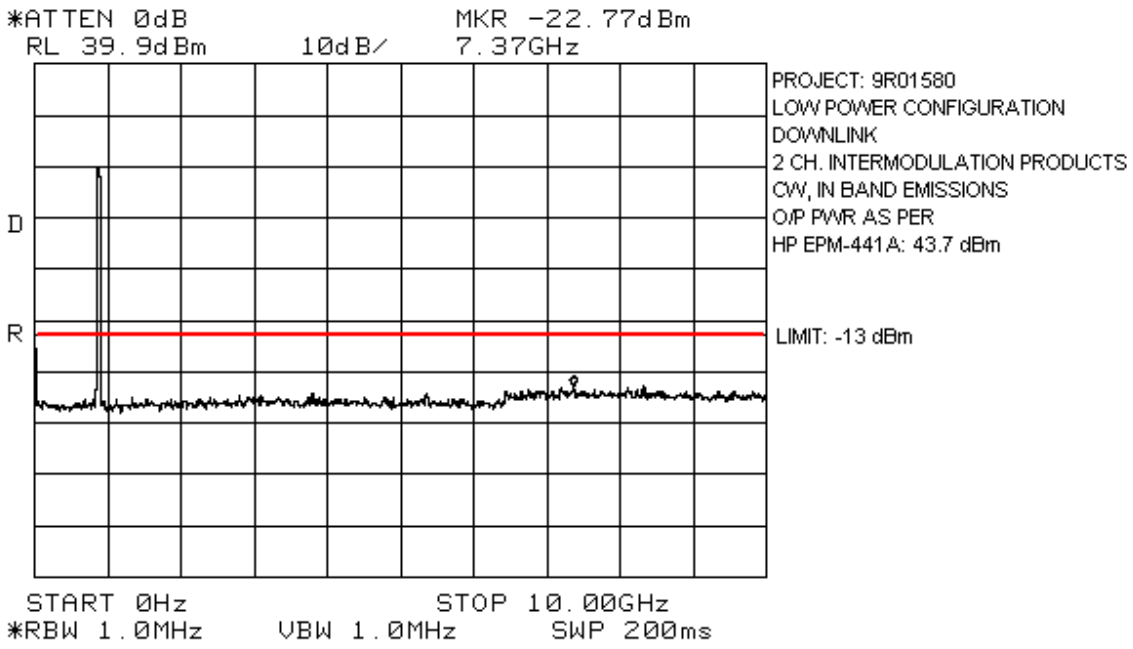

*ATTEN 10dB
RL 44.8dBm
10dB/
MKR -34.70dBm
869.0000MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
LOWER BAND EDGE
SINGLE CH. TEST
TDMA
O/P PWR AS PER
HP EPM-441A: 44.8 dBm
D
R
LIMIT: -13 dBm
CENTER 869.0000MHz
SPAN 200.0kHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec

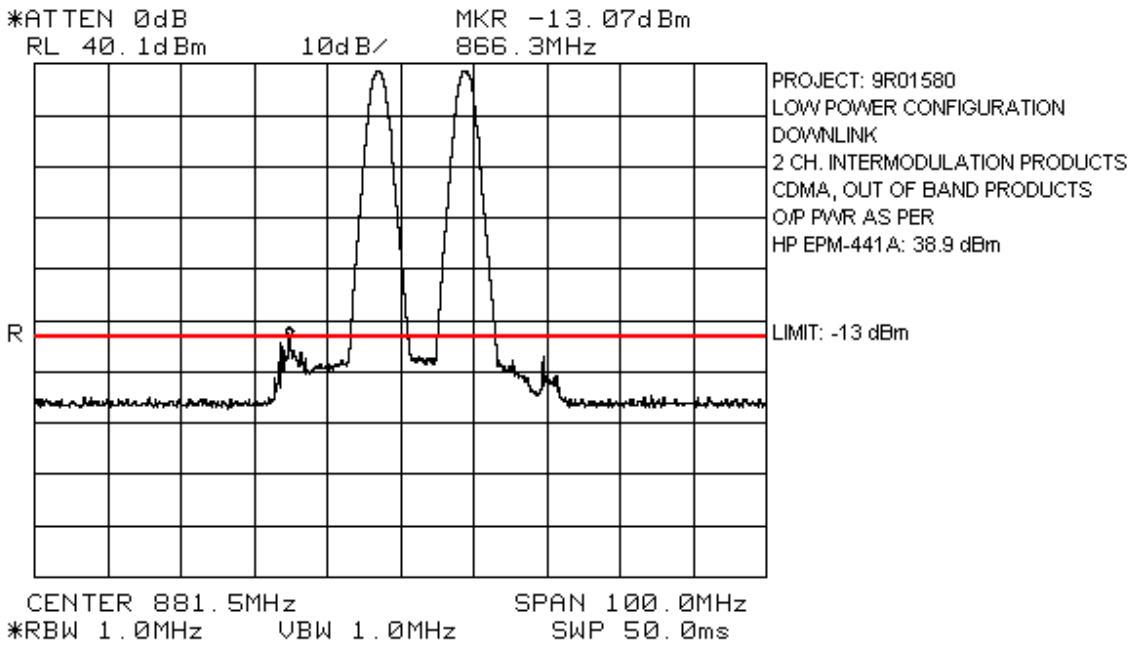

ATTEN 10dB
RL 43.1dBm
10dB/
MKR -28.40dBm
894.0030MHz
D
R
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
UPPER BAND EDGE
TDMA
O/P PWR AS PER
HP EPM-441A: 43.1 dBm
LIMIT: -13 dBm
CENTER 894.0000MHz
SPAN 200.0kHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec

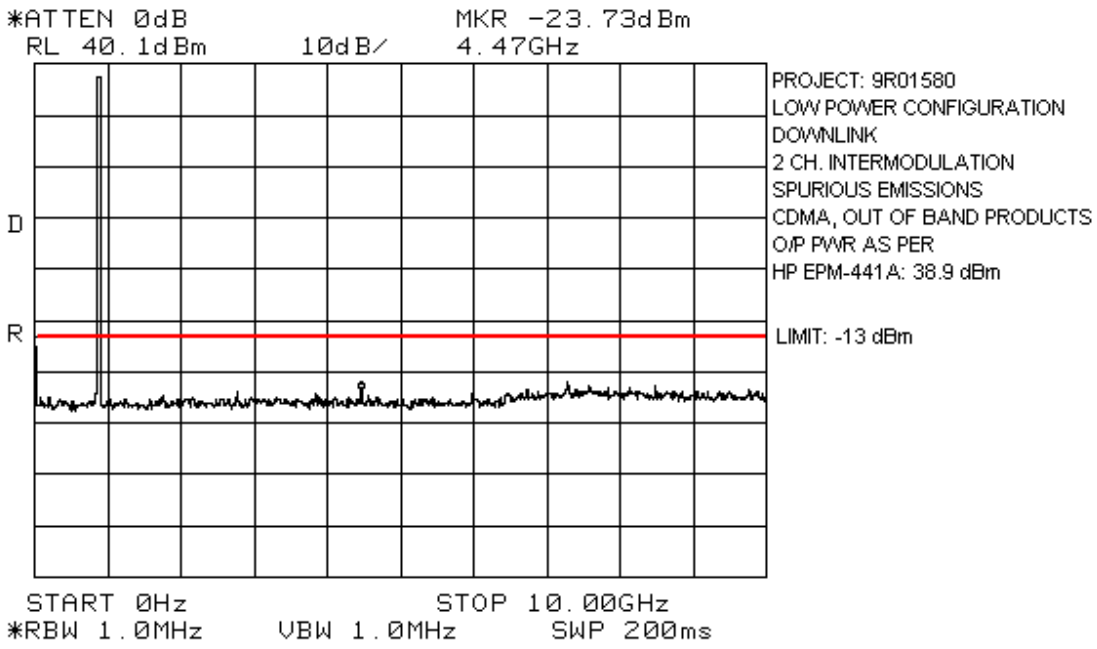

ATTEN 10dB
RL 44.8dBm
10dB/
MKR -22.70dBm
894.0010MHz
PROJECT: 9R01580
HIGH POWER CONFIGURATION
DOWNLINK
UPPER BAND EDGE
SINGLE CH. TEST
TDMA
O/P PWR AS PER
HP EPM-441A: 44.8 dBm
R
LIMIT: -13 dBm
CENTER 894.0000MHz
SPAN 200.0kHz
*RBW 300Hz
VBW 300Hz
SWP 5.60sec

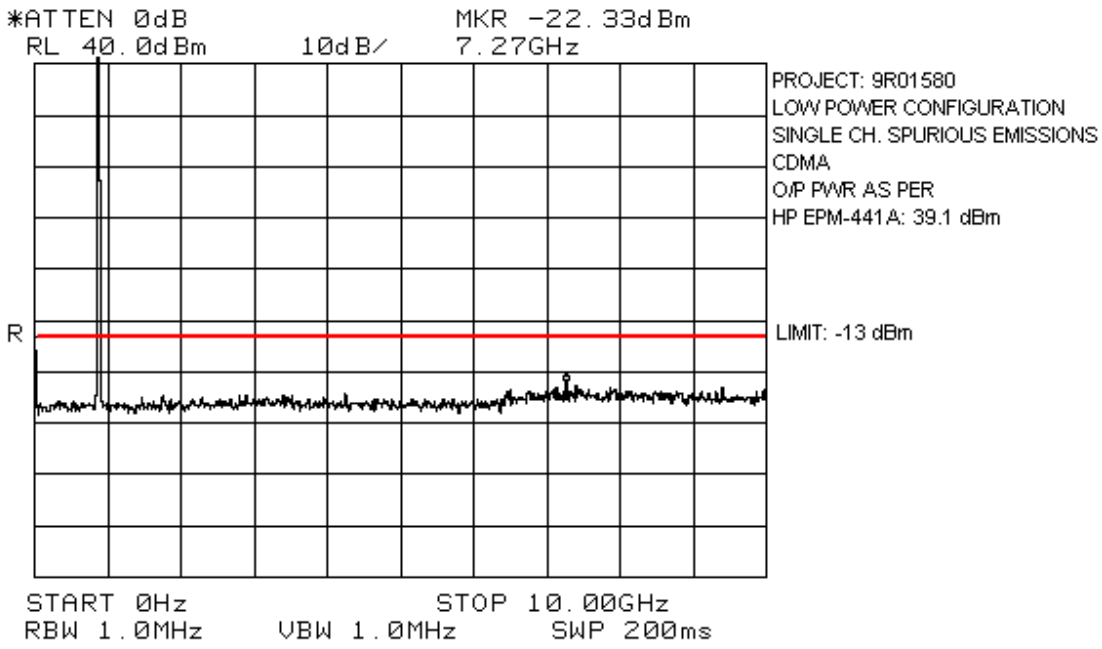
Spurious Emissions At Antenna Terminals: Low Power

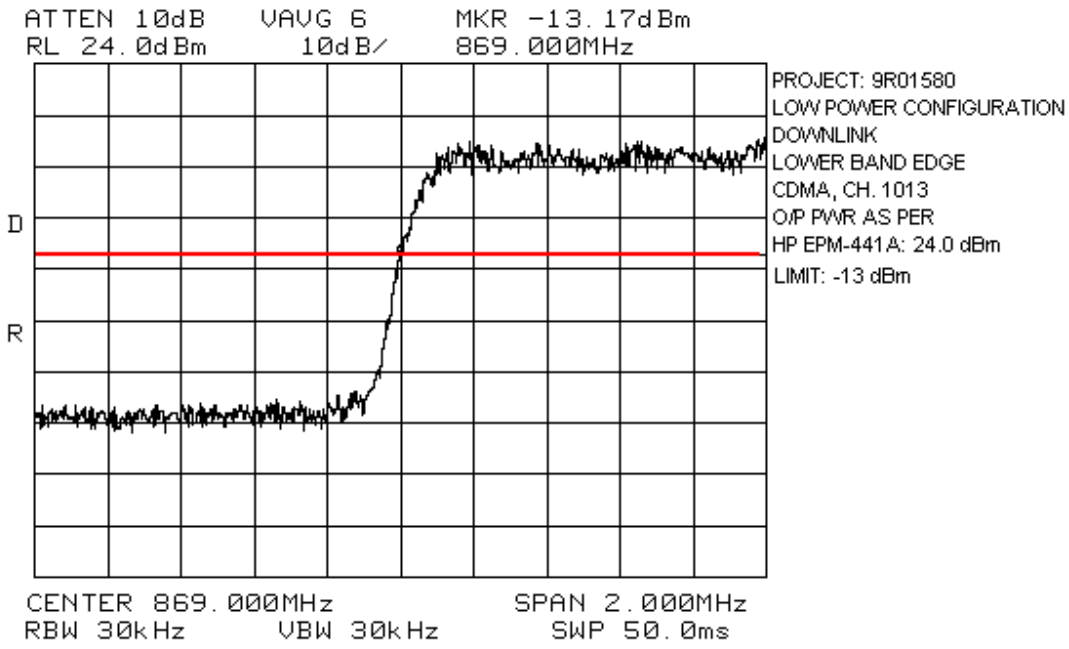


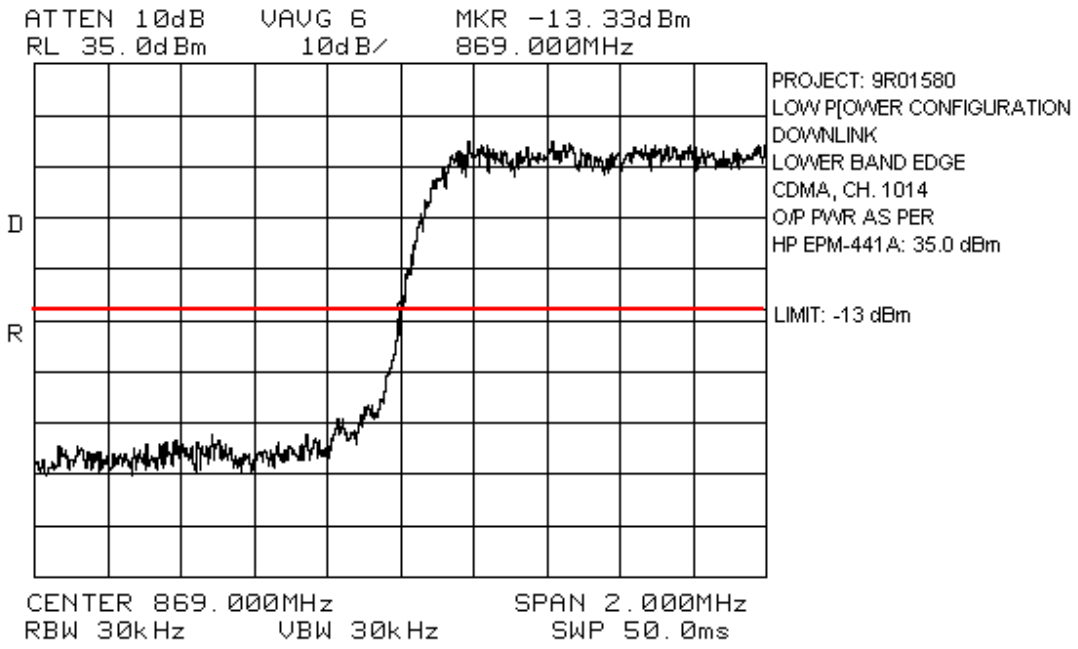

*ATTEN 0dB
MKR -22.77dBm
RL 39.9dBm
10dB/
7.37GHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
2 CH. INTERMODULATION PRODUCTS
CW, IN BAND EMISSIONS
O/P PWR AS PER
HP EPM-441A: 43.7 dBm
D
R
LIMIT: -13 dBm
START 0Hz
STOP 10.00GHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 200ms

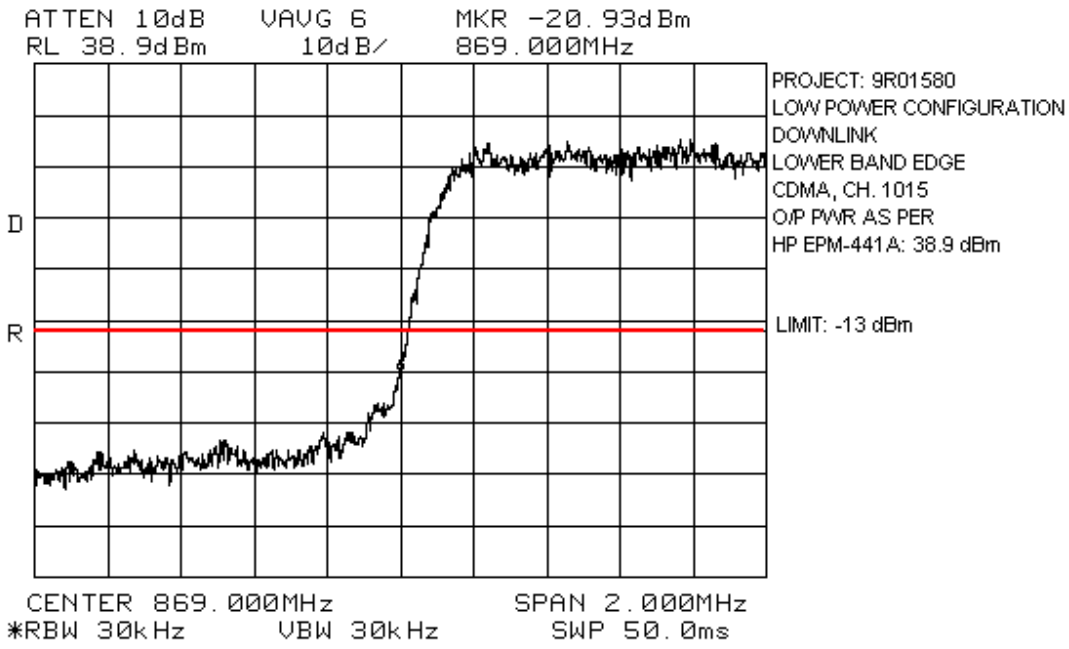

*ATTEN 0dB
RL 40.1dBm
10dB/
MKR -13.07dBm
866.3MHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
2 CH. INTERMODULATION PRODUCTS
CDMA, OUT OF BAND PRODUCTS
O/P PWR AS PER
HP EPM-441A: 38.9 dBm
R
LIMIT: -13 dBm
CENTER 881.5MHz
SPAN 100.0MHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms

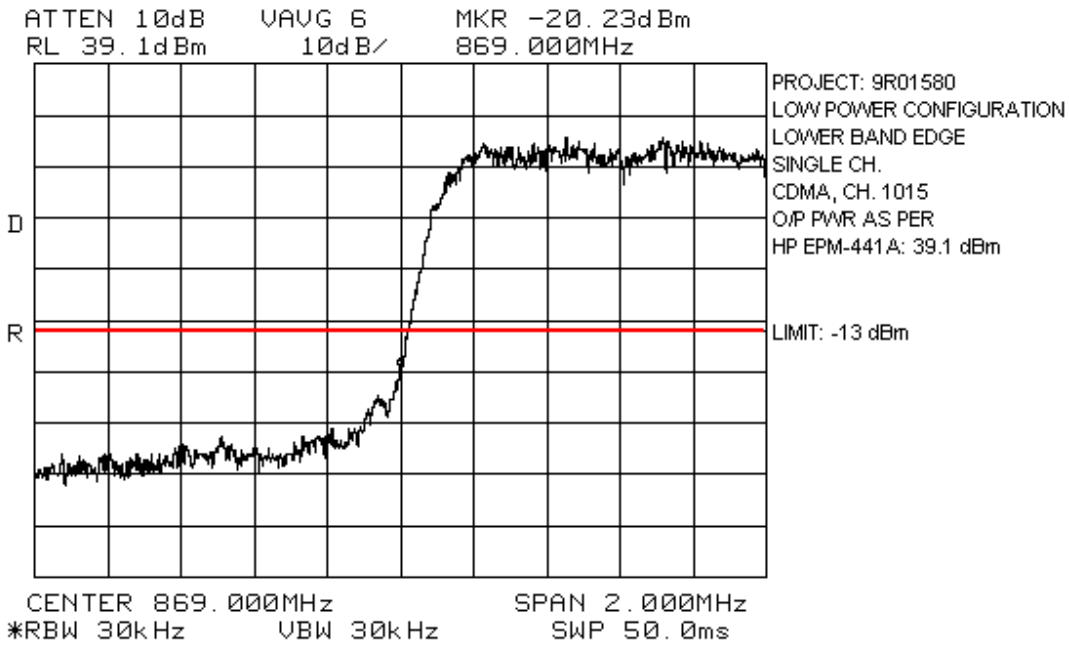

*ATTEN 0dB
MKR -23.73dBm
RL 40.1dBm
10dB/
4.47GHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
2 CH. INTERMODULATION
SPURIOUS EMISSIONS
CDMA, OUT OF BAND PRODUCTS
O/P PWR AS PER
HP EPM-441A: 38.9 dBm
LIMIT: -13 dBm
START 0Hz
STOP 10.00GHz
*RBW 1.0MHz
VBW 1.0MHz
SWP 200ms

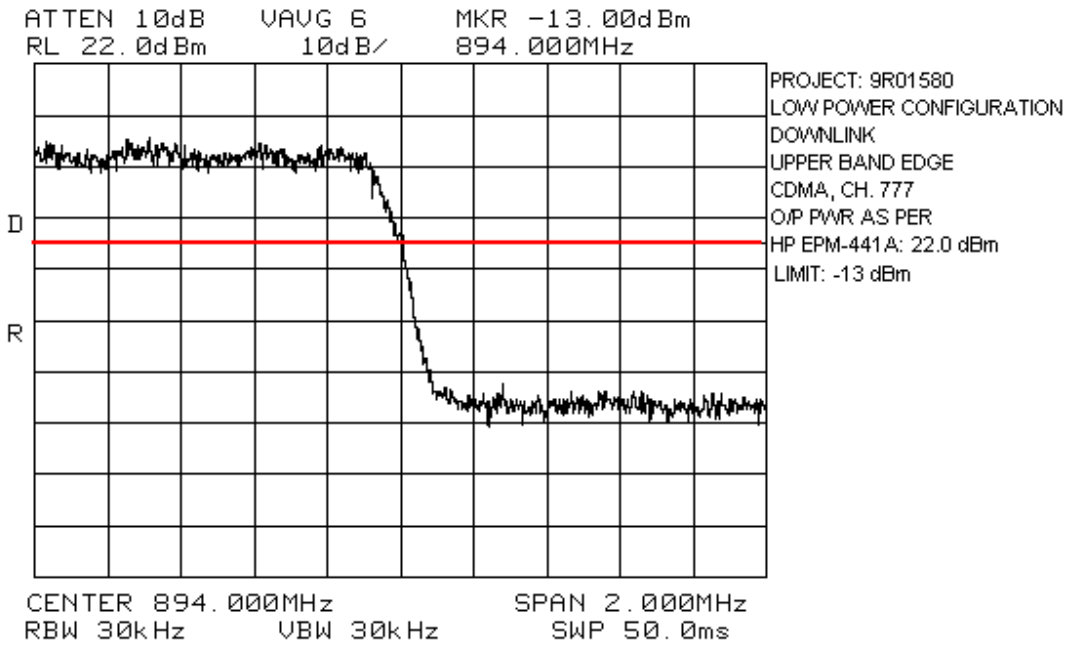

*ATTEN 0dB
MKR -22.33dBm
RL 40.0dBm
10dB/
7.27GHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
SINGLE CH. SPURIOUS EMISSIONS
CDMA
O/P PWR AS PER
HP EPM-441A: 39.1 dBm
R
LIMIT: -13 dBm
START 0Hz
STOP 10.00GHz
RBW 1.0MHz
VBW 1.0MHz
SWP 200ms

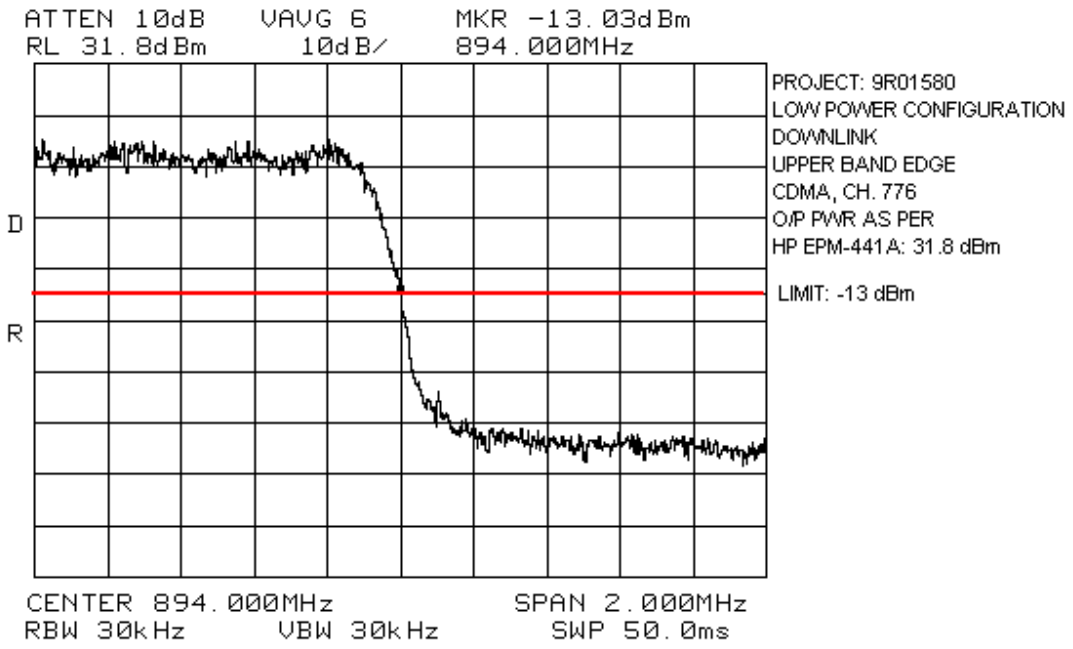

ATTEN 10dB
RL 24.0dBm
VAVG 6
10dB/
MKR -13.17dBm
869.000MHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
LOWER BAND EDGE
CDMA, CH. 1013
O/P PWR AS PER
HP EPM-441A: 24.0 dBm
LIMIT: -13 dBm
D
R
CENTER 869.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

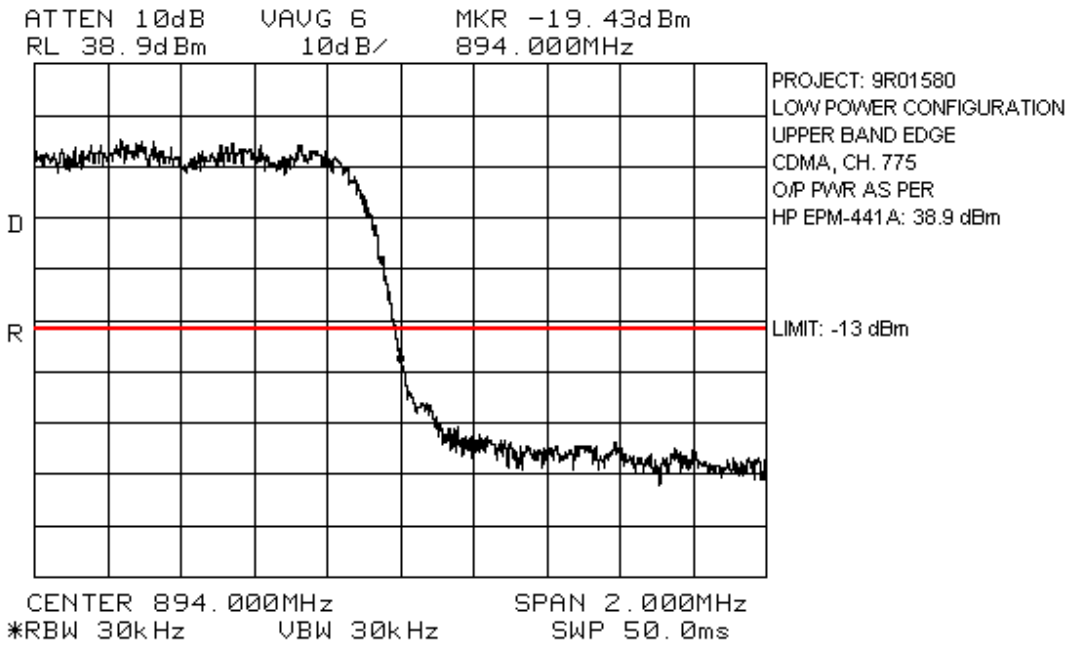

ATTEN 10dB
RL 35.0dBm
VAVG 6
10dB/
MKR -13.33dBm
869.000MHz
D
R
PROJECT: 9R01580
LOW P[OWER CONFIGURATION
DOWNLINK
LOWER BAND EDGE
CDMA, CH. 1014
O/P PWR AS PER
HP EPM-441A: 35.0 dBm
LIMIT: -13 dBm
CENTER 869.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

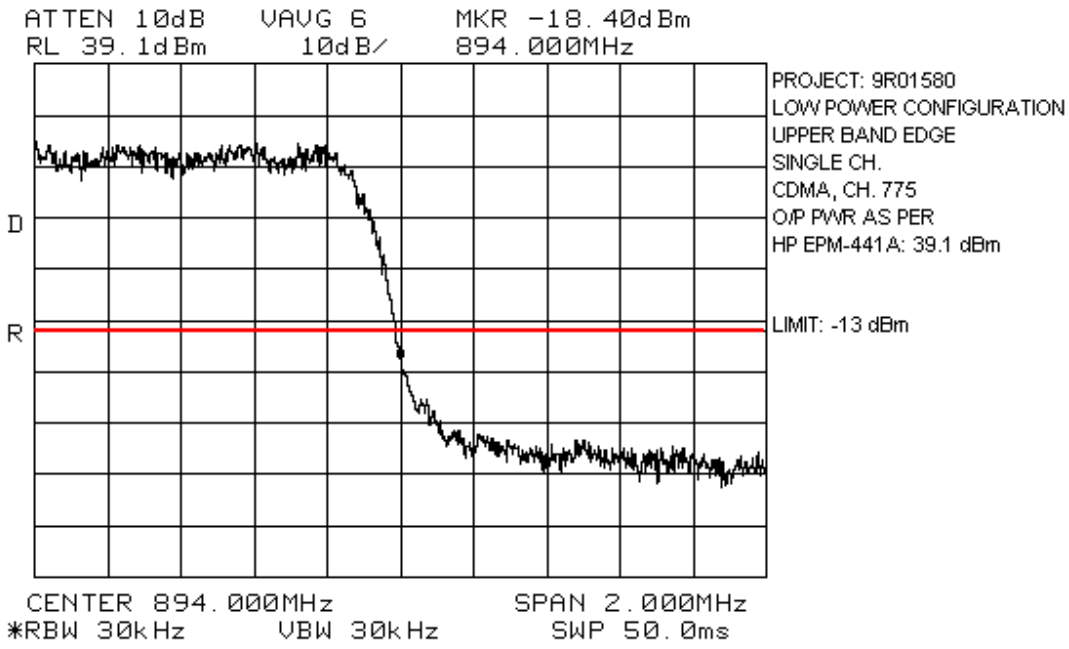

ATTEN 10dB
RL 38.9dBm
VAVG 6
10dB/
MKR -20.93dBm
869.000MHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
LOWER BAND EDGE
CDMA, CH. 1015
O/P PWR AS PER
HP EPM-441A: 38.9 dBm
LIMIT: -13 dBm
CENTER 869.000MHz
SPAN 2.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

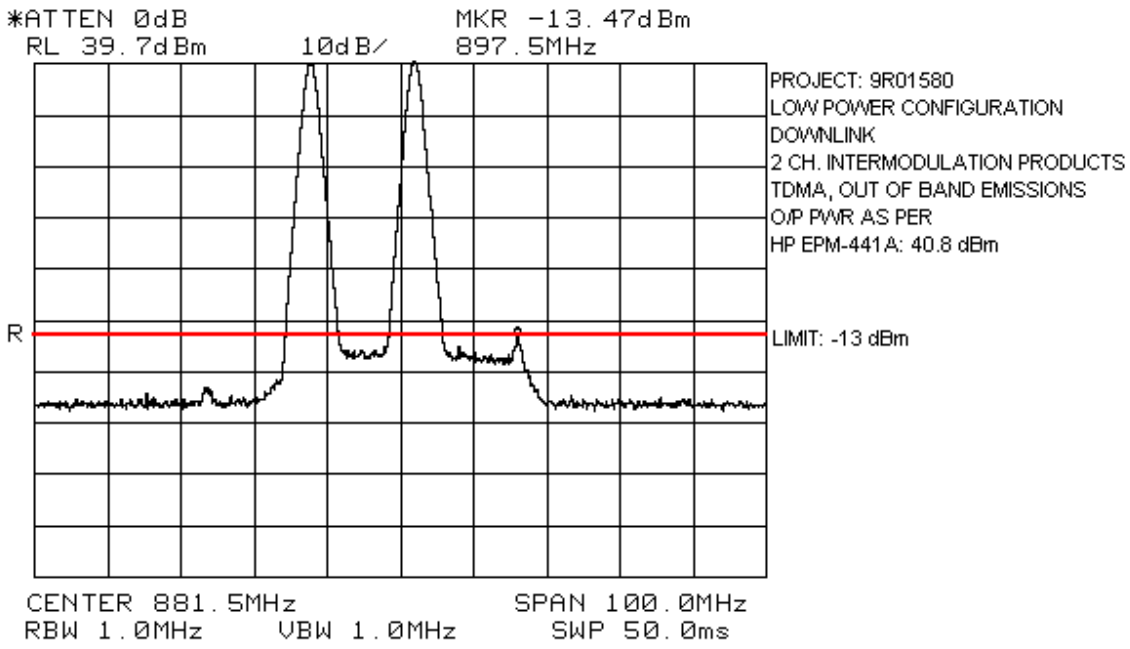

ATTEN 10dB
RL 39.1dBm
VAVG 6
10dB/
MKR -20.23dBm
869.000MHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
LOWER BAND EDGE
SINGLE CH.
CDMA, CH. 1015
O/P PWR AS PER
HP EPM-441A: 39.1 dBm
D
R
LIMIT: -13 dBm
CENTER 869.000MHz
SPAN 2.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

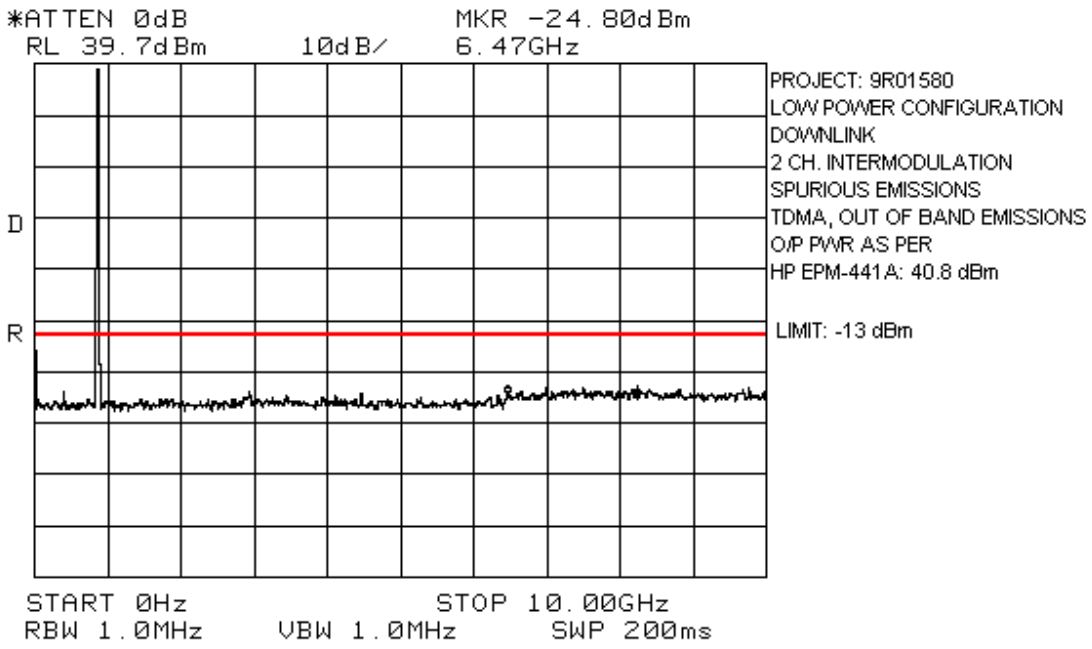

ATTEN 10dB
VAVG 6
MKR -13.00dBm
RL 22.0dBm
10dB/
894.000MHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
UPPER BAND EDGE
CDMA, CH. 777
O/P PWR AS PER
HP EPM-441A: 22.0 dBm
LIMIT: -13 dBm
D
R
CENTER 894.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

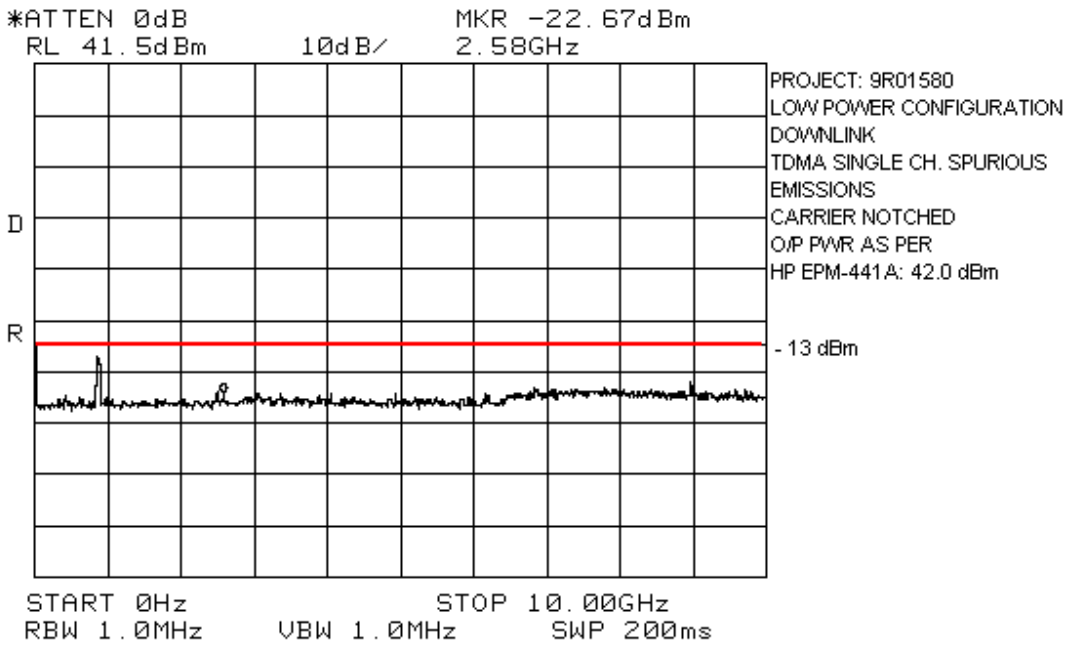

ATTEN 10dB
RL 31.8dBm
VAVG 6
10dB/
MKR -13.03dBm
894.000MHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
UPPER BAND EDGE
CDMA, CH. 776
O/P PWR AS PER
HP EPM-441A: 31.8 dBm
LIMIT: -13 dBm
D
R
CENTER 894.000MHz
SPAN 2.000MHz
RBW 30kHz
VBW 30kHz
SWP 50.0ms

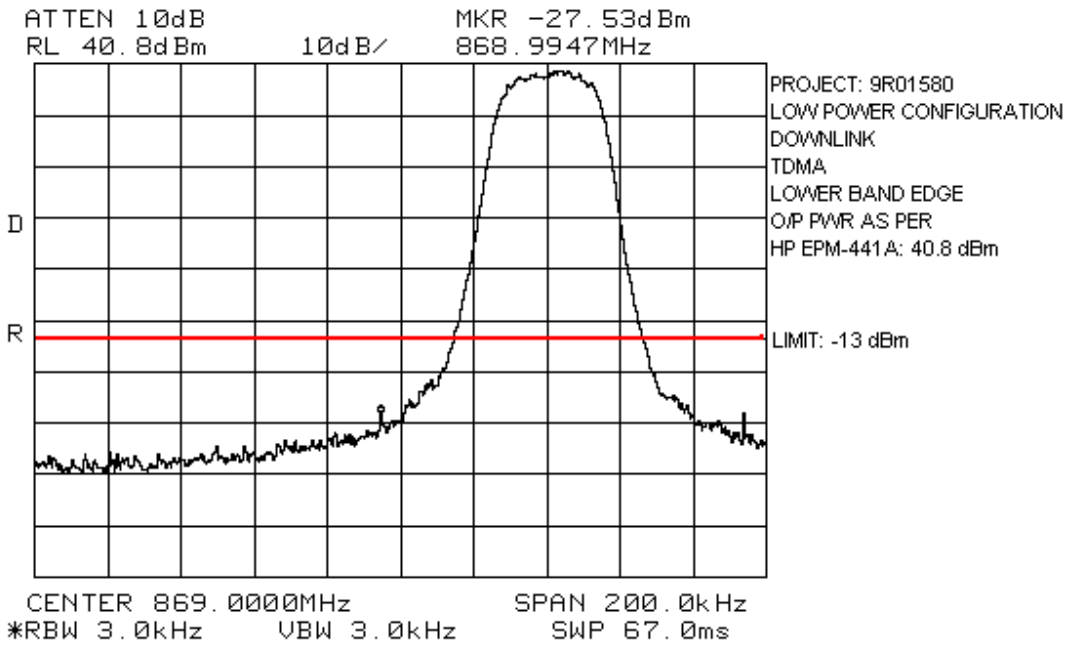

ATTEN 10dB
RL 38.9dBm
VAVG 6
10dB/
MKR -19.43dBm
894.000MHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
UPPER BAND EDGE
CDMA, CH. 775
O/P PWR AS PER
HP EPM-441A: 38.9 dBm
D
R
LIMIT: -13 dBm
CENTER 894.000MHz
SPAN 2.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

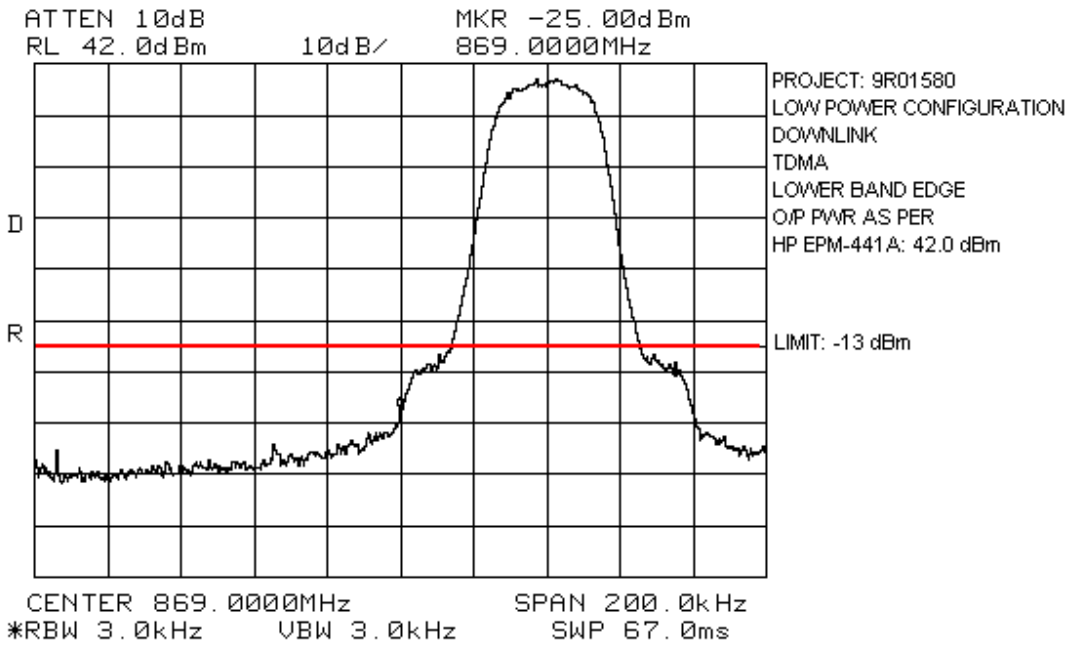

ATTEN 10dB
RL 39.1dBm
VAVG 6
10dB/
MKR -18.40dBm
894.000MHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
UPPER BAND EDGE
SINGLE CH.
CDMA, CH. 775
O/P PWR AS PER
HP EPM-441A: 39.1 dBm
D
R
LIMIT: -13 dBm
CENTER 894.000MHz
SPAN 2.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

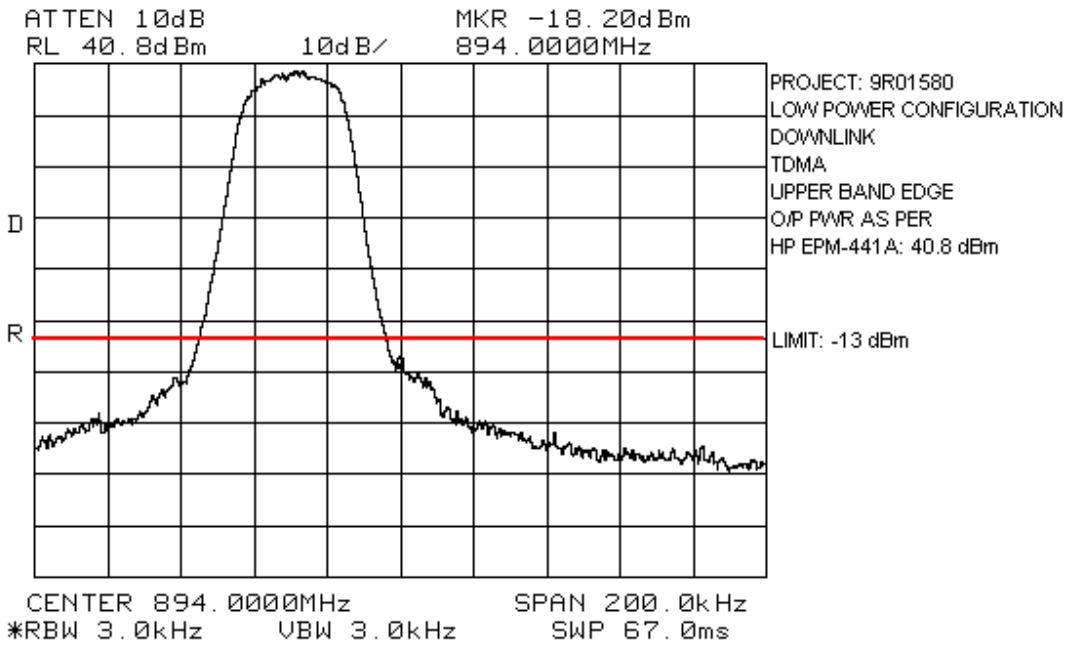

*ATTEN 0dB
RL 39.7dBm
10dB/
MKR -13.47dBm
897.5MHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
2 CH. INTERMODULATION PRODUCTS
TDMA, OUT OF BAND EMISSIONS
O/P PWR AS PER
HP EPM-441A: 40.8 dBm
R
LIMIT: -13 dBm
CENTER 881.5MHz
SPAN 100.0MHz
RBW 1.0MHz
VBW 1.0MHz
SWP 50.0ms

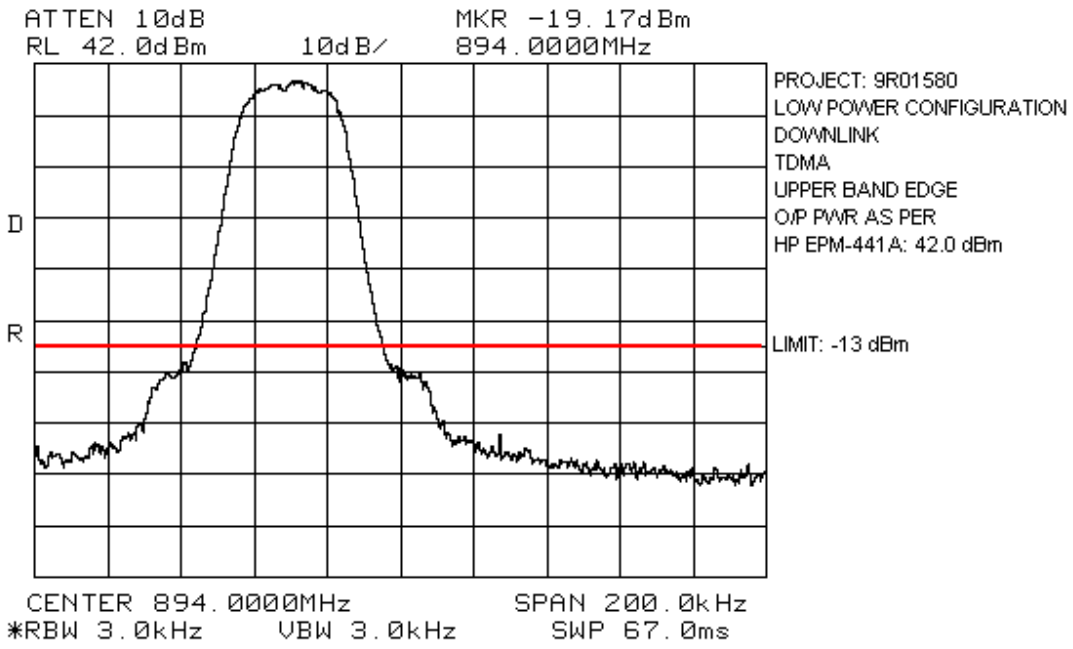

*ATTEN 0dB
MKR -24.80dBm
RL 39.7dBm
10dB/
6.47GHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
2 CH. INTERMODULATION
SPURIOUS EMISSIONS
TDMA, OUT OF BAND EMISSIONS
O/P PWR AS PER
HP EPM-441A: 40.8 dBm
LIMIT: -13 dBm
START 0Hz
STOP 10.00GHz
RBW 1.0MHz
VBW 1.0MHz
SWP 200ms


*ATTEN 0dB
MKR -22.67dBm
RL 41.5dBm
10dB/
2.58GHz
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
TDMA SINGLE CH. SPURIOUS
EMISSIONS
CARRIER NOTCHED
O/P PWR AS PER
HP EPM-441A: 42.0 dBm
D
R
-13 dBm
START 0Hz
STOP 10.00GHz
RBW 1.0MHz
VBW 1.0MHz
SWP 200ms


ATTEN 10dB
RL 40.8dBm
10dB/
MKR -27.53dBm
868.9947MHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
TDMA
LOWER BAND EDGE
O/P PWR AS PER
HP EPM-441A: 40.8 dBm
LIMIT: -13 dBm
CENTER 869.0000MHz
SPAN 200.0kHz
*RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms


ATTEN 10dB
RL 42.0dBm
10dB/
MKR -25.00dBm
869.0000MHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
TDMA
LOWER BAND EDGE
O/P PWR AS PER
HP EPM-441A: 42.0 dBm
LIMIT: -13 dBm
CENTER 869.0000MHz
SPAN 200.0kHz
*RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms


ATTEN 10dB
RL 40.8dBm
10dB/
MKR -18.20dBm
894.0000MHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
TDMA
UPPER BAND EDGE
O/P PWR AS PER
HP EPM-441A: 40.8 dBm
LIMIT: -13 dBm
CENTER 894.0000MHz
SPAN 200.0kHz
*RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms


ATTEN 10dB
RL 42.0dBm
10dB/
MKR -19.17dBm
894.0000MHz
D
R
PROJECT: 9R01580
LOW POWER CONFIGURATION
DOWNLINK
TDMA
UPPER BAND EDGE
O/P PWR AS PER
HP EPM-441A: 42.0 dBm
LIMIT: -13 dBm
CENTER 894.0000MHz
SPAN 200.0kHz
*RBW 3.0kHz
VBW 3.0kHz
SWP 67.0ms

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious	PARA. NO.: 2.1053
TESTED BY: Kevin Carr	DATE: July 8, 1999

Test Results: Complies.
The maximum field strength is 59.7 dBµV/m @ 3525.97 MHz at 3m.

Test Data: See attached tables.

Test Data - Radiated Emissions

Test Distance (meters) : 3		Range: A Tower		Receiver: 014		RBW (1 MHz): VBW (3 MHz)		Detector: PEAK			
Freq. (MHz)	**Ant. ***	**Pol. (V/H)**	**Ant. HGT. (m)**	**Table (deg.)**	**RCVD Signal (dBµV/m)**	**Ant. Factor (dB)****	**Amp. Gain (dB)*****	**Dist. Corr. (dB)**	**Field Strength (dBµV/m)**	**Limit (dBµV/m)**	**Margin (dB)**
1762.98	Hrn2	V			54.6	29.8	-43.2		41.2	82.3	41.1
1763.02	Hrn2	H			54.1	29.8	-43.2		40.7	82.3	41.6
2644.47	Hrn2	V			55.9	31.6	-45.5		42.0	82.3	40.3
2644.51	Hrn2	H			50.1	31.6	-45.5		36.2	82.3	46.1
3525.97	Hrn2	V			66.6	35.3	-42.2		59.7	82.3	22.6
3526.0	Hrn2	H			55.1	35.3	-42.2		48.2	82.3	34.1
4407.46	Hrn2	V			62.8	37.1	-43.2		56.7	82.3	25.6
4407.5	Hrn2	H			58.0	37.1	-43.2		51.9	82.3	30.4
5288.96	Hrn2	V			31.1	39.8	-44.0		26.9	82.3	55.4
5289.0	Hrn2	H			30.8	39.8	-44.0		26.6	82.3	55.7
6170.45	Hrn2	V			39.6	42.5	-40.8		41.3	82.3	41.0
6170.4	Hrn2	H			30.8	42.5	-40.8		32.5	82.3	49.8
7051.94	Hrn2	V			27.6	44.1	-42.6		29.1	82.3	53.2

Notes:
The spectrum was search up to the 10th harmonic of the fundamental frequency.
B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
* Includes cable loss when amplifier is not used.
** Includes cable loss.
( ) Denotes failing emission level.

Photographs of Test Setup

Front View

Rear View

Section 7. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 1055
TESTED BY:	DATE:

Test Results: Complies/Does Not Comply.

Measurement Data: Standard Test Frequency: _____ MHz
Standard Test Voltage: _____ Vdc

NOT APPLICABLE

Section 8. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.	
1 Year	Attenuator	Narda	768-20	9507	July 24/98	July 24/99	
1 Year	Attenuator	Narda	765-20	9510	July 24/98	July 24/99	
1 Year	Attenuator	Narda	768-10	9704	July 24/98	July 24/99	
1 Year	Insertion Unit	Rohde & Schwarz	URV5-Z4	FA000905	July 23/98	July 23/99	
1 Year	RF Millivoltmeter	Rohde & Schwarz	URV5	FA000420	July 23/98	Sept. 24/99	
2 Year	Horn Antenna	EMCO #2	3115	4336	Oct. 30/97	Oct. 30/99	
1 Year	Log Periodic Antenna	EMCO	LPA-25	1141	July 27/98	July 27/99	
	50 Ω Termination	Wiltron	26N50	605248	N/A	N/A	
1 Year	Directional Coupler	Hewlett Packard	765D	228	July 21/98	July 21/99	
1 Year	50 ohm Combiner Pad	Mini Circuits	ZA3PD-2	9746	July 23/98	July 23/99	
1 Year	Low Noise Amplifier	Avantek	AWT-8035	1005	Aug. 4/98	Aug. 4/99	
1 Year	Low Noise Amplifier	DBS Microwave	DWT-13035	9623	Aug. 4/98	Aug. 4/99	
1 Year	Signal Generator	Hewlett Packard	8660C	2044A03304	July 21/98	July 21/99	
2 Year	Spectrum Analyzer (Rental)	Hewlett Packard	HP8563E	862205	Jan.22/98	Jan.22/00	
1 Year	Power Head (Rental)	Hewlett Packard	8781A	909238	Feb. 5/99	Feb. 5/00	
1 Year	Power Meter (Rental)	Hewlett Packard	EPM-441A	837896	Oct.1/98	Oct.1/99	
3 Year	RF Generator	Rohde & Schwarz	SME3	DE14439	June 29/96	June 29/99	
1 Year	RF Generator	Rohde & Schwarz	SIMIQ03E	DE24154	Sept. 28/98	Sept. 28/99	
	Power Supply	Hewlett Packard	6274B	2552A-08243	NCR	NCR	
1 Year	Notch Filter	K&L	3TNF-500/1000	137	Jan 5/99	Jan. 5/00	
1 Year	RF Amplifier	ENI	603L	709285	May 5/99	May 5/00	
NCR	RF Amplifier	ComTest	GPA301	8C5320-1040	NCR	NCR	

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

ANNEX A

TEST METHODOLOGIES

NAME OF TEST: RF Power Output **PARA. NO.: 1.1046**

Minimum Standard: Para. No. 22.913(a). The E.R.P. of mobile transmitter and auxiliary test transmitter must not exceed 7 watts.

EIA is 19B Para. No. 3.2.1.3. The transmitter shall be compiled of 8 distinct power levels.

The output power shown above shall be maintained within the range of +2 dB, -4 dB of nominal dBW value

PL	I	II	III
0	+6	+2	-2
1	+2	+2	-2
2	-2	-2	-2
3	-6	-6	-6
4	-10	-10	-10
5	-14	-14	-14
6	-18	-18	-18
7	-22	-22	-22

Method Of Measurement:

Detachable Antenna:
The power at antenna terminals is measured using an in-line power meter.

Integral Antenna:
If the antenna is not detachable from the circuit then the Power Output is derived from the radiated field strength of the fundamental emission by using the plane wave relation $GP/4\pi R^2 = E^2/120\pi$ and proceeding as follows:

$$P = \frac{E^2 R^2}{30G} = \frac{E^2 3^2}{30G}$$

where,

P = the equivalent radiated power in watts
E = the maximum measured field strength in V/m
R = the measurement range (3 meters)
G = the numeric gain of the transmit antenna in relation to a halfwave dipole antenna

NAME OF TEST: Audio Frequency Response	**PARA. NO.: 2.1047**

Minimum Standard: Para. No. 15-19-B. From 300 to 3000 Hz the audio frequency response shall not vary more than +1 to –3 dB from a true 6dB octave pre-emphasis characteristic as referred to 1000 Hz level (with the exception of a permissible 6dB per octave roll-off from 2500 to 3000 Hz).

Method Of Measurement:

Operate the transmitter with the compressor disabled, and monitor the output with a frequency deviation meter or standard test receiver without standard 750-microsecond de-emphasis, with expander disabled, and without C-message weighted filter (see 6.6.2). Apply a sine wave audio input to the transmitter external audio input port, vary the modulating frequency from 300 to 3000 Hz and observe the input levels necessary to maintain a constant ±2.9 kHz system deviation.

NAME OF TEST: Audio Low Pass Filter Response PARA. NO.: 2.1047

Minimum Standard: Para. No. 22.915 (d). For mobile stations, signals must be attenuated as a function of frequency as follows:

i. In the frequency ranges 3.0 to 5.9 Hz and 6.1 to 15 kHz, 40 log (f/3) dB.
ii. In the frequency range 5.9 to 6.1 kHz, 35 dB
iii. In the frequency range above 15 kHz, 28 dB.

Method Of Measurement:

Adjust the audio input frequency to 1000 Hz and adjust the input level to 20 dB greater than that required to produce ±8 kHz deviation. Note the output level on the frequency deviation meter or standard test receiver. Using the output level as reference (0dB), vary the modulating frequency from 3000 Hz to 30,000 Hz and observe the change in output while maintaining a constant audio input level.

NAME OF TEST: Modulation Limiting	**PARA. NO.: 2.1047**

Minimum Standard: 22.915(b)

The levels of the modulating signals must be set to the values specified below and must be maintained within ±10% of these values.

Voice: ±12 kHz
SAT: ±2 kHz
Wideband Data: ±8 kHz
ST: ± 8 kHz

Method Of Measurement:

Voice: A 1 kHz audio tone is injected at levels between -45 and +20 dBVrms. The peak deviation is noted. This is repeated with a 300 Hz tone and a 3 kHz tone.

SAT: A SAT tone is generated by the mobile station and the peak deviation is measured.

Wideband Data: Wideband data is generated by the mobile station and the peak deviation is measured.

ST: ST data is generated by the mobile station and the peak deviation is measured.

NAME OF TEST: Occupied Bandwidth (Voice & SAT) PARA. NO.: 2.1049

Minimum Standard: 22.917(b) The mean power of any emission removed from the carrier frequency by a displacement frequency (f_d in kHz) must be attenuated below the mean power of the unmodulated carrier (P) as follows:

(i) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz: at least 26 dB

(ii) On any frequency removed from the carrier frequency by more than 45 kHz, up to the first multiple of the carrier frequency:

at least 60 dB or 43 + 10 log (P) dB, whichever is the lesser attenuation.

Method Of Measurement:

Spectrum Analyzer Settings:

RBW: 300 Hz
VBW: ≥ RBW
Span: 100 kHz
Sweep: Auto
Mask: CELLF3E

Input Signal Characteristics (F3E/F3D):

AF1 frequency: 2.5 kHz
AF1 level: 16 dB above the level sufficient to produce ±6 kHz deviation with a 1 kHz tone.
SAT: 6000 Hz SAT
SAT level: sufficient to produce ±2 kHz deviation.

NAME OF TEST: Occupied Bandwidth (WBD & SAT) PARA. NO.: 21049

Minimum Standard: 22.917(d) The mean power of any emission removed from the carrier frequency by a displacement frequency (f_d in kHz) must be attenuated below the mean power of the unmodulated carrier (P) as follows:

(1) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz:

at least 26 dB

(2) On any frequency removed from the carrier frequency by more than 45 kHz but not more than 90 kHz:

at least 45 dB

(3) On any frequency removed from the carrier frequency by more than 90 kHz, up to the first multiple of the carrier frequency:

at least 60 dB or 43 + 10 log (P) dB, whichever is the lesser attenuation.

Method Of Measurement:

Spectrum Analyzer Settings:
RBW: 300 Hz
VBW: ≥ RBW
Span: 200 kHz
Sweep: Auto
Mask: CELLF1D

Input Signal Characteristics:
RF level: Maximum recommended by manufacturer
10 kbps WBD + DAT
ST

NAME OF TEST: Spurious Emission at Antenna Terminals PARA. NO.: 2.1051

Minimum Standard: Para. No. 22.917(b). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least 43 + 10 log P. This is equivalent to -13 dBm absolute power.

Method Of Measurement:

Spectrum Analyzer Settings:
RBW: 30 kHz (AMPS). As required for digital modulations.
VBW: ≥ RBW
Start Frequency: 0 MHz
Stop Frequency: 10 GHz
Sweep: Auto

NAME OF TEST: Field Strength of Spurious Radiation PARA. NO.: 2.1053

Minimum Standard: Para. No. 22.917(b). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least 43 + 10 log P. This is equivalent to -13 dBm absolute power.

Calculation Of Field Strength Limit:

An example of attenuation requirement of 43 + 10 Log P is equivalent to -13 dBm (5×10^{-5} Watts) at the antenna terminal. We determine the field strength limit by using the plane wave relation.

$GP/4\pi R^2 = E^2/120\pi$

For emissions ≤ 1 GHz:

G = 1.64 (Dipole Gain)
P = 10^{-5} Watts (Maximum spurious output power)
R = 3m (Measurement Distance)

$$E = \frac{\sqrt{30GP}}{R}$$

$$E = \frac{\sqrt{30 \times 1.64 \times 5 \times 10^{-5}}}{3} = 0.016533 \text{ V/m} = 84.4 \text{ dB}\mu\text{V/m}$$

For emissions > 1 GHz:

G = 1 (Isotropic Gain)
P = 1×10^{-5} Watts (Maximum spurious output power)
R = 3m (Measurement Distance)

$$E = 84.4 - 20Log\sqrt{1.64} = 82.3 dB\mu V / m@3m$$

The spectrum is searched to 10 GHz.

NAME OF TEST: Frequency Stability **PARA. NO.: 2.1055**

Minimum Standard: Para. No. 22.355. The transmitter carrier frequency shall remain within the tolerances given in Table C-1.

Freq. Range (MHz)	Mobile > 3 W	Mobile ≤ 3 W
821 to 896	2.5	2.5

Table C-1

Method Of Measurement:

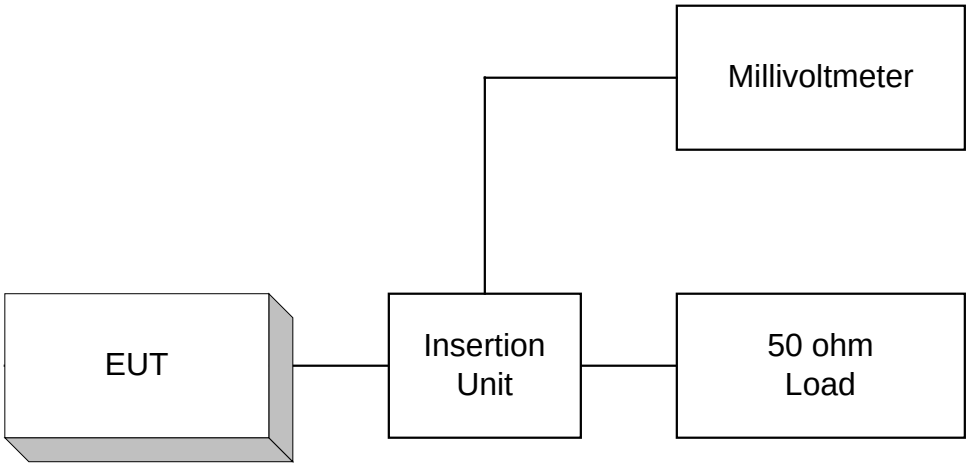
Frequency Stability With Voltage Variation:
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10 MHz ref, in of the signal generator. With the voltage input to the E.U.T. set to 85% S.T.V., the frequency is measured in 30 second intervals for a period of 5 minutes. This procedure is repeated at 100% S.T.V. and 115% S.T.V.

Frequency Stability With Temperature Variation:
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

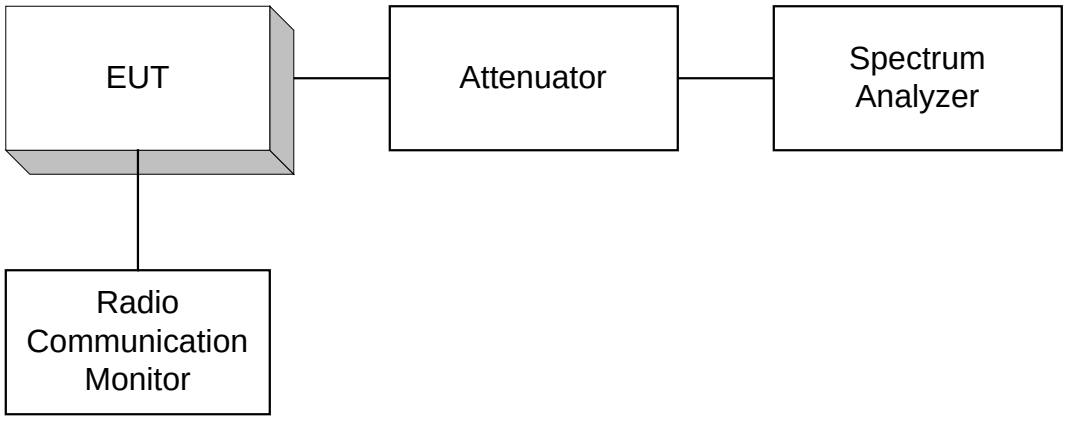
ANNEX B

TEST DIAGRAMS

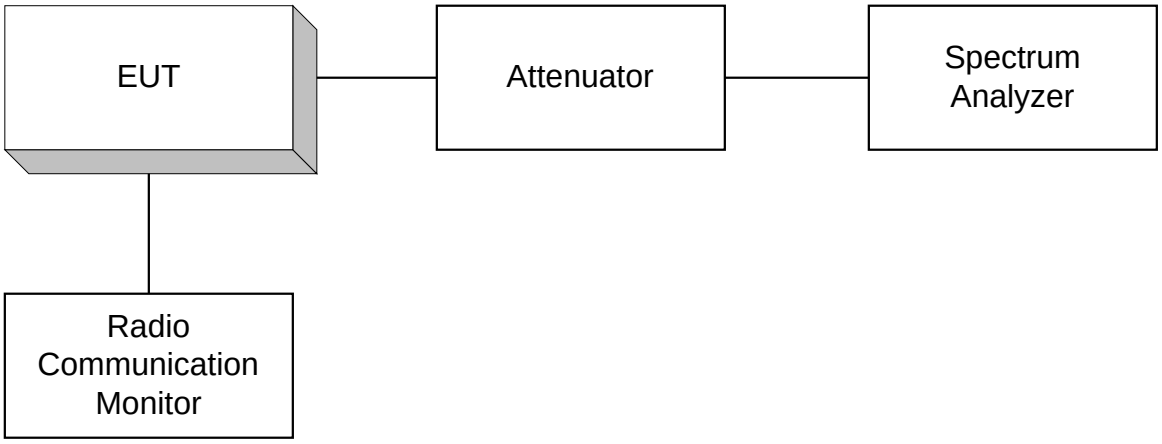
Para. No. 2.1046 - R.F. Power Output



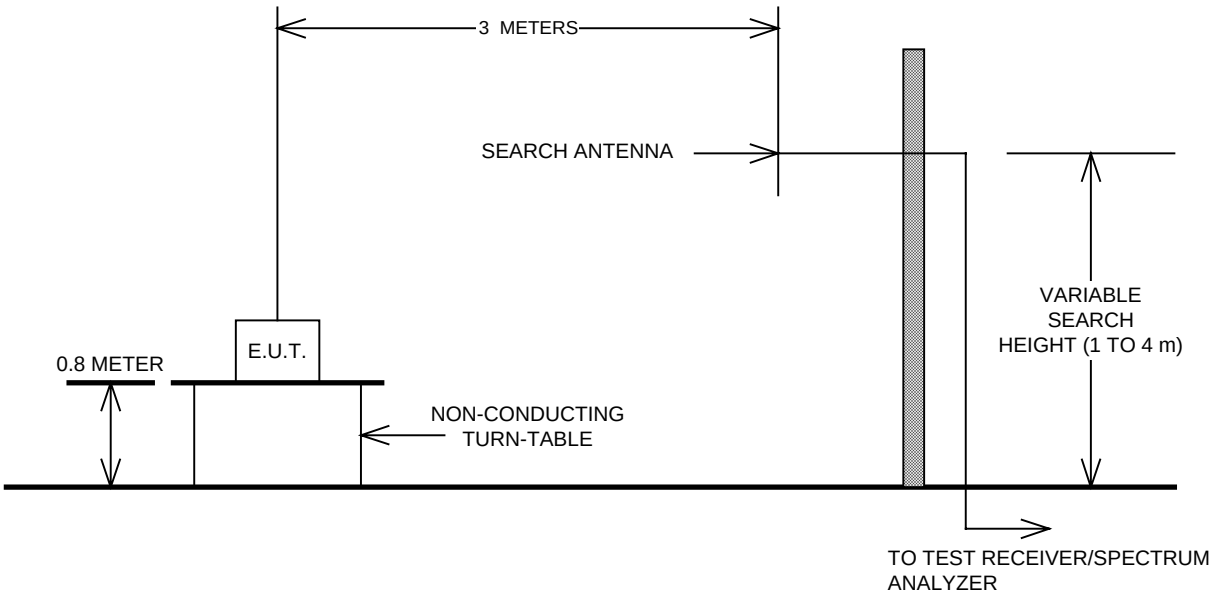
Para. No. 2.1049 - Occupied Bandwidth



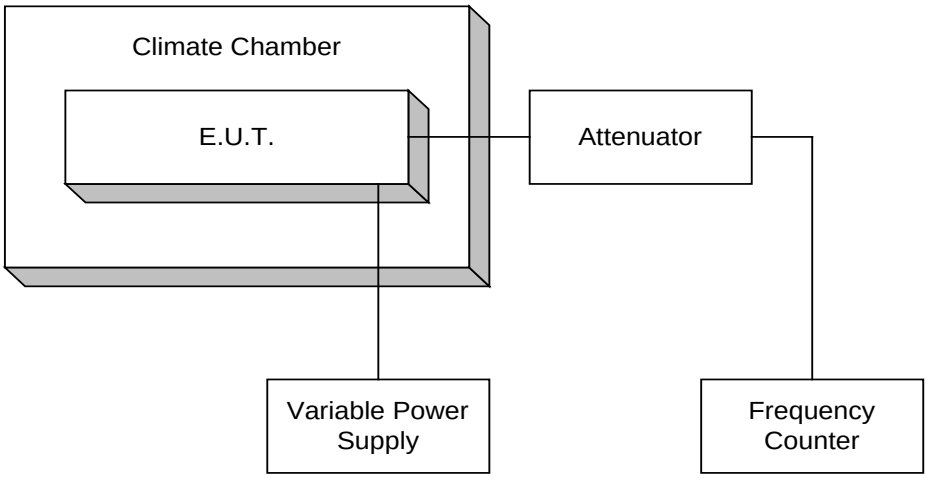
Para. No. 2.1051 Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation



Para. No. 2.1055 - Frequency Stability



Para. No. 2.1045 – Audio Frequency Response, Audio Low Pass Filter Response And Modulation Limiting