

# TEST RESULT SUMMARY

## FCC PART 22 SUBPART H

MANUFACTURER 1 - NAME	Vanu, Inc.
MANUFACTURER'S ADDRESS	One Porter Square, Suite 18 Cambridge MA 02140
NAME OF EQUIPMENT	Vanu Software Radio Base Station
MODEL NUMBER(S)	<b>RAN-1.0</b>
MANUFACTURER 2 - NAME	ADC Inc.
MANUFACTURER'S ADDRESS	PO Box 1101 Minneapolis MN 55440
NAME OF EQUIPMENT	Digivance Wide Band Digital Radio 800 MHz 50-Watt System
MODEL NUMBER(S)	<b>DGVS-112710SYS</b> <b>DGVS-122710SYS</b>
TEST REPORT NUMBER	WC402208.3
TEST DATE	07 May 2004

According to testing performed at TÜV Product Service Inc, the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in FCC Part 22 Subpart H.

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

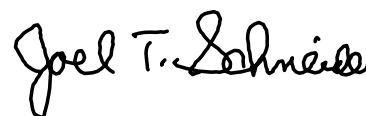
TÜV Product Service Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the requirements of FCC Part 22 Subpart H.

Date: 10 September 2004



Location: Taylors Falls MN  
USA

J. C. Sausen  
Test Technician



J. T. Schneider  
Chief Engineer

Not Transferable

# EMC EMISSION - TEST REPORT

Test Report File No. : **WC402208.3** Date of issue: 10 September 2004

MANUFACTURER 1 - NAME  
MANUFACTURER'S ADDRESS

Vanu, Inc.  
One Porter Square, Suite 18  
Cambridge MA 02140

NAME OF EQUIPMENT  
MODEL NUMBER(S)

Vanu Software Radio Base Station  
**RAN-1.0**

MANUFACTURER 2 - NAME  
MANUFACTURER'S ADDRESS

ADC Inc.  
PO Box 1101  
Minneapolis MN 55440

NAME OF EQUIPMENT  
MODEL NUMBER(S)

Digivance Wide Band Digital Radio  
800 MHz 50-Watt System  
**DGVS-112710SYS**  
**DGVS-122710SYS**

TEST REPORT NUMBER

WC402208.3

TEST DATE

07 May 2004

Test Result : ☒ **Positive** ☐ **Negative**

Test Project Number :  
Reference(s) **WC402208.3**

Total pages including  
Appendices **144**

*TÜV Product Service Inc is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001. TÜV Product Service Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV Product Service Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV Product Service Inc issued reports. This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP or any agency of the US government.*

*TÜV Product Service Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI*

## D I R E C T O R Y   -   E M I S S I O N S

	Page(s)
<b>A) Documentation</b>	
Test report	<u>1 – 136</u>
Directory	<u>2</u>
Test Regulations	<u>3</u>
<b>B) Test data</b>	
22.355 Frequency tolerance	<u>5 - 7</u>
22.913 Effective Radiated Power Limit	<u>8 - 9</u>
22.915 Modulation requirements	<u>10</u>
22.917 Emission Limitations for cellular	<u>10 - 112</u>
2.1053 Case radiation	<u>113 - 125</u>
EUT Operating Mode and Configuration Information	<u>126</u>
Deviations, General Remarks and Summary	<u>127</u>
Test Equipment List	<u>128</u>
Test Setup Diagrams and Photo(s)	<u>129 - 136</u>
<b>C) Product Information</b>	
Product Information Form	<u>A1 – A8</u>

## EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

- |   |   |                                    |
|---|---|------------------------------------|
| <input type="checkbox"/> - EN 50081-1 / 1991                | <input type="checkbox"/> - Group 1                          | <input type="checkbox"/> - Group 2 |
| <input type="checkbox"/> - EN 55011 / 1991                  | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - EN 55013 / 1990                  | <input type="checkbox"/> - Household appliances and similar |                                    |
| <input type="checkbox"/> - EN 55014 / 1987                  | <input type="checkbox"/> - Portable tools                   |                                    |
|   | <input type="checkbox"/> - Semiconductor devices            |                                    |
| <input type="checkbox"/> - EN 55014 / A2:1990               | <input type="checkbox"/> - Household appliances and similar |                                    |
| <input type="checkbox"/> - EN 55014 / 1993                  | <input type="checkbox"/> - Portable tools                   |                                    |
|   | <input type="checkbox"/> - Semiconductor devices            |                                    |
| <input type="checkbox"/> - EN 55015 / 1987                  | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - EN 55015 / A1:1990               |   |                                    |
| <input type="checkbox"/> - EN 55015 / 1993                  |   |                                    |
| <input type="checkbox"/> - EN 55022 / 1987                  |   |                                    |
| <input checked="" type="checkbox"/> - FCC Part 22 Subpart H |   |                                    |
| <input type="checkbox"/> - BS                               | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - VCCI                             | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - FCC                              | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - AS 3548 (1992)                   | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
| <input type="checkbox"/> - CISPR 11 (1990)                  | <input type="checkbox"/> - Group 1                          | <input type="checkbox"/> - Group 2 |
| <input type="checkbox"/> - CISPR 22 (1993)                  | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |
|   | <input type="checkbox"/> - Class A                          | <input type="checkbox"/> - Class B |

**Environmental conditions in the lab:**

	<u>Actual</u>
Temperature	: 23 °C
Relative Humidity	: 28 %
Atmospheric pressure	: 98.0 kPa
Power supply system	: 60 Hz - 115 V - 1-phase

**Sign Explanations:**

- ☐ - not applicable  
☒ - applicable



## 22.355 Frequency tolerance

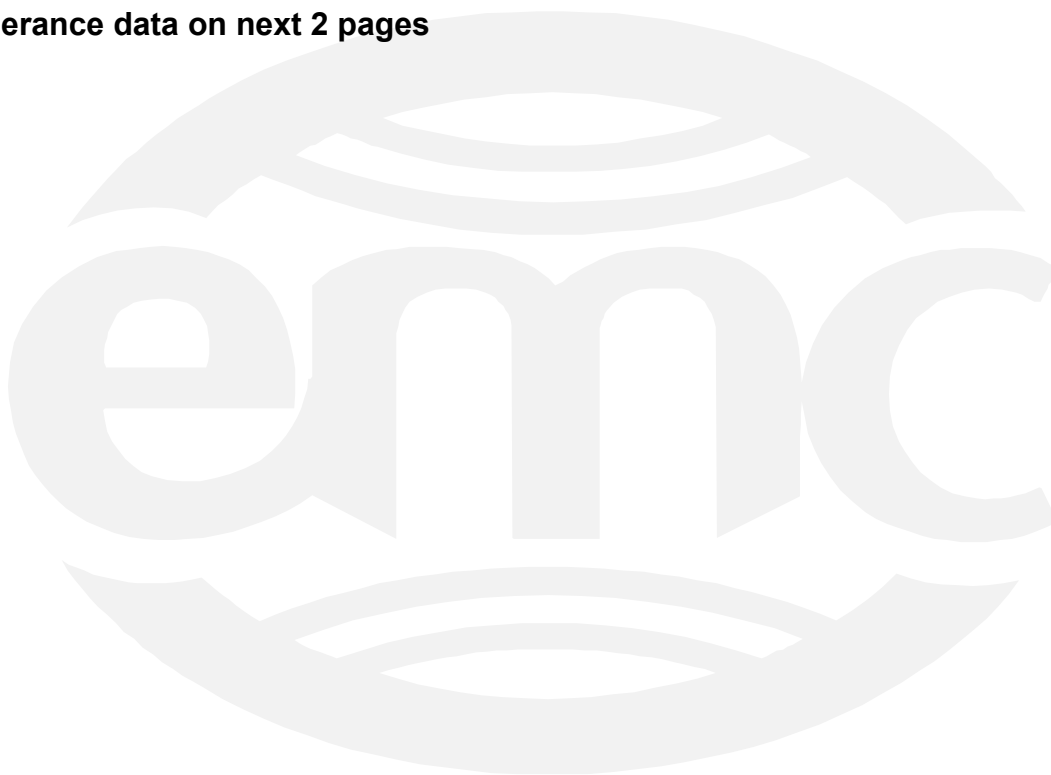
The Frequency Tolerance measurements were performed at the following test location:

- - ADC facility

The EUT Server is specified for indoor use only with temperature range of +10 to +35° C and was tested within its range. The EUT STM and LPA are specified with a temperature range of -30 to +50° C and were tested within their range.

The remote units are placed in the temp chamber and the temp is lowered to -30 degrees C. Incremental temperature increases are administered and test measurements are taken when the units are soaked long enough. When the testing has been completed for the temperatures up to 0 degrees, then the host unit is placed in the temp chamber and testing resumes all the way up to +50 degrees C.

**Frequency tolerance data on next 2 pages**



**Frequency Tolerance Test for ADC Inc**  
**Digivance 800 MHz 50-Watt SDR System**  
**Model Numbers DGVs-112710SYS and DGVs-122710SYS**

**EUT A Band**

<b>Input Voltage</b>	<b>Carrier Frequency</b>	<b>Measured Frequency</b>	<b>Meets requirement?</b>
102 VAC	869.200000 MHz	869.200000 MHz	YES
120 VAC	869.200000 MHz	869.200000 MHz	YES
138 VAC	869.200000 MHz	869.200000 MHz	YES
102 VAC	879.800000 MHz	879.800000 MHz	YES
120 VAC	879.800000 MHz	879.800000 MHz	YES
138 VAC	879.800000 MHz	879.800000 MHz	YES
102 VAC	891.400000 MHz	891.400000 MHz	YES
120 VAC	891.400000 MHz	891.400000 MHz	YES
138 VAC	891.400000 MHz	891.400000 MHz	YES
<b>Temperature</b>	<b>Carrier Frequency</b>	<b>Measured Frequency</b>	<b>Meets requirement?</b>
-30 Deg C	869.200000 MHz	869.200000 MHz	YES
-20 Deg C	869.200000 MHz	869.200000 MHz	YES
-10 Deg C	869.200000 MHz	869.200000 MHz	YES
0 Deg. C	869.200000 MHz	869.200000 MHz	YES
10 Deg C	869.200000 MHz	869.200000 MHz	YES
20 Deg C	869.200000 MHz	869.200000 MHz	YES
30 Deg C	869.200000 MHz	869.200000 MHz	YES
40 Deg C	869.200000 MHz	869.200000 MHz	YES
50 Deg C	869.200000 MHz	869.200000 MHz	YES
-30 Deg C	879.800000 MHz	879.800000 MHz	YES
-20 Deg C	879.800000 MHz	879.800000 MHz	YES
-10 Deg C	879.800000 MHz	879.800000 MHz	YES
0 Deg. C	879.800000 MHz	879.800000 MHz	YES
10 Deg C	879.800000 MHz	879.800000 MHz	YES
20 Deg C	879.800000 MHz	879.800000 MHz	YES
30 Deg C	879.800000 MHz	879.800000 MHz	YES
40 Deg C	879.800000 MHz	879.800000 MHz	YES
50 Deg C	879.800000 MHz	879.800000 MHz	YES
-30 Deg C	891.400000 MHz	891.400000 MHz	YES
-20 Deg C	891.400000 MHz	891.400000 MHz	YES
-10 Deg C	891.400000 MHz	891.400000 MHz	YES
0 Deg. C	891.400000 MHz	891.400000 MHz	YES
10 Deg C	891.400000 MHz	891.400000 MHz	YES
20 Deg C	891.400000 MHz	891.400000 MHz	YES
30 Deg C	891.400000 MHz	891.400000 MHz	YES
40 Deg C	891.400000 MHz	891.400000 MHz	YES
50 Deg C	891.400000 MHz	891.400000 MHz	YES

## EUT B Band

Input Voltage	Carrier Frequency	Measured Frequency	Meets requirement?
102 VAC	880.000000 MHz	880.000000 MHz	YES
120 VAC	880.000000 MHz	880.000000 MHz	YES
138 VAC	880.000000 MHz	880.000000 MHz	YES
102 VAC	887.000000 MHz	887.000000 MHz	YES
120 VAC	887.000000 MHz	887.000000 MHz	YES
138 VAC	887.000000 MHz	887.000000 MHz	YES
102 VAC	893.800000 MHz	893.800000 MHz	YES
120 VAC	893.800000 MHz	893.800000 MHz	YES
138 VAC	893.800000 MHz	893.800000 MHz	YES
Temperature	Carrier Frequency	Measured Frequency	Meets requirement?
-30 Deg C	880.000000 MHz	880.000000 MHz	YES
-20 Deg C	880.000000 MHz	880.000000 MHz	YES
-10 Deg C	880.000000 MHz	880.000000 MHz	YES
0 Deg. C	880.000000 MHz	880.000000 MHz	YES
10 Deg C	880.000000 MHz	880.000000 MHz	YES
20 Deg C	880.000000 MHz	880.000000 MHz	YES
30 Deg C	880.000000 MHz	880.000000 MHz	YES
40 Deg C	880.000000 MHz	880.000000 MHz	YES
50 Deg C	880.000000 MHz	880.000000 MHz	YES
-30 Deg C	887.000000 MHz	887.000000 MHz	YES
-20 Deg C	887.000000 MHz	887.000000 MHz	YES
-10 Deg C	887.000000 MHz	887.000000 MHz	YES
0 Deg. C	887.000000 MHz	887.000000 MHz	YES
10 Deg C	887.000000 MHz	887.000000 MHz	YES
20 Deg C	887.000000 MHz	887.000000 MHz	YES
30 Deg C	887.000000 MHz	887.000000 MHz	YES
40 Deg C	887.000000 MHz	887.000000 MHz	YES
50 Deg C	887.000000 MHz	887.000000 MHz	YES
-30 Deg C	893.800000 MHz	893.800000 MHz	YES
-20 Deg C	893.800000 MHz	893.800000 MHz	YES
-10 Deg C	893.800000 MHz	893.800000 MHz	YES
0 Deg. C	893.800000 MHz	893.800000 MHz	YES
10 Deg C	893.800000 MHz	893.800000 MHz	YES
20 Deg C	893.800000 MHz	893.800000 MHz	YES
30 Deg C	893.800000 MHz	893.800000 MHz	YES
40 Deg C	893.800000 MHz	893.800000 MHz	YES
50 Deg C	893.800000 MHz	893.800000 MHz	YES

Note: EUT Server is specified for indoor use only with temperature range of +10 to +35° C and was tested within its range.

Note: EUT STM and LPA are specified with a temperature range of -30 to +50° C and were tested within their range.

## 22.913 Effective Radiated Power Limit

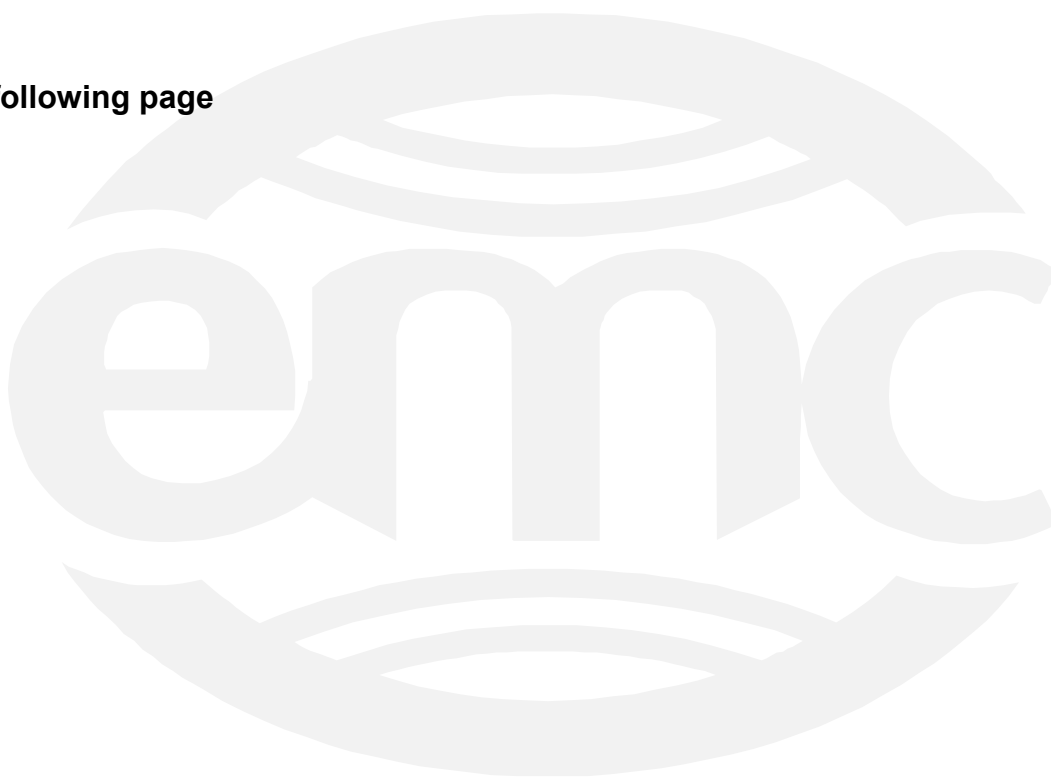
The Effective Radiated Power Limit measurements were tested at the following test location:

☐ - Test not applicable

■ - ADC facility

This measurement was made as a direct conducted emission measurement. The output from the EUT antenna connector was connected directly to the spectrum analyzer, which was set up with a 1 MHz resolution bandwidth. The spectrum analyzer level was offset by 20 dB to compensate for the attenuator placed between the EUT and the analyzer, and by 2 dB for the measured cable loss between the EUT and the analyzer.

ERP data on following page



# **Effective Isotropic Radiated Power Limit Test for ADC Inc.**

## **Digivance 800 MHz 50-Watt SDR System**

### **Model Numbers DGVs-112710SYS and DGVs-122710SYS**

This measurement was made as a direct conducted emission measurement. The output from the EUT antenna connector was connected to the spectrum analyzer. The Carrier Output, below, was conducted using a single CW signal. The spectrum analyzer level was offset to compensate for attenuators and cable loss between the EUT and the analyzer.

A CW signal was used at the low, mid and high parts of the selected band. The spectrum analyzer level was offset by 50.5 dB to compensate for attenuators and cable loss between the EUT and the analyzer.

#### **Band A**

<b>Carrier Frequency</b>	<b>Carrier Output</b>
869.20 MHz	+ 43.50 dBm
879.80 MHz	+ 44.83 dBm
891.40 MHz	+ 45.33 dBm

#### **Band B**

<b>Carrier Frequency</b>	<b>Carrier Output</b>
880.00 MHz	+ 46.00 dBm
887.00 MHz	+ 46.17 dBm
893.80 MHz	+ 47.17 dBm

## 22.915 Modulation requirements

The Modulation requirement measurements were performed at the following test location:

☒ - Test not applicable

- ☐ - Wild River Lab Large Test Site
- ☐ - Wild River Lab Small Test Site (Open Area Test Site)
- ☐ - Oakwood Lab (Open Area Test Site)
- ☐ - Wild River Lab Screen Room
- ☐ - New Brighton Lab Shielded Room

The instantaneous frequency deviation measurements and the audio filter characteristics measurements are not applicable to this device – it is an amplifier.

## 22.917 Emission Limitations for cellular

The Emission limitations for cellular measurements were performed at the following test location:

- ☐ - Wild River Lab Large Test Site (Open Area Test Site)
- ☒ - ADC facility

at a test distance of:

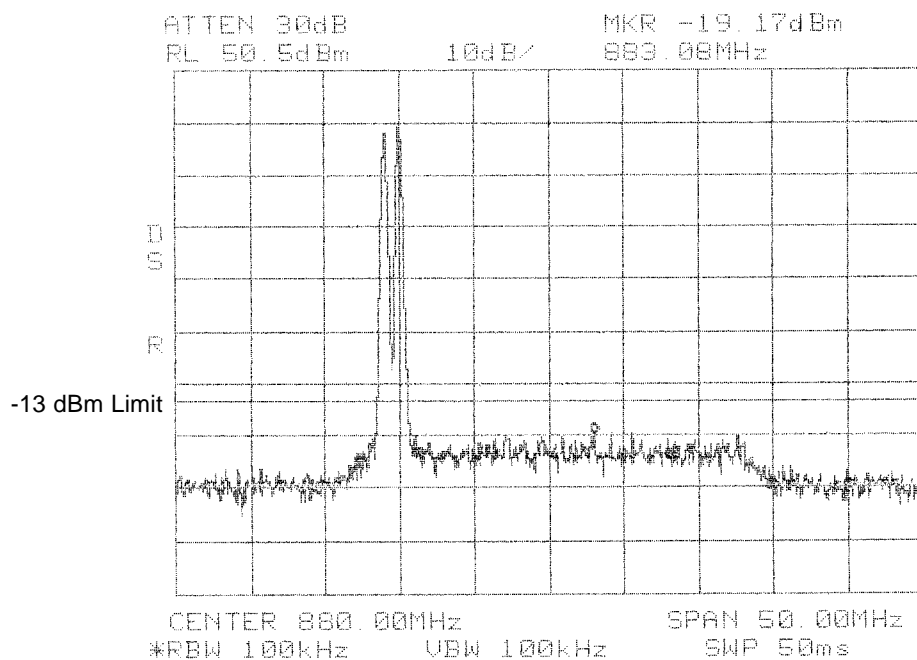
- ☒ - 3 meters
- ☐ - 10 meters

**Inter-Modulation Test for ADC Inc.**  
**Digivance 800 MHz 50-Watt SDR System**  
**Model Numbers DGVs-112710SYS and DGVs-122710SYS**

The intermodulation product test was performed for each bandwidth setting of the EUT. Two tests were performed with each modulation type. Test 1 was with two signals input into the EUT at lower end channels. Test 2 was with two signals input into the EUT at upper end channels. The modulation type tested was GSM. An investigation was made from 30 MHz to the 10<sup>th</sup> harmonic of the highest fundamental frequency (~10 GHz).

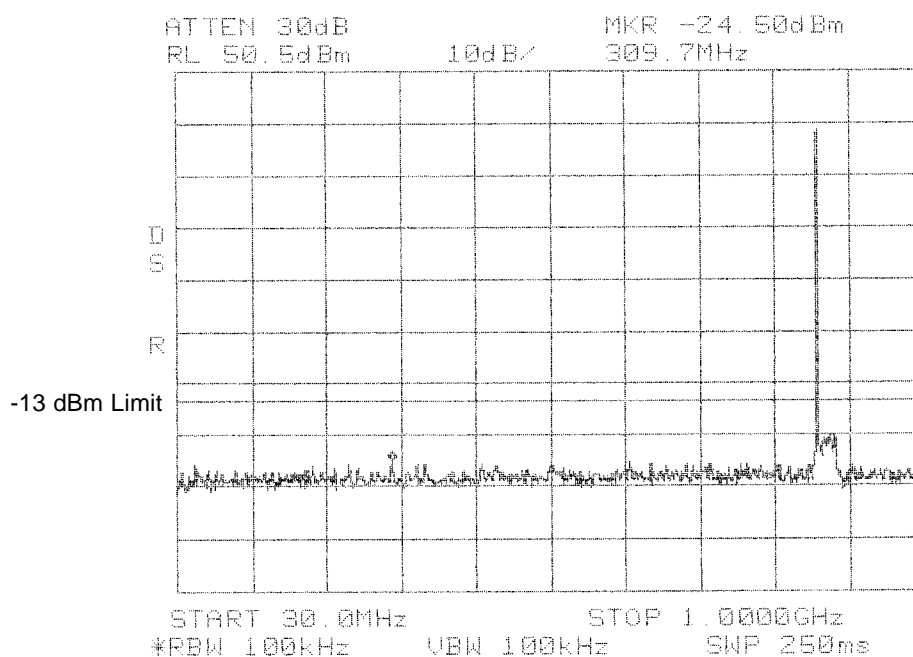
**Results:**

Pass (see plots)



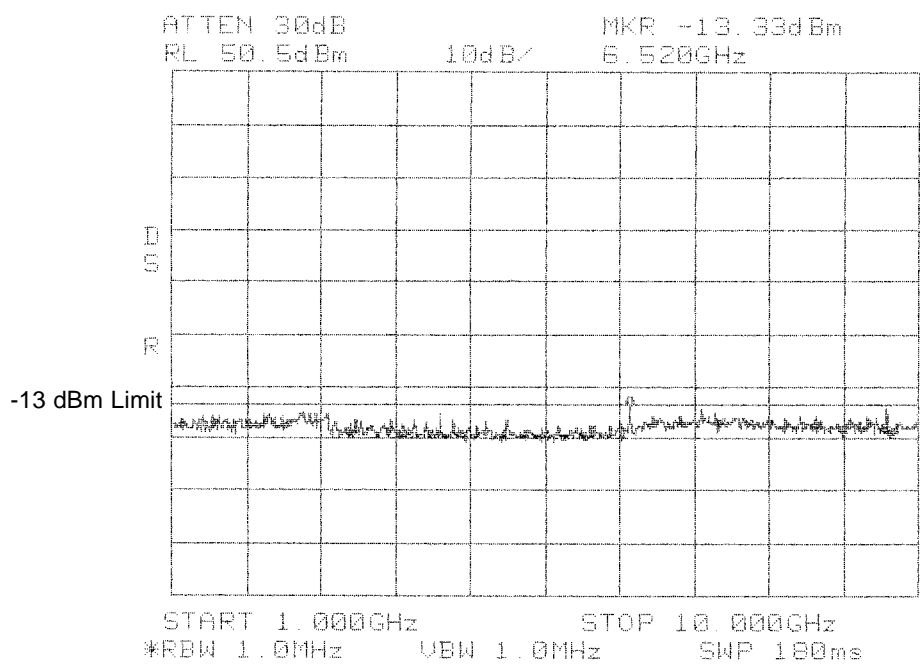
Spikes are carrier signals.

**Software Defined Radio  
Intermodulation  
Low  
GSM  
A BAND**  
Channel 128  
Channel 133



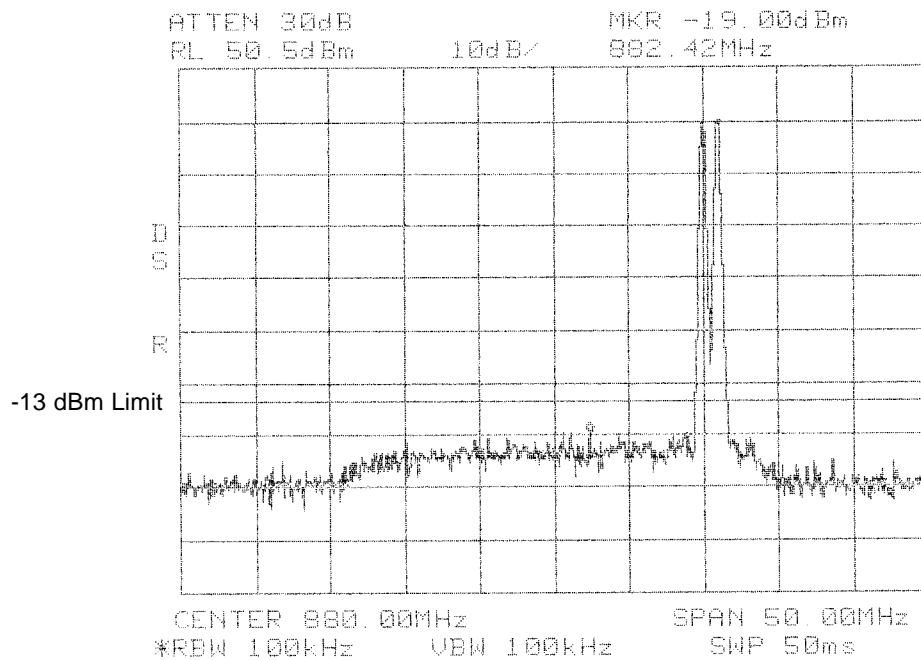
Spikes are carrier signals.

**Software Defined Radio  
Intermodulation  
Low  
GSM  
A BAND**  
Channel 128  
Channel 133



Spikes are carrier signals.

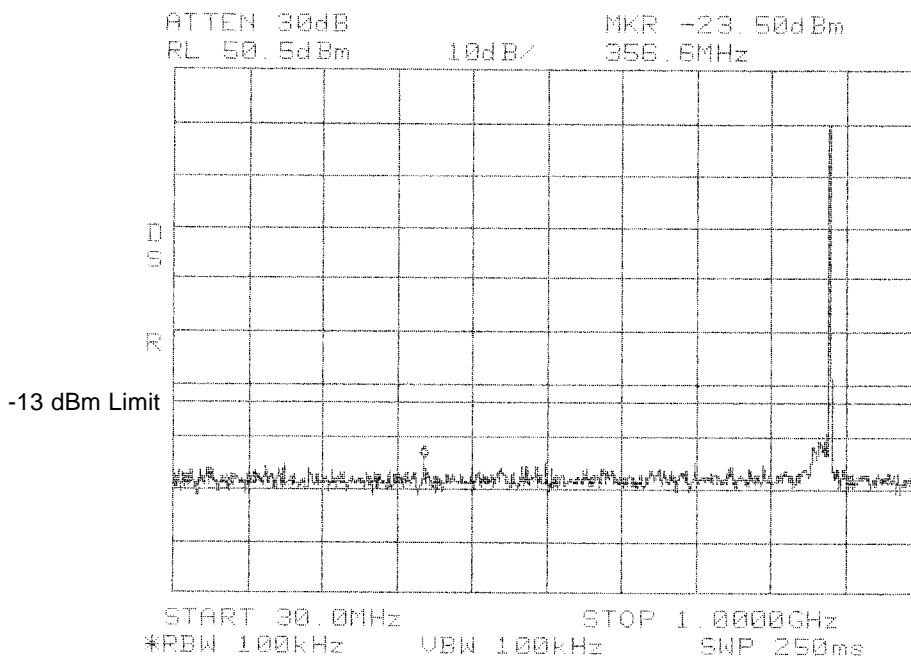
**Software Defined Radio  
Intermodulation  
Low  
GSM  
A BAND**  
*Channel 128  
channel 133*



Spikes are carrier signals.

## Software Defined Radio Intermodulation High GSM A BAND

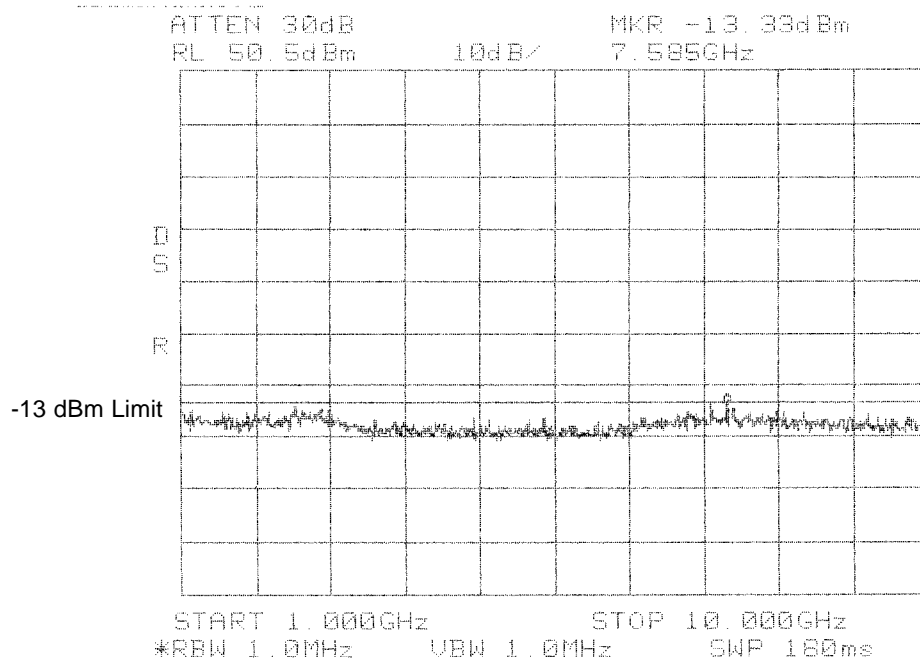
Channel 233  
Channel 238



Spikes are carrier signals.

## Software Defined Radio Intermodulation High GSM A BAND

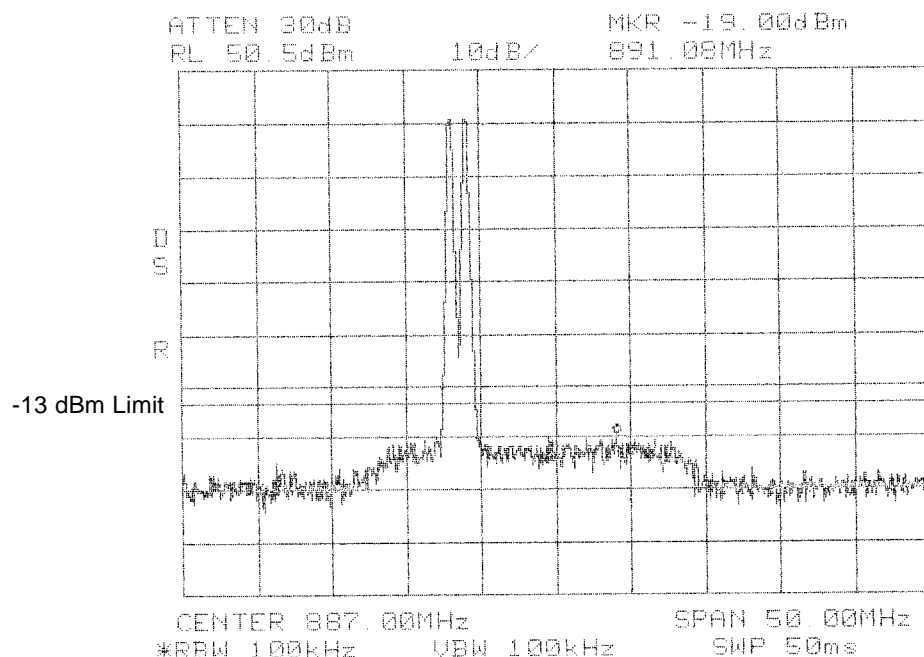
Channel 233  
Channel 238



**Software Defined Radio**  
**Intermodulation**  
**High**  
**GSM**  
**A BAND**

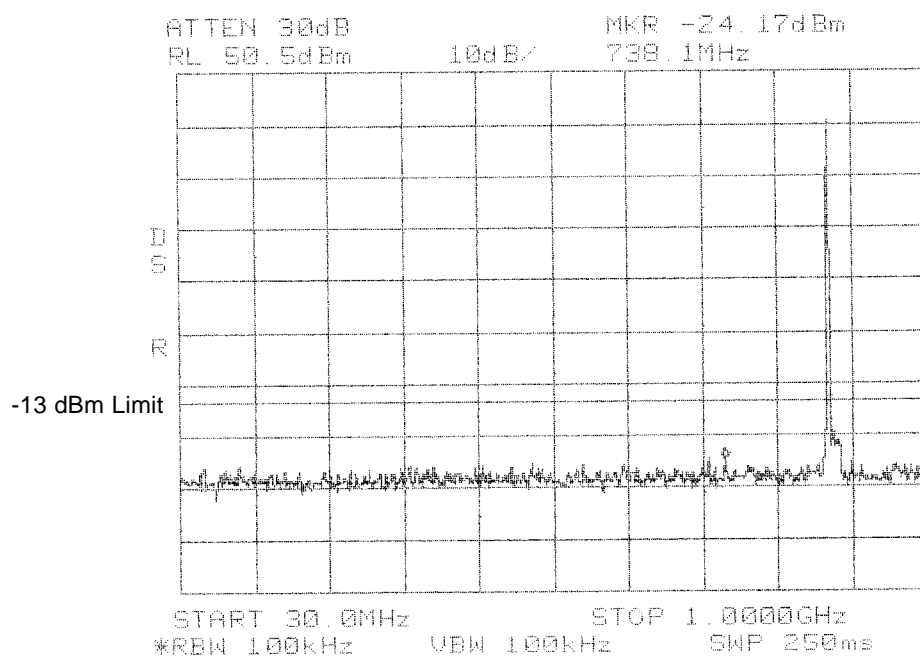
Channel 233  
 channel 238

Spikes are carrier signals.



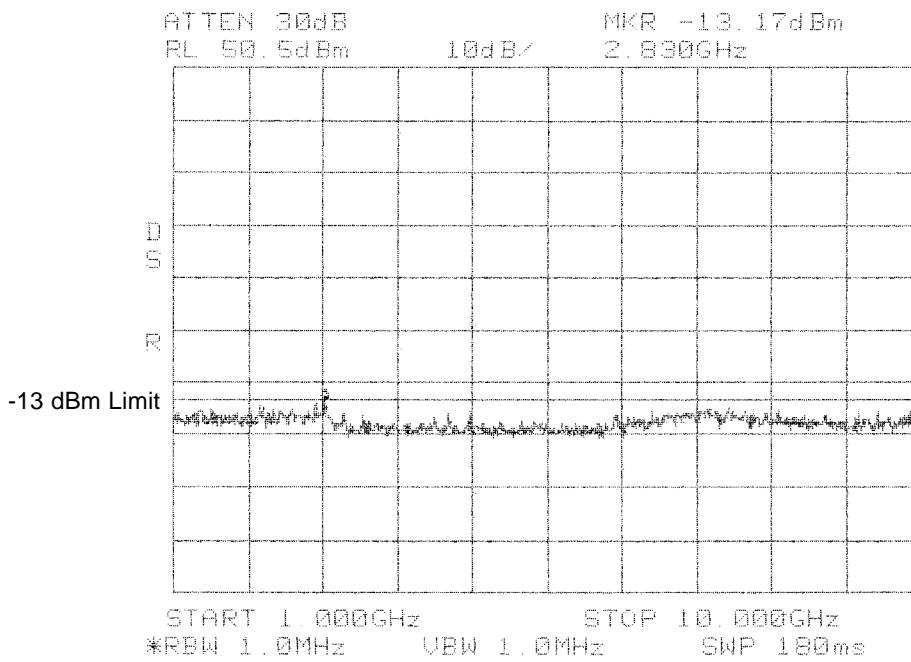
Spikes are carrier signals.

**Software Defined Radio  
Intermodulation  
Low  
GSM  
B BAND**  
Channel 183  
Channel 188



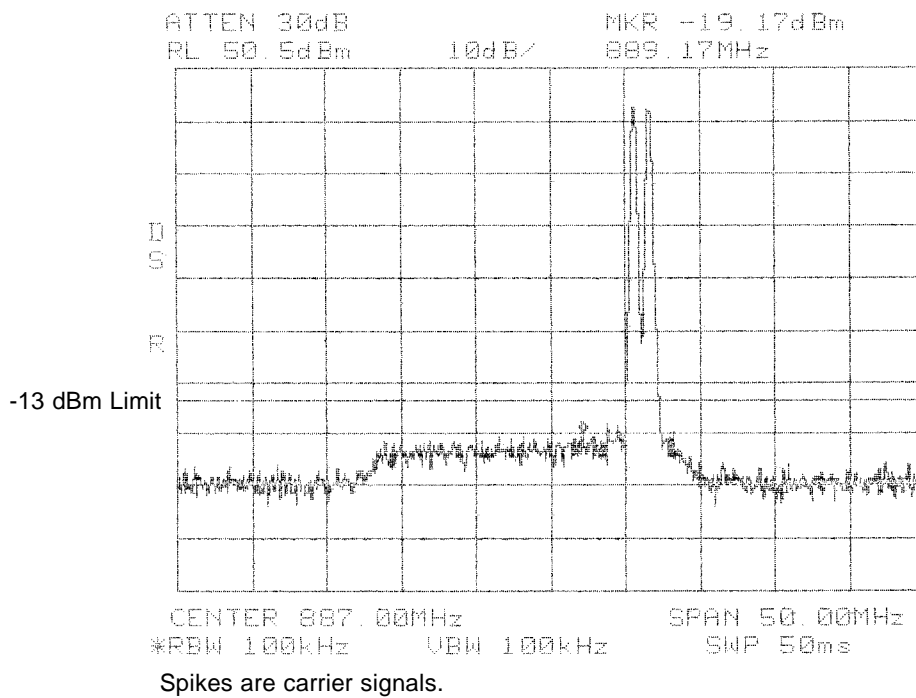
Spikes are carrier signals.

**Software Defined Radio  
Intermodulation  
Low  
GSM  
B BAND**  
Channel 183  
Channel 188



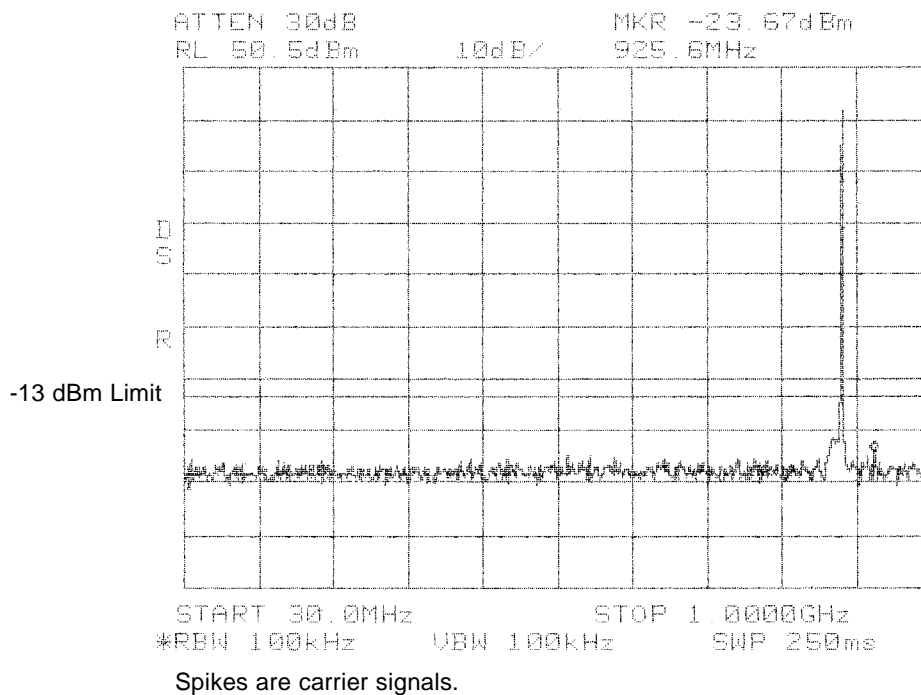
**Software Defined Radio  
Intermodulation  
Low  
GSM  
B BAND**  
Channel 183  
Channel 188

Spikes are carrier signals.



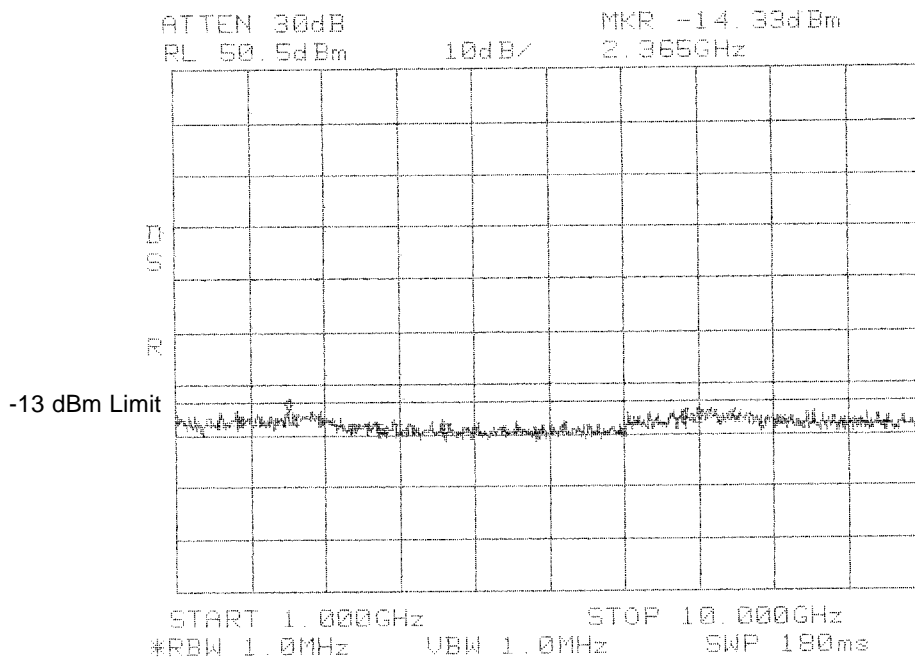
# Software Defined Radio Intermodulation High GSM B BAND

Channel 246  
channel 251



# Software Defined Radio Intermodulation High GSM B BAND

Channel 246  
Channel 251



**Software Defined Radio**  
**Intermodulation**  
**High**  
**GSM**  
**B BAND**  
 Channel 246  
 Channel 251

**Conducted Emission Limits Test for ADC Inc.**  
**Digivance 800 MHz 50-Watt SDR System**  
**Model Numbers DGVs-112710SYS and DGVs-122710SYS**

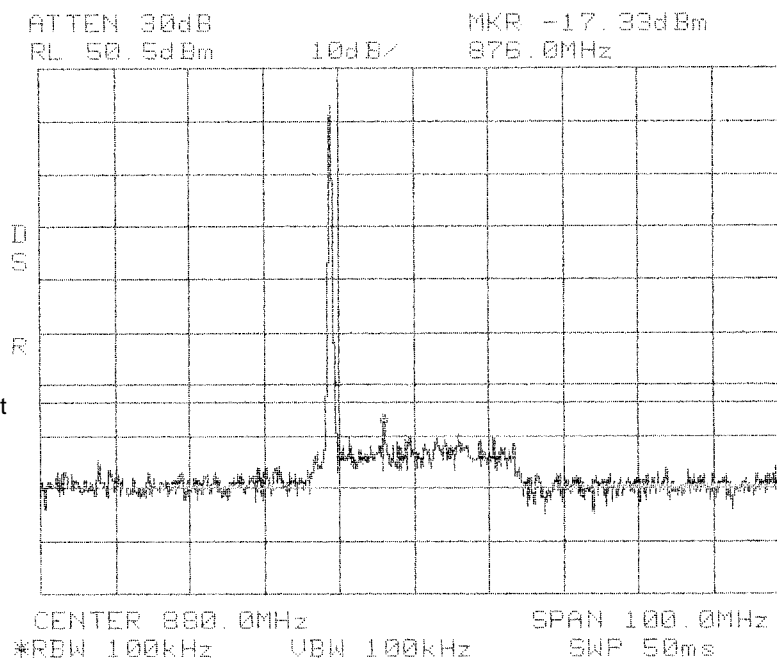
The out of band emissions were measured directly from the EUT antenna output with a spectrum analyzer from 30 MHz to the 10<sup>th</sup> harmonic of the highest carrier frequency. Test signals used are CW, and GSM. The different signals were input one at a time to the EUT. In all cases, the out of band emissions were less than -13dBm from the equation

$$(19\text{dBm} - [43 + 10\log(0.08\text{W})])$$

Band edge compliance is also demonstrated using a GSM signal at the upper and lower limits of the band and a resolution bandwidth of 1 kHz.

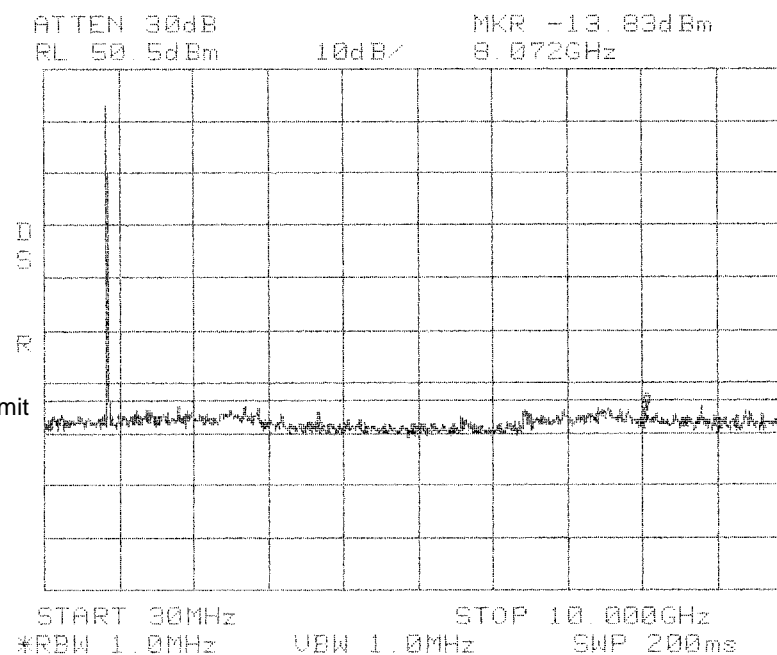
**Results:**

Pass (see plots)



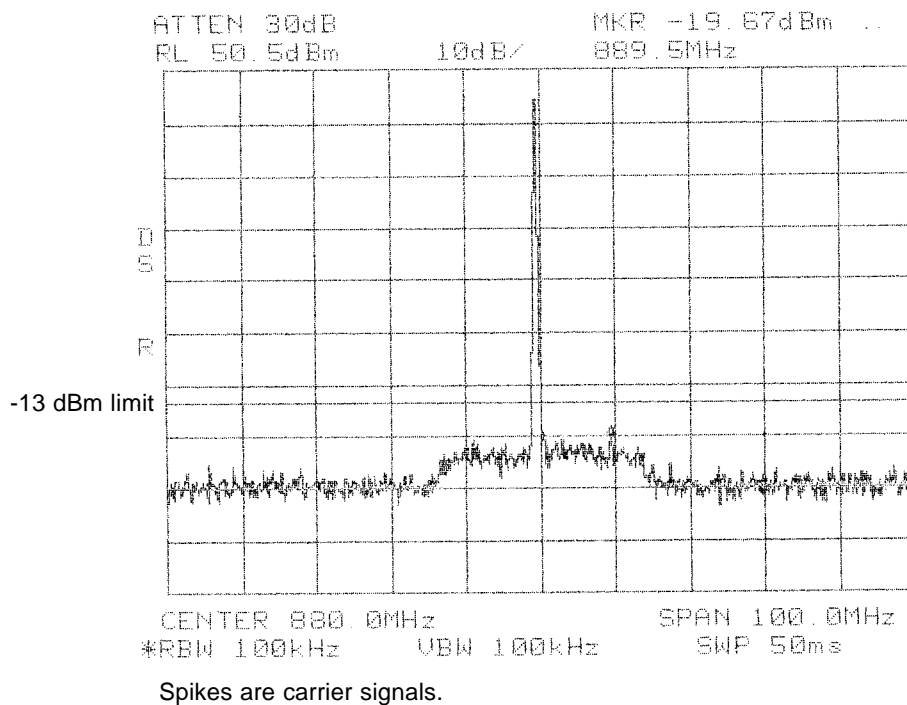
Spikes are carrier signals.

**Software Defined Radio  
Conducted Emissions  
LOW  
A BAND**  
Channel 128

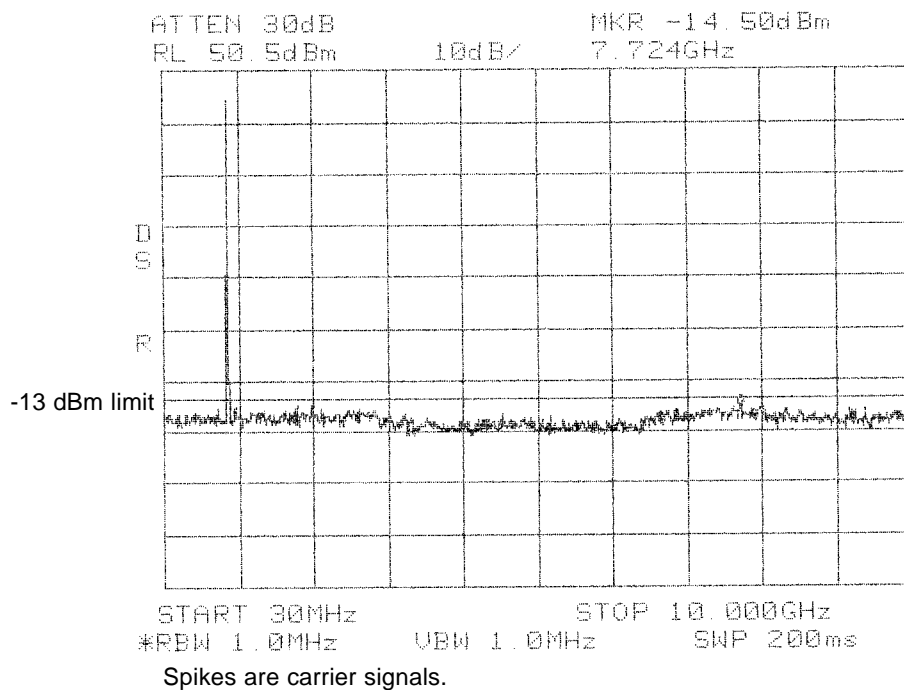


Spikes are carrier signals.

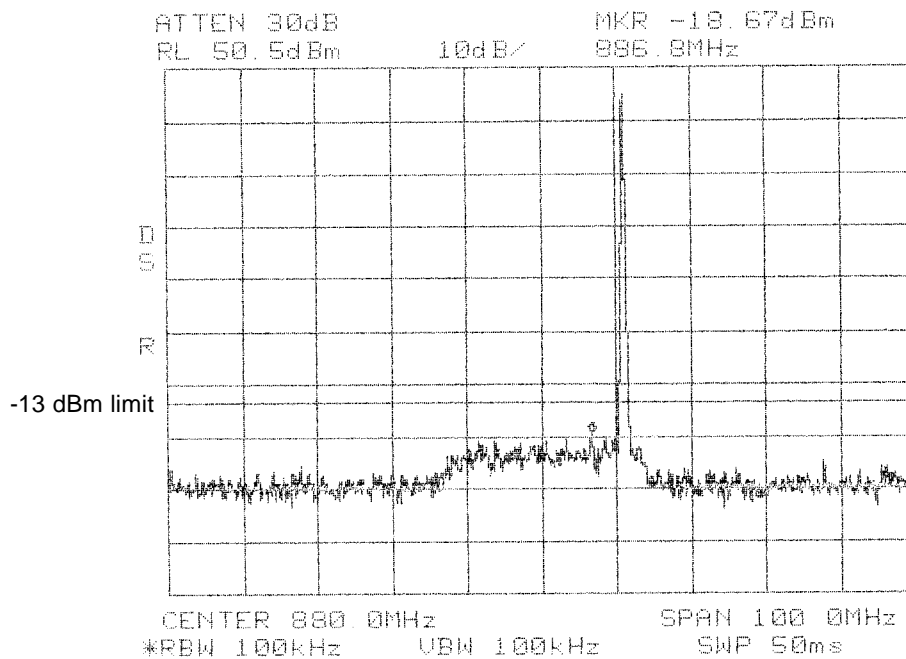
**Software Defined Radio  
Conducted Emissions  
LOW  
A BAND**  
Channel 128



**Software Defined Radio  
Conducted Emissions  
MID  
A BAND**  
Channel 181

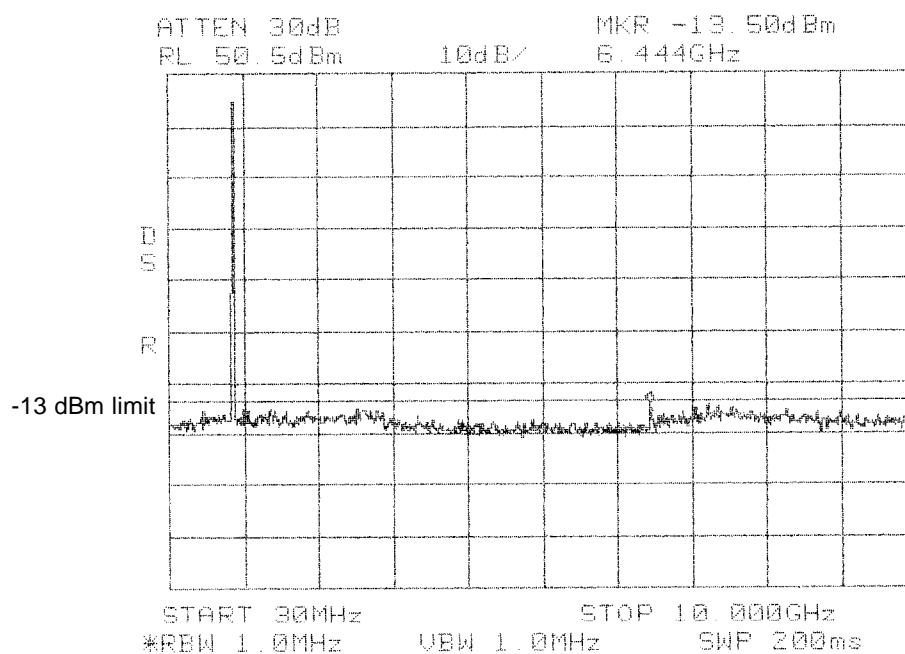


**Software Defined Radio  
Conducted Emissions  
MID  
A BAND**  
Channel 181



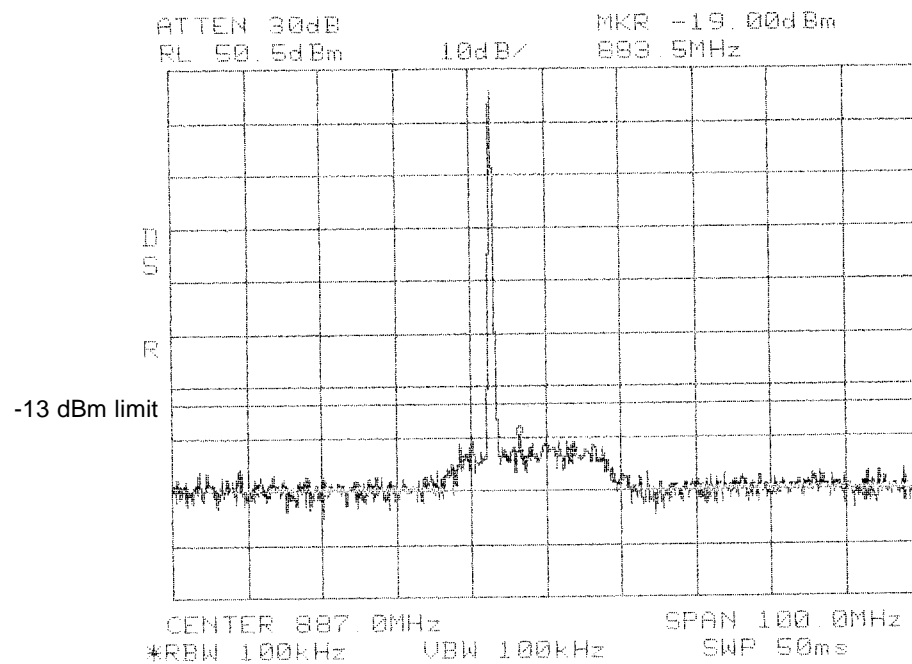
Spikes are carrier signals.

**Software Defined Radio  
Conducted Emissions  
HIGH  
A BAND**  
Channel 239



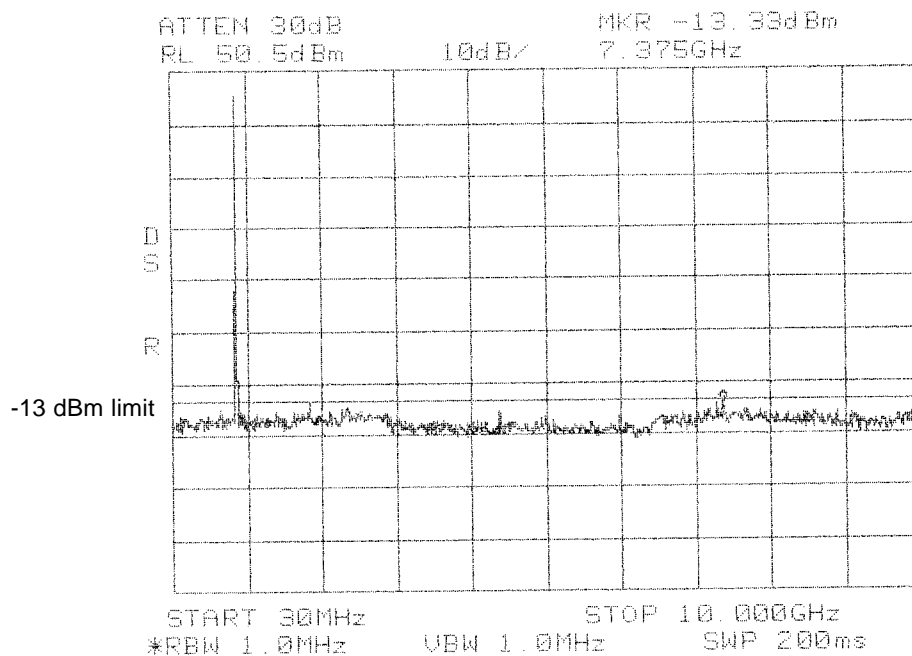
Spikes are carrier signals.

**Software Defined Radio  
Conducted Emissions  
HIGH  
A BAND**  
Channel 239



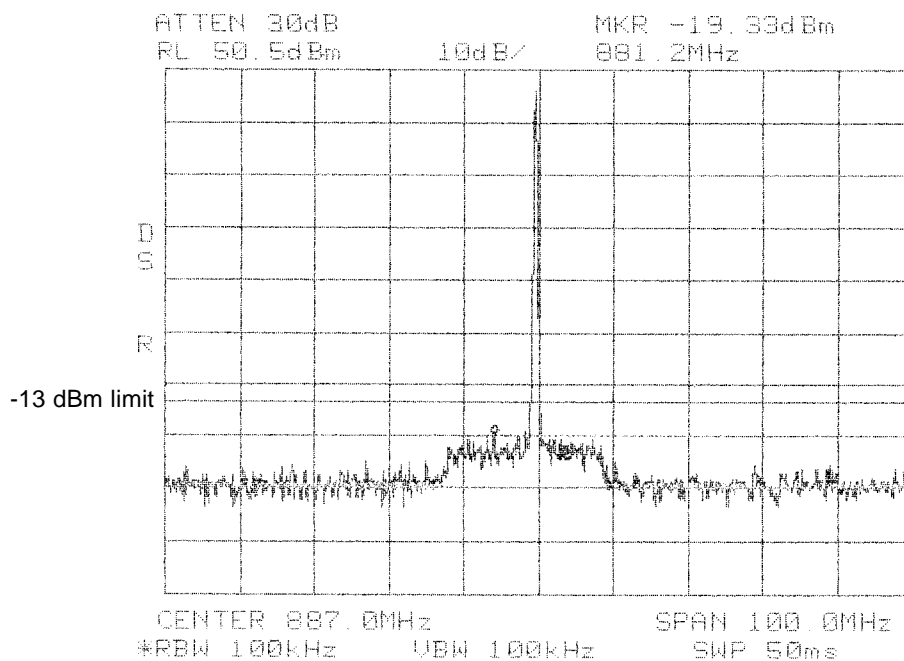
Spikes are carrier signals.

**Software Defined Radio  
Conducted Emissions  
LOW  
B BAND**  
Channel 183



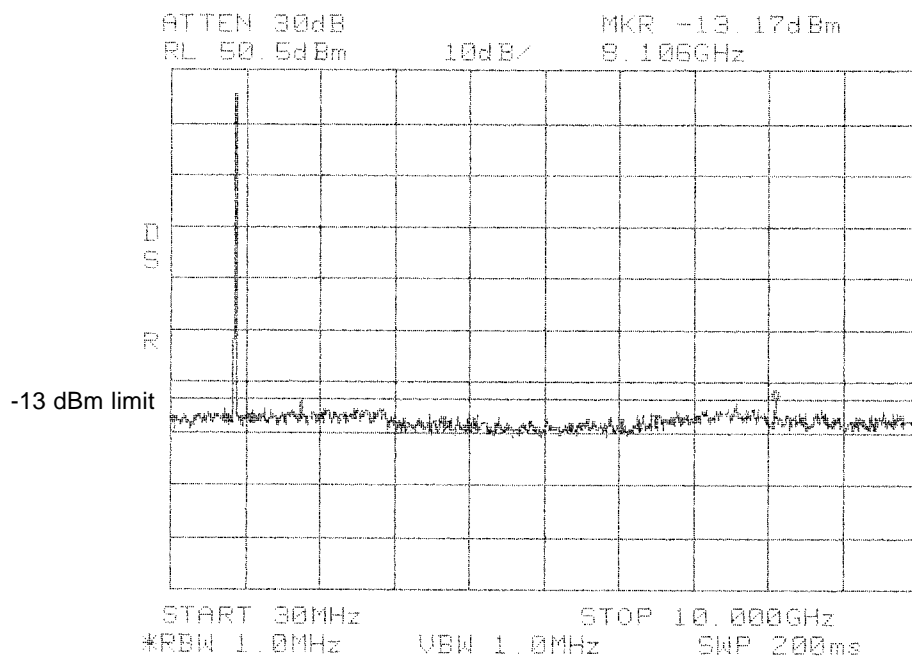
Spikes are carrier signals.

**Software Defined Radio  
Conducted Emissions  
LOW  
B BAND**  
Channel 183



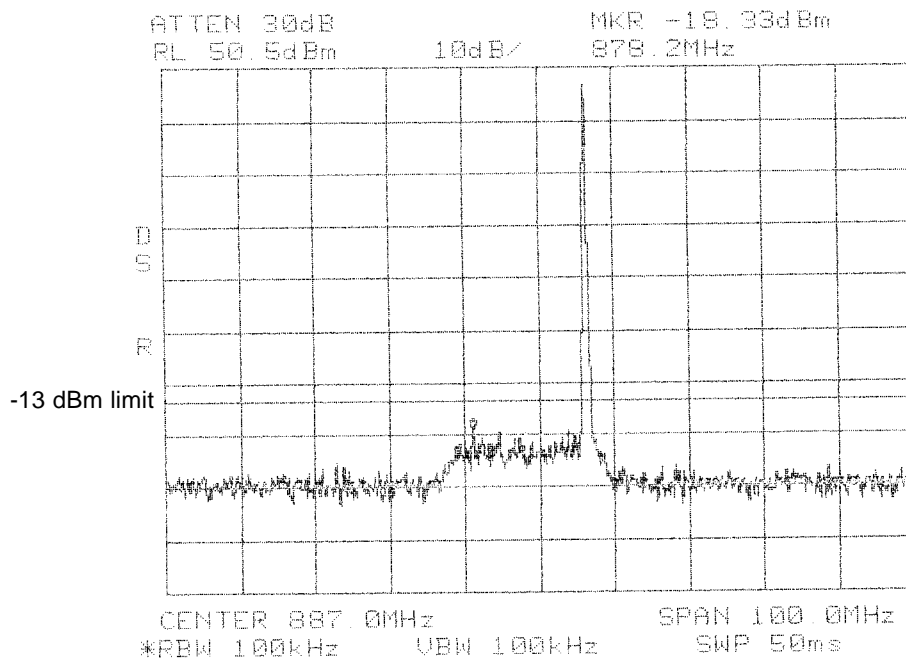
Spikes are carrier signals.

**Software Defined Radio  
Conducted Emissions  
MID  
B BAND**  
channel Z17



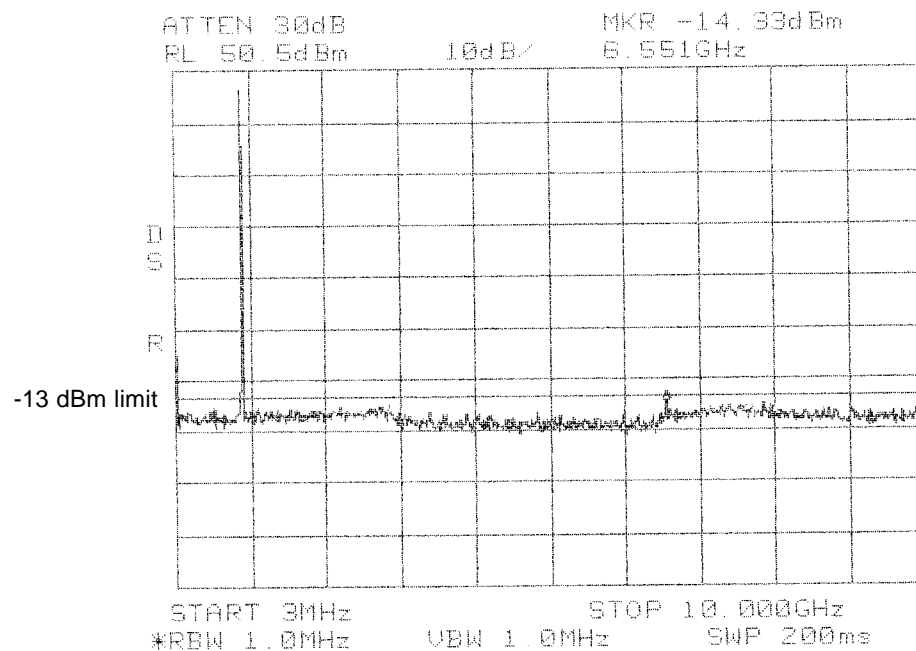
Spikes are carrier signals.

**Software Defined Radio  
Conducted Emissions  
MID  
B BAND**  
channel Z17



Spikes are carrier signals.

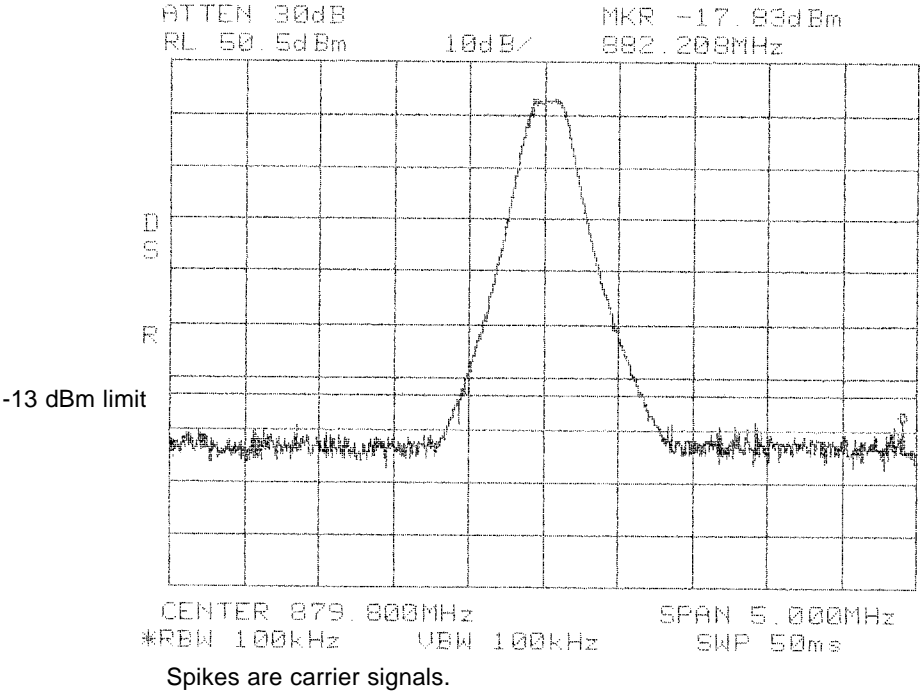
**Software Defined Radio  
Conducted Emissions  
HIGH  
B BAND**  
channel 251



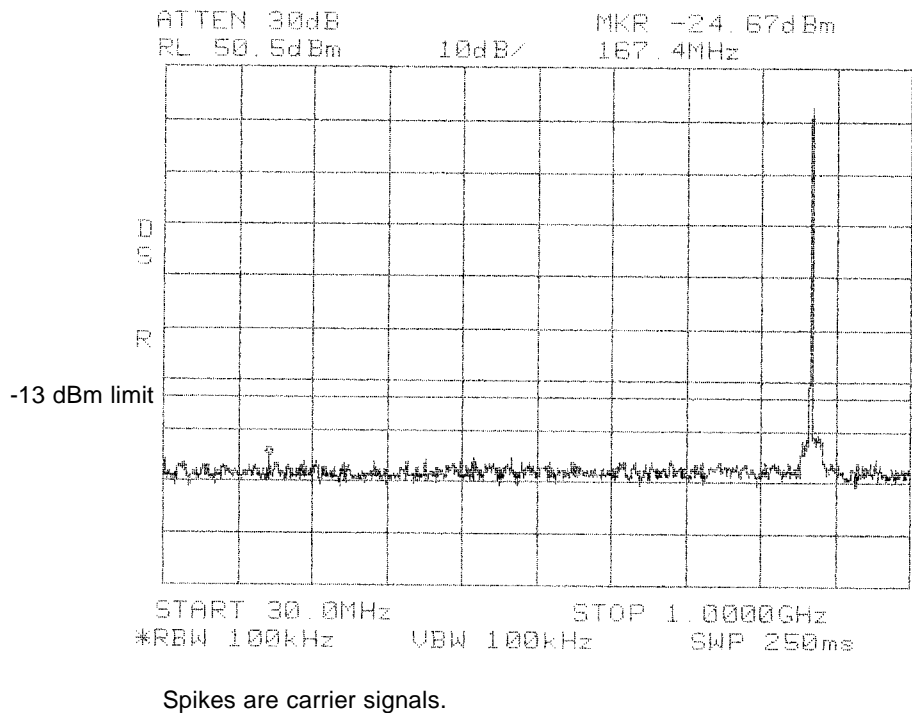
Spikes are carrier signals.

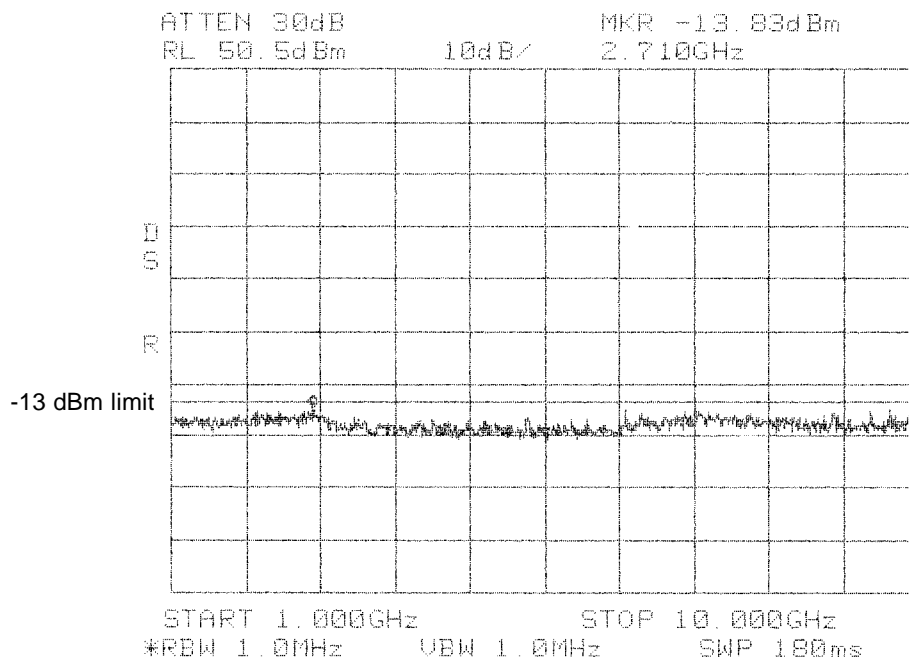
**Software Defined Radio  
Conducted Emissions  
HIGH  
B BAND**  
channel 251

**Software Defined Radio  
Conducted Emissions  
GSM  
A BAND**  
*Channel 181*



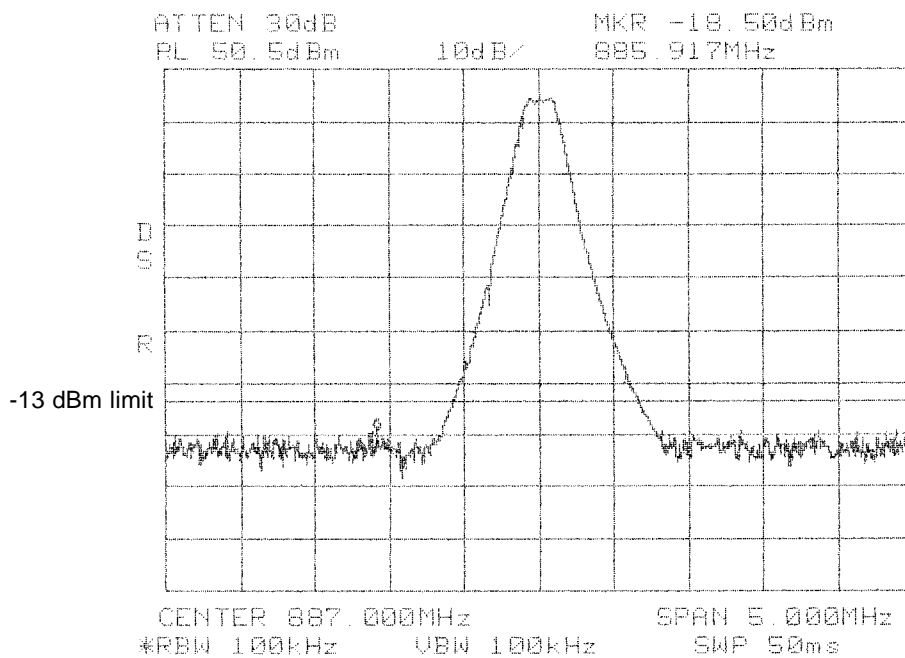
**Software Defined Radio  
Conducted Emissions  
GSM  
A BAND**  
*Channel 181*





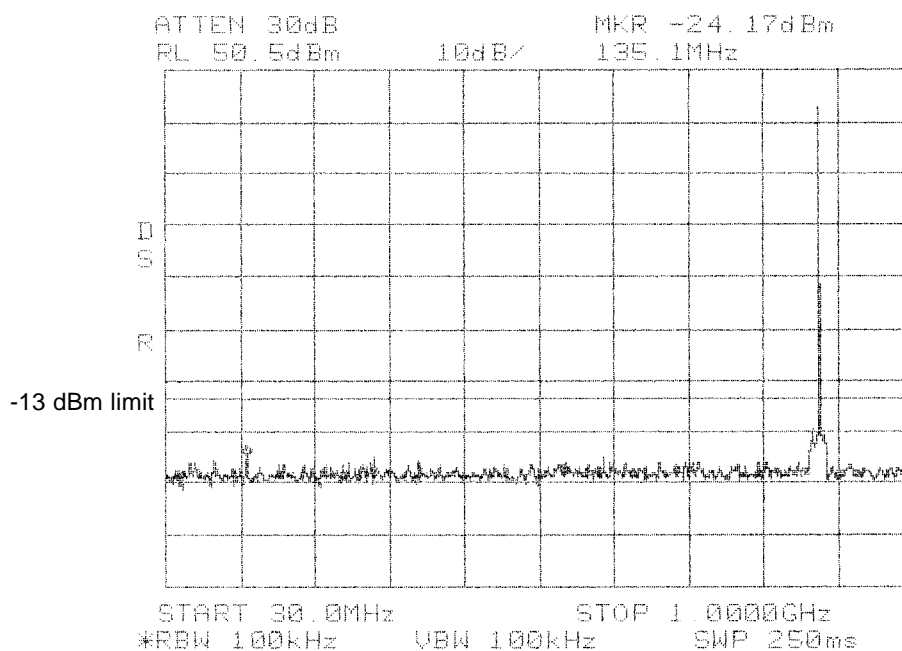
Spikes are carrier signals.

**Software Defined Radio  
 Conducted Emissions  
 GSM  
 A BAND**  
*Channel 181*



Spikes are carrier signals.

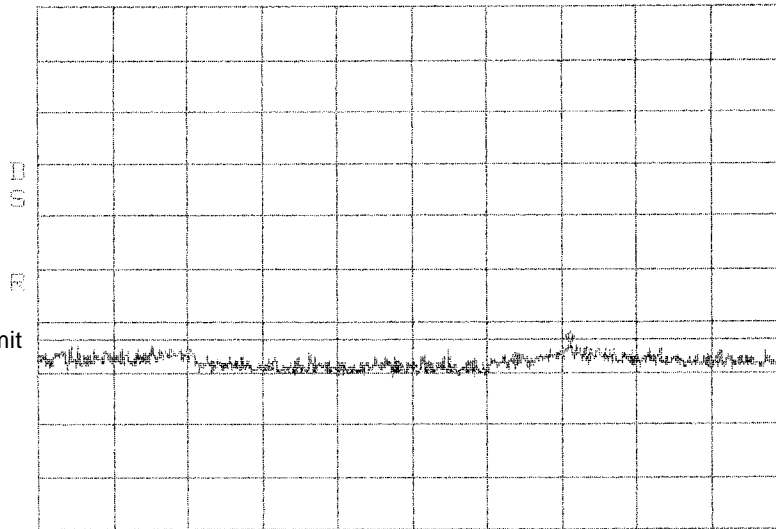
**Software Defined Radio  
Conducted Emissions  
GSM  
B BAND**  
Channel 217



Spikes are carrier signals.

**Software Defined Radio  
Conducted Emissions  
GSM  
B BAND**  
Channel 217

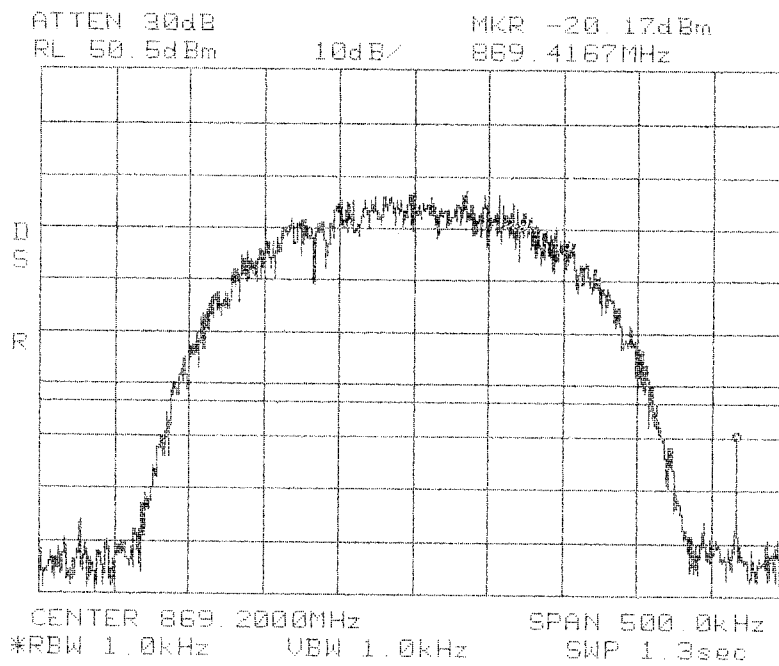
ATTEN 30dB MKR -13.50dBm  
RL 50.5dBm 10dB/ 7.405GHz



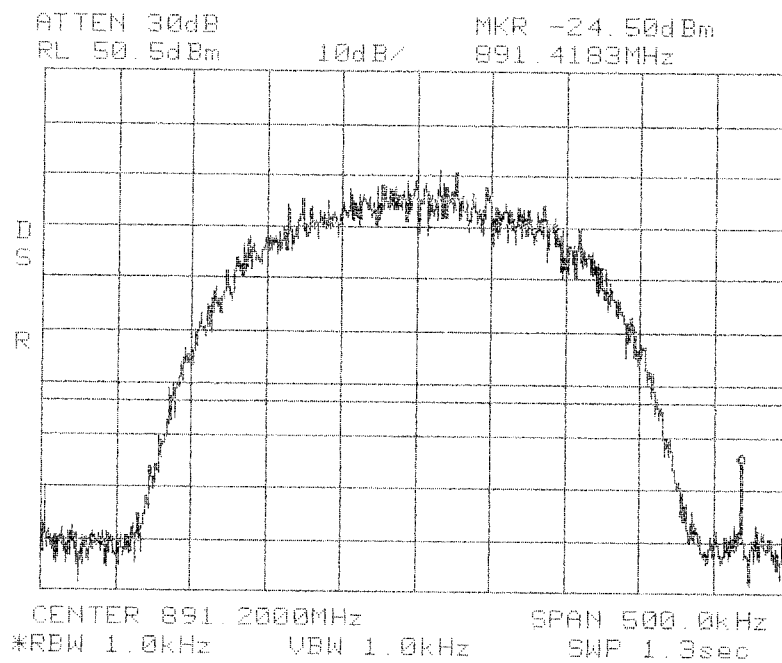
START 1.000GHz STOP 10.000GHz  
\*RBW 1.0MHz VBW 1.0MHz SWP 180ms

Spikes are carrier signals.

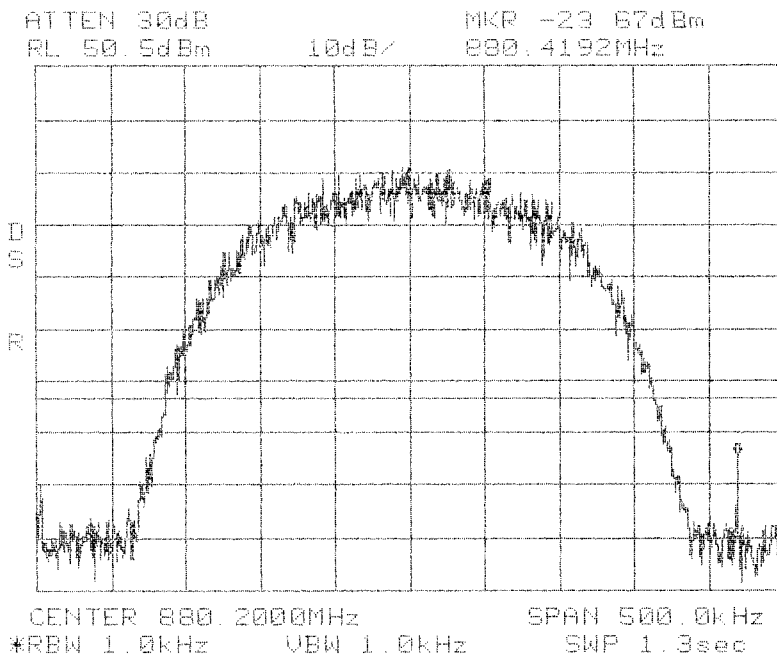
**Software Defined Radio  
Conducted Emissions  
GSM  
B BAND  
Channel 217**



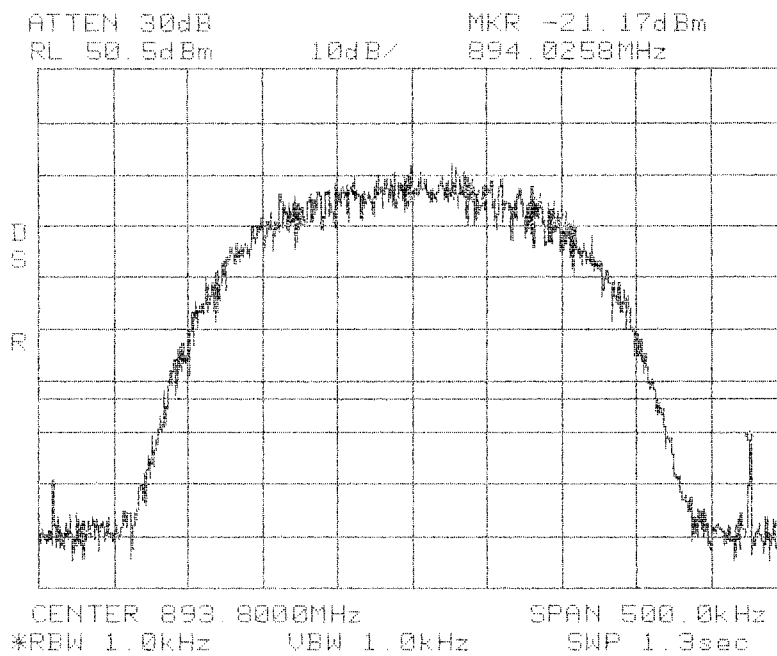
**Software Defined Radio  
Conducted Emissions  
Band Edge  
GSM  
A BAND**  
*Channel 128*



**Software Defined Radio  
Conducted Emissions  
Band Edge  
GSM  
A BAND**  
*Channel 238*



**Software Defined Radio  
Conducted Emissions  
Band Edge  
GSM  
B BAND**  
Channel 183



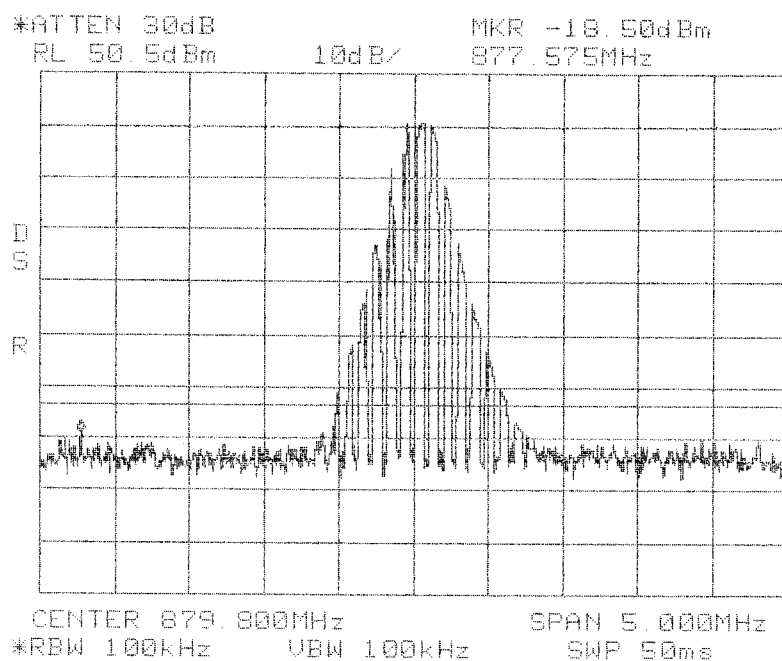
**Software Defined Radio  
Conducted Emissions  
Band Edge  
GSM  
B BAND**  
Channel 251

**Software Test 1 for ADC Inc.**  
**Digivance 800 MHz 50-Watt SDR System**  
**Model Numbers DGVs-112710SYS and DGVs-122710SYS**

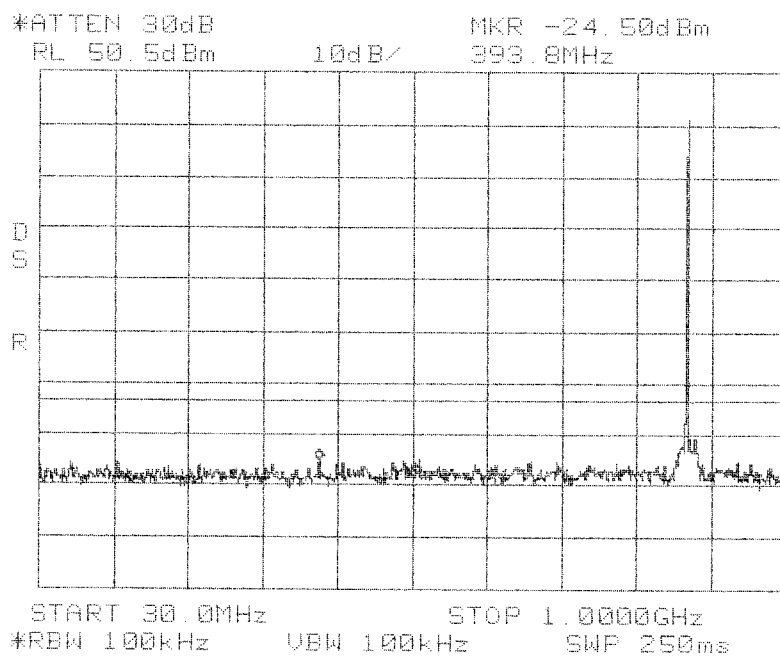
The out of band emissions were measured directly from the EUT antenna output with a spectrum analyzer from 30 MHz to the 10<sup>th</sup> harmonic of the highest carrier frequency. The Software Test 1 simply simulates a GSM signal syncburst dropout where we are sending the PCIX card the data filling every other page with zeros.

**Results:**

Pass (see plots)

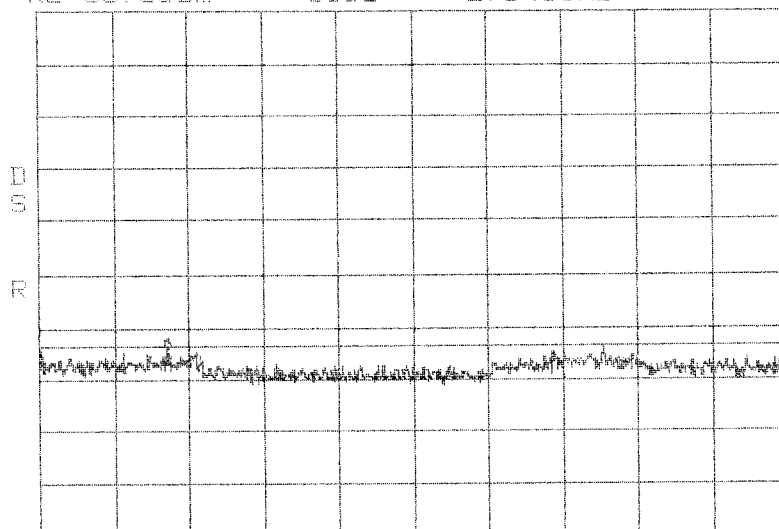


**Software Defined Radio  
Software Test 1  
A Band**  
Channel 181



**Software Defined Radio  
Software Test 1  
A Band**  
Channel 181

\*ATTEN 30dB MKR -13.50dBm  
RL 50.5dBm 10dB/ 2.545GHz

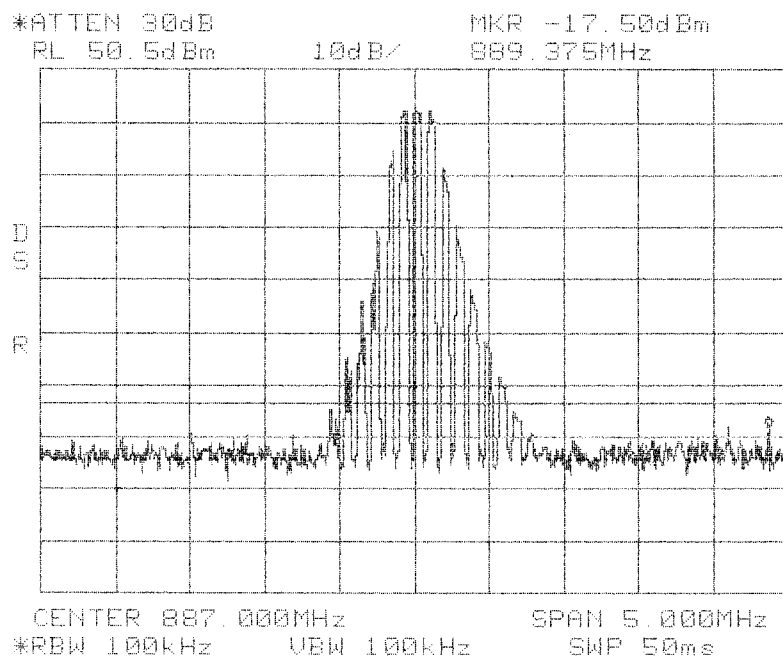


START 1.000GHz STOP 10.000GHz  
\*RBW 1.0MHz VBW 1.0MHz SWP 180ms

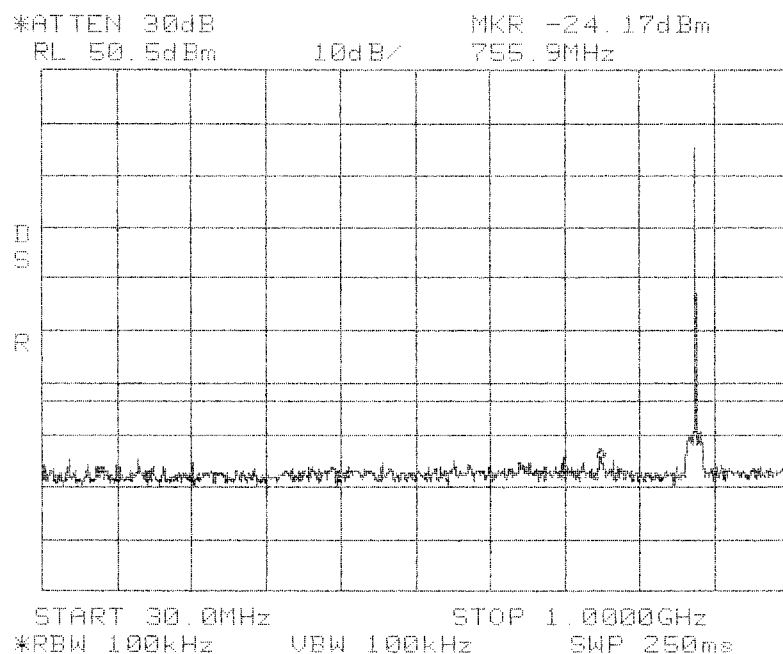
**Software Defined Radio  
Software Test 1  
A Band**

Channel 181

**Software Defined Radio  
Software Test 1  
A Band**

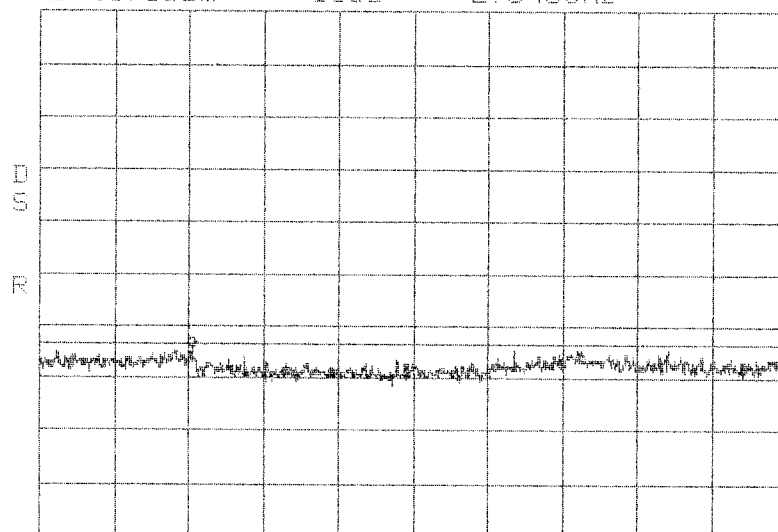


**Software Defined Radio  
Software Test 1  
B Band**  
Channel 217



**Software Defined Radio  
Software Test 1  
B Band**  
Channel 217

\*ATTEN 30dB MKR -13.67dBm  
RL 50.5dBm 10dB/ 2.045GHz



**Software Defined Radio**  
**Software Test 1**  
**B Band**  
channel 217

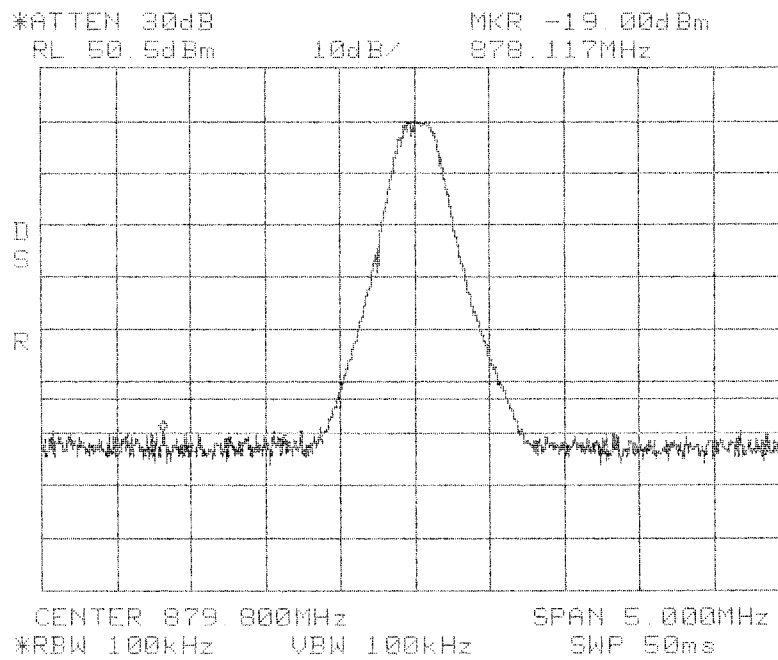
**Software Defined Radio**  
**Software Test 1**  
**B Band**

**Software Test 2 for ADC Inc.**  
**Digivance 800 MHz 50-Watt SDR System**  
**Model Numbers DGVs-112710SYS and DGVs-122710SYS**

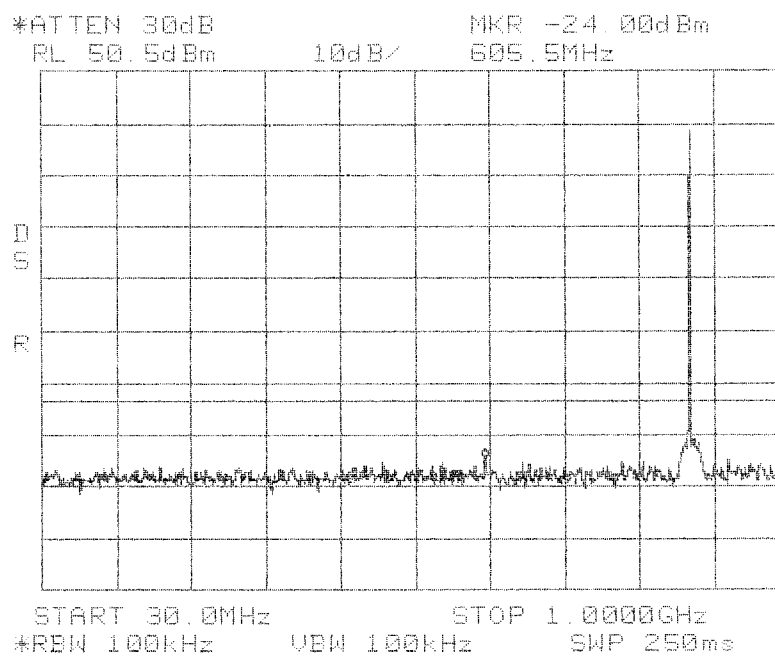
The out of band emissions were measured directly from the EUT antenna output with a spectrum analyzer from 30 MHz to the 10<sup>th</sup> harmonic of the highest carrier frequency. The Software Test 2 will simply suspend the GSM signal program for seconds at a time every couple of seconds. This should be equivalent to the behavior of the base station if there is a software failure.

**Results:**

Pass (see plots)

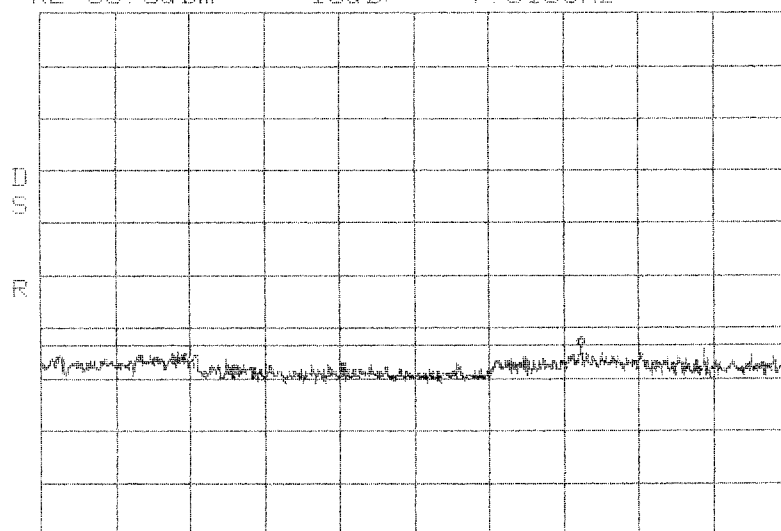


**Software Defined Radio  
Software Test 2  
A Band**  
Channel 181



**Software Defined Radio  
Software Test 2  
A Band**  
channel 181

\*ATTEN 30dB MKR -13.93dBm  
RL 50.5dBm 10dB/ 7.510GHz

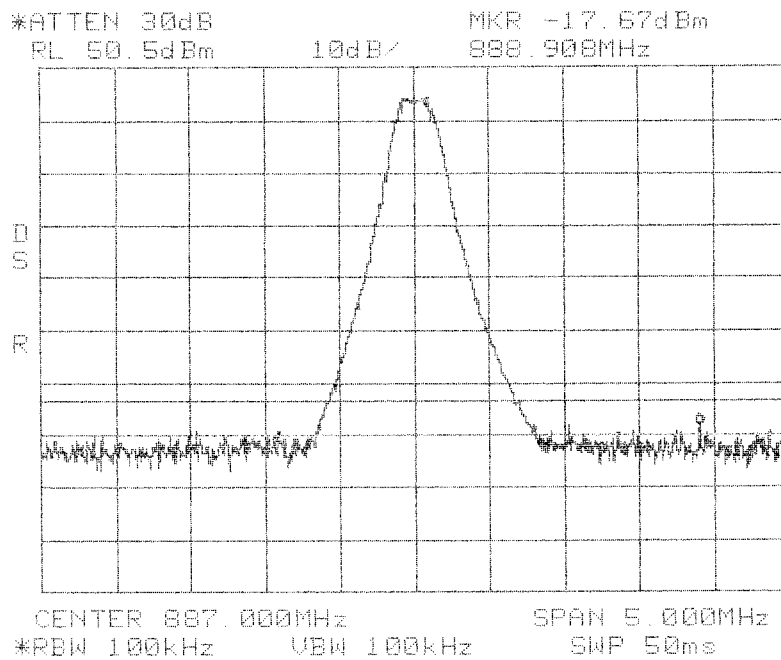


START 1.000GHz STOP 10.000GHz  
\*RBW 1.0MHz VBW 1.0MHz SWP 180ms

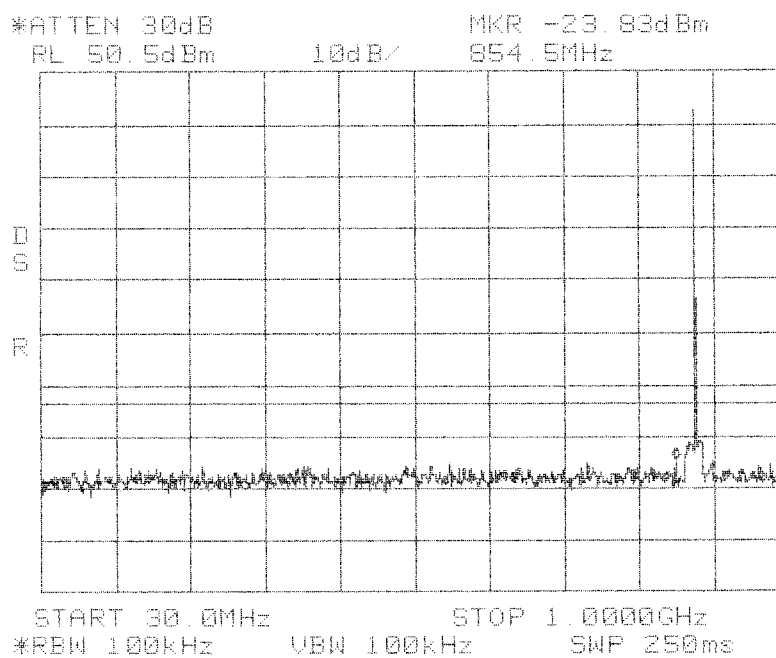
**Software Defined Radio  
Software Test 2  
A Band**

*Channel 181*

**Software Defined Radio  
Software Test 2  
A Band**

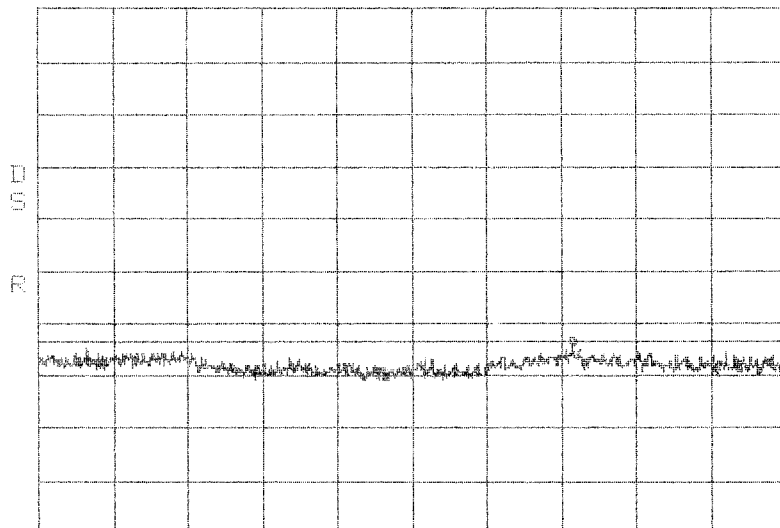


**Software Defined Radio  
Software Test 2  
B Band**  
Channel 217



**Software Defined Radio  
Software Test 2  
B Band**  
Channel 217

\*ATTEN 30dB MKR -14.00dBm  
RL 50.5dBm 10dB/ 7.435GHz



START 1.000GHz STOP 10.000GHz  
\*RBW 1.0MHz VBW 1.0MHz SWP 100ms

**Software Defined Radio**  
**Software Test 2**  
**B Band**  
Channel 217

**Software Test 3 for  
Digivance 800 MHz 50-Watt SDR System  
Model Numbers DGVs-112710SYS and DGVs-122710SYS**

The out of band emissions were measured directly from the EUT antenna output with a spectrum analyzer from 30 MHz to the 10<sup>th</sup> harmonic of the highest carrier frequency. The Software Test 3 simulates the GSM signal created from a sequence of all zeros.

**Results:**

Pass (see plots)

Software Defined Radio

Software Test 3

A Band - Channel 181

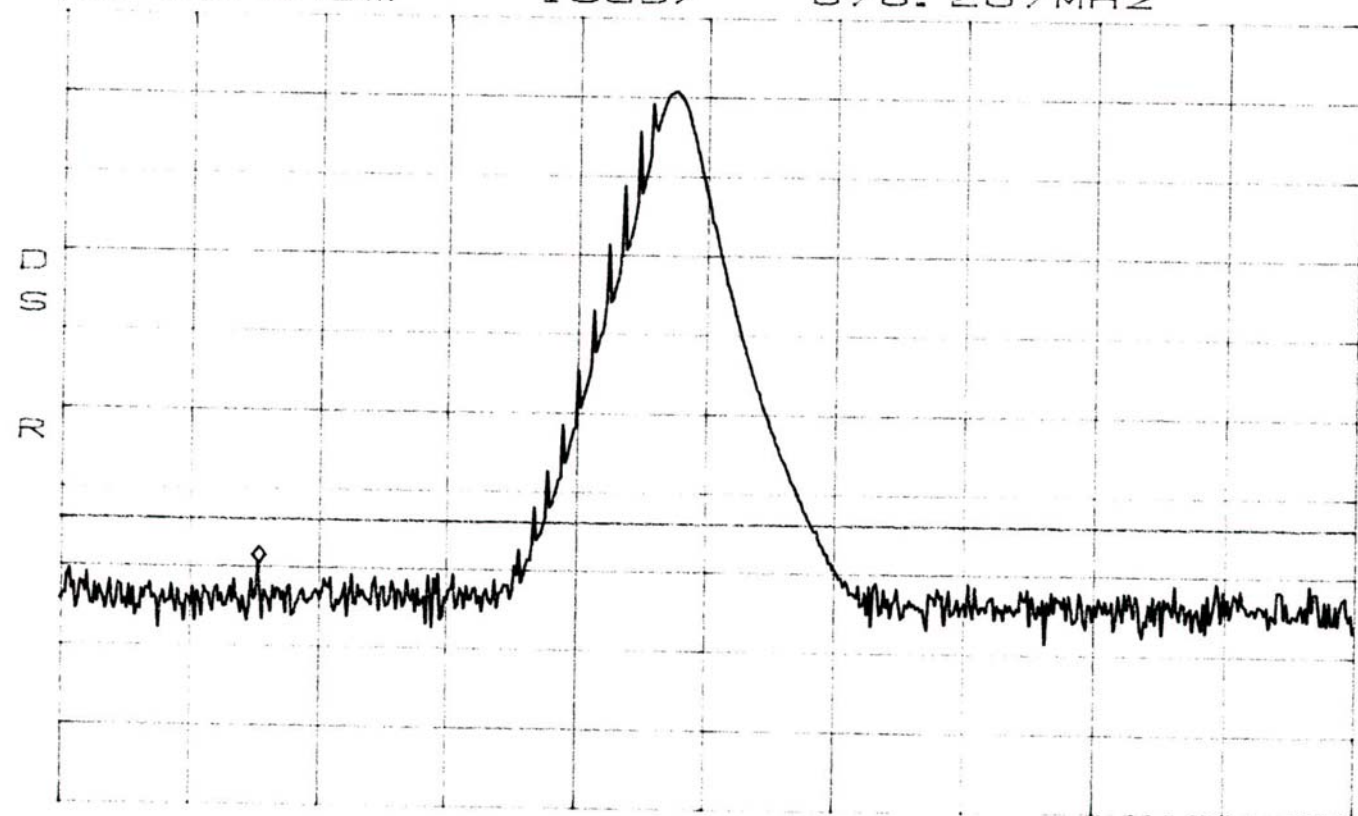
\*ATTEN 30dB

RL 51.0dBm

MKR -18.33dBm

10dB/

878.267MHz



CENTER 880.000MHz

SPAN 5.000MHz

\*RBW 100kHz

VBW 100kHz

SWP 50ms

Software Defined Radio

Software Test 3

A Band - Channel 181

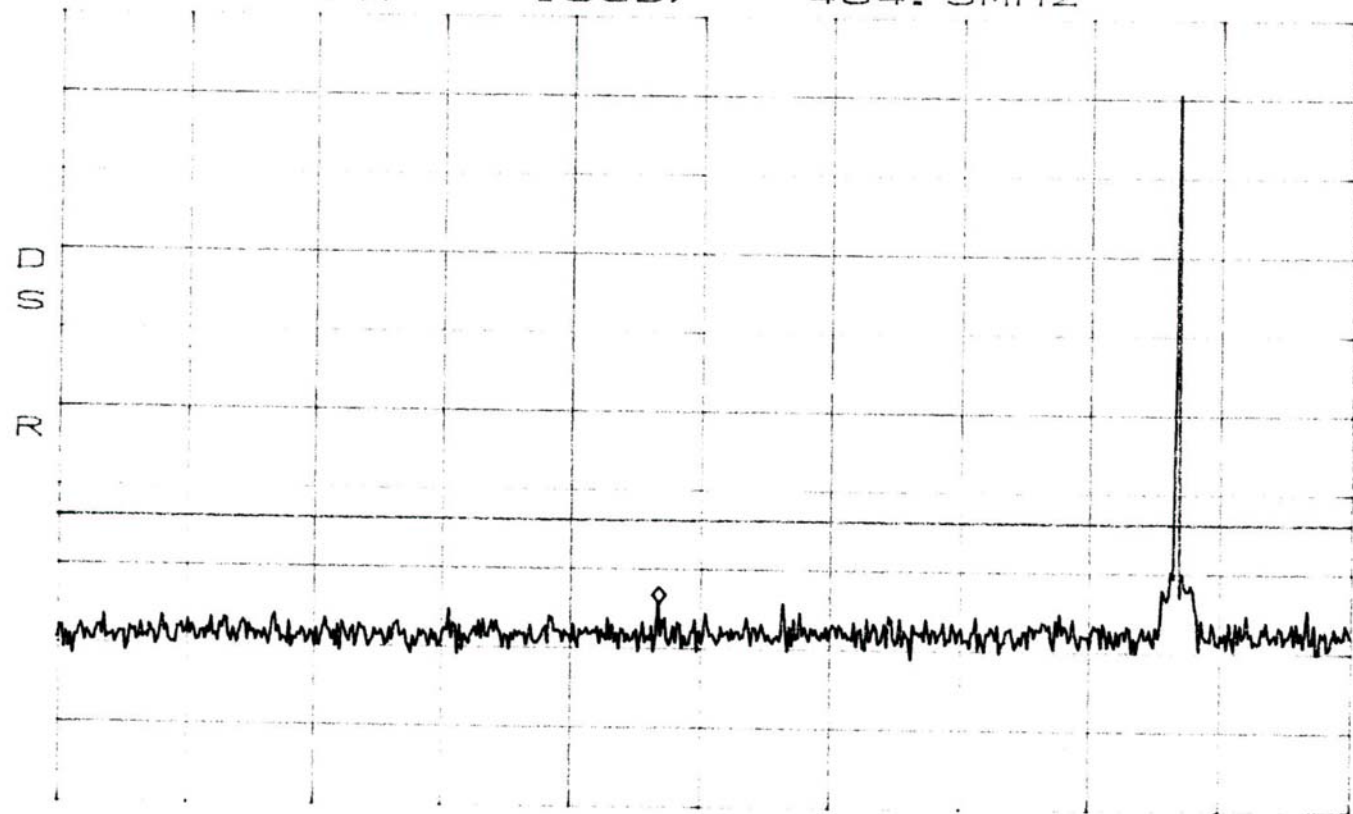
\*ATTEN 30dB

RL 51.0dBm

10dB/

MKR -23.17dBm

484.3MHz



START 30.0MHz

STOP 1.0000GHz

\*RBW 100kHz

VBW 100kHz

SWP 250ms

Software Defined Radio

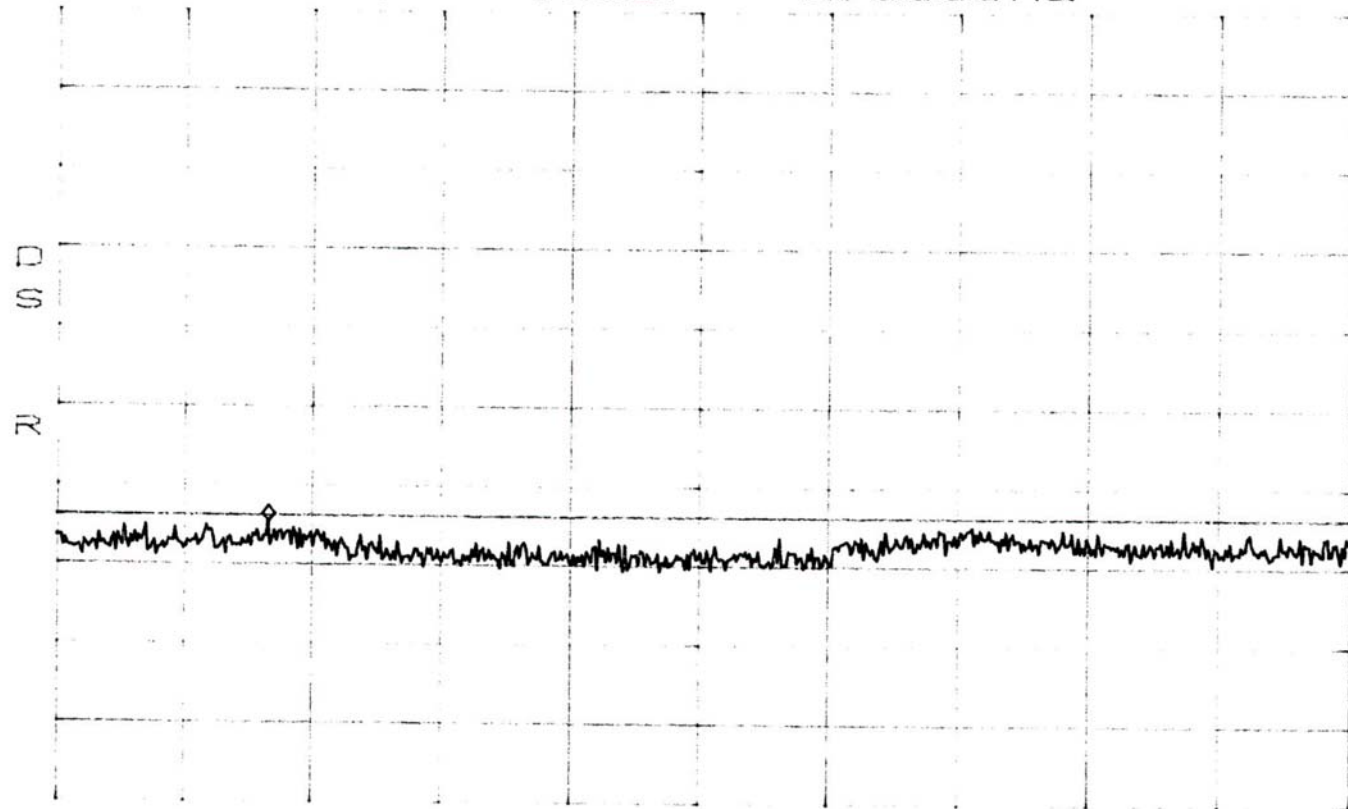
Software Test 3

A Band - Channel 181

\*ATTEN 30dB  
RL 51.0dBm

10dB/

MKR -13.50dBm  
2.500GHz



START 1.000GHz STOP 10.000GHz  
\*RBW 1.0MHz VBW 1.0MHz SWP 180ms

Software Defined Radio

Software Test 3

B Band - Channel 217

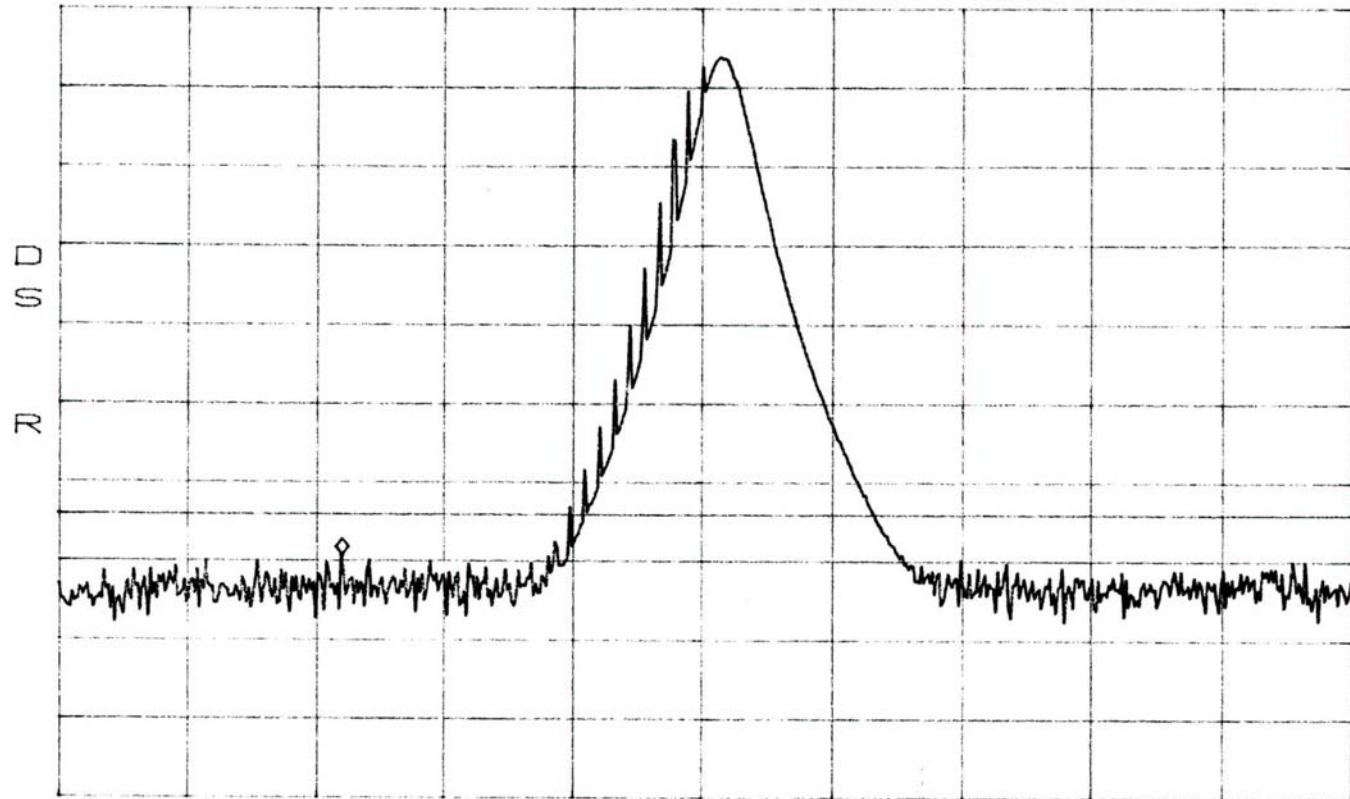
ATTEN 30dB

RL 51.0dBm

MKR -18.17dBm

10dB/

885.600MHz



CENTER 887.000MHz

SPAN 5.000MHz

\*RBW 100kHz

VBW 100kHz

SWP 50ms

Software Defined Radio

Software Test 3

B Band - Channel 217

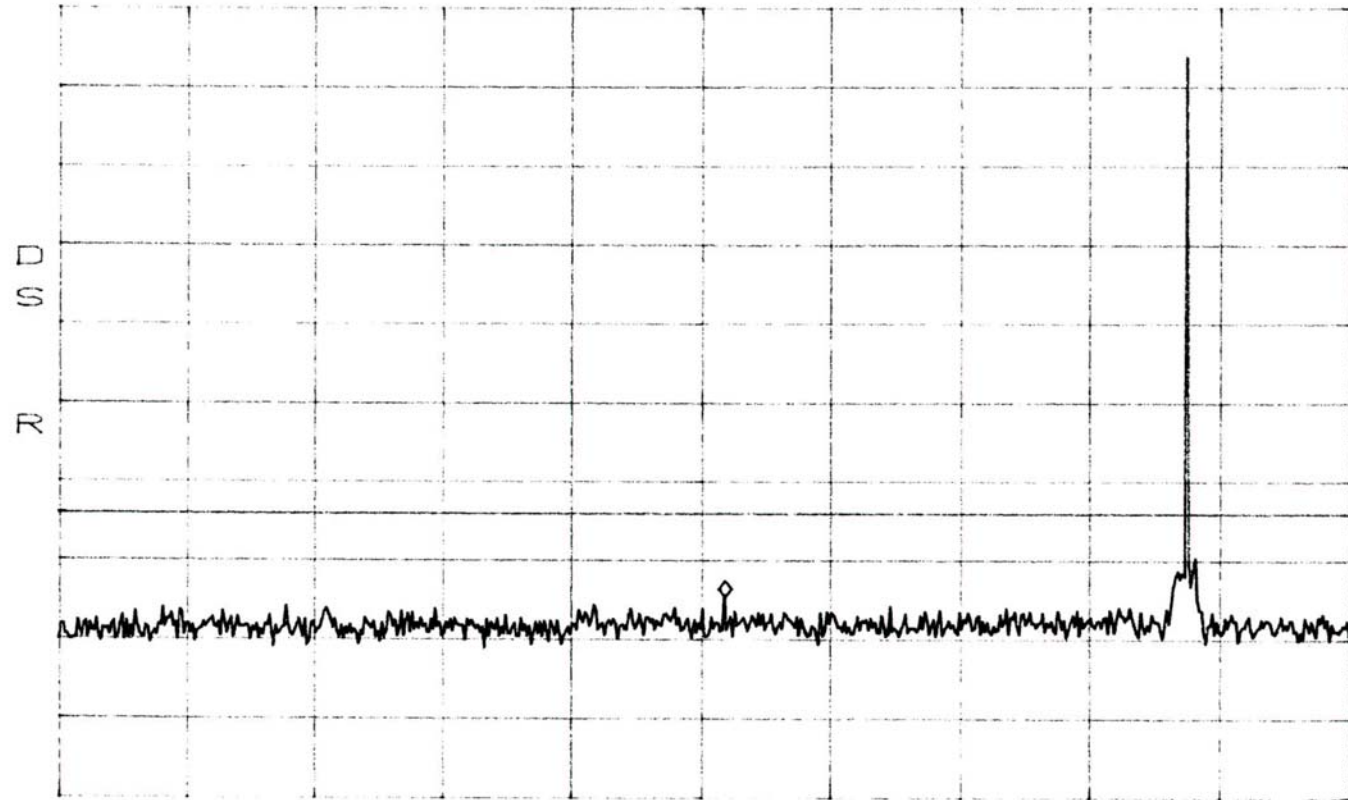
ATTEN 30dB

RL 51.0dBm

MKR -23.50dBm

10dB/

532.8MHz



START 30.0MHz

STOP 1.0000GHz

\*RBW 100kHz

VBW 100kHz

SWP 250ms

Software Defined Radio

Software Test 3

B Band - Channel 217

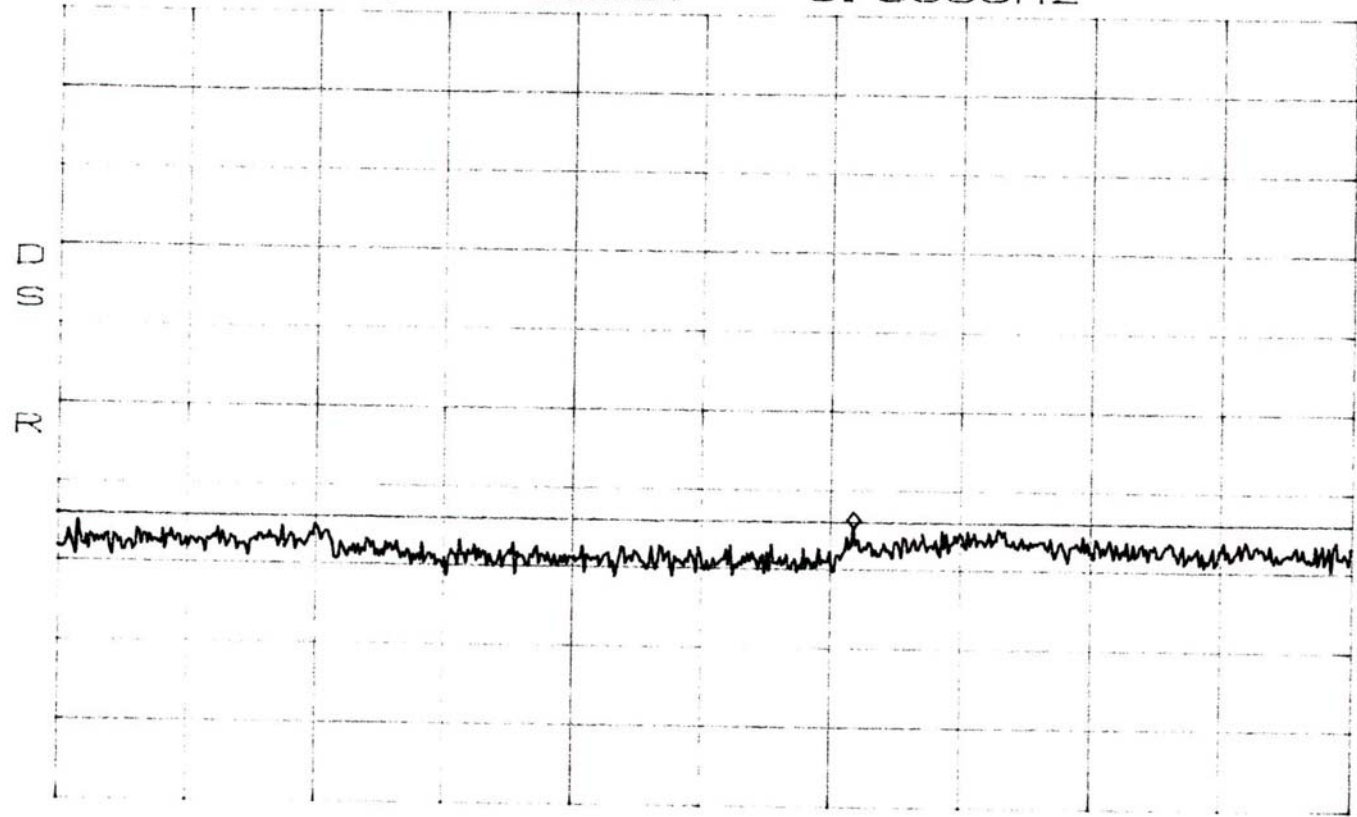
ATTEN 30dB

RL 51.0dBm

10dB/

MKR -13.67dBm

6.565GHz



START 1.000GHz

STOP 10.000GHz

\*RBW 1.0MHz

VBW 1.0MHz

SWP 180ms

**Software Test 4 for  
Digivance 800 MHz 50-Watt SDR System  
Model Numbers DGV5-112710SYS and DGV5-122710SYS**

The out of band emissions were measured directly from the EUT antenna output with a spectrum analyzer from 30 MHz to the 10<sup>th</sup> harmonic of the highest carrier frequency. The Software Test 4 simulates the GSM signal created from a repeated sequence of 8 bursts of valid traffic channel data followed by 8 bursts of all zeros.

**Results:**

Pass (see plots)

Software Defined Radio

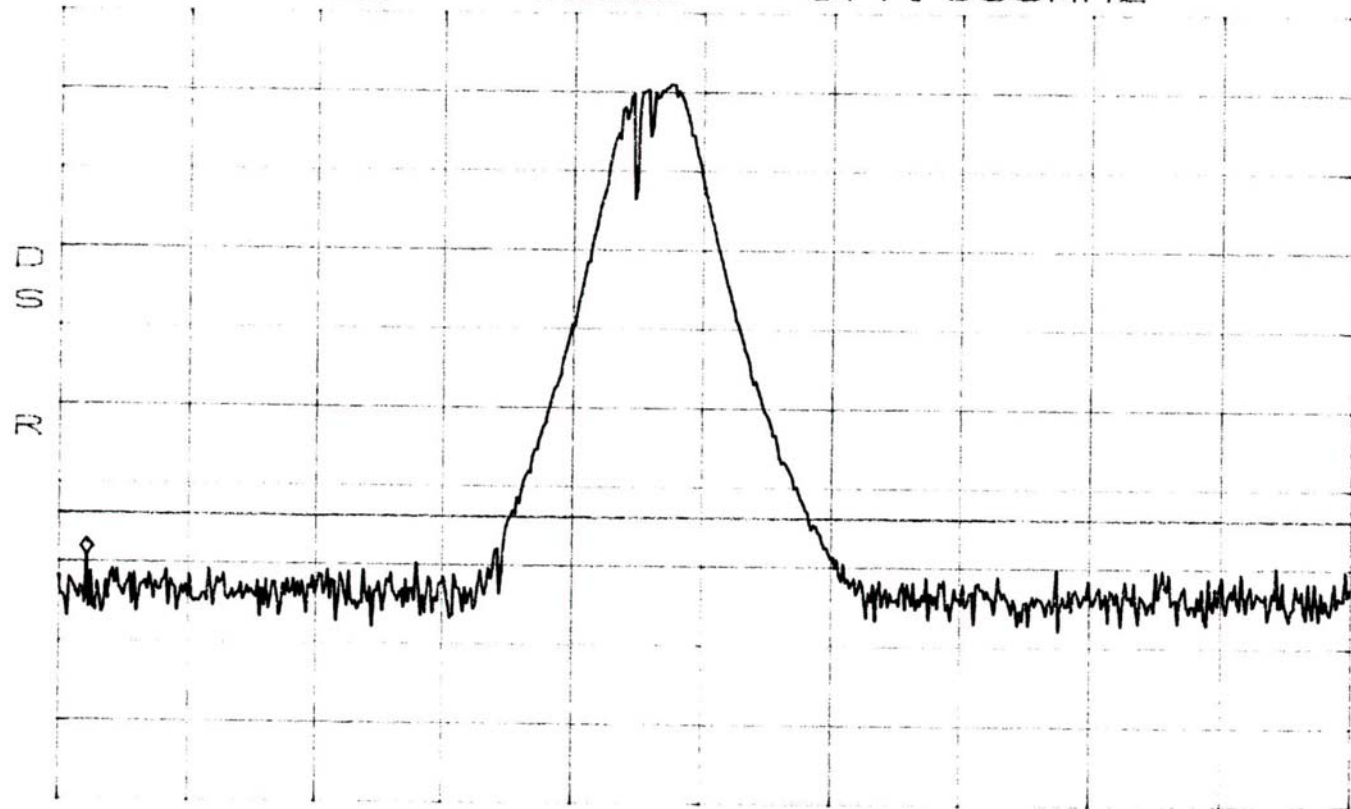
Software Test 4

A Band - Channel 181

\*ATTEN 30dB  
RL 51.0dBm

10dB/

MKR -18.00dBm  
877.608MHz



CENTER 880.000MHz

SPAN 5.000MHz

\*RBW 100kHz

VBW 100kHz

SWP 50ms

Software Defined Radio

Software Test 4

A Band - Channel 181

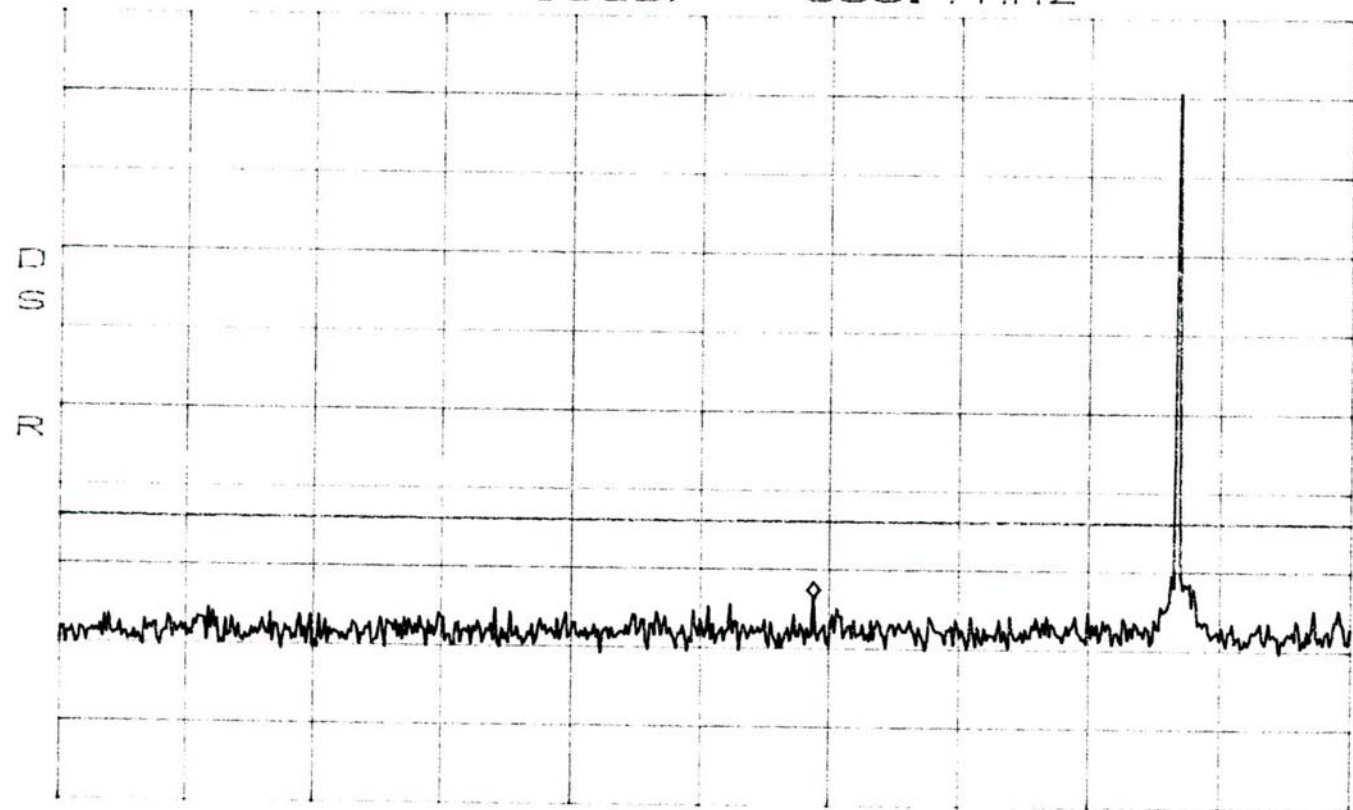
\*ATTEN 30dB

RL 51.0dBm

10dB/

MKR -22.50dBm

600.7MHz



START 30.0MHz

STOP 1.0000GHz

\*RBW 100kHz

VBW 100kHz

SWP 250ms

Software Defined Radio

Software Test 4

A Band - Channel 181

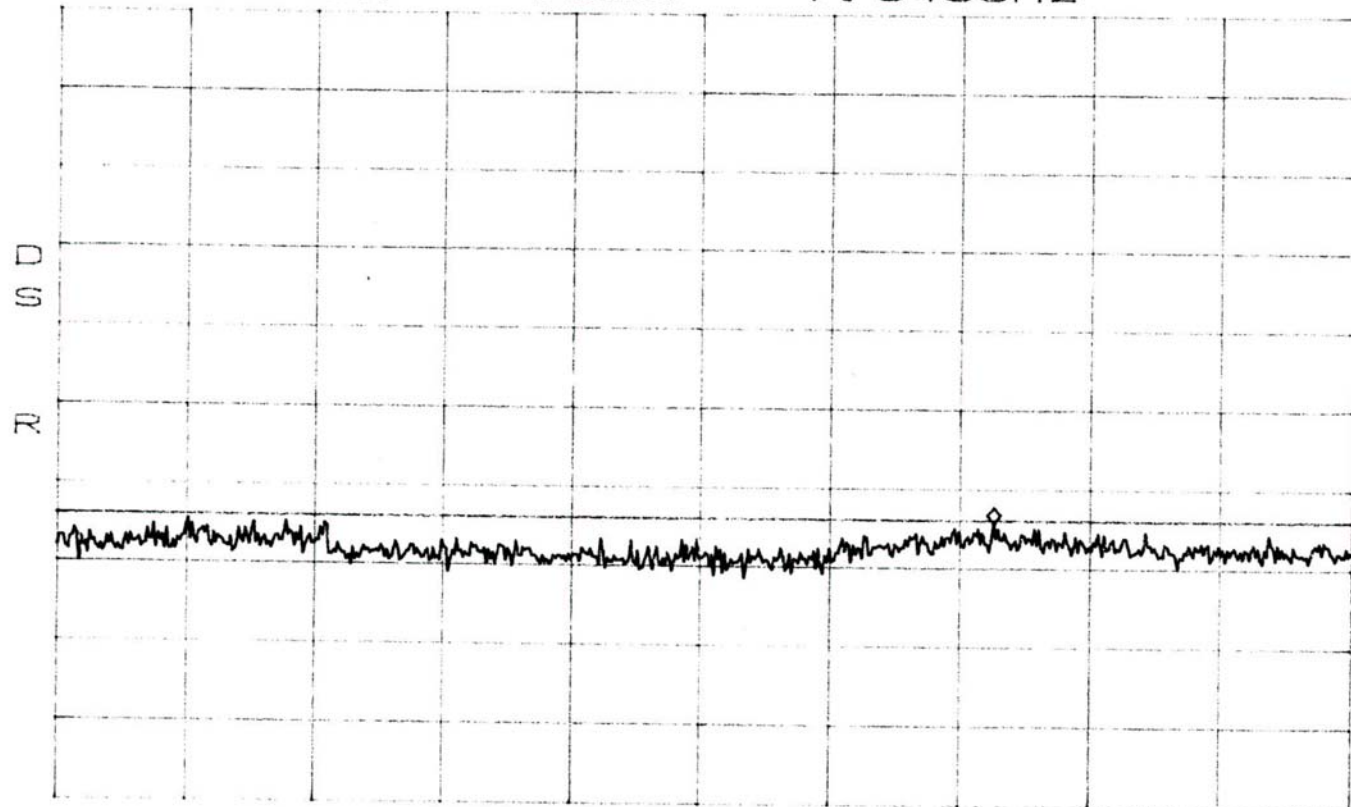
\*ATTEN 30dB

RL 51.0dBm

10dB/

MKR -13.17dBm

7.540GHz



START 1.000GHz

STOP 10.000GHz

\*RBW 1.0MHz

VBW 1.0MHz

SWP 180ms

Software Defined Radio

Software Test 4

B Band - Channel 217

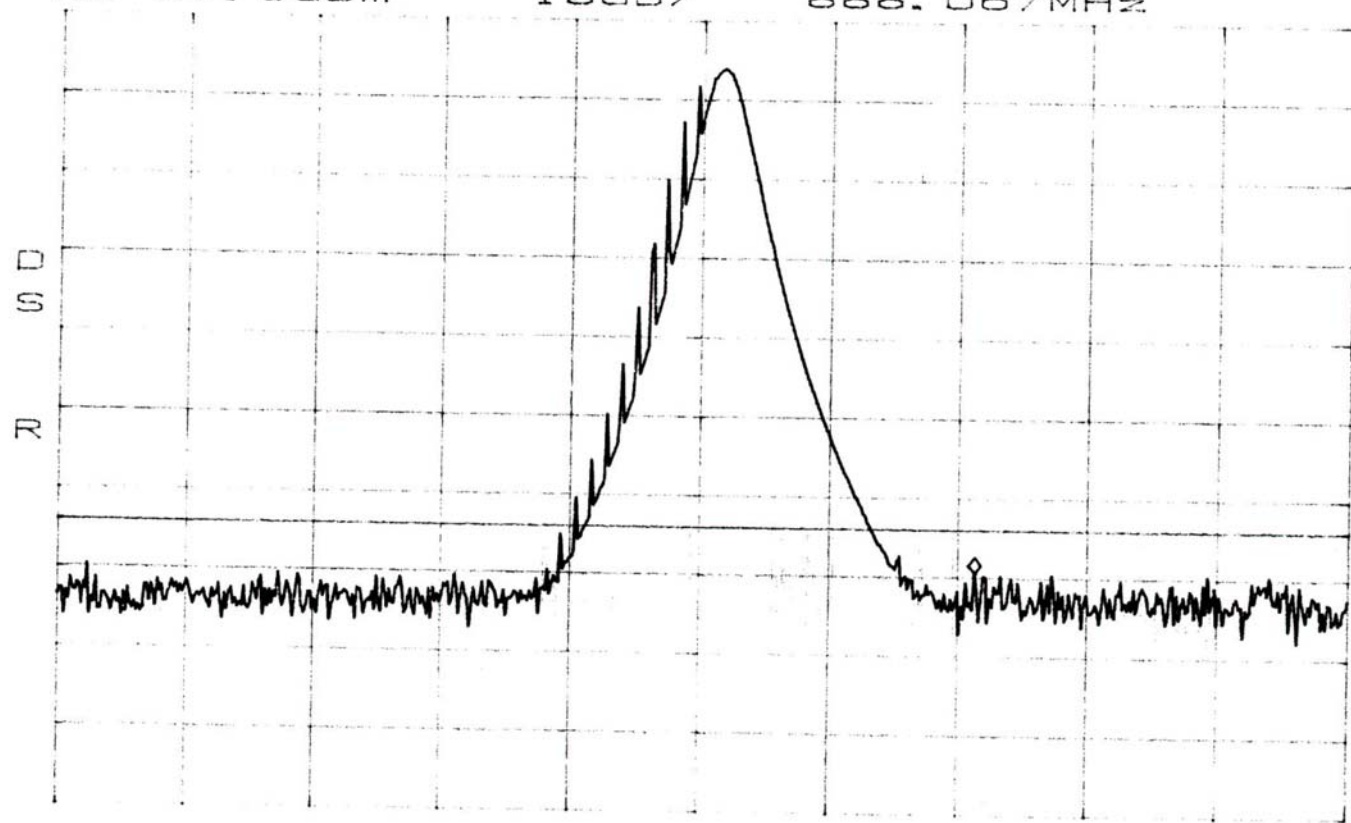
ATTEN 30dB

RL 51.0dBm

MKR -18.33dBm

10dB/

888.067MHz



CENTER 887.000MHz

SPAN 5.000MHz

\*RBW 100kHz

VBW 100kHz

SWP 50ms

Software Defined Radio

Software Test 4

B Band - Channel 217

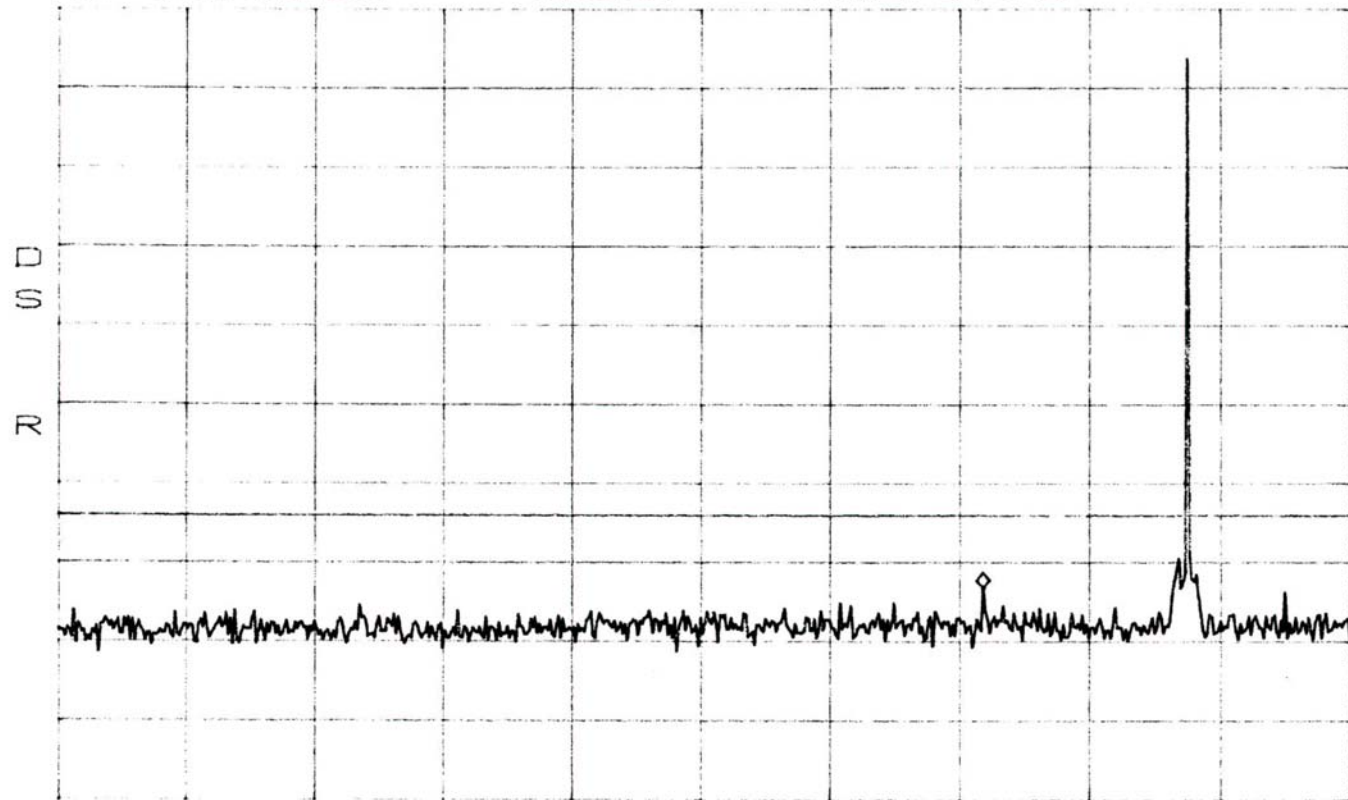
ATTEN 30dB

RL 51.0dBm

MKR -22.17dBm

10dB/

726.8MHz



START 30.0MHz

STOP 1.0000GHz

\*RBW 100kHz

VBW 100kHz

SWP 250ms