



**MOTOROLA**

Global Telecom Solutions Sector

SC4812T-MC @ 800 MHz CDMA BTS    FCC ID: IHET5DK1  
Test Report Exhibit

## Equipment Authorization Measurements

FCC Identifier:            IHET5DK1  
Name of Grantee:        Motorola, Inc  
Equipment Class:        Licensed Non-Broadcast Transmitter  
Notes:                    SC4812T-MC @ 800 MHz CDMA BTS

FCC CFR Title 47	Description	Section	Compliant
2.1046	RF Output Power	A	Yes
2.1047	Modulation Characteristics	B	Yes
2.1049	Occupied Bandwidth	C	Yes
2.1051	Spurious Emissions at Antenna Terminals	D	Yes
2.1053	Field Strength of Spurious Radiation	E	Yes
2.1055	Frequency Stability	F	Yes

### Measurements Performed by:

Motorola EMC Facility  
5555 North Beach Street  
Fort Worth, TX 76137  
Authorized Testing Laboratory  
FCC Test Firm Registration No. 90809

**Test Engineer**

**FCC/Package Coordination**





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## SECTION A

### RF Output Power - 47CFR2.1046

Channel	Tune Frequency (MHz)	Power Level (W)	Power Level (dBm)	Power Level Measured (dBm)	IS-97 Limit (dB)	Pass/Fail
777	893.10	120	50.8	51.06	+2/-4	Pass
1013	869.70	120	50.8	50.89	+2/-4	Pass
777	893.10	45	46.5	46.68	+2/-4	Pass
1013	869.70	45	46.5	46.50	+2/-4	Pass
777	893.10	.45	26.5	26.64	+2/-4	Pass
1013	869.70	.45	26.5	26.78	+2/-4	Pass

### Summary of Radiated RF Measurements *Worst Case Radiated RF Spur Level*

Transmit Channel	Power Level (W)	Spur Freq. (GHz)	Spur Level Measured (dBμV/meter)	Spur Level Measured (dBm*)	FCC Max Limit (dBm)	Pass/Fail
1013	120	4.3485	64.35	-30.88	-13.0	Pass

### Summary of Conducted RF Measurements *Worst Case Conducted RF Spur Level*

Transmit Channel	Power Level (W)	Freq. (MHz)	Spur Level Measured (dBm)	FCC Max Limit (dBm)	Pass/Fail
1013	120	870.4065	-16.94	-13	Pass



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## **SECTION B**

### **Modulation Characteristics - 47CFR2.1047**

#### **Summary of Modulation Characteristics**

<b>Channel</b>	<b>Tune Frequency (MHz)</b>	<b>Power Level (W)</b>	<b>RHO Measured</b>	<b>RHO Specification</b>	<b>Pass/Fail</b>
777	893.10	120	.98432	>0.912	Pass
1013	869.70	120	.98430	>0.912	Pass
777	893.10	45	.98430	>0.912	Pass
1013	869.70	45	.98359	>0.912	Pass
777	893.10	.45	.98116	>0.912	Pass
1013	869.70	.45	.97804	>0.912	Pass

*Note: The BTS was configured for maximum power out of 50.8 dBm, mid power of 46.5 dBm, and minimum power of 26.5dBm respectively. The output power was set respectively to 120W, 45W, and 450mW using a power meter.*





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## SECTION C

### Occupied Bandwidth - 47CFR2.1049

#### Summary of Occupied Bandwidth

Channel	Frequency (MHz)	Power Level (dBm)	Measured (MHz)	FCC Limit (MHz)	Pass/Fail
777	893.31	50.74	1.2215	1.30	Pass
1013	869.70	50.93	1.2210	1.30	Pass
777	893.31	46.31	1.2211	1.30	Pass
1013	869.70	46.34	1.2201	1.30	Pass
777	893.31	26.59	1.2224	1.30	Pass
1013	869.70	26.86	1.2205	1.30	Pass

*Note: The BTS was configured for maximum power out of 50.8 dBm, mid power of 46.5 dBm, and minimum power of 26.5dBm respectively. The output power was set respectively to 120W, 45W, and 450mW using a power meter.*

The following formula is used to obtain the correct power reference point from which the OBW of the CDMA signal is obtained. See example calculation below:

$$\text{Power (measured in 30kHz bandwidth)} + 10 \log (1.2288 \text{ MHz}/30\text{kHz})$$

The occupied bandwidth is measured in a 30 kHz resolution bandwidth. Results are summarized above.



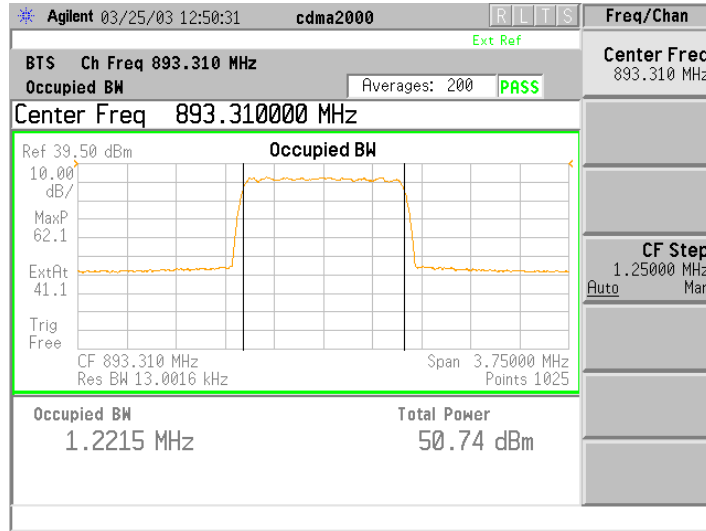


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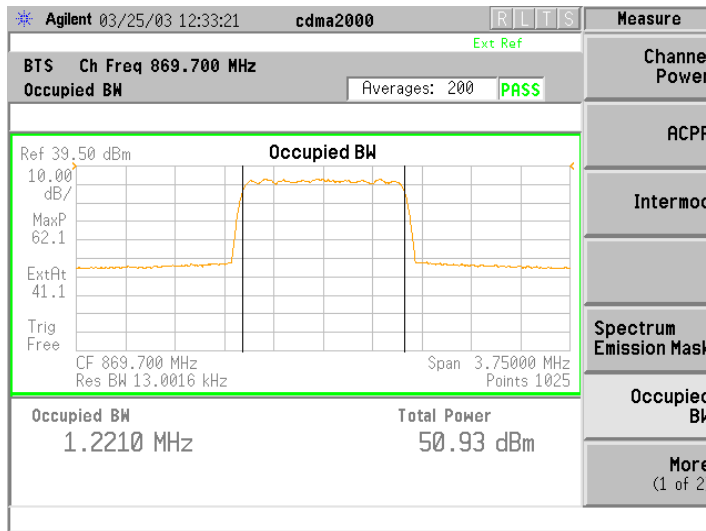
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### Occupied Bandwidth - 120W



Channel 777 – 893.31 MHz



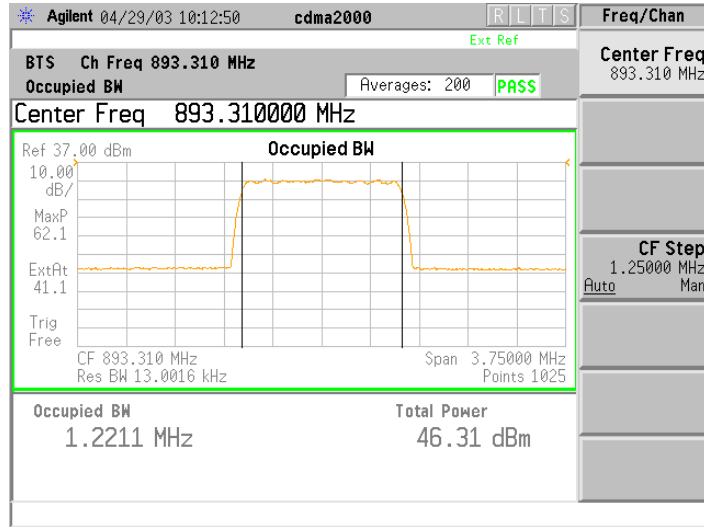
Channel 1013 – 869.7 MHz



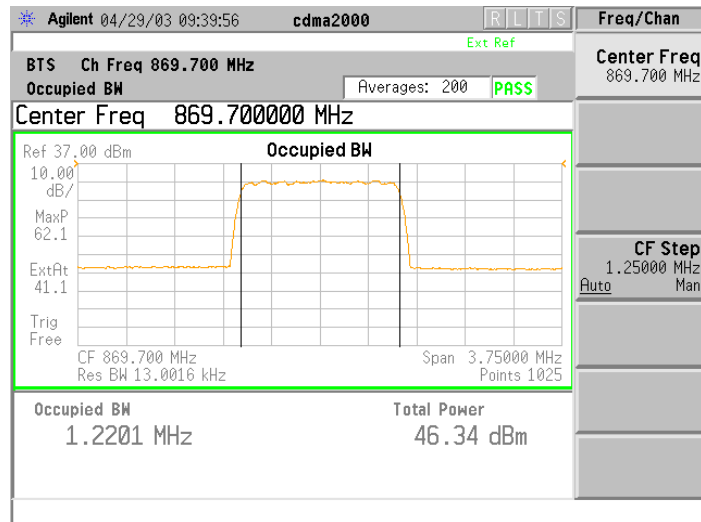
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## Occupied Bandwidth - 45W



### Channel 777 – 893.31 MHz



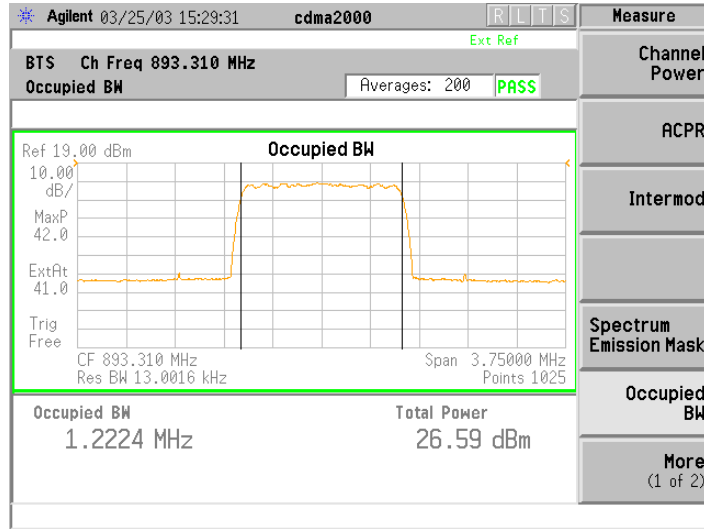
### Channel 1013 – 869.7 MHz



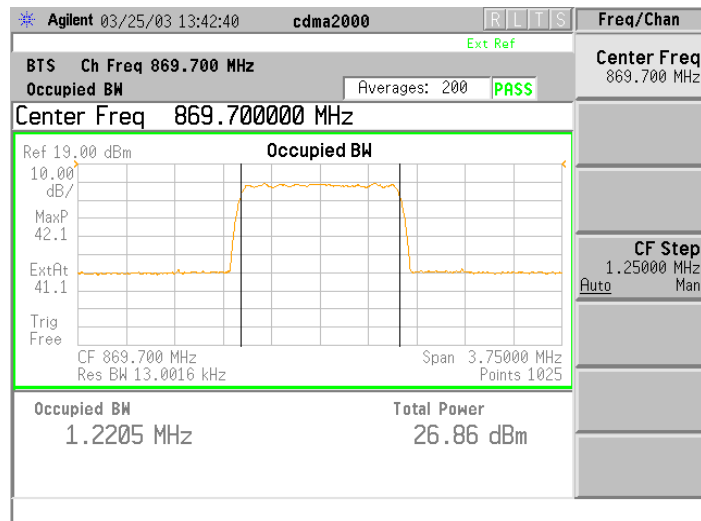
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## Occupied Bandwidth – .45W



### Channel 777 – 893.31 MHz



### Channel 1013 – 869.7 MHz



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## SECTION D

### Spurious Emissions at Antenna Terminal - 47 CFR 2.1051

#### Summary of Worst Case Spurious Emissions at Antenna Terminal

Channel	Freq. (MHz)	Spur Level Measured (dBm)	FCC Max Limit (dBm)	Pass/Fail
777	894.0065	-17.69	-13	Pass
1013	870.4065	-16.94	-13	Pass

FCC Max. Limit Per 47 CFR 22.917:

- = Transmitted Power (10 Log10 (Pwatt)) - (43 + 10 Log10 (Pwatt)) dBW
- = 10 Log10 (Pwatt) - (43 + 10 Log10 (Pwatt)) dBW
- = -43 dBW
- = -13 dBm

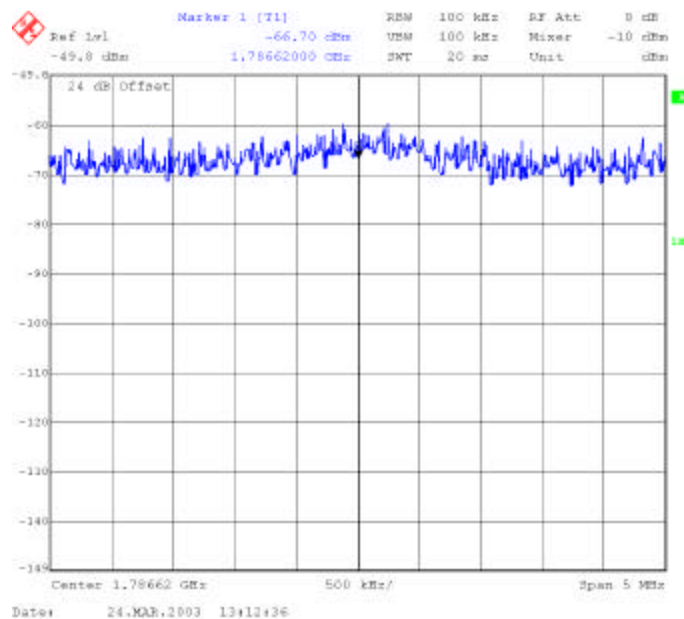
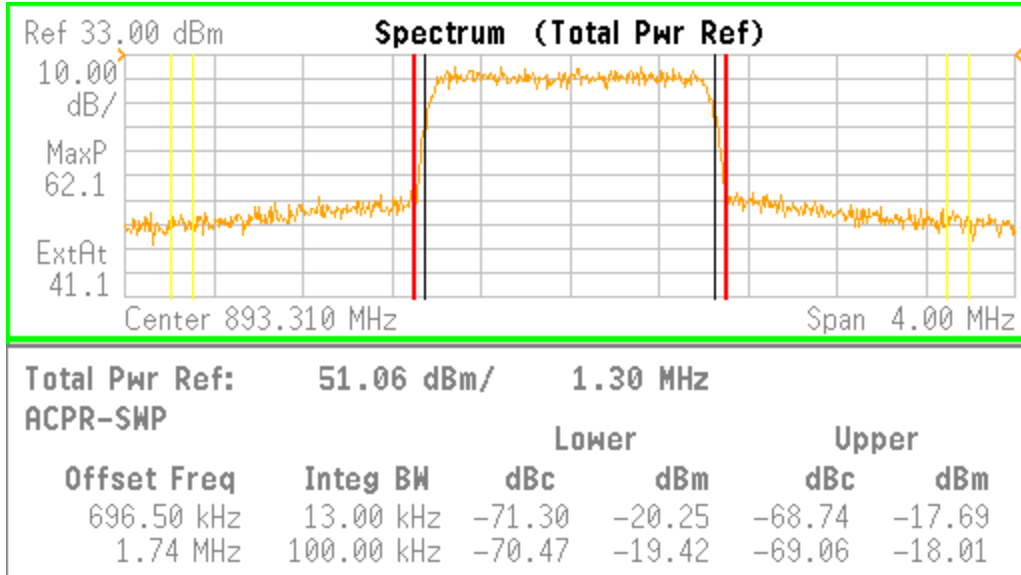




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## Spurious Emissions at Antenna Terminal – 120W Channel 777 – 893.31 MHz

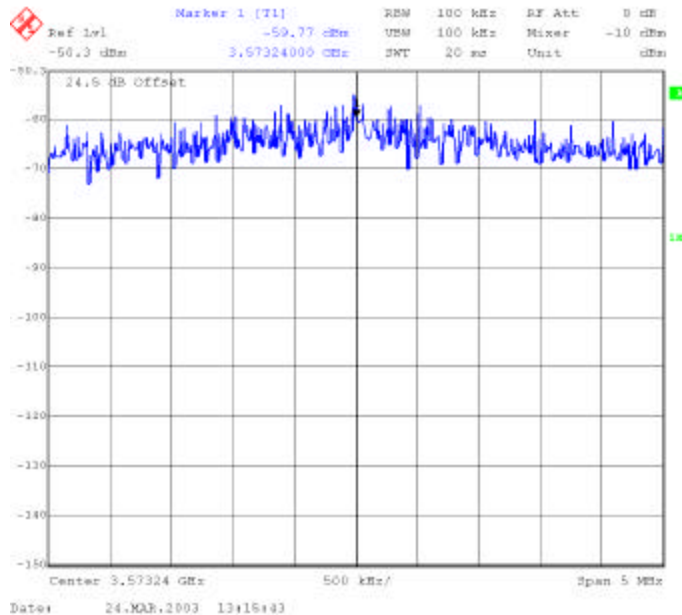
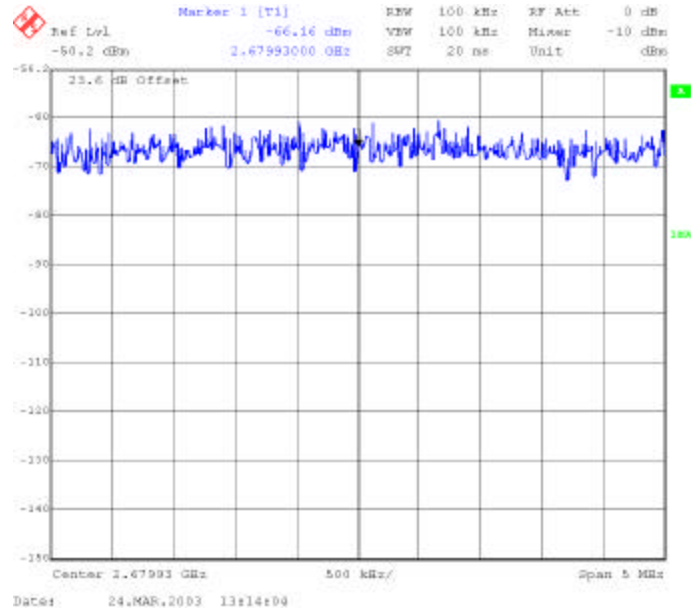




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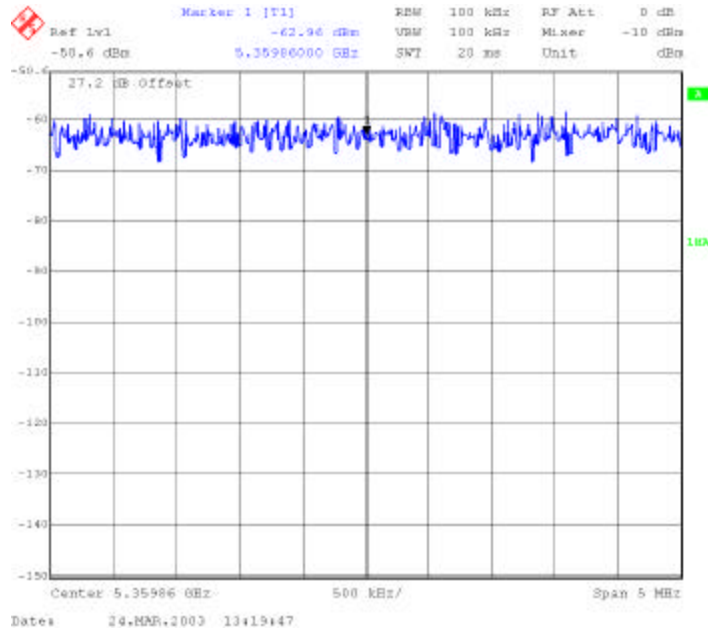
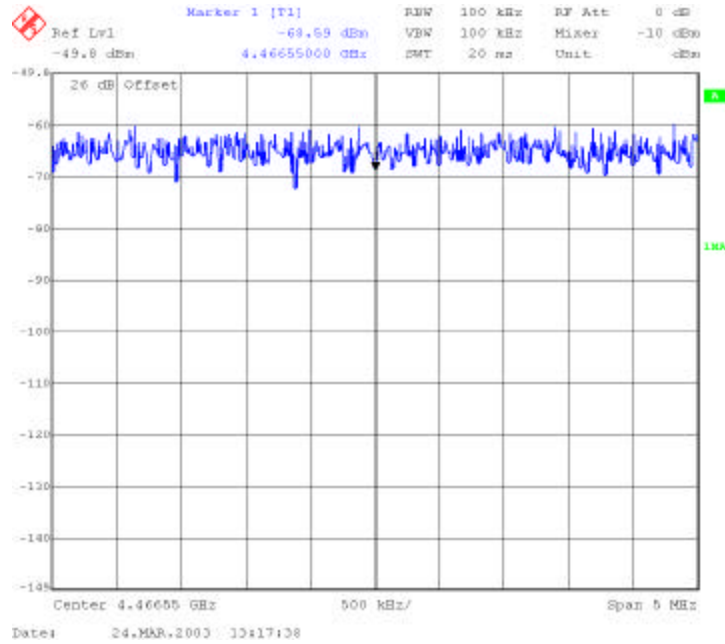
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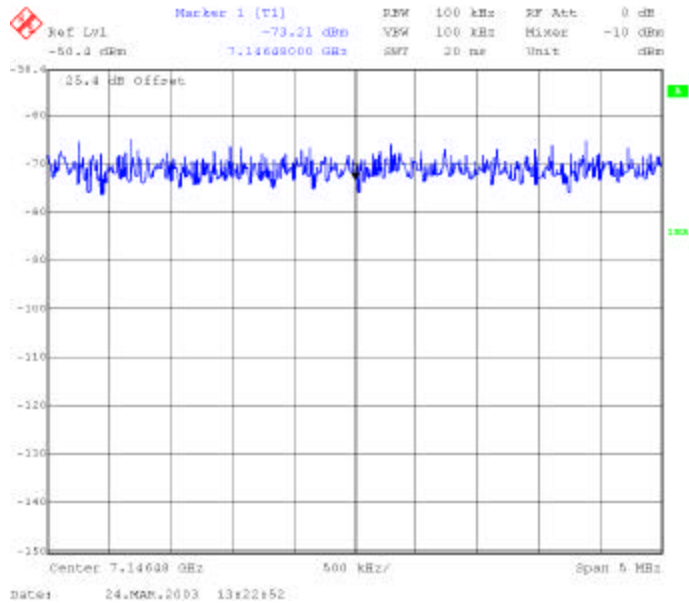
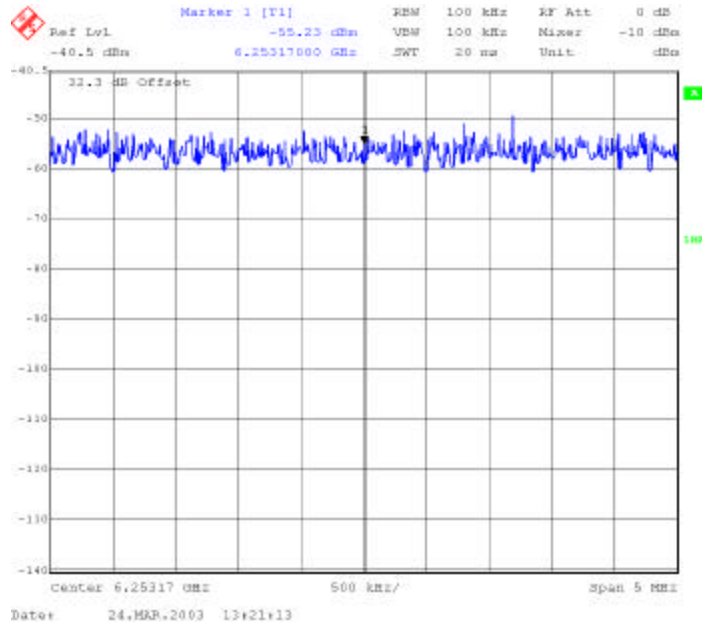
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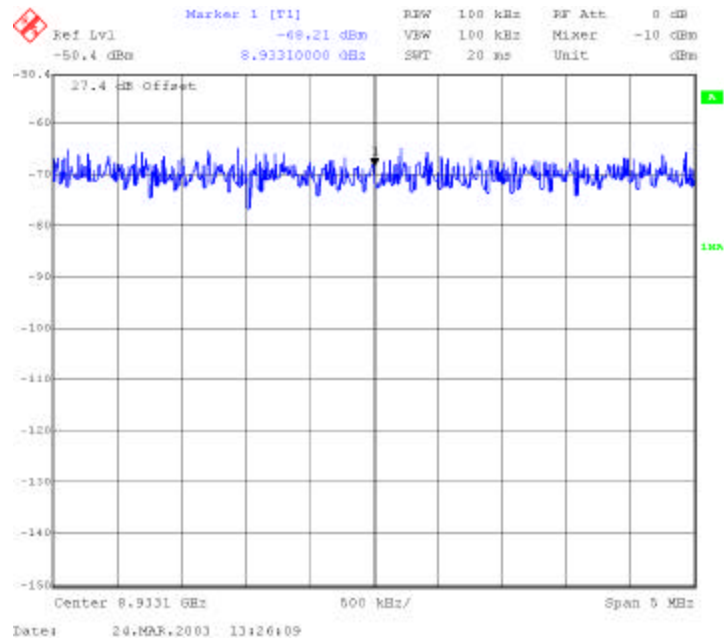
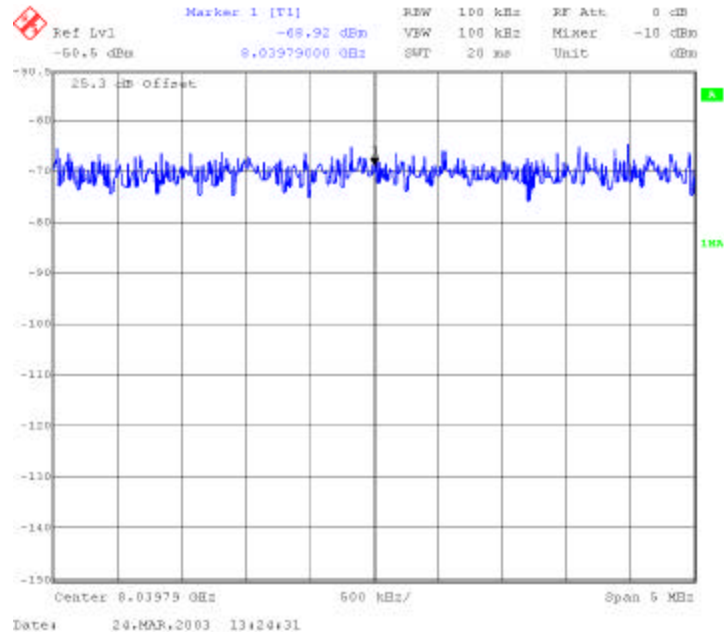




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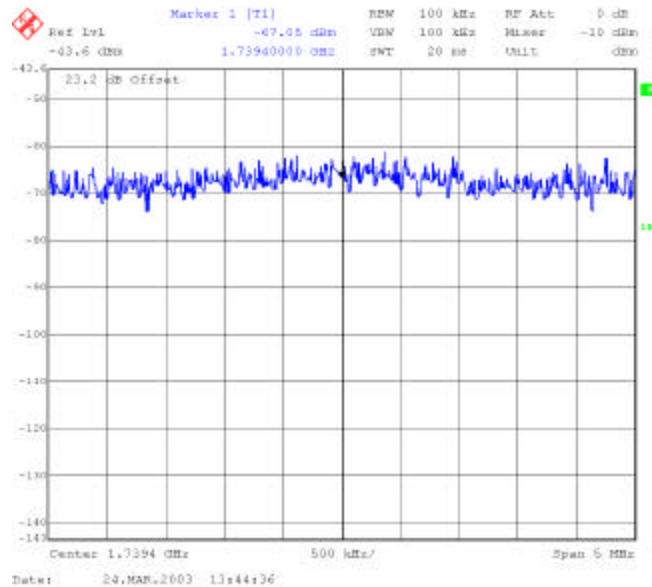
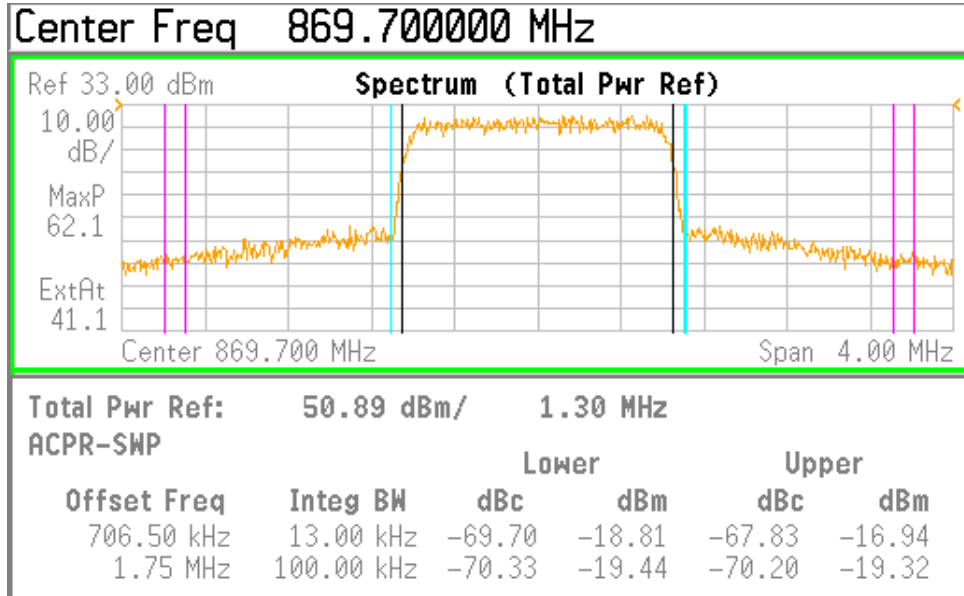




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## Spurious Emissions at Antenna Terminal – 120W Channel 1013 – 869.70 MHz

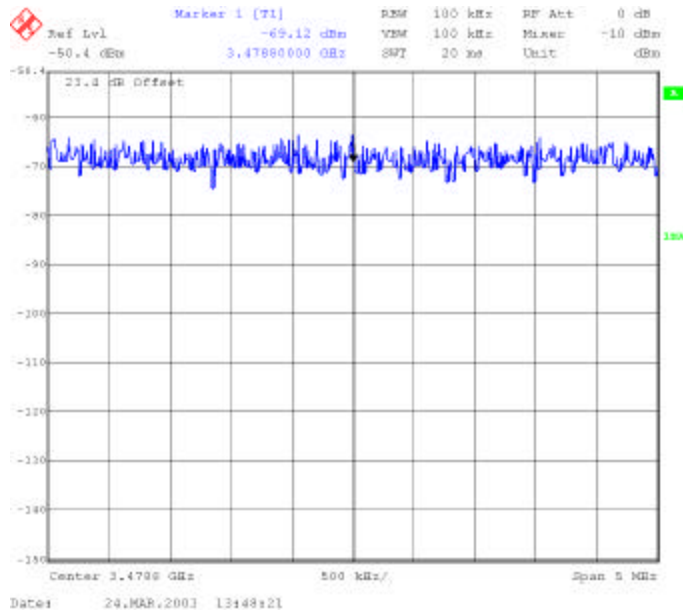
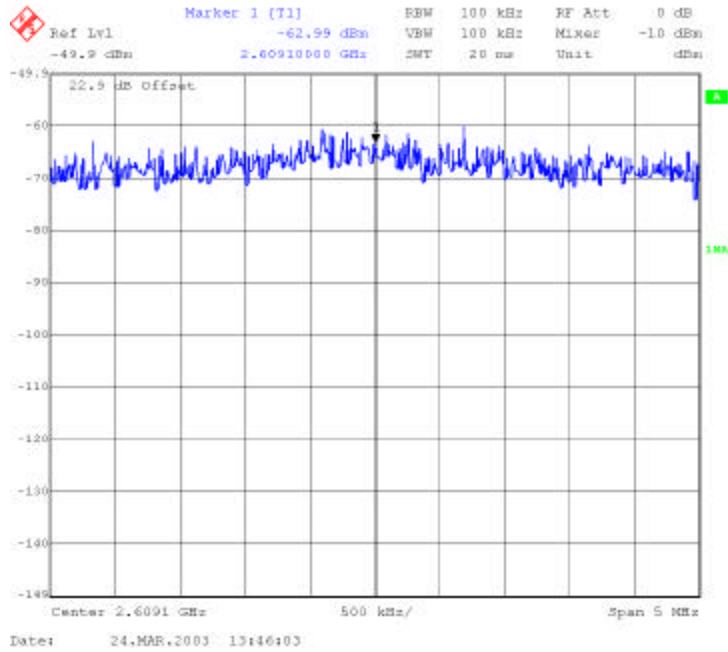




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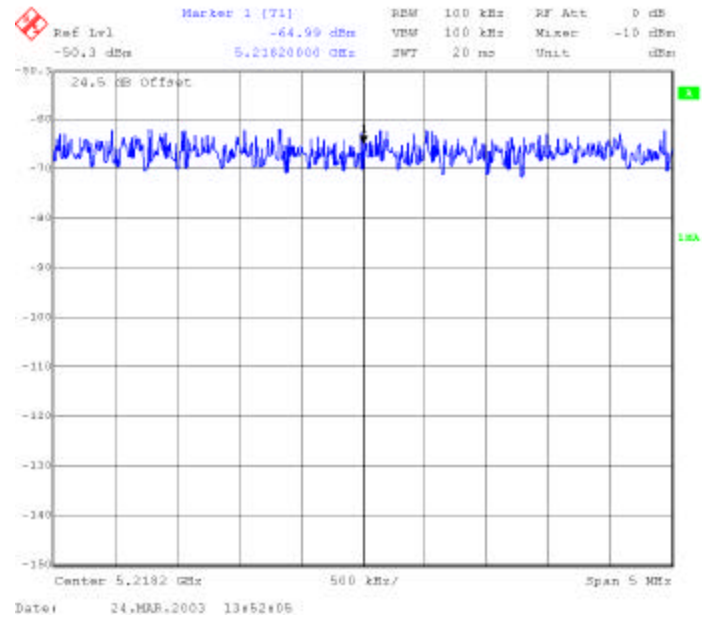
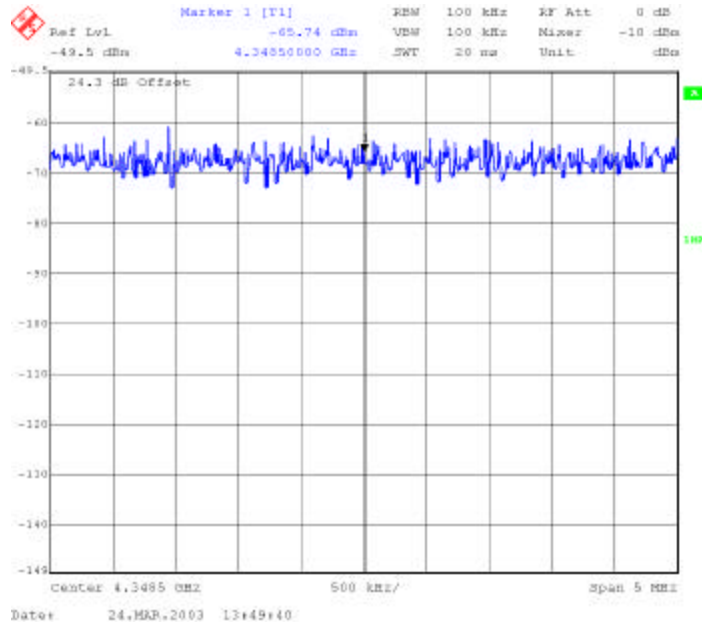




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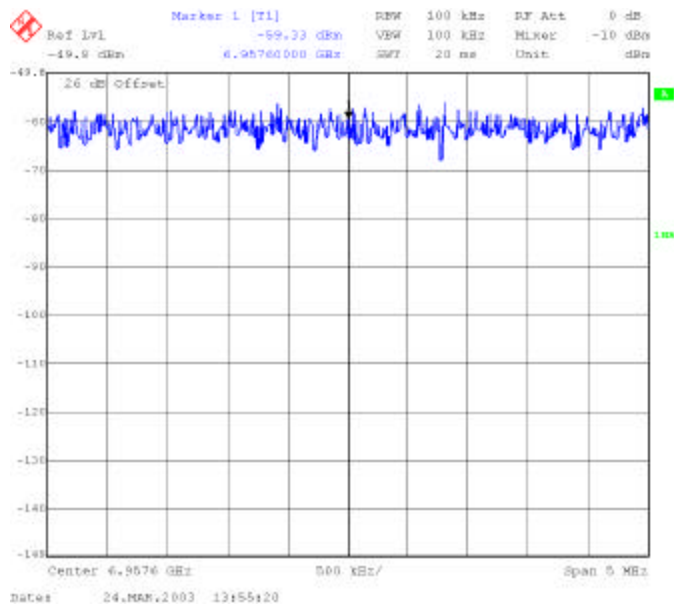
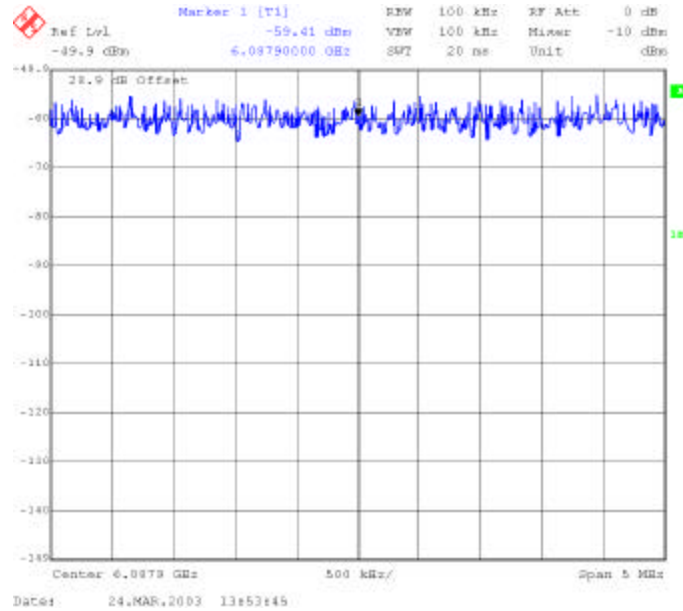




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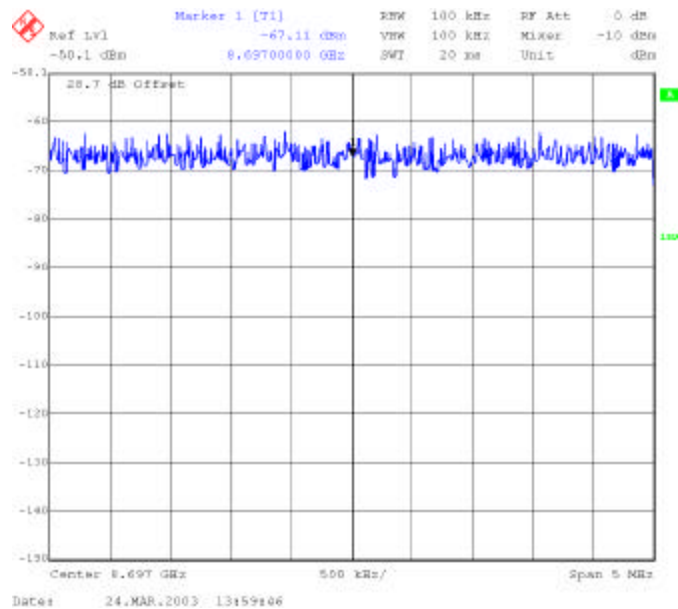
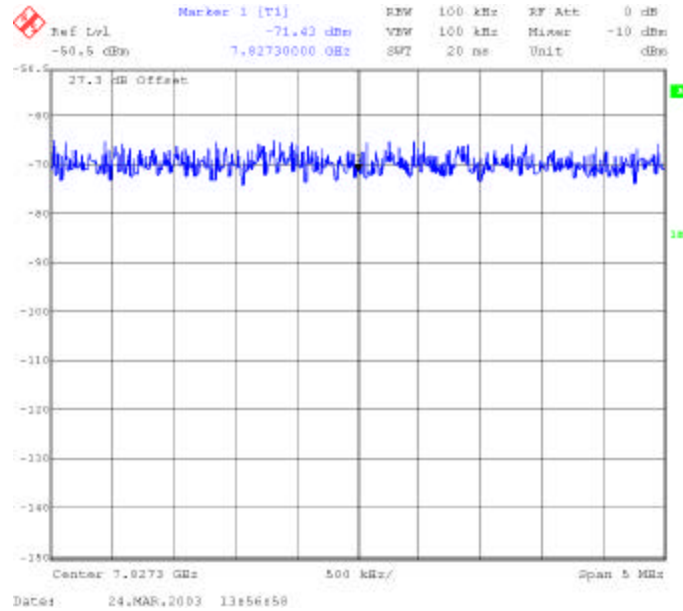




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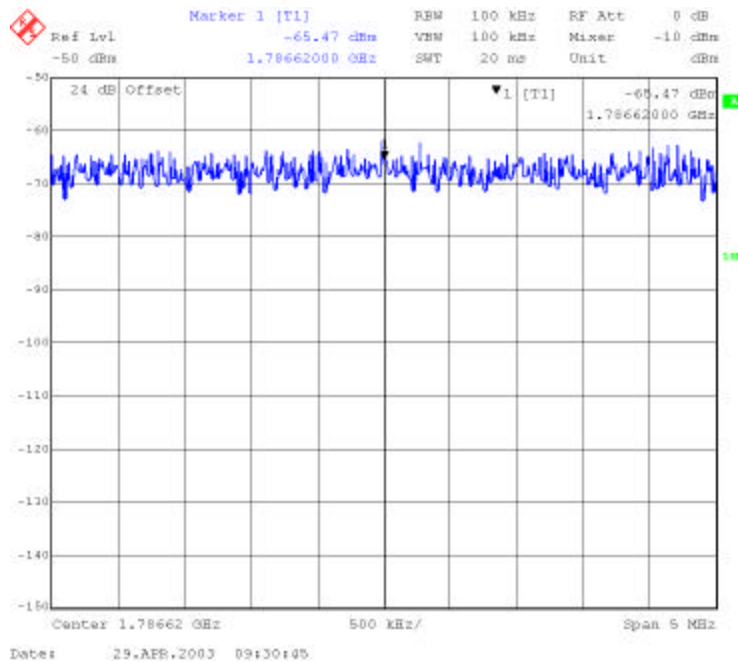
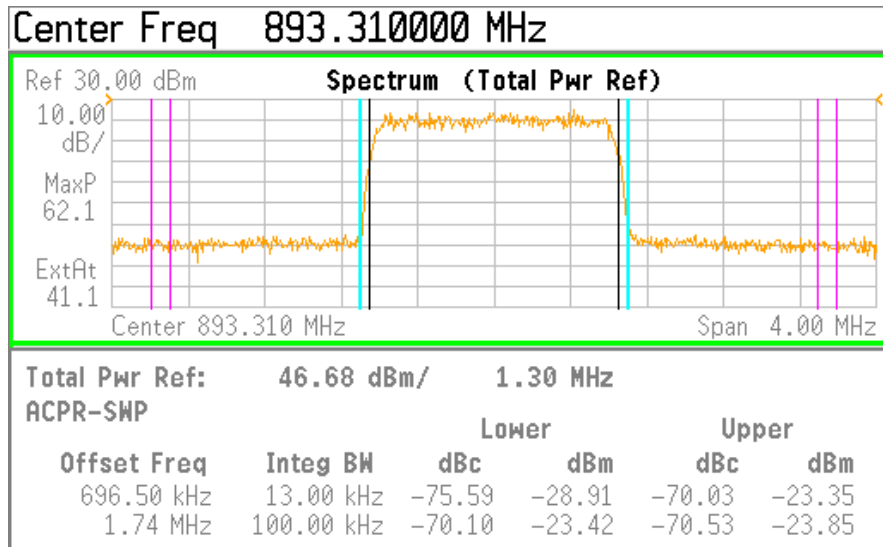




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## Spurious Emissions at Antenna Terminal – 45W Channel 777 – 893.31 MHz

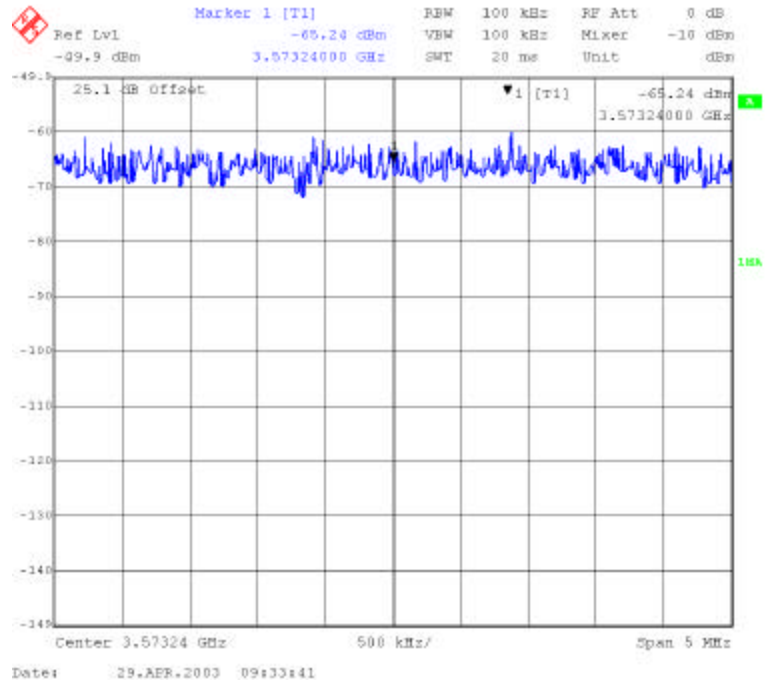
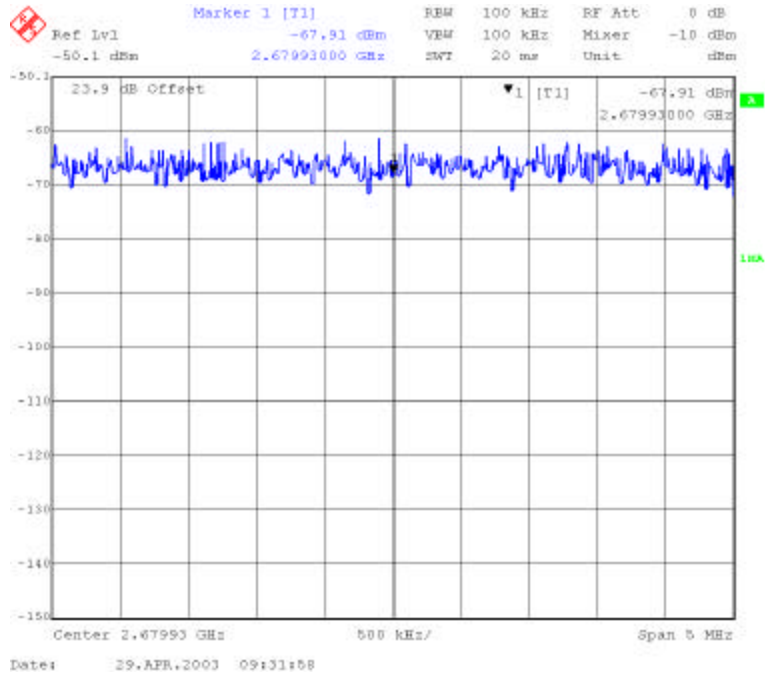




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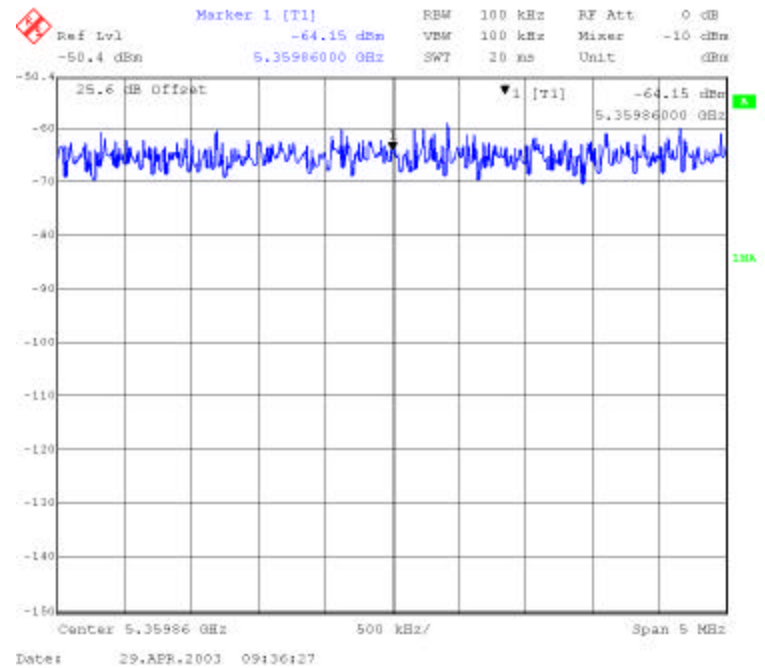
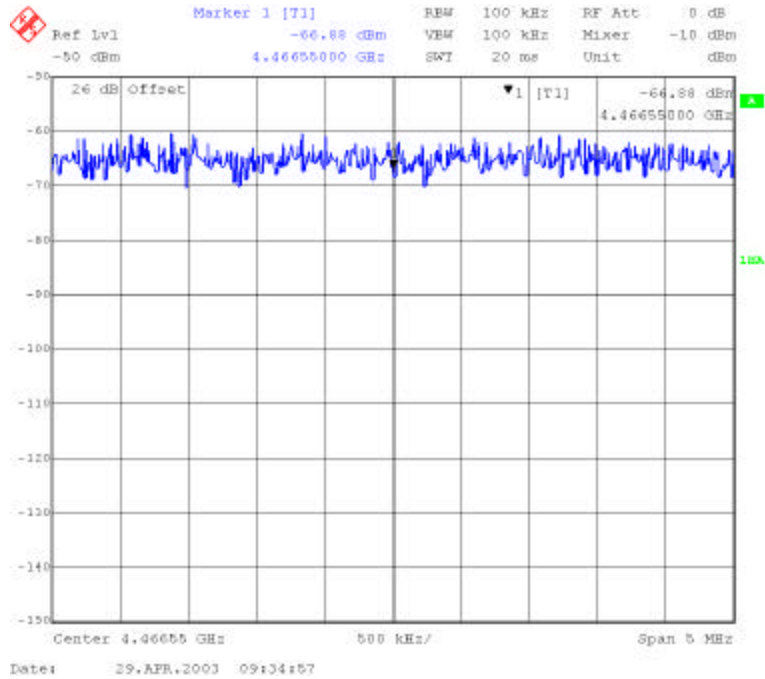




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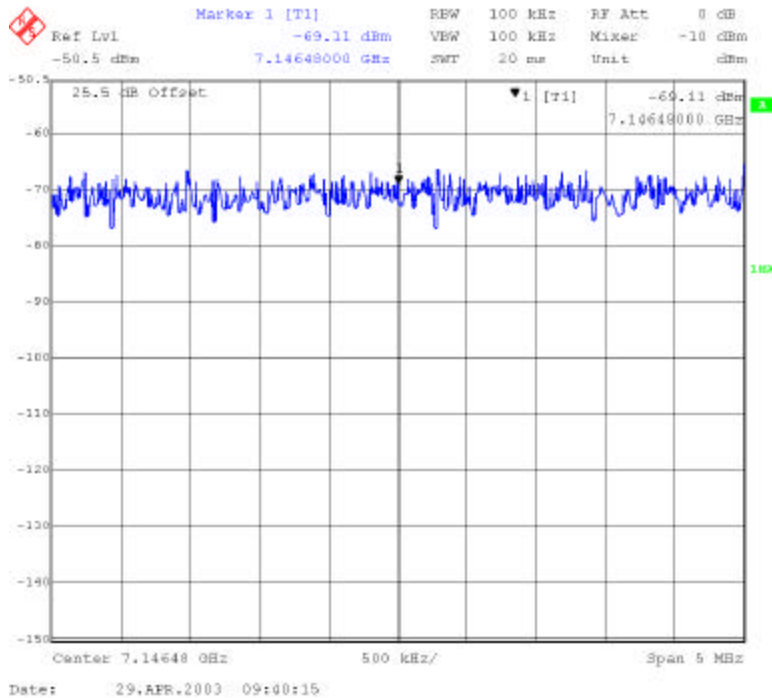
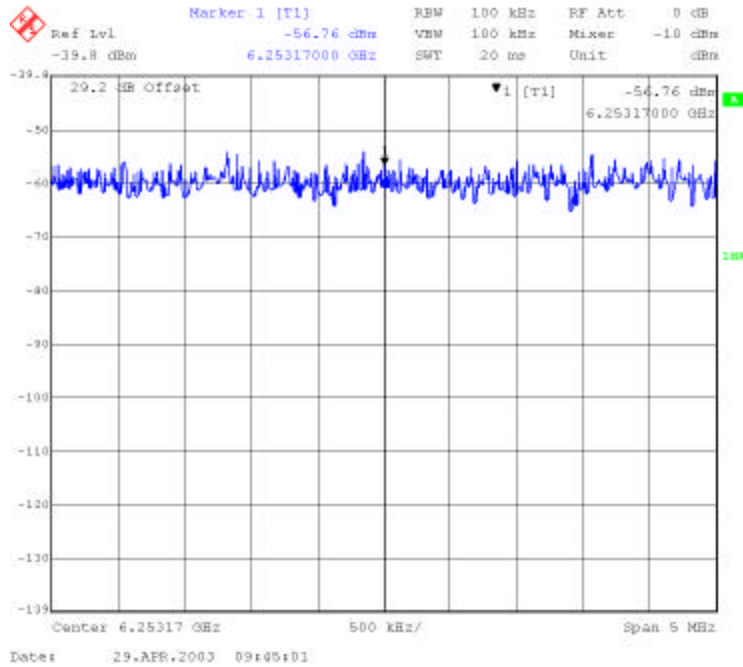




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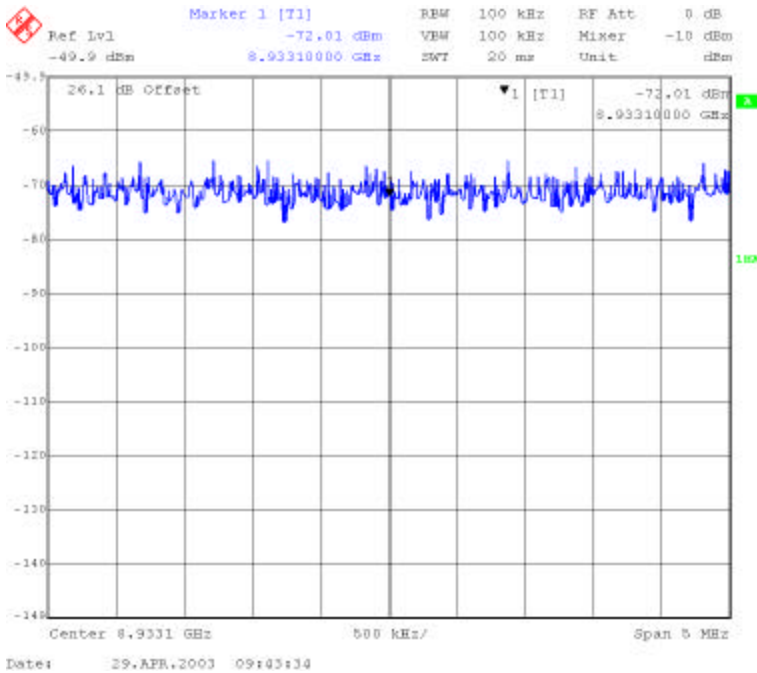
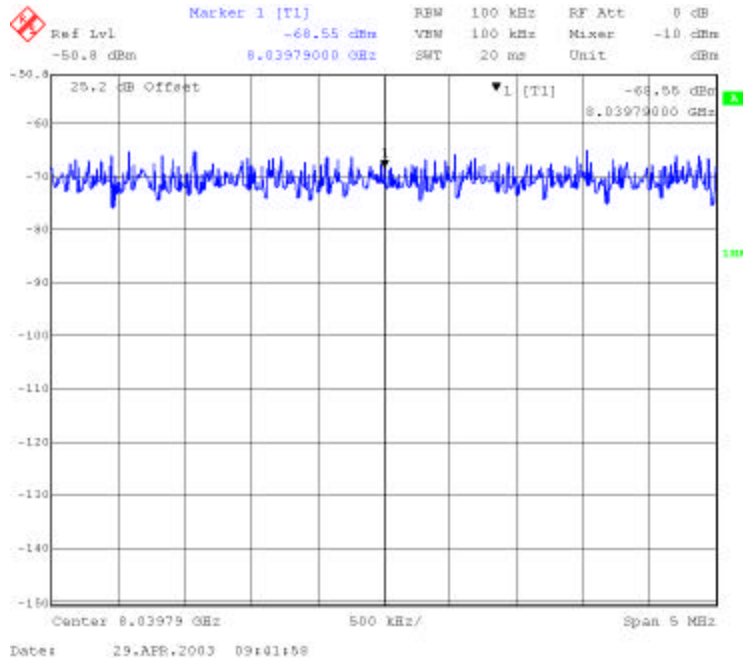




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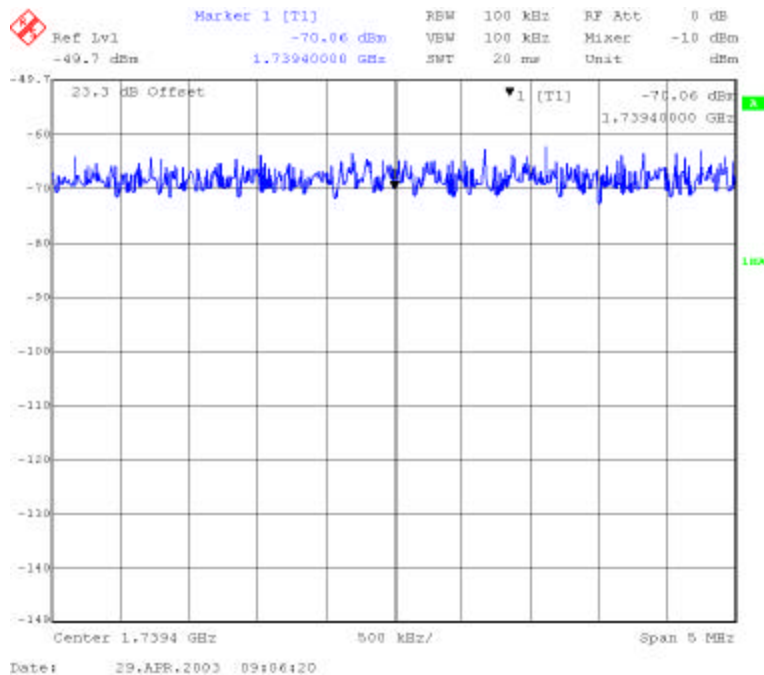
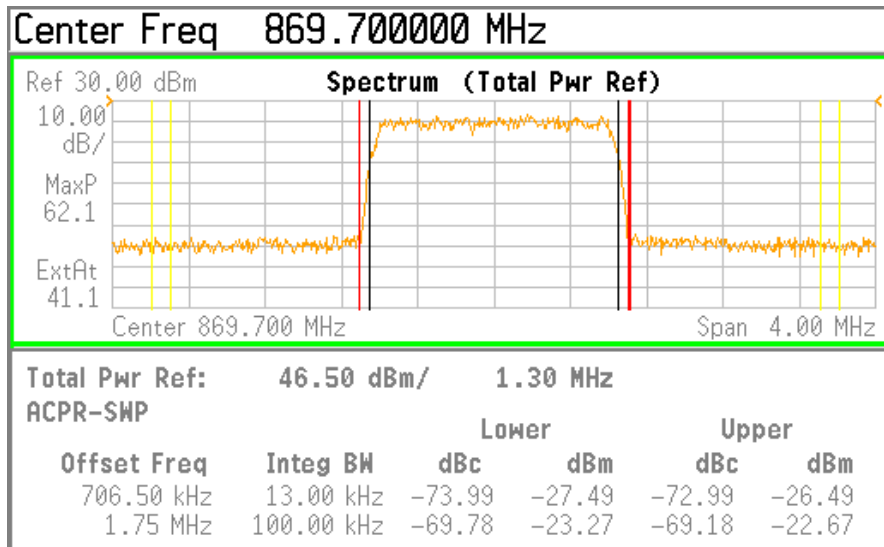




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## Spurious Emissions at Antenna Terminal – 45W Channel 1013 – 869.70 MHz



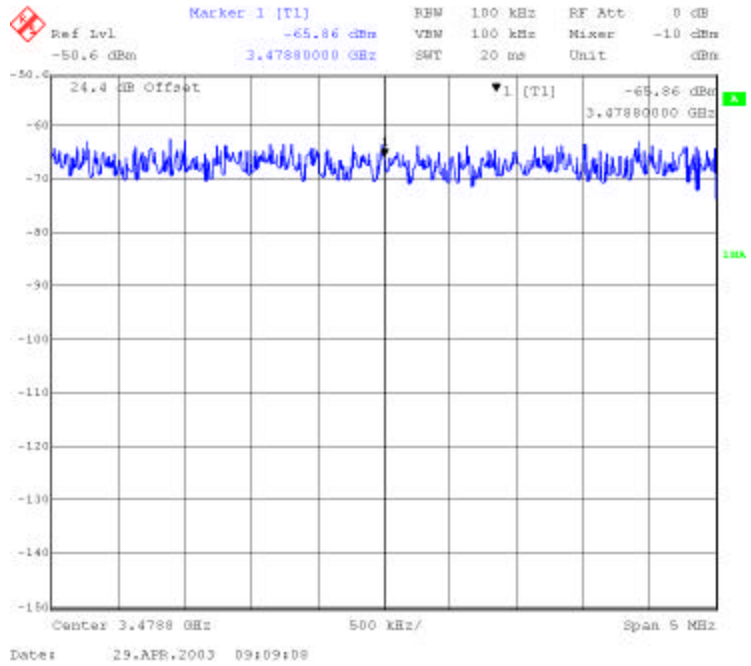
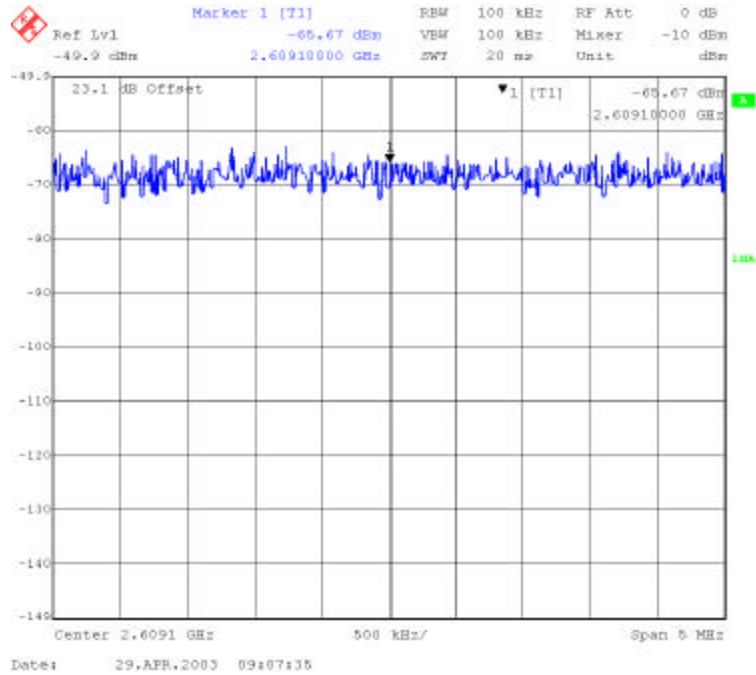




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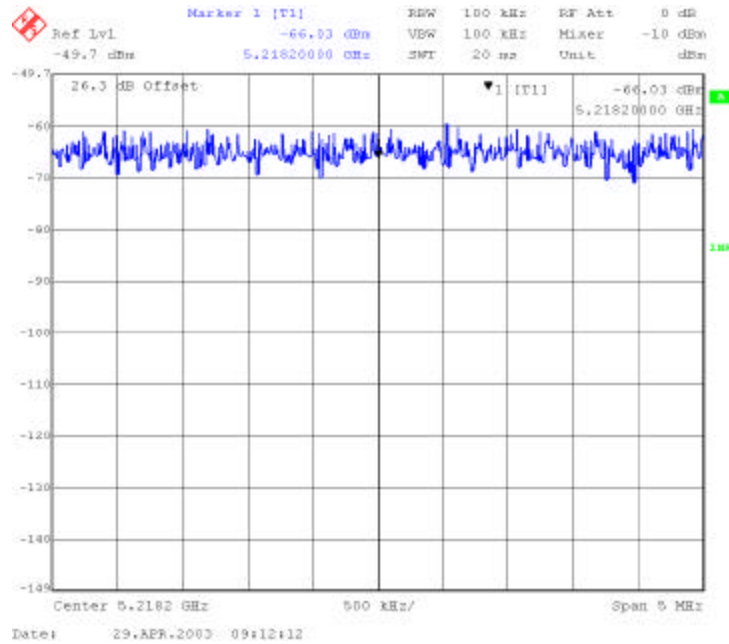
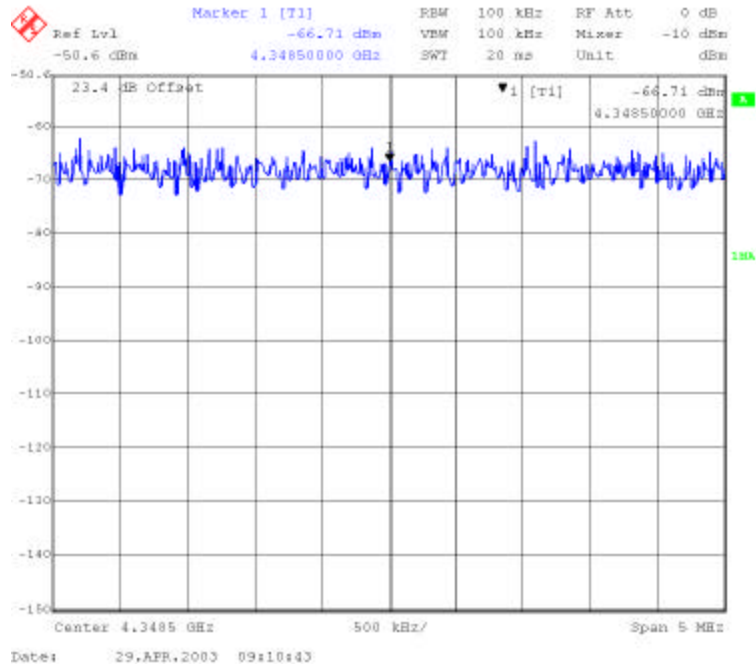
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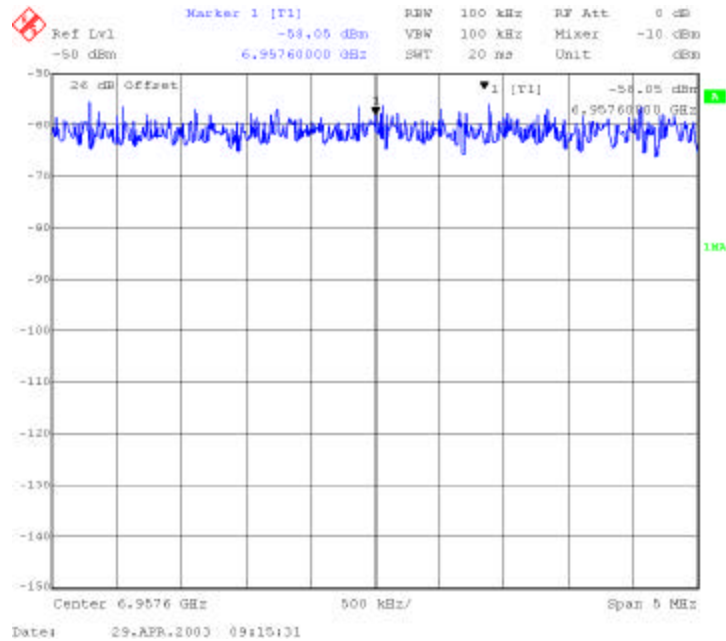
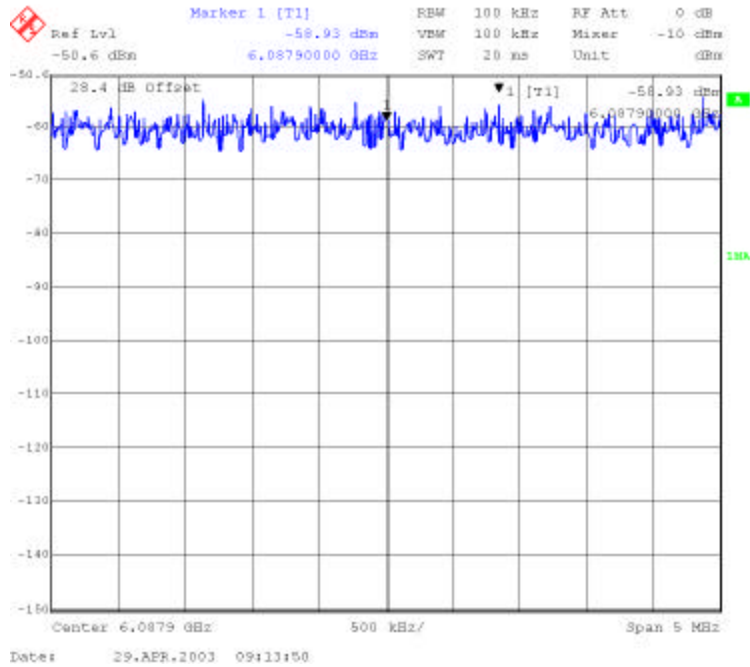
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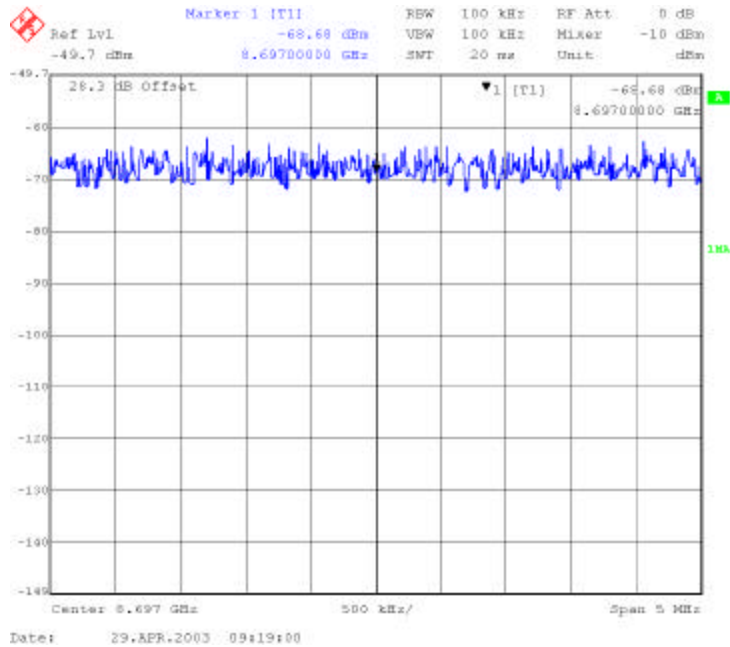
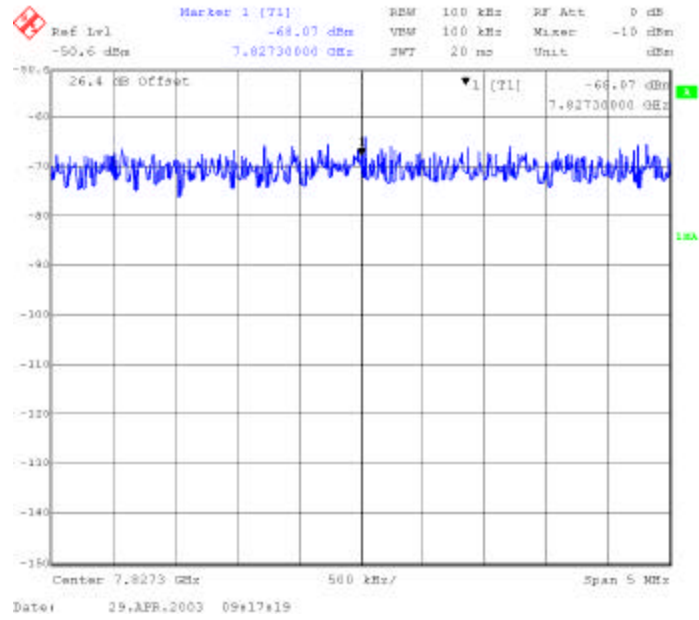




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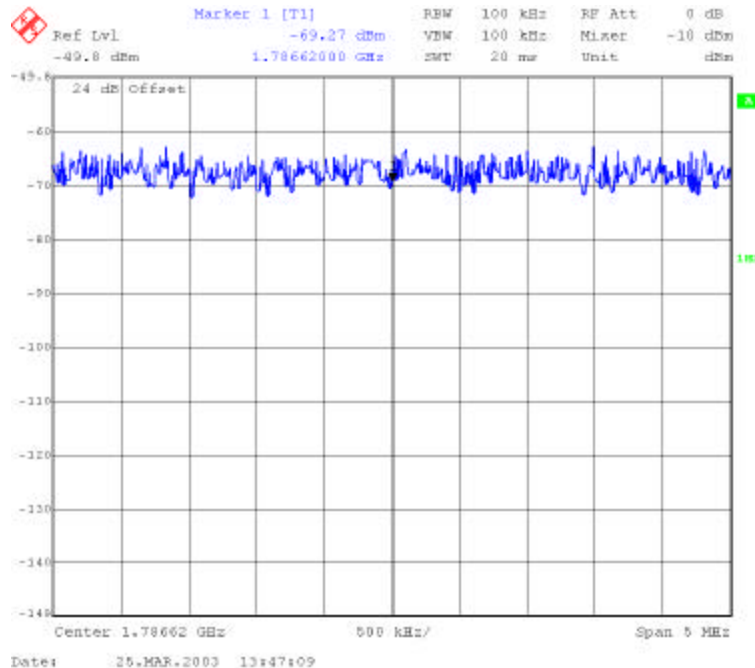
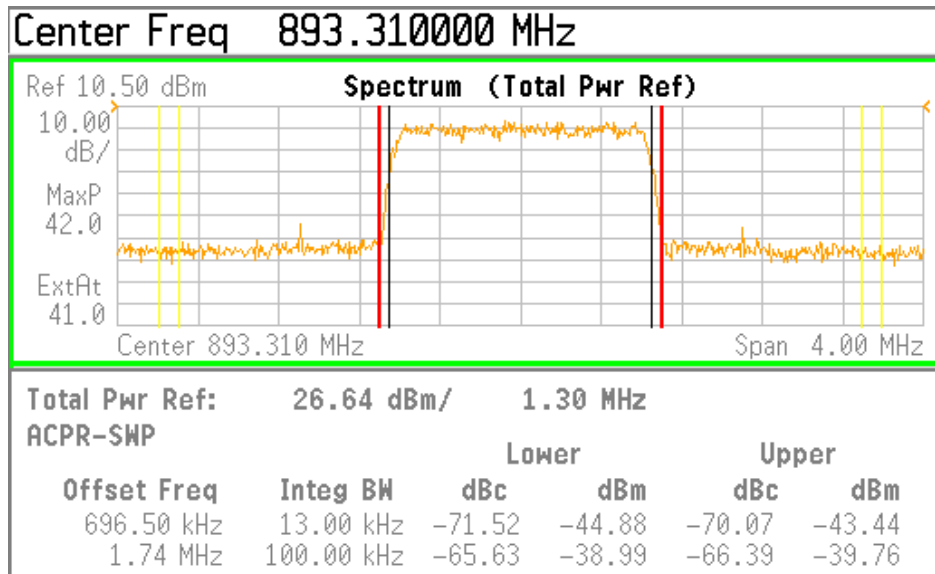




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## Spurious Emissions at Antenna Terminal – .45W Channel 777 – 893.31 MHz

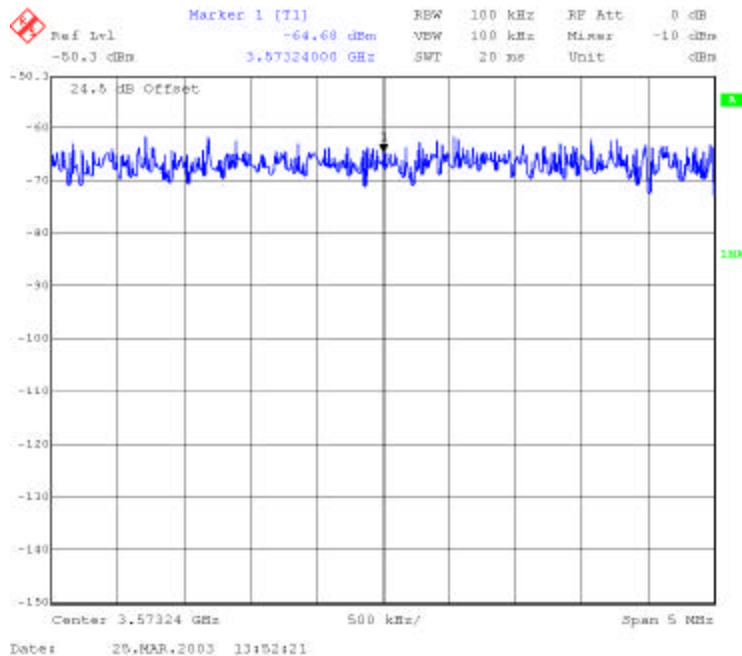
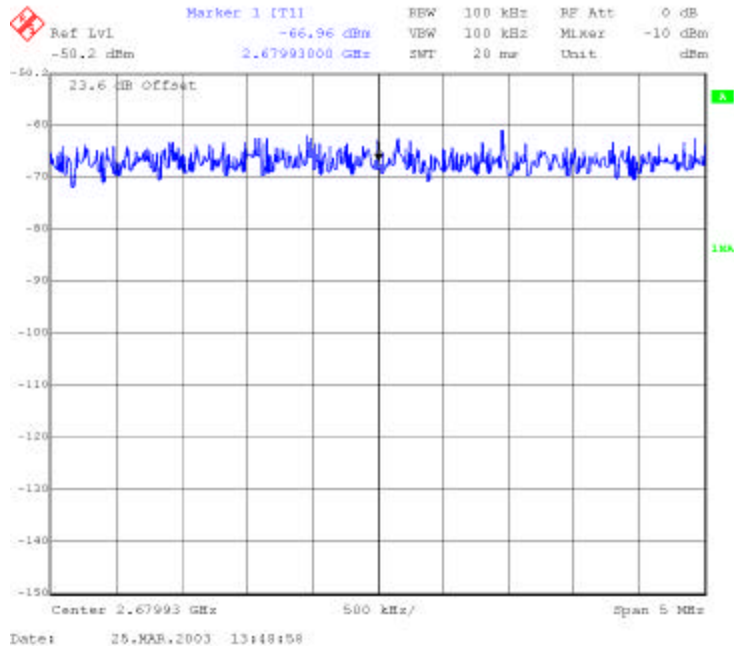




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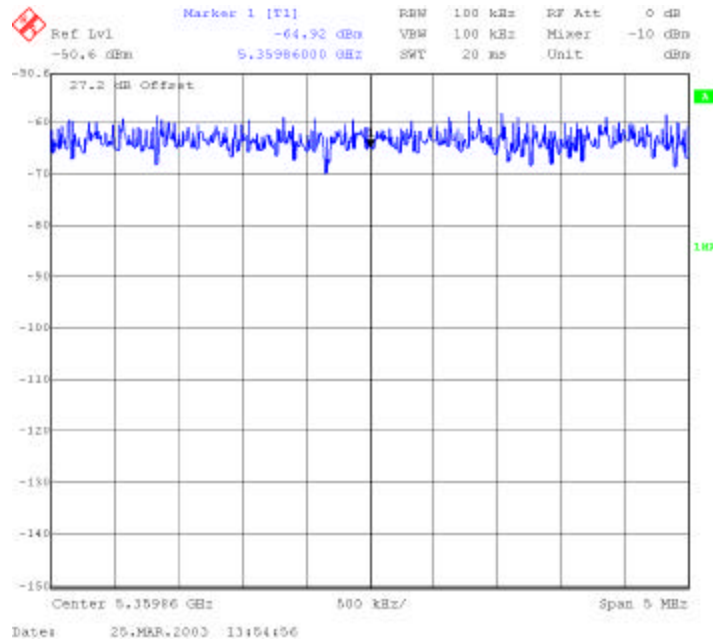
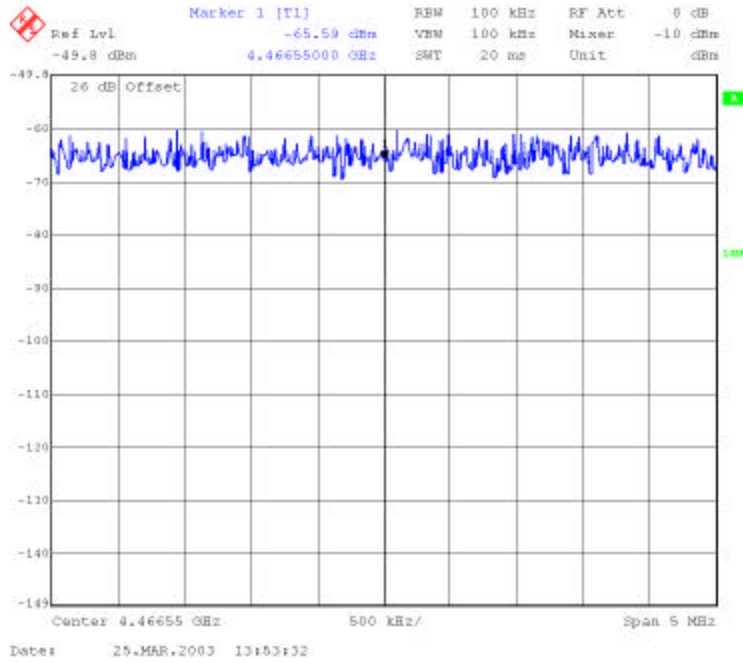




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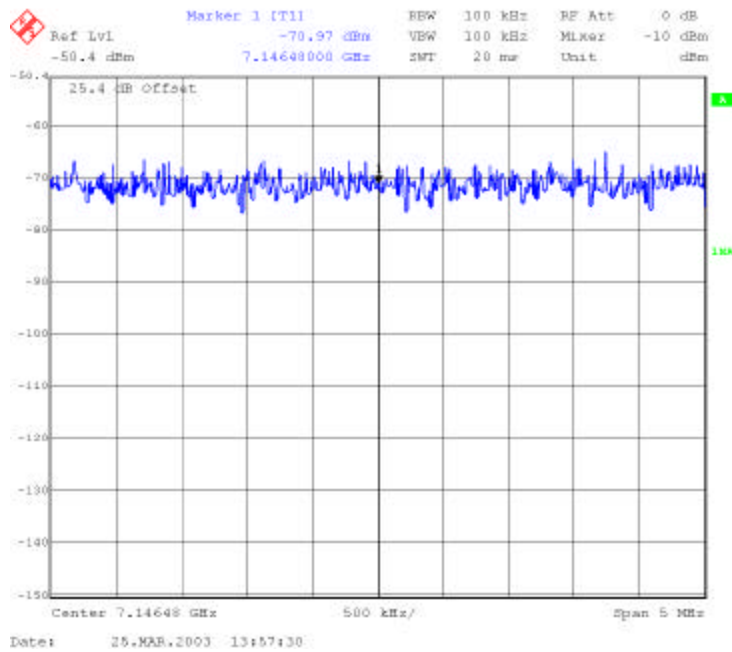
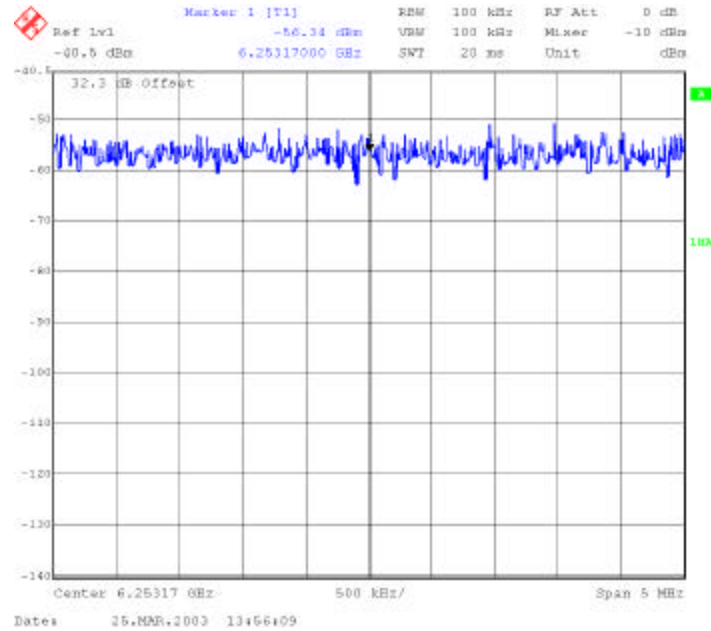




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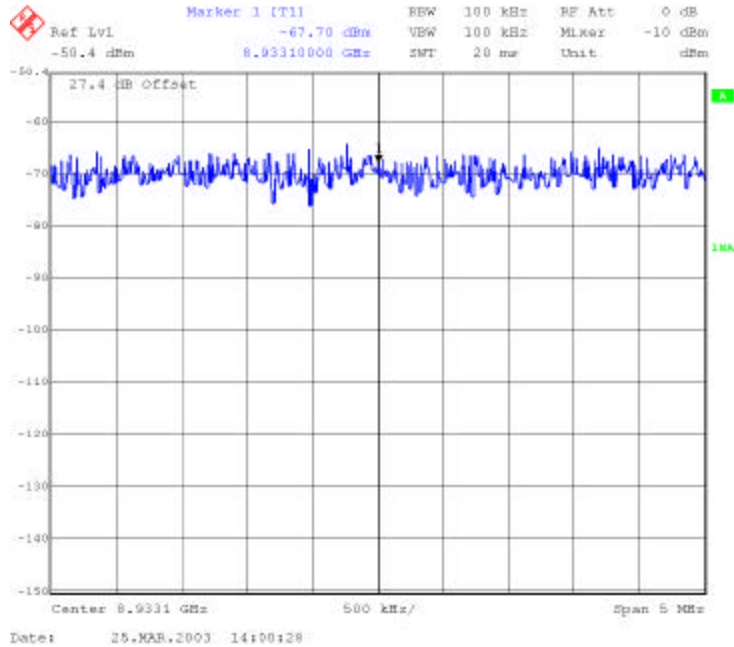
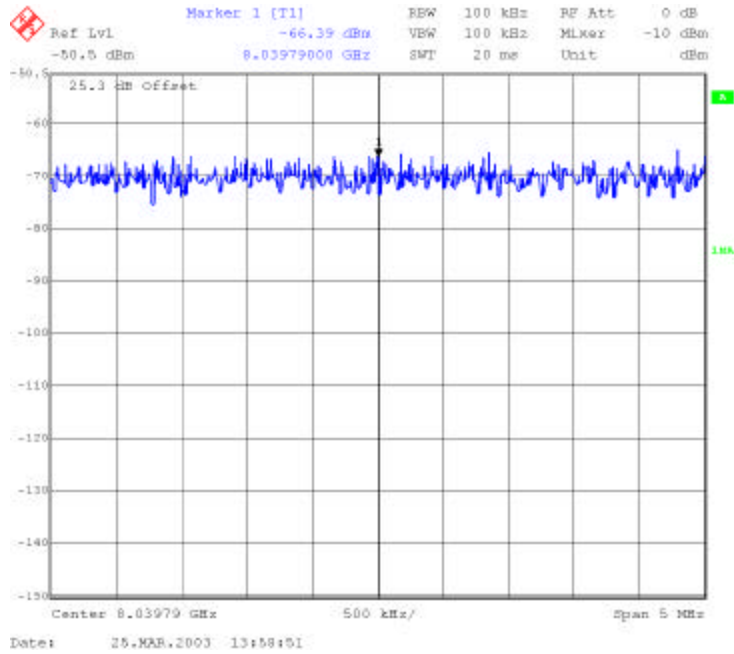




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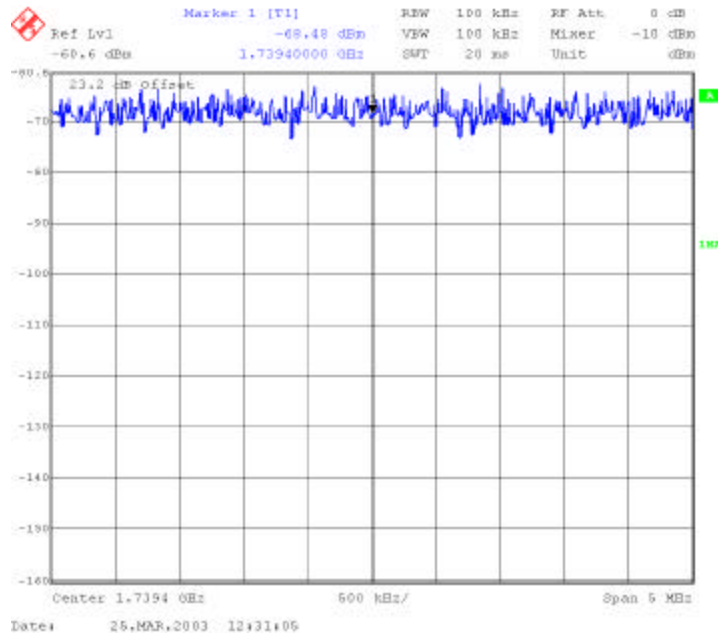
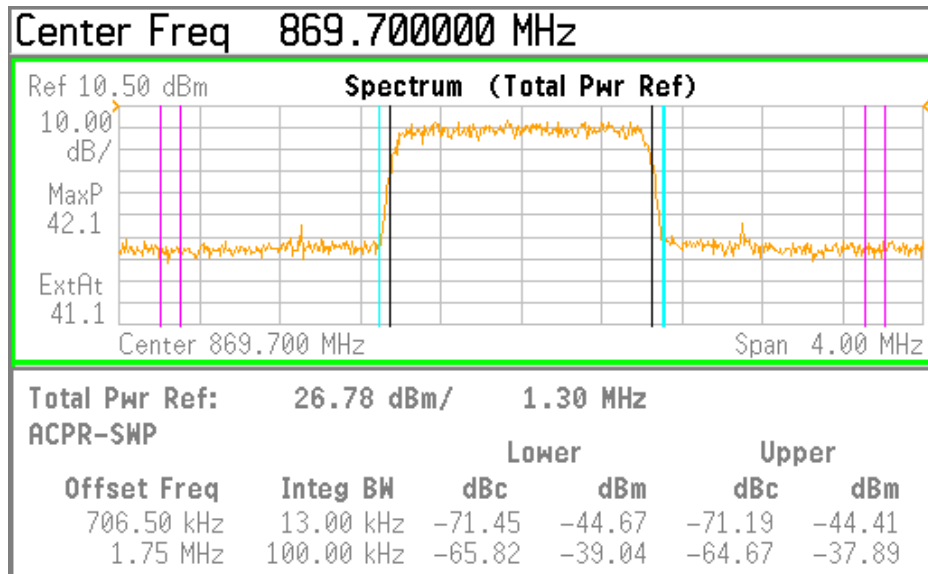




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## Spurious Emissions at Antenna Terminal – .45W Channel 1013 – 869.70 MHz

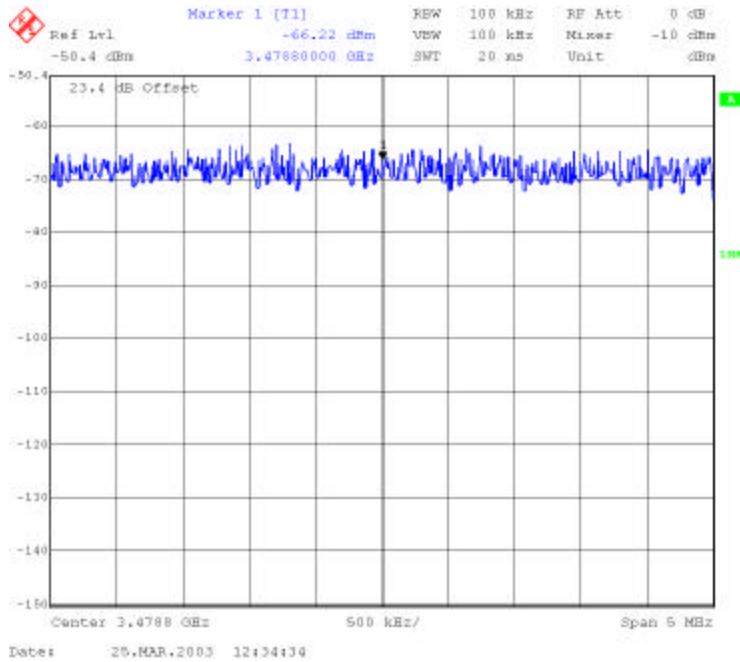
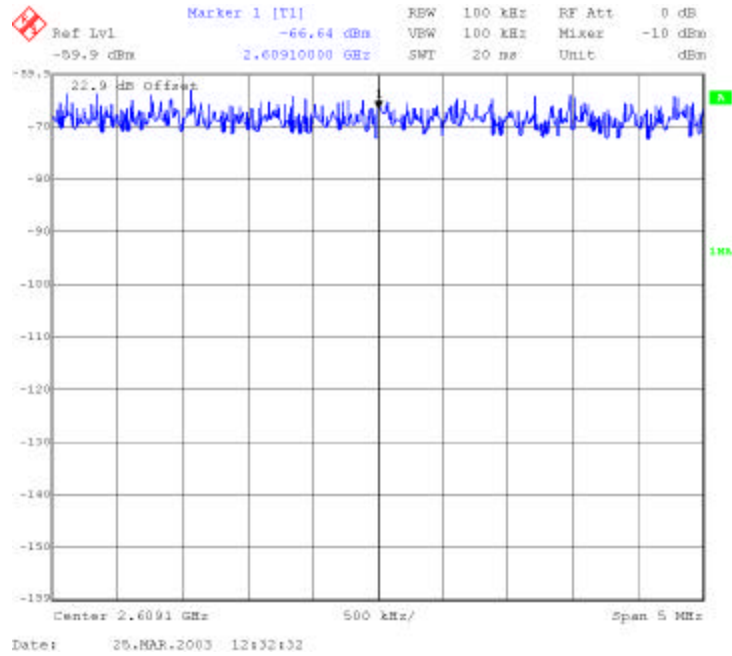




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# SC4812T-MC @ 800 MHz CDMA BTS      FCC ID: IHET5DK1

## Test Report Exhibit

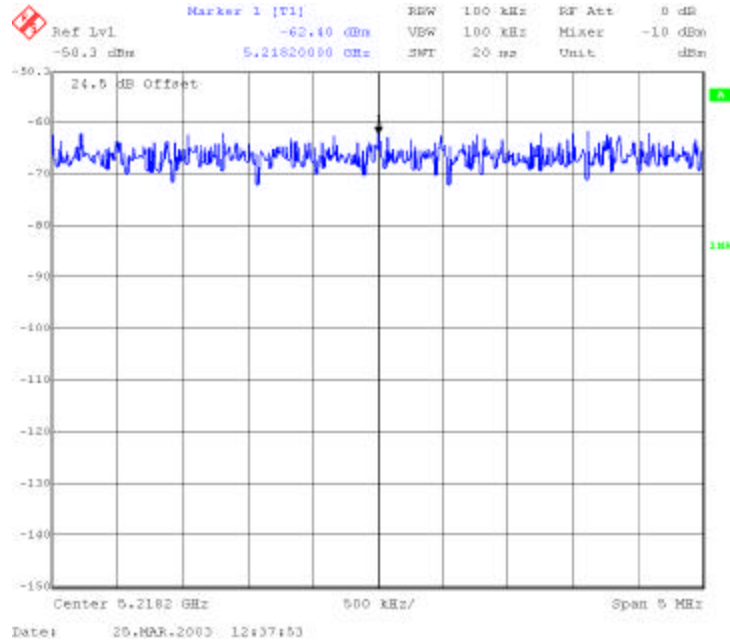
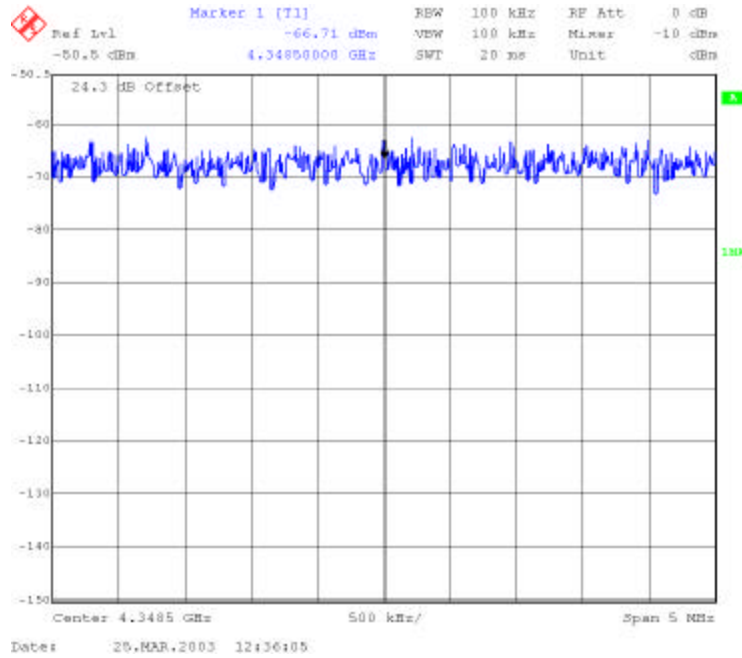




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## Test Report Exhibit

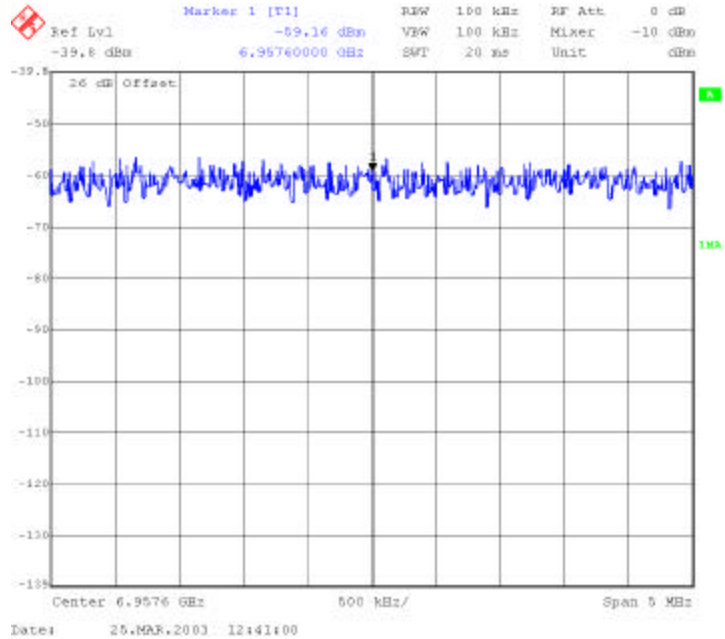
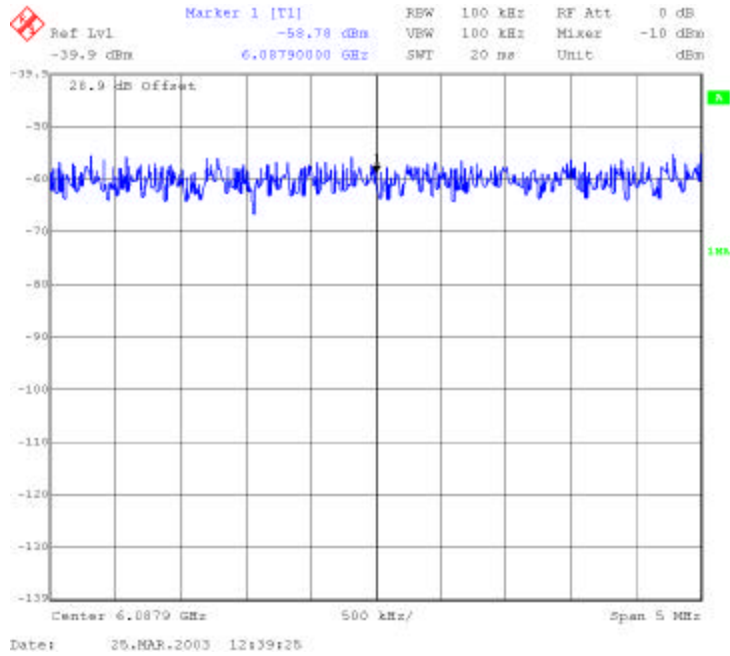




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## Test Report Exhibit

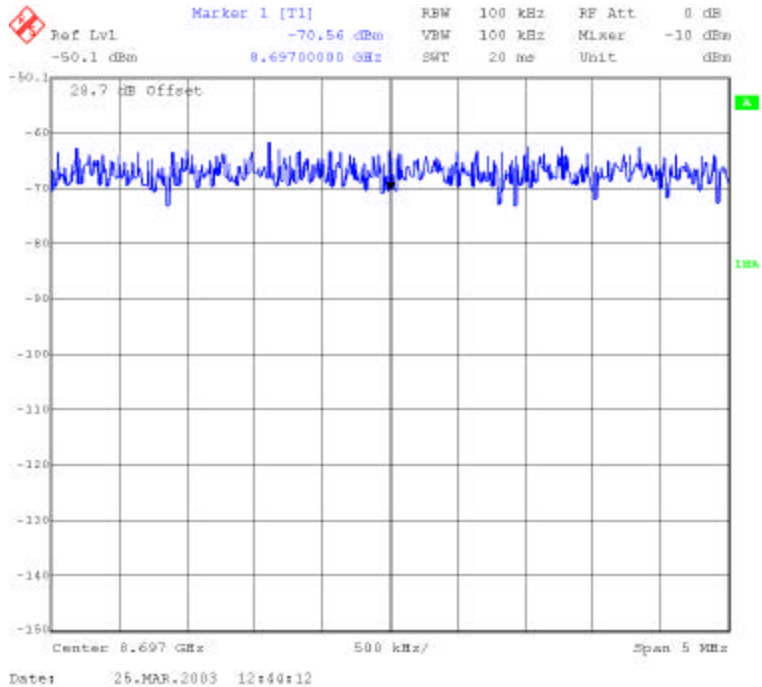
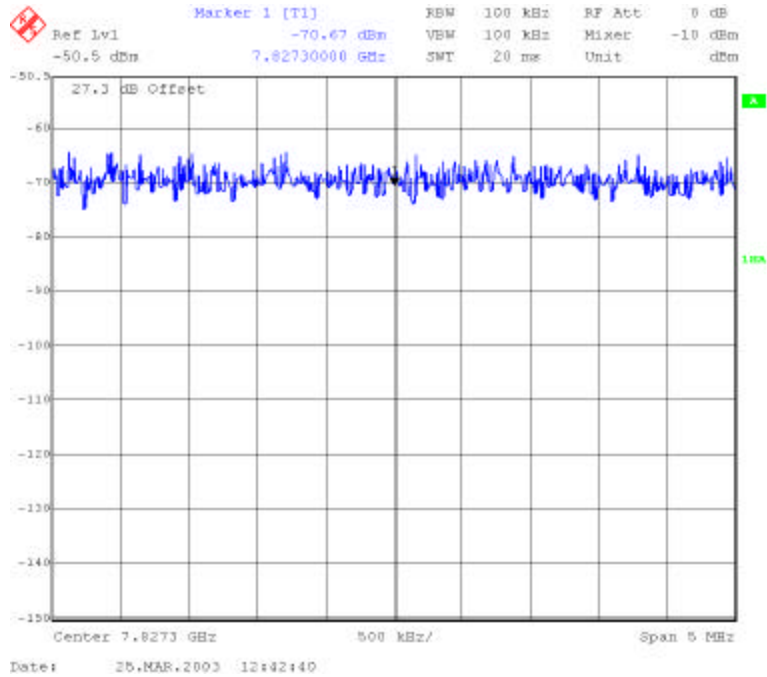




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## SECTION E

### Field Strength of Spurious Radiation - 47CFR2.1053

#### Worst case Radiated RF Spur Levels

TRANSMIT CHANNEL	SPUR FREQUENCY (GHz)	MEASURED SIGNAL LEVEL dBuV/meter	MEASURED Signal Level (dBm)	FCC, Part 22 MAX LIMIT (dBm)
1013H 1013V	8.697 8.697	56.377 53.91	-38.85 -41.32	-13 -13
777H 777V	8.9331 8.9331	49.343 54.61	-45.89 -40.62	-13 -13

Converting dBuV/meter to dBm when Part 22 is done at 3 meters.

1.  $(\text{dBuV/M} / 20) * (\text{Inverse Log}) = \text{uV/M}$
2.  $\text{Log}(\text{uV/M} / 57735) * 20 = \text{dBm}$

If the test is done at 10 meters, the first formula would remain the same.

The 2nd is as follows  $\text{Log}[(\text{uV/m} * 1 / (3 * 57735)/10)] * 20 \text{ dBm}$



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## **SECTION F**

### **Frequency Stability - 47CFR2.1055**

<b>Mode</b>	<b>27V Power</b>	<b>Worst case DPPM</b>	<b>FCC Requirement</b>	<b>Pass/Fail</b>
CSM1	85-115%	<0.02	+/- 1.5 ppm max	Pass
CSM 2	85-115%	<0.02	+/- 1.5 ppm max	Pass

<b>Mode</b>	<b>Temperature</b>	<b>DPPM</b>	<b>FCC Requirement</b>	<b>Pass/Fail</b>
CSM1	-30 to +50 C	<0.02	+/- 1.5 ppm max	Pass
CSM2	-30 to +50 C	<0.02	+/- 1.5 ppm max	Pass



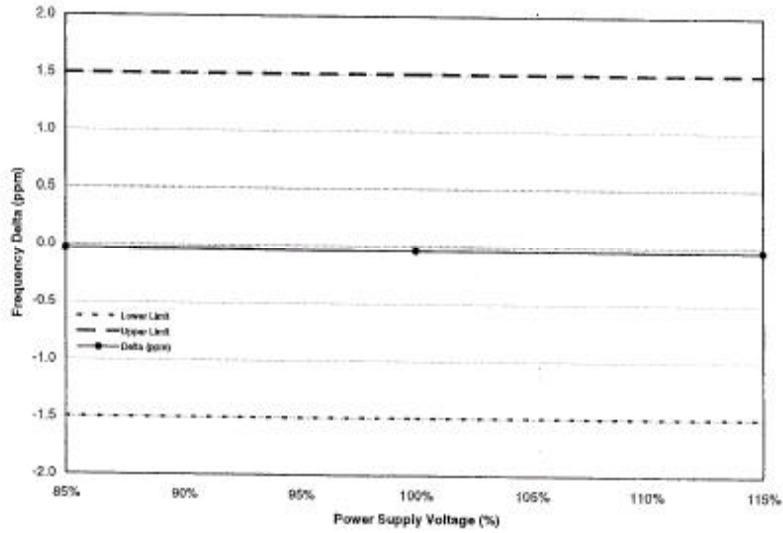


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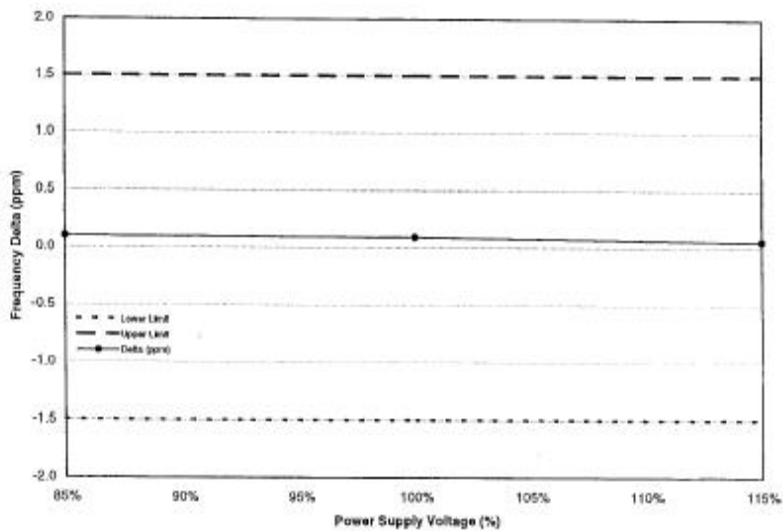
# SC4812T-MC @ 800 MHz CDMA BTS      FCC ID: IHET5DK1

## Test Report Exhibit

Frequency Stability with Varying Supply Voltage - CSM1



Frequency Stability with Varying Supply Voltage - CSM2



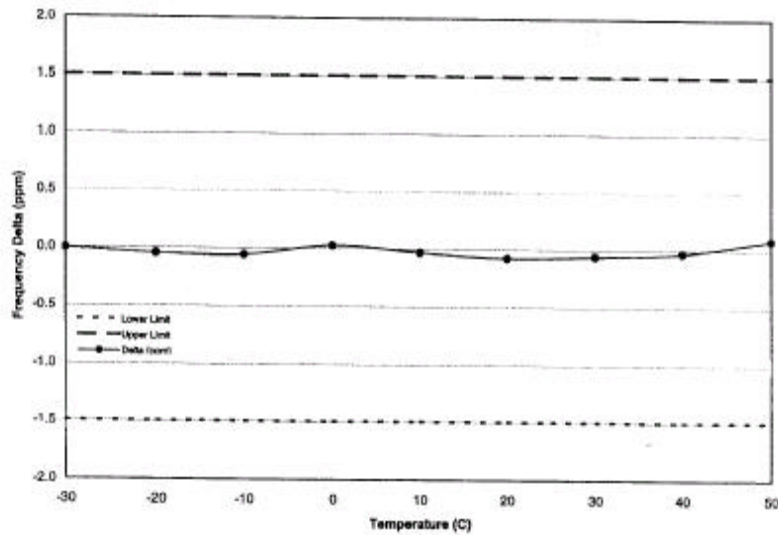


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## Test Report Exhibit

Frequency Stability Over Temperature - CSM1



Frequency Stability Over Temperature - CSM2

