

**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****MOTOROLA**

Global Telecom Solutions Sector, 5555 North Beach Street TX14-7C, Fort Worth, Texas
Telephone (817) 245-6039, Fax (817) 245-6248, Email wlmv00@email.mot.com

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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

Channel	Tune Frequency (MHz)	Power Level (W)	RHO Measured	RHO Specification	Pass/Fail
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:

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

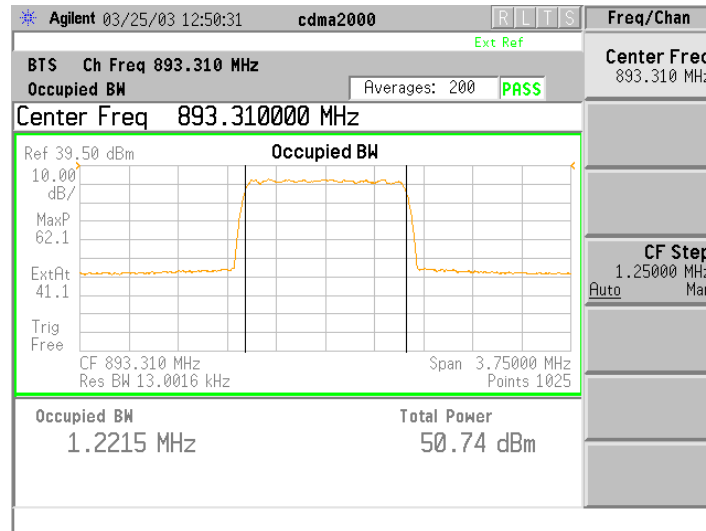
The occupied bandwidth is measured in a 30 kHz resolution bandwidth. Results are summarized above.

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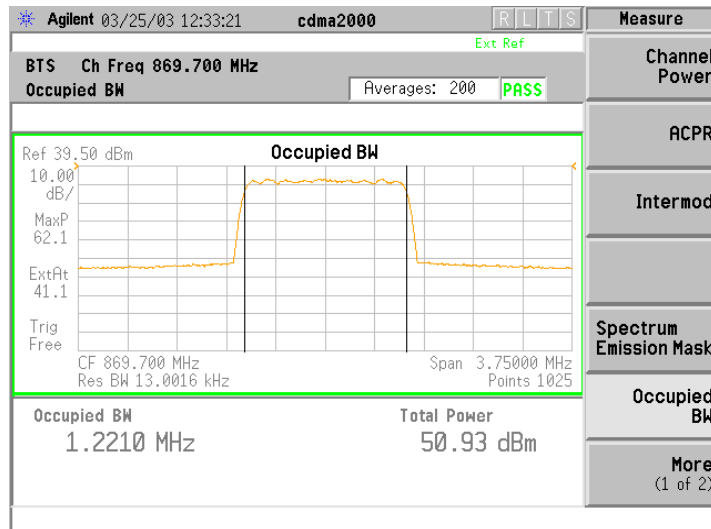
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Occupied Bandwidth - 120W



Channel 777 – 893.31 MHz



Channel 1013 – 869.7 MHz

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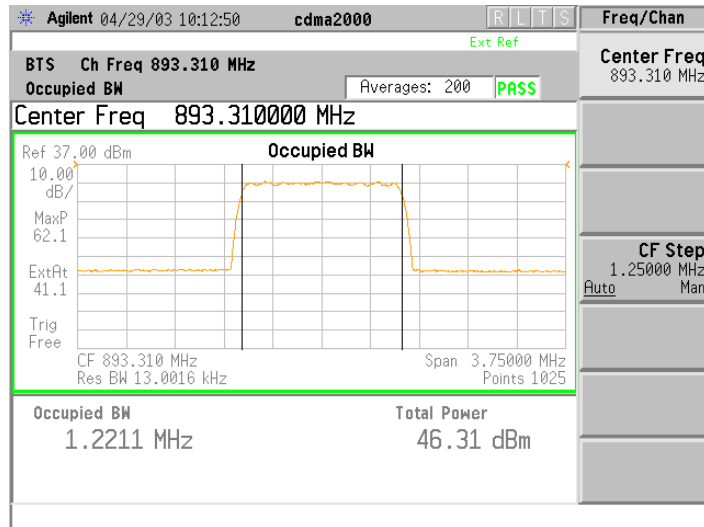
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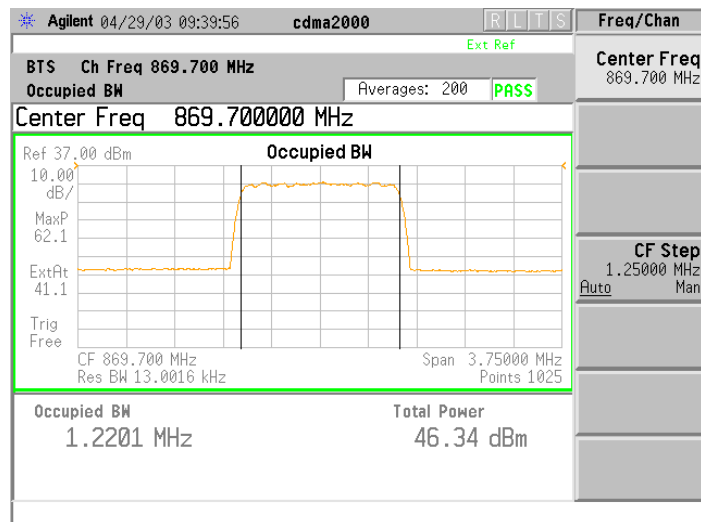
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Occupied Bandwidth - 45W



Channel 777 – 893.31 MHz



Channel 1013 – 869.7 MHz

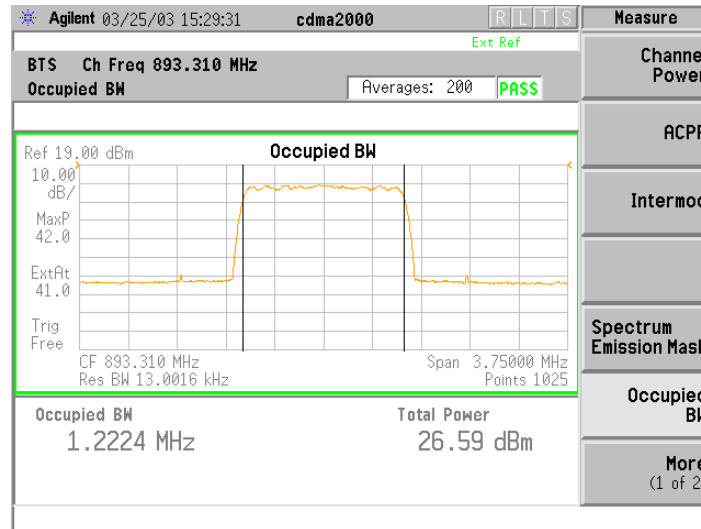
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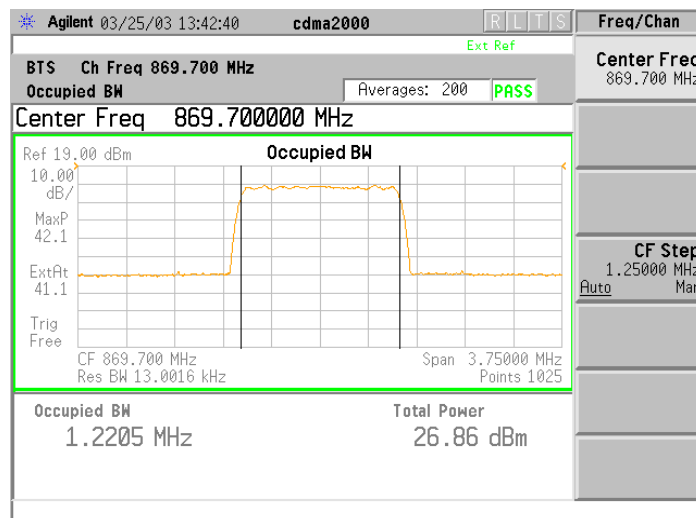
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Occupied Bandwidth – .45W



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:

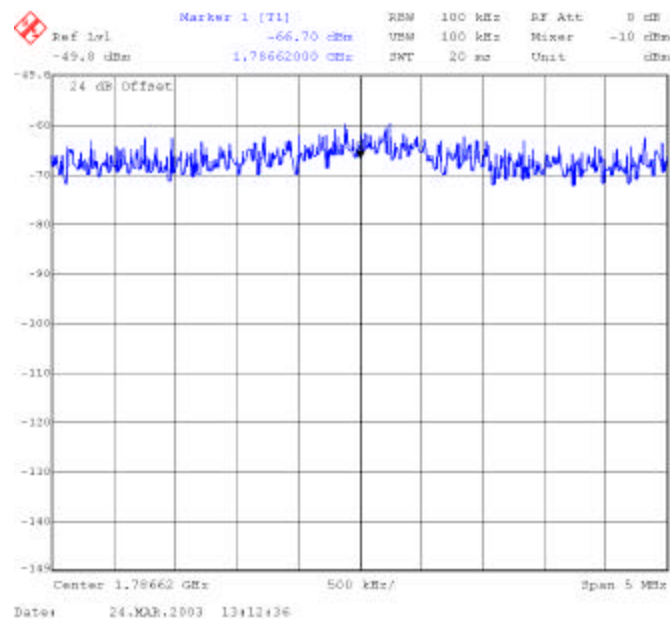
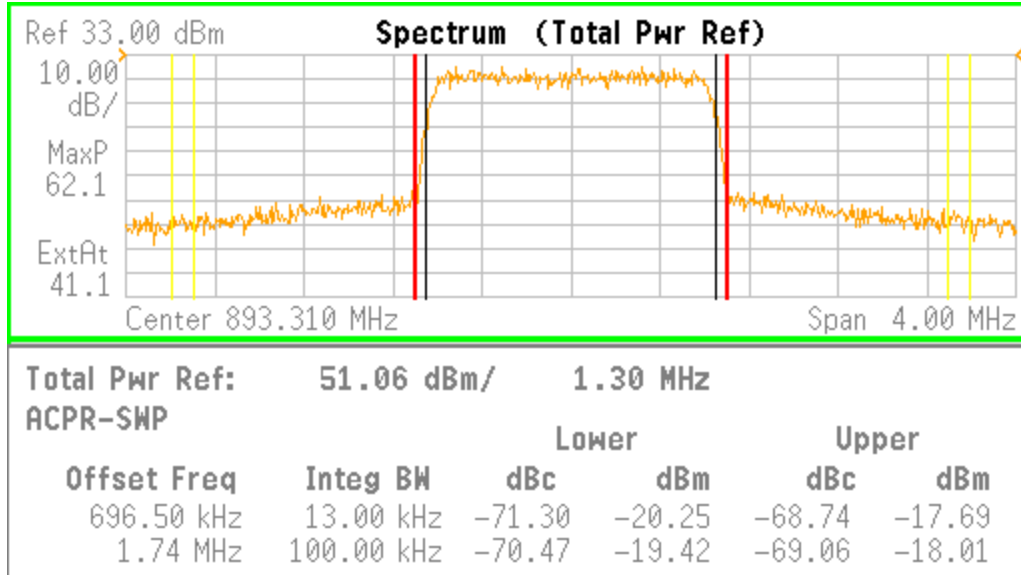
= Transmitted Power (10 Log₁₀ (P_{watt})) - (43 + 10 Log₁₀ (P_{watt})) dBW
= 10 Log₁₀ (P_{watt}) - (43 + 10 Log₁₀ (P_{watt})) dBW
= -43 dBW
= -13 dBm

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



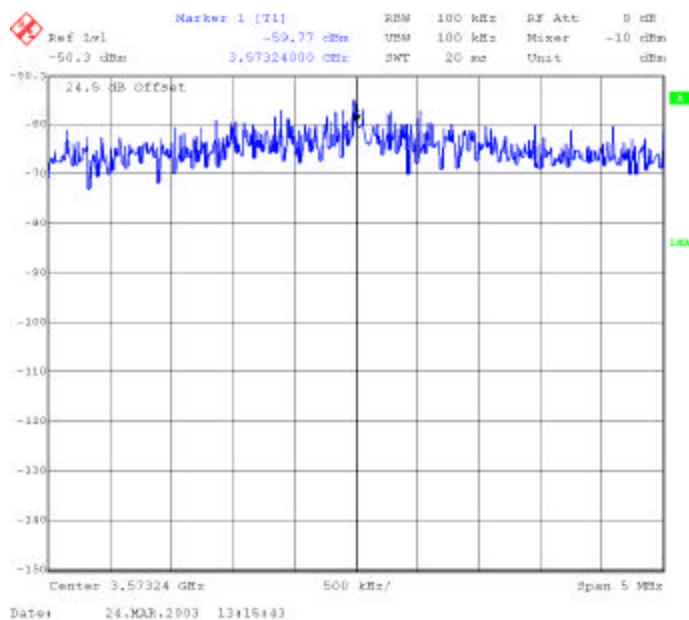
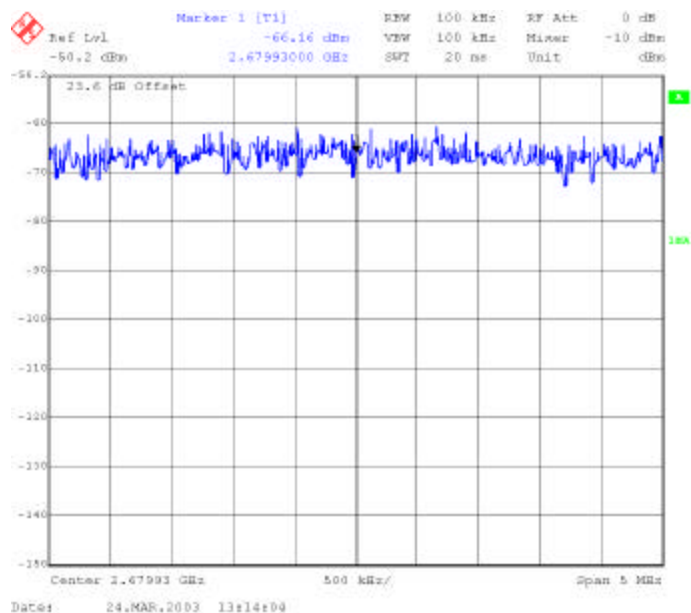
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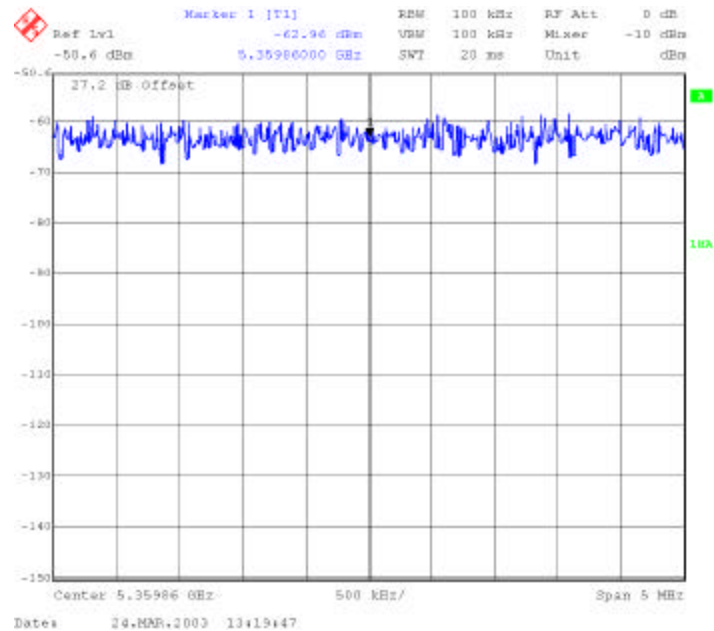
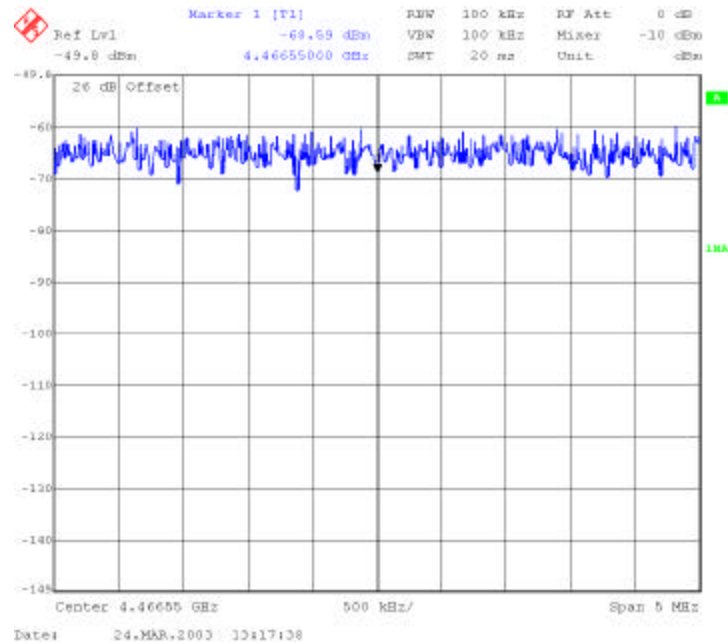
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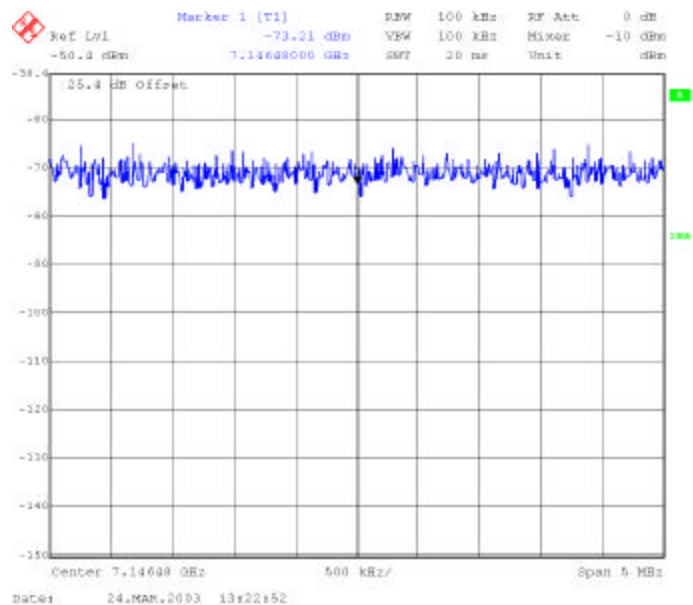
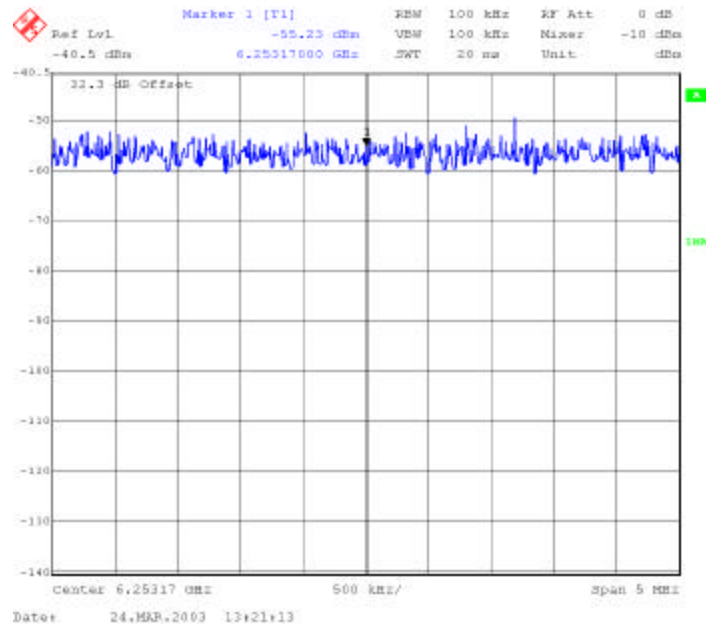
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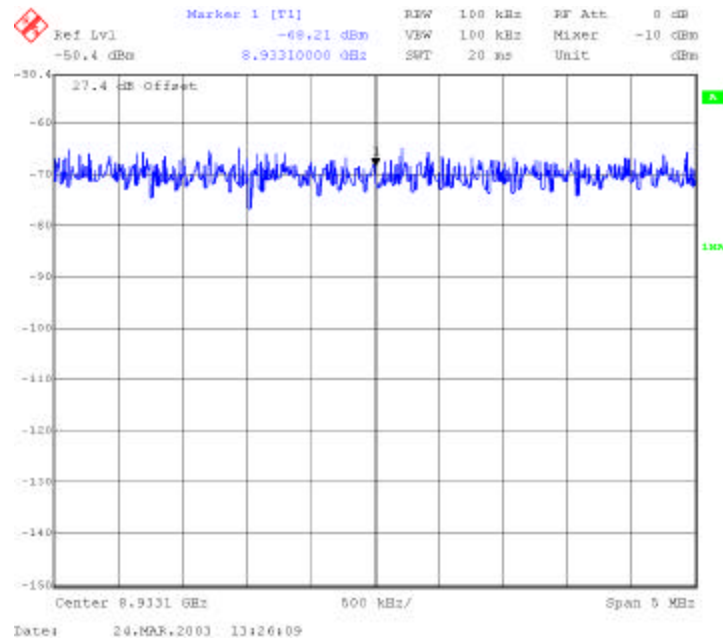
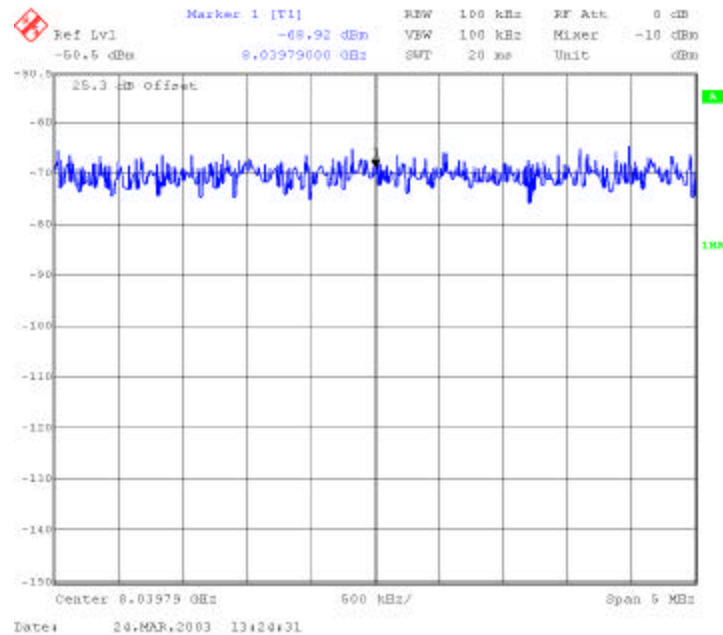
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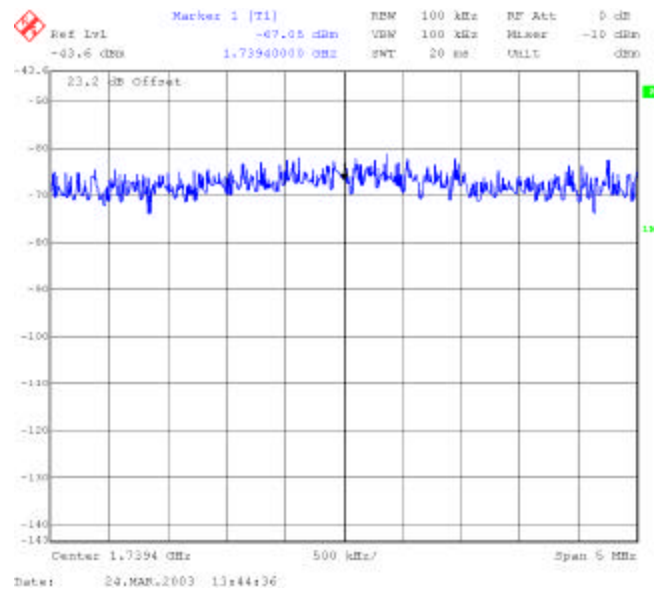
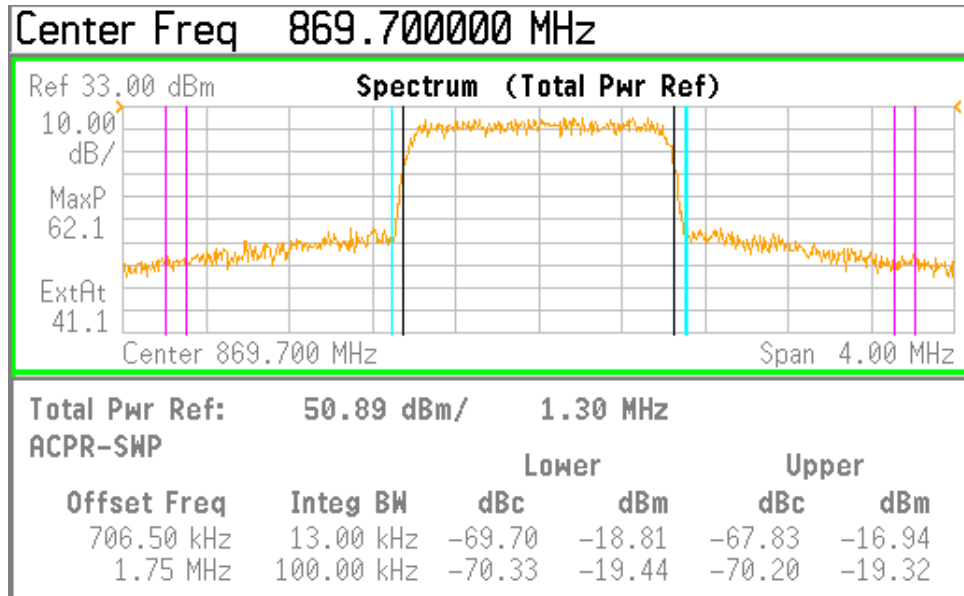
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Spurious Emissions at Antenna Terminal – 120W Channel 1013 – 869.70 MHz



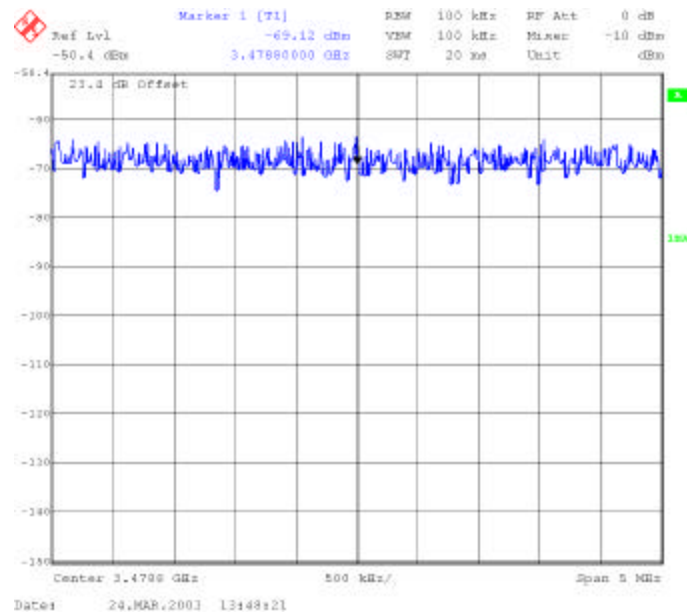
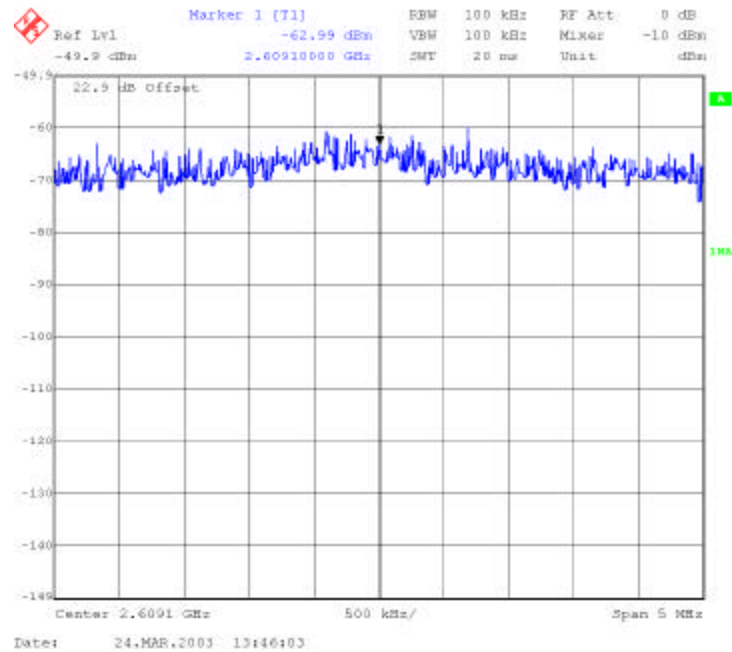
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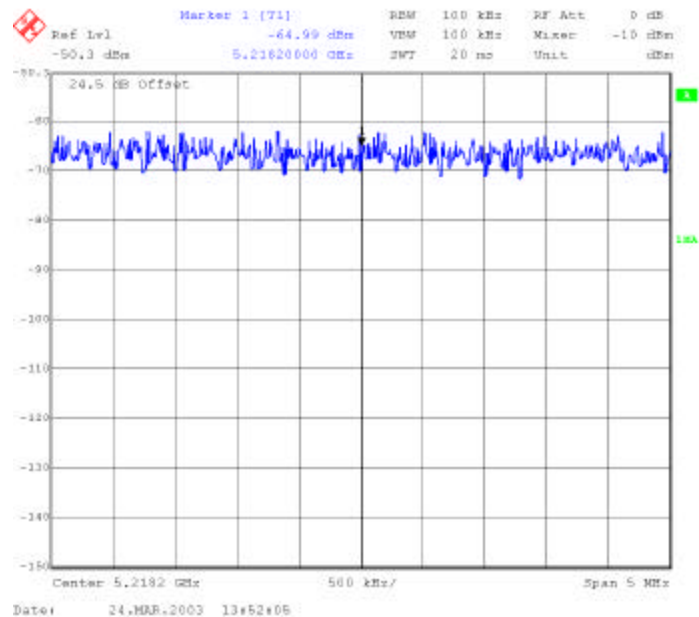
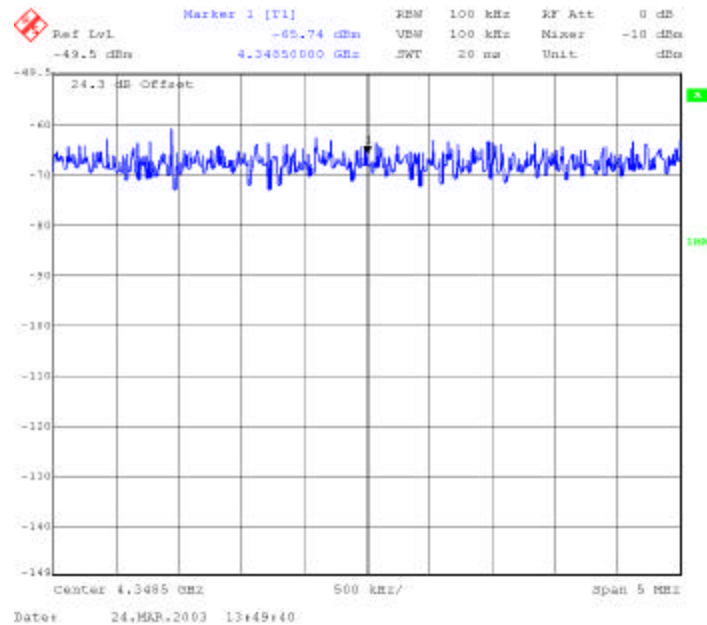
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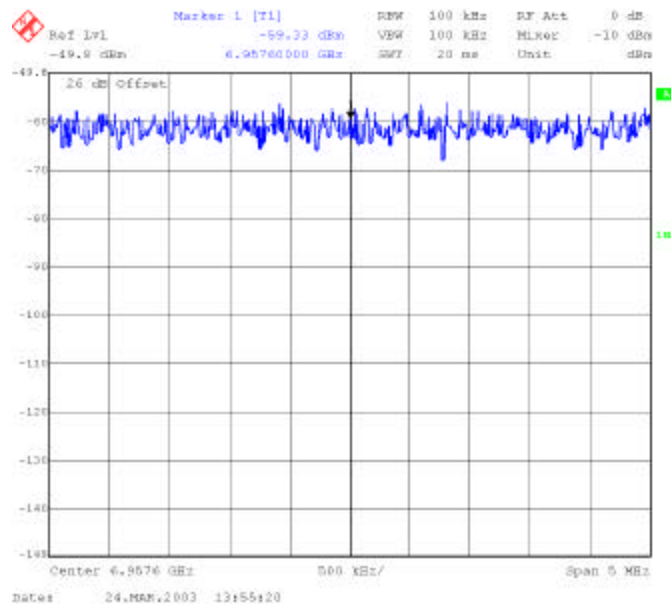
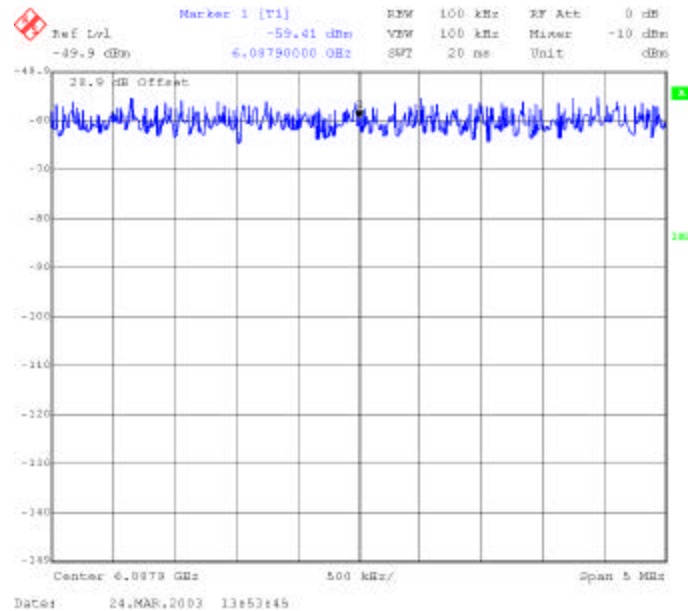
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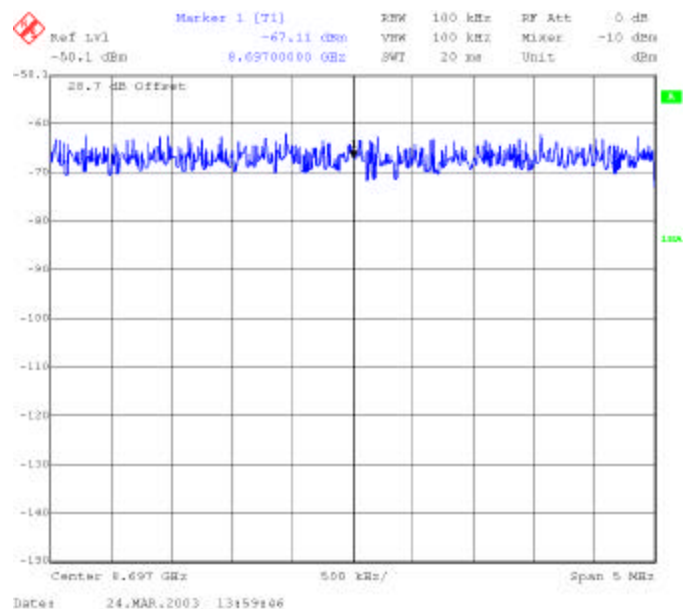
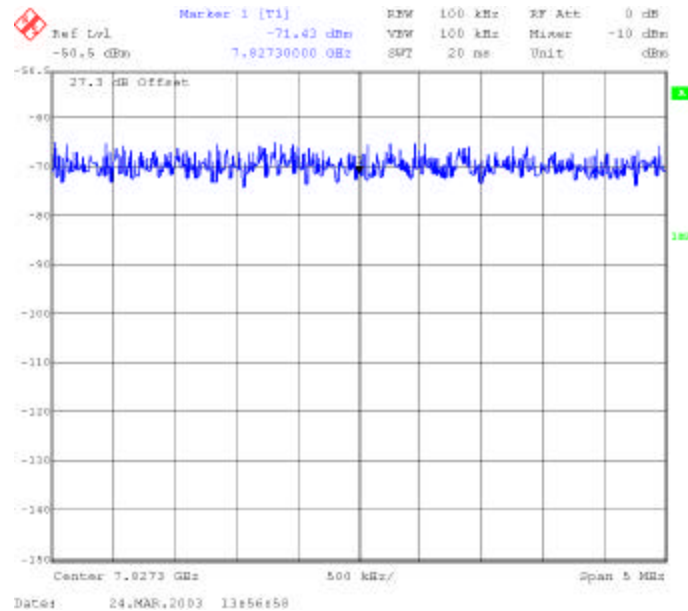
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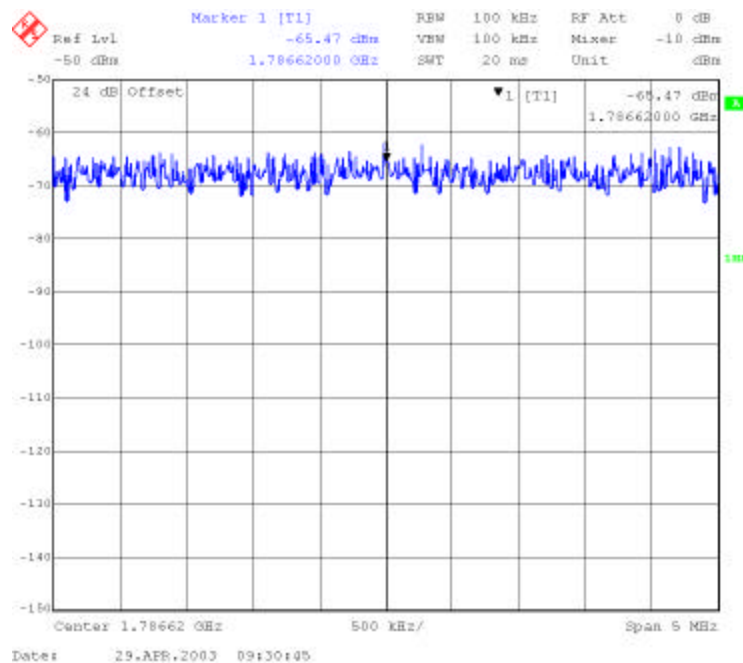
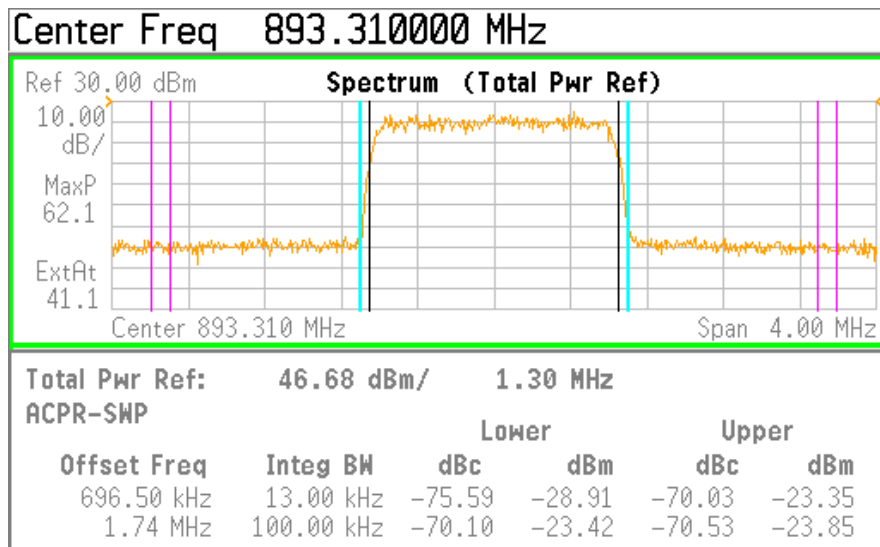


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Spurious Emissions at Antenna Terminal – 45W Channel 777 – 893.31 MHz



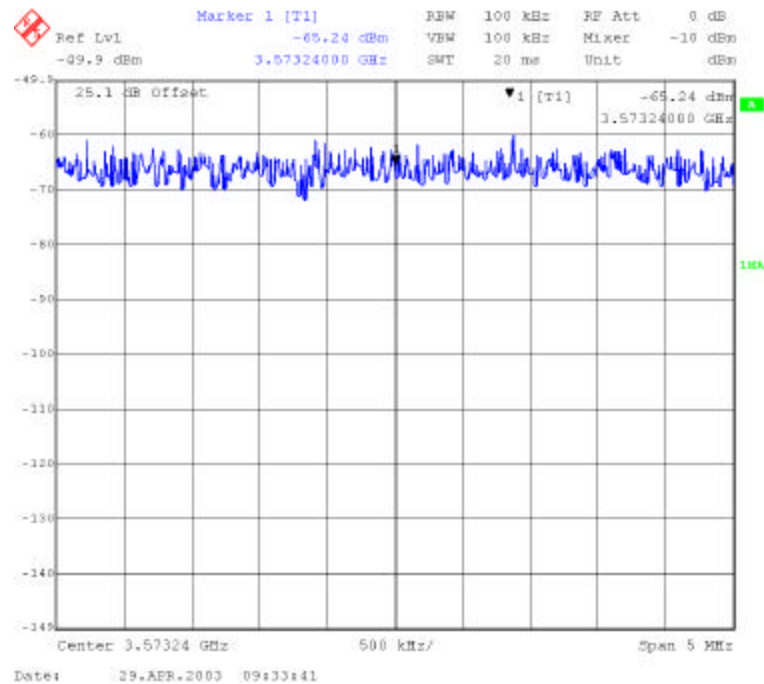
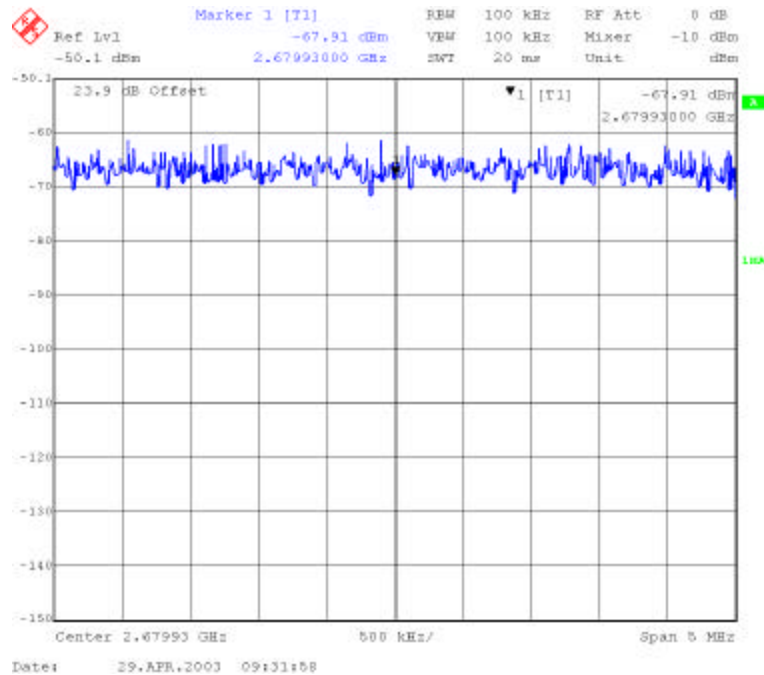
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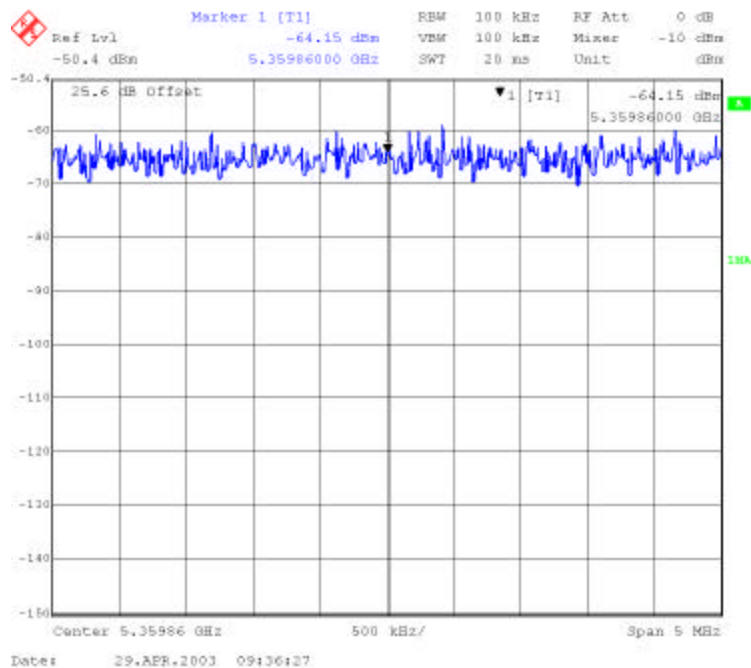
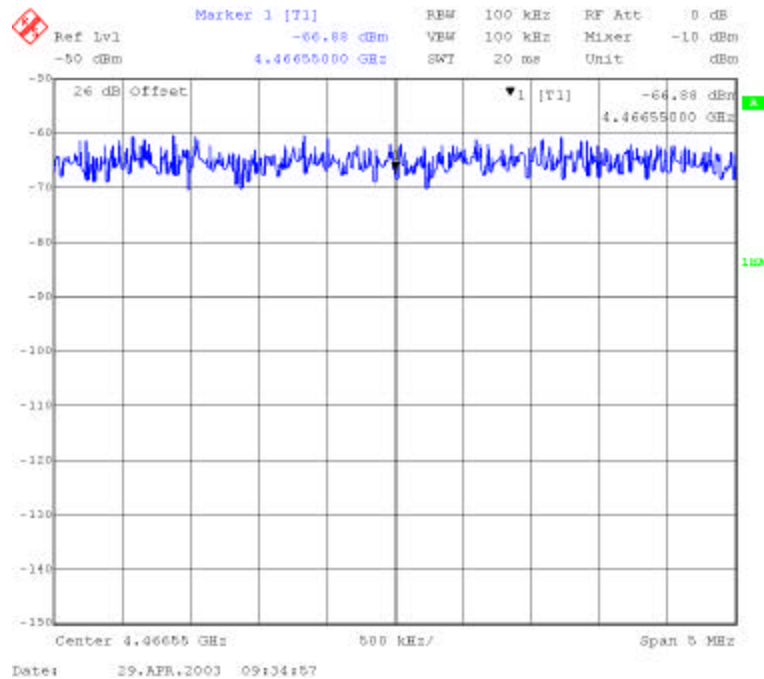
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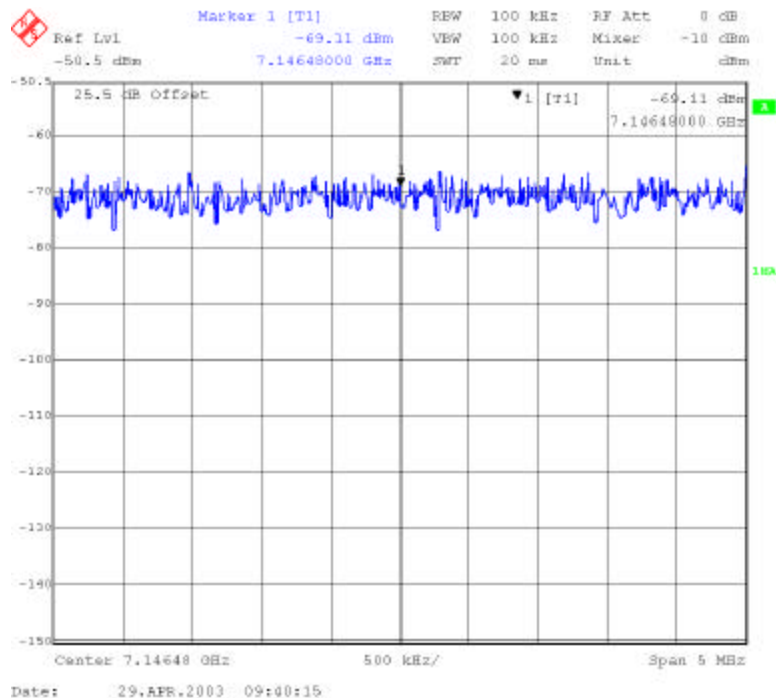
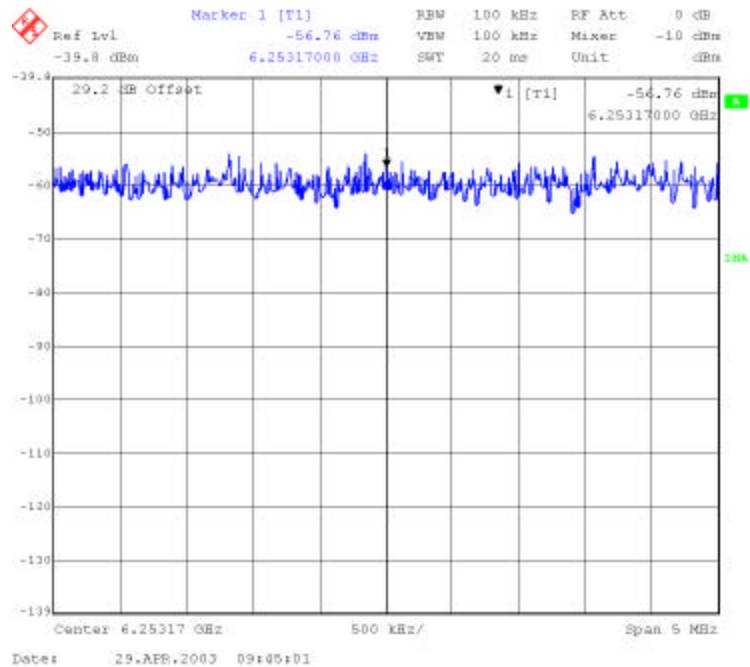
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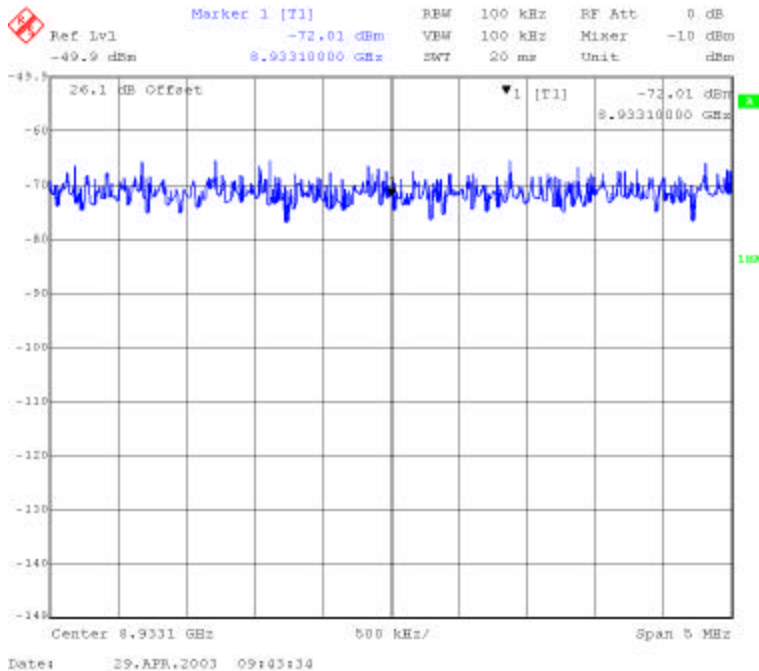
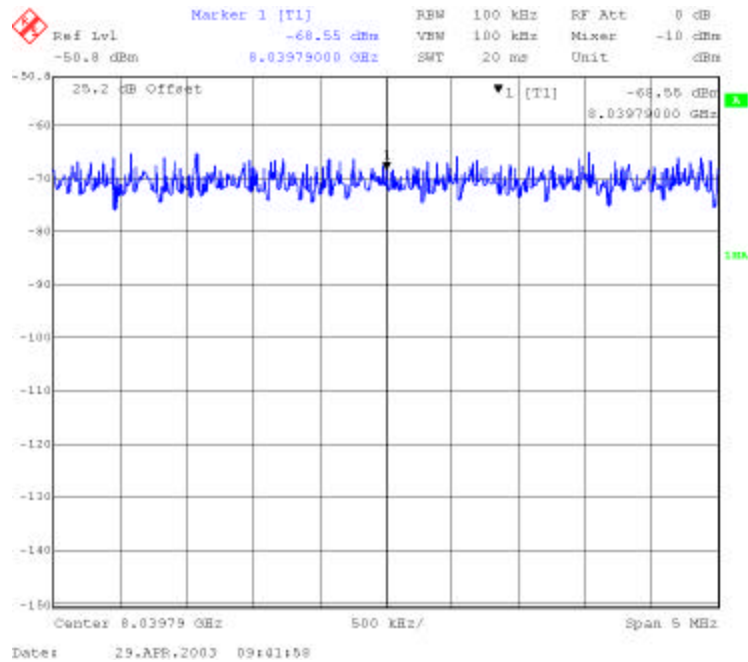
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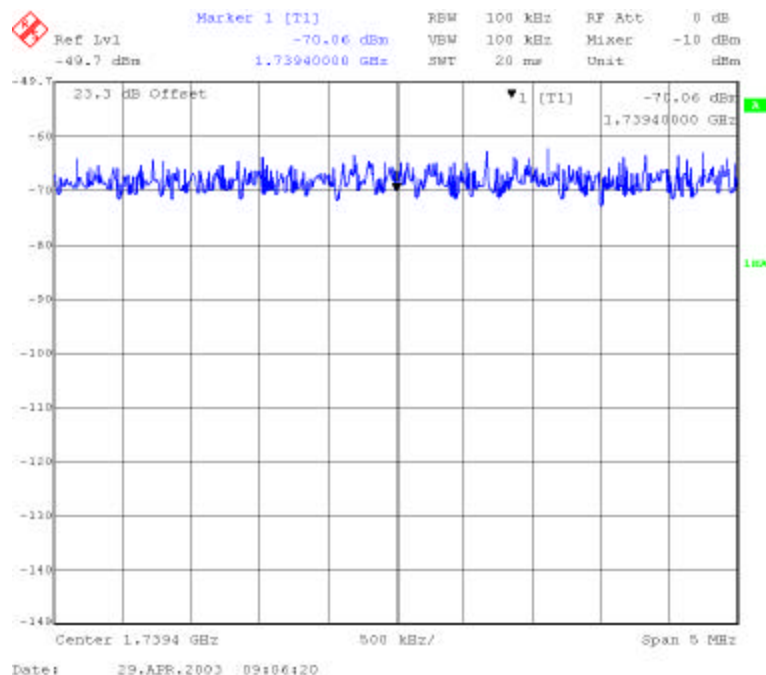
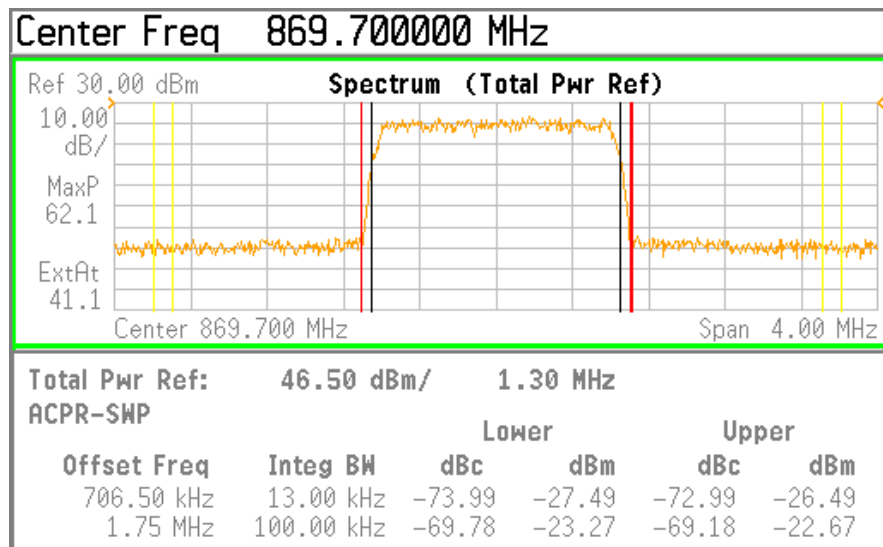
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Spurious Emissions at Antenna Terminal – 45W Channel 1013 – 869.70 MHz



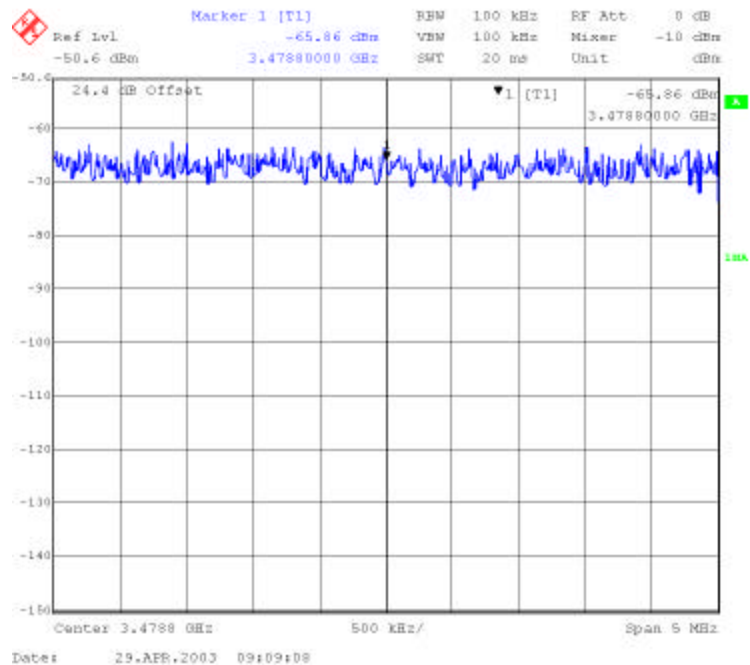
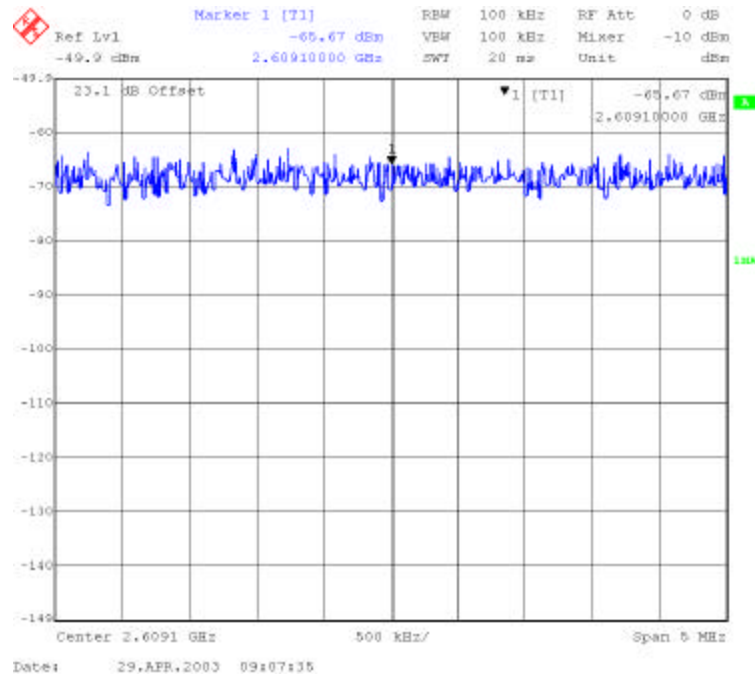
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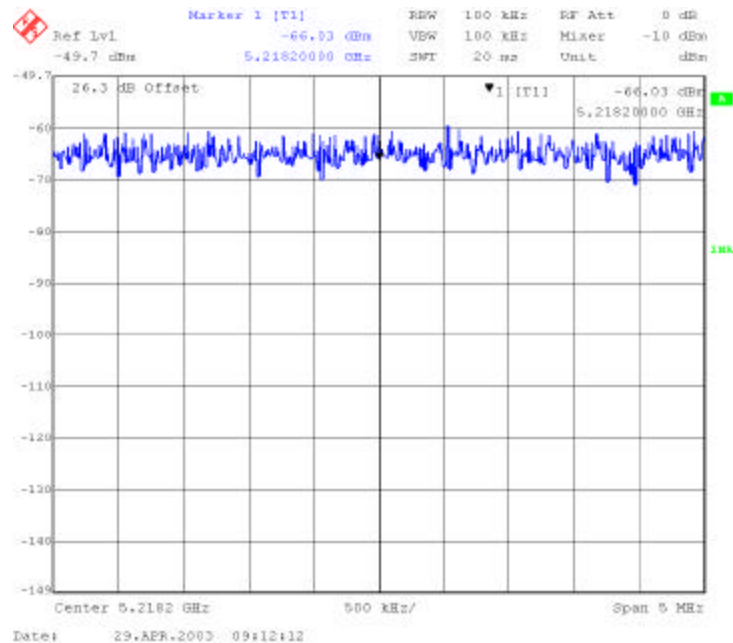
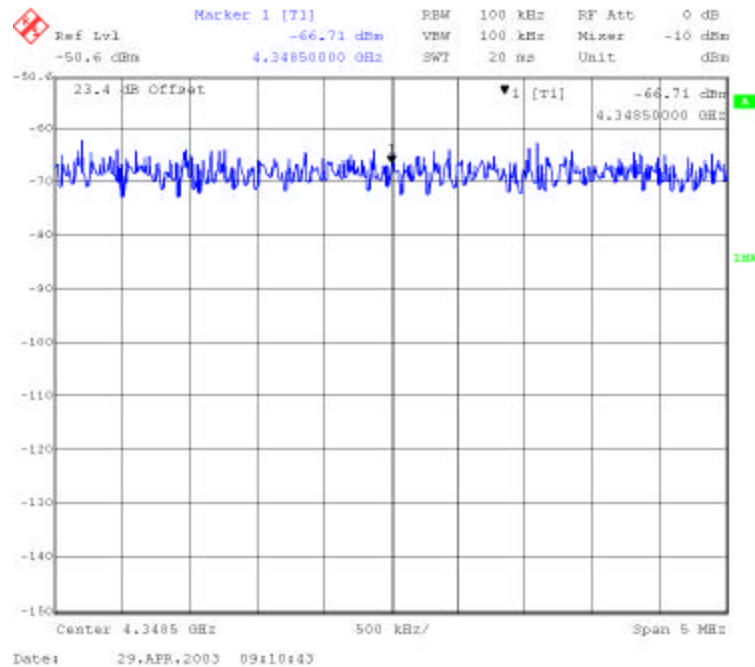
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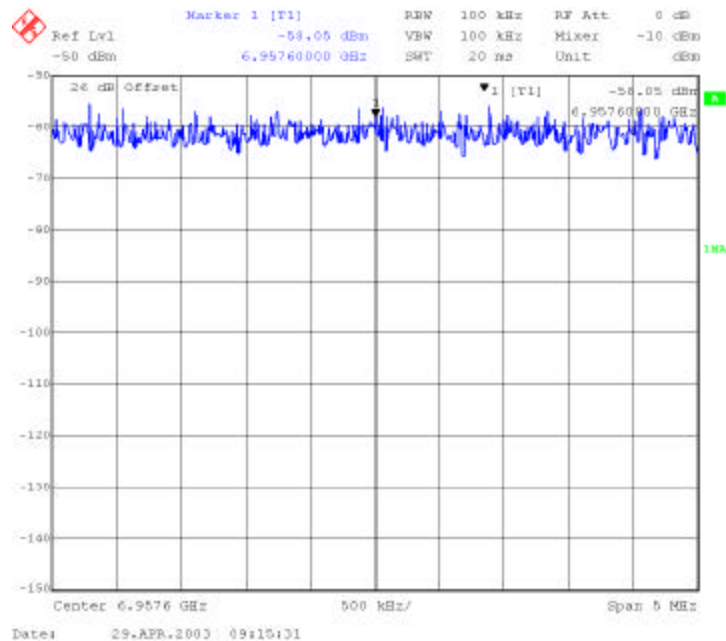
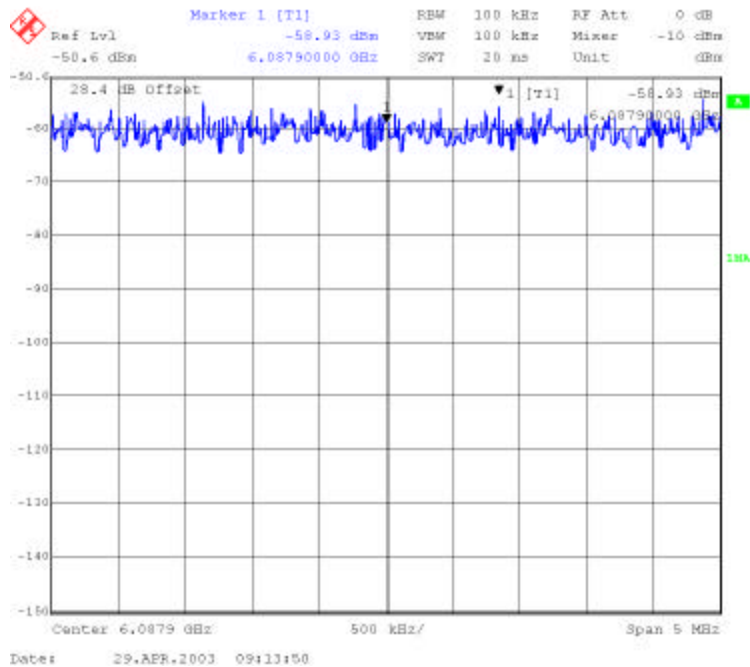
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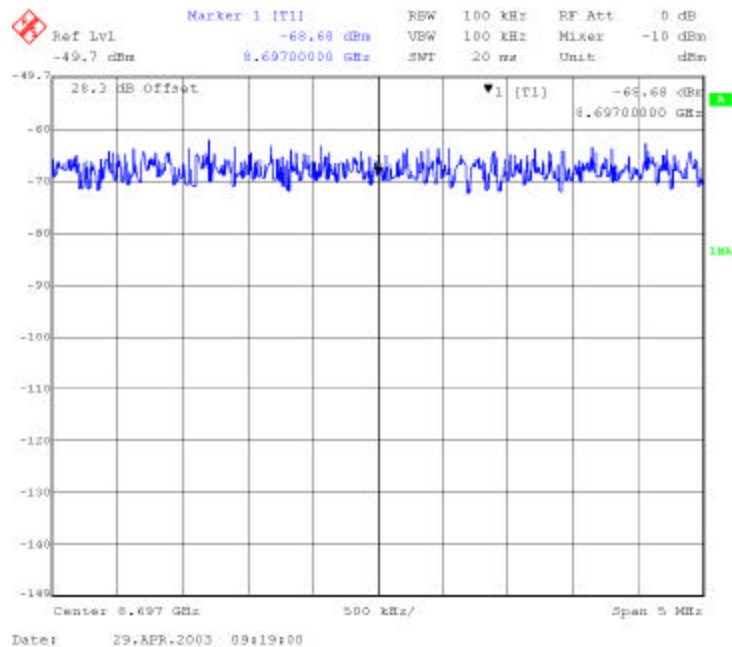
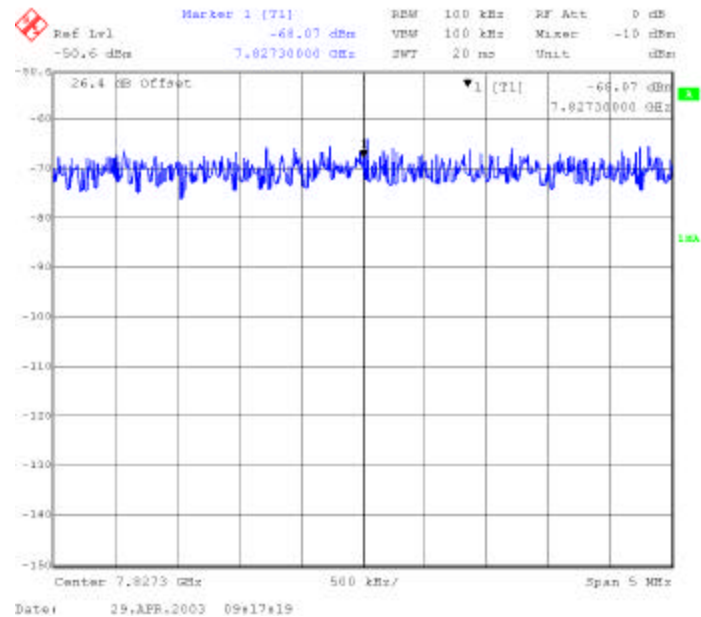
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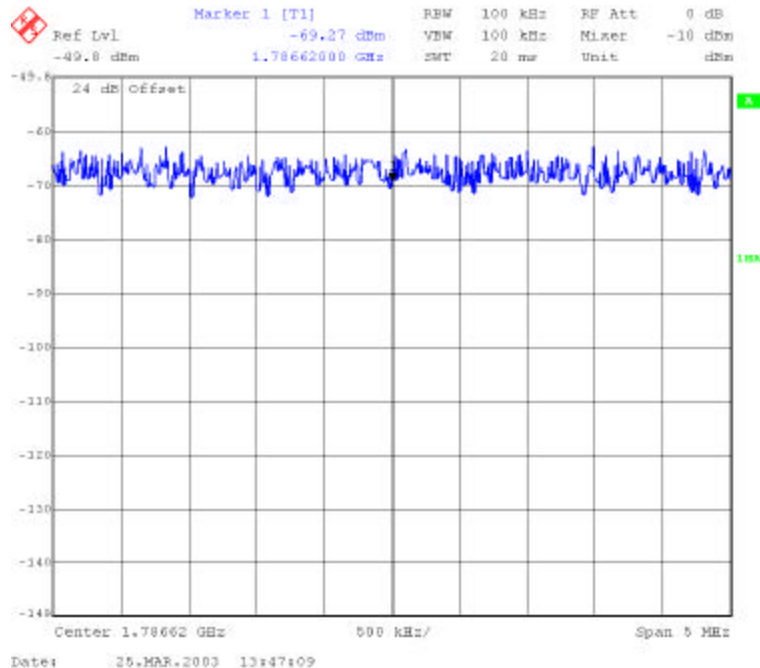
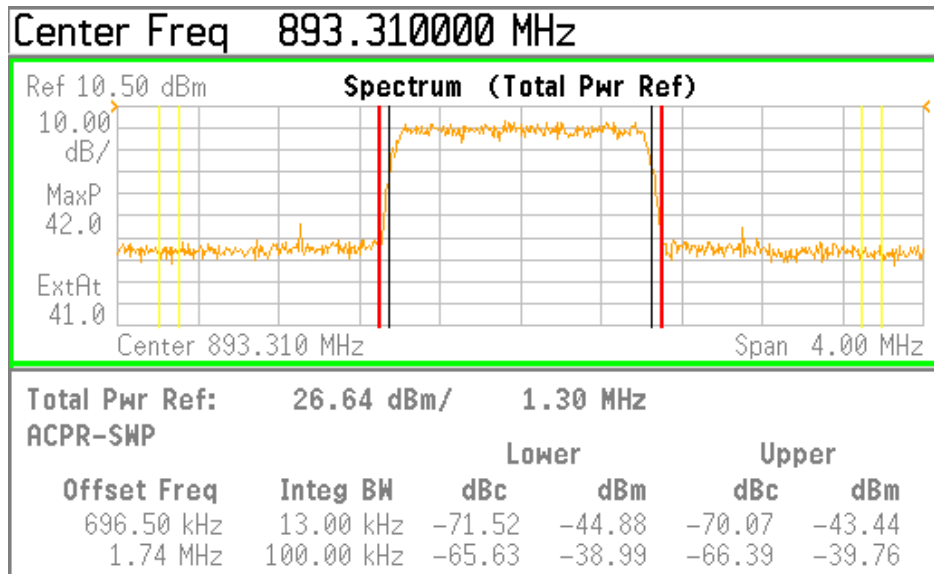
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Spurious Emissions at Antenna Terminal – .45W Channel 777 – 893.31 MHz



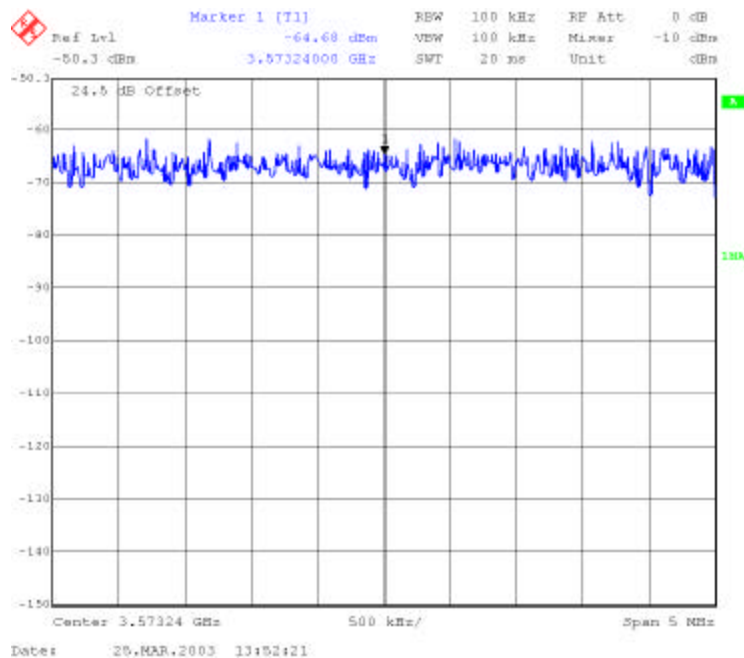
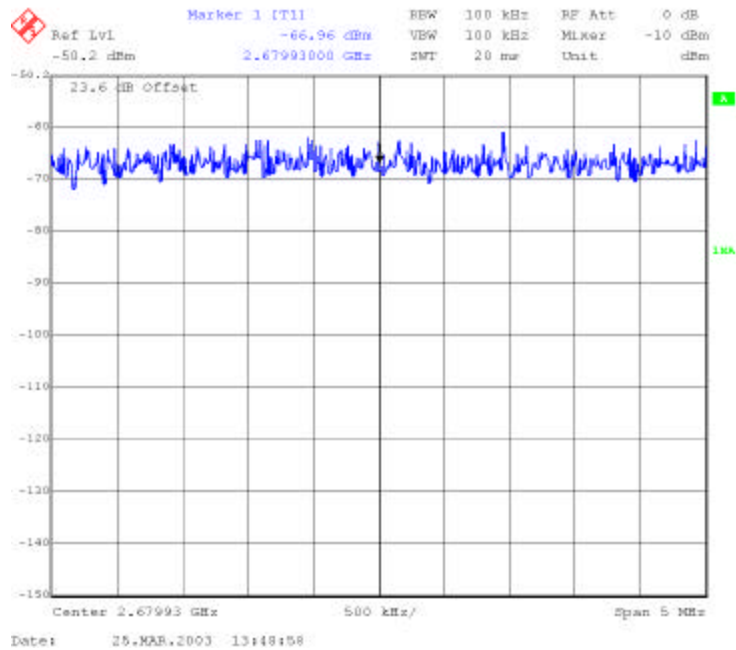
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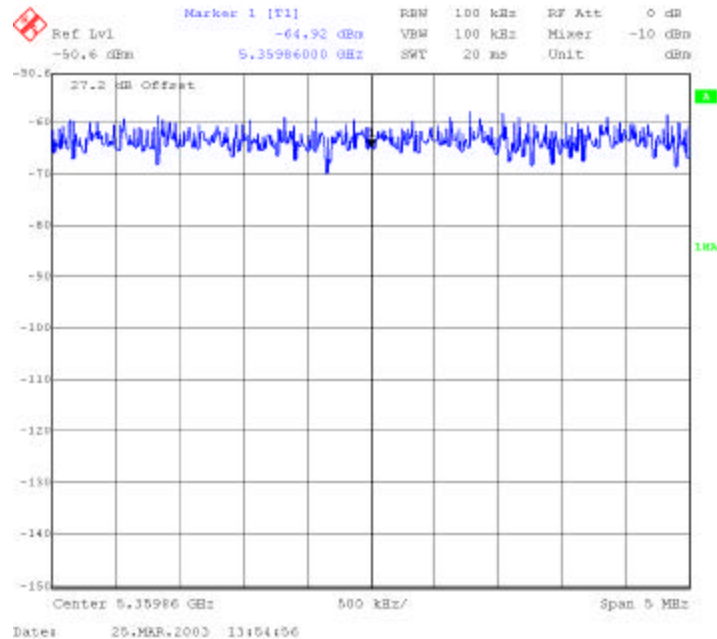
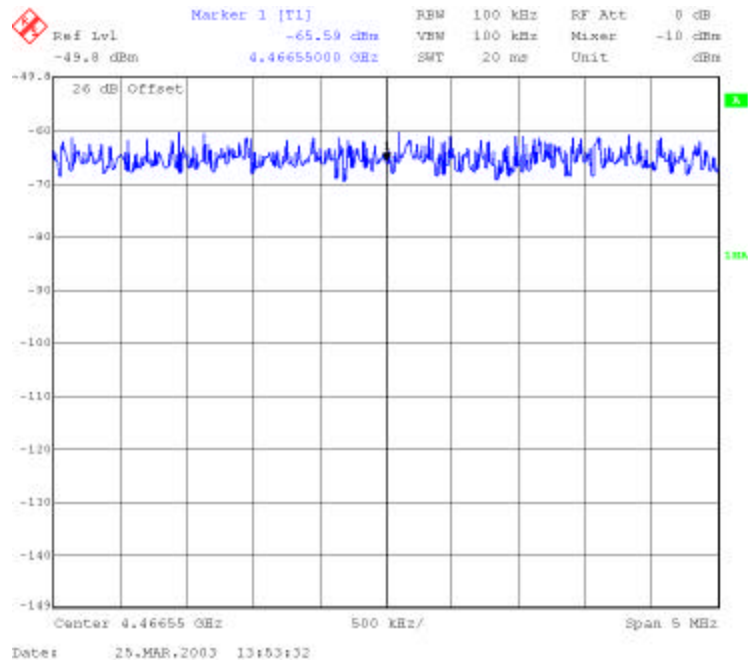
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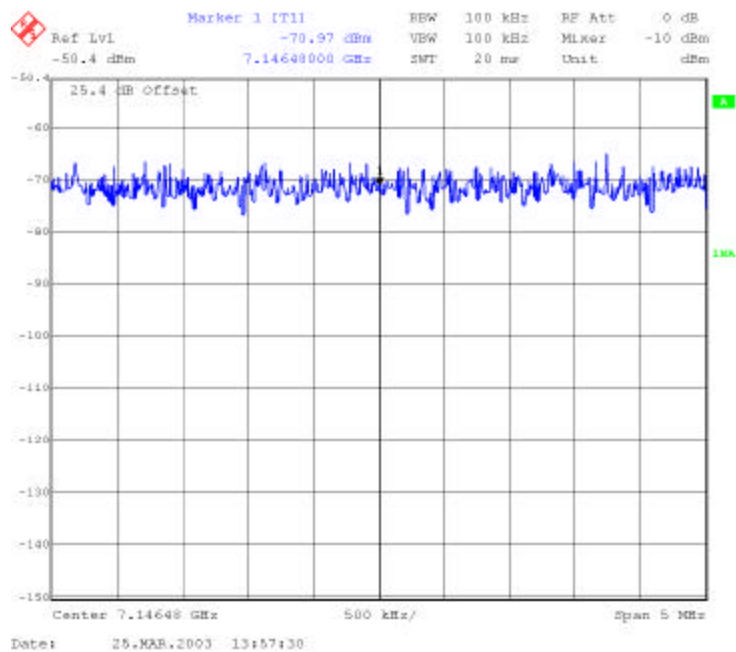
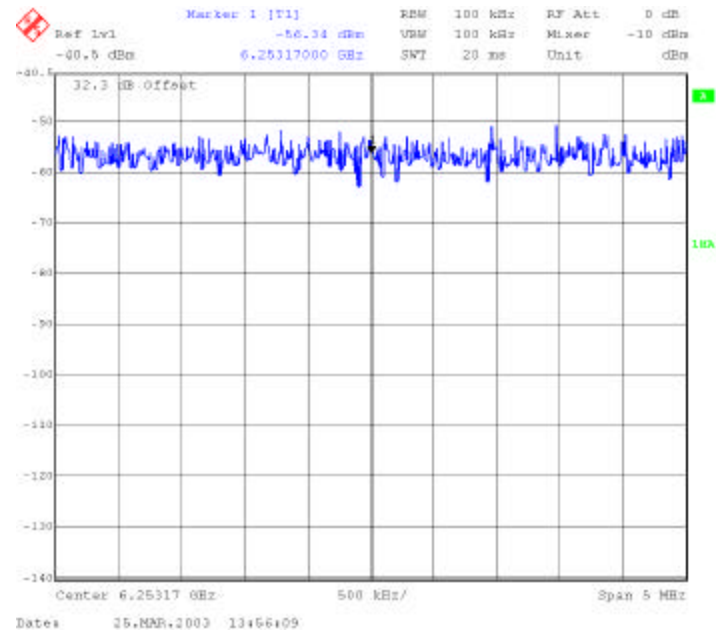
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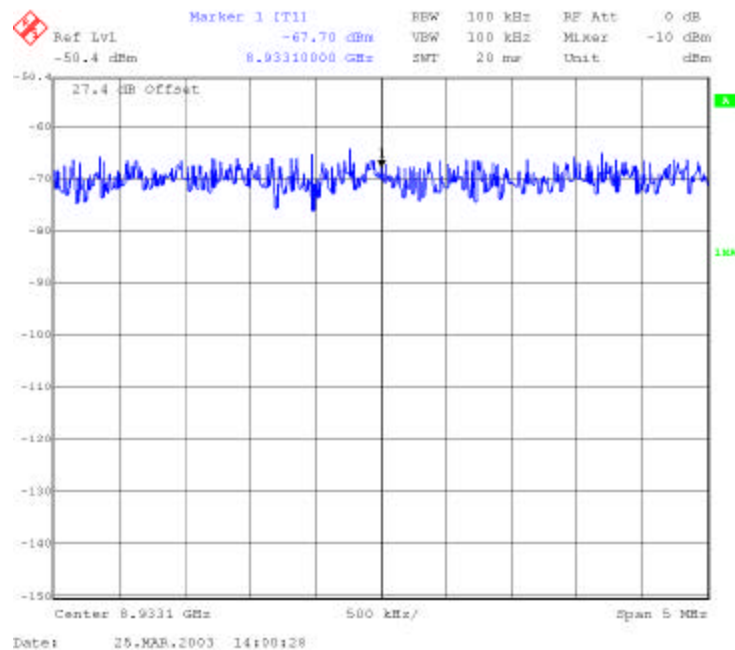
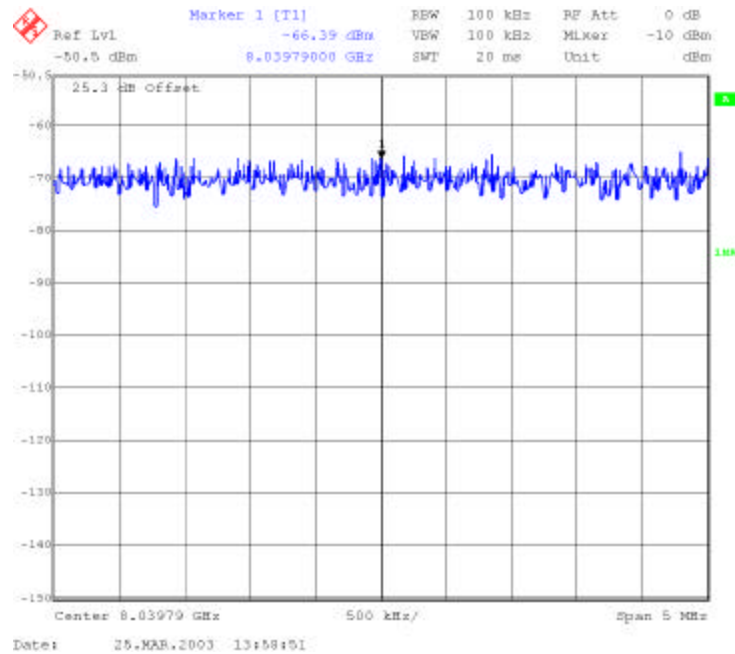
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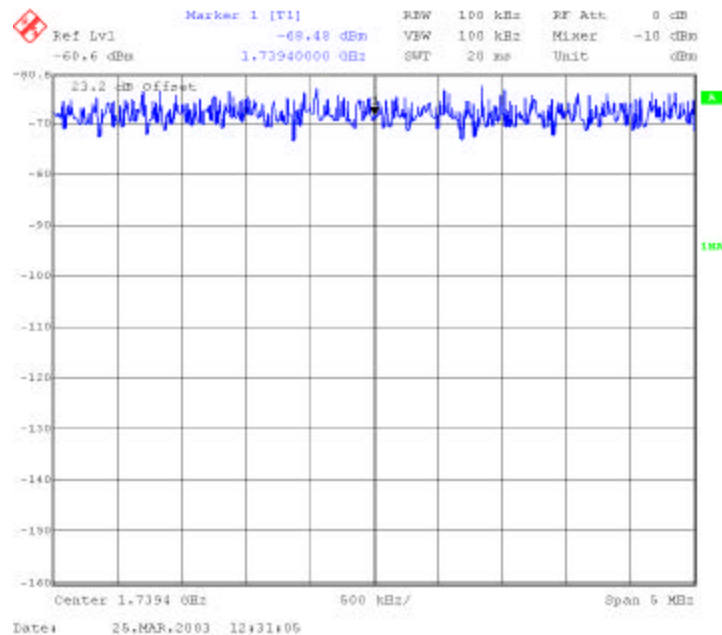
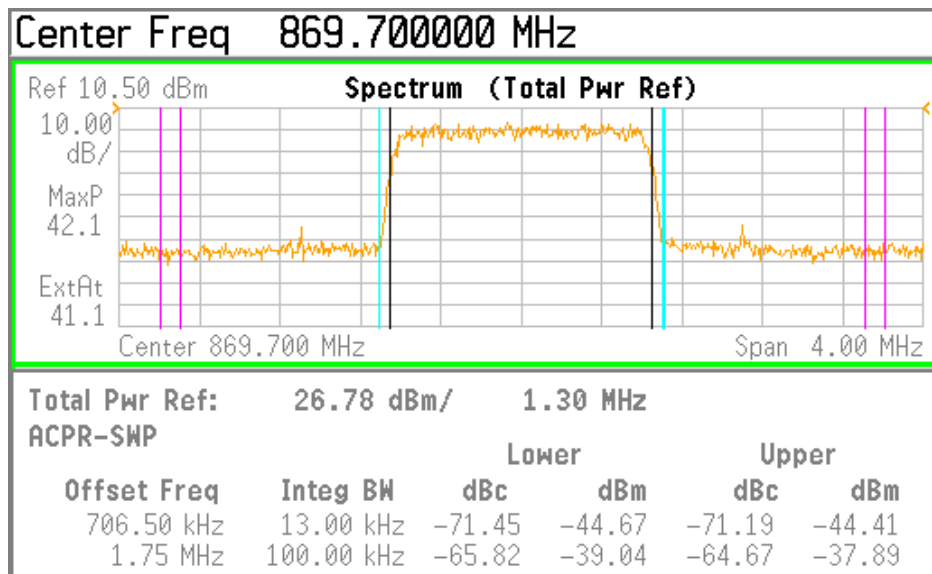
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Spurious Emissions at Antenna Terminal – .45W Channel 1013 – 869.70 MHz



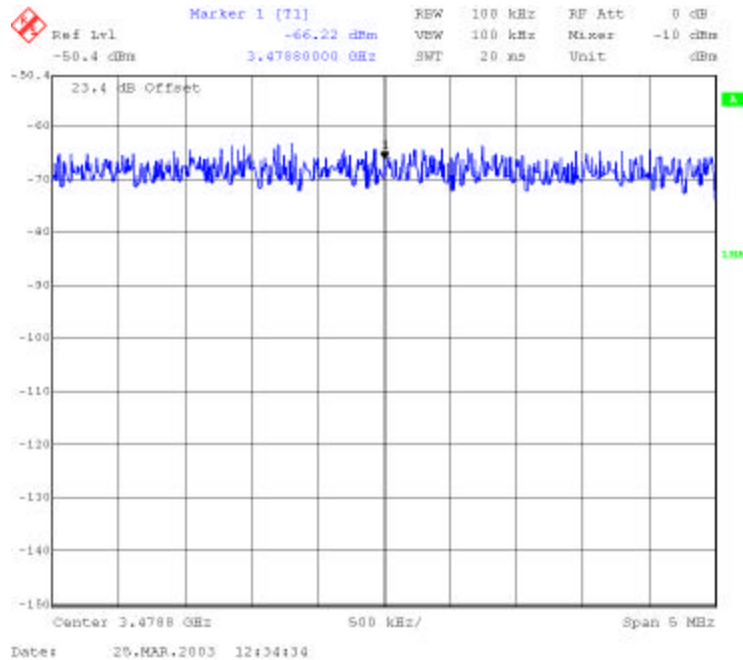
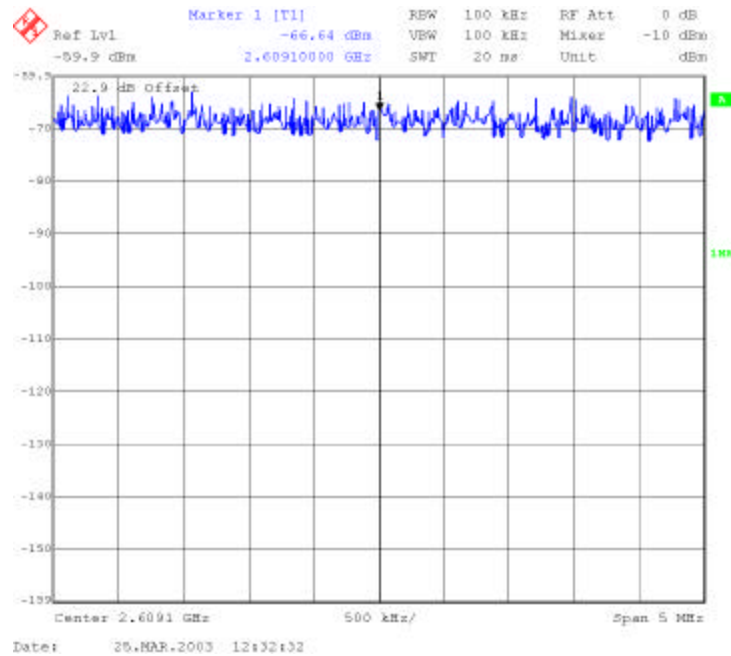
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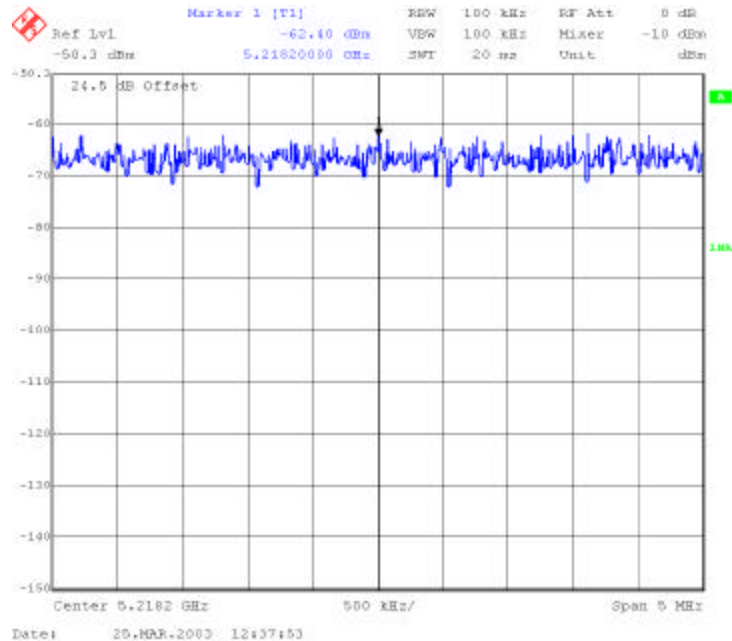
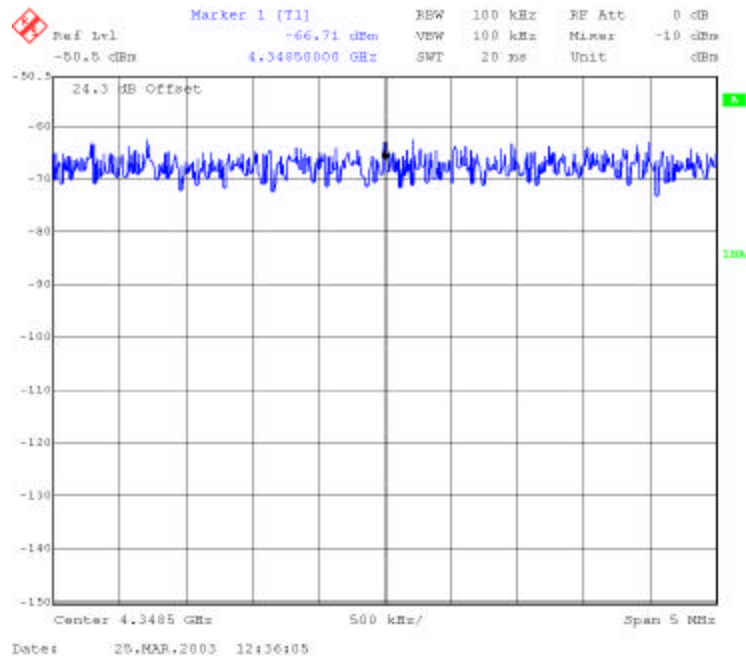
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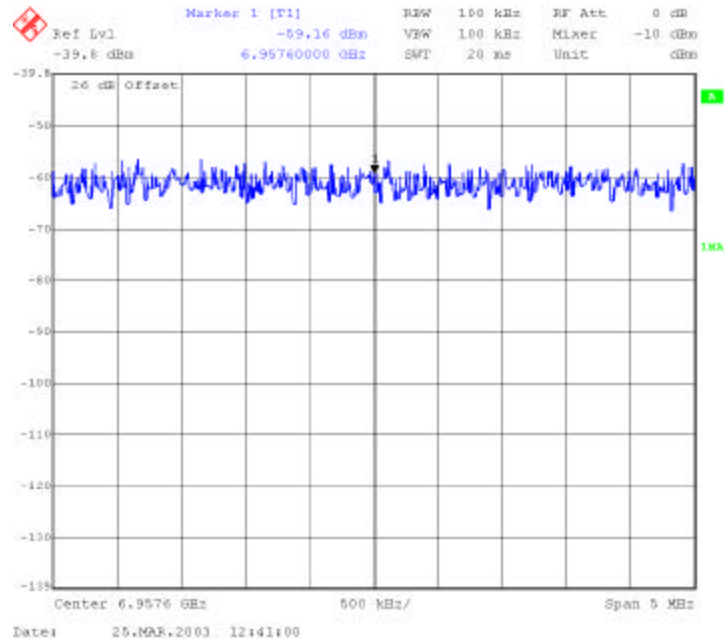
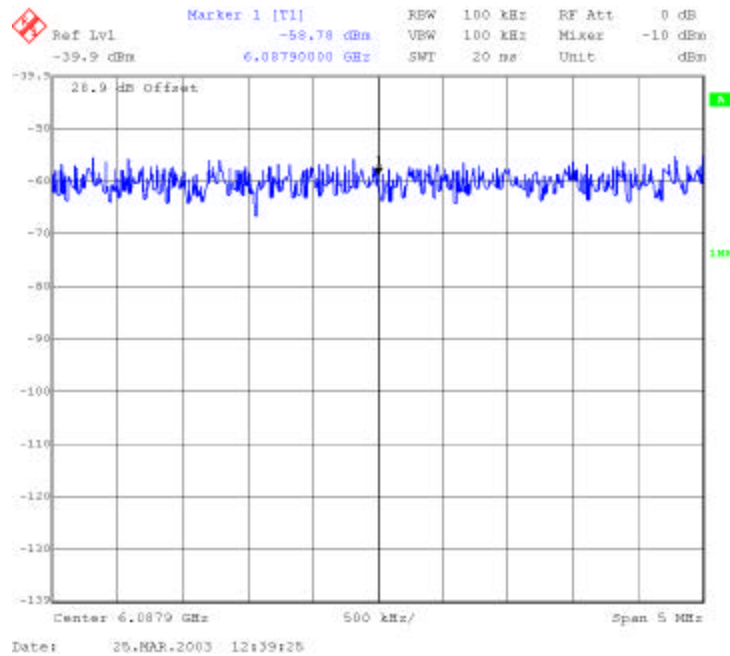
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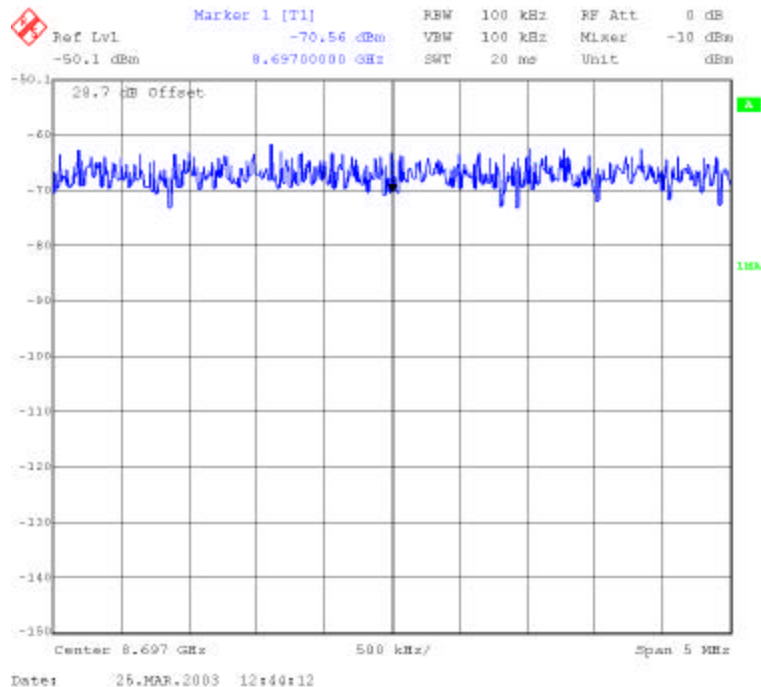
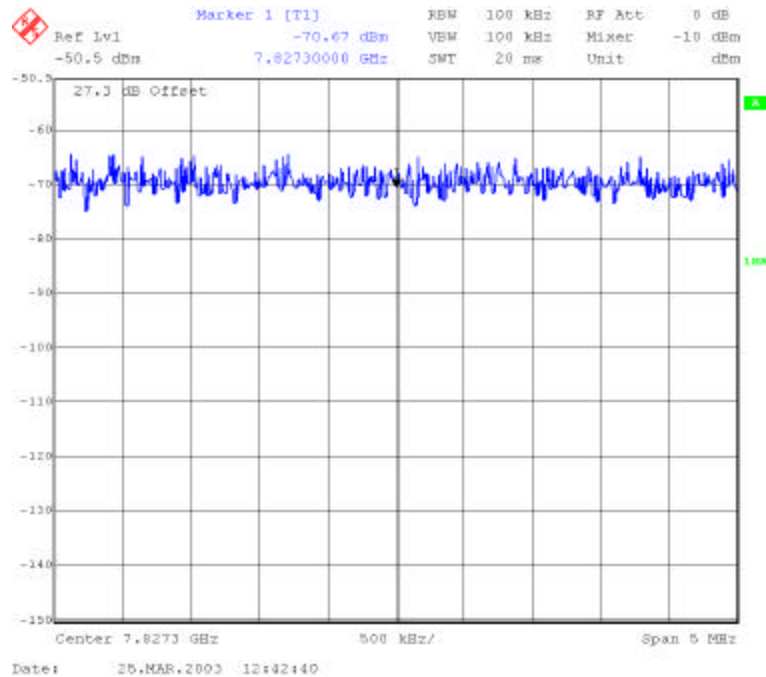
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SECTION E

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

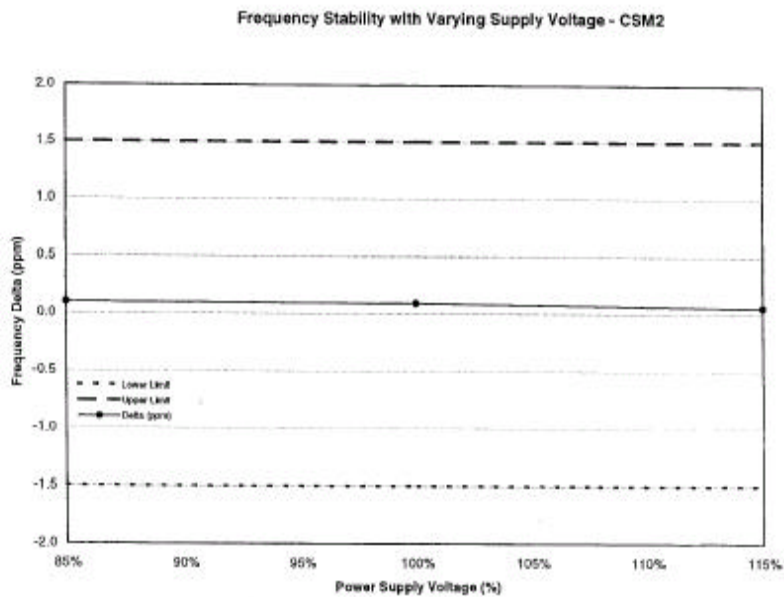
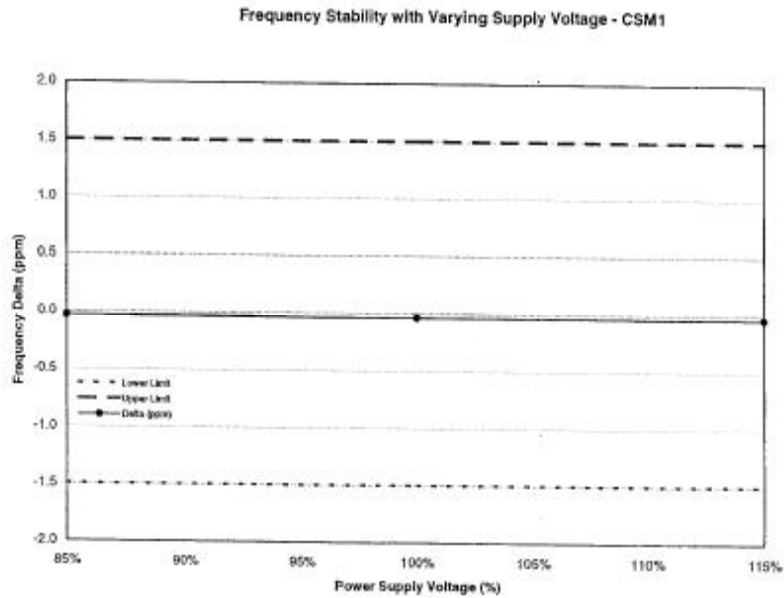
Mode	27V Power	Worst case DPPM	FCC Requirement	Pass/Fail
CSM1	85-115%	<0.02	+/- 1.5 ppm max	Pass
CSM 2	85-115%	<0.02	+/- 1.5 ppm max	Pass

Mode	Temperature	DPPM	FCC Requirement	Pass/Fail
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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