

June 17, 2003

Federal Communications Commission  
Authorization and Evaluation Division  
7435 Oakland Mills Road  
Columbia, MD 21046

Attention: Applications Examiner

Applicant: Nokia Inc. dba Nokia Networks

Equipment: Nokia UltraSite EDGE 800 MHz Base Station Transceiver Module  
FCC ID: L7KTSTB-01

Specification: for a 47 CFR 22 Class II Permissive Change

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Dear Examiner:

The following application for Grant of Equipment Authorization is presented on behalf of Nokia Inc. dba Nokia Networks for the Licensed Certification of their Model: UltraSite EDGE 800MHz Base Station (BTS) Transceiver Module.

Enclosed, please find a complete data and documentation package demonstrating that this device complies with the technical requirements of 47 CFR 22, for a Base Station (BTS) Transceiver Module.

If you have any questions, please contact the undersigned, who is authorized to act as Agent.

Sincerely,



Chris Harvey, Director  
EMC Laboratory

Enclosures: (\Nokia\EMC13790-FCC22.rpt)

DOCTEM-23 Jan 02

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# ENGINEERING TEST REPORT

in support of the Application for Grant of Equipment Authorization

**EQUIPMENT:** Nokia UltraSite EDGE 800 MHz Base Station

**FCC ID:** L7KTSTB-01

**Specification:** 47 CFR 22 Class II Permissive Change

**On Behalf of the Applicant:** Nokia Inc. dba Nokia Networks  
6000 Connection Drive  
Irving, TX 75039

**Manufacturer:** Nokia Inc. dba Nokia Networks  
6000 Connection Drive  
Irving, TX 75039

**Manufacturer's Representative** Mr. Steve Mitchell

**Test Date(s):** May 22, 2003 and June 17, 2003

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## ENGINEERING STATEMENT

**I ATTEST:** the measurements shown in this report were made in accordance with the procedures indicated, and that the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements. On the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Part 22 of the FCC Rules under normal use and maintenance.

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Anthony Aird  
Compliance Engineer, Nokia Networks

**Summary of Test Results**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 22 of 47 CFR. All tests were conducted using measurement procedure ANSI C63.4-1992.

Type of Submission/Rule Part: 22	Class II Permissive Change *
EUT:	Nokia Networks UltraSite EDGE BTS Transceiver Module
FCC ID:	L7KTSTB-01
Type of Emissions:	248KGXW (GMSK) 246KGXW (8PSK)
RF Power output:	GMSK: 40.0-Watts full power (some channels are documented as being reduced power in the Block Edge Power. See the table on page 4 of this report) 8PSK: 50.0-Watts full power (some channels are documented as being reduced power in the Block Edge Power. See the table on page 4 of this report)
Frequency Range (MHz):	824-849 receive and 869-894 Transmit (869.2-893.8)
Frequency Stability:	+/- 20Hz

**Summary of Test Data**

Name of Test	FCC Rule Part/Section	Results
Radiated Spurious Emissions	2.1053 2.1057, 22.901(d) and 22.917(e)	Complies
Occupied Bandwidth	2.1049, 22.901(d), 22.917(e) (b)	Re-tested & Complies
RF Power Output	2.1046, 22.913(a)	Complies
Spurious Emissions at Antenna Terminals	2.1051,22.901(d), 22.917(e)	Complies
Out of band emissions	2.1051, 22.901(d), 22.917(e) (b)	Re-tested & Complies
Frequency Stability over temperature variations	2.1055(a)(1)	Complies
Frequency Stability over supply Voltage variations	2.1055(d)(1)	Complies
Modulation Characteristics	2.1047(a)	Complies

**\* The Class II Permissive Change based on the R & O – FCC 02-229 Rule Changes:  
 The EUT (Nokia Networks UltraSite EDGE BTS Transceiver Module) has not been Modified  
 Just re-tested in accordance with the new FCC Section 22.917(b) Measurement procedure.**

Plots of the spurious emissions as measured at the extremes of each frequency block appear on the following pages. Table below summarizes the measurements made.

Channel	Channel Frequency (MHz)	Channel Block	Block Edge (MHz)	Maximum Power Level GSMK Modulation	Maximum Power Level 8PSK Modulation
128	869.2	A'' + A	869	PL-6 (33.53 dBm)	PL-6 (36.75 dBm)
181	879.8	A'' + A	880	PL-6 (33.72 dBm)	PL-6 (36.98 dBm)
182	880.0	Block Edge	880	Blocked	Blocked
183	880.2	B	880	PL-6 (33.72 dBm)	PL-6 (36.92 dBm)
231	889.8	B	890	PL-6 (33.65 dBm)	PL-6 (36.85 dBm)
232	890.0	Block Edge	890	Blocked	Blocked
233	890.2	A'	890	PL-6 (33.65 dBm)	PL-6 (36.86 dBm)
238	891.2	A'	891.5	PL-0 (45.64 dBm)	PL-0 (46.93 dBm)
239	891.4	Block Edge	891.5	Blocked	Blocked
240	891.6	Block Edge	891.5	Blocked	Blocked
241	891.8	B' + B''	891.5	PL-0 (45.72 dBm)	PL-0 (46.98 dBm)
251	893.8	B' + B''	894	PL-6 (33.52 dBm)	PL-6 (36.81 dBm)
190	881.6	NA	NA	PL-0 (45.65 dBm)	PL-0 (46.96 dBm)

PL = Power Level

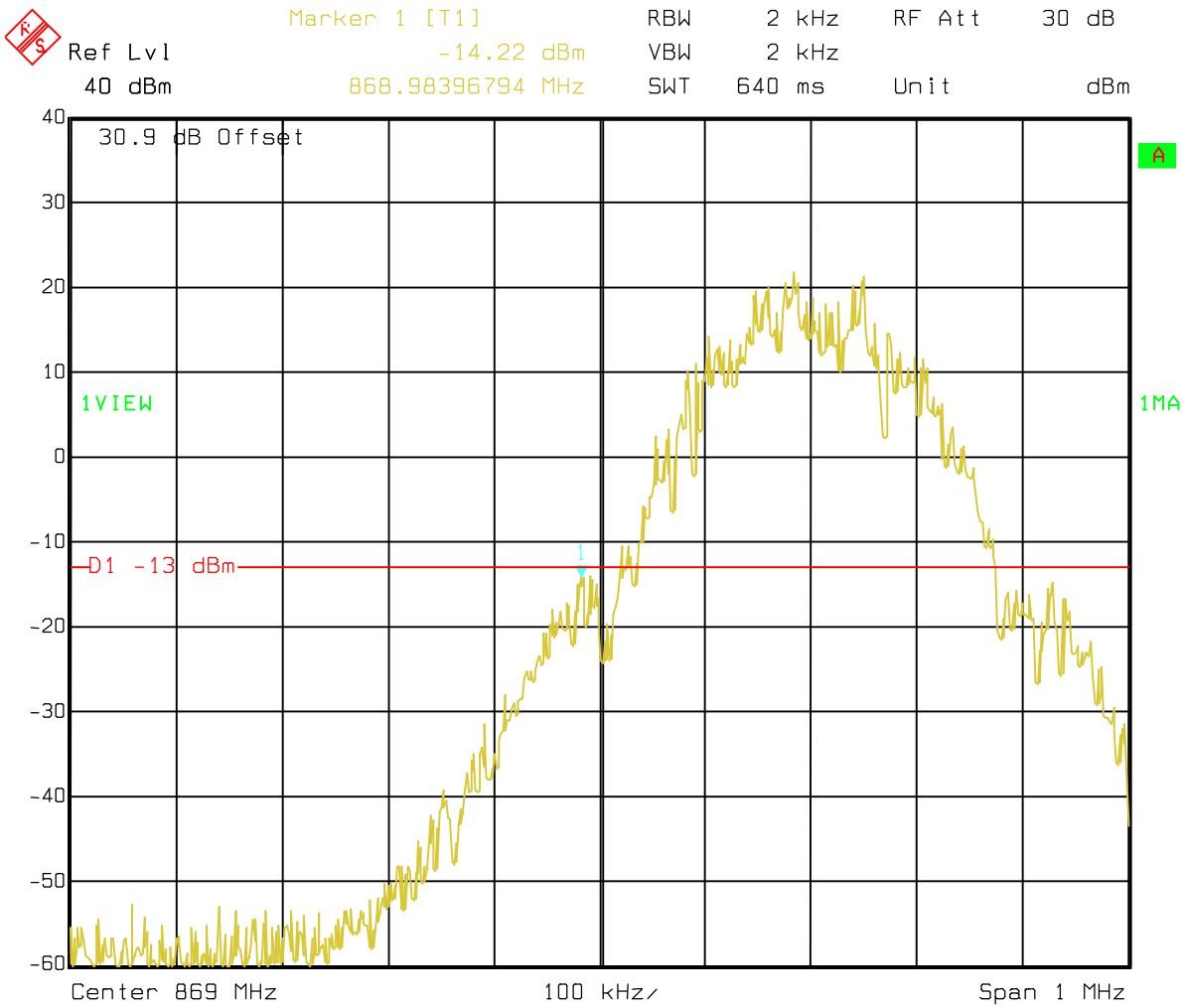
Note: All channels not listed above can transmit at full power. Mid-band channel 190 measured to determine Occupied Bandwidth.

**800 MHz REDUCED POWER LEVEL CHANNEL MEASUREMENTS**

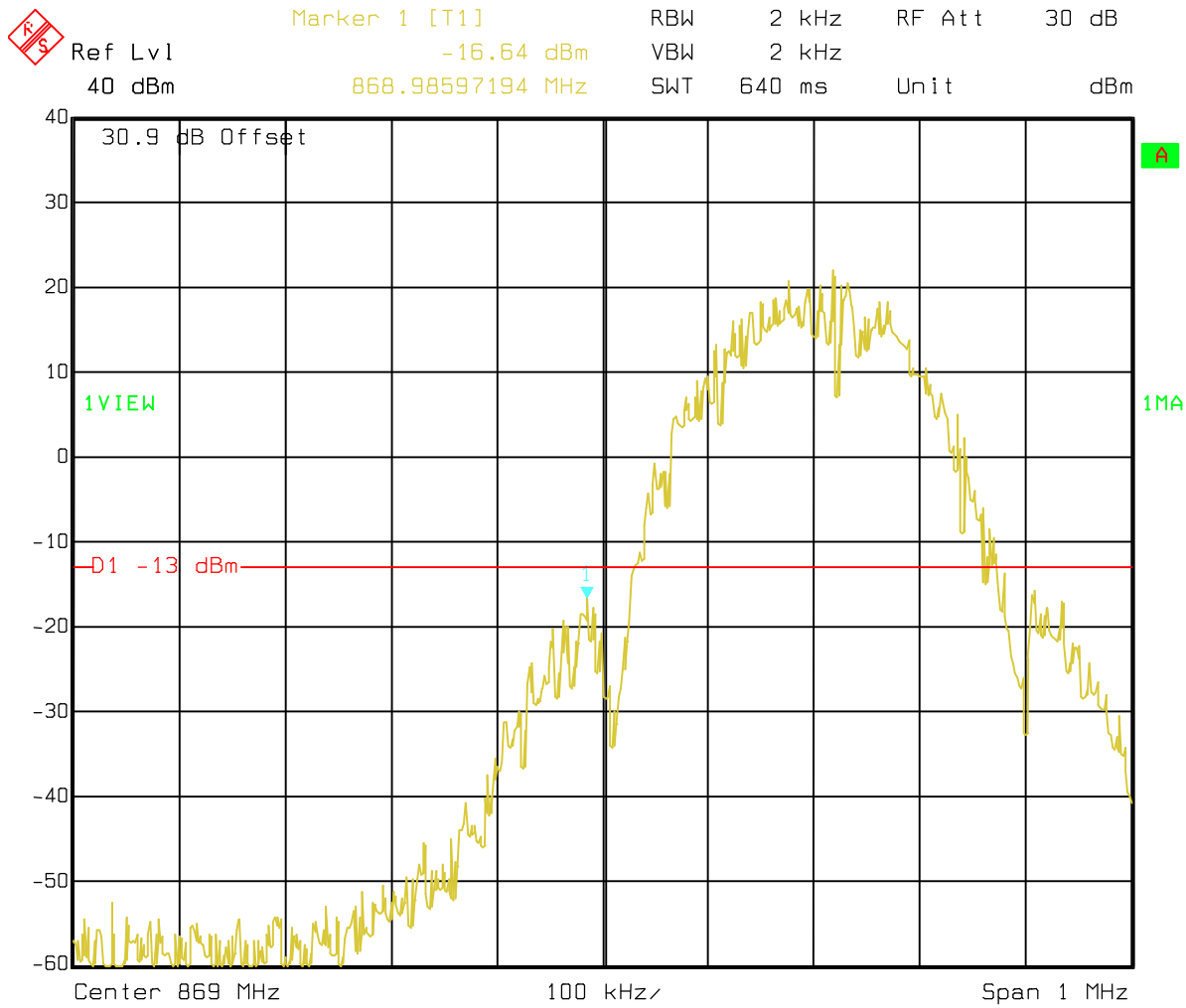
Test Equipment	Serial Number	Cal Due Date
R&S FSEA Spectrum Analyzer	DE31383	July 11, 2003

BTS Equipment	Model Number	Serial Number
800 TRX	TSTB 11 469087A.102	L1021334256
800 Duplexer	DVTB 11 468133A.101	L1021880836
Baseband Unit	BB2E 11 468131A.101	L1020524732
BOIA	BOIA 11 467868A.104	L1010821570

### Channel 128 – Spurious Emissions



Title: Spur Emissions at Frequency Block Edges (Low Side A")  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 128)  
Date: 22.MAY 2003 14:48:51  
Comment B: Maximum power attenuated 12 dB

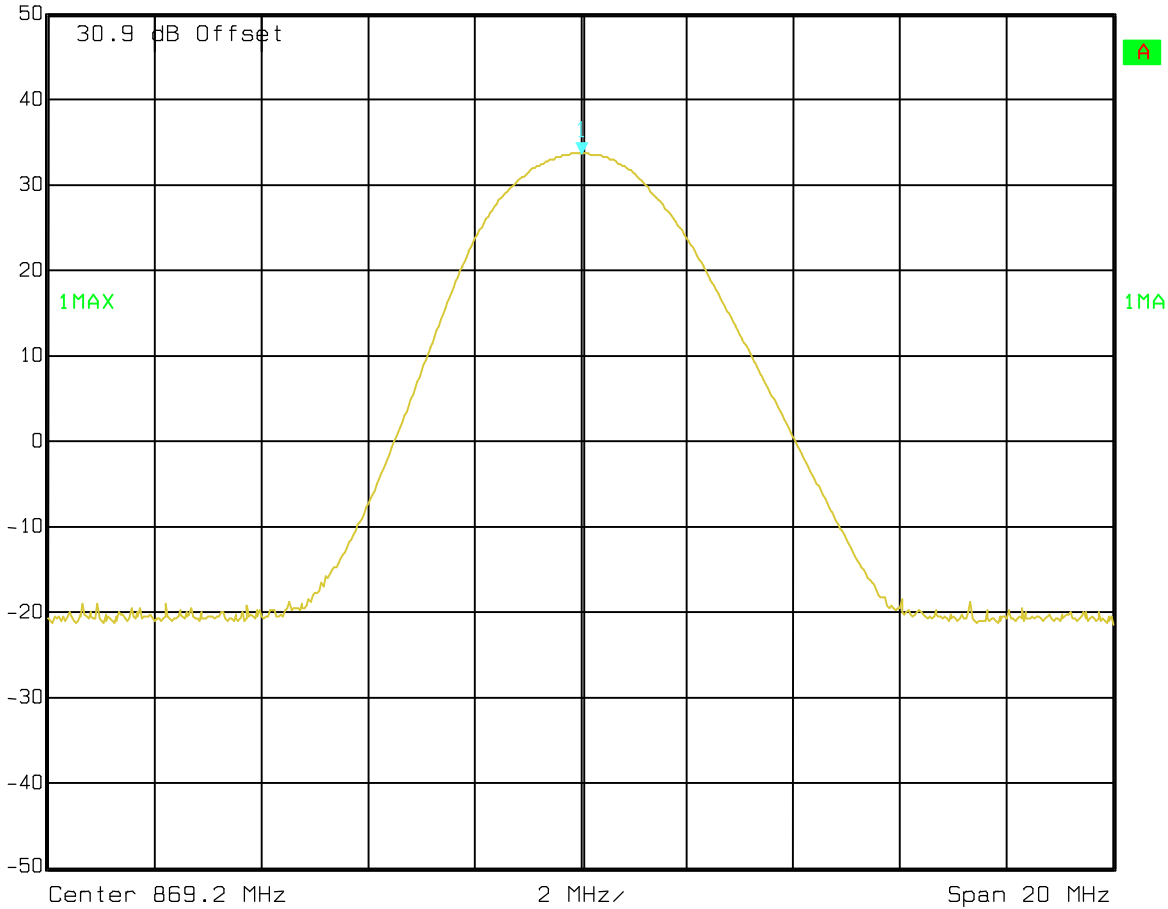


Title: Spur Emissions at Frequency Block Edges (Low Side A")  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 128)  
 Date: 22.MAY 2003 14:50:19  
 Comment B: Maximum power attenuated 12 dB

### Channel 128 – Output Power

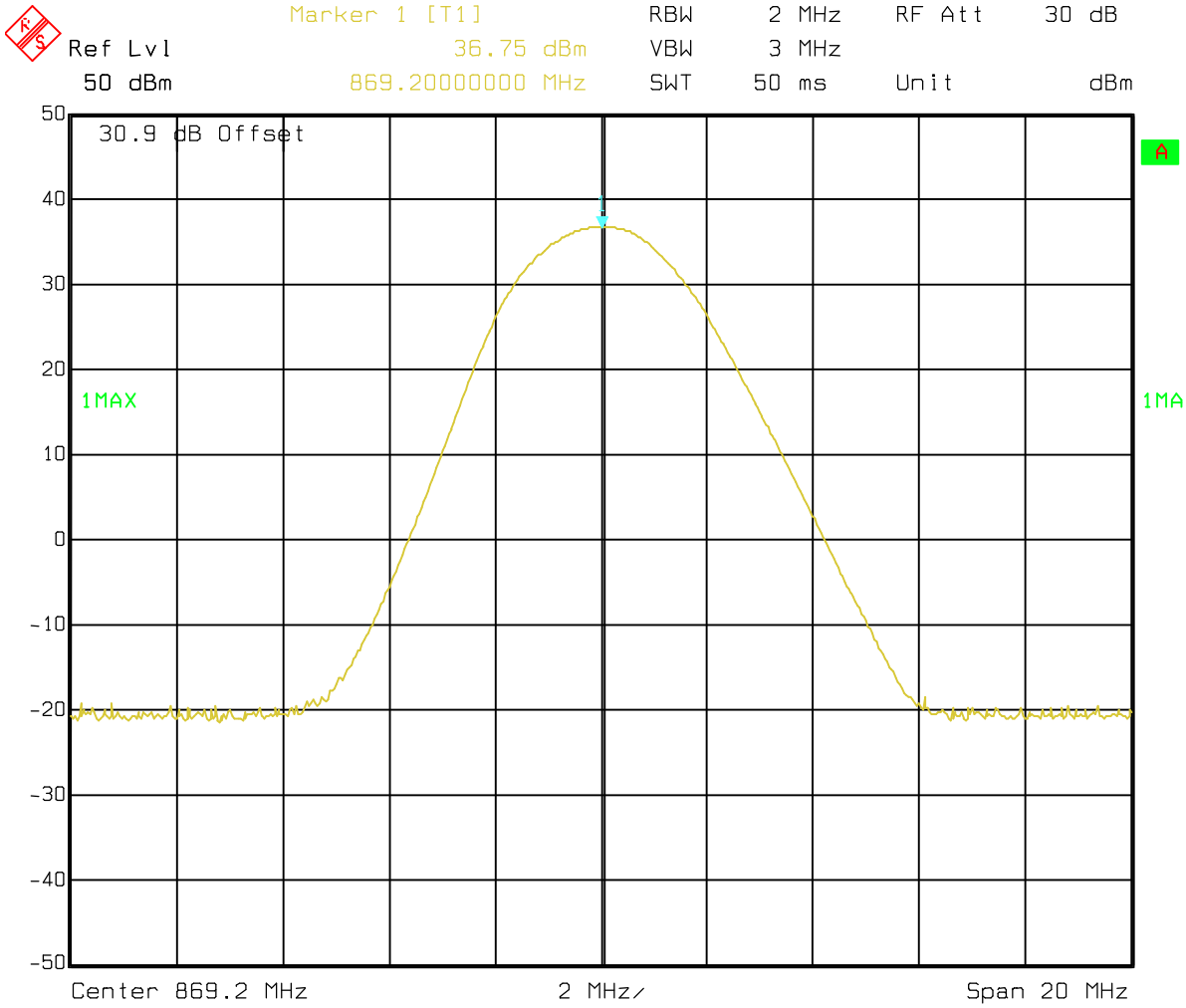


Marker 1 [T1] RBW 2 MHz RF Att 30 dB  
Ref Lvl 33.53 dBm VBW 3 MHz  
50 dBm 869.20000000 MHz SWT 50 ms Unit dBm



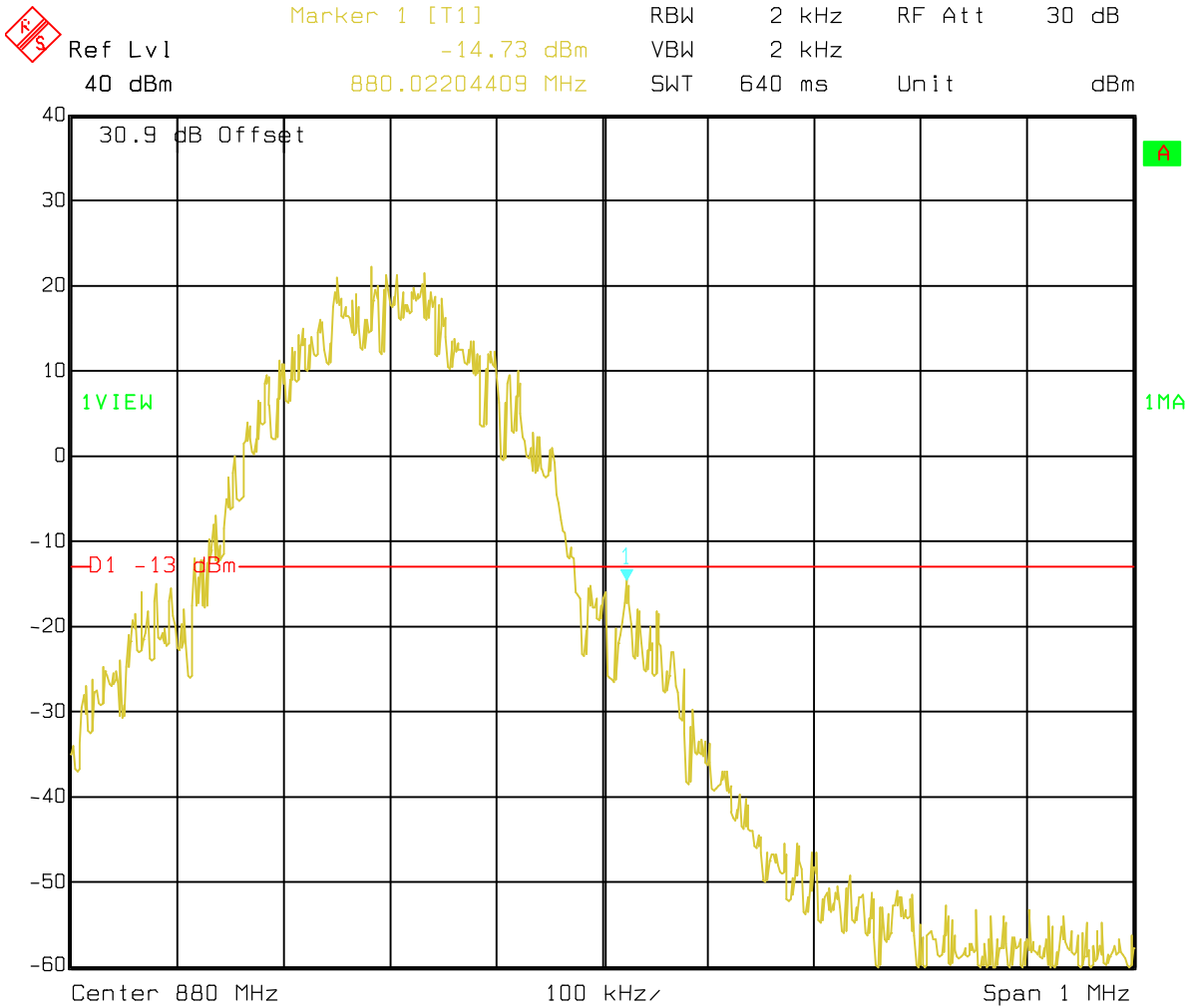
Title: Output Power at Frequency Block Edges (Low Side A")  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 128)  
Date: 22.MAY 2003 15:19:57  
Comment B: Maximum power attenuated 12 dB



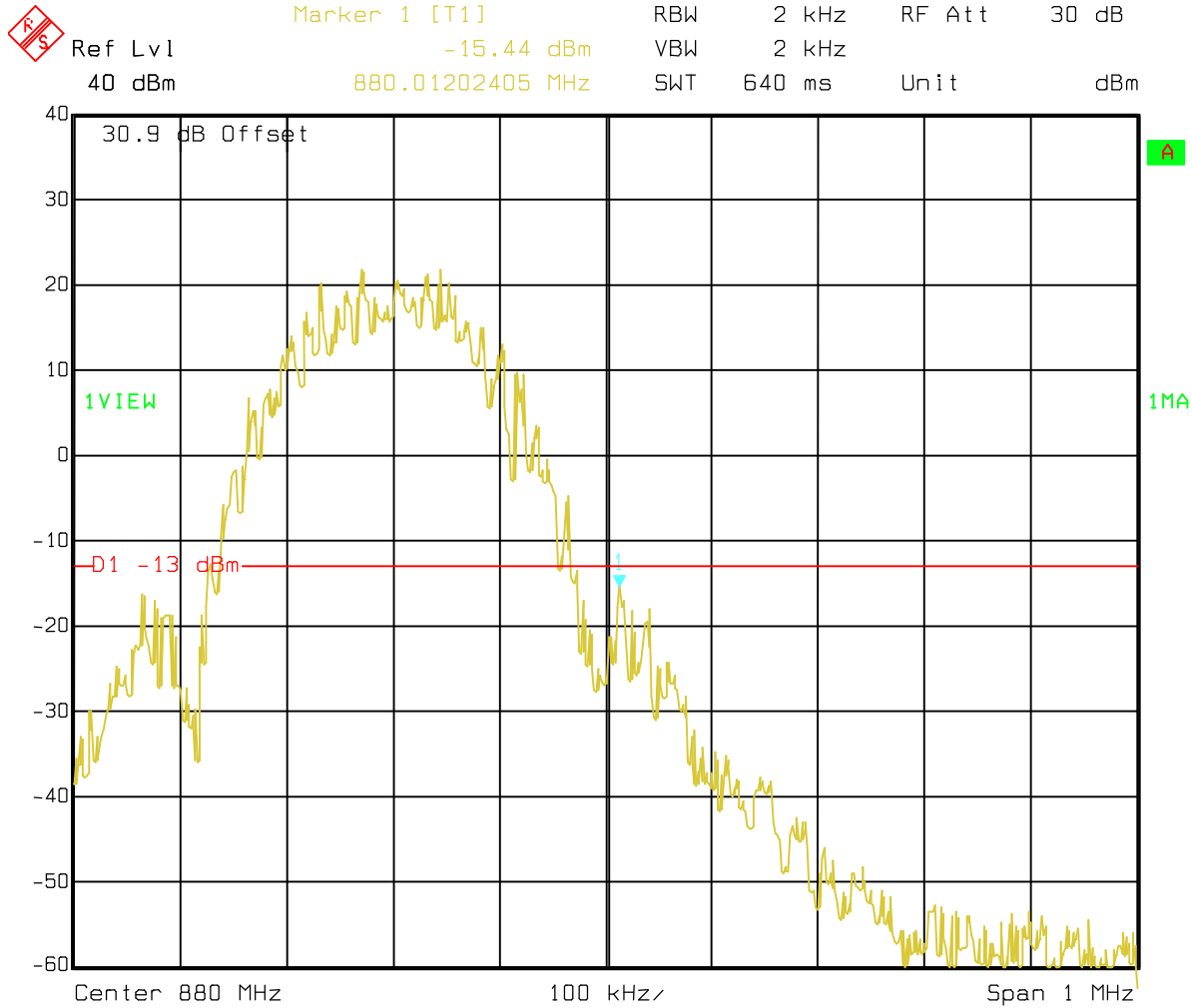


Title: Output Power at Frequency Block Edges (Low Side A")  
Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 128)  
Date: 22.MAY 2003 15:20:48  
Comment B: Maximum power attenuated 12 dB

**Channel 181 – Spurious Emissions**

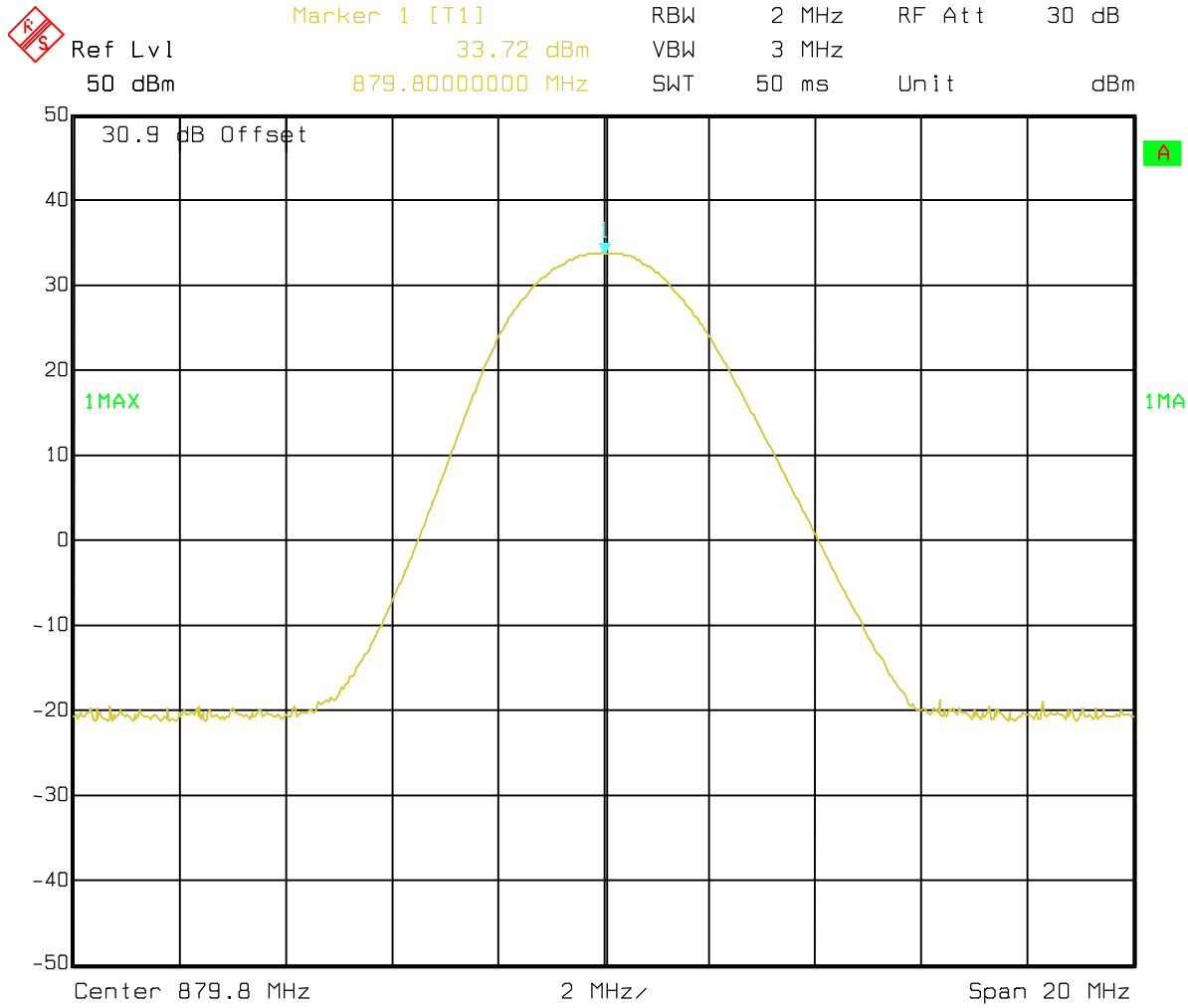


Title: Spur Emissions at Frequency Block Edges (High Side A)  
 Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 181)  
 Date: 22.MAY 2003 14:53:33  
 Comment B: Maximum power attenuated 12 dB

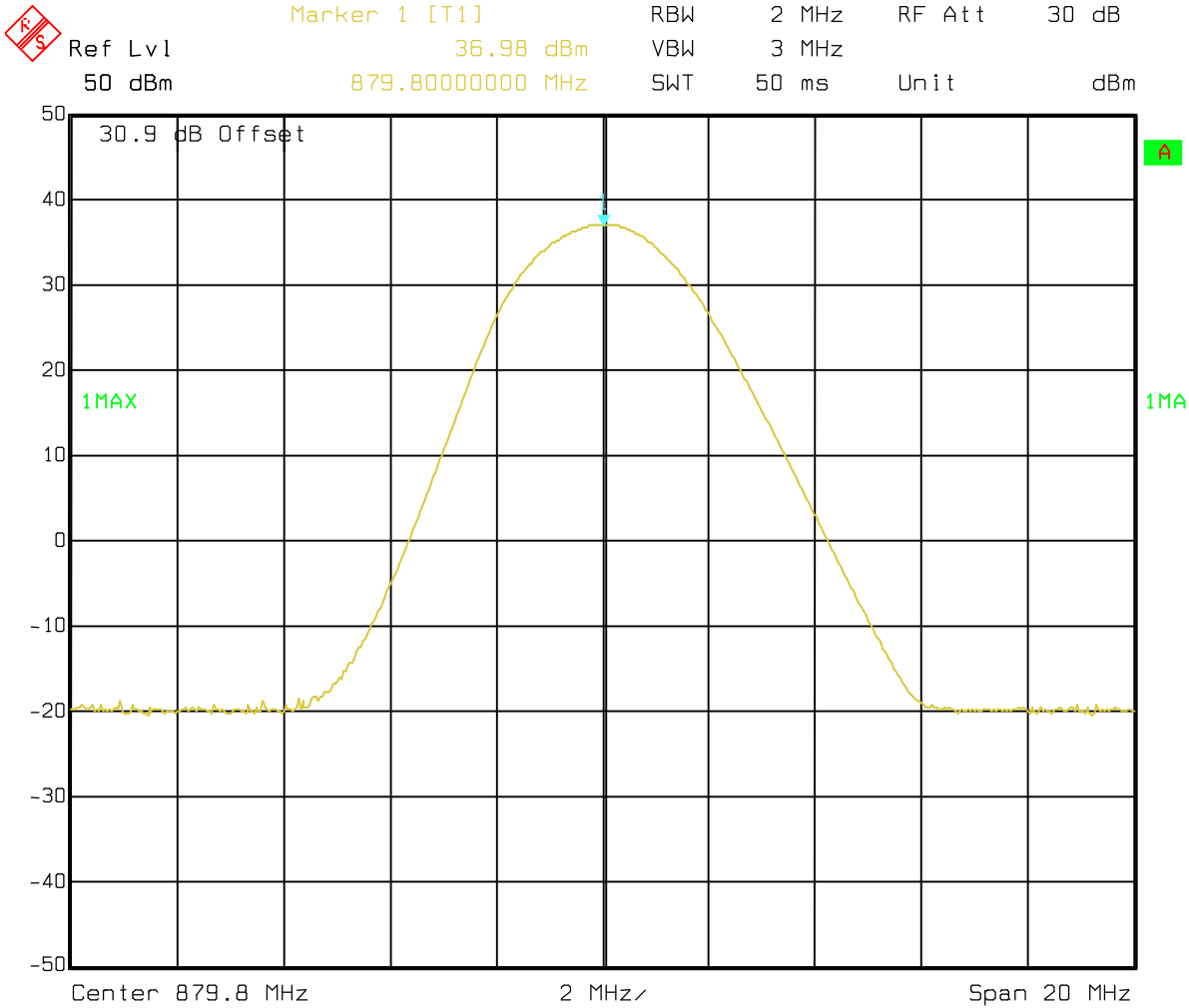


Title: Spur Emissions at Frequency Block Edges (High Side A)  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 181)  
 Date: 22.MAY 2003 14:52:21  
 Comment B: Maximum power attenuated 12 dB

### Channel 181 – Output Power

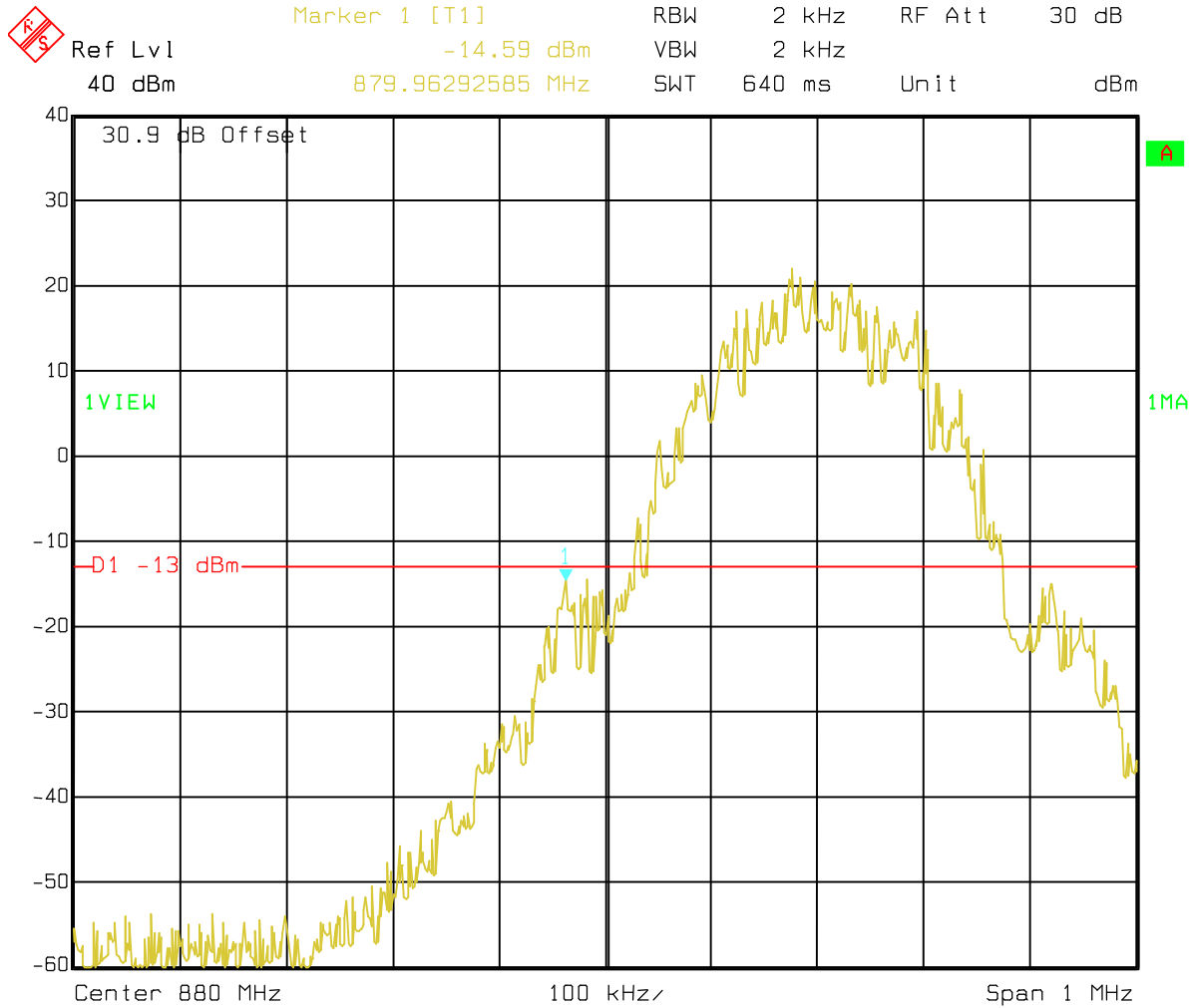


Title:      Output Power at Frequency Block Edges (High Side A)  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 181)  
Date:      22.MAY 2003 15:25:46  
Comment B: Maximum power attenuated 12 dB

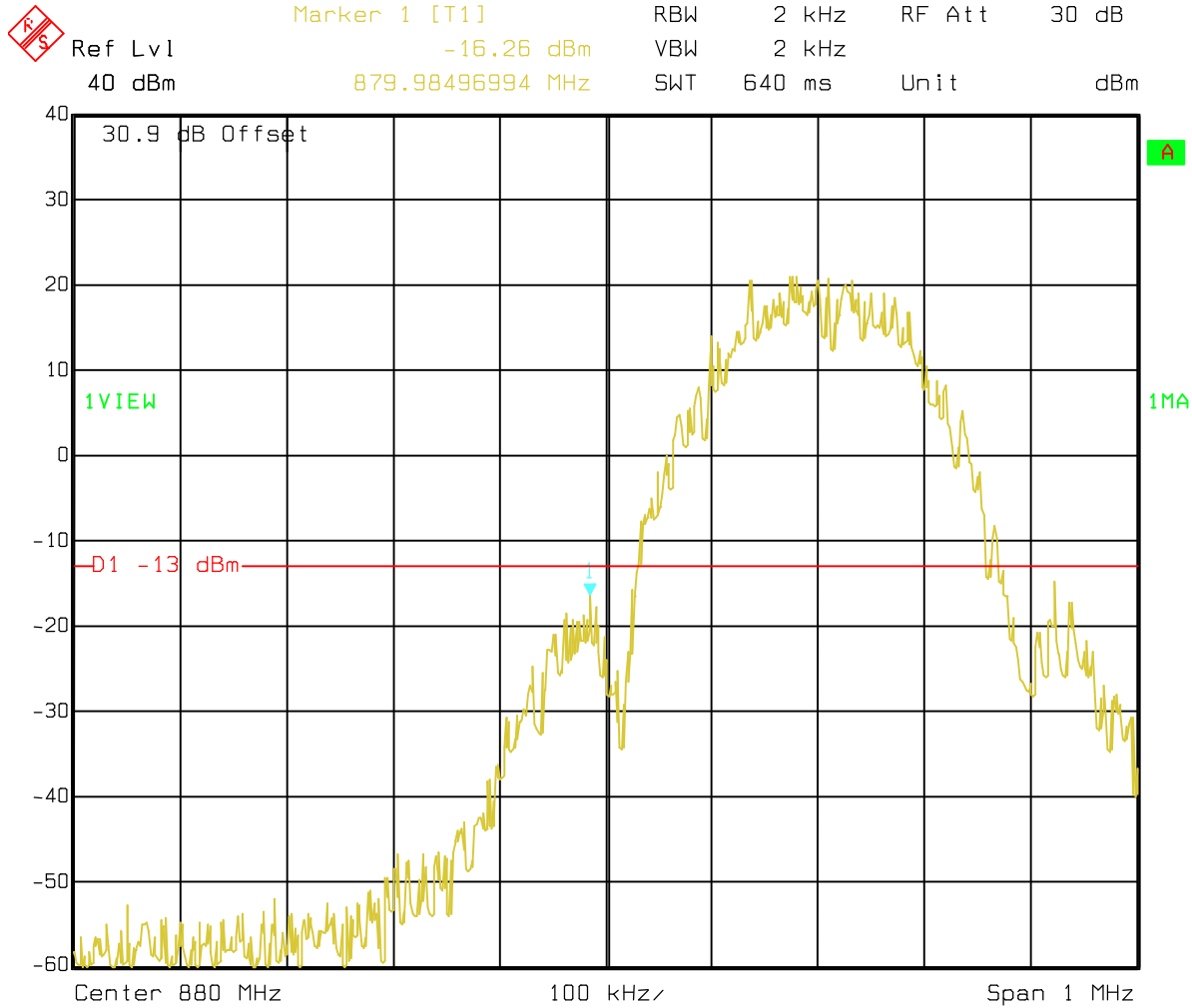


Title: Output Power at Frequency Block Edges (High Side A)  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 181)  
 Date: 22.MAY 2003 15:24:55  
 Comment B: Maximum power attenuated 12 dB

### Channel 183 – Spurious Emissions



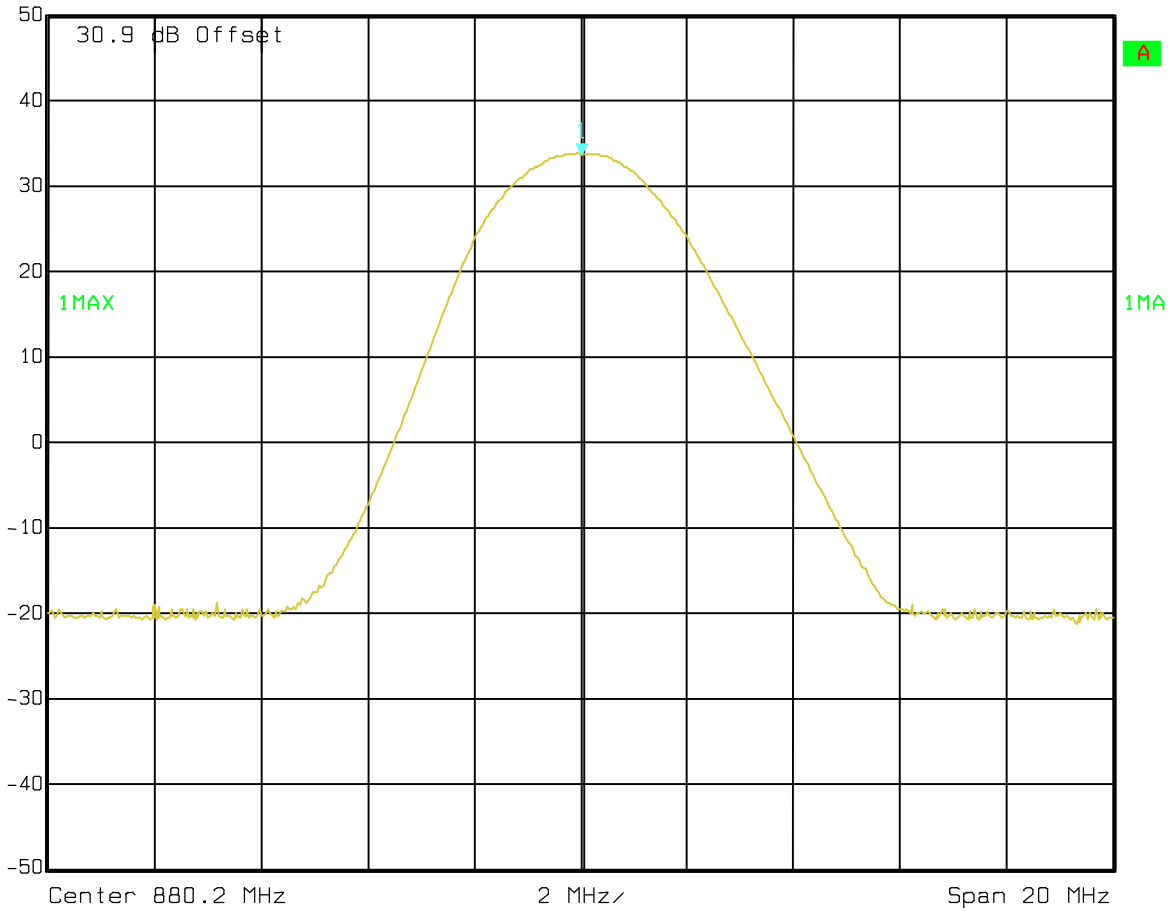
Title: Spur Emissions at Frequency Block Edges (Low Side B)  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 183)  
Date: 22.MAY 2003 14:56:09  
Comment B: Maximum power attenuated 12 dB



Title: Spur Emissions at Frequency Block Edges (Low Side B)  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 183)  
 Date: 22.MAY 2003 14:57:18  
 Comment B: Maximum power attenuated 12 dB

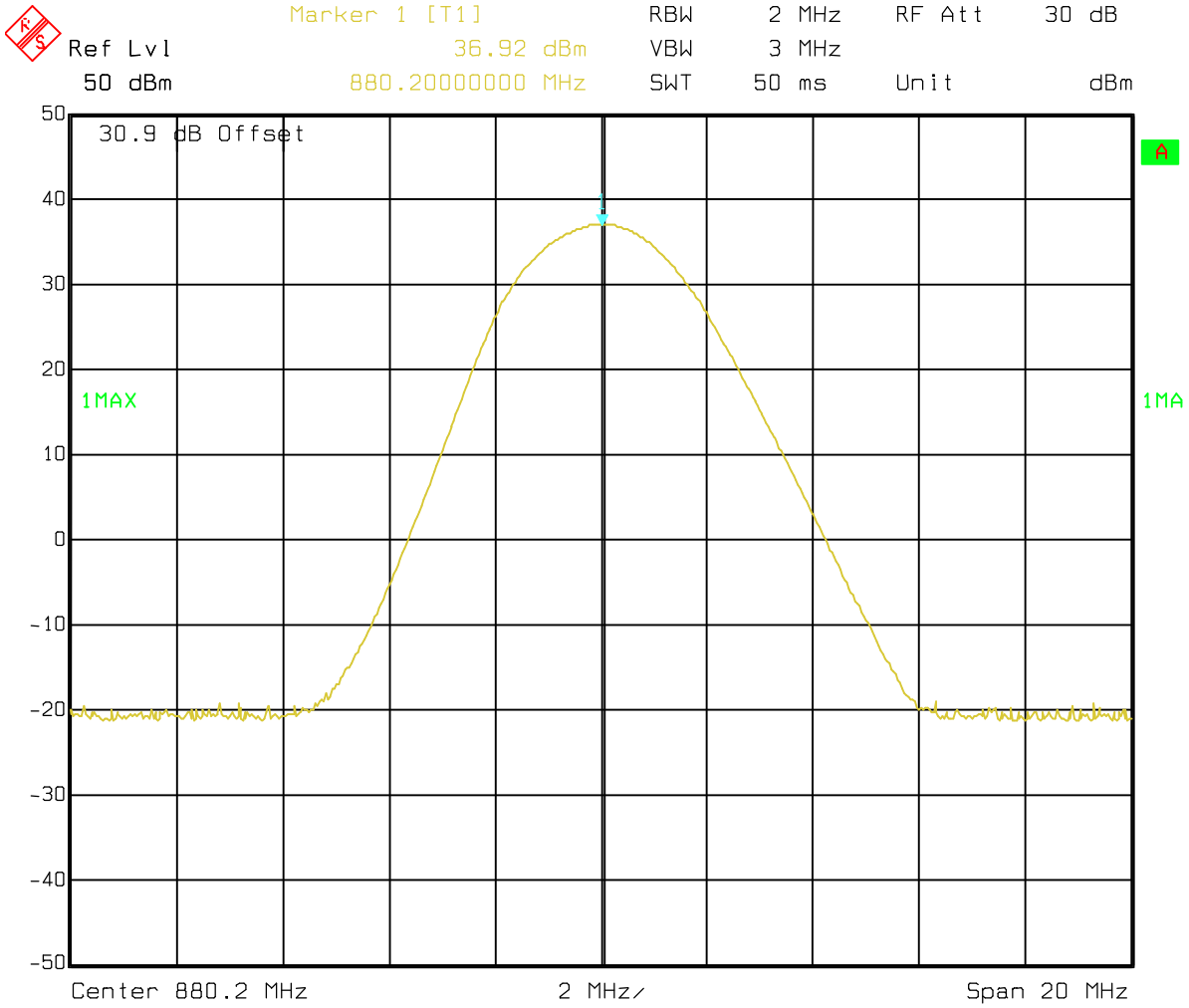
### Channel 183 – Output Power

 Marker 1 [T1] RBW 2 MHz RF Att 30 dB  
Ref Lvl 33.72 dBm VBW 3 MHz  
50 dBm 880.20000000 MHz SWT 50 ms Unit dBm



Title: Output Power at Frequency Block Edges (Low Side B)  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 183)  
Date: 22.MAY 2003 15:27:27  
Comment B: Maximum power attenuated 12 dB

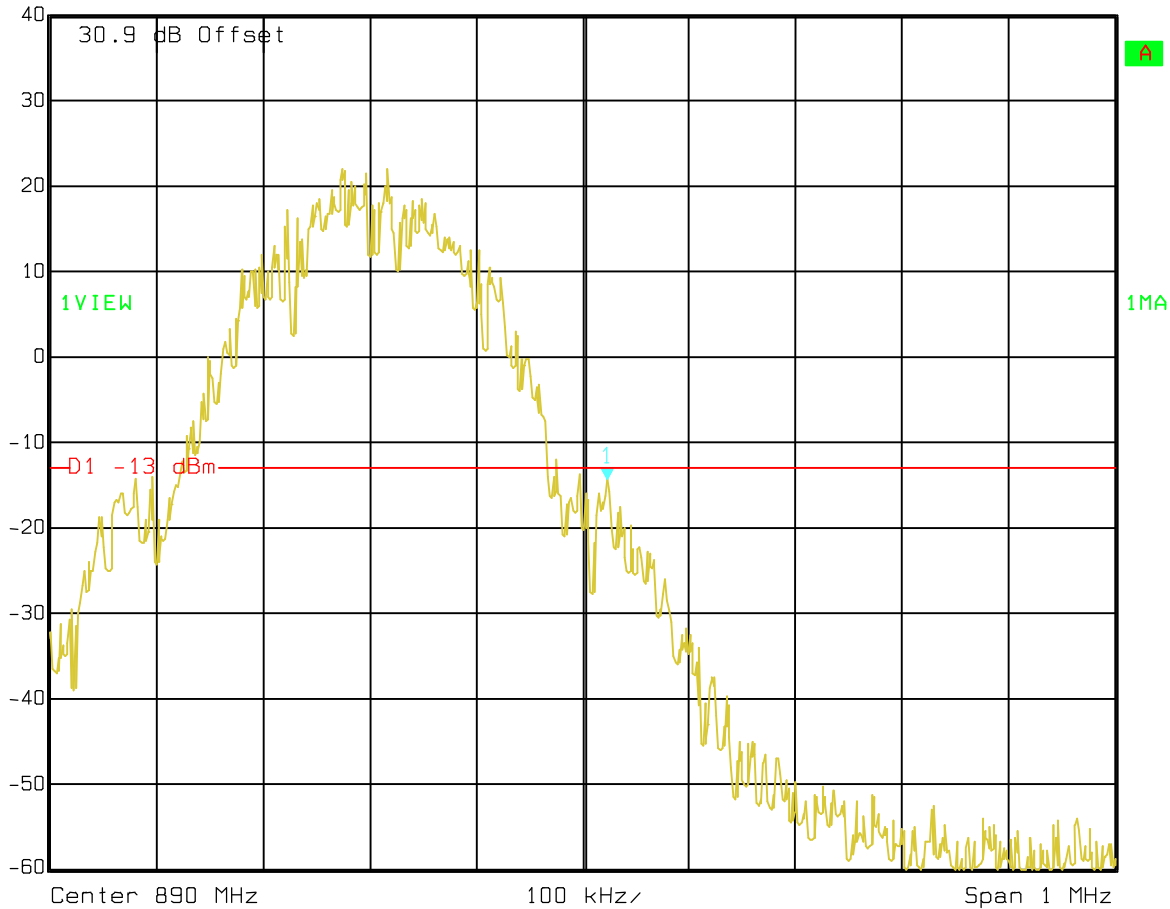




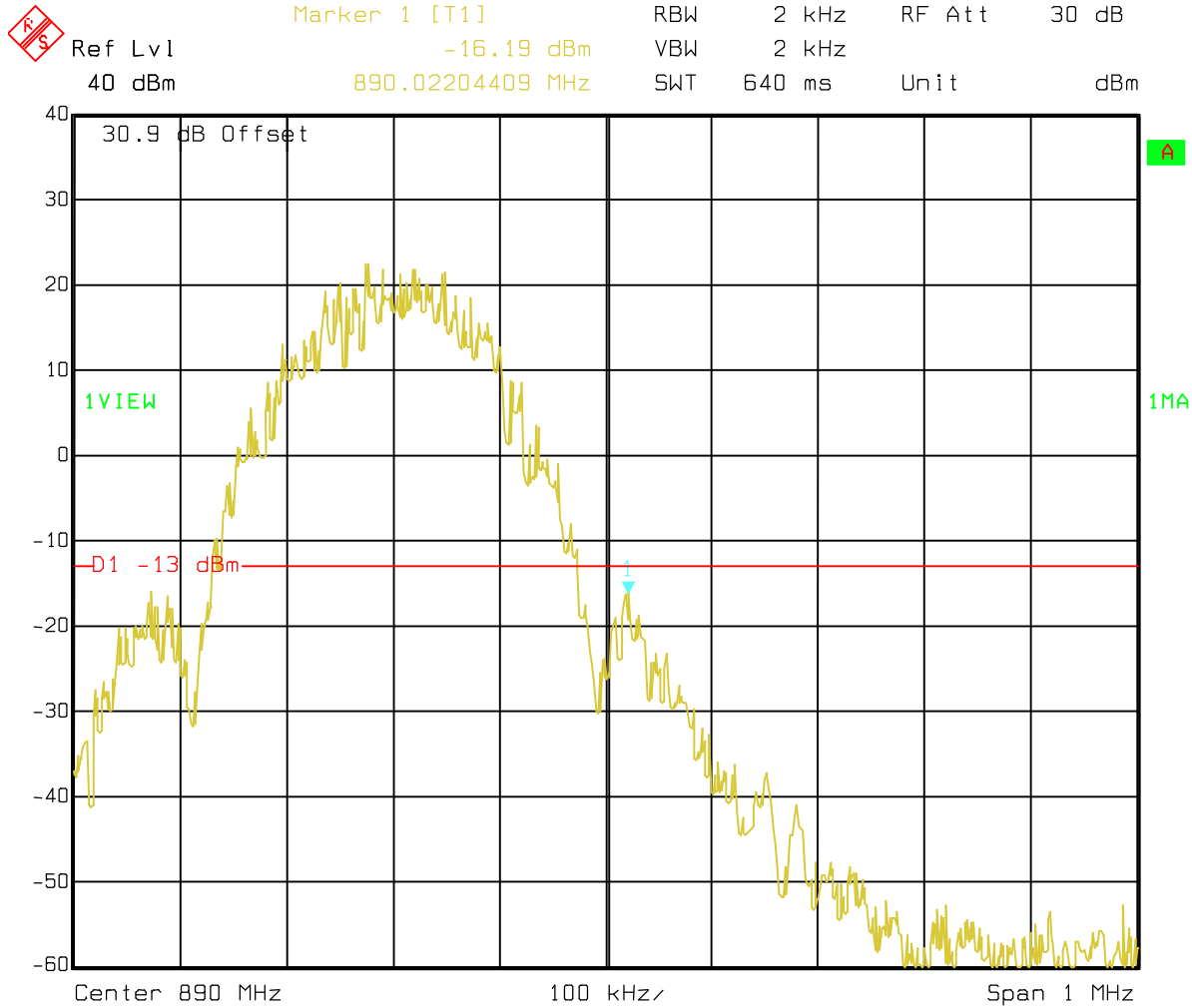
Title: Output Power at Frequency Block Edges (Low Side B)  
Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 183)  
Date: 22.MAY 2003 15:28:12  
Comment B: Maximum power attenuated 12 dB

### Channel 231 – Spurious Emissions

	Ref Lvl	Marker 1 [T1]	RBW	2 kHz	RF Att	30 dB
	40 dBm	-14.40 dBm	VBW	2 kHz		
		890.02404810 MHz	SWT	640 ms	Unit	dBm



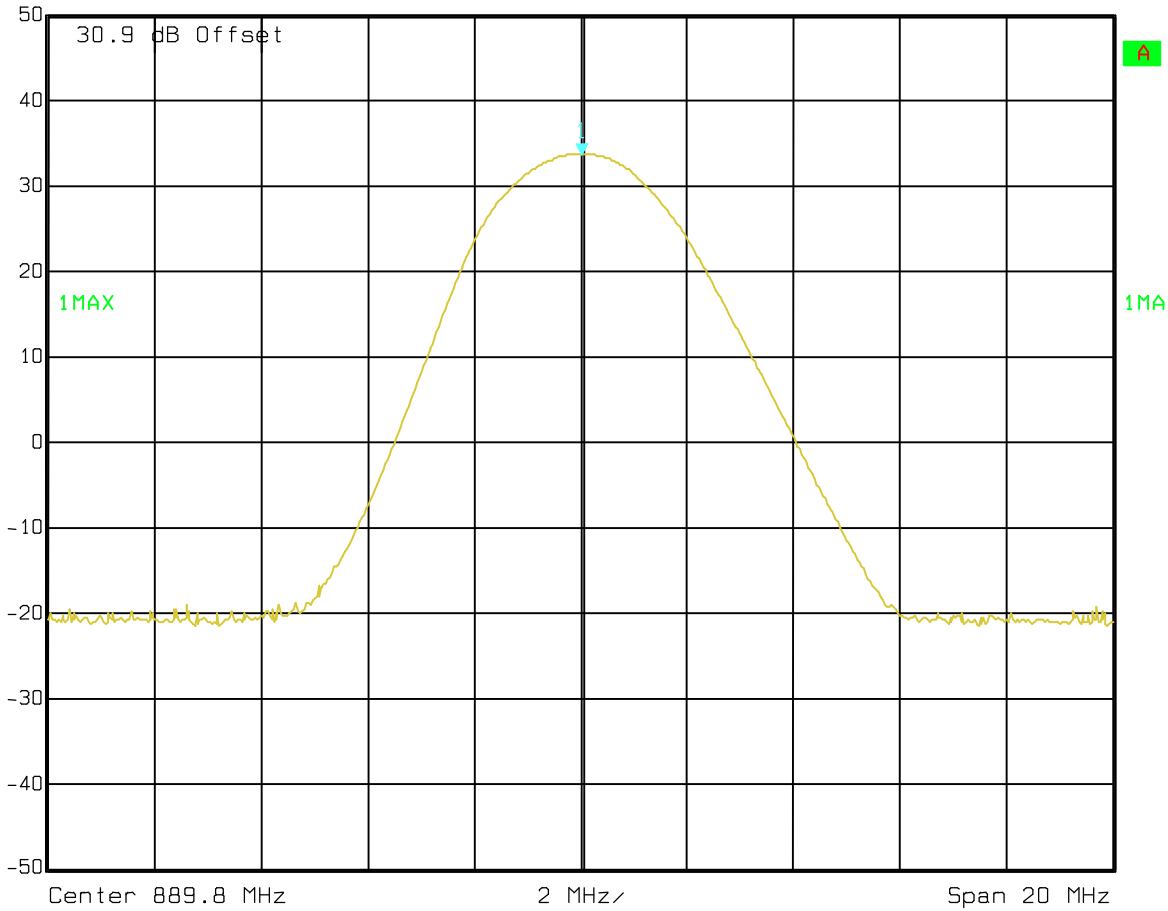
Title: Spur Emissions at Frequency Block Edges (High Side B)  
 Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 231)  
 Date: 22.MAY 2003 15:00:29  
 Comment B: Maximum power attenuated 12 dB



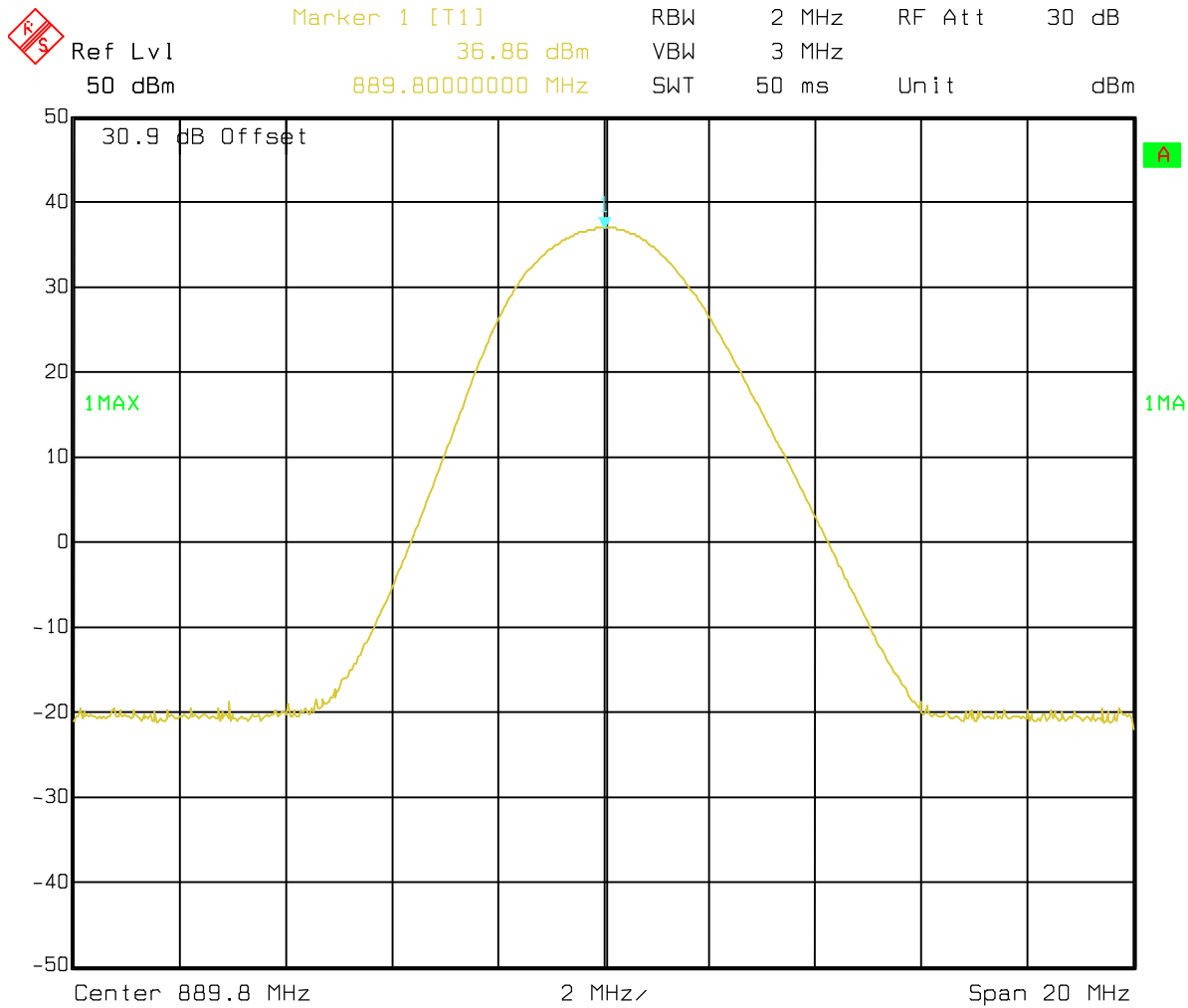
Title: Spur Emissions at Frequency Block Edges (High Side B)  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 231)  
 Date: 22.MAY 2003 14:59:03  
 Comment B: Maximum power attenuated 12 dB

### Channel 231 – Output Power

 Ref Lvl 50 dBm      Marker 1 [T1] 889.80000000 MHz      RBW 2 MHz      RF Att 30 dB  
33.65 dBm      VBW 3 MHz      Unit dBm  
SWT 50 ms



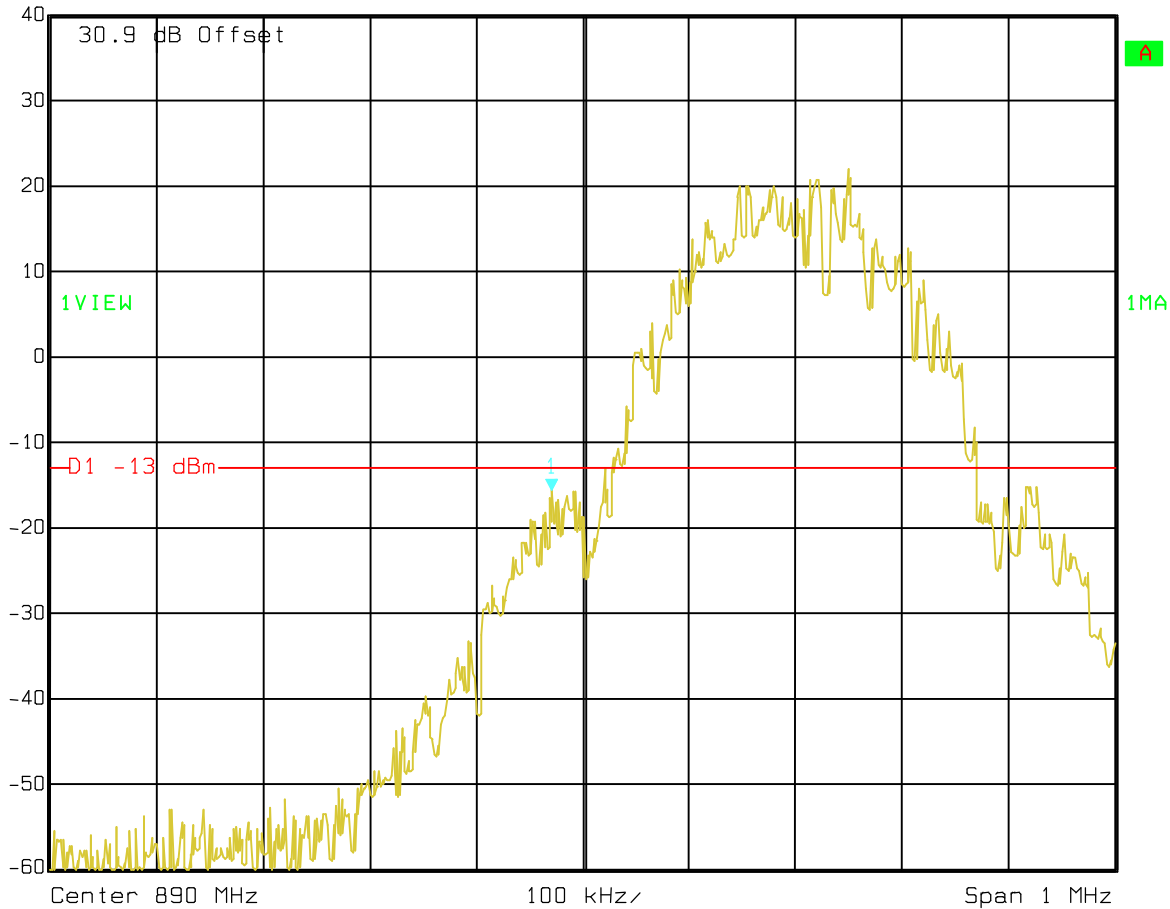
Title: Output Power at Frequency Block Edges (High Side B)  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 231)  
Date: 22.MAY 2003 15:30:14  
Comment B: Maximum power attenuated 12 dB



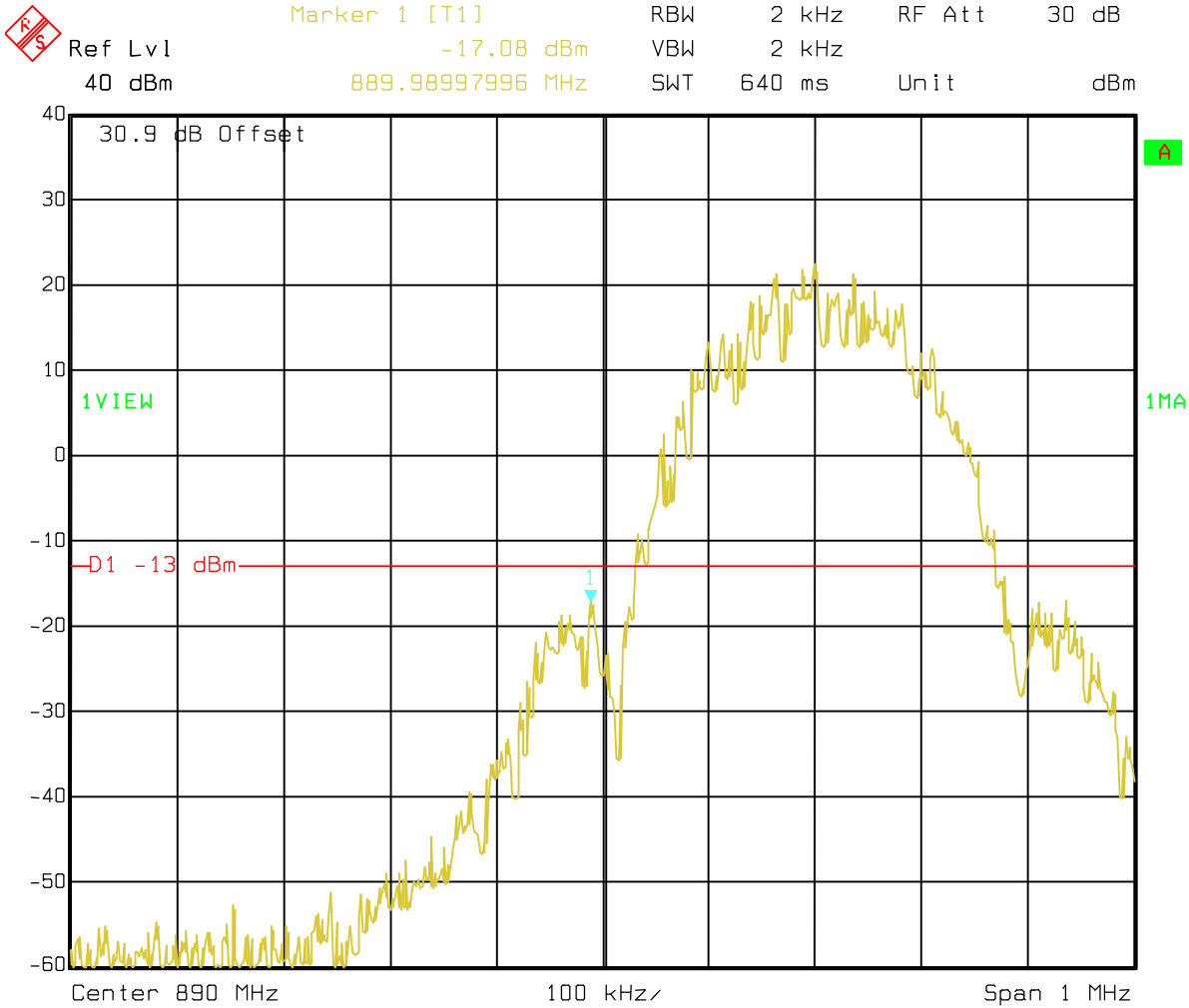
Title: Output Power at Frequency Block Edges (High Side B)  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 231)  
 Date: 22.MAY 2003 15:29:25  
 Comment B: Maximum power attenuated 12 dB

### Channel 233 – Spurious Emissions

	Ref Lvl	Marker 1 [T1]	RBW	2 kHz	RF Att	30 dB
	40 dBm	-15.67 dBm	VBW	2 kHz		
		889.97194389 MHz	SWT	640 ms	Unit	dBm



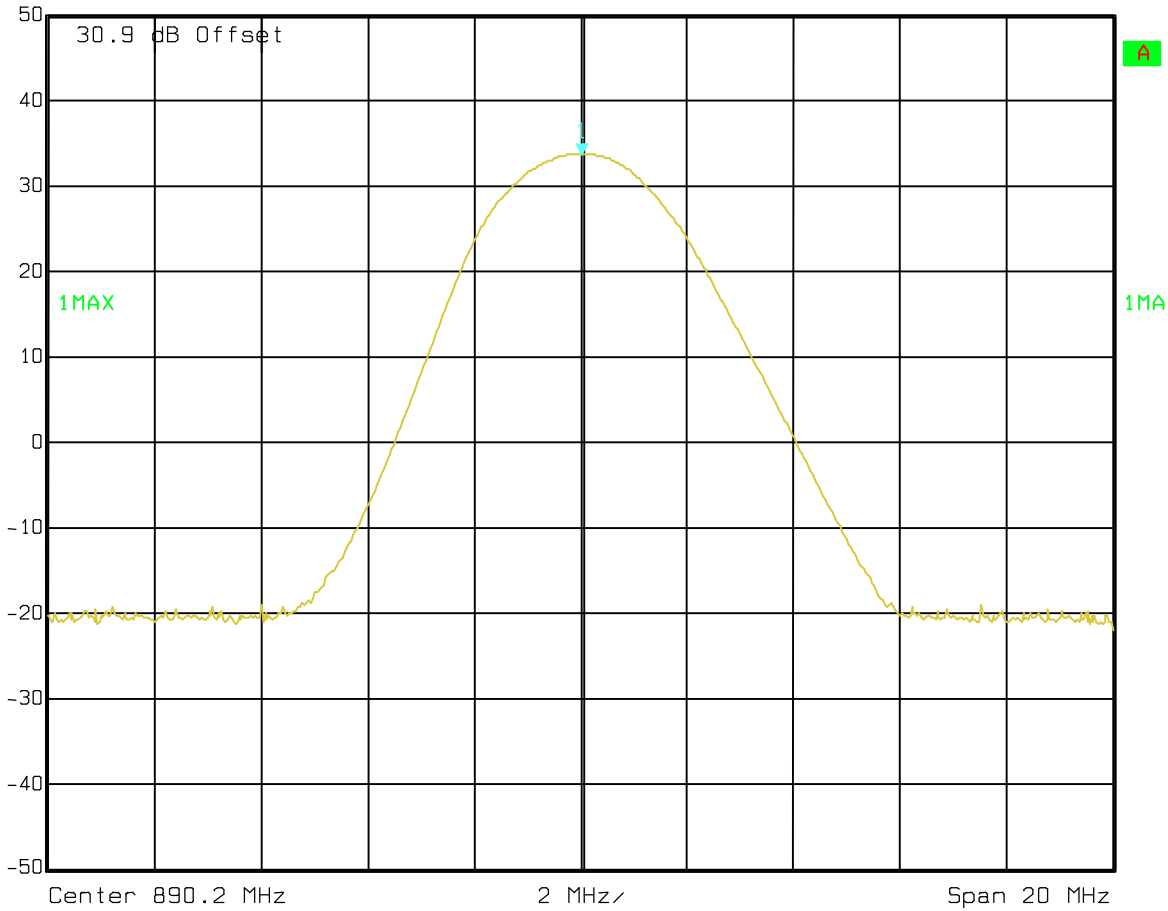
Title: Spur Emissions at Frequency Block Edges (Low Side A')  
 Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 233)  
 Date: 22.MAY 2003 15:02:38  
 Comment B: Maximum power attenuated 12 dB



Title: Spur Emissions at Frequency Block Edges (Low Side A')  
Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 233)  
Date: 22.MAY 2003 15:03:39  
Comment B: Maximum power attenuated 12 dB

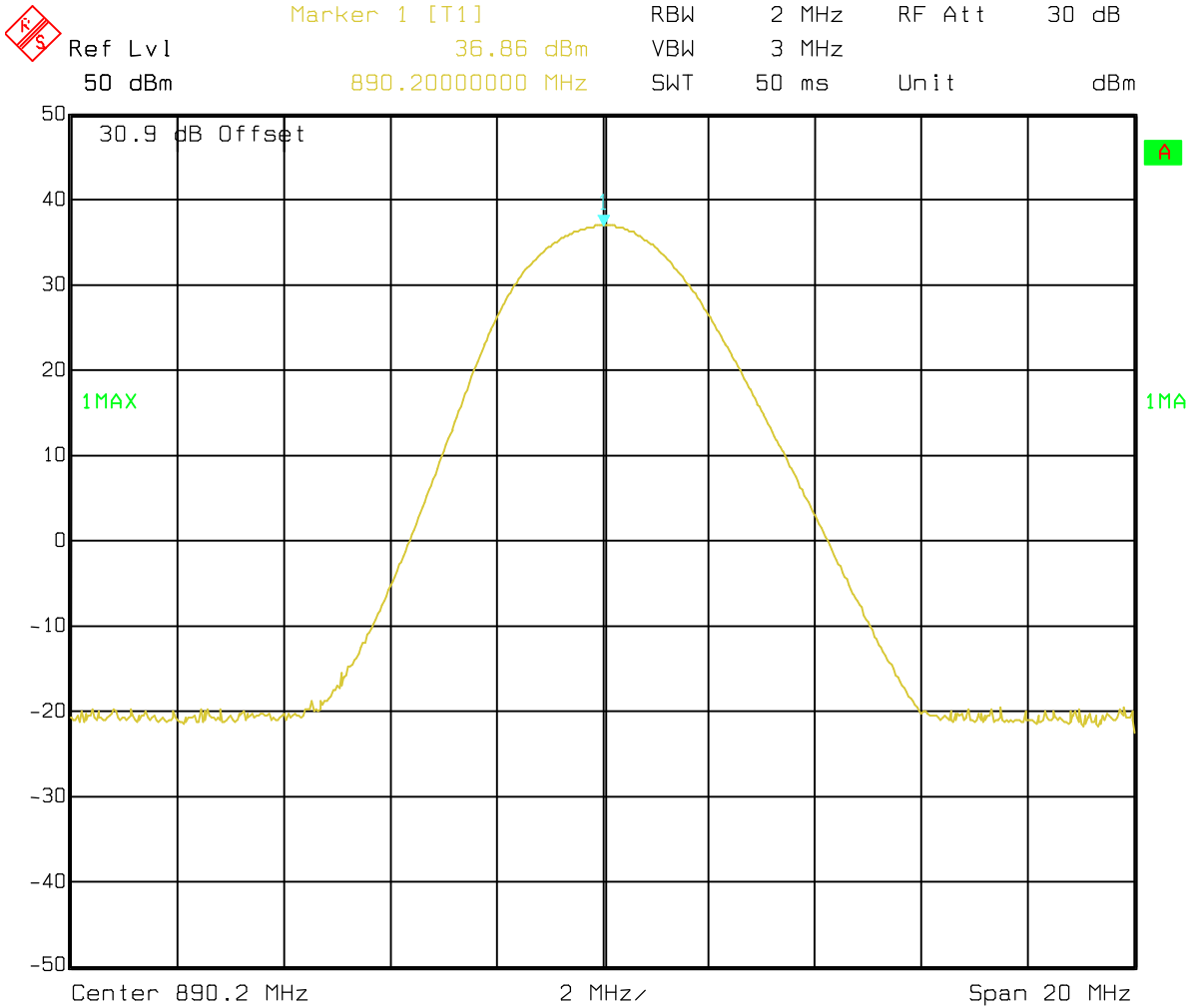
### Channel 233 – Output Power

 Marker 1 [T1] RBW 2 MHz RF Att 30 dB  
Ref Lvl 33.65 dBm VBW 3 MHz  
50 dBm 890.20000000 MHz SWT 50 ms Unit dBm



Title: Output Power at Frequency Block Edges (Low Side A')  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 233)  
Date: 22.MAY 2003 15:31:30  
Comment B: Maximum power attenuated 12 dB

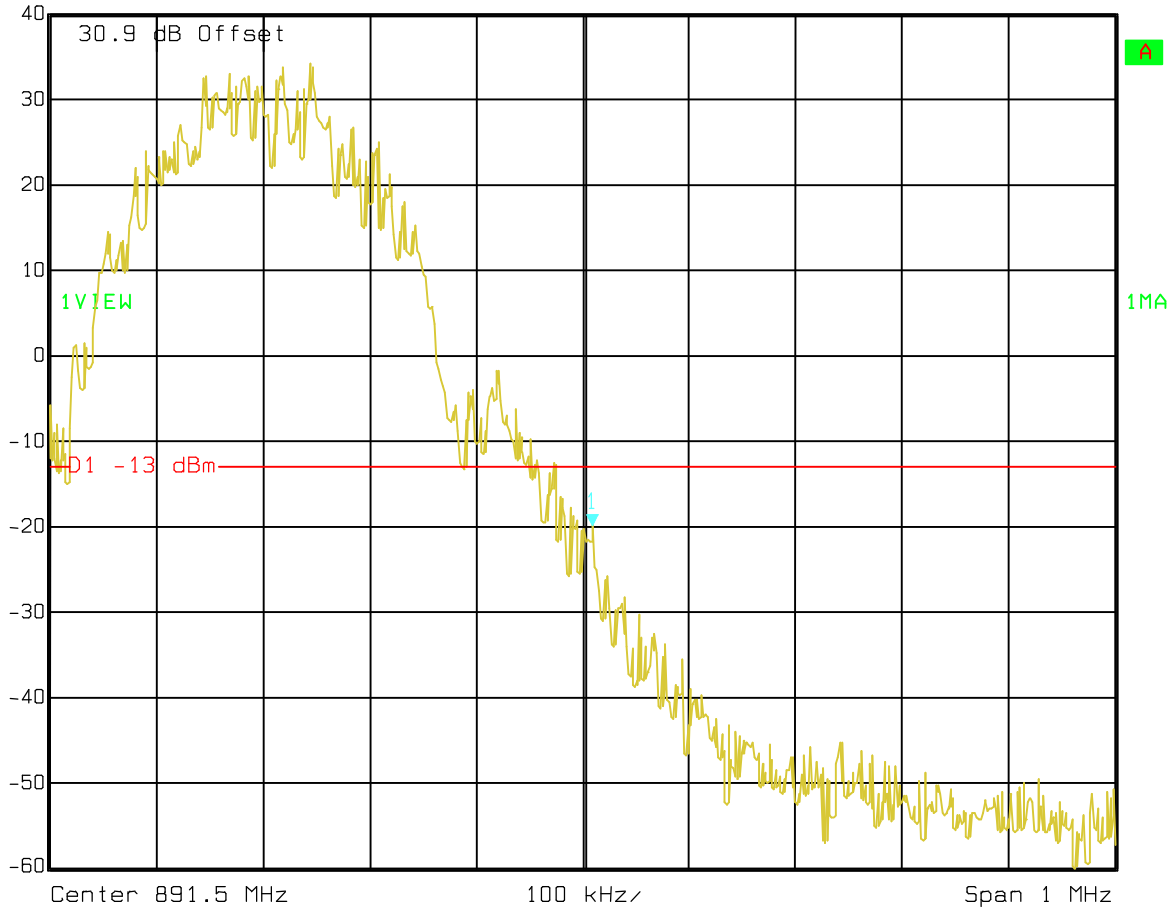




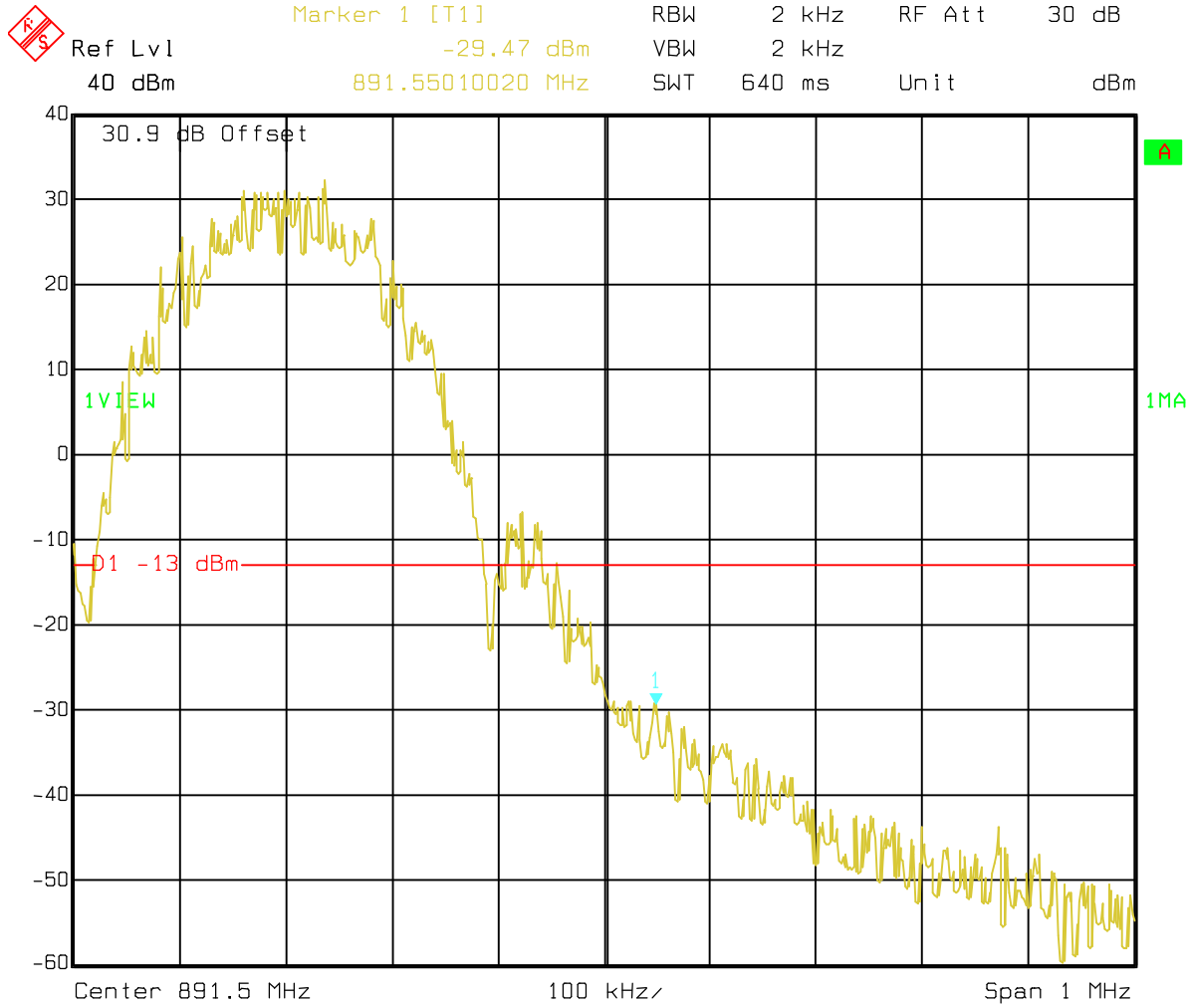
Title: Output Power at Frequency Block Edges (Low Side A')  
Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 233)  
Date: 22.MAY 2003 15:32:15  
Comment B: Maximum power attenuated 12 dB

### Channel 238 – Spurious Emissions

ⓧ Marker 1 [T1] RBW 2 kHz RF Att 30 dB  
 Ref Lvl -19.83 dBm VBW 2 kHz  
 40 dBm 891.51002004 MHz SWT 640 ms Unit dBm



Title: Spur Emissions at Frequency Block Edges (High Side A')  
 Comment A: Ultrasite EDGE 800 (GMSK Power Level 0)(Channel 238)  
 Date: 22.MAY 2003 15:06:44  
 Comment B: Maximum power attenuated 0 dB

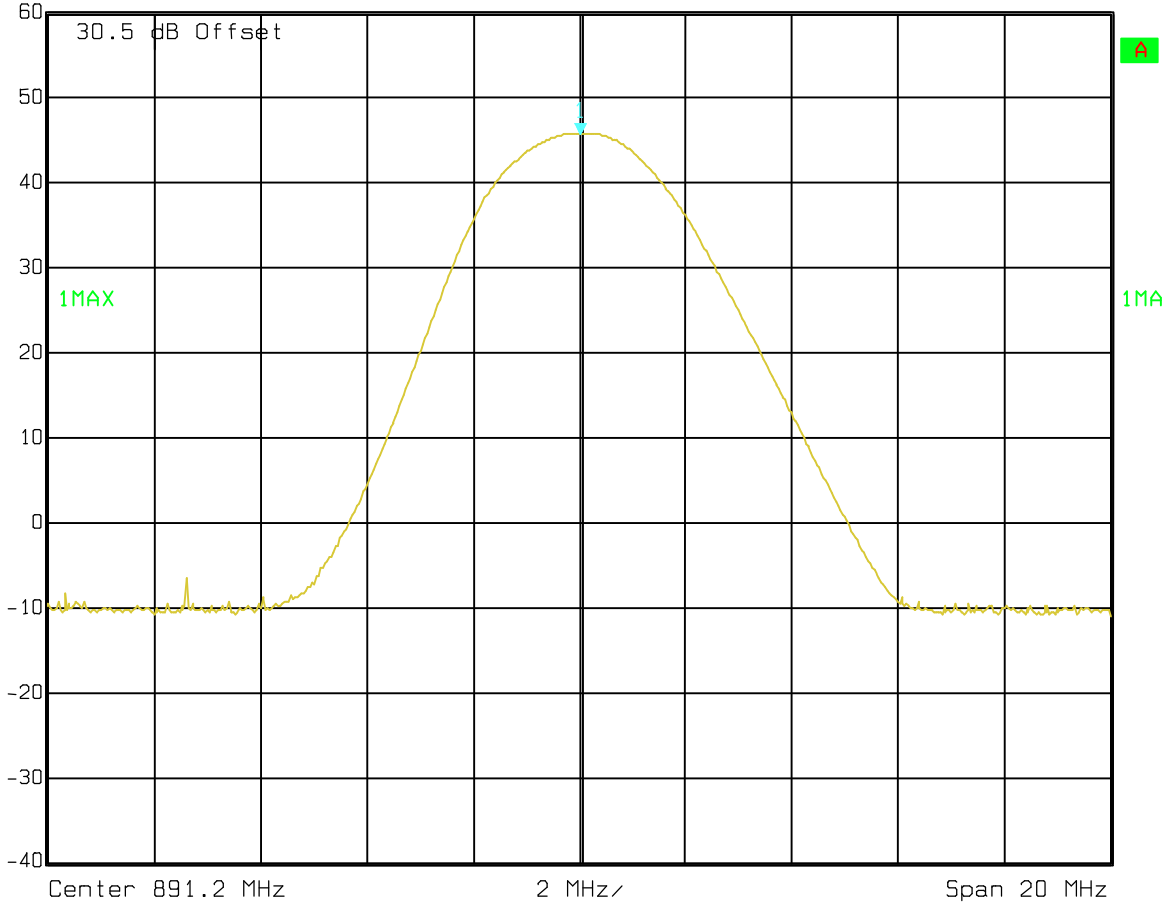


Title: Spur Emissions at Frequency Block Edges (High Side A')  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 0)(Channel 238)  
 Date: 22.MAY 2003 15:05:41  
 Comment B: Maximum power attenuated 0 dB

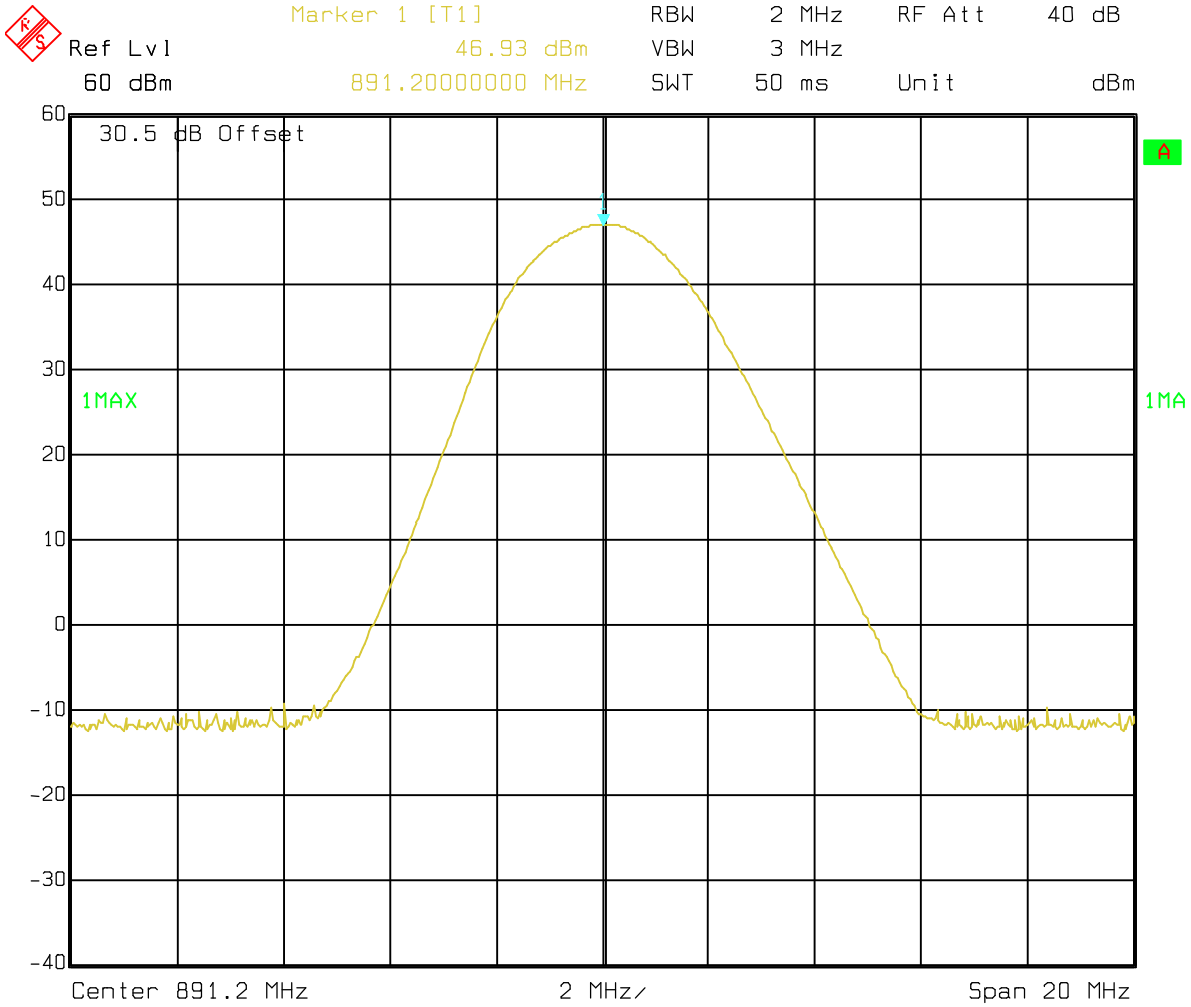
### Channel 238 – Output Power



Ref Lvl 60 dBm  
Marker 1 [T1] 891.20000000 MHz 45.75 dBm  
RBW 2 MHz RF Att 40 dB  
VBW 3 MHz  
SkT 50 ms Unit dBm



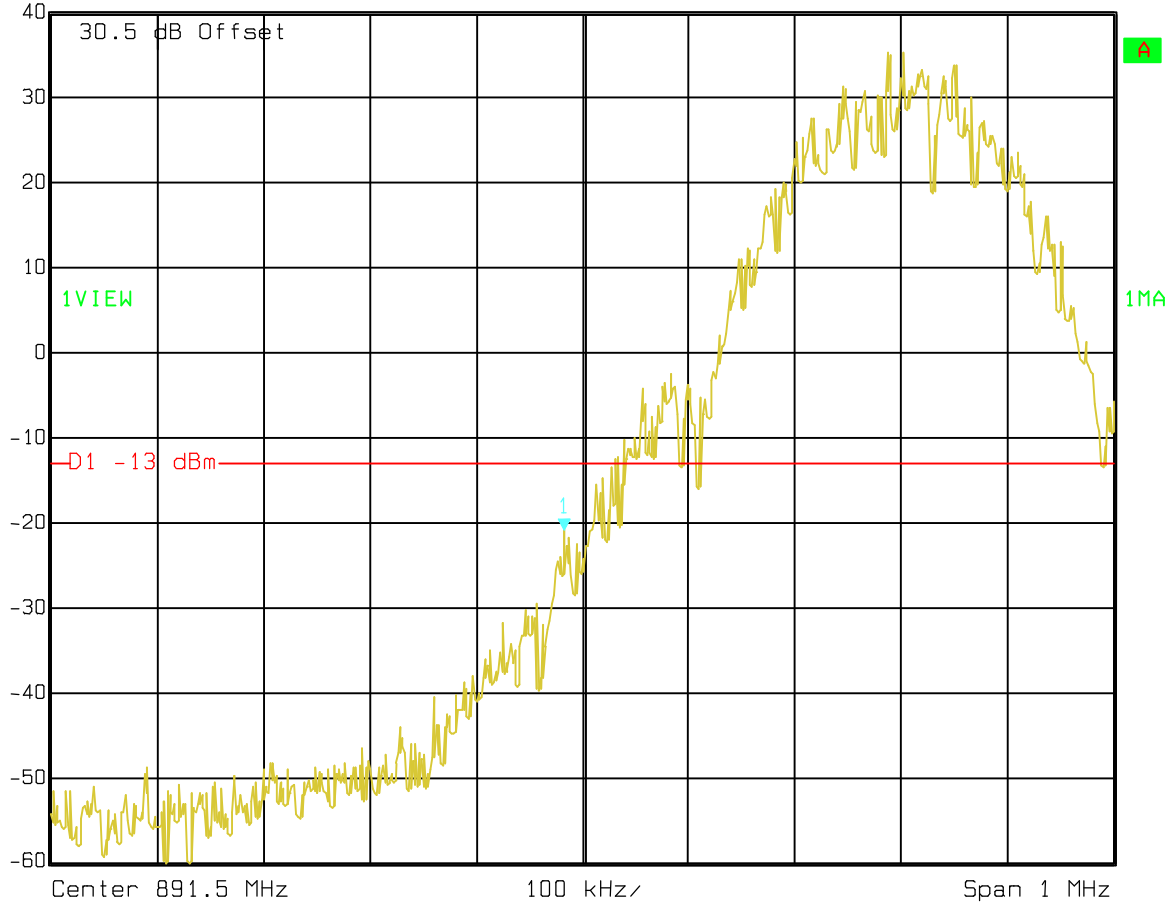
Title: Output Power at Frequency Block Edges (High Side A')  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 0)(Channel 238)  
Date: 17.JUN.2003 14:20:36  
Comment B: Maximum power attenuated 0 dB



Title: Output Power at Frequency Block Edges (High Side A')  
Comment A: Ultrasite EDGE 800 (8-PSK Power Level 0)(Channel 238)  
Date: 17.JUN.2003 14:25:11  
Comment B: Maximum power attenuated 0 dB

### Channel 241 – Spurious Emissions

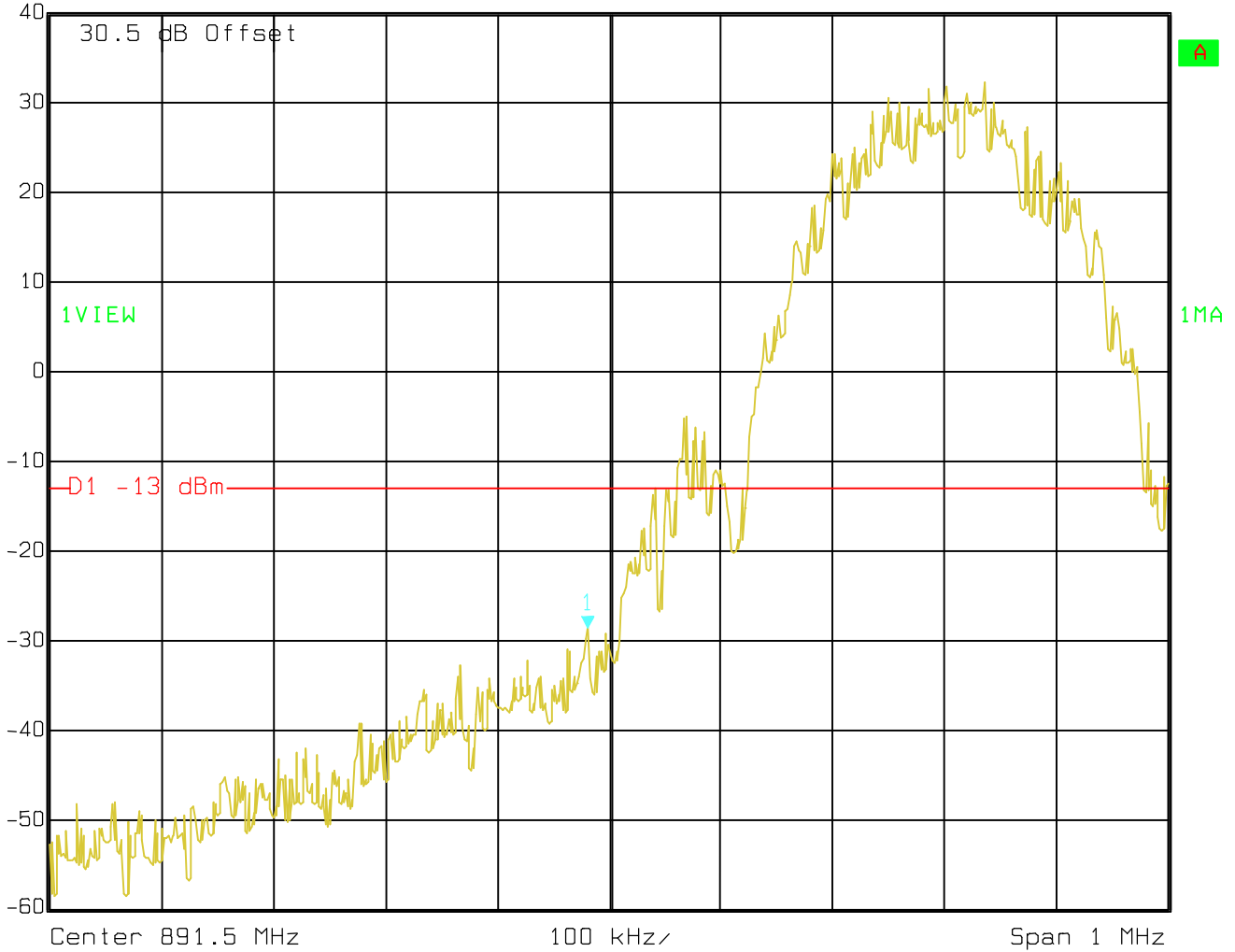

 Marker 1 [T1] RBW 2 kHz RF Att 30 dB  
 Ref Lvl -20.98 dBm VBW 2 kHz  
 40 dBm 891.48336673 MHz SwT 640 ms Unit dBm



Title: Spur Emissions at Frequency Block Edges (Low Side B' + B")  
 Comment A: Ultrasite EDGE 800 (GMSK Power Level 0)(Channel 241)  
 Date: 17.JUN.2003 14:39:52  
 Comment B: Maximum power attenuated 0 dB



Marker 1 [T1] RBW 2 kHz RF Att 30 dB  
 Ref Lvl -28.65 dBm VBW 2 kHz  
 40 dBm 891.48136273 MHz SWT 640 ms Unit dBm



Title: Spur Emissions at Frequency Block Edges (Low Side B' + B'')

Comment A: Ultrasite EDGE 800 (8-PSK Power Level 0)(Channel 241)

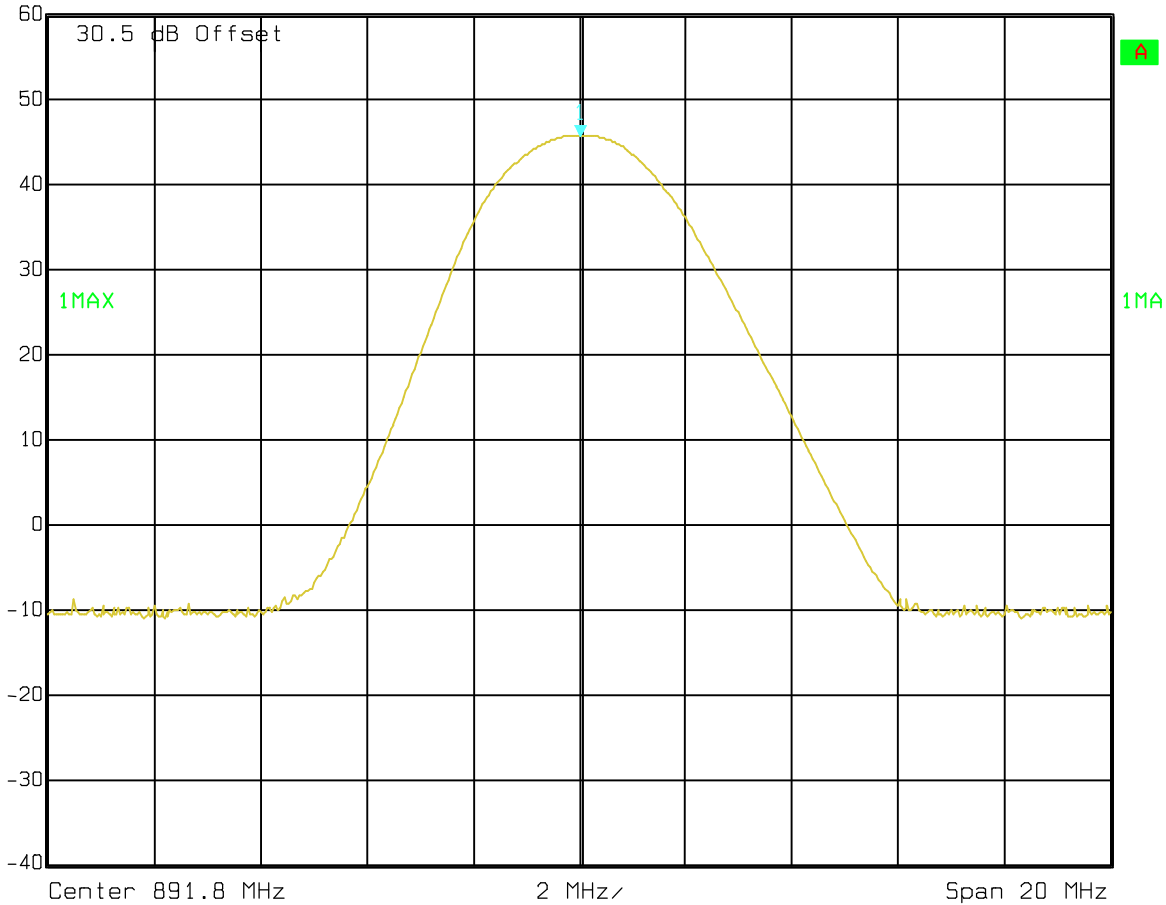
Date: 17.JUN.2003 14:42:18

Comment B: Maximum power attenuated 0 dB

### Channel 241 – Output Power

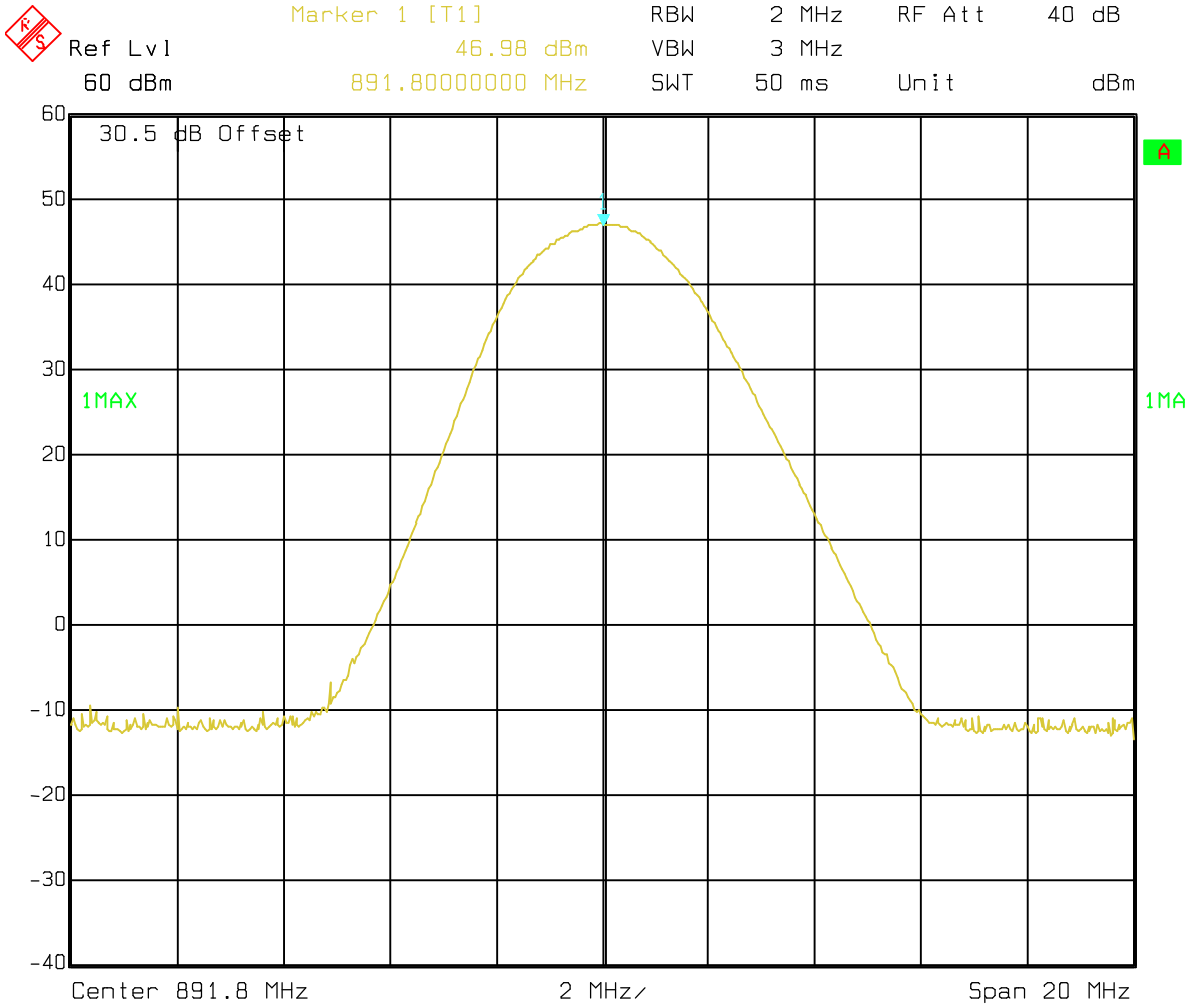


Ref Lvl	Marker 1 [T1]	RBW	2 MHz	RF Att	40 dB
60 dBm	45.72 dBm	VBW	3 MHz		
	891.80000000 MHz	SkT	50 ms	Unit	dBm



Title: Output Power at Frequency Block Edges (Low Side B' + B")  
 Comment A: Ultrasite EDGE 800 (GMSK Power Level 0)(Channel 241)  
 Date: 17.JUN.2003 14:35:08  
 Comment B: Maximum power attenuated 0 dB





Title: Output Power at Frequency Block Edges (Low Side B' + B'')

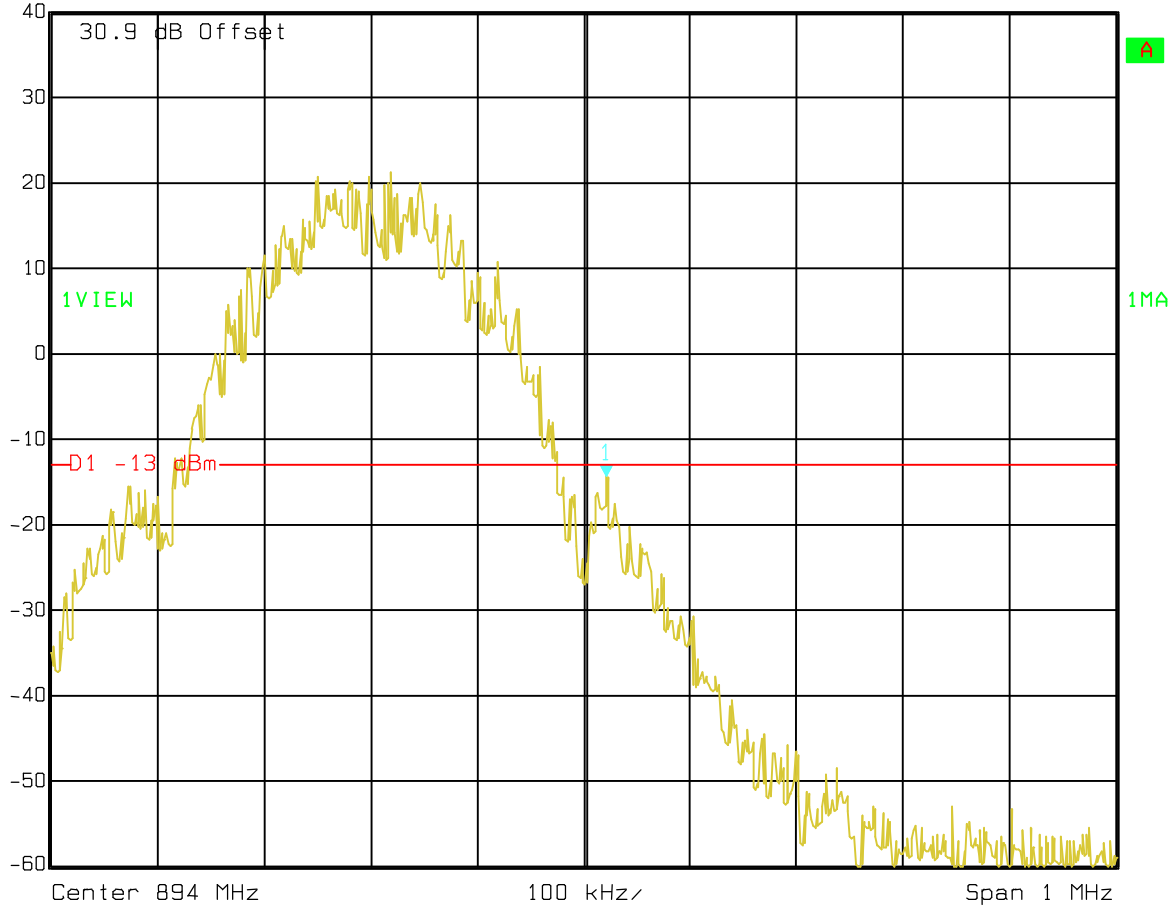
Comment A: Ultrasite EDGE 800 (8-PSK Power Level 0)(Channel 241)

Date: 17.JUN.2003 14:33:06

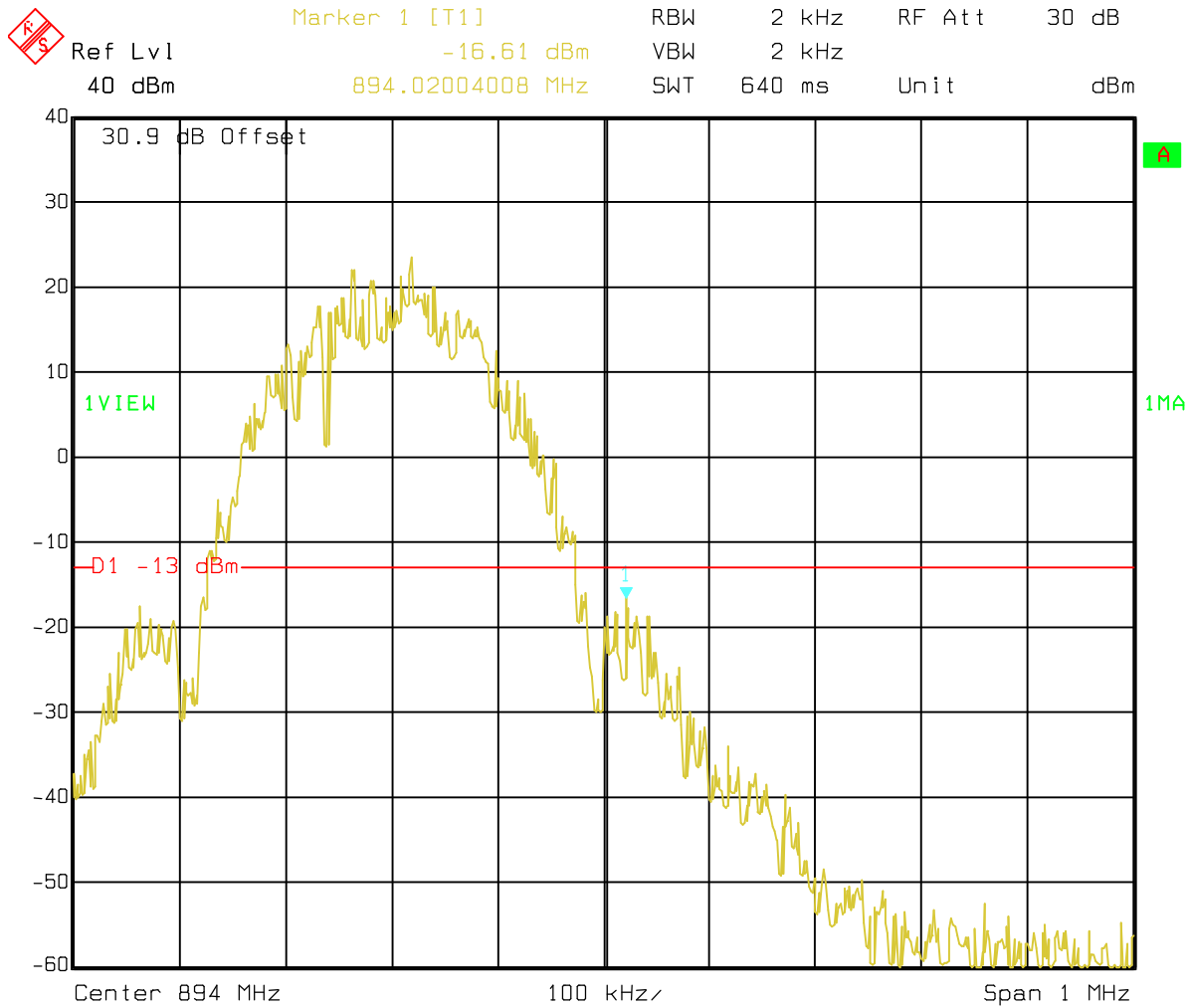
Comment B: Maximum power attenuated 0 dB

### Channel 251 – Spurious Emissions

	Ref Lvl	Marker 1 [T1]	RBW	2 kHz	RF Att	30 dB
	40 dBm	-14.47 dBm	VBW	2 kHz		
		894.02004008 MHz	SWT	640 ms	Unit	dBm



Title: Spur Emissions at Frequency Block Edges (High Side B'+B")  
 Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 251)  
 Date: 22.MAY 2003 15:08:56  
 Comment B: Maximum power attenuated 12 dB

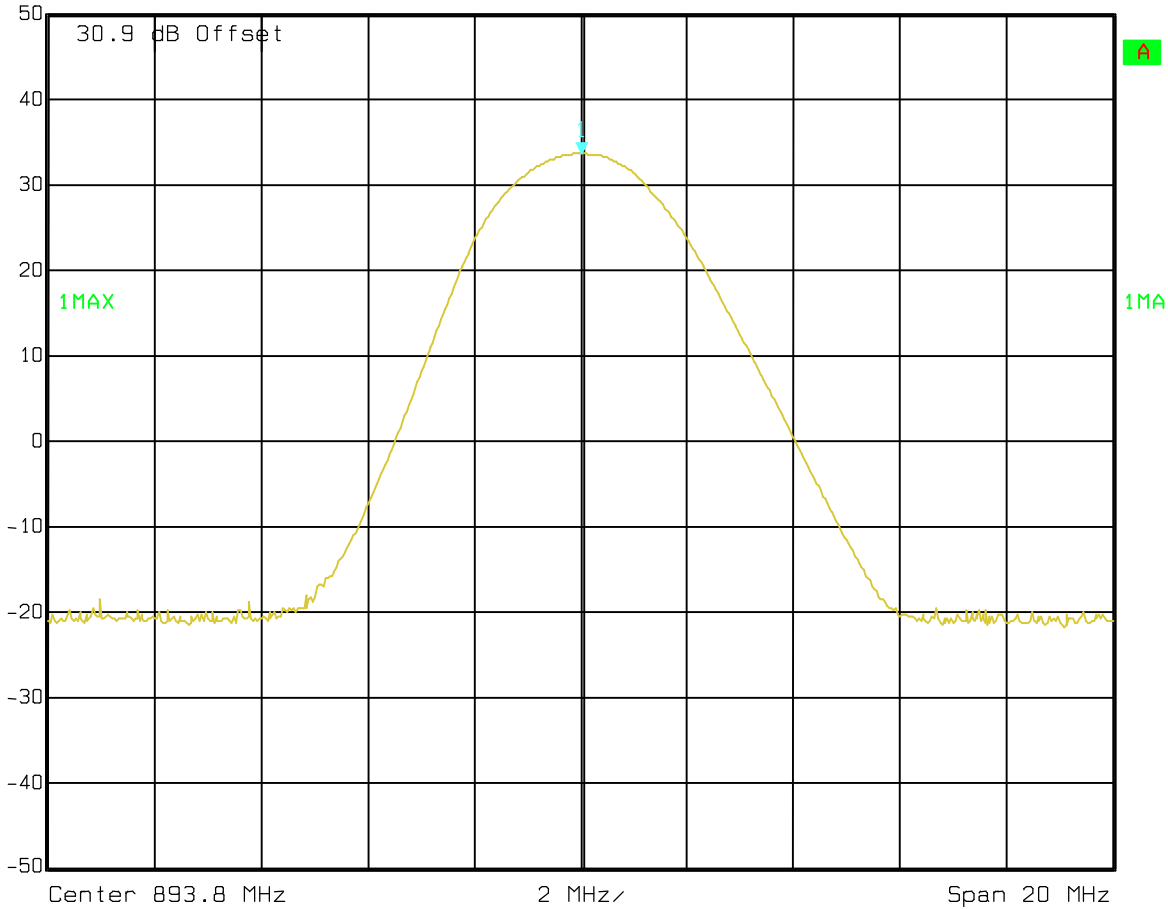


Title: Spur Emissions at Frequency Block Edges (High Side B'+B")  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 251)  
 Date: 22.MAY 2003 15:11:52  
 Comment B: Maximum power attenuated 12 dB

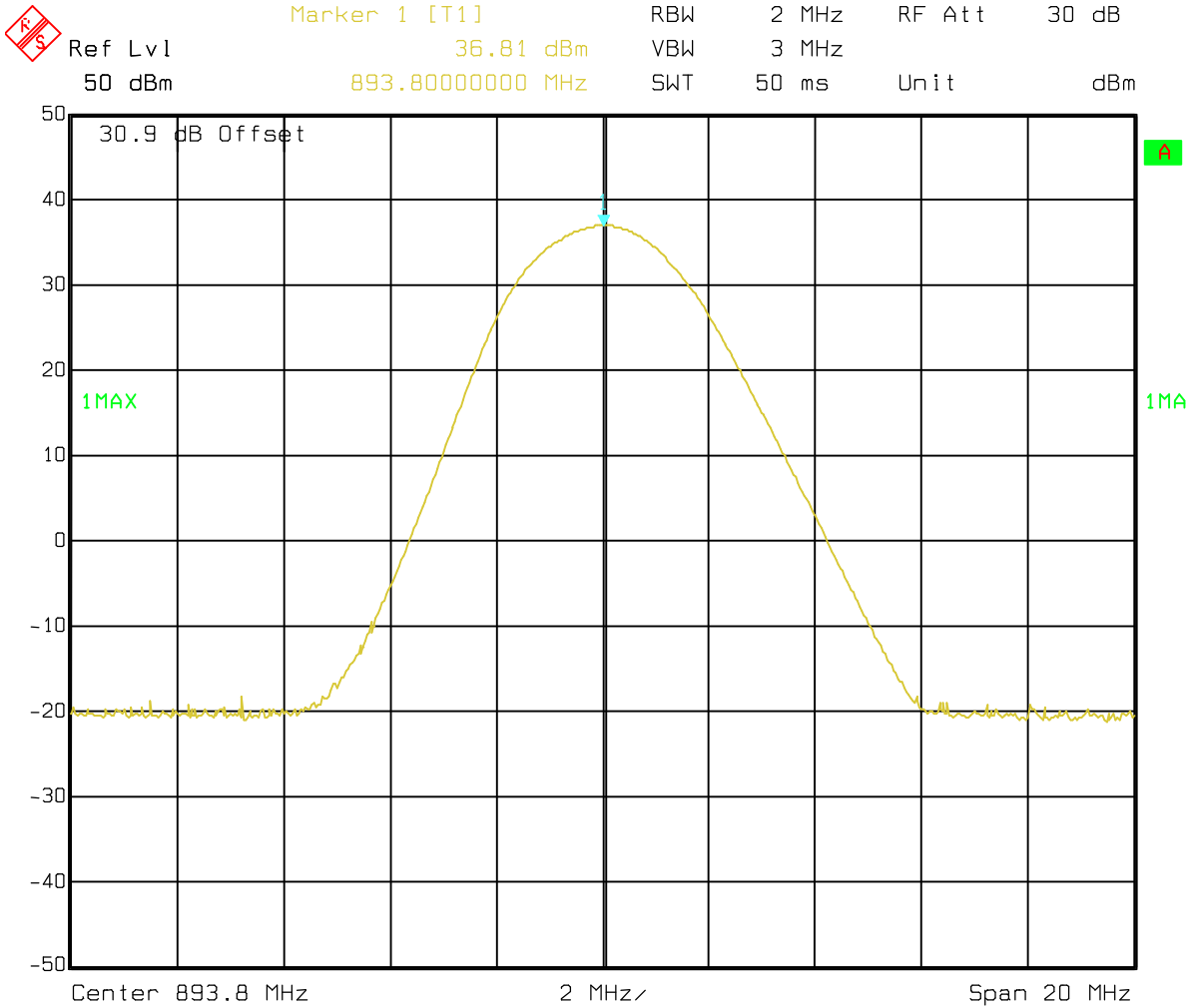
### Channel 251 – Output Power



Marker 1 [T1] RBW 2 MHz RF Att 30 dB  
Ref Lvl 33.52 dBm VBW 3 MHz  
50 dBm 893.80000000 MHz SWT 50 ms Unit dBm



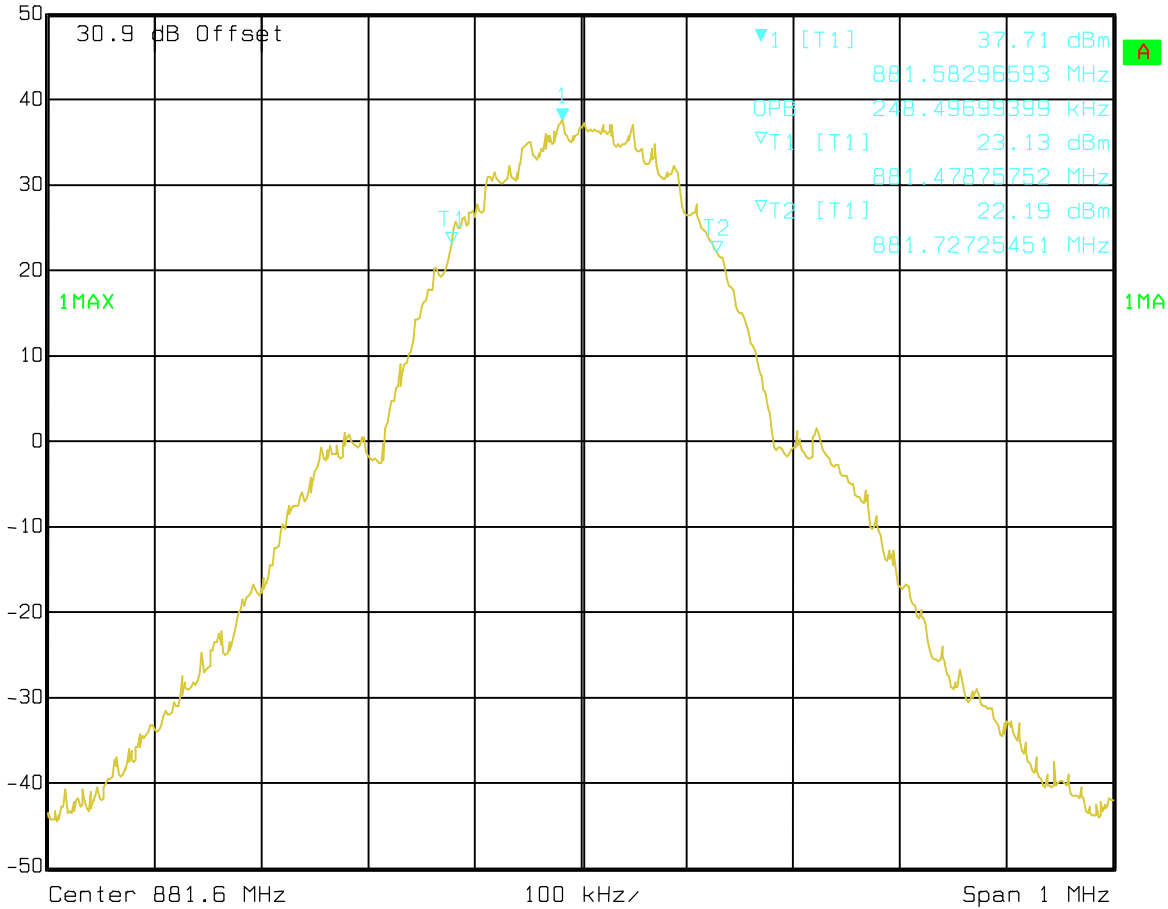
Title: Output Power at Frequency Block Edges (High Side B'+B")  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 6)(Channel 251)  
Date: 22.MAY 2003 15:34:30  
Comment B: Maximum power attenuated 12 dB



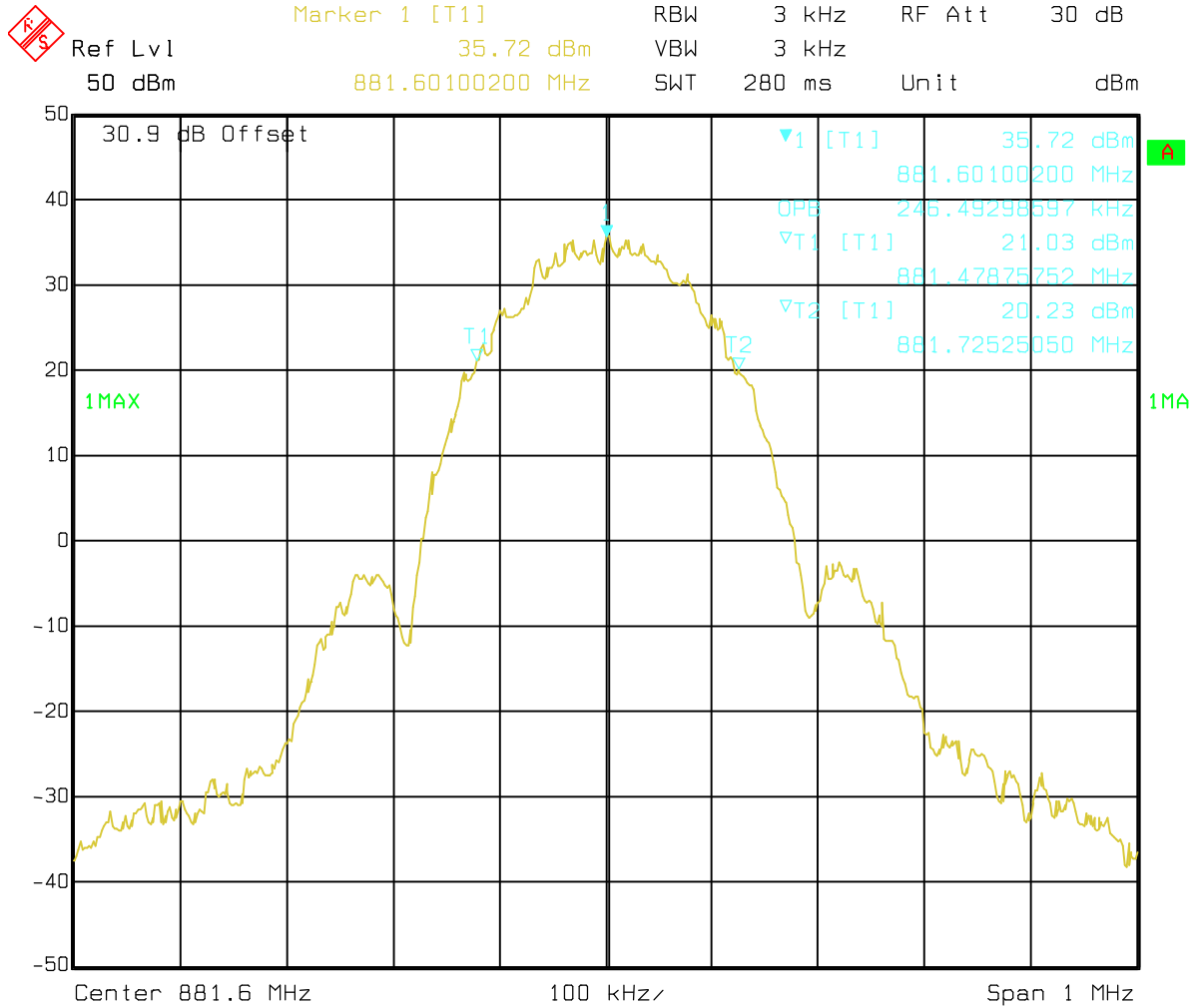
Title: Output Power at Frequency Block Edges (High Side B'+B'')  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 6)(Channel 251)  
 Date: 22.MAY 2003 15:33:43  
 Comment B: Maximum power attenuated 12 dB

### Middle Channel 190 – Occupied Bandwidth


 Ref Lvl 50 dBm  
 Marker 1 [T1] 881.58296593 MHz 37.71 dBm  
 RBW 3 kHz RF Att 30 dB  
 VBW 3 kHz  
 SWT 280 ms Unit dBm



Title: Occupied Bandwidth at Center of Authorized Band  
 Comment A: Ultrasite EDGE 800 (GMSK Power Level 0)(Channel 190)  
 Date: 22.MAY 2003 14:39:28  
 Comment B: Maximum power attenuated 0 dB

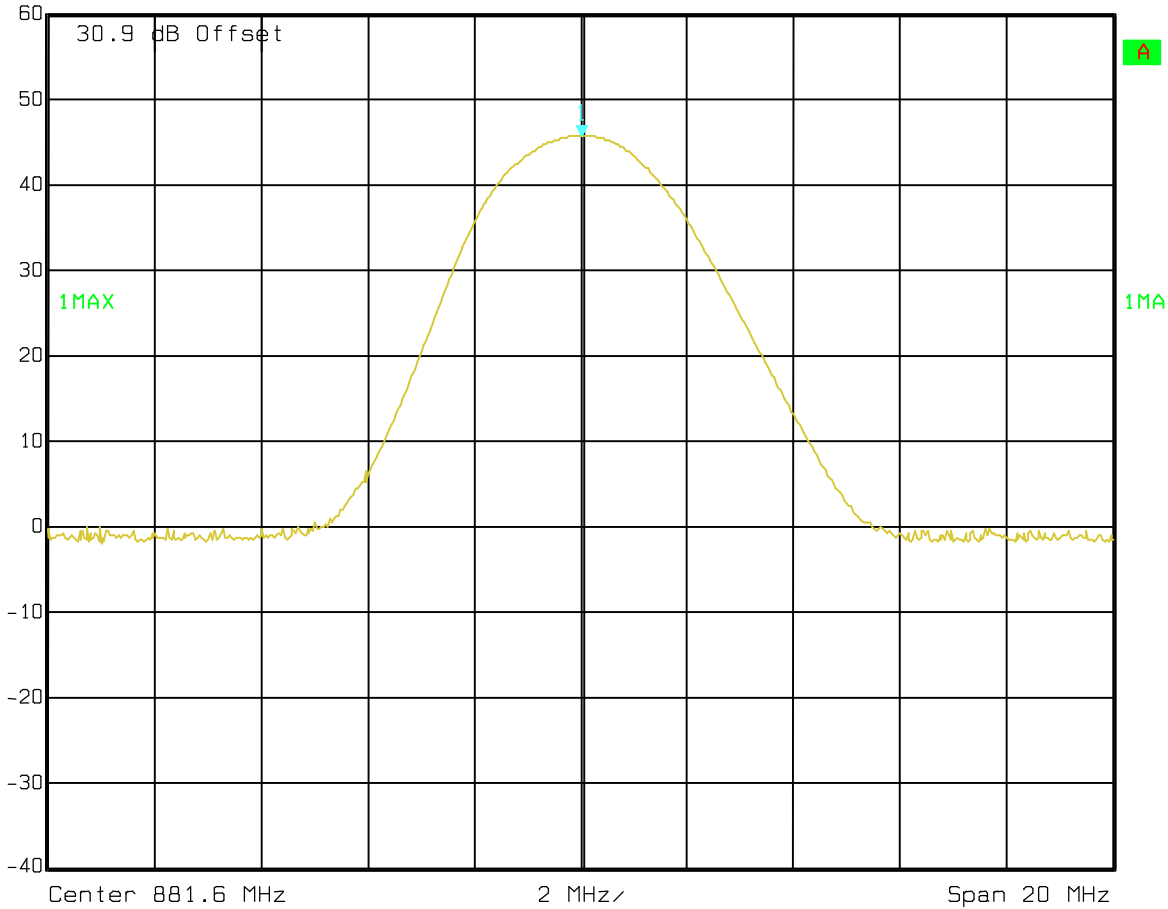


Title: Occupied Bandwidth at Center of Authorized Band  
 Comment A: Ultrasite EDGE 800 (8-PSK Power Level 0)(Channel 190)  
 Date: 22.MAY 2003 14:14:00  
 Comment B: Maximum power attenuated 0 dB

### Middle Channel 190 – Output Power

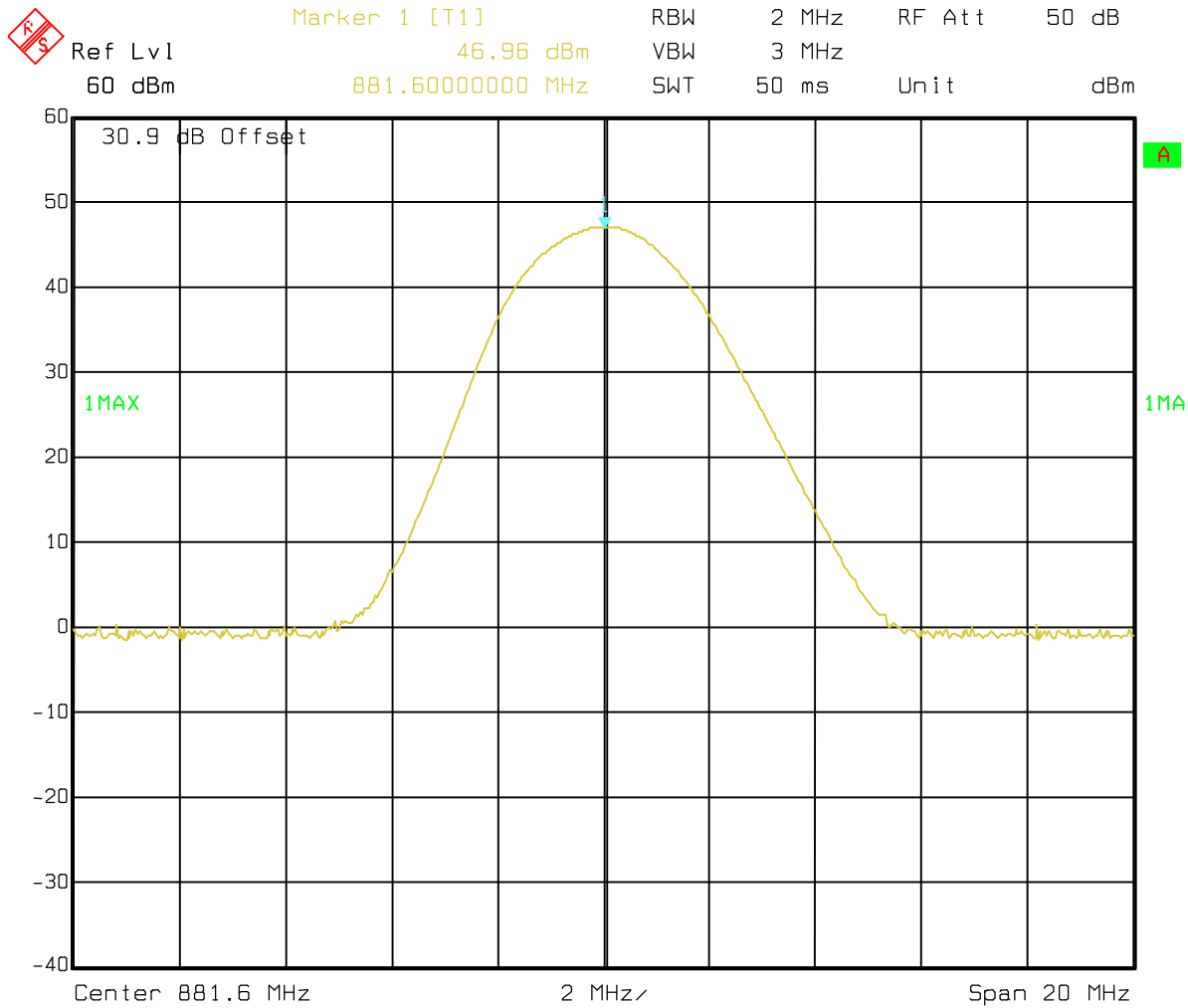


Ref Lvl 60 dBm  
Marker 1 [T1] 45.65 dBm  
881.60000000 MHz  
RBW 2 MHz RF Att 50 dB  
VBW 3 MHz  
SWT 50 ms Unit dBm



Title: Output Power at Center of Authorized Band  
Comment A: Ultrasite EDGE 800 (GMSK Power Level 0)(Channel 190)  
Date: 22.MAY 2003 13:33:30  
Comment B: Maximum power attenuated 0 dB





Title: Output Power at Center of Authorized Band  
Comment A: Ultrasite EDGE 800 (8-PSK Power Level 0)(Channel 190)  
Date: 22.MAY 2003 13:31:56  
Comment B: Maximum power attenuated 0 dB

**End of Report**