



Test Report

Product Name : UHF Band MMDS Transceiver

Model No. : TRX-310

FCC ID. : OUP970900101

Applicant : TRANSYSTEM INC.

Address : No.1-2, Li-Hsin Rd. 1, Science-Based Industrial
Park, Hsinchu, Taiwan R.O.C.

Date of Receipt : 2008/10/17

Issued Date : 2008/11/10

Report No. : 08A216R-RFUSP21V01

Version : V1.0

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date : 2008/11/10

Report No. : 08A216R-RFUSP21V01



Product Name : UHF Band MMDS Transceiver
 Applicant : TRANSYSTEM INC.
 Address : No.1-2, Li-Hsin Rd. 1, Science-Based Industrial Park,
 Hsinchu, Taiwan R.O.C.
 Manufacturer : TRANSYSTEM INC.
 Model No. : TRX-310
 FCC ID. : OUP970900101
 Rated Voltage : AC 120V / 60Hz
 EUT Voltage : AC 120V / 60Hz
 Trade Name : TSI
 Applicable Standard : FCC CFR Title 47 Part 2 and Part 27
 Test Result : Complied

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By : Sandy Chuang

(Sandy Chuang / Adm. Specialist)

Reviewed By : Halu Chung

(Halu Chung / Engineer)

Approved By : Roy Wang

(Roy Wang / Manager)

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1. General Information

1.1. EUT Description

Product Name	UHF Band MMDS Transceiver
Trade Name	TSI
Model No.	TRX-310
Frequency Range	704-716 MHz
Modulation Type	QPSK, 16QAM
L.O freq. of each channel	674MHz
Antenna Gain	2dBi
Channel Control	AUTO
Antenna Type	Connector
Normal operation dc voltages	DC Voltage: 19V
DC Currents	DC Current: 300mA

Upstream Symbol Rate (ksps)	QPSK Data Rate (kbps)	16QAM Data Rate (kbps)	Bandwidth Used (kHz)
160	320	640	200
320	640	1280	400
640	1280	2560	800
1280	2560	5120	1600
2560	5120	10240	3200

Note:

1. This device is a UHF Band MMDS Transceiver included a 704-716 MHz transmitting function.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 27 for MMDS (Microwave Multipoint Distribution Systems) devices.
3. Regards to the frequency band operation; the highest rate that was included the lowest 、 middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 08A216R-RFUSP01V02 under Declaration of Conformity.

1.2. Operational Description

The EUT is UHF Band MMDS Transceiver included receiving function and transmitting function. The Operating Frequency range is from 704MHz to 716MHz. The device adapts QPSK modulation and 16QAM modulation. It accepts an IF signal of 30~42 MHz from cable modem, up converts the signal to 704~716MHz and transmits it back to the MMDS headend site.

With its built-in automatic on/off switch, TRX-310 will enter sleep mode to eliminate the broadband noise when there is no data packet transmission.

Without exception, TRX-310 embodies the long term stability and reliability common to all TSI products. With the integrated downconverter and upconverter, TRX-310 provides the best cost / performance solution for your 2-way MMDS operation.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were evaluated with the EUT in normal operation, which was shown in this test report and defined as below:

Evaluated Mode (Uplink)		
	Bandwidth(kHz)	Modulation
Mode 1: Transmit	200	QPSK
		16QAM
Mode 2: Transmit	400	QPSK
		16QAM
Mode 3: Transmit	800	QPSK
		16QAM
Mode 4: Transmit	1600	QPSK
		16QAM
Mode 5: Transmit	3200	QPSK
		16QAM

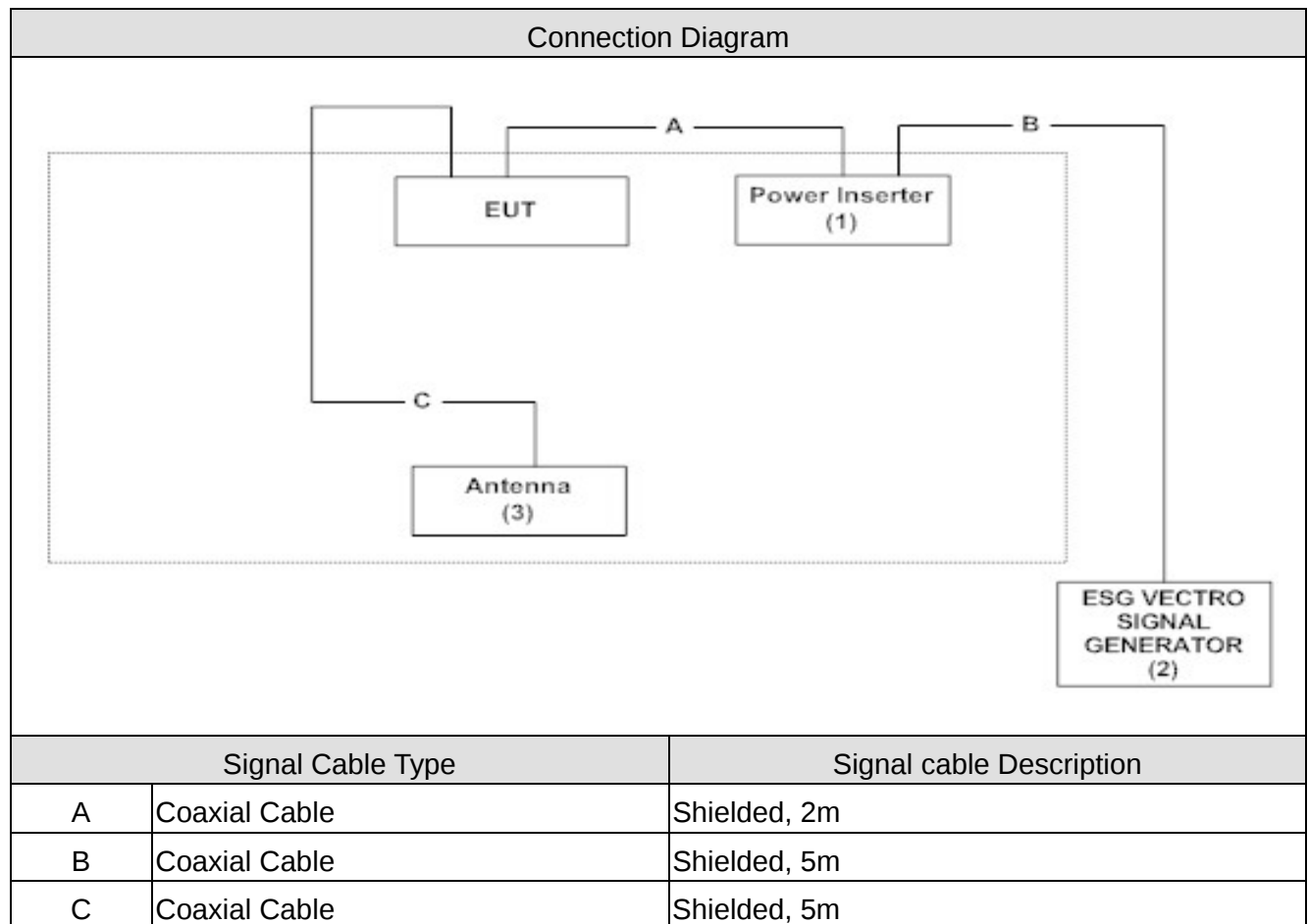
Final Test Mode & Test Item (Uplink)		
Test Item	QPSK	16 QAM
Peak Output Power	MODE 1 、MODE 2 MODE 3 、MODE 4 MODE 5	MODE 1 、MODE 2 MODE 3 、MODE 4 MODE 5
Band Edge	--	MODE 1 、MODE 5
Occupied Bandwidth	MODE 1 、MODE 2 MODE 3 、MODE 4 MODE 5	MODE 1 、MODE 2 MODE 3 、MODE 4 MODE 5
Conducted Spurious Emission	--	MODE 1 、MODE 5
Radiated Spurious Emission	--	MODE 1 、MODE 5
Frequency Stability Over Temperatures Variation	Carrier Frequency	
Frequency Stability Over Voltage Variation	Carrier Frequency	
AC Conducted Emission	--	MODE 1

1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1 Power Inserter	GMI	D7-10-10	N/A	DoC	--
2 ESG VECTOR SIGNAL GENERATOR	Agilent	E4438C	N/A	DoC	--
3 Antenna	Lucky	TV-210	N/A	DoC	Non-Shielded, 5.0m

1.5. Configuration of tested System



1.6. EUT Exercise Software

1	Setup the EUT and VSG (Modulation Source) as shown on 1.5.
2	Turn on the power of EUT and VSG.
3	Data will transmit continuously from VSG to EUT.
4	All the peripheral will be retrieved during the test
5	Repeat the above procedure (3) to (4)

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 2.1046 and PART 27.50(h)(2) Peak Output Power	15 - 35	22
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 2.1049 and PART 27.53(l)(6) Occupied Bandwidth	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 2.1051 and PART 27.53(l)(4)(6) Band Edge	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 2.1051 and PART 27.53(l)(4)(6) Conducted Spurious Emission	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 2.1053 and PART 27.53(l)(4)(6) Radiated Spurious Emission	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 2.1055(a)(l) and PART 27.54 Frequency Stability Over Temperature Variation	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 2.1055(d) and PART 27.54 Frequency Stability Over Voltage Variation	15 - 35	22
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.207 AC Conducted Emission	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

August 30, 2007 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520



Accredited by TAF
Accreditation Number: 1313
Effective through: December 27, 2010



Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2009



Site Name: Quietek Corporation
Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.
TEL : 886-3-592-8858 / FAX : 886-3-592-8859
E-Mail : service@quietek.com9

2. Peak Output Power

2.1. Test Equipment

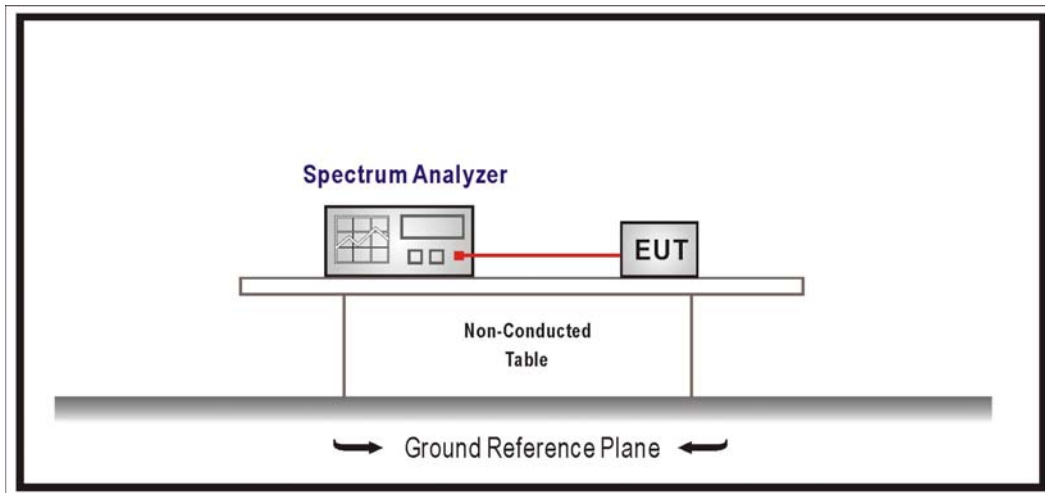
The following test equipments are used during the test:

RF Conducted Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer		R & S	FSP / 100561	Jan., 2008
2	No.7 Shielding Room				Sep., 2008
RF Radiated Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2008
2	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2008
3		Loop Antenna	R & S	HFH2-Z2 / 833799/004	Sep., 2008
4		BiconiLog Antenna	Schwarzbeck	VULB 9166 / 1061	Sep., 2008
5		Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2008
6	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Sep., 2008
7	X	Horn Antenna	Schwarzbeck	BBHA 9120 / 9120D-639	Aug., 2008
8	X	Singal Generator	MG3694A	041902	Nov., 2007
9	No.1 OATS				Sep., 2008

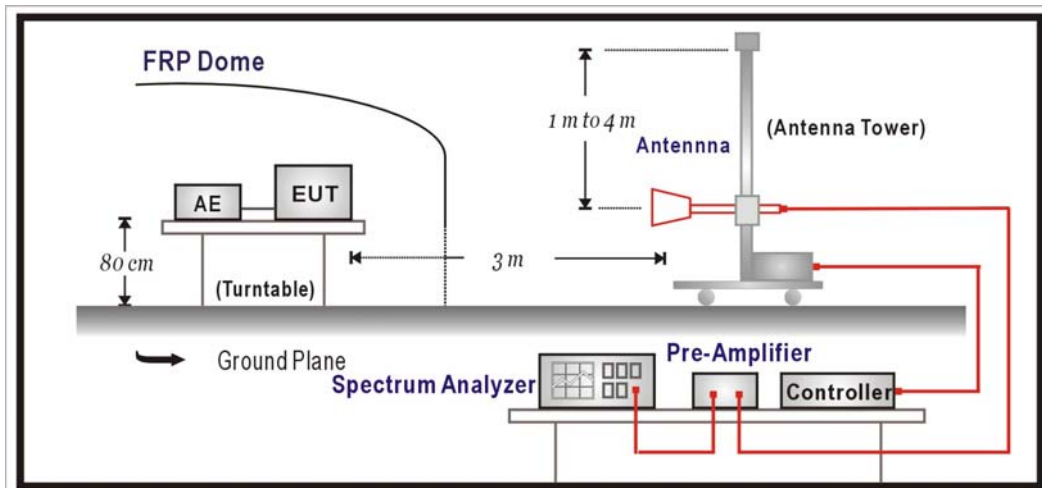
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

2.2. Test Setup

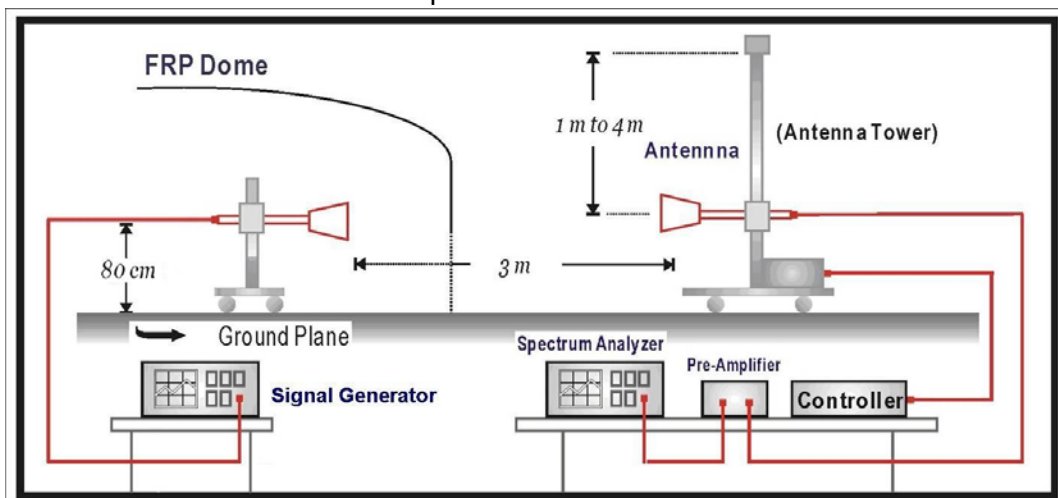
RF Conducted Measurement:



RF Radiated Measurement:



Substitution Measurement Setup:



2.3. Limits

(1) Main, Booster and Base Stations: Maximum E.I.R.P shall not exceed $33 \text{ dBW} + 10\log(X/Y)$ dBW, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition.

(2) Mobile and Other User Stations: 2.0 Watts EIRP.

2.4. Test Procedure

The conducted peak output power is measured using R&S Spectrum Analyzer. The EUT was set up for the rated peak power. All measurements were done at 3 channels: low, middle and high operational frequency range.

For measuring E.I.R.P peak power, EUT was placed on the turn-table which was rotated around 360 degrees to search the maximum radiation power and receiver antenna was rotated vertical and horizontal polarization to find the maximum polarization radiated power.

The EUT is replaced by a horn antenna connected to a signal generator tuned to the frequency of emission and level of signal generator adjusted to same level of emission. Both horizontal and vertical polarization of the antenna are set on measurement.

The radiated E.I.R.P power was calculated via the Correct factor, Reading Level, and Antenna gain as follows:

$$\text{E.I.R.P} = \text{Reading Level} + \text{Correct Factor} = \text{S.G.} - \text{Cable Loss} + \text{Antenna Gain}$$

2.5. Uncertainty

The measurement uncertainty is defined as $\pm 1.27 \text{ dB}$

2.6. Test Result

Product	UHF Band MMDS Transceiver		
Test Item	Peak Output Power		
Test Mode	Transmit		
Date of Test	2008/10/23	Test Site	SR7

Upstream Symbol Rate	Test Mode	16QAM				QPSK			
		704.2 (30.2)	709.8 (35.8)	710.2 (36.2)	715.8 (41.8)	704.2 (30.2)	709.8 (35.8)	710.2 (36.2)	715.8 (41.8)
160	Mode 1	23.07	23.69	23.59	22.98	22.48	22.95	22.88	22.31
320	Mode 2	23.04	23.50	23.43	22.80	22.31	22.81	22.74	22.13
640	Mode 3	22.63	23.18	23.1	22.47	21.84	22.36	22.28	21.67

Upstream Symbol Rate	Test Mode	16QAM				QPSK			
		705.8 (31.8)	708.2 (34.2)	711.8 (37.8)	714.2 (40.2)	705.8 (31.8)	708.2 (34.2)	711.8 (37.8)	714.2 (40.2)
1280	Mode 4	23.29	23.68	23.61	23.20	22.58	22.97	22.76	22.28
2560	Mode 5	23.35	23.68	23.59	23.20	22.68	22.92	22.86	22.56

Test Mode: Mode 1

Modulation Type: 16QAM

704.2 MHz

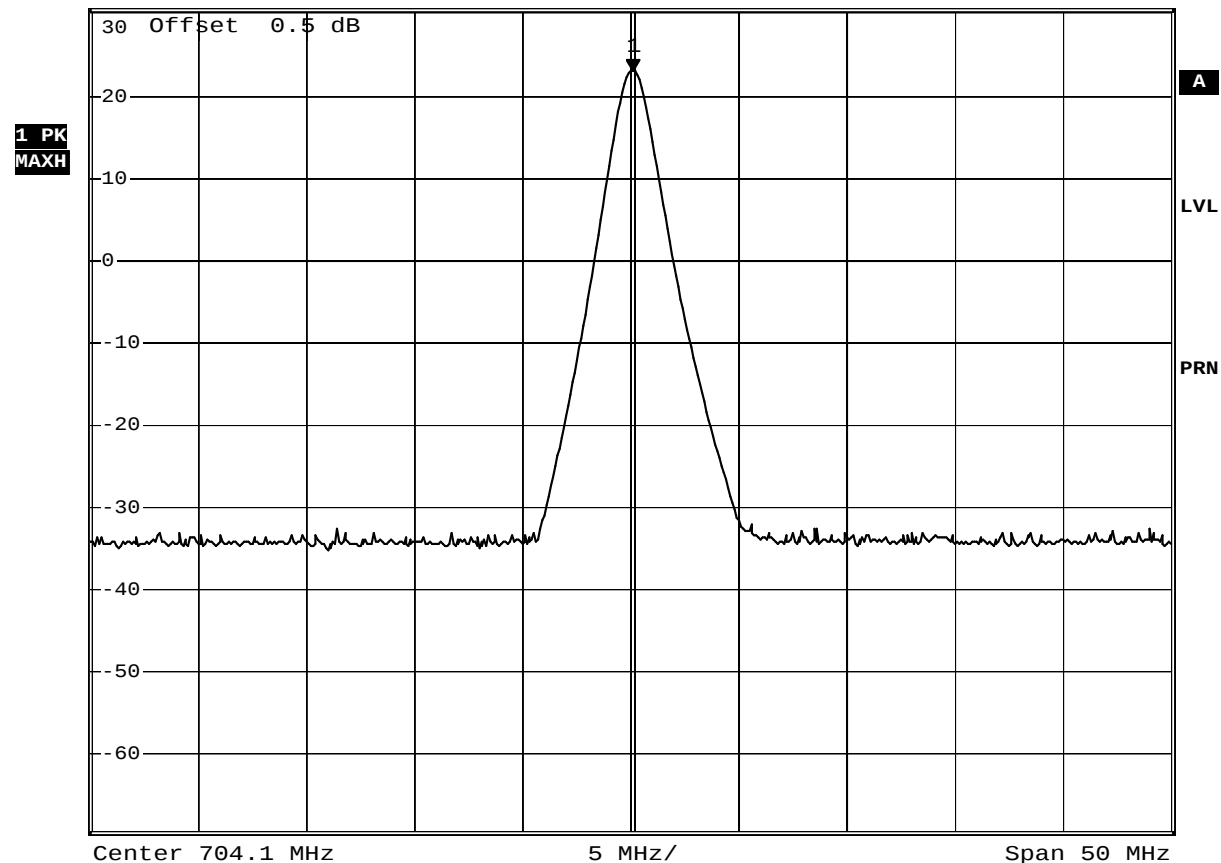
Upstream Symbol Rate: 160 ksps



*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 23.07 dBm
 *SWT 200 ms 704.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 14:38:53

Test Mode: Mode 2

Modulation Type: 16QAM

704.2 MHz

Upstream Symbol Rate: 320 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

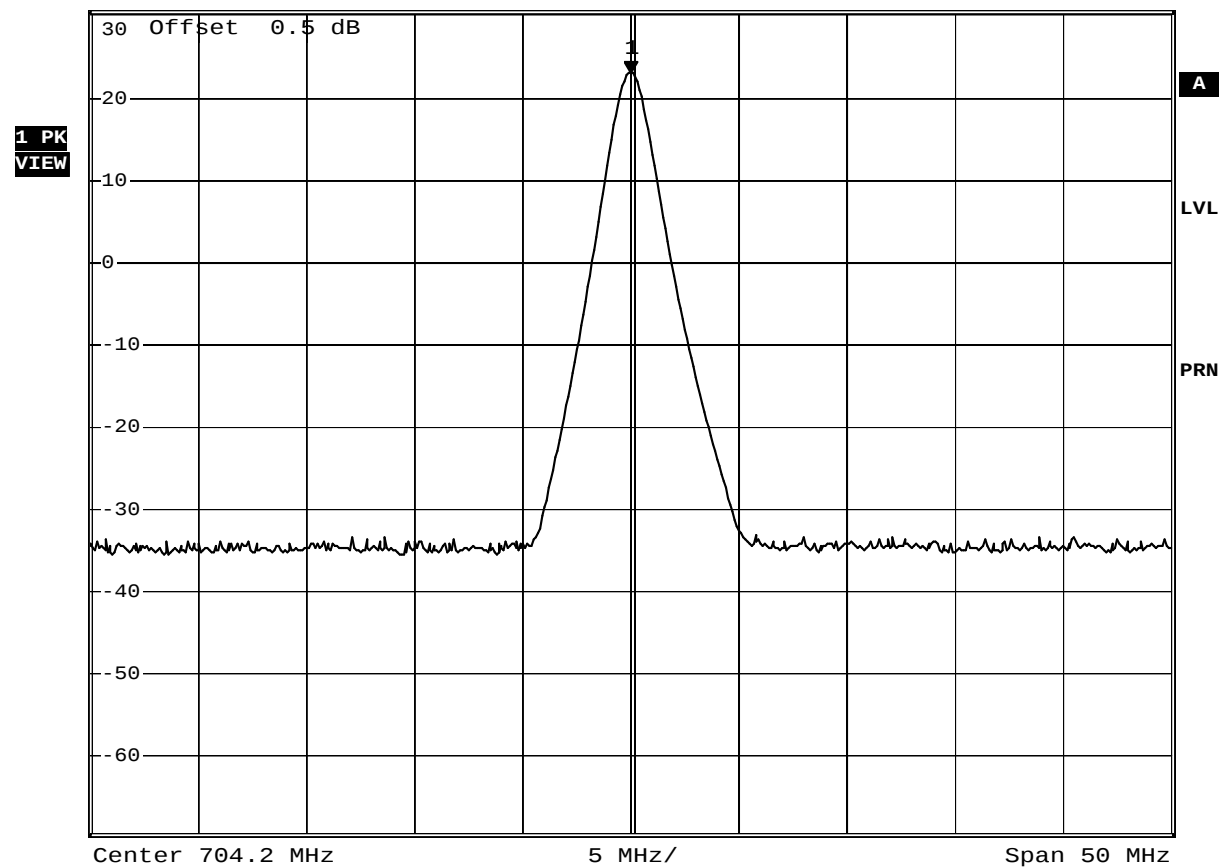
23.04 dBm

*SWT 200 ms

704.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:22:12

Test Mode: Mode 3

Modulation Type: 16QAM

704.2 MHz

Upstream Symbol Rate: 640 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

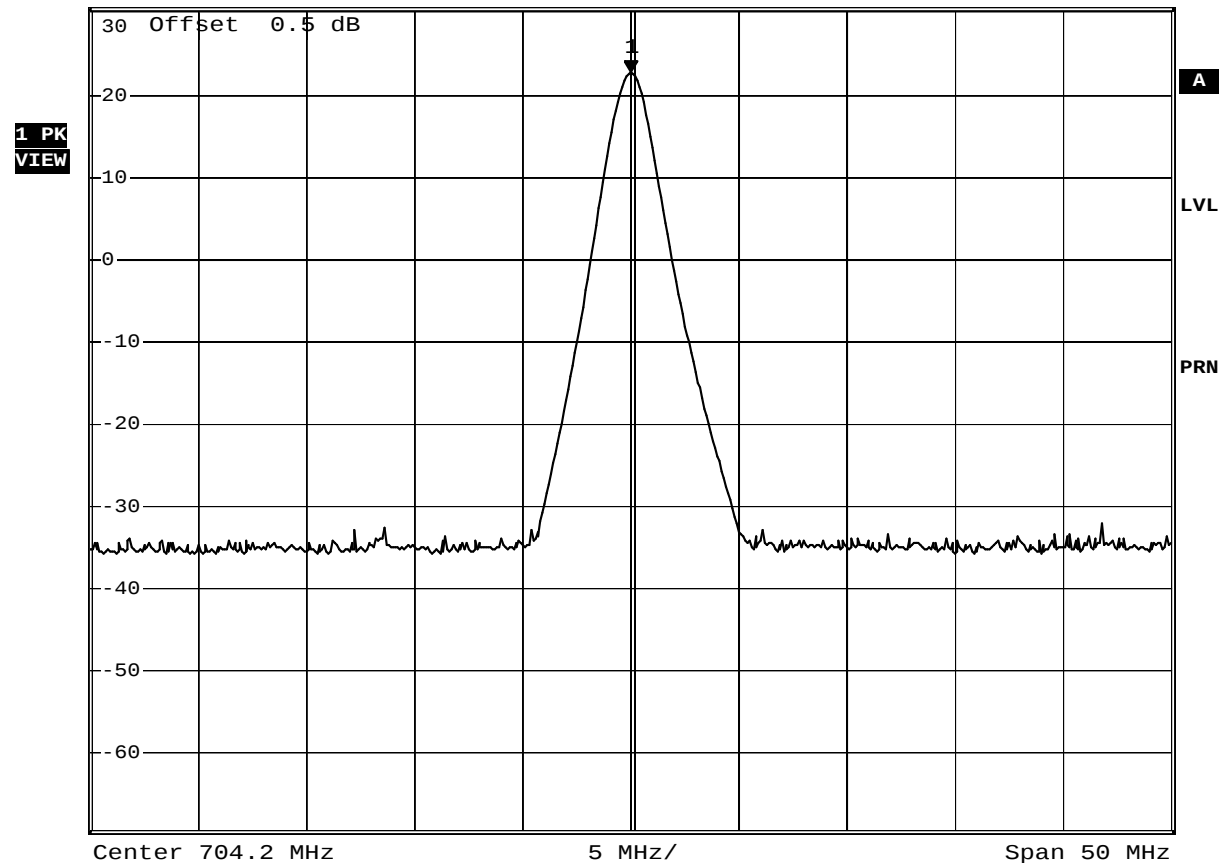
22.63 dBm

*SWT 200 ms

704.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:30:58

Test Mode: Mode 4

Modulation Type: 16QAM

705.8 MHz

Upstream Symbol Rate: 1280 ksps



*RBW 3 MHz

Marker 1 [T1]

*VBW 3 MHz

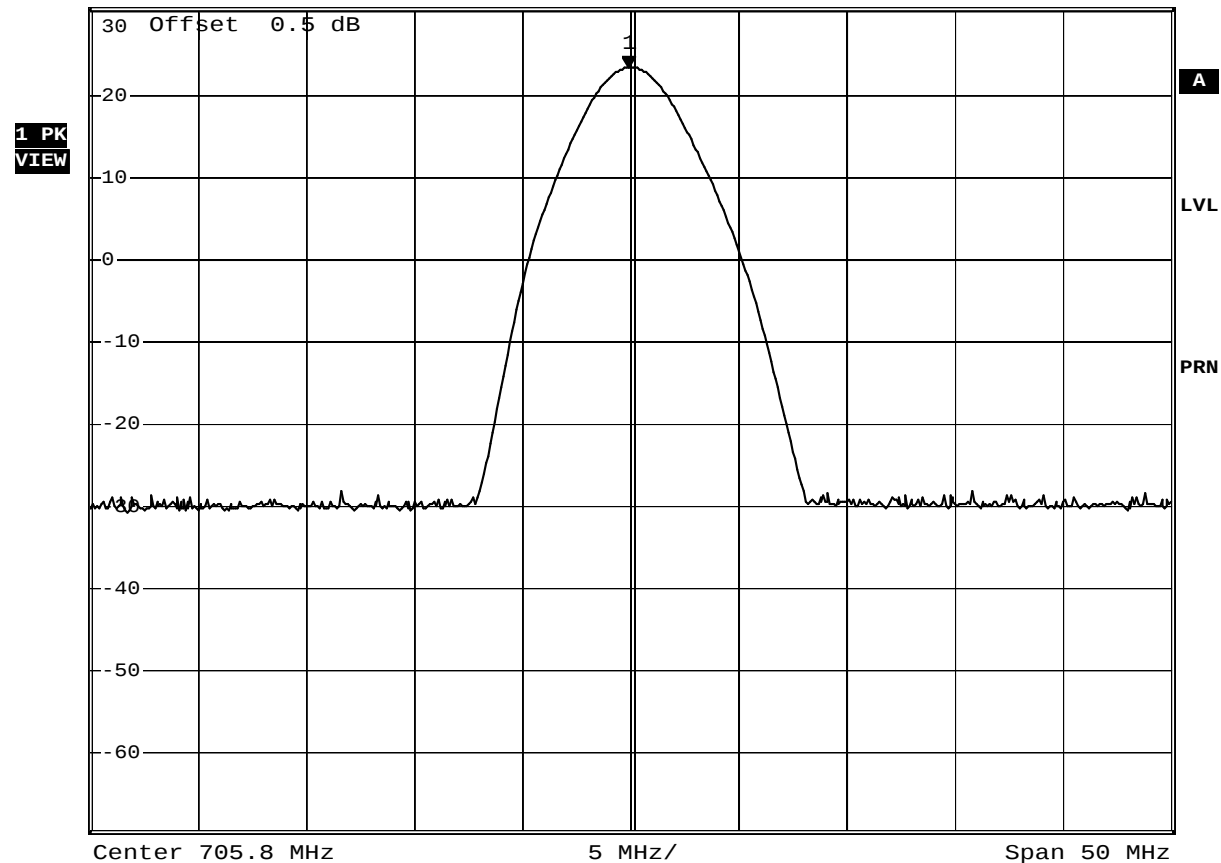
23.29 dBm

*SWT 200 ms

705.700000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 12:08:21

Test Mode: Mode 5

Modulation Type: 16QAM

705.8 MHz

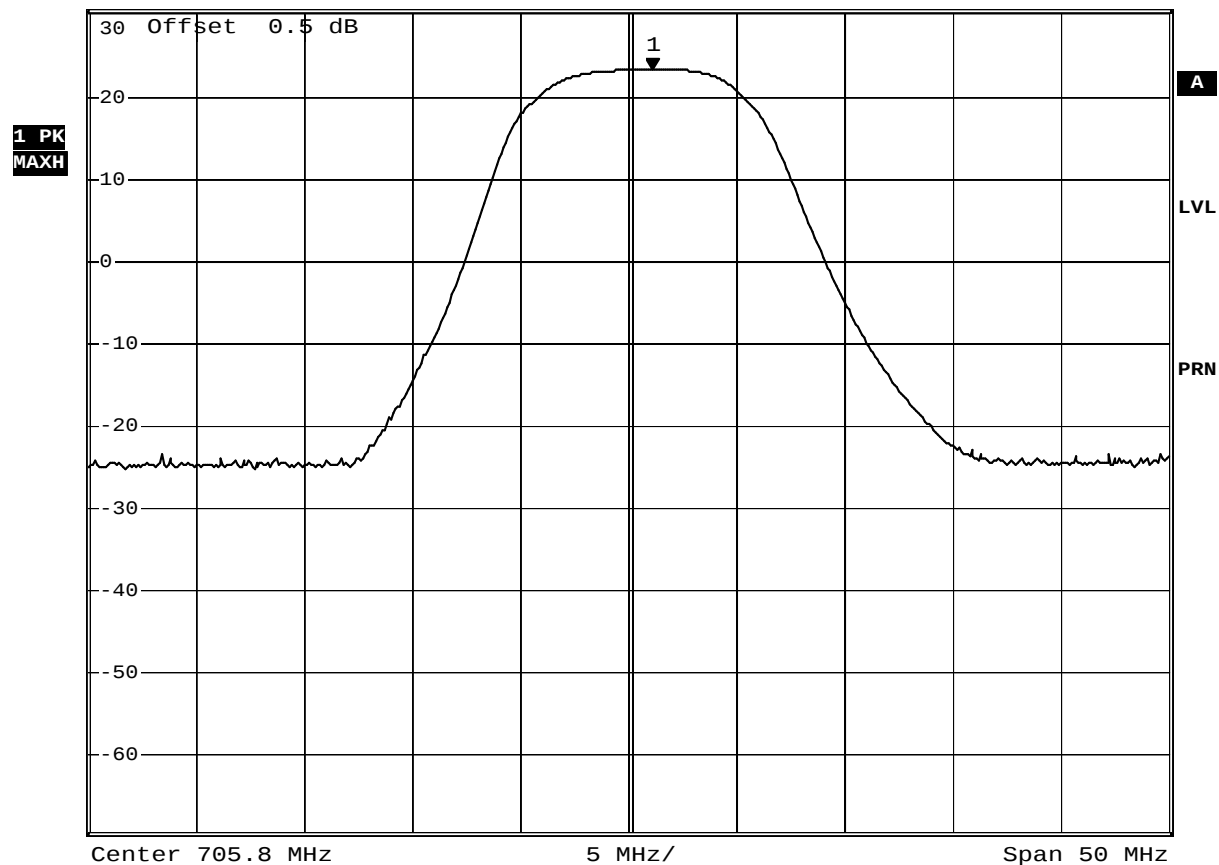
Upstream Symbol Rate: 2560 kbps



*RBW 10 MHz Marker 1 [T1]
 *VBW 10 MHz 23.35 dBm
 *SWT 200 ms 706.900000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 17:00:50

Test Mode: Mode 1

Modulation Type: 16QAM

709.8 MHz

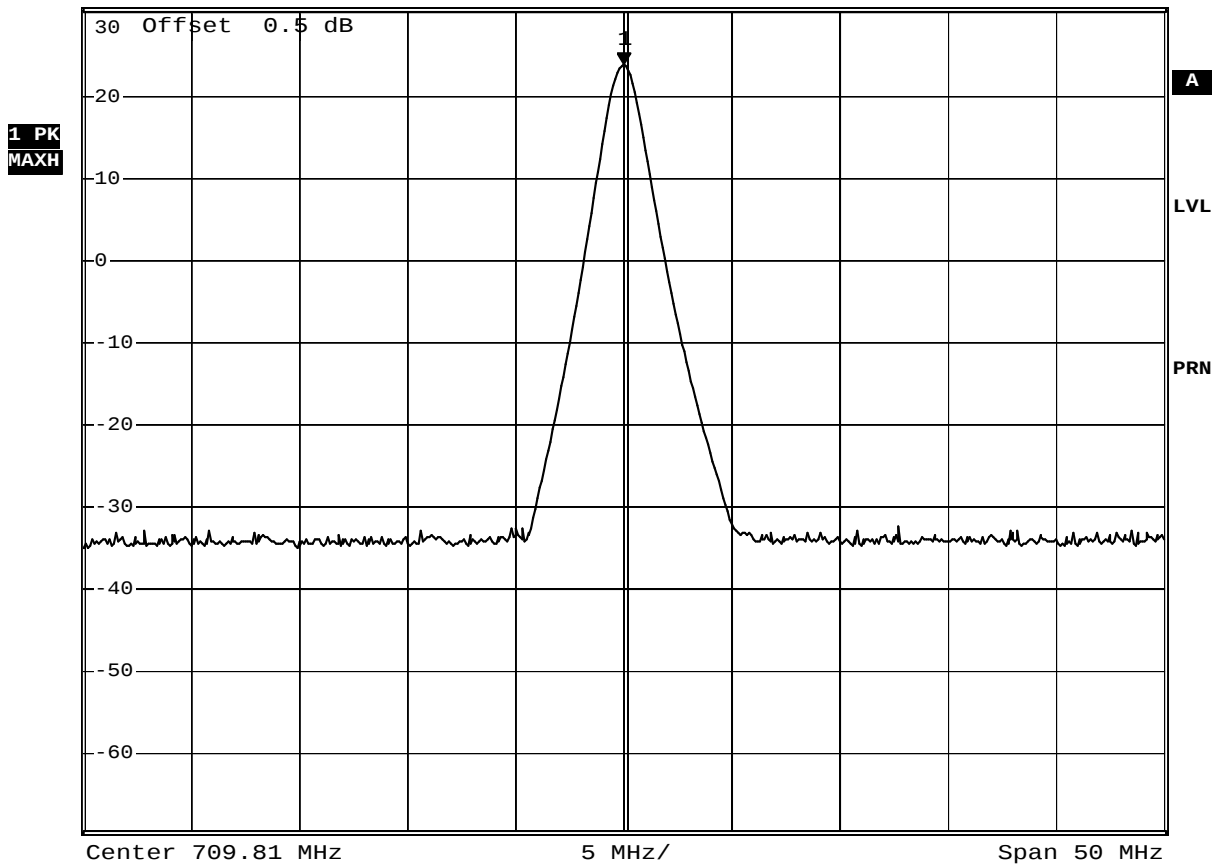
Upstream Symbol Rate: 160 ksps



*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 23.69 dBm
 *SWT 200 ms 709.810000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 10:38:36

Test Mode: Mode 2

Modulation Type: 16QAM

709.8 MHz

Upstream Symbol Rate: 320 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

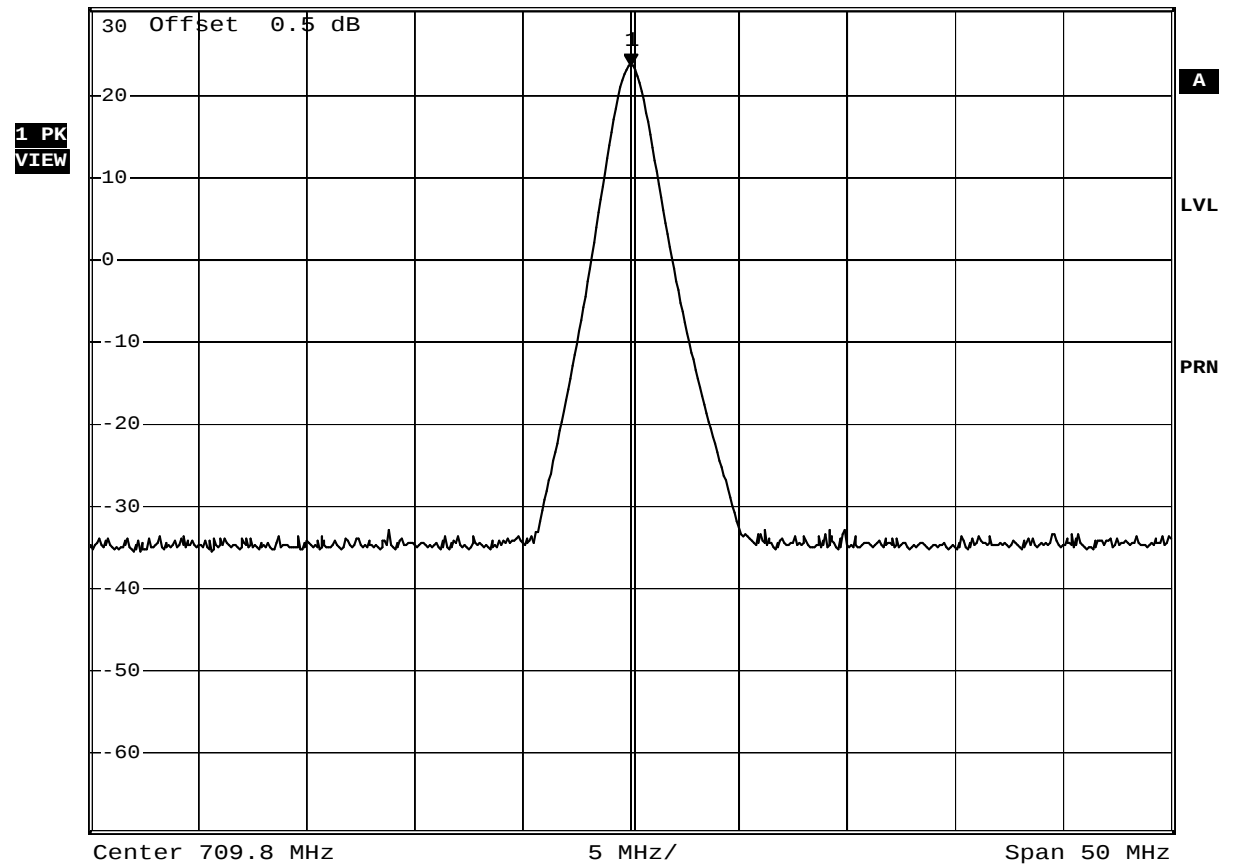
23.50 dBm

*SWT 200 ms

709.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:22:59

Test Mode: Mode 3

Modulation Type: 16QAM

709.8 MHz

Upstream Symbol Rate: 640 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

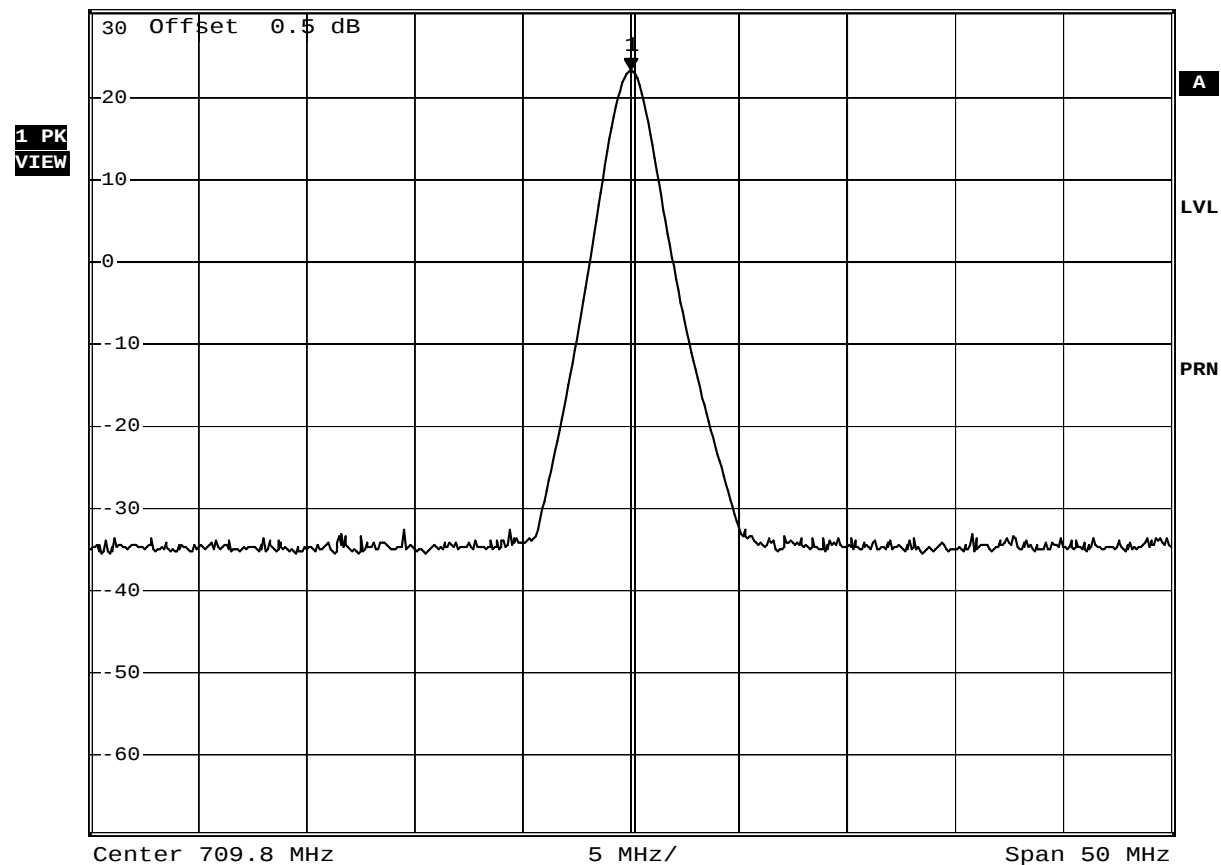
23.18 dBm

*SWT 200 ms

709.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:29:30

Test Mode: Mode 4

Modulation Type: 16QAM

708.2 MHz

Upstream Symbol Rate: 1280 ksps



*RBW 3 MHz

Marker 1 [T1]

*VBW 3 MHz

23.68 dBm

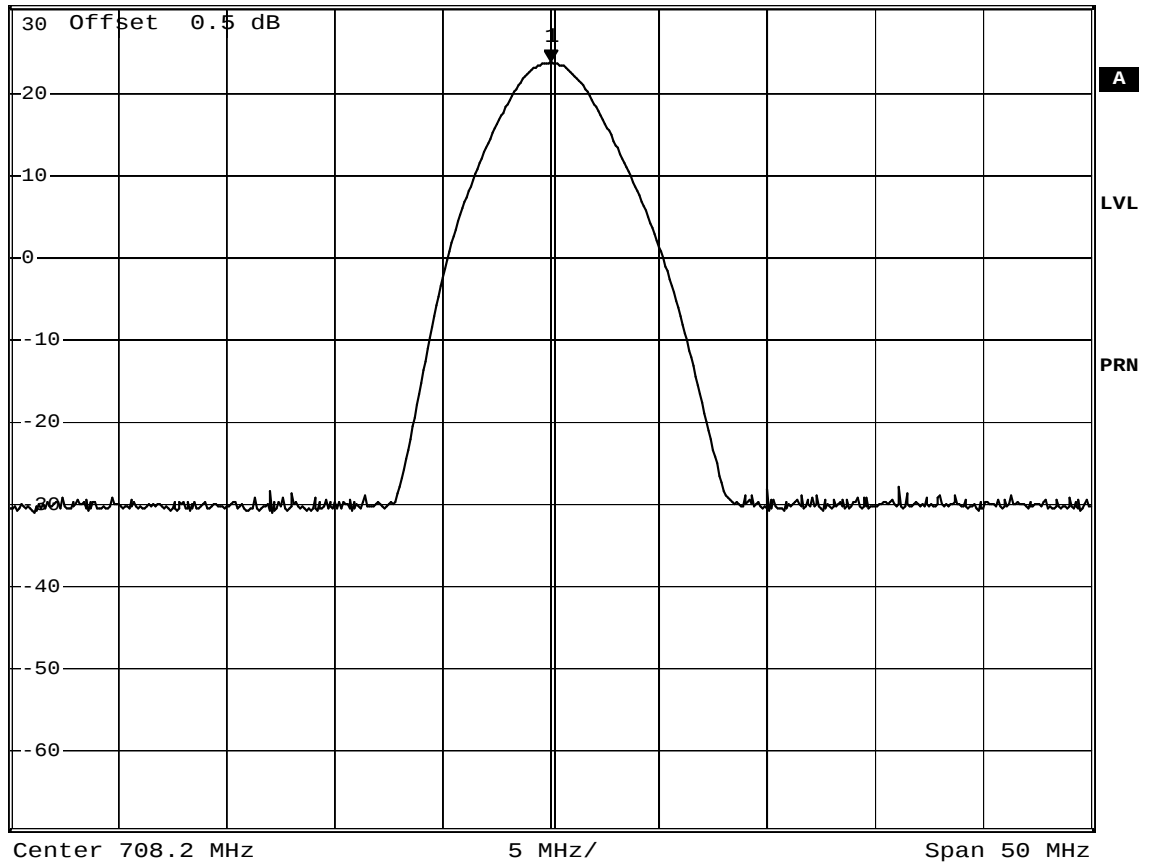
*SWT 200 ms

708.200000000 MHz

Ref 30.5 dBm

*Att 50 dB

1 PK
VIEW



Date: 23.OCT.2008 12:07:18

Test Mode: Mode 5

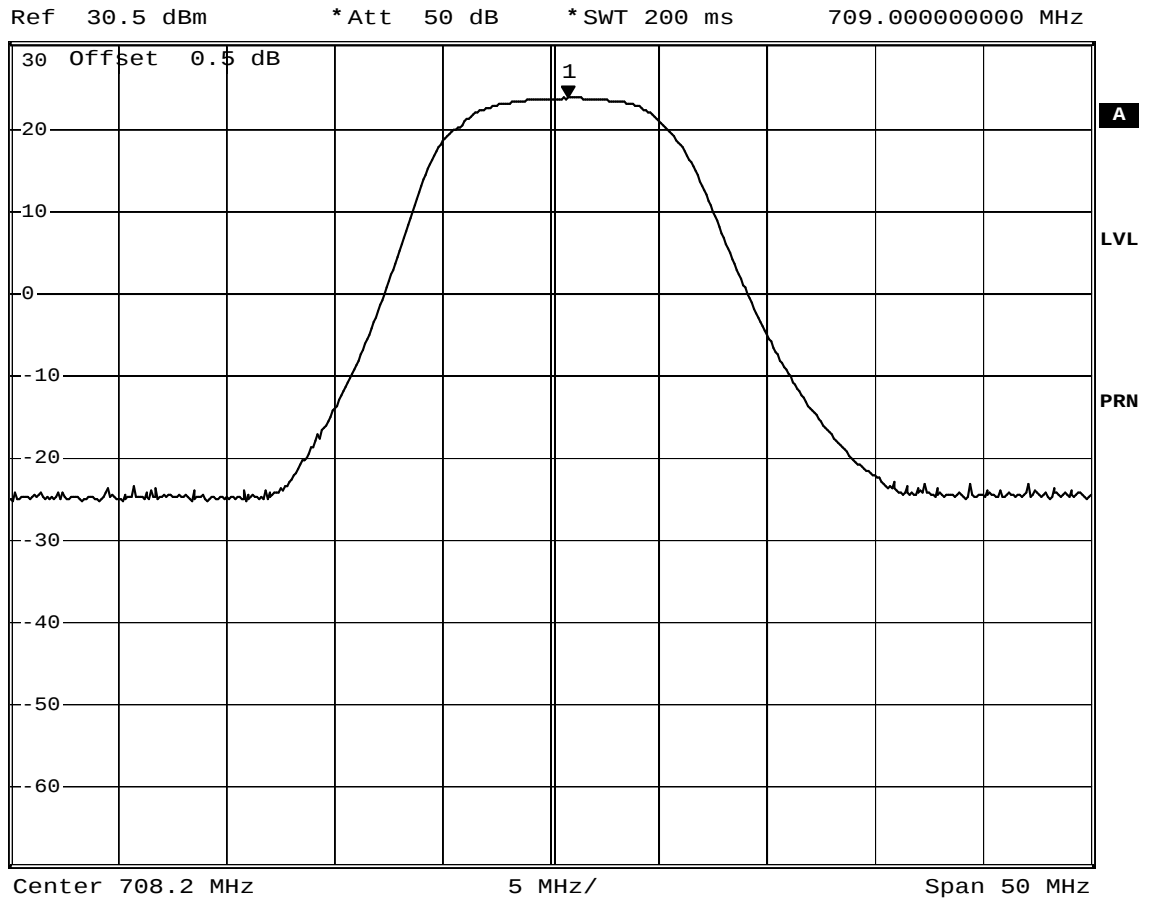
Modulation Type: 16QAM

708.2 MHz

Upstream Symbol Rate: 2560 kbps



*RBW 10 MHz Marker 1 [T1]
 *VBW 10 MHz 23.68 dBm
 *SWT 200 ms 709.000000000 MHz



Date: 23.OCT.2008 17:01:48

Test Mode: Mode 1

Modulation Type: 16QAM

710.2 MHz

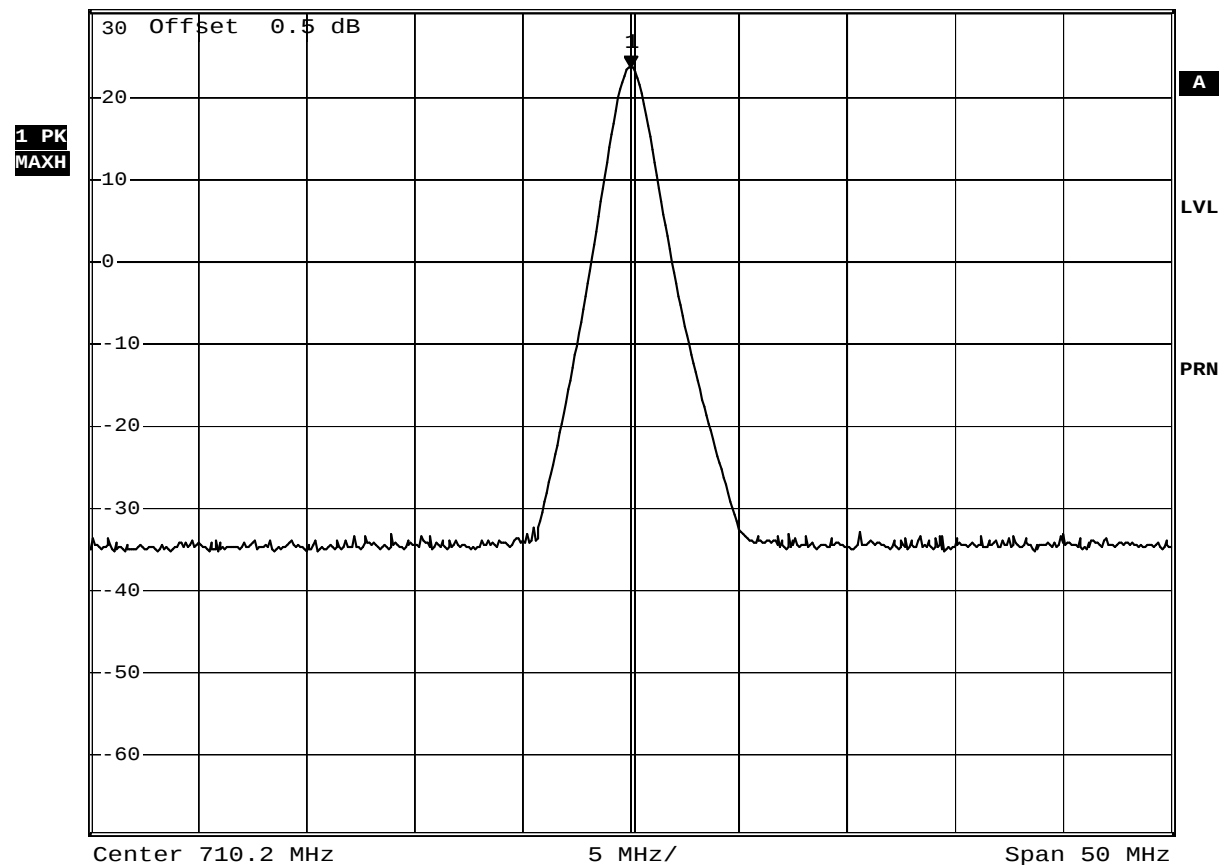
Upstream Symbol Rate: 160 ksps



*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 23.59 dBm
 *SWT 200 ms 710.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:02:56

Test Mode: Mode 2

Modulation Type: 16QAM

710.2 MHz

Upstream Symbol Rate: 320 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

23.43 dBm

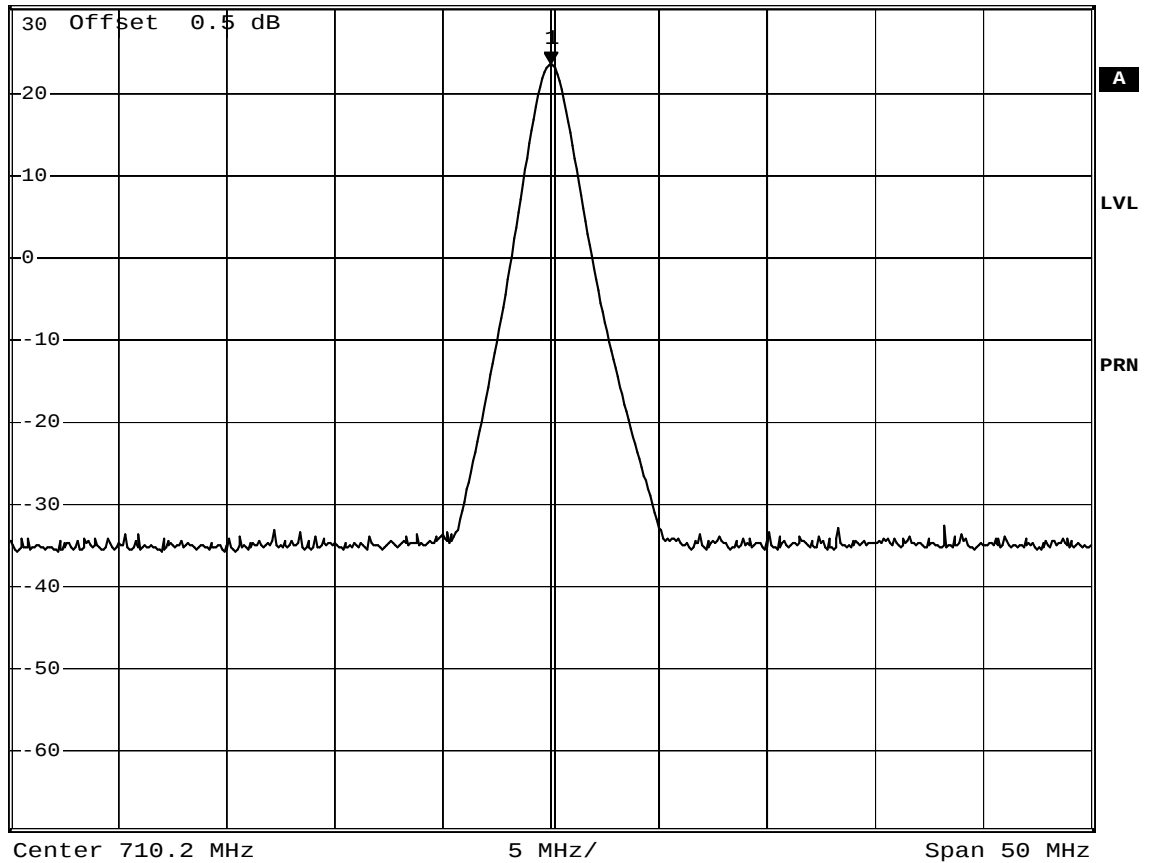
*SWT 200 ms

710.200000000 MHz

Ref 30.5 dBm

*Att 50 dB

1 PK
VIEW



Date: 23.OCT.2008 11:23:46

Test Mode: Mode 3

Modulation Type: 16QAM

710.2 MHz

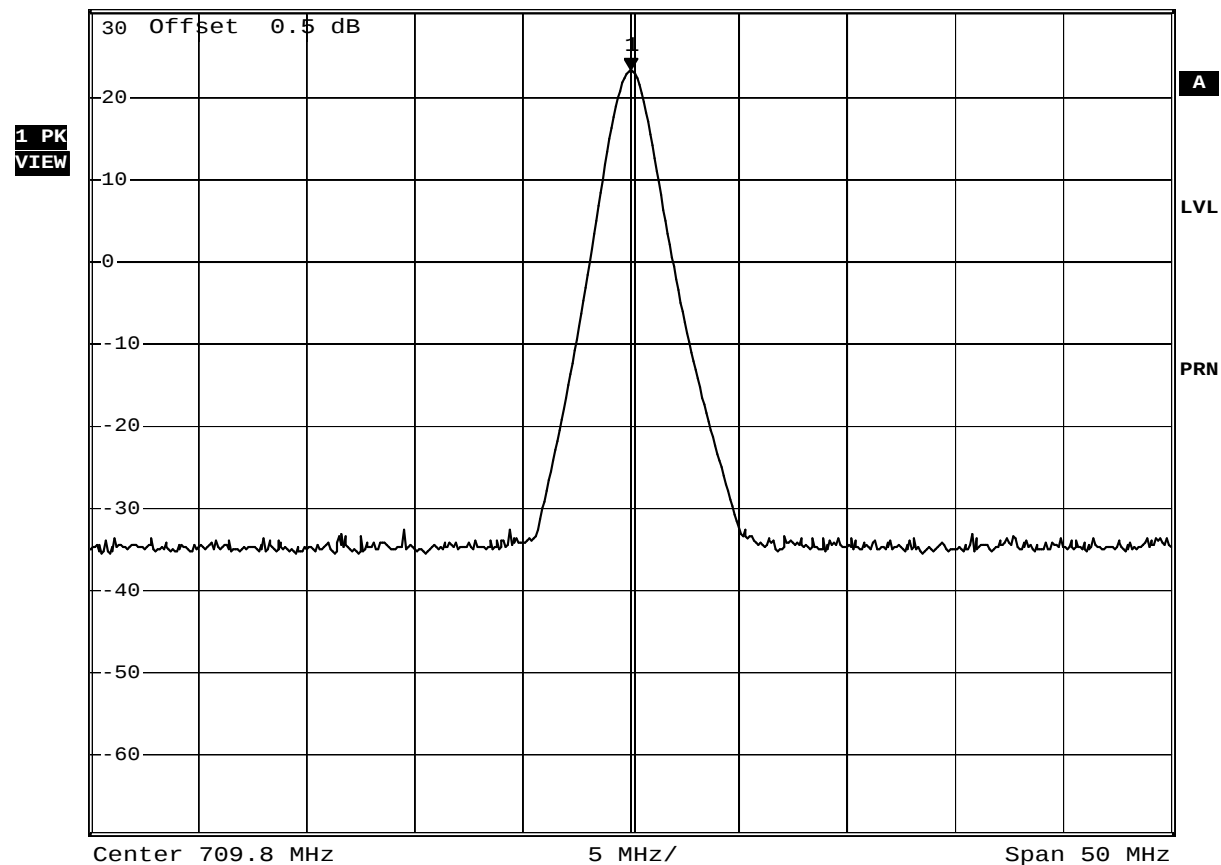
Upstream Symbol Rate: 640 ksps



*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 23.18 dBm
 *SWT 200 ms 709.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:29:30

Test Mode: Mode 4

Modulation Type: 16QAM

711.8 MHz

Upstream Symbol Rate: 1280 ksps



*RBW 3 MHz

Marker 1 [T1]

*VBW 3 MHz

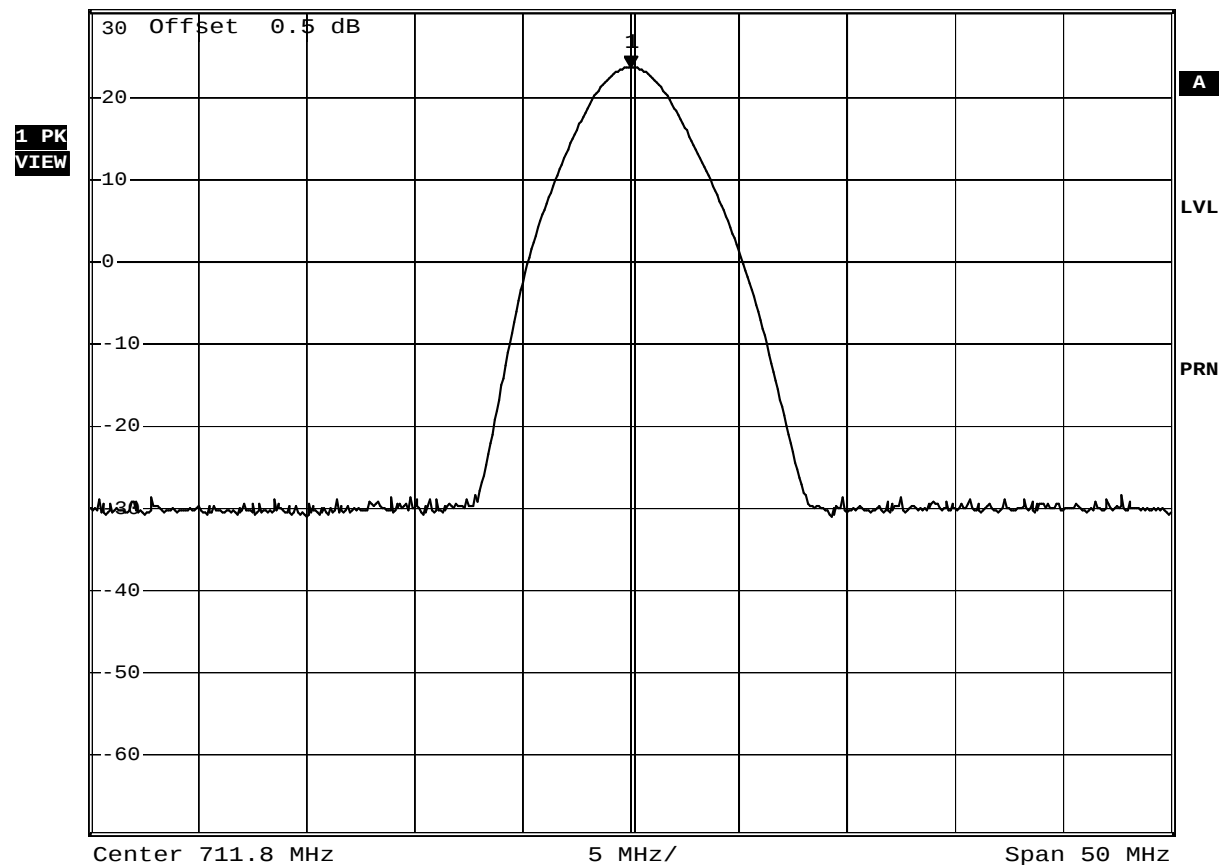
23.61 dBm

*SWT 200 ms

711.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 12:06:42

Test Mode: Mode 5

Modulation Type: 16QAM

711.8 MHz

Upstream Symbol Rate: 2560 kbps



*RBW 10 MHz

Marker 1 [T1]

*VBW 10 MHz

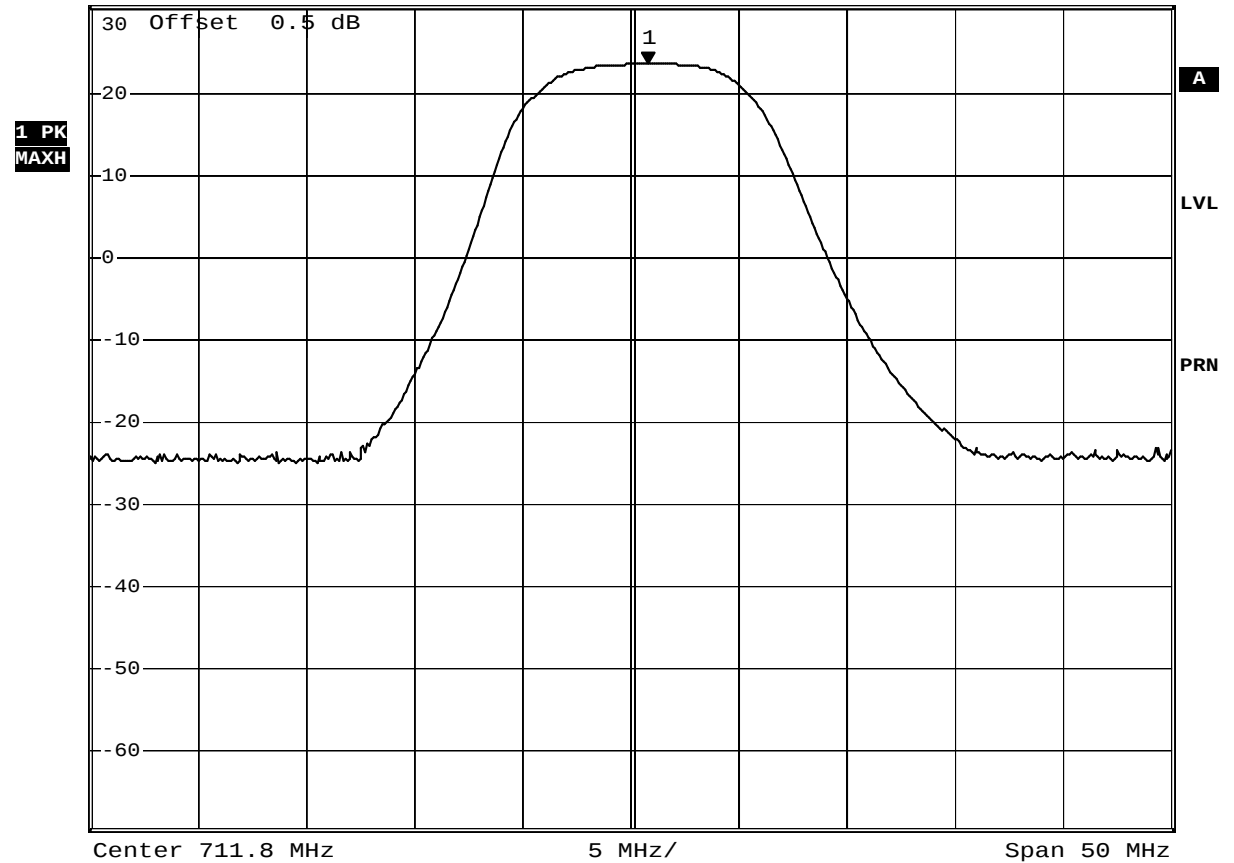
23.59 dBm

*SWT 200 ms

712.600000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 17:03:16

Test Mode: Mode 1

Modulation Type: 16QAM

715.8 MHz

Upstream Symbol Rate: 160 ksps



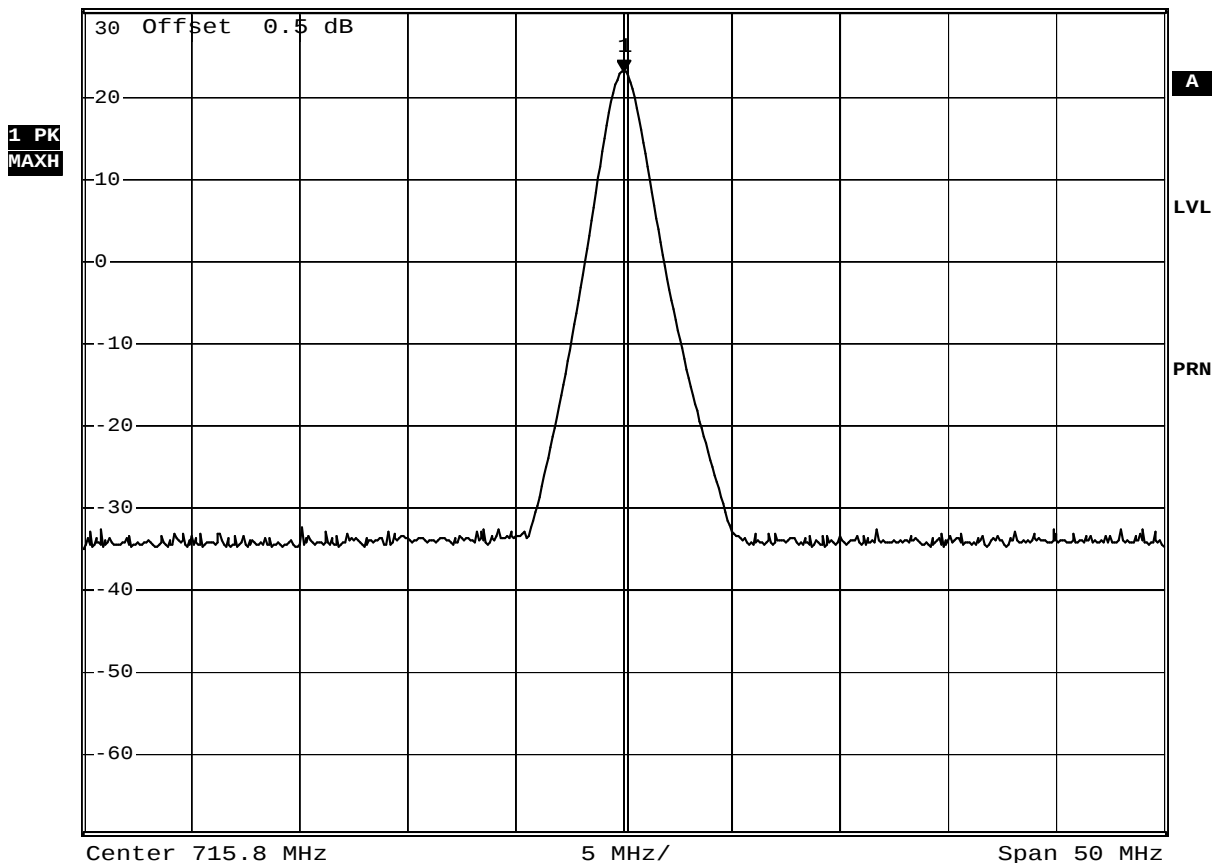
*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 22.98 dBm
 *SWT 200 ms 715.800000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

715.800000000 MHz



Date: 23.OCT.2008 11:02:11

Test Mode: Mode 2

Modulation Type: 16QAM

715.8 MHz

Upstream Symbol Rate: 320 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

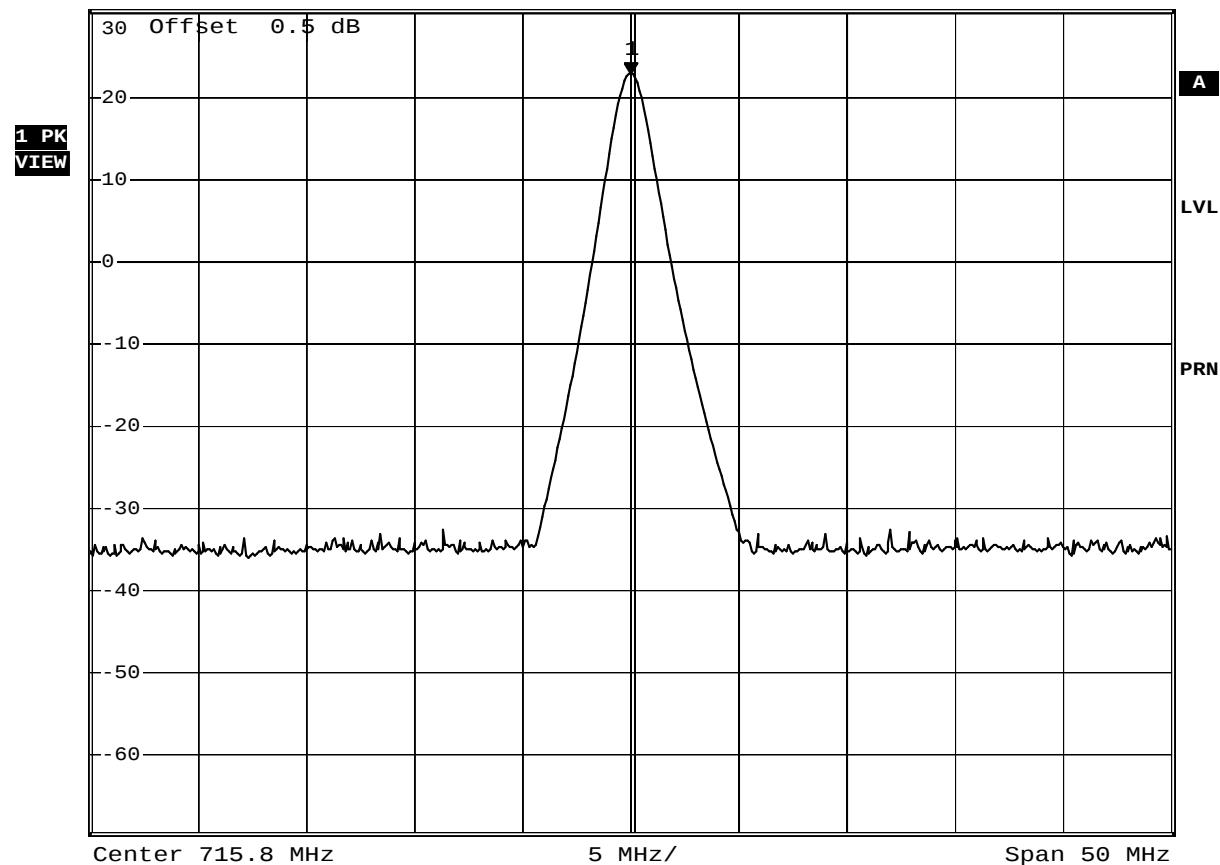
22.80 dBm

*SWT 200 ms

715.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:24:34

Test Mode: Mode 3

Modulation Type: 16QAM

715.8 MHz

Upstream Symbol Rate: 640 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

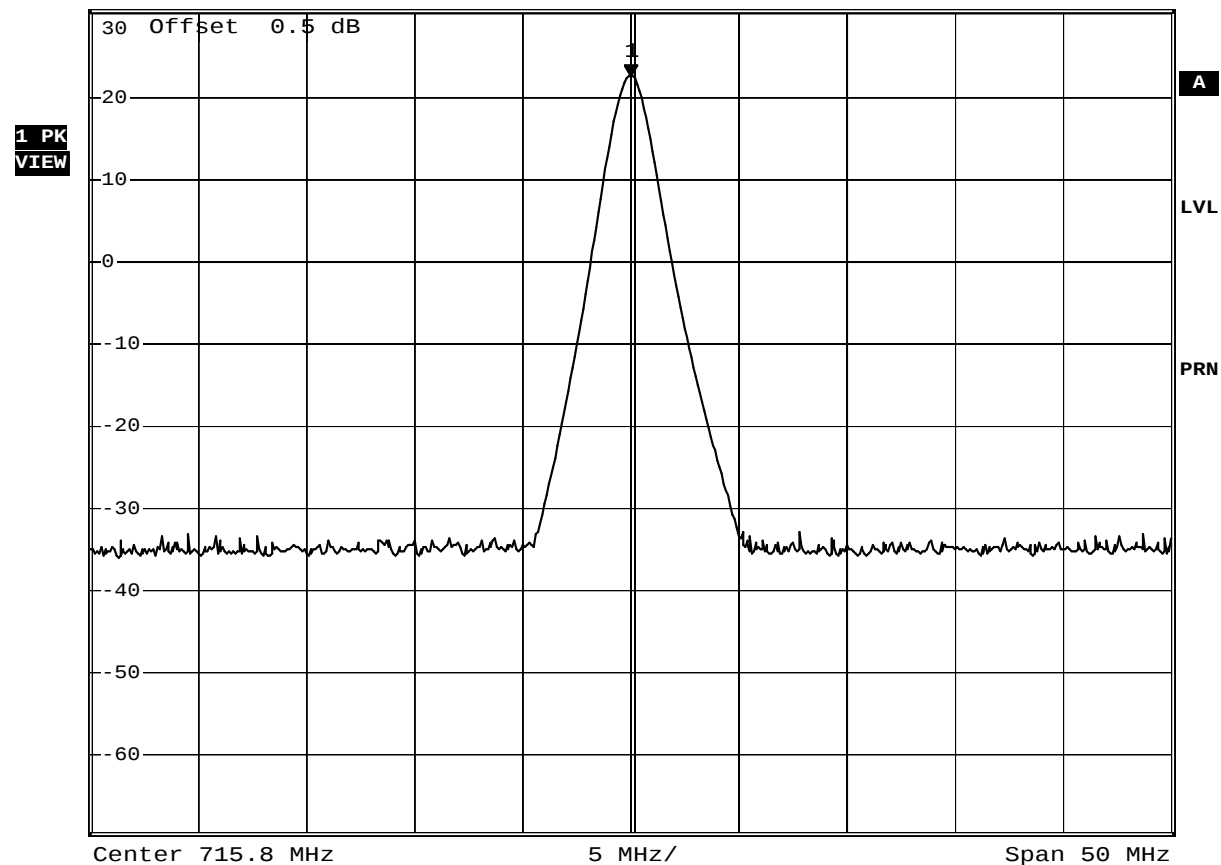
22.47 dBm

*SWT 200 ms

715.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:33:13

Test Mode: Mode 4

Modulation Type: 16QAM

714.2 MHz

Upstream Symbol Rate: 1280 ksps



*RBW 3 MHz

Marker 1 [T1]

*VBW 3 MHz

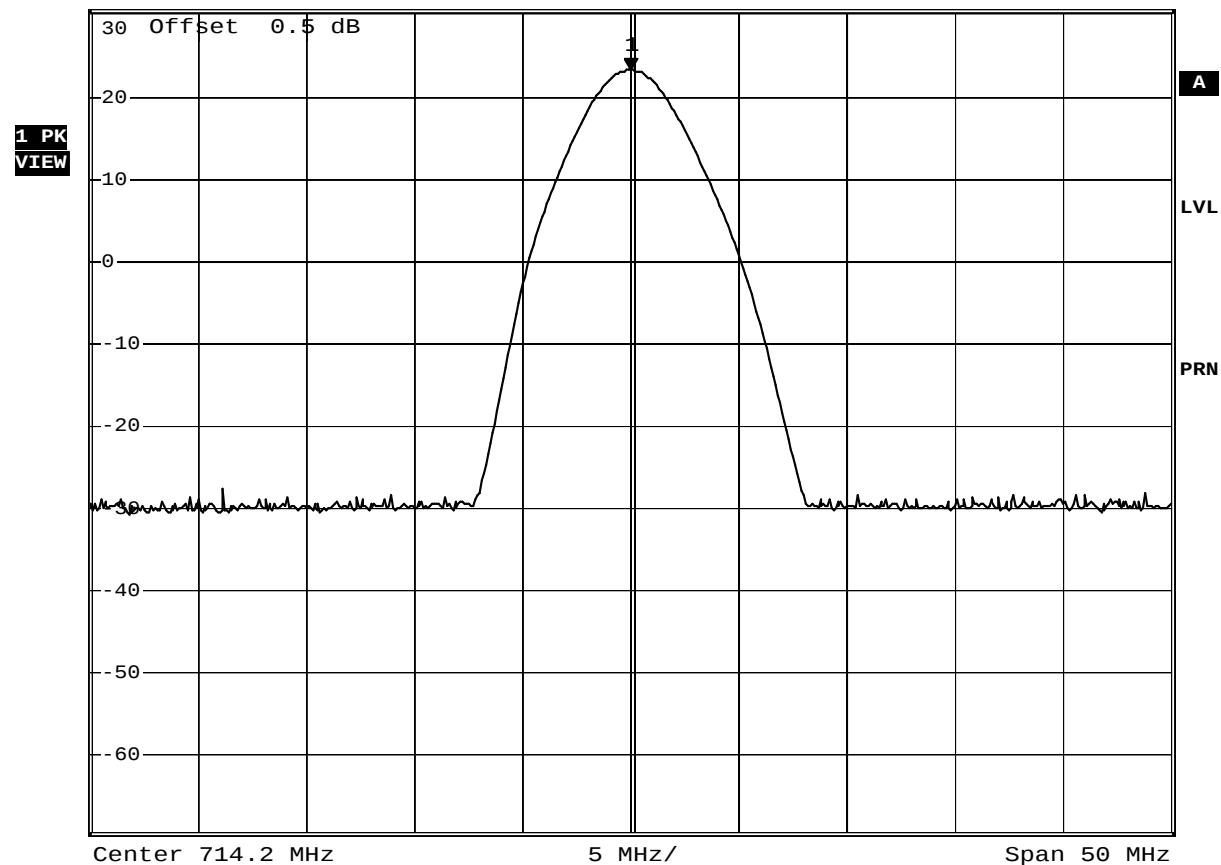
23.20 dBm

*SWT 200 ms

714.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 13:26:07

Test Mode: Mode 5

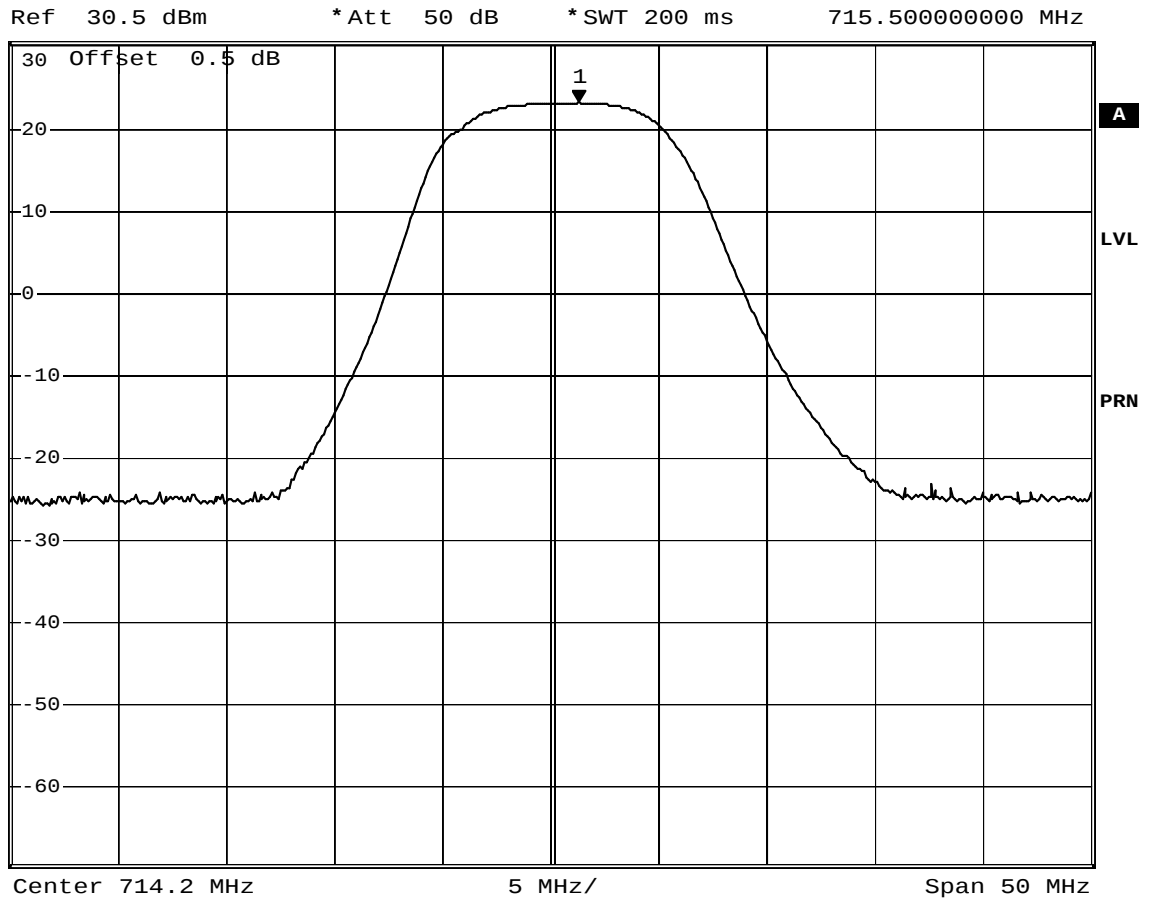
Modulation Type: 16QAM

714.2 MHz

Upstream Symbol Rate: 2560 ksps



*RBW 10 MHz Marker 1 [T1]
 *VBW 10 MHz 23.20 dBm
 *SWT 200 ms 715.500000000 MHz



Date: 23.OCT.2008 17:04:46

Test Mode: Mode 1

Modulation Type: QPSK

704.2 MHz

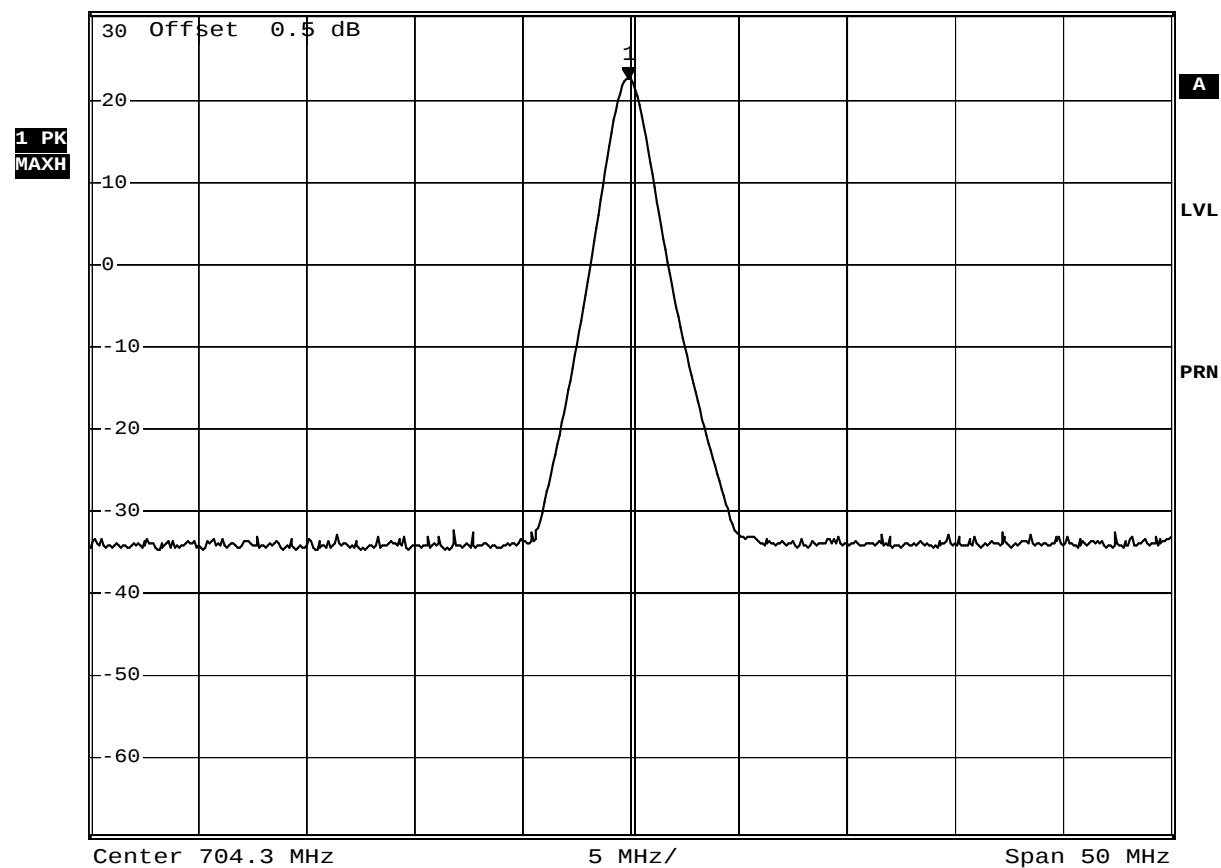
Upstream Symbol Rate: 160 ksps



*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 22.48 dBm
 *SWT 200 ms 704.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:05:02

Test Mode: Mode 2

Modulation Type: QPSK

704.2 MHz

Upstream Symbol Rate: 320 ksp/s



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

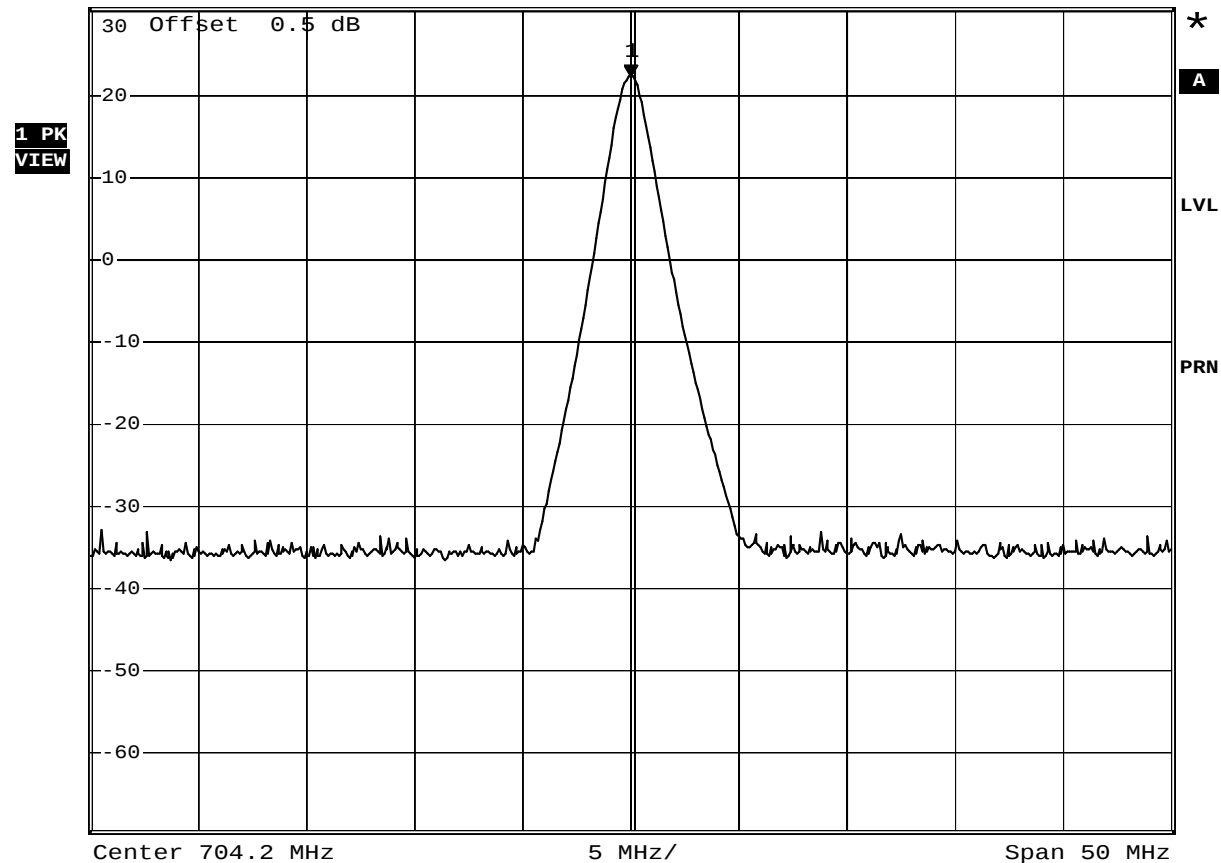
22.31 dBm

*SWT 200 ms

704.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:13:18

Test Mode: Mode 3

Modulation Type: QPSK

704.2 MHz

Upstream Symbol Rate: 640 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

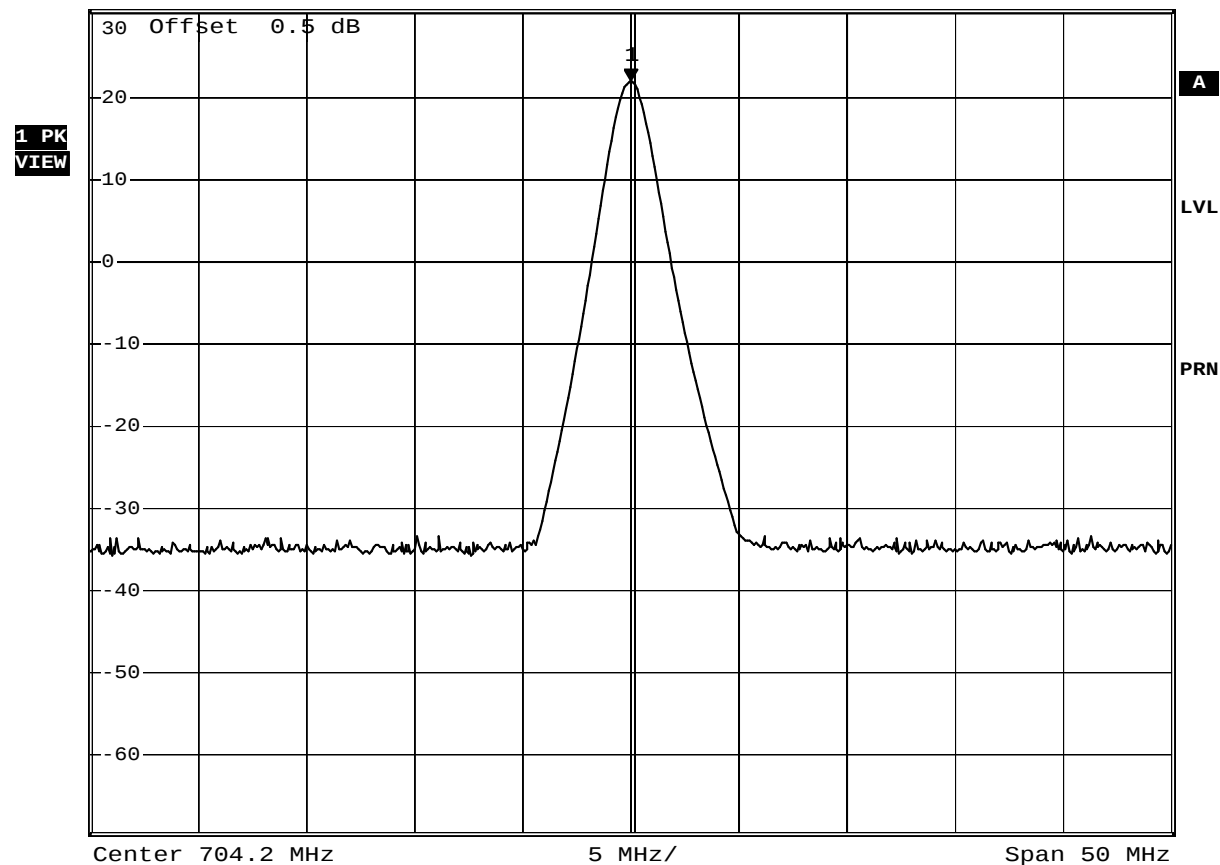
21.84 dBm

*SWT 200 ms

704.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:35:28

Test Mode: Mode 4

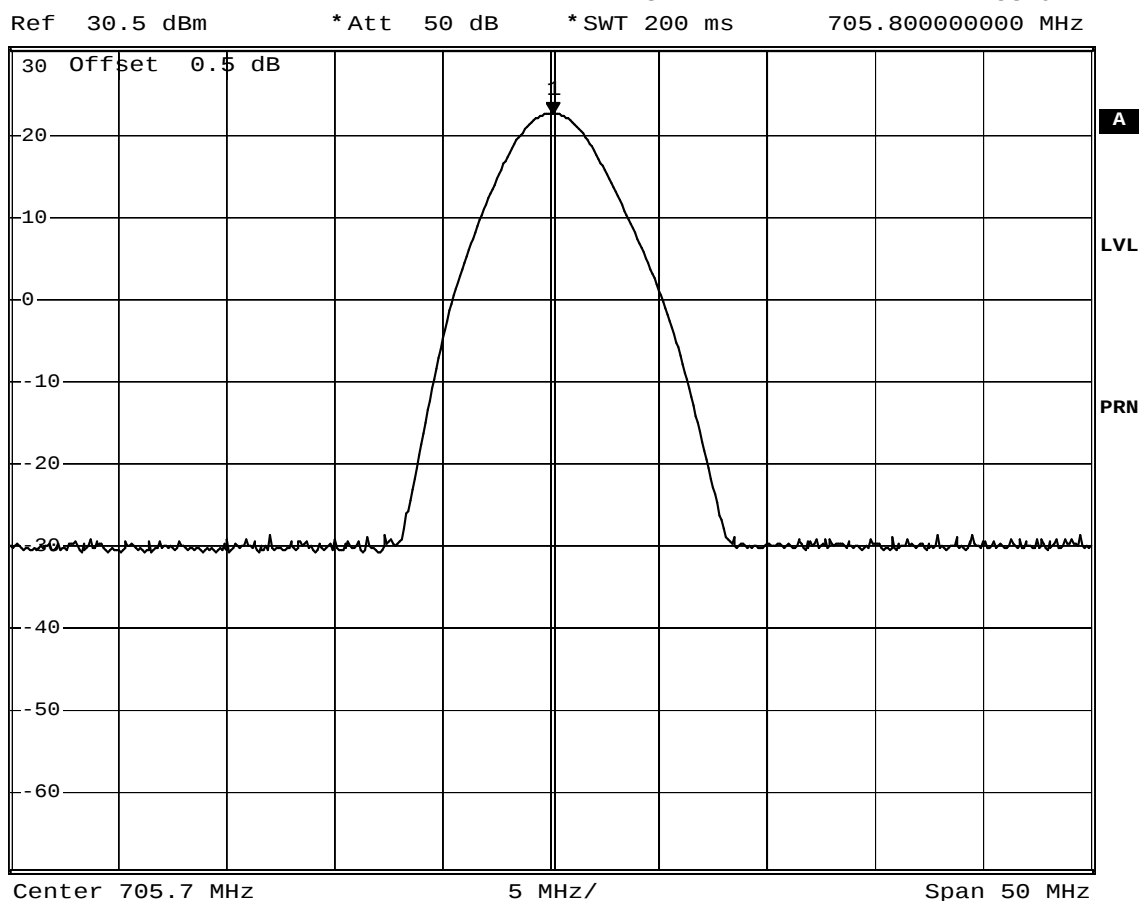
Modulation Type: QPSK

705.8 MHz

Upstream Symbol Rate: 1280 ksps



*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 22.58 dBm
 *SWT 200 ms 705.800000000 MHz



Date: 23.OCT.2008 13:30:32

Test Mode: Mode 5

Modulation Type: QPSK

705.8 MHz

Upstream Symbol Rate: 2560 kbps



*RBW 10 MHz

Marker 1 [T1]

*VBW 10 MHz

22.68 dBm

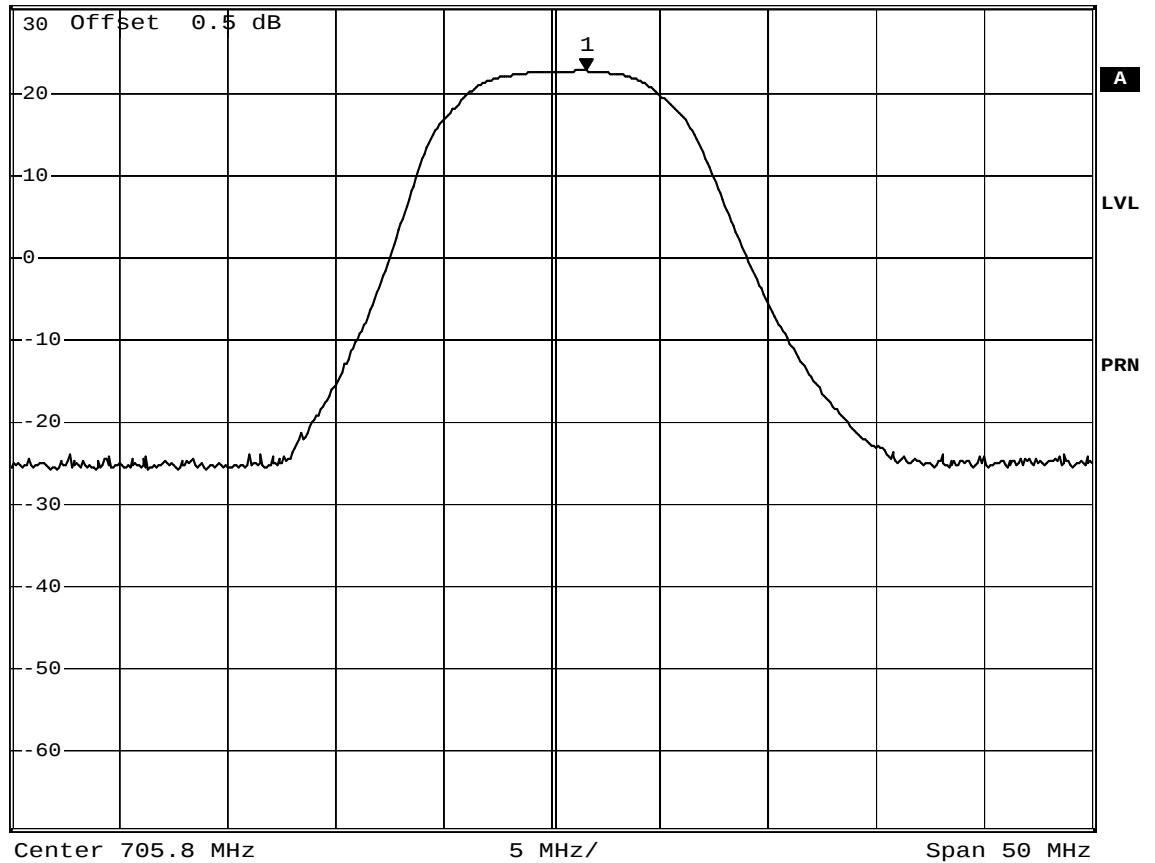
*SWT 200 ms

707.400000000 MHz

Ref 30.5 dBm

*Att 50 dB

1 PK
VIEW



Date: 23.OCT.2008 17:20:14

Test Mode: Mode 1

Modulation Type: QPSK

709.8 MHz

Upstream Symbol Rate: 160 kps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

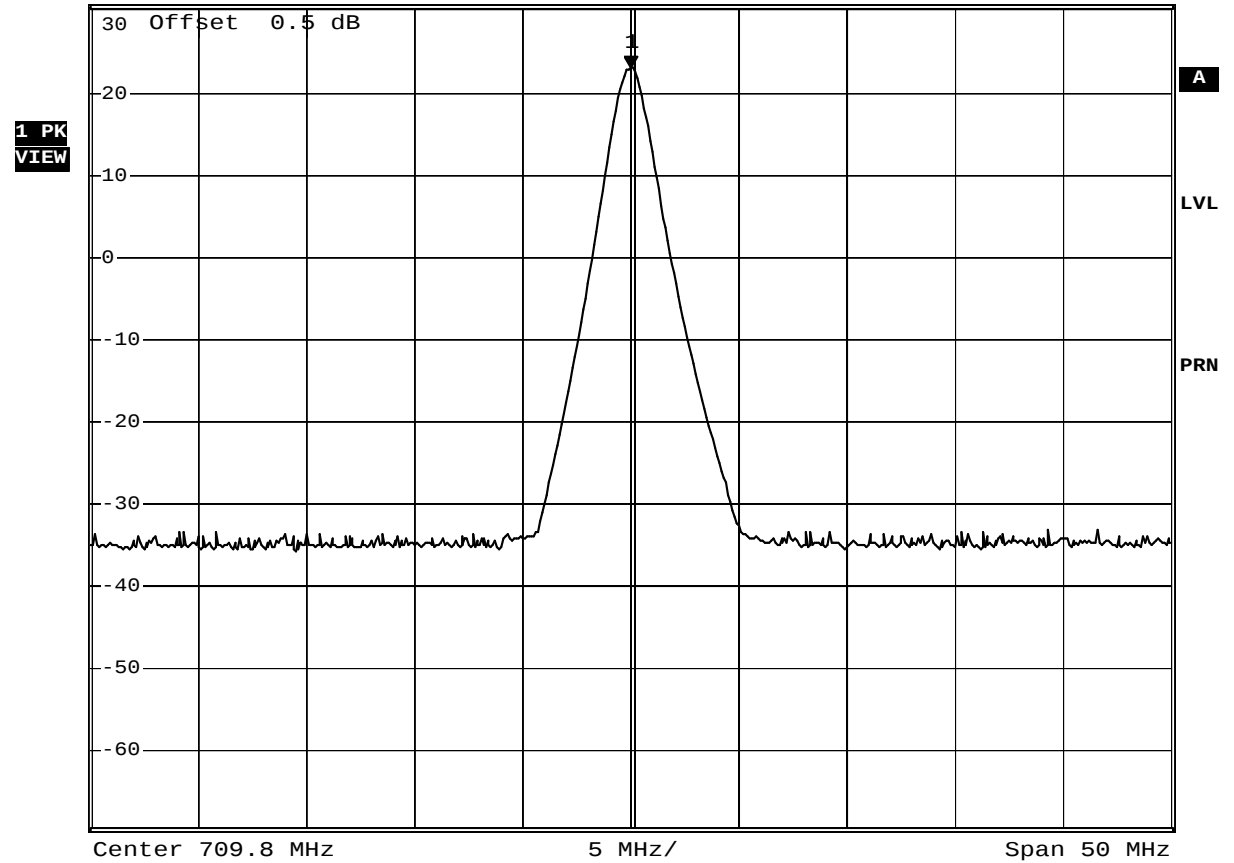
22.95 dBm

*SWT 200 ms

709.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:06:01

Test Mode: Mode 2

Modulation Type: QPSK

709.8 MHz

Upstream Symbol Rate: 320 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

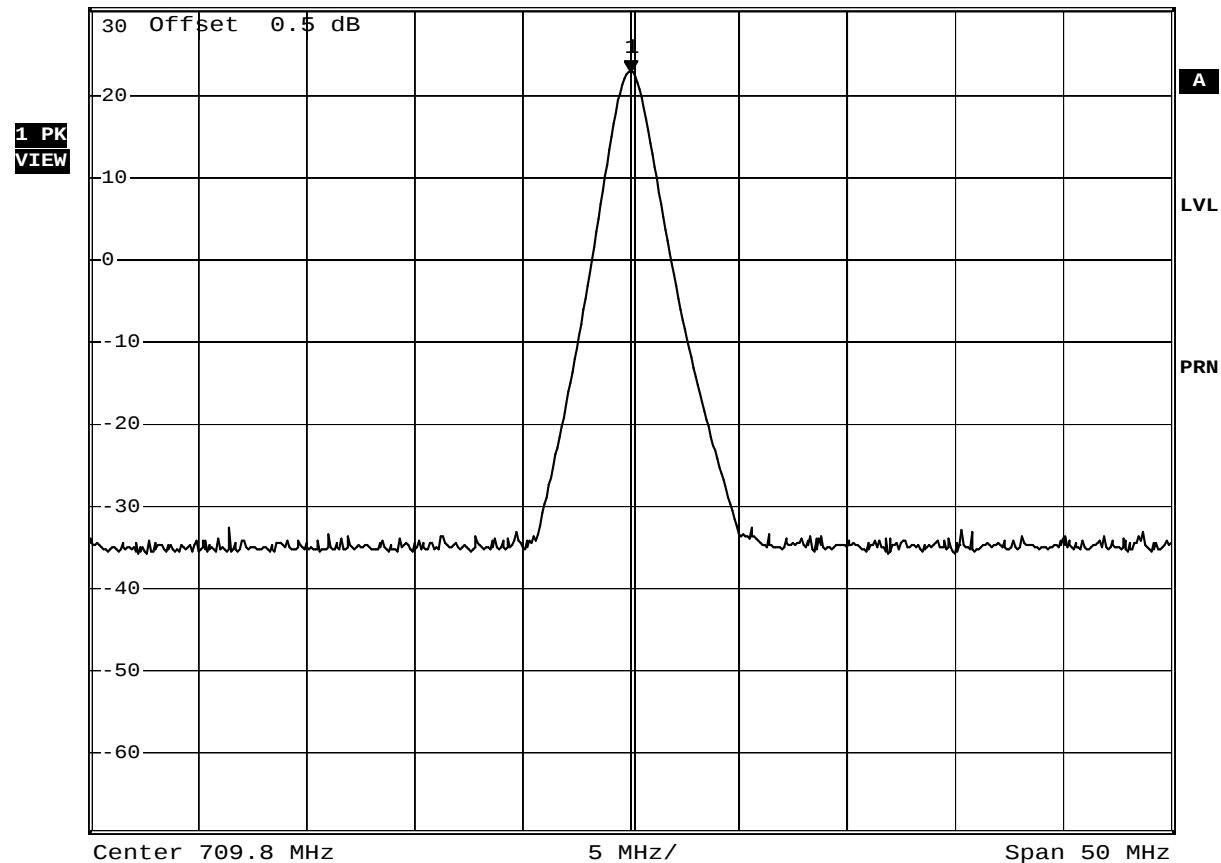
22.81 dBm

*SWT 200 ms

709.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:12:34

Test Mode: Mode 3

Modulation Type: QPSK

709.8 MHz

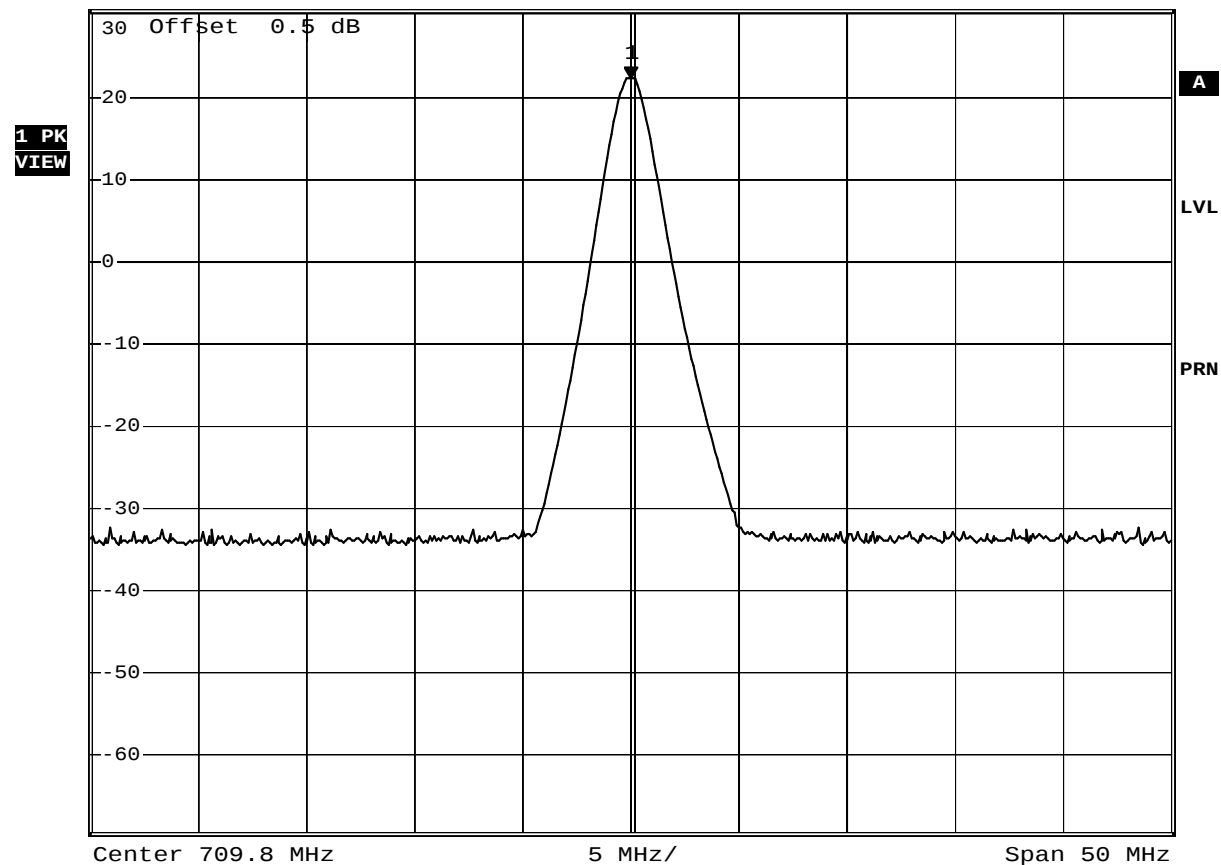
Upstream Symbol Rate: 640 ksps



*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 22.36 dBm
 *SWT 200 ms 709.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



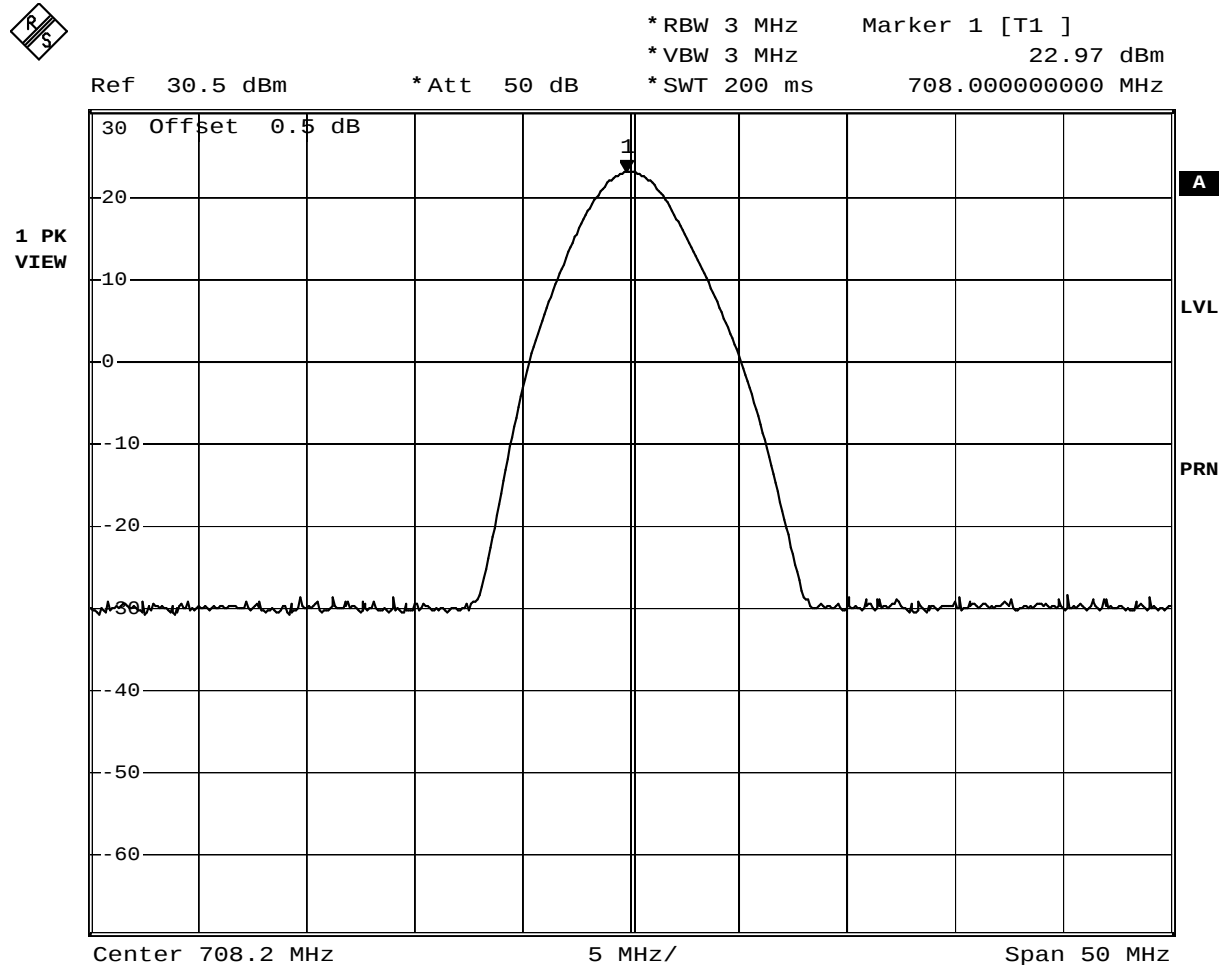
Date: 23.OCT.2008 11:39:23

Test Mode: Mode 4

Modulation Type: QPSK

708.2 MHz

Upstream Symbol Rate: 1280 ksps



Date: 23.OCT.2008 13:54:11

Test Mode: Mode 5

Modulation Type: QPSK

708.2 MHz

Upstream Symbol Rate: 2560 kbps



*RBW 10 MHz

Marker 1 [T1]

*VBW 10 MHz

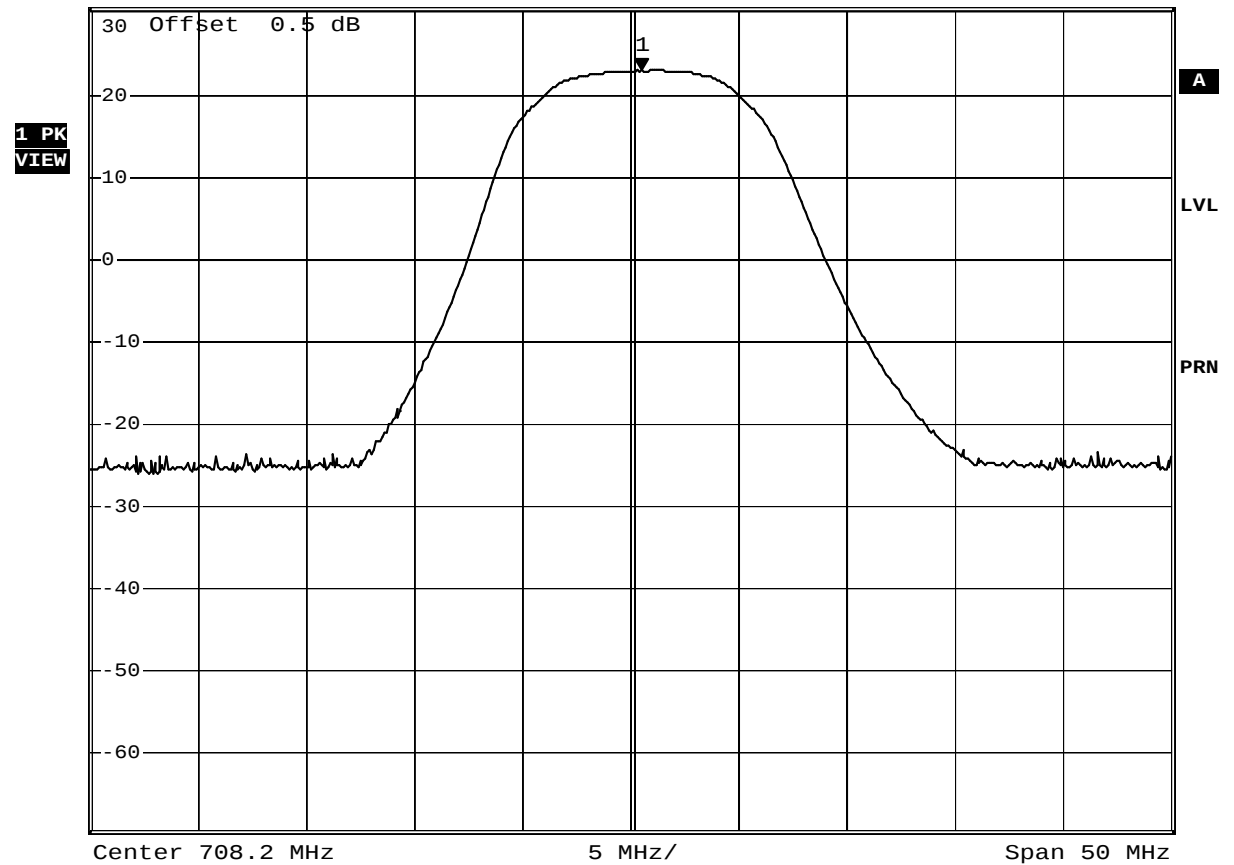
22.92 dBm

*SWT 200 ms

708.700000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 17:07:01

Test Mode: Mode 1

Modulation Type: QPSK

710.2 MHz

Upstream Symbol Rate: 160 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

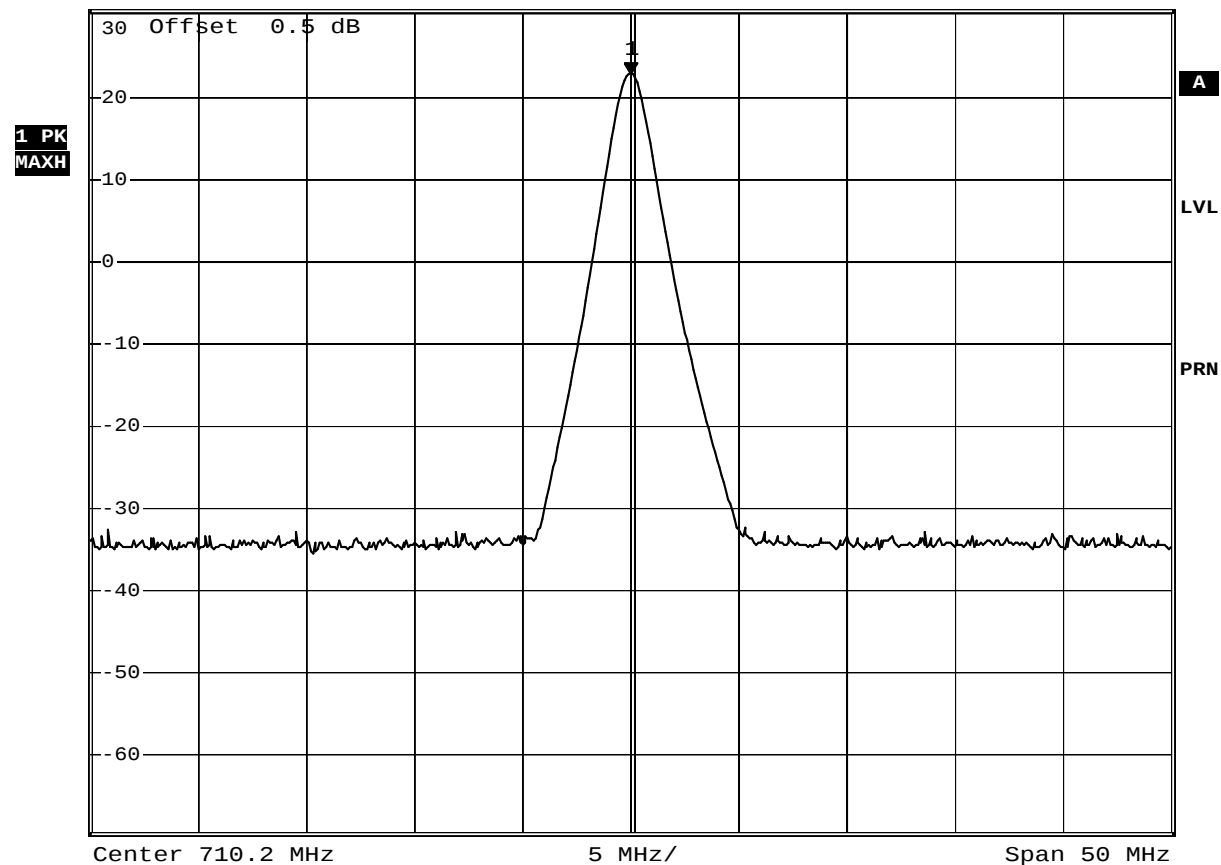
22.88 dBm

*SWT 200 ms

710.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:07:16

Test Mode: Mode 2

Modulation Type: QPSK

710.2 MHz

Upstream Symbol Rate: 320 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

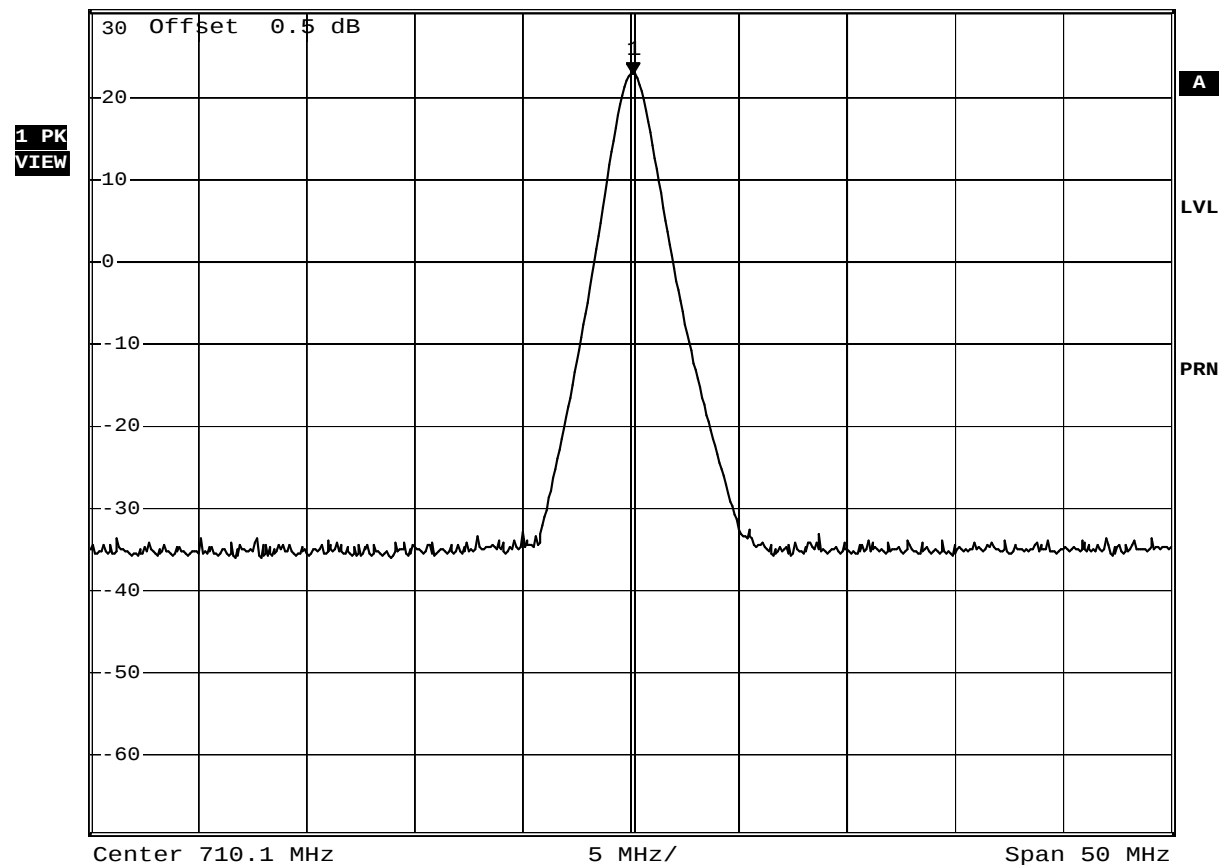
22.74 dBm

*SWT 200 ms

710.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:14:02

Test Mode: Mode 3

Modulation Type: QPSK

710.2 MHz

Upstream Symbol Rate: 640 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

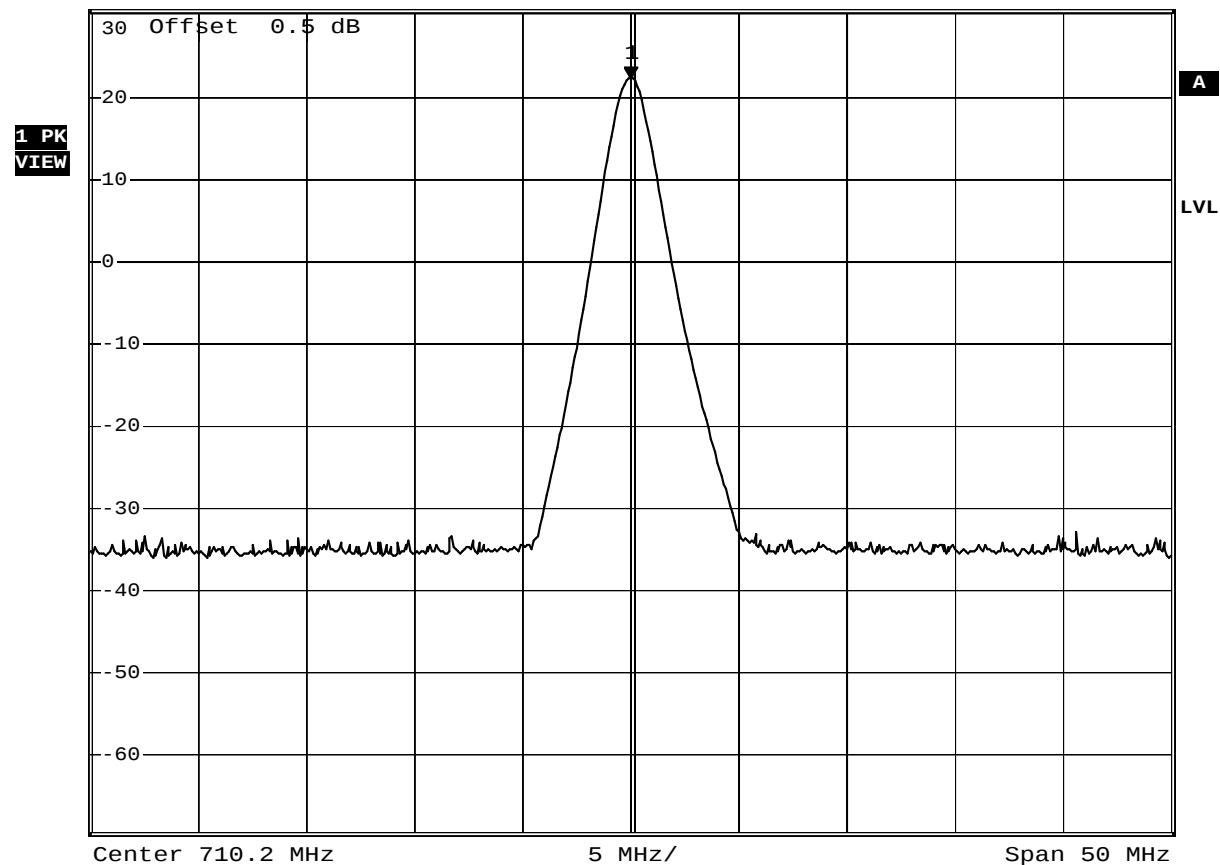
22.28 dBm

*SWT 200 ms

710.200000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:49:12

Test Mode: Mode 4

Modulation Type: QPSK

711.8 MHz

Upstream Symbol Rate: 1280 ksps



*RBW 3 MHz

Marker 1 [T1]

*VBW 3 MHz

22.76 dBm

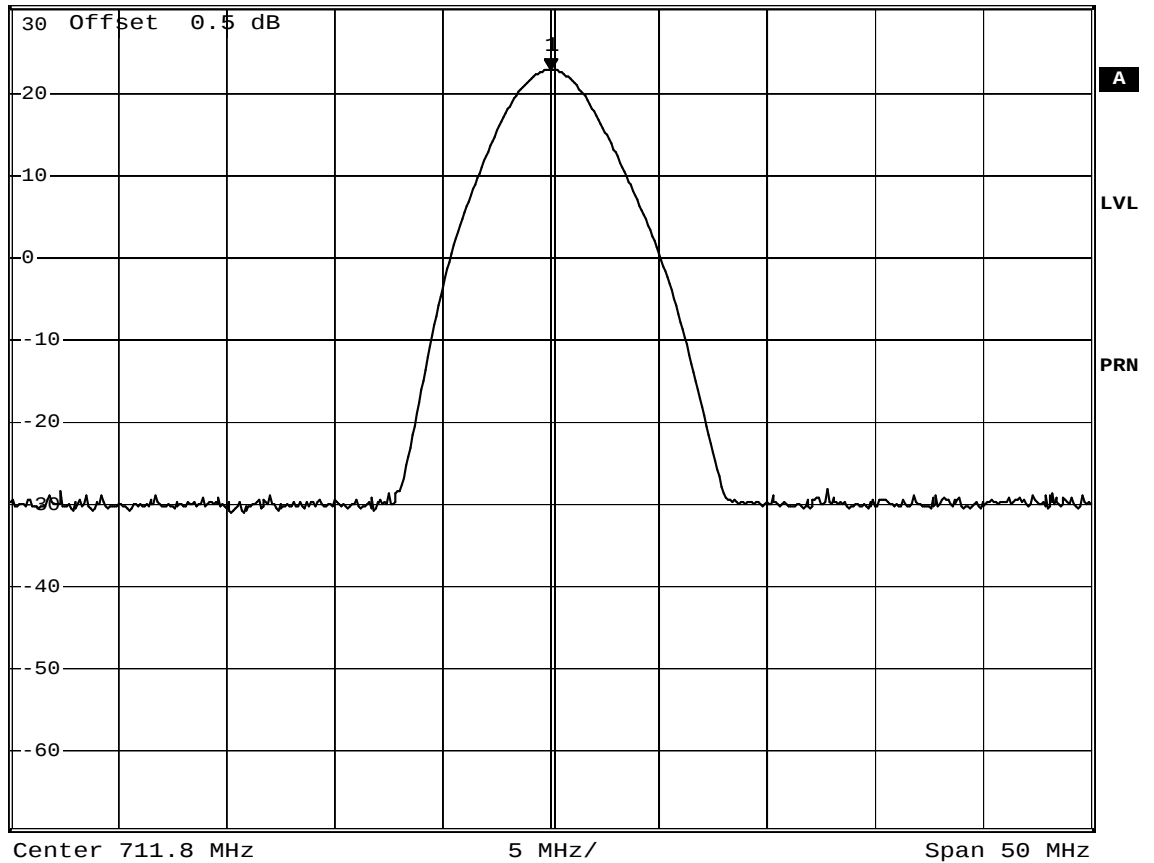
*SWT 200 ms

711.800000000 MHz

Ref 30.5 dBm

*Att 50 dB

1 PK
VIEW



Date: 23.OCT.2008 13:55:09

Test Mode: Mode 5

Modulation Type: QPSK

711.8 MHz

Upstream Symbol Rate: 2560 ksps



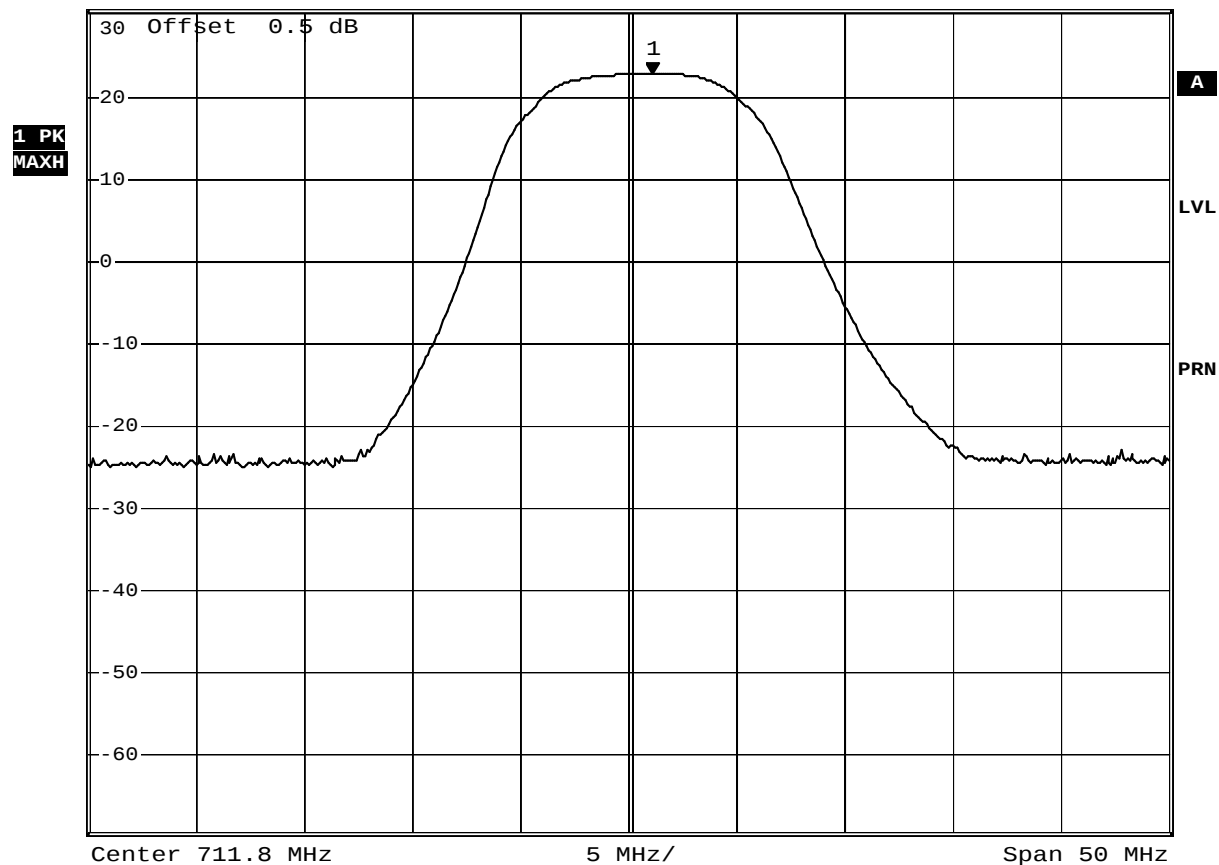
*RBW 10 MHz Marker 1 [T1]
 *VBW 10 MHz 22.86 dBm
 *SWT 200 ms 712.900000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

712.900000000 MHz



Date: 23.OCT.2008 17:21:46

Test Mode: Mode 1

Modulation Type: QPSK

715.8 MHz

Upstream Symbol Rate: 160 ksps



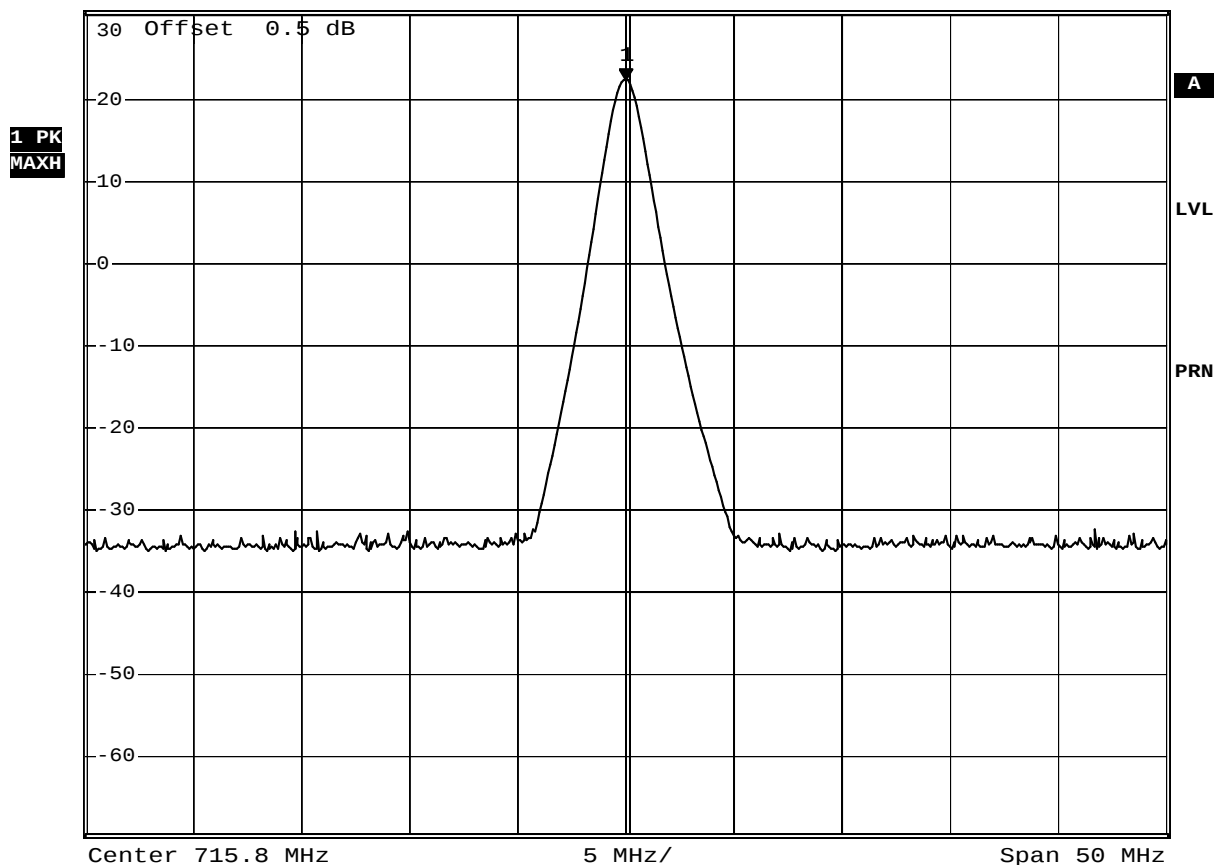
*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 22.31 dBm
 *SWT 200 ms 715.800000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

715.800000000 MHz



Date: 23.OCT.2008 11:08:14

Test Mode: Mode 2

Modulation Type: QPSK

715.8 MHz

Upstream Symbol Rate: 320 ksps



*RBW 1 MHz

Marker 1 [T1]

*VBW 1 MHz

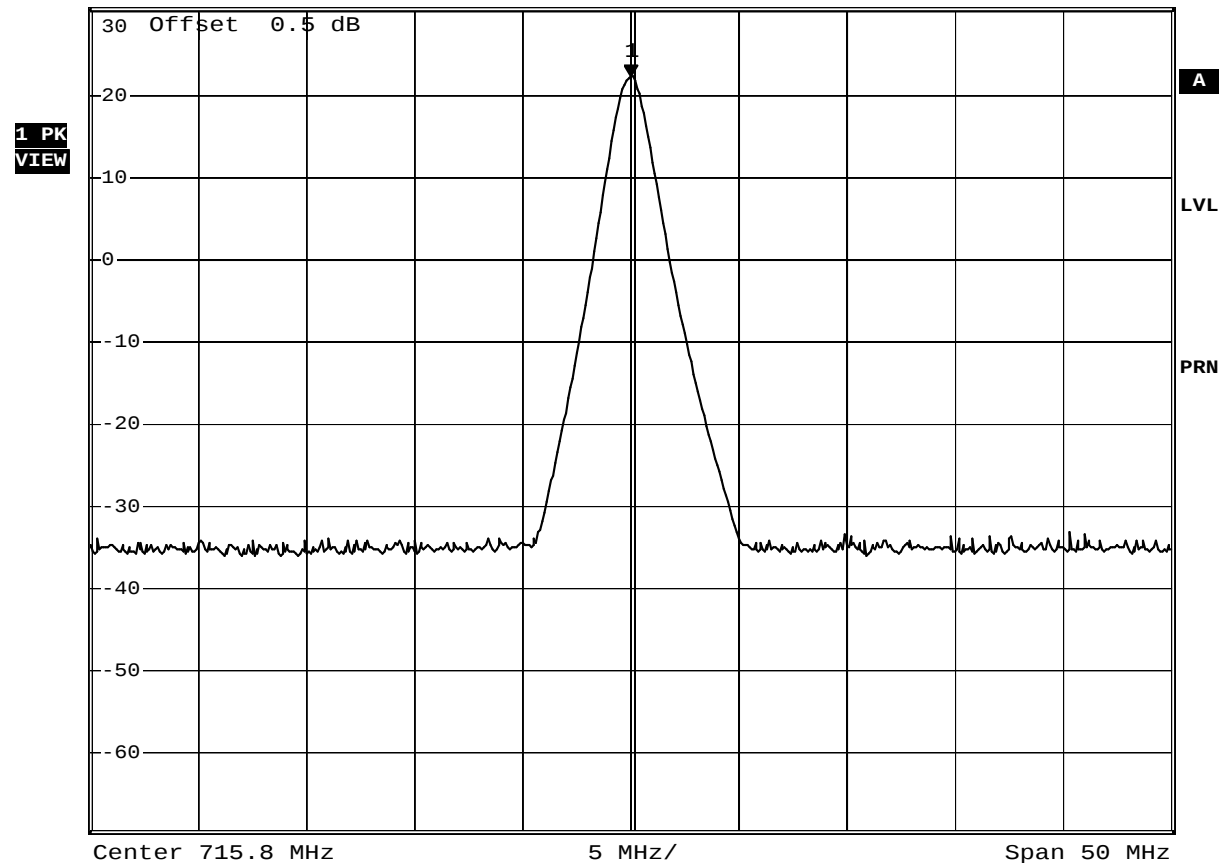
22.13 dBm

*SWT 200 ms

715.800000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 11:20:12

Test Mode: Mode 3

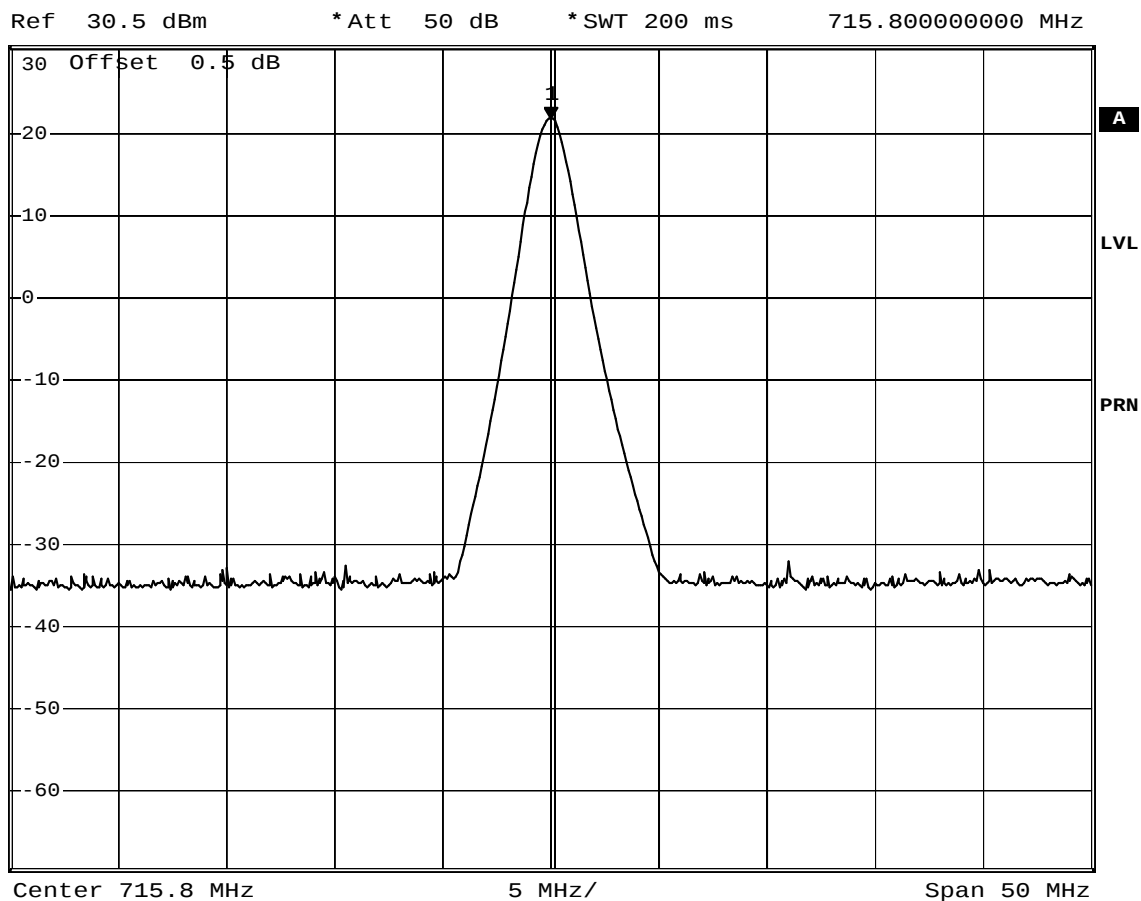
Modulation Type: QPSK

715.8 MHz

Upstream Symbol Rate: 640 ksps



*RBW 1 MHz Marker 1 [T1]
 *VBW 1 MHz 21.67 dBm
 *SWT 200 ms 715.800000000 MHz



Date: 23.OCT.2008 11:51:05

Test Mode: Mode 4

Modulation Type: QPSK

714.2 MHz

Upstream Symbol Rate: 1280 ksps



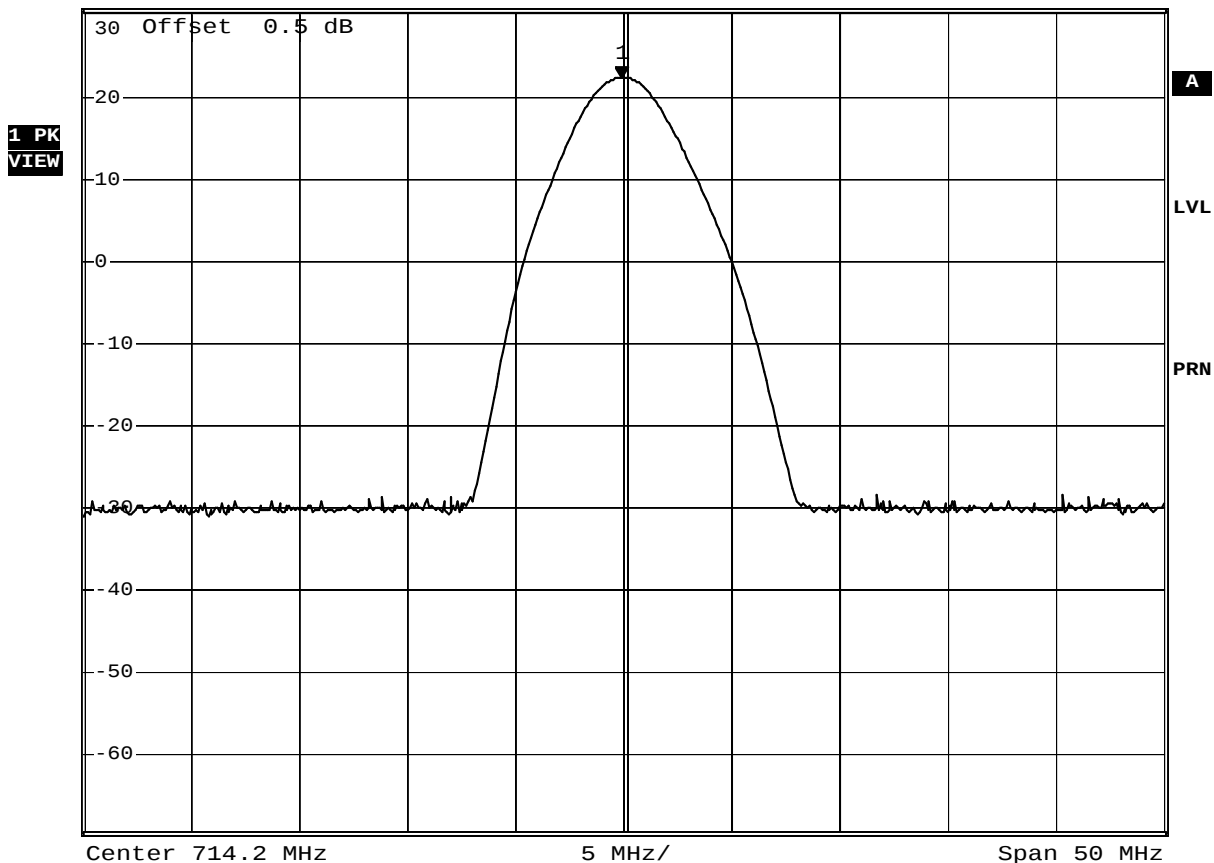
*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 22.28 dBm
 *SWT 200 ms 714.100000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

714.100000000 MHz



Date: 23.OCT.2008 13:55:58

Test Mode: Mode 5

Modulation Type: QPSK

714.2 MHz

Upstream Symbol Rate: 2560 ksps

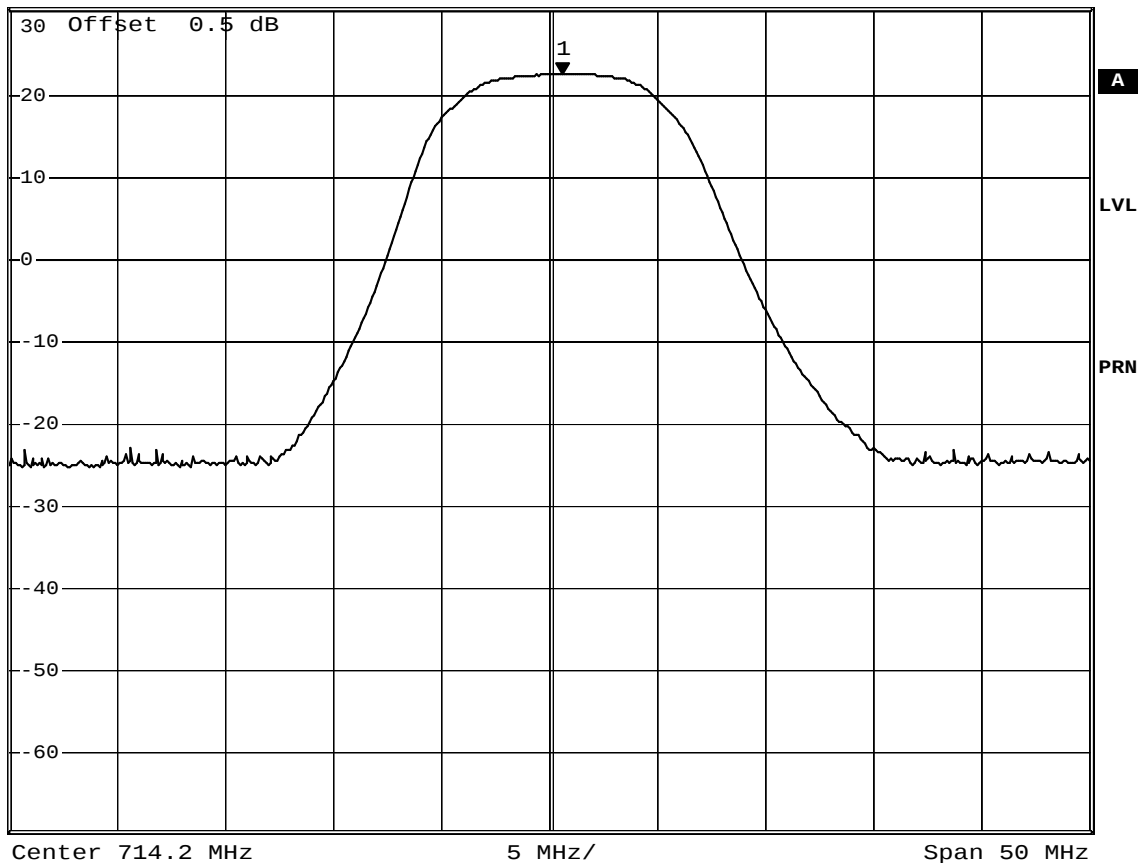


*RBW 10 MHz Marker 1 [T1]
 *VBW 10 MHz 22.56 dBm
 *SWT 200 ms 714.800000000 MHz

Ref 30.5 dBm

*Att 50 dB

1 PK
VIEW



Date: 23.OCT.2008 17:09:18

E.I.R.P Power (Mode1: 16QAM-200KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	704.2(30.2)	33.268	-16.11	17.158	51.97565847	H
Middle	709.8(35.8)	33.448	-18.26	15.188	33.02174353	H
Middle	710.2(36.2)	33.454	-18.17	15.284	33.75981049	H
High	715.8(41.8)	33.615	-17.82	15.795	37.9751939	H

E.I.R.P Power (Mode1: 16QAM-200KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	704.2(30.2)	33.857	-9.43	24.427	277.1405025	V
Middle	709.8(35.8)	34.31	-8.98	25.330	341.1929116	V
Middle	710.2(36.2)	34.337	-8.93	25.407	347.2961749	V
High	715.8(41.8)	34.771	-10.67	24.101	257.0987706	V

E.I.R.P = Reading Level + Correct Factor = S.G. – Cable Loss + Antenna Gain

E.I.R.P Power (Mode2: 16QAM-400KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	704.2(30.2)	33.259	-15.340	17.919	61.92984599	H
Middle	709.8(35.8)	33.448	-13.680	19.768	94.7981801	H
Middle	710.2(36.2)	33.455	-12.434	21.021	126.5027597	H
High	715.8(41.8)	33.615	-8.637	24.978	314.6299056	H

E.I.R.P Power (Mode2: 16QAM-400KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	704.2(30.2)	33.858	-9.650	24.208	263.511759	V
Middle	709.8(35.8)	34.311	-10.190	24.121	258.2854846	V
Middle	710.2(36.2)	34.340	-9.320	25.020	317.6874071	V
High	715.8(41.8)	34.772	-9.660	25.112	324.4890157	V

E.I.R.P = Reading Level + Correct Factor = S.G. – Cable Loss + Antenna Gain

E.I.R.P Power (Mode3: 16QAM-800KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	704.2(30.2)	33.268	-15.740	17.528	56.59785862	H
Middle	709.8(35.8)	33.448	-13.370	20.078	101.8122417	H
Middle	710.2(36.2)	33.454	-12.604	20.850	121.6186001	H
High	715.8(41.8)	33.615	-9.147	24.468	279.7692638	H

E.I.R.P Power (Mode3: 16QAM-800KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	704.2(30.2)	33.858	-9.860	23.998	251.0729931	V
Middle	709.8(35.8)	34.314	-10.320	23.994	250.8418528	V
Middle	710.2(36.2)	34.339	-9.120	25.219	332.5829644	V
High	715.8(41.8)	34.772	-9.440	25.332	341.3500729	V

E.I.R.P = Reading Level + Correct Factor = S.G. – Cable Loss + Antenna Gain

E.I.R.P Power (Mode4: 16QAM-1600KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	705.8(31.8)	33.422	-13.35	20.072	101.67168	H
Middle	708.2(34.2)	33.431	-12.176	21.255	133.505759	H
Middle	711.8(37.8)	33.493	-11.534	21.959	157.0001257	H
High	714.2(40.2)	33.567	-10.907	22.66	184.5015419	H

E.I.R.P Power (Mode4: 16QAM-1600KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	705.8(31.8)	34.014	-9.4	24.614	289.3343523	V
Middle	708.2(34.2)	34.209	-8.932	25.277	337.0543993	V
Middle	711.8(37.8)	34.455	-8.983	25.472	352.5331812	V
High	714.2(40.2)	34.647	-10.14	24.507	282.2929291	V

E.I.R.P = Reading Level + Correct Factor = S.G. – Cable Loss + Antenna Gain

E.I.R.P Power (Mode5: 16QAM-3200KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	705.8(31.8)	33.343	-15.660	17.683	58.65431943	H
Middle	708.2(34.2)	33.422	-13.220	20.202	104.761088	H
Middle	711.8(37.8)	33.493	-12.034	21.459	139.9265093	H
High	714.2(40.2)	33.566	-9.477	24.089	256.389361	H

E.I.R.P Power (Mode5: 16QAM-3200KHz)						
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	E.I.R.P (dBm)	E.I.R.P (mW)	Polarization
Low	705.8(31.8)	34.010	-9.870	24.140	259.4179362	V
Middle	708.2(34.2)	33.422	-9.630	23.792	239.4418173	V
Middle	711.8(37.8)	34.453	-9.590	24.863	306.4079294	V
High	714.2(40.2)	34.644	-9.710	24.934	311.4583654	V

E.I.R.P = Reading Level + Correct Factor = S.G. – Cable Loss + Antenna Gain

3. Occupied Bandwidth

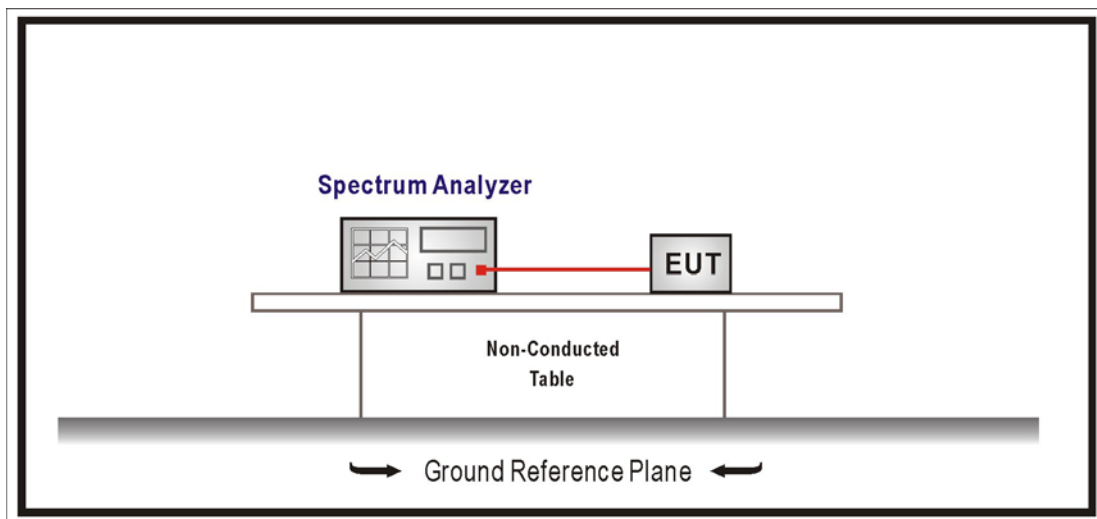
3.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	No.7 Shielding Room			Sep., 2008

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup



3.3. Limits

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

3.4. Test Procedure

The occupied bandwidth is measured using R&S Spectrum Analyzer with a resolution bandwidth of 100 kHz, video bandwidth of 300 kHz and span of 10 MHz. The EUT was set up for the rated peak power under transmission mode and specific channel frequency. The standards required a measurement bandwidth is the fundamental emission below 26dB bandwidth.

3.5. Uncertainty

The measurement uncertainty is defined as ± 50 KHz

3.6. Test Result

Product	UHF Band MMDS Transceiver		
Test Item	Occupied Bandwidth		
Test Mode	Transmit		
Date of Test	2008/11/21	Test Site	SR7

TRX-310	
Test Mode: Mode 1	
Occupied Bandwidth (16QAM-160)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
704.2(30.2)	0.197
709.8(35.8)	0.196
710.2(36.2)	0.196
715.8(41.8)	0.196

TRX-310	
Test Mode: Mode 1	
Occupied Bandwidth (QPSK-160)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
704.2(30.2)	0.198
709.8(35.8)	0.198
710.2(36.2)	0.198
715.8(41.8)	0.198

Test Mode: Mode 2	
Occupied Bandwidth (16QAM-320)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
704.2(30.2)	0.397
709.8(35.8)	0.397
710.2(36.2)	0.396
715.8(41.8)	0.397

Test Mode: Mode 2	
Occupied Bandwidth (QPSK-320)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
704.2(30.2)	0.398
709.8(35.8)	0.398
710.2(36.2)	0.399
715.8(41.8)	0.399

Test Mode: Mode 3	
Occupied Bandwidth (16QAM-640)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
704.2(30.2)	0.784
709.8(35.8)	0.784
710.2(36.2)	0.784
715.8(41.8)	0.784

Test Mode: Mode 3	
Occupied Bandwidth (QPSK-640)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
704.2(30.2)	0.788
709.8(35.8)	0.790
710.2(36.2)	0.788
715.8(41.8)	0.788

Test Mode: Mode 4	
Occupied Bandwidth (16QAM-1280)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
705.8(31.8)	1.572
708.2(34.2)	1.576
711.8(37.8)	1.576
714.2(40.2)	1.576

Test Mode: Mode 4	
Occupied Bandwidth (QPSK-1280)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
705.8(31.8)	1.584
708.2(34.2)	1.584
711.8(37.8)	1.584
714.2(40.2)	1.584

Test Mode: Mode 5	
Occupied Bandwidth (16QAM-2560)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
705.8(31.8)	3.12
708.2(34.2)	3.12
711.8(37.8)	3.12
714.2(40.2)	3.12

Test Mode: Mode 5	
Occupied Bandwidth (QPSK-2560)	
Frequency (MHz)	-26 dBc Bandwidth (MHz)
705.8(31.8)	3.11
708.2(34.2)	3.11
711.8(37.8)	3.10
714.2(40.2)	3.11

Test Mode: Mode 1

Modulation Type: 16QAM

704.2 MHz

Upstream Symbol Rate: 160 ksps



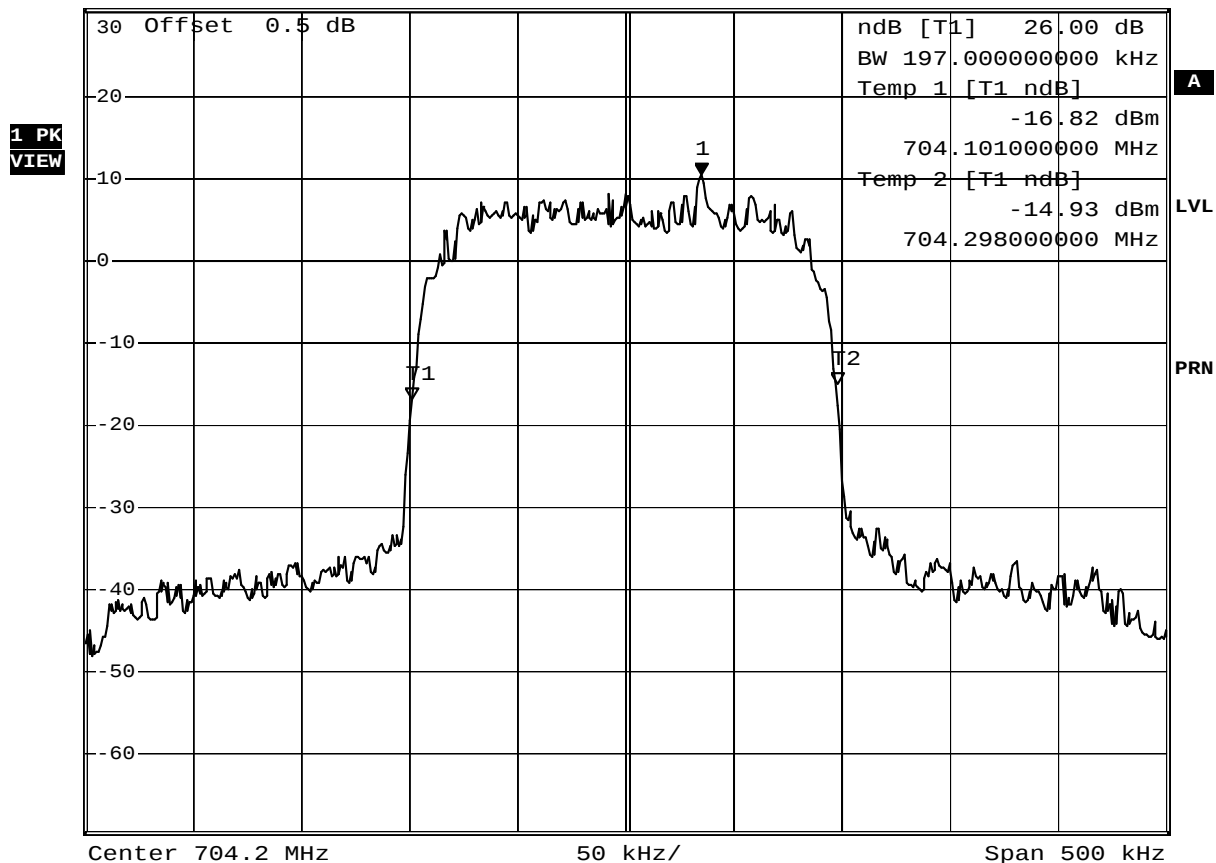
*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 10.36 dBm
 *SWT 200 ms 704.235000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

704.235000000 MHz



Date: 21.NOV.2008 04:49:24

Upstream Symbol Rate: 320 ksps



Date: 21.NOV.2008 05:18:40

Test Mode: Mode 3

Modulation Type: 16QAM

704.2 MHz

Upstream Symbol Rate: 640 ksps



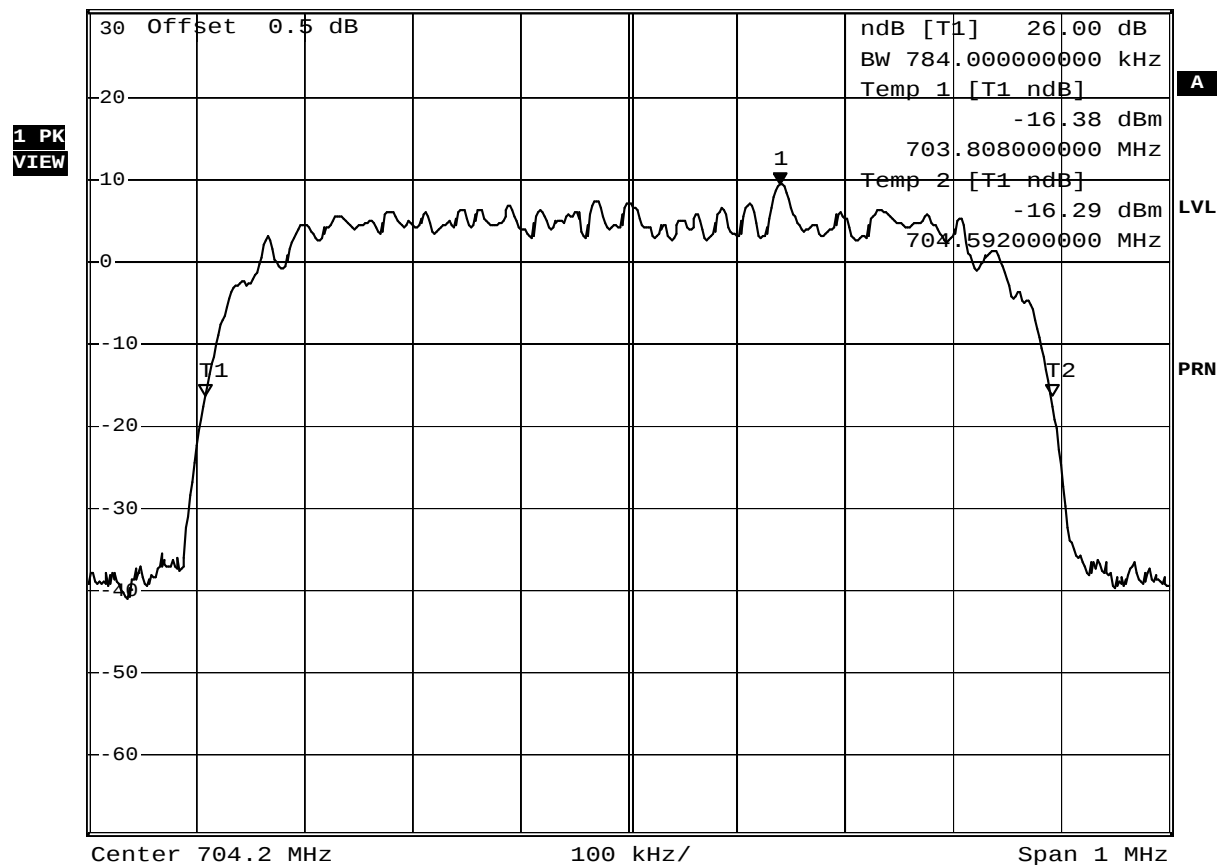
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 9.36 dBm
 *SWT 200 ms 704.340000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

704.340000000 MHz



Date: 21.NOV.2008 05:30:36

Test Mode: Mode 4

Modulation Type: 16QAM

705.8 MHz

Upstream Symbol Rate: 1280 kbps



*RBW 30 kHz Marker 1 [T1]
 *VBW 100 kHz 11.28 dBm
 *SWT 200 ms 706.080000000 MHz

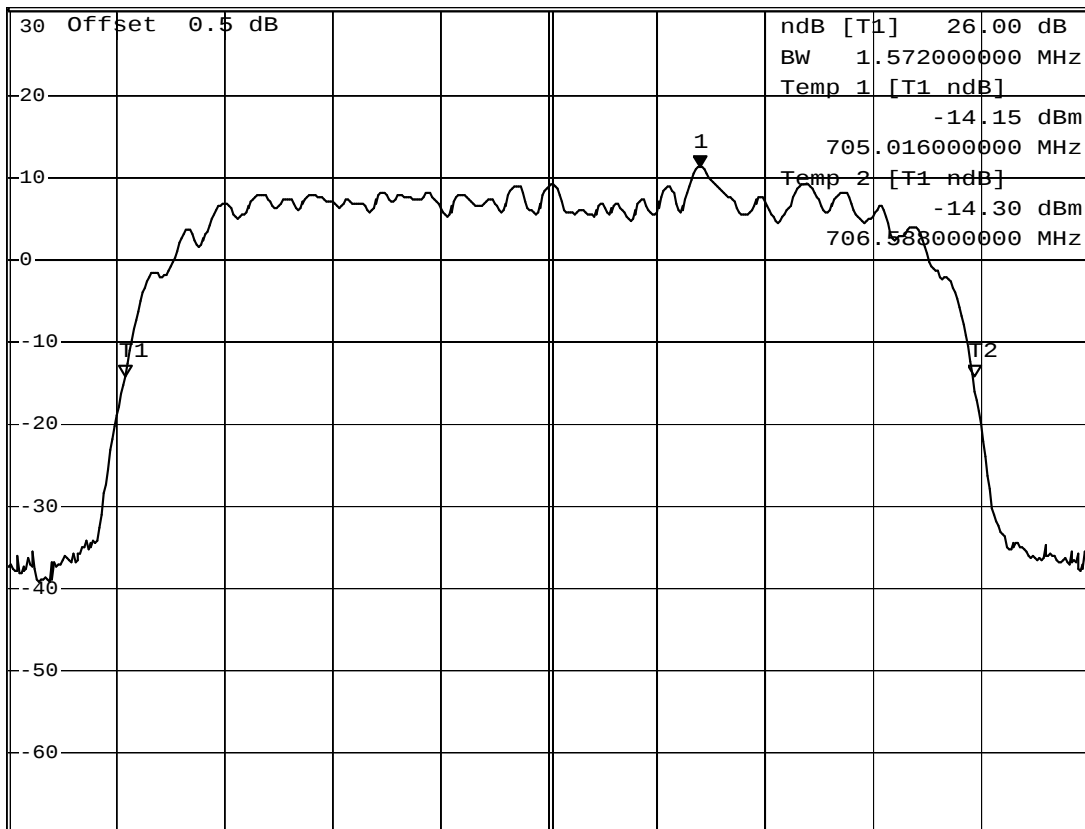
Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

706.080000000 MHz

1 PK
VIEW



Center 705.8 MHz

200 kHz/

Span 2 MHz

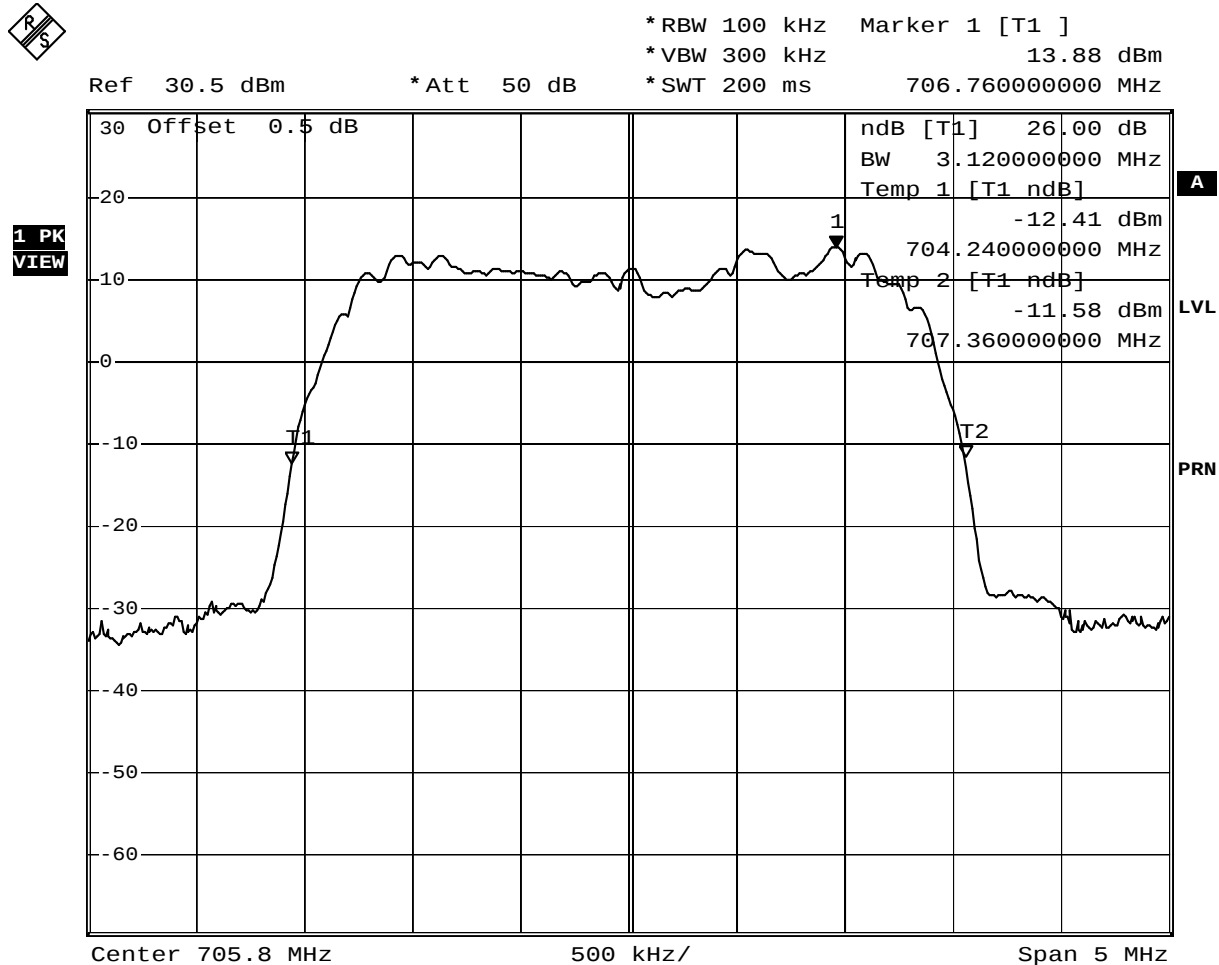
Date: 21.NOV.2008 05:44:16

Test Mode: Mode 5

Modulation Type: 16QAM

705.8 MHz

Upstream Symbol Rate: 2560 ksps



Date: 23.OCT.2008 22:26:30

Test Mode: Mode 1

Modulation Type: 16QAM

709.8 MHz

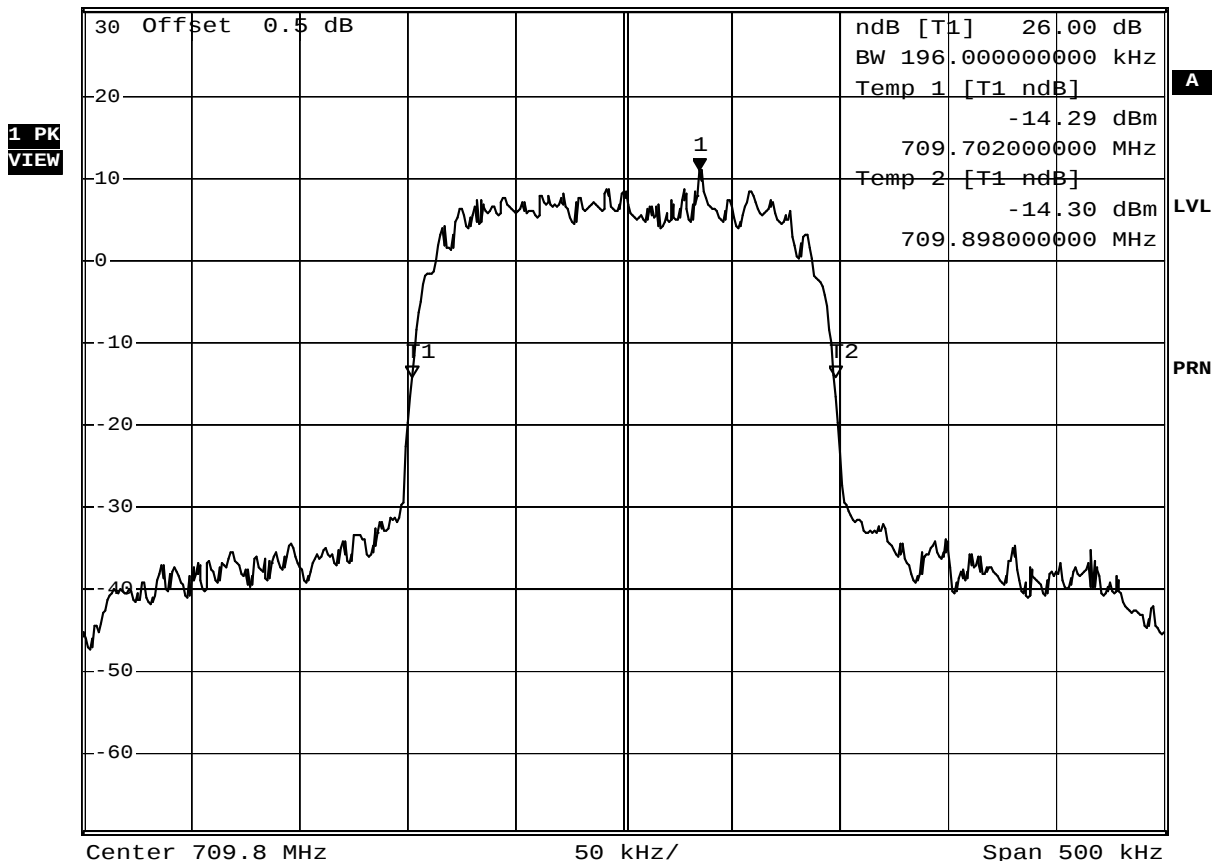
Upstream Symbol Rate: 160 ksps



*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 10.90 dBm
 *SWT 200 ms 709.835000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 21.NOV.2008 04:50:47

Test Mode: Mode 2

Modulation Type: 16QAM

709.8 MHz

Upstream Symbol Rate: 320 ksps



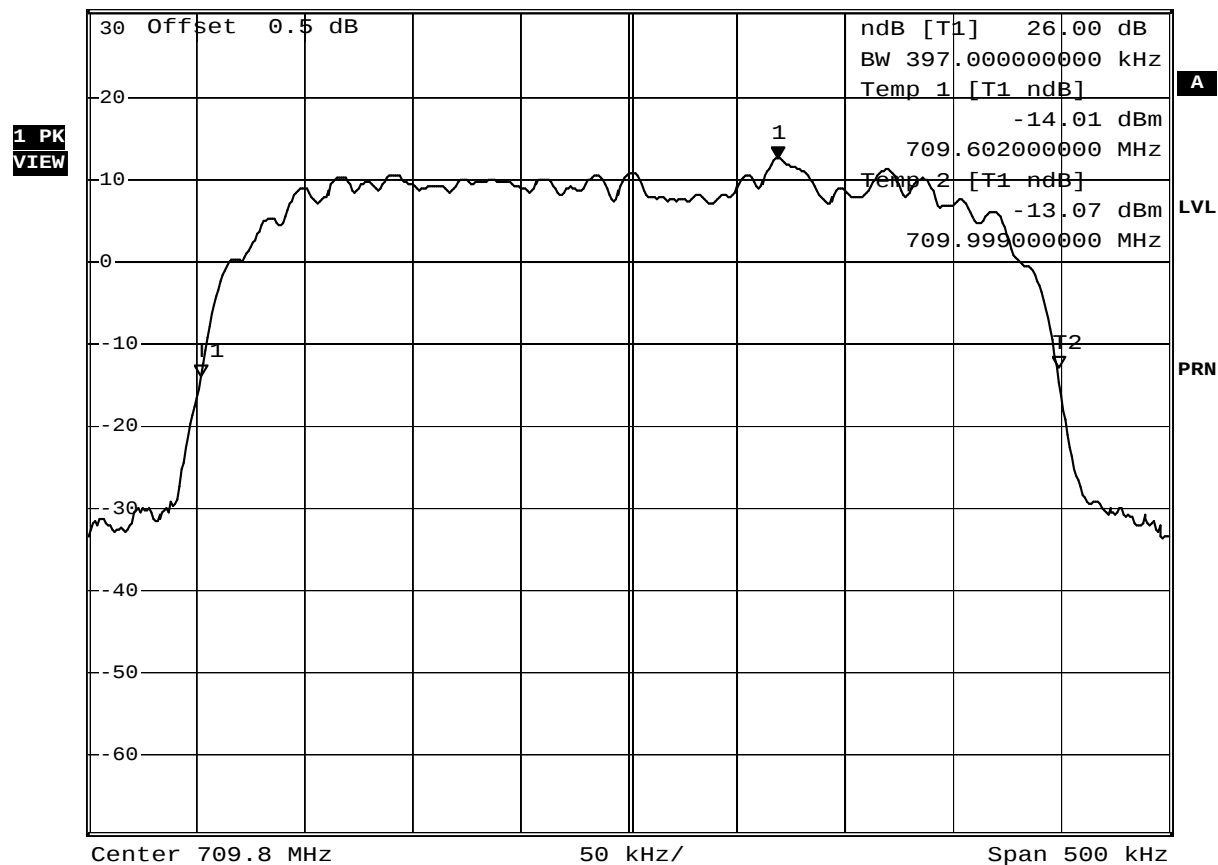
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 12.47 dBm
 *SWT 200 ms 709.869000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

709.869000000 MHz



Date: 21.NOV.2008 05:19:54

Test Mode: Mode 3

Modulation Type: 16QAM

709.8 MHz

Upstream Symbol Rate: 640 ksps



*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 10.04 dBm
 *SWT 200 ms 709.942000000 MHz

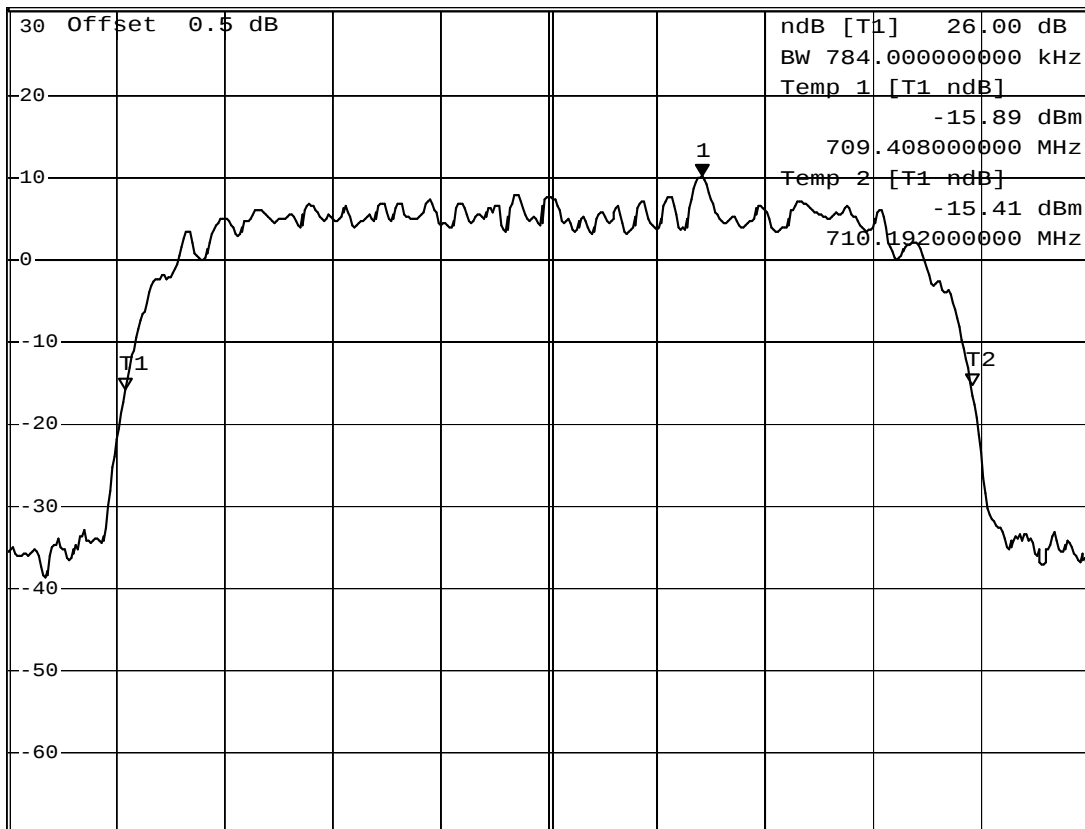
Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

709.942000000 MHz

1 PK
VIEW



Center 709.8 MHz

100 kHz/

Span 1 MHz

Date: 21.NOV.2008 05:29:43

Test Mode: Mode 4

Modulation Type: 16QAM

708.2 MHz

Upstream Symbol Rate: 1280 ksps



*RBW 30 kHz Marker 1 [T1]
 *VBW 100 kHz 11.40 dBm
 *SWT 200 ms 708.480000000 MHz

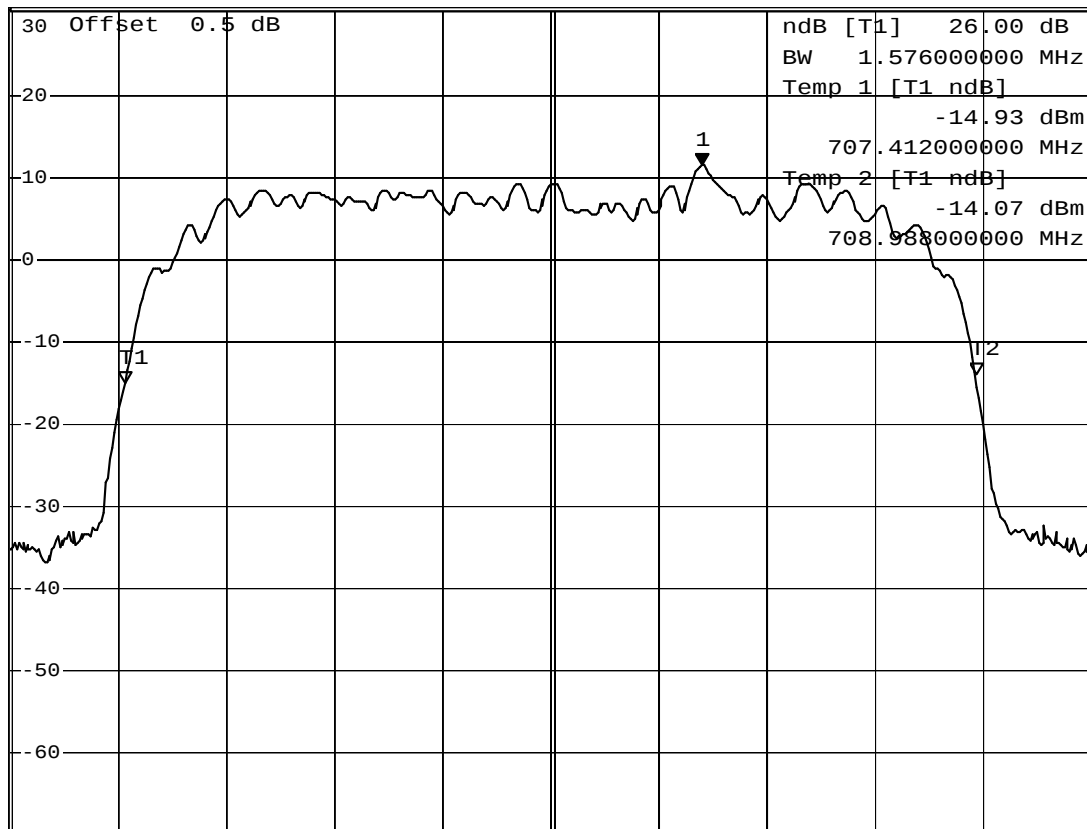
Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

708.480000000 MHz

1 PK
VIEW



A

LVL

PRN

Center 708.2 MHz

200 kHz/

Span 2 MHz

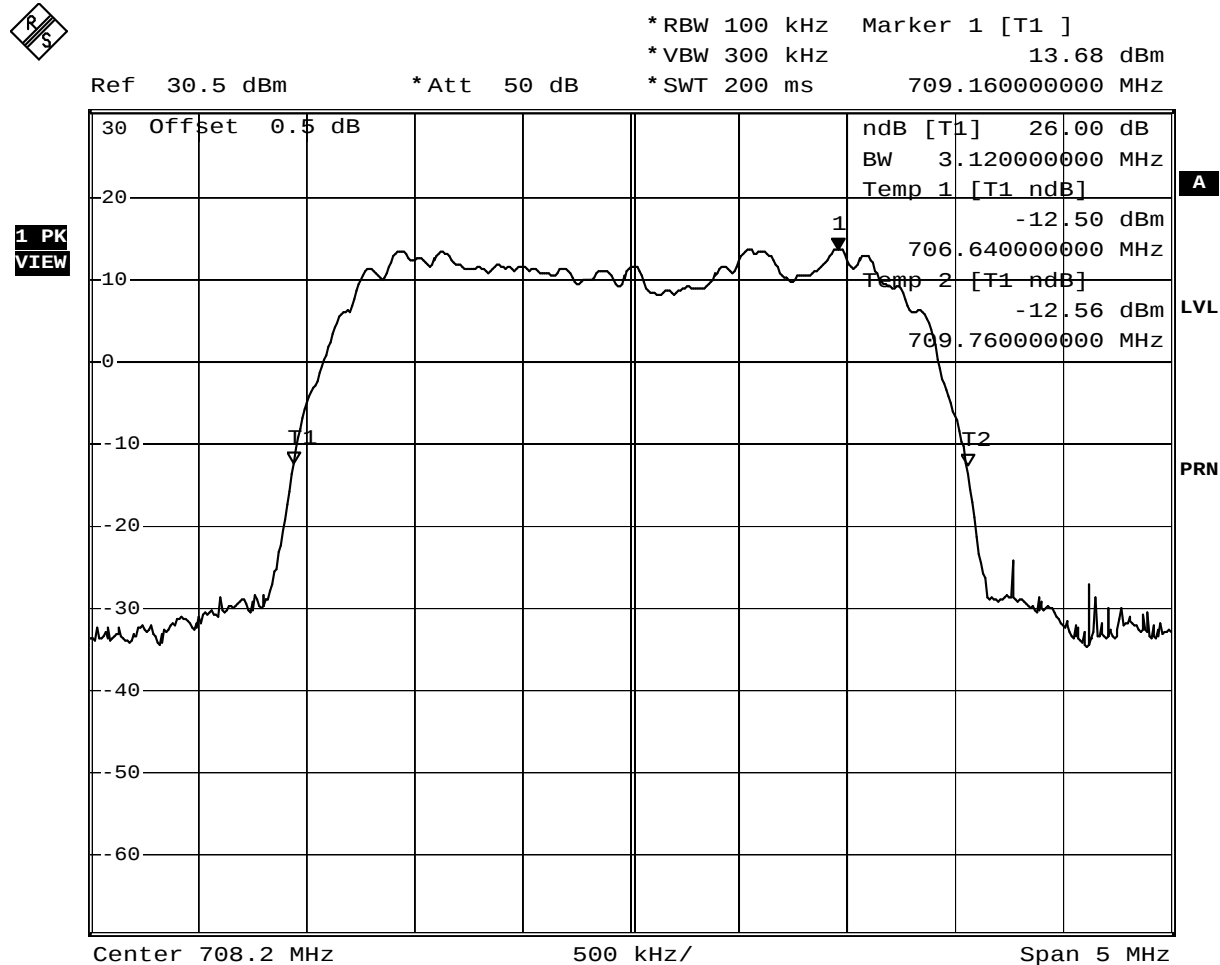
Date: 21.NOV.2008 05:45:40

Test Mode: Mode 5

Modulation Type: 16QAM

708.2 MHz

Upstream Symbol Rate: 2560 ksps



Date: 23.OCT.2008 22:27:45

Test Mode: Mode 1

Modulation Type: 16QAM

710.2 MHz

Upstream Symbol Rate: 160 ksps

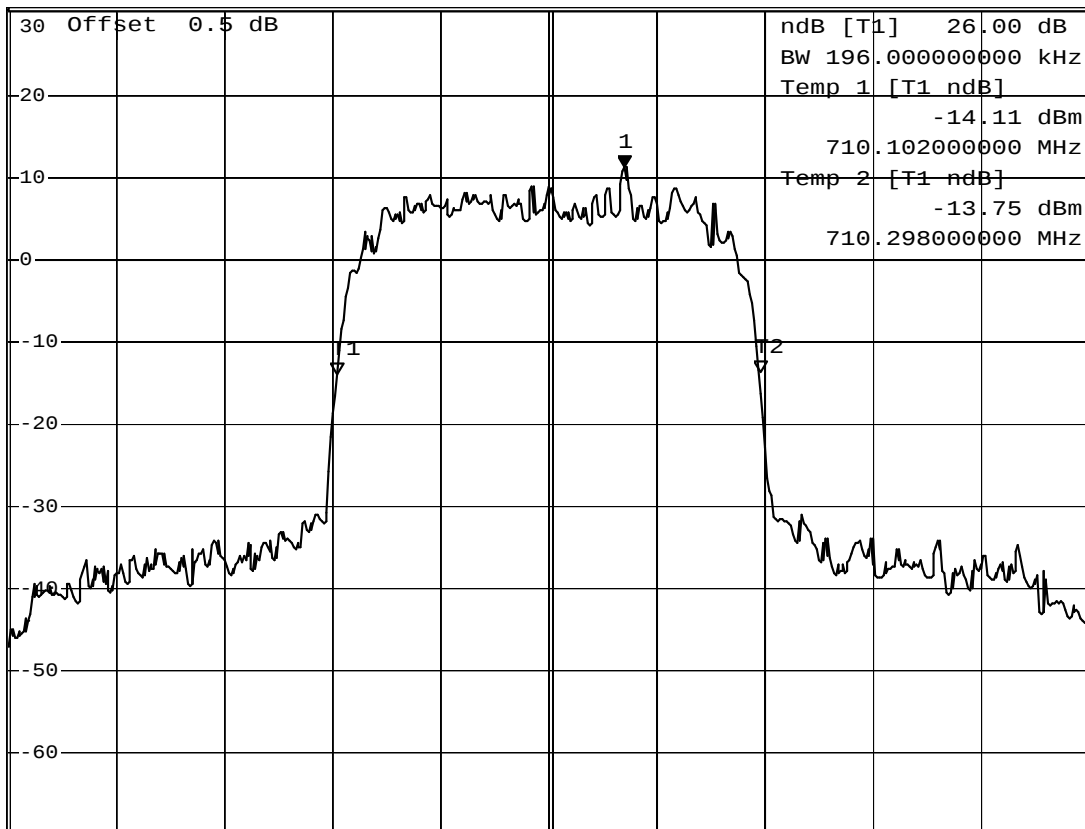


*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 11.16 dBm
 *SWT 200 ms 710.235000000 MHz

Ref 30.5 dBm

*Att 50 dB

1 PK
VIEW



Center 710.2 MHz

50 kHz/

Span 500 kHz

Date: 21.NOV.2008 04:53:15

Test Mode: Mode 2

Modulation Type: 16QAM

710.2 MHz

Upstream Symbol Rate: 320 ksps



*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 12.85 dBm
 *SWT 200 ms 710.269000000 MHz

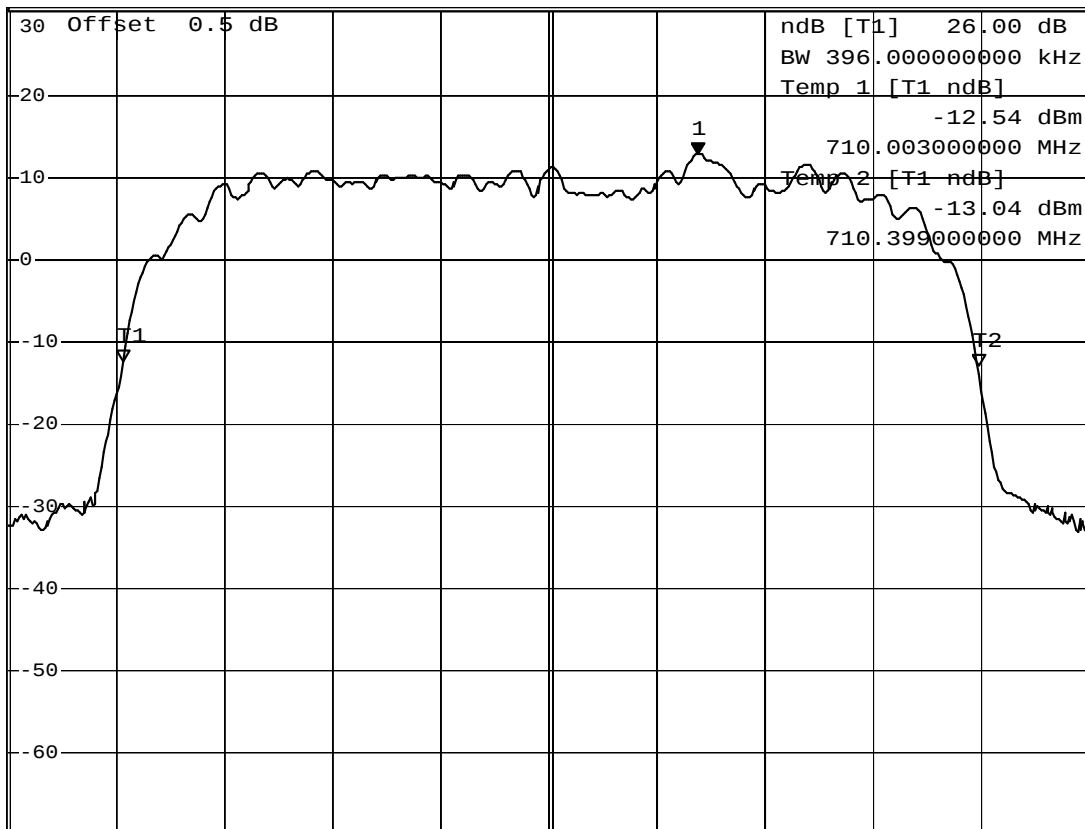
Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

710.269000000 MHz

1 PK
VIEW



Center 710.2 MHz

50 kHz/

Span 500 kHz

Date: 21.NOV.2008 05:20:43

Test Mode: Mode 3

Modulation Type: 16QAM

710.2 MHz

Upstream Symbol Rate: 640 ksps



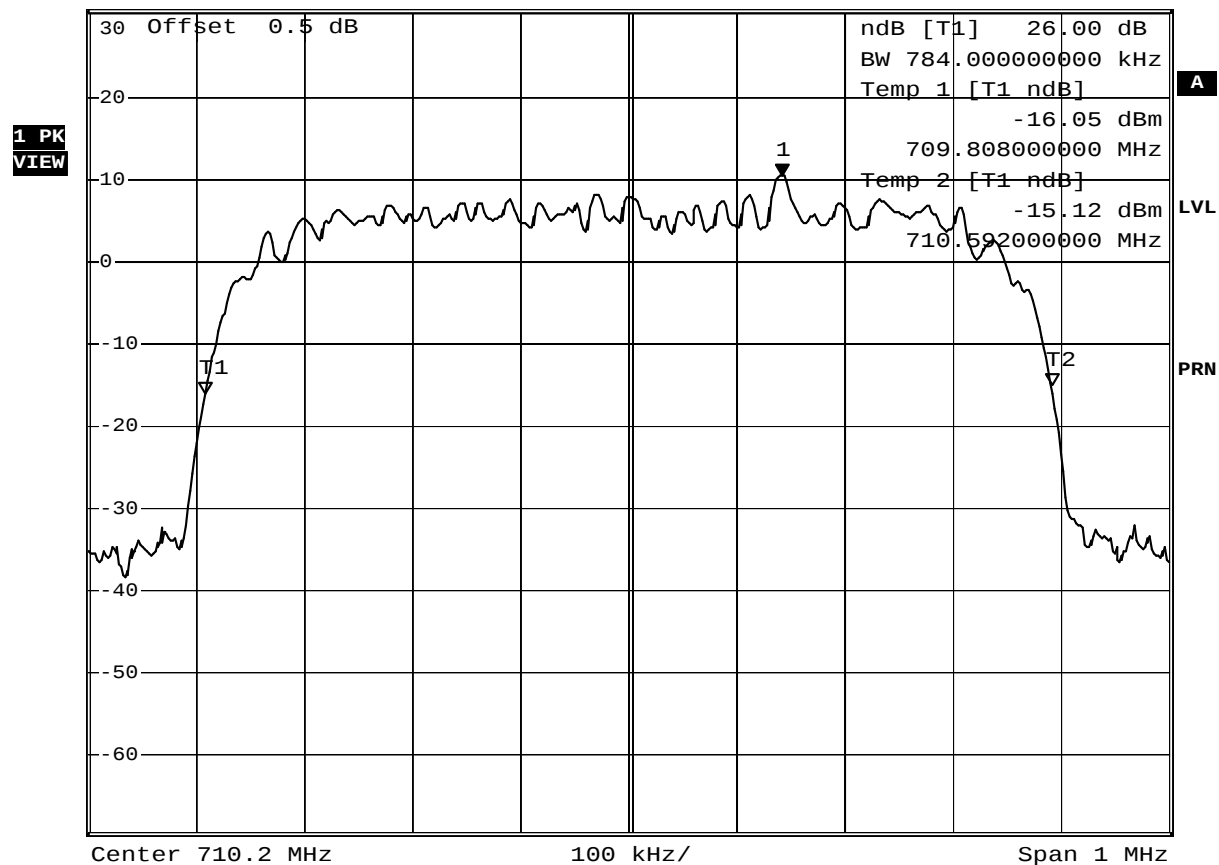
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 10.46 dBm
 *SWT 200 ms 710.342000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

710.342000000 MHz



Date: 21.NOV.2008 05:28:50

Test Mode: Mode 4

Modulation Type: 16QAM

711.8 MHz

Upstream Symbol Rate: 1280 ksps



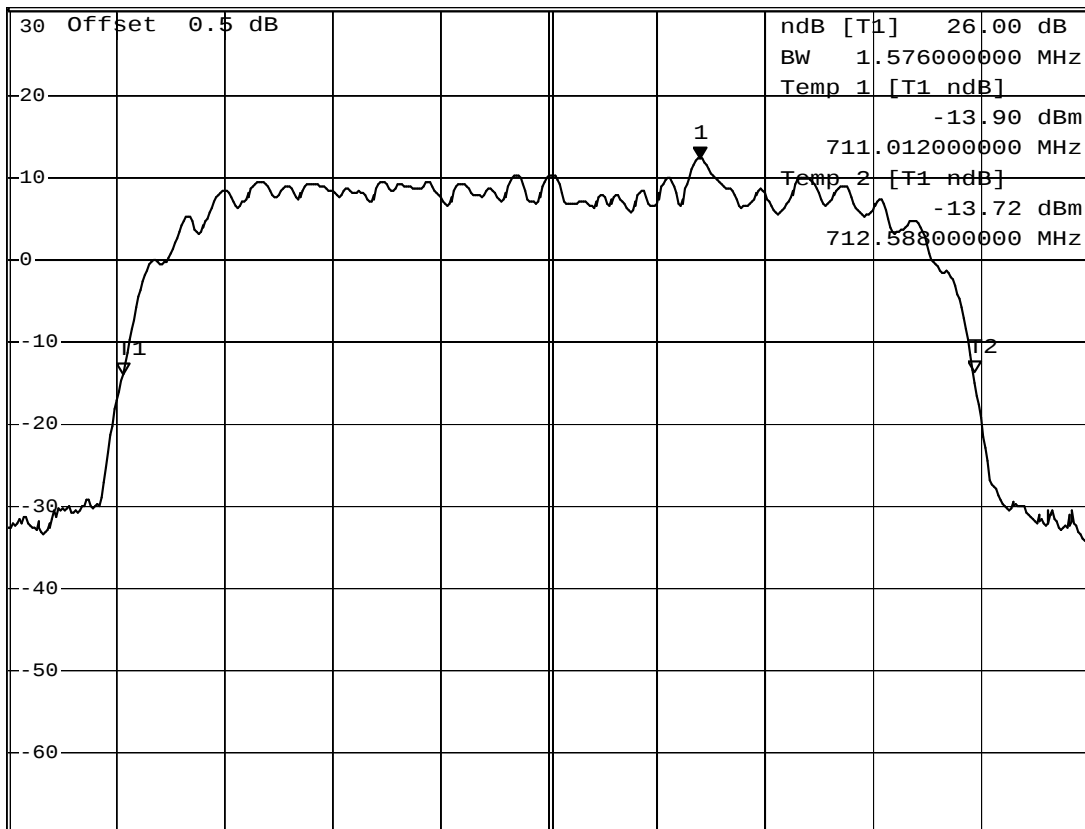
*RBW 30 kHz Marker 1 [T1]
 *VBW 100 kHz 12.26 dBm
 *SWT 200 ms 712.080000000 MHz

Ref 30.5 dBm

*Att 50 dB

712.080000000 MHz

1 PK
VIEW



Center 711.8 MHz

200 kHz/

Span 2 MHz

Date: 21.NOV.2008 05:46:54

Test Mode: Mode 5

Modulation Type: 16QAM

711.8 MHz

Upstream Symbol Rate: 2560 ksps



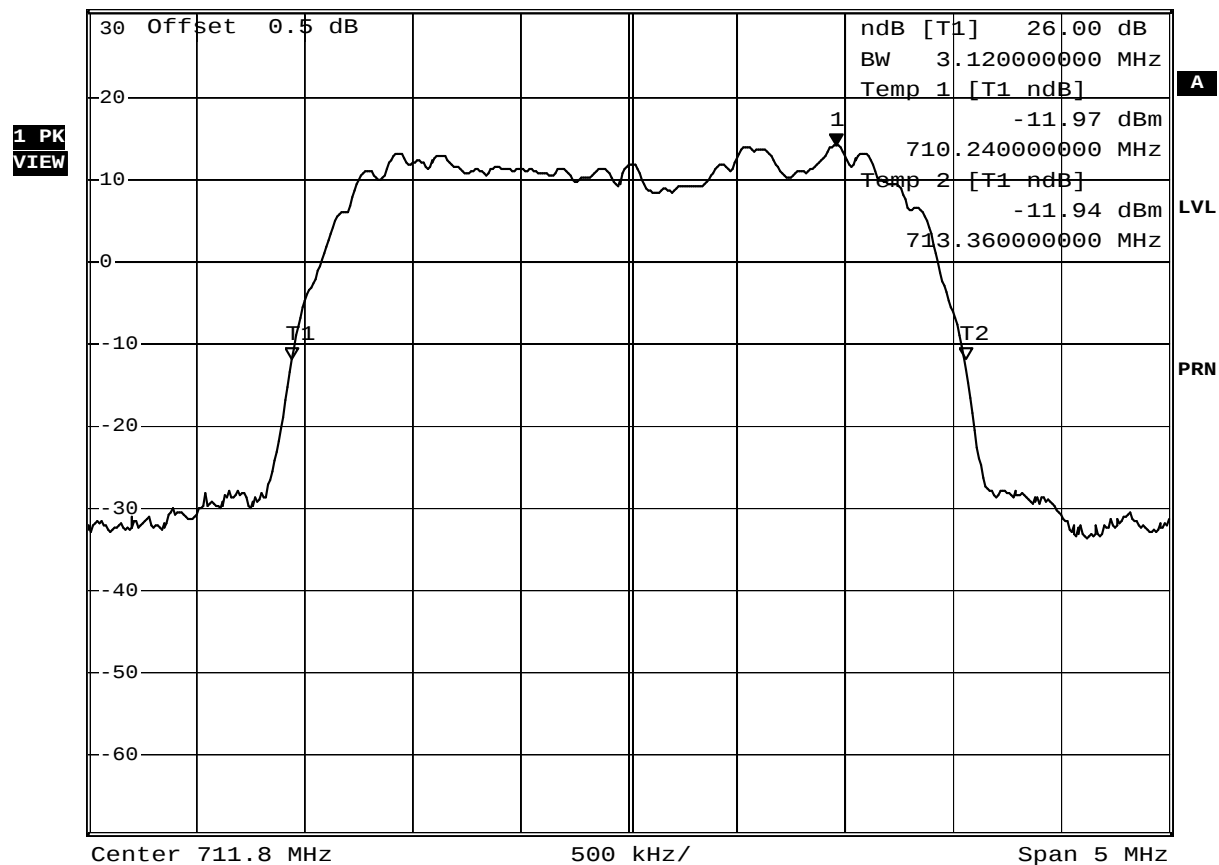
*RBW 100 kHz Marker 1 [T1]

*VBW 300 kHz 14.05 dBm

*SWT 200 ms 712.760000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 22:34:18

Test Mode: Mode 1

Modulation Type: 16QAM

715.8 MHz

Upstream Symbol Rate: 160 ksps



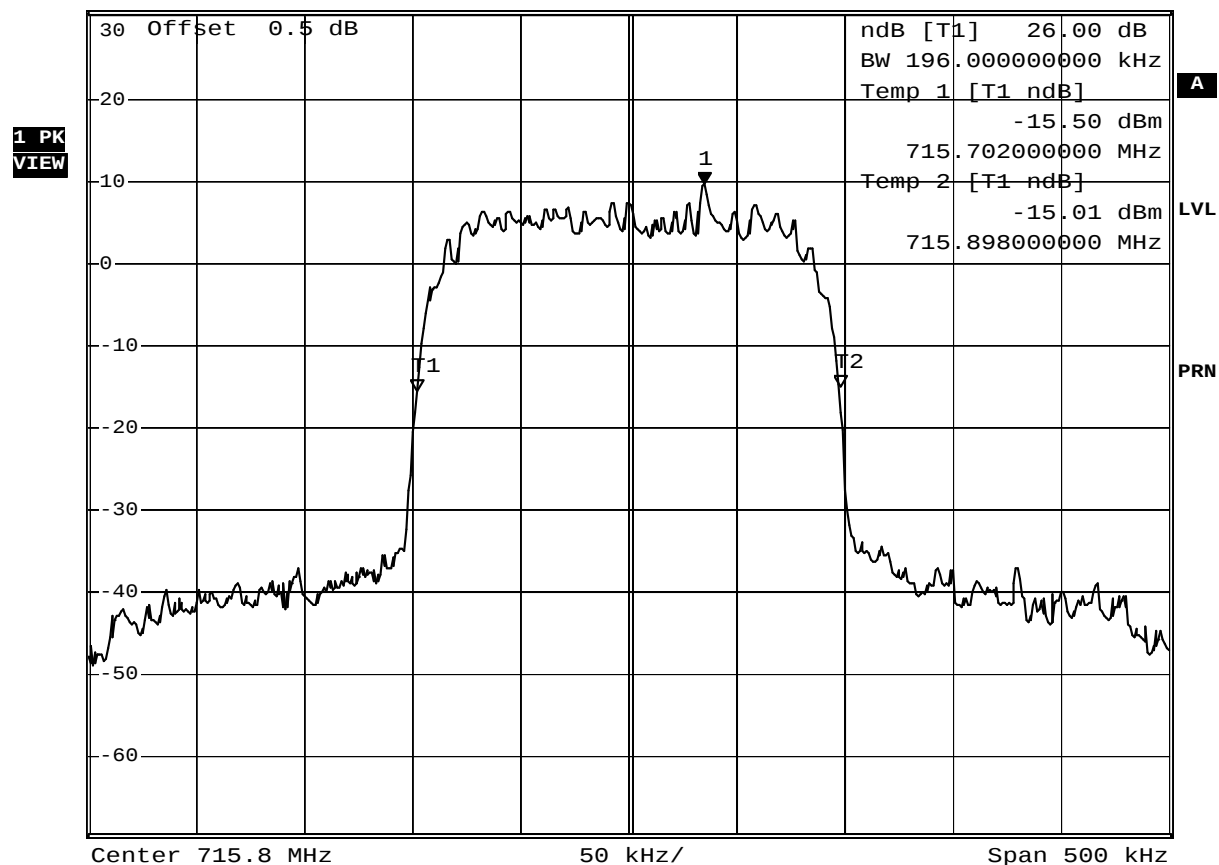
*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 9.61 dBm
 *SWT 200 ms 715.835000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

715.835000000 MHz



Date: 21.NOV.2008 04:54:45

Test Mode: Mode 2

Modulation Type: 16QAM

715.8 MHz

Upstream Symbol Rate: 320 ksps



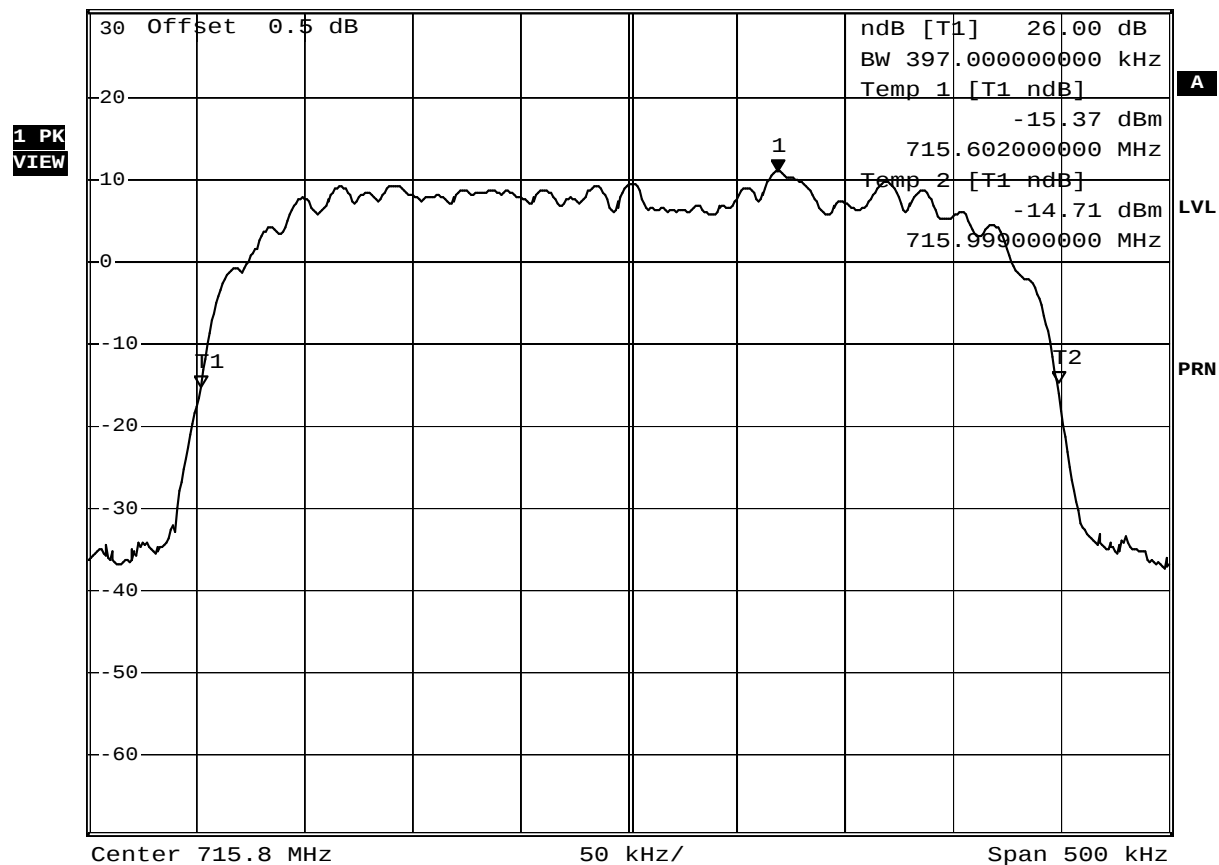
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 11.04 dBm
 *SWT 200 ms 715.869000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

715.869000000 MHz



Date: 21.NOV.2008 05:21:28

Test Mode: Mode 3

Modulation Type: 16QAM

715.8 MHz

Upstream Symbol Rate: 640 ksps



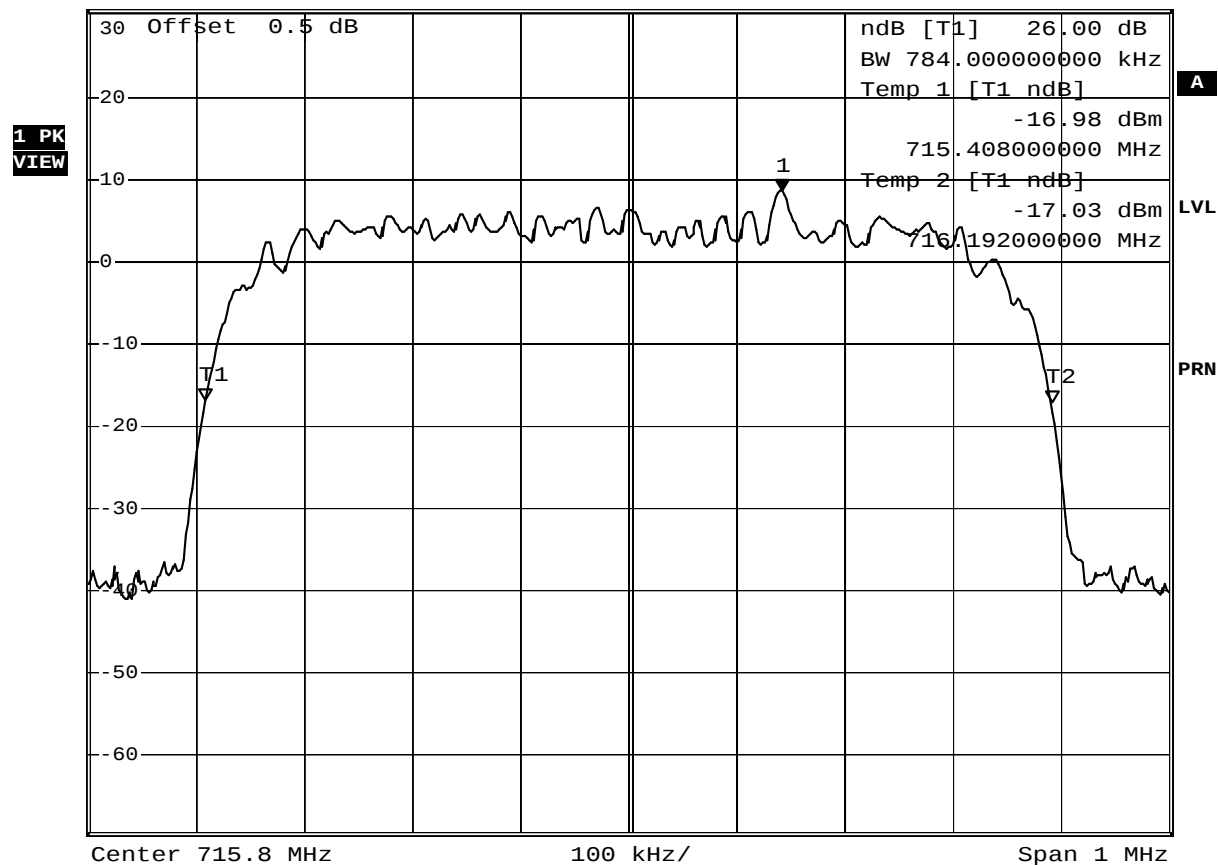
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 8.53 dBm
 *SWT 200 ms 715.942000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

715.942000000 MHz



Date: 21.NOV.2008 05:27:49

Test Mode: Mode 4

Modulation Type: 16QAM

714.2 MHz

Upstream Symbol Rate: 1280 kbps



*RBW 30 kHz Marker 1 [T1]
 *VBW 100 kHz 11.24 dBm
 *SWT 200 ms 714.480000000 MHz

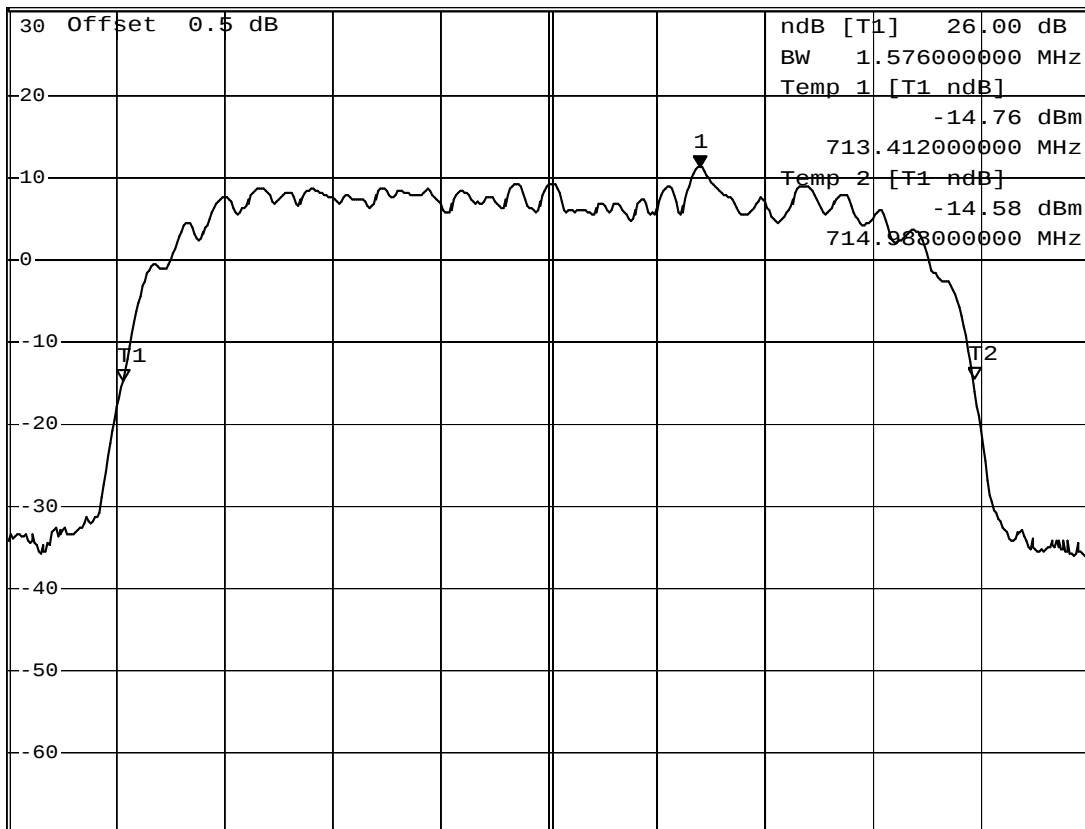
Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

714.480000000 MHz

1 PK
VIEW



Center 714.2 MHz

200 kHz/

Span 2 MHz

Date: 21.NOV.2008 05:47:43

Test Mode: Mode 5

Modulation Type: 16QAM

714.2 MHz

Upstream Symbol Rate: 2560 ksps



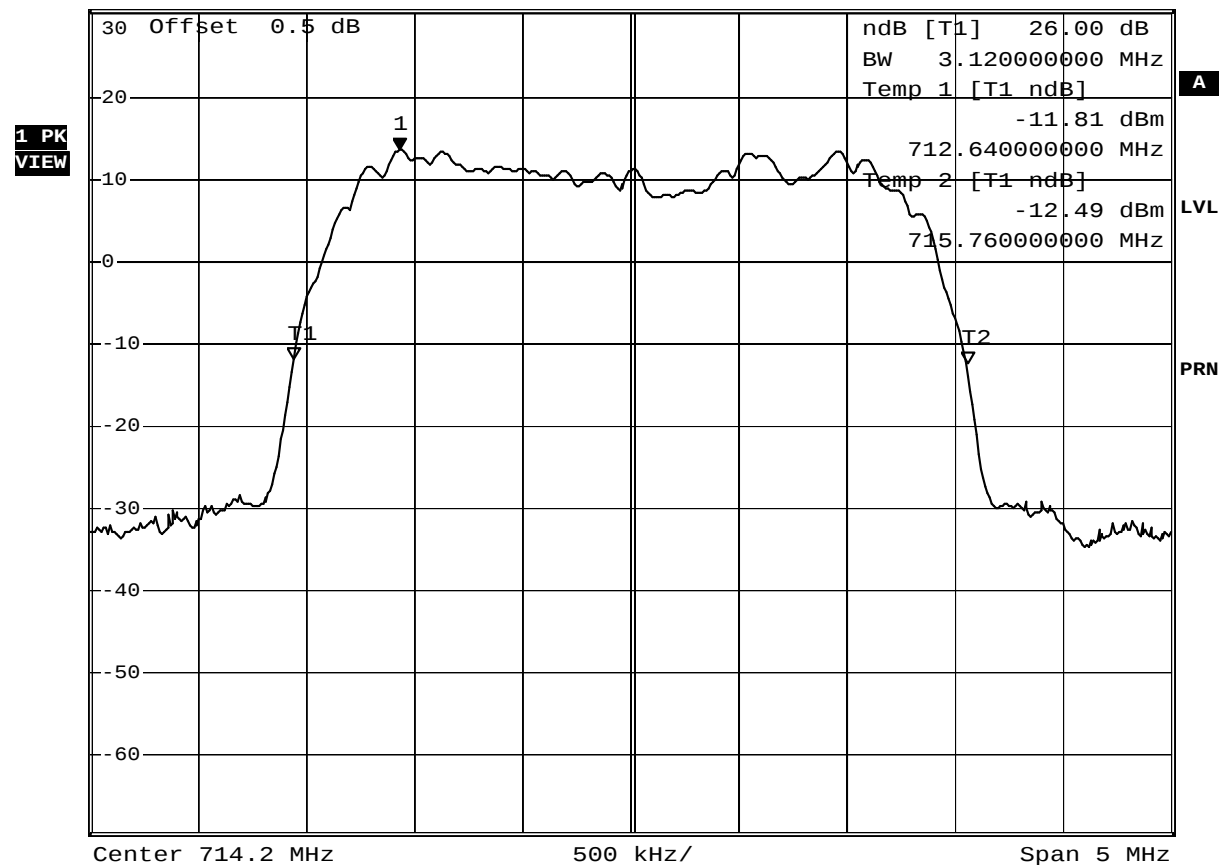
*RBW 100 kHz Marker 1 [T1]

*VBW 300 kHz 13.49 dBm

*SWT 200 ms 713.130000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 22:35:04

Test Mode: Mode 1

Modulation Type: QPSK

704.2 MHz

Upstream Symbol Rate: 160 ksps



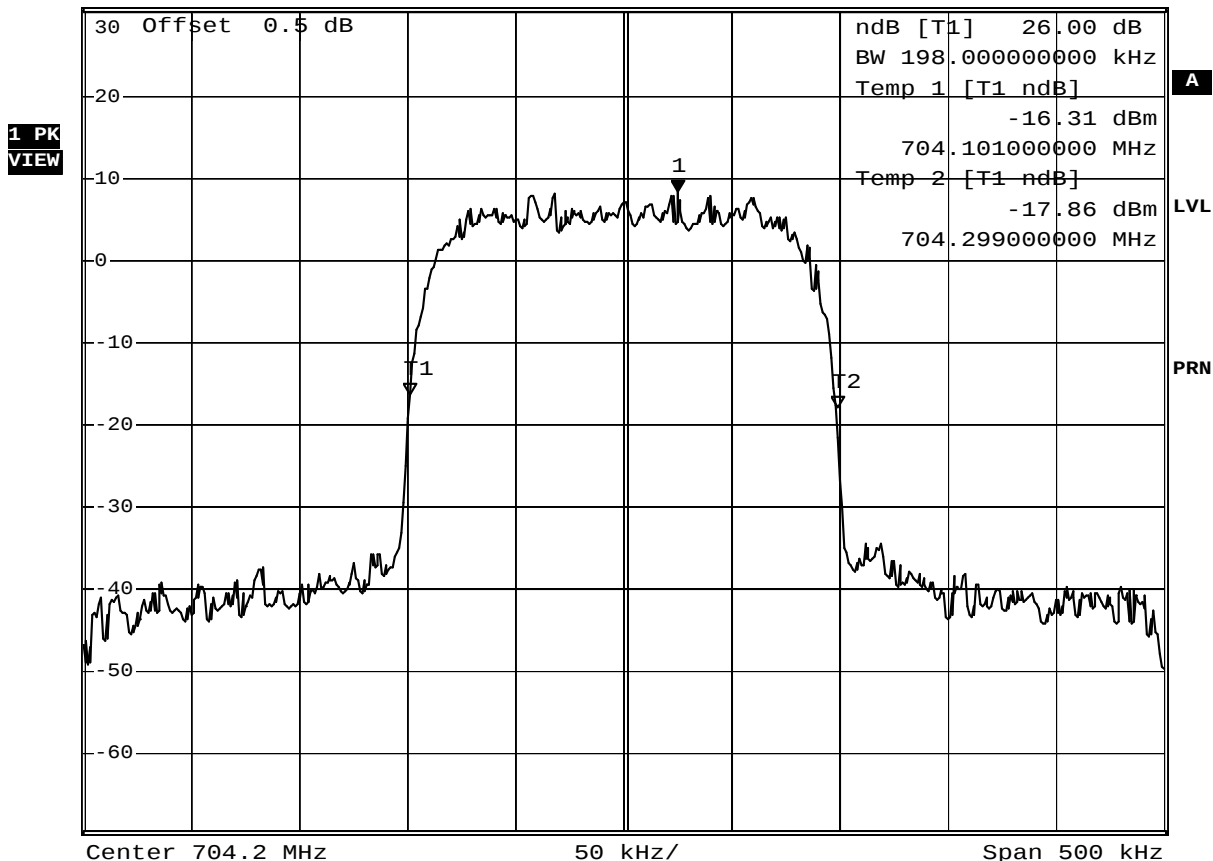
*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 8.45 dBm
 *SWT 200 ms 704.225000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

704.225000000 MHz



Date: 21.NOV.2008 04:58:31

Test Mode: Mode 2

Modulation Type: QPSK

704.2 MHz

Upstream Symbol Rate: 320 ksps



*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 10.90 dBm
 *SWT 200 ms 704.116000000 MHz

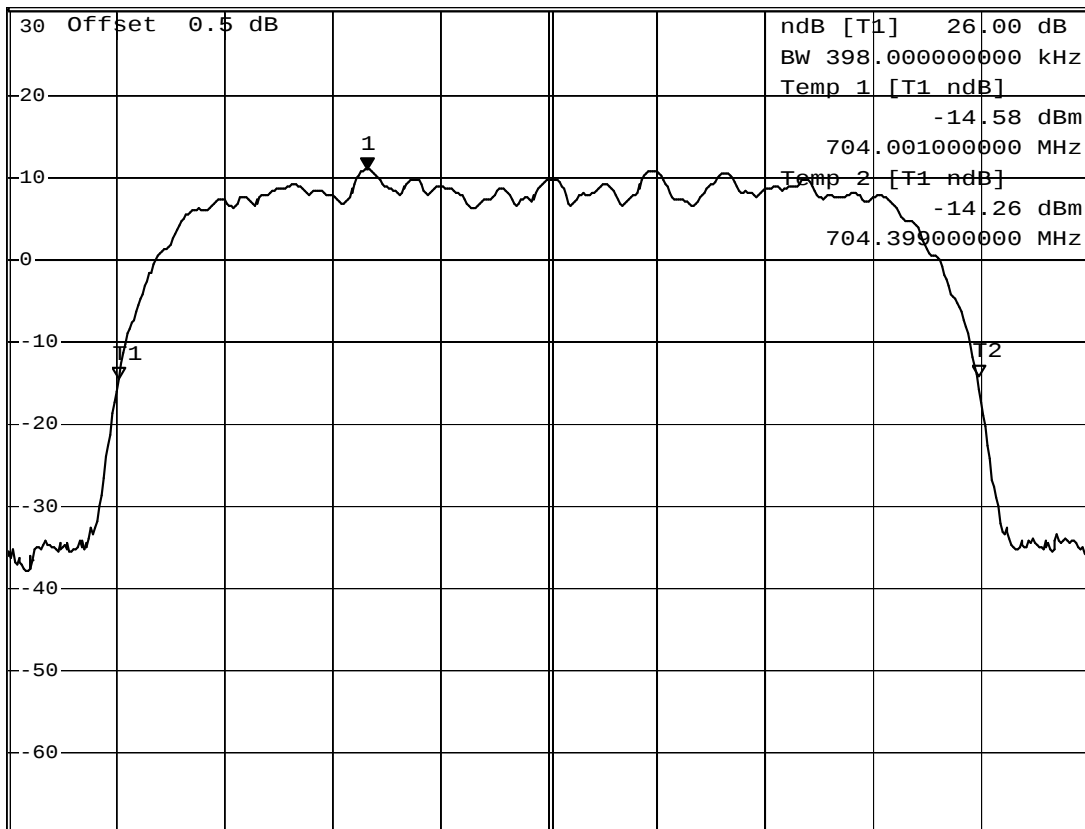
Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

704.116000000 MHz

1 PK
VIEW



Center 704.2 MHz

50 kHz/

Span 500 kHz

Date: 21.NOV.2008 05:17:21

Test Mode: Mode 3

Modulation Type: QPSK

704.2 MHz

Upstream Symbol Rate: 640 ksps

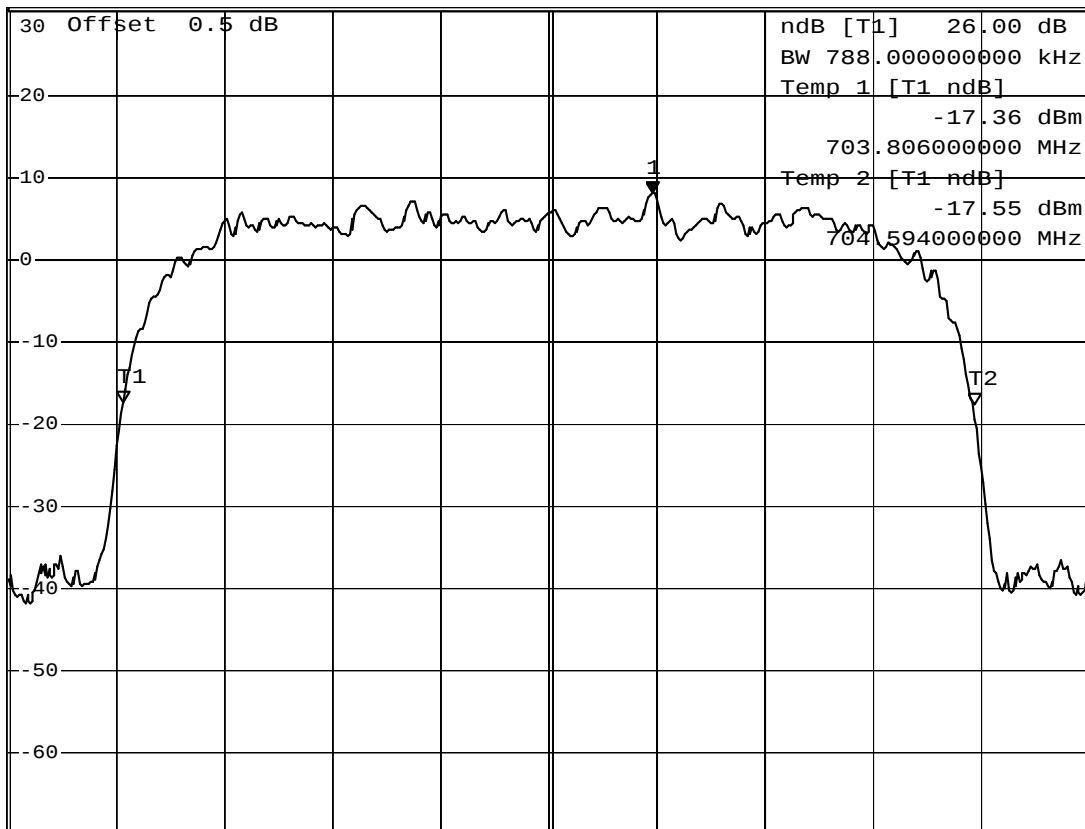


*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 7.99 dBm
 *SWT 200 ms 704.296000000 MHz

Ref 30.5 dBm

*Att 50 dB

1 PK
VIEW



Center 704.2 MHz

100 kHz/

Span 1 MHz

Date: 21.NOV.2008 05:32:27

Test Mode: Mode 4

Modulation Type: QPSK

705.8 MHz

Upstream Symbol Rate: 1280 kbps



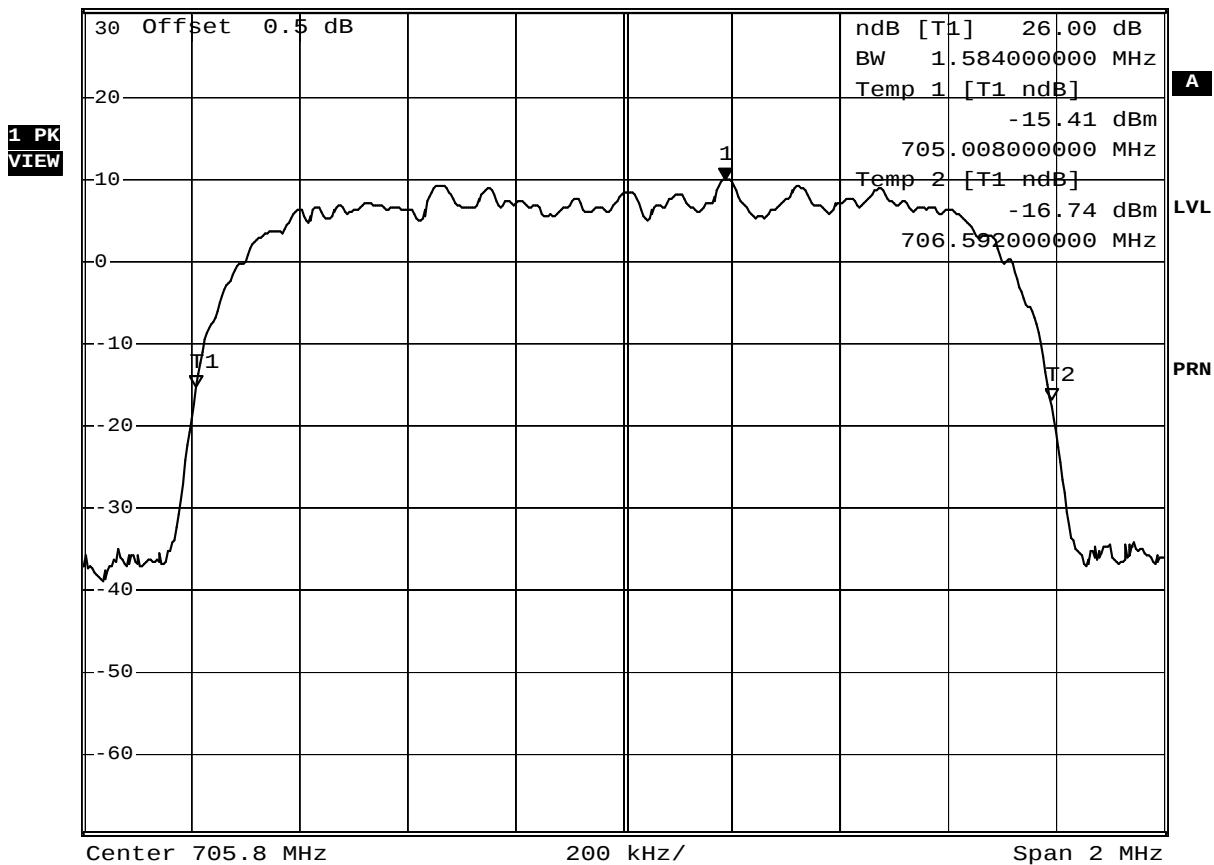
*RBW 30 kHz Marker 1 [T1]

*VBW 100 kHz 10.01 dBm

*SWT 200 ms 705.988000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 21.NOV.2008 05:42:46

Test Mode: Mode 5

Modulation Type: QPSK

705.8 MHz

Upstream Symbol Rate: 2560 ksps



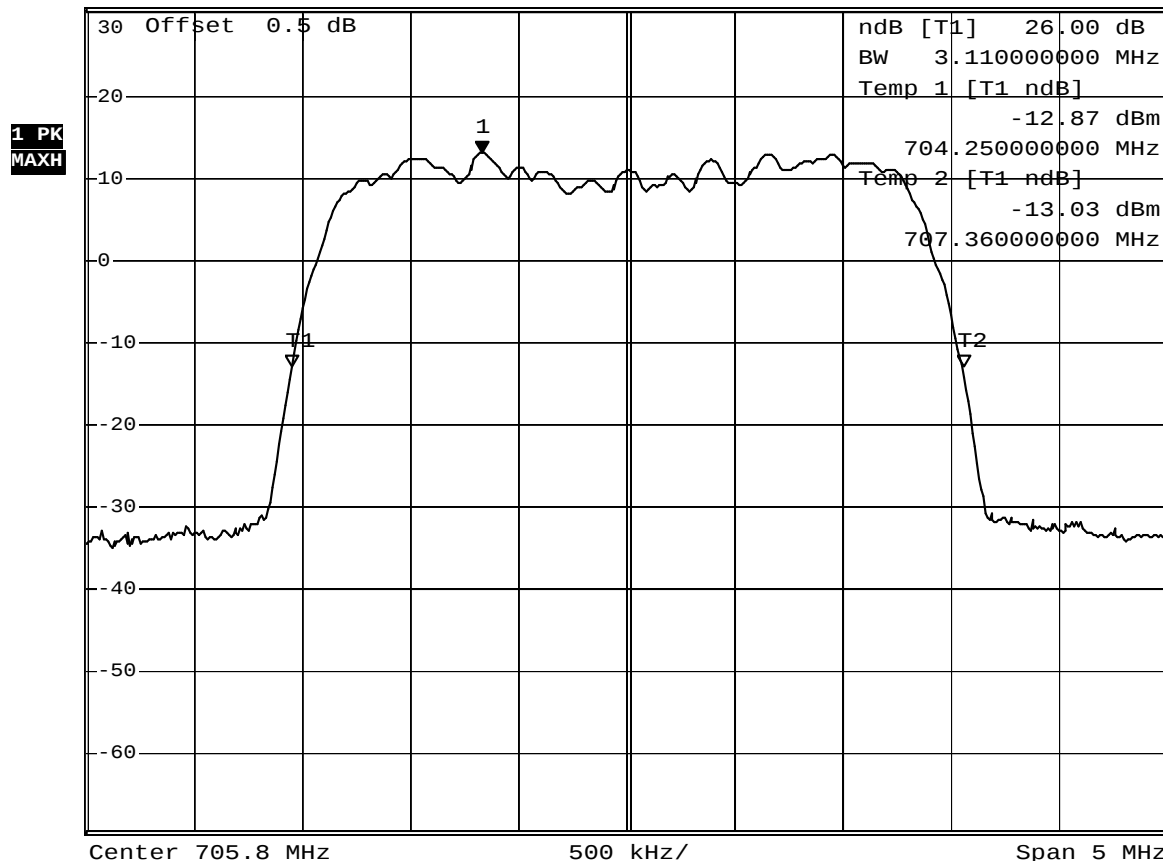
*RBW 100 kHz Marker 1 [T1]

*VBW 300 kHz 12.99 dBm

*SWT 200 ms 705.130000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 22:36:18

Test Mode: Mode 1

Modulation Type: QPSK

709.8 MHz

Upstream Symbol Rate: 160 ksps



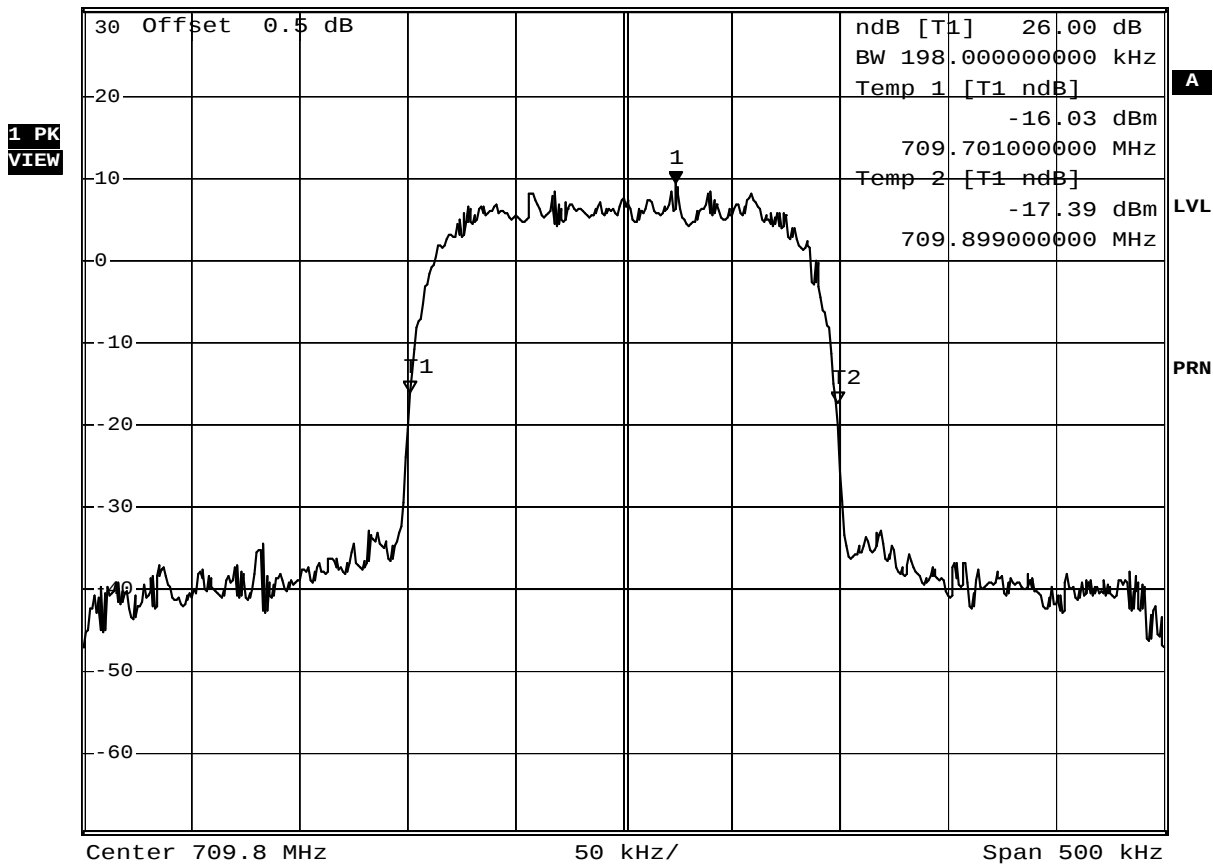
*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 9.26 dBm
 *SWT 200 ms 709.824000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

709.824000000 MHz



Date: 21.NOV.2008 05:01:32

Test Mode: Mode 2

Modulation Type: QPSK

709.8 MHz

Upstream Symbol Rate: 320 ksps



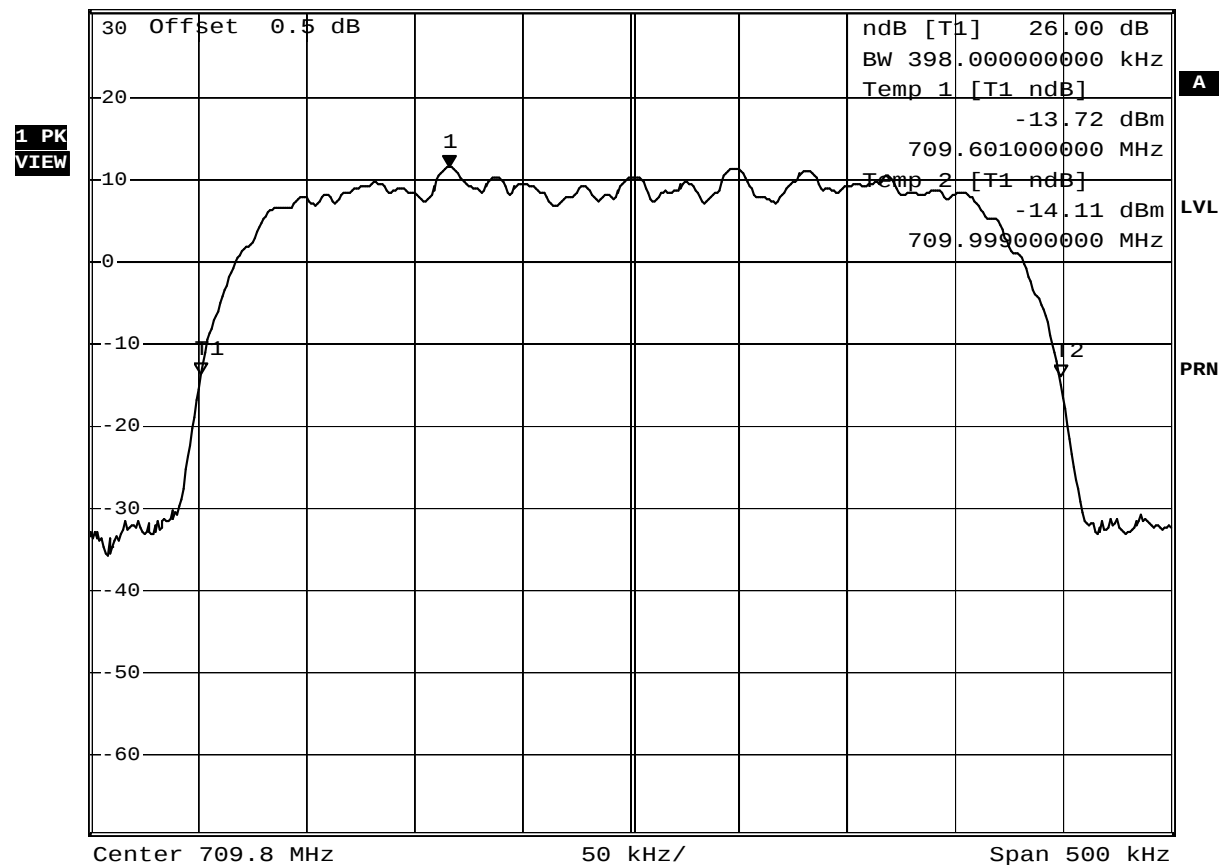
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 11.43 dBm
 *SWT 200 ms 709.716000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

709.716000000 MHz



Date: 21.NOV.2008 05:16:24

Test Mode: Mode 3

Modulation Type: QPSK

709.8 MHz

Upstream Symbol Rate: 640 ksps



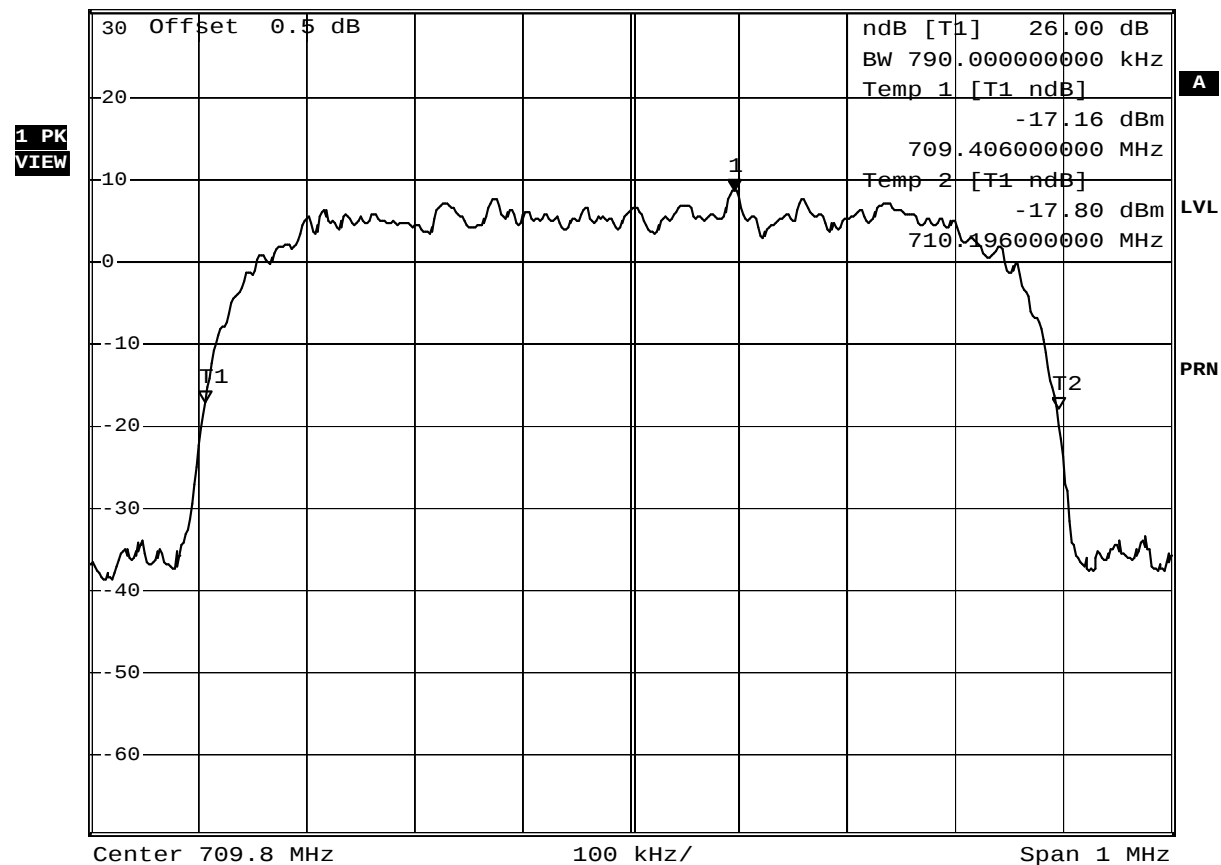
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 8.64 dBm
 *SWT 200 ms 709.896000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

709.896000000 MHz



Date: 21.NOV.2008 05:33:20

Test Mode: Mode 4

Modulation Type: QPSK

708.2 MHz

Upstream Symbol Rate: 1280 kbps



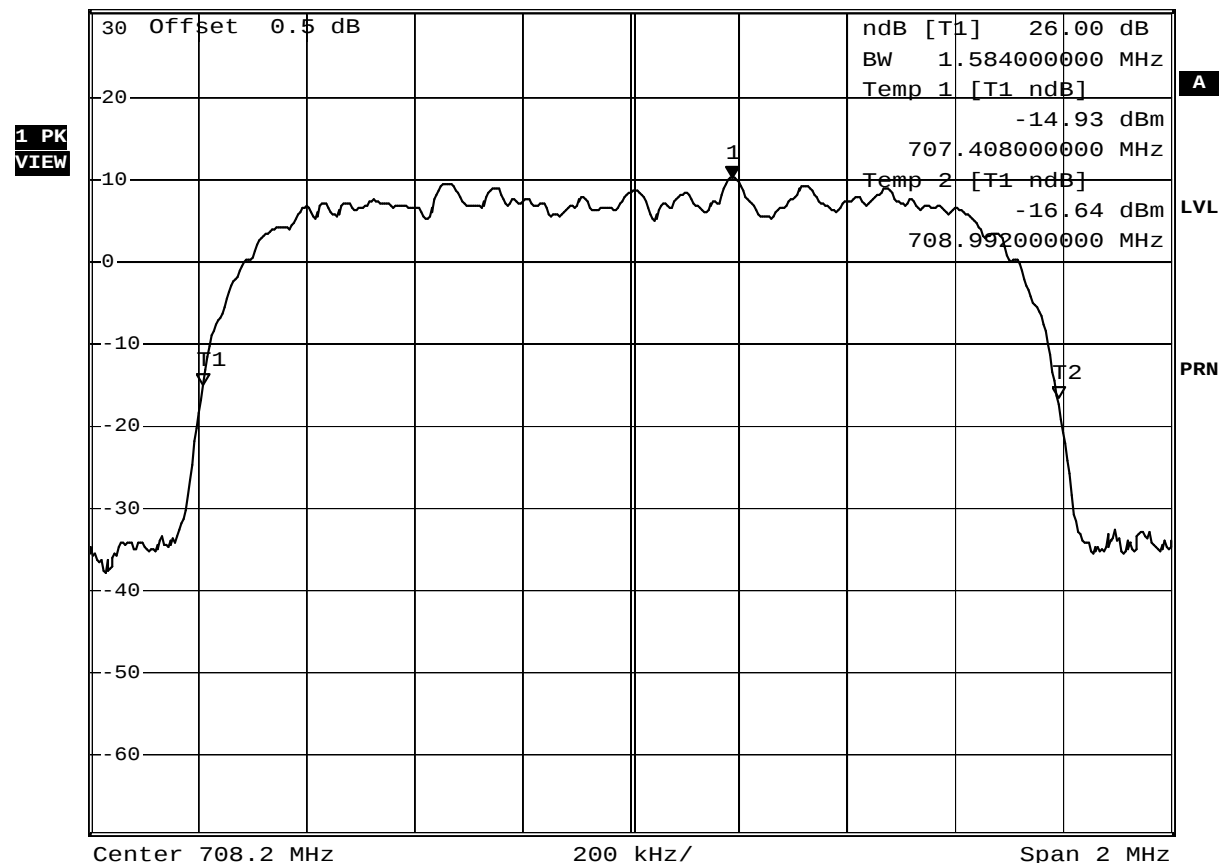
*RBW 30 kHz Marker 1 [T1]
 *VBW 100 kHz 10.13 dBm
 *SWT 200 ms 708.388000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

708.388000000 MHz



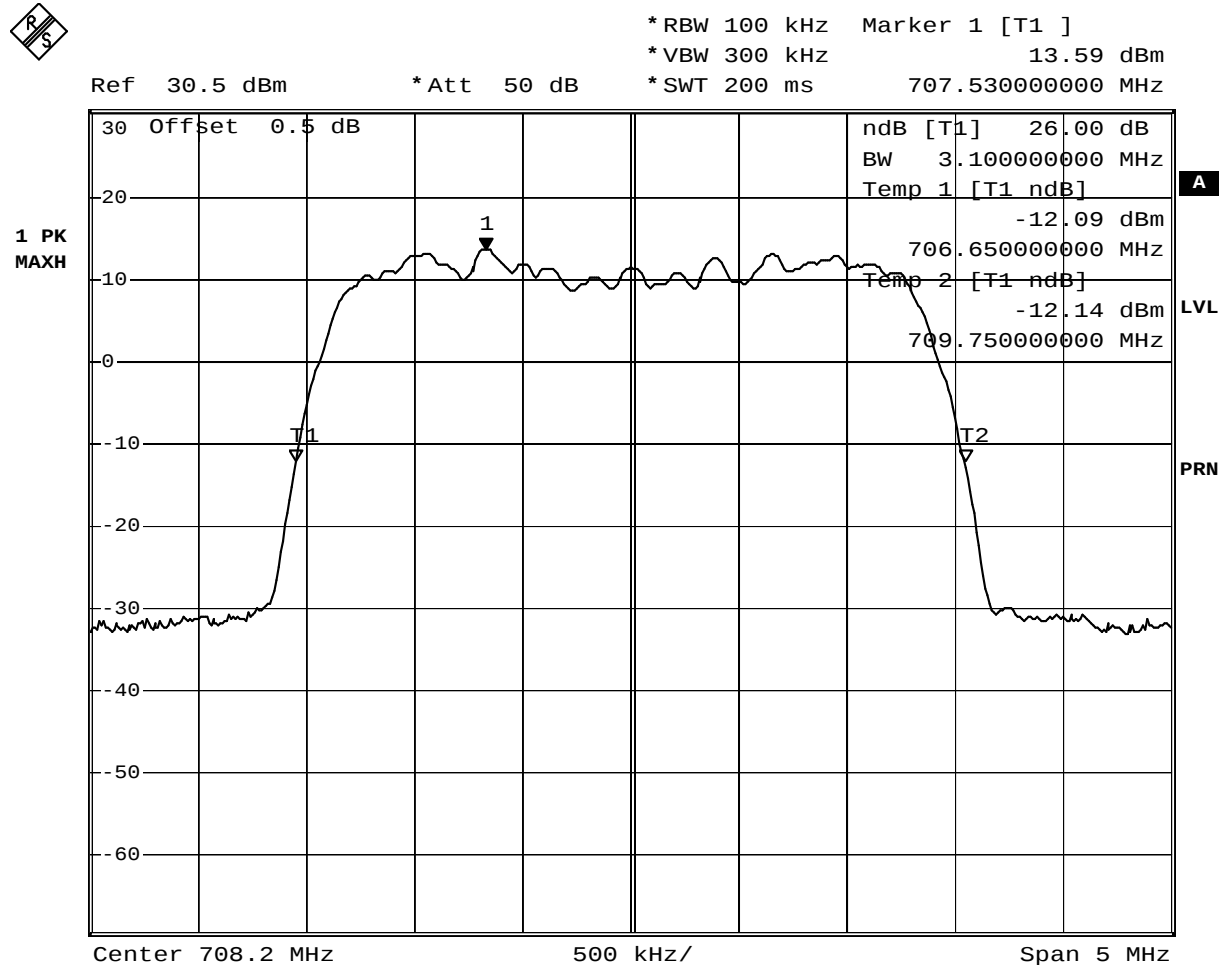
Date: 21.NOV.2008 05:41:58

Test Mode: Mode 5

Modulation Type: QPSK

708.2 MHz

Upstream Symbol Rate: 2560 ksps



Date: 23.OCT.2008 22:53:37

Test Mode: Mode 1

Modulation Type: QPSK

710.2 MHz

Upstream Symbol Rate: 160 ksps

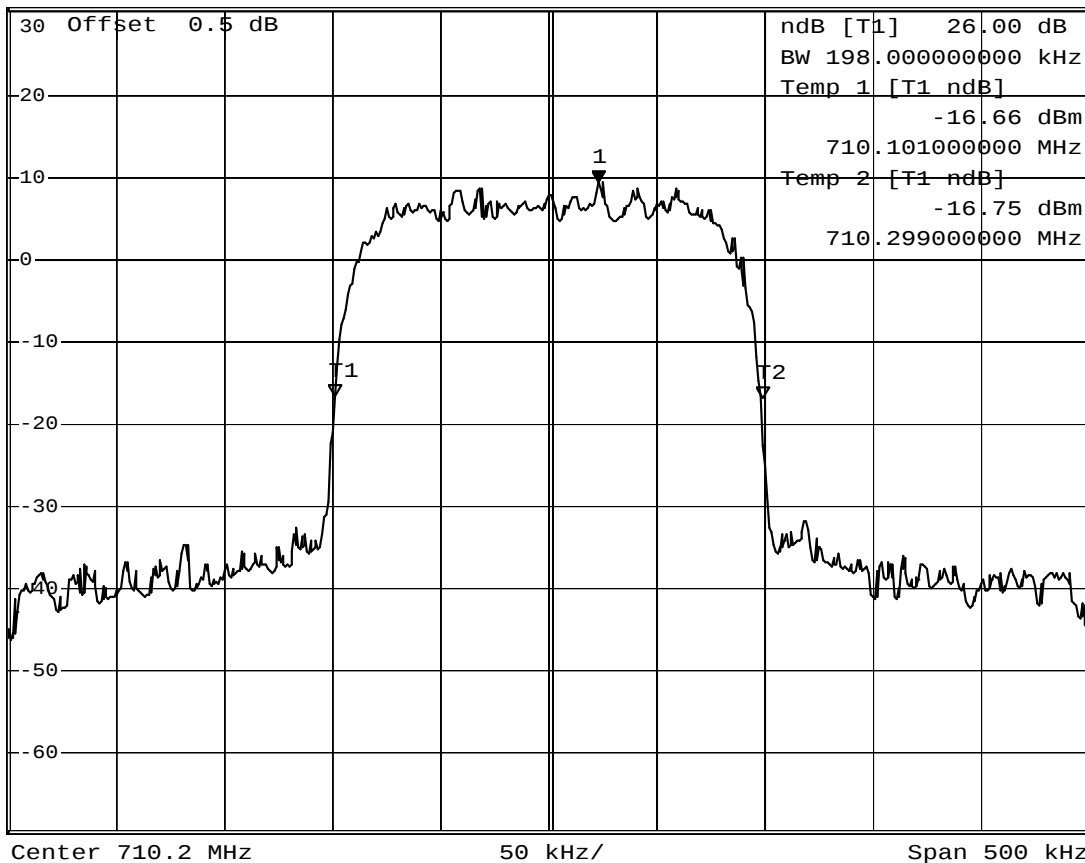


*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 9.38 dBm
 *SWT 200 ms 710.223000000 MHz

Ref 30.5 dBm

*Att 50 dB

1 PK
VIEW



Date: 21.NOV.2008 05:02:26

Test Mode: Mode 2

Modulation Type: QPSK

710.2 MHz

Upstream Symbol Rate: 320 ksps



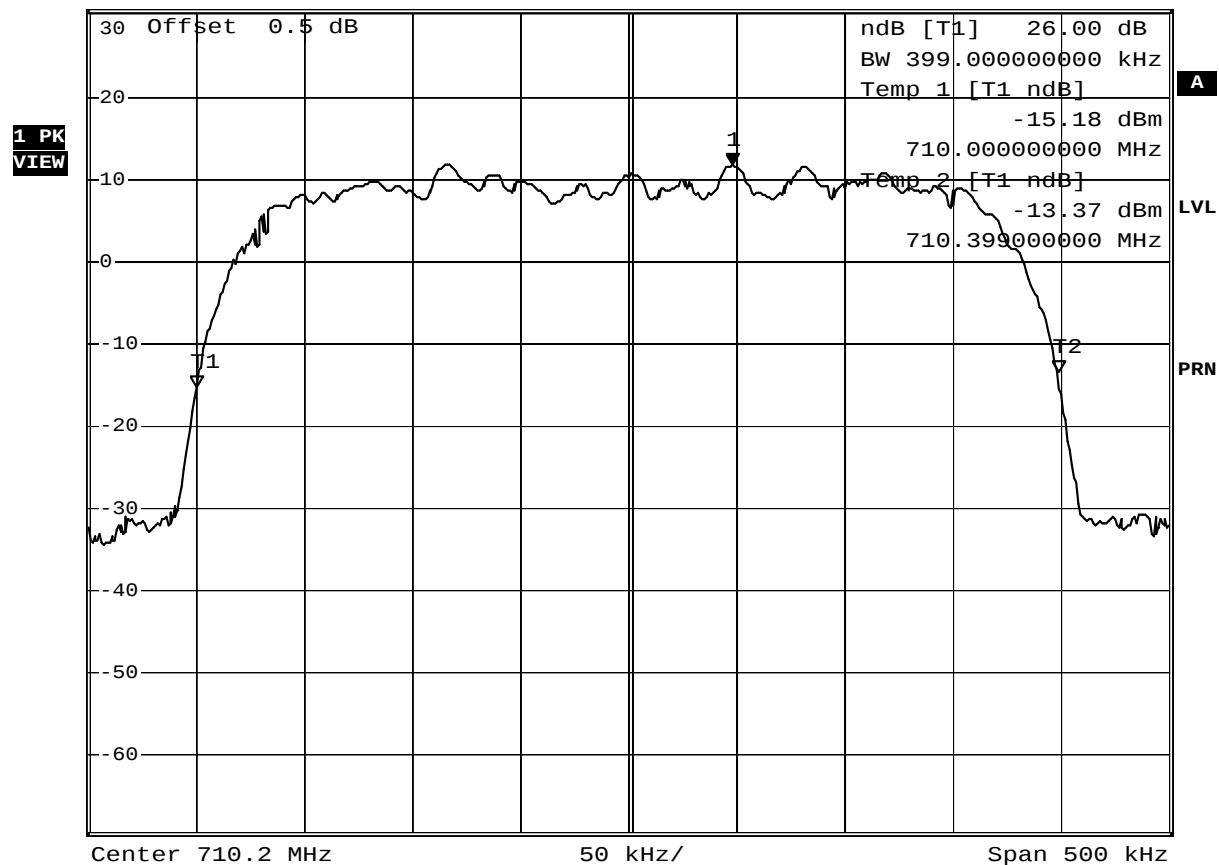
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 11.66 dBm
 *SWT 200 ms 710.248000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

710.248000000 MHz



Date: 21.NOV.2008 05:15:11

Test Mode: Mode 3

Modulation Type: QPSK

710.2 MHz

Upstream Symbol Rate: 640 ksps



*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 9.05 dBm
 *SWT 200 ms 710.296000000 MHz

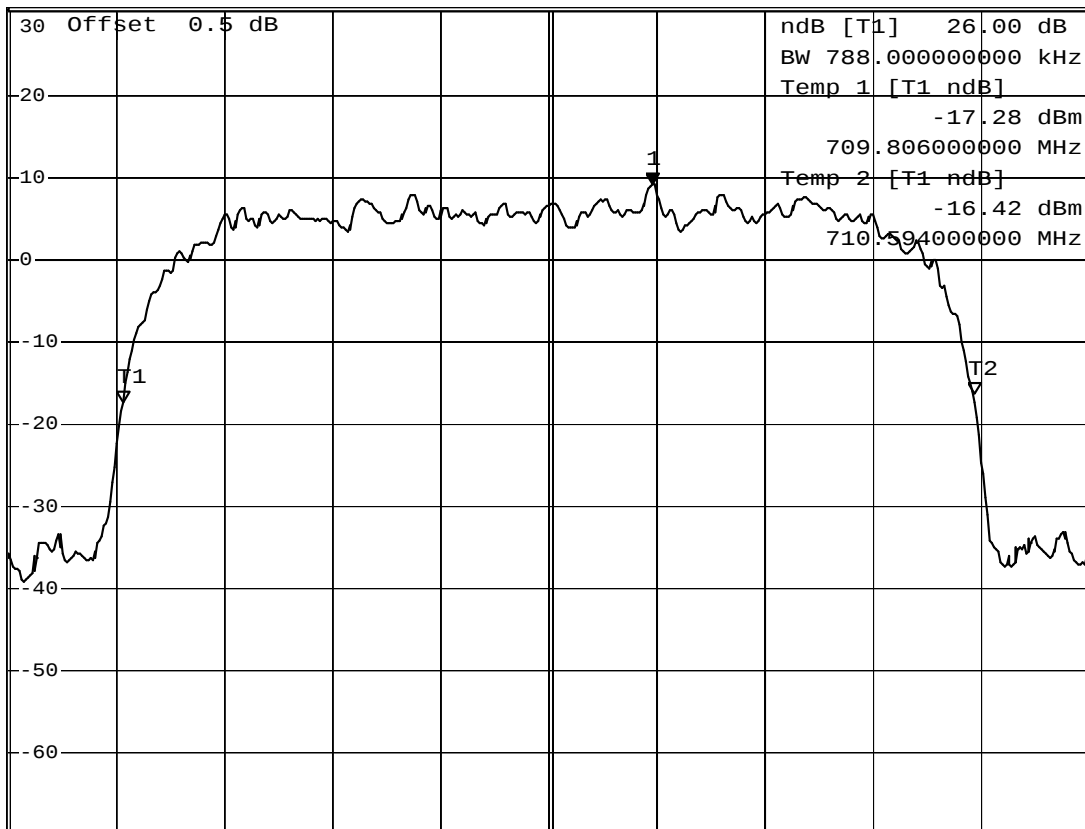
Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

710.296000000 MHz

1 PK
VIEW



Center 710.2 MHz

100 kHz/

Span 1 MHz

Date: 21.NOV.2008 05:36:05

Test Mode: Mode 4

Modulation Type: QPSK

711.8 MHz

Upstream Symbol Rate: 1280 ksps

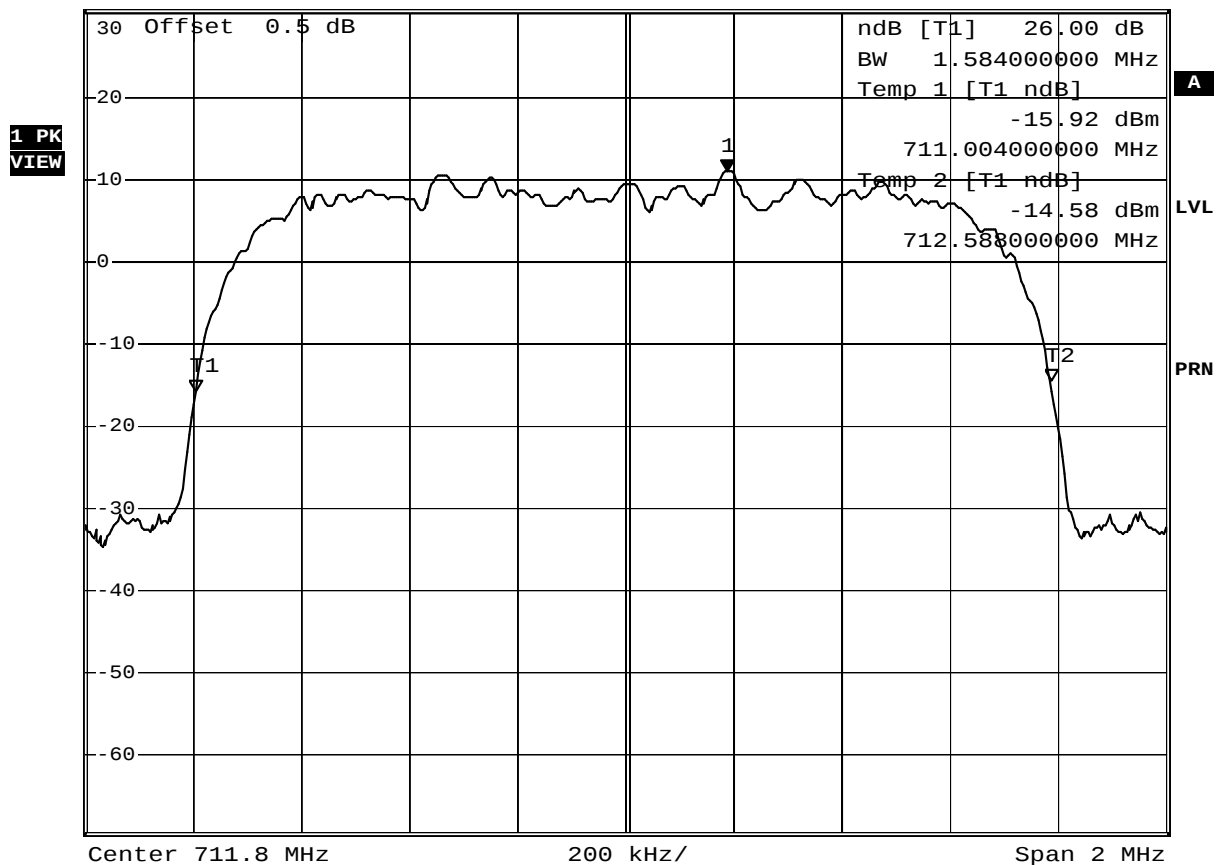


*RBW 30 kHz Marker 1 [T1]
 *VBW 100 kHz 11.05 dBm
 *SWT 200 ms 711.988000000 MHz

Ref 30.5 dBm

*Att 50 dB

711.988000000 MHz



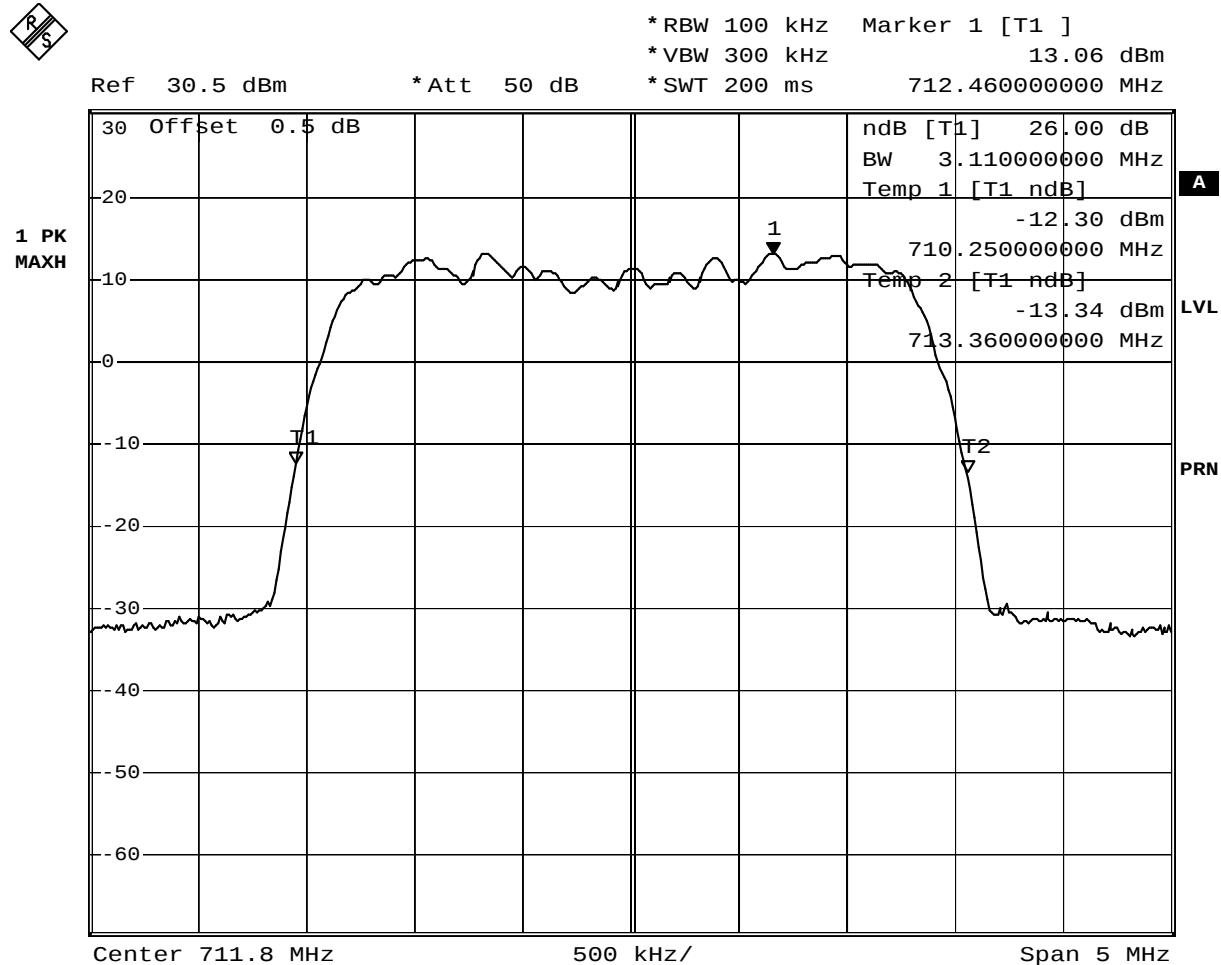
Date: 21.NOV.2008 05:41:14

Test Mode: Mode 5

Modulation Type: QPSK

711.8 MHz

Upstream Symbol Rate: 2560 ksps



Date: 23.OCT.2008 23:02:50

Test Mode: Mode 1

Modulation Type: QPSK

715.8 MHz

Upstream Symbol Rate: 160 ksps



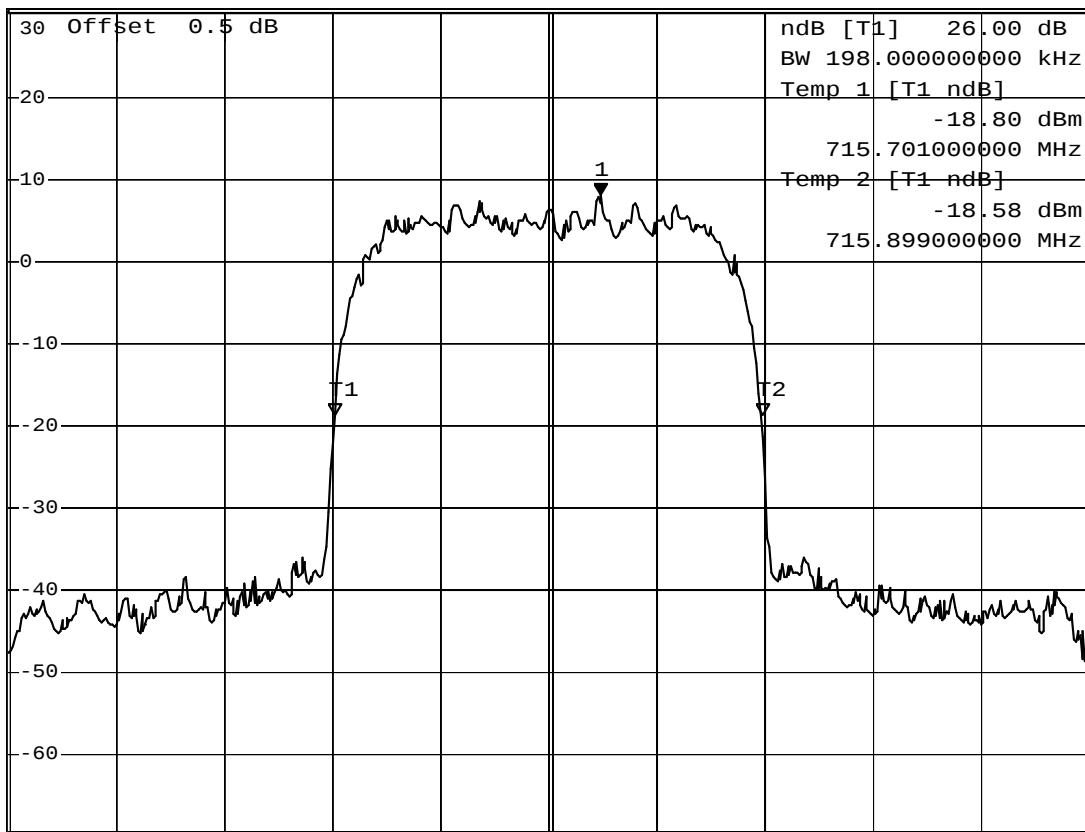
*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 8.06 dBm
 *SWT 200 ms 715.824000000 MHz

Ref 30.5 dBm

*Att 50 dB

715.824000000 MHz

1 PK
VIEW



Center 715.8 MHz

50 kHz/

Span 500 kHz

Date: 21.NOV.2008 05:03:39

Test Mode: Mode 2

Modulation Type: QPSK

715.8 MHz

Upstream Symbol Rate: 320 ksps



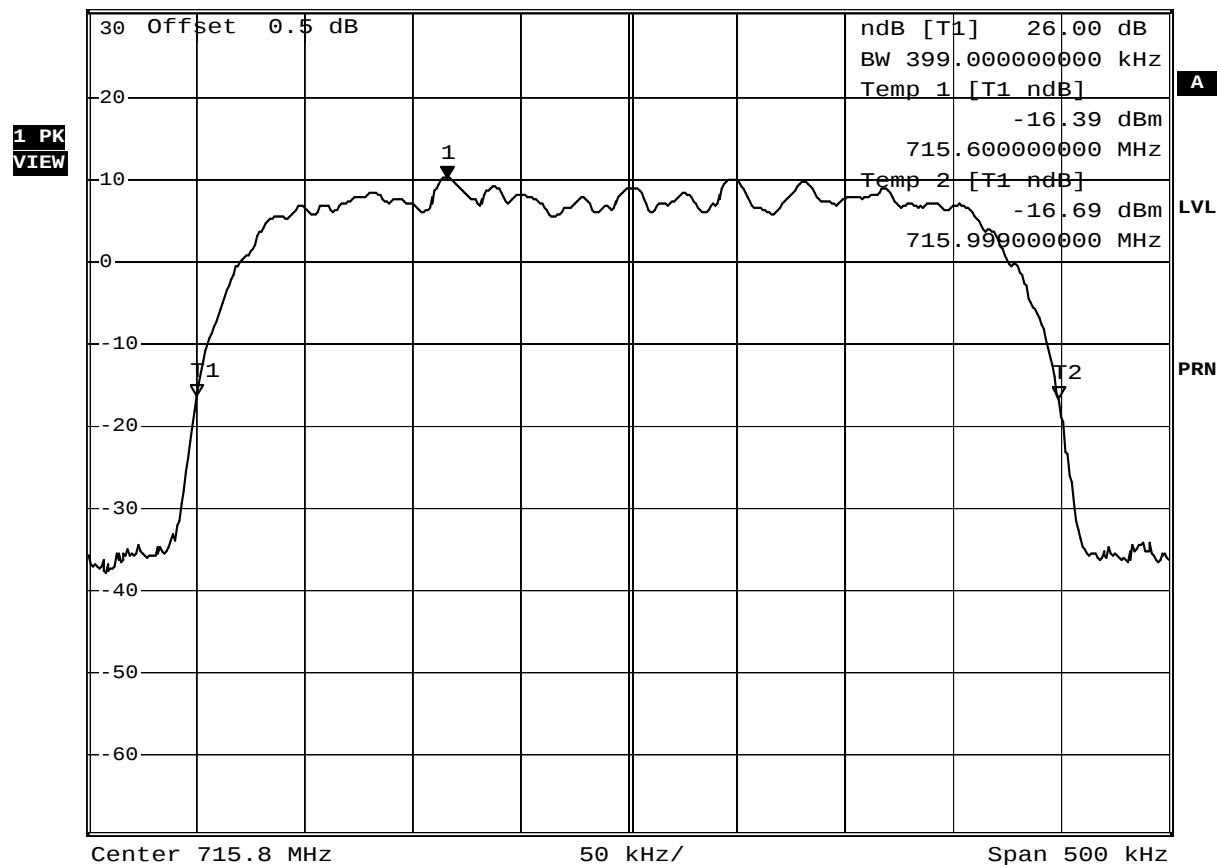
*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 10.17 dBm
 *SWT 200 ms 715.716000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

715.716000000 MHz



Date: 21.NOV.2008 05:14:16

Test Mode: Mode 3

Modulation Type: QPSK

715.8 MHz

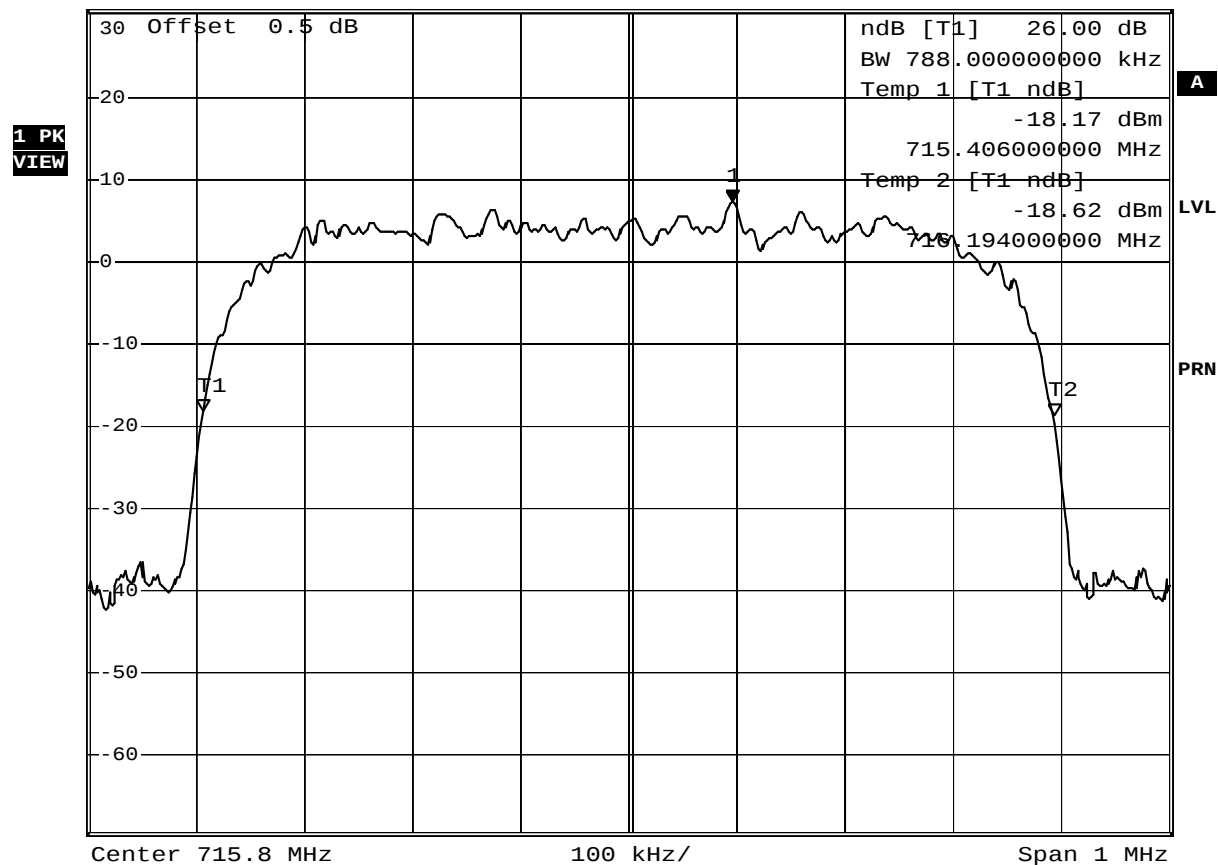
Upstream Symbol Rate: 640 ksps



*RBW 10 kHz Marker 1 [T1]
 *VBW 30 kHz 7.15 dBm
 *SWT 200 ms 715.896000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 21.NOV.2008 05:35:17

Test Mode: Mode 4

Modulation Type: QPSK

714.2 MHz

Upstream Symbol Rate: 1280 kbps



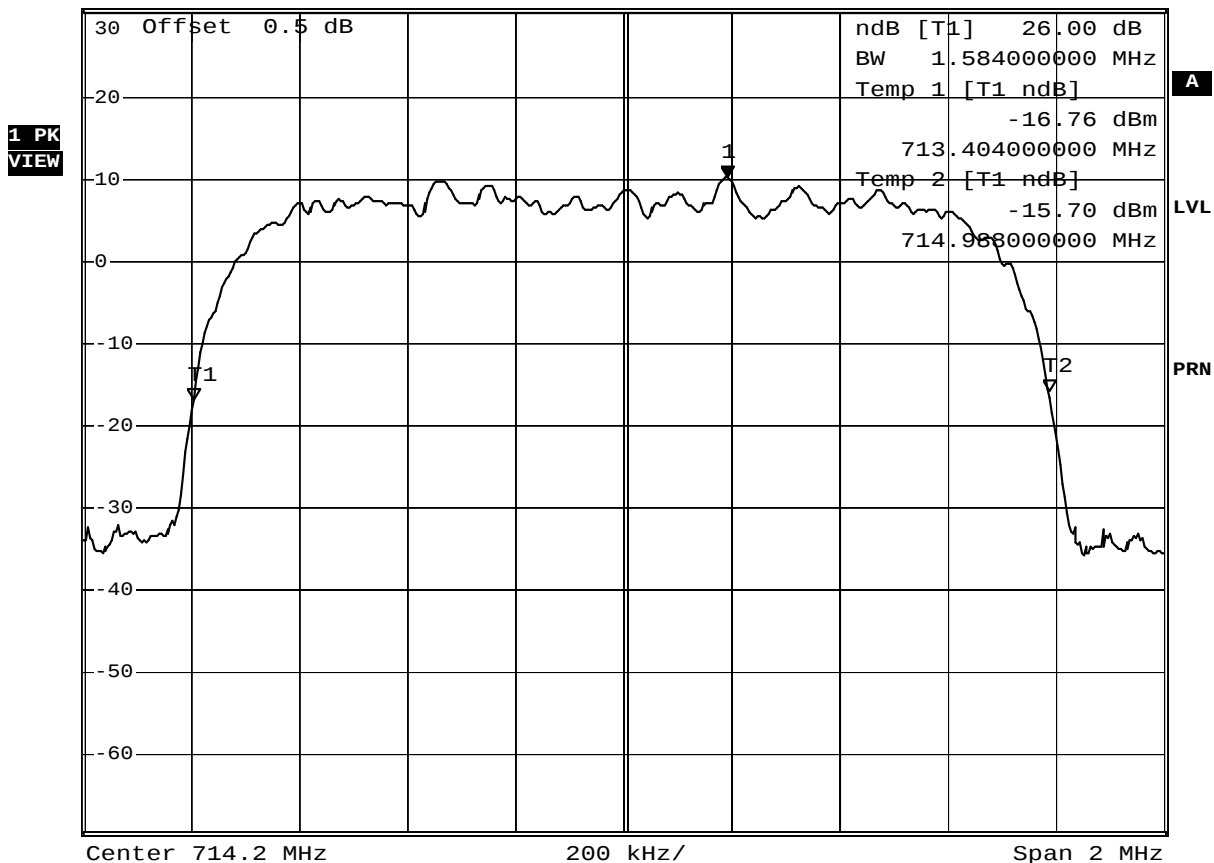
*RBW 30 kHz Marker 1 [T1]

*VBW 100 kHz 10.06 dBm

*SWT 200 ms 714.392000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 21.NOV.2008 05:40:29

Test Mode: Mode 5

Modulation Type: QPSK

714.2 MHz

Upstream Symbol Rate: 2560 ksps

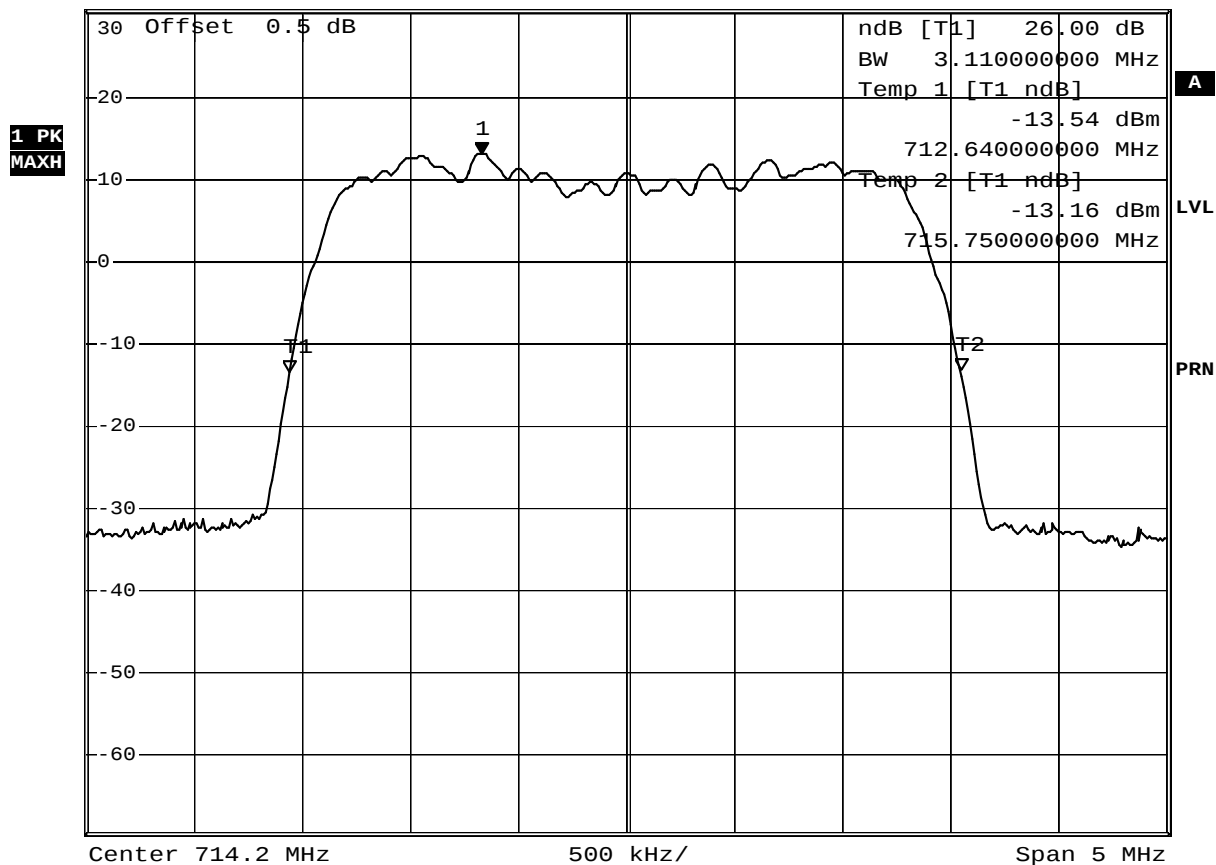


*RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz 13.09 dBm
 *SWT 200 ms 713.530000000 MHz

Ref 30.5 dBm

*Att 50 dB

713.530000000 MHz



Date: 23.OCT.2008 23:08:06

4. Band Edge

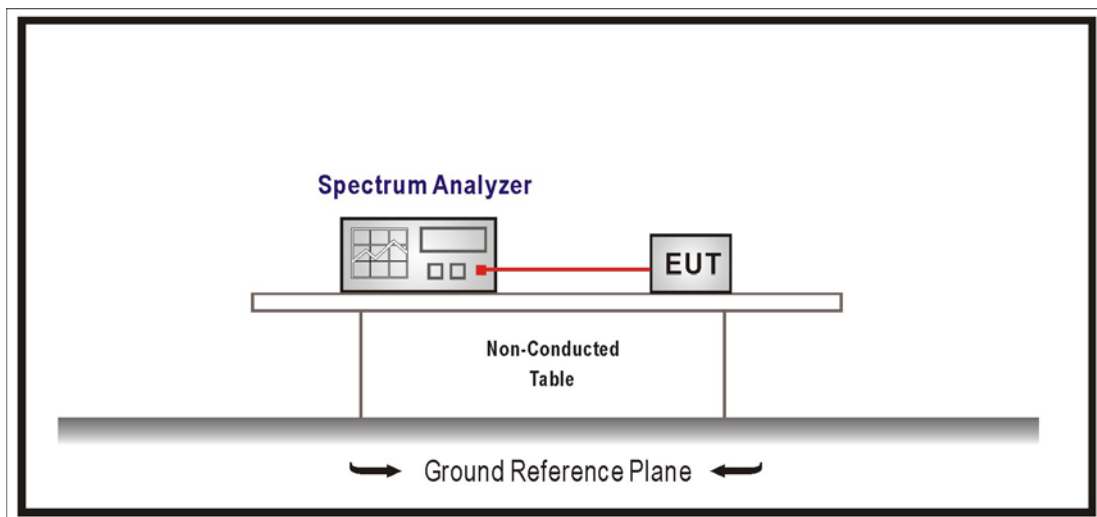
4.1. Test Equipment

The following test equipments are used during the test:

RF Conducted Measurement:				
Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	No.7 Shielding Room			Sep., 2008

4.2. Test Setup

RF Conducted Measurement:



4.3. Limits

- (1) Fixed and Temporary Fixed Digital Stations: not less than $43 + \log (P)$ dB
- (2) Mobile Digital Stations: not less than $43 + \log (P)$ dB at the channel edge and $55 + \log (P)$ dB at 5.5 MHz from the channel edges

Sample Calculation:

Assume the EUT Output Power is 2 W = 33 dBm

$$43 + \log (P) \text{ dB}$$

$$43 + \log (2) = 46 \text{ dB}$$

$$33 \text{ dBm} - 46 \text{ dB} = -13 \text{ dBm}$$

$$55 + \log (2) = 58 \text{ dB}$$

$$33 \text{ dBm} - 58 \text{ dB} = -25 \text{ dBm}$$

4.4. Test Procedure

The EUT was set up for the rated peak power. The band edge was measured with Spectrum Analyzer with a resolution bandwidth of 100 kHz and video bandwidth of 300 kHz. All measurements were done at 2 channels: low and high operational frequency range.

The center frequency of spectrum is the band edge frequency and span is 7.5 MHz for test mode 1 (5 MHz bandwidth) and 15 MHz for test mode 2 (10 MHz bandwidth). The resolution bandwidth of spectrum is 100 kHz and video bandwidth of spectrum is 300 kHz.

Record the max trace plot into the test report.

4.5. Uncertainty

The measurement uncertainty

Conducted is defined as $\pm 1.27\text{dB}$

Radiated is defined as $\pm 3.9\text{dB}$

4.6. Test Result

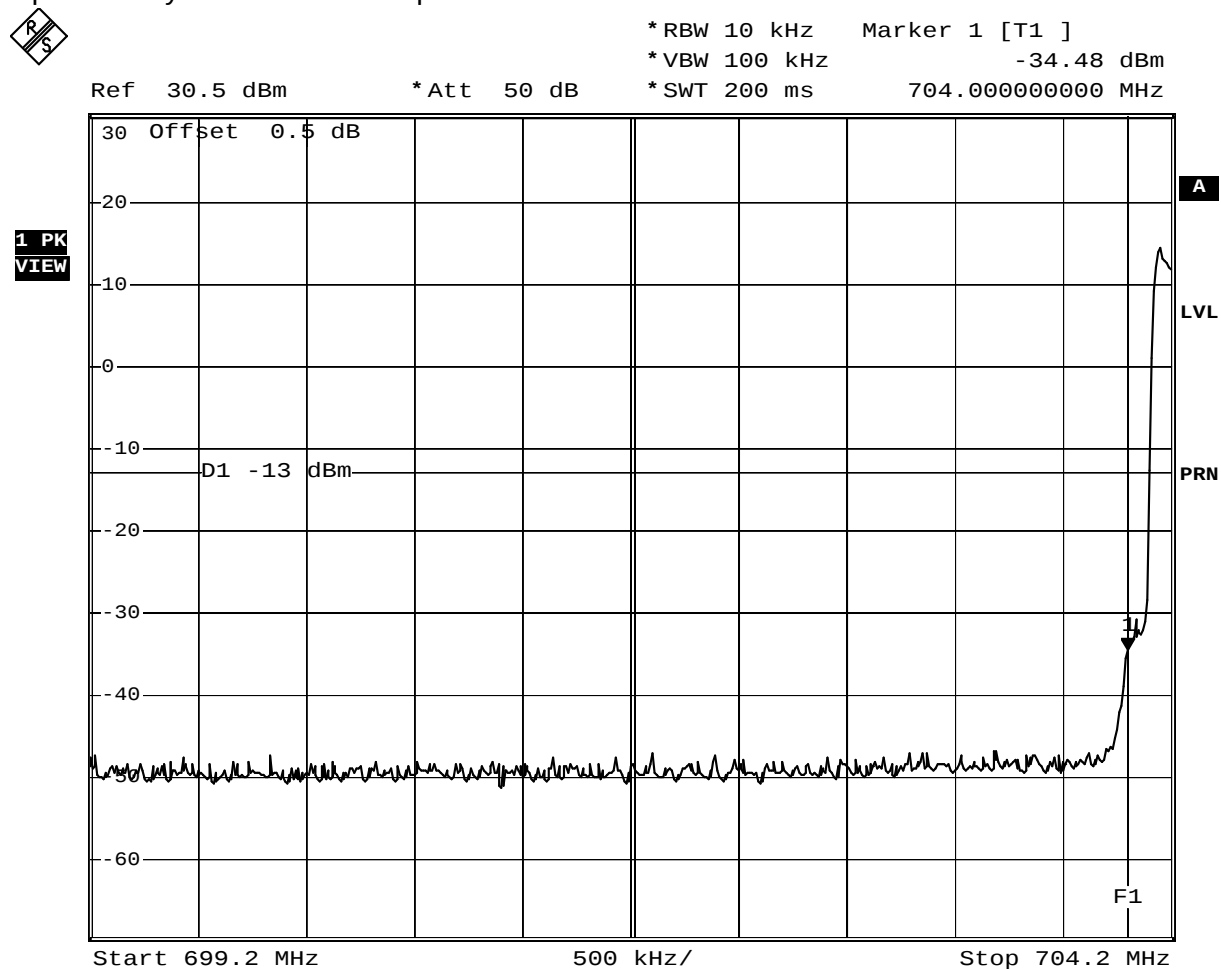
Product	UHF Band MMDS Transceiver		
Test Item	Band Edge		
Test Mode	Transmit		
Date of Test	2008/10/23	Test Site	SR7

Test Mode: Mode 1

Modulation Type: 16QAM

704 MHz

Upstream Symbol Rate: 160 kbps



Date: 23.OCT.2008 15:06:16

Test Mode: Mode 5

Modulation Type: 16QAM

705 MHz

Upstream Symbol Rate: 2560 ksps



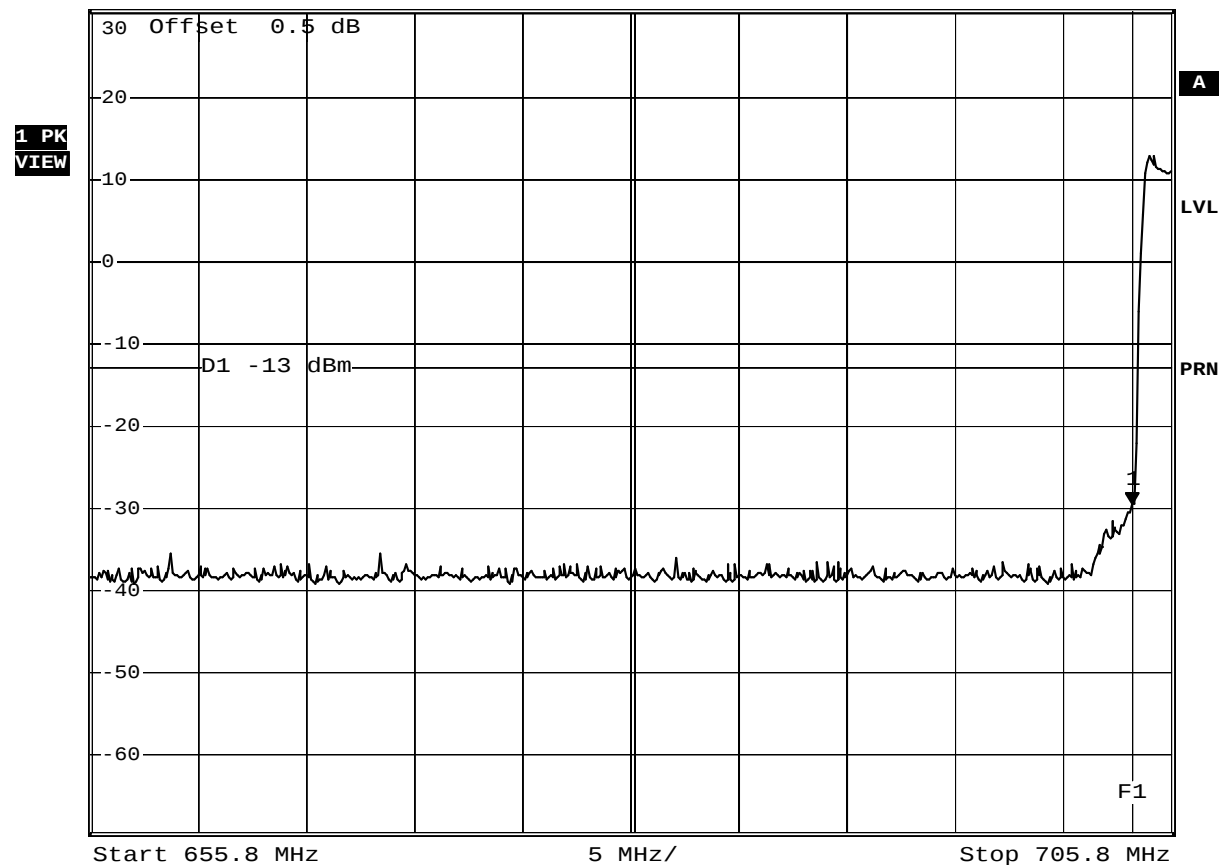
*RBW 100 kHz Marker 1 [T1]

*VBW 300 kHz -29.57 dBm

*SWT 200 ms 704.000000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 15:37:06

Test Mode: Mode 1

Modulation Type: 16QAM

709 MHz

Upstream Symbol Rate: 160 ksps



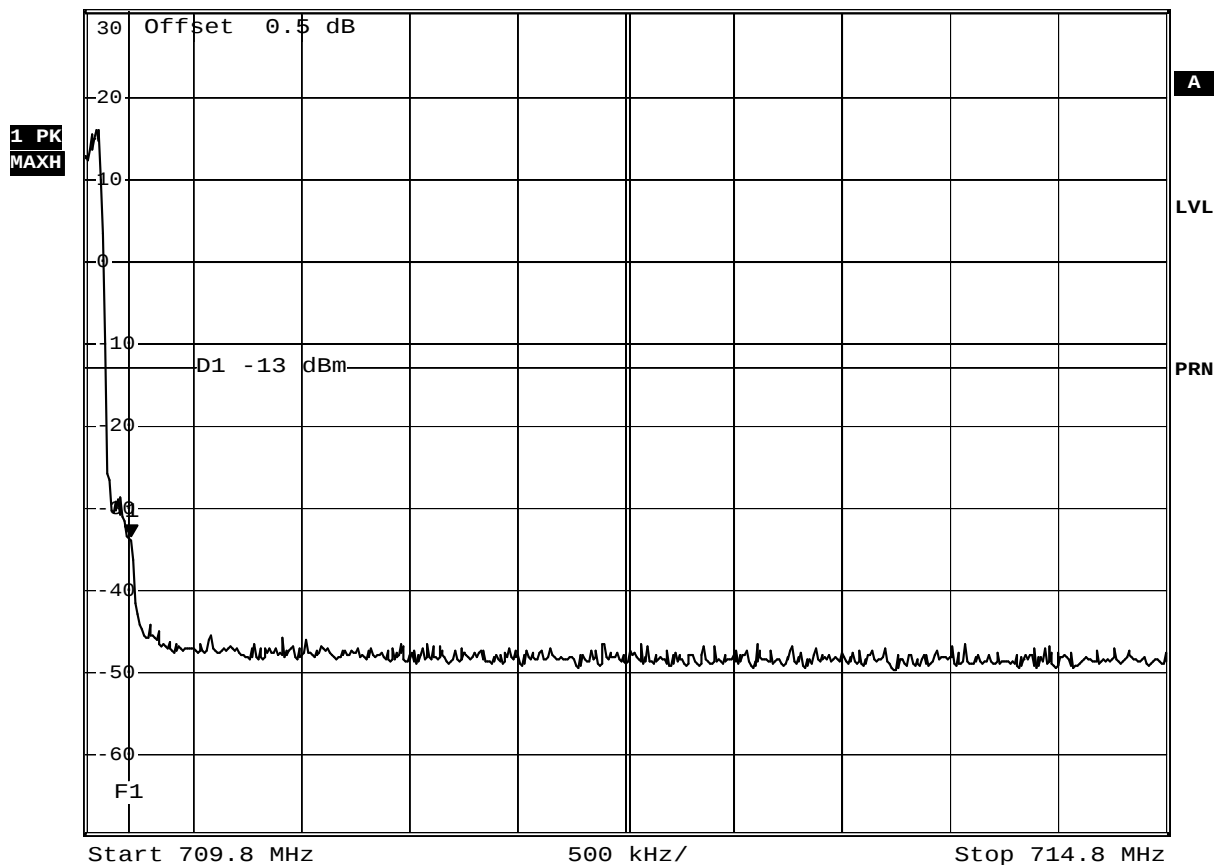
*RBW 10 kHz Marker 1 [T1]
 *VBW 100 kHz -33.35 dBm
 *SWT 200 ms 710.010000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

710.010000000 MHz



Date: 23.OCT.2008 15:03:05

Test Mode: Mode 5

Modulation Type: 16QAM

708 MHz

Upstream Symbol Rate: 2560 ksps



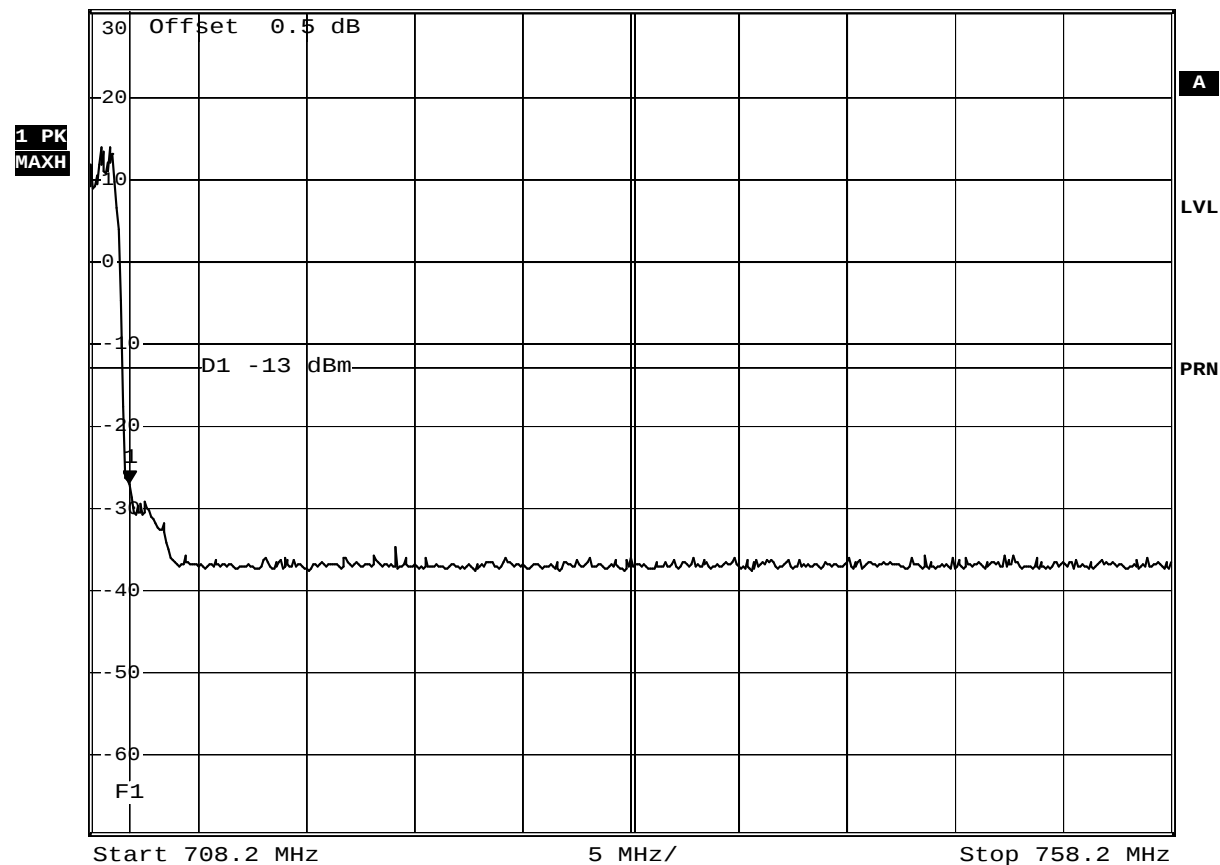
*RBW 100 kHz Marker 1 [T1]

*VBW 300 kHz -26.98 dBm

*SWT 200 ms 710.000000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 15:35:29

Test Mode: Mode 1

Modulation Type: 16QAM

710 MHz

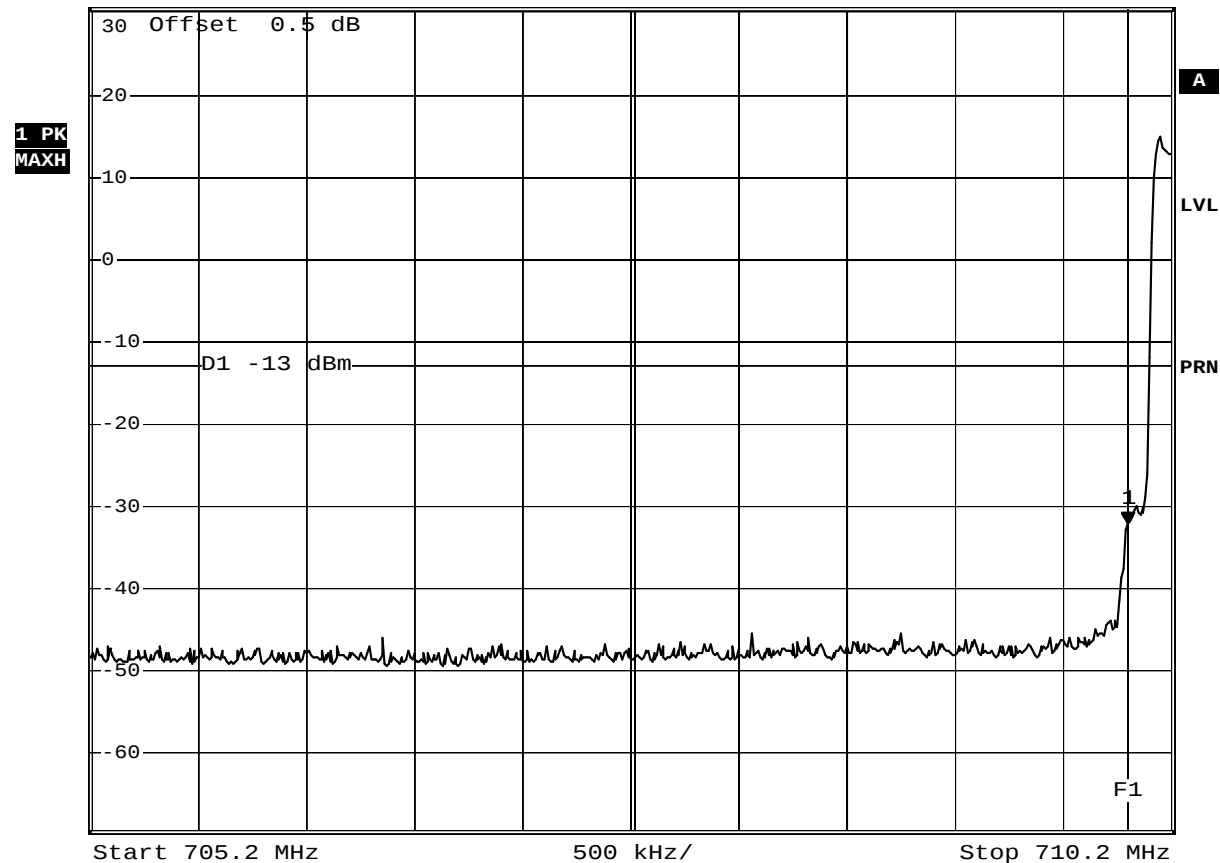
Upstream Symbol Rate: 160 ksps



*RBW 10 kHz Marker 1 [T1]
 *VBW 100 kHz -32.15 dBm
 *SWT 200 ms 710.000000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 15:08:48

Test Mode: Mode 5

Modulation Type: 16QAM

711 MHz

Upstream Symbol Rate: 2560 ksps



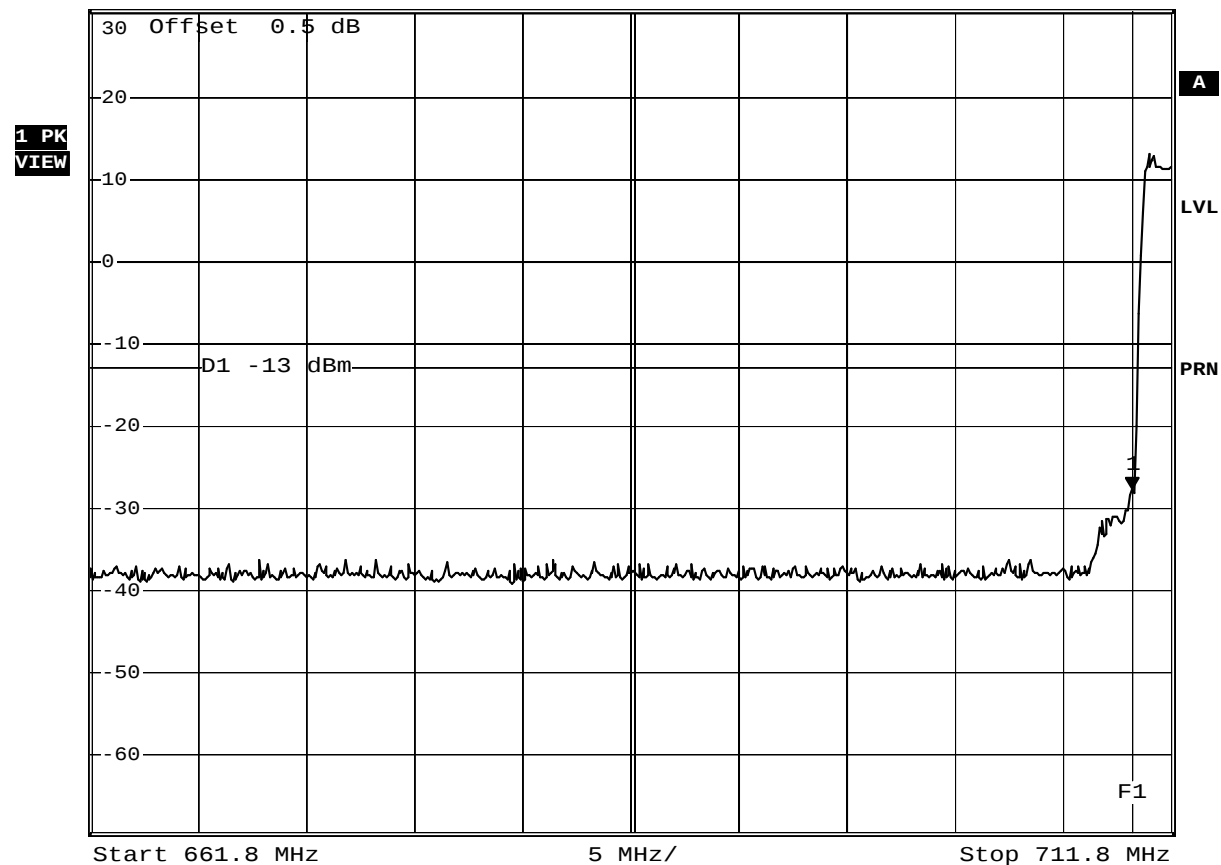
*RBW 100 kHz Marker 1 [T1]

*VBW 300 kHz -27.59 dBm

*SWT 200 ms 710.000000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 15:28:12

Test Mode: Mode 1

Modulation Type: 16QAM

715 MHz

Upstream Symbol Rate: 160 ksps



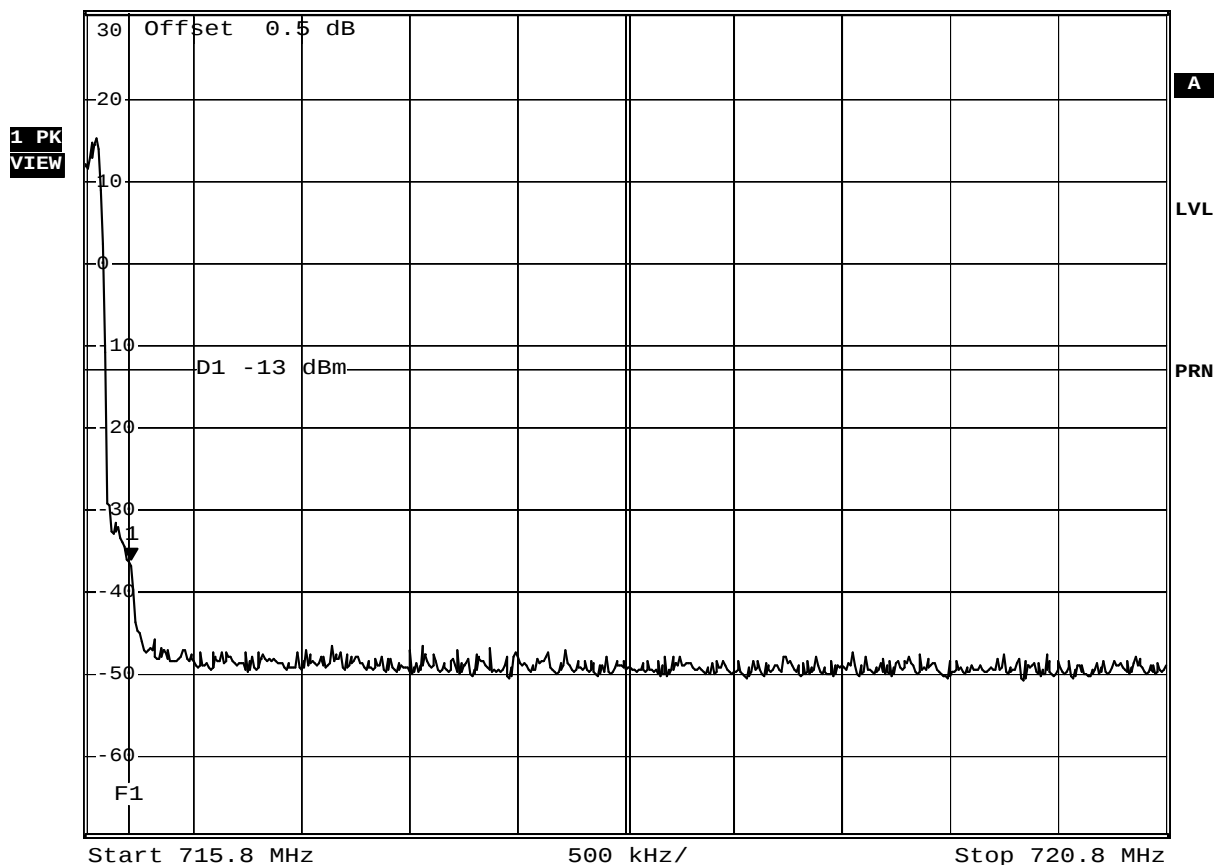
*RBW 10 kHz Marker 1 [T1]
 *VBW 100 kHz -35.92 dBm
 *SWT 200 ms 716.010000000 MHz

Ref 30.5 dBm

*Att 50 dB

*SWT 200 ms

716.010000000 MHz



Date: 23.OCT.2008 15:10:48

Test Mode: Mode 5

Modulation Type: 16QAM

714 MHz

Upstream Symbol Rate: 2560 ksps



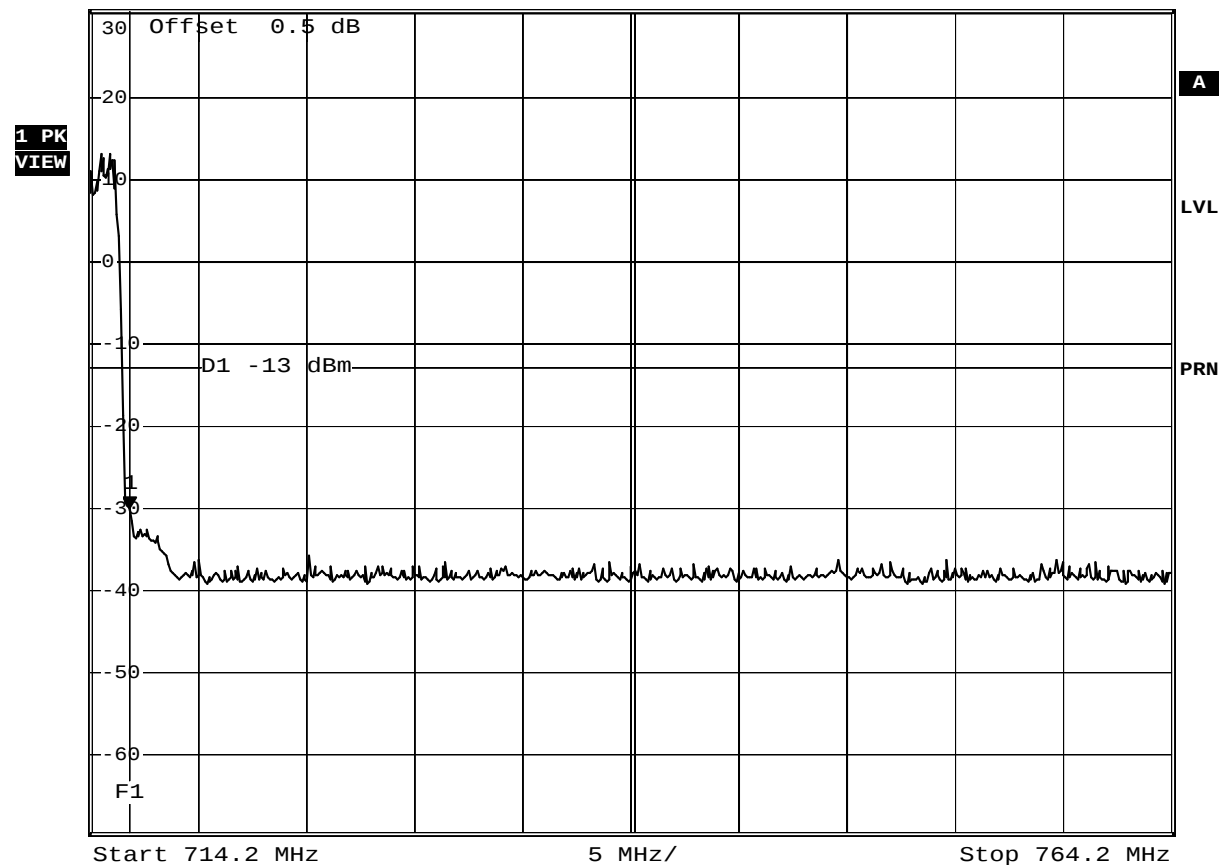
*RBW 100 kHz Marker 1 [T1]

*VBW 300 kHz -30.00 dBm

*SWT 200 ms 716.000000000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 23.OCT.2008 15:38:32

5. Conducted Spurious Emission

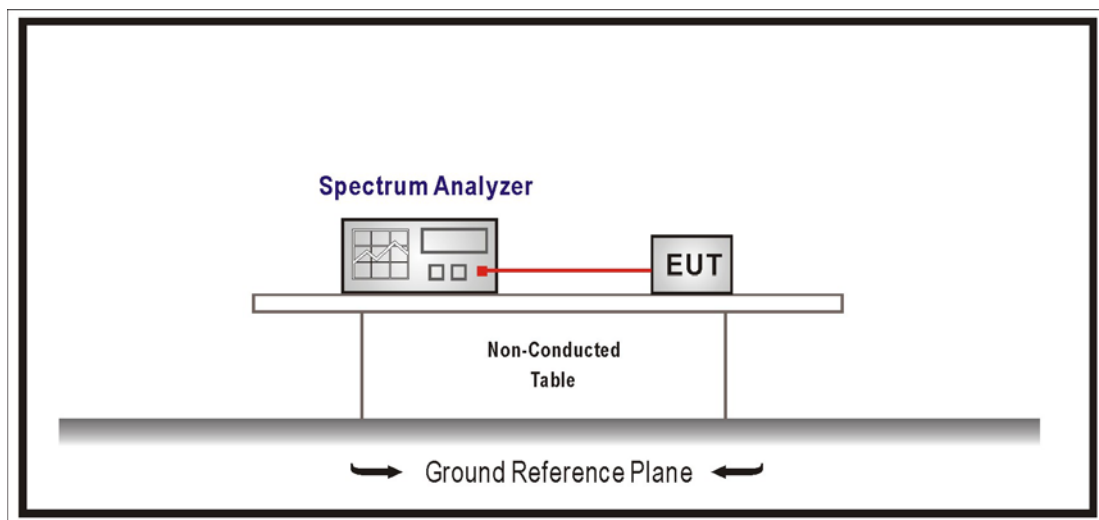
5.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP40 / 100005	Nov., 2007
2	No.7 Shielding Room			Sep., 2008

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

5.2. Test Setup



5.3. Limits

- (1) Fixed and Temporary Fixed Digital Stations: not less than $43 + \log (P)$ dB
- (2) Mobile Digital Stations: not less than $43 + \log (P)$ dB at the channel edge and $55 + \log (P)$ dB at 5.5 MHz from the channel edges

Sample Calculation:

Assume the EUT Output Power is 2 W = 33 dBm

$$43 + \log (P) \text{ dB}$$

$$43 + \log (2) = 46 \text{ dB}$$

$$33 \text{ dBm} - 46 \text{ dB} = -13 \text{ dBm}$$

$$55 + \log (2) = 58 \text{ dB}$$

$$33 \text{ dBm} - 58 \text{ dB} = -25 \text{ dBm}$$

5.4. Test Procedure

The EUT was set up for the rated peak power. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels: low, middle and high operational frequency range.

When the spectrum scanned from 30MHz to 27GHz, it connected to the 10dB attenuator to the carried frequency. The spectrum set RBW = 1MHz, VBW = 3MHz. and using peak detection mode.

5.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

5.6. Test Result

Product	UHF Band MMDS Transceiver		
Test Item	Conducted Spurious Emission		
Test Mode	Transmit		
Date of Test	2008/10/24	Test Site	SR7

Test Mode: Mode 1

Modulation Type: 16QAM

704 MHz

Upstream Symbol Rate: 160 kbps

30MHz-1GHz



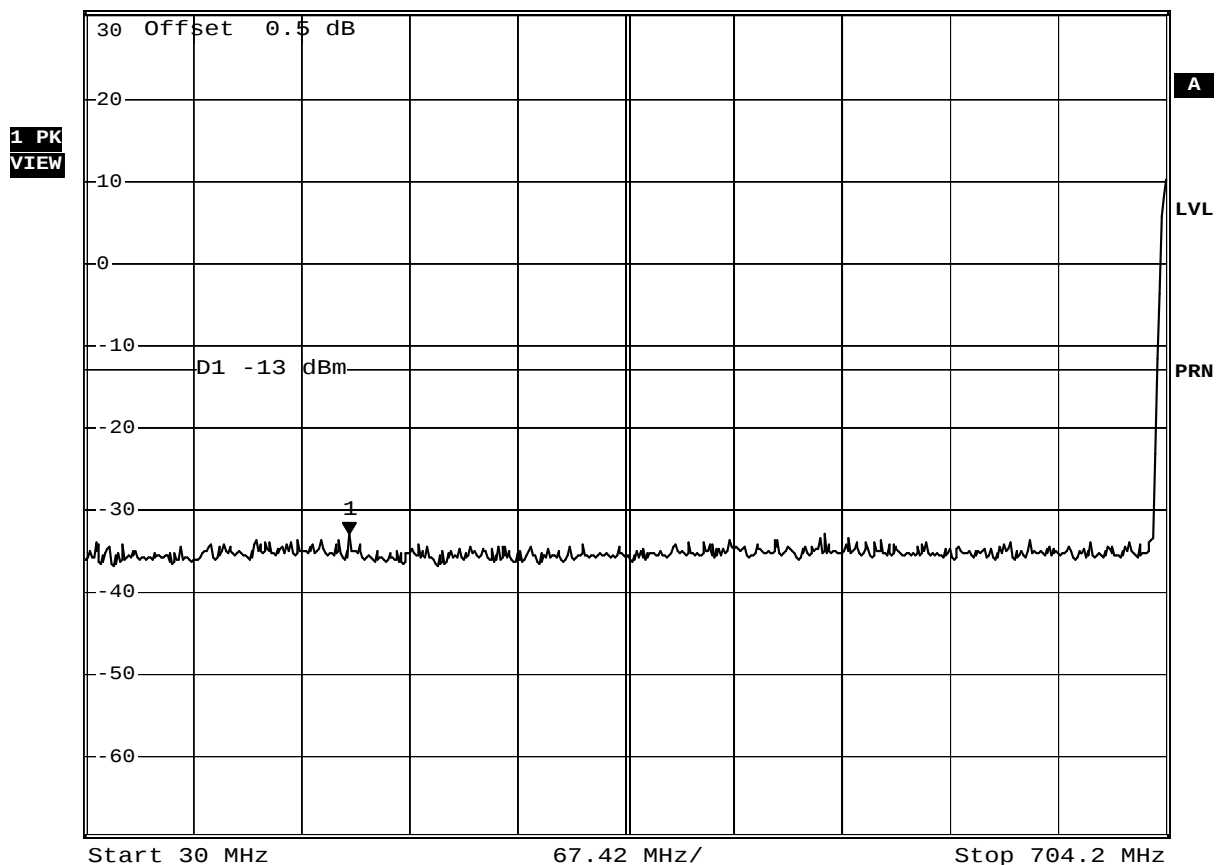
*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -32.94 dBm
 SWT 5 ms 194.504800000 MHz

Ref 30.5 dBm

*Att 50 dB

SWT 5 ms

194.504800000 MHz



Date: 24.OCT.2008 10:19:03

Test Mode: Mode 1

Modulation Type: 16QAM

704 MHz

Upstream Symbol Rate: 160 ksps

1GHz-8GHz



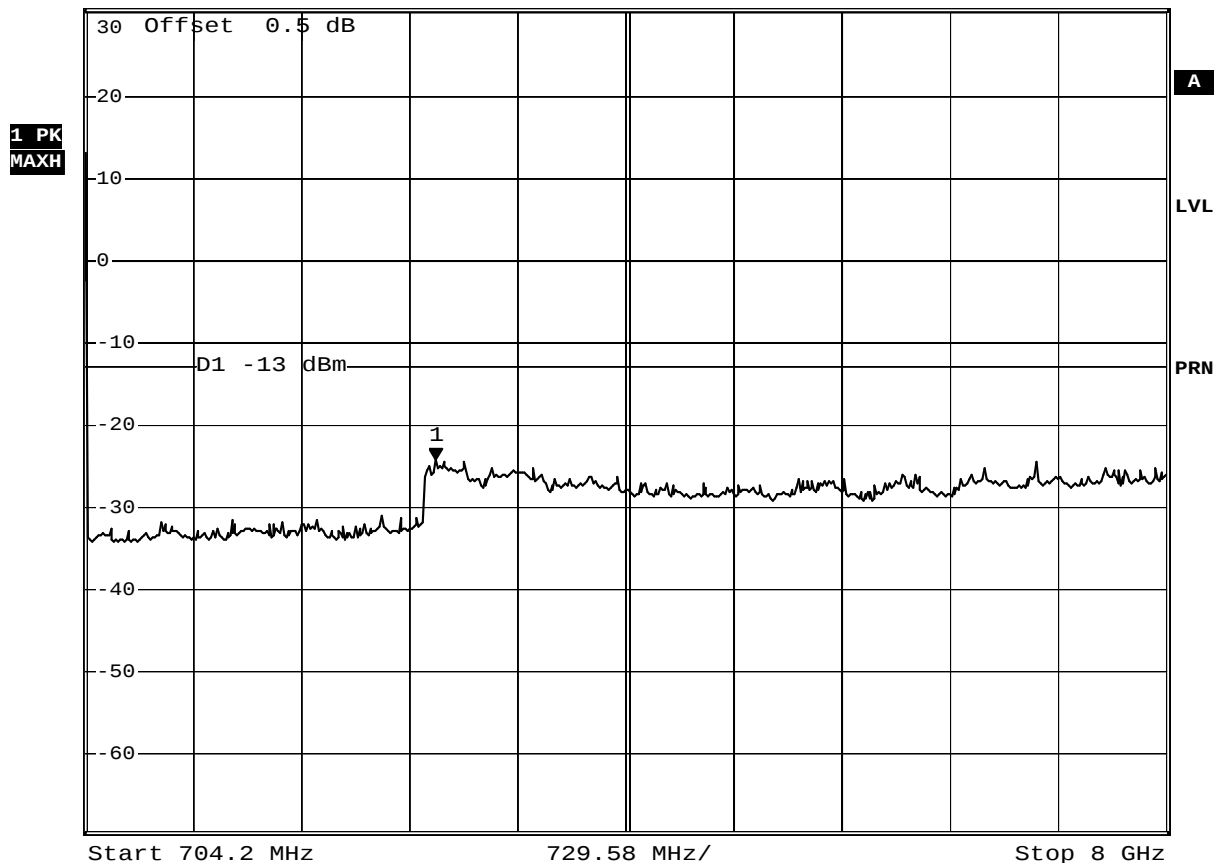
*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -24.23 dBm
 SWT 150 ms 3.068039200 GHz

Ref 30.5 dBm

*Att 50 dB

SWT 150 ms

3.068039200 GHz



Date: 24.OCT.2008 10:21:07

Test Mode: Mode 5

Modulation Type: 16QAM

705 MHz

Upstream Symbol Rate: 2560 ksps

30MHz-1GHz



*RBW 1 MHz

Marker 1 [T1]

*VBW 3 MHz

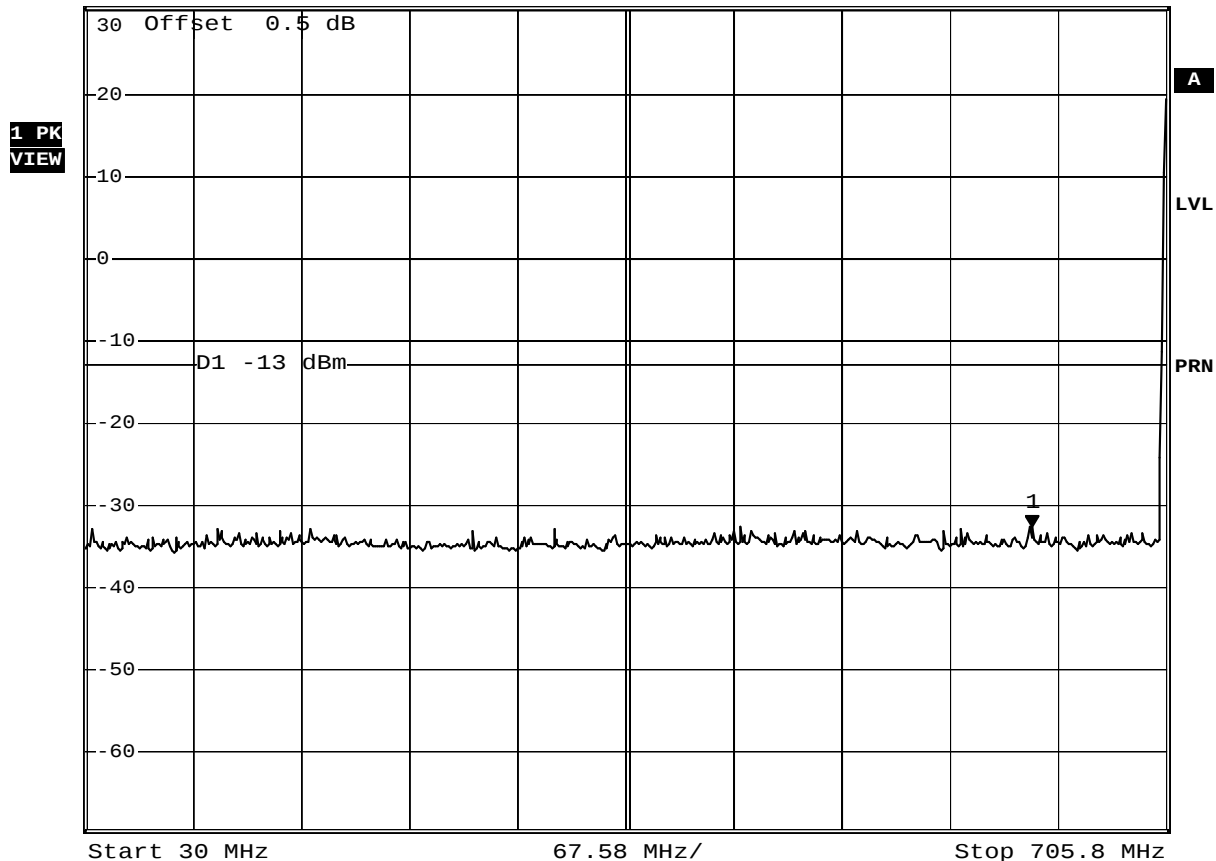
-32.62 dBm

Ref 30.5 dBm

*Att 50 dB

SWT 5 ms

622.000800000 MHz



Date: 24.OCT.2008 10:34:56

Test Mode: Mode 5

Modulation Type: 16QAM

705 MHz

Upstream Symbol Rate: 2560 ksps

1GHz-8GHz



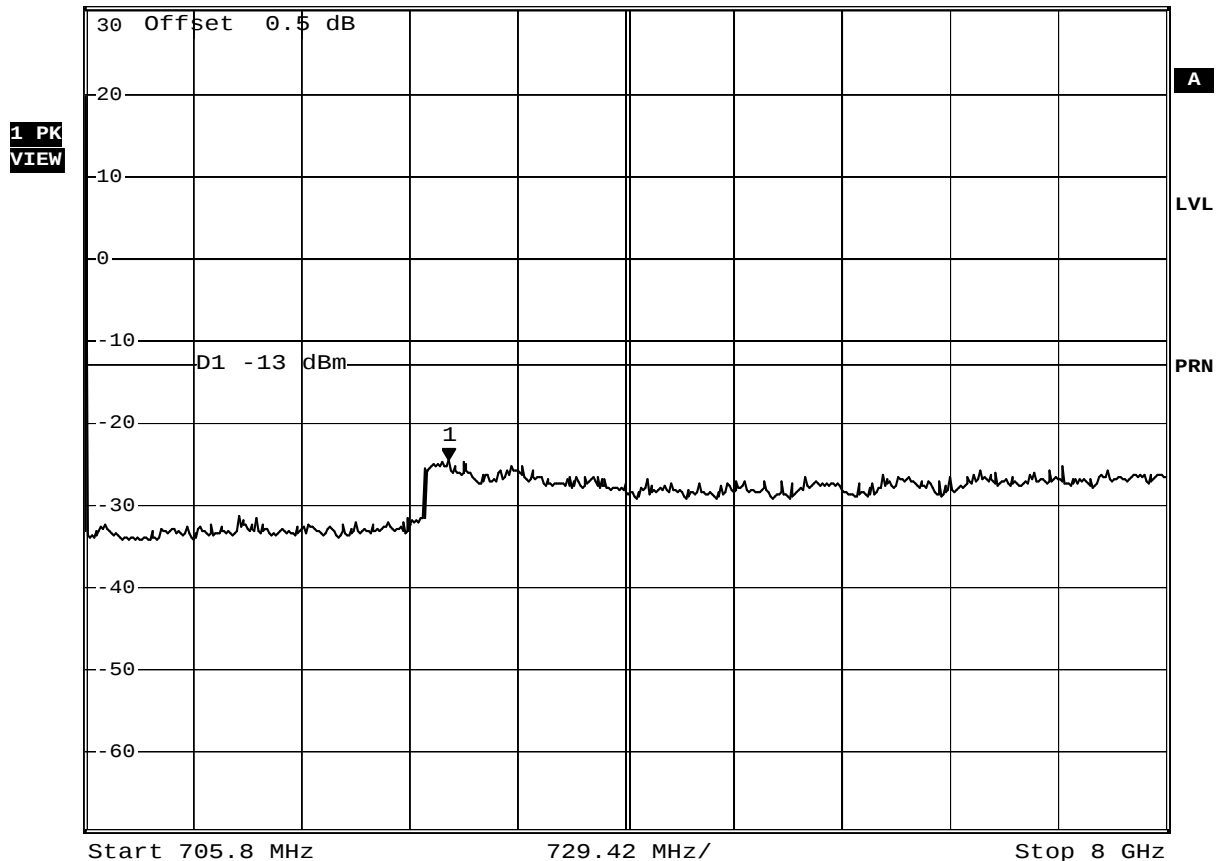
*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -24.53 dBm
 SWT 150 ms 3.156651200 GHz

Ref 30.5 dBm

*Att 50 dB

SWT 150 ms

3.156651200 GHz



Date: 24.OCT.2008 10:37:17

Test Mode: Mode 1

Modulation Type: 16QAM

709 MHz

Upstream Symbol Rate: 160 ksps

30MHz-1GHz



*RBW 1 MHz

Marker 1 [T1]

*VBW 3 MHz

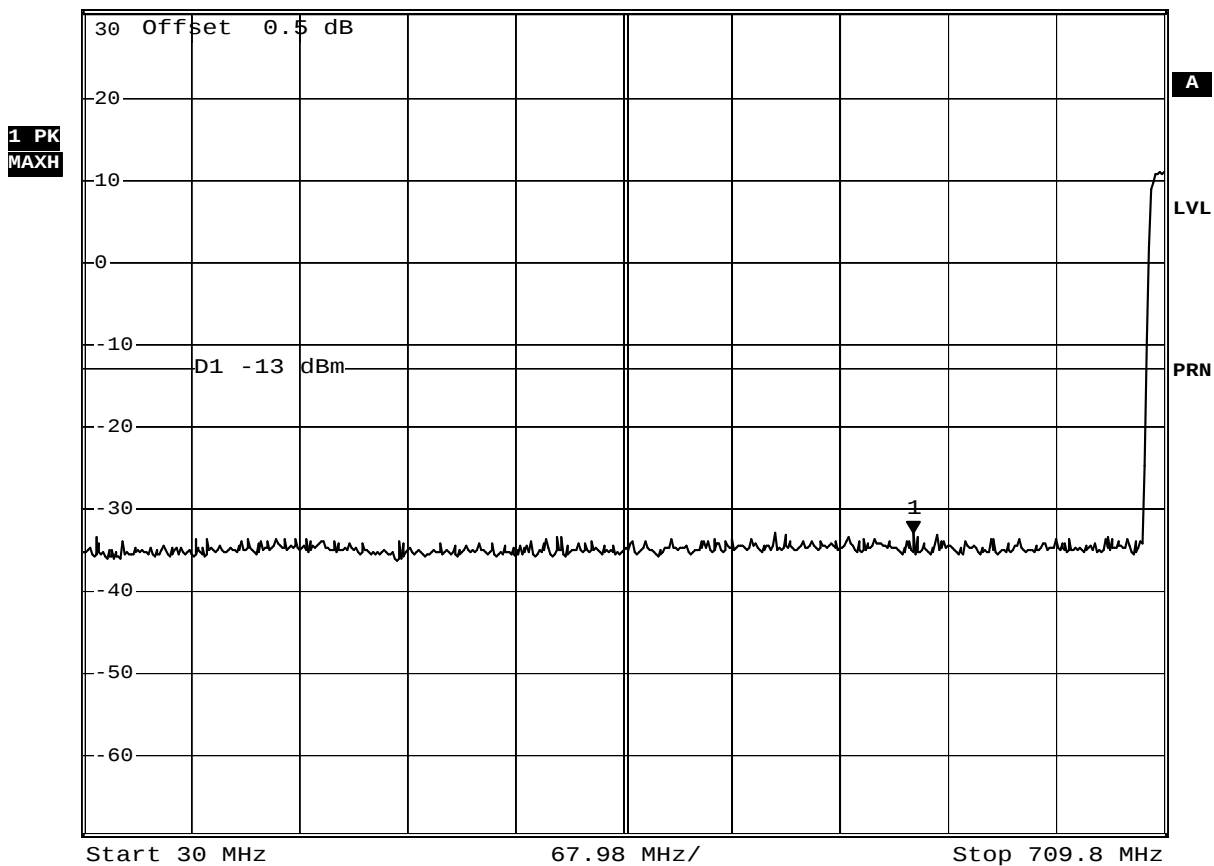
-32.80 dBm

Ref 30.5 dBm

*Att 50 dB

SWT 5 ms

552.086400000 MHz



Date: 24.OCT.2008 10:22:25

Test Mode: Mode 1

Modulation Type: 16QAM

709 MHz

Upstream Symbol Rate: 160 ksps

1GHz-8GHz



*RBW 1 MHz

Marker 1 [T1]

*VBW 3 MHz

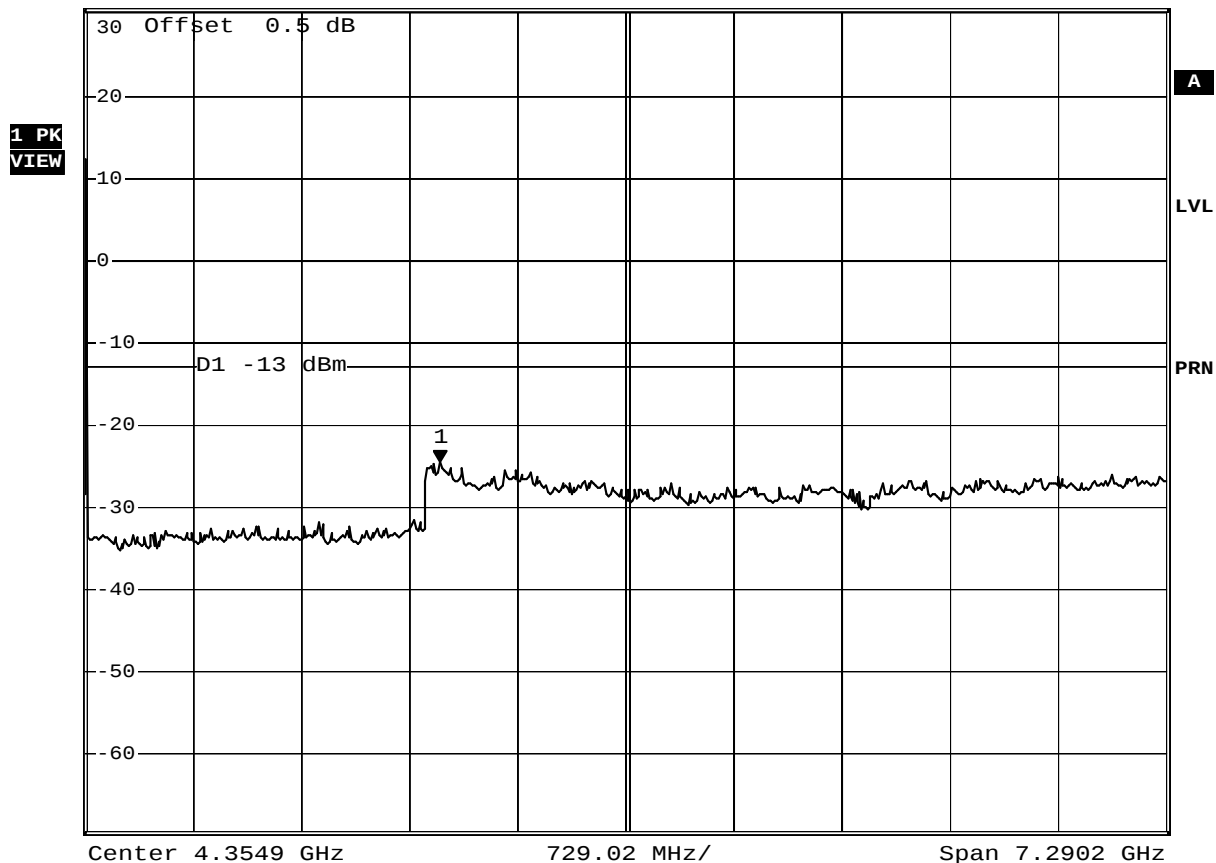
-24.61 dBm

Ref 30.5 dBm

*Att 50 dB

SWT 150 ms

3.100985600 GHz



Date: 24.OCT.2008 10:23:45

Test Mode: Mode 5

Modulation Type: 16QAM

708 MHz

Upstream Symbol Rate: 2560 ksps

30MHz-1GHz



*RBW 1 MHz

Marker 1 [T1]

*VBW 3 MHz

-32.00 dBm

SWT 5 ms

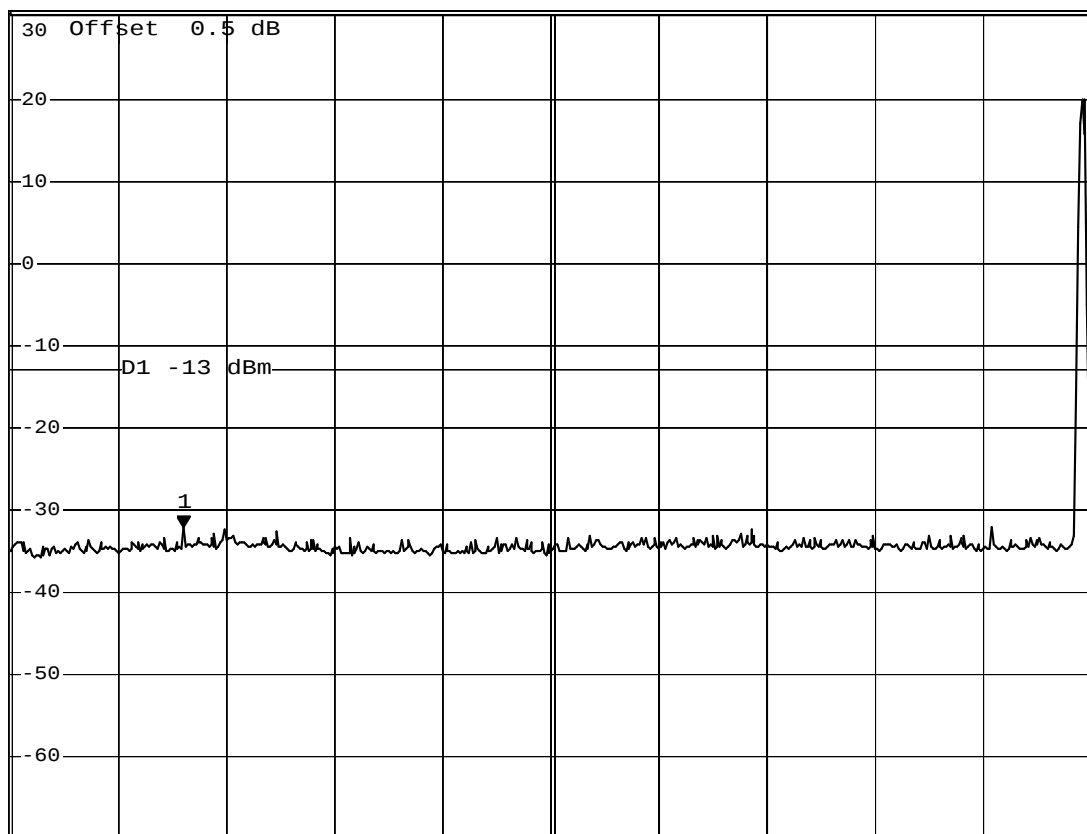
139.472000000 MHz

Ref 30.5 dBm

*Att 50 dB

30 Offset 0.5 dB

1 PK
VIEW



Start 30 MHz

68.42 MHz/

Stop 714.2 MHz

Date: 24.OCT.2008 10:40:37

Test Mode: Mode 5

Modulation Type: 16QAM

708 MHz

Upstream Symbol Rate: 2560 ksps

1GHz-8GHz



*RBW 1 MHz

Marker 1 [T1]

*VBW 3 MHz

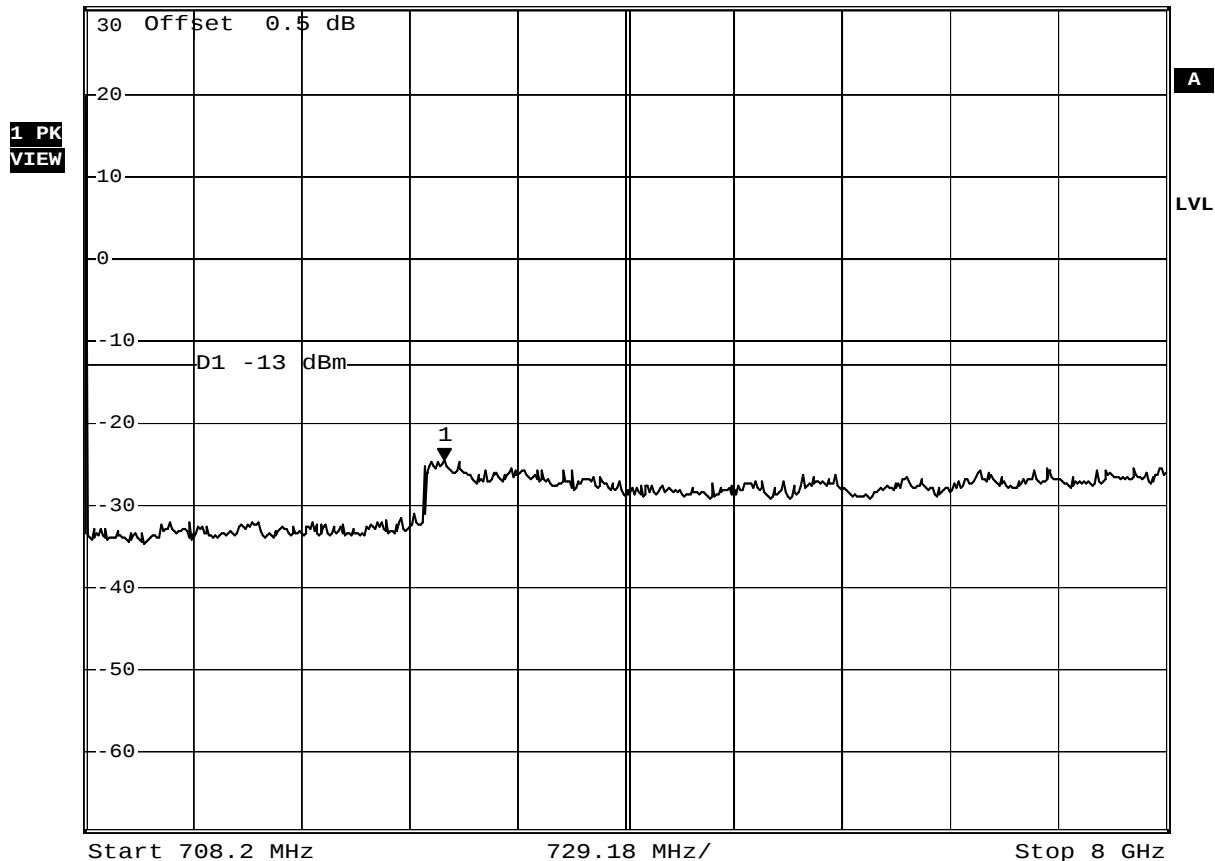
-24.41 dBm

Ref 30.5 dBm

*Att 50 dB

SWT 150 ms

3.129077600 GHz



Date: 24.OCT.2008 10:57:52

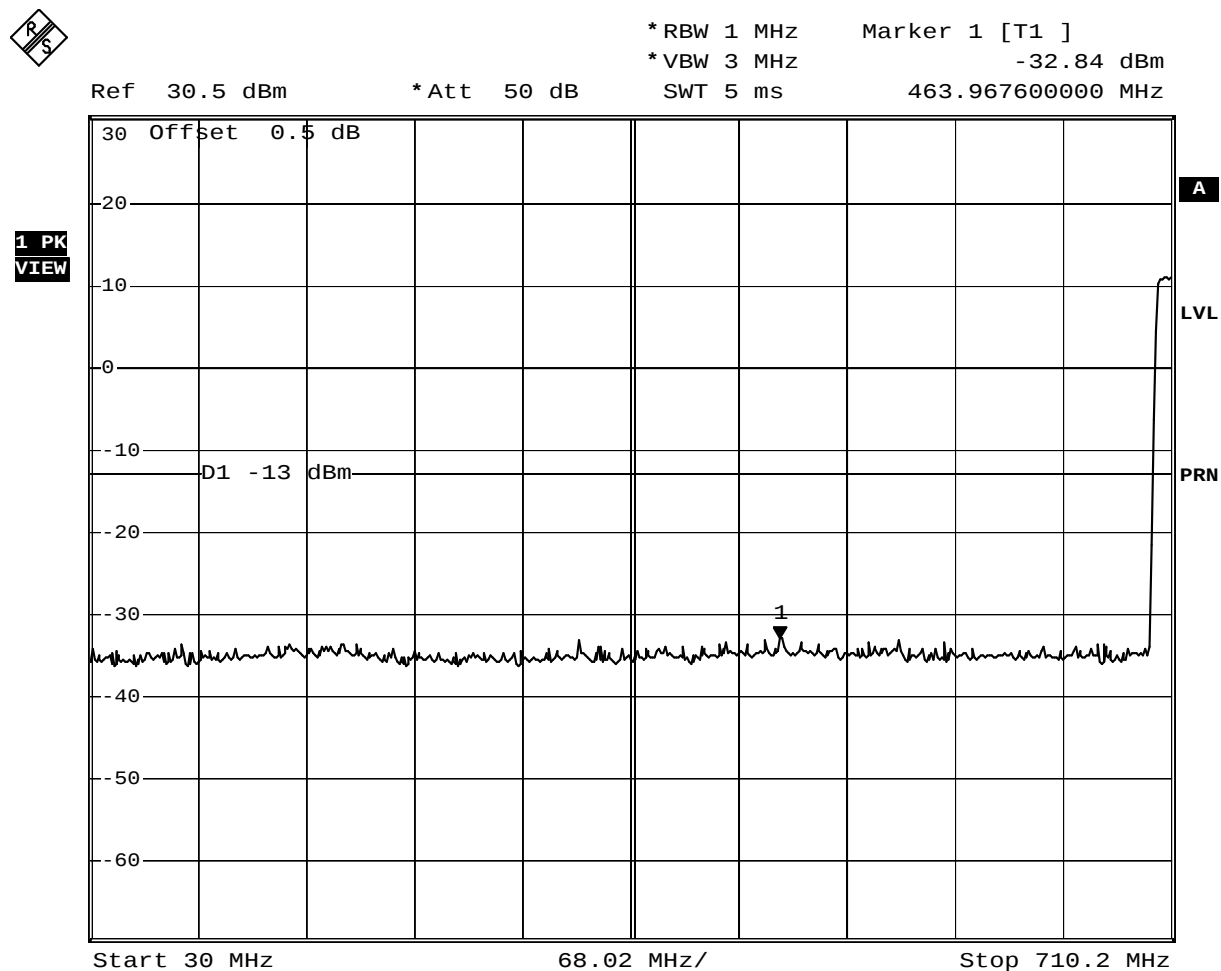
Test Mode: Mode 1

Modulation Type: 16QAM

710 MHz

Upstream Symbol Rate: 160 ksps

30MHz-1GHz



Date: 24.OCT.2008 10:25:44

Test Mode: Mode 1

Modulation Type: 16QAM

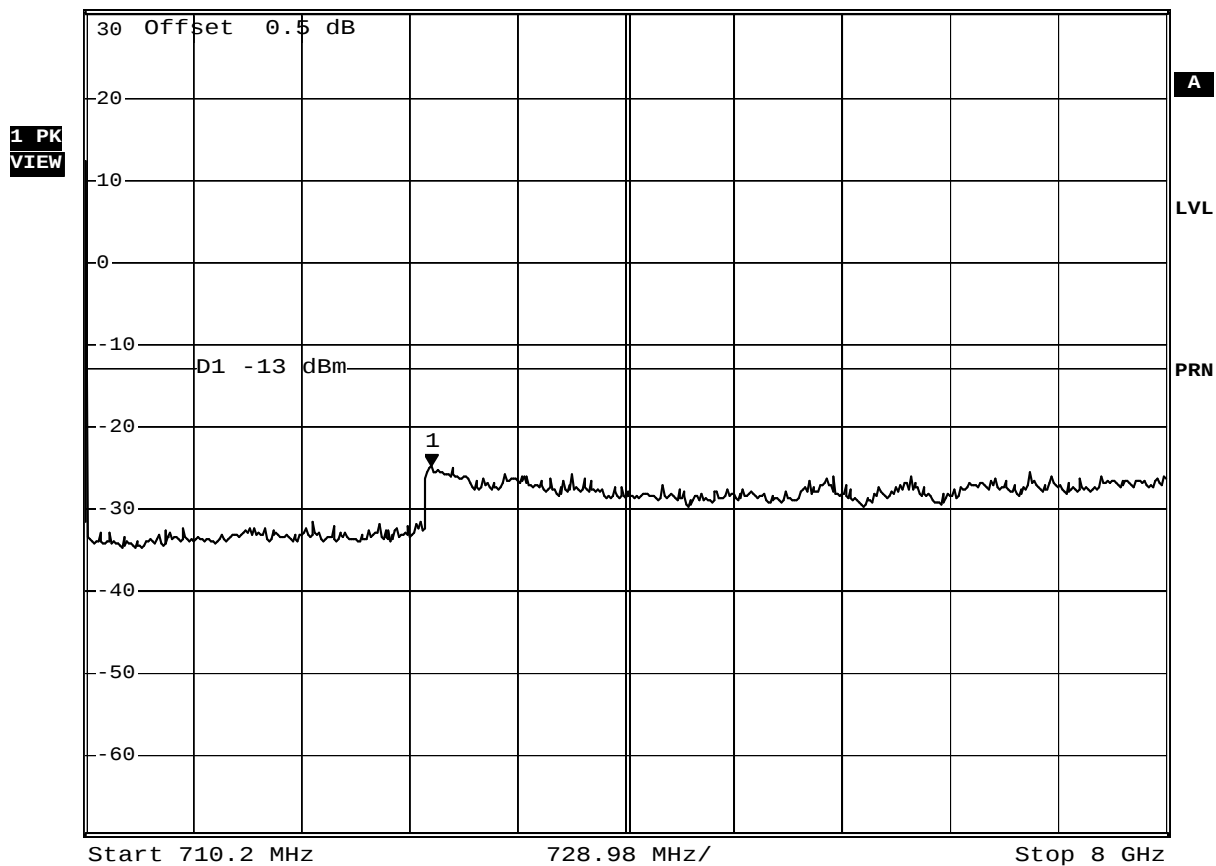
710 MHz

Upstream Symbol Rate: 160 ksps

1GHz-8GHz



*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -24.79 dBm
 Ref 30.5 dBm *Att 50 dB SWT 150 ms 3.042936000 GHz



Date: 24.OCT.2008 10:27:04

Test Mode: Mode 5

Modulation Type: 16QAM

711 MHz

Upstream Symbol Rate: 2560 ksps

30MHz-1GHz



*RBW 1 MHz

Marker 1 [T1]

*VBW 3 MHz

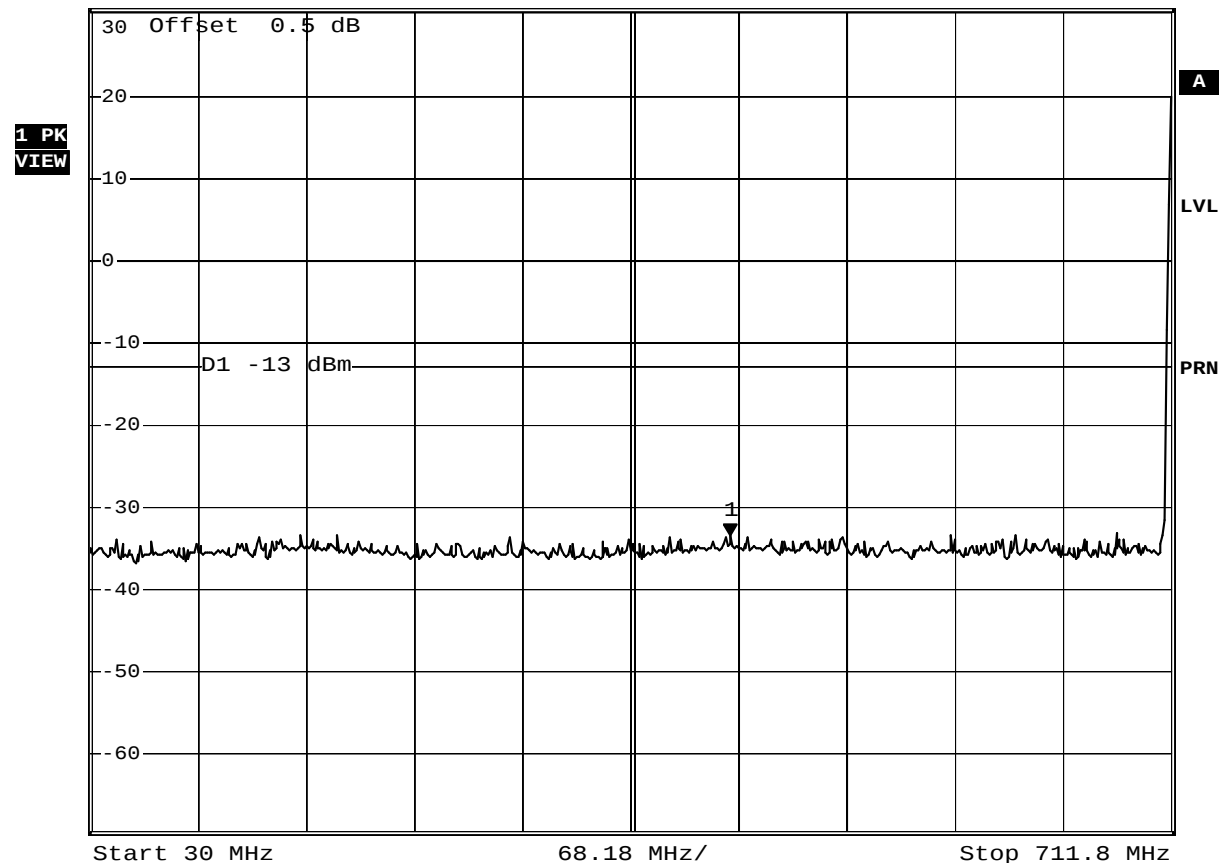
-33.47 dBm

SWT 5 ms

433.625600000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 24.OCT.2008 11:00:00

Test Mode: Mode 5

Modulation Type: 16QAM

711 MHz

Upstream Symbol Rate: 2560 ksps

1GHz-8GHz



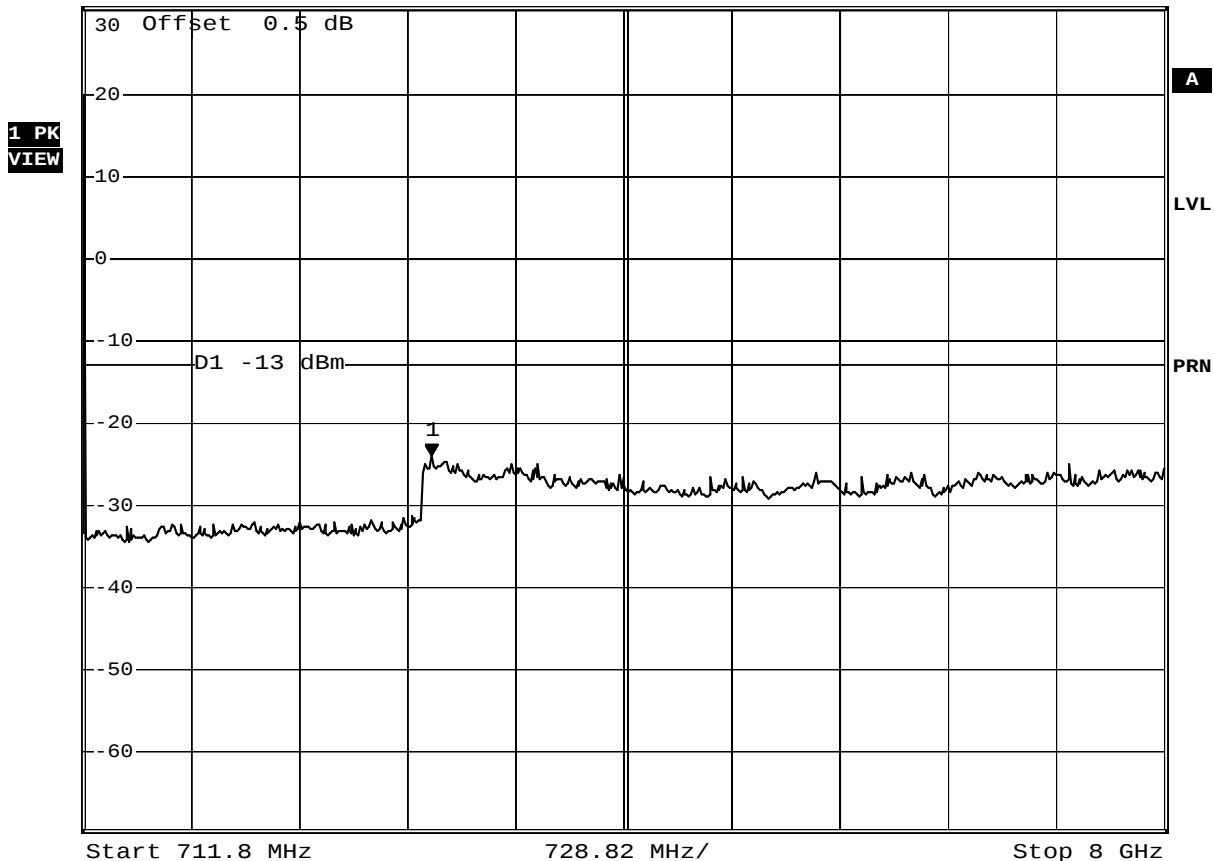
*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -23.99 dBm
 SWT 150 ms 3.058600400 GHz

Ref 30.5 dBm

*Att 50 dB

SWT 150 ms

3.058600400 GHz



Date: 24.OCT.2008 11:01:49

Test Mode: Mode 1

Modulation Type: 16QAM

715 MHz

Upstream Symbol Rate: 160 ksps

30MHz-1GHz



*RBW 1 MHz

Marker 1 [T1]

*VBW 3 MHz

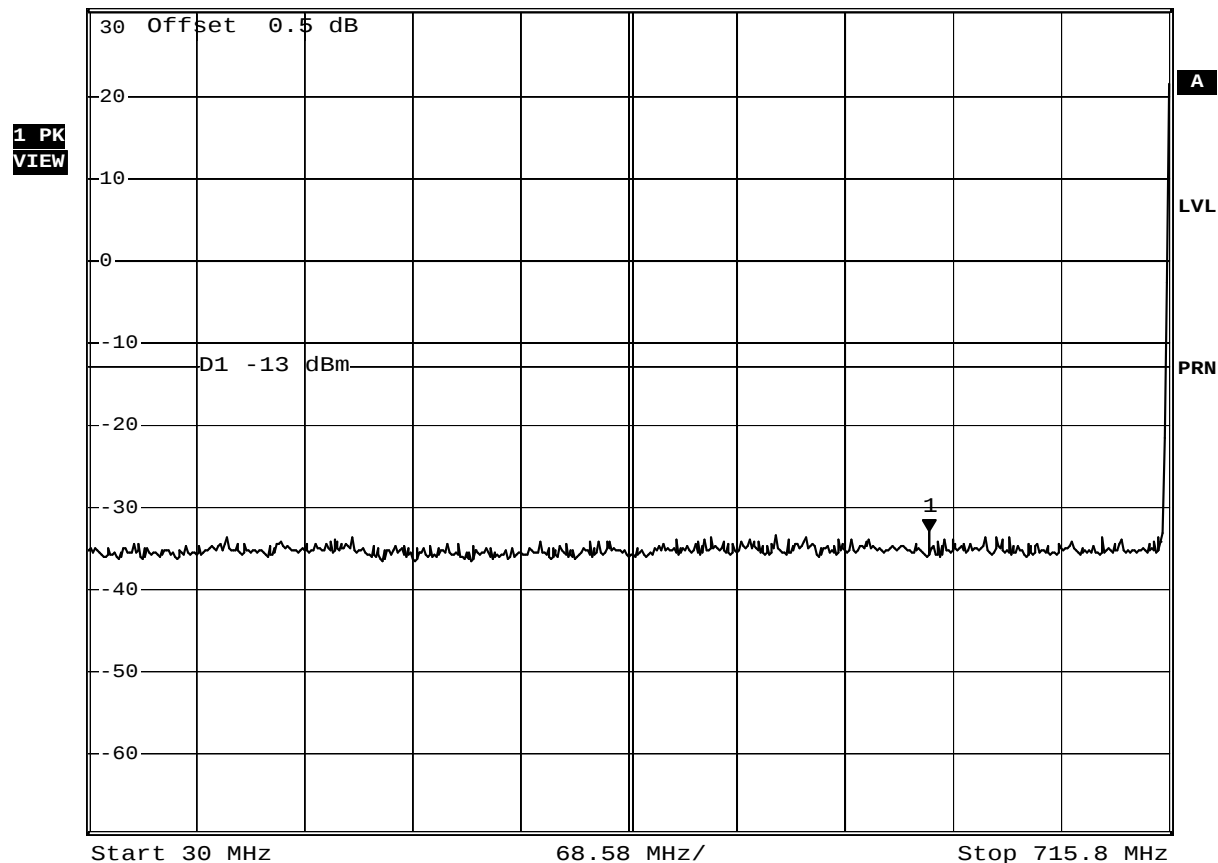
-32.80 dBm

SWT 5 ms

563.552400000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 24.OCT.2008 10:29:39

Test Mode: Mode 1

Modulation Type: 16QAM

715 MHz

Upstream Symbol Rate: 160 ksps

1GHz-8GHz



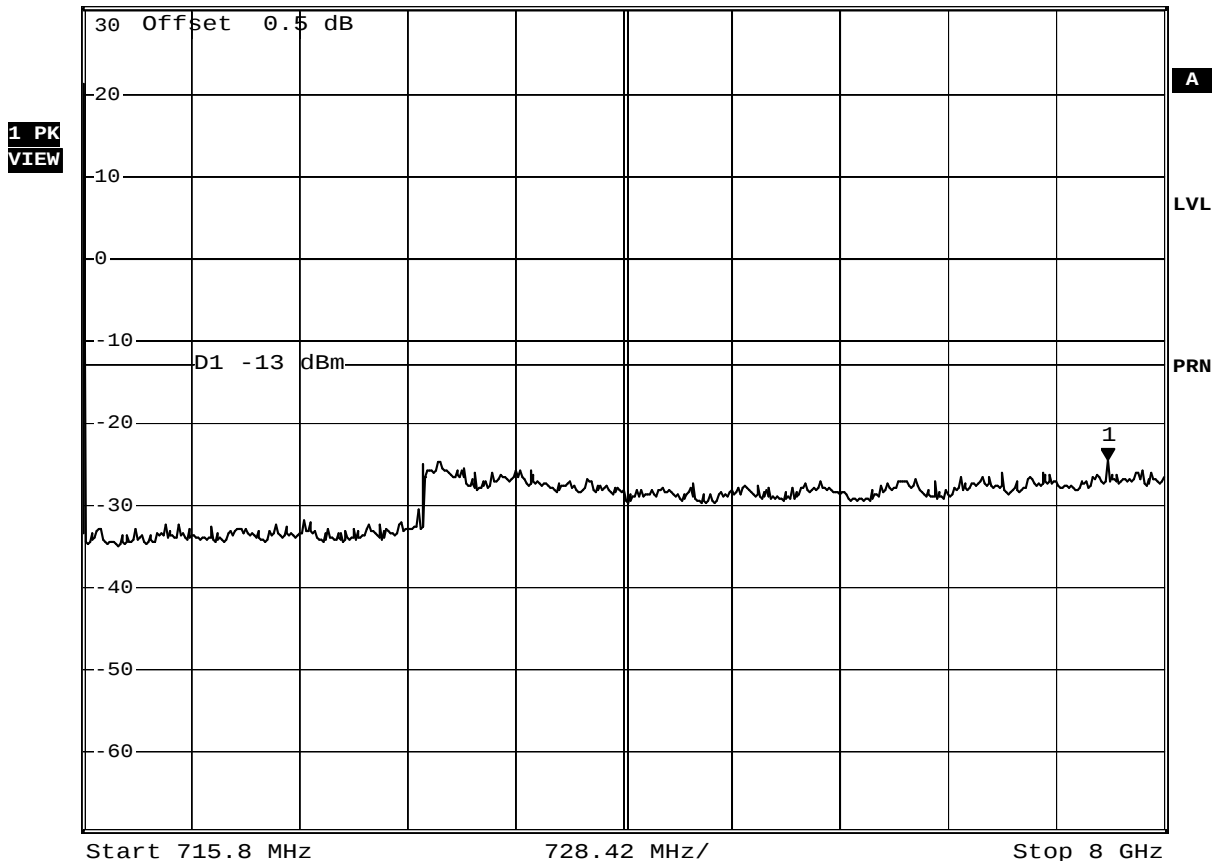
*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -24.52 dBm
 SWT 150 ms 7.621221600 GHz

Ref 30.5 dBm

*Att 50 dB

SWT 150 ms

7.621221600 GHz



Date: 24.OCT.2008 10:31:29

Test Mode: Mode 5

Modulation Type: 16QAM

714 MHz

Upstream Symbol Rate: 2560 ksps

30MHz-1GHz



*RBW 1 MHz

Marker 1 [T1]

*VBW 3 MHz

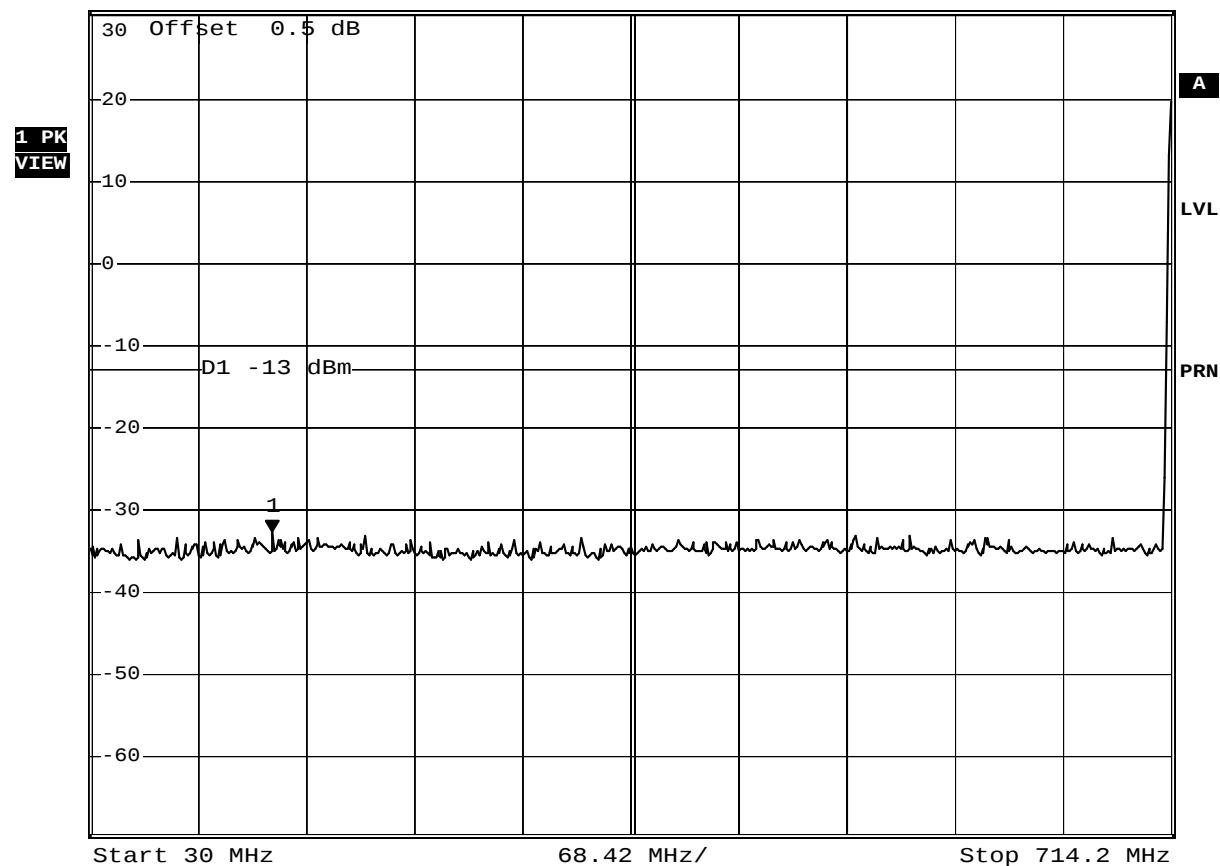
-32.54 dBm

SWT 5 ms

144.945600000 MHz

Ref 30.5 dBm

*Att 50 dB



Date: 24.OCT.2008 11:03:49

Test Mode: Mode 5

Modulation Type: 16QAM

714 MHz

Upstream Symbol Rate: 2560 ksps

1GHz-8GHz



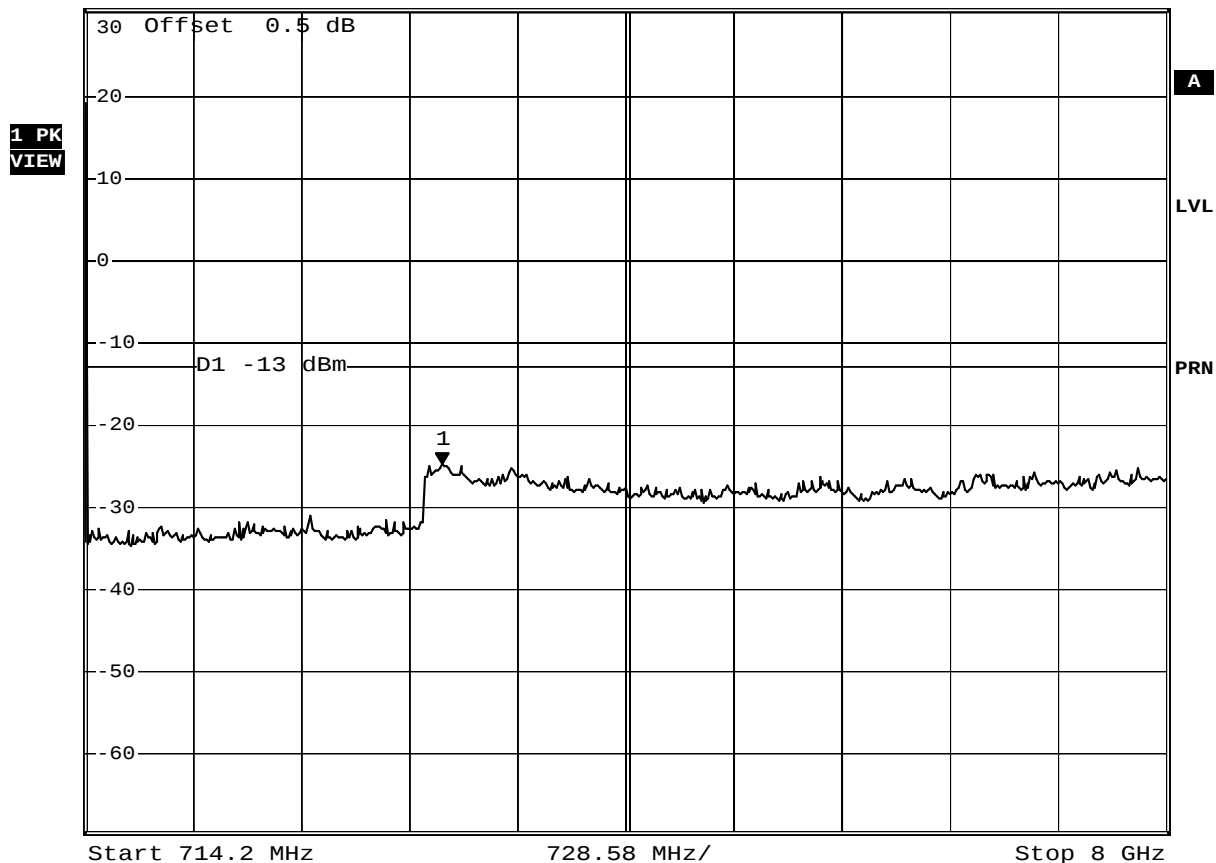
*RBW 1 MHz Marker 1 [T1]
 *VBW 3 MHz -24.88 dBm
 SWT 150 ms 3.118514000 GHz

Ref 30.5 dBm

*Att 50 dB

SWT 150 ms

3.118514000 GHz



Date: 24.OCT.2008 11:05:37

6. Radiated Spurious Emission

6.1. Test Equipment

The following test equipments are used during the test:

Radiated Emission / Site1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2895	2008/09/03
Horn Antenna	Electro Metrics	EM-6961	103325	2008/03/15
Pre-Amplifier	HP	8449B	3008A01123	2007/11/15
Pre-Amplifier	Quietek	AP-025C	N/A	N/A
Spectrum Analyzer	R & S	FSP40	100005	2008/08/25
Spectrum Analyzer	Advantest	R3162	120300649	2007/11/24
Test Receiver	R & S	ESCS 30	825442/017	2008/02/13

- Note:
1. All equipments that need to calibrate are with calibration period of 1 year.
 2. "N/A" Ca1.Date is used to Pre-test, not final test.

6.3. Limits

- (1) Fixed and Temporary Fixed Digital Stations: not less than $43 + \log (P)$ dB.
- (2) Mobile Digital Stations: not less than $43 + \log (P)$ dB at the channel edge and $55 + \log (P)$ dB at 5.5 MHz from the channel edges.

Sample Calculation:

Assume the EUT Output Power is 2 W = 33 dBm

$43 + \log (P)$ dB

$43 + \log (2) = 46$ dB

$33 \text{ dBm} - 46 \text{ dB} = -13 \text{ dBm}$

$55 + \log (2) = 58$ dB

$33 \text{ dBm} - 58 \text{ dB} = -25 \text{ dBm}$

6.4. Test Procedure

For measuring E.I.R.P peak power, EUT was placed on the turn-table which was rotated around 360 degrees to search the maximum radiation power and receiver antenna was rotated vertical and horizontal polarization to find the maximum polarization radiated power.

The EUT is replaced by a horn antenna connected to a signal generator tuned to the frequency of emission and level of signal generator adjusted to same level of emission. Both horizontal and vertical polarization of the antenna are set on measurement.

On any frequency, the limits shown are based on measuring equipment employing a peak detector function. The resolution bandwidth of spectrum analyzer is 1MHz. and video bandwidth is 3MHz.

The radiated E.I.R.P power was calculated via the Correct factor, Reading Level, and Antenna gain as follows:

$\text{E.I.R.P} = \text{Reading Level} + \text{Correct Factor} = \text{S.G.} - \text{Cable Loss} + \text{Antenna Gain}$

6.5. Uncertainty

The measurement uncertainty

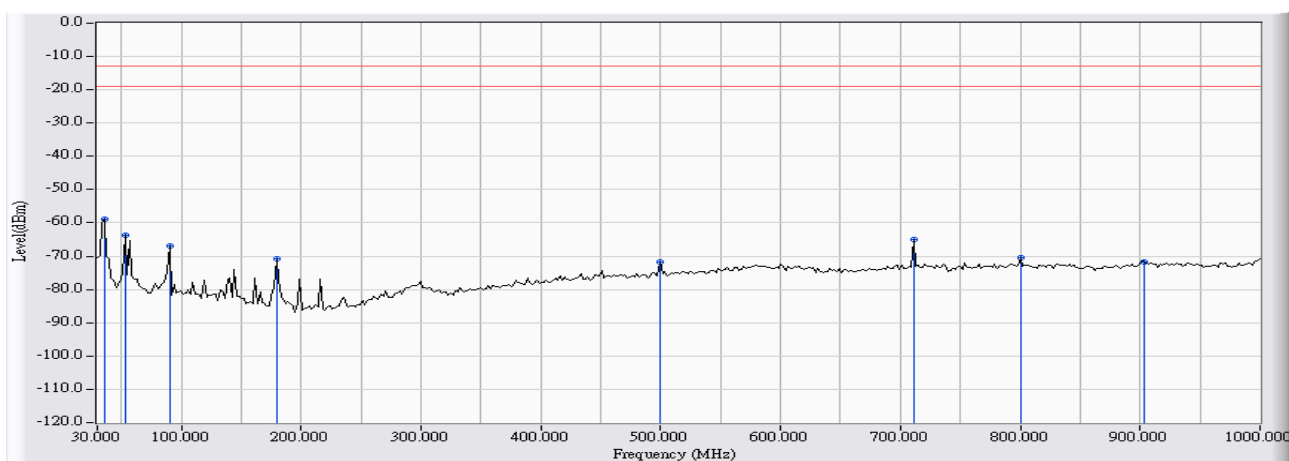
30MHz~1GHz as $\pm 3.19\text{dB}$

1GHz~27GHz as $\pm 3.9\text{dB}$

6.6. Test Result

30 MHz – 1 GHz Spurious:

Site : Site 1	Time : 2008/10/26 - 21:33
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : 16QAM-Rate160-Mode 1: Transmit

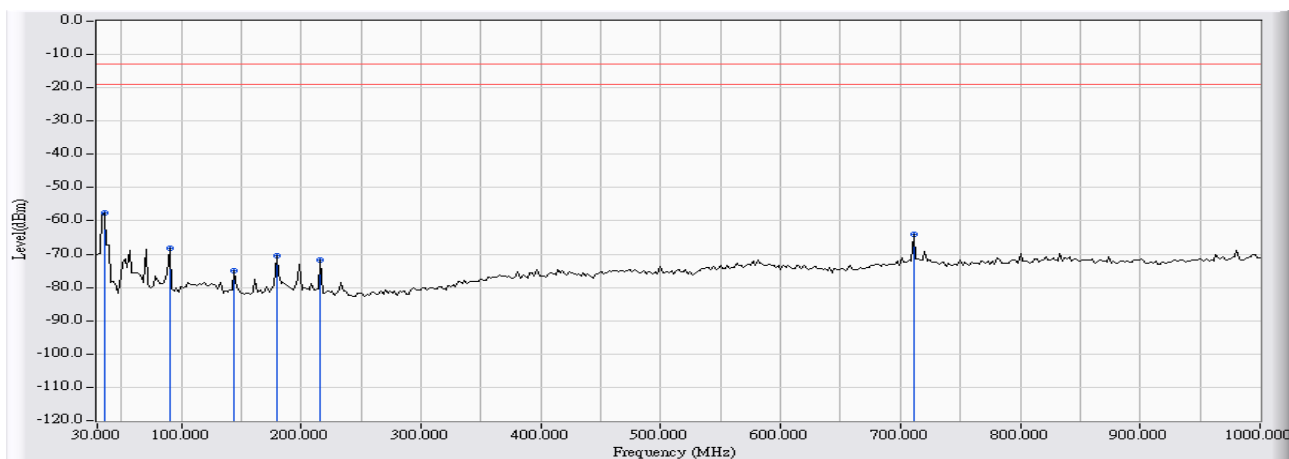


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	35.820	9.780	-68.742	-58.962	-45.962	-13.000	QUASIPeAK
2		53.280	3.248	-67.050	-63.802	-50.802	-13.000	QUASIPeAK
3		90.140	2.558	-69.572	-67.014	-54.014	-13.000	QUASIPeAK
4		179.380	-2.158	-68.536	-70.693	-57.693	-13.000	QUASIPeAK
5		499.480	8.352	-80.077	-71.725	-58.725	-13.000	QUASIPeAK
6		710.940	10.978	-76.112	-65.134	-52.134	-13.000	QUASIPeAK
7		800.180	10.955	-81.268	-70.313	-57.313	-13.000	QUASIPeAK
8		903.000	11.858	-83.577	-71.719	-58.719	-13.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : Site 1	Time : 2008/10/26 - 21:37
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : 16QAM-Rate160-Mode 1: Transmit

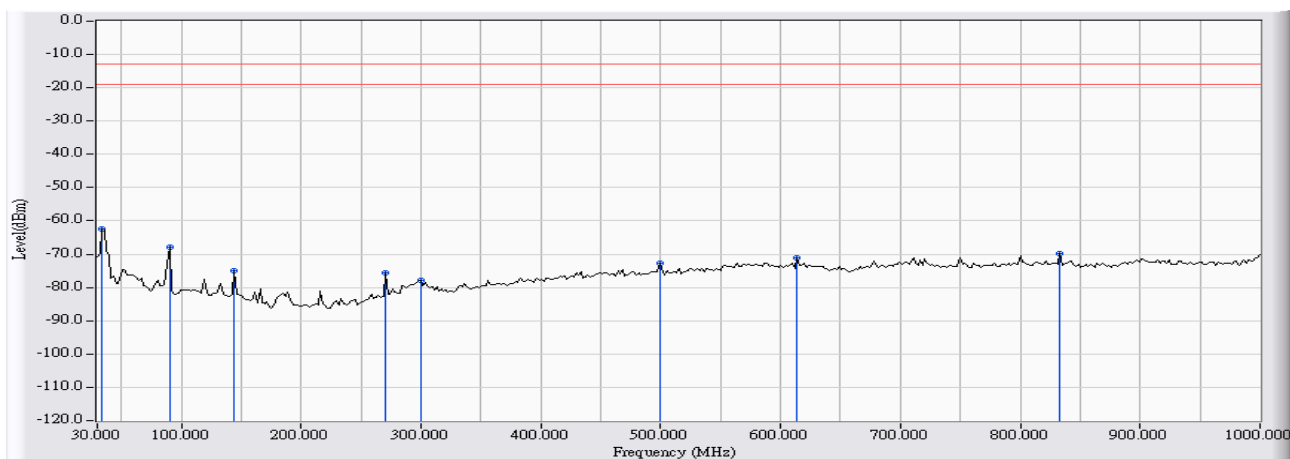


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	35.820	3.925	-61.635	-57.710	-44.710	-13.000	QUASIPeAK
2		90.140	2.908	-70.988	-68.080	-55.080	-13.000	QUASIPeAK
3		144.460	3.325	-78.319	-74.994	-61.994	-13.000	QUASIPeAK
4		179.380	2.553	-72.941	-70.387	-57.387	-13.000	QUASIPeAK
5		216.240	2.786	-74.628	-71.842	-58.842	-13.000	QUASIPeAK
6		710.940	11.896	-75.817	-63.921	-50.921	-13.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : Site 1	Time : 2008/10/26 - 21:43
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : 16QAM-Rate2560-Mode 5: Transmit

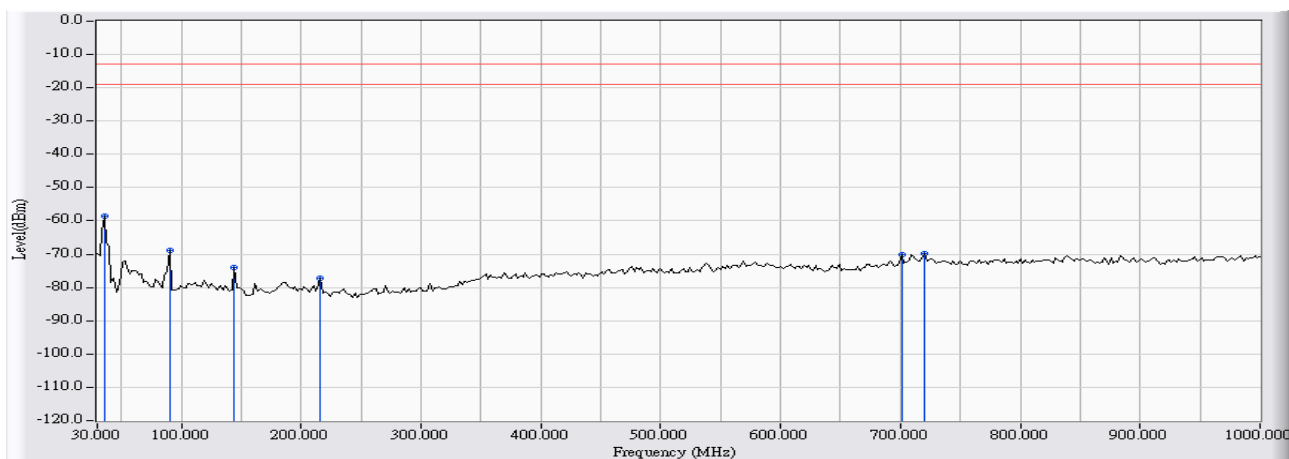


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	33.880	9.963	-72.420	-62.458	-49.458	-13.000	QUASIPeAK
2		90.140	2.558	-70.424	-67.866	-54.866	-13.000	QUASIPeAK
3		144.460	1.595	-76.538	-74.942	-61.942	-13.000	QUASIPeAK
4		270.560	1.246	-76.791	-75.545	-62.545	-13.000	QUASIPeAK
5		299.660	4.856	-82.592	-77.736	-64.736	-13.000	QUASIPeAK
6		499.480	8.352	-80.952	-72.600	-59.600	-13.000	QUASIPeAK
7		613.940	10.424	-81.380	-70.956	-57.956	-13.000	QUASIPeAK
8		833.160	11.192	-81.129	-69.937	-56.937	-13.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : Site 1	Time : 2008/10/26 - 21:53
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : 16QAM-Rate2560-Mode 5: Transmit



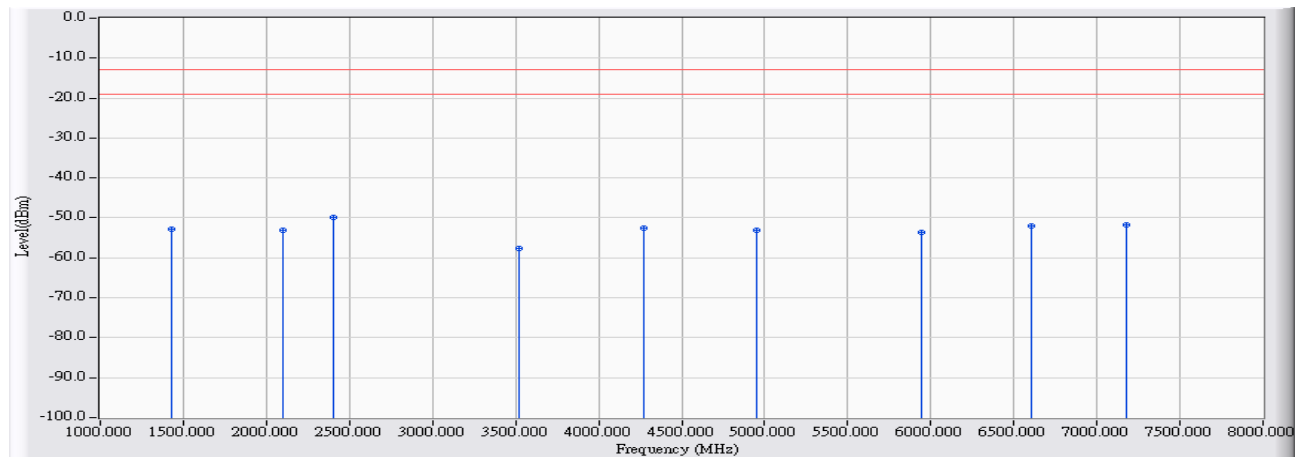
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	35.820	3.925	-62.361	-58.436	-45.436	-13.000	QUASIPeAK
2		90.140	2.908	-71.766	-68.858	-55.858	-13.000	QUASIPeAK
3		144.460	3.325	-77.323	-73.998	-60.998	-13.000	QUASIPeAK
4		216.240	2.786	-80.067	-77.281	-64.281	-13.000	QUASIPeAK
5		701.240	11.074	-81.243	-70.169	-57.169	-13.000	QUASIPeAK
6		720.640	12.562	-82.223	-69.661	-56.661	-13.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

1 GHz – 26 GHz Spurious:

Site : Site 1	Time : 2008/10/31 - 12:00
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-160-704.2-Mode 1: Transmit

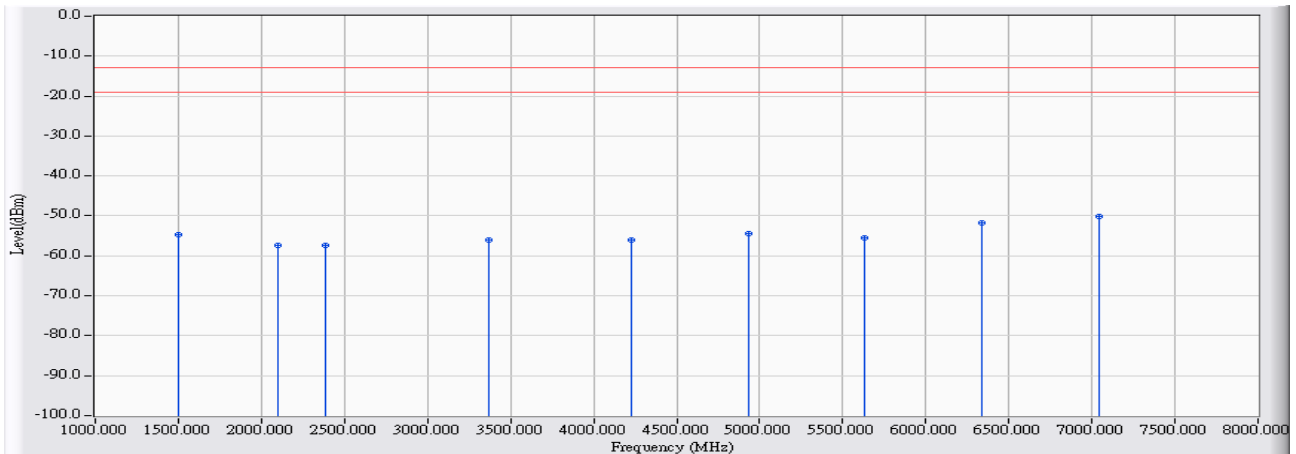


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	1424.894	10.470	-63.410	-52.940	-39.940	-13.000	PEAK
2	2099.810	12.258	-65.330	-53.072	-40.072	-13.000	PEAK
3	* 2399.920	12.903	-62.640	-49.736	-36.736	-13.000	PEAK
4	3524.793	13.121	-70.790	-57.669	-44.669	-13.000	PEAK
5	4274.769	15.788	-68.390	-52.602	-39.602	-13.000	PEAK
6	4951.097	17.720	-70.930	-53.210	-40.210	-13.000	PEAK
7	5943.620	17.538	-71.230	-53.692	-40.692	-13.000	PEAK
8	6609.210	19.267	-71.290	-52.022	-39.022	-13.000	PEAK
9	7175.270	20.443	-72.270	-51.827	-38.827	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 13:21
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-160-704.2-Mode 1: Transmit

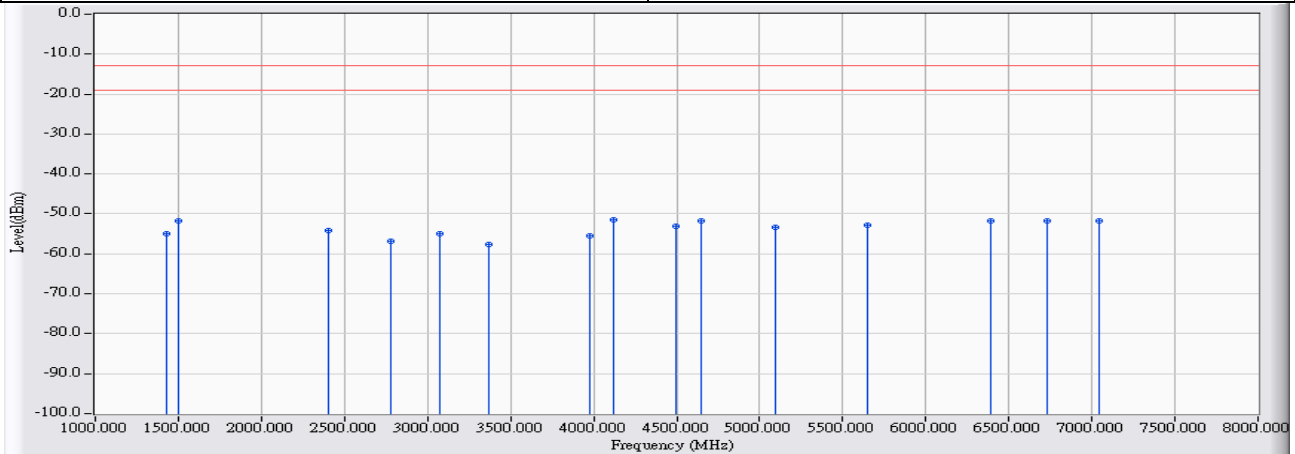


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	1500.125	10.894	-65.513	-54.620	-41.620	-13.000	PEAK
2	2100.012	11.884	-69.360	-57.476	-44.476	-13.000	PEAK
3	2388.770	13.177	-70.510	-57.333	-44.333	-13.000	PEAK
4	3368.737	13.401	-69.320	-55.920	-42.920	-13.000	PEAK
5	4225.529	16.682	-72.820	-56.137	-43.137	-13.000	PEAK
6	4929.188	17.350	-71.700	-54.350	-41.350	-13.000	PEAK
7	5633.645	15.567	-70.940	-55.373	-42.373	-13.000	PEAK
8	6337.135	19.227	-71.060	-51.833	-38.833	-13.000	PEAK
9	* 7040.455	21.986	-72.070	-50.084	-37.084	-13.000	PEAK
10	7040.546	21.985	-72.070	-50.085	-37.085	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 13:45
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-160-709.8-Mode 1: Transmit

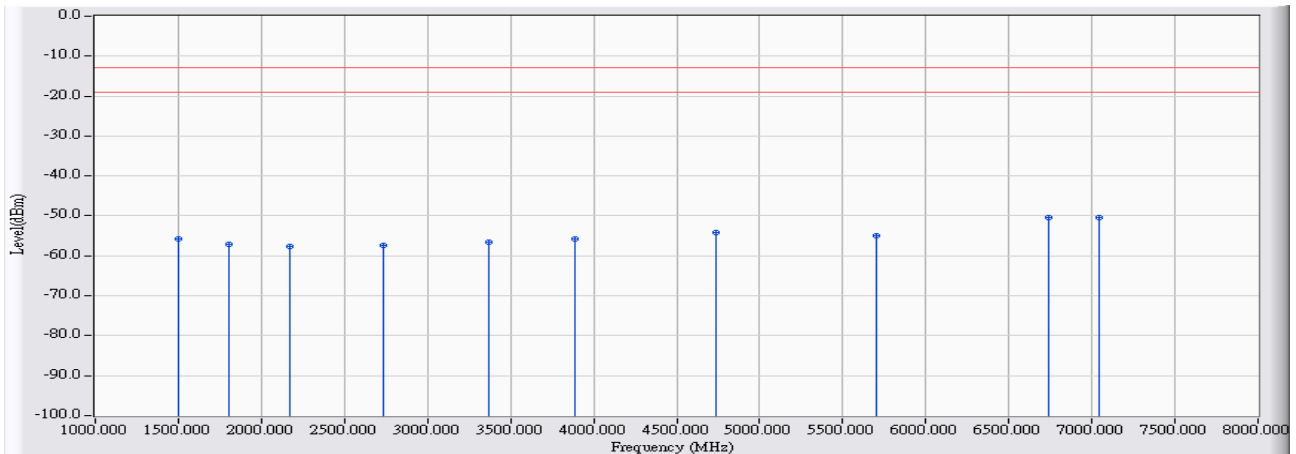


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1424.890	10.470	-65.500	-55.030	-42.030	-13.000	PEAK
2		1499.992	10.473	-62.320	-51.848	-38.848	-13.000	PEAK
3		2399.799	12.903	-66.940	-54.036	-41.036	-13.000	PEAK
4		2774.925	13.427	-70.200	-56.773	-43.773	-13.000	PEAK
5		3072.144	13.585	-68.640	-55.055	-42.055	-13.000	PEAK
6		3370.740	13.173	-70.920	-57.747	-44.747	-13.000	PEAK
7		3977.950	15.294	-70.690	-55.396	-42.396	-13.000	PEAK
8	*	4124.240	15.578	-66.970	-51.392	-38.392	-13.000	PEAK
9		4498.890	16.116	-69.080	-52.964	-39.964	-13.000	PEAK
10		4649.250	16.639	-68.430	-51.791	-38.791	-13.000	PEAK
11		5098.190	17.230	-70.701	-53.471	-40.471	-13.000	PEAK
12		5649.299	15.549	-68.430	-52.881	-39.881	-13.000	PEAK
13		6394.789	18.750	-70.610	-51.860	-38.860	-13.000	PEAK
14		6727.460	19.596	-71.410	-51.815	-38.815	-13.000	PEAK
15		7042.545	20.364	-72.240	-51.876	-38.876	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 14:33
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-160-709.8-Mode 1: Transmit

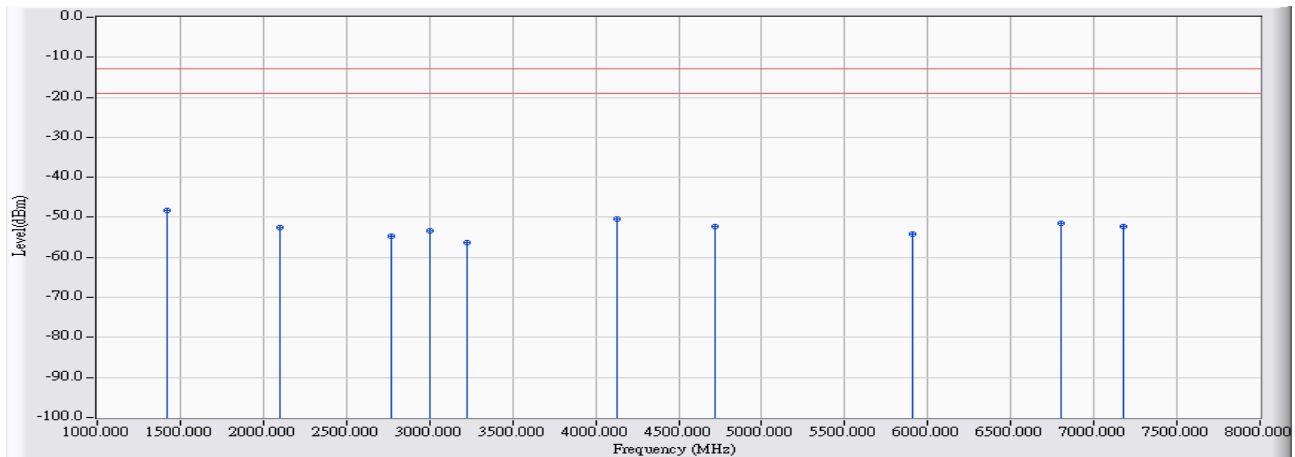


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1		1501.000	10.894	-66.760	-55.865	-42.865	-13.000	PEAK
2		1801.603	11.224	-68.430	-57.206	-44.206	-13.000	PEAK
3		2170.340	12.198	-69.920	-57.722	-44.722	-13.000	PEAK
4		2737.470	13.209	-70.620	-57.411	-44.411	-13.000	PEAK
5		3370.740	13.403	-69.960	-56.556	-43.556	-13.000	PEAK
6		3885.771	15.344	-71.070	-55.727	-42.727	-13.000	PEAK
7		4735.470	17.502	-71.589	-54.087	-41.087	-13.000	PEAK
8		5701.400	16.024	-71.050	-55.027	-42.027	-13.000	PEAK
9		6735.470	20.850	-71.310	-50.460	-37.460	-13.000	PEAK
10	*	7040.230	21.986	-72.390	-50.404	-37.404	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 15:11
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-160-710.2-Mode 1: Transmit

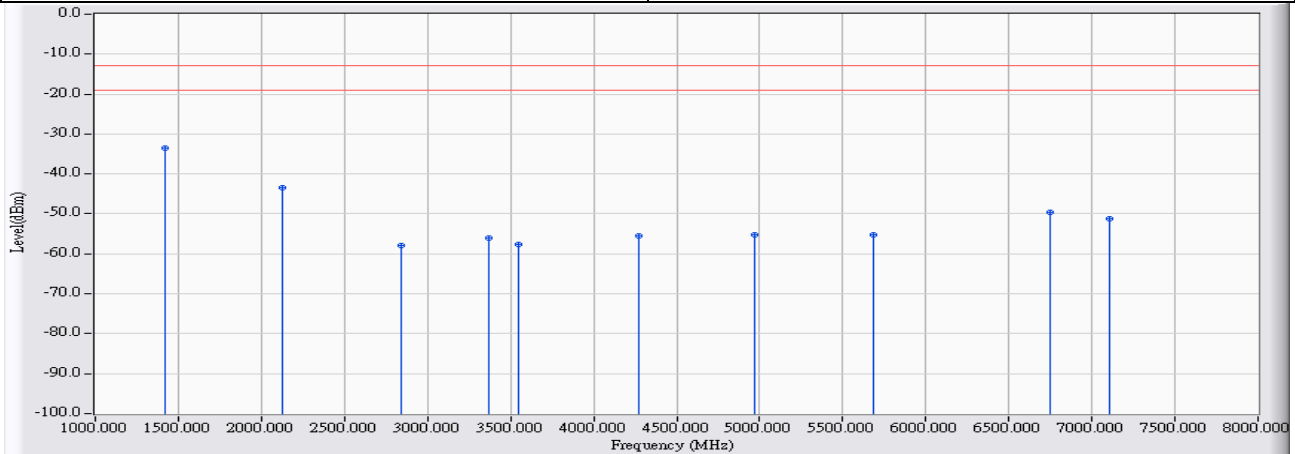


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1420.440	10.473	-58.730	-48.257	-35.257	-13.000	PEAK
2		2099.870	12.258	-64.720	-52.462	-39.462	-13.000	PEAK
3		2774.550	13.427	-68.250	-54.824	-41.824	-13.000	PEAK
4		2999.825	13.667	-67.100	-53.433	-40.433	-13.000	PEAK
5		3224.887	13.378	-69.690	-56.312	-43.312	-13.000	PEAK
6		4124.530	15.579	-66.000	-50.421	-37.421	-13.000	PEAK
7		4718.037	16.890	-69.080	-52.190	-39.190	-13.000	PEAK
8		5903.807	17.271	-71.390	-54.119	-41.119	-13.000	PEAK
9		6797.595	19.782	-71.320	-51.538	-38.538	-13.000	PEAK
10		7176.350	20.443	-72.790	-52.347	-39.347	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 15:12
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-160-710.2-Mode 1: Transmit

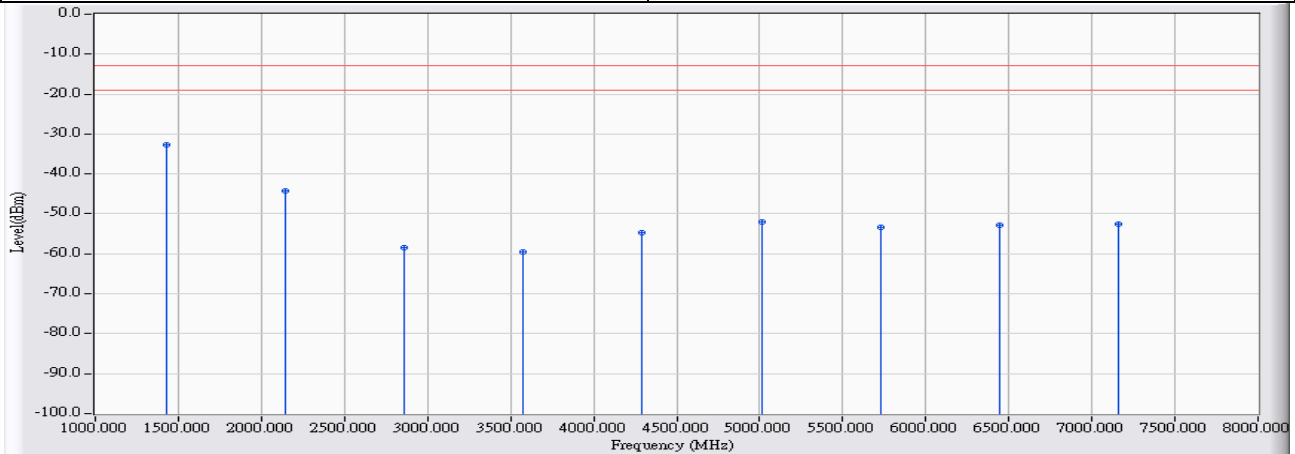


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1420.450	10.695	-44.210	-33.515	-20.515	-13.000	PEAK
2		2130.260	12.021	-55.500	-43.480	-30.480	-13.000	PEAK
3		2840.840	13.015	-70.980	-57.965	-44.965	-13.000	PEAK
4		3370.630	13.404	-69.480	-56.077	-43.077	-13.000	PEAK
5		3551.240	13.865	-71.440	-57.574	-44.574	-13.000	PEAK
6		4269.010	16.842	-72.230	-55.389	-42.389	-13.000	PEAK
7		4971.440	17.315	-72.440	-55.125	-42.125	-13.000	PEAK
8		5681.574	15.892	-71.220	-55.328	-42.328	-13.000	PEAK
9		6751.500	20.926	-70.610	-49.684	-36.684	-13.000	PEAK
10		7102.245	21.935	-73.090	-51.155	-38.155	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 16:37
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-160-715.8-Mode 1: Transmit

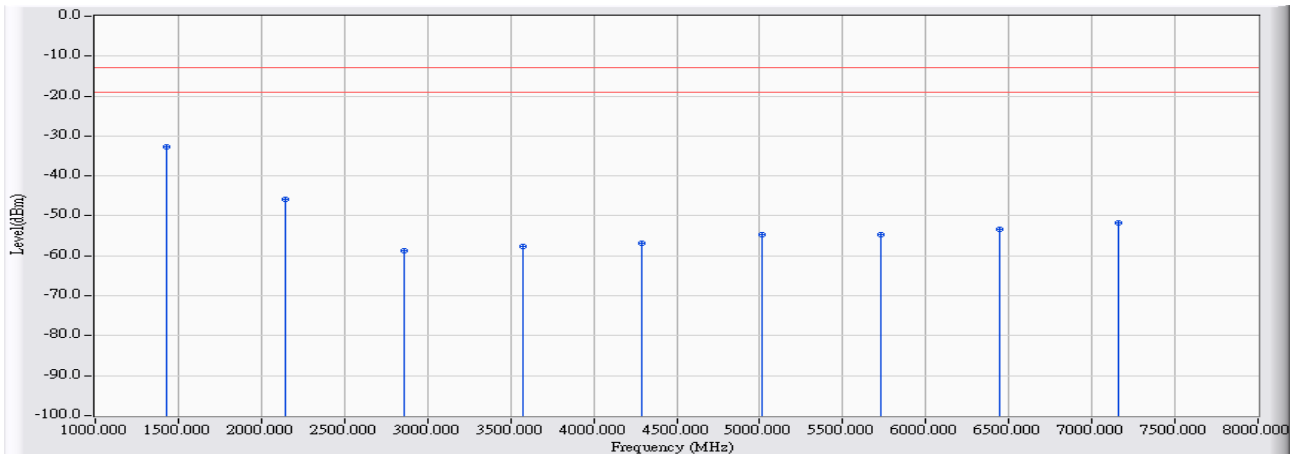


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1431.584	10.470	-43.176	-32.706	-19.706	-13.000	PEAK
2		2147.415	12.360	-56.613	-44.253	-31.253	-13.000	PEAK
3		2863.270	13.525	-71.862	-58.337	-45.337	-13.000	PEAK
4		3578.950	13.376	-72.857	-59.481	-46.481	-13.000	PEAK
5		4286.870	15.807	-70.620	-54.813	-41.813	-13.000	PEAK
6		5010.600	17.814	-69.844	-52.031	-39.031	-13.000	PEAK
7		5726.022	16.070	-69.360	-53.290	-40.290	-13.000	PEAK
8		6442.158	18.845	-71.780	-52.935	-39.935	-13.000	PEAK
9		7157.850	20.433	-72.870	-52.438	-39.438	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 16:54
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-160-715.8-Mode 1: Transmit

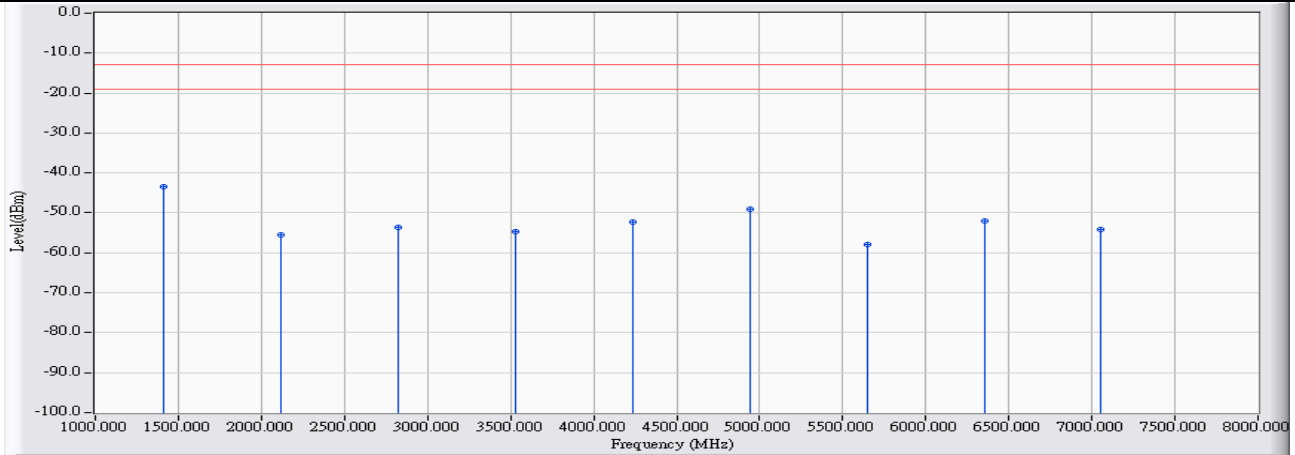


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1431.571	10.724	-43.430	-32.706	-19.706	-13.000	PEAK
2		2147.415	12.097	-57.850	-45.753	-32.753	-13.000	PEAK
3		2862.564	12.975	-71.710	-58.736	-45.736	-13.000	PEAK
4		3579.025	13.989	-71.710	-57.720	-44.720	-13.000	PEAK
5		4286.870	16.907	-73.720	-56.813	-43.813	-13.000	PEAK
6		5010.600	17.235	-71.944	-54.709	-41.709	-13.000	PEAK
7		5726.022	16.184	-70.960	-54.776	-41.776	-13.000	PEAK
8		6442.158	19.608	-72.980	-53.372	-40.372	-13.000	PEAK
9		7157.850	21.889	-73.670	-51.781	-38.781	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 17:11
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-2650-705.8--Mode 5: Transmit

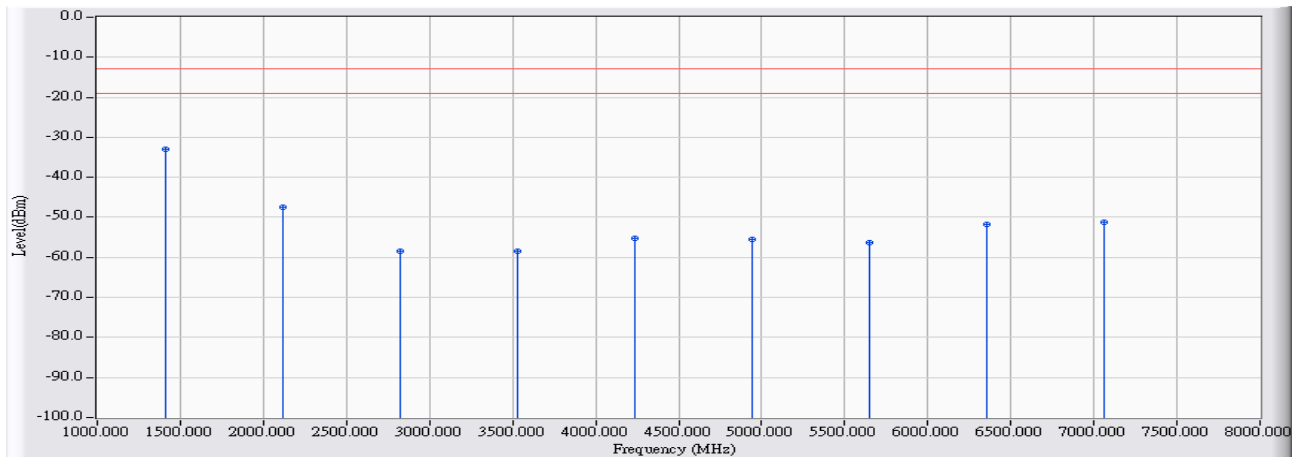


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1411.553	10.478	-54.020	-43.542	-30.542	-13.000	PEAK
2		2117.415	12.292	-67.860	-55.568	-42.568	-13.000	PEAK
3		2823.027	13.479	-66.970	-53.491	-40.491	-13.000	PEAK
4		3529.170	13.142	-67.930	-54.788	-41.788	-13.000	PEAK
5		4234.753	15.734	-68.120	-52.386	-39.386	-13.000	PEAK
6		4939.989	17.679	-66.840	-49.161	-36.161	-13.000	PEAK
7		5646.446	15.529	-73.340	-57.812	-44.812	-13.000	PEAK
8		6352.340	18.664	-70.670	-52.006	-39.006	-13.000	PEAK
9		7054.125	20.371	-74.600	-54.229	-41.229	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 17:19
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-2650-705.8-Mode 5: Transmit

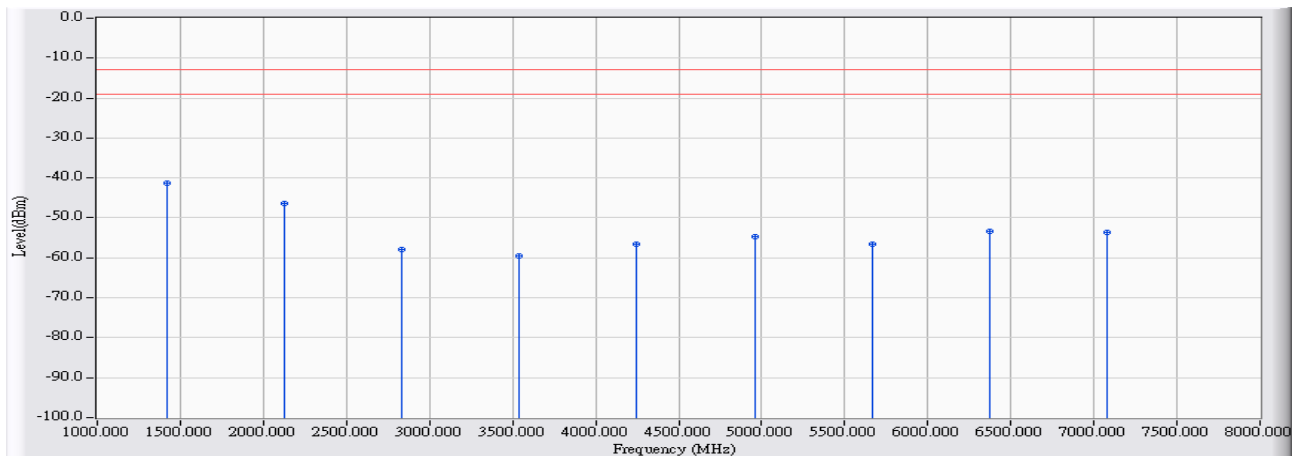


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1411.596	10.674	-43.550	-32.876	-19.876	-13.000	PEAK
2		2117.364	11.964	-59.340	-47.376	-34.376	-13.000	PEAK
3		2823.289	13.048	-71.470	-58.422	-45.422	-13.000	PEAK
4		3528.964	13.771	-72.210	-58.439	-45.439	-13.000	PEAK
5		4234.732	16.715	-71.930	-55.214	-42.214	-13.000	PEAK
6		4940.658	17.338	-72.854	-55.517	-42.517	-13.000	PEAK
7		5646.550	15.653	-72.070	-56.417	-43.417	-13.000	PEAK
8		6352.090	19.280	-71.110	-51.830	-38.830	-13.000	PEAK
9		7058.170	21.970	-73.170	-51.199	-38.199	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 17:40
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-2650-708.2-Mode 5: Transmit

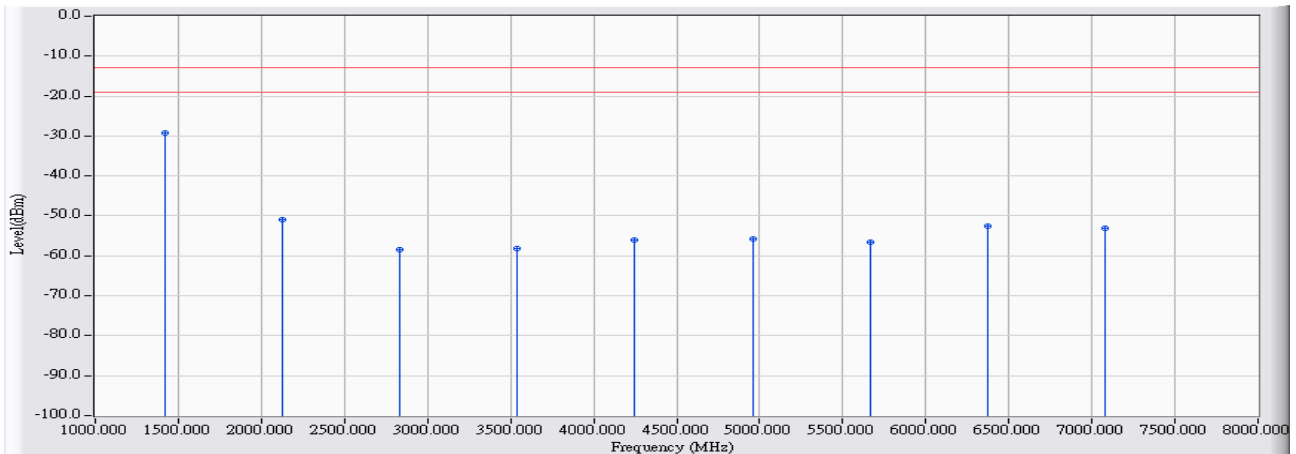


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1416.384	10.475	-51.800	-41.325	-28.325	-13.000	PEAK
2		2124.459	12.305	-58.770	-46.464	-33.464	-13.000	PEAK
3		2832.270	13.491	-71.370	-57.879	-44.879	-13.000	PEAK
4		3540.856	13.197	-72.800	-59.603	-46.603	-13.000	PEAK
5		4248.369	15.748	-72.190	-56.442	-43.442	-13.000	PEAK
6		4957.448	17.744	-72.340	-54.597	-41.597	-13.000	PEAK
7		5665.523	15.658	-72.270	-56.611	-43.611	-13.000	PEAK
8		6373.940	18.704	-72.150	-53.445	-40.445	-13.000	PEAK
9		7081.890	20.388	-73.960	-53.572	-40.572	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 17:46
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-2650-708.2-Mode 5: Transmit

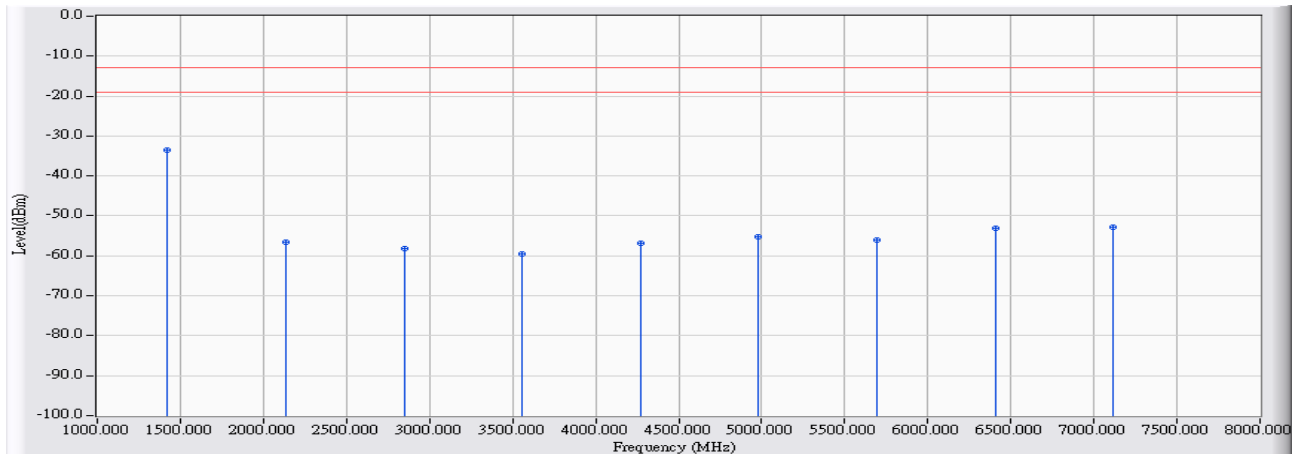


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1416.415	10.685	-39.980	-29.295	-16.295	-13.000	PEAK
2		2124.640	11.997	-63.050	-51.053	-38.053	-13.000	PEAK
3		2832.035	13.032	-71.580	-58.549	-45.549	-13.000	PEAK
4		3540.000	13.819	-72.040	-58.221	-45.221	-13.000	PEAK
5		4249.246	16.764	-72.780	-56.015	-43.015	-13.000	PEAK
6		4957.301	17.328	-73.210	-55.882	-42.882	-13.000	PEAK
7		5665.460	15.783	-72.440	-56.656	-43.656	-13.000	PEAK
8		6373.721	19.356	-71.890	-52.534	-39.534	-13.000	PEAK
9		7081.984	21.951	-75.160	-53.209	-40.209	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 17:58
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-2650-711.8-Mode 5: Transmit

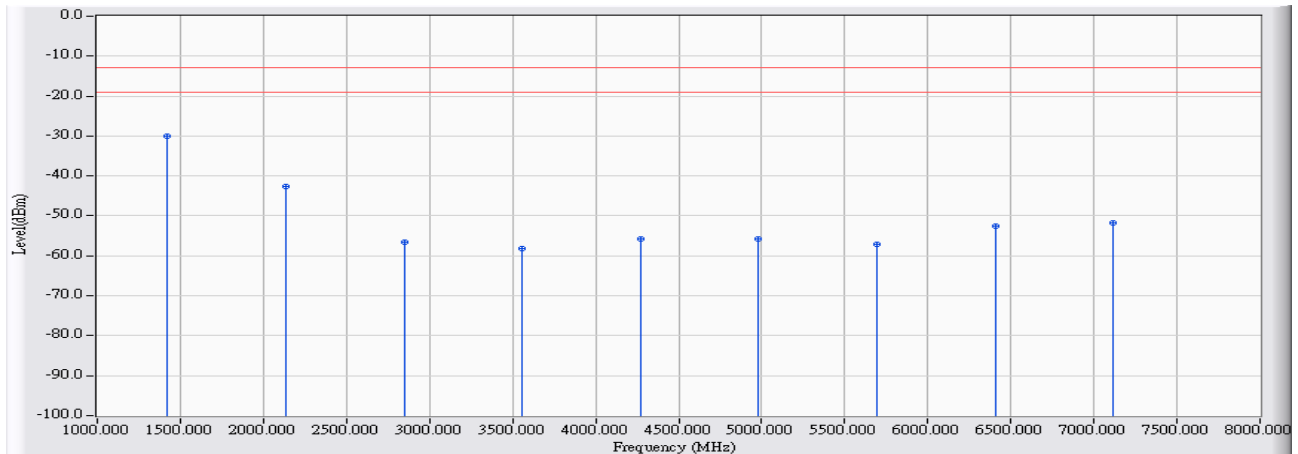


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1423.586	10.471	-43.920	-33.449	-20.449	-13.000	PEAK
2		2135.210	12.332	-68.820	-56.489	-43.489	-13.000	PEAK
3		2847.320	13.511	-71.560	-58.049	-45.049	-13.000	PEAK
4		3559.190	13.283	-72.800	-59.517	-46.517	-13.000	PEAK
5		4270.870	15.782	-72.750	-56.967	-43.967	-13.000	PEAK
6		4982.490	17.824	-72.990	-55.166	-42.166	-13.000	PEAK
7		5694.250	15.854	-71.900	-56.045	-43.045	-13.000	PEAK
8		6406.430	18.771	-71.760	-52.989	-39.989	-13.000	PEAK
9		7117.000	20.407	-73.320	-52.912	-39.912	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 18:03
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-2650-711.8-Mode 5: Transmit

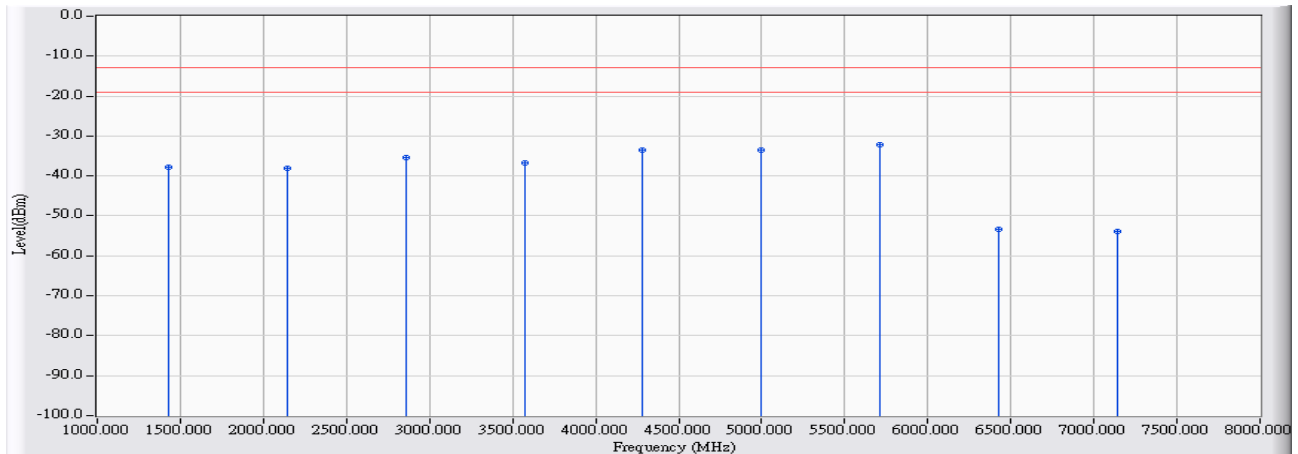


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1423.580	10.702	-40.730	-30.028	-17.028	-13.000	PEAK
2		2135.410	12.042	-54.690	-42.648	-29.648	-13.000	PEAK
3		2846.960	13.003	-69.630	-56.627	-43.627	-13.000	PEAK
4		3559.170	13.903	-71.970	-58.067	-45.067	-13.000	PEAK
5		4271.030	16.849	-72.670	-55.821	-42.821	-13.000	PEAK
6		4982.520	17.303	-73.050	-55.747	-42.747	-13.000	PEAK
7		5694.540	15.975	-73.100	-57.124	-44.124	-13.000	PEAK
8		6406.340	19.482	-71.910	-52.429	-39.429	-13.000	PEAK
9		7118.140	21.921	-73.550	-51.628	-38.628	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 18:23
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - HORIZONTAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-2650-714.2-Mode 5: Transmit

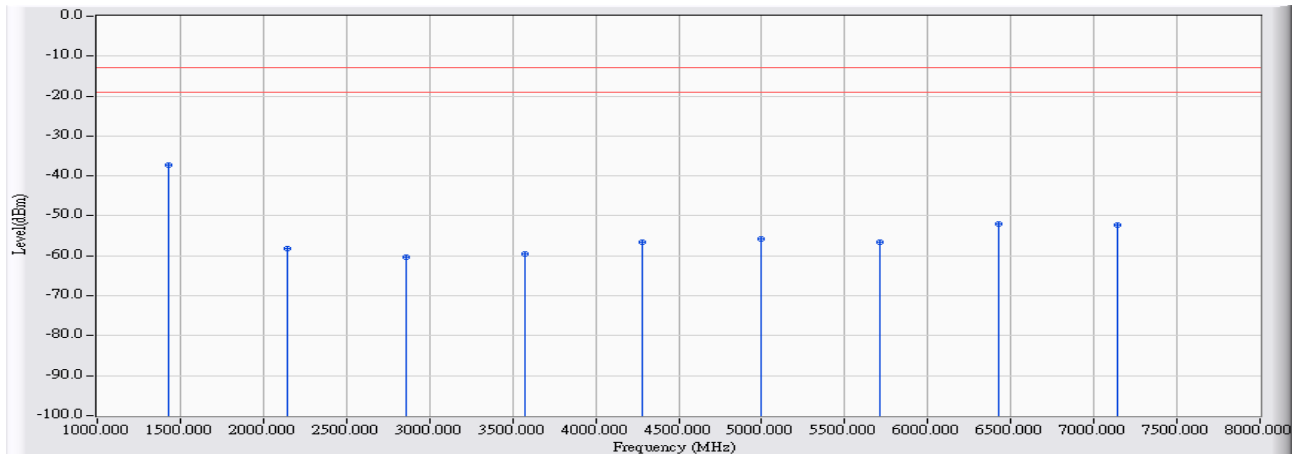


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	1428.227	10.471	-48.270	-37.800	-24.800	-13.000	PEAK
2	2142.589	12.348	-50.450	-38.102	-25.102	-13.000	PEAK
3	2856.840	13.520	-48.900	-35.379	-22.379	-13.000	PEAK
4	3571.170	13.339	-50.010	-36.670	-23.670	-13.000	PEAK
5	4284.965	15.804	-49.430	-33.626	-20.626	-13.000	PEAK
6	4999.420	17.854	-51.390	-33.536	-20.536	-13.000	PEAK
7	* 5713.521	15.982	-48.020	-32.038	-19.038	-13.000	PEAK
8	6427.590	18.818	-72.040	-53.222	-40.222	-13.000	PEAK
9	7141.980	20.423	-74.240	-53.817	-40.817	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	Time : 2008/10/31 - 18:28
Limit : PART27/PLMN09(Fixed_station)_00M_PK	Margin : 6
Probe : CB3_FCC_1-18G(2008-8) - VERTICAL	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX-2650-714.2-Mode 5: Transmit



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBm)	Measure Level (dBm)	Margin (dB)	Limit (dBm)	Detector Type
1	*	1428.440	10.715	-47.880	-37.165	-24.165	-13.000	PEAK
2		2142.777	12.074	-70.310	-58.235	-45.235	-13.000	PEAK
3		2856.650	12.985	-73.270	-60.285	-47.285	-13.000	PEAK
4		3571.050	13.957	-73.369	-59.412	-46.412	-13.000	PEAK
5		4285.320	16.903	-73.370	-56.468	-43.468	-13.000	PEAK
6		4999.220	17.276	-72.960	-55.685	-42.685	-13.000	PEAK
7		5713.670	16.106	-72.760	-56.654	-43.654	-13.000	PEAK
8		6427.815	19.557	-71.660	-52.103	-39.103	-13.000	PEAK
9		7141.920	21.902	-74.150	-52.248	-39.248	-13.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

6.7. Test Photo

Test Mode : Mode 1: Transmit

Description : Front View of Radiated Emission Test Setup



Test Mode : Mode 1: Transmit

Description : Back View of Radiated Emission Test Setup



Test Mode : Mode 1: Transmit

Description : Front View of Radiated Emission Test Setup (Horn)



7. Frequency Stability Over Temperatures Variation

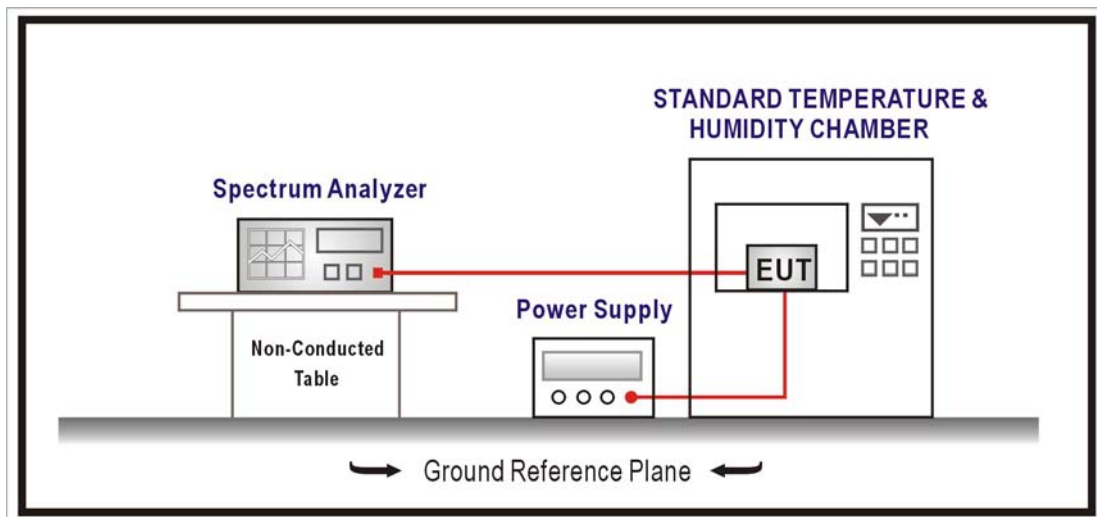
7.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	STANDARD TEMPERATURE & HUMIDITY CHAMBER	WIT	TH-1S-B / 108210	Feb., 2008

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

The frequency stability shall be measured with variation of ambient temperature as follows: From -30° to +50° centigrade for all equipment. Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range.

7.4. Test Procedure

Power must be turned off when changing from one temperature to another. Power warm up is at least 15 min and power applied should perform before recording frequency error. The temperature range step is 10 degrees in this test items. All temperature levels shall be holding the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

7.5. Uncertainty

The measurement uncertainty is defined as $\pm 100\text{KHz}$

7.6. Test Result

Product	UHF Band MMDS Transceiver		
Test Item	Frequency Stability Over Temperatures Variation		
Test Mode	Mode 1: Transmit		
Date of Test	2008/10/23	Test Site	No.7 Shielding Room

160Kps			2560Kps		
Carrier Signal			Carrier Signal		
704.2MHz			705.8MHz		
Frequency Error Over Temperatures			Frequency Error Over Temperatures		
Temp. (°C)	Frequency (MHz)	Frequency Error (ppm)	Temp. (°C)	Frequency (MHz)	Frequency Error (ppm)
50	704.20296	5.493	50	705.8029	5.356
40	704.201	2.709	40	705.8012	2.947
30	704.19972	0.892	30	705.7996	0.680
25	704.199092	0.000	25	705.79912	0.000
20	704.19912	0.040	20	705.79912	0.000
10	704.19852	-0.812	10	705.79852	-0.850
0	704.19768	-2.005	0	705.79748	-2.324
-10	704.19636	-3.880	-10	705.79867	-0.638
-20	704.19734	-2.488	-20	705.79871	-0.581

Carrier Signal			Carrier Signal		
709.8MHz			708.2MHz		
Frequency Error Over Temperatures			Frequency Error Over Temperatures		
Temp. (°C)	Frequency (MHz)	Frequency Error (ppm)	Temp. (°C)	Frequency (MHz)	Frequency Error (ppm)
50	709.803	5.579	50	708.20284	5.253
40	709.80096	2.705	40	708.2012	2.937
30	709.79972	0.958	30	708.2004	1.807
25	709.79904	0.000	25	708.19912	0.000
20	709.79912	0.113	20	708.19912	0.000
10	709.79768	-1.916	10	708.19862	-0.706
0	709.79628	-3.888	0	708.19764	-2.090
-10	709.79546	-5.044	-10	708.19741	-2.415
-20	709.79664	-3.381	-20	708.19772	-1.977

160Kps

Carrier Signal		
710.2MHz		
Frequency Error Over Temperatures		
Temp. (°C)	Frequency (MHz)	Frequency Error (ppm)
50	710.20316	5.689
40	710.20096	2.591
30	710.19976	0.901
25	710.19912	0.000
20	710.1992	0.113
10	710.19864	-0.676
0	710.19782	-1.830
-10	710.19771	-1.985
-20	710.19817	-1.338

2560Kps

Carrier Signal		
711.8MHz		
Frequency Error Over Temperatures		
Temp. (°C)	Frequency (MHz)	Frequency Error (ppm)
50	711.80272	5.058
40	711.8004	1.798
30	711.7996	0.674
25	711.79912	0.000
20	711.79912	0.000
10	711.79768	-2.023
0	711.79741	-2.402
-10	711.79762	-2.107
-20	711.79755	-2.206

Carrier Signal

715.8MHz

Frequency Error Over Temperatures

Temp. (°C)	Frequency (MHz)	Frequency Error (ppm)
50	715.80316	5.756
40	715.8008	2.459
30	715.79972	0.950
25	715.79904	0.000
20	715.79912	0.112
10	715.79844	-0.838
0	715.7978	-1.732
-10	715.79763	-1.970
-20	715.79742	-2.263

Carrier Signal

714.2MHz

Frequency Error Over Temperatures

Temp. (°C)	Frequency (MHz)	Frequency Error (ppm)
50	714.20276	5.041
40	714.1992	0.056
30	714.1992	0.056
25	714.19916	0.000
20	714.19912	-0.056
10	714.19852	-0.896
0	714.19768	-2.072
-10	714.19766	-2.100
-20	714.19754	-2.268

8. Frequency Stability Over Voltage Variation

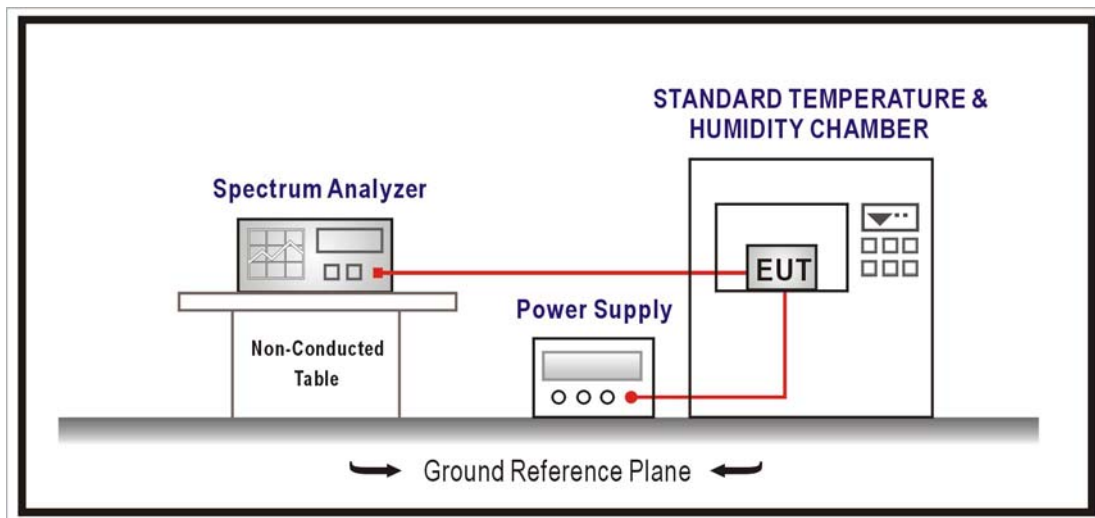
8.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	STANDARD TEMPERATURE & HUMIDITY CHAMBER	WIT	TH-1S-B / 108210	Feb., 2008

Note: 1. all equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

The frequency stability shall be measured with variation of primary supply voltage as follows:

- (1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
- (2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.
- (3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

8.4. Test Procedure

Power must be removed when changing from one voltage to another voltage. Power warm up is at least 15 min and power applied should perform before recording frequency error.

EUT is connected the external power supply to control the DC input power. The various Volts set from the minimum 4.5 Volts to 5.5 Volts. Each step shall be record the frequency error rate.

8.5. Uncertainty

The measurement uncertainty is defined as $\pm 100\text{KHz}$.

8.6. Test Result

Product	UHF Band MMDS Transceiver		
Test Item	Frequency Stability Over Voltage Variation		
Test Mode	Mode 1: Transmit		
Date of Test	2008/10/23	Test Site	No.7 Shielding Room

160Kps			2560Kps		
Carrier Signal			Carrier Signal		
704.2MHz			705.8MHz		
Frequency Error Over Voltage			Frequency Error Over Voltage		
Voltage	Frequency (MHz)	Frequency Error (ppm)	Voltage	Frequency (MHz)	Frequency Error (ppm)
138	704.19904	0.454	138	705.79912	0.113
120	704.19872	0.000	120	705.79904	0.000
102	704.19932	0.852	102	705.7992	0.227

Carrier Signal			Carrier Signal		
709.8MHz			708.2MHz		
Frequency Error Over Voltage			Frequency Error Over Voltage		
Voltage	Frequency (MHz)	Frequency Error (ppm)	Voltage	Frequency (MHz)	Frequency Error (ppm)
138	709.79912	0.564	138	708.19916	0.056
120	709.79872	0.000	120	708.19912	0.000
102	709.79932	0.845	102	708.19924	0.169

160Kps			2560Kps		
Carrier Signal			Carrier Signal		
710.2MHz			711.8MHz		
Frequency Error Over Voltage			Frequency Error Over Voltage		
Voltage	Frequency (MHz)	Frequency Error (ppm)	Voltage	Frequency (MHz)	Frequency Error (ppm)
138	710.19912	-1.014	138	711.79924	0.169
120	710.19984	0.000	120	711.79912	0.000
102	710.19932	-0.732	102	711.79912	0.000

Carrier Signal			Carrier Signal		
715.8MHz			714.2MHz		
Frequency Error Over Voltage			Frequency Error Over Voltage		
Voltage	Frequency (MHz)	Frequency Error (ppm)	Voltage	Frequency (MHz)	Frequency Error (ppm)
138	715.79912	0.112	138	714.19904	-0.112
120	715.79904	0.000	120	714.19912	0.000
102	715.79932	0.391	102	714.19912	0.000

9. AC Conducted Emission

9.1. Test Equipment

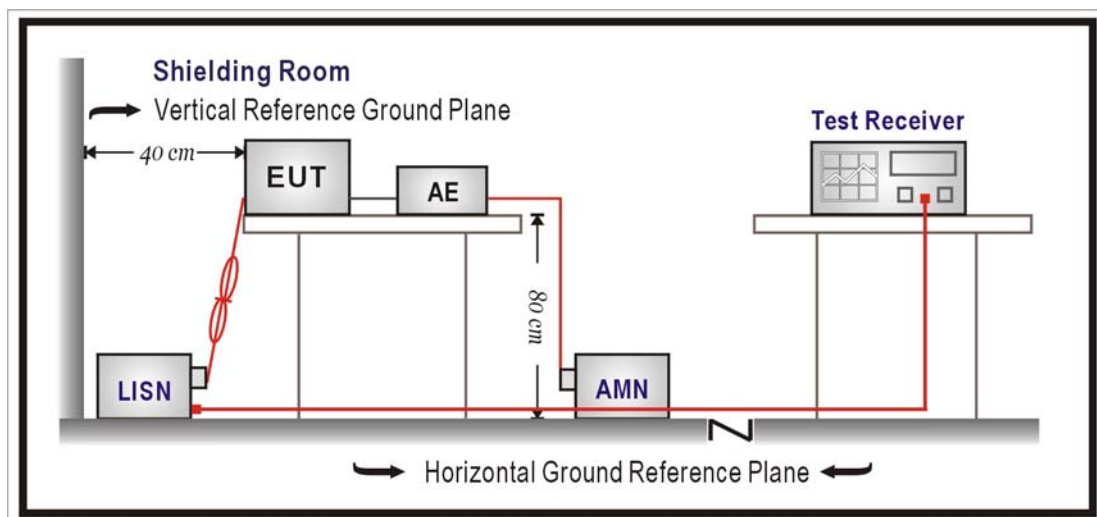
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
4-Wire ISN	R & S	ENY 41	837032/001	2008/04/15
Double 2-Wire ISN	R & S	ENY 22	835354/008	2008/04/15
LISN	R&S	ESH3-Z5	836679/022	2008/06/17
LISN	R & S	ESH3-Z5	836679/013	2007/12/30
Pulse Limiter	R & S	ESH3-Z2	100411	2007/11/16
Test Receiver	R & S	ESCS 30	100149	2007/11/15

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

9.2. Test Setup



9.3. Limits

FCC Part 15 Subpart C Paragraph 15.247 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

9.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

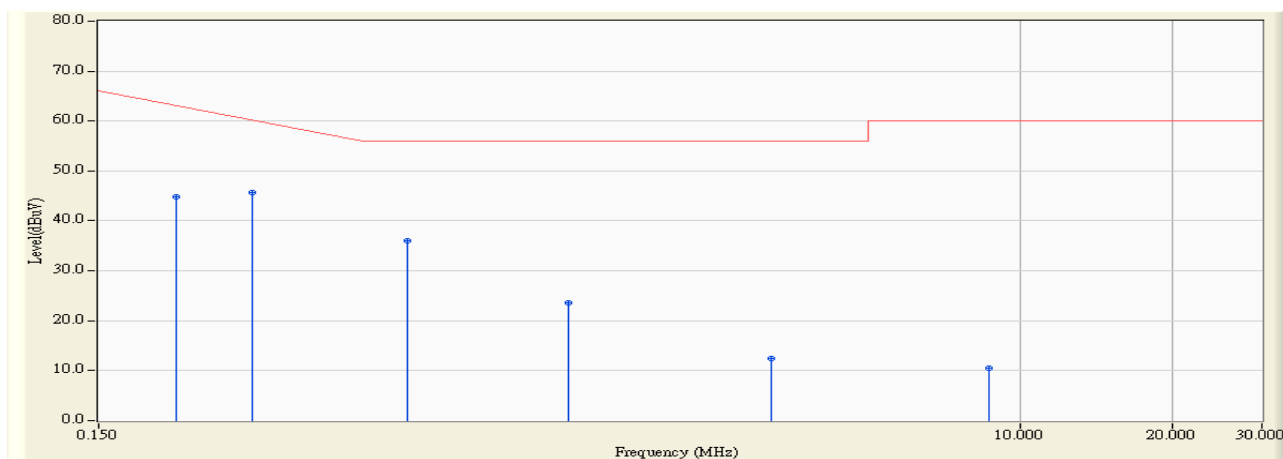
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

9.5. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB

9.6. Test Result

Site : SR3	Time : 2008/10/30 - 10:50
Limit : CISPR_B_00M_QP	Margin : 0
Probe : SR3_LISN(16A) - Line1	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX

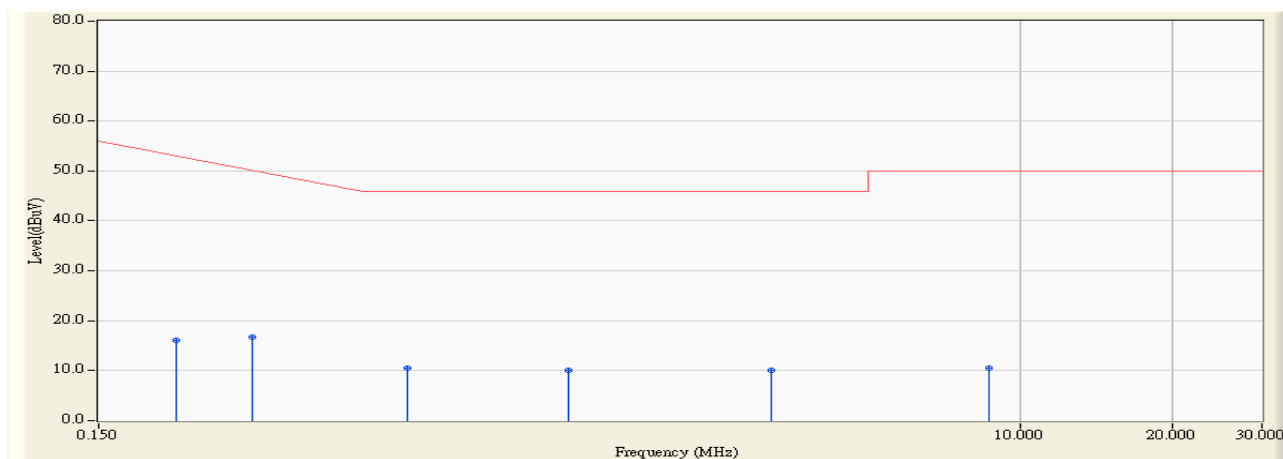


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.214	9.958	34.967	44.926	-19.245	64.171	QUASPEAK
2	*	0.302	10.005	35.754	45.759	-15.898	61.657	QUASPEAK
3		0.610	10.120	26.016	36.136	-19.864	56.000	QUASPEAK
4		1.274	10.110	13.412	23.522	-32.478	56.000	QUASPEAK
5		3.202	10.150	2.238	12.388	-43.612	56.000	QUASPEAK
6		8.662	10.455	0.000	10.455	-49.545	60.000	QUASPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	Time : 2008/10/30 - 10:50
Limit : CISPR_B_00M_AV	Margin : 0
Probe : SR3_LISN(16A) - Line1	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX

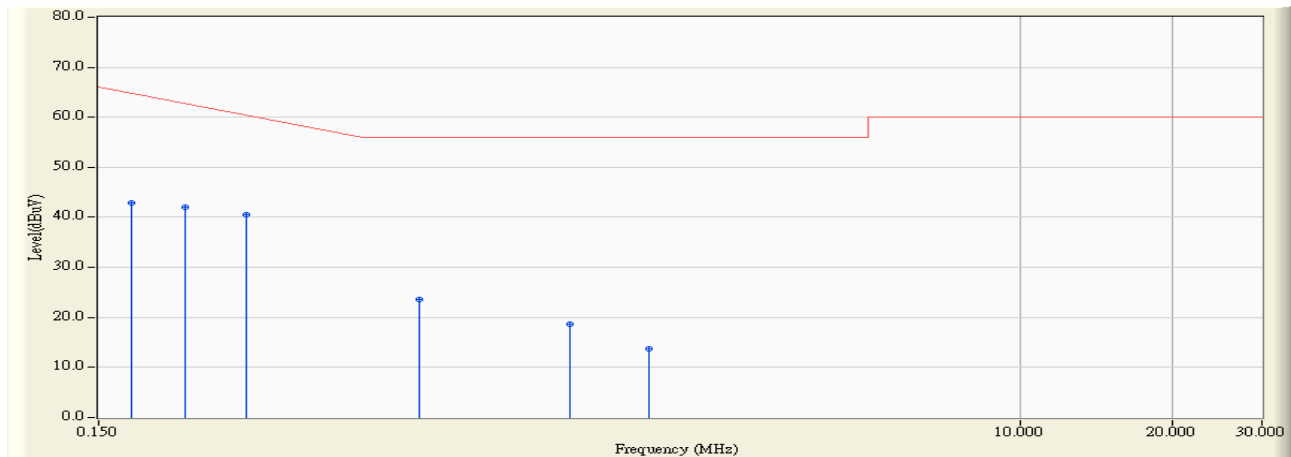


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.214	9.958	6.124	16.082	-38.089	54.171	AVERAGE
2	*	0.302	10.005	6.636	16.642	-35.015	51.657	AVERAGE
3		0.610	10.120	0.401	10.521	-35.479	46.000	AVERAGE
4		1.274	10.110	0.000	10.110	-35.890	46.000	AVERAGE
5		3.202	10.150	0.000	10.150	-35.850	46.000	AVERAGE
6		8.662	10.455	-0.010	10.445	-39.555	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	Time : 2008/10/30 - 10:53
Limit : CISPR_B_00M_QP	Margin : 0
Probe : SR3_LISN(16A) - Line2	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX

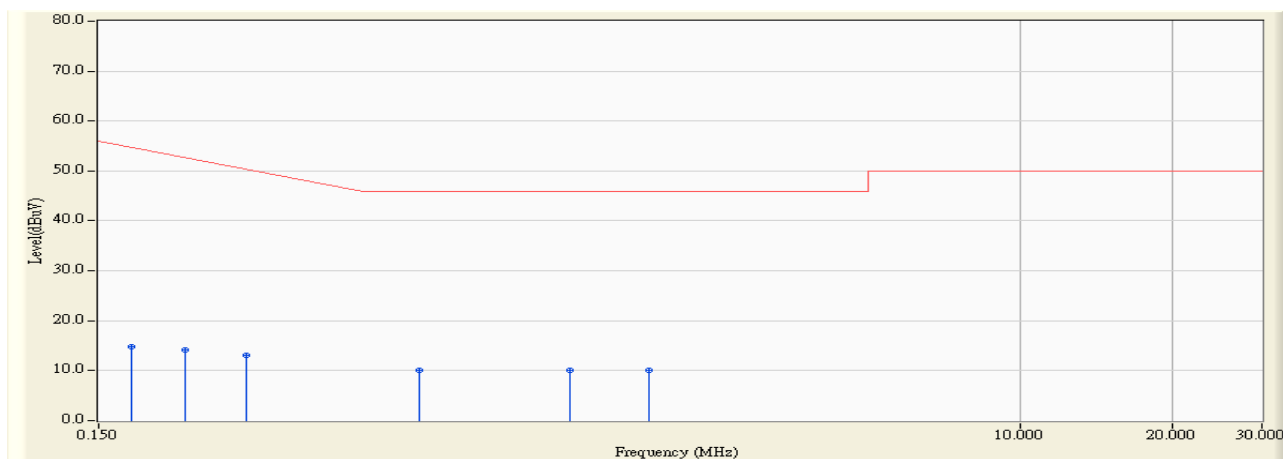


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.174	9.945	32.993	42.938	-22.376	65.314	QUASIPeAK
2		0.222	9.962	32.048	42.010	-21.933	63.943	QUASIPeAK
3	*	0.294	10.005	30.463	40.468	-21.418	61.886	QUASIPeAK
4		0.646	10.130	13.428	23.558	-32.442	56.000	QUASIPeAK
5		1.282	10.140	8.469	18.609	-37.391	56.000	QUASIPeAK
6		1.838	10.160	3.468	13.628	-42.372	56.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	Time : 2008/10/30 - 10:53
Limit : CISPR_B_00M_AV	Margin : 0
Probe : SR3_LISN(16A) - Line2	Power : AC 120V / 60Hz
EUT :UHF Band MMDS Transceiver	Note : TX



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.174	9.945	4.930	14.875	-40.439	55.314	AVERAGE
2		0.222	9.962	4.128	14.090	-39.853	53.943	AVERAGE
3		0.294	10.005	3.149	13.154	-38.732	51.886	AVERAGE
4		0.646	10.130	0.000	10.130	-35.870	46.000	AVERAGE
5		1.282	10.140	0.000	10.140	-35.860	46.000	AVERAGE
6	*	1.838	10.160	0.000	10.160	-35.840	46.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.