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PART 15.247, SUBPART C

RSS-210 - LOW POWER LICENSE EXEMPT RADIO-COMMUNICATION DEVICES (ALL FREQUENCY BANDS)

CERTIFICATION REPORT

For The **Ethernet Bridge/Transceiver**

Model: **SkyWay 7000 Series**

FCC ID# KA358WAN2

PREPARED FOR:

Solectek Corporation
6370 Nancy Ridge Drive, Suite 109
San Diego, CA 92121-3212

PREPARED ON 3-15-05

REPORT NUMBER: 2005 030174-FCC

PROJECT NUMBER: 25-174-SOLR1

Total Pages: 60

DOCUMENT HISTORY

REVISION	DATE	COMMENTS
-	3-15-05	Prepared By: A. Laudani
-	3-15-05	Initial Release: Ricky Hill
	6-8-05	Revised: A. Laudani

NOTE: Nemko USA, Inc. hereby makes the following statements so as to conform to Chapter 10 (Test Reports) Requirements of ANSI C63.4 (2001) "Methods and Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz":

- The unit described in this report was received at Nemko USA, Inc.'s facilities on March 11, 2004. Testing was performed on the unit described in this report on March 11, 2004 to March 16, 2004.
- The Test Results reported herein apply only to the Unit actually tested, and to substantially identical Units.
- This report does not imply the endorsement of the Federal Communications Commission (FCC), NVLAP or any other government agency.

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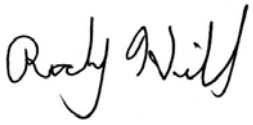
CERTIFICATION

Nemko USA, Inc., an independent Electromagnetic Compatibility (EMC) Test Laboratory, produced this Test Report and performed the Radio Frequency Interference (RFI) testing and data evaluation contained herein.

Nemko USA, Inc.'s measurement facility is currently registered with the United States Federal Communications Commission (FCC) in accordance with the provisions of 47 United States Code (CFR) Part 2, Subpart I, Section 2.948(a). A current description of Nemko USA, Inc.'s measurement facility is on file with the FCC. Nemko USA Inc. has additionally satisfied the FCC that it complies with the requirements set forth in 47 CFR Part 2, Subpart I, Section 2.948(d) regarding the accreditation of EMC laboratories.

The RFI testing, test data collection and test data evaluation were accomplished in accordance with the ANSI C63.4-2001 Standard, and in accordance with the applicable sections of the FCC rules (47 CFR Parts 2 and 15). The testing was also accomplished in accordance with Industry Canada's ICES-003 standard for unintentional radiating device per EMCAB-3, Issue 3 (May 1998). The administrative summary of this test report provides a description of the test sample.

I hereby certify that the test data, test data evaluation, and equipment configurations used to compile this test report are a true and accurate representation of the test sample's radio frequency interference characteristics as of the test date(s), and, for the design of the test sample.



Ricky L. Hill
Senior EMC Engineer

1. ADMINISTRATIVE DATA AND TEST SUMMARY

1.1. Administrative Data

CLIENT: Solectek Corporation
6370 Nancy Ridge Drive, Suite 109
San Diego, CA 92121-3212

CONTACT: David Gell

DATE (S) OF TEST: March 7, 2005 to March 15, 2005

EQUIPMENT UNDER TEST (EUT): Ethernet Bridge/Transceiver

Model: SkyWay 7000 Series

Condition Upon Receipt: Suitable for Test

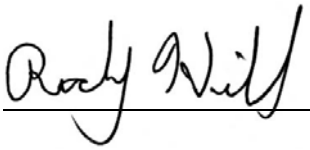
TEST SPECIFICATION: FCC, Part 15.247, Subpart C,

FCC ID#: KA358WAN2

Test Summary

Specification	*Frequency Range*	*Compliance Status*
FCC, CFR 47, Section 15.207	0.15 MHz - 30.00 MHz	PASS
FCC, CFR 47, Section 15.209	30 MHz – 10th Harmonic	PASS
FCC CFR 47, §15.247 Plus Bandedge	5725 – 5850 MHz	PASS
RSS-210 - Low Power License Exempt Radio-communication Devices (All Frequency Bands) Paragraph 6.22 (o)	5725 – 5850 MHz	PASS

Testing was started at 30 MHz as there are no RF signals generated below this frequency.

Test Supervisor: 

R. L. Hill, Nemko USA, Inc.

Refer to the test results section for further details.

2. SYSTEM CONFIGURATION

The SkyWay 7000 Series is a Ethernet Bridge/Transceiver. Its function is transmit and receive data as provided by an Ethernet Bridge (included). The EUT was exercised use of the Ping program as applied by a typical laptop. It fails by an interruption of the Ping program.

2.1. System Components and Power Cables

DEVICE	MANUFACTURER MODEL # SERIAL #	POWER CABLE
EUT - Ethernet Bridge/Transceiver Enclosure 1: MTI	Solectek Corporation Ethernet Bridge/Transceiver Serial #: NA	48 Vdc
EUT - Ethernet Bridge/Transceiver Enclosure 2: ARC	Solectek Corporation Ethernet Bridge/Transceiver Serial #: NA	48 Vdc
Ethernet Bridge	Solectek Corporation Ethernet Bridge/Transceiver	
EUT Power Supply Used during Immunity Conducted Emissions testing	Best Technology Co., LTD. Model: BPA-018 BD53000048	1.5m, unshielded, 18x2awg,
Power Supply	Artesyn Model # SSL40-7617 Serial # 91-57589	100-240 Vac

2.2. Device Interconnection and I/O Cables

CONNECTION	I/O CABLE
Ethernet	Shielded >~ 20 m

3. DESCRIPTION OF TEST SITE AND EQUIPMENT

3.1. Description of Test Site

The test site is located at 11696 Sorrento Valley Road, Suite F, San Diego, CA 92121. The site is physically located 18 miles Northwest of downtown San Diego. The general area is a valley 1.5 miles east of the Pacific Ocean. This particular part of the valley tends to minimize ambient levels, i.e. radio and TV broadcast stations and land mobile communications. The three and ten-meter Open Area Test Site (OATS) is located behind the office/lab building. It conforms to the normalized site attenuation limits and construction specifications as set in the EN 55022 (1998), CISPR 16 (2003) and 22 (1997) and ANSI C63.4-2001 documents. The OATS normalized site attenuation characteristics are verified for compliance every year.

4. DESCRIPTION OF TESTING METHODS

4.1. Introduction

As required in 47 CFR, Parts 2 and 15, the methods employed to test the radiated and conducted emissions (as applicable) of the EUT are those contained within the American National Standards Institute (ANSI) document C63.4-2001, titled "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz." All applicable FCC Rule Sections that provide further guidance for performance of such testing are also observed.

For General Test Configuration please refer to Figure 1 on the following page.

Digital devices sold in Canada are required to comply with the Interference Causing Equipment Standard for Digital Apparatus, ICES-003. These test methods and limits are specified in the Canadian Standards Association's (CSA) Standard C108.8-M1983 (1-1-94 version) and are "essentially equivalent" with FCC, Part 15 and CISPR 22 (EN55022) rules for unintentional radiators per EMCAB-3, Issue 3 (May 1998). No further testing is required for compliance to ICES-003.

4.2. Configuration and Methods of Measurements for Conducted Emissions

Section 7 of ANSI C63.4 determines the general configuration of the EUT and associated equipment, as well as the test platform for conducted emissions testing. Tabletop devices are placed on a non-conducting surface 80 centimeters above the ground plane floor and 40 centimeters from the ground plane wall. The EUT and associated system are configured to operate continuously, representing a "normally operating" mode. The EUT is powered via a Line Impedance Stabilization Network (LISN). The emissions are recorded using the required bandwidth of 9 kHz in the quasi-peak mode. The average amplitude is also observed employing a 10 kHz bandwidth to determine the presence of broadband RFI. When such interference is caused by broadband sources (as defined by the FCC and ANSI Rules), the deviation guidelines contained in Section 11.3.1 of ANSI C63.4 are employed, which allows a correction factor of 13 dB to be subtracted from the quasi-peak reading. The emission levels are then compared to the applicable FCC limits to determine compliance.

For Conducted Emissions Test Configuration please refer to Figure 2 on the following page.

4.3. Configuration and Methods of Measurements for Frequency Identification

When performing all testing of equipment, the actual emissions of the EUT are segregated from ambient signals present within the laboratory or the open-field test range. Preliminary testing is performed to ensure that ambient signals are sufficiently low to allow for proper observation of the emissions from the EUT. Incoming power lines are filtered using a 120 dB, 30-ampere; 115/208-volt filter to assist in reducing ambient signals for tests of levels of conducted emissions. Ambients within the laboratory are compared to those noted at the nearby open-field site to discriminate between signals produced from the EUT and ambient signals. In the event that a significant emission is produced by the EUT at a frequency which is also demonstrating significant ambient signals, the spectrum analyzer is placed in the peak mode, the bandwidth is narrowed, the EUT's signal is centered on the analyzer, the scan width is expanded to 50 kHz while monitoring the audio to ensure that only the EUT signal is present, the analyzer is switched to quasi-peak mode, and the level of the EUT signal is recorded.

For Frequency ID Test Configuration please refer to Figure 3 on the following page.

4.4. Configuration and Methods of Measurements for Radiated Emissions

Section 8 of ANSI C63.4 determines the general configuration and procedures for measuring the radiated emissions of equipment under test. Initially, the primary emission frequencies are identified inside the test lab by positioning a broadband receive antenna one meter from the EUT to locate frequencies of significant radiation. Next, the EUT and associated system are placed on a turntable on a ten meter open area test site (registered with the FCC in accord with its Rules and ANSI C63.4) and the receive antenna is located at a distance of ten meters from the EUT.

The EUT and associated system are configured to operate continuously, representing a "normally operating" mode. All significant radiated emissions are recorded when maximum radiation on each frequency is observed, in accordance with part 8 of ANSI C63.4-1992 and Section 15.33 of the FCC Rules. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters and rotated to horizontal and vertical polarities, and the turntable is also rotated to determine the worst emitting configuration. The numerical results of the test are included herein to demonstrate compliance.

The numerical results that are applied to the emissions limits are arrived at by the following method:
Example: A=RR+CL+AF
A = Amplitude dBuV/M
RR = Receiver Reading dBuV
CL = cable loss dB
AF = antenna factor dBm-1

Example Frequency = 110MHz
18.5 dBuV (spectrum analyzer reading)
+3.0 dB (cable loss @ frequency)
21.5 dBuV
+15.4 dBm-1 (antenna factor @ frequency)
36.9 dBuV/M Final adjusted value

The final adjusted value is then compared to the appropriate emission limit to determine compliance.

For Radiated Emissions Test Configuration please refer to Figure 4 on the following page.

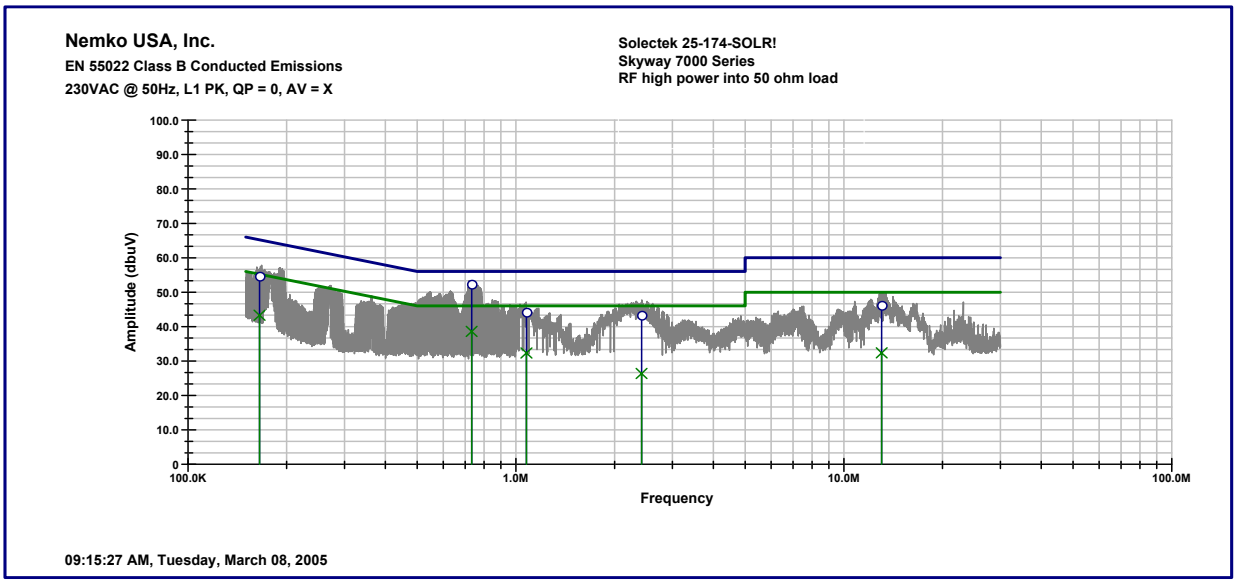
4.5. Operation in the 15.247 bands

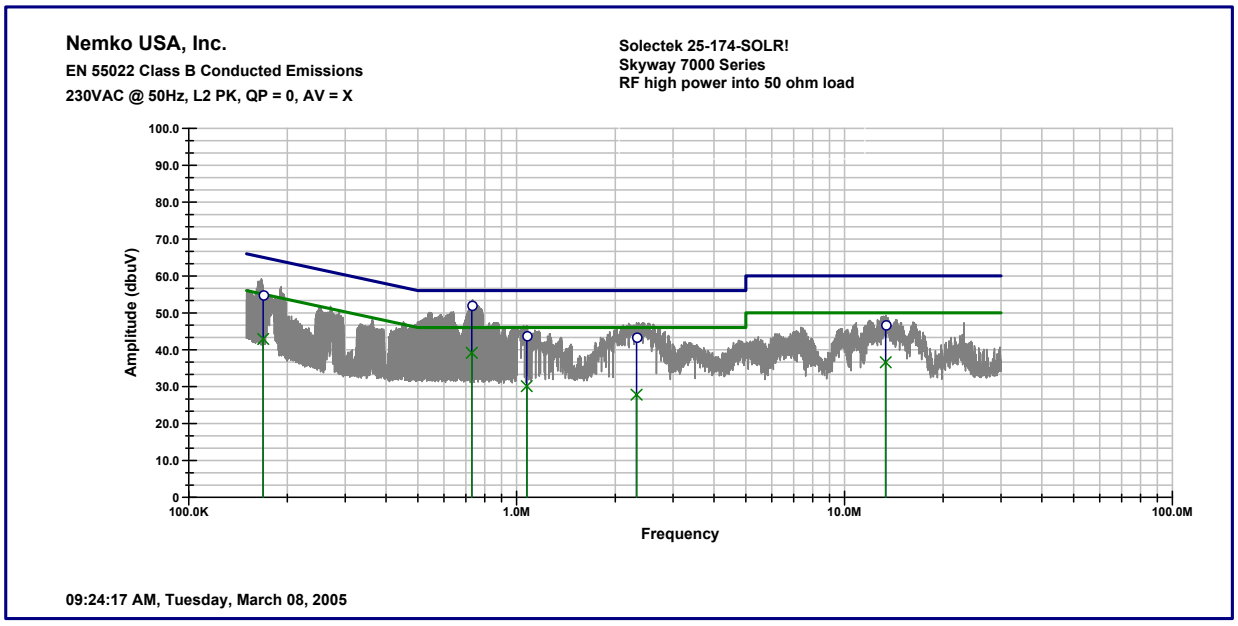
In Addition to the general radiated emissions requirements described in FCC, Part 15B, Section 15.247 determines the configuration and procedures for measuring additional emissions of Intentional Radiating Devices.

5. TEST RESULTS

5.1. Conducted Emissions Test Data – RF mode with Ethernet "Ping"

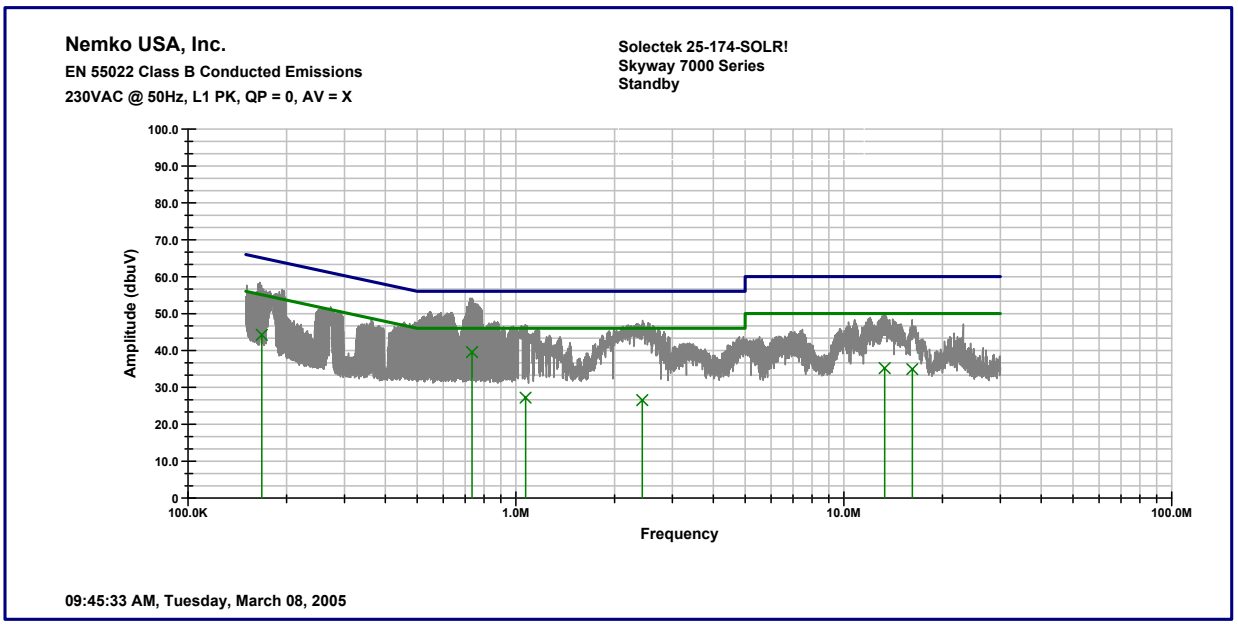
Client	Solectek Corporation	Temperature	71	deg F
PAN #	25-174-SOLR1	Relative Humidity	45	%
EUT Name	Ethernet Bridge/Transceiver	Barometric Pressure	30.1	Hg
EUT Model	SkyWay 7000 Series	Test Location	Shielded Room 1	
Governing Doc	FCC 15.207	Test Engineer	A. Laudani	
Basic Standard	EN55022 Class B	Date	3-8-05	

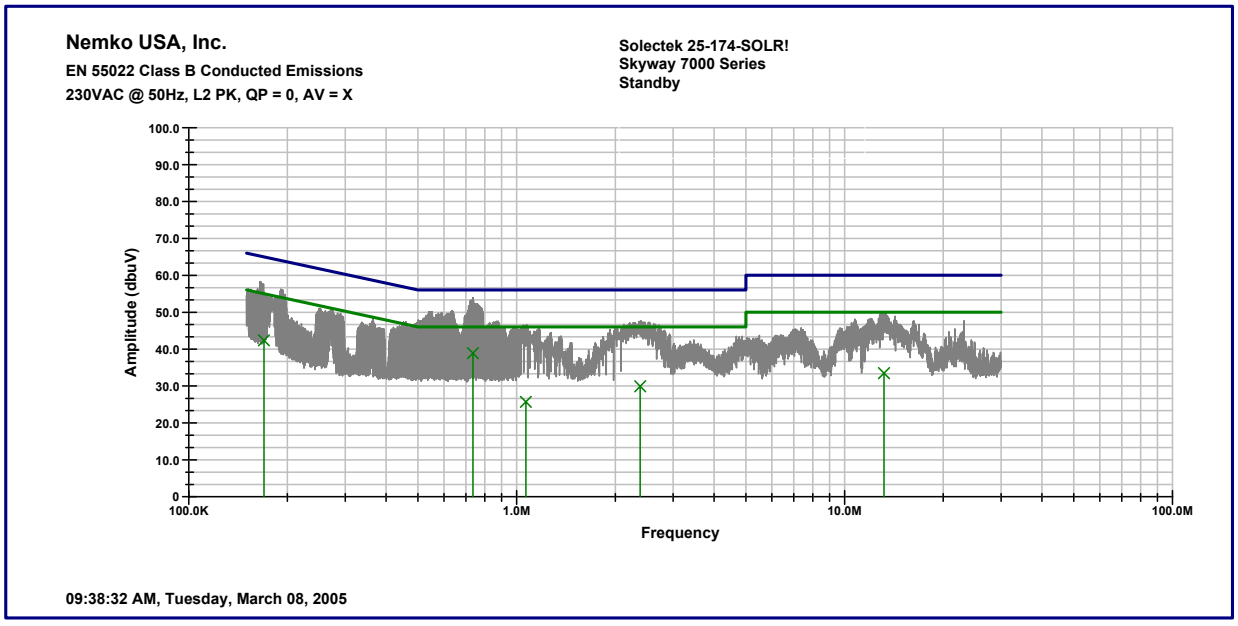




5.2. Standby mode

Client	Solectek Corporation	Temperature	71	deg F
PAN #	25-174-SOLR1	Relative Humidity	45	%
EUT Name	Ethernet Bridge/Transceiver	Barometric Pressure	30.1	Hg
EUT Model	SkyWay 7000 Series	Test Location	Shielded Room 1	
Governing Doc	FCC 15.207	Test Engineer	A. Laudani	
Basic Standard	EN55022 Class B	Date	3-8-05	





5.3 Radiated Emissions Test Data – Enclosure 1

Radiated Emissions Data

Complete: Yes
Preliminary:

Job # : 25-174-SOLR1 Test # : 2
Page 1 of 1

Client Name : Solectek
EUT Name :
EUT Model # : Skyways 7000 Series
EUT Part # :
EUT Serial # :
EUT Config. : RF ON (INTO A 50 OHM LOAD), ping ethernet laptop to Skyway

Specification : EN55022: 1998, Class B
Reference :

Rod. Ant. #:	NA	Temp. (deg. C) :	22	Date :	3/8/2005
Bicon Ant.#:	116	Humidity (%) :	60	Time :	3.30 pm
Log Ant.#:	112	EUT Voltage :	230 Vac	Staff :	A. Laudani
DRG Ant. #	NA	EUT Frequency :	50Hz	Photo ID:	
Dipole Ant.#:	NA	Phase:	1	Peak Bandwidth:	100 kHz
Cable#:	SOATS	Location:	SOATS	Video Bandwidth:	100 kHz
Preamp#:	827	Distance:	10m		
Spec An.#:	675				
QP #:	676				
PreSelect#:	NA				

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
37.53	V		40.3	17.5	1.6	32.6	26.8	30.0	-3.2	Pass	
40.5	V		40	15.6	1.8	32.6	24.8	30.0	-5.2	Pass	
51.28	V		42.3	11.9	2.0	32.5	23.7	30.0	-6.3	Pass	
68.9	V		47.2	7.7	2.3	32.4	24.8	30.0	-5.2	Pass	
125	H		41	14.1	3.3	32.6	25.8	30.0	-4.2	Pass	
137.4	V		39.2	14.8	3.3	32.6	24.7	30.0	-5.3	Pass	
880	V		33.4	21.5	9.5	32.7	31.7	37.0	-5.3	Pass	
440	V		34.4	15.9	6.5	33.0	23.8	37.0	-13.2	Pass	
250	V		46.7	11.5	-0.7	32.7	24.8	37.0	-12.2	Pass	

Enclosure 1

Radiated Emissions Data

Complete: Yes
Preliminary:

Job # : 25-174-SOLR1 Test # : 1
Page 1 of 1

Client Name : Solectek
EUT Name :
EUT Model # : Skyways 7000 Series
EUT Part # :
EUT Serial # :
EUT Config. : standby

Specification : EN55022: 1998, Class B
Reference :

Rod. Ant. #:	NA	Temp. (deg. C) :	22	Date :	3/8/2005
Bicon Ant.#:	116	Humidity (%) :	62	Time :	16:00
Log Ant.#:	112	EUT Voltage :	230 Vac	Staff :	A. Laudani
DRG Ant. #	NA	EUT Frequency :	50Hz	Photo ID:	
Dipole Ant.#:	NA	Phase:	1	Peak Bandwidth:	100 kHz
Cable#:	soats	Location:	SOATS	Video Bandwidth:	100 kHz
Preamp#:	827	Distance:	10m		
Spec An.#:	675				
QP #:	676				
PreSelect#:	NA				

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
37.53	V		40.3	17.5	1.6	32.6	26.8	30.0	-3.2	Pass	
40.5	V		40	15.6	1.8	32.6	24.8	30.0	-5.2	Pass	
51.28	V		42.3	11.9	2.0	32.5	23.7	30.0	-6.3	Pass	
68.9	V		47.2	7.7	2.3	32.4	24.8	30.0	-5.2	Pass	
125	H		41	14.1	3.3	32.6	25.8	30.0	-4.2	Pass	
137.4	V		39.2	14.8	3.3	32.6	24.7	30.0	-5.3	Pass	
880	V		35	21.5	9.5	32.7	33.3	37.0	-3.7	Pass	
440	V		34.9	15.9	6.5	33.0	24.3	37.0	-12.7	Pass	
250	V		44.2	11.5	-0.7	32.7	22.3	37.0	-14.7	Pass	

Enclosure 2

Radiated Emissions Data

Complete: YES
Preliminary:
Job # : 25-174-SOLR1 Test # : 1
Page 1 of 1

Client Name : Solectek
EUT Name :
EUT Model # : Enclosure 2
EUT Part # :
EUT Serial # :
EUT Config. : transmitting ping with ethenet from laptop

Specification : EN55022: 1998, Class A
Reference :

Rod. Ant. #:	NA	Temp. (deg. C) :	21	Date :	5/9/2005
Bicon Ant.#:	116	Humidity (%) :	45	Time :	13:00
Log Ant.#:	112	EUT Voltage :	230 Vac	Staff :	A. Laudani
DRG Ant. #	NA	EUT Frequency :	50Hz	Photo ID:	
Dipole Ant.#:	NA	Phase:	1	Peak Bandwidth:	100 kHz
Cable#:	soats	Location:	SOATS	Video Bandwidth	100 kHz
Preamp#:	827	Distance:	10m		
Spec An.#:	675				
QP #:	676				
PreSelect#:	NA				

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
39.7	V		45	17.5	1.6	32.6	31.5	40.0	-8.5	Pass	
40.5	V		40	15.6	1.8	32.6	24.8	40.0	-15.2	Pass	
48.31	V		44.2	13.8	1.9	32.6	27.3	40.0	-12.7	Pass	
68.9	V		49.2	7.7	2.3	32.4	26.8	40.0	-13.2	Pass	
125	H		41	14.1	3.3	32.6	25.8	40.0	-14.2	Pass	
137.4	V		39.2	14.8	3.3	32.6	24.7	40.0	-15.3	Pass	
250	V		38.2	11.5	-0.7	32.7	16.3	47.0	-30.7	Pass	
293.2	V		38	13.5	5.2	32.8	23.9	47.0	-23.1	Pass	
307.2	V		43.2	13.9	5.3	32.8	29.6	47.0	-17.4	Pass	

Enclosure 2

Radiated Emissions Data

Complete: YES — Job # : 25-174-SOLR1 — Test # : 2
Preliminary: — Page 1 of 1

Client Name : Solectek
EUT Name :
EUT Model # : Enclosure 2
EUT Part # :
EUT Serial # :
EUT Config. : Standby

Specification : EN55022: 1998, Class A — Reference :

Rod. Ant. #:	NA	Temp. (deg. C) :	21	Date :	5/9/2005
Bicon Ant.#:	116	Humidity (%) :	45	Time :	15:00
Log Ant.#:	112	EUT Voltage :	230 Vac	Staff :	A. Laudani
DRG Ant. #	NA	EUT Frequency :	50Hz	Photo ID:	
Dipole Ant.#:	NA	Phase:	1	Peak Bandwidth:	100 kHz
Cable#:	soats	Location:	SOATS	Video Bandwidth	100 kHz
Preamp#:	827	Distance:	10m		
Spec An.#:	675				
QP #:	676				
PreSelect#:	NA				

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
39.7	V		45	17.5	1.6	32.6	31.5	40.0	-8.5	Pass	
40.5	V		40	15.6	1.8	32.6	24.8	40.0	-15.2	Pass	
48.31	V		44.2	13.8	1.9	32.6	27.3	40.0	-12.7	Pass	
68.9	V		49.2	7.7	2.3	32.4	26.8	40.0	-13.2	Pass	
125	H		41	14.1	3.3	32.6	25.8	40.0	-14.2	Pass	
137.4	V		39.2	14.8	3.3	32.6	24.7	40.0	-15.3	Pass	
250	V		38.2	11.5	-0.7	32.7	16.3	47.0	-30.7	Pass	
293.2	V		38	13.5	5.2	32.8	23.9	47.0	-23.1	Pass	
307.2	V		43.2	13.9	5.3	32.8	29.6	47.0	-17.4	Pass	

CFR 47 Part 15c §15.247 Test Results

RF Radiated Spurious.

With any of the Antennas below, no spurious emissions were found in the Restricted Bands (15.205) from 30 MHz to 40 GHz when the circuitry was mounted in either of the Enclosures.

1) Wireless Edge LTD antenna MT-485028/S/E 22 dBi Gain
2) ARC Wireless Solutions ANT-A-1285-02 23 dBi Gain
3) Wireless Edge LTD antenna MT-486004 26 dBi Gain
4) Wireless Edge LTD antenna MT-484032-SV-E 14 dBi Gain
5) Maxrad MFB58009 9 dBi Gain

RF Conducted Power

Tested by Peak Power Meter Model E4416A at the highest power setting.

Of the four antennas, the 26 dBi antenna has the highest gain.

The input power was varied from 102 to 138 Vac (±15%) with no resultant change in power level.

Narrowband Mode = 20 MHz

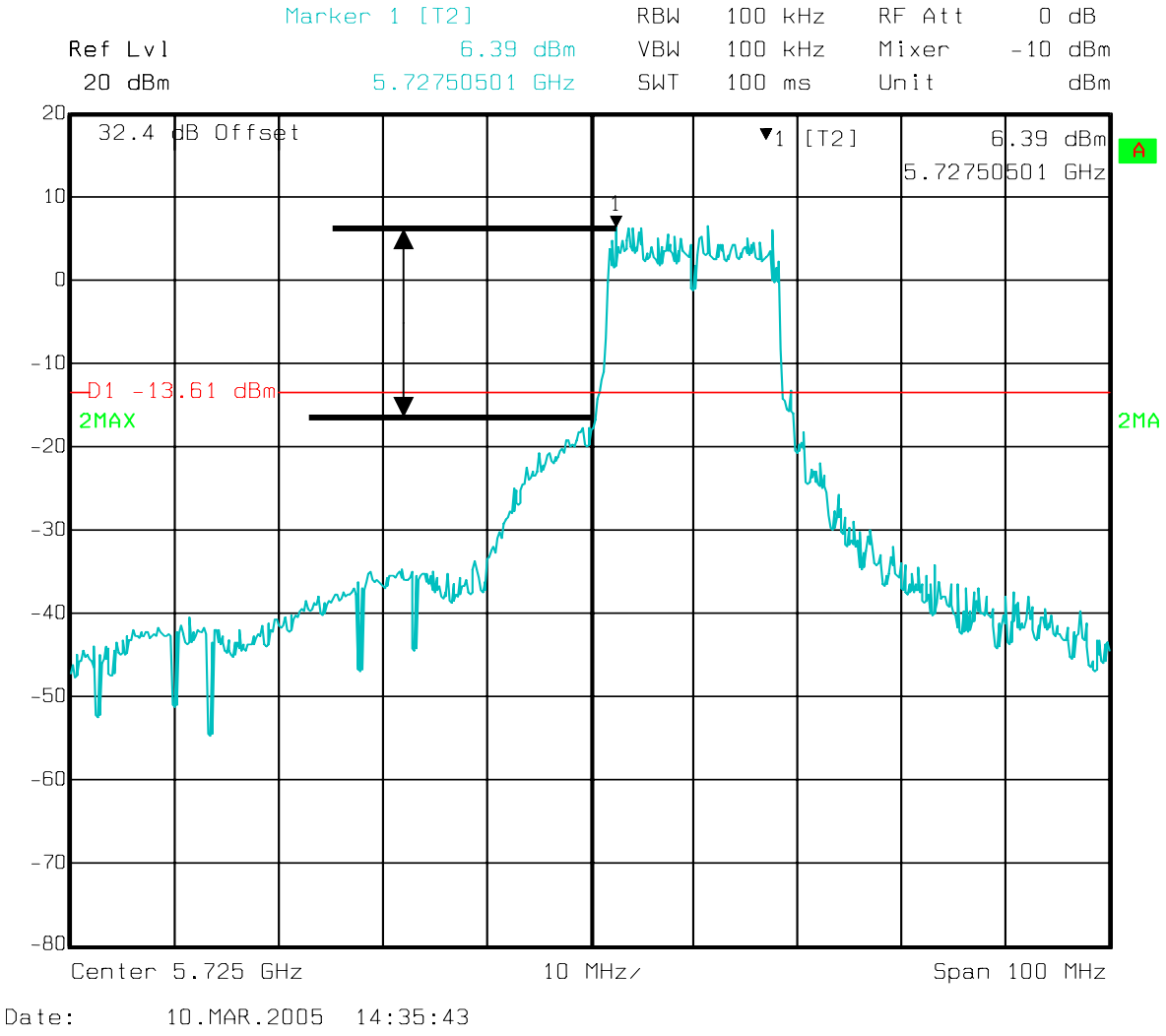
Frequency (MHz)	Power Meter Measurement (dBm)	Antenna Gain	EIRP (dBm)	EIRP (W)
5735	25.9	26	51.9	154.9
5775	25.8	26	51.8	151.4
5835	25.9	26	51.9	154.9

Wideband Mode = 40 MHz

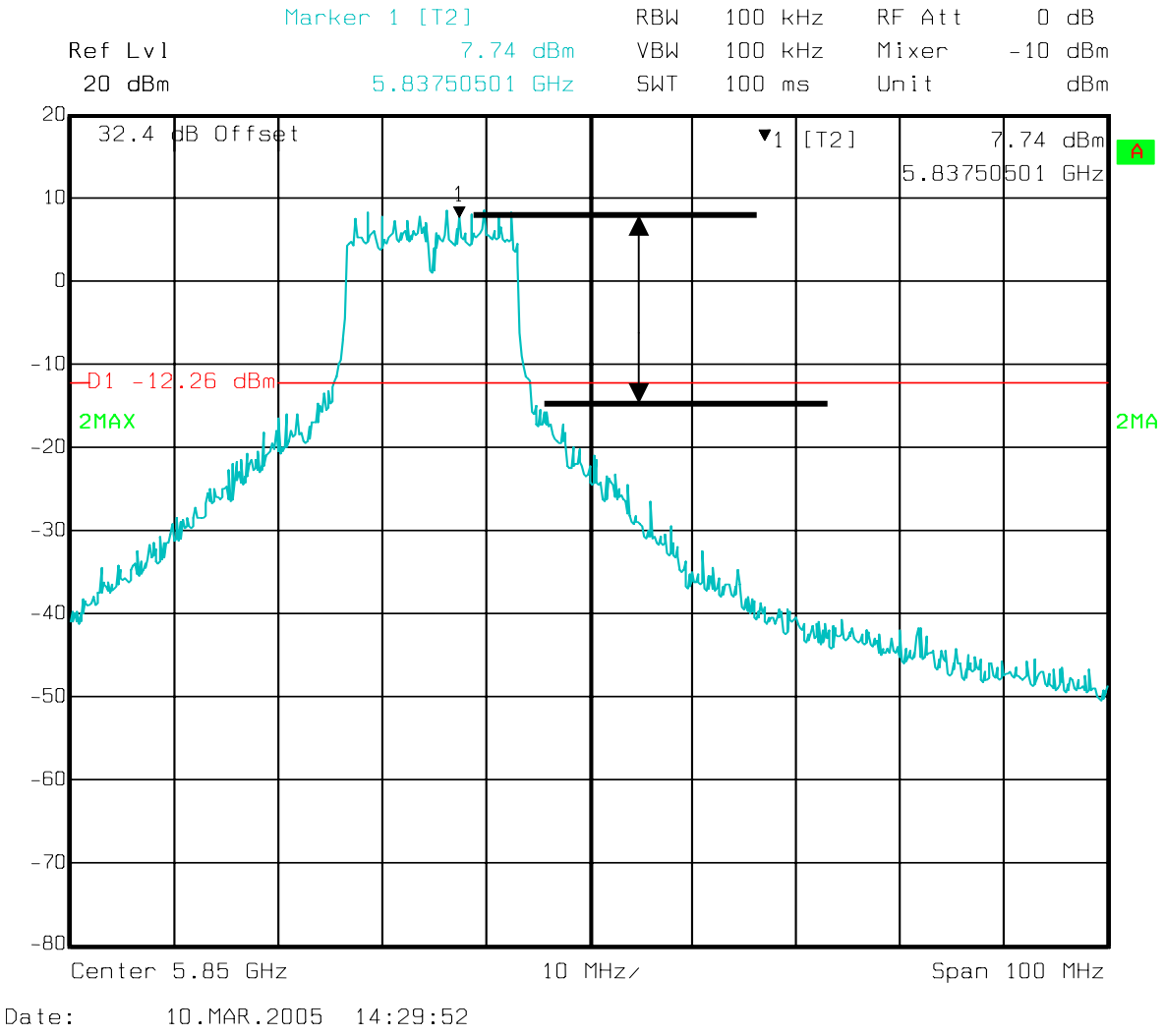
Frequency (MHz)	Power Meter Measurement (dBm)	Antenna Gain	EIRP (dBm)	EIRP (W)
5735	25.8	26	51.8	151.4
5775	25.7	26	51.7	147.9
5835	25.8	26	51.8	151.4

Conducted Spurious Emissions 15.247 (c) 30 MHz to 40 GHz

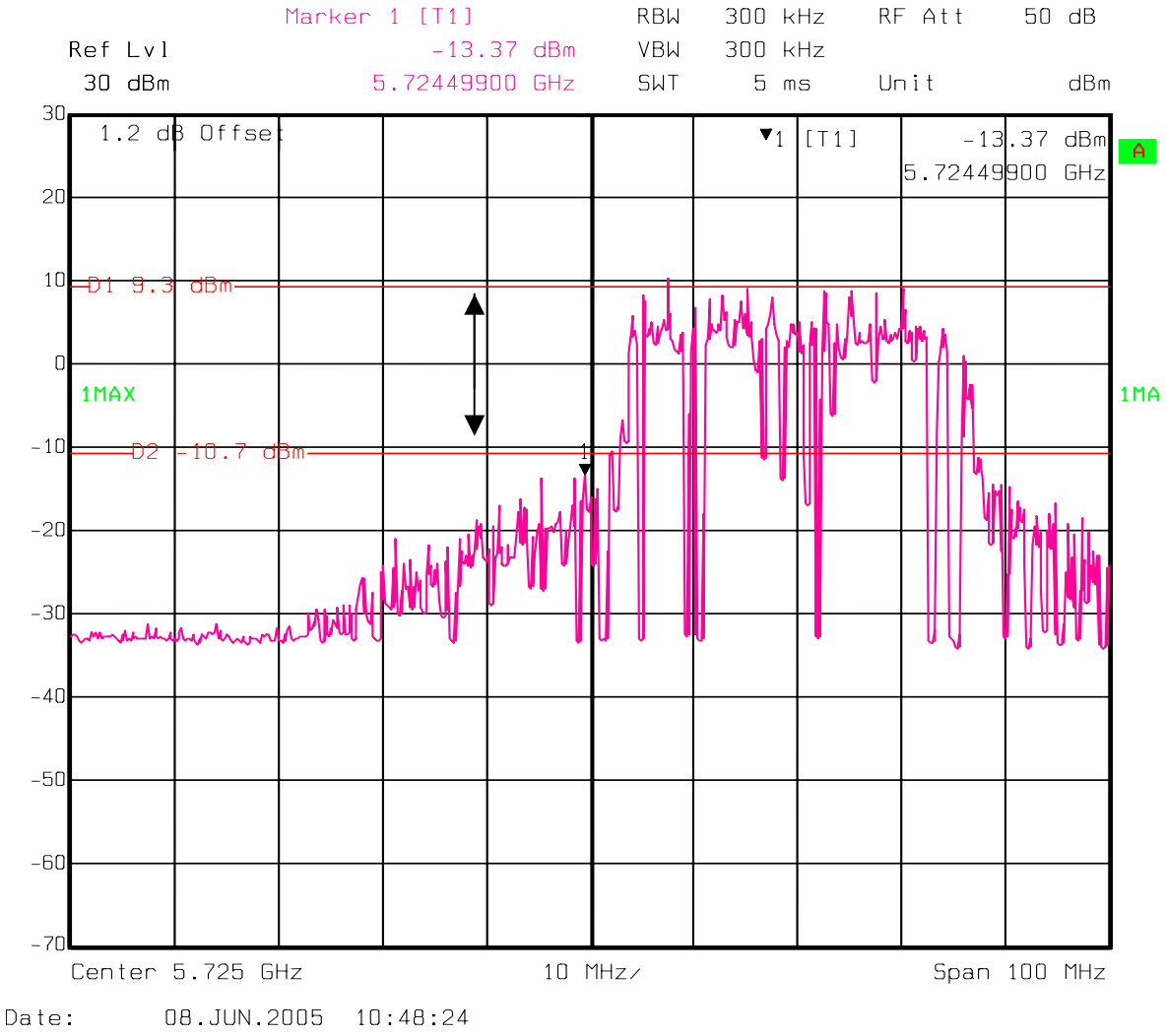
BandEdge Low – 20 MHz Mode -- Shows emission below 20 dB of Transmit Maximum



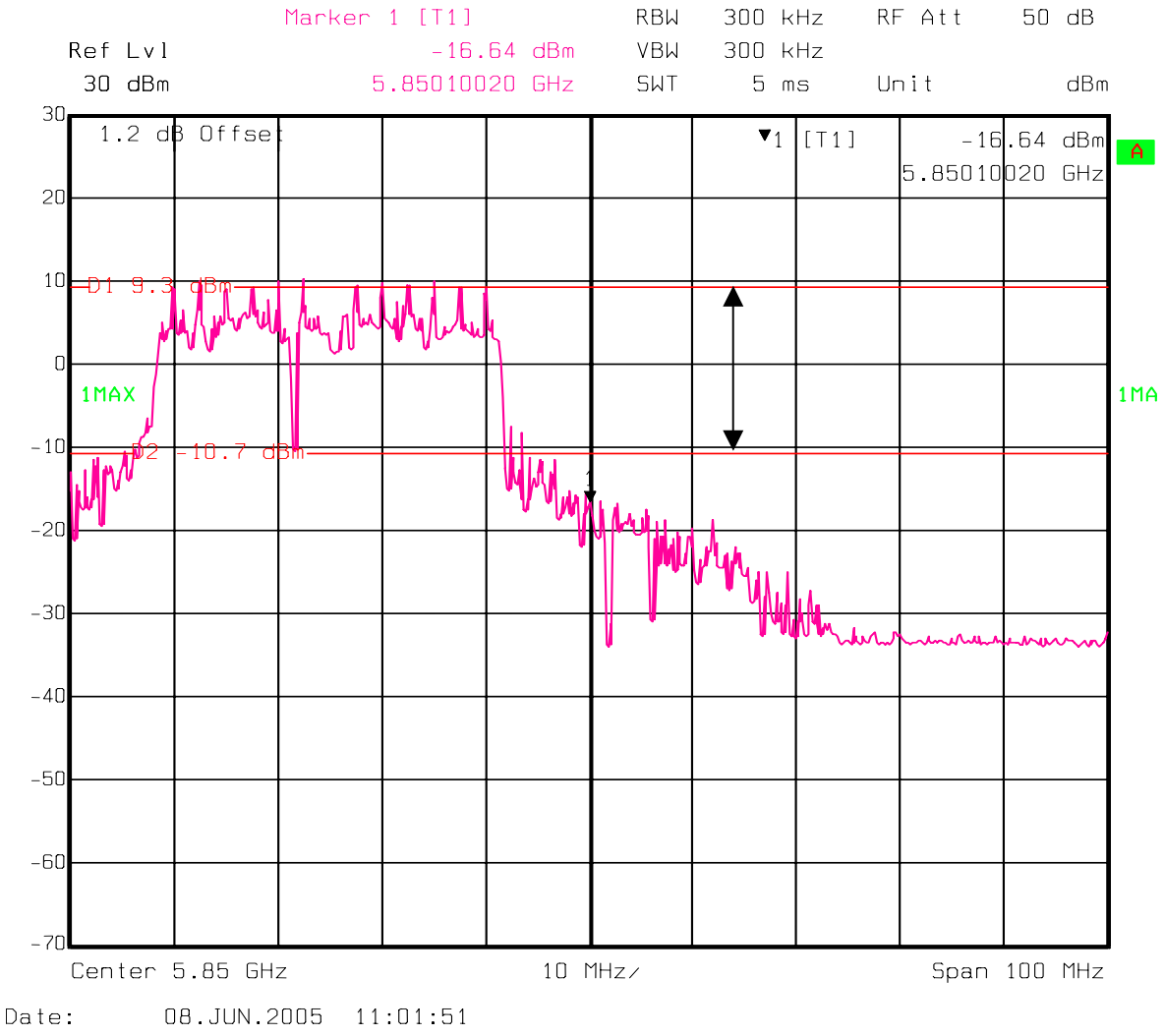
BandEdge High– 20 MHz Mode - Shows emission below 20 dB of Transmit Maximum



BandEdge Low – 40 MHz Mode-- Shows emission below 20 dB of Transmit Maximum



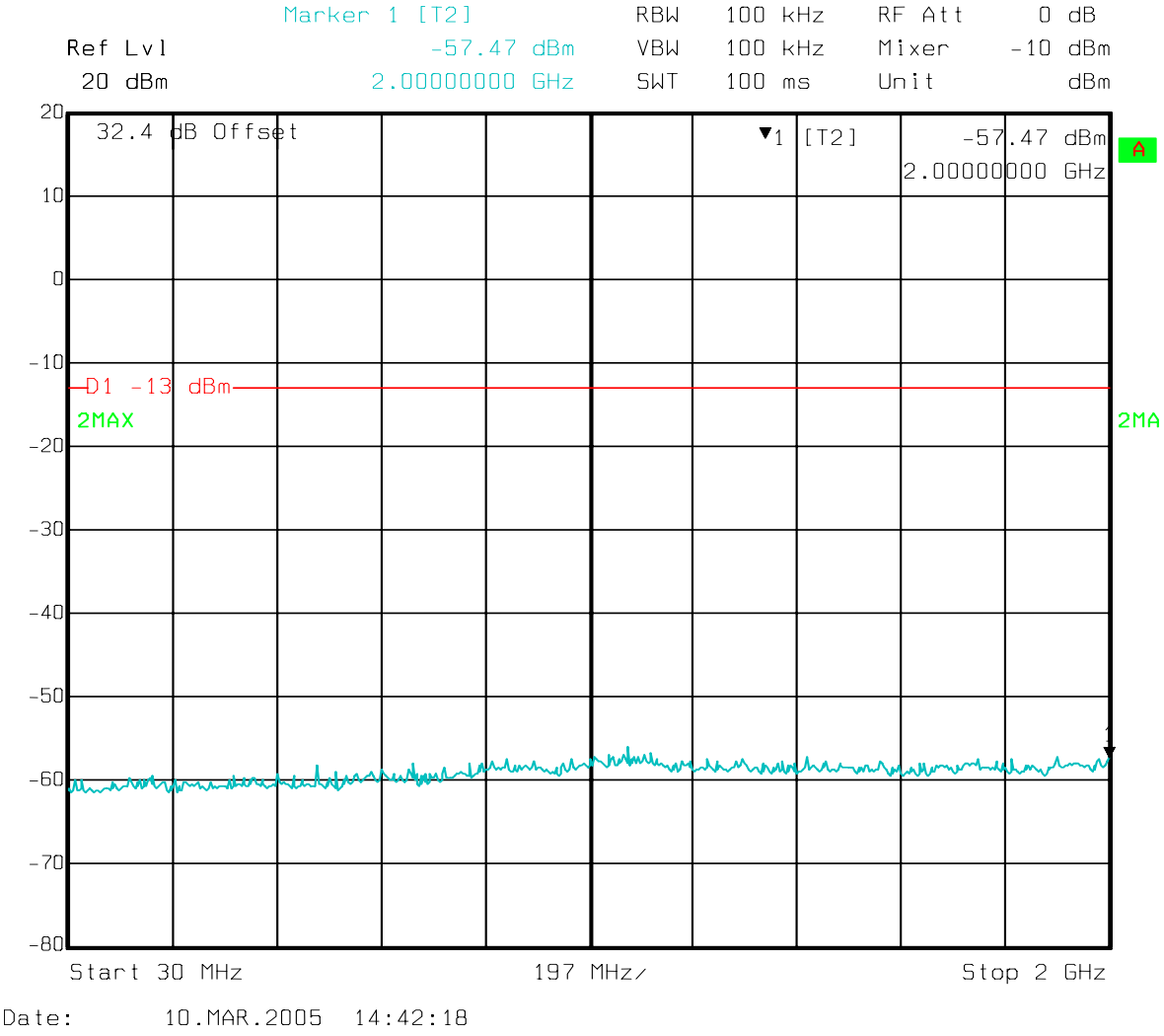
BandEdge High– 40 MHz Mode -- Shows emission below 20 dB of Transmit Maximum

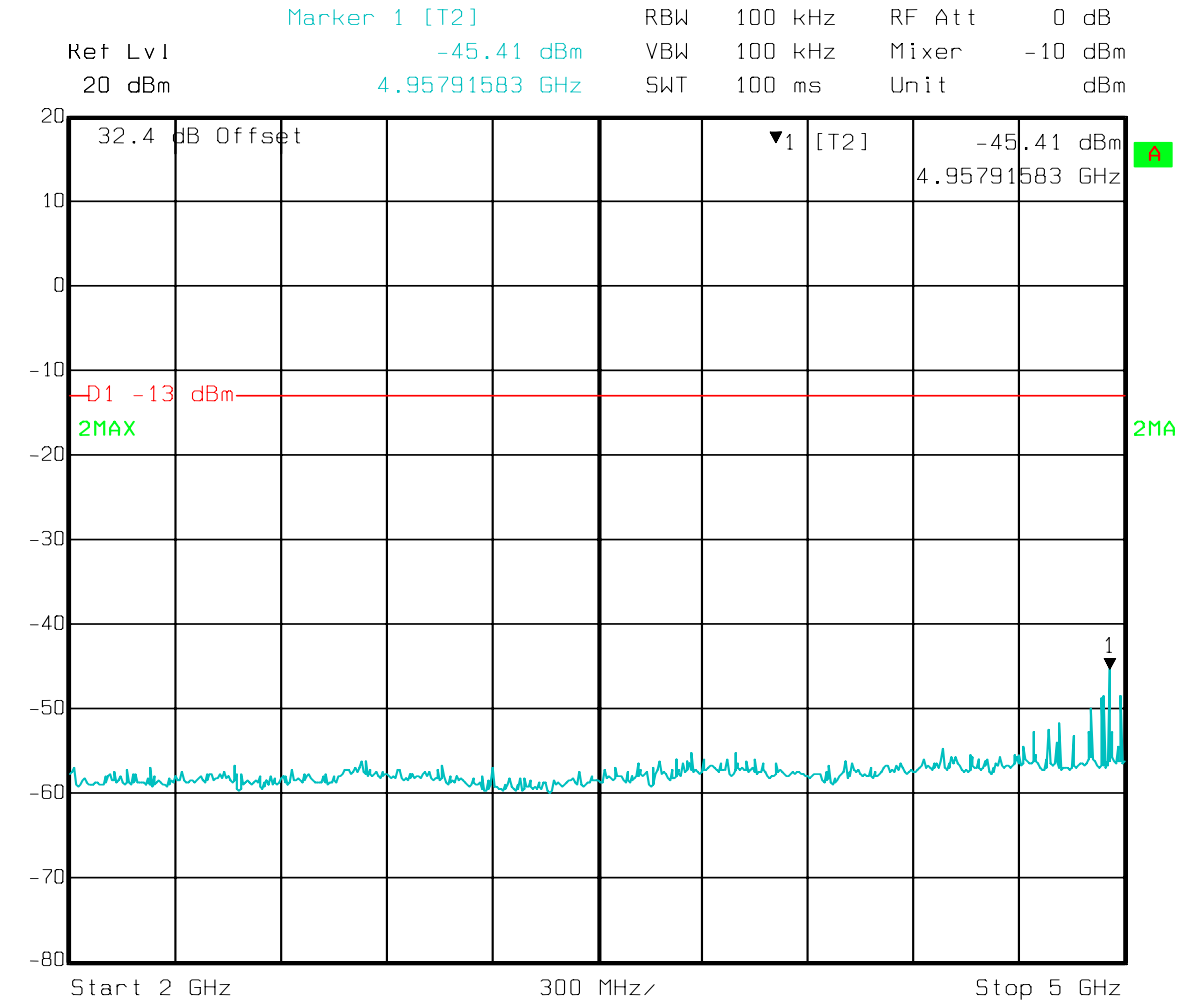


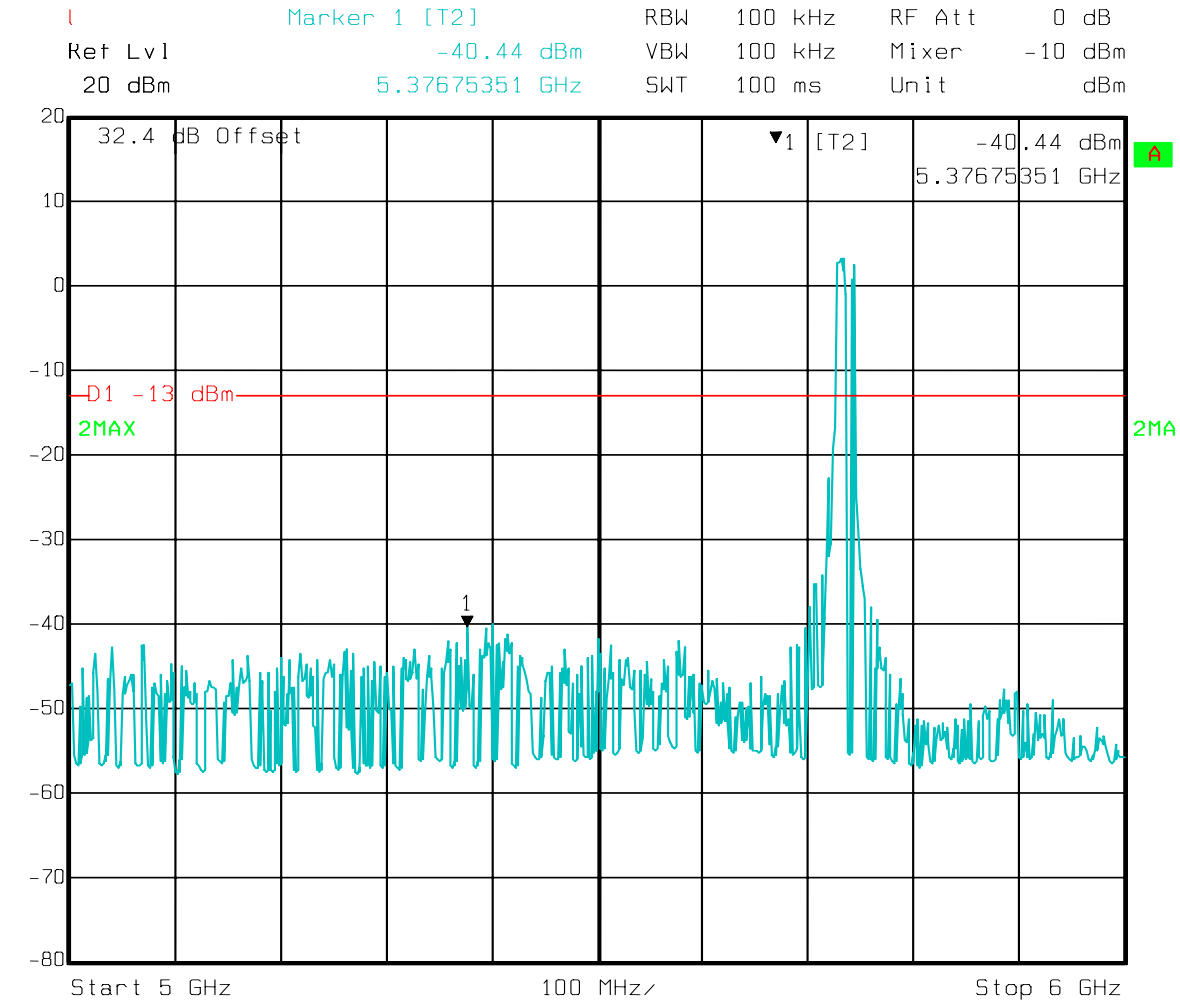
Mode: 20 MHz Bandwidth mode worst case vs 40 MHz Bandwidth

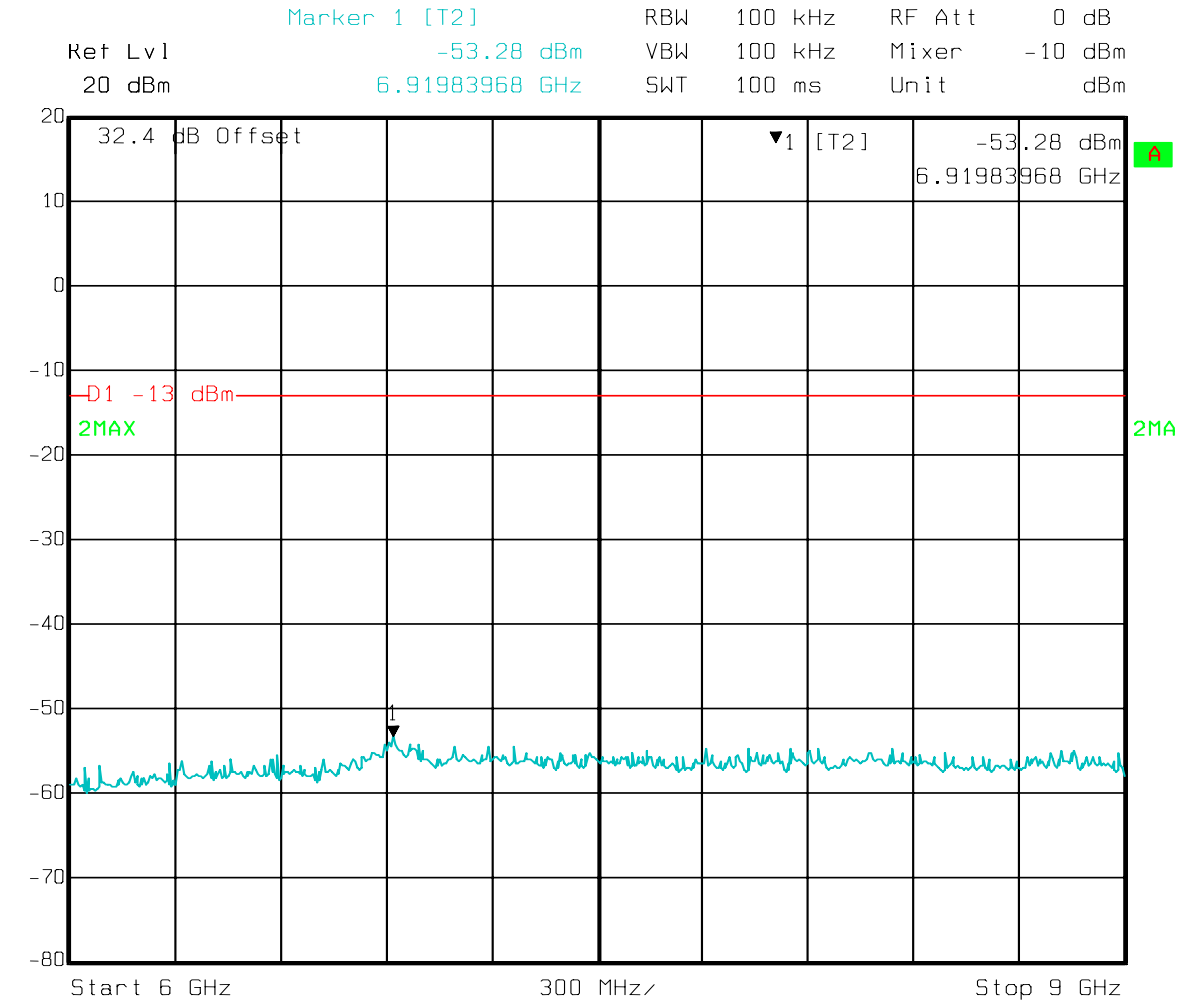
Low Channel 5735 MHz – Conducted Spurious

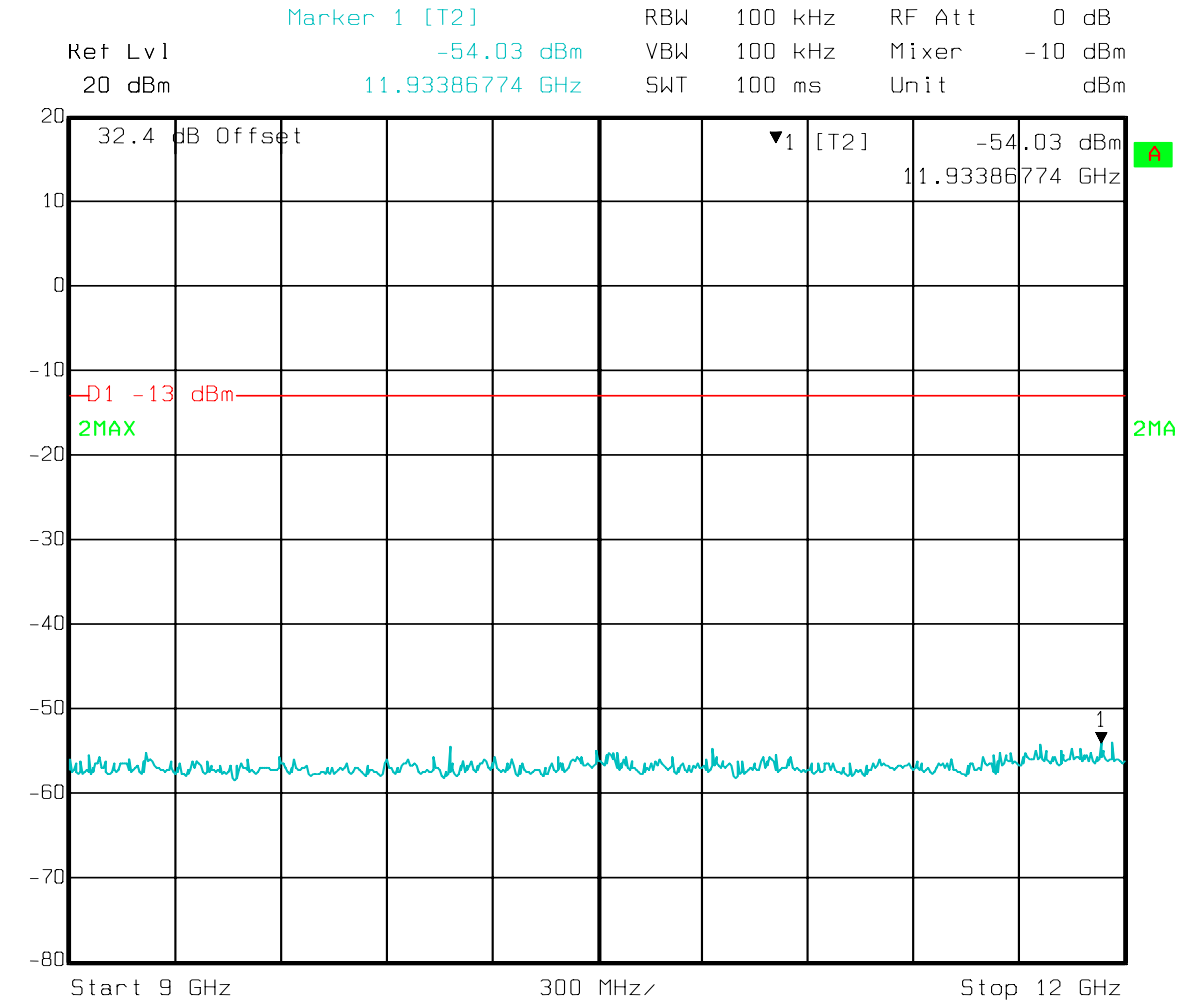
No Out of Band emissions within 20 dB of the limit.

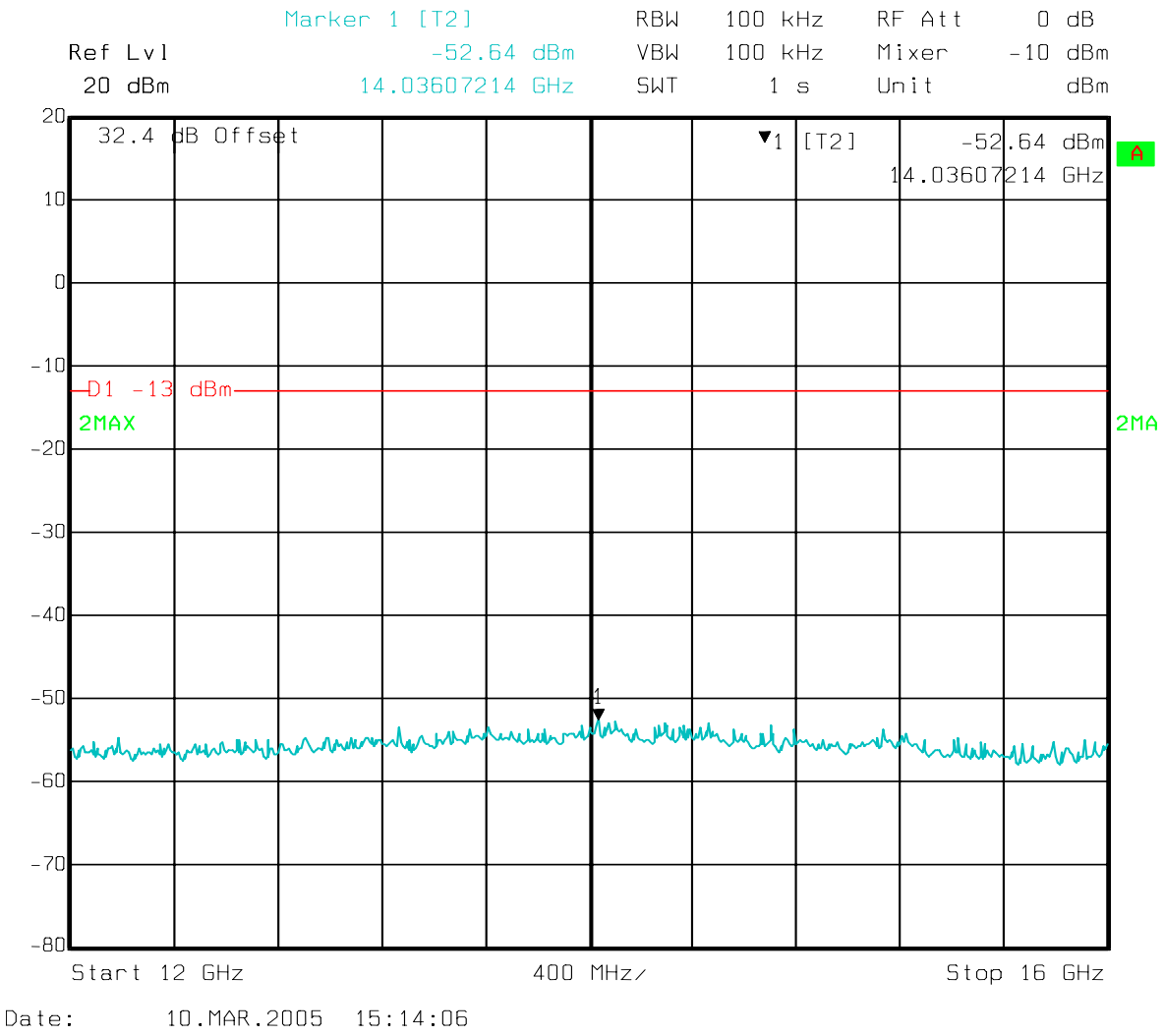


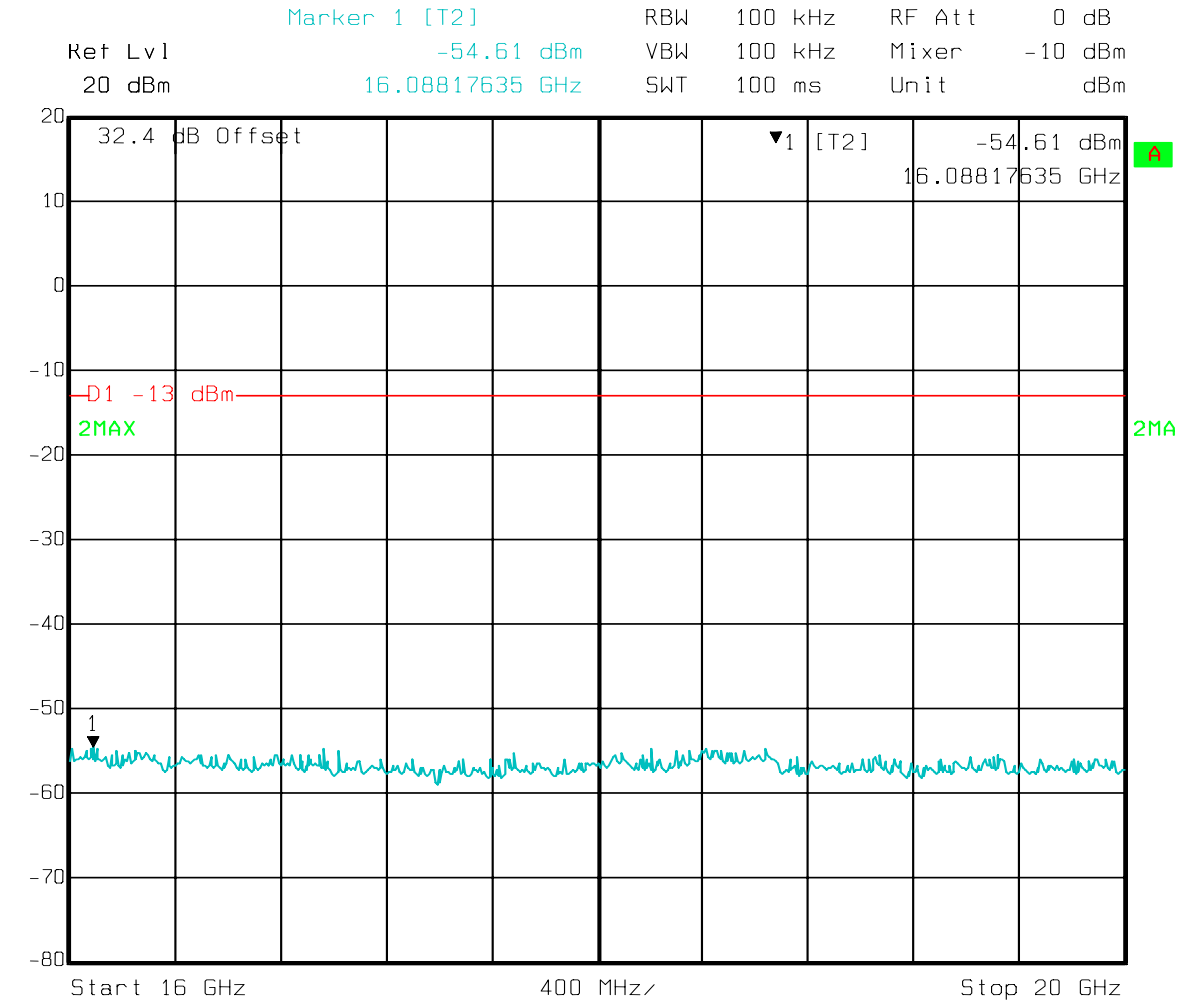

Marker 1 [T2]
Ref Lvl
20 dBm
-45.41 dBm
4.95791583 GHz
RBW 100 kHz
VBW 100 kHz
SWT 100 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
▼1 [T2]
-45.41 dBm
4.95791583 GHz
A
D1 -13 dBm
2MAX
2MA
1
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 2 GHz
300 MHz/
Stop 5 GHz
Date: 10.MAR.2005 14:43:06

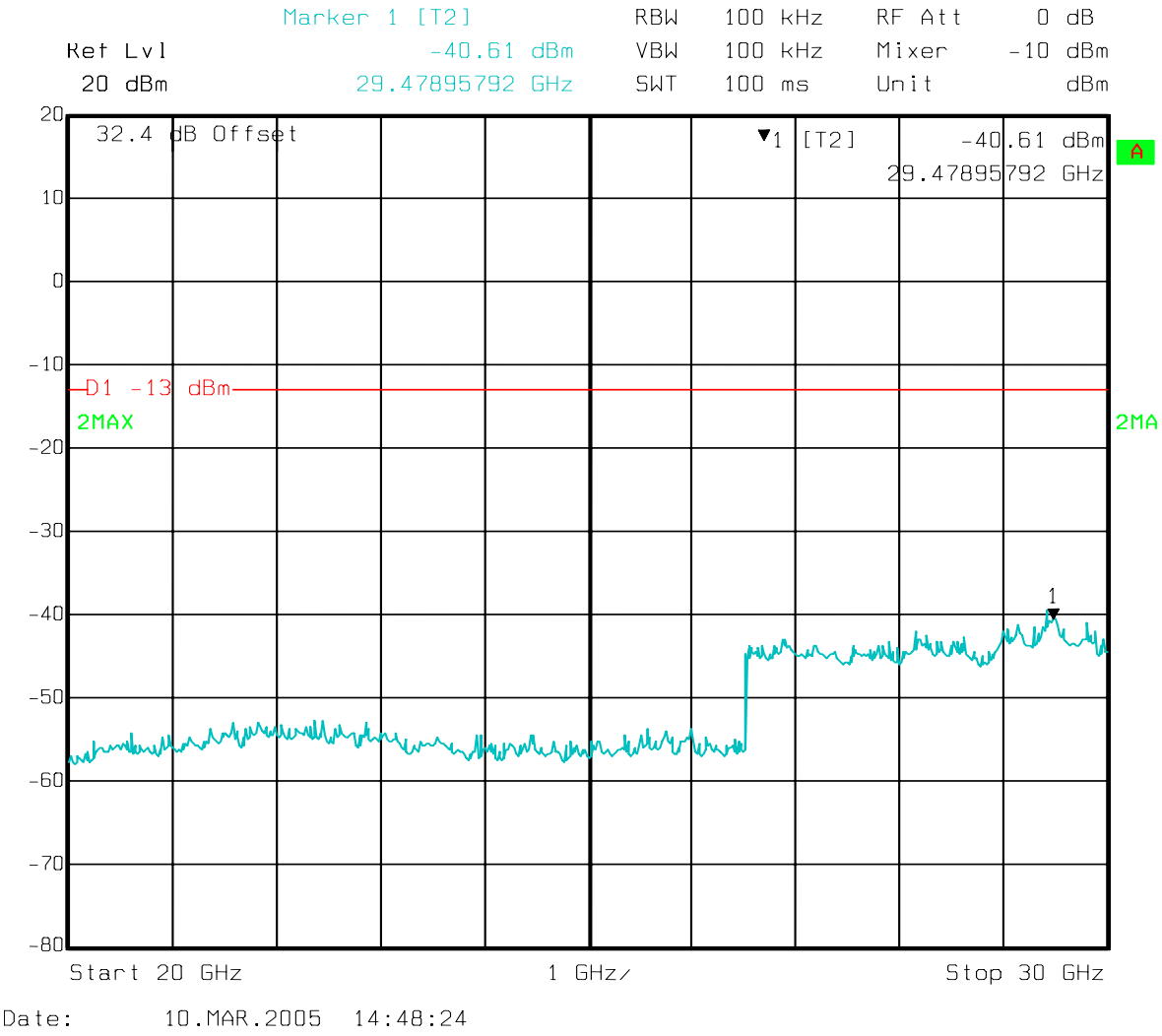

Marker 1 [T2]
-40.44 dBm
5.37675351 GHz
RBW 100 kHz
VBW 100 kHz
SWT 100 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
Ref Lvl
20 dBm
32.4 dB Offset
1 [T2]
-40.44 dBm
5.37675351 GHz
D1 -13 dBm
2MAX
2MA
A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 5 GHz
100 MHz/
Stop 6 GHz
Date: 10.MAR.2005 14:45:10

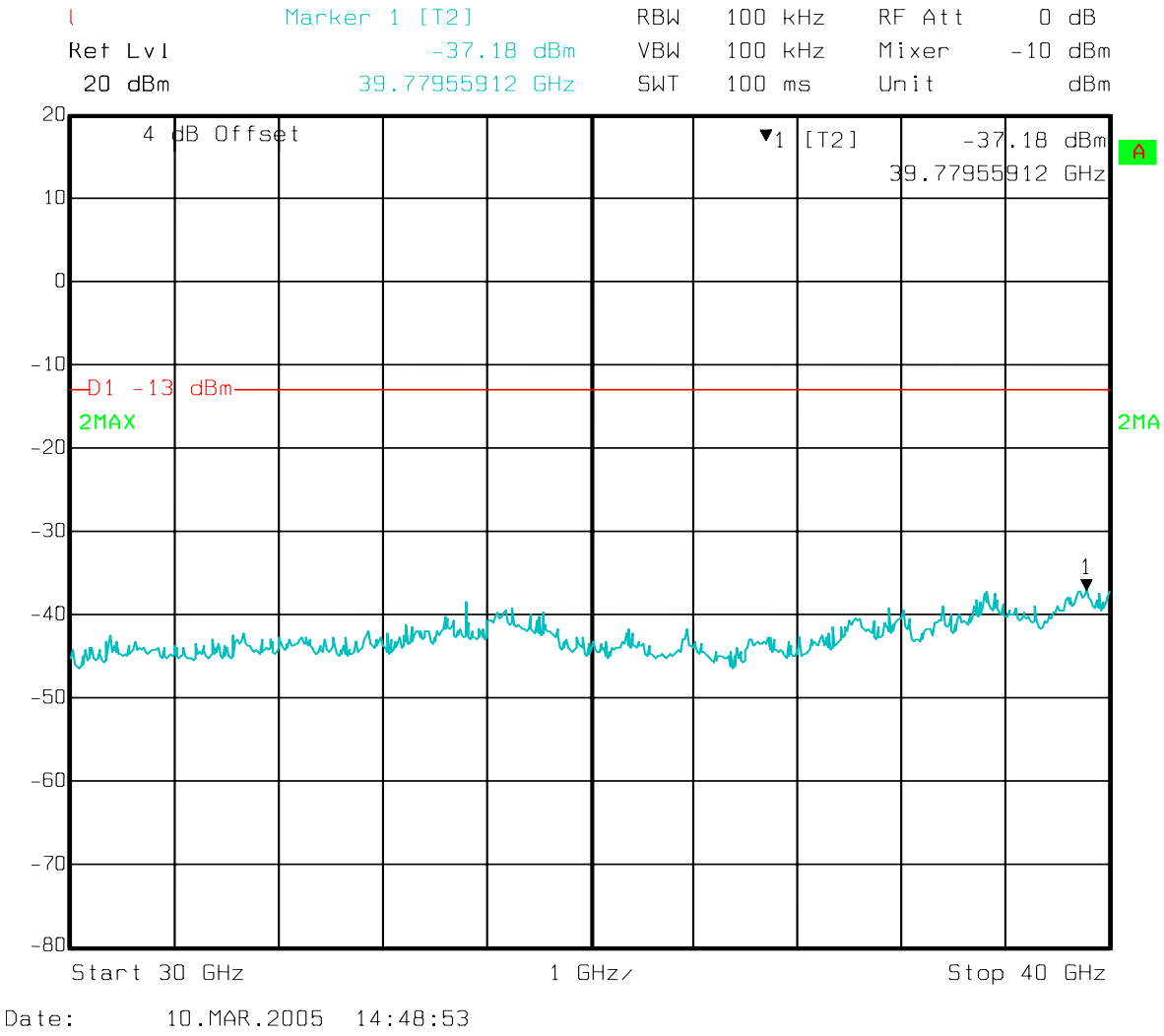

Marker 1 [T2]
Ref Lvl
20 dBm
-53.28 dBm
6.91983968 GHz
RBW 100 kHz
VBW 100 kHz
SWT 100 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
1 [T2]
-53.28 dBm
6.91983968 GHz
A
D1 -13 dBm
2MAX
2MA
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 6 GHz
300 MHz/
Stop 9 GHz
Date: 10.MAR.2005 14:45:42


Marker 1 [T2]
Ref Lvl
20 dBm
-54.03 dBm
11.93386774 GHz
RBW 100 kHz
VBW 100 kHz
SWT 100 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
1 [T2]
-54.03 dBm
11.93386774 GHz
A
D1 -13 dBm
2MAX
2MA
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 9 GHz
300 MHz/
Stop 12 GHz
Date: 10.MAR.2005 14:56:05


Marker 1 [T2]
Ref Lvl
20 dBm
-52.64 dBm
14.03607214 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
1 [T2]
-52.64 dBm
14.03607214 GHz
A
D1 -13 dBm
2MAX
2MA
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 12 GHz
400 MHz/
Stop 16 GHz
Date: 10.MAR.2005 15:14:06


Marker 1 [T2]
Ref Lvl
20 dBm
-54.61 dBm
16.08817635 GHz
RBW 100 kHz
VBW 100 kHz
SWT 100 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
1 [T2]
-54.61 dBm
16.08817635 GHz
A
D1 -13 dBm
2MAX
2MA
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 16 GHz
400 MHz/
Stop 20 GHz
Date: 10.MAR.2005 14:47:53

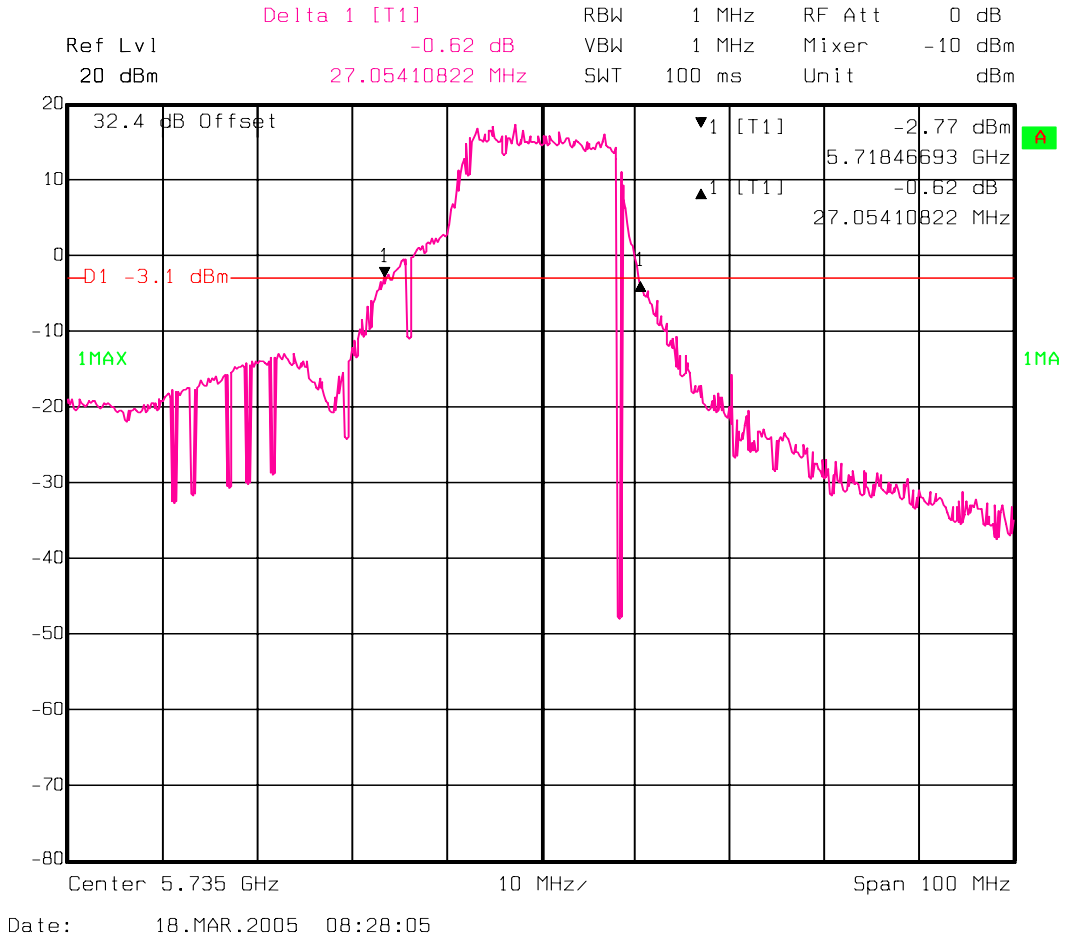

Marker 1 [T2]
Ref Lvl
20 dBm
-40.61 dBm
29.47895792 GHz
RBW 100 kHz
VBW 100 kHz
SWT 100 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
1 [T2]
-40.61 dBm
29.47895792 GHz
A
D1 -13 dBm
2MAX
2MA
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 20 GHz
1 GHz/
Stop 30 GHz
Date: 10.MAR.2005 14:48:24



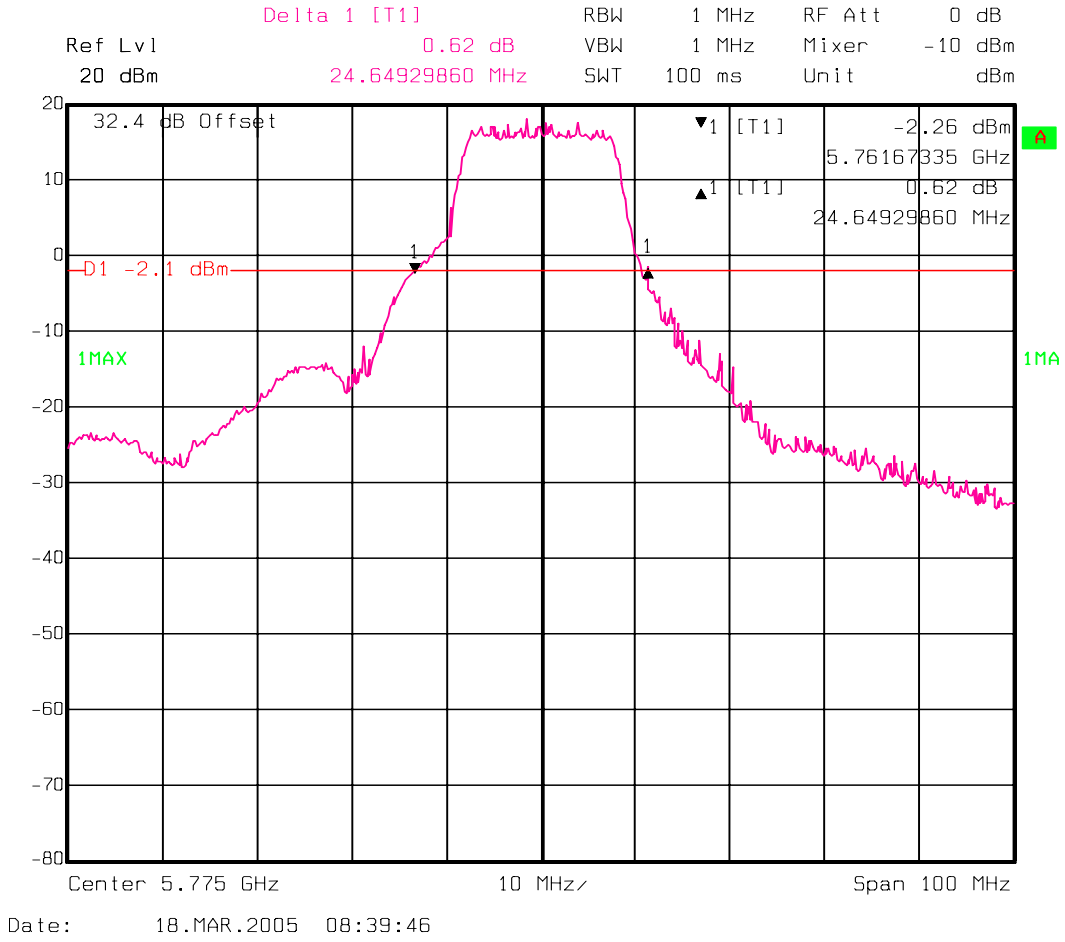
Mid Channel 5775 MHz – Conducted Spurious In APPENDIX A

High Channel 5835 MHz – Conducted Spurious In APPENDX A

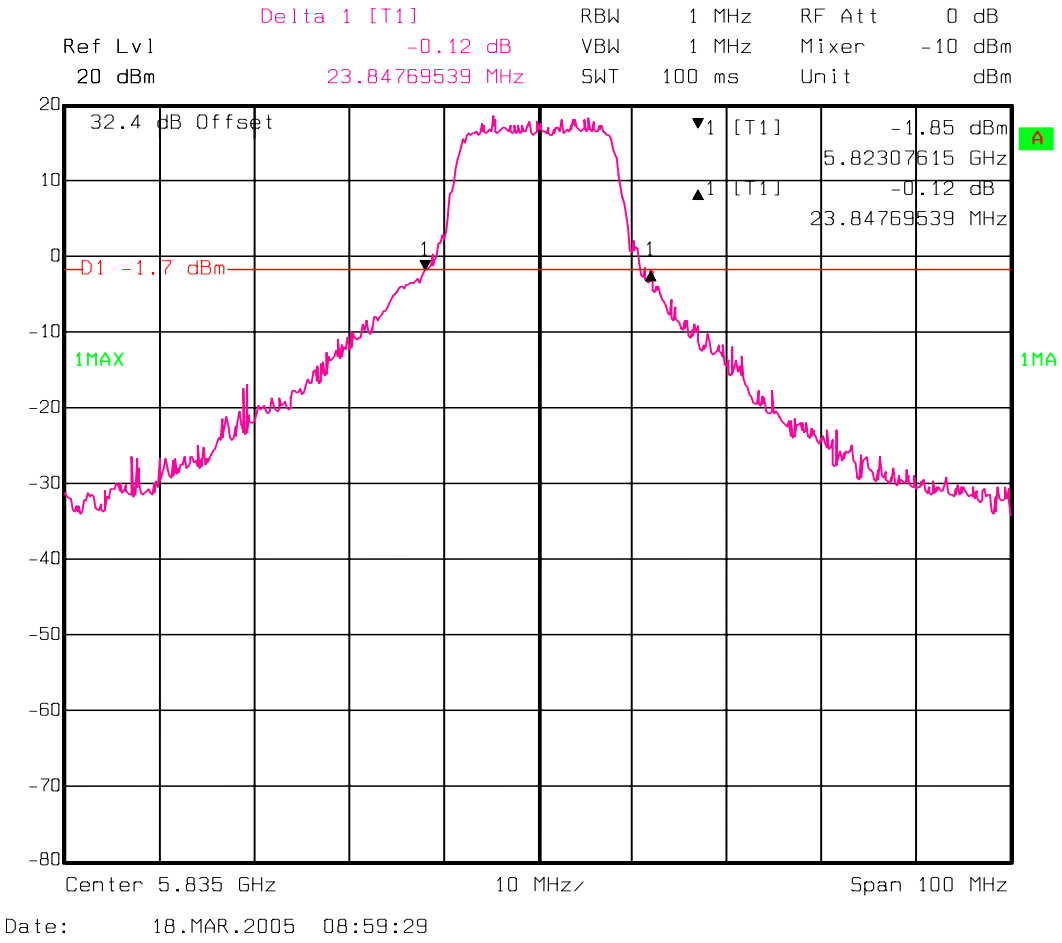
Bandwidth Low Channel 5735 MHz, Narrowband Mode = 20 MHz



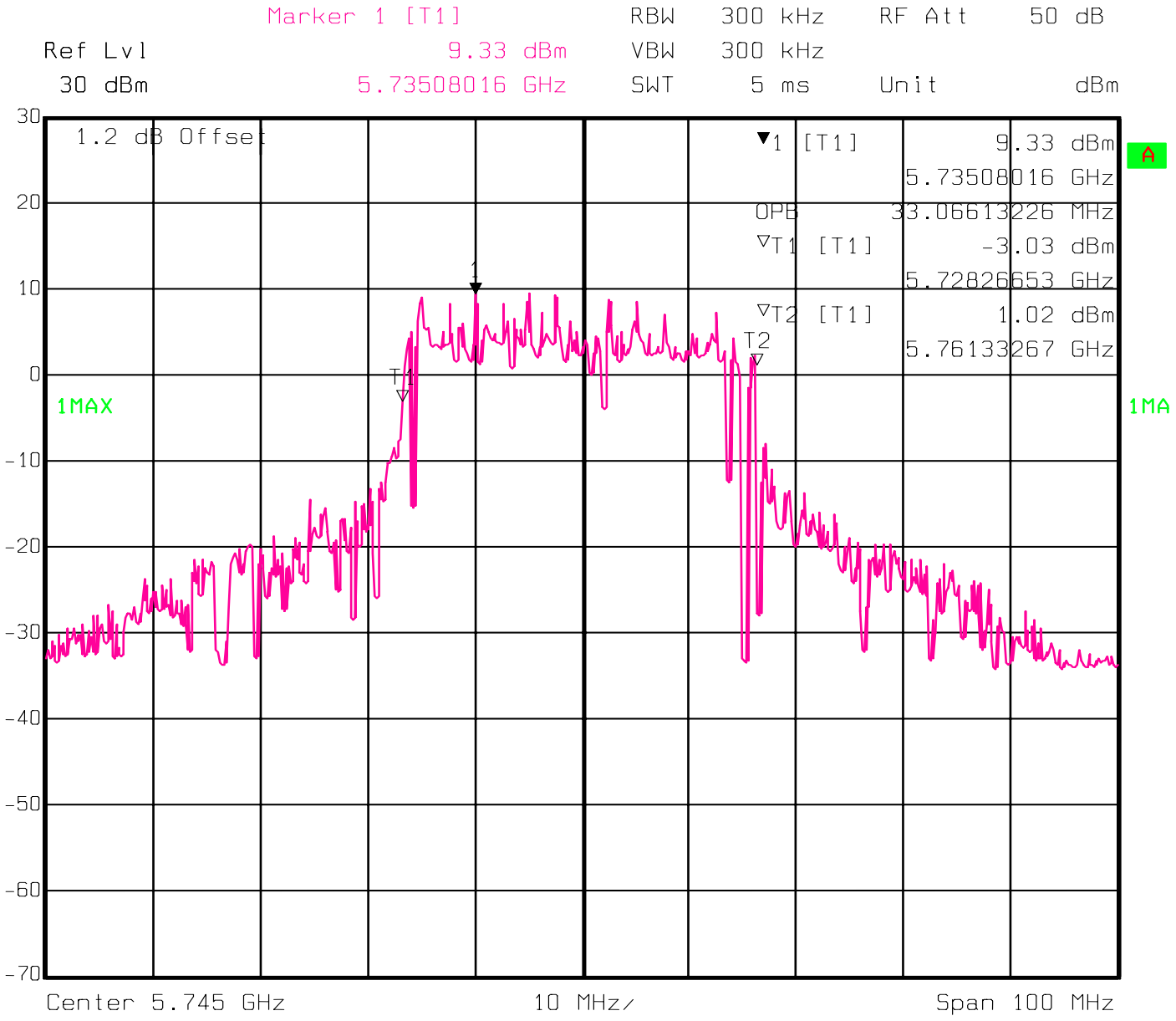
Bandwidth Mid Channel 5775 MHz, Narrowband Mode = 20 MHz



Bandwidth High Channel 5835 MHz, Narrowband Mode = 20 MHz

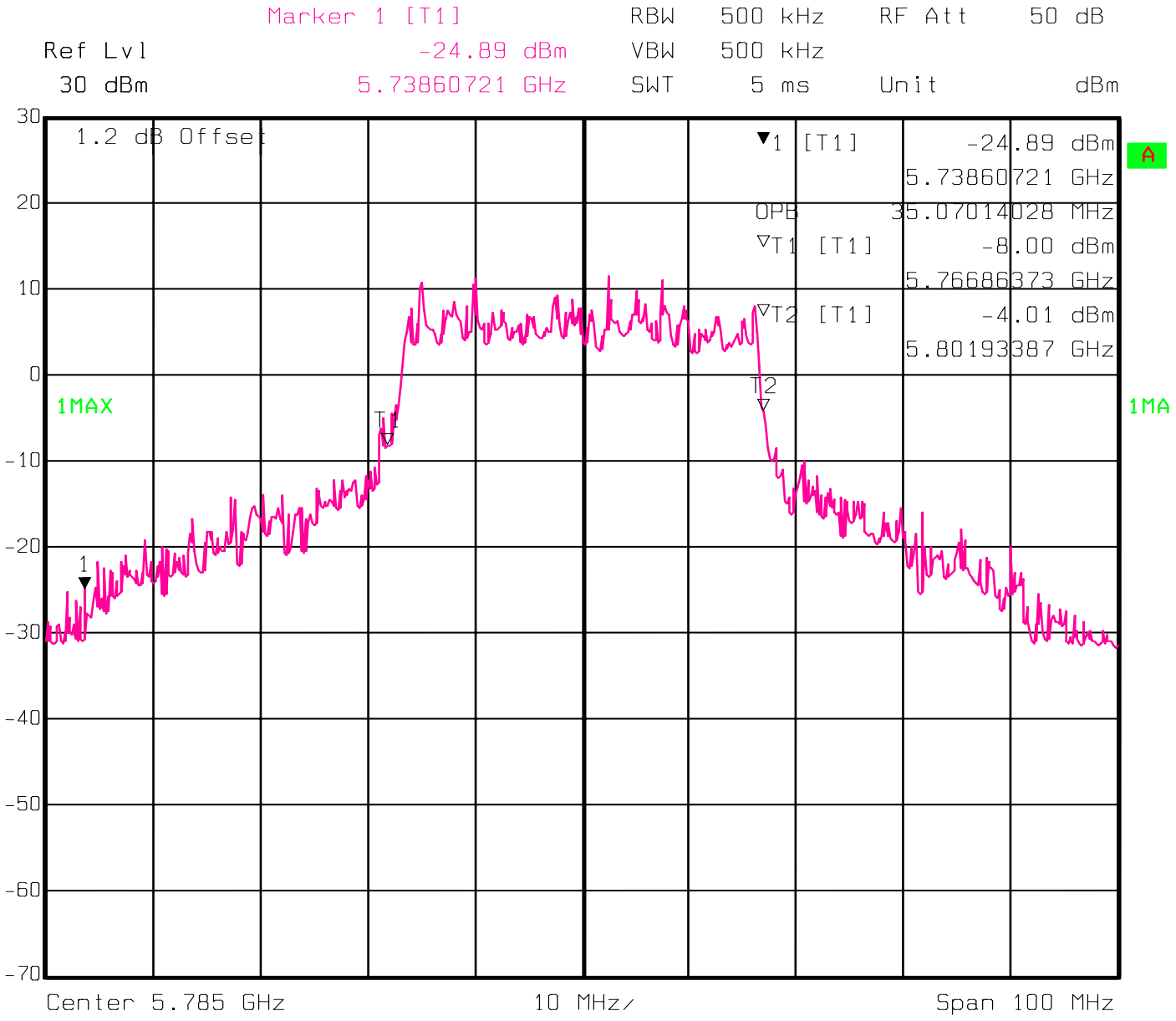


Bandwidth Low Channel 5745 MHz, Wideband Mode = 40 MHz



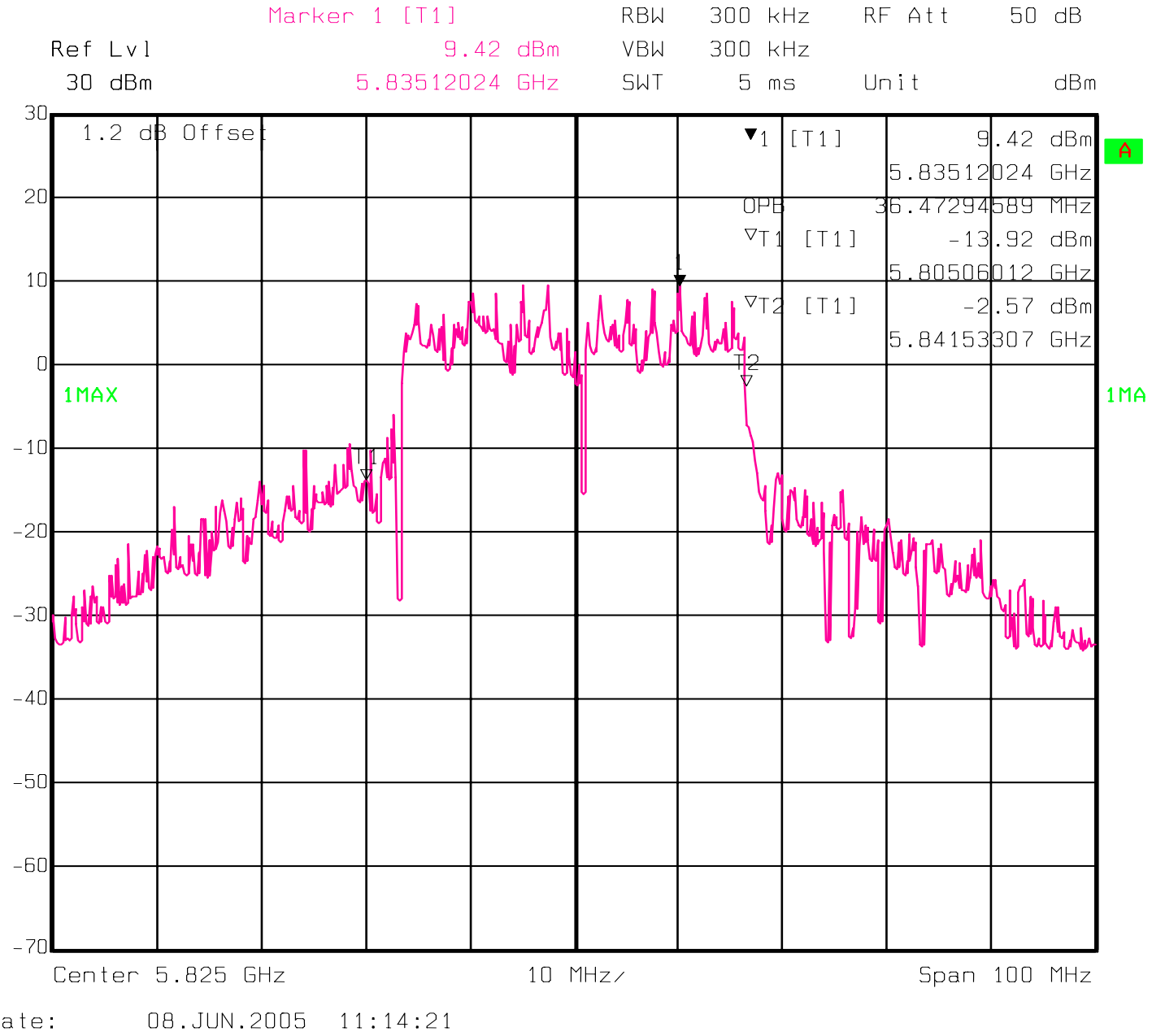
Date: 08.JUN.2005 11:25:03

Bandwidth Mid Channel 5785 MHz, Wideband Mode = 40 MHz



Date: 08.JUN.2005 10:20:57

Bandwidth High Channel 5825 MHz, Wideband Mode = 40 MHz



Date: 08.JUN.2005 11:14:21

Peak Power Density

Measured with spectrum analyzer at 3 kHz VBW, corrected for path loss. Modulation On.

Narrowband Mode = 20 MHz

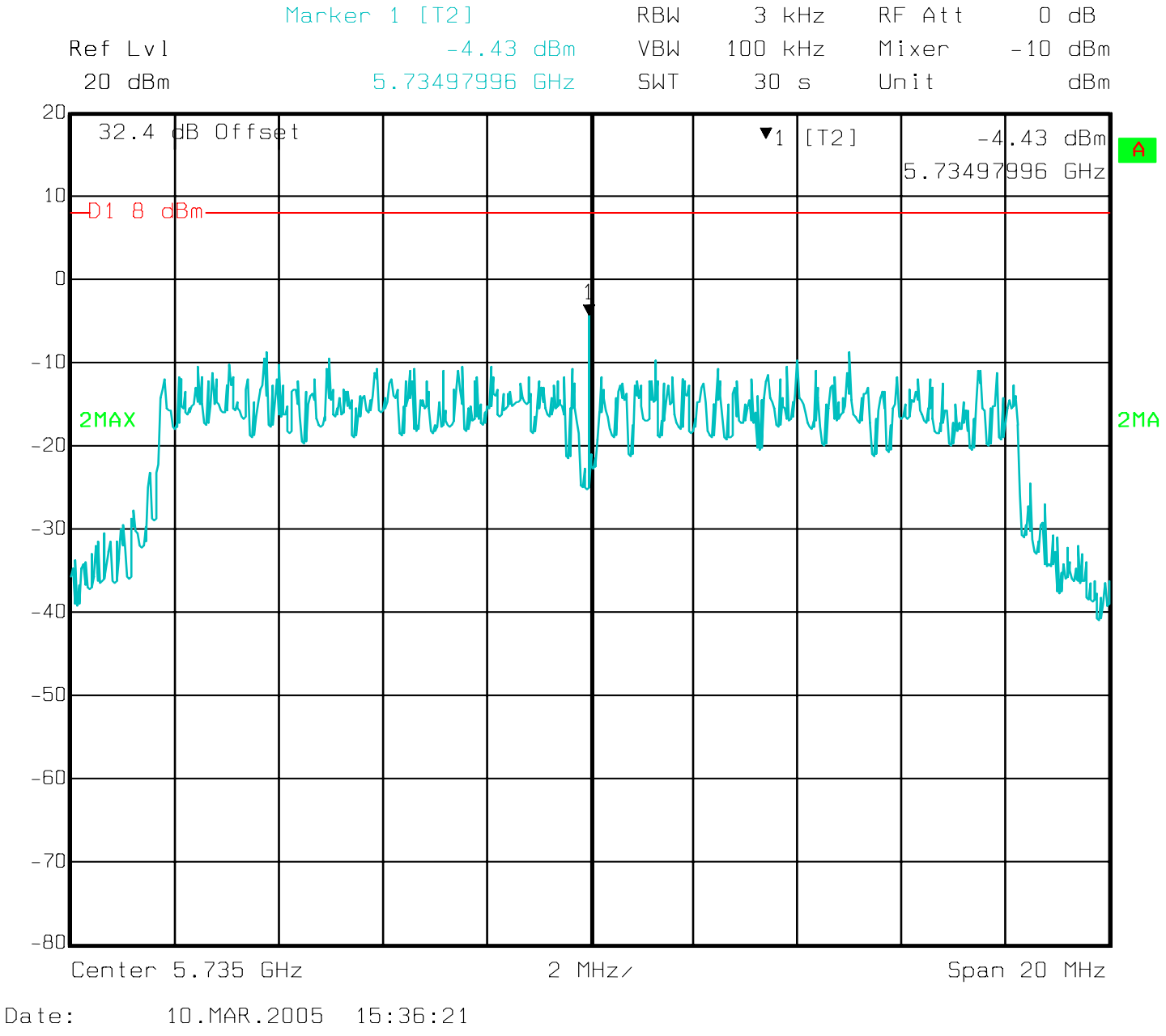
Frequency (MHz)	Emission Level (dBm)	Limit	Comment
5735	-4.4	8	Complies
5775	-8.9	8	Complies
5835	-7.9	8	Complies

Measured with spectrum analyzer at 3 kHz VBW, corrected for path loss. Modulation On.

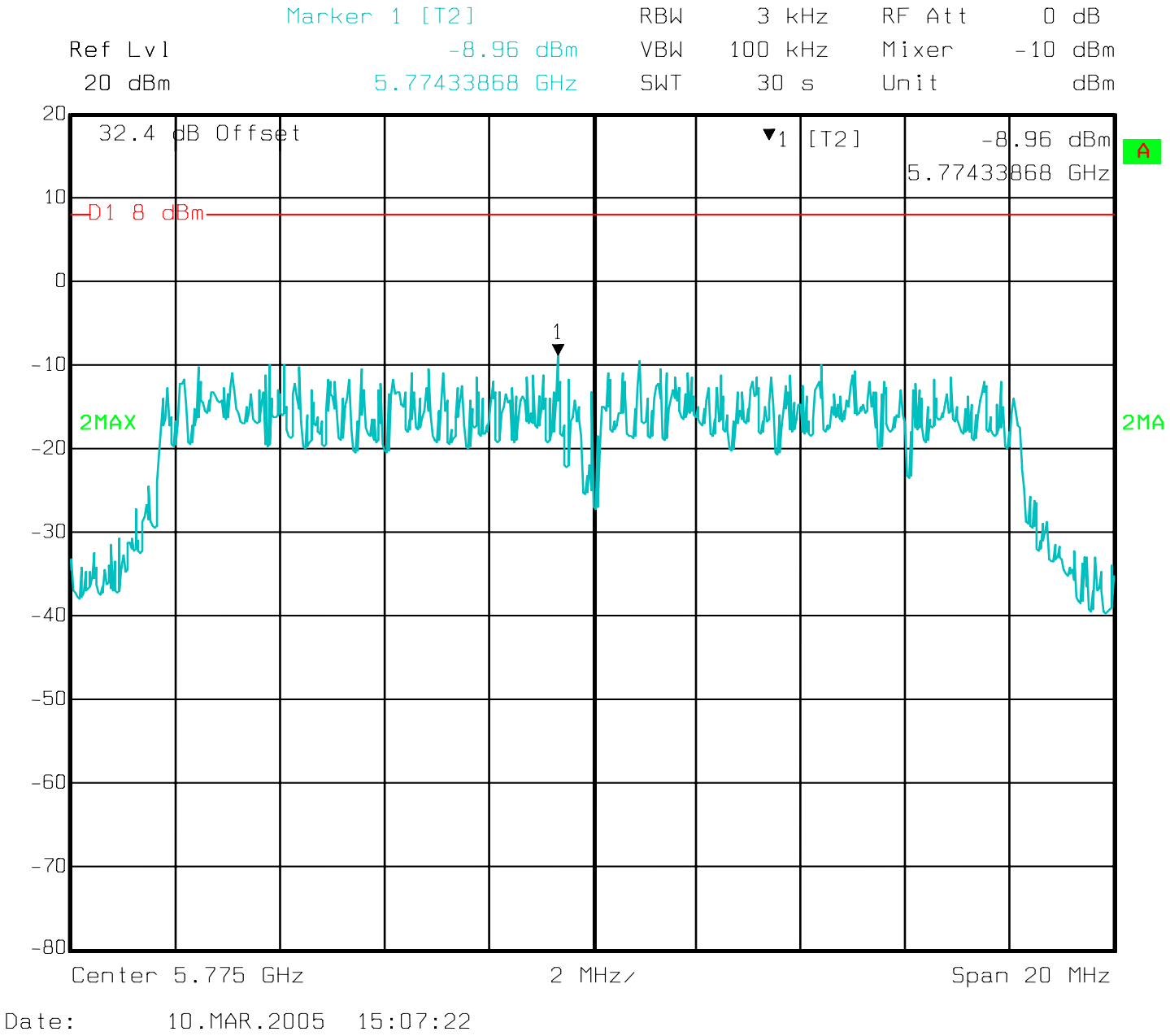
Wideband Mode = 40 MHz

Frequency (MHz)	Emission Level (dBm)	Limit	Comment
5735	-7.5	8	Complies
5775	-10.5	8	Complies
5835	-6.4	8	Complies

Low Channel, Narrowband Mode.

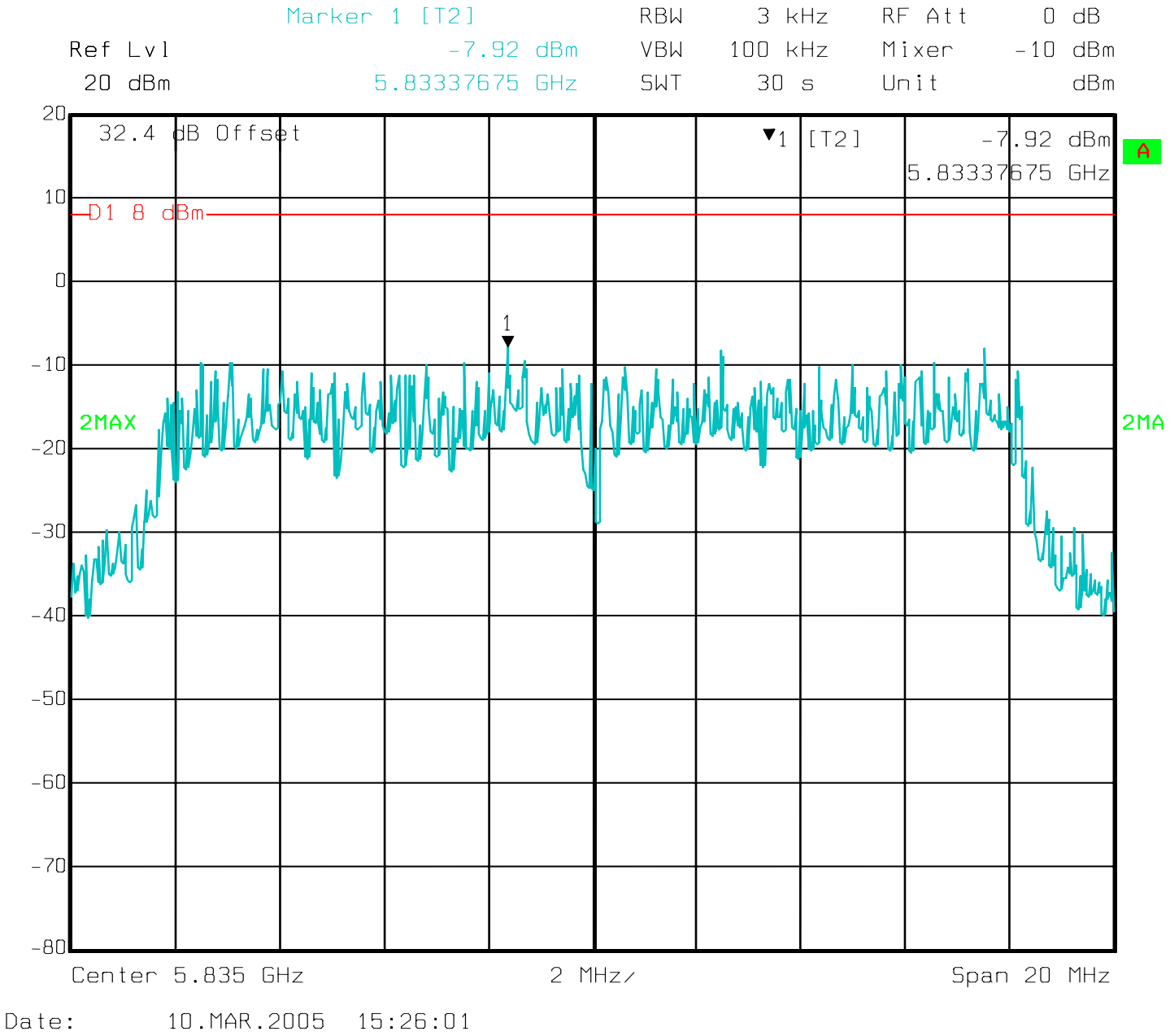


Mid Channel, Narrowband Mode.

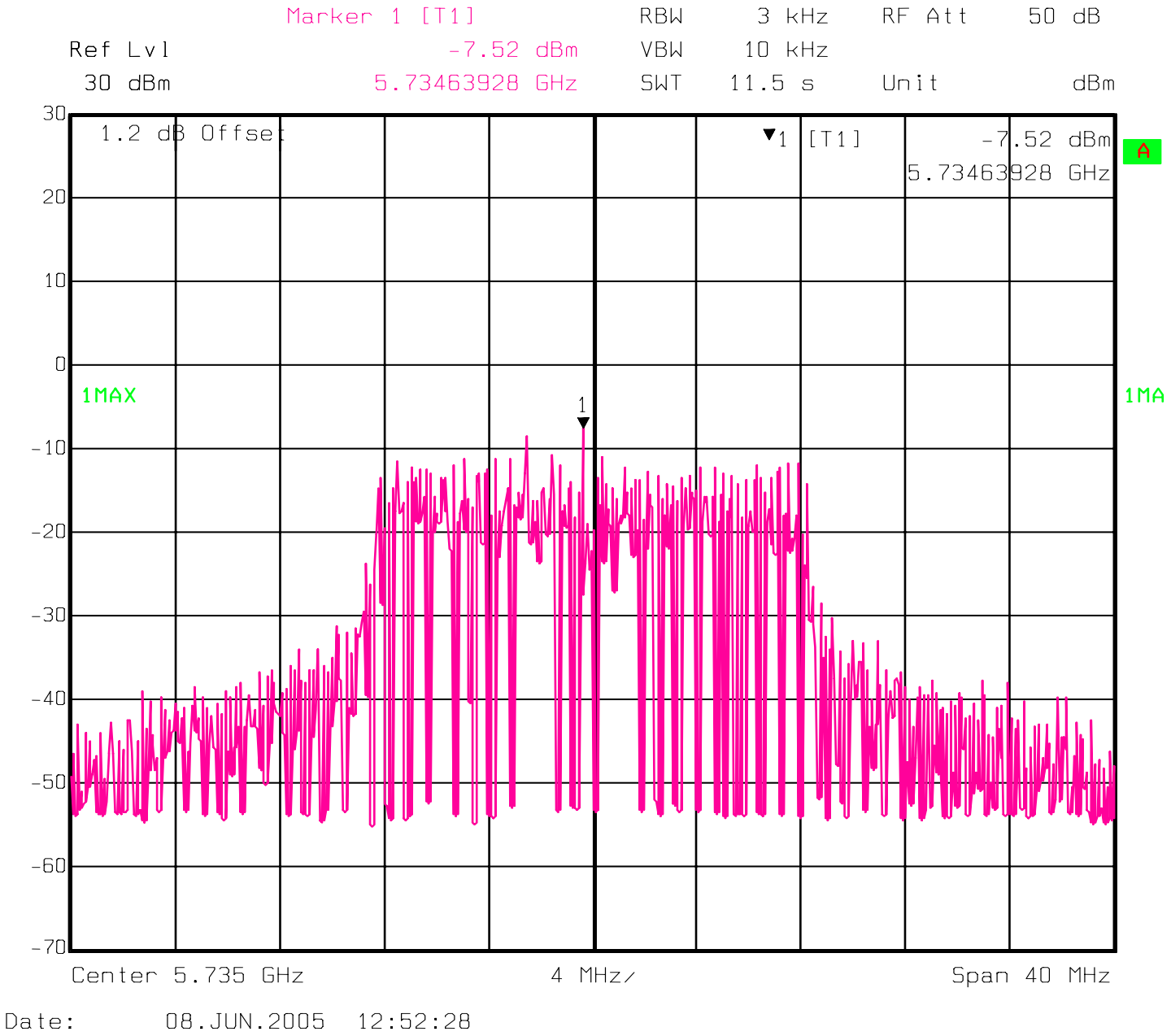


Date: 10.MAR.2005 15:07:22

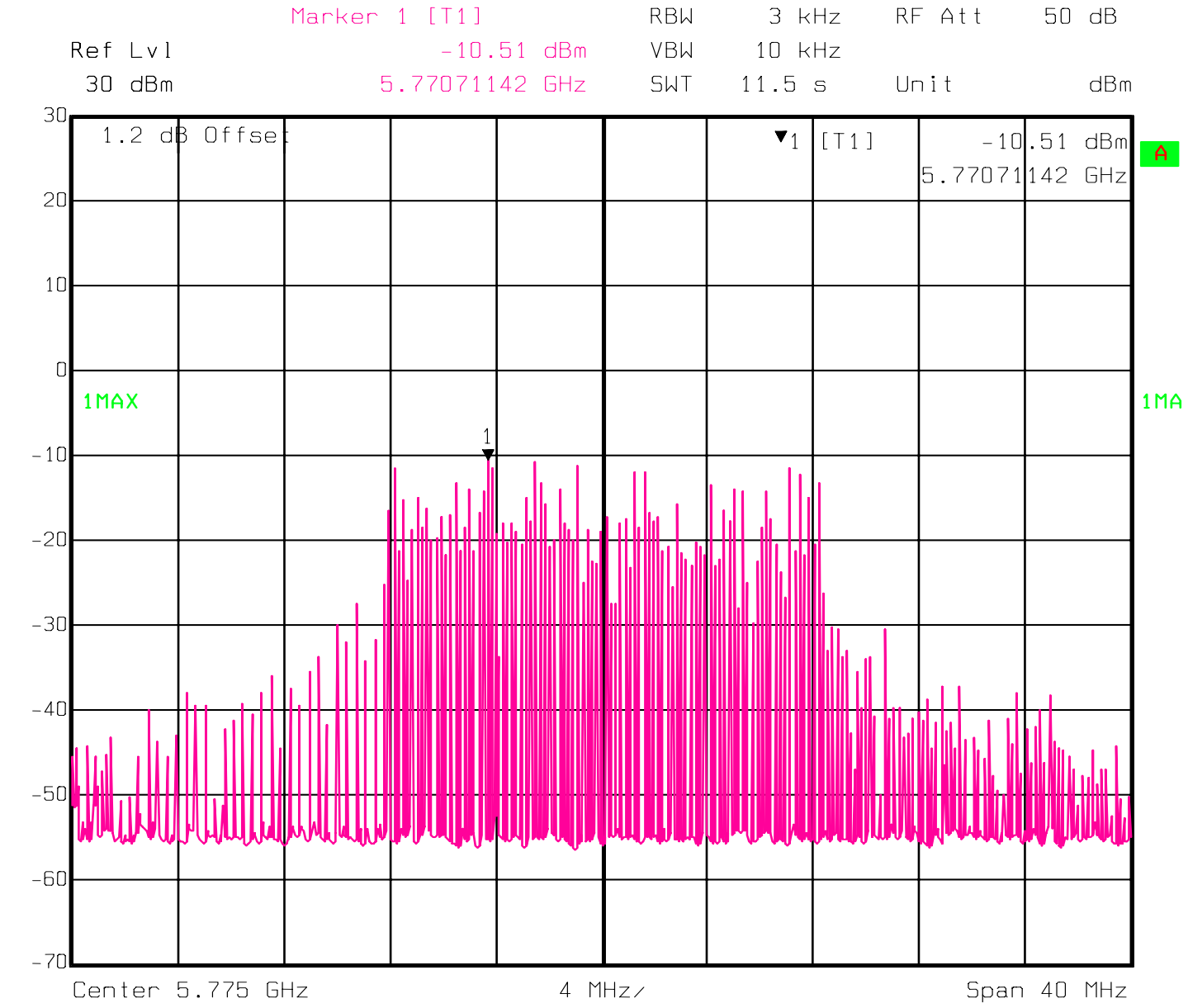
High Channel, Narrowband Mode.



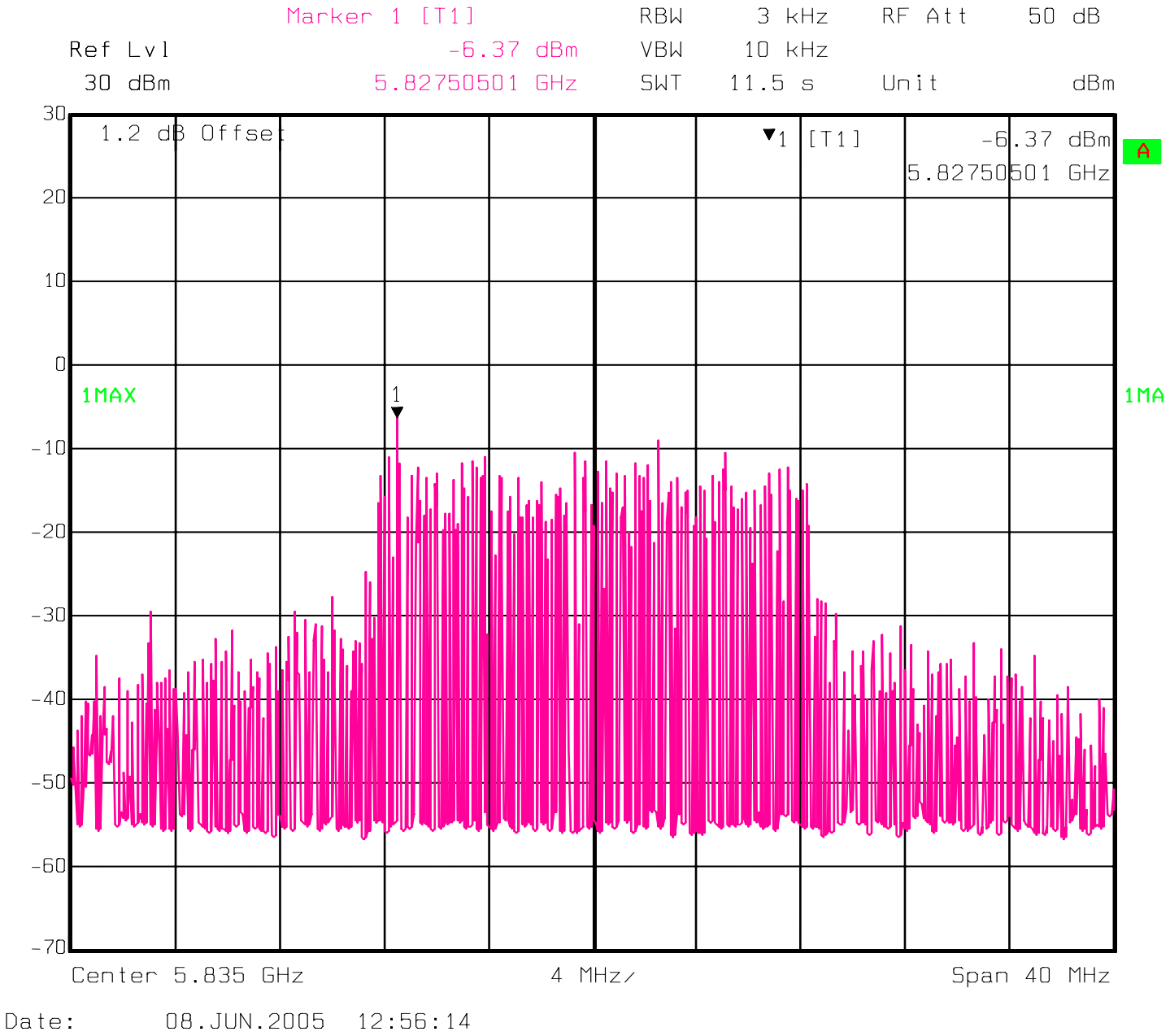
Low Channel, Wideband Mode.



Mid Channel, Wideband Mode.



High Channel, Wideband Mode.



Frequency Stability Complies:

RSS 210 Frequency Stability

25-174-SOLR1

Limit 0.01 % of 5775 MHz = 57.75 kHz

Greatest Variation: 0.4 kHz 0.07 ppm

Temperature Setpoint °C	Actual	Minimal Voltage = 102 Vac Low Frequency High Frequency GHz	Frequency(GHz) Variation kHz	Vnom = 120 Vac Low Frequency High Frequency GHz	Frequency(GHz) Variation kHz	Max Voltage = 138 Vac Low Frequency High Frequency GHz	Frequency(GHz) Variation kHz
-20	-19.8	5.76656313 5.78359760	5.775080365 0.205	5.76656313 5.78359719	5.775080160 0.000	5.76656393 5.78359719	5.775080560 0.400
20	20.1	5.76656313 5.78359719	5.775080160 0.000	**5.76656313** **5.78359719**	**5.775080160** **0.000**	5.76656313 5.78359719	5.775080160 0.000
50	49.9	5.76656273 5.78359719	5.775079960 -0.200	5.76656273 5.78359760	5.775080165 0.005	5.76656313 5.78359719	5.775080160 0.000

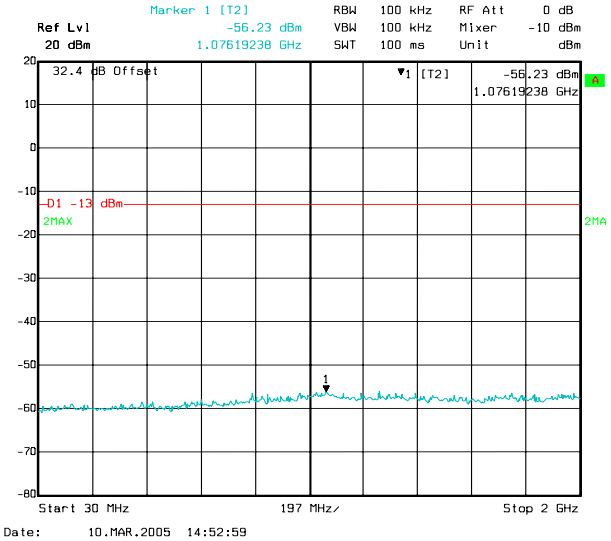
Frequencies are read after one hour soak at temperature
Spectrum Analyzer @ 1 MHz VBW, 1 MHz RBW, Span = 100 MHz

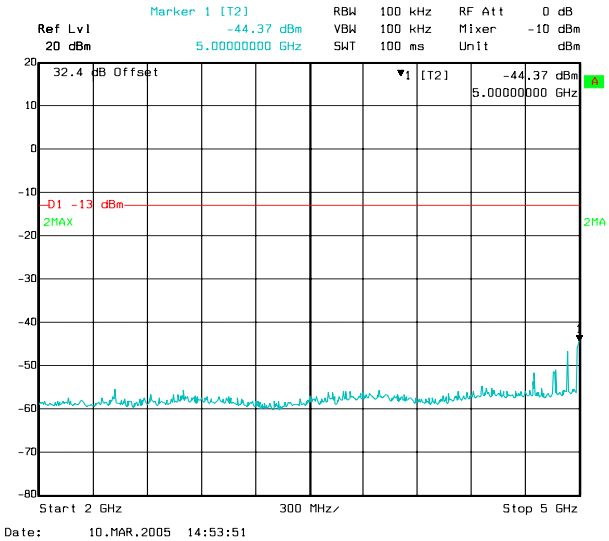
Emissions Test Equipment

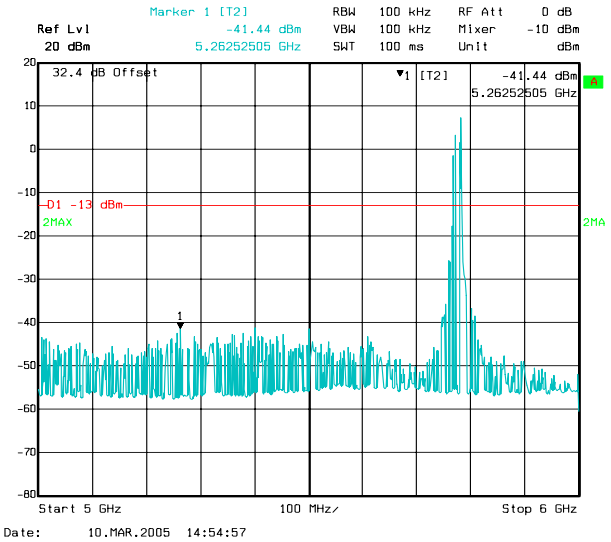
Device Type	*Model #*	*Asset #*	*Used*	*Serial Number*	*Cal Due*
Antenna OATS #1 (South)					
Amplifier Preamp (40dB), ComPower	PA-010	841	X	171007	11/17/2005
Quasi-Peak Adapter, HP Spectrum Analyzer Display, HP Spectrum Analyzer, HP	85650A 85662A 8568B	676 675 674	X X X	2007A00910 2005A01282 2430A00576	9/22/05 3/22/05 3/22/05
Spectrum Analyzer, R&S	RHDFSEK	835	X	829058/005	12-30-05
Antenna, Biconical	3110	116	X	1267	8/30/2005
Antenna, Log Periodic	3146	112	X	9101-2988	10/28/2005
Antenna, Ridged Guide	3115	529	X	2505	3/30/2005
Antenna, Dipole	3121C	756	X	1214	8/27/2005
Harmonic Mixer 18-26.5 GHz, HP	11970K	576	X	2332A00405	1-6-06
Harmonic Mixer 26.5-40 GHz, HP	11970A	598	X	3003A03988	1-6-06
Preamp, HP	11975A	577	X	2517A01068	1-6-06
Limiter	11947A	681	X	3107A02634	5-13-05
LISN – EUT,	9348-50-R-24-BNC	395	X	941718	12-22-05
High Pass Filter	7801-5	564	X	T9481	1-6-06
LISN- support equipment	9348-50-R-24-BNC	805	X	10148408	8-12-05
Multimeter, Fluke	111	809	X	331312	1-6-06
Variac, Delta		NA	X	NA	NCR
Environmental Chamber	Themotron	NA	X	23946	1-12-06
50 Ohm Load	HP	330	X	X1366	1-6-06
30 dB Attenuator, HP	8491B	332	X	X0475	4-21-05
Power Meter, Agilent EPM-P	E4416A	NA	X	GB41293329	NEW
Power Meter Sensor, Agilent	E9322A	NA	X	US4040047S	NEW

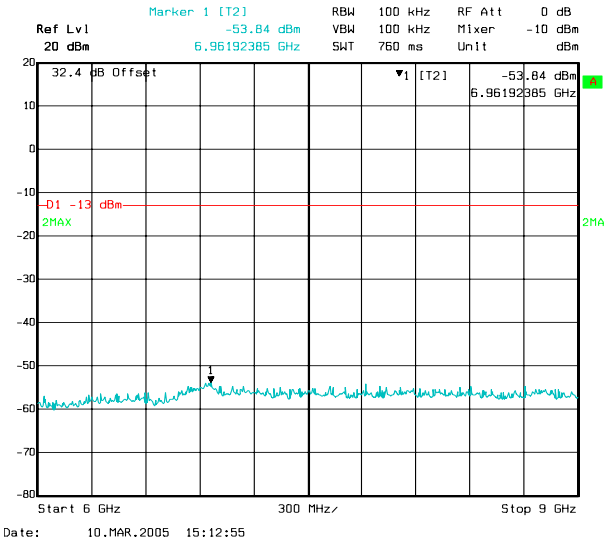
APPENDIX A

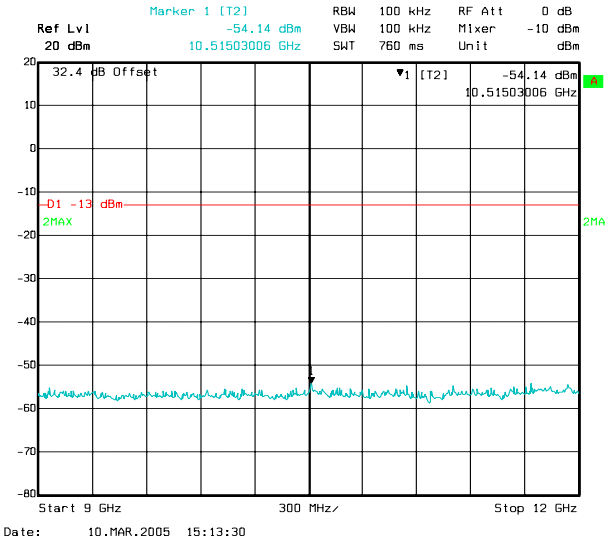
Mid Channel 5775 MHz – Conducted Spurious

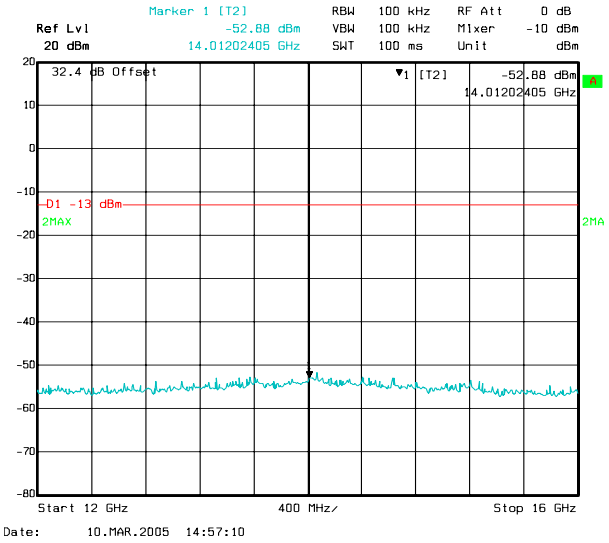


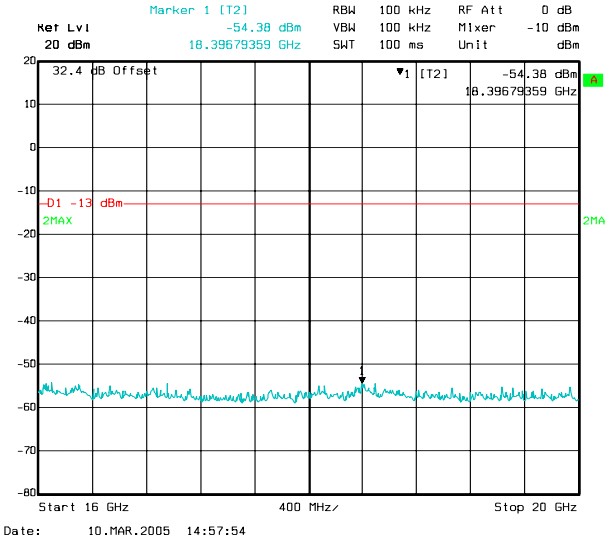


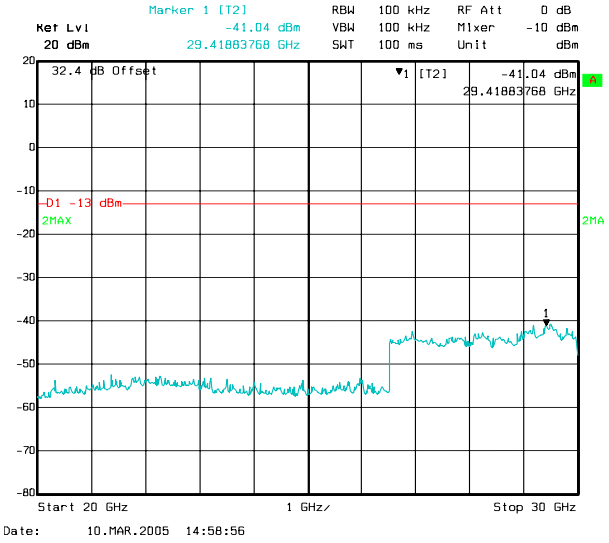


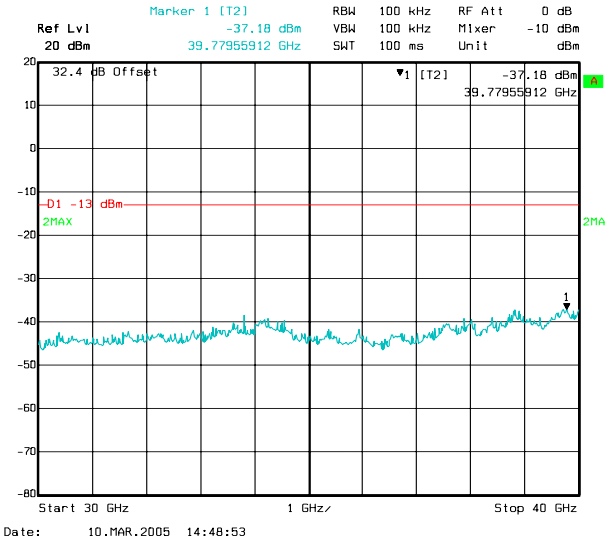



Marker 1 [T2]
Ref Lvl
20 dBm
-54.14 dBm
10.51503006 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
1 [T2]
-54.14 dBm
10.51503006 GHz
D1 -13 dBm
2MAX
2MA
Start 9 GHz
300 MHz/
Stop 12 GHz
Date: 10.MAR.2005 15:13:30

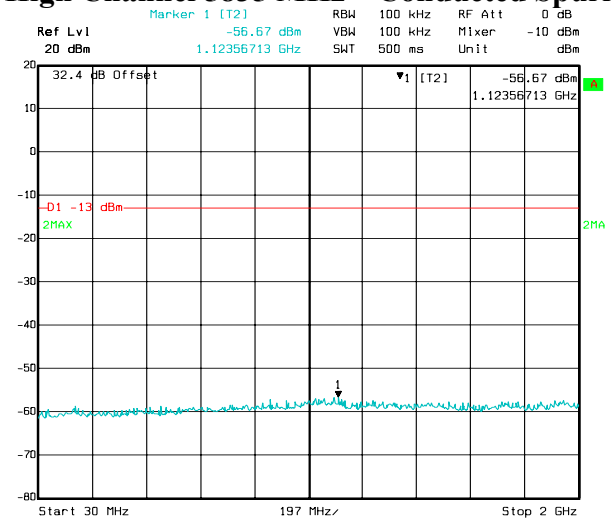

Marker 1 [T2]
Ref Lvl
20 dBm
-52.88 dBm
14.01202405 GHz
RBW 100 kHz
VBW 100 kHz
SWT 100 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
1 [T2]
-52.88 dBm
14.01202405 GHz
D1 -13 dBm
2MAX
2MA
Start 12 GHz
400 MHz/
Stop 16 GHz
Date: 10.MAR.2005 14:57:10

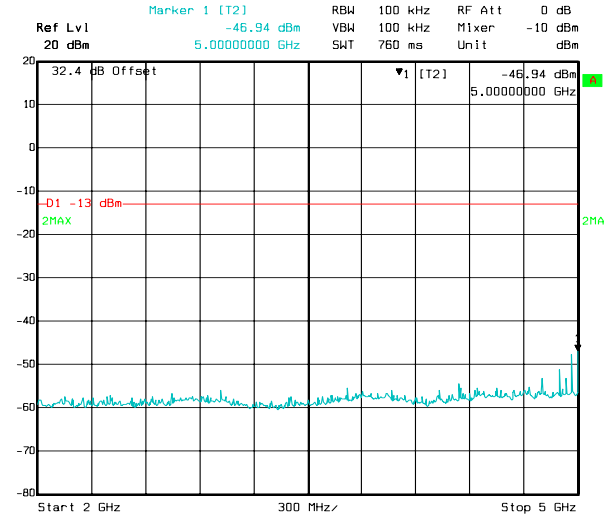

Marker 1 [T2]
Ref Lvl
20 dBm
-54.38 dBm
18.39679359 GHz
RBW 100 kHz
VBW 100 kHz
SWT 100 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
1 [T2]
-54.38 dBm
18.39679359 GHz
D1 -13 dBm
2MAX
2MA
Start 16 GHz
400 MHz/
Stop 20 GHz
Date: 10.MAR.2005 14:57:54

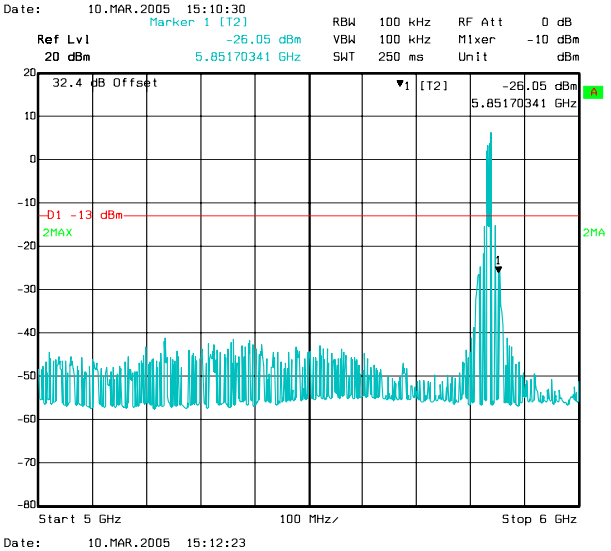

Marker 1 [T2]
Ref Lvl
20 dBm
-41.04 dBm
29.41883768 GHz
RBW 100 kHz
VBW 100 kHz
SWT 100 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
1 [T2]
-41.04 dBm
29.41883768 GHz
D1 -13 dBm
2MAX
2MA
Start 20 GHz
1 GHz/
Stop 30 GHz
Date: 10.MAR.2005 14:58:56

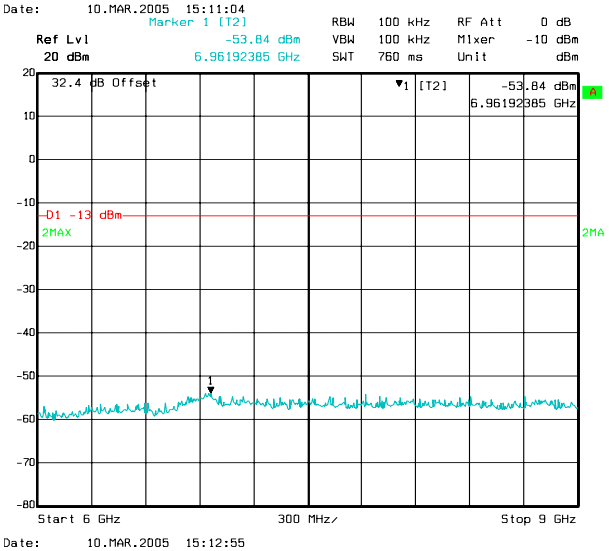


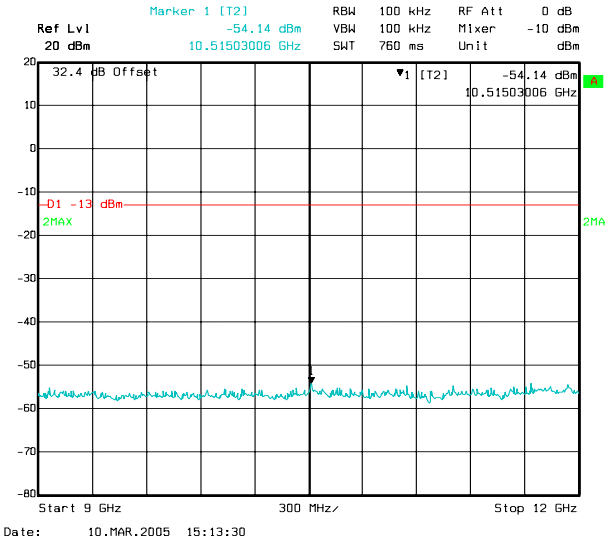
High Channel 5835 MHz – Conducted Spurious

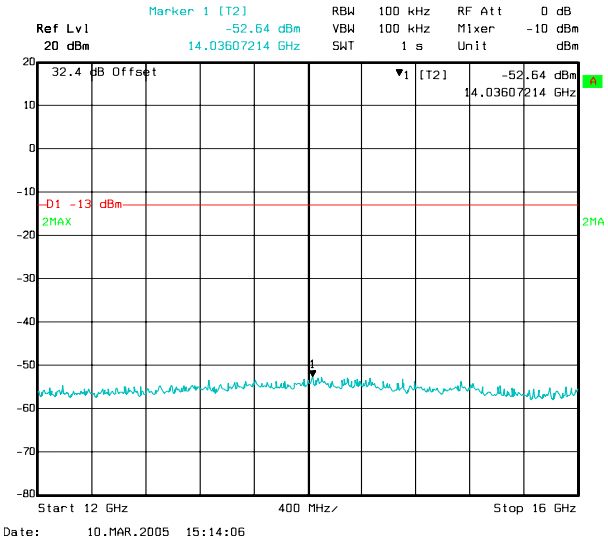


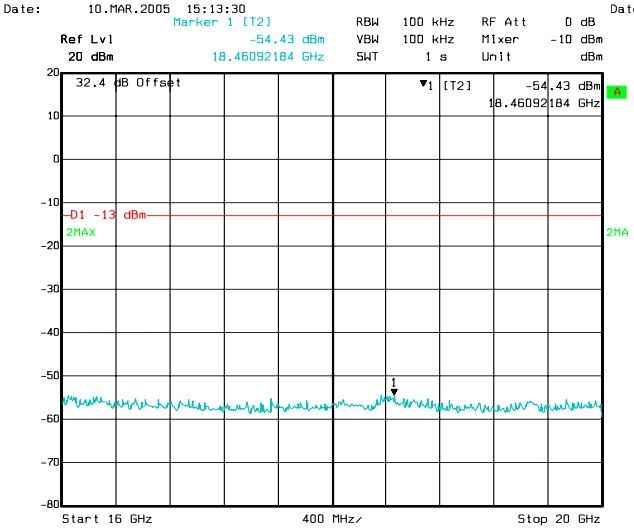


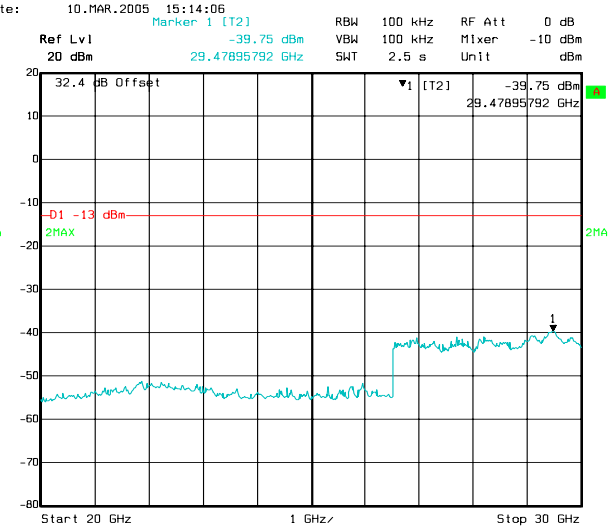


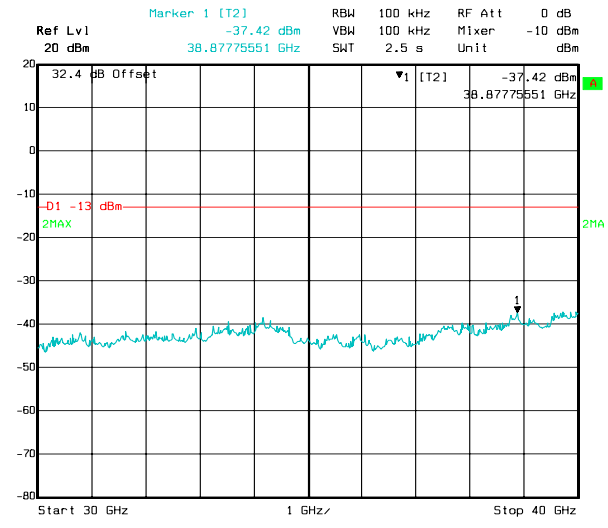



Marker 1 [T2]
Ref Lvl
20 dBm
-54.14 dBm
10.51503006 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
▼1 [T2]
-54.14 dBm
10.51503006 GHz
D1 -13 dBm
2MAX
2MA
Start 9 GHz
300 MHz/
Stop 12 GHz
Date: 10.MAR.2005 15:13:30


Marker 1 [T2]
Ref Lvl
20 dBm
-52.64 dBm
14.03607214 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
▼1 [T2]
-52.64 dBm
14.03607214 GHz
D1 -13 dBm
2MAX
2MA
Start 12 GHz
400 MHz/
Stop 16 GHz
Date: 10.MAR.2005 15:14:06


Marker 1 [T2]
Ref Lvl
20 dBm
-54.43 dBm
18.46092184 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
▼1 [T2]
-54.43 dBm
18.46092184 GHz
D1 -13 dBm
2MAX
2MA
Start 16 GHz
400 MHz/
Stop 20 GHz
Date: 10.MAR.2005 15:14:49


Marker 1 [T2]
Ref Lvl
20 dBm
-39.75 dBm
29.47895792 GHz
RBW 100 kHz
VBW 100 kHz
SWT 2.5 s
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
▼1 [T2]
-39.75 dBm
29.47895792 GHz
D1 -13 dBm
2MAX
2MA
Start 20 GHz
1 GHz/
Stop 30 GHz
Date: 10.MAR.2005 15:19:37


Marker 1 [T2]
Ref Lvl
20 dBm
-37.42 dBm
38.87775551 GHz
RBW 100 kHz
VBW 100 kHz
SWT 2.5 s
RF Att 0 dB
Mixer -10 dBm
Unit dBm
32.4 dB Offset
▼1 [T2]
-37.42 dBm
38.87775551 GHz
D1 -13 dBm
2MAX
2MA
Start 30 GHz
1 GHz/
Stop 40 GHz
Date: 10.MAR.2005 15:19:59

APPENDIX B
B. Conducted & Radiated Emissions Measurement Uncertainties

1. Introduction

ISO Standard 17025 and ANSI/NCSL Z540-1(1994) require that all measurements contained in a test report be "traceable". "Traceability" is defined in the *International Vocabulary of Basic and General Terms in Metrology* (ISO: 1993) as: "the property of the result of a measurement... whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons, *all having stated uncertainties*".

The purposes of this Appendix are to "state the *Measurement Uncertainties*" of the conducted emissions and radiated emissions measurements contained in Section 5 of this Test Report, and to provide a practical explanation of the meaning of these measurement uncertainties.

2. Statement of the Worst-Case Measurement Uncertainties for the Conducted and Radiated Emissions Measurements Contained in This Test Report

Table 1: Worst-Case Expanded Uncertainty "U" of Measurement for a k=2 Coverage Factor

Conducted Emissions Measurement Detection Systems	Applicable Frequency Range	"U" for a k=2 Coverage Factor
HP8568B Spectrum Analyzer with QPA and HP8447F Preamplifier	150 kHz - 30 MHz	+/- 3.0 dB
HP8566B Spectrum Analyzer with QPA and Preselector	9 kHz - 30 MHz	+/- 2.9 dB
Radiated Emissions Measurement Detection Systems	**Applicable Frequency Range**	**"U" for a k=2 Coverage Factor**
HP8568B Spectrum Analyzer with QPA & HP8447F Preamplifier	30 MHz - 200 MHz	+4.0 dB, -4.1 dB
HP8568B Spectrum Analyzer with QPA & HP8447F Preamplifier	200 MHz-1000 MHz	+/- 3.5 dB
HP8566B Spectrum Analyzer with QPA & Preselector	30 MHz - 200 MHz	+3.9 dB, -4.0 dB
HP8566B Spectrum Analyzer with QPA & Preselector	200 MHz-1000 MHz	+/- 3.4 dB
HP8566B Spectrum Analyzer with QPA & HP 8449A Preamplifier	1 GHz - 18 GHz	+2.5 dB, -2.6 dB
HP8566B Spectrum Analyzer with QPA & HP8449A Preamplifier	18 GHz - 40 GHz	+/- 3.4 dB

NOTES:
1. Applies to 3 and 10 meter measurement distances
2. Applies to all valid combinations of Transducers (i.e. LISNs, Line Voltage Probes, and Antennas, as appropriate)
3. Excludes the Repeatability of the EUT

3. Practical Explanation of the Meaning of the Conducted and Radiated Emissions Measurement Uncertainties

In general, a "Statement of Measurement Uncertainty" means that with a certain (specified) confidence level, the "true" value of a measurand will be between a (stated) upper bound and a (stated) lower bound.

In the specific case of EMC Measurements in this test report, the measurement uncertainties of the conducted emissions measurements and the radiated emissions measurements have been calculated in accordance with the method detailed in the following documents:

- *ISO Guide to the Expression of Uncertainty in Measurement* (ISO, 1993)
- NIS 81:1994, *The Treatment of Uncertainty in EMC Measurements* (NAMAS, 1994)
- NIST Technical Note 1297(1994), *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results* (NIST, 1994)

The calculation method used in these documents requires that the stated uncertainty of the measurements be expressed as *an "expanded uncertainty", U, with a k=2 coverage factor*. The practical interpretation of this method of expressing measurement uncertainty is shown in the following example:

EXAMPLE: Assume that at 39.51 MHz, the (measured) radiated emissions level was equal to +26.5 dBuV/m, and that the +/- 2 standard deviations (i.e. 95% confidence level) measurement uncertainty was +/- 3.4 dB.

In the example above, the phrase "k = 2 Coverage Factor" simply means that the measurement uncertainty is stated to cover +/-2 standard deviations (i.e. a 95% confidence interval) about the measurand. The measurand is the radiated emissions measurement of +26.5 dBuV/m at 39.51 MHz, and the 95% bounds for the uncertainty are –3.4 dB to + 3.4 dB. One can thus be 95% confident that the "true" value of the radiated emissions measurement is between +23.1 dBuV/m and +29.5 dBuV/m. *In effect, this means that in the above example there is only a 2.5% chance that the "true" radiated emissions value exceeds +29.5 dBuV/m.*

APPENDIX C
C. Nemko USA, Inc.'s Test Equipment & Facilities Calibration Program

Nemko USA, Inc. operates a comprehensive Periodic Calibration Program in order to ensure the validity of all test data. Nemko USA's Periodic Calibration Program is fully compliant to the requirements of NVLAP Policy Guide PG-1-1988, ANSI/NCSL Z540-1 (1994), ISO 10012-1 (1993-05-01), ISO Standard 17025, ISO-9000 and EN 45001. Nemko USA, Inc.'s calibrations program therefore meets or exceed the US national commercial and military requirements [N.B. ANSI/NCSL Z540-1 (1994) replaces MIL-STD-45662A].

Specifically, all of Nemko USA's *primary reference standard devices* (e.g. vector voltmeters, multimeters, attenuators and terminations, RF power meters and their detector heads, oscilloscope mainframes and plug-ins, spectrum analyzers, RF preselectors, quasi-peak adapters, interference analyzers, impulse generators, signal generators and pulse/function generators, field-strength meters and their detector heads, etc.) and certain *secondary standard devices* (e.g. RF Preamplifiers used in CISPR 11/22 and FCC Part 15/18 tests) are periodically recalibrated by:

- A Nemko USA-approved independent (third party) metrology laboratory that uses NIST-traceable standards and that is ISO Guide 25-accredited as a calibration laboratories by NIST; or,
- A Nemko USA-approved independent (third party) metrology laboratory that uses NIST-traceable standards and that is ISO Guide 25-accredited as a calibration laboratory by another accreditation body (such as A2LA) that is mutually recognized by NIST; or,
- A manufacturer of Measurement and Test Equipment (M&TE), if the manufacturer uses NIST-traceable standards and is ISO Guide 25-accredited as calibration laboratory either by NIST or by another accreditation body (such as A2LA) that is mutually recognized by NIST; or
- A manufacturer of M&TE (or by a Nemko USA-approved independent third party metrology laboratory) that is not ISO Guide 25-accredited. (In these cases, Nemko USA conducts an annual audit of the manufacturer or metrology laboratory for the purposes of proving traceabilty to NIST, ensuring that adequate and repeatable calibration procedures are being applied, and verifying conformity with the other requirements of ISO Guide 25).

In all cases, the entity performing the Calibration is required to furnish Nemko USA with a calibration test report and/or certificate of calibration, and a "calibration sticker" on each item of M&TE that is successfully calibrated.

Calibration intervals are normally one year, except when the manufacture advises a shorter interval (e.g. the HP 8568B Spectrum Analyzer is recalibrated every six months) or if US Government directives or client requirements demand a shorter interval. Items of instrumentation/related equipment which fail during routine use, or which suffer visible mechanical damage (during use or while in transit), are sidelined pending repair and recalibration. (Repairs are carried out either in-house [if minor] or by a Nemko USA-approved independent [third party] metrology laboratory, or by the manufacturer of the item of M&TE).

Each antenna used for CISPR 11 and CISPR 22 and FCC Part 15 and Part 18 radiated emissions testing (and for testing to the equivalent European Norms) is calibrated annually by either a NIST (or A2LA) ISO Standard 17025-Accredited third-party Antenna Calibration Laboratory or by the antenna's OEM if the OEM is NIST or A2LA ISO Standard 17025-accredited as an antenna calibration laboratory. The antenna calibrations are performed using the methods specified in Annex G.5 of CISPR 16-1(2003) or ANSI C63.5-1991, including the "Three-Antenna Method". Certain other kinds of antennas (e.g. magnetic-shielded loop antennas) are calibrated annually by either a NIST (or A2LA) ISO Standard 17025-accredited third-party antenna calibration laboratory, or by the antenna's OEM if the OEM is NIST or A2LA ISO Standard 17025-accredited as an antenna calibration laboratory using the procedures specified in the latest version of SAE ARP-958.

In accordance with FCC and other regulations, Nemko USA recalibrates its suite of antennas used for radiated emissions tests on an annual basis. These calibrations are performed as a precursor to the FCC-required annual revalidation of the Normalized Site Attenuation properties of Nemko USA's Open Area Test Site. Nemko USA, Inc. uses the procedures given in both Subclause 16.6 and Annex G.2 of CISPR 16-1 (2003), and, ANSI C63.4-2001 when performing the normalized site attenuation measurements.

APPENDIX D
D. NVLAP Accreditation

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation

ISO/IEC 17025:1999
ISO 9002:1994

NEMKO USA, INC. - SAN DIEGO EMC DIVISION
SAN DIEGO, CA

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

December 31, 2005
Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 200116-0

NVLAP-01C (06-01)

National Institute of Standards and Technology — NVLAP® — National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 200116-0

NEMKO USA, INC. - SAN DIEGO EMC DIVISION
11696 Sorrento Valley Road, Suite F
San Diego, CA 92121
Mr. Ricky Hill
Phone: 858-755-5525 x207 Fax: 858-793-9914
E-Mail: rick.hill@nemko.com
URL: http://www.nemko.com

NVLAP Code	*Designation / Description*
Emissions Test Methods:	
12/CIS14	CISPR 14-1 (March 30, 2000): Limits and Methods of Measurement of Radio interference Characteristics of Household Electrical Appliances, Portable Tools and Similiar Electrical Apparatus - Part 1: Emissions
12/CIS14a	EN 55014-1 (1993), A1 (1997), A2 (1999):
12/CIS14b	AS/NZS 1044 (1995):
12/CIS14c	CNS 13783-1: Electromagnetic Compatibility Requirements for household appliances, electric tools and similar apparatus - Part 1: Emissions
12/CIS22	IEC/CISPR 22 (1997) & EN 55022 (1998) + A1(2000): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22 (1993) and EN 55022 (1994): Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1 (1995) and Amendment 2 (1996)

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National Institute of Standards and Technology — NVLAP® — National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200116-0**

NEMKO USA, INC. - SAN DIEGO EMC DIVISION

NVLAP Code	*Designation / Description*
12/CIS22b	CNS 13438 (1997): Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/EM02a	IEC 61000-3-2, Edition 2.1 (2001-10), EN 61000-3-2 (2000), and AS/NZS 2279.1 (2000): Electromagnetic compatibility (EMC) Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A)
12/EM03b	IEC 61000-3-3, Edition 1.1(2002-03) & EN 61000-3-3, A1(2001): EMC - Part 3-3: Limits - Limitations of voltage changes, voltage flucuations and flicker, in public low-voltage supply-systems, for equipment with rated current <=16 A per phase and not subject to conditional connections
12/F18	FCC OST/MP-5 (1986): FCC Methods of Measurement of Radio Noise Emissions for ISM Equipment (cited in FCC Method 47 CFR Part 18 - Industrial, Scientific, and Medical Equipment)
12/FCC15b	ANSI C63.4 (2001) with FCC Method 47 CFR Part 15, Subpart B: Unintentional Radiators
12/T51	AS/NZS CISPR 22 (2002) and AS/NZS 3548 (1997): Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment

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National Institute of Standards and Technology — NVLAP® — National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS — **NVLAP LAB CODE 200116-0**

NEMKO USA, INC. - SAN DIEGO EMC DIVISION

NVLAP Code	*Designation / Description*
Immunity Test Methods:	
12/I01	IEC 61000-4-2, Ed. 2.1 (2001), A1, A2; EN 61000-4-2: Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3, Ed. 2.0 (2002-03); EN 61000-4-3 (2002): Radiated Radio-Frequency Electromagnetic Field Immunity Test
12/I03	IEC 61000-4-4(1995), A1(2000), A2(2001); EN 61000-4-4: Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5, Ed. 1.1 (2001-04); EN 61000-4-5: Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test
12/I05	IEC 61000-4-6, Ed. 2.0 (2003-05); EN 61000-4-6: Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
12/I06	IEC 61000-4-8, Ed. 1.1 (2001); EN 61000-4-8: Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test
12/I07	IEC 61000-4-11, Ed. 1.1 (2001-03); EN 61000-4-11: Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

December 31, 2005
Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)