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PART 15.247, SUBPART C

DECLARATION OF CONFORMANCE PROCEDURES
TEST REPORT

For The **MEPS RFID System**

Model: **MEPS 020 0001**

PREPARED FOR:

MEPS Real-Time, Inc.
13651 W. Bay Shore Dr.
Traverse City, MI 49684

PREPARED ON 11-11-2004

REPORT NUMBER 2004 0110852-FCC

PROJECT NUMBER: 2004 0110852-FCC

DOCUMENT HISTORY

REVISION	DATE	COMMENTS
-	11-11-2004	Prepared By: Alan LAUDANI
-	11-11-2004	Initial Release: R. L. Hill
	12-16-2004	Revised Alan LAUDANI

NOTE: Nemko USA, Inc. hereby makes the following statements so as to conform to Chapter 10 (Test Reports) Requirements of ANSI C63.4 (1992) "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 November 10, 2004. Testing was performed on the unit described in this report on November 10, 2004 to November 12, 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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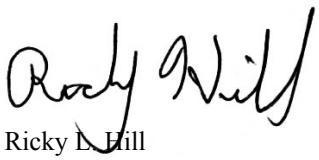
CERTIFICATION

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. As a result, the FCC has placed Nemko USA Inc. on its list of EMC laboratories approved to perform Declaration of Conformity (DOC) procedure testing.

The RFI testing, test data collection and test data evaluation were accomplished in accordance with the ANSI C63.4-1992 Standard, and in accordance with the applicable sections of the FCC rules (47 CFR Parts 2 and 18)." digital devices. 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: MEPS Real-Time, Inc.
13651 W. Bay Shore Dr.
Traverse City, MI 49684
(760) 918-9908
(760) 918-2219- fax

CONTACT: Jim Caputo

DATE (S) OF TEST: November 10, 2004 to November 12, 2004

EQUIPMENT UNDER TEST (EUT): MEPS RFID System

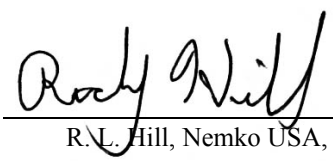
Model: MEPS 020 0001

Condition Upon Receipt: Suitable for Test

TEST SPECIFICATION: FCC, Part 18, Subpart C

1.2. Test Summary

Specification	*Frequency Range*	*Compliance Status*
FCC, CFR 47, Section 15.207 Conducted Emissions	0.45 MHz - 30.00 MHz	PASS
FCC, CFR 47, Section 15.209 Radiated Emissions	30 MHz - 5000 MHz	PASS
FCC, CFR 47, Section 15.247 Radiated Emissions	2401—24750 MHz	PASS
FCC, CFR 47, Section 15.247 Conducted Emissions	1000—25000 MHz	PASS
FCC, CFR 47, Section 15.247 Conducted Output Power	2401—2475 MHz	PASS

Test Supervisor: 
R.L. Hill, Nemko USA, Inc.

Refer to the test results section for further details.

2.SYSTEM CONFIGURATION

2.1. System Components and Power Cables

DEVICE	MANUFACTURER MODEL # SERIAL #	POWER CABLE
EUT - MEPS RFID System	MEPS Real-Time, Inc. Model #MEPS 020 0001 SN: N/A	3 wire –1 m
Power Suppy	Condor Model #HA5 Serial # n/a	3 wire –1 m
RF Switch Mutiplexor Antenna Array	MEPS Real-Time, Inc. Model #MEPS 020 0001 Serial # N/A	Coax—1 m
Computer	Compaq Laptop Model #Armada E500 Serial# 3J0CDN04T0G8S88	2 Wire—1m
Computer Power Supply	Compaq Model # PPP002D Serial# 386315-001	3 wire –1 m

2.2. Device Interconnection and I/O Cables

CONNECTION	I/O CABLE	
EUT To Laptop	RS232	Unshielded
EUT to Power Supply	Twisted Pair	
EUT to Mutiplexor Control Cable	DB25 – DB15	Unshielded
EUT to Mutiplexor	Coax	Shielded

2.3. Design Modifications for Compliance

The MEPS 020 0001 is a MEPS RFID System. Its function is identify products containing RFID tags. The EUT was exercised at individual frequencies per 15.31(m) for conductive and radiated emission tests (15.247 and 15.209) and at frequency hopping mode for the BandEdge plot and conductive spurious emissions (15.207).

2.4. Design Modifications for Compliance

Device: MEPS RFID System
Model: MEPS 020 0001

The following design modifications were made to the EUT during testing.

No design modifications were made to the EUT during testing.

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 (1987), CISPR 16 and 22 (1985) and ANSI C63.4-1992 documents. The OATS normalized site attenuation characteristics are verified for compliance every year and the entire measurement facility was last registered with the Federal Communications Commission on December 2, 2003.

4. DESCRIPTION OF TESTING METHODS

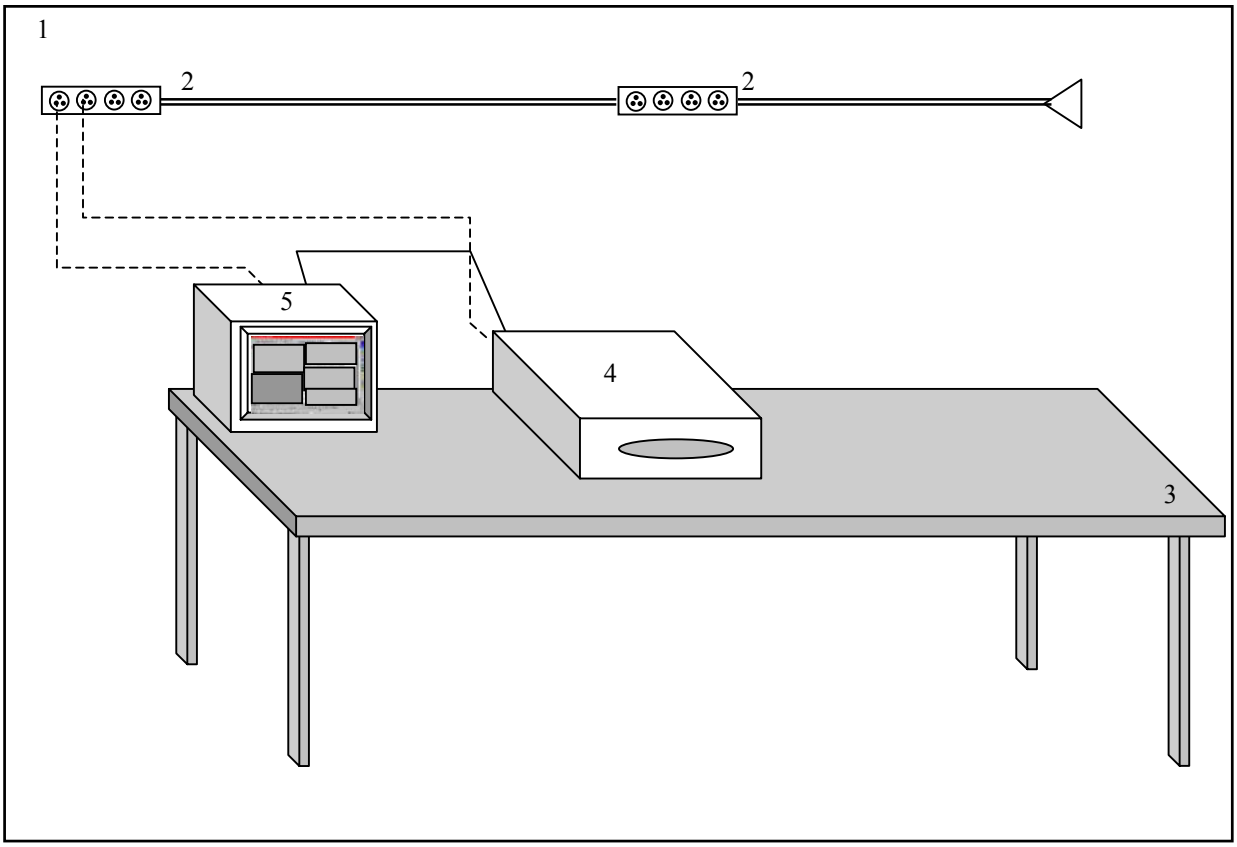
4.1. Introduction

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 C63.4-1992, 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.

Figure 1. General EUT Test Setup Diagram



NOT TO SCALE

CONFIGURATION LEGEND

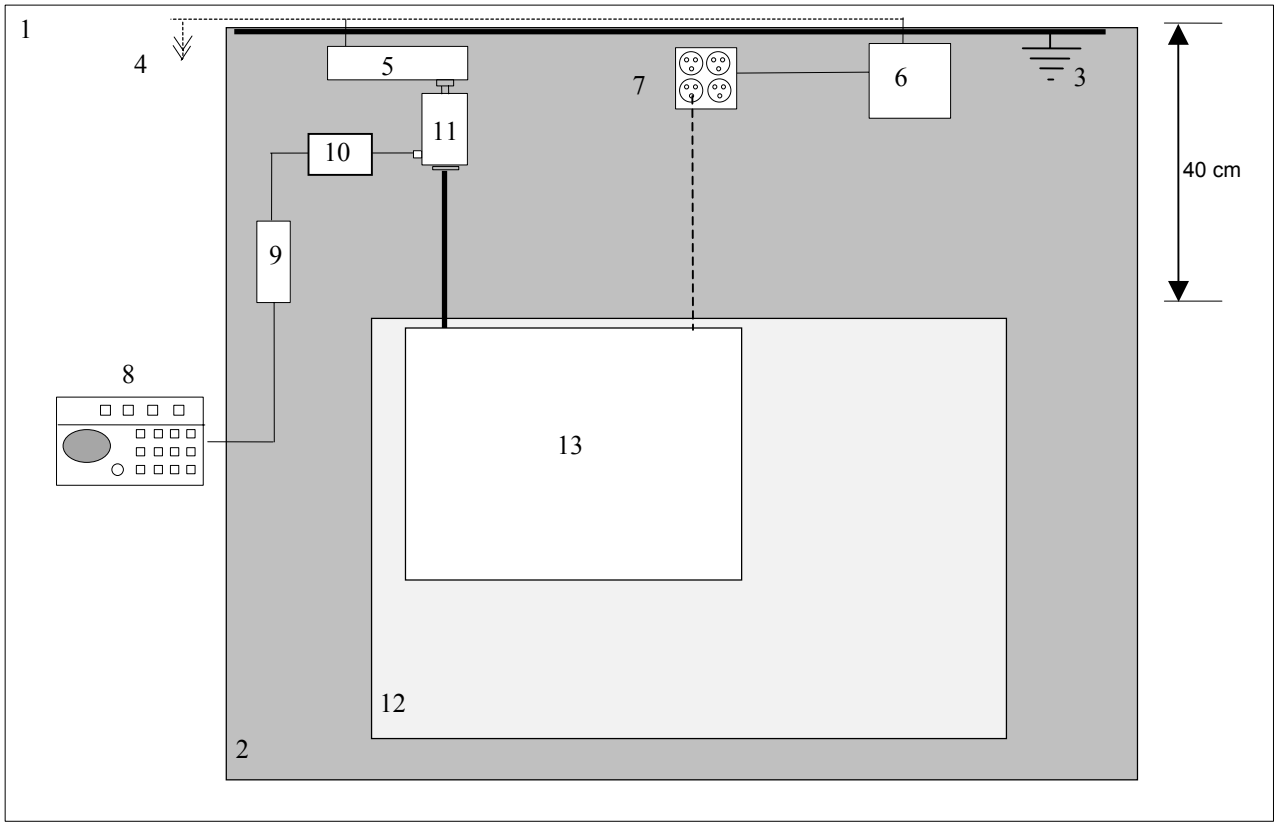
1. Test Laboratory
2. AC Power for Peripheral Devices (120V, 60 cycles, single phase)
3. Non-Conducting tables 80 cm above ground plane
4. EUT: MEPS RFID System

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.

Figure 2. Conducted Emissions Test Setup Diagram



NOT TO SCALE

CONFIGURATION LEGEND

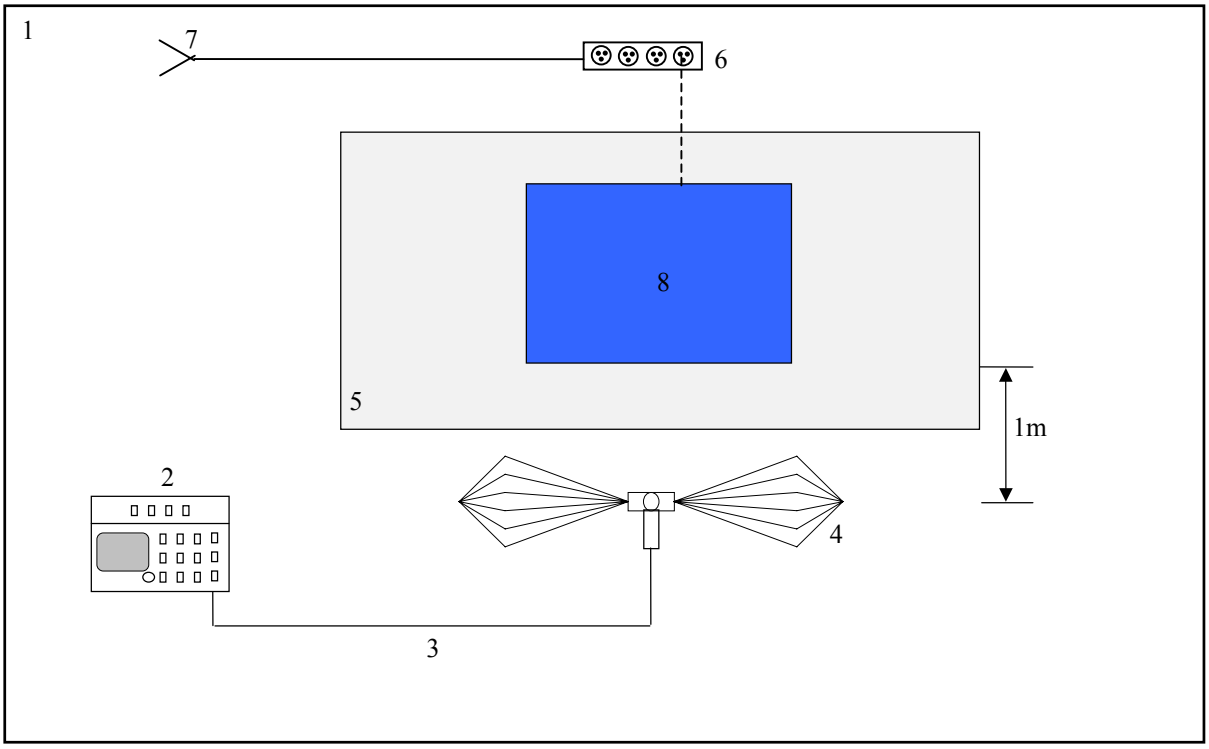
1. Test Laboratory (6 X 6 meters)
2. Ground Plane (15 square meters)
3. Vertical Conducting Wall (Grounded through Ground Plane via 10' ground rod)
4. AC Power for Devices
5. Power Line Filter, Lindgren, 120 dB, 30 amp
6. Line Impedance Stabilization Network (LISN) for peripheral devices
7. Power Distribution Box for peripheral devices
8. Spectrum Analyzer with Quasi-Peak Adapter
9. High Pass Filter
10. Transient Limiter
11. LISN for EUT
12. Non-Conducting table 80 cm above ground plane
13. EUT: MEPS RFID System and Associated System

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.

Figure 3. Frequency ID of Radiated Emissions Test Setup Diagram



NOT TO SCALE

CONFIGURATION LEGEND

1. Test Laboratory
2. Spectrum Analyzer with Quasi-Peak Adapter
3. Coax interconnect from Antenna to Spectrum Analyzer
4. Receive Antenna (basic relative position)
5. Non-Conducting table 80 cm above ground plane
6. Power strip for EUT and peripherals
7. AC power for devices
8. EUTMEPS RFID System and Associated System

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.

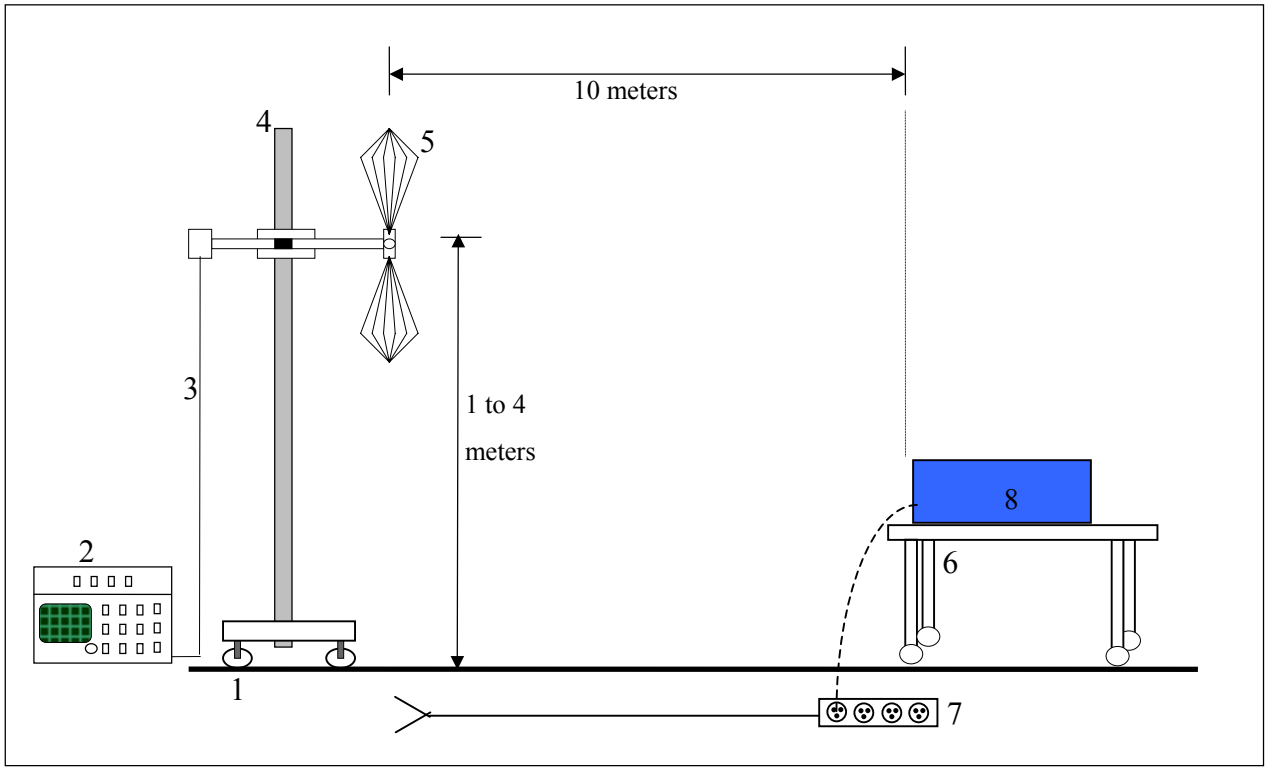
The numerical results that are applied to the emissions limits are arrived at by the following method:
Example: A=RR+CL+AF
A = Amplitude dBuV/M
RR = Receiver Reading dBuV
CL = cable loss dB
AF = antenna factor dBm-1

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.

Figure 4. Radiated Emissions Test Setup Diagram



NOT TO SCALE

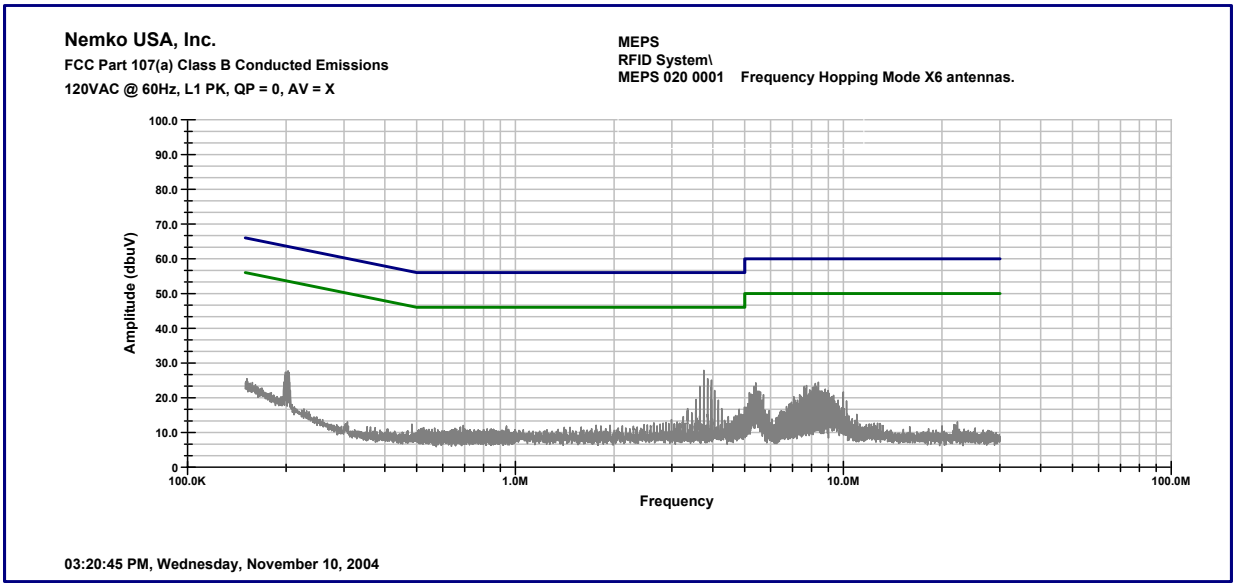
CONFIGURATION LEGEND

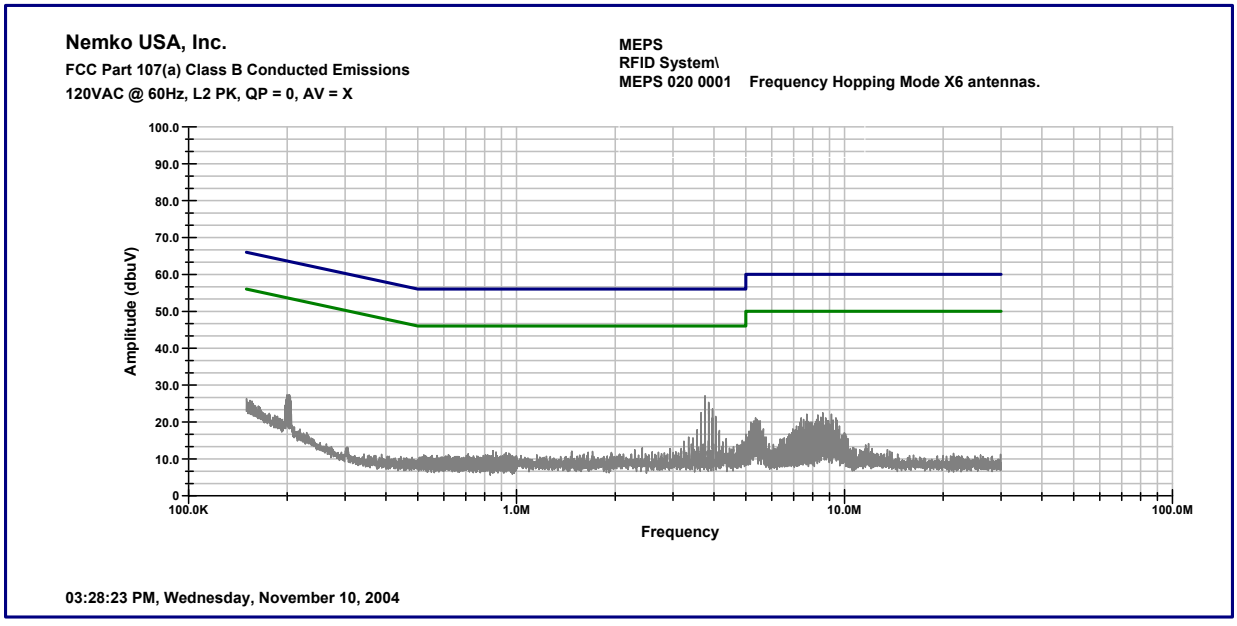
1. Ground plane (11 X 17 meters)
2. Spectrum Analyzer with Quasi-Peak Adapter
3. Coax interconnect from Receive Antenna to Spectrum Analyzer
4. Antenna Mast with motorized mounting assembly
5. Receive Antenna (basic relative position)
6. Non-Conducting table 80 cm above ground plane
7. AC power for devices
8. EUT: MEPS RFID Systemand Associated System

5. TEST RESULTS

5.1. Conducted Emissions Test Data

Client	MEPS Real-Time, Inc.	Temperature	74	deg F
PAN #	24-852-EMC	Relative Humidity	55	%
EUT Name	MEPS RFID System	Barometric Pressure	30.07	Hg
EUT Model	MEPS 020 0001	Test Location	Shielded Room 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	A. Laudani	
Basic Standard	Sec. 15.207	Date	Nov. 11, 2004	





Conducted Emissions Test Equipment

Client	MEPS Real-Time, Inc.	EUT Name	MEPS RFID System
PAN #	24-852-EMC	EUT Model	MEPS 020 0001

Device Type	*Model #*	*Asset #*	*Used*	*Cal Done*	*Cal Due*
Filter / Limiter					
High Pass Filter, Solar	7801-50	542	X	2-27-04	2-27-05
Transient Limiter, HP	11947A	681	X	5-13-04	5-13-05
Transducer					
V-Network LISN, Solar	9348-50-R-24-BNC	384	X	8-12-04	8-12-05
V-Network LISN, Solar	9348-50-R-24-BNC	395	X	8-12-04	8-12-05
Spectrum Analyzer / Receiver					
Quasi-Peak Adapter, HP	85650A	438	X	1-19-04	1-19-05
Spectrum Analyzer Display, HP	85662A	107	X	11-22-03	11-22-04
Spectrum Analyzer, HP	8568B	422	X	11-22-03	11-22-04

5.2. Radiated Emissions Test Data

Radiated Emissions 30 MHz to 1 GHz., No Other Emissions within 20 dB of the Limit reported.

NEMKO USA, Inc.

San Diego Headquarters:
11696 Sorrento Valley Rd.
San Diego, CA 92121
Tel: (858) 755-5525
Fax: (858) 452-1810

Radiated Emissions Data

Complete	YES			Job # :	24-852-EMC
Preliminary				Page	1
Client Name :	MEPS Realtime				
EUT Name :	MEPS RFID System				
EUT Model # :	Meps 020 0001				
EUT Part # :					
EUT Serial # :					
EUT Config. :	Frequency Hopping				
Specification :	CFR47 Part 15, Subpart B, Class B			Reference :	
Rod. Ant. #:	NA	Temp. (deg. C) :	14	Date :	11/11/2004
Bicon Ant.#:	116	Humidity (%) :	88	Time :	
Log Ant.#:	112	EUT Voltage :	120 Vac	Staff :	A. Laudani
DRG Ant. #	NA	EUT Frequency :	60Hz	Photo ID:	
Dipole Ant.#:	NA	Phase:	1	Peak Bandwidth:	100 kHz
Cable#:	NOATS	Location:	NOATS	Video Bandwidth	100 kHz
Preamp#:	826	Distance:	3m		
Spec An.#:	674				
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
40	V		51.7	15.6	1.0	32.6	35.7	40.0	-4.3	Pass	
56.67	V		36.5	10.2	1.2	32.5	15.4	40.0	-24.6	Pass	
80	H		40.2	6.8	1.4	32.4	16.0	40.0	-24.0	Pass	
114	V		44.8	12.1	1.8	32.5	26.2	43.5	-17.3	Pass	
147.3	V		47	15.2	2.0	32.7	31.5	43.5	-12.0	Pass	
456	V		54.9	15.9	4.2	32.7	42.3	46.0	-3.7	Pass	

Radiated Emissions 1 GHz to 25 GHz, No other Emissions found.

NEMKO USA, Inc.

San Diego Headquarters:
11696 Sorrento Valley Rd.
San Diego, CA 92121
Tel: (858) 755-5525
Fax: (858) 452-1810

Radiated Emissions Data

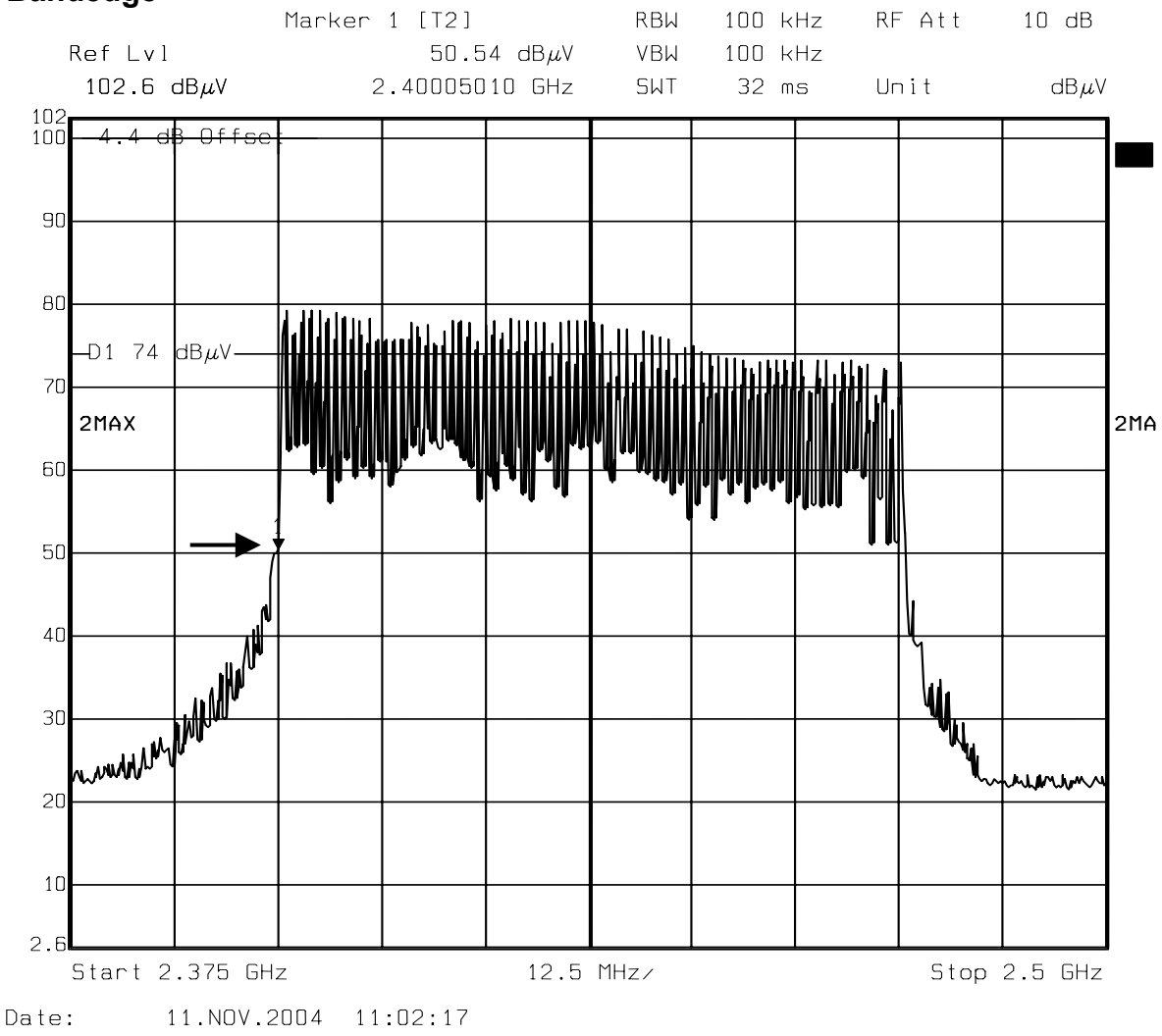
Complete: Yes
Preliminary:
Job # : 24-852-EMC Test # : 3
Page 1 of 1

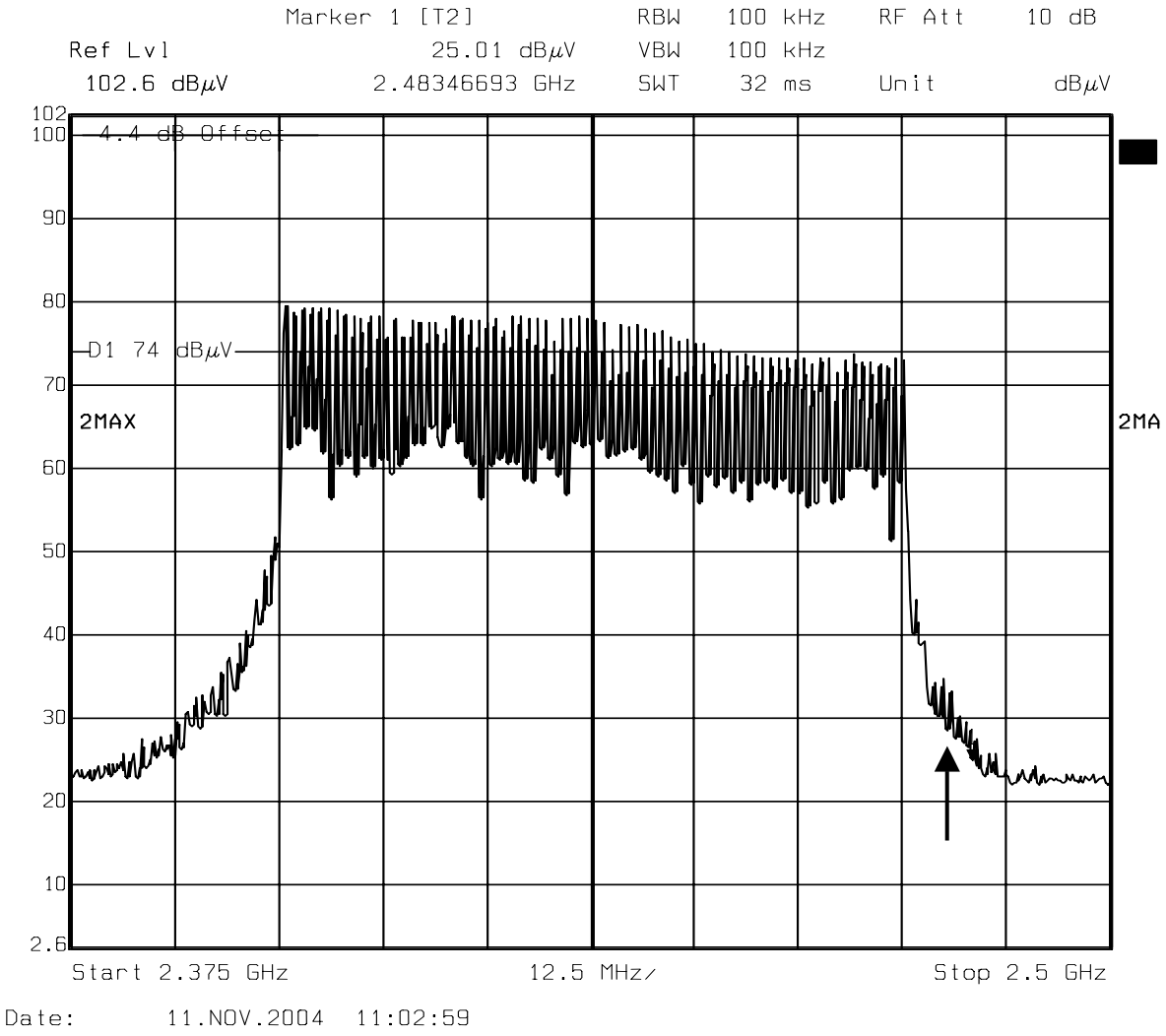
Client Name : MEPS Realtime
EUT Name : MEPS RFID System
EUT Model # : Meps 020 0001
EUT Part # :
EUT Serial # :
EUT Config. : Transmit

Specification : FCC Part 15.247 15.205 Reference :
Rod. Ant. #: NA Temp. (deg. C) : 12 Date : 12/8/2004
Bicon Ant.#: NA Humidity (%) : 60 Time :
Log Ant.#: NA EUT Voltage : 120 Vac Staff : A. Laudani
DRG Ant. # 529 EUT Frequency : 60 Hz Photo ID:
Dipole Ant.#: NA Phase: 1 Peak Hold Measurements
Cable#: 60ft Location: NOATS Peak Bandwidth: 1MHz for peak & ave
Preamp#: 40db Distance: 3m Video Bandwidth 1 MHz For Peak
Spec An.#: 835 Video Bandwidth 10 Hz For Ave
QP #: NA
PreSelect#: NA

Meas. Freq. (MHz)	Vertical (dBuV) pk	Vertical (dBuV) av	Horizontal (dBuV) pk	Horizontal (dBuV) av	CF (db)	Max Level (dBuV/m) pk	Max Level (dBuV/m) av	Spec. Limit (dBuV/m) pk	Spec. Limit (dBuV/m) av	Margin dB pk	Margin dB av	EUT Rotation	Ant. Height	Pass Fail Unc.	Comment
2400	51.6	35.4	49.2	29.4	-4.4	47.2	31	74.0	54.0	-26.8	-23.0	180	1.1	Pass	Bandedge
															Lowest channel 1
4802	48.8	42.5	46.1	37.2	3.4	52.2	45.9	74.0	54.0	-21.8	-8.1	180	1.1	Pass	
7203	38.6	32.7	35.0	31.3	8.5	47.1	41.2	74.0	54.0	-26.9	-12.8	180	1.1	Pass	
															Mid channel 37
4874	44.7	38.7	40.7	33.4	3.4	48.1	42.1	74.0	54.0	-25.9	-11.9	180	1.1	Pass	
7311	42.5	38.9	35.9	35.1	8.5	51	47.4	74.0	54.0	-23.0	-6.6	180	1.1	Pass	
															Highest Channel 75
2483.5	48.6	28.6	47.5	26.9	-4.4	44.2	24.2	74.0	54.0	-29.8	-29.8	180	1.1	Pass	Bandedge
4950	49.3	39.8	47.7	35.4	-4.4	44.9	35.4	74.0	54.0	-29.1	-18.6	180	1.1	Pass	
7425	40.2	32.5	34.5	32.0	3.4	43.6	35.9	74.0	54.0	-30.4	-18.1	180	1.1	Pass	

Bandedge


Marker 1 [T2]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
50.54 dBµV
VBW 100 kHz
102.6 dBµV
2.40005010 GHz
SWT 32 ms
Unit dBµV
102
100
4.4 dB Offset
90
80
D1 74 dBµV
70
2MAX
2MA
60
50
40
30
20
10
2.6
Start 2.375 GHz
12.5 MHz/
Stop 2.5 GHz
Date: 11.NOV.2004 11:02:17


Marker 1 [T2]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
25.01 dBµV
VBW 100 kHz
102.6 dBµV
2.48346693 GHz
SWT 32 ms
Unit dBµV
102
100
4.4 dB Offset
90
80
D1 74 dBµV
70
2MAX
2MA
60
50
40
30
20
10
2.6
Start 2.375 GHz
12.5 MHz/
Stop 2.5 GHz
Date: 11.NOV.2004 11:02:59

Radiated Emissions Test Equipment

Client	**MEPS Real-Time, Inc.**	EUT Name	**MEPS RFID System**
PAN #	**24-852-EMC**	EUT Model	**MEPS 020 0001**

Device Type	*Model #*	*MFG*	*Asset #*	*SN*	*Cal Due*
OATS #1 (North)					
Spectrum Analyzer	1088.3494.30	R & S	835	830320/002	12/11/04
Antenna, Ridged Guide	3115	EMCO	529	2505	3/30/04
Antenna, Ridged Guide	3116	EMCO	625	9611-2325	1/12/05
Preamplifier	40 dB	Miteq	171	NA	NCR
4 GHz High Pass Filter	9SH10-4000	K&L	NA	55	NCR
Spectrum Analyzer	8568B	HP	422	2517A01757	3-22-05
Preamplifier	ZHL-2	MINICIRCUITS	635	091887-21	10-22-05
Antenna, Bi-conical	3110	EMCO	116	1287	8-30-05
Antenna, Log Periodic	3146	EMCO	112	9101-2988	10-28-05
Quasi-peak Detector	85650A	HP	421	3145A01672	9-22-05

5.3. Conducted Output Power

Limit = 1 Watt (30 dBm) EUT Complies

26.97 dBm + 2.5 dBi = 29.47 dBm < 1 W

Conducted Output Power from RF module into Multiplexor with voltage variation +/- 15% of Nominal Voltage per 15.31(e)

Frequency	Output Power (dBm)		
	102 Vac	120 Vac	138 Vac
2401 MHz	27.29	27.28	27.29
2437 MHz	27.12	27.13	27.10
2475 MHz	27.05	27.06	27.06

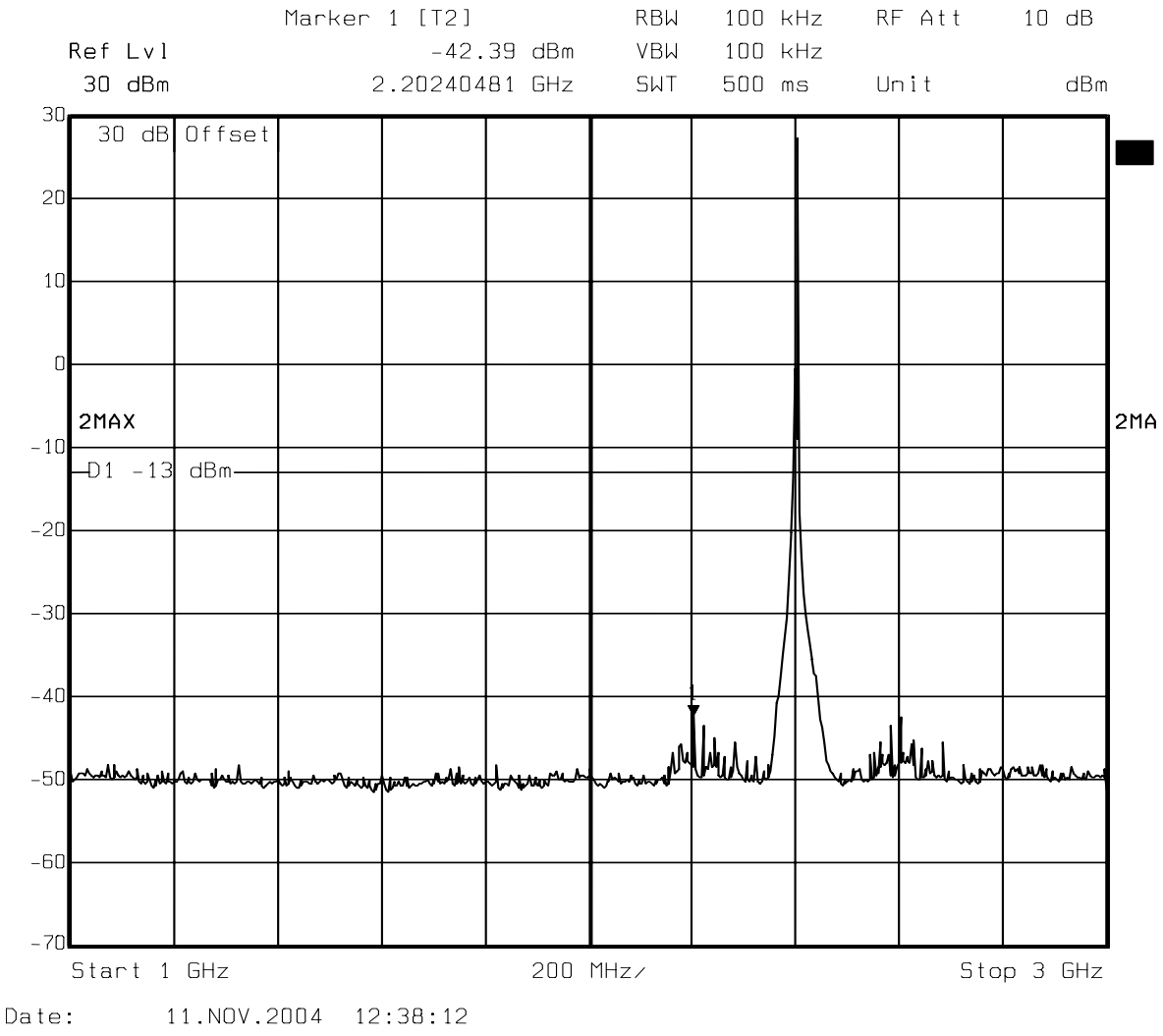
Conducted Output Power at Antenna Terminals

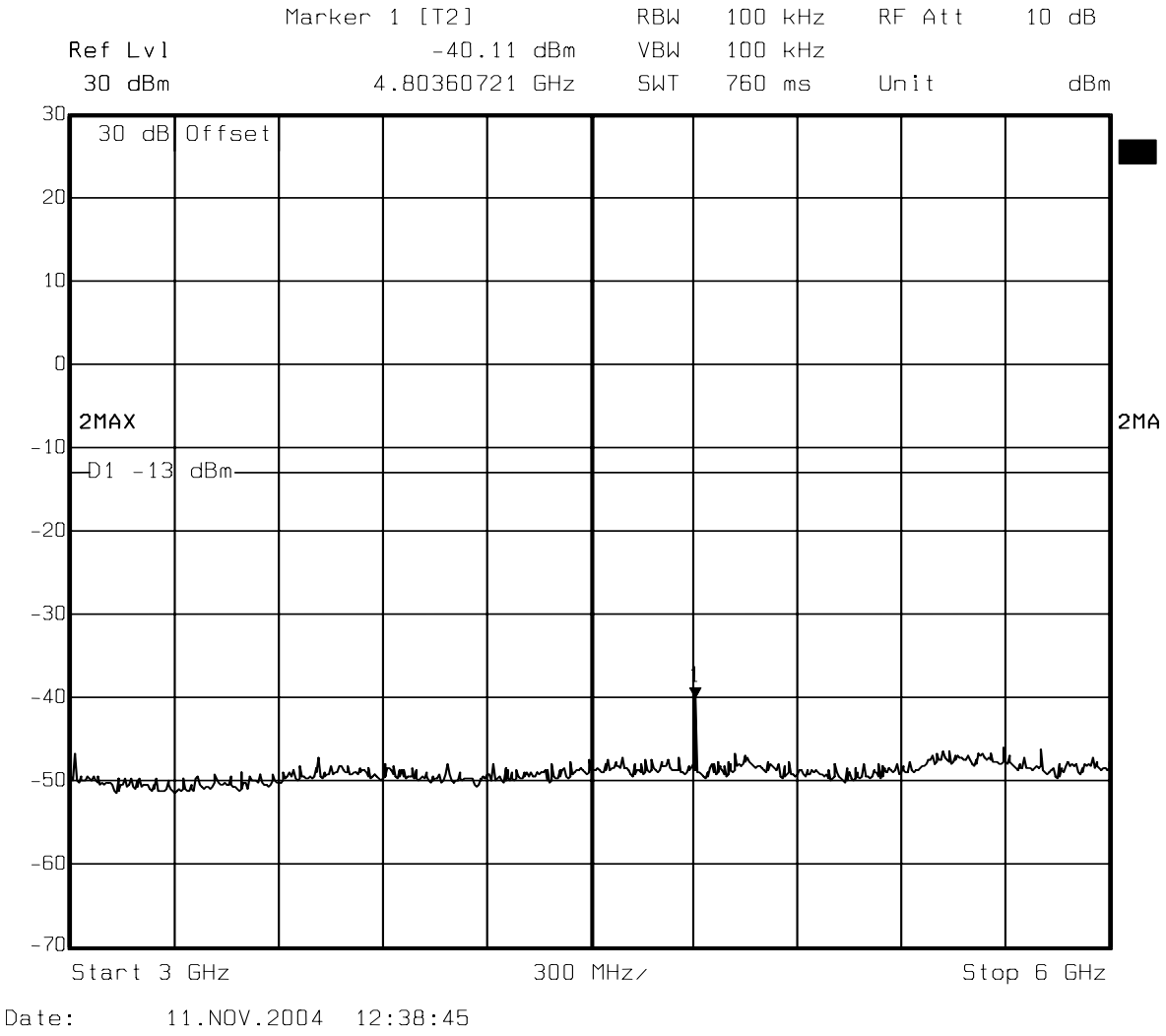
Frequency	Output Power (dBm)					
	Ant. 1	Ant. 2	Ant. 3	Ant. 4	Ant. 5	Ant. 6
2401 MHz	26.85	26.78	26.85	**26.97**	26.85	26.79
2437 MHz	26.57	26.52	26.46	26.74	26.78	26.59
2475 MHz	26.54	26.47	26.53	26.66	26.66	26.53

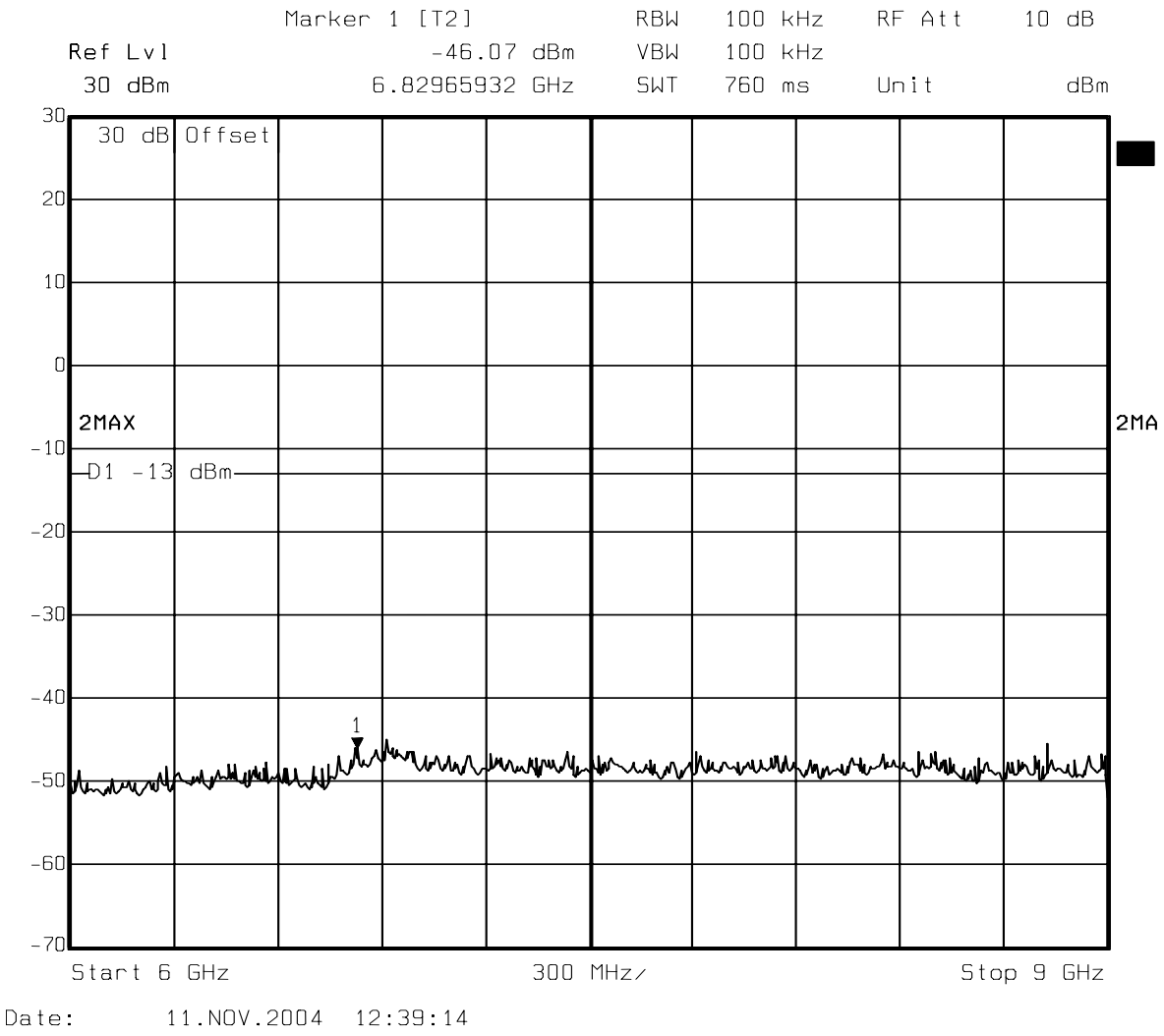
Conductive measurements – Peak Hold at RBW = 1 MHz.

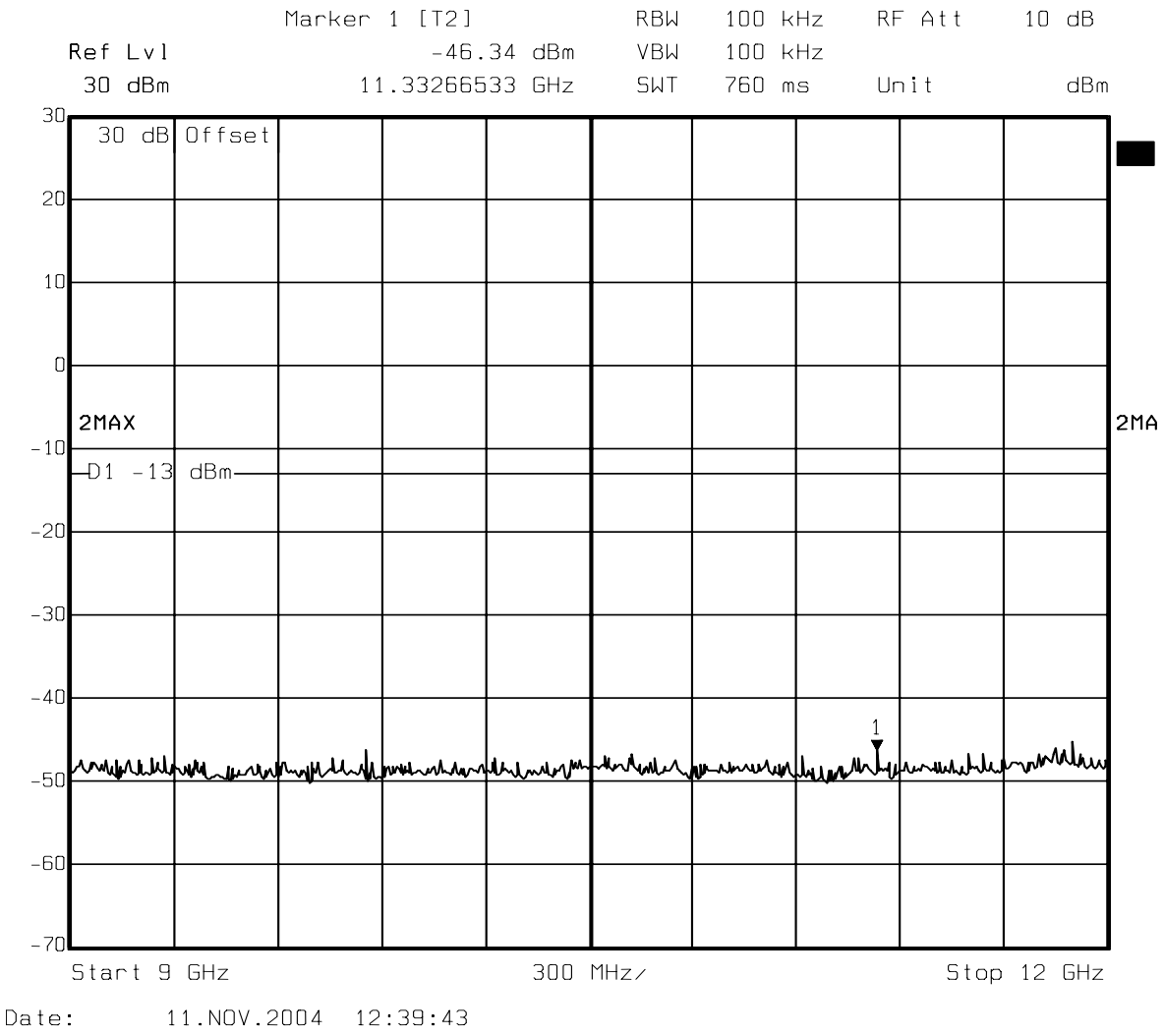
5.4. Conducted Spurious Emissions

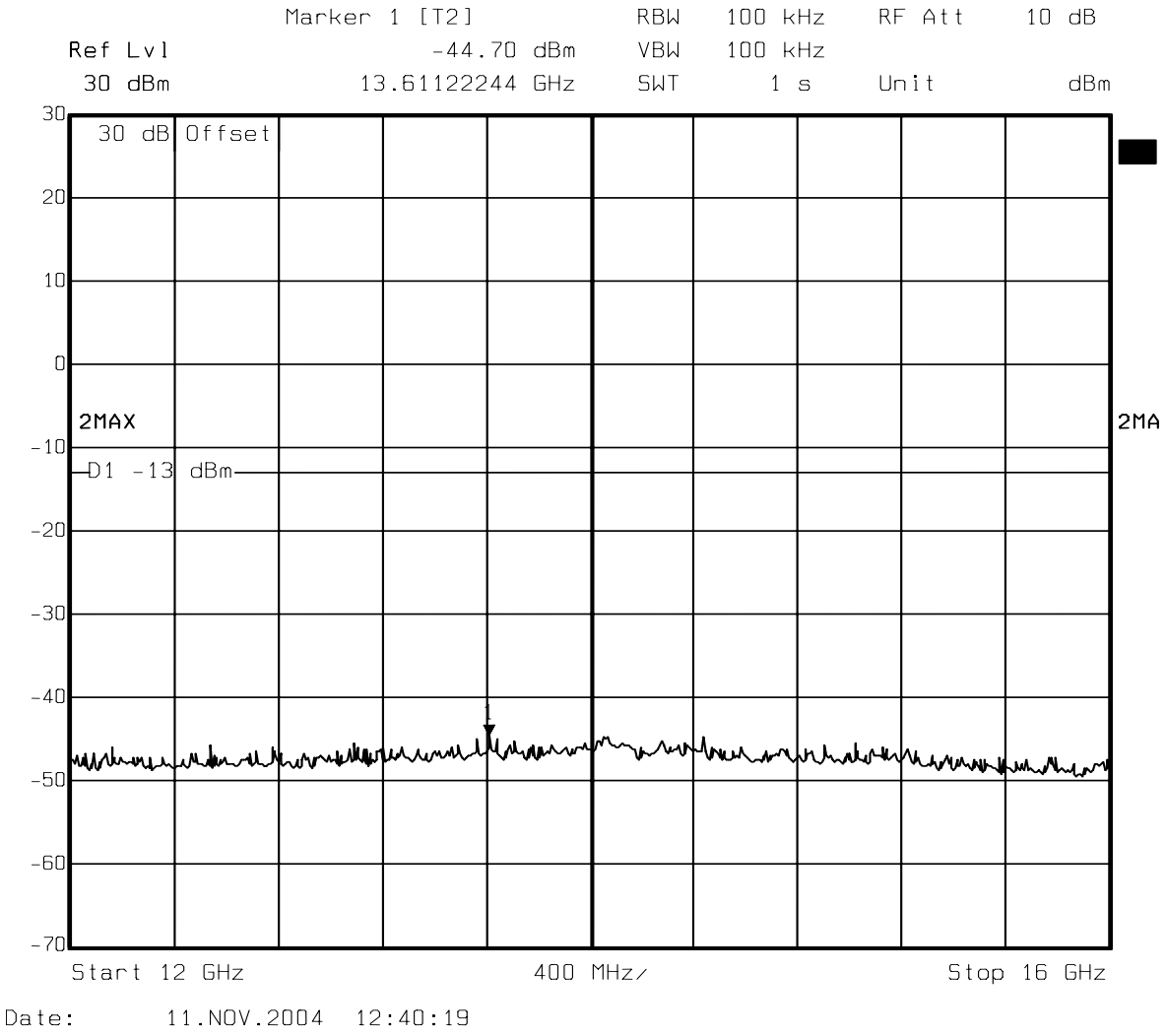
Low Channel

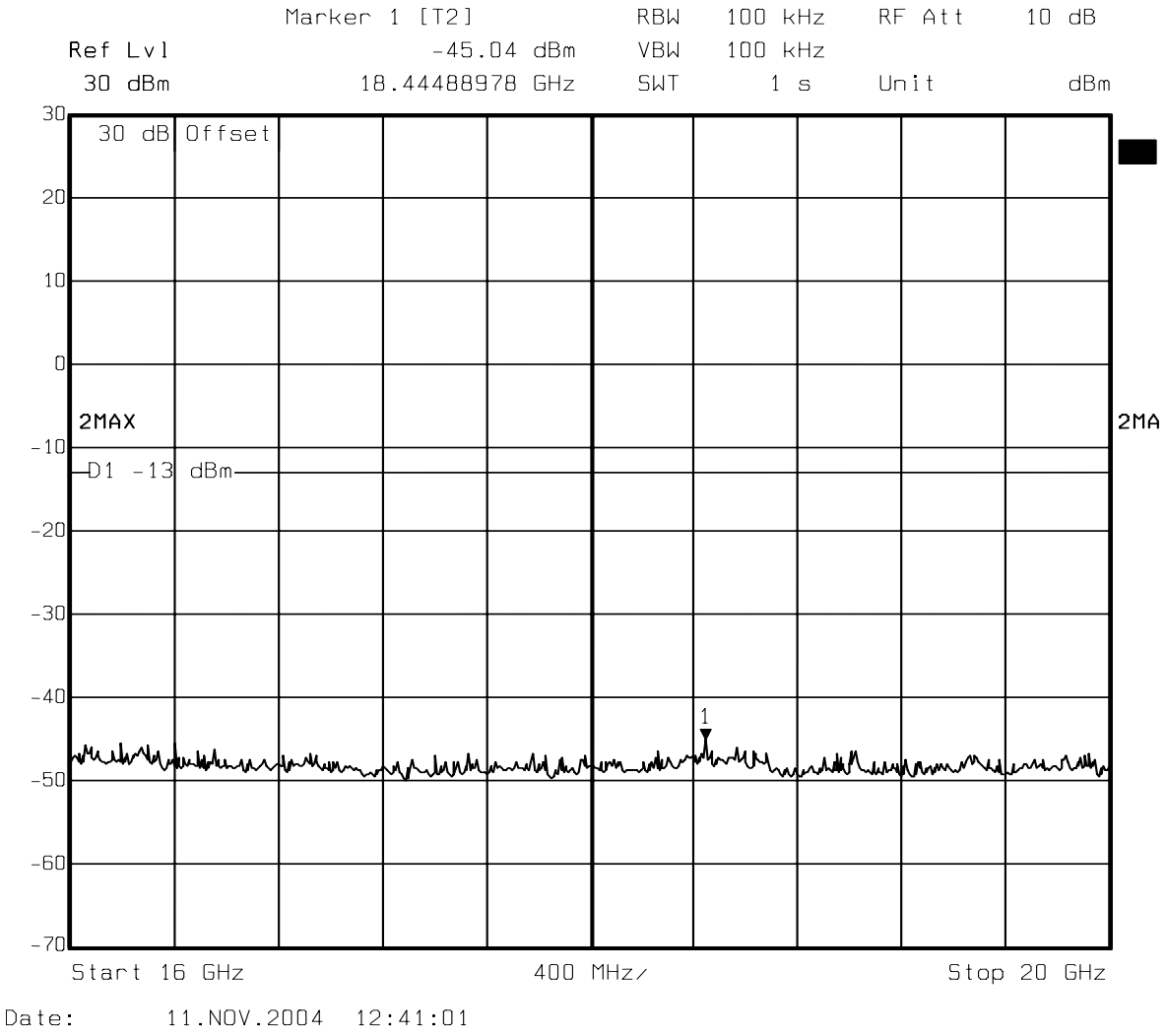


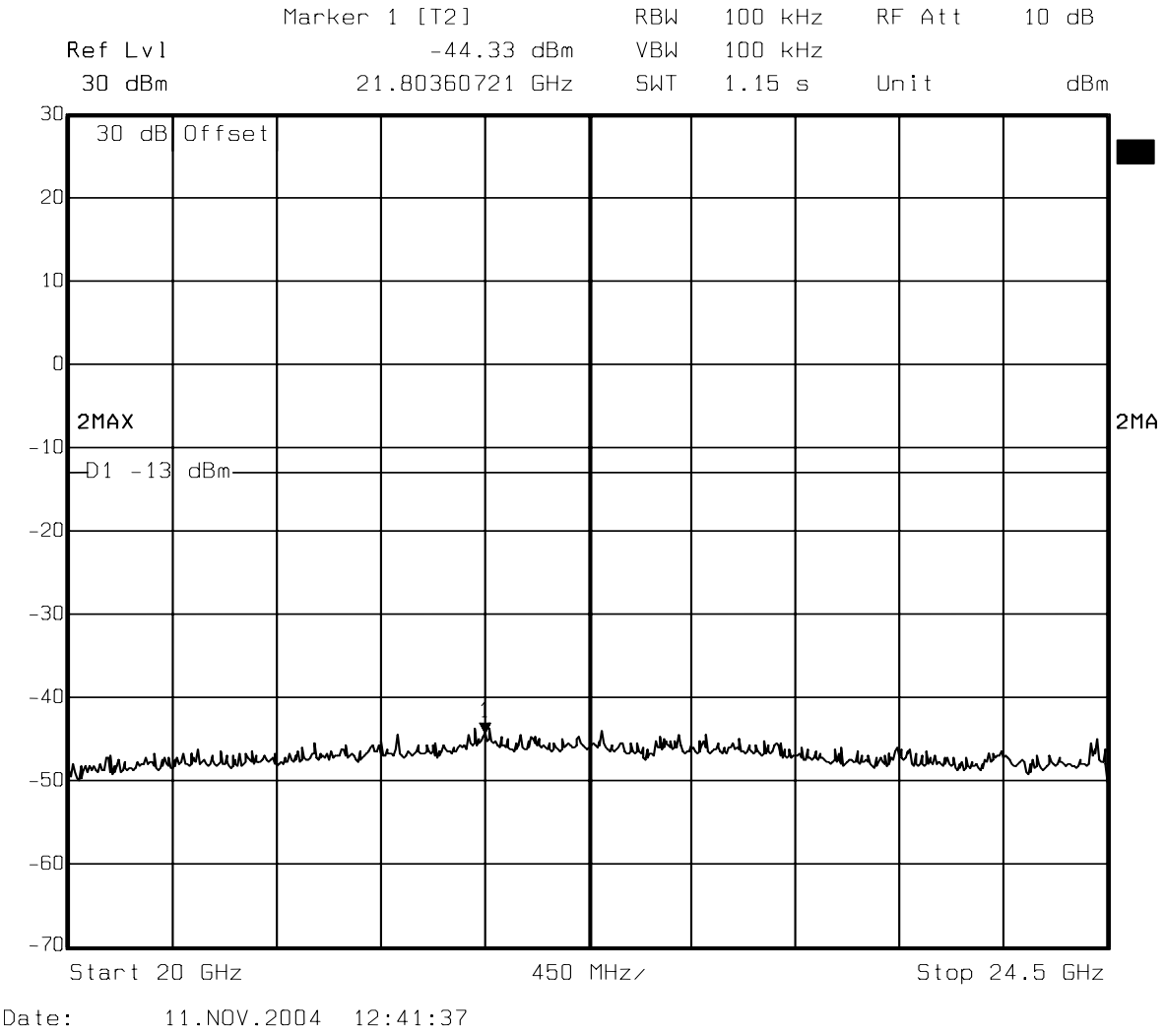

Marker 1 [T2]
-40.11 dBm
4.80360721 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 3 GHz
300 MHz/
Stop 6 GHz
Date: 11.NOV.2004 12:38:45


Marker 1 [T2]
-46.07 dBm
6.82965932 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 6 GHz
300 MHz/
Stop 9 GHz
Date: 11.NOV.2004 12:39:14

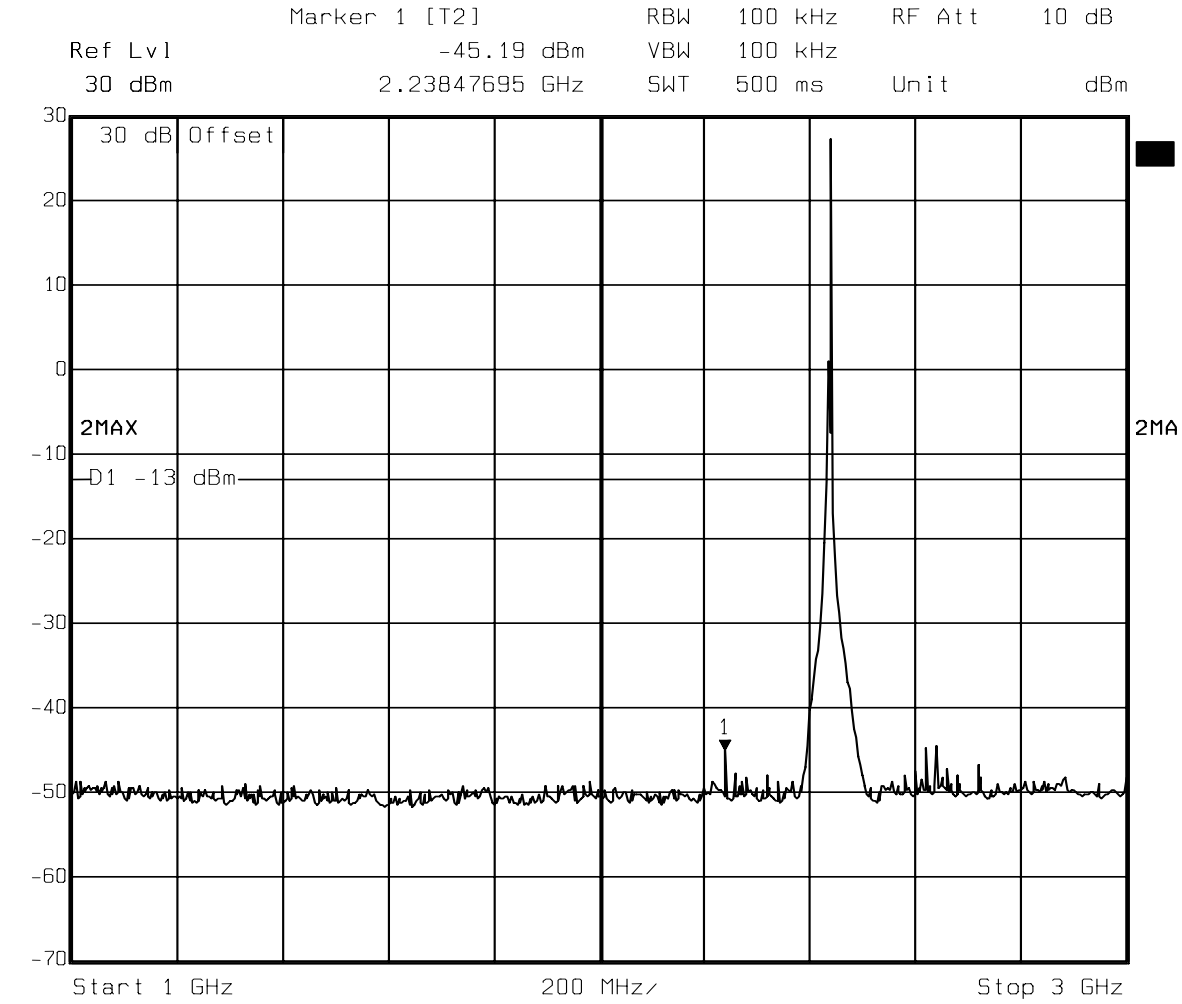

Marker 1 [T2]
-46.34 dBm
11.33266533 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 9 GHz
300 MHz/
Stop 12 GHz
Date: 11.NOV.2004 12:39:43

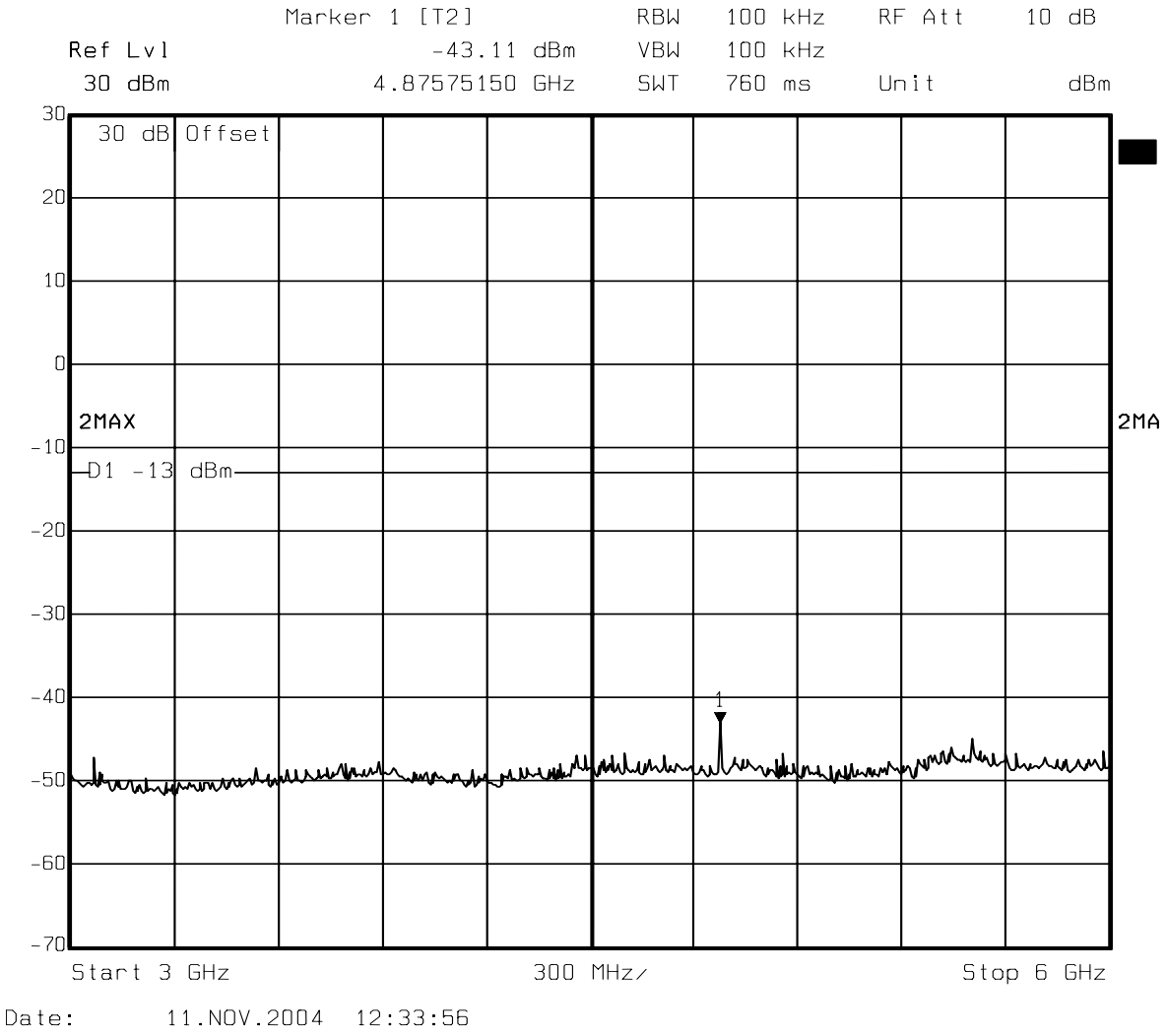

Marker 1 [T2]
-44.70 dBm
13.61122244 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 12 GHz
400 MHz/
Stop 16 GHz
Date: 11.NOV.2004 12:40:19

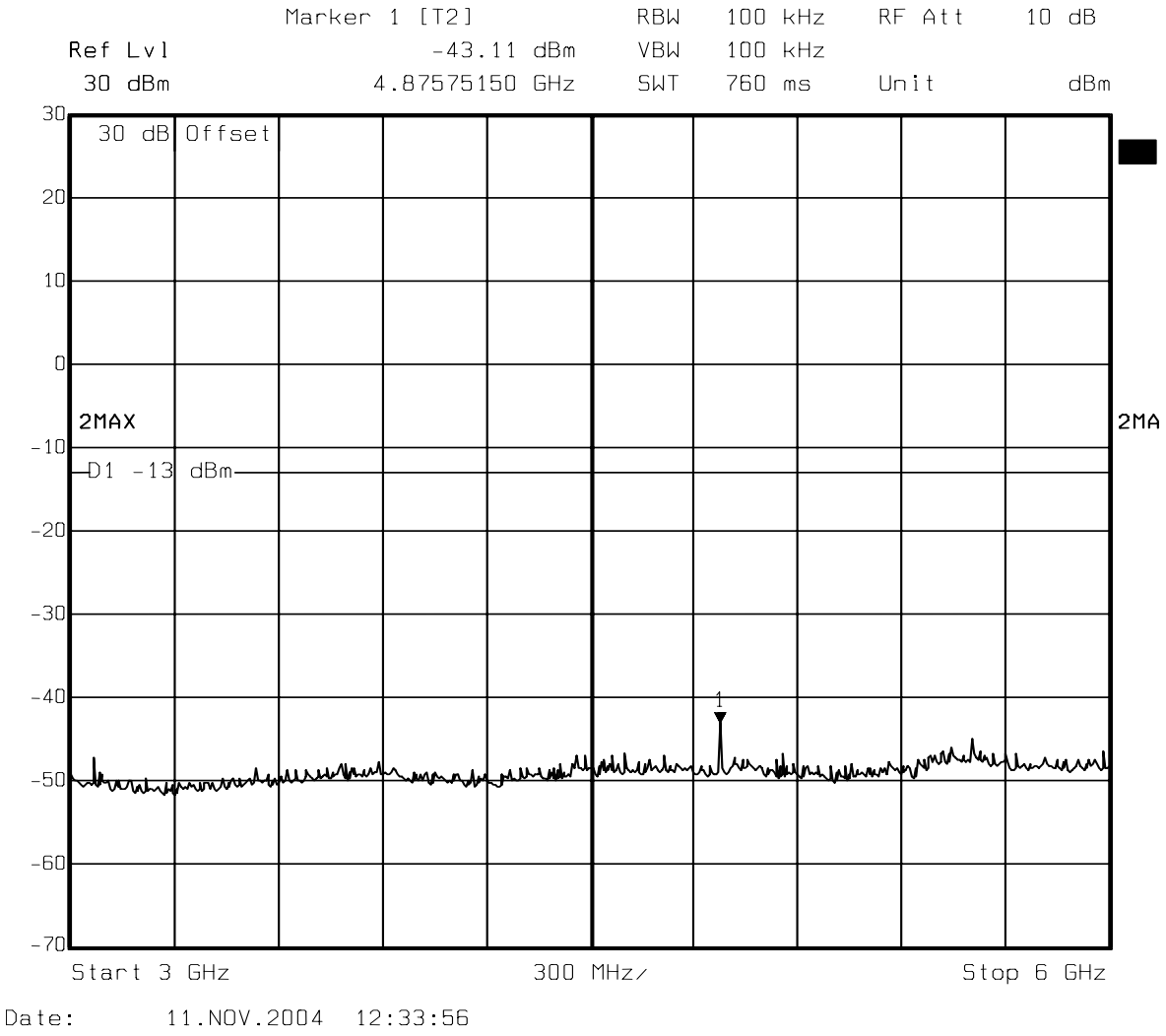

Marker 1 [T2]
-45.04 dBm
18.44488978 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 16 GHz
400 MHz/
Stop 20 GHz
Date: 11.NOV.2004 12:41:01

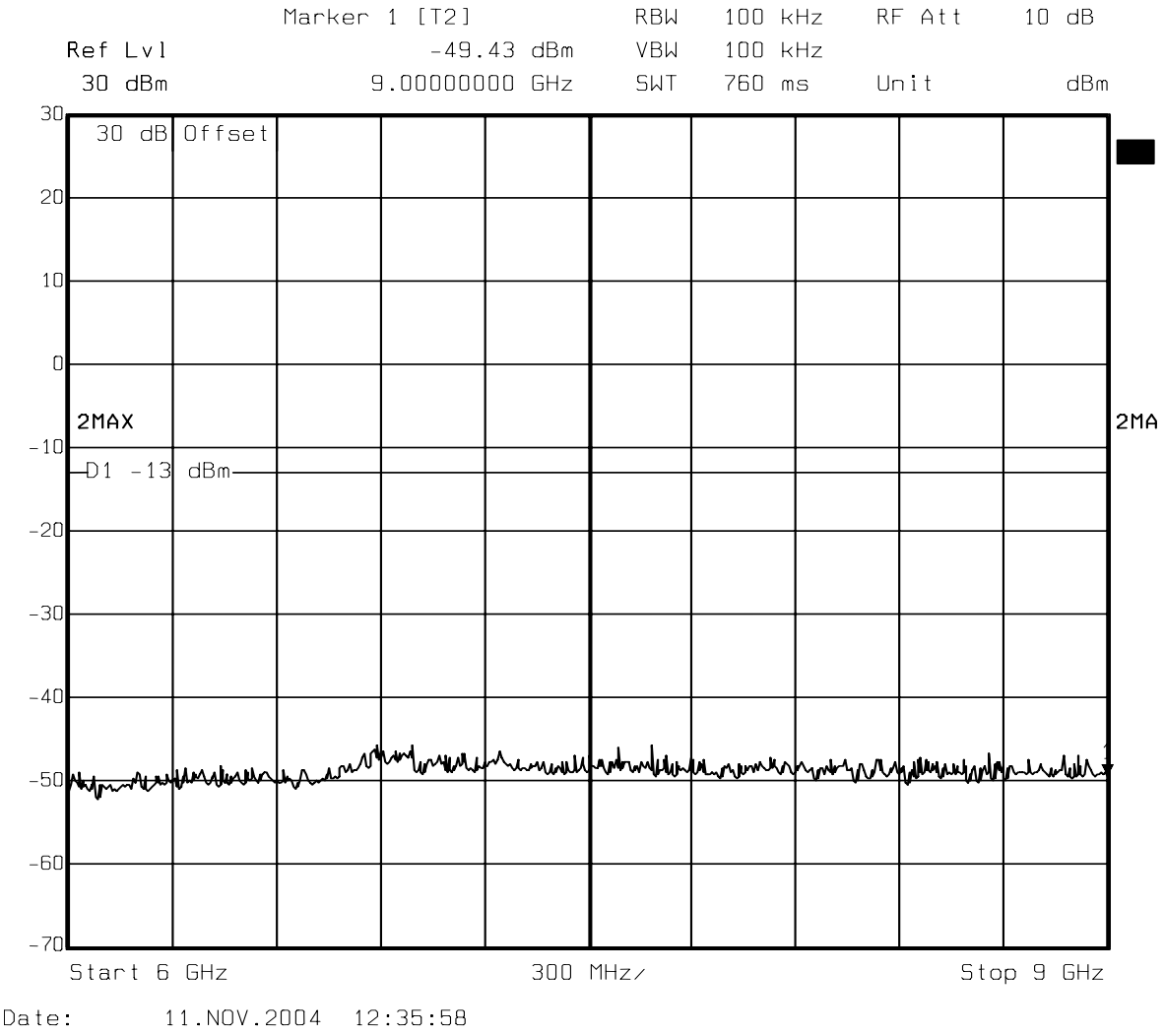

Marker 1 [T2]
-44.33 dBm
21.80360721 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1.15 s
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 20 GHz
450 MHz/
Stop 24.5 GHz
Date: 11.NOV.2004 12:41:37

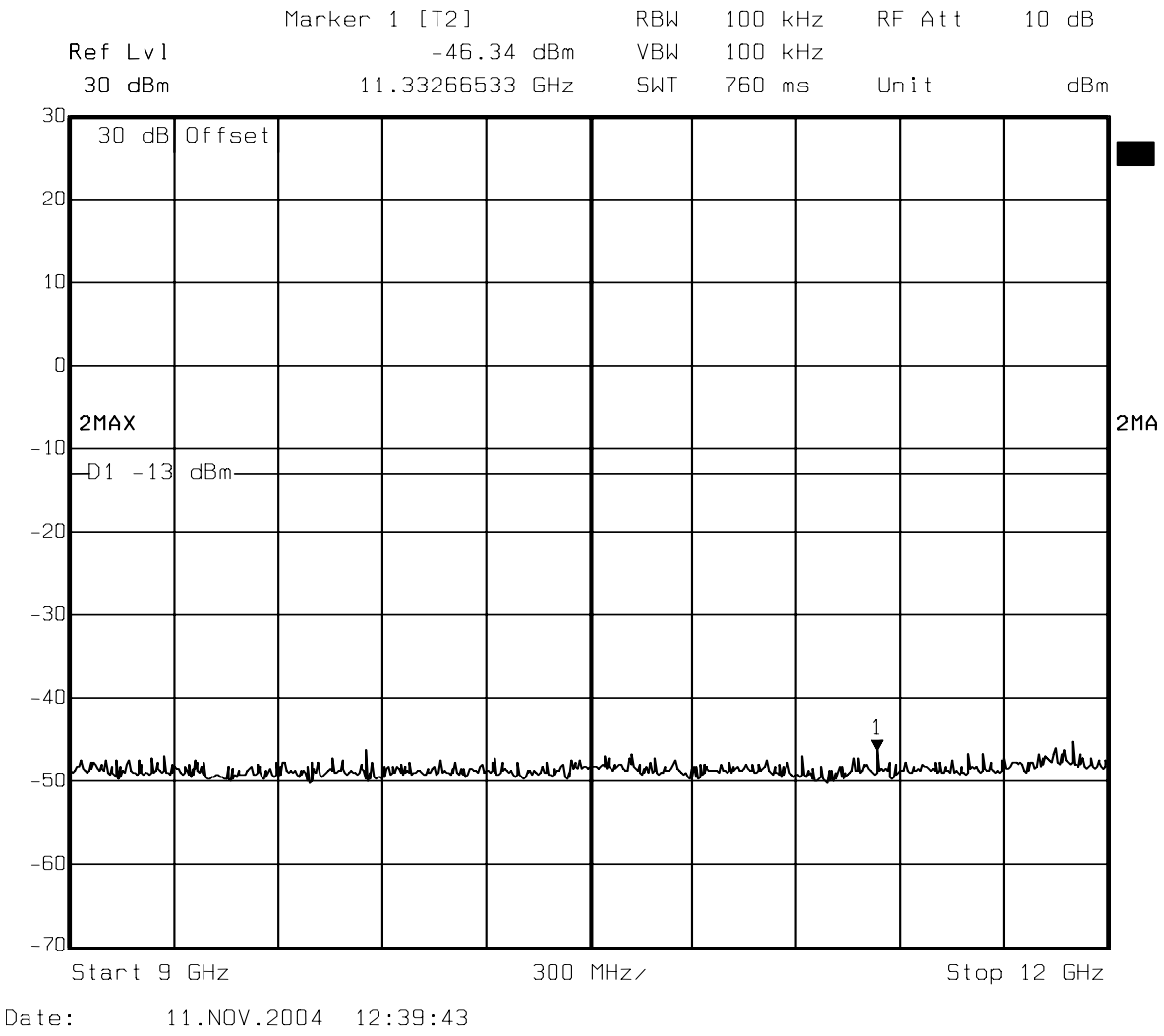
Mid Channel

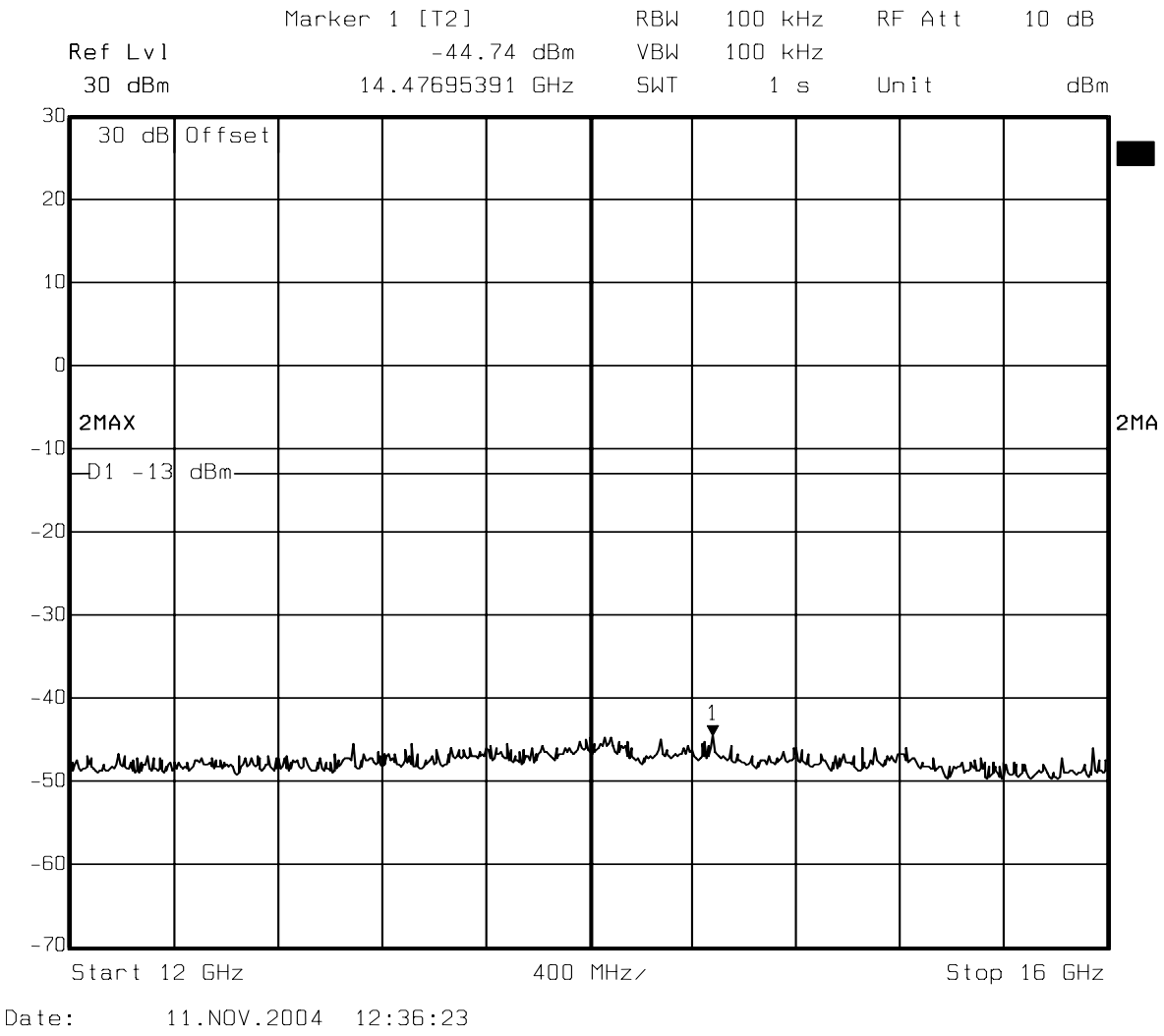

Marker 1 [T2]
Ref Lvl
30 dBm
-45.19 dBm
2.23847695 GHz
RBW 100 kHz
VBW 100 kHz
SWT 500 ms
RF Att 10 dB
Unit dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
1
Start 1 GHz
200 MHz/
Stop 3 GHz
Date: 11.NOV.2004 12:33:25

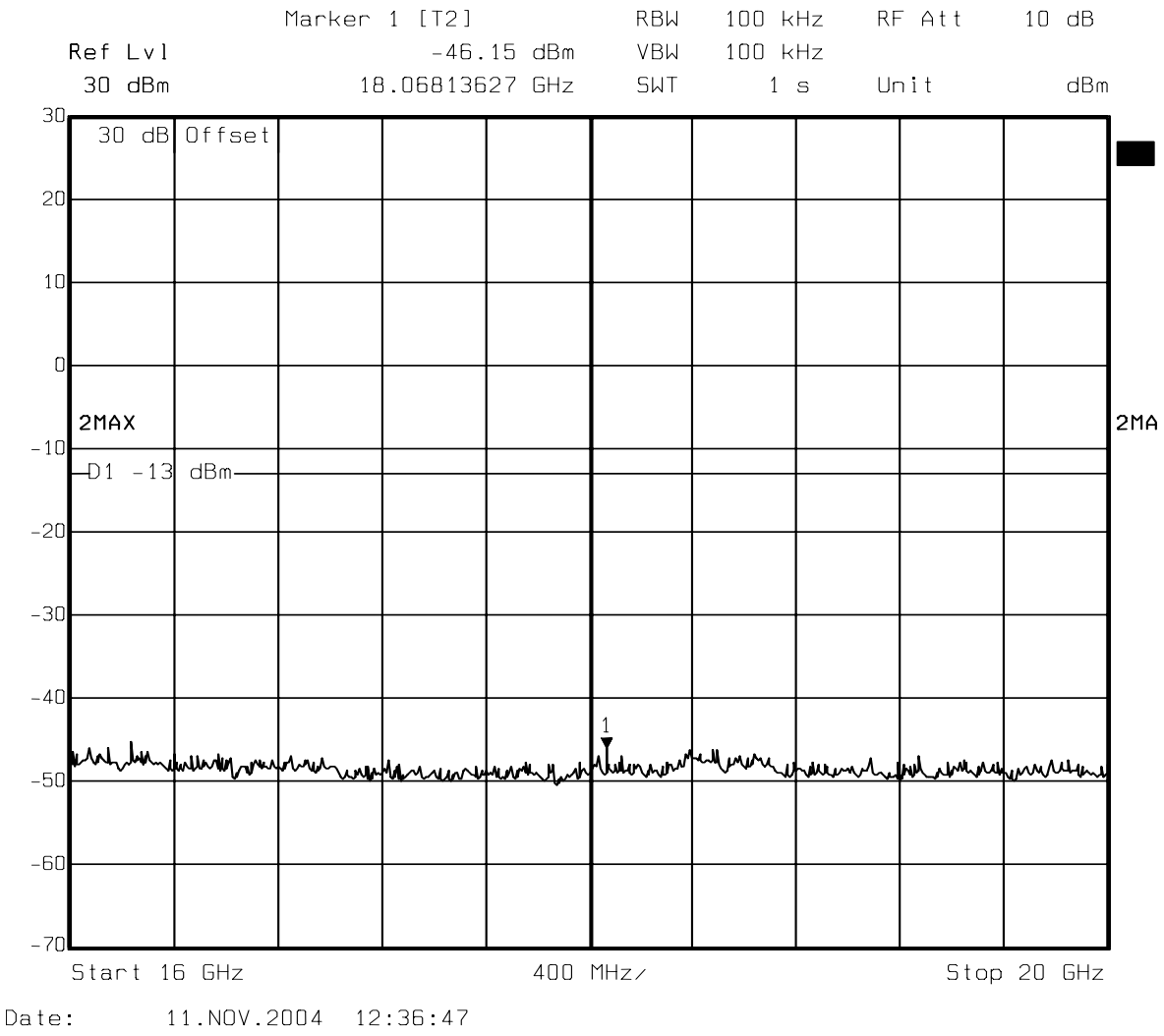

Marker 1 [T2]
-43.11 dBm
4.87575150 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 3 GHz
300 MHz/
Stop 6 GHz
Date: 11.NOV.2004 12:33:56

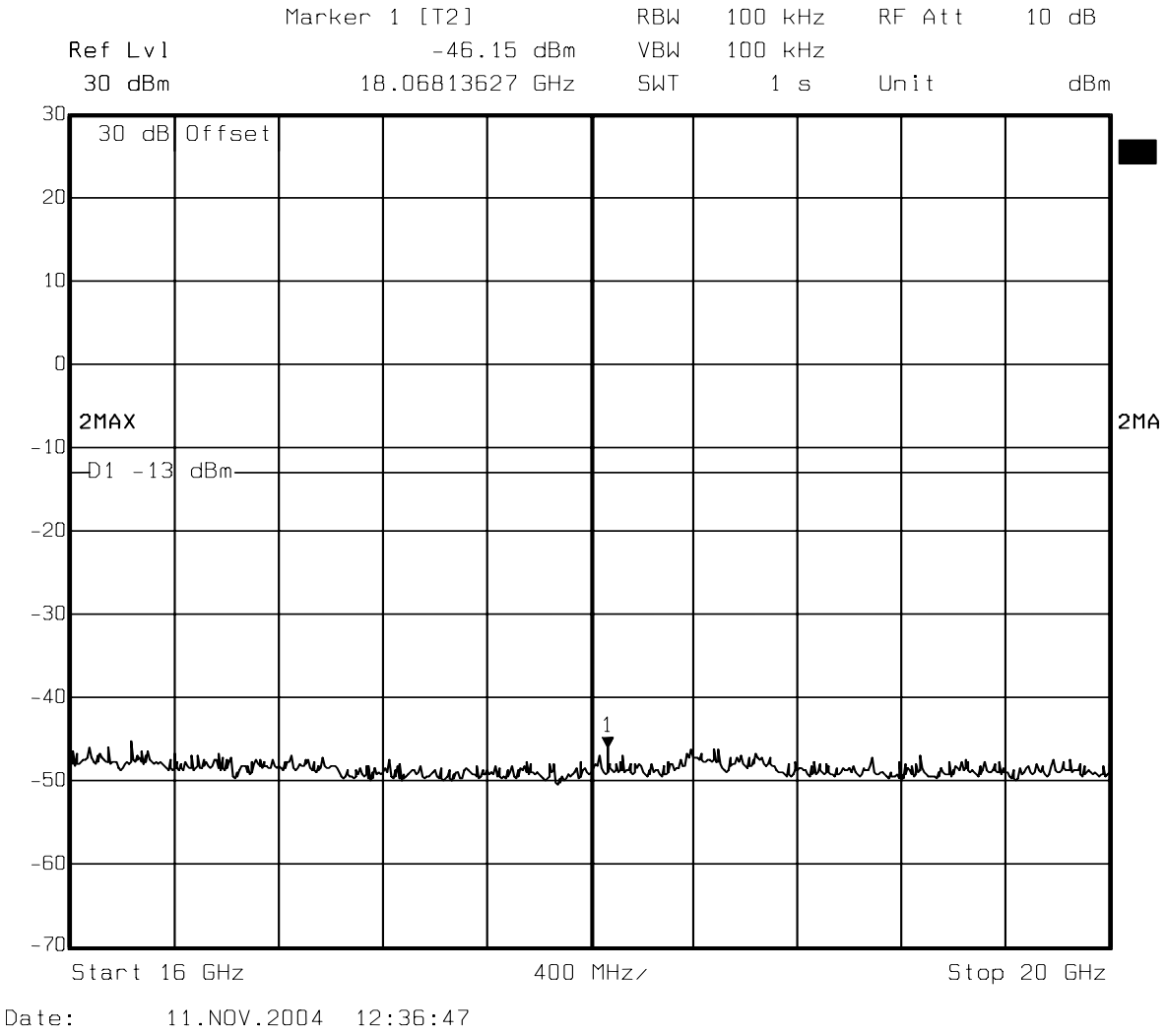

Marker 1 [T2]
-43.11 dBm
4.87575150 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 3 GHz
300 MHz/
Stop 6 GHz
Date: 11.NOV.2004 12:33:56

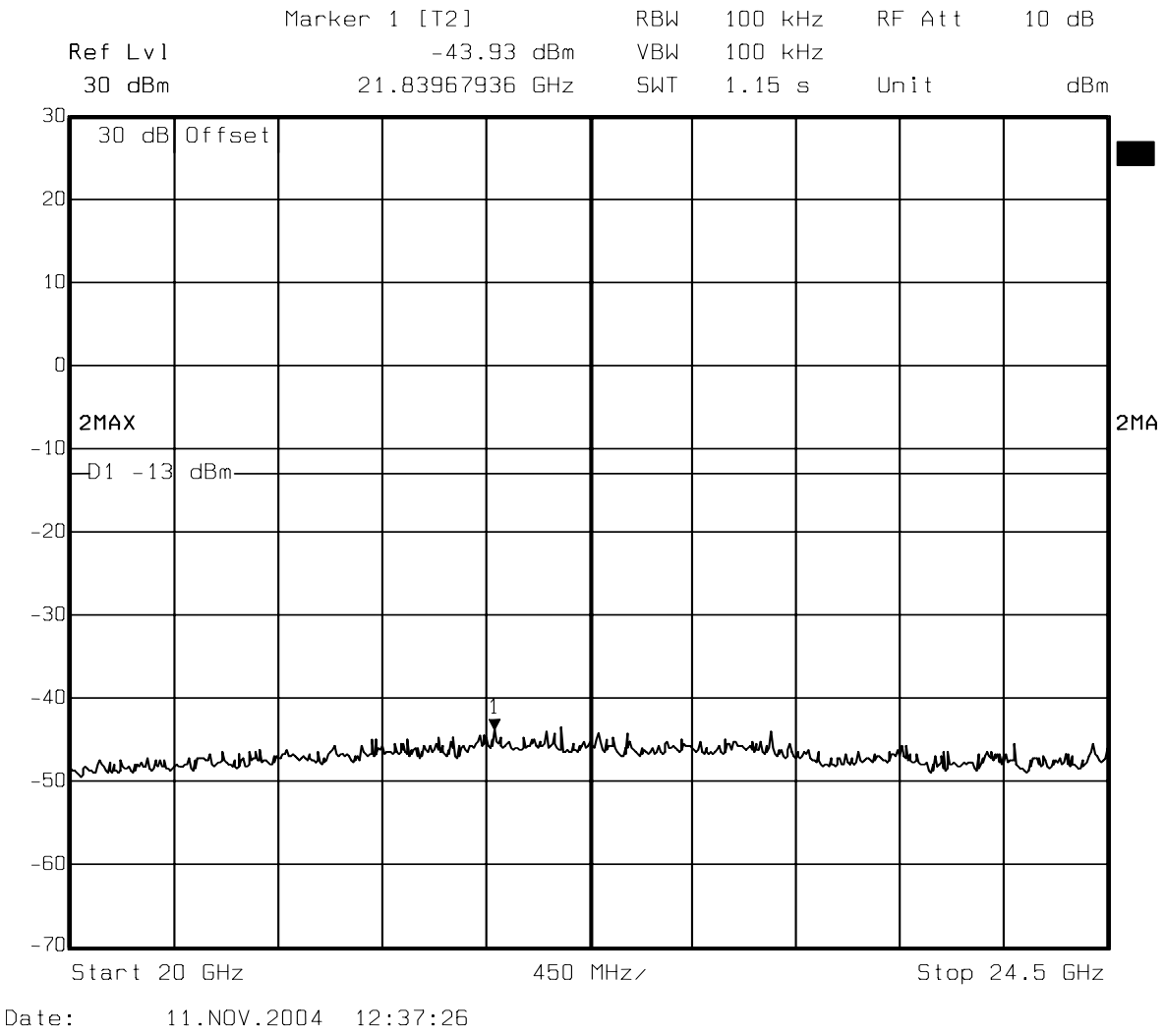

Marker 1 [T2]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-49.43 dBm
VBW 100 kHz
30 dBm
9.00000000 GHz
SWT 760 ms
Unit dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 6 GHz
300 MHz/
Stop 9 GHz
Date: 11.NOV.2004 12:35:58


Marker 1 [T2]
-46.34 dBm
11.33266533 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
Start 9 GHz
300 MHz/
Stop 12 GHz
Date: 11.NOV.2004 12:39:43

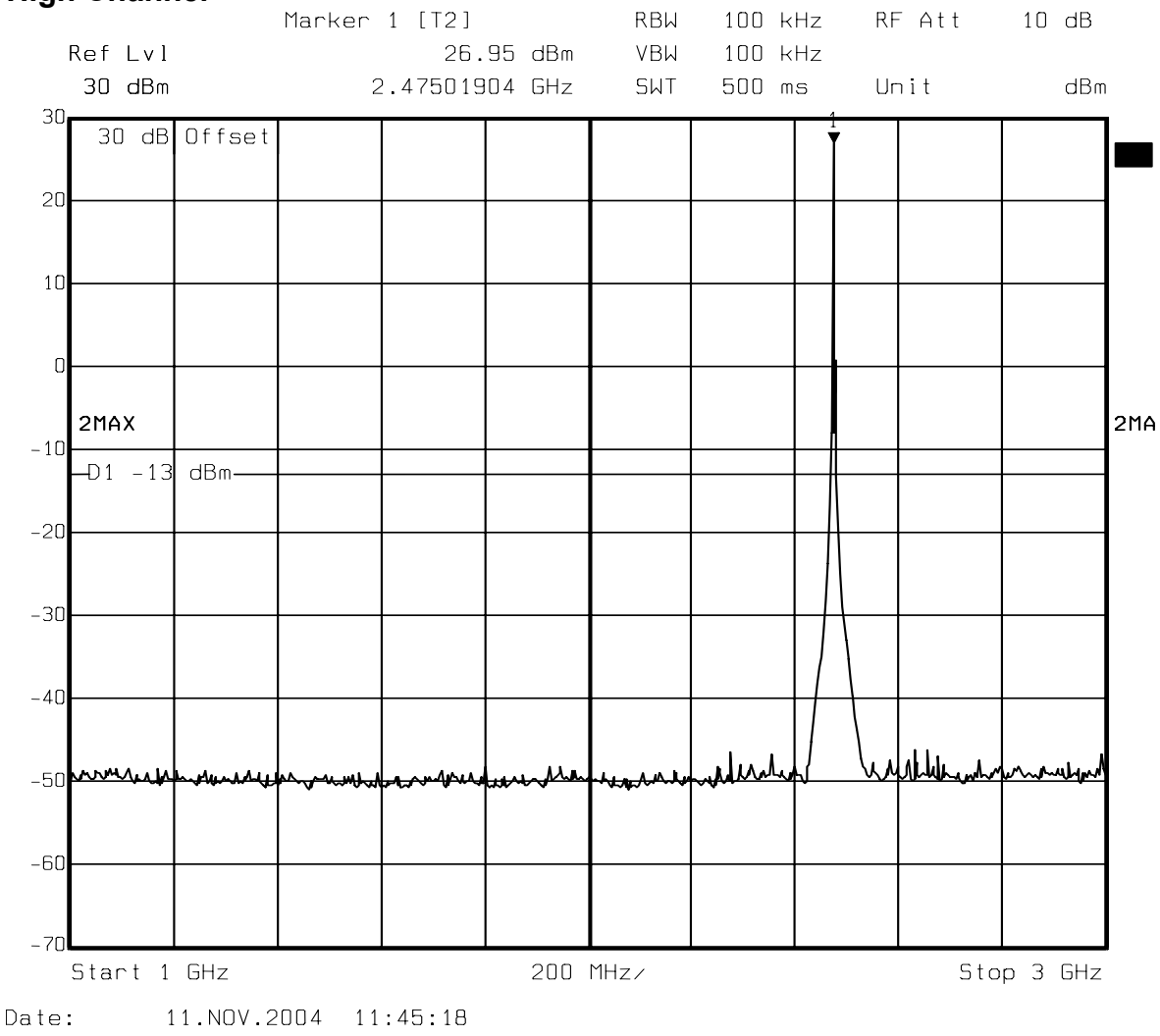

Marker 1 [T2]
-44.74 dBm
14.47695391 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
1
Start 12 GHz
400 MHz/
Stop 16 GHz
Date: 11.NOV.2004 12:36:23

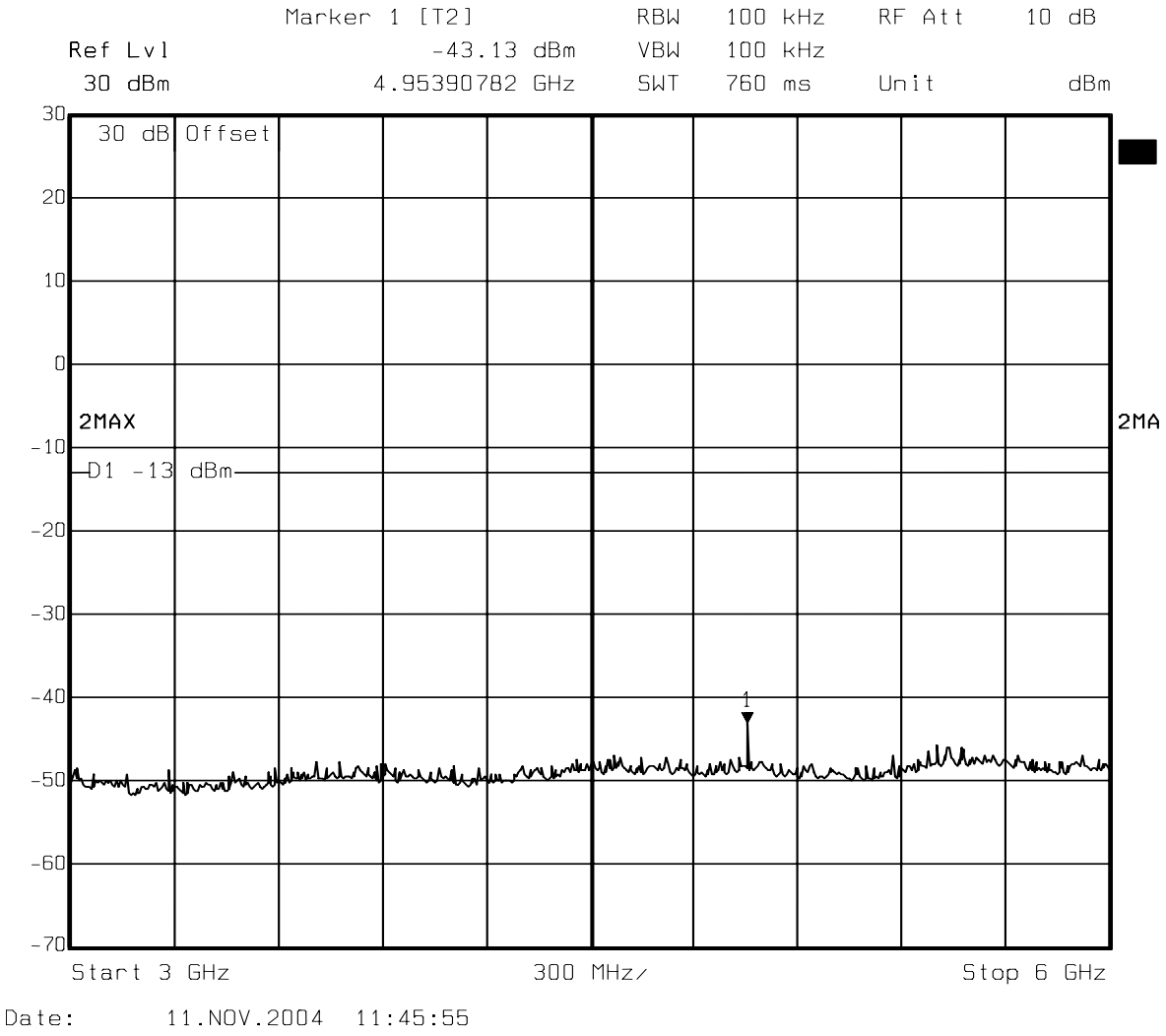

Marker 1 [T2]
-46.15 dBm
18.06813627 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 16 GHz
400 MHz/
Stop 20 GHz
Date: 11.NOV.2004 12:36:47

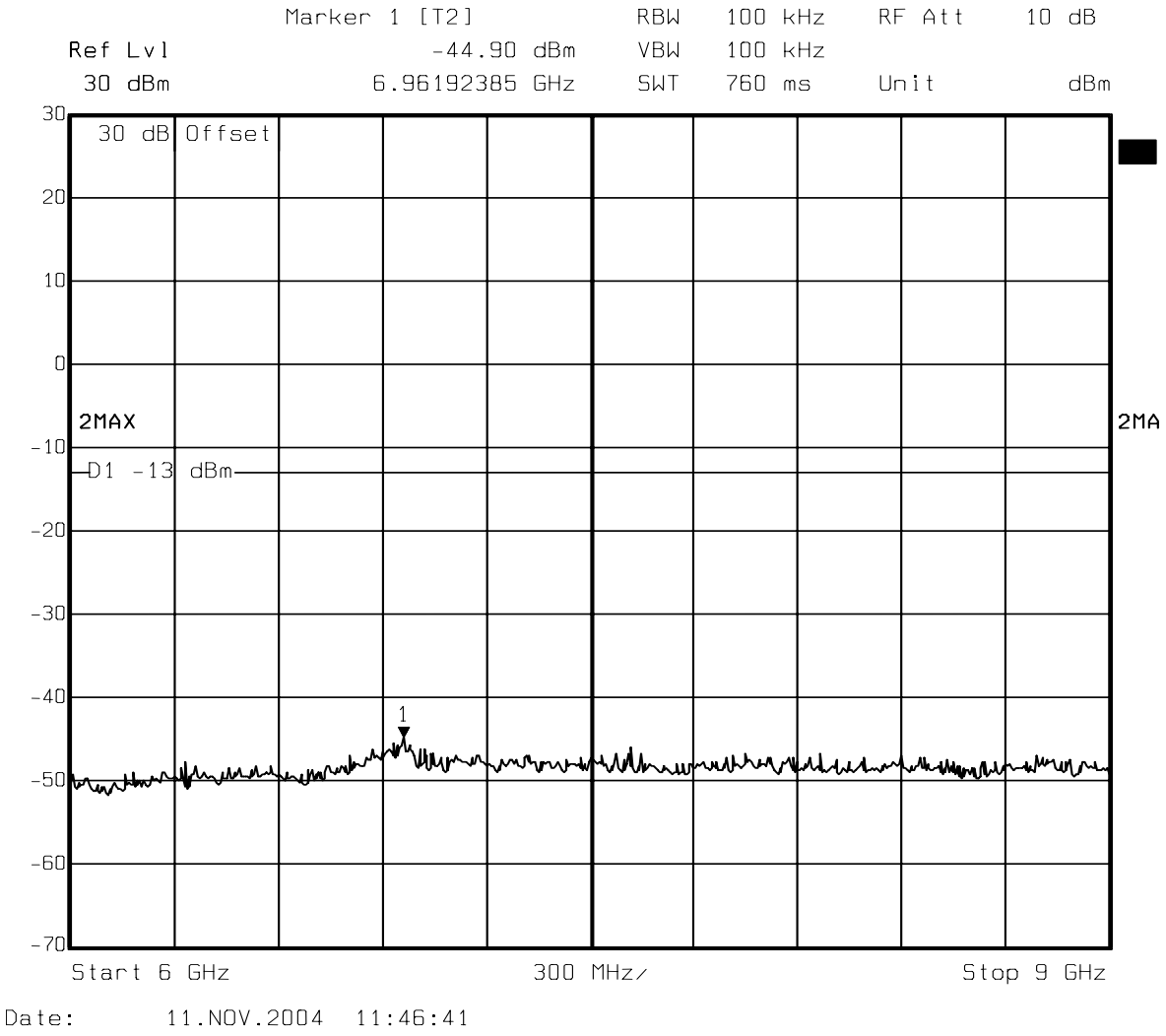

Marker 1 [T2]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-46.15 dBm
VBW 100 kHz
30 dBm
18.06813627 GHz
SWT 1 s
Unit dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
1
Start 16 GHz
400 MHz/
Stop 20 GHz
Date: 11.NOV.2004 12:36:47

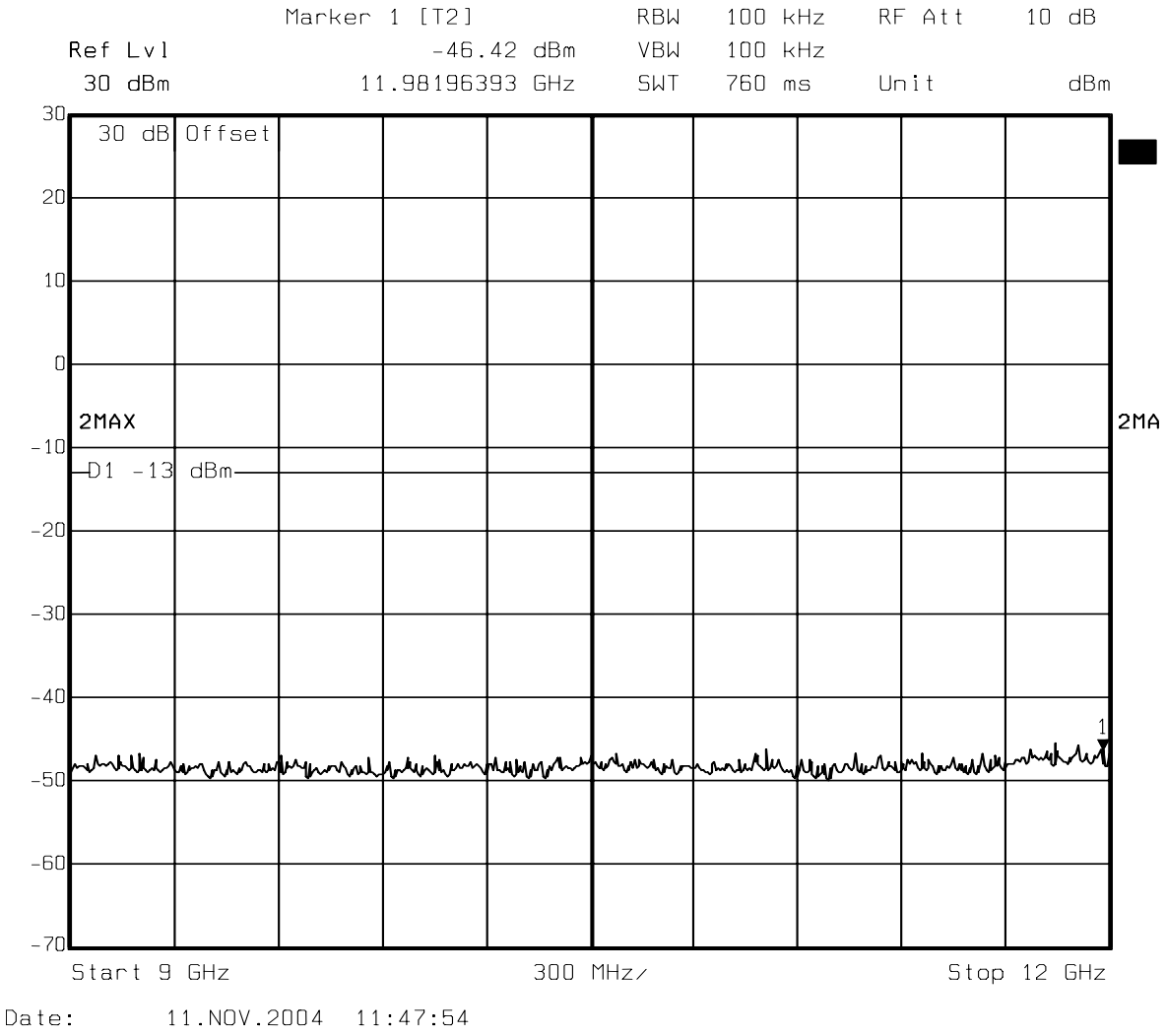

Marker 1 [T2]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-43.93 dBm
VBW 100 kHz
30 dBm
21.83967936 GHz
SWT 1.15 s
Unit dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 20 GHz
450 MHz/
Stop 24.5 GHz
Date: 11.NOV.2004 12:37:26

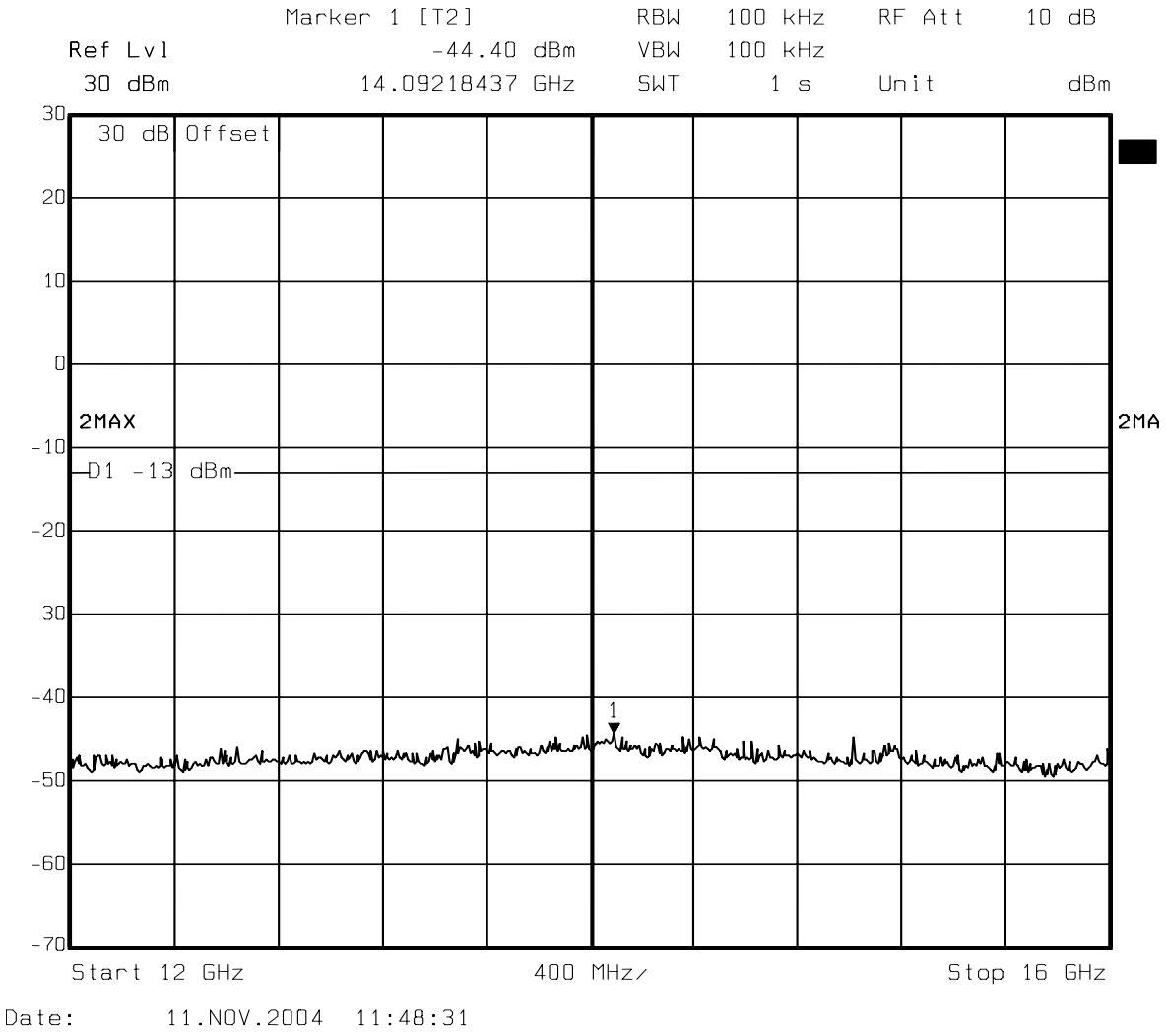
High Channel

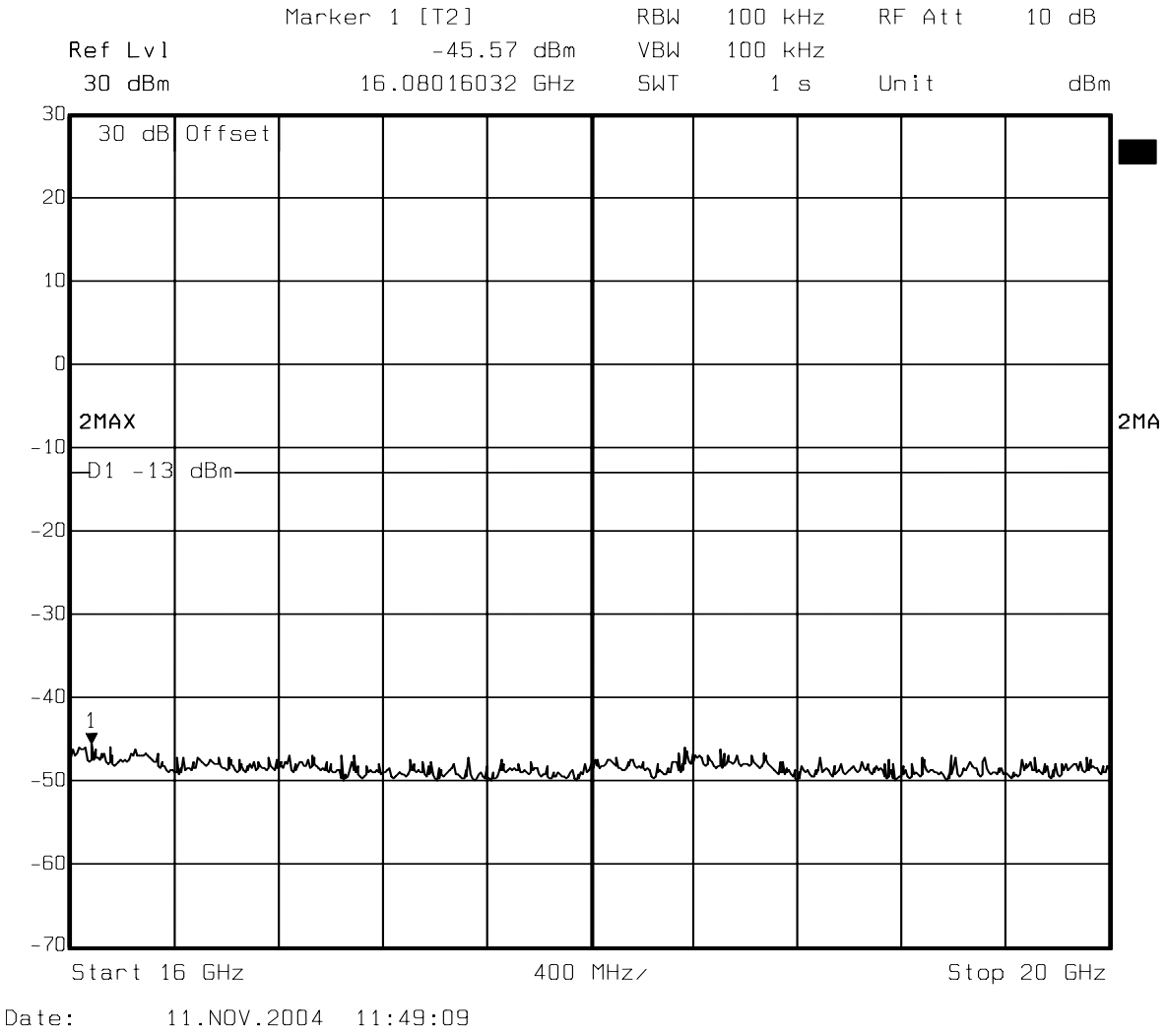


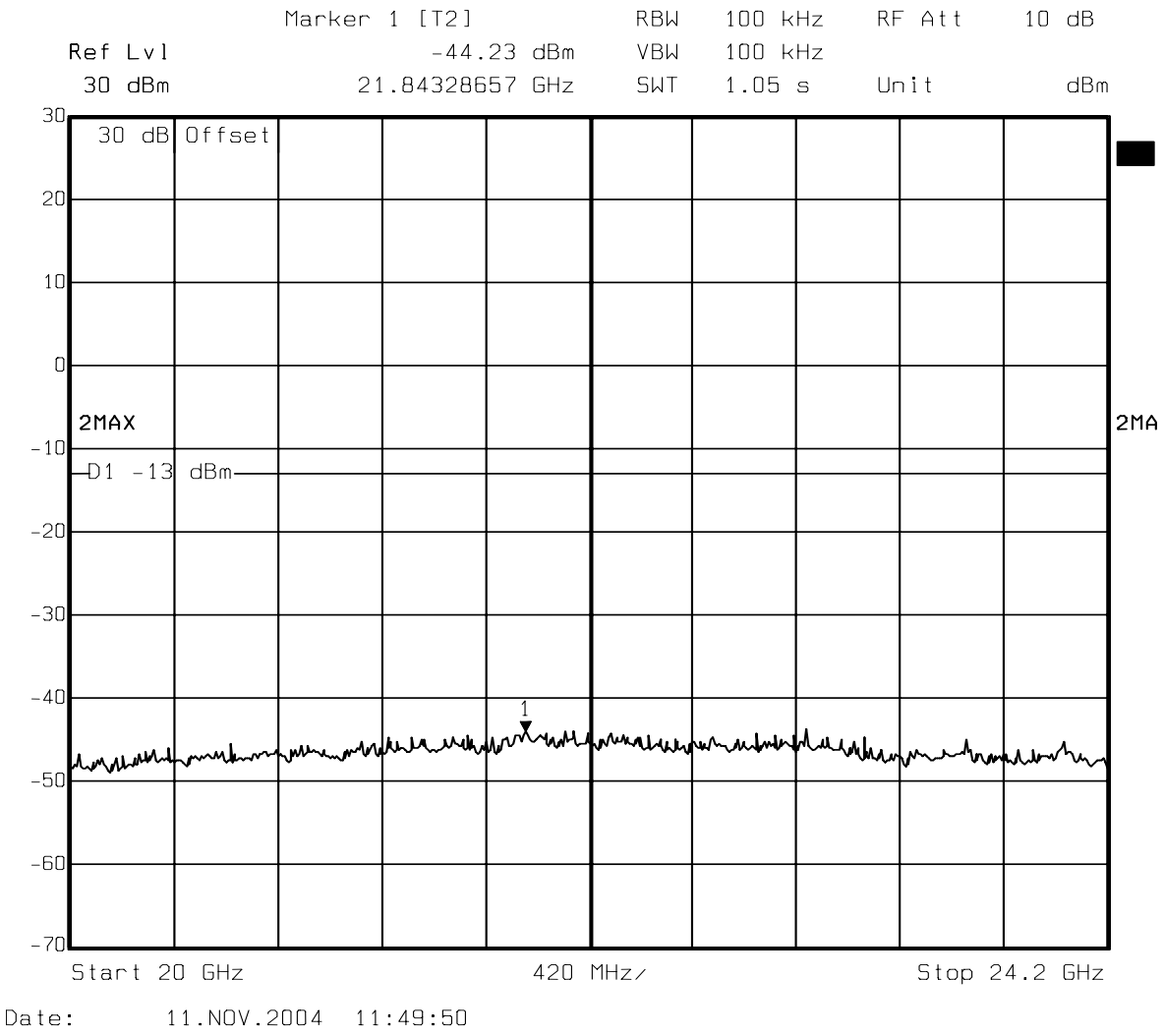

Marker 1 [T2]
Ref Lvl
30 dBm
-43.13 dBm
4.95390782 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 10 dB
Unit dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 3 GHz
300 MHz/
Stop 6 GHz
Date: 11.NOV.2004 11:45:55


Marker 1 [T2]
-44.90 dBm
6.96192385 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 6 GHz
300 MHz/
Stop 9 GHz
Date: 11.NOV.2004 11:46:41

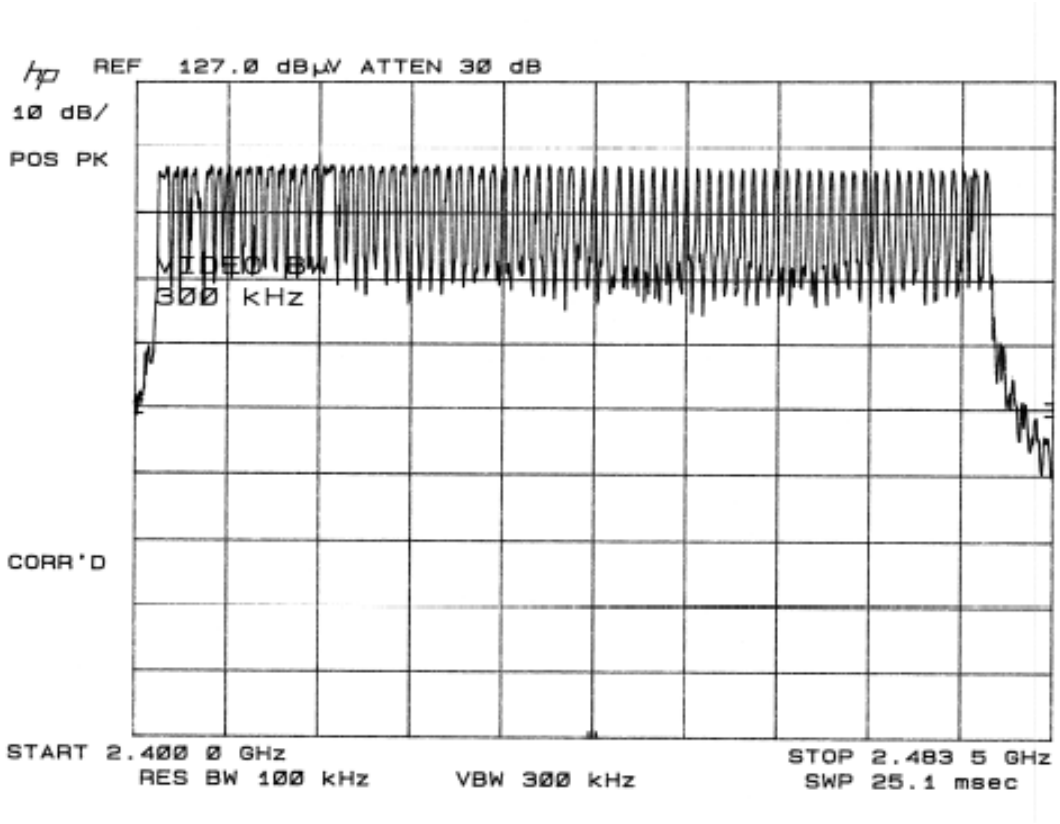

Marker 1 [T2]
-46.42 dBm
11.98196393 GHz
RBW 100 kHz
VBW 100 kHz
SWT 760 ms
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 9 GHz
300 MHz/
Stop 12 GHz
Date: 11.NOV.2004 11:47:54

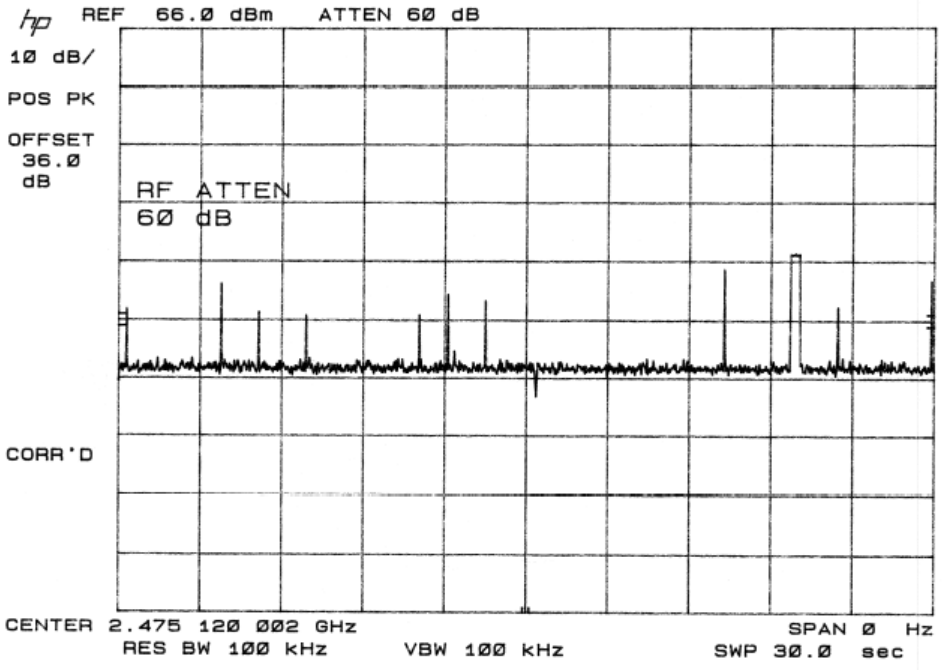

Marker 1 [T2]
-44.40 dBm
14.09218437 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 12 GHz
400 MHz/
Stop 16 GHz
Date: 11.NOV.2004 11:48:31

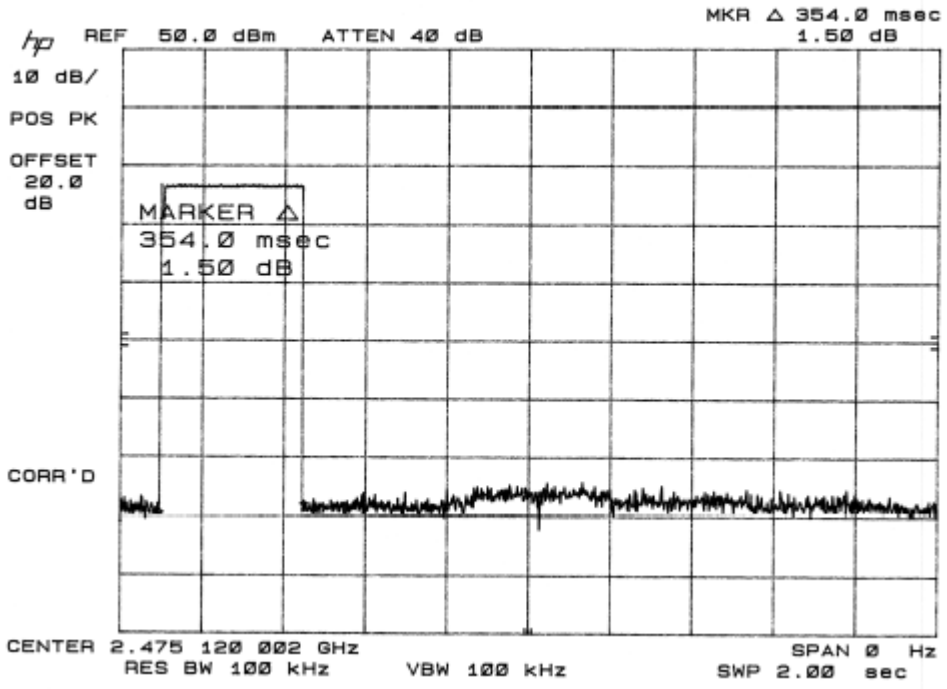

Marker 1 [T2]
-45.57 dBm
16.08016032 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
30 dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 16 GHz
400 MHz/
Stop 20 GHz
Date: 11.NOV.2004 11:49:09


Marker 1 [T2]
Ref Lvl
30 dBm
-44.23 dBm
21.84328657 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1.05 s
RF Att 10 dB
Unit dBm
30 dB Offset
2MAX
D1 -13 dBm
2MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
1
Start 20 GHz
420 MHz/
Stop 24.2 GHz
Date: 11.NOV.2004 11:49:50

Number of Hopping Channels = 75



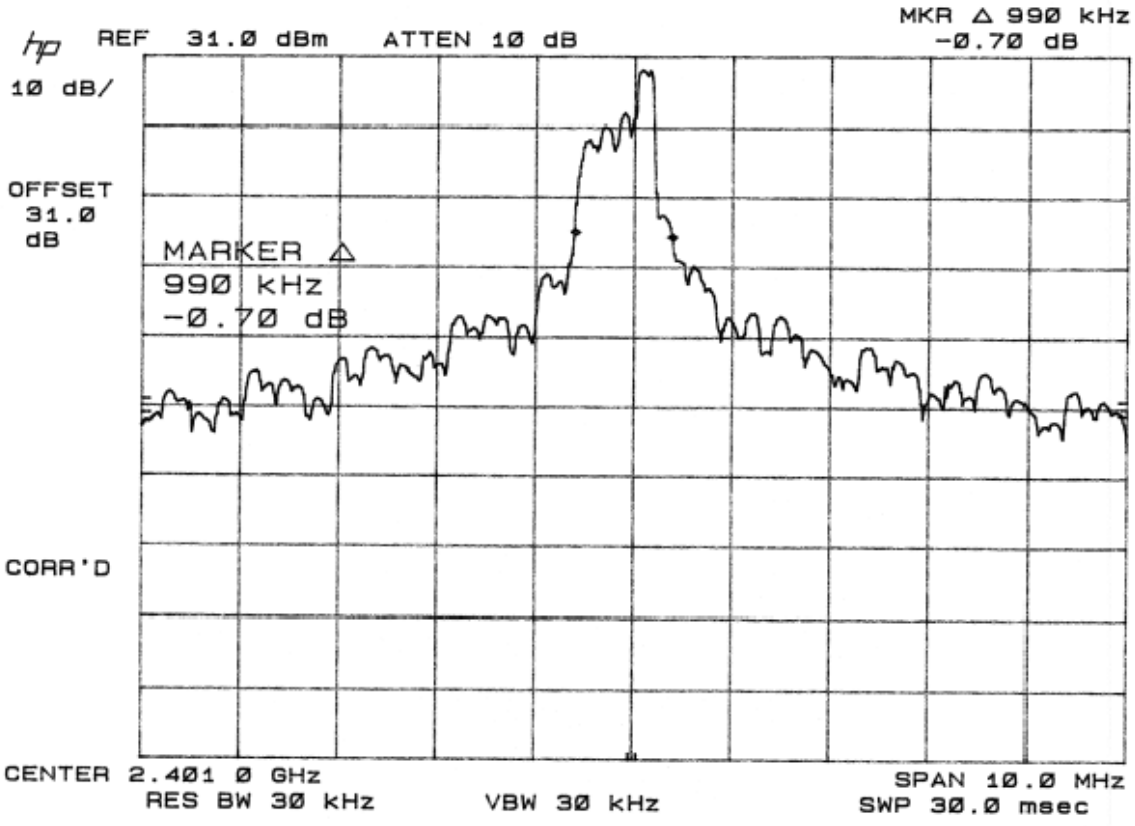




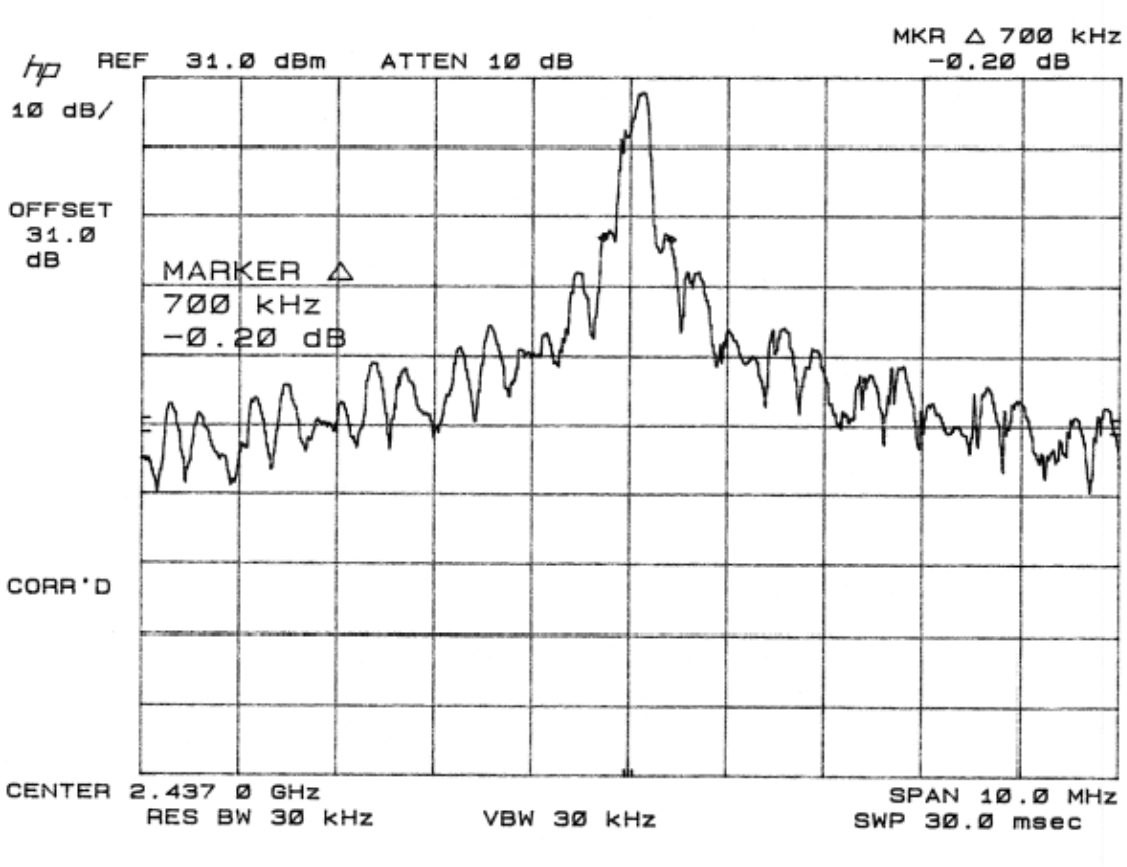
15.247(a)(1)(iii) Average time of occupancy < 0.4 seconds in 75 channels X 0.4 sec = 30 seconds

Above -- one channel exists in 30 seconds: Duration = 354ms

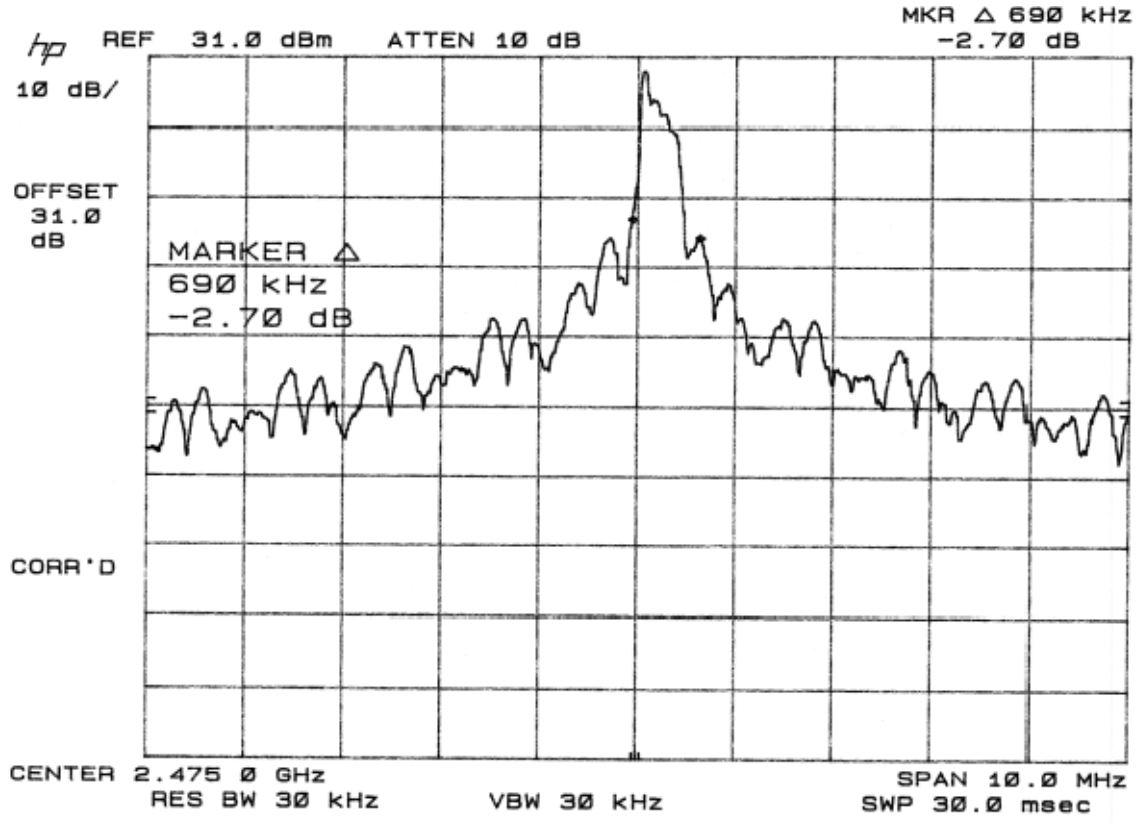
EUT complies.



Channel 1, Bandwidth

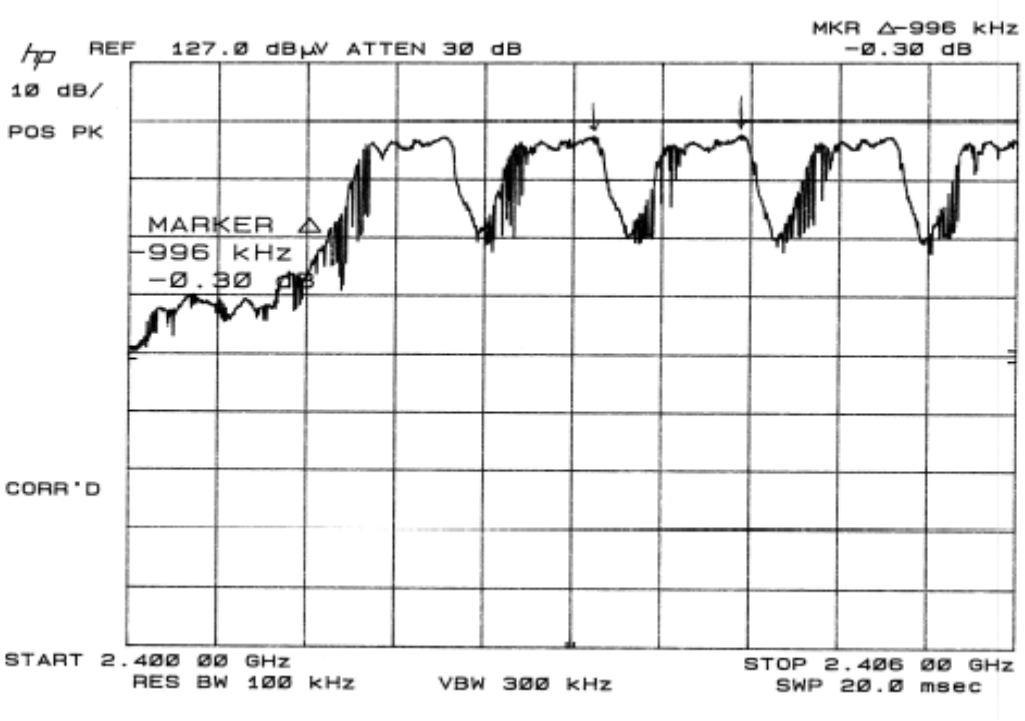


Channel 37, Bandwidth



Channel 75, Bandwidth

Channel Separation = 1 MHz

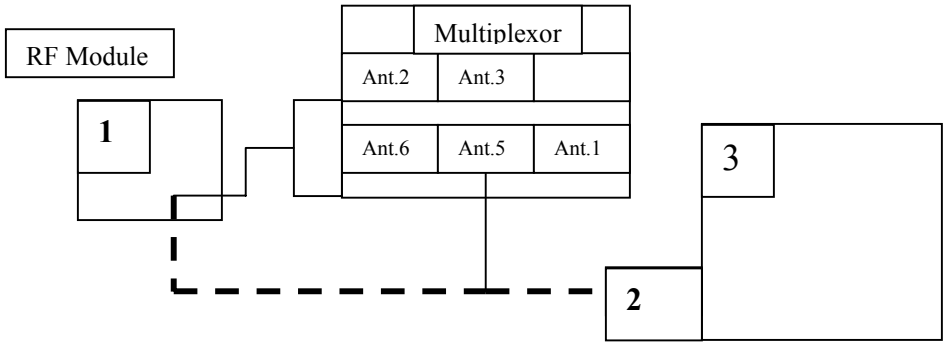


Conducted Emissions Test Equipment

Client	MEPS Real-Time, Inc.	EUT Name	MEPS RFID System
PAN #	24-852-EMC	EUT Model	MEPS 020 0001

Device Type	*Model #*	*Asset #*	*Serial Number*	*Cal Due*
Attenuator				
30 dB Attenuator, HP	8491B	332	X0475	4-21-05
Spectrum Analyzer / Receiver				
Spectrum Analyzer, R & S	1088.3494.30	835	830320/002	12/11/04
Multimeter, Fluke	111	810	BB1310	1-5-05
Spectrum Analyzer, HP	8566B	537	2230A01678	4-15-05

Diagram1. Conducted Spurious Emissions Test Configuration



1. EUT: MEPS RFID System
2. 30 dB attenuator
3. Spectrum Analyzer

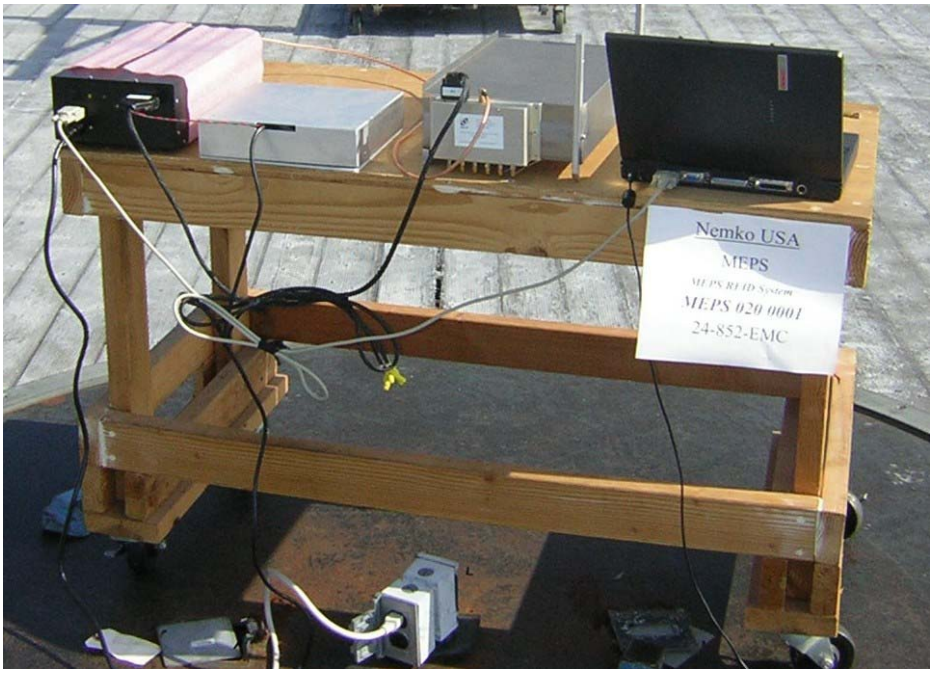
Photograph 1. Radiated Emissions Test Configuration

1. Biconical Antenna shown.
2. EUT: MEPS RFID System

Photograph 2. Front View of EUT

Conducted Emissions Test Configuration

Photograph 3. Rear View of EUT



APPENDIX A

A. 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 B
B. 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).

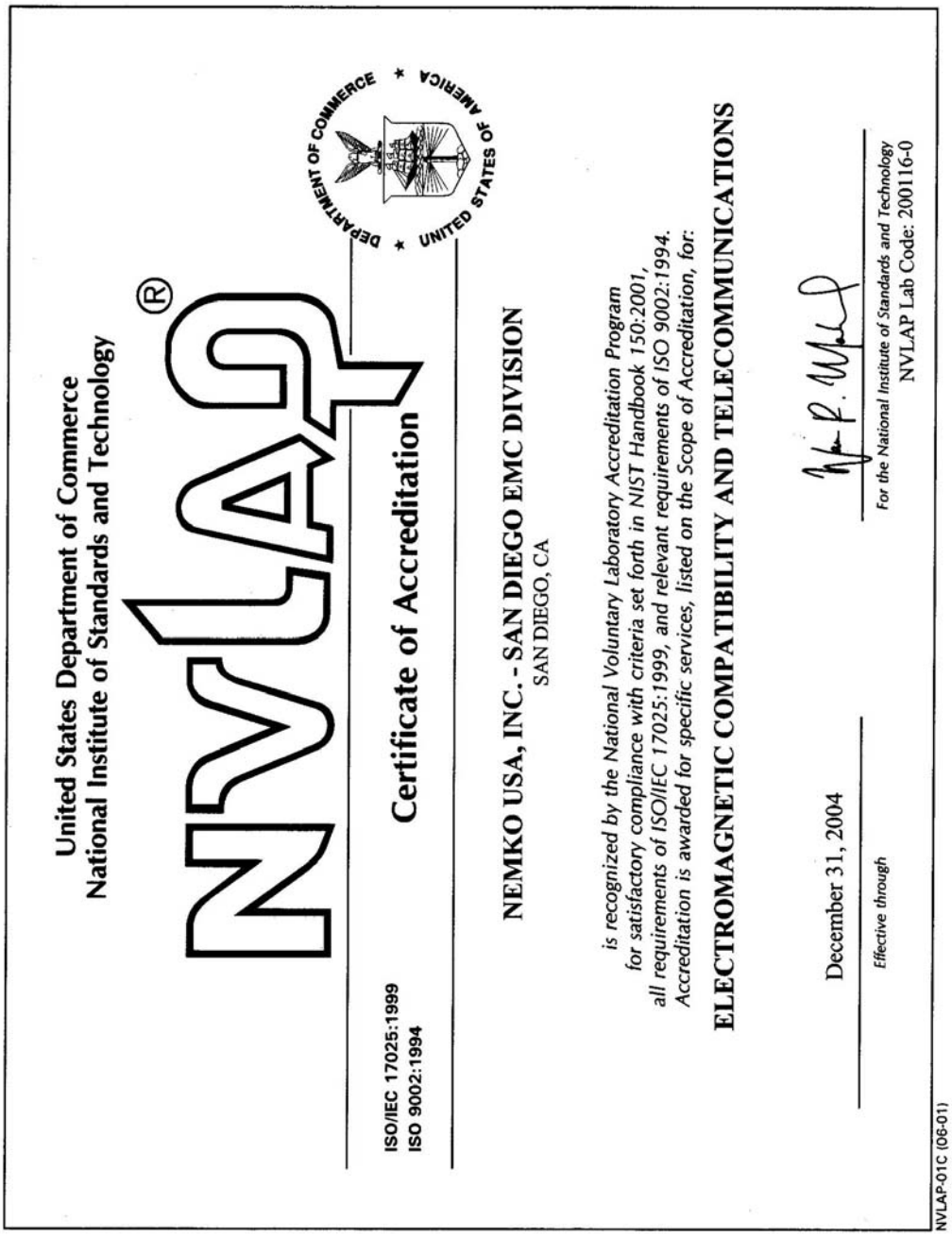
In all cases, the entity performing the Calibration is required to furnish Nemko USA with a calibration test report and/or certificate of calibration, and a "calibration sticker" on each item of M&TE that is successfully calibrated.

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(1993) 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 (1993), and, ANSI C63.4-1992 when performing the normalized site attenuation measurements.

APPENDIX C
C. FCC and 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, 2004
Effective through

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

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Scope of Accreditation

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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) with Amendments A1 (1997) & A2 (1999)
12/CIS14b	AS/NZS 1044 (1995)
12/CIS14c	CNS 13783-1
12/CIS22	IEC/CISPR 22 (1997) and EN 55022 (1998): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22 (1993): Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1 (1995) and Amendment 2 (1996)

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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 (2002-03), edition 1.1: 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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NVLAP Code	*Designation / Description*
Immunity Test Methods:	
12/I01	IEC 61000-4-2, Edition 2.1 (2001) including Amds. 1 & 2 and EN 61000-4-2: Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3 (2002) and EN 61000-4-3: Radiated Radio-Frequency Electromagnetic Field Immunity Test
12/I03	IEC 61000-4-4 (1995) + Amd. 1 (2000) & Amd. 2 (2001) and EN 61000-4-4: Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5 (1995) + Amd. 1 (2000) and EN 61000-4-5: Surge Immunity Test
12/I05	IEC 61000-4-6, Edition 2.0 (2003) and EN 61000-4-6: Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields
12/I06	IEC 61000-4-8, Edition 1.1 (2001) and EN 61000-4-8: Power Frequency Magnetic Field Immunity Test
12/I07	IEC 61000-4-11 (1994) + Amd. 1 (2000) and EN 61000-4-11: Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

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