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CERTIFICATION TEST REPORT

Report Number: 2007 086393 EMC


Project Number: 6963-1

Applicant: OSI Security Devices
1580 Jayken Way
Chula Vista, CA 91911

Equipment Under Test (EUT): Single Door Controler
Model: 12860-001
FCC ID: T8H-SDC2K
IC: 6498A-SDC2K

In Accordance With: FCC Part 15 Subpart C, 15.247
RSS-210, Issue 7, June 2007

Tested By: Nemko USA Inc.
11696 Sorrento Valley Road, Suite F
San Diego, CA 92121

Authorized By: 
Michael T. Krumweide, EMC Supervisor

Date: August 24, 2007

Total Number of Pages: 56

Summary of Test Results

General

All measurements are traceable to national standards

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15; Subpart C. Radiated tests were conducted in accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

The assessment summary is as follows:

Apparatus Assessed: Single Door Controller
Model 12860-001

Specification: FCC Part 15 Subpart C, 15.247

Date Received in Laboratory: August 20, 2007

Compliance Status: Complies

Exclusions: None

Non-compliances: None

Report Release History:

REVISION	DATE	COMMENTS
-	February 12, 2008	Prepared By: Alan Laudani
-	February 12, 2008	Initial Release: Mike T. Krumweide

Nemko USA, Inc.

6498A-SDC2K

T8H-SDC2K

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Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025.

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TESTED BY:



Date: February 12, 2008

Alan Laudani, EMC Test Engineer

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Equipment Under Test

1.1. Product Identification

The following samples of the apparatus have been submitted for type assessment:

DEVICE	MANUFACTURER MODEL # SERIAL #	POWER CABLE
EUT - SINGLE DOOR CONTROLLER	OSI SECURITY DEVICES MODEL: 12860-001 SERIAL #:	NONE – BATTERY OPERATED
AC POWER SUPPLY (TYPICAL—NOT SOLD WITH TRANSCEIVER)	INTERNATIONAL ELECTRONICS INC. MODEL: PIP16AC SERIAL #: NA	20 AWG 2 WIRES 1M
DC POWER SUPPLY (TYPICAL—NOT SOLD WITH TRANSCEIVER)	LENMAR MODEL: DVR-1250-B11 SERIAL #: NA	20 AWG 2 WIRES 1M

CONNECTION	I/O CABLE
NONE	CABLE IN SETUP PHOTOS FOR PROGRAMMING ONLY

1.2. Theory of Operation

The Model 12860-001 is a Single Door Controller. The antenna is an off the shelf reverse SMA compatible dipole. The sheet metal housing is used for grounding and shielding.

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1.3. Technical Specifications of the EUT

Manufacturer: OSI Security Devices

Operating Frequency: 2405.0 MHz to 2480.2 MHz in the 2400 to 2483.5 MHz Band

Rated Power: 18.2 mW

Modulation: Digital

Antenna Data: ANT-2.4-CW-RCT-RP 2.20 dBi

Antenna Connector: Reverse SMA

Power Source: 3 1.5 VDC cells in series = 4.5 VDC

Test Conditions

1.4. Specifications

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart C, 15.247

Operation within the bands 902-928 MHz, **2400-2483.5 MHz**,
5725-5850 MHz and 24.0-24.25 GHz bands.

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Annex 8 - Frequency Hopping and Digital Modulation Systems Operating in the
Bands 902-928 MHz, **2400-2483.5 MHz**, and 5725-5850 MHz

1.5. Deviations From Laboratory Test Procedures

No deviations from Laboratory Test Procedure

1.6. Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	20.5 – 31.3 °C
Humidity range	:	26 - 65 %
Pressure range	:	86 - 106 kPa
Power supply range	:	+/- 1% of rated voltages

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1.7. Test Equipment

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
110	Antenna, LPA	Electro-metrics	LPA-25	1217	12/18/2006	12/18/07
114	Antenna	Electro-Metrics	3104	3020	8/28/2007	08/28/08
317	Preamplifier	HP	8449A	2749A00167	2/9/2007	02/09/08
529	Antenna, DRWG	EMCO	3115	2505	8/27/2007	08/27/08
835	Spectrum Analyzer	HP	85680A	2517A01757	5/11/2007	05/11/08
395	V-Network LISN	Solar	9348-50-R-24-BNC	941718	3/9/07	3/9/08
538	Spectrum Analyzer	HP	85650A	2521A00588	4/2/07	4/2/08
107	Quasi-Peak Adapter	HP	8568B	2415A00373	4/9/07	4/9/08
835	Spectrum Analyzer	Rohde & Schwarz	RHDFSEK	829058/005	6/20/2007	6/20/08
559	High Pass Filter	Solar	8310-1.0	844823	4/4/07	4/4/08
685	Transient Limiter	HP	11947A	3107A02637	9/5/07	9/5/08

Observations

1.8. Modifications Performed During Assessment

No modifications were performed during assessment.

1.9. Record Of Technical Judgements

No technical judgements were made during the assessment.

1.10. EUT Parameters Affecting Compliance

The user of the apparatus could not alter parameters that would affect compliance.

1.11. Tests Deleted

No Tests were deleted from this assessment.

1.12. Additional Observations

There were no additional observations made during this assessment.

Results Summary

This section contains the following:

FCC Part 15 Subpart C: Test Results

§ 15.247 Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.

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Annex 8 - Frequency Hopping and Digital Modulation Systems Operating in the Bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

RSS-Gen Issue 2 June 2007

General Requirements and Information for the Certification of Radiocommunication Equipment

The column headed “Required” indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N No: not applicable / not relevant

Y Yes: Mandatory i.e. the apparatus shall conform to this test.

N/T Not Tested, mandatory but not assessed. (See section 4.4 Test deleted)

The results contained in this section are representative of the operation of the apparatus as originally submitted.

5.1 Test Results

Part 15C	RSS-210	Test Description	Required	Result
	RSP100	20 dB Bandwidth – required to determine emission designator per TRC-43	Y	Pass
15.247(b)(3)	A8.4 (4)	Maximum peak output power of systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands	Y	Pass
15.209 (a)	A8.5 Table 1	Radiated Emissions within Restricted Bands	Y	Pass
15.247(a)(2)	A8.2 (a)	Minimum 6dB RF Bandwidth	Y	Pass
15.247 (d)	A8.5	Out-of-band Emissions	Y	Pass
15.247(e)	A8.2 (b)	Power Spectral Density for Digitally Modulated Devices	Y	Pass
15.207	RSS-GEN 4.6.1	Transmitter and Receiver AC Power Lines Conducted Emission Limit	Y	Pass
Part 15B	RSS-GEN 4.10	Receiver Spurious Emissions	Y	Pass

Appendix A: Test Results

1.13. 20dB Bandwidth

RSS-Gen 4.6.1

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

Test Conditions:

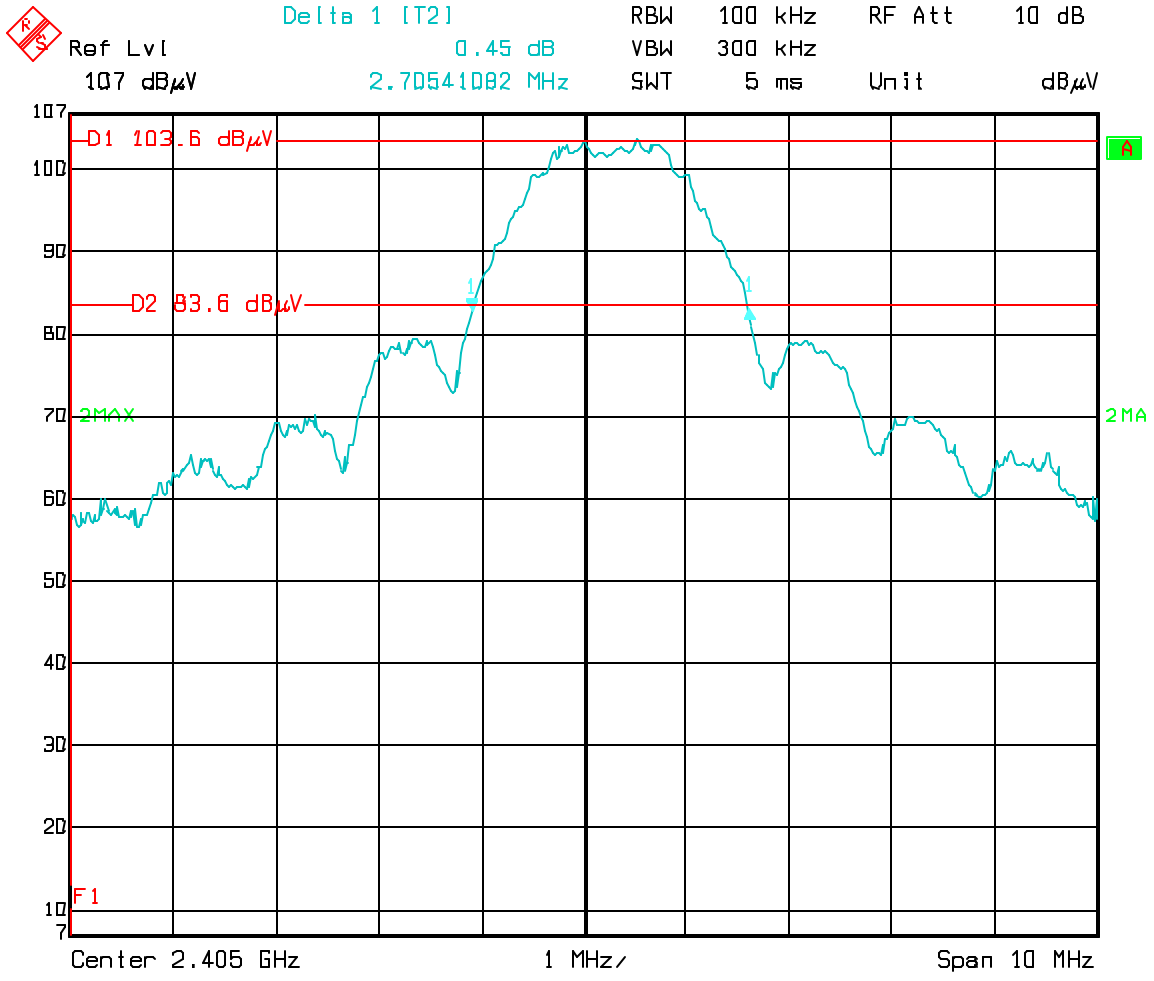
Model Number:	12860-001	Temperature:	31°C
Date:	Aug. 7, 2007	Humidity:	35%RH
Modification State:	Lo/Mid/High Channels	Tester:	Alan Laudani
		Laboratory:	SOATS

Test Results:

Low Frequency	2405 MHz	2.70 MHz
Mid Frequency	2445 MHz	2.68 MHz
Mid Frequency	2480 MHz	2.70 MHz

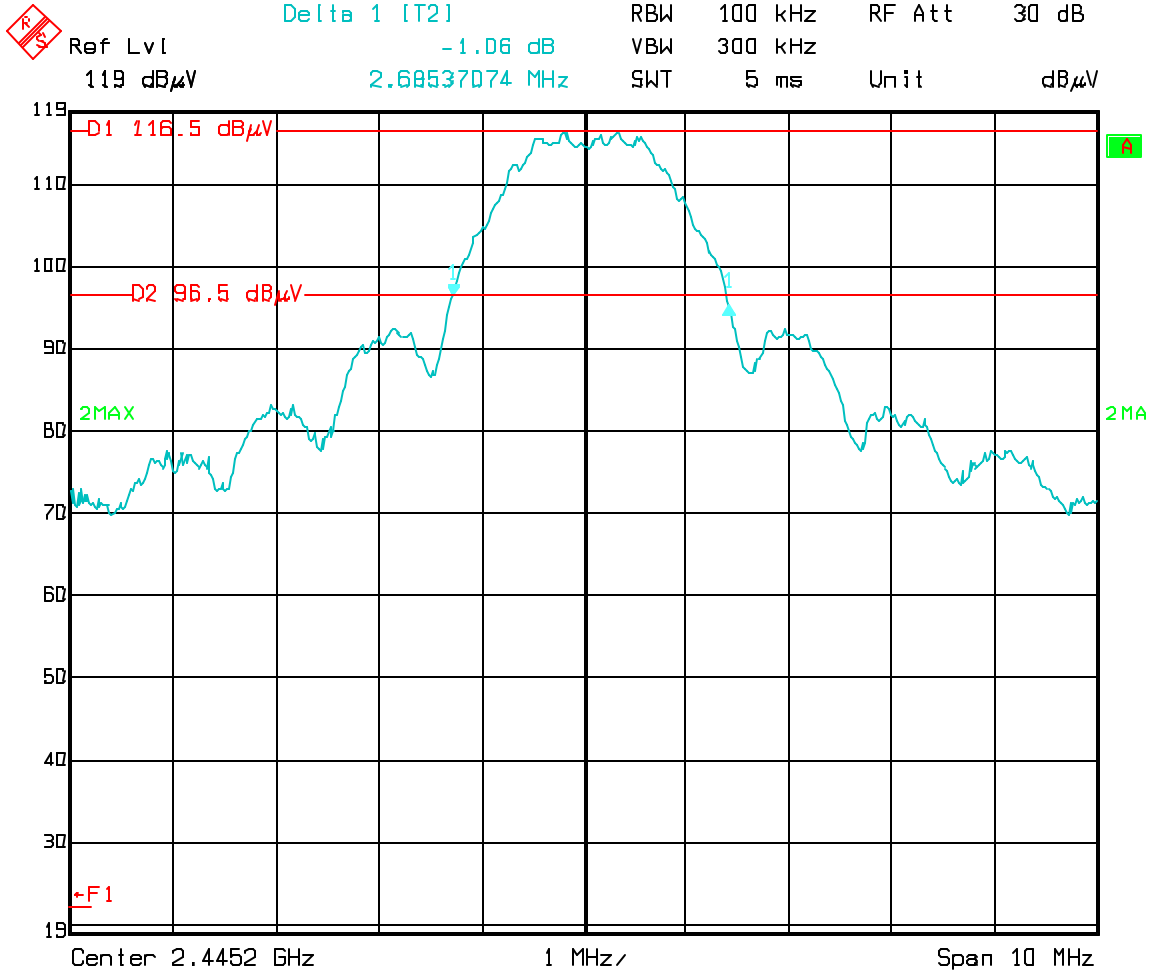
See Attached Plots.

Low Frequency 2405 MHz BW 2.70 MHz



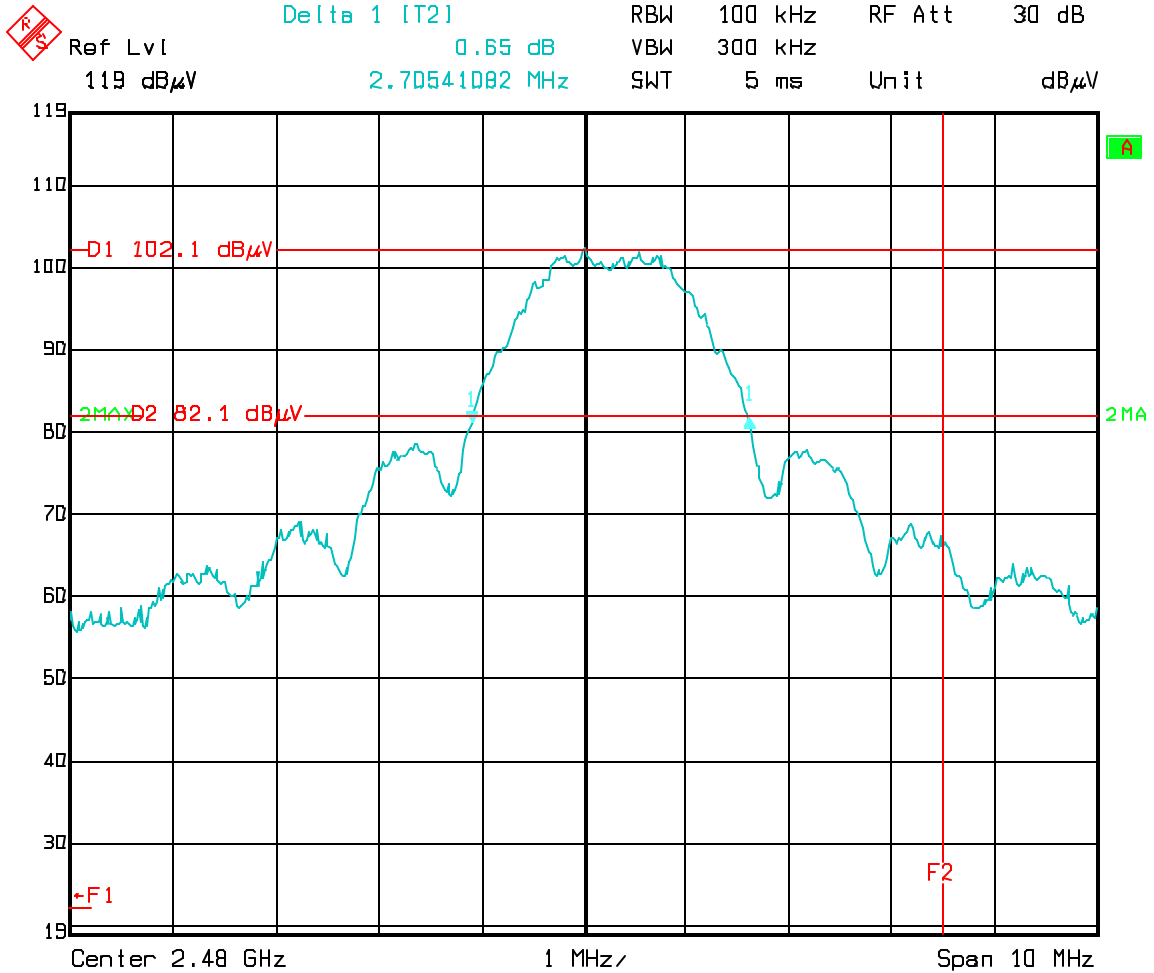
Date: 07.AUG.2007 15:17:38

Mid Frequency 2445 MHz BW 2.68 MHz



Date: 07.AUG.2007 15:19:44

High Frequency 2480 MHz BW 2.70 MHz



Date: 07.AUG.2007 15:38:41

1.14. Out-of-band Emissions / Radiated Emissions within Restricted Bands

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (uV/meter)	Measurement Distance (meter)
0.009-0.490	2400/F (kHz)	300
0.490-1.705	24000/F (kHz)	30
1.705-30.0	30	3
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Sec. 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a) (see Sec. 15.205(c)).

A8.5 Out-of-band Emissions

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under Section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

Test Conditions:

Model Number:	12860-001	Temperature:	31°C
Date:	8-21-2007	Humidity:	35%RH
Modification State:	Lo/Mid/High Channels	Tester:	Alan Laudani
		Laboratory:	SOATS

Test Results:

See Attached Table.

Worst Case Emission found was 0.8 dB below the average limit at 2483.5 MHz.

Emissions were searched for between 30 MHz and 25000 MHz.

No emissions were found between 30 MHz and 2400 MHz within 20 dB of the limits, therefore no table of emissions in this area are presented.

Additional Observations:

The Spectrum was searched from 30MHz to the 10th Harmonic, 25000 MHz.

There are no emissions found that do not comply to the restricted bands defined in FCC Part 15 Subpart C, 15.205 or Part 15.247(d). The EUT was measured on three orthogonal axes. Measurements below 1GHz were performed at 3m with a Quasi-Peak detector while an Average detector was used above 1GHz. The EUT was equipped with a new battery.

During Testing, it was found that the power levels of the lowest and highest channels either surpassed bandedge limits or restricted band limits for the third harmonics. A modification to the output filter dropped the third harmonic's energy to less than 20dB of the limit. This modification was a removal of the capacitor which was part of a PI filter, resulting in an L filter as shown on the schematic. The lowest and highest channels were reduced in power per programming and will be set to this reduced power in all production. To show compliance with restricted bands, the second and next from last channel (remaining programmed at full power) were measured and included in the table below.

Max level = correction factor + max of vertical or horizontal antenna measurement.

Correction factor = cable loss + antenna factor – preamplifier (if used).

Fundamental power levels do not require preamplifier.

Margin = Max Level – Spec. Limit, if negative, EUT complies.

Example

4810. MHz 47.3 > 44.4 so 47.3 selected Max at vertical polarity of antenna.

Correction factor = 16.1 = 10.6 cable loss + 32.8 antenna factor – 27.3 preamplifier

Radiated Emissions 30 MHz to 2400 MHz

No emissions within 20 dB of the limit detected.

Radiated Emissions: 2400 MHz To 10th Harmonic

Radiated Emissions Data

Complete	<u>YES</u>	Job # :	<u> </u>	Test # :	<u>1</u>
Preliminary	<u> </u>	Page	<u>1</u>	of	<u>1</u>
Client Name :	<u>OSI Security Devices</u>				
EUT Name :	<u>Single Door Controler</u>				
EUT Model # :	<u>12860-001</u>				
EUT Serial # :	<u> </u>				
EUT Config. :	<u>Transmit</u>				
Specification :	<u>FCC Part 15.247</u>				
Rod. Ant. # :	<u>NA</u>	Temp. (deg. C) :	<u>31</u>	Date :	<u>8/21/2007</u>
Bicon Ant.#:	<u>110</u>	Humidity (%) :	<u>35</u>	Time :	<u>1pm</u>
Log Ant.#:	<u>114</u>	EUT Voltage :	<u>6VDC</u>	Staff :	<u>aal</u>
DRG Ant. #	<u>529</u>	EUT Frequency :	<u> </u>	Photo ID:	<u> </u>
Dipole Ant.#:	<u>NA</u>	Phase:	<u> </u>	Peak Res Bandwidth:	<u>1 MHz</u>
Cable#:	<u>60ft</u>	Location:	<u>SOATS</u>	Peak Video Bandwidth:	<u>1 MHz</u>
Preamp#:	<u>317</u>	Distance:	<u>3 m</u>	AVE Res Bandwidth:	<u>1 MHz</u>
Spec An.#:	<u>835</u>	Duty Cycle Factor	<u> </u>	AVE Video Bandwidth:	<u>10 Hz</u>
QP #:	<u>NA</u>				

Meas. Freq. (MHz)	Vertical (dBuV)		Horizontal (dBuV)		CF (db)	Max Level (dBuV/m)		Spec. Limit (dBuV/m)		Margin dB		EUT Rotation	Ant. Height	Pass Fail Unc.	Comment		
	pk	av	pk	av		pk	av	pk	av	pk	av						
																Bandedge	
2400.00	26.9	16.9			35.6	62.5	52.5	74.0	54.0	-11.5	-1.5			Pass		100 kHz RBW	
2405.00	60.3	56.9	47.8	44.3	35.6	95.9	92.5	125.3	105.3							channel 1	
4810.00	47.3	36.4	44.4	32.6	16.1	63.4	52.5	74.0	54.0	-10.6	-1.5			Pass		Reduced power	
2410.00	70.7	68.1	57.7	55.3	7.5	78.2	75.6	125.3	105.3							channel 2	
4820.00	48.1	35.6	43.0	31.8	16.1	64.2	51.7	74.0	54.0	-9.8	-2.3			Pass		Full power	
2445.00	73.0	70.2	61.5	58.8	35.6	108.6	105.8	125.3	105.3							mid channel	
4890.40	47.8	35.8	45.7	32.3	16.1	63.9	51.9	74.0	54.0	-10.1	-2.1			Pass			
2475.24	74.0	71.3	59.0	56.4	35.6	109.6	106.9	125.3	105.3							channel 25	
4950.48	46.5	35.2	43.1	32.2	16.1	62.6	51.3	74.0	54.0	-11.4	-2.7			Pass		Full power	
2480.00	60.6	58.2	47.2	43.3	35.6	96.2	93.8	125.3	105.3							Reduced power	
4960.00	44.4	34.3	42.8	32.5	16.1	60.5	50.4	74.0	54.0	-13.5	-3.6			Pass		channel 26	
																	Bandedge
2483.50	28.3	17.6			35.6	63.9	53.2	74.0	54.0	-10.1	-0.8			Pass		100 kHz RBW	

1.15. Minimum 6dB RF Bandwidth

(a)(2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

A8.2 (a) The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Conditions:

Model Number:	12860-001	Temperature:	31°C
Date:	8-21-07	Humidity:	35%RH
Modification State:	Lo/Mid/High Channels	Tester:	Alan Laudani
		Laboratory:	SOATS

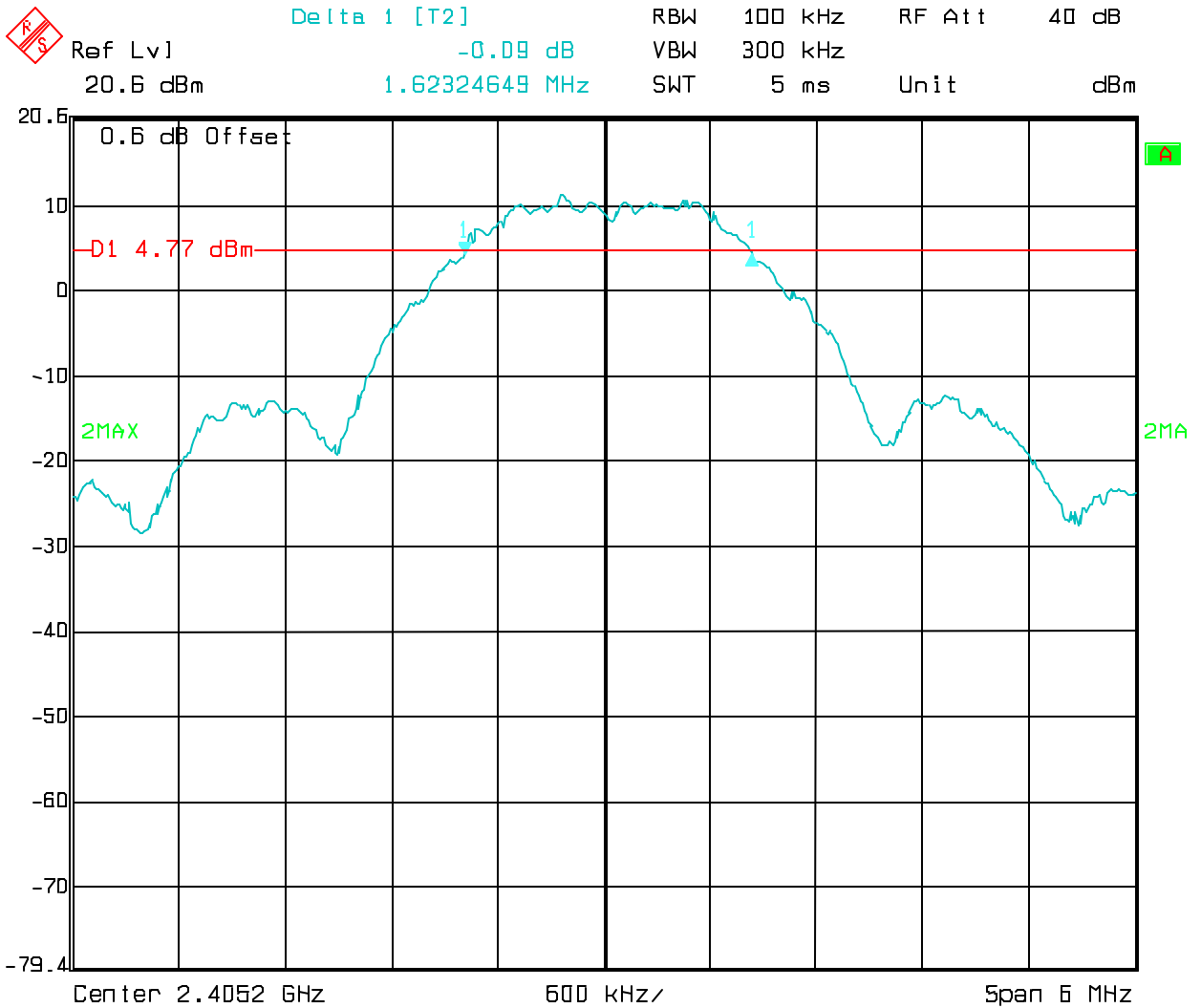
Test Results:

6dB Bandwidth:

The antenna port of the EUT was connected to the input of a spectrum analyser. The analyser’s RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyser’s frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

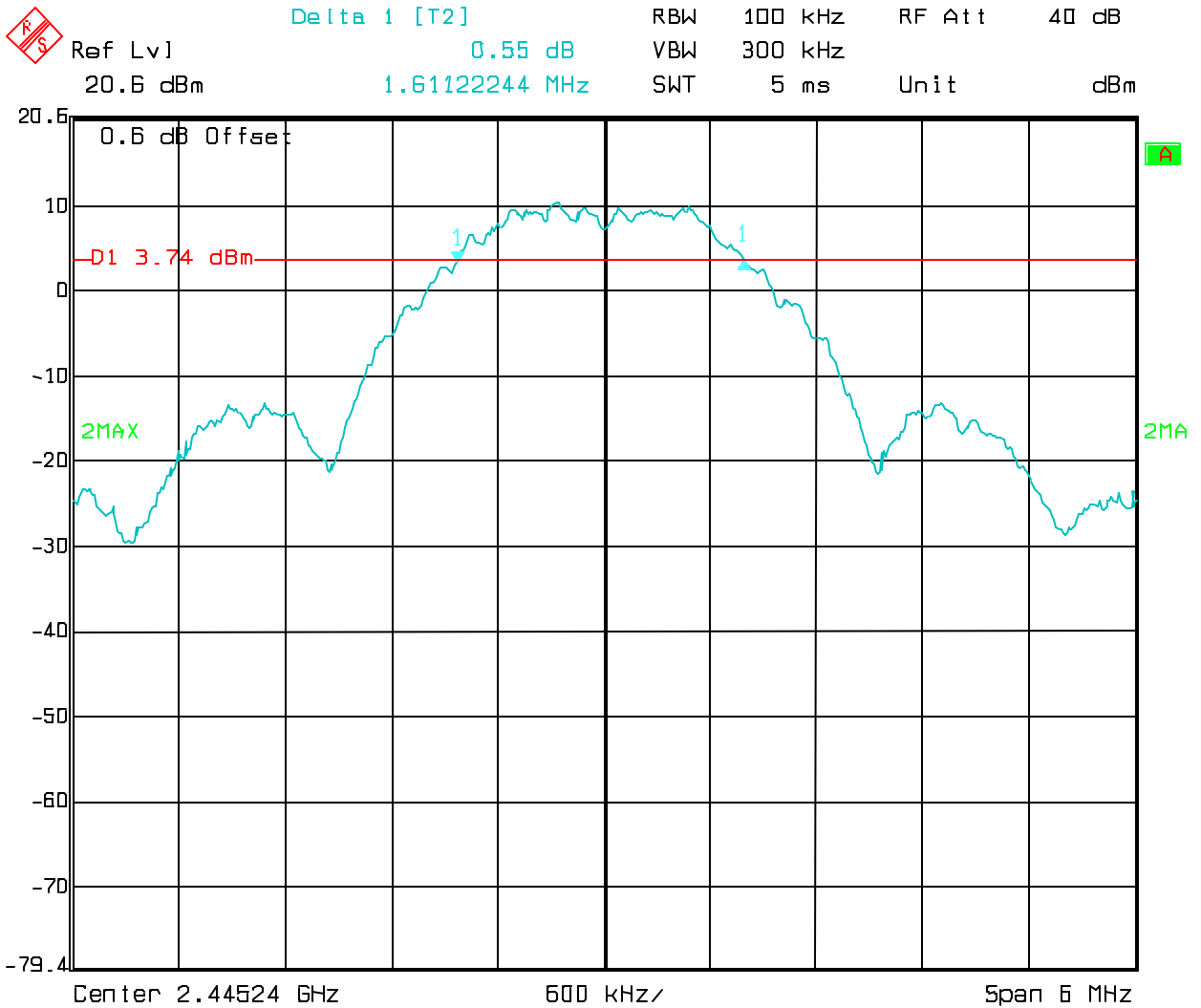
Channel Range	6 dB Bandwidth
Low (2405 MHz)	1.62 MHz
Mid (2445 MHz)	1.61 MHz
High (2480 MHz)	1.64 MHz

Low Channel 2405 MHz



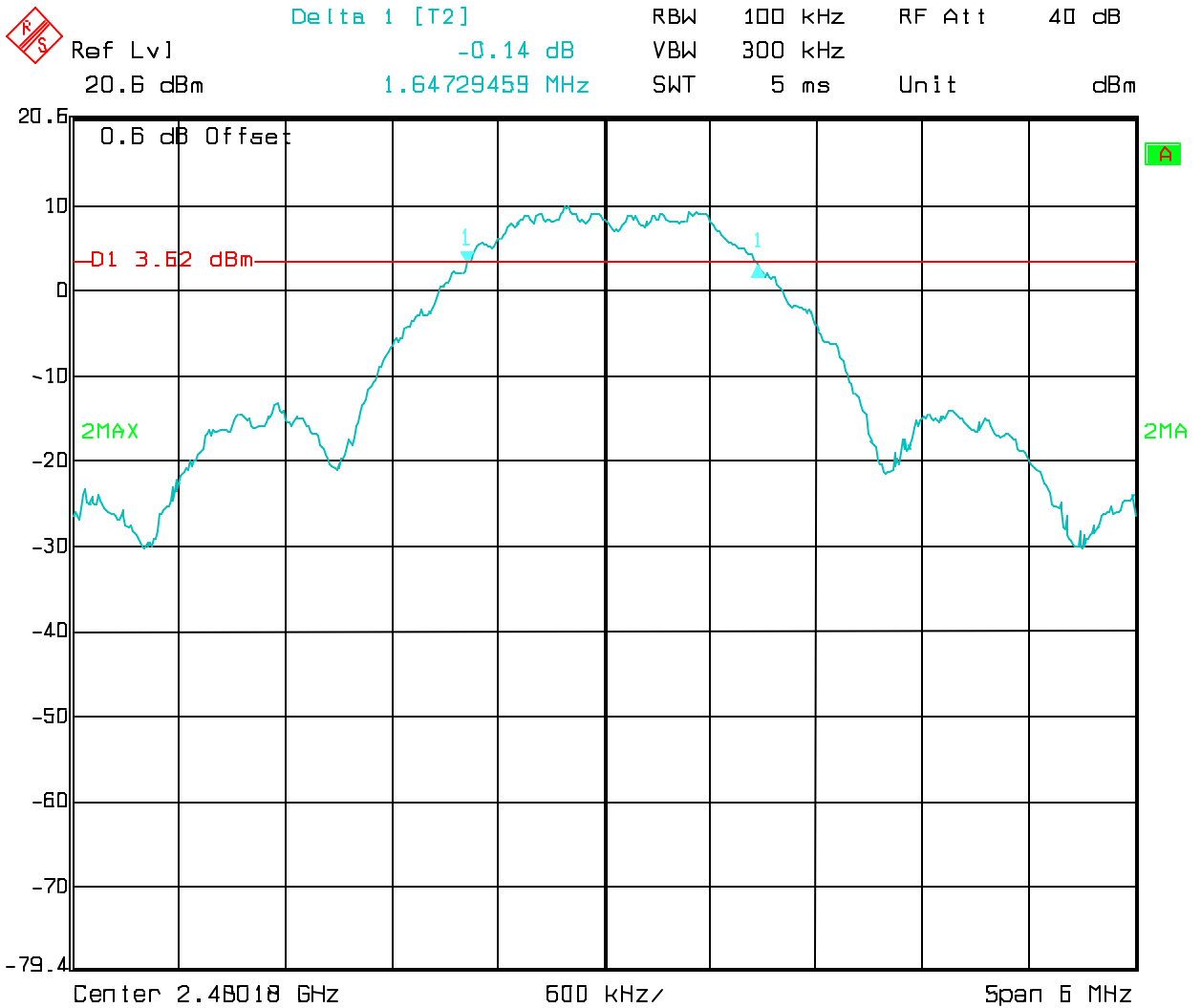
Date: 21.JUL.2007 12:59:48

Mid Channel 2445 MHz



Date: 21.JUL.2007 12:57:35

High Channel 2480 MHz



Date: 21.JUL.2007 13:03:24

1.16. Maximum peak output power

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signalling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

A8.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under Section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

Test Conditions:

Model Number:	12860-001	Temperature:	31°C
Date:	February 11, 2008	Humidity:	35%RH
Modification State:	Lo/Mid/High Channels	Tester:	Alan Laudani
		Laboratory:	Nemko SR1

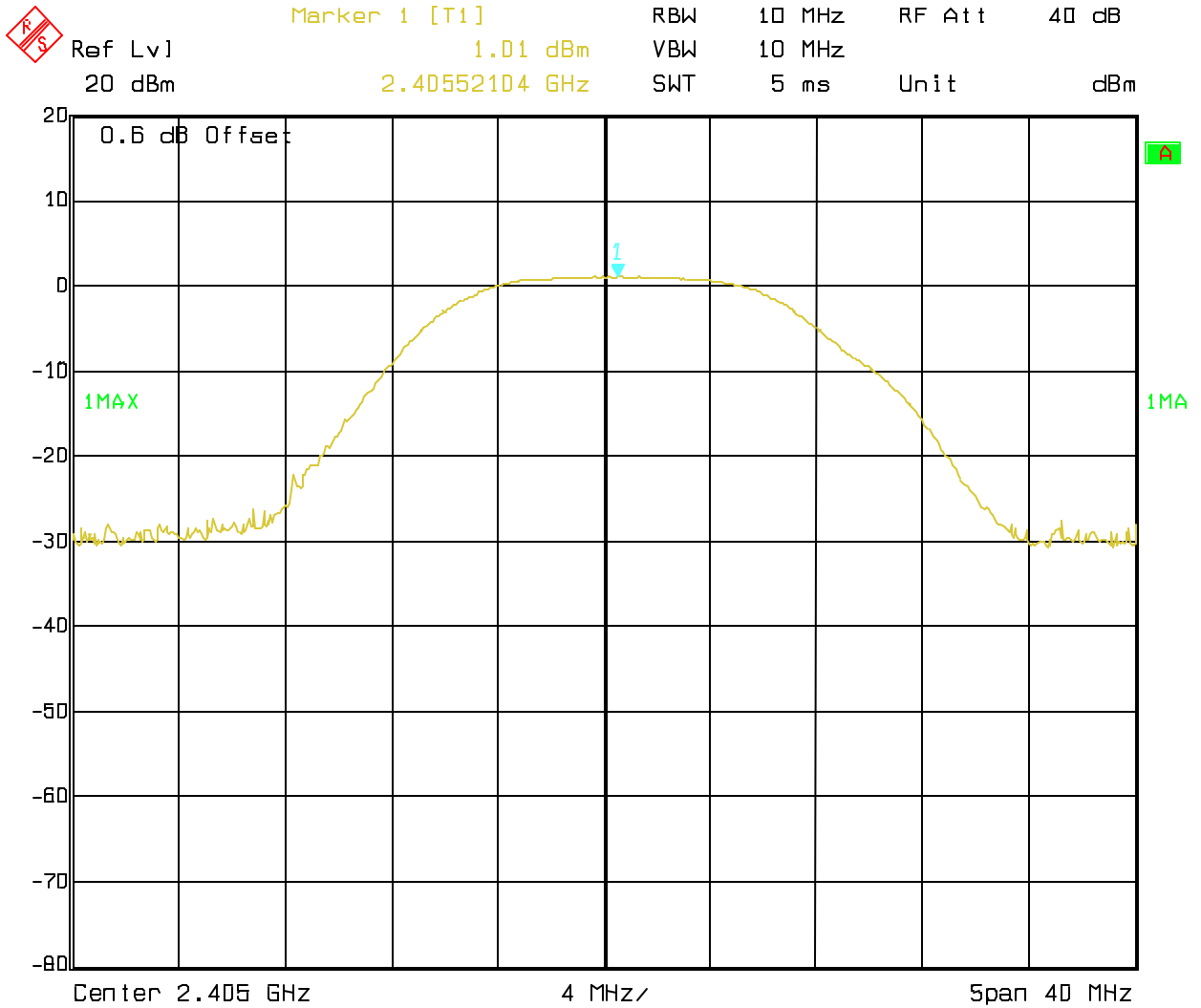
Test Results:

Conducted Output Power:

The antenna port of the EUT was connected to the input of a spectrum analyser. The Resolution BW was set greater than the 6 dB bandwidth. The cable's loss was accounted for by a 0.6 dB offset. The power was taken with freshly installed batteries, and with AC and DC Power supplies. AC and DC power supplies were connected to an autotransformer that changed their 120 Vac input +/- 15%. No RF output power variance was noted.

Channel	Frequency	Measured Output dBm	Gain dBi	EIRP	Power (W)
Low	2405 MHz	1.01 dBm	2.20	3.21	0.0021 mW
Mid	2445 MHz	12.61 dBm	2.20	14.81	30.2 mW
High	2480 MHz	0.52 dBm	2.20	2.72	0.0053 mW

Low Channel

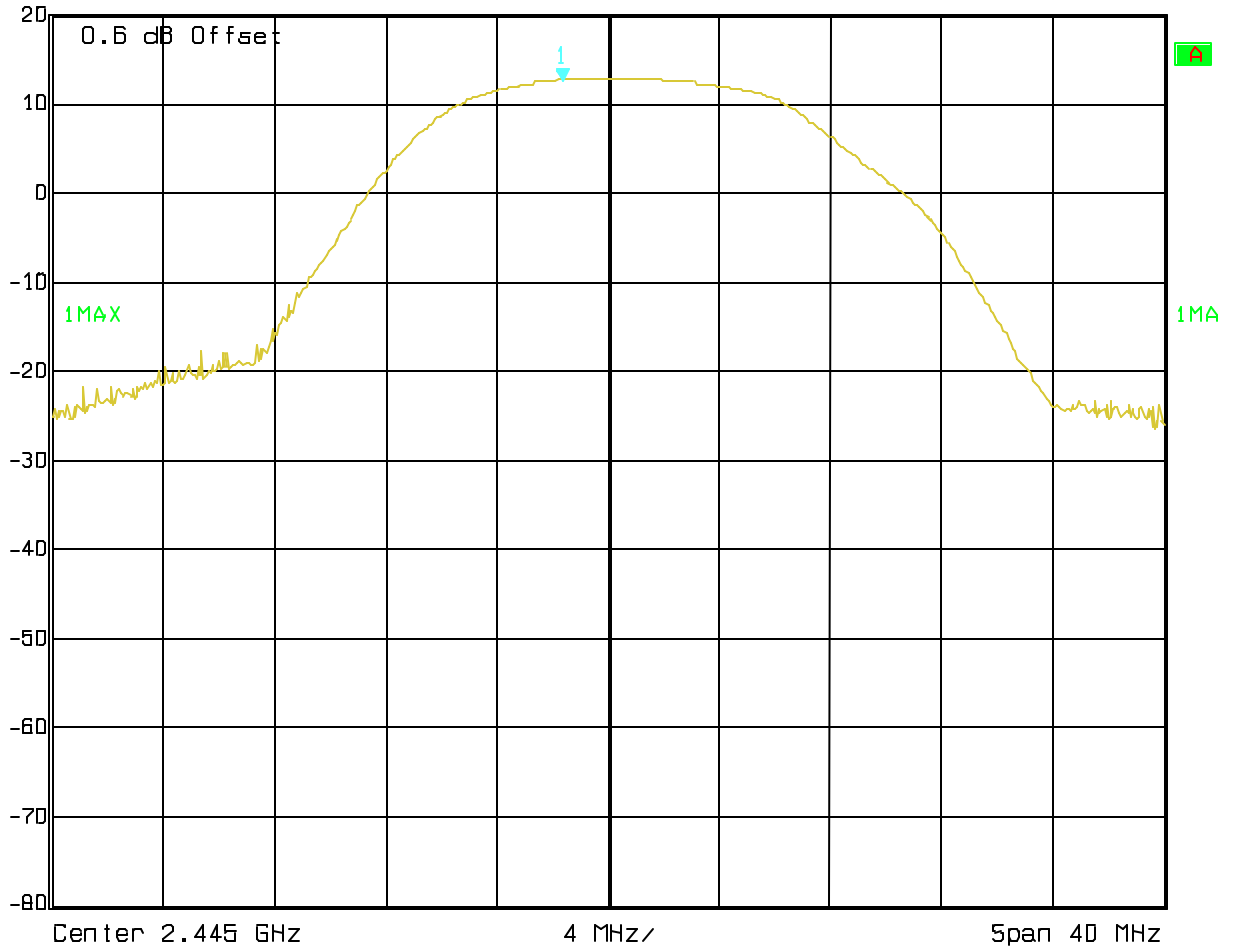


Date: 22.JUL.2007 18:09:55

Mid Channel

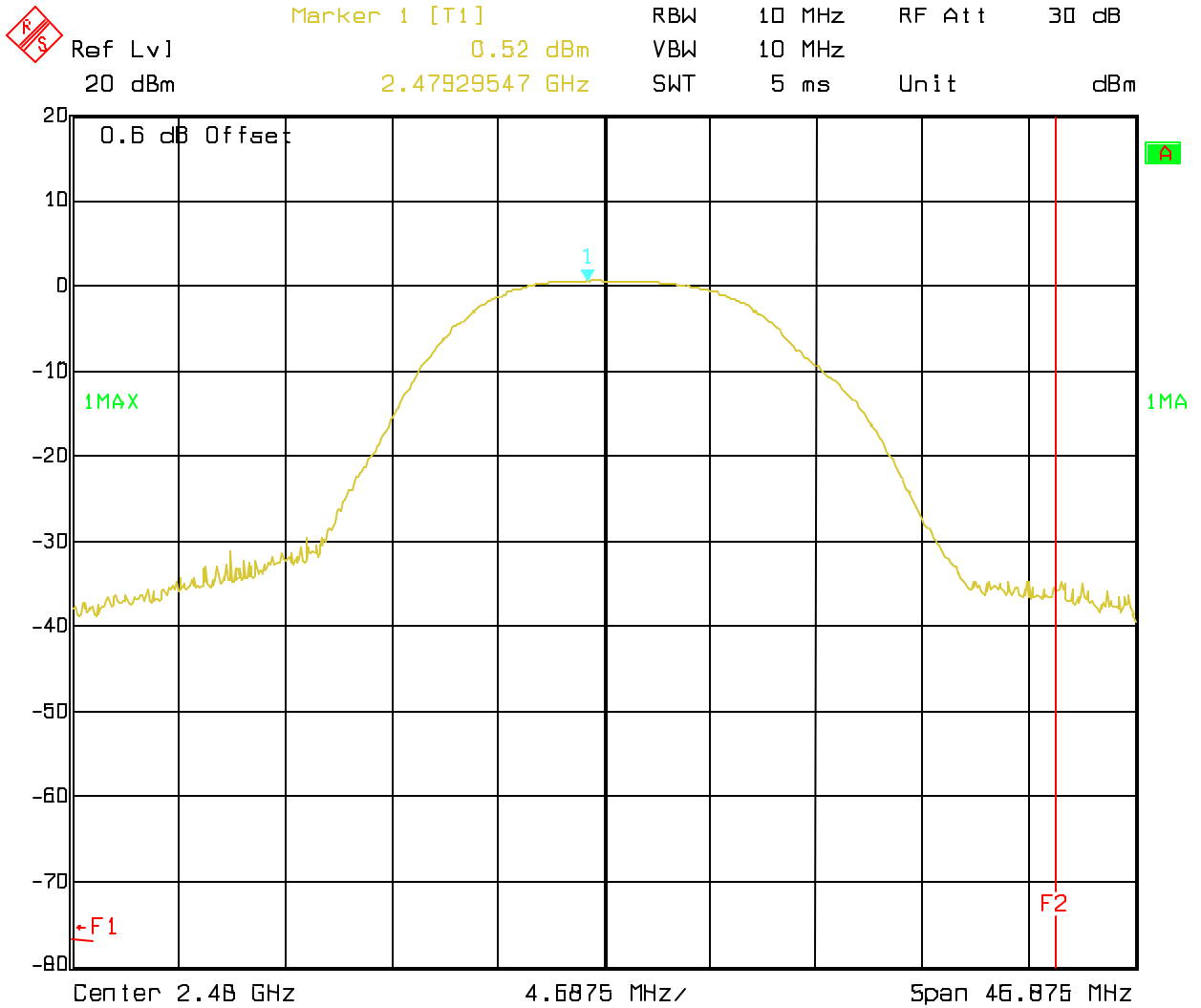


Ref Lvl 20 dBm
Marker 1 [T1] 12.61 dBm
2.44335671 GHz
RBW 10 MHz
RF Att 30 dB
VBW 10 MHz
SWT 5 ms
Unit dBm



Date: 22.JUL.2007 18:24:07

High Channel



Date: 22.JUL.2007 18:35:56

1.17. Spurious Emissions (RF Antenna Conducted Test)

<p>In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).</p>

Test Conditions:

Model Number:	12860-001	Temperature:	31°C
Date:	August 22, 2007	Humidity:	35%RH
Modification State:	Lo/Mid/High Channels	Tester:	Alan Laudani
		Laboratory:	Nemko SR1

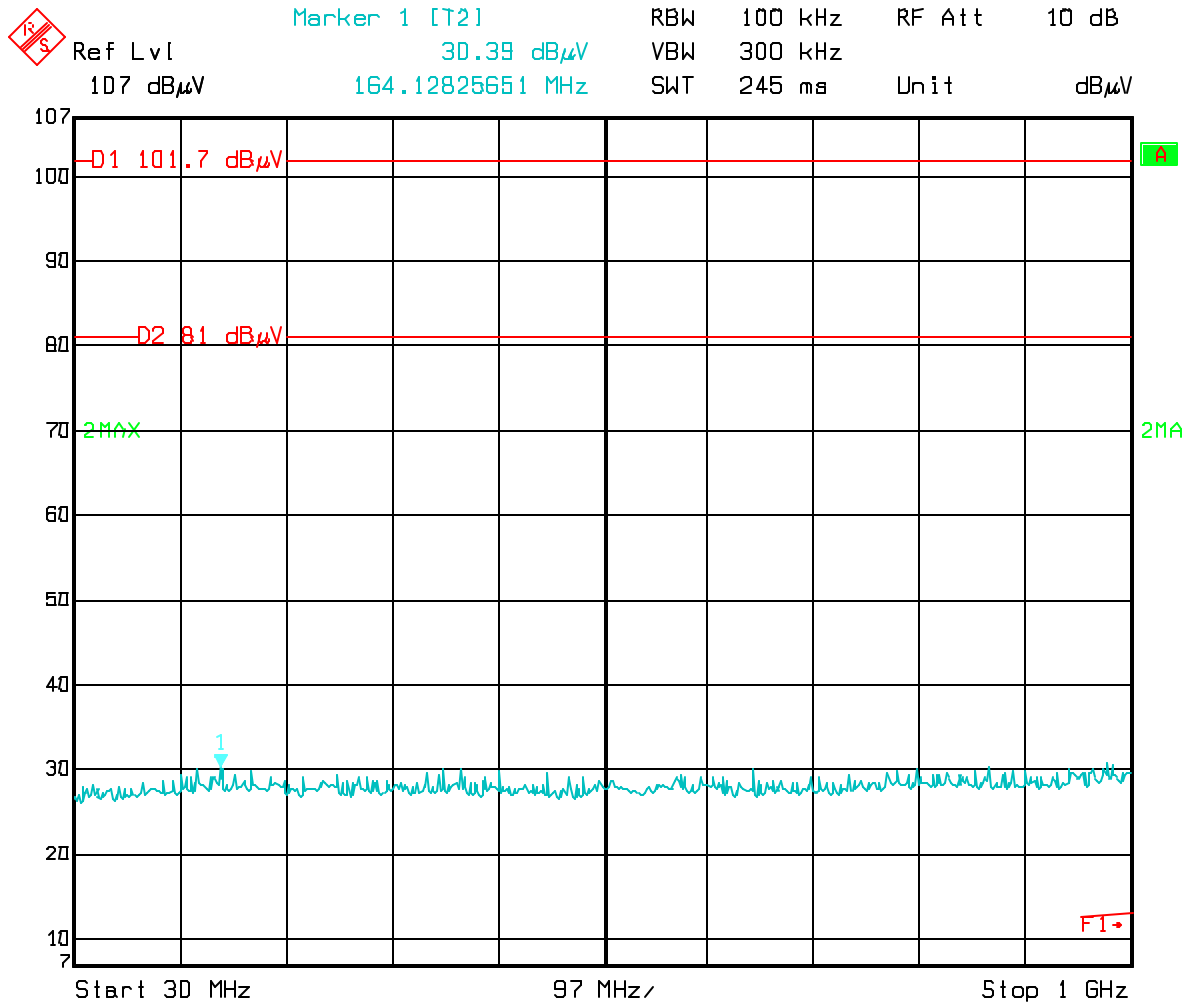
Test Results:

See Attached Plots.

The transmitter output was connected to the spectrum analyzer via a low loss cable. RBW was set to 100kHz and VBW to 300kHz with suitable frequency span and appropriate sweep time.

The EUT was investigated for spurious emission on Low, Mid and High channels between 30 MHz and 25 GHz.

Low Channel (2405.0 MHz)



Date: 07.AUG.2007 15:11:45

Nemko USA, Inc.

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Report Number: **2007 086393 EMC**

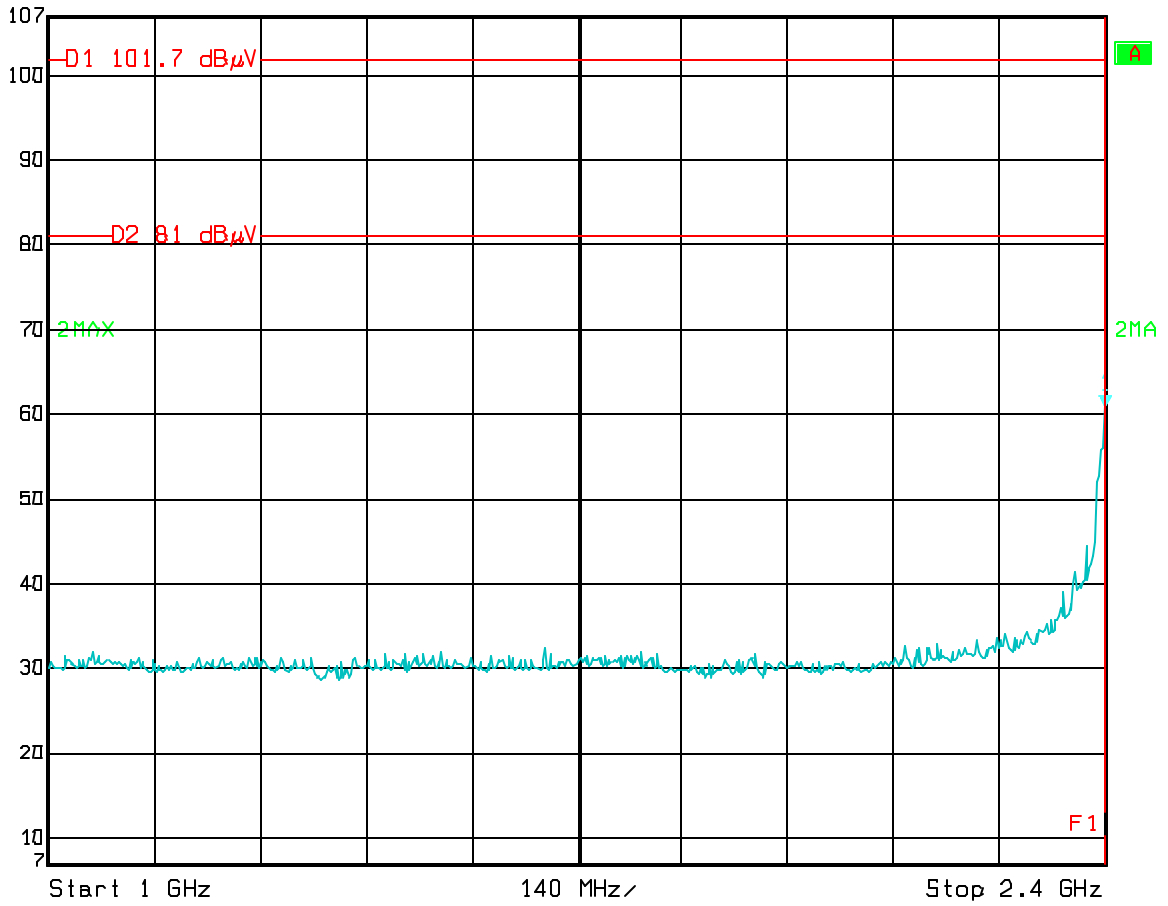
Specification: FCC Part 15 Subpart C, 15.247



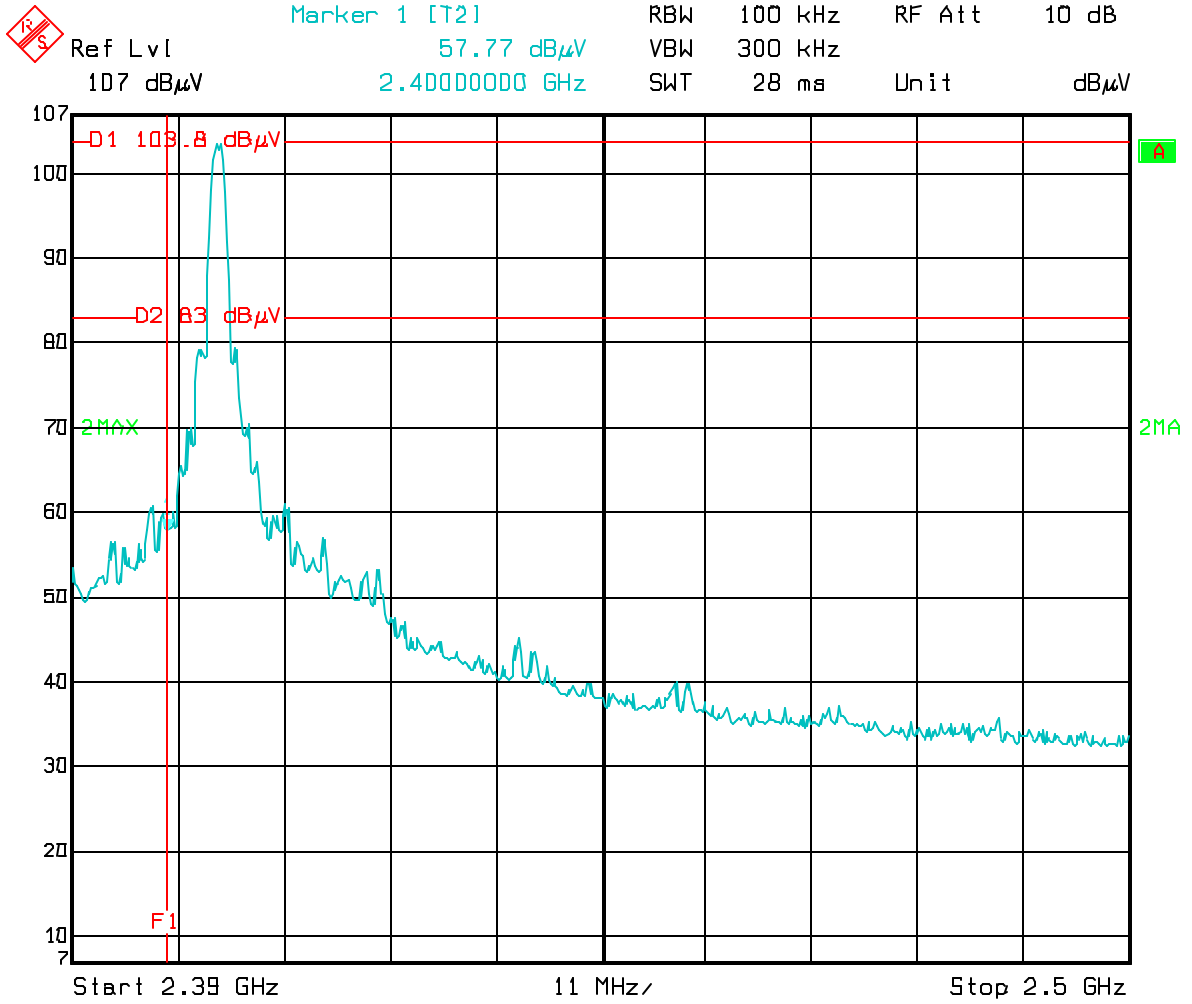
Ref Lvl
107 dB μ V

Marker 1 [T2]
60.81 dB μ V
2.40000000 GHz

RBW 100 kHz RF Att 10 dB
VBW 300 kHz
SWT 350 ms Unit dB μ V



Date: 07.AUG.2007 15:12:25



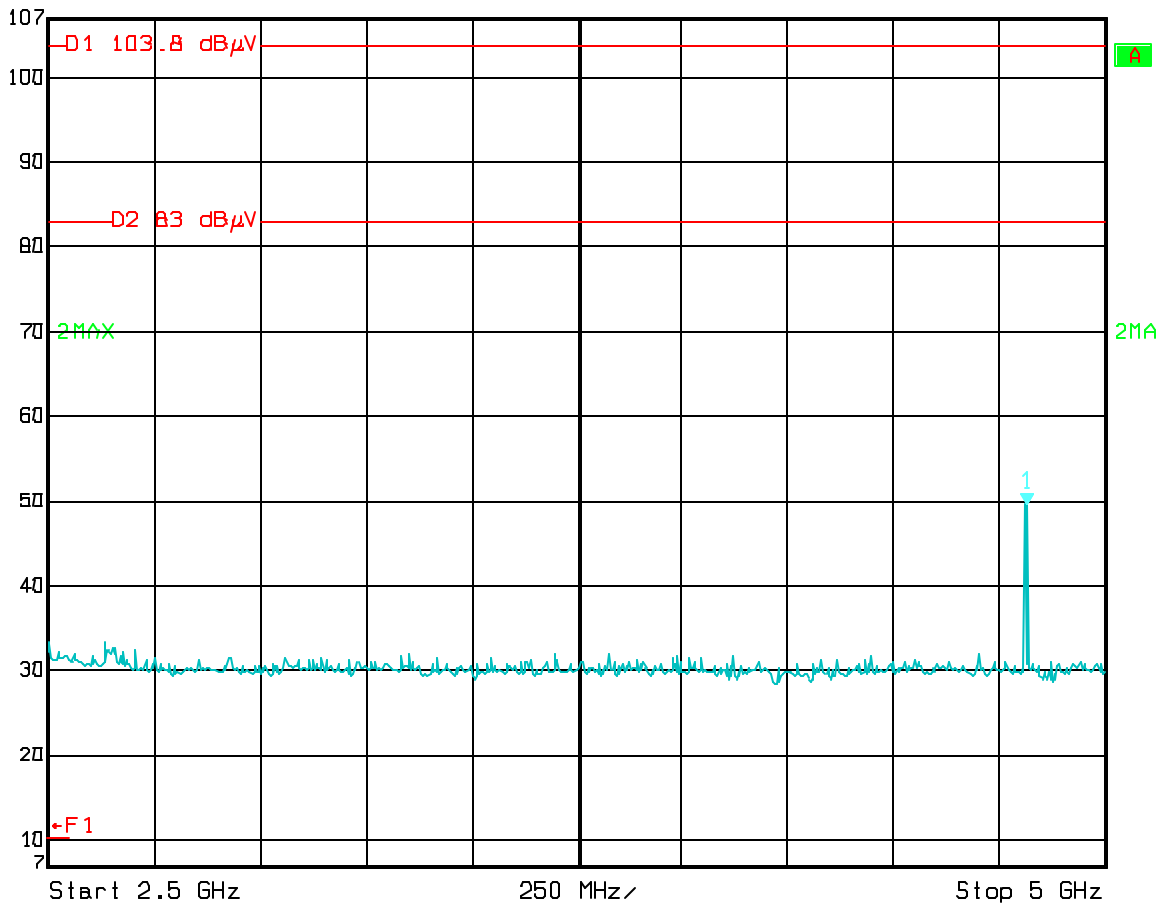
Date: 07.AUG.2007 15:13:18



Ref Lvl
107 dB μ V

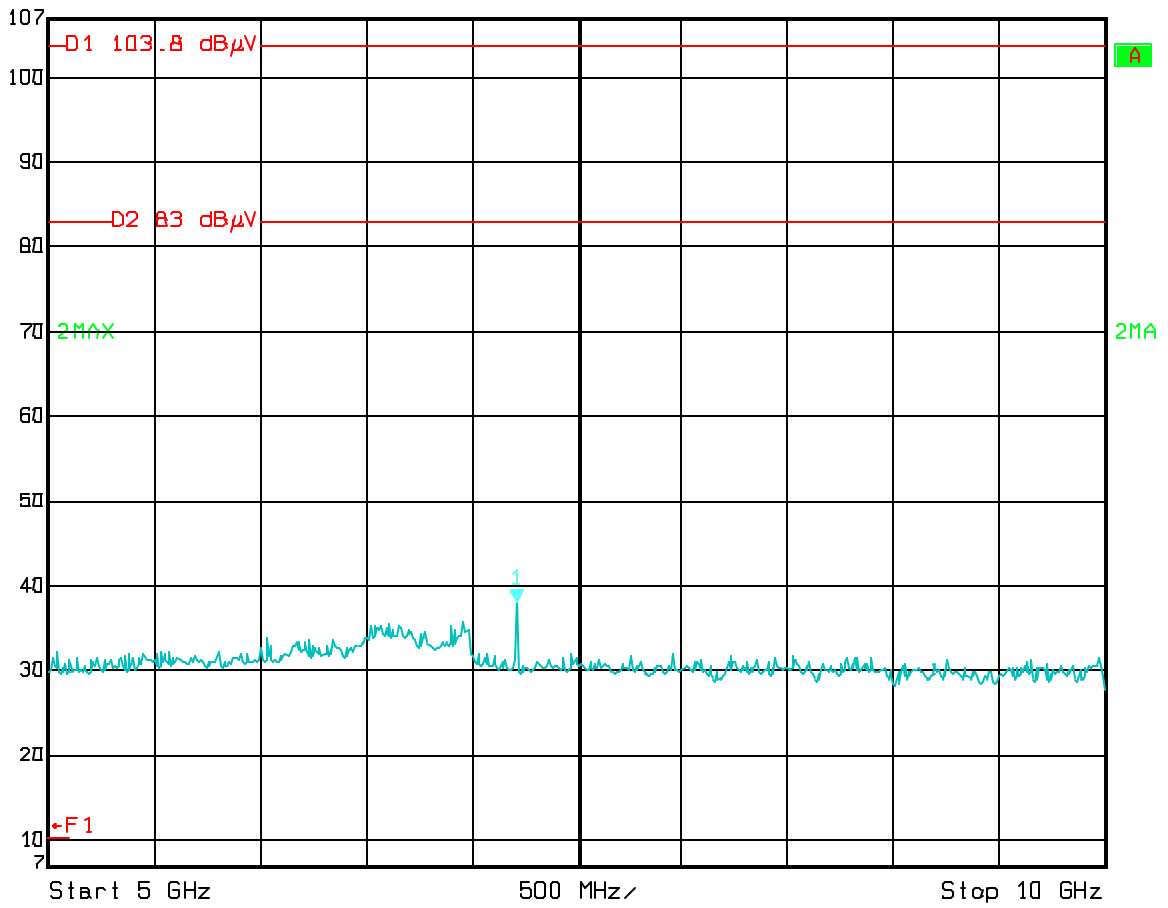
Marker 1 [T2]
49.57 dB μ V
4.81462926 GHz

RBW 100 kHz RF Att 10 dB
VBW 300 kHz
SWT 640 ms Unit dB μ V



Date: 07.AUG.2007 15:13:56

 Ref Lvl 107 dB μ V
Marker 1 [T2] 38.16 dB μ V
7.21442886 GHz
RBW 100 kHz RF Att 10 dB
VBW 300 kHz
SWT 1.25 a Unit dB μ V



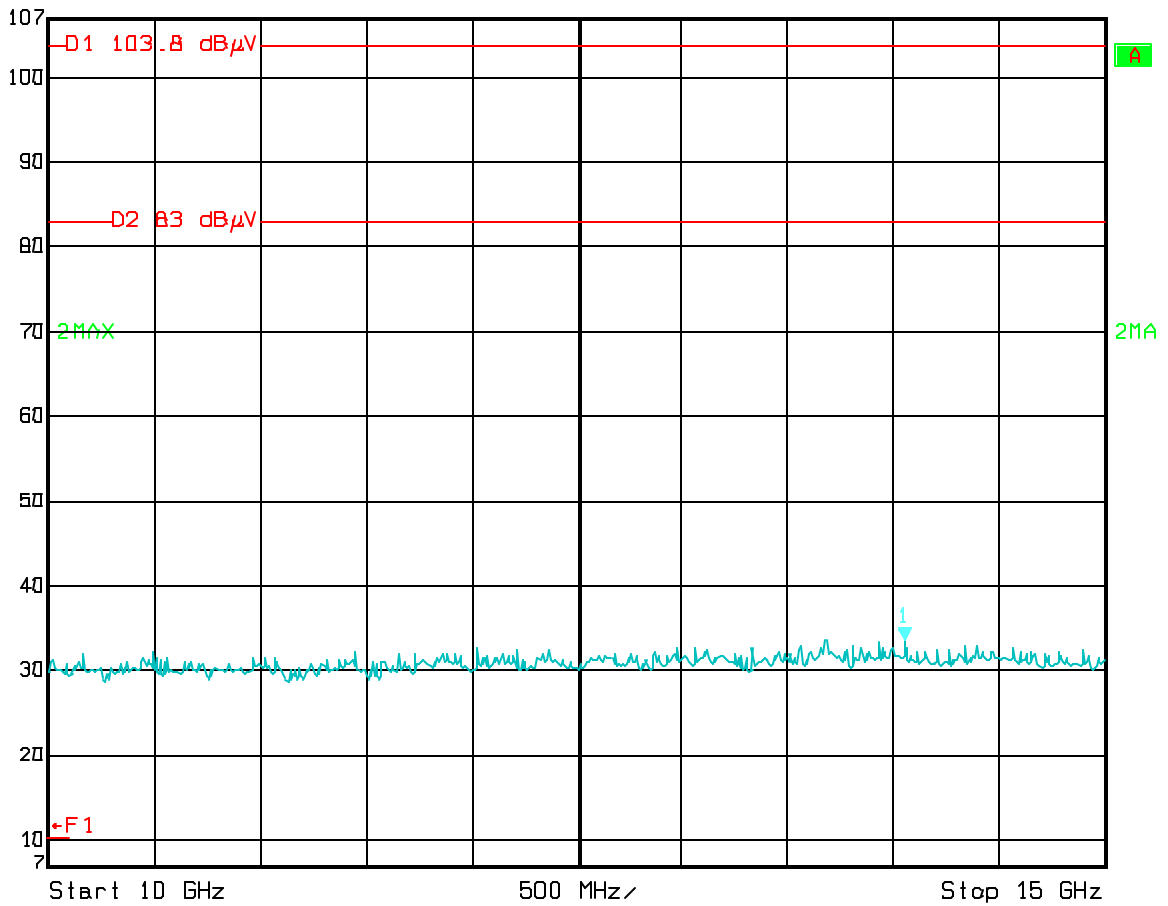
Date: 07.AUG.2007 15:14:21



Ref Lvl
107 dB μ V

Marker 1 [T2]
33.61 dB μ V
14.04809619 GHz

RBW 100 kHz RF Att 10 dB
VBW 300 kHz
SWT 1.25 a Unit dB μ V



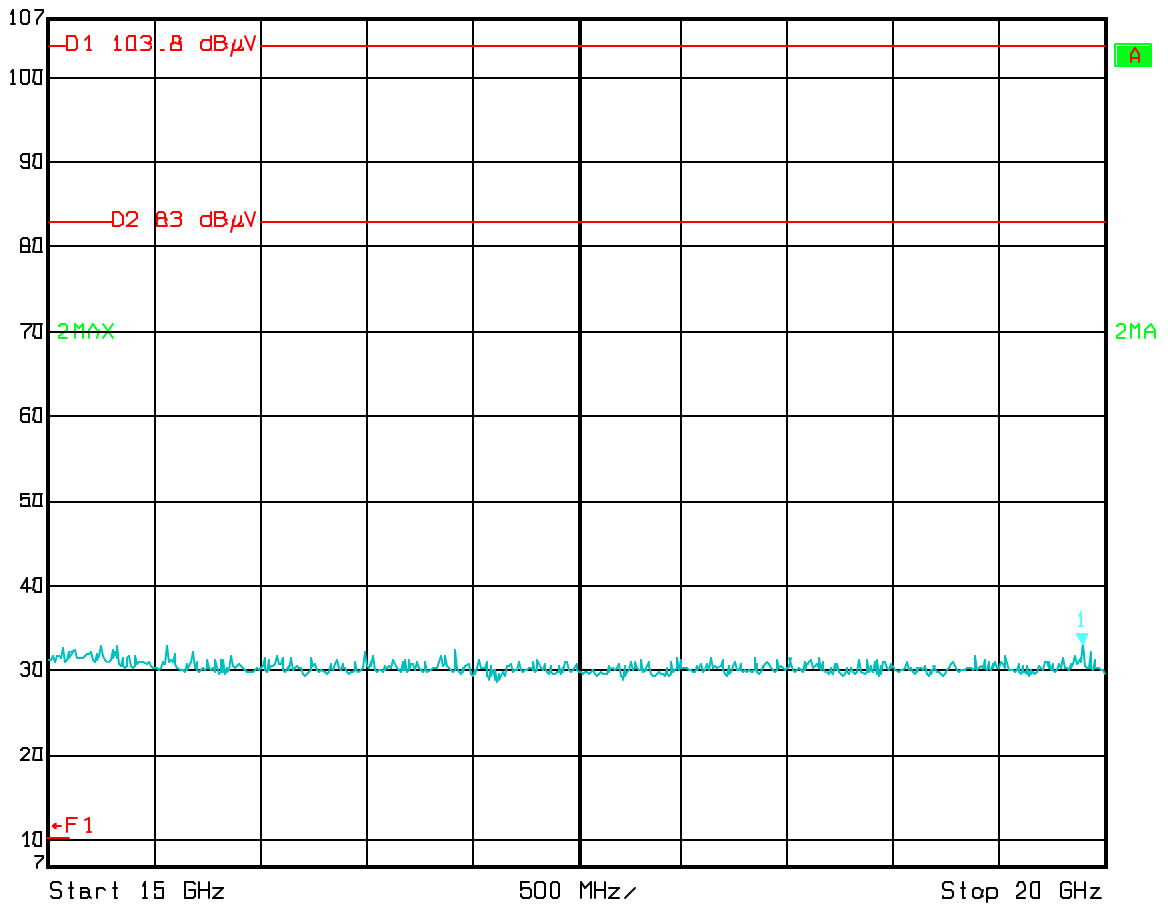
Date: 07.AUG.2007 15:15:02



Ref Lvl
107 dB μ V

Marker 1 [T2]
33.03 dB μ V
19.88977956 GHz

RBW 100 kHz RF Att 10 dB
VBW 300 kHz
SWT 1.25 a Unit dB μ V



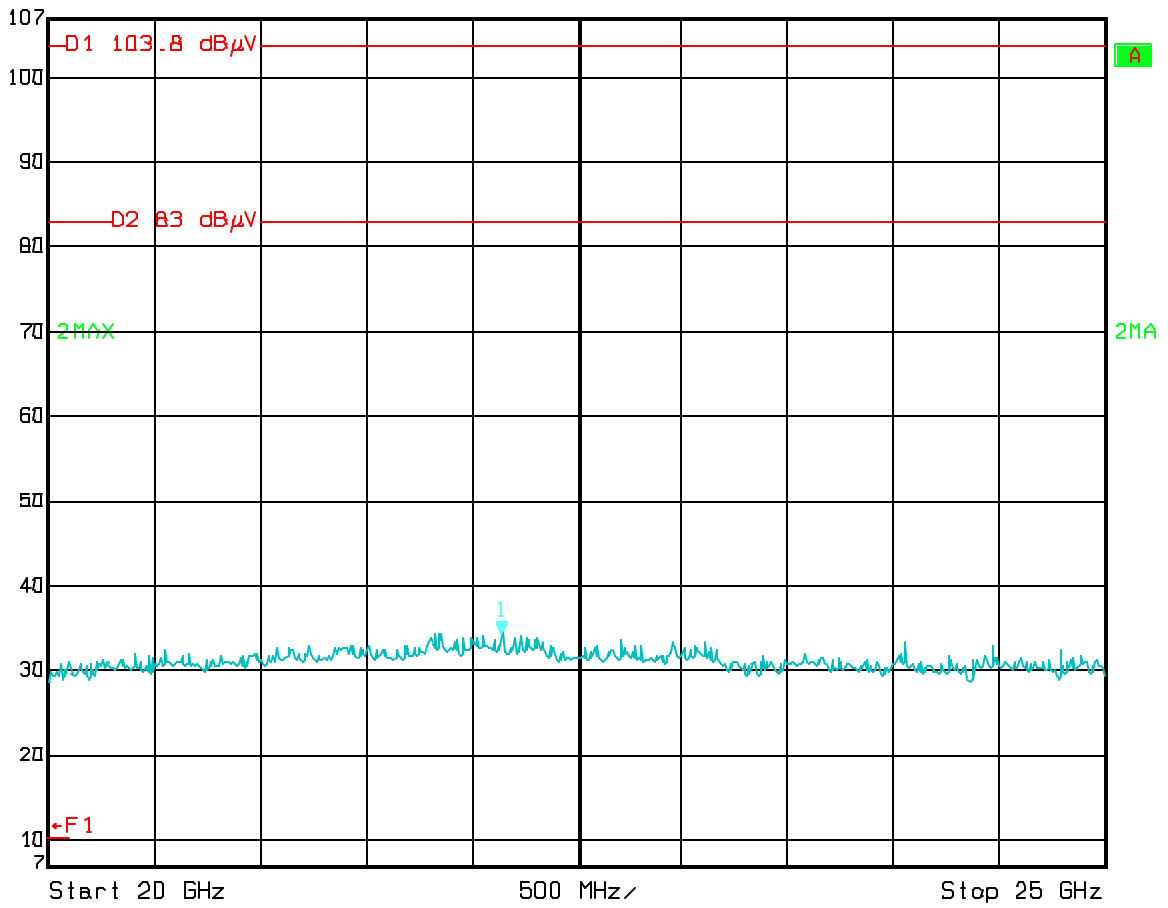
Date: 07.AUG.2007 15:15:28



Ref Lvl
107 dB μ V

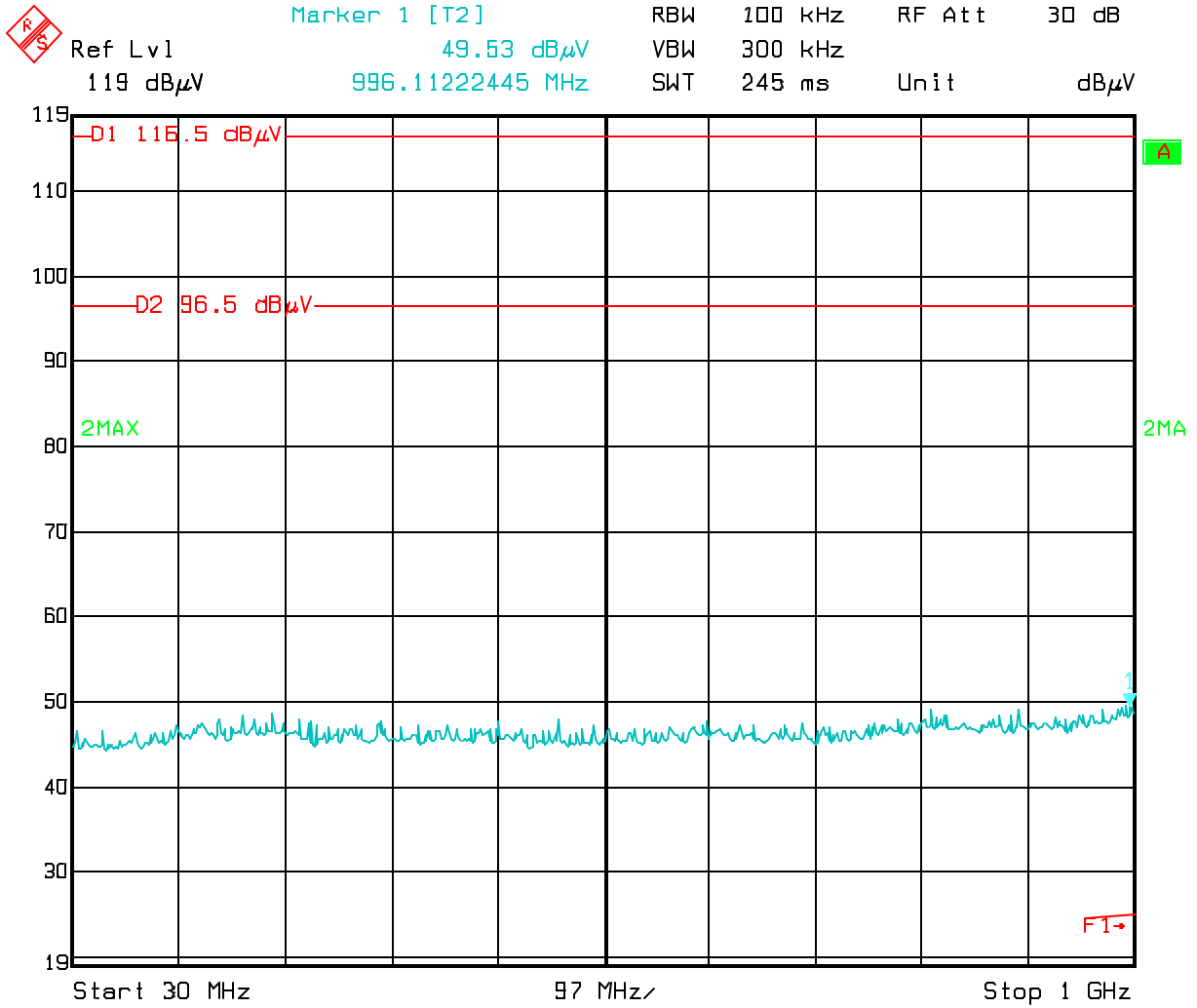
Marker 1 [T2]
34.43 dB μ V
22.14428858 GHz

RBW 100 kHz RF Att 10 dB
VBW 300 kHz
SWT 1.25 a Unit dB μ V



Date: 07.AUG.2007 15:16:22

Mid Channel (2455.2 MHz)



Date: 07.AUG.2007 15:20:19

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T8H-SDC2K

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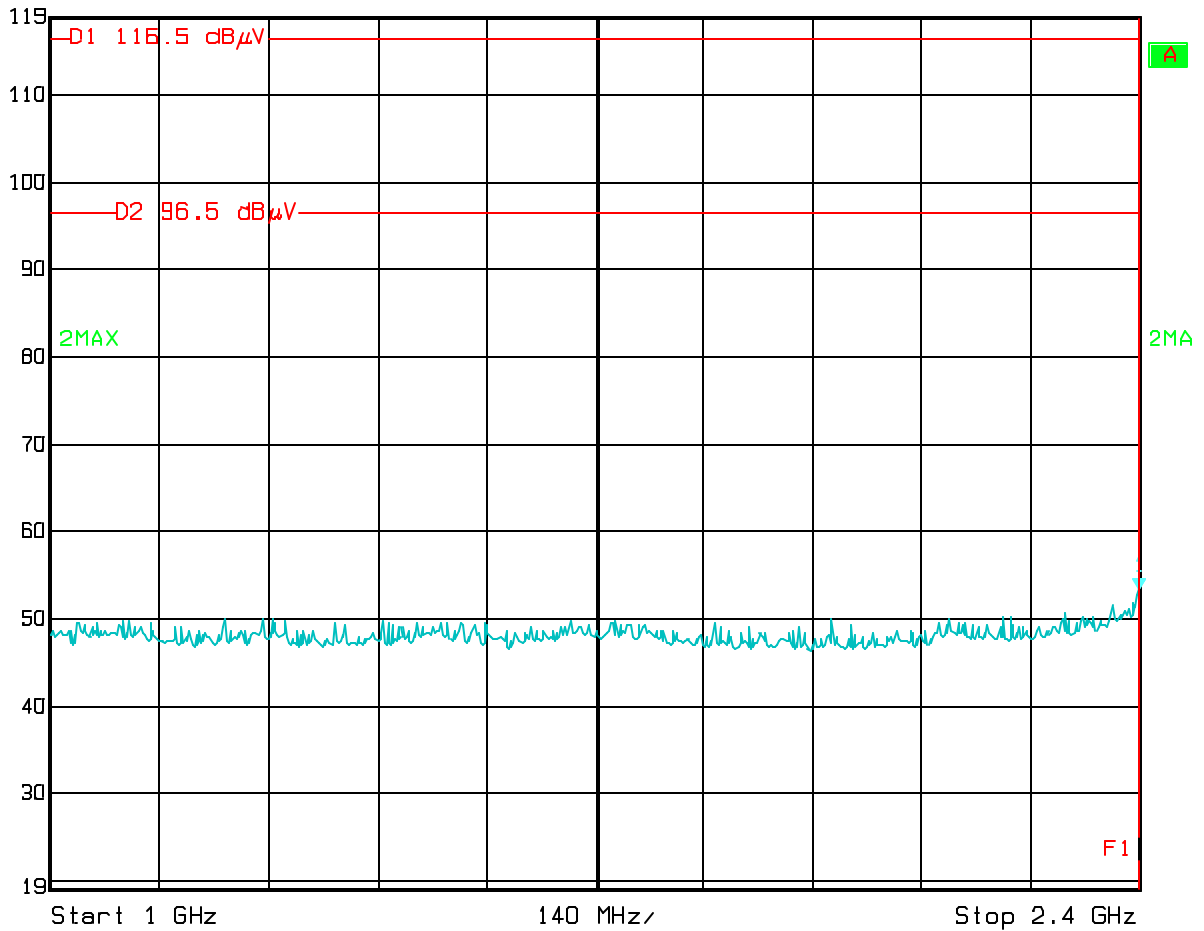
Phone (858) 755-5525 Fax (858) 452-1810

Report Number: 2007 086393 EMC

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2] RBW 100 kHz RF Att 30 dB
53.34 dB μ V VBW 300 kHz
2.40000000 GHz SWT 350 ms Unit dB μ V
Ref Lvl 119 dB μ V



Date: 07.AUG.2007 15:20:47

Nemko USA, Inc.

6498A-SDC2K

T8H-SDC2K

11696 Sorrento Valley Road, Suite F, San Diego, CA 92121

Phone (858) 755-5525 Fax (858) 452-1810

Report Number: 2007 086393 EMC

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

RBW 100 kHz RF Att 30 dB

Ref Lvl

52.43 dB μ V

VBW 300 kHz

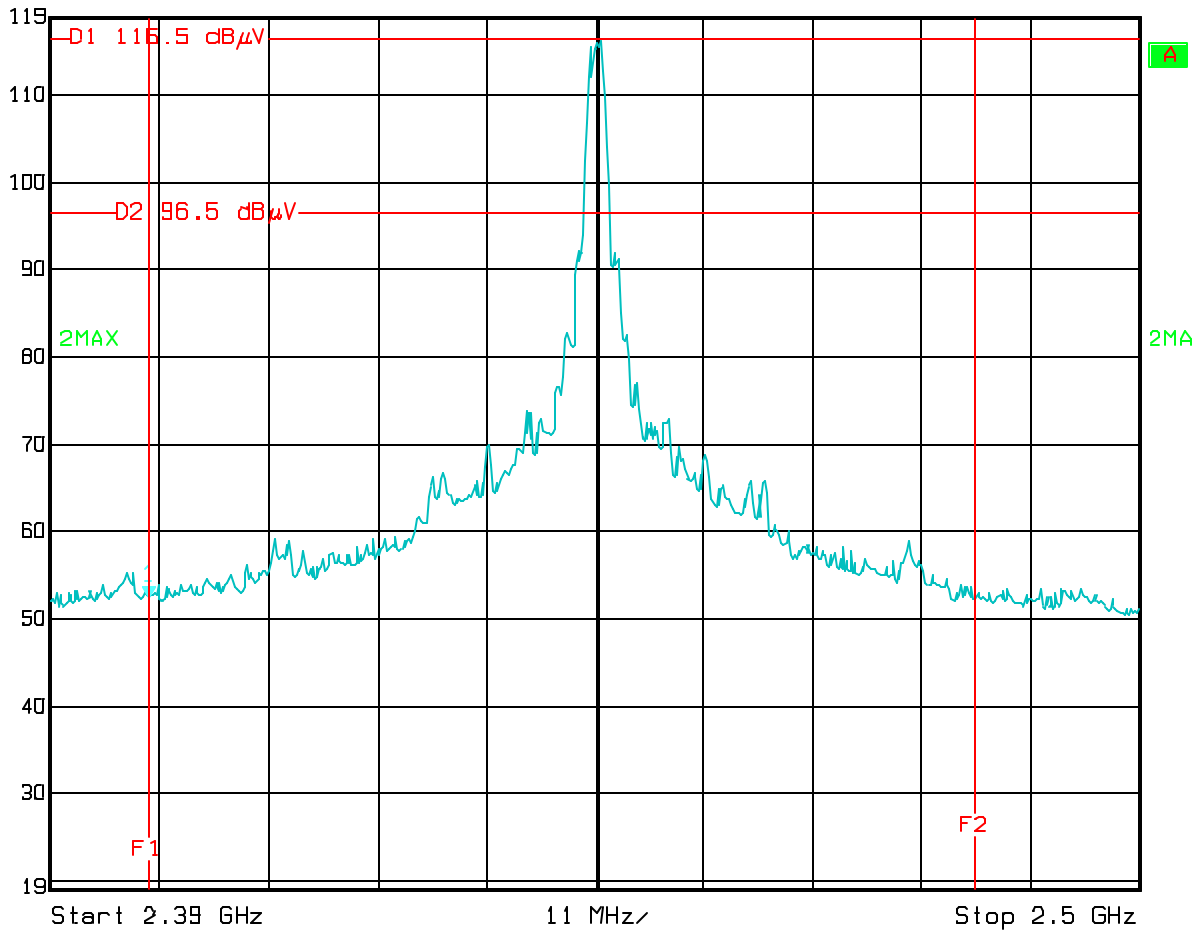
119 dB μ V

2.40000000 GHz

SWT 28 ms

Unit

dB μ V



Date: 07.AUG.2007 15:21:33

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6498A-SDC2K

T8H-SDC2K

11696 Sorrento Valley Road, Suite F, San Diego, CA 92121

Phone (858) 755-5525 Fax (858) 452-1810

Report Number: **2007 086393 EMC**

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

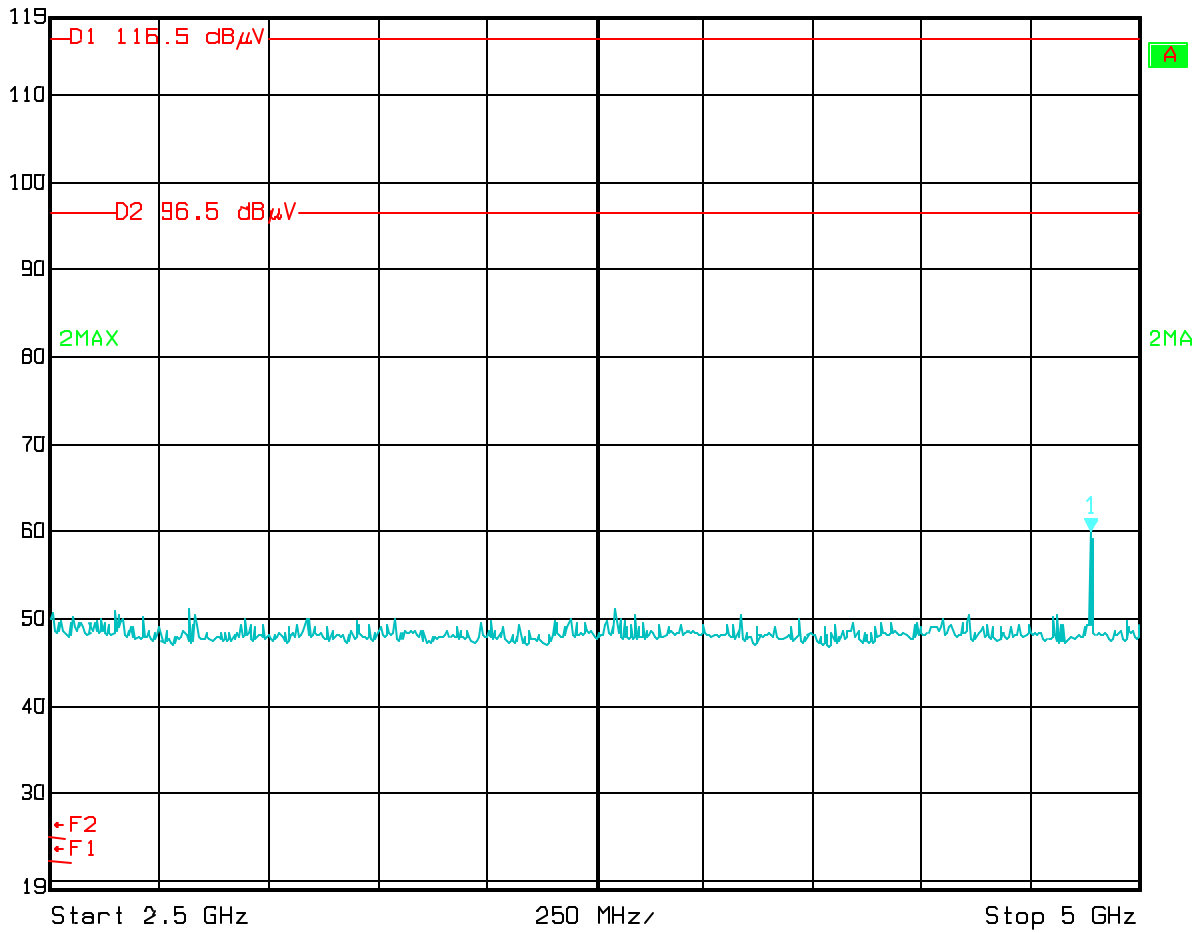
RBW 100 kHz RF Att 30 dB

Ref Lvl 60.10 dB μ V

VBW 300 kHz

119 dB μ V 4.88977956 GHz

SWT 640 ms Unit dB μ V



Date: 07.AUG.2007 15:22:04

Nemko USA, Inc.

6498A-SDC2K

T8H-SDC2K

11696 Sorrento Valley Road, Suite F, San Diego, CA 92121

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Report Number: **2007 086393 EMC**

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

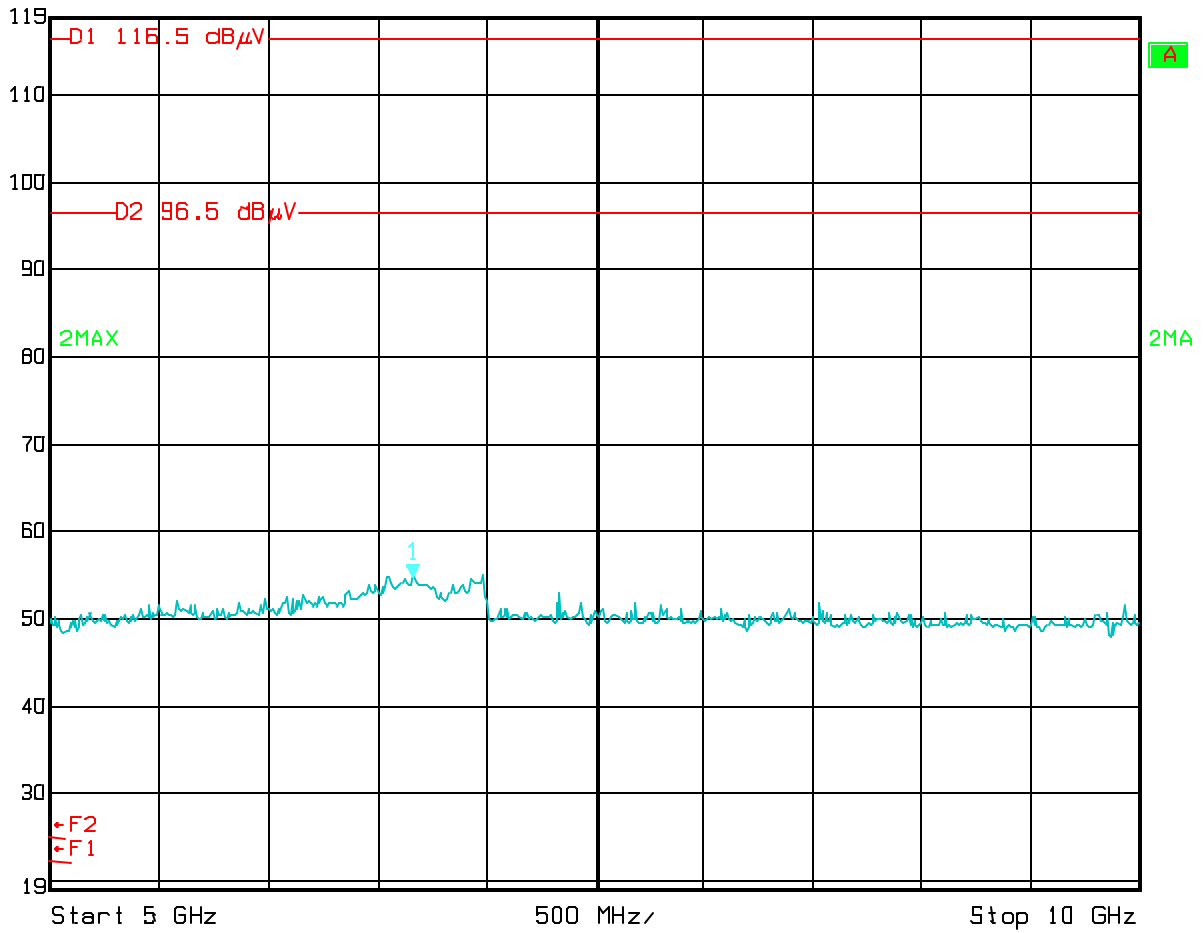
RBW 100 kHz RF Att 30 dB

Ref Lvl 54.82 dB μ V

VBW 300 kHz

119 dB μ V 6.66332885 GHz

SWT 1.25 s Unit dB μ V



Date: 07.AUG.2007 15:25:23

Nemko USA, Inc.

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T8H-SDC2K

11696 Sorrento Valley Road, Suite F, San Diego, CA 92121

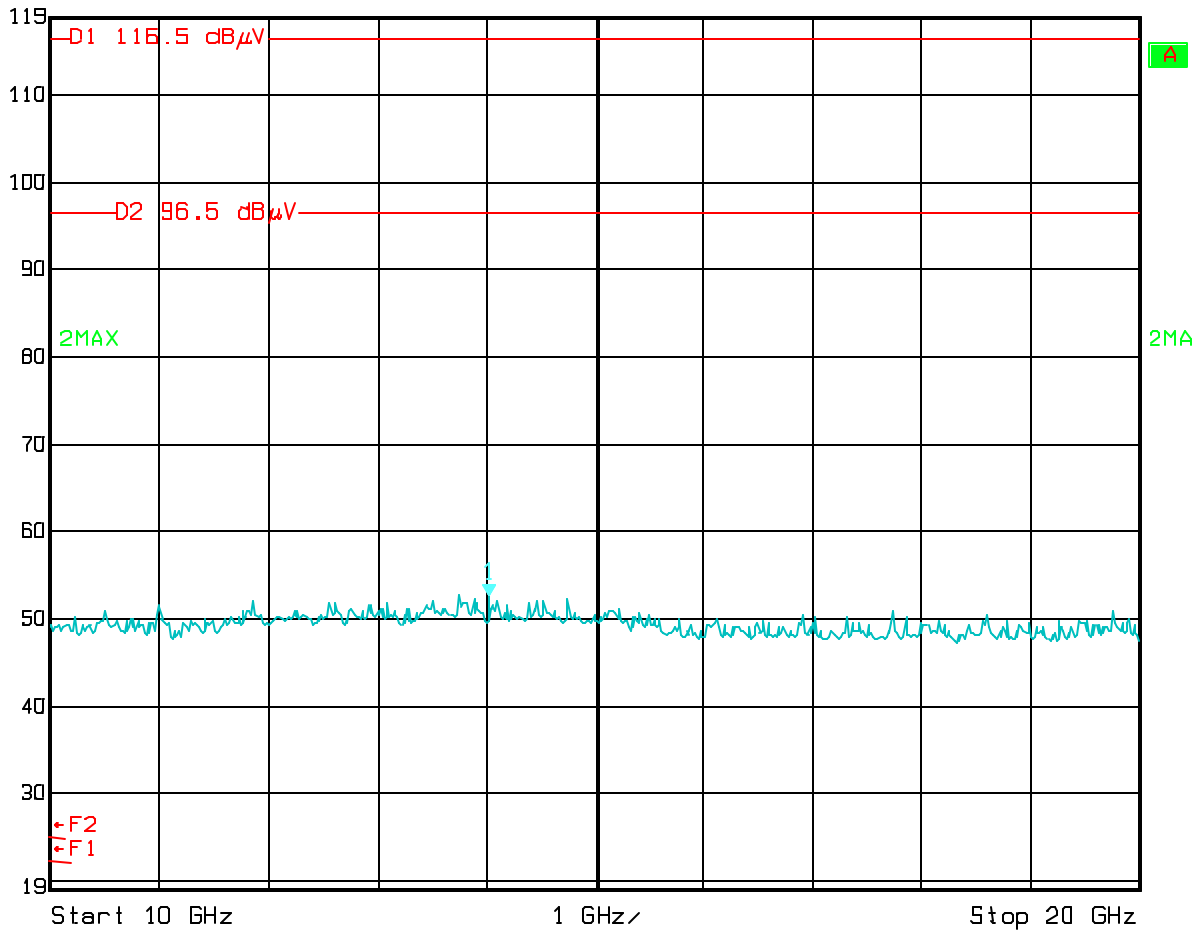
Phone (858) 755-5525 Fax (858) 452-1810

Report Number: 2007 086393 EMC

Specification: FCC Part 15 Subpart C, 15.247



Ref Lvl 119 dB μ V
Marker 1 [T2] 52.72 dB μ V
14.02805611 GHz
RBW 100 kHz RF Att 30 dB
VBW 300 kHz
SWT 2.5 s Unit dB μ V



Date: 07.AUG.2007 15:26:21

Nemko USA, Inc.

6498A-SDC2K

T8H-SDC2K

11696 Sorrento Valley Road, Suite F, San Diego, CA 92121

Phone (858) 755-5525 Fax (858) 452-1810

Report Number: **2007 086393 EMC**

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

RBW 100 kHz RF Att 30 dB

Ref Lvl

53.43 dB μ V

VBW 300 kHz

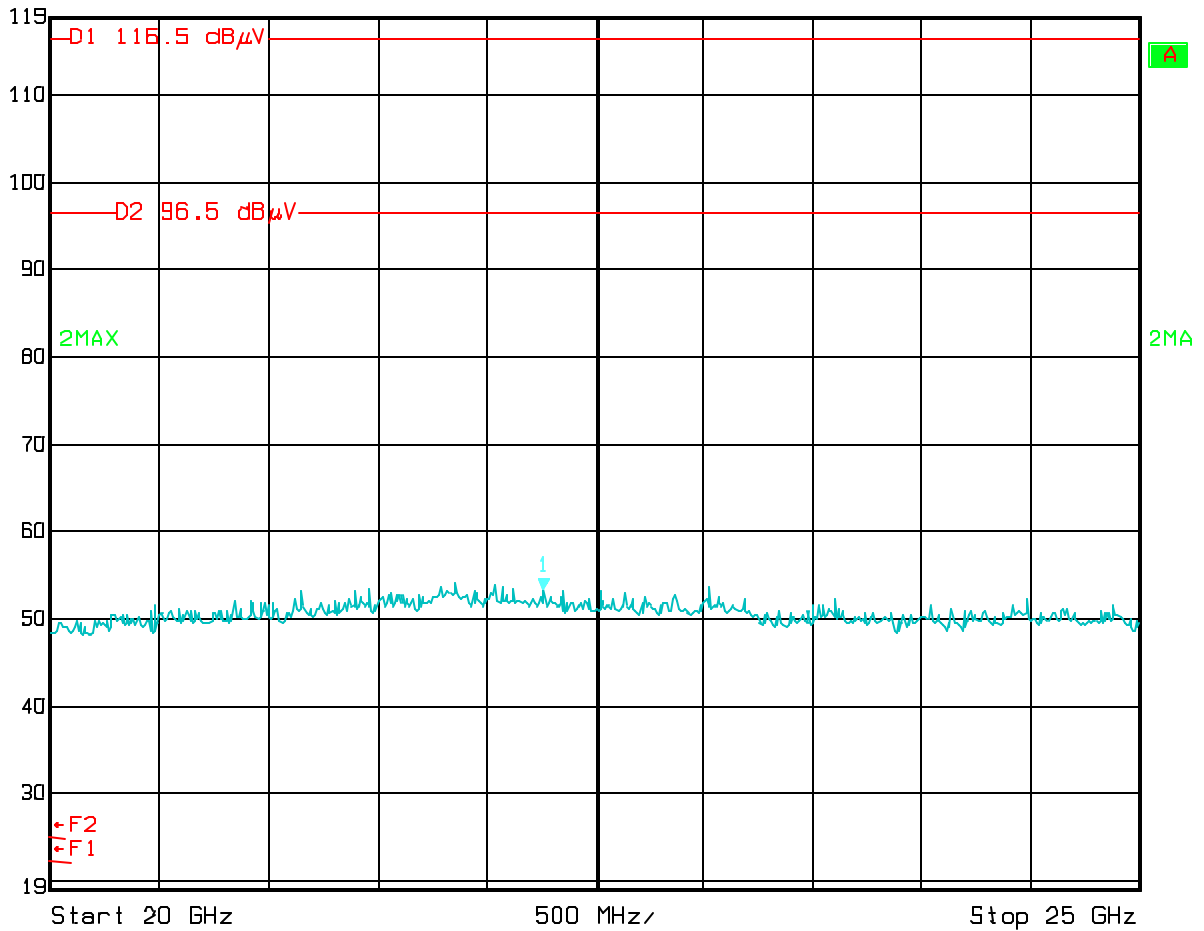
119 dB μ V

22.26452906 GHz

SWT 1.25 s

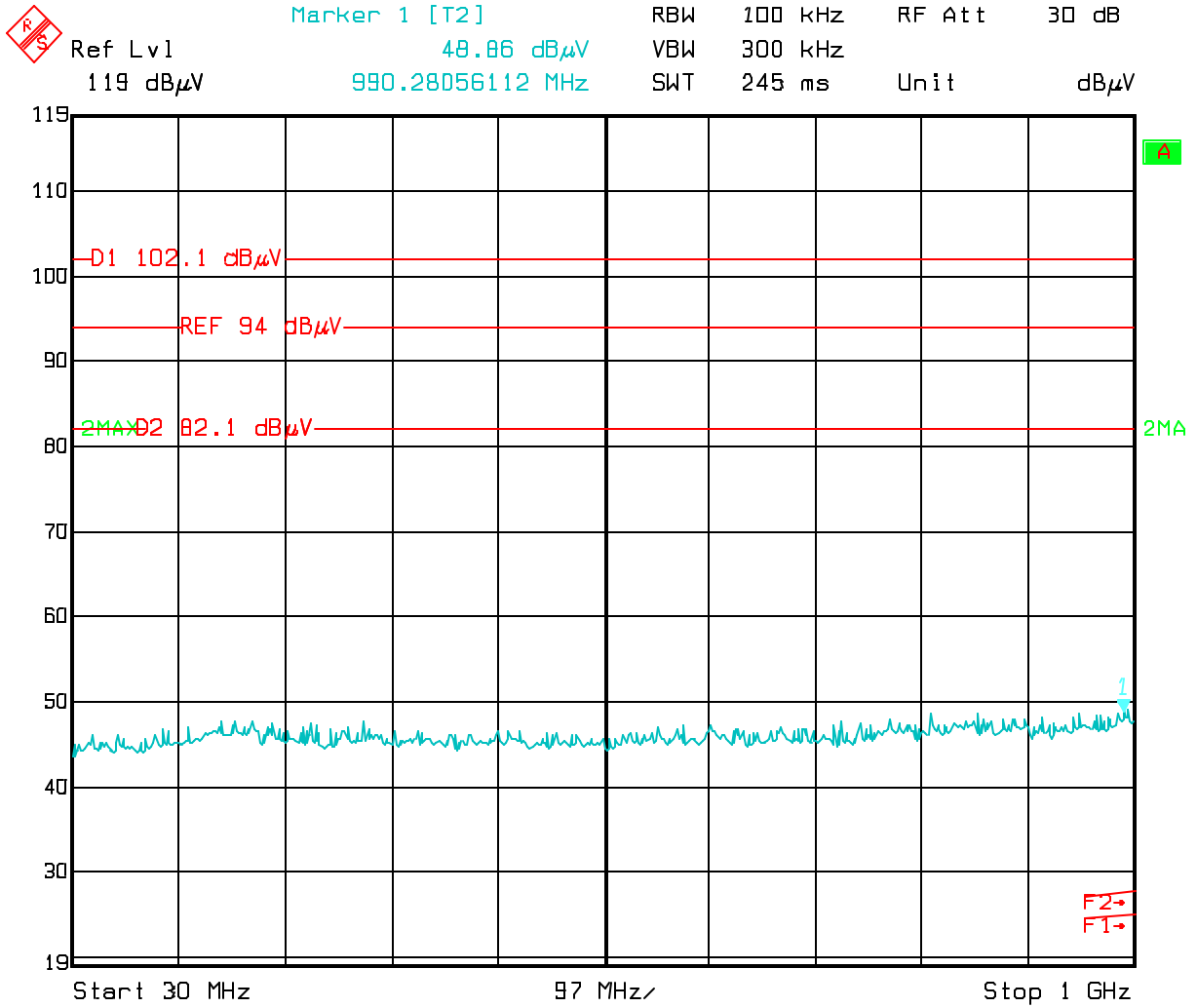
Unit

dB μ V



Date: 07.AUG.2007 15:27:00

High Channel (2480.2 MHz)



Date: 07.AUG.2007 15:32:49

Nemko USA, Inc.

6498A-SDC2K

T8H-SDC2K

11696 Sorrento Valley Road, Suite F, San Diego, CA 92121

Phone (858) 755-5525 Fax (858) 452-1810

Report Number: 2007 086393 EMC

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

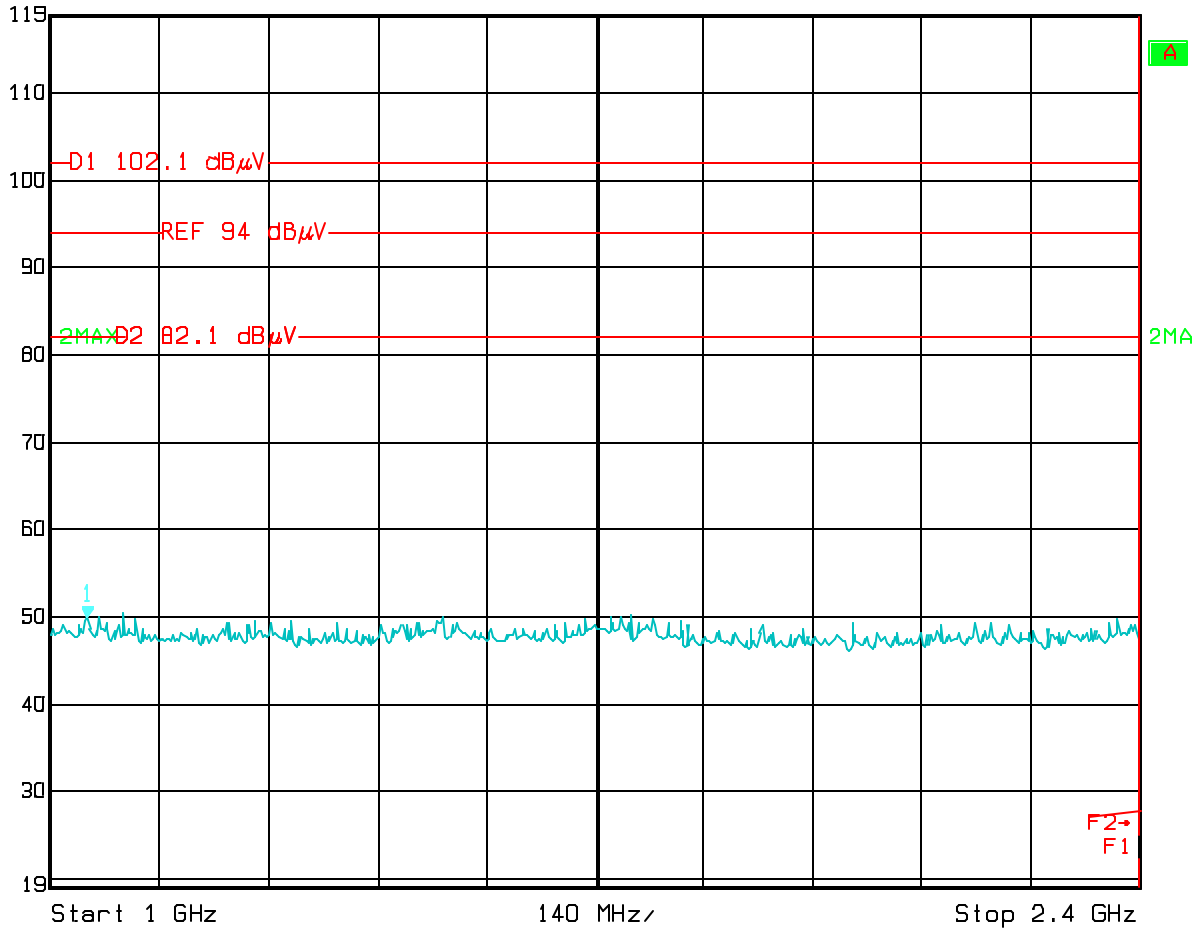
RBW 100 kHz RF Att 30 dB

Ref Lvl 49.86 dB μ V

VBW 300 kHz

119 dB μ V 1.04769539 GHz

SWT 350 ms Unit dB μ V



Start 1 GHz

140 MHz

Stop 2.4 GHz

Date: 07.AUG.2007 15:33:27

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6498A-SDC2K

T8H-SDC2K

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Phone (858) 755-5525 Fax (858) 452-1810

Report Number: 2007 086393 EMC

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

RBW 100 kHz RF Att 30 dB

Ref Lvl

65.72 dB μ V

VBW 300 kHz

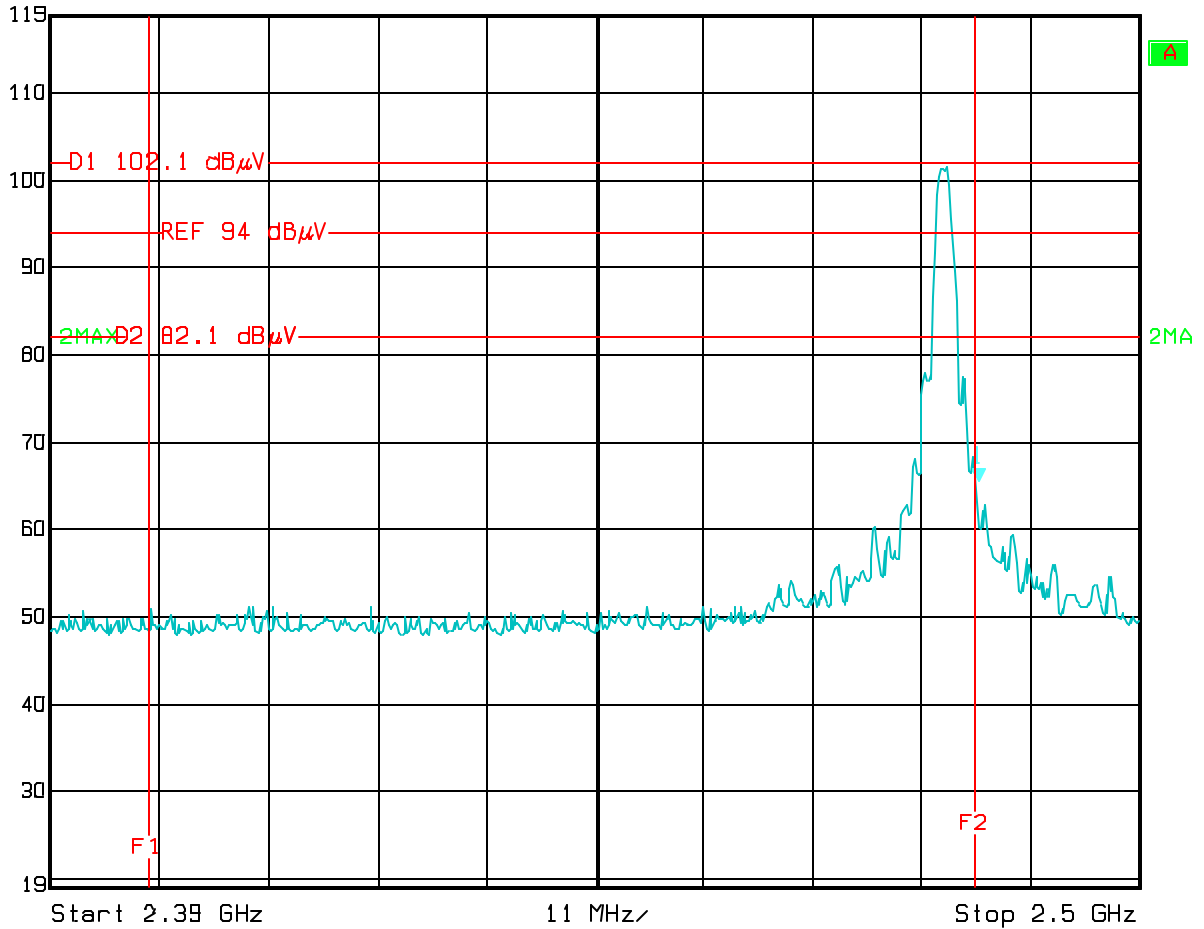
119 dB μ V

2.48368737 GHz

SWT 28 ms

Unit

dB μ V



Date: 07.AUG.2007 15:34:50

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6498A-SDC2K

T8H-SDC2K

11696 Sorrento Valley Road, Suite F, San Diego, CA 92121

Phone (858) 755-5525 Fax (858) 452-1810

Report Number: 2007 086393 EMC

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

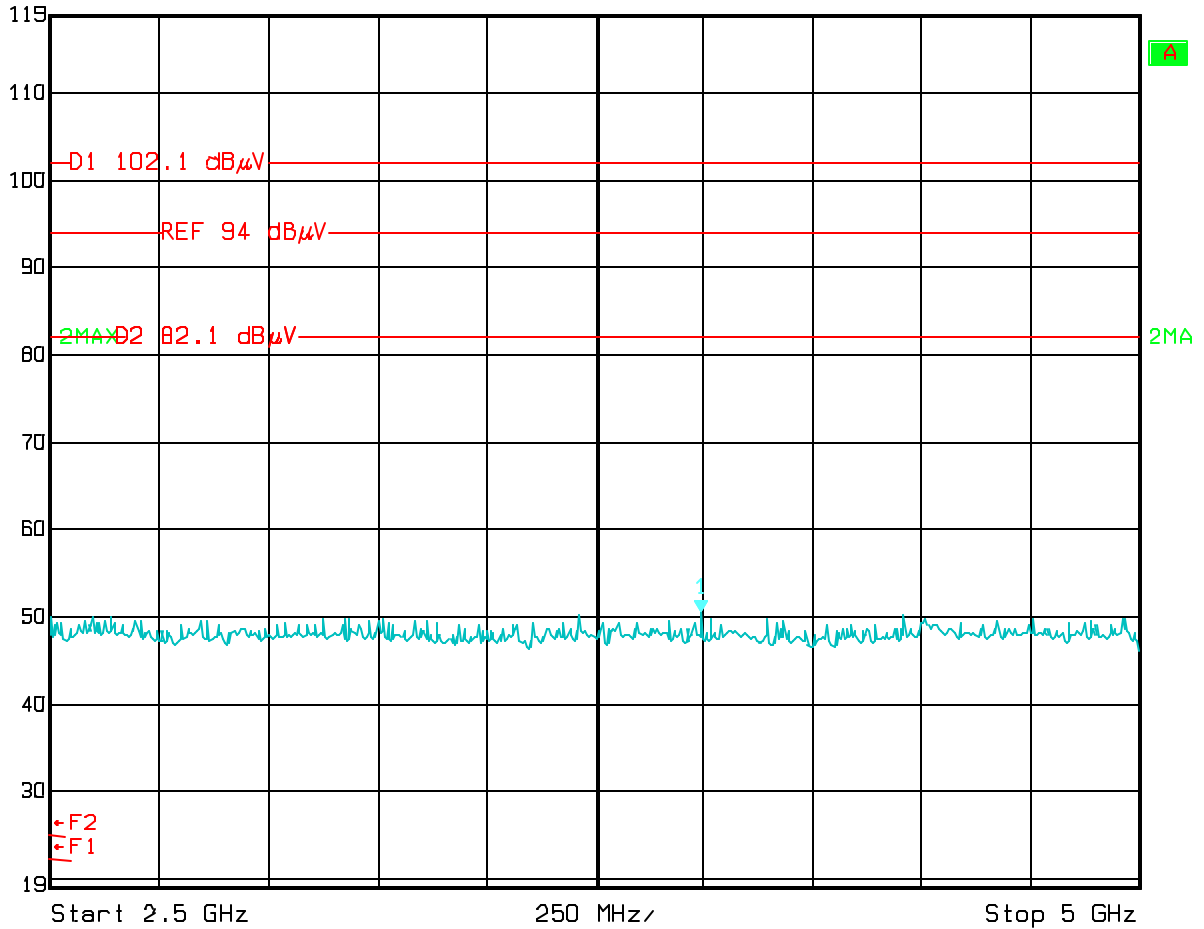
RBW 100 kHz RF Att 30 dB

Ref Lvl 50.56 dB μ V

VBW 300 kHz

119 dB μ V 3.99298597 GHz

SWT 640 ms Unit dB μ V



Date: 07.AUG.2007 15:35:41

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6498A-SDC2K

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Report Number: 2007 086393 EMC

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

RBW 100 kHz RF Att 30 dB

Ref Lvl

55.01 dB μ V

VBW 300 kHz

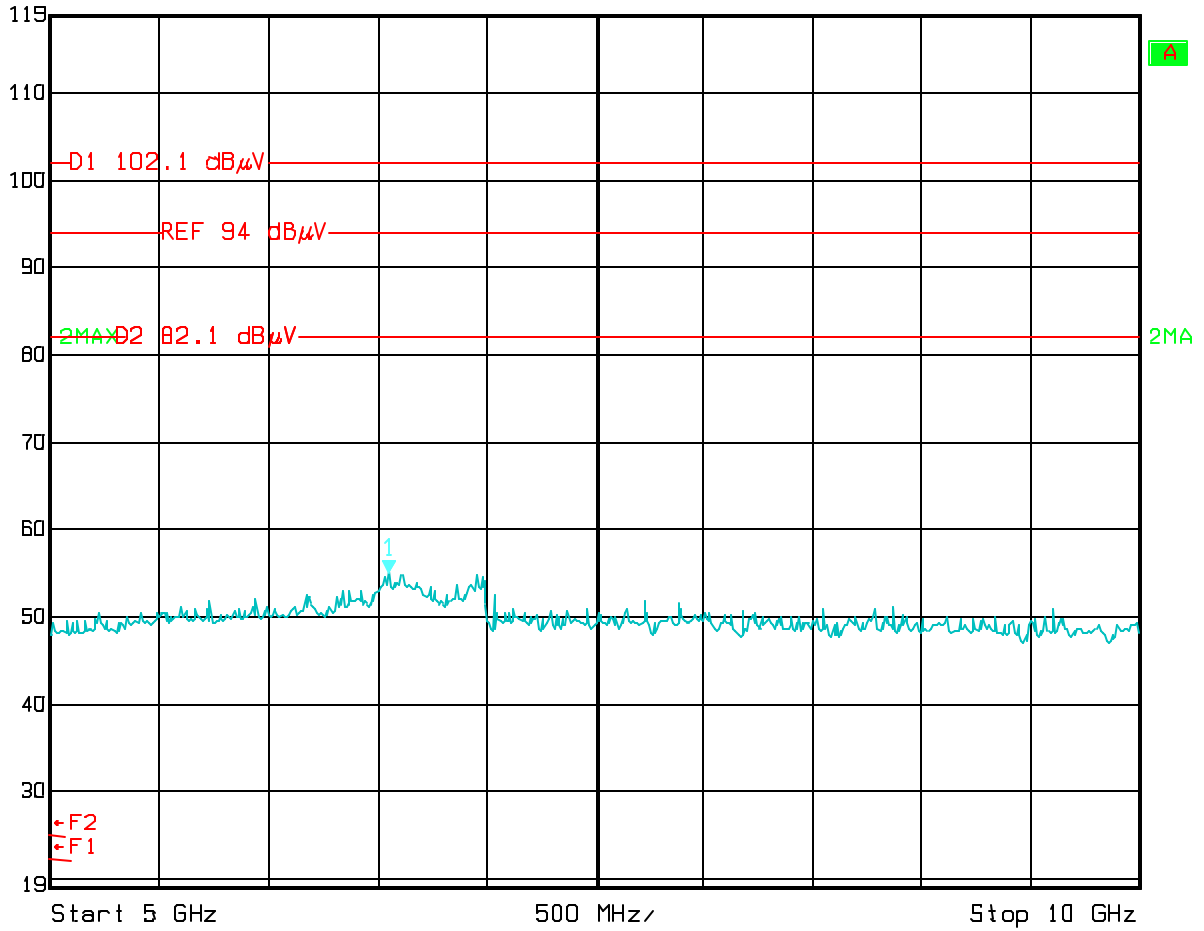
119 dB μ V

6.55310621 GHz

SWT 1.25 s

Unit

dB μ V



Date: 07.AUG.2007 15:36:04

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6498A-SDC2K

T8H-SDC2K

11696 Sorrento Valley Road, Suite F, San Diego, CA 92121

Phone (858) 755-5525 Fax (858) 452-1810

Report Number: 2007 086393 EMC

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

RBW 100 kHz RF Att 30 dB

Ref Lvl

52.74 dB μ V

VBW 300 kHz

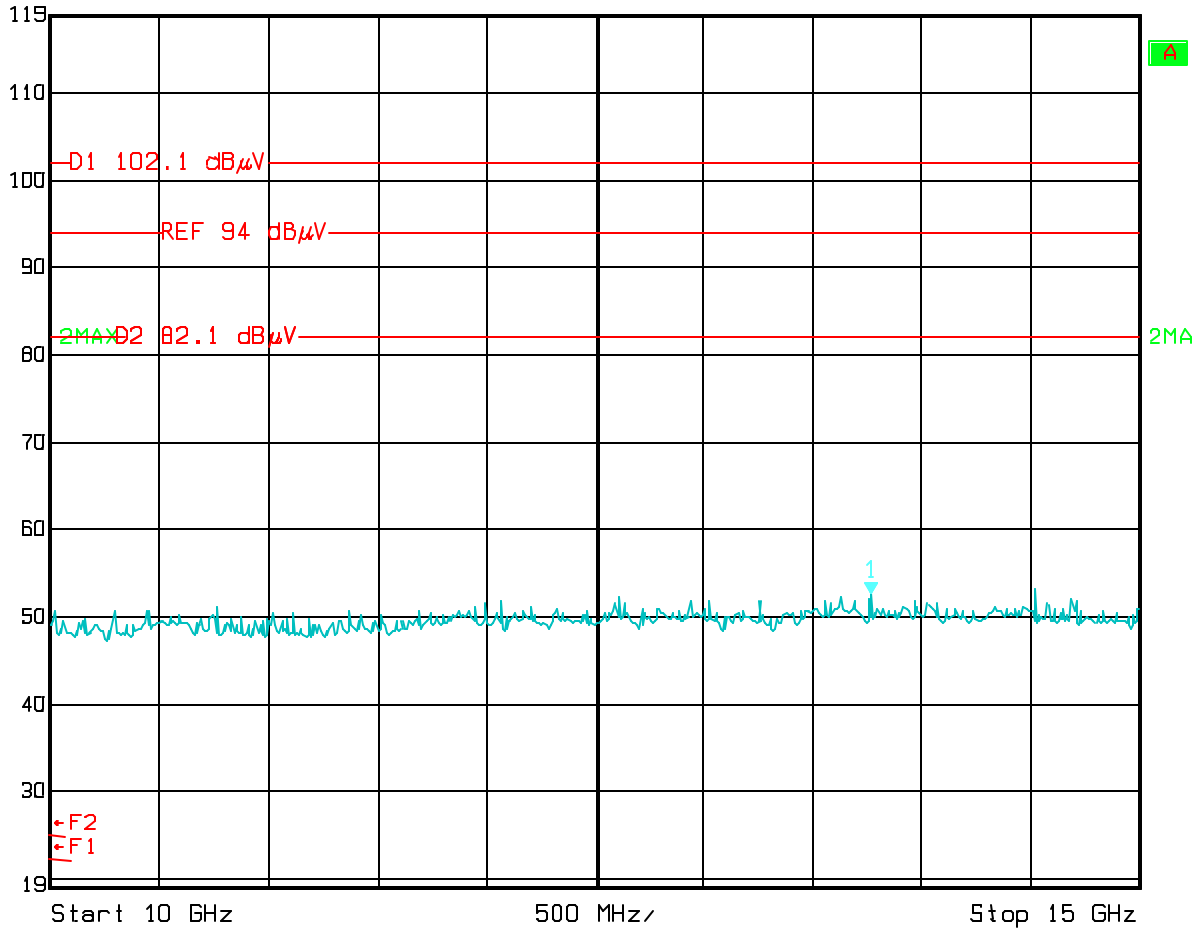
119 dB μ V

13.76753507 GHz

SWT 1.25 s

Unit

dB μ V



Start 10 GHz

500 MHz

Stop 15 GHz

Date: 07.AUG.2007 15:36:30

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Report Number: **2007 086393 EMC**

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

Ref Lvl

51.28 dB μ V

RBW 100 kHz RF Att 30 dB

VBW 300 kHz

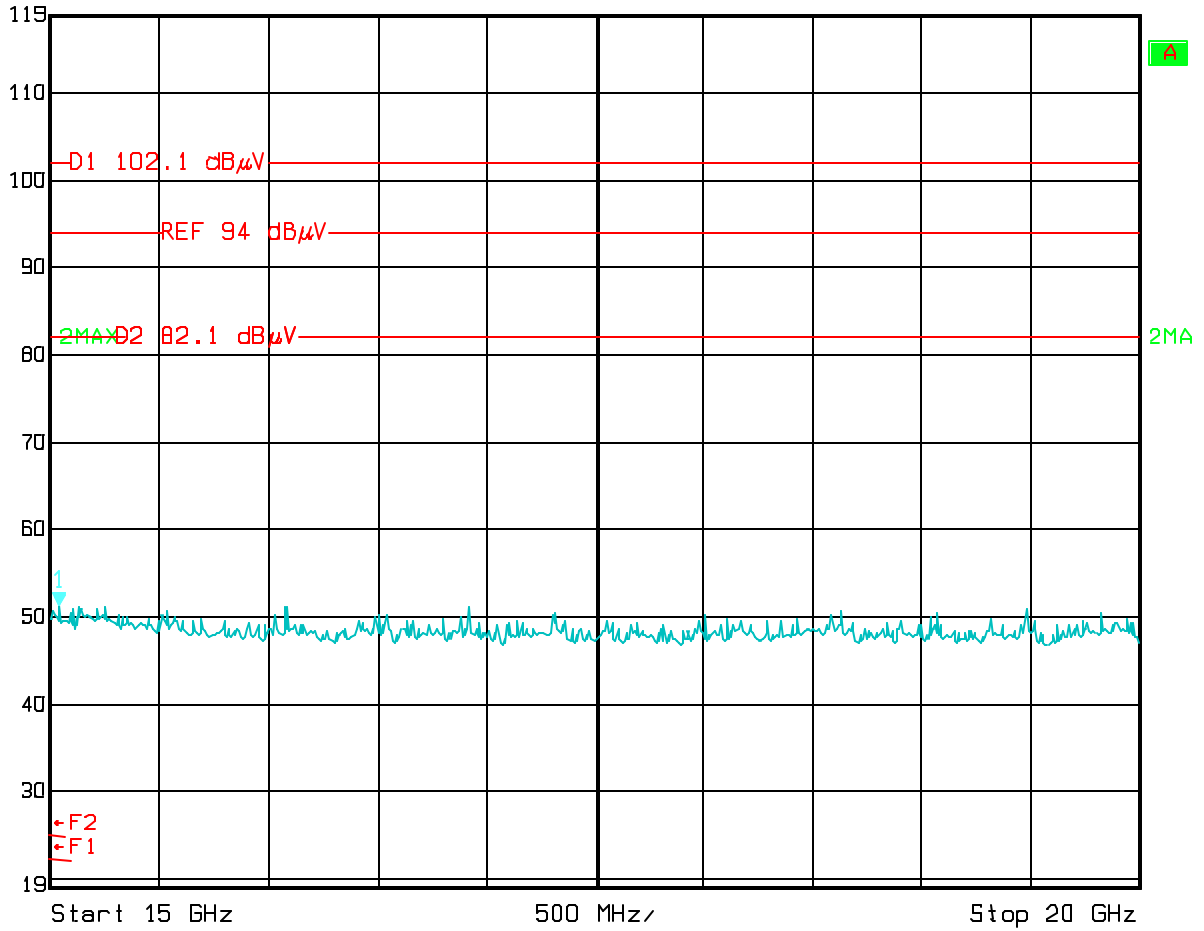
119 dB μ V

15.04008016 GHz

SWT 1.25 s

Unit

dB μ V



Date: 07.AUG.2007 15:36:58

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6498A-SDC2K

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Report Number: **2007 086393 EMC**

Specification: FCC Part 15 Subpart C, 15.247



Marker 1 [T2]

Ref Lvl

53.58 dB μ V

RBW 100 kHz RF Att 30 dB

VBW 300 kHz

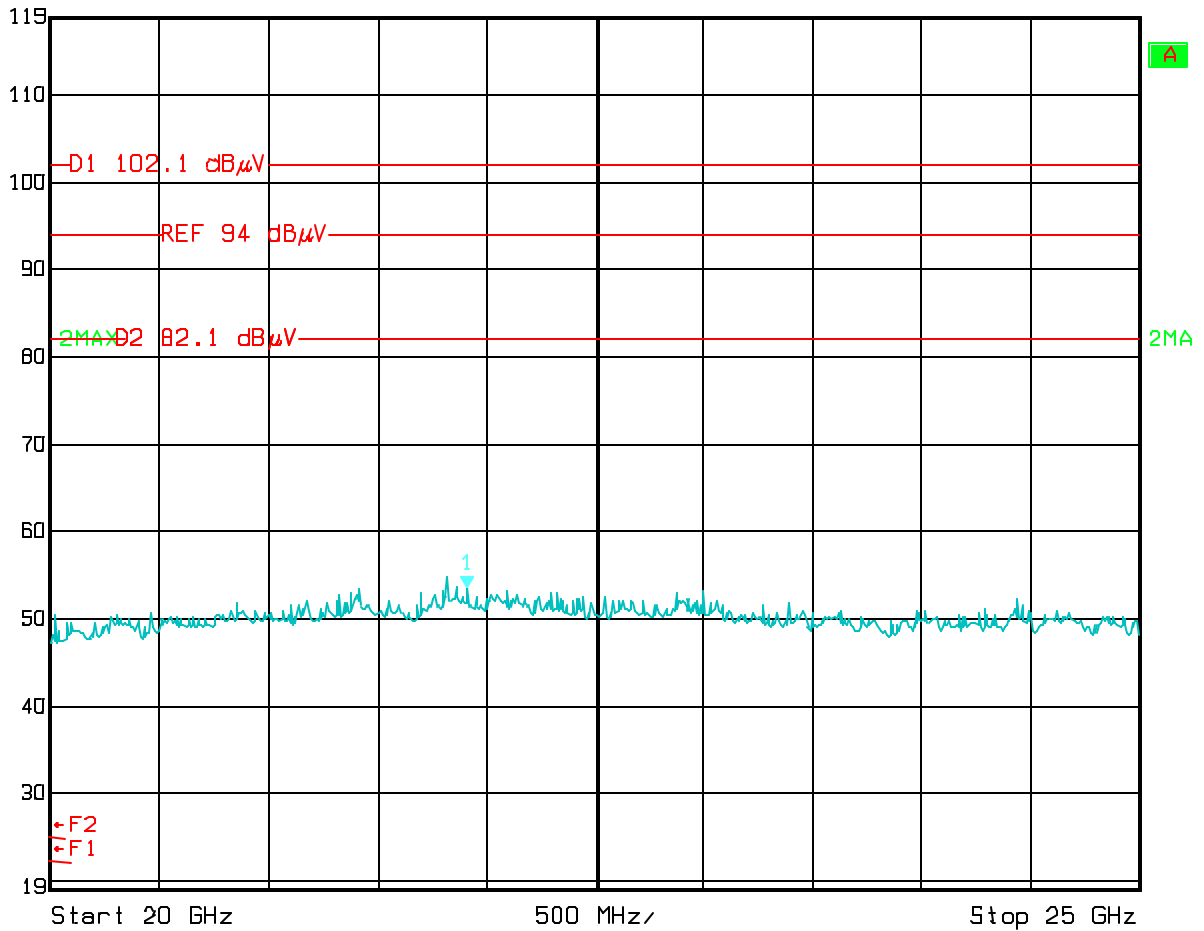
119 dB μ V

21.91382766 GHz

SWT 1.25 s

Unit

dB μ V



Date: 07.AUG.2007 15:37:24

1.18. Power Spectral Density

(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

A8.2(b) The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0-second duration. This power spectral density shall be determined in accordance with the provisions of Section A8.4(4); (i.e. the power spectral density shall be determined using the same method for determining the conducted output power).

Test Conditions:

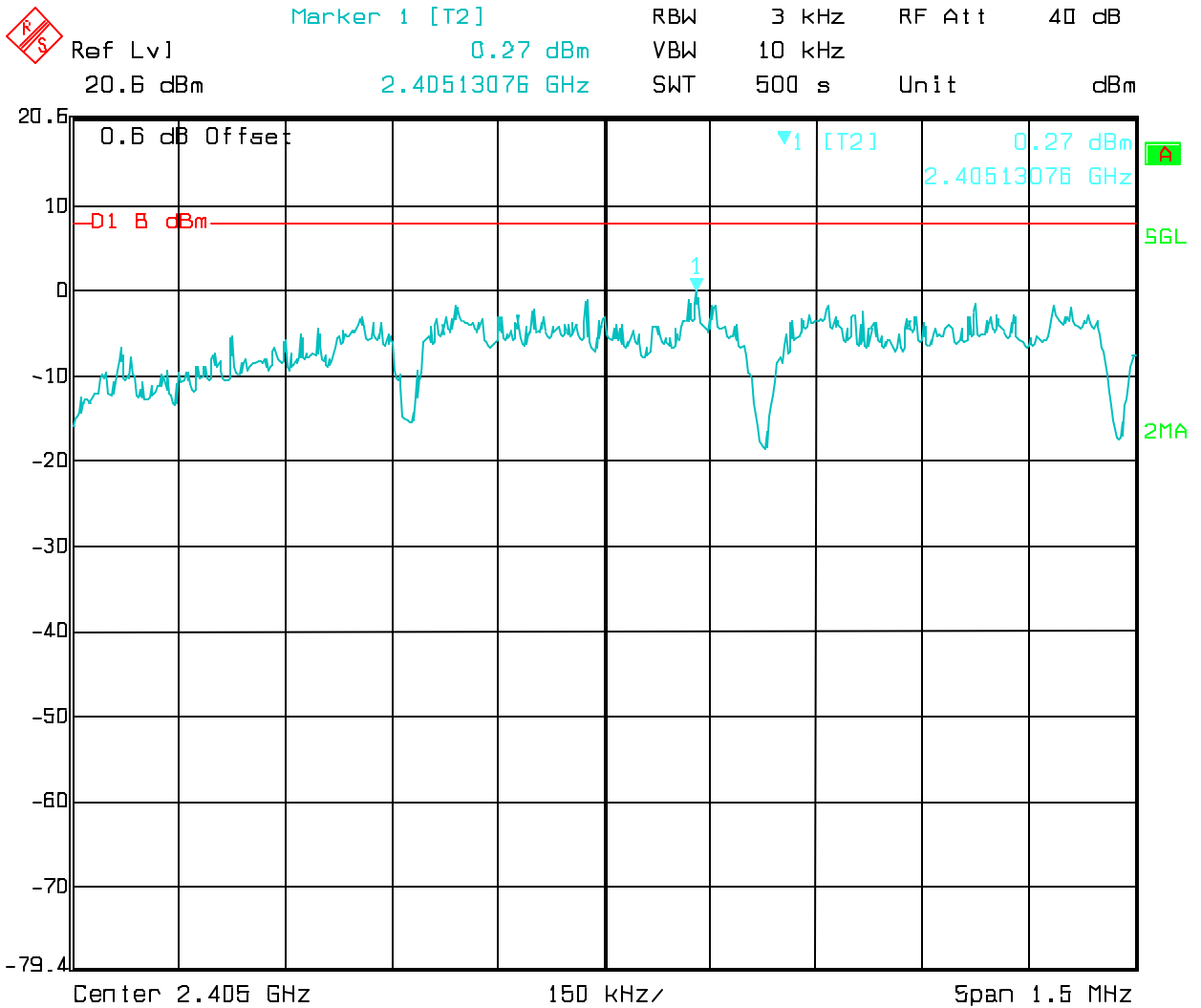
Model Number:	12860-001	Temperature:	31°C
Date:	August 22, 2007	Humidity:	35%RH
Modification State:	Lo/Mid/High Channels	Tester:	Alan Laudani
		Laboratory:	Nemko SR1

Test Results:

The transmitter output was connected to the spectrum analyzer, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 300kHz VBW, set sweep time = span/3kHz for a full response of the mixer in the spectrum analyzer.

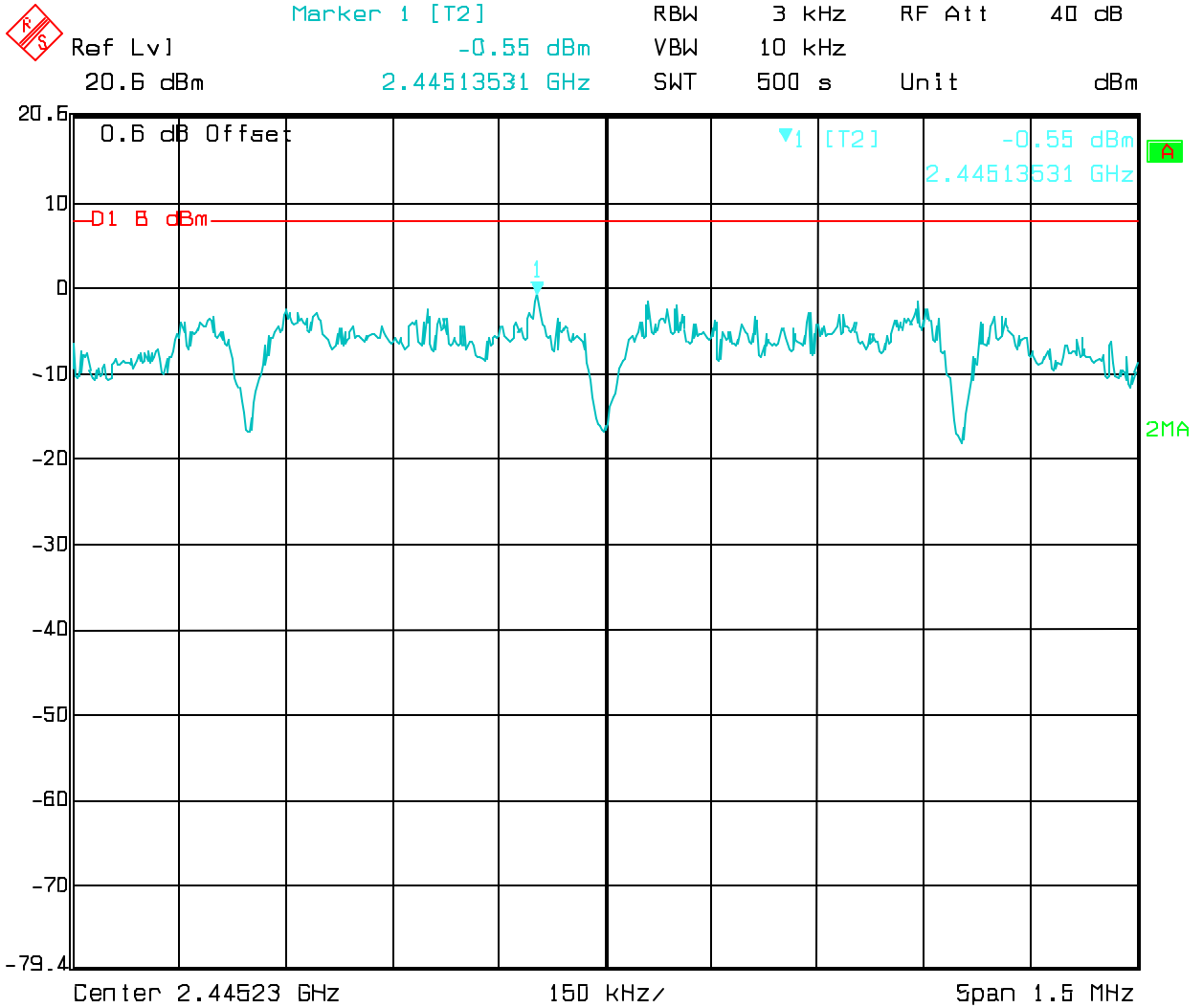
Channel	Channel Frequency (MHz)	RF Power Level in 3KHz BW	Maximum Limit (dBm)
LO	2405	0.27	8
MID	2445	-0.55	8
HIGH	2480	-7.78	8

Low Channel 2405 MHz



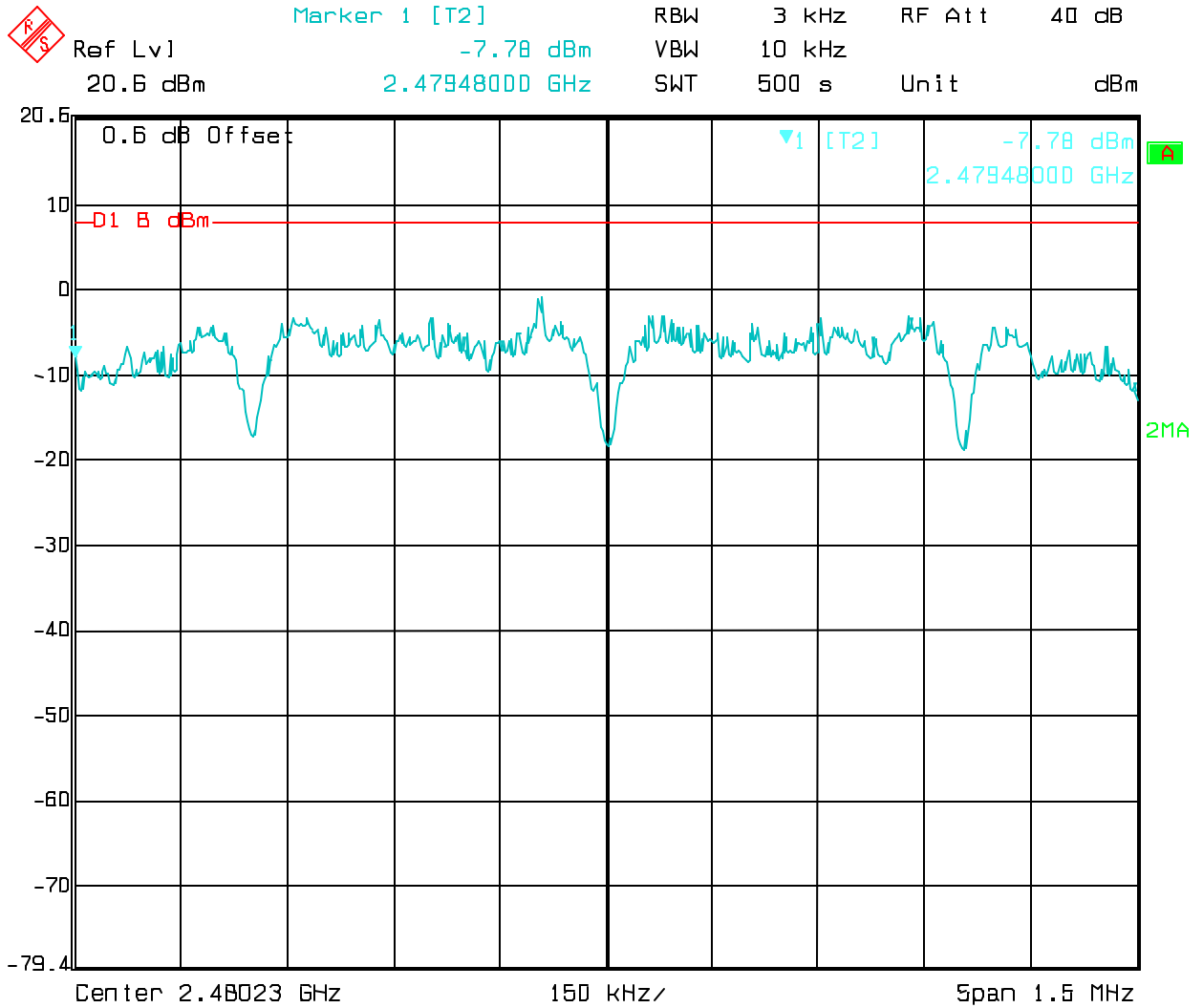
Date: 21.JUL.2007 14:28:22

Mid Channel 2445 MHz



Date: 21.JUL.2007 14:43:20

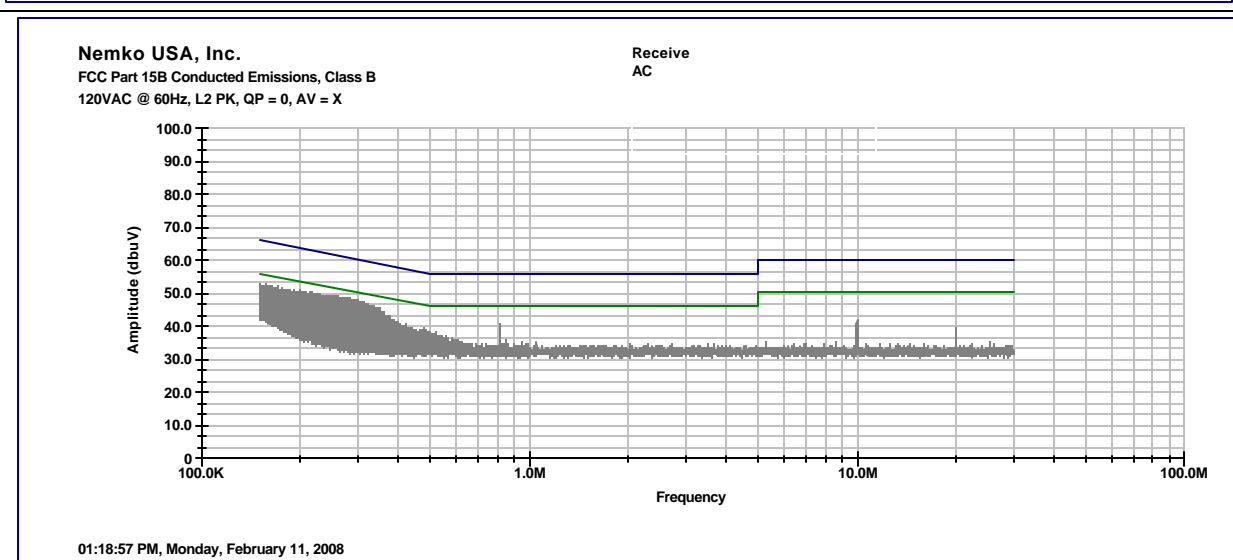
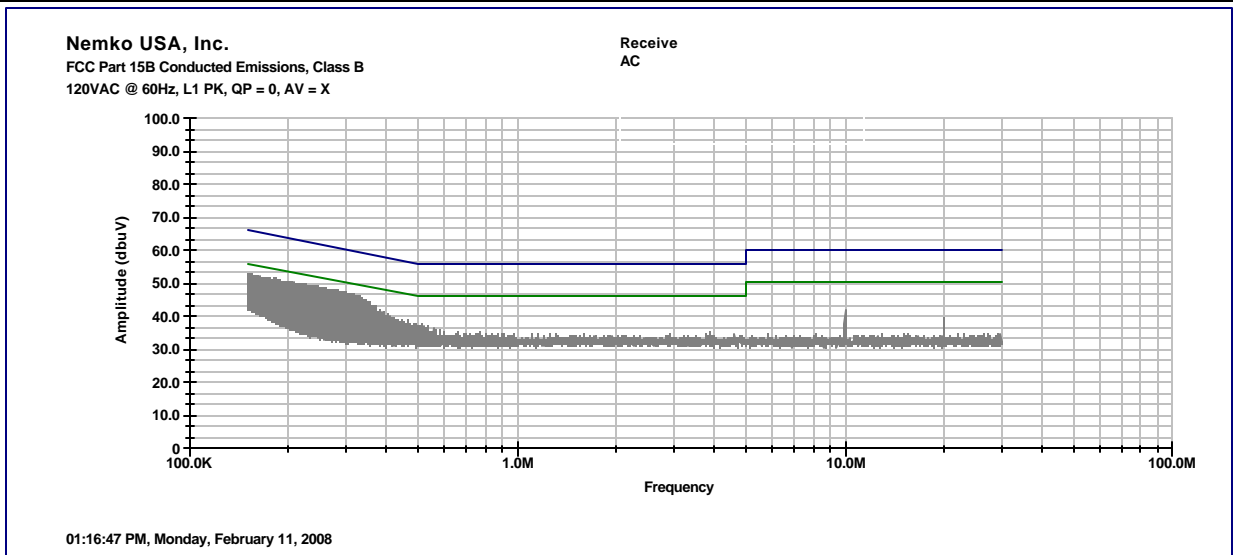
High Channel 2480 MHz



Date: 21.JUL.2007 14:56:16

1.19. Conducted Emissions Test Data

Client	OSI Security Devices	Temperature	72	°F
Quote #	6963-1	Relative Humidity	33	%
EUT Name	Single Door Controller	Barometric Pressure	30.15	Hg
EUT Model	12860-001	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	Alan Laudani	
Basic Standard	Sec. 15.107 Class "B"	Date of test	2-11-08	
Test Parameters	Peak RBW: 100kHz VBW: 100kHz Quasi-Peak: RBW 9kHz, VBW 30 kHz Average: RBW 100 kHz, VBW 1 Hz Quasi-Peak Limit Blue Line, Average Limit Green Line			



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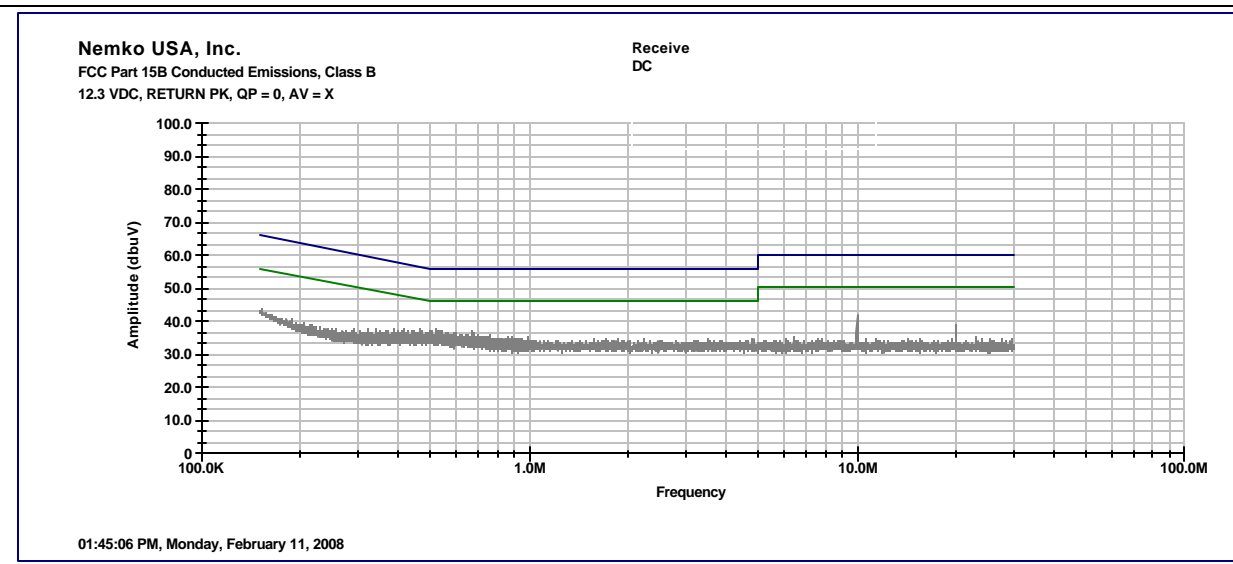
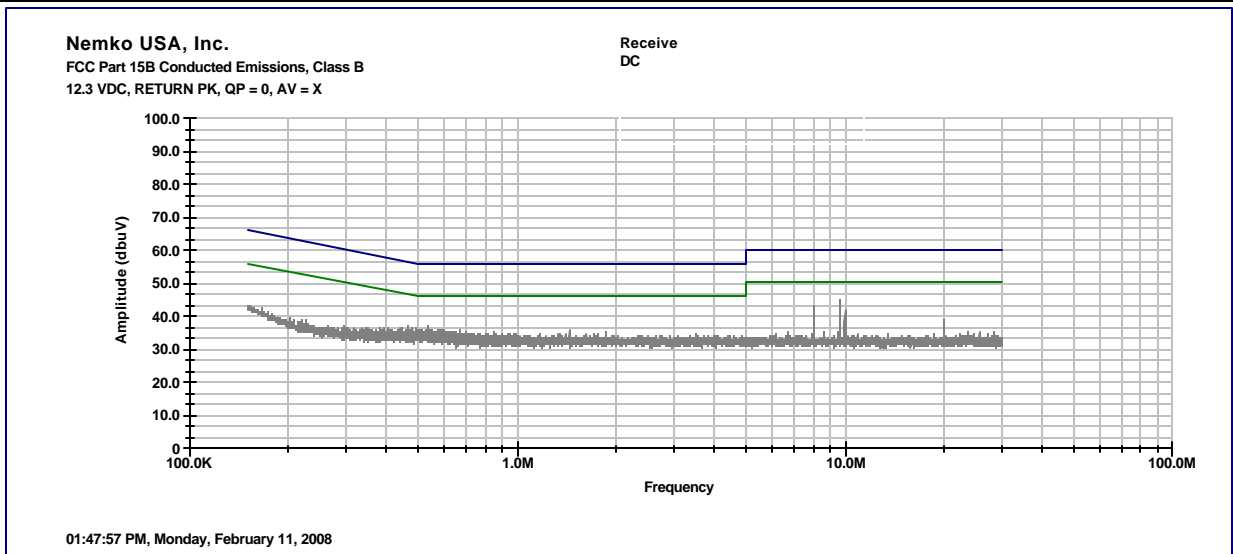
6498A-SDC2K
T8H-SDC2K

11696 Sorrento Valley Road, Suite F, San Diego, CA 92121
Phone (858) 755-5525 Fax (858) 452-1810

Report Number: **2007 086393 EMC**

Specification: FCC Part 15 Subpart C, 15.247

Client	OSI Security Devices	Temperature	72	°F
Quote #	6963-1	Relative Humidity	33	%
EUT Name	Single Door Controller	Barometric Pressure	30.15	Hg
EUT Model	12860-001	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	Alan Laudani	
Basic Standard	Sec. 15.107 Class "B"	Date of test	2-11-08	
Test Parameters	Peak RBW: 100kHz VBW: 100kHz Quasi-Peak: RBW 9kHz, VBW 30 kHz Average: RBW 100 kHz, VBW 1 Hz Quasi-Peak Limit Blue Line, Average Limit Green Line			



Nemko USA, Inc.

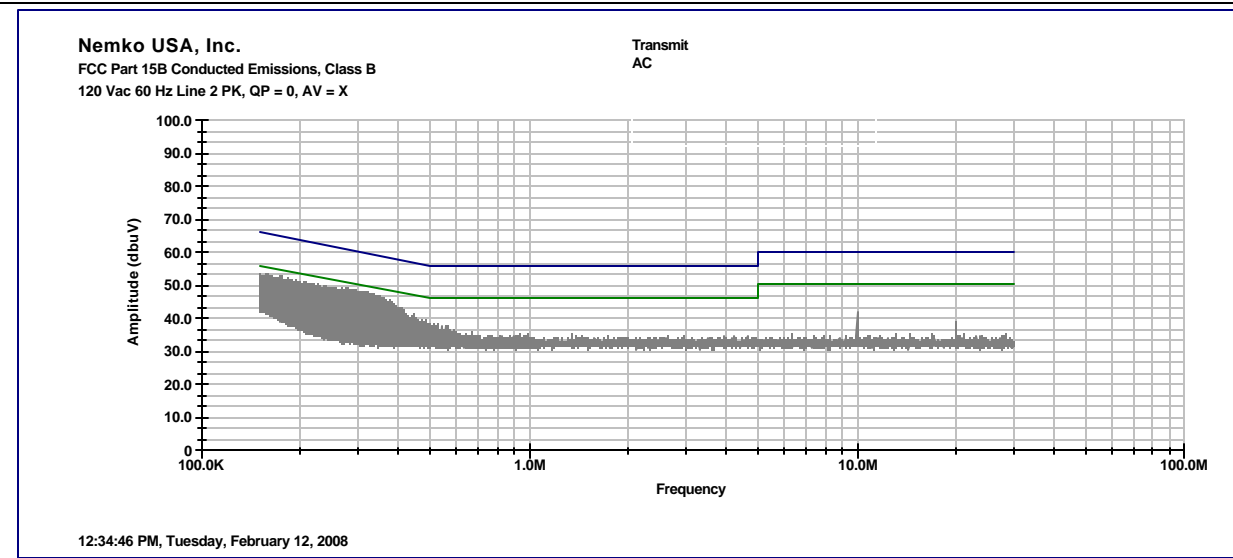
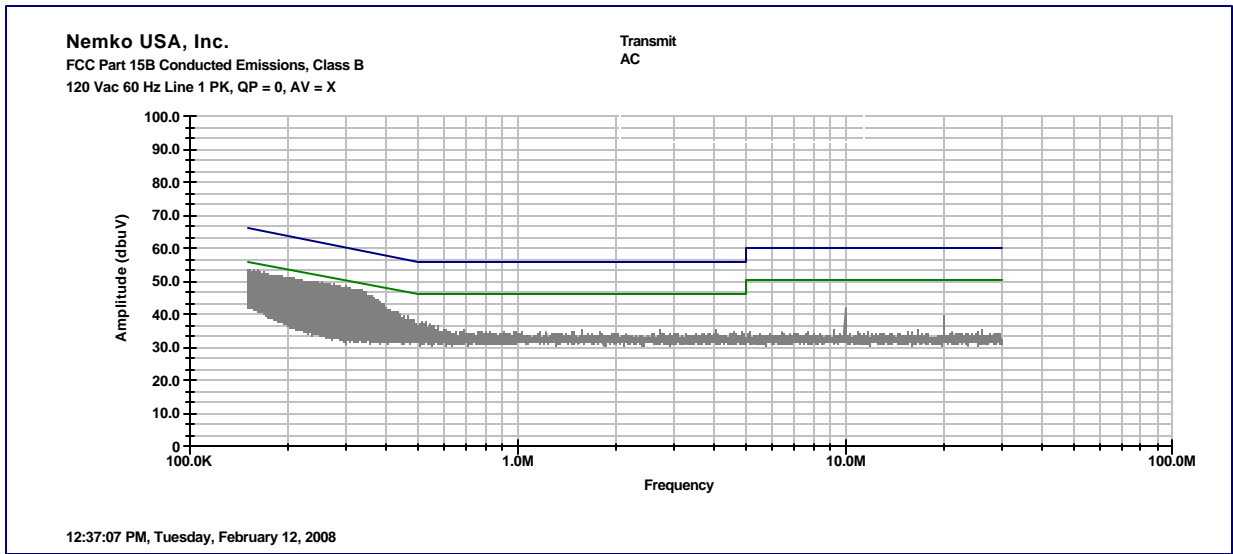
6498A-SDC2K
T8H-SDC2K

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Phone (858) 755-5525 Fax (858) 452-1810

Report Number: **2007 086393 EMC**

Specification: FCC Part 15 Subpart C, 15.247

Client	OSI Security Devices	Temperature	72	°F
Quote #	6963-1	Relative Humidity	33	%
EUT Name	Single Door Controller	Barometric Pressure	30.15	Hg
EUT Model	12860-001	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	Alan Laudani	
Basic Standard	Sec. 15.207	Date of test	2-12-08	
Test Parameters	Peak RBW: 100kHz VBW: 100kHz Quasi-Peak: RBW 9kHz, VBW 30 kHz Average: RBW 100 kHz, VBW 1 Hz Quasi-Peak Limit Blue Line, Average Limit Green Line			



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Report Number: **2007 086393 EMC**

Specification: FCC Part 15 Subpart C, 15.247

Client	OSI Security Devices	Temperature	72	°F
Quote #	6963-1	Relative Humidity	33	%
EUT Name	Single Door Controller	Barometric Pressure	30.15	Hg
EUT Model	12860-001	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	Alan Laudani	
Basic Standard	Sec. 15.207	Date of test	2-12-08	
Test Parameters	Peak RBW: 100kHz VBW: 100kHz Quasi-Peak: RBW 9kHz, VBW 30 kHz Average: RBW 100 kHz, VBW 1 Hz Quasi-Peak Limit Blue Line, Average Limit Green Line			

