Nemko USA, Inc.
Phone (858) 755-5525 Fax (858) 452-1810
11696 Sorrento Valley Rd., Suite F
San Diego, CA 92121-1024

Test Report:	2007 065455 FCC
Applicant:	Broadcast Microwave Services 12367 Crosthwaite Circle Dock 10 Poway, CA 92064 (858) 391-3050 x147 (858) 391-3049 - fax
Equipment Under Test:	Model: 7GHz Truck-Coder II (TCII) Van Microwave System
FCC ID:	CNVTCII-ODU-9
In Accordance With:	FCC PART 2 and FCC PART 74 Subpart F
Tested By:	Nemko USA Inc. 11696 Sorrento Valley Road San Diego, CA 92121-1024
Date:	July 31, 2007
Total Number of Pages:	81

DOCUMENT HISTORY

REVISION	DATE	COMMENTS
-	July 31, 2007	Prepared By: F.S.Custodio
-	July 31, 2007	Initial Release: A.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: 2003 “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 June 12, 200. Testing was performed on the unit described in this report on June 12, 2007 to July 31, 2006.
- 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.

Table of Contents

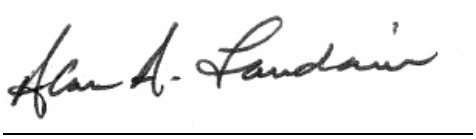
CERTIFICATION

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: 2003 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.



Alan A. Laudani, EMC Test Engineer

Section 1. 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 FCC PART 2 and FCC PART 74 Subpart F.

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	2.1046	PASS
Modulation Characteristics	2.1047	AS REPORTED
Occupied Bandwidth	2.1049	PASS
Spurious Emissions at Antenna Terminals	2.1051	PASS
Field Strength of Spurious Emissions	2.1053	PASS
Frequency Stability	2.1055	PASS

Footnotes for 2.1047: EUT is a digitally modulated transmitter. Parts 74 do not express limits or pass/fail criteria for Modulation Characteristics.

Test Conditions:

Indoor	Temperature:	23.3 °C
	Humidity:	47-58 %
Outdoor	Temperature:	23 °C
	Humidity:	55 %

.

Section 2. General Equipment Specification

Manufacturer:	Broadcast Microwave Services
FCC ID:	CNVTCII-ODU-9
Model No.:	8014191000 (Truck Coder II COFDM Digital/Analog ENG/OB Van Microwave System)
Transmitter Type:	Mobile
Serial No. (IDU):	116-11106 (Indoor Unit)
Serial No. (ODU):	N/A Engineering Unit (Outdoor Unit)
Test Voltage:	115VAC 60Hz for the IDU (48VDC to ODU coming from the IDU)
Frequency Ranges:	6431-6519 MHz in the 6425-6525 MHz Band 6881-7119 MHz in the 6875-7125 MHz Band
Date Received In Laboratory:	June 12, 2007
Nemko Identification No.:	5455-1-BRO

Section 3. RF Power Output

Para. No.: 2.1046(c)

Test Performed By: F. S. Custodio	**Date of Test: 06-12-2007**

Minimum Standard: Subpart F--Television Broadcast Auxiliary Stations
Sec. 74.636 Power limitations.

(a) On any authorized frequency, transmitter peak output power and the average power delivered to an antenna in this service must be the minimum amount of power necessary to carry out the communications desired and shall not exceed the values listed in the following table. Application of this principle includes, but is not to be limited to, requiring a licensee who replaces one or more of its antennas with larger antennas to reduce its antenna input power by an amount appropriate to compensate for the increased primary lobe gain of the replacement antenna(s). In no event shall the average equivalent isotropically radiated power (EIRP), as referenced to an isotropic radiator, exceed the values specified in the following table. In cases of harmful interference, the Commission may, after notice and opportunity for hearing, order a change in the effective radiated power of this station. The table follows:

Frequency Band (MHz)	Maximum allowable transmitter power	Maximum allowable EIRP[2]	
	Mobile (W)	Fixed (dBW)	Mobile (dBW)
2,025 to 2,110	12.0	+45	+35
2,450 to 2,483.5	12.0	+45	+35
6,425 to 6,525	12.0		+35
6,875 to 7,125	12.0	+55	+35
12,700 to 13,250	1.5	+55	+35
17,700 to 18,600		+55	
18,600 to 18,800[1]		+35	
18,800 to 19,700		+55	

[1] The power delivered to the antenna is limited to -3 dBW.
[2] Stations licensed based on an application filed before April 16, 2003, for EIRP values exceeding those specified above, may continue to operate indefinitely in accordance with the terms of their current authorizations, subject to periodic renewal.

Test Results: EUT complies

Test Conditions:

Measured both Digital (COFDM) and Analog (FM) modes using US 6 GHz Low Band and 7 GHz High Band channel plans. RF setting set to High using Bars and Tone. Peak power and average power were measured using the channel power measurement feature of the spectrum analyzer through a 40dB attenuator. Total reference offset is 42.4dB including the cable used. Detector is set accordingly, RBW and VBW is set by the instrument (RBW of 100kHz and VBW of 300kHz for Peak and 100kHz/1MHz for Average measurements). Bandwidth used for measurement is 8 MHz for digital and 17 MHz for analog. For Analog (FM) average power measurements, several single sweep plots are taken until maximum reading is recorded.

Measurement Data :

$

6GHz Low Band Channel Plan:

LOW Channel = 6431 MHZ (Channel 1-)
MID Channel = 6487.5 MHz (Channel 3)
HIGH Channel = 6519 MHz (Channel 4+)

(All data are in Watts)

	Low Channel		Mid Channel		High Channel	
Modulation	***Peak***	***Average***	***Peak***	***Average***	***Peak***	***Average***
QPSK	28.31	4.13	27.04	3.98	28.51	4.14
16QAM	27.23	4.07	27.29	3.98	28.05	4.13
64QAM	28.91	4.09	27.16	3.94	29.38	4.24

	Low Channel		Mid Channel		High Channel	
Modulation	***Peak***	***Average***	***Peak***	***Average***	***Peak***	***Average***
FM	73.62	3.56	62.95	2.85	69.82	2.64

7GHz High Band Channel Plan:

LOW Channel = 6881 MHZ (Channel 1-)
MID Channel = 6987.5 MHz (Channel 5)
HIGH Channel = 7119 MHz (Channel 10+)

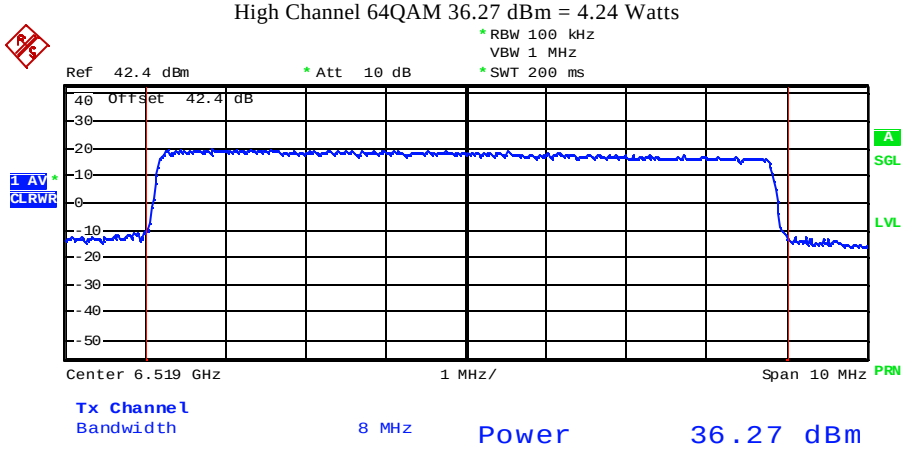
(All data are in Watts)

Modulation	Low Channel		Mid Channel		High Channel	
	Peak	***Average***	***Peak***	***Average***	***Peak***	***Average***
QPSK	23.44	3.40	28.84	4.26	28.97	4.23
16QAM	23.01	3.37	28.77	4.15	28.77	4.15
64QAM	23.28	3.35	29.17	4.43	29.58	4.26

Modulation	Low Channel		Mid Channel		High Channel	
	Peak	***Average***	***Peak***	***Average***	***Peak***	***Average***
FM	56.49	2.11	72.95	2.75	65.77	2.81

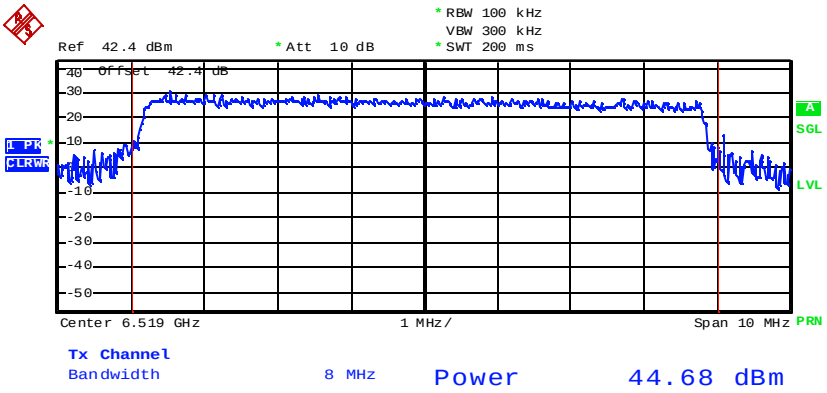
Plots Shown Typical of Highest Output Power Measured

High Channel 64QAM 36.27 dBm = 4.24 Watts

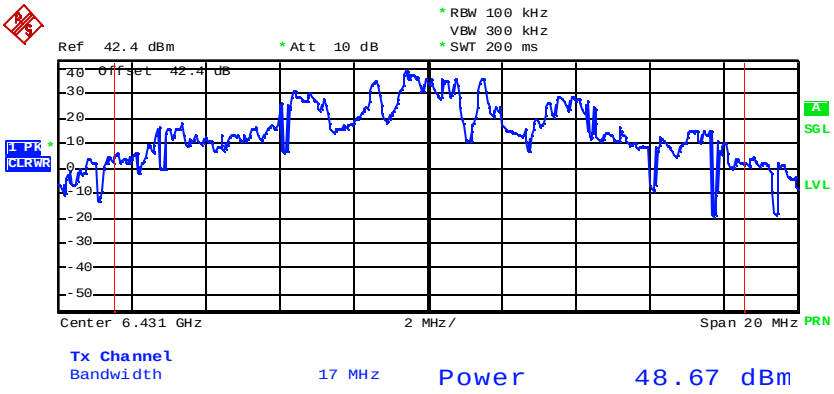


Date: 12.JUN.2007 15:29:53

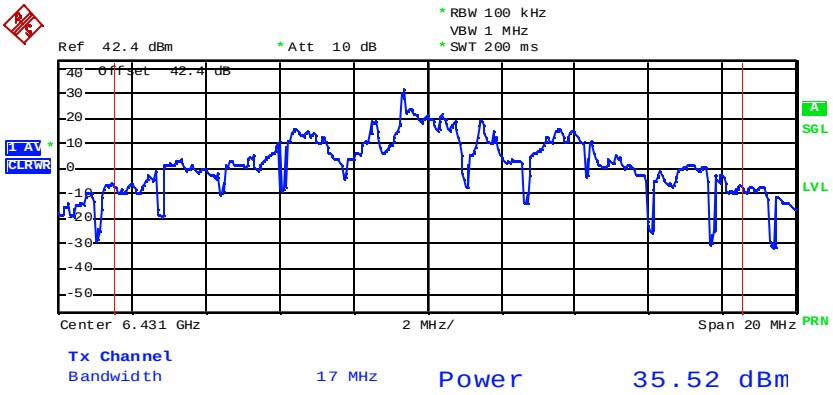
Digital Average Measurement



Digital Peak Measurement



Analogue Peak Measurement



Analogue Average Measurement

Section 4. Modulation Characteristics

Para. No.: 2.1047

Test Performed By: Ferdinand S. Custodio	**Date of Test: 06-12-2007**

Minimum Standard: Part 74

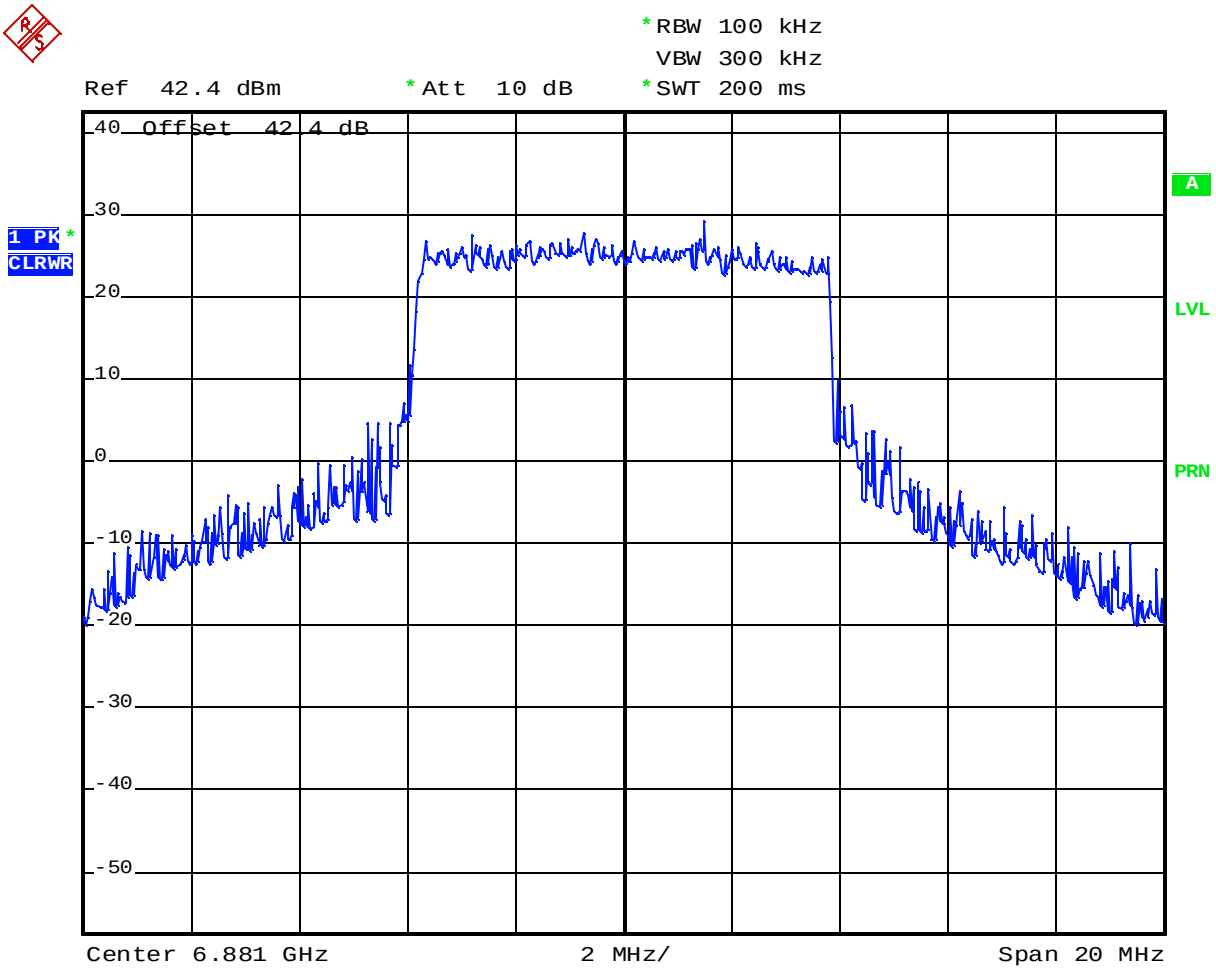
Test Results: As Reported. Conducted emission plots captured on the Spectrum Analyzer thru a 40 dB attenuator.

Measurement Data: See attached plots to exemplify the four modes of modulation:

Modulation modes are QPSK, 16QAM, 64QAM and FM. All measurements are done on both Digital and Analog Mode. For digital measurements, the mode QPSK was used as it offers the highest Tx robustness among the three modes. Modulation mode (Digital) has no evident effect on spurious, power or frequency stability measurements.

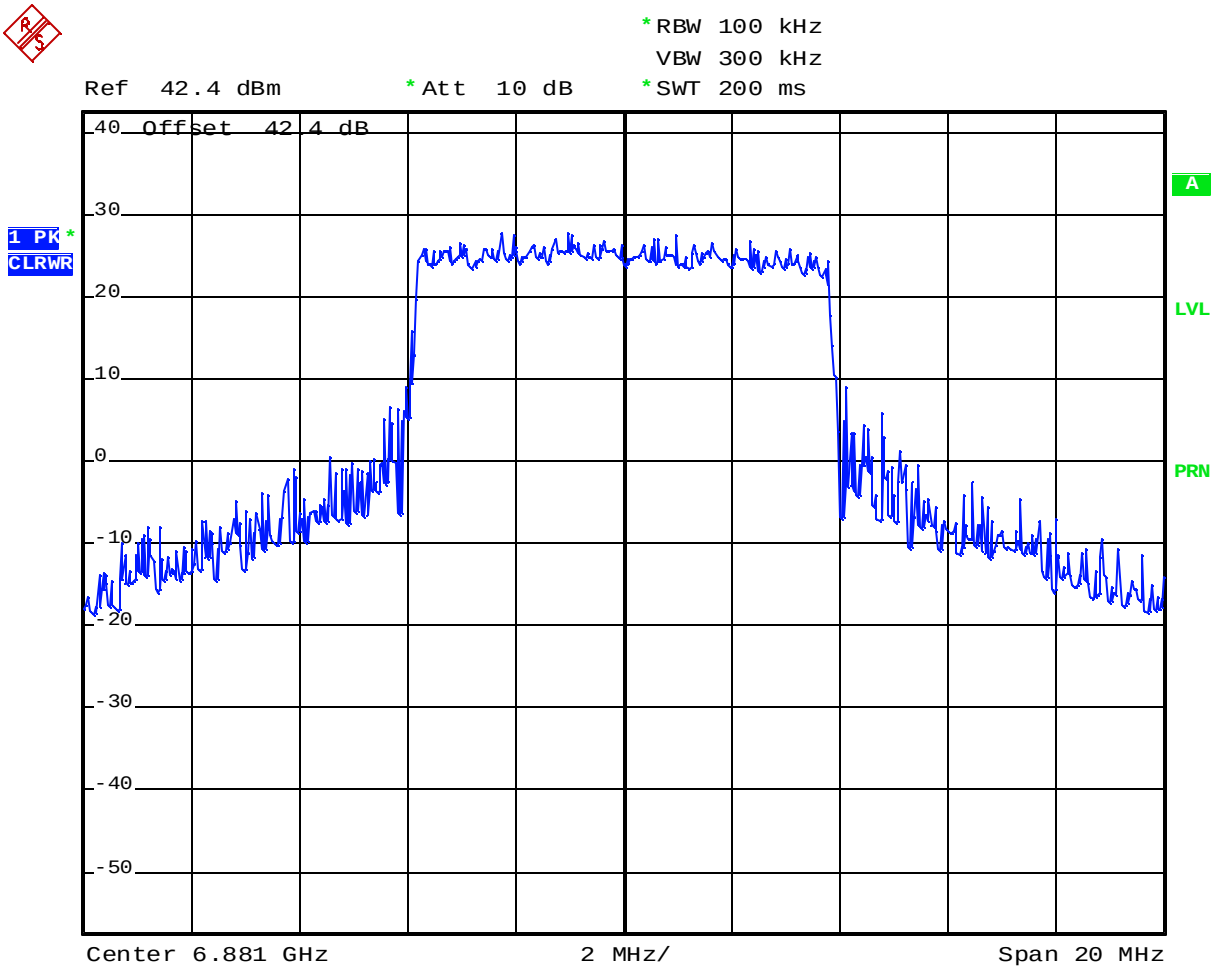
Audio frequency response and modulation limiting for conventional analogue FM modulation of the EUT is described in detail under attached exhibit: Report – Audio Response.

Modulation Mode: 64QAM



Date: 12.JUN.2007 17:13:14

Modulation Mode: 16QAM



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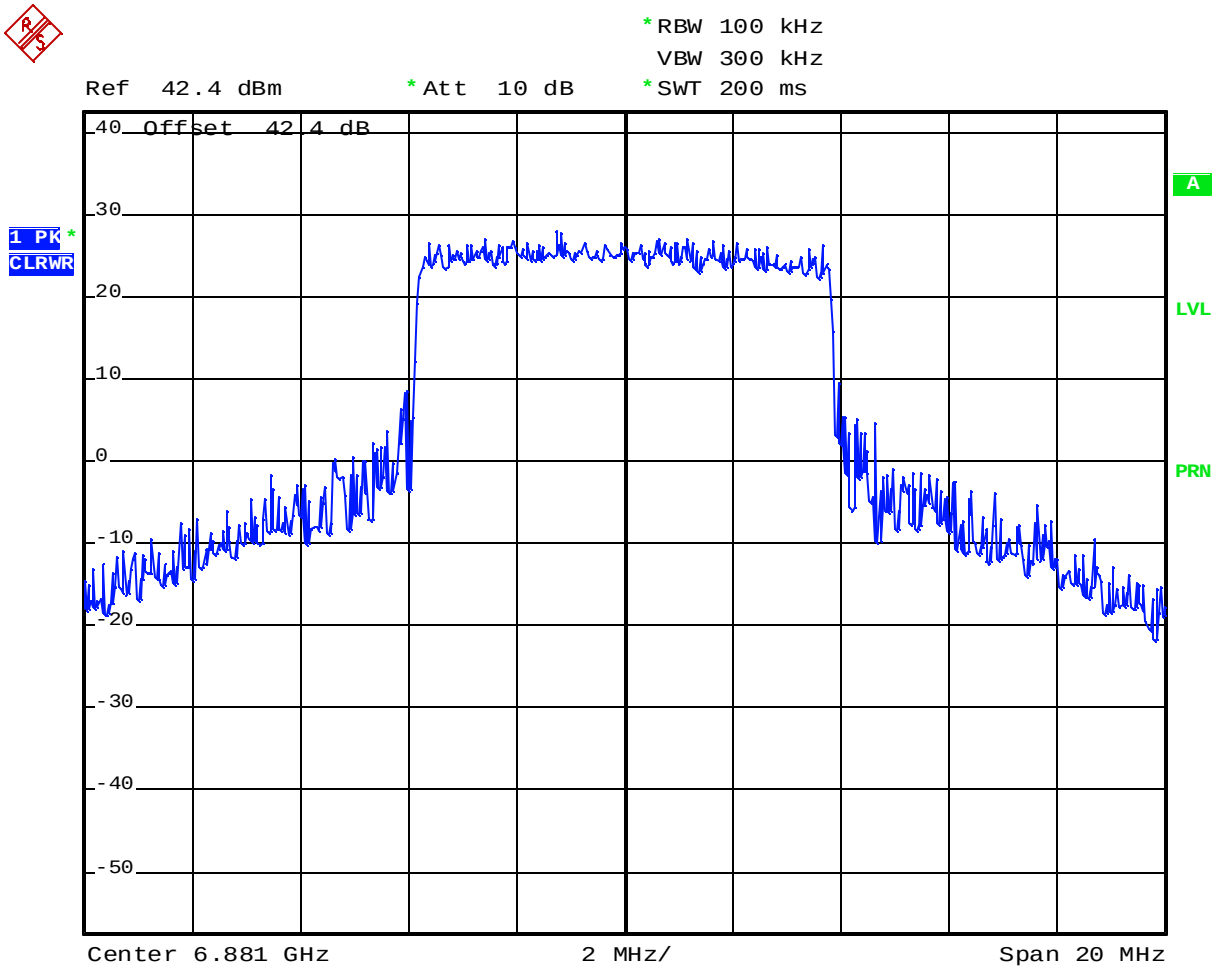
Modulation Mode: QPSK



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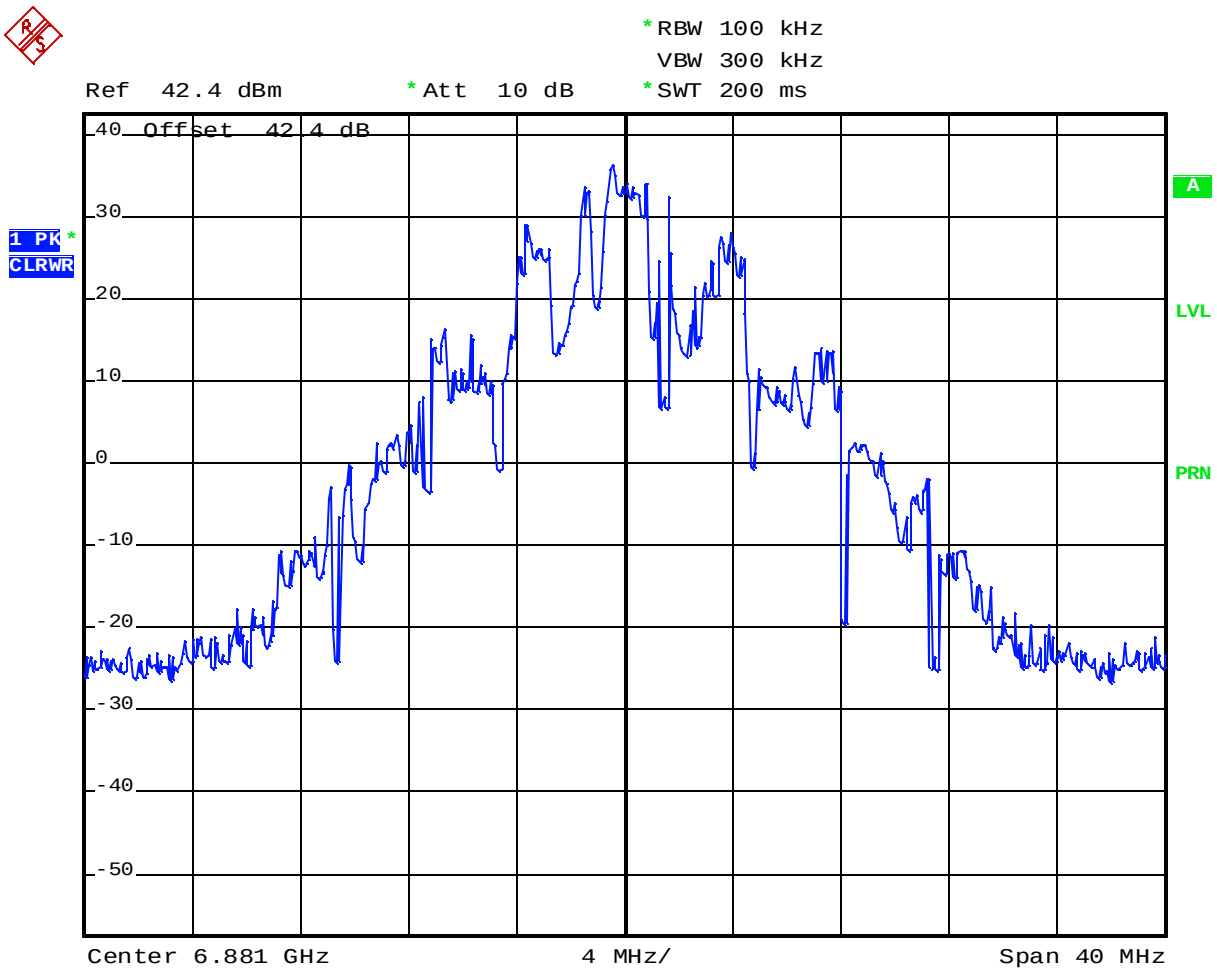
Modulation Mode: Analog (FM)



Date: 12.JUN.2007 17:08:34

Section 5. Occupied Bandwidth

Para. No.: 2.1049

Test Performed By: Ferdinand Custodio	**Date of Test: 06-13-2007**

Minimum Standard: Part 74.637 (g) Occupied/Authorized bandwidth.

§74.637(g) The maximum bandwidth which will be authorized per frequency assignment is set out in the table which follows. Regardless of the maximum authorized bandwidth specified for each frequency band, the Commission reserves the right to issue a license for less than the maximum bandwidth if it appears that less bandwidth would be sufficient to support an applicant's intended communications.

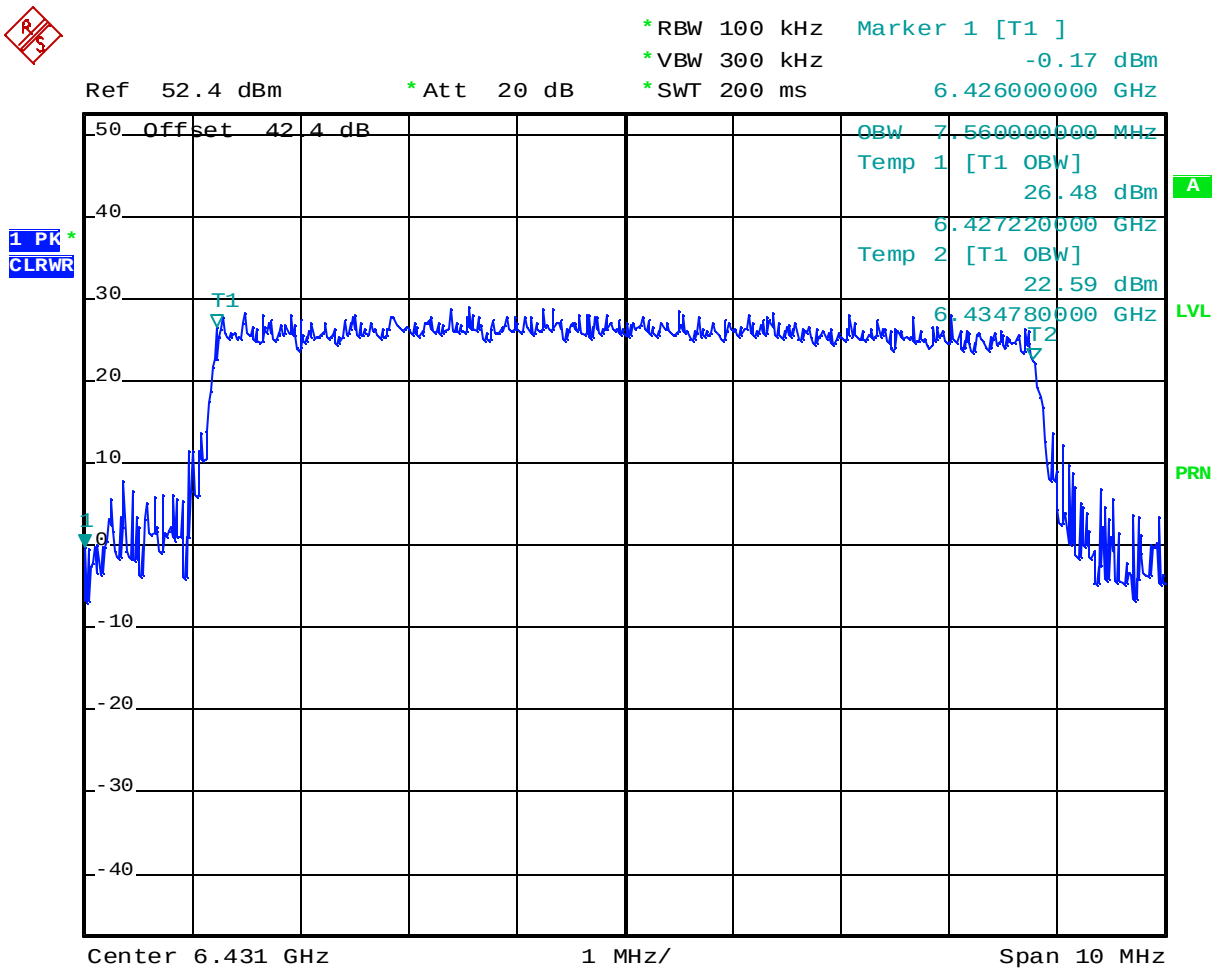
Frequency Band (MHz)	Maximum authorized bandwidth (MHz)
1,990 to 2,110	18
6,425 to 6,525	*25*
6,875 to 7,125	*25*
12,700 to 13,250	25
17,700 to 19,700	80

Test Results: EUT Complies. Conductive emission plots captured on the Spectrum Analyzer thru a 40 dB attenuator.

Test Data: See attached plots. The EUT has a selectable RF Bandwidth of 6, 7 and 8 MHz under Digital (COFDM) setup. The EUT was investigated using US 6 GHz Low Band and 7 GHz High Band channel plans both Digital and Analogue. The resulting plots submitted here represent each bandwidth since identical results were obtained on all configurations represented.

Analogue and composite video signal used for testing is described in detail under attached exhibit: Report – Video Modulation

6 GHz Channel Plan Digital 8 MHz Bandwidth



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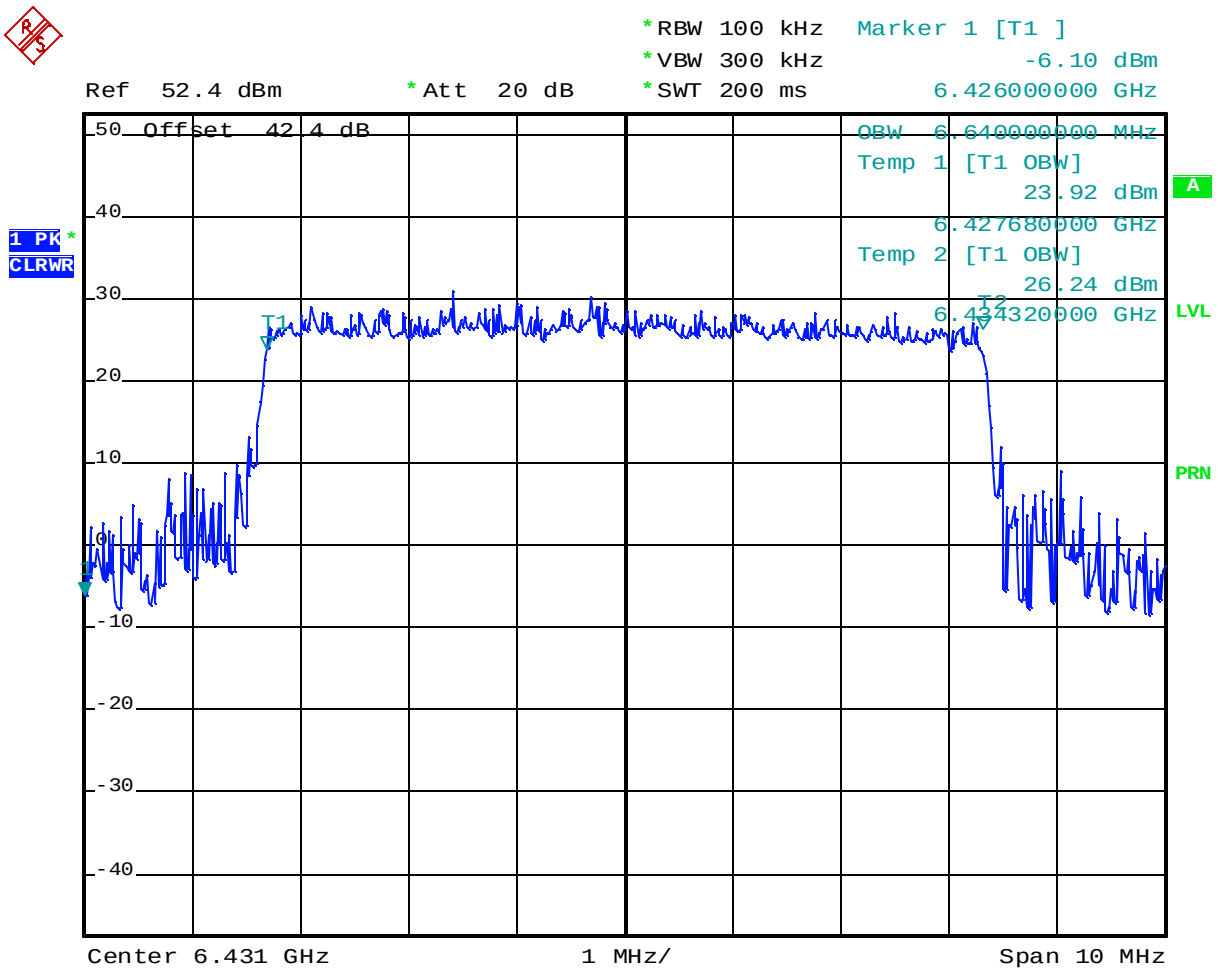
6 GHz Channel Plan Digital 7 MHz Bandwidth



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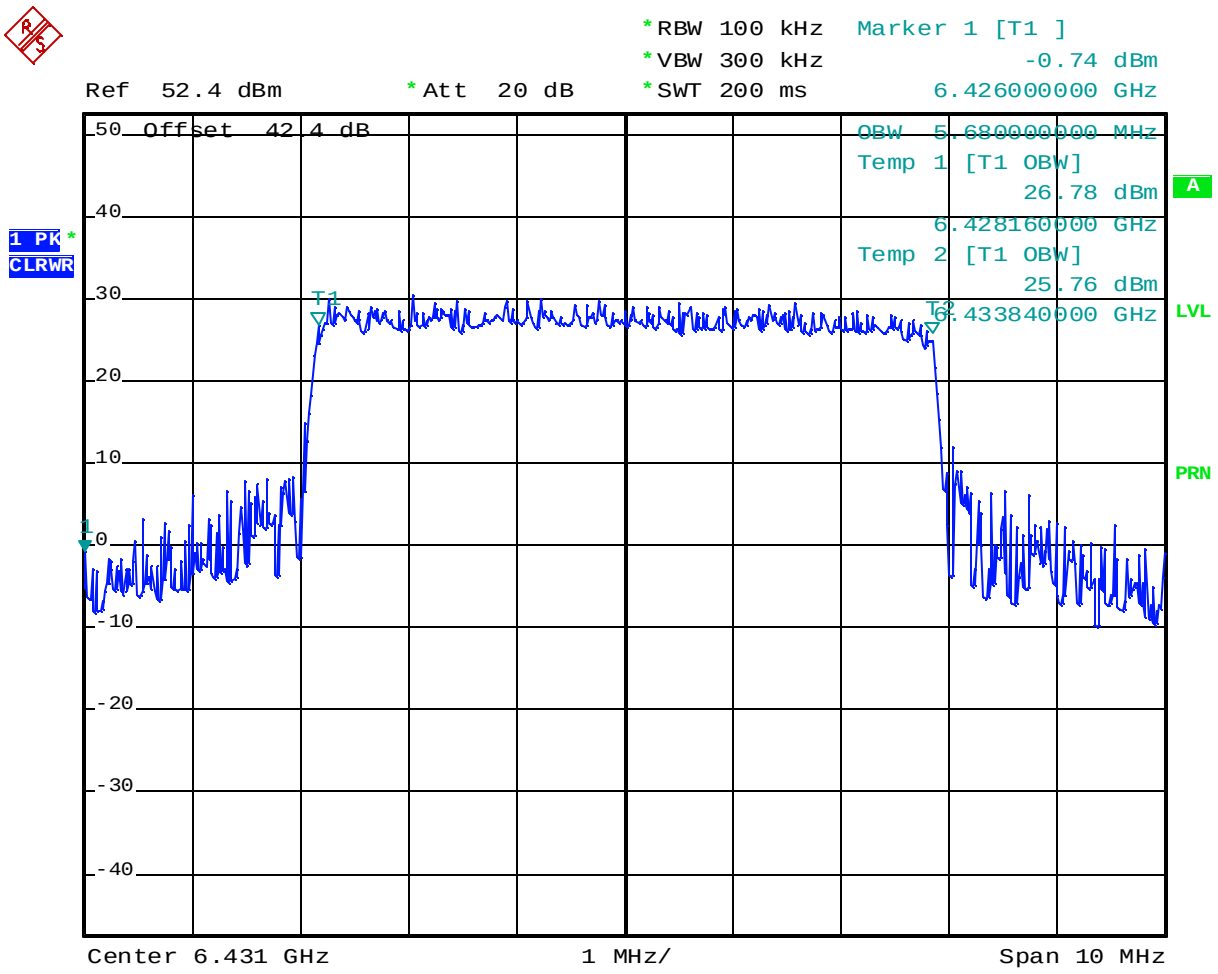
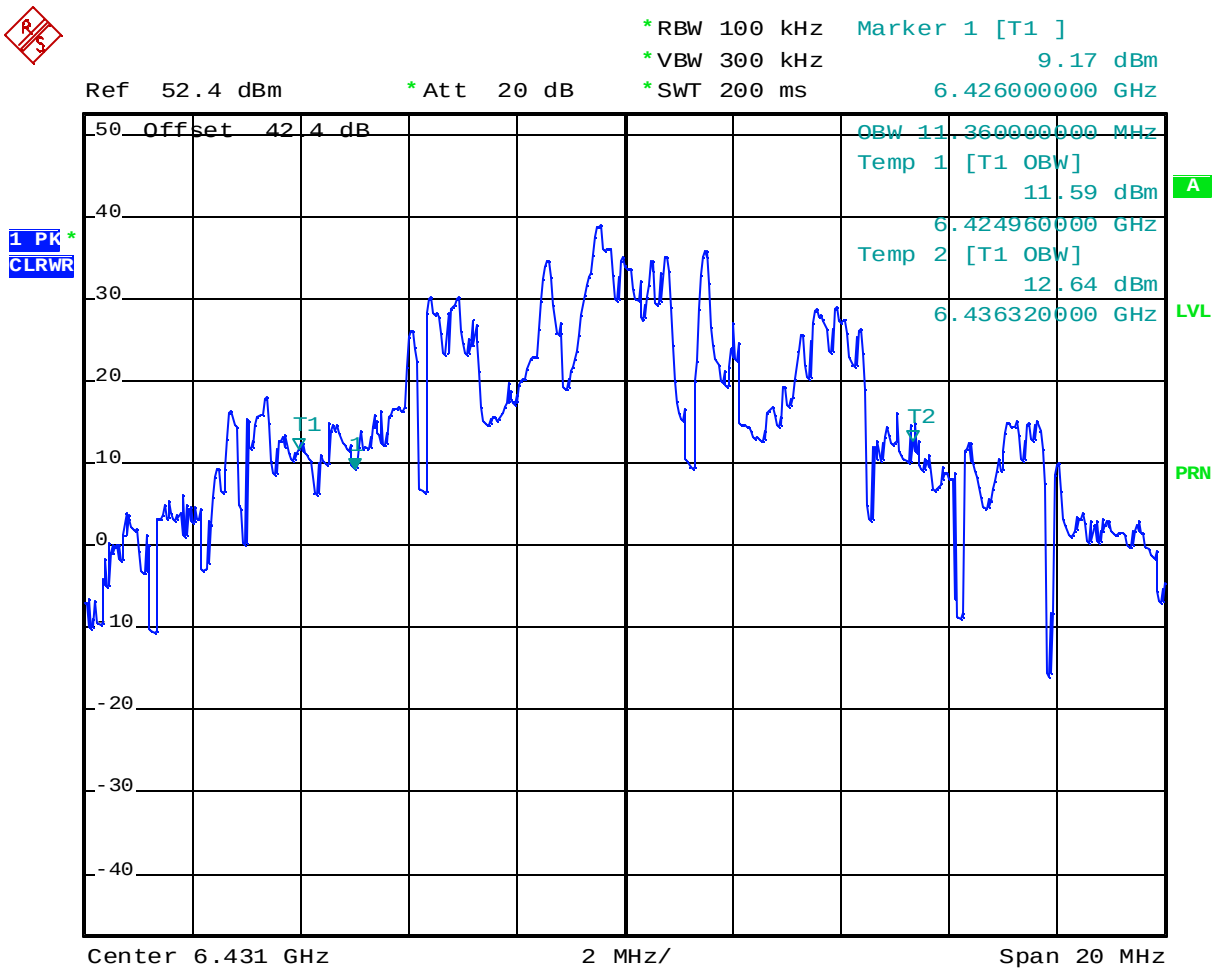
6 GHz Channel Plan Digital 6 MHz Bandwidth



Date: 13.JUN.2007 09:40:39

6 GHz Channel Plan Analogue 17 MHz Bandwidth



Date: 13.JUN.2007 09:44:55

Section 6. Spurious Emissions At Antenna Terminals

Para. No.: 2.1051

Test Performed By: Ferdinand Custodio	**Date of Test: 06-15-2007, 06-25-2007 and 07-31-2007**

Minimum Standard: Part 74.637 Emissions and emission limitations

(a) The mean power of emissions shall be attenuated below the mean transmitter power (P_{MEAN}) in accordance with the following schedule:

(1) When using frequency modulation:

(i) On any frequency removed from the assigned (center) frequency by more than 50% up to and including 100% of the authorized bandwidth: At least 25 dB in any 100 kHz reference bandwidth (B_{REF});

(ii) On any frequency removed from the assigned (center) frequency by more than 100% up to and including 250% of the authorized bandwidth: At least 35 dB in any 100 kHz reference bandwidth;

(iii) On any frequency removed from the assigned (center) frequency by more than 250% of the authorized bandwidth: At least 43+10 log_{10} (P_{MEAN} in watts) dB, or 80 dB, whichever is the lesser attenuation, in any 100 kHz reference bandwidth.

(2) When using transmissions employing digital modulation techniques:

(i) For operating frequencies below 15 GHz, in any 4 kHz reference bandwidth (B_{REF}), the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth: As specified by the following equation but in no event less than 50 decibels:

$A = 35 + 0.8 (G - 50) + 10 Log_{10} B.$

(Attenuation greater than 80 decibels is not required.)

Where:

A = Attenuation (in decibels) below the mean output power level.

G = Percent removed from the carrier frequency.

B = Authorized bandwidth in megahertz.

(c) For purposes of compliance with the emission limitation requirements of this section:

(3) For demonstrating compliance with the attenuation requirements for frequency modulation and digital modulation in paragraph (a) of this section, the resolution bandwidth (B_{RES}) of the

measuring equipment used for measurements removed from the center frequency by more than 250 percent of the authorized bandwidth shall be 100 kHz for operating frequencies below 1 GHz, and 1 MHz for operating frequencies above 1 GHz. The resolution bandwidth for frequencies removed from the center frequency by less than 250 percent of the authorized bandwidth shall be the reference bandwidth (B_{REF}) specified in the individual emission limitations, but may be reduced to not less than one percent of the authorized bandwidth (B), adjusted upward to the nearest greater resolution bandwidth available on the measuring equipment. In all cases, if B_{RES} and B_{REF} are not equal, then the attenuation requirement must be increased (or decreased) as determined by a factor of 10 log_{10} [(B_{REF} in megahertz)/(B_{RES} in megahertz)] decibels, where a positive factor indicates an increase in the attenuation requirement and a negative factor indicates a decrease in the attenuation requirement.

Test Results: EUT Complies. Conductive emission plots captured on the Spectrum Analyzer thru a 41.5 dB attenuator. Emissions were investigated from 30 MHz to 40 GHz.

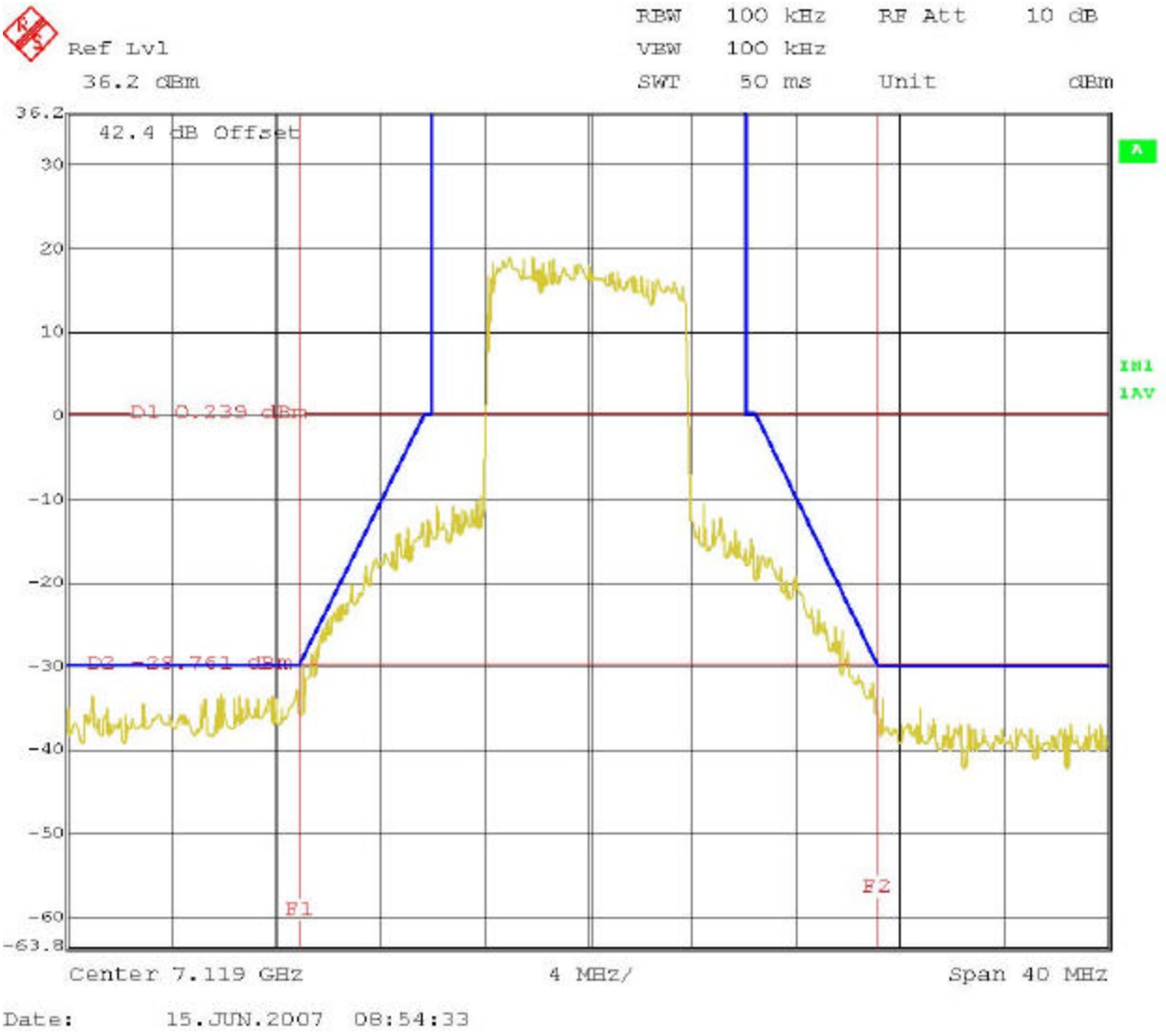
Test Data: See attached Plots (balance in Appendix).

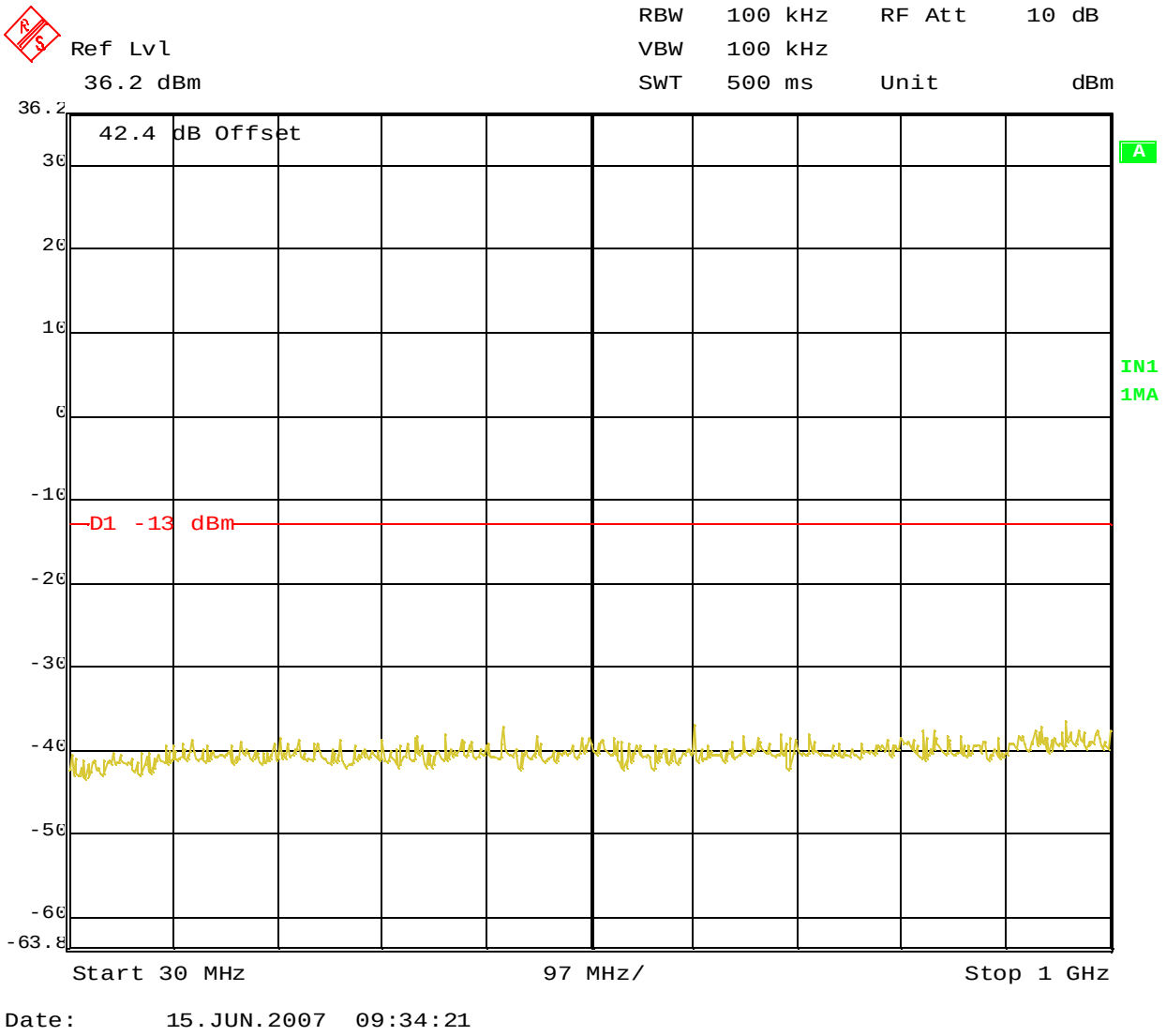
Analogue and composite video signal used for testing is described in detail under attached exhibit: Report – Video Modulation

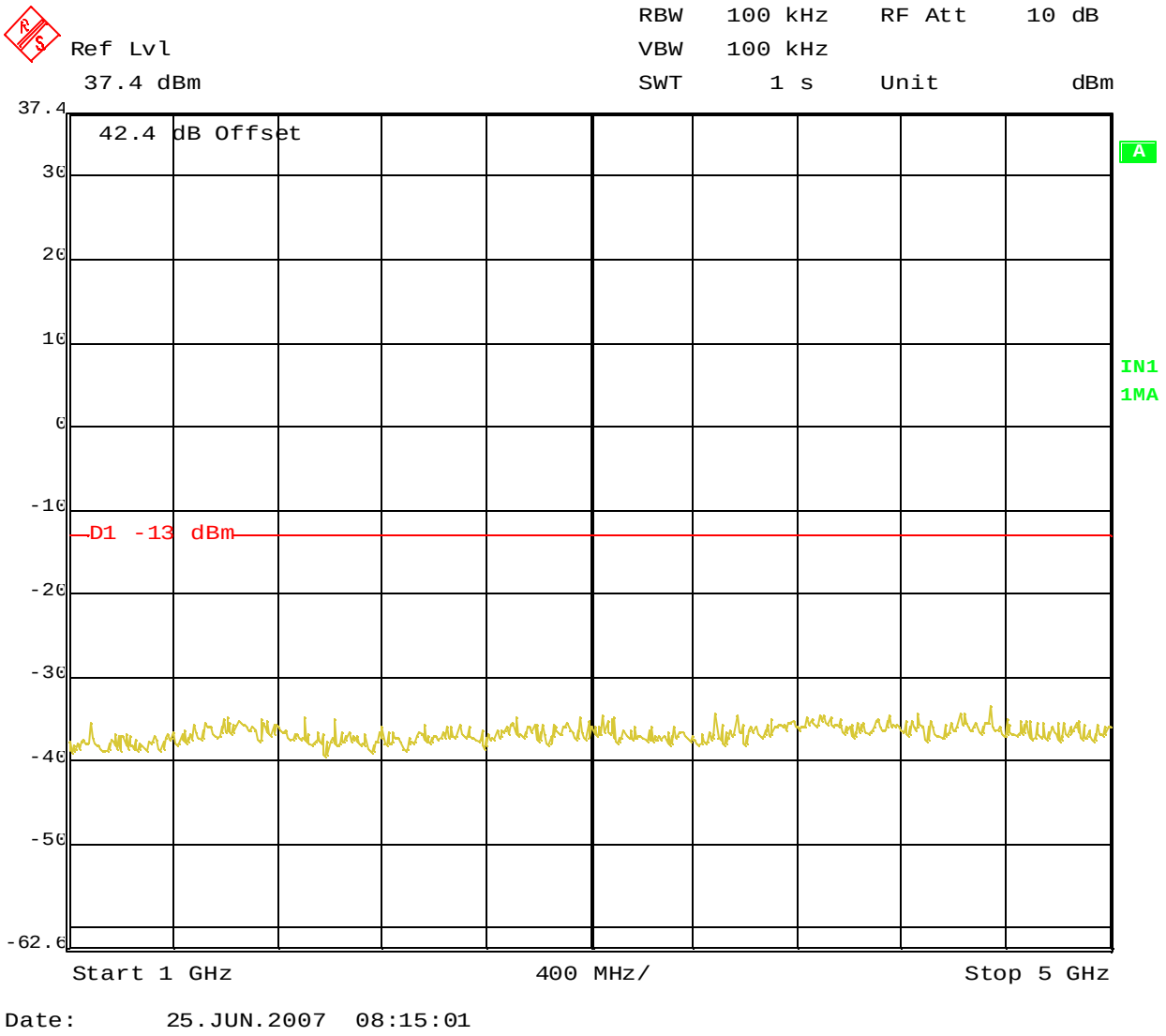
Additional Observations: Out of band spurious emissions recorded on pages 24, 25, and 26 while below the limits were verified not coming from the EUT. These spurious emissions were present even when the EUT was turned off. While the scans were done as peak measurements, local emissions were additionally presented as mean (average) measurements.

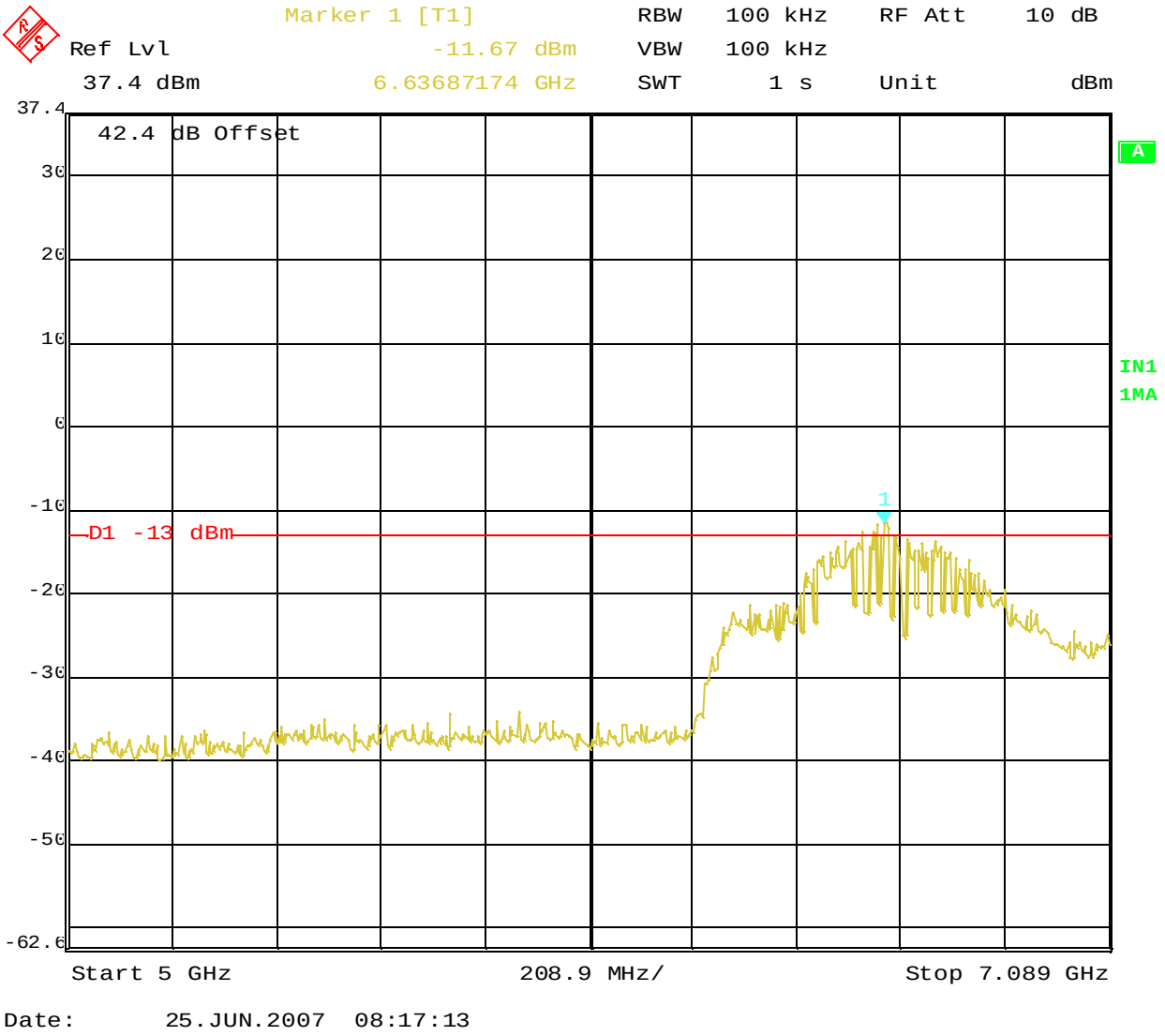
Emission Mask Endpoints Part 74.637(C)(3):
BW = 12 MHz, REF LVL = Mean Output Power

Digital Channel 10+ (7GHz High Band Channel Plan) – 7119 MHz QPSK

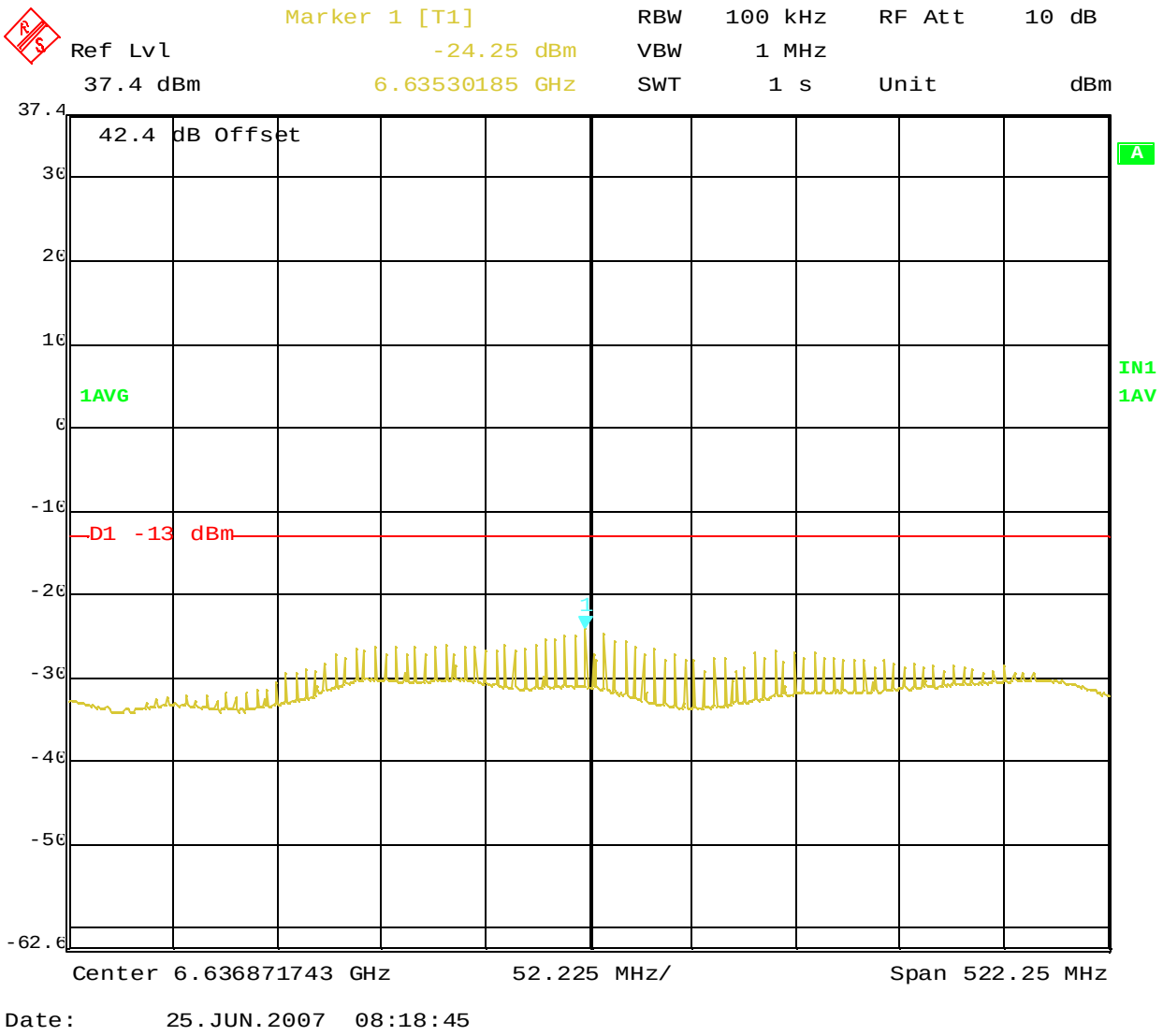


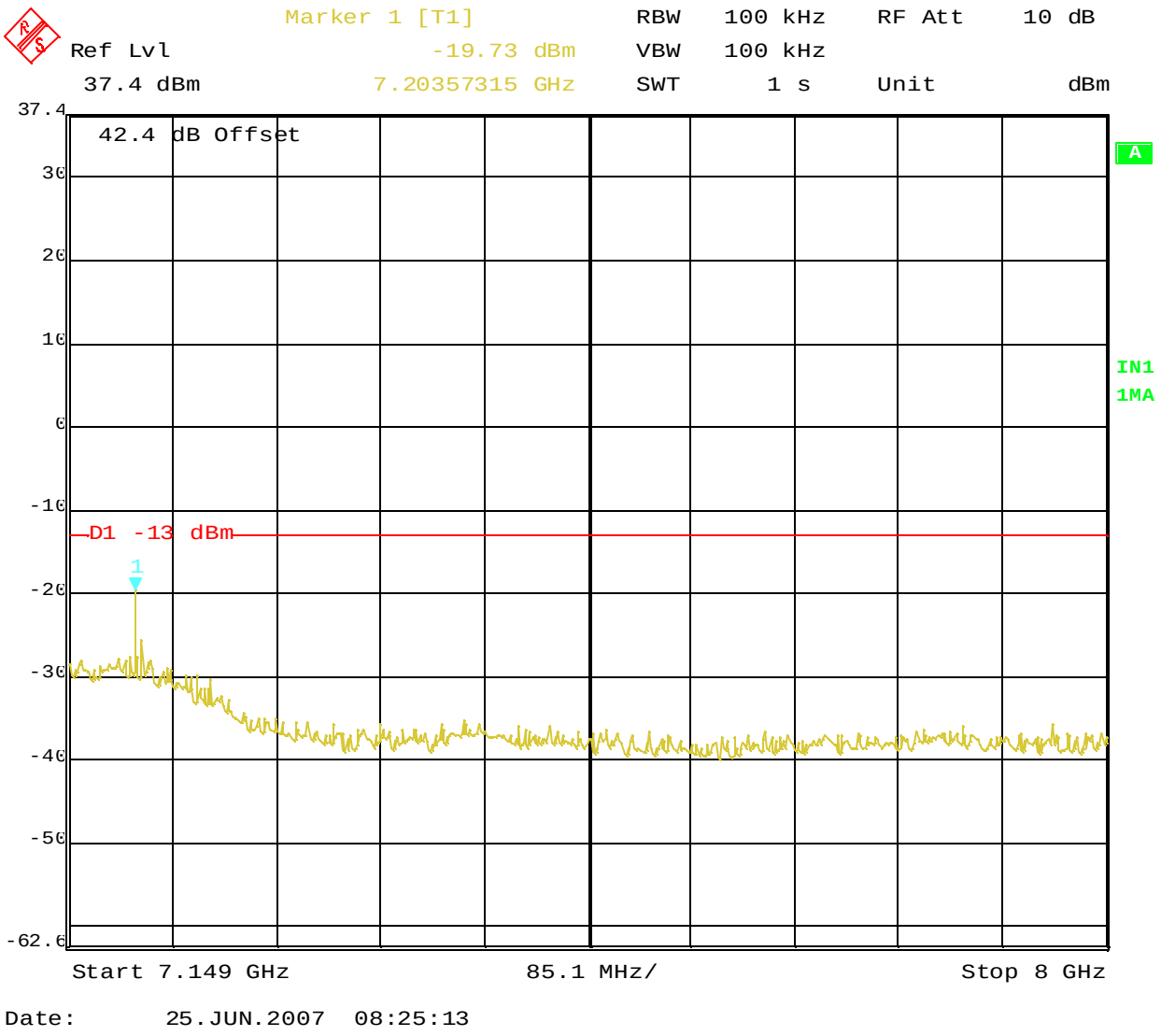

RBW 100 kHz
RF Att 10 dB
VBW 100 kHz
Ref Lvl
36.2 dBm
SWT 500 ms
Unit dBm
36.2
42.4 dB Offset
30
20
10
0
-10
-20
-30
-40
-50
-60
-63.8
A
IN1
1MA
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 15.JUN.2007 09:34:21

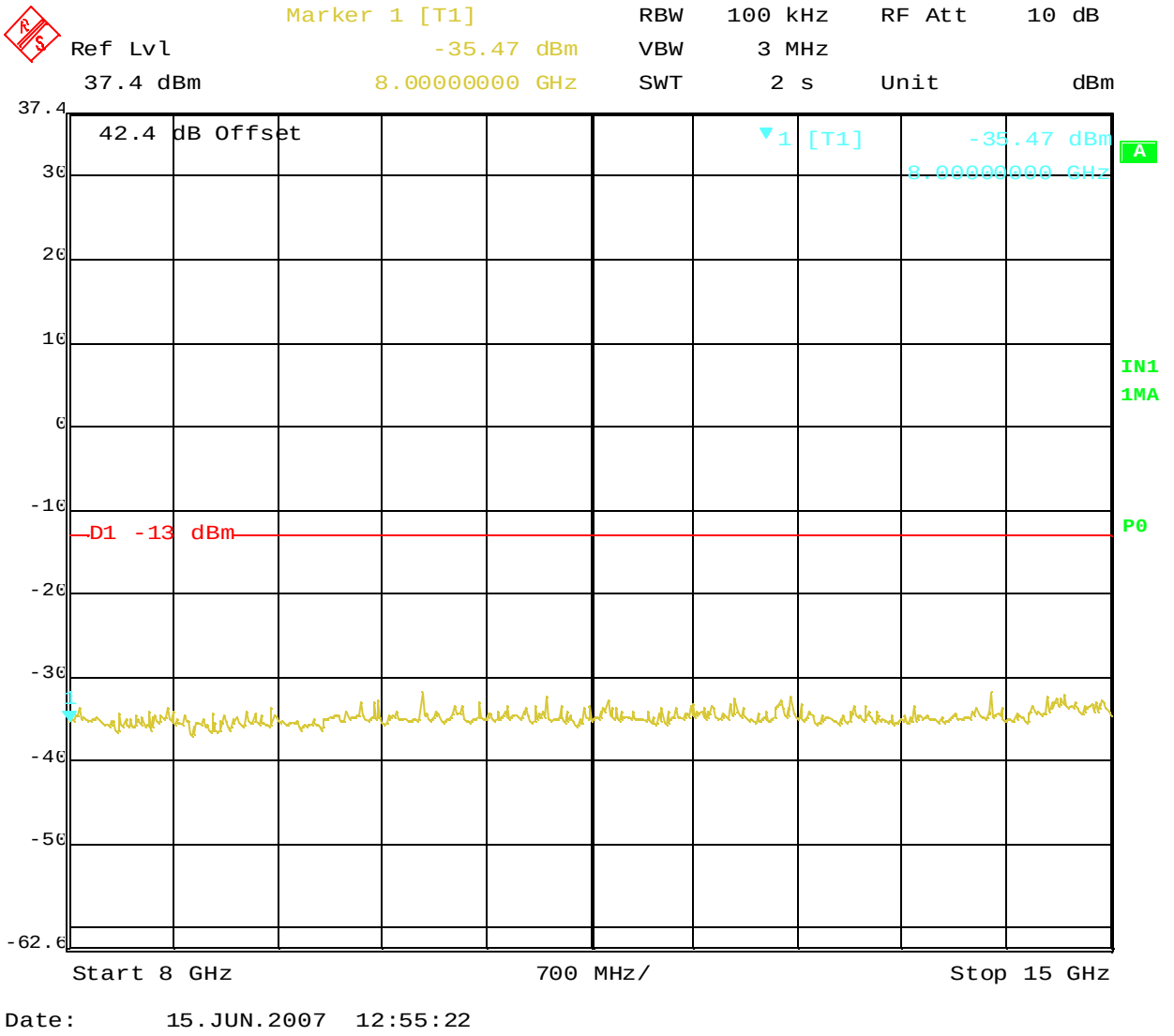

RBW 100 kHz
RF Att 10 dB
Ref Lvl
VBW 100 kHz
37.4 dBm
SWT 1 s
Unit dBm
37.4
42.4 dB Offset
A
IN1
1MA
D1 -13 dBm
-62.6
Start 1 GHz
400 MHz/
Stop 5 GHz
Date: 25.JUN.2007 08:15:01



Note: Peak detector measurement, please refer to the next page for Average measurement @ 6.636GHz


Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-24.25 dBm
VBW 1 MHz
37.4 dBm
6.63530185 GHz
SWT 1 s
Unit dBm
37.4
42.4 dB Offset
30
20
10
1AVG
0
-10
D1 -13 dBm
-20
-30
-40
-50
-62.6
A
IN1
1AV
Center 6.636871743 GHz
52.225 MHz/
Span 522.25 MHz
Date: 25.JUN.2007 08:18:45


Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-19.73 dBm
VBW 100 kHz
37.4 dBm
7.20357315 GHz
SWT 1 s
Unit dBm
37.4
42.4 dB Offset
A
IN1
1MA
D1 -13 dBm
1
-62.6
Start 7.149 GHz
85.1 MHz/
Stop 8 GHz
Date: 25.JUN.2007 08:25:13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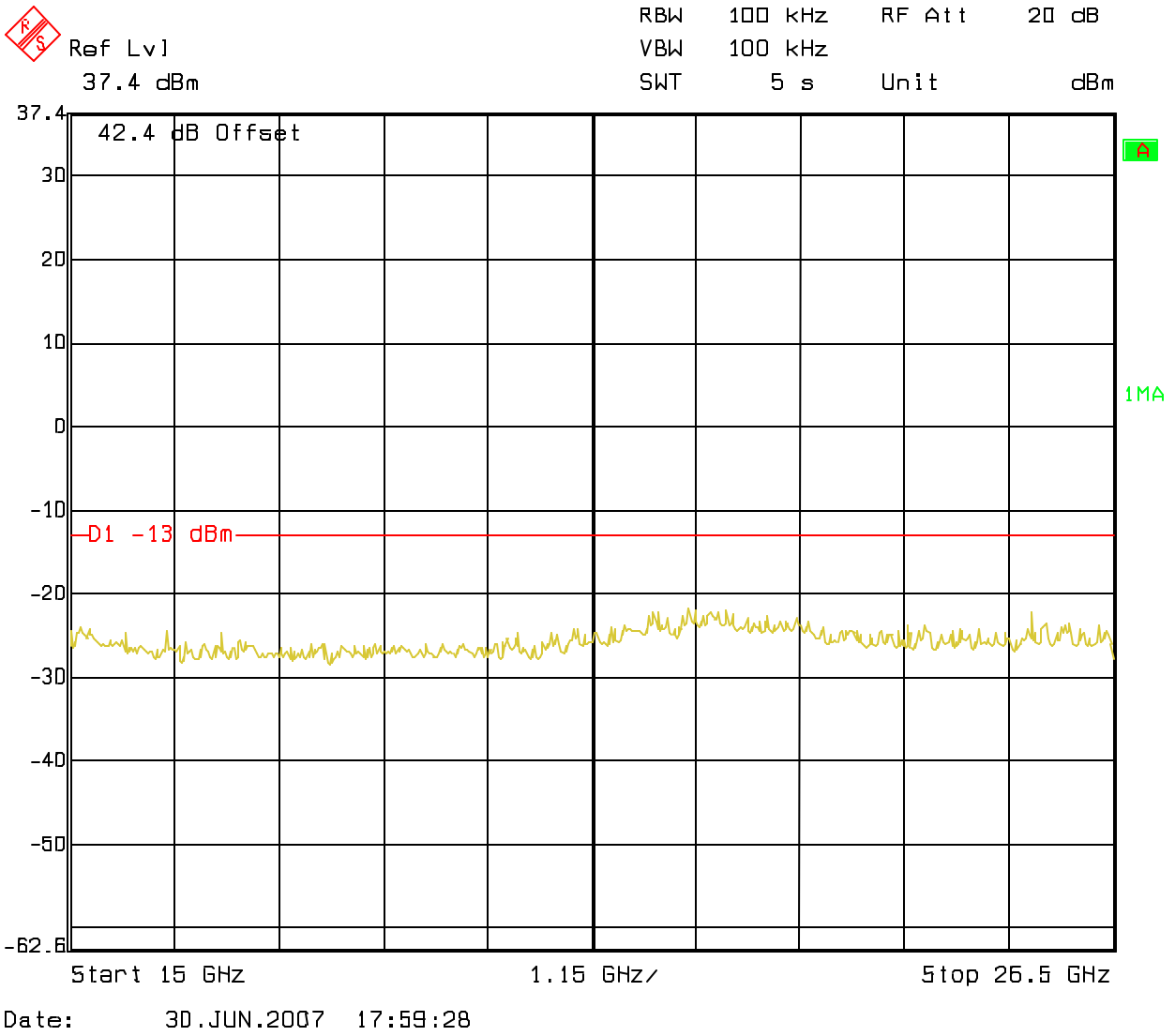
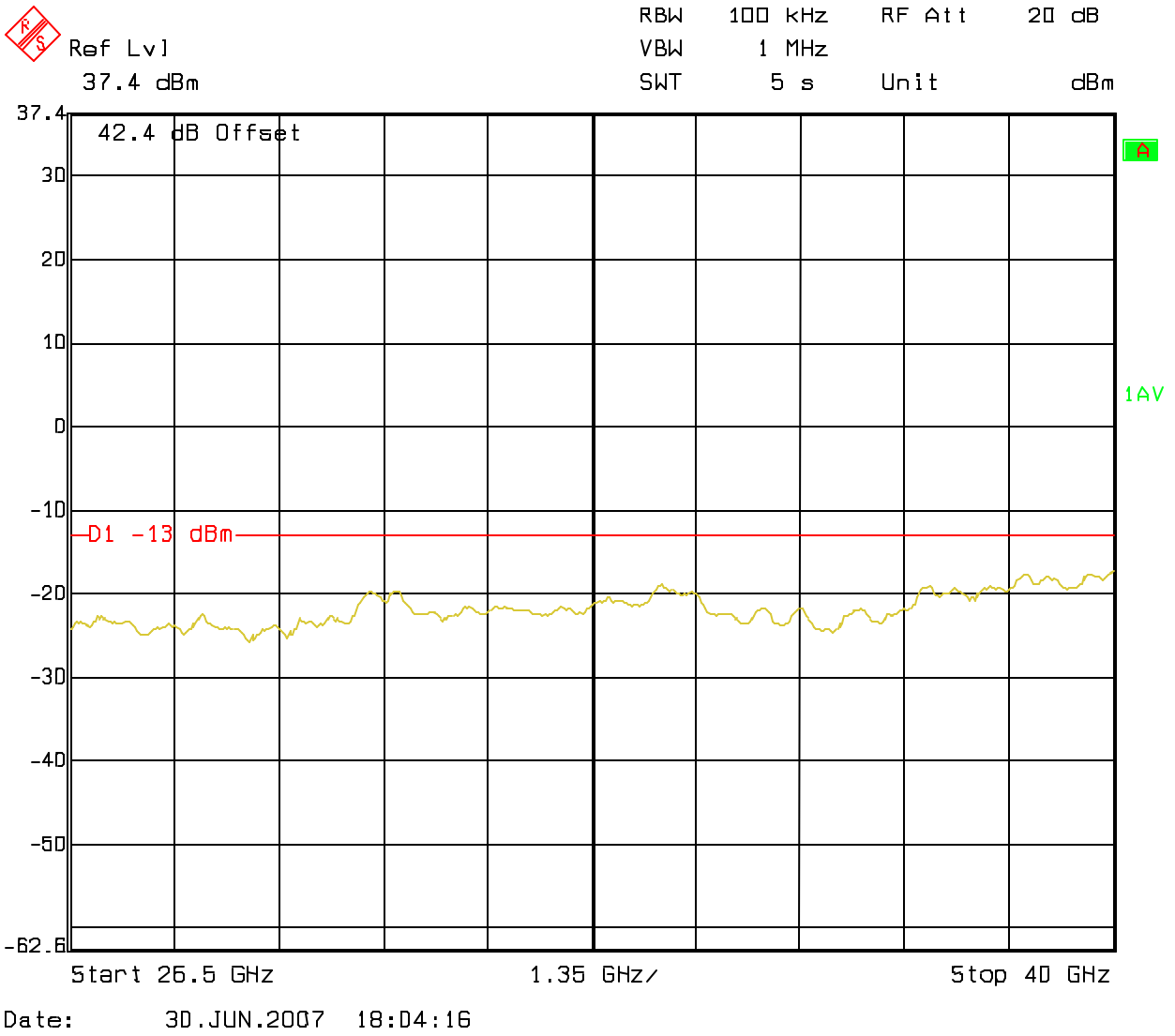
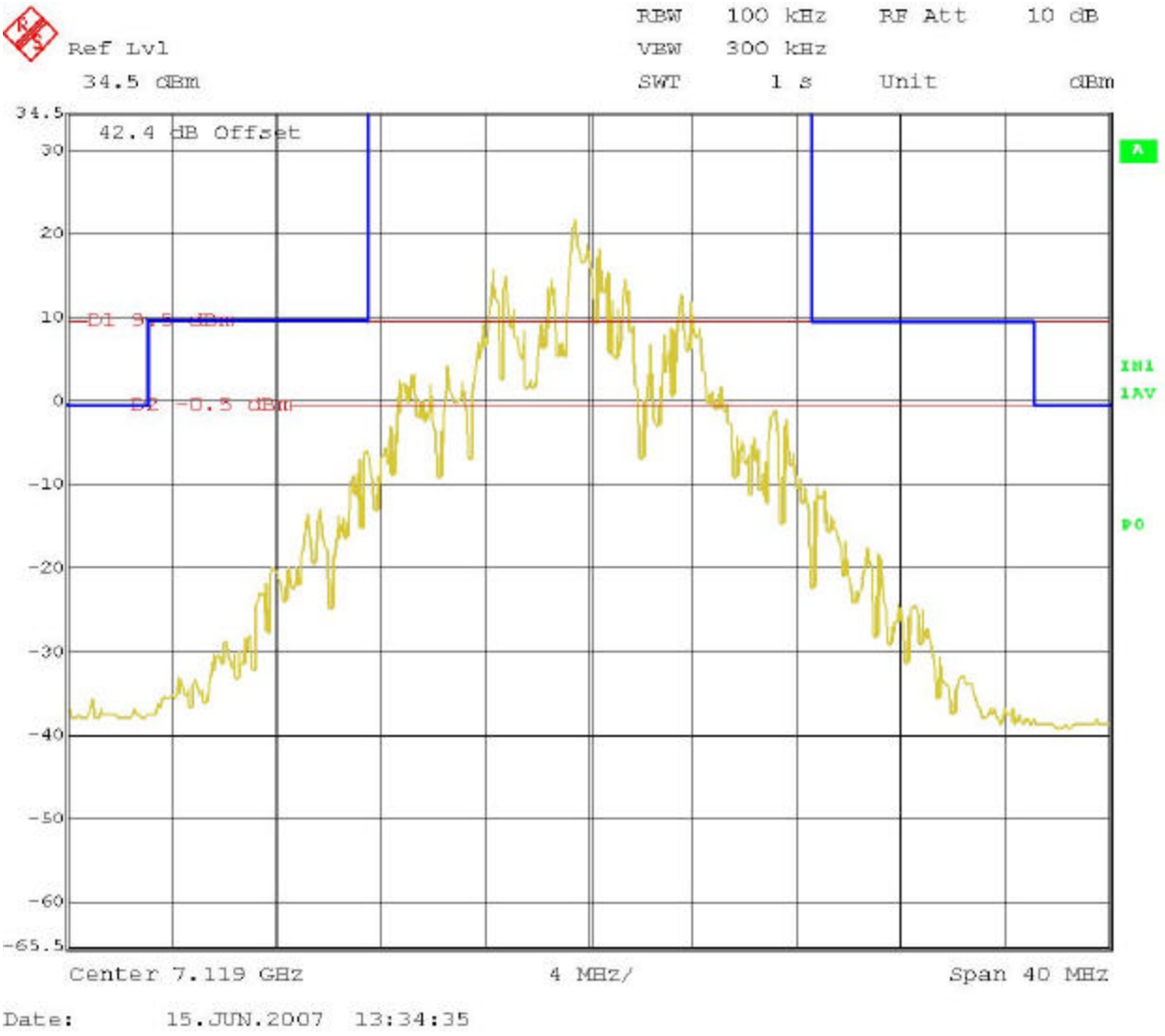
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-35.47 dBm
VBW 3 MHz
37.4 dBm
8.00000000 GHz
SWT 2 s
Unit dBm
37.4
42.4 dB Offset
1 [T1]
-35.47 dBm
8.00000000 GHz
A
30
20
10
0
IN1
1MA
-10
D1 -13 dBm
P0
-20
-30
-40
-50
-62.6
Start 8 GHz
700 MHz/
Stop 15 GHz
Date: 15.JUN.2007 12:55:22

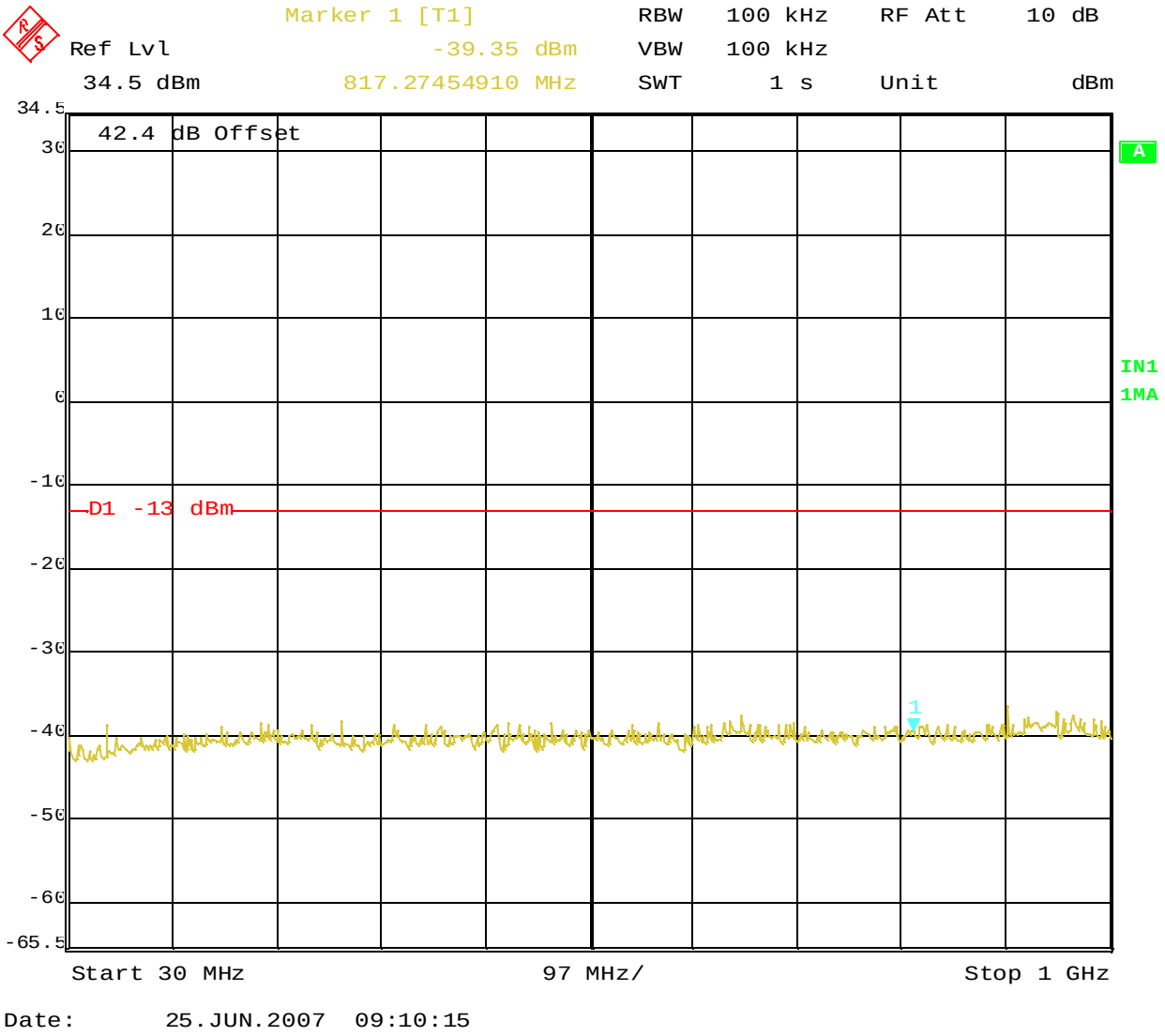

Ref Lvl
37.4 dBm
RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 20 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
1MA
37.4
30
20
10
0
-10
-20
-30
-40
-50
-62.6
Start 15 GHz
1.15 GHz/
Stop 26.5 GHz
Date: 30.JUN.2007 17:59:28

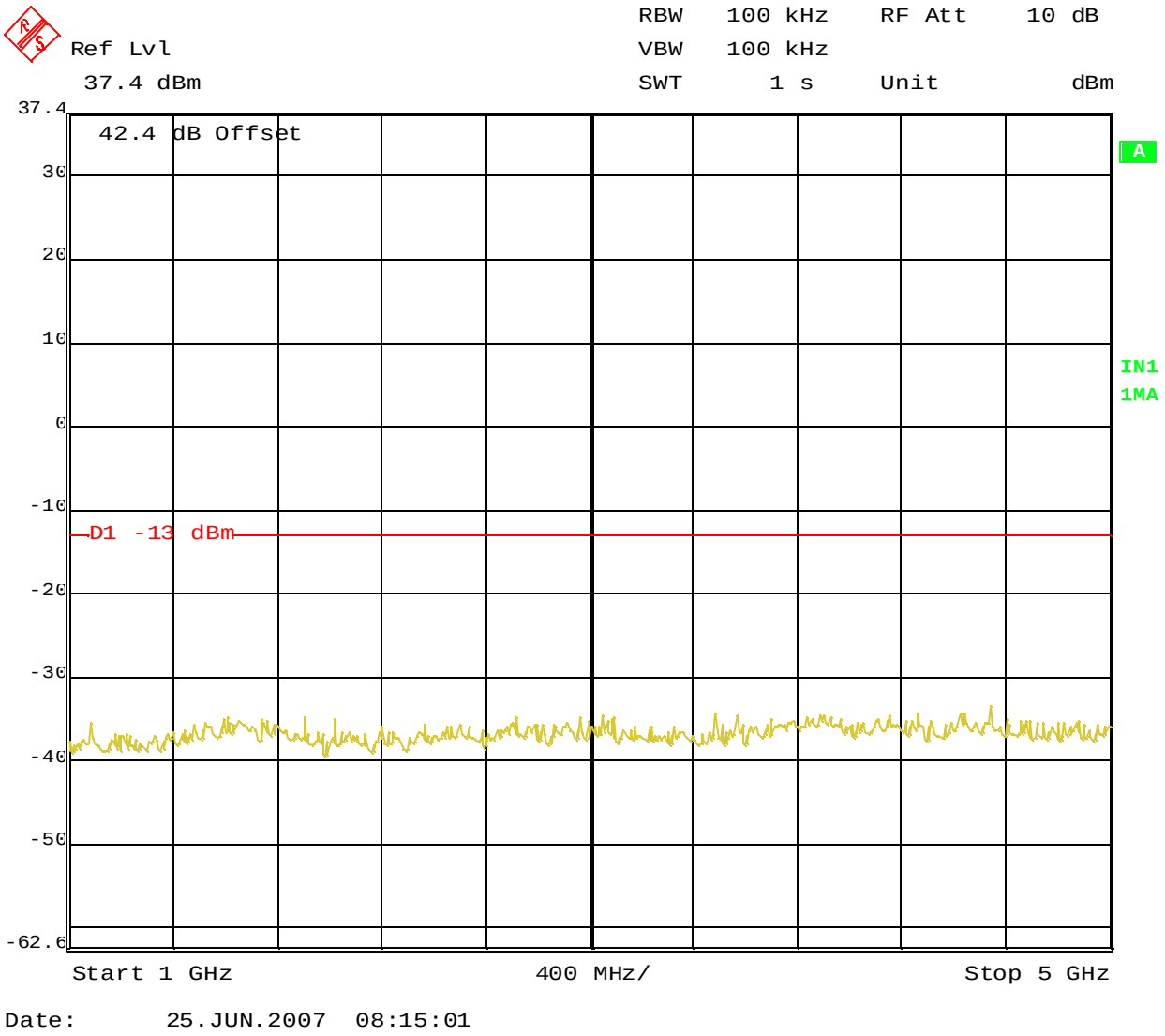

RBW 100 kHz
RF Att 20 dB
Ref Lvl
VBW 1 MHz
37.4 dBm
SWT 5 s
Unit dBm
37.4
42.4 dB Offset
30
20
10
0
-10
-20
-30
-40
-50
-62.6
D1 -13 dBm
1AV
Start 26.5 GHz
1.35 GHz/
Stop 40 GHz
Date: 30.JUN.2007 18:04:16

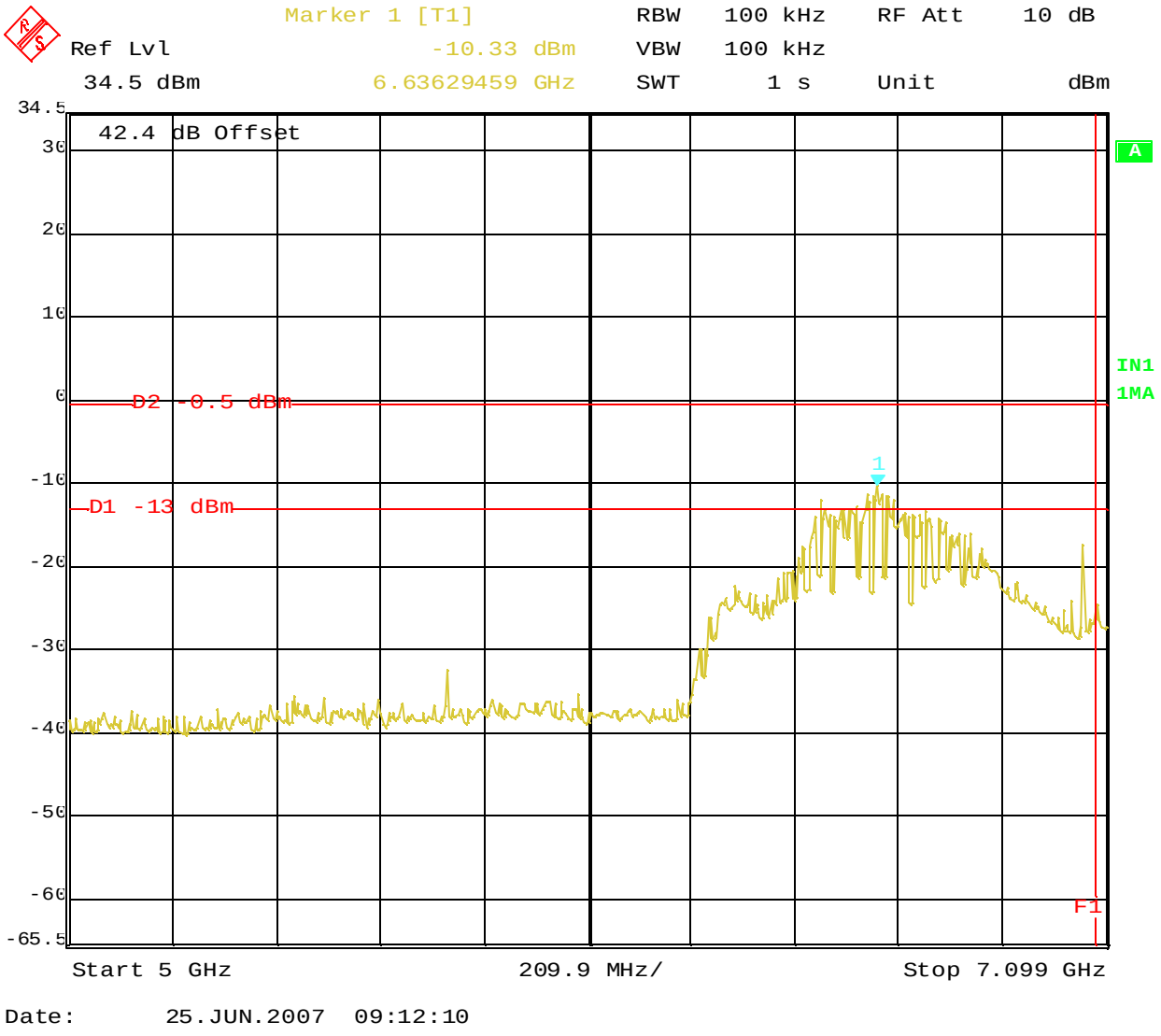
Emission Mask Endpoints Part 74.637(a)(1):
BW = 17 MHz, REF LVL = Mean Output Power

Analogue Channel 10+ (7GHz High Band Channel Plan) – 7119 MHz FM

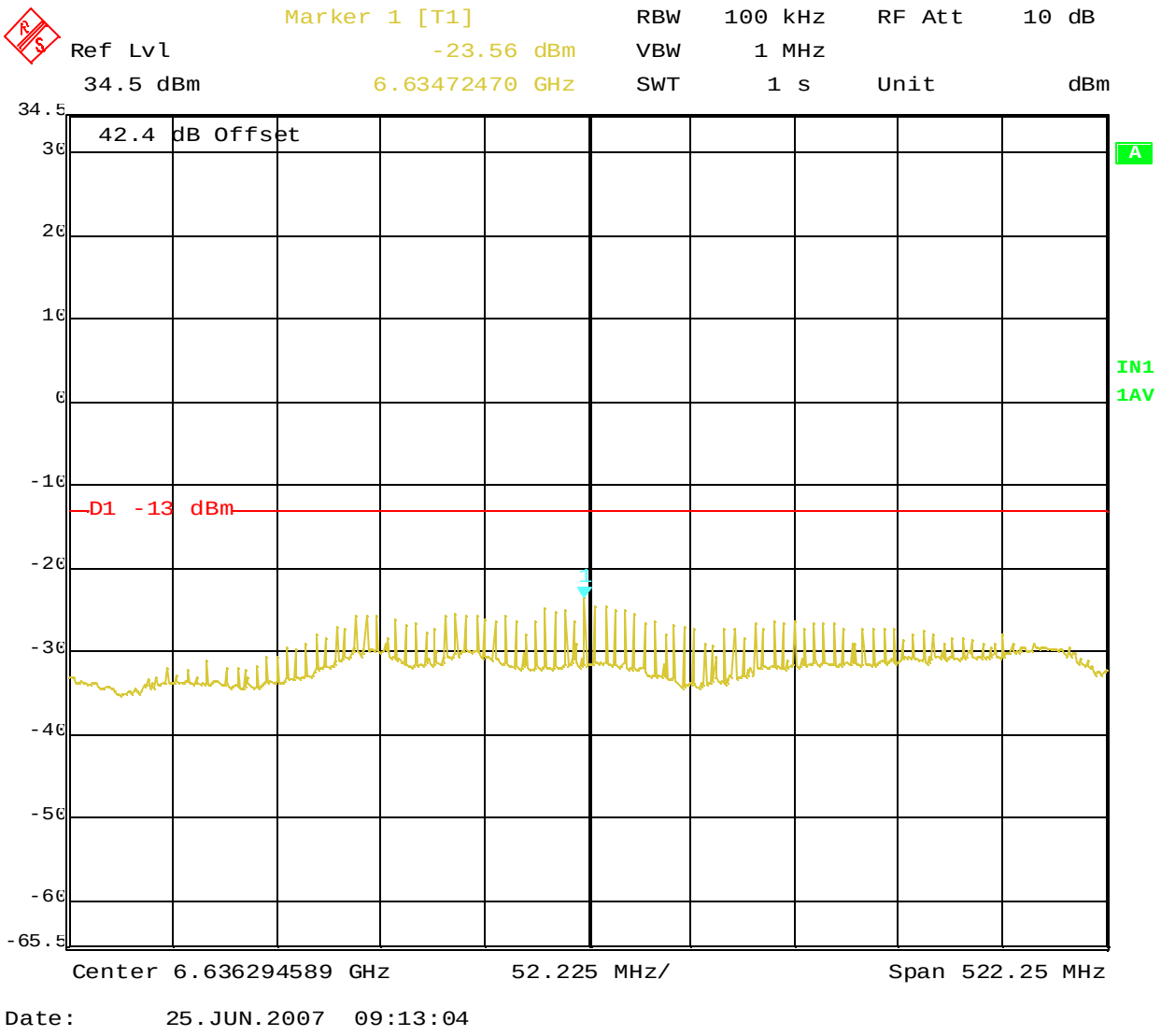


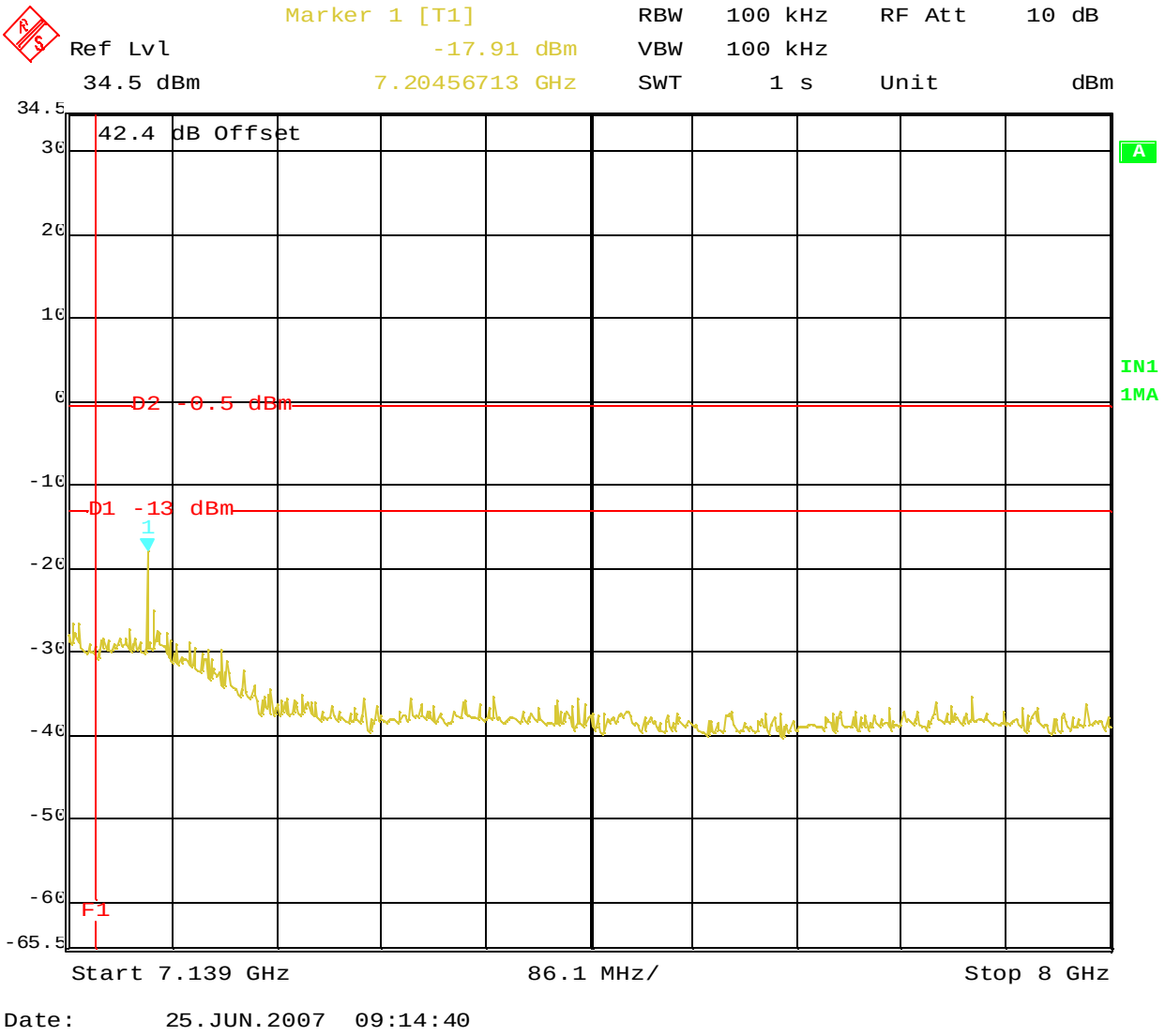

Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-39.35 dBm
VBW 100 kHz
34.5 dBm
817.27454910 MHz
SWT 1 s
Unit dBm
34.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-65.5
42.4 dB Offset
A
IN1
1MA
D1 -13 dBm
1
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 25.JUN.2007 09:10:15

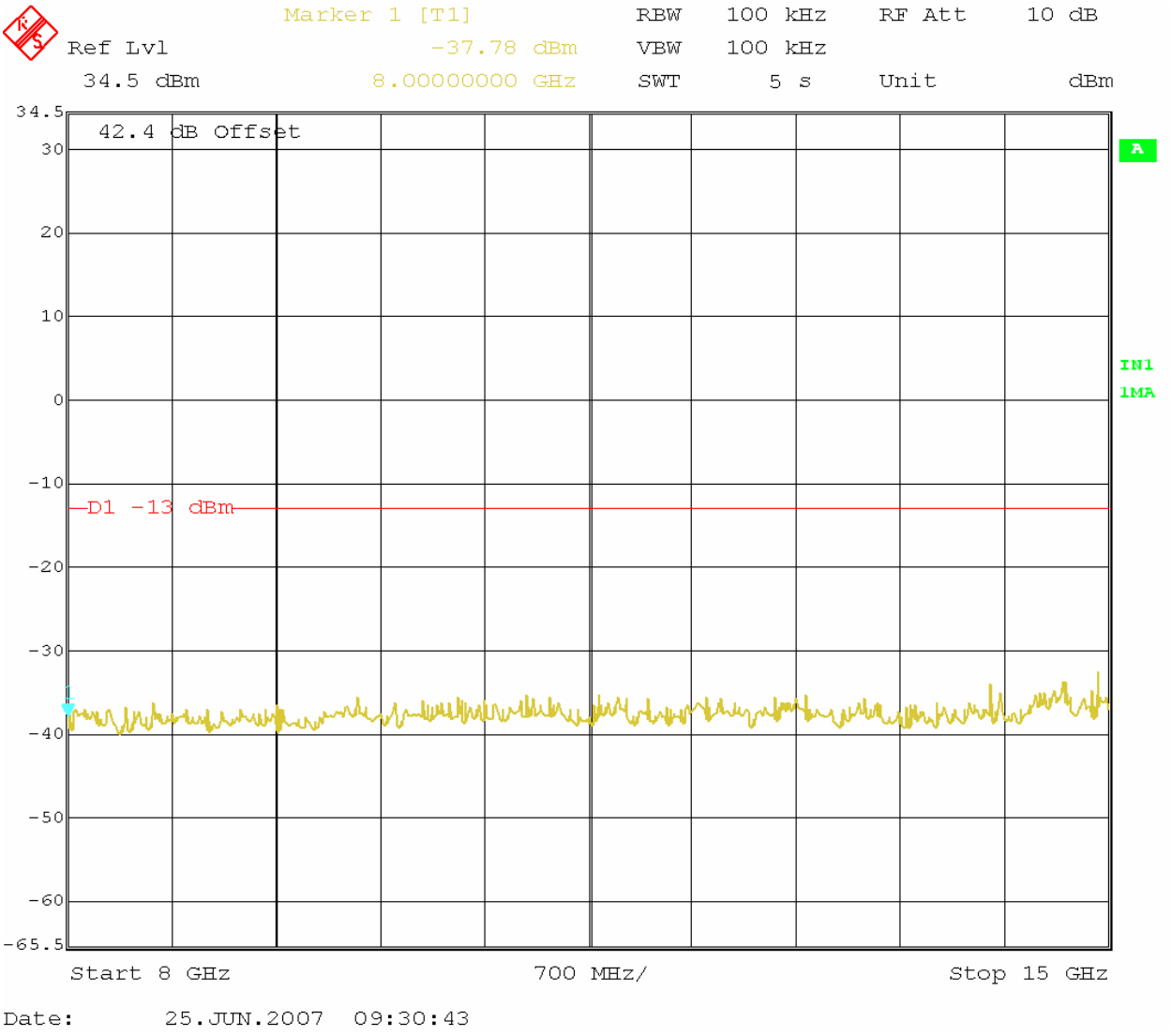

RBW 100 kHz
RF Att 10 dB
Ref Lvl
VBW 100 kHz
37.4 dBm
SWT 1 s
Unit dBm
37.4
42.4 dB Offset
A
IN1
1MA
D1 -13 dBm
-62.6
Start 1 GHz
400 MHz/
Stop 5 GHz
Date: 25.JUN.2007 08:15:01

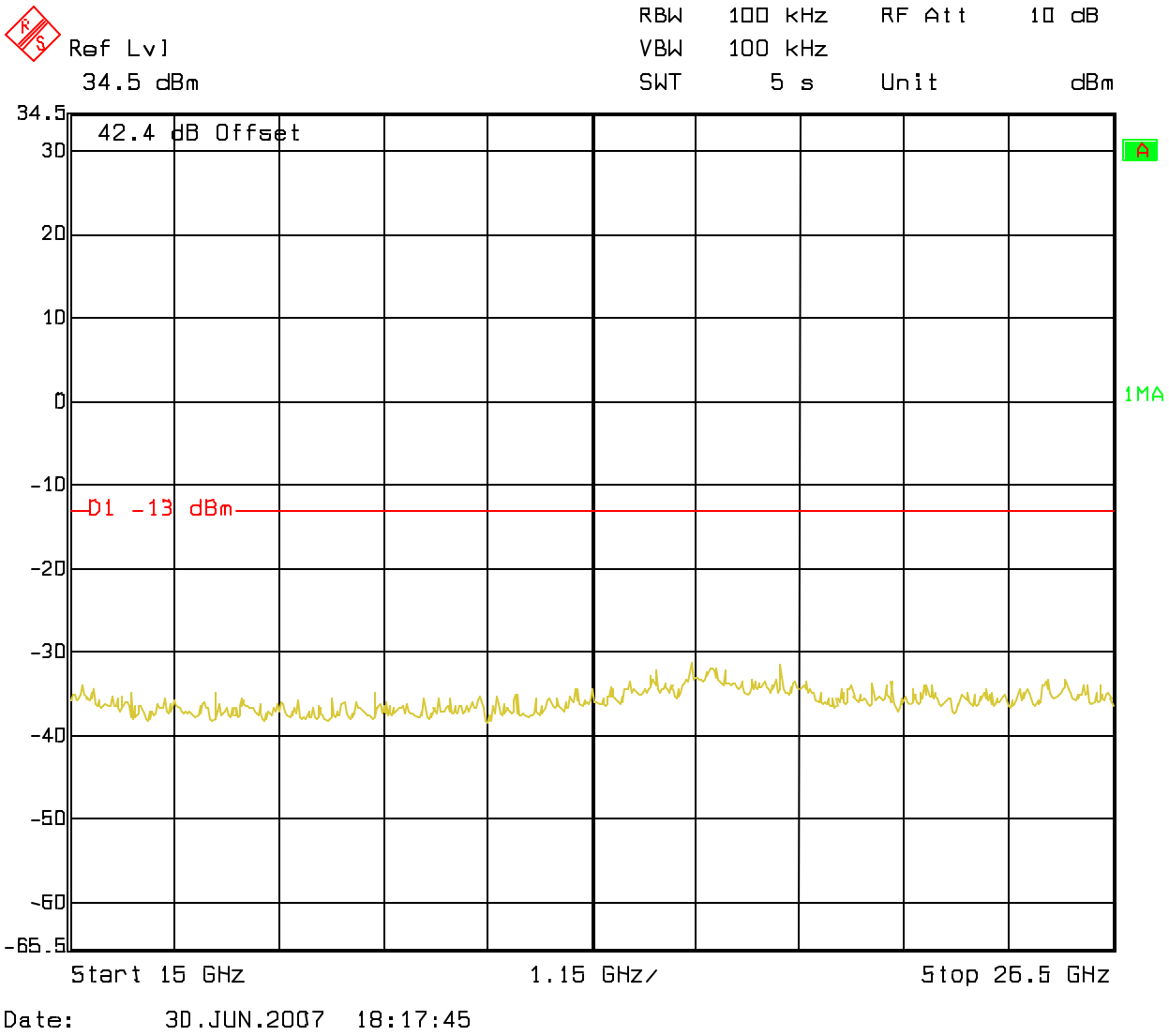


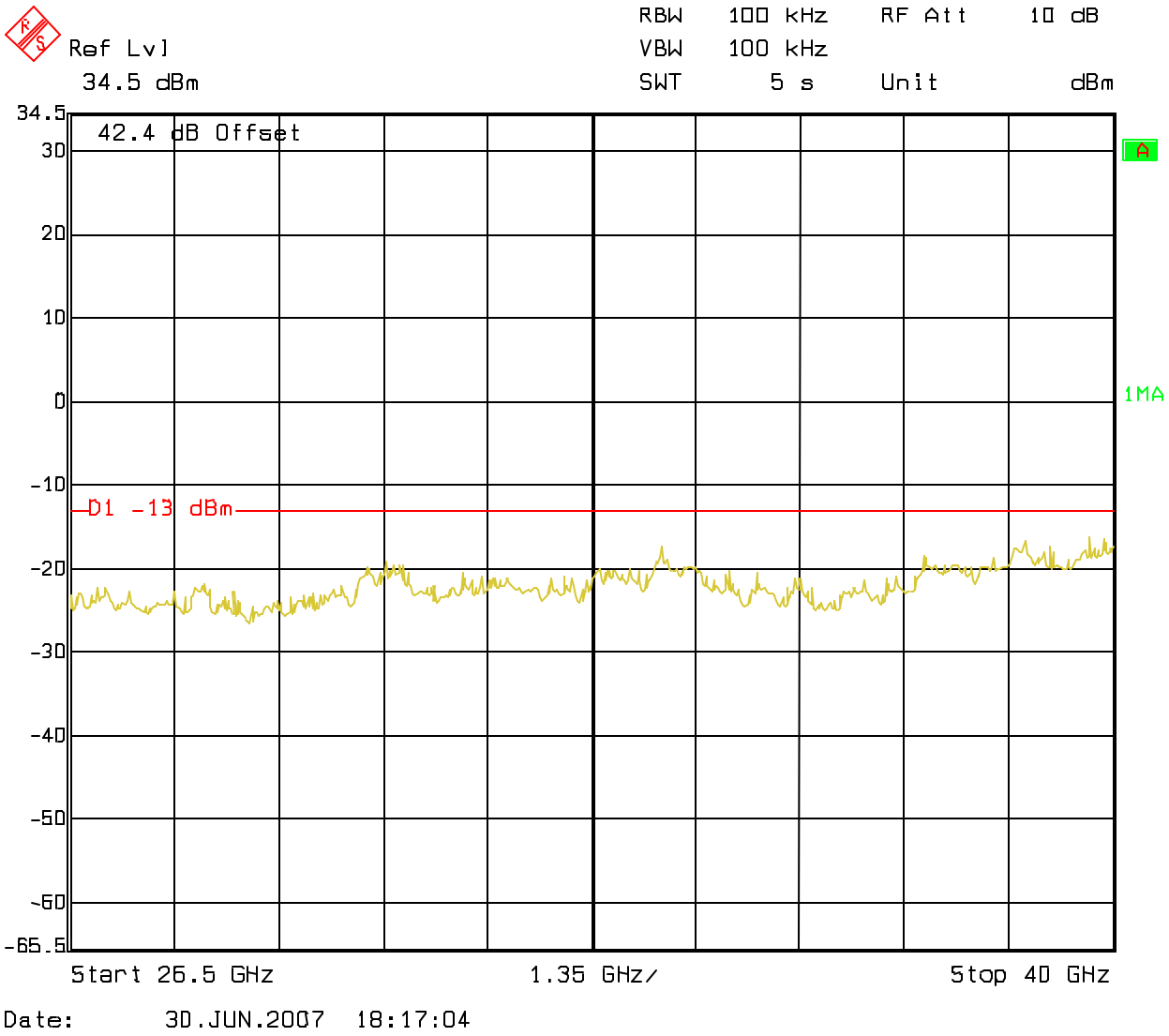
Note: Peak detector measurement, please refer to the next page for Average measurement @ 6.636GHz


Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-23.56 dBm
VBW 1 MHz
34.5 dBm
6.63472470 GHz
SWT 1 s
Unit dBm
42.4 dB Offset
A
IN1
1AV
D1 -13 dBm
Center 6.636294589 GHz
52.225 MHz/
Span 522.25 MHz
Date: 25.JUN.2007 09:13:04


Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-17.91 dBm
VBW 100 kHz
34.5 dBm
7.20456713 GHz
SWT 1 s
Unit dBm
42.4 dB Offset
A
IN1
1MA
D2 -0.5 dBm
D1 -13 dBm
1
F1
34.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-65.5
Start 7.139 GHz
86.1 MHz/
Stop 8 GHz
Date: 25.JUN.2007 09:14:40

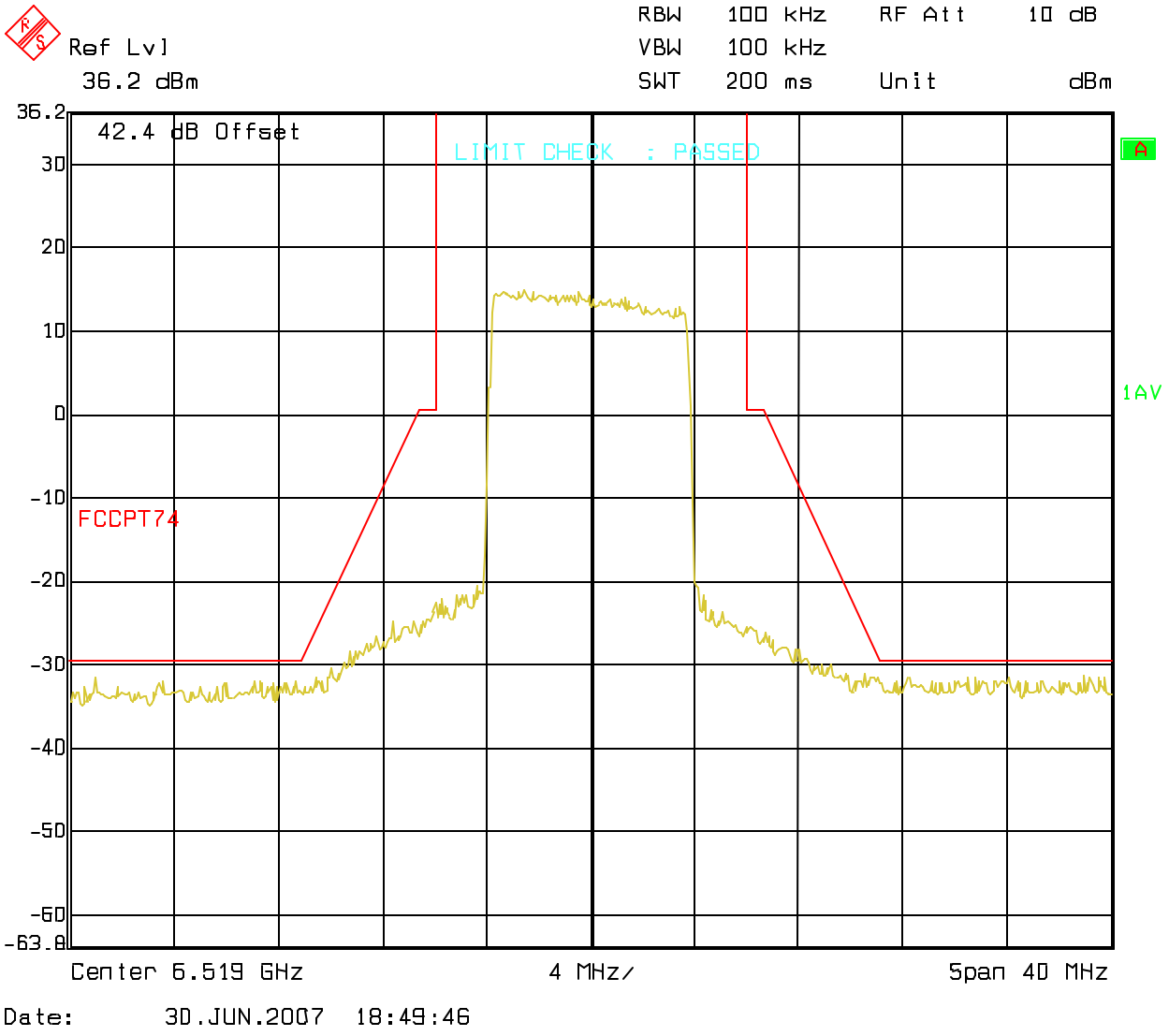

Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-37.78 dBm
VBW 100 kHz
34.5 dBm
8.00000000 GHz
SWT 5 s
Unit dBm
34.5
42.4 dB Offset
30
20
10
0
-10
D1 -13 dBm
-20
-30
-40
-50
-60
-65.5
A
IN1
1MA
Start 8 GHz
700 MHz/
Stop 15 GHz
Date: 25.JUN.2007 09:30:43

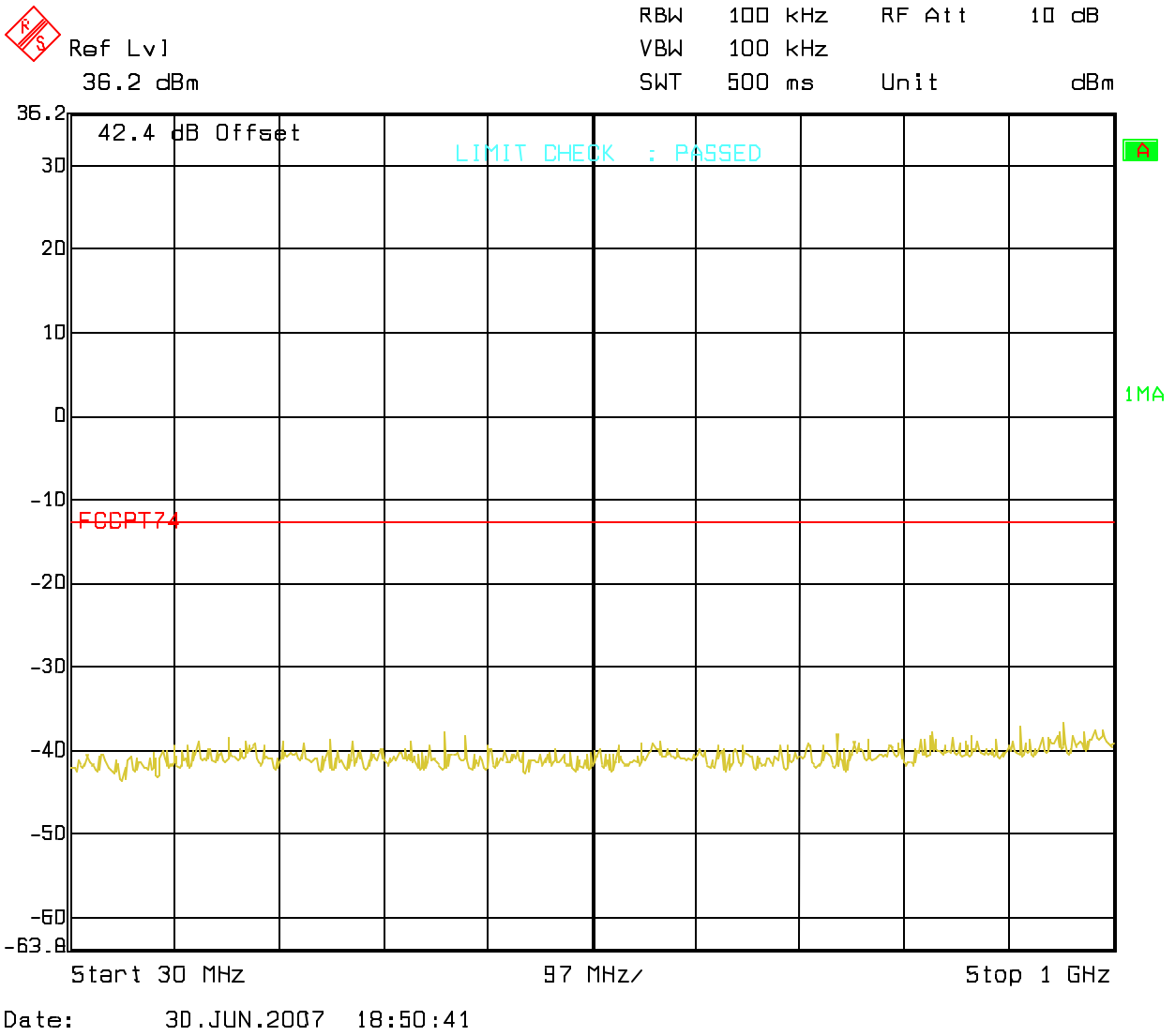

Ref Lvl
34.5 dBm
RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
1MA
34.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-65.5
Start 15 GHz
1.15 GHz/
Stop 26.5 GHz
Date: 30.JUN.2007 18:17:45

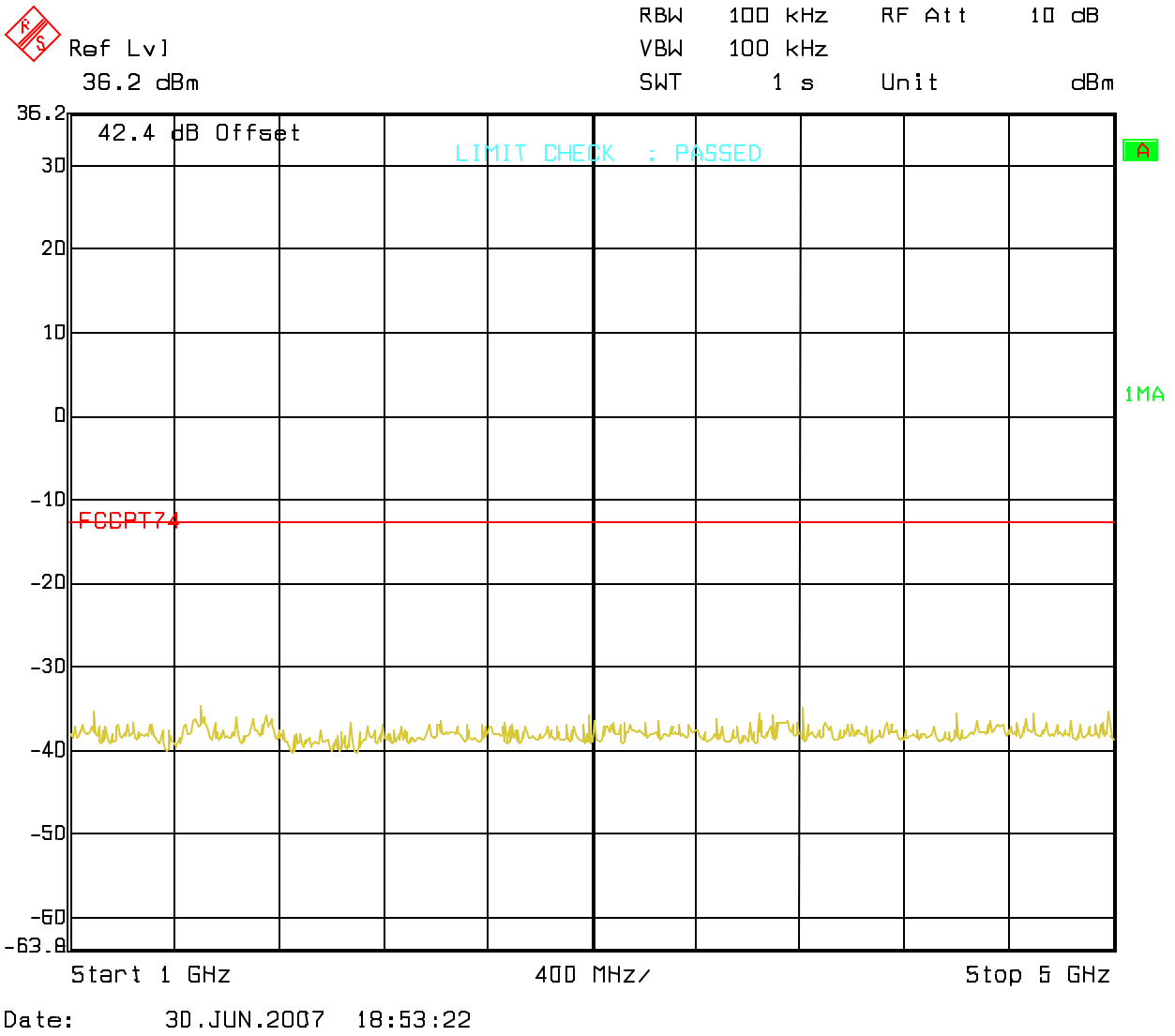

Ref Lvl
34.5 dBm
RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
1MA
34.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-65.5
Start 26.5 GHz
1.35 GHz/
Stop 40 GHz
Date: 30.JUN.2007 18:17:04

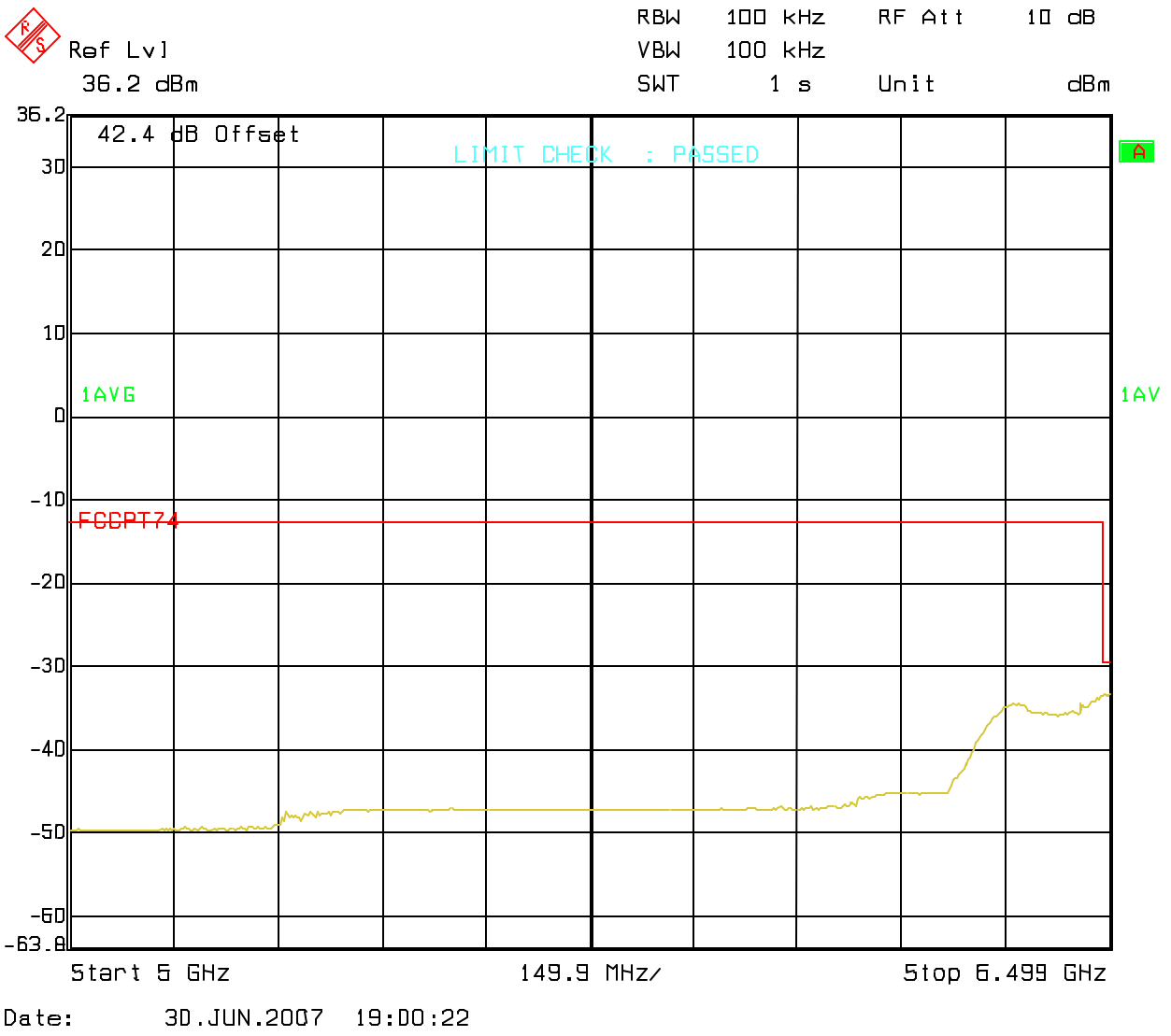
Emission Mask Endpoints Part 74.637(C)(3):
BW = 12 MHz, REF LVL = Mean Output Power

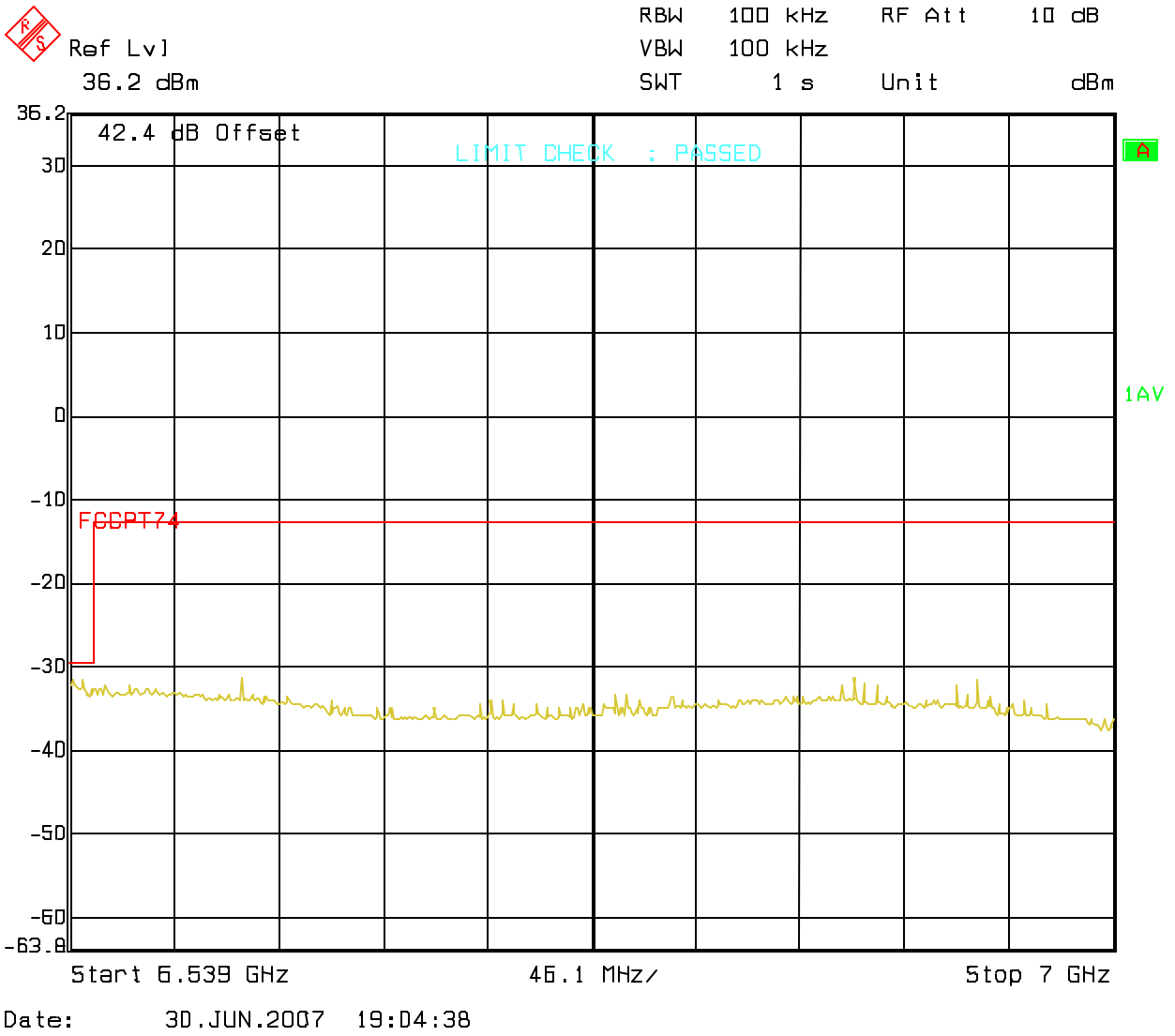
Digital Channel 4+ (6GHz Low Band Channel Plan) – 6519 MHz 64QAM

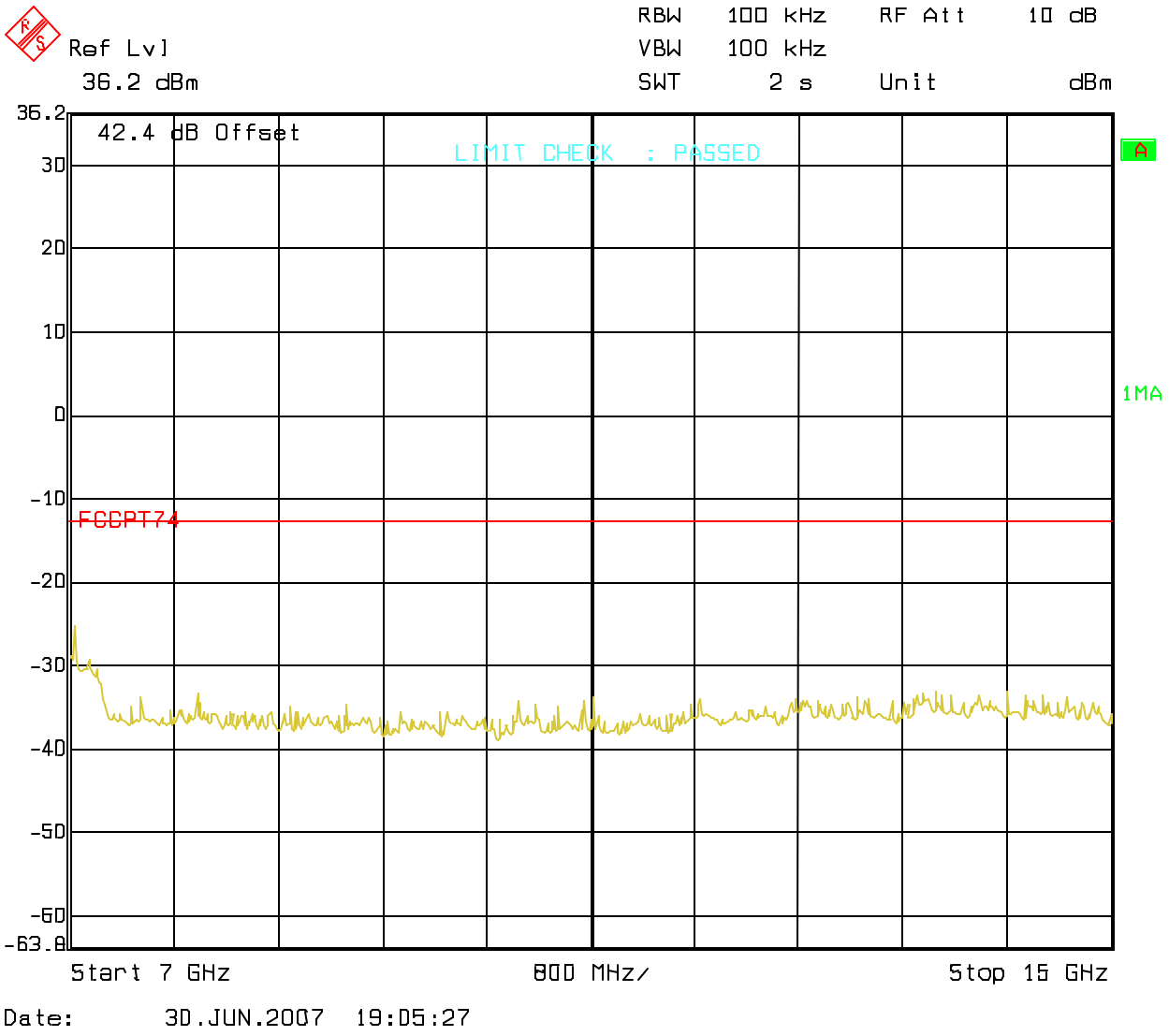


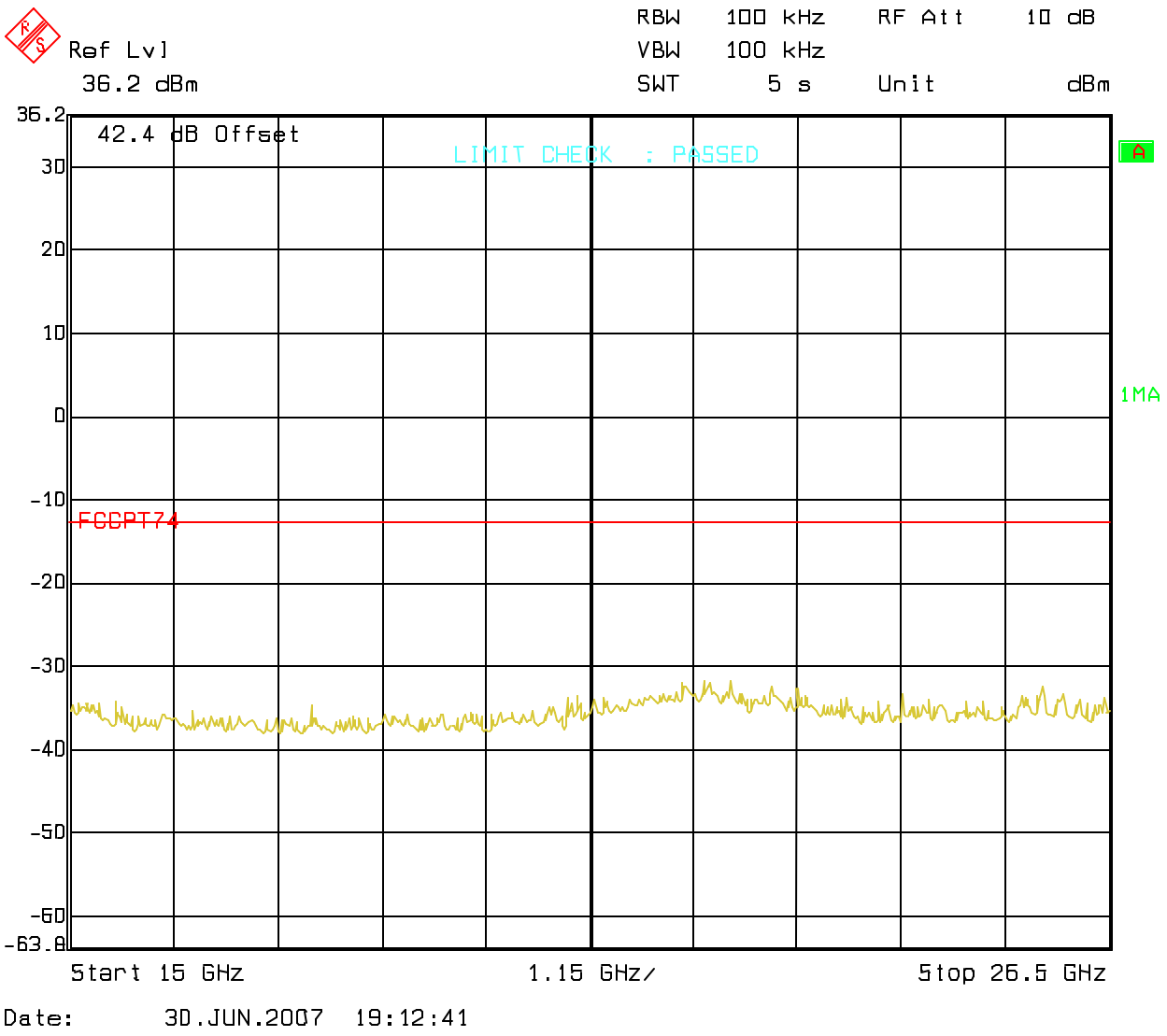

Ref Lvl
36.2 dBm
RBW 100 kHz
VBW 100 kHz
SWT 500 ms
RF Att 10 dB
Unit dBm
42.4 dB Offset
LIMIT CHECK : PASSED
A
1MA
FCCPT74
36.2
30
20
10
0
-10
-20
-30
-40
-50
-60
-63.8
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 30.JUN.2007 18:50:41

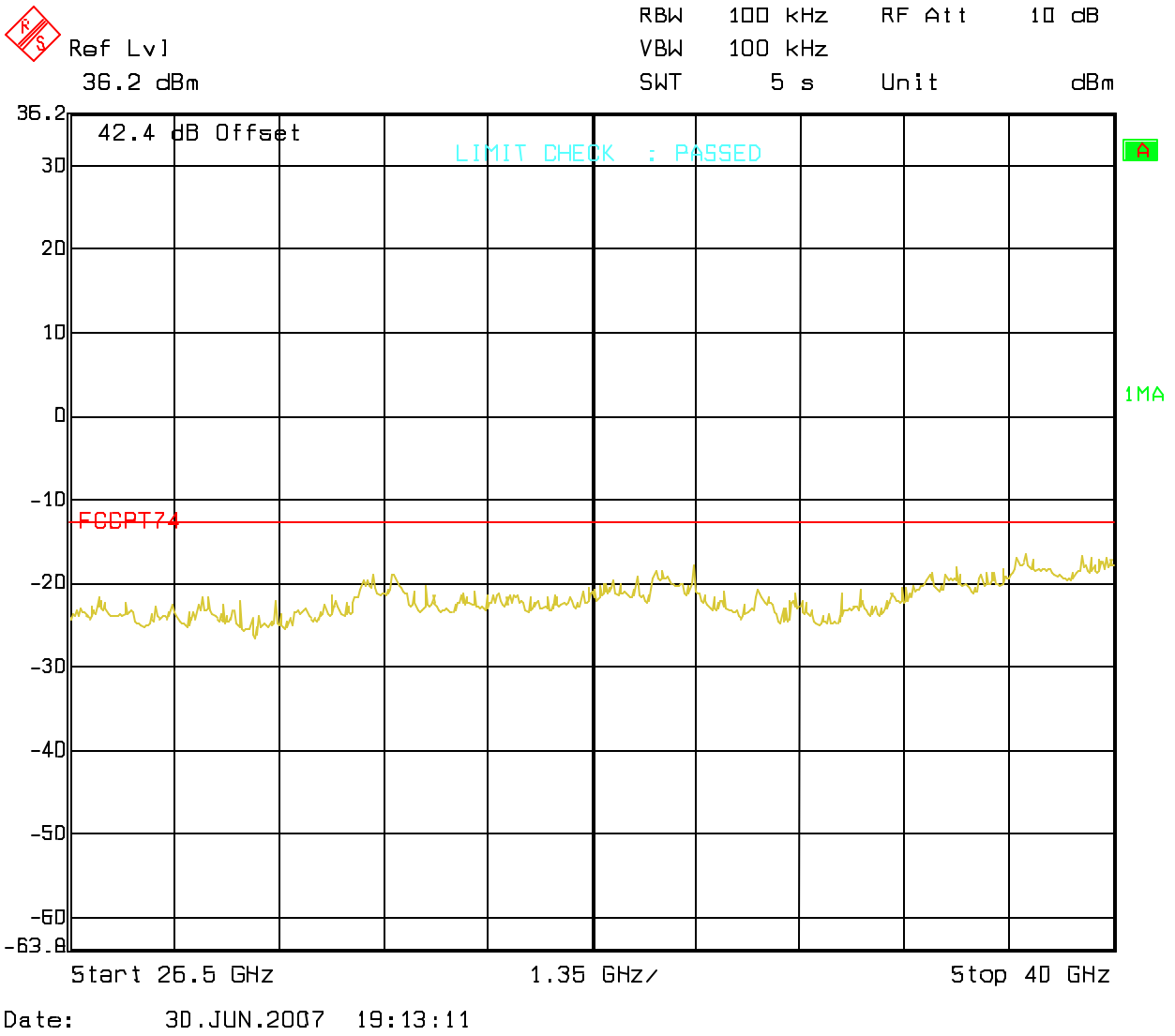

Ref Lvl
36.2 dBm
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
LIMIT CHECK : PASSED
A
1MA
FCCPT74
36.2
30
20
10
0
-10
-20
-30
-40
-50
-60
-63.8
Start 1 GHz
400 MHz/
Stop 5 GHz
Date: 30.JUN.2007 18:53:22


RBW 100 kHz
RF Att 10 dB
Ref Lvl
VBW 100 kHz
36.2 dBm
SWT 1 s
Unit dBm
42.4 dB Offset
LIMIT CHECK : PASSED
1AVG
1AV
FCCPT74
36.2
30
20
10
0
-10
-20
-30
-40
-50
-60
-63.8
Start 5 GHz
149.9 MHz/
Stop 6.499 GHz
Date: 30.JUN.2007 19:00:22


Ref Lvl
36.2 dBm
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
LIMIT CHECK : PASSED
A
1AV
FCCPT74
36.2
30
20
10
0
-10
-20
-30
-40
-50
-60
-63.8
Start 6.539 GHz
46.1 MHz/
Stop 7 GHz
Date: 30.JUN.2007 19:04:38

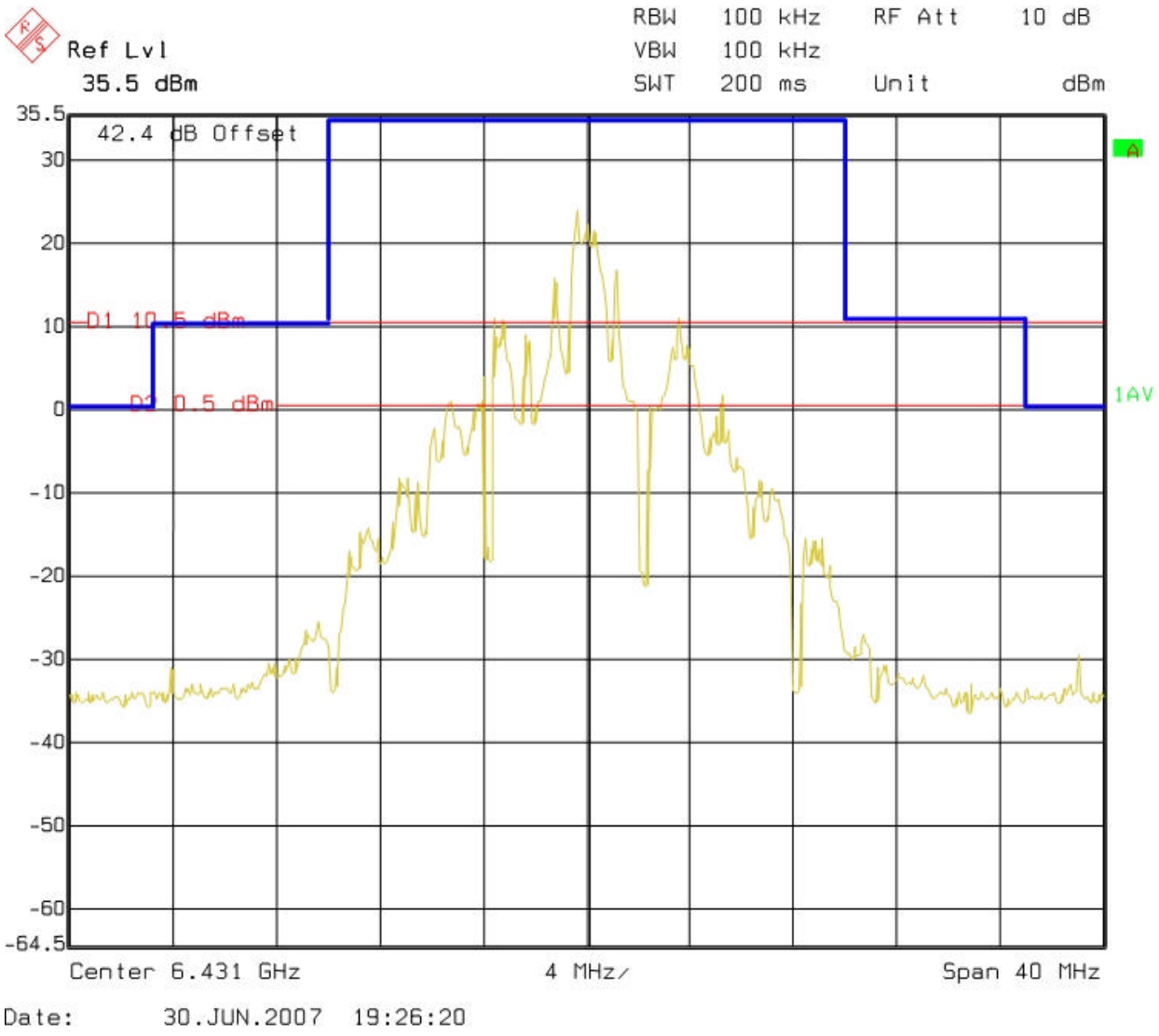

RBW 100 kHz
RF Att 10 dB
Ref Lvl
VBW 100 kHz
36.2 dBm
SWT 2 s
Unit dBm
36.2
42.4 dB Offset
LIMIT CHECK : PASSED
30
20
10
0
1MA
-10
FCCPT74
-20
-30
-40
-50
-60
-63.8
Start 7 GHz
800 MHz/
Stop 15 GHz
Date: 30.JUN.2007 19:05:27

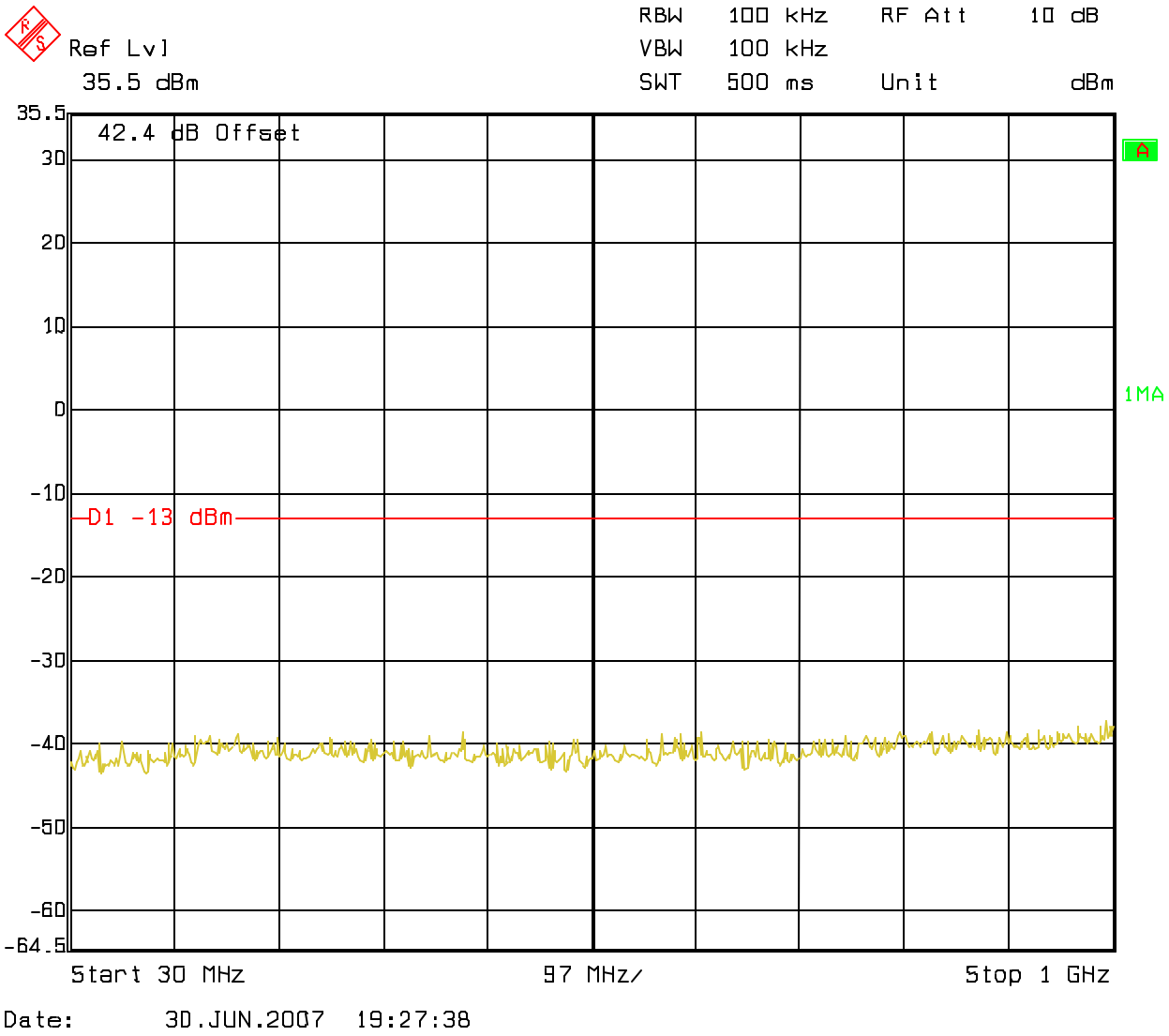

RBW 100 kHz
RF Att 10 dB
Ref Lvl
VBW 100 kHz
36.2 dBm
SWT 5 s
Unit dBm
36.2
42.4 dB Offset
LIMIT CHECK : PASSED
30
20
10
0
1MA
-10
FCCPT74
-20
-30
-40
-50
-60
-63.8
Start 15 GHz
1.15 GHz/
Stop 26.5 GHz
Date: 30.JUN.2007 19:12:41

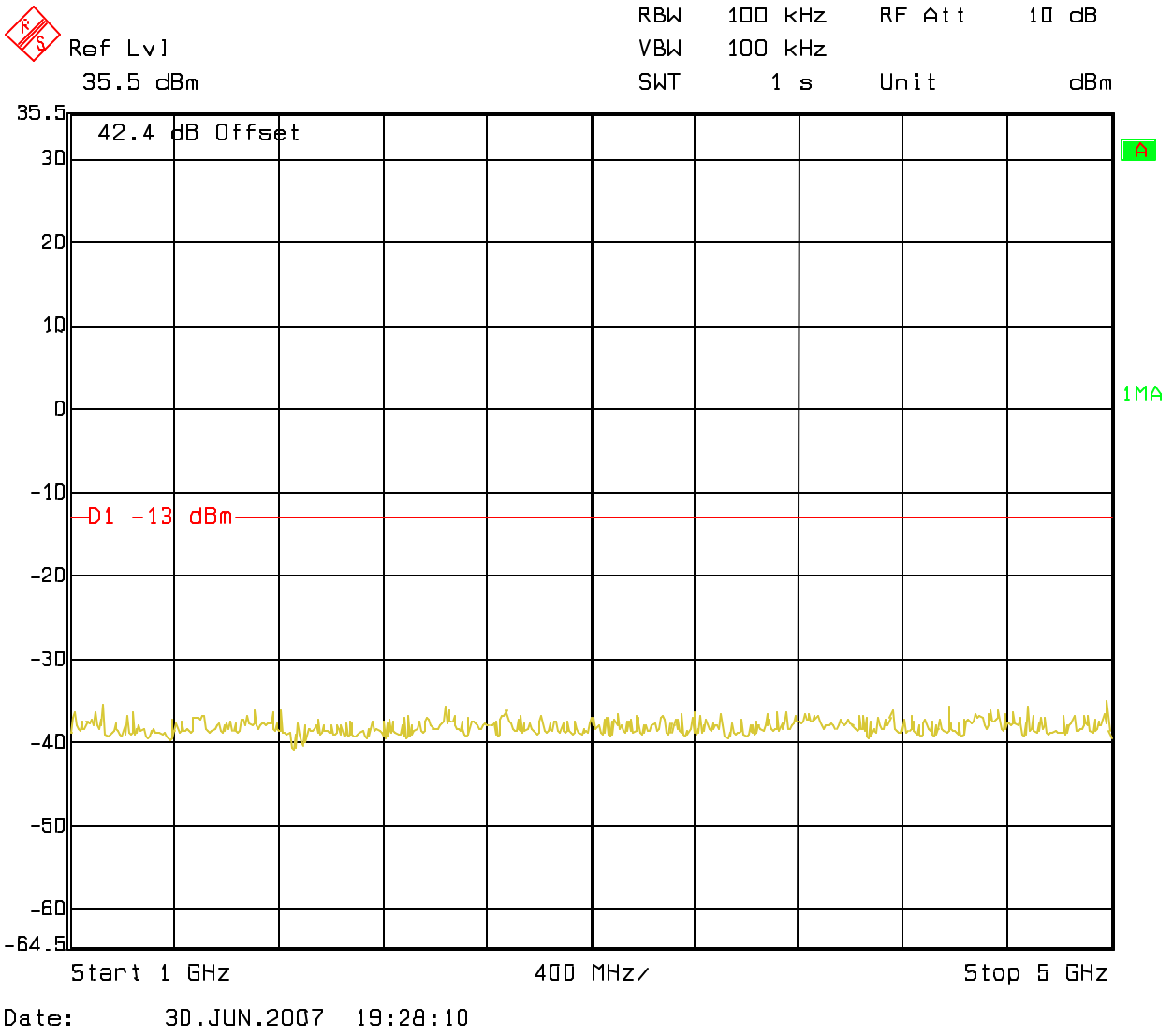

Ref Lvl
36.2 dBm
RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
LIMIT CHECK : PASSED
A
1MA
FCCPT74
36.2
30
20
10
0
-10
-20
-30
-40
-50
-60
-63.8
Start 26.5 GHz
1.35 GHz/
Stop 40 GHz
Date: 30.JUN.2007 19:13:11

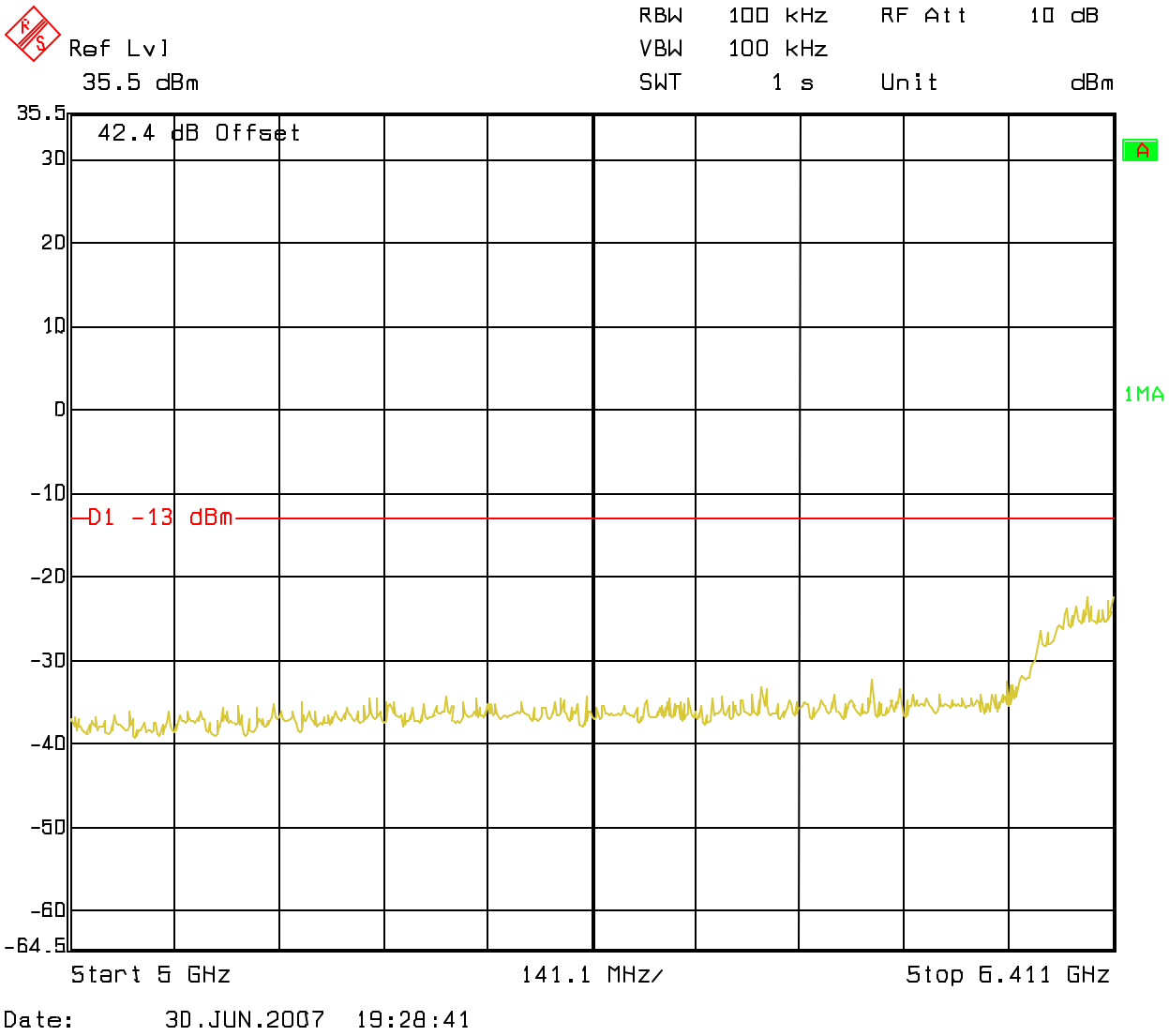
Emission Mask Endpoints Part 74.637(a)(1):
BW = 17 MHz, REF LVL = Mean Output Power

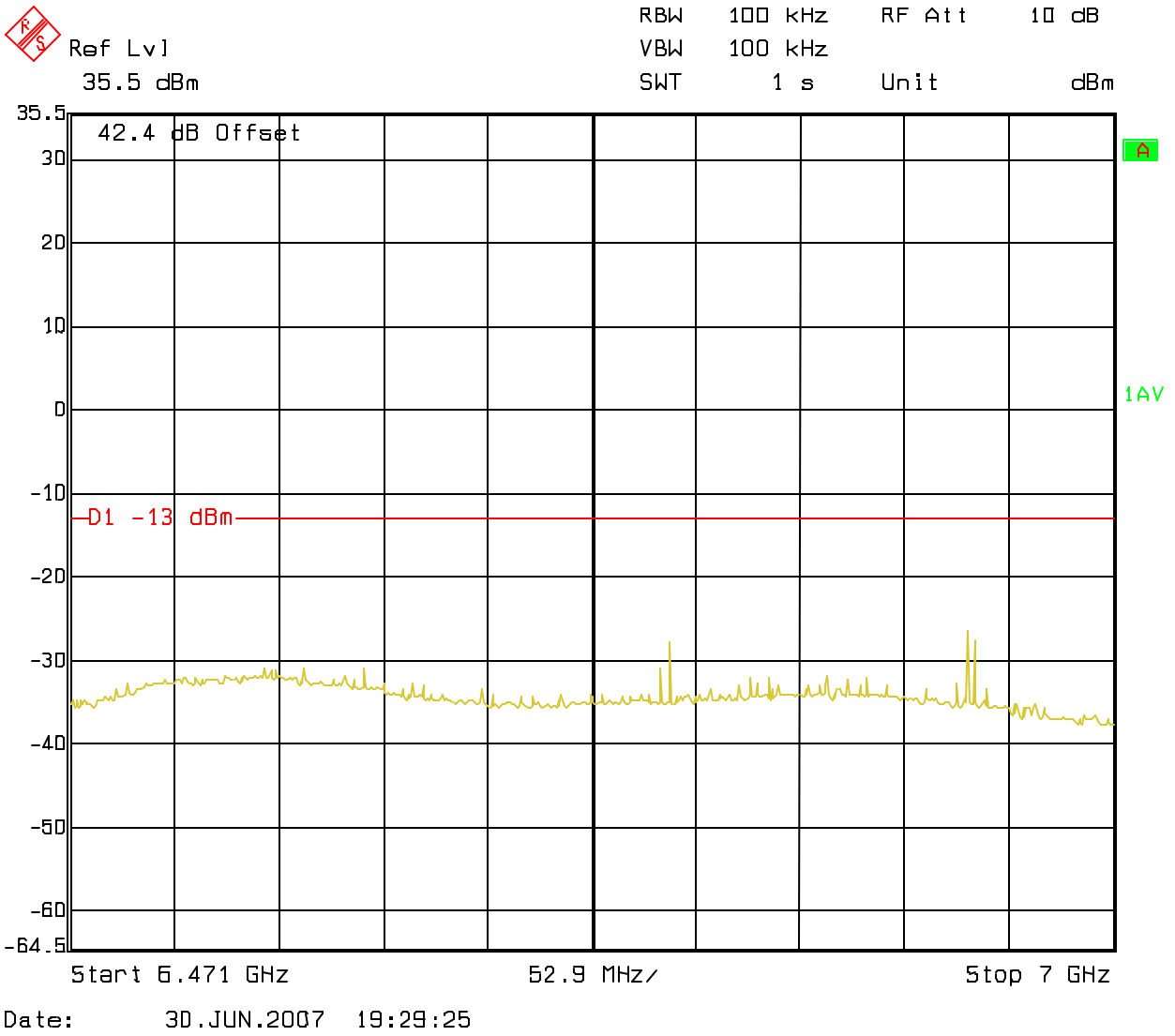
Analogue Channel 4+ (6GHz Low Band Channel Plan) – 6519 MHz FM

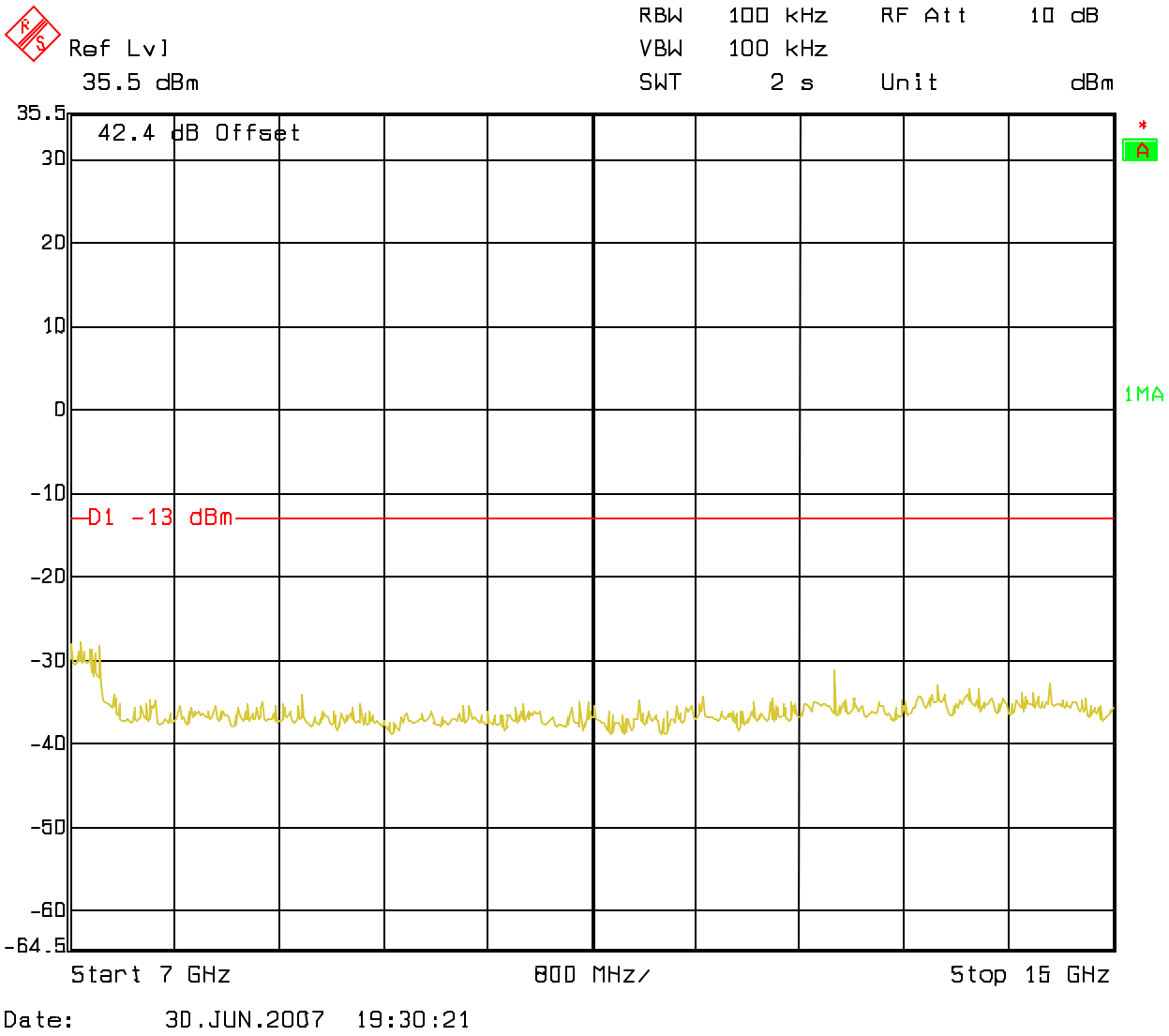


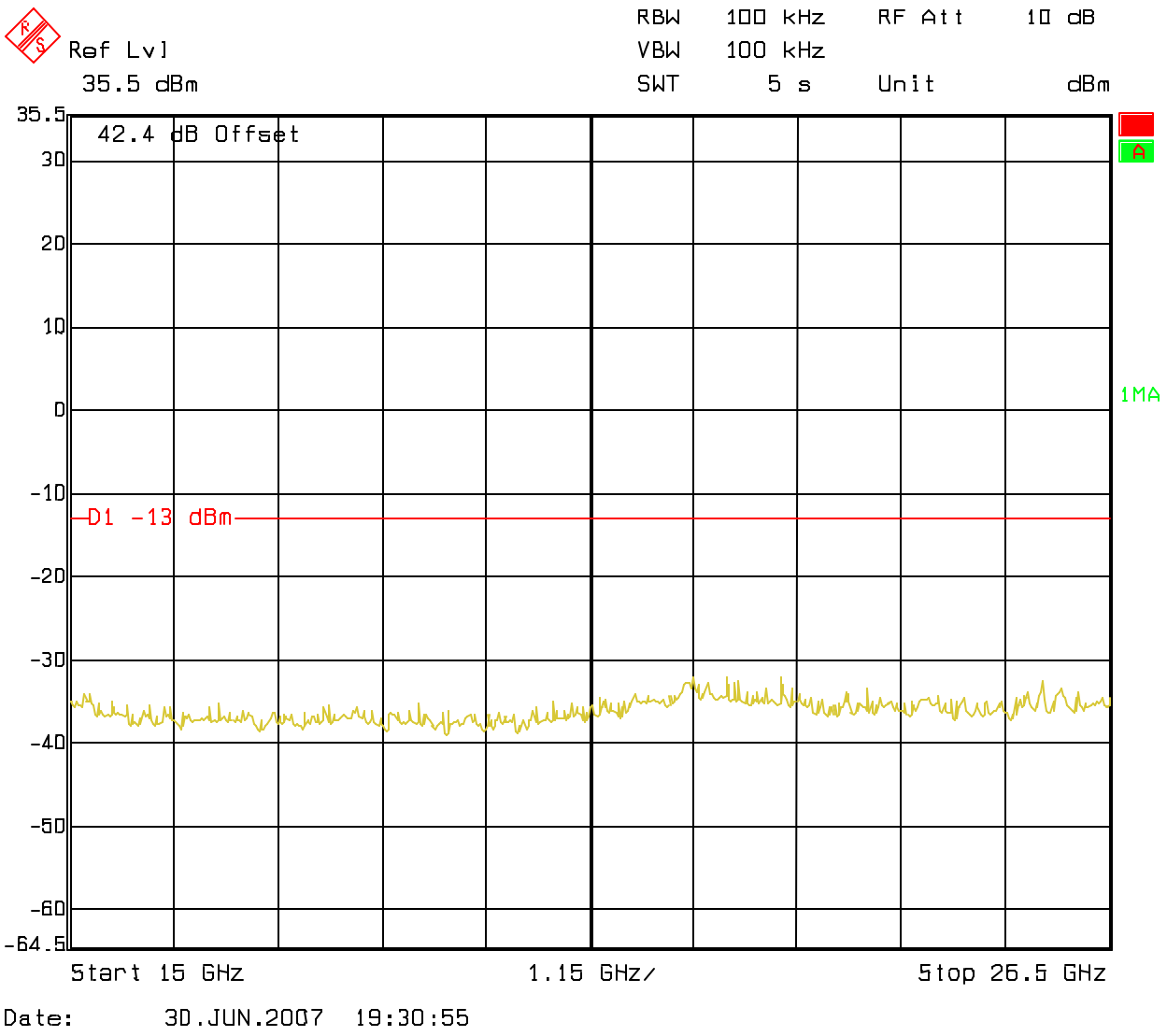

Ref Lvl
35.5 dBm
RBW 100 kHz
VBW 100 kHz
SWT 500 ms
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
1MA
35.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-64.5
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 30.JUN.2007 19:27:38

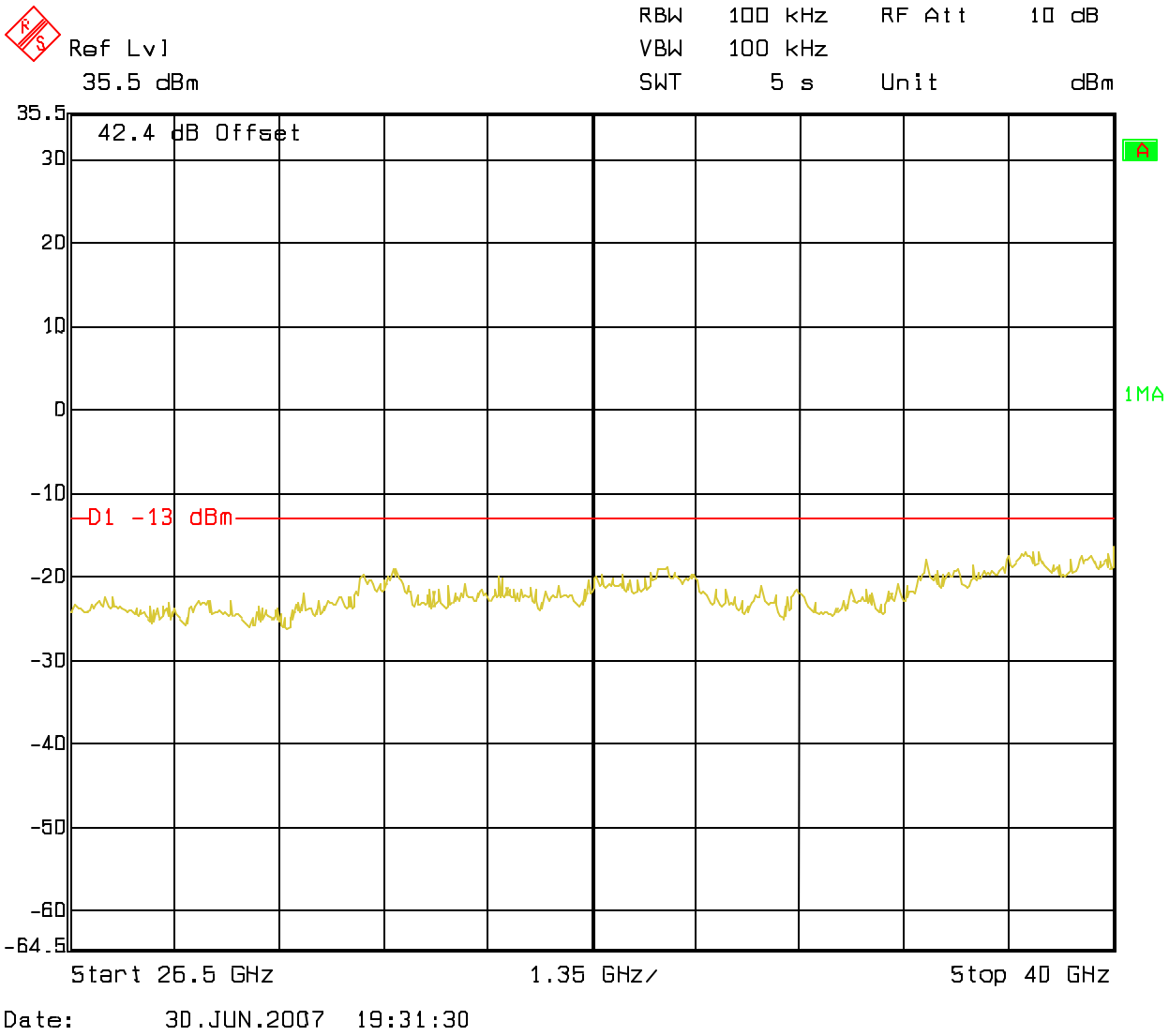

RBW 100 kHz
RF Att 10 dB
Ref Lvl
VBW 100 kHz
35.5 dBm
SWT 1 s
Unit dBm
35.5
42.4 dB Offset
30
20
10
0
1MA
-10
D1 -13 dBm
-20
-30
-40
-50
-60
-64.5
Start 1 GHz
400 MHz/
Stop 5 GHz
Date: 30.JUN.2007 19:28:10


Ref Lvl
35.5 dBm
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
1MA
35.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-64.5
Start 5 GHz
141.1 MHz/
Stop 6.411 GHz
Date: 30.JUN.2007 19:28:41


Ref Lvl
35.5 dBm
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
1AV
35.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-64.5
Start 6.471 GHz
52.9 MHz/
Stop 7 GHz
Date: 30.JUN.2007 19:29:25


Ref Lvl
35.5 dBm
RBW 100 kHz
VBW 100 kHz
SWT 2 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
35.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-64.5
D1 -13 dBm
1MA
Start 7 GHz
800 MHz/
Stop 15 GHz
Date: 30.JUN.2007 19:30:21


RBW 100 kHz
RF Att 10 dB
Ref Lvl
VBW 100 kHz
35.5 dBm
SWT 5 s
Unit dBm
35.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-64.5
42.4 dB Offset
D1 -13 dBm
1MA
Start 15 GHz
1.15 GHz/
Stop 26.5 GHz
Date: 30.JUN.2007 19:30:55


Ref Lvl
35.5 dBm
RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
1MA
35.5
30
20
10
0
-10
-20
-30
-40
-50
-60
-64.5
Start 26.5 GHz
1.35 GHz/
Stop 40 GHz
Date: 30.JUN.2007 19:31:30

Section 7. Field Strength of Spurious

Para. No.: 2.1053

Test Performed By: Ferdinand Custodio Date of Test: 6-14-2007

Test Results: EUT Complies.
Emissions were searched from 30 MHz to 40 GHz with the antenna port terminated into a 50 ohm load. No spurious emissions above 1 GHz other than harmonics were within 20dB below the limit was observed. Emissions between 30 MHz and 1 GHz were searched and no significant emissions were found. Seven emissions based from initial prescan were measured and the results proved by substitution.

Test Condition: Tested using Channel 10+ (7119MHz) of the 7GHz High Channel Band Plan, 64QAM, 8MHz BW with RF power set to High. A prescan of Low, Mid and High frequencies of both band and modulation modes proved this to be worst case.

Test Data: See attached tables.

Quasi-peak measurements with a RBW =VBW = 100 kHz.

Measured Frequency (MHz)	Antenna Polarization (H/V)	Meter Reading (dBuV)
50.281	V	17.48
129.331	V	8.0
139.548	V	8.1
206	V	9.39
216.1	V	8.52
226.1	V	9.54
980.1	H	16.7

Results—Substitution

Target Frequency	Target Level (dBuV/m)	Antenna Gain (dipole)	Cable Loss	Signal Generator (dBm)	Total (EIRP) dBm	Specs (dBm)	Margin (dBm)
50.281	17.48	0	1	-69.4	-70.40	-13	-57.4
129.331	8.0	0	1	-90.4	-91.40	-13	-78.4
139.548	8.1	0	1	-90.4	-91.40	-13	-78.4
206	9.39	0	1	-90.4	-91.40	-13	-78.4
216.1	8.52	0	1	-84.7	-85.70	-13	-72.7
226.1	9.54	0	1	-84.5	-85.50	-13	-72.5
980.1	16.7	0	2.3	-52.9	-55.20	-13	-42.2

Location: North OATS, T = 23°C, 55% R.H. 3 meters

Section 8. Frequency Stability

Para. No.: 2.1055

Test Performed By: F.S.Custodio	**Date of Test: 06-13-2007**

Minimum Standard: 2.1055 Frequency Stability vs Temperature Variation and Power Supply Voltage Variation.

Test Results: Limit = 0.01 % = 10 ppm
Analogue Modulation 10040 Hz difference which corresponds to 1.41 ppm
Digital Modulation 1810 Hz difference which corresponds to 0.25 ppm 711,900 Hz for Channel 10+ (7.119GHz)

Design note: The same RF source internal circuit is used for the first band (6.424 GHz to 6.525 GHz) and the second band (6.875 GHz to 7.125 GHz).

Measurement Data:

Digital Modulation (QPSK)

Part 2.1055 (-30°C to +50°C)				
Spectrum Analyzer @ 100KHz RBW, 1MHZ VBW			**Channel 10+ Digital**	
Worst case variation:		**1810.0 Hz (>Set freq.)**	**Monitored Frequency:**	**7.1151022 GHz**
		0.0 Hz (<Set freq.)	*Red are negative numbers	
Temp.Set Point Temp.Actual	Time	**85% of Vnom** Frequency ? (GHz) Difference (GHz)	**Vnom=115VAC** Frequency ? (GHz) Difference (GHz)	**115% of Vnom** Frequency ? (GHz) Difference (GHz)
-30 -29.9	8:30AM	7.11510401 0.000001810	7.11510401 0.000001810	7.11510401 0.000001810
-20 -20	9:30AM	7.11510401 0.000001810	7.11510401 0.000001810	7.11510401 0.000001810
-10 -9.9	10:30AM	7.11510401 0.000001810	7.11510401 0.000001810	7.11510401 0.000001810
0 0	11:30AM	7.11510401 0.000001810	7.11510401 0.000001810	7.11510401 0.000001810
10 10	12:30PM	7.11510401 0.000001810	7.11510401 0.000001810	7.11510401 0.000001810
20 20.1	1:30PM	7.1151022 0.000000000	7.1151022 0.000000000	7.1151022 0.000000000
30 30	2:30PM	7.11510401 0.000001810	7.11510401 0.000001810	7.11510401 0.000001810
40 39.9	3:30PM	7.11510401 0.000001810	7.11510401 0.000001810	7.11510401 0.000001810
50 49.9	4:30PM	7.11510401 0.000001810	7.11510401 0.000001810	7.11510401 0.000001810

Analogue Modulation

Part 2.1055 (-30°C to +50°C)				
Spectrum Analyzer @ 100KHz RBW, 1MHZ VBW			**Channel 10+ Analog**	
Worst case variation:		**1000.0 Hz (>Set freq.)**	**Monitored Frequency:**	**7.11757717 GHz**
		10040.0 Hz (<Set freq.)	*Red are negative numbers	
Temp.Set Point Temp.Actual	Time	**85% of Vnom** Frequency ? (GHz) Difference (GHz)	**Vnom=115VAC** Frequency ? (GHz) Difference (GHz)	**115% of Vnom** Frequency ? (GHz) Difference (GHz)
-30 -29.9	8:30AM	7.11756713 0.000010040	7.11756713 0.000010040	7.11756713 0.000010040
-20 -20	9:30AM	7.11756854 0.000008630	7.11756854 0.000008630	7.11756854 0.000008630
-10 -9.9	10:30AM	7.11756945 0.000007720	7.11756945 0.000007720	7.11756945 0.000007720
0 0	11:30AM	7.11757356 0.000003610	7.11757356 0.000003610	7.11757356 0.000003610
10 10	12:30PM	7.11757623 0.000000940	7.11757623 0.000000940	7.11757623 0.000000940
20 20.1	1:30PM	7.11757817 0.000001000	7.11757817 0.000001000	7.11757817 0.000001000
30 30	2:30PM	7.11757815 0.000000980	7.11757815 0.000000980	7.11757815 0.000000980
40 39.9	3:30PM	7.11757815 0.000000980	7.11757815 0.000000980	7.11757815 0.000000980
50 49.9	4:30PM	7.11757815 0.000000980	7.11757815 0.000000980	7.11757815 0.000000980

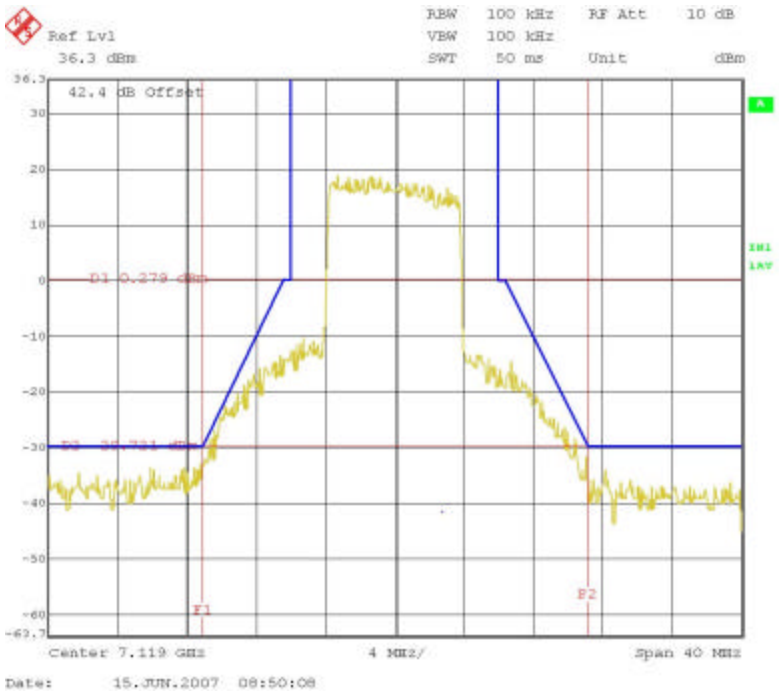
Section 9. Test Equipment List

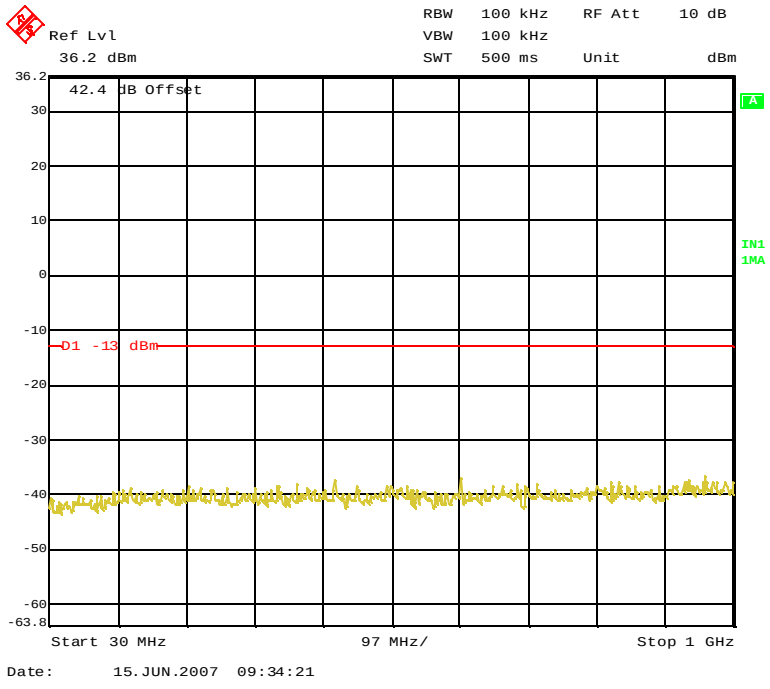
Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
877	Antenna, DRG Horn, .7-18GHz	AH Systems	2882	688	6/20/06	6/20/07
111	Antenna, LPA	EMCO	3146	1382	8/7/2006	08/07/07
117	Antenna	Electro-Metrics	BIA-25	2611	7/5/2006	07/05/07
836	Signal Generator	Agilent	E8254A	US41140229	7/27/2006	07/27/07
897	Spectrum Analyzer	Rohde & Schwarz	FSP7	837620/009	8/11/2006	08/11/07
915	EMI Test Receiver 20 Hz- 26.5	Rohde & Schwarz	1088.7490.26	837491/0002	2/6/2007	02/06/08
911	Spectrum Analyzer	Agilent	E4440A	US41421266	2/14/2007	02/14/08
625	Antenna, Dbl Ridge Horn	EMCO	3116	2325	Verified 7/30/07	
N149	Environmental Chamber	Cincinnati Sub-Zero	ZPHS-32-2-2-H/AC	ZP0552665	5/30/2007	5/30/2008
835	Spectrum Analyzer	Rohde & Schwarz	RHDFSEK	829058/005	6/20/2007	06/20/08
809	Multimeter	Fluke	111	77790102	2/6/2007	02/06/08
765	Antenna Set, Dipole	EMCO	3121C	1214	6/27/06	6/27/07
306	Medium Pwr.Termination	Narda	374BNF	8602	Verified 6/13/07	

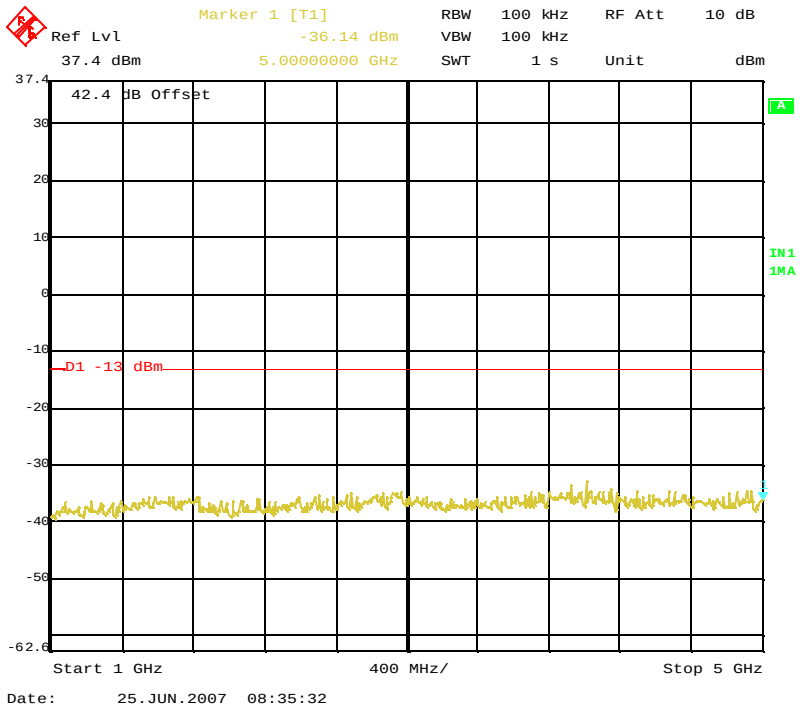
Appendix A.

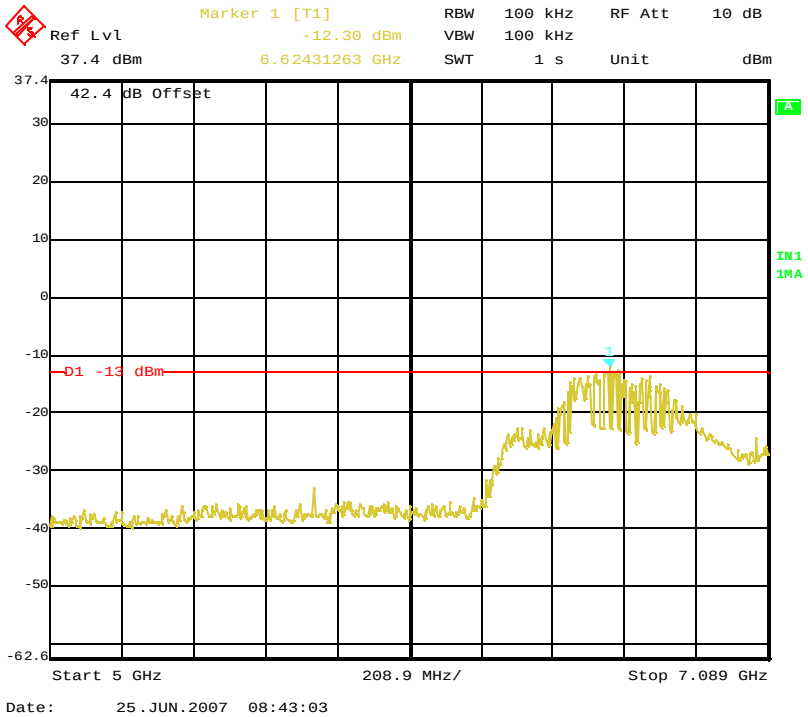
Appendix A. Spurious Emissions At Antenna Terminals

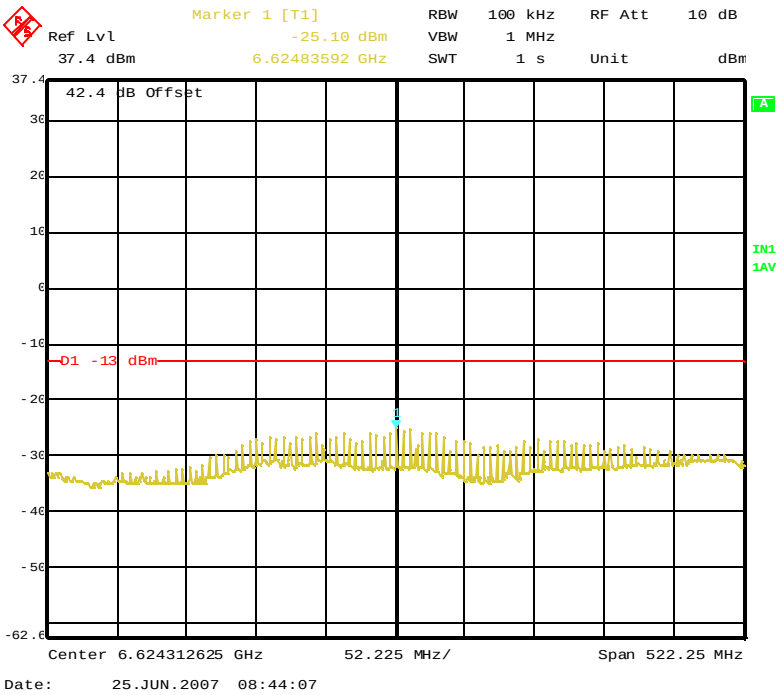
Channel 10+ Digital (7119MHz) 16QAM

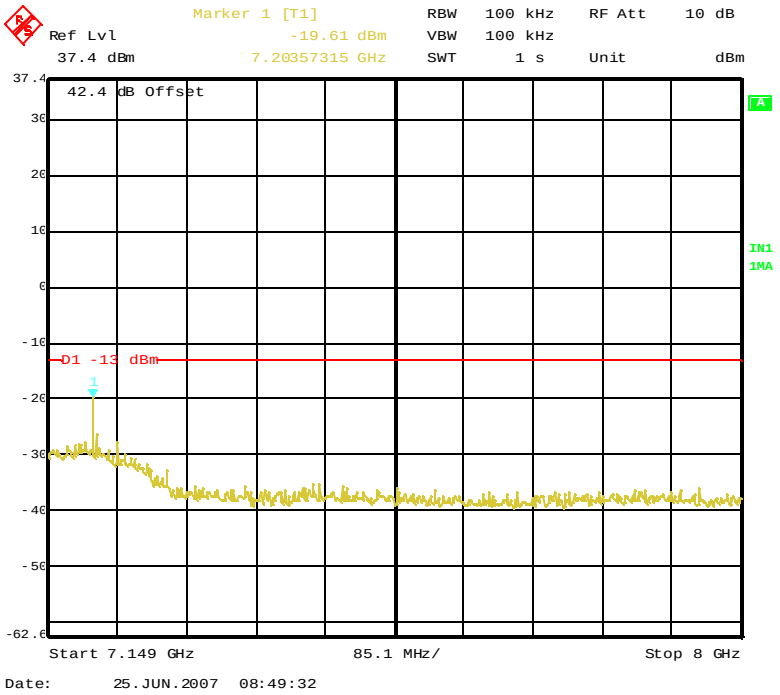


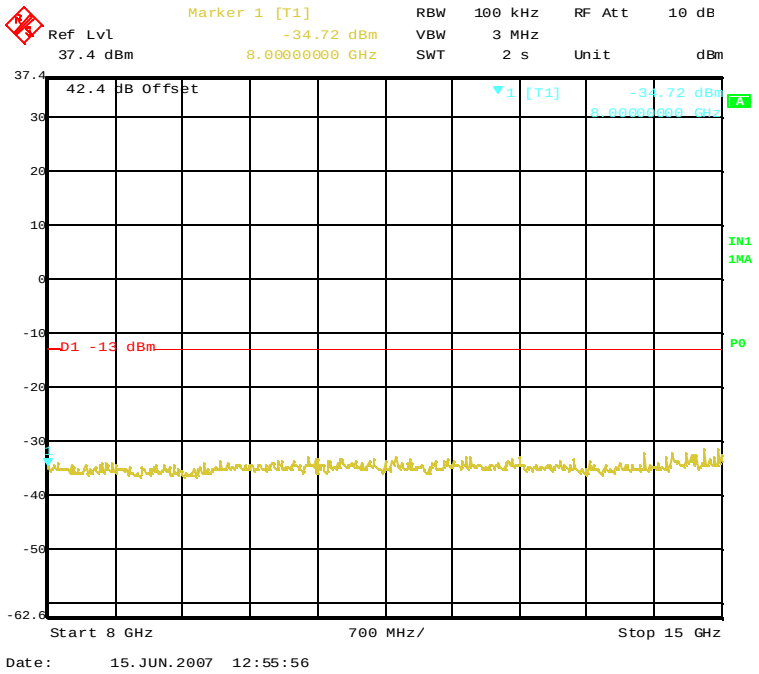


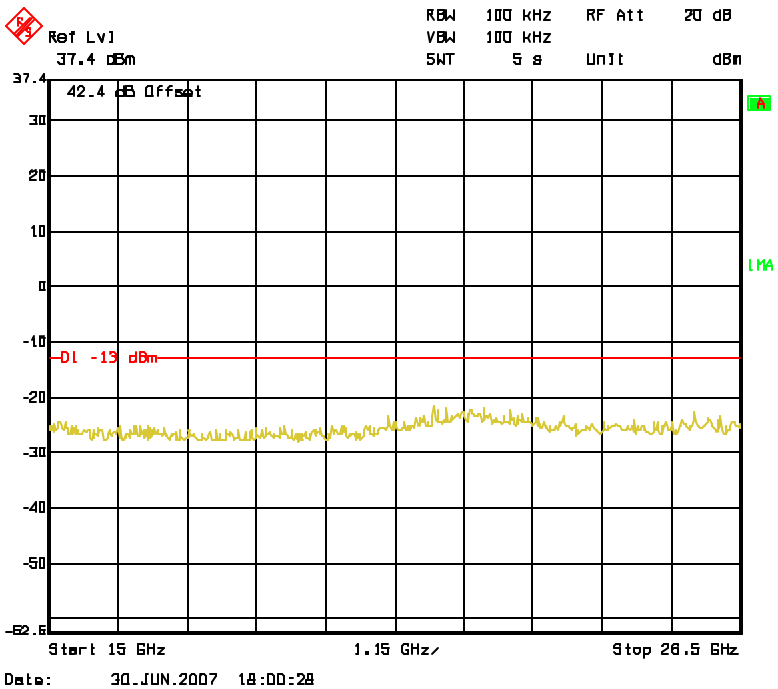

Marker 1 [T1]
Ref Lvl
37.4 dBm
-36.14 dBm
5.00000000 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
IN1
1MA
Start 1 GHz
400 MHz/
Stop 5 GHz
Date: 25.JUN.2007 08:35:32

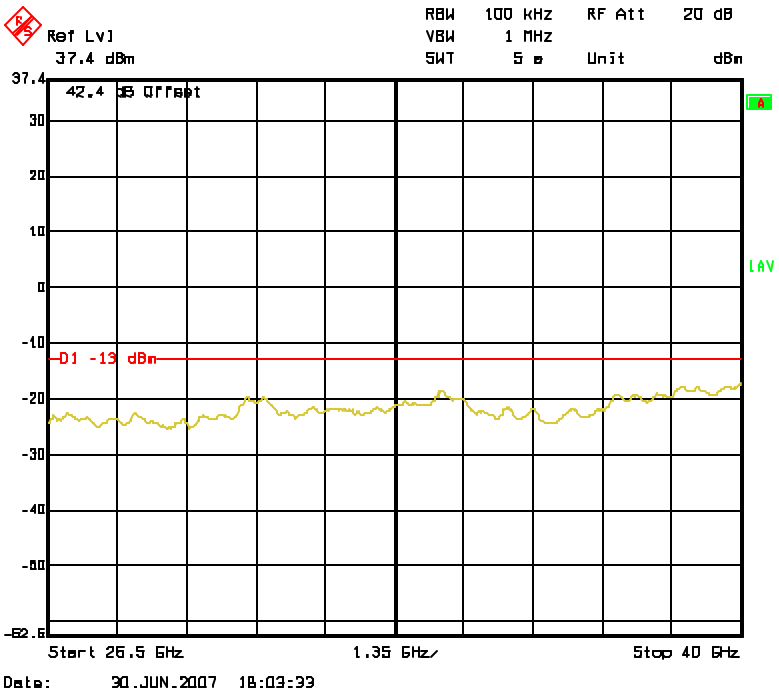

Marker 1 [T1]
Ref Lvl
37.4 dBm
-12.30 dBm
6.62431263 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
IN1
1MA
Start 5 GHz
208.9 MHz/
Stop 7.089 GHz
Date: 25.JUN.2007 08:43:03


Marker 1 [T1]
Ref Lvl
37.4 dBm
-25.10 dBm
6.62483592 GHz
RBW 100 kHz
VBW 1 MHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
IN1
1AV
Center 6.624312625 GHz
52.225 MHz/
Span 522.25 MHz
Date: 25.JUN.2007 08:44:07

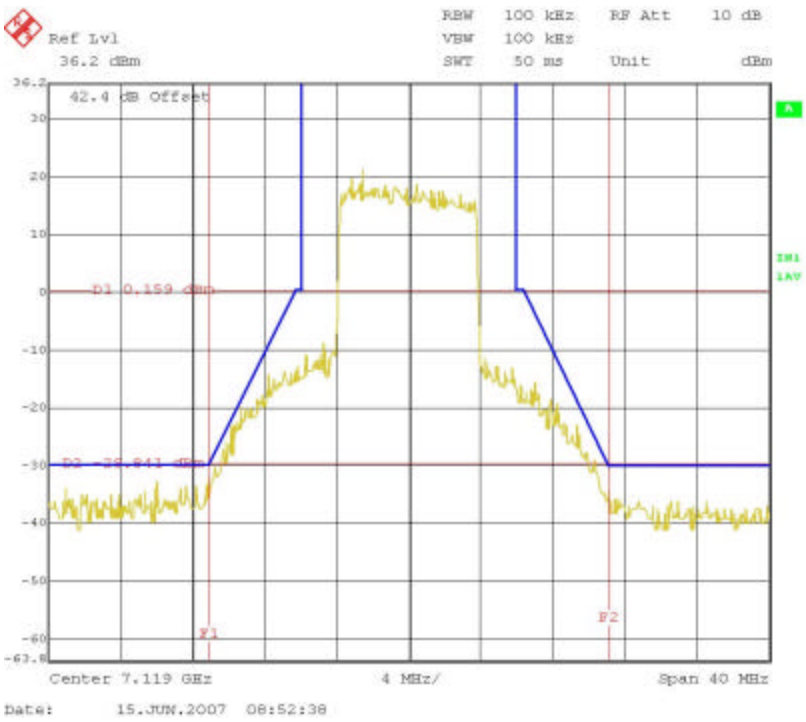

Marker 1 [T1]
Ref Lvl
37.4 dBm
-19.61 dBm
7.20357315 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
IN1
1MA
Start 7.149 GHz
85.1 MHz/
Stop 8 GHz
Date: 25.JUN.2007 08:49:32

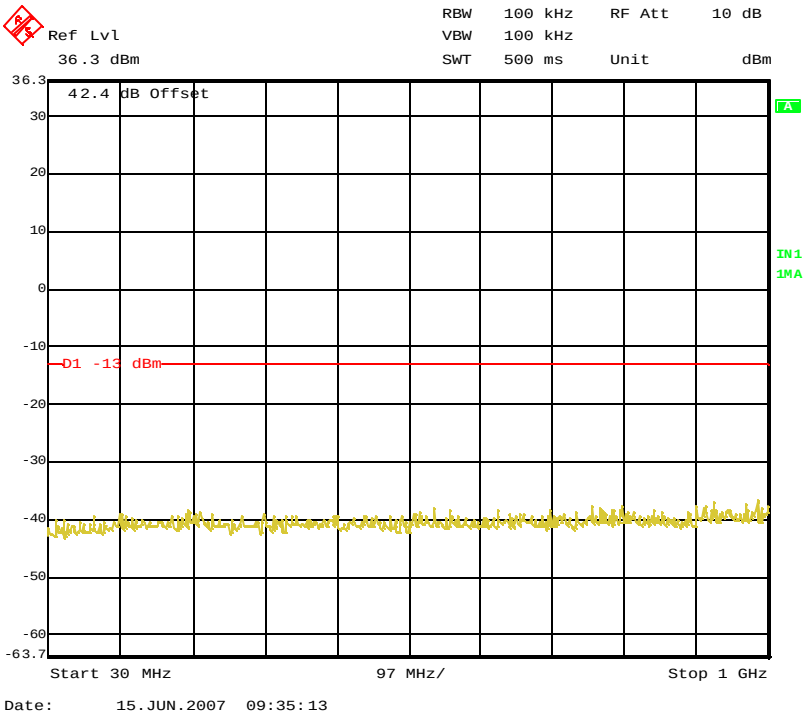

Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-34.72 dBm
VBW 3 MHz
37.4 dBm
8.00000000 GHz
SWT 2 s
Unit dBm
42.4 dB Offset
1 [T1]
-34.72 dBm
8.00000000 GHz
A
IN1
1MA
D1 -13 dBm
P0
37.4
30
20
10
0
-10
-20
-30
-40
-50
-62.6
Start 8 GHz
700 MHz/
Stop 15 GHz
Date: 15.JUN.2007 12:55:56

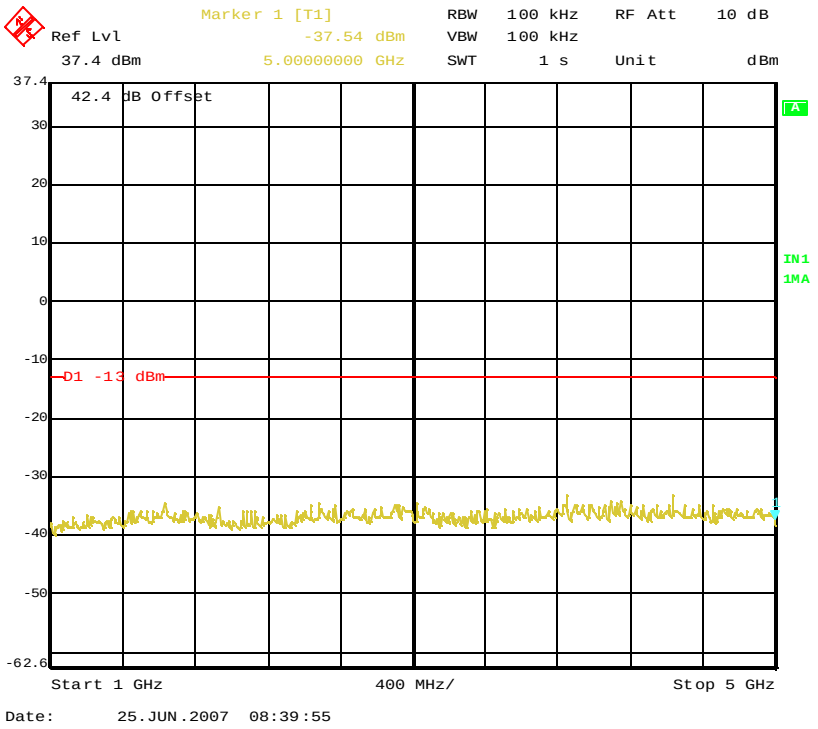

RBW 100 kHz
RF Att 20 dB
Ref Lvl
VBW 100 kHz
37.4 dBm
SWT 5 s
Unit dBm
42.4 dB Offset
A
1MA
D1 -13 dBm
37.4
30
20
10
0
-10
-20
-30
-40
-50
-62.6
Start 15 GHz
1.15 GHz/
Stop 26.5 GHz
Date: 30.JUN.2007 18:00:28

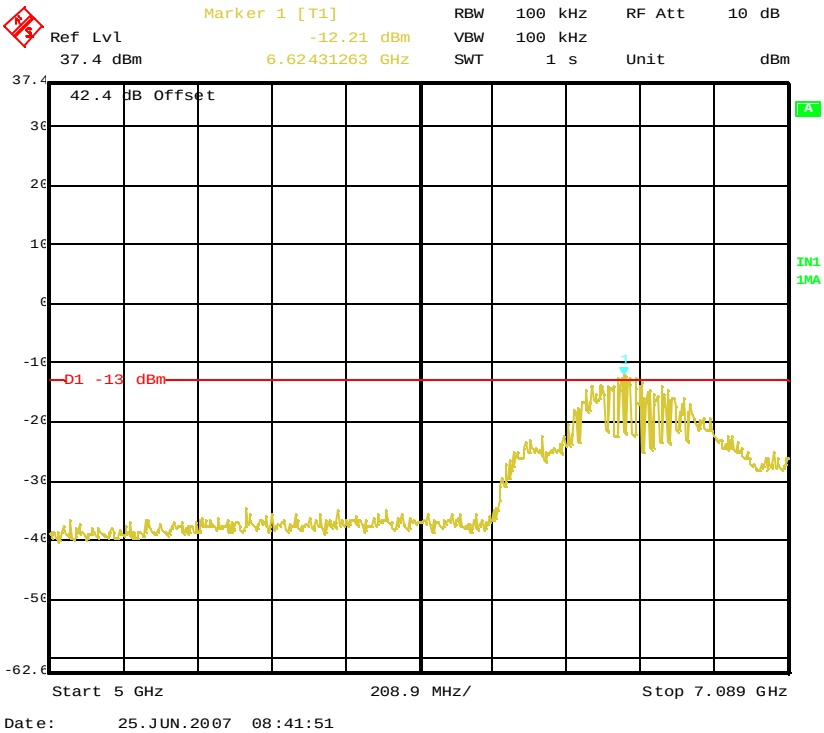

RBW 100 kHz
RF Att 20 dB
VBW 1 MHz
SWT 5 s
Unit dBm
Ref Lvl
37.4 dBm
42.4 dB Offset
37.4
30
20
10
0
-10
-20
-30
-40
-50
-62.5
D1 -13 dBm
A
LAV
Start 26.5 GHz
1.35 GHz/
Stop 40 GHz
Date: 30.JUN.2007 18:03:33

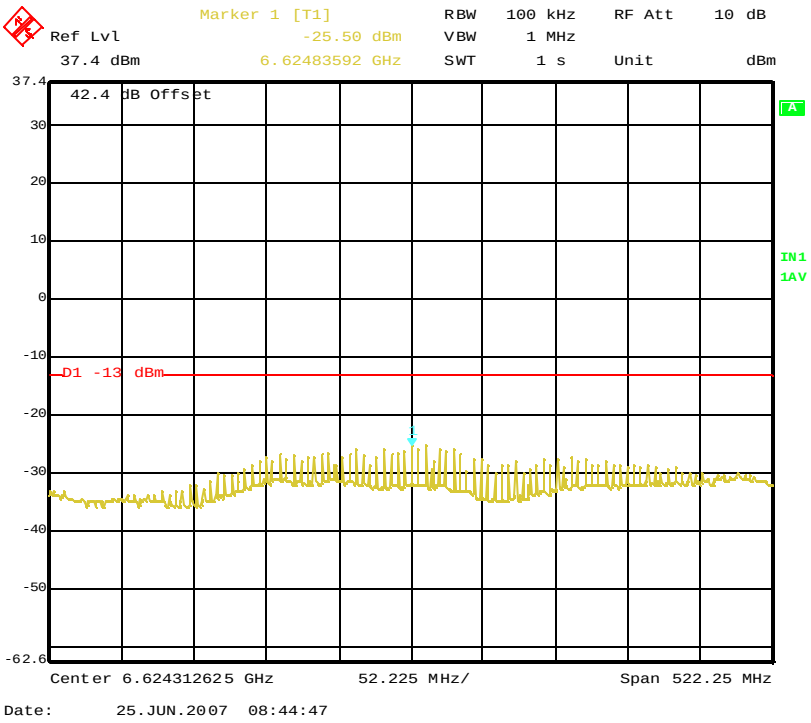
Channel 10+ Digital (7119MHz) 64QAM

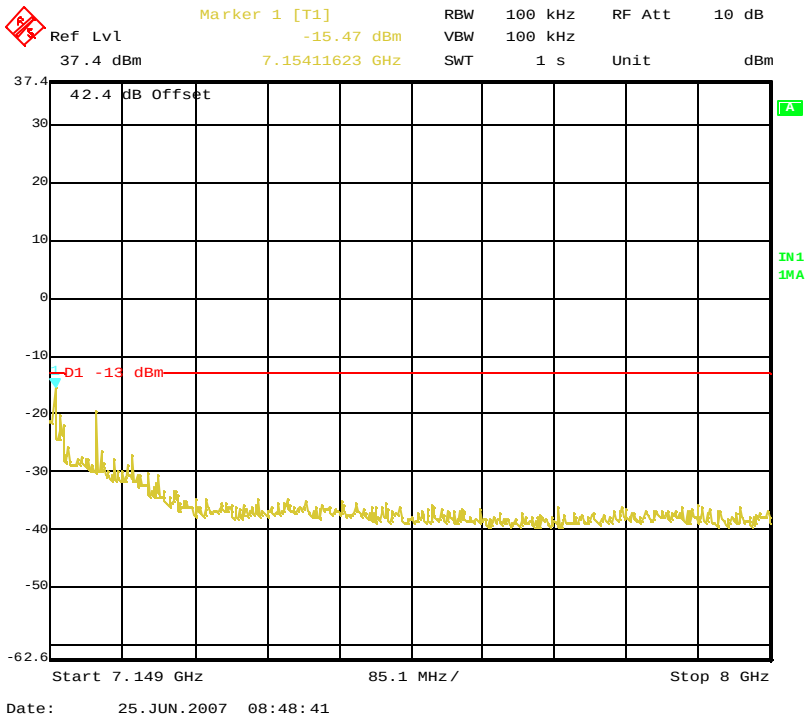


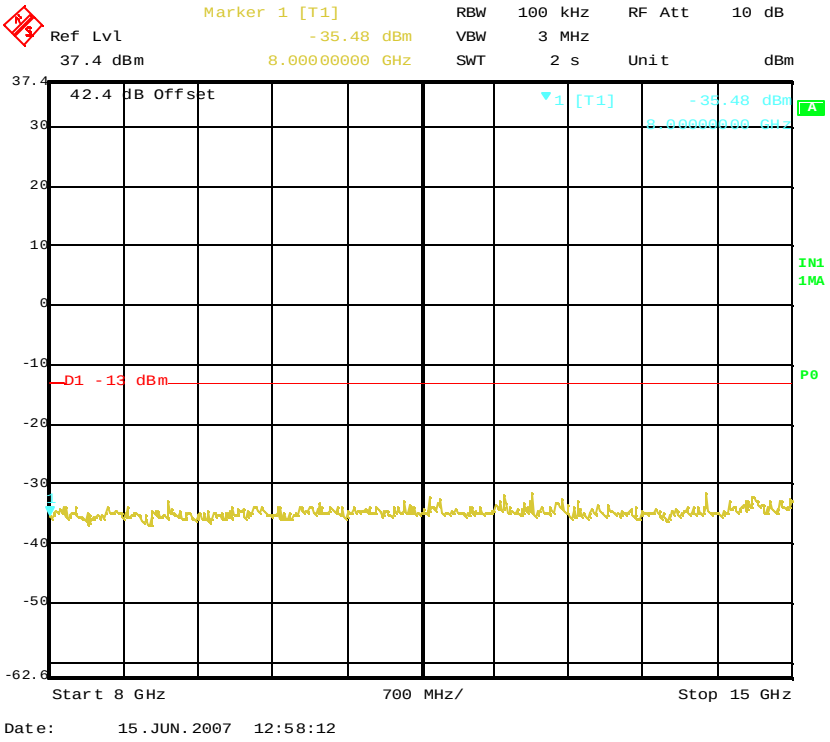


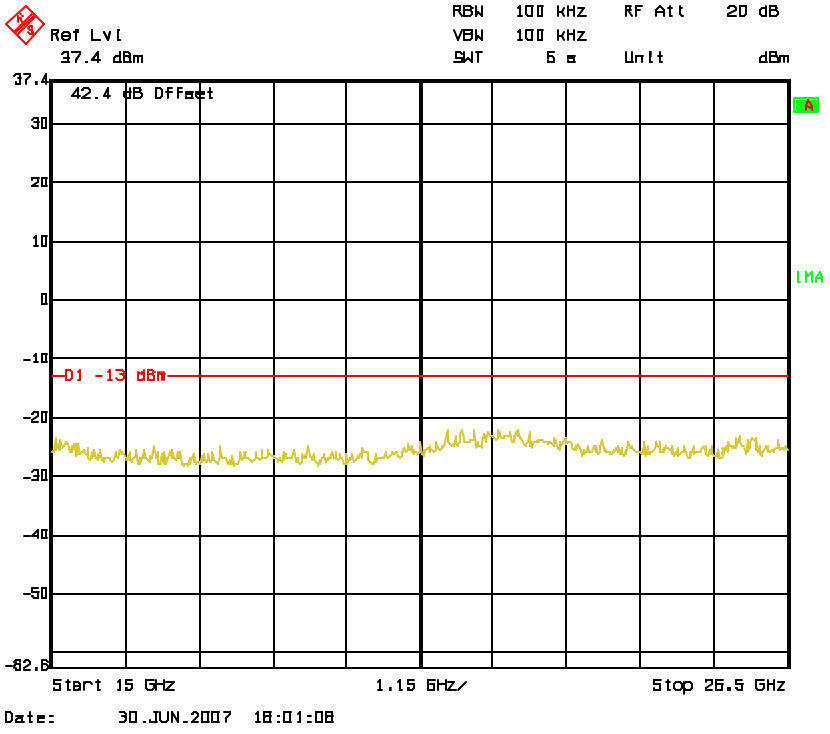

Marker 1 [T1]
Ref Lvl
37.4 dBm
-37.54 dBm
5.00000000 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
IN1
1MA
Start 1 GHz
400 MHz/
Stop 5 GHz
Date: 25.JUN.2007 08:39:55

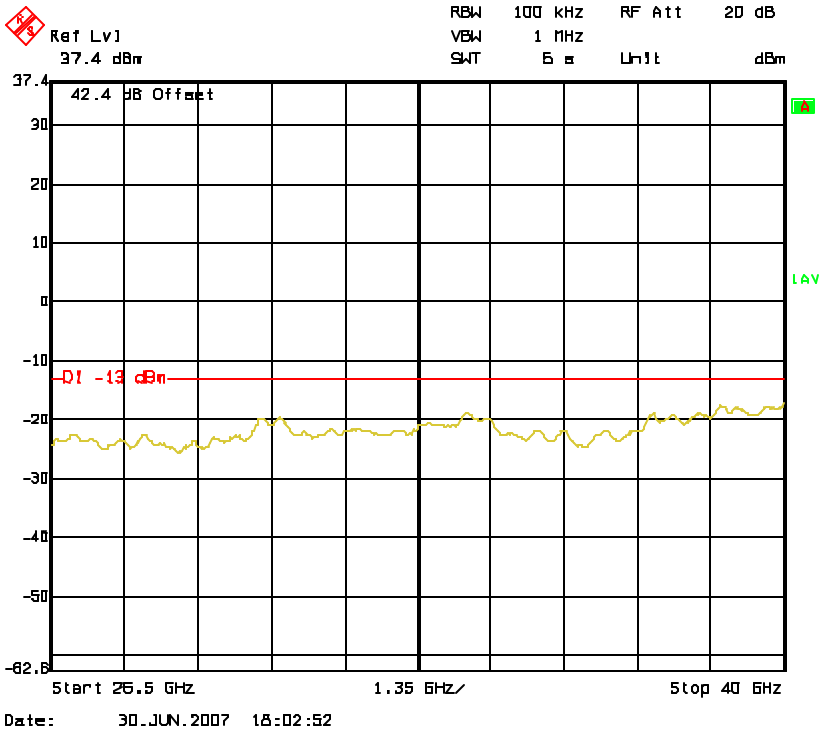

Marker 1 [T1]
Ref Lvl
37.4 dBm
-12.21 dBm
6.62431263 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
D1 -13 dBm
IN1
1MA
Start 5 GHz
208.9 MHz/
Stop 7.089 GHz
Date: 25.JUN.2007 08:41:51


Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-25.50 dBm
VBW 1 MHz
37.4 dBm
6.62483592 GHz
SWT 1 s
Unit dBm
37.4
42.4 dB Offset
30
20
10
0
-10
-20
-30
-40
-50
-62.6
D1 -13 dBm
A
IN1
1AV
Center 6.624312625 GHz
52.225 MHz/
Span 522.25 MHz
Date: 25.JUN.2007 08:44:47

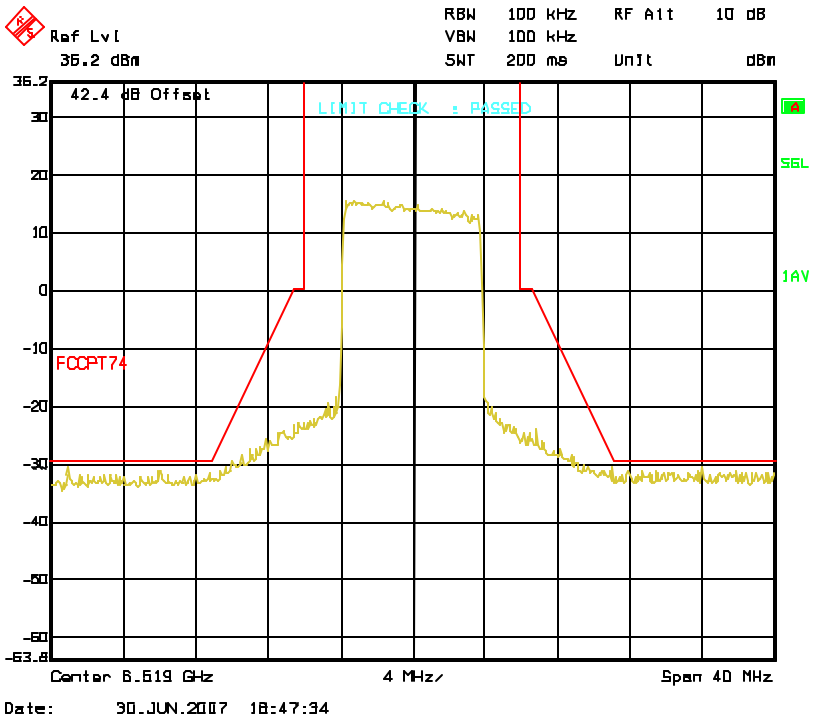

Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-15.47 dBm
VBW 100 kHz
37.4 dBm
7.15411623 GHz
SWT 1 s
Unit dBm
37.4
42.4 dB Offset
30
20
10
0
-10
-20
-30
-40
-50
-62.6
D1 -13 dBm
A
IN1
1MA
Start 7.149 GHz
85.1 MHz/
Stop 8 GHz
Date: 25.JUN.2007 08:48:41

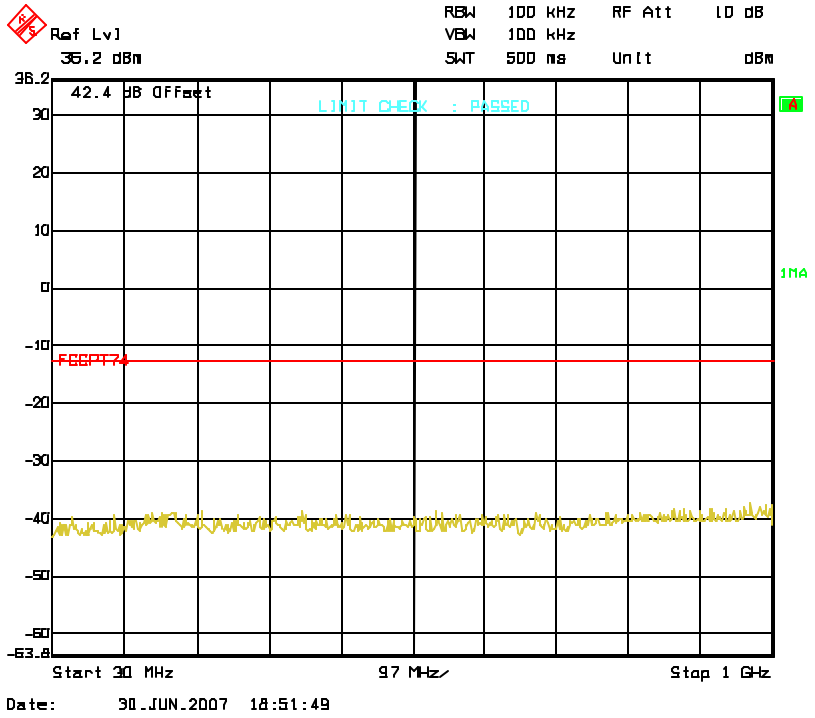

Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-35.48 dBm
VBW 3 MHz
37.4 dBm
8.00000000 GHz
SWT 2 s
Unit dBm
37.4
42.4 dB Offset
1 [T1]
-35.48 dBm
8.00000000 GHz
A
30
20
10
IN1
1MA
0
-10
D1 -13 dBm
P0
-20
-30
-40
-50
-62.6
Start 8 GHz
700 MHz/
Stop 15 GHz
Date: 15.JUN.2007 12:58:12

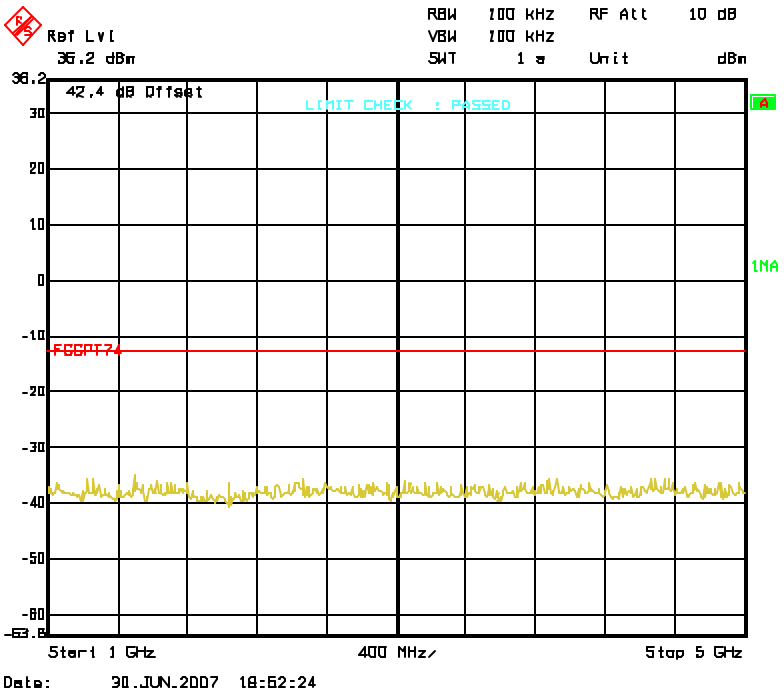

RBW 100 kHz
RF Att 20 dB
Ref Lvl
VBW 100 kHz
37.4 dBm
SWT 6 s
Unit dBm
37.4
42.4 dB Offset
A
30
20
10
1MA
0
-10
D1 -13 dBm
-20
-30
-40
-50
-82.6
Start 15 GHz
1.15 GHz/
Stop 26.5 GHz
Date: 30.JUN.2007 18:01:08

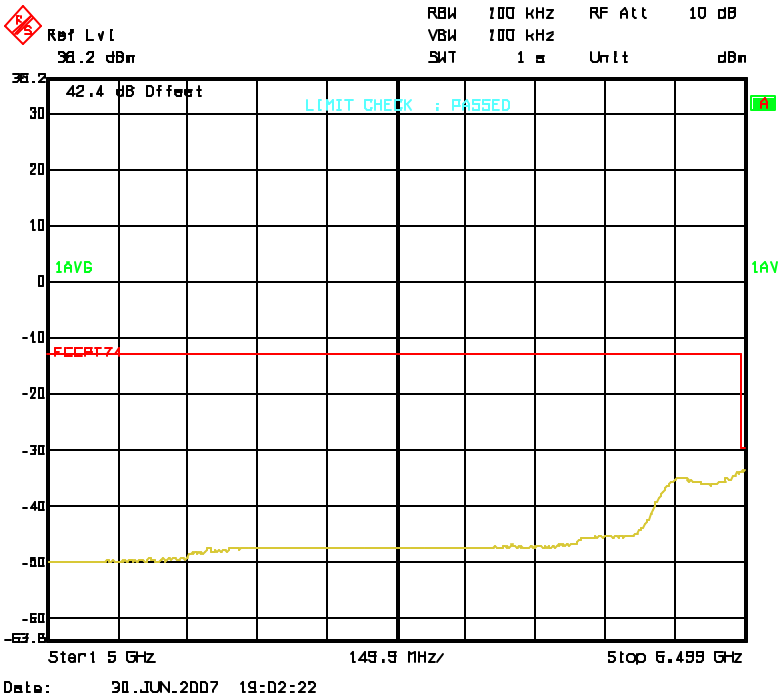

RBW 100 kHz
RF Att 20 dB
VBW 1 MHz
SWT 5 s
Unit dBm
Ref Lvl
37.4 dBm
42.4 dB Offset
37.4
30
20
10
0
-10
-20
-30
-40
-50
-62.6
D1 -13 dBm
LAV
Start 26.5 GHz
1.35 GHz/
Stop 40 GHz
Date: 30.JUN.2007 18:02:52

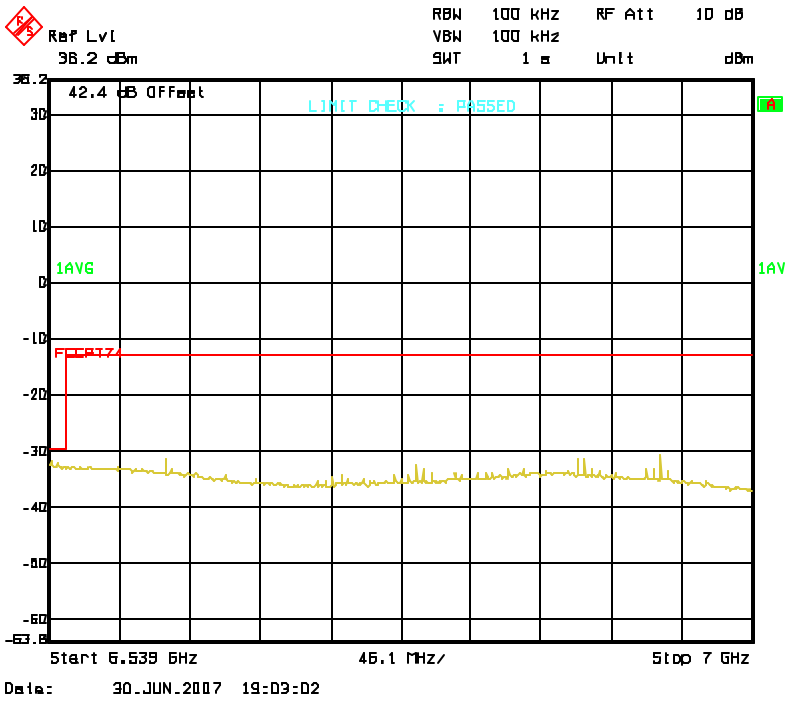
Channel 4+ Digital (6519MHz) QPSK

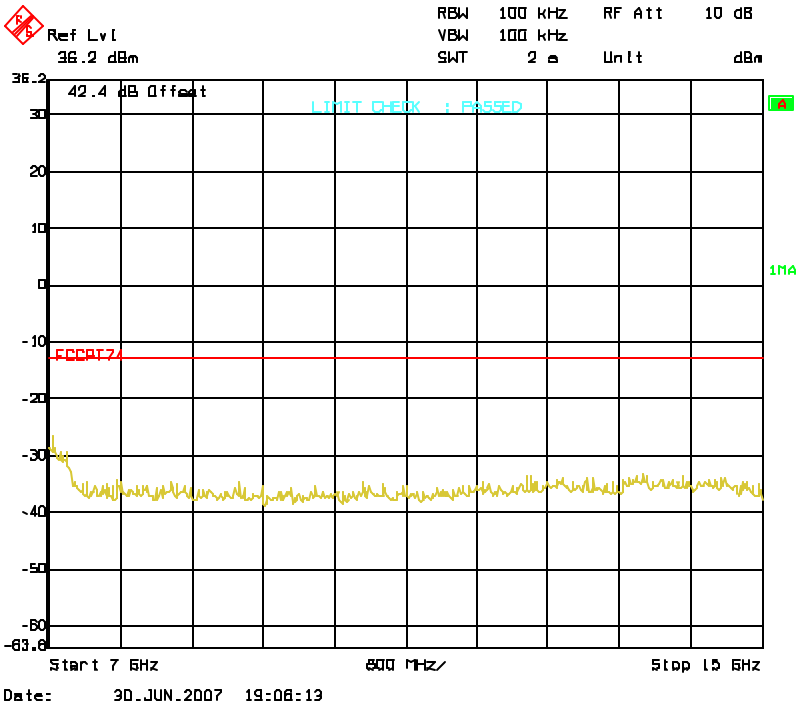


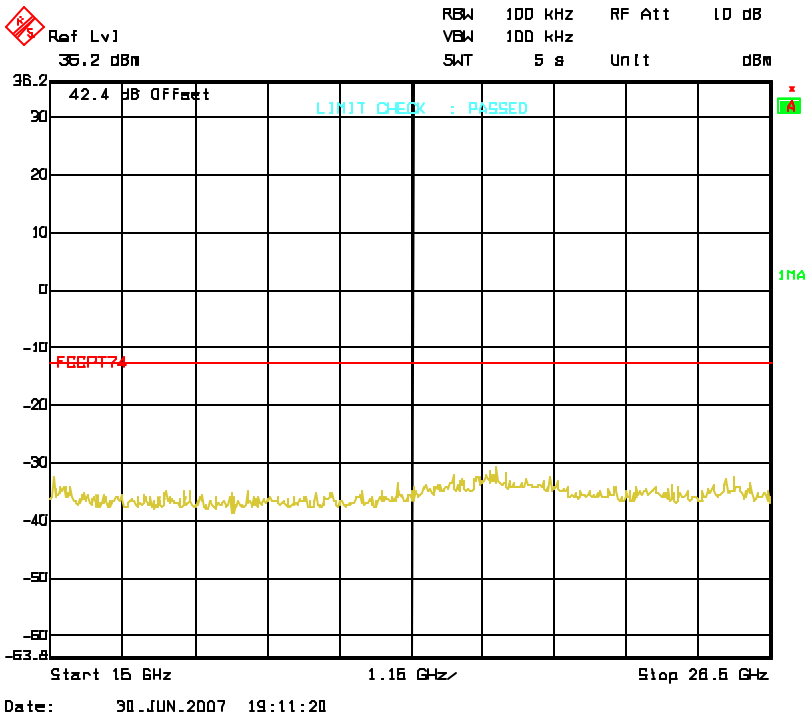


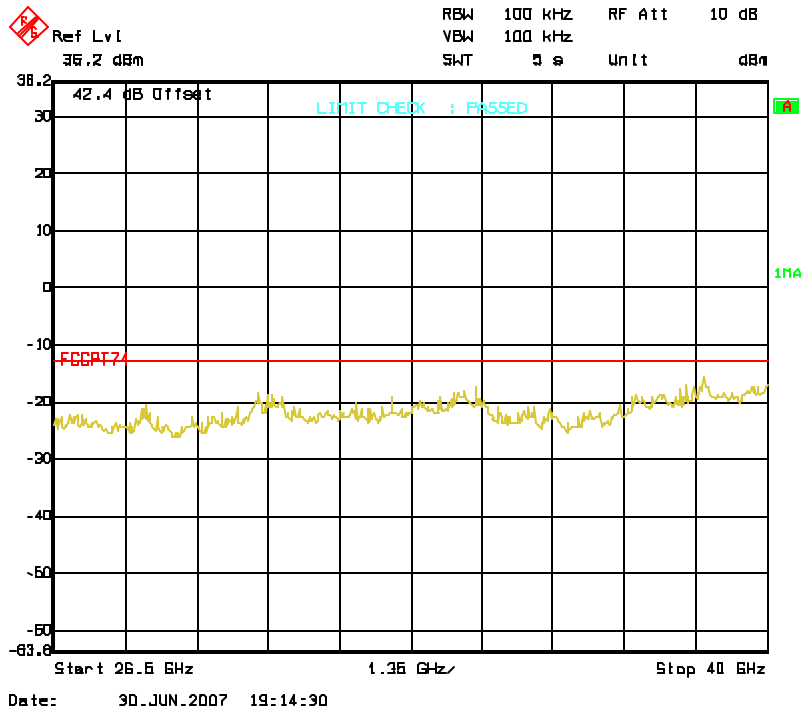

RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
36.2 dBm
42.4 dB Offset
LIMIT CHECK : PASSED
1MA
FCCPT74
Start 1 GHz
400 MHz/
Stop 5 GHz
Date: 30.JUN.2007 18:52:24


RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
36.2 dBm
42.4 dB Offset
LIMIT CHECK : PASSED
1AVG
1AV
FCCPT74
Start 5 GHz
149.9 MHz/
Stop 6.499 GHz
Date: 30.JUN.2007 19:02:22

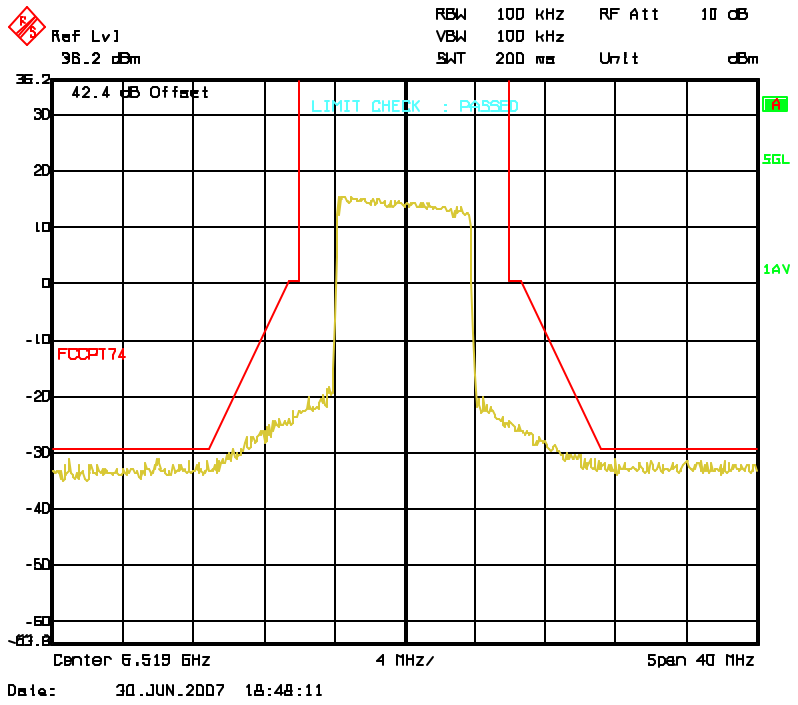

RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
36.2 dBm
42.4 dB OFFset
LIMIT CHECK : PASSED
1AVG
1AV
FCCPK7
Start 6.539 GHz
46.1 MHz/
Stop 7 GHz
Date: 30.JUN.2007 19:03:02

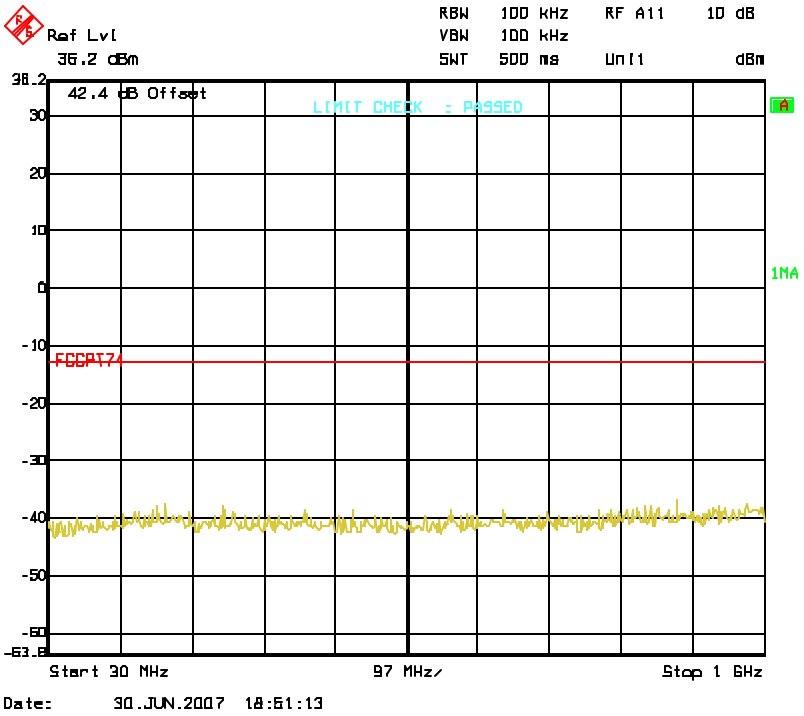

RBW 100 kHz
VBW 100 kHz
SWT 2 s
RF Att 10 dB
Unit dBm
Ref Lvl
36.2 dBm
42.4 dB Offset
LIMIT CHECK : PASSED
1MA
FCCPK7
Start 7 GHz
800 MHz/
Stop 15 GHz
Date: 30.JUN.2007 19:08:19

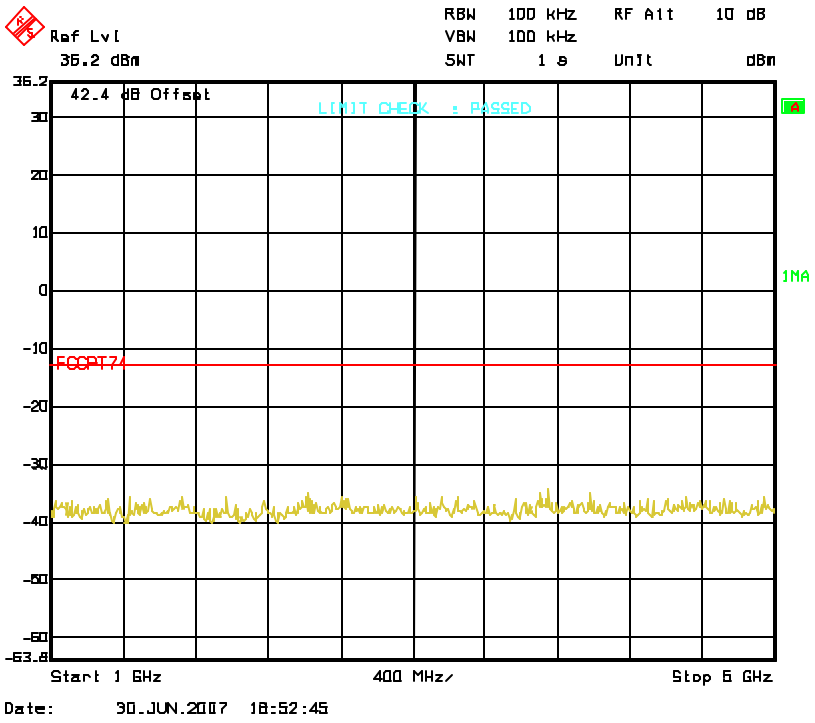

Ref Lvl
36.2 dBm
RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
LIMIT CHECK : PASSED
FCCPT74
1MA
Start 15 GHz
1.15 GHz/
Stop 26.5 GHz
Date: 30.JUN.2007 19:11:20

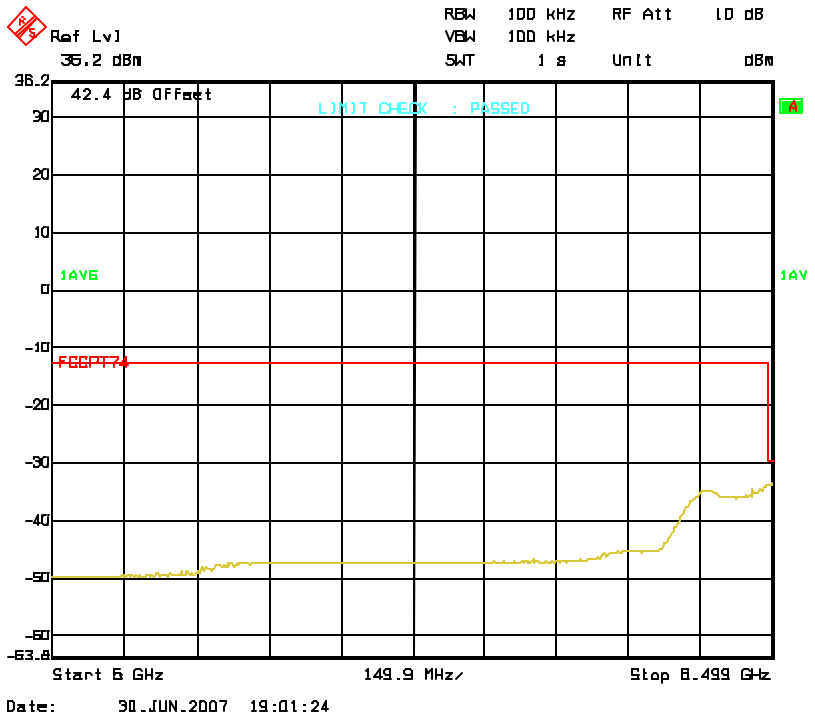

Ref Lvl
36.2 dBm
RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 10 dB
Unit dBm
42.4 dB Offset
LIMIT CHECK : PASSED
FCCPT74
1MA
Start 26.5 GHz
1.35 GHz/
Stop 40 GHz
Date: 30.JUN.2007 19:14:30

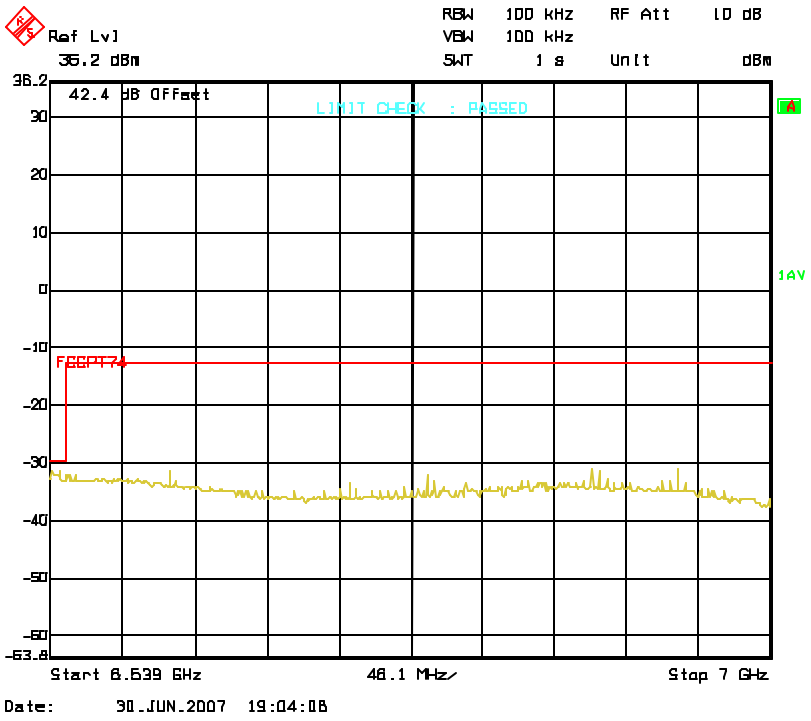
Channel 4+ Digital (6519MHz) 16QAM

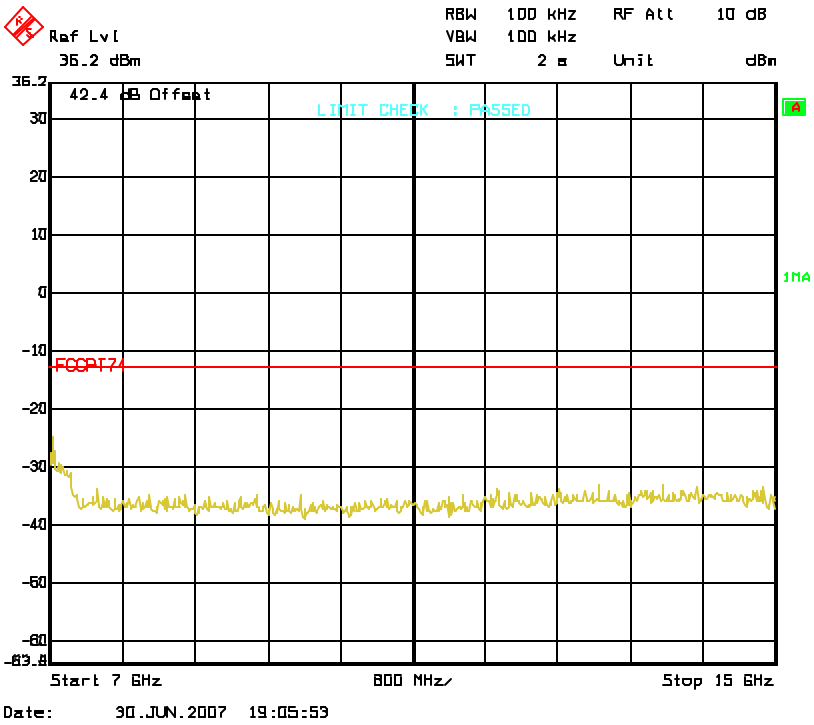


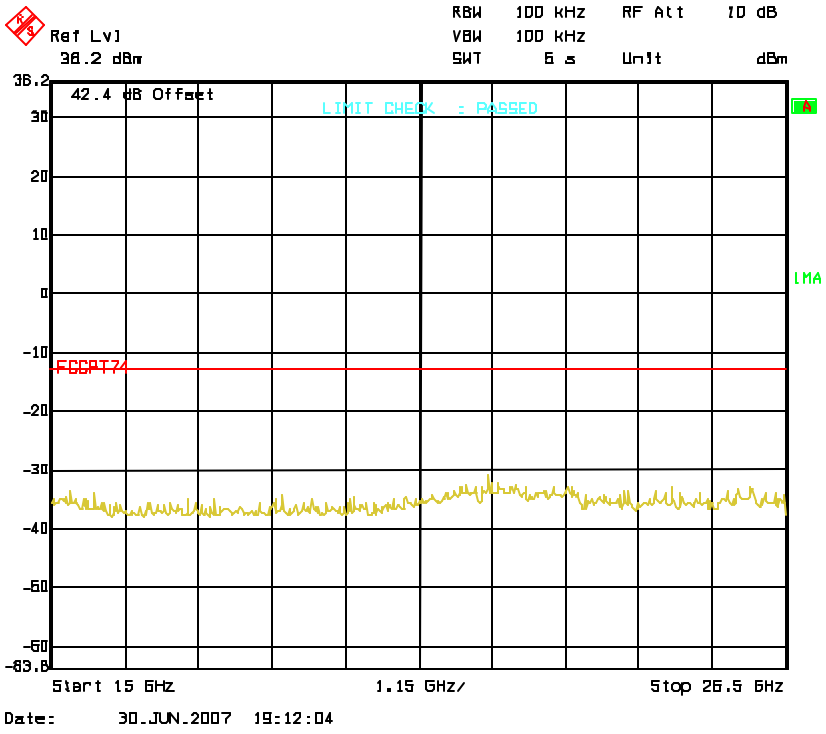


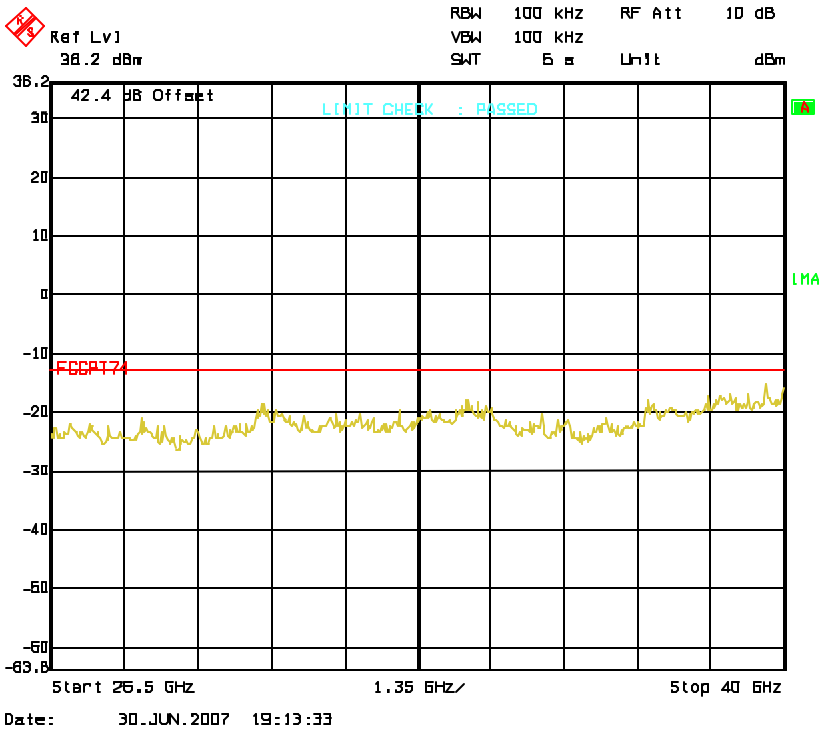

RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
36.2 dBm
42.4 dB Offset
LIMIT CHECK : PASSED
1MA
FCCPT74
Start 1 GHz
400 MHz/
Stop 5 GHz
Date: 30.JUN.2007 18:52:45


RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
36.2 dBm
42.4 dB Offset
LIMIT CHECK : PASSED
1AVG
1AV
FCCPT74
Start 5 GHz
149.9 MHz/
Stop 8.499 GHz
Date: 30.JUN.2007 19:01:24


RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
36.2 dBm
42.4 dB Offset
LIMIT CHECK : PASSED
FCCPT74
1AV
Start 6.639 GHz
48.1 MHz/
Stop 7 GHz
Date: 30.JUN.2007 19:04:08


RBW 100 kHz
VBW 100 kHz
SWT 2 s
RF Att 10 dB
Unit dBm
Ref Lvl
36.2 dBm
42.4 dB Offset
LIMIT CHECK : PASSED
FCCPT74
1MA
Start 7 GHz
800 MHz/
Stop 15 GHz
Date: 30.JUN.2007 19:05:53


RBW 100 kHz
VBW 100 kHz
SWT 6 s
RF Att 10 dB
Unit dBm
Ref Lvl
38.2 dBm
42.4 dB Offset
LIMIT CHECK : PASSED
LMA
FCCPT74
38.2
30
20
10
0
-10
-20
-30
-40
-50
-60
-83.8
Start 15 GHz
1.15 GHz/
Stop 26.5 GHz
Date: 30.JUN.2007 19:12:04


RBW 100 kHz
VBW 100 kHz
SWT 6 s
RF Att 10 dB
Unit dBm
Ref Lvl
38.2 dBm
42.4 dB Offset
LIMIT CHECK : PASSED
LMA
FCCPT74
38.2
30
20
10
0
-10
-20
-30
-40
-50
-60
-83.8
Start 26.5 GHz
1.35 GHz/
Stop 40 GHz
Date: 30.JUN.2007 19:13:33