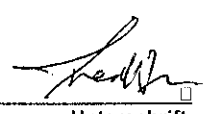
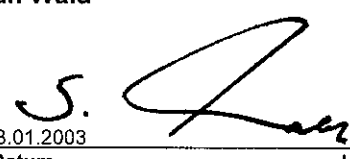


Prüfbericht - Nr.: 14002427 001		Seite 1 von 19 Page 1 of 19		
<i>Test Report No.</i>				
Auftraggeber: <i>Client:</i>	Emerging Technologies Limited 11/F, Wong's Industrial Centre 180 Wai Yip Street, Kwun Tong Kowloon Hong Kong			
Gegenstand der Prüfung: <i>Test item:</i>	iCliq Bluetooth Headset			
Bezeichnung: i38 <i>Identification:</i>	Serien-Nr.: <i>Serial No.</i>	Engineering sample		
Wareneingangs-Nr.: 021004015 <i>Receipt No.:</i>	Eingangsdatum: 4.10.2002 <i>Date of receipt:</i>			
Prüfart: <i>Testing location:</i>	Refer to section 4.1			
Prüfgrundlage: <i>Test specification:</i>	FCC Part 15, Subpart C ANSI C63.4-1992			
Prüfresultat: <i>Test Result</i>	Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage. The a. m. test item passed.			
geprüft / tested by: Fred Wai	kontrolliert / reviewed by Stephan Wald			
28.01.2003 Datum Date	 Unterschrift Signature	28.01.2003 Datum Date		
 Unterschrift Signature				
Sonstiges / Other Aspects:				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> Abkürzungen: OK, Pass = entspricht Prüfgrundlage Fail = entspricht nicht Prüfgrundlage N/A = nicht anwendbar </td> <td style="width: 50%; vertical-align: top;"> Abbreviations: OK, Pass = passed Fail = failed N/A = not applicable </td> </tr> </table>			Abkürzungen: OK, Pass = entspricht Prüfgrundlage Fail = entspricht nicht Prüfgrundlage N/A = nicht anwendbar	Abbreviations: OK, Pass = passed Fail = failed N/A = not applicable
Abkürzungen: OK, Pass = entspricht Prüfgrundlage Fail = entspricht nicht Prüfgrundlage N/A = nicht anwendbar	Abbreviations: OK, Pass = passed Fail = failed N/A = not applicable			
Dieser Prüfbericht bezieht sich nur auf den o.g. Prüfgegenstand und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report relates to the a. m. test item. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. Authorized format 16.12.1996, R.M.				

1 Test Summary

7.1.1 ANTENNA CONNECTOR SUBCLAUSE 15.203

7.1.2 ANTENNA TYPE SUBCLAUSE 15.204

7.1.3 DISTURBANCE VOLTAGE ON AC MAINS SUBCLAUSE 15.207(A)

RESULT: Pass

Limit Subclause 15.207(a)

7.1.4 CARRIER FREQUENCY SEPERATION SUBCLAUSE 15.247(A)(1)

Limit Subclause 15.247(a)(1)

7.1.5 DWELL TIME SUBCLAUSE 15.247(A)(1)(III)

RESULT: Pass

Limit Subclause 15.247(a)(1)(iii)

7.1.6 20dB BANDWIDTH SUBCLAUSE 15.247(A)(1)

RESULT: Pass

Limit Subclause 15.247(a)(1)(ii)

7.1.7 HOPPING SEQUENCE SUBCLAUSE 15.247(A)(1)

7.1.8 RECEIVER INPUT BANDWIDTH SUBCLAUSE 15.247(A)(1)

7.1.9 PEAK OUTPUT POWER SUBCLAUSE 15.247(B)(1)

RESULT: Pass

Limit Subclause 15.247(b)(1)

7.1.10 BAND EDGE COMPLIANCE SUBCLAUSE 15.247(C)

RESULT: Pass

Limit Subclause 15.247(c)

7.1.11 SPURIOUS CONDUCTED EMISSIONS SUBCLAUSE 15.247(C)

RESULT: Pass

Limit Subclause 15.247(c)

7.1.12 SPURIOUS RADIATED EMISSIONS SUBCLAUSE 15.247(C)

RESULT: Pass

Limit Subclause 15.247(c)

2 Contents

1	TEST SUMMARY	2
2	CONTENTS	3
3	GENERAL REMARKS	4
3.1	COMPLEMENTARY MATERIALS.....	4
4	TEST SITES	4
4.1	TEST FACILITIES	4
4.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS	5
5	GENERAL PRODUCT INFORMATION	6
5.1	PRODUCT FUNCTION AND INTENDED USE	6
5.2	RATINGS AND SYSTEM DETAILS	6
5.3	INDEPENDENT OPERATION MODES	6
5.4	SUBMITTED DOCUMENTS.....	7
6	TEST SET-UP AND OPERATION MODE	7
6.1	PRINCIPLE OF CONFIGURATION SELECTION	7
6.2	TEST OPERATION AND TEST SOFTWARE.....	7
6.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	7
7	TEST RESULTS.....	8
7.1.1	Antenna connector Subclause 15.203	8
7.1.2	Antenna type Subclause 15.204.....	8
7.1.3	Disturbance voltage on AC mains Subclause 15.207(a).....	9
7.1.4	Carrier frequency seperation Subclause 15.247(a)(1).....	10
7.1.5	Dwell time Subclause 15.247(a)(1)(iii)	11
7.1.6	20dB bandwidth Subclause 15.247(a)(1)	12
7.1.7	Hopping sequence Subclause 15.247(a)(1).....	13
7.1.8	Receiver input bandwidth Subclause 15.247(a)(1)	14
7.1.9	Peak output power Subclause 15.247(b)(1)	15
7.1.10	Band edge compliance Subclause 15.247(c)	16
7.1.11	Spurious conducted emissions Subclause 15.247(c)	17
7.1.12	Spurious radiated emissions Subclause 15.247(c)	18

3 General Remarks

3.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test Results

Appendix 2: Test Setup

Appendix 3: EUT Photos

Appendix 4: FCCID Label, Block Diagram and Schematics

4 Test Sites

4.1 Test Facilities

Hong Kong Productivity Council
HKPC Building
78 Tat Chee Avenue
Kowloon
Hong Kong

Prüfbericht - Nr.:

14002427 001

Test Report No.

Seite 5 von 19
 Page 5 of 19

4.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

	Kind of Equipment	Manufacturer	Type	S/N
☐	Test Receiver	Rohde & Schwarz	ESH-3	890173/033
☐	L/I/S/N	Rohde & Schwarz	ESH 3-Z5	849876/026
☐	Oscilloscope	HP	54713B	US34510455
☐	Test Receiver	Rohde & Schwarz	ESVP	882402/033
☐	Absorbing Clamp	Rohde & Schwarz	MDS-21	979 3/4
☒	Test Receiver	Rohde & Schwarz	ESVS30	842807/009
☒	Biconical Antenna	Rohde & Schwarz	HK116	841489/015
☒	Log.-Periodic Antenna	Rohde & Schwarz	HL223	841516/017
☐	Universal Power Analyzer	Voltech	PM3000A	9915
☐	Reference Impedance Network	Voltech	IEC 555 Standard	9946
☐	AC Power Source	California Instr.	4500L	HK51895
☐	Trip-Loop Antenna	Chase	LLA6142	1019
☒	Double Ridge Horn Antenna	EMCO	3115	9002-3351
☒	Double Ridge Horn Antenna	EMCO	3116	9002-3347
☐	RF Comms Test Set	HP	8920B	US36492628
☐	Spectrum Analyser + Tracking Gen.	HP	8596E	3639A00758
☒	Signal Generator	Rohde & Schwarz	SMY 01	844146/024
☒	Signal Generator	Rohde & Schwarz	SMY 01	844146/023
☐	BiLog Antenna	EMCO	3143	9607-1287
☐	Isotropic Field Probe	Holladay	HI-4422	90956
☐	Power Amplifier	Kalmus	757-LC	7620-1
☐	Power Amplifier	Kalmus	122-FC	7620-2
☐	Coupling Clamp	Schaffner	CDN 126	312
☐	Couple Device Network	Fischer	CDN-M2	9604
☒	Spectrum Analyzer	Rohde & Schwarz	FSP30	1093.4495K30
☐	Temperature Chamber	Binder	MK 240	9020-0028
☐	EFT,ESD,SURGE, DIPS tester	Schaffner	Best 96	IN3796-011

5 General Product Information

5.1 Product Function and Intended Use

The submitted sample is Bluetooth Headset for use with a device providing the Bluetooth audio gateway functionality.

Bluetooth is a short-range radio link intended to be a cable replacement between portable and/or fixed electronic devices.

Bluetooth operates in the unlicensed ISM Band at 2.4 GHz. In the US a band of 83.5 MHz width is available. In this band, 79 RF channels spaced 1MHz apart are defined.

The channel is represented by a pseudo-random hopping sequence through the 79 channels. The channel is divided into time slots, with a nominal slot length of 625µs, where each slot corresponds to different RF hop frequencies. The nominal hop rate is 1600 hops/s. The symbol rate on the channel is 1 Ms/s.

5.2 Ratings and System Details

	Receiver	Transmitter
Frequency range	: 2402 - 2480MHz	2402 - 2480MHz
Number of channels	: 79	79
Channel separation	: 1MHz	1MHz
Type of antenna	: Integral Wire antenna	Integral Wire antenna
Power supply	: Battery operated	Battery operated

5.3 Independent Operation Modes

- a) Inquiry scan
- b) Page scan
- c) Connection state:
 - ACL link
 - SCO link

For further information, please refer to the user manual.

5.4 Submitted Documents

Schematics
Block Diagram
PCB Layout
User manual

6 Test Set-up and Operation Mode

6.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

6.2 Test Operation and Test Software

Refer to Test set-up in chapter 7.

6.3 Special Accessories and Auxiliary Equipment

Battery charger for Bluetooth Headset iCliqu

Model	:	28 – D06 – 200
Input	:	AC 120, 60Hz, 3W
Output	:	DC 6V, 200mA

Prüfbericht - Nr.:

14002427 001

Test Report No.

Seite 8 von 19

Page 8 of 19

7 Test Results

7.1.1 Antenna connector

Subclause 15.203

The EUT has no antenna connector.

7.1.2 Antenna type

Subclause 15.204

The EUT has a $\lambda/4$ wire antenna soldered to the circuit board. The antenna gain is 0dBi.

Prüfbericht - Nr.:
 Test Report No.

14002427 001

Seite 9 von 19
 Page 9 of 19

7.1.3 Disturbance voltage on AC mains

Subclause 15.207(a)

RESULT:

Pass

Test Specification : ANSI C63.4-1992
 Mode of operation : Normal operating mode (hopping on)
 Port of testing : AC power port of charger
 Supply voltage : AC 120V
 Temperature : 21°C
 Humidity : 54%

For Live measurement

Frequency	QP reading	QP limit	Av reading	Av limit
MHz	dB μ V	dB μ V	dB μ V	dB μ V
0.762	18.1	56.0	1.9	46.0

For Neutral measurement

Frequency	QP reading	QP limit	Av reading	Av limit
MHz	dB μ V	dB μ V	dB μ V	dB μ V
28.672	18.9	56.0	16.8	46.0
20.480	15.2	56.0	14.1	46.0

The radio frequency voltage conducted back onto the Live and the Neutral power lines complies with the limits.

For test results please refer to Appendix 1 page 22-23.

Limit

Subclause 15.207(a)

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Frequency of Emission (Mhz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

Prüfbericht - Nr.:

14002427 001

Test Report No.

Seite 10 von 19

Page 10 of 19

7.1.4 Carrier frequency separation

Subclause 15.247(a)(1)

Test specification : FCC § 15.31
Mode of operation : Tx mode (hopping on), DH1 packet
Port of testing : Temporary antenna port
Detector : PK
RBW/VBW : 100kHz/300kHz
Supply voltage : DC 3,6V
Temperature : 20°C
Humidity : 55%

The centre frequencies of the hopping channels are separated by 1MHz.
For test results refer to Appendix 1, page 21

Limit

Subclause 15.247(a)(1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

7.1.5 Dwell time

Subclause 15.247(a)(1)(iii)

RESULT:

Pass

Test specification : FCC § 15.31
Mode of operation : Tx mode (2441MHz), DH5 packet
Port of testing : Temporary antenna port
Detector : PK
RBW/VBW : 1MHz/3MHz
Supply voltage : DC 3,6V
Temperature : 20°C
Humidity : 55%

The screenshot in annex 1 p.19 shows the occurrence of a channel in a 12.8s time period. In inquiry and page scan mode Bluetooth is using 32 hopping channels only. The frequency was used 39 times. The dwell time for the longest supported packet type is about 3ms. As a result the average time of occupancy will not be greater than 400ms.

i.e. Time period calculation:
 $0.4 \times 32 = 12.8s$

Limit calculation:
 $39 \times 2.996 \times 10^{-3} = 116.8 \times 10^{-3}s$
 $\leq 400 \times 10^{-3}s$

For test results please refer to Appendix 1, page 19 – 20.

Limit

Subclause 15.247(a)(1)(iii)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Prüfbericht - Nr.:

14002427 001

Test Report No.

Seite 12 von 19

Page 12 of 19

7.1.6 20dB bandwidth

Subclause 15.247(a)(1)

RESULT:

Pass

Test specification : FCC § 15.31
 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH5 packet
 Port of testing : Temporary antenna port
 Detector : Peak
 RBW/VBW : 30kHz/100kHz
 Supply voltage : DC 3,6V
 Temperature : 20°C
 Humidity : 55%

20dB bandwidth (MHz)		
2402	2441	2480
(0.412)-(-0.456)	(0.412)-(-0.448)	(0.408)-(-0.456)
= 0.868	= 0.860	= 0.864

For test results refer to Appendix 1, page 01 – 03.

Limit

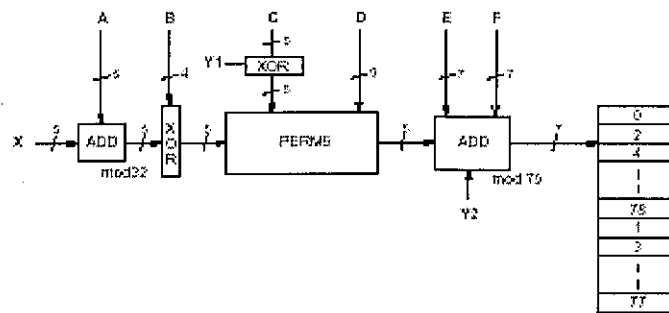
Subclause 15.247(a)(1)(ii)

The occupied bandwidth shall not exceed 1000kHz

7.1.7 Hopping sequence

Subclause 15.247(a)(1)

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master. The X input determines the phase in the 32-hop segment, whereas Y1 and Y2 selects between master-to-slave and slave-to-master transmission. The inputs A to D determine the ordering within the segment, the inputs E and F determine the mapping onto the hop frequencies.



Example data:

Hop sequence {k} for CONNECTION STATE:

CLK start: 0x0000010

ULAP: 0x00000000

#ticks: 00 02 | 04 06 | 08 0a | 0c 0e | 10 12 | 14 16 | 18 1a | 1c 1e |

0x0000010:	08 66	10 70	12 19	14 23	16 01	18 05	20 33	22 37
0x0000030:	24 03	26 07	28 35	30 39	32 72	34 76	36 25	38 29
0x0000050:	40 74	42 78	44 27	46 31	48 09	50 13	52 41	54 45
0x0000070:	56 11	58 15	60 43	62 47	32 17	36 19	34 49	38 51
0x0000090:	40 21	44 23	42 53	46 55	48 33	52 35	50 65	54 67
0x00000b0:	56 37	60 39	58 69	62 71	64 25	68 27	66 57	70 59
0x00000d0:	72 29	76 31	74 61	78 63	01 41	05 43	03 73	07 75
0x00000f0:	09 45	13 47	11 77	15 00	64 49	66 53	68 02	70 06
0x0000110:	01 51	03 55	05 04	07 08	72 57	74 61	76 10	78 14
0x0000130:	09 59	11 63	13 12	15 16	17 65	19 69	21 18	23 22
0x0000150:	33 67	35 71	37 20	39 24	25 73	27 77	29 26	31 30
0x0000170:	41 75	43 00	45 28	47 32	17 02	21 04	19 34	23 36
0x0000190:	33 06	37 08	35 38	39 40	25 10	29 12	27 42	31 44
0x00001b0:	41 14	45 16	43 46	47 48	49 18	53 20	51 50	55 52
0x00001d0:	65 22	69 24	67 54	71 56	57 26	61 28	59 58	63 60
0x00001f0:	73 30	77 32	75 62	00 64	49 34	51 42	57 66	59 74
0x0000210:	53 36	55 44	61 68	63 76	65 50	67 58	73 03	75 11
0x0000230:	69 52	71 60	77 05	00 13	02 38	04 46	10 70	12 78
0x0000250:	06 40	08 48	14 72	16 01	18 54	20 62	26 07	28 15
0x0000270:	22 56	24 64	30 09	32 17	02 66	06 74	10 19	14 27
0x0000290:	04 70	08 78	12 23	16 31	18 03	22 11	26 35	30 43
0x00002b0:	20 07	24 15	28 39	32 47	34 68	38 76	42 21	46 29
0x00002d0:	36 72	40 01	44 25	48 33	50 05	54 13	58 37	62 45
0x00002f0:	52 09	56 17	60 41	64 49	34 19	36 35	50 51	52 67
0x0000310:	38 21	40 37	54 53	56 69	42 27	44 43	58 59	60 75
0x0000330:	46 29	48 45	62 61	64 77	66 23	68 39	03 55	05 71
0x0000350:	70 25	72 41	07 57	09 73	74 31	76 47	11 63	13 00
0x0000370:	78 33	01 49	15 65	17 02	66 51	70 67	03 04	07 20
0x0000390:	68 55	72 71	05 08	09 24	74 59	78 75	11 12	15 28
0x00003b0:	76 63	01 00	13 16	17 32	19 53	23 69	35 06	39 22
0x00003d0:	21 57	25 73	37 10	41 26	27 61	31 77	43 14	47 30
0x00003f0:	29 65	33 02	45 18	49 34	19 04	21 08	23 20	25 24

7.1.8 Receiver input bandwidth

Subclause 15.247(a)(1)

The receiver bandwidth is equal to the receiver bandwidth in the 79 hopping channel mode, which is 1 MHz. The receiver bandwidth is indirectly verified during Bluetooth RF conformance testing.

Prüfbericht - Nr.:

14002427 001

Test Report No.

Seite 15 von 19

Page 15 of 19

7.1.9 Peak output power

Subclause 15.247(b)(1)

RESULT:

Pass

Test specification : FCC § 15.31
 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet
 Port of testing : Temporary antenna port
 Detector : PK
 RBW/VBW : 1MHz/3MHz
 Supply voltage : DC 3,6V
 Temperature : 20°C
 Humidity : 55%

Frequency (MHz)	Maximum peak output power (dBm)	Cable attenuation (dB)	Corrected value (dBm)
2402	-3.18	0.76	-2.42
2441	-3.54	0.68	-2.86
2480	-3.93	0.73	-3.20

All three transmit frequency modes comply with the maximum peak output power limit.
 For test results refer to Appendix 1, page 04 - 06

Limit

Subclause 15.247(b)(1)

Frequency range	RF output power
2.400-2.483,5MHz	0.125W (21.0dBm)

Prüfbericht - Nr.:
Test Report No.

14002427 001

Seite 16 von 19
Page 16 of 19

7.1.10 Band edge compliance

Subclause 15.247(c)

RESULT:

Pass

Test specification	:	FCC § 15.31
Mode of operation	:	Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet
Port of testing	:	Temporary antenna port
Detector	:	PK
RBW/VBW	:	300kHz/1.0MHz
Supply voltage	:	DC 3,6V
Temperature	:	20°C
Humidity	:	55%

All three transmit frequency modes comply with the limit stated in subclause 15.247(c).
For test results refer to Appendix 1, page 16 - 18

Limit

Subclause 15.247(c)

In any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Prüfbericht - Nr.:
 Test Report No.

14002427 001

Seite 17 von 19
 Page 17 of 19

7.1.11 Spurious conducted emissions

Subclause 15.247(c)

RESULT:

Pass

Test specification : FCC § 15.31
 Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet
 Port of testing : Temporary antenna port
 Detector : PK
 RBW/VBW : 100kHz/300kHz
 Supply voltage : DC 3,6V
 Temperature : 20°C
 Humidity : 55%

Operating frequency : 2402MHz

Spurious Frequency (MHz)	Power level (dBm)	Reference value (dBm)	Delta to reference level (dB)
648.14	-62.64	-4.52	-58.12
4795.66	-49.98	-4.52	-45.46

Operating frequency : 2441MHz

Spurious Frequency (MHz)	Power level (dBm)	Reference value (dBm)	Delta to reference level (dB)
4795.66	-52.89	-5.75	-47.14
4875.42	-52.90	-5.75	-47.15

Operating frequency : 2480MHz

Spurious Frequency (MHz)	Power level (dBm)	Reference value (dBm)	Delta to reference level (dB)
4795.66	-52.27	-6.27	-46.00
4955.18	-55.12	-6.27	-48.85

All three transmit frequency modes comply with the 20dB limit stated in subclause 15.247(c).
 For test results refer to Appendix 1, page 07 - 15

Limit

Subclause 15.247(c)

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.

Prüfbericht - Nr.:

14002427 001

Test Report No.

Seite 18 von 19
Page 18 of 19

7.1.12 Spurious radiated emissions

Subclause 15.247(c)

RESULT:

Pass

Test specification : ANSI C63.4 - 1992
Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet
Port of testing : Enclosure
Measurement Location: 10m Semi Anechoic Chamber
Measurement Distance: 3m
Measurement BW : 1 MHz
Supply voltage : DC 3,6V
Temperature : 21°C
Humidity : 56%

Tx frequency 2402MHz, Polarization Vertical

Freq	Reading	AF	Cable att.	Pre -amp	Filter att.	Level	Limit
GHz	dBuV	dB(1/m)	dB	dB	dB	dBuV/m	dBuV/m
-	-	-	-	-	-	-	-

Tx frequency 2402MHz, Polarization Horizontal

Freq	Reading	AF	Cable att.	Pre -amp	Filter att.	Level	Limit
GHz	dBuV	dB(1/m)	dB	dB	dB	dBuV/m	dBuV/m
-	-	-	-	-	-	-	-

Tx frequency 2441MHz, Polarization Vertical

Freq	Reading	AF	Cable att.	Pre -amp	Filter att.	Level	Limit
GHz	DBuV	dB(1/m)	dB	dB	dB	dBuV/m	dBuV/m
-	-	-	-	-	-	-	-

Tx frequency 2441MHz, Polarization Horizontal

Freq	Reading	AF	Cable att.	Pre -amp	Filter att.	Level	Limit
GHz	dBuV	dB(1/m)	dB	dB	dB	dBuV/m	dBuV/m
-	-	-	-	-	-	-	-

Tx frequency 2480MHz, Polarization Vertical

Freq	Reading	AF	Cable att.	Pre -amp	Filter att.	Level	Limit
GHz	dBuV	dB(1/m)	dB	dB	dB	dBuV/m	dBuV/m
-	-	-	-	-	-	-	-

Tx frequency 2480MHz, Polarization Horizontal

Freq	Reading	AF	Cable att.	Pre -amp	Filter att.	Level	Limit
GHz	dBuV	dB(1/m)	dB	dB	dB	dBuV/m	dBuV/m
-	-	-	-	-	-	-	-

Prüfbericht - Nr.:

14002427 001

Test Report No.

Seite 19 von 19
Page 19 of 19

No spurious emissions found in the restricted bands.

All three transmit frequency modes comply with the field strength within the restricted bands.
For test results please refer to the Appendix 1 page 24 - 59.

Limit

Subclause 15.247(c)

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

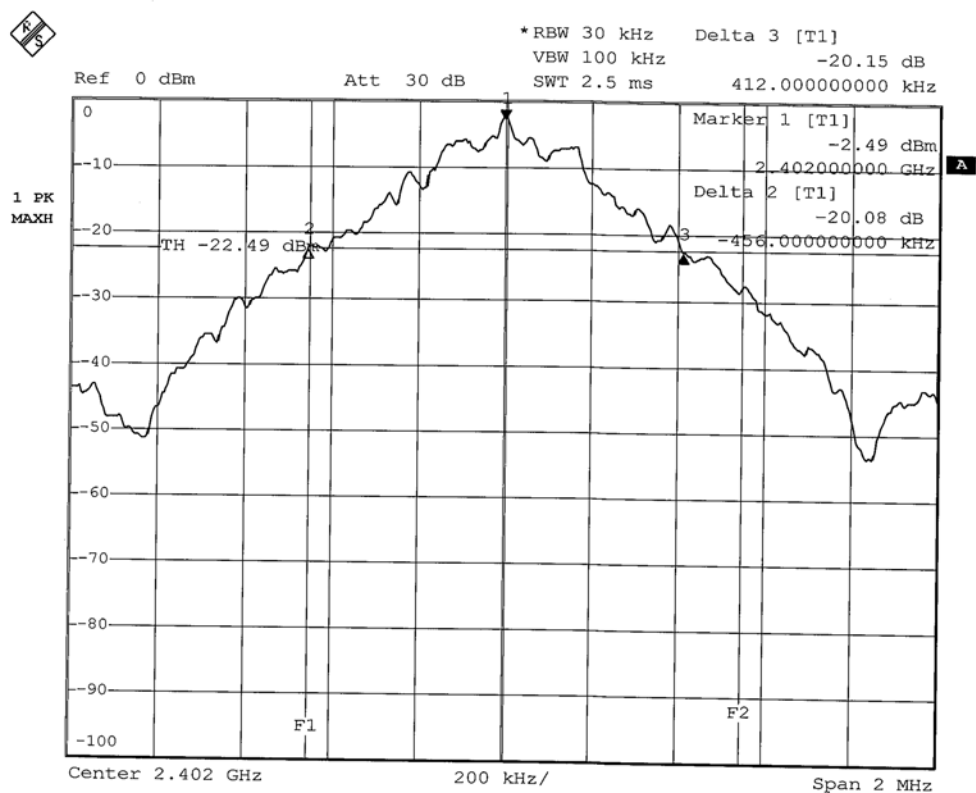
Field strength limits within the restricted bands

Frequency (MHz)	Field strength (microvolts/meter)	Field strength (dB μ V/m)	Measurement distance (meters)
30-88	100	$20 \cdot \log(100) = 40.0$	3
88-216	150	$20 \cdot \log(150) = 43.5$	3
216-960	200	$20 \cdot \log(200) = 46.0$	3
960-2500	500	$20 \cdot \log(500) = 54.0$	3

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 1 von 59
 Page 1 of 59

20dB bandwidth – 2402MHz

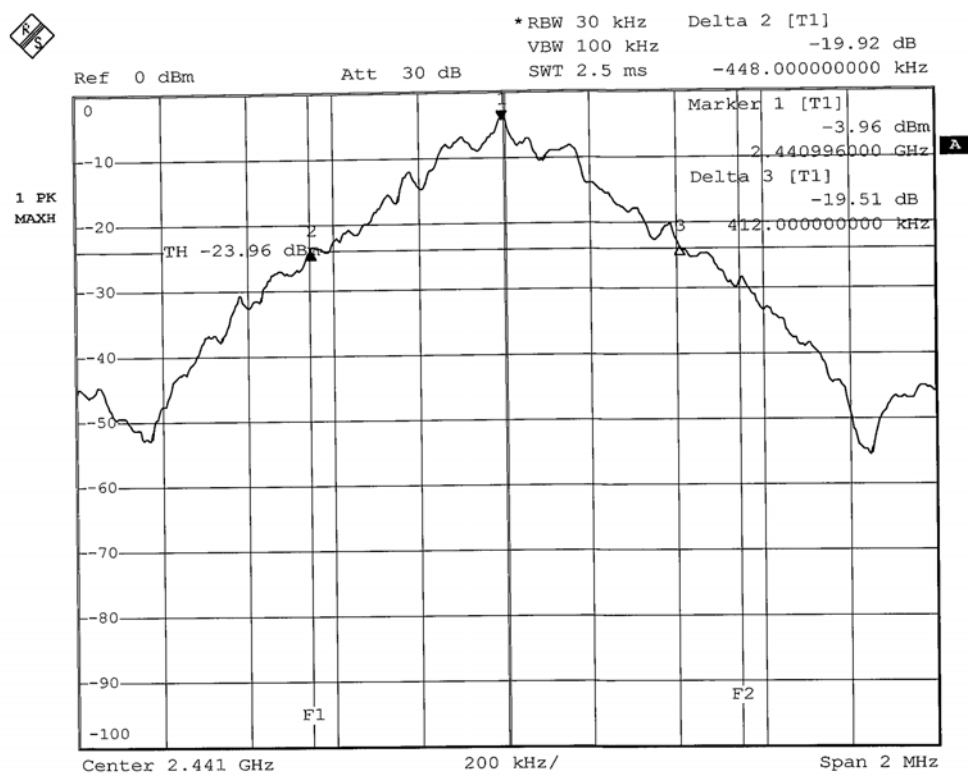


Date: 27.JAN.2003 17:42:28

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 2 von 59
 Page 2 of 59

20dB bandwidth – 2441MHz

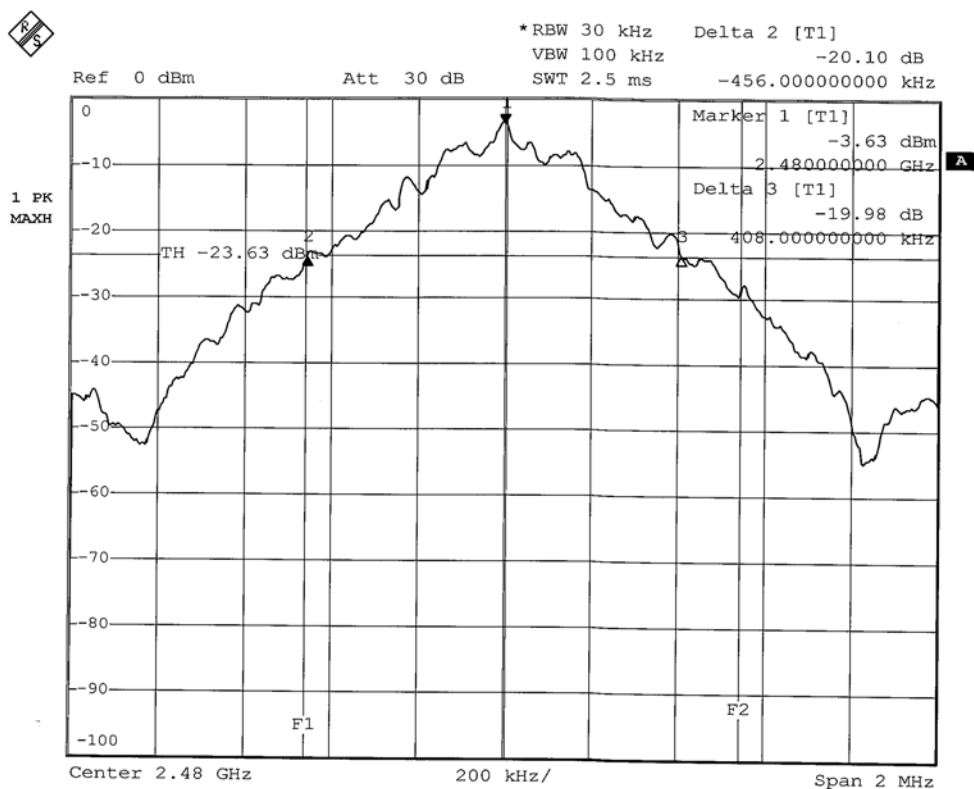


Date: 27.JAN.2003 17:48:20

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 3 von 59
 Page 3 of 59

20dB bandwidth – 2480MHz

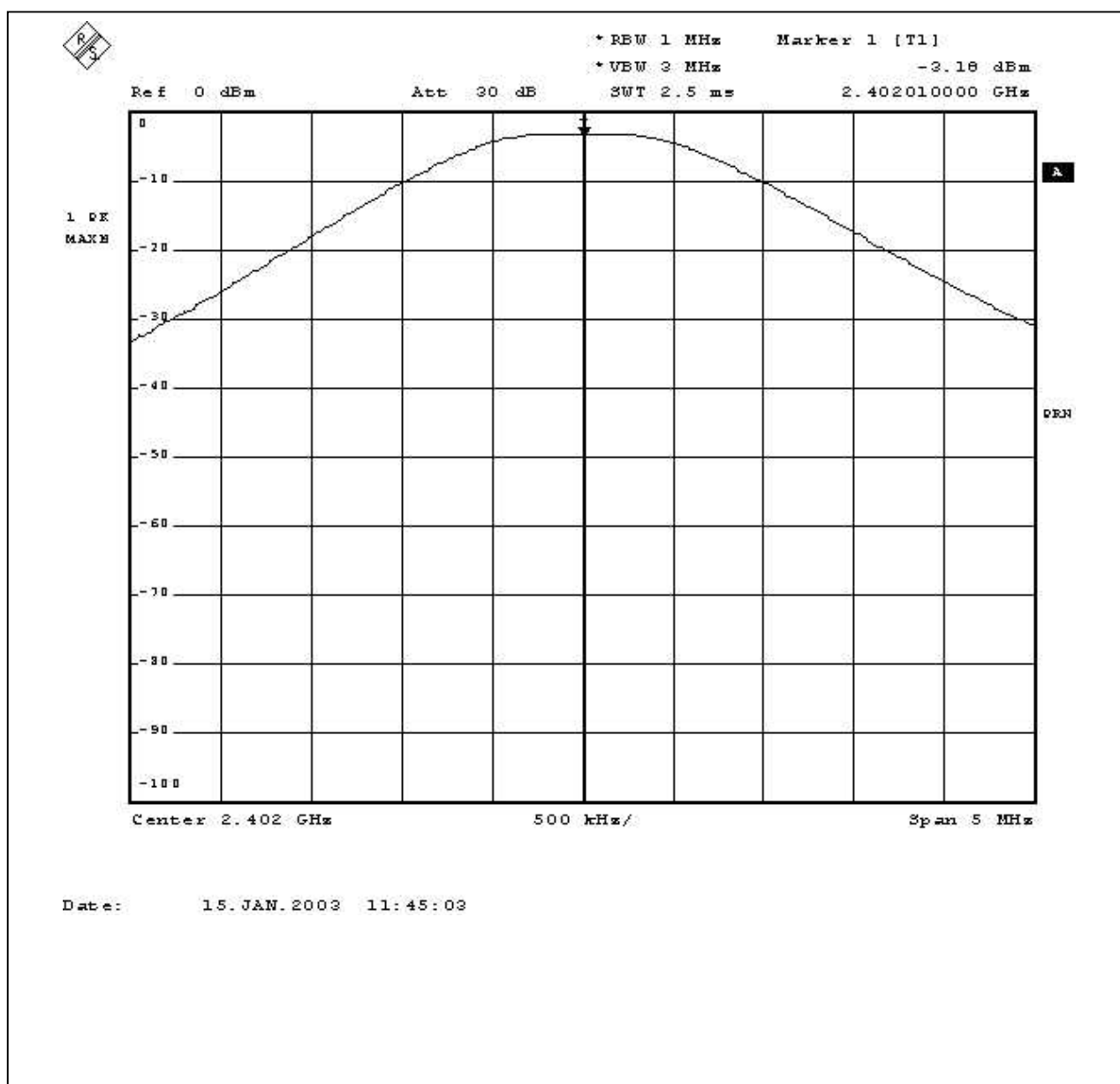


Date: 27.JAN.2003 17:50:53

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 4 von 59
Page 4 of 59

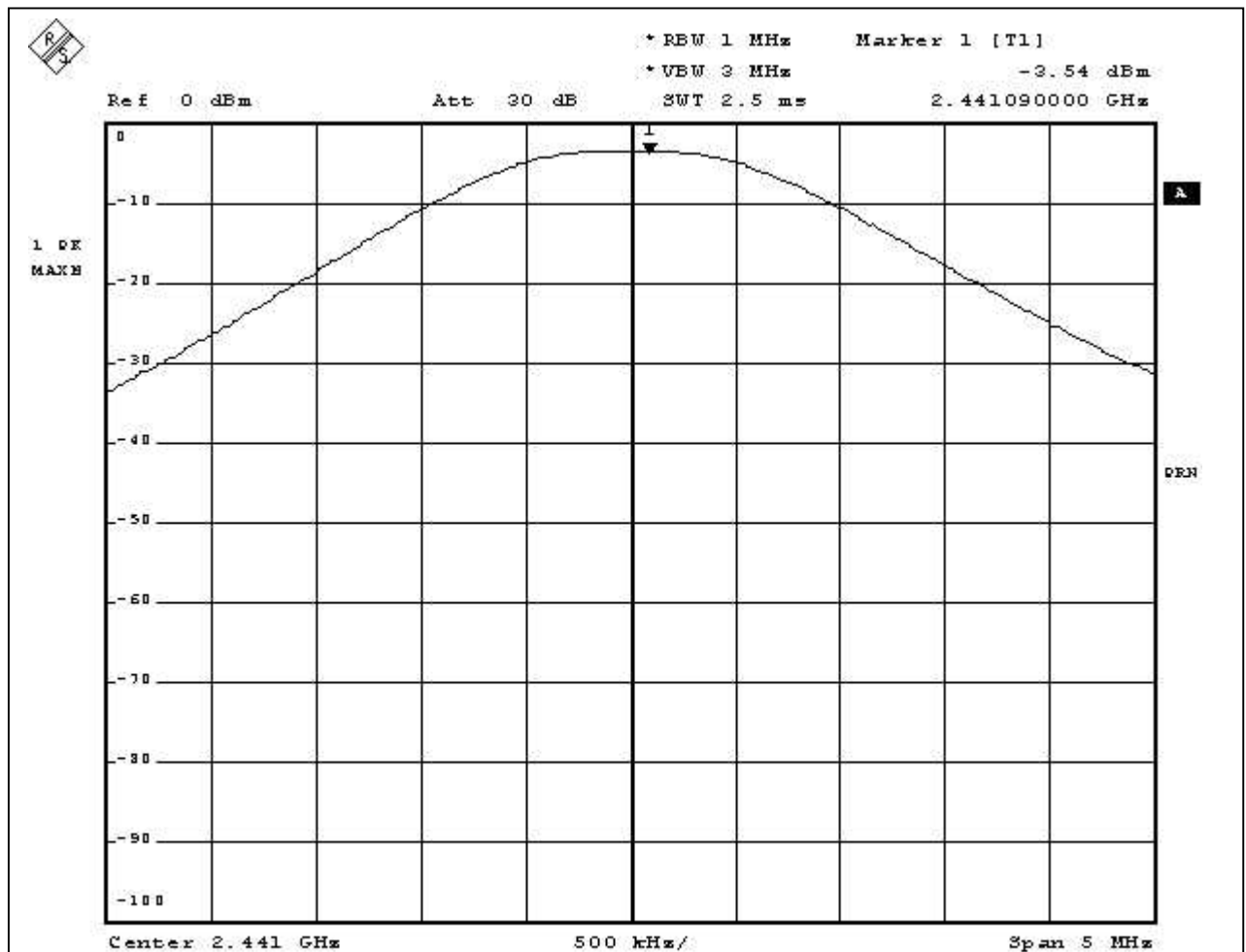
Peak power output – 2402MHz



Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 5 von 59
Page 5 of 59

Peak power output – 2441MHz

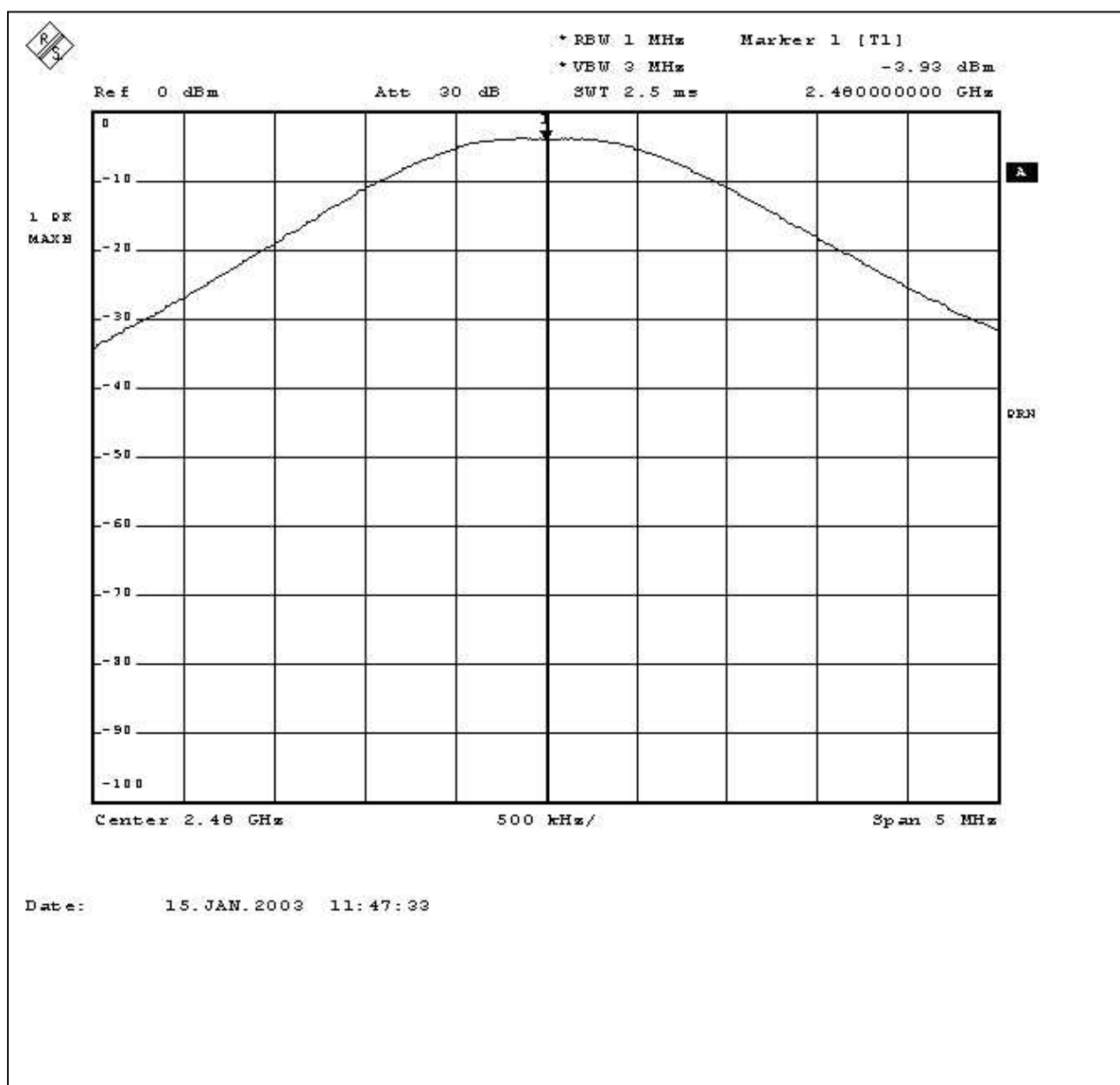


Date: 15. JAN. 2003 11:43:35

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 6 von 59
 Page 6 of 59

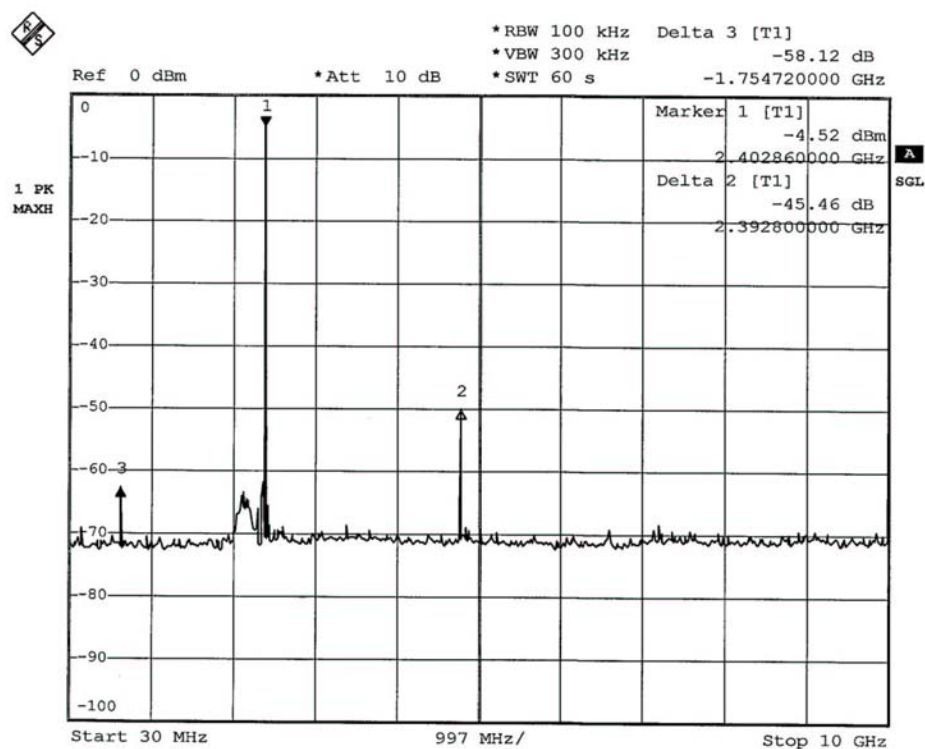
Peak power output – 2480MHz



Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 7 von 59
 Page 7 of 59

Spurious emission, conducted – 2402MHz
(30MHz – 10GHz)

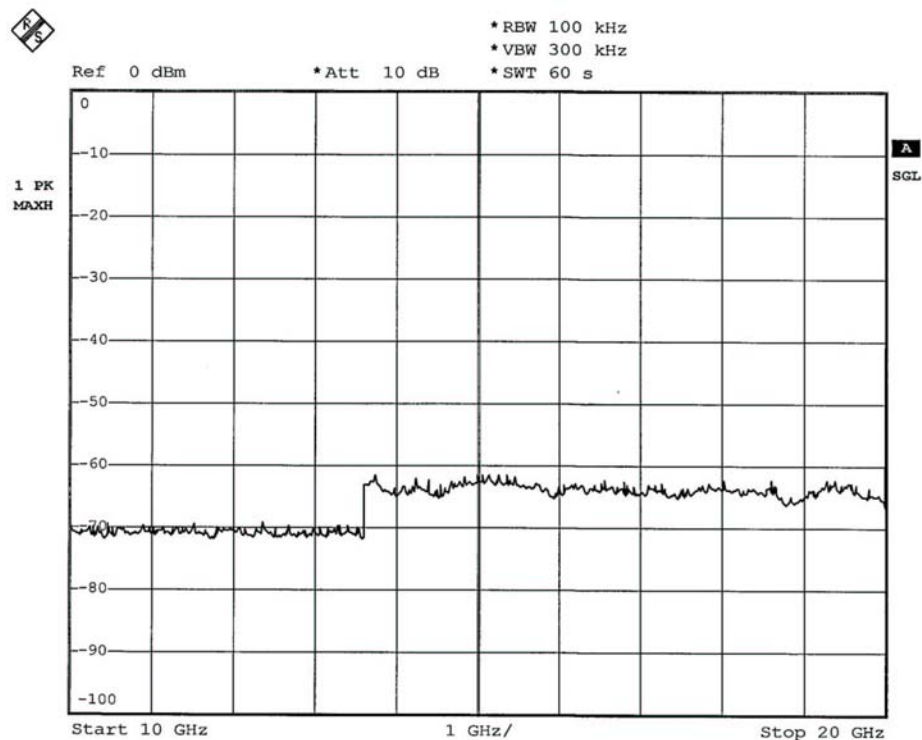


Date: 4.OCT.2002 08:20:42

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 8 von 59
Page 8 of 59

**Spurious emission, conducted – 2402MHz
(10GHz – 20GHz)**

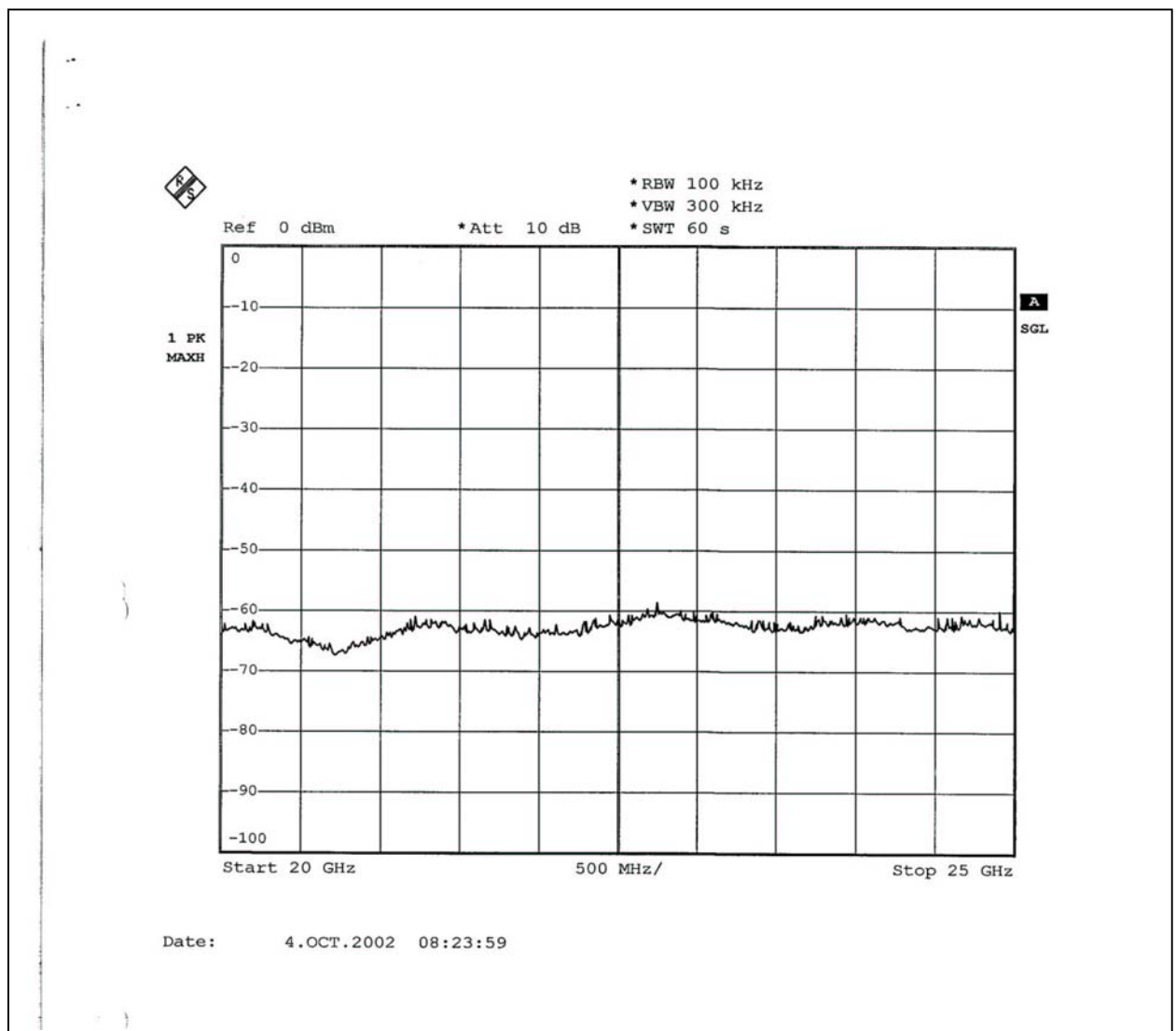


Date: 4.OCT.2002 08:22:41

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 9 von 59
Page 9 of 59

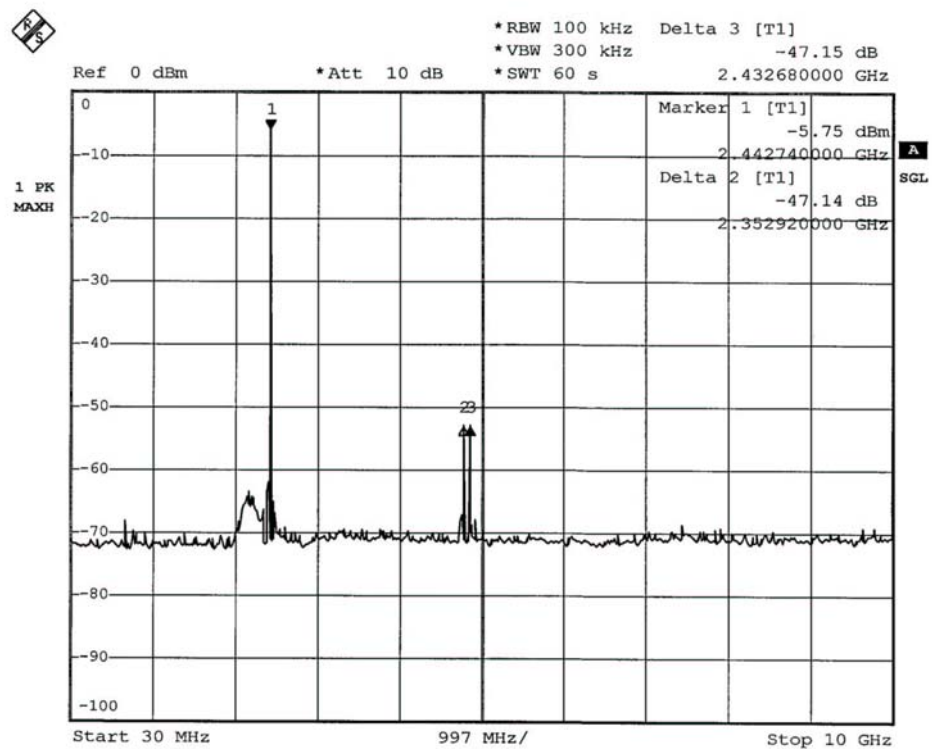
**Spurious emission, conducted – 2402MHz
(20GHz – 25GHz)**



Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 10 von 59
 Page 10 of 59

Spurious emission, conducted – 2441MHz
(30MHz – 10GHz)

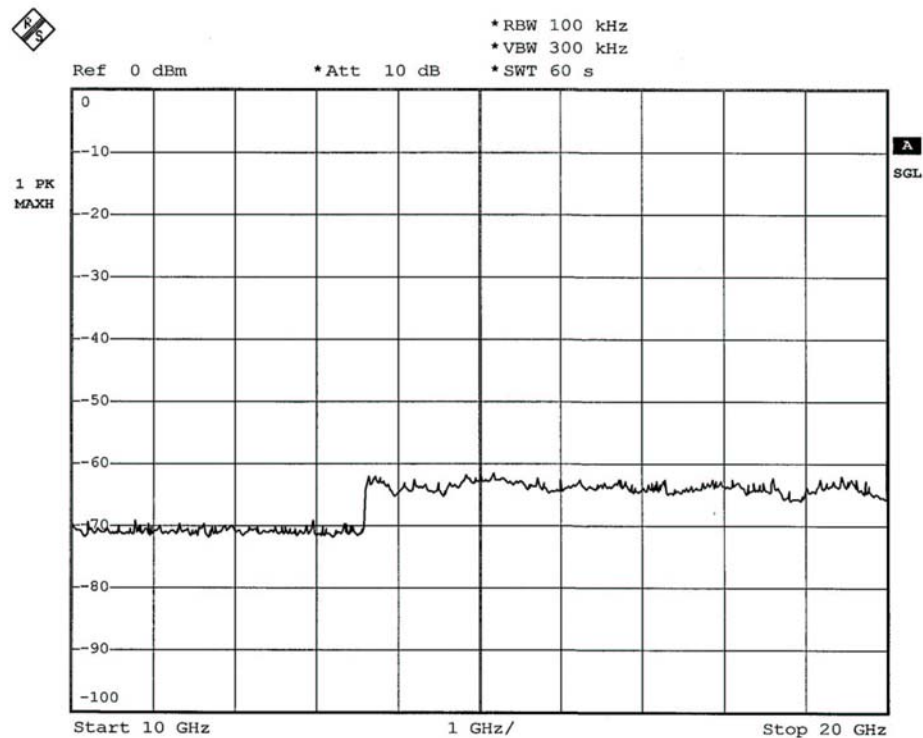


Date: 4.OCT.2002 08:53:07

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 11 von 59
Page 11 of 59

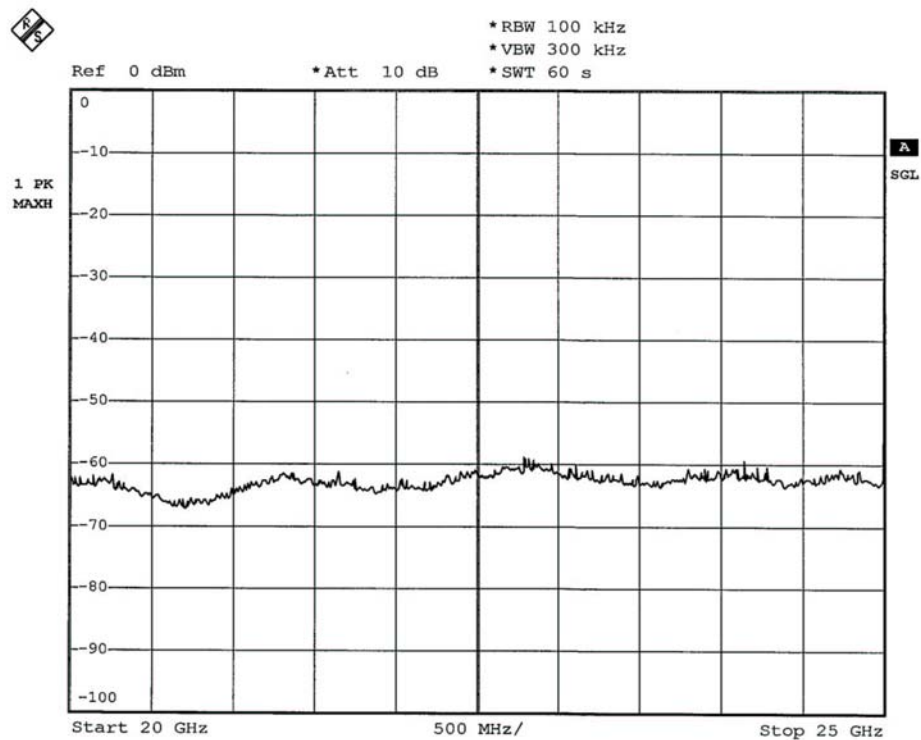
**Spurious emission, conducted – 2441MHz
(10GHz – 20GHz)**



Date: 4.OCT.2002 08:54:40

Seite 12 von 59
Page 12 of 59

**Spurious emission, conducted – 2441MHz
(20GHz – 25GHz)**

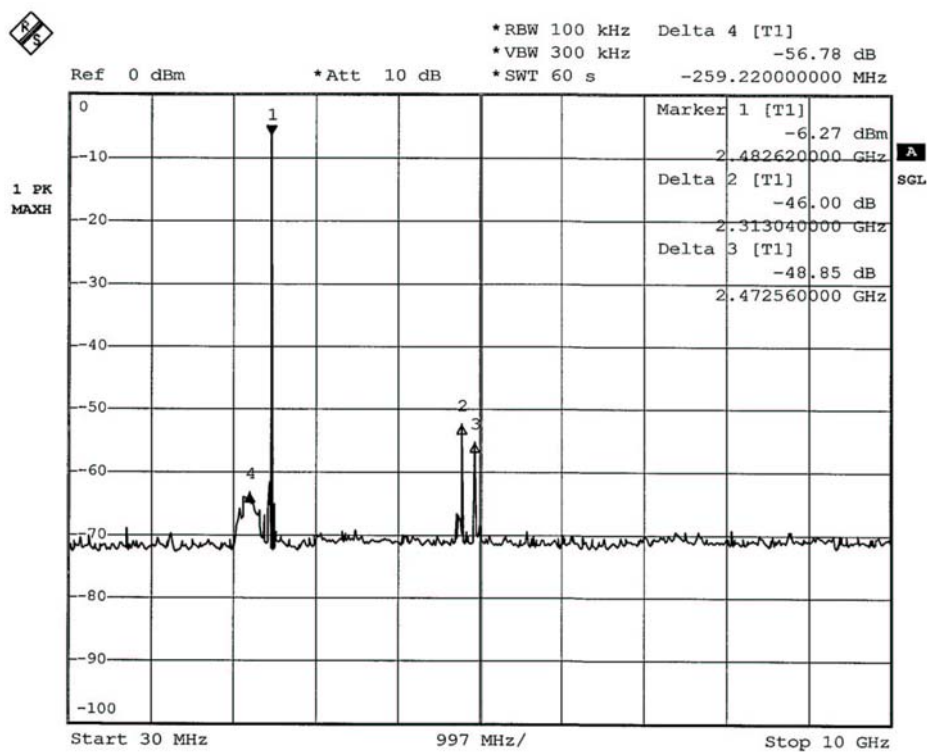


Date: 4.OCT.2002 08:59:00

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 13 von 59
 Page 13 of 59

Spurious emission, conducted – 2480MHz
(30MHz – 10GHz)

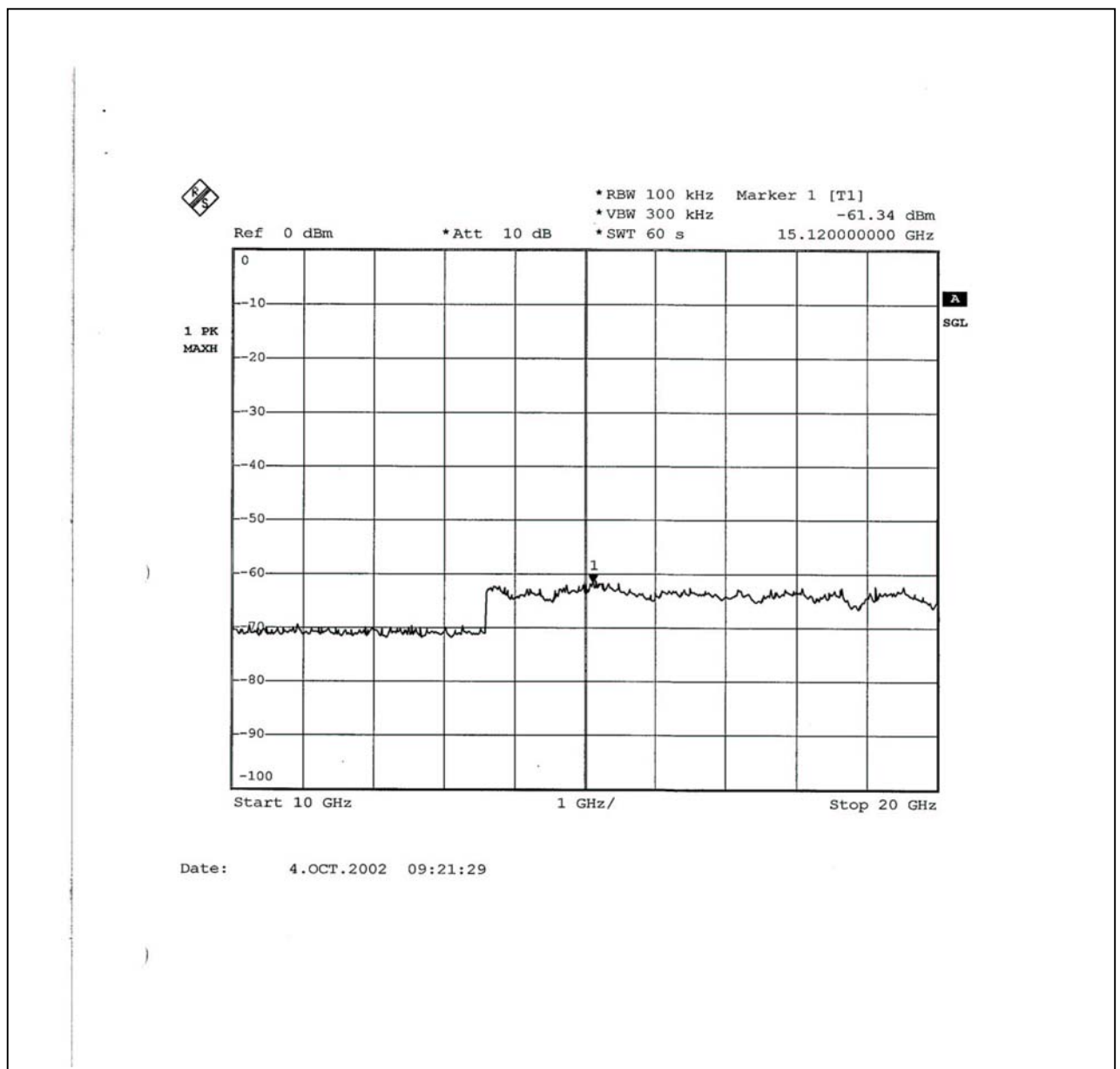


Date: 4.OCT.2002 09:20:09

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 14 von 59
Page 14 of 59

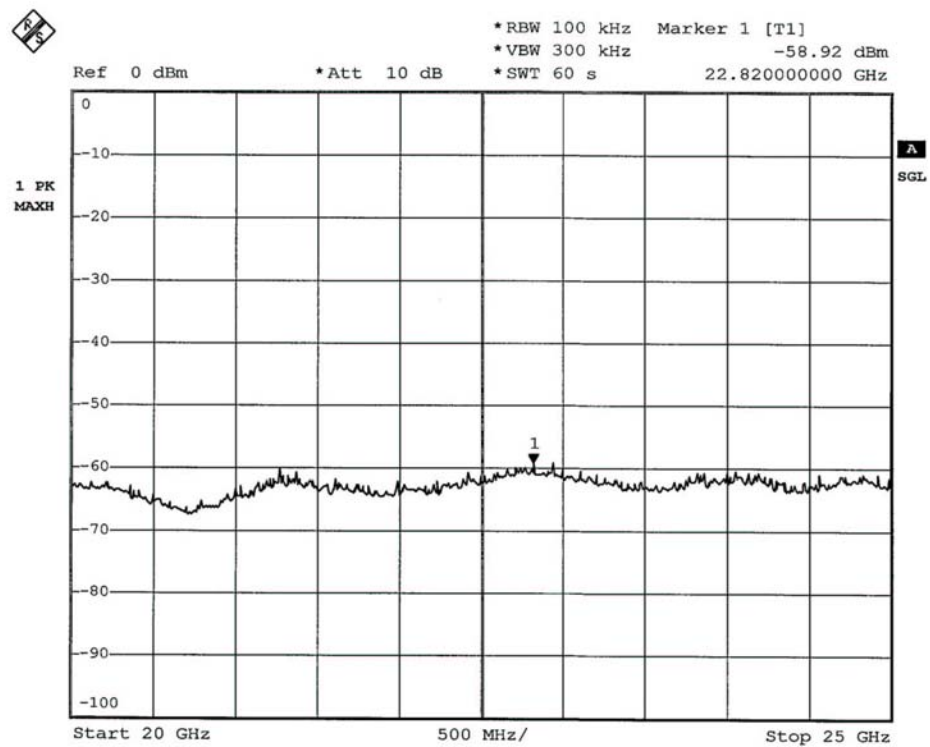
**Spurious emission, conducted – 2480MHz
(10GHz – 20GHz)**



Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 15 von 59
Page 15 of 59

Spurious emission, conducted – 2480MHz
(20GHz – 25GHz)



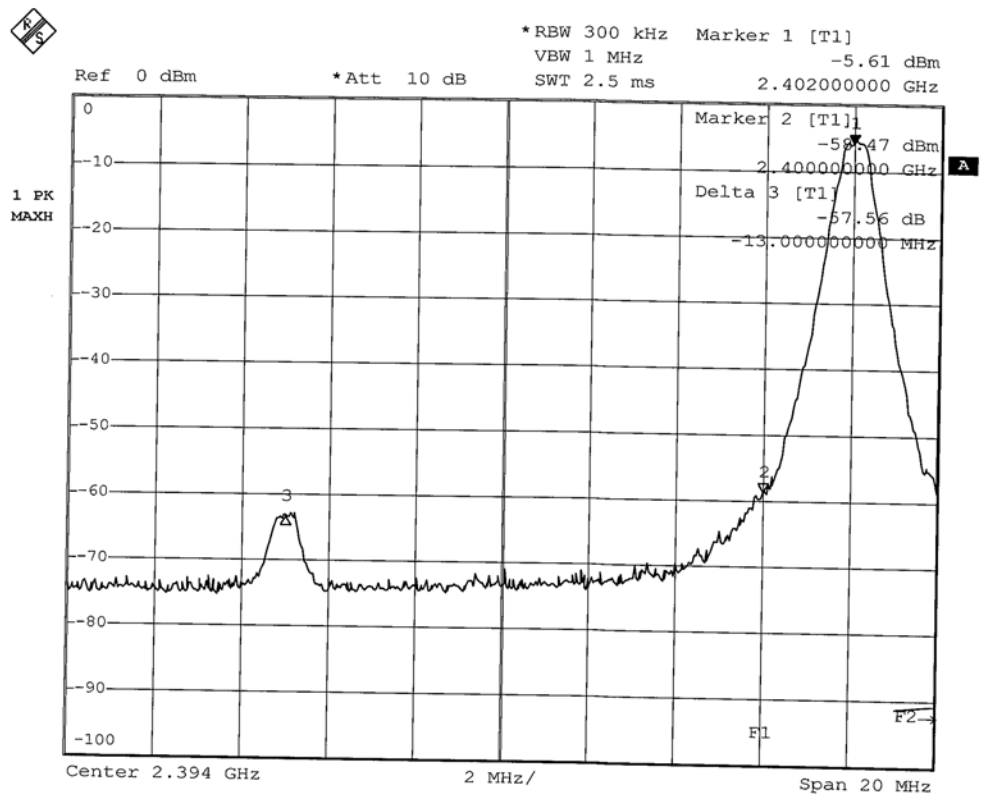
Date: 4.OCT.2002 09:22:59

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 16 von 59
 Page 16 of 59

Spurious emissions, conducted – 2402MHz

Band-edge compliance



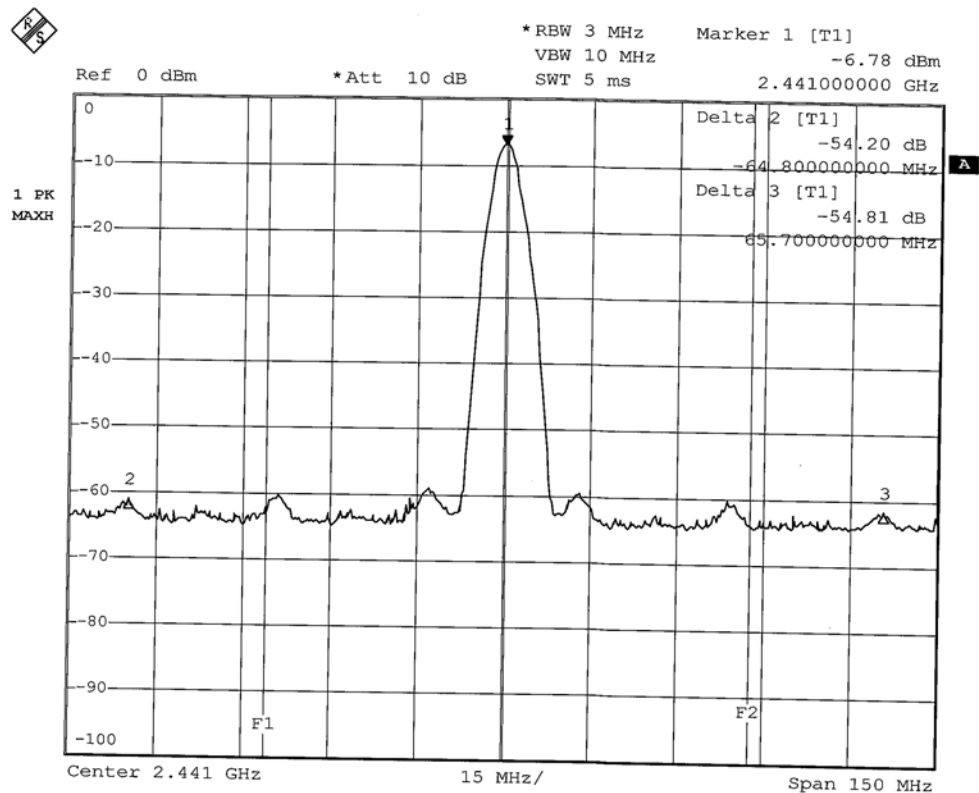
Date: 28.JAN.2003 10:38:32

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 17 von 59
 Page 17 of 59

Spurious emissions, conducted – 2441MHz

Band-edge compliance



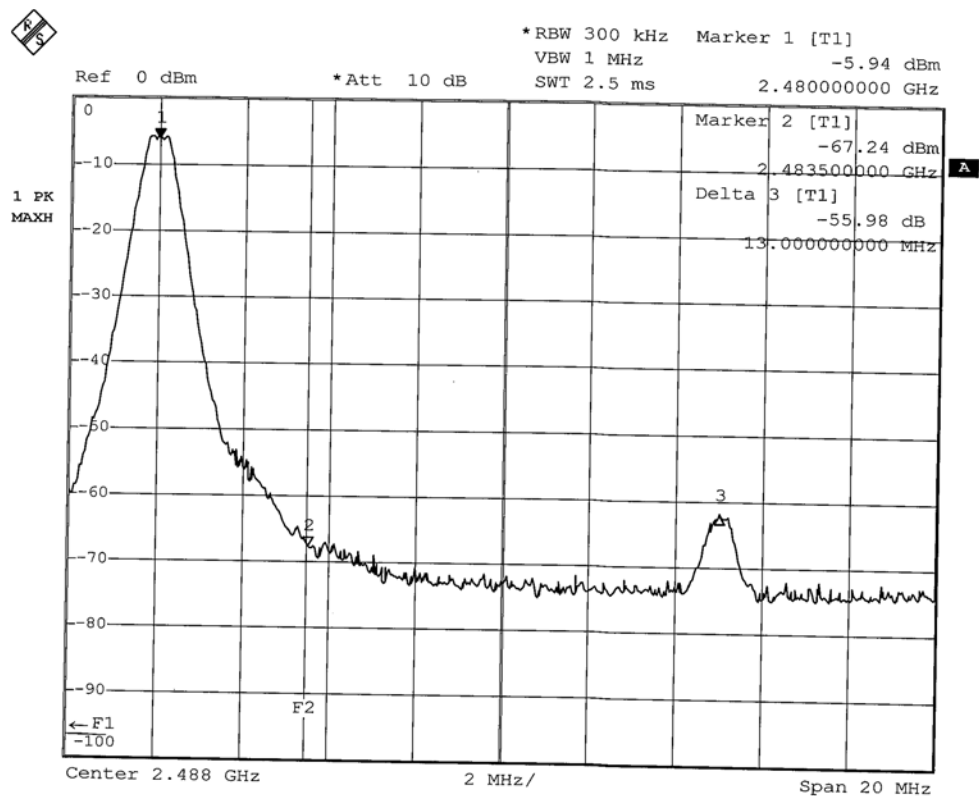
Date: 28.JAN.2003 10:34:27

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 18 von 59
 Page 18 of 59

Spurious emissions, conducted – 2480MHz

Band-edge compliance



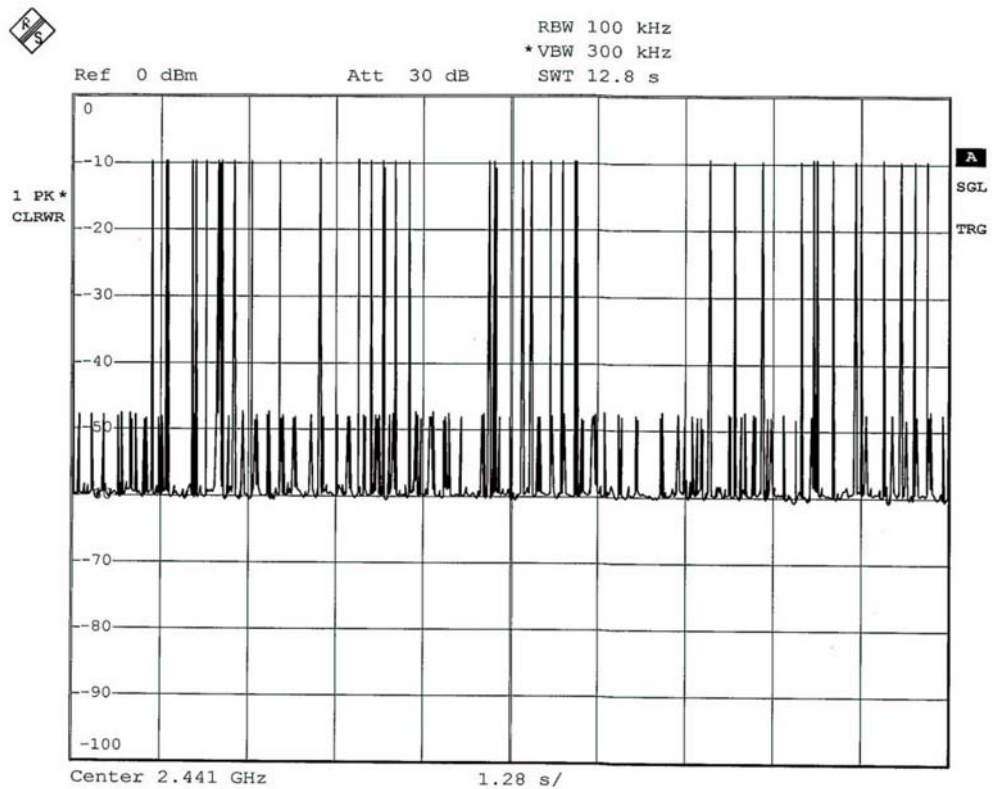
Date: 28.JAN.2003 10:37:13

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 19 von 59
Page 19 of 59

Dwell time

Channel occupancy DH5 packet



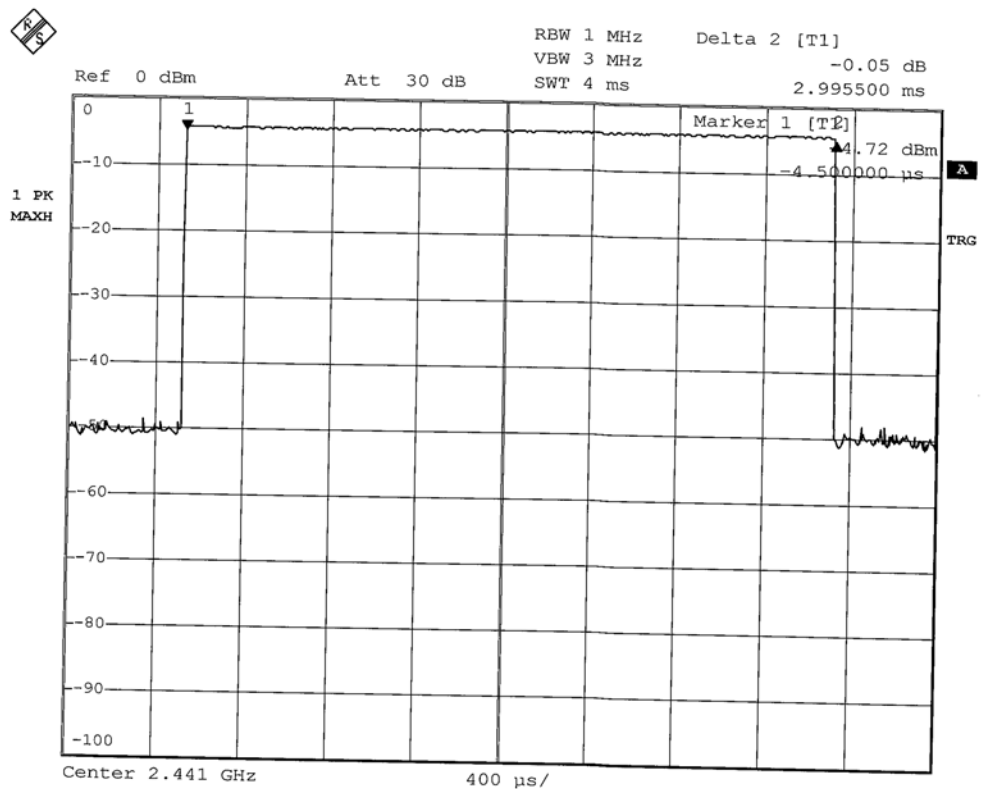
Date: 22.JAN.2003 17:25:44

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 20 von 59
Page 20 of 59

Dwell time

Burst duration DH5 packet

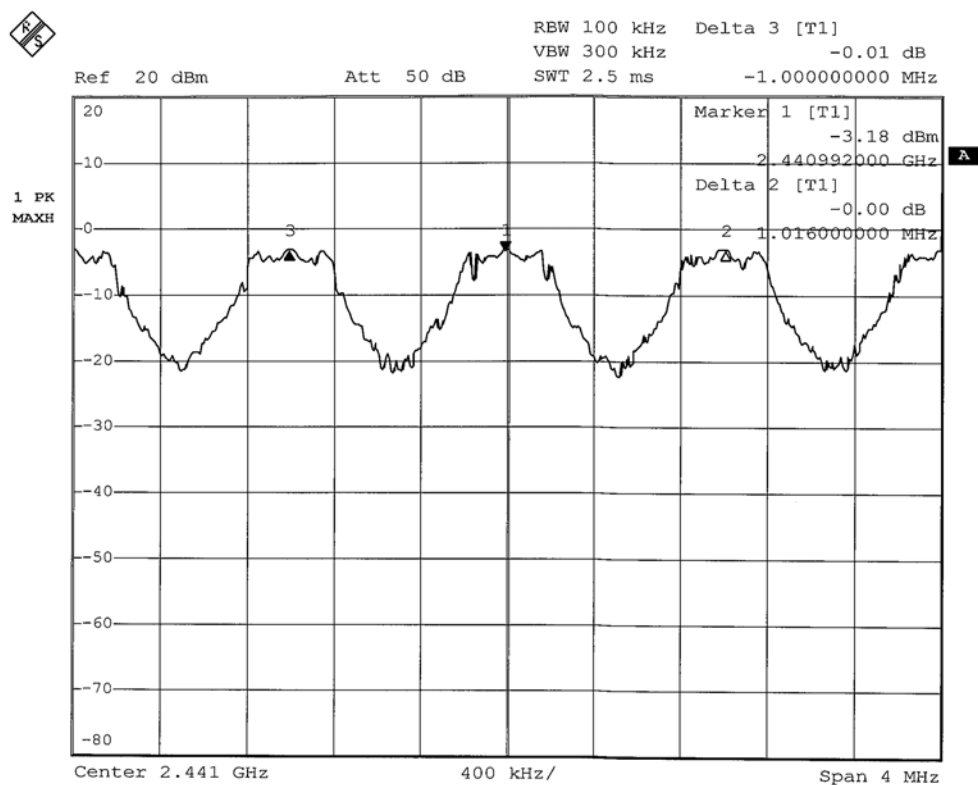


Date: 27.JAN.2003 18:31:08

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 21 von 59
 Page 21 of 59

Channel separation

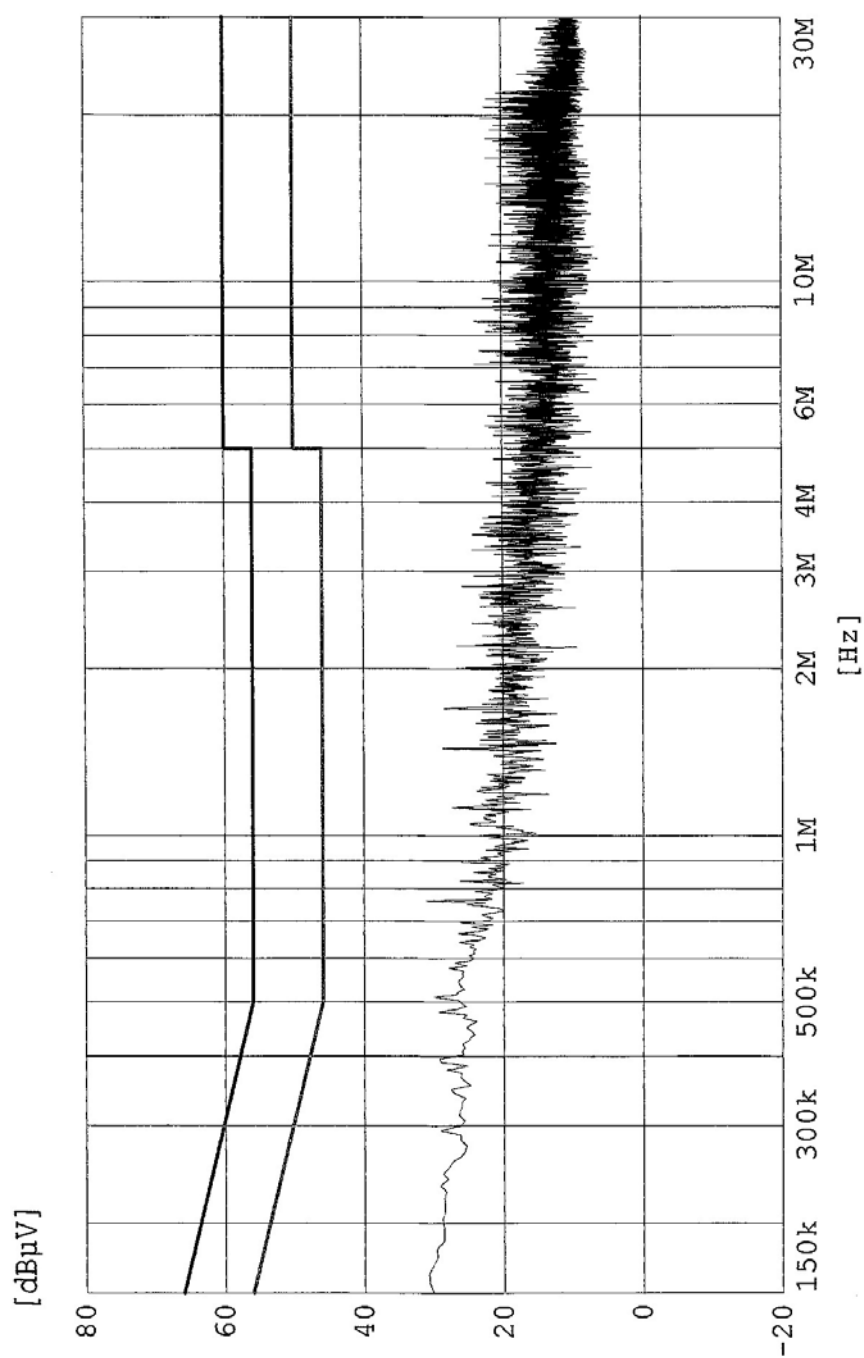


Date: 27.JAN.2003 18:37:04

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 22 von 59
Page 22 of 59

Disturbance voltage in AC mains

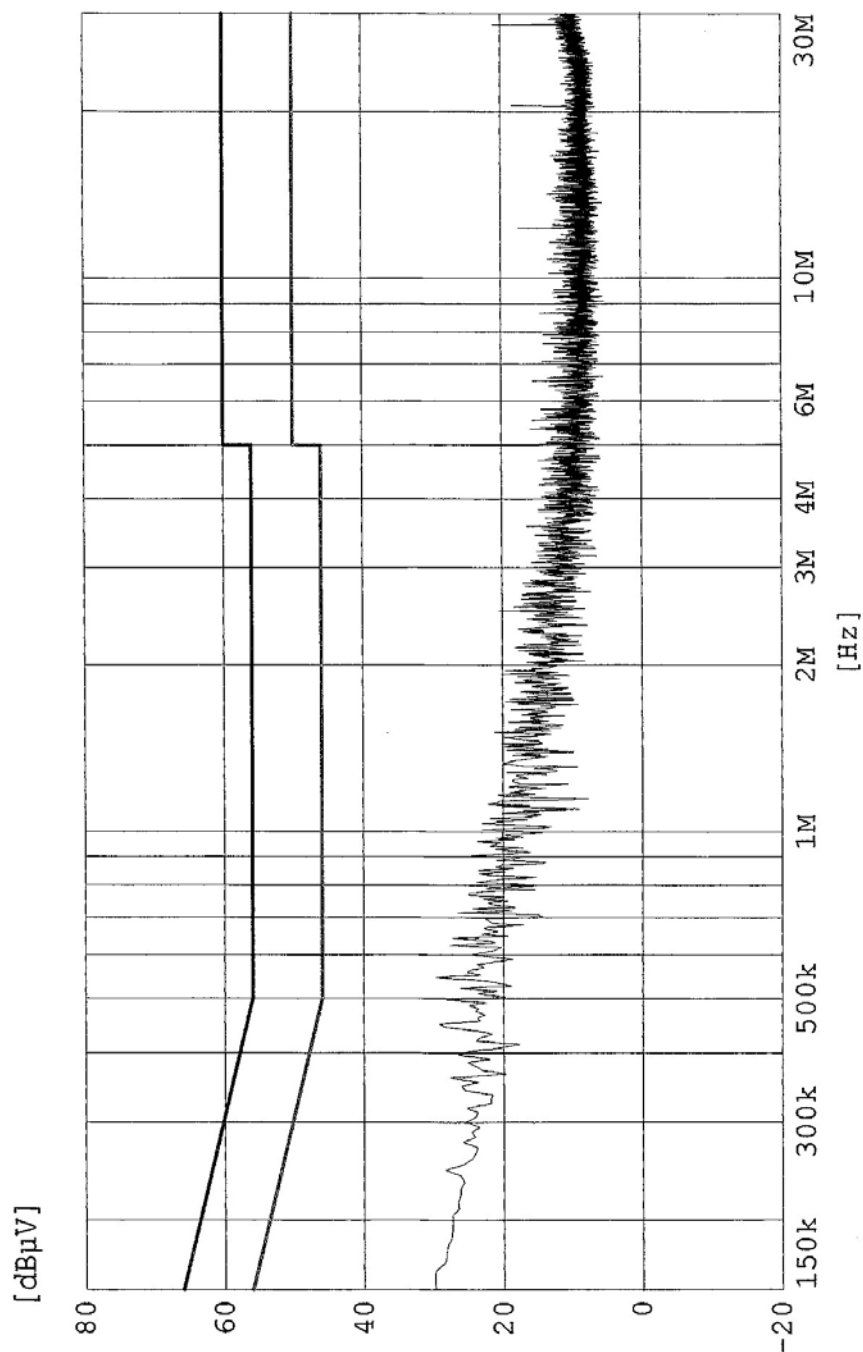


MES 05674B12.PK
LIM FCC 15.207 QP NEW
LIM FCC 15.207 AV NEW

Freeq. 0.782 MHz
QP 18.1
AV 1.9

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 23 von 59
Page 23 of 59



MES 05674B13.PK
LTM FCC 15.207 QP NEW
LTM FCC 15.207 AV NEW

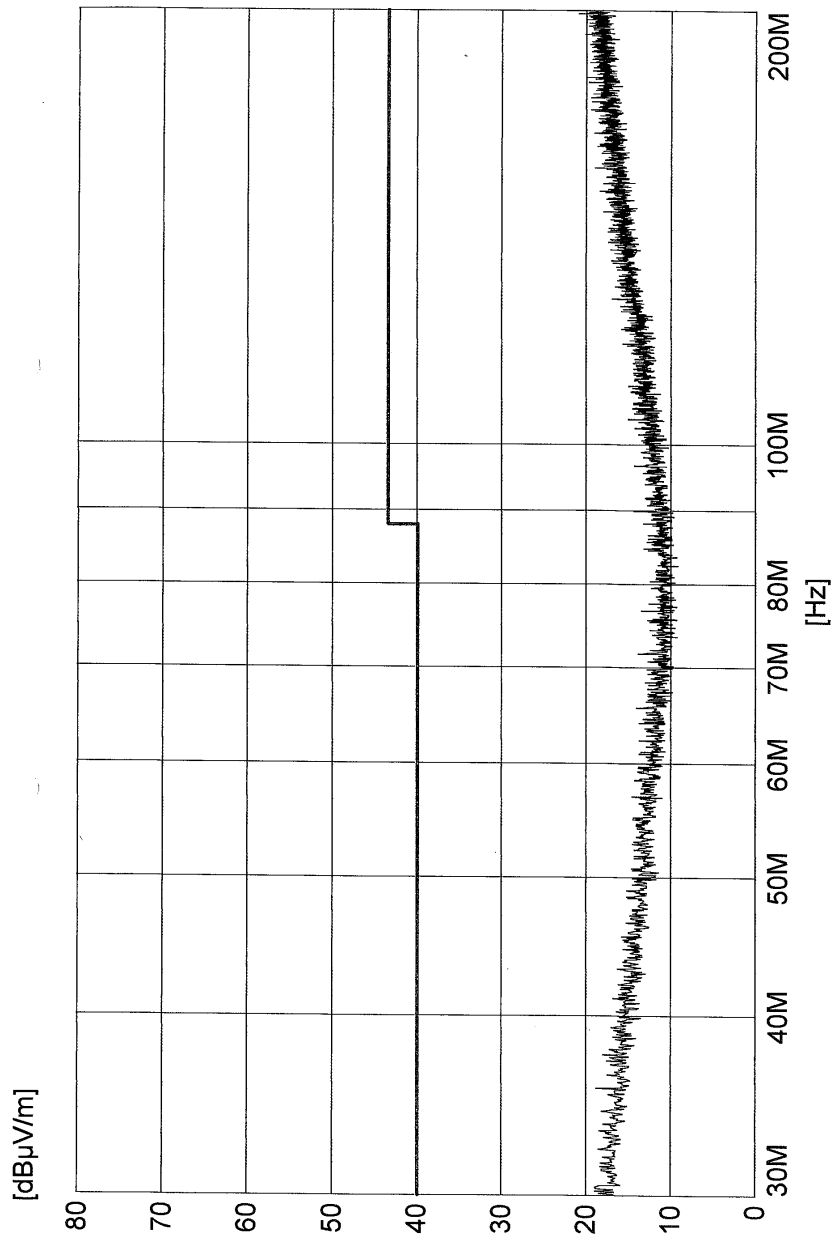
Freq 28.6716MHz
20.4777MHz
Q.P 18.9
15.2
AV 16.8
14.1

N
ETL clip

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 24 von 59
 Page 24 of 59

Spurious Radiated Emissions (2402MHz: 30MHz – 25GHz)

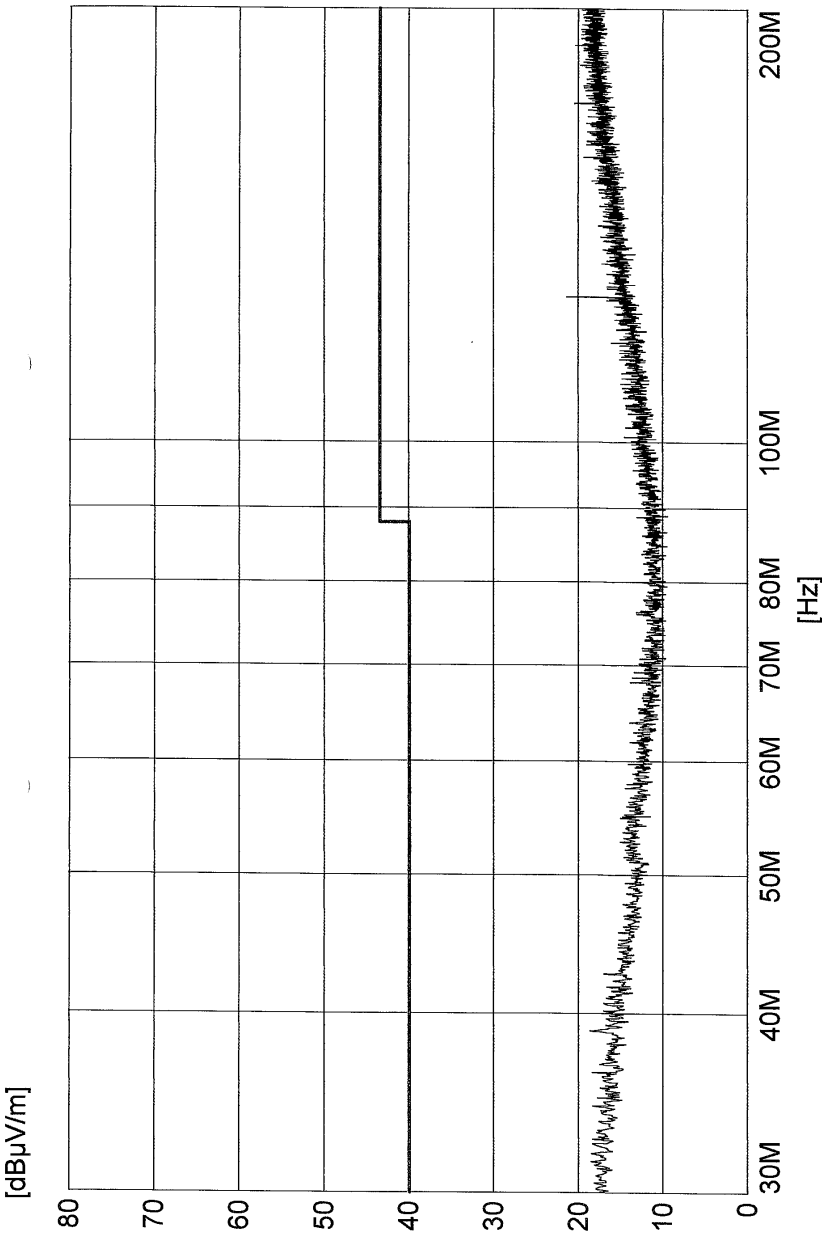


— MES 05383A20.PK
 — LIM FCC P15.247 (USA)

u.f.g.
 2402
 H
 FCC.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 25 von 59
Page 25 of 59

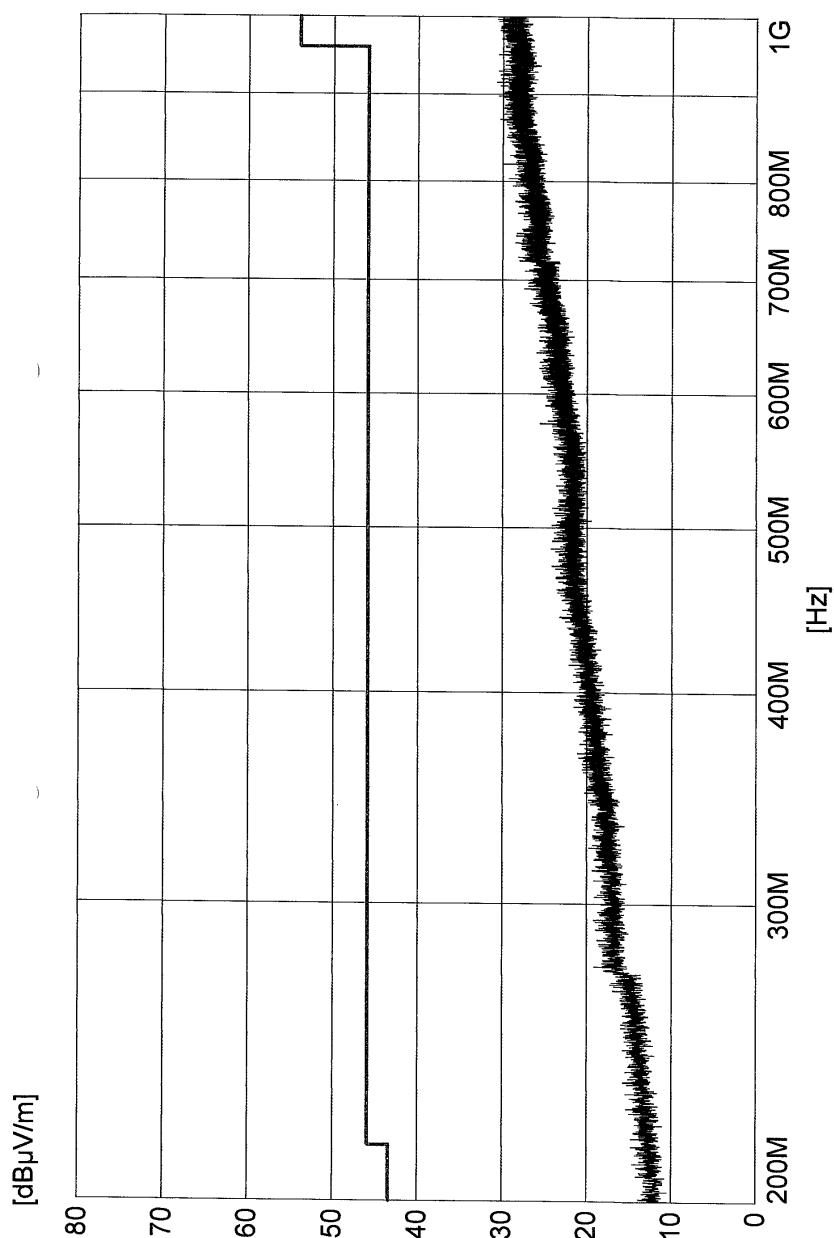


MES 05383A19.PK
LIM FCC P15.247 (USA)

2402
Y
FCC

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 26 von 59
 Page 26 of 59

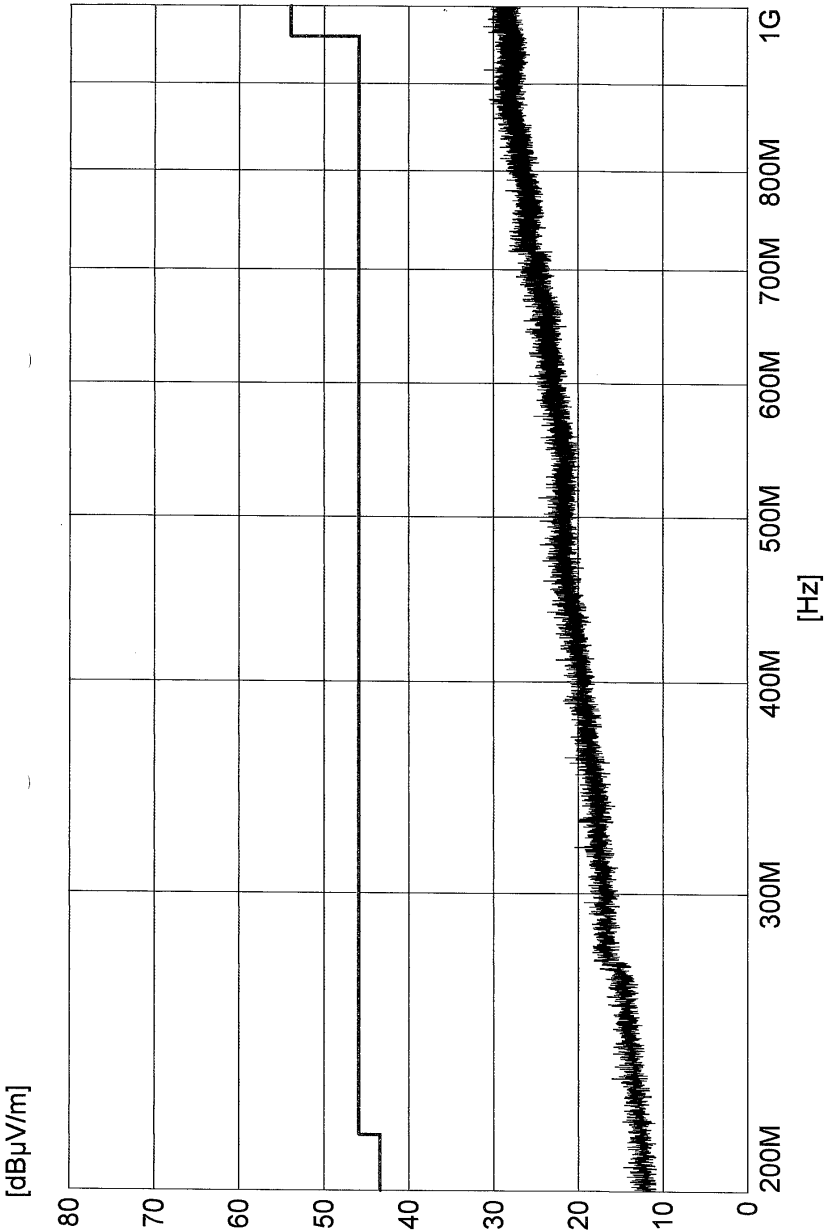


MES 05383A30.PK
 LIM FCC P15.247 (USA)

idag
 2402
 H
 FCC

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 27 von 59
Page 27 of 59

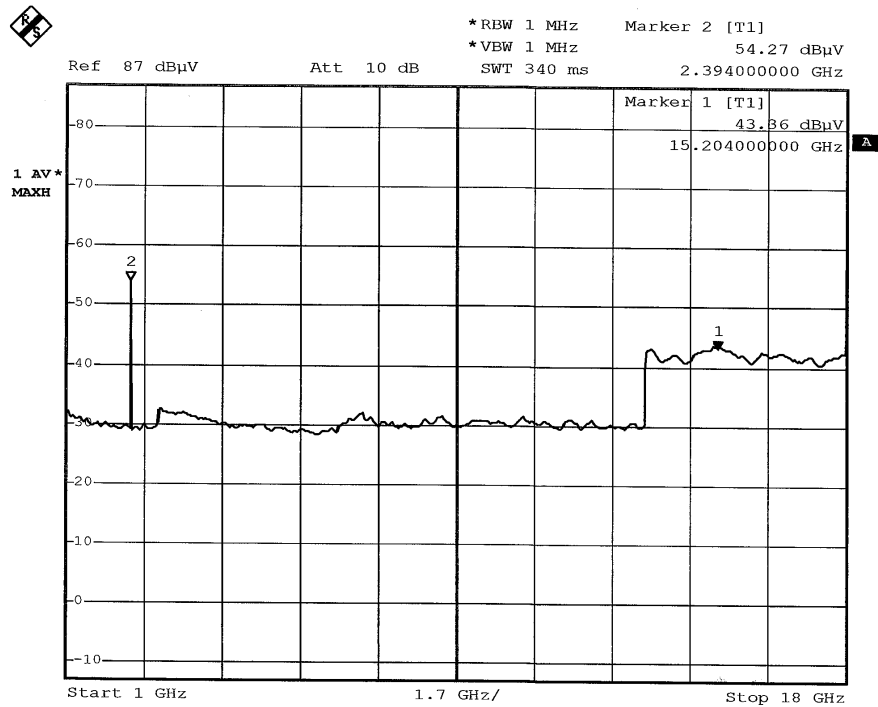


MES 05383A29.PK
LIM FCC P15.247 (USA)

05383A
2402
V
FCC

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 28 von 59
 Page 28 of 59

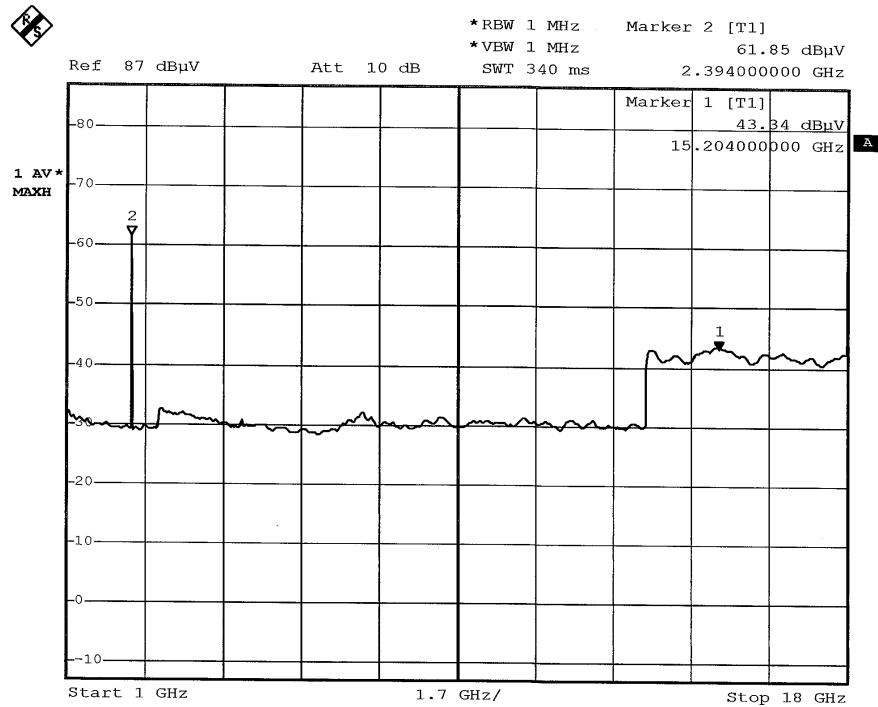


Date: 3.OCT.2002 11:54:58

FCC
 2402
 H
 edq.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 29 von 59
Page 29 of 59

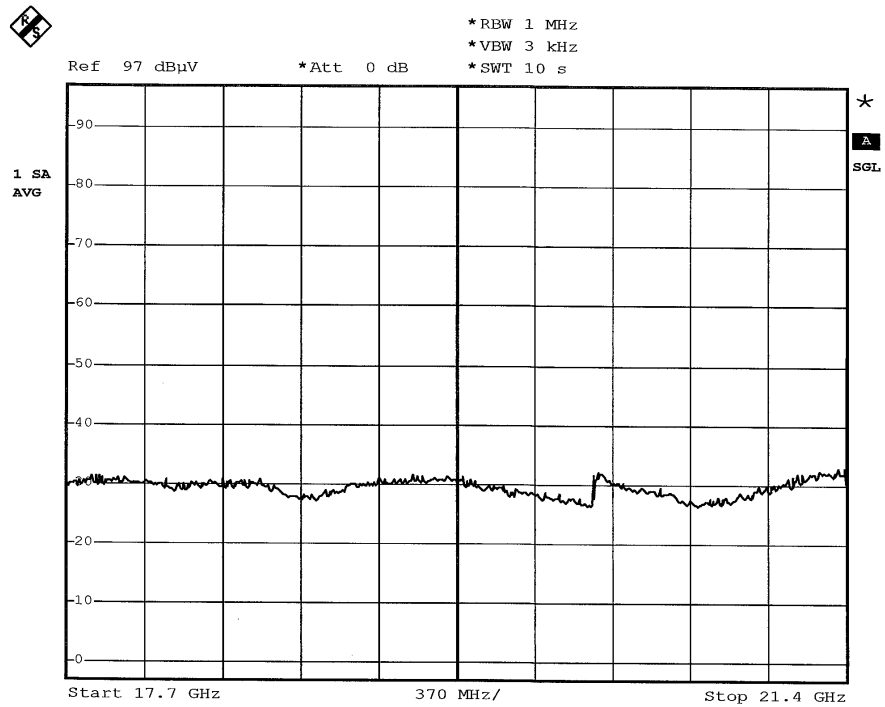


Date: 3.OCT.2002 11:56:44

FCC
2402
V
ictiq.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 30 von 59
Page 30 of 59

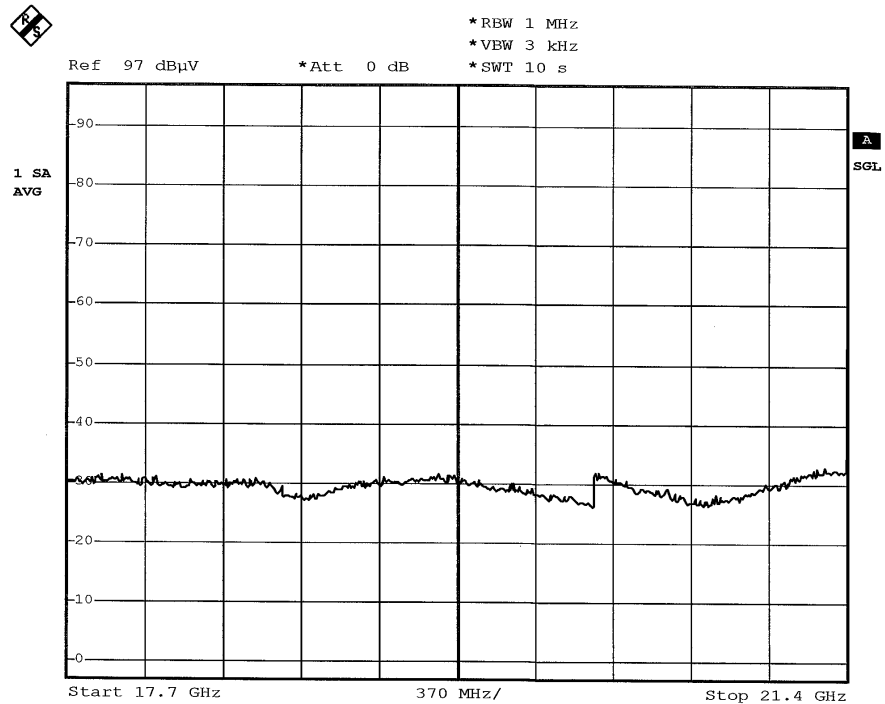


Date: 3.OCT.2002 10:19:44

FCC
2402
H
idig.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 31 von 59
Page 31 of 59

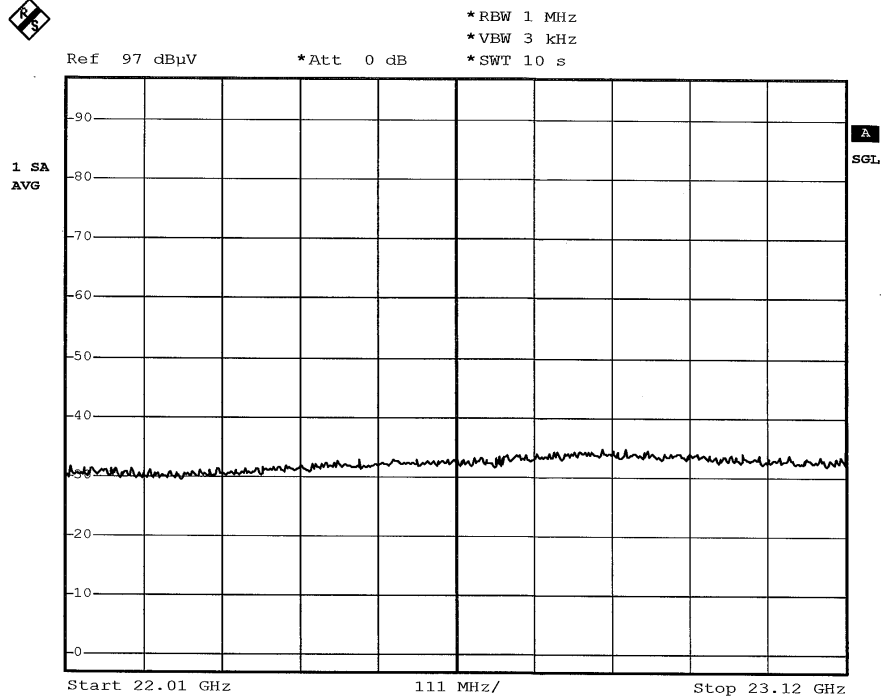


Date: 3.OCT.2002 10:22:57

FCC
2402
V
idig

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 32 von 59
Page 32 of 59

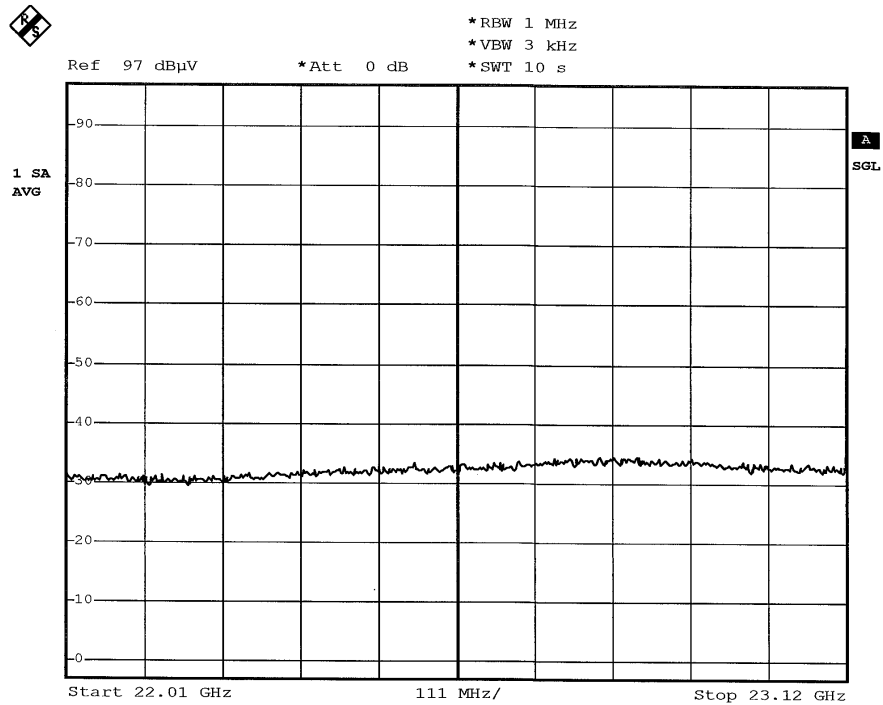


Date: 3.OCT.2002 10:20:52

FCC
2402
H
avg

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 33 von 59
Page 33 of 59

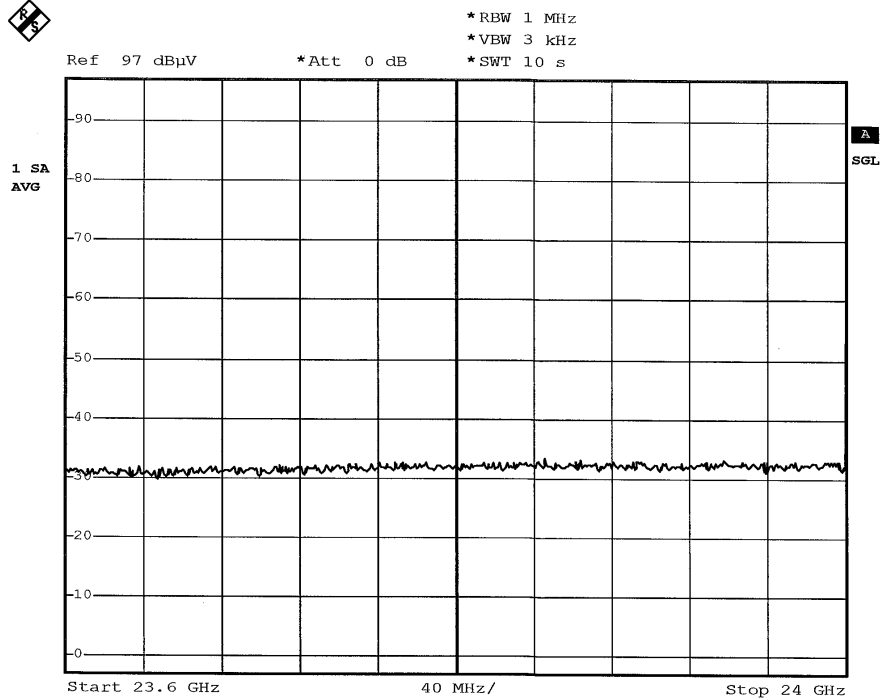


Date: 3.OCT.2002 10:23:28

FCC
2402
V
Relig.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 34 von 59
Page 34 of 59

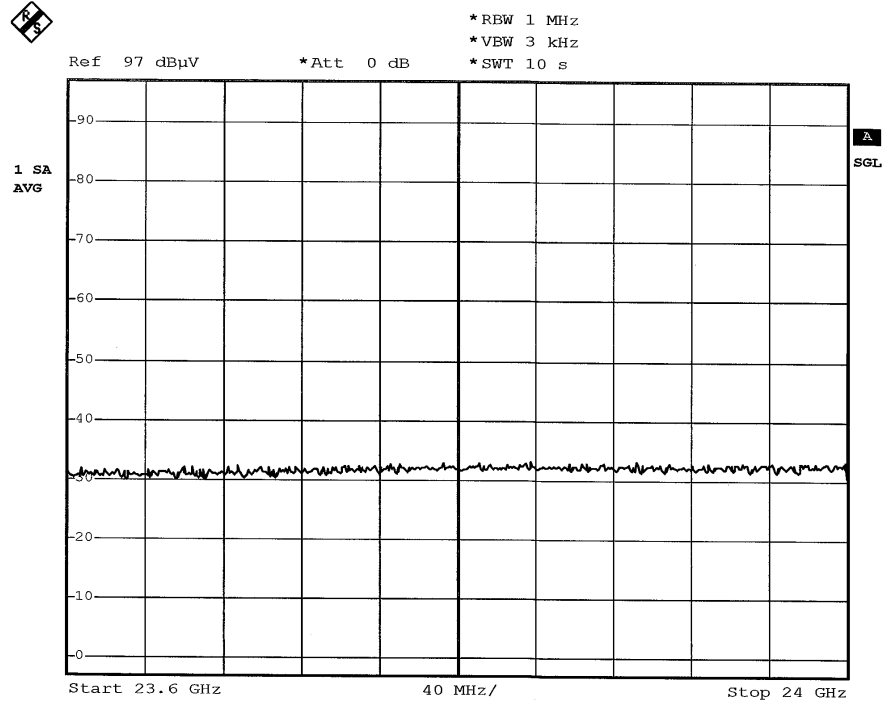


Date: 3.OCT.2002 10:21:38

FCC
2402
H
idliq.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 35 von 59
Page 35 of 59



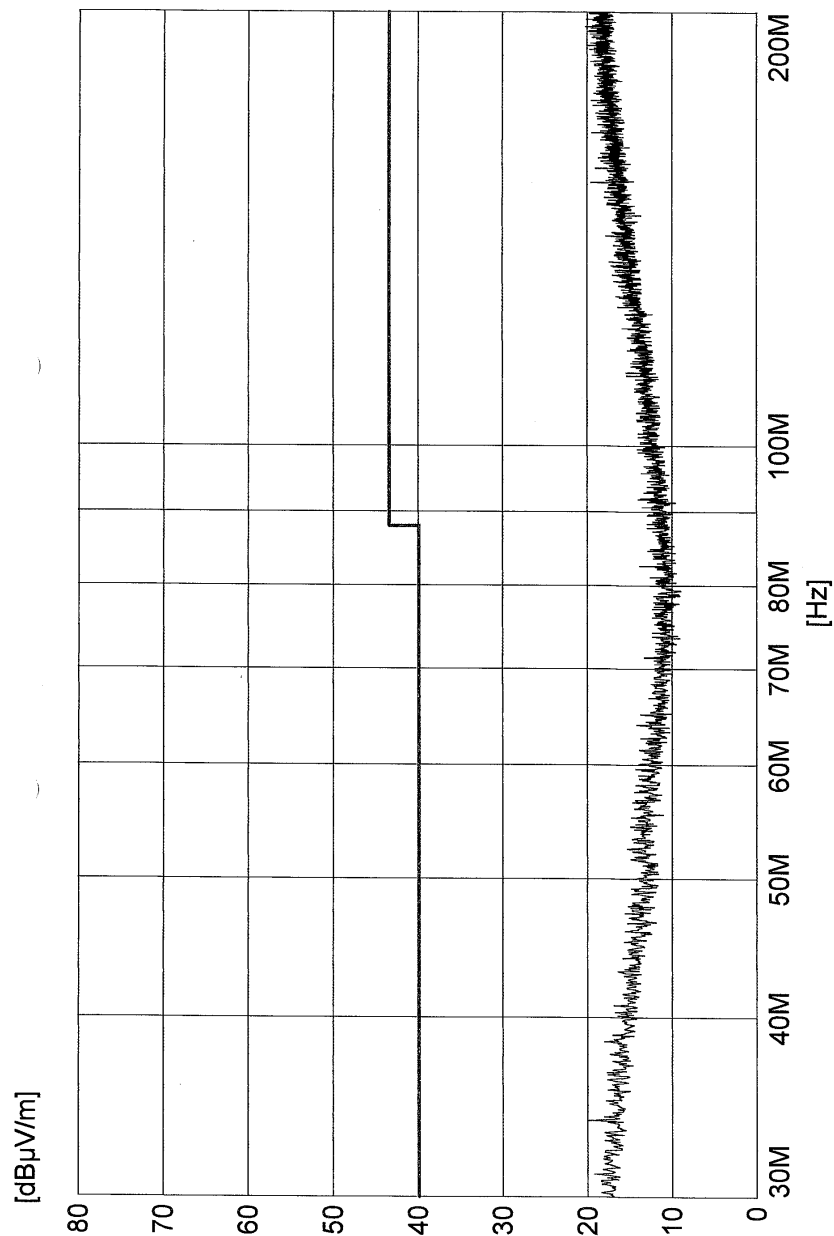
Date: 3.OCT.2002 10:22:17

FCC
2402
V
idig

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 36 von 59
 Page 36 of 59

Spurious Radiated Emissions (2441MHz: 30MHz – 25GHz)

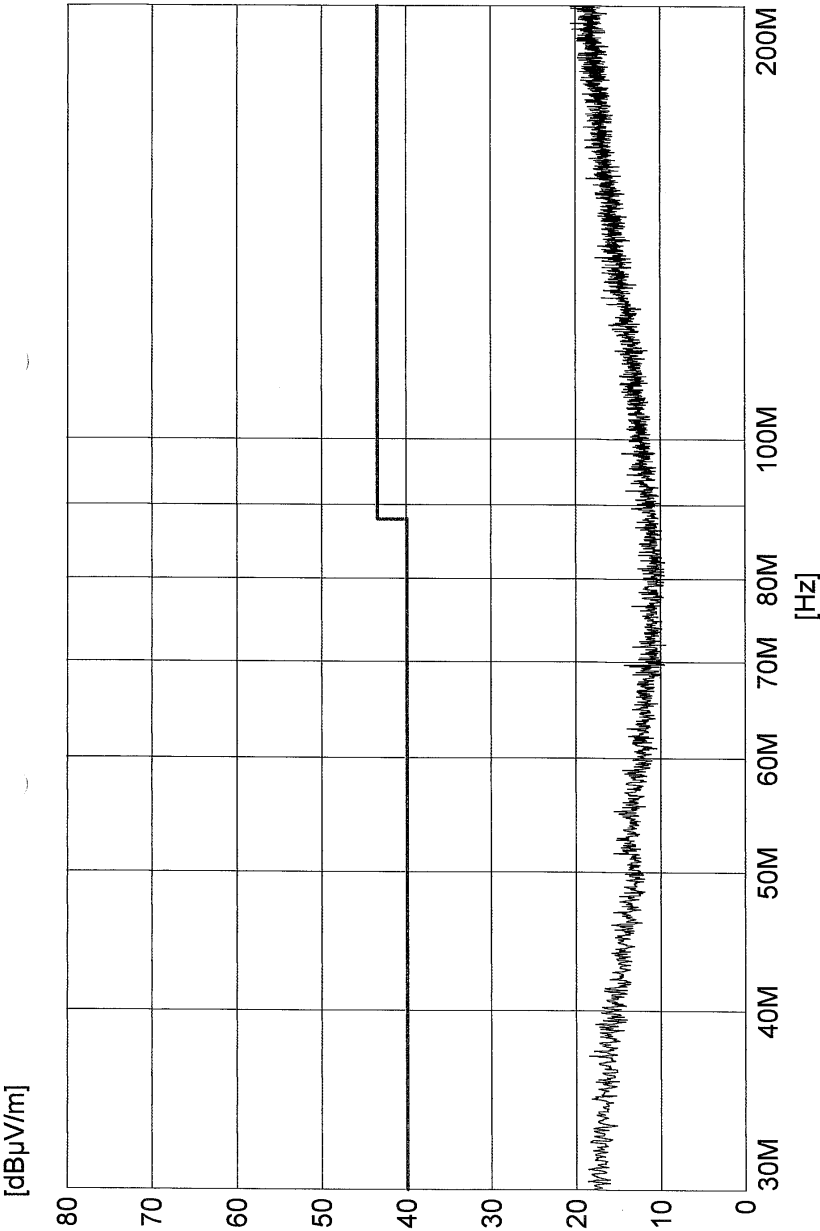


— MES 05383A21.PK
 - - - LIM FCC P15.247 (USA)

idbay
 2441
 H
 FCC

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 37 von 59
Page 37 of 59

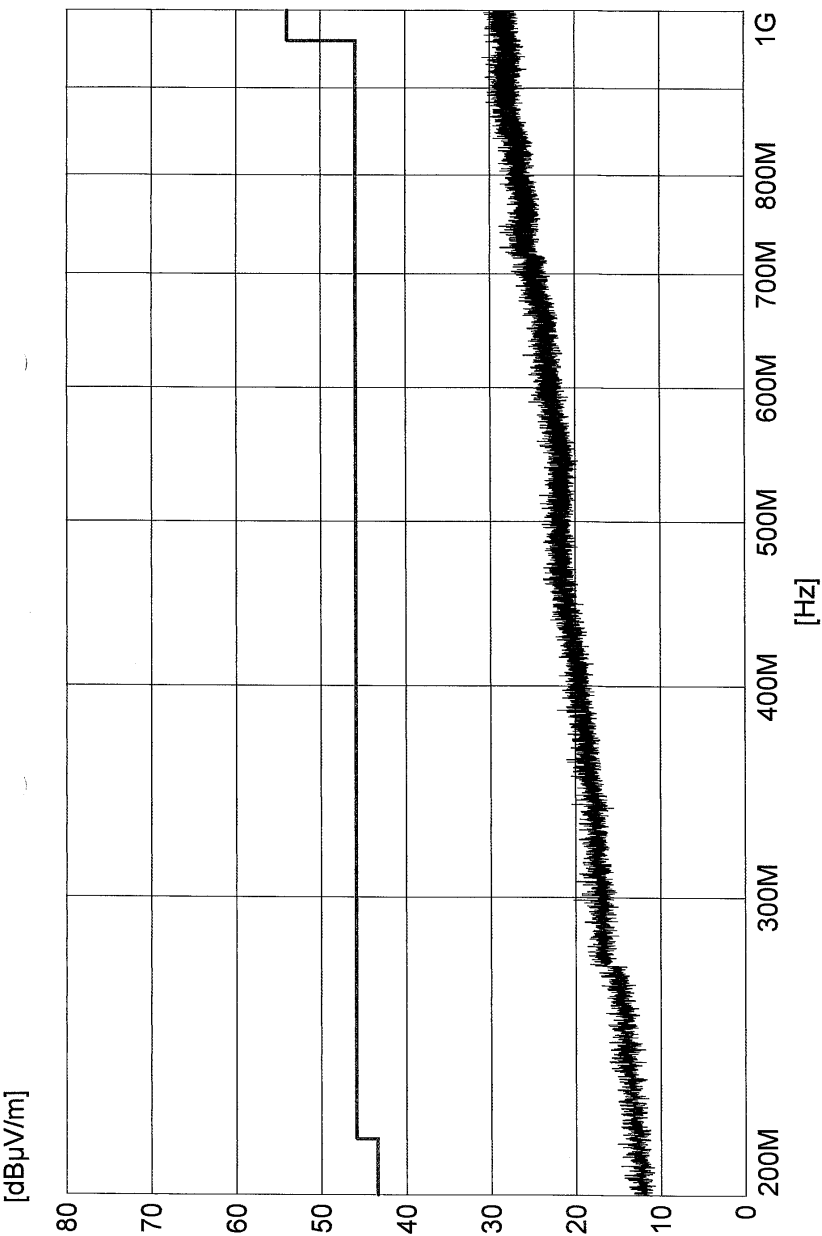


MES 05383A22.PK
LIM FCC P15.247 (USA)

idig.
2441
V
FCC.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 38 von 59
Page 38 of 59

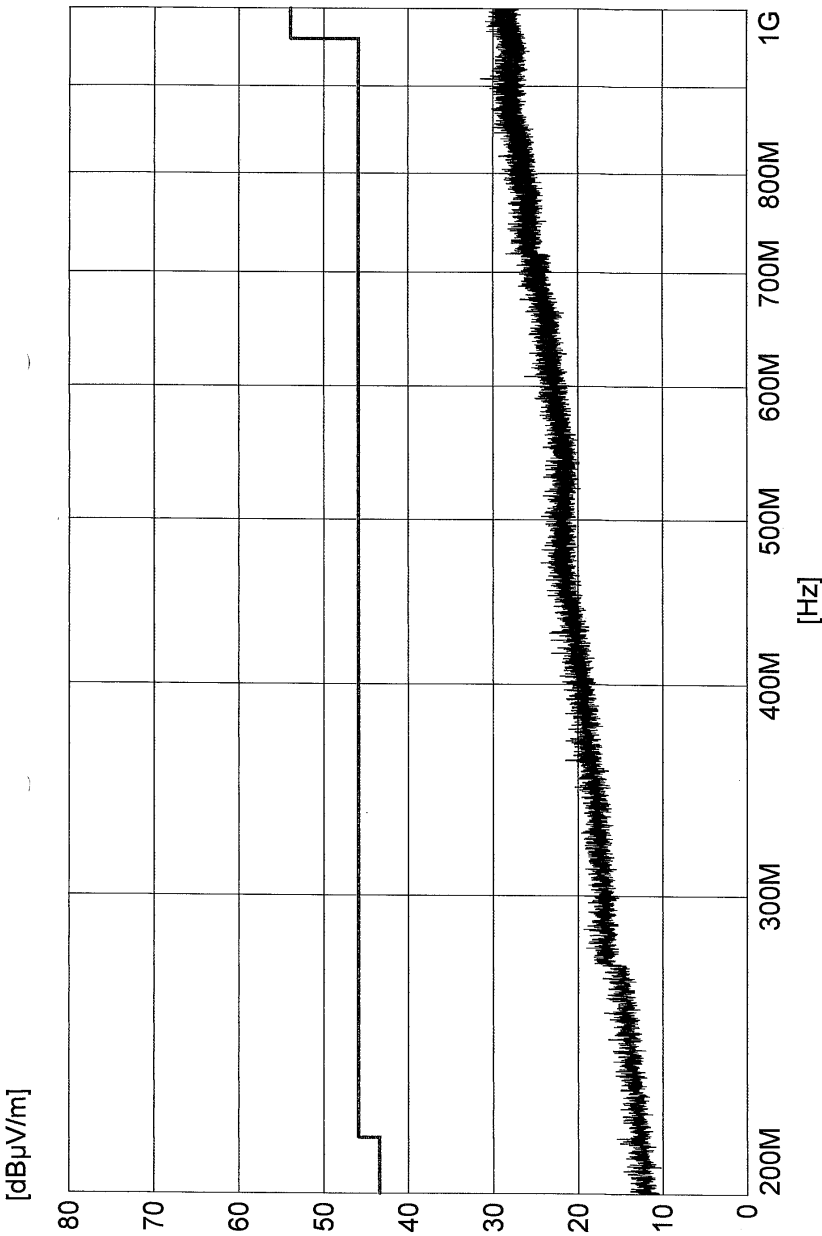


MES 05383A27.PK
LIM FCC P15.247 (USA)

icbq
2441
H
FCC

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 39 von 59
Page 39 of 59

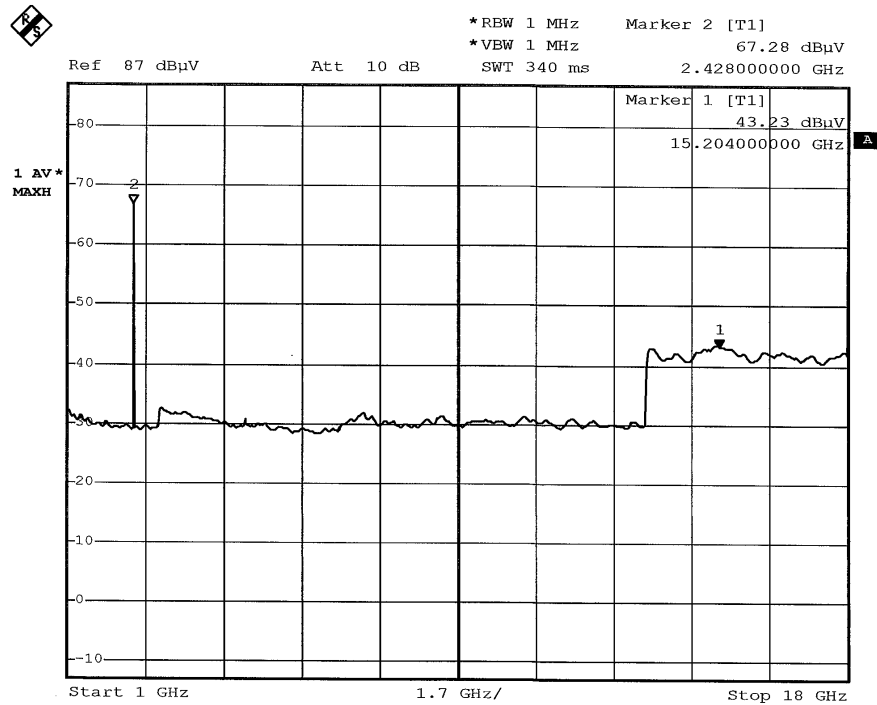


MES 05383A28.PK
LIM FCC P15.247 (USA)

id: 9
2441
V
FCC

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 40 von 59
 Page 40 of 59

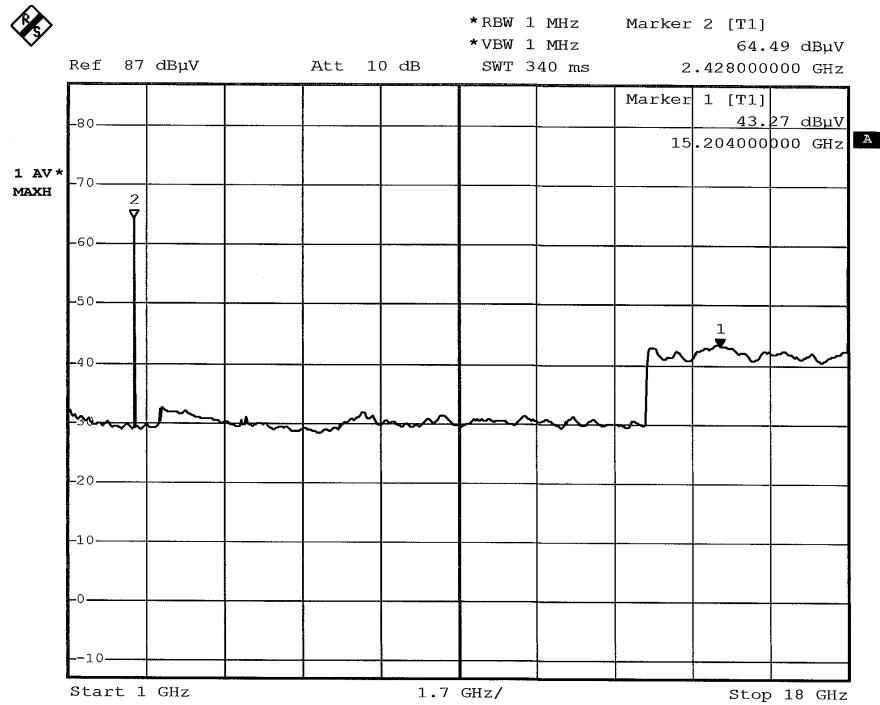


Date: 3.OCT.2002 12:00:54

FCC
 2441
 H
 richtig.

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 41 von 59
 Page 41 of 59

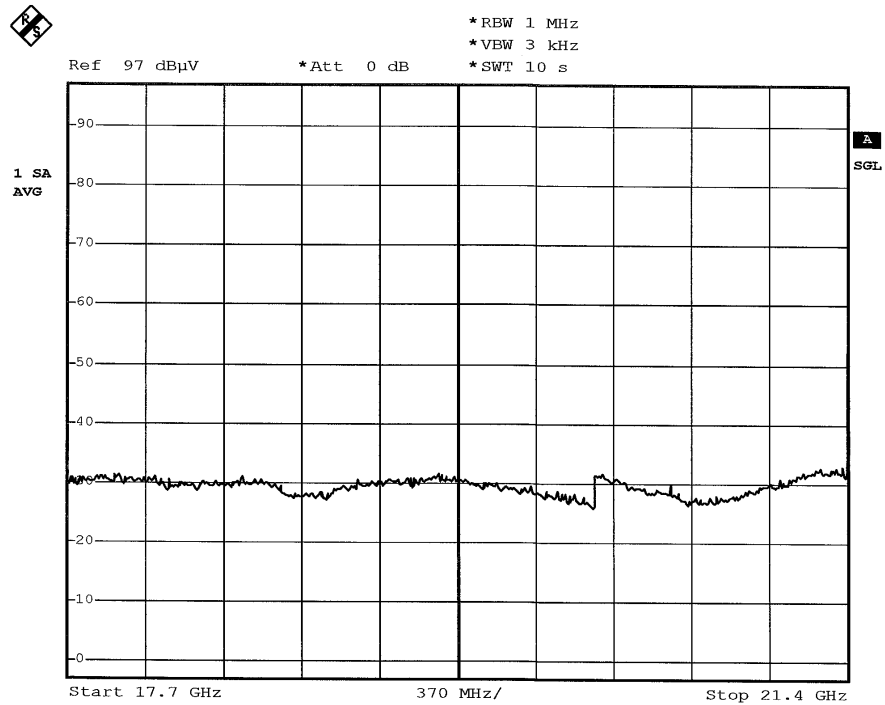


Date: 3.OCT.2002 11:59:15

FCC
 2441
 V
 idig.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 42 von 59
Page 42 of 59

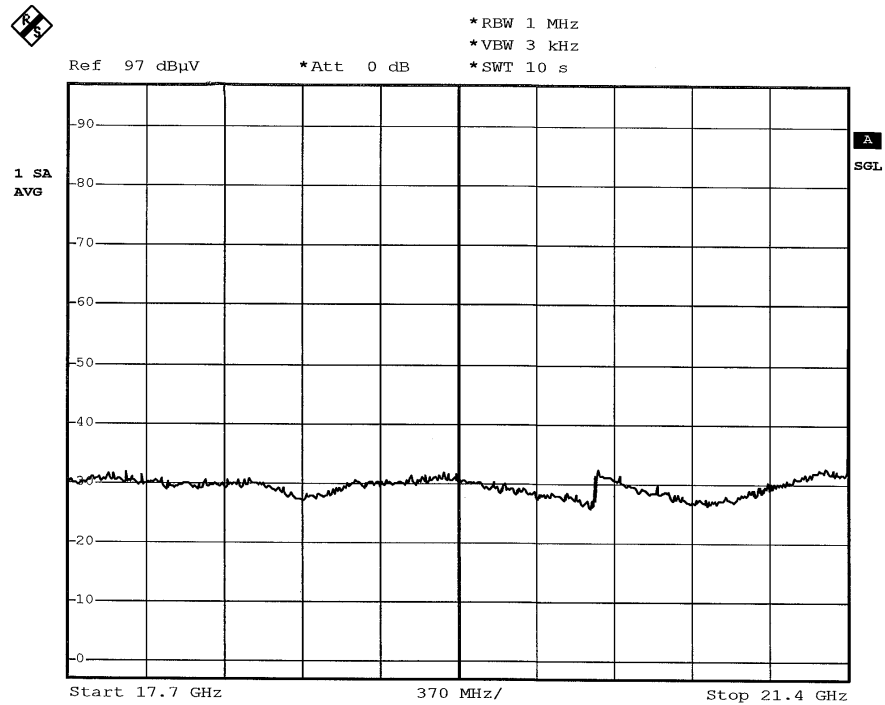


Date: 3.OCT.2002 10:29:59

FCC
2441
H
illeg.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 43 von 59
Page 43 of 59

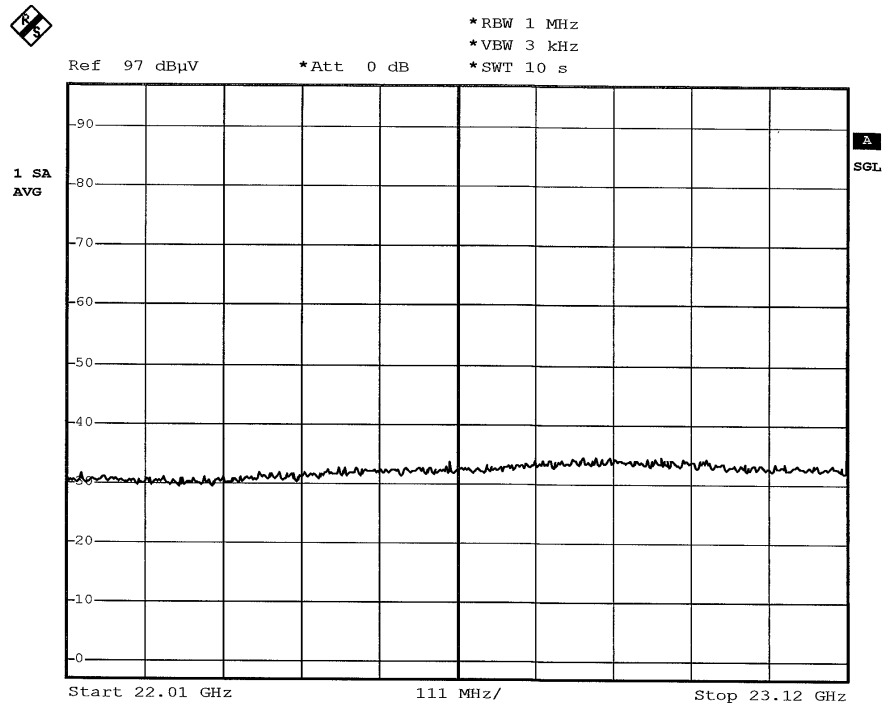


Date: 3.OCT.2002 10:31:33

FCC
2441
V
relig

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 44 von 59
Page 44 of 59

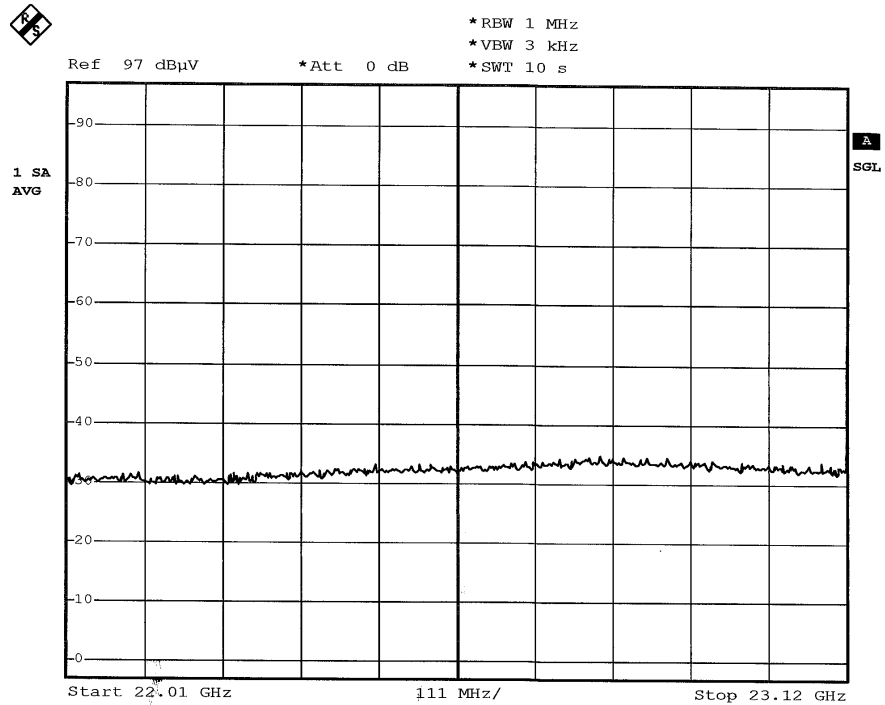


Date: 3.OCT.2002 10:27:36

FLC
2441
H
uly.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 45 von 59
Page 45 of 59

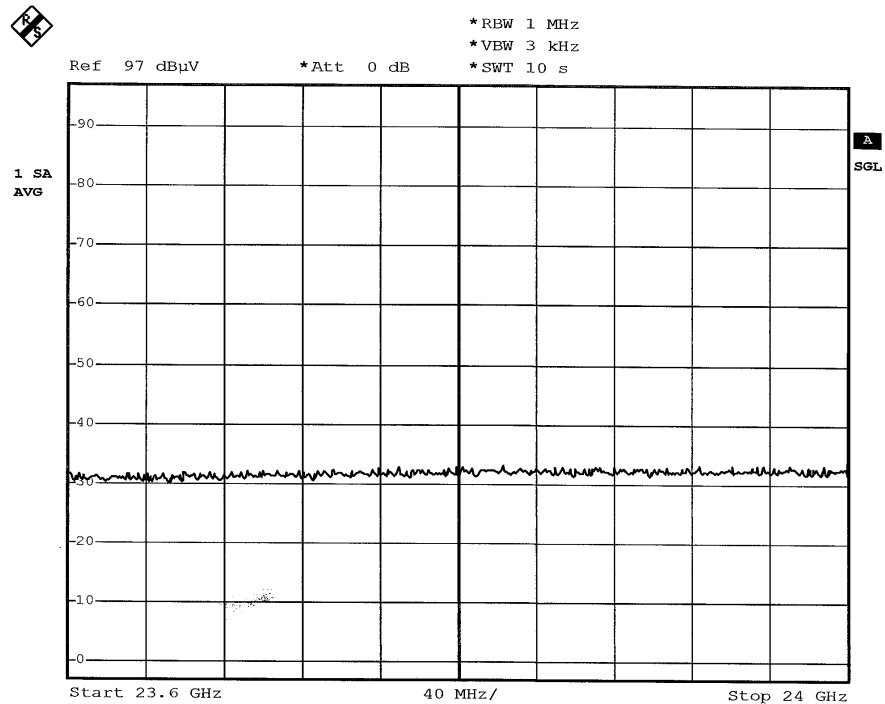


Date: 3.OCT.2002 10:28:07

FCC
2441
V
relig.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 46 von 59
Page 46 of 59

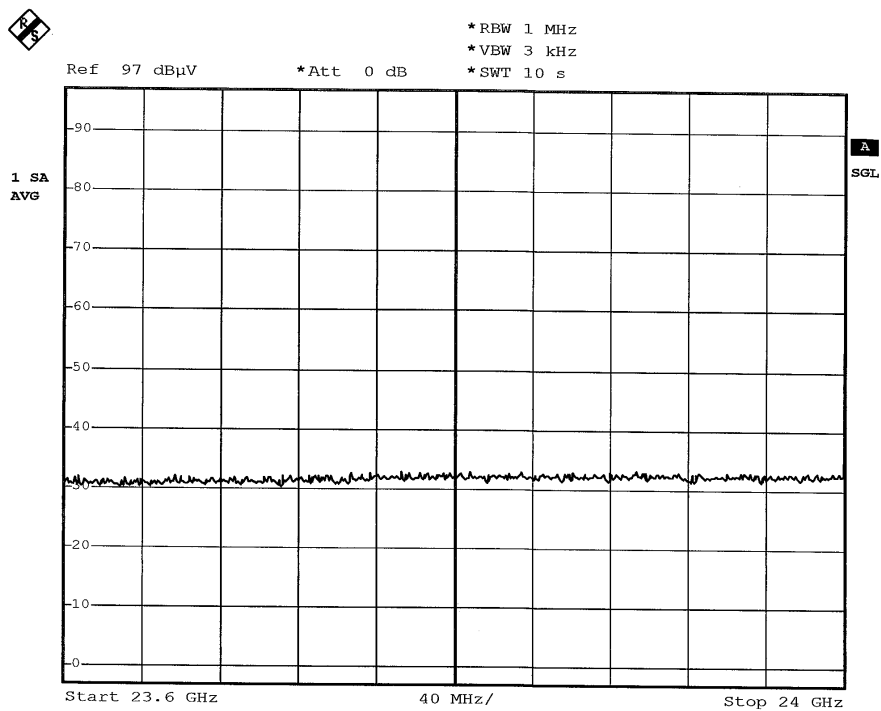


Date: 3.OCT.2002 10:34:02

FCC
2441
H
ichtig.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 47 von 59
Page 47 of 59



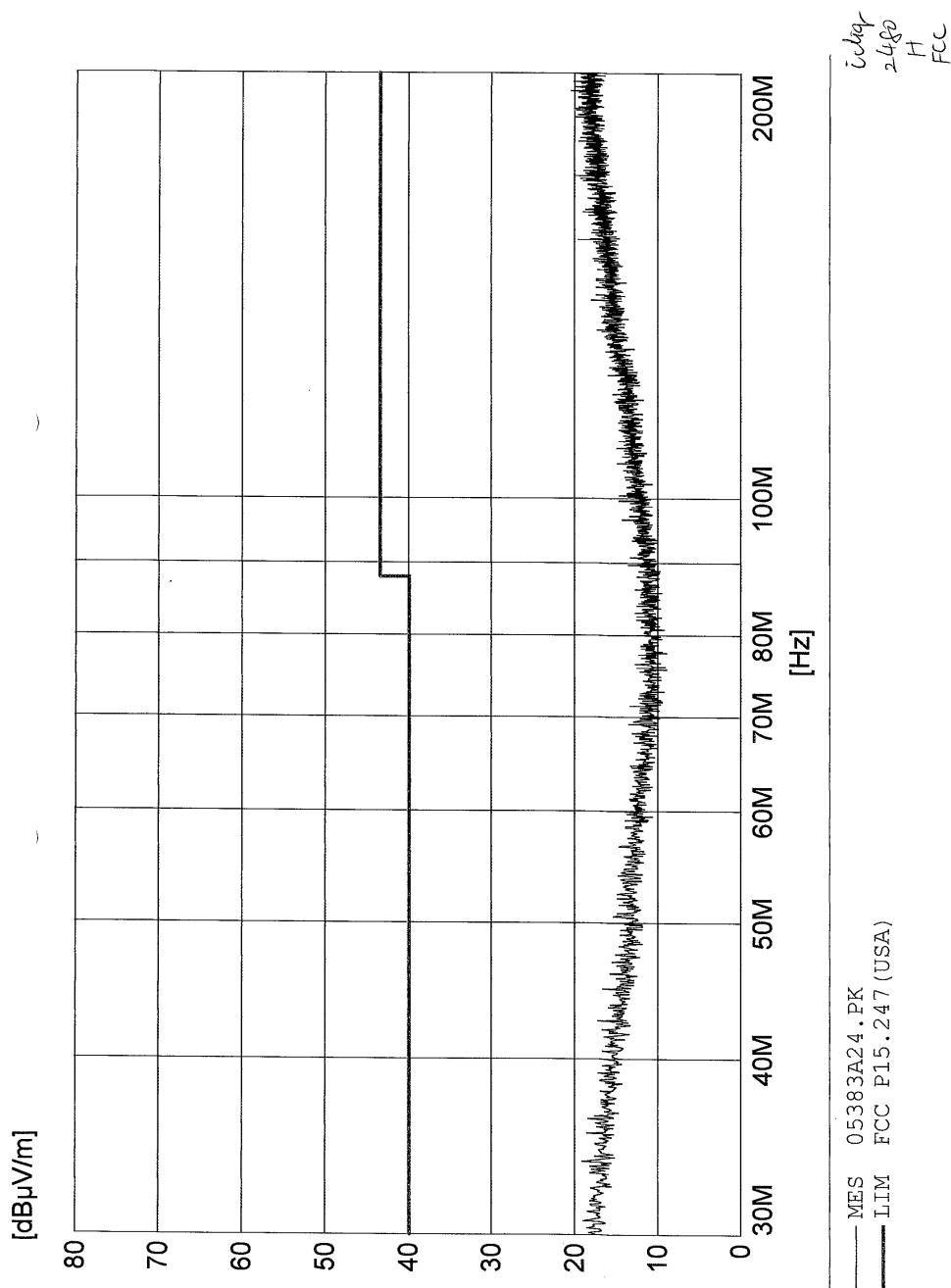
Date: 3.OCT.2002 10:33:09

FCC
2006/1
✓
idig

Prüfbericht - Nr.: 14002427 001
 Test Report No.

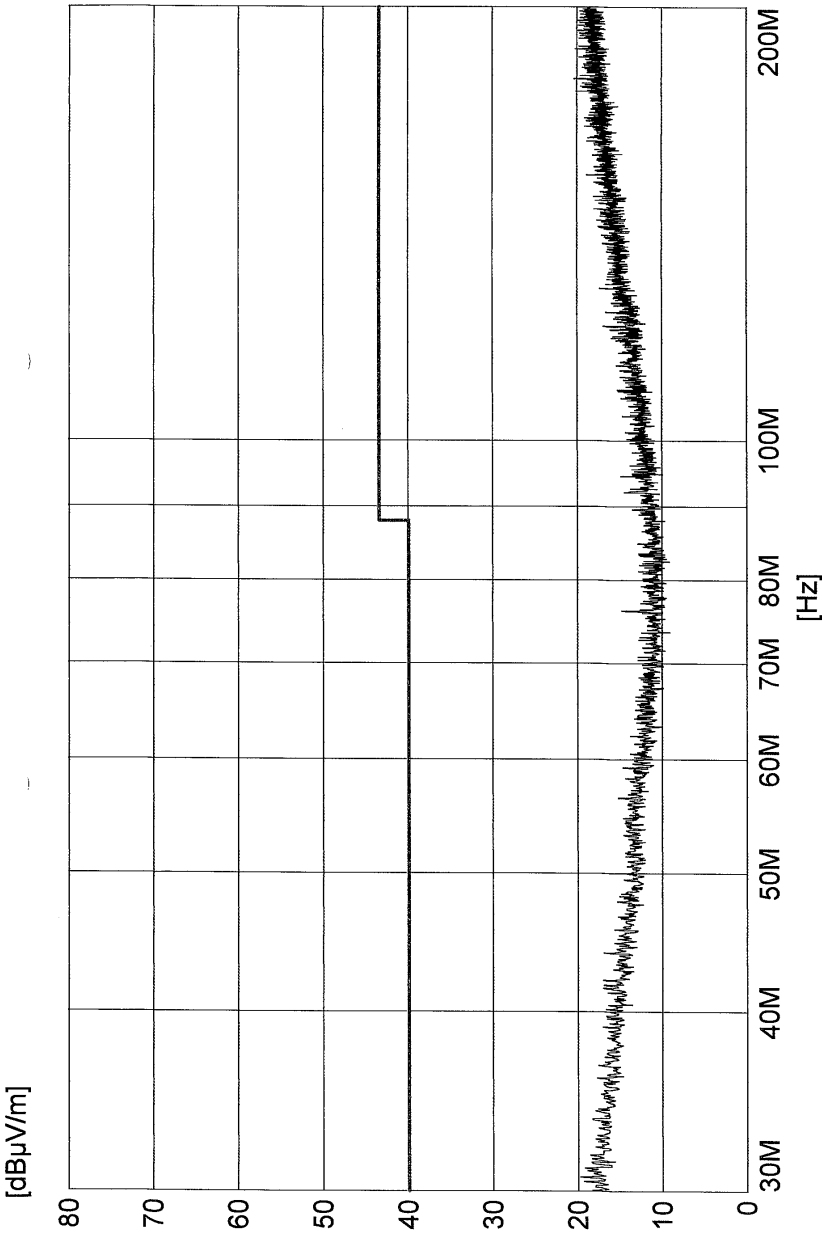
Seite 48 von 59
 Page 48 of 59

Spurious Radiated Emissions (2480MHz: 30MHz – 25GHz)



Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 49 von 59
Page 49 of 59

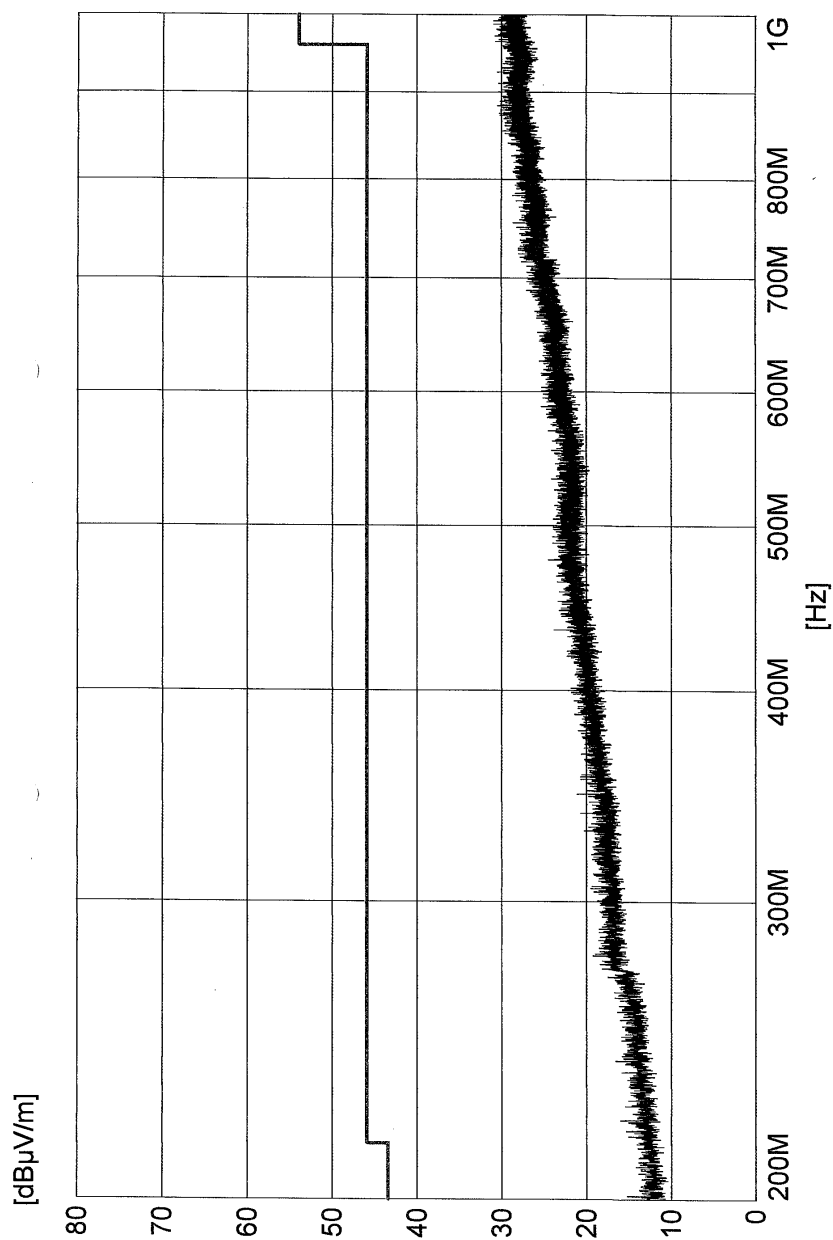


icdy.
2480
V
FCC

MES 05383A23.PK
LIM FCC P15.247 (USA)

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 50 von 59
 Page 50 of 59

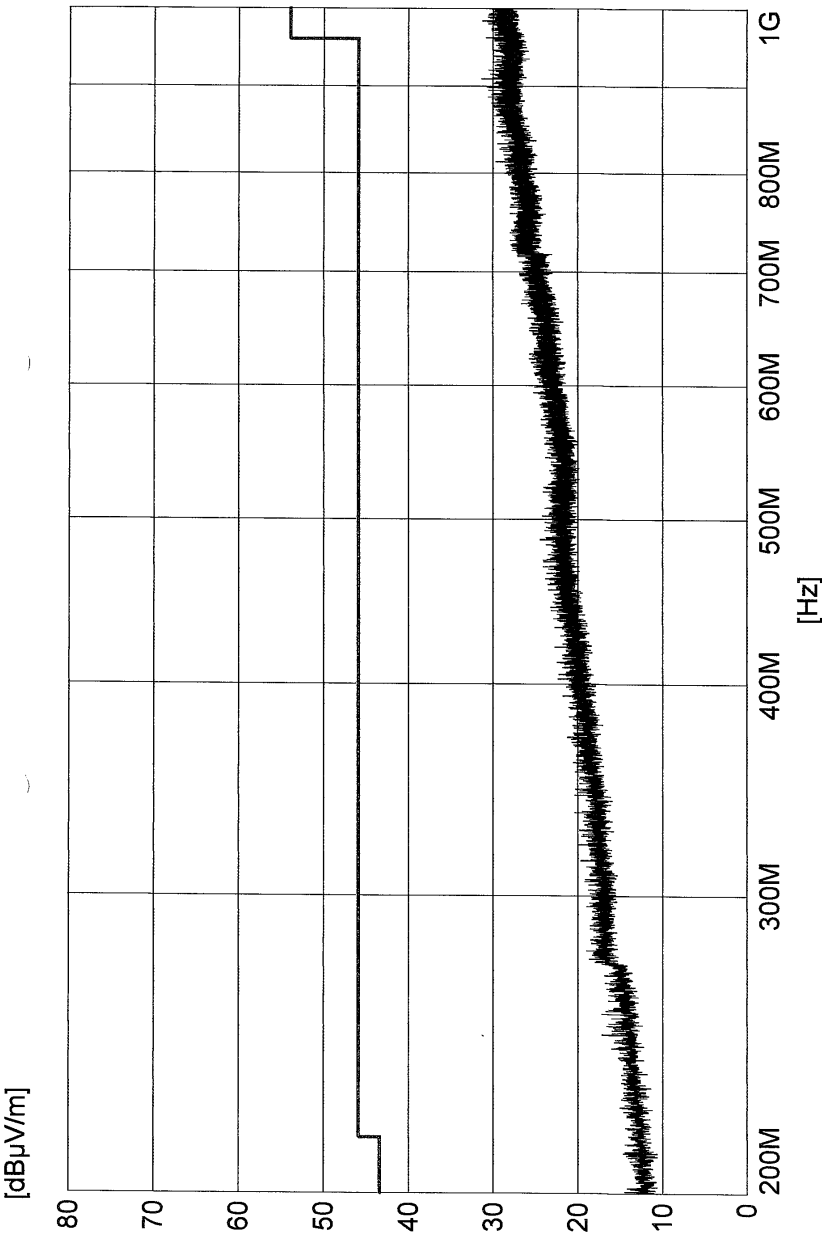


MES 05383A26.PK
 LIM FCC P15.247 (USA)

cd19
 2480
 Horizontal
 FCC.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 51 von 59
Page 51 of 59

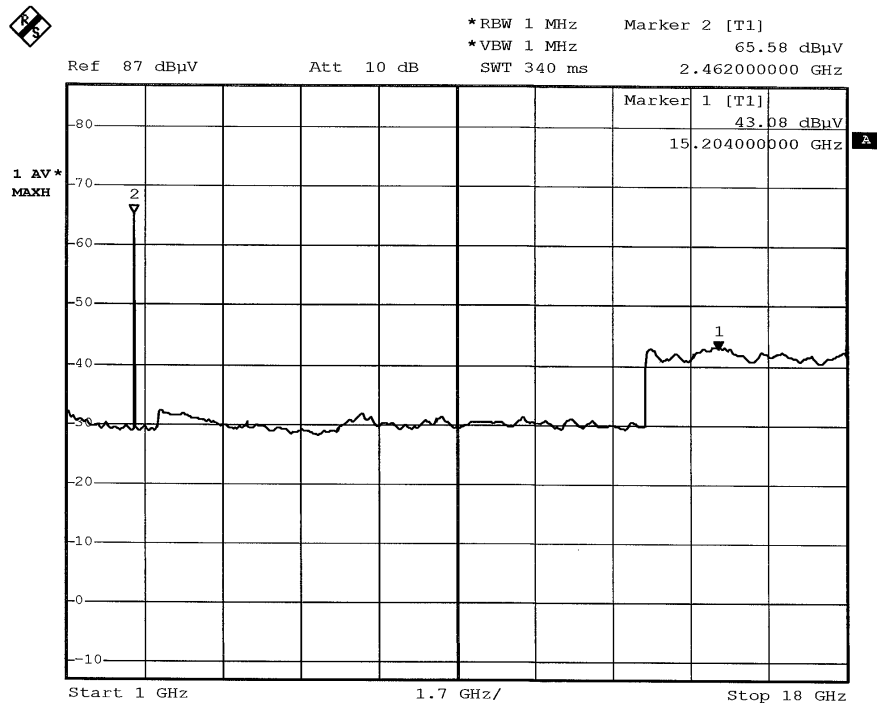


MES 05383A25.PK
LIM FCC P15.247 (USA)

2480
Vertical
FCC

Prüfbericht - Nr.: 14002427 001
 Test Report No.

Seite 52 von 59
 Page 52 of 59

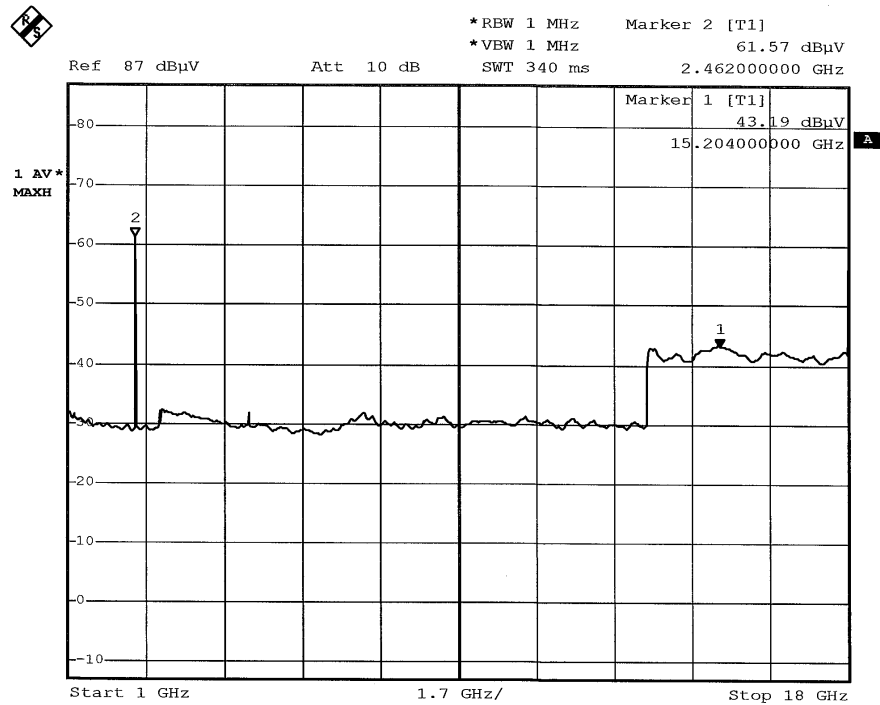


Date: 3.OCT.2002 12:02:38

FCC
 240280
 H
 ichig.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 53 von 59
Page 53 of 59

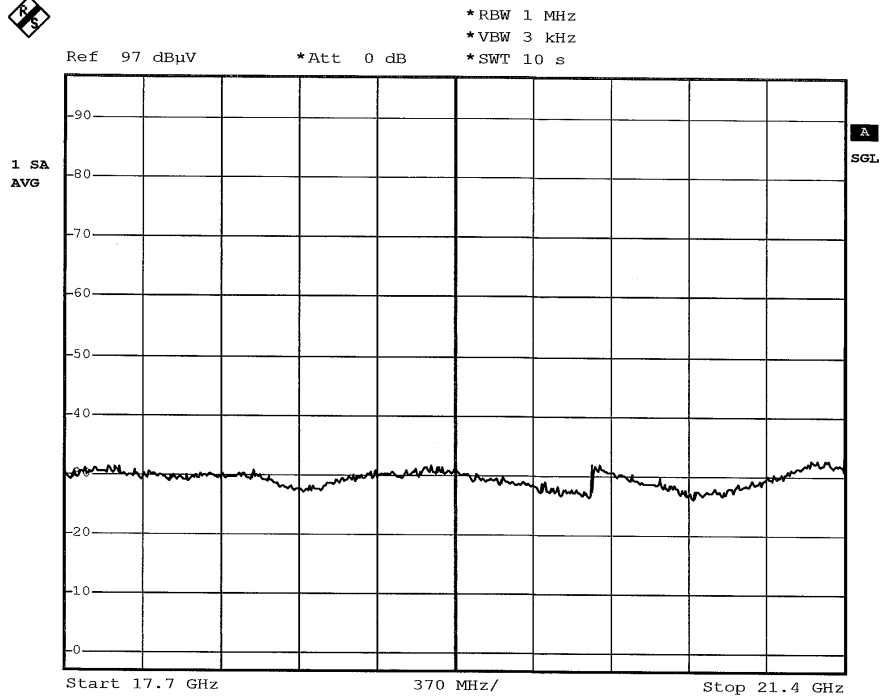


Date: 3.OCT.2002 12:03:41

FCC
2480
✓
idlog

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 54 von 59
Page 54 of 59

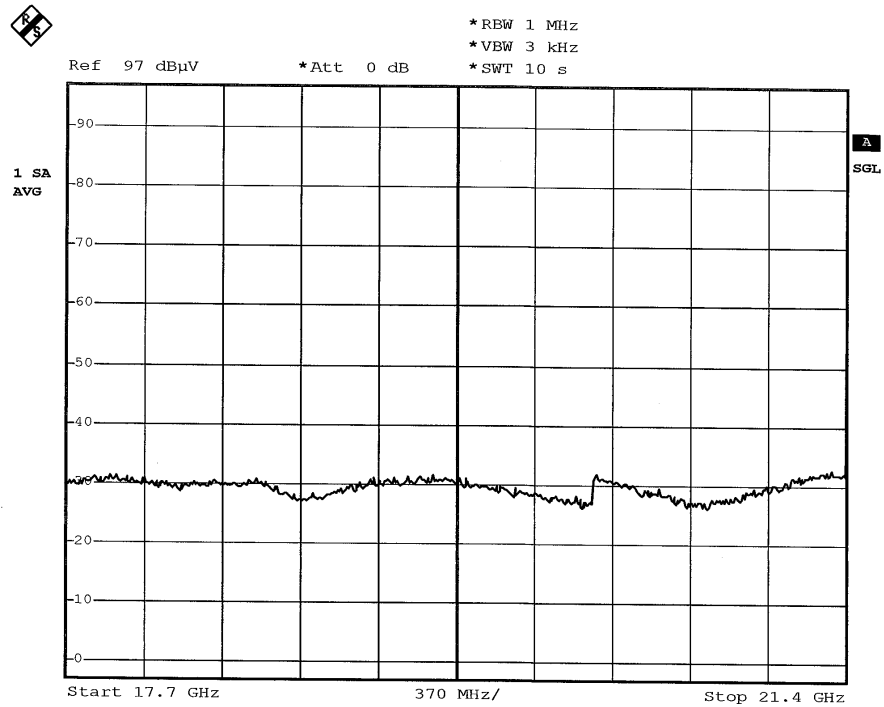


Date: 3.OCT.2002 10:37:56

FCC
2480
H
iclog.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 55 von 59
Page 55 of 59

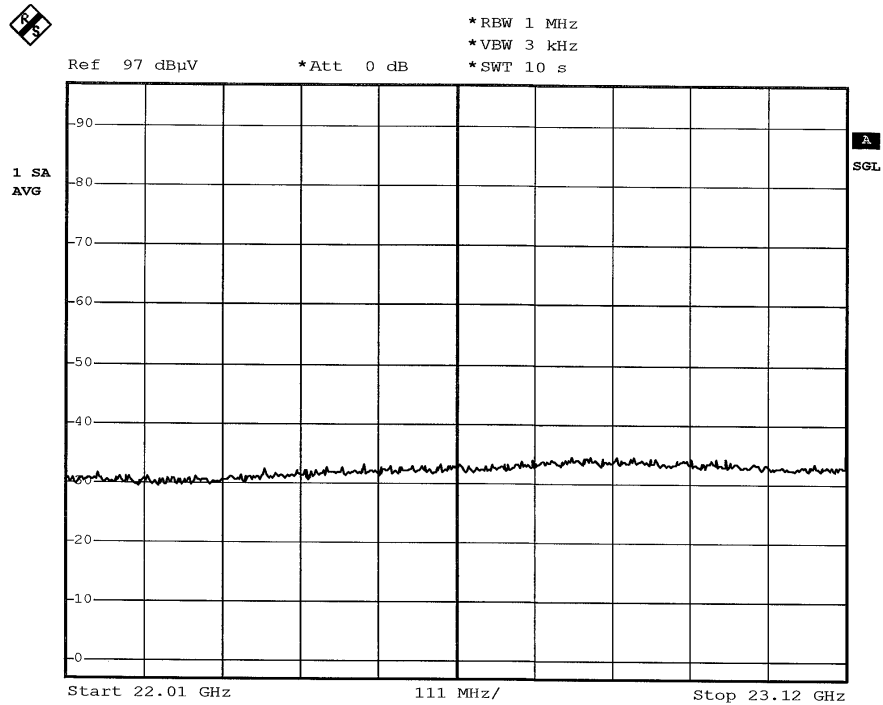


Date: 3.OCT.2002 10:38:14

FCC
2480
V
icliq.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 56 von 59
Page 56 of 59

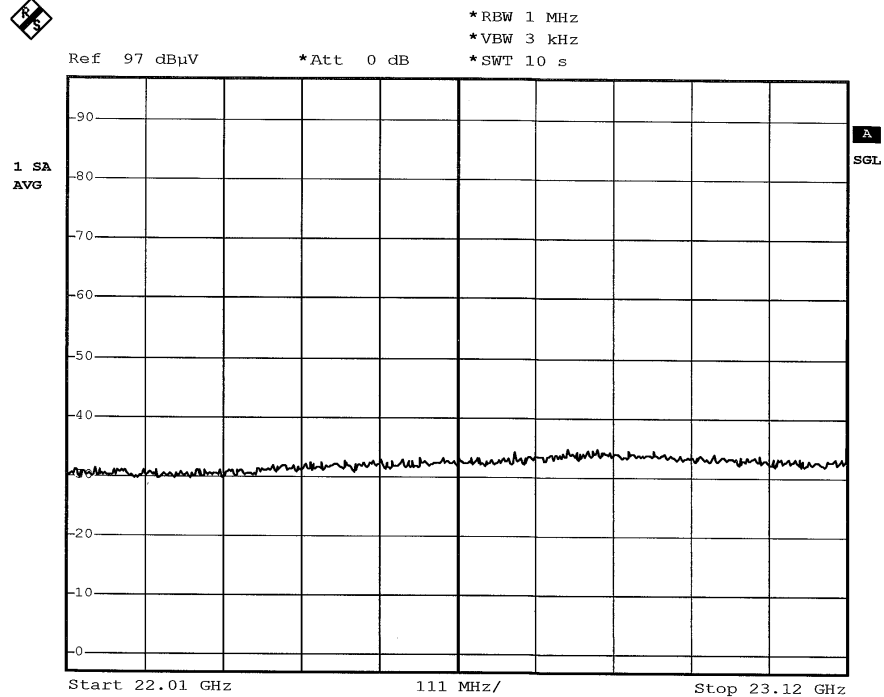


Date: 3.OCT.2002 10:37:04

FCC
2480
H
cdiq.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 57 von 59
Page 57 of 59

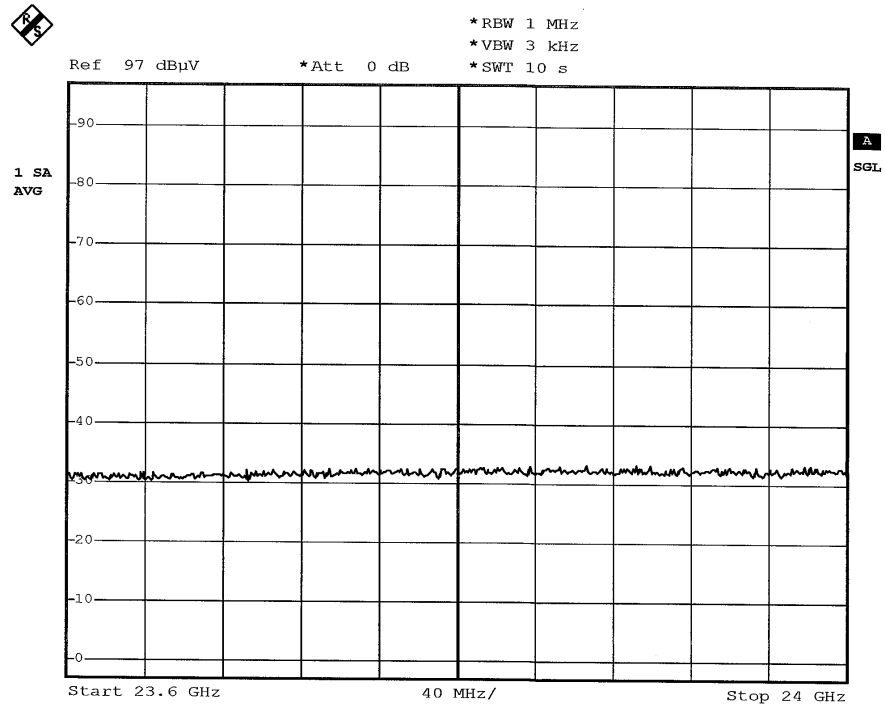


Date: 3.OCT.2002 10:36:38

FCC
2480
✓
idig.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 58 von 59
Page 58 of 59

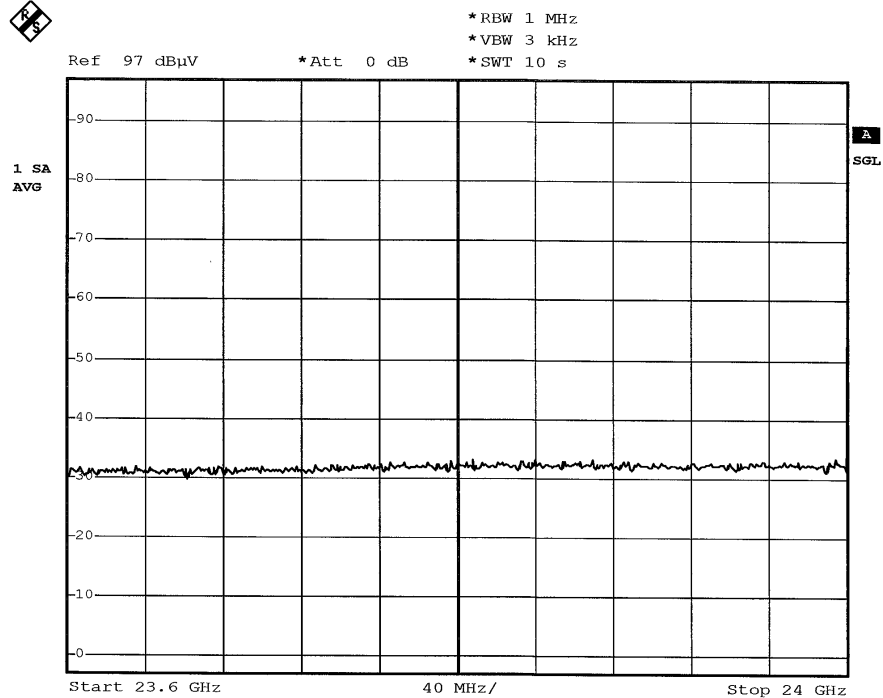


Date: 3.OCT.2002 10:35:36

FCC
2480
H
Eclog.

Prüfbericht - Nr.: 14002427 001
Test Report No.

Seite 59 von 59
Page 59 of 59



Date: 3.OCT.2002 10:36:05

FCC
2480
V
ichg.