

Straubing, 17 December 2003

TEST - REPORT

No. 55416-30783

for

OMB-2

Tranceiver Base Unit

Applicant: think dig High Tech Solutions GmbH

Test Specification: FCC Code of Federal Regulations,
CFR 47, Part 15,
Sections 15.209 and 15.249

Note:

The test data of this report relate only to the individual item which has been tested.
This report shall not be reproduced except in full extent without the written approval of
the testing laboratory.

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Administrative Data

Test item (EUT)	
Type designation	OMB-2
Version of EUT:	As delivered
Serial number(s):	53282
Type of equipment:	Transceiver Base Unit
Parts/accessories:	
FCC-ID:	
Technical data	
Frequency range:	902 – 906 MHz
Operational frequencies:	902.15- 905.4 MHz
Type of modulation:	14K4F1D
Pulse frequency:	
Pulse width:	
Class of emission:	
Antenna:	Monopole rod antenna
Power supply:	15.00 V DC
Applicant: (full address)	think dig High Tech Solutions GmbH Bachstraße 59 A-5023 Salzburg Austria
Contract identification:	
Contact person:	Mr. Martin Brandauer
Manufacturer:	Applicant
Application details	
Receipt of EUT:	25 November 2003
Date of test:	December 2003
Note:	

Identification of Test Laboratory

Details of the Test Laboratory	
Company name:	Senton GmbH EMI/EMC Test Center
Address:	Aeussere Fruehlingstrasse 45 D-94315 Straubing Germany
Laboratory Accreditation:	DAR-Registration No. TTI-P-G 062/94-01
FCC Test Site registration number	90926
Industry Canada Test site registration:	IC 3050
Name for contact purposes:	Mr. Johann Roidt
	Phone: (+49) (0)9421 5522-0 Fax: (+49) (0)9421 5522-99

Summary

Summary of test results	
The tested sample complies with the requirements set forth in the Code of Regulations CFR 47, Part 15, Sections 15.207, 15.209 and 15.249 of the Federal Communication Commission (FCC) and the Radio Standards Specification RSS-210 Issue 5, Section 7 (Category I Receiver) of Industry Canada (IC).	

Personnel involved in this report	
Laboratory Manager:	 Mr. Johann Roidt
Responsible for testing:	Mr. Johann Roidt
Responsible for test report:	Mr. Johann Roidt

Operation Mode and Configuration of EUT

Operation Mode

- 1) TX-mode:
The EUT was tested with the RF-channels 04 and 70.
- 2) RX mode:
The EUT was tested with the RF-channels 04 and 70.

Configuration of EUT

The EUT was configured via the RS 232-interface connected to the notebook.

List of ports and cables

<i>Port</i>	<i>Description</i>	<i>Classification¹</i>	<i>Cable type</i>	<i>Cable length</i>
1	AC power supply input port	AC power	Non-shielded	> 3m
2	DC power input port	DC power	Non-shielded	< 3m
3	RS 232 interface port	signal/control port	Non-shielded	> 3m
4	RS 485 interface port 1	signal/control port	Non-shielded	> 3 m
5	RS 485 interface port 2	signal/control port	Non-shielded	> 3m

List of devices connected to EUT

<i>Item</i>	<i>Description</i>	<i>Type Designation</i>	<i>Serial no. or ID</i>	<i>Manufacturer</i>
1	Notebook	LiteLine	TNT S98018460	Fujitsu
2	FW7238/15	AC/DC adapter		think dig

¹ Ports shall be classified as ac power, dc power or signal/control port

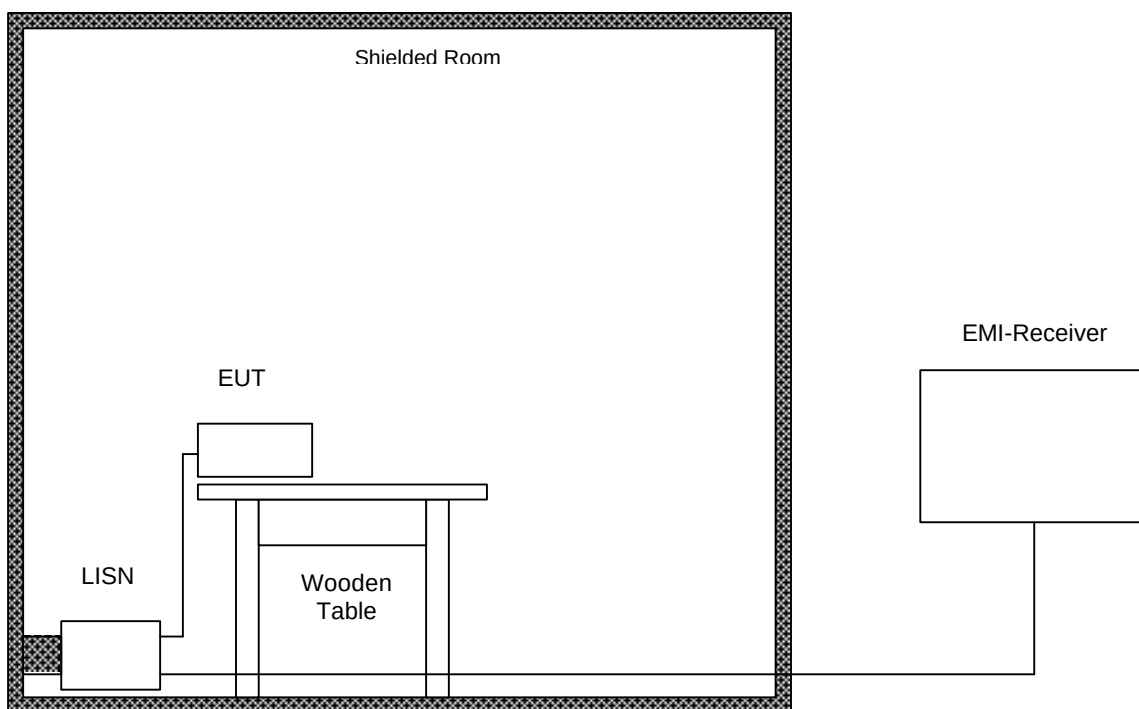
1. Measuring Methods

1.1. Conducted powerline emissions

Rules and Specifications:	Sections 15.107 & 15.207
Guide:	CISPR 22

Measurement Procedure:

In general conducted emission tests in the frequency range 0.15 - 30 MHz are required to be performed with quasi-peak and average detector. To simplify testing the following procedure is used: First the whole spectrum of emission caused by equipment under test (EUT) is recorded with detector set to peak. After that all emission levels having less margin than 20 dB to or exceeding the appropriate limit (in general average limit is 10 dB lower than quasi-peak limit) are retested with detector set to quasi-peak. If average limit is kept no additional scan with average detector is necessary. In cases of emission levels between quasi-peak and average limit an additional scan with detector set to average has to be recorded.



Test instruments used:

No.	Type	Model	Serial Number	Manufacturer
01	EMI Receiver	ESHS 10	860043/016	Rohde & Schwarz
02	LISN	ESH3-Z5	862770/021	Rohde & Schwarz
03	LISN	ESH-3-Z5	830952/025	Rohde & Schwarz
04	Shielded Room No. 4	---	3FD-100 544	Euroshield

1.2. Field Strength of Emissions, Prescans in a fully-anechoic Room

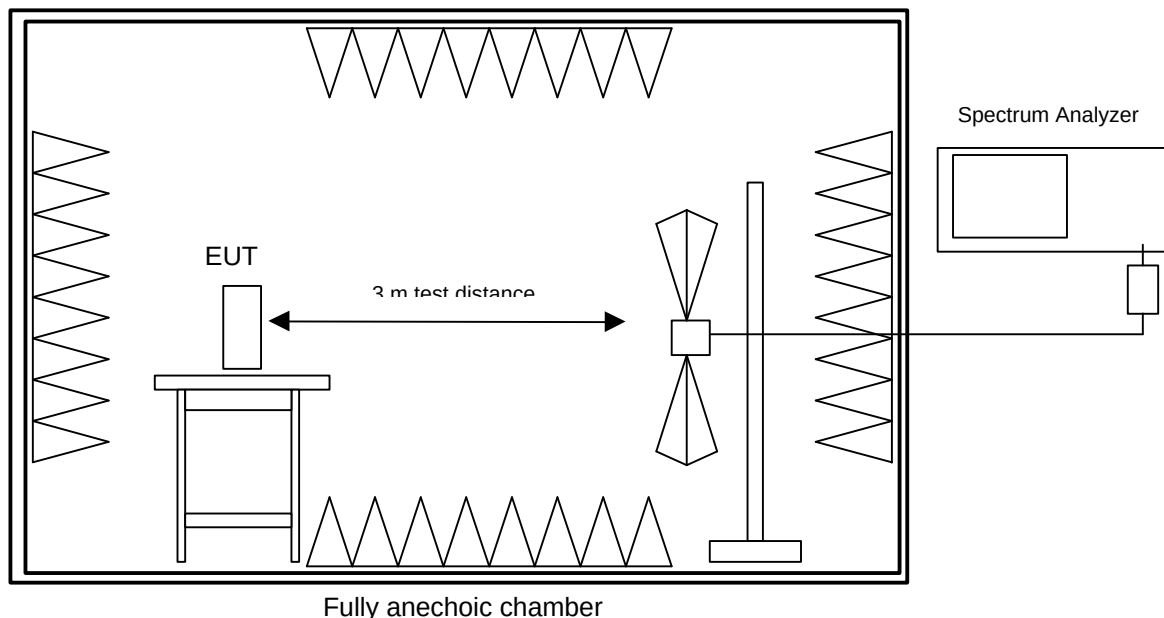
Rules and Specifications:	Sections 15.109, 15.209, 15.245
Guide:	ANSI C63.4 1997

Measurement Procedure:

Radiated emissions are measured over the frequency range from 30 MHz to maximum frequency as specified in section 15.33.

Measurements are made in both the horizontal and vertical planes of polarization in a fully anechoic room using a spectrum analyzer with the detector function set to peak and resolution as well as video bandwidth set to 100 kHz (below 1 GHz) or 1 MHz (above 1 GHz).

All tests are performed at a test-distance of 3 meters. Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing. During the tests the EUT is rotated all around to find the maximum levels of emissions. The cables and equipment were placed and moved within the range of position likely to find their maximum emissions.



Test instruments used:

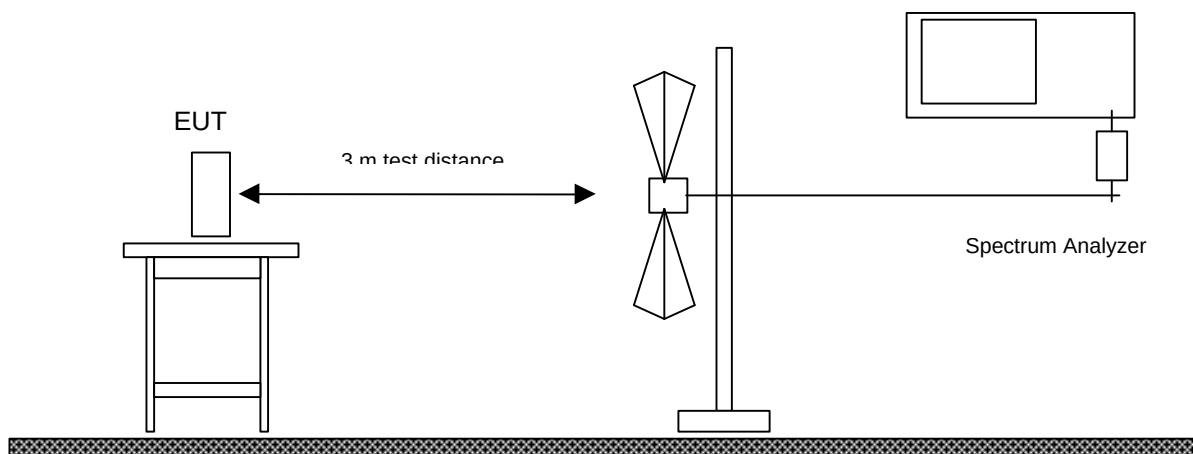
No.	Type	Model	Serial Number	Manufacturer
01	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
02	Preamplifier	CPA9231A	3393	Schaffner
03	Biconical antenna	HK 116	829708/006	Rohde & Schwarz
04	Log. periodic antenna	3147	9112-1054	EMCO
05	Horn antenna	3115	9508-4553	EMCO
06	Horn antenna	3160-03	9112-1003	Emco
07	Horn antenna	3160-04	9112-1001	Emco
08	Horn antenna	3160-05	9112-1001	Emco
09	Horn antenna	3160-06	9112-1001	Emco
10	Horn antenna	3160-07	9112-1008	Emco
11	Horn antenna	3160-08	9112-1002	Emco
12	Horn antenna	3160-09	9403-1025	Emco
13	Preamplifier 1-8 GHz	AFS3-00100800-32-LN	847743	Miteq
14	Preamplifier 8-18 GHz	ACO/180-3530	32641	CTT
15	Fully anechoic room	No. 2	1452	Albatross Projects

1.3. Radiated Emission Measurement at Open Area Test Site

Rules and Specifications:	Sections 15.109, 15.209, 15.245
Guide:	ANSI C63.4 1997

Measurement Procedure:

Radiated emissions are measured in the frequency range 30 MHz to 1 GHz
The measurement bandwidth of the test receiver is set to 120 kHz with detector set to quasi-peak.
Hand-held or body-worn devices are tested in the position producing the highest emission relative to the limit as verified by prescans in the fully-anechoic room.
EUT is rotated all around and receiving antenna is raised and lowered to find the maximum levels of emission. The cables and equipment are placed and moved within the range of position likely to find their maximum emissions.
In general a test-distance of 3 meters is selected. If a test-distance of 10 meters is used the limits are calculated according to 15.31 (d) and (f)(1).
If required preamplifiers are used for the whole frequency range. Special care is taken to avoid overload in transmit mode (using appropriate attenuators and filters if necessary).



Test instruments used:

No.	Type	Model	Serial Number	Manufacturer
01	EMI Receiver	ESVP	881414/009	Rohde & Schwarz
141	Biconical antenna	HK 116	829708/006	Rohde & Schwarz
143	Log. periodic antenna	3147	9112-1054	EMCO
145	Horn antenna	3115	9508-4553	EMCO
146	Horn antenna set	3160-03/-09	9112-1003	EMCO
114	Preamplifier 1-8 GHz	AFS3-00100800-32-LN	847743	Miteq
115	Preamplifier 8-18 GHz	ACO/180-3530	32641	CTT
003	Open Field Test Site	No. 1	N/A	Senton

2. Photographs Taken During Testing

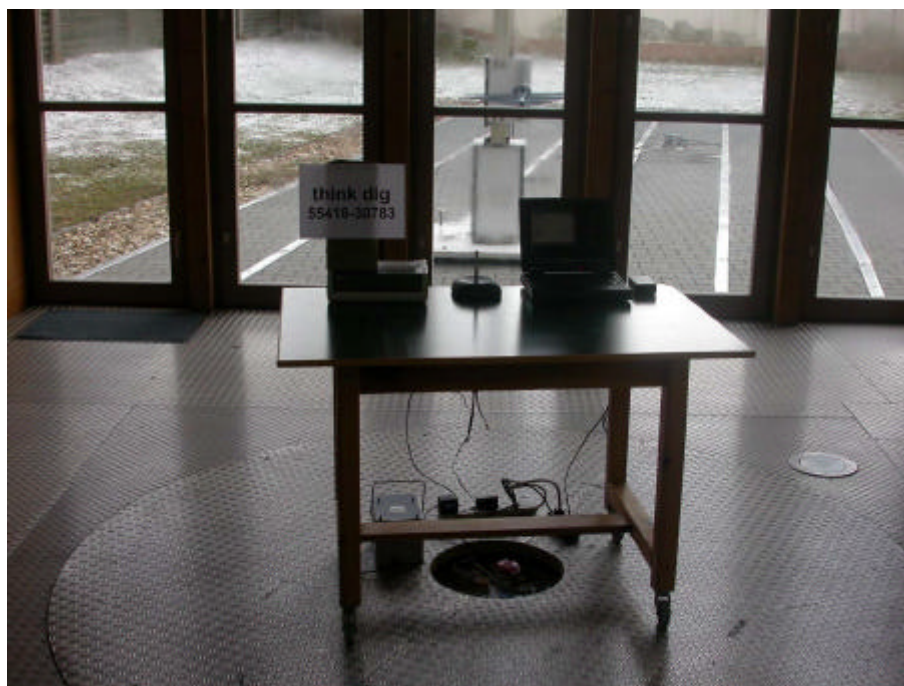
Test setup for conducted power line emission measurement



Test setup for radiated emission measurement (fully anechoic room)



**Test setup for radiated emission measurement
(open area test-side)**



3. List of Measurements

FCC Part 15			
Section(s):	Test	Page(s)	Result
15.205 15.207 15.249 (a) 15.249 (d)			
	Restricted Bands		Pass
	AC Powerline Emissions		Pass
	Field Strength of Emissions (Fundamental & Harmonics)		Pass
	Radiated Spurious Emissions		Pass

IC RSS-210 Issue 5			
Section(s):	Test	Page(s)	Result
6.6	Transmitter AC Wireline Conducted Emissions		Passed
6.2.2 (m2) (1)	Field Strength of Emissions Fundamental & Harmonics		Passed
6.2.2. (m2) (3)	Radiated Spurious Emissions (except Fundamental & Harmonics)		Passed

Conducted Powerline Emission Measurement

Rules and Specifications:	15.107, 15.207		
Guide:	CISPR 22		
Limit:	Frequency of Emission (MHz)	Conducted Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5 0.5 – 5 5 - 30	66 to 56 56 60	56 to 46 46 50

Test Site:	Radio Lab.
Distance:	Conducted Measurement
Date of Test:	

Frequency (MHz)	Detector	Analyzer Reading (dBμV)	Correction Factor (dB)	Final Value (dBμV)	Limit (dBμV)	Margin (dB)
0.15 - 30	PK	***				

*** = No emissions above noise floor detected

Sample calculation of Final values:

$$\text{Final Value (dB}\mu\text{V)} = \text{Analyzer Reading (dB}\mu\text{V)} + \text{Correction Factor (dB)}$$

Test Results:	Pass	
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Field Strength of Emissions

Rules and Specifications:	15.209, 15.249 (a) Radiated Emission Limits		
Guide:	ANSI C63.4		
Limit:	The field strength of emissions from intentional radiators operated in these frequency band shall comply with the following:		
	Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
	902-928 MHz	50	500
	2400-2483.5 MHz	50	500
	5725-5875 MHz	50	500
	24-24.25 GHz	250	2500

Tested Frequency:	
Test Site:	Open Area Test Site (< 1 GHz), Fully anechoic chamber (> 1 GHz)
Distance:	3 Meter

Channel 04:

Frequency (MHz)	Detector	Antenna Polarization	Analyzer Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
901.150	AV	Ver	64.4	27.4	91.8	93.90	2.1

Channel 70:

Frequency (MHz)	Detector	Antenna Polarization	Analyzer Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
905.400	AV	Ver	64.9	27.4	92.3	93.90	1.6

Sample calculation of erp values:

$$\text{Field Strength (dBμV/m)} = \text{Analyzer Reading (dBμV)} + \text{Correction Factor (dB/m)}$$

Test Results:	Pass	
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Spurious Radiation Measurement; TX mode

Rules and Specifications:	15.209, 15.249 (d) Radiated Emission Limits	
Guide:	ANSI C63.4	
Limit:	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated at least 50 dB below the level of the fundamental or to the general radiated emission limits below, whichever is the lesser attenuation	
	Frequency of Emission (MHz)	Field Strength (microvolts/meter)
	30 - 88	100
	88 - 216	150
	216 - 960	200
	Above 960	500

Tested Frequency:	
Test Site:	Open Area Test Site (< 1 GHz), Fully anechoic chamber (> 1 GHz)
Distance:	3 Meter

Frequency (MHz)	Detector	Antenna Polarization	Analyzer Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
190,100	QP	Hor	20,3	16,0	36,3	43,50	7,2
348,300	QP	Hor	15,1	17,0	32,1	46,00	13,9
696,800	QP	Ver	15,3	27,4	42,7	46,00	3,3
902,000	QP	Ver	15,3	27,4	42,7	46,00	3,3
1042,000	AV	Hor	21,77	24,62	46,4	53,90	7,5
1396,000	AV	Ver	23,40	26,93	50,3	53,90	3,6
1744,000	AV	Ver	15,61	29,60	45,2	53,90	8,7

*** = All emissions showed more than 20 dB margin to the limit

Sample calculation of erp values:

Field Strength (dBμV/m) = Analyzer Reading (dBμV) + Correction Factor (dB/m)

Test Results:	Pass
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Spurious Radiation Measurement; RX mode

Rules and Specifications:	15.209, 15.249 (d) Radiated Emission Limits	
Guide:	ANSI C63.4	
Limit:	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated at least 50 dB below the level of the fundamental or to the general radiated emission limits below, whichever is the lesser attenuation	
	Frequency of Emission (MHz)	Field Strength (microvolts/meter)
	30 - 88	100
	88 - 216	150
	216 - 960	200
	Above 960	500

Tested Frequency:	
Test Site:	Open Area Test Site (< 1 GHz), Fully anechoic chamber (> 1 GHz)
Distance:	3 Meter

Frequency (MHz)	Detector	Antenna Polarization	Analyzer Reading (dBμV)	Correction Factor (dB/m)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
190,100	QP	Hor	20,3	16,0	36,3	43,50	7,2
348,300	QP	Hor	15,1	17,0	32,1	46,00	13,9
696,800	QP	Ver	15,3	27,4	42,7	46,00	3,3
1042,000	AV	Hor	21,77	24,62	46,4	53,90	7,5
1396,000	AV	Ver	23,40	26,93	50,3	53,90	3,6
1744,000	AV	Ver	15,61	29,60	45,2	53,90	8,7

*** = All emissions showed more than 20 dB margin to the limit

Sample calculation of erp values:

$$\text{Field Strength (dB}\mu\text{V/m)} = \text{Analyzer Reading (dB}\mu\text{V)} + \text{Correction Factor (dB/m)}$$

Test Results:	Pass
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4. Referenced Regulations

All tests were performed with reference to the following regulations and standards:

☒	CFR 47 Part 2	Code of Federal Regulations Part 2 (Frequency Allocations And Radio Treaty Matters, General Rules And Regulations) of the Federal Communication Commission (FCC)	October 1, 2001
☐	CFR 47 Part 15 Subpart A	Code of Federal Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communication Commission (FCC)	March 13, 2003
☐	CFR 47 Part 15 Subpart B	Code of Federal Regulations Part 15 (Radio Frequency Devices), Subpart B (Unintentional Radiators) of the Federal Communication Commission (FCC)	March 13, 2003
☒	CFR 47 Part 15 Subpart C	Code of Federal Regulations Part 15 (Radio Frequency Devices), Subpart C (Intentional Radiators) of the Federal Communication Commission (FCC)	March 13, 2003
☐	ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz - 40 GHz	October, 1992
☒	RSS-210	Radio Standards Specification RSS-210 Issue 5 for Low Power Licence-Exempt Radiocommunication Devices of Industry Canada	November 2001
☐	TIA/EIA-603	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	February 1993
☐	TIA/EIA-603-1	Addendum to TIA/EIA-603	March 4, 1998

Antenna connector requirement

Rules and Specifications:	15.203
Guide:	---
Limit:	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
Test Resultmit:	Pass
	Does not use or employ a standard antenna jack or electrical connector



Charts taken during testing

Radiated Emission Test 902 MHz - 928 MHz acc. FCC Part 15

Model:
OMB2-118 (USA)

Serial No.:
53282

Applicant:
think dig High Tech Solutions GmbH

Mode:

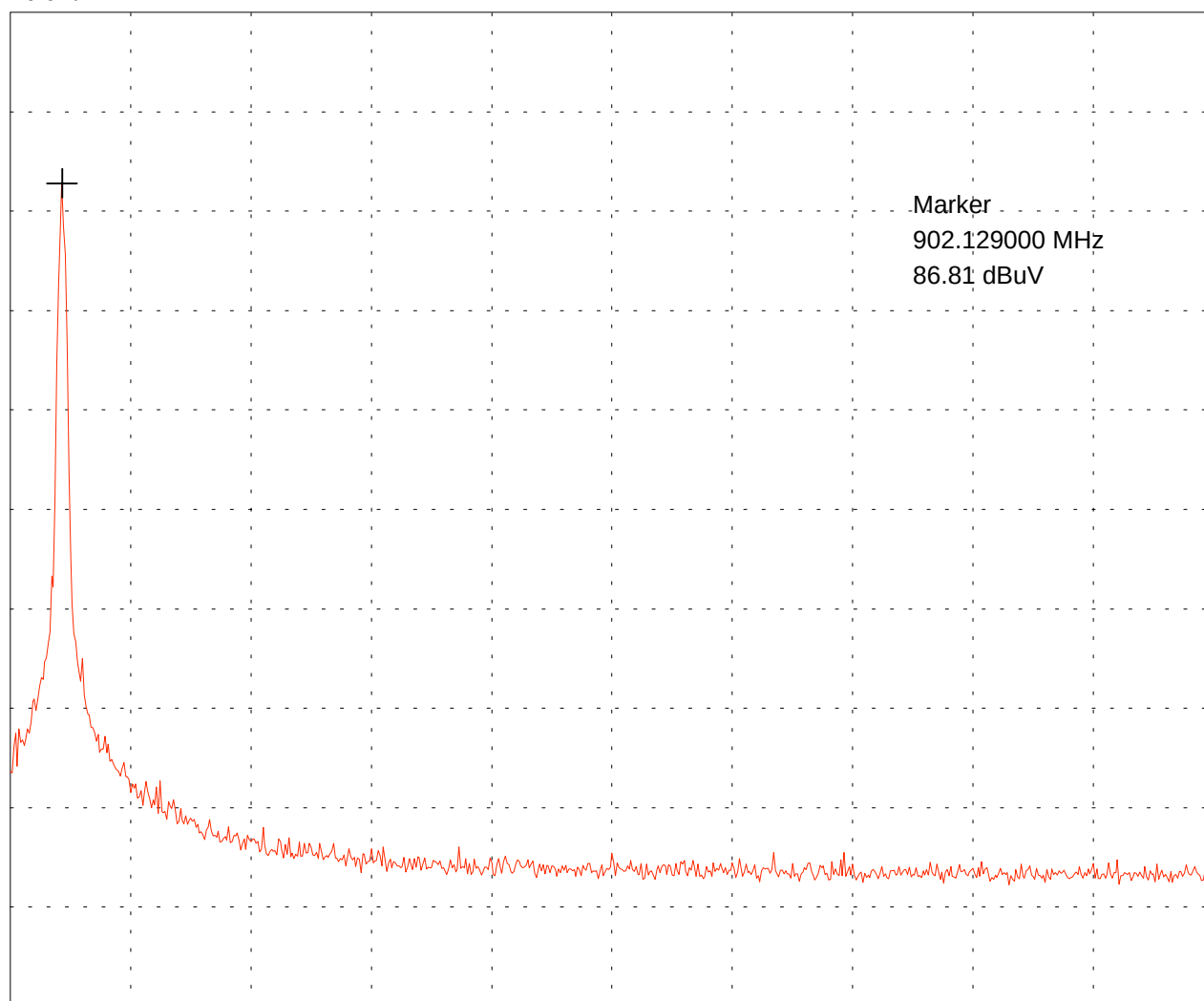
- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 04 selected

Ref. Level 104 dBuV
10 dB/Div.

ATT 10 dB

Ref. Offset -3 dB



Start 902.000 MHz
RBW 1 kHz

VBW 100 kHz

Stop 905.000 MHz
SWP 6 s

Tested by:
M. Steindl

Date:
12/17/2003

Project-No.:
55416-30783

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Radiated Emission Test 902 MHz - 928 MHz acc. FCC Part 15

Model:
OMB2-118 (USA)

Serial No.:
53282

Applicant:
think dig High Tech Solutions GmbH

Mode:

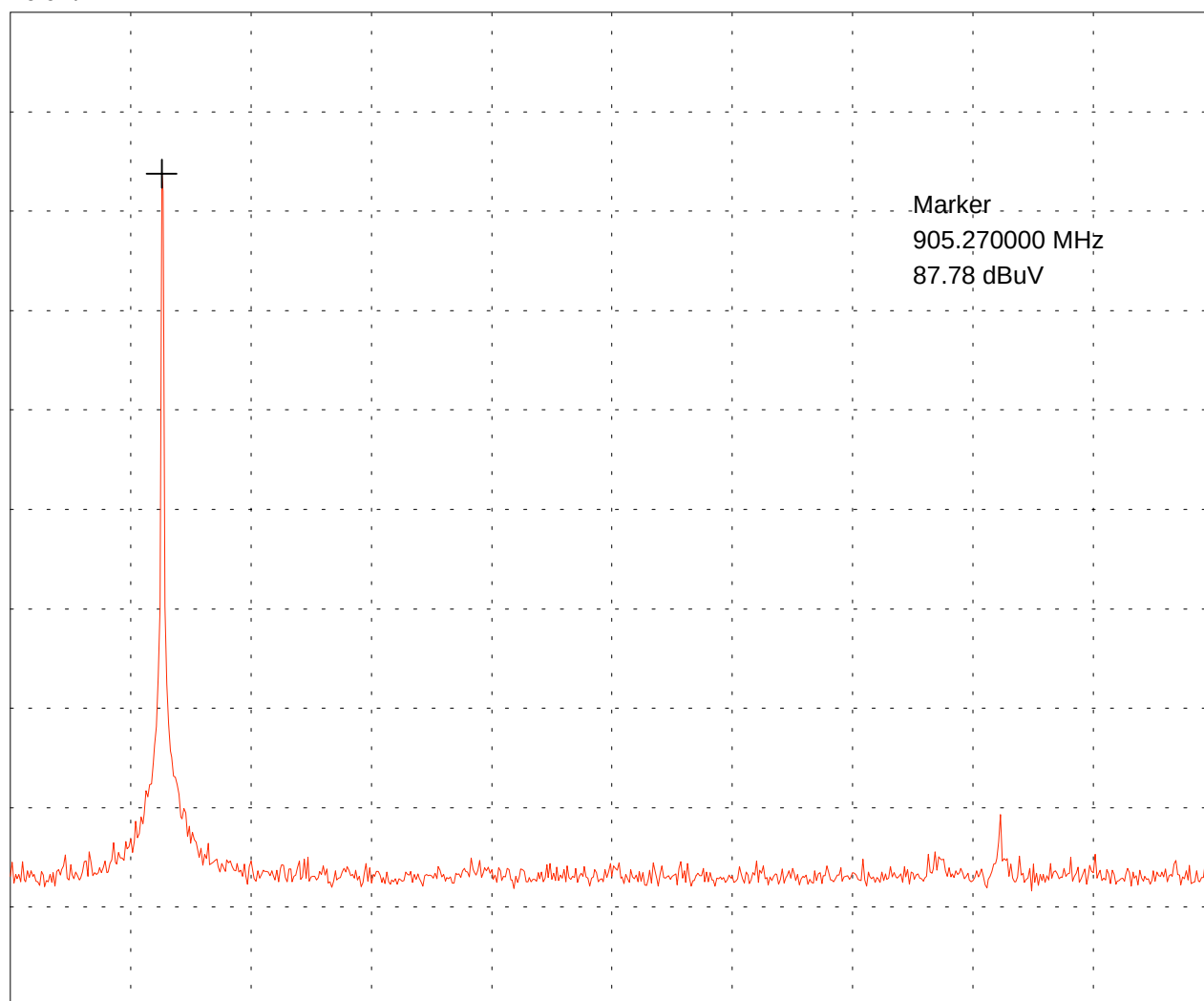
- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 70 selected

Ref.Level 104 dBuV
10 dB/Div.

ATT 10 dB

Ref. Offset -3 dB



Start 902.000 MHz
RBW 3 kHz

VBW 100 kHz

Stop 928.000 MHz
SWP 6 s

Tested by:
M. Steindl

Date:
12/17/2003

Project-No.:
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Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test: 12/15/2003 Operator: M. Steindl

Test performed: automatically File name: default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- TX mode
- channel 04 selected

Detector:
Peak

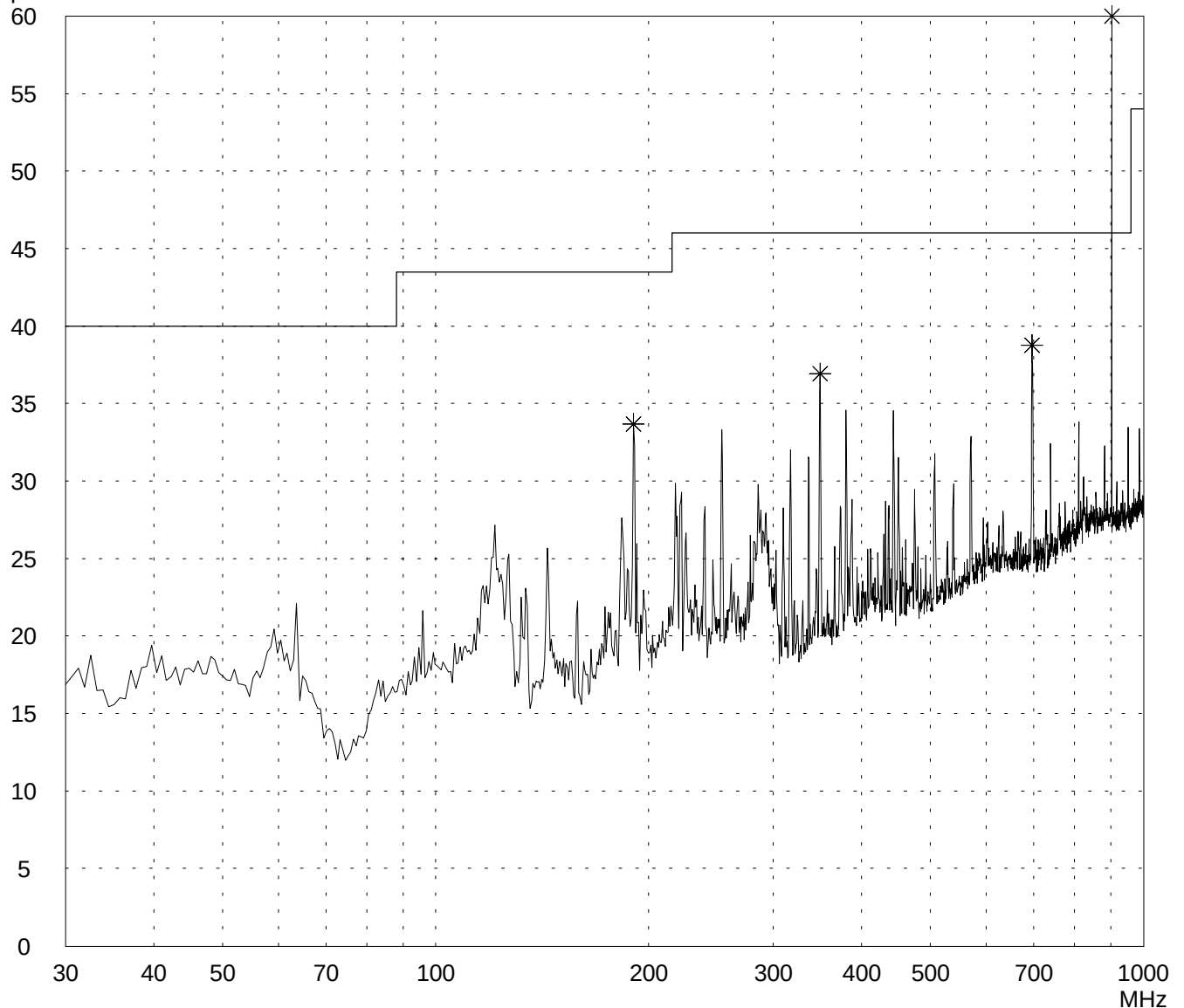
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Prescan

Project file:
55416-30783

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Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 04 selected

Detector:
Peak

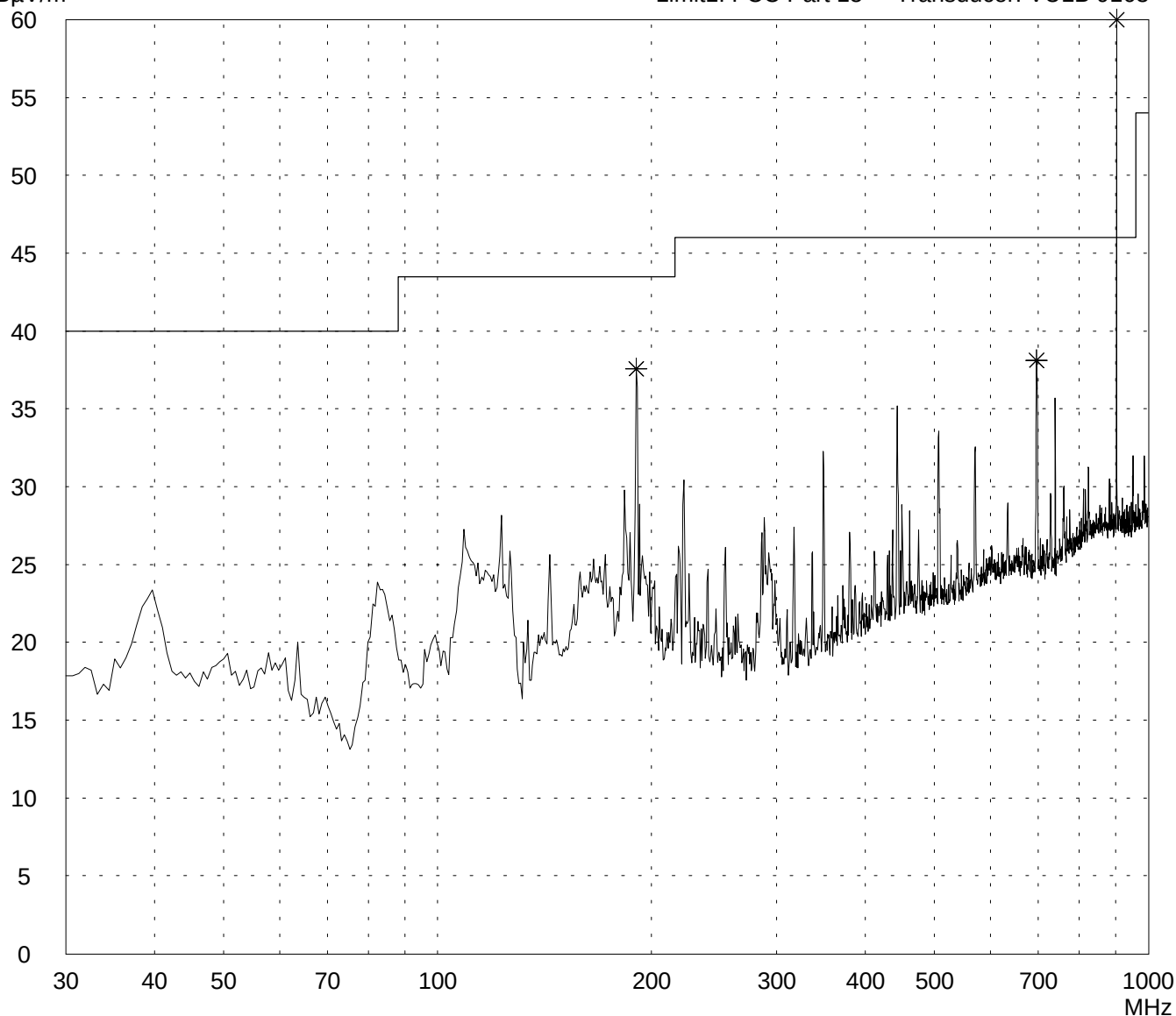
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Prescan

Project file:
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Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Horizontal Polarization**

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

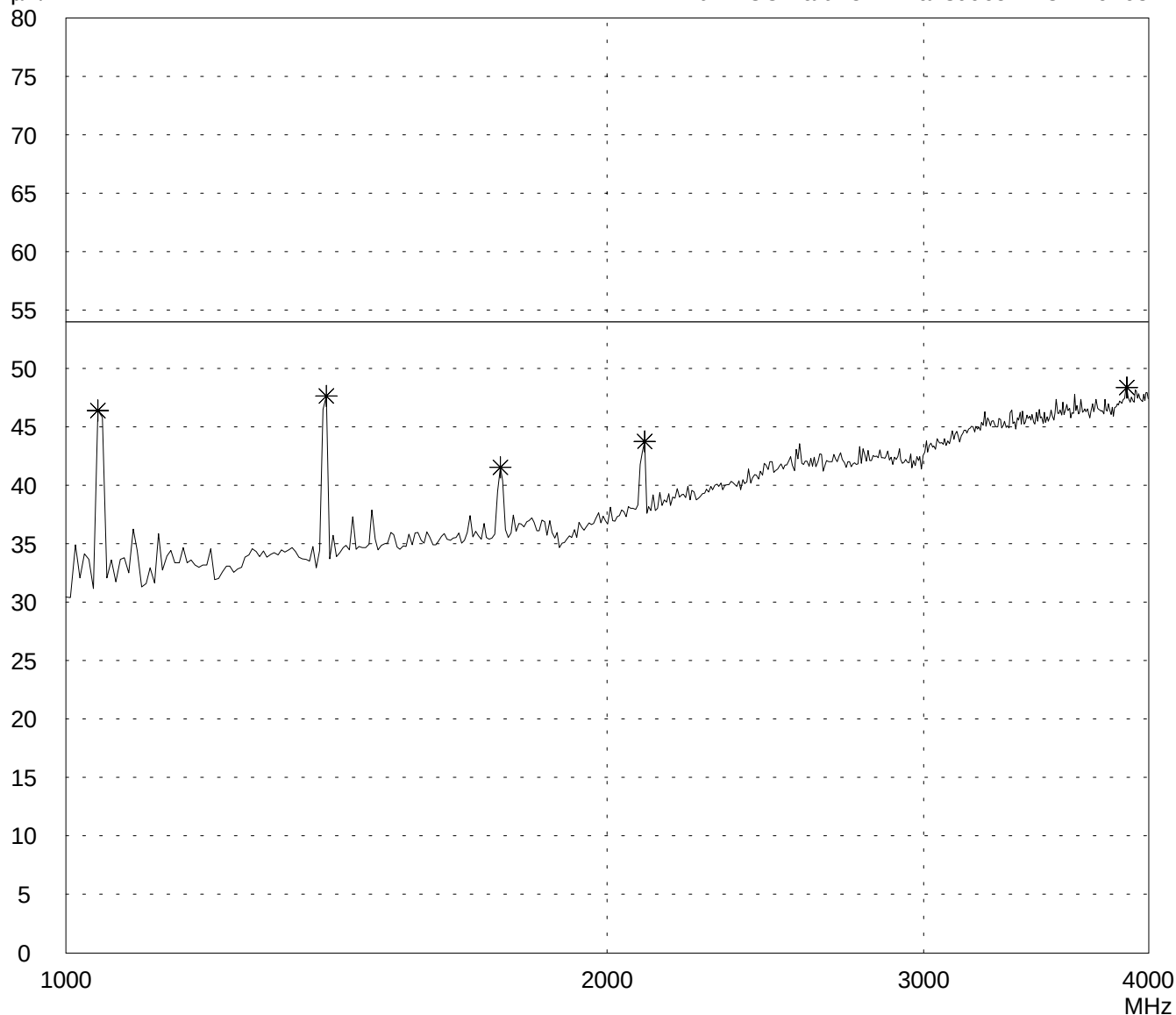
- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- TX mode
- channel 04 selected
- Note: with WHKS1000-10SS high pass filter

Detector:
Peak

List of values:
Selected by hand

dBμV/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Limit kept

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Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

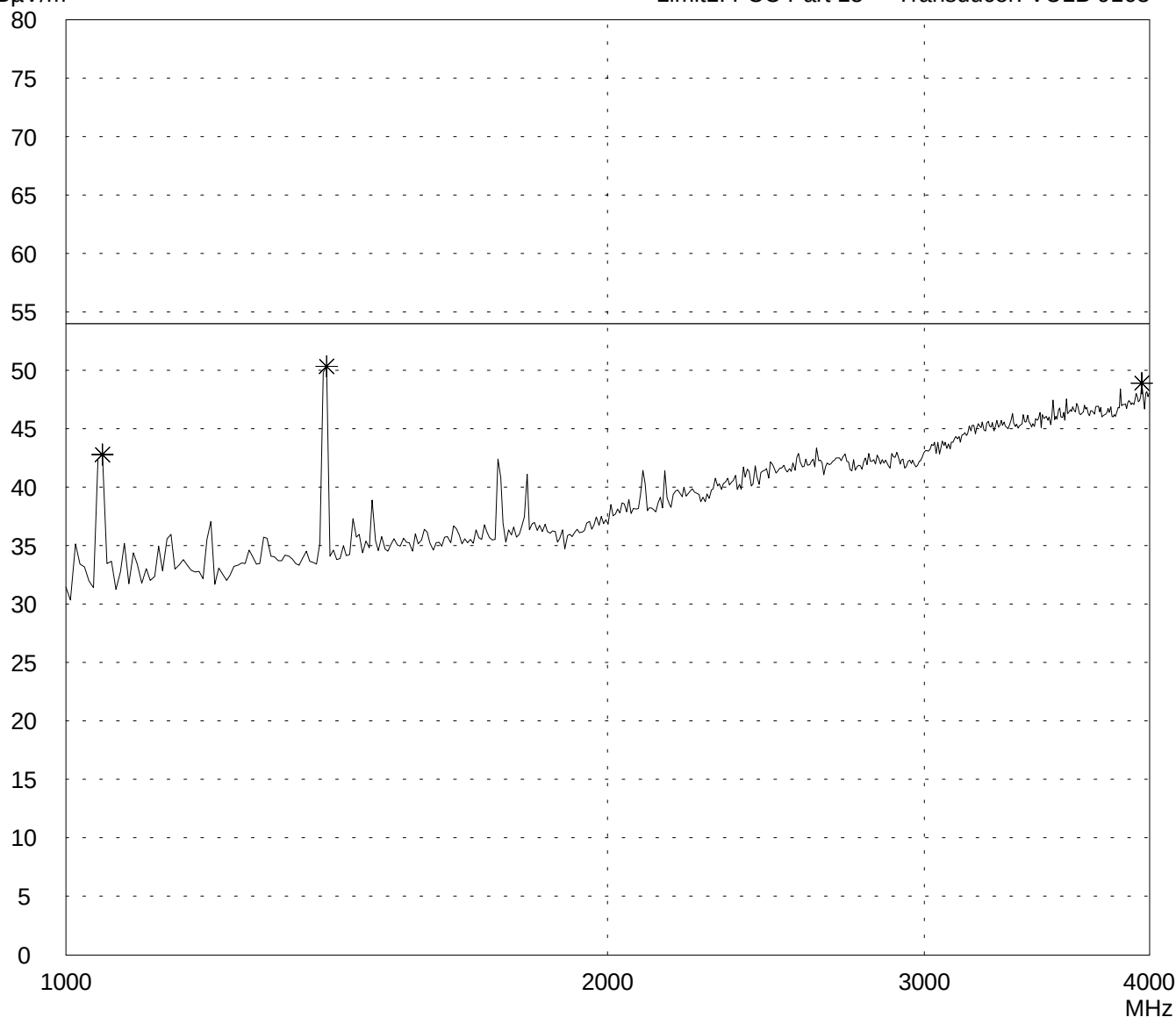
- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- TX mode
- channel 04 selected
- Note: with WHKS1000-10SS high pass filter

Detector:
Peak

List of values:
Selected by hand

dB μ V/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Horizontal Polarization**

Date of test: 12/15/2003 Operator: M. Steindl

Test performed: automatically File name: default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 04 selected

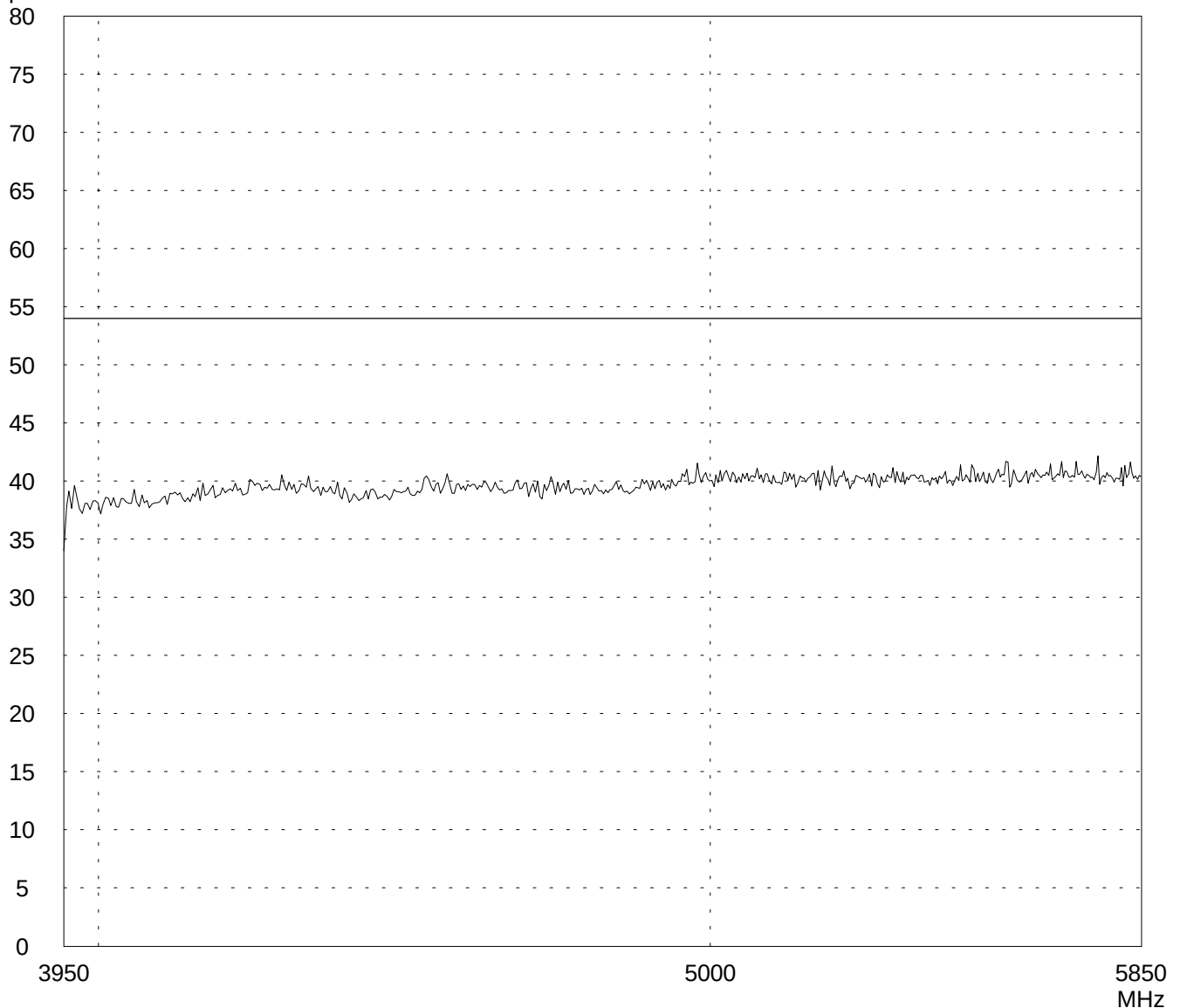
- Note: with WHK/M3/13G-10SS high-pass-filter

Detector:
Peak

List of values:
10 dB Margin 50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

Project file:
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Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test: Operator:
12/15/2003 M. Steindl

Test performed: File name:
automatically default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 04 selected

- Note: with WHK/M3/13G-10SS high-pass-filter

Detector:
Peak

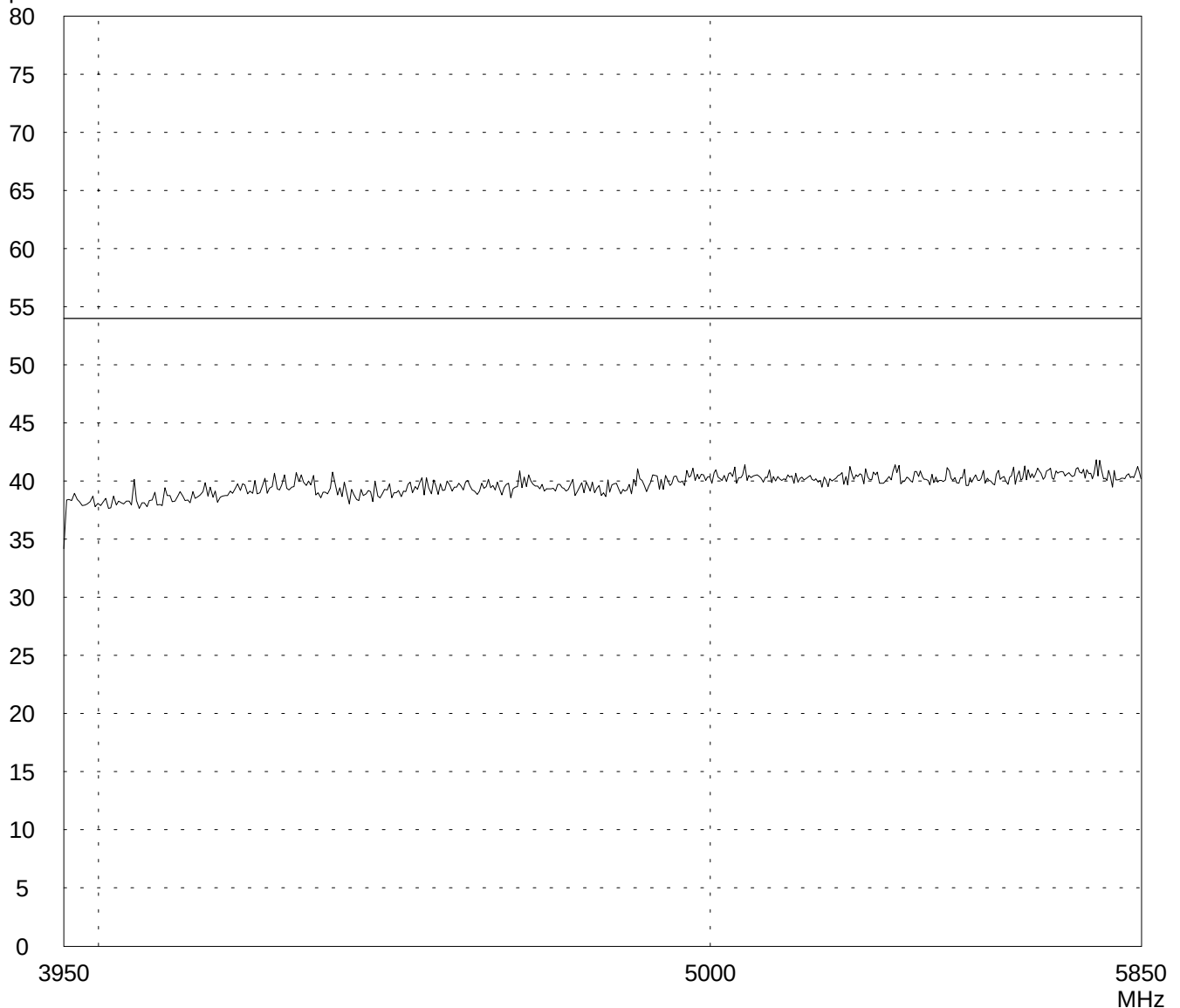
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Horizontal Polarization**

Date of test: Operator:
12/15/2003 M. Steindl

Test performed: File name:
automatically default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 04 selected

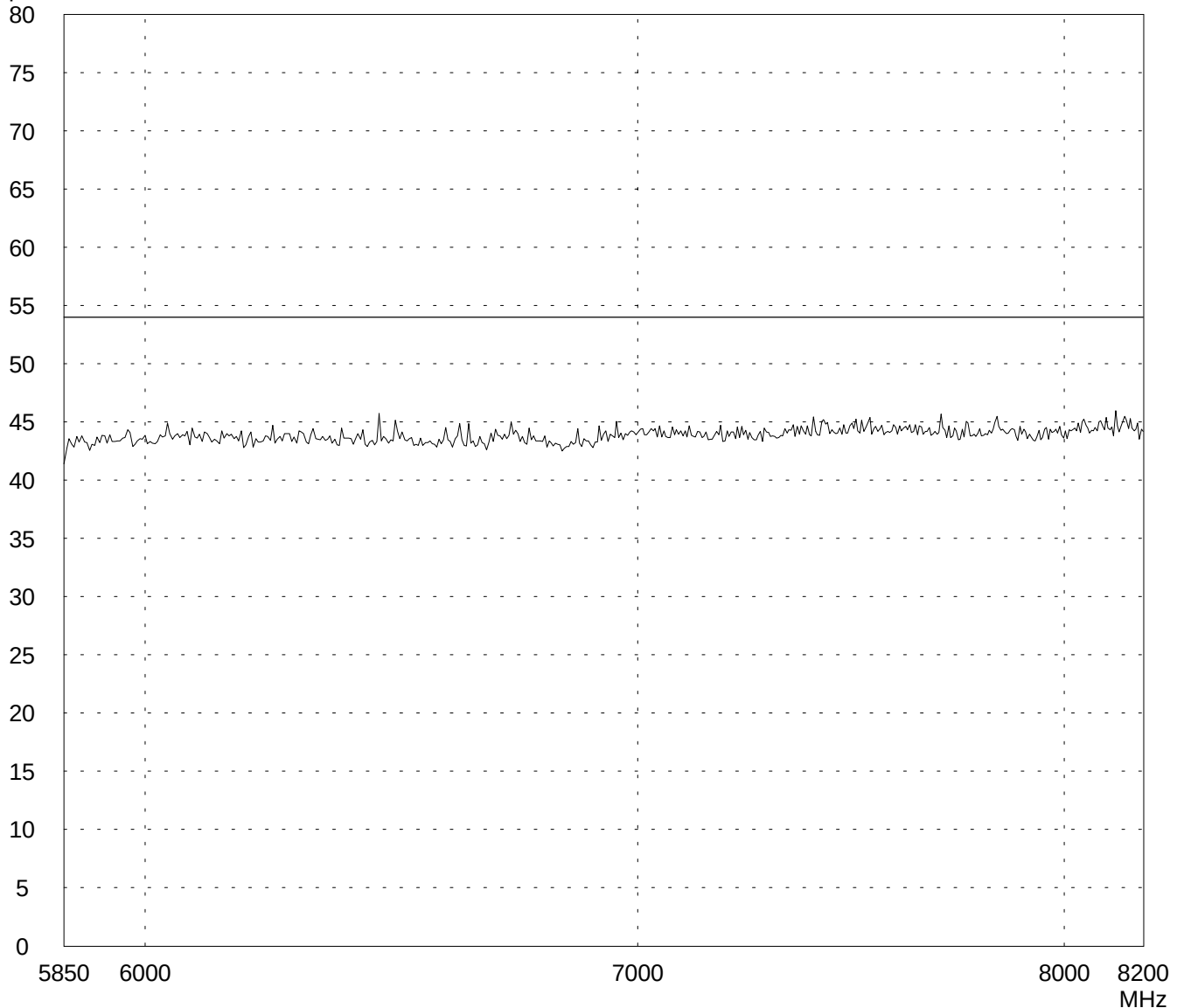
- Note: with WHK/M3/13G-10SS high-pass-filter

Detector:
Peak

List of values:
Selected by hand

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test: Operator:
12/15/2003 M. Steindl

Test performed: File name:
automatically default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 04 selected

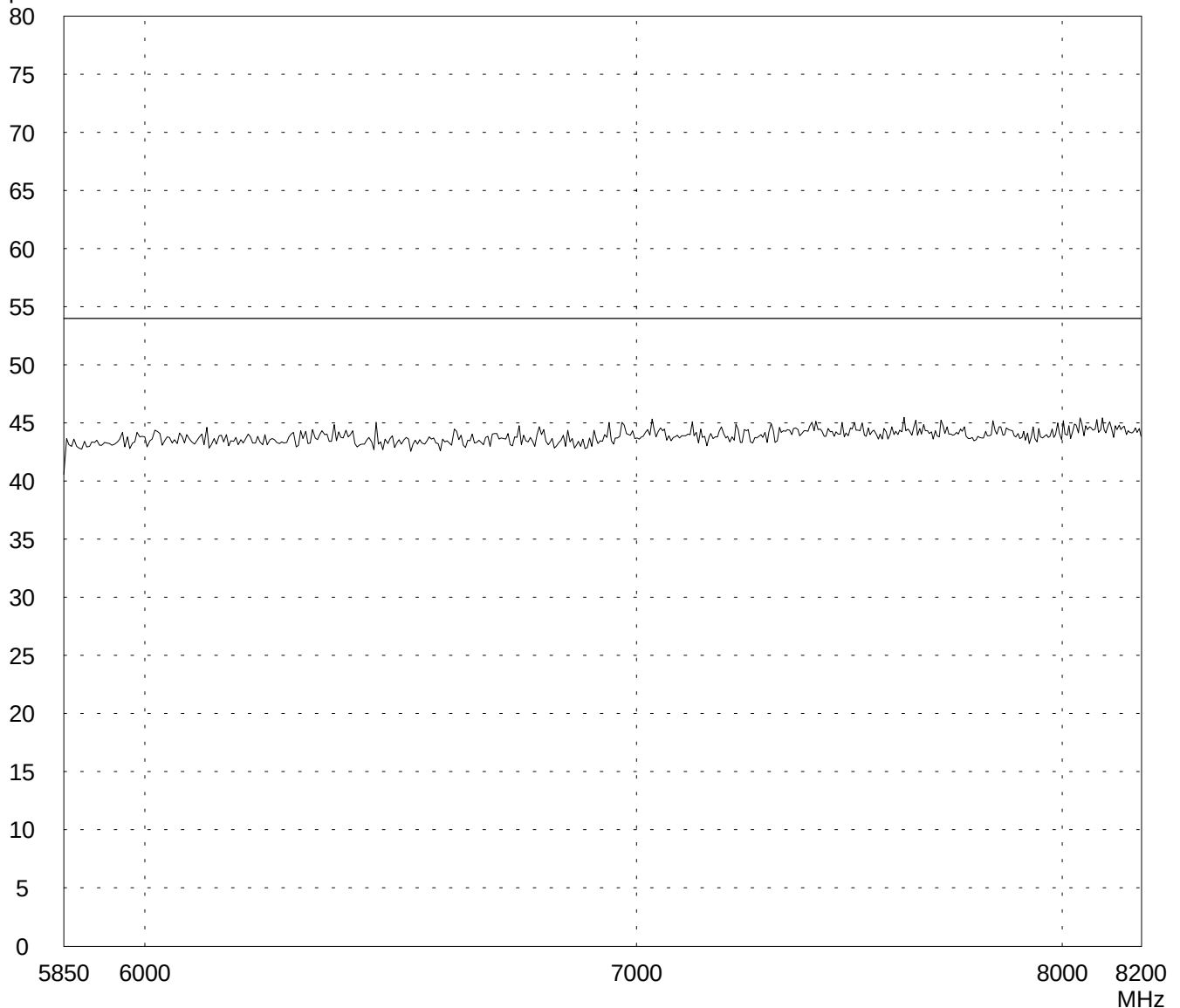
- Note: with WHK/M3/13G-10SS high-pass-filter

Detector:
Peak

List of values:
Selected by hand

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

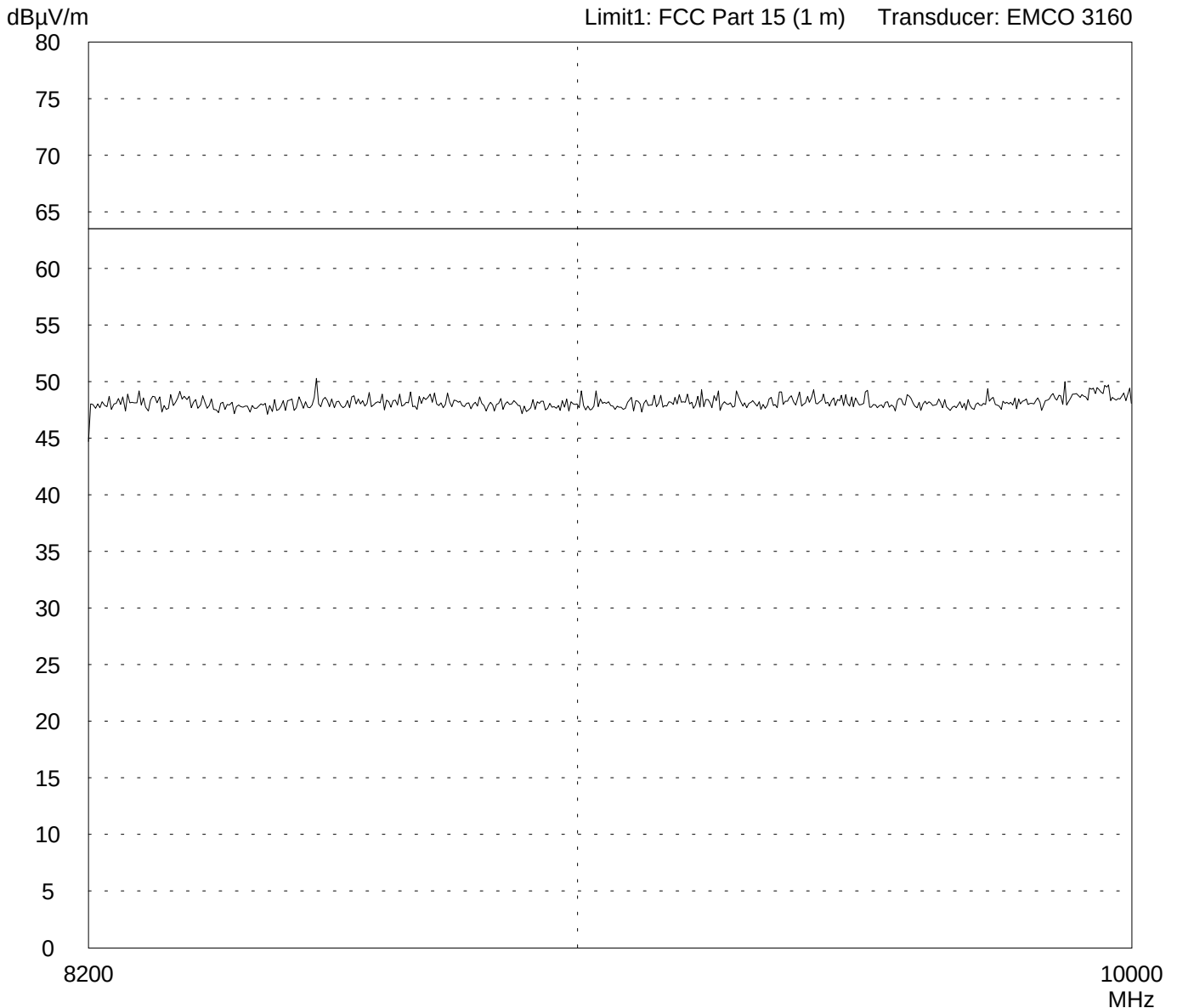
Project file:
55416-30783

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Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 (EMCO 3160)

Model: OMB2-118 (USA)	Comment: - with 115 V AC power supply - with AC/DC adapter FW7238/15 (output 15 V DC) - with non-shielded cables connected to all ports (RS232 and 2 x RS485) - communication via RS232 - TX mode - channel 04 selected - Note: with WHK/M3/13G-10SS high-pass-filter
Serial no.: 53282	
Applicant: think dig High Tech Solutions GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Horizontal Polarization	
Date of test: 12/15/2003	Operator: M. Steindl
Test performed: automatically	File name: default.emi

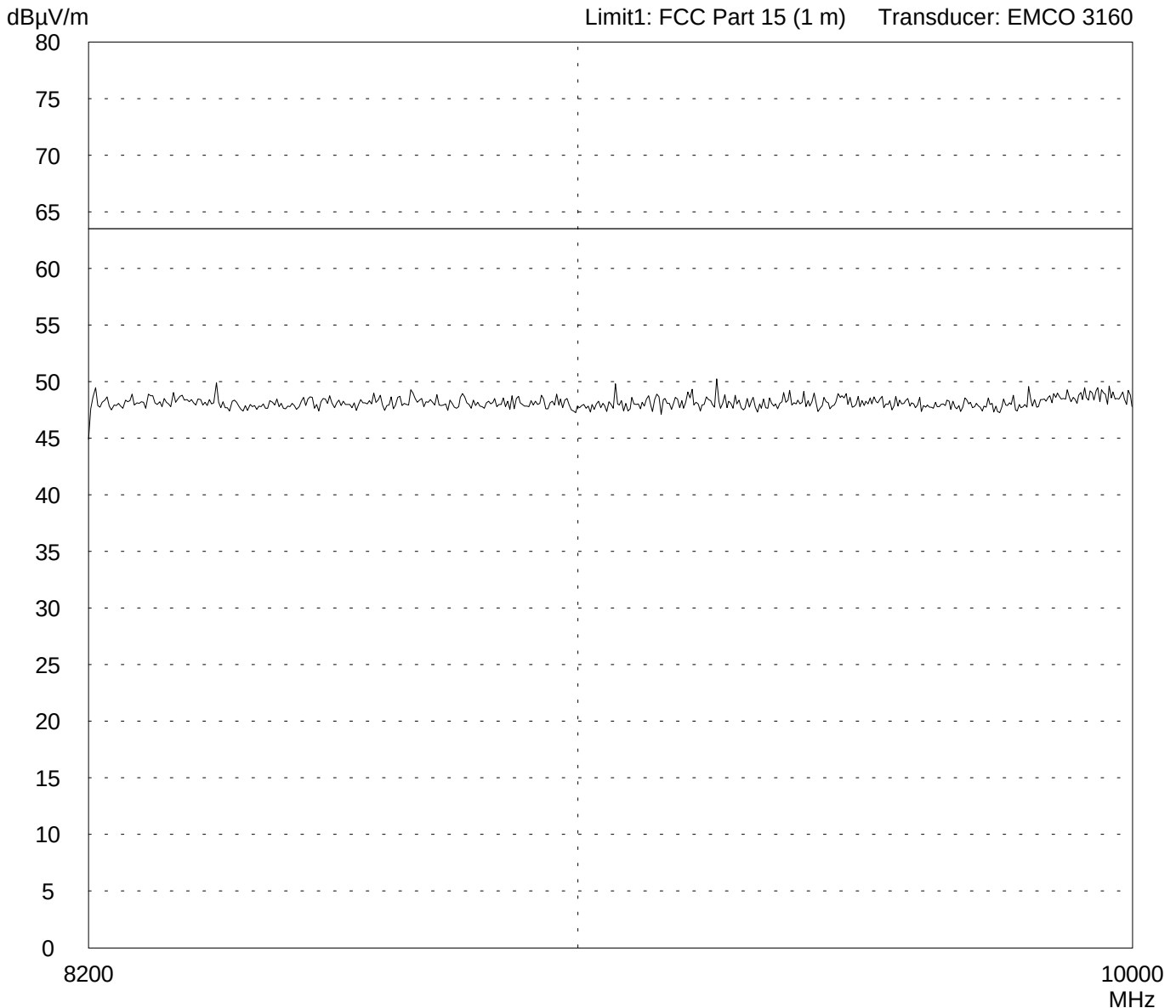
Detector: Peak	List of values:
--------------------------	------------------------



Result: Limit kept	Project file: 55416-30783
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Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 (EMCO 3160)

Model: OMB2-118 (USA)	Comment: - with 115 V AC power supply - with AC/DC adapter FW7238/15 (output 15 V DC) - with non-shielded cables connected to all ports (RS232 and 2 x RS485) - communication via RS232 - TX mode - channel 04 selected - Note: with WHK/M3/13G-10SS high-pass-filter
Serial no.: 53282	
Applicant: think dig High Tech Solutions GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Vertical Polarization	
Date of test: 12/15/2003	Operator: M. Steindl
Test performed: automatically	File name: default.emi
Detector: Peak	List of values:



Result: Limit kept	Project file: 55416-30783
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Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test: 12/15/2003 Operator: M. Steindl

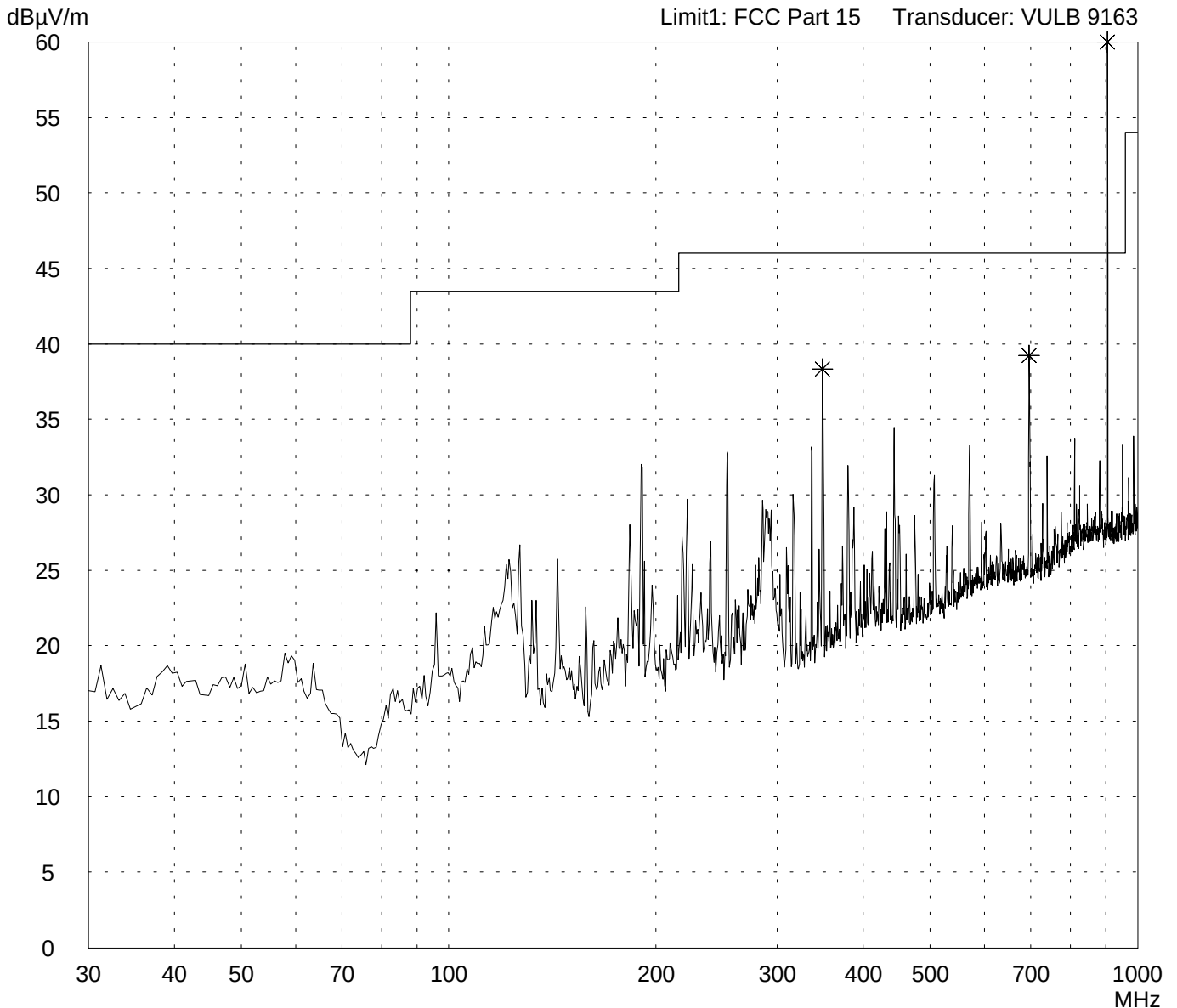
Test performed: automatically File name: default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- TX mode
- channel 70 selected

Detector:
Peak

List of values:
Selected by hand



Result:
Prescan

Project file:
55416-30783

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Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Vertical Polarization

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- TX mode
- channel 70 selected

Detector:
Peak

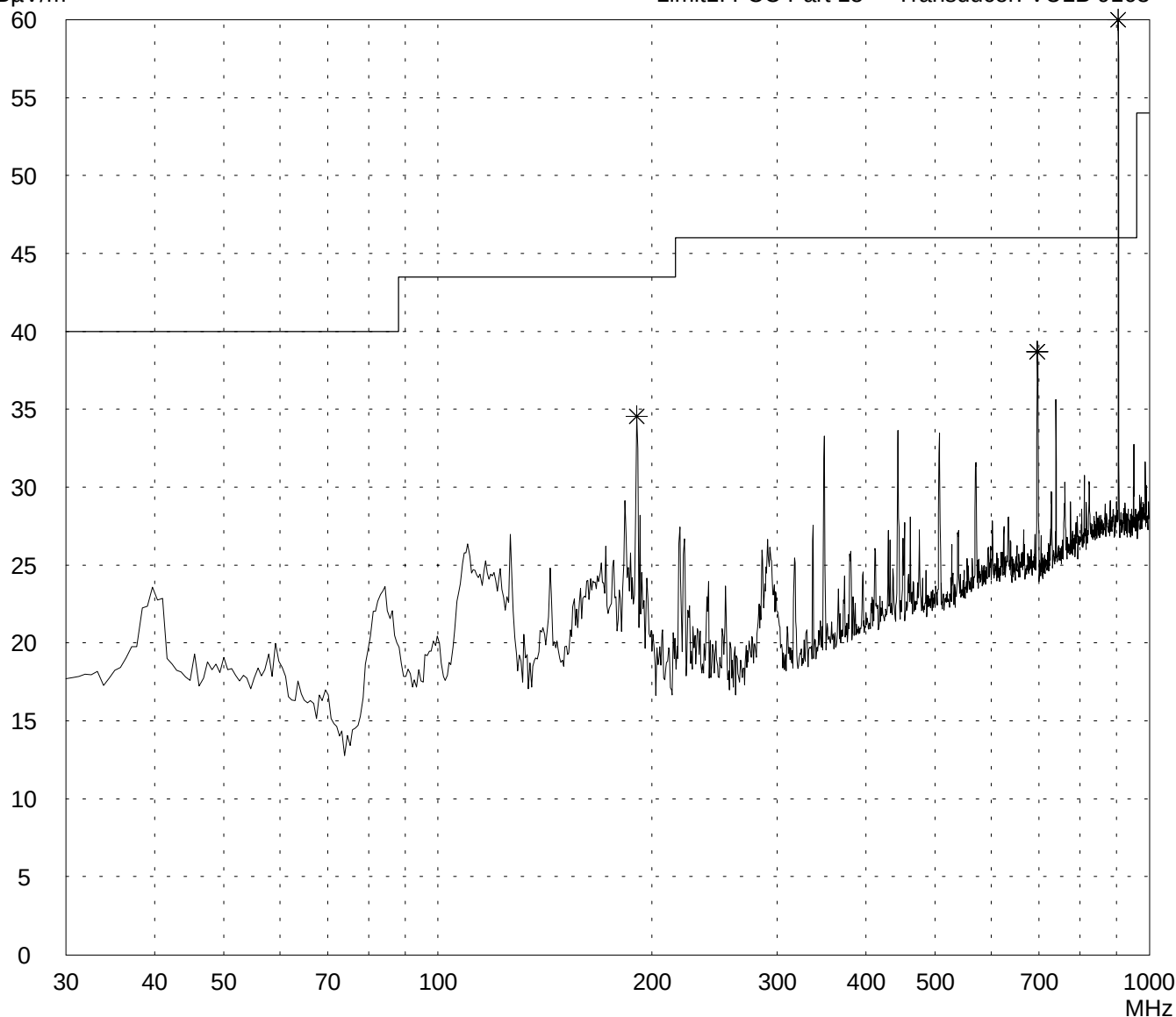
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Prescan

Project file:
55416-30783

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Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test: 12/15/2003 Operator: M. Steindl

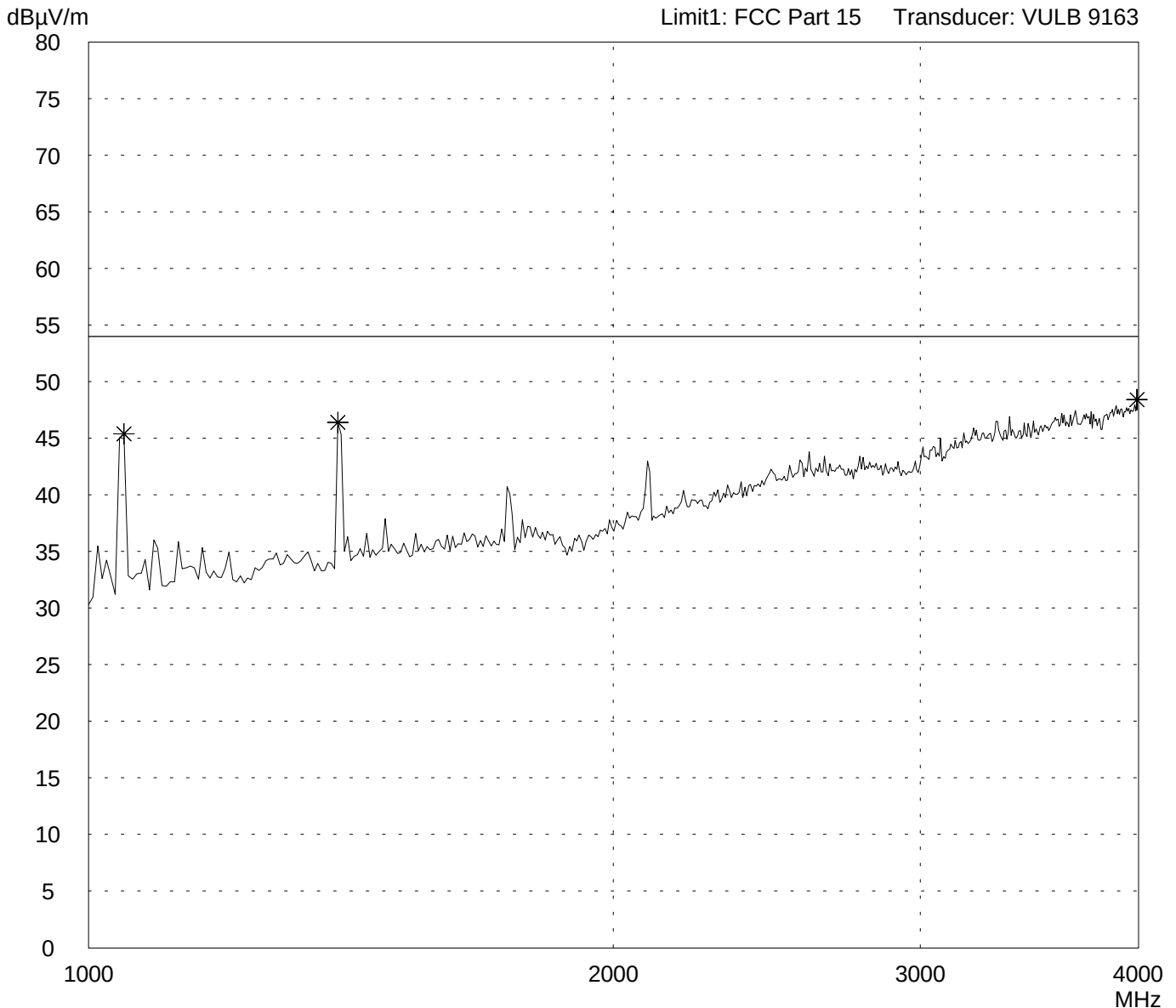
Test performed: automatically File name: default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- TX mode
- channel 70 selected
- Note: with WHKS1000-10SS high pass filter

Detector:
Peak

List of values:
Selected by hand



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Vertical Polarization

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

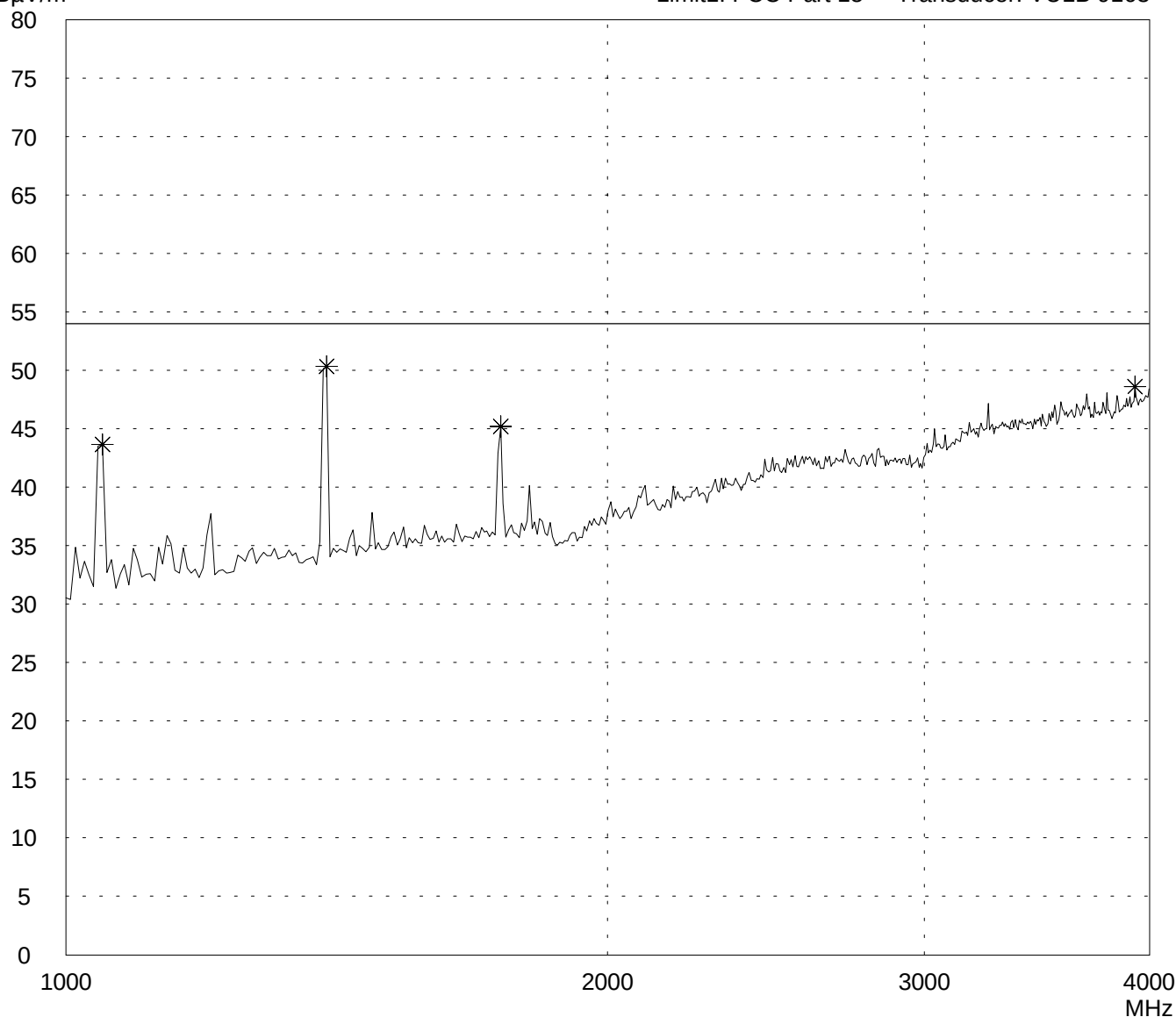
- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- TX mode
- channel 70 selected
- Note: with WHKS1000-10SS high pass filter

Detector:
Peak

List of values:
Selected by hand

$\text{dB}\mu\text{V/m}$

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Prescan

Project file:
55416-30783

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Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Horizontal Polarization**

Date of test: Operator:
12/15/2003 M. Steindl

Test performed: File name:
automatically default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 70 selected

- Note: with WHK/M3/13G-10SS high-pass-filter

Detector:
Peak

List of values:

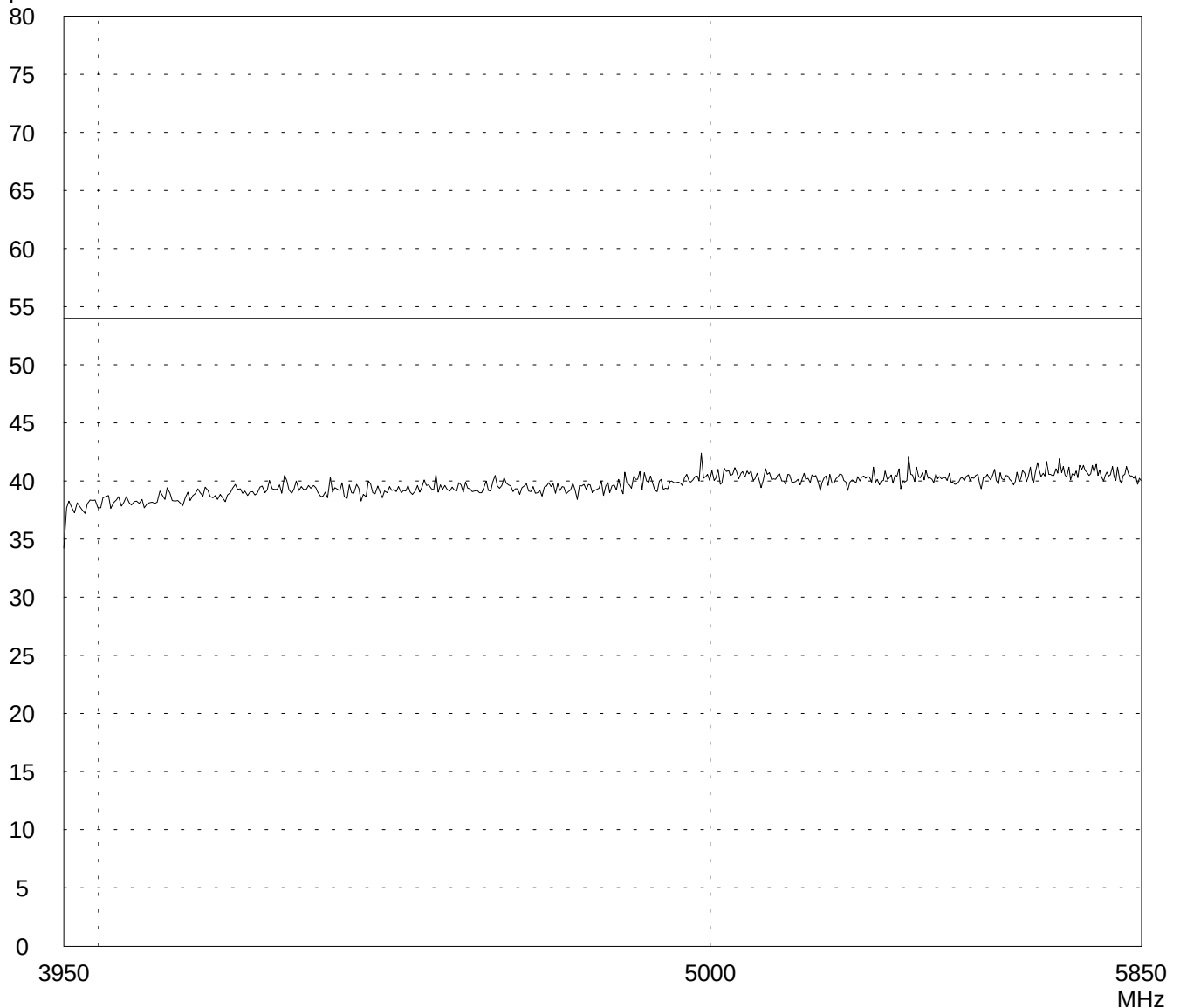
10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15

Transducer: EMCO 3160



Result:
Limit kept

Project file:
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Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test: Operator:
12/15/2003 M. Steindl

Test performed: File name:
automatically default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 70 selected

- Note: with WHK/M3/13G-10SS high-pass-filter

Detector:
Peak

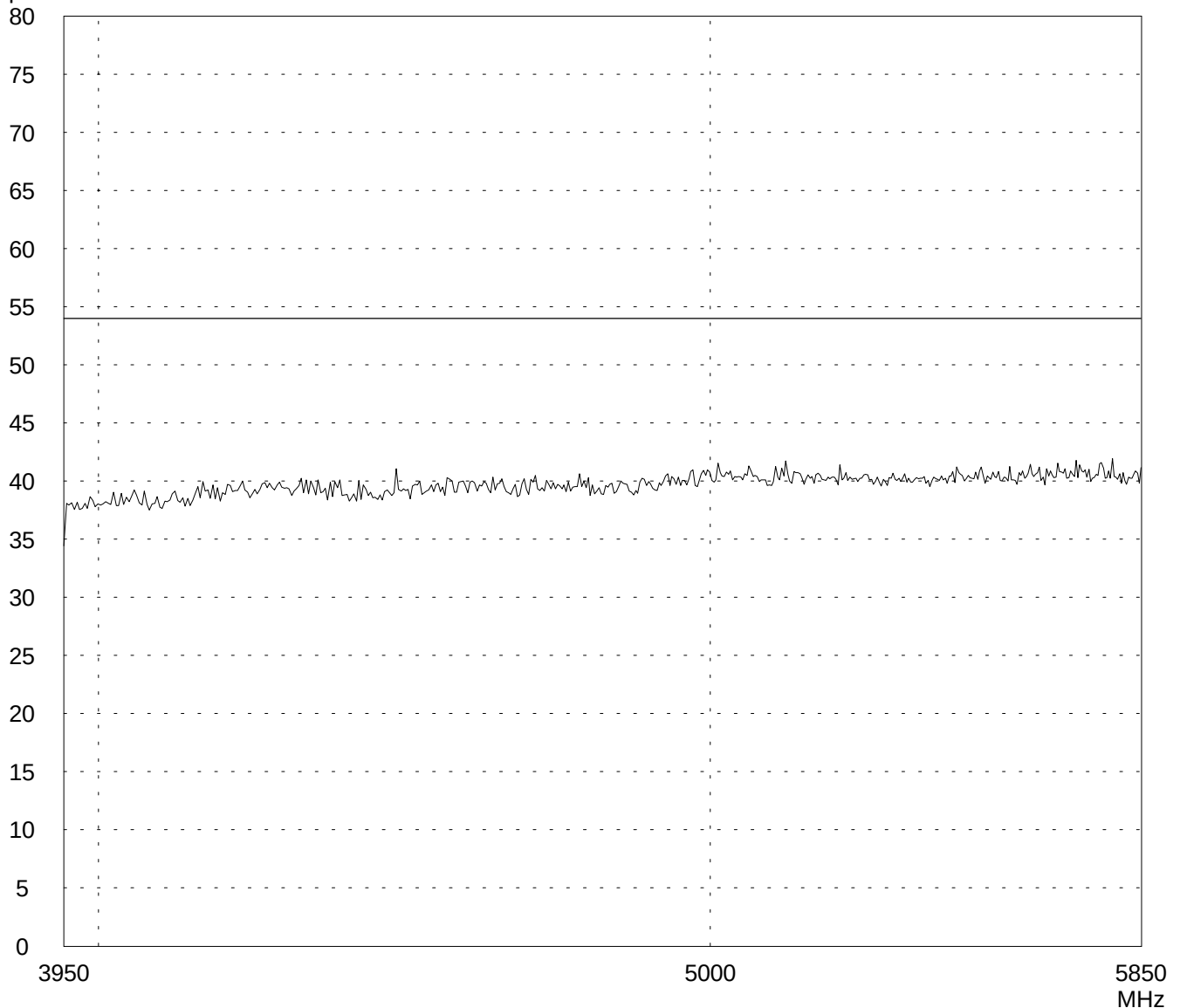
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Horizontal Polarization**

Date of test: Operator:
12/15/2003 M. Steindl

Test performed: File name:
automatically default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 70 selected

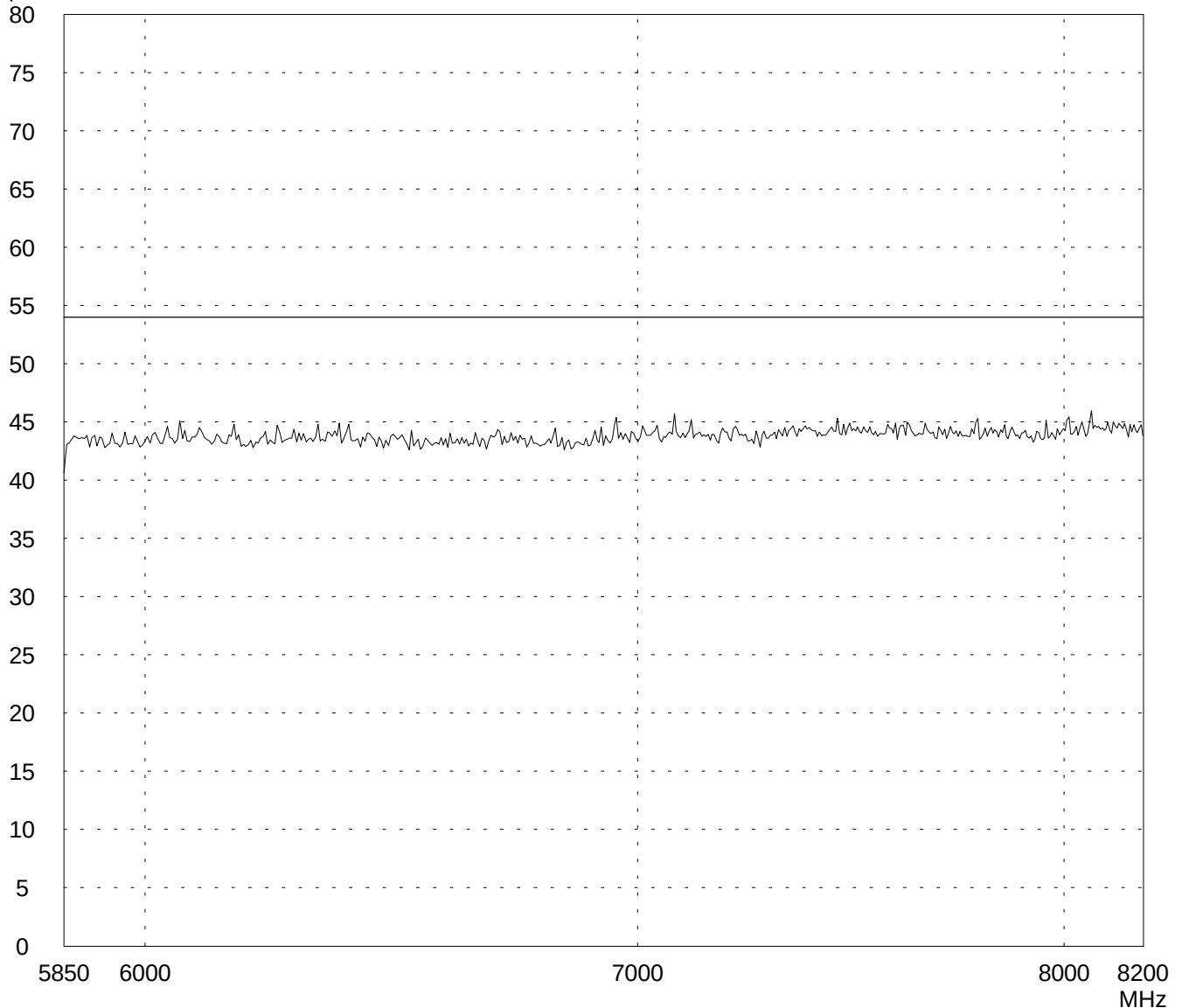
- Note: with WHK/M3/13G-10SS high-pass-filter

Detector:
Peak

List of values:

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

Project file:
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Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test: Operator:
12/15/2003 M. Steindl

Test performed: File name:
automatically default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- TX mode
- channel 70 selected

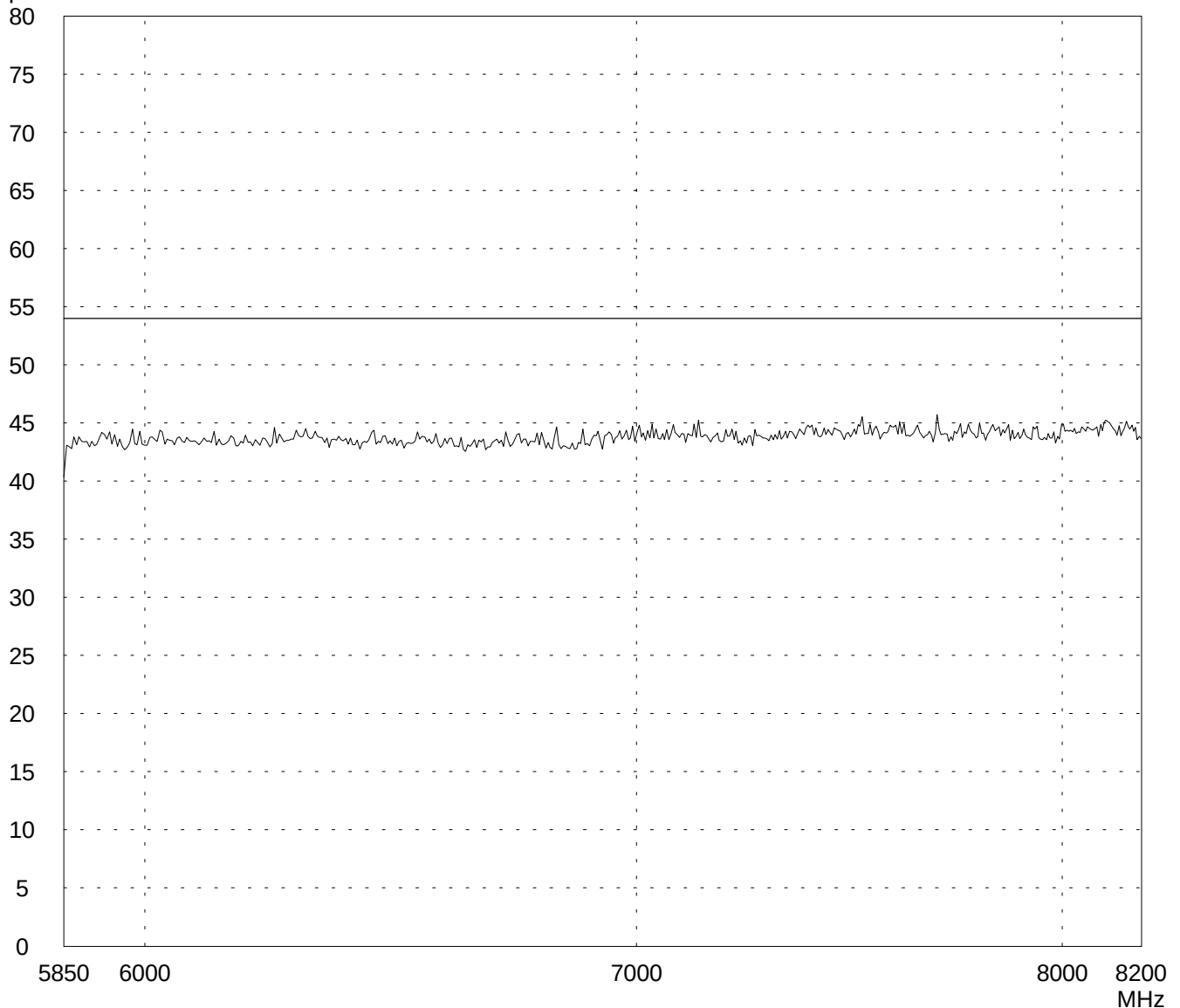
- Note: with WHK/M3/13G-10SS high-pass-filter

Detector:
Peak

List of values:
Selected by hand

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



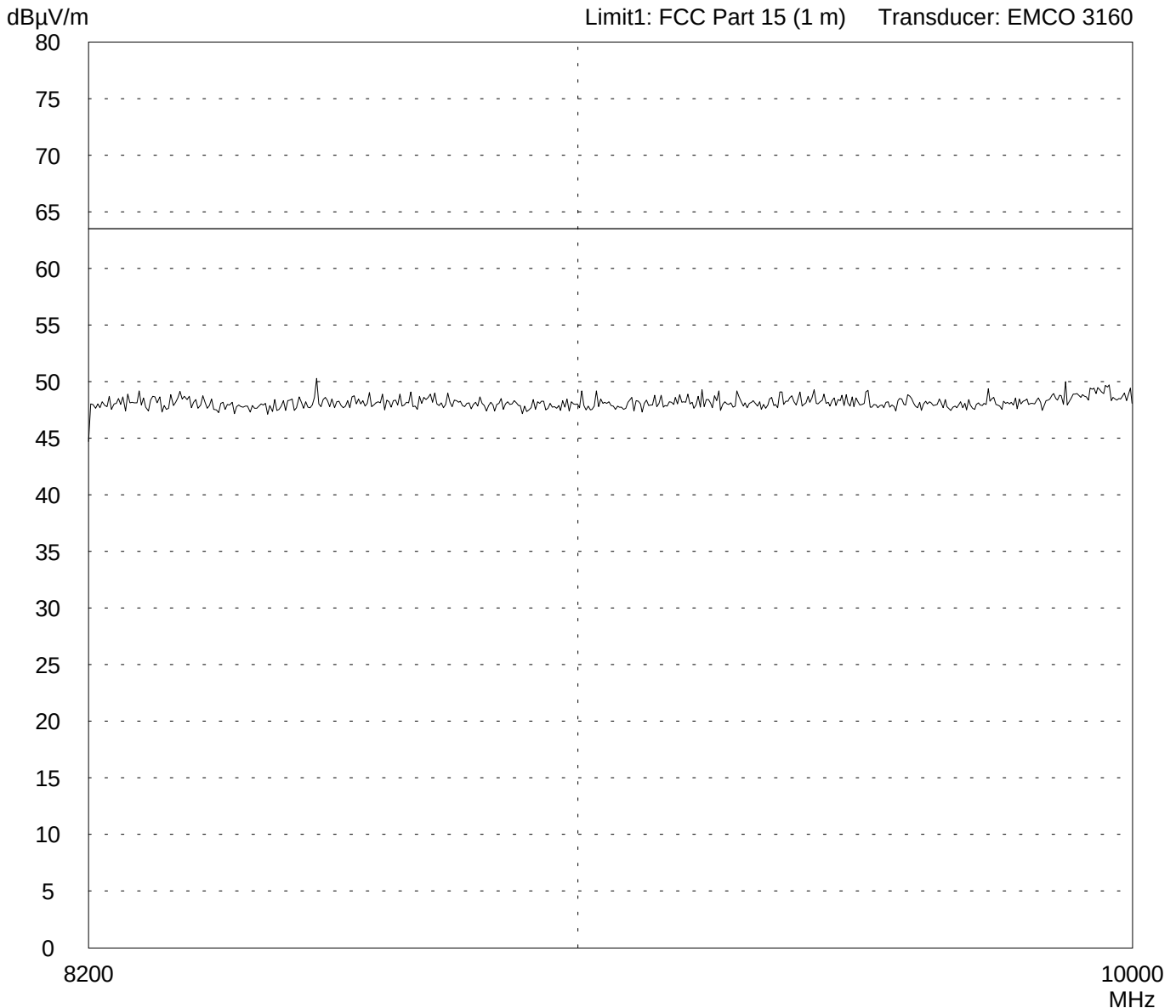
Result:
Limit kept

Project file:
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Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 (EMCO 3160)

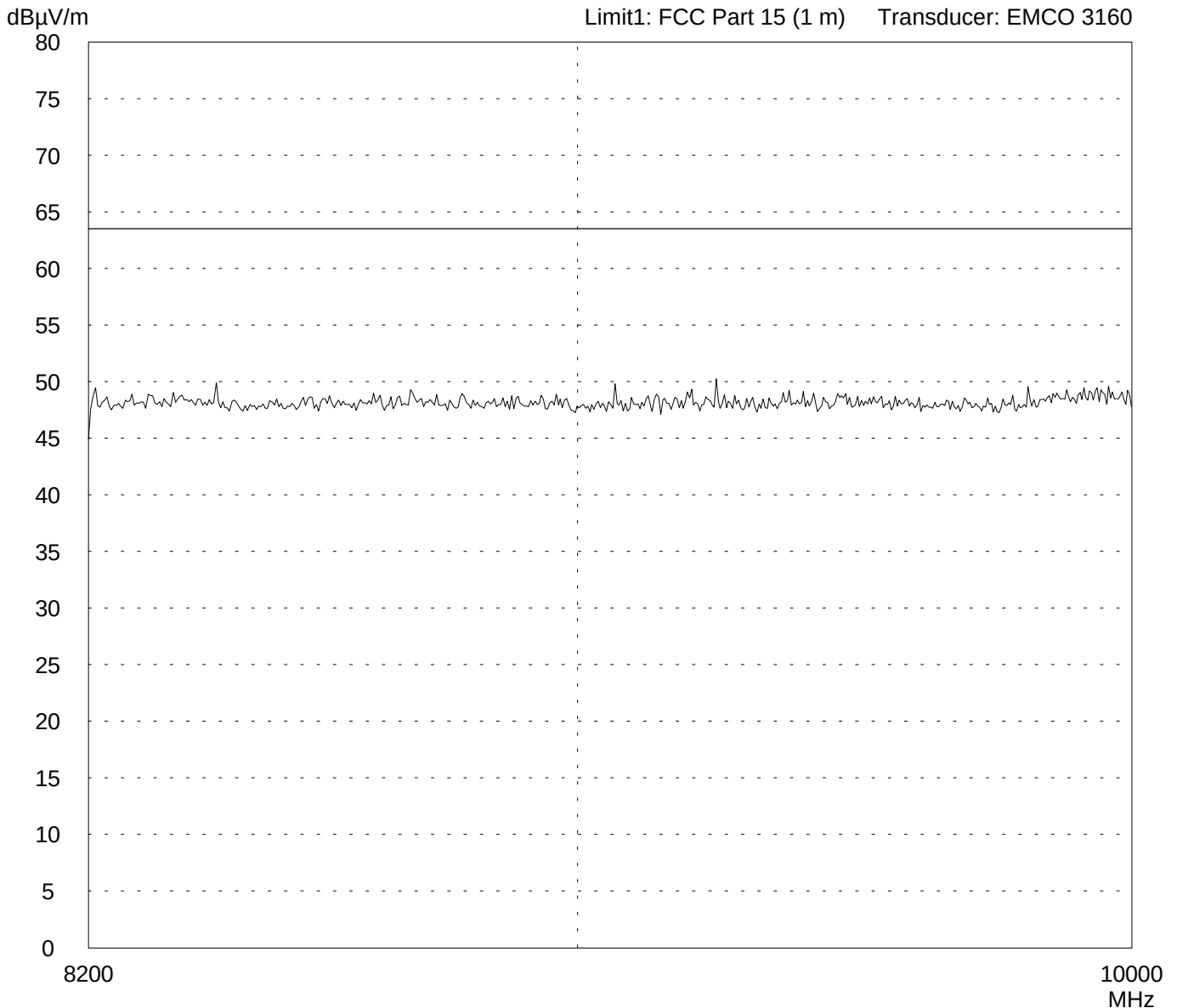
Model: OMB2-118 (USA)	Comment: - with 115 V AC power supply - with AC/DC adapter FW7238/15 (output 15 V DC) - with non-shielded cables connected to all ports (RS232 and 2 x RS485) - communication via RS232 - TX mode - channel 70 selected - Note: with WHK/M3/13G-10SS high-pass-filter
Serial no.: 53282	
Applicant: think dig High Tech Solutions GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Horizontal Polarization	
Date of test: 12/15/2003	Operator: M. Steindl
Test performed: automatically	File name: default.emi
Detector: Peak	List of values:



Result: Limit kept	Project file: 55416-30783
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Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 (EMCO 3160)

Model: OMB2-118 (USA)	Comment: - with 115 V AC power supply - with AC/DC adapter FW7238/15 (output 15 V DC) - with non-shielded cables connected to all ports (RS232 and 2 x RS485) - communication via RS232 - TX mode - channel 70 selected - Note: with WHK/M3/13G-10SS high-pass-filter
Serial no.: 53282	
Applicant: think dig High Tech Solutions GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Vertical Polarization	
Date of test: 12/15/2003	Operator: M. Steindl
Test performed: automatically	File name: default.emi
Detector: Peak	List of values:



Result: Limit kept	Project file: 55416-30783
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Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

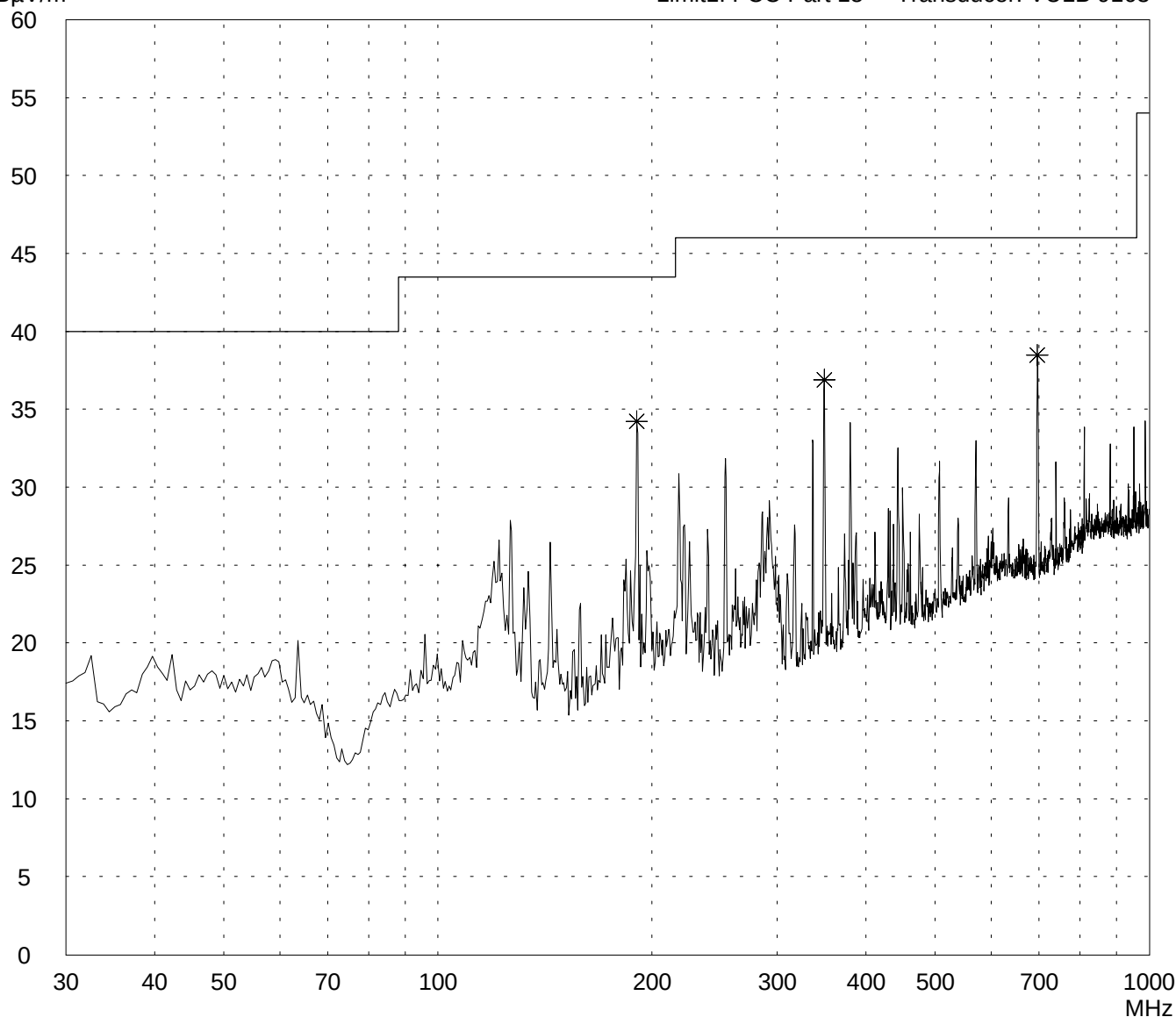
- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- RX mode
- channel 04 selected

Detector:
Peak

List of values:
Selected by hand

dB μ V/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Prescan

Project file:
55416-30783

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Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Vertical Polarization

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- RX mode
- channel 04 selected

Detector:
Peak

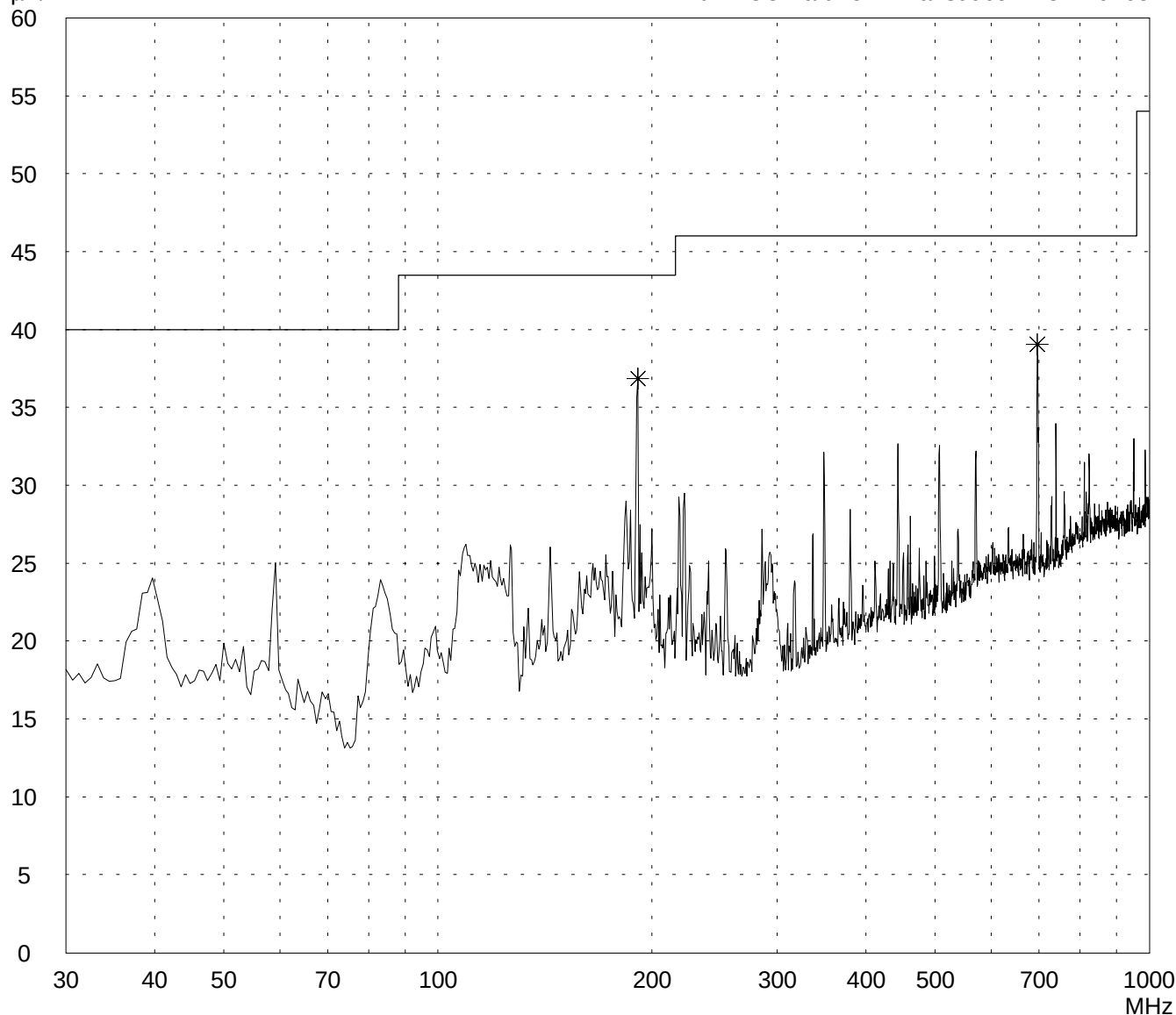
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Prescan

Project file:
55416-30783

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Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Horizontal Polarization**

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

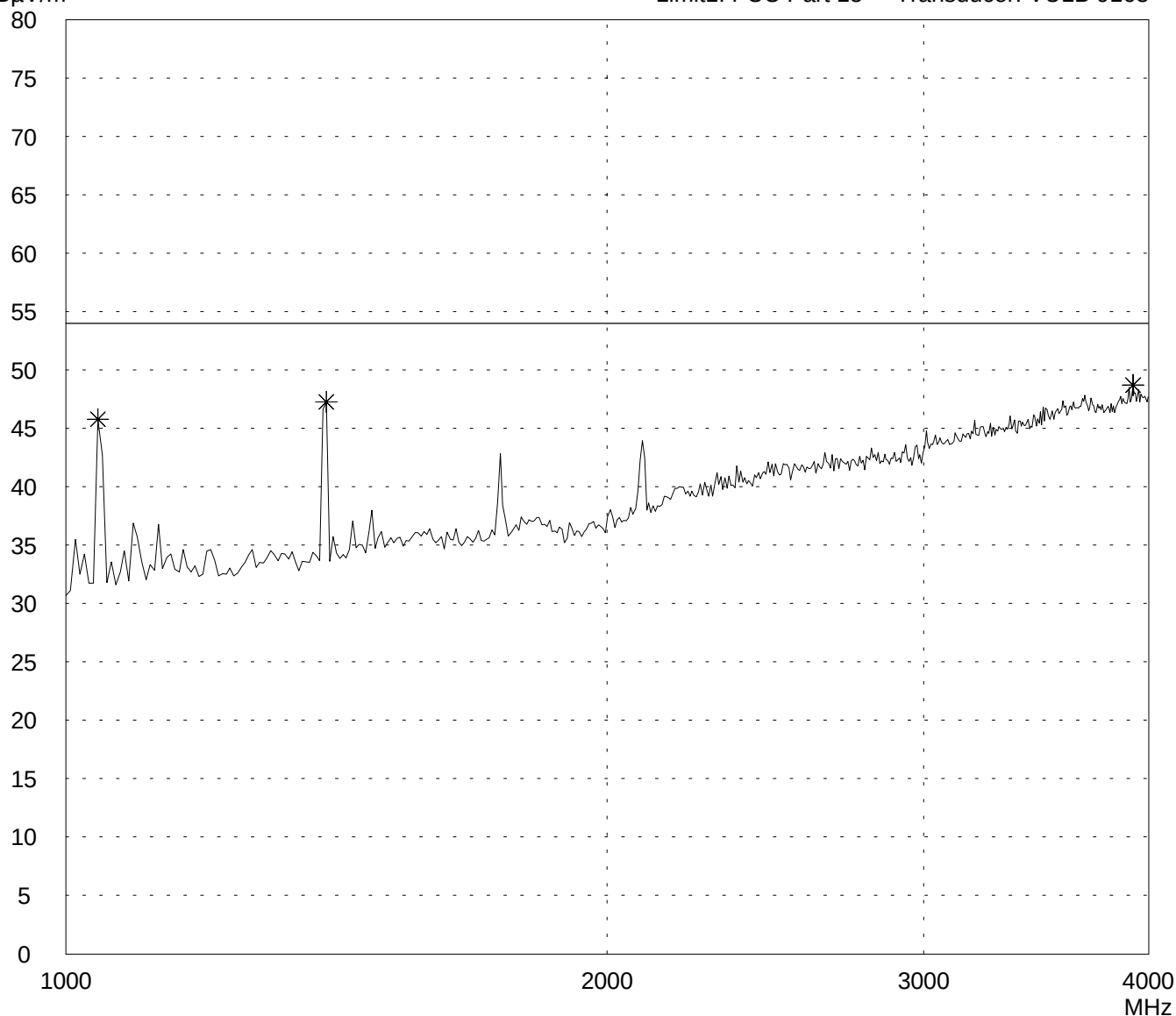
- RX mode
- channel 04 selected

Detector:
Peak

List of values:
Selected by hand

dB μ V/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

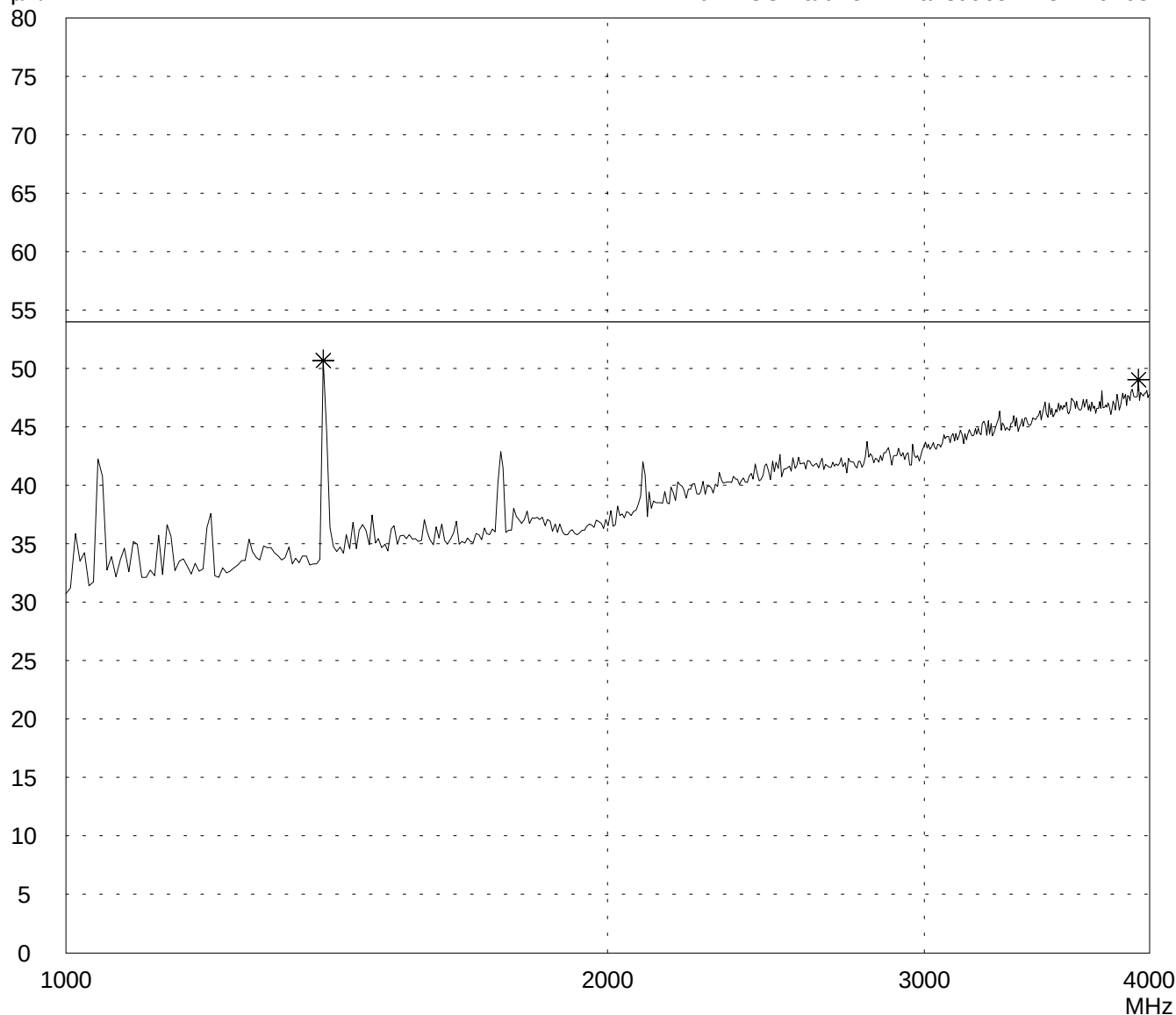
- RX mode
- channel 04 selected

Detector:
Peak

List of values:
Selected by hand

dBµV/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Horizontal Polarization**

Date of test: 12/15/2003 Operator: M. Steindl

Test performed: automatically File name: default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- RX mode
- channel 04 selected

Detector:
Peak

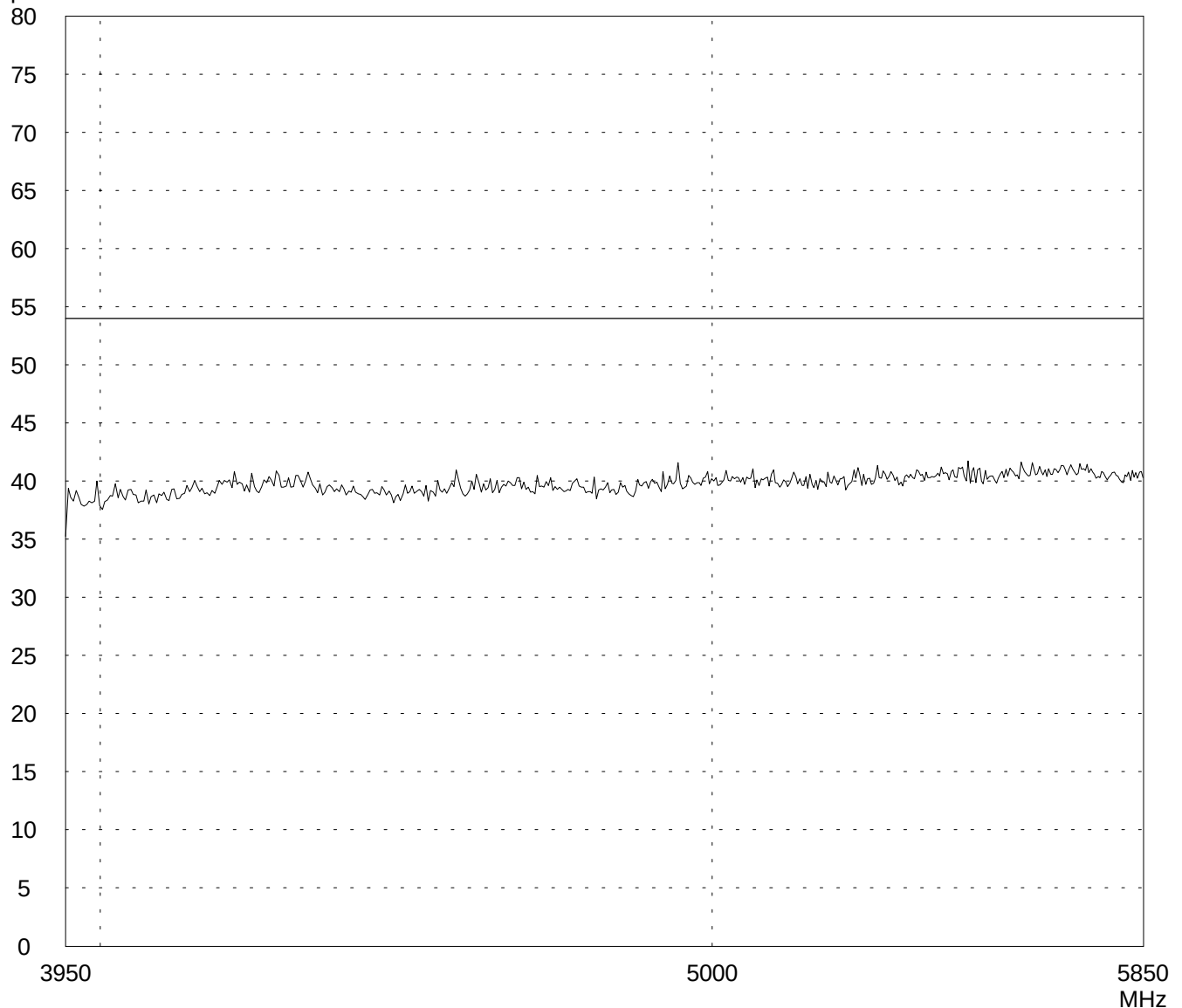
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test: 12/15/2003 Operator: M. Steindl

Test performed: automatically File name: default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- RX mode
- channel 04 selected

Detector:
Peak

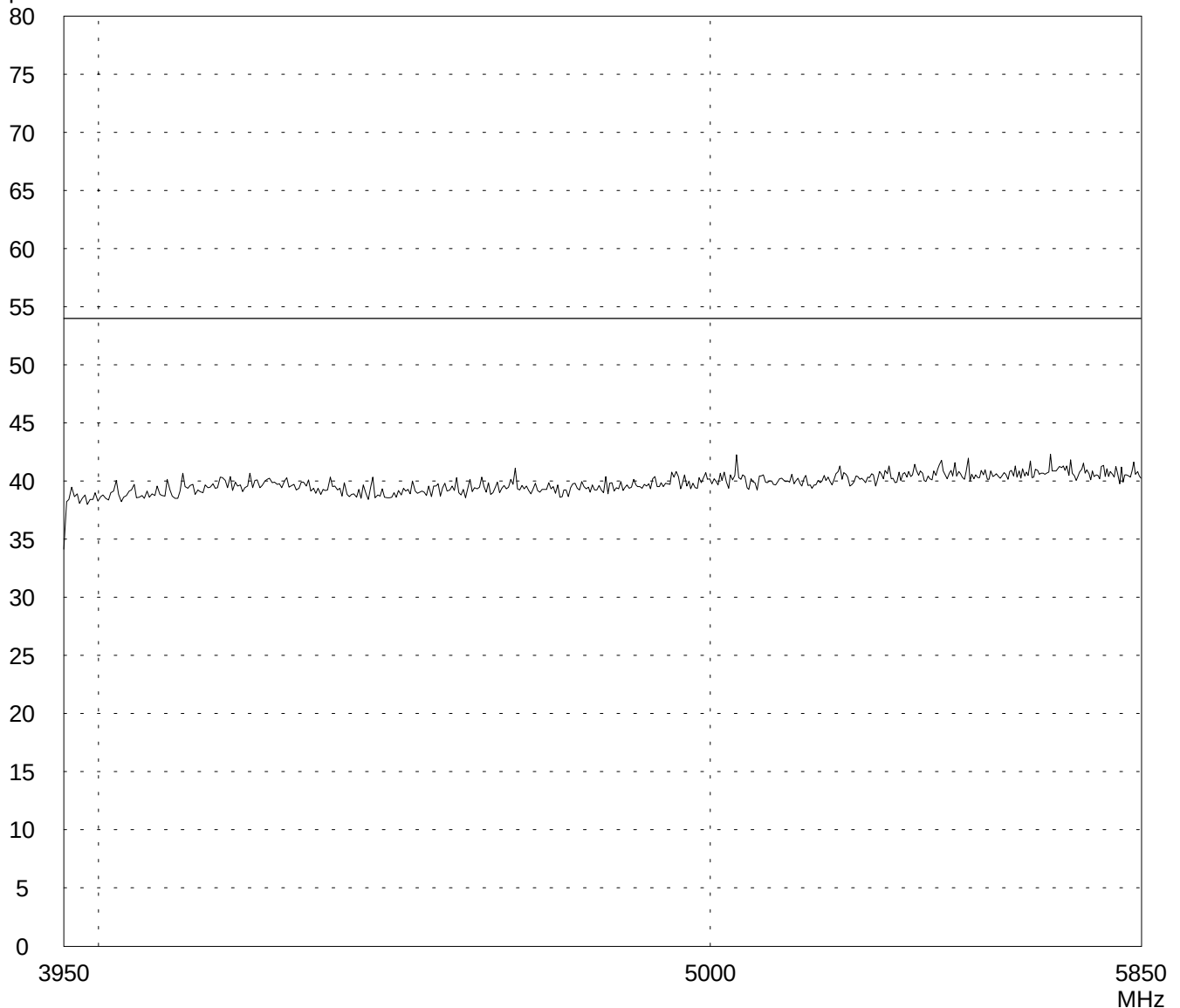
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- RX mode
- channel 70 selected

Detector:
Peak

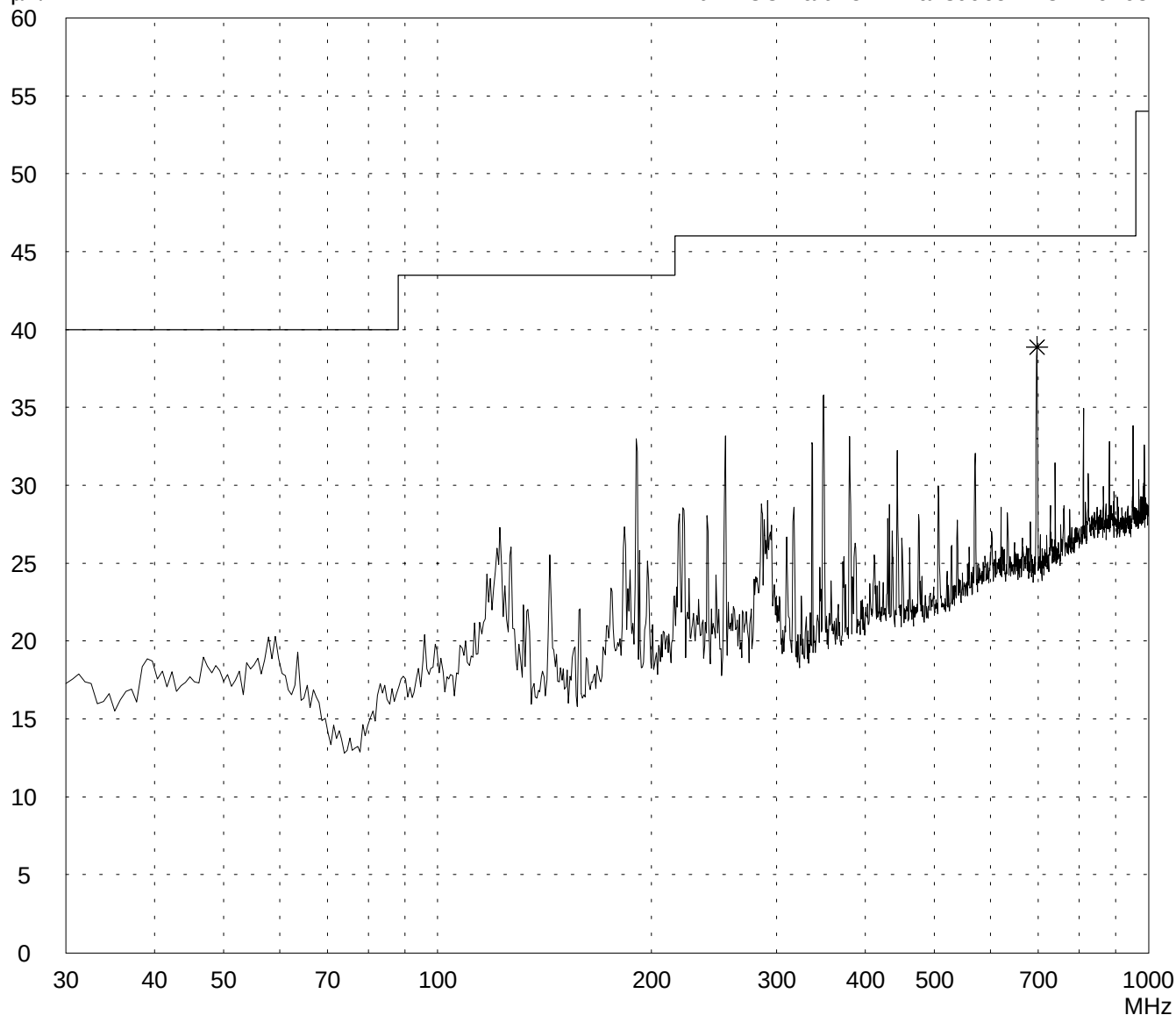
List of values:

10 dB Margin

50 Subranges

dB μ V/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Prescan

Project file:
55416-30783

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Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Vertical Polarization

Date of test: 12/15/2003 Operator: M. Steindl

Test performed: automatically File name: default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- RX mode
- channel 70 selected

Detector:
Peak

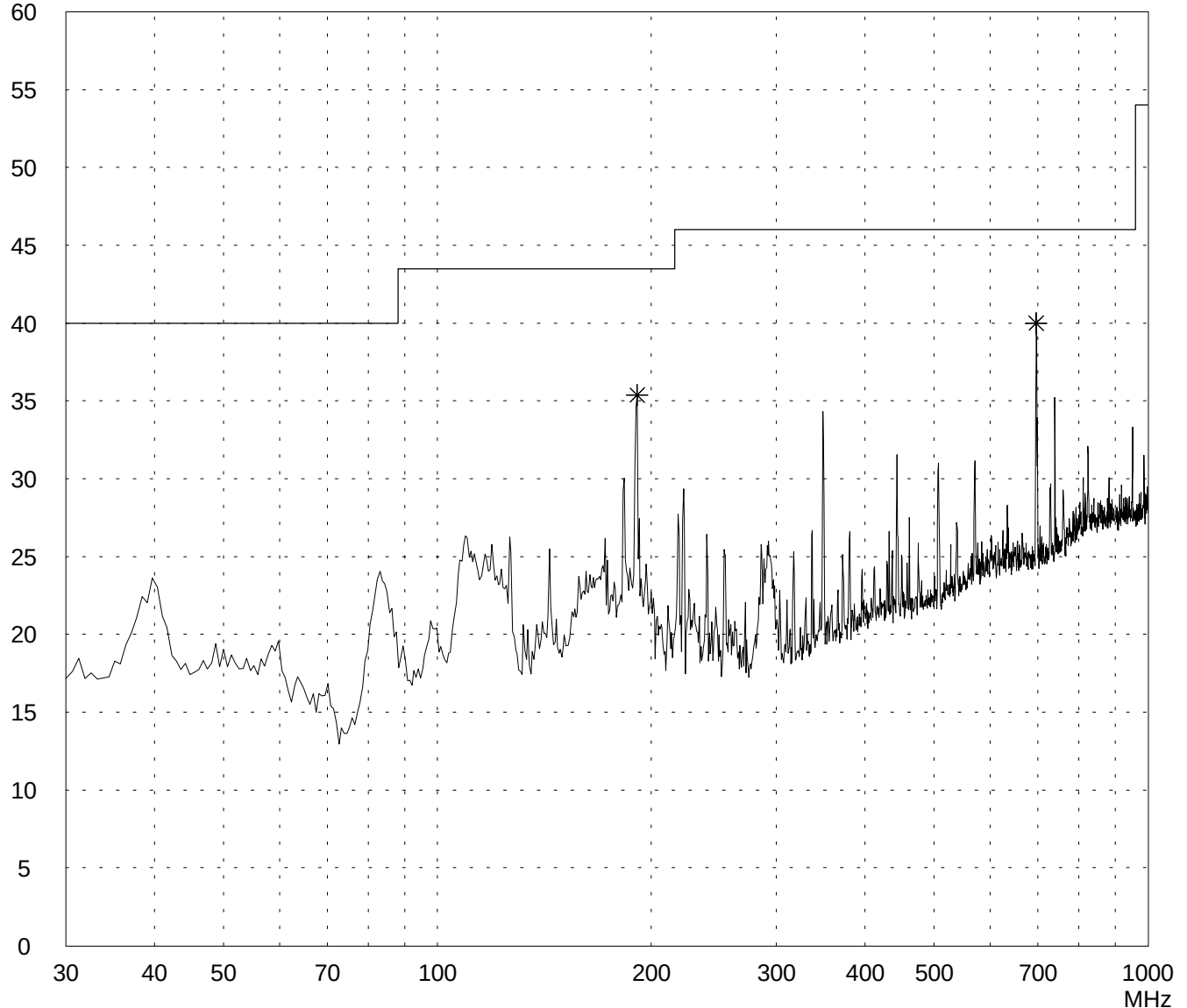
List of values:

10 dB Margin

50 Subranges

dBµV/m
60

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Prescan

Project file:
55416-30747

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Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

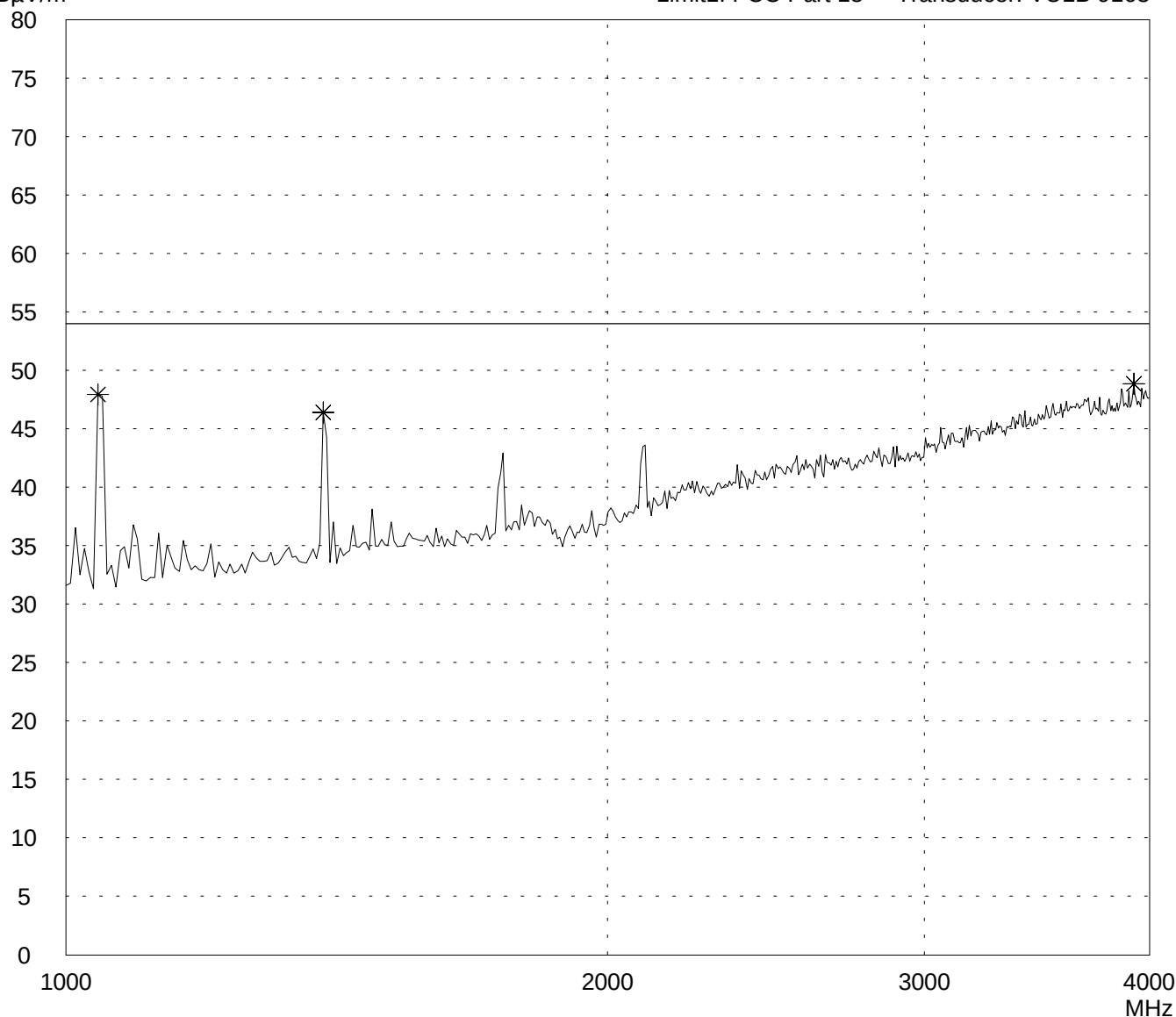
- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232
- RX mode
- channel 70 selected

Detector:
Peak

List of values:
Selected by hand

$\text{dB}\mu\text{V/m}$

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test:
12/15/2003

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

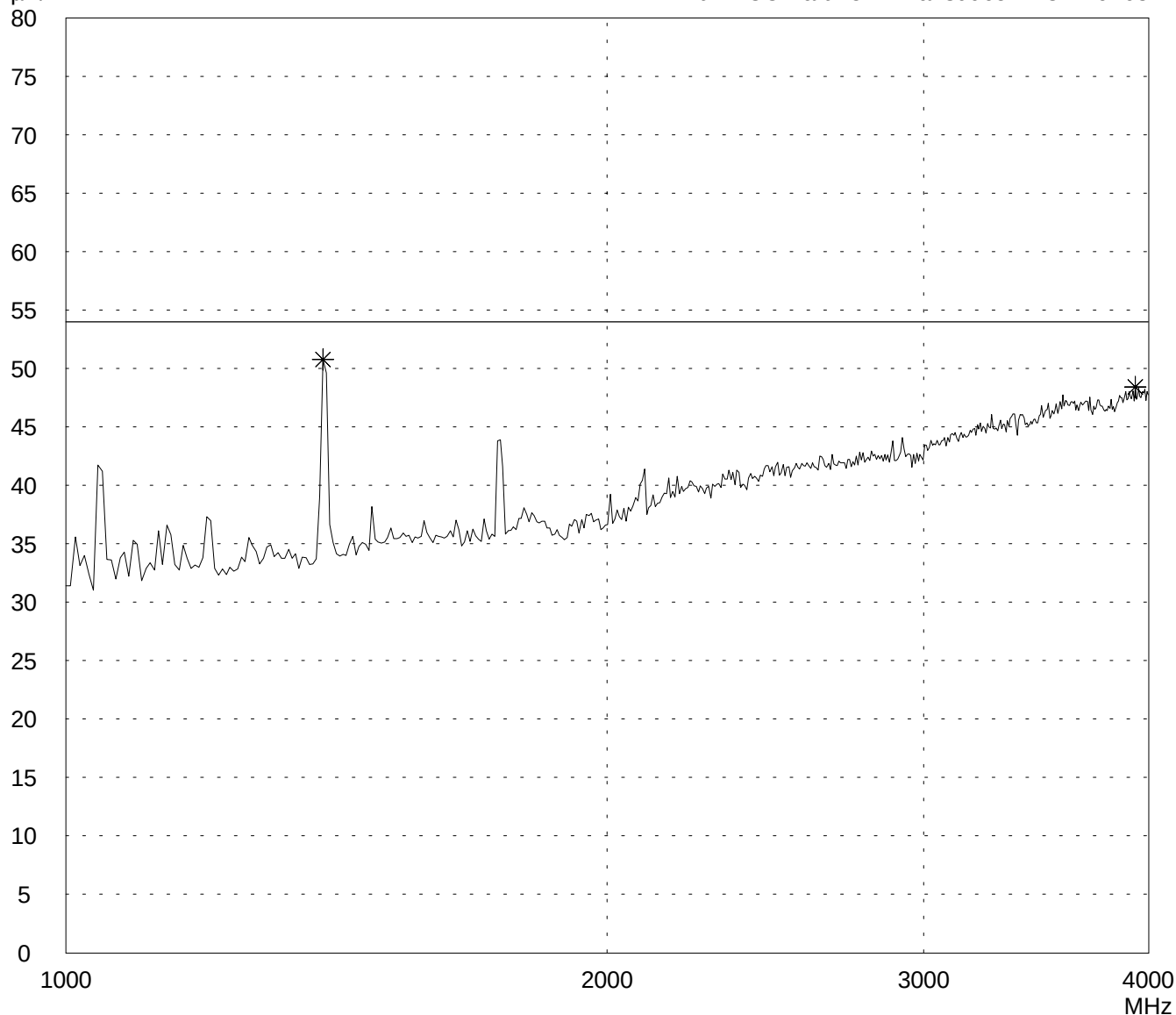
- RX mode
- channel 70 selected

Detector:
Peak

List of values:
Selected by hand

dBµV/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Horizontal Polarization**

Date of test: Operator:
12/15/2003 M. Steindl

Test performed: File name:
automatically default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- RX mode
- channel 70 selected

Detector:
Peak

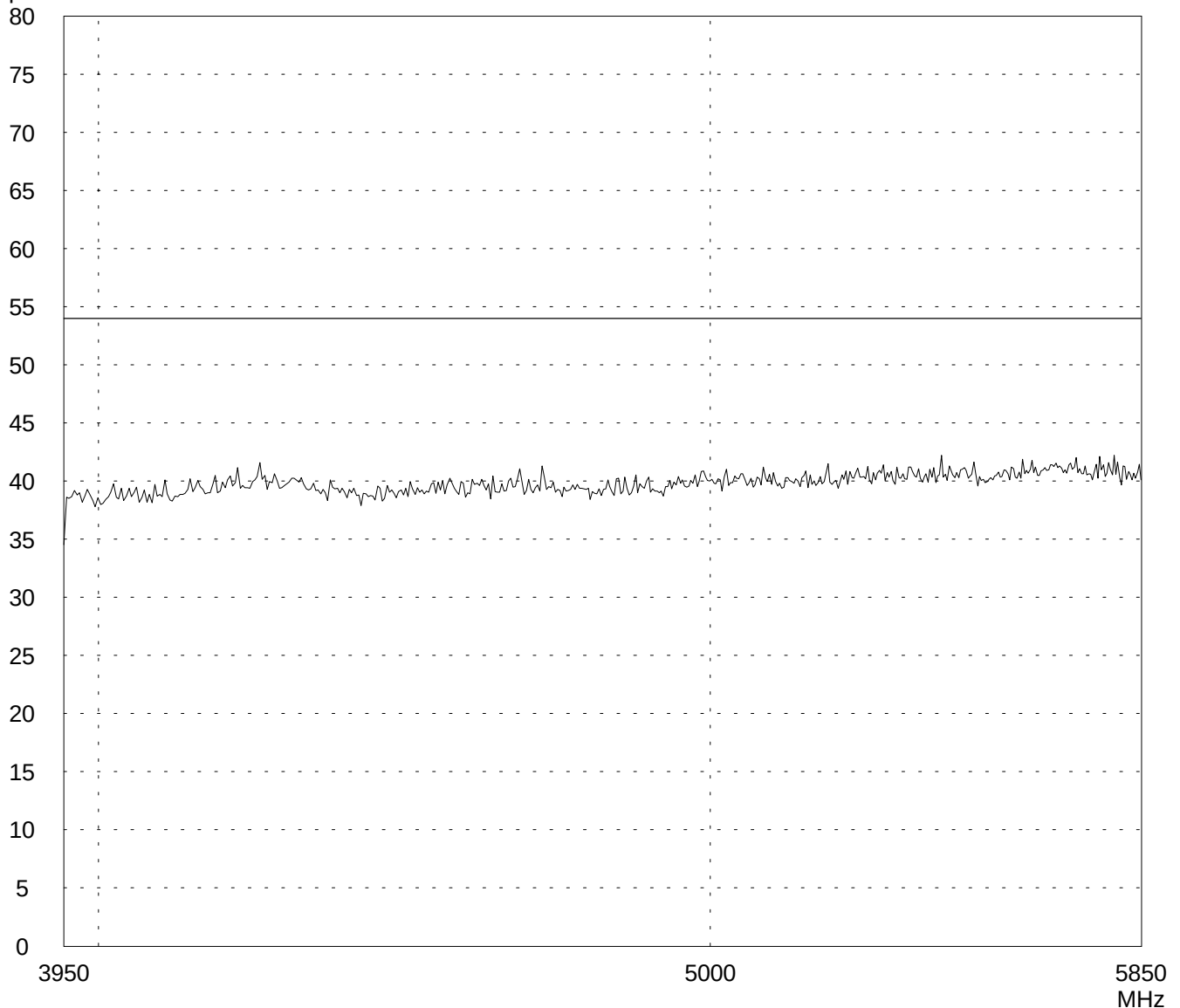
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

Project file:
55416-30783

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Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

Model:
OMB2-118 (USA)

Serial no.:
53282

Applicant:
think dig High Tech Solutions GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
**Test distance 3 metres
Vertical Polarization**

Date of test: Operator:
12/15/2003 M. Steindl

Test performed: File name:
automatically default.emi

Comment:

- with 115 V AC power supply
- with AC/DC adapter FW7238/15 (output 15 V DC)
- with non-shielded cables connected to all ports (RS232 and 2 x RS485)
- communication via RS232

- RX mode
- channel 70 selected

Detector:
Peak

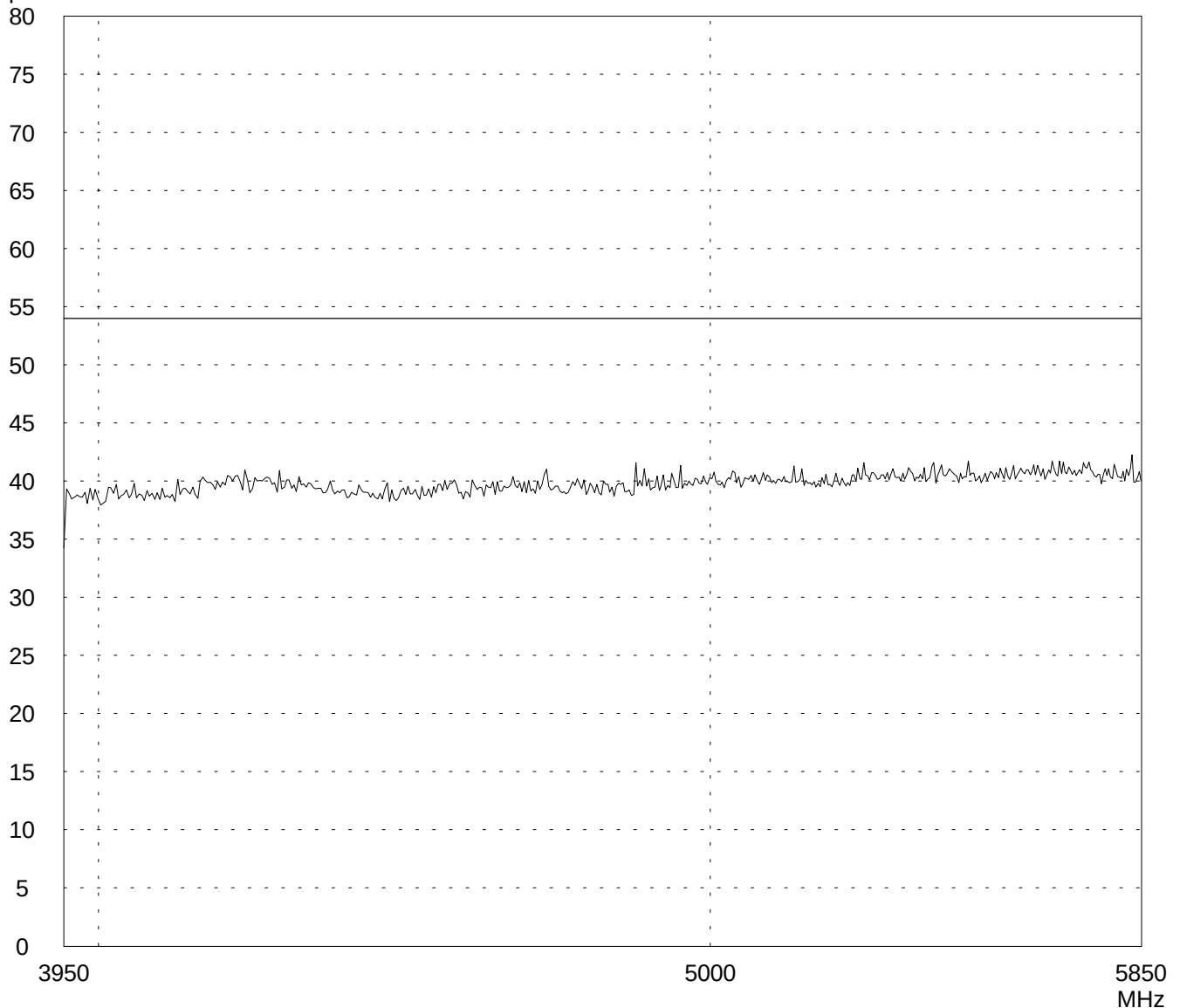
List of values:

10 dB Margin

50 Subranges

dBµV/m

Limit1: FCC Part 15 Transducer: EMCO 3160



Result:
Limit kept

Project file:
55416-30783

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