SENTON
EMV-Prüfzentrum EMI/EMC-Testcenter

Straubing, September 17, 2002

T E S T - R E P O R T

No. 50602-20351

for

MWD BF

Field Disturbance Sensor

Applicant:	FEIG ELECTRONIC GmbH
Purpose of testing:	To show compliance with
	FCC Code of Federal Regulations, Part 15 Subpart C, Section 15.245
	Industry Canada Radio Standards Specification RSS-210 Issue 4, Section 6.1 (Category I Equipment)

Table of Contents

1. Administrative Data

Test item (EUT)	
Type designation	MWD BF
Serial number(s):	0001
Type of equipment:	Field Disturbance Sensor
Parts/accessories:	---
FCC-ID:	
Technical data	
Frequency range	24075 – 24175 MHz
Operational frequency	24120 MHz
Type of modulation	0H00N0N
Pulse frequency	N/A
Pulse width	N/A
Antenna	Integrated (rectangular horn)
Power supply	12 – 24 DC or AC
Applicant: (full address)	FEIG ELECTRONIC GmbH Lange Strasse 4 35781 Weilburg-Waldhausen
Contract identification:	EB201736 / 16483
Contact person:	Mr. Alwin Scheu
Manufacturer:	FEIG ELECTRONIC GmbH
Application details	
Receipt of EUT:	28 May 2002
Date of test:	June 2002
Note:	
Responsible for testing:	Johann Roidt
Responsible for test report:	Johann Roidt

2. Identification of Test Laboratory

Test Laboratory: (full address	Senton GmbH EMI/EMC Test Center Aeussere Fruehlingstrasse 45 D-94315 Straubing / Germany	
Contact person	Mr. Johann Roidt	
Communication:	Telephone	(+49) 0 94 21 / 55 22-0
	Fax	(+49) 0 94 21 / 55 22-99
	eMail:	Office@senton.de
Laboratory accreditation:		
DATECH	DAR-Registration No. TTI-P-G 062/94-40	
FCC Test site registration	File number 90926	
Industry Canada	File number IC 3050	

3. Summary of Test Results

The tested sample complies with the requirements set forth in the

Code of Federal Regulations CFR 47, Part 15 Subpart C, Section 15.245
Operation within the band 24075 to 24175 MHz

and the

Radio Standards Specification RSS-210 Issue 4, Section 6.2.2 (n) for Low Power Licence-Exempt Radiocommunication Devices (Field Disturbance Sensors).

Johann Roidt
Technical Manager

4. Operation Mode of EUT

Continous operation, RX and TX on

5. Configuration of EUT and Peripheral Devices

5.1 Description of peripheral devices connected to EUT

Item	*Designation*	*Serial, part or ID no.*
Not applicable		

5.2 Description of cables connected to EUT

Item	*Cable length*	*Serial, part or ID no.*
Unshielded power cable		

6. Measuring Methods

6.1. Radiated Emission 30 MHz - 1 GHz (FCC §15.205.a,b, §15.209, §15.249 (a) / RSS-210 Sections 6.1.1.b, 6.3)

Radiated emissions are measured over the frequency range from 30 MHz to 1 GHz. The bandwidth of the EMI-receiver is set to 120 kHz and the detector-function is set to CISPR quasi-peak.
The test setup is made in accordance with ANSI C63.4-1992.
Measurements are made in both the horizontal and vertical planes of polarization. Preliminary scans are taken in a fully-anechoic room using a spectrum analyzer with the detector function set to peak. 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.
All tests are performed at a test-distance of 3 meters.
For final testing an open-area test-site is used. During the tests the EUT is rotated all around and the receiving-antenna is raised and lowered from 1 meter to 4 meters to find the maximum levels of emissions. The cables and equipment are placed and moved within the range of position likely to find their maximum emissions.

See figure 2 for the measurement setup.

Test equipment used (see equipment list for details):
01, 02, 05, 12, 38, 39, 40, 41, 58, 61, 64, 66

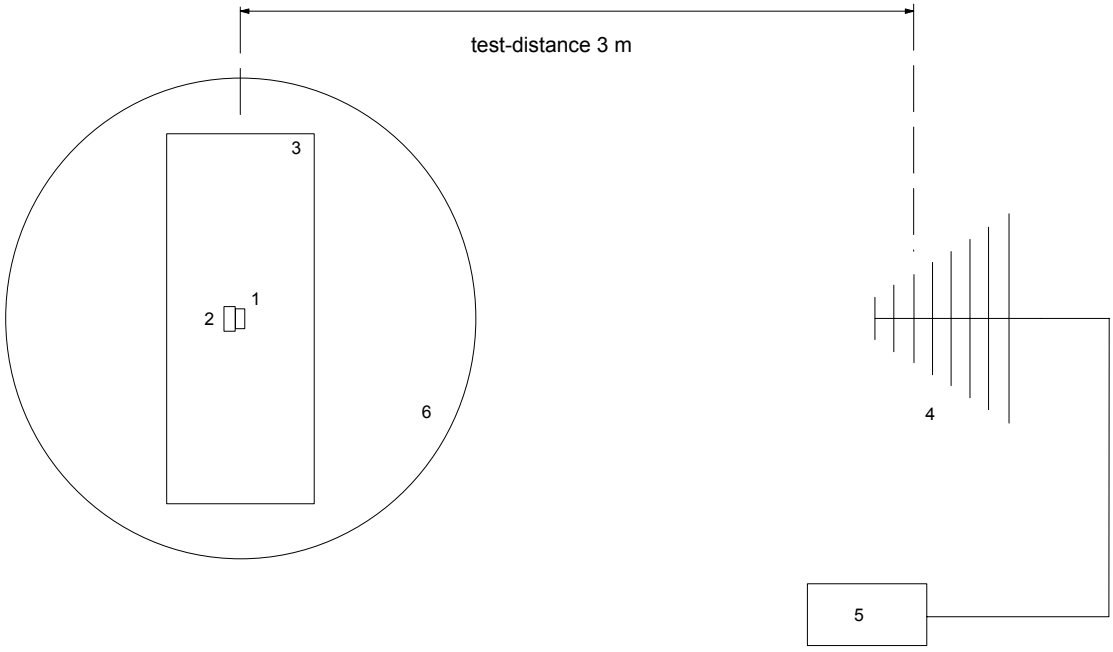


Figure 2: Measurement setup for radiated emission test below 1 GHz

1	Transmitter (EUT)	4	Measurement antenna
2	Wooden pedestal (if necessary)	5	Test receiver
3	Wooden table	6	Turn table

6.2. Radiated Emission 1 GHz - 110 GHz (FCC §15.205.a,b, §15.209, §15.249 (a) / RSS-210 Sections 6.1.1.b, 6.3)

Radiated emissions are measured in the frequency range 1 GHz to 110 GHz. Resolution and video bandwidth of the spectrum analyzer are set to 1 MHz.
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.
Additional measurements are performed at critical frequencies with reduced span.
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.
All tests are performed in a semi-anechoic chamber with a test-distance of 3 meters.
If possible preamplifiers are used for the whole frequency range. Special care is taken to avoid overload in transmit mode (using appropriate attenuators if necessary).

See figure 3 for the measurement setup.

Test equipment used (see equipment list for details):
02, 13, 14, 16, ,42, 44, 45, 57, 64

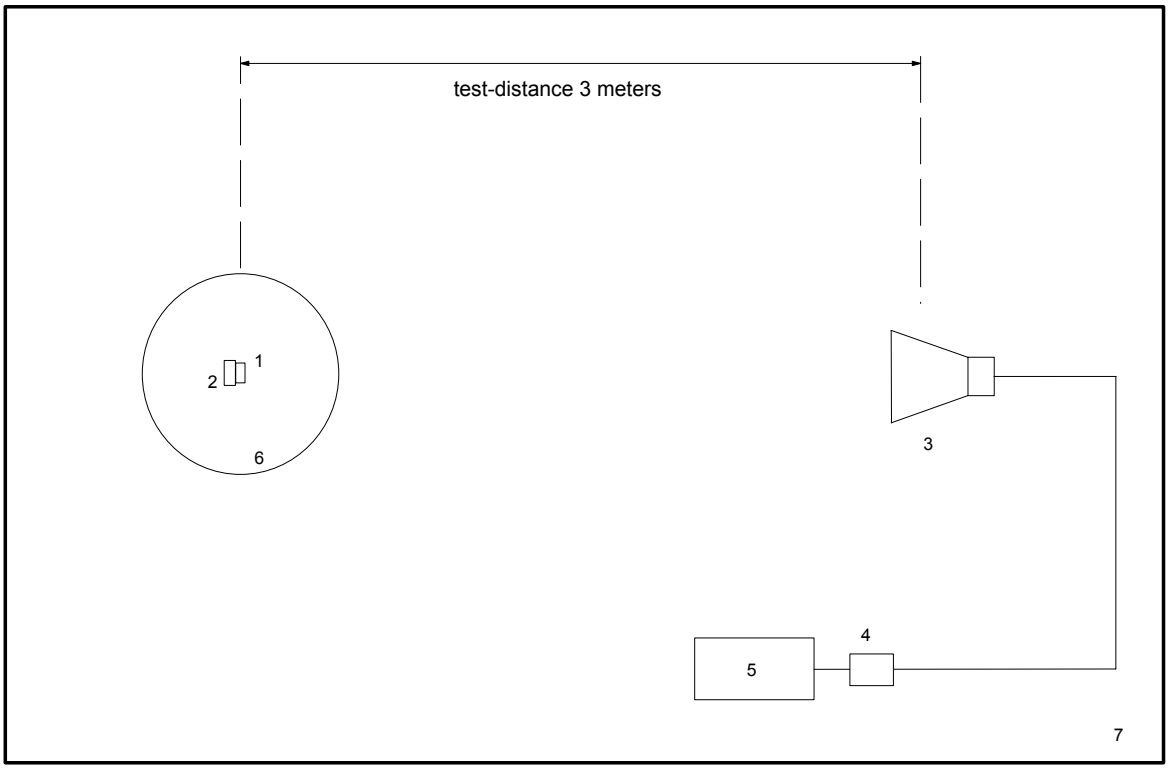


Figure 3: Measurement setup for radiated emission test above 1 GHz

1 Transmitter (EUT)
2 Wooden pedestal (if necessary)
3 Measurement antenna
4 Preamplifier (if applicable)
5 Spectrum analyzer
6 Turn table
7 Semi anechoic room

7. Equipment List

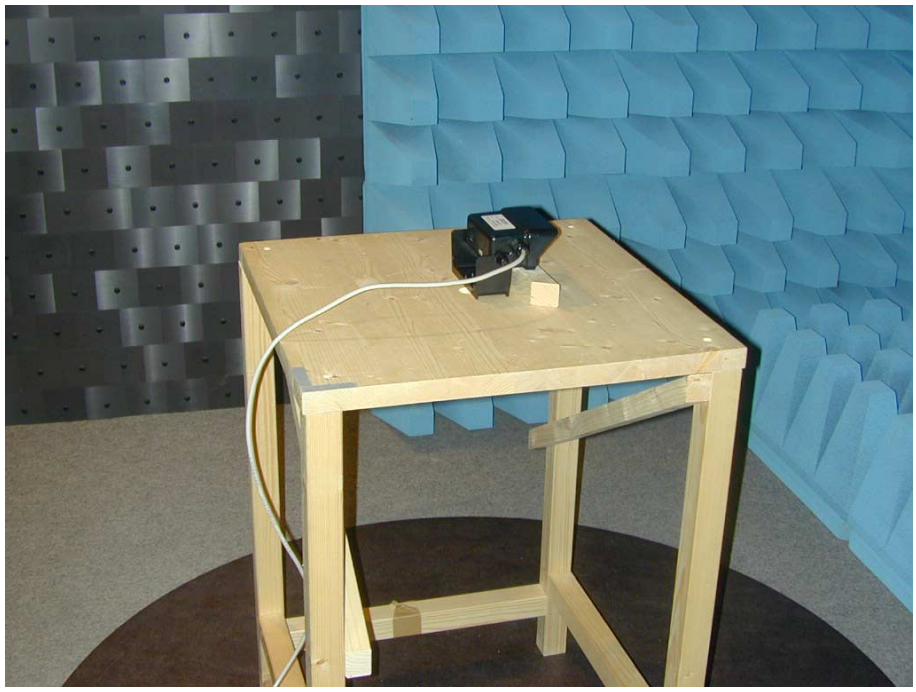
To facilitate reference to test equipment used for related tests, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory.

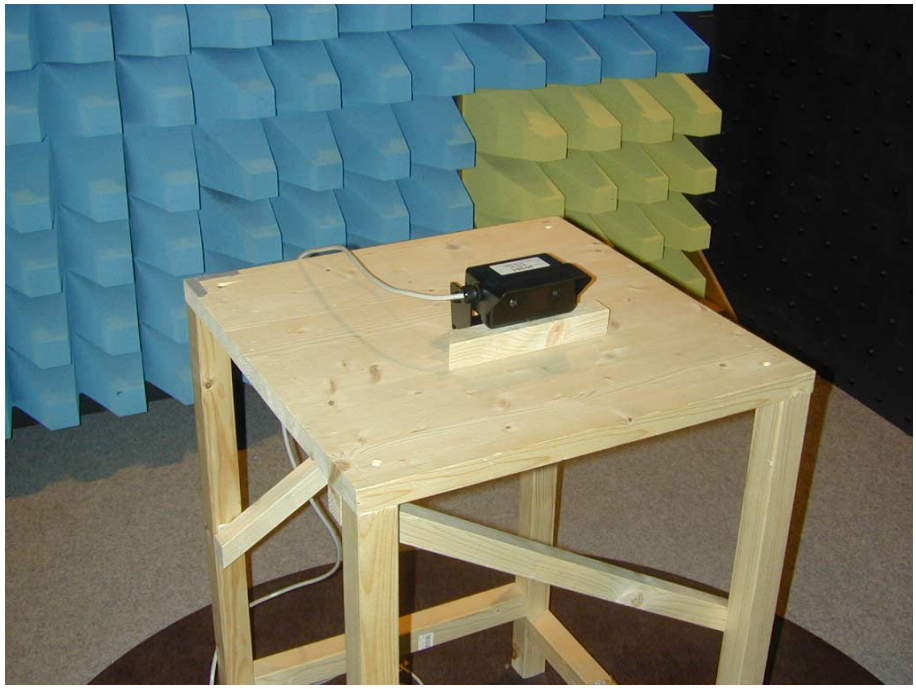
No.	Type	Model	Serial Number	Manufacturer
01	Spectrum Analyzer	R 3271	05050023	Advantest
02	EMI Test Receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
03	Test Receiver	ESH 3	880112/032	Rohde & Schwarz
04	Test Receiver	ESHS 10	860043/016	Rohde & Schwarz
05	Test Receiver	ESV	881414/009	Rohde & Schwarz
06	Test Receiver	ESVP	881120/024	Rohde & Schwarz
07	Audio Analyzer	UPA	862954	Rohde & Schwarz
08	Power Meter	NRVS	836856/015	Rohde & Schwarz
09	Power Sensor	NRV-Z52	837901/030	Rohde & Schwarz
10	Power Sensor	NRV-Z4	863828/015	Rohde & Schwarz
11	Preamplifier	ESV-Z3	860907/004	Rohde & Schwarz
12	Preamplifier	R14601		Advantest
13	Preamplifier	ACX/080-3030	32640	CTT
14	Preamplifier	ACO/180-3530	32641	CTT
15	Signal Generator	SMS	872166/039	Rohde & Schwarz
16	Signal Generator	HP 8673 D	2930A00966	Hewlett Packard
17	Waveform Generator	HP 33120 A	US34005375	Hewlett Packard
18	Attenuator 20 dB	4776-20	9503	Narda
19	Attenuator 10 dB	4776-10	9412	Narda
20	Pulse Limiter	ESH 3-Z2	1144	Rohde & Schwarz
21	Pulse Limiter	11947 A	3107A00566	Hewlett Packard
22	V-Network	ESH 3-Z5	862770/018	Rohde & Schwarz
23	V-Network	ESH 3-Z5	894785/005	Rohde & Schwarz
24	V-Network	ESH 3-Z5	830952/025	Rohde & Schwarz
25	V-Network	ESH 3-Z6	830722/010	Rohde & Schwarz
26	V-Network	NSLK 8127	8127152	Schwarzbeck
27	V-Network	NNLA 8119	8119148	Schwarzbeck
28	V-Network	SE 01	01	Senton
29	T-Network	ESH 3-Z4	890602/011	Rohde & Schwarz
30	T-Network	ESH 3-Z4	890602/012	Rohde & Schwarz
31	High Impedance Probe	TK 9416	01	Schwarzbeck
32	High Impedance Probe	TK 9416	02	Schwarzbeck
33	Current Probe	ESH 2-Z1	863366/18	Rohde & Schwarz
34	Current Probe	ESV-Z1	862553/3	Rohde & Schwarz

No.	Type	Model	Serial Number	Manufacturer
35	Absorbing Clamp	MDS 21	80911	Lüthi
36	Absorbing Clamp	MDS 21	79690	Lüthi
37	Loop Antenna	HFH2-Z2	882964/1	Rohde & Schwarz
38	Biconical Antenna	HK 116	842204/001	Rohde & Schwarz
39	Biconical Antenna	HK 116	836239/02	Rohde & Schwarz
40	Log. Periodic Antenna	HL 223	841516/023	Rohde & Schwarz
41	Log. Periodic Antenna	HL 223	834408/12	Rohde & Schwarz
42	Horn Antenna	3115	9508-4553	Emco
43	Horn Antenna	3160-03	9112-1003	Emco
44	Horn Antenna	3160-04	9112-1001	Emco
45	Horn Antenna	3160-05	9112-1001	Emco
46	Horn Antenna	3160-06	9112-1001	Emco
47	Horn Antenna	3160-07	9112-1008	Emco
48	Horn Antenna	3160-08	9112-1002	Emco
49	Horn Antenna	3160-09	9403-1025	Emco
50	Digital multimeter	199	463386	Keithley
51	DC Power Supply	NGSM 32/10	203	Rohde & Schwarz
52	DC Power Supply	NGB	2455	Rohde & Schwarz
53	DC Power Supply	NGA	386	Rohde & Schwarz
54	Temperature Test Chamber	HT4010	07065550	Heraeus
55	Cable	RG214	1309	Senton
56	Cable	200CM_001	1357	Rosenberger
57	Cable	150CM_001	1479	Rosenberger
58	Cable Set EG1	RG214	1189 - 1191	Senton
59	Cable Set Cabine 1	RG214		Senton
60	Cable Set Cabine 2	RG214		Senton
61	Cable Set Cabine 3	RG214		Senton
62	Shielded Room	No. 1	1451	Senton
63	Shielded Room	No. 2	1452	Senton
64	Semi-anechoic Chamber	No. 3	1453	Siemens
65	Shielded Room	No. 4	1454	Euroshield
66	Open Area Test Site	EG 1		Senton
67	Test fixture			Senton

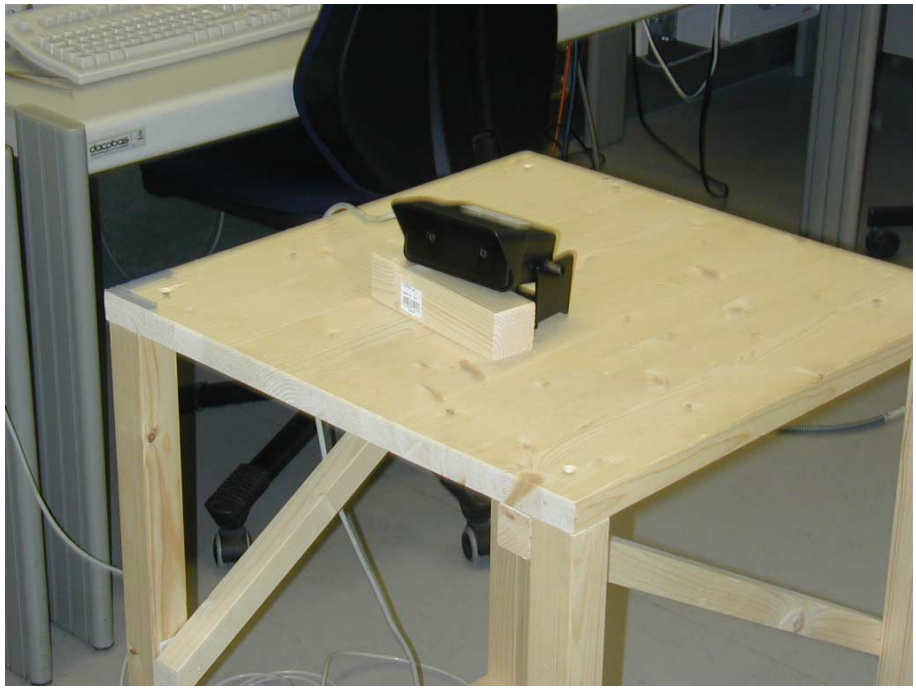
8. Photographs Taken During Testing

Test setup for radiated emission pre-test 30 MHz - 1 GHz
(fully anechoic room)





Test setup for radiated emission test above 18 GHz



9. List of Measurements

9.1. List of Measurements According To FCC Part 15 Subpart C

FCC Part 15 Subpart C			
Section(s):	Test	Page(s)	Result
15.245 (b)	Field strength of fundamental emission and harmonics	15	Pass
15.245 (b) (1)	Harmonic emissions in restricted bands at and above 17.7 GHz	15	Pass
15.245 (b) (3)	Field strength of emissions outside of the specified frequency band except for harmonics	16	Pass
15.245 (b) (4)	Limiting peak emissions according to Section 15.35	15	Pass

9.2. List of Measurements According To Industry Canada RSS-210

Industry Canada RSS-210 Issue 4			
Section(s):	Test	Page(s)	Result
6.2.2.(n)	Field strength of fundamental emission and harmonics	15	Pass
6.2.2.(n) 1 (i)	Harmonic emissions in restricted bands at and above 17.7 GHz	15	Pass
6.2.2.(n) 3	Field strength of emissions outside of the specified frequency band except for harmonics	16	Pass
	Limiting peak emissions	15	Pass

10. Referenced Regulations

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

☒	FCC Part 15 Subpart A	Code of Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communication Commission (FCC)	May 30, 2002
☒	FCC Part 15 Subpart B	Code of Regulations Part 15 (Radio Frequency Devices), Subpart B (Unintentional Radiators) of the Federal Communication Commission (FCC)	May 30, 2002
☒	FCC Part 15 Subpart C	Code of Regulations Part 15 (Radio Frequency Devices), Subpart C (Intentional Radiators) of the Federal Communication Commission (FCC)	May 30, 2002
☒	FCC Part 2	Code of Regulations Part 2	May 30, 2002
☒	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 4 for Low Power Licence-Exempt Radiocommunication Devices (all frequency bands)	December 2000

11. Test Results

Field strength of fundamental emission and harmonics

Equipment under Test (EUT)	MWD BF
Ambiebt Temperature:	23 °C
Relative Humidity:	51 %

Specification: Section 15.245 (b) of the FCC Rules
The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (millivolts/meter)
24075 – 24175	2500 = 68 dBmV/m	25.0 = 28 dBmV/m

Frequency (MHz)	Detector	Antenna Pol.	Analyzer Reading (dBmV)	Correction Factor dB(1/m)	Field Strength (dBmV/m)	Limit (dBmV/m)	Margin (dB)
24120,0	Peak	Vertical	10,9	40,4	51,3	68,0	**16,7**
48238,8	Peak	Vertical	-16,3	34,0	17,7	28,0	**10,3**
72358,0	Peak	Vertical	-25,4	44,6	19,2	28,0	**8,8**
96480,0	Peak	Vertical	-36,4	41,5	5,1	28,0	**22,9**

***** = No emissions above noise floor detected**

Sample calculation of field strength values:
Field Strength (dBmV/m) = Analyzer Reading (dBmV) + Correction Factor (dB(1/m))

Test equipment used (see equipment list for details):
02, 13, 14, 16, 38, 40 ,42, 57, 64, 67

Field strength of emissions outside of the specified frequency band except for harmonics

Equipment under Test (EUT)	MWD BF
Ambiebt Temperature:	23 °C
Relative Humidity:	51 %

Specification:	Section 15.245 (b) (3)of the FCC Rules Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Frequency (MHz)	Detector	Antenna Pol.	Analyzer Reading (dBµV)	Correction Factor dB(1/m)	Field Strength (dBµV/m	Limit (dBµV/m)	Margin (dB)
***							

***** = No emissions above noise floor detected**

Sample calculation of field strength values:

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

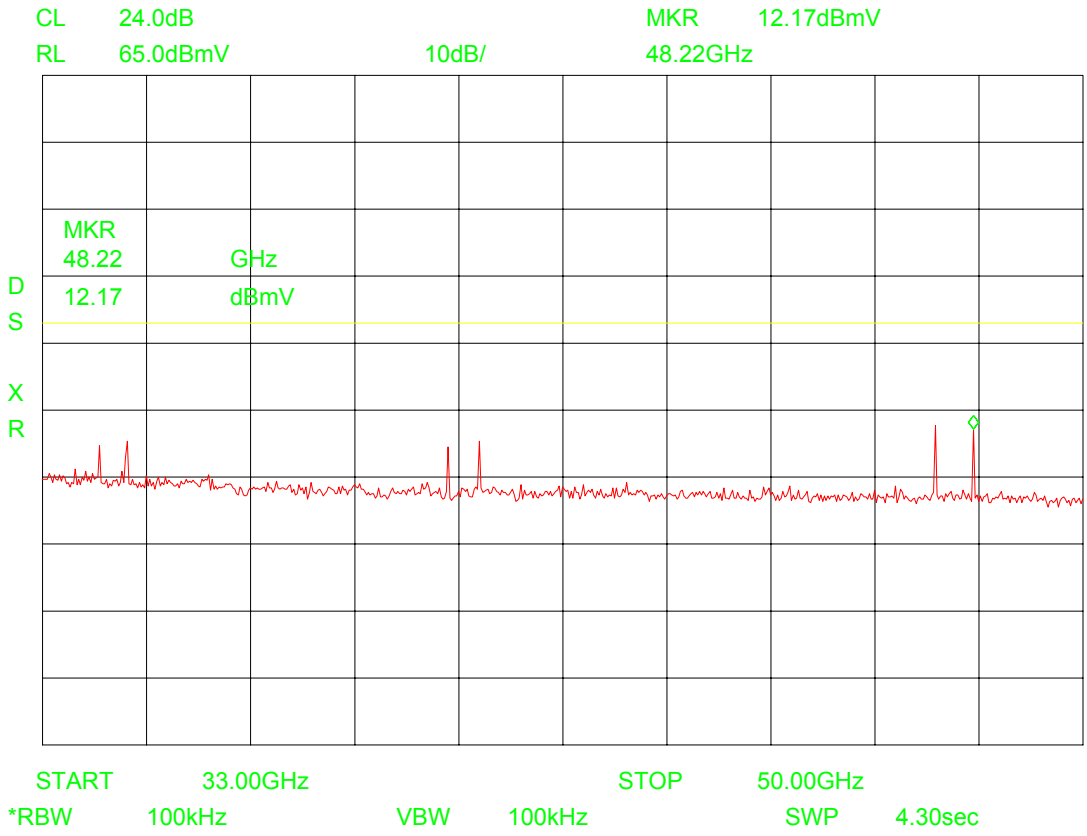
Test equipment used (see equipment list for details):
02, 13, 14, 16, 38, 40 ,42, 57, 64, 67

Charts taken during Testing

Radiated Emission Measurement

Model:	Notes:
MWD BF	Horizontal & Vertical Polarization
Serial No.	

Applicant:	
FEIG ELECTRONIC GmbH	

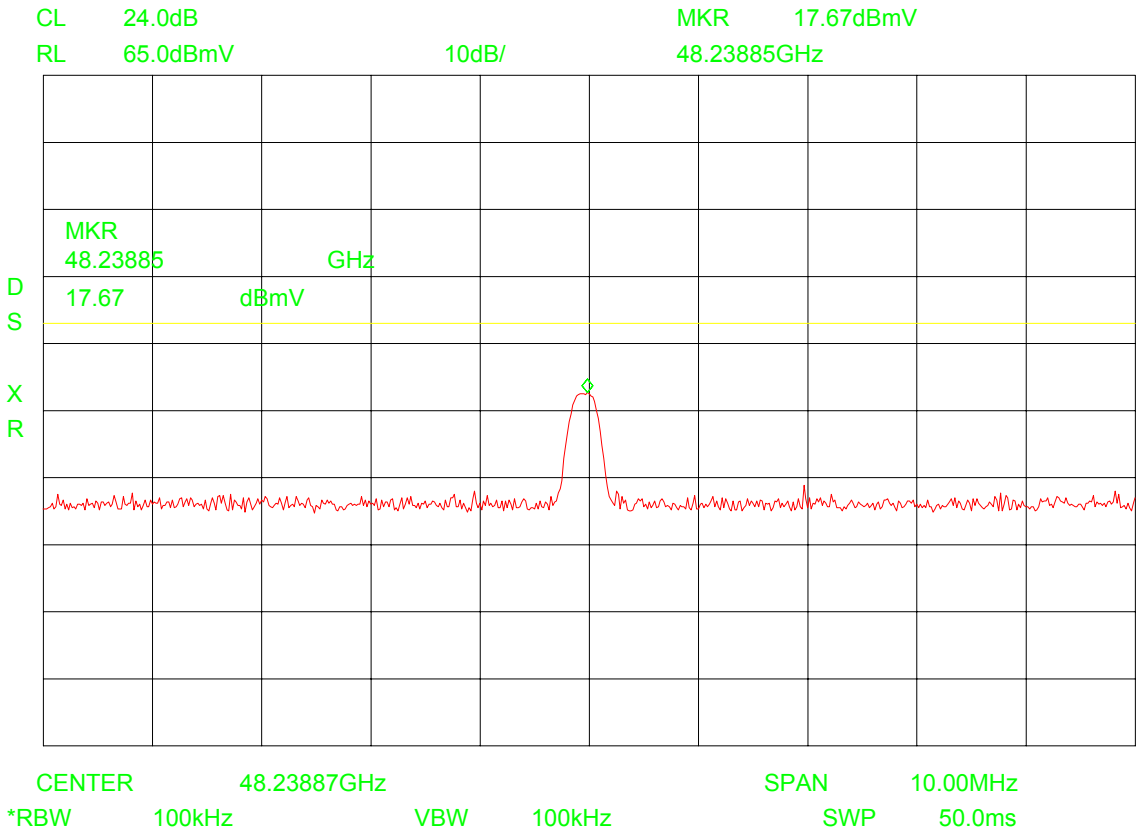


Note:All spurious emissions displayed in this frequency span are produced by the external mixer.
With the help of an internal signal identifier program it is possible to show, that only the frequency f = 48.22 GHz is a true response.

Radiated Emission Measurement

Model:	Notes:
MWD BF	Horizontal & Vertical Polarization
Serial No.	

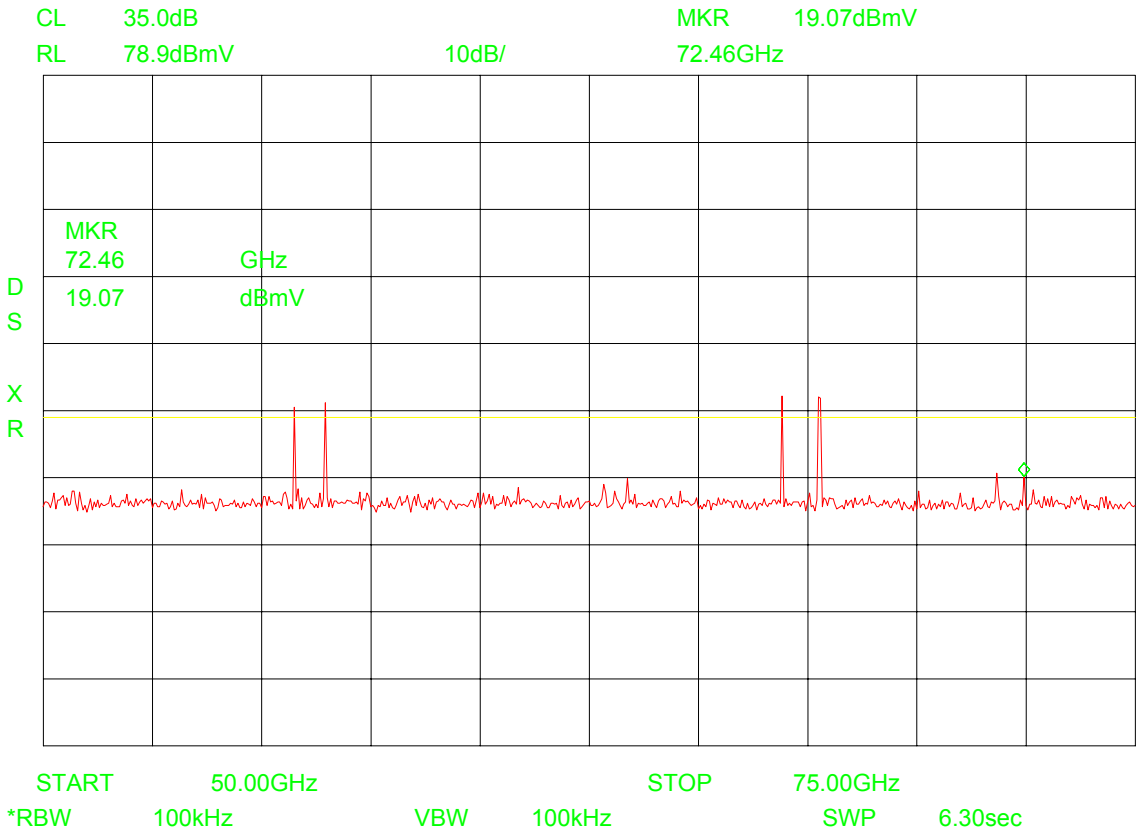
Applicant:	
FEIG ELECTRONIC GmbH	



Radiated Emission Measurement

Model:	Notes:
MWD BF	Horizontal & Vertical Polarization
Serial No.	

Applicant:	
FEIG ELECTRONIC GmbH	

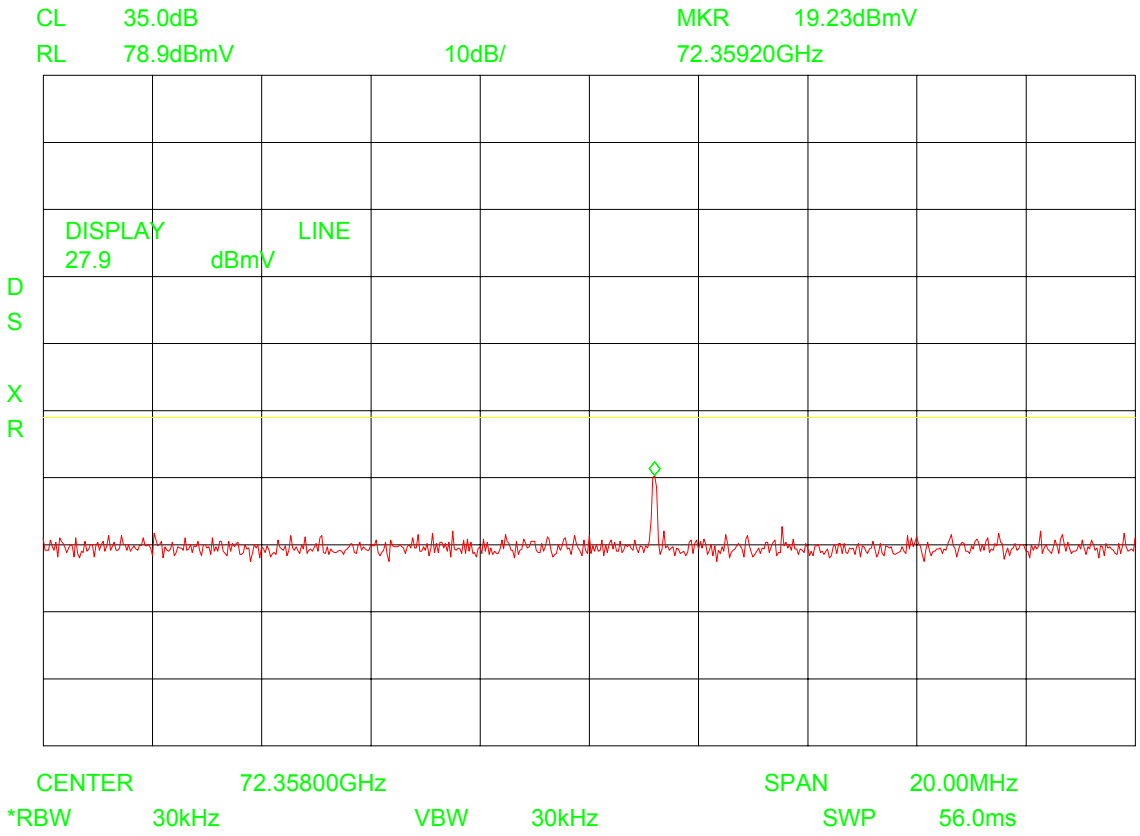


Remark: All spurious emissions displayed in this frequency span are produced by the external mixer.
With the help of an internal signal identifier program it is possible to show, that only the frequency f = 72.3 GHz is a true response.

Radiated Emission Measurement

Model:	Notes:
MWD BF	Horizontal & Vertical Polarization
Serial No.	

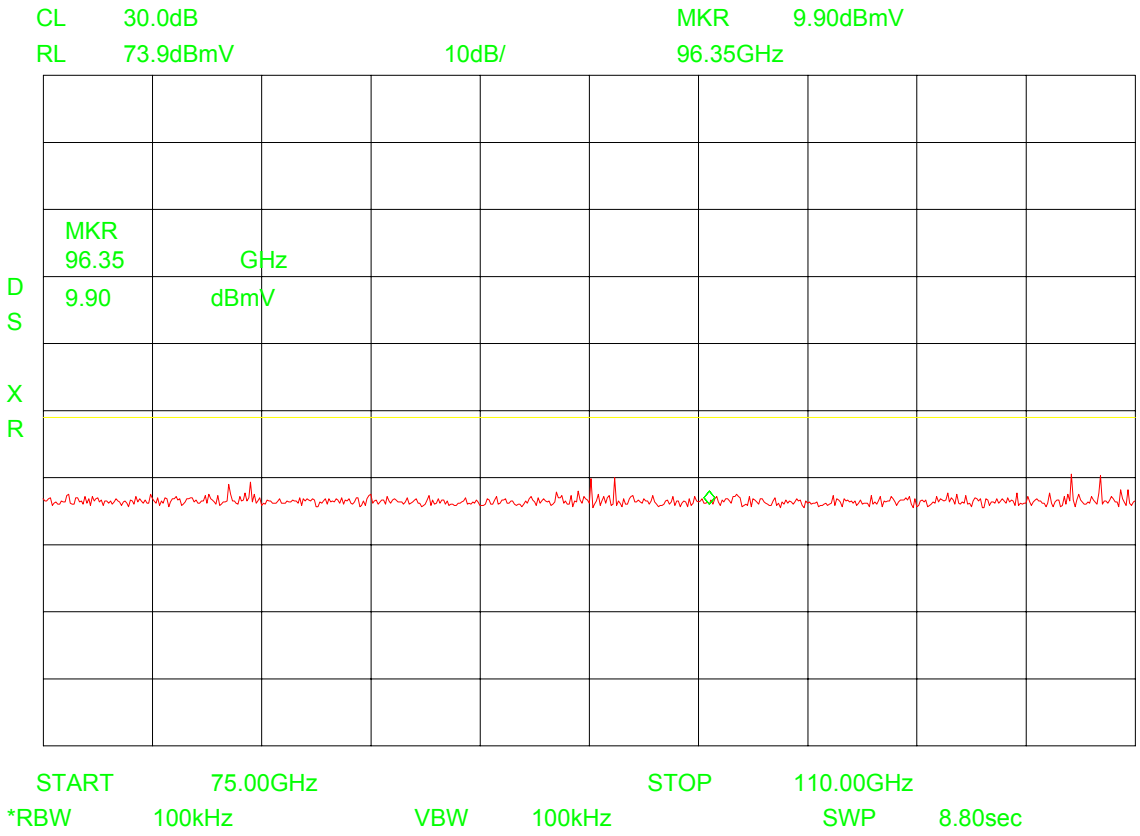
Applicant:	
FEIG ELECTRONIC GmbH	



Radiated Emission Measurement

Model:	Notes:
MWD BF	Horizontal & Vertical Polarization
Serial No.	

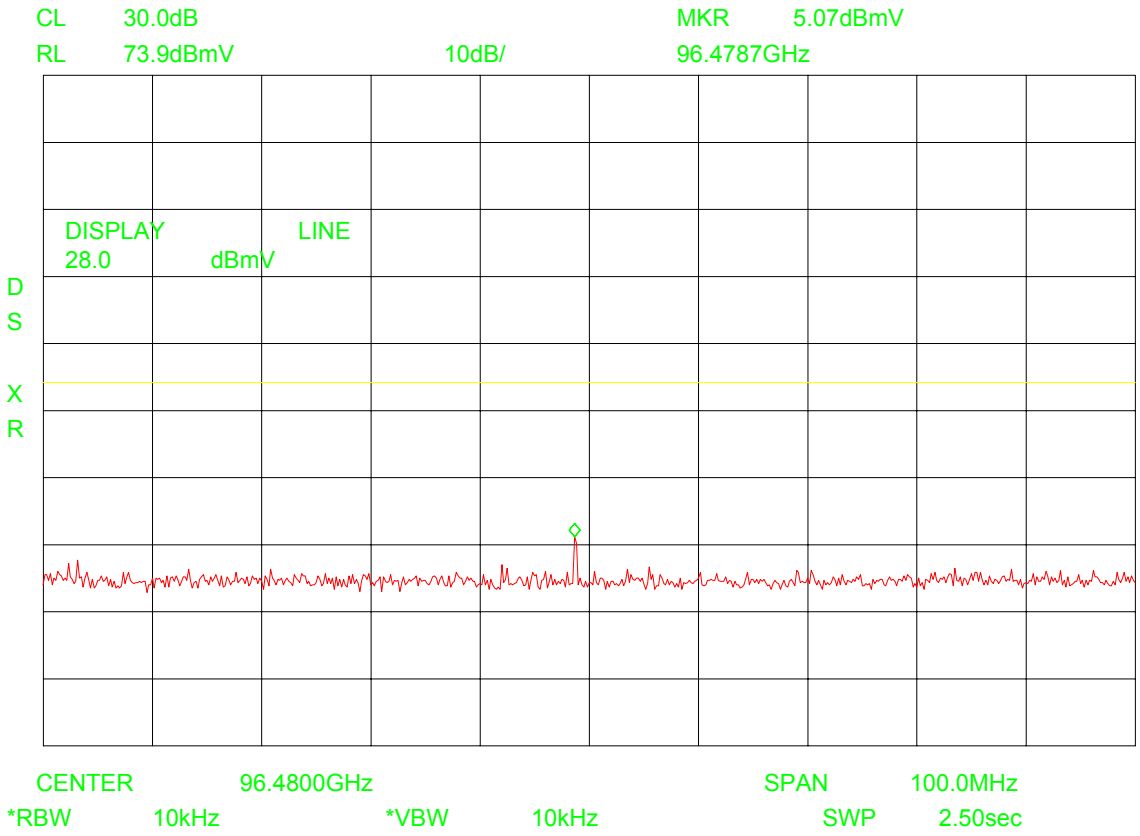
Applicant:	
FEIG ELECTRONIC GmbH	



Remark: All spurious emissions displayed in this frequency span are produced by the external mixer.
With the help of an internal signal identifier program it is possible to show, that only the frequency f = 96.5 GHz is a true response.

Radiated Emission Measurement

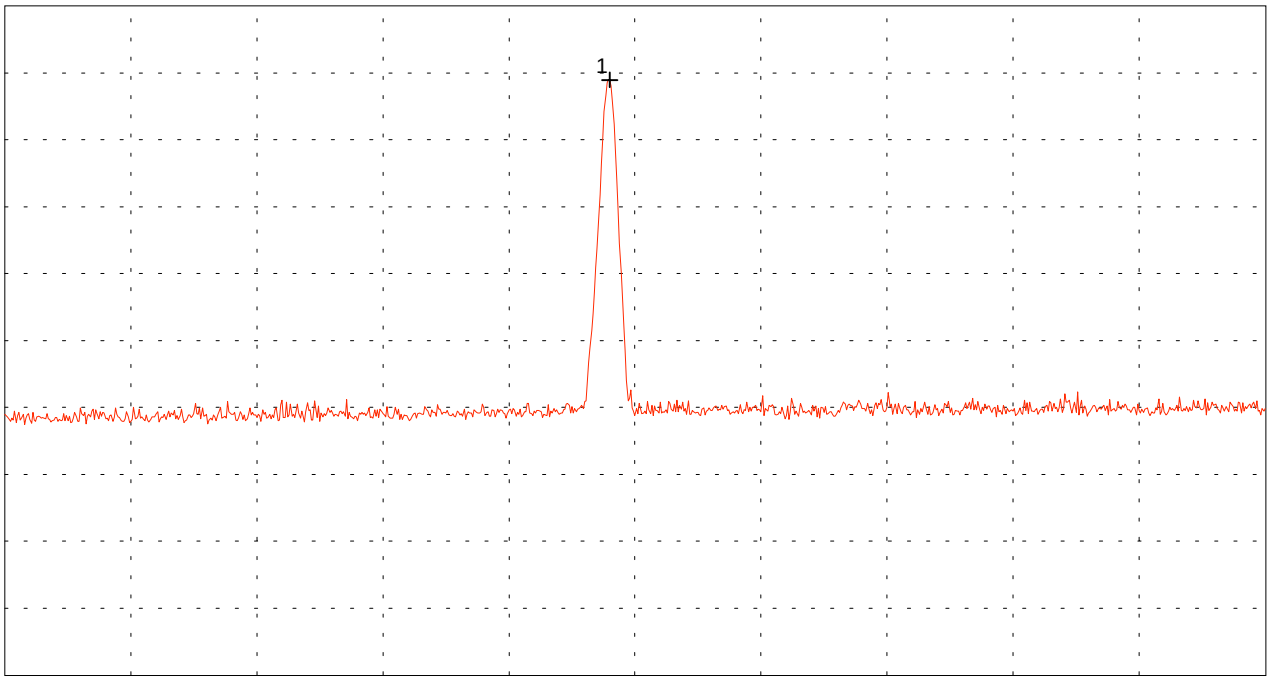
Model: MWD BF	Notes: Horizontal & Vertical Polarization
Serial No. ---	
Applicant: FEIG ELECTRONIC GmbH	



Measurement of Radiated Spurious Emissions

Model: MWD BF 24 GHz	Mode: Vertical Polarization 1 Meter Test Distance
Serial No.: ---	
Applicant: FEIG ELEKTRONIC GmbH	

Ref.Level 92 dBµV ATT 0 dB
10 dB/Div.



Start 24.000 GHz Stop 24.250 GHz
RBW 1 MHz VBW 1 MHz SWP 20 ms

Multi Marker List

No. 1 24.120000 GHz 80.93 dBµV

Tested by: Johann Roidt	Project-No.: 50602-20351
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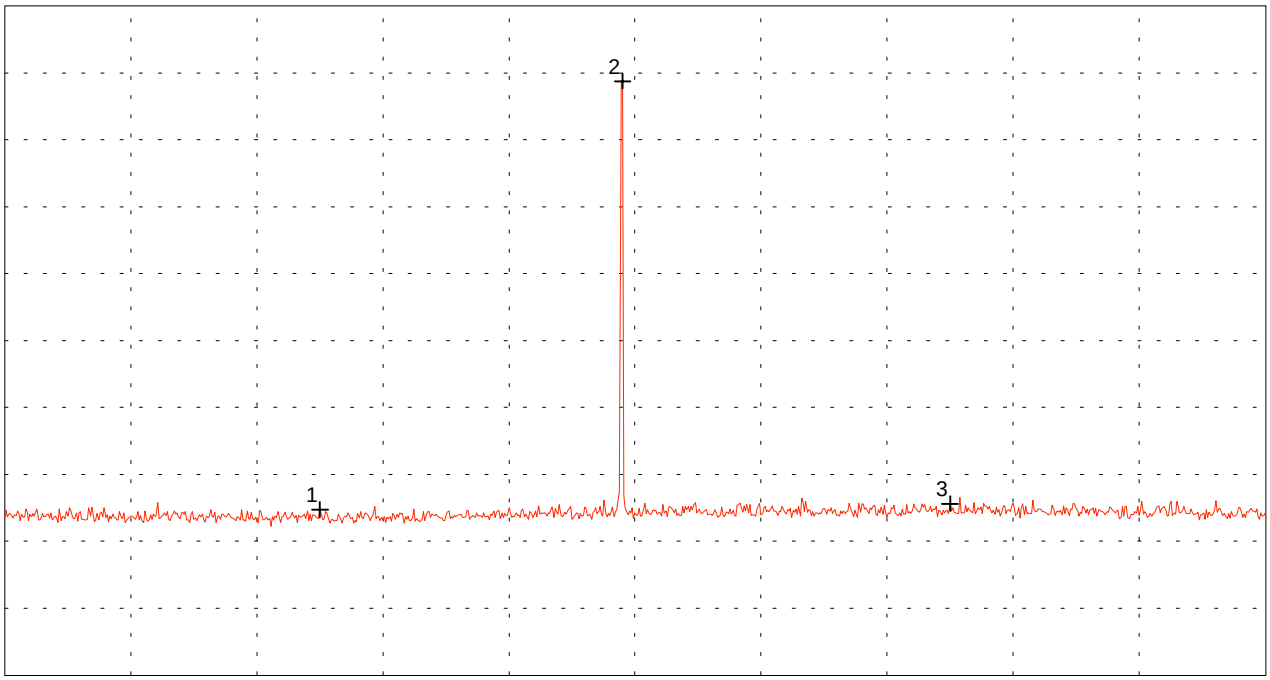
Band Edge Compliance

Model: MWD BF 24 GHz	Mode: Vertical Polarization 1 Meter Test Distance
Serial No.: ---	
Applicant: FEIG ELEKTRONIC GmbH	

Ref.Level 92 dBµV
10 dB/Div.

ATT 0 dB



Start 23.875 GHz
RBW 30 kHz

VBW 30 kHz

Stop 24.375 GHz
SWP 1.68 s

Multi Marker List

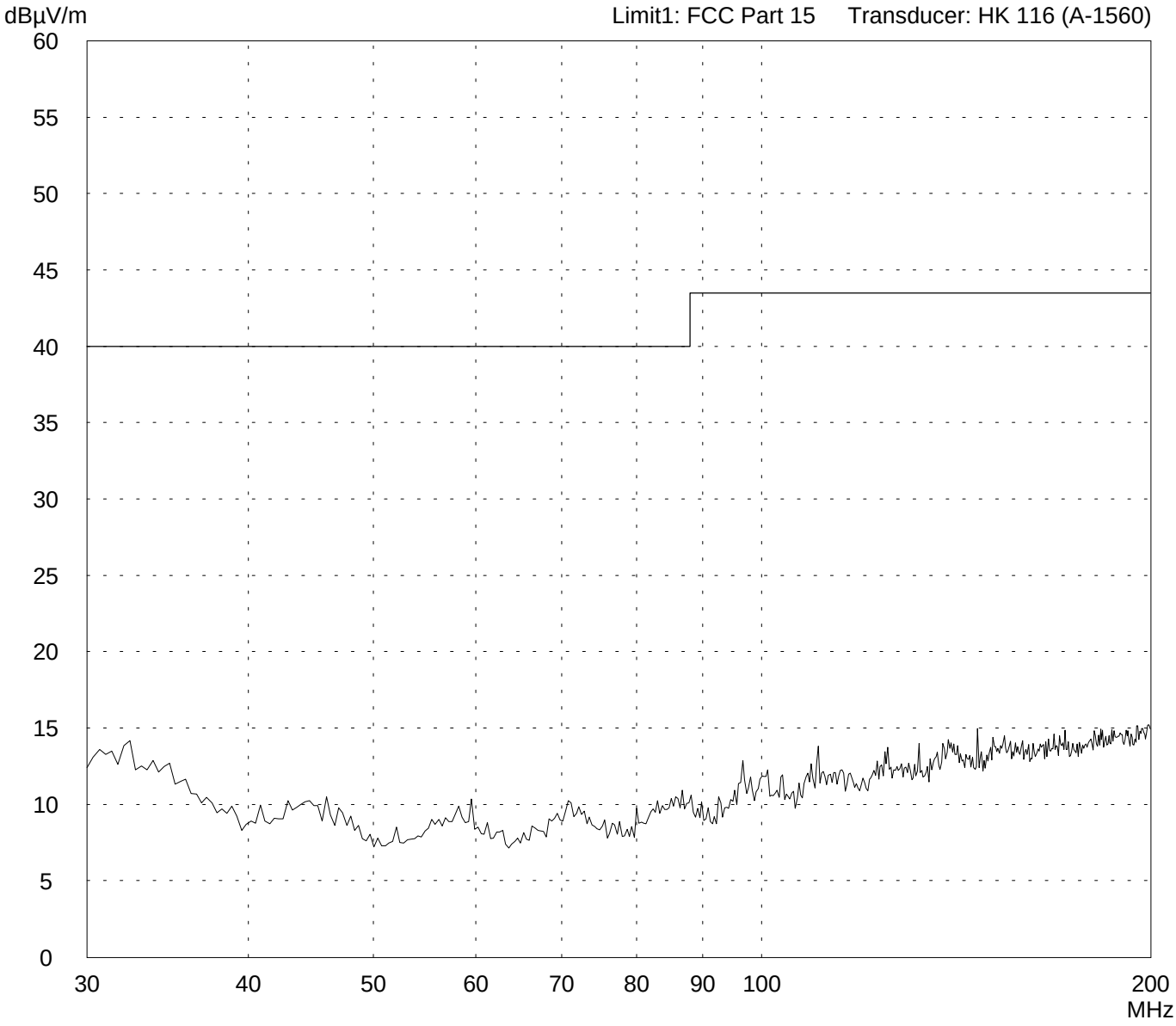
No. 1	24.000000 GHz	16.71 dBµV
No. 2	24.120000 GHz	80.73 dBµV
No. 3	24.250000 GHz	17.60 dBµV

Tested by: Johann Roidt	Project-No.: 50602-20351
Date: June 17, 2002	Page of pages

Radiated Emission Test 30 MHz - 200 MHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: MWD BF	Comment: TX + RX on
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/22/2002 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin 50 Subranges

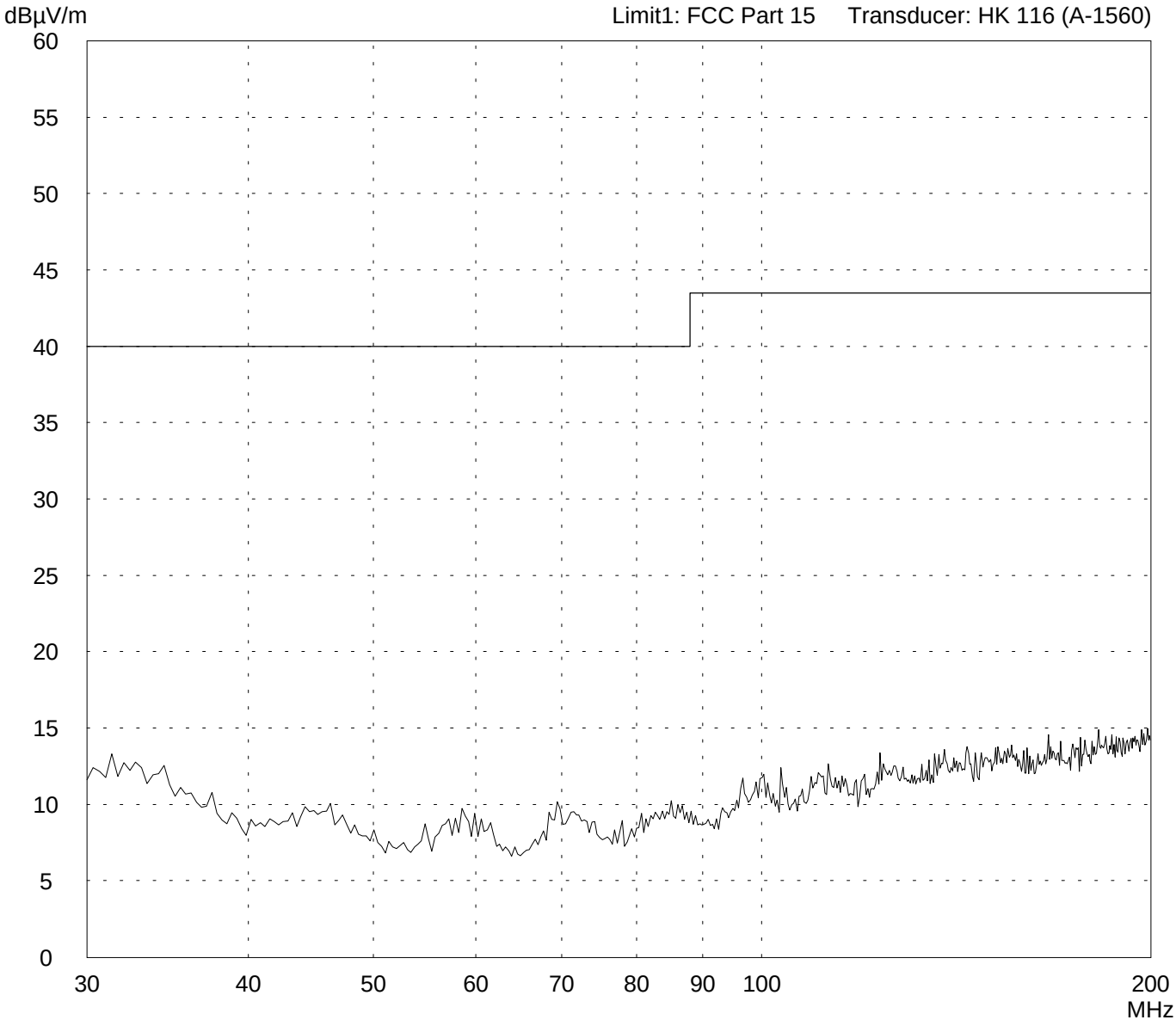


Result: Limit kept	Project file: 50602-20351 Page of Pages

Radiated Emission Test 30 MHz - 200 MHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: MWD BF	Comment: TX + RX on
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/22/2002 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin / 50 Subranges

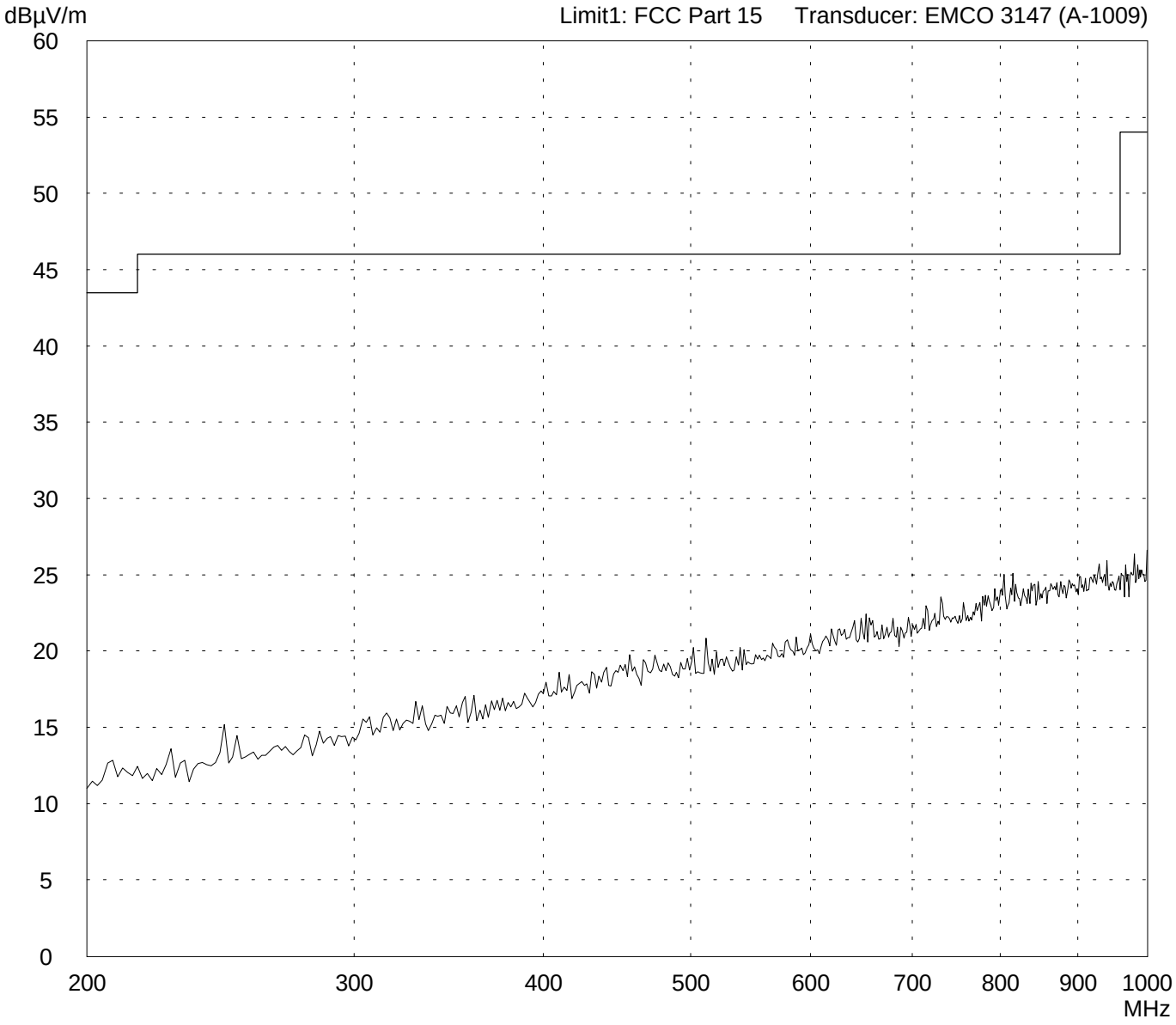


Result: Limit kept	Project file: 50602-20351 Page of Pages

Radiated Emission Test 200 MHz - 1 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin / 50 Subranges

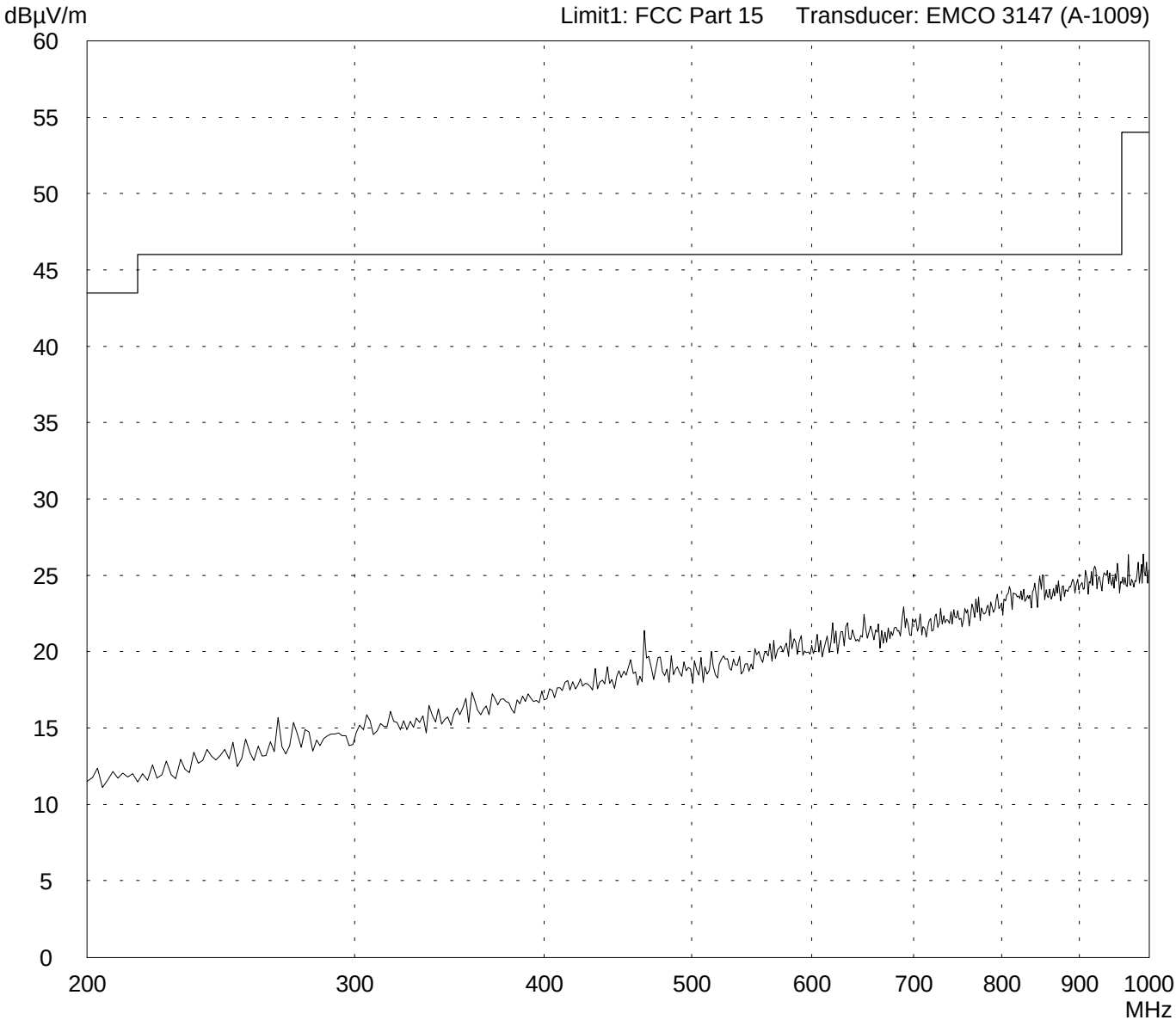


Result: Prescan	Project file: 50602-20351 Page of Pages

Radiated Emission Test 200 MHz - 1 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin / 50 Subranges

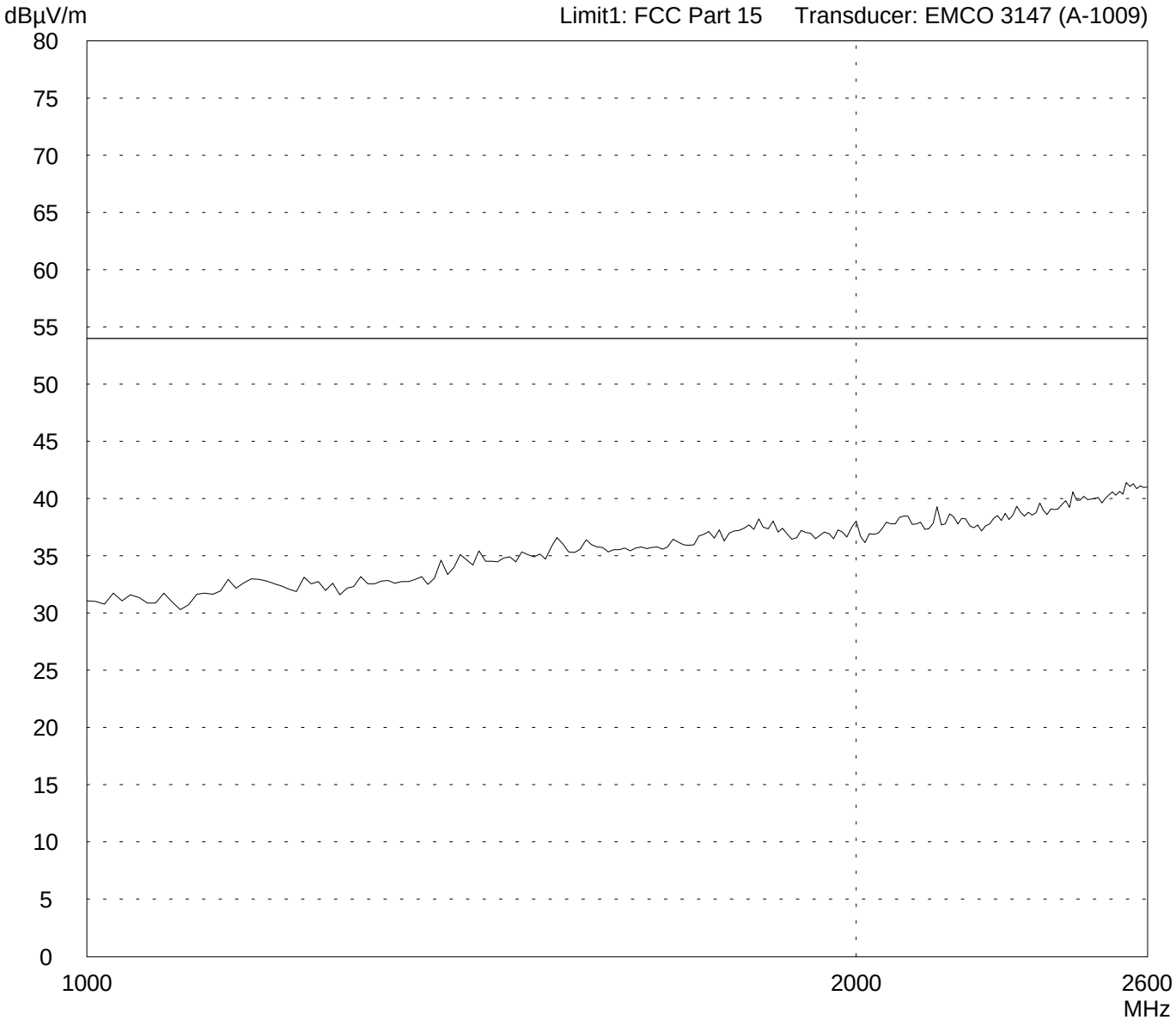


Result: Prescan	Project file: 50602-20351 Page of Pages

Radiated Emission Test 1 GHz - 2.6 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin 50 Subranges

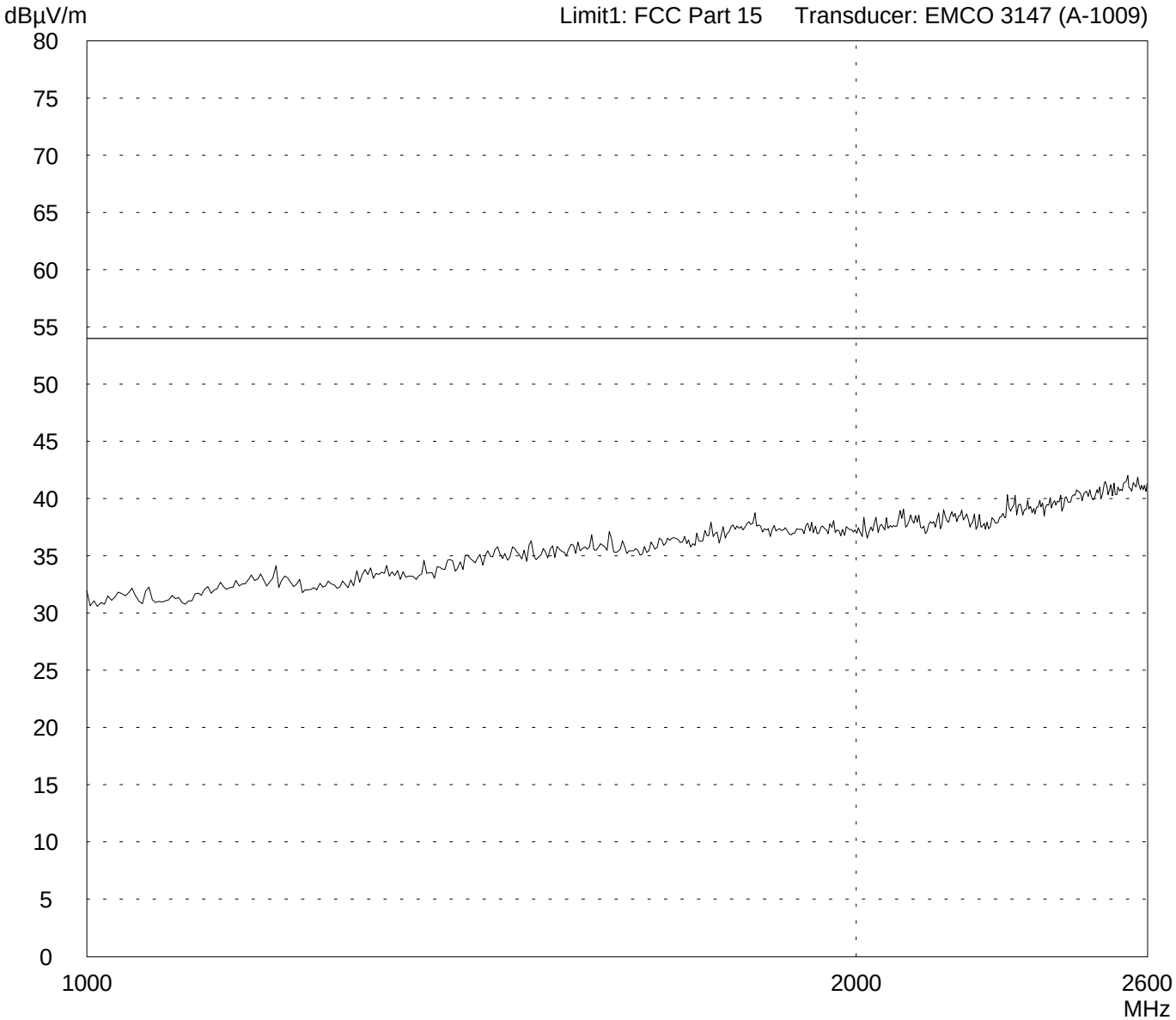


Result: Prescan	Project file: 50602-20351 Page of Pages

Radiated Emission Test 1 GHz - 2.6 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin 50 Subranges

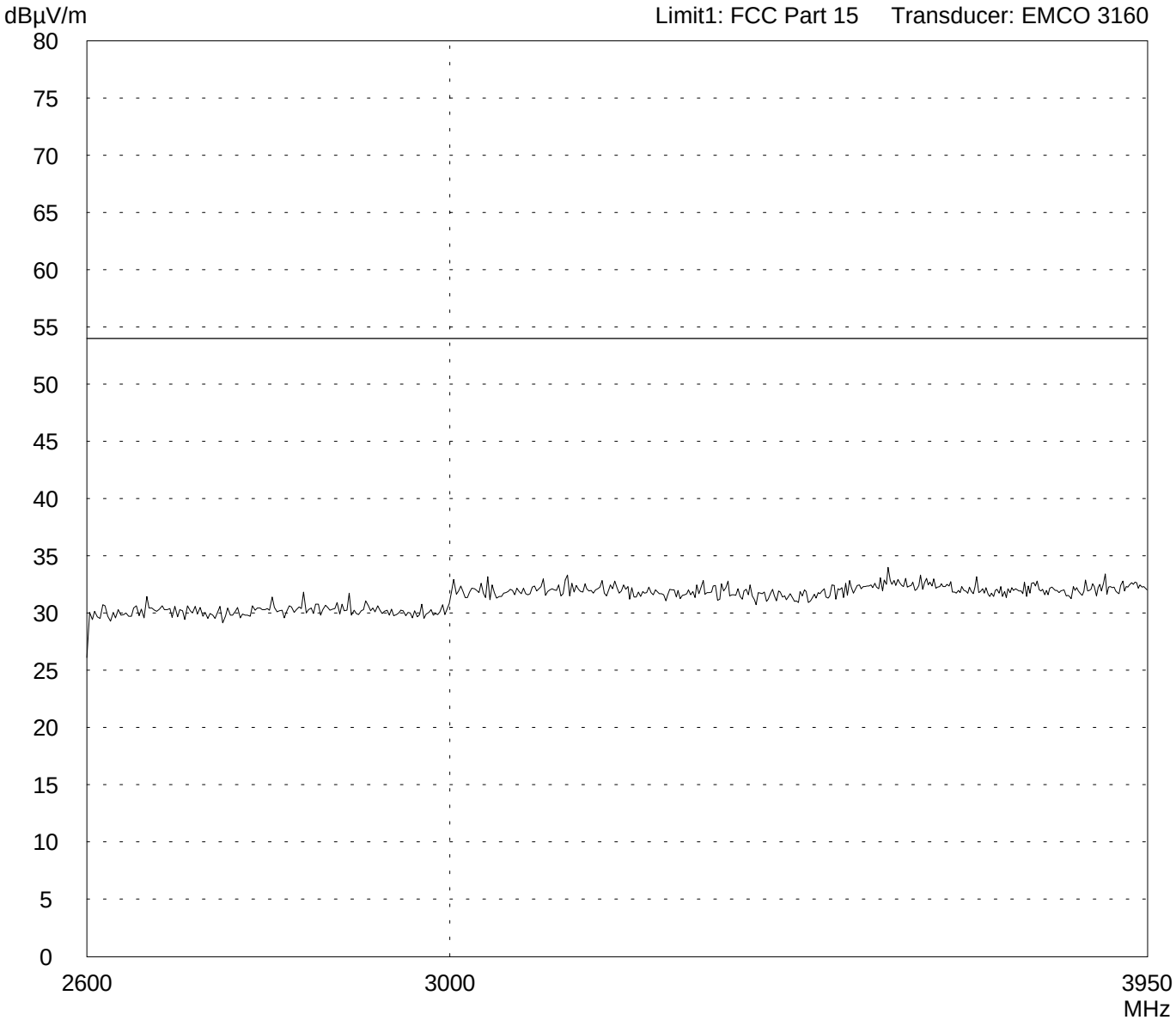


Result: Prescan	Project file: 50602-20351 Page of Pages

Radiated Emission Test 2.6 GHz - 3.95 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin / 50 Subranges

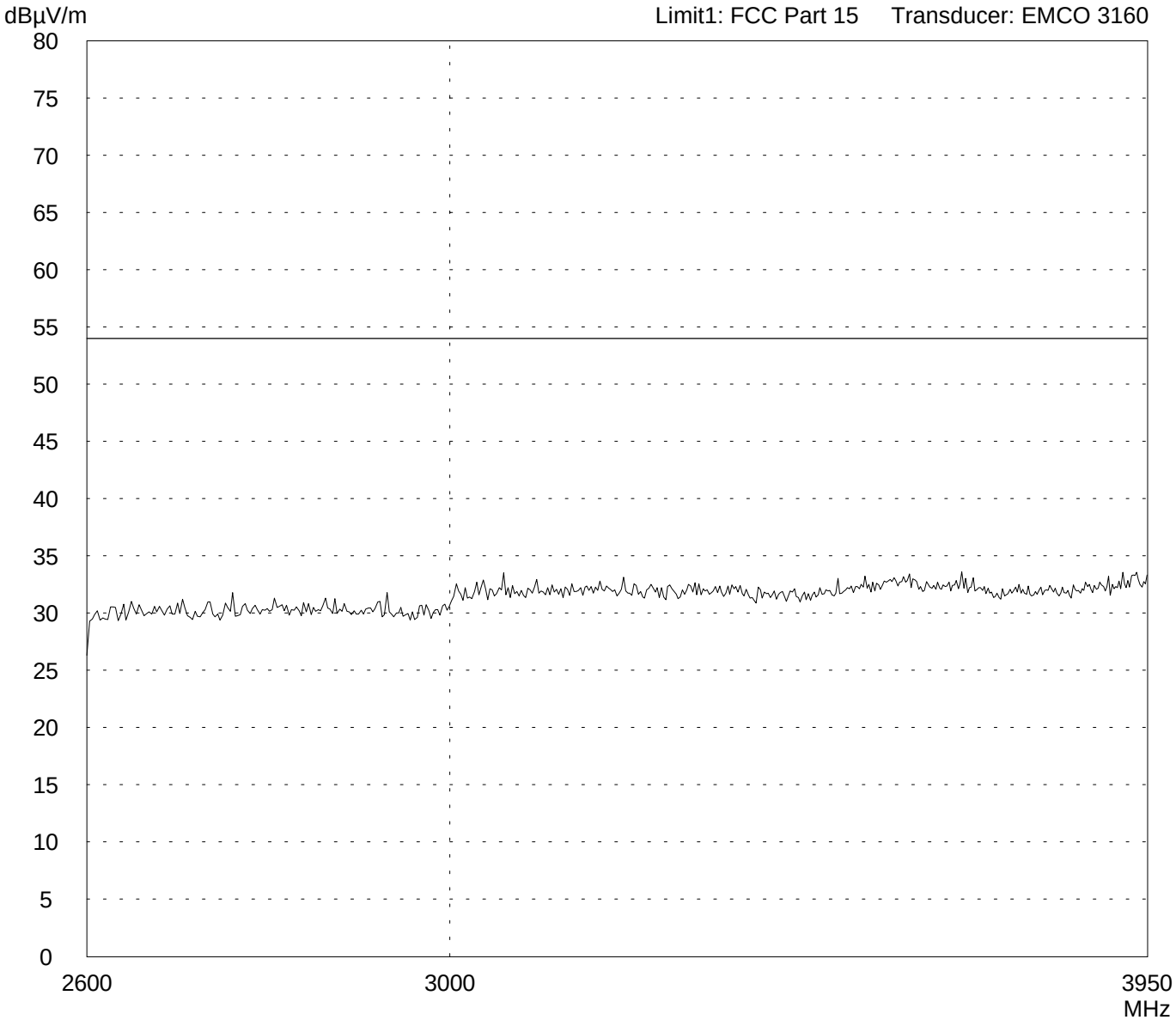


Result: Prescan	Project file: 50602-20351 Page of Pages

Radiated Emission Test 2.6 GHz - 3.95 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin / 50 Subranges

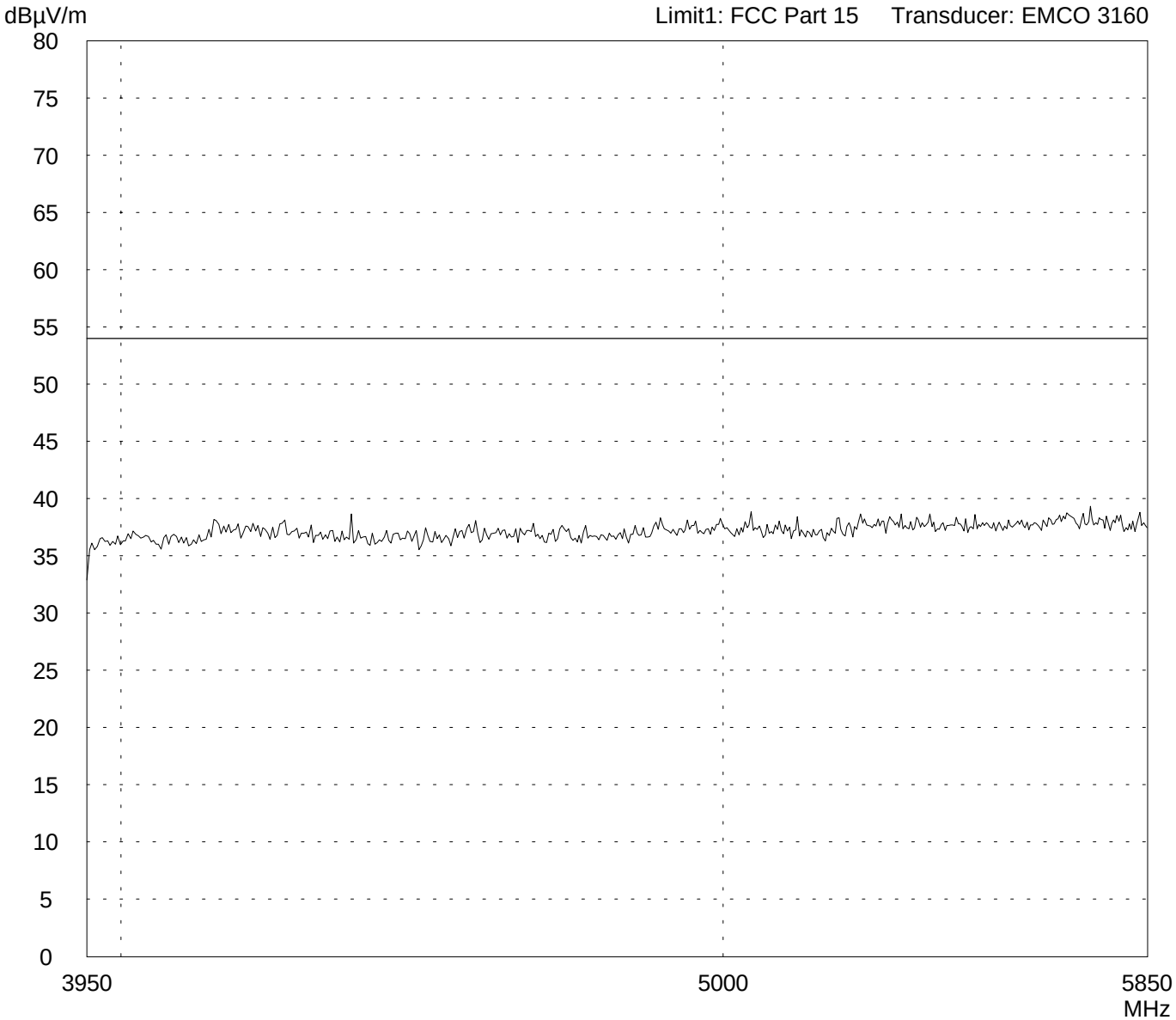


Result: Prescan	Project file: 50602-20351 Page of Pages

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

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin / 50 Subranges

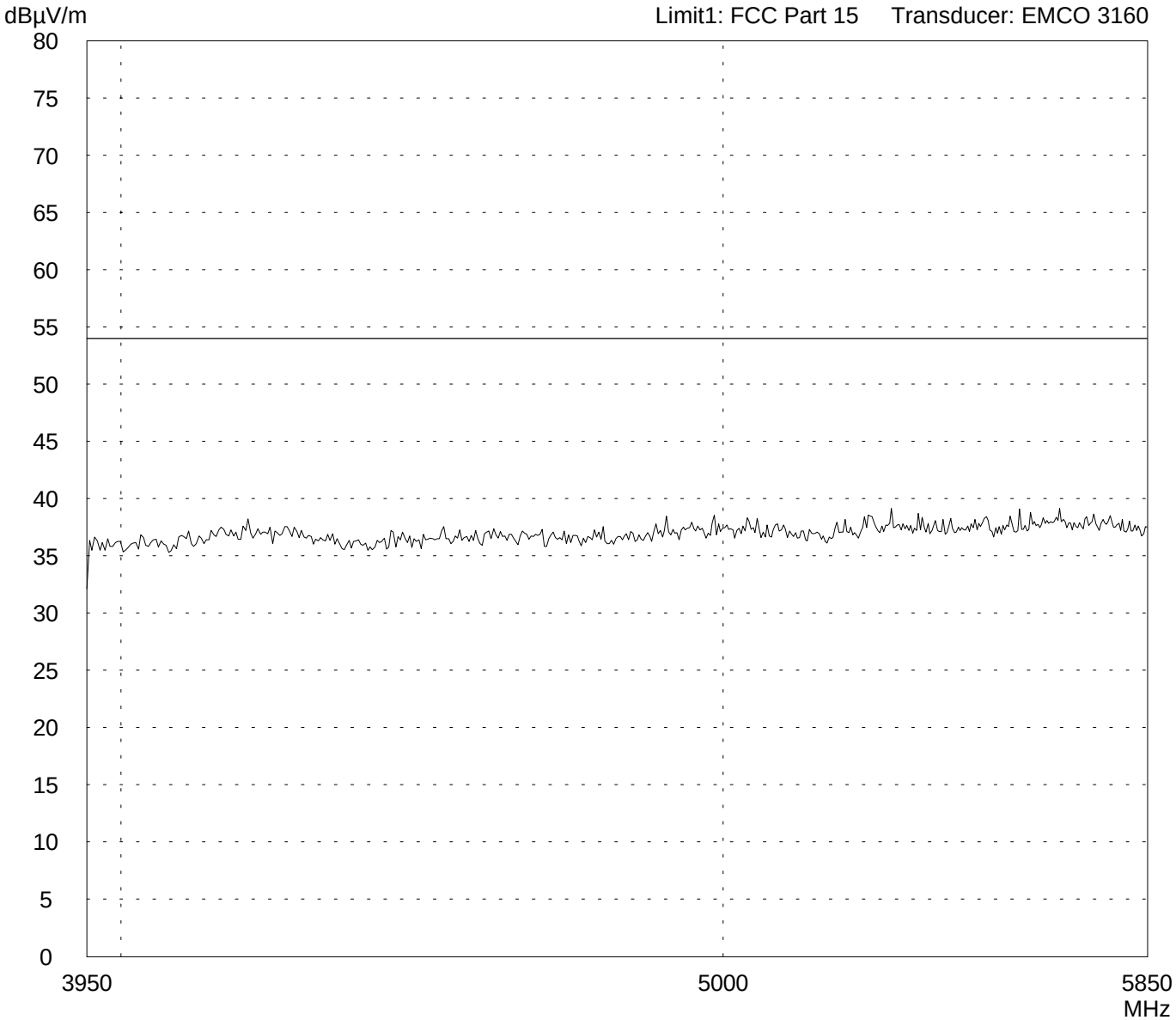


Result: Prescan	Project file: 50602-20351 Page of Pages

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

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin / 50 Subranges

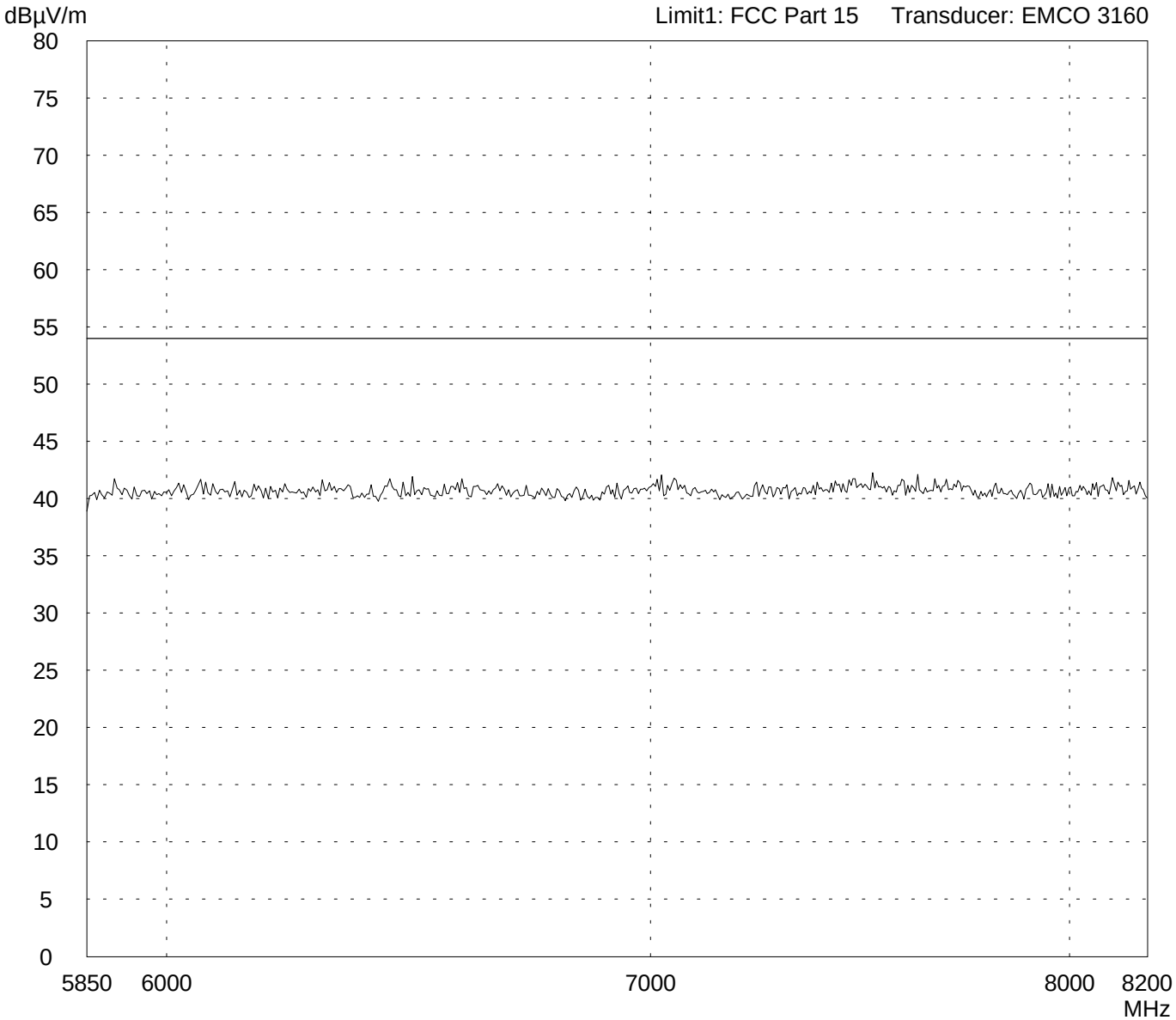


Result: Prescan	Project file: 50602-20351 Page of Pages

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

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin / 50 Subranges

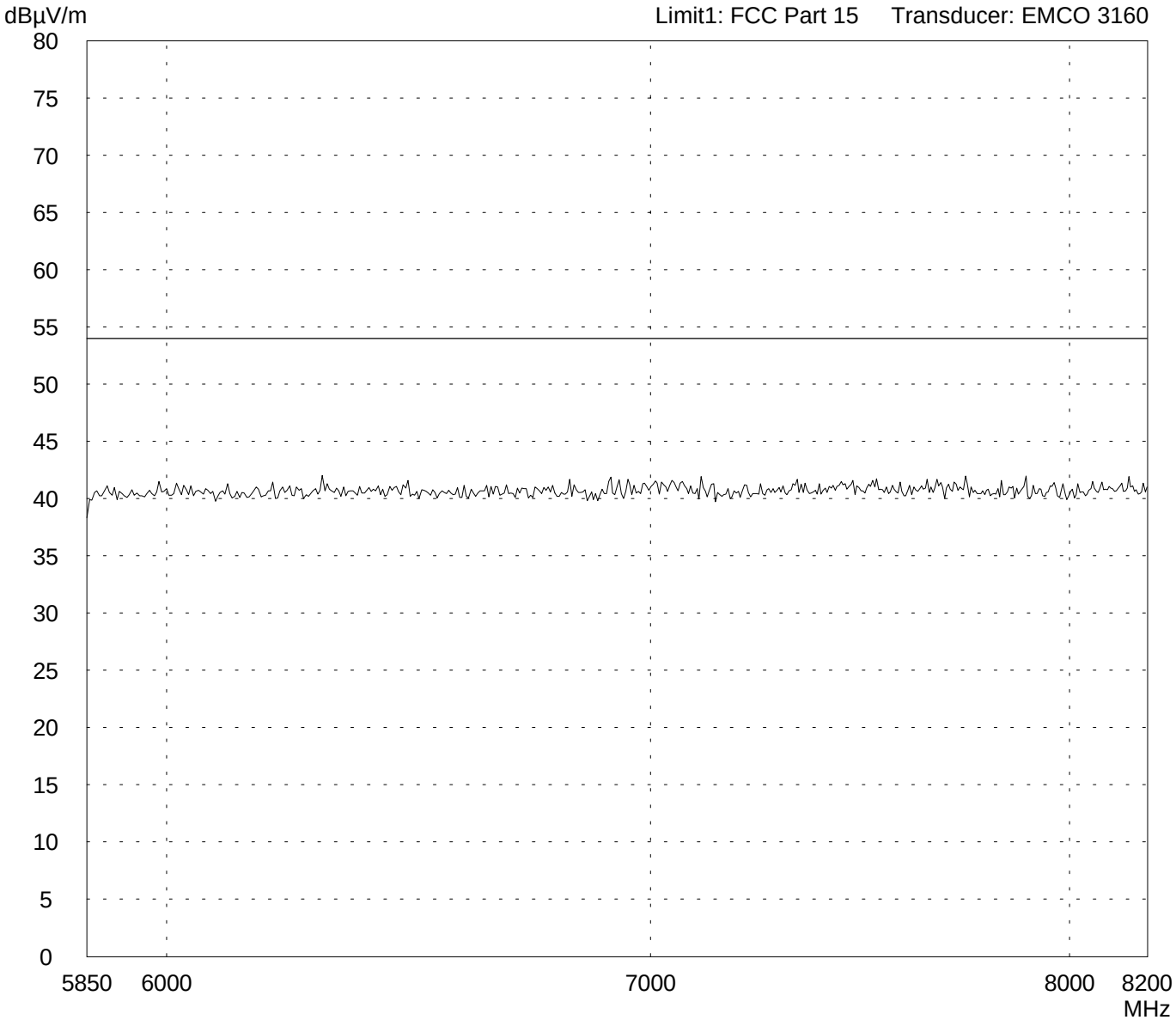


Result: Prescan	Project file: 50602-20351 Page of Pages

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

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: 10 dB Margin / 50 Subranges



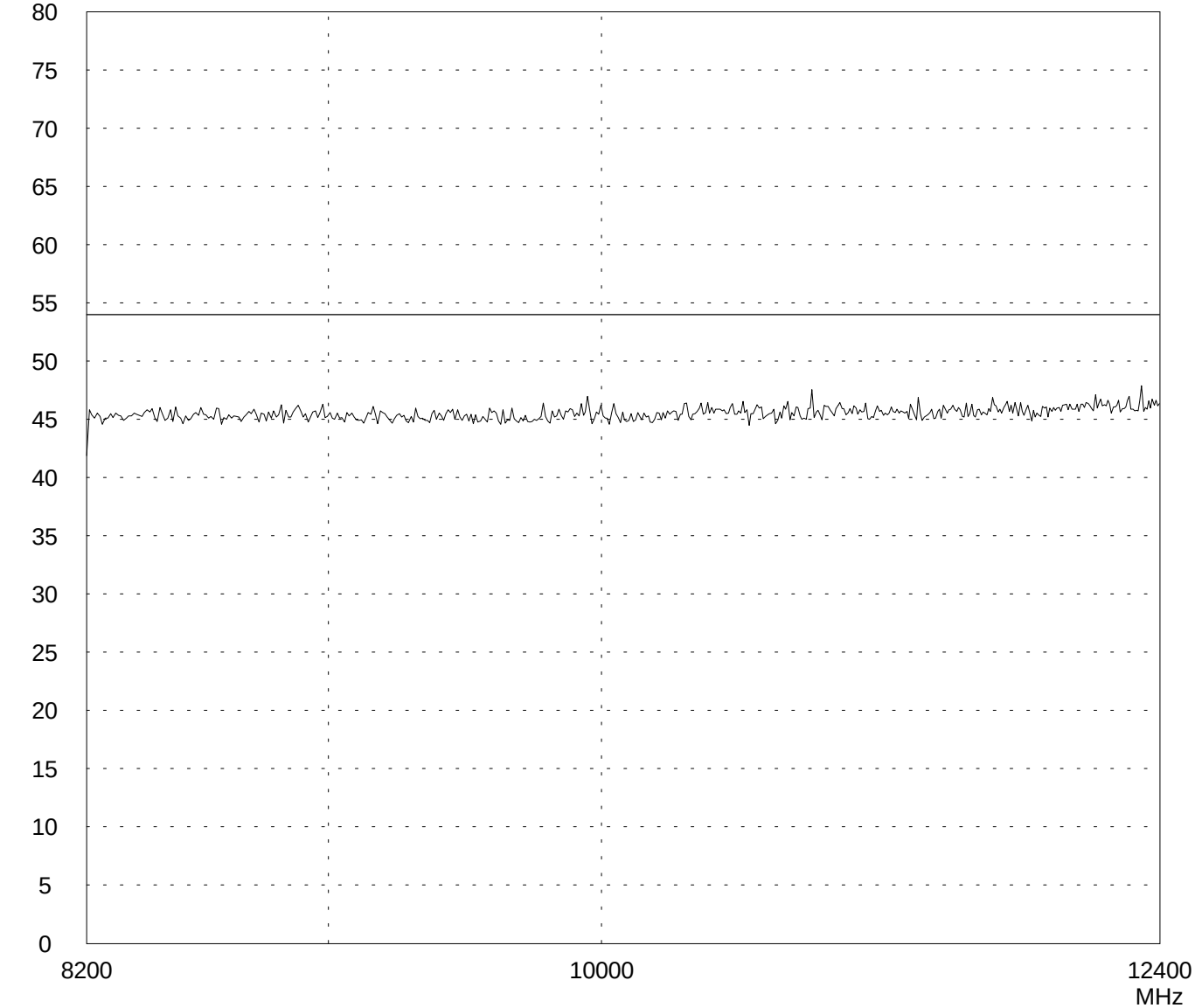
Result: Prescan	Project file: 50602-20351 Page of Pages

Radiated Emission Test 8.2 GHz - 12.4 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

dBµV/m — Limit1: FCC Part 15 — Transducer: EMCO 3160



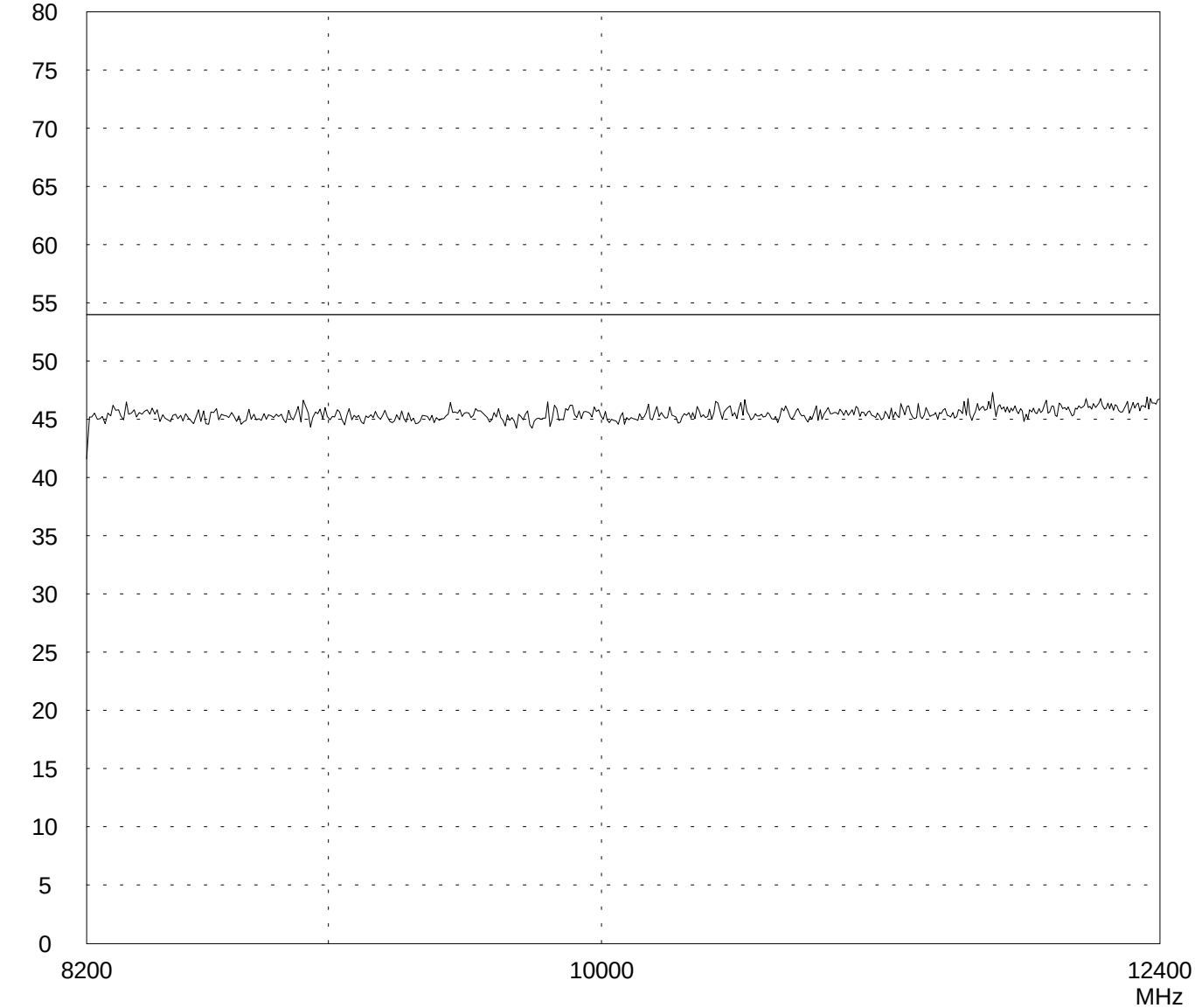
Result: Prescan	Project file: 50602-20351 Page of Pages

Radiated Emission Test 8.2 GHz - 12.4 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: MWD BF 24 GHz	Comment:
Serial no.: ---	
Applicant: FEIG ELEKTRONIC GmbH	
Test site: Fully anechoic room	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: June 17, 2002 / Operator: T. Eberl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

dBµV/m — Limit1: FCC Part 15 — Transducer: EMCO 3160

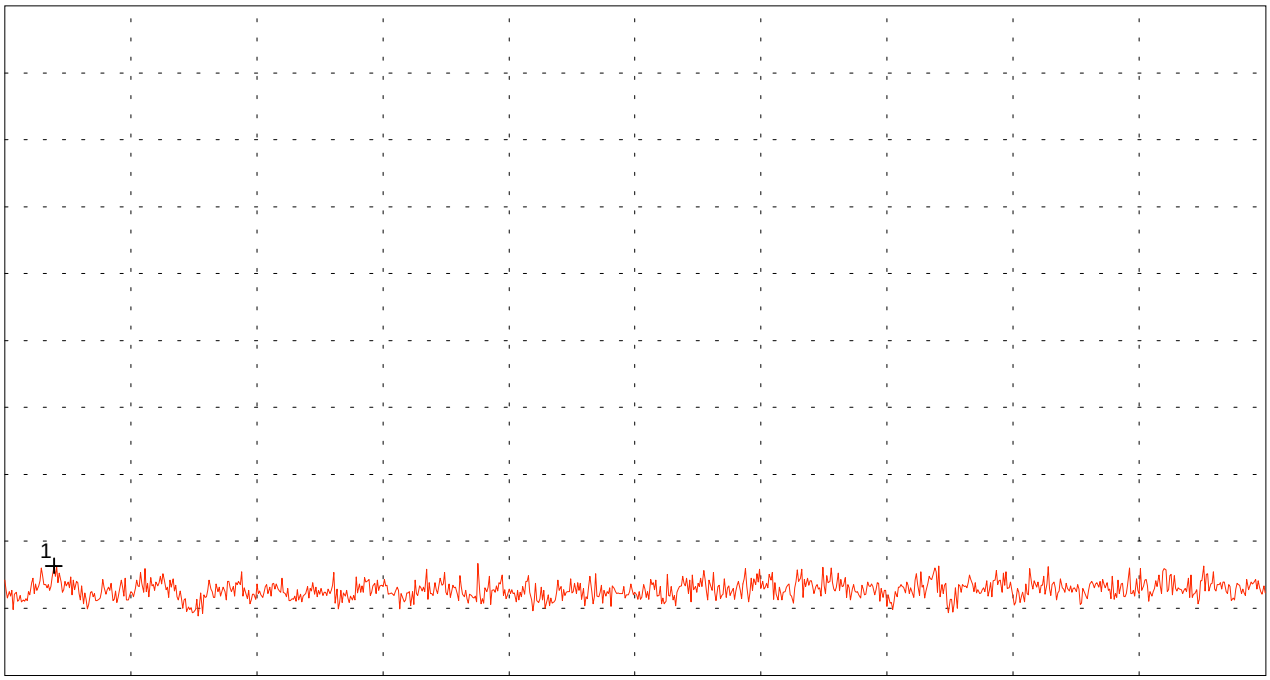


Result: Prescan	Project file: 50602-20351 Page of Pages

Measurement of Radiated Spurious Emissions

Model: MWD BF 24 GHz	Mode: Horizontal Polarization 1 Meter Test Distance
Serial No.: ---	
Applicant: FEIG ELEKTRONIC GmbH	

Ref.Level 52 dBµV ATT 0 dB Ref. Offset -35 dB
5 dB/Div.



Start 12.400 GHz Stop 18.000 GHz
RBW 1 MHz VBW 1 MHz SWP 40 ms

Multi Marker List

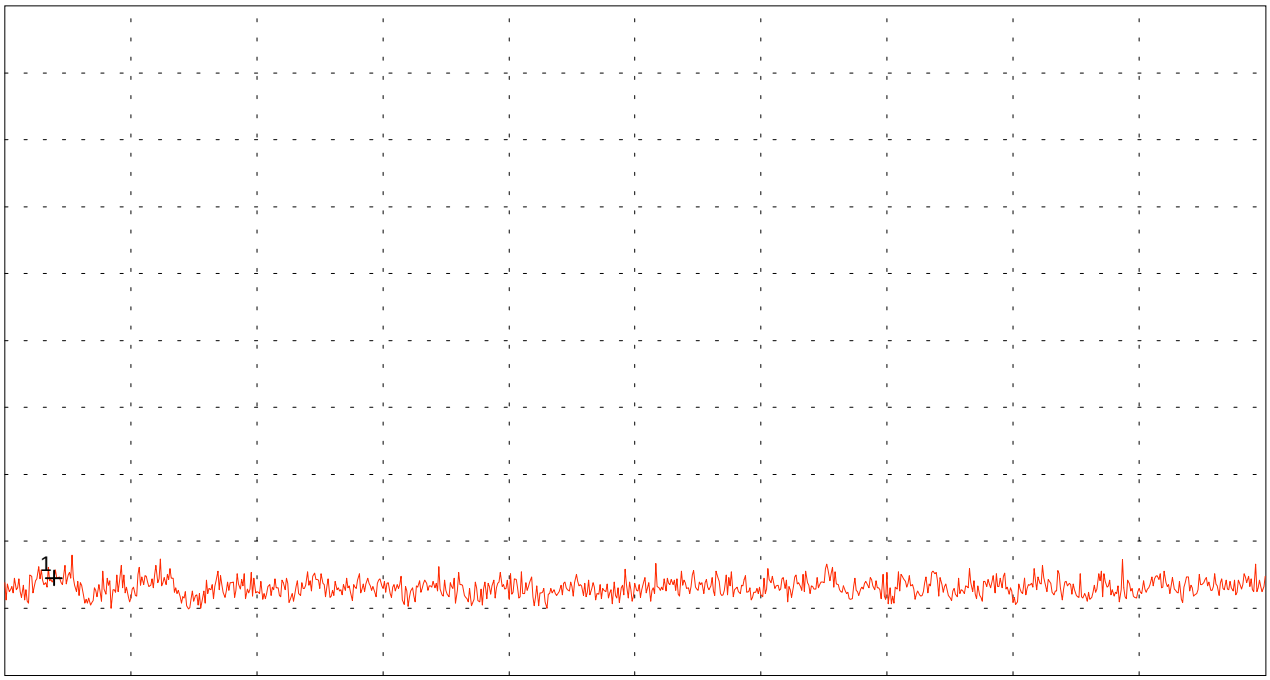
No. 1 12.617778 GHz 10.16 dBµV

Tested by: Johann Roidt	Project-No.: 50602-20351
Date: June 17, 2002	Page of pages

Measurement of Radiated Spurious Emissions

Model: MWD BF 24 GHz	Mode: Horizontal Polarization 1 Meter Test Distance
Serial No.: ---	
Applicant: FEIG ELEKTRONIC GmbH	

Ref.Level 52 dBµV ATT 0 dB Ref. Offset -35 dB
5 dB/Div.



Start 12.400 GHz Stop 18.000 GHz
RBW 1 MHz VBW 1 MHz SWP 40 ms

Multi Marker List

No. 1 12.617778 GHz 9.25 dBµV

Tested by: Johann Roidt	Project-No.: 50602-20351
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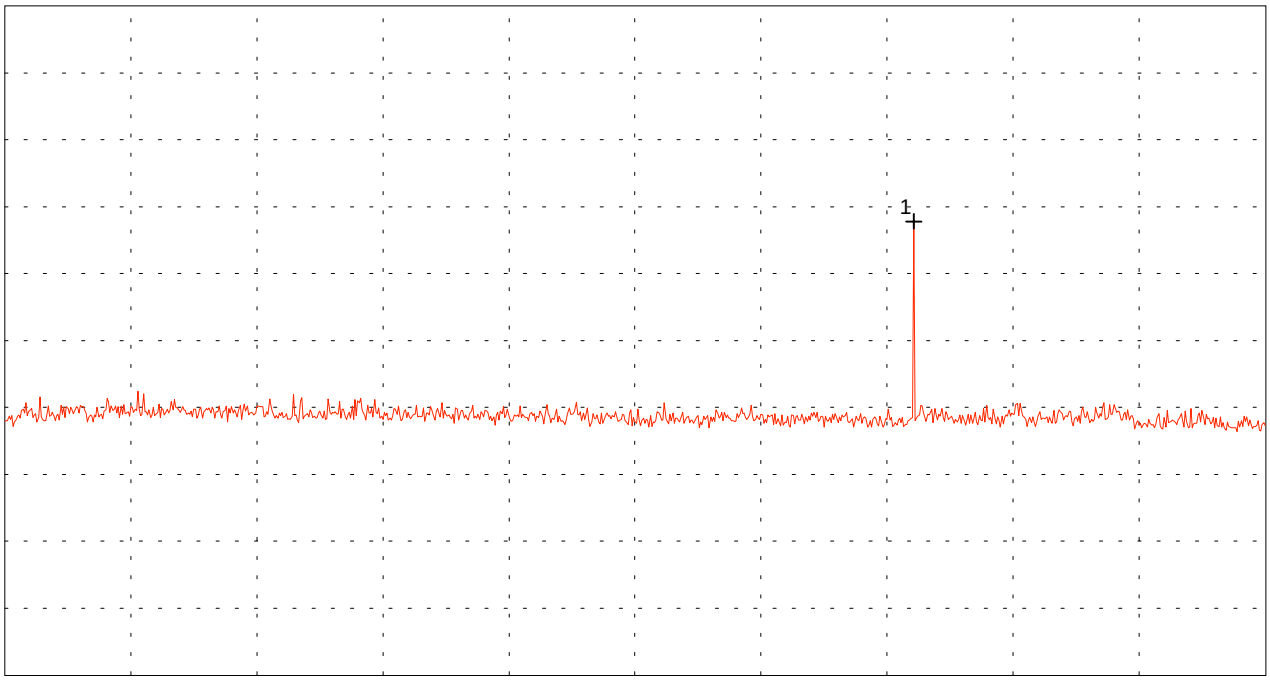
Measurement of Radiated Spurious Emissions

Model: MWD BF 24 GHz	Mode: Horizontal Polarization 1 Meter Test Distance
Serial No.: ---	
Applicant: FEIG ELEKTRONIC GmbH	

Ref.Level 92 dBµV
10 dB/Div.

ATT 0 dB



Start 18.000 GHz
RBW 1 MHz

VBW 1 MHz

Stop 26.500 GHz
SWP 40 ms

Multi Marker List

No. 1 24.129444 GHz 59.81 dBµV

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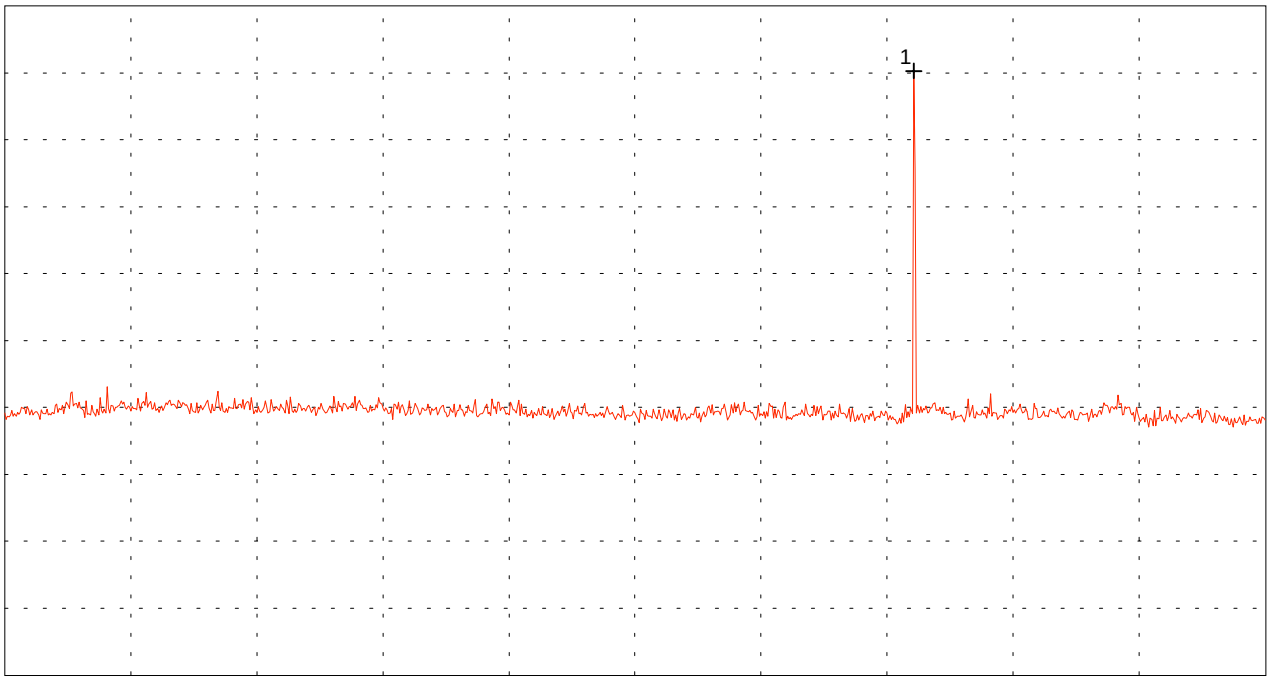
Measurement of Radiated Spurious Emissions

Model: MWD BF 24 GHz	Mode: Vertical Polarization 1 Meter Test Distance
Serial No.: ---	
Applicant: FEIG ELEKTRONIC GmbH	

Ref.Level 92 dBµV ATT 0 dB
10 dB/Div.



Start 18.000 GHz Stop 26.500 GHz
RBW 1 MHz VBW 1 MHz SWP 40 ms

Multi Marker List

No. 1 24.129444 GHz 82.30 dBµV

Tested by: Johann Roidt	Project-No.: 50602-20351
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