SENTON

■ EMV-Prüfzentrum ■ EMI/EMC-Testcenter ■

Straubing, April 18, 2003

T E S T - R E P O R T

No. 50831-30106-1

for

ScanID

Handheld RFID Reader

Applicant:	Hermos Informatik GmbH
Purpose of testing:	To show compliance with
	FCC Code of Federal Regulations, CFR 47, Part 15, Subpart C, Sections 15.205, 15.209
	Industry Canada Radio Standards Specification RSS-210 Issue 5, Sections 6.2.1, 6.3, 6.6 (Category I Equipment)

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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1. Administrative Data

Equipment Under Test (EUT):	ScanID
Serial number(s):	Sample no. 1
Type of equipment:	Handheld RFID Reader
Type of emission:	10K0A1D
Parts/accessories:	---
FCC-ID:	N5GSID

Applicant: (full address)	Hermos Informatik GmbH Gartenstraße 19 D-95490 Mistelgau Germany
Contract identification:	---
Contact person:	Mr. Lothar Düngfelder
Manufacturer:	Hermos Informatik GmbH

Receipt of EUT:	March 3, 2003
Dates of test:	March 3 to 5, 2003
Note:	---

Responsible for testing:	Rainer Heller
Responsible for test report:	Rainer Heller

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 Fax eMail:	(+49) 0 94 21 / 55 22-0 (+49) 0 94 21 / 55 22-99 Office@senton.de
FCC registration number:	90926	
Industry Canada file number:	IC 3050	

3. Summary of Test Results

The tested sample complies with the requirements for set forth in the

The Code of Federal Regulations 47, Part 15, Subpart C, Sections 15.205, 15.207 and 15.209

of the Federal Communication Commission (FCC) and the

Radio Standards Specification RSS-210 Issue 5, Sections 6.2.1, 6.3 and 6.6 for Low Power Licence-Exempt Radiocommunication Devices

of Industry Canada (IC).

Johann Roidt
Laboratory Manager

Rainer Heller
Test Engineer

4. Deviations from the Test Specifications

All tests were performed without deviations from the test specifications.

5. Operation Mode of EUT

- FCC test setup as stand alone device
- with fully charged accumulator

- without tag
or
- reading tag continuously (distance 1 cm)

6. Configuration of EUT and Peripheral Devices

Configuration of cables of EUT

Not applicable

Configuration of peripheral devices connected to EUT

Not applicable

7. Measuring Methods

7.1. Radiated emission 9 kHz - 30 MHz (§15.205, §15.209 / IC RSS-210 Sections 6.2.1, 6.3)

Radiated emissions in the frequency range 9 kHz – 30 MHz were measured initially at a distance of 3 meters. A prescan at 3 meter distance were performed in a shielded room with the detector of the spectrum analyzer or EMI Receiver 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.
Final measurement is then performed at 30 meter distance. In case the regulation requires testing at other distances, the result will be extrapolated. The extrapolation factor is determined by making a second measurement at 10 meter distance. In cases of very low emissions measurements are performed at shorter distances and results are extrapolated to the required distance. The provisions of 15.31 (d) apply.
According to section 15.209 (d) final measurementis performed with the detector set to Quasi Peak except for the frequency bands 9 – 90 kHz and 110 – 490 kHz where average detector is employed.

See figure 1 for the measurement setup.

Test equipment used (see equipment list for details):
001, 004, 103, 104, 140, 172

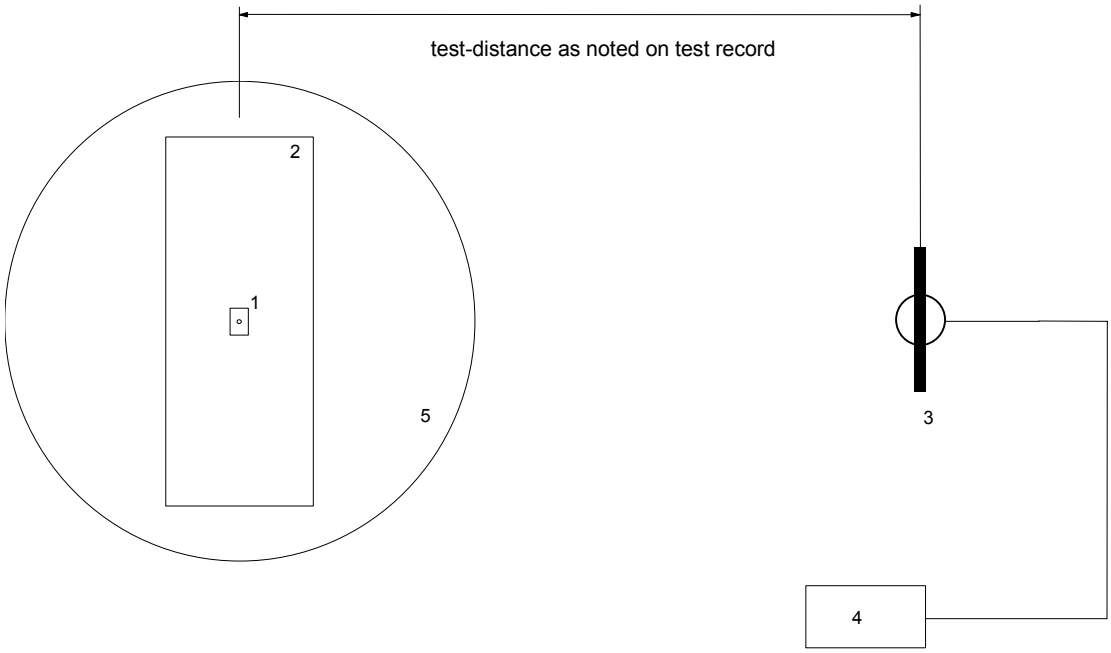


Figure 1: Measurement setup for radiated emission test below 30 MHz

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

7.2. Radiated emission 30 MHz - 1 GHz (§15.205, §15.209 / IC RSS-210 Sections 6.2.1, 6.3)

Radiated emissions were measured over the frequency range from 30 MHz to 1 GHz. For final testing the detector-function of the spectrum analyzer was set to quasi peak

Measurements were made in both the horizontal and vertical planes of polarization. Preliminary scans were taken in a semi or fully anechoic room using a spectrum analyzer with the detector function set to peak and resolution bandwidth set to 100 kHz. All tests were 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.
For final testing an open-area test-site was used. During the tests the EUT was rotated all around and the receiving-antenna was raised and lowered from 1 meter to 4 meters 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.

See figure 2 for the measurement setup.

Test equipment used (see equipment list for details):
001, 003, 004, 012, 014, 015, 018, 102, 106, 113, 141, 142, 143, 144, 171, 172

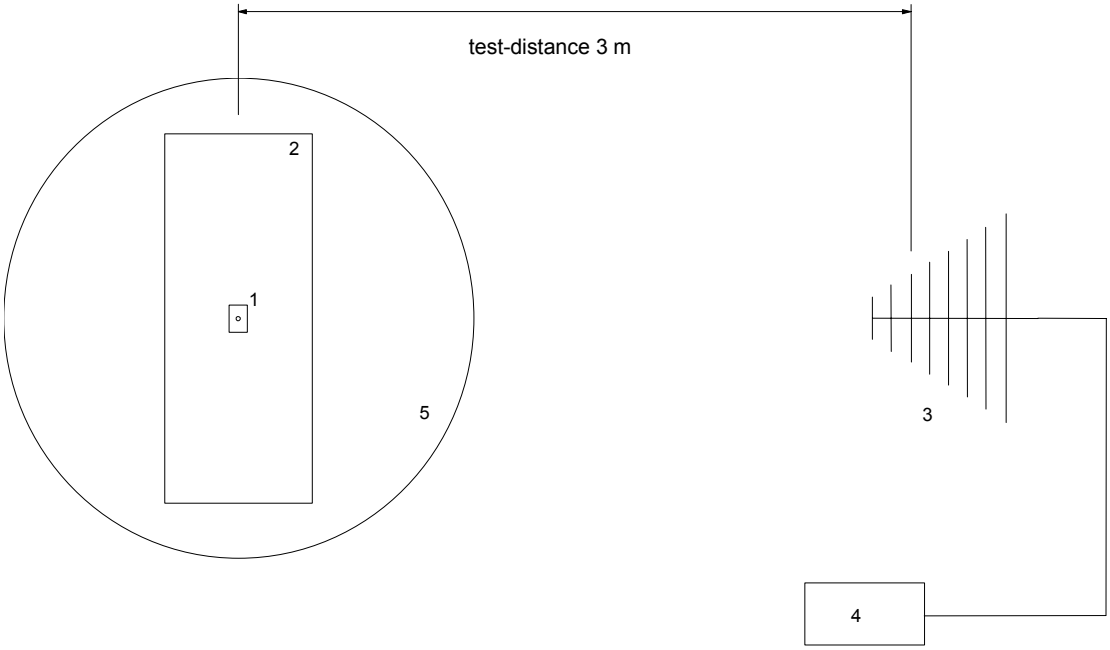


Figure 2: Measurement setup for radiated emission test

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

8. Photographs of Test Setups

8.1. Photographs of Test Setups for three orthogonal axes

Photos No. 8.1 and 8.2

Test Setup with EUT in horizontal position with rear side on table

Photos No. 8.3 and 8.4

Test Setup with EUT in horizontal position with rear side on table - continued -

Photos No. 8.5 and 8.6

Test Setup with EUT in horizontal position with right side on table

Photos No. 8.7 and 8.8

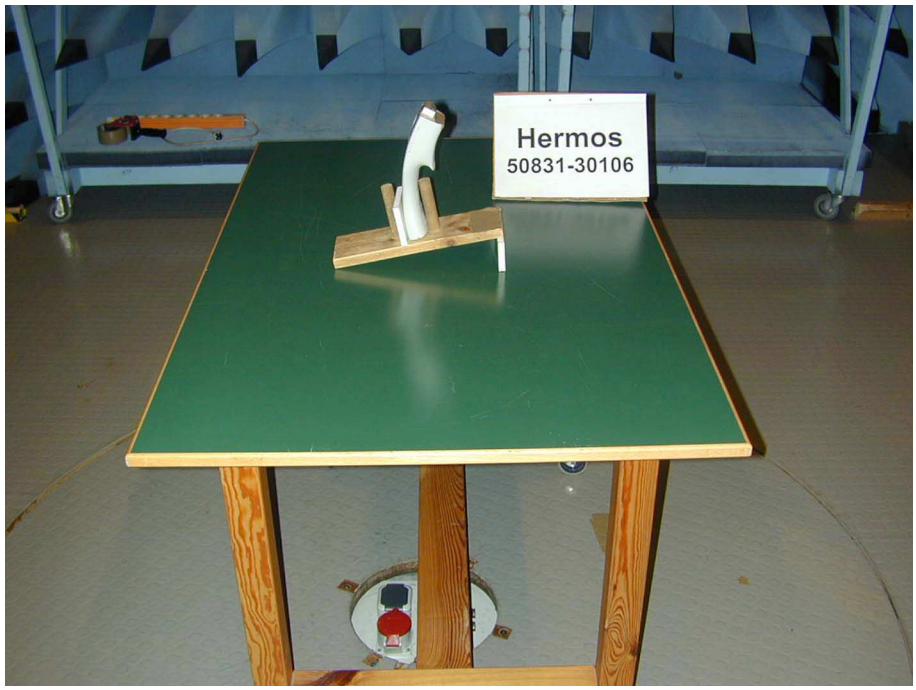
Test Setup with EUT in horizontal position with right side on table - continued -

Photos No. 8.9 and 8.10

Test Setup with EUT in vertical position with bottom side on table

Photos No. 8.11 and 8.12

Test Setup with EUT in vertical position with bottom side on table - continued -



8.2. Photographs of Test Setups for different mesurements

Photo No. 8.13

Test Setup for Radiated Emissions 9 kHz – 30 MHz (prescan)

Photo No. 8.14

Test Setup for Radiated Emissions 9 kHz – 30 MHz (final scan)

Photo No. 8.15

Test Setup for Radiated Emissions 30 – 1000 MHz (prescan)

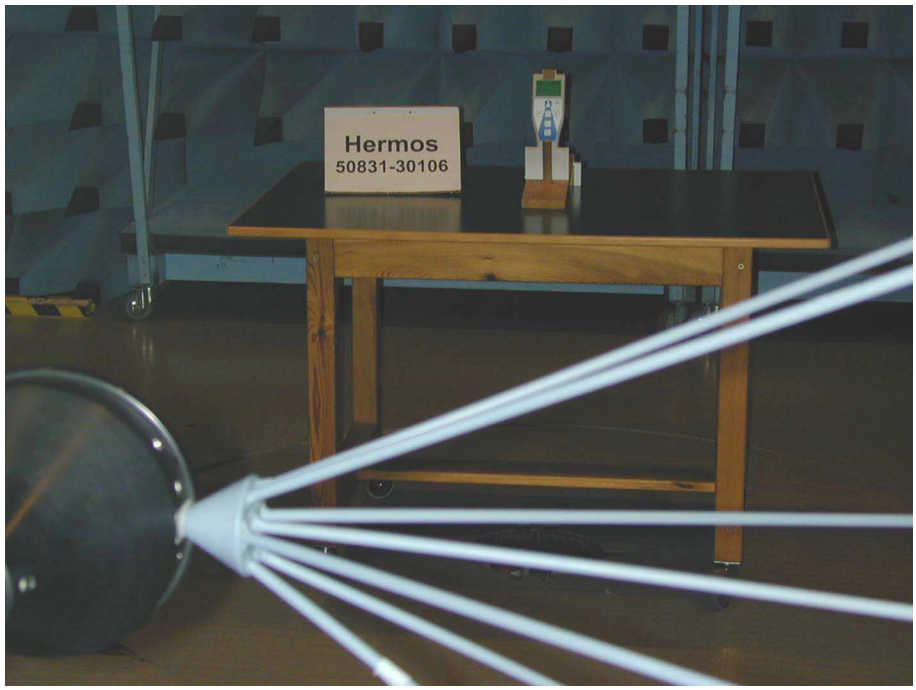


Photo No. 8.16

Test Setup for Radiated Emissions 30 – 1000 MHz (final scan)

9. Equipment List

To simplify the identification on each page of the test report, each item of test equipment and ancillaries such as cables is identified (numbered) by the test laboratory (version 01/18/2002), below.

General Test Equipment and Ancillaries

No.	Instrument/Ancillary	Type	Serial Number	Manufacturer
001	Open area test site	EG 1		Senton
002	Shielded room	No. 1	1451	Albatross
003	Fully anechoic room	No. 2	1452	Albatross
004	Semi-anechoic room	No. 3	1453	Siemens
005	Shielded room	No. 4	3FD 100 544	Euroshield
006	Shielded room	No. 5	5468	Ray Proof Division
007	Temperature test chamber	HT4010	07065550	Heraeus
008	Cable	RG214	1309	Senton
009	Cable	200CM_001	1357	Rosenberger
010	Cable	150CM_001	1479	Rosenberger
011	Cable	150CM_002	1480	Rosenberger
012	Cable set EG1	RG214	1189 - 1191	Senton
013	Cable set cabin no. 1	RG214		Senton
014	Cable set cabin no. 2	UTIFLEX		Rosenberger
015	Cable set cabin no. 3	RG214		Senton
016	Cable set cabin no. 4	RG214		Senton
017	DC power supply	NGSM 32/10	203	Rohde & Schwarz
018	DC power supply	NGB	2455	Rohde & Schwarz
019	DC power supply	NGA	386	Rohde & Schwarz
020	Isolating transformer	RT 5A	10387	Grundig
021	Isolating transformer	RT 5A	10416	Grundig
022	Digital multimeter	199	463386	Keithley
023	Multimeter	HP E2373A	2927J03345	Hewlett Packard
024	DC-block 0.01 - 18 GHz		8037	Inmet
025	DC-block	7006	A2798	Weinschel
026	Digital multimeter	UDS 5	838760/001	Rohde & Schwarz

Test Equipment and Ancillaries used for Emission Tests

No.	Instrument/Ancillary	Type	Serial Number	Manufacturer
101	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
102	Spectrum analyzer	FSP30	100036	Rohde & Schwarz
103	Test receiver	ESH 3	880112/032	Rohde & Schwarz
104	Test receiver	ESHS 10	860043/016	Rohde & Schwarz
105	Test receiver	ESV	881414/009	Rohde & Schwarz
106	Test receiver	ESVP	881120/024	Rohde & Schwarz
107	Audio analyzer	UPA	862954	Rohde & Schwarz
108	Radio communication service monitor	CMS 54	838384/030	Rohde & Schwarz
109	Power meter	NRVS	836856/015	Rohde & Schwarz
110	Power sensor	NRV-Z52	837901/030	Rohde & Schwarz
111	Power sensor	NRV-Z4	863828/015	Rohde & Schwarz
112	Preamplifier	ESV-Z3	860907/004	Rohde & Schwarz
113	Preamplifier	CPA9231A	3393	Schaffner
114	Preamplifier	AFS3-00100800-32-LN	847743	Miteq
115	Preamplifier	ACO/180-3530	32641	CTT
116	Signal generator	SMY 01	830694/001	Rohde & Schwarz
117	Signal generator	HP 8673 D	2930A00966	Hewlett Packard
118	Waveform generator	HP 33120 A	US34005375	Hewlett Packard
119	UHF attenuator set	DPU	300771/075	Rohde & Schwarz
120	UHF attenuator set	DPU	300788/006	Rohde & Schwarz
121	Attenuator	4776-10	9412	Narda
122	Attenuator	4776-20	9503	Narda
123	Pulse limiter	ESH 3-Z2	1144	Rohde & Schwarz
124	Pulse limiter	11947 A	3107A00566	Hewlett Packard
125	V-network	ESH 3-Z5	862770/018	Rohde & Schwarz
127	V-network	ESH 3-Z5	830952/025	Rohde & Schwarz
128	V-network	ESH 3-Z6	830722/010	Rohde & Schwarz
129	V-network	NSLK 8127	8127152	Schwarzbeck
130	Artificial mains network	ESH 2-Z5	842966/004	Rohde & Schwarz
131	T-network	ESH 3-Z4	890602/011	Rohde & Schwarz
132	T-network	ESH 3-Z4	890602/012	Rohde & Schwarz
133	Diode detector negative	8473D	01492	Hewlett Packard
134	High impedance probe	TK 9416	01	Schwarzbeck
135	High impedance probe	TK 9416	02	Schwarzbeck

Test Equipment and Ancillaries used for Emission Tests (continued)

No.	Instrument/Ancillary	Type	Serial Number	Manufacturer
136	Current probe	ESH 2-Z1	863366/18	Rohde & Schwarz
137	Current probe	ESV-Z1	862553/3	Rohde & Schwarz
138	Absorbing clamp	MDS 21	80911	Lüthi
139	Absorbing clamp	MDS 21	79690	Lüthi
140	Loop antenna	HFH2-Z2	882964/1	Rohde & Schwarz
141	Biconical antenna	HK 116	829708/006	Rohde & Schwarz
142	Biconical antenna	HK 116	842204/001	Rohde & Schwarz
143	Log. periodic antenna	3147	9112-1054	EMCO
144	Log. periodic antenna	HL 223	841516/023	Rohde & Schwarz
145	Horn antenna	3115	9508-4553	Emco
146	Horn antenna	3160-03	9112-1003	Emco
147	Horn antenna	3160-04	9112-1001	Emco
148	Horn antenna	3160-05	9112-1001	Emco
149	Horn antenna	3160-06	9112-1001	Emco
150	Horn antenna	3160-07	9112-1008	Emco
151	Horn antenna	3160-08	9112-1002	Emco
152	Horn antenna	3160-09	9403-1025	Emco
153	Stub tuner	904N	04	Narda
154	Mains analyzer	DPA 503	496 - 02	EM Test
155	Controller	HIS 500	X71010	EM Test
156	AC Amplifier	ACS 500	HK51736	EM Test
157	Mains impedance	AIF 500	X71062	EM Test
158	T-Section	BN 42441/50	300808/2	Rohde & Schwarz
159	T-Section	BN 42441/50	300772/29	Rohde & Schwarz
160	Coaxial Switch	HR 07-720	30185	WISI
161	Coaxial resistor	8135	15972	Bird
162	Dummy microphone circuit	DMC-ED-23-B	---	Senton
163	Sampling unit	SU-ED-23-B	---	Senton
164	Detector unit	DU-ED-23-B	---	Senton
165	Oscilloscope	54602B	US35060304	Hewlett Packard
166	Test probe	TP01	001	Senton
167	Serial interface converter	SIC-V24-TTL	001	Senton
168	Dual Directional Coupler	HP 778D	0826A01562	Hewlett Packard
169	White Noise Generator	NG01	001	Senton
170	Audio Filter Circuit	AFC01	001	Senton
171	Preamplifier	R14601		Advantest
172	Spectrum analyzer	R 3271	05050023	Advantest
173	Biconical antenna	HK 116	836239/02	Rohde & Schwarz
174	Log. periodic antenna	HL 223	834408/12	Rohde & Schwarz

Test Equipment and Ancillaries used for Immunity Tests

No.	Type	Model	Serial Number	Manufacturer
201	ESD simulator	NSG 435	000290	Schaffner
202	EFT generator	NSG 1025	3020	Schaffner
203	Ultra compact simulator	UCS	1195-30	EM Test
204	Coupling clamp	CDN 8014	131	Schaffner
205	Coupling clamp	SL 400-071D	007	Schaffner
206	Coupling filter	FP 16	080554-14-84	Haefely
207	Oscilloscope	2225	203550	Tektronix
208	Signal generator	SMT 03	838129/029 837533/032	Rohde & Schwarz
209	Power amplifier	150 L	8835	Amplifier Research
210	Power amplifier	200 W 1000	12904	Amplifier Research
211	Power meter	NRVS	838624/016	Rohde & Schwarz
212	E-field generator	3107 B	2302	Emco
213	Hybrid log. periodic antenna	HLP-2603	120500	EMC Automation
214	Log. periodic antenna	AT 1080	12834	Amplifier Research
215	Isotropic field probe	FP 2000	12847	Amplifier Research
216	Isotropic field monitor	FM 2004	12632	Amplifier Research
217	Ultra compact simulator	UCS	1195-30	EM Test
218	Surge generator	NSG 2050	200104-005AR	Schaffner
219	Coupling network	CDN 110	1649135	Schaffner
220	Coupling network	CDN 115	132	Schaffner
221	Dropping resistor	INA 110-40	121	Schaffner
222	Oscilloscope	HM 408	9005 F 3144	Hameg

Test Equipment and Ancillaries used for Immunity Tests (continued)

No.	Type	Model	Serial Number	Manufacturer
223	Signal generator	SMX	883184/018	Rohde & Schwarz
224	Power amplifier	411 LA	299	ENI
225	Power amplifier	HVV 250	836956/004	Rohde & Schwarz
226	Power meter	NRV	863825/018	Rohde & Schwarz
227	Coupling network	FCC - 801- M3-25	117	FCC
228	Coupling network	FCC - 801- M4-25	17	FCC
229	Coupling network	FCC - 801- M5-25	16	FCC
230	Coupling network	FCC - 801- AF4	47	FCC
231	Coupling network	FCC - 801- AF4	48	FCC
232	Coupling network	FCC - 801-T4	68	FCC
233	Coupling network	FCC - 801- C1	64	FCC
234	Coupling network	CDN 801-M3	--	Senton
235	Coupling network	CDN 801-S37	--	Senton
236	Current clamp	FCC-120-9B	15	FCC
237	EM injection clamp	EM 101	35354	Lüthi
238	Ultra compact simulator	UCS 500	1195-30	EM Test
239	Transformer	EAC/MT27016/ATE /PCG1	96.24.934	ET System Electronic
240	Oscilloscope	54602B	US35060304	Hewlett Packard
241	Coupling network	CNI 503	0796-04	EM Test
242	Test pulse generator	NSG 5003	199811-089AR	Schaffner
243	Test pulse generator	NSG 5001	199849-751AR	Schaffner
244	Test pulse generator	NSG 5005	199840-093AR	Schaffner
245	Coupling clamp	CDN 500	293	Schaffner

10. 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, 1999
☐	CFR 47 Part 15 Subpart A	Code of Federal Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communication Commission (FCC)	August 20, 2002
☐	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)	August 20, 2002
☒	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)	August 20, 2002
☐	CFR 47 Part 95 Subpart C/E	Code of Federal Regulations Part 95 (Personal Radio Services), Subpart C/E (Radio Control(R/C) Radio Service) of the Federal Communication Commission (FCC)	October 1, 1998
☒	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 Radiocommuniction 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
☒	CISPR 22	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement	1997

11. List of Measurements

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

FCC Part 15 Subpart C			
Section(s):	**Test**	**Page(s)**	**Result**
§15.207	Conducted emission test 150 kHz - 30 MHz	---	Not Applicable
§15.209 **§15.205.a,b**	Radiated Emission 9 kHz - 30 MHz	34	Passed
§15.209 **§15.205.a,b**	Radiated Emission 30 MHz – 1 GHz	35	Passed

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

Industry Canada RSS-210 Issue 5			
Section(s):	**Test**	**Page(s)**	**Result**
6.6	Transmitter AC Wireline Conducted Emissions 450 kHz - 30 MHz	---	Not Applicable
6.2.1 **6.3**	Field Strength of Emissions 9 kHz - 30 MHz	34	Passed
6.2.1 **6.3**	Field Strength of Emissions 30 MHz – 1 GHz	35	Passed

12. Test Results

Radiated Emission according to FCC Rules, Part 15, Subpart C, Sections 15.209, 15.205 Frequency Band ≤ 30 MHz

Model:	ScanID
Type:	Handheld RFID Reader
Serial No.	Sample no. 1
Applicant:	Hermos Informatik GmbH
Test Site:	Open Field Test Site (without Ground Plane)
Test distance:	10 meters
Date of Test:	03/05/2003

Frequency [MHz]	Detector	Receiver reading [dBµV]	Correction factor [dB]	Fieldstrength [dBµV/m]	Limit [dBµV/m]	Margin to limit [dB]
EUT in horizontal position with rear side on table						
0.1343	QP	16.8	20.0	36.8	84.1	47.3
0.1343	AV	4.4	20.0	24.4	84.1	59.7
EUT in horizontal position with right side on table						
0.1343	QP	24.7	20.0	44.7	84.1	39.4
0.1343	AV	11.3	20.0	31.3	84.1	52.8
EUT in vertical position with bottom side on table						
0.1343	QP	23.8	20.0	43.8	84.1	40.3
0.1343	AV	10.9	20.0	30.9	84.1	53.2

Note 1: Limit for test distance of 10 meters is calculated from limit for 300 meters by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: No emissions above noise floor detected in the restricted band 90 kHz to 110 kHz.

Sample calculation of field strength values:

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

Radiated Emission according to FCC Rules, Part 15, Subpart C, Sections 15.209, 15.205 Frequency Band ≥ 30 MHz

Model:	ScanID
Type:	Handheld RFID Reader
Serial No.	Sample no. 1
Applicant:	Hermos Informatik GmbH
Test Site:	Open Field Test Site
Distance:	10 meters
Position of EUT:	EUT in horizontal position with right side on table
Date of Test:	03/04/2003

Frequency [MHz]	Detector	Antenna polarization	Receiver reading [dBµV]	Correction factor [dB]	Fieldstrength [dBµV/m]	Limit [dBµV/m]	Margin to limit [dB]
64.520	QP	horizontal	9.4	9.8	19.2	40.0	20.8
70.070	QP	horizontal	9.3	9.6	18.9	40.0	21.1
153.040	QP	horizontal	6.8	14.0	20.8	43.5	22.7
154.870	QP	horizontal	6.2	14.0	20.2	43.5	23.3

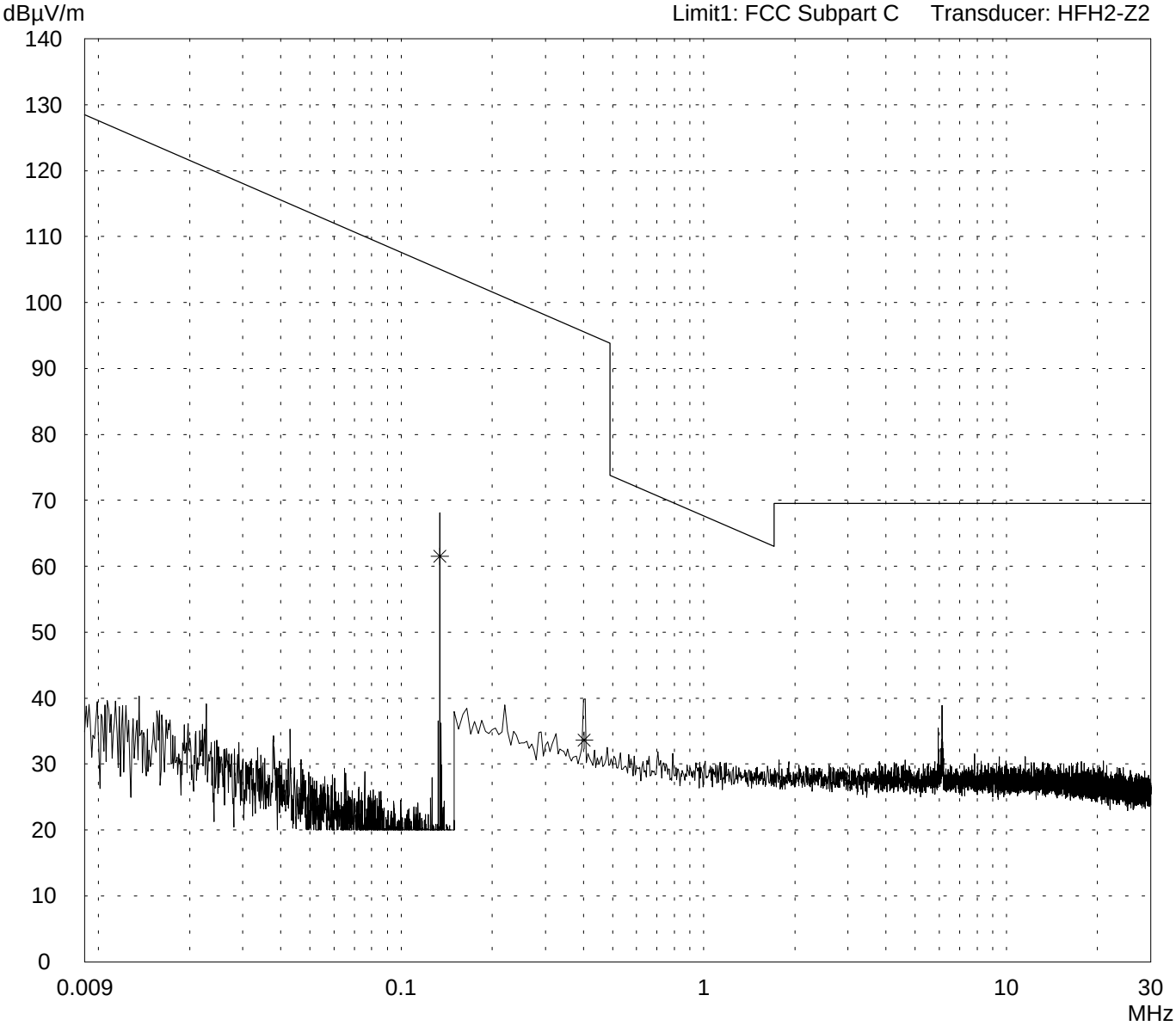
Sample calculation of field strength values:

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

13. Charts taken during testing

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with rear side on table Final results with AV detector: 0.1343 MHz: 44.6 dBµV/m 0.4029 MHz: 24.5 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak / Final Results: QP	Final results: Selected by hand



Result: Prescan	Project file: 50831-30106-1 — Page 37 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with rear side on table Final results with AV detector: 0.1343 MHz: 44.6 dBµV/m 0.4029 MHz: 24.5 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

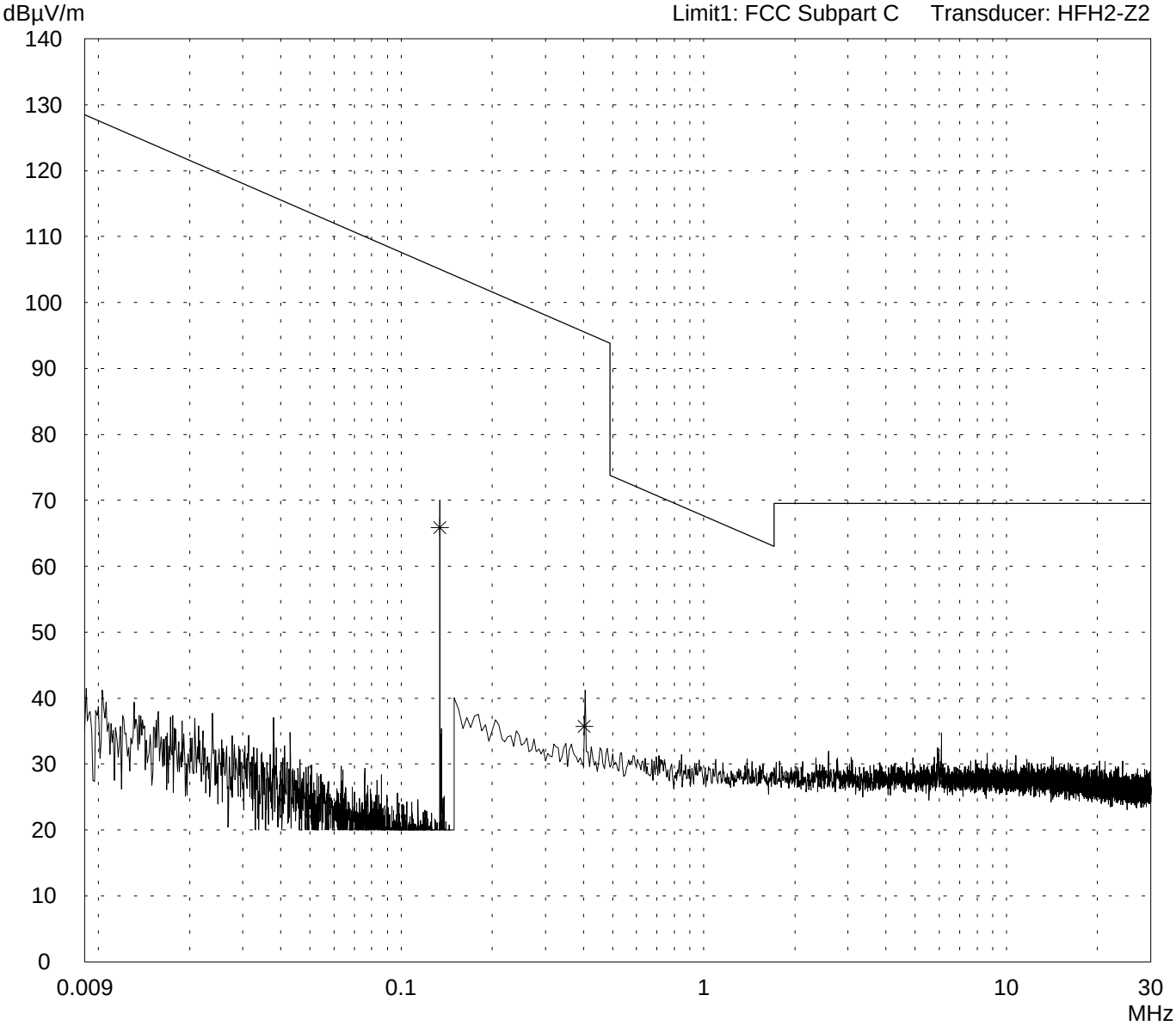
Detector: Peak / Final Results: QP	Final results: Selected by hand

Frequency MHz	*Reading dBµV*	*Correction factor dB*	*Value dBµV/m*	*Limit dBµV/m*	*Limit exceeded*
0.1343	41.5	20.0	61.5	105.0	
0.4029	13.6	20.0	33.6	95.5	

Result: Prescan	Project file: 50831-30106-1 Page 38 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - without tag - EUT in horizontal position with rear side on table Final results with AV detector: 0.1343 MHz: 53.9 dBµV/m 0.4029 MHz: 27.6 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak / Final Results: QP	Final results: Selected by hand



Result: Prescan	Project file: 50831-30106-1 — Page 39 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - without tag - EUT in horizontal position with rear side on table Final results with AV detector: 0.1343 MHz: 53.9 dBµV/m 0.4029 MHz: 27.6 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

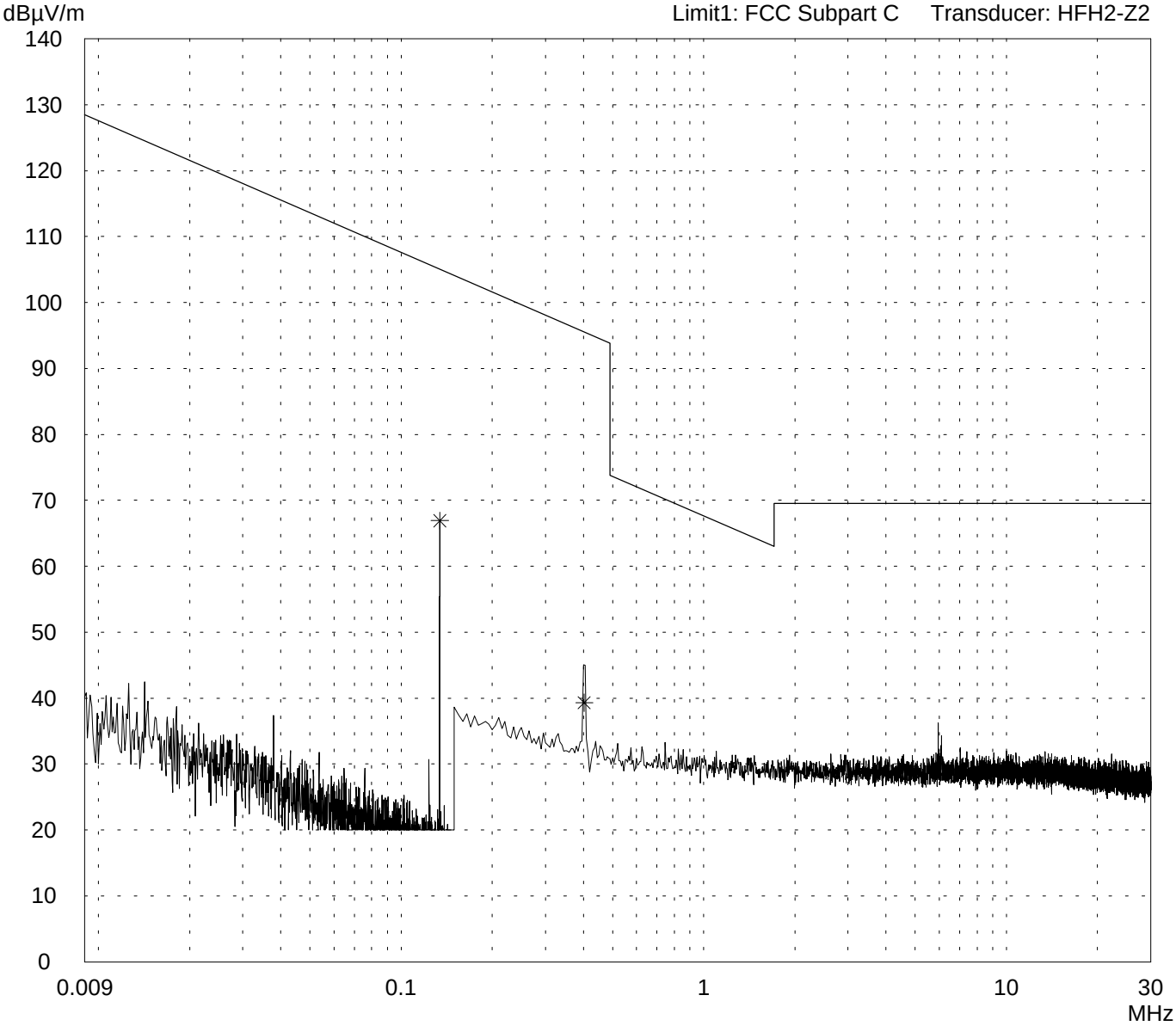
Detector: Peak / Final Results: QP	Final results: Selected by hand

Frequency MHz	*Reading dBµV*	*Correction factor dB*	*Value dBµV/m*	*Limit dBµV/m*	*Limit exceeded*
0.1343	45.9	20.0	65.9	105.0	
0.4029	15.7	20.0	35.7	95.5	

Result: Prescan	Project file: 50831-30106-1 Page 40 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table Final results with AV detector: 0.1343 MHz: 49.4 dBµV/m 0.4029 MHz: 27.8 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak / Final Results: QP	Final results: Selected by hand



Result: Prescan	Project file: 50831-30106-1 — Page 41 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

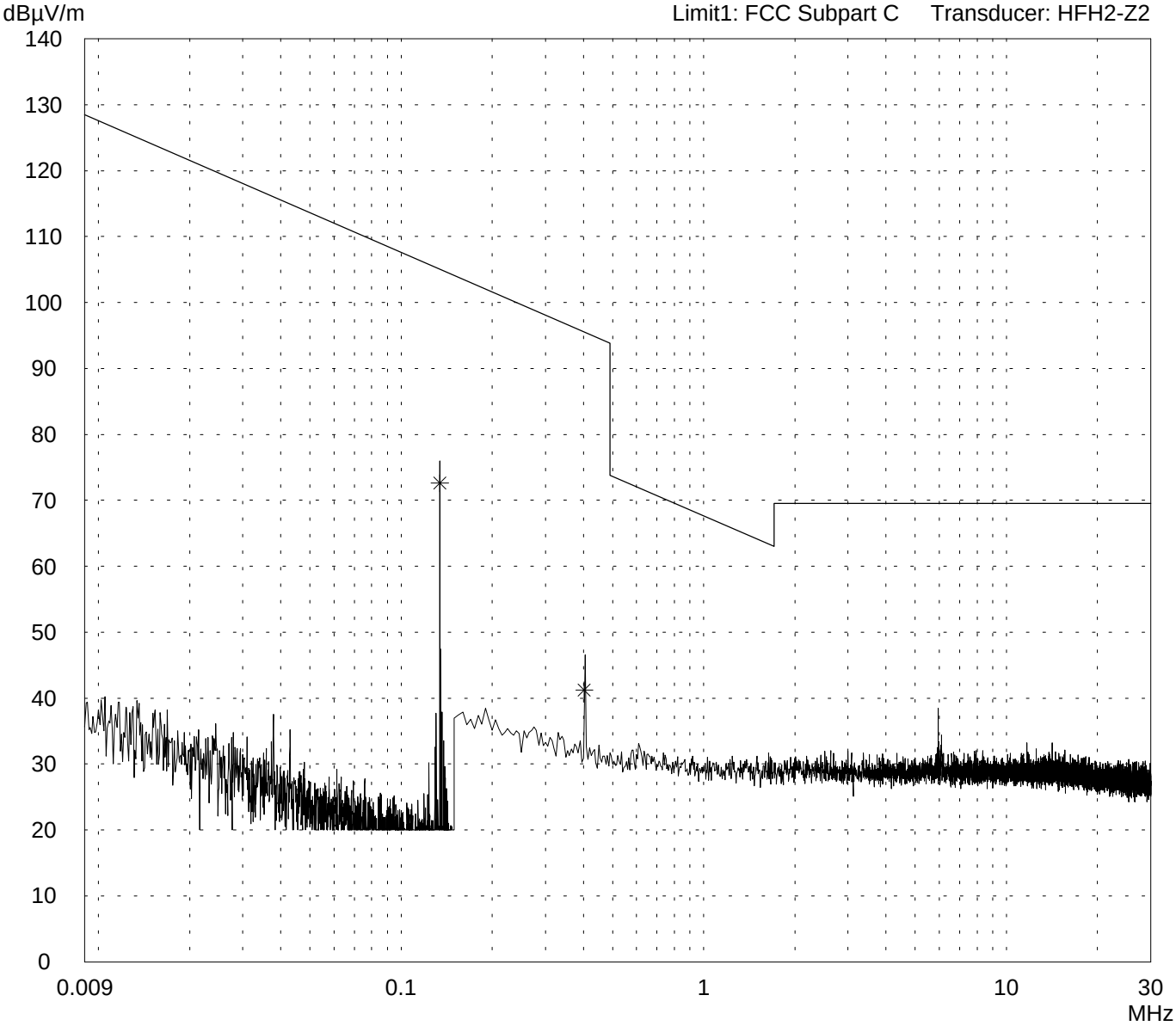
Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table Final results with AV detector: 0.1343 MHz: 49.4 dBµV/m 0.4029 MHz: 27.8 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak / Final Results: QP	Final results: Selected by hand

Frequency MHz	*Reading dBµV*	*Correction factor dB*	*Value dBµV/m*	*Limit dBµV/m*	*Limit exceeded*
0.1343	46.9	20.0	66.9	105.0	
0.4029	19.3	20.0	39.3	95.5	

Result: Prescan	Project file: 50831-30106-1 Page 42 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - without tag - EUT in horizontal position with right side on table Final results with AV detector: 0.1343 MHz: 60.2 dBµV/m 0.4028 MHz: 31.1 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak / Final Results: QP	Final results: Selected by hand



Result: Prescan	Project file: 50831-30106-1 — Page 43 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - without tag - EUT in horizontal position with right side on table Final results with AV detector: 0.1343 MHz: 60.2 dBµV/m 0.4028 MHz: 31.1 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

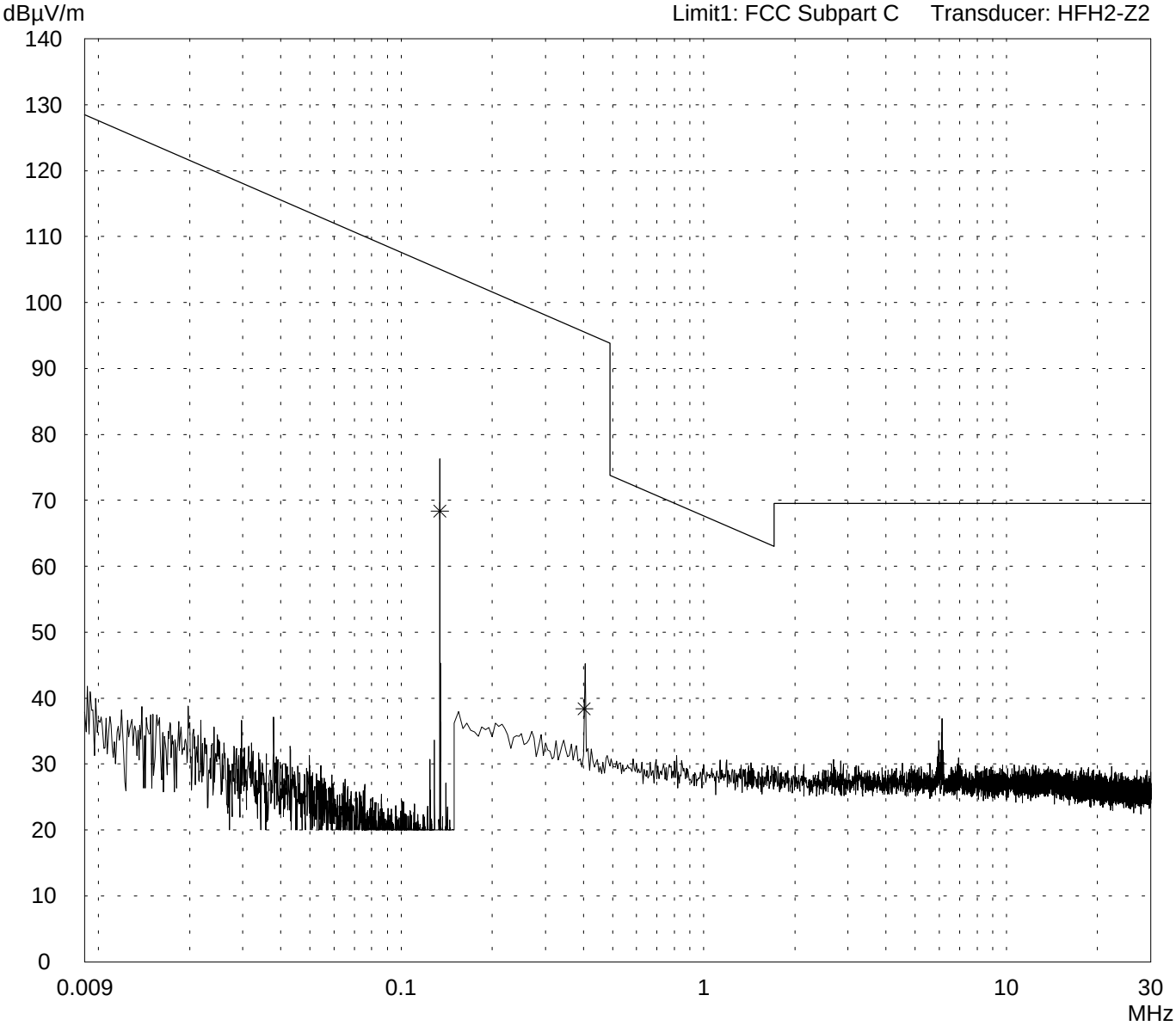
Detector: Peak / Final Results: QP	Final results: Selected by hand

Frequency MHz	*Reading dBµV*	*Correction factor dB*	*Value dBµV/m*	*Limit dBµV/m*	*Limit exceeded*
0.1343	52.6	20.0	72.6	105.0	
0.4028	21.2	20.0	41.2	95.5	

Result: Prescan	Project file: 50831-30106-1 Page 44 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in vertical position with bottom side on table Final results with AV detector: 0.1343 MHz: 50.9 dBµV/m 0.4029 MHz: 26.3 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak / Final Results: QP	Final results: Selected by hand



Result: Prescan	Project file: 50831-30106-1 — Page 45 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in vertical position with bottom side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	Final results with AV detector: 0.1343 MHz: 50.9 dBµV/m 0.4029 MHz: 26.3 dBµV/m
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

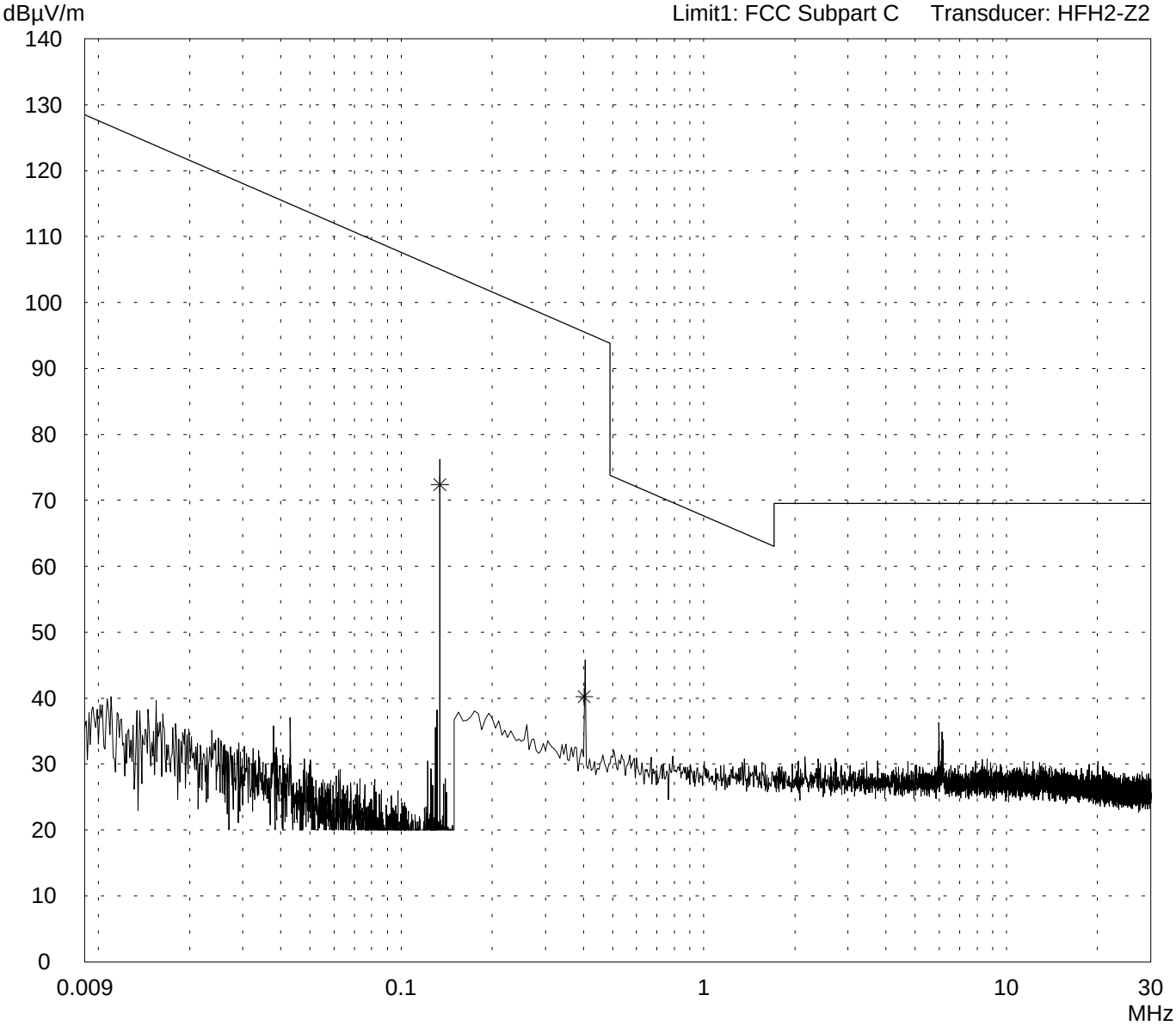
Detector: Peak / Final Results: QP	Final results: Selected by hand

Frequency MHz	*Reading dBµV*	*Correction factor dB*	*Value dBµV/m*	*Limit dBµV/m*	*Limit exceeded*
0.1343	48.4	20.0	68.4	105.0	
0.4029	18.4	20.0	38.4	95.5	

Result: Prescan	Project file: 50831-30106-1 Page 46 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - without tag - EUT in vertical position with bottom side on table Final results with AV detector: 0.1343 MHz: 59.8 dBµV/m 0.4029 MHz: 30.1 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak / Final Results: QP	Final results: Selected by hand



Result: Prescan	Project file: 50831-30106-1 — Page 47 of 67 Pages

Radiated Emission Test 9 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - without tag - EUT in vertical position with bottom side on table Final results with AV detector: 0.1343 MHz: 59.8 dBµV/m 0.4029 MHz: 30.1 dBµV/m
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Shielded room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

Detector: Peak / Final Results: QP	Final results: Selected by hand

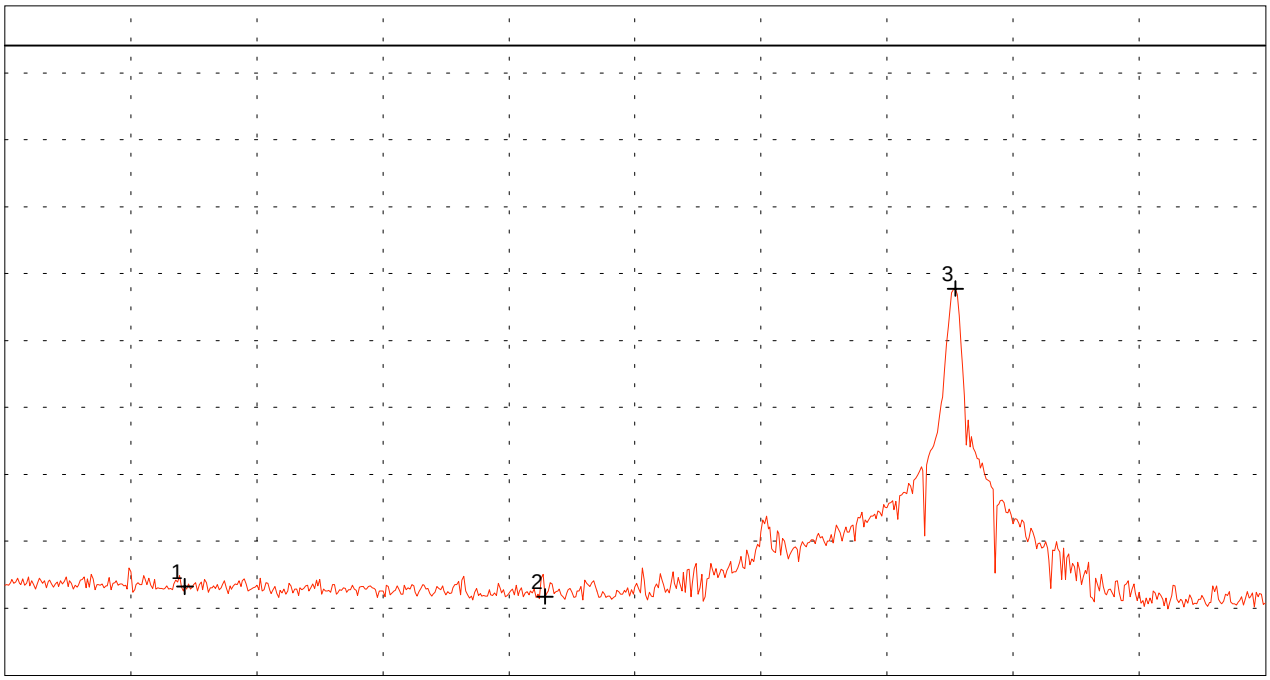
Frequency MHz	*Reading dBµV*	*Correction factor dB*	*Value dBµV/m*	*Limit dBµV/m*	*Limit exceeded*
0.1343	52.4	20.0	72.4	105.0	
0.4029	20.2	20.0	40.2	95.5	

Result: Prescan	Project file: 50831-30106-1 Page 48 of 67 Pages

Restricted bands requirement according to §15.205

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table Referred test distance: 10 meters Spurious emission limit for 10 meters: 84.1 dBµV/m Restricted band: 90 kHz - 110 kHz
Serial No.: Sample no. 1	
Applicant: Hermos Informatik GmbH	

Ref.Level 90 dBuV/m ATT 0 dB Ref. Offset -8.7 dB
10 dB/Div.



Start 80.000 kHz Stop 150.000 kHz
RBW 300 Hz VBW 1 kHz SWP 1.60 s

Multi Marker List

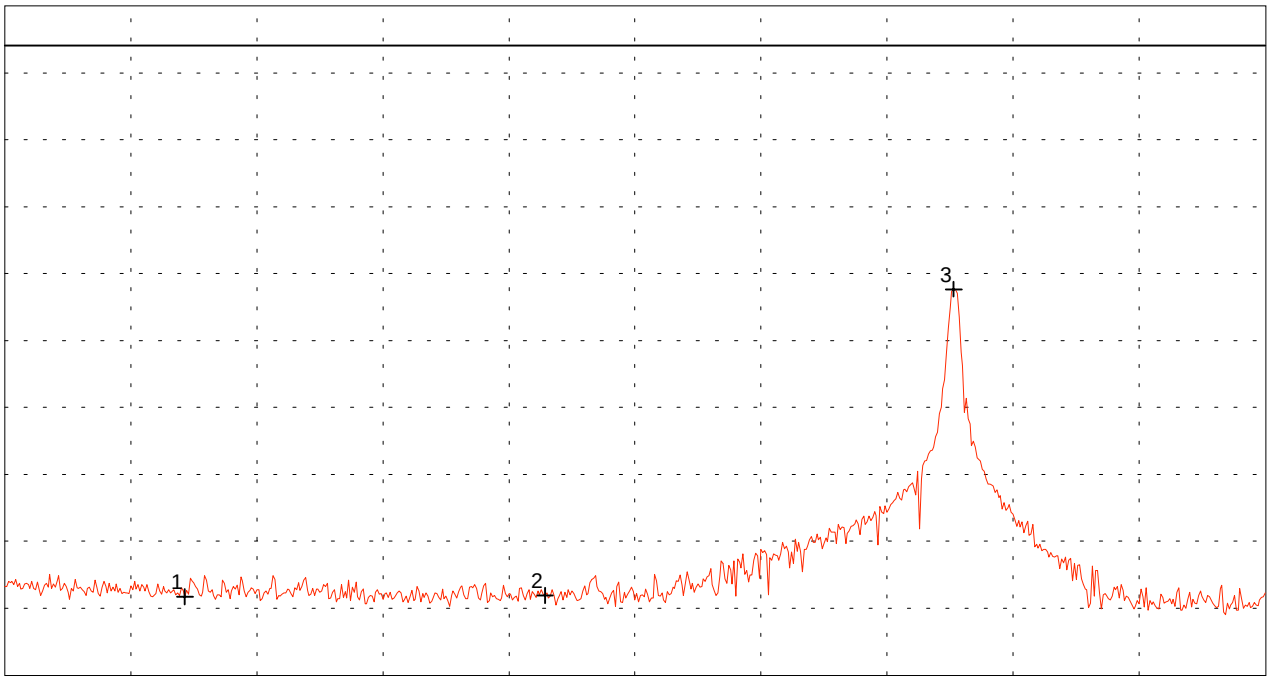
No. 1	90.000 kHz	3.22 dBuV/m
No. 2	110.000 kHz	1.72 dBuV/m
No. 3	132.800 kHz	47.75 dBuV/m

Tested by: Rainer Heller	Project-No.: 50831-30106-1
Date: 04/01/2003	Page 49 of 67 Pages

Restricted bands requirement according to §15.205

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - without tag - EUT in horizontal position with right side on table Referred test distance: 10 meters Spurious emission limit for 10 meters: 84.1 dBµV/m Restricted band: 90 kHz - 110 kHz
Serial No.: Sample no. 1	
Applicant: Hermos Informatik GmbH	

Ref.Level 90 dBuV/m ATT 0 dB Ref. Offset -8.7 dB
10 dB/Div.



Start 80.000 kHz Stop 150.000 kHz
RBW 300 Hz VBW 1 kHz SWP 1.60 s

Multi Marker List

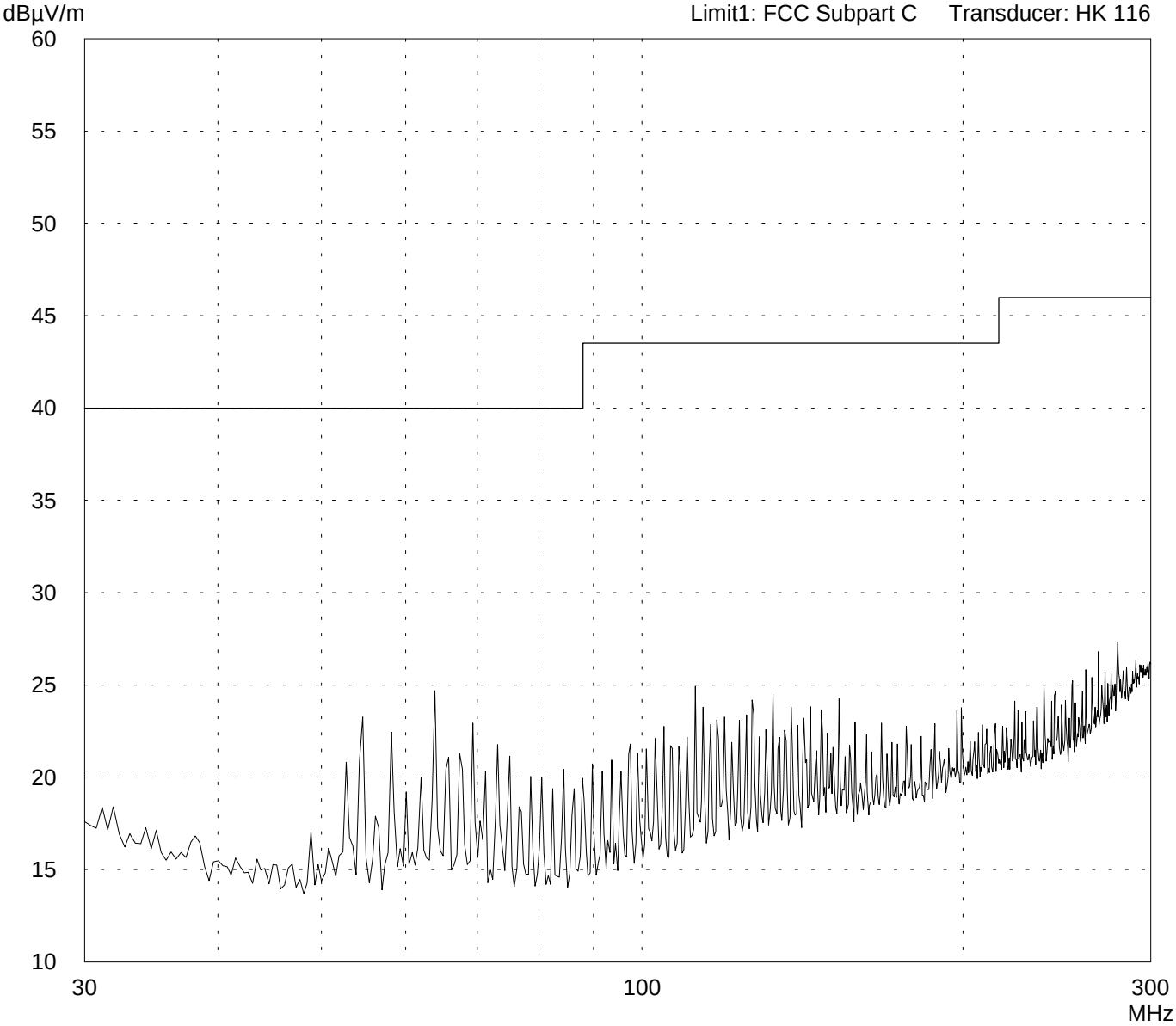
No. 1	90.000 kHz	1.69 dBuV/m
No. 2	110.000 kHz	1.88 dBuV/m
No. 3	132.700 kHz	47.63 dBuV/m

Tested by: Rainer Heller	Project-No.: 50831-30106-1
Date: 04/01/2003	Page 50 of 67 Pages

Radiated Emission Test 30 MHz - 300 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with rear side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

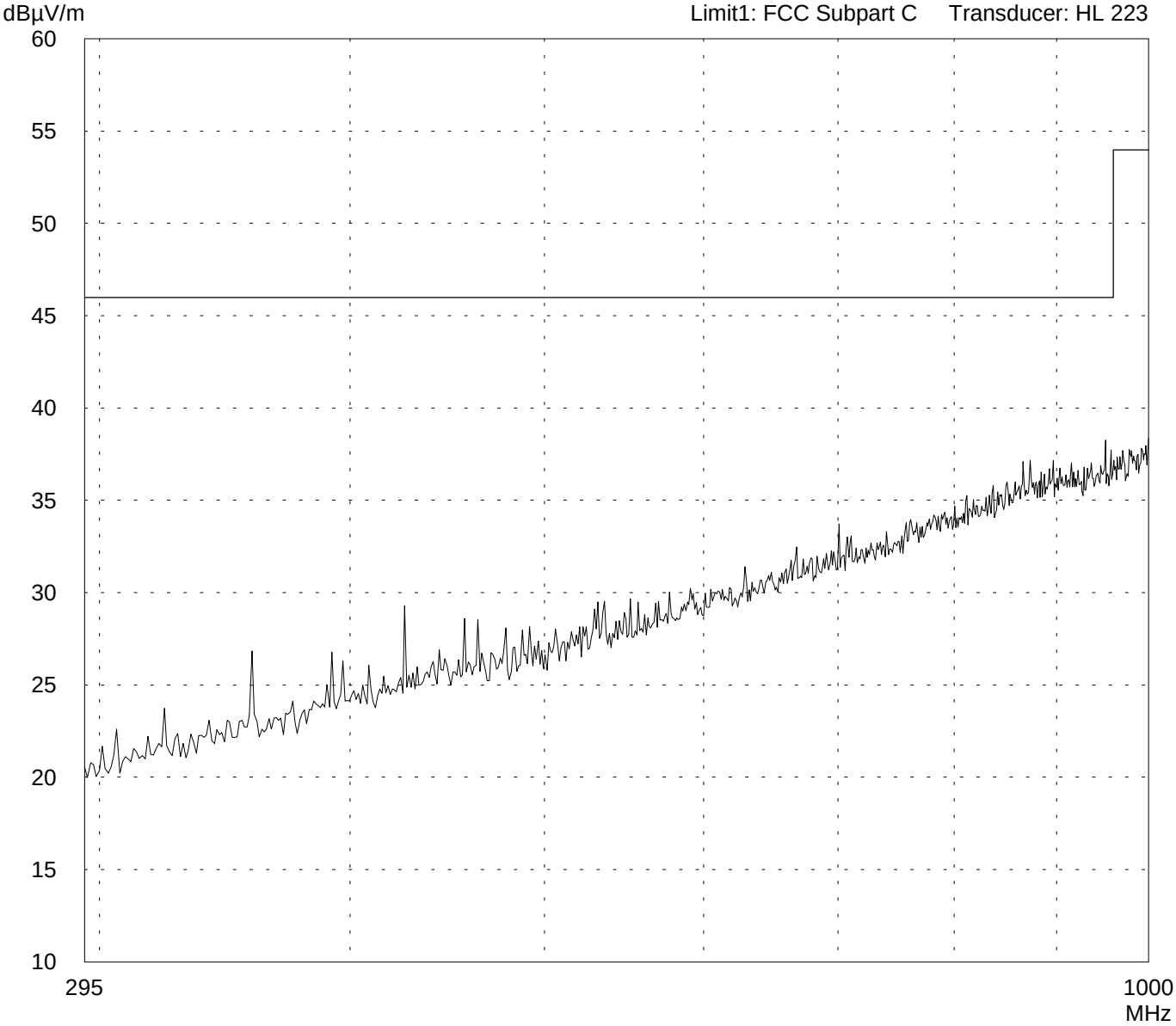
Detector: Peak	List of values: 10 dB Margin — 50 Subranges



Result: Prescan	Project file: 50831-30106-1 — Page 51 of 67 Pages

Radiated Emission Test 295 MHz - 1 GHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with rear side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak	List of values: Selected by hand

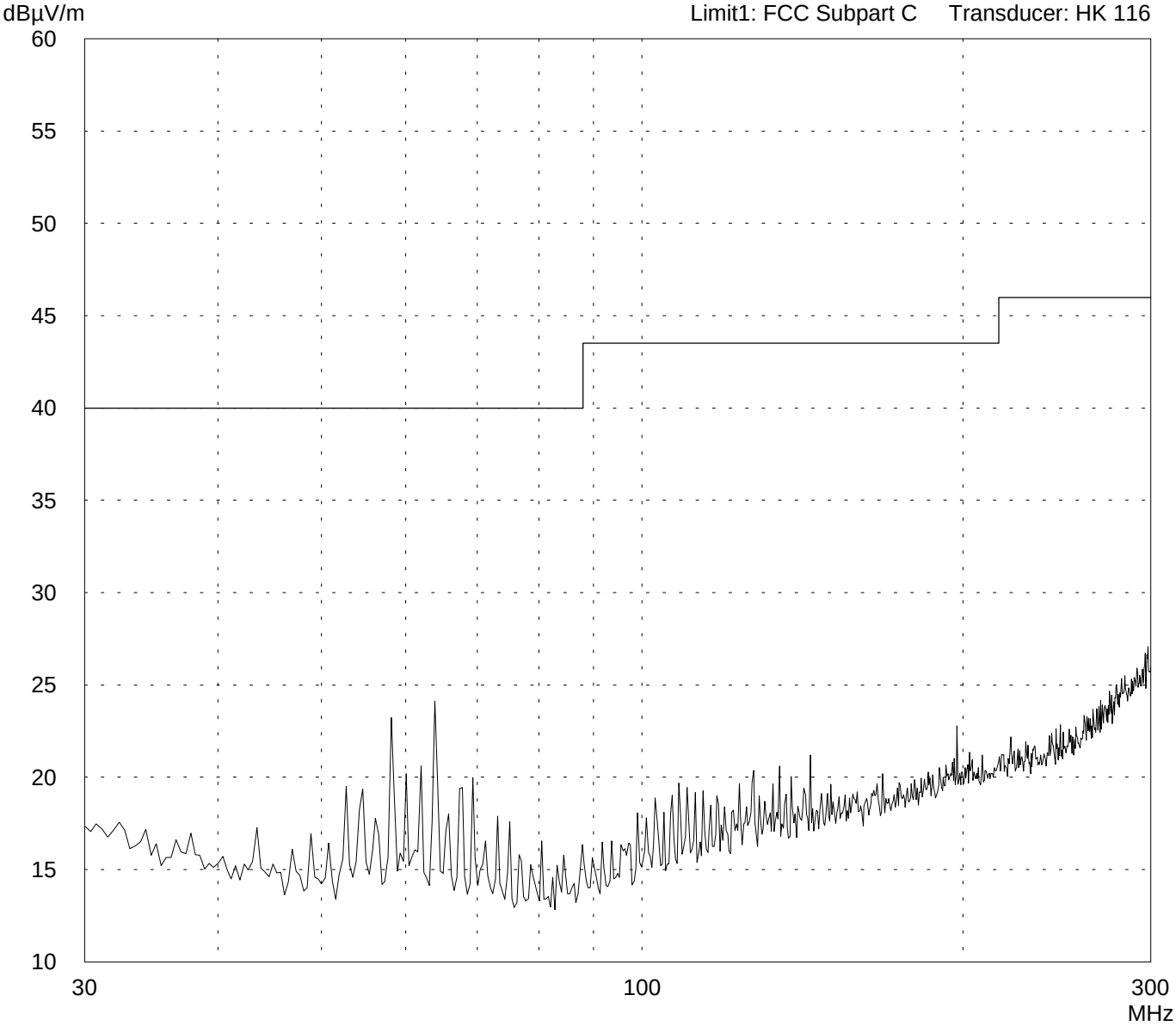


Result: Prescan	Project file: 50831-30106-1 — Page 52 of 67 Pages

Radiated Emission Test 30 MHz - 300 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with rear side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

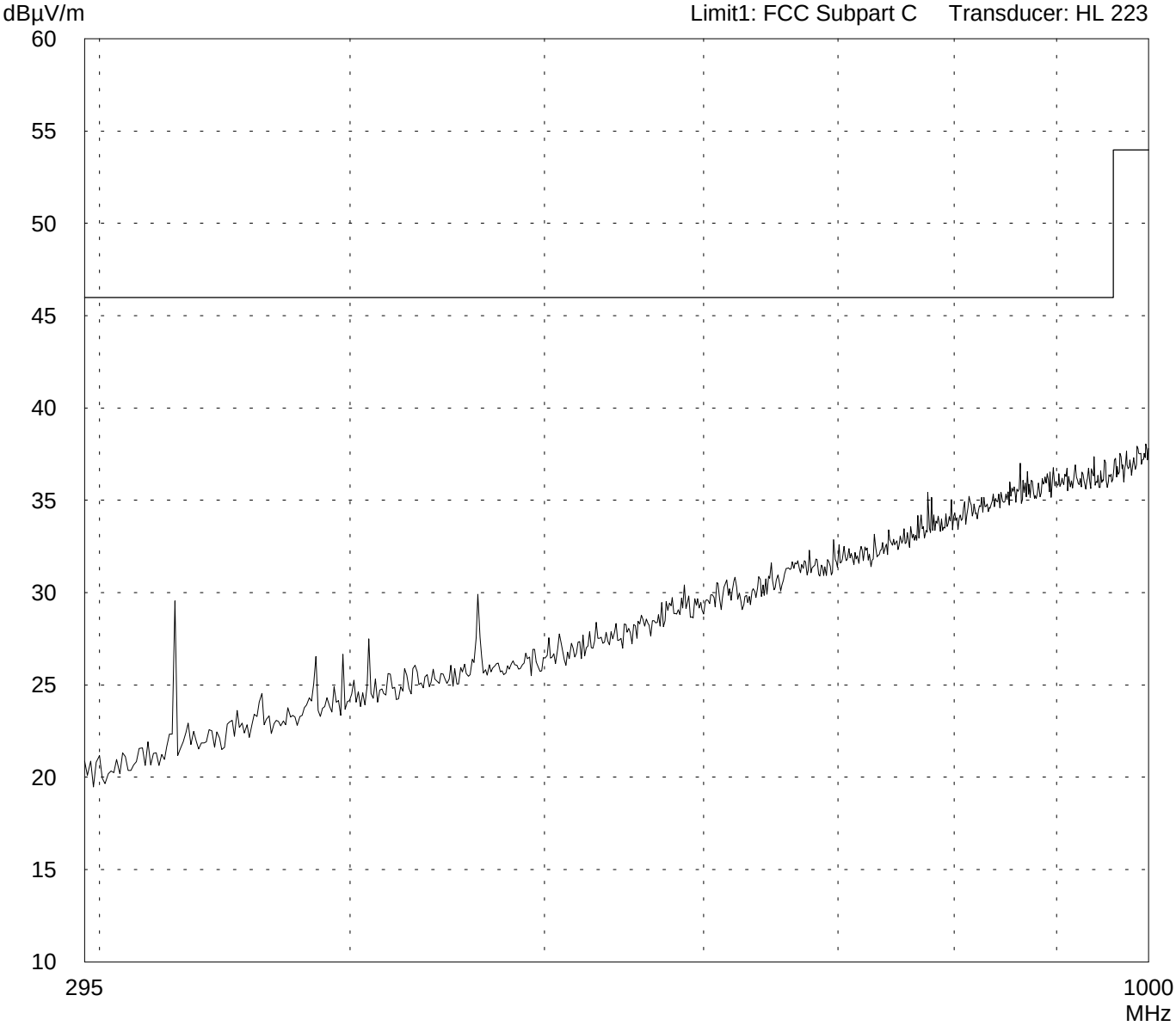
Detector: Peak	List of values: 10 dB Margin — 50 Subranges



Result: Prescan	Project file: 50831-30106-1 — Page 53 of 67 Pages

Radiated Emission Test 295 MHz - 1 GHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with rear side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak	List of values: Selected by hand

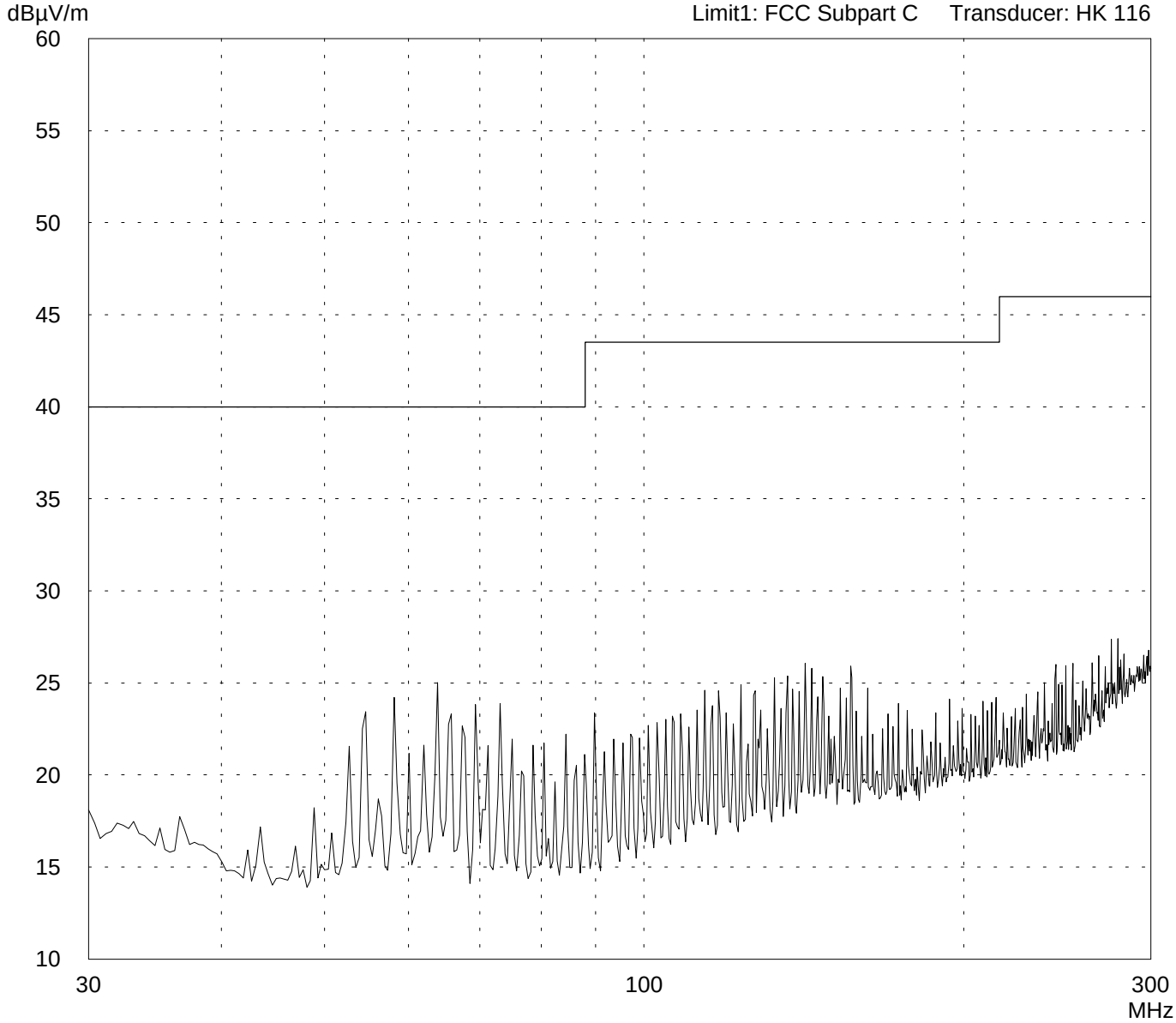


Result: Prescan	Project file: 50831-30106-1 — Page 54 of 67 Pages

Radiated Emission Test 30 MHz - 300 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

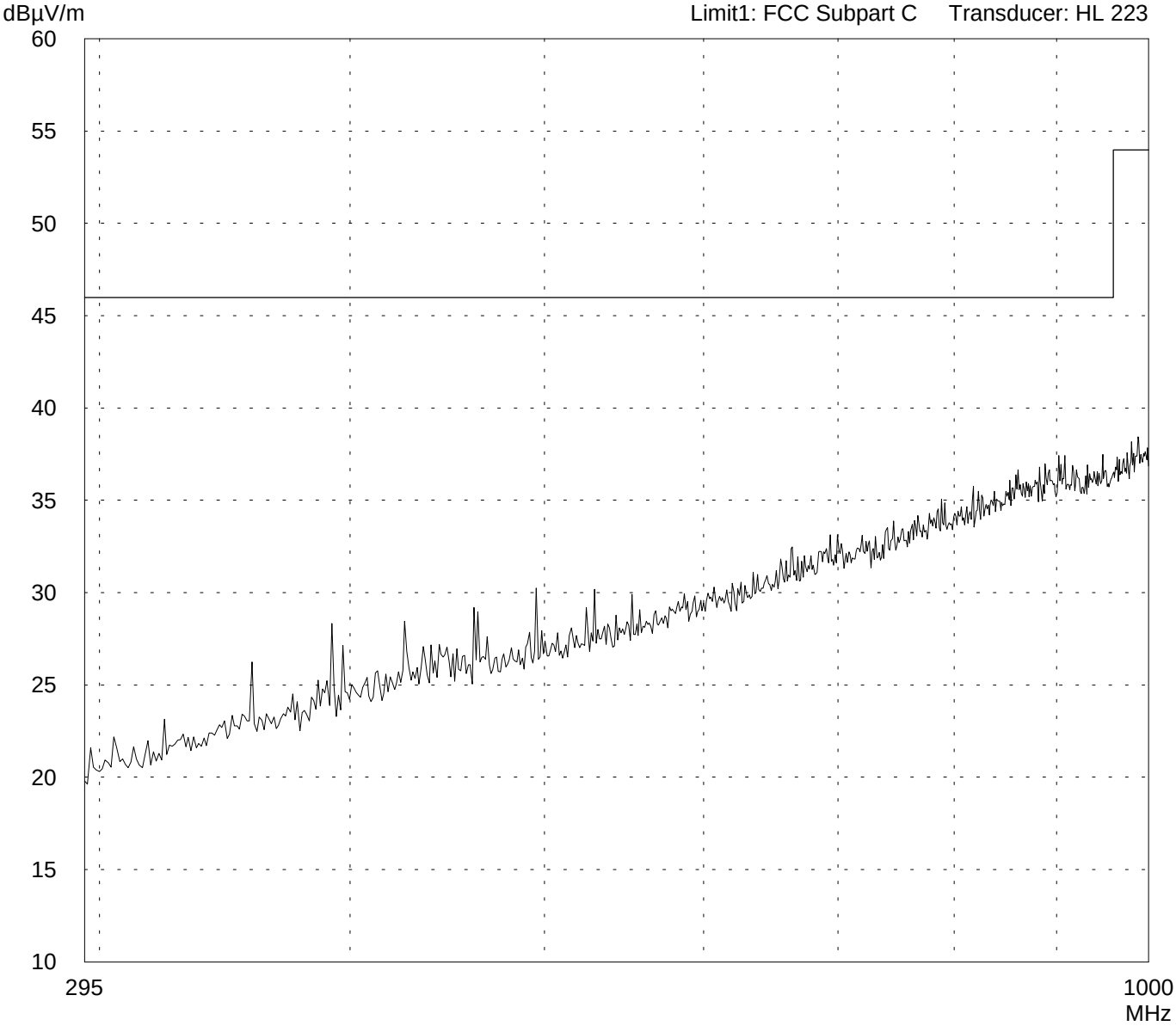
Detector: Peak	List of values: 10 dB Margin — 50 Subranges



Result: Prescan	Project file: 50831-30106-1 — Page 55 of 67 Pages

Radiated Emission Test 295 MHz - 1 GHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak	List of values: Selected by hand

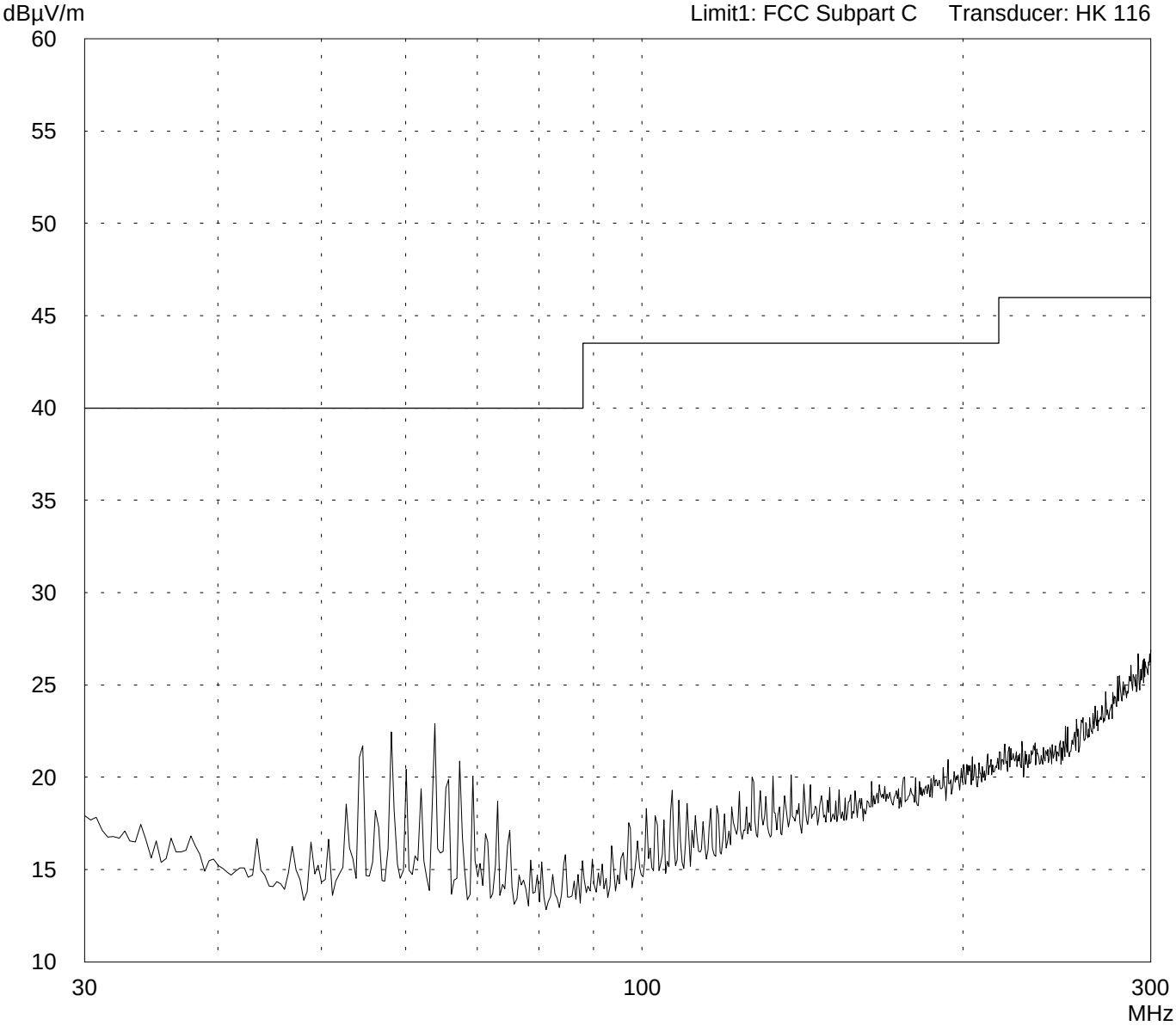


Result: Prescan	Project file: 50831-30106-1 — Page 56 of 67 Pages

Radiated Emission Test 30 MHz - 300 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

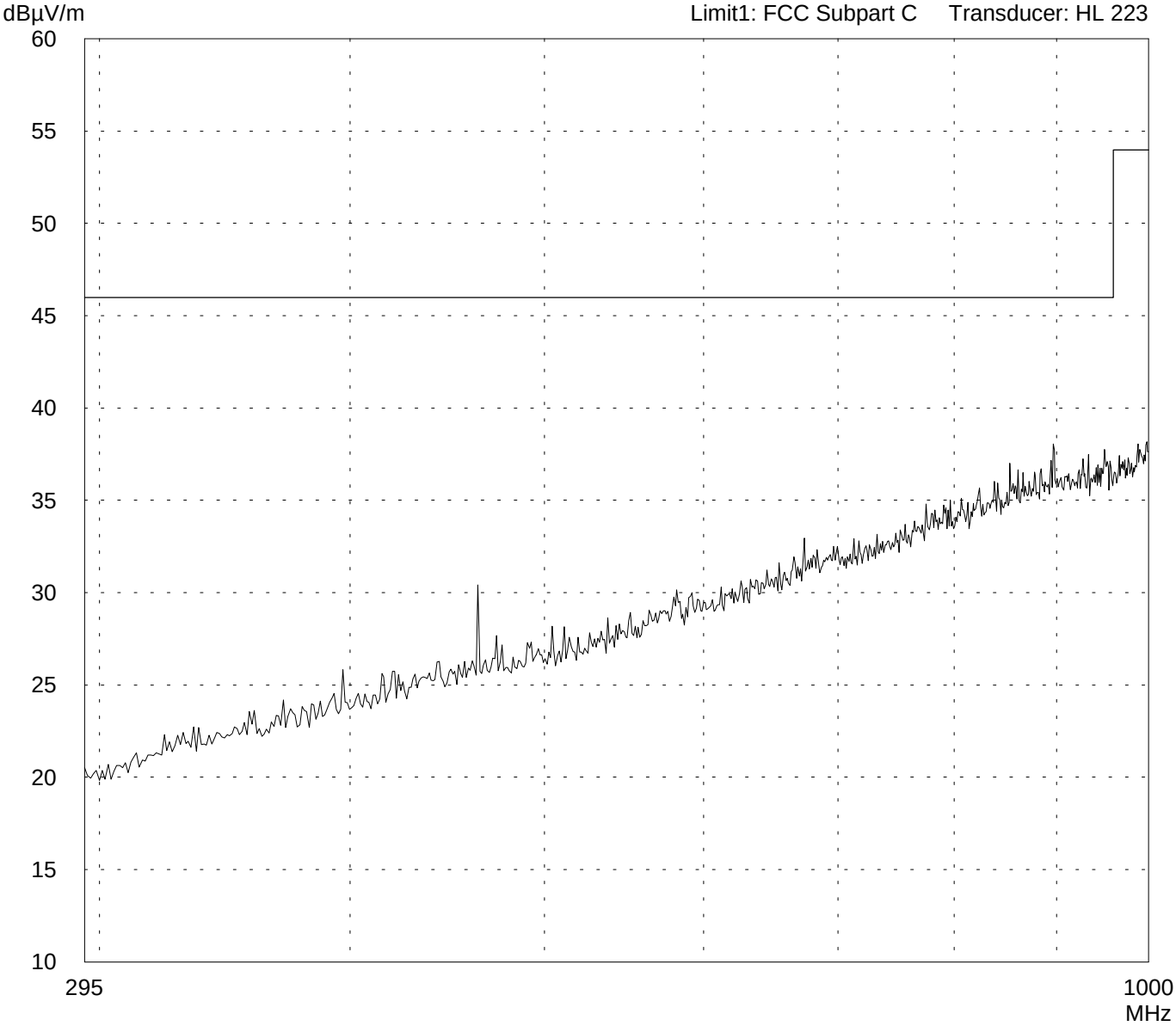
Detector: Peak	List of values: 10 dB Margin — 50 Subranges



Result: Prescan	Project file: 50831-30106-1 — Page 57 of 67 Pages

Radiated Emission Test 295 MHz - 1 GHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak	List of values: Selected by hand

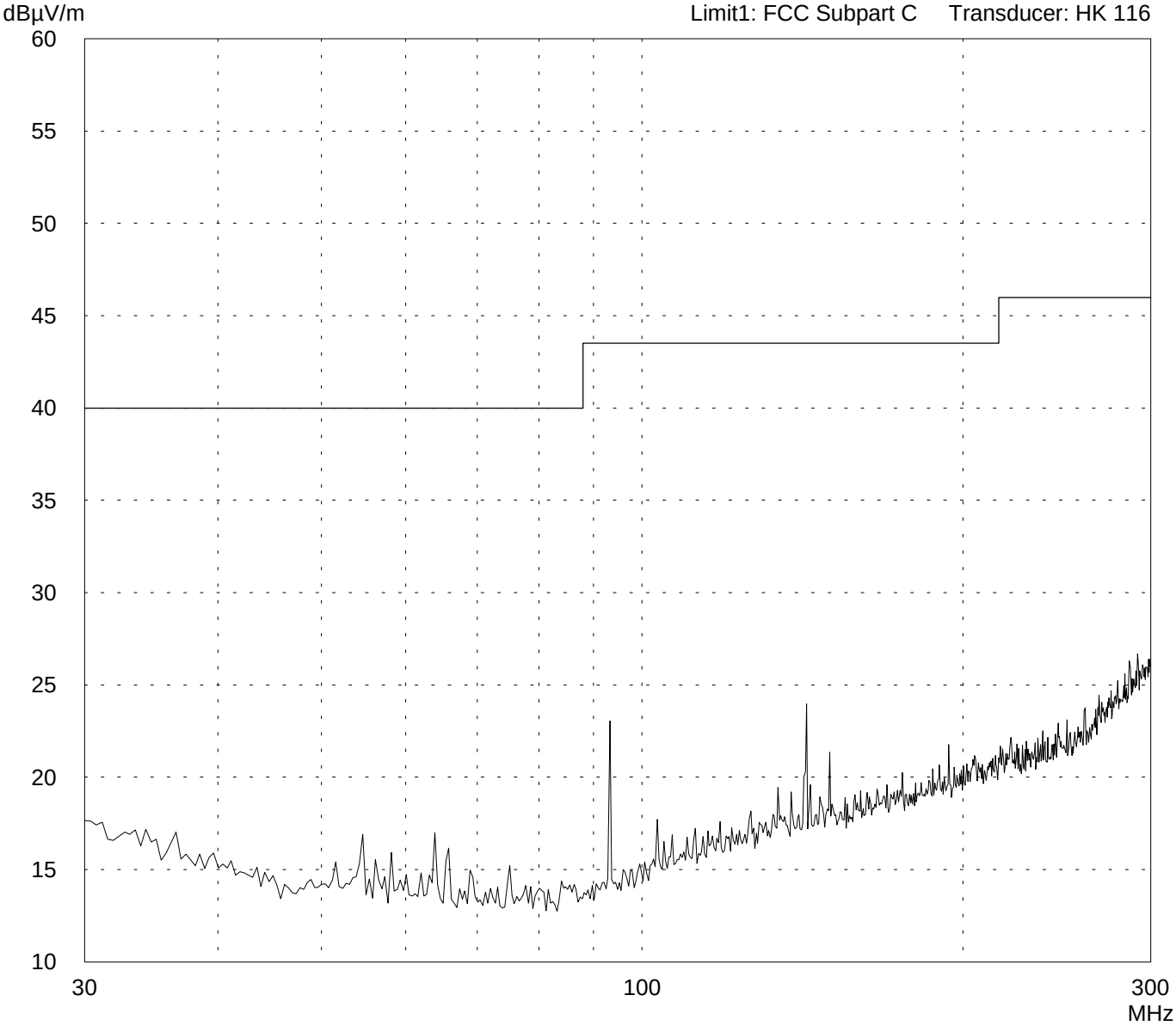


Result: Prescan	Project file: 50831-30106-1 — Page 58 of 67 Pages

Radiated Emission Test 30 MHz - 300 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in vertical position with bottom side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

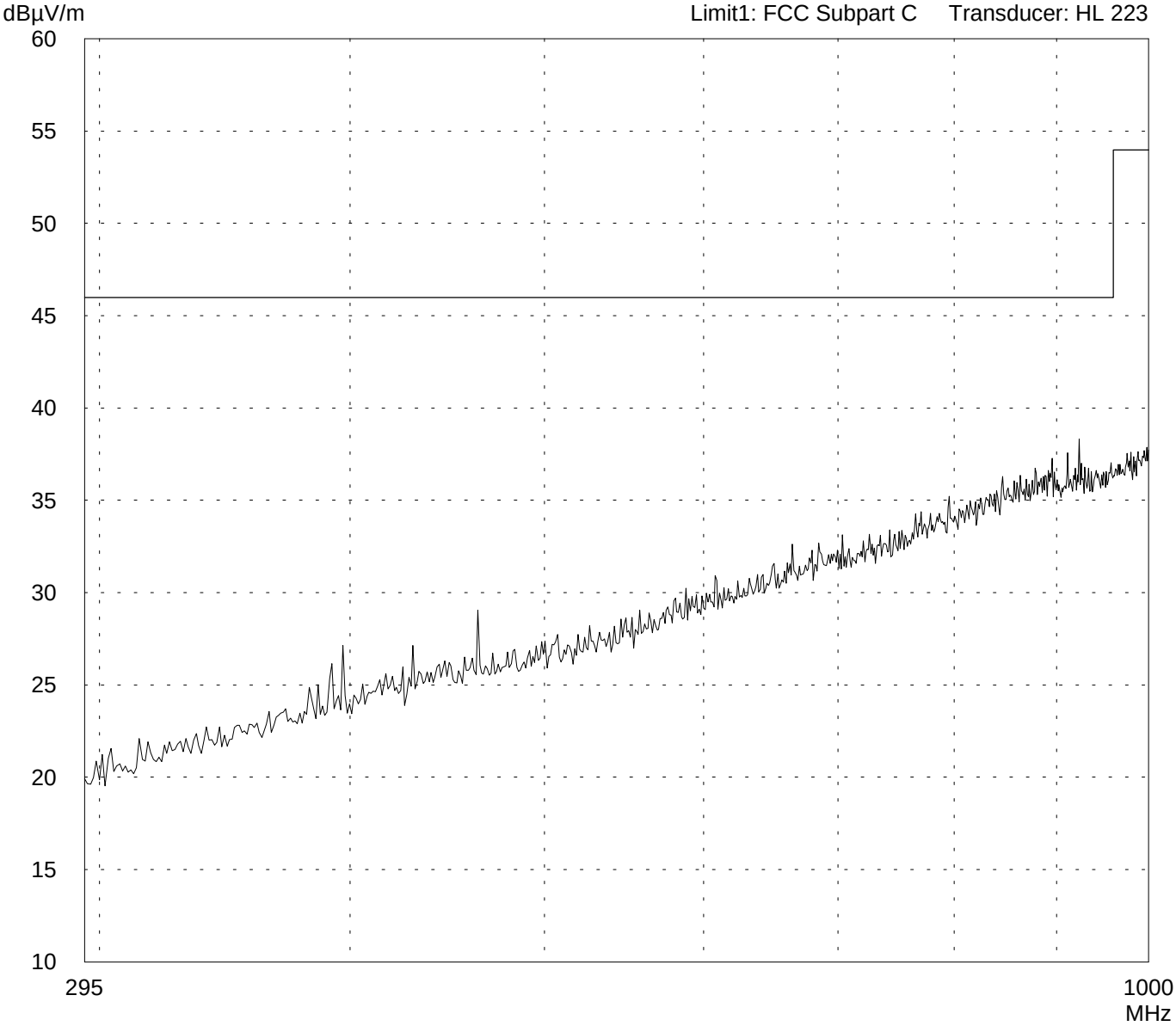
Detector: Peak	List of values: 10 dB Margin — 50 Subranges



Result: Prescan	Project file: 50831-30106-1 — Page 59 of 67 Pages

Radiated Emission Test 295 MHz - 1 GHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in vertical position with bottom side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak	List of values: Selected by hand

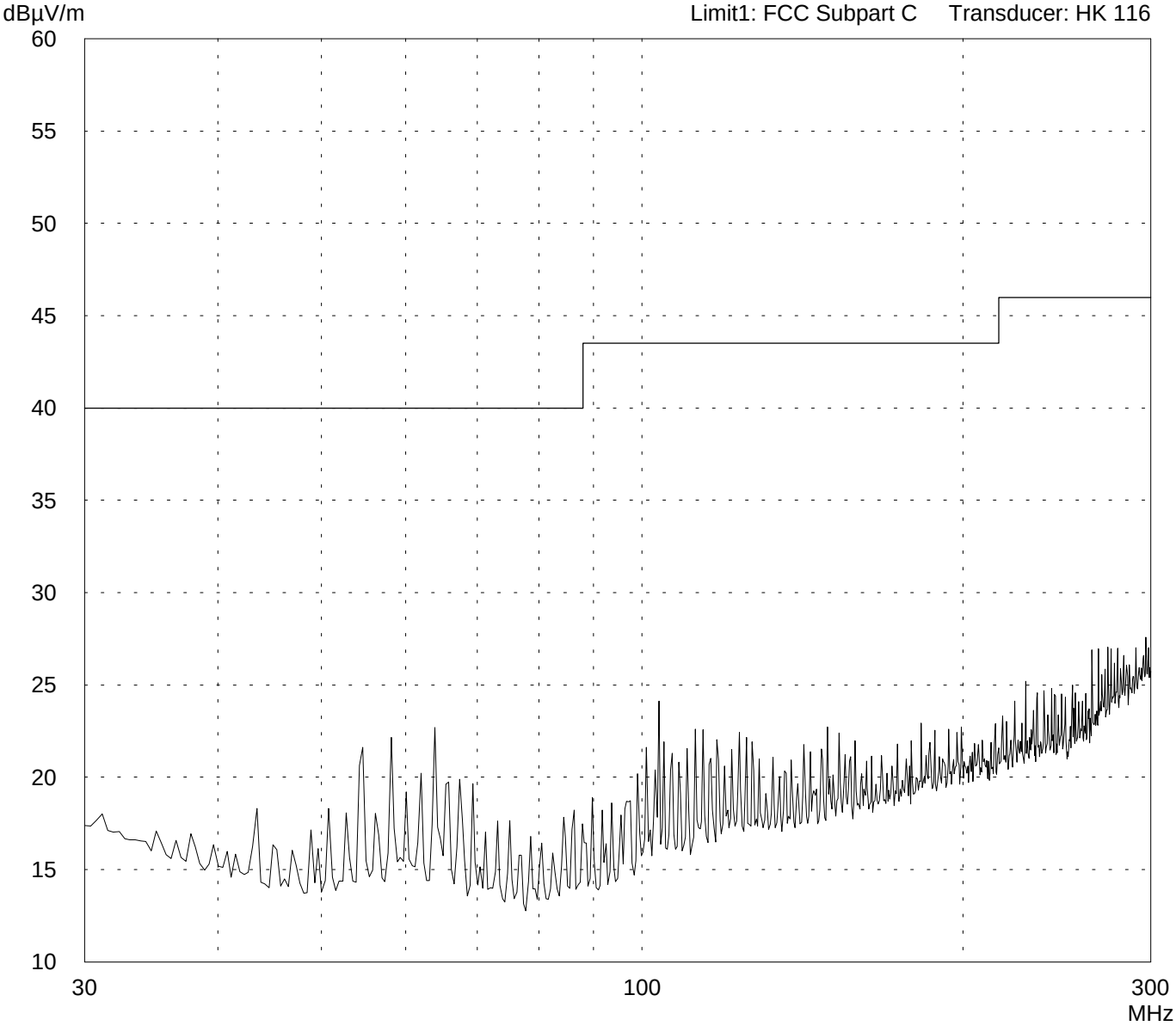


Result: Prescan	Project file: 50831-30106-1 — Page 60 of 67 Pages

Radiated Emission Test 30 MHz - 300 MHz
according to FCC Part 15 Subpart C

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in vertical position with bottom side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	

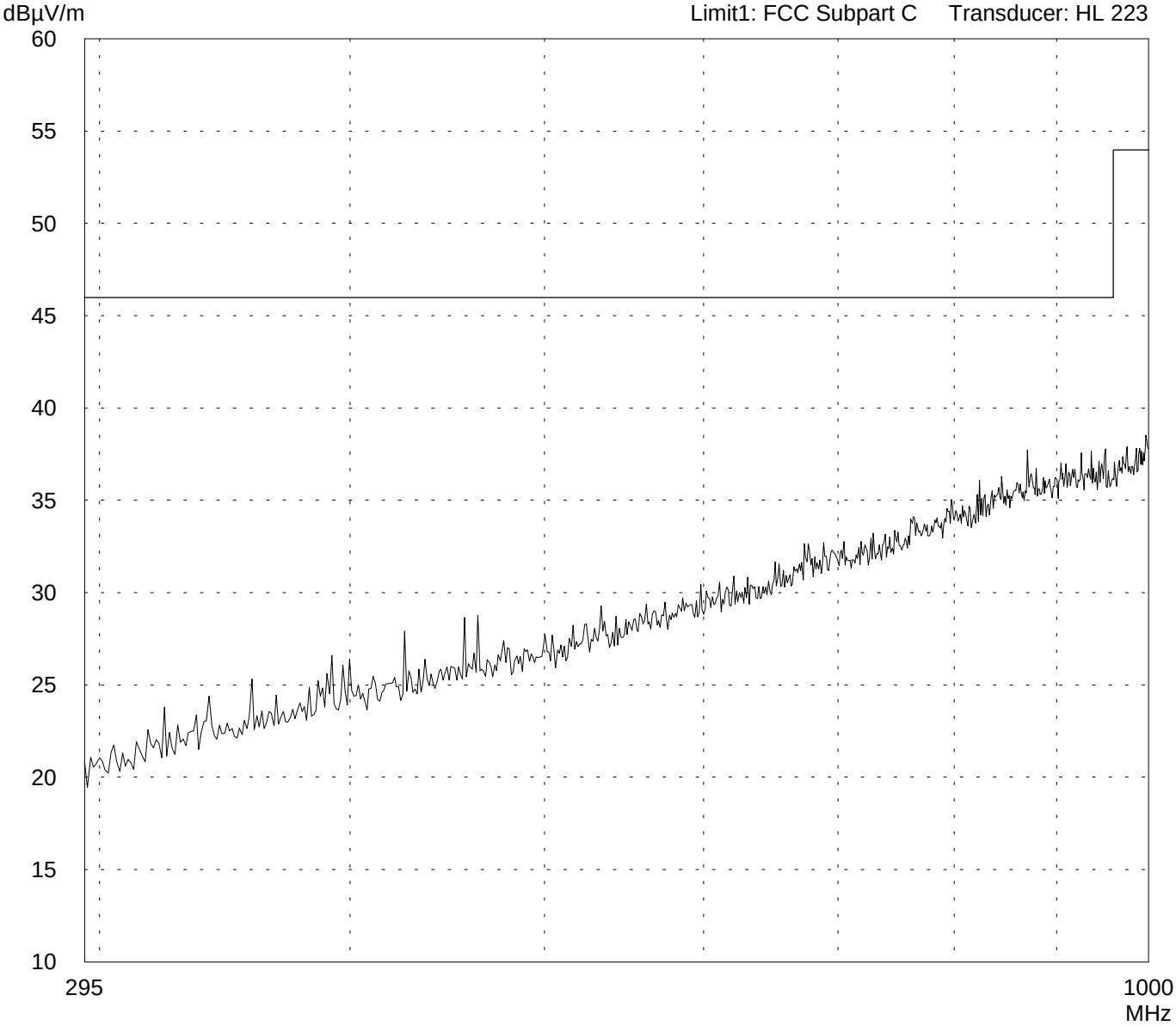
Detector: Peak	List of values: 10 dB Margin — 50 Subranges



Result: Prescan	Project file: 50831-30106-1 — Page 61 of 67 Pages

Radiated Emission Test 295 MHz - 1 GHz
according to FCC Part 15 Subpart C

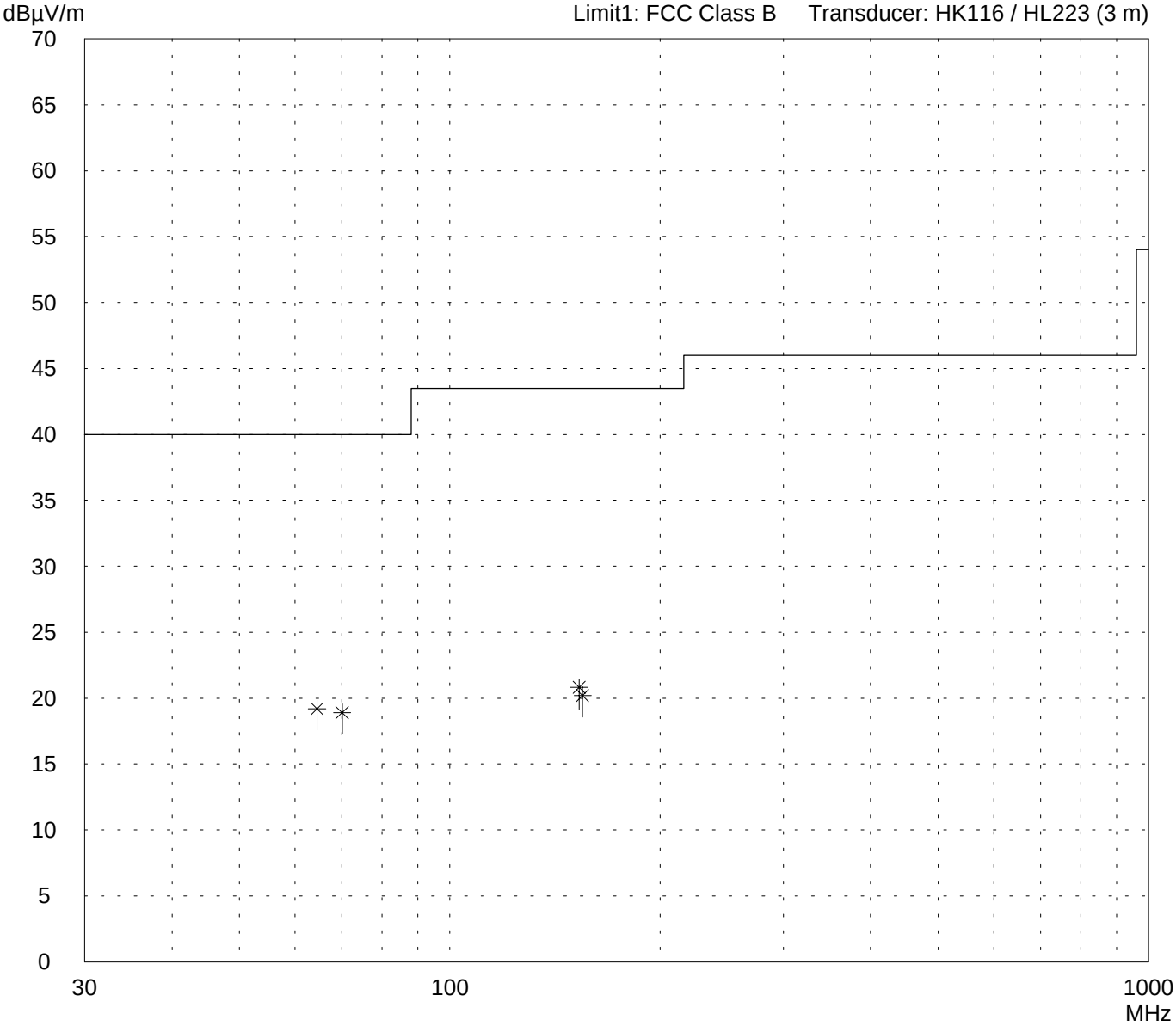
Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in vertical position with bottom side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 03/03/2003 — Operator: R. Heller	
Test performed: automatically — File name:	
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 50831-30106-1 — Page 62 of 67 Pages

Radiated Emission Test 30 MHz - 1 GHz
according to FCC Part 15 Subpart B Class B

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Open area test-site I	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 04/03/2003 — Operator: R. Heller	
Test performed: by hand — File name:	
Detector: Quasi-Peak	List of values: Selected by hand



Result: Limit kept	Project file: 50831-30106-1 — Page 63 of 67 Pages

Radiated Emission Test 30 MHz - 1 GHz
according to FCC Part 15 Subpart B Class B

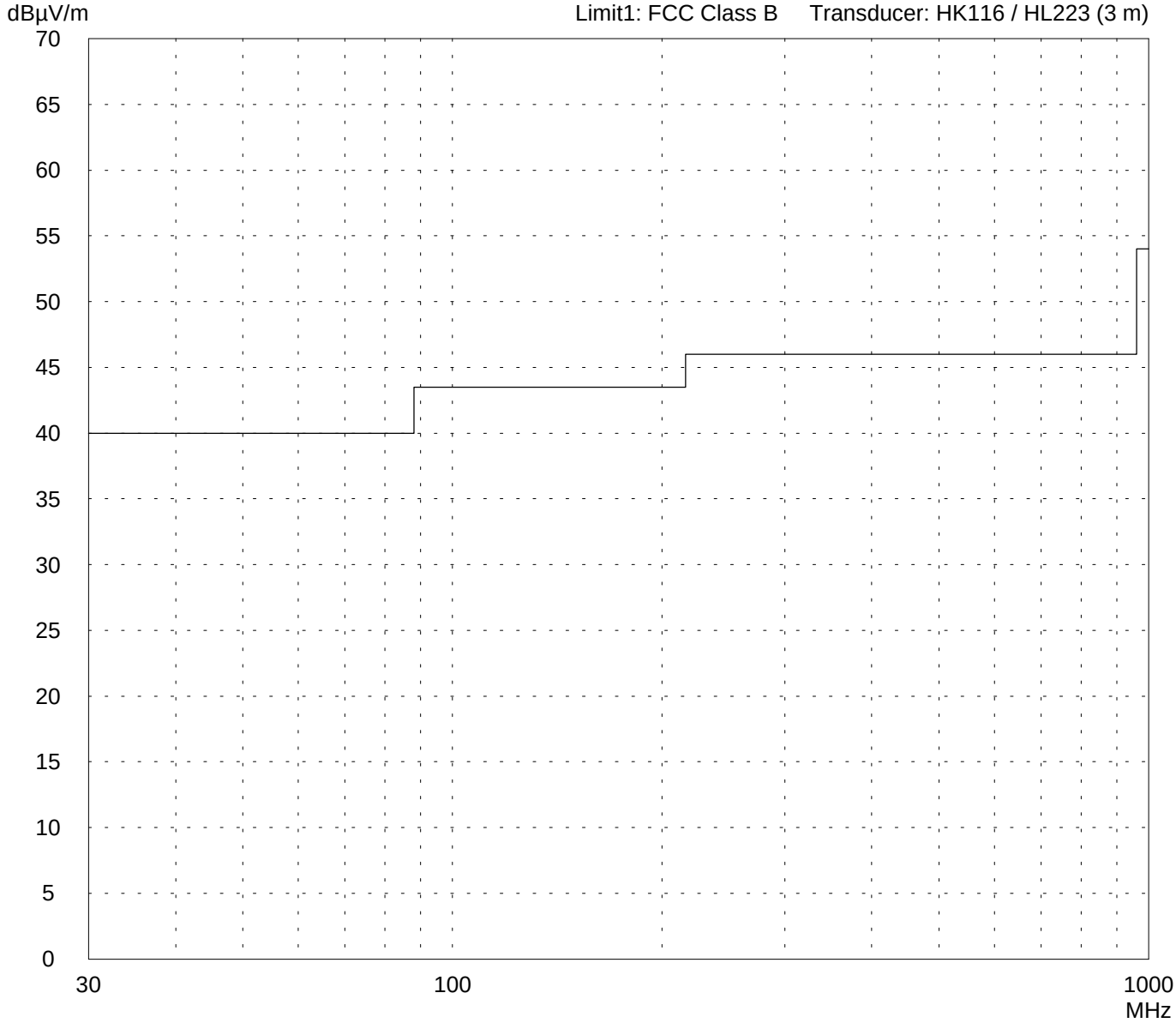
Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Open area test-site I	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 04/03/2003 — Operator: R. Heller	
Test performed: by hand — File name:	
Detector: Quasi-Peak	List of values: Selected by hand

Frequency MHz	*Reading dBµV*	*Correction factor dB*	*Value dBµV/m*	*Limit dBµV/m*	*Limit exceeded*
64.52	9.4	9.8	19.2	40.0	
70.07	9.3	9.6	18.9	40.0	
153.04	6.8	14.0	20.8	43.5	
154.87	6.2	14.0	20.2	43.5	

Result: Limit kept	Project file: 50831-30106-1 — Page 64 of 67 Pages

Radiated Emission Test 30 MHz - 1 GHz
according to FCC Part 15 Subpart B Class B

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Open area test-site I	
Tested on: Test distance 3 metres Vertical Polarization	Note: No levels above noise floor detected.
Date of test: 04/03/2003 — Operator: R. Heller	
Test performed: by hand — File name:	
Detector: Quasi-Peak	List of values: Selected by hand



Result: Limit kept	Project file: 50831-30106-1 — Page 65 of 67 Pages

Radiated Emission Test 30 MHz - 1 GHz
according to FCC Part 15 Subpart B Class B

Model: ScanID	Mode: - FCC test setup as stand alone device - with fully charged accumulator - reading tag continuously (distance 1 cm) - EUT in horizontal position with right side on table
Serial no.: Sample no. 1	
Applicant: Hermos Informatik GmbH	
Test site: Open area test-site I	
Tested on: Test distance 3 metres Vertical Polarization	Note: No levels above noise floor detected.
Date of test: 04/03/2003 — Operator: R. Heller	
Test performed: by hand — File name:	

Detector: Quasi-Peak	List of values: Selected by hand

Frequency MHz	*Reading dBµV*	*Correction factor dB*	*Value dBµV/m*	*Limit dBµV/m*	*Limit exceeded*
no results					

Result: Limit kept	Project file: 50831-30106-1 Page 66 of 67 Pages

14. Additional Information supplementary to the Test Report

Item	Description	No. of Pages
1	Annex A: Photographs of EUT	17
2	Annex B: Photographs of Test Setups	13