

Straubing, August 20, 1999

**TEST - REPORT**

**No. 55411-90496-2**

**for**

**IQ8T-D/E**

**Transceiver (868.35 MHz)**

Applicant: Identec Solutions GmbH & Co

Purpose of testing: To show compliance with

FCC Code of Federal Regulations,  
Part 15 Subpart C, Section §15.231

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**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): IQ8T-D/E  
Serial number: 0099.000.174.150  
Type of equipment: Transceiver (868.35 MHz)  
Parts/accessories: ---  
FCC-ID: OO4-ILR-IQR

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Applicant: Identec Solutions GmbH & Co  
(full address) Montafonerstraße 8  
A-6780 Schruns  
Contract identification: ---  
Contact person: Mr. Wilhelm Gantner  
Manufacturer: Identec Solutions GmbH & Co

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Receipt of EUT: August 09, 1999  
Date of test: August 09, 1999  
Note: During testing EUT was called "IQ8T-D/E"

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Test Laboratory: Senton GmbH EMI/EMC Test Center  
(full address): Aeussere Fruehlingstrasse 45  
D-94315 Straubing  
Germany  
Contact person: Mr. Johann Roidt  
FCC file number: 31040/SIT 1300F2

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Responsible for testing: Rupert Kohlhäufel  
Responsible for test report: Rupert Kohlhäufel

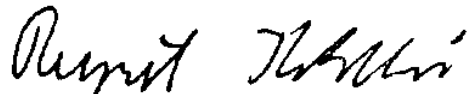
## 2. Summary of Test Results

The tested sample complies with the requirements set forth in the

**Code of Regulations Part 15 Subpart C, Section §15.231 (intentional radiators) of the Federal Communication Commission (FCC).**



Johann Roidt  
Technical Manager



Rupert Kohlhäufel  
Test Engineer

### 3. Operation Mode of EUT

EUT is transmitting continuously with modulation, supplied by battery (3.6 V DC)

#### **4. Configuration of EUT and Peripheral Devices**

##### **Configuration of EUT**

EUT is configured as stand-alone device

##### **Configuration of cables of EUT**

Not applicable

##### **Configuration of peripheral devices connected to EUT**

Not applicable

## 5. Measuring Methods

### 5.1. Bandwidth of Emission(FCC §15.231.c)

The Bandwidth of Emission is measured with a spectrum analyzer connected to measuring antenna (radiated measurement) or test fixture while EUT is operating in transmit mode with modulation at the appropriate center frequency. To increase received signal level distance to EUT is reduced (appropriate level offset is included).

The spectrum analyzer was set to:

RBW = 10 kHz, VBW = 10 kHz, span = 2 MHz, sweep = 60 ms

See figure 1 for the measurement setup.

Test equipment used (see equipment list for details):

02, 55, 67

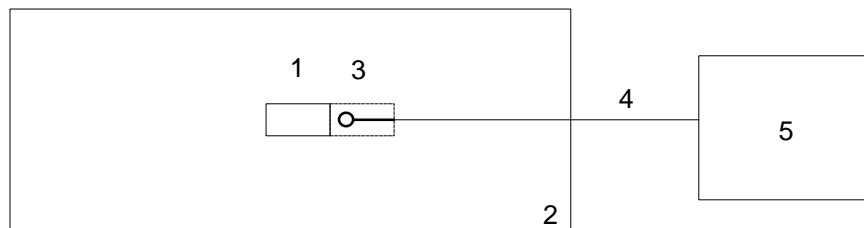


Figure 1: Measurement setup for bandwidth of emission test

**1** Transmitter (EUT)

**2** Wooden table

**3** Test fixture

**4** Test cable

**5** Spectrum analyzer

## **5.2. Radiated Emission 30 MHz - 1 GHz (FCC §15.205.a,b, §15.209, §15.231.b)**

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 semi-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 is 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 quipment list for details):

01, 02, 05, 12, 38, 39, 40, 41, 58, 61, 64, 66



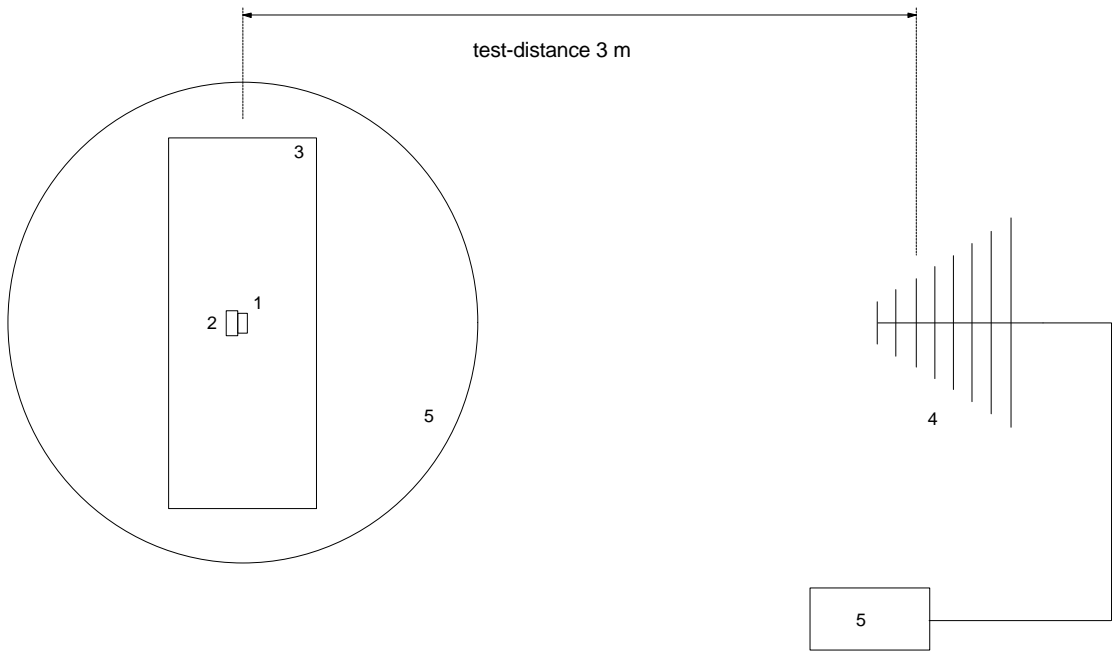


Figure 2: Measurement setup for radiated emission test below 1 GHz

- |   |                              |
|---|------------------------------|
| <b>1</b> Transmitter (EUT)              | <b>4</b> Measurement antenna |
| <b>2</b> Wooden pedestal (if necessary) | <b>5</b> Test receiver       |
| <b>3</b> Wooden table                   | <b>6</b> Turn table          |

### **5.3. Radiated Emission 1 GHz - 10 GHz (FCC §15.205.a,b, §15.209, §15.231.b)**

Radiated emissions are measured in the frequency range 1 GHz to 10 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

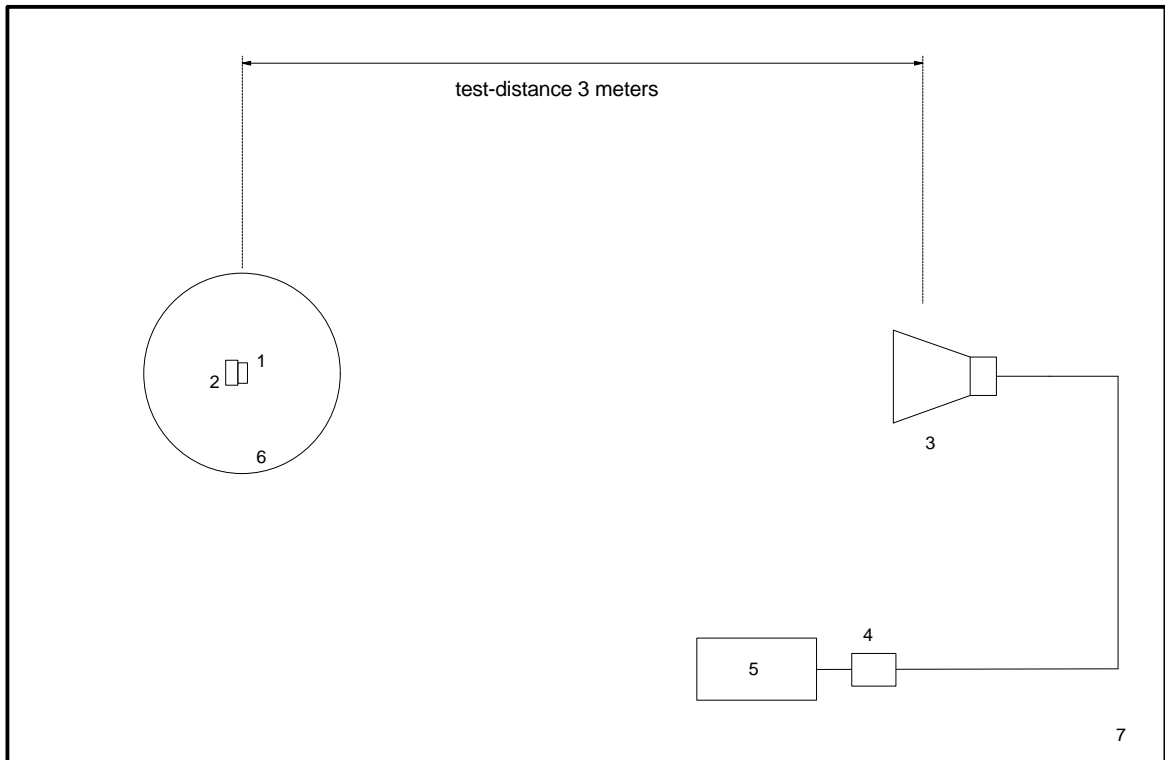


Figure 3: Measurement setup for radiated emission test above 1 GHz

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

## 6. 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
	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

## 7. Photographs Taken During Testing

## Photos No. 7.1 - 7.2

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



## Photos No. 7.3 - 7.4

### Test setup for radiated emission final test 30 MHz - 1 GHz (open area test site)





## Photos No. 7.5 - 7.6

### Test setup for radiated emission test above 1 GHz



## 8. List of Measurements

**8.1. List of Measurements According To FCC Part 15 Subpart C**

<b>FCC Part 15 Subpart C</b>			
<b>Section(s):</b>	<b>Test</b>	<b>Page(s)</b>	<b>Result</b>
§15.231.c	Bandwidth of emission	22	passed
§15.207	Conducted emission test 450 kHz - 30 MHz	---	not applicable (battery supply)
§15.231.b §15.209 §15.205.a,b	Radiated emission test 9 kHz - 30 MHz	---	not applicable (acc. to §15.33)
§15.231.b §15.209 §15.205.a,b	Radiated emission test 30 MHz - 1 GHz	23-36	passed
§15.231.b §15.209 §15.205.a,b	Radiated emission test 1 GHz - 10 GHz	37-47	passed

## 9. Referenced Regulations

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

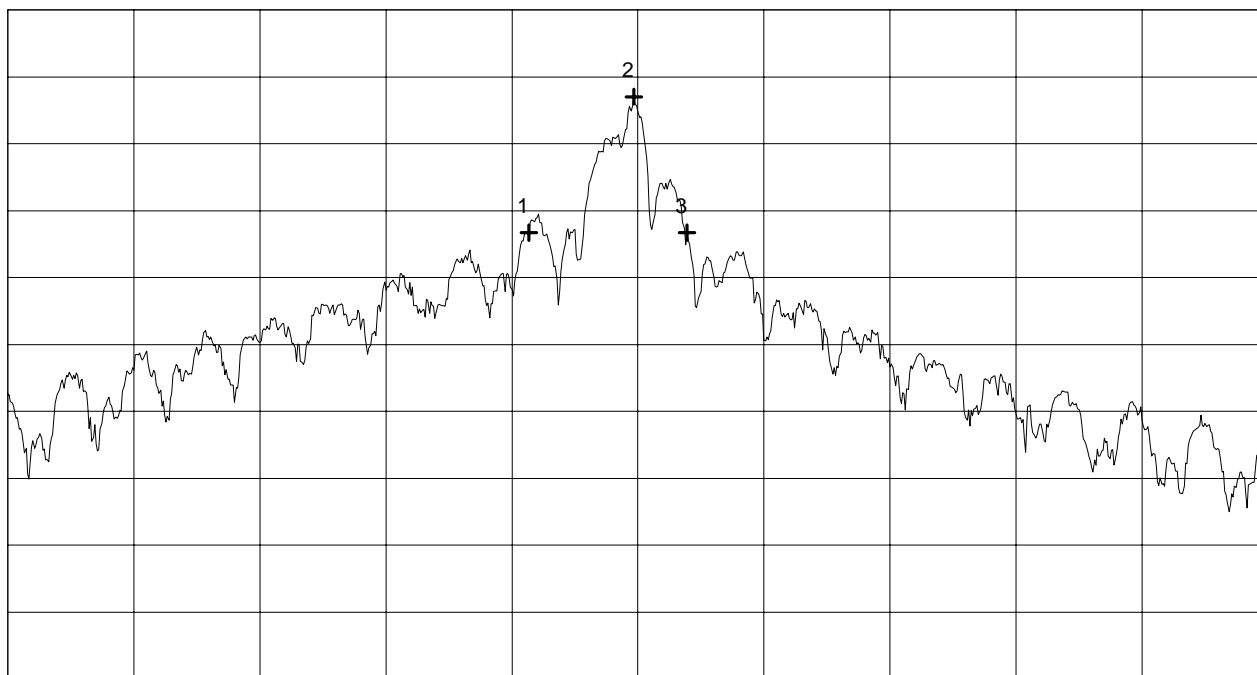
- |                                     |                          |  |                  |
|-------------------------------------|--------------------------|--|------------------|
| <input checked="" type="checkbox"/> | FCC Part 15<br>Subpart A | Code of Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communication Commission (FCC)   | October 20, 1997 |
| <input type="checkbox"/>            | FCC Part 15<br>Subpart B | Code of Regulations Part 15 (Radio Frequency Devices), Subpart B (Unintentional Radiators) of the Federal Communication Commission (FCC)                           | October 20, 1997 |
| <input checked="" type="checkbox"/> | FCC Part 15<br>Subpart C | Code of Regulations Part 15 (Radio Frequency Devices), Subpart C (Intentional Radiators) of the Federal Communication Commission (FCC)                             | October 20, 1997 |
| <input checked="" type="checkbox"/> | 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    |

## 10. Test Results

## Bandwidth of emission according to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Vers. 2.2	Mode: TX/RX mode
Serial No.: 099.000.174.150	Battery supply: DC 3.6 V
Applicant: Identec Solutions GmbH	

Ref.Level 105 dB $\mu$ V/m      ATT 15 dB      Ref. Offset 16 dB  
 10 dB dB/Div.



Start 867.445052 MHz      Stop 869.445052 MHz  
 RBW 10 kHz      VBW 10 kHz      SWP 60 ms

**** Multi Marker ****		
-----		
Nr.1	868.271719 MHz	71.71 dB $\mu$ V/m
Nr.2	868.438385 MHz	92.03 dB $\mu$ V/m
Nr.3	868.522830 MHz	71.71 dB $\mu$ V/m
Nr.4		
Nr.5		
Nr.6		
Nr.7		
Nr.8		

Tested by: Rupert Kohlhäufel	Project-No.: 55411-90496-2
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**Radiated Emission 30 MHz - 1 GHz (Final Test)  
according to FCC Part 15 Subpart C, §15.231.b**

**Model:** IO8T-D/E  
**Type:** Transceiver (868.35 MHz)  
**Serial No.:** 099.000.174.150  
**Applicant:** Identec Solutions GmbH  
**Test-site:** Open area test-site I  
**Test distance:** 3 meters  
**Date of test:** 09/08/1999  
**Operator:** R. Kohlhäufel  
**Mode:** - transmitting continuously  
 - with battery supply 3.6 V DC

**Detector:** Peak

**Polarization:** horizontal

Frequency [MHz]	Receiver reading [dBµV]	Correction factor [dB]	Fieldstrength Peak [dBµV/m]	Limit Peak [dBµV/m]	Duty cycle correction [dB]	Fieldstrength Average [dBµV/m]	Limit Average [dBµV/m]	Limit exceeded
868.35	54.4	29.9	84.3	101.9	35.5	48.8	81.9	

**Result:** The limits are kept.

**Radiated Emission 30 MHz - 1 GHz (Final Test)  
according to FCC Part 15 Subpart C, §15.231.b**

**Model:** IQ8T-D/E  
**Type:** Transceiver (868.35 MHz)  
**Serial No.:** 099.000.174.150  
**Applicant:** Identec Solutions GmbH  
**Test-site:** Open area test-site I  
**Test distance:** 3 meters  
**Date of test:** 09/08/1999  
**Operator:** R. Kohlhäufi  
**Mode:** - transmitting continuously  
 - with battery supply 3.6 V DC

**Detector:** Peak

**Polarization:** vertical

Frequency [MHz]	Receiver reading [dB $\mu$ V]	Correction factor [dB]	Fieldstrength Peak [dB $\mu$ V/m]	Limit Peak [dB $\mu$ V/m]	Duty cycle correction [dB]	Fieldstrength Average [dB $\mu$ V/m]	Limit Average [dB $\mu$ V/m]	Limit exceeded
868.35	66.1	29.9	96.0	101.9	35.5	60.5	81.9	

**Result:** The limits are kept.

24/47



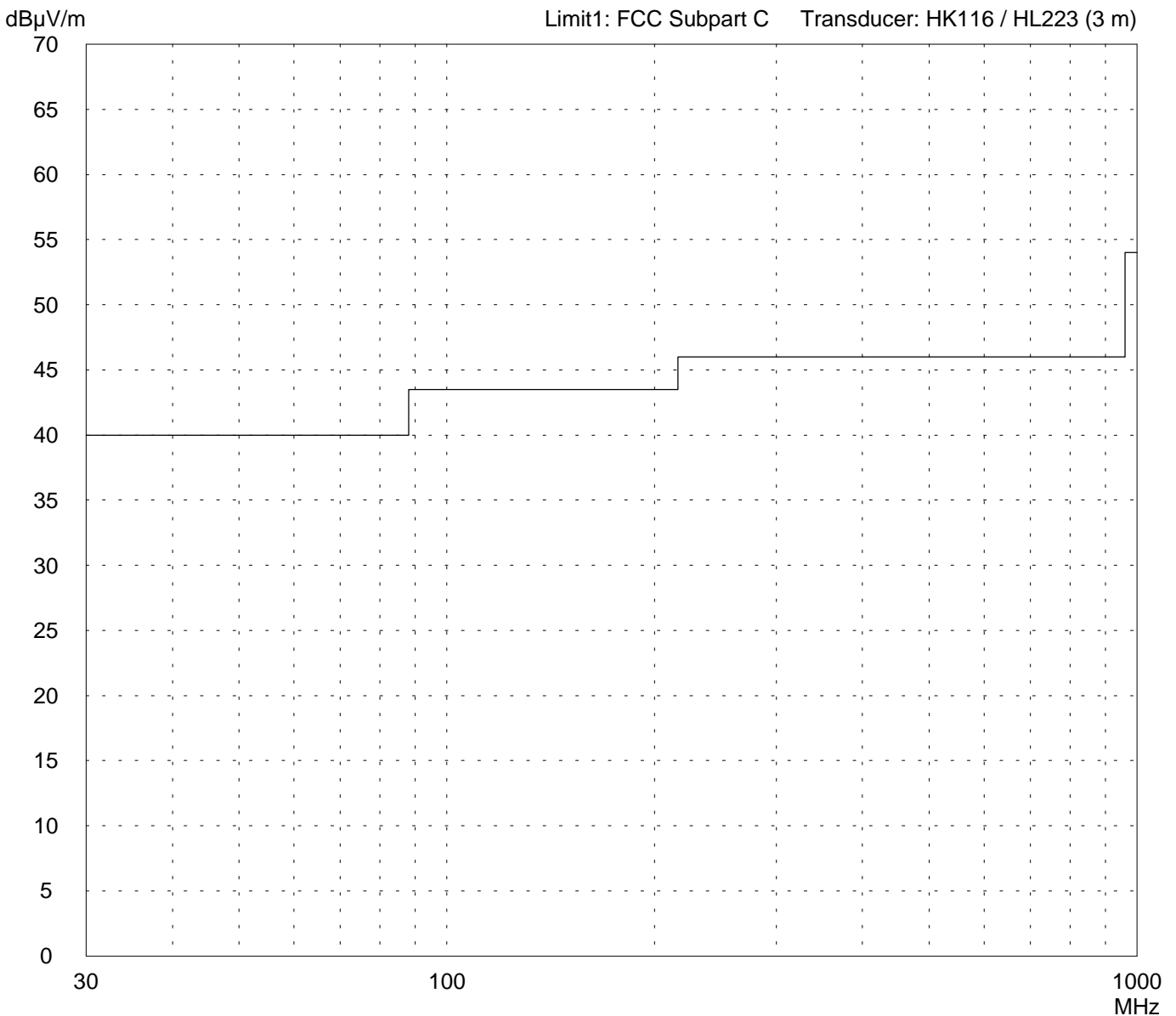
# Radiated Emission Test 30 MHz - 1 GHz according to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Version 2.2	
Serial no.: 099.000.174.150	
Applicant: Identec Solutions GmbH	
Test site: Open area test-site I	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 08/09/1999	Operator: R. Kohlhäufel
Test performed: by hand	File name:

Mode: TX/RX mode
Battery supply: DC 3.6 V

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



Result: Limit kept
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# Radiated Emission Test 30 MHz - 1 GHz according to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Version 2.2	
Serial no.: 099.000.174.150	
Applicant: Identec Solutions GmbH	
Test site: Open area test-site I	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 08/09/1999	Operator: R. Kohlhäufel
Test performed: by hand	File name:

Mode: TX/RX mode
Battery supply: DC 3.6 V

Detector: Quasi-Peak
-------------------------

List of values: Selected by hand
-------------------------------------

<i>Frequency MHz</i>	<i>Reading dB<math>\mu</math>V</i>	<i>Correction factor dB</i>	<i>Value dB<math>\mu</math>V/m</i>	<i>Limit dB<math>\mu</math>V/m</i>	<i>Limit exceeded</i>
868.4	45.2	29.9	75.1	46.0	*

Result: Limit kept
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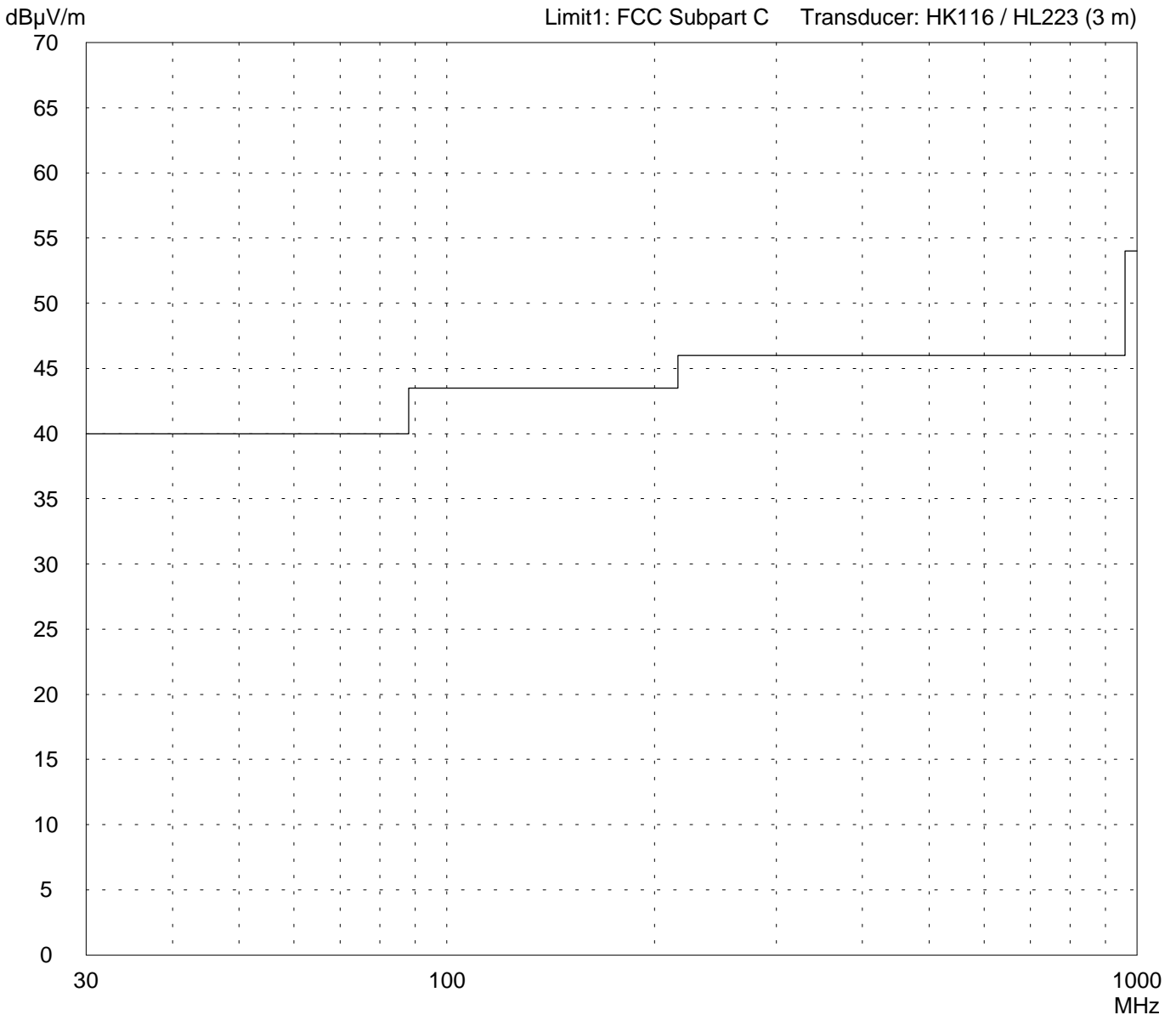
# Radiated Emission Test 30 MHz - 1 GHz according to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Version 2.2	
Serial no.: 099.000.174.150	
Applicant: Identec Solutions GmbH	
Test site: Open area test-site I	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 08/09/1999	Operator: R. Kohlhäufel
Test performed: by hand	File name:

Mode: TX/RX mode
Battery supply: DC 3.6 V

Detector: Quasi-Peak
-------------------------

List of values: Selected by hand
-------------------------------------



Result: Limit kept
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## Radiated Emission Test 30 MHz - 1 GHz according to FCC Part 15 Subpart C

Model:  
ILR Datenträger iQ8T-D/E Version 2.2

Serial no.:  
099.000.174.150

Applicant:  
Identec Solutions GmbH

Test site:  
Open area test-site I

Tested on:  
Test distance 3 meters  
Vertical Polarization

Date of test: 08/09/1999      Operator: R. Kohlhäufel

Test performed: by hand      File name:

Mode:  
TX/RX mode

Battery supply: DC 3.6 V

Detector:  
Quasi-Peak

List of values:  
Selected by hand

<i>Frequency MHz</i>	<i>Reading dBμV</i>	<i>Correction factor dB</i>	<i>Value dBμV/m</i>	<i>Limit dBμV/m</i>	<i>Limit exceeded</i>
868.4	55.5	29.9	85.4	46.0	*

Result:  
Limit kept

Project file:  
55411-90496-2

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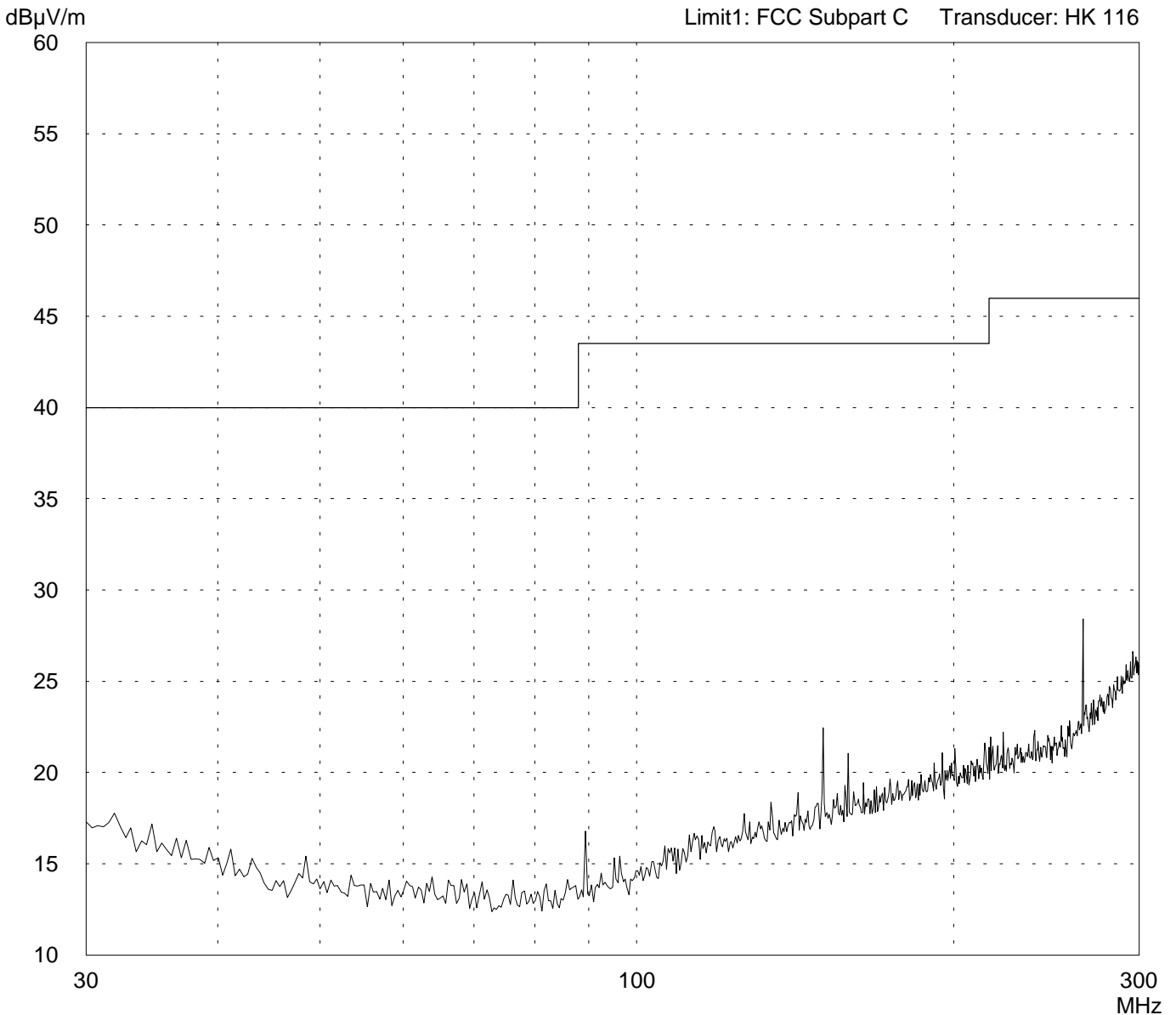
# Radiated Emission Test 30 MHz - 300 MHz according to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Version 2.2	
Serial no.: 099.000.174.150	
Applicant: Identec Solutions GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 08/09/1999	Operator: R. Kohlhäufel
Test performed: automatically	File name:

Mode: TX/RX mode	
Battery supply: DC 3.6 V	

Detector: Peak
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List of values: 10 dB Margin	50 Subranges
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Result: Prescan
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## Radiated Emission Test 30 MHz - 300 MHz according to FCC Part 15 Subpart C

<p>Model: ILR Datenträger iQ8T-D/E Version 2.2</p> <p>Serial no.: 099.000.174.150</p> <p>Applicant: Identec Solutions GmbH</p> <p>Test site: Semi anechoic room, cabin no. 3</p> <p>Tested on: Test distance 3 meters Horizontal Polarization</p> <p>Date of test: 08/09/1999      Operator: R. Kohlhäufel</p> <p>Test performed: automatically      File name:</p>	<p>Mode: TX/RX mode</p> <p>Battery supply: DC 3.6 V</p>
---	---

<p>Detector: Peak</p>	<p>List of values: 10 dB Margin                      50 Subranges</p>
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<i>Frequency MHz</i>	<i>Reading dB<math>\mu</math>V</i>	<i>Correction factor dB</i>	<i>Value dB<math>\mu</math>V/m</i>	<i>Limit dB<math>\mu</math>V/m</i>	<i>Limit exceeded</i>
no results					

<p>Result: Prescan</p>	<p>Project file: 55411-90496-2</p> <p style="text-align: right;">Page 30 of 47 pages</p>
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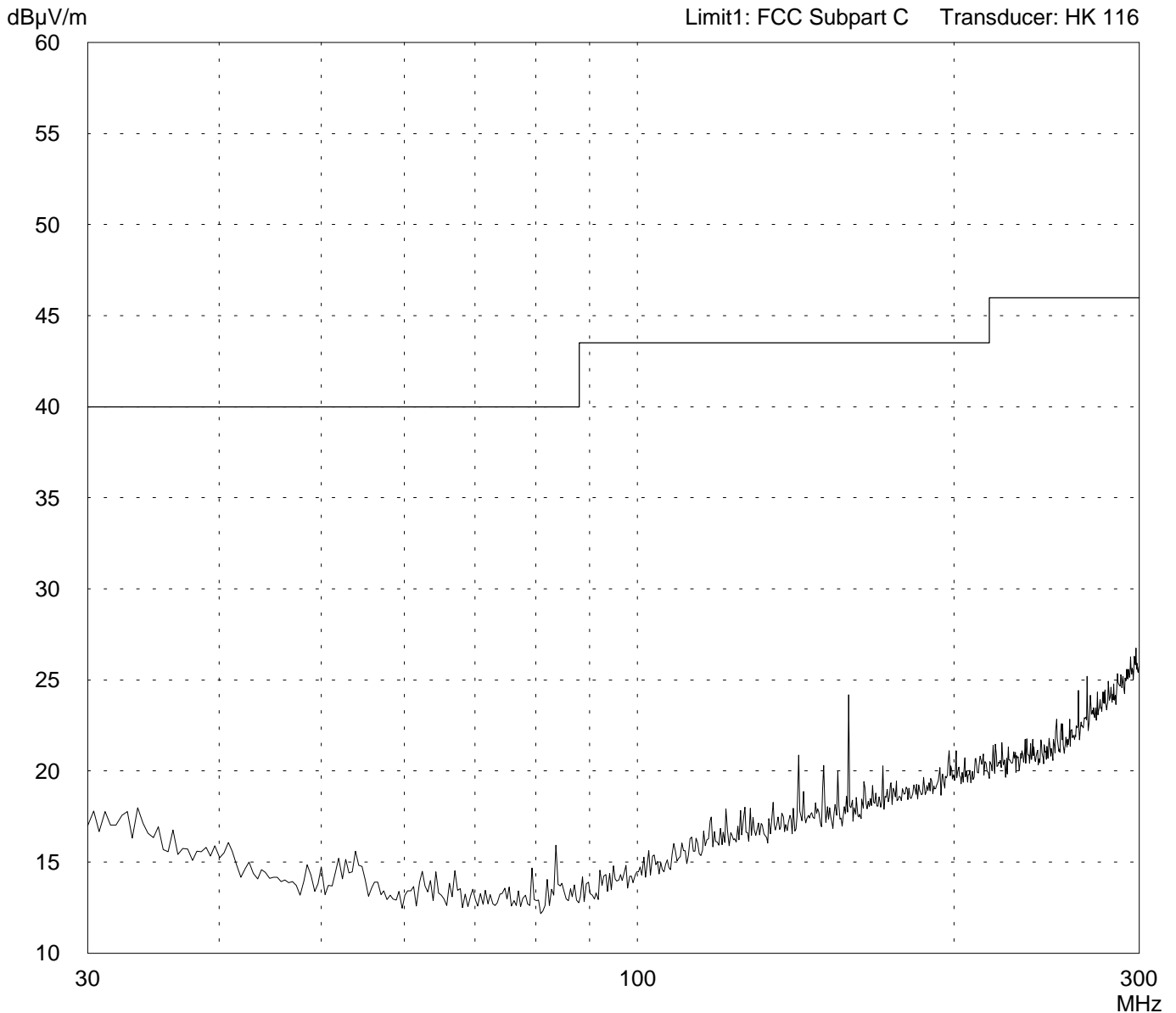
# Radiated Emission Test 30 MHz - 300 MHz according to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Version 2.2	
Serial no.: 099.000.174.150	
Applicant: Identec Solutions GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 08/09/1999	Operator: R. Kohlhäufel
Test performed: automatically	File name:

Mode: TX/RX mode
Battery supply: DC 3.6 V

Detector: Peak
-------------------

List of values: 10 dB Margin	50 Subranges
---------------------------------	--------------



Result: Prescan
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## Radiated Emission Test 30 MHz - 300 MHz according to FCC Part 15 Subpart C

<p>Model: ILR Datenträger iQ8T-D/E Version 2.2</p> <p>Serial no.: 099.000.174.150</p> <p>Applicant: Identec Solutions GmbH</p> <p>Test site: Semi anechoic room, cabin no. 3</p> <p>Tested on: Test distance 3 meters Vertical Polarization</p> <p>Date of test: 08/09/1999      Operator: R. Kohlhäufel</p> <p>Test performed: automatically      File name:</p>	<p>Mode: TX/RX mode</p> <p>Battery supply: DC 3.6 V</p>
---	---

<p>Detector: Peak</p>	<p>List of values: 10 dB Margin                      50 Subranges</p>
---------------------------	---

Frequency MHz	Reading dB $\mu$ V	Correction factor dB	Value dB $\mu$ V/m	Limit dB $\mu$ V/m	Limit exceeded
no results					

<p>Result: Prescan</p>	<p>Project file: 55411-90496-2</p> <p style="text-align: right;">Page 32 of 47 pages</p>
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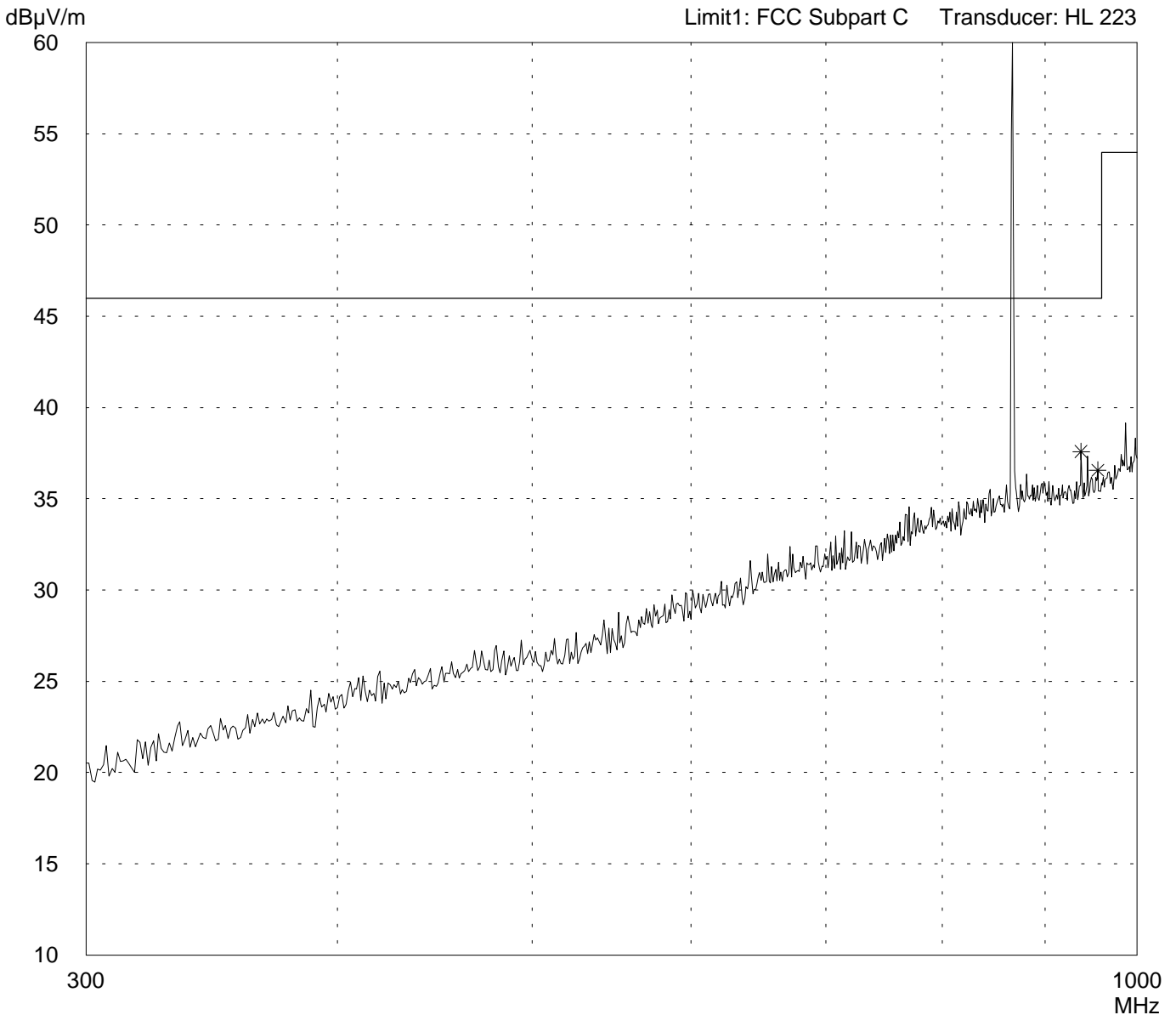
# Radiated Emission Test 300 MHz - 1 GHz according to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Version 2.2	
Serial no.: 099.000.174.150	
Applicant: Identec Solutions GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 08/09/1999	Operator: R. Kohlhäufel
Test performed: automatically	File name:

Mode: TX/RX mode
Battery supply: DC 3.6 V

Detector: Peak
-------------------

List of values: 10 dB Margin	50 Subranges
---------------------------------	--------------



Result: Prescan
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## Radiated Emission Test 300 MHz - 1 GHz according to FCC Part 15 Subpart C

<p>Model: ILR Datenträger iQ8T-D/E Version 2.2</p> <p>Serial no.: 099.000.174.150</p> <p>Applicant: Identec Solutions GmbH</p> <p>Test site: Semi anechoic room, cabin no. 3</p> <p>Tested on: Test distance 3 meters Horizontal Polarization</p> <p>Date of test: 08/09/1999      Operator: R. Kohlhäufel</p> <p>Test performed: automatically      File name:</p>	<p>Mode: TX/RX mode</p> <p>Battery supply: DC 3.6 V</p>
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<p>Detector: Peak</p>	<p>List of values: 10 dB Margin                      50 Subranges</p>
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<i>Frequency MHz</i>	<i>Reading dBμV</i>	<i>Correction factor dB</i>	<i>Value dBμV/m</i>	<i>Limit dBμV/m</i>	<i>Limit exceeded</i>
867.0	50.3	34.3	84.6	46.0	*
938.0	3.0	34.6	37.6	46.0	
956.0	1.8	34.8	36.6	46.0	

<p>Result: Prescan</p>	<p>Project file: 55411-90496-2</p> <p style="text-align: right;">Page 34 of 47 pages</p>
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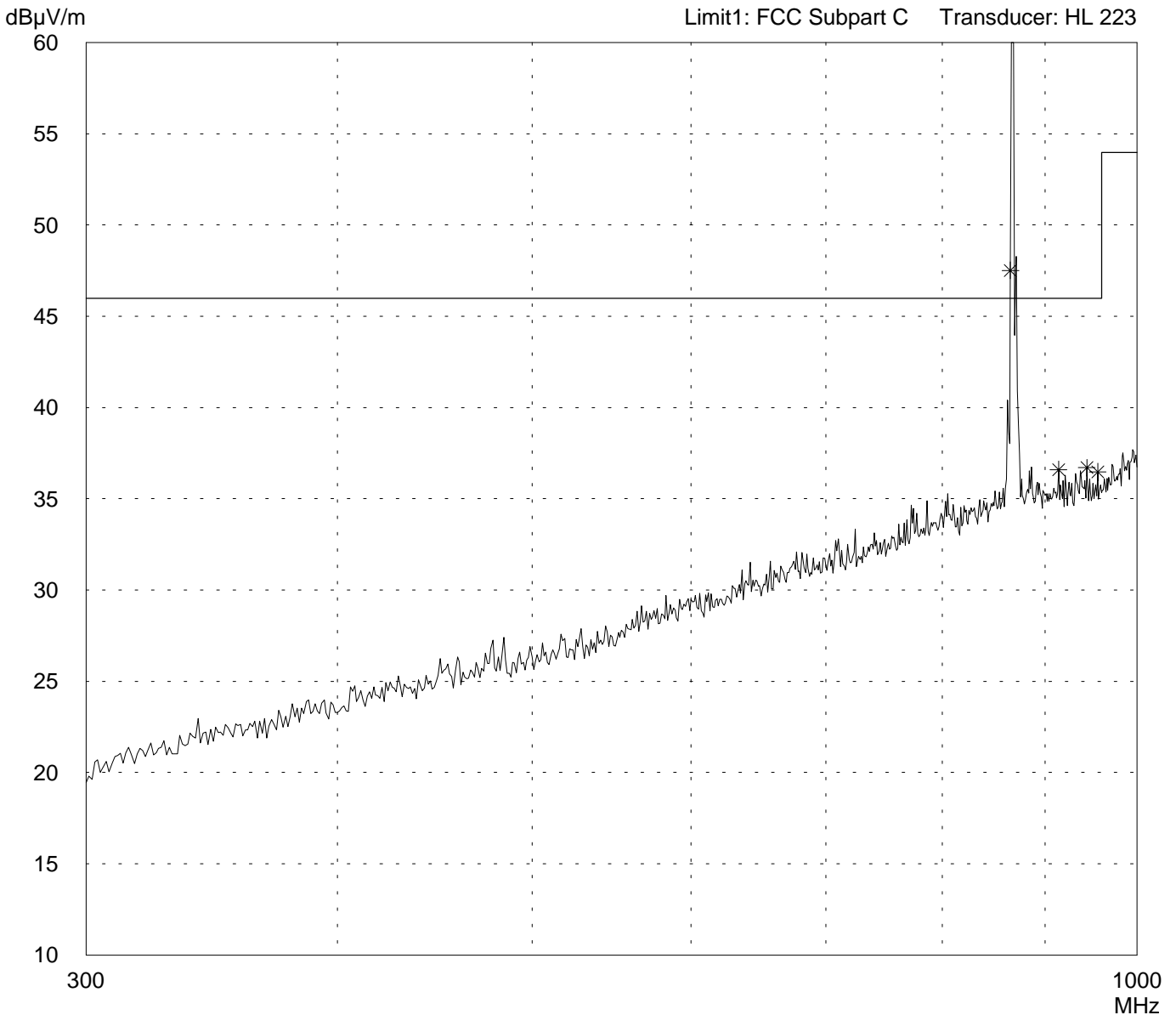
# Radiated Emission Test 300 MHz - 1 GHz according to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Version 2.2	
Serial no.: 099.000.174.150	
Applicant: Identec Solutions GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 08/09/1999	Operator: R. Kohlhäufel
Test performed: automatically	File name:

Mode: TX/RX mode
Battery supply: DC 3.6 V

Detector: Peak
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List of values: 10 dB Margin	50 Subranges
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Result: Prescan
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# Radiated Emission Test 300 MHz - 1 GHz according to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Version 2.2	
Serial no.: 099.000.174.150	
Applicant: Identec Solutions GmbH	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 08/09/1999	Operator: R. Kohlhäufel
Test performed: automatically	File name:

Mode: TX/RX mode
Battery supply: DC 3.6 V

Detector: Peak
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List of values: 10 dB Margin	50 Subranges
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<i>Frequency MHz</i>	<i>Reading dB<math>\mu</math>V</i>	<i>Correction factor dB</i>	<i>Value dB<math>\mu</math>V/m</i>	<i>Limit dB<math>\mu</math>V/m</i>	<i>Limit exceeded</i>
865.0	13.3	34.2	47.5	46.0	*
867.0	61.5	34.3	95.8	46.0	*
914.0	1.9	34.7	36.6	46.0	
944.0	2.1	34.6	36.7	46.0	
956.0	1.7	34.8	36.5	46.0	

Result: Prescan
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**Radiated Emission 1 GHz - 10 GHz  
according to FCC Part 15 Subpart C, §15.231.b**

**Model:** IQ8T-D/E  
**Type:** Transceiver (868.35 MHz)  
**Serial No.:** 099.000.174.150  
**Applicant:** Identec Solutions GmbH  
**Test-site:** Semi anechoic room  
**Test distance:** 3 meters  
**Date of test:** 09/08/1999  
**Operator:** R. Kohlhäufel  
**Mode:** - transmitting continuously  
 - with battery supply 3.6 V DC

**Detector:** Peak

Frequency [GHz]	Polarization	Analyzer-reading [dBµV]	Antenna-correction [dB]	Cable-correction [dB]	Fieldstrength Peak [dBµV/m]	Limit Peak [dBµV/m]	Duty cycle correction [dB]	Fieldstrength Average [dBµV/m]	Limit Average [dBµV/m]	Limit exceeded
1.7367	vertical	22.1	27.9	0.5	50.5	81.9	35.5	15.0	61.9	

**Note:** Frequency error of markers is depending on span of analyzer. Therefore exact frequency values are calculated as harmonics of fundamental frequency.

**Result:** The limits are kept.

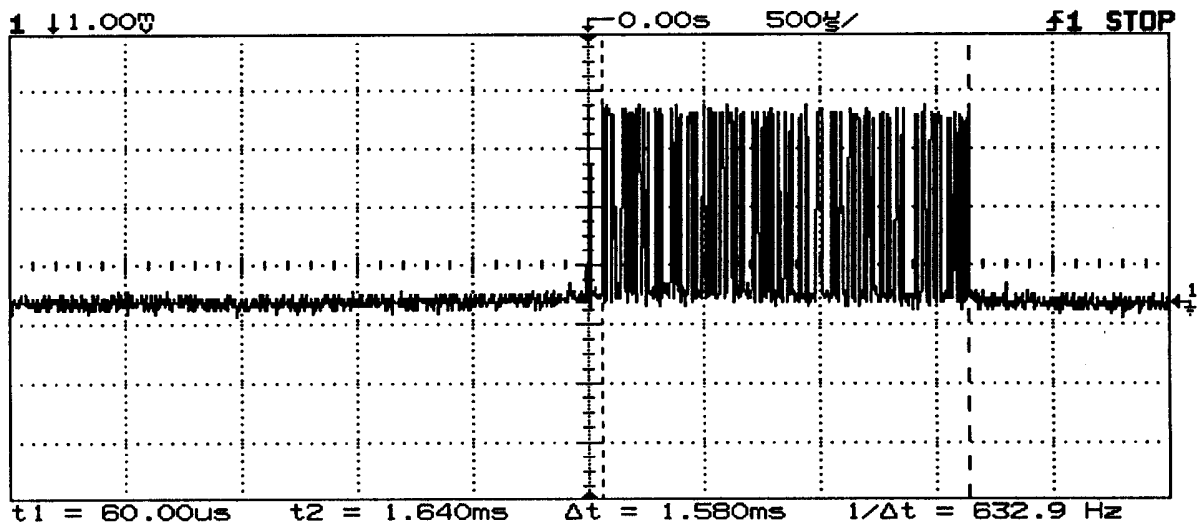
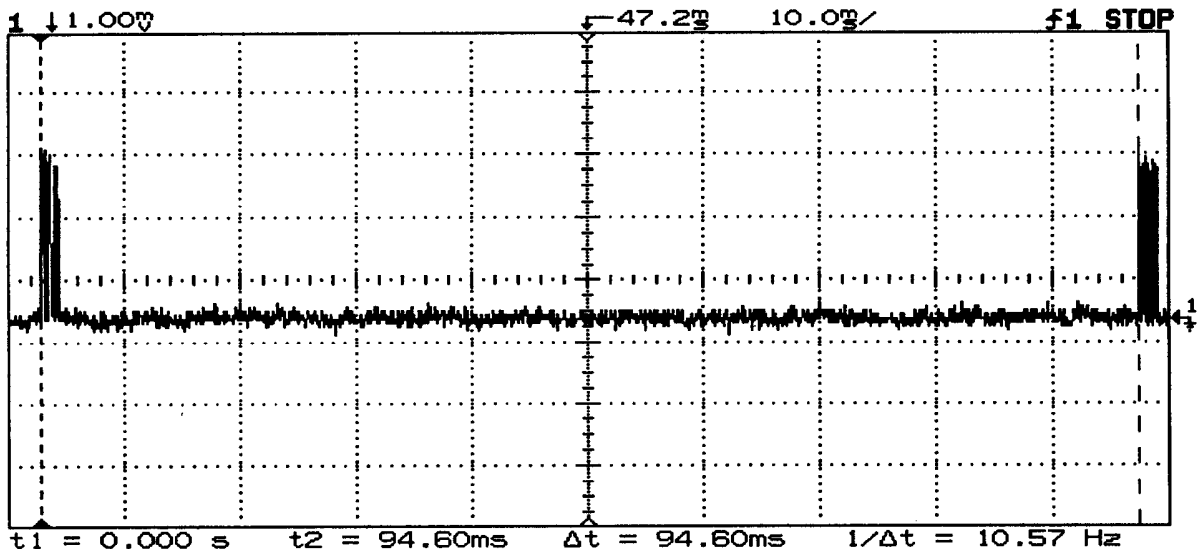
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## Duty Cycle Test

according to FCC Part 15 Subpart C, §15.231 / ANSI C63.4-1992 (I4.10)

Model: IQ8T-D/E  
Type: Transceiver (868.35 MHz)  
Serial No.: 099.000.174.150  
Applicant: Identec Solutions GmbH  
Test-site: Shielded room

Date of test: 09/08/1999  
Operator: R. Kohlhäufel  
Mode: - transmitting continuously  
- with battery supply 3.6 V DC



**Duty Cycle Test (continued)**  
**according to FCC Part 15 Subpart C, §15.231 / ANSI C63.4-1992 (I4.10)**

Model: IQ8T-D/E  
 Type: Transceiver (868.35 MHz)  
 Serial No.: 099.000.174.150  
 Applicant: Identec Solutions GmbH  
 Test-site: Shielded room

Date of test: 09/08/1999  
 Operator: R. Kohlhäufel  
 Mode: - transmitting continuously  
 - with battery supply 3.6 V DC

(standard mode)

	Number of pulses	T [ms]	Duty Cycle	Duty Cycle Correction [dB]
Pulse Train		1000.000	0.002	-56.0
Transmitter ON (long time)	1	1.580		
Transmitter ON (short time)	0	1.580		

(worst case mode)

	Number of pulses	T [ms]	Duty Cycle	Duty Cycle Correction [dB]
Pulse Train		94.600	0.017	-35.5
Transmitter ON (long time)	1	1.580		
Transmitter ON (short time)	0	1.580		

# Radiated emission test 1GHz - 10GHz acc.to FCC Part 15 Subpart C

Model:  
ILR Datenträger iQ8T-D/E Vers. 2.2

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Serial No.:  
099.000.174.150

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Applicant:  
Identec Solutions GmbH

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Mode:  
TX/RX mode

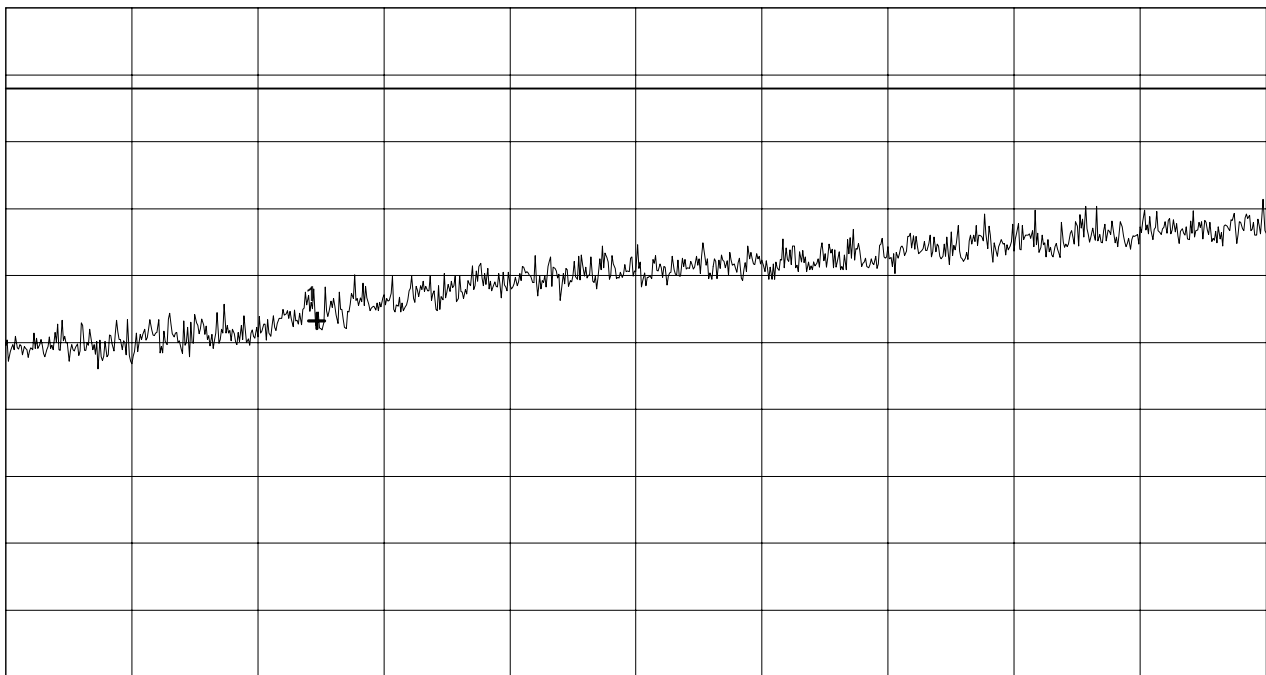
Battery supply: DC 3.6 V

Horizontal polarization

Ref.Level 60 dB $\mu$ V/m  
5 dB dB/Div.

ATT 0 dB

Ref. Offset -30.5 dB



Start 1.000 GHz  
RBW 1 MHz

VBW 1 MHz

Stop 4.000 GHz  
SWP 20 ms

**** Multi Marker ****		
Nr.	Frequency (GHz)	Amplitude (dB $\mu$ V/m)
Nr.1	1.740000 GHz	36.62 dB $\mu$ V/m
Nr.2		
Nr.3		
Nr.4		
Nr.5		
Nr.6		
Nr.7		
Nr.8		

Tested by:  
Rupert Kohlhäufel

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Date:  
08/09/1999

Project-No.:  
55411-90496-2

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# Radiated emission test 1GHz - 10GHz acc.to FCC Part 15 Subpart C

Model:  
ILR Datenträger iQ8T-D/E Vers. 2.2

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Serial No.:  
099.000.174.150

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Applicant:  
Identec Solutions GmbH

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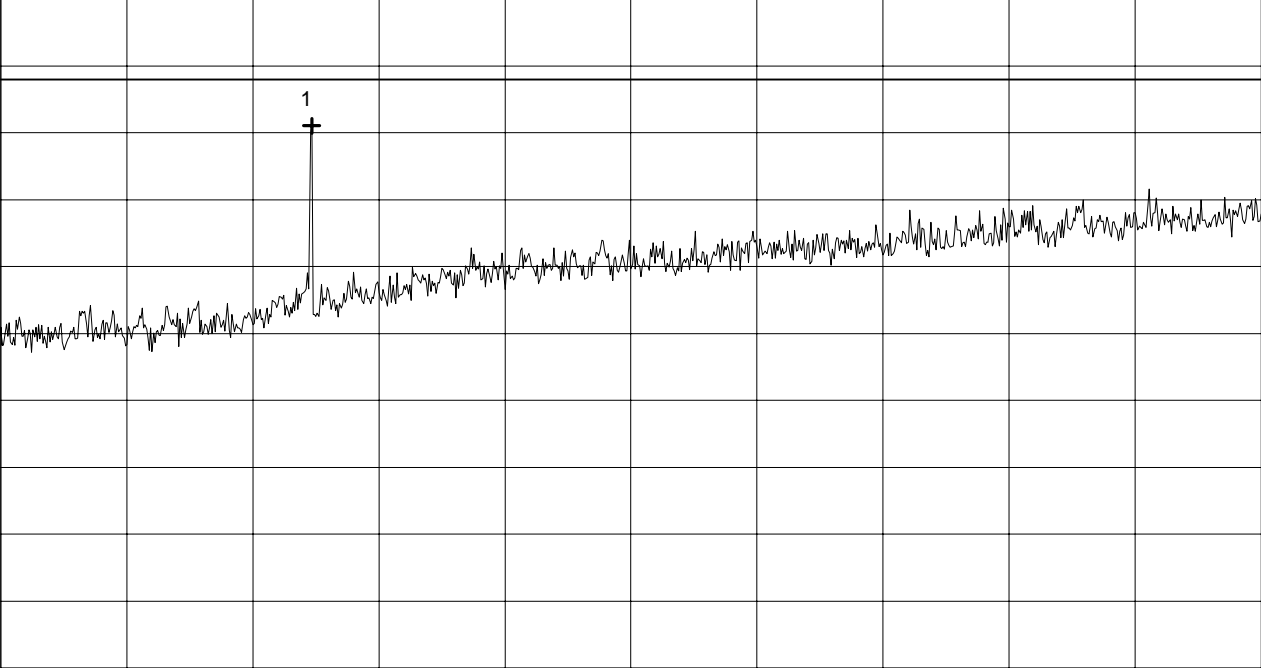
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Mode:  
TX/RX mode

Battery supply: DC 3.6 V

Vertical polarization

Ref.Level 60 dB $\mu$ V/m      ATT 0 dB      Ref. Offset -30.5 dB  
5 dB dB/Div.



Start 1.000 GHz      Stop 4.000 GHz  
RBW 1 MHz      VBW 1 MHz      SWP 20 ms

**** Multi Marker ****		
	-----	
Nr.1	1.740000 GHz	50.51 dB $\mu$ V/m
Nr.2		
Nr.3		
Nr.4		
Nr.5		
Nr.6		
Nr.7		
Nr.8		

Tested by:  
Rupert Kohlhäufel

Date:  
08/09/1999

Project-No.:  
55411-90496-2

# Radiated emission test 1GHz - 10GHz acc.to FCC Part 15 Subpart C

Model:  
ILR Datenträger iQ8T-D/E Vers. 2.2

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Serial No.:  
099.000.174.150

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Applicant:  
Identec Solutions GmbH

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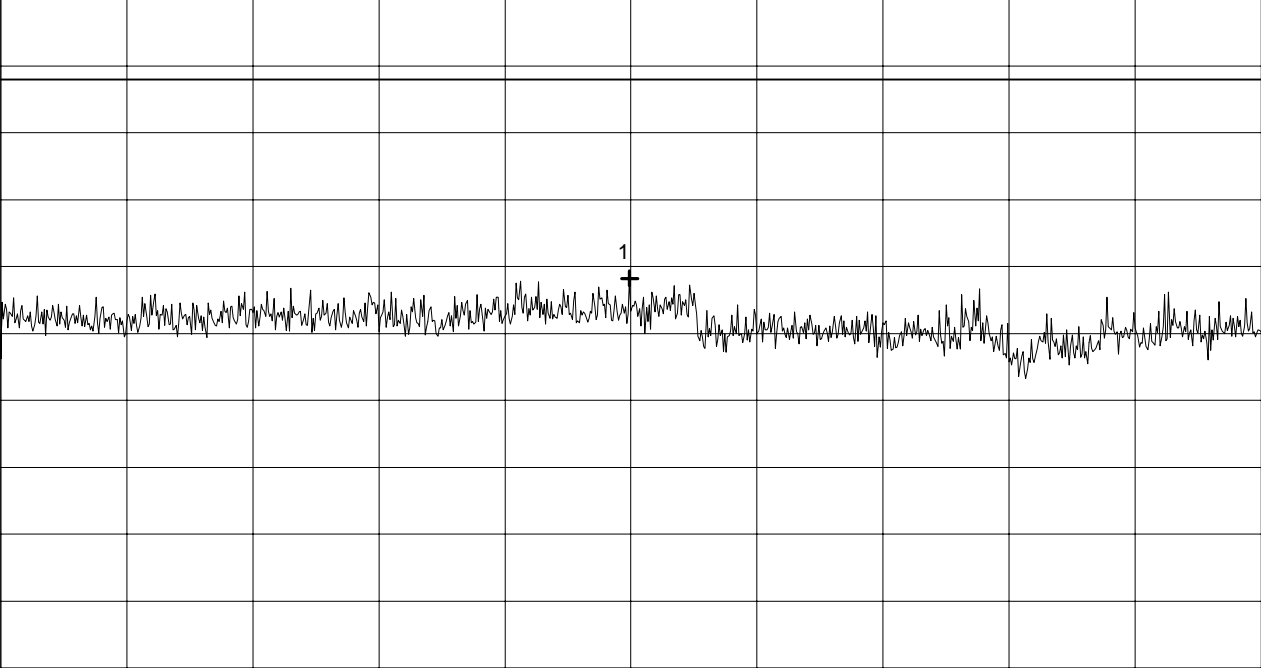
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Mode:  
TX/RX mode

Battery supply: DC 3.6 V

Horizontal polarization

Ref.Level 60 dBμV/m  
5 dB dB/Div. ATT 0 dB Ref. Offset -30.5 dB



Start 3.950 GHz VBW 1 MHz Stop 5.850 GHz  
 RBW 1 MHz SWP 20 ms

**** Multi Marker ****		
	-----	
Nr.1	4.897889 GHz	39.11 dBμV/m
Nr.2		
Nr.3		
Nr.4		
Nr.5		
Nr.6		
Nr.7		
Nr.8		

Tested by:  
Rupert Kohlhäufel

Project-No.:  
55411-90496-2

Date:  
08/09/1999

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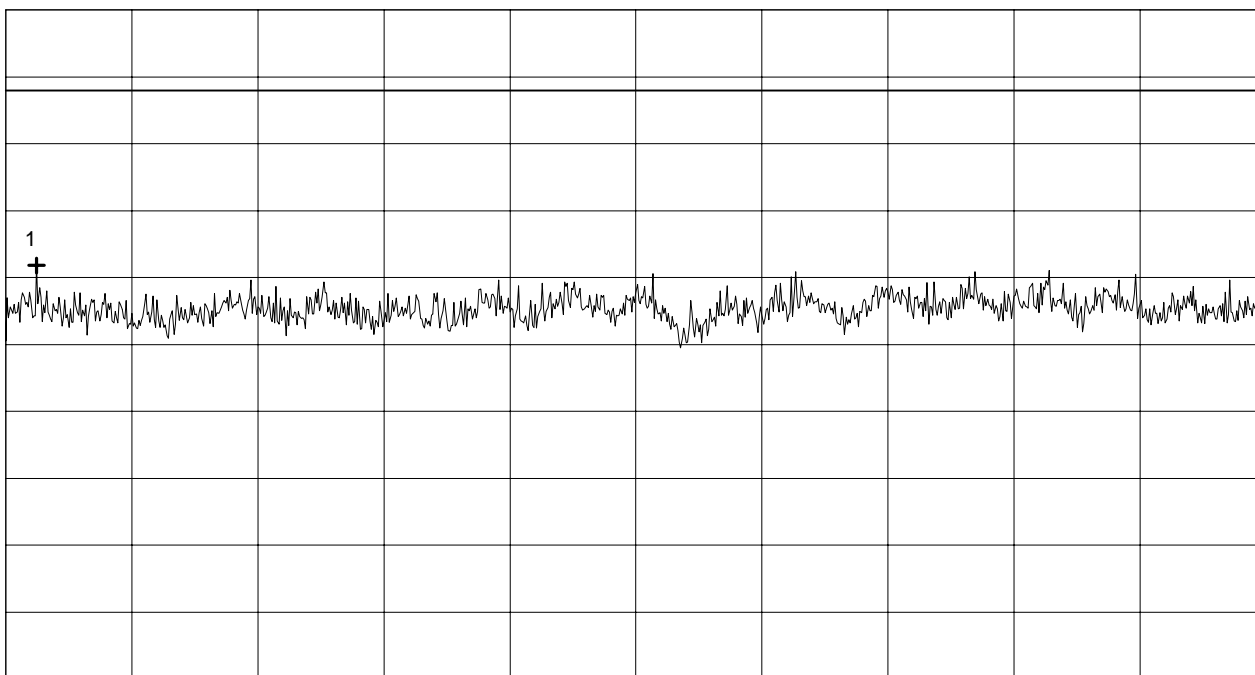
# Radiated emission test 1GHz - 10GHz acc.to FCC Part 15 Subpart C

Model: ILR Datenträger iQ8T-D/E Vers. 2.2	Mode: TX/RX mode
Serial No.: 099.000.174.150	Battery supply: DC 3.6 V
Applicant: Identec Solutions GmbH	Horizontal polarization

Ref.Level 60 dBµV/m  
5 dB dB/Div.

ATT 0 dB

Ref. Offset -30.5 dB



Start 5.850 GHz  
RBW 1 MHz

VBW 1 MHz

Stop 8.200 GHz  
SWP 20 ms

**** Multi Marker ****		
-----		
Nr.1	5.907444 GHz	40.91 dBµV/m
Nr.2		
Nr.3		
Nr.4		
Nr.5		
Nr.6		
Nr.7		
Nr.8		

Tested by: Rupert Kohlhäufel	Project-No.: 55411-90496-2
Date: 08/09/1999	Page 44 of 47 pages





