

Straubing, September 1, 2005

**TEST - REPORT**

**No. 55456-050446-2 (Edition 1)**

**for**

**i-B2**

**Transmitter**

**Applicant:** IDENTEC SOLUTIONS AG

**Test Specifications:** FCC Code of Federal Regulations,  
CFR 47, Part 15,  
Sections 15.205, 15.215 and 15.249

Industry Canada Radio Standards  
Specification RSS-210 Issue 5,  
Sections 6.2.2 (m2) and 6.3  
(Category I Equipment)

**Note:**

The test data of this report is related 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 Description of the Equipment Under Test (EUT)

General data of EUT	
Type designation <sup>1</sup> :	i-B2
Parts <sup>2</sup> :	1
Serial number(s):	0.300.002.002
Manufacturer:	IDENITEC SOLUTIONS AG
Type of equipment:	Transmitter
Version:	With modification: R11 = 56kΩ
FCC ID:	
Additional parts/accessories:	

Technical data of EUT	
Application frequency range:	902 - 928 MHz
Frequency range:	902 - 928 MHz
Operating frequency:	915 MHz
Type of modulation:	ASK
Pulse train:	0.01 s
Pulse width:	1.94 ms
Number of RF-channels:	1
Channel spacing:	Not Applicable
Designation of emissions <sup>3</sup> :	10K0A1D
Type of antenna:	Internal Antenna
Size/length of antenna:	6 cm
Connection of antenna:	<input type="checkbox"/> detachable <input checked="" type="checkbox"/> not detachable
Type of power supply:	Battery supply
Specifications for power supply:	nominal voltage:      3.00 V

<sup>1</sup> Type designation of the system if EUT consists of more than one part.

<sup>2</sup> Type designations of the parts of the system, if applicable.

<sup>3</sup> Also known as "Class of Emission".

## 2 Administrative Data

Application details	
Applicant (full address):	IDENTEC SOLUTIONS AG Millenniumspark 2 A - 6890 Lustenau
Contact person:	Mr Vogel
Contract identification:	Order No. 45600294
Receipt of EUT:	21 July 2005
Date(s) of test:	August / September 2005
Note(s):	

Report details	
Report number:	55456-050446-2
Edition:	1
Issue date:	September 1, 2005

### 3 Identification of the Test Laboratory

Details of the Test Laboratory	
Company name:	Senton GmbH EMI/EMC Test Center
Address:	Aeussere Fruehlingstrasse 45 D-94315 Straubing Germany
Laboratory accreditation:	DAR-Registration No. DAT-P-171/94-02
FCC test site registration number	90926
Industry Canada test site registration:	IC 3050
Contact person:	Mr. Johann Roidt
	Phone: (+49) (0)9421 5522-0 Fax: (+49) (0)9421 5522-99

## 4 Summary

### Summary of test results

The tested sample complies with the requirements set forth in the

**Code of Federal Regulations CFR 47, Part 15, Sections 15.205, 15.215 and 15.249**

of the Federal Communication Commission (FCC) and the

**Standards Specification RSS-210 Issue 5, Sections 6.2.2 (m2) and 6.3 (Category I Equipment)**

of Industry Canada (IC).

### Personnel involved in this report

Laboratory Manager:



Mr. Johann Roidt

Responsible for testing:



Mr. Martin Steindl

Responsible for test report:

Mr. Martin Steindl

## 5 Operation Mode and Configuration of EUT

### Operation Mode(s)

Test mode:  
Transmitting continuously. Repeat time: 0.01 s.

### Configuration(s) of EUT

EUT was configured as stand alone device.  
For testing purposes the device contained a jumper to set repeat time to 0.01 s.

### List of ports and cables

<i>Port</i>	<i>Description</i>	<i>Classification<sup>4</sup></i>	<i>Cable type</i>	<i>Cable length</i>
	Not Applicable			

### List of devices connected to EUT

<i>Item</i>	<i>Description</i>	<i>Type Designation</i>	<i>Serial no. or ID</i>	<i>Manufacturer</i>
	Not Applicable			

### List of support devices

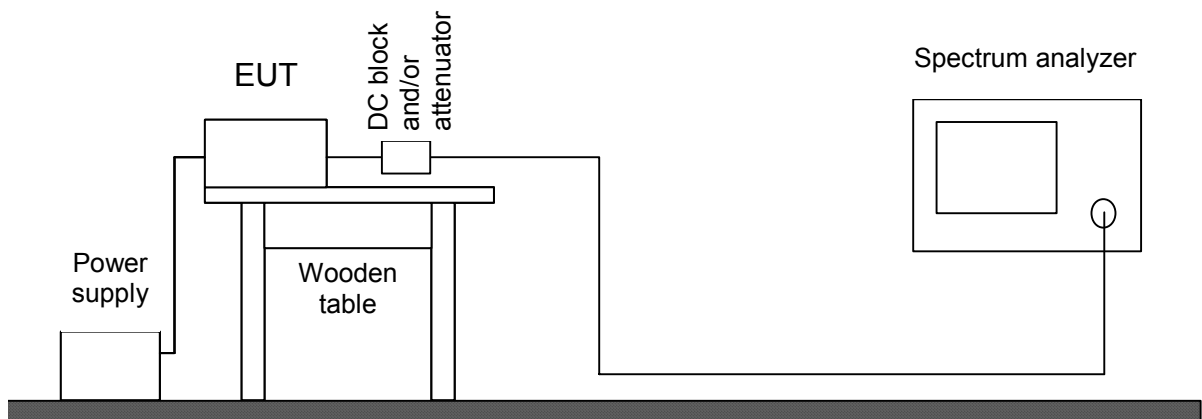
<i>Item</i>	<i>Description</i>	<i>Type Designation</i>	<i>Serial no. or ID</i>	<i>Manufacturer</i>
	Not Applicable			

<sup>4</sup> Ports shall be classified as ac power, dc power or signal/control port

## 6 Measurement Procedures

### 6.1 Bandwidth Measurements

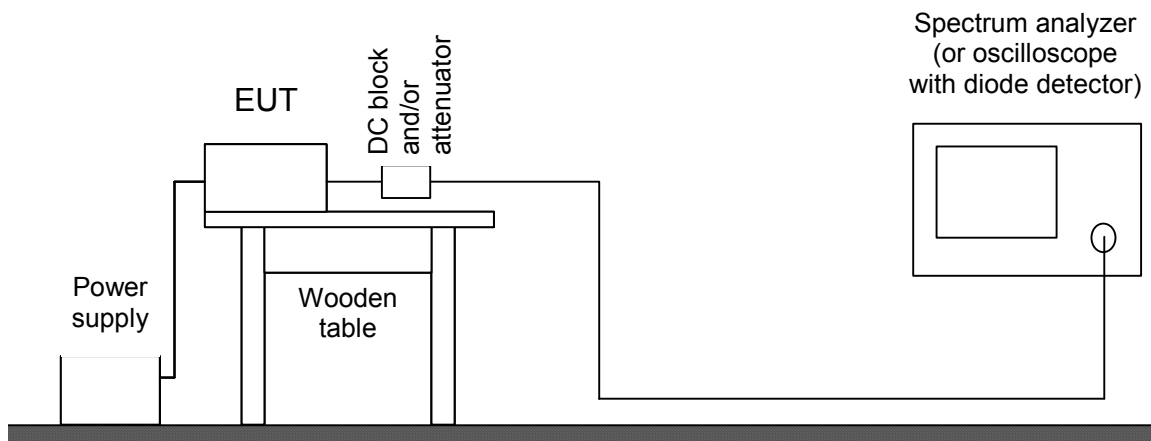
Measurement Procedure:	
Rules and specifications:	CFR 47 Part 2, section 2.202(a) CFR 47 Part 15, section 15.215(c) IC RSS-210 Issue 5, section 5.9.1 IC RSS-210 Issue 5, section 6.1.1(c) ANSI C63.4, annex H.6
Guide:	ANSI C63.4 / IC RSS-210 Issue 5, section 5.9.1
Measurement setup:	<input type="checkbox"/> Conducted: See below <input checked="" type="checkbox"/> Radiated: Radiated Emission in Fully or Semi Anechoic Room (6.3)
<p>If antenna is detachable bandwidth measurements shall be performed at the antenna connector (conducted measurement) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The RF output terminals are connected to a spectrum analyzer. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). The electrical characteristics of the radio frequency load attached to the output terminals shall be stated, if applicable.</p> <p>If radiated measurements are performed the same test setups and instruments are used as with radiated emission measurements for the appropriate frequency range.</p> <p>The analyzer settings are specified by the test description of the appropriate test record(s).</p>	





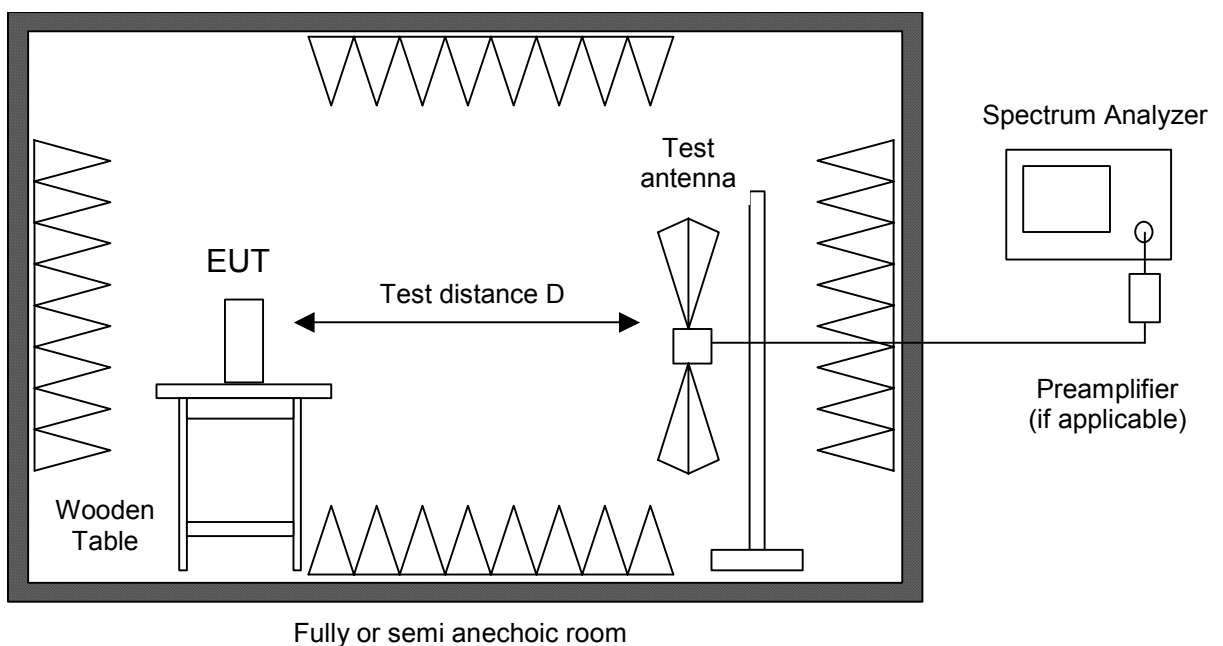
## 6.2 Pulse Train Measurement

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, section 15.35(c) IC RSS-210 Issue 5, section 6.5
Guide:	ANSI C63.4
Measurement setup:	<input type="checkbox"/> Conducted: See below (direct connection or via test fixture) <input checked="" type="checkbox"/> Radiated: Radiated Emission in Fully or Semi Anechoic Room (6.3)
<p>If antenna is detachable pulse train measurements shall be performed at the antenna connector (conducted measurement). The RF output terminals are connected to a spectrum analyzer or to a diode detector in combination with an oscilloscope. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). The electrical characteristics of the radio frequency load attached to the output terminals shall be stated, if applicable.</p> <p>If antenna is not detachable a test fixture may be used instead of direct connection to RF output terminals.</p> <p>If radiated measurements are performed similar test setups and instruments are used as with radiated emission measurements for the appropriate frequency range. However, the spectrum analyzer may be replaced by a diode detector connected to an oscilloscope.</p>	



### 6.3 Radiated Emission in Fully or Semi Anechoic Room

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.215(b) and 15.249 IC RSS-210 Issue 5, section 6.2.2 (m2)
Guide:	ANSI C63.4
<p>Radiated emission in fully or semi anechoic room is measured in the frequency range from 30 MHz to the maximum frequency as specified in CFR 47 Part 15 section 15.33.</p> <p>Measurements are made in both the horizontal and vertical planes of polarization in a fully anechoic room using a spectrum analyzer with the detector function set to peak and resolution as well as video bandwidth set to 100 kHz (below 1 GHz) or 1 MHz (above 1 GHz).</p> <p>Testing up to 1 GHz is performed with a linear polarized logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna"). For testing above 1 GHz horn antennas are used.</p> <p>All tests below 18 GHz are performed at a test distance D of 3 meters. For higher frequencies the test distance is reduced (e.g. to 1 meter) due to the sensitivity of the measuring instrument(s) and the test results are calculated according to CFR 47 Part 15 section 15.31(f)(1) using an extrapolation factor of 20 dB/decade. If required, preamplifiers are used for the whole frequency range. Special care is taken to avoid overload, using appropriate attenuators and filters, if necessary.</p> <p>If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35(c). If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.</p> <p>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.</p> <p>During testing the EUT is rotated all around to find the maximum levels of emissions. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.</p> <p>For final testing below 1 GHz an open field test-site is used and the plots recorded in the fully or semi anechoic room are indicated as prescans.</p>	

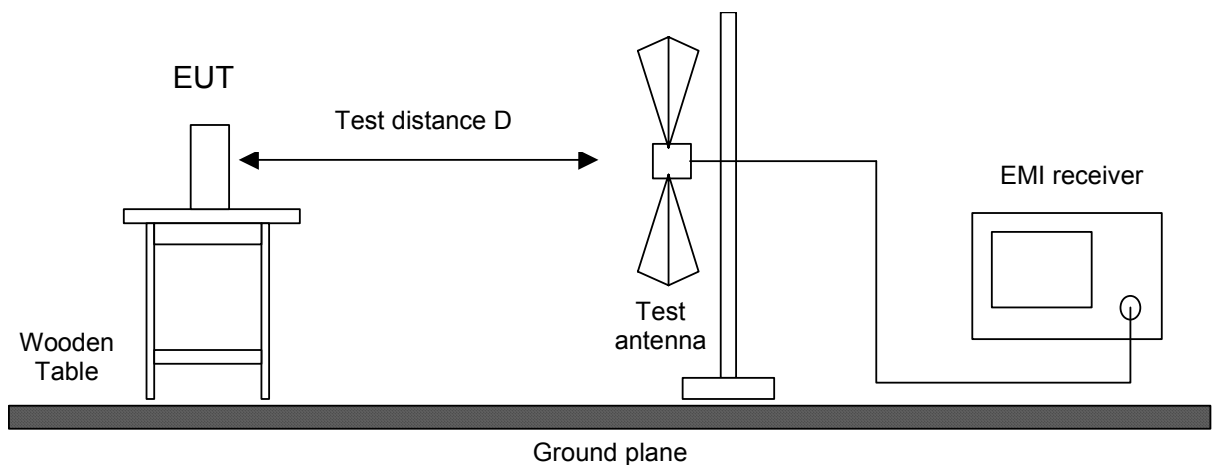


Test instruments used:

Used	Type	Model	Serial No. or ID	Manufacturer
<input checked="" type="checkbox"/>	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
<input type="checkbox"/>	Spectrum analyzer	R 3271	05050023	Advantest
<input type="checkbox"/>	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
<input checked="" type="checkbox"/>	Preamplifier	CPA9231A	3393	Schaffner
<input type="checkbox"/>	Preamplifier	R14601		Advantest
<input checked="" type="checkbox"/>	Preamplifier 1-8 GHz	AFS3-00100800-32-LN	847743	Miteq
<input type="checkbox"/>	Preamplifier 0.5-8 GHz	AMF-4D-005080-25-13P	860149	Miteq
<input type="checkbox"/>	Preamplifier 8-18 GHz	ACO/180-3530	32641	CTT
<input type="checkbox"/>	External Mixer	WM782A	845881/005	Tektronix
<input type="checkbox"/>	Harmonic Mixer	FS-Z30	843389/007	Rohde & Schwarz
	Accessories			
<input checked="" type="checkbox"/>	Trilog broadband antenna	VULB 9163	9163-188	Schwarzbeck
<input type="checkbox"/>	Horn antenna	3115	9508-4553	EMCO
<input type="checkbox"/>	Horn antenna	3160-03	9112-1003	EMCO
<input type="checkbox"/>	Horn antenna	3160-04	9112-1001	EMCO
<input checked="" type="checkbox"/>	Horn antenna	3160-05	9112-1001	EMCO
<input checked="" type="checkbox"/>	Horn antenna	3160-06	9112-1001	EMCO
<input checked="" type="checkbox"/>	Horn antenna	3160-07	9112-1008	EMCO
<input type="checkbox"/>	Horn antenna	3160-08	9112-1002	EMCO
<input type="checkbox"/>	Horn antenna	3160-09	9403-1025	EMCO
<input type="checkbox"/>	Horn antenna	3160-10	399185	EMCO
<input type="checkbox"/>	Fully anechoic room	No. 2	1452	Albatross Projects
<input type="checkbox"/>	Semi-anechoic room	No. 3	1453	Siemens

## 6.4 Radiated Emission at Open Field Test Site

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.215(b) and 15.249 IC RSS-210 Issue 5, section 6.2.2 (m2)
Guide:	ANSI C63.4
<p>Radiated emission at open field test site is measured in the frequency range 30 MHz to 1 GHz using a biconical antenna up to 300 MHz and a logarithmic periodic antenna above. The measurement bandwidth of the test receiver is set to 120 kHz with quasi-peak detector selected.</p> <p>If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35(c). If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.</p> <p>Hand-held or body-worn devices are tested in the position producing the highest emission relative to the limit as verified by prescans in the fully anechoic room. EUT is rotated all around and receiving antenna is raised and lowered within 1 meter to 4 meters to find the maximum levels of emission. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.</p> <p>For measuring emissions of intentional radiators and receivers a test distance D of 3 meters is selected. Testing of unintentional radiators is performed at a distance of 10 meters. If limits specified for 3 meters shall be used for measurements performed at 10 meters distance the limits are calculated according to CFR 47 Part 15 section 15.31(d) and (f)(1) using an inverse linear-distance extrapolation factor of 20 dB/decade.</p>	



Test instruments used:

Used	Type	Model	Serial No. or ID	Manufacturer
<input checked="" type="checkbox"/>	EMI receiver	ESVP	881414/009	Rohde & Schwarz
<input type="checkbox"/>	Biconical antenna	EG 1 HK 116	842204/001	Rohde & Schwarz
<input checked="" type="checkbox"/>	Log. per. antenna	EG 1 HL 223	841516/023	Rohde & Schwarz
<input checked="" type="checkbox"/>	Open field test site	EG 1	1450	Senton

## **7 Photographs Taken During Testing**

**Test setup for radiated emission measurement  
(fully anechoic room)**



**Test setup for radiated emission measurement  
(open field test site)**



## 8 Test Results

FCC CFR 47 Parts 2 and 15			
<i>Section(s)</i>	<i>Test</i>	<i>Page</i>	<i>Result</i>
2.1046(a)	Conducted output power	---	Not applicable
2.202(a)	Occupied bandwidth	18	Recorded
15.215(c)	Bandwidth of the emission	21	Test passed
2.201, 2.202	Class of emission	23	Calculated
15.35(c)	Pulse train measurement for pulsed operation	24	Recorded
15.205(a)	Restricted bands of operation	27	Test passed
15.207	Conducted AC powerline emission 150 kHz to 30 MHz	---	Not applicable
15.205(b) 15.249	Radiated emission 9 kHz to 30 MHz	---	Not applicable according to CFR 47 Part 15, section 15.33(a)
15.205(b) 15.215(b) 15.249	Radiated emission 30 MHz to 10 GHz	29	Test passed



<b>IC RSS-210 Issue 5</b>			
<i>Section(s)</i>	<i>Test</i>	<i>Page</i>	<i>Result</i>
10	Antenna conducted output power	---	Not applicable
5.9.1	Emission bandwidth	21	Recorded
5.9.2	Designation of emissions	23	Calculated
6.5	Pulsed operation	24	Recorded
6.3(a)	Restricted bands and unwanted emission frequencies	27	Test passed
6.6	Transmitter AC wireline conducted emissions 450 kHz to 30 MHz	---	Not applicable
6.2.2(m2) 6.3(b)-(d)	Field strength of emissions 9 kHz to 30 MHz	---	Not applicable according to IC RSS-210 Issue 5, section 6.3(e)
6.2.2(m2) 6.3(b)-(d)	Field strength of emissions 30 MHz to 10 GHz	29	Test passed
14 / RSS-102 Issue 1 Sect. 4.1	Exposure of humans to RF fields	30	Test passed

## 8.1 Occupied Bandwidth

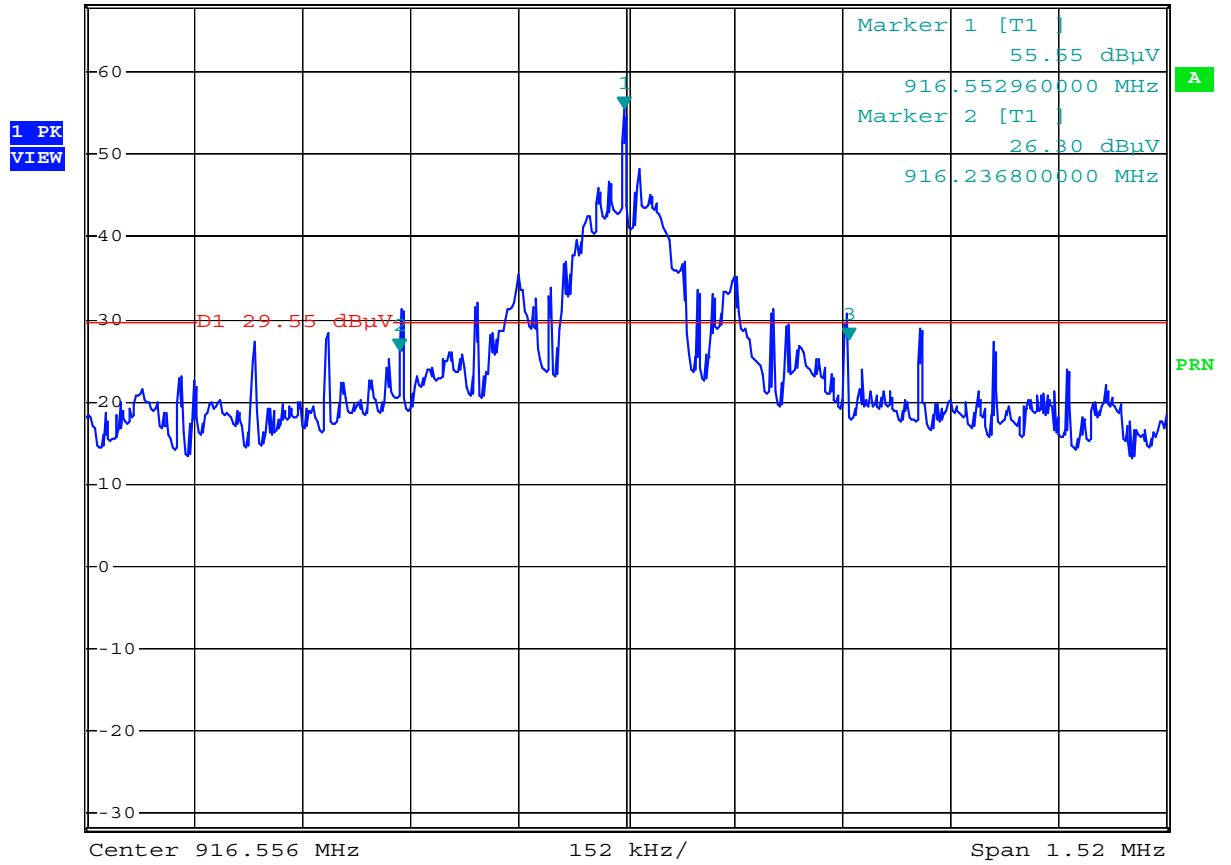
Rules and specifications:	CFR 47 Part 2, section 2.202(a) ANSI C63.4, annex H.6	
Guide:	ANSI C63.4	
Description:	<p>The occupied bandwidth according to CFR 47 Part 2, section 2.202(a), is measured as the 99% emission bandwidth, i.e. below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5% of the total mean power radiated by a given emission.</p> <p>The occupied bandwidth according to ANSI C63.4, annex H.6; is measured as the frequency range defined by the points that are 26 dB down relative to the maximum level of the modulated carrier.</p> <p>The resolution bandwidth of the spectrum analyzer shall be set to a value greater than 5.0% of the allowed bandwidth. If no bandwidth specifications are given, the following guidelines are used:</p>	
	Fundamental frequency	Minimum resolution bandwidth
	9 kHz to 30 MHz	1 kHz
	30 MHz to 1000 MHz	10 kHz
	1000 MHz to 40 GHz	100 kHz
	The video bandwidth shall be at least three times greater than the resolution bandwidth.	
Measurement procedure:	Bandwidth Measurements (6.1)	

Comment:	
Date of test:	September 2, 2005
Test site:	Fully anechoic room, cabin no. 2

**Occupied Bandwidth (99 %):**



\*RBW 3 kHz      Marker 3 [T1 ]  
 \*VBW 100 kHz      27.53 dBµV  
 Ref 68.1 dBµV      \*Att 0 dB      SWT 170 ms      916.869120000 MHz



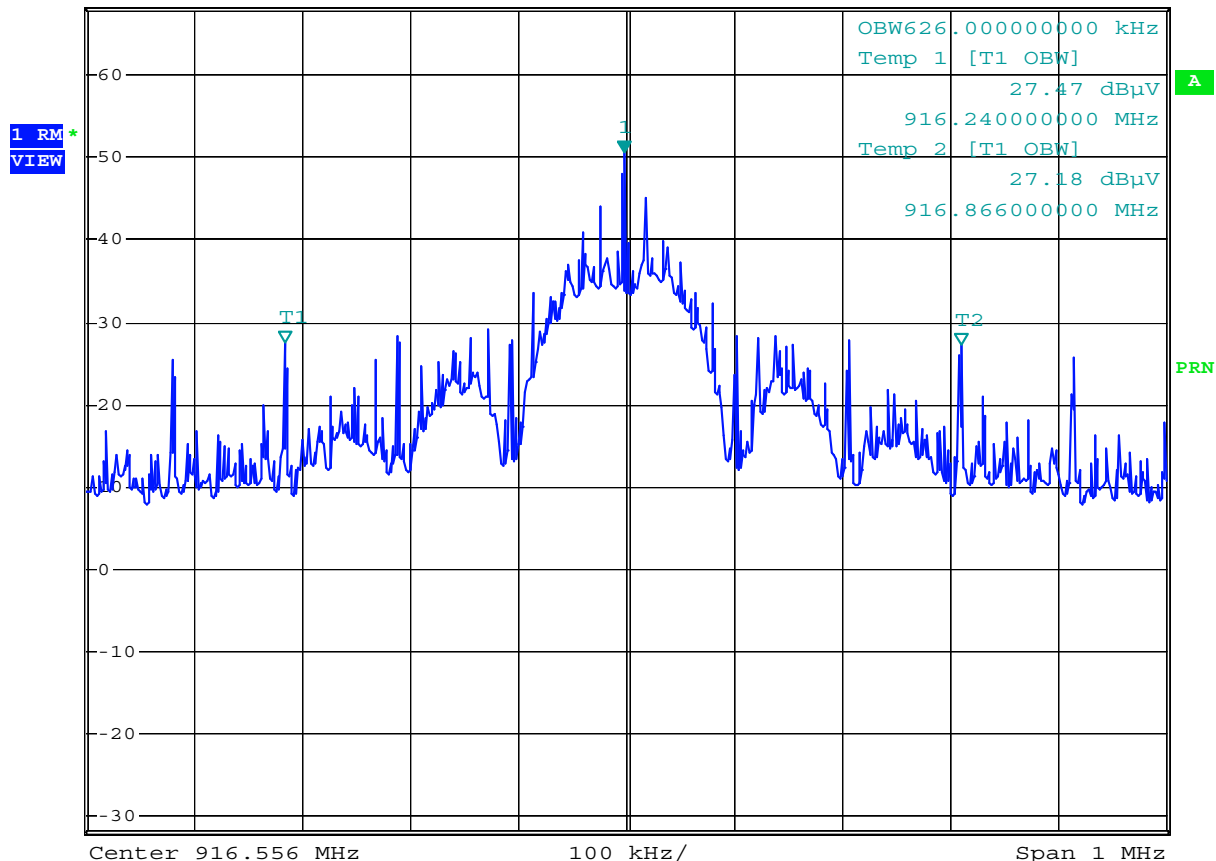
Comment: Identec 050446: Occupied Bandwidth  
 Date: 2.SEP.2005 10:40:27

Occupied Bandwidth (99 %):	<b>632.32 kHz</b>
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**Occupied Bandwidth (-26 dB):**



\*RBW 1 kHz      Marker 1 [T1 ]  
 \*VBW 100 kHz      50.60 dBμV  
 Ref 68.1 dBμV      \*Att 0 dB      SWT 1 s      916.554000000 MHz



Comment: Identec 050446: Occupied Bandwidth  
 Date: 2.SEP.2005 10:37:58

Occupied Bandwidth (-26 dB): **626.00 kHz**

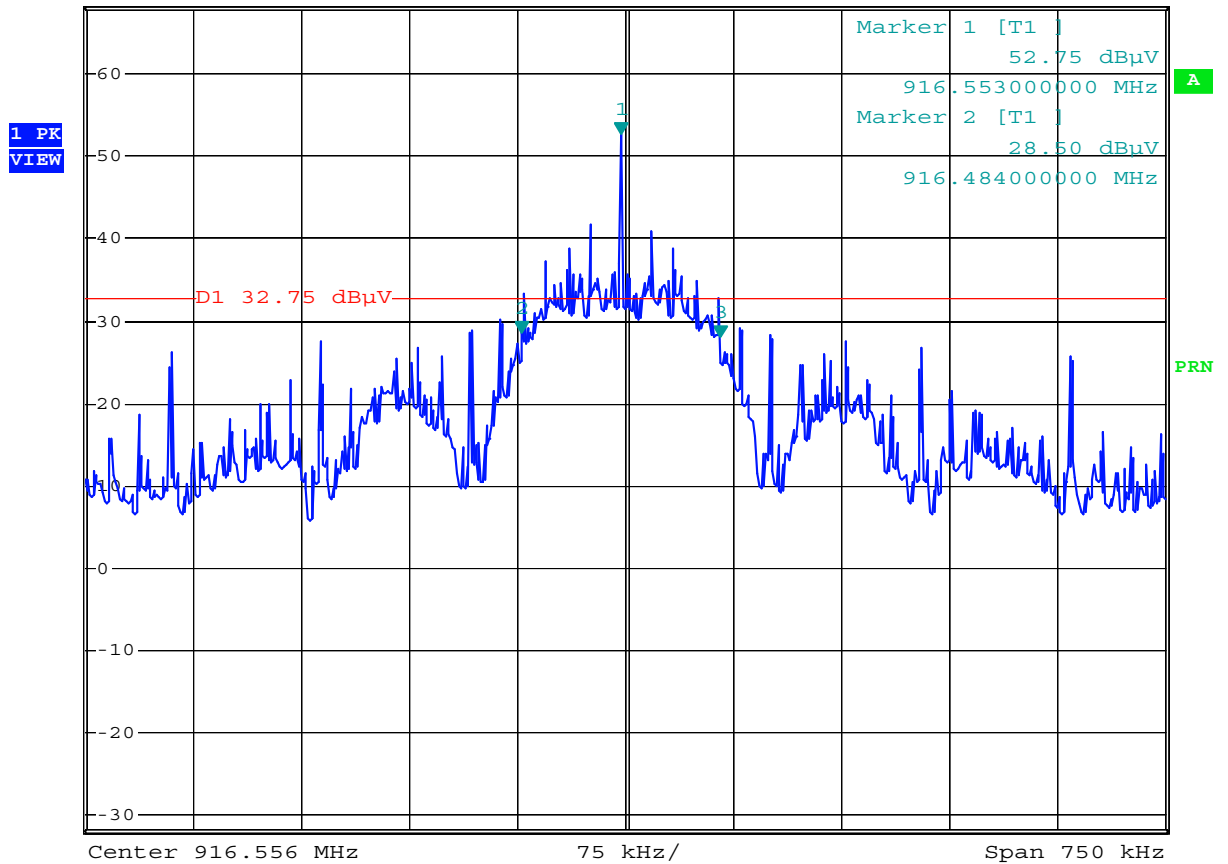
## 8.2 Emission Bandwidth

Rules and specifications:	CFR 47 Part 15, section 15.215(c) IC RSS-210 Issue 5, section 5.9.1
Guide:	ANSI C63.4 / IC RSS-210 Issue 5, section 5.9.1
Description:	The 20 dB bandwidth is measured at the points when the spectral density of the signal is 20 dB down from the inband spectral density of the modulated signal, with the transmitter modulated by a representative signal. Spectral density (power per unit bandwidth) is measured with a spectrum analyzer with resolution bandwidth set to 300 Hz or alternatively equal to approximately 1.0% of the emission bandwidth. The video bandwidth shall be at least three times greater than the resolution bandwidth.
Measurement procedure:	Bandwidth Measurements (6.1)

Comment:	
Date of test:	September 2, 2005
Test site:	Fully anechoic room, cabin no. 2



\*RBW 300 Hz    Marker 3 [T1 ]  
 \*VBW 100 kHz                    28.10 dBμV  
 Ref 68.1 dBμV    \*Att 0 dB    SWT 8.4 s    916.622000000 MHz



Comment: Identec 050446: Emission Bandwidth  
 Date: 2.SEP.2005 10:47:35

Permitted frequency band:	<b>902 - 928 MHz</b>	
Emission frequency range:		
Emission bandwidth:	<b>138 kHz</b>	
Carrier frequency stability:	<input type="checkbox"/> specified	<input checked="" type="checkbox"/> not specified
Maximum frequency tolerances:	+..... kHz - ..... kHz	
Frequency range of the emission:	<b>within permitted frequency band<sup>5</sup>:</b>	
Bandwidth of the emission:	..... kHz <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	

Test Result:	Test passed
--------------	-------------

<sup>5</sup> If a frequency stability is not specified, it is recommended that the fundamental emission is kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

### 8.3 Designation of Emissions

Rules and specifications:	CFR 47 Part 2, sections 2.201 and 2.202 IC RSS-210 Issue 5, section 5.9.2
Guide:	ANSI C63.4 / TRC-43

Type of modulation:	Amplitude Modulation
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$B_n$ = Necessary Bandwidth	$B_n = 2BK$
$B$ = Modulation rate	$B = 5 \text{ kHz}$
$K$ = Overall numerical factor	$K = 1$
Calculation:	$B_n = 2 \cdot (5 \text{ kHz}) \cdot 1 = 10 \text{ kHz}$

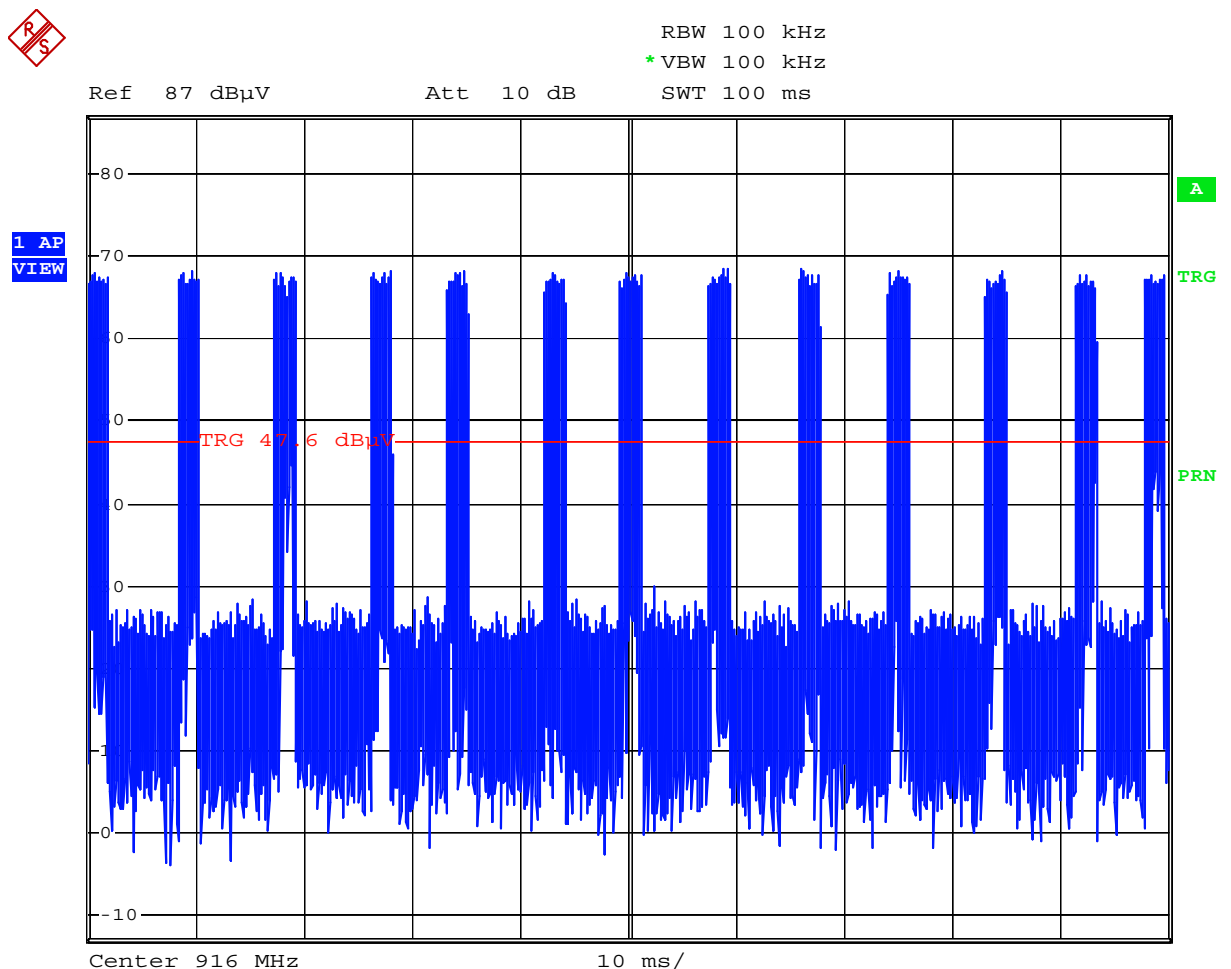
Designation of Emissions:	<b>10K0A1D</b>
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## 8.4 Pulse Train Measurement

Rules and specifications:	CFR 47 Part 15, section 15.35(c) IC RSS-210 Issue 5, section 6.5
Guide:	ANSI C63.4
Measurement procedure:	Pulse Train Measurement (6.2)

Comment:	
Date of test:	August 24, 2005
Test site:	Fully anechoic room, cabin no. 2

### Worst case 0.1 second interval:

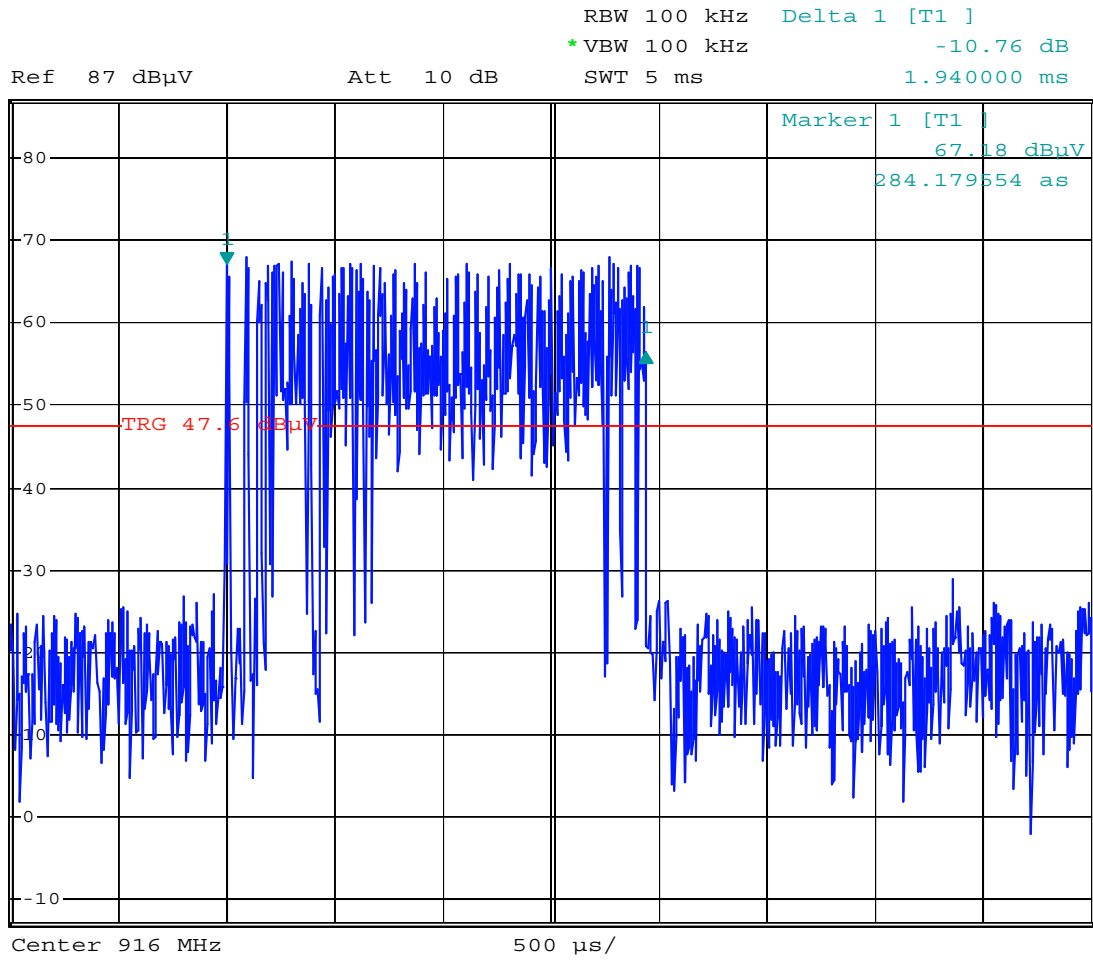


Comment: Identec 050446: Pulse Train (0.01s)  
 Date: 24.AUG.2005 10:55:25



**Calculation of pulse train correction:**

TX-On-Time (worst case):	$T_{on}$	=	$13 \cdot 1.94 \text{ ms} = 25.22 \text{ ms}$
Pulse Train Time:	$T_{pt}$	=	100 ms
Period Time:	$T_{period}$	=	100 ms
Pulse Train Correction:	$C_{pt}$	=	$20 \cdot \text{Log}(T_{on} / T_{period}) \text{ dB}$
		=	<b>-11.97 dB</b>



Comment: Identec 050446: Pulse Train (0.01s)  
Date: 24.AUG.2005 10:56:40

## 8.5 Restricted Bands of Operation

Rules and specifications:	CFR 47 Part 15, section 15.205(a) IC RSS-210 Issue 5, section 6.3(a)
Guide:	ANSI C63.4
Limit:	Only spurious emissions are permitted in any of the frequency bands listed in CFR 47 Part 15, section 15.205(a) or IC RSS-210 Issue 5, section 6.3(a).
Measurement procedure:	Radiated Emission in Fully or Semi Anechoic Room (6.3)

Comment:	
Date of test:	September 2, 2005
Test site:	Fully anechoic room, cabin no. 2
Test distance:	3 meters



## 8.6 Radiated Emission Measurement 30 MHz to 10 GHz

Rules and specifications:	CFR 47 Part 15, sections 15.215(b) and 15.249 IC RSS-210 Issue 5, section 6.2.2 (m2)		
Guide:	ANSI C63.4		
Limit:	Frequency of Emission (MHz)	Field Strength ( $\mu\text{V}/\text{m}$ )	Field Strength (dB $\mu\text{V}/\text{m}$ )
	30 - 88	100	40.0
	88 - 216	150	43.5
	216 - 960	200	46.0
	Above 960	500	54.0
	Additionally, the level of any unwanted emissions shall not exceed the level of the fundamental emission.		
Measurement procedures:	Radiated Emission in Fully or Semi Anechoic Room (6.3) Radiated Emission at Open Field Test Site (6.4)		

Comment:	
Date of test:	September 01, 2005
Test site:	Frequencies $\leq$ 1 GHz: Open field test site Frequencies $>$ 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	3 meters

Test Result:	Test passed
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Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dB $\mu\text{V}$ )	Correction Factor (dB/m)	Pulse Train Correction (dB)	Final Value (dB $\mu\text{V}/\text{m}$ )	Limit (dB $\mu\text{V}/\text{m}$ )	Margin (dB)
916.560	vertical	Quasi-Peak	60.1	26.8		86.9	94.0	7.1
1834.000	vertical	Peak	20.1	31.2	-12.0	39.3	54.0	14.7

### Sample calculation of final values:

$$\text{Final Value (dB}\mu\text{V/m)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB/m)} + \text{Pulse Train Correction (dB)}$$

## 8.7 Exposure of Humans to RF Fields

Rules and specifications:	IC RSS-210 Issue 5, section 14
Guide:	IC RSS-102 Issue 1, section 4.1

Exposure of Humans to RF Fields	Applicable	Declared by applicant	Measured	Exemption				
<b>The transmitter is for</b>								
<input checked="" type="checkbox"/> fixed use <input type="checkbox"/> mobile use <input type="checkbox"/> portable use		<input checked="" type="checkbox"/>		<input type="checkbox"/>				
<b>The antenna is</b>								
<input type="checkbox"/> detachable								
The output power (TP in watts) is measured at the antenna connector: $TP = \dots\dots\dots \text{W}$ Numerical gain of the antenna: $G = \dots\dots\dots$							<input type="checkbox"/>	
<input checked="" type="checkbox"/> not detachable								
A field strength measurement is used to determine the output power (TP in watts) given by <sup>6</sup> : $TP = \frac{(FS \cdot D)^2}{30 \cdot G} \Rightarrow TP = 146.9 \mu\text{W}$ with: Field strength <sup>7</sup> in V/m: $FS = 22.13 \text{ mV/m}$ Distance between the two antennas in m: $D = 3 \text{ m}$ Numerical gain of the antenna: $G = 1$								<input type="checkbox"/>
<b>SAR and RF evaluation</b>								
$EIRP = G \cdot TP \Rightarrow EIRP = \dots\dots\dots \text{W}$								
<input checked="" type="checkbox"/> Transmitter is operating at frequencies below 1.0 GHz with an output power TP equal to or less than 200 milliwatts (mW). <input type="checkbox"/> Transmitter is operating at frequencies between 1.0 and 2.2 GHz with an output power TP equal to or less than 100 milliwatts (mW). <input type="checkbox"/> Transmitter is for mobile use and operating frequency is below 1.5 GHz with effective radiated power (ERP) of 1.5 watts or less (i.e. EIRP of 2.5 watts or less). <input type="checkbox"/> Transmitter is for mobile use and operating frequency is above 1.5 GHz with ERP of 3 watts or less (i.e. EIRP of 5 watts or less). <input type="checkbox"/> SAR and/or RF evaluation is documented in test report no. ....								<input type="checkbox"/>

<sup>6</sup> The conversion formula is valid only for properly matched antennas. In other cases the transmitter output power may have to be measured by a terminated measurement when applying the exemption clauses.

<sup>7</sup> If an open area test site is used for field strength measurement, the effect due to the metal ground reflecting plane should be subtracted from the maximum field strength value in order to reference it to free space, before calculating TP.

## 9 Referenced Regulations

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

<input checked="" type="checkbox"/>	CFR 47 Part 2	Code of Federal Regulations Part 2 (Frequency allocation and radio treaty matters; General rules and regulations) of the Federal Communication Commission (FCC)	October 10, 2004
<input checked="" type="checkbox"/>	CFR 47 Part 15	Code of Federal Regulations Part 15 (Radio Frequency Devices) of the Federal Communication Commission (FCC)	April 5, 2005
<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 to 40 GHz	December 11, 2003 (published on January 30, 2004)
<input checked="" type="checkbox"/>	RSS-210	Radio Standards Specification RSS-210 Issue 5 for Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands), published by Industry Canada	November 2001
<input checked="" type="checkbox"/>	RSS-102	Radio Standards Specification RSS-102 Issue 1: Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields, published by Industry Canada	September 1999
<input type="checkbox"/>	ICES-003	Interference-Causing Equipment Standard ICES-003 Issue 4 for Digital Apparatus, published by Industry Canada	February 2004
<input checked="" type="checkbox"/>	CISPR 22	Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, "Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement"	1997
<input type="checkbox"/>	CAN/CSA-CEI/IEC CISPR 22	Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment	2002
<input checked="" type="checkbox"/>	TRC-43	Notes Regarding Designation of Emission (Including Necessary Bandwidth and Classification), Class of Station and Nature of Service, published by Industry Canada	October 9, 1982

## 10 Charts taken during testing



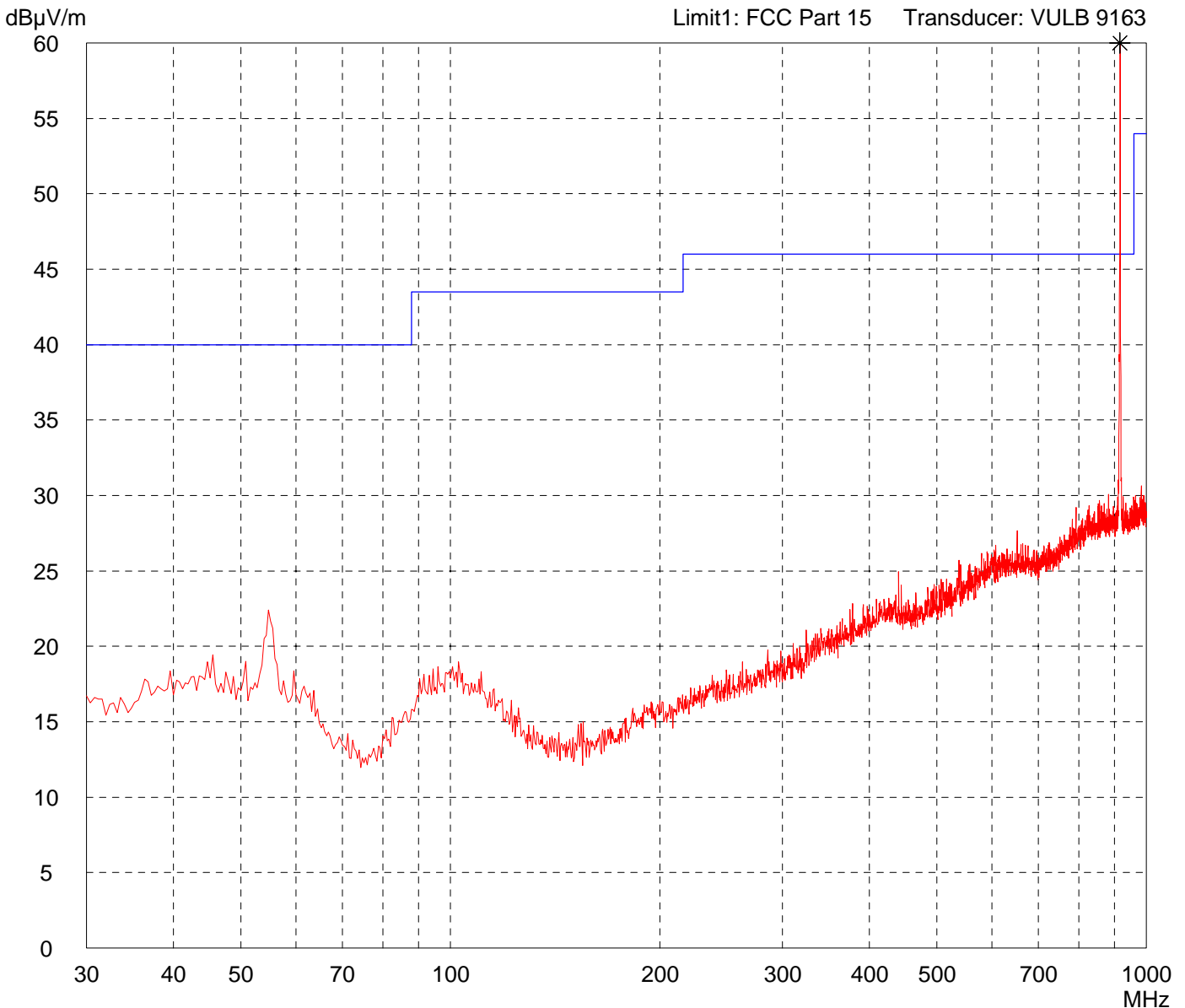
# Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: i-B2	
Serial no.: 0.300.002.002	
Applicant: Identec Solutions AG	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 09/01/2005	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - internal battery supply - EUT in vertical position - Mode: 0.01 s	
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Detector: Peak
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List of values: 10 dB Margin	50 Subranges
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Result: Prescan
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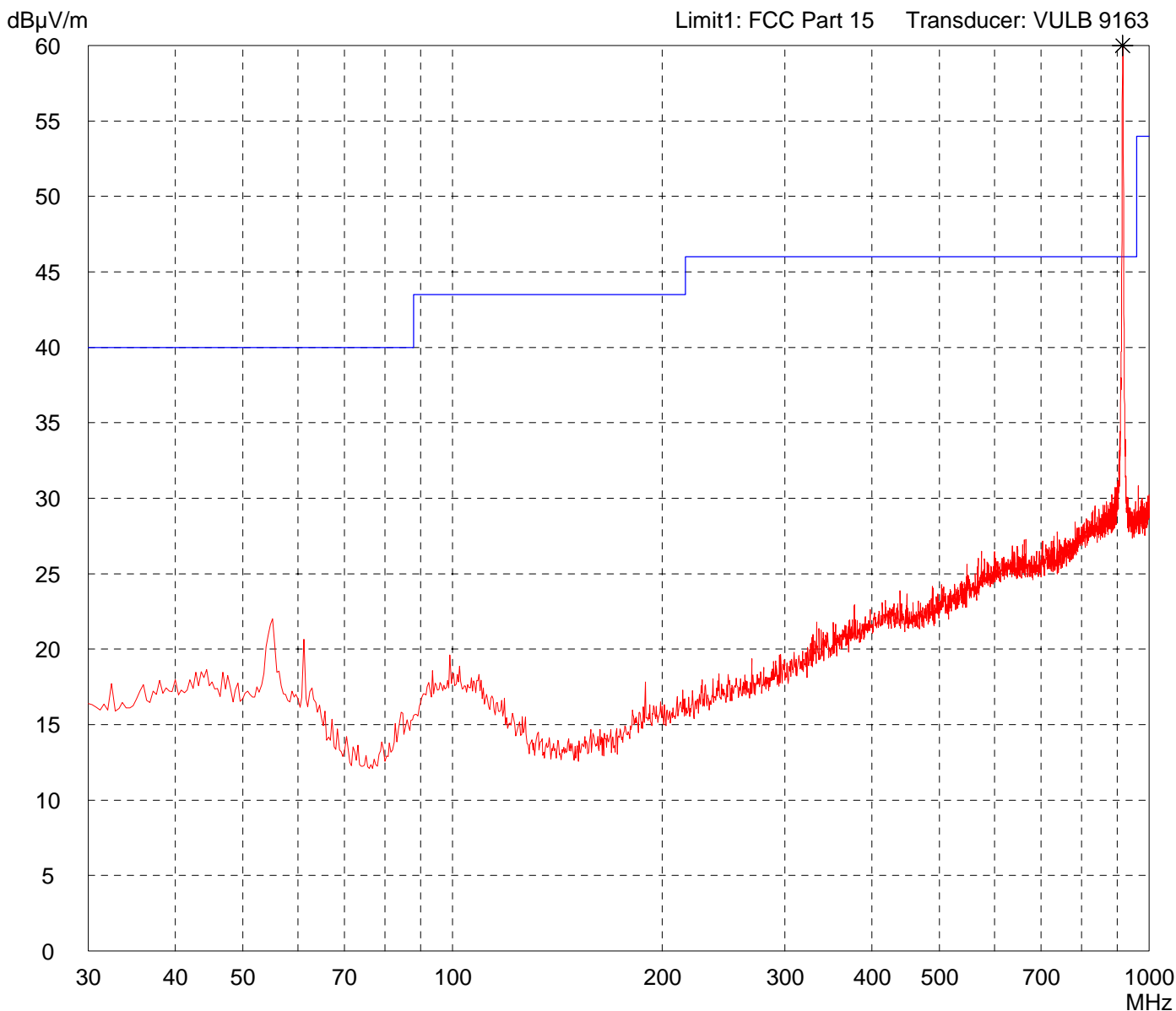
# Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: i-B2	
Serial no.: 0.300.002.002	
Applicant: Identec Solutions AG	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 09/01/2005	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - internal battery supply - EUT in vertical position - Mode: 0.01 s	
---	--

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

List of values: 10 dB Margin	50 Subranges
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Result: Prescan
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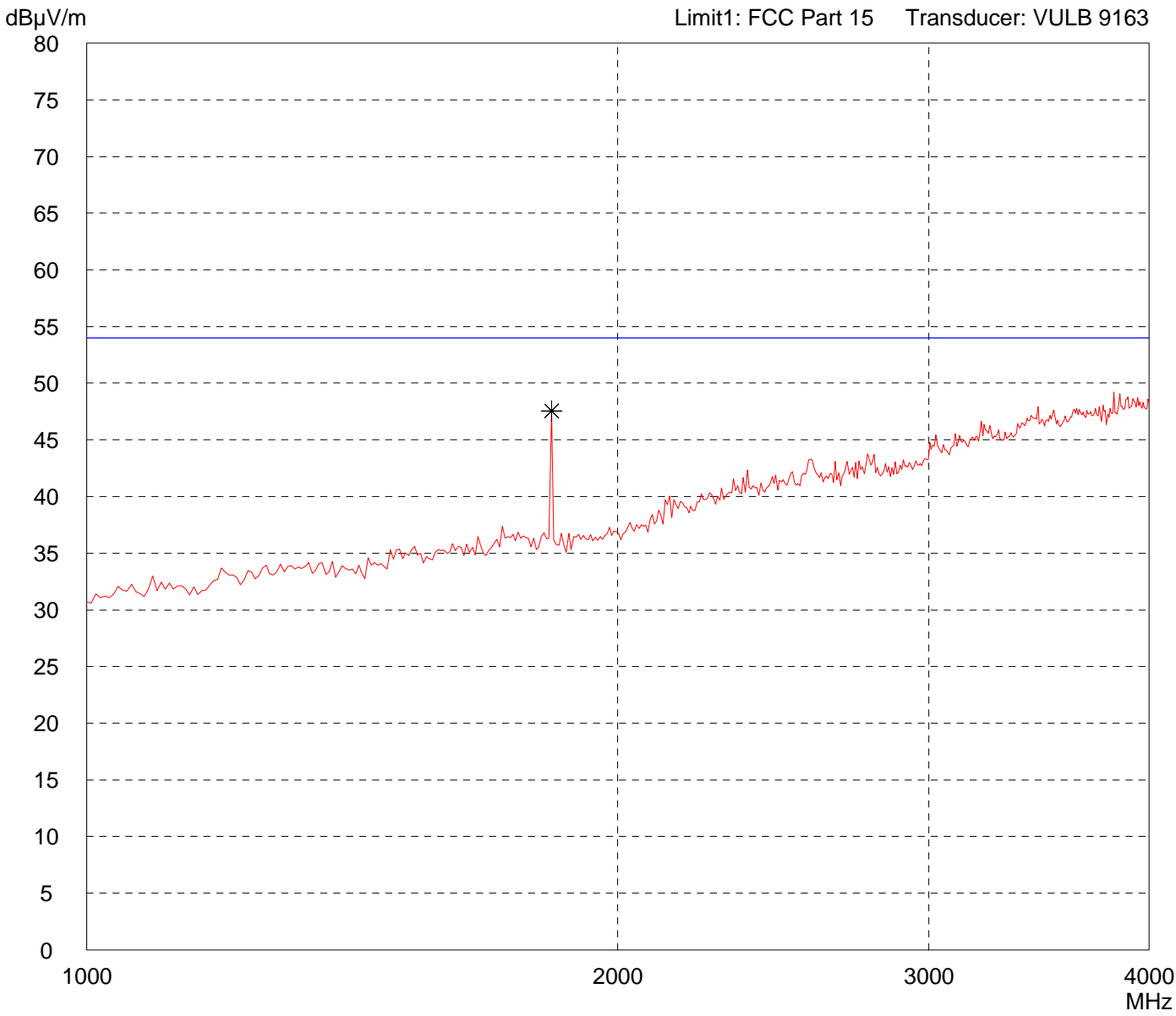
# Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: i-B2	
Serial no.: 0.300.002.002	
Applicant: Identec Solutions AG	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 09/01/2005	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - internal battery supply  - EUT in vertical position  - Mode: 0.01 s
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Detector: Peak
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List of values: Selected by hand
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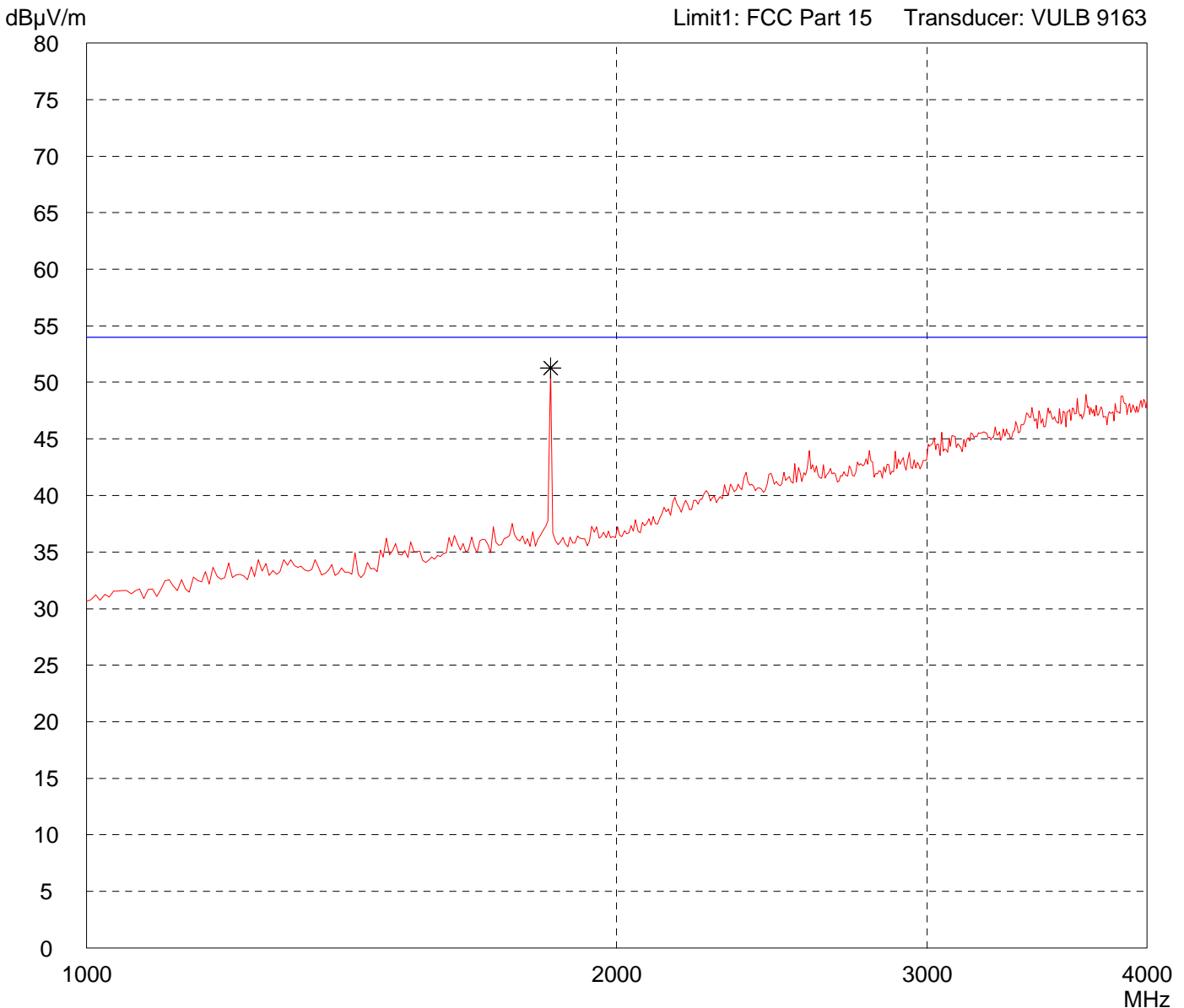


Result: Prescan
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# Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

<p>Model: <b>i-B2</b></p> <p>Serial no.: <b>0.300.002.002</b></p> <p>Applicant: <b>Identec Solutions AG</b></p> <p>Test site: <b>Fully anechoic room, cabin no. 2</b></p> <p>Tested on: <b>Test distance 3 metres Vertical Polarization</b></p> <p>Date of test: <b>09/01/2005</b>      Operator: <b>M. Steindl</b></p> <p>Test performed: <b>automatically</b>      File name: <b>default.emi</b></p>	<p>Comment:</p> <ul style="list-style-type: none"> <li>- internal battery supply</li> <li>- EUT in vertical position</li> <li>- Mode: 0.01 s</li> </ul>
<p>Detector: <b>Peak</b></p>	<p>List of values: <b>Selected by hand</b></p>

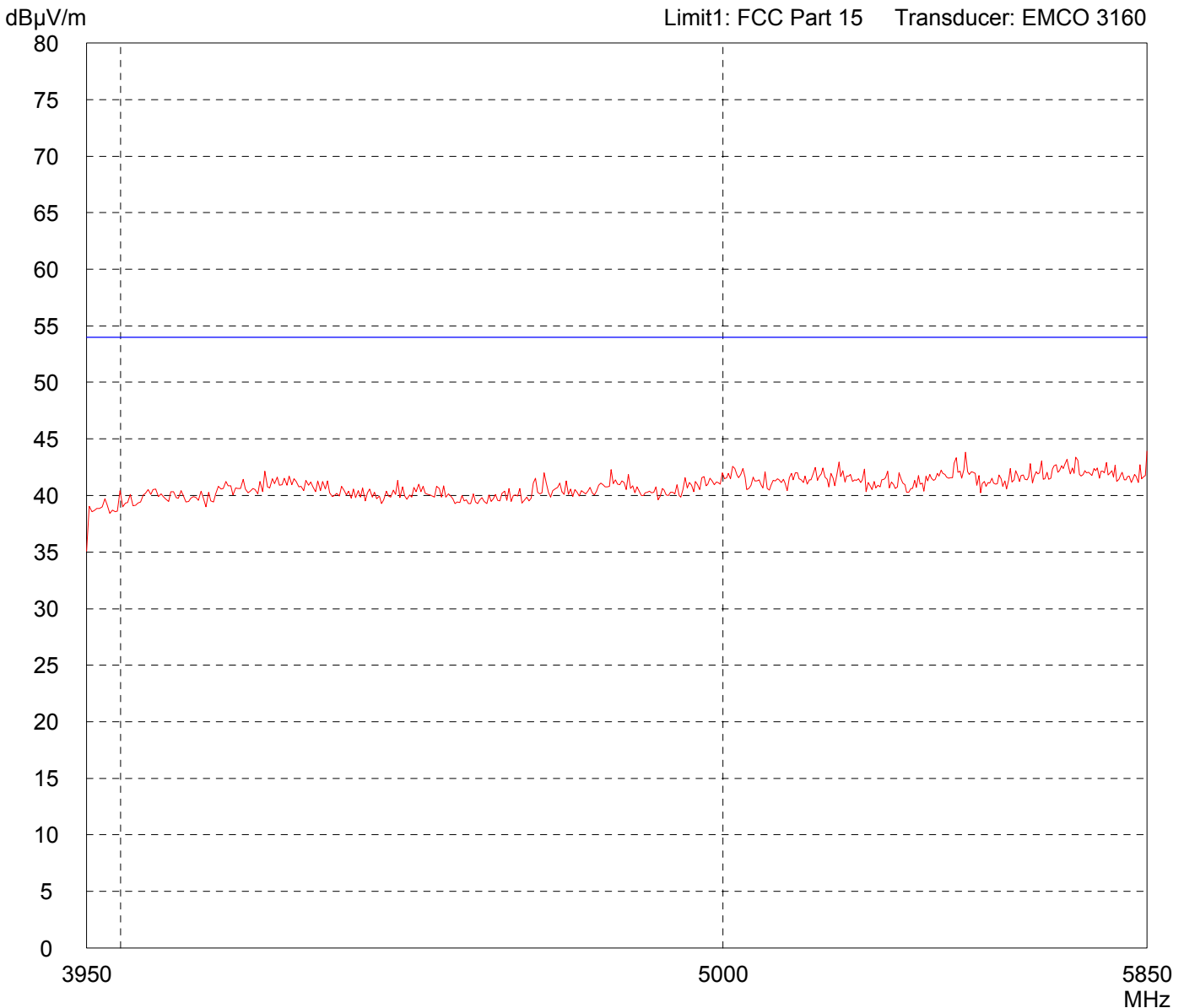


<p>Result: <b>Prescan</b></p>	<p>Project file: <b>55456-50446-2</b></p> <p style="text-align: right;">Page    of    Pages</p>
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# Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

<p>Model: <b>i-B2</b></p> <p>Serial no.: <b>0.300.002.002</b></p> <p>Applicant: <b>Identec Solutions AG</b></p> <p>Test site: <b>Fully anechoic room, cabin no. 2</b></p> <p>Tested on: <b>Test distance 3 metres Horizontal Polarization</b></p> <p>Date of test: <b>09/01/2005</b>      Operator: <b>M. Steindl</b></p> <p>Test performed: <b>automatically</b>      File name: <b>default.emi</b></p>	<p>Comment:</p> <ul style="list-style-type: none"> <li>- internal battery supply</li> <li>- EUT in vertical position</li> <li>- Mode: 0.01 s</li> </ul>
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<p>Detector: <b>Peak</b></p>	<p>List of values: <b>10 dB Margin                      50 Subranges</b></p>
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<p>Result: <b>Prescan</b></p>	<p>Project file: <b>55456-50446-2</b></p> <p style="text-align: right;">Page    of    Pages</p>
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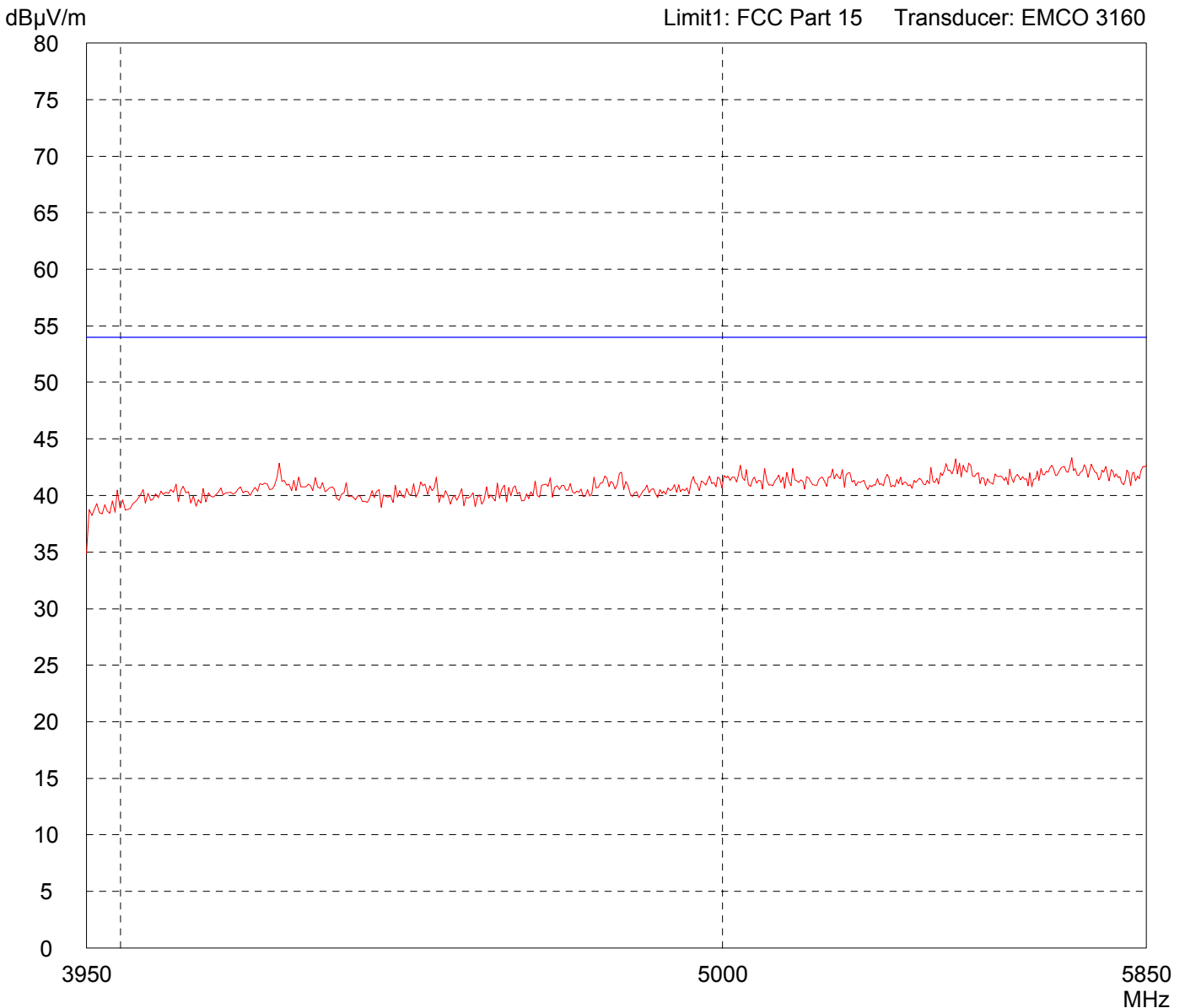
# Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 (EMCO 3160)

Model: i-B2	
Serial no.: 0.300.002.002	
Applicant: Identec Solutions AG	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 09/01/2005	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - internal battery supply  - EUT in vertical position  - Mode: 0.01 s	
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Detector: Peak
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List of values: 10 dB Margin	50 Subranges
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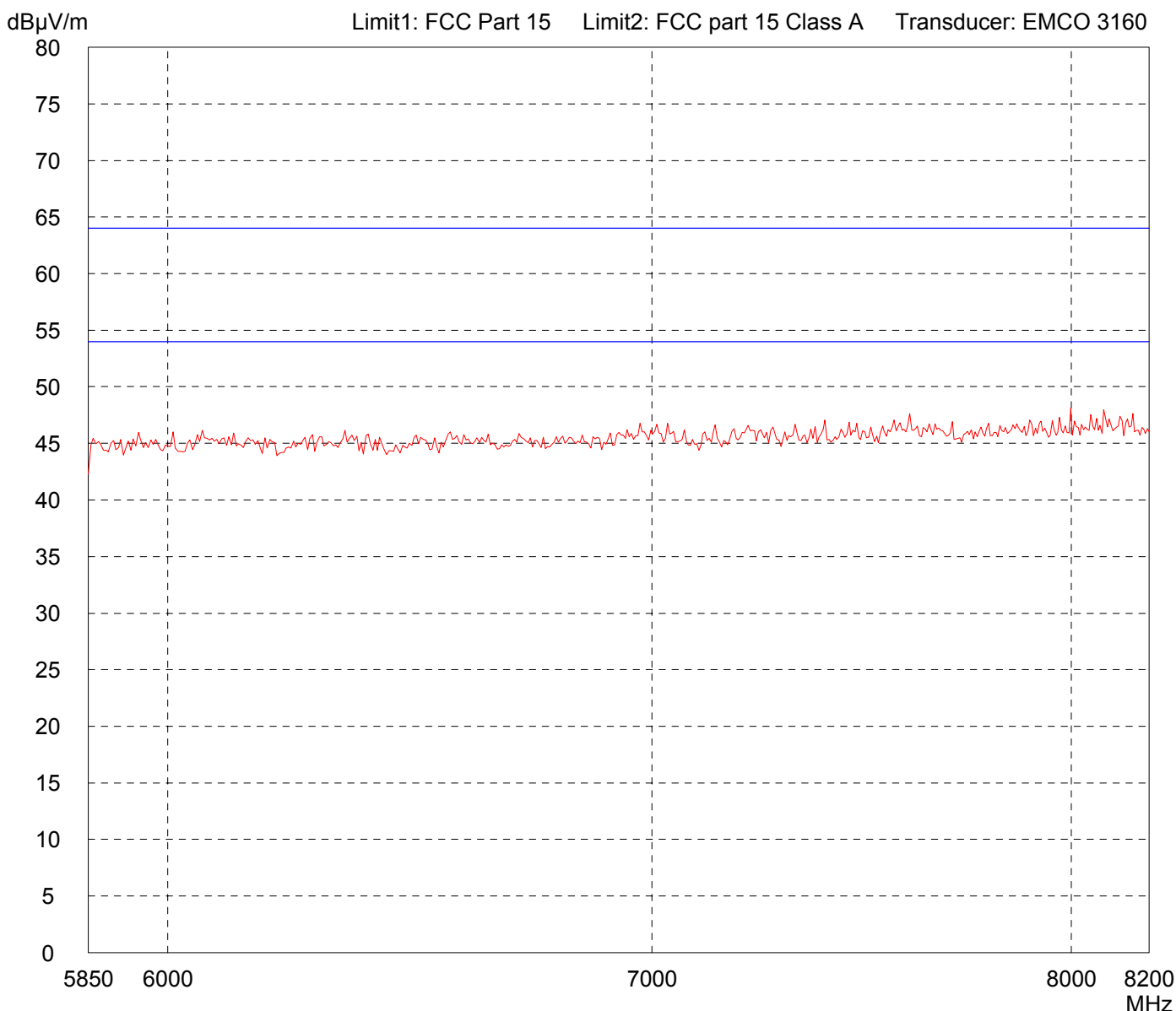


Result: Prescan
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Project file: 55456-50446-2	Page    of    Pages
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# Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 (EMCO 3160)

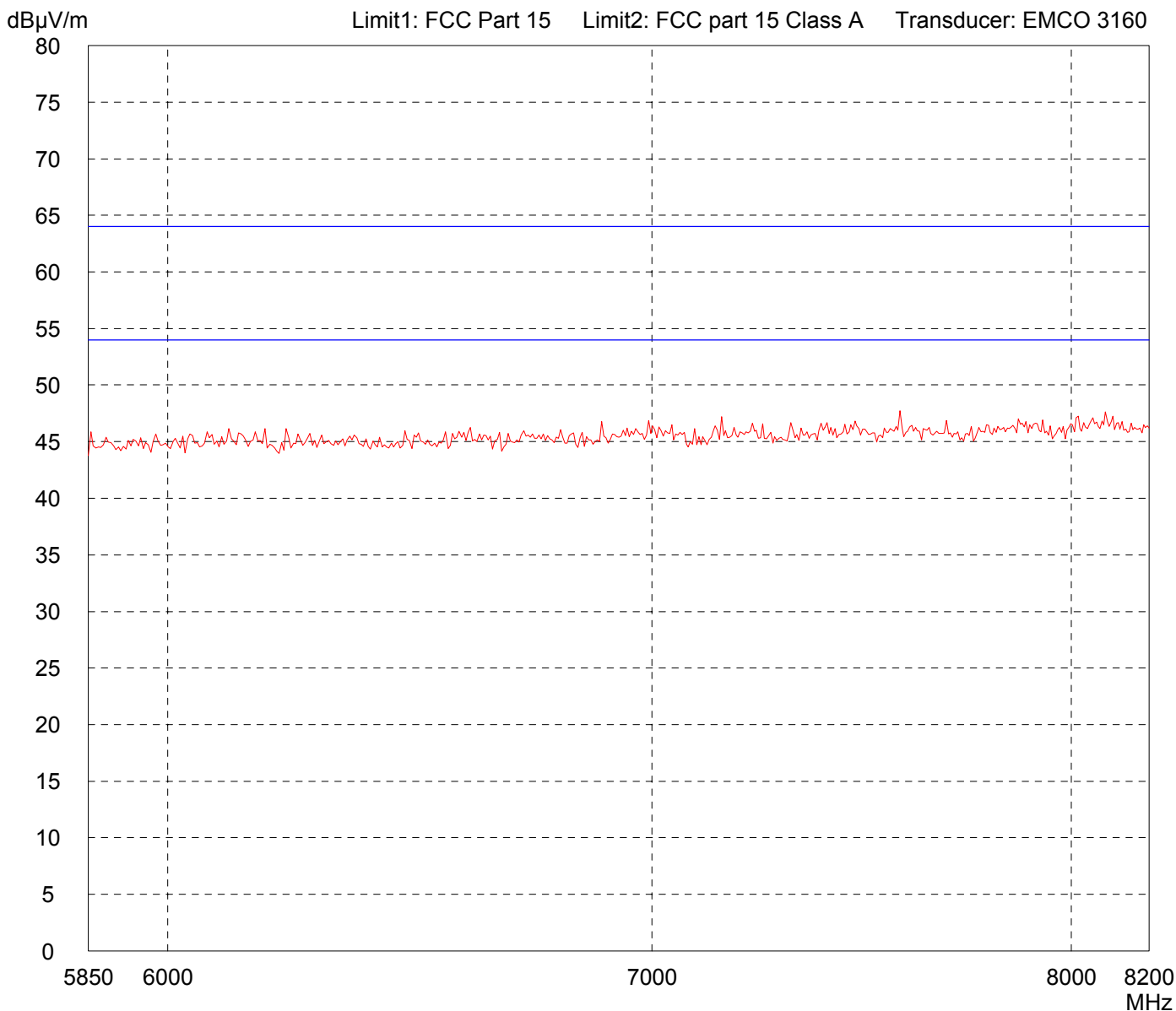
<p>Model: i-B2</p> <p>Serial no.: 0.300.002.002</p> <p>Applicant: Identec Solutions AG</p> <p>Test site: Fully anechoic room, cabin no. 2</p> <p>Tested on: Test distance 3 metres Horizontal Polarization</p> <p>Date of test: 09/01/2005      Operator: M. Steindl</p> <p>Test performed: automatically      File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> <li>- internal battery supply</li> <li>- EUT in vertical position</li> <li>- Mode: 0.01 s</li> </ul>
<p>Detector: Peak</p>	<p>List of values: Selected by hand</p>



<p>Result: Prescan</p>	<p>Project file: 55456-50446-2</p> <p style="text-align: right;">Page    of    Pages</p>
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# Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 (EMCO 3160)

<p>Model: i-B2</p> <p>Serial no.: 0.300.002.002</p> <p>Applicant: Identec Solutions AG</p> <p>Test site: Fully anechoic room, cabin no. 2</p> <p>Tested on: Test distance 3 metres Vertical Polarization</p> <p>Date of test: 09/01/2005      Operator: M. Steindl</p> <p>Test performed: automatically      File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> <li>- internal battery supply</li> <li>- EUT in vertical position</li> <li>- Mode: 0.01 s</li> </ul>
<p>Detector: Peak</p>	<p>List of values: Selected by hand</p>



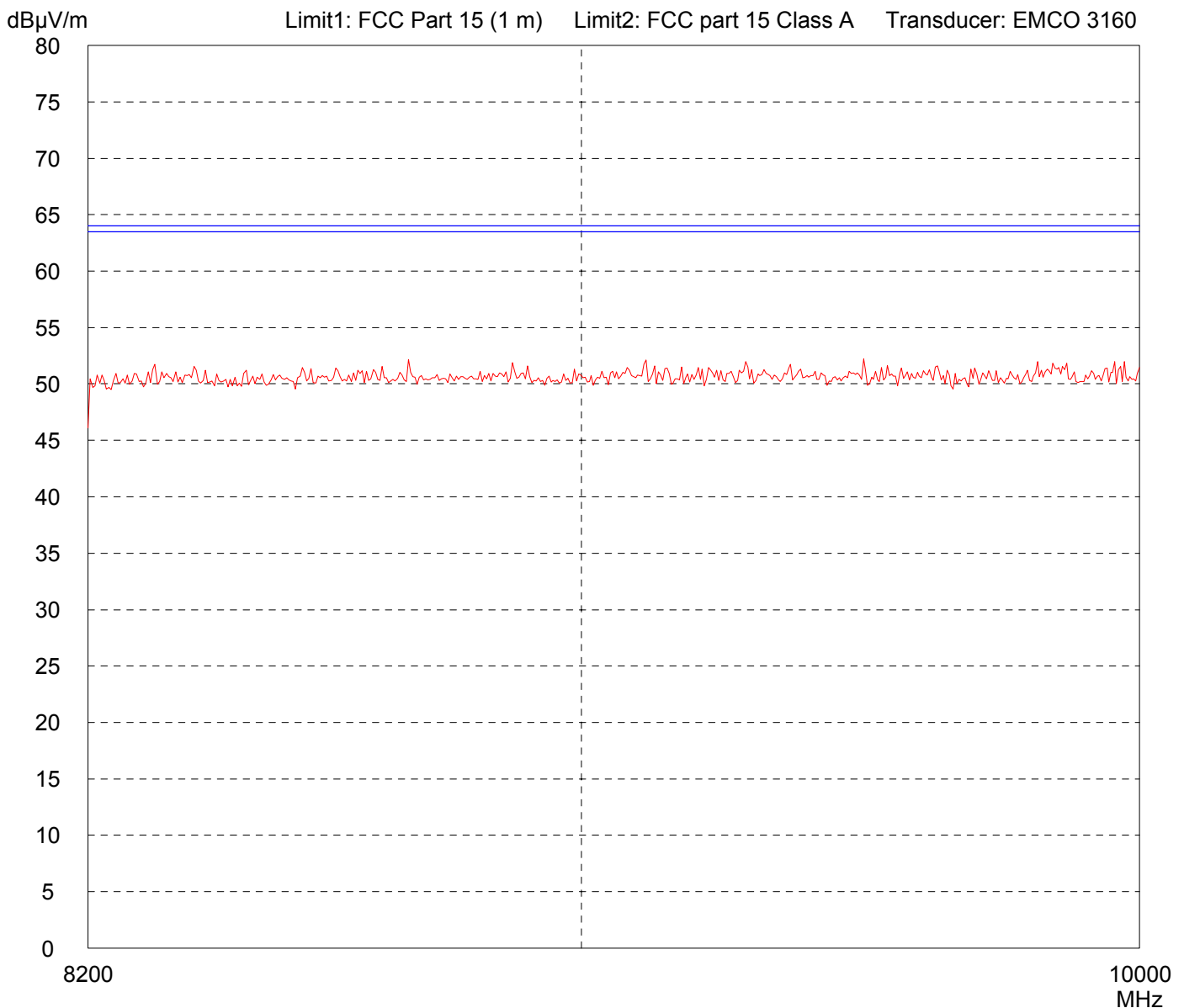
<p>Result: Prescan</p>	<p>Project file: 55456-50446-2</p> <p style="text-align: right;">Page    of    Pages</p>
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# Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 (EMCO 3160)

<p>Model: i-B2</p> <p>Serial no.: 0.300.002.002</p> <p>Applicant: Identec Solutions AG</p> <p>Test site: Fully anechoic room, cabin no. 2</p> <p>Tested on: Test distance 1 meter Horizontal Polarization</p> <p>Date of test: 09/01/2005      Operator: M. Steindl</p> <p>Test performed: automatically      File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> <li>- internal battery supply</li> <li>- EUT in vertical position</li> <li>- Mode: 0.01 s</li> </ul>
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<p>Detector: Peak</p>	<p>List of values: 10 dB Margin                      50 Subranges</p>
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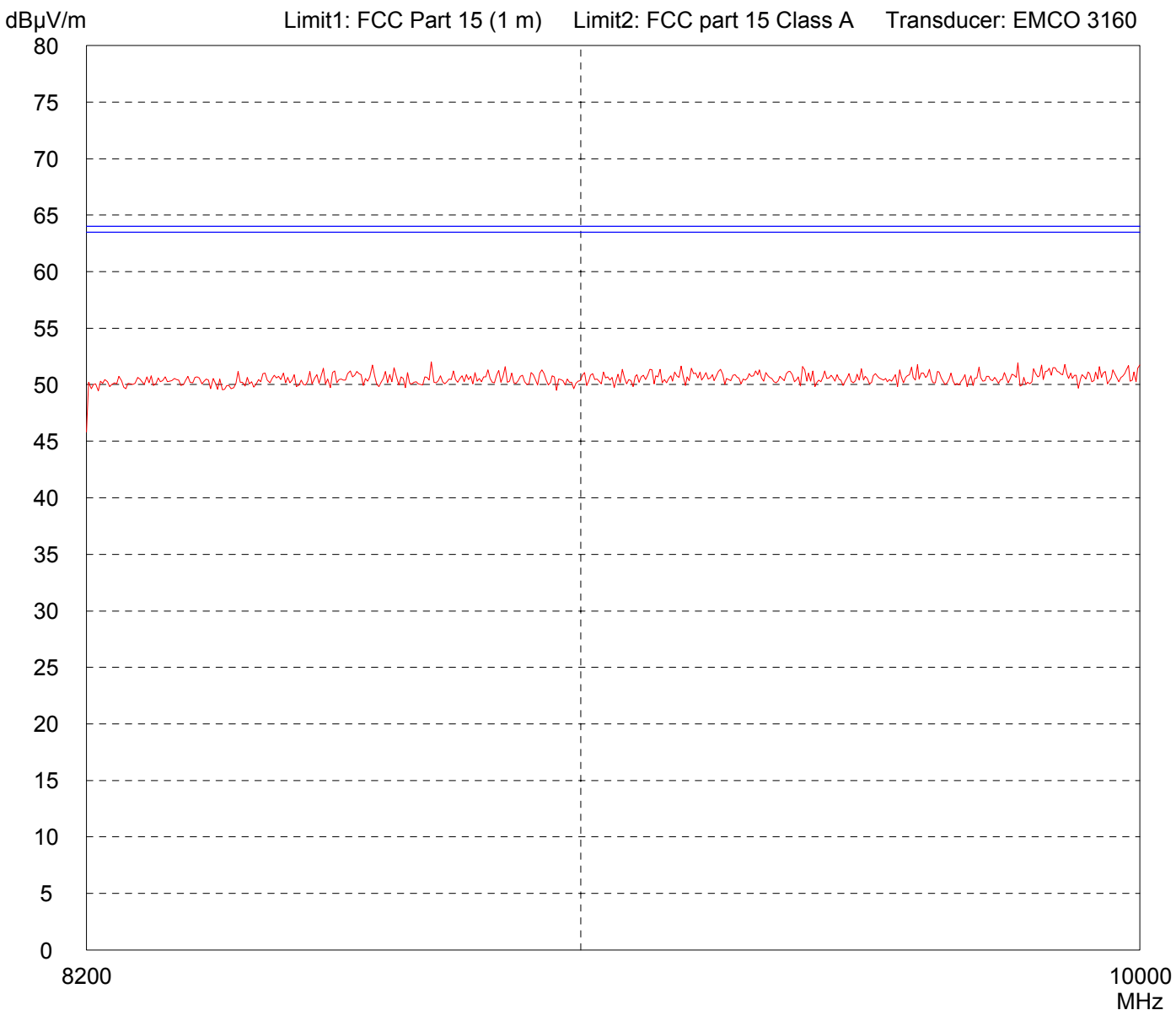


<p>Result: Prescan</p>	<p>Project file: 55456-50446-2</p> <p style="text-align: right;">Page    of    Pages</p>
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# Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 (EMCO 3160)

<p>Model: i-B2</p> <p>Serial no.: 0.300.002.002</p> <p>Applicant: Identec Solutions AG</p> <p>Test site: Fully anechoic room, cabin no. 2</p> <p>Tested on: Test distance 1 meter Vertical Polarization</p> <p>Date of test: 09/01/2005      Operator: M. Steindl</p> <p>Test performed: automatically      File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> <li>- internal battery supply</li> <li>- EUT in vertical position</li> <li>- Mode: 0.01 s</li> </ul>
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<p>Detector: Peak</p>	<p>List of values: 10 dB Margin                      50 Subranges</p>
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<p>Result: Prescan</p>	<p>Project file: 55456-50446-2</p> <p style="text-align: right;">Page    of    Pages</p>
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