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November 6, 2009

Prüfbericht / *Test Report*

Nr. / No. 50784-00618-1 (Edition 2)

Applicant: BARTEC GmbH
Type of equipment: UHF RFID Module
Type designation: MC9090RFID UHF External Antenna
Order No.: ---
Test standards: FCC Code of Federal Regulations,
CFR 47, Part 15,
Sections 15.205, 15.207, 15.215 and 15.247

Industry Canada Radio Standards Specifications
RSS-Gen Issue 2, Section 7.2.2 and
RSS-210 Issue 7, Sections 2.2, A8 (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 ¹ :	MC9090RFID UHF External Antenna
Parts ² :	
Serial number(s):	Test sample
Manufacturer:	BARTEC GmbH
Type of equipment:	UHF RFID Module
Version:	As received
FCC ID:	
Additional parts/accessories:	

Technical data of EUT	
Application frequency range:	902 - 928 MHz
Frequency range:	902.75 - 927.25 MHz
Operating frequency:	902.75 MHz, 915.25 MHz, 927.25 MHz
Type of modulation:	ASK
Pulse train:	---
Pulse width:	---
Number of RF-channels:	50
Channel spacing:	500 kHz
Designation of emissions ³ :	80K0A1D
Type of antenna:	Integrated
Size/length of antenna:	
Connection of antenna:	<input type="checkbox"/> detachable <input checked="" type="checkbox"/> not detachable
Type of power supply:	DC supply
Specifications for power supply:	nominal voltage: 6.5 V

¹ Type designation of the system if EUT consists of more than one part.

² Type designations of the parts of the system, if applicable.

³ Also known as "Class of Emission".



2 Administrative Data

Application details

Applicant (full address):	BARTEC GmbH Max-Eyth-Str. 16 D-97980 Bad Mergentheim
Contact person:	Mr. Sebastian Kuhn
Contract identification:	
Receipt of EUT:	July 29, 2009
Date(s) of test:	July - August 2009
Note(s):	

Report details

Report number:	50784-00618-1
Edition:	2
Issue date:	November 6, 2009



3 Identification of the Test Laboratory

Details of the Test Laboratory	
Company name:	TÜV SÜD SENTON GmbH EMI/EMC Test Center
Address:	Aeussere Fruehlingstrasse 45 D-94315 Straubing Germany
Laboratory accreditation:	DAR-Registration No. DAT-PL-171/94-03
FCC test site registration number	90926
Industry Canada test site registration:	3050A-1
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, 15.247
and 2.1093**

of the Federal Communication Commission (FCC) and the

**Radio Standards Specifications
RSS-210 Issue 7, Sections 2.2, 2.6 and A8 (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)

The EUT was set up to transmit on lowest, middle and highest channel with modulation.

Configuration(s) of EUT

The EUT was configured as stand alone device. The RS232-interface was connected to a laptop PC for configuration of the transmitting channel. The EUT is intended to be operated on a battery-operated handheld PC.

The conducted measurements on the antenna port were performed on a separated module.

List of ports and cables

<i>Port</i>	<i>Description</i>	<i>Classification⁴</i>	<i>Cable type</i>	<i>Cable length</i>
1	DC supply	dc power	Unshielded	2 m
2	RS232	signal/control port	Shielded	2 m

List of devices connected to EUT

<i>Item</i>	<i>Description</i>	<i>Type Designation</i>	<i>Serial no. or ID</i>	<i>Manufacturer</i>
1	Laptop PC	DELL dimension		DELL

List of support devices

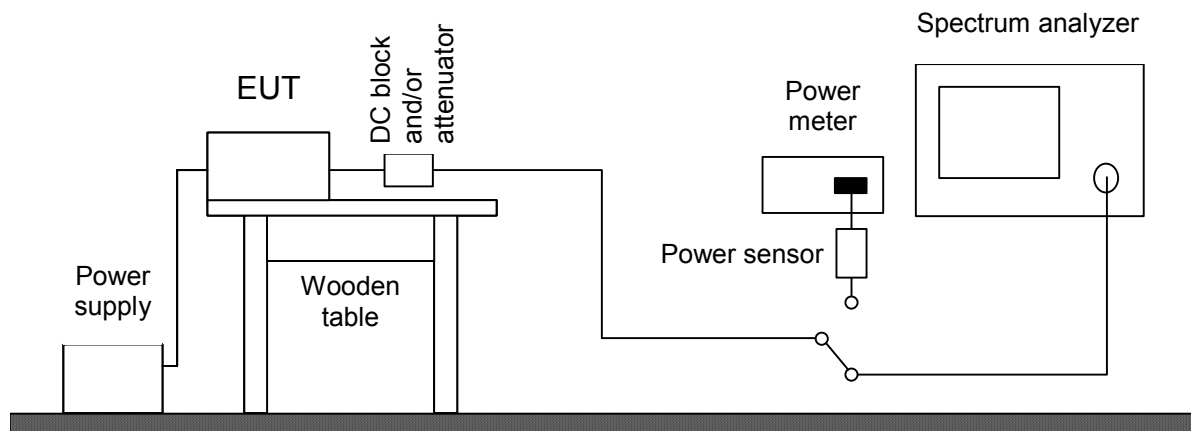
<i>Item</i>	<i>Description</i>	<i>Type Designation</i>	<i>Serial no. or ID</i>	<i>Manufacturer</i>

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

6 Measurement Procedures

6.1 Conducted Output Power

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 2, section 2.1046(a) IC RSS-Gen Issue 2, section 4.8
Guide:	CFR 47 Part 2, section 2.1046 / IC RSS-Gen Issue 2
<p>Conducted output power is measured at the RF output terminals (e.g. antenna connector if antenna is detachable) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The RF output terminals are connected to a spectrum analyzer and/or a power meter with appropriate sensor. 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 a spectrum analyzer is used and no other settings are specified resolution bandwidth shall be selected according to the carrier frequency f_c and set to 10 kHz ($150 \text{ kHz} \leq f_c < 30 \text{ MHz}$), 100 kHz ($30 \text{ MHz} \leq f_c < 1 \text{ GHz}$) or 1 MHz ($f_c \geq 1 \text{ GHz}$). The video bandwidth shall be at least three times greater than the resolution bandwidth. The settings used have to be indicated within the appropriate test record(s).</p>	

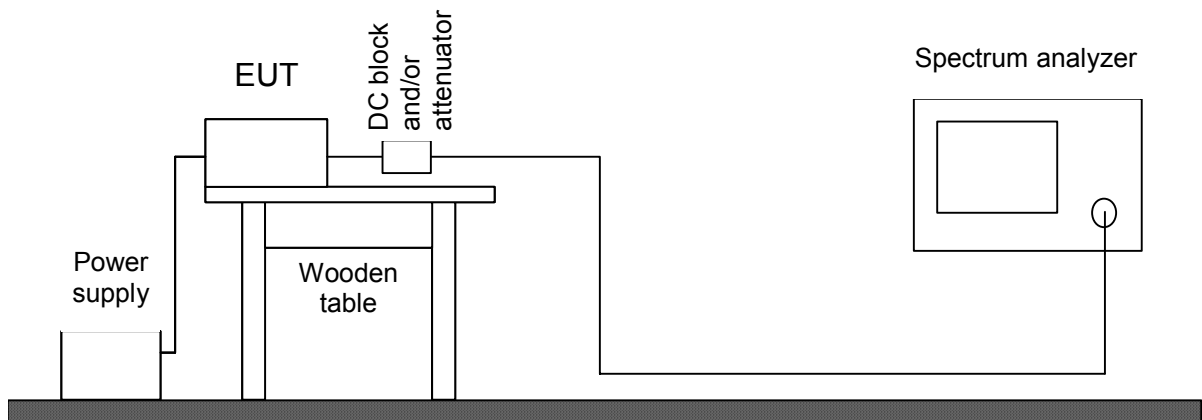


Test instruments used:

Used	Type	Model	Serial No. or ID	Manufacturer
<input type="checkbox"/>	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
<input checked="" type="checkbox"/>	EMI test receiver	ESPI7	836914/0002	Rohde & Schwarz
<input type="checkbox"/>	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
<input type="checkbox"/>	Power meter	NRVS	836856/015	Rohde & Schwarz
<input type="checkbox"/>	Peak power sensor	NRV-Z31	8579604.03	Rohde & Schwarz
<input type="checkbox"/>	Power sensor	NRV-Z52	837901/030	Rohde & Schwarz
<input type="checkbox"/>	Power sensor	NRV-Z4	863828/015	Rohde & Schwarz
<input type="checkbox"/>	DC-block	7006	A2798	Weinschel
<input checked="" type="checkbox"/>	Attenuator	4776-10	9412	Narda
<input type="checkbox"/>	Attenuator	4776-20	9503	Narda

6.2 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-Gen Issue 2, sections 4.6.1 and 4.6.2 IC RSS-210 Issue 7, section A1.1.3 ANSI C63.4, annex H.6
Guide:	ANSI C63.4 / IC RSS-Gen Issue 2, sections 4.6.1 and 4.6.2
Measurement setup:	<input checked="" type="checkbox"/> Conducted: See below <input type="checkbox"/> Radiated: Radiated Emission in Fully or Semi Anechoic Room (6.4)
<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>	



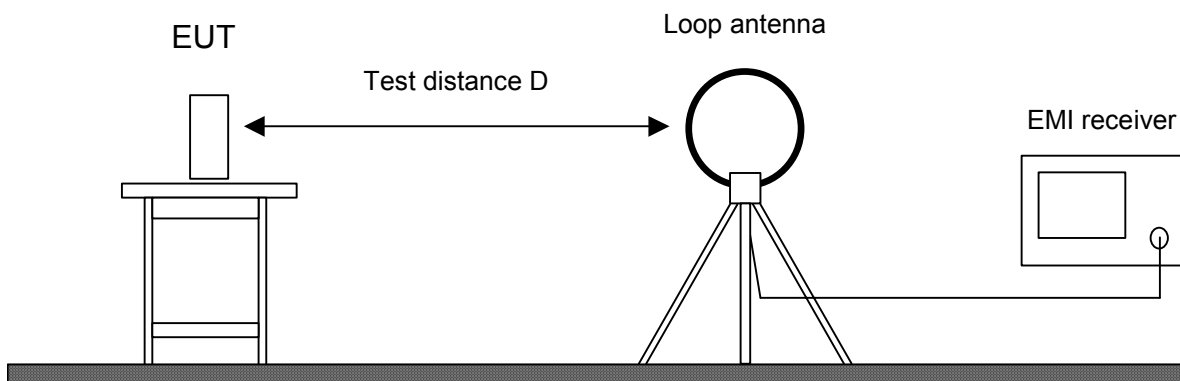


Test instruments used for conducted measurements:

Used	Type	Model	Serial No. or ID	Manufacturer
<input type="checkbox"/>	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
<input checked="" type="checkbox"/>	EMI test receiver	ESPI7	836914/0002	Rohde & Schwarz
<input type="checkbox"/>	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
<input type="checkbox"/>	Power meter	NRVS	836856/015	Rohde & Schwarz
<input type="checkbox"/>	Peak power sensor	NRV-Z31	8579604.03	Rohde & Schwarz
<input type="checkbox"/>	Power sensor	NRV-Z52	837901/030	Rohde & Schwarz
<input type="checkbox"/>	Power sensor	NRV-Z4	863828/015	Rohde & Schwarz
<input type="checkbox"/>	DC-block	7006	A2798	Weinschel
<input checked="" type="checkbox"/>	Attenuator	4776-10	9412	Narda
<input type="checkbox"/>	Attenuator	4776-20	9503	Narda

6.3 Radiated Emission Measurement 9 kHz to 30 MHz

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.205(b) and 15.247 IC RSS-210 Issue 7, sections 2.2(b)(c), 2.6 and A8.5
Guide:	ANSI C63.4
<p>Radiated emission in the frequency range 9 kHz to 30 MHz is measured using an active loop antenna. First the whole spectrum of emission caused by the equipment is recorded at a distance of 3 meters in a fully or semi anechoic room with the detector of the spectrum analyzer or EMI receiver set to peak. This configuration is also used for recording the spectrum of intentional radiators.</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. 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>If worst case emission of the EUT cannot be recorded with EUT in standard position and loop antenna in vertical polarization the EUT (or the radiating part of the EUT) is rotated by 90 degrees instead of changing the loop antenna to horizontal polarization. This procedure is selected to minimize the influence of the environment (e.g. effects caused by the floor especially with longer distances).</p> <p>Final measurement is performed at a test distance D of 30 meters using an open field test site. In case the regulation requires testing at other distances, the result is extrapolated by either making measurements at an additional distance D of 10 meters to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). In cases of very low emissions measurements are performed at shorter distances and results are extrapolated to the required distance. The provisions of CFR 47 Part 15 sections 15.31(d) and (f)(2) apply. According to CFR 47 Part 15 section 15.209(d) final measurement is performed with detector function set to quasi-peak except for the frequency bands 9 to 90 kHz and 110 to 490 kHz where, for non-pulsed operation, average detector is employed.</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>	

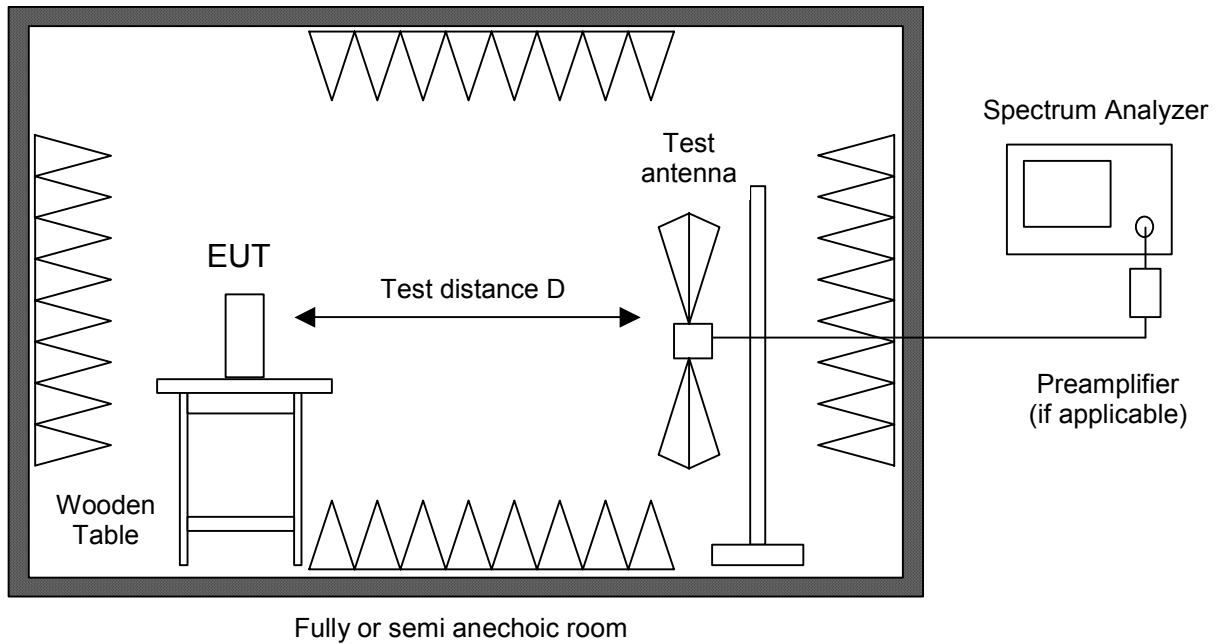


Test instruments used:

Used	Type	Model	Serial No. or ID	Manufacturer
<input checked="" type="checkbox"/>	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
<input type="checkbox"/>	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
<input checked="" type="checkbox"/>	Test receiver	ESHS 10	860043/016	Rohde & Schwarz
<input type="checkbox"/>	Preamplifier	CPA9231A	3393	Schaffner
<input checked="" type="checkbox"/>	Loop antenna	HFH2-Z2	882964/1	Rohde & Schwarz
<input checked="" type="checkbox"/>	Fully anechoic room	No. 2	1452	Albatross Projects
<input type="checkbox"/>	Semi-anechoic room	No. 3	1453	Siemens
<input checked="" type="checkbox"/>	Open field test site	EG 1	1450	Senton

6.4 Radiated Emission in Fully or Semi Anechoic Room

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.109, 15.215(b) and 15.249 IC RSS-Gen Issue 2, sections 6(a), 7.2.3.2 IC RSS-210 Issue 7, section A2.9
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>	

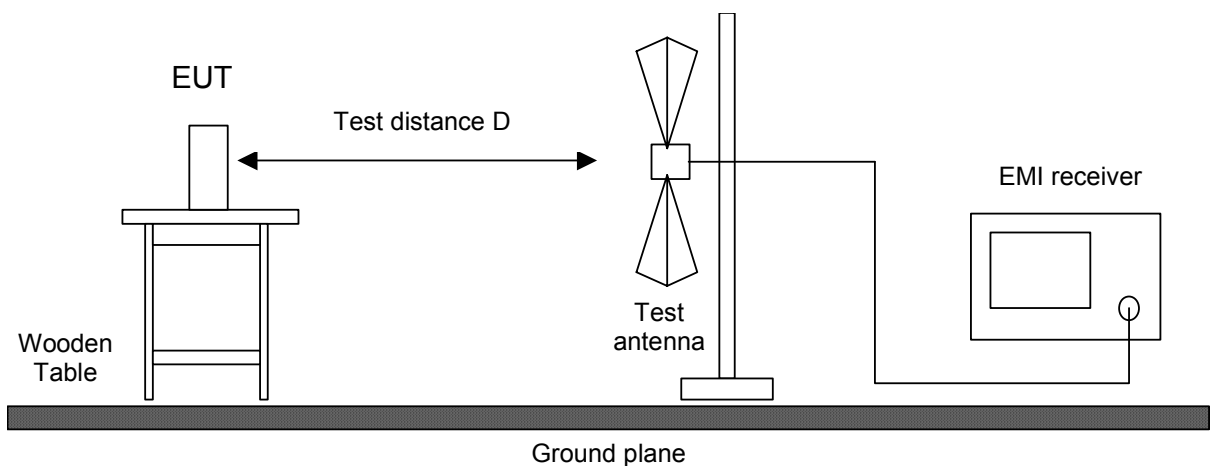


Test instruments used:

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 checked="" 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 checked="" type="checkbox"/>	Horn antenna	3115	9508-4553	EMCO
<input type="checkbox"/>	Horn antenna	3160-03	9112-1003	EMCO
<input checked="" 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 checked="" type="checkbox"/>	Fully anechoic room	No. 2	1452	Albatross Projects
<input type="checkbox"/>	Semi-anechoic room	No. 3	1453	Siemens

6.5 Radiated Emission at Open Field Test Site

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.109, 15.215(b) and 15.249 IC RSS-Gen Issue 2, sections 6(a), 7.2.3.2 IC RSS-210 Issue 7, section A2.9
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>	





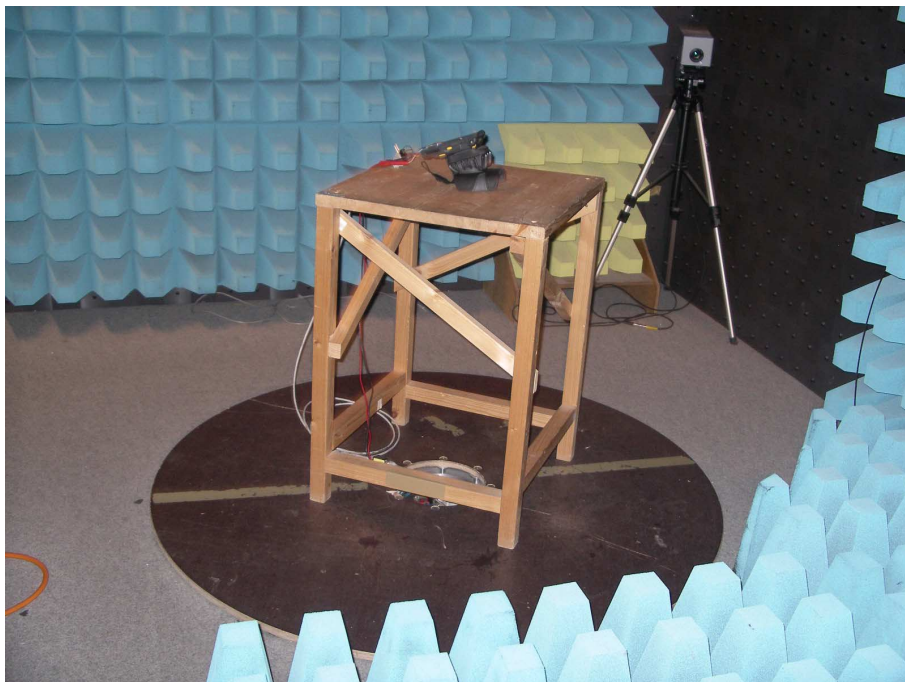
Test instruments used:

Used	Type		Model	Serial No. or ID	Manufacturer
<input checked="" type="checkbox"/>	EMI receiver		ESVP	881120/024	Rohde & Schwarz
<input checked="" 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

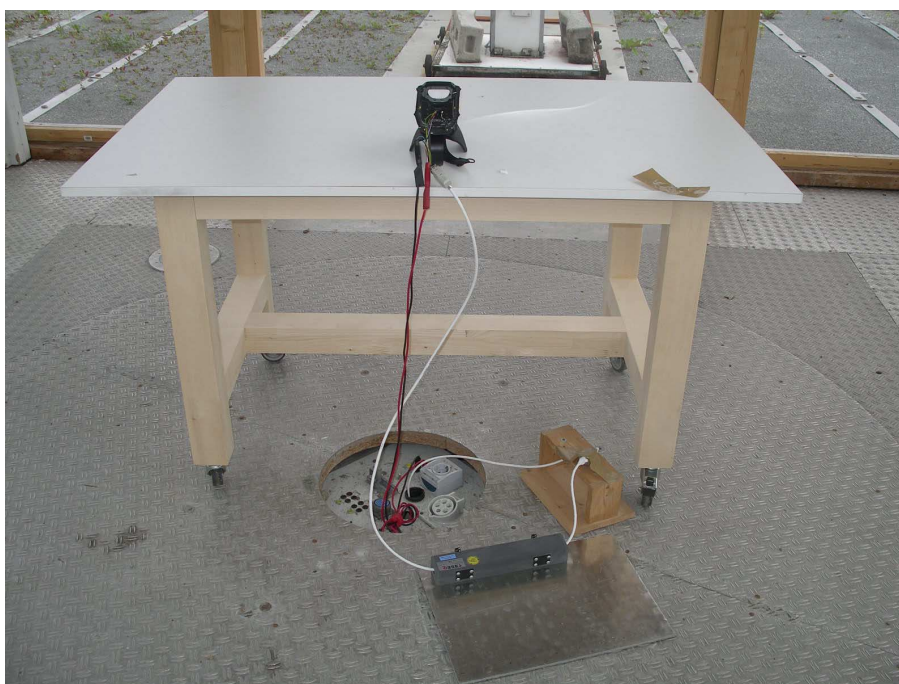


7 Photographs Taken During Testing

Test setup for radiated emission measurement (fully anechoic room)



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



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



8 Test Results

FCC CFR 47 Parts 2 and 15			
Section(s)	Test	Page	Result
2.1046(a)	Conducted output power	---	Not applicable
2.202(a)	Occupied bandwidth	24	Recorded
15.204	Antenna requirement	---	Integrated Antenna
15.215(c)	Bandwidth of the emission	30	Test passed
2.201, 2.202	Class of emission	34	Calculated
15.35(c)	Pulse train measurement for pulsed operation	---	Not applicable
15.205(a)	Restricted bands of operation	35	Test passed
15.247(a)(1)(i)	Channel Bandwidth	38	Test passed
15.247(a)(1)	Hopping channel separation	39	Test passed
15.247(a)(1)(i)	Number of hopping frequencies used	42	Test passed
15.247(a)(1)(i)	Time occupancy on any channel	44	Test passed
15.247(b)(2)	Maximum peak output power	48	Test passed
15.207	Conducted AC powerline emission 150 kHz to 30 MHz	---	Not applicable
15.247(d)	Conducted emissions	51	Test passed
15.205(b) 15.247(d)	Radiated emission 9 kHz to 30 MHz	54	Test passed
15.205(b) 15.215(b) 15.247(d)	Radiated emission 30 MHz to 10 GHz	55	Test passed
15.247(i) 2.1093	RF exposure requirement	59	Test passed

IC RSS-Gen Issue 2			
<i>Section(s)</i>	<i>Test</i>	<i>Page</i>	<i>Result</i>
4.8	Transmitter output power (conducted)	---	Not applicable
4.6.1	Occupied Bandwidth	24	Recorded
3.2(h), 8	Designation of emissions	34	Calculated
4.5	Pulsed operation	---	Not applicable
7.2.2	Transmitter AC power lines conducted emissions 150 kHz to 30 MHz	---	Not applicable
5.5	Exposure of Humans to RF Fields	60	Exempted from SAR and RF evaluation

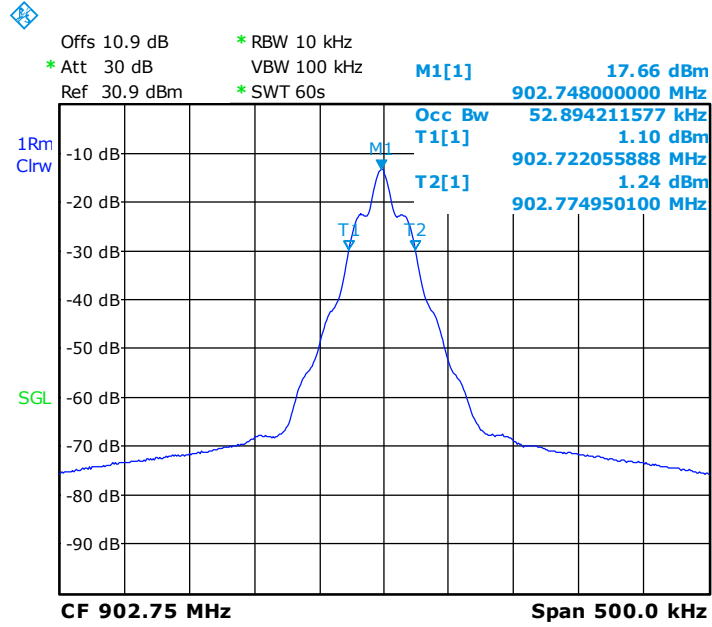
IC RSS-210 Issue 7			
<i>Section(s)</i>	<i>Test</i>	<i>Page</i>	<i>Result</i>
2.2(a)	Restricted bands and unwanted emission frequencies	35	Test passed
7.1.4	Antenna requirement	---	Integrated antenna
A8.1(c)	Channel bandwidth	38	Test passed
A8.1(b)	Hopping channel separation	39	Test passed
A8.1(c)	Number of hopping frequencies used	42	Test passed
A8.1(c)	Time occupancy on any channel	44	Test passed
A8.4(1)	Maximum output power	48	Test passed
A8.5	Conducted emissions	51	Test passed
2.2(b)(c) 2.6 A8.5	Unwanted emissions 9 kHz to 30 MHz	54	Test passed
2.2(b)(c) 2.6 A8.5	Unwanted emissions 30 MHz to 10 GHz	55	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:	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.	
	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.	
	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:	
	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 (6.2)	

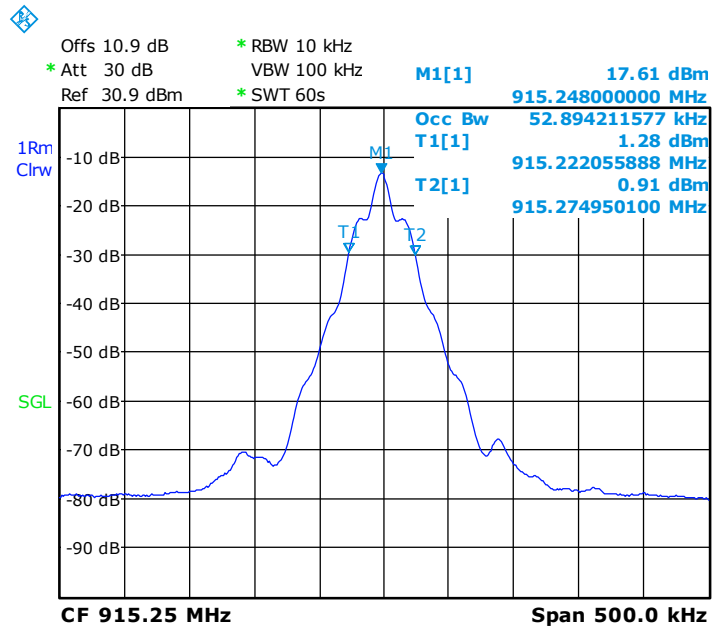
Comment:	Test was performed with module
Date of test:	August 14, 2009
Test site:	Fully anechoic room, cabin no. 2

Occupied Bandwidth (99 %):



Date: 14.AUG.2009 13:41:27

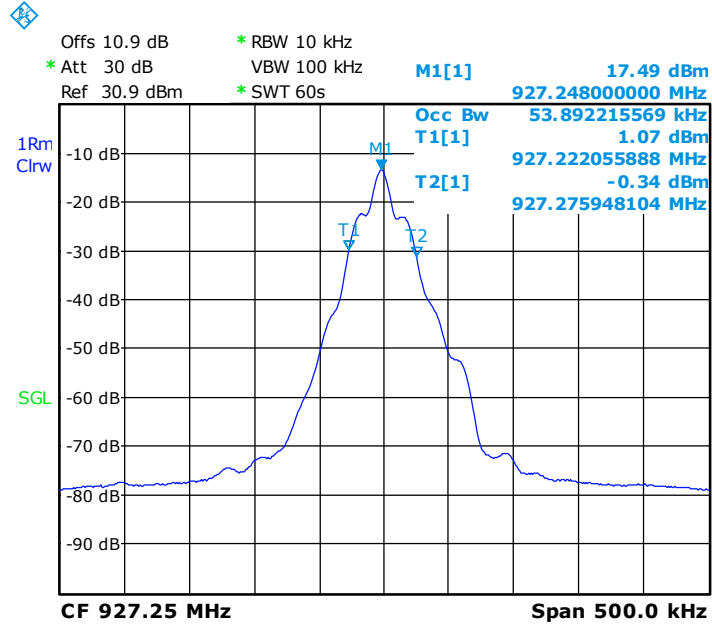
Occupied Bandwidth (99 %): **52.89 kHz**



Date: 14.AUG.2009 13:39:44

Occupied Bandwidth (99 %): **52.89 kHz**

Occupied Bandwidth (99 %) - continued:



Date: 14.AUG.2009 13:37:37

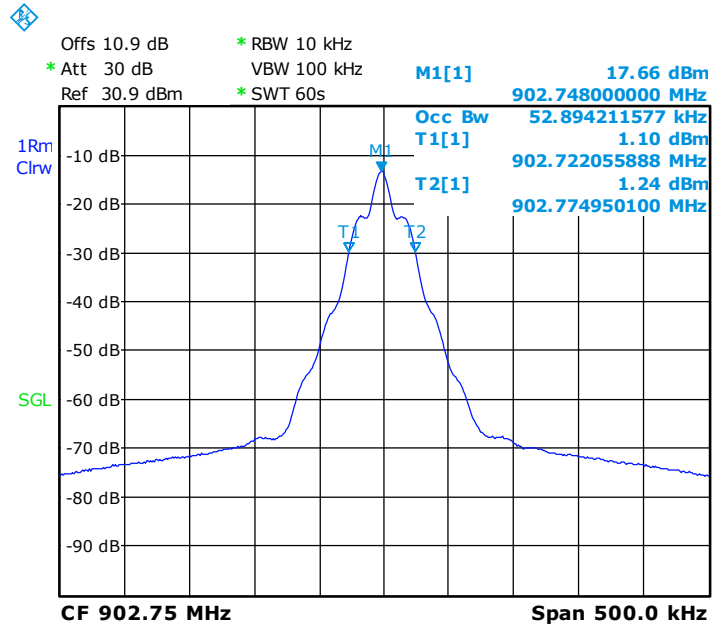
Occupied Bandwidth (99 %):	53.89 kHz
----------------------------	------------------

Occupied Bandwidth (continued)

Rules and specifications:	IC RSS-Gen Issue 2, section 4.6.1
Guide:	IC RSS-Gen Issue 2, section 4.6.1
Description:	<p>If not specified in the applicable RSS the occupied bandwidth is measured as the 99% emission bandwidth.</p> <p>The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth.</p> <p>The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is also recorded. The span between the two recorded frequencies is the occupied bandwidth.</p>
Measurement procedure:	Bandwidth Measurements (6.2)

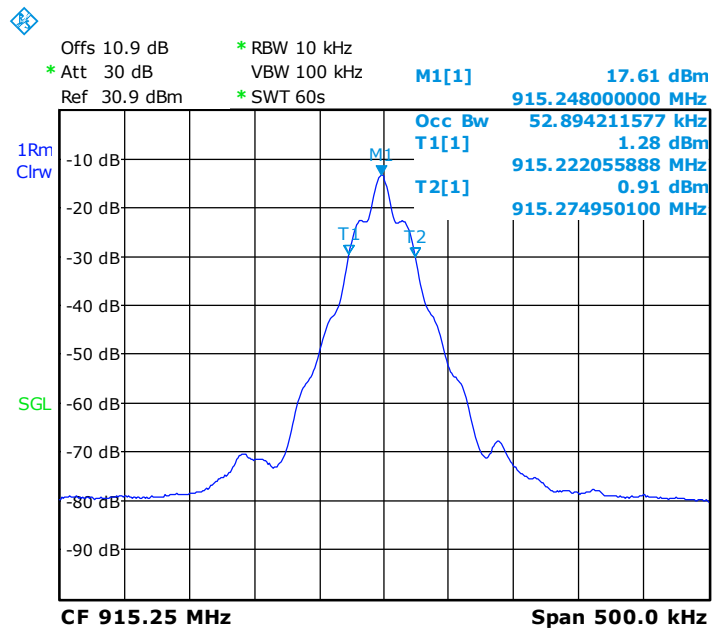
Comment:	Test was performed with module
Date of test:	August 14, 2009
Test site:	Fully anechoic room, cabin no. 2

Occupied Bandwidth (99 %):



Date: 14.AUG.2009 13:41:27

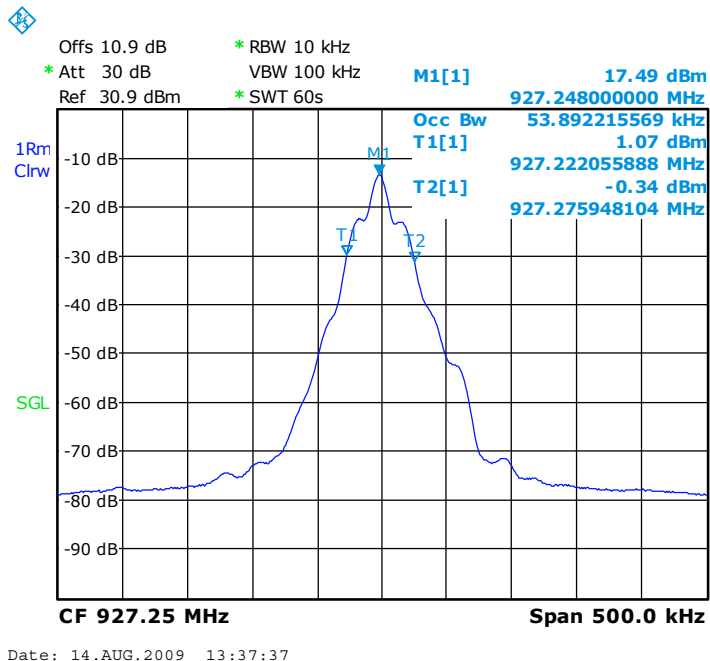
Occupied Bandwidth (99 %): **52.89 kHz**



Date: 14.AUG.2009 13:39:44

Occupied Bandwidth (99 %): **52.89 kHz**

Occupied Bandwidth (99 %) - continued:

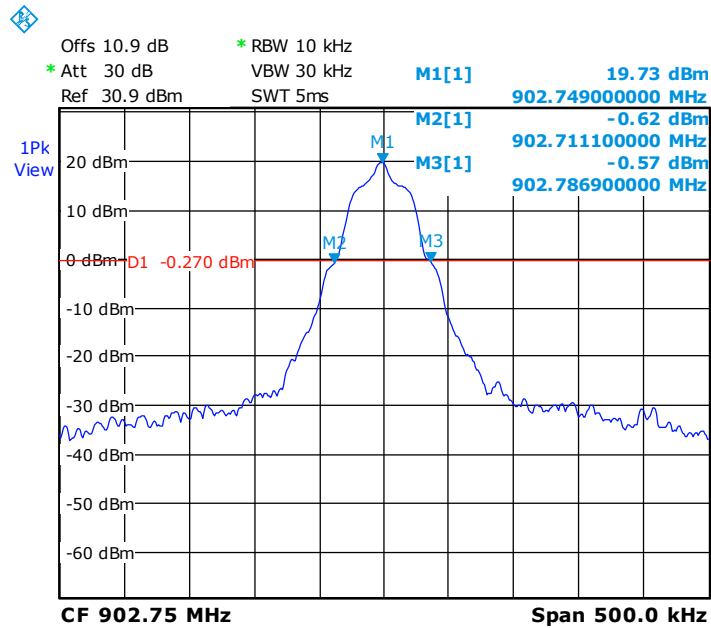


Occupied Bandwidth (99 %):	53.89 kHz
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8.2 Bandwidth of the Emission

Rules and specifications:	CFR 47 Part 15, section 15.215(c)	
Guide:	ANSI C63.4	
Description:	<p>The 20 dB bandwidth of the emission is measured as the frequency range defined by the points that are 20 dB down relative to the maximum level of the modulated carrier.</p> <p>For intentional radiators operating under the alternative provisions to the general emission limits the requirement to contain the 20 dB bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.</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 (6.2)	

Comment:	Test was performed with module
Date of test:	August 14, 2009
Test site:	Fully anechoic room, cabin no. 2

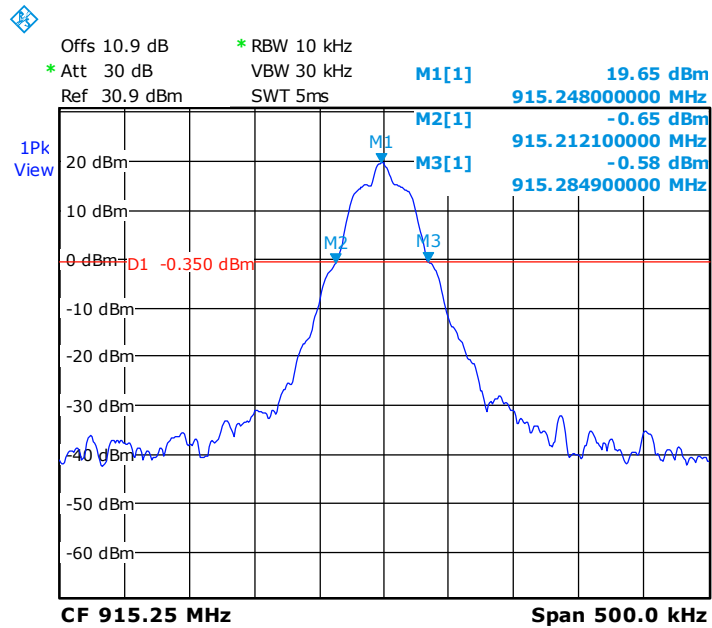


Date: 14.AUG.2009 13:28:39

Permitted frequency band:	902 - 928 MHz	
20 dB bandwidth:	75.8 kHz	
Carrier frequency stability:	<input type="checkbox"/> specified	<input checked="" type="checkbox"/> not specified
Maximum frequency tolerances:		
Bandwidth of the emission:	within permitted frequency band ⁵ : <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	

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

⁵ 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.

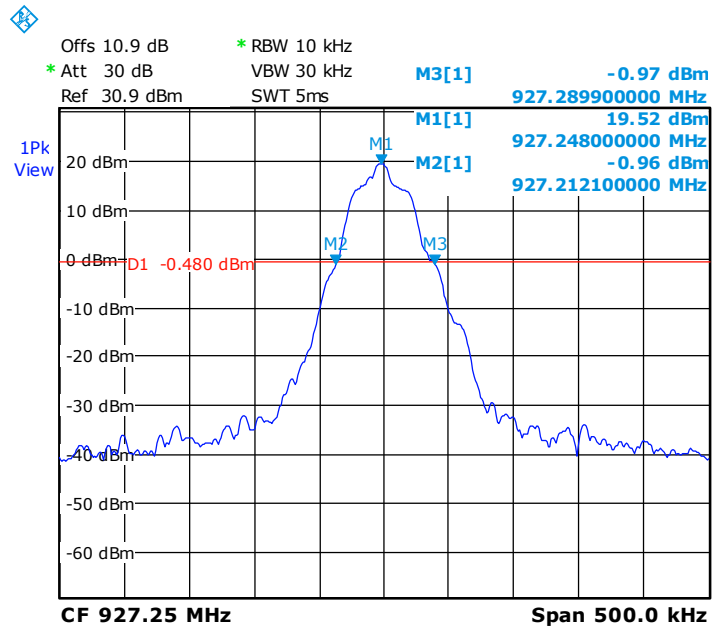


Date: 14.AUG.2009 13:30:30

Permitted frequency band:	902 - 928 MHz	
20 dB bandwidth:	72.8 kHz	
Carrier frequency stability:	<input type="checkbox"/> specified	<input checked="" type="checkbox"/> not specified
Maximum frequency tolerances:		
Bandwidth of the emission:	within permitted frequency band ⁶ : <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	

Test Result:	Test passed
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⁶ 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.



Date: 14.AUG.2009 13:32:00

Permitted frequency band:	902 - 928 MHz	
20 dB bandwidth:	77.8 kHz	
Carrier frequency stability:	<input type="checkbox"/> specified	<input checked="" type="checkbox"/> not specified
Maximum frequency tolerances:		
Bandwidth of the emission:	within permitted frequency band ⁷ : <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	

Test Result:	Test passed
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⁷ 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-Gen Issue 2, sections 3.2(h) and 8
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 = 43 kHz
K = Overall numerical factor	K = 1
Calculation:	$B_n = 2 \cdot (43 \text{ kHz}) \cdot 1 = 86 \text{ kHz}$

Designation of Emissions:	86K0A1D
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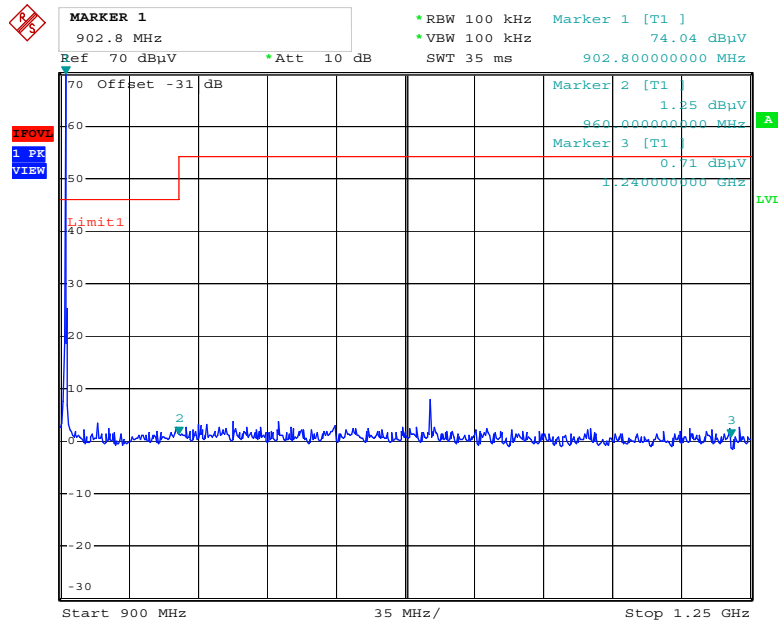


8.4 Restricted Bands of Operation

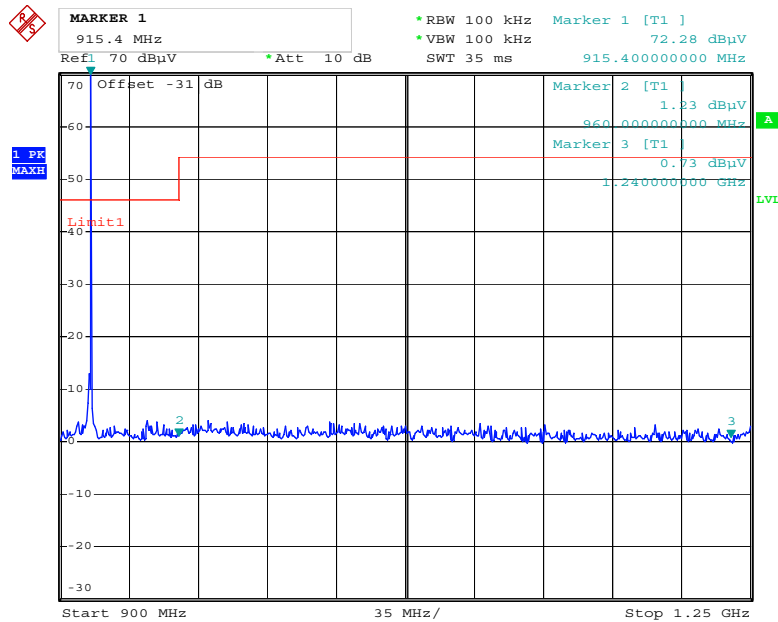
Rules and specifications:	CFR 47 Part 15, section 15.205(a) IC RSS-210 Issue 7, section 2.2(a)
Guide:	ANSI C63.4
Limit:	Only spurious emissions are permitted in any of the frequency bands listed in CFR 47 Part 15, section 15.205(a) or IC RSS-210 Issue 7, section 2.2(a).
Measurement procedure:	Radiated Emission in Fully or Semi Anechoic Room (6.4)

Comment:	
Date of test:	July 30, 2009
Test site:	Fully anechoic room, cabin no. 2
Test distance:	3 meters

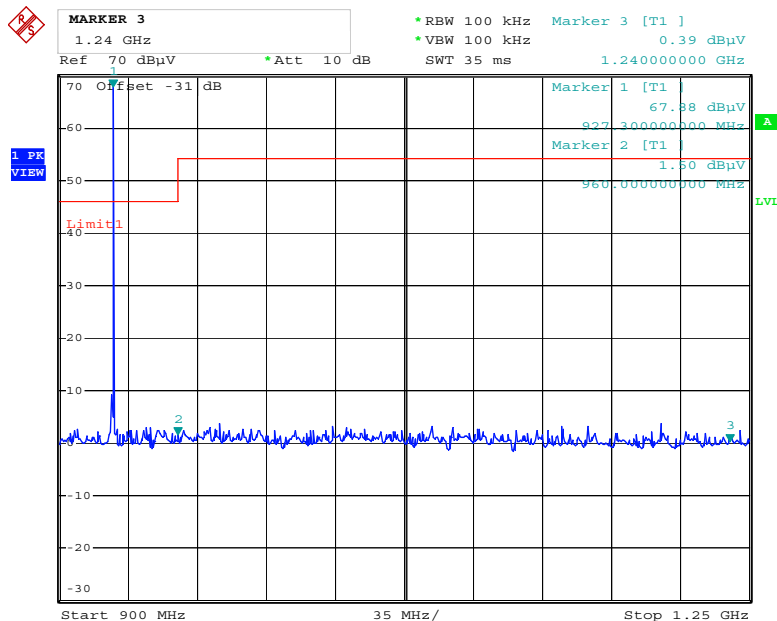
Test Result:	Test passed
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Date: 30.JUL.2009 13:51:10



Date: 30.JUL.2009 13:50:38



Date: 30.JUL.2009 13:49:18



8.5 Channel Bandwidth

Rules and specifications:	CFR 47 Part 15, section 15.247(a)(1)(i) IC RSS-210 Issue 7, section A8.1(c)
Guide:	ANSI C63.4
Limit:	The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz
Measurement procedure:	Radiated Emission in Fully or Semi Anechoic Room (6.4)

Comment:	Please see 8.2 Bandwidth of the Emission for details.
Date of test:	August 14, 2009
Test site:	Fully anechoic room, cabin no. 2
Test distance:	3 meters

Frequency (MHz)	Channel Bandwidth (kHz)	Limit (kHz)	Result
902.75	75.8	≤ 500	Pass
915.25	72.8	≤ 500	Pass
927.25	77.8	≤ 500	Pass

Test Result:	Test passed
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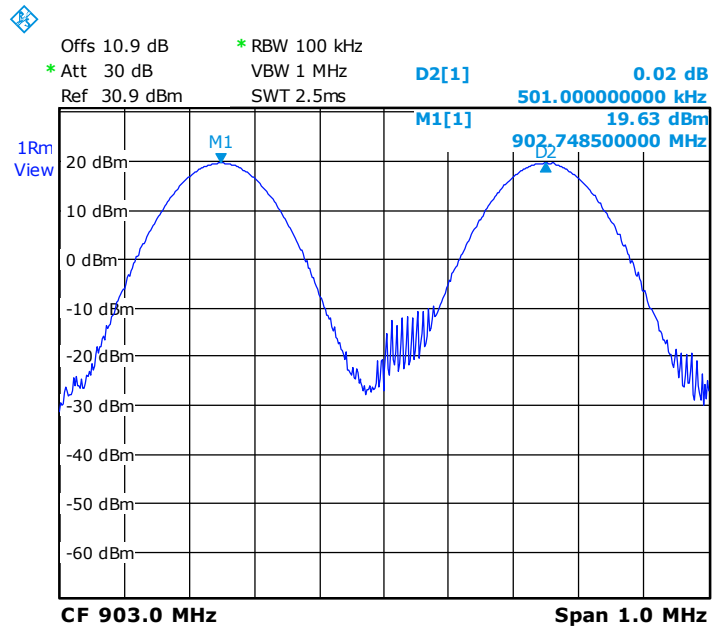
8.6 Hopping channel separation

Rules and specifications:	CFR 47 Part 15, section 15.247(a)(1) IC RSS-210 Issue 7, section A8.1(b)
Guide:	ANSI C63.4
Limit:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.
Measurement procedure:	Radiated Emission in Fully or Semi Anechoic Room (6.4)

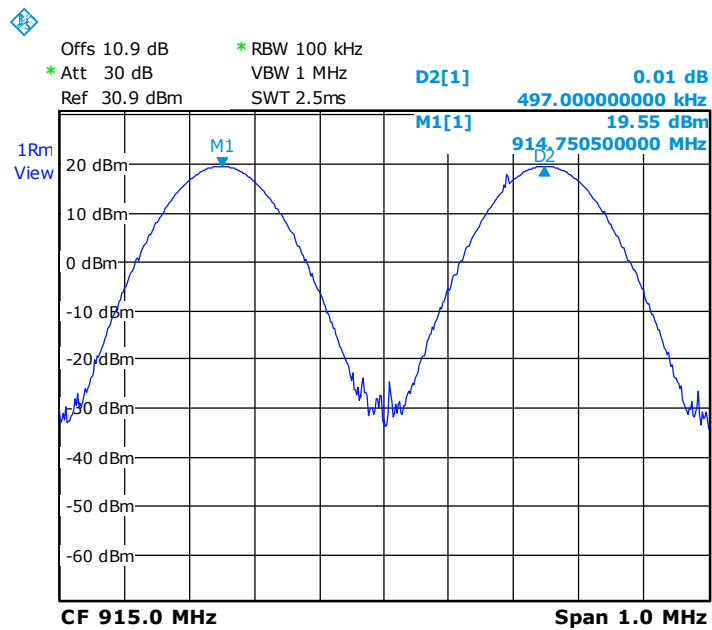
Comment:	Test was performed with module
Date of test:	August 14, 2009
Test site:	Fully anechoic room, cabin no. 2
Test distance:	3 meters

Frequency (MHz)	Channel separation (kHz)	Limit (kHz)	Result
902.75	501	≥ 75.8	Pass
915.25	497	≥ 72.8	Pass
927.25	501	≥ 77.8	Pass

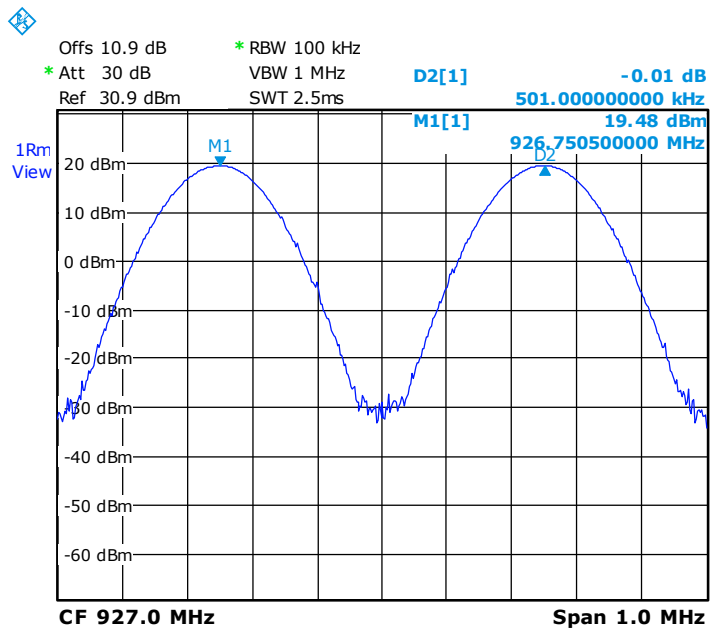
Test Result:	Test passed
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Date: 14.AUG.2009 13:52:45



Date: 14.AUG.2009 13:50:33



Date: 14.AUG.2009 13:53:30



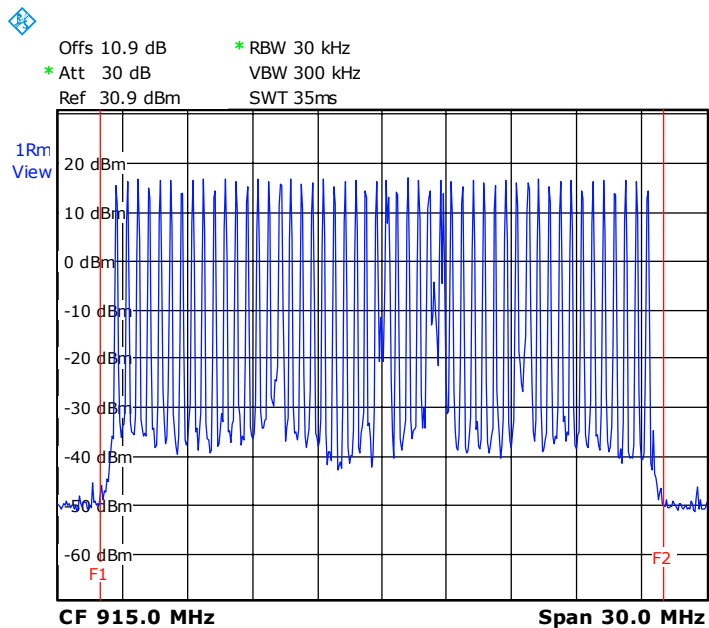
8.7 Number of hopping frequencies used

Rules and specifications:	CFR 47 Part 15, section 15.247(a)(1)(i) IC RSS-210 Issue 7, section A8.1(c)
Guide:	ANSI C63.4
Limit:	If the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.
Measurement procedure:	Radiated Emission in Fully or Semi Anechoic Room (6.4)

Comment:	Test was performed with module
Date of test:	August 14, 2009
Test site:	Fully anechoic room, cabin no. 2
Test distance:	3 meters

Frequencies	Limit	Result
50	≥ 50	Pass

Test Result:	Test passed
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Date: 14.AUG.2009 13:48:49

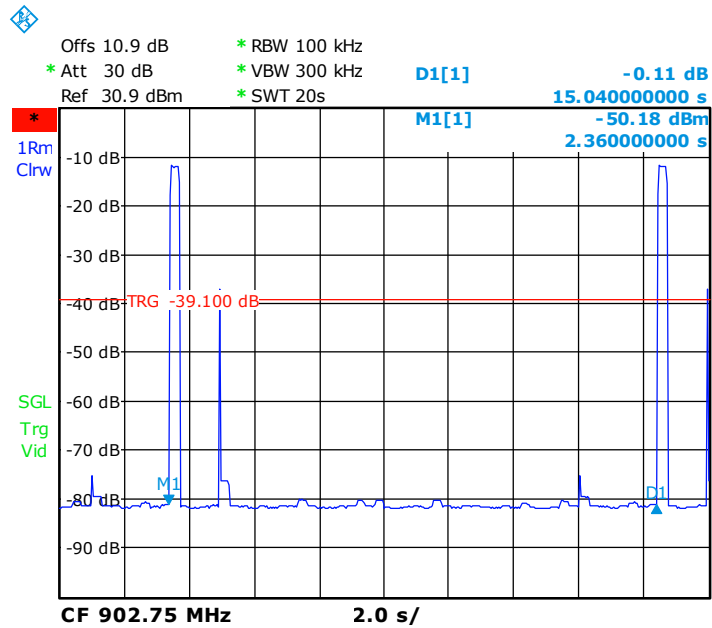
8.8 Time occupancy on any channel

Rules and specifications:	CFR 47 Part 15, section 15.247(a)(1)(i) IC RSS-210 Issue 7, section A8.1(c)
Guide:	ANSI C63.4
Limit:	If the 20 dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 seconds period.
Measurement procedure:	Radiated Emission in Fully or Semi Anechoic Room (6.4)

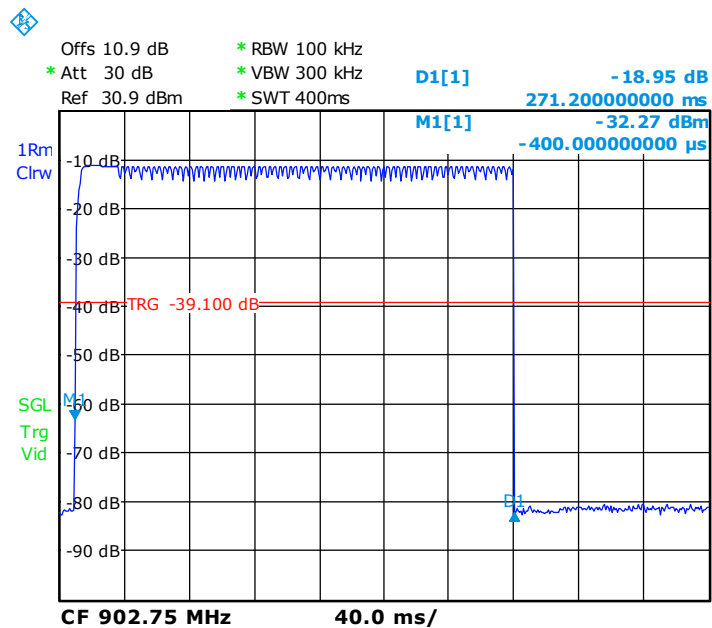
Comment:	Test was performed with module
Date of test:	Since the EUT uses a cycle-time of approximately 15 s to use all hopping channels the evaluation was taken for 15 s instead of 20 s. Thus the limit for average time occupancy calculates to 0.3 seconds within a 15 second period.
Test site:	Fully anechoic room, cabin no. 2
Test distance:	3 meters

Frequency (MHz)	Time occupancy (ms in a 15 s period)	Limit (ms in a 15 s period)	Result
902.75	271.2	≤ 300	
915.25	272.0	≤ 300	
927.25	272.0	≤ 300	

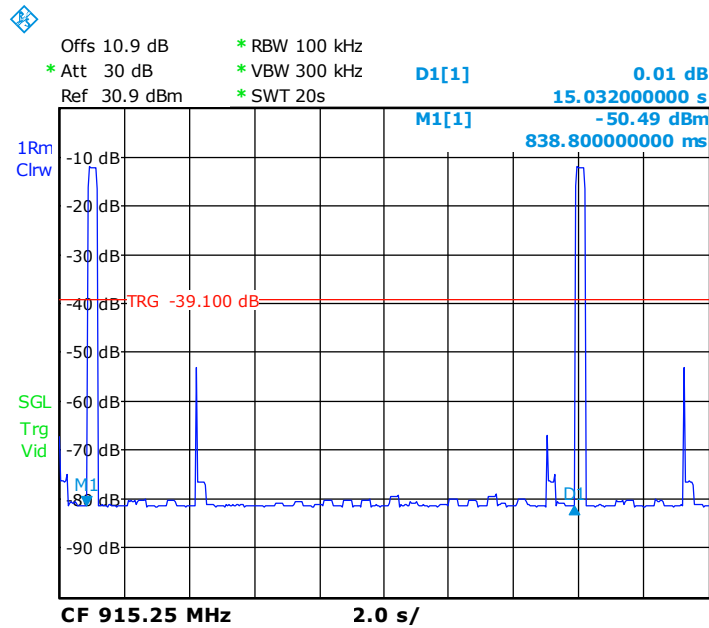
Test Result:	Test passed
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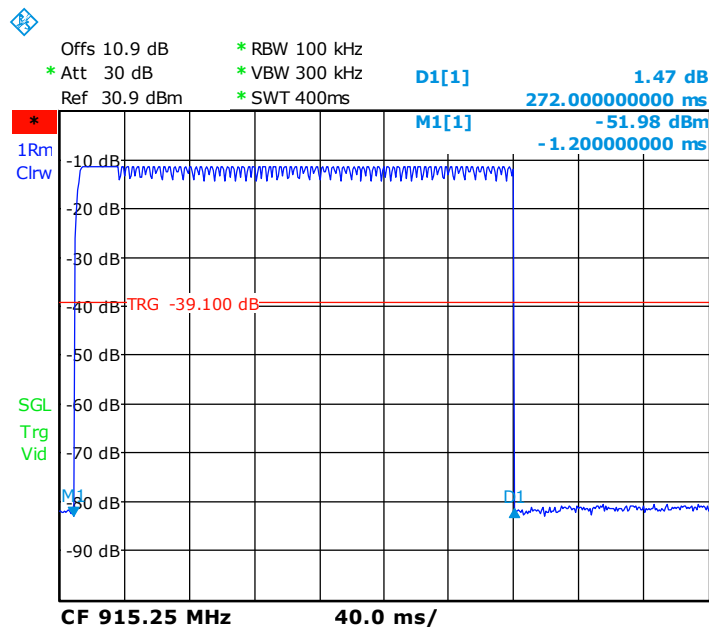
Date: 14.AUG.2009 13:57:33



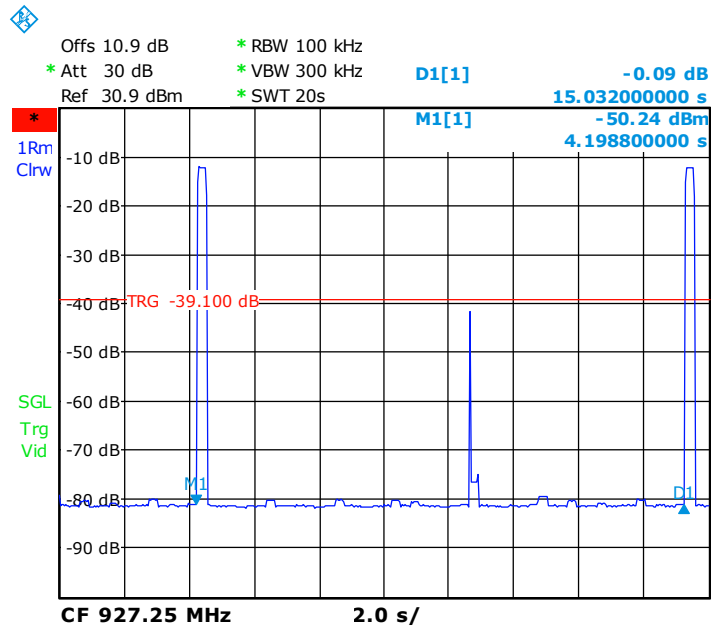
Date: 14.AUG.2009 13:59:02



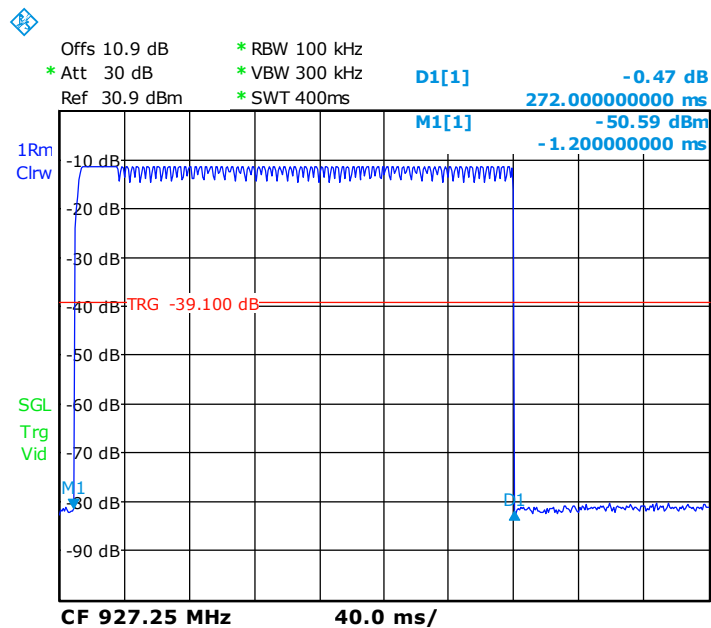
Date: 14.AUG.2009 14:01:25



Date: 14.AUG.2009 13:59:47



Date: 14.AUG.2009 14:02:54



Date: 14.AUG.2009 14:18:32



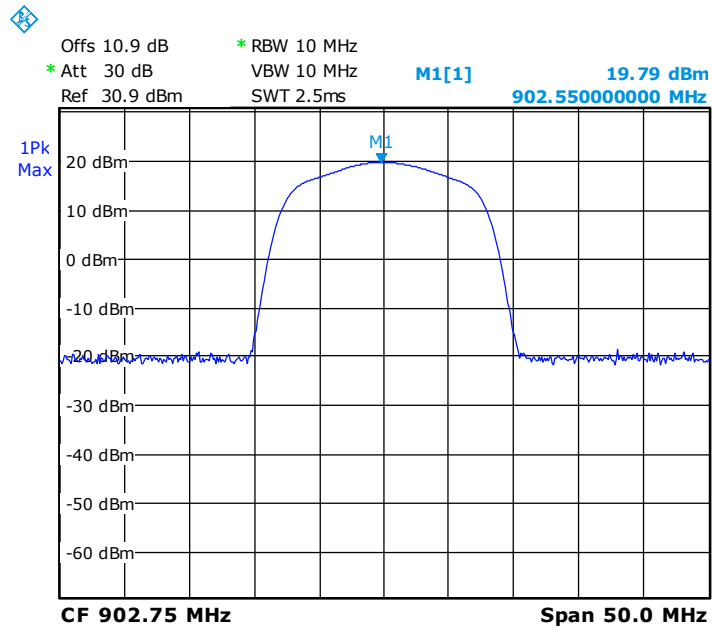
8.9 Maximum output power

Rules and specifications:	CFR 47 Part 15, section 15.247(b)(2) IC RSS-210 Issue 7, section A8.4(1)
Guide:	ANSI C63.4
Limit:	The maximum output power is 1 W (30 dBm) for systems employing at least 50 hopping channels; and 0.25 W (24 dBm) for systems employing less than 50 hopping channels but at least 25 hopping channels.
Measurement procedure:	Conducted Output Power (6.1)

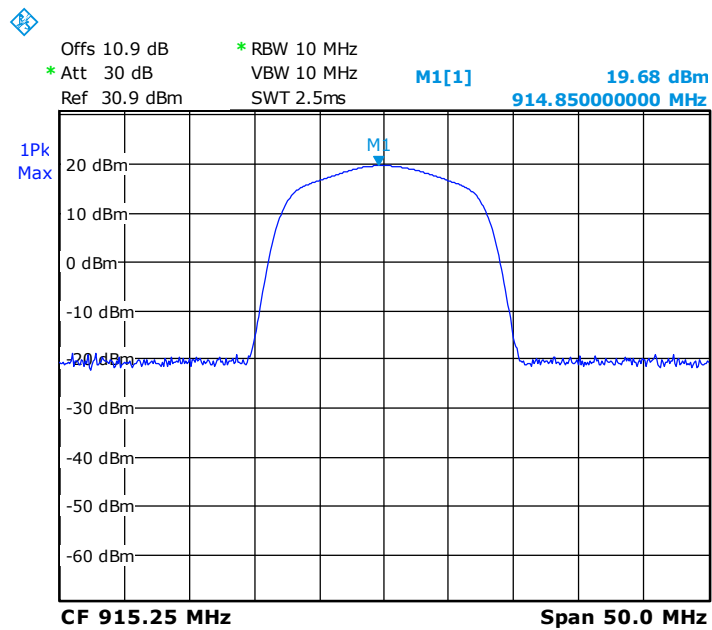
Comment:	Test was performed with module on antenna port 1 which is used for external antenna.
Date of test:	August 14, 2009
Test site:	Fully anechoic room, cabin no. 2
Test distance:	3 meters

Frequency (MHz)	Output power (dBm)	Limit (dBm)	Result
902.75	19.79	≤ 30	Pass
915.25	19.68	≤ 30	Pass
927.25	19.59	≤ 30	Pass

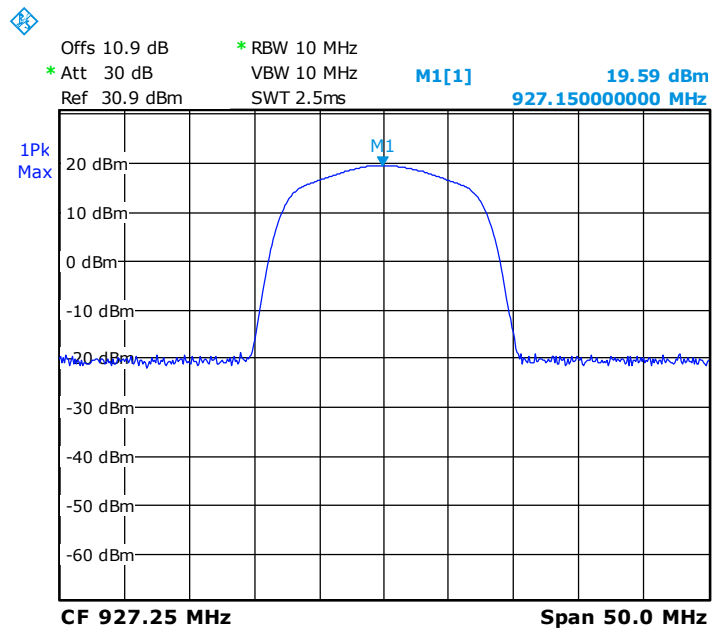
Test Result:	Test passed
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Date: 14.AUG.2009 13:03:32



Date: 14.AUG.2009 13:04:16



Date: 14.AUG.2009 13:05:03

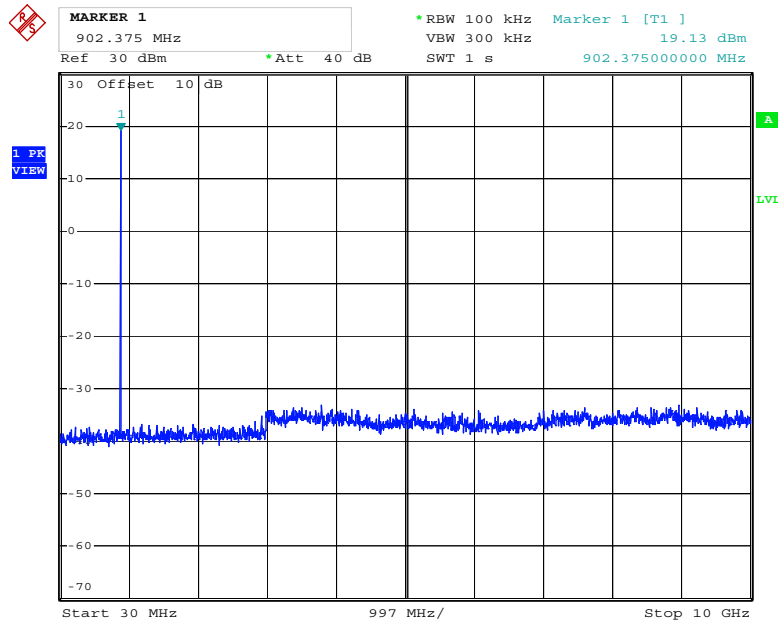
8.10 Conducted Emission Measurement 30 MHz to 10 GHz

Rules and specifications:	CFR 47 Part 15, section 15.247(d) IC RSS-210 Issue 7, section A8.5
Guide:	ANSI C63.4
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits
Measurement procedure:	Conducted Output Power (6.1)

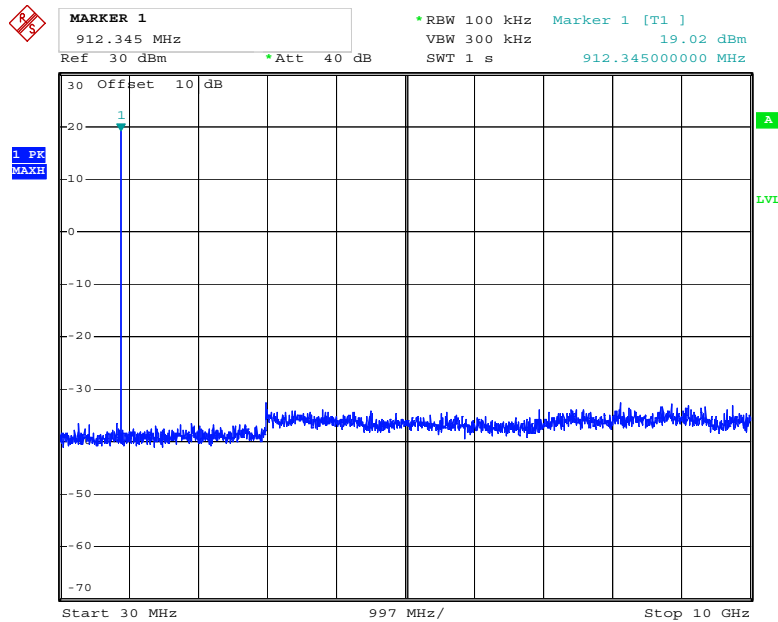
Comment:	Test was performed with module
Date of test:	August 21, 2009
Test site:	Open field test site

All emissions of all testings show more than 20 dB margin to the limit, no values recorded.

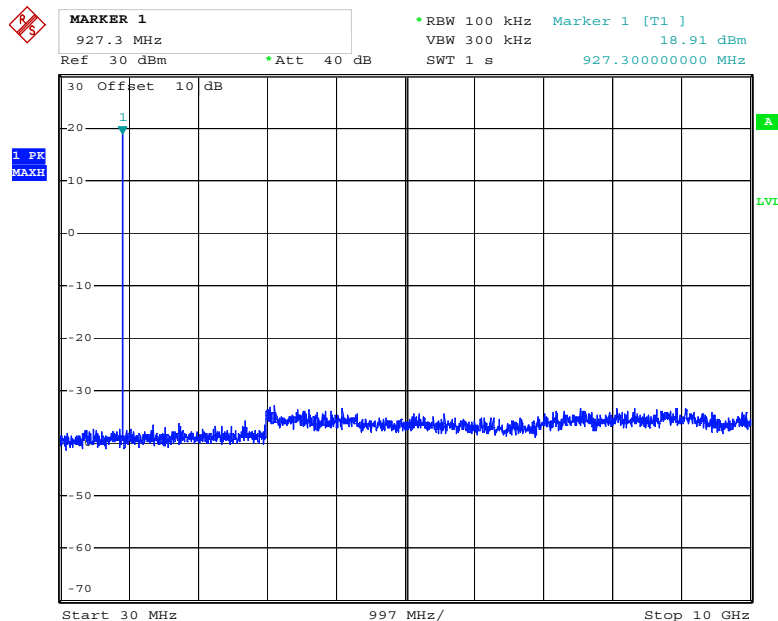
Test Result:	Test passed
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Date: 21.AUG.2009 10:09:14



Date: 21.AUG.2009 10:10:29



Date: 21.AUG.2009 10:11:23

8.11 Radiated Emission Measurement 9 kHz to 30 MHz

Rules and specifications:	CFR 47 Part 15, sections 15.205 and 15.209 IC RSS-210 Issue 7, sections 2.2 and 2.6			
Guide:	ANSI C63.4			
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply the radiated emission limits specified in Section 15.209(a).			
Limit according to 15.209(a):	Frequency of Emission (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Field Strength ($\text{dB}\mu\text{V}/\text{m}$)	Measurement Distance d (meters)
	0.009 - 0.490	$2400/F(\text{kHz})$	$67.6 - 20 \cdot \log(F(\text{kHz}))$	300
	0.490 - 1.705	$24000/F(\text{kHz})$	$87.6 - 20 \cdot \log(F(\text{kHz}))$	30
	1.705 - 30.000	30	29.5	30
	Additionally, the level of any unwanted emissions shall not exceed the level of the fundamental emission.			
Measurement procedure:	Radiated Emission Measurement 9 kHz to 30 MHz (6.3)			

Comment:	
Date of test:	July 30, 2009
Test site:	Open field test site

All emissions show more than 20 dB margin to the limit, no values recorded.

Test Result:	Test passed
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8.12 Radiated Emission Measurement 30 MHz to 10 GHz

Rules and specifications:	CFR 47 Part 15, sections 15.215(b) and 15.247 IC RSS-210 Issue 7, section A8		
Guide:	ANSI C63.4		
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply the radiated emission limits specified in Section 15.209(a).		
Limit 15.209(a):	Frequency of Emission (MHz)	Field Strength (µV/m)	Field Strength (dBµV/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 (6.4) Radiated Emission at Open Field Test Site (6.5)		

Test Result:	Test passed
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Comment:	
Mode:	Transmitting continuously with 902.75 MHz
Date of test:	July 30, 2009 August 14, 2009
Test site:	Frequencies ≤ 1 GHz: Open field test site Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	Frequencies ≤ 8.2 GHz: 3 meters Frequencies > 8.2 GHz: 1 meters

Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dBµV)	Correction Factor (dB/m)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
902.750	horizontal	Quasi-Peak	94.8	27.7		122.5		
1806.400	vertical	Peak	21.6	31.3		52.9	102.5	49.6
2708.000	horizontal	Peak	10.3	28.8		39.1	54.0	14.9
3612.500	vertical	Peak	14.9	29.7		44.7	54.0	9.3
4512.400	vertical	Peak	12.6	34.0		46.6	54.0	7.4
5420.600	vertical	Peak	7.8	34.9		42.7	54.0	11.3

Sample calculation of final values:

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



Comment:	
Mode:	Transmitting continuously with 915.25 MHz
Date of test:	July 30, 2009 August 14, 2009
Test site:	Frequencies ≤ 1 GHz: Open field test site Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	Frequencies ≤ 8.2 GHz: 3 meters Frequencies > 8.2 GHz: 1 meters

Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dBµV)	Correction Factor (dB/m)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
915.250	horizontal	Quasi-Peak	94.4	27.6		122.0		
1832.000	vertical	Peak	24.1	31.4		55.6	102.2	46.7
2745.800	horizontal	Peak	12.4	28.8		41.2	54.0	12.8
3661.100	vertical	Peak	18.6	29.8		48.4	54.0	5.6
4577.000	vertical	Peak	15.9	34.1		50.0	54.0	4.0
5492.800	vertical	Peak	13.6	34.9		48.6	102.2	53.7

Sample calculation of final values:

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



Comment:	
Mode:	Transmitting continuously with 927.25 MHz
Date of test:	July 30, 2009 August 14, 2009
Test site:	Frequencies ≤ 1 GHz: Open field test site Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	Frequencies ≤ 8.2 GHz: 3 meters Frequencies > 8.2 GHz: 1 meters

Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dBµV)	Correction Factor (dB/m)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
927.250	horizontal	Quasi-Peak	93.4	27.6		121.0		
1854.400	horizontal	Peak	27.1	31.5		58.7	101.0	42.4
1854.428	horizontal	Average	21.1	31.5		52.7	101.0	48.3
1854.522	horizontal	Average	25.7	31.5		57.3	101.0	43.8
2783.600	horizontal	Peak	15.7	28.8		44.6	54.0	9.4
3709.700	vertical	Peak	23.5	29.8		53.3	54.0	0.7
4636.280	vertical	Average	18.2	34.1		52.3	54.0	1.7
4637.800	vertical	Peak	20.0	34.1		54.1	74.0	19.9
5568.800	vertical	Peak	15.8	35.0		50.8	101.0	50.2
8344.000	horizontal	Peak	5.9	43.3		49.2	63.5	14.3

Sample calculation of final values:

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

8.13 RF exposure requirement

Rules and specifications:	CFR 47 Part 15, section 15.247(i) CFR 47 Part 1, sections 1.1307(b)(1)				
Guide:	OET Bulletin 65, Edition 97-01				
Limits:	Limits for general population / uncontrolled exposure				
	Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time (minutes)
	0.3 - 1.34	614	1.63	(100)*	30
	1.34 - 30	824 / f	2.19 / f	(180 / f ²)*	30
	30 - 300	27.5	0.073	0.2	30
	300 - 1500	---	---	f/1500	30
	1500 - 100000	---	---	1.0	30
	f = frequency in MHz * Plane-wave equivalent power density				

Spectral power density		Declared by applicant	Measured
Prediction ⁸ :	$S = P G / 4 \pi R^2$		
Where:	S = Power density P = Power input of antenna G = Power gain of the antenna relativ to an isotropic radiator R = Distance to the center of radiation of the antenna		
Maximum output power:	P = 19.79 dBm = 95.28 mW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Antenna gain:	G = 4.5 dBi = 2.82	<input checked="" type="checkbox"/>	
Prediction distance:	R = 20 cm		
Power density at 20 cm:	S = 0.053 mW/cm²		
Limit	S_{lim} = 0.602 mW/cm²		

Test Result:	Test passed
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⁸ MPE Prediction of MPE according to equation from page 19 of OET Bulletin 65, Ed. 97-01

8.14 Exposure of Humans to RF Fields

Rules and specifications:	IC RSS-Gen Issue 2, section 5.5
Guide:	IC RSS-102 Issue 2, section 2.5

Exposure of Humans to RF Fields	Applicable	Declared by applicant	Measured	Exemption
The antenna is				
<input type="checkbox"/> detachable				
<p>The conducted output power (CP in watts) is measured at the antenna connector:</p> $CP = \dots\dots\dots \mathbf{W}$ <p>The effective isotropic radiated power (EIRP in watts) is calculated using</p> <p><input type="checkbox"/> the numerical antenna gain: $G = \dots\dots\dots$</p> $EIRP = G \cdot CP \Rightarrow EIRP = \dots\dots\dots \mathbf{W}$ <p><input type="checkbox"/> the field strength⁹ in V/m: $FS = \dots\dots\dots \mathbf{V/m}$</p> $EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP = \dots\dots\dots \mathbf{W}$ <p>with:</p> <p>Distance between the antennas in m: $D = \dots\dots\dots \mathbf{m}$</p>			<input type="checkbox"/>	
<input checked="" type="checkbox"/> not detachable				
<p>A field strength measurement is used to determine the effective isotropic radiated power (EIRP in watts) given by⁹:</p> $EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP = \mathbf{0.533 W}$ <p>with:</p> <p>Field strength in V/m: $FS = \mathbf{1.33 V/m}$</p> <p>Distance between the two antennas in m: $D = \mathbf{3 m}$</p>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Selection of output power				
<p>The output power TP is the higher of the conducted or effective isotropic radiated power (e.i.r.p.):</p> $TP = \mathbf{0.533 W}$				

⁹ 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. 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.



Exposure of Humans to RF Fields (continued)	Applicable	Declared by applicant	Measured	Exemption
Separation distance between the user and the transmitting device is				
<input type="checkbox"/> less than or equal to 20 cm		<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/> greater than 20 cm				
Transmitting device is				
<input type="checkbox"/> in the vicinity of the human head		<input type="checkbox"/>		
<input type="checkbox"/> body-worn				
SAR evaluation				
SAR evaluation is required if the separation distance between the user and the device is less than or equal to 20 cm.				
<input type="checkbox"/> The device operates from 3 kHz up to 1 GHz inclusively and its source-based time-averaged output power is less than, or equal to 200 mW for General Public Use and 1000 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> The device operates above 1 GHz up to 2.2 GHz inclusively and its source-based time-averaged output power is less than, or equal to 100 mW for General Public Use and 500 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> The device operates above 2.2 GHz up to 3 GHz inclusively and its source-based time-averaged output power is less than, or equal to 20 mW for General Public Use and 100 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> The device operates above 3 GHz up to 6 GHz inclusively and its source-based time-averaged output power) is less than, or equal to 10 mW for General Public Use and 50 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> SAR evaluation is documented in test report no.				
RF exposure evaluation				
RF exposure evaluation is required if the separation distance between the user and the device is greater than 20 cm.				
<input checked="" type="checkbox"/> The device operates below 1.5 GHz and its e.i.r.p. is equal to or less than 2.5 W.				<input checked="" type="checkbox"/>
<input type="checkbox"/> The device operates at or above 1.5 GHz and the e.i.r.p. of the device is equal to or less than 5 W.				<input type="checkbox"/>
<input type="checkbox"/> RF exposure evaluation is documented in test report no.				

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 1, 2006
<input checked="" type="checkbox"/>	CFR 47 Part 15	Code of Federal Regulations Part 15 (Radio Frequency Devices) of the Federal Communication Commission (FCC)	October 1, 2008
<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-Gen	Radio Standards Specification RSS-Gen Issue 2 containing General Requirements and Information for the Certification of Radiocommunication Equipmment, published by Industry Canada	June 2007
<input checked="" type="checkbox"/>	RSS-210	Radio Standards Specification RSS-210 Issue 7 for Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment, published by Industry Canada	June 2007
<input type="checkbox"/>	RSS-310	Radio Standards Specification RSS-310 Issue 1 for Low Power Licence-Ecempt Radiocommunicaton Devices (All Frequency Bands): Category II Equipment, published by Industry Canada	September 2005
<input checked="" type="checkbox"/>	RSS-102	Radio Standards Specification RSS-102 Issue 2: Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)	November 2005
<input type="checkbox"/>	ICES-003	Interference-Causing Equipment Standard ICES-003 Issue 4 for Digital Apparatus, published by Industry Canada	February 7, 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



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 Revision History

Revision History			
<i>Edition</i>	<i>Date</i>	<i>Issued by</i>	<i>Modifications</i>
1	06.07.2009	M. Steindl (cj)	First edition
2	06.11.2009	M. Steindl	Correction of frequency ranges and type designation.



11 Charts taken during testing

Radiated Emission Test 9 kHz - 30 MHz acc. to FCC Part 15 Subpart C (FAR)

Model:
MC 9090 RFID UHF External Antenna

Serial no.:

Applicant:
BARTEC GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres

Date of test:
07/29/2009

Operator:
M. Steindl

Test performed:
by hand

File name:
default.emi

Comment:

- 6.5 V external power supply
- Transmitting continuously with modulation
- Power: 20 dBm
- Frequency: 902.75 MHz

Detector:
Peak

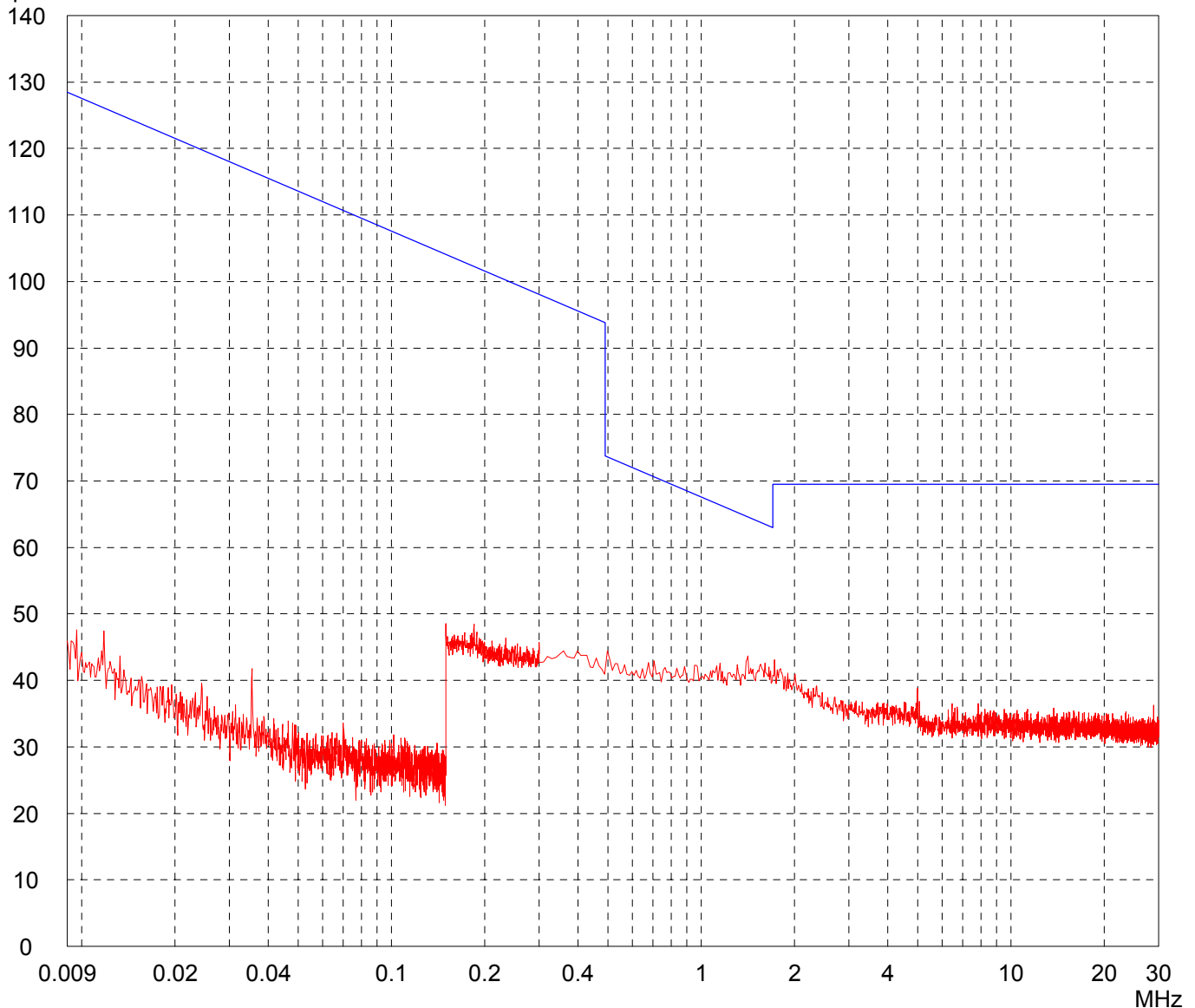
List of values:

10 dB Margin

50 Subranges

dB μ V/m

Limit1: FCC Part 15 Transducer: HFH2-Z2



Result:
Prescan

Project file:
50784-00618-1

Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

Model:
MC 9090 RFID UHF External Antenna

Serial no.:

Applicant:
BARTEC GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test:
07/29/2009

Operator:
M. Steindl

Test performed:
automatically

File name:
default.emi

Comment:

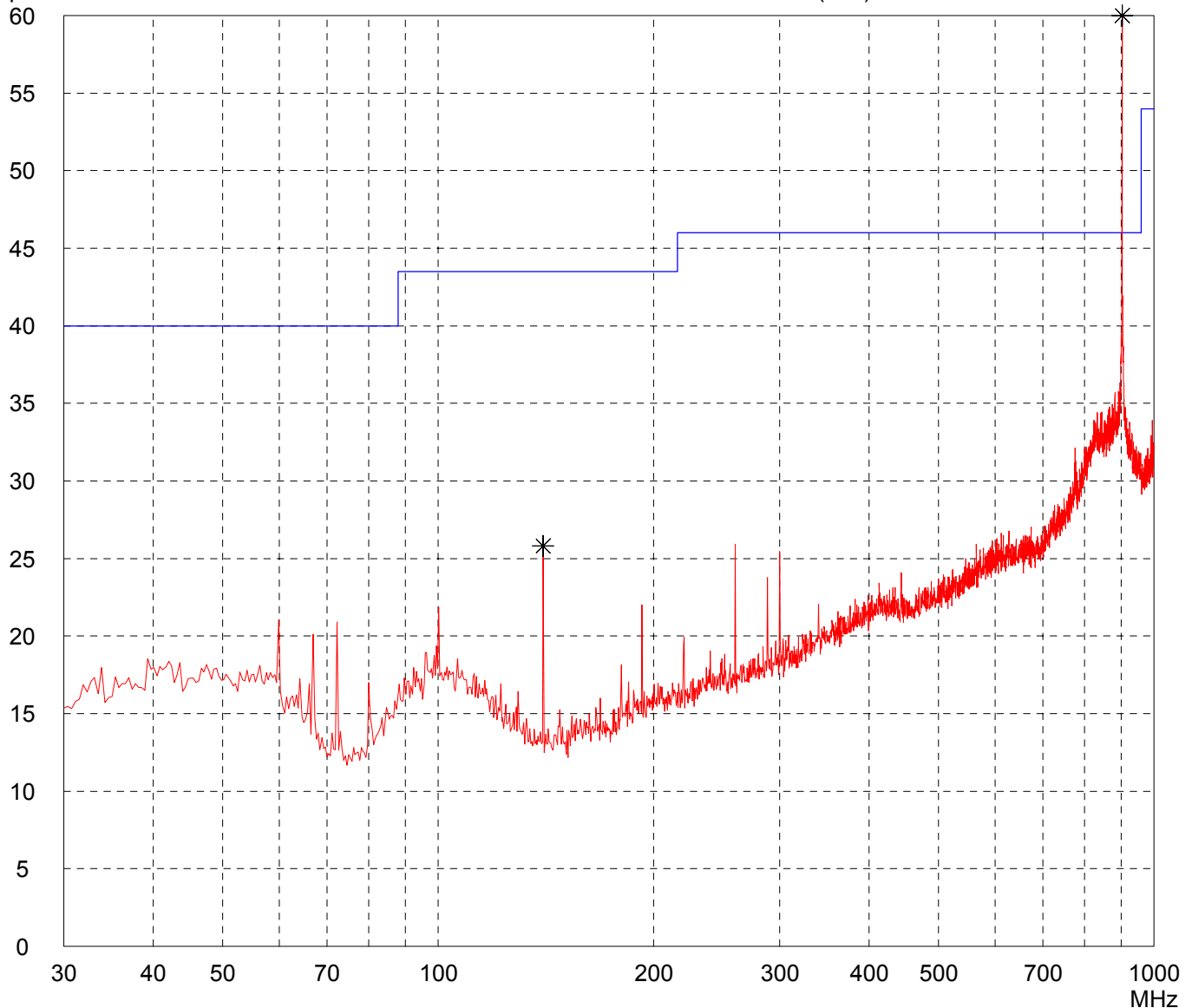
- 6.5 V external power supply
- Transmitting continuously with modulation
- Power: 20 dBm
- Frequency: 902.75 MHz
- With notch-filter set to carrier-frequency

Detector:
Peak

List of values:
Selected by hand

dB μ V/m

Limit1: FCC 15.209 (3 m) Transducer: VULB 9163



Result:
Prescan

Project file:
50784-00618-1

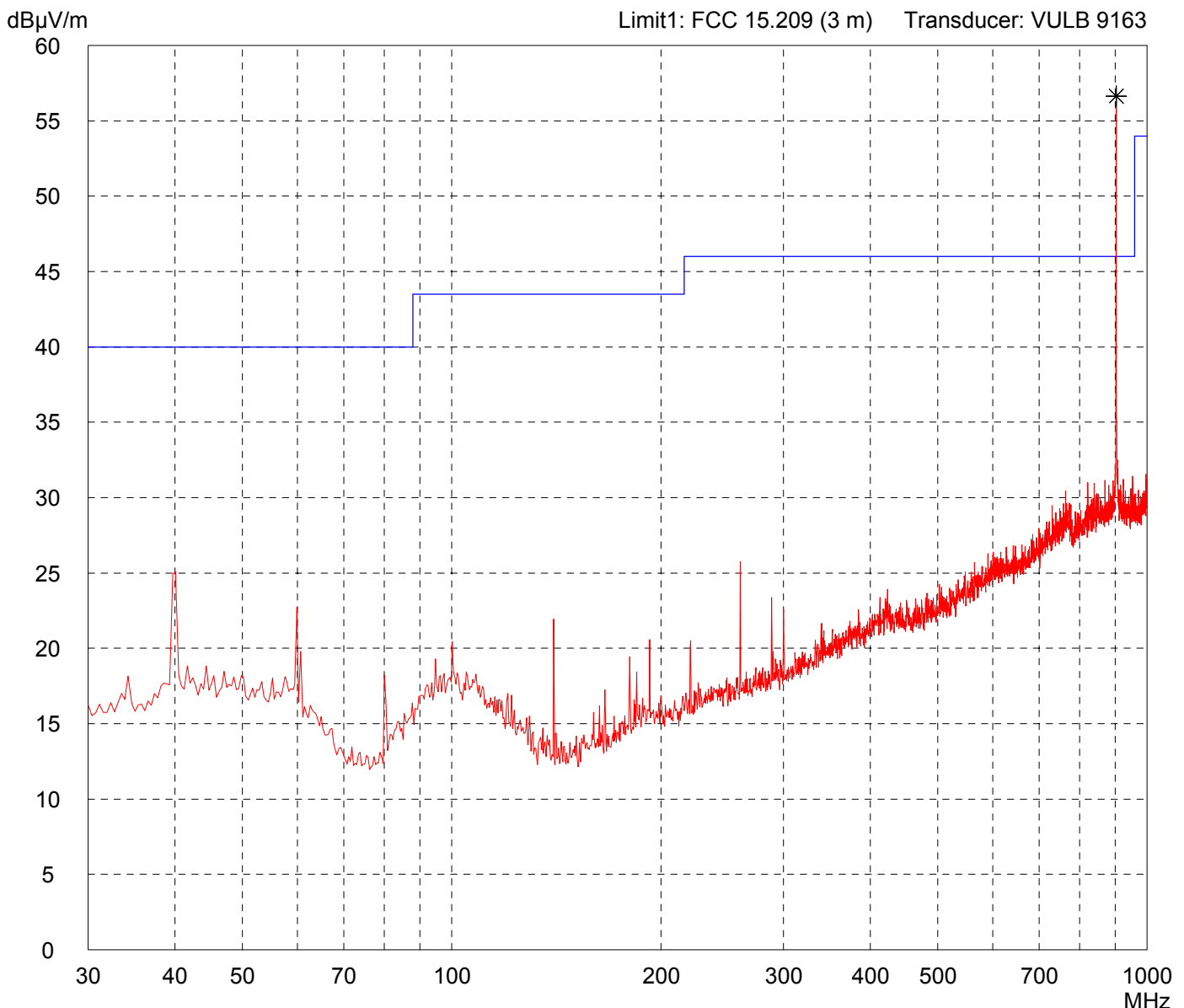
Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 902.75 MHz - With notch-filter set to carrier-frequency
--

Detector: Peak

List of values: 10 dB Margin	50 Subranges
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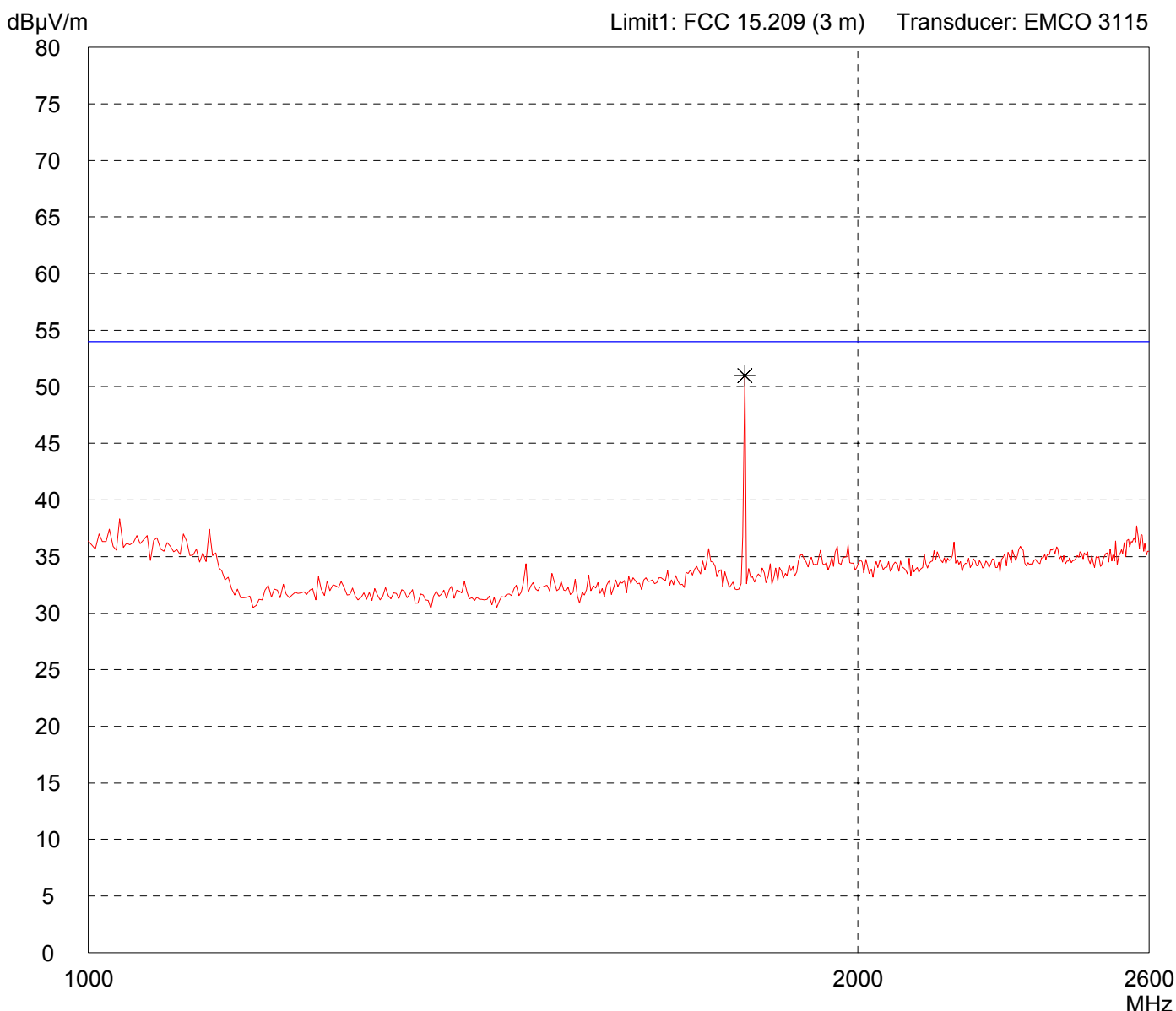
Result: Prescan

Project file: 50784-00618-1

Radiated Emission Test 1 GHz - 2.6 GHz acc. to FCC Part 15 Subpart C (FAR)

<p>Model: MC 9090 RFID UHF External Antenna</p> <p>Serial no.:</p> <p>Applicant: BARTEC GmbH</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: 07/29/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 902.75 MHz - With high-pass-filter
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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: 50784-00618-1</p>
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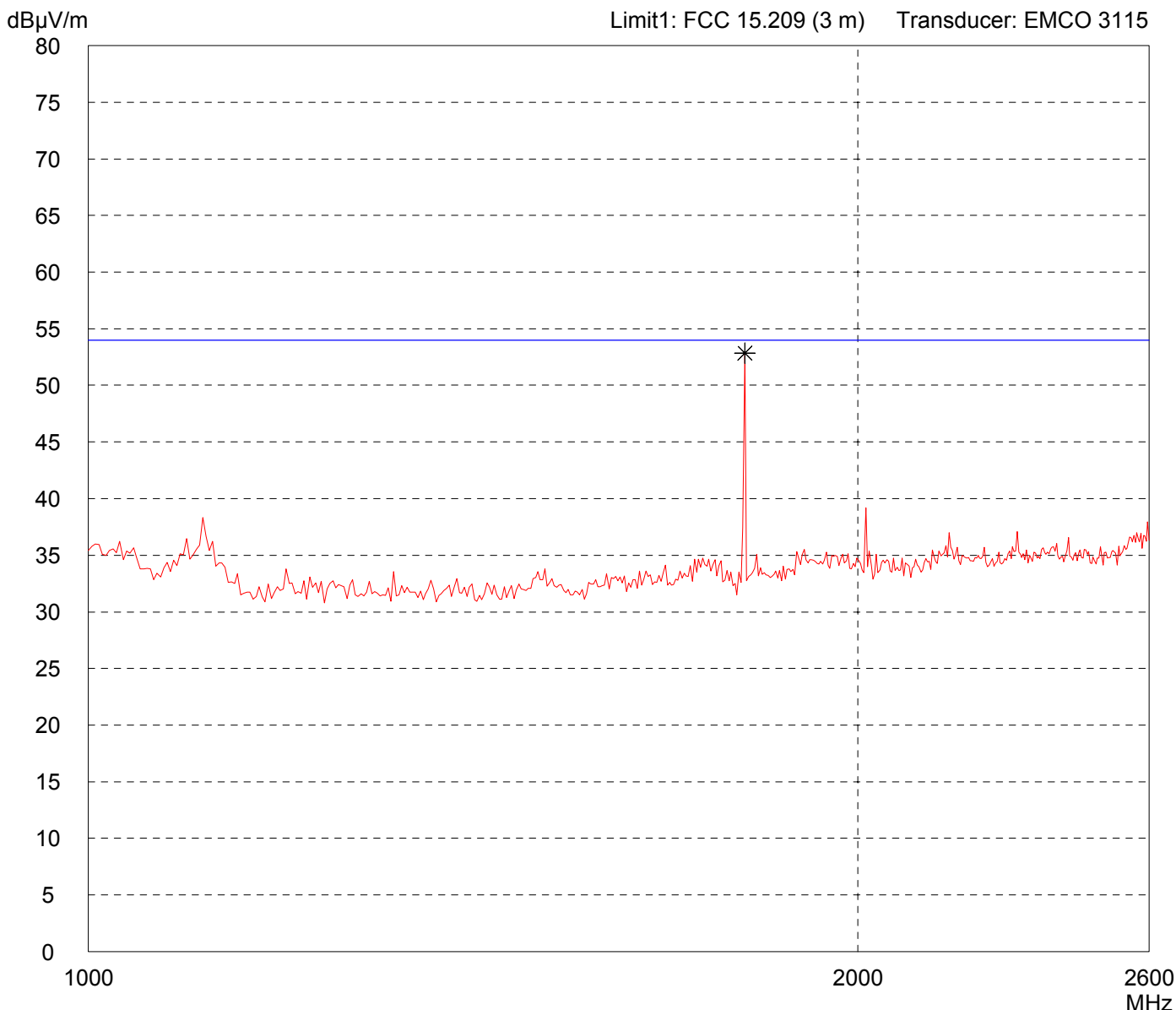
Radiated Emission Test 1 GHz - 2.6 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 902.75 MHz	
- With high-pass-filter	

Detector: Peak

List of values:	50 Subranges
10 dB Margin	



Result: Prescan

Project file: 50784-00618-1

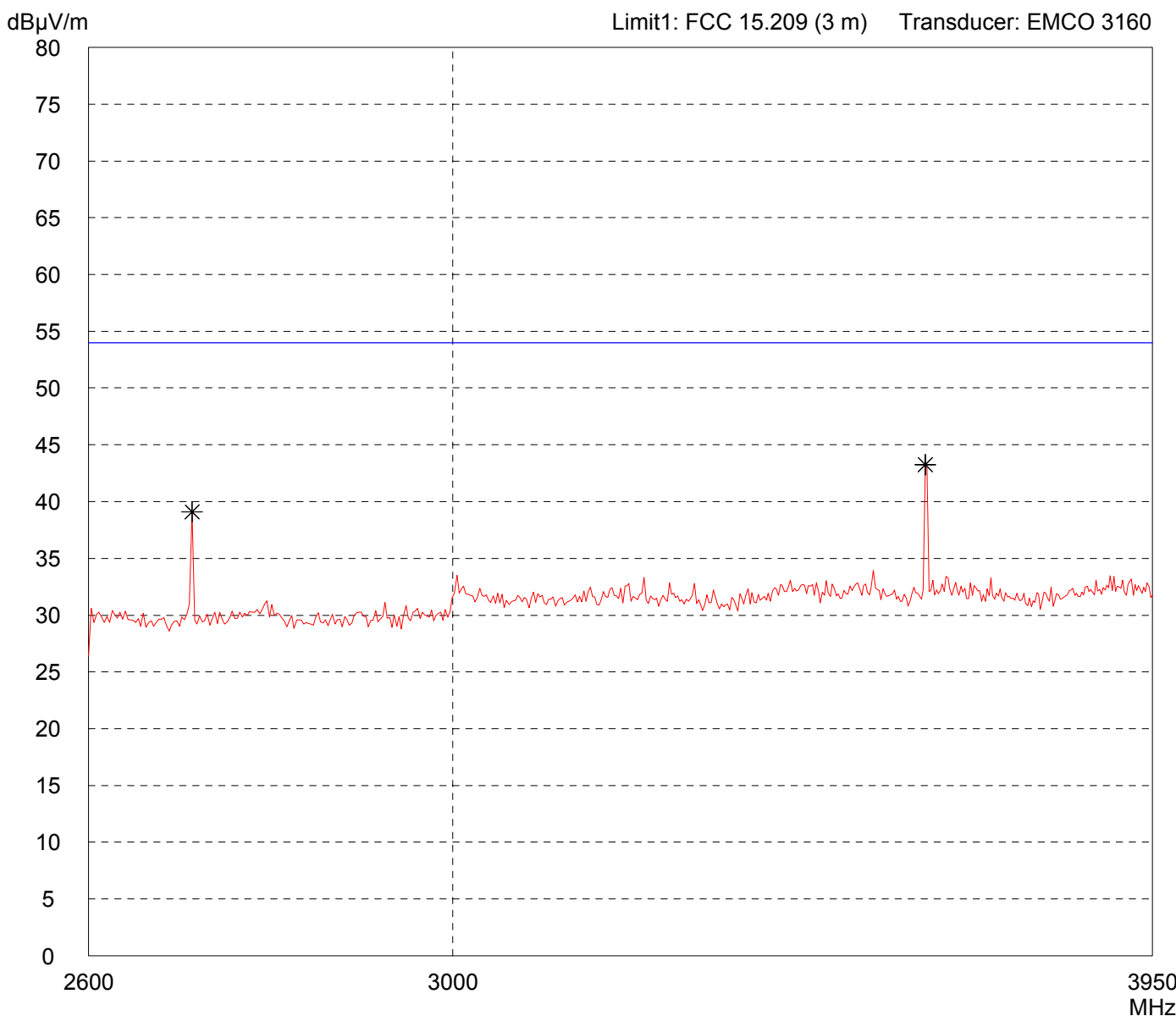
Radiated Emission Test 2.6 GHz - 3.95 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 902.75 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

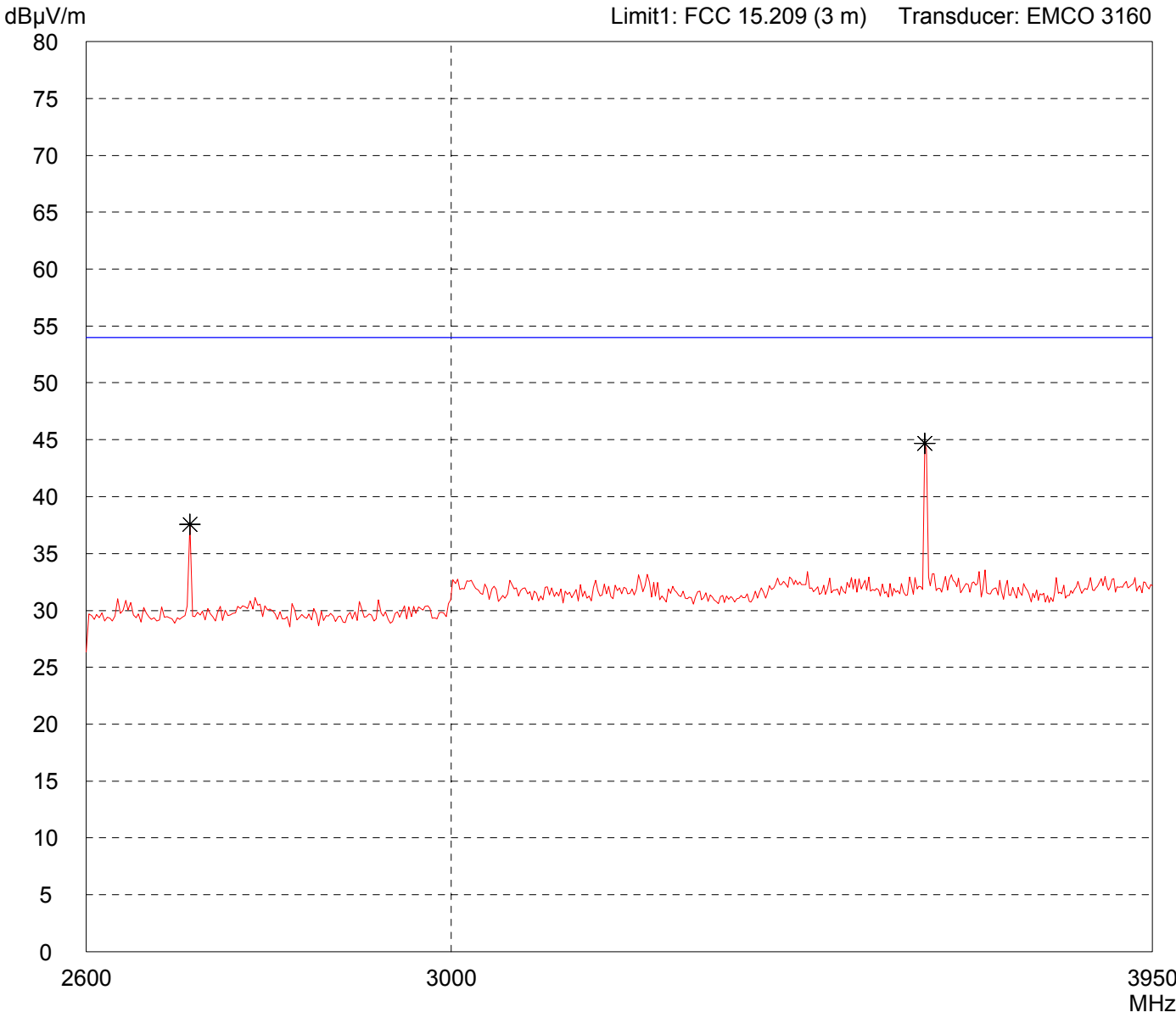
Radiated Emission Test 2.6 GHz - 3.95 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 902.75 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 Subpart C (FAR)

Model:
MC 9090 RFID UHF External Antenna

Serial no.:

Applicant:
BARTEC GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Horizontal Polarization

Date of test: 07/29/2009
Operator: M. Steindl

Test performed: automatically
File name: default.emi

Comment:
- 6.5 V external power supply
- Transmitting continuously with modulation
- Power: 20 dBm
- Frequency: 902.75 MHz

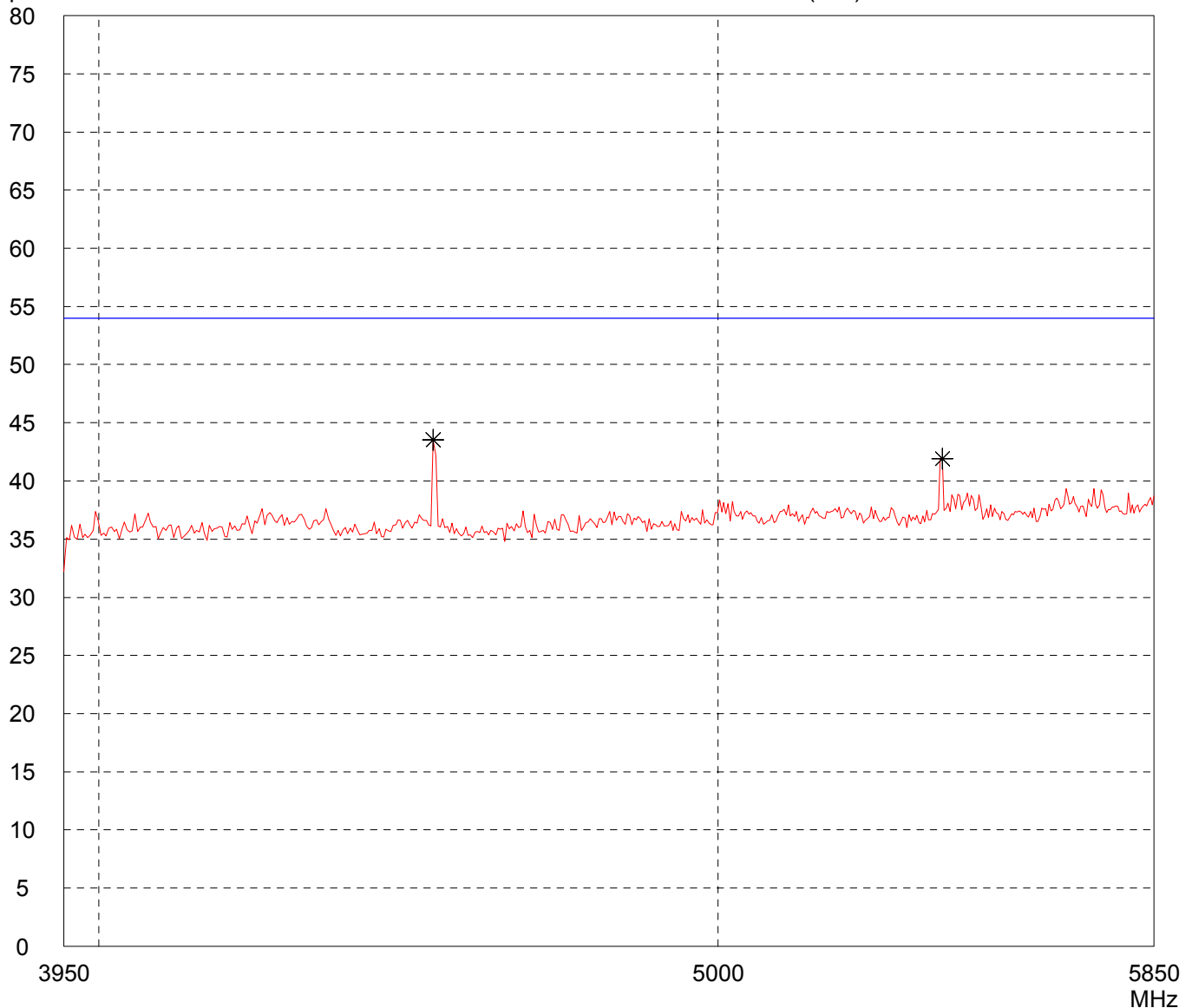
- With high-pass-filter

Detector:
Peak

List of values:
Selected by hand

dB μ V/m

Limit1: FCC 15.209 (3 m) Transducer: EMCO 3160



Result:
Prescan

Project file:
50784-00618-1

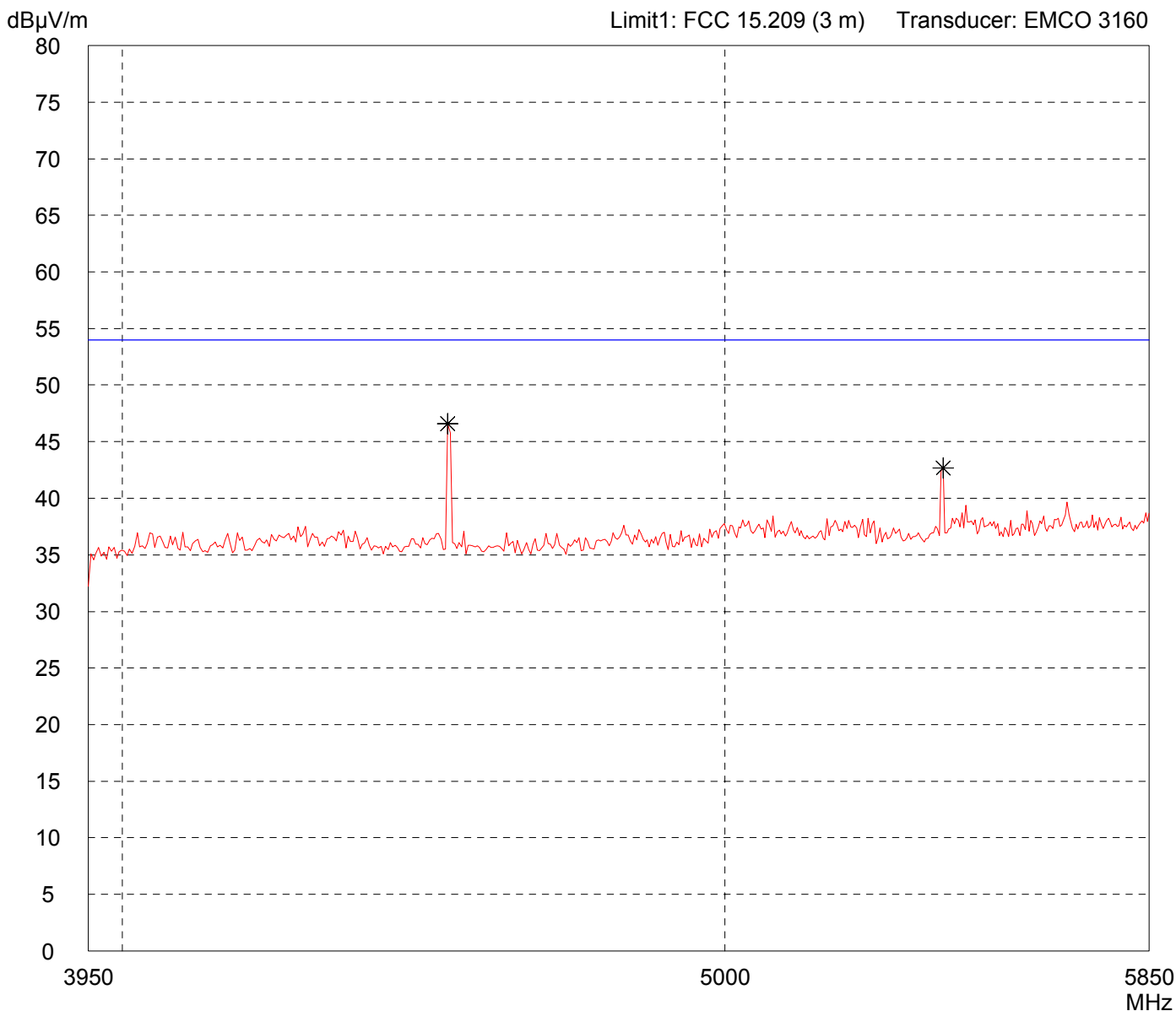
Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 902.75 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



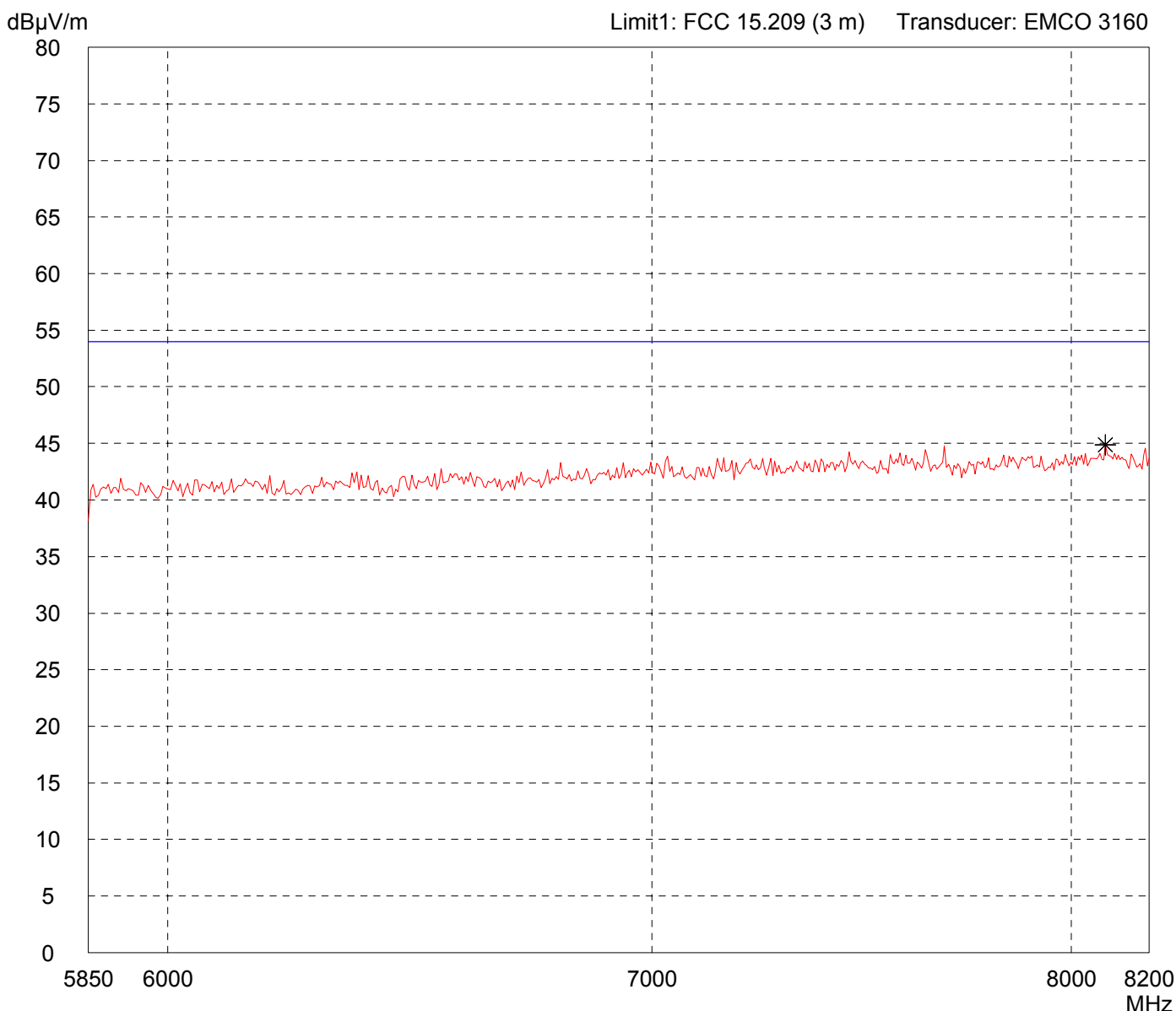
Result: Prescan

Project file: 50784-00618-1

Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 Subpart C (FAR)

<p>Model: MC 9090 RFID UHF External Antenna</p> <p>Serial no.:</p> <p>Applicant: BARTEC GmbH</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: 07/29/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 902.75 MHz - With high-pass-filter
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<p>Detector: Peak</p>	<p>List of values: Selected by hand</p>
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<p>Result: Prescan</p>	<p>Project file: 50784-00618-1</p>
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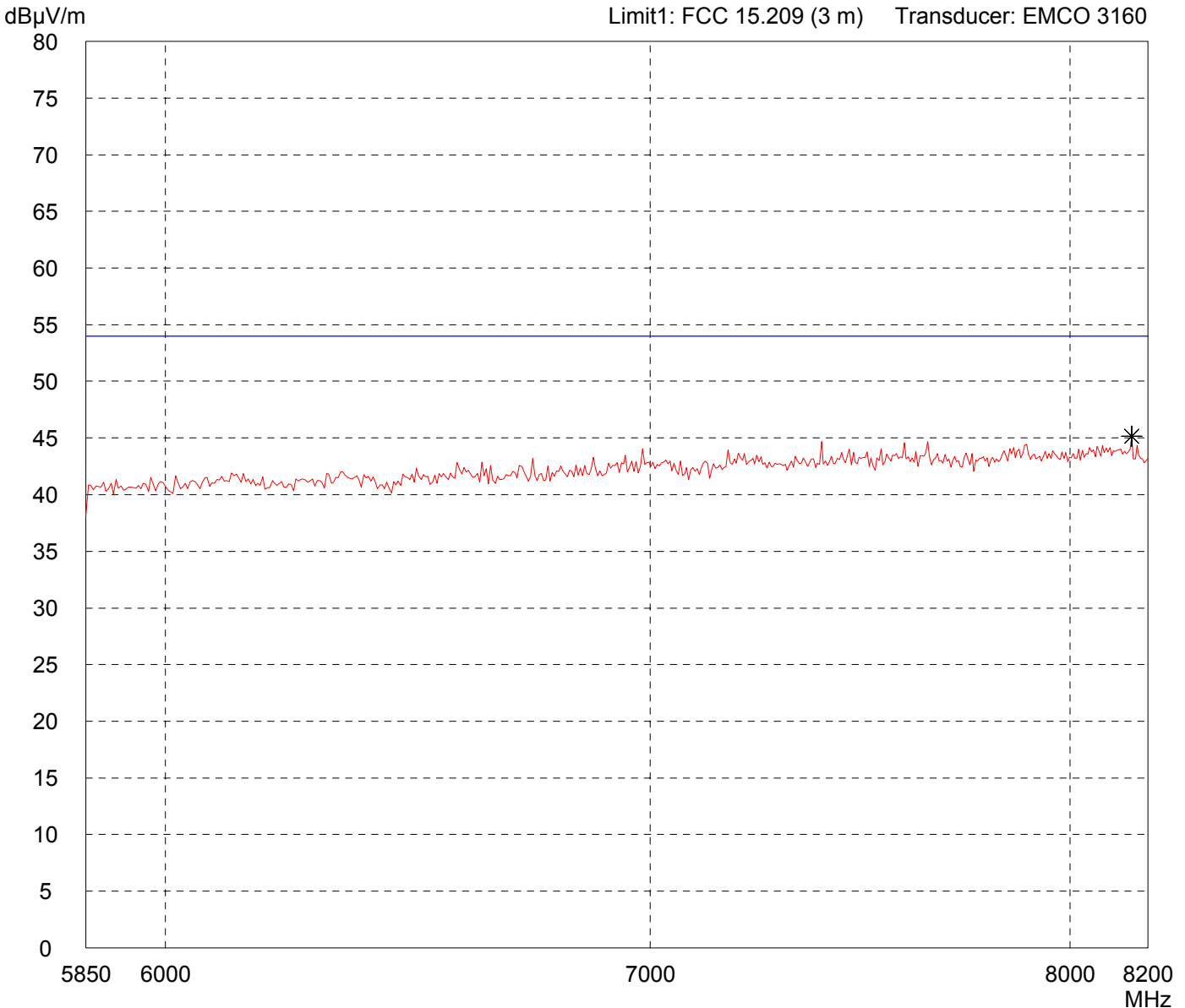
Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 902.75 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

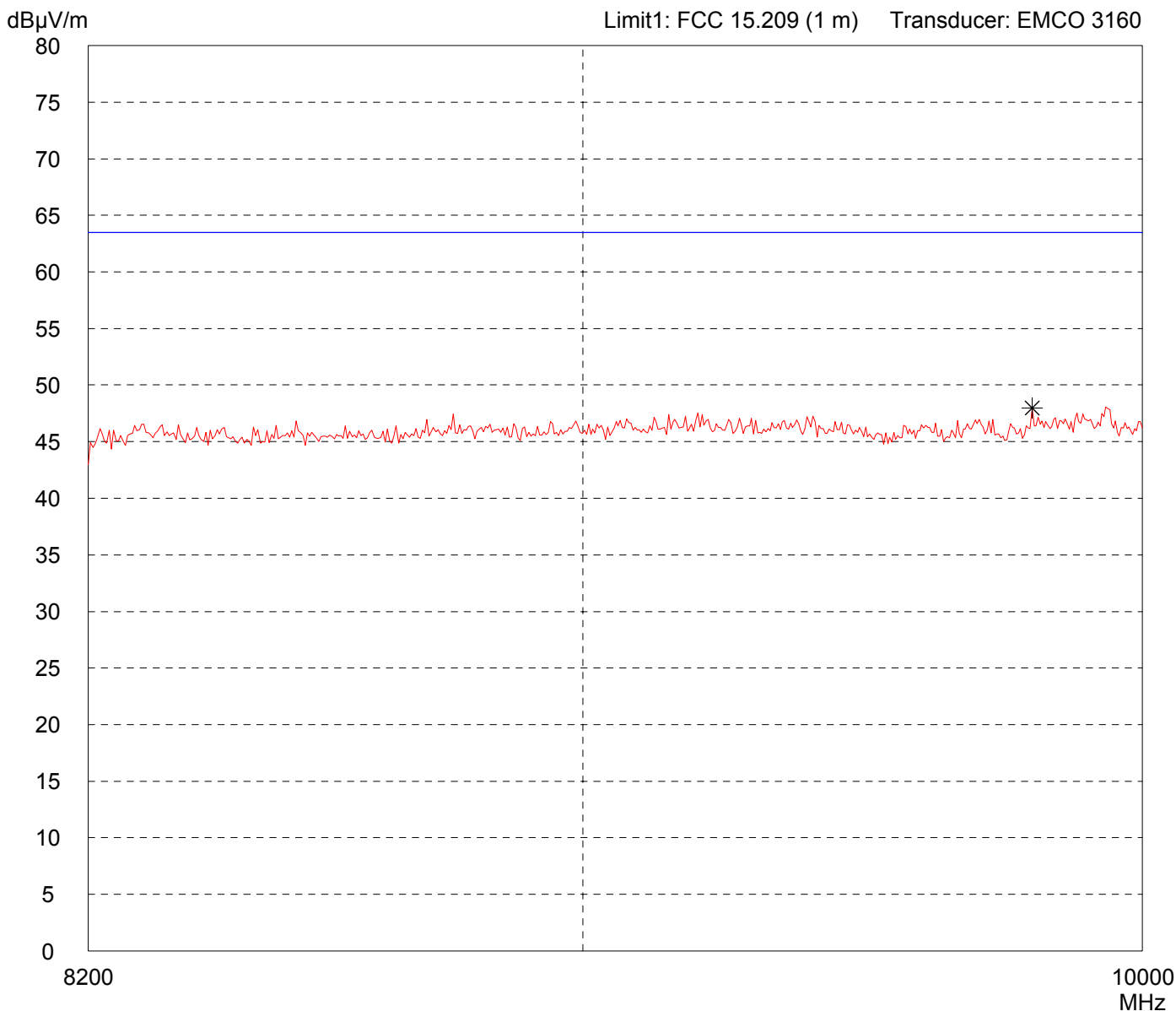
Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 902.75 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



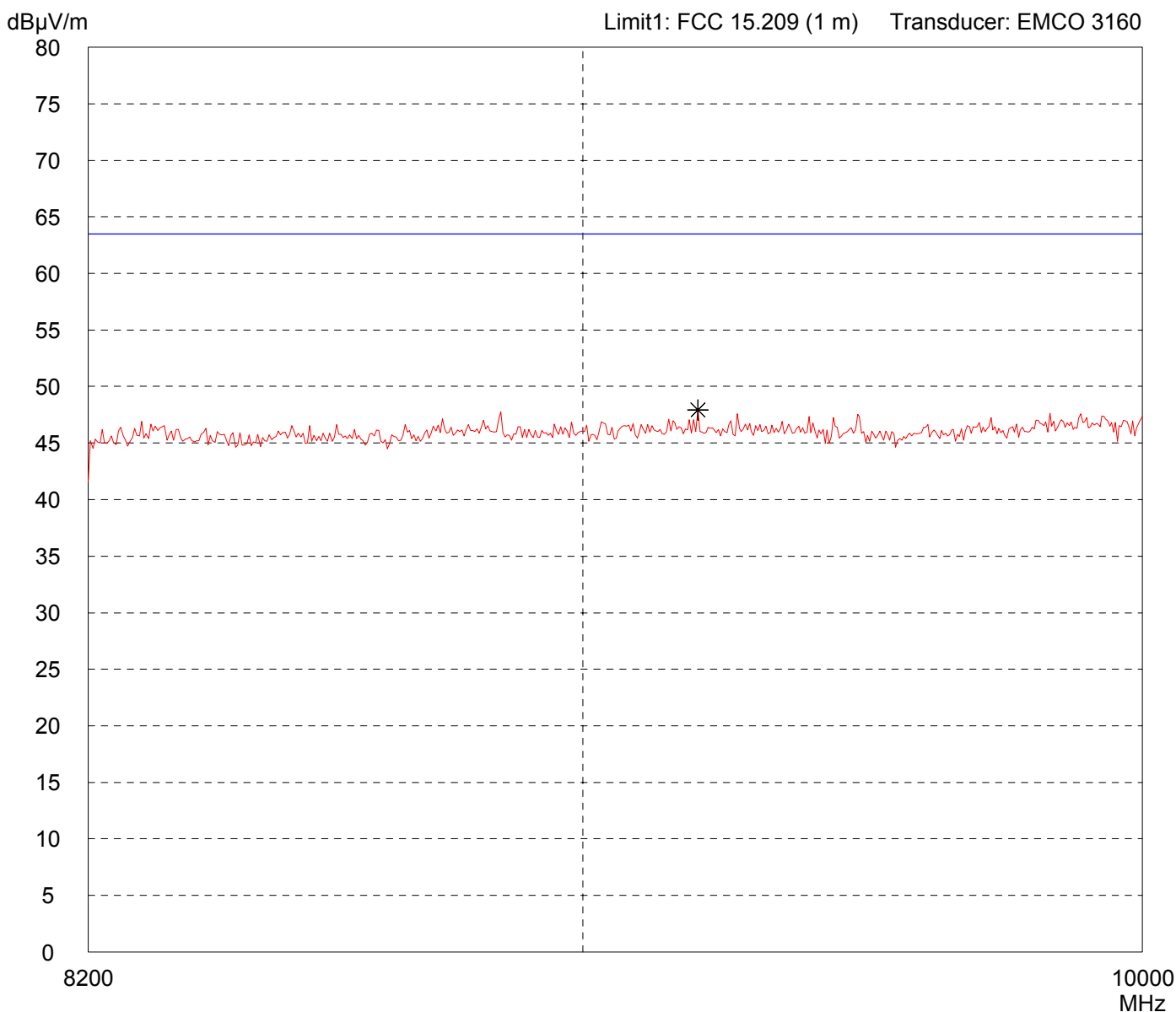
Result: Prescan

Project file: 50784-00618-1

Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 Subpart C (FAR)

<p>Model: MC 9090 RFID UHF External Antenna</p> <p>Serial no.:</p> <p>Applicant: BARTEC GmbH</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: 07/29/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 902.75 MHz - With high-pass-filter
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<p>Detector: Peak</p>	<p>List of values: Selected by hand</p>
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<p>Result: Prescan</p>	<p>Project file: 50784-00618-1</p>
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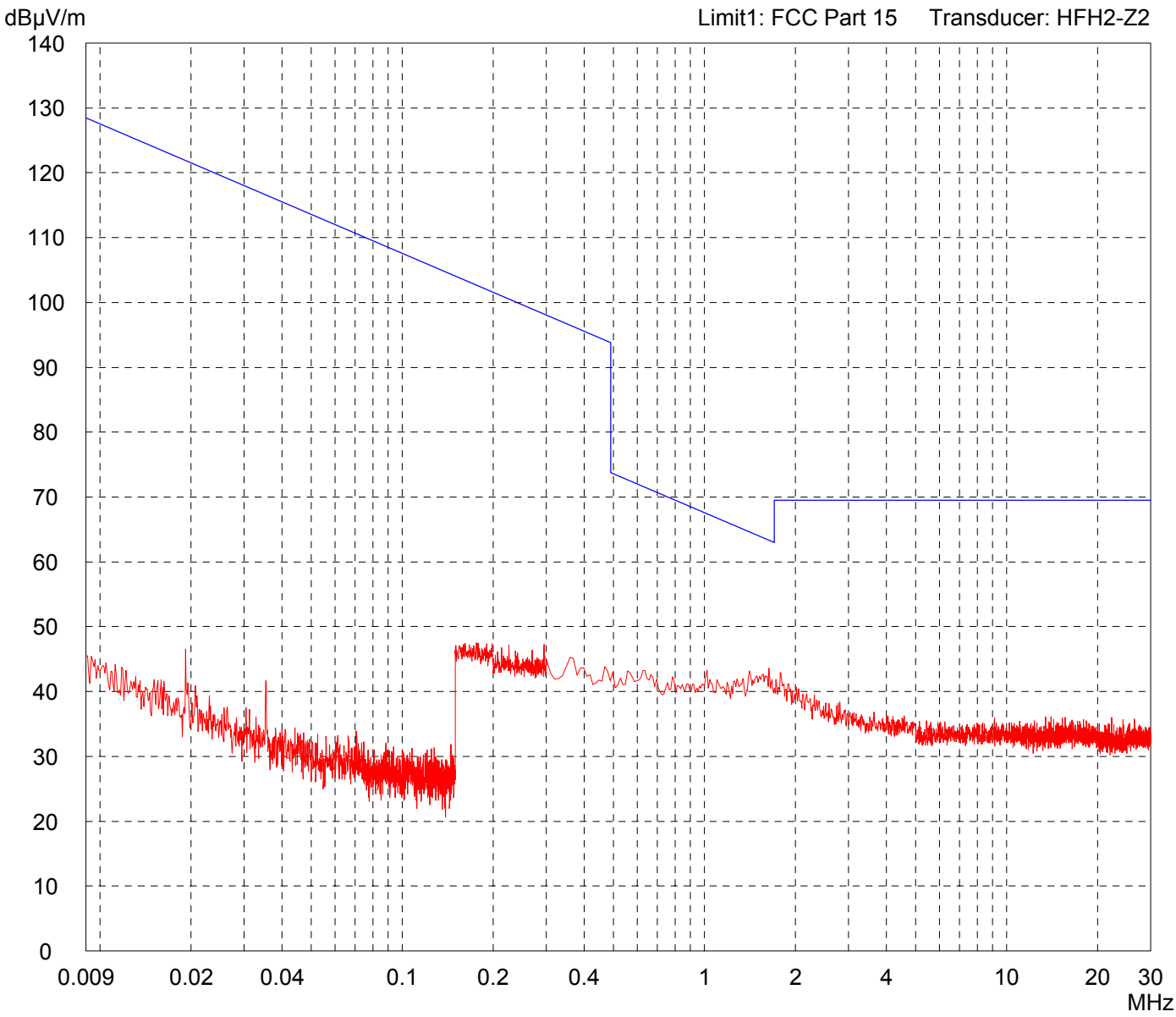
Radiated Emission Test 9 kHz - 30 MHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: by hand	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 915.25 MHz	

Detector: Peak

List of values:	
10 dB Margin	50 Subranges



Result: Prescan

Project file: 50784-00618-1	..
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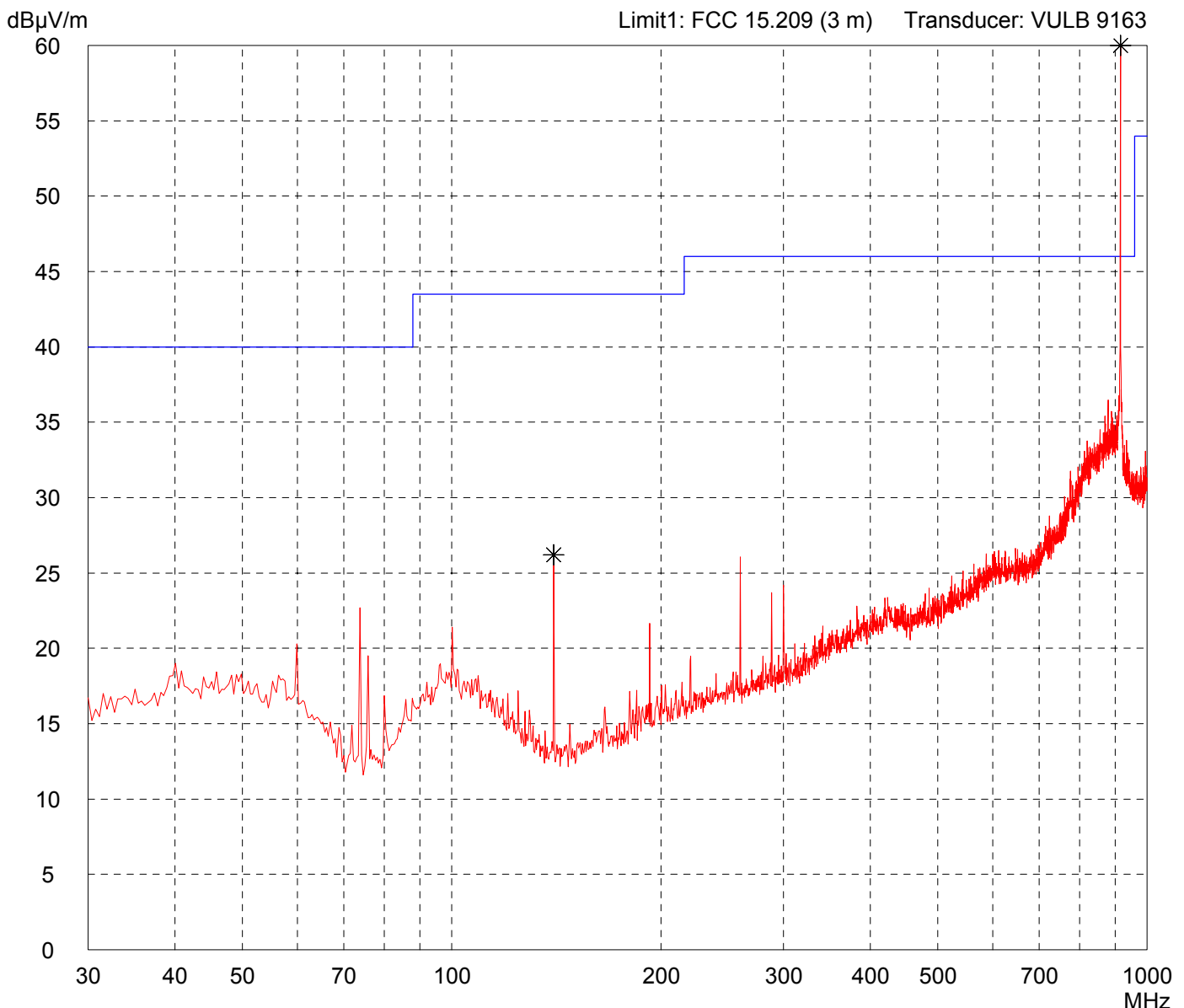
Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 915.25 MHz - With notch-filter set to carrier-frequency
--

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

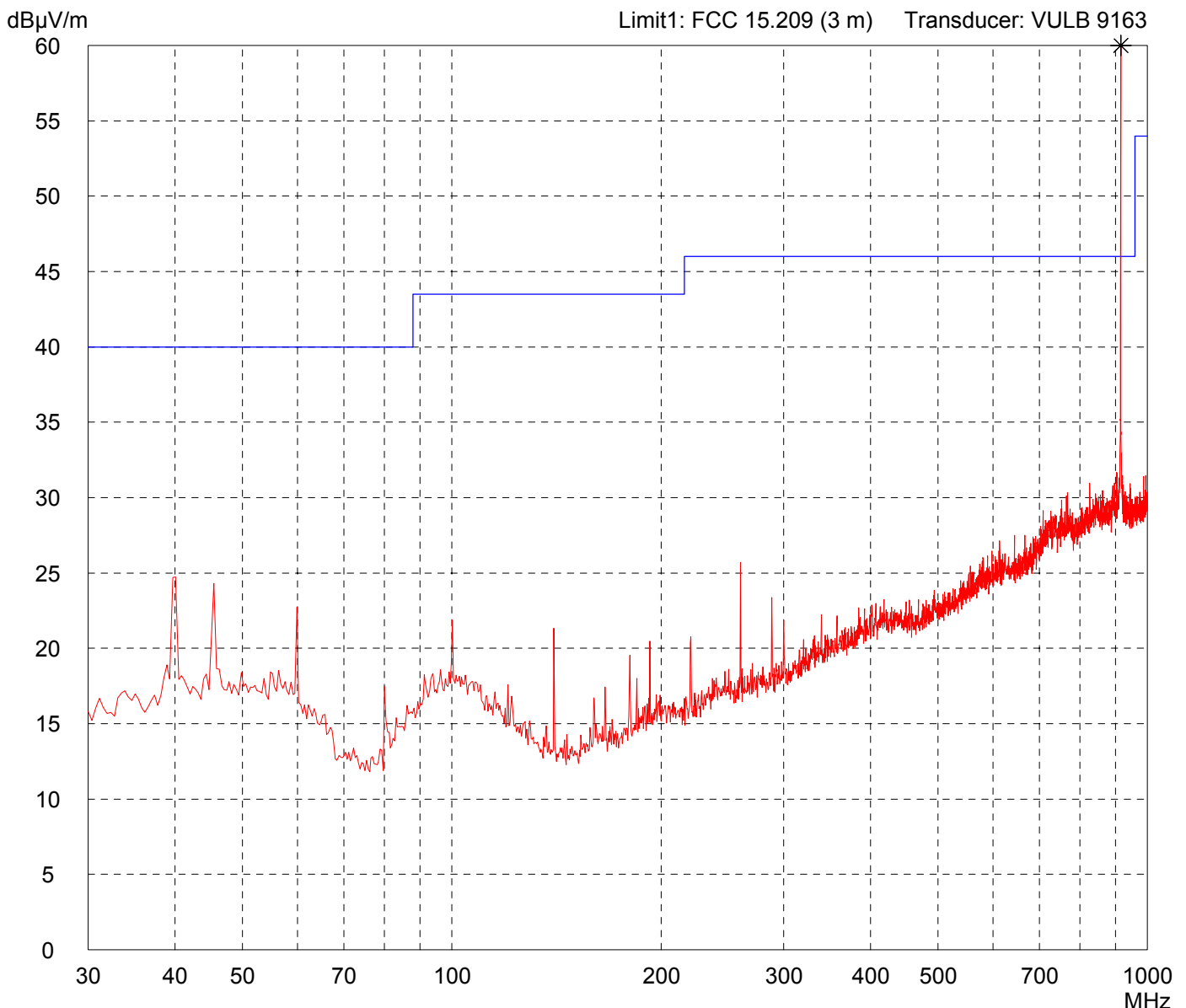
Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 915.25 MHz - With notch-filter set to carrier-frequency
--

Detector: Peak

List of values: 10 dB Margin	50 Subranges
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Result: Prescan

Project file: 50784-00618-1

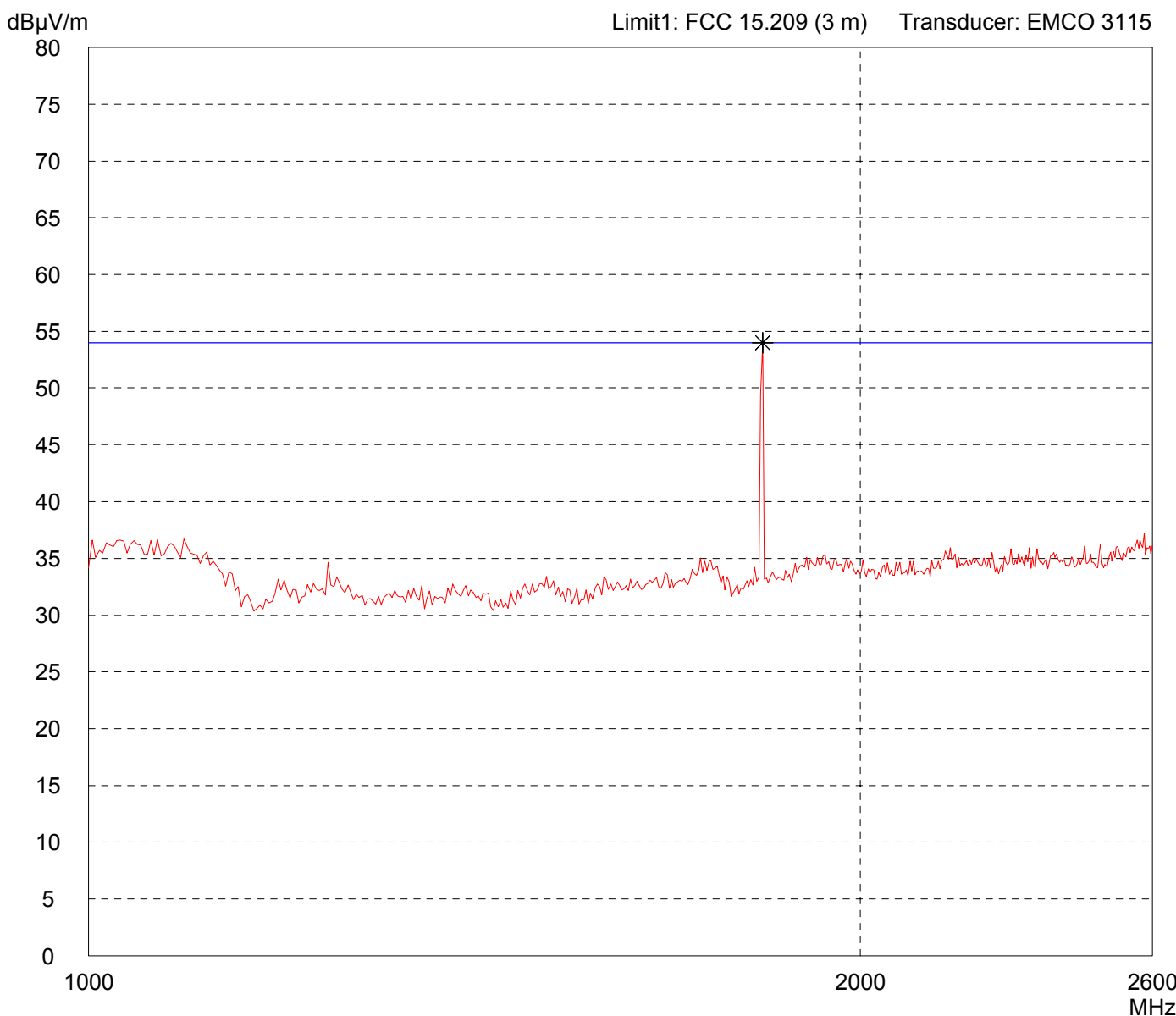
Radiated Emission Test 1 GHz - 2.6 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 915.25 MHz	
- With high-pass-filter	

Detector: Peak

List of values:	50 Subranges
10 dB Margin	



Result: Prescan

Project file: 50784-00618-1

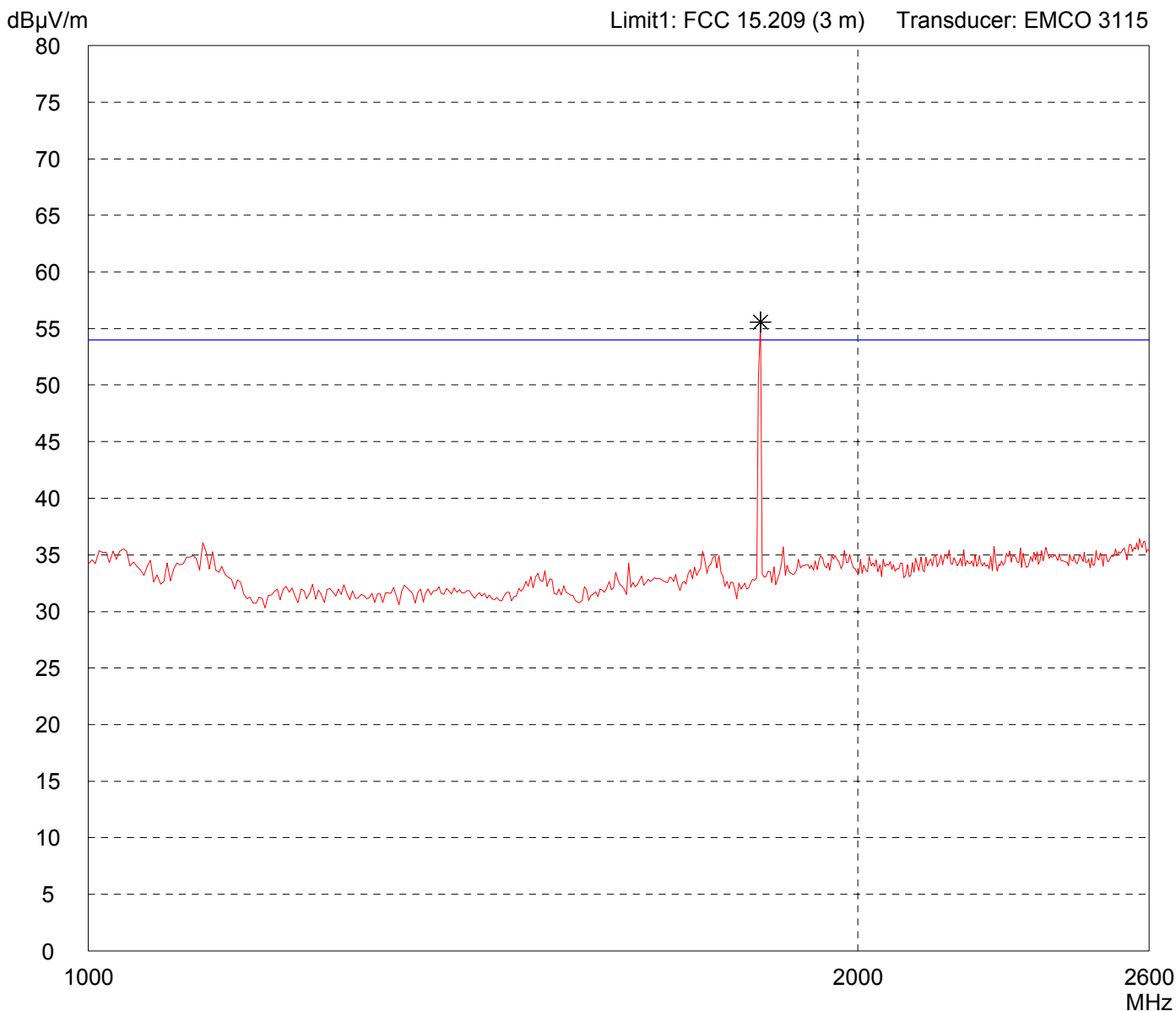
Radiated Emission Test 1 GHz - 2.6 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 915.25 MHz	
- With high-pass-filter	

Detector: Peak

List of values:	50 Subranges
10 dB Margin	



Result: Prescan

Project file: 50784-00618-1

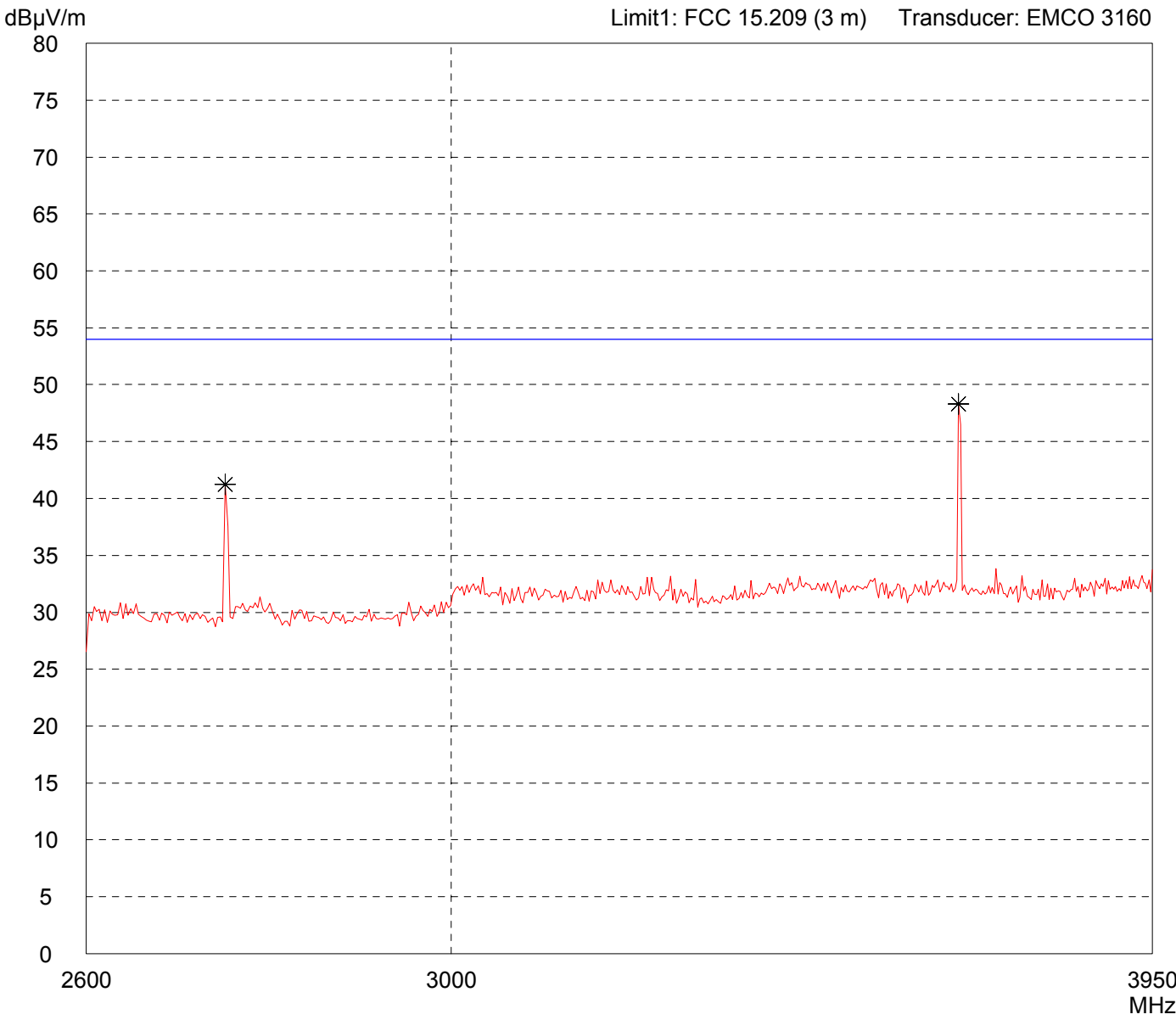
Radiated Emission Test 2.6 GHz - 3.95 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 915.25 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

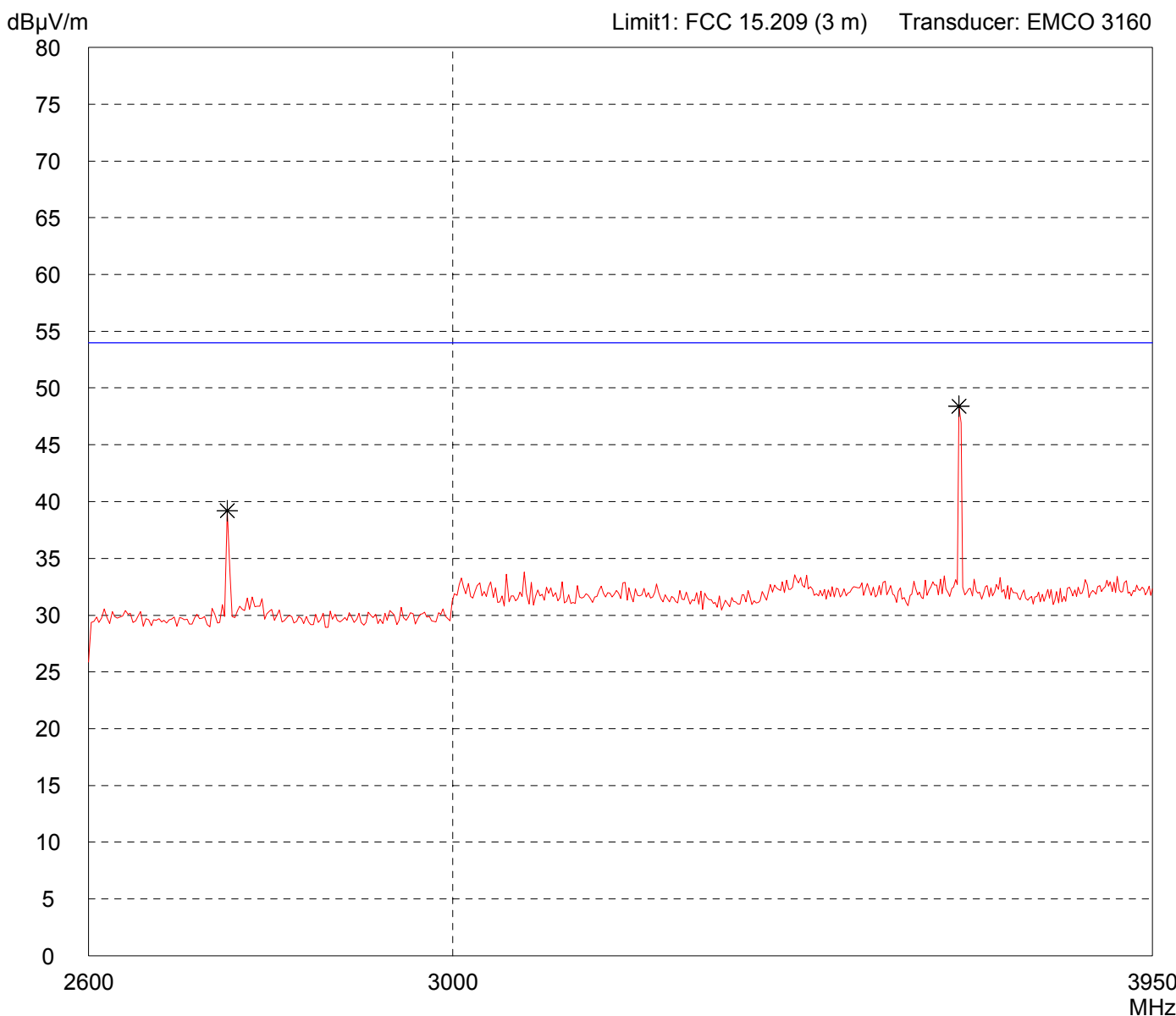
Radiated Emission Test 2.6 GHz - 3.95 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: last.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 915.25 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

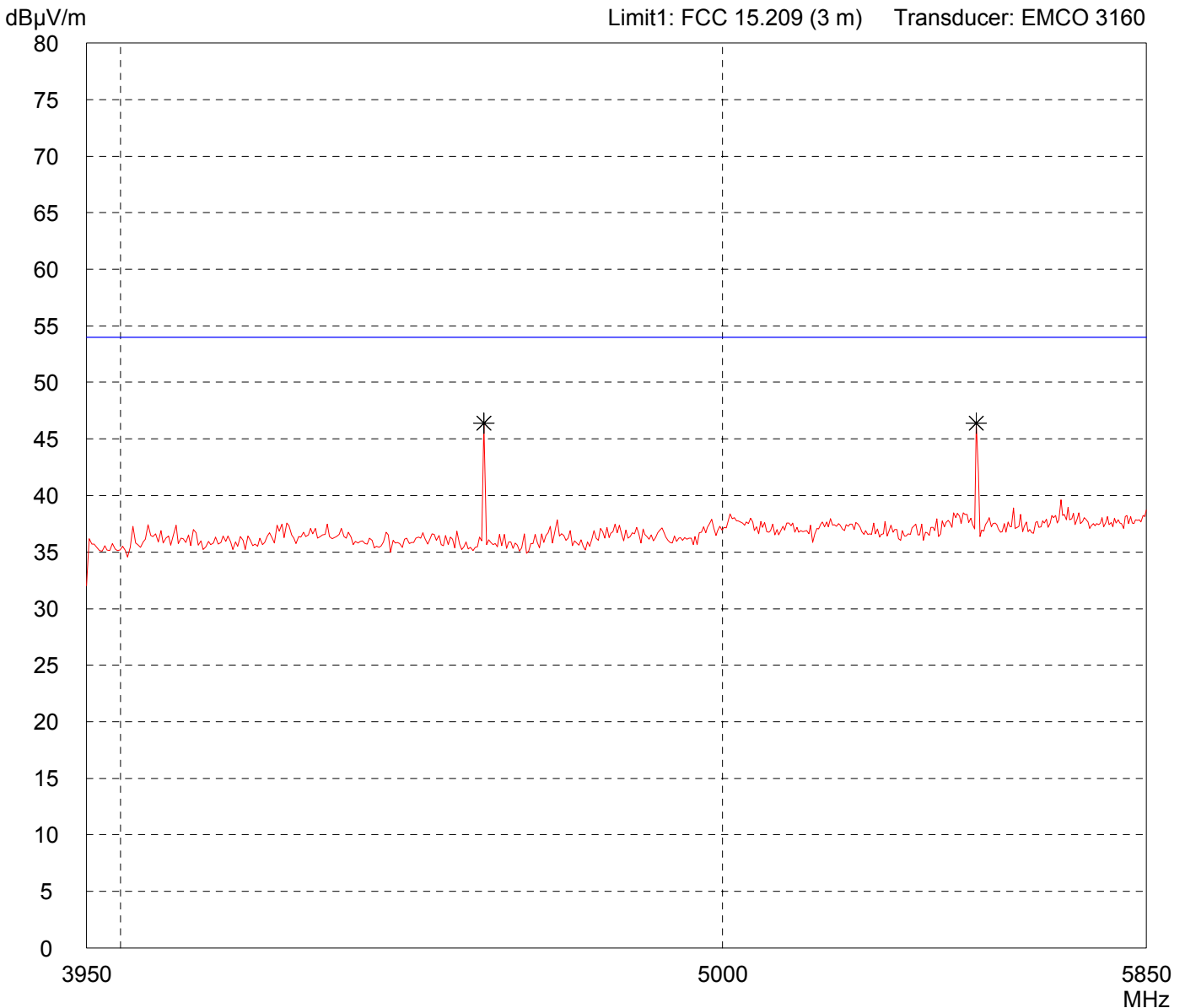
Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 915.25 MHz	
- With high-pass-filter	

Detector: Peak

List of values:	50 Subranges
10 dB Margin	



Result: Prescan

Project file: 50784-00618-1

Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 Subpart C (FAR)

Model:
MC 9090 RFID UHF External Antenna

Serial no.:

Applicant:
BARTEC GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres
Vertical Polarization

Date of test: 07/29/2009
Operator: M. Steindl

Test performed: automatically
File name: default.emi

Comment:
- 6.5 V external power supply
- Transmitting continuously with modulation
- Power: 20 dBm
- Frequency: 915.25 MHz

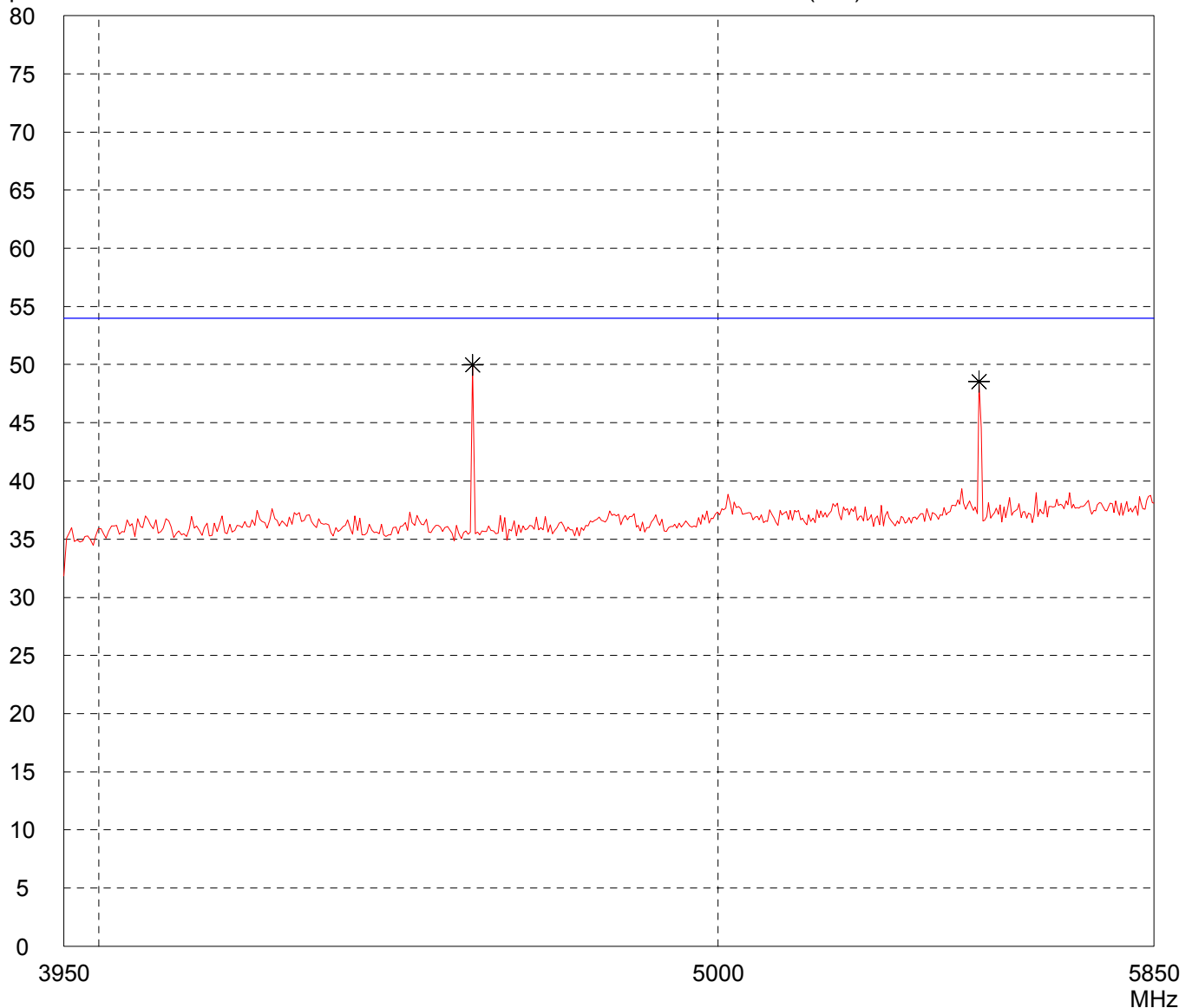
- With high-pass-filter

Detector:
Peak

List of values:
Selected by hand

dB μ V/m

Limit1: FCC 15.209 (3 m) Transducer: EMCO 3160



Result:
Prescan

Project file:
50784-00618-1

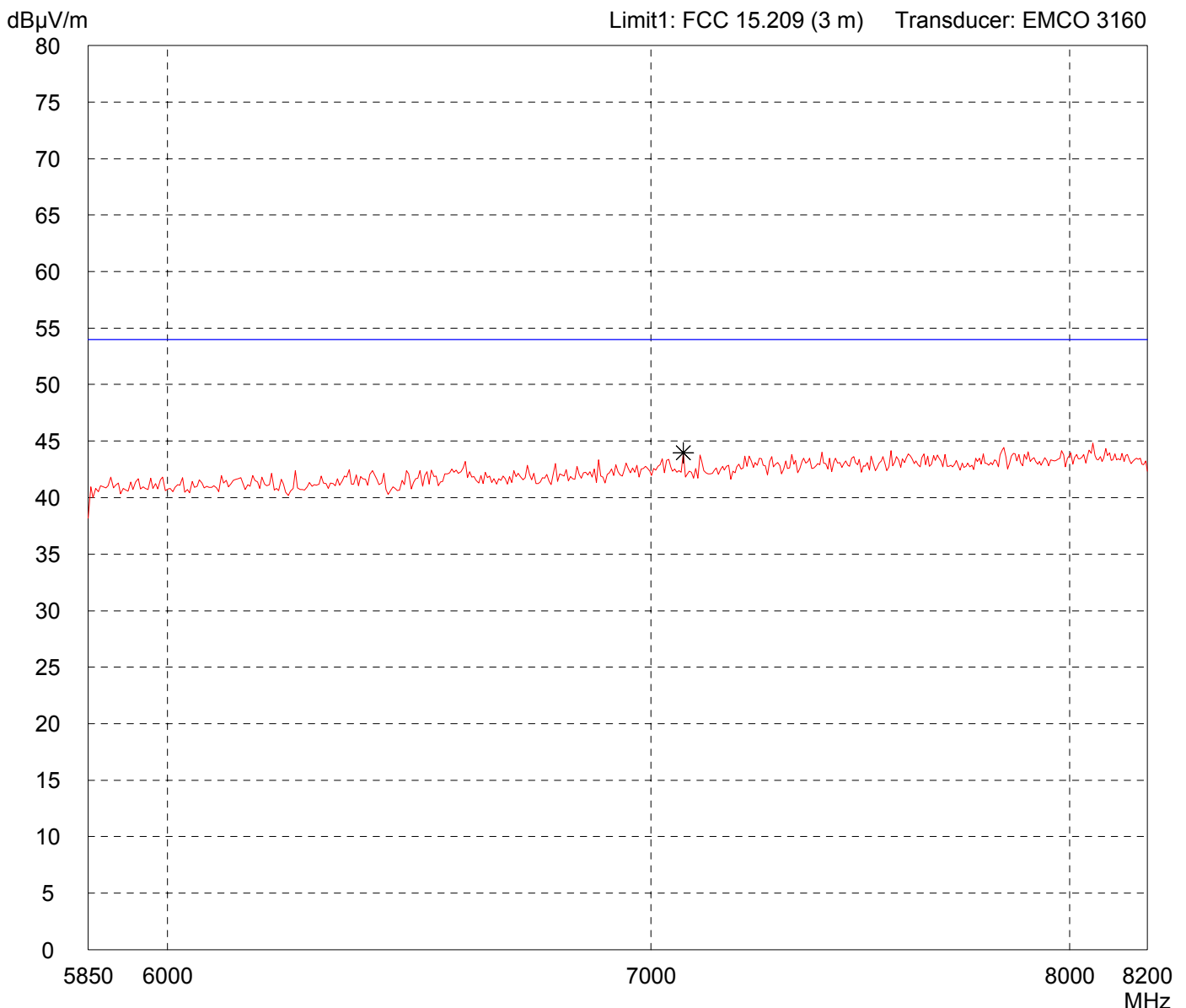
Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 915.25 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

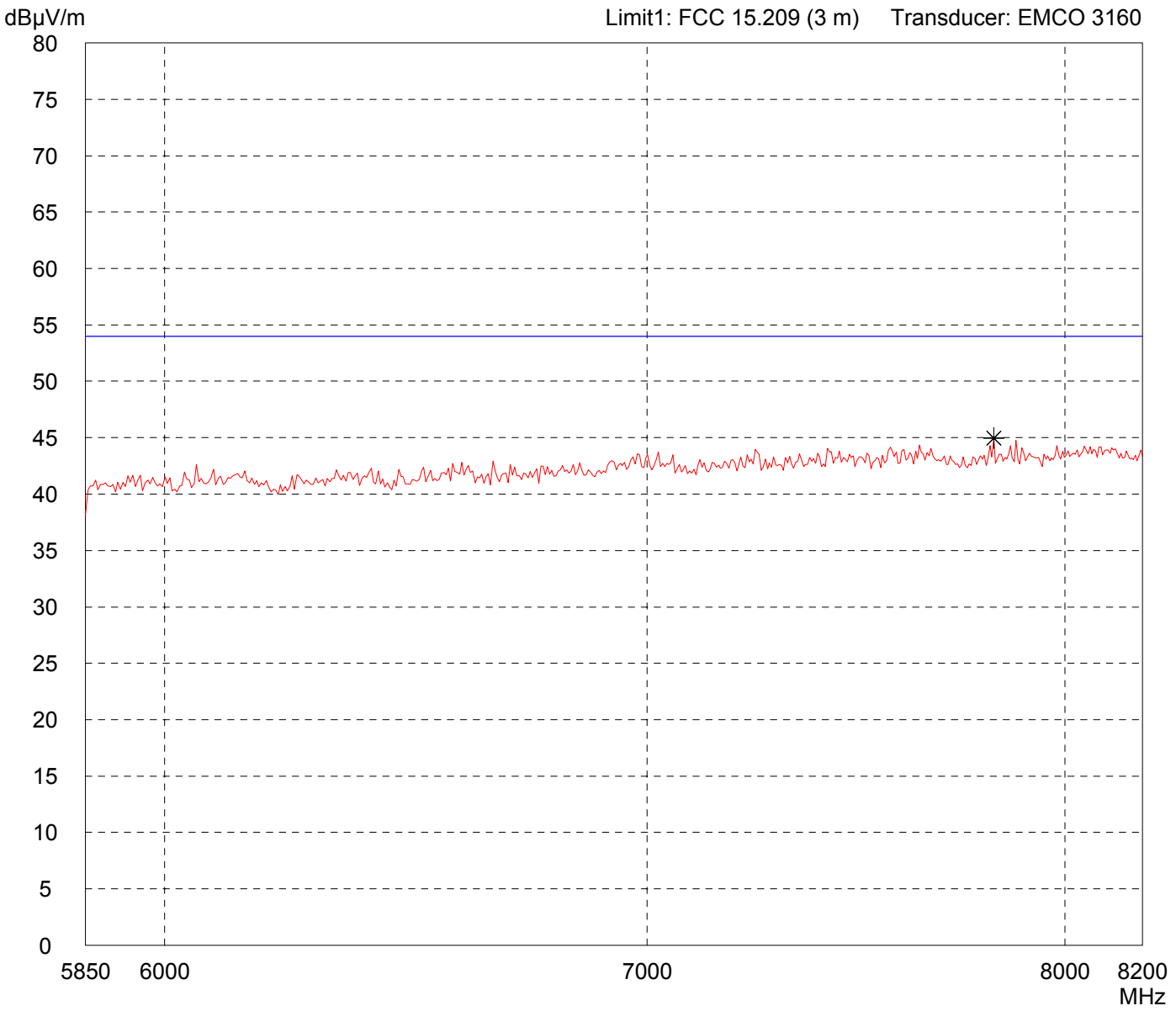
Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 915.25 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

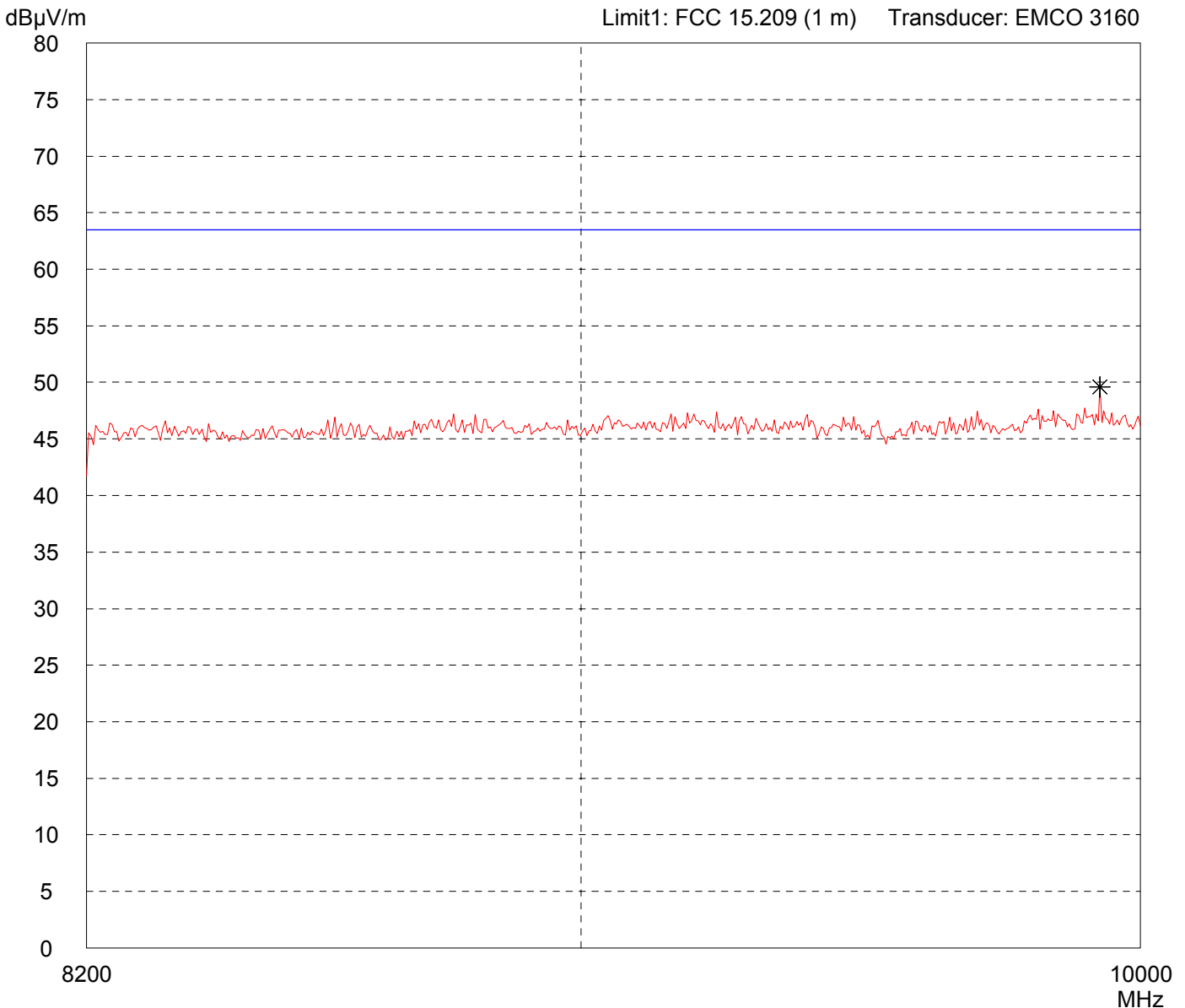
Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 915.25 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

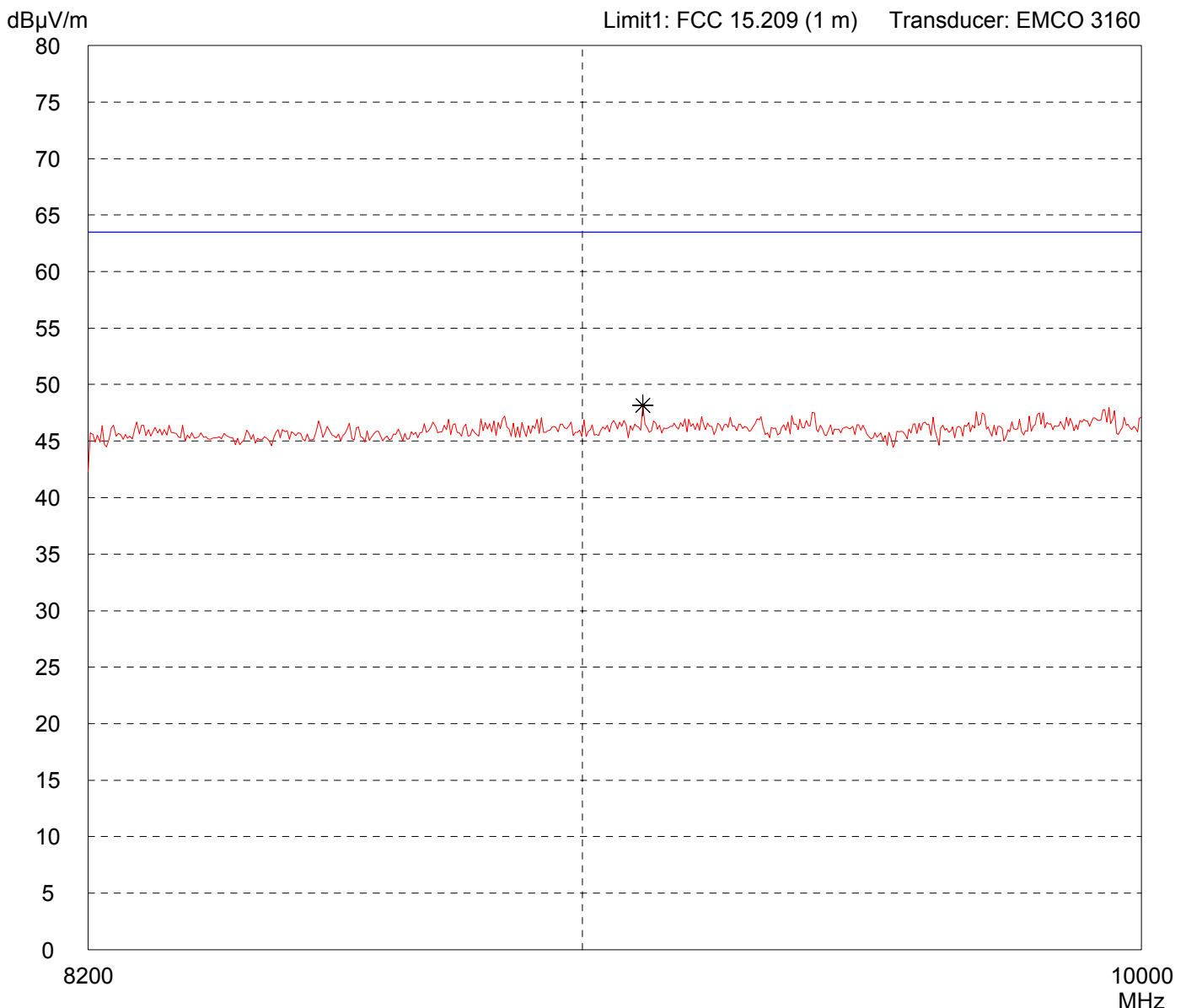
Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 915.25 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

Radiated Emission Test 9 kHz - 30 MHz acc. to FCC Part 15 Subpart C (FAR)

Model:
MC 9090 RFID UHF External Antenna

Serial no.:

Applicant:
BARTEC GmbH

Test site:
Fully anechoic room, cabin no. 2

Tested on:
Test distance 3 metres

Date of test:
07/29/2009

Operator:
M. Steindl

Test performed:
by hand

File name:
default.emi

Comment:

- 6.5 V external power supply
- Transmitting continuously with modulation
- Power: 20 dBm
- Frequency: 927.25 MHz

Detector:
Peak

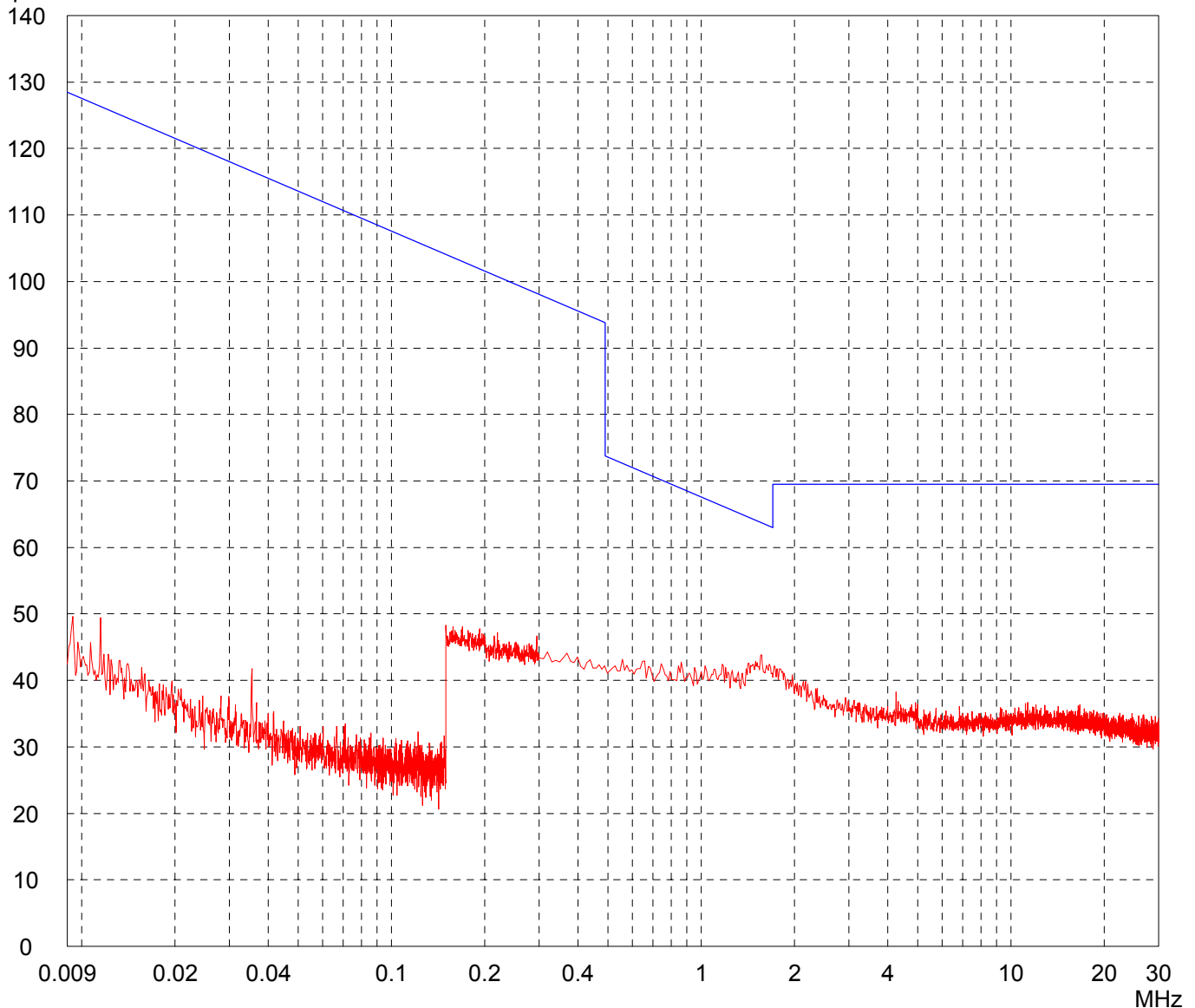
List of values:

10 dB Margin

50 Subranges

dB μ V/m

Limit1: FCC Part 15 Transducer: HFH2-Z2



Result:
Prescan

Project file:
50784-00618-1

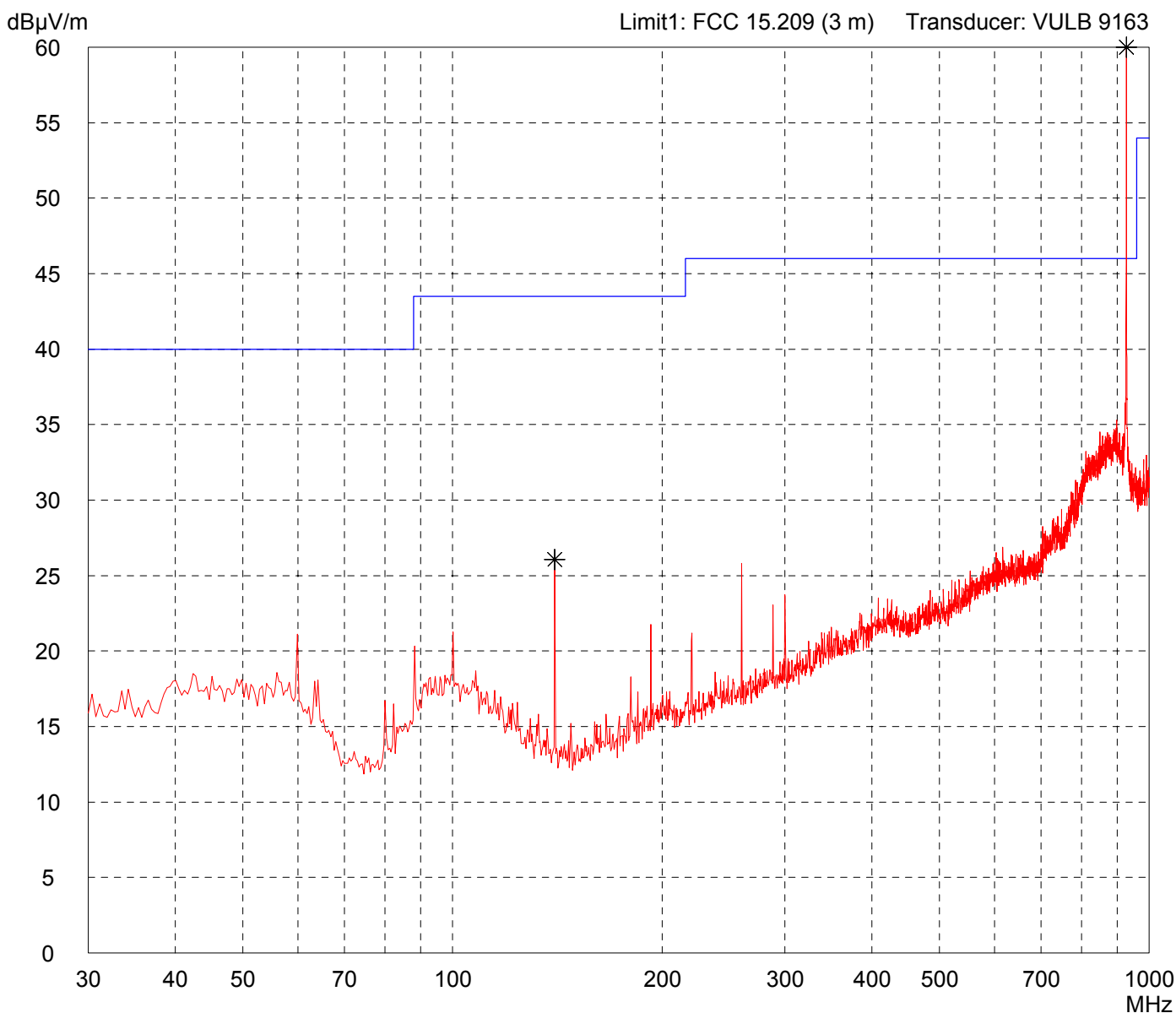
Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 927.25 MHz - With notch-filter set to carrier-frequency
--

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

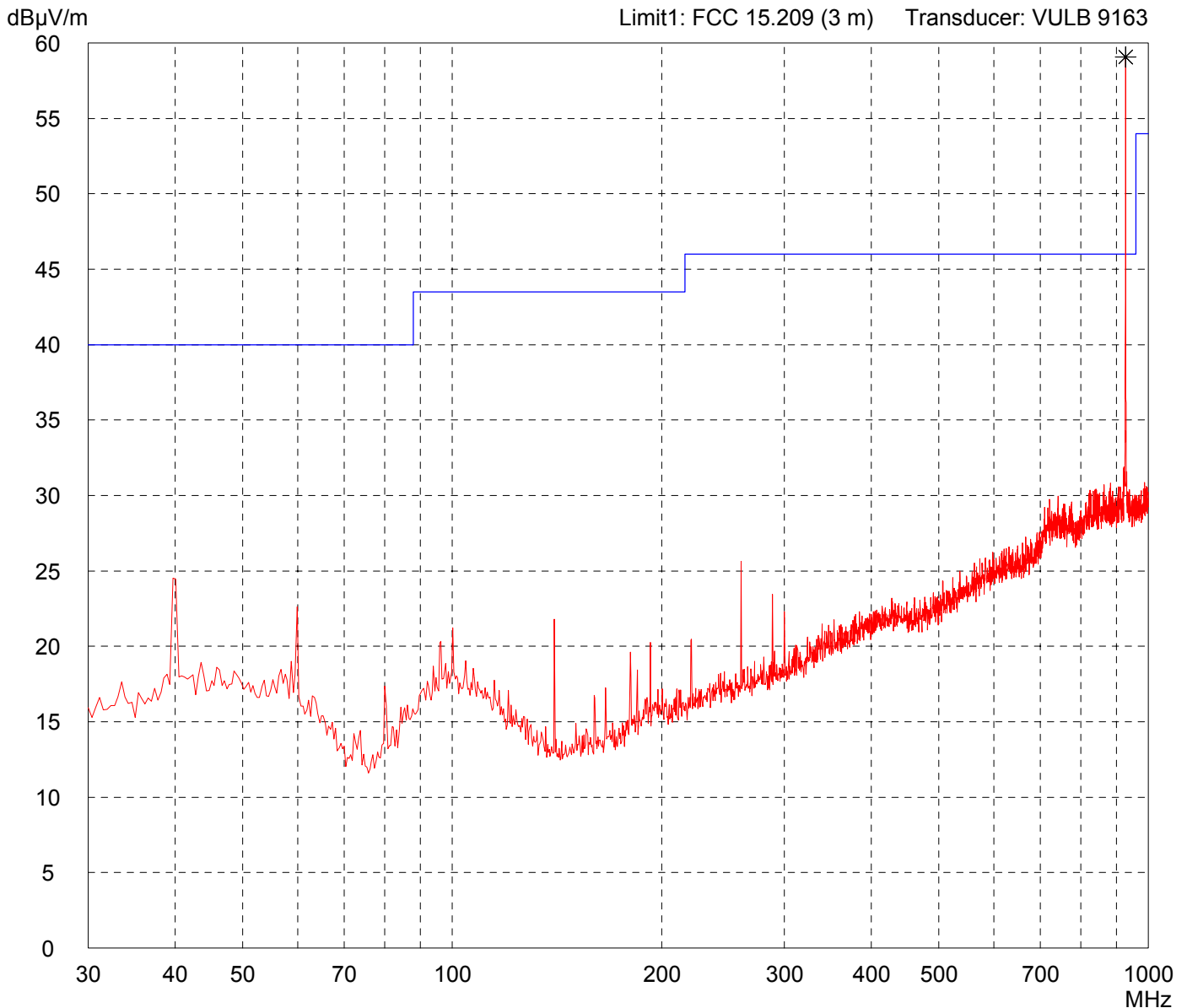
Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 927.25 MHz	
- With notch-filter set to carrier-frequency	

Detector: Peak

List of values:	
10 dB Margin	50 Subranges



Result: Prescan

Project file: 50784-00618-1

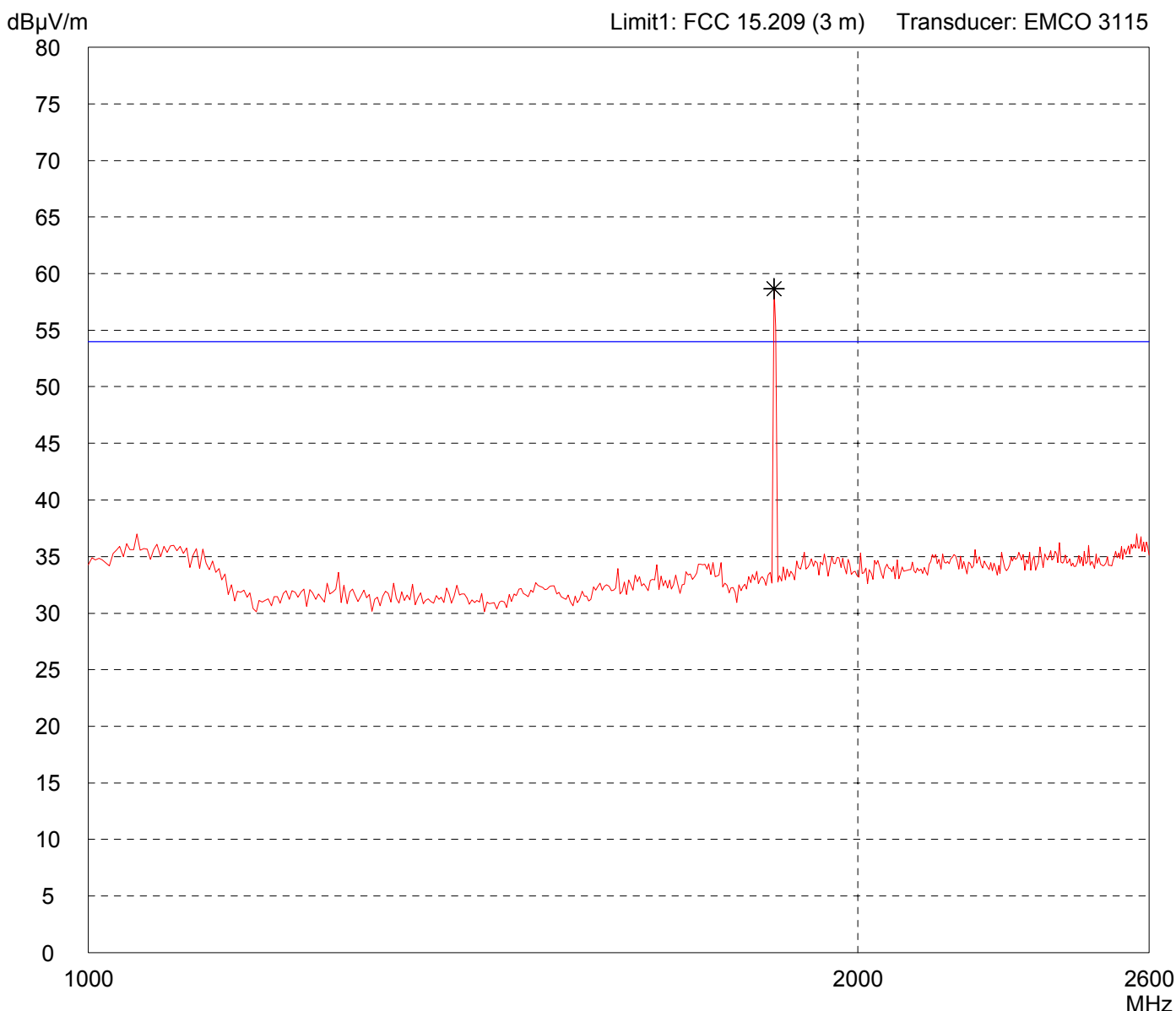
Radiated Emission Test 1 GHz - 2.6 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 927.25 MHz	
- With high-pass-filter	

Detector: Peak

List of values:	50 Subranges
10 dB Margin	



Result: Prescan

Project file: 50784-00618-1

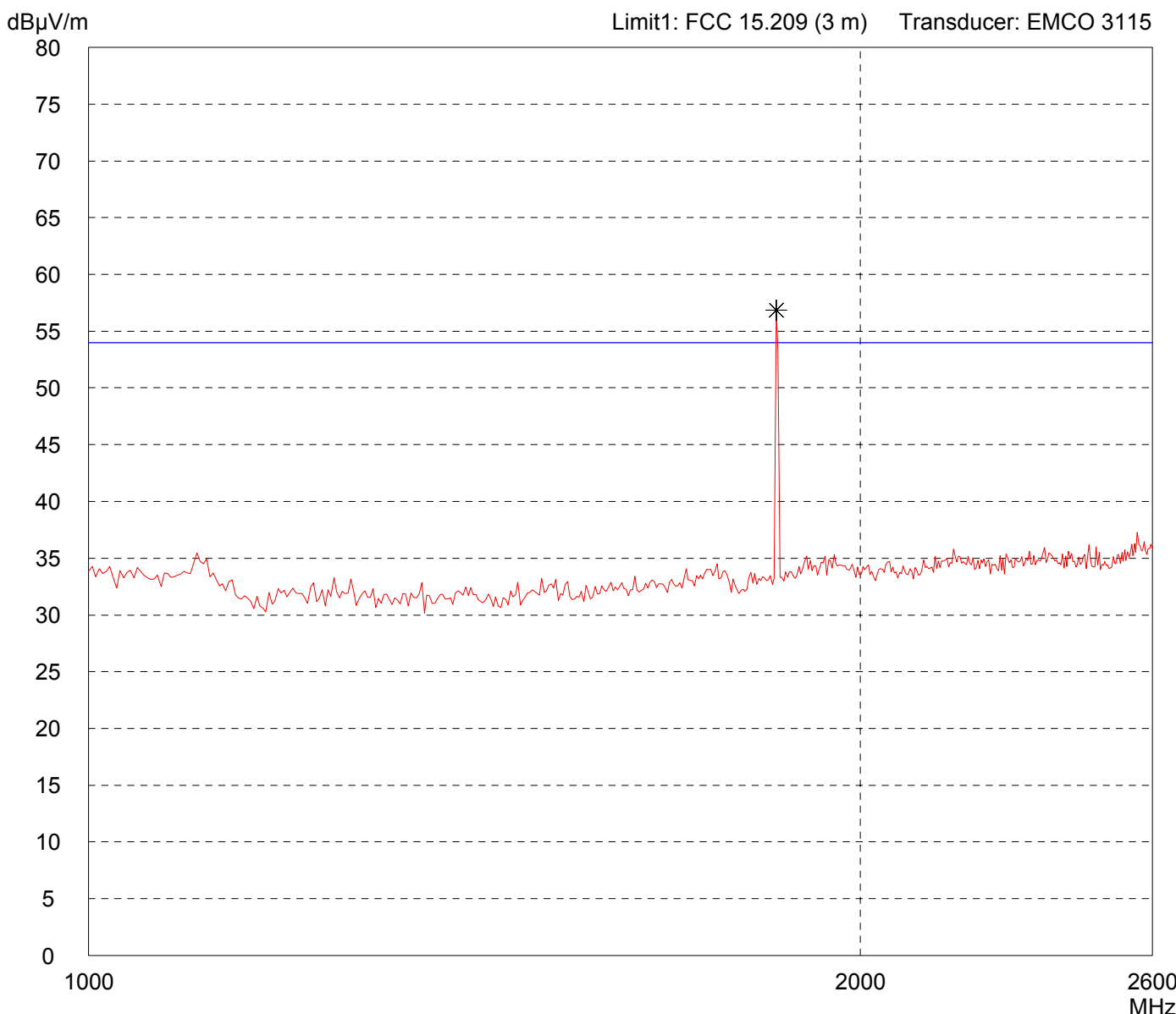
Radiated Emission Test 1 GHz - 2.6 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 927.25 MHz	
- With high-pass-filter	

Detector: Peak

List of values:	50 Subranges
10 dB Margin	



Result: Prescan

Project file: 50784-00618-1

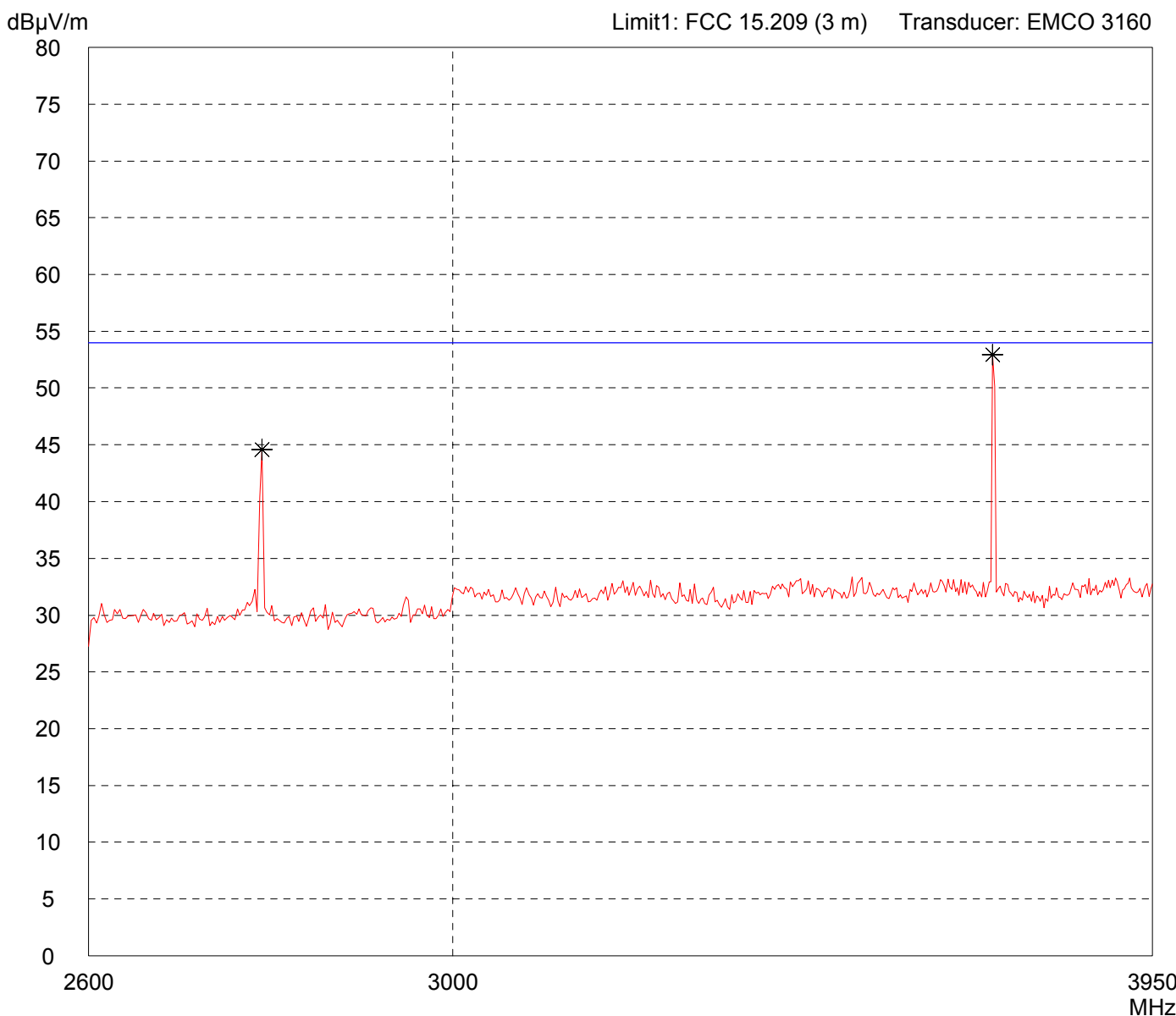
Radiated Emission Test 2.6 GHz - 3.95 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 meters Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 927.25 MHz - With high-pass-filter

Detector: Peak

List of values: 10 dB Margin	50 Subranges
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Result: Prescan

Project file: 50784-00618-1

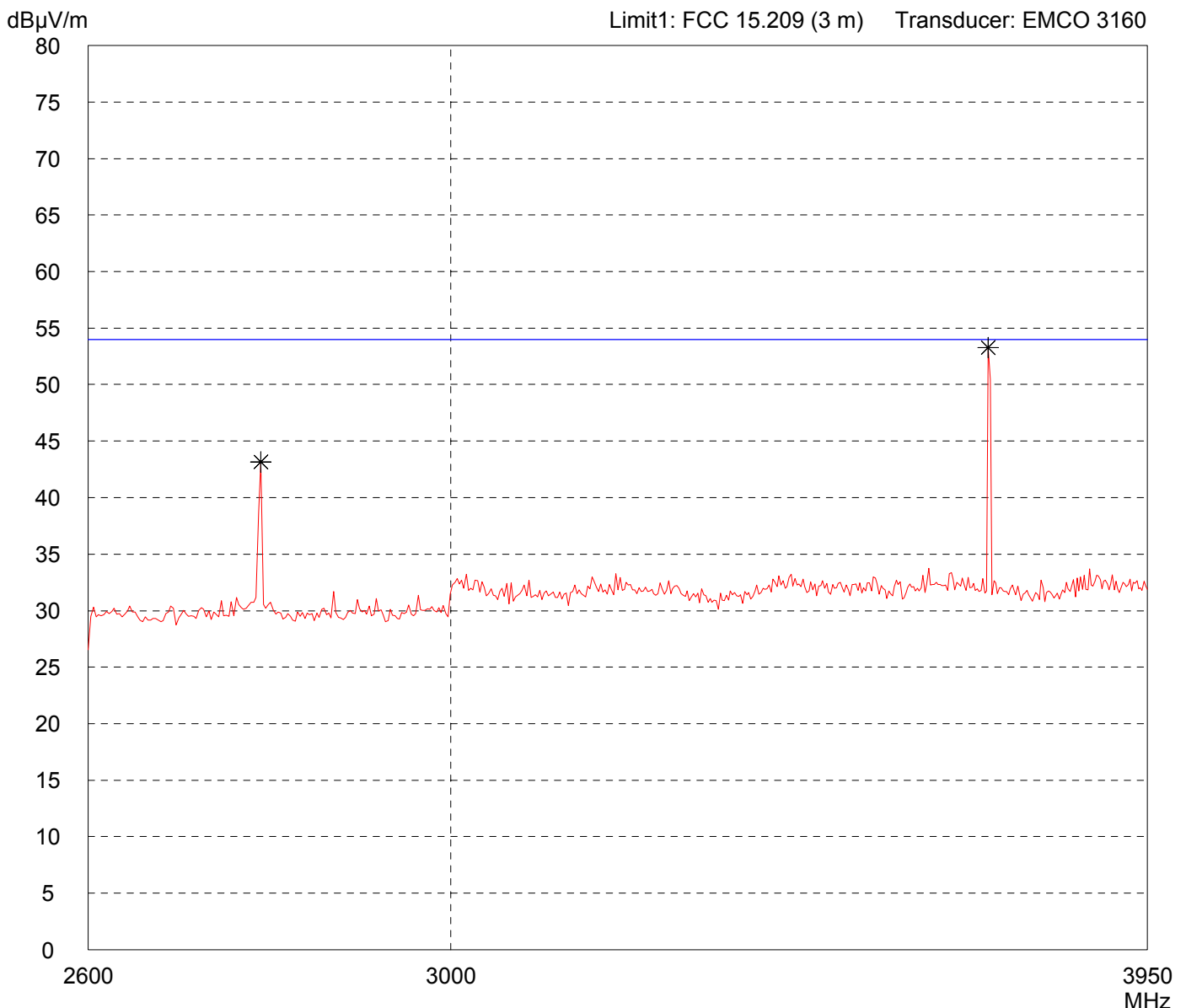
Radiated Emission Test 2.6 GHz - 3.95 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 meters Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 927.25 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



Result: Prescan

Project file: 50784-00618-1

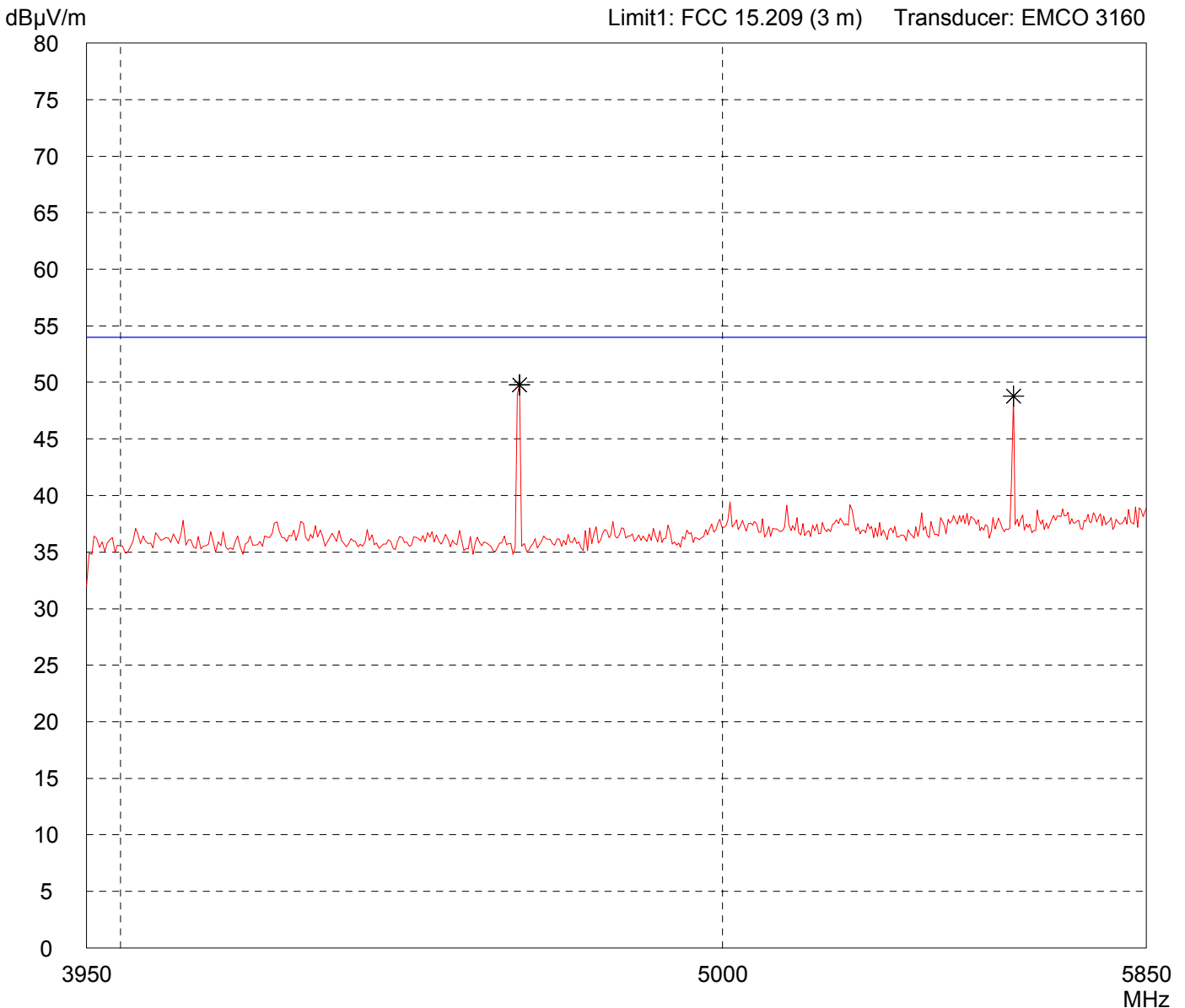
Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 927.25 MHz	
- With high-pass-filter	

Detector: Peak

List of values:	
10 dB Margin	50 Subranges



Result: Prescan

Project file: 50784-00618-1

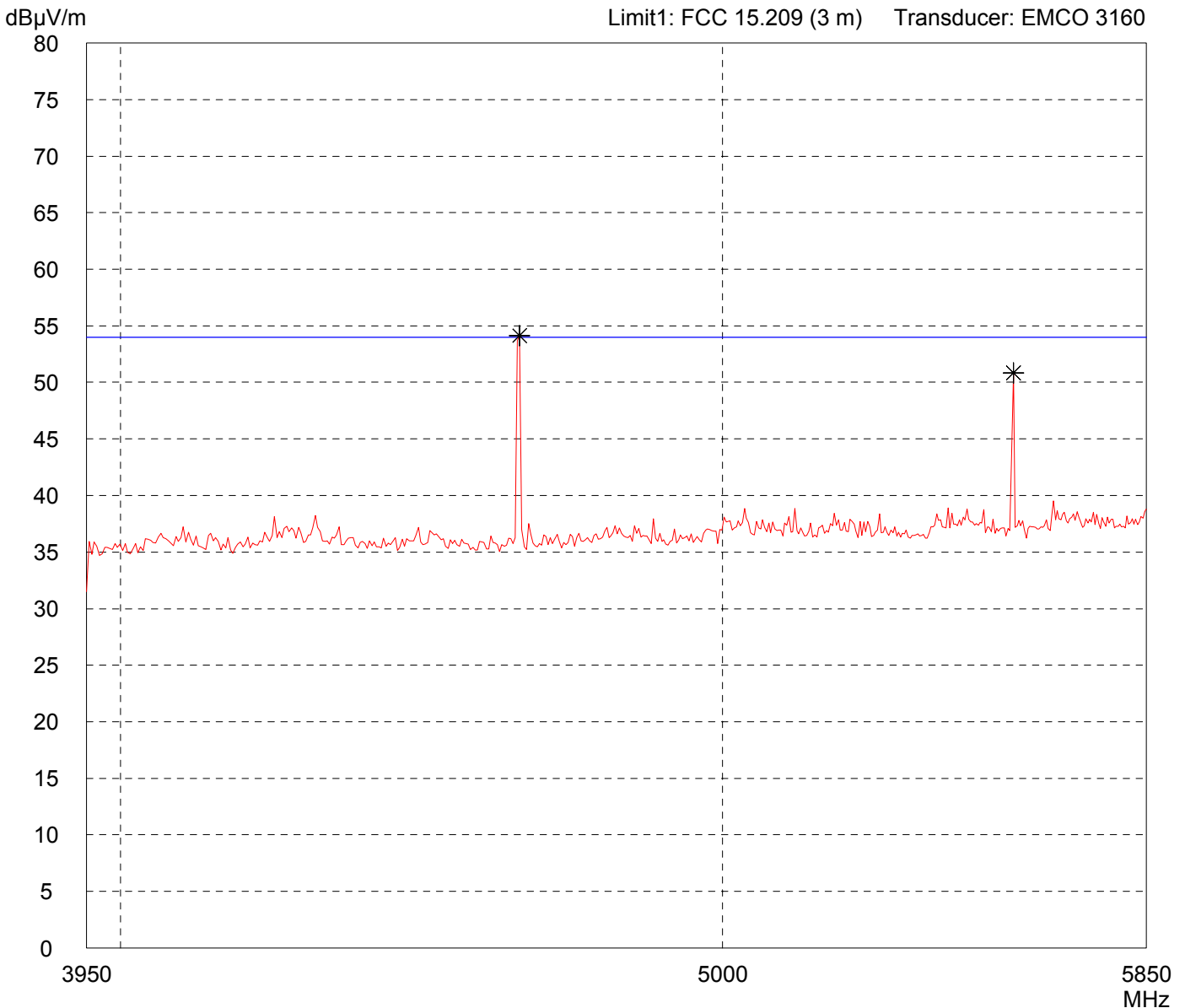
Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment:	
- 6.5 V external power supply	
- Transmitting continuously with modulation	
- Power: 20 dBm	
- Frequency: 927.25 MHz	
- With high-pass-filter	

Detector: Peak

List of values:	50 Subranges
10 dB Margin	



Result: Prescan

Project file: 50784-00618-1

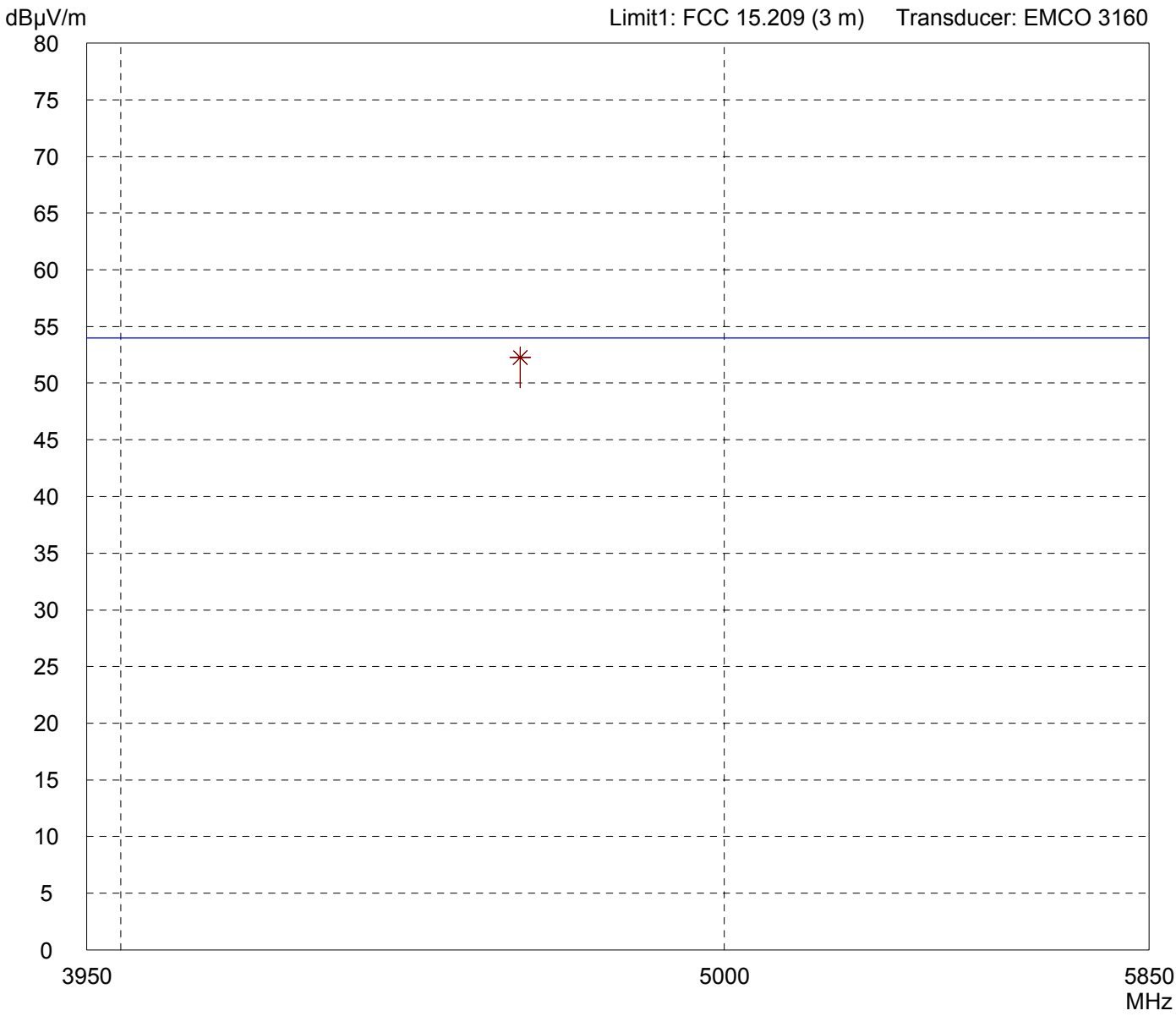
Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: by hand	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 927.25 MHz - With high-pass-filter

Detector: Average

List of values: Selected by hand



Result: Limit kept

Project file: 50784-00618-1

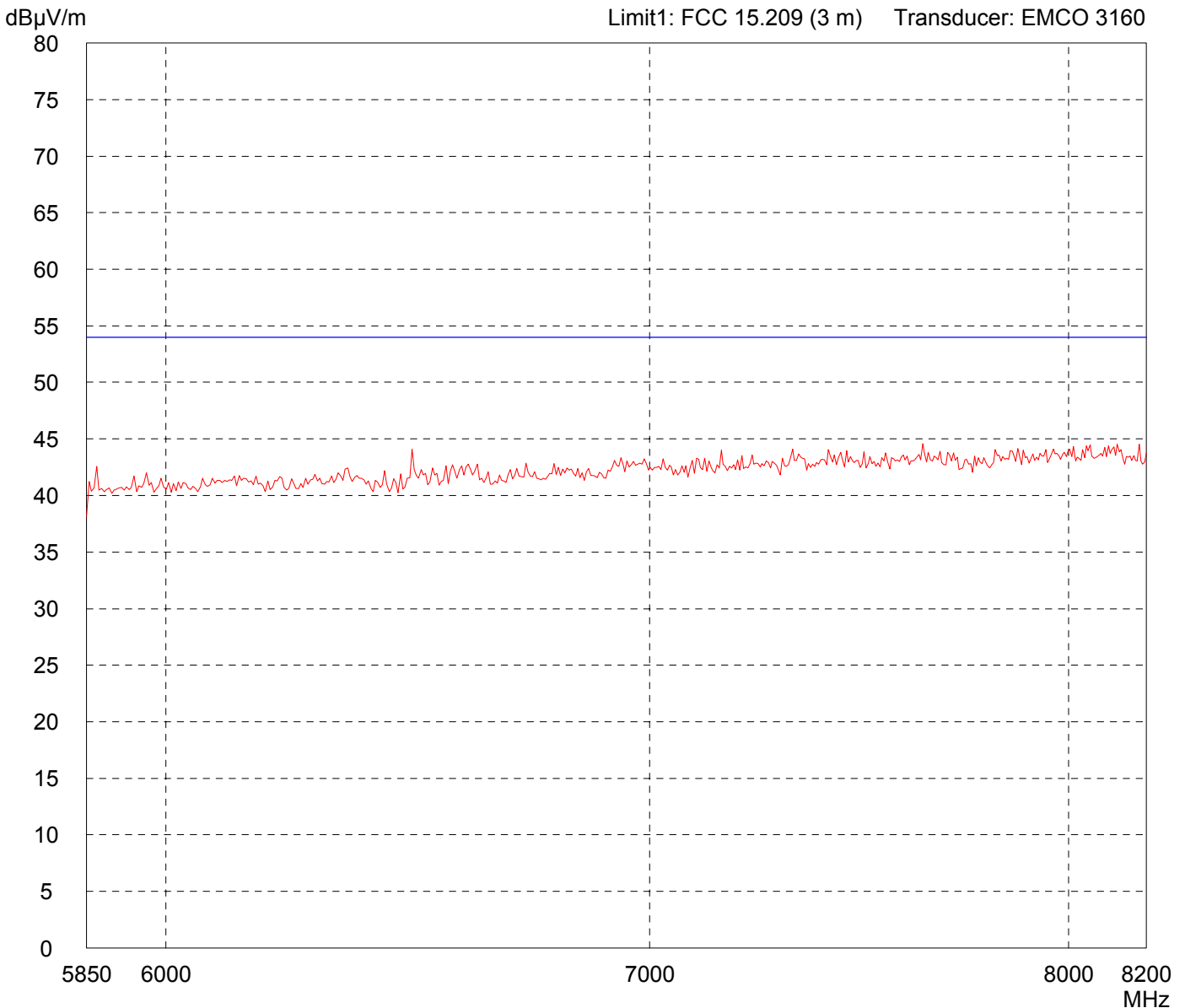
Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 Subpart C (FAR)

Model: MC 9090 RFID UHF External Antenna	
Serial no.:	
Applicant: BARTEC GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/29/2009	Operator: M. Steindl
Test performed: automatically	File name: default.emi

Comment: - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 927.25 MHz - With high-pass-filter

Detector: Peak

List of values: Selected by hand



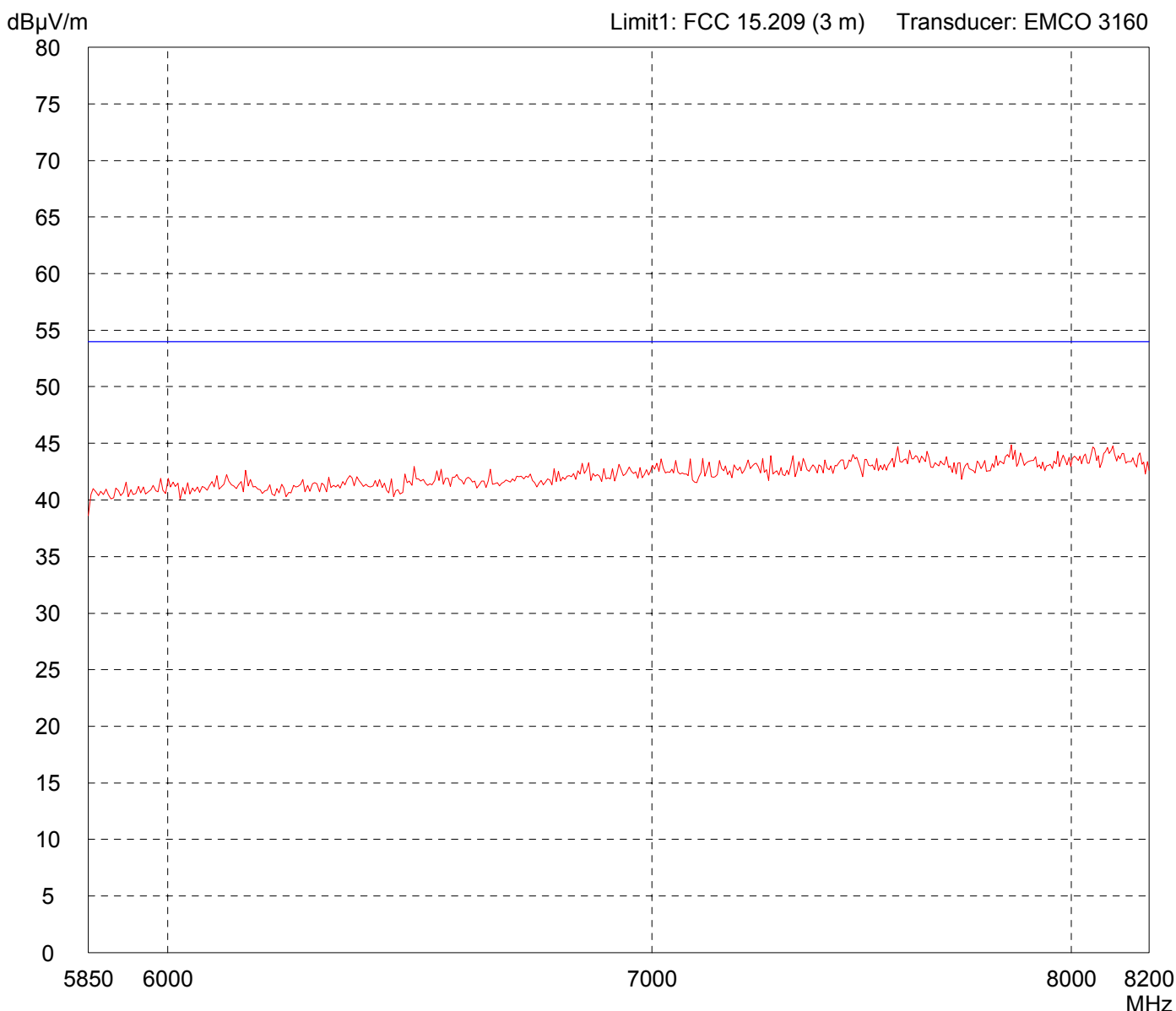
Result: Prescan

Project file: 50784-00618-1

Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 Subpart C (FAR)

<p>Model: MC 9090 RFID UHF External Antenna</p> <p>Serial no.:</p> <p>Applicant: BARTEC GmbH</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: 07/29/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 927.25 MHz - With high-pass-filter
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<p>Detector: Peak</p>	<p>List of values: Selected by hand</p>
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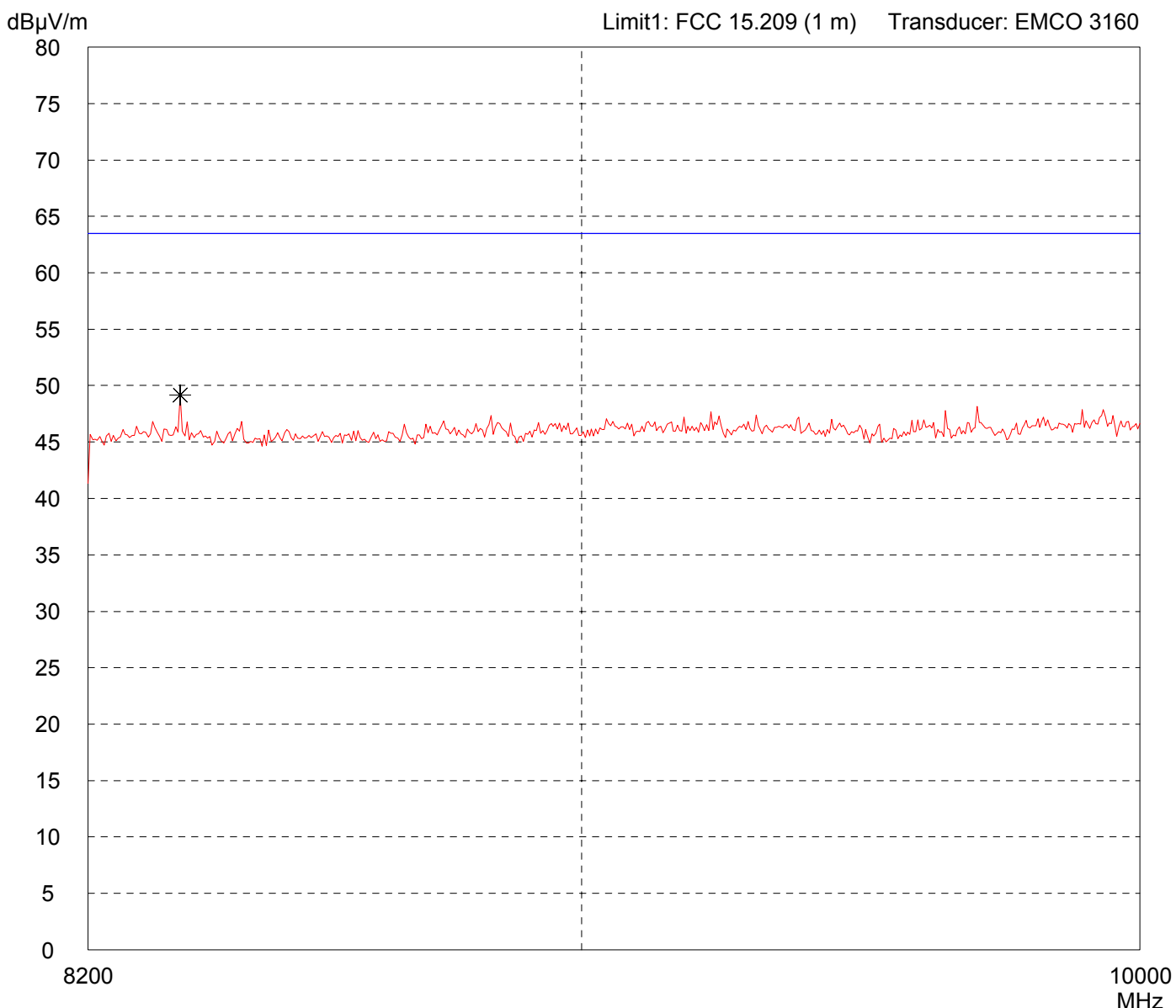


<p>Result: Prescan</p>	<p>Project file: 50784-00618-1</p>
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Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 Subpart C (FAR)

<p>Model: MC 9090 RFID UHF External Antenna</p> <p>Serial no.:</p> <p>Applicant: BARTEC GmbH</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: 07/29/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 927.25 MHz - With high-pass-filter
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<p>Detector: Peak</p>	<p>List of values: Selected by hand</p>
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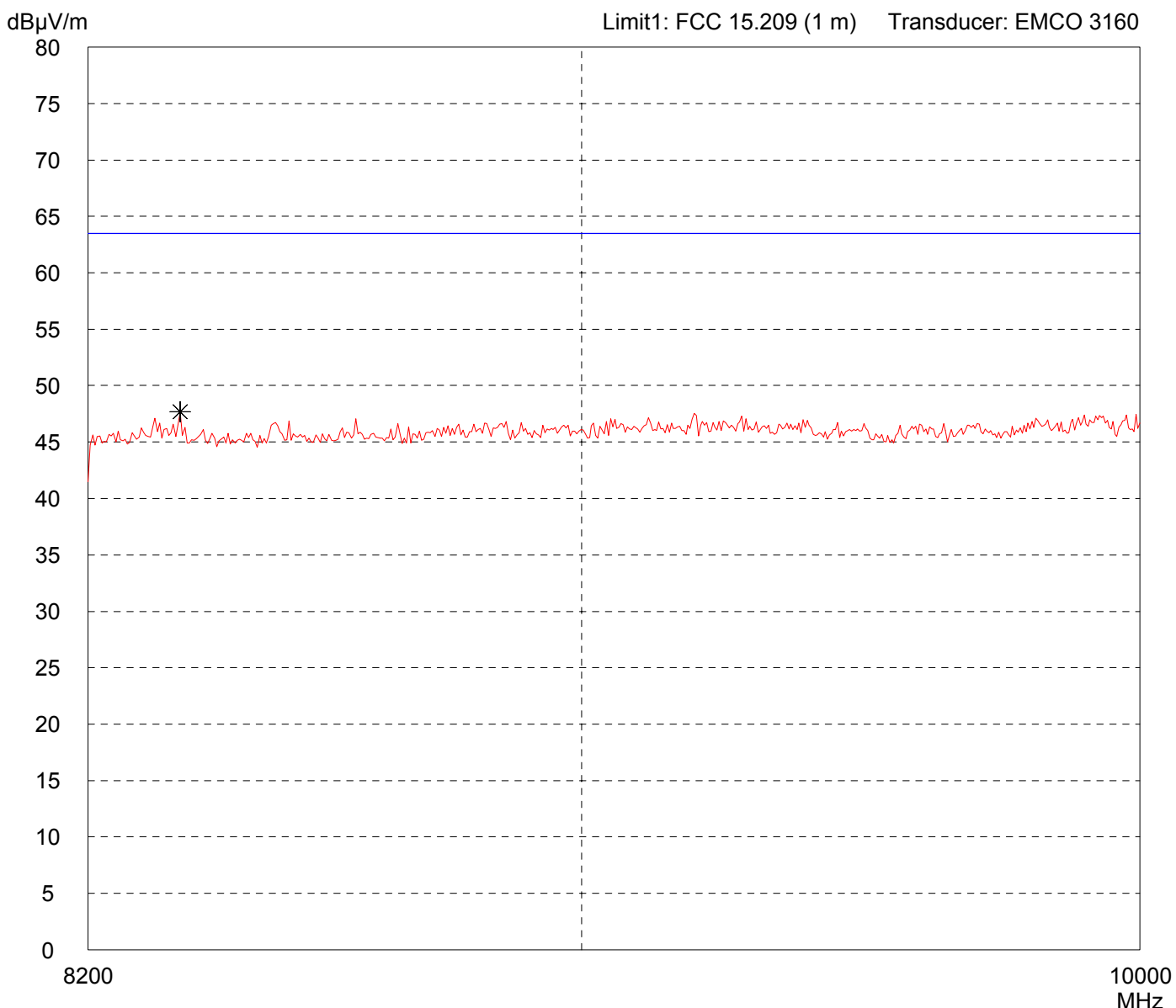


<p>Result: Prescan</p>	<p>Project file: 50784-00618-1</p>
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Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 Subpart C (FAR)

<p>Model: MC 9090 RFID UHF External Antenna</p> <p>Serial no.:</p> <p>Applicant: BARTEC GmbH</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: 07/29/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name: default.emi</p>	<p>Comment:</p> <ul style="list-style-type: none"> - 6.5 V external power supply - Transmitting continuously with modulation - Power: 20 dBm - Frequency: 927.25 MHz - With high-pass-filter
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<p>Detector: Peak</p>	<p>List of values: Selected by hand</p>
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<p>Result: Prescan</p>	<p>Project file: 50784-00618-1</p>
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