Senton GmbH
Aeussere Fruehlingstrasse 45
D-94315 Straubing

Straubing, 12 September 2006

T E S T - R E P O R T

No. 57403-060316-1 (Edition 2)

for

WNCA01

Nurse Call Transceiver

Applicant:	Vigil Health Solutions Inc.
Test Specifications:	FCC Code of Federal Regulations, CFR 47, Part 15, Sections 15.107, 15.109, 15.207 15.215 and 15.247 Industry Canada Radio Standards Specifications RSS-Gen Issue 1, Sectons 7.2.2, 7.2.3 and RSS-210 Issue 6, Section A8 (Category I Equipment)

Table of Contents

1 Description of the Equipment Under Test (EUT)

General data of EUT	
Type designation[1]:	WNCA01
Parts[2]:	
Serial number(s):	---
Manufacturer:	Vigil Health Solutions Inc.
Type of equipment:	Nurse Call Transceiver
Version:	As delivered
FCC ID:	
Additional parts/accessories:	---

Technical data of EUT	
Application frequency range:	902 - 928 MHz
Frequency range:	902 - 928 MHz
Operating frequency:	915 MHz
Type of modulation:	FM
Pulse train:	---
Pulse width:	---
Number of RF-channels:	---
Channel spacing:	---
Designation of emissions[3]:	250kF1D
Type of antenna:	Integrated
Size/length of antenna:	
Connection of antenna:	☐ detachable ☒ not detachable
Type of power supply:	Battery supply - lithium type
Specifications for power supply:	nominal voltage: 3.6 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):	Vigil Health Solutions Inc. 2102-4464 Markham Street V8Z 7X8 Victoria British Columbia Canada
Contact person:	Steven Smith
Contract identification:	
Receipt of EUT:	30 June 2006
Date(s) of test:	July - August 2006
Note(s):	---

Report details	
Report number:	57403-060316-1
Edition:	2
Issue date:	12 September 2006

3 Identification of the Test Laboratory

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

4 Summary

Summary of test results
The tested sample complies with the requirements set forth in the **Code of Federal Regulations CFR 47, Part 15, Sections 15.109, 15.215 and 15.247** of the Federal Communication Commission (FCC) and the **Radio Standards Specifications** **RSS-Gen Issue 1, Sections 7.2.3 and** **RSS-210 Issue 6, Section 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
Tests were performed with on lowest, middle and highest channel.

Configuration of EUT
The EUT was configured as stand alone device. The SDK board was used for adjusting the channel and mode only.

List of ports and cables				
Port	*Description*	*Classification*[4]	*Cable type*	*Cable length*
	Not applicable			

List of devices connected to EUT				
Item	*Description*	*Type Designation*	*Serial no. or ID*	*Manufacturer*
	Not applicable			

List of support devices				
Item	*Description*	*Type Designation*	*Serial no. or ID*	*Manufacturer*
1	SDK board with remote connector	Test board		Aerocomm

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

6 Measurement Procedures

6.1 Bandwidth Measurements

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 2, section 2.202(a) CFR 47 Part 15, section 15.215(c) and 15.247(a)(2) IC RSS-Gen Issue 1, sections 4.4.1 and 4.4.2 IC RSS-210 Issue 6, section A1.1.3 ANSI C63.4, annex H.6
Guide:	ANSI C63.4
Measurement setup:	☐ Conducted: See below ☒ Radiated: Radiated Emission in Fully or Semi Anechoic Room (6.2)

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.

If radiated measurements are performed the same test setups and instruments are used as with radiated emission measurements for the appropriate frequency range.

The analyzer settings are specified by the test description of the appropriate test record(s).

6.2 Radiated Emission in Fully or Semi Anechoic Room

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.215(b) and 15.249 IC RSS-210 Issue 6, section A2.9
Guide:	ANSI C63.4

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.

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).

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.

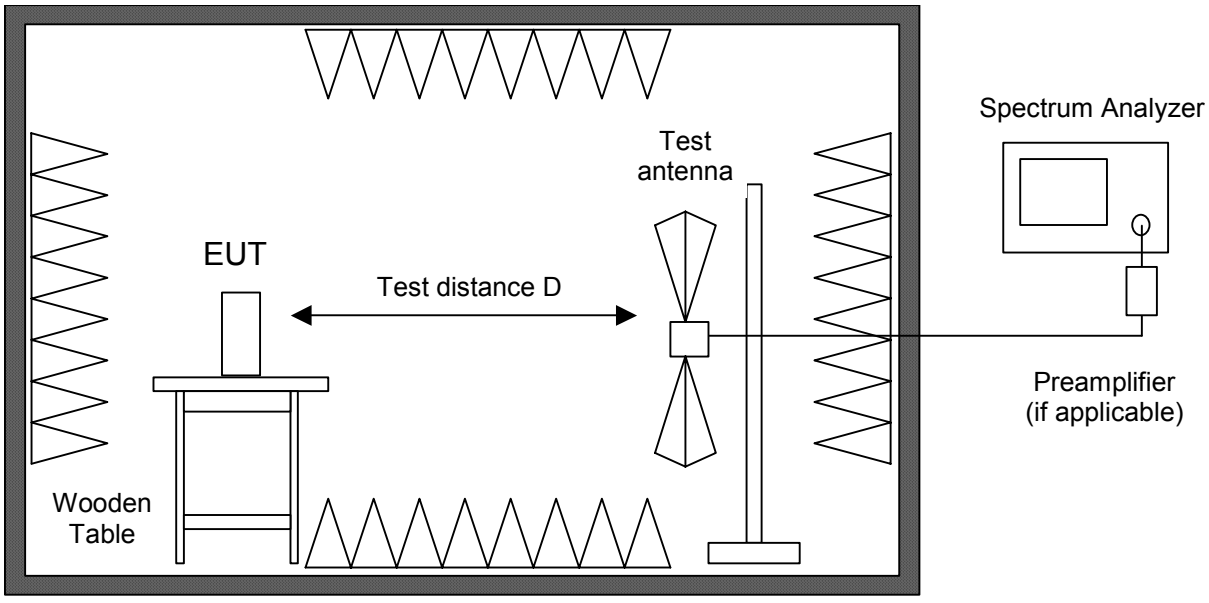
All tests below 18 GHz are performed at a test distance D of 3 meters. For higher frequencies the test distance is reduced (e.g. to 1 meter) due to the sensitivity of the measuring instrument(s) and the test results are calculated according to CFR 47 Part 15 section 15.31(f)(1) using an extrapolation 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.

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.

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.

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.

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.



Fully or semi anechoic room

Test instruments used:

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

6.3 Radiated Emission at Open Field Test Site

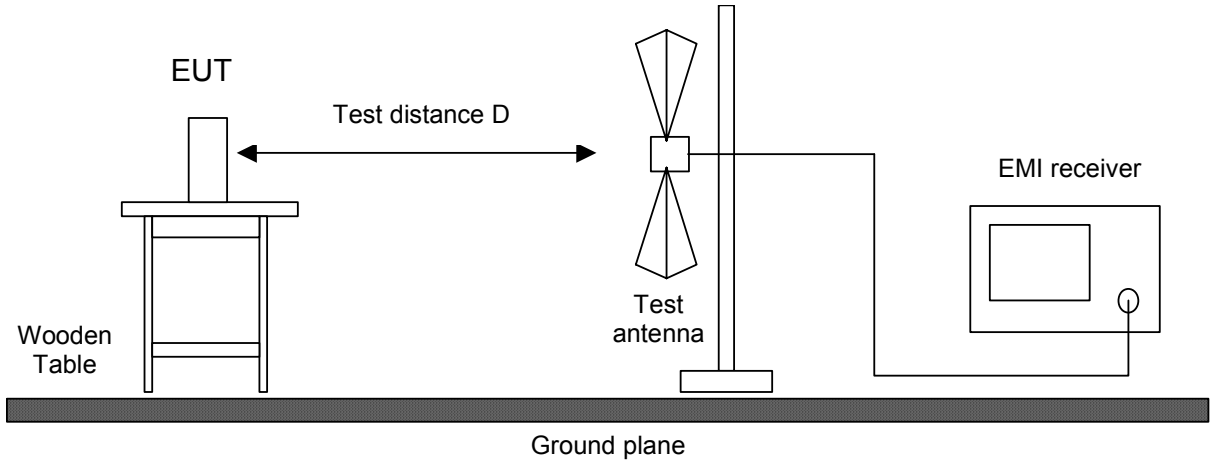
Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.215(b) and 15.249 IC RSS-210 Issue 6, section A2.9
Guide:	ANSI C63.4

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.

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.

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.

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.

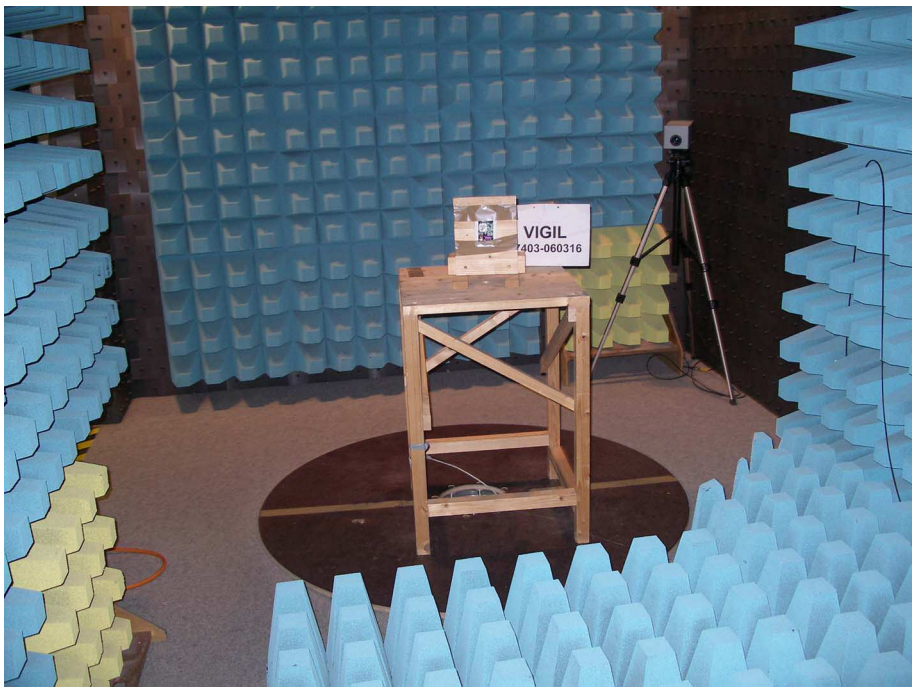


Test instruments used:

Used	Type		Model	Serial No. or ID	Manufacturer
☒	EMI receiver		ESVP	881120/024	Rohde & Schwarz
☒	Biconical antenna	EG 1	HK 116	842204/001	Rohde & Schwarz
☒	Log. per. antenna	EG 1	HL 223	841516/023	Rohde & Schwarz
☒	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 for Transmitter

FCC CFR 47 Parts 2 and 15			
Section(s)	*Test*	*Page*	*Result*
2.1046(a)	Conducted output power	---	Not applicable
2.1093	RF Exposure Requirement	58	Test passed
2.202(a)	Occupied bandwidth	18	Recorded
15.215(c)	Bandwidth of the emission	29	Test passed
2.201, 2.202	Class of emission	33	Calculated
15.35(c)	Pulse train measurement for pulsed operation	---	Not applicable
15.207	Conducted AC powerline emission 150 kHz to 30 MHz	---	Not applicable
15.247(a)(1)	Channel Bandwidth	34	Test passed
15.247(a)(1)	Hopping channel separation	35	Test passed
15.247(a)(1)(i)	Number of hopping frequencies used	39	Test passed
15.247(a)(1)(i)	Dwell time of each frequency within a 10 second period of time	41	Test passed
15.247(b)(2)	Maximum Peak Output Power	48	Test passed
15.247(c)	Spurious emissions 30 MHz to 10 GHz - conducted	---	Not applicable
15.247(c)	Spurious emissions 30 MHz to 10 GHz - radiated	52	Test passed
15.247(g)	Compliance with applicable requirements for FHSS	---	Test passed
15.247(h)	Limitation on avoidance on hopping in occupied channel	---	Test passed

IC RSS-Gen Issue 1			
Section(s)	*Test*	*Page*	*Result*
4.6	Transmitter output power (conducted)	---	Not applicable
4.4.1	Occupied Bandwidth	18	Recorded
3.2(h), 8	Designation of emissions	33	Calculated
4.3	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	59	Exempted from SAR and RF evaluation

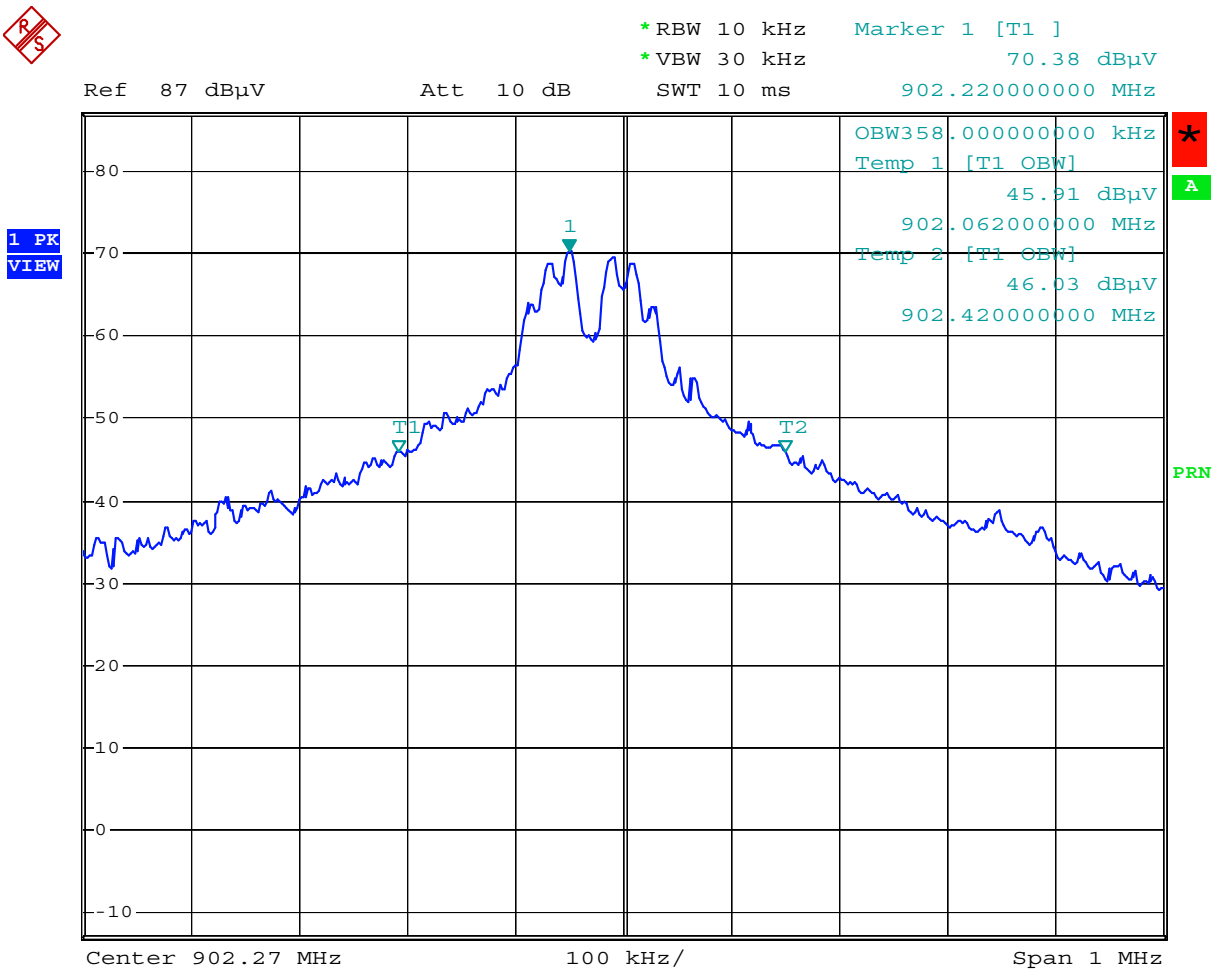
IC RSS-210 Issue 6			
Section(s)	*Test*	*Page*	*Result*
A8.1(2)	Channel bandwidth	34	Test passed
A8.1(2)	Hopping channel separation	35	Test passed
A8.1(4)	Number of hopping frequencies used	39	Test passed
A8.1(4)	Time occupancy on any channel	41	Test passed
A8.4(2)	Maximum peak output power	48	Test passed
A8.5	Spurious emissions 30 MHz to 10 GHz - conducted	---	Not applicable
A8.5	Spurious emissions 30 MHz to 10 GHz - radiated	52	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 (6.1)	

Comment:	
Date of test:	4 August 2006
Test site:	Fully anechoic room, cabin no. 2

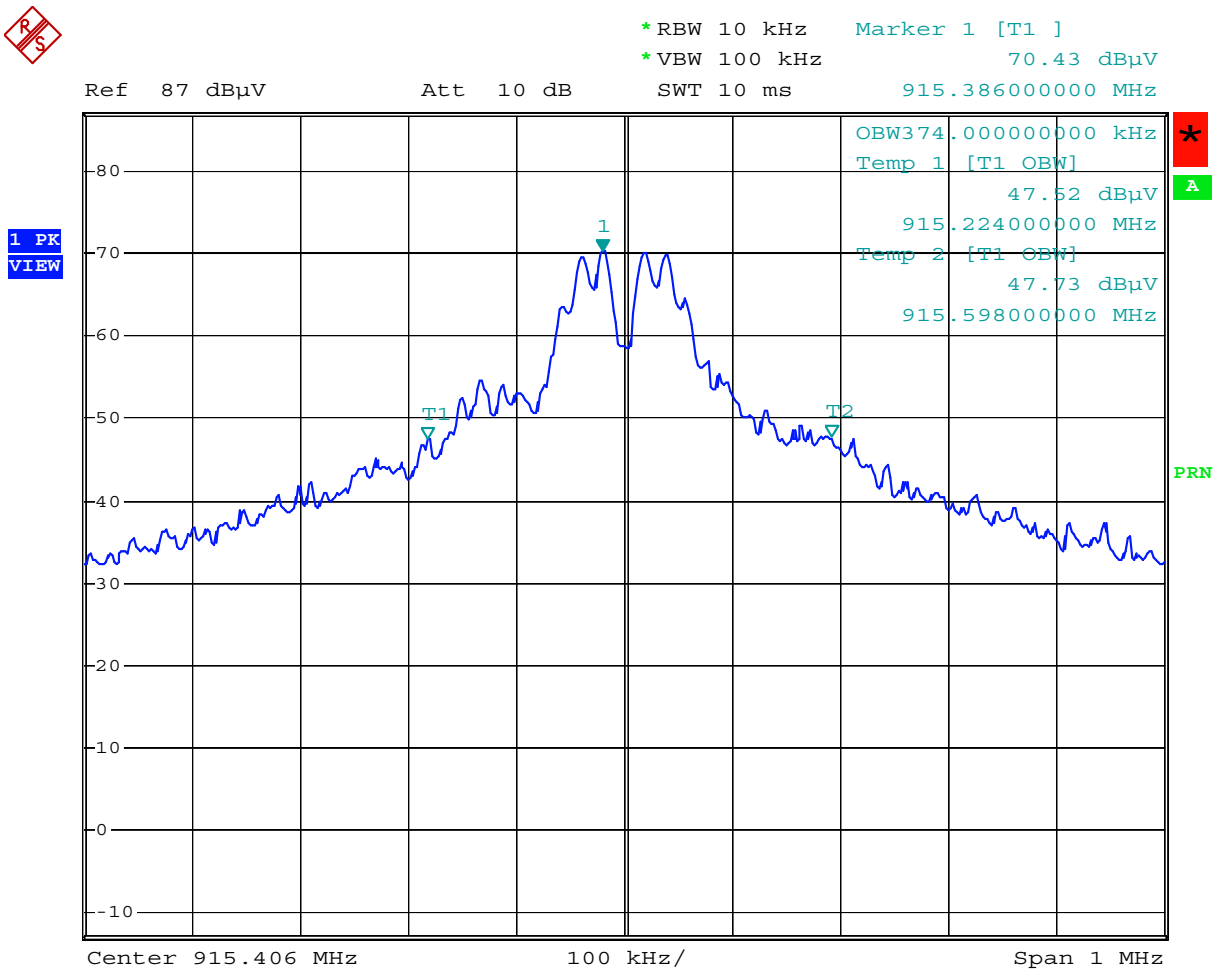
Occupied Bandwidth (99 %) on lowest channel:



Comment: vigil 060316: Occupied Bandwidth
Date: 4.AUG.2006 12:38:05

Occupied Bandwidth (99 %):	**358 kHz**

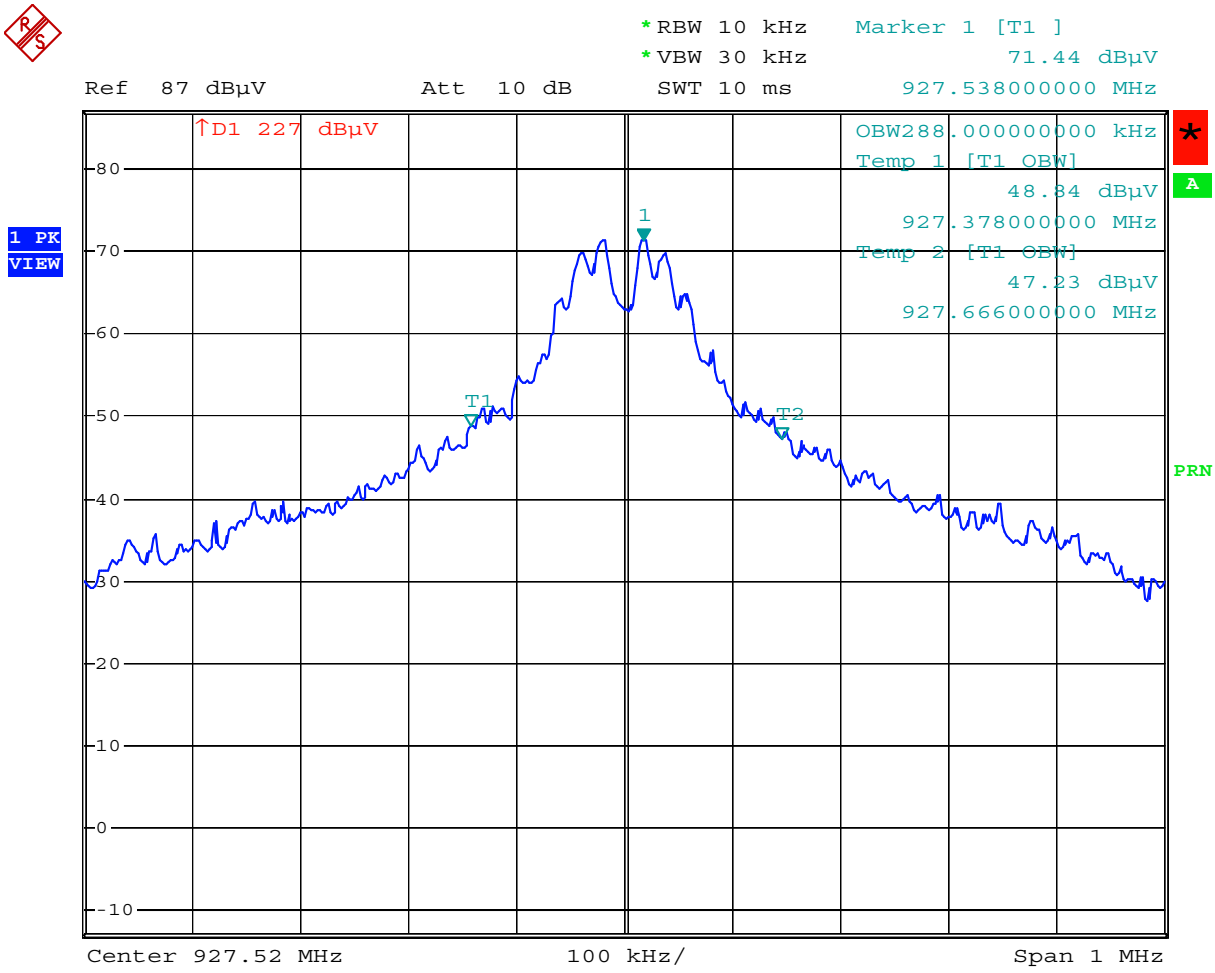
Occupied Bandwidth (99 %) on middle channel:



Comment: vigil 060316: Occupied Bandwidth
Date: 4.AUG.2006 13:19:57

Occupied Bandwidth (99 %):	**374 kHz**

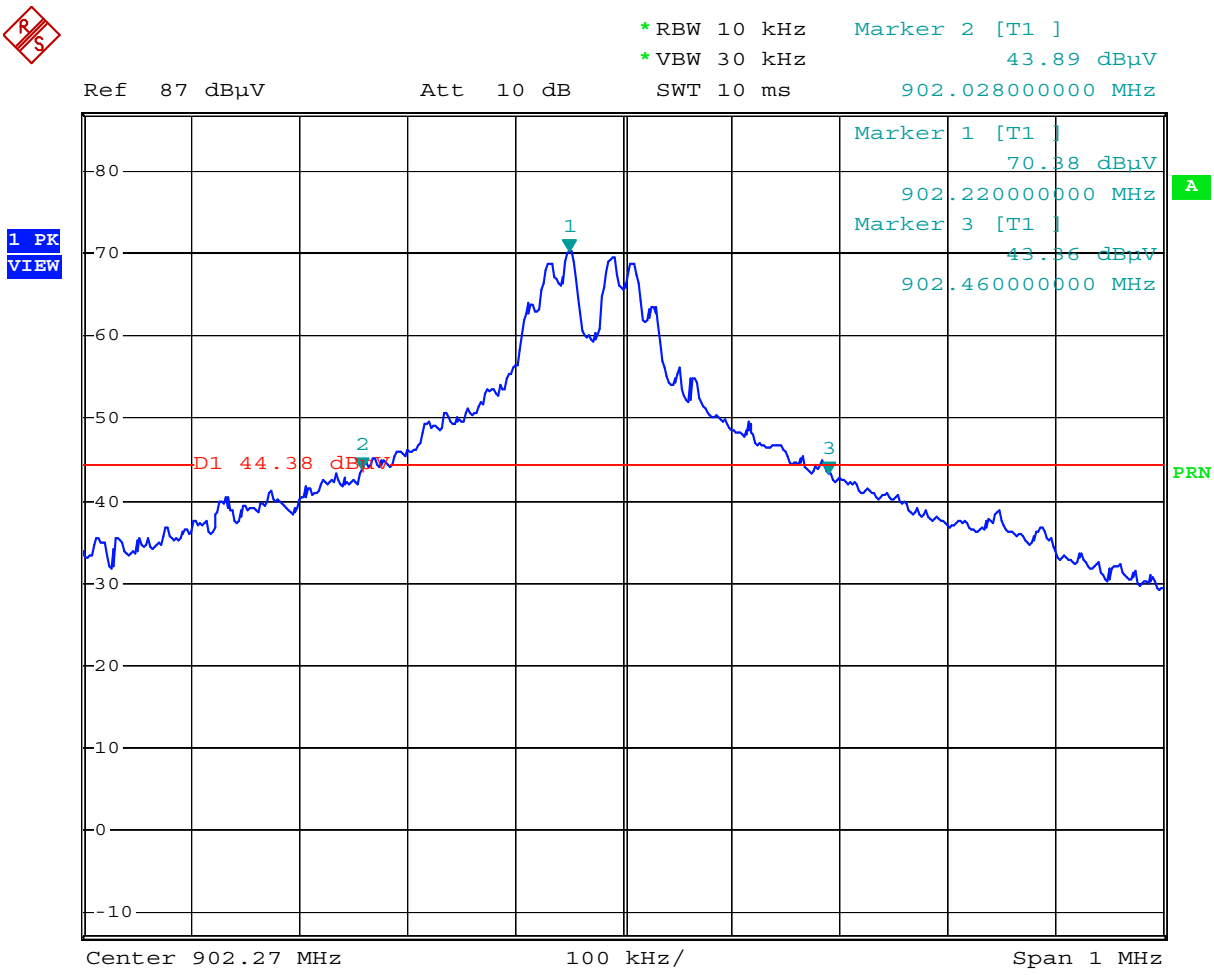
Occupied Bandwidth (99 %) on highest channel:



Comment: vigil 060316: Occupied Bandwidth
Date: 4.AUG.2006 12:09:52

Occupied Bandwidth (99 %):	**288 kHz**

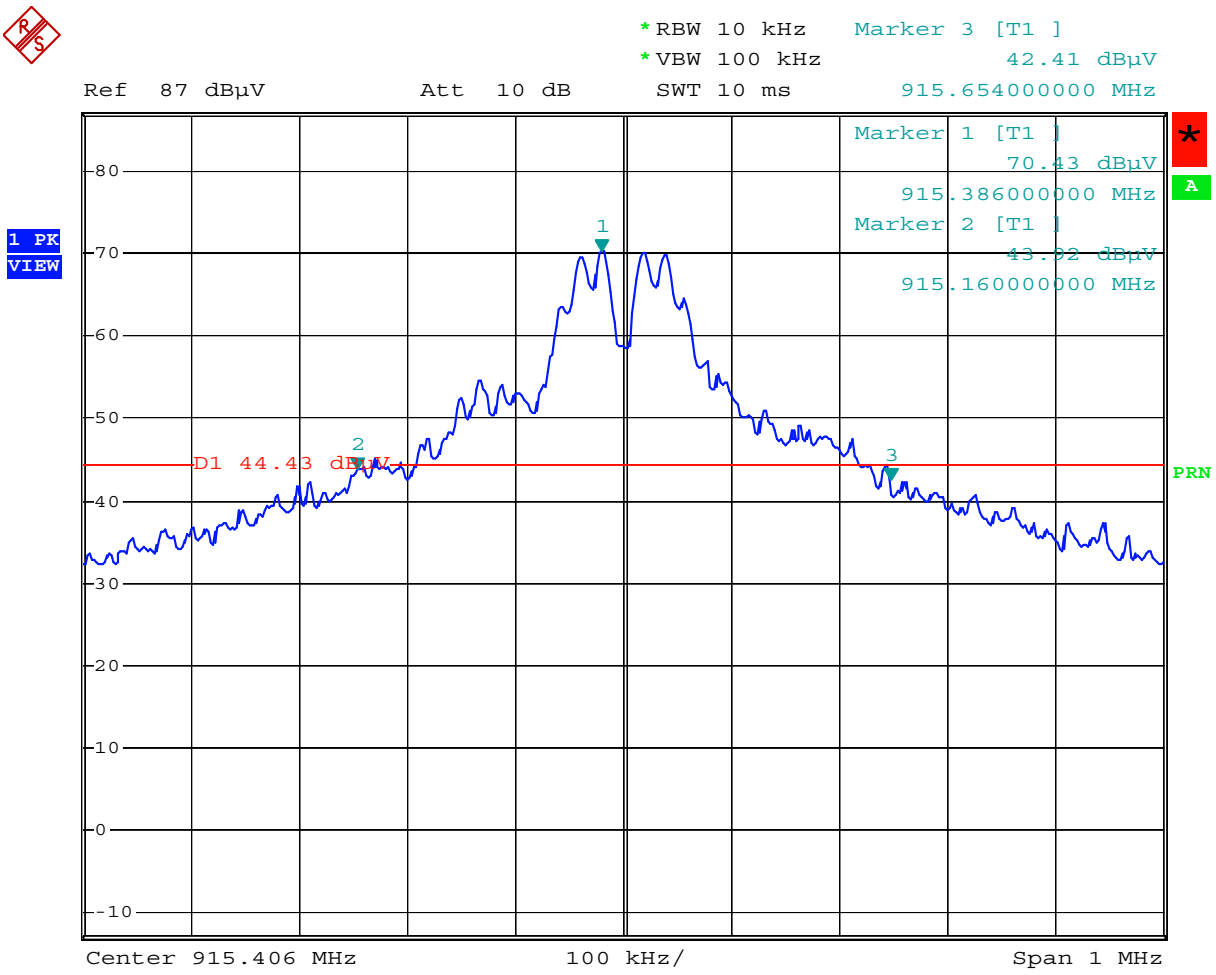
Occupied Bandwidth (-26 dB) on lowest channel:



Comment: vigil 060316: Occupied Bandwidth
Date: 4.AUG.2006 12:37:47

Occupied Bandwidth (-26 dB):	**432 kHz**

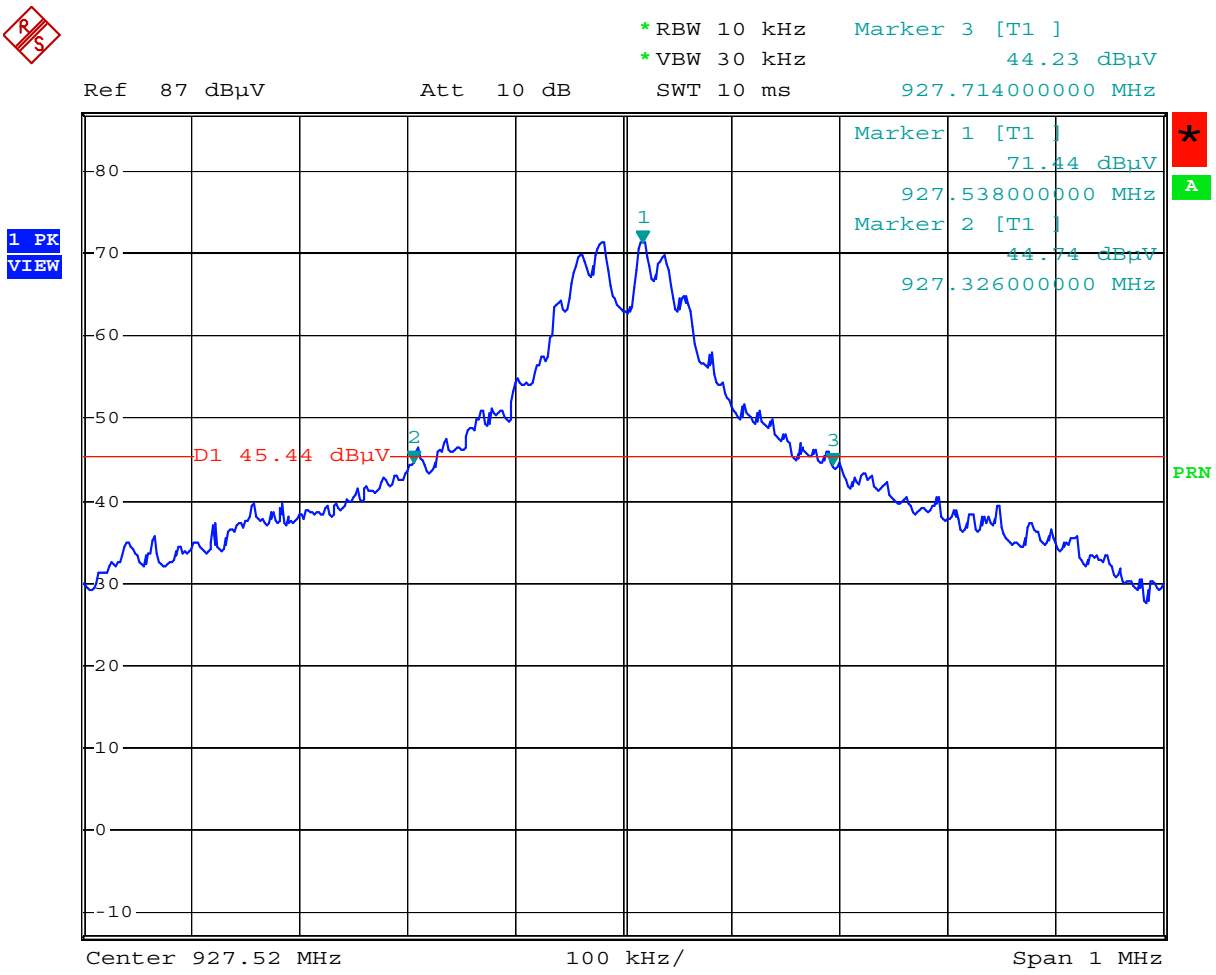
Occupied Bandwidth (-26 dB) on middle channel:



Comment: vigil 060316: Occupied Bandwidth
Date: 4.AUG.2006 13:20:51

Occupied Bandwidth (-26 dB):	**494 kHz**

Occupied Bandwidth (-26 dB) on highest channel:



Comment: vigil 060316: Occupied Bandwidth
Date: 4.AUG.2006 12:11:21

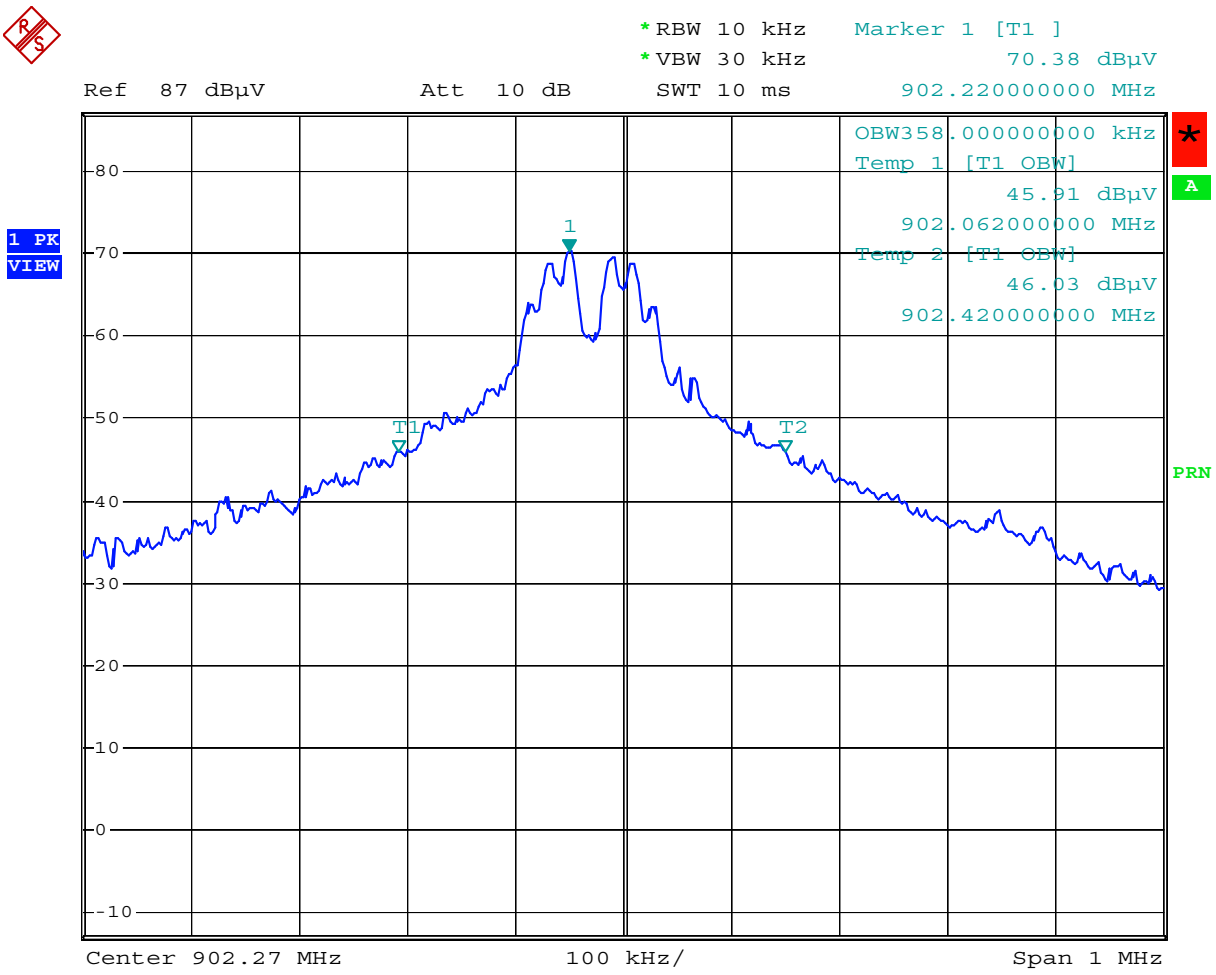
Occupied Bandwidth (-26 dB):	**388 kHz**

Occupied Bandwidth (continued)

Rules and specifications:	IC RSS-Gen Issue 1, section 4.4.1
Guide:	IC RSS-Gen Issue 1, section 4.4.1
Description:	If not specified in the applicable RSS the occupied bandwidth is measuredas the 99% emission bandwidth. 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. 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.
Measurement procedure:	Bandwidth Measurements (6.1)

Comment:	
Date of test:	4 August 2006
Test site:	Fully anechoic room, cabin no. 2

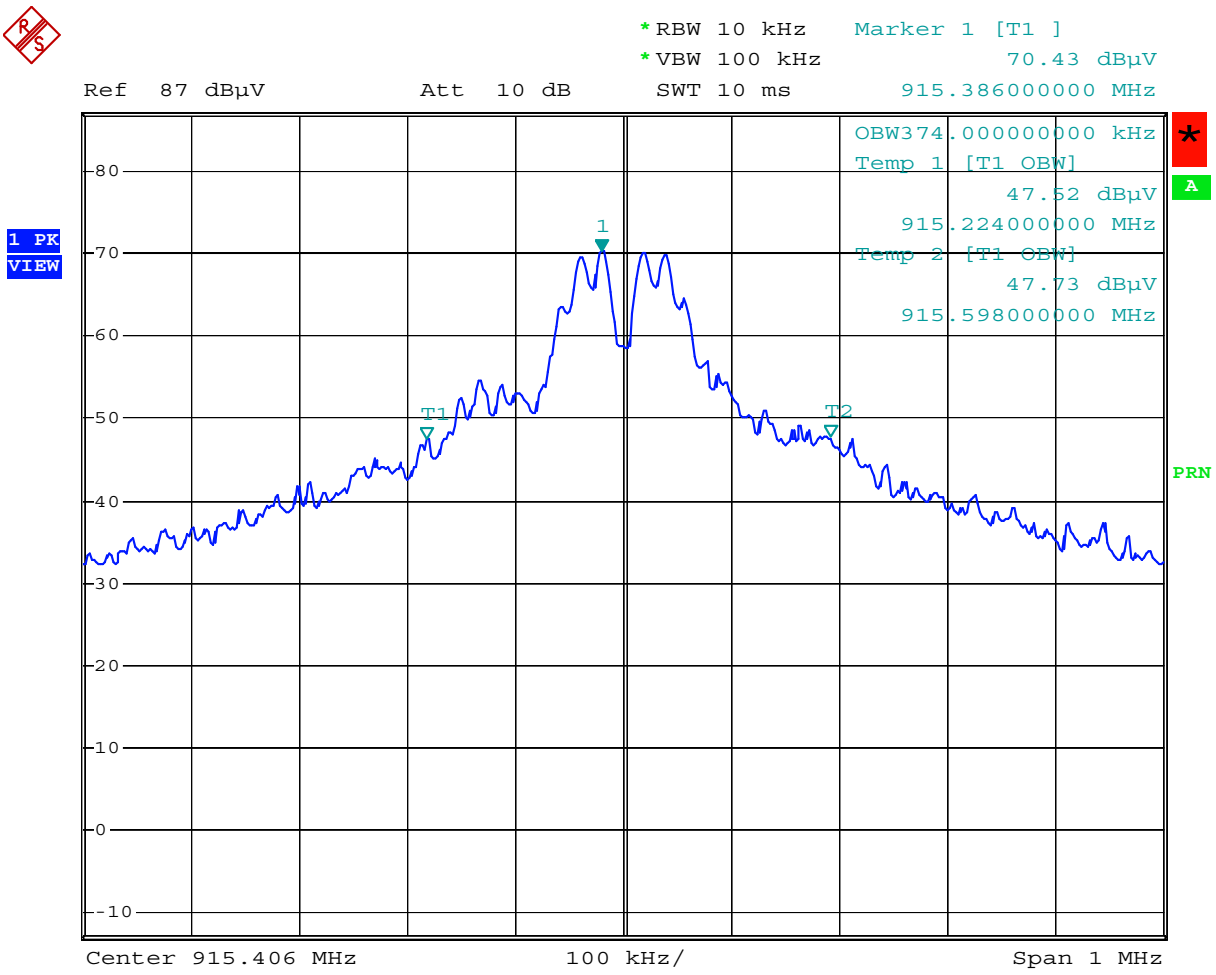
Occupied Bandwidth (99 %) on lowest channel:



Comment: vigil 060316: Occupied Bandwidth
Date: 4.AUG.2006 12:38:05

Occupied Bandwidth (99 %):	**358 kHz**

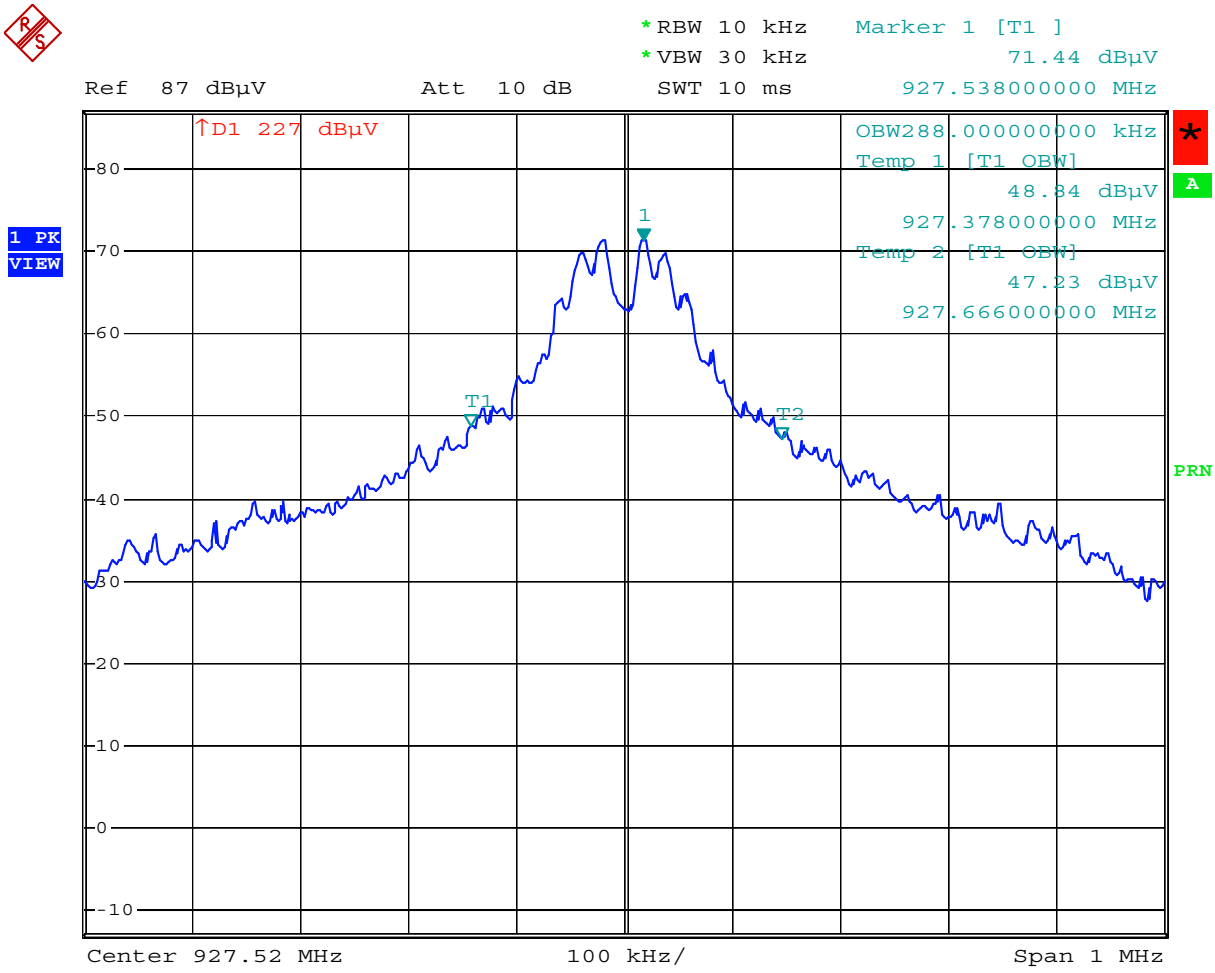
Occupied Bandwidth (99 %) on middle channel:



Comment: vigil 060316: Occupied Bandwidth
Date: 4.AUG.2006 13:19:57

Occupied Bandwidth (99 %):	**374 kHz**

Occupied Bandwidth (99 %) on highest channel:



Comment: vigil 060316: Occupied Bandwidth
Date: 4.AUG.2006 12:09:52

Occupied Bandwidth (99 %):	**288 kHz**

8.2 Bandwidth of the Emission

Rules and specifications:	CFR 47 Part 15, section 15.215(c)
Guide:	ANSI C63.4
Description:	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. 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. 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

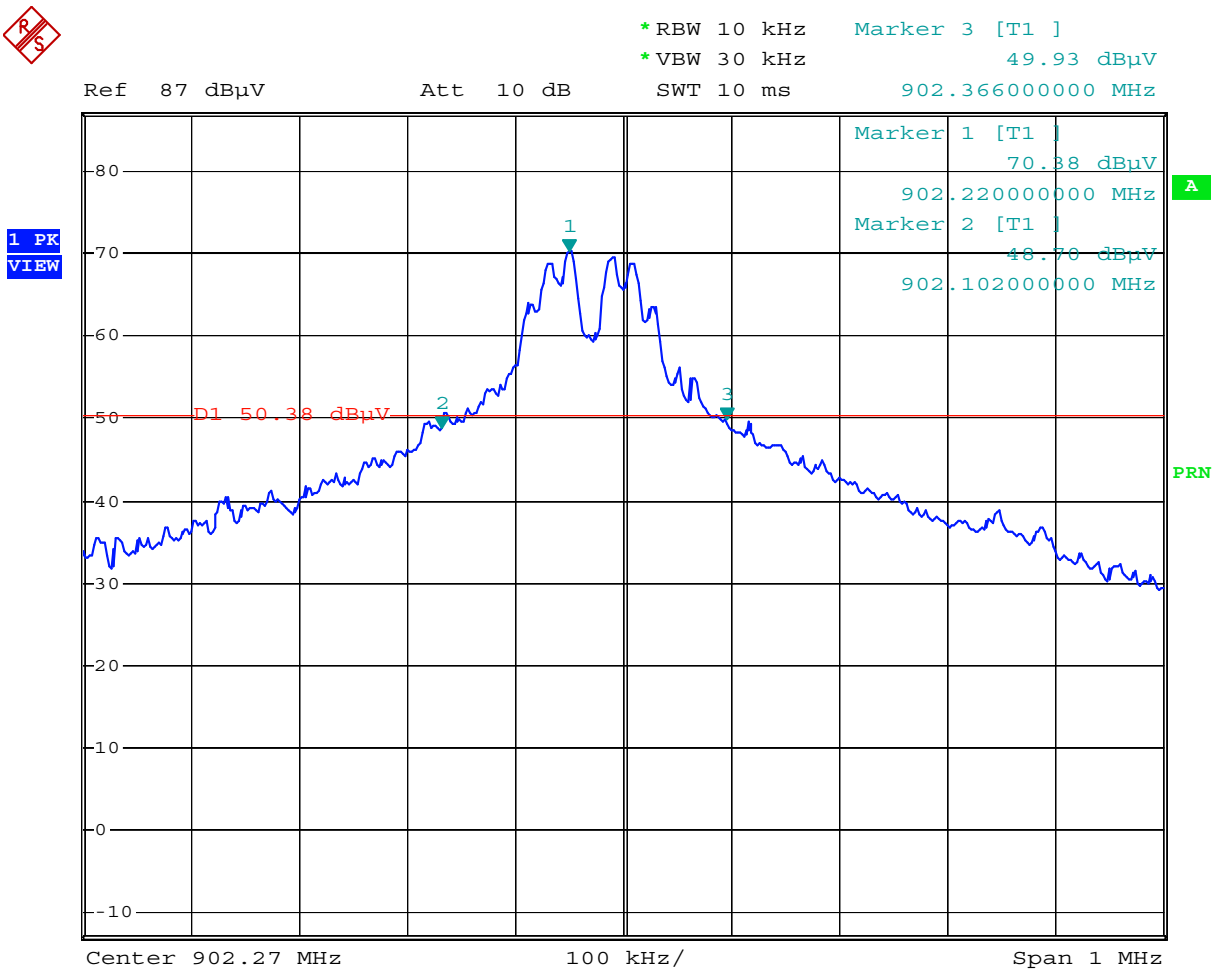
The video bandwidth shall be at least three times greater than the resolution bandwidth.

Measurement procedure:	Bandwidth Measurements (6.1)

Comment:	
Date of test:	8 August 2006
Test site:	Fully anechoic room, cabin no. 2

Test Result:	Test passed

-20 dB bandwidth on lowest channel:

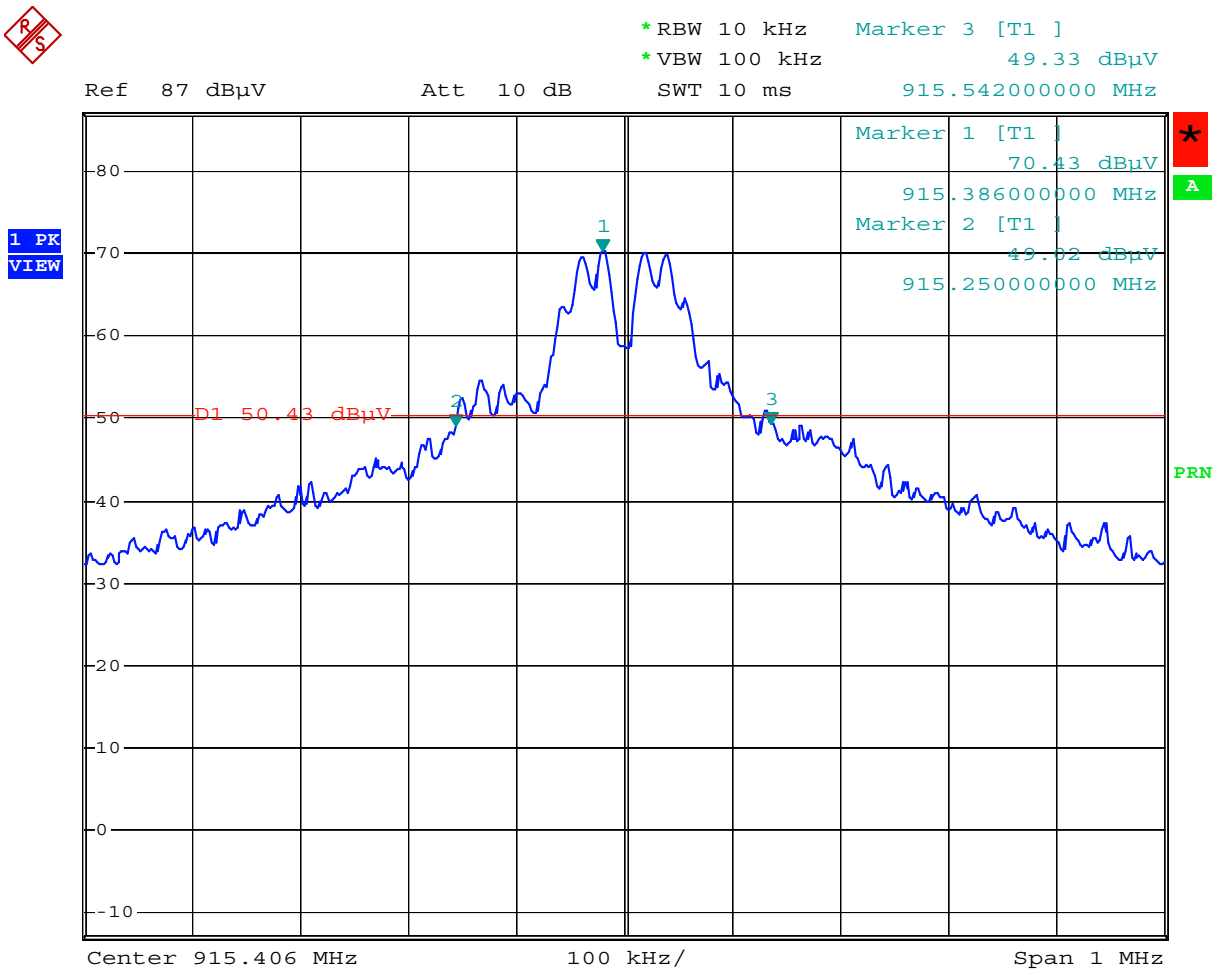


Comment: vigil 060316: Emission Bandwidth
Date: 4.AUG.2006 12:36:40

Permitted frequency band:	**902 - 928** MHz	
20 dB bandwidth:	**264 kHz**	
Carrier frequency stability: Maximum frequency tolerances:	☐ **specified**	☒ **not specified**
Bandwidth of the emission:		**within permitted frequency band[5]:** ☒ **yes** ☐ **no**

[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.

-20 dB bandwidth on middle channel:

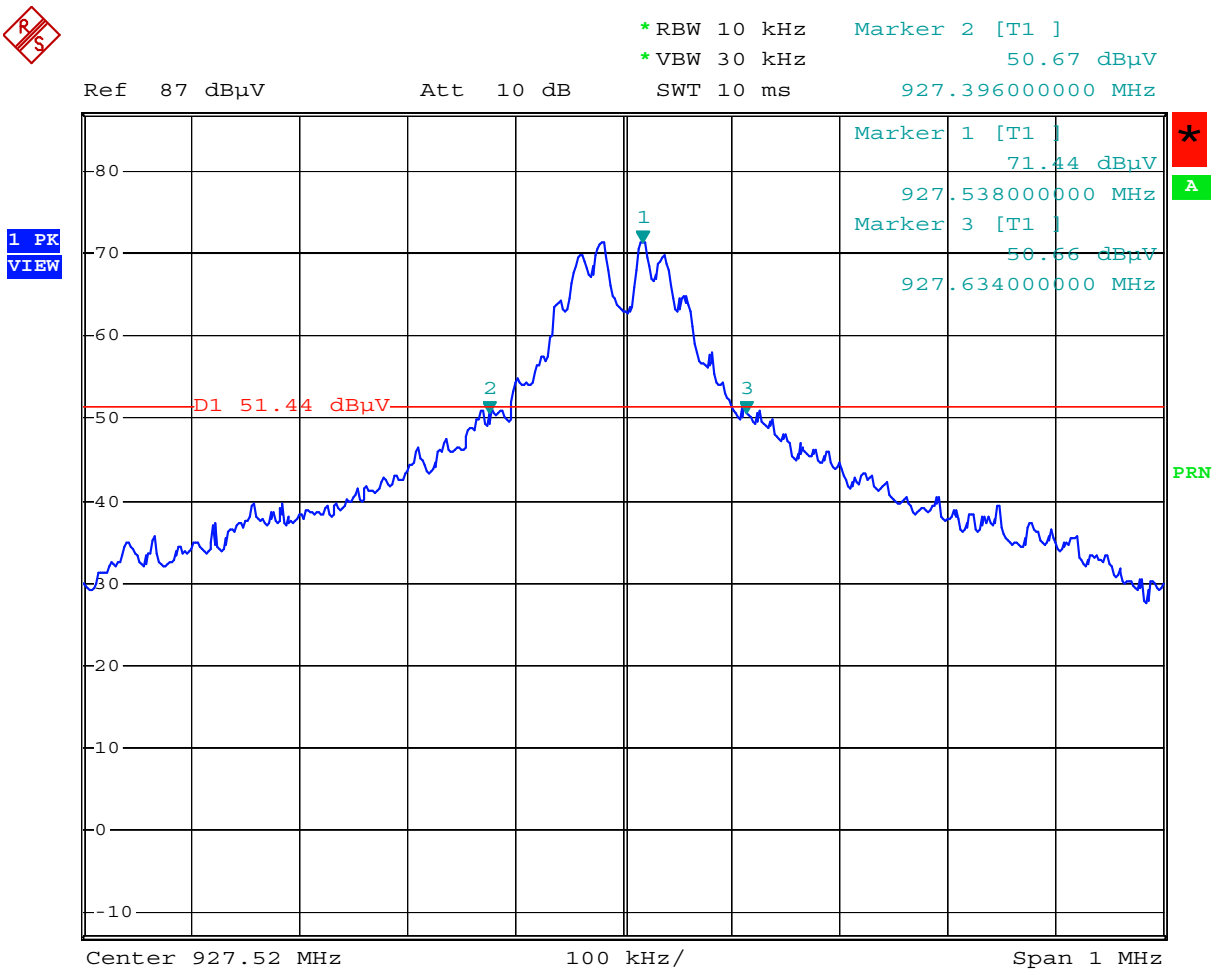


Comment: vigil 060316: Emission Bandwidth
Date: 4.AUG.2006 13:21:32

Permitted frequency band:	**902 - 928** MHz	
20 dB bandwidth:	**292 kHz**	
Carrier frequency stability: Maximum frequency tolerances:	☐ **specified**	☒ **not specified**
Bandwidth of the emission:		**within permitted frequency band[6]:** ☒ **yes** ☐ **no**

[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.

-20 dB bandwidth on highest channel:



Comment: vigil 060316: Emission Bandwidth
Date: 4.AUG.2006 12:12:34

Permitted frequency band:	**902 - 928** MHz	
20 dB bandwidth:	**238 kHz**	
Carrier frequency stability: Maximum frequency tolerances:	☐ **specified**	☒ **not specified**
Bandwidth of the emission:		**within permitted frequency band[7]:** ☒ **yes** ☐ **no**

[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 1, sections 3.2(h) and 8
Guide:	ANSI C63.4 / TRC-43

Type of modulation:	Frequency Modulation

B_n = Necessary Bandwidth	B_n = 2M + 2DK
M = Modulation frequency	M = 105 kHz
D = Peak deviation	D = 20 kHz
K = Overall numerical factor	K = 1
Calculation:	$B_n = 2 \cdot (105\ kHz) + 2 \cdot (20\ kHz) \cdot 1 = 250\ kHz$

Designation of Emissions:	**250kF1D**

8.4 Channel Bandwidth

Rules and specifications:	CFR 47 Part 15, section 15.247(a)(1)(i) RSS-210, Issue 6, section A8(3)
Guide:	ANSI C63.4
Limit:	The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
Measurement procedure:	Bandwidth Measurements (6.1)

Comment:	
Date of test:	8 August 2006
Test site:	Fully anechoic room, cabin no. 2

Channel Frequency	Channel Bandwidth		Result
	Measured	Limit	
Low (902.22 MHz)	264 kHz	≤ 500 kHz	**Passed**
Middle (915.39 MHz)	292 kHz	≤ 500 kHz	**Passed**
High (927.40 MHz)	238 kHz	≤ 500 kHz	**Passed**

Test Result:	Test passed

8.5 Hopping Channel Separation

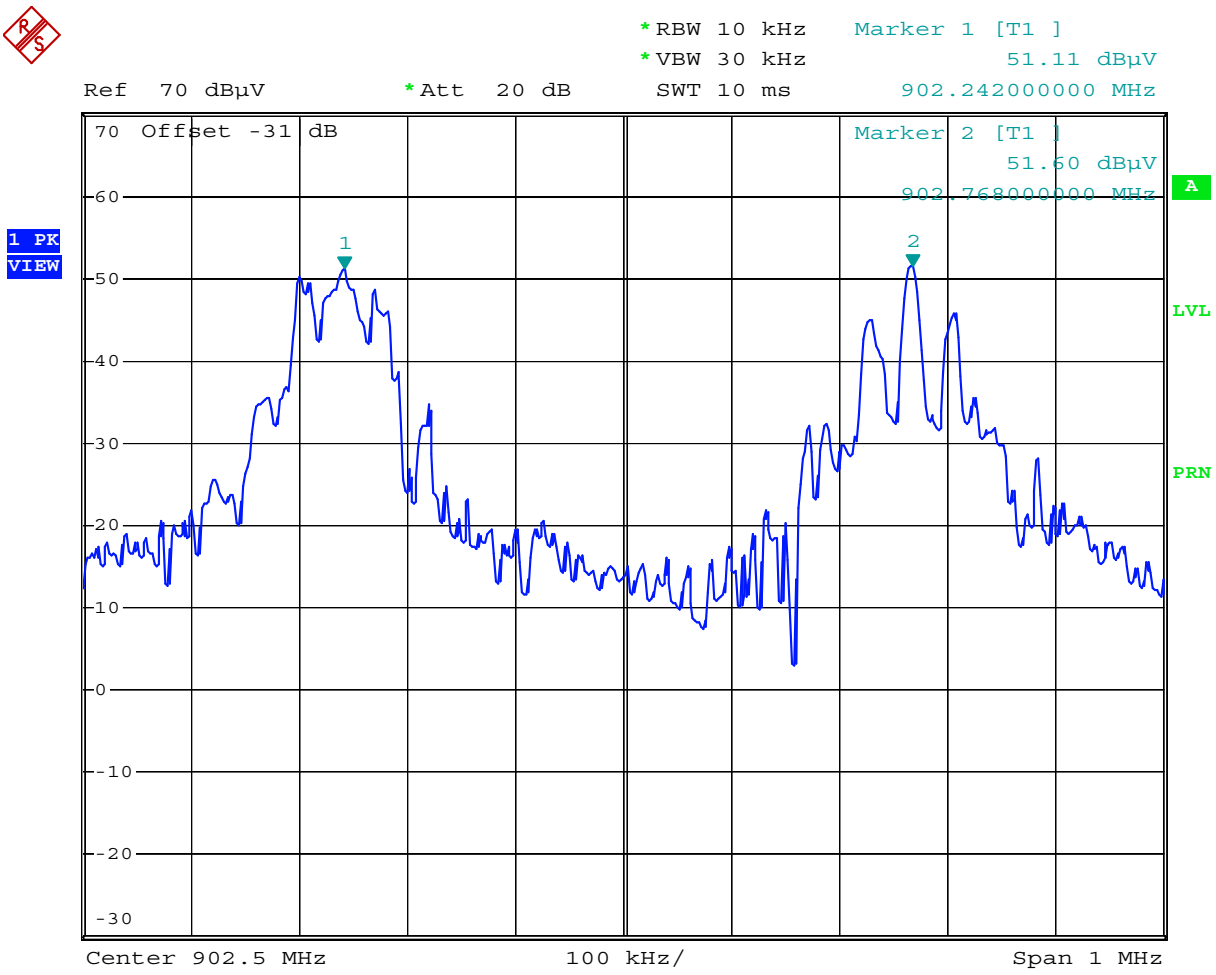
Rules and specifications:	CFR 47 Part 15, section 15.247(a)(1)(i) RSS-210, Issue 6, section A8(3)
Guide:	ANSI C63.4
Limit:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth, whichever is greater
Measurement procedure:	Bandwidth Measurements (6.1)

Comment:	
Date of test:	8 August 2006
Test site:	Fully anechoic room, cabin no. 2

Channel Frequency	Hopping Channel Separation		Result
	Measured	Required	
Low (902.22 MHz)	526 kHz	≤ 264 kHz	**Passed**
Middle (915.39 MHz)	530 kHz	≤ 292 kHz	**Passed**
High (927.40 MHz)	278 kHz	≤ 238 kHz	**Passed**

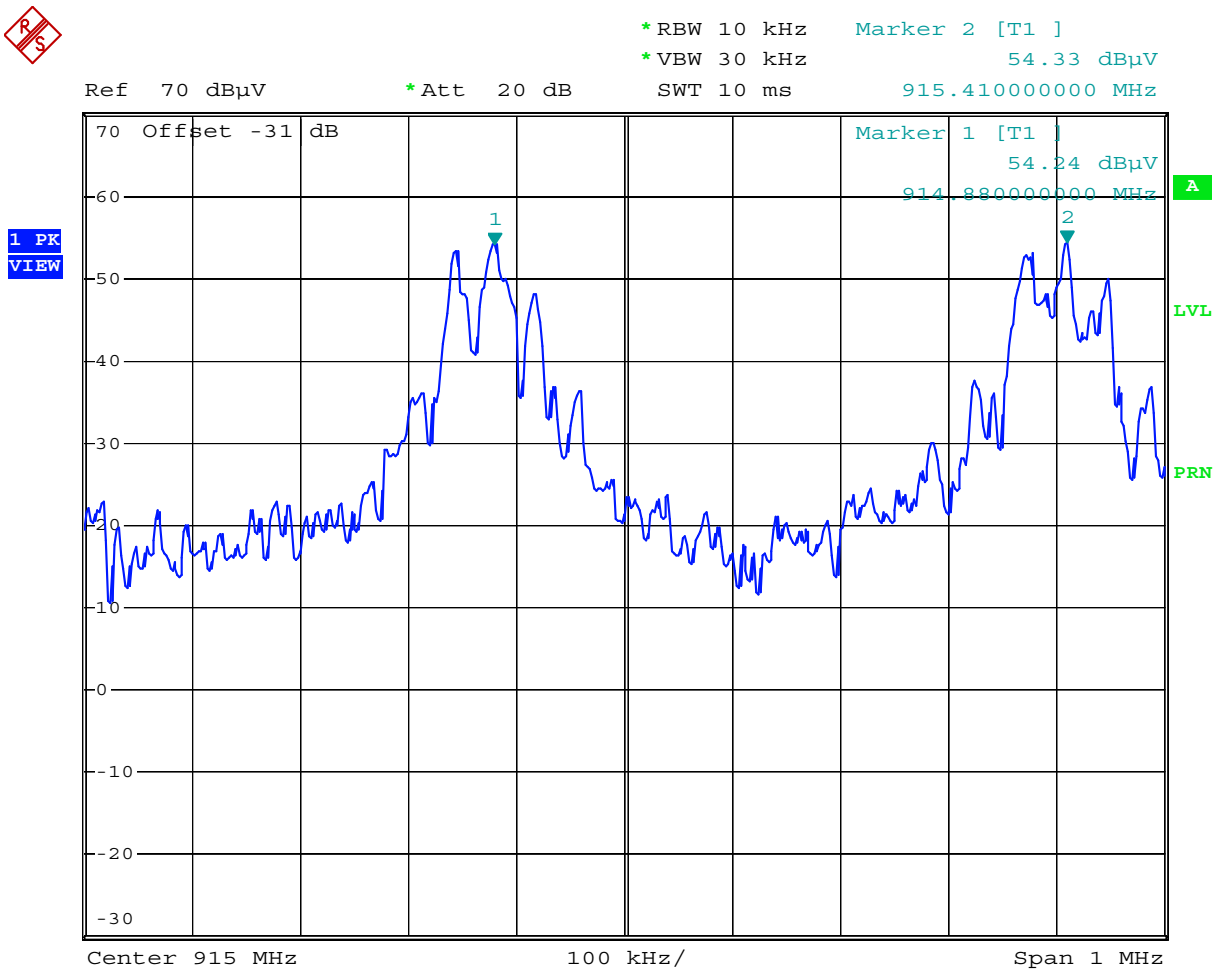
Test Result:	Test passed

-20 dB bandwidth on lowest channel:



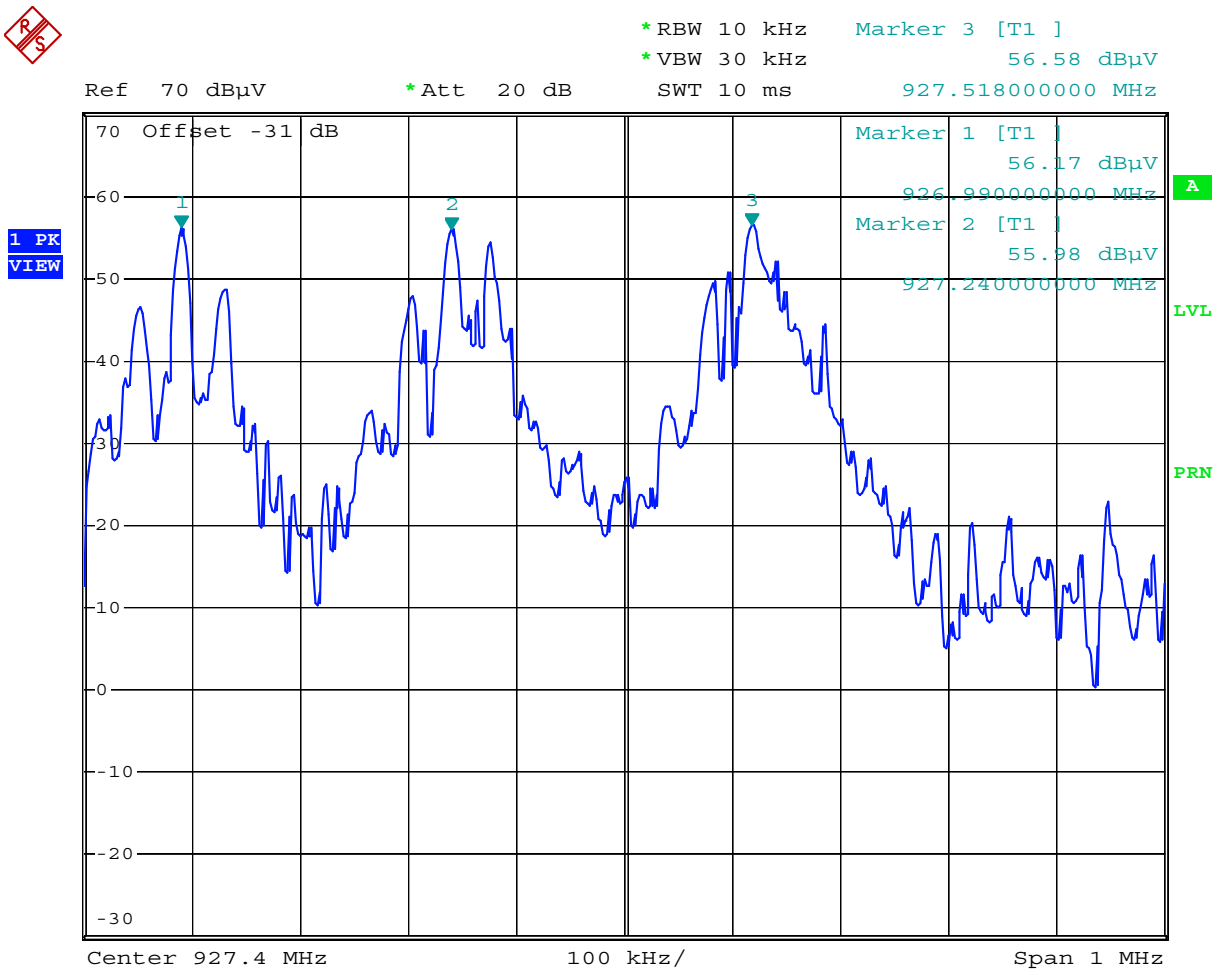
Comment: vigil 060316: Hopping Channel Separation
Date: 4.AUG.2006 11:26:17

-20 dB bandwidth on middle channel:



Comment: vigil 060316: Hopping Channel Separation
Date: 4.AUG.2006 11:30:20

-20 dB bandwidth on highest channel:



Comment: vigil 060316: Hopping Channel Separation
Date: 4.AUG.2006 11:27:57

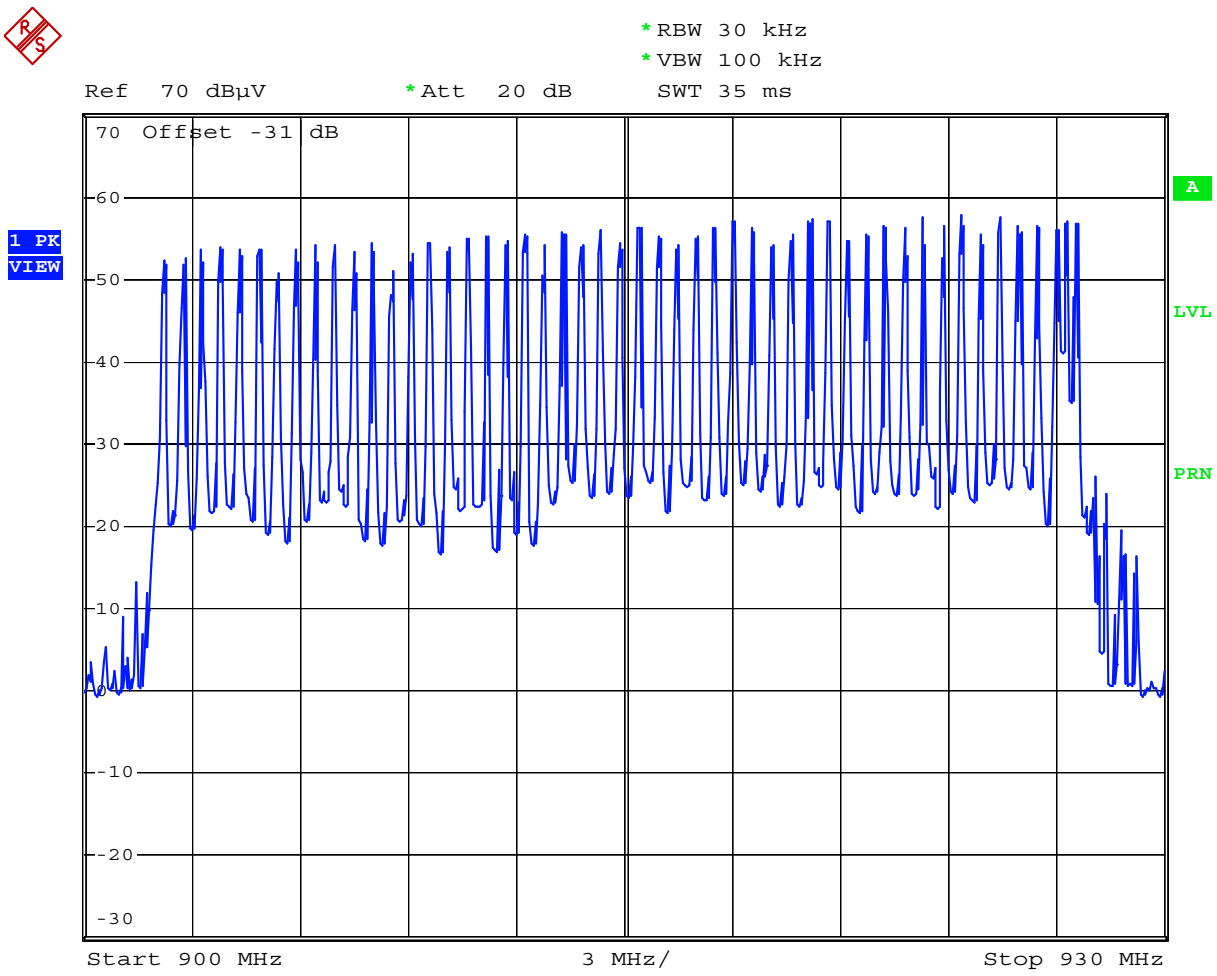
8.6 Number of Hopping Frequencies

Rules and specifications:	CFR 47 Part 15, section 15.247(a)(1)(i) RSS-210, Issue 6, section A8(3)
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 bandwith of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.
Measurement procedure:	Bandwidth Measurements (6.1)

Comment:	
Date of test:	8 August 2006
Test site:	Fully anechoic room, cabin no. 2

Number of Hopping Frequencies		Result
Measured	**Required**	
50	≥50	**Passed**

Test Result:	Test passed



Comment: vigil 060316: Number of Hopping Channels
Date: 4.AUG.2006 11:23:18

8.7 Time Occupancy on any Channel

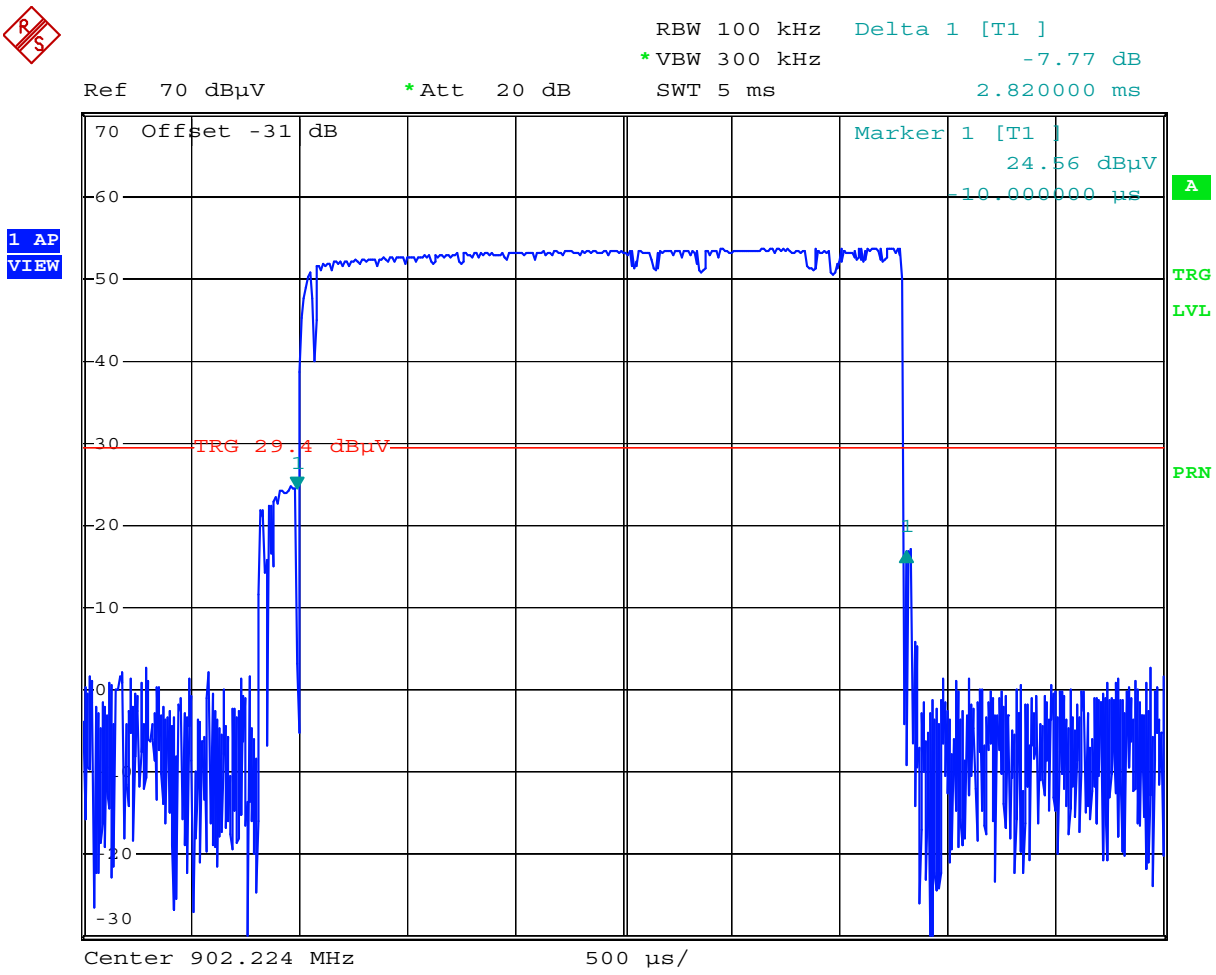
Rules and specifications:	CFR 47 Part 15, section 15.247(a)(1)(i) RSS-210, Issue 6, section A8(3)
Guide:	ANSI C63.4
Limit:	If the 20 dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwith 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:	Bandwidth Measurements (6.1)

Comment:	
Date of test:	8 August 2006
Test site:	Fully anechoic room, cabin no. 2

Channel Frequency	Time Occupancy		Result
	Measured	Required	
Low (902.22 MHz)	2.82 ms · 11 = 31.02 ms in 10 s period	< 400 ms in 10 s period	**Passed**
Middle (915.39 MHz)	2.82 ms · 11 = 31.02 ms in 10 s period	< 400 ms in 10 s period	**Passed**
High (927.40 MHz)	2.82 ms · 11 = 31.02 ms in 10 s period	< 400 ms in 20 s period	**Passed**

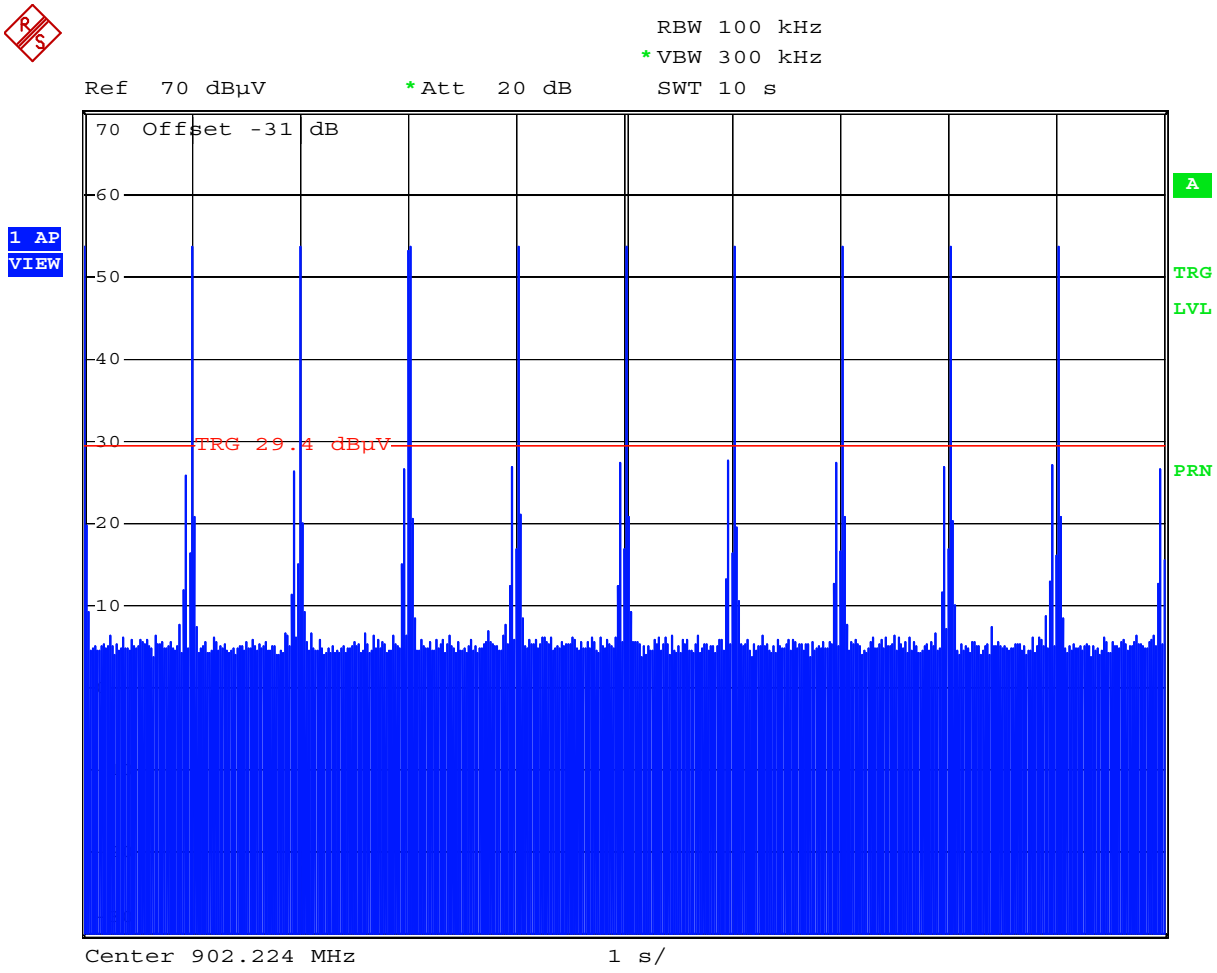
Test Result:	Test passed

Lowest Channel



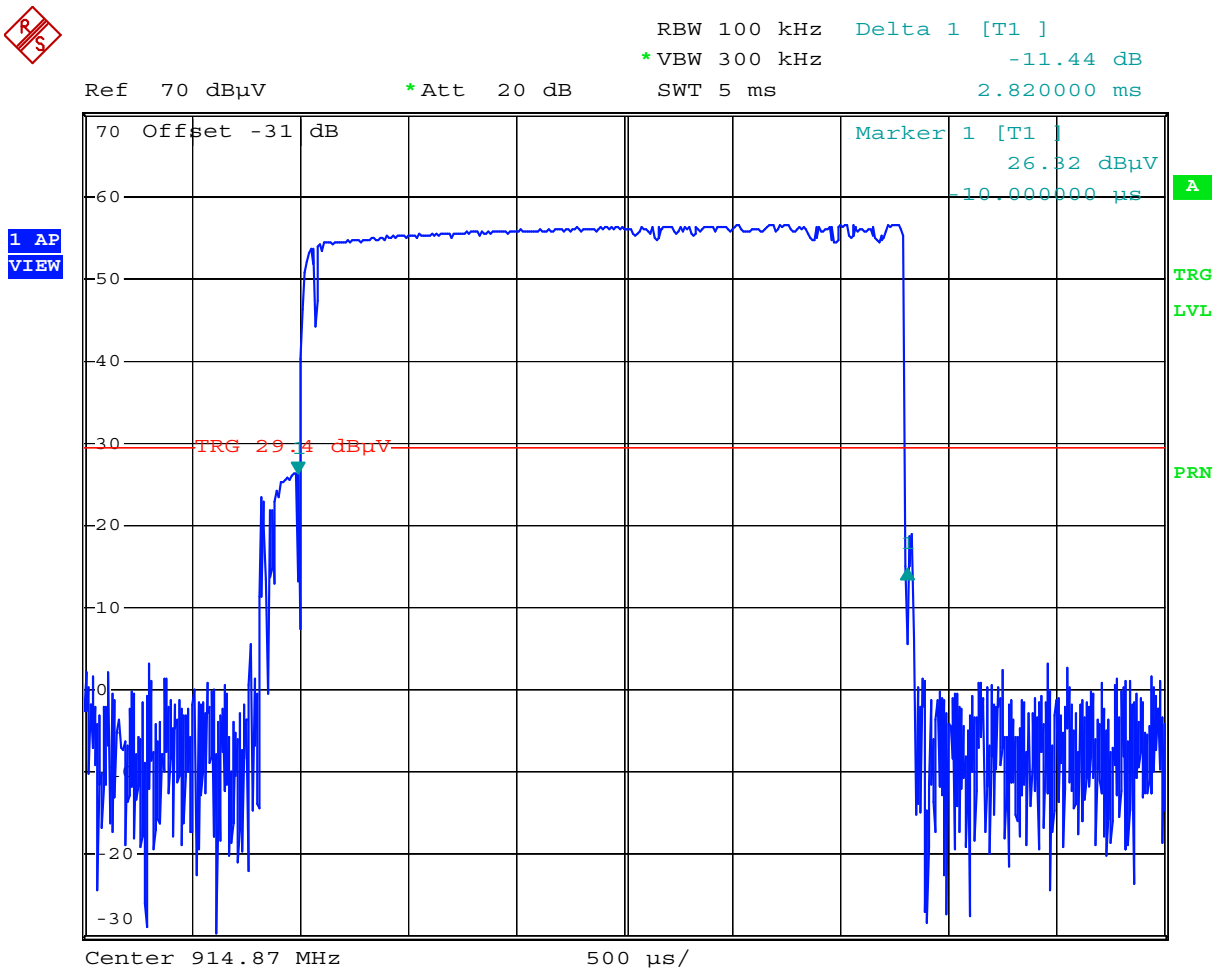
Comment: vigil 060316: Time Occupancy
Date: 4.AUG.2006 11:32:38

Lowest Channel - continued



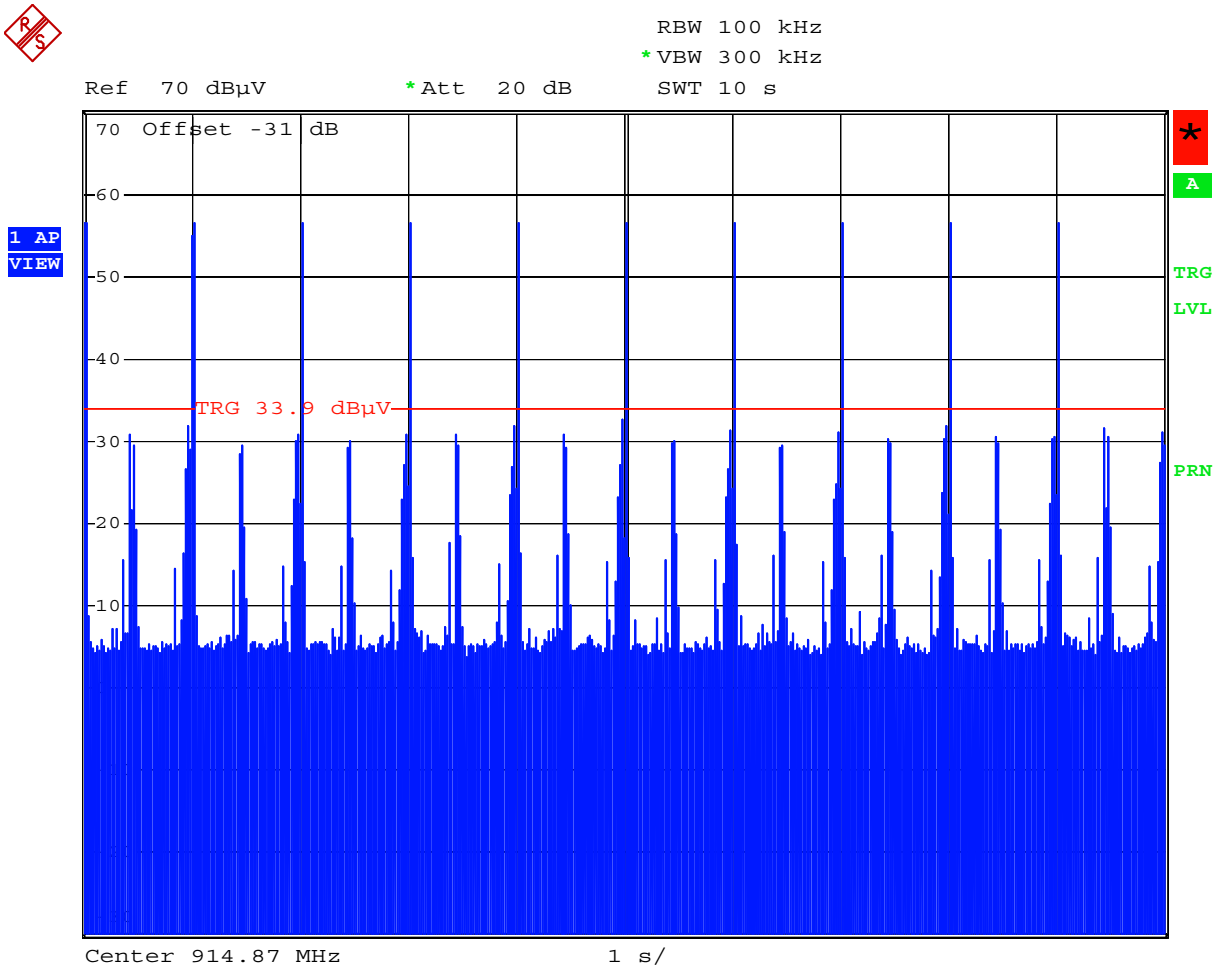
Comment: vigil 060316: Time Occupancy
Date: 4.AUG.2006 11:33:22

Middle Channel



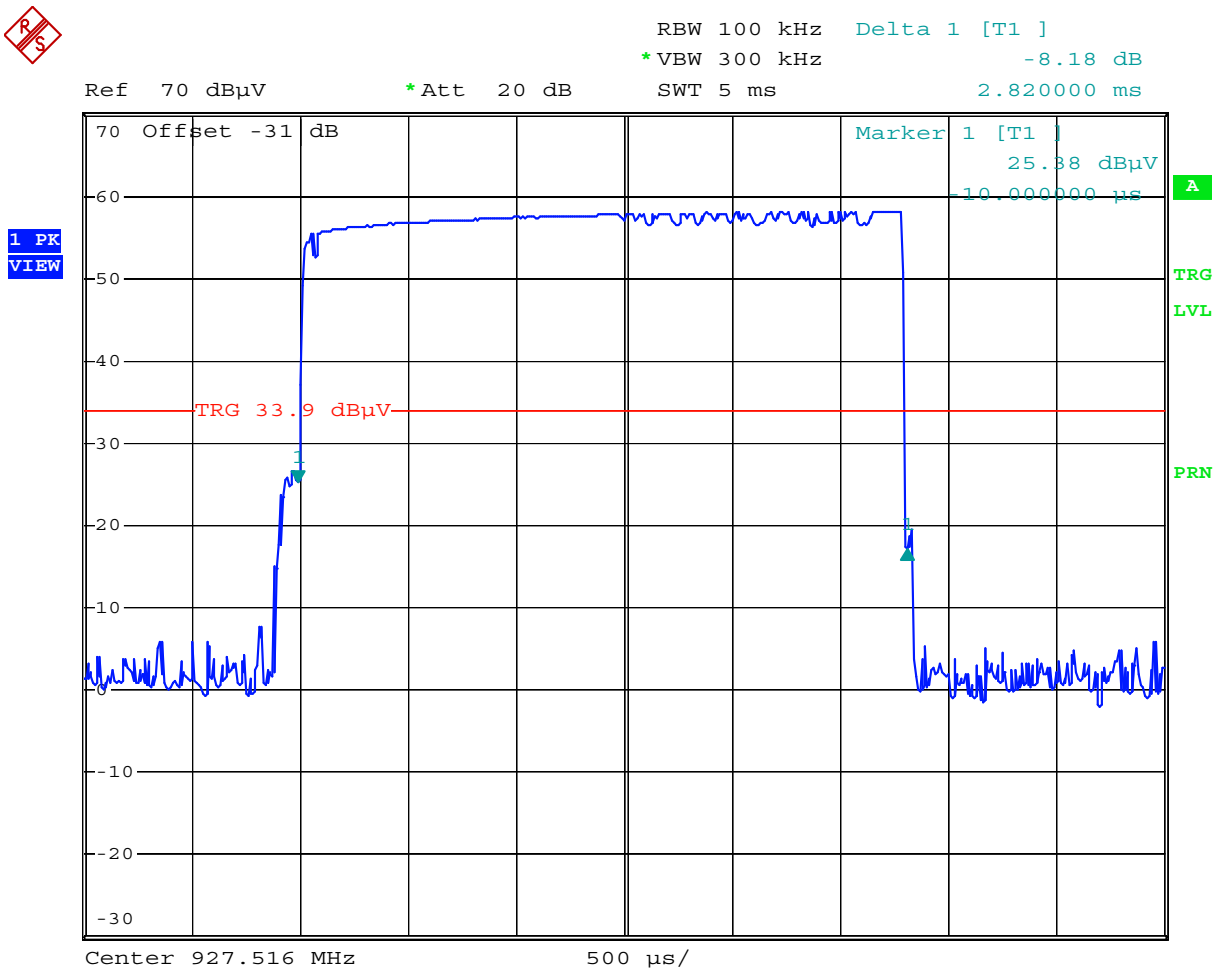
Comment: vigil 060316: Time Occupancy
Date: 4.AUG.2006 11:34:36

Middle Channel - continued



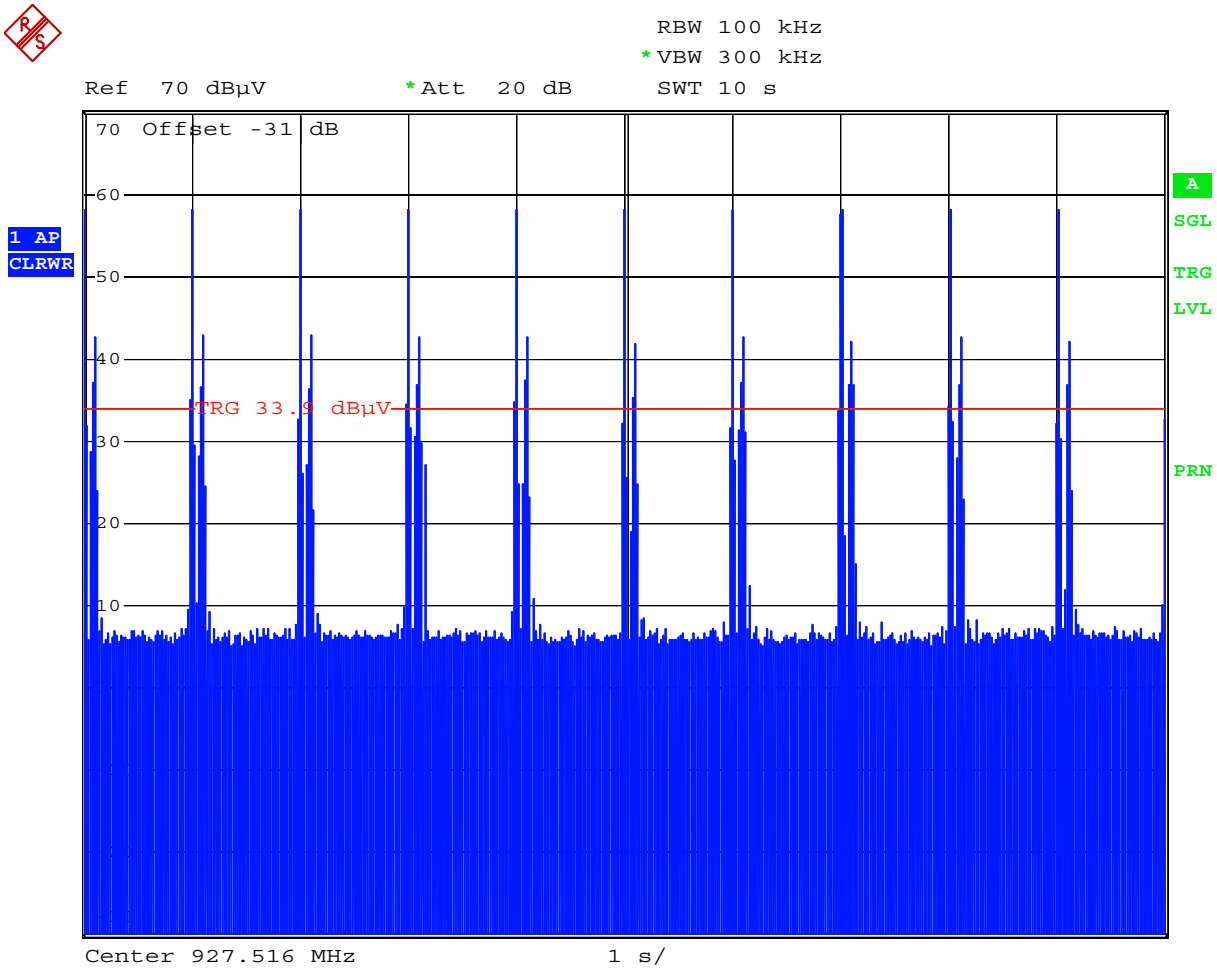
Comment: vigil 060316: Time Occupancy
Date: 4.AUG.2006 11:35:31

Highest Channel



Comment: vigil 060316: Time Occupancy
Date: 4.AUG.2006 11:37:12

Highest Channel - continued



Comment: vigil 060316: Time Occupancy
Date: 4.AUG.2006 11:37:50

8.8 Carrier Power

Rules and specifications:	CFR 47 Part 15, section 15.247(b)(2) IC RSS-210, issue 6, section A8.4
Guide:	ANSI C63.4
Limit:	For frequency hopping systems operation in the 902 - 928 MHz band: 1 watt for systems employing at least 50 hopping channels; and 0.25 watt for systems employing less than 50 hopping channels, but at leas 25 hopping channels.
Measurement procedures:	Radiated Emission in Fully or Semi Anechoic Room (6.2) Radiated Emission at Open Field Test Site (6.3)

Comment:	Since the device does not feature an antenna connector the carrier power was calculated from the radiated carrier emission..
Date of test:	8 August 2006
Test site:	Open Field Test Side
Test distance:	3 meters

Test Result:	Test passed

Comment:	
Mode:	Transmitting continuously on lowest channel
Date of test:	8 August 2006

$$P = (FS\ D)^2 / (30\ G_i)$$

Where: P = Conducted Output Power
FS = Field Strength
D = Distance to the center of radiation of the antenna
G_i = Gain of Antenna

Fieldstrength (measured)	105.1 dBµV/m = 179.89 mV/m
Test Distance	3 m
Gain (declared by applicant):	-0.99 dBi = 0.796
	12.20 mW
Limit:	1 W

Test Result:	Test passed

Comment:	
Mode:	Transmitting continuously on middle channel
Date of test:	8 August 2006

$$P = (FS\ D)^2 / (30\ G_i)$$

Where: P = Conducted Output Power
FS = Field Strength
D = Distance to the center of radiation of the antenna
G_i = Gain of Antenna

Fieldstrength (measured)	104.8 dBµV/m = 173.78 mV/m
Test Distance	3 m
Gain (declared by applicant):	-0.99 dBi = 0.796
	11.38 mW
Limit:	1 W

Test Result:	Test passed

Comment:	
Mode:	Transmitting continuously on highest channel
Date of test:	8 August 2006

$$P = (FS\ D)^2 / (30\ G_i)$$

Where: P = Conducted Output Power
FS = Field Strength
D = Distance to the center of radiation of the antenna
G_i = Gain of Antenna

Fieldstrength (measured)	102.8 dBµV/m = 138.04 mV/m
Test Distance	3 m
Gain (declared by applicant):	-0.99 dBi = 0.796
	7.18 mW
Limit:	1 W

Test Result:	Test passed

8.9 Spurious emissions 30 MHz to 10 GHz - radiated

Rules and specifications:	CFR 47 Part 15, sections 15.247(d) IC RSS-210 Issue 6, 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 radio frequency power that is prduced 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 a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as specified in section 15.205(a), must also comply with the radiated emission limits. specified in section 15.209(a).
Measurement procedures:	Radiated Emission in Fully or Semi Anechoic Room (6.2) Radiated Emission at Open Field Test Site (6.3)

Test Result:	Test passed

Comment:	
Date of test:	1 August 2006
Mode:	Transmitting continuously on lowest channel
Test site:	Frequencies ≤ 1 GHz: Open field test site Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	3 meters for frequencies ≤ 8.2 GHz 1 meters for frequencies > 8.2 GHz

Test Result:	Test passed

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)
902.270	vertical	Quasi-Peak	78.7	26.4		105.1		
1804.000	vertical	Peak	7.8	31.3		39.1	85.1	46.1
2710.000	vertical	Peak	11.5	34.6		46.2	54.0	7.8
3610.000	vertical	Peak	12.8	38.1		51.0	54.0	**3.1**
4512.400	vertical	Peak	15.6	34.0		49.6	54.0	4.4
5413.000	vertical	Peak	11.7	34.9		46.5	54.0	7.5
7217.700	horizontal	Peak	10.1	39.0		49.1	85.1	36.0
7603.100	vertical	Peak	7.8	39.3		47.2	54.0	6.9
9024.400	horizontal	Peak	9.8	43.7		53.5	63.5	10.0

Note: For test distances other 3 meters the limit was extrapolated using a extrapolation factor of 20 dB/decade.

Sample calculation of final values:

Final Value (dBµV/m) = Reading Value (dBµV) + Correction Factor (dB/m) + Pulse Train Correction (dB)

Comment:	
Date of test:	1 August 2006
Mode:	Transmitting continuously on middle channel
Test site:	Frequencies ≤ 1 GHz: Open field test site Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	3 meters for frequencies ≤ 8.2 GHz 1 meters for frequencies > 8.2 GHz

Test Result:	Test passed

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)
915.430	vertical	Quasi-Peak	78.5	26.3		104.8		
1828.000	vertical	Peak	7.7	31.4		39.1	84.8	45.7
2746.000	vertical	Peak	10.3	34.8		45.1	54.0	8.9
3664.000	horizontal	Peak	11.1	38.3		49.4	54.0	4.6
4577.000	vertical	Peak	14.4	34.1		48.4	54.0	5.6
5492.800	horizontal	Peak	9.9	34.9		44.8	84.8	40.0
5496.600	vertical	Peak	10.8	34.9		45.7	84.8	39.1
6409.300	horizontal	Peak	10.6	38.3		48.9	84.8	35.9
7325.800	vertical	Peak	11.3	39.1		50.4	54.0	**3.6**

Note: For test distances other 3 meters the limit was extrapolated using a extrapolation factor of 20 dB/decade.

Sample calculation of final values:

Final Value (dBµV/m) = Reading Value (dBµV) + Correction Factor (dB/m) + Pulse Train Correction (dB)

Comment:	
Date of test:	1 August 2006
Mode:	Transmitting continuously on highest channel
Test site:	Frequencies ≤ 1 GHz: Open field test site Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	3 meters for frequencies ≤ 8.2 GHz 1 meters for frequencies > 8.2 GHz

Test Result:	Test passed

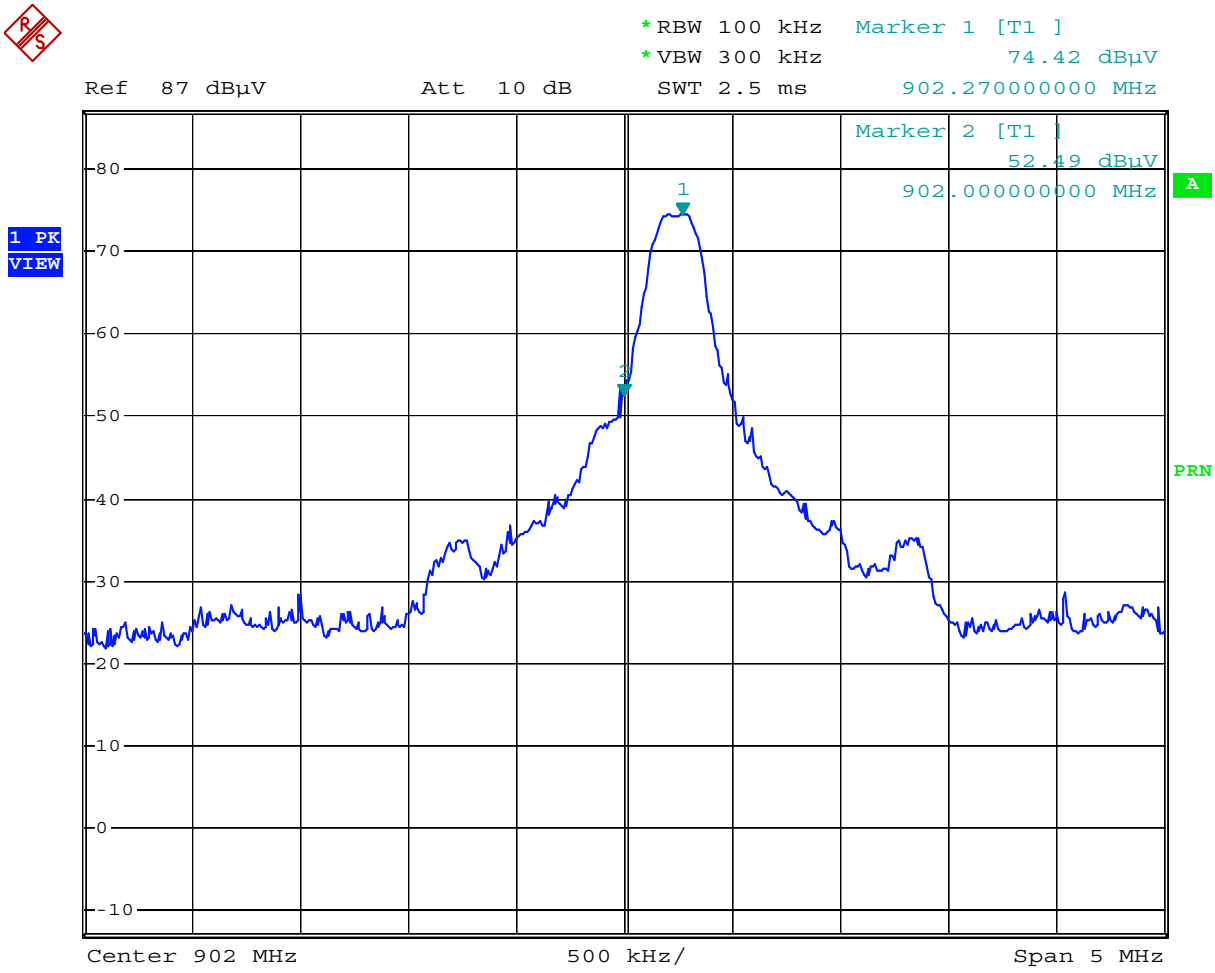
Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dBµV)	Correction Factor (dB/m)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
927.520	vertical	Quasi-Peak	76.6	26.2		102.8		
1918.000	vertical	Peak	6.6	31.9		38.5	82.8	44.3
2782.000	horizontal	Peak	10.8	35.0		45.8	54.0	8.2
3712.000	horizontal	Peak	10.3	38.4		48.7	54.0	5.3
4637.800	horizontal	Peak	19.9	34.1		54.0	54.0	**0.0**
5568.800	vertical	Peak	9.9	35.0		44.9	82.8	37.9
6493.900	horizontal	Peak	10.4	38.3		48.8	82.8	34.1
7419.800	vertical	Peak	14.1	39.2		53.3	54.0	0.7
8347.600	horizontal	Peak	13.5	43.3		56.7	63.5	6.8

Note: For test distances other 3 meters the limit was extrapolated using a extrapolation factor of 20 dB/decade.

Sample calculation of final values:

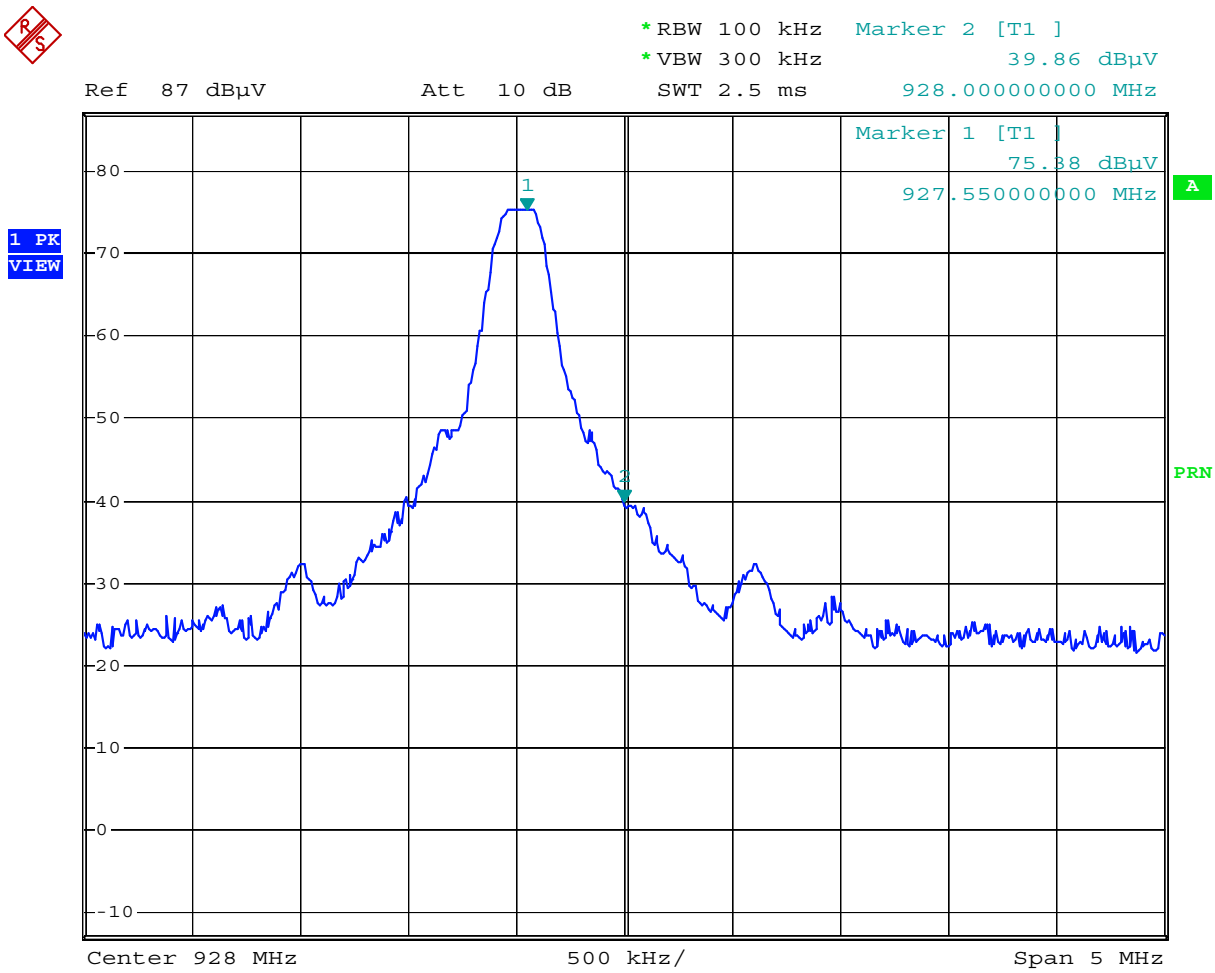
Final Value (dBµV/m) = Reading Value (dBµV) + Correction Factor (dB/m) + Pulse Train Correction (dB)

Band edge on lowest channel:



Comment: vigil 060316: Band Edge
Date: 4.AUG.2006 12:34:34

Bandedge on highest channel



Comment: vigil 060316: Band Edge
Date: 4.AUG.2006 12:31:02

8.10 RF-Exposure

Rules and specifications:	CFR 47 Part 1, section 1.1310 CFR 47 Part 15, section 15.247(b)(4)			
Guide:	OET Bulletin 65, Edition 97-01			
Limit:	Limits for General Population / Uncontrolled Exposure:			
	Frequency range [MHz]	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm²]
	0.3 – 1.34	614	1.63	*(100)
	1.34 – 30	824 / f	2.19 / f	*(180 / f²)
	30 – 300	27.5	0.073	0.2
	300 – 1500	---	---	f / 1500
	1500 - 100000	---	---	1.0
	Averaging time is 30 minutes for all frequency ranges.			
	f: Frequency in MHz *: Plane-wave equivalent power density			

MPE Prediction of MPE according to equation from page 19 of OET Bulletin 65, Edition 97-01**:**

$$\mathbf{S = (EIRP) / (4 \pi R^2)}$$

Where: S = Power Density
EIRP = Equivalent Isotropic Radiated Power
R = Distance to the center of radiation of the antenna

Equivalent Isotropic Radiated Power (maximum measured):	4.6 dBm = 2.88 mW
Prediction distance:	20 cm
Power density at 20 cm:	**573 nW/cm²**
Limit:	601 mW/cm²

Test Result:	Test passed

8.11 Exposure of Humans to RF Fields

Rules and specifications:	IC RSS-Gen Issue 1, 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				
☐ detachable				
The conducted output power (CP in watts) is measured at the antenna connector: CP = **..... W**			☐	
The effective isotropic radiated power (EIRP in watts) is calculated using				
☐ the numerical antenna gain: G = **.....** $EIRP = G \cdot CP \Rightarrow EIRP$ = **..... W**		☐		
☐ the field strength[8] in V/m: FS = **..... V/m** $EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP$ = **..... W**			☐	
with: Distance between the antennas in m: D = **..... m**			☐	
☒ not detachable				
A field strength measurement is used to determine the effective isotropic radiated power (EIRP in watts) given by[8]: $EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP$ = **9.7 mW**				
with: Field strength in V/m: FS = **105.1 dBµV/m** = **180 mV/m**			☐	
Distance between the two antennas in m: D = **3 m**			☐	
Selection of output power				
The output power TP is the higher of the conducted or effective isotropic radiated power (e.i.r.p.): TP = **9.7 mW**				

[8] 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				
☒ less than or equal to 20 cm ☐ greater than 20 cm		☒		
Transmitting device is				
☐ in the vicinity of the human head ☐ 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.				
☒ 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.				☐
☐ 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.				☐
☐ 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.				☐
☐ 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.				☐
☐ 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.				
☐ The device operates below 1.5 GHz and its e.i.r.p. is equal to or less than 2.5 W.				☐
☐ 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.				☐
☐ RF exposure evaluation is documented in test report no.				

9 Test Results for Receiver

FCC CFR 47 Part 15			
Section(s)	*Test*	*Page*	*Result*
15.107	Conducted AC powerline emission 150 kHz to 30 MHz	---	Not applicable
15.109	Radiated emission 30 MHz to 5 GHz	62	Test passed
15.111(a)	Antenna power conduction emission of receivers 9 kHz to 5 GHz	---	Not applicable

IC RSS-Gen Issue 1			
Section(s)	*Test*	*Page*	*Result*
7.2.2	Transmitter AC power lines conducted emissions 150 kHz to 30 MHz	---	Not applicable
6(a), 7.2.3.2	Receiver spurious emissions (radiated) 30 MHz to 5 GHz	62	Test passed
6(b), 7.2.3.1	Receiver spurious emissions (antenna conducted) 9 kHz to 5 GHz	---	Not applicable

9.1 Radiated Emission Measurement 30 MHz to 5 GHz

Rules and specifications:	CFR 47 Part 15, section 15.109 (Class B) IC RSS-Gen Issue 1, sections 6(a) and 7.2.3.2		
Guide:	ANSI C63.4		
Limit:	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
Measurement procedures:	Radiated Emission in Fully or Semi Anechoic Room (6.2) Radiated Emission at Open Field Test Site (6.3)		

Comment:	
Date of test:	25 July 2006
Test site:	Frequencies ≤ 1 GHz: Open field test site Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	3 meters

Test Result:	Test passed

Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dBµV)	Correction Factor (dB/m)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
516.090	vertical	Quasi-Peak	16.7	20.8	37.5	46.0	8.5
545.590	vertical	Quasi-Peak	17.1	20.9	38.0	46.0	8.0
604.570	vertical	Quasi-Peak	18.0	22.1	40.1	46.0	5.9
915.280	vertical	Quasi-Peak	17.4	26.3	43.7	46.0	**2.3**

Sample calculation of field final values:

Final Value (dBµV/m) = Reading Value (dBµV) + Correction Factor (dB/m)

10 Referenced Regulations

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

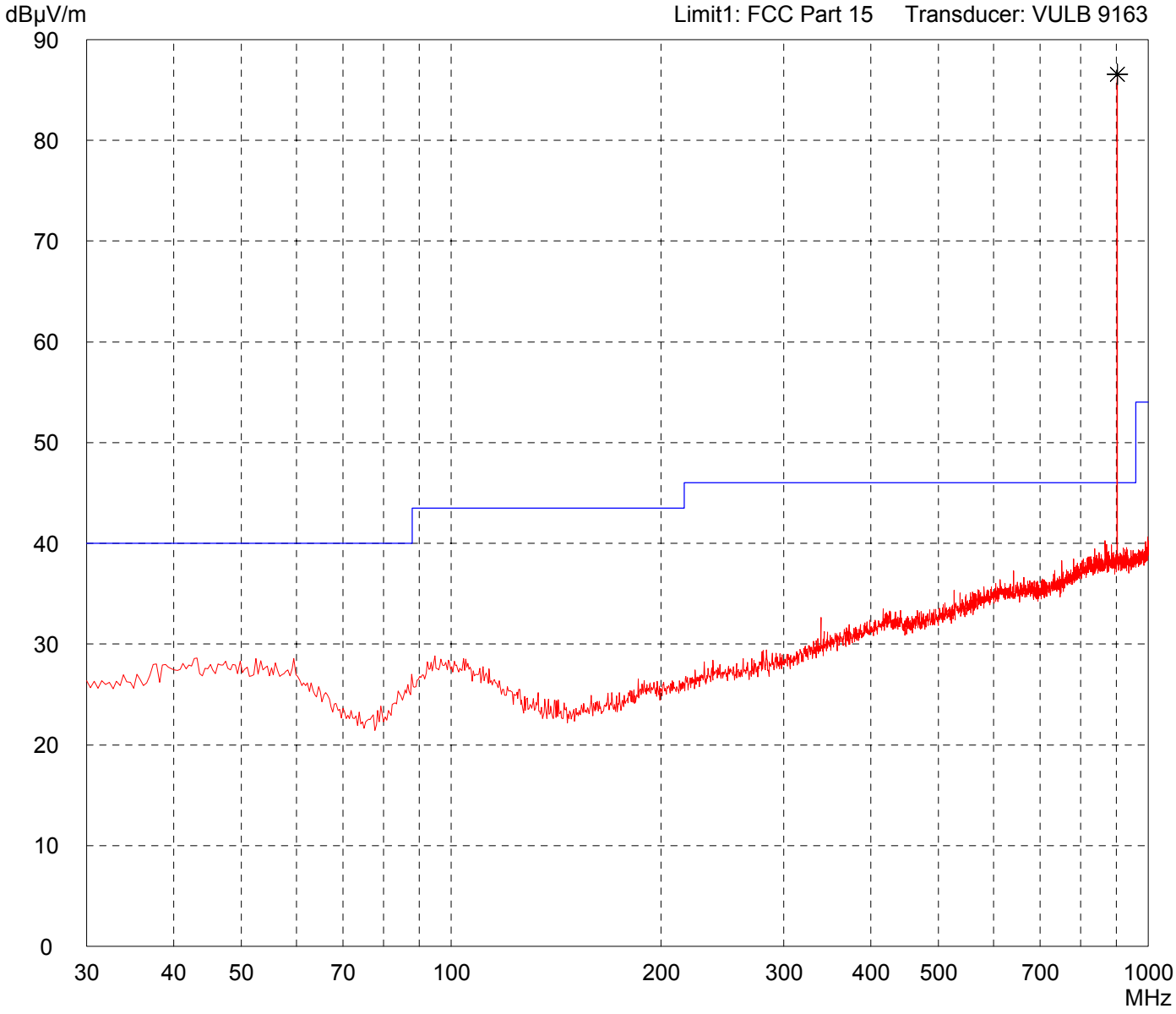
☒	CFR 47 Part 2	Code of Federal Regulations Part 2 (Frequency allocation and radio treaty matters; General rules and regulations) of the Federal Communication Commission (FCC)	October 10, 2004
☒	CFR 47 Part 15	Code of Federal Regulations Part 15 (Radio Frequency Devices) of the Federal Communication Commission (FCC)	September 19, 2005
☒	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)
☒	RSS-Gen	Radio Standards Specification RSS-Gen Issue 1 containing General Requirements and Information for the Certification of Radiocommunication Equimpment, published by Industry Canada	September 2005
☒	RSS-210	Radio Standards Specification RSS-210 Issue 6 for Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment, published by Industry Canada	September 2005
☐	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
☒	RSS-102	Radio Standards Specification RSS-102 Issue 2: Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)	November 2005
☐	ICES-003	Interference-Causing Equipment Standard ICES-003 Issue 4 for Digital Apparatus, published by Industry Canada	February 7, 2004
☒	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
☐	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

11 Charts taken during Testing

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/20/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

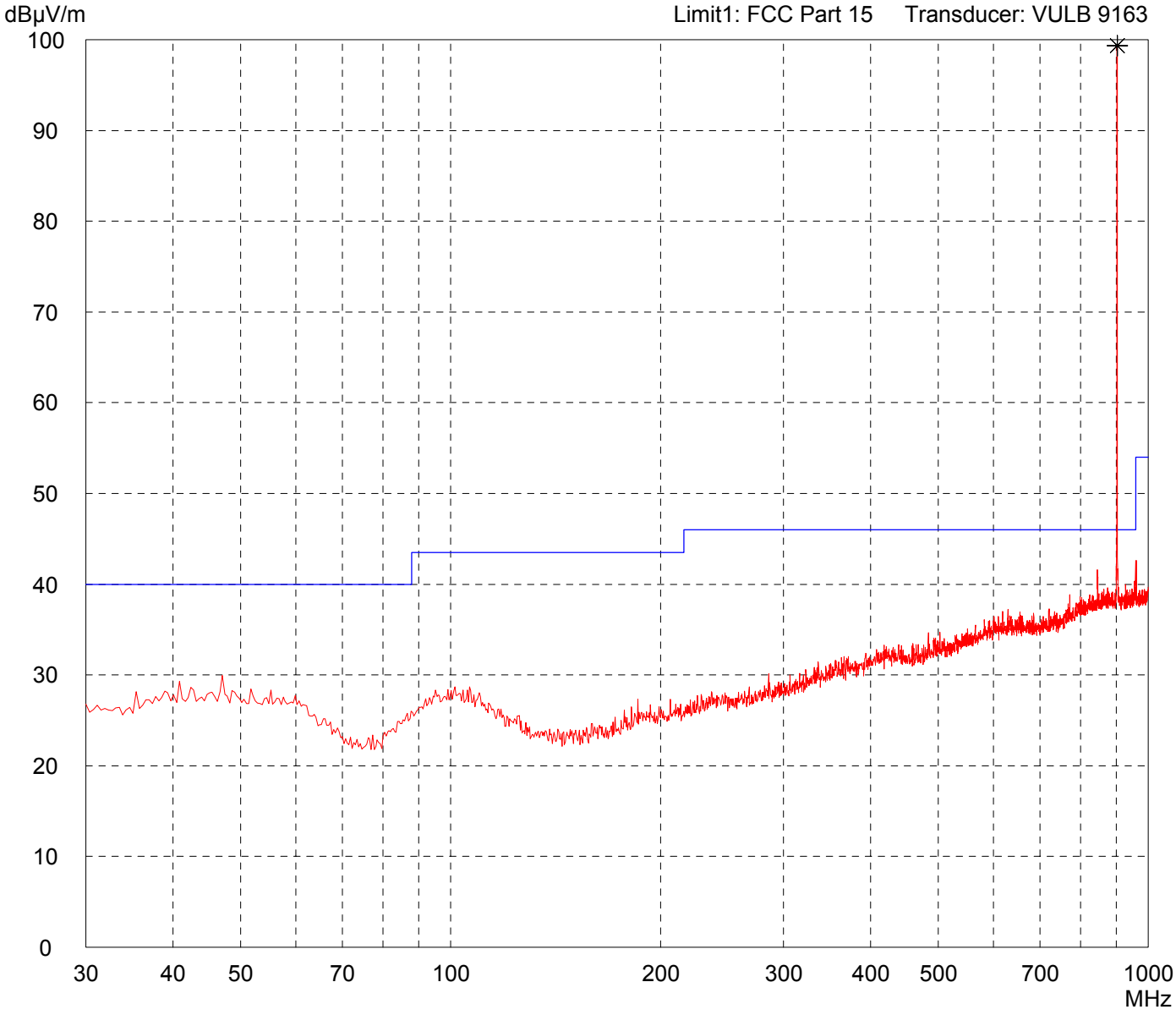
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/20/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1

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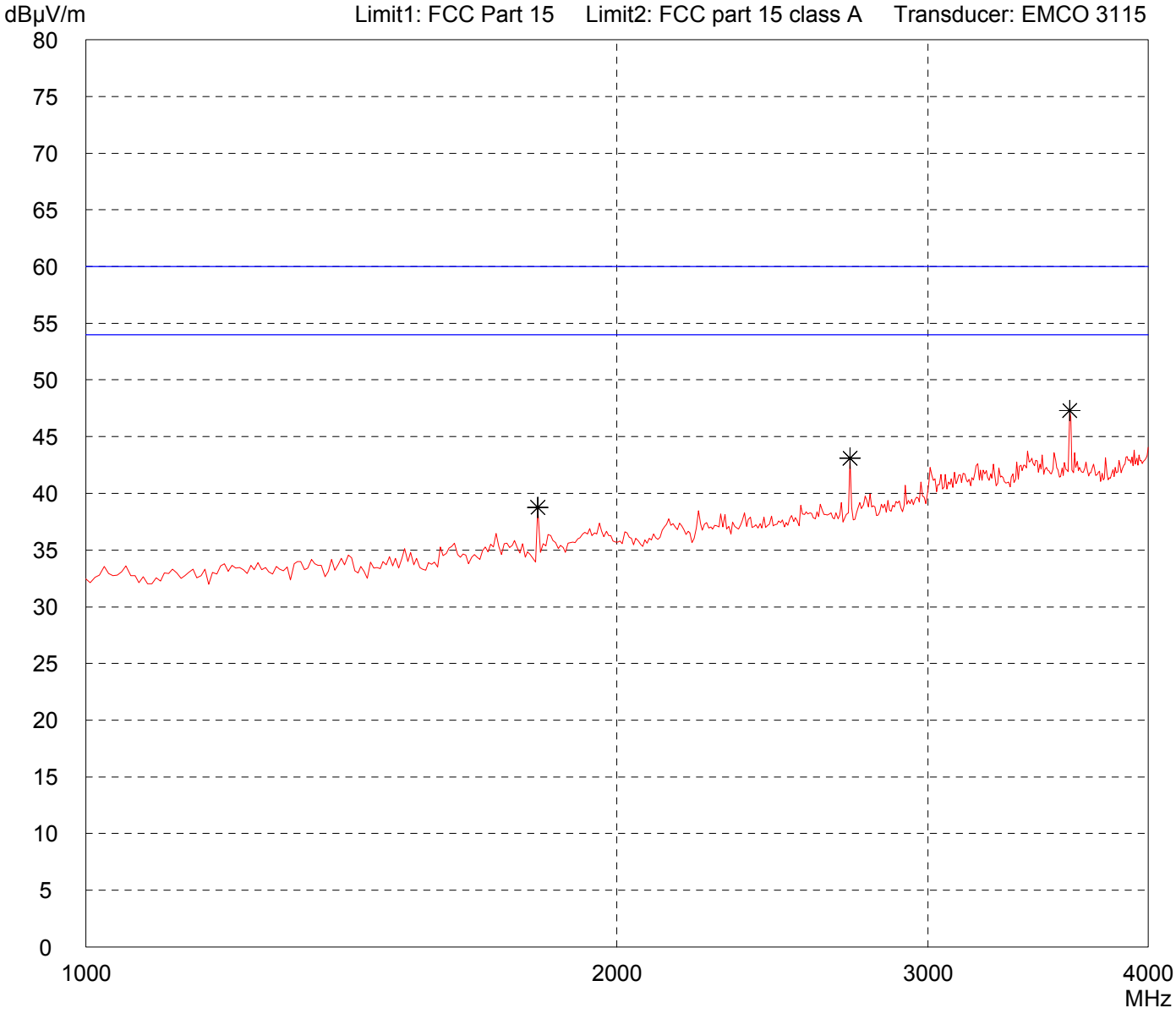
Radiated Emission Test 1 GHz - 4 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand



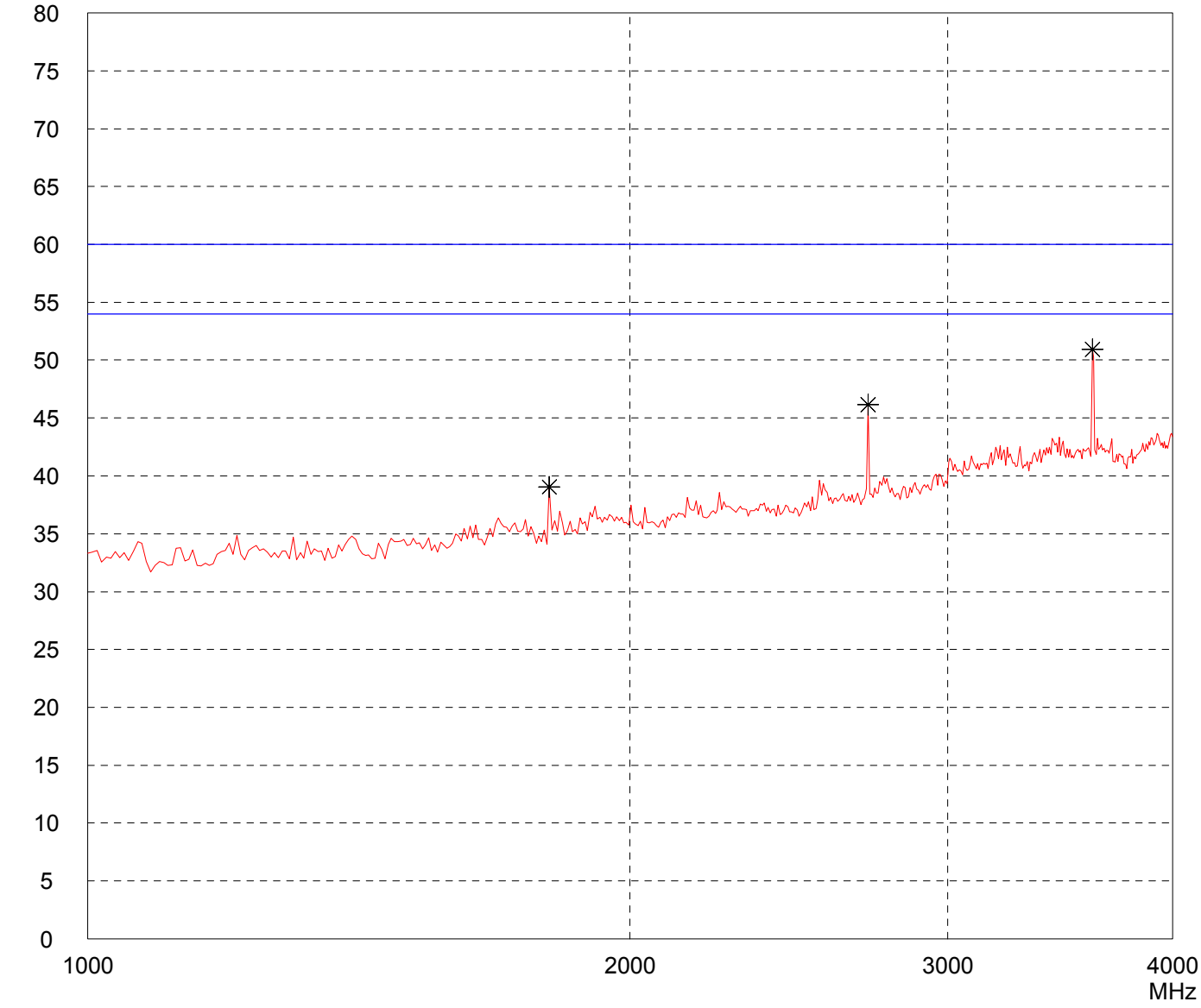
Result: Prescan	Project file: 57403-60316-1

Radiated Emission Test 1 GHz - 4 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

dBµV/m Limit1: FCC Part 15 Limit2: FCC part 15 class A Transducer: EMCO 3115



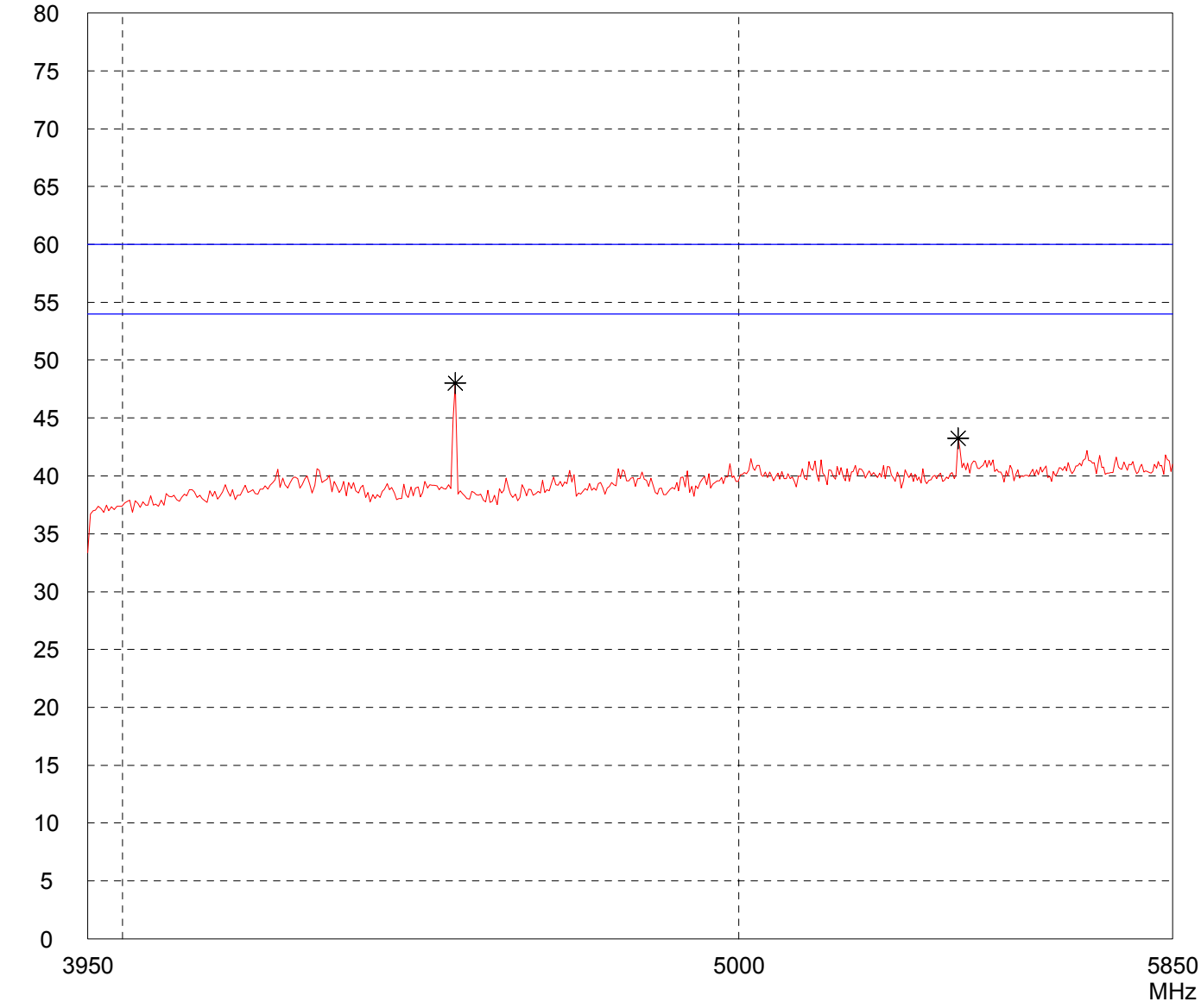
Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

dBµV/m Limit1: FCC Part 15 Limit2: FCC part 15 class A Transducer: EMCO 3160



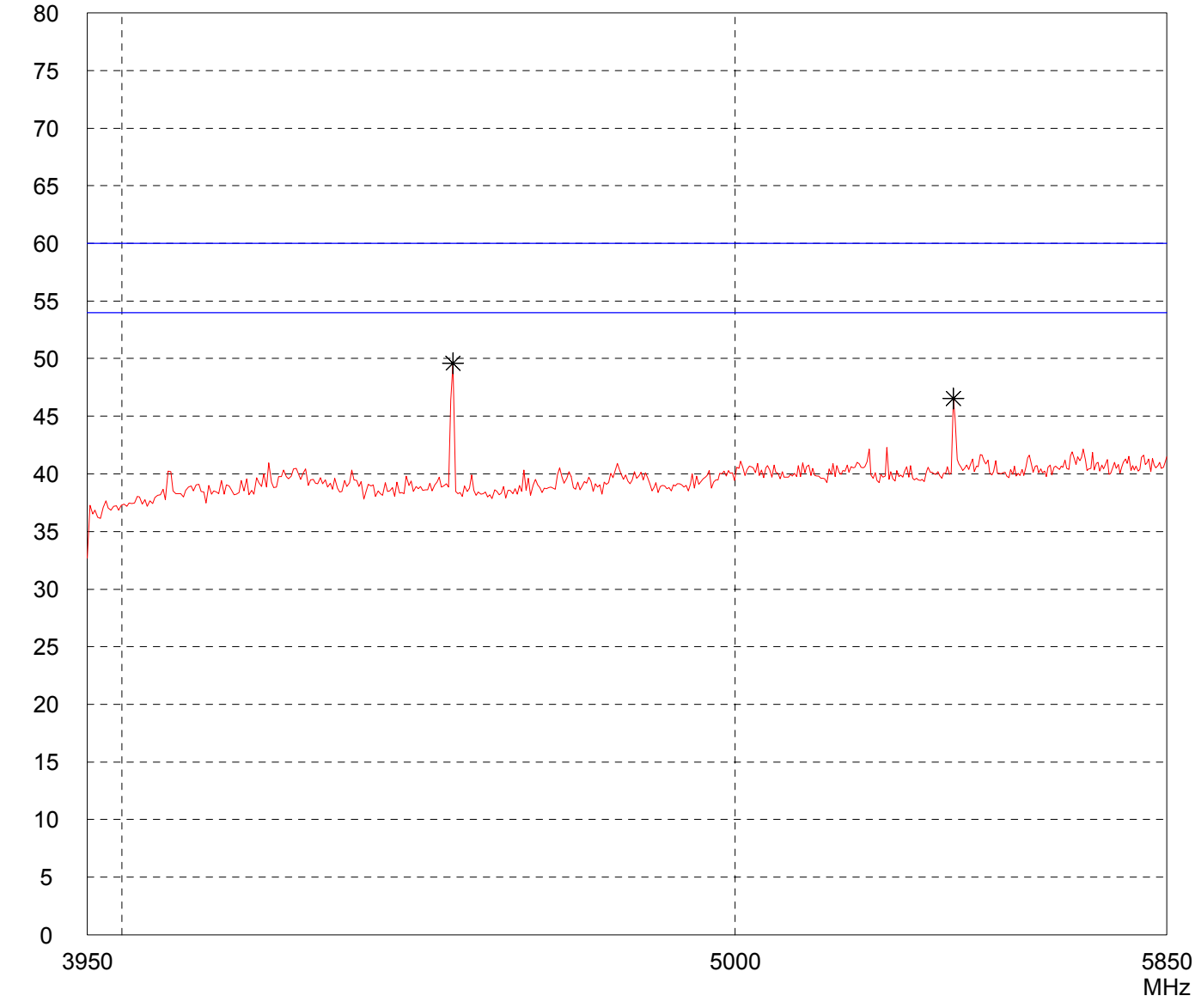
Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

dBµV/m Limit1: FCC Part 15 Limit2: FCC part 15 class A Transducer: EMCO 3160



Result: Prescan	Project file: 57403-60316-1

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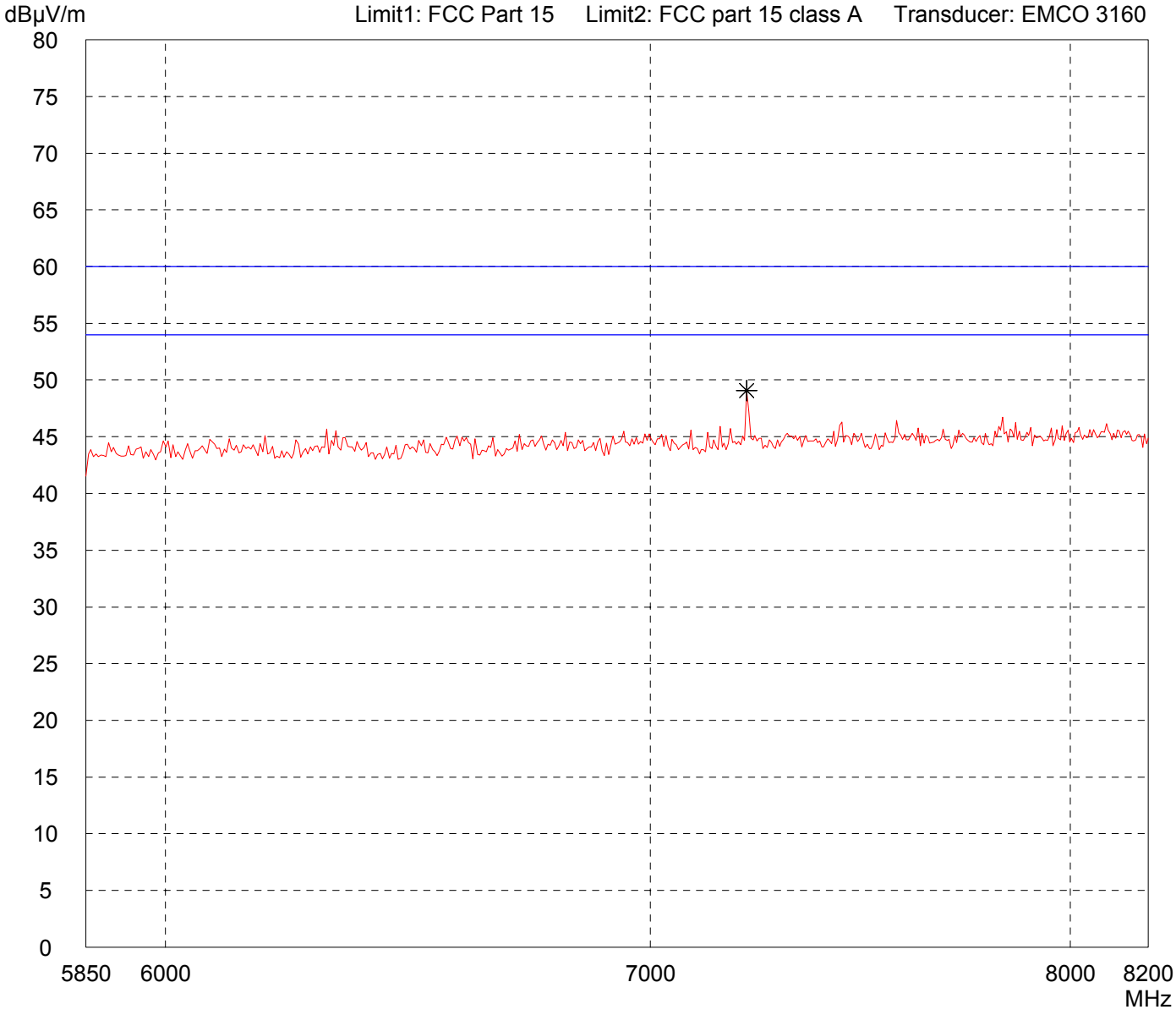
Radiated Emission Test 5.85 GHz - 8.2 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

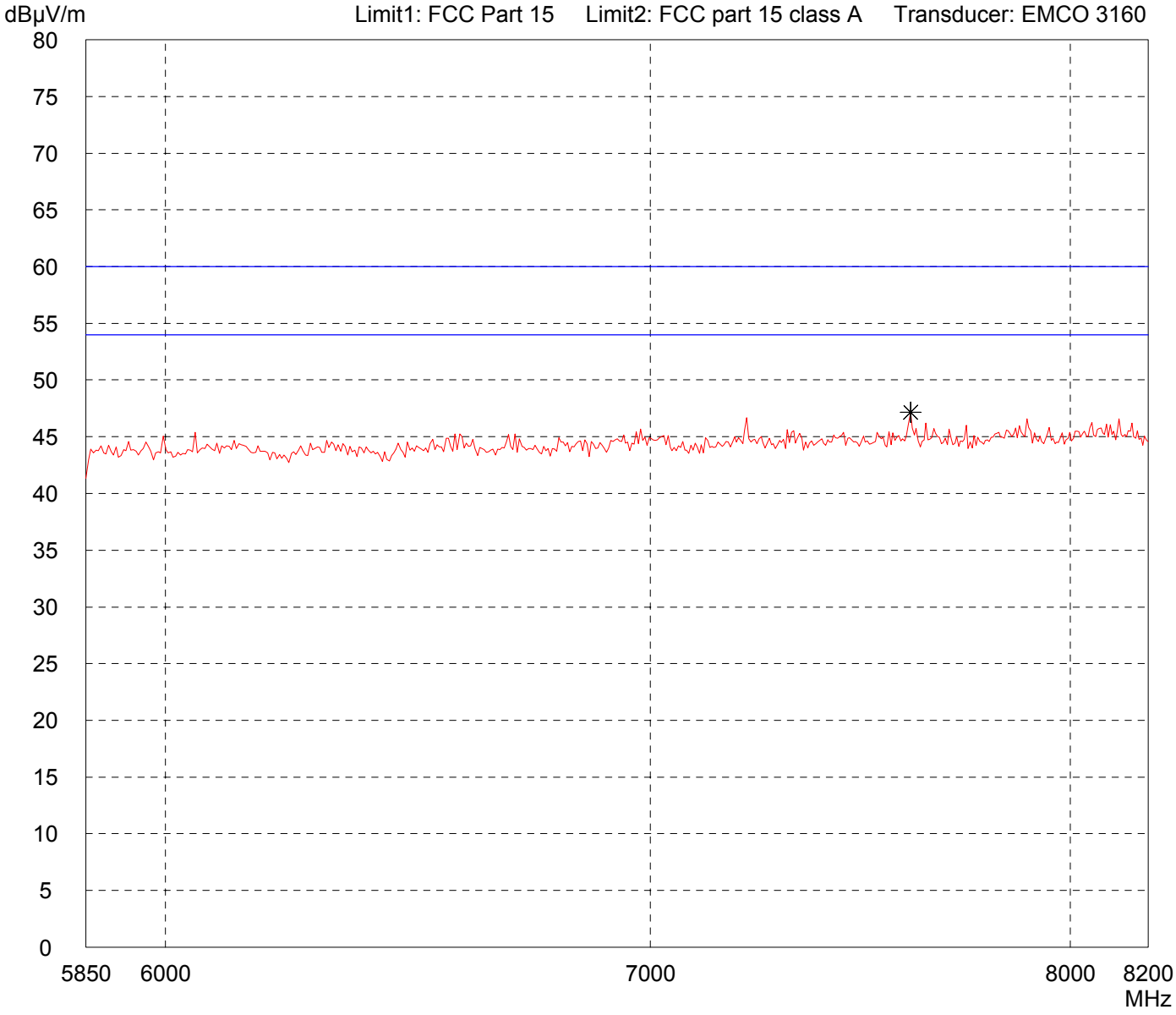


Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

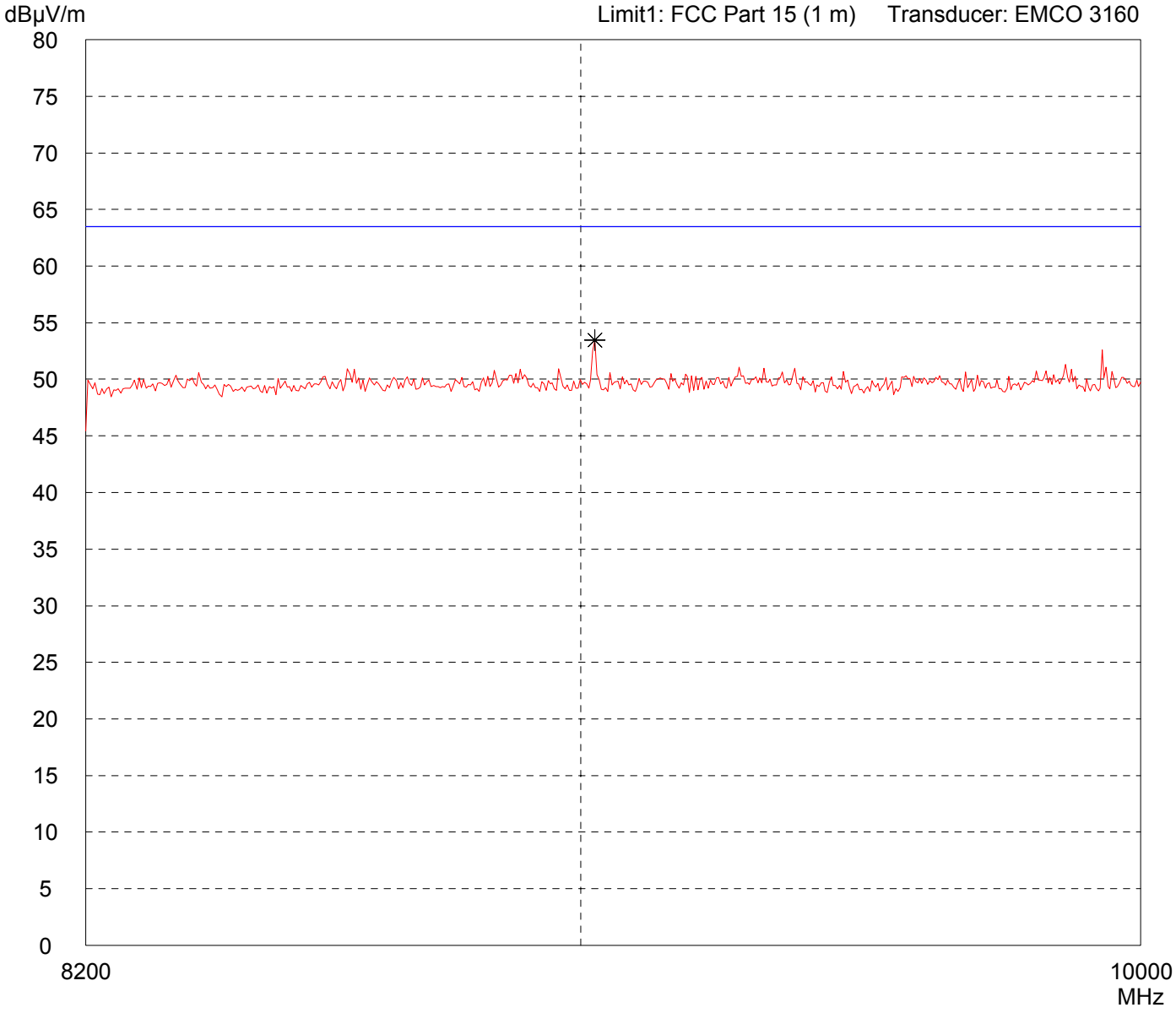
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1

Radiated Emission Test 8.2 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand



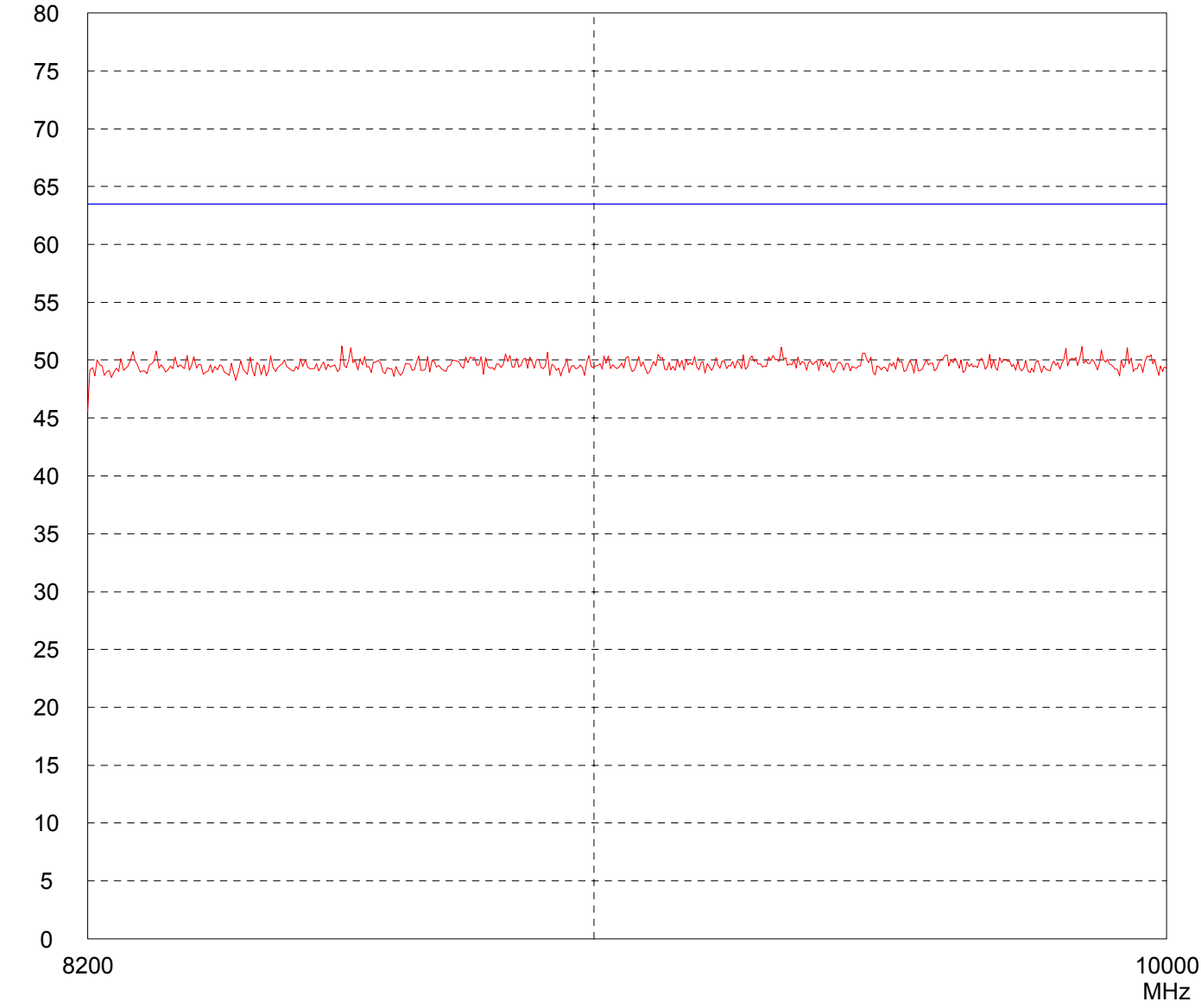
Result: Prescan	Project file: 57403-60316-1

Radiated Emission Test 8.2 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on lowest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

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

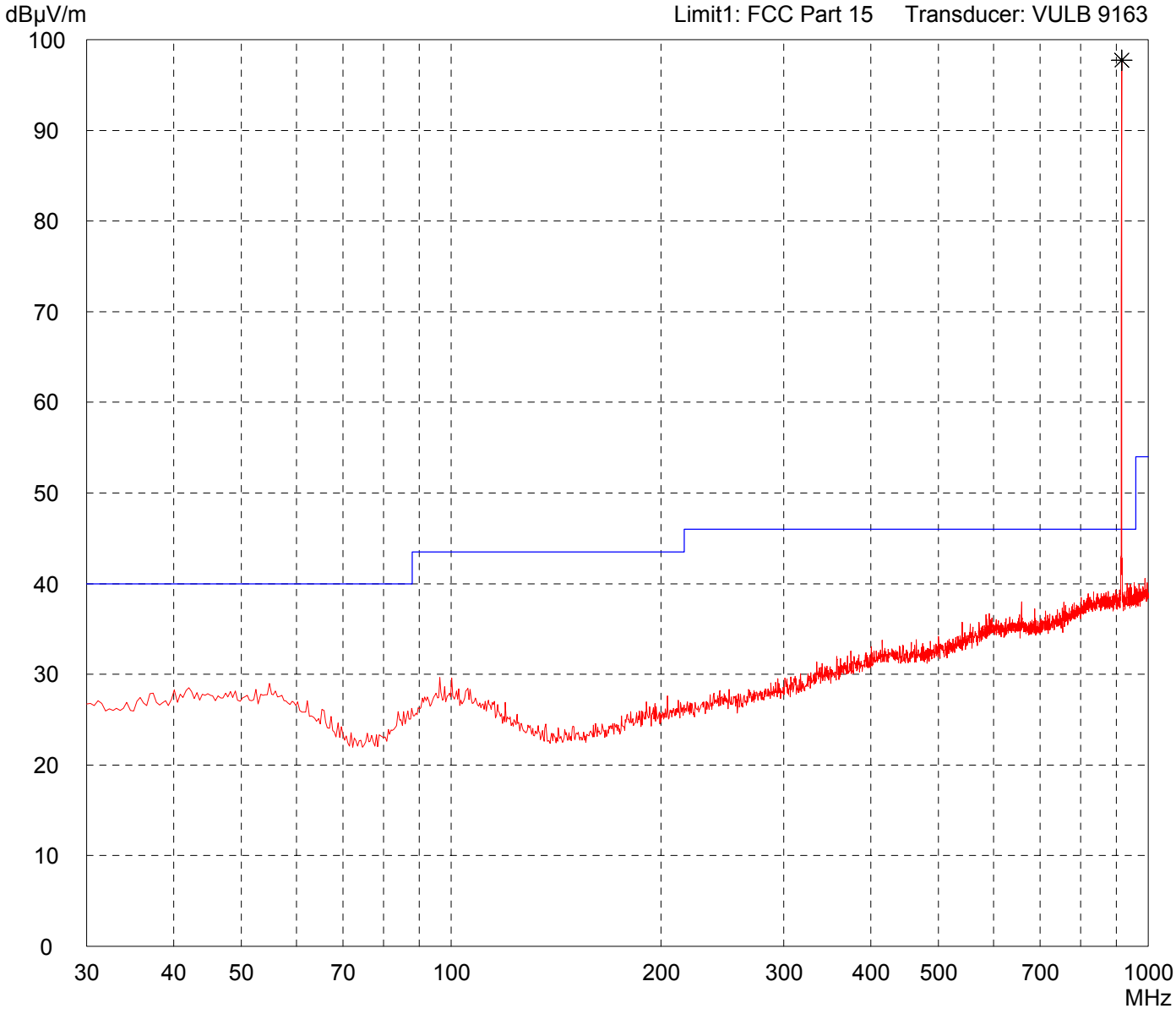
dBµV/m — Limit1: FCC Part 15 (1 m) — Transducer: EMCO 3160



Result: Prescan	Project file: 57403-60316-1

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

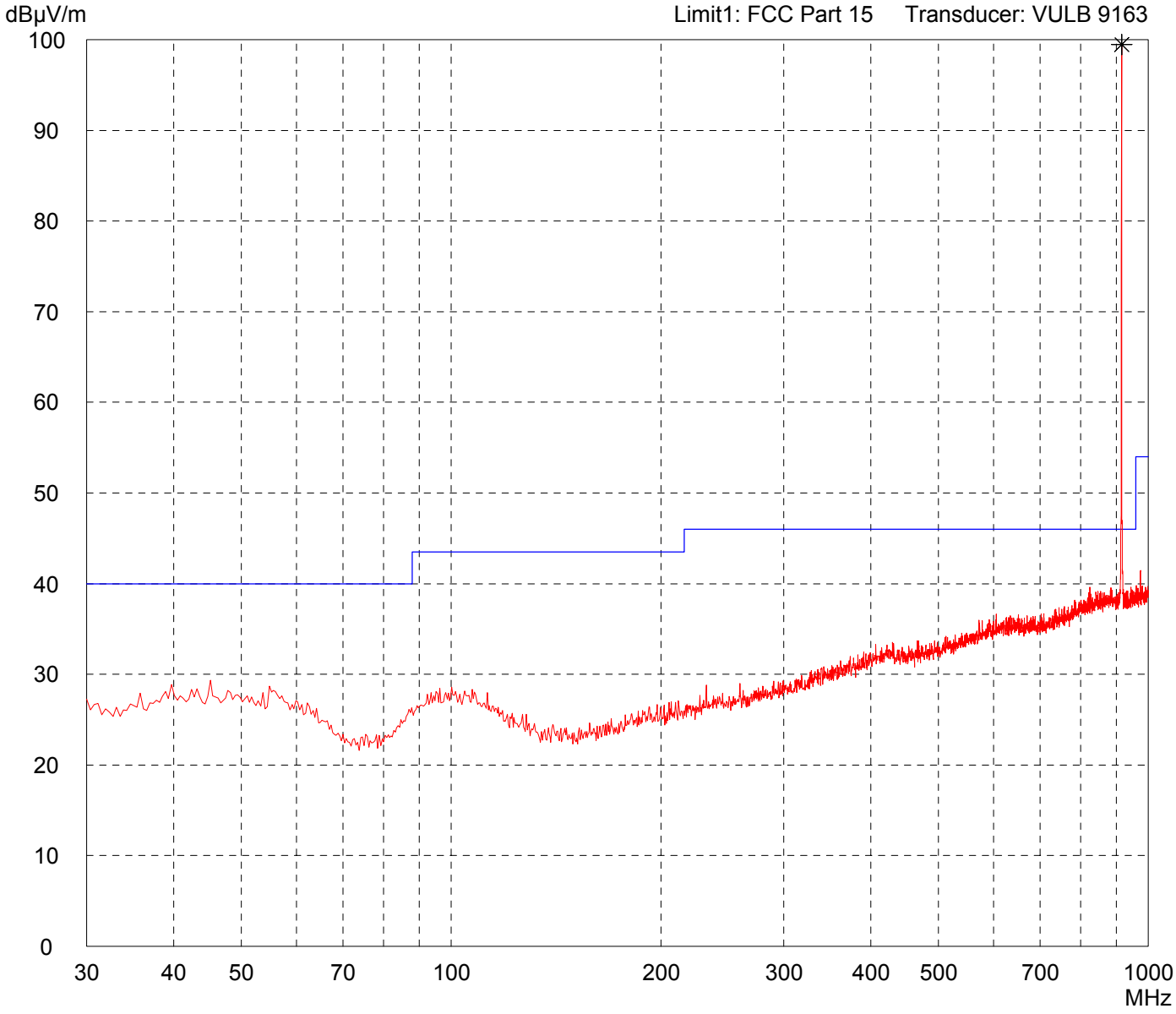
Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/21/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 50516-60368

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

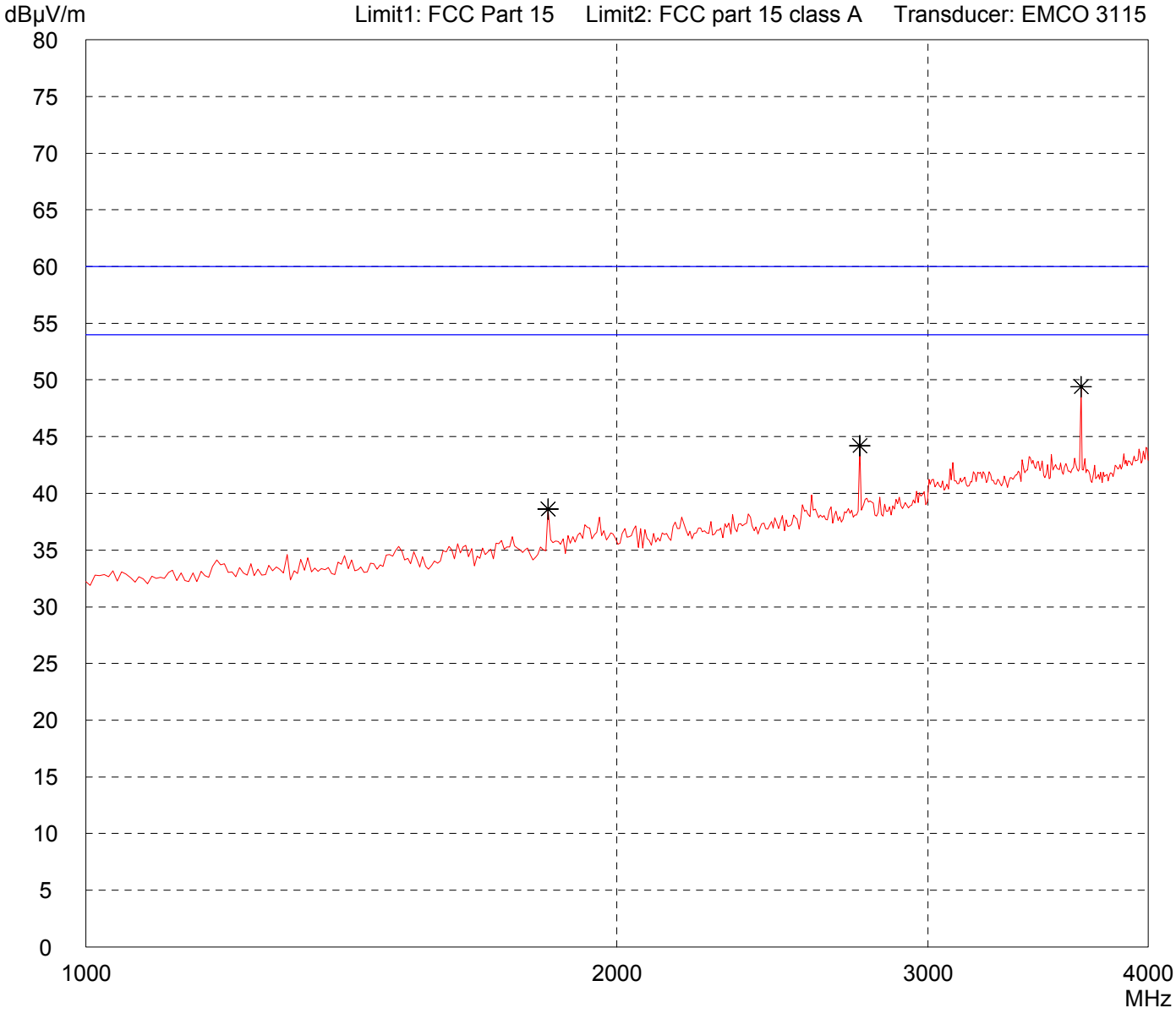
Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/21/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 50516-60368

Radiated Emission Test 1 GHz - 4 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1

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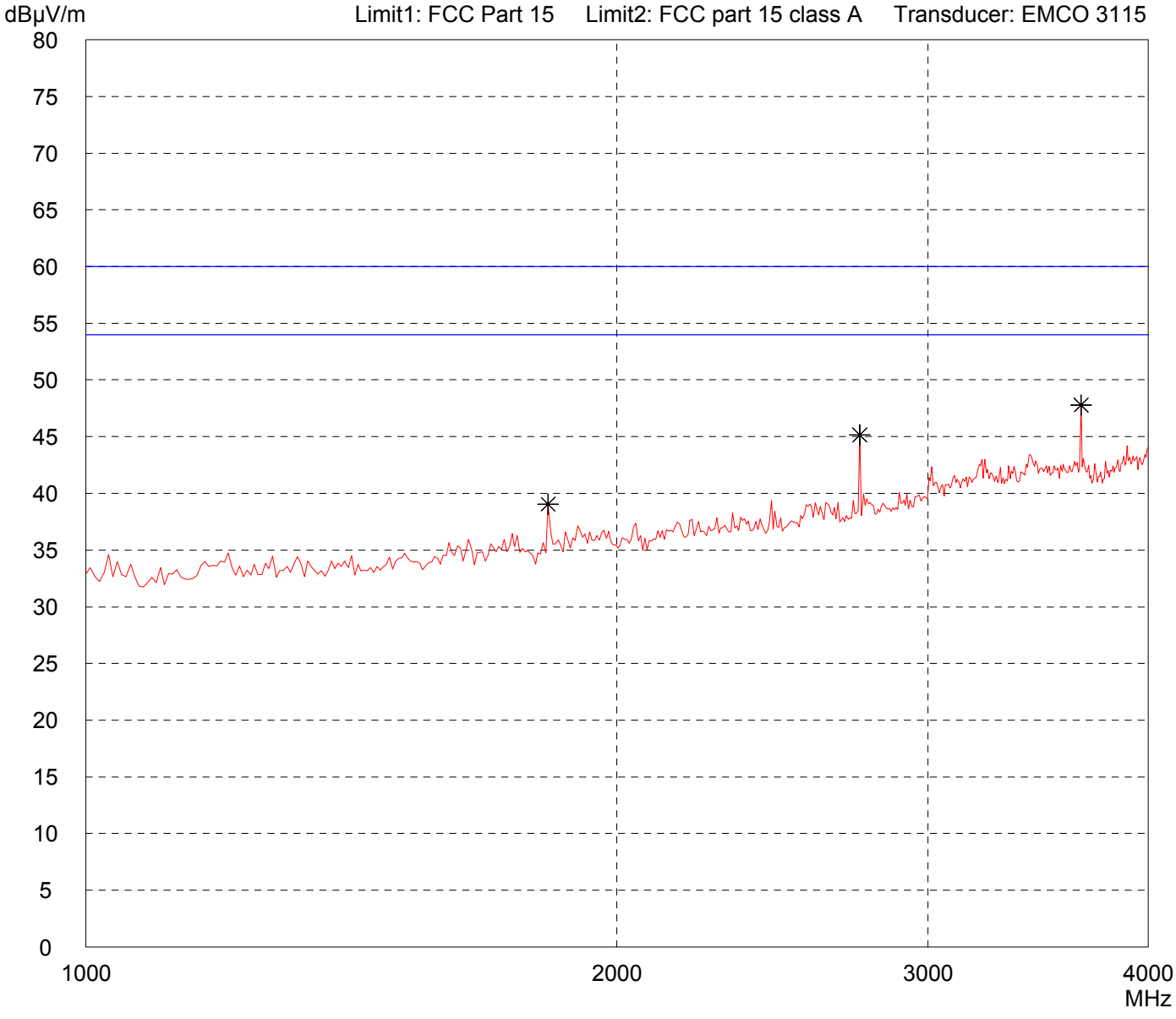
Radiated Emission Test 1 GHz - 4 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

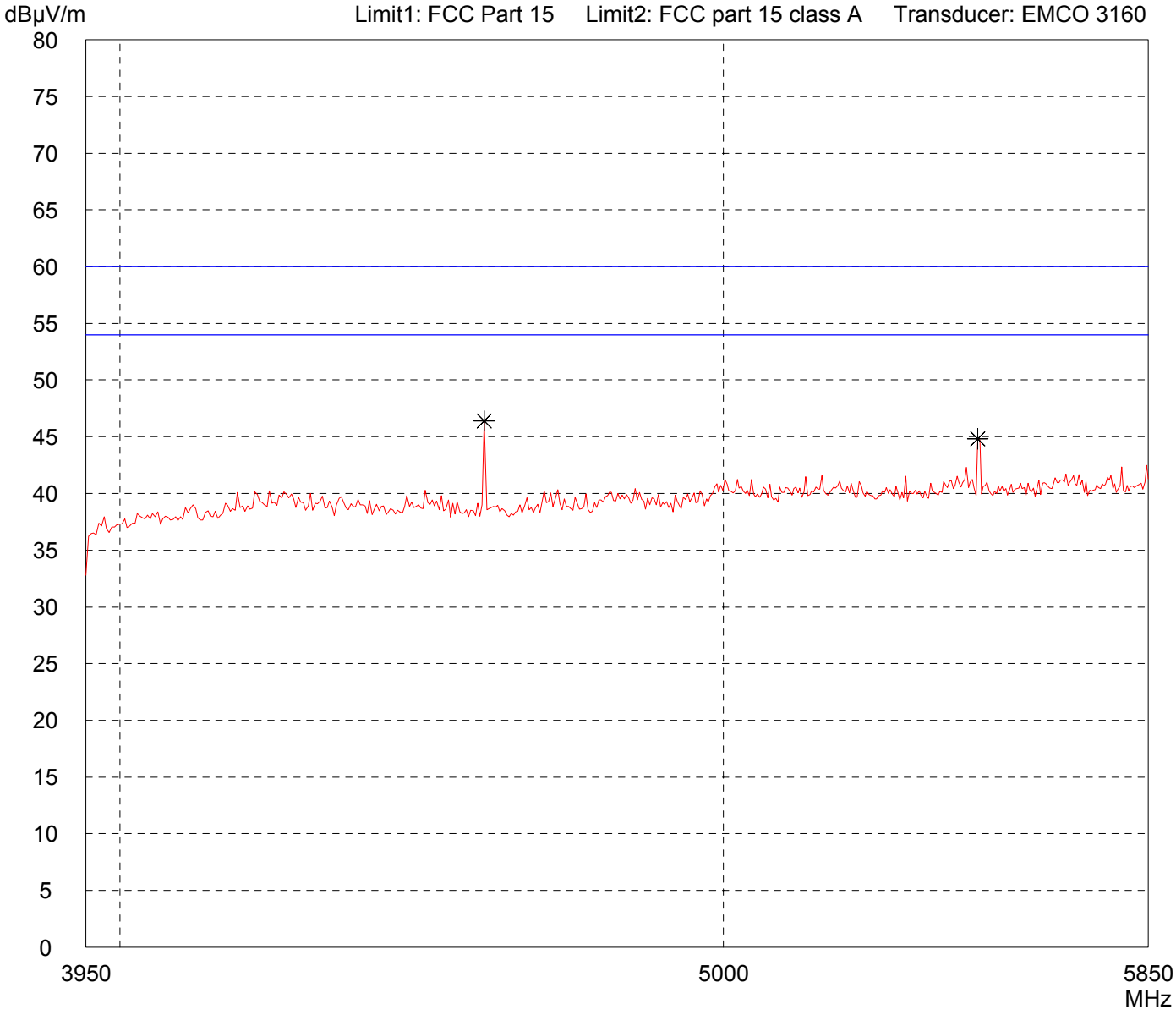


Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1

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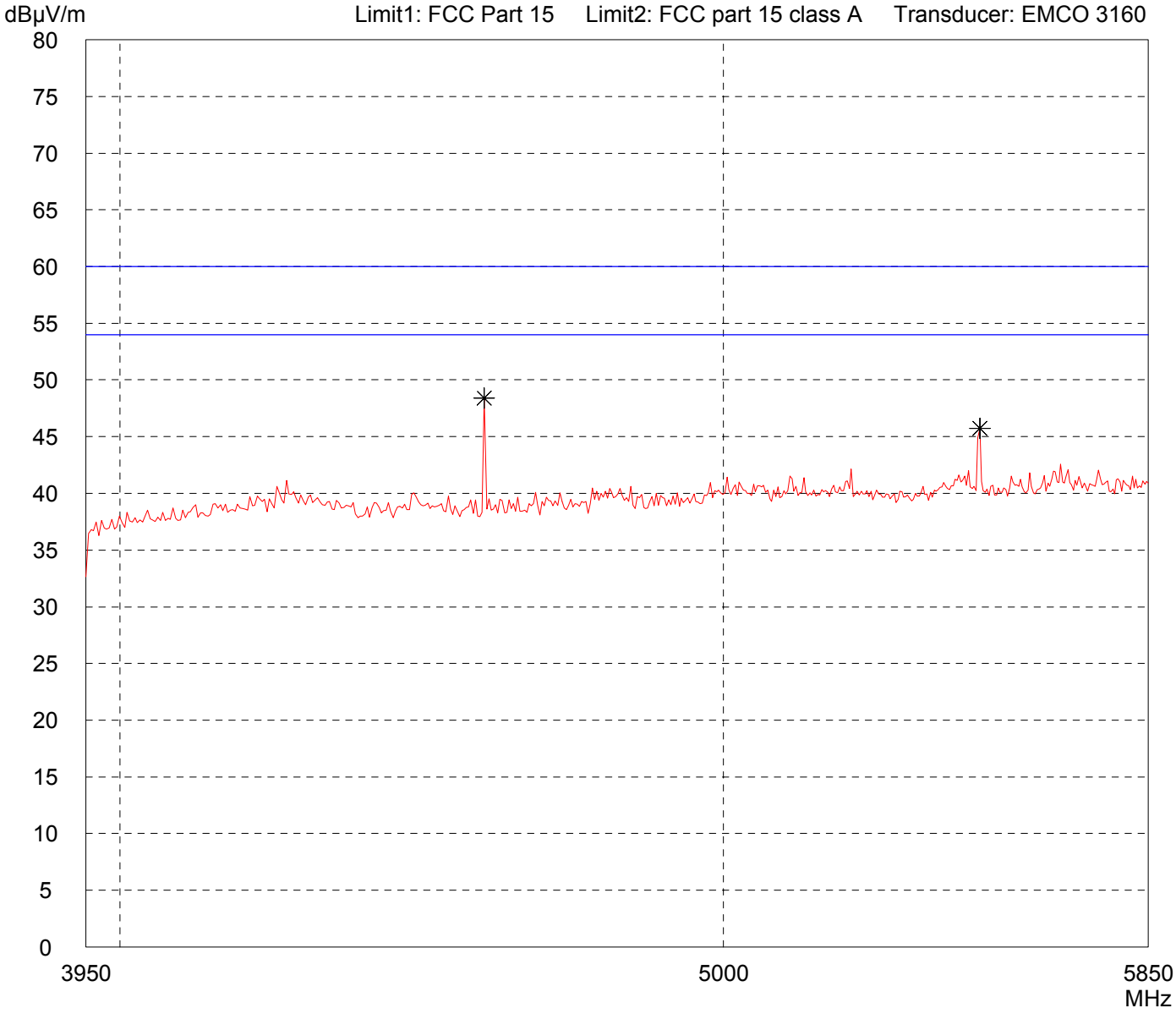
Radiated Emission Test 3.95 GHz - 5.85 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand



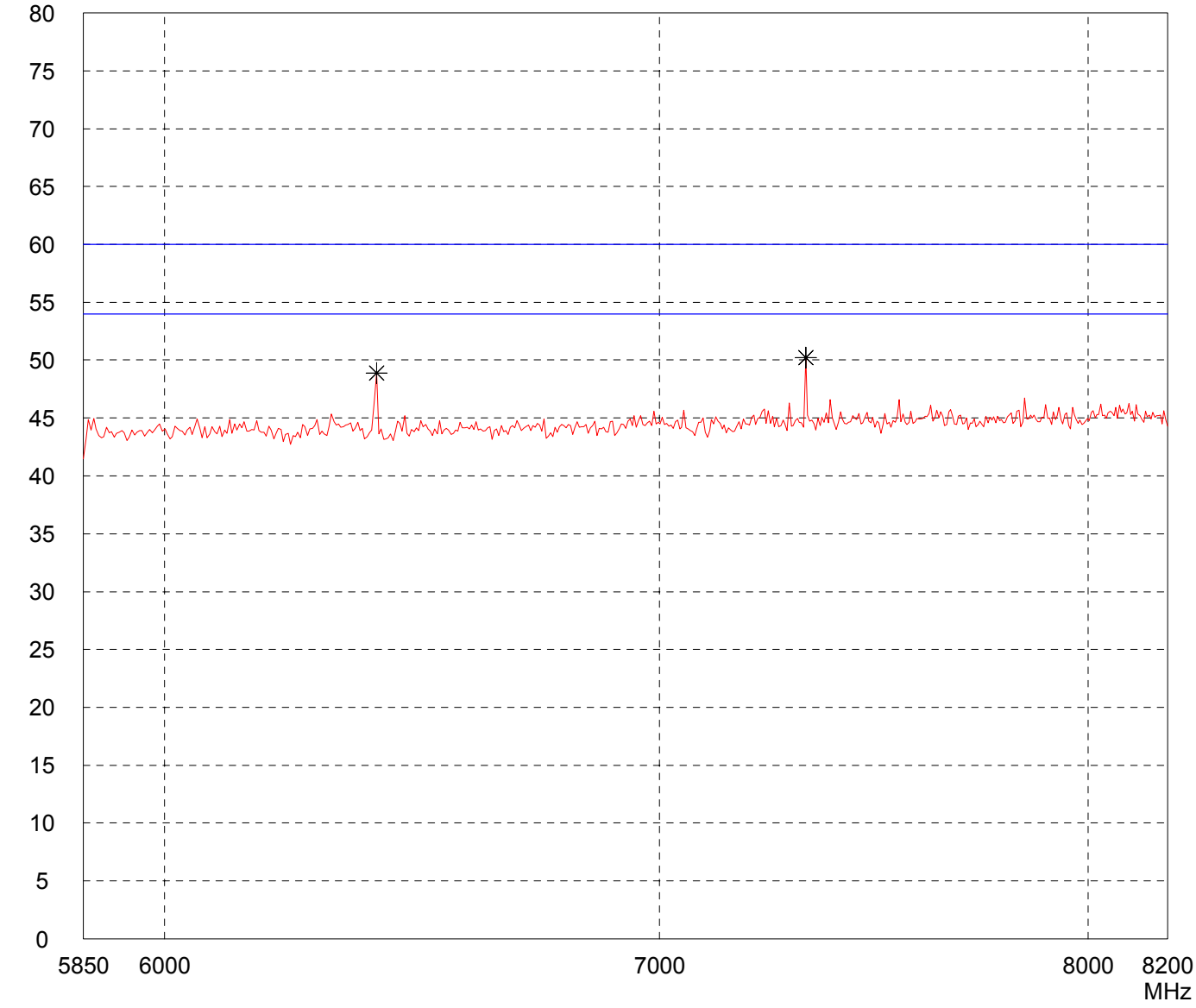
Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

dBµV/m Limit1: FCC Part 15 Limit2: FCC part 15 class A Transducer: EMCO 3160

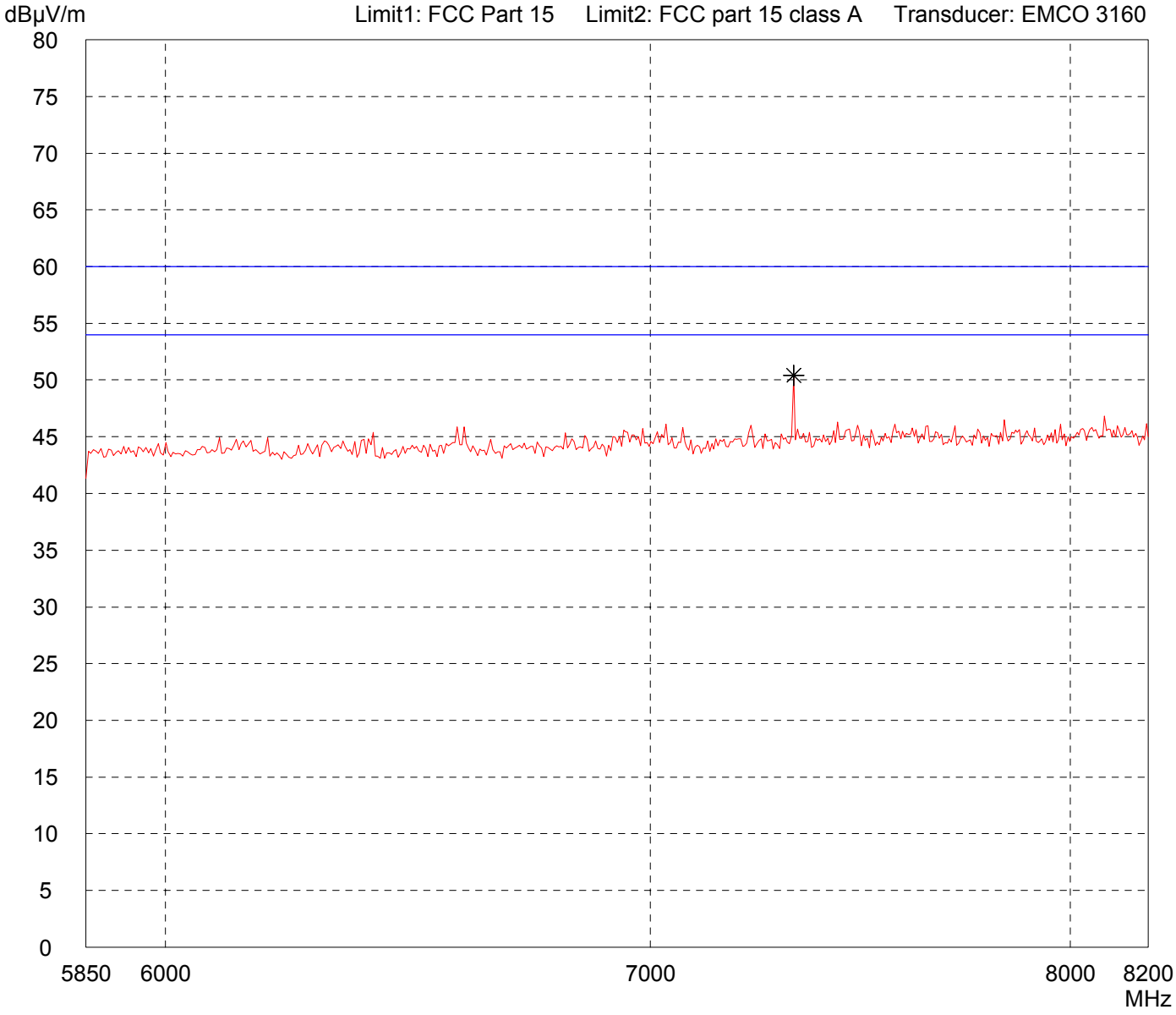


Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1

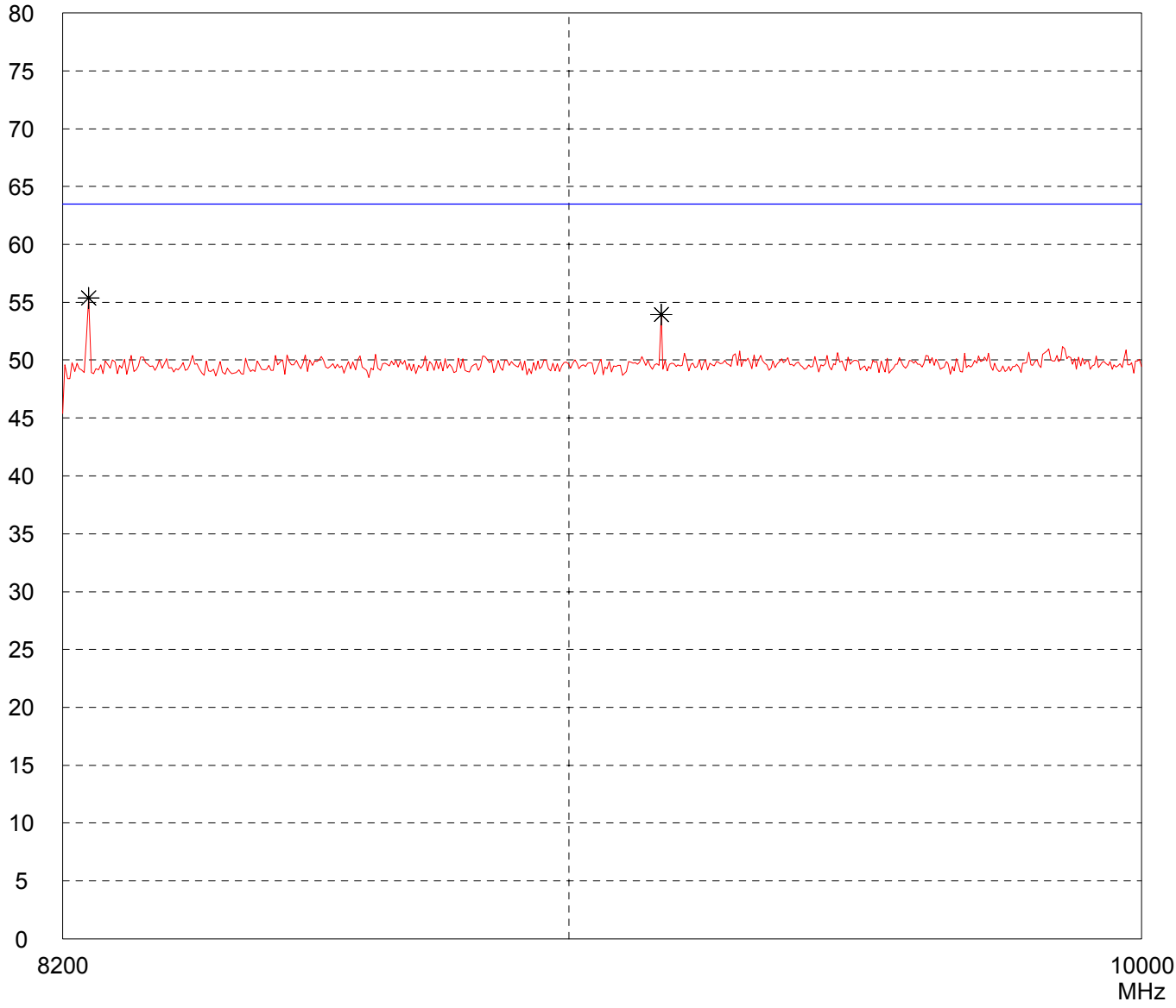
Radiated Emission Test 8.2 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

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

dBµV/m

Limit1: FCC Part 15 (1 m) Transducer: EMCO 3160



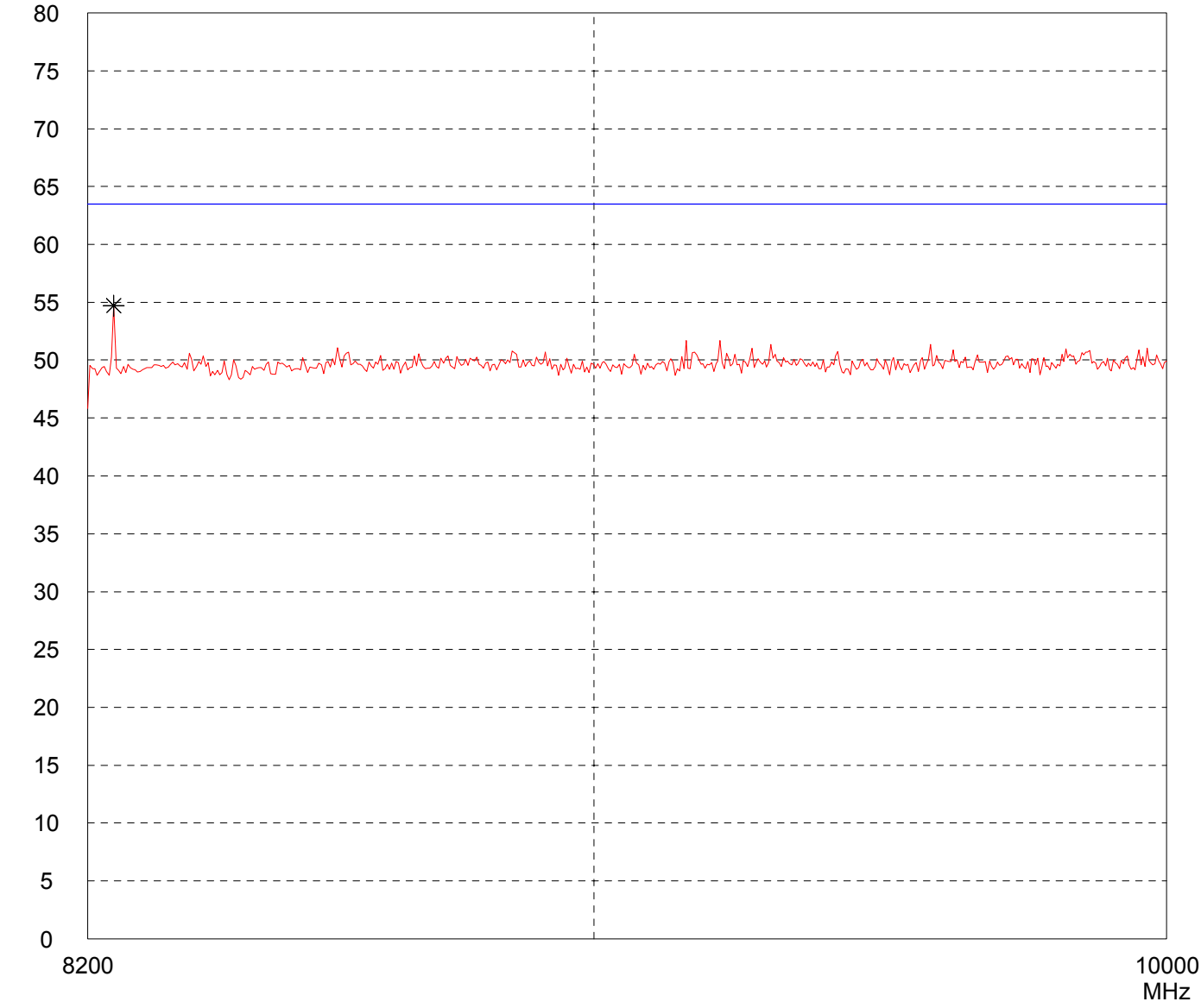
Result: Prescan	Project file: 57403-60316-1

Radiated Emission Test 8.2 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

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

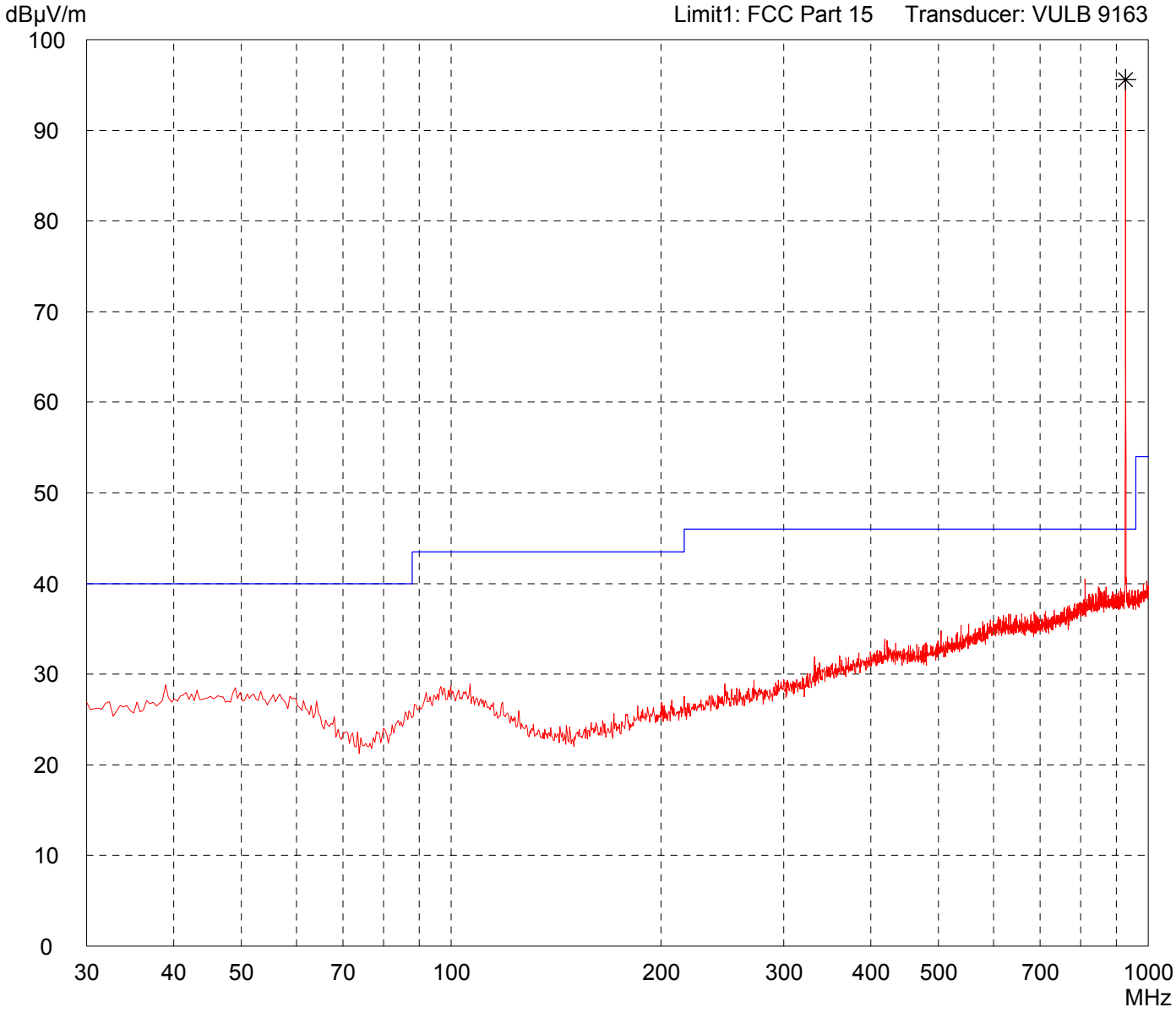
dBµV/m — Limit1: FCC Part 15 (1 m) — Transducer: EMCO 3160



Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/21/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

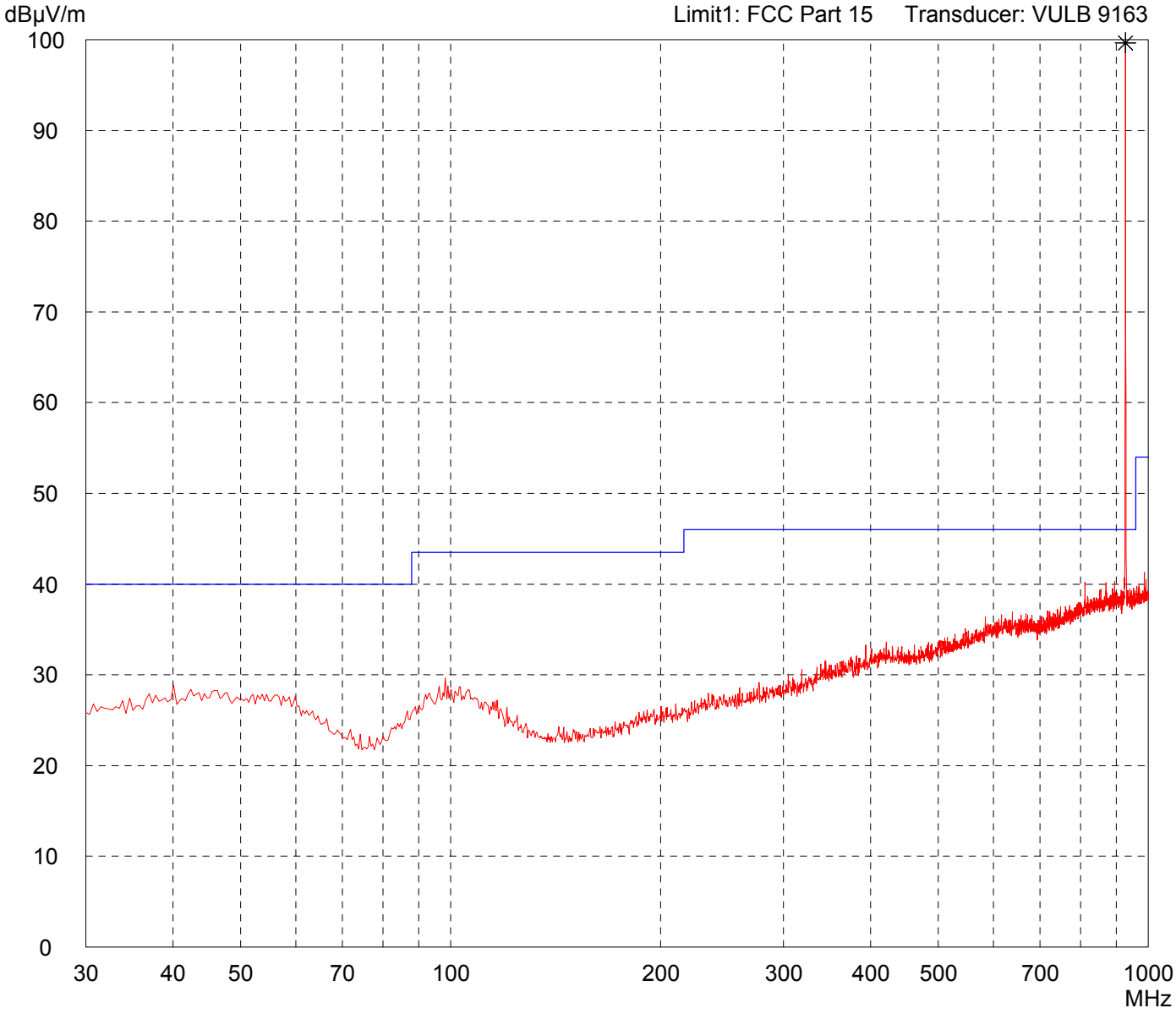


Result: Prescan	Project file: 50516-60368

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/21/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

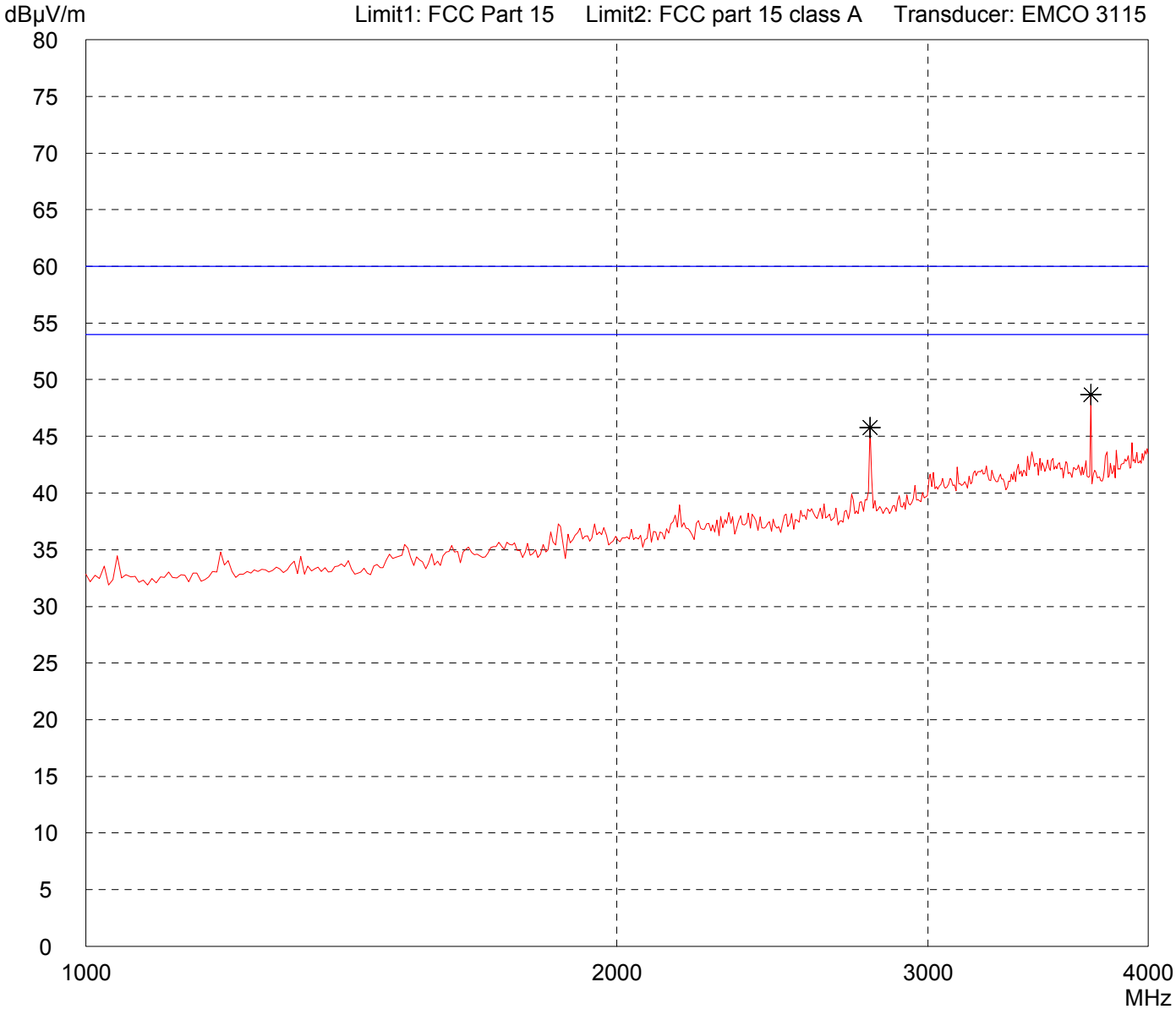


Result: Prescan	Project file: 50516-60368

Radiated Emission Test 1 GHz - 4 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1

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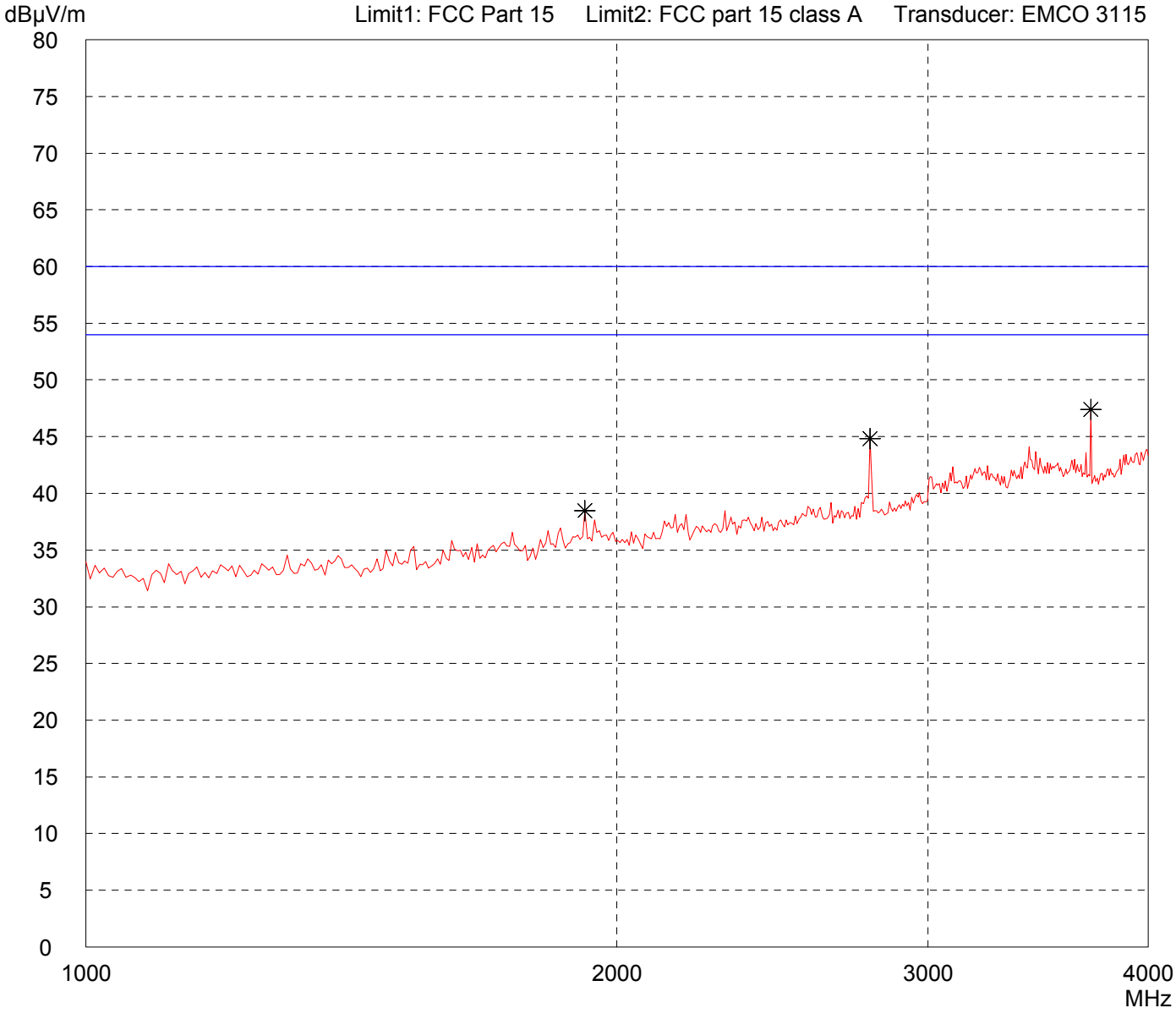
Radiated Emission Test 1 GHz - 4 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

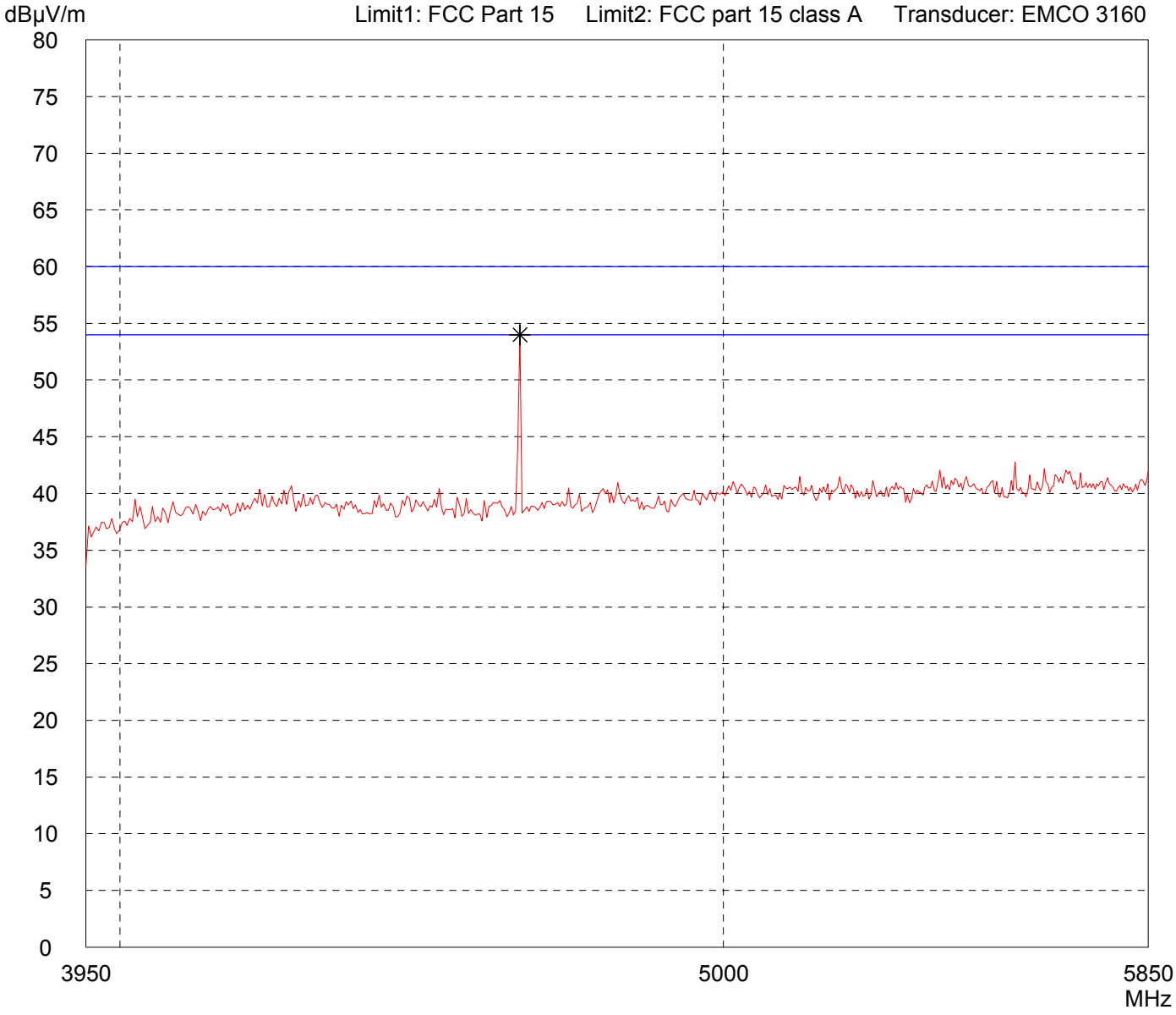


Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1

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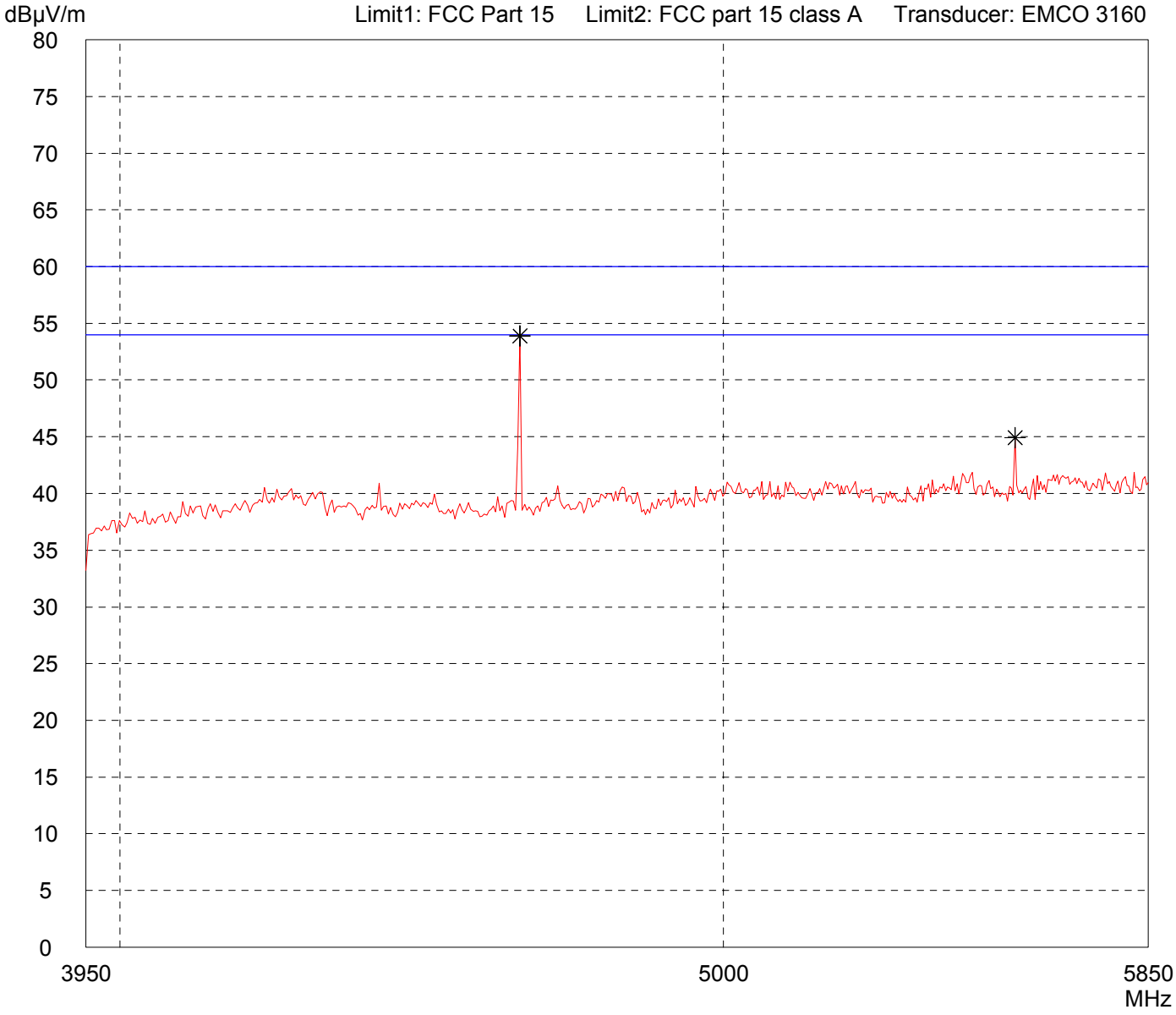
Radiated Emission Test 3.95 GHz - 5.85 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1

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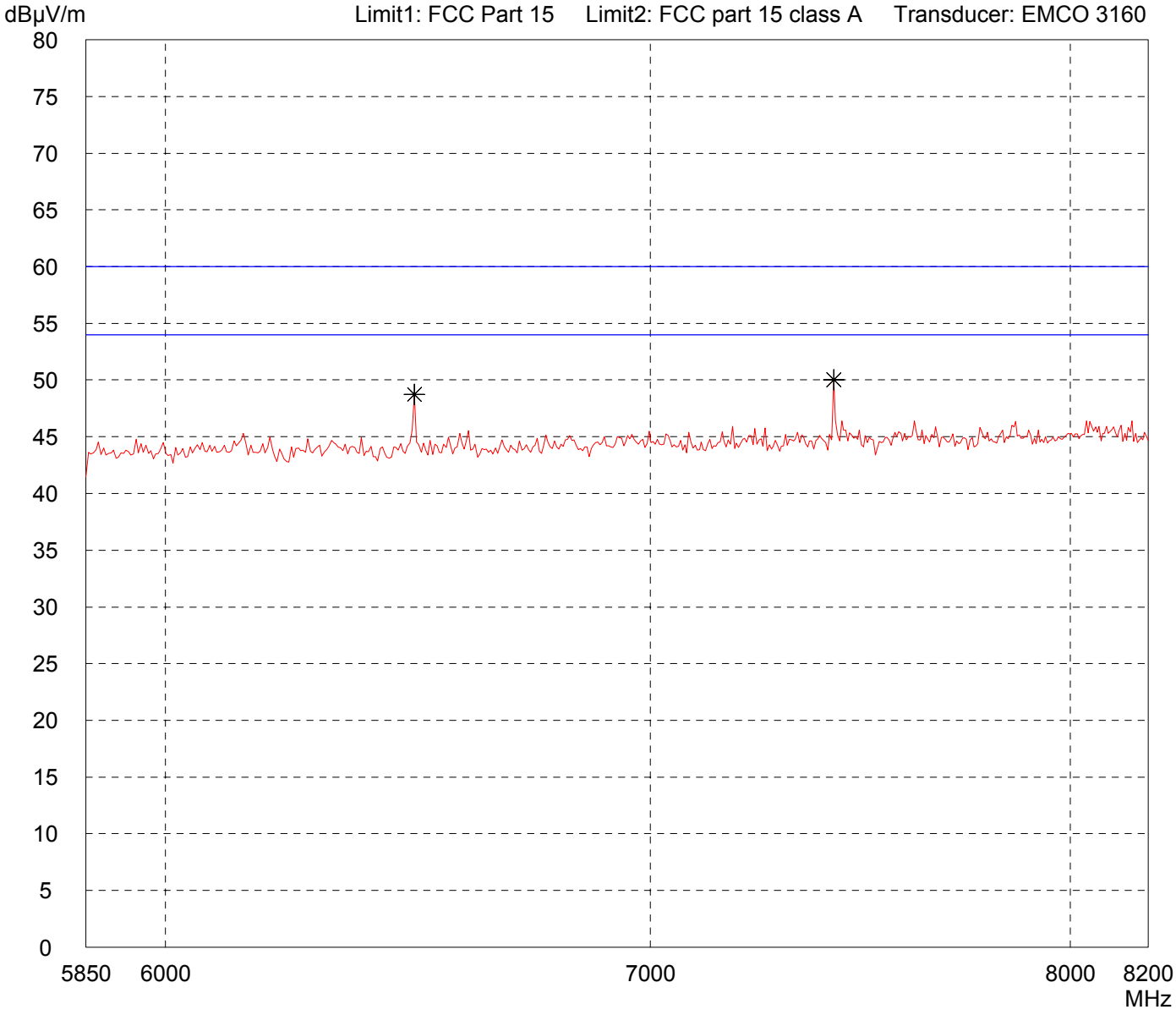
Radiated Emission Test 5.85 GHz - 8.2 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

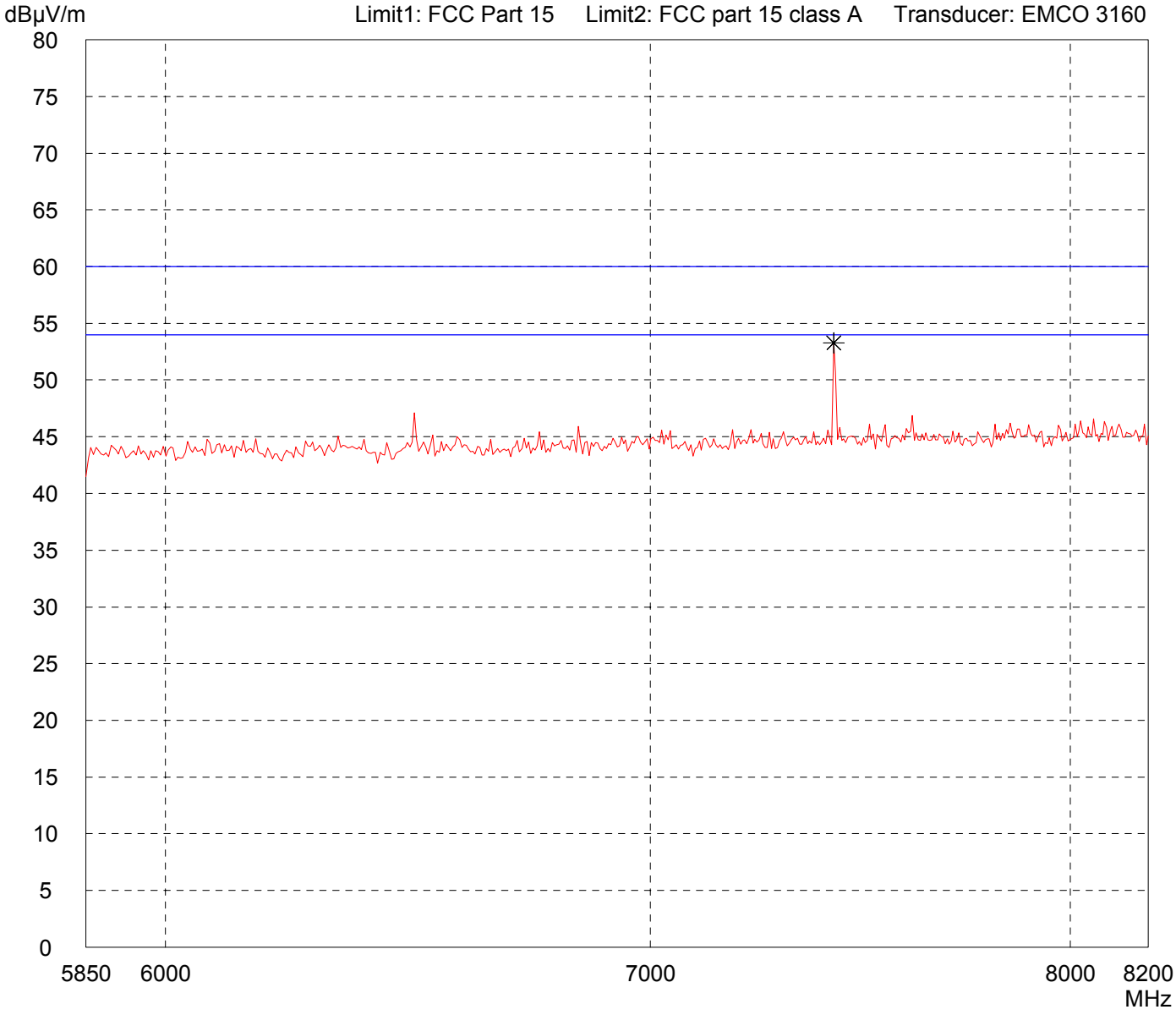


Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand



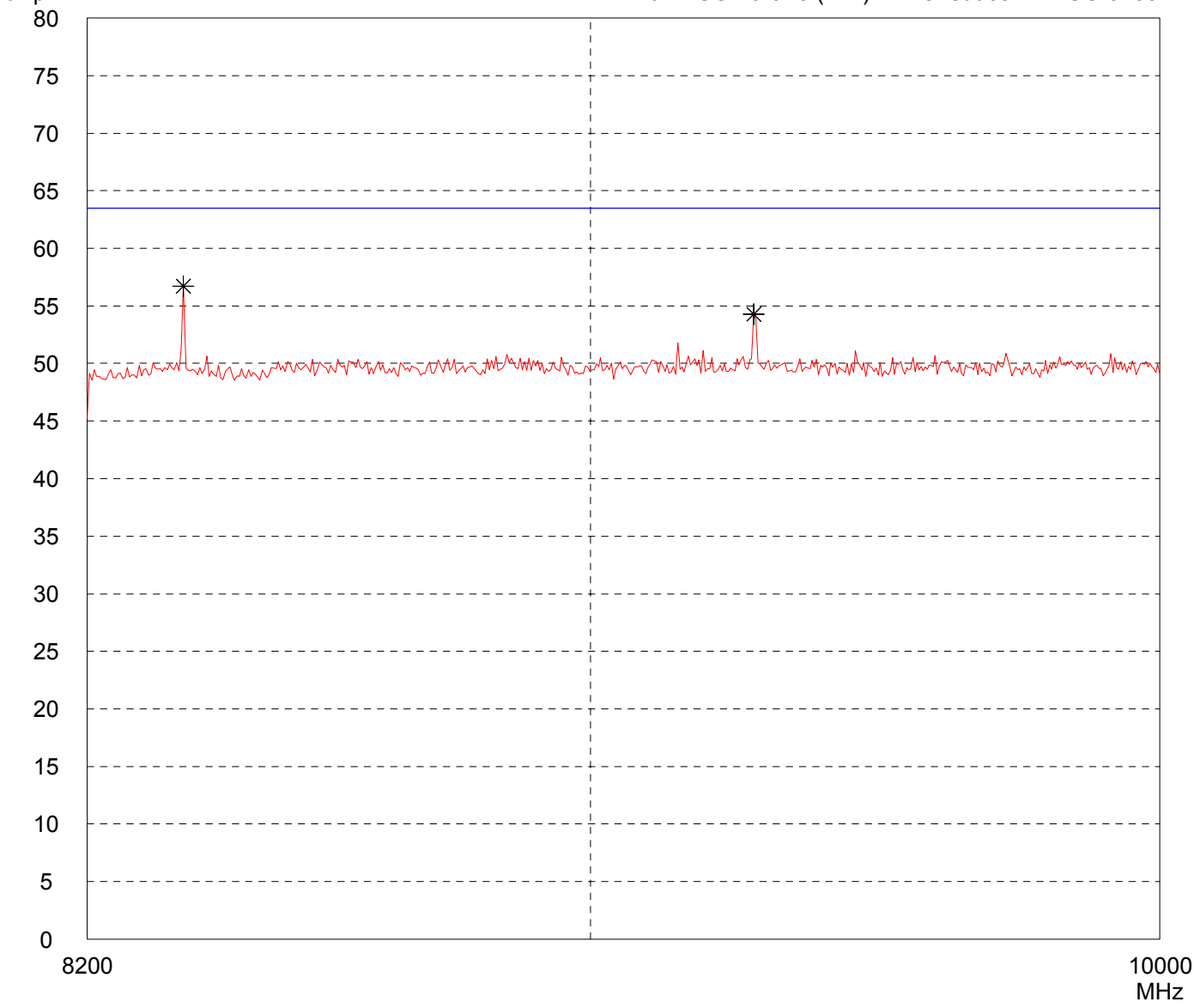
Result: Prescan	Project file: 57403-60316-1

Radiated Emission Test 8.2 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

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

dBµV/m — Limit1: FCC Part 15 (1 m) — Transducer: EMCO 3160

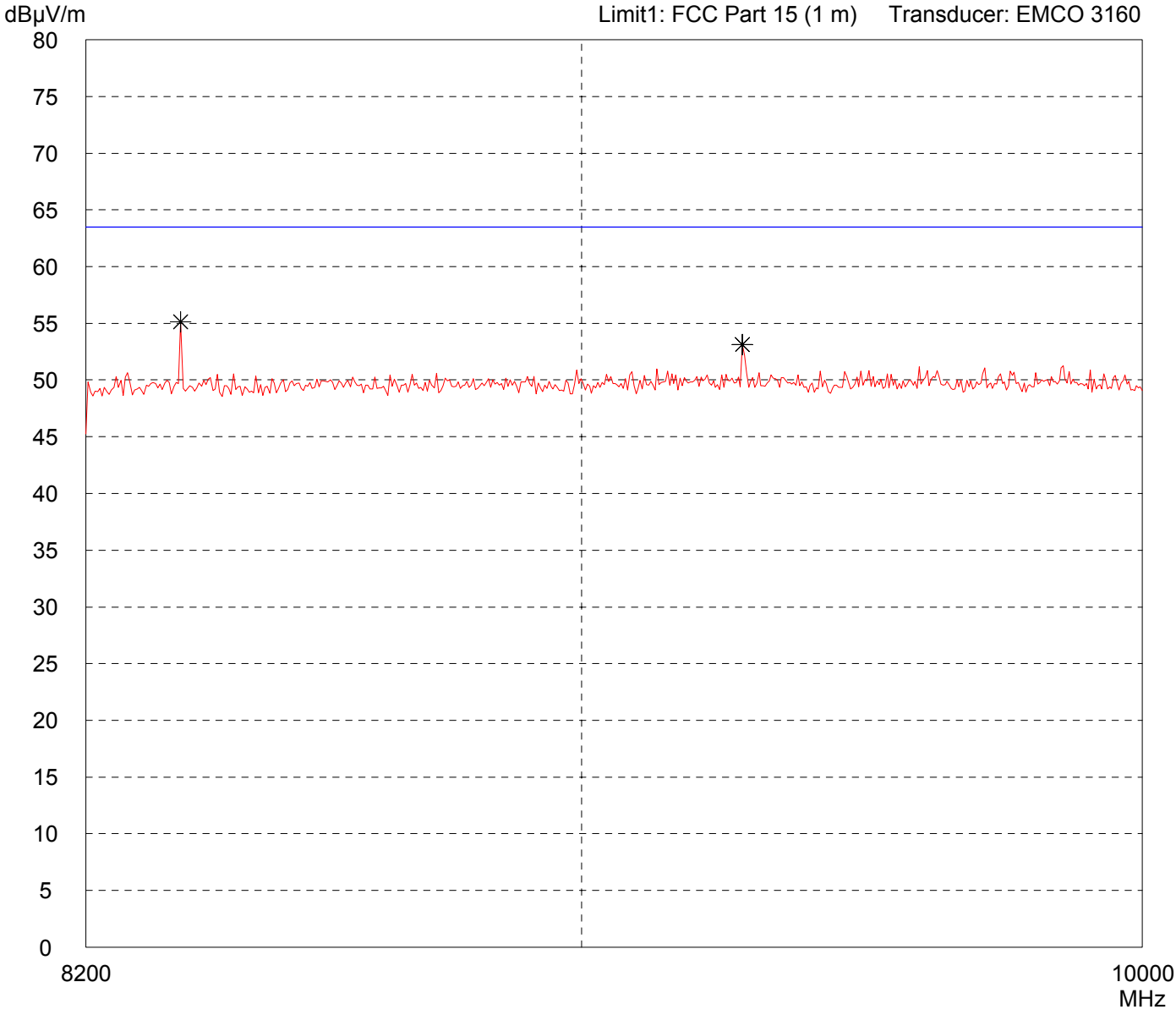


Result: Prescan	Project file: 57403-60316-1

Radiated Emission Test 8.2 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: WNCA01	Comment: - 3.6 V battery supply - TX on highest channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

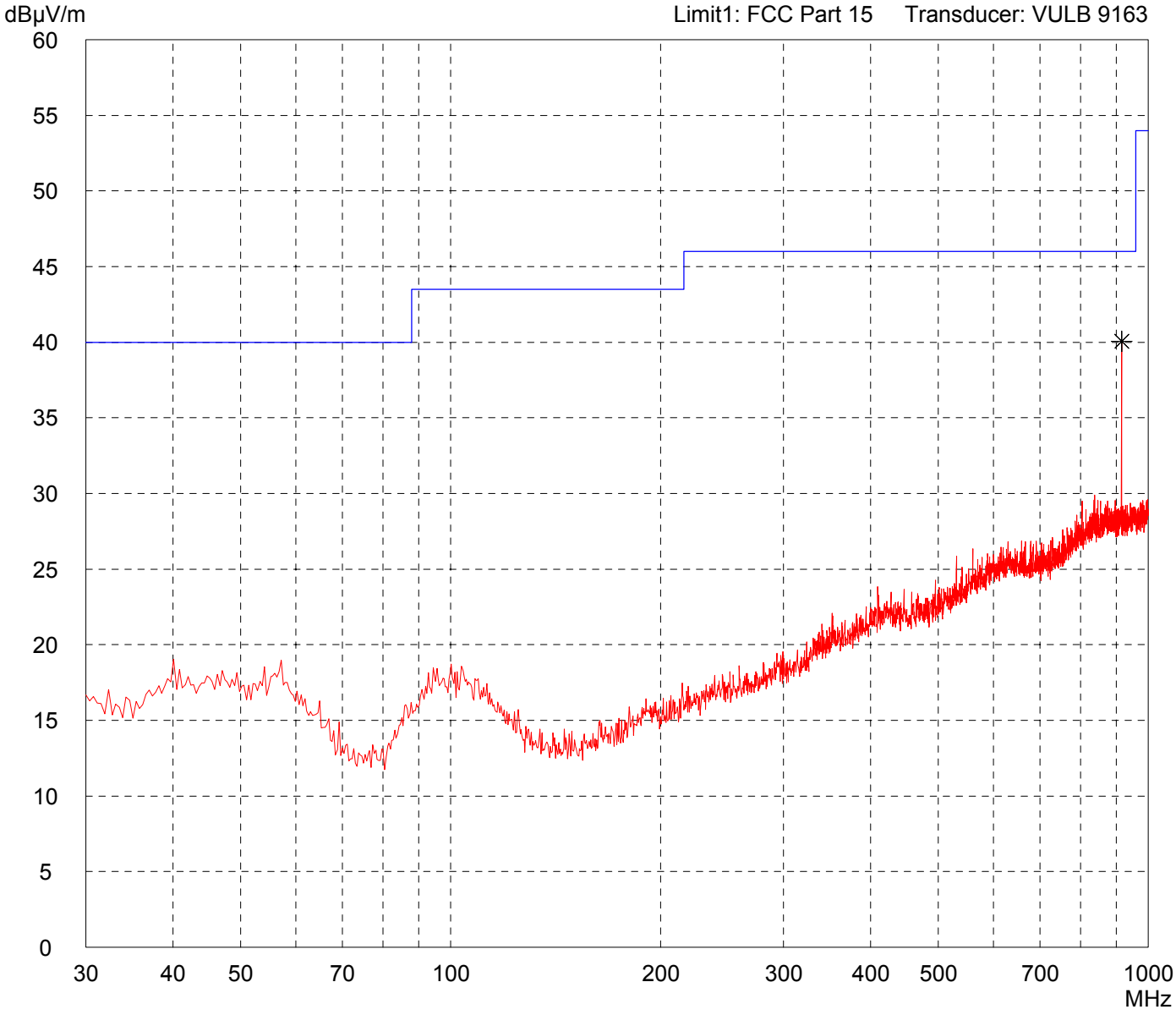


Result: Prescan	Project file: 57403-60316-1

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

Model: WNCA01	Comment: - 3.6 V battery supply - RX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

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



Result: Prescan	Project file: 57403-60316-1

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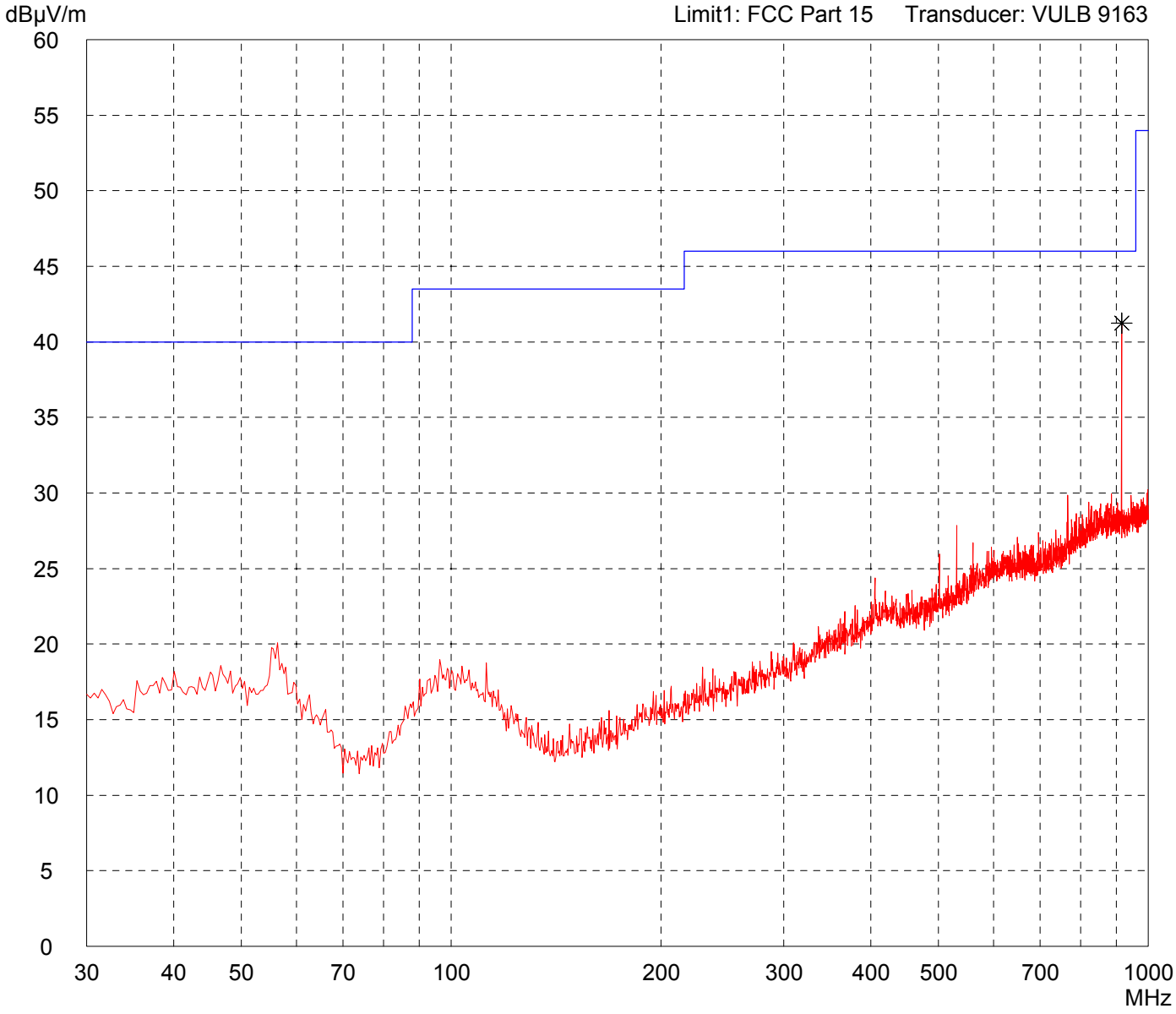
Radiated Emission Test 30 MHz - 1 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: WNCA01	Comment: - 3.6 V battery supply - RX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

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



Result: Prescan	Project file: 57403-60316-1

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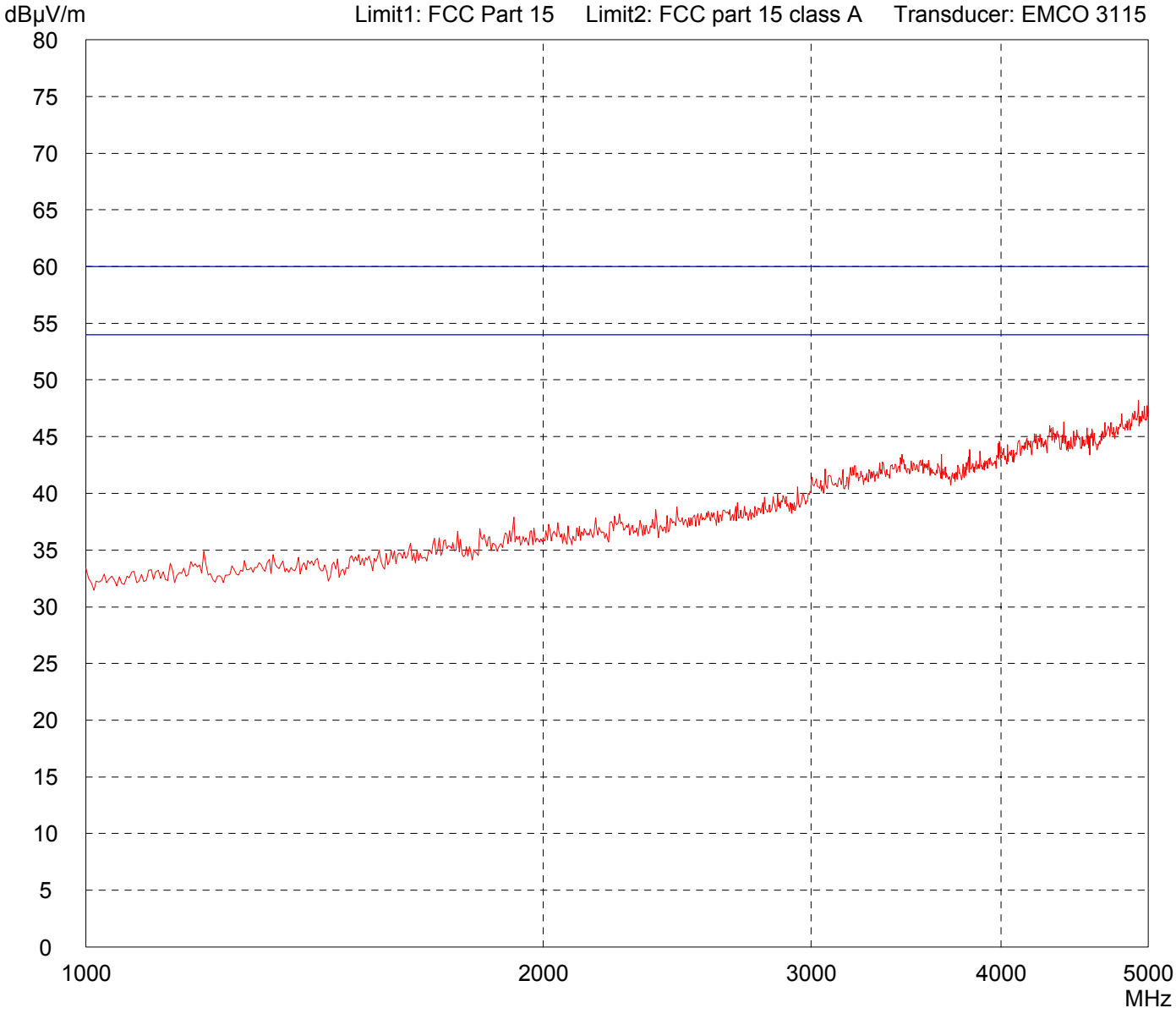
Radiated Emission Test 1 GHz - 5 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: WNCA01	Comment: - 3.6 V battery supply - RX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

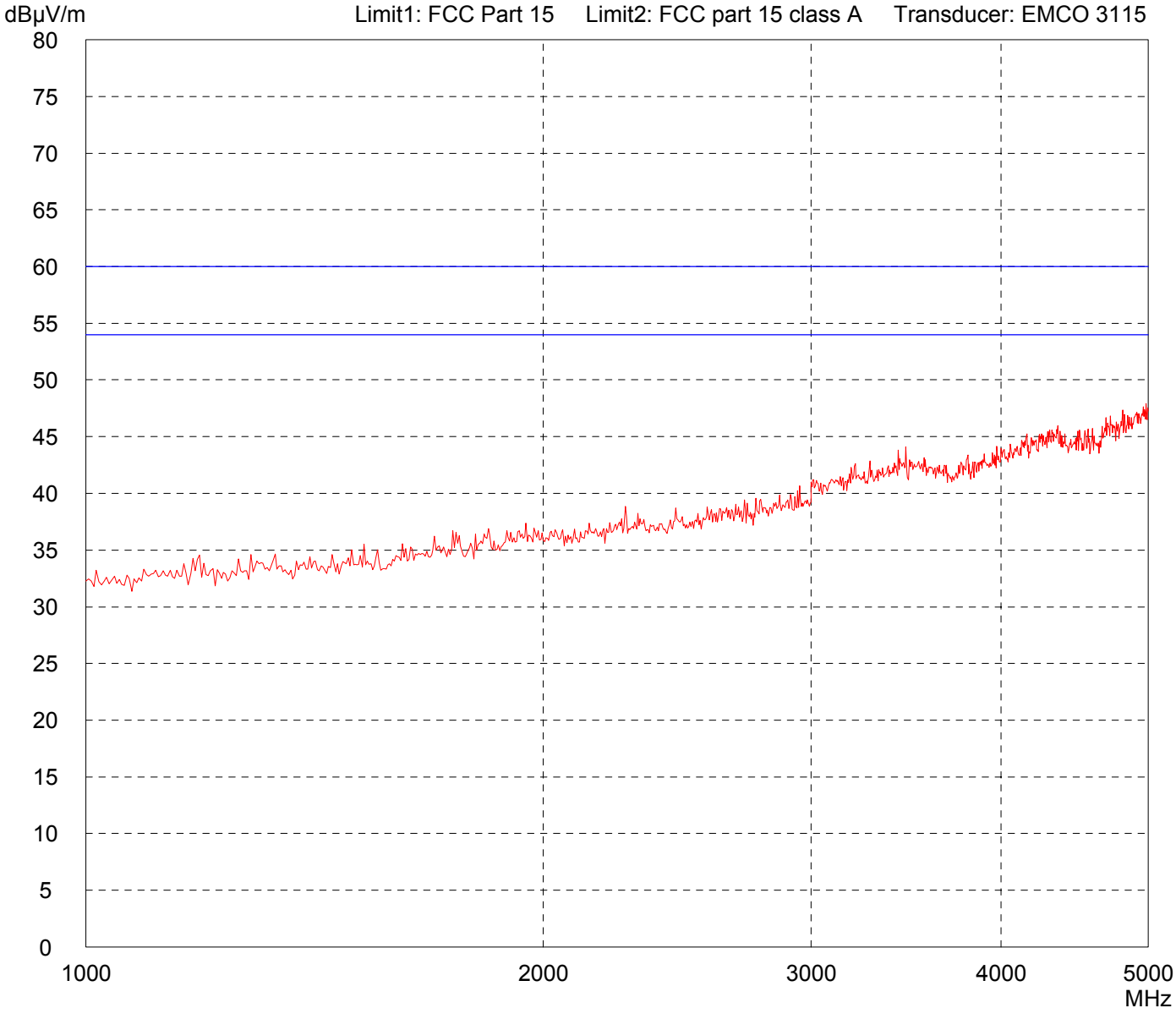


Result: Prescan	Project file: 57403-60316-1

Radiated Emission Test 1 GHz - 5 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: WNCA01	Comment: - 3.6 V battery supply - RX on middle channel
Serial no.: ---	
Applicant: Vigil Health Solutions Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 07/25/2006 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 57403-60316-1