SENTON

■ EMV-Prüfzentrum ■ EMI/EMC-Testcenter ■

Straubing, 08 March 2004

T E S T - R E P O R T

No. 56109-40084

for

AC4490-1000M

RF Transceiver Module

Applicant:	AEROCOMM, Inc.
Purpose of testing:	To show compliance with FCC Code of Federal Regulations, Part 15 Subpart C, Section 15.247 RSS 210, Issue 5, November 2001, Section 6.2.2. (o)

Table of Contents

1. Administrative Data

Test item (EUT)	
Type designation	AC4490-1000M
Serial number(s):	001
Type of equipment:	RF Transceiver
Parts/accessories:	---
FCC-ID:	KQL-AC4490
Technical data	
Frequency range	902 - 928 MHz
Operational frequencies	FHSS
Type of modulation	N/A
Pulse frequency	N/A
Pulse width	N/A
Antenna	Nearson 467FL-L-AM-915S
Power supply	3.3 V DC
Applicant: (full address)	AEROCOMM, Inc. 10981 Eicher Drive Lenexa, KS 66219, USA
Contract identification:	---
Contact person:	Matthew Maslak
Manufacturer:	Applicant
Application details	
Receipt of EUT:	11 February 2004
Date of test:	27 February 2004
Note:	---
Responsible for testing:	Johann Roidt
Responsible for test report:	Johann Roidt

2. Identification of Test Laboratory

DETAILS OF THE TEST LABORATORY	
COMPANY NAME:	Senton GmbH EMI/EMC Test Center
ADDRESS:	Aeussere Fruehlingsstrasse 45 D-94315 Straubing Germany
LABORATORY ACCREDITATION:	DAR-Registration No. TTI-P-G 062/94-01
FCC TEST SITE LISTING	90926
INDUSTRY CANADA TEST SITE REGISTRATION	IC 3050
NAME FOR CONTACT PURPOSES:	Mr. Johann Roidt
TELEPHONE: (+49) (0)9421 5522-0	FAX: (+49) (0)9421 5522-99

PERSONNEL INVOLVED IN THIS TEST REPORT	
LABORATORY MANAGER:	 Mr. Johann Roidt
RESPONSIBLE FOR TESTING:	Mr. Johann Roidt
RESPONSIBLE FOR TEST REPORT:	Mr. Johann Roidt

SUMMARY OF TEST RESULTS
The tested sample complies with the requirements set forth in the **Code of Regulations Part 15 Subpart C, Section 15.247 of the Federal Communication Commission (FCC.**

3. Operation Mode of EUT

Transmitter operating continuously,
full tests were performed on lowest, middle and highest RF channel.

4. Configuration

Configuration of the EUT
A full test setup was supplied by the applicant

Cables connected to the EUT
Not applicable

Peripheral devices connected to the EUT
Not applicable

5. Measuring Methods

5.1. Maximum Transmitter Power

5.1.1. Conducted Maximum Transmitter Power

Rules and Specifications:	Section 15.247
Guide:	ANSI C63.4-1992

Measurement Procedure:
A spectrum analyzer / EMI test receiver is connected to the output of the transmitter power amplifier (conducted measurement) via dummy load while EUT was operating in transmit mode using the assigned frequency. The trace mode of the spectrum analyzer was set to max hold with: RBW = 100 kHz, VBW = 100 kHz, span = 1 MHz, sweep = 20 ms (auto mode)

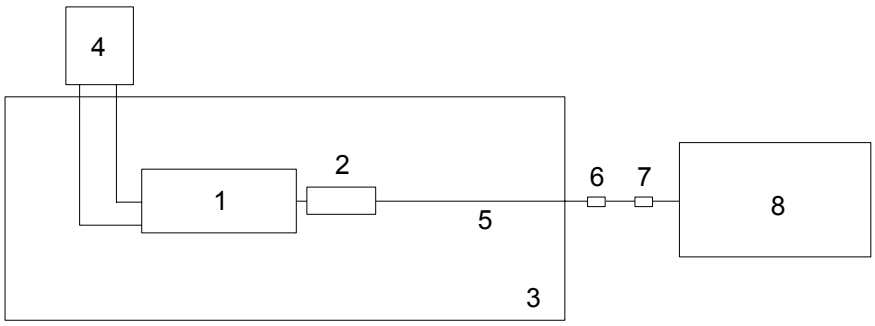


Figure 1: Measurement setup for testing on antenna connector

Test instruments used:

No.	Type	Model	Serial Number	Manufacturer
01	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
08	Power Meter	NRVS	836856/015	Rohde & Schwarz
09	Power Sensor	NRV-Z52	837901/030	Rohde & Schwarz
18	Attenuator 20 dB	4776-20	9503	Narda
19	Attenuator 10 dB	4776-10	9412	Narda

5.1.2. Radiated Maximum Transmitter Power

Radiated Maximum Transmitter Power was measured with detector-function of the spectrum analyzer set to positive peak and trace mode max hold:
RBW = 100 kHz, VBW = 100 kHz, span = 1 MHz, sweep = 15 s

For measurement setup and procedure see section 5.2

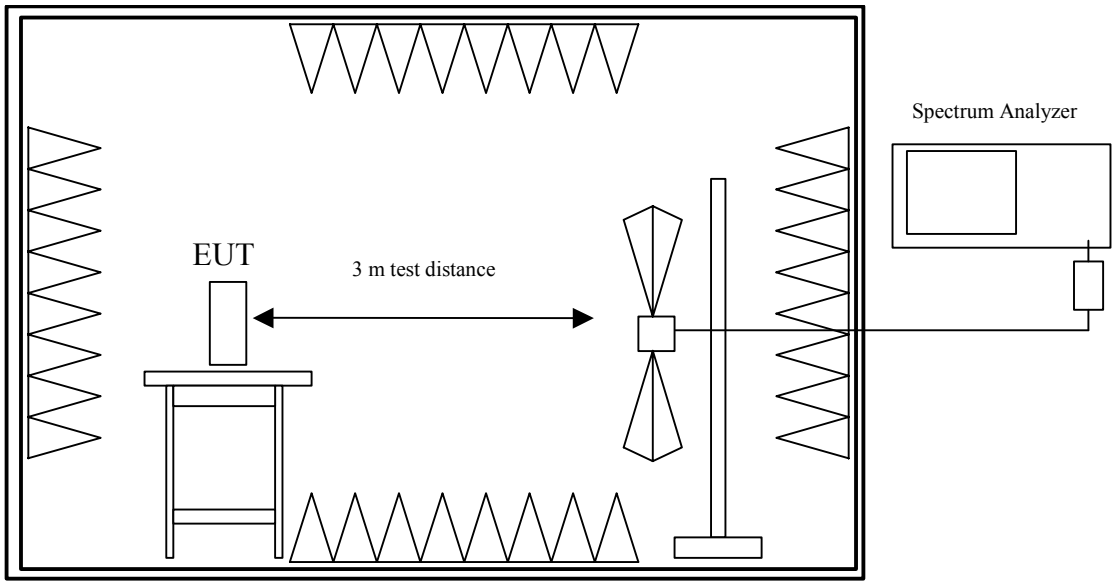
5.2. Radiated Emissions 30 MHz – 1 GHz

Rules and Specifications:	Section 15.247
Guide:	ANSI C63.4-1992

Measurement Procedure:

Radiated emissions are measured over the frequency range from 30 MHz to 1 GHz.

Measurements were 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 bandwidth set to 100 kHz. All tests were performed at a test-distance of 3 meters. Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing



Fully anechoic chamber

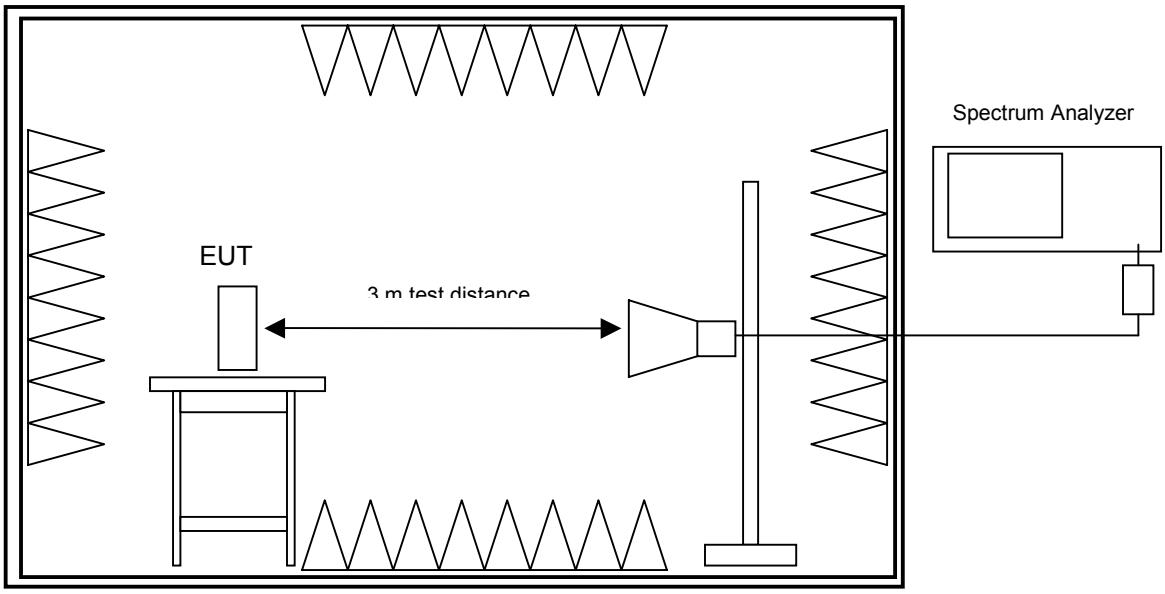
Test instruments used:

No.	Type	Model	Serial Number	Manufacturer
01	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
113	Preamplifier	CPA9231A	3393	Schaffner
141	Trilog broadband antenna	VULB 9163	9163-188	Schwarzbeck
003	Fully anechoic room	No. 2	1452	Albatross Projects

5.3. Radiated Emission > 1 GHz

Rules and Specifications:	Section 15.247
Guide:	ANSI C63.4

Measurement Procedure:
Radiated emissions are measured in the frequency range 1 GHz to 25 GHz. Resolution and video bandwidth of the spectrum analyzer are set to 1 MHz. Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing. Additional measurements are performed at critical frequencies with reduced span. EUT is rotated all around and receiving antenna is raised and lowered to find the maximum levels of emission. The cables and equipment are placed and moved within the range of position likely to find their maximum emissions. All tests are performed in a fully-anechoic chamber with a test-distance of 3 meters. If required preamplifiers are used for the whole frequency range. Special care is taken to avoid overload in transmit mode (using appropriate attenuators and filters if necessary).



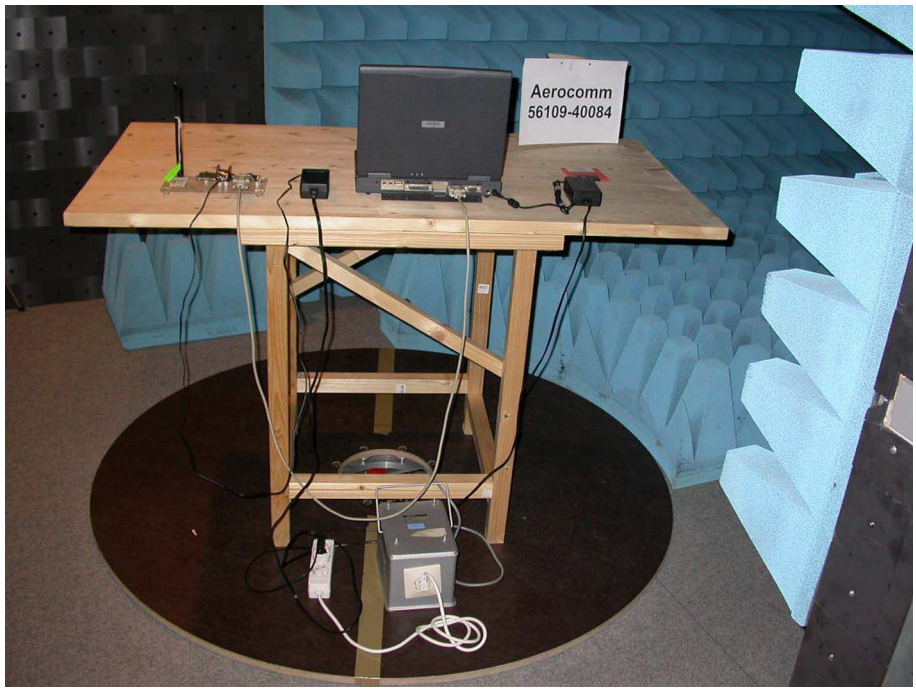
Fully anechoic chamber

Test instruments used:

No.	Type	Model	Serial Number	Manufacturer
01	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
143	Log. periodic antenna	3147	9112-1054	EMCO
145	Horn antenna	3115	9508-4553	EMCO
146	Horn antenna set	3160-03/-09	9112-1003	EMCO
114	Preamplifier 1-8 GHz	AFS3-00100800-32-LN	847743	Miteq
115	Preamplifier 8-18 GHz	ACO/180-3530	32641	CTT
003	Fully anechoic room	No. 2	1452	Albatross Projects

6. Photographs Taken During Testing

Test setup for radiated emission measurement 30 MHz – 25 GHz (fully anechoic room)



Test setup for conducted AC Powerline Emission Mesurement


Aerocomm
56109-40084

7. List of Measurements

FCC Part 15 Subpart C			
Section(s):	**Test**	**Page(s)**	**Result**
	Transmitter:		
15.205	Restricted Bands	---	Pass
15.247 (a) (1)	Channel Bandwidth	16	Pass
15.247 (a) (1)	Hopping channel separation	18	Pass
15.247 (a) (1) (i)	Number of Hopping Frequencies used	20	Pass
15.247 (a) (1) (i)	Dwell Time of each frequency within a 10 Second Period of Time	21	Pass
15.247 (b) (2)	Maximum Peak Output Power	23	Pass
15.247 (c)	Spurious emissions - conducted	25	Pass
15.247 (c) **15.209**	Spurious emissions - radiated	29	Pass
15.247 (g)	Compliance with applicable requirements for FHSS	---	
15.247 (h)	Limitation on avoidance on hopping in occupied channel	---	
15.203	Antenna Requirement	30	
2.1093	RF Exposure Requirement	31	Pass
15.207	Conducted AC Powerline Emissions	32	Pass
	Receiver		
15.111	Spurious emissions on antenna port	---	N/A
15.109	Radiated Emissions	33	Pass

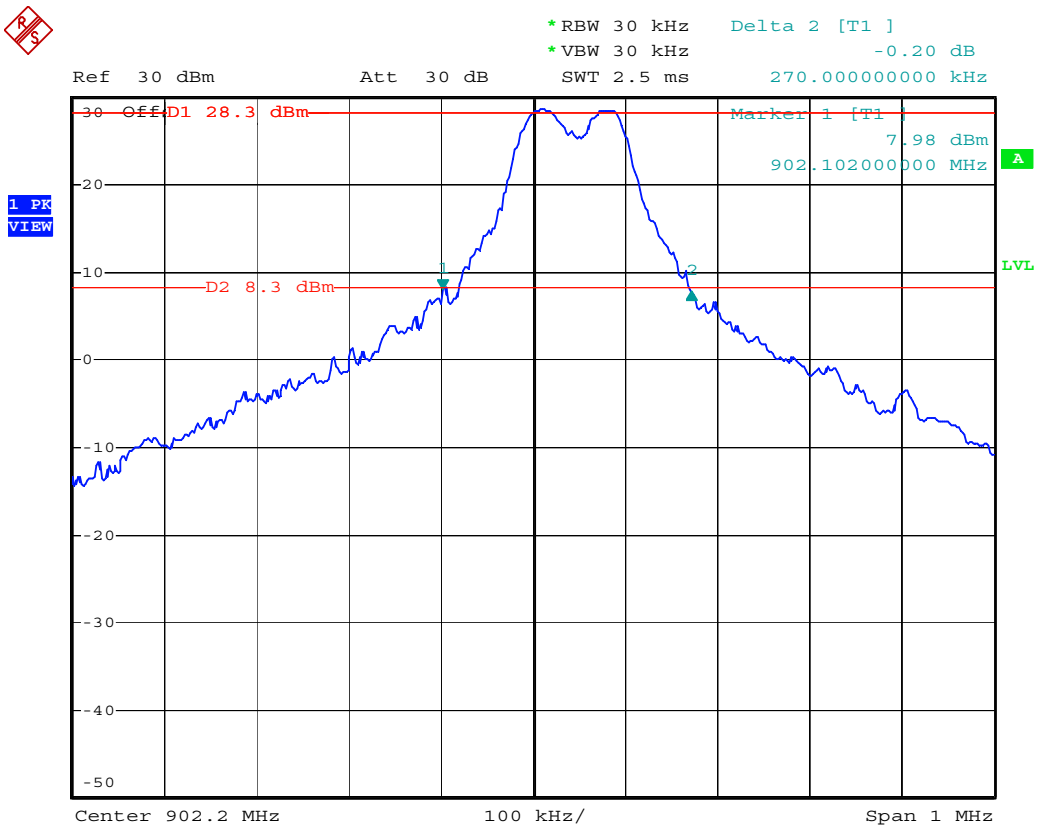
RSS 210, Issue 5			
Section(s):	**Test**	**Page(s)**	**Result**
	Transmitter:		
6.2.2 (o)			
(e3)	Restricted Bands	---	Pass
(a) (a2)	Channel Bandwidth	16	Pass
(a2)	Hopping channel separation	18	Pass
(a2)	Number of Hopping Frequencies used	20	Pass
(a2)	Dwell Time of each frequency within a 10 Second Period of Time	21	Pass
(a2)	Maximum Peak Output Power	23	Pass
(e1)	Spurious emissions - conducted	25	Pass
(e1)	Spurious emissions - radiated	29	Pass
(e2)	Antenna Requirement	30	
14	RF Exposure Requirement	31	Pass
6.6	Conducted AC Powerline Emissions	32	Pass
	Receiver		
7.2	Spurious emissions on antenna port	---	N/A
7.3	Radiated Emissions	33	Pass

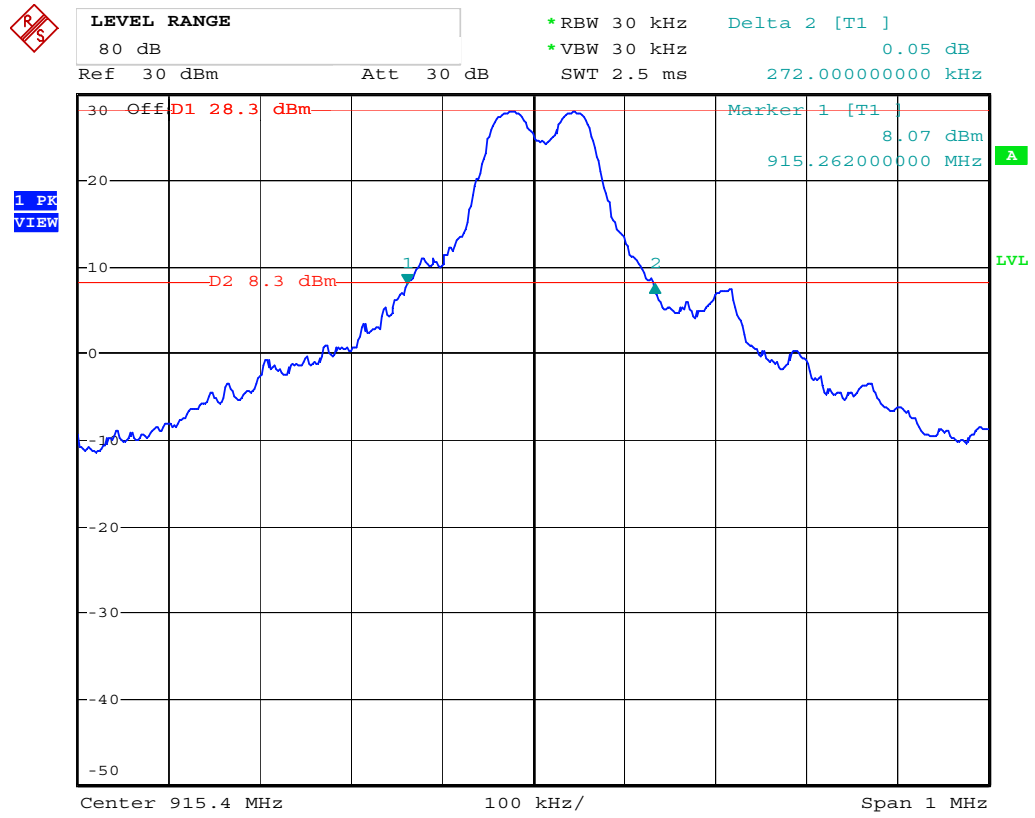
Channel Bandwidth

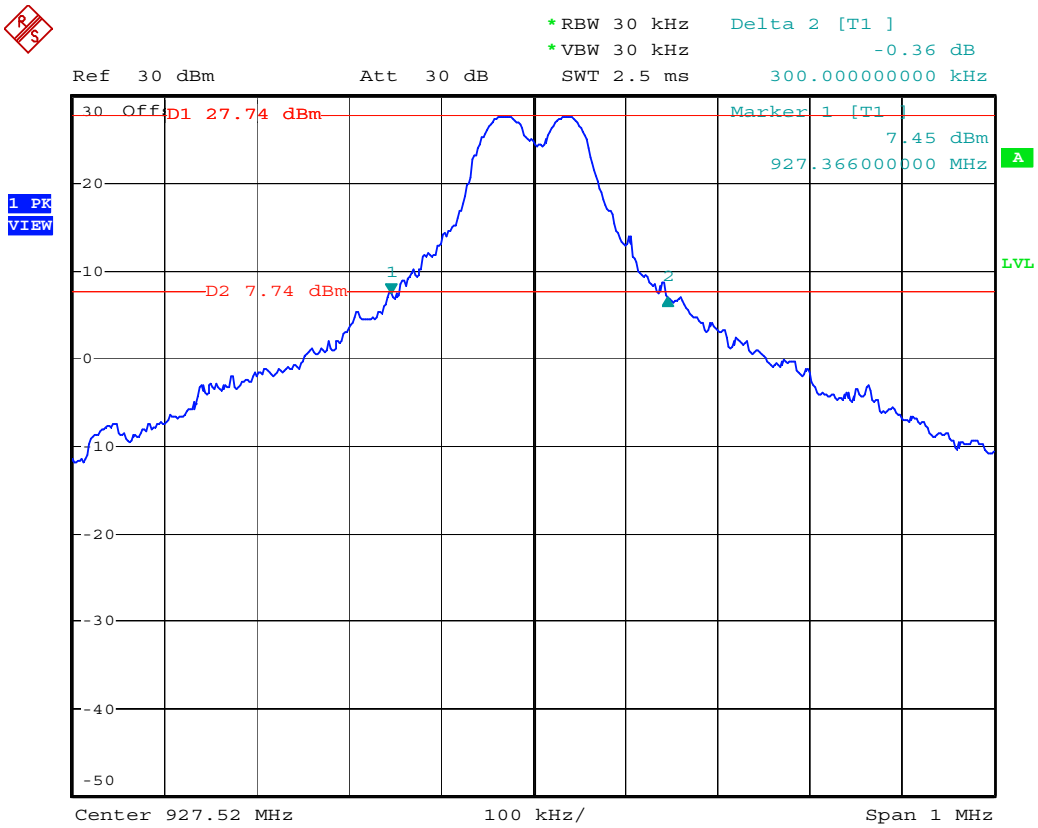
Rules and Specifications:	15.247 (a) (1) (i)
Guide:	ANSI C63.4-1992
Limit:	The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Test Site:	Radio Lab.
Distance:	Conducted Measurement
Date of Test:	

Frequency	Channel Bandwidth in kHz	Standard	Result
Low (902.2 MHz)	270	≤500 kHz	Pass
Middle 915,4 MHz	272	≤500 kHz	Pass
High 927.5 MHz	300	≤500 kHz	Pass




LEVEL RANGE
80 dB
Ref 30 dBm
Att 30 dB
*RBW 30 kHz
*VBW 30 kHz
SWT 2.5 ms
Delta 2 [T1]
0.05 dB
272.000000000 kHz
Marker 1 [T1]
8.07 dBm
915.262000000 MHz
Off
D1 28.3 dBm
D2 8.3 dBm
1 PK
VIEW
A
LVL
30
20
10
0
-10
-20
-30
-40
-50
Center 915.4 MHz
100 kHz/
Span 1 MHz

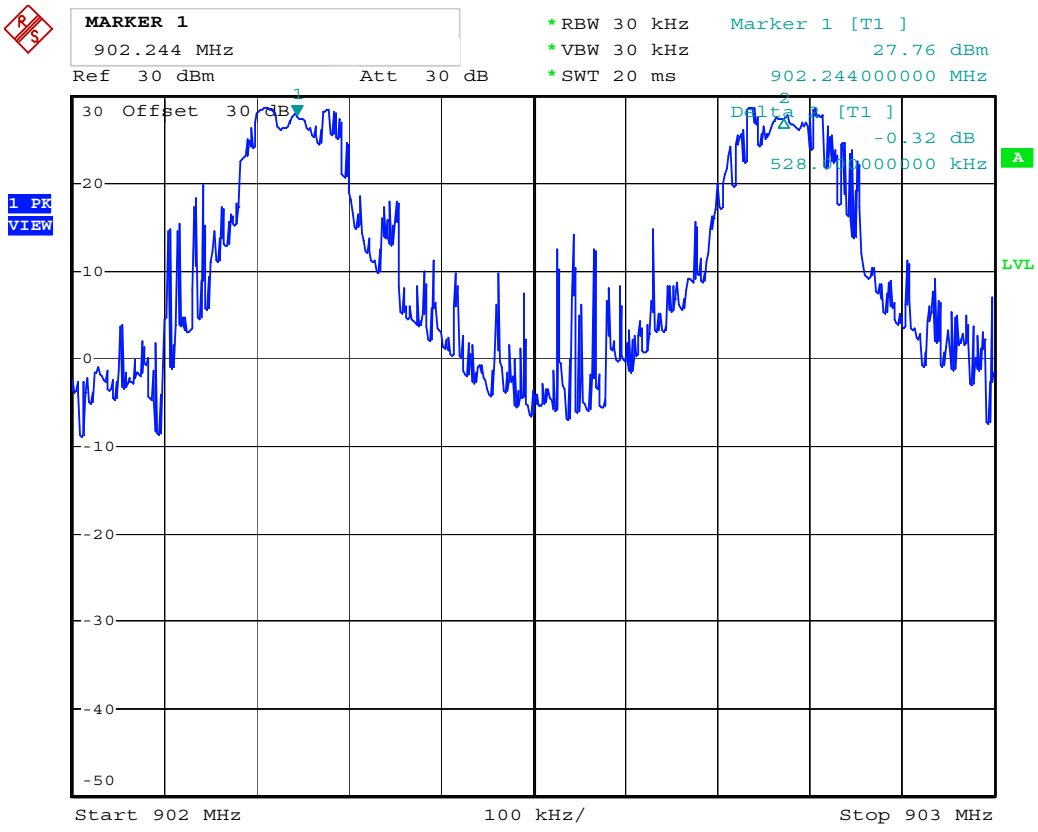

Ref 30 dBm
Att 30 dB
*RBW 30 kHz
*VBW 30 kHz
SWT 2.5 ms
Delta 2 [T1]
-0.36 dB
300.000000000 kHz
Marker 1 [T1]
7.45 dBm
927.366000000 MHz
Off
D1 27.74 dBm
D2 7.74 dBm
1 PK
VIEW
A
LVL
30
20
10
0
-10
-20
-30
-40
-50
Center 927.52 MHz
100 kHz/
Span 1 MHz

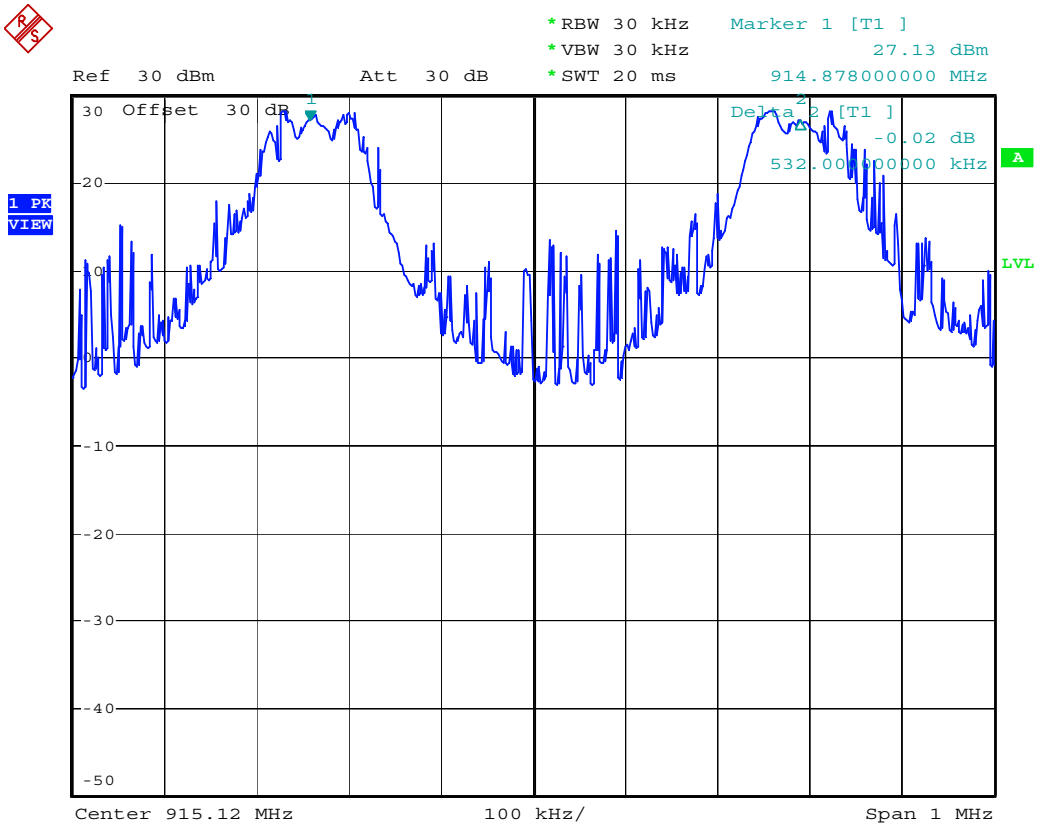
Hopping Channel Separation

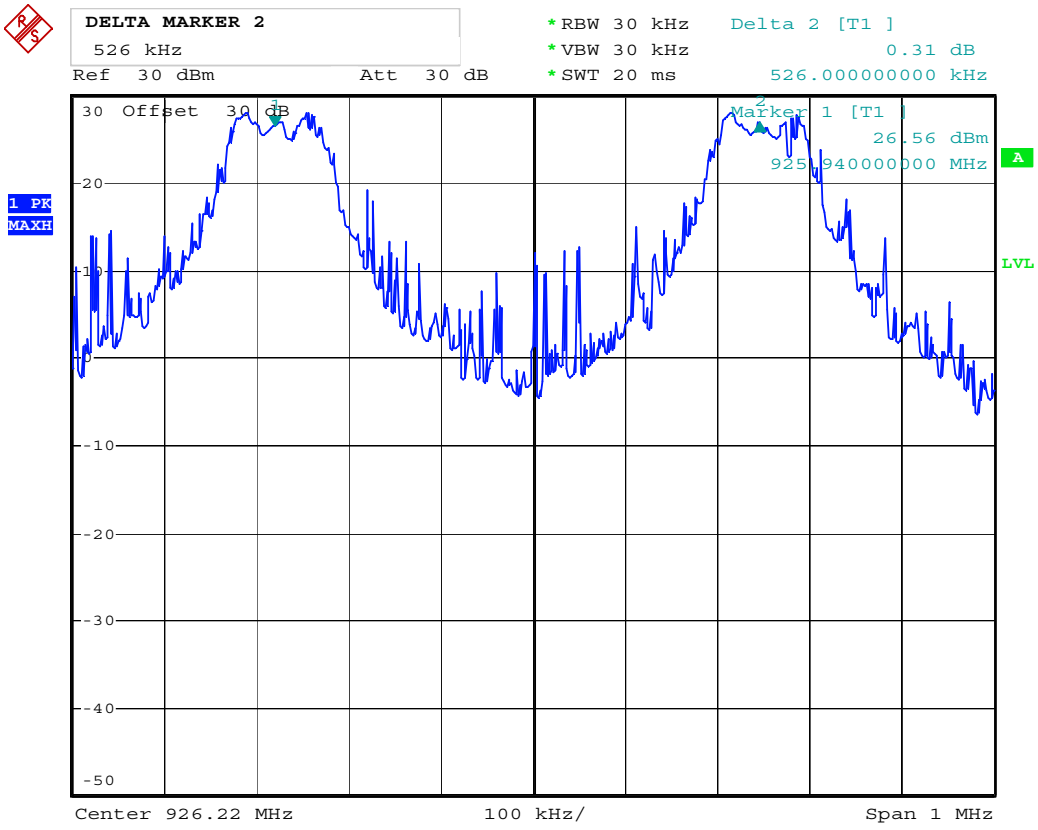
Rules and Specifications:	15.247 (a) (1)
Guide:	ANSI C63.4-1992
Limit:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth, whichever is greater.

Test Site:	Radio Lab.
Distance:	Conducted Measurement
Date of Test:	

Channel Frequency	Measured	Required	Result
902.2. MHz	528 kHz	> 270 kHz	Pass
915.4 MHz	532 kHz	> 272 kHz	Pass
925.9 MHz	526 kHz	> 300 kHz	Pass




*RBW 30 kHz
*VBW 30 kHz
*SWT 20 ms
Marker 1 [T1]
27.13 dBm
914.878000000 MHz
Ref 30 dBm
Att 30 dB
30 Offset 30 dB
Delta 2 [T1]
-0.02 dB
532.000000000 kHz
1 PK
VIEW
A
LVL
30
20
10
0
-10
-20
-30
-40
-50
Center 915.12 MHz
100 kHz/
Span 1 MHz

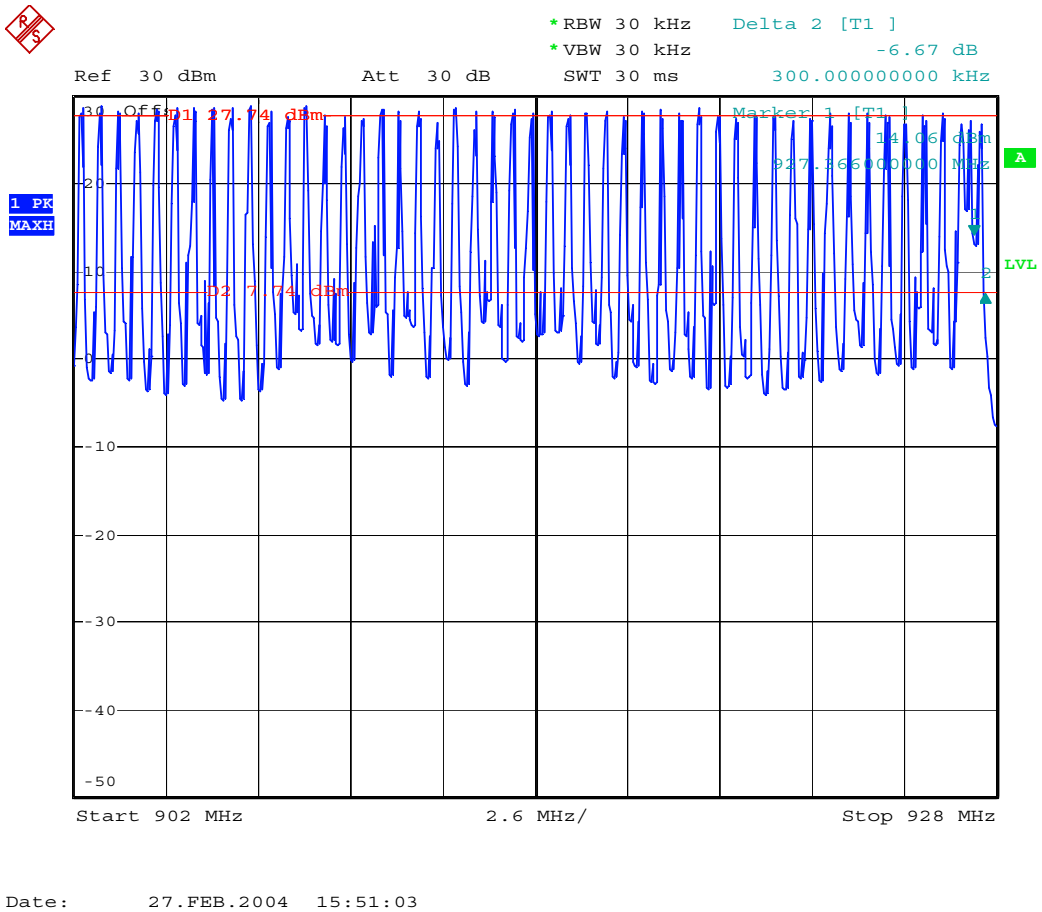

DELTA MARKER 2
526 kHz
*RBW 30 kHz
*VBW 30 kHz
*SWT 20 ms
Delta 2 [T1]
0.31 dB
526.000000000 kHz
Ref 30 dBm
Att 30 dB
30 Offset 30 dB
Marker 1 [T1]
26.56 dBm
925.940000000 MHz
1 PK
MAXH
A
LVL
30
20
10
0
-10
-20
-30
-40
-50
Center 926.22 MHz
100 kHz/
Span 1 MHz

Number of Hopping Frequencies used

Rules and Specifications:	15.247 (a) (1) (i)
Guide:	ANSI C63.4-1992
Limit:	Frequency hopping systems in the 902 - 928 MHz band shall use at least 25 non-overlapping channels.

Test Site:	Radio Lab.
Distance:	Conducted Measurement
Date of Test:	

Number of Hopping Frequencies	Measured	Required	Result
	50	25	Pass



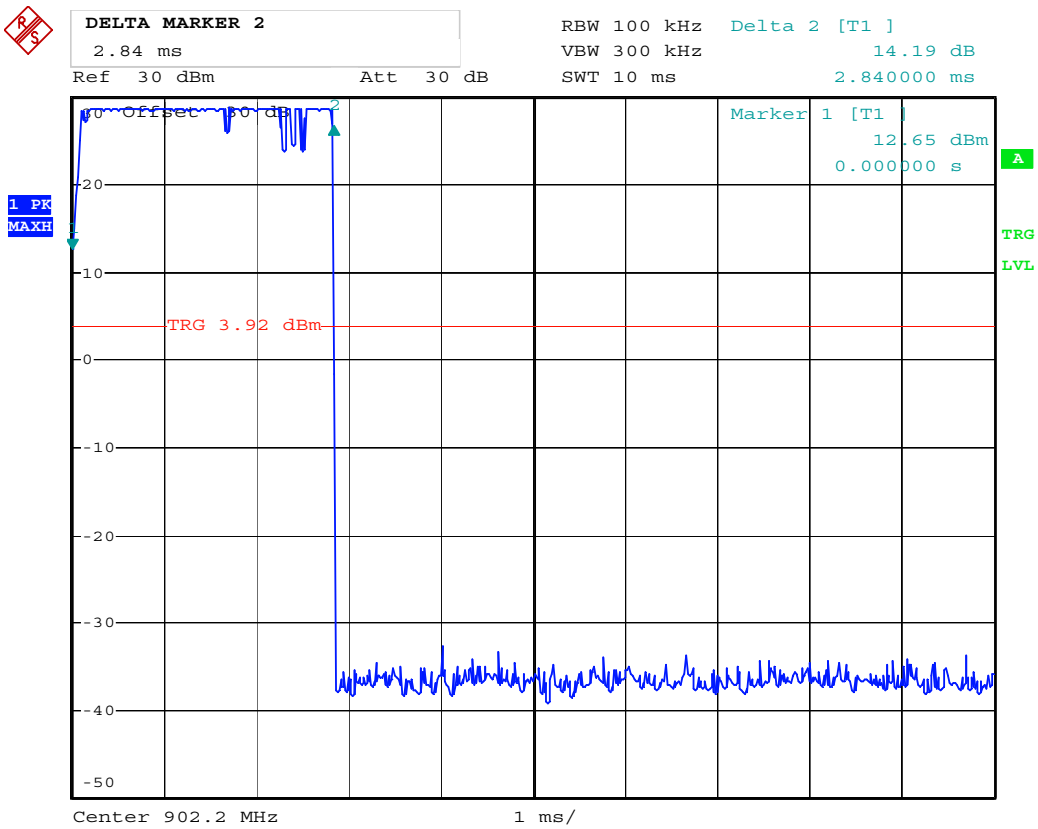
Date: 27.FEB.2004 15:51:03

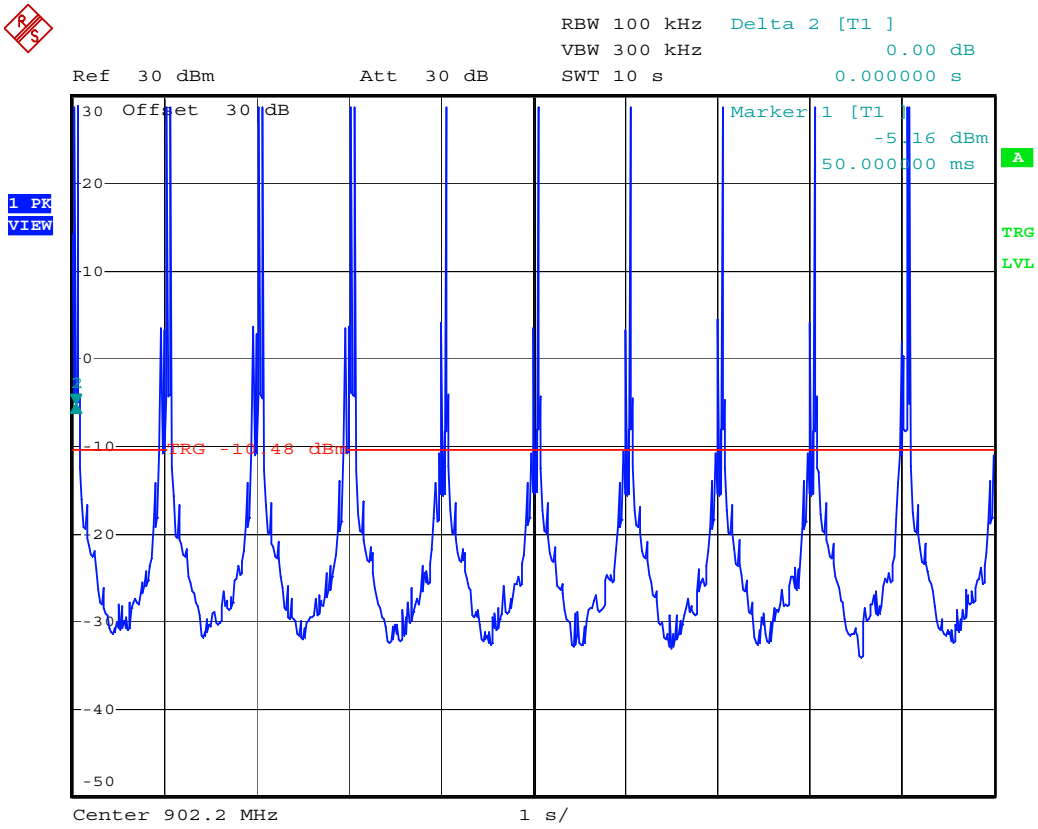
Time Occupancy on any Channel

Rules and Specifications:	15.247 (a) (1) (i)
Guide:	ANSI C63.4-1992
Limit:	If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

Test Site:	Radio Lab.
Distance:	Conducted Measurement
Date of Test:	27 February 2004

Time occupancy	Measured	Required	Result
	10 x 2.84 ms = 28.4 ms within a 10 seconds period	< 0.4 seconds within a 10 second period	Pass



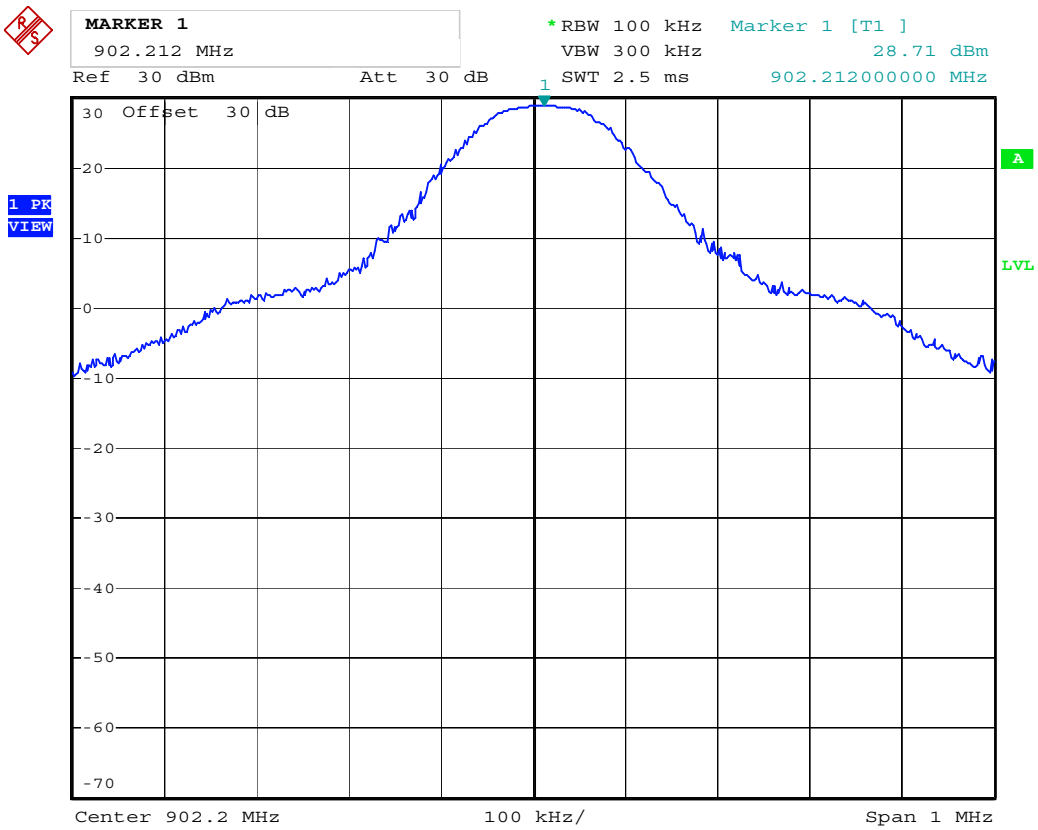

RBW 100 kHz
Delta 2 [T1]
VBW 300 kHz
0.00 dB
Ref 30 dBm
Att 30 dB
SWT 10 s
0.000000 s
Offset 30 dB
Marker 1 [T1
-5.16 dBm
50.000000 ms
1 PK
VIEW
A
TRG
LVL
30
20
10
0
-10
-20
-30
-40
-50
TRG -10.48 dBm
Center 902.2 MHz
1 s/

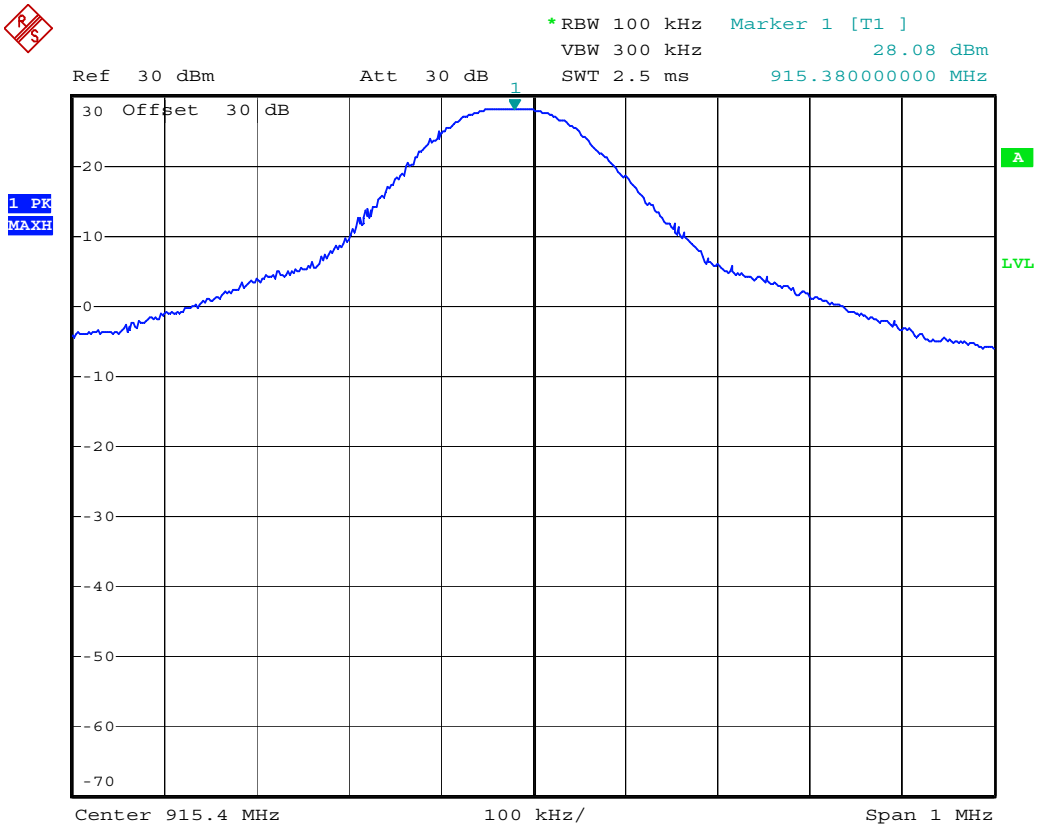
Carrier Power Measurement

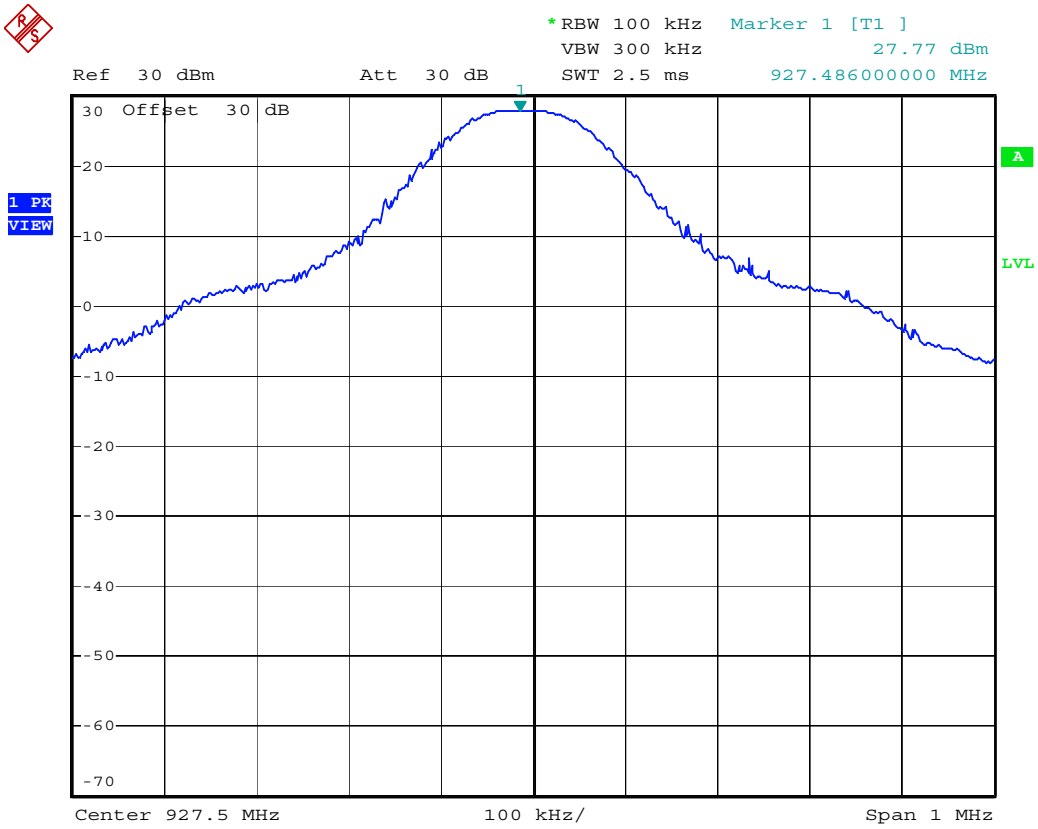
Rules and Specifications:	15.247 (b) (2)
Guide:	ANSI C63.4-1992
Limit:	For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels;

Test Site:	Radio Lab.
Distance:	Conducted Measurement
Date of Test:	27 February 2004

Frequency	Output Power in dBm	Output Power in W	Standard	Result
Low (902.2 MHz)	28.71	0.743	≤1.00W	Pass
Middle 915,4 MHz	28.08	0.758	≤1.00W	Pass
High 927.5 MHz	27.77	0.598	≤1.00W	Pass




*RBW 100 kHz
Marker 1 [T1]
VBW 300 kHz
28.08 dBm
Ref 30 dBm
Att 30 dB
SWT 2.5 ms
915.380000000 MHz
30 Offset 30 dB
1 PK
MAXH
A
LVL
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 915.4 MHz
100 kHz/
Span 1 MHz

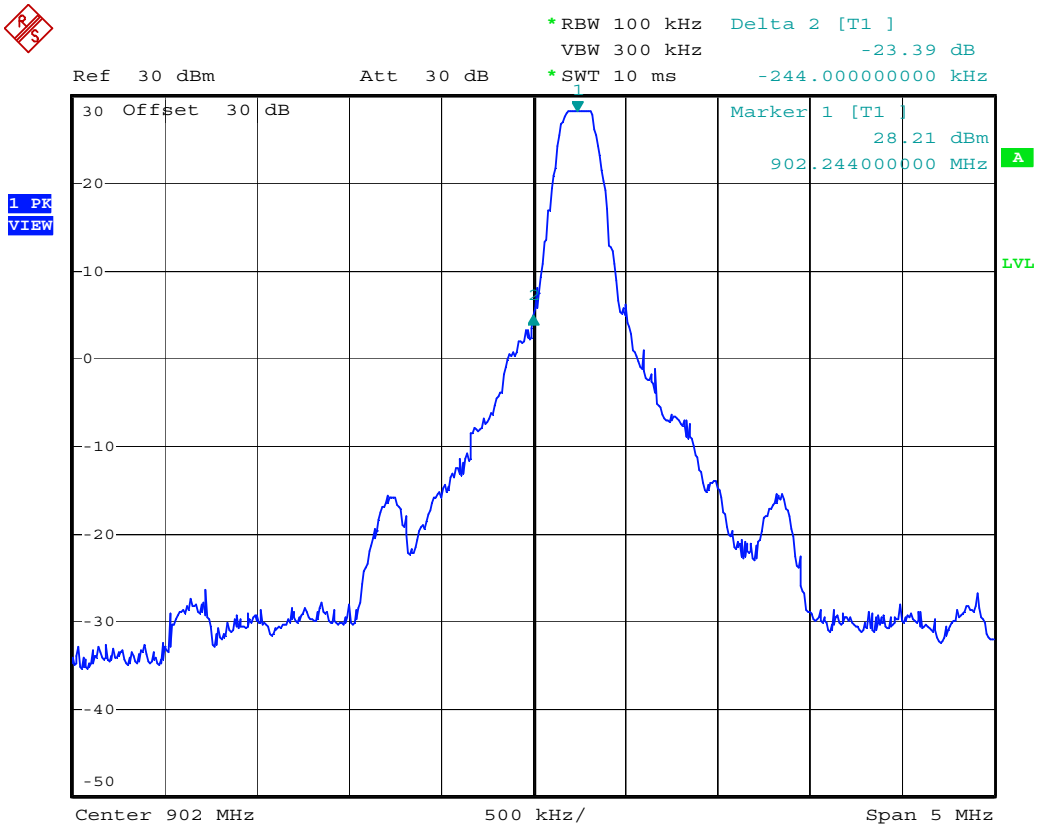

*RBW 100 kHz
Marker 1 [T1]
VBW 300 kHz
27.77 dBm
Ref 30 dBm
Att 30 dB
SWT 2.5 ms
927.486000000 MHz
30 Offset 30 dB
1 PK
VIEW
A
LVL
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 927.5 MHz
100 kHz/
Span 1 MHz

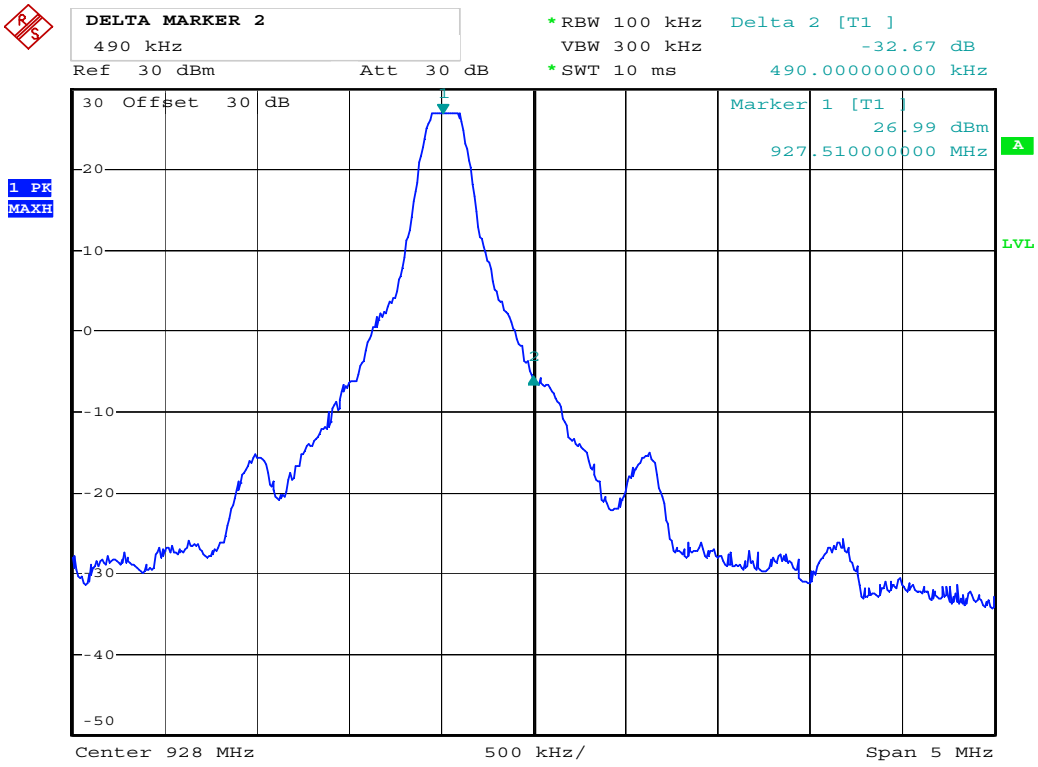
Spurious Emissions

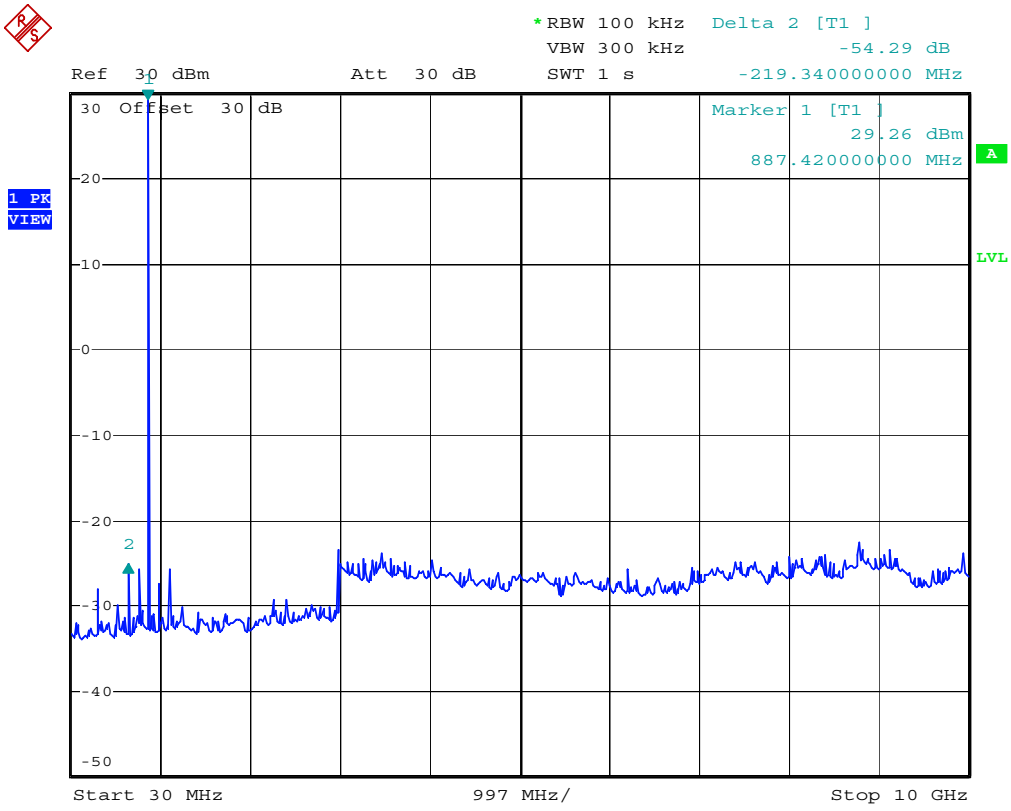
Rules and Specifications:	15.247 (c)
Guide:	ANSI C63.4-1992
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB 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 a radiated measurement.

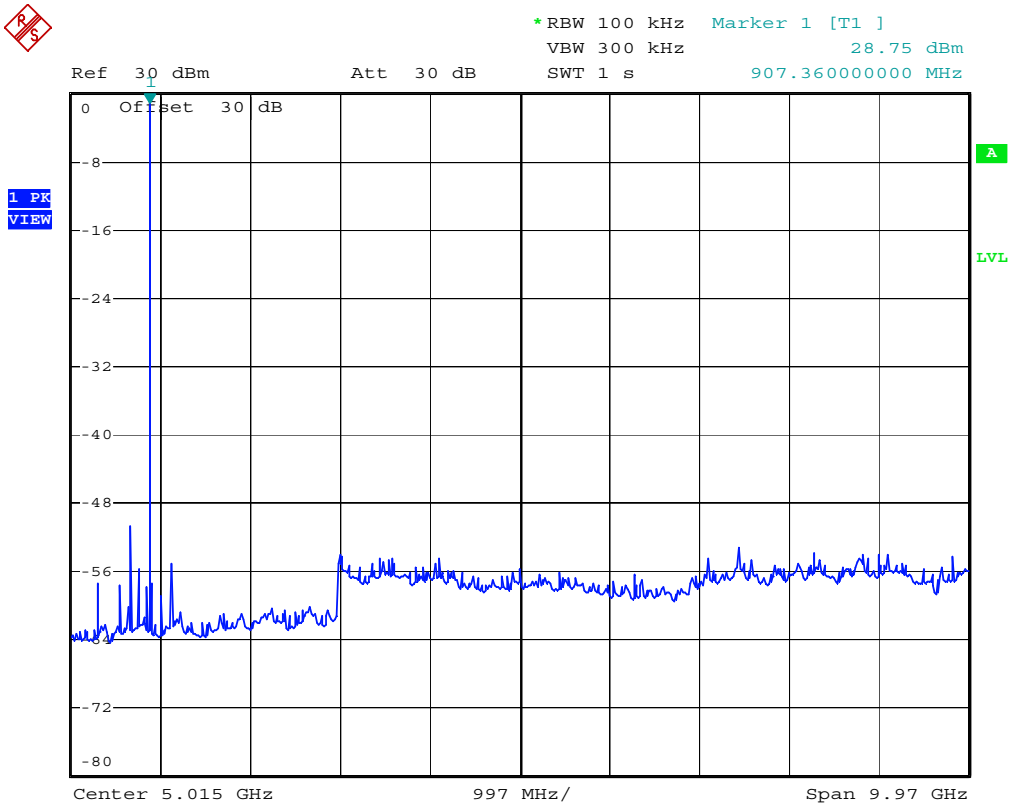
Test Site:	Radio Lab.
Distance:	Conducted Measurement
Date of Test:	27 February 2004

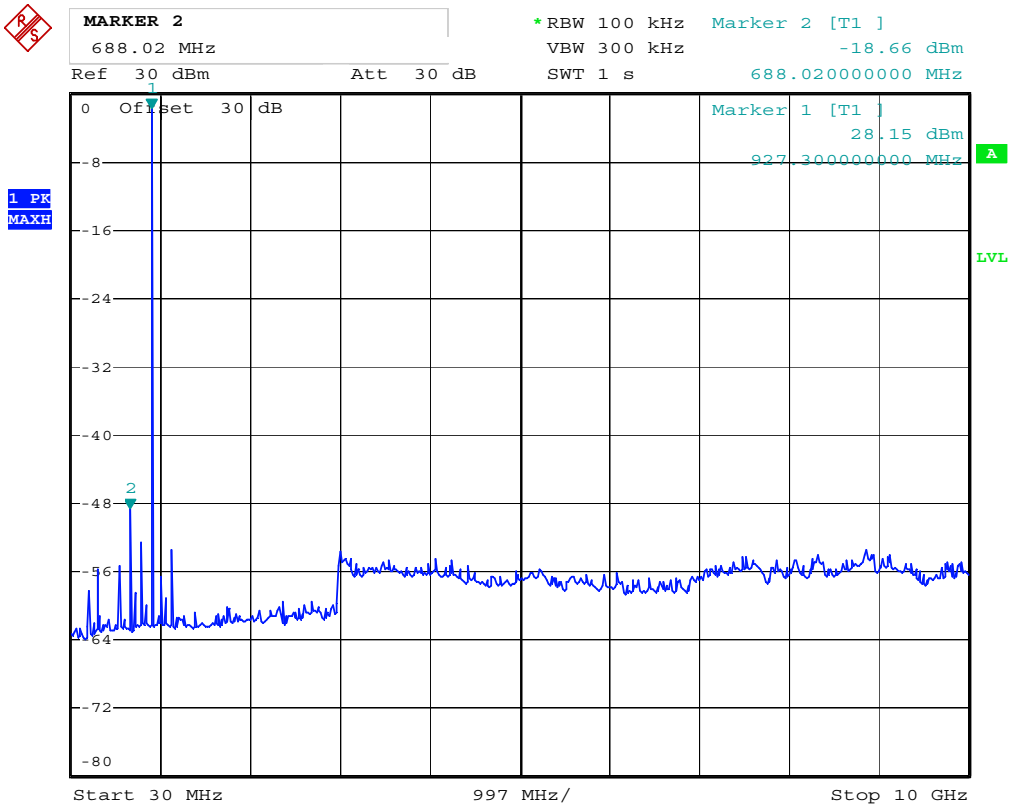
Frequency (MHz)	Measured Value (dBm)	Limit (dBm)	Margin (dB)	Result
902.2	28.71	---	---	Fundamental
915.4	28.08	---	---	Fundamental
927.5	27.77	---	---	Fundamental
902.0	4.82	8.71	-3.89	Pass
928.0	-5.68	7.77	-13.45	Pass
887.4	-25.03	8.71	-33.74	Pass
688.0	-18.66	7.77	-26.43	Pass


*RBW 100 kHz
VBW 300 kHz
*SWT 10 ms
Delta 2 [T1]
-23.39 dB
-244.000000000 kHz
Ref 30 dBm
Att 30 dB
30 Offset 30 dB
Marker 1 [T1]
28.21 dBm
902.244000000 MHz
1 PK
VIEW
A
LVL
30
20
10
0
-10
-20
-30
-40
-50
Center 902 MHz
500 kHz/
Span 5 MHz


DELTA MARKER 2
490 kHz
*RBW 100 kHz
VBW 300 kHz
*SWT 10 ms
Delta 2 [T1]
-32.67 dB
490.000000000 kHz
Ref 30 dBm
Att 30 dB
30 Offset 30 dB
Marker 1 [T1]
26.99 dBm
927.510000000 MHz
1 PK
MAXH
A
LVL
30
20
10
0
-10
-20
-30
-40
-50
Center 928 MHz
500 kHz/
Span 5 MHz


*RBW 100 kHz
VBW 300 kHz
SWT 1 s
Delta 2 [T1]
-54.29 dB
-219.340000000 MHz
Ref 30 dBm
Att 30 dB
Offset 30 dB
Marker 1 [T1]
29.26 dBm
887.420000000 MHz
1 PK
VIEW
A
LVL
30
20
10
0
-10
-20
-30
-40
-50
Start 30 MHz
997 MHz/
Stop 10 GHz


*RBW 100 kHz
VBW 300 kHz
SWT 1 s
Marker 1 [T1]
28.75 dBm
907.360000000 MHz
Ref 30 dBm
Att 30 dB
Offset 30 dB
1 PK
VIEW
A
LVL
0
-8
-16
-24
-32
-40
-48
-56
-64
-72
-80
Center 5.015 GHz
997 MHz/
Span 9.97 GHz


MARKER 2
688.02 MHz
Ref 30 dBm
Att 30 dB
*RBW 100 kHz
VBW 300 kHz
SWT 1 s
Marker 2 [T1]
-18.66 dBm
688.020000000 MHz
Marker 1 [T1]
28.15 dBm
927.300000000 MHz
0 Offset 30 dB
1 PK
MAXH
A
LVL
-8
-16
-24
-32
-40
-48
-56
-64
-72
-80
Start 30 MHz
997 MHz/
Stop 10 GHz

Spurious Emissions

Rules and Specifications:	15.247 (c)
Guide:	ANSI C63.4-1992
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 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 a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

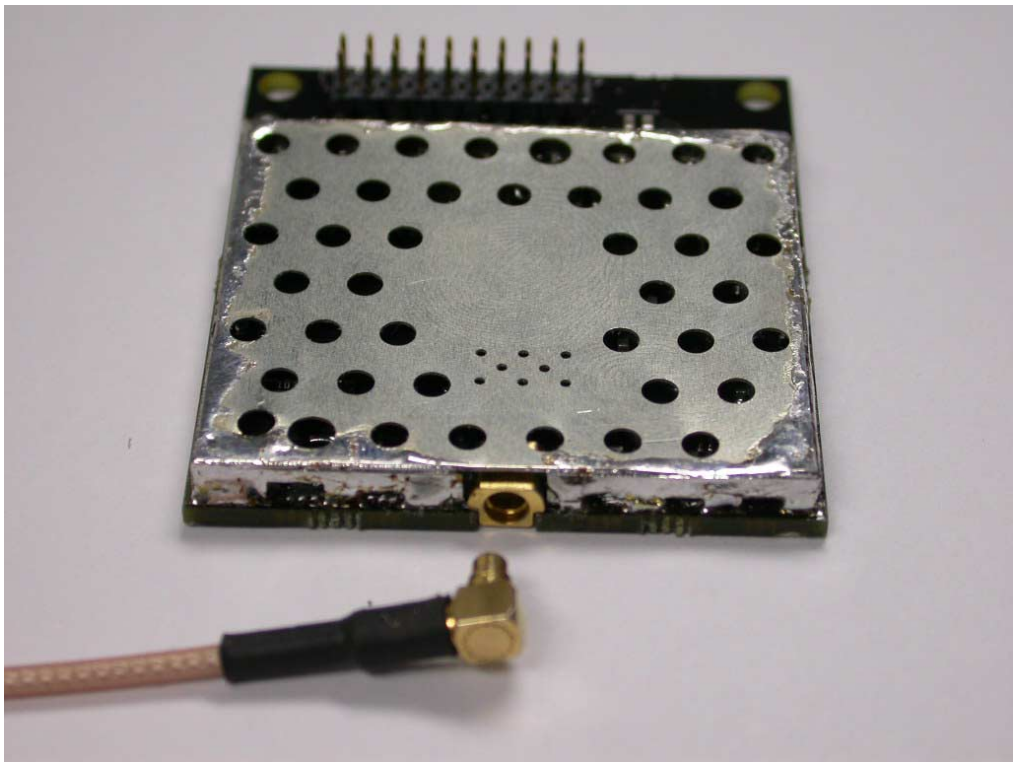
Test Site:	Open Area Test Site (< 1GHz), Fully anechoic room (>1 GHz)
Distance:	Radiated Measurement
Date of Test:	27 February 2004

Frequency (MHz)	Antenna Polarisation	Meter Reading (dBµV)	Antenna Correction (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
902.2	Vertical	101.02	23.29	124.31	---	---
915.4	Vertical	100.87	23.39	124.26	---	---
927.5	Vertical	99.70	23.49	123.19	---	---
565.4	Vertical	39.25	19.65	58.90	103.2	-44.30
677.9	Horizontal	36.96	20.67	57.63	103.2	-45.57
734.2	Horizontal	26.61	21.26	47.87	103.2	-55.33
790.4	Horizontal	30.45	22.01	52.46	103.2	-50.47
1128.0	Vertical	24.40	25.48	49.88	54.0	-4.12
1240.0	Horizontal	17.84	26.30	44.14	54.0	-9.86
3708.0	Vertical	14.91	36.54	51.45	54.0	-2.55
5568.0	Vertical	15.52	40.22	55.74	103.2	-47.46

Antenna connector requirement

Rules and Specifications:	15.203
Guide:	---
Limit:	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section.

Test Result	Pass
	The UUT employs a MMCX connector which meets the requirements for an unique antenna coupler



RF Exposure

Rules and Specifications:	15.247 (b) (4)
Guide:	OET Bulletin 65, Edition 97-01
Limit:	According to §15.247(b)(4) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissive Exposure (MPE)
General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2	Averaging Time (minute)
30 - 1500	---	---	f/1500 = 0.61 mw/cm2 @ 915 MHz	30

f = frequency in MHz

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

$S = PG/4\pi R^2$

Where: S = power density
P = power input to 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 at antenna input terminal: **28.71 dBm = 743 mW**
Prediction distance: **20 cm**
Antenna gain: (Nearson S467FL-L-AM-915S) **2.0 dBi = 1.58 (numerical gain)**

Power density at 20 cm: **0.117 mW/cm2**

Test Result:	**Pass**	

Conducted Powerline Emission Measurement

Rules and Specifications:	15.107, 15.207		
Guide:	CISPR 22		
Limit:	Frequency of Emission (MHz)	Conducted Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5 0.5 – 5 5 - 30	66 to 56 56 60	56 to 46 46 50

Test Site:	EMC Lab. - Shielded Room 4
Distance:	Conducted Measurement
Date of Test:	02 March 2004

Frequency (MHz)	Detector	Analyzer Reading (dBµV)	Correction Factor (dB)	Final Value (dBµV)	Limit (dBµV)	Margin (dB)
0.535	Q.P.	33.7	0	33,7	56,0	**-22,3**
1,775	Q.P.	34.0	0	34	56,0	**-22,0**
2,205	Q.P.	29,80	0	29,8	56,0	**-26,2**

***** = No emissions above noise floor detected**

Sample calculation of Final values:

Final Value (dBµV) = Analyzer Reading (dBµV) + Correction Factor (dB)

Test Results:	Pass	

Spurious Radiation Measurement

Rules and Specifications:	15.109,
Guide:	ANSI C63.4-1992
Limit:	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated at least 50 dB below the level of the fundamental or to the general radiated emission limits below, whichever is the lesser attenuation

Frequency of Emission (MHz)	Field Strength (microvolts/meter)
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

Tested Frequency:	RX Mode, middle RF Channel
Test Site:	Open Area Test Site (< 1 GHz), Fully anechoic chamber (> 1 GHz)
Distance:	3 Meter

Frequency (MHz)	Detector	Antenna Polarization	Analyzer Reading (dBµV)	Correction Factor (dB/m)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
88,200	Q.P.	Vertical	27,46	12,61	40,07	43,50	**-3,4**
132,820	Q.P.	Verical	26,78	10,04	36,82	43,50	**-6,7**
146,400	Q.P.	Vertical	30,05	9,57	39,62	43,50	**-3,9**
161,920	Q.P.	Vertical	26,71	10,09	36,80	43,50	**-6,7**
697.36	Q.P.	Vertical	16,75	20,76	37,51	46,0	**-8,5**
916,580	Q.P	Vertical	15,88	23,40	39,28	46,0	**-6,7**
1390,000	Peak	Vertical	18,76	28,11	46,87	54,0	**-7,1**

***** = All emissions showed more than 20 dB margin to the limit**

Sample calculation of erp values:

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

8. Referenced Regulations

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

☒	FCC Part 2	Code of Federal Regulations Part 2 Frequency allocationand radio treaty matters; General rules and regulations	October 01, 1999
☒	FCC Part 15 Subpart A	Code of Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communication Commission (FCC)	December 08, 2003
☐	FCC Part 15 Subpart B	Code of Regulations Part 15 (Radio Frequency Devices), Subpart B (Unintentional Radiators) of the Federal Communication Commission (FCC)	December 08, 2003
☒	FCC Part 15 Subpart C	Code of Regulations Part 15 (Radio Frequency Devices), Subpart C (Intentional Radiators) of the Federal Communication Commission (FCC)	December 08, 2003
☐	FCC Part 74 Subpart H	Code of Regulations Part 15 (Radio Frequency Devices), Subpart H (Low Power Auxiliary Stations) of the Federal Communication Commission (FCC)	October 20, 1997
☒	ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz - 40 GHz	October, 1992
☒	RSS-210	Radio Standards Specification RSS-210 Issue 2 for Low Power Licence-Exempt Radiocommuniction Devices of Industry Canada	November 2001

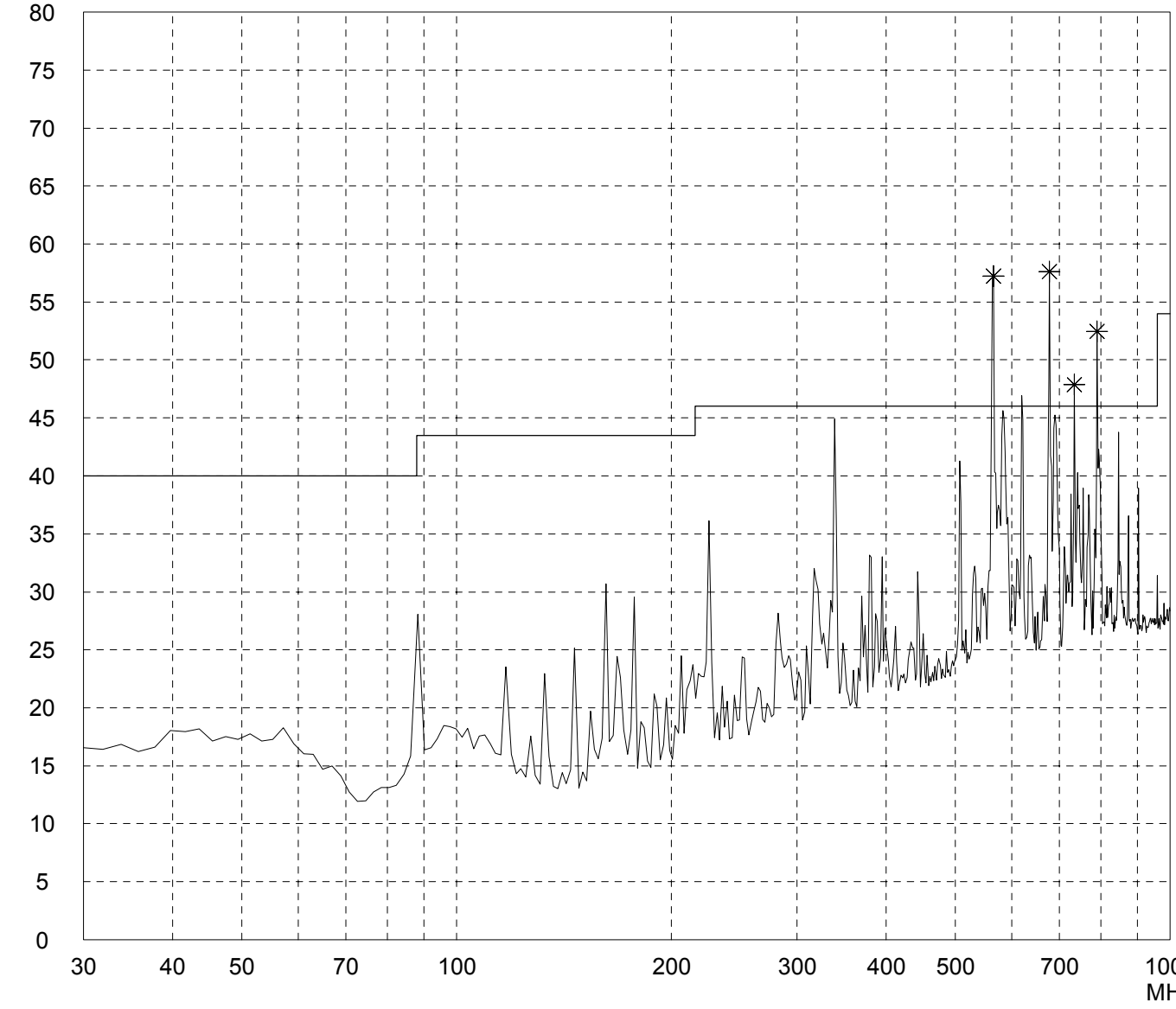
Charts taken during testing

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

Model: AC4490-1000	Comment: TX Mode - Low Frequency Notch Filter on Fundamental
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/02/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

dBµV/m

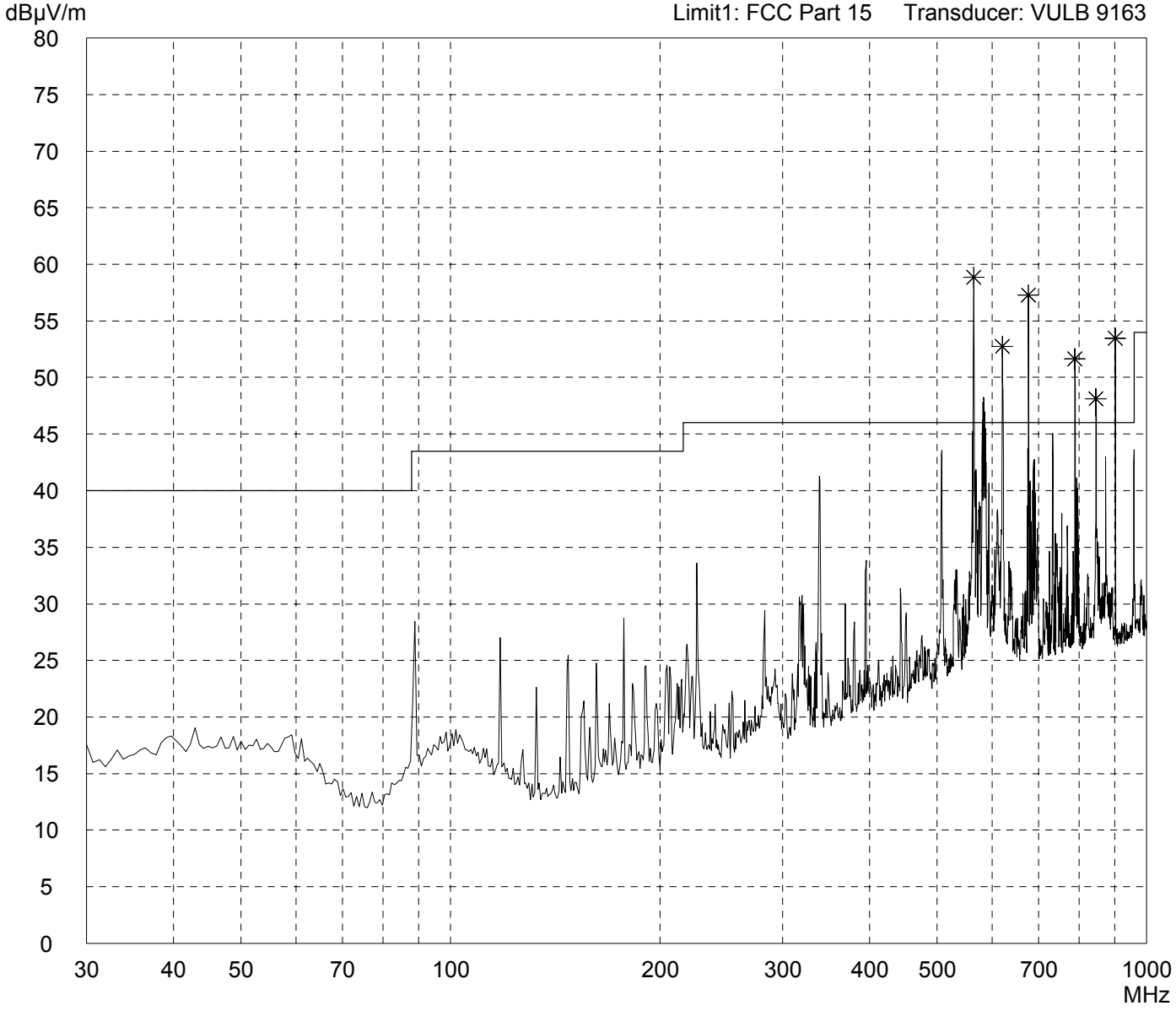
Limit1: FCC Part 15 Transducer: VULB 9163



Result: Prescan	Project file: 56109-40084 Page of Pages

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

Model: AC4490-1000	Comment: TX Mode - Low Frequency Notch Filter on Fundamental
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/02/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

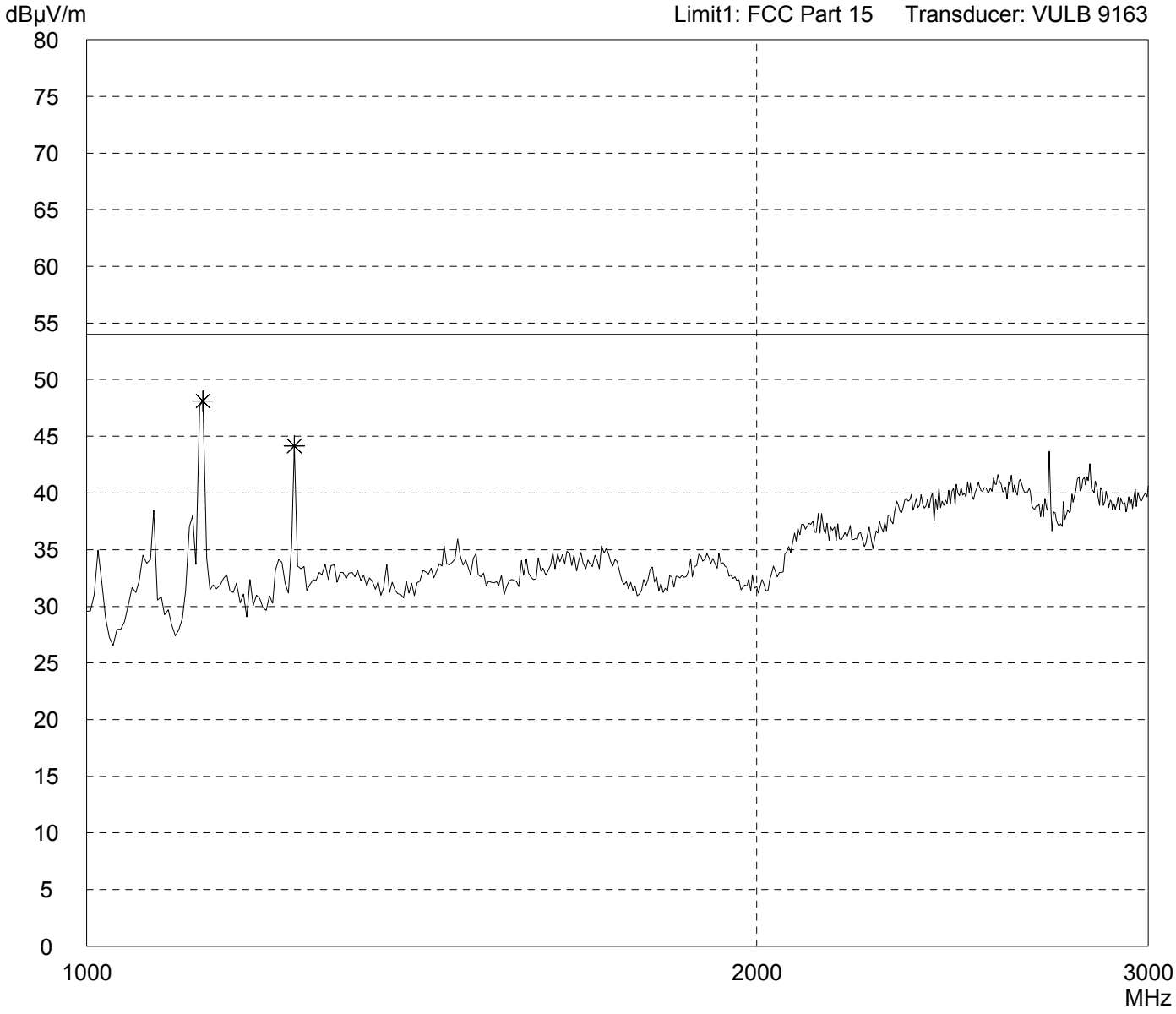


Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 1 GHz - 3 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: AC4490-1000	Comment: TX-Mode - Low Frequency - Note: with WHKS1000-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/03/2004 / Operator: J. Roidt	
Test performed: by hand / File name: default.emi	

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



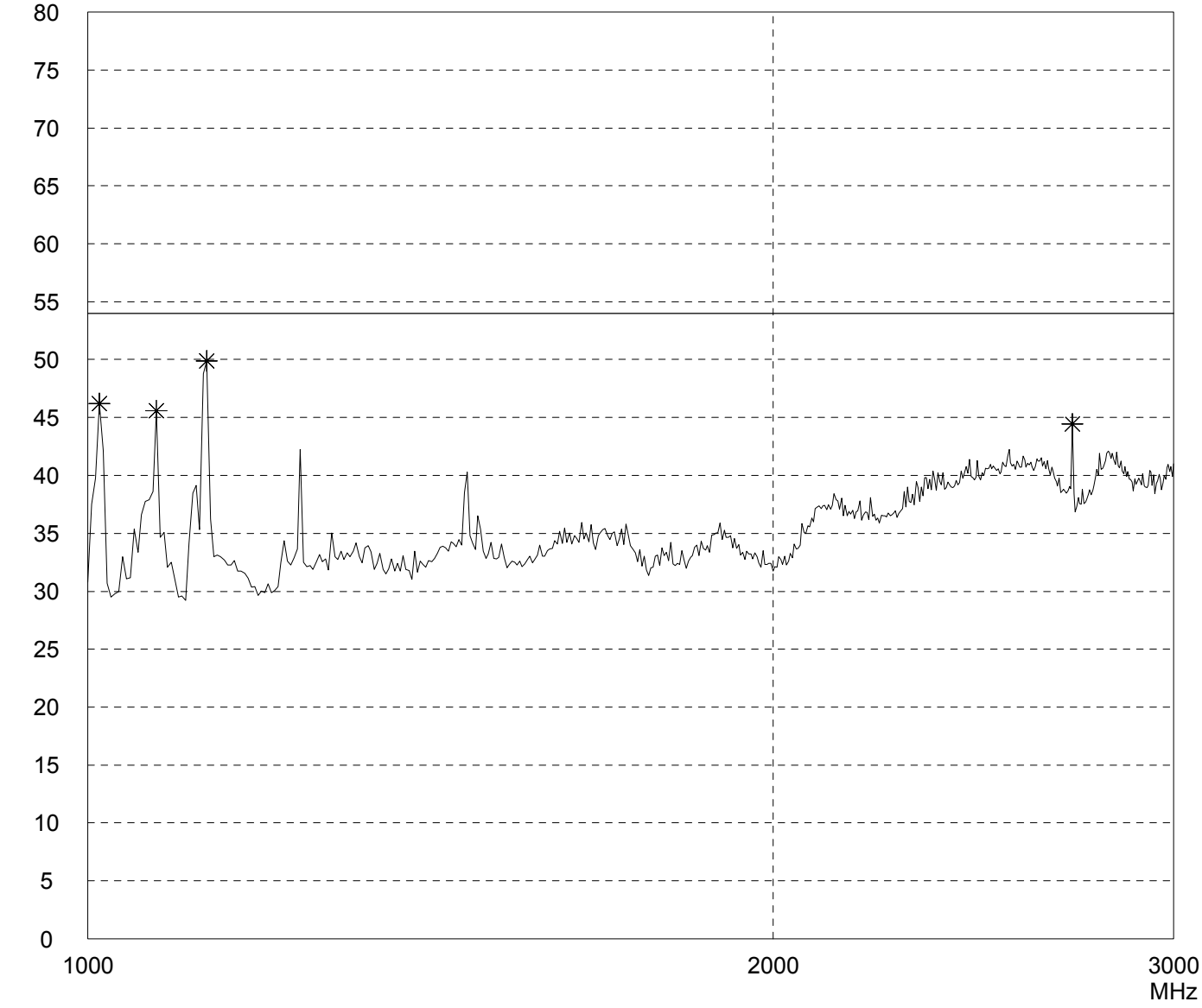
Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 1 GHz - 3 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: AC4490-1000	Comment: TX-Mode - Low Frequency - Note: with WHKS1000-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/03/2004 — Operator: J. Roidt	
Test performed: by hand — File name: default.emi	

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

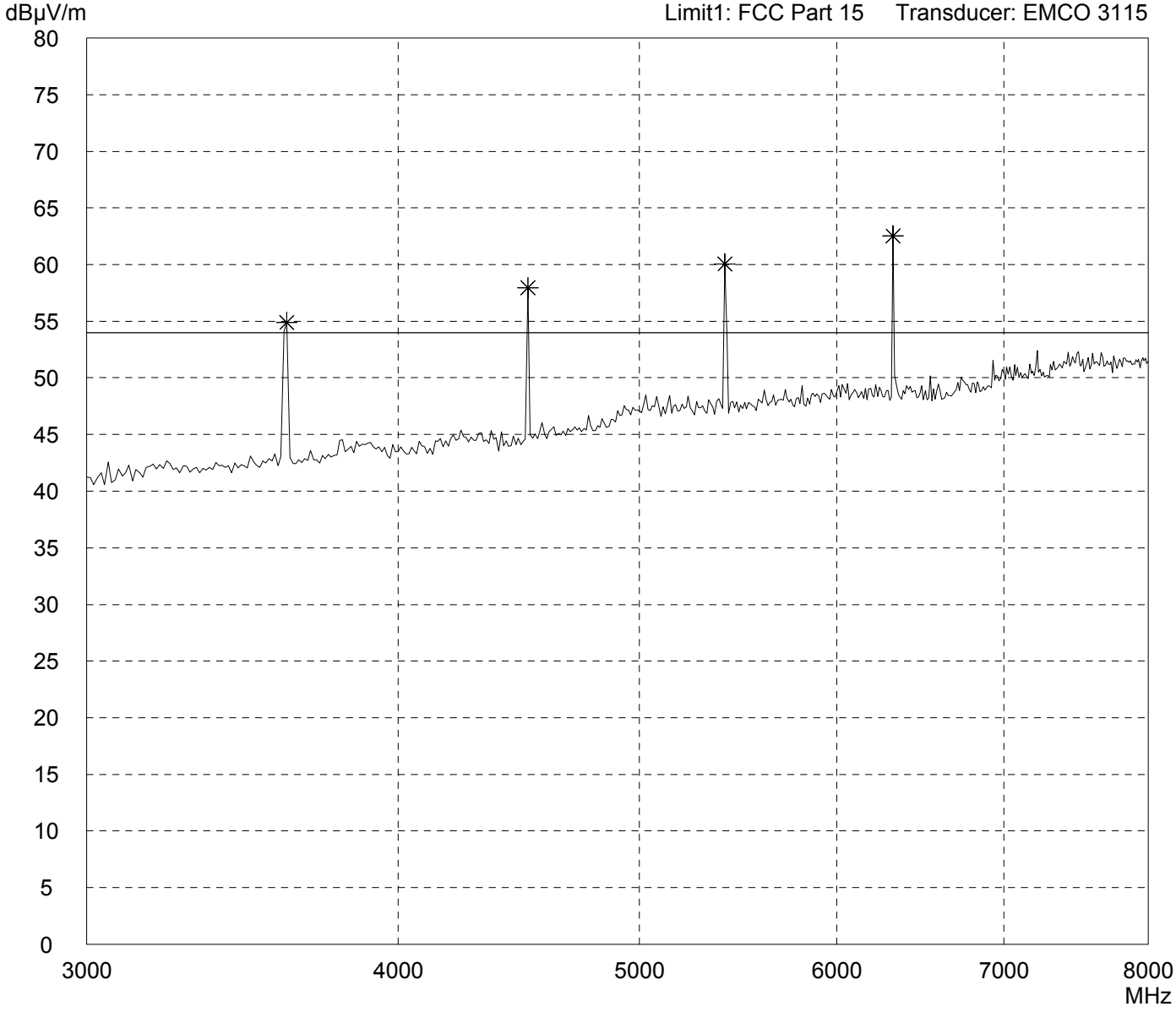
dBµV/m — Limit1: FCC Part 15 — Transducer: VULB 9163



Result: Prescan	Project file: 56109-40084 — Page of Pages

Radiated Emission Test 3 GHz - 8 GHz
acc. to FCC Part 15 (EMCO 3115)

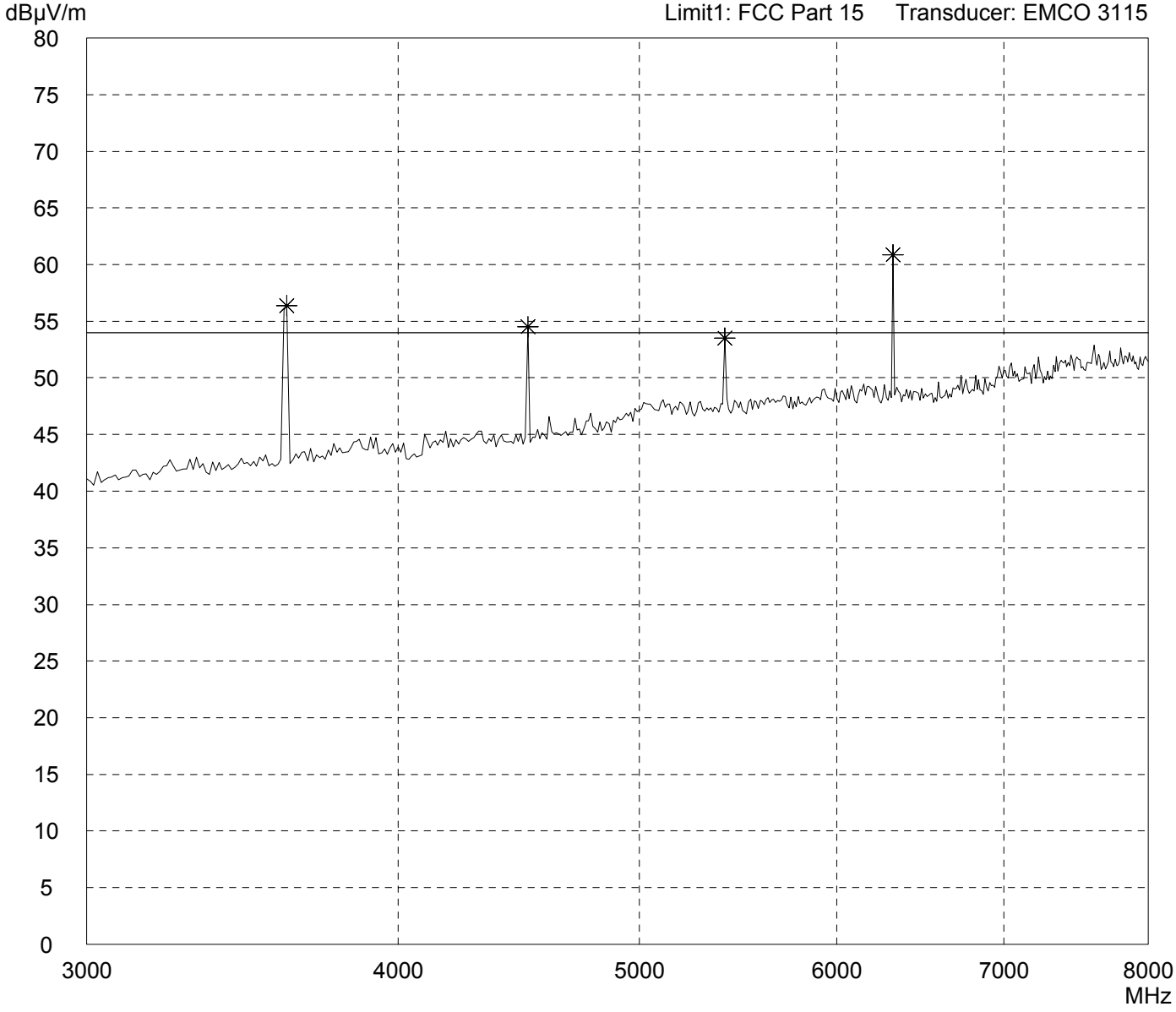
Model: AC4490-1000	Comment: TX-Mode - Low-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 3 GHz - 8 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: AC4490-1000	Comment: TX-Mode - Low-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	
Detector: Peak	List of values: Selected by hand

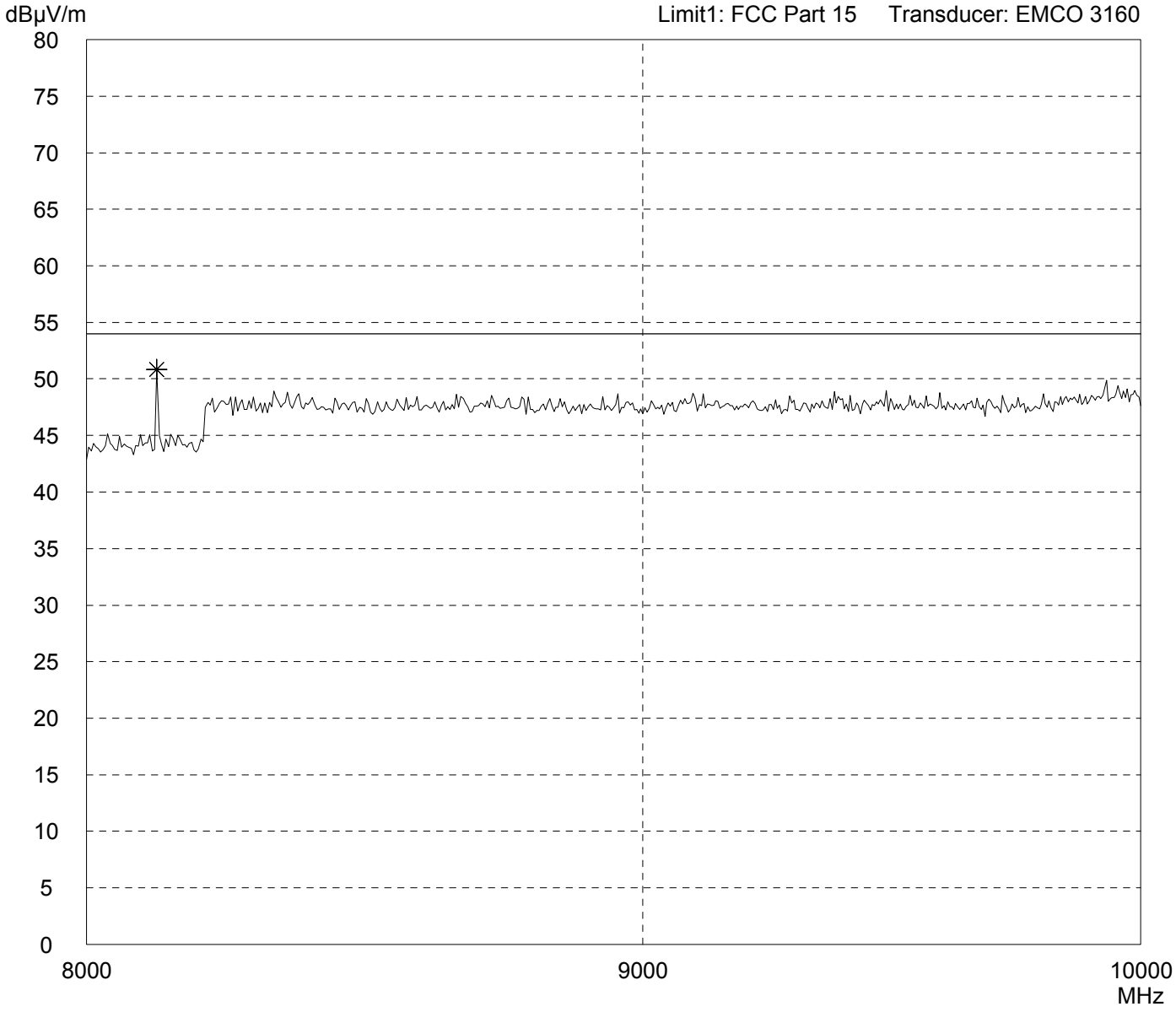


Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 8 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: AC4490-1000	Comment: TX-Mode - Low-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	

Detector: Peak	List of values: Selected by hand

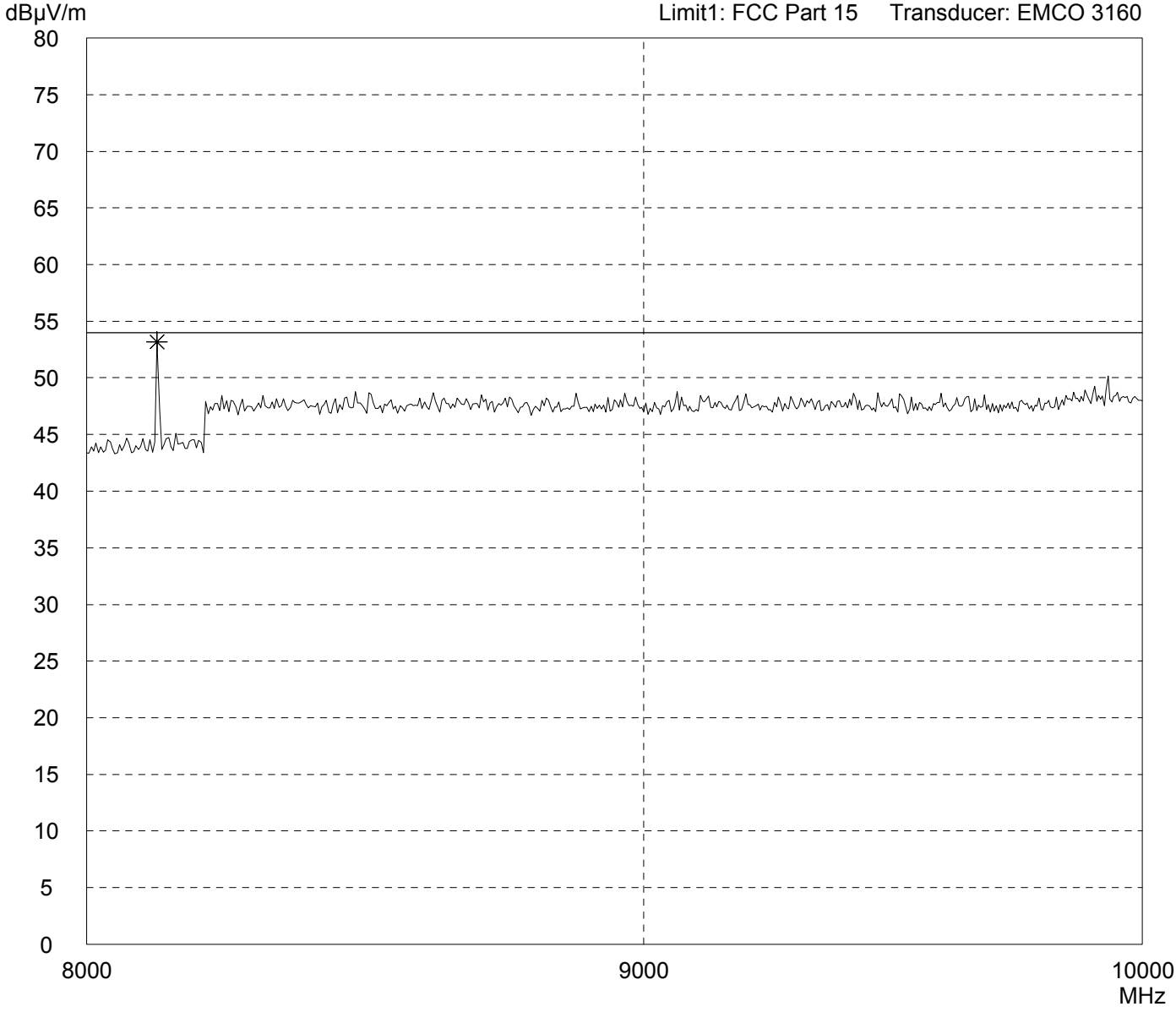


Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 8 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: AC4490-1000	Comment: TX-Mode - Low-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	

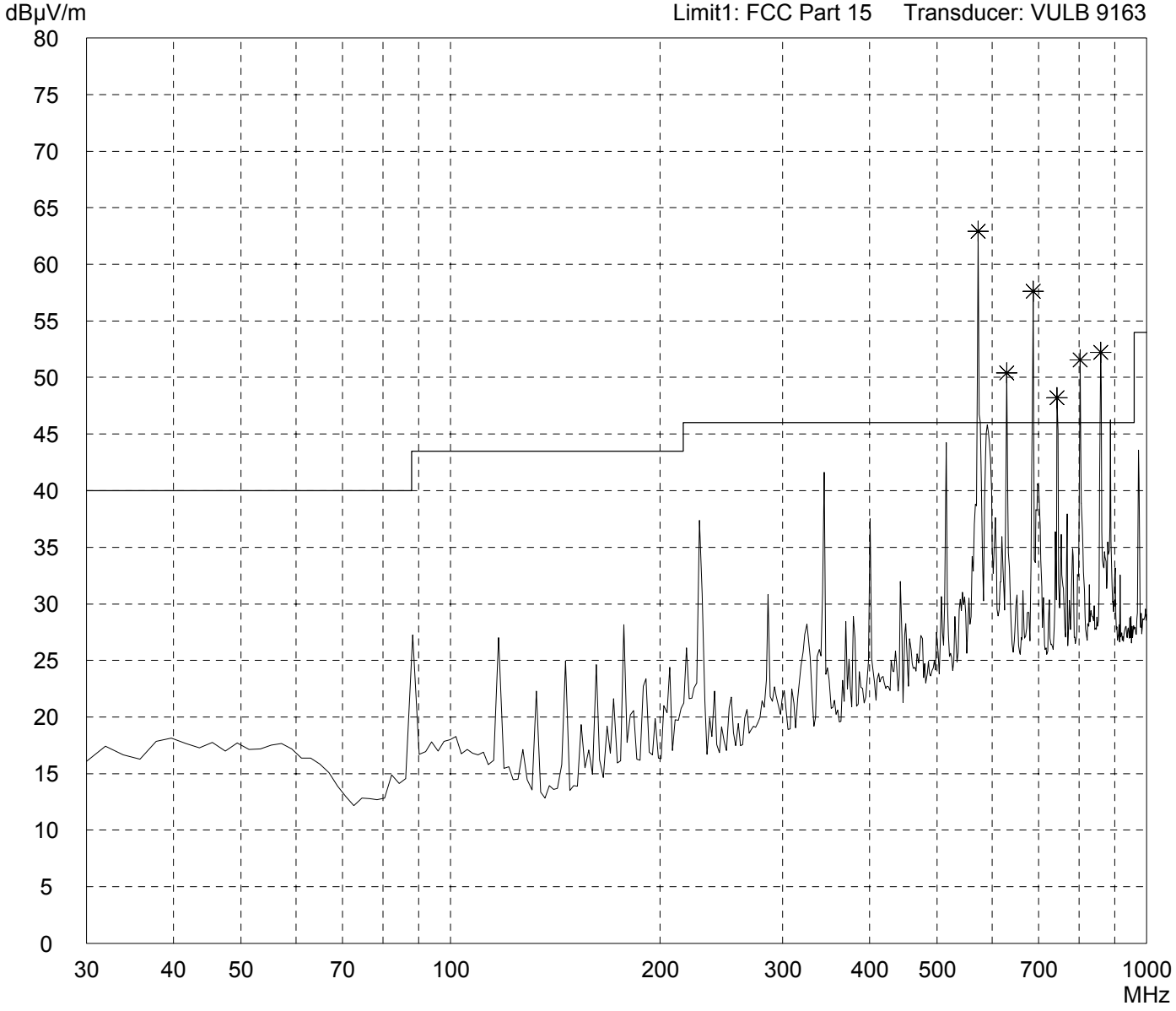
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 56109-40084 Page of Pages

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

Model: AC4490-1000	Comment: TX Mode - Middle Frequency Notch Filter on Fundamental
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/02/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand



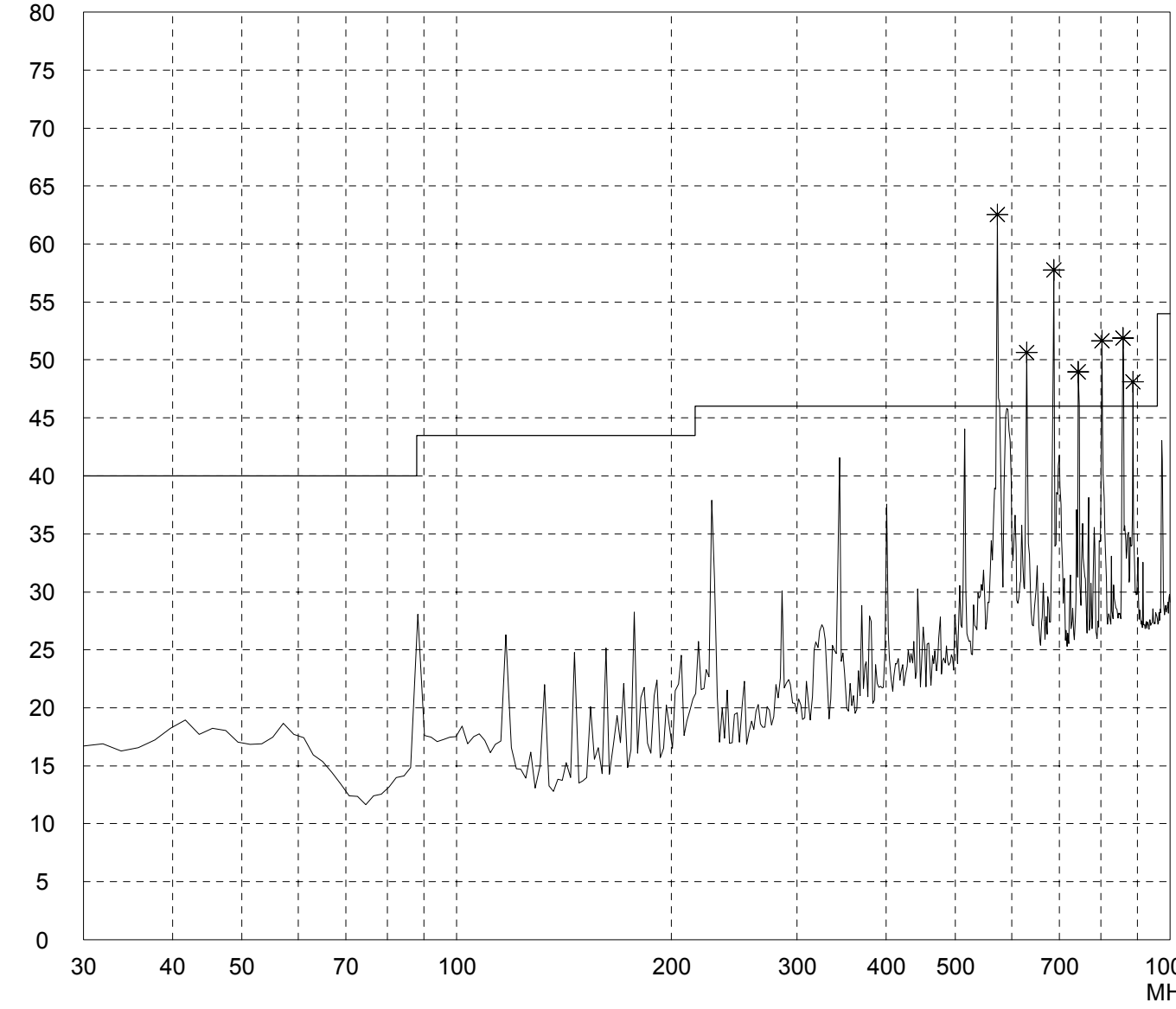
Result: Prescan	Project file: 56109-40084 Page of Pages

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

Model: AC4490-1000	Comment: TX Mode - Middle Frequency Notch Filter on Fundamental
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/02/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

dBµV/m

Limit1: FCC Part 15 Transducer: VULB 9163



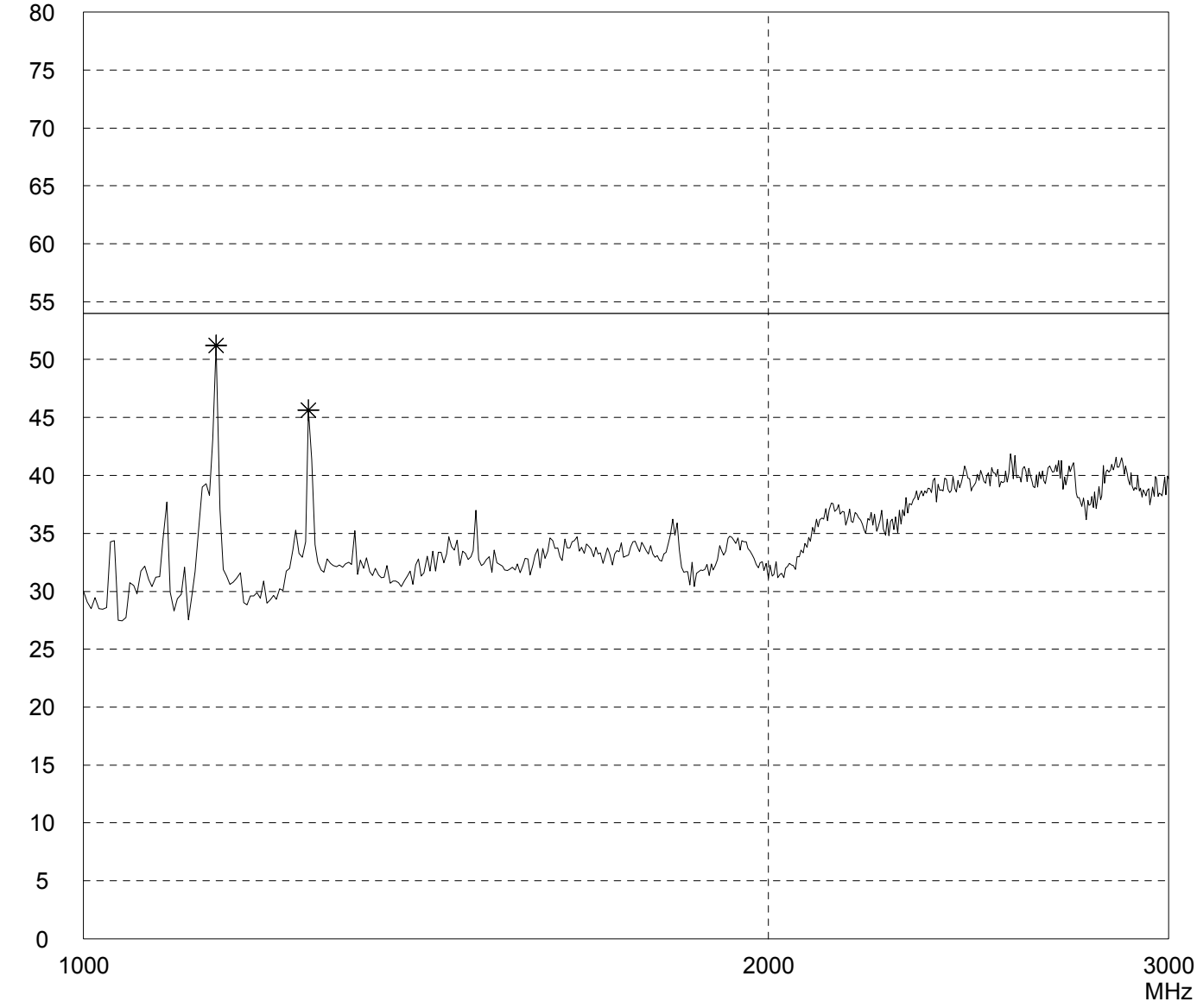
Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 1 GHz - 3 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: AC4490-1000	Comment: TX-Mode - Mid-Frequency - Note: with WHKS1000-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/03/2004 / Operator: J. Roidt	
Test performed: by hand / File name: default.emi	

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

dBµV/m — Limit1: FCC Part 15 — Transducer: VULB 9163



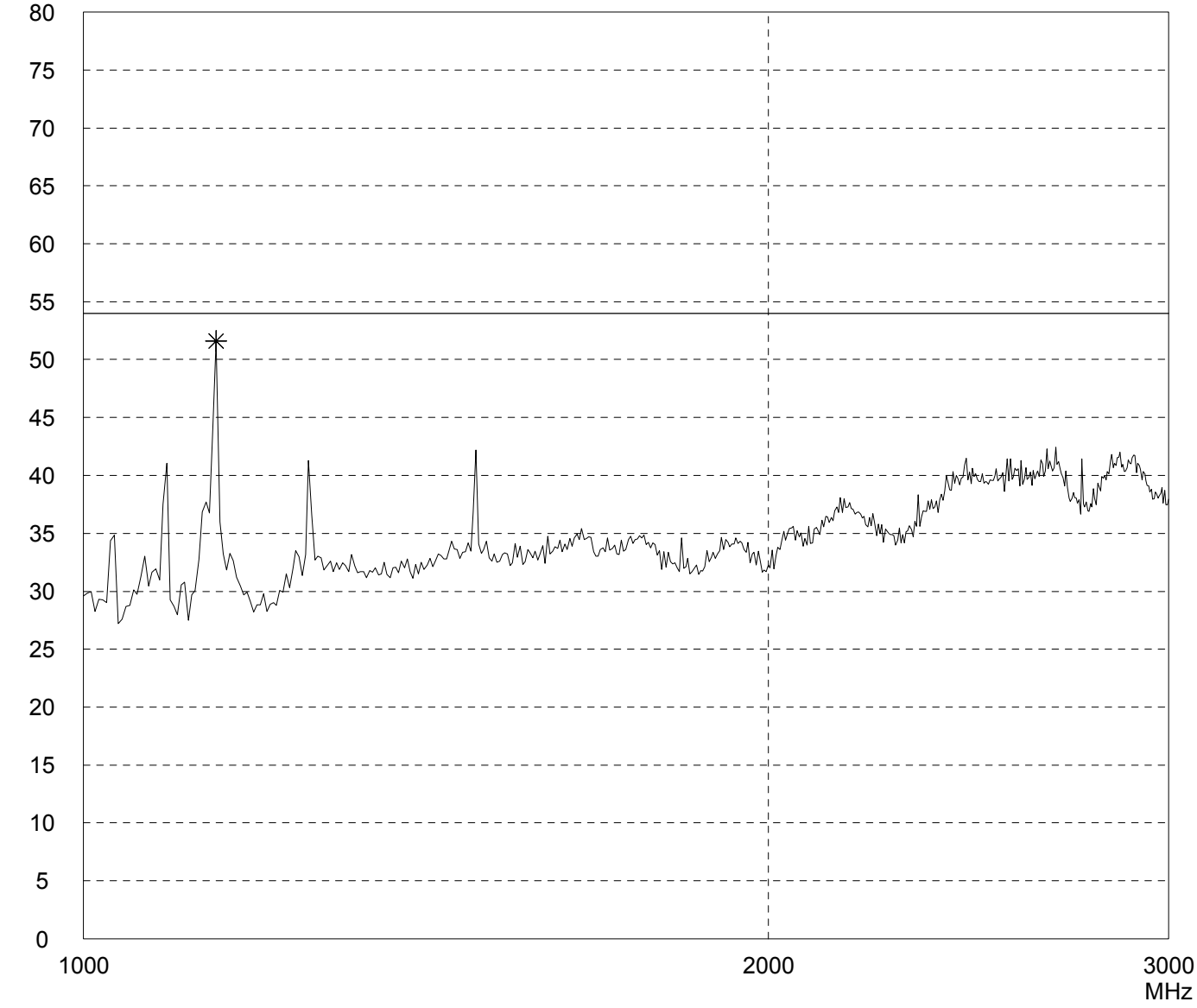
Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 1 GHz - 3 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: AC4490-1000	Comment: TX-Mode - Mid-Frequency - Note: with WHKS1000-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/03/2004 / Operator: J. Roidt	
Test performed: by hand / File name: default.emi	

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

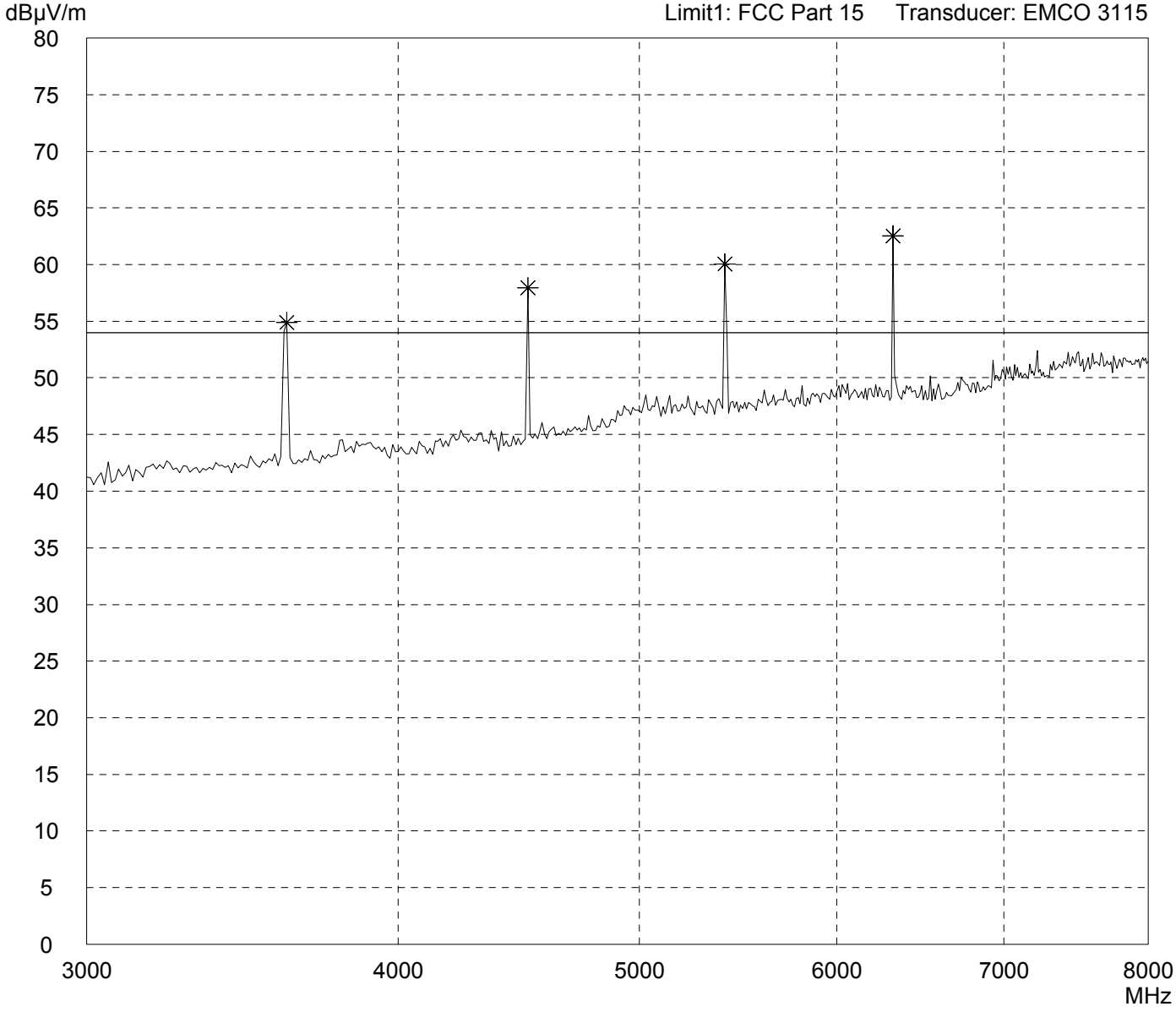
dBµV/m — Limit1: FCC Part 15 — Transducer: VULB 9163



Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 3 GHz - 8 GHz
acc. to FCC Part 15 (EMCO 3115)

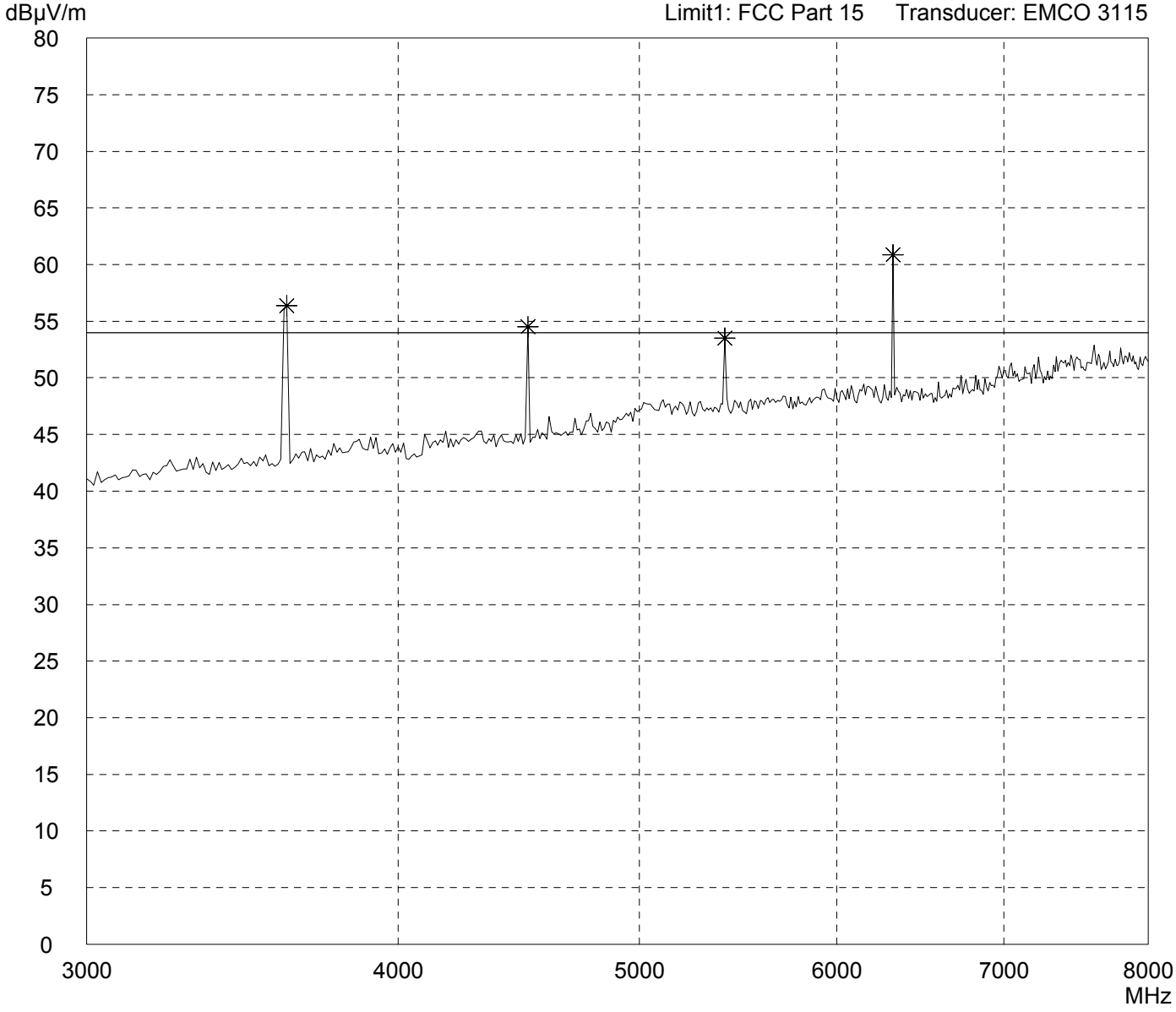
Model: AC4490-1000	Comment: TX-Mode - Low-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 3 GHz - 8 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: AC4490-1000	Comment: TX-Mode - Low-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	
Detector: Peak	List of values: Selected by hand

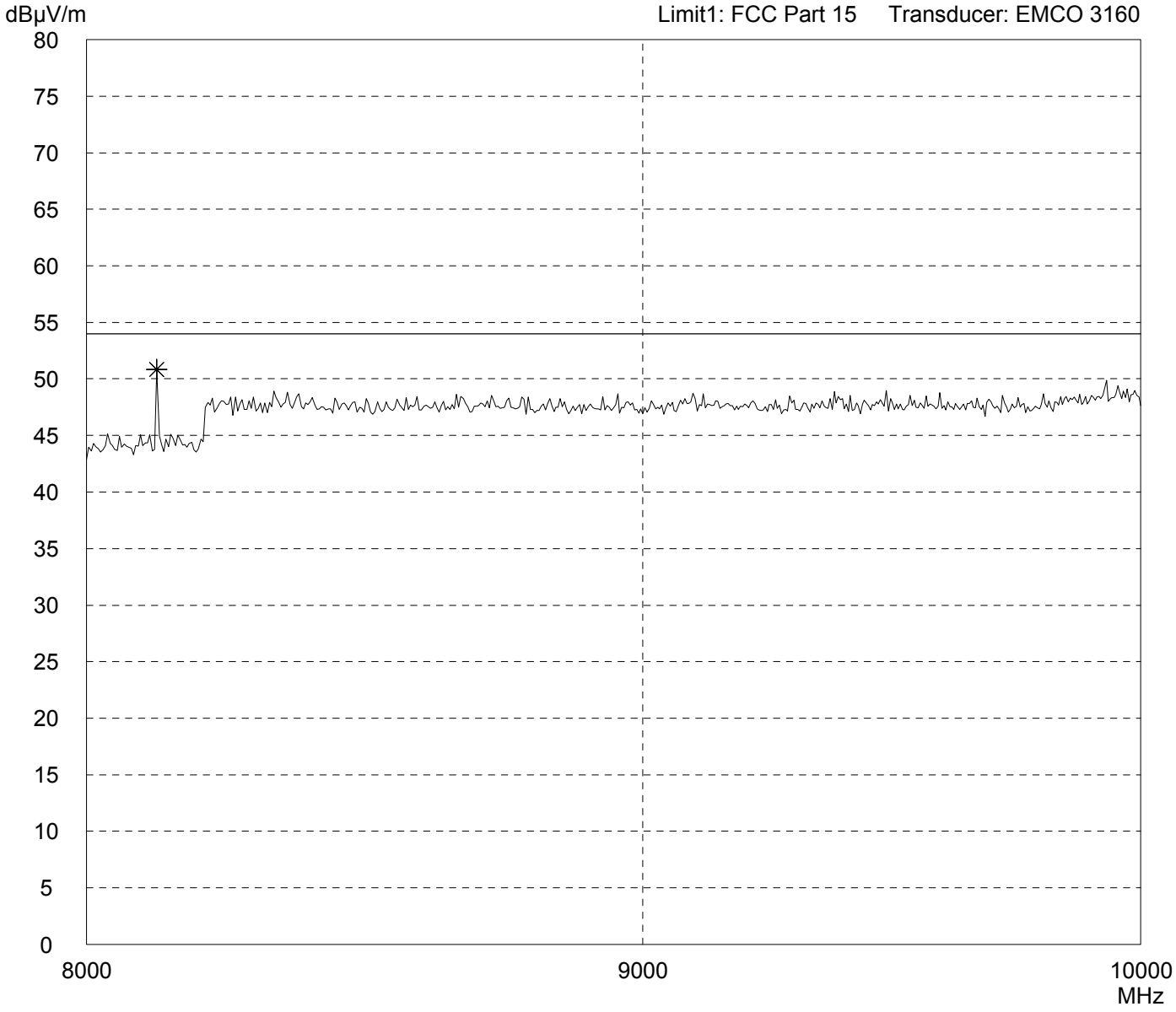


Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 8 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: AC4490-1000	Comment: TX-Mode - Low-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	

Detector: Peak	List of values: Selected by hand

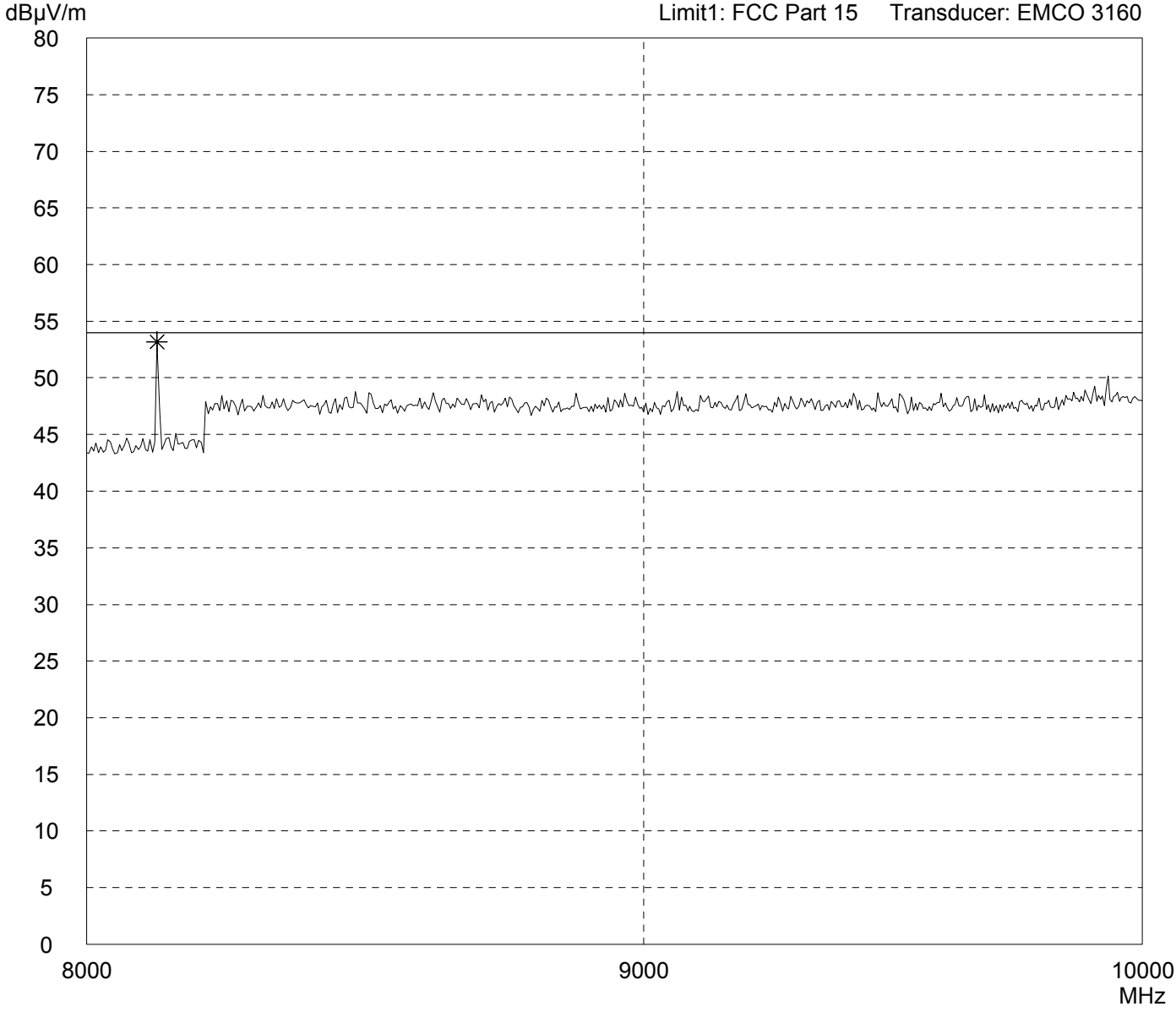


Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 8 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: AC4490-1000	Comment: TX-Mode - Low-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	

Detector: Peak	List of values: Selected by hand



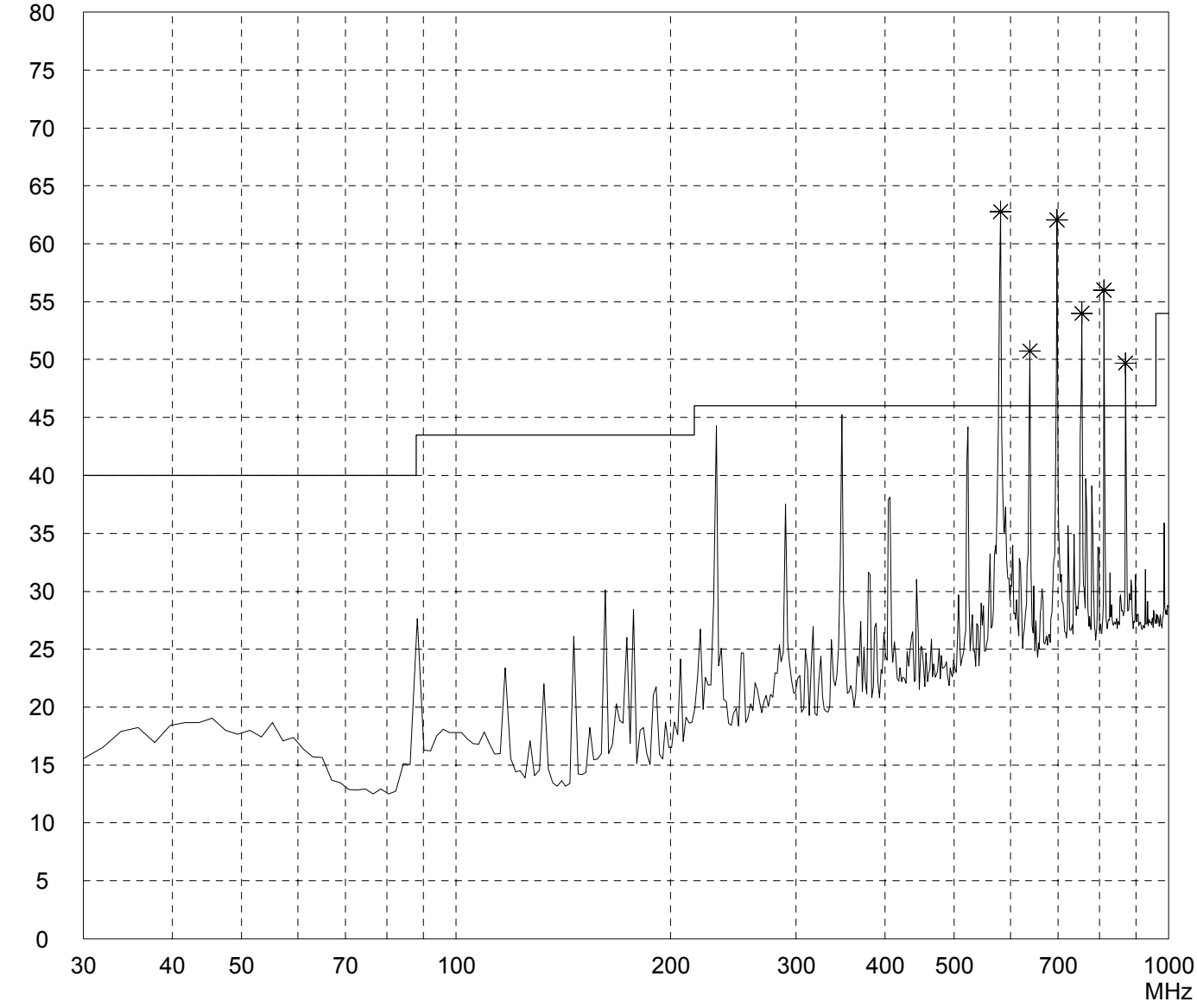
Result: Prescan	Project file: 56109-40084 Page of Pages

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

Model: AC4490-1000	Comment: TX Mode - High Frequency Notch Filter on Fundamental
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/02/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

dBµV/m

Limit1: FCC Part 15 Transducer: VULB 9163



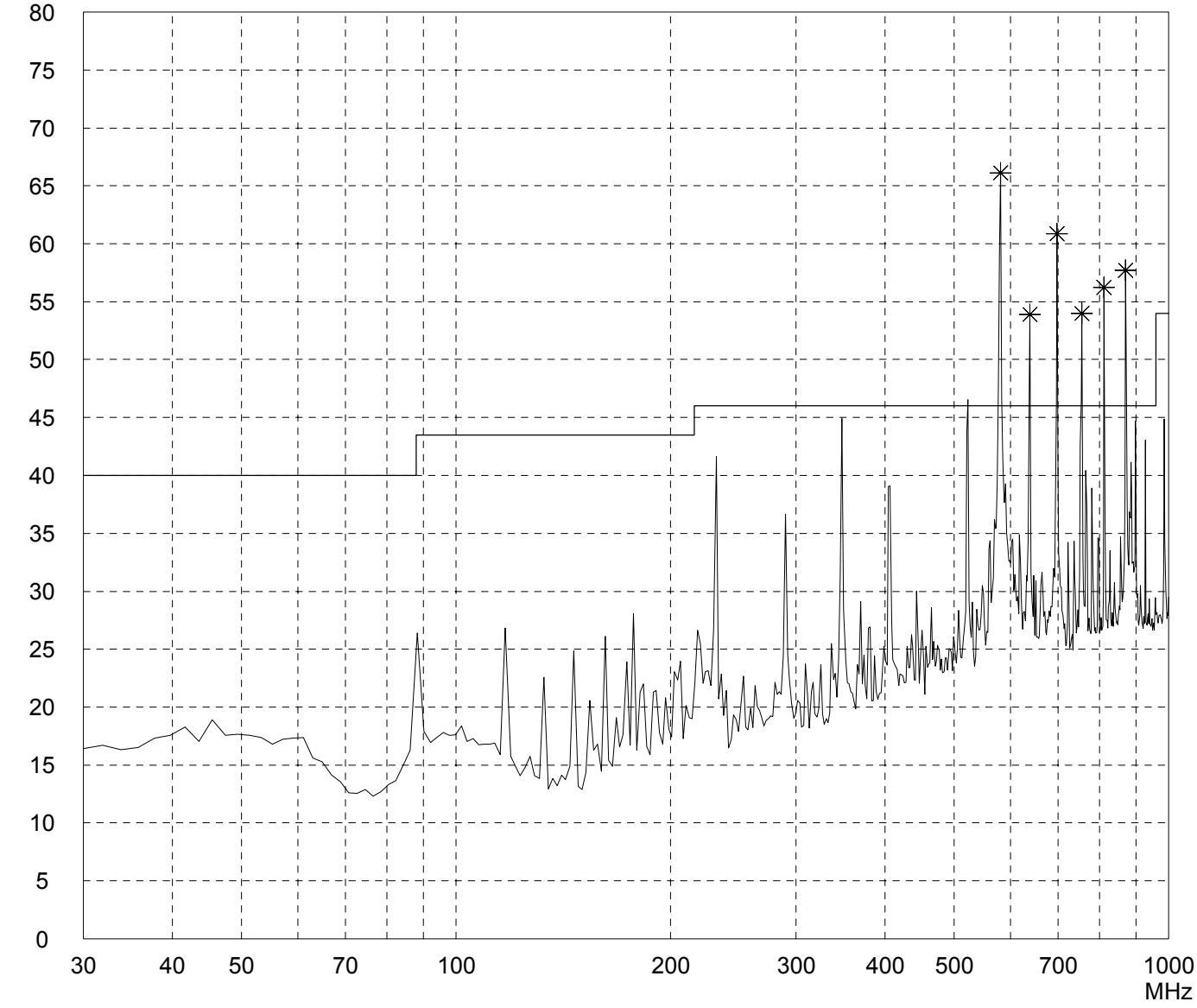
Result: Prescan	Project file: 56109-40084 Page of Pages

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

Model: AC4490-1000	Comment: TX Mode - High Frequency Notch Filter on Fundamental
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/02/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

dBµV/m

Limit1: FCC Part 15 Transducer: VULB 9163



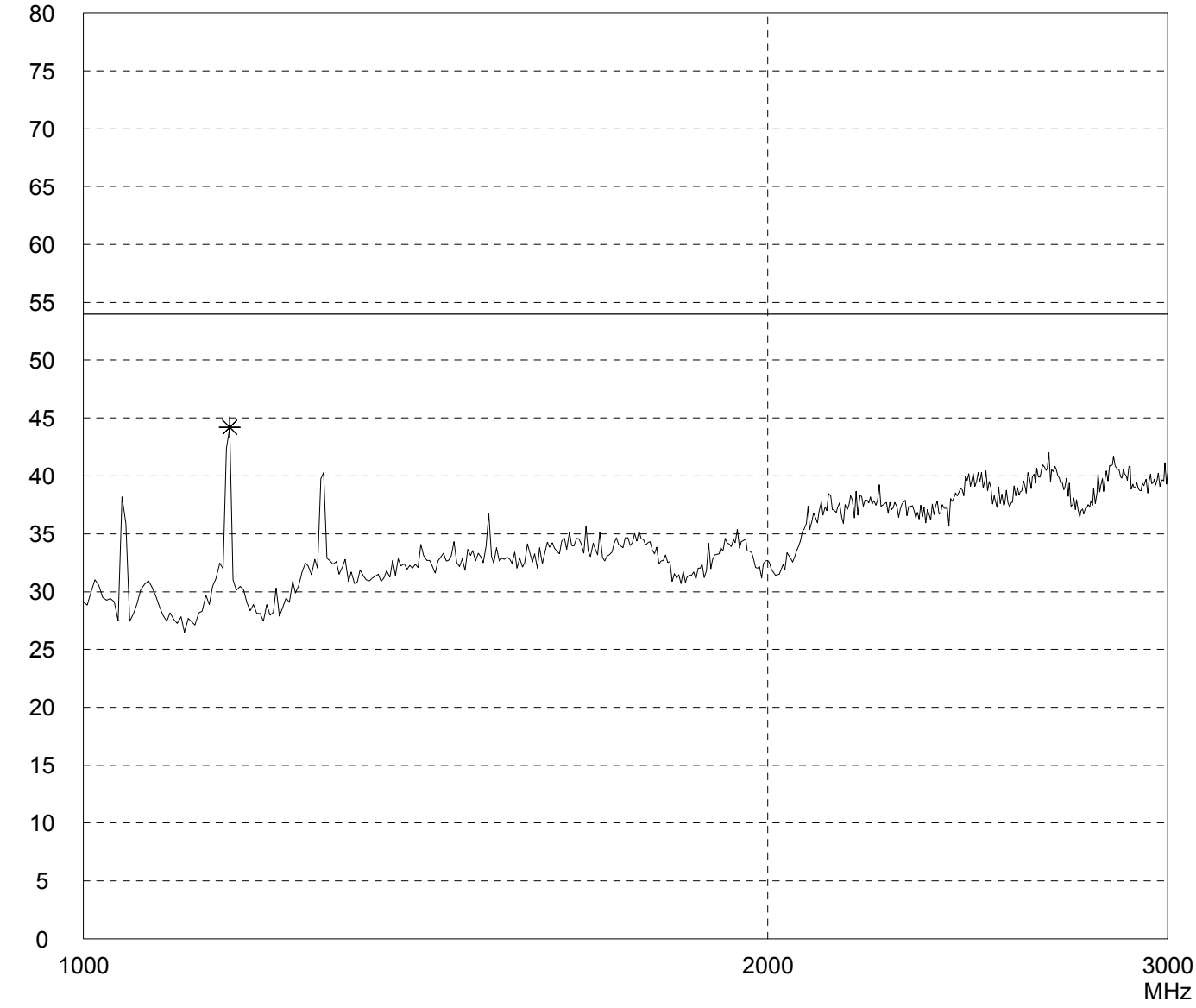
Result: Limit kept	Project file: 56109-40084 Page of Pages

Radiated Emission Test 1 GHz - 3 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: AC4490-1000	Comment: TX-Mode - High-Frequency - Note: with WHKS1000-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/03/2004 / Operator: J. Roidt	
Test performed: by hand / File name: default.emi	

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

dBµV/m — Limit1: FCC Part 15 — Transducer: VULB 9163



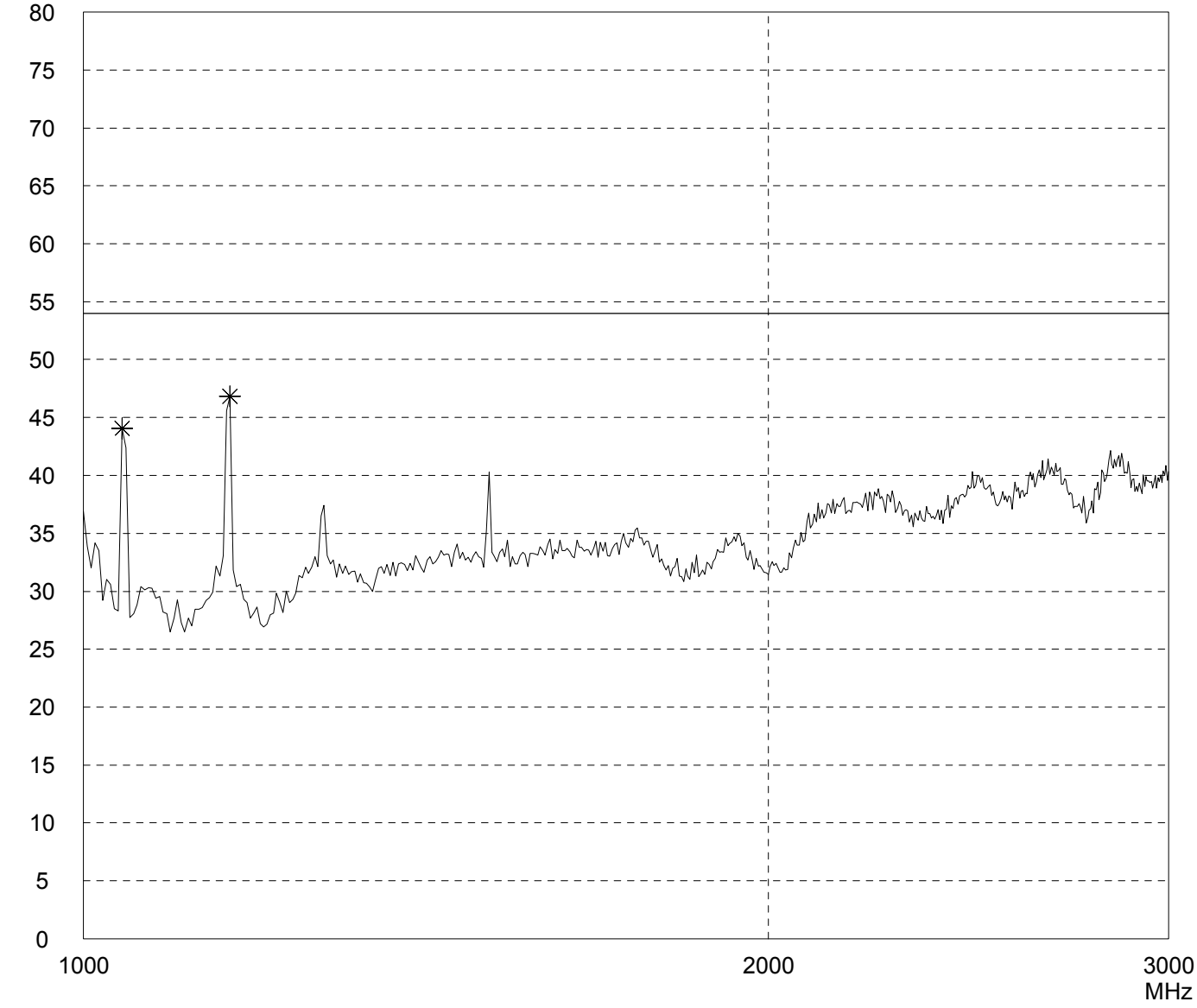
Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 1 GHz - 3 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: AC4490-1000	Comment: TX-Mode - High-Frequency - Note: with WHKS1000-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/03/2004 — Operator: J. Roidt	
Test performed: by hand — File name: default.emi	

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

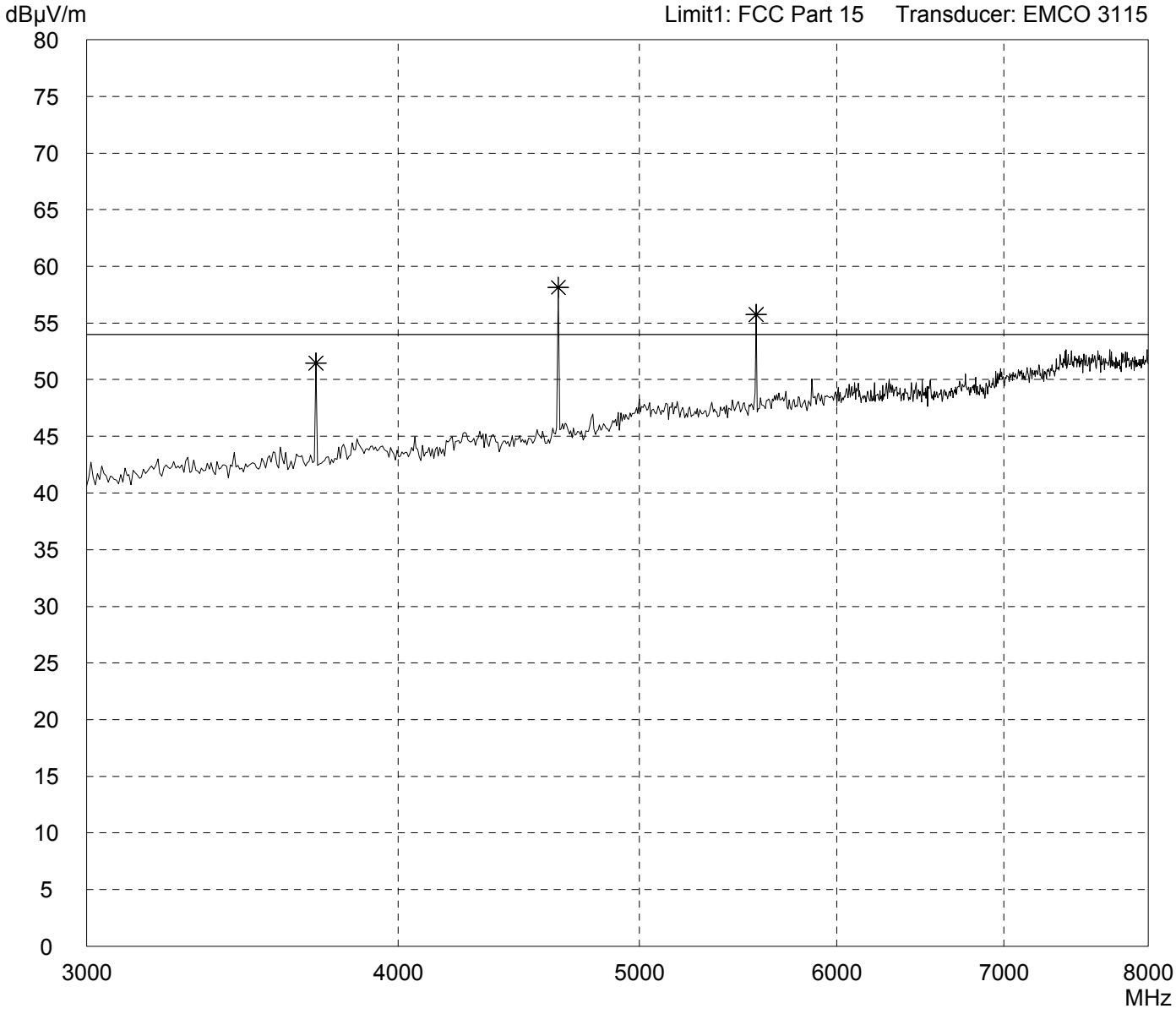
dBµV/m — Limit1: FCC Part 15 — Transducer: VULB 9163



Result: Prescan	Project file: 56109-40084 — Page of Pages

Radiated Emission Test 3 GHz - 8 GHz
acc. to FCC Part 15 (EMCO 3115)

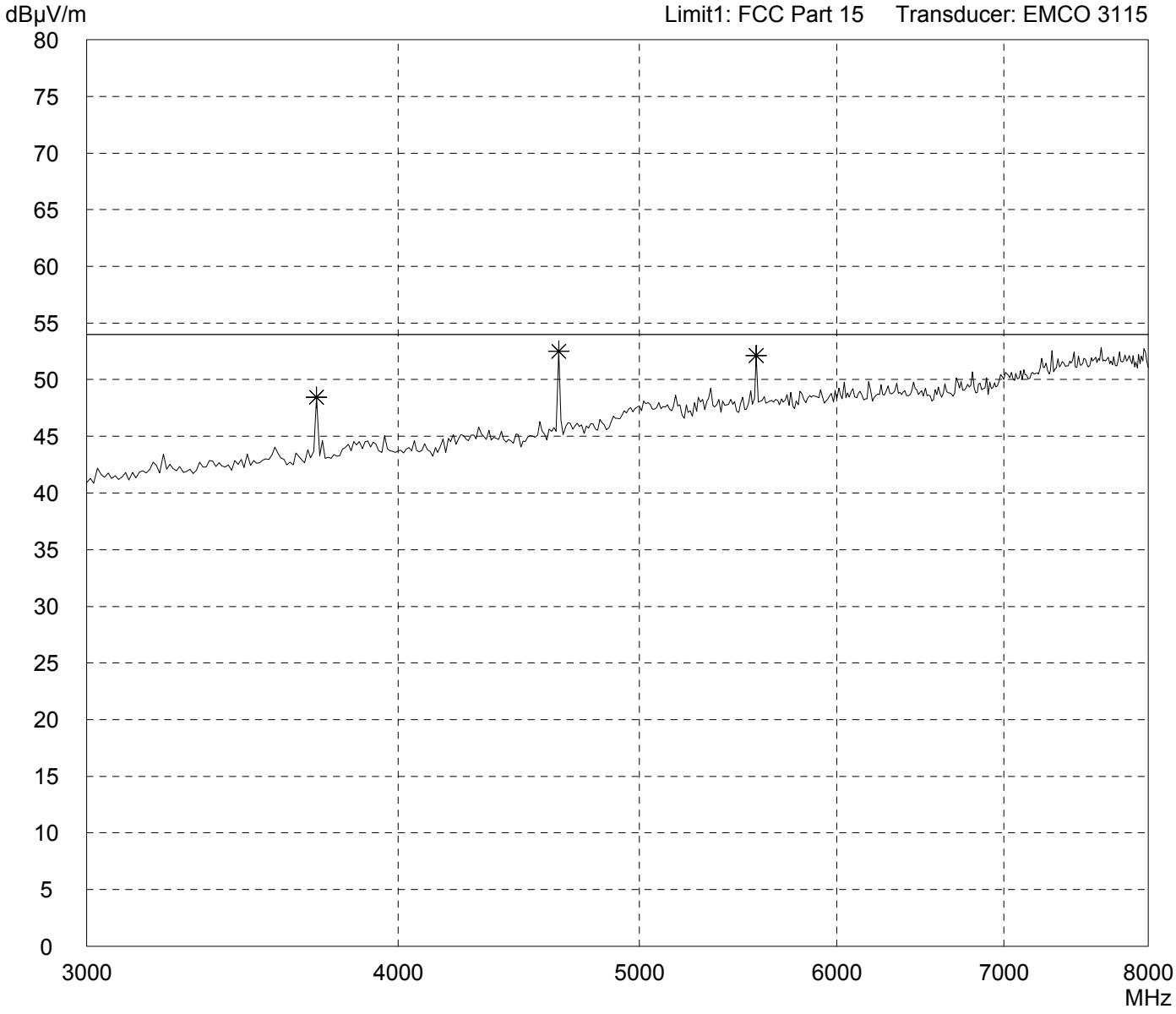
Model: AC4490-1000	Comment: TX-Mode - High-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/03/2004 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand



Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 3 GHz - 8 GHz
acc. to FCC Part 15 (EMCO 3115)

Model: AC4490-1000	Comment: TX-Mode - High-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/03/2004 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

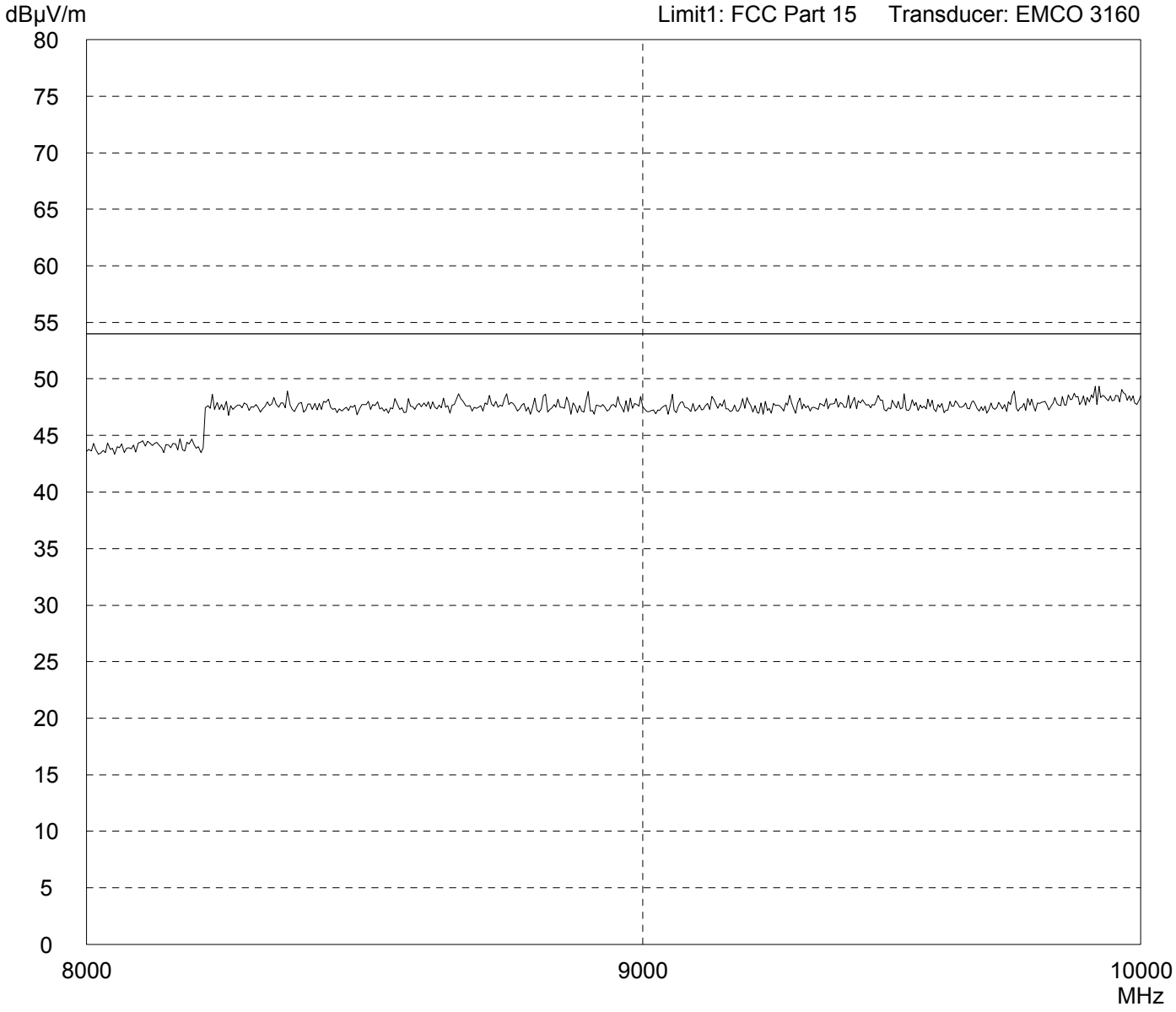


Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 8 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: AC4490-1000	Comment: TX-Mode - High-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	

Detector: Peak	List of values: Selected by hand

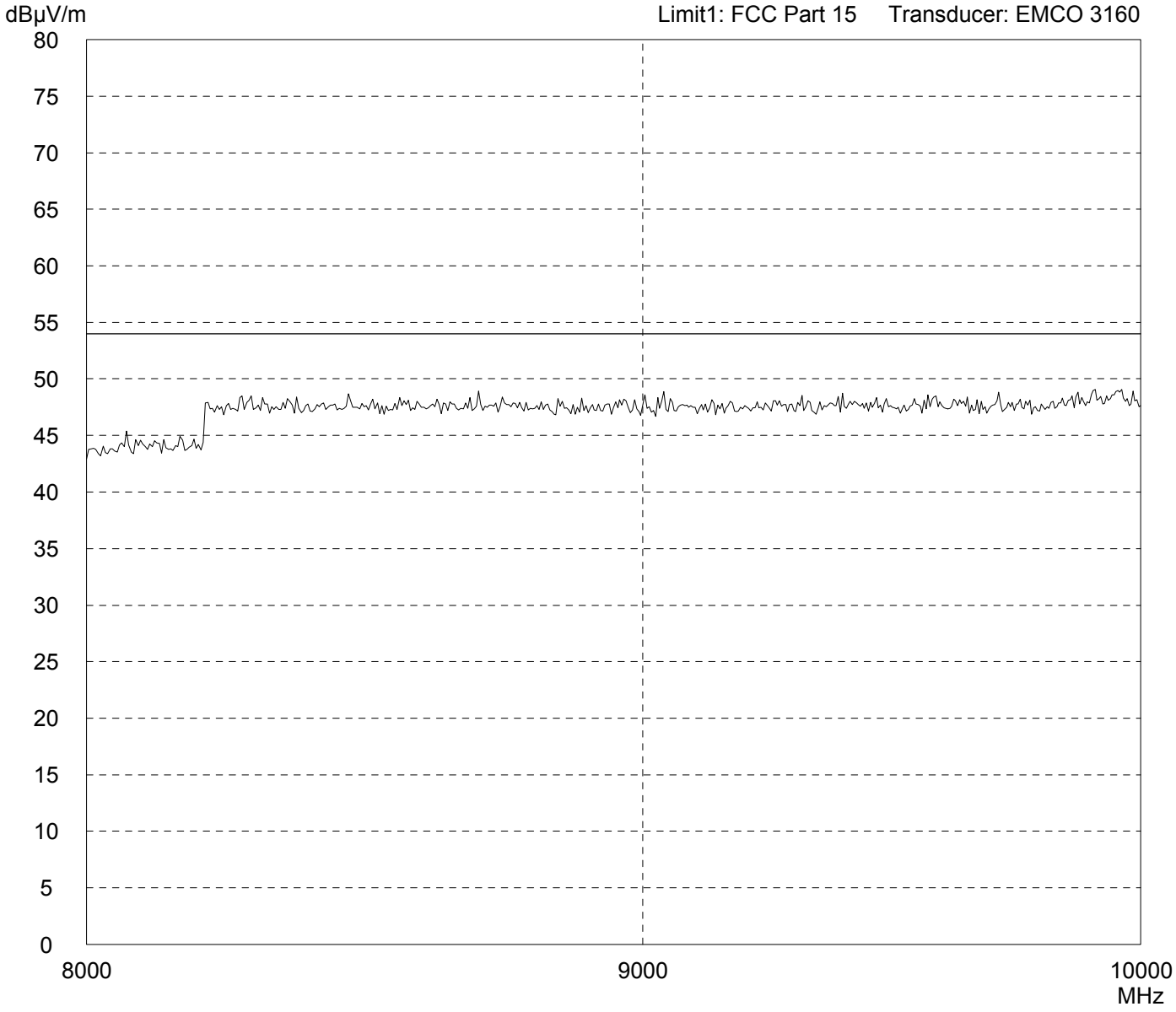


Result: Prescan	Project file: 56109-40084 Page of Pages

Radiated Emission Test 8 GHz - 10 GHz
acc. to FCC Part 15 (EMCO 3160)

Model: AC4490-1000	Comment: TX-Mode - High-Frequency - Note: with WHKM3/13G-10SS high-pass-filter
Serial no.: #1	
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 03/03/2004 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	

Detector: Peak	List of values: Selected by hand



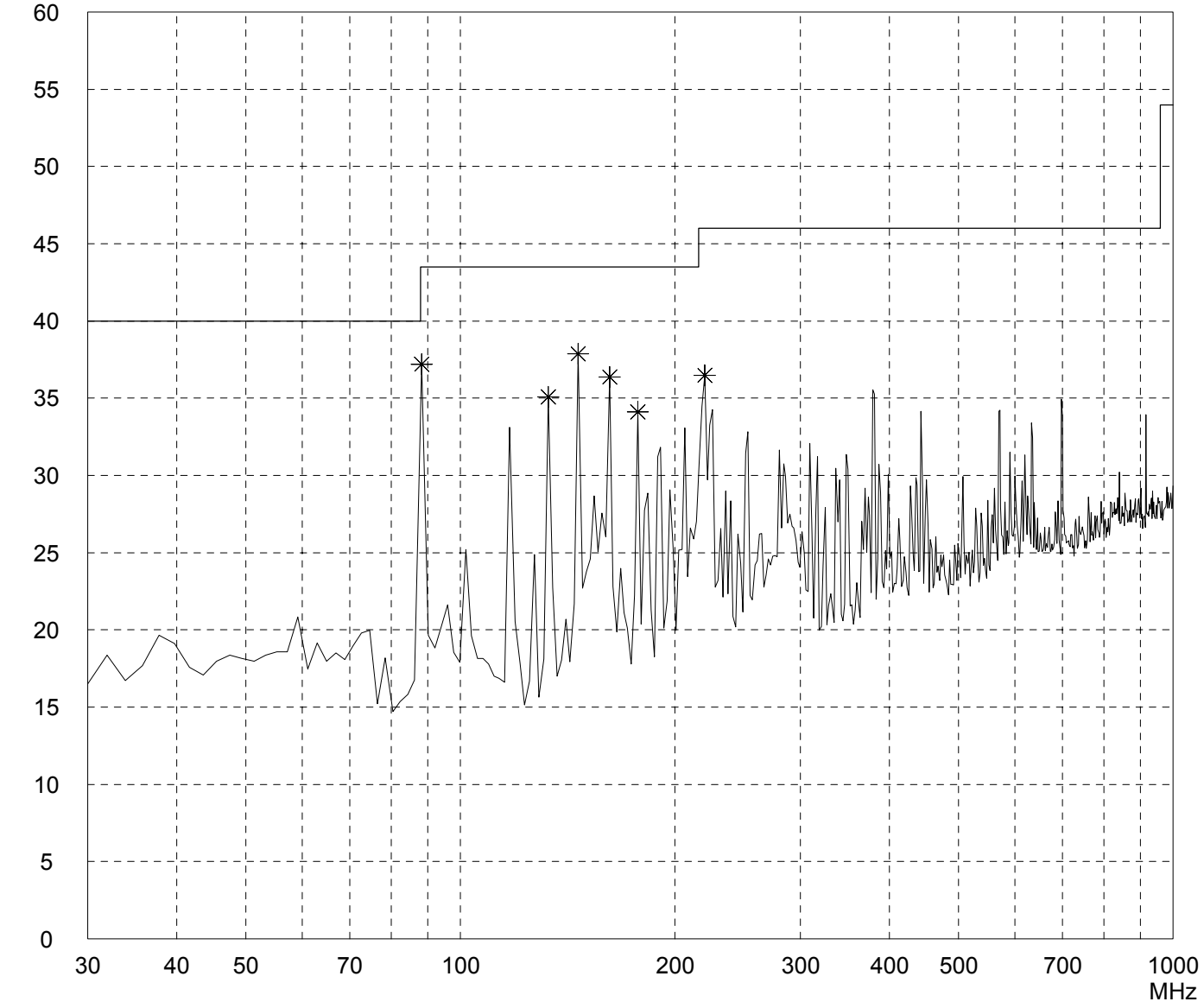
Result: Prescan	Project file: 56109-40084 Page of Pages

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

Model: AC4490-1000	Comment: RX at middle channel
Serial no.: #2	Antenna:
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 02/27/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	

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

dBµV/m — Limit1: FCC Part 15 — Transducer: VULB 9163



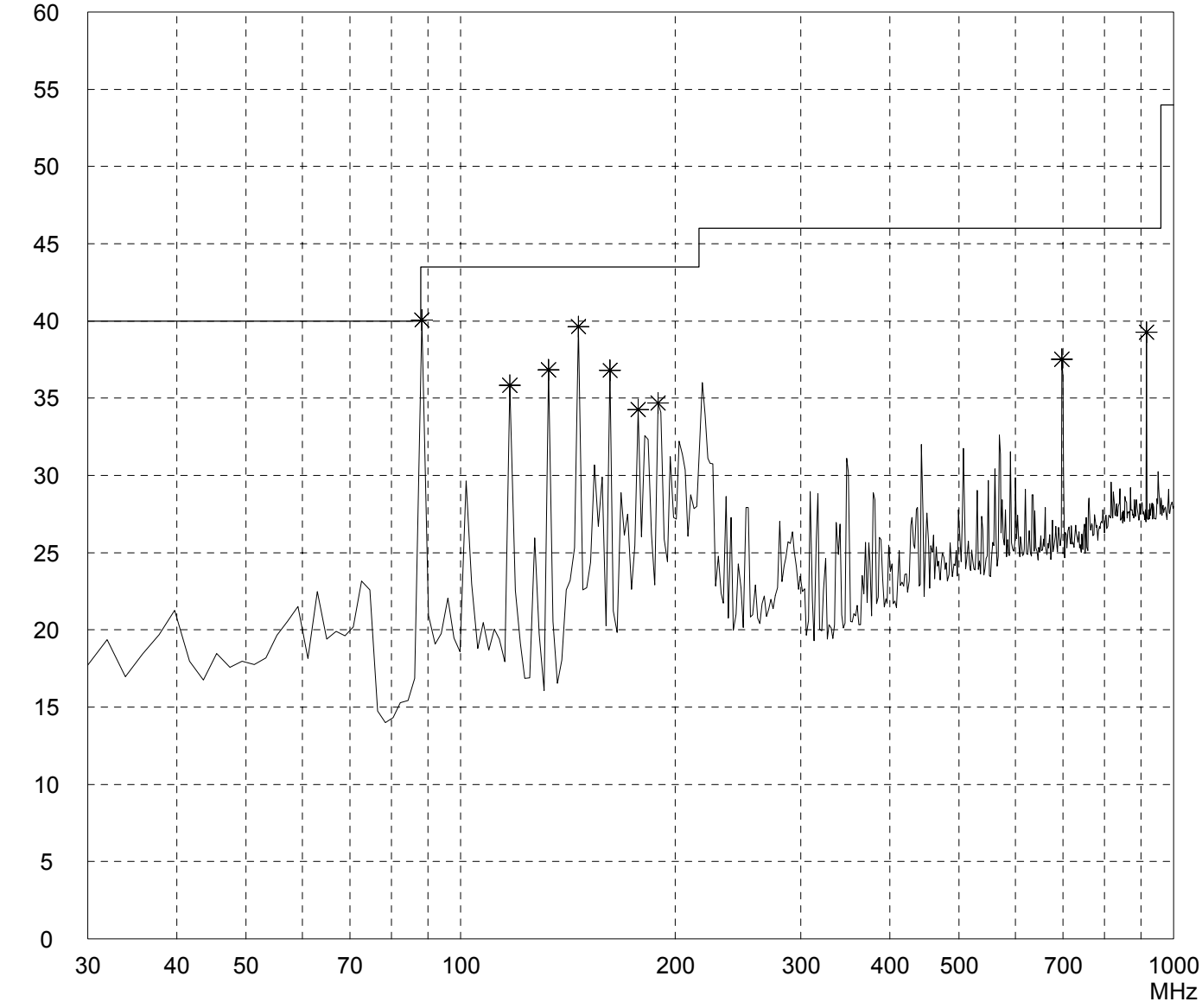
Result: Prescan	Project file: 56109-40084 Page of Pages

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

Model: AC4490-1000	Comment: RX at middle channel
Serial no.: #2	Antenna:
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 02/27/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	

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

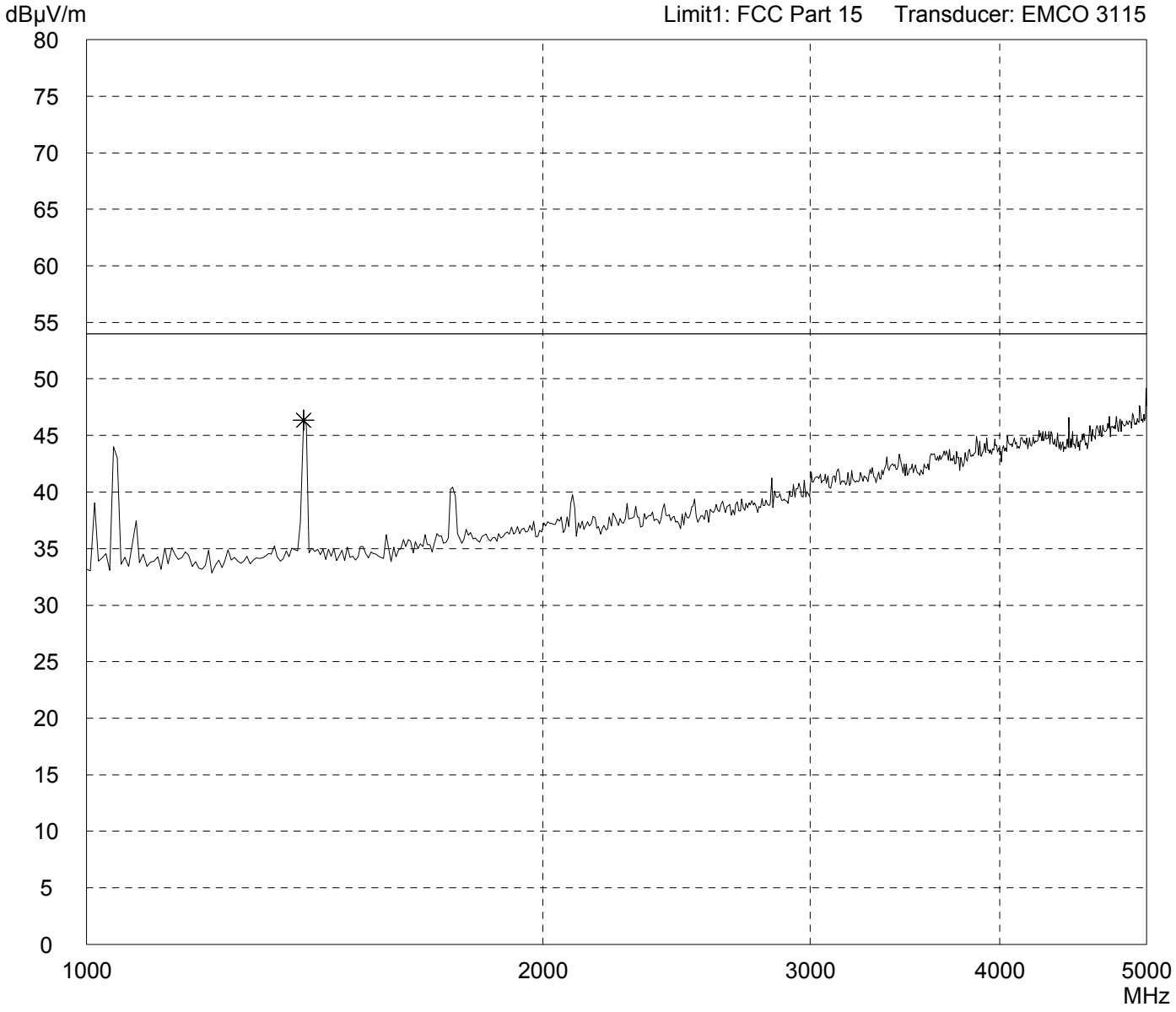
dBµV/m — Limit1: FCC Part 15 — Transducer: VULB 9163



Result: Prescan	Project file: 56109-40084 Page of Pages

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

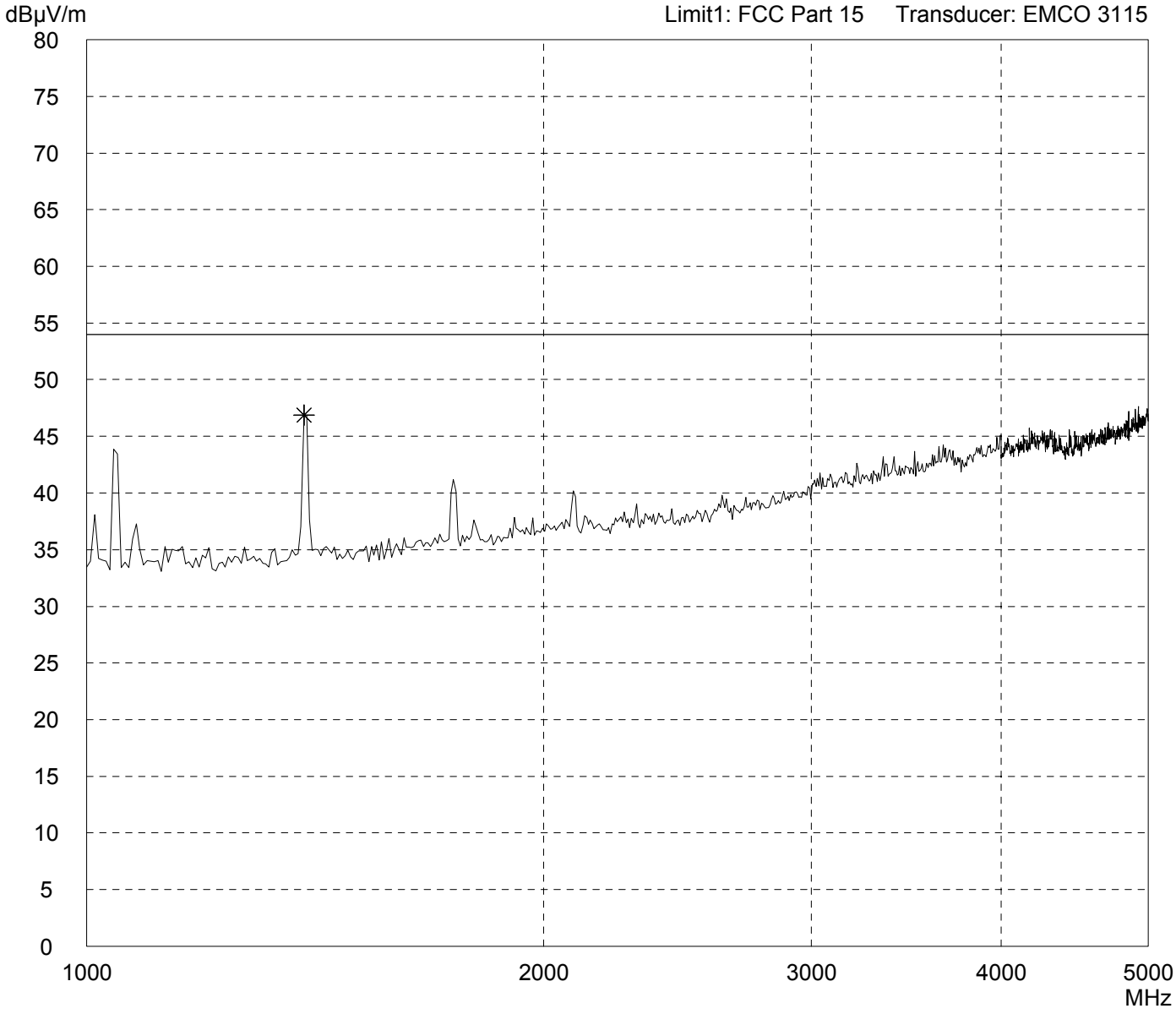
Model: AC4490-1000	Comment: RX at middle channel
Serial no.: #2	Antenna:
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 02/27/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand



Result: Limit kept	Project file: 56109-40084 Page of Pages

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

Model: AC4490-1000	Comment: RX at middle channel
Serial no.: #2	Antenna:
Applicant: AEROCOMM, Inc.	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 02/27/2004 / Operator: J. Roidt	
Test performed: automatically / File name: default.emi	
Detector: Peak	List of values: Selected by hand

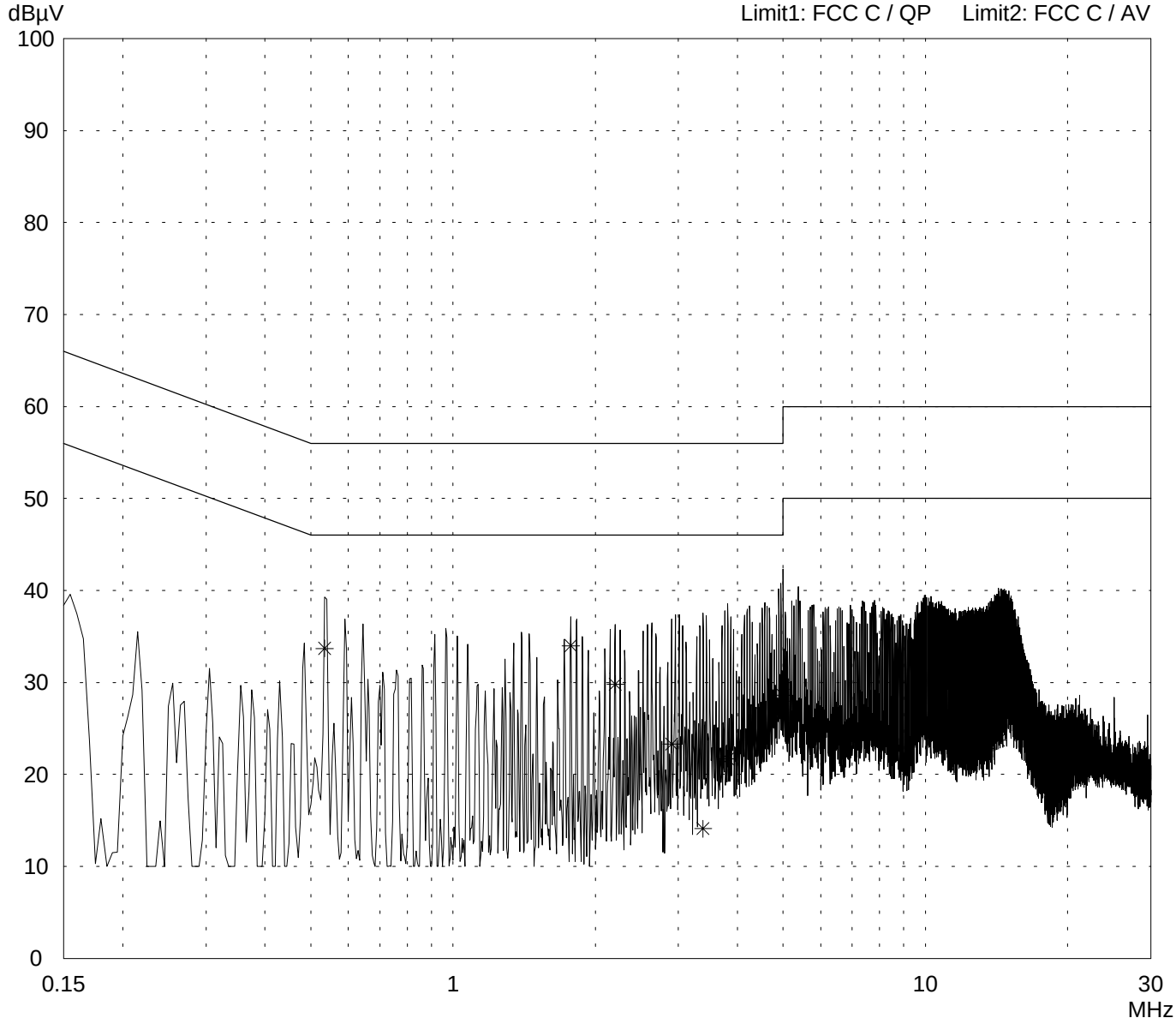


Result: Limit kept	Project file: 56109-40084 Page of Pages

Conducted Emission Test 150 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: AC4490-1000	Mode: - TX mode - Frequency Hopping
Serial no.: # 1	
Applicant: AEROCOMM, Inc.	
Test site: Shielded room, cabin no. 2	
Tested on: Linecord Phase L1	
Date of test: 03/03/2004 / Operator: M. Steindl	
Test performed: automatically / File name:	

Detector: Peak / Final Results: QP	Final results: 20 dB Margin 25 Subranges

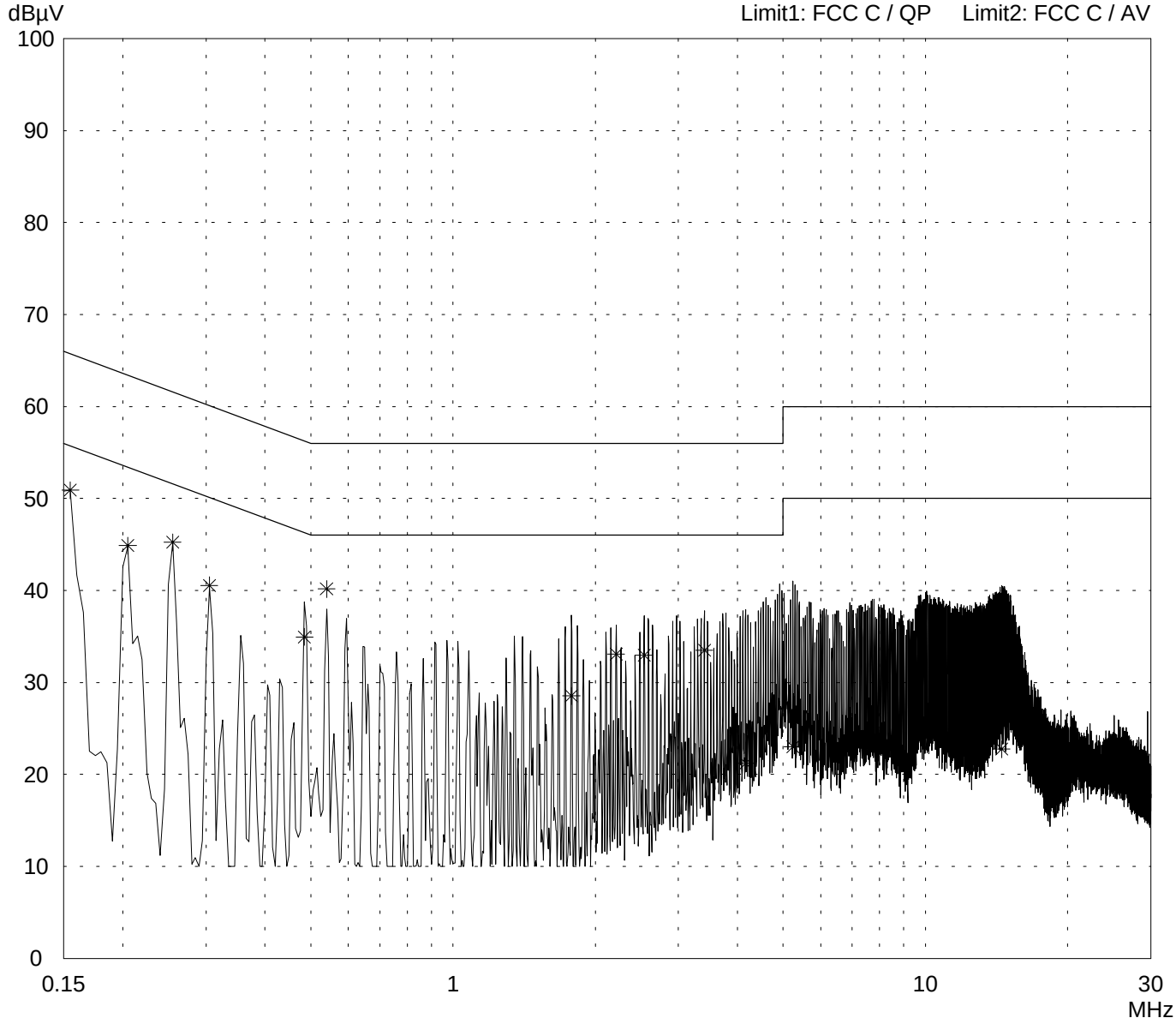


Result: Limit kept	Project file: 56109-40084 Page of Pages

Conducted Emission Test 150 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: AC4490-1000	Mode: - TX mode - Frequency Hopping
Serial no.: # 1	
Applicant: AEROCOMM, Inc.	
Test site: Shielded room, cabin no. 2	
Tested on: Linecord Phase N	
Date of test: 03/03/2004 / Operator: M. Steindl	
Test performed: automatically / File name:	

Detector: Peak / Final Results: QP	Final results: 20 dB Margin 25 Subranges



Result: Limit kept	Project file: 56109-40084 Page of Pages