Senton GmbH
Aeussere Fruehlingstrasse 45
D-94315 Straubing

Straubing, June 14, 2005

T E S T - R E P O R T

No. 55449-050287-1 (Edition 1)

for

RDHC-0502N0-01

TAG Reader Module

Applicant:	ACG Identification Technologies AT GmbH
Test Specifications:	FCC Code of Federal Regulations, CFR 47, Part 15, Sections 15.205, 15.207, 15.215 and 15.225

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1 Description of the Equipment Under Test (EUT)

General data of EUT	
Type designation[1]:	RDHC-0502N0-01
Parts[2]:	
Serial number(s):	1005000488
Manufacturer:	ACG Identification Technologies AT GmbH
Type of equipment:	TAG Reader Module
Version:	As delivered
FCC ID:	---
Additional parts/accessories:	

Technical data of EUT		
Application frequency range:	13.110 - 14.010 MHz	
Frequency range:	13.553 - 13.567 MHz	
Operating frequency:	13.56 MHz	
Type of modulation:	ASK	
Pulse train:	---	
Pulse width:	---	
Number of RF-channels:	1	
Channel spacing:	Not Applicable	
Designation of emissions[3]:	10K0A1D	
Type of antenna:	Integrated loop on printed board	
Size/length of antenna:	65 x 40 mm	
Connection of antenna:	☐ detachable	☒ not detachable
Type of power supply:	DC supply	
Specifications for power supply:	nominal voltage: minimum voltage: maximum voltage:	5.00 V 4.50 V 5.50 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):	ACG Identification Technologies AT GmbH Parkring 1 A-8074 Grambach Austria
Contact person:	Mr. Erich Rohrhofer
Contract identification:	Order no BF05-059
Receipt of EUT:	13 June 2005
Date(s) of test:	13 - 14 June 2005
Note(s):	Mr. List and Mr. Schweiger representing the applicant attended all testings.

Report details	
Report number:	55449-050287-1
Edition:	1
Issue date:	June 14, 2005

3 Identification of the Test Laboratory

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

4 Summary

Summary of test results
The tested sample complies with the requirements set forth in the **Code of Federal Regulations CFR 47, Part 15, Sections 15.205, 15.207, 15.215 and 15.225** of the Federal Communication Commission (FCC).

Personnel involved in this report	
Laboratory Manager:	 Mr. Johann Roidt
Responsible for testing:	 Mr. Martin Steindl
Responsible for test report:	Mr. Martin Steindl

5 Operation Mode and Configuration of EUT

Operation Mode(s)
- Transmitting continuously without TAG
- Reading TAG continuously

Configuration(s) of EUT
The EUT was tested as module. For testing purposes the power supply of the EUT was taken from a USB-interface of a laptop-PC.

List of ports and cables

Port	*Description*	*Classification*[4]	*Cable type*	*Cable length*
1	DC supply	dc power	Shielded	
2	RS 232 interface	signal/control port	Shielded	

List of devices connected to EUT

Item	*Description*	*Type Designation*	*Serial no. or ID*	*Manufacturer*
1	DELL Latitude	Laptop PC		DELL

List of support devices

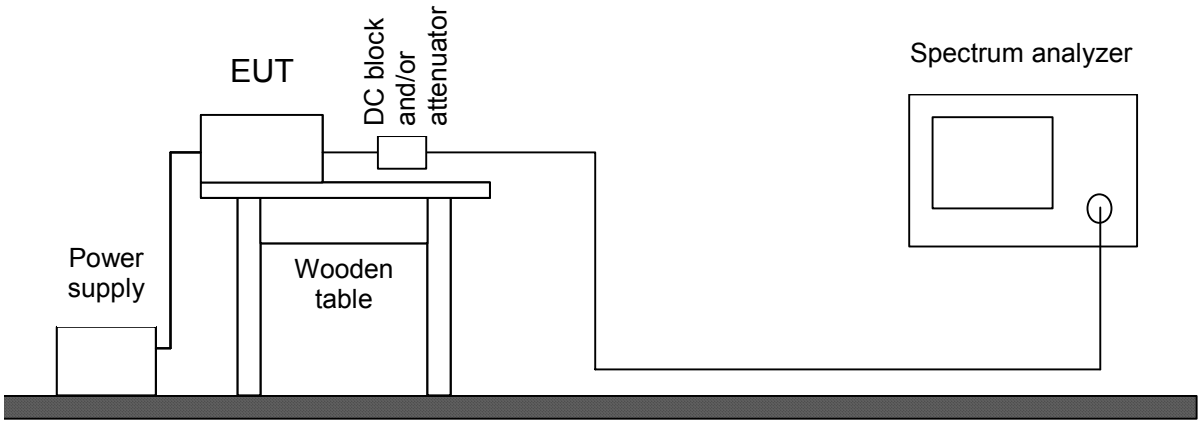
Item	*Description*	*Type Designation*	*Serial no. or ID*	*Manufacturer*
1	Mifare 1k	TAG		

[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) ANSI C63.4, annex H.6
Guide:	ANSI C63.4 / IC RSS-210 Issue 5, section 5.9.1
Measurement setup:	☐ Conducted: See below ☒ Radiated: Radiated Emission Measurement 9 kHz to 30 MHz (6.3)
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).	



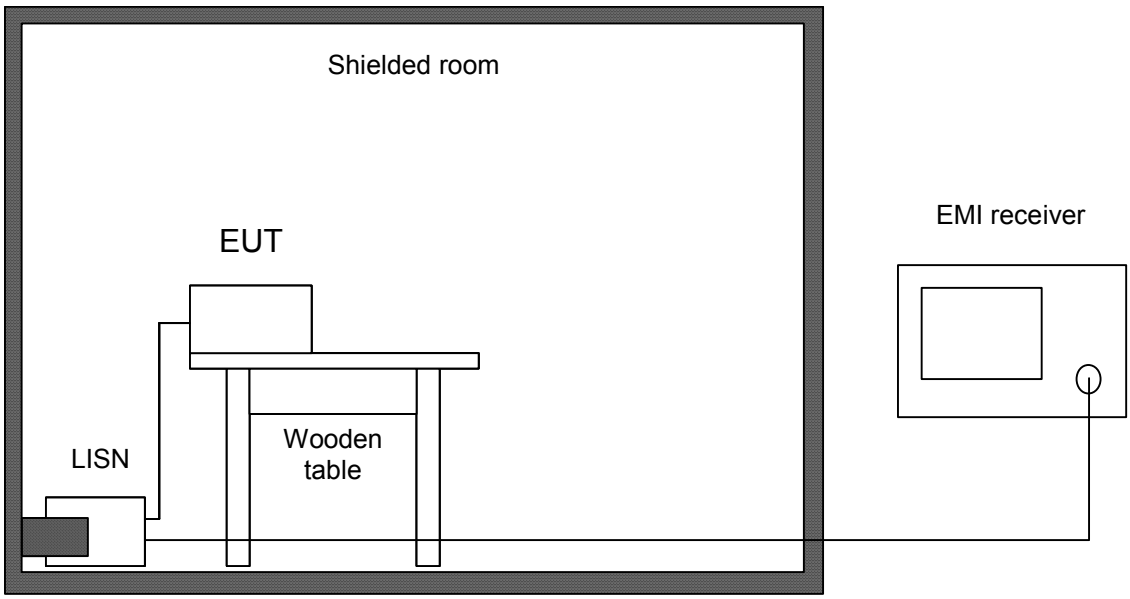
6.2 Conducted AC Powerline Emission

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, section 15.207
Guide:	ANSI C63.4 / CISPR 22

Conducted emission tests in the frequency range 150 kHz to 30 MHz are performed using Line Impedance Stabilization Networks (LISNs). To simplify testing with quasi-peak and average detector the following procedure is used:

First the whole spectrum of emission caused by the equipment under test (EUT) is recorded with detector set to peak using CISPR bandwidth of 10 kHz. After that all emission levels having less margin than 10 dB to or exceeding the average (CFR 47 Part 15) or quasi-peak (IC RSS-210) limit are retested with detector set to quasi-peak.
If average limit is kept with quasi-peak levels no additional scan with average detector is necessary. In cases of emission levels between quasi-peak and average limit an additional scan with detector set to average is performed.

According to ANSI C63.4, section 13.1.3.1, testing of intentional radiators with detachable antenna shall be performed using a suitable dummy load connected to the antenna output terminals. Otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended.
Testing with dummy load may be necessary to distinguish (unintentional) conducted emissions on the supply lines from (intentional) emissions radiated by the antenna and coupling directly to supply lines and/or LISN. Usage of dummy load has to be stated in the appropriate test record(s) and notes should be added to clarify the test setup.



Test instruments used:

Used	Type	Model	Serial No. or ID	Manufacturer
☒	EMI receiver	ESHS 10	860043/016	Rohde & Schwarz
☒	LISN	ESH3-Z5	862770/021	Rohde & Schwarz
☐	LISN	ESH3-Z5	830952/025	Rohde & Schwarz
☐	Artificial mains network	ESH 2-Z5	842966/004	Rohde & Schwarz
☐	Shielded room	No. 1	1451	Albatross Projects
☒	Shielded room	No. 4	3FD-100 544	Euroshield

6.3 Radiated Emission Measurement 9 kHz to 30 MHz

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.205, 15.215(b) and 15.225(a)-(d)
Guide:	ANSI C63.4

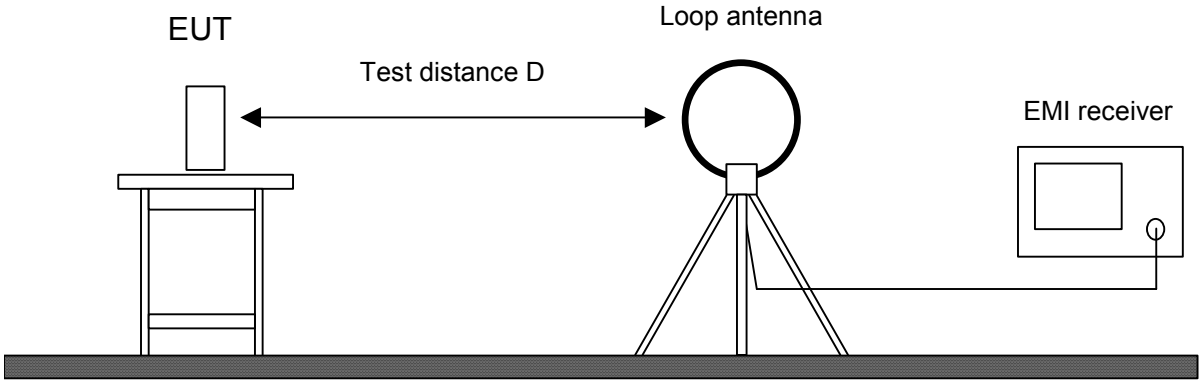
Radiated emission in the frequency range 9 kHz to 30 MHz is measured using an active loop antenna. First the whole spectrum of emission caused by the equipment is recorded at a distance of 3 meters in a fully or semi anechoic room with the detector of the spectrum analyzer or EMI receiver set to peak. This configuration is also used for recording the spectrum of intentional radiators.

Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing.

EUT is rotated all around to find the maximum levels of emissions. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions. Due to fixed polarization of the loop antenna, if possible, the EUT is put into a position that gives the maximum levels of emissions.

Final measurement is performed at a test distance D of 30 meters using an open field test site. In case the regulation requires testing at other distances, the result is extrapolated by either making measurements at an additional distance D of 10 meters to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). In cases of very low emissions measurements are performed at shorter distances and results are extrapolated to the required distance. The provisions of CFR 47 Part 15 sections 15.31(d) and (f)(2) apply. According to CFR 47 Part 15 section 15.209(d) final measurement is performed with detector function set to quasi-peak except for the frequency bands 9 to 90 kHz and 110 to 490 kHz where, for non-pulsed operation, average detector is employed.

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.



Test instruments used:

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

6.4 Radiated Emission in Fully or Semi Anechoic Room

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.205(b) and 15.225(d)
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.

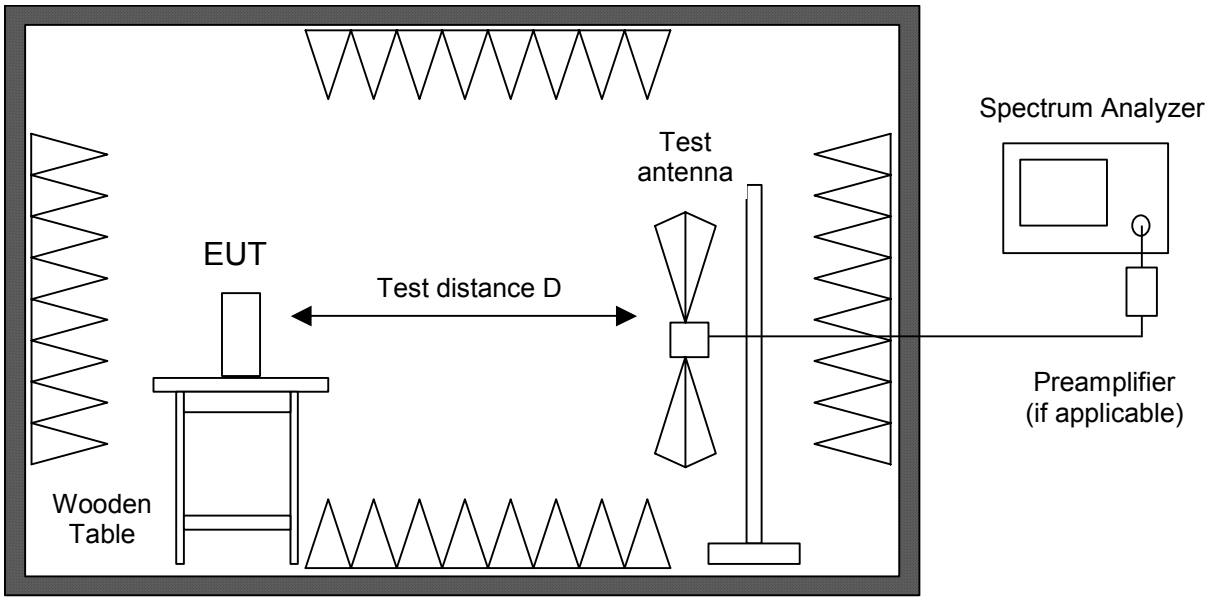
All tests below 18 GHz are performed at a test distance D of 3 meters. For higher frequencies the test distance is reduced (e.g. to 1 meter) due to the sensitivity of the measuring instrument(s) and the test results are calculated according to CFR 47 Part 15 section 15.31(f)(1) using an extrapolation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

6.5 Radiated Emission at Open Field Test Site

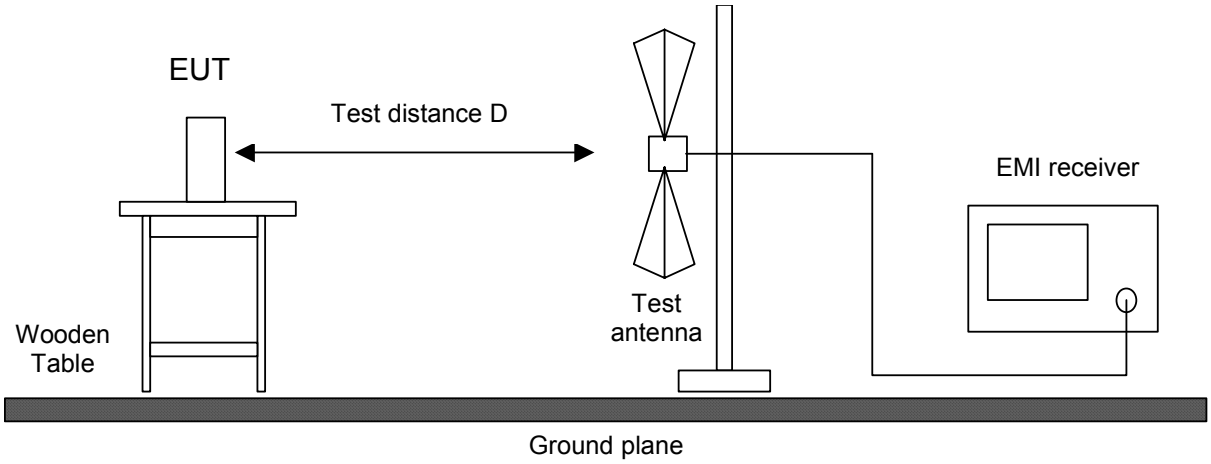
Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.205(b) and 15.225(d)
Guide:	ANSI C63.4

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	881414/009	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

6.6 Carrier Frequency Stability

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, section 15.225(e)
Guide:	ANSI C63.4

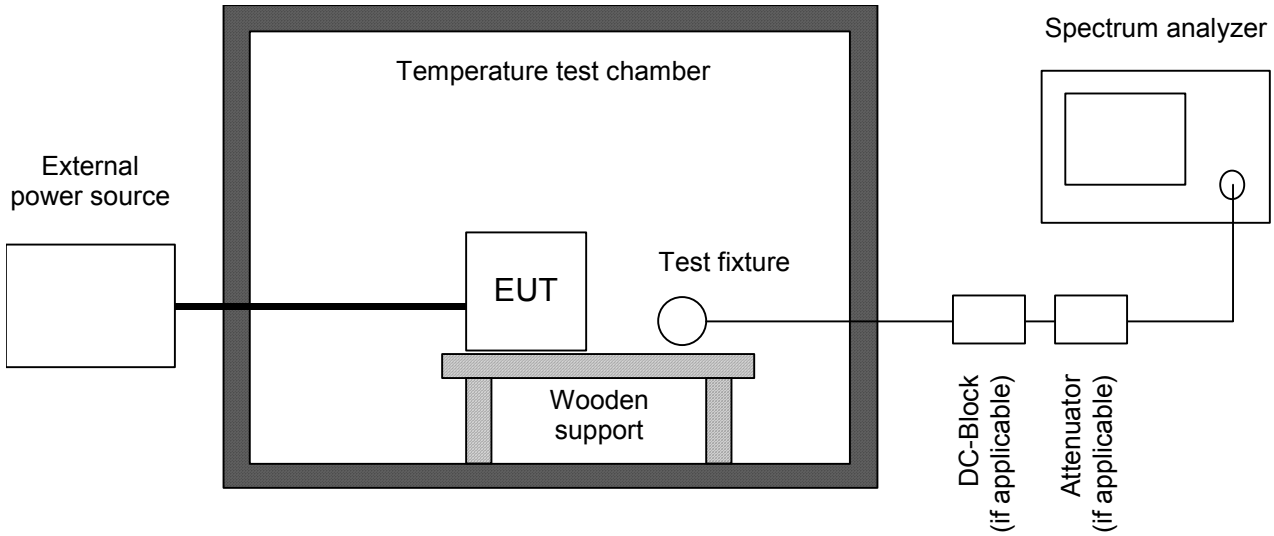
The frequency tolerance of the carrier signal is measured over a temperature variation of -20 °C to +50 °C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 °C.

If the EUT provides an antenna connector the spectrum analyzer is connected to this port. 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). In cases where the EUT does not provide an antenna connector a test fixture is used.

For battery operated equipment, the test is performed using a new battery. Alternatively, an external supply voltage can be used and is at least set to:

- the maximum battery voltage as delivered by a new battery or 115% of the battery nominal voltage
- the battery nominal voltage
- 85% of the battery nominal voltage
- the battery operating end point voltage which shall be specified by the equipment manufacturer

The EUT is operating providing an unmodulated carrier. The peak detector of the spectrum analyzer is selected and resolution as well as video bandwidth are set to values appropriate to the shape of the spectrum of the EUT. The frequency counter mode of the spectrum analyzer is used to maximize the accuracy of the measured frequency tolerance.
If an unmodulated carrier is not available a significant and stable point on the spectrum is selected and the span is reduced to a value that delivers an accuracy which shall be better than 1% of the maximum frequency tolerance allowed for the carrier signal. This method may be performed as long as the margin to the frequency tolerance allowed is larger than the uncertainty of the measured frequency tolerance.

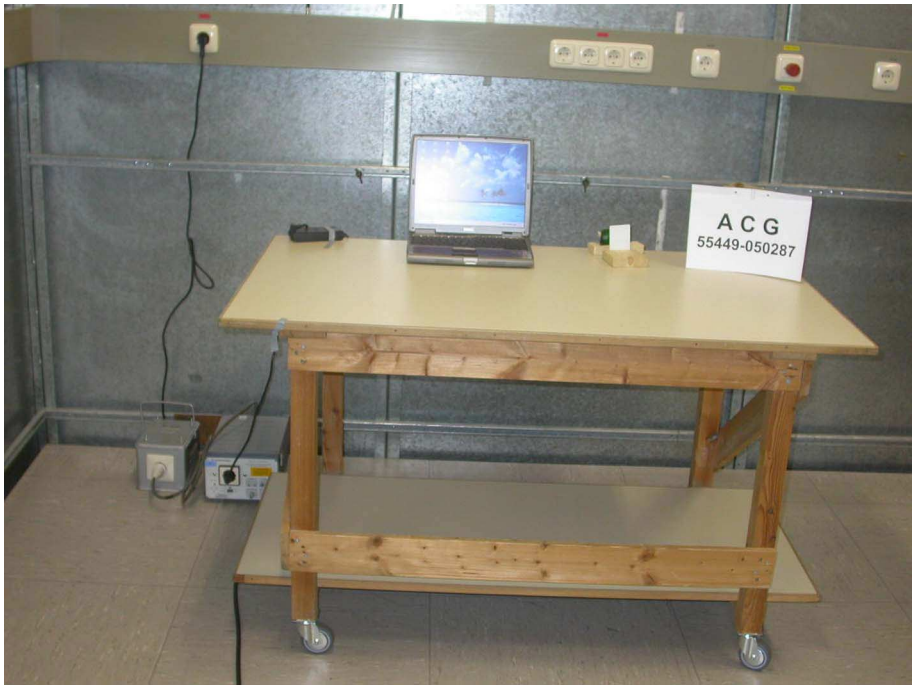


Test instruments used:

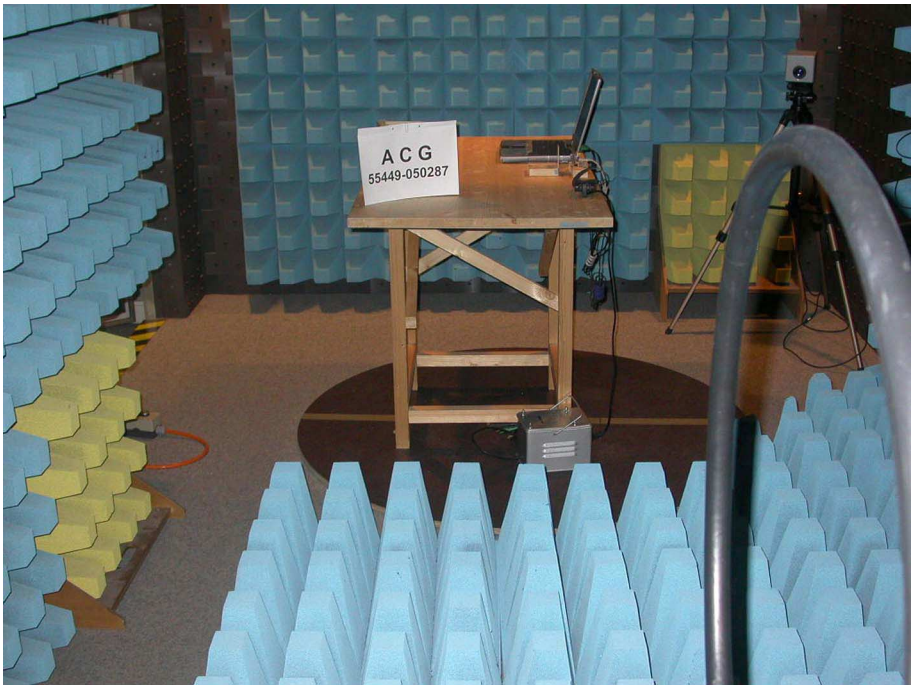
Used	Type	Model	Serial No. or ID	Manufacturer
☐	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
☐	EMI test receiver	ESPI7	836914/0002	Rohde & Schwarz
☒	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
☒	DC-block	7006	A2798	Weinschel
☐	Attenuator	4776-10	9412	Narda
☐	Attenuator	4776-20	9503	Narda
☒	Test probe	TP01	001	Senton
☒	DC power supply	NGSM 32/10	203	Rohde & Schwarz
☐	Isolating transformer	RT 5A	10387	Grundig
☐	Isolating transformer	RT 5A	10416	Grundig
☒	Temperature test chamber	HT4010	07065550	Heraeus

7 Photographs Taken During Testing

Test setup for conducted AC powerline emission measurement

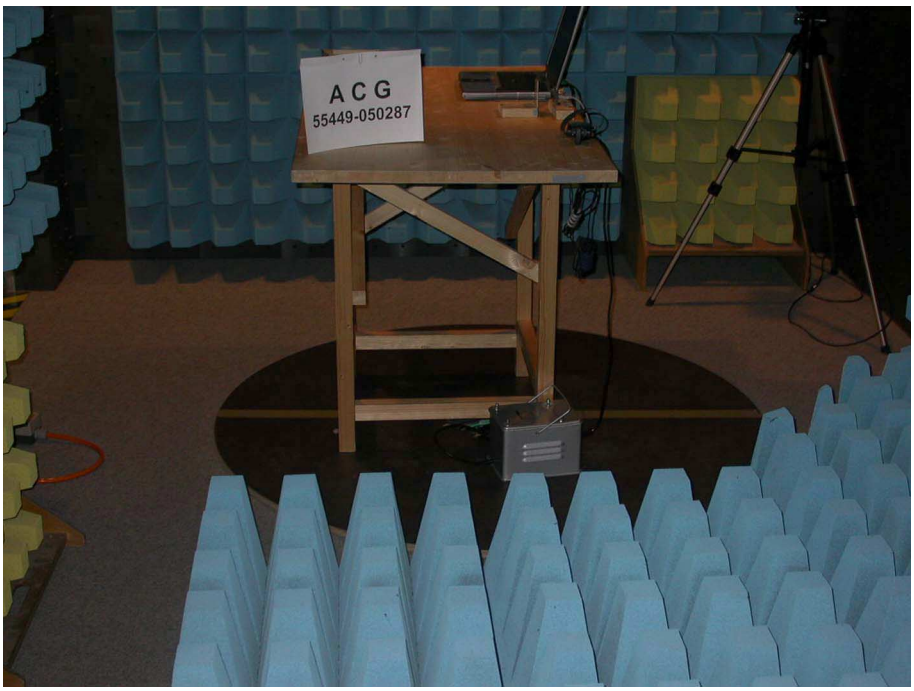


Test setup for radiated emission measurement 9 kHz – 30 MHz



Test setup for radiated emission measurement 9 kHz – 30 MHz
- continued -

Test setup for radiated emission measurement (fully anechoic room)



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

8 Test Results

FCC CFR 47 Parts 2 and 15			
Section(s)	*Test*	*Page*	*Result*
2.1046(a)	Conducted output power	---	Not applicable
2.202(a)	Occupied bandwidth	25	Recorded
15.215(c)	Bandwidth of the emission	27	Test passed
2.201, 2.202	Class of emission	29	Calculated
15.205(a) 15.205(d)(7)	Restricted bands of operation	---[5]	Test passed
15.207	Conducted AC powerline emission 150 kHz to 30 MHz	30	Test passed
15.225(a)-(d)	Spectrum Mask	35	Test passed
15.205(b) 15.215(b) 15.225(a)(d)	Radiated emission 9 kHz to 30 MHz	38	Test passed
15.205(b) 15.225(d)	Radiated emission 30 MHz to 1 GHz	40	Test passed
15.225(e)	Carrier frequency stability	42	Test passed

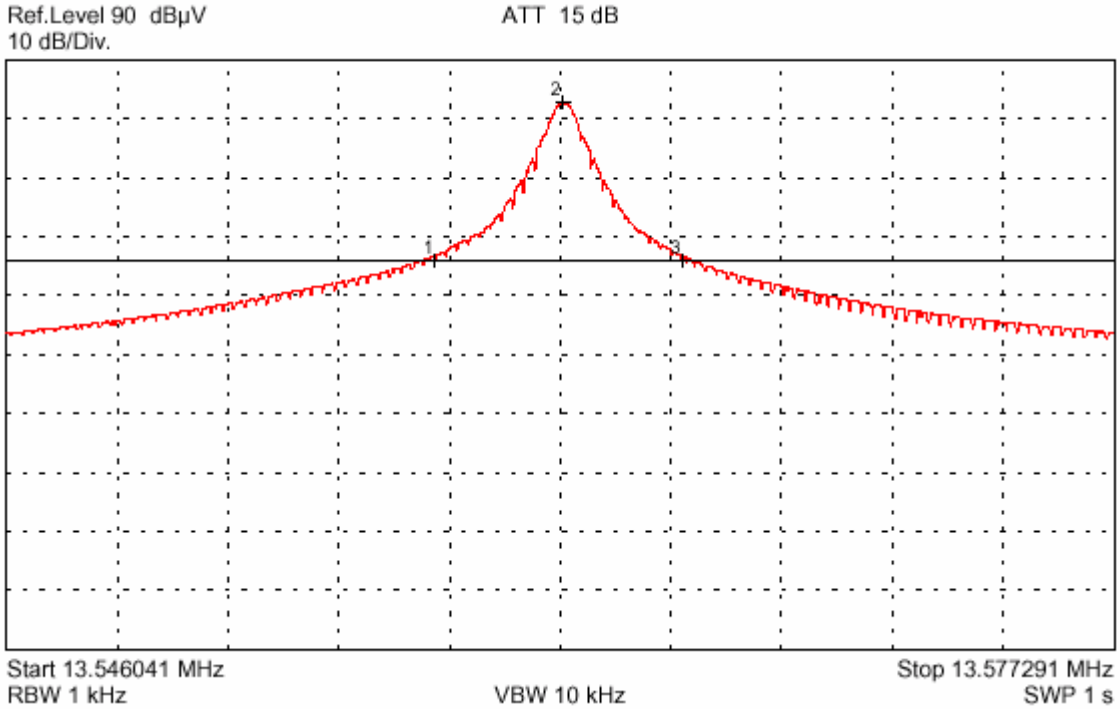
[5] See "Spectrum Mask" for the 13.36 to 13.41 MHz band. For all other restricted bands see "Radiated Emission".

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:	14 June 2005
Test site:	Fully anechoic room, cabin no. 2

Occupied Bandwidth (-26 dB):

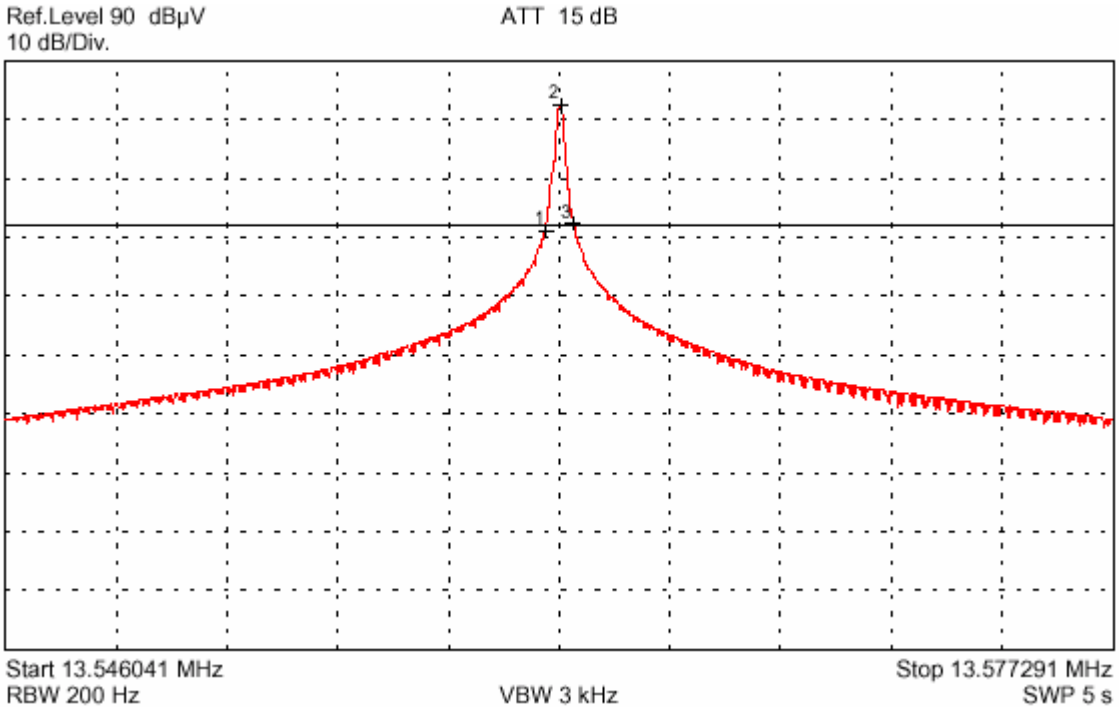


Occupied Bandwidth (-26 dB):	**6.98 kHz**

8.2 Emission Bandwidth

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

Comment:	
Date of test:	14 June 2005
Test site:	Fully anechoic room, cabin no. 2



Permitted frequency band:	**13.110 - 14.010 MHz**	
Emission frequency range: Emission bandwidth:	**13.553 - 13.567 MHz** **0.76 kHz**	
Carrier frequency stability: Maximum frequency tolerances:	☒ **specified** **+0.078 kHz** **- 0.138 kHz**	☐ **not specified**
Frequency range of the emission: Bandwidth of the emission:	 **0.98 kHz**	**within permitted frequency band[6]:** ☐ **yes** ☐ **no**

Test Result:	Test passed

[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.

8.3 Designation of Emissions

Rules and specifications:	CFR 47 Part 2, sections 2.201 and 2.202
Guide:	ANSI C63.4 / TRC-43

Type of modulation:	Amplitude Modulation

B_n = Necessary Bandwidth	B_n = 2BK
B = Modulation rate	B = 5.0 kHz
K = Overall numerical factor	K = 1
Calculation:	B_n = 2 · 5.0 kHz) · 1 = 10.0 kHz

Designation of Emissions:	**10K0A1D**

8.4 Conducted Powerline Emission Measurement 150 kHz to 30 MHz

Rules and specifications:	CFR 47 Part 15, section 15.207		
Guide:	ANSI C63.4 / CISPR 22		
Limit:	CFR 47 Part 15		
	Frequency of Emission (MHz)	Conducted Limit (dBµV)	
		Quasi-peak	Average
	0.15 - 0.5	66 to 56	56 to 46
	0.5 - 5	56	46
	5 - 30	60	50
Measurement procedure:	Conducted AC Powerline Emission (6.2)		

Comment:	Transmitting continuously
Date of test:	14 June 2005
Test site:	Shielded room, cabin no. 1

Test Result:	Test passed

Tested on:	L1

Frequency (MHz)	Detector	Reading Value (dBµV)	Correction Factor (dB)	Final Value (dBµV)	CFR 47 Part 15 Limit (dBµV)	CFR 47 Part 15 Margin (dB)
0.160	Quasi-Peak	43.4	0.0	43.4	65.5	22.1
0.205	Quasi-Peak	50.0	0.0	50.0	63.4	13.4
0.205	Average	39.1	0.0	39.1	53.4	14.3
0.235	Quasi-Peak	35.4	0.0	35.4	62.3	26.9
0.310	Quasi-Peak	40.6	0.0	40.6	60.0	19.4
0.310	Average	32.3	0.0	32.3	50.0	17.7
0.410	Quasi-Peak	39.5	0.0	39.5	57.6	18.1
0.415	Average	31.2	0.0	31.2	47.5	16.3
0.515	Quasi-Peak	38.3	0.0	38.3	56.0	17.7
0.515	Average	30.4	0.0	30.4	46.0	15.6
0.620	Quasi-Peak	38.1	0.0	38.1	56.0	17.9
0.640	Average	30.8	0.0	30.8	46.0	15.2
0.670	Average	25.3	0.0	25.3	46.0	20.7
0.720	Quasi-Peak	38.8	0.0	38.8	56.0	17.2
0.825	Quasi-Peak	37.9	0.0	37.9	56.0	18.1
0.930	Average	26.7	0.0	26.7	46.0	19.3
1.030	Quasi-Peak	37.7	0.0	37.7	56.0	18.3
1.340	Quasi-Peak	37.0	0.0	37.0	56.0	19.0
1.340	Average	25.4	0.0	25.4	46.0	20.6
1.545	Quasi-Peak	36.6	0.0	36.6	56.0	19.4
1.755	Average	26.5	0.0	26.5	46.0	19.5
2.060	Quasi-Peak	34.7	0.0	34.7	56.0	21.3
2.170	Average	23.3	0.0	23.3	46.0	22.7
2.370	Quasi-Peak	37.0	0.0	37.0	56.0	19.0
2.475	Average	22.6	0.0	22.6	46.0	23.4
3.095	Average	19.3	0.0	19.3	46.0	26.7
5.365	Average	23.7	0.0	23.7	50.0	26.3
5.780	Average	23.4	0.0	23.4	50.0	26.6
9.180	Average	25.9	0.0	25.9	50.0	24.1
12.570	Quasi-Peak	29.8	0.0	29.8	60.0	30.2
12.690	Average	27.7	0.0	27.7	50.0	22.3
13.560	Quasi-Peak	52.5	0.0	52.5	60.0	7.5
13.560	Average	49.8	0.0	49.8	50.0	**0.2**
16.080	Quasi-Peak	28.9	0.0	28.9	60.0	31.1
16.300	Average	25.1	0.0	25.1	50.0	24.9
19.805	Average	21.8	0.0	21.8	50.0	28.2

Tested on:	N

Frequency (MHz)	Detector	Reading Value (dBµV)	Correction Factor (dB)	Final Value (dBµV)	CFR 47 Part 15 Limit (dBµV)	CFR 47 Part 15 Margin (dB)
0.155	Quasi-Peak	38.0	0.0	38.0	65.7	27.7
0.205	Average	43.1	0.0	43.1	53.4	10.3
0.206	Quasi-Peak	49.3	0.0	49.3	63.4	14.1
0.310	Average	38.2	0.0	38.2	50.0	11.8
0.415	Quasi-Peak	41.1	0.0	41.1	57.5	16.4
0.415	Average	37.0	0.0	37.0	47.5	10.5
0.515	Quasi-Peak	41.2	0.0	41.2	56.0	14.8
0.515	Average	38.1	0.0	38.1	46.0	7.9
0.620	Quasi-Peak	40.6	0.0	40.6	56.0	15.4
0.620	Average	37.5	0.0	37.5	46.0	8.5
0.720	Average	33.6	0.0	33.6	46.0	12.4
0.725	Quasi-Peak	40.3	0.0	40.3	56.0	15.7
0.840	Quasi-Peak	34.0	0.0	34.0	56.0	22.0
0.945	Average	31.5	0.0	31.5	46.0	14.5
1.030	Average	32.0	0.0	32.0	46.0	14.0
1.035	Quasi-Peak	39.6	0.0	39.6	56.0	16.4
1.445	Average	33.0	0.0	33.0	46.0	13.0
1.545	Quasi-Peak	38.6	0.0	38.6	56.0	17.4
1.860	Average	34.0	0.0	34.0	46.0	12.0
2.165	Quasi-Peak	38.3	0.0	38.3	56.0	17.7
2.165	Average	28.2	0.0	28.2	46.0	17.8
2.580	Average	28.5	0.0	28.5	46.0	17.5
2.685	Quasi-Peak	37.3	0.0	37.3	56.0	18.7
2.995	Average	27.4	0.0	27.4	46.0	18.6
3.405	Quasi-Peak	33.0	0.0	33.0	56.0	23.0
4.335	Quasi-Peak	34.9	0.0	34.9	56.0	21.1
4.440	Average	26.6	0.0	26.6	46.0	19.4
5.370	Average	27.6	0.0	27.6	50.0	22.4
5.465	Quasi-Peak	34.2	0.0	34.2	60.0	25.8
5.680	Average	27.6	0.0	27.6	50.0	22.4
5.985	Quasi-Peak	38.1	0.0	38.1	60.0	21.9
7.945	Quasi-Peak	37.2	0.0	37.2	60.0	22.8
8.360	Average	29.1	0.0	29.1	50.0	20.9
8.465	Average	29.2	0.0	29.2	50.0	20.8
8.975	Quasi-Peak	35.5	0.0	35.5	60.0	24.5
10.735	Average	26.0	0.0	26.0	50.0	24.0
11.865	Quasi-Peak	33.6	0.0	33.6	60.0	26.4
13.560	Quasi-Peak	51.4	0.0	51.4	60.0	8.6
13.560	Average	48.4	0.0	48.4	50.0	**1.6**

Comment:	Reading TAG continuously
Date of test:	14 June 2005
Test site:	Shielded room, cabin no. 1

Test Result:	Test passed

Tested on:	L1

Frequency (MHz)	Detector	Reading Value (dBµV)	Correction Factor (dB)	Final Value (dBµV)	CFR 47 Part 15 Limit (dBµV)	CFR 47 Part 15 Margin (dB)
0.185	Quasi-Peak	34.5	0.0	34.5	64.3	29.8
0.205	Average	38.0	0.0	38.0	53.4	15.4
0.206	Quasi-Peak	48.6	0.0	48.6	63.4	14.8
0.310	Average	31.7	0.0	31.7	50.0	18.3
0.415	Average	28.3	0.0	28.3	47.5	19.2
0.515	Average	27.2	0.0	27.2	46.0	18.8
0.635	Average	32.7	0.0	32.7	46.0	13.3
0.670	Average	27.9	0.0	27.9	46.0	18.1
0.725	Quasi-Peak	35.4	0.0	35.4	56.0	20.6
0.845	Average	27.6	0.0	27.6	46.0	18.4
1.240	Average	22.5	0.0	22.5	46.0	23.5
1.275	Average	25.7	0.0	25.7	46.0	20.3
1.755	Quasi-Peak	31.3	0.0	31.3	56.0	24.7
1.965	Average	19.8	0.0	19.8	46.0	26.2
5.370	Average	16.2	0.0	16.2	50.0	33.8
5.680	Average	13.7	0.0	13.7	50.0	36.3
8.055	Average	17.5	0.0	17.5	50.0	32.5
9.400	Average	21.8	0.0	21.8	50.0	28.2
11.775	Quasi-Peak	31.0	0.0	31.0	60.0	29.0
12.395	Average	24.3	0.0	24.3	50.0	25.7
13.562	Quasi-Peak	50.9	0.0	50.9	60.0	9.1
13.562	Average	47.0	0.0	47.0	50.0	**3.0**

Tested on:	N

Frequency (MHz)	Detector	Reading Value (dBµV)	Correction Factor (dB)	Final Value (dBµV)	CFR 47 Part 15 Limit (dBµV)	CFR 47 Part 15 Margin (dB)
0.205	Average	42.9	0.0	42.9	53.4	10.5
0.206	Quasi-Peak	49.3	0.0	49.3	63.4	14.1
0.310	Quasi-Peak	40.7	0.0	40.7	60.0	19.3
0.310	Average	37.6	0.0	37.6	50.0	12.4
0.415	Quasi-Peak	40.8	0.0	40.8	57.5	16.7
0.430	Average	32.3	0.0	32.3	47.3	15.0
0.515	Average	37.0	0.0	37.0	46.0	9.0
0.520	Quasi-Peak	38.1	0.0	38.1	56.0	17.9
0.535	Average	36.2	0.0	36.2	46.0	9.8
0.720	Quasi-Peak	38.0	0.0	38.0	56.0	18.0
0.740	Average	37.2	0.0	37.2	46.0	8.8
0.840	Quasi-Peak	33.8	0.0	33.8	56.0	22.2
0.930	Average	33.0	0.0	33.0	46.0	13.0
1.070	Average	29.6	0.0	29.6	46.0	16.4
1.135	Quasi-Peak	39.2	0.0	39.2	56.0	16.8
1.340	Quasi-Peak	39.3	0.0	39.3	56.0	16.7
1.345	Average	27.6	0.0	27.6	46.0	18.4
1.755	Average	30.5	0.0	30.5	46.0	15.5
1.860	Quasi-Peak	39.3	0.0	39.3	56.0	16.7
2.165	Average	23.5	0.0	23.5	46.0	22.5
2.260	Quasi-Peak	26.4	0.0	26.4	56.0	29.6
2.375	Quasi-Peak	38.7	0.0	38.7	56.0	17.3
2.480	Average	28.7	0.0	28.7	46.0	17.3
2.995	Quasi-Peak	34.0	0.0	34.0	56.0	22.0
3.410	Average	23.9	0.0	23.9	46.0	22.1
4.130	Average	23.6	0.0	23.6	46.0	22.4
5.060	Quasi-Peak	37.3	0.0	37.3	60.0	22.7
5.060	Average	26.7	0.0	26.7	50.0	23.3
5.575	Quasi-Peak	37.1	0.0	37.1	60.0	22.9
5.680	Average	23.6	0.0	23.6	50.0	26.4
7.950	Average	28.0	0.0	28.0	50.0	22.0
8.260	Quasi-Peak	37.3	0.0	37.3	60.0	22.7
8.980	Quasi-Peak	36.5	0.0	36.5	60.0	23.5
8.985	Average	27.0	0.0	27.0	50.0	23.0
10.740	Average	24.4	0.0	24.4	50.0	25.6
13.561	Average	47.1	0.0	47.1	50.0	**2.9**
13.562	Quasi-Peak	51.0	0.0	51.0	60.0	9.0

Sample calculation of final values:

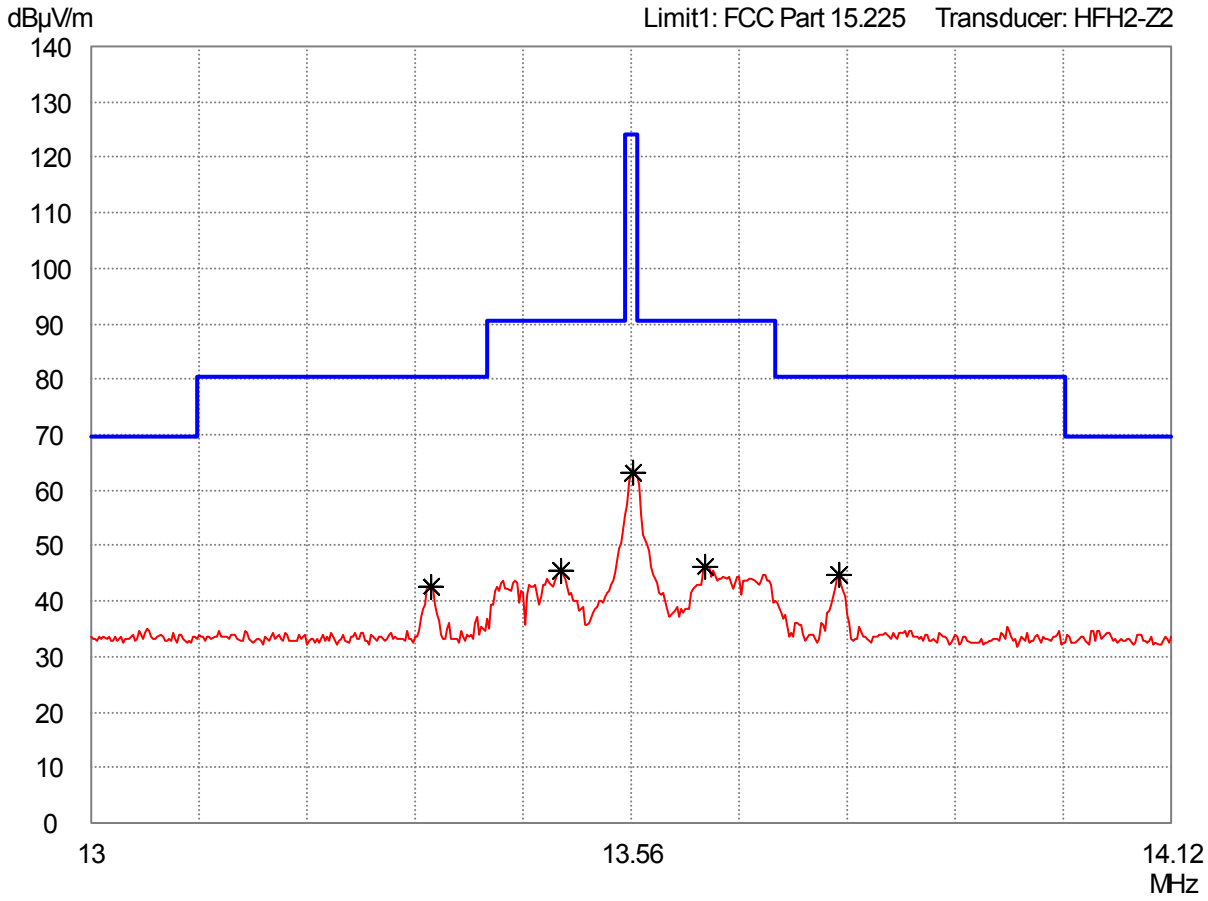
Final Value (dBµV) = Reading Value (dBµV) + Correction Factor (dB)

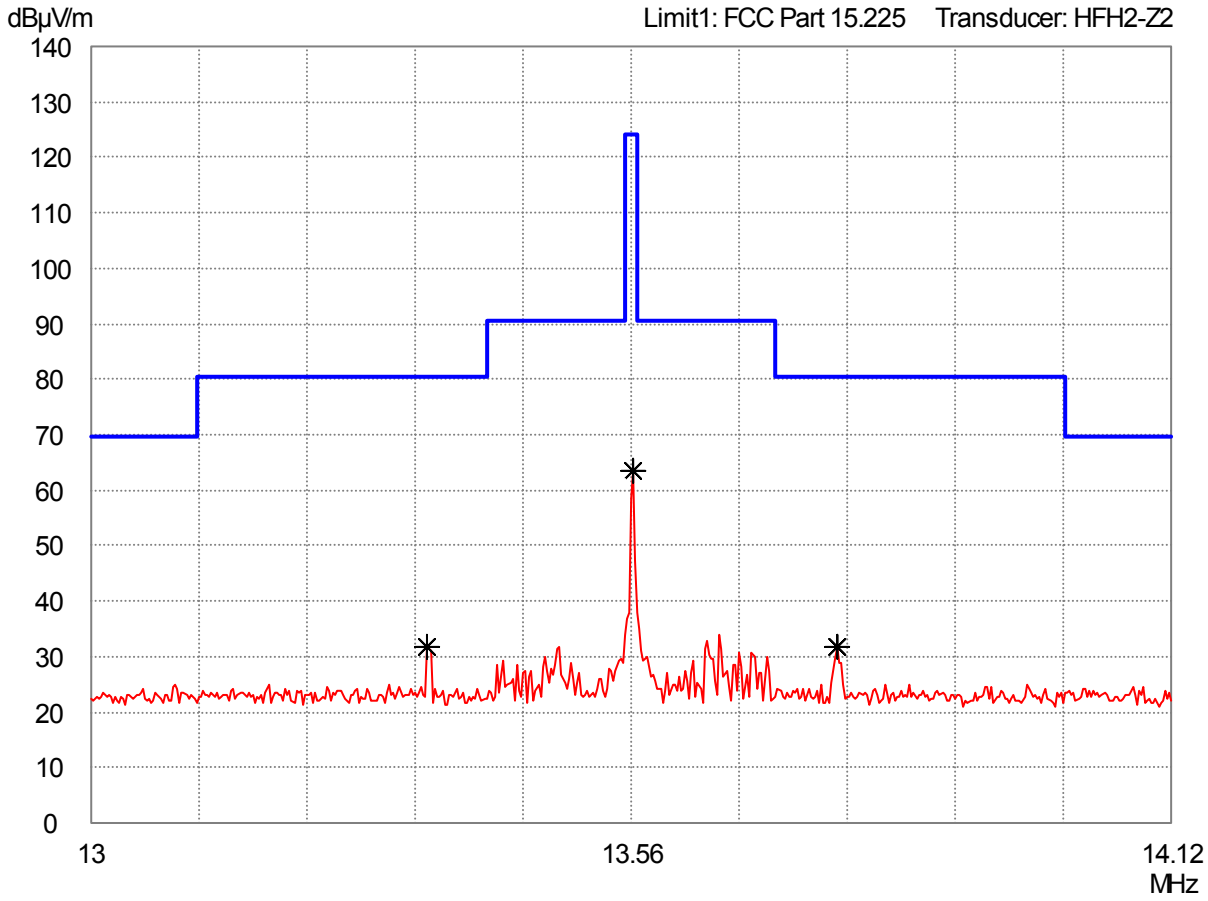
8.5 Spectrum Mask

Rules and specifications:	CFR 47 Part 15, section 15.225(a)-(d)			
Guide:	ANSI C63.4			
Description:	Compliance with the spectrum mask is tested using a spectrum analyzer with resolution bandwidth set to a 1 kHz for the band 13.553 to 13.567 MHz and to 10 kHz outside this band. The video bandwidth shall be at least three times greater than the resolution bandwidth.			
Limit:	Frequency of Emission (MHz)	Field Strength (µV/m)	Field Strength (dBµV/m)	Measurement Distance d (meters)
	1.705 - 13.110	30	29.5	30
	13.110 - 13.410	106	40.5	30
	13.410 - 13.553	334	50.5	30
	13.553 - 13.567	15848	84.0	30
	13.567 - 13.710	334	50.5	30
	13.710 - 14.010	106	40.5	30
	14.010 - 30.000	30	29.5	30
Measurement procedure:	Radiated Emission Measurement 9 kHz to 30 MHz (6.3)			

Comment:	
Date of test:	13 June 2005
Test site:	Fully anechoic room, cabin no. 2
Test distance:	3 meters
Extrapolation Factor:	40 dB/decade

Test Result:	Test passed


dBµV/m
Limit1: FCC Part 15.225
Transducer: HFH2-Z2
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
13
13.56
14.12
MHz


dBµV/m
Limit1: FCC Part 15.225
Transducer: HFH2-Z2
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
13
13.56
14.12
MHz

8.6 Radiated Emission Measurement 9 kHz to 30 MHz

Rules and specifications:	CFR 47 Part 15, sections 15.205 and 15.225(a)-(d)			
Guide:	ANSI C63.4			
Limit:	Frequency of Emission (MHz)	Field Strength (µV/m)	Field Strength (dBµV/m)	Measurement Distance d (meters)
	0.009 - 0.490	2400/F(kHz)	67.6 - 20 · log(F(kHz))	300
	0.490 - 1.705	24000/F(kHz)	87.6 - 20 · log(F(kHz))	30
	1.705 - 13.110	30	29.5	30
	13.110 - 13.410	106	40.5	30
	13.410 - 13.553	334	50.5	30
	13.553 - 13.567	15848	84.0	30
	13.567 - 13.710	334	50.5	30
	13.710 - 14.010	106	40.5	30
	14.010 - 30.000	30	29.5	30
	Additionally, the level of any unwanted emissions shall not exceed the level of the fundamental emission.			
Measurement procedure:	Radiated Emission Measurement 9 kHz to 30 MHz (6.3)			

Comment:	Transmitting without TAG
Date of test:	13 June 2005
Test site:	Open field test site

Test Result:	Test passed

Frequency	Detector	Distance		Reading Value		Correction	Extrapolation Factor		Pulse Train	Final	Limit	Margin
		d_1	d_2	d_1	d_2	Factor			Correction	Value		
(MHz)		(m)	(m)	(dBµV)	(dBµV)	(dB/m)	(dB/dec)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
13.562	QP	3	10	48.3	35.2	20.0	-25.1	-12.0		43.2	84.0	**40.8**

Comment:	Transmitting with TAG
Date of test:	14 June 2005
Test site:	Open field test site

Test Result:	Test passed

Frequency	Detector	Distance		Reading Value		Correction	Extrapolation Factor		Pulse Train	Final	Limit	Margin
		d_1	d_2	d_1	d_2	Factor			Correction	Value		
(MHz)		(m)	(m)	(dBµV)	(dBµV)	(dB/m)	(dB/dec)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
13.562	QP	3	10	46.9	33.9	20.0	-24.9	-11.9		42.0	84.0	**42.0**

Sample calculation of final values:

$$\text{Extrapolation Factor (dB/decade)} = \begin{cases} -40 \text{ (dB/decade)} & \text{if } d_1 = d_2 \\ \dfrac{\text{Reading Value } d_2 \text{ (dBµV)} - \text{Reading Value } d_1 \text{ (dBµV)}}{\text{Log}(d_2) - \text{Log}(d_1)} & \text{if } d_1 \neq d_2 \end{cases}$$

$$\text{Extrapolation Factor (dB)} = (\text{Log}(d) - \text{Log}(d_2)) \cdot \text{Extrapolation Factor (dB/decade)}$$

$$\text{Final Value (dBµV/m)} = \text{Reading Value } d_2 \text{ (dBµV)} + \text{Correction Factor (dB/m)} + \text{Extrapolation Factor (dB)} + \text{Pulse Train Correction (dB)}$$

8.7 Radiated Emission Measurement 30 MHz to 1 GHz

Rules and specifications:	CFR 47 Part 15, sections 15.205(b) and 15.225(d)		
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
	Additionally, the level of any unwanted emissions shall not exceed the level of the fundamental emission.		
Measurement procedures:	Radiated Emission in Fully or Semi Anechoic Room (6.4) Radiated Emission at Open Field Test Site (6.5)		

Comment:	Transmitting without TAG
Date of test:	13 June 2005
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)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
149.180	vertical	Quasi-Peak	8.5	13.6		22.1	43.5	21.4
162.740	vertical	Quasi-Peak	21.5	14.0		35.5	43.5	**8.0**
271.230	horizontal	Quasi-Peak	13.4	20.0		33.4	46.0	12.6

Comment:	Reading TAG continuously
Date of test:	13 June 2005
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)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
162.740	vertical	Quasi-Peak	21.8	14.0		35.8	43.5	**7.7**
216.980	vertical	Quasi-Peak	19.7	17.5		37.2	46.0	8.8
244.010	horizontal	Quasi-Peak	19.8	17.6		37.4	46.0	8.6
271.220	horizontal	Quasi-Peak	14.5	20.0		34.5	46.0	11.5

Sample calculation of final values:

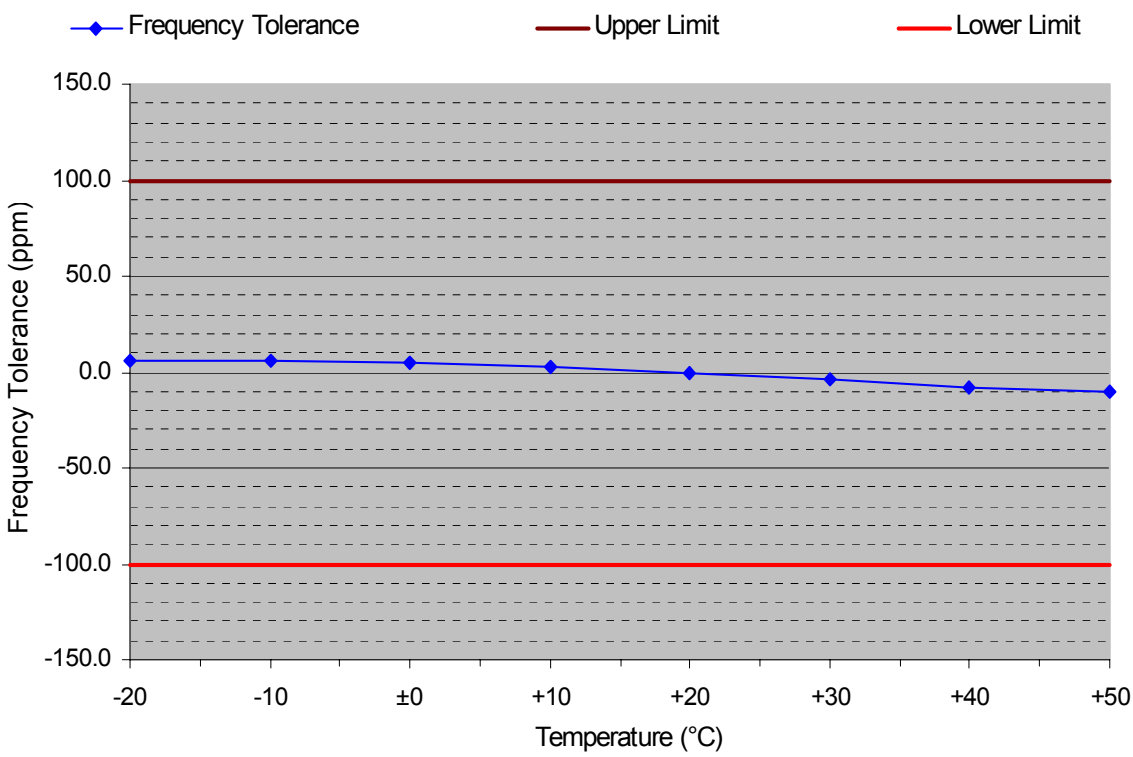
Final Value (dBµV/m) = Reading Value (dBµV) + Correction Factor (dB/m) + Pulse Train Correction (dB)

8.8 Carrier Frequency Stability

Rules and specifications:	CFR 47 Part 15, section 15.225(e)
Guide:	ANSI C63.4
Limit:	The frequency tolerance of the carrier signal shall be maintained within ±0.01 % (±100 ppm) of the carrier frequency under nominal conditions.
Temperature range: Voltage range:	-20°C to +50°C (at normal supply voltage) 85% to 115% of the rated supply voltage (at a temperature of +20 °C)
Measurement procedure:	Carrier Frequency Stability (6.6)

Comment:	
Date of test:	14 June 2005

8.8.1 Carrier Frequency Stability vs. Temperature

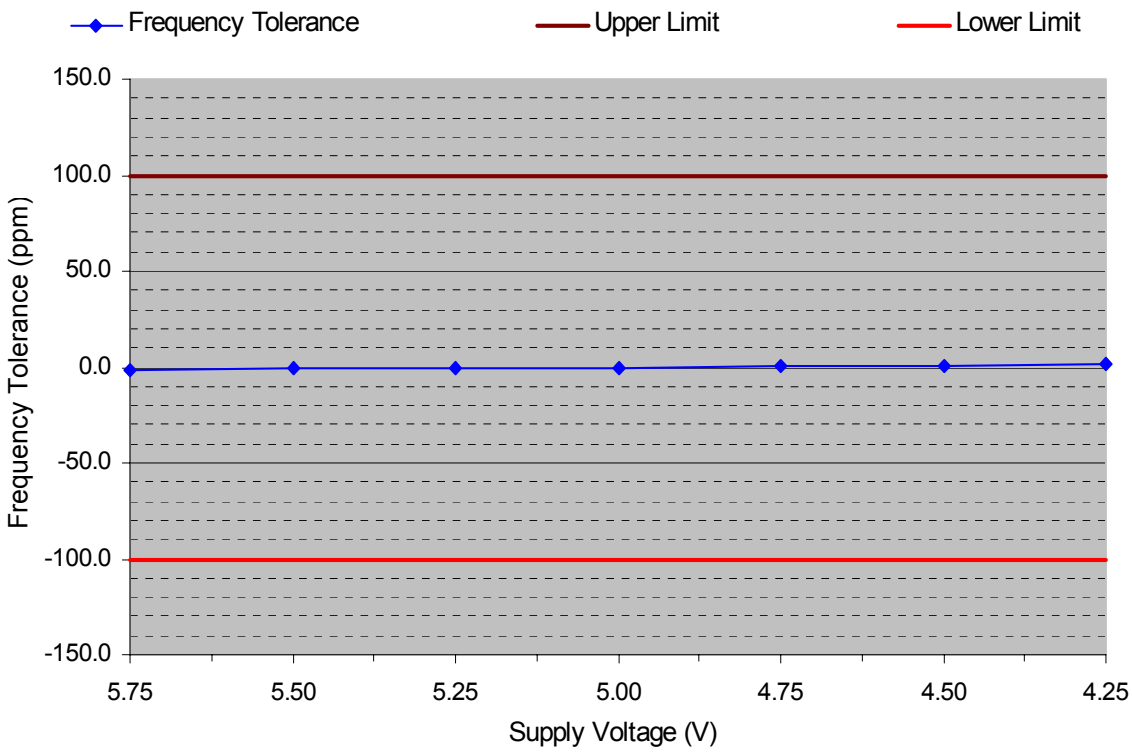


Supply voltage: 5 V Nominal frequency: 13.561724 MHz

Temperature (°C)	Frequency (MHz)	Frequency Tolerance (Hz)	Frequency Tolerance (ppm)	Upper Limit (ppm)	Lower Limit (ppm)	Margin (ppm)
-20	13.561800	76	5.6	+100.0	-100.0	94.4
-10	13.561802	78	5.8	+100.0	-100.0	94.2
±0	13.561796	72	5.3	+100.0	-100.0	94.7
+10	13.561765	41	3.0	+100.0	-100.0	97.0
+20	13.561724	0	0.0	+100.0	-100.0	100.0
+30	13.561668	-56	-4.1	+100.0	-100.0	95.9
+40	13.561621	-103	-7.6	+100.0	-100.0	92.4
+50	13.561586	-138	-10.2	+100.0	-100.0	**89.8**

Test Result:	Test passed

8.8.2 Carrier Frequency Stability vs. Supply Voltage



Temperature: +20 °C Battery End Point: Not applicable
Nominal frequency: 13.561724 MHz

Supply Voltage (V)	Frequency (MHz)	Frequency Tolerance (Hz)	Frequency Tolerance (ppm)	Upper Limit (ppm)	Lower Limit (ppm)	Margin (ppm)
5.75	13.561706	-18	-1.3	+100.0	-100.0	**98.7**
5.50	13.561712	-12	-0.9	+100.0	-100.0	99.1
5.25	13.561718	-6	-0.4	+100.0	-100.0	99.6
5.00	13.561724	0	0.0	+100.0	-100.0	100.0
4.75	13.561730	6	0.4	+100.0	-100.0	99.6
4.50	13.561734	10	0.7	+100.0	-100.0	99.3
4.25	13.561740	16	1.2	+100.0	-100.0	98.8

Test Result:	Test passed

9 Referenced Regulations

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

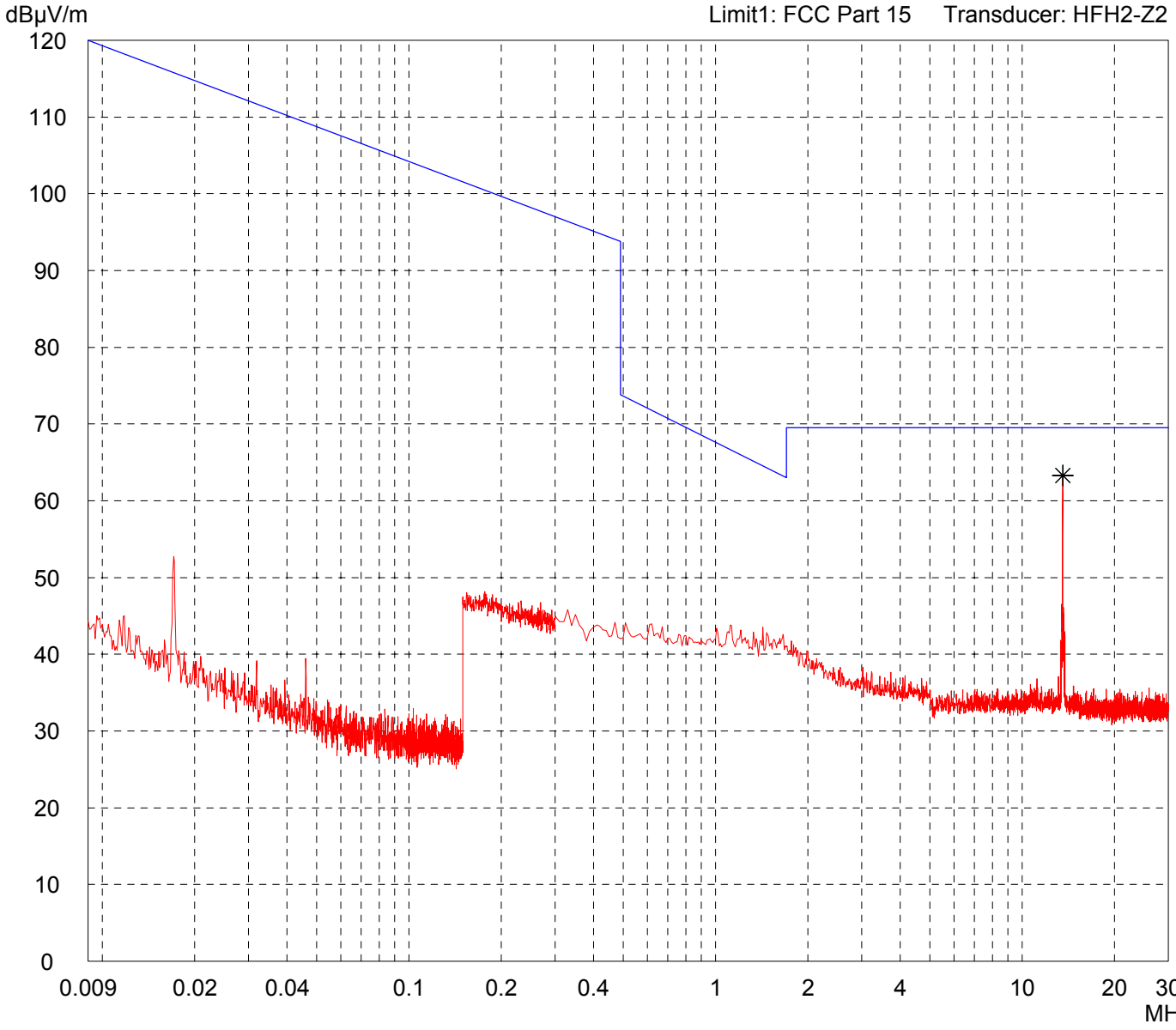
☒	CFR 47 Part 2	Code of Federal Regulations Part 2 (Frequency allocation and radio treaty matters; General rules and regulations) of the Federal Communication Commission (FCC)	October 10, 2004
☒	CFR 47 Part 15	Code of Federal Regulations Part 15 (Radio Frequency Devices) of the Federal Communication Commission (FCC)	April 5, 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-210	Radio Standards Specification RSS-210 Issue 5 for Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands), published by Industry Canada	November 2001
☐	RSS-102	Radio Standards Specification RSS-102 Issue 1: Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields, published by Industry Canada	September 1999
☐	ICES-003	Interference-Causing Equipment Standard ICES-003 Issue 4 for Digital Apparatus, published by Industry Canada	February 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

10 Charts taken during testing

Radiated Emission Test 9 kHz - 30 MHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: RDHC-0502N0-01	Comment: - DC 5 V power supply with DELL Latitude - transmitting continiously - Note: with 30 MHz high-pass-filter
Serial no.: 1005000488	
Applicant: ACG Identification Technologies AT GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: by hand / File name: default.emi	

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

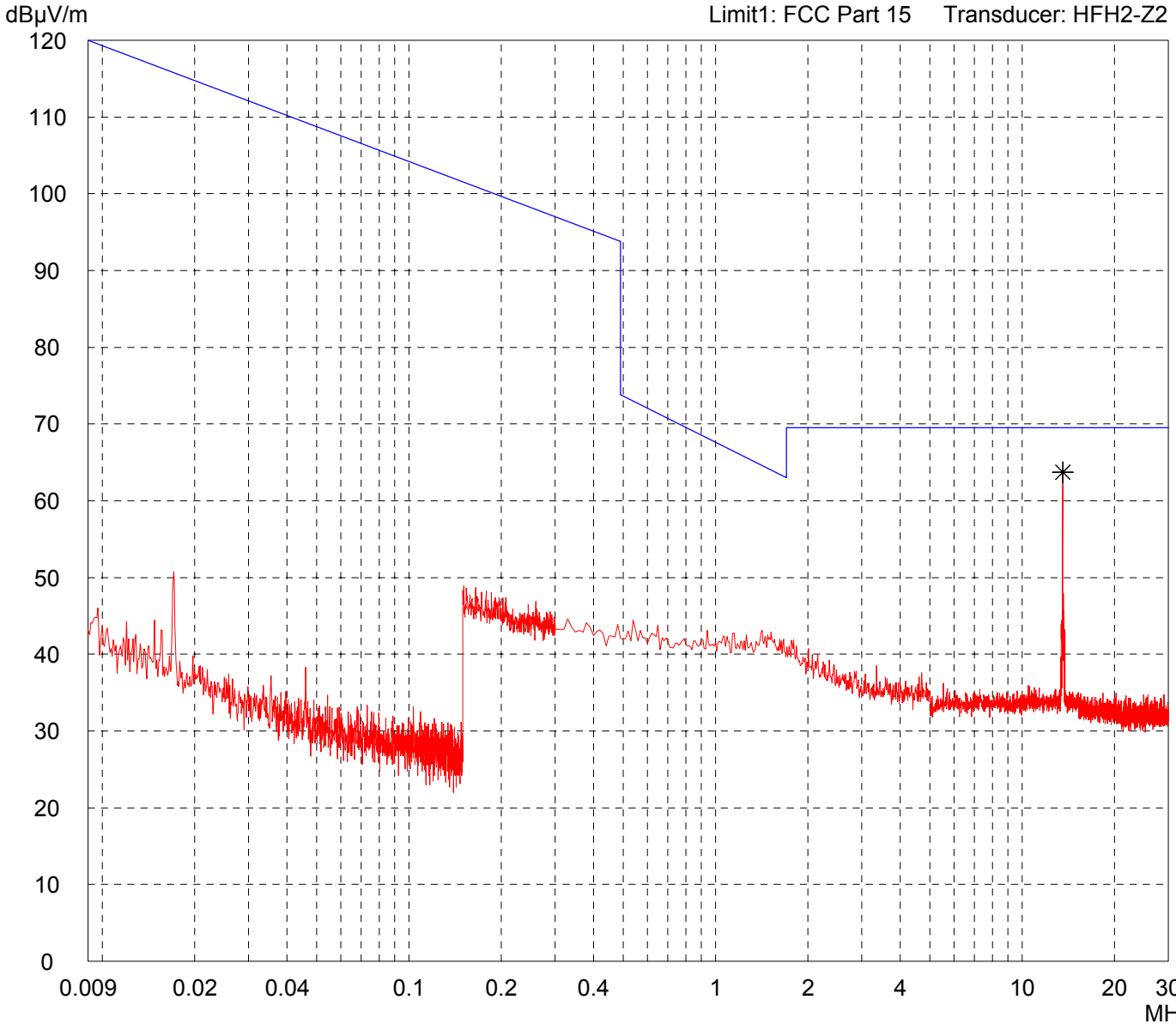


Result: Prescan	Project file: 55449-50287 Page of Pages

Radiated Emission Test 9 kHz - 30 MHz
acc. to FCC Part 15 (Fully Anechoic Chamber)

Model: RDHC-0502N0-01	Comment: - DC 5 V power supply with DELL Latitude - reading TAG continiously (Mifare 1k) - Note: with 30 MHz high-pass-filter
Serial no.: 1005000488	
Applicant: ACG Identification Technologies AT GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: by hand / File name: default.emi	

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



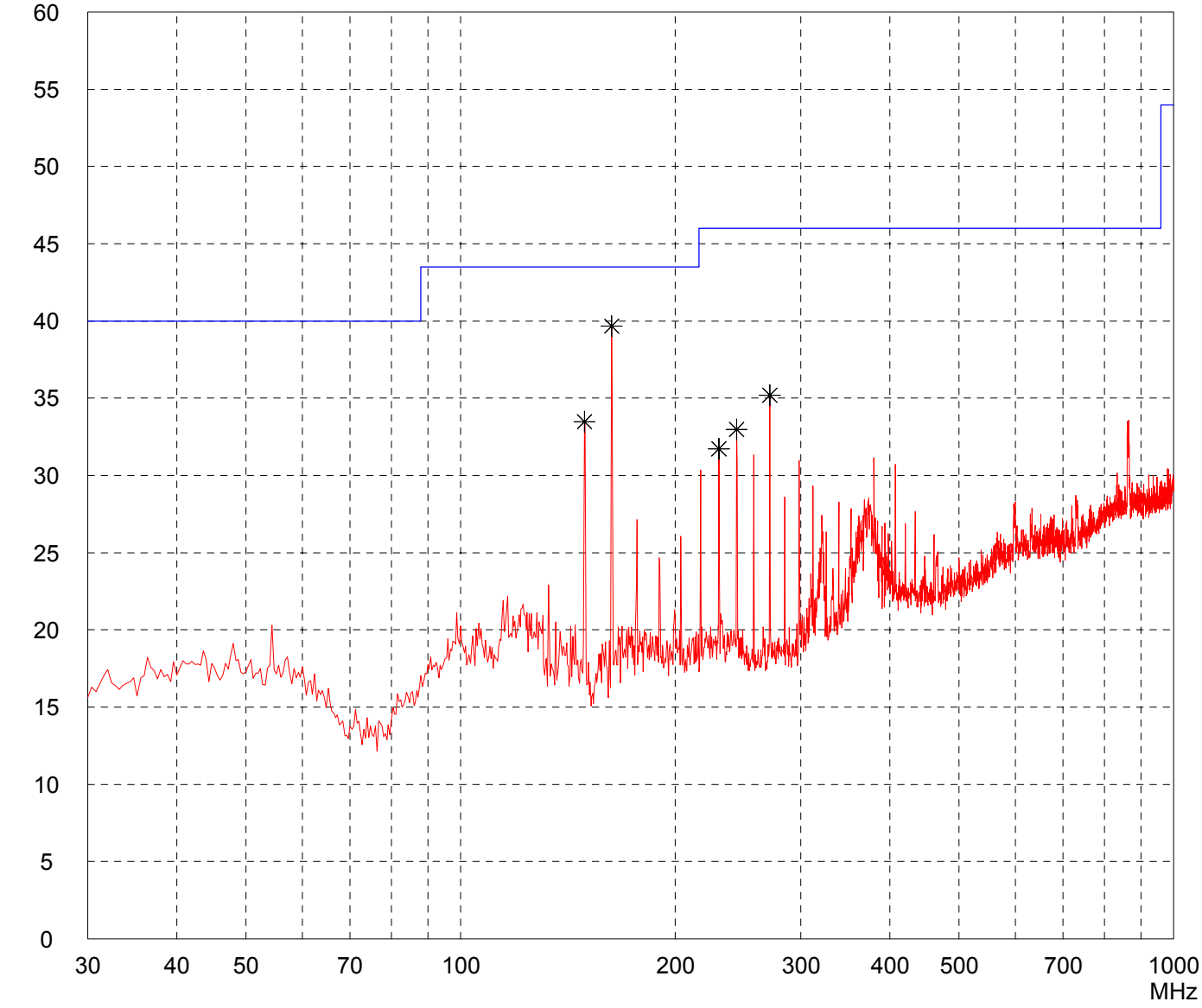
Result: Prescan	Project file: 55449-50287 Page of Pages

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

Model: RDHC-0502N0-01	Comment:
Serial no.: 1005000488	- FCC setup: 115 V power supply - DC 5 V power supply with DELL Latitude - transmitting continiously - Note: with 30 MHz high-pass-filter
Applicant: ACG Identification Technologies AT GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

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

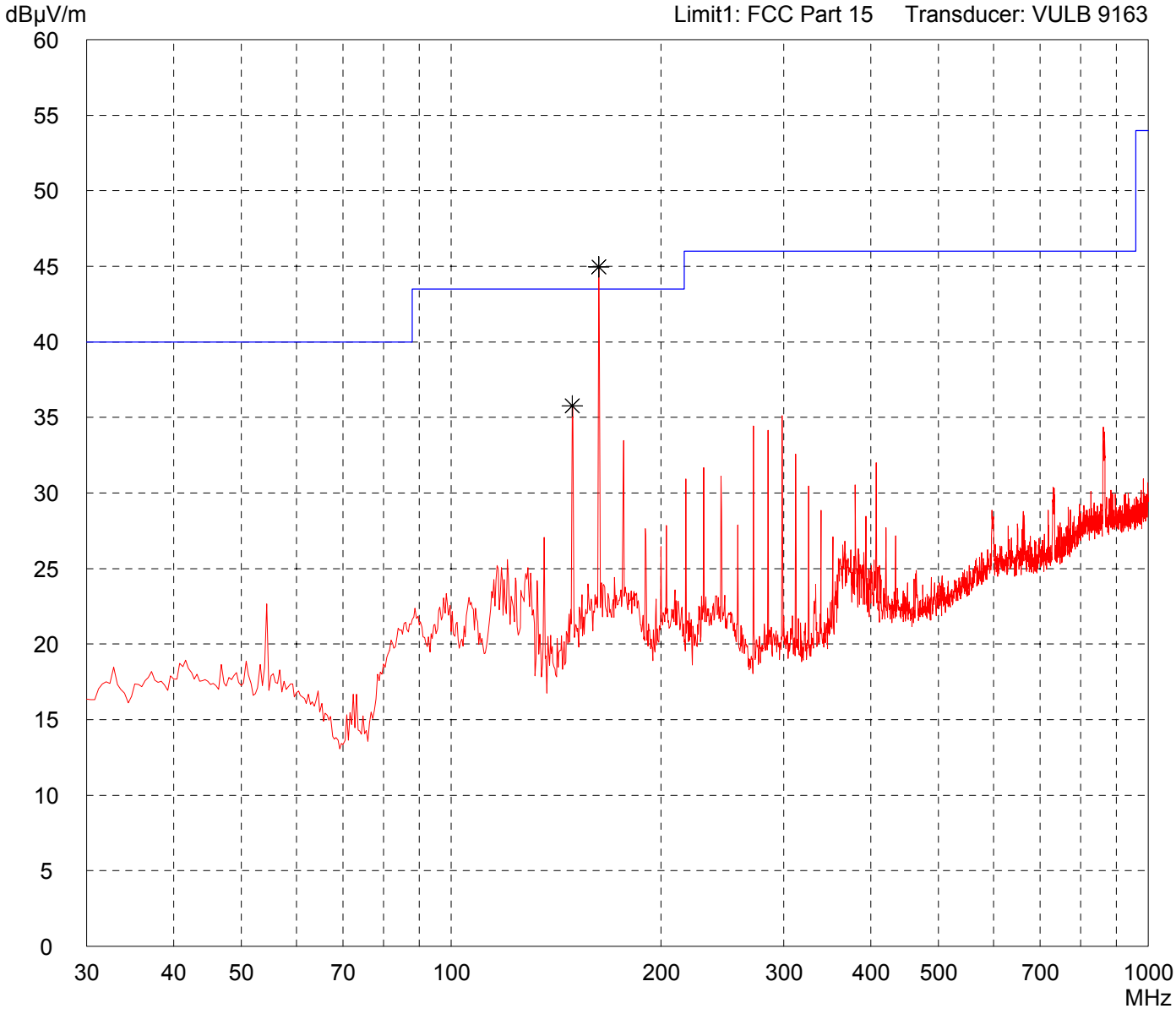


Result: Prescan	Project file: 55449-50287 Page of Pages

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

Model: RDHC-0502N0-01	Comment:
Serial no.: 1005000488	- FCC setup: 115 V power supply - DC 5 V power supply with DELL Latitude - transmitting continiously - Note: with 30 MHz high-pass-filter
Applicant: ACG Identification Technologies AT GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 06/13/2005 — Operator: M. Steindl	
Test performed: automatically — File name: default.emi	

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



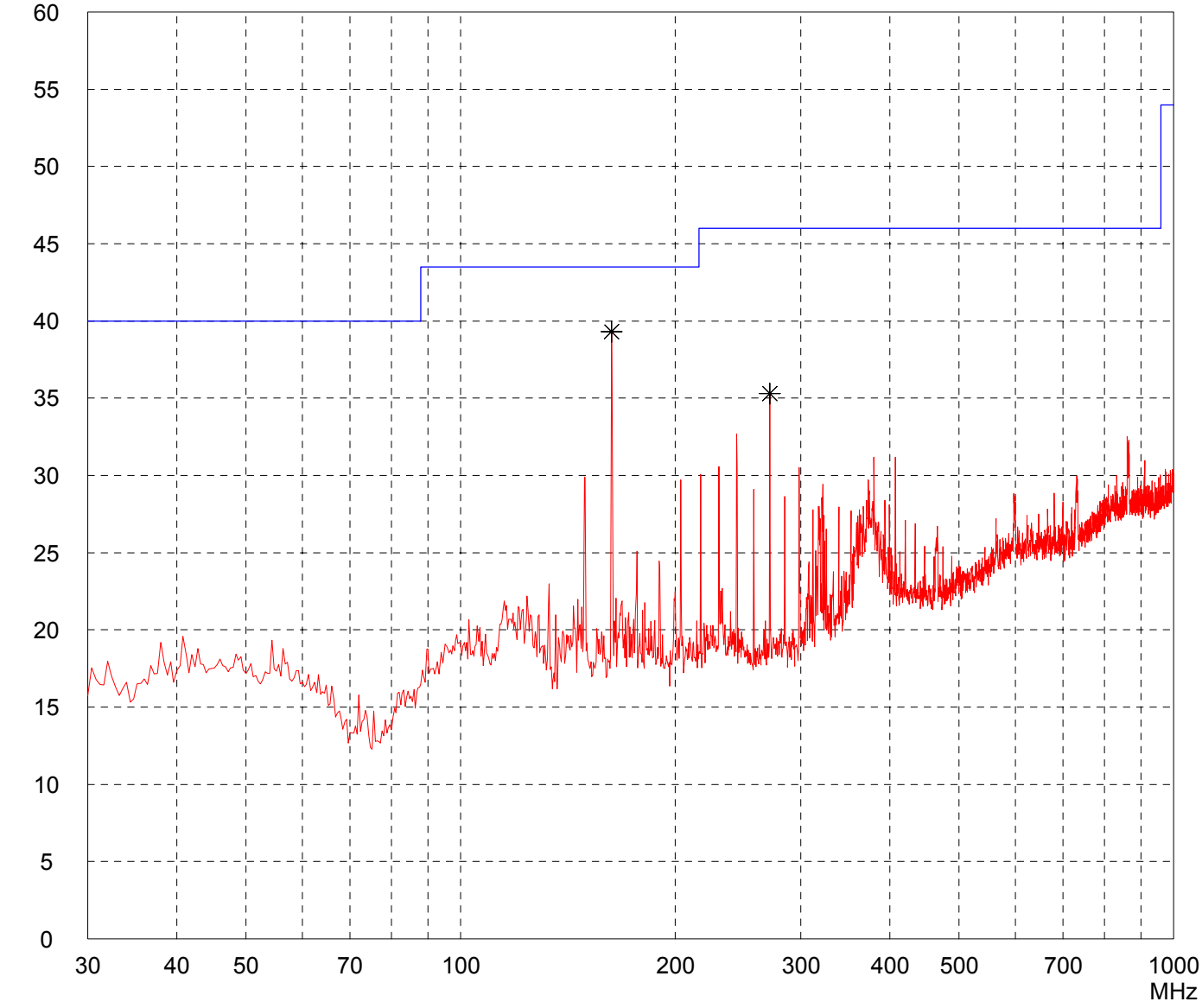
Result: Prescan	Project file: 55449-50287 — Page of Pages

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

Model: RDHC-0502N0-01	Comment:
Serial no.: 1005000488	- FCC setup: 115 V power supply - DC 5 V power supply with DELL Latitude - reading TAG continiously (Mifare 1k) - Note: with 30 MHz high-pass-filter
Applicant: ACG Identification Technologies AT GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: automatically / File name: default.emi	

Detector: Peak	List of values: Selected by hand

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



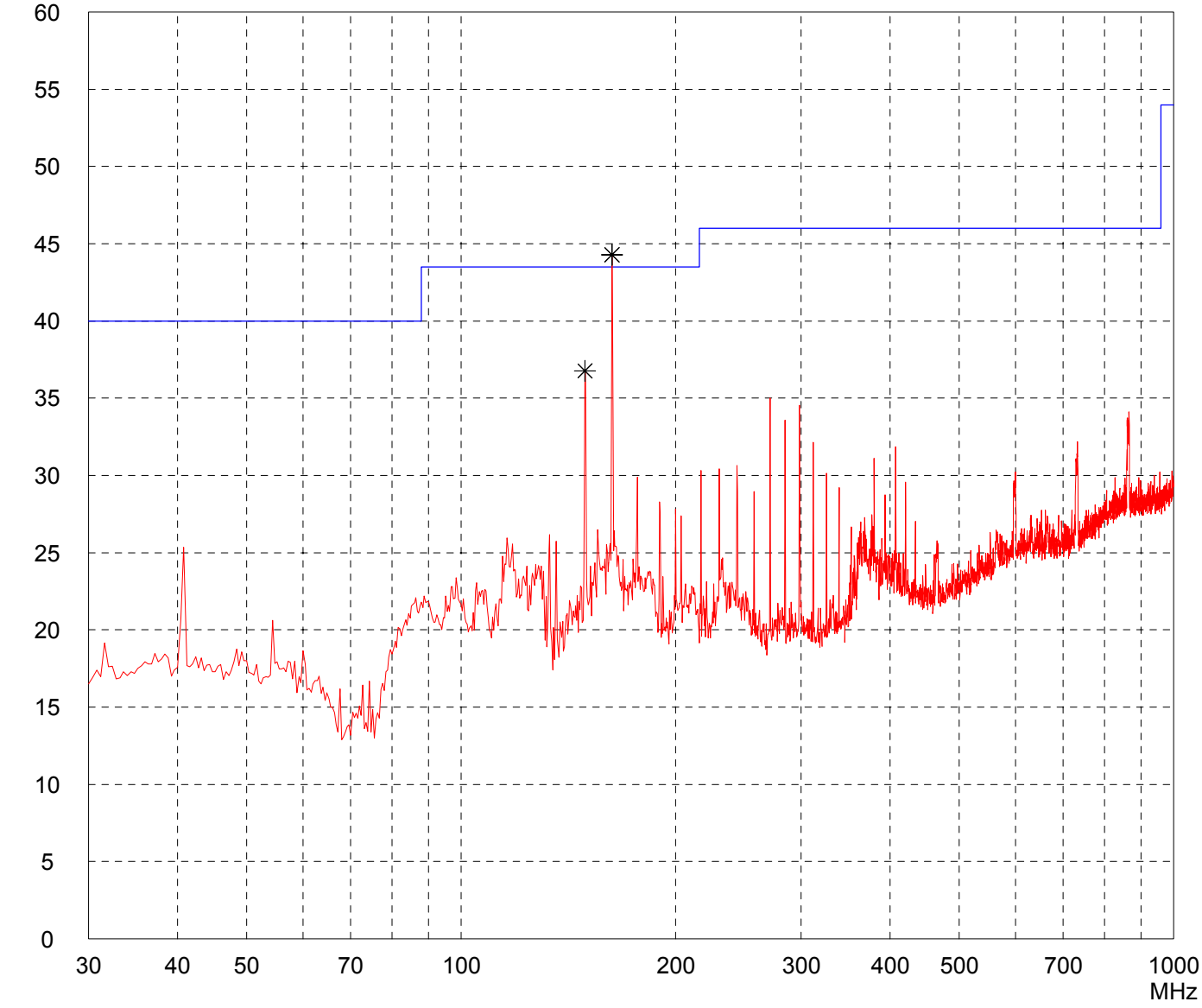
Result: Prescan	Project file: 55449-50287 Page of Pages

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

Model: RDHC-0502N0-01	Comment: - FCC setup: 115 V power supply - DC 5 V power supply with DELL Latitude - reading TAG continiously (Mifare 1k) - Note: with 30 MHz high-pass-filter
Serial no.: 1005000488	
Applicant: ACG Identification Technologies AT GmbH	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 06/13/2005 / 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 — Transducer: VULB 9163

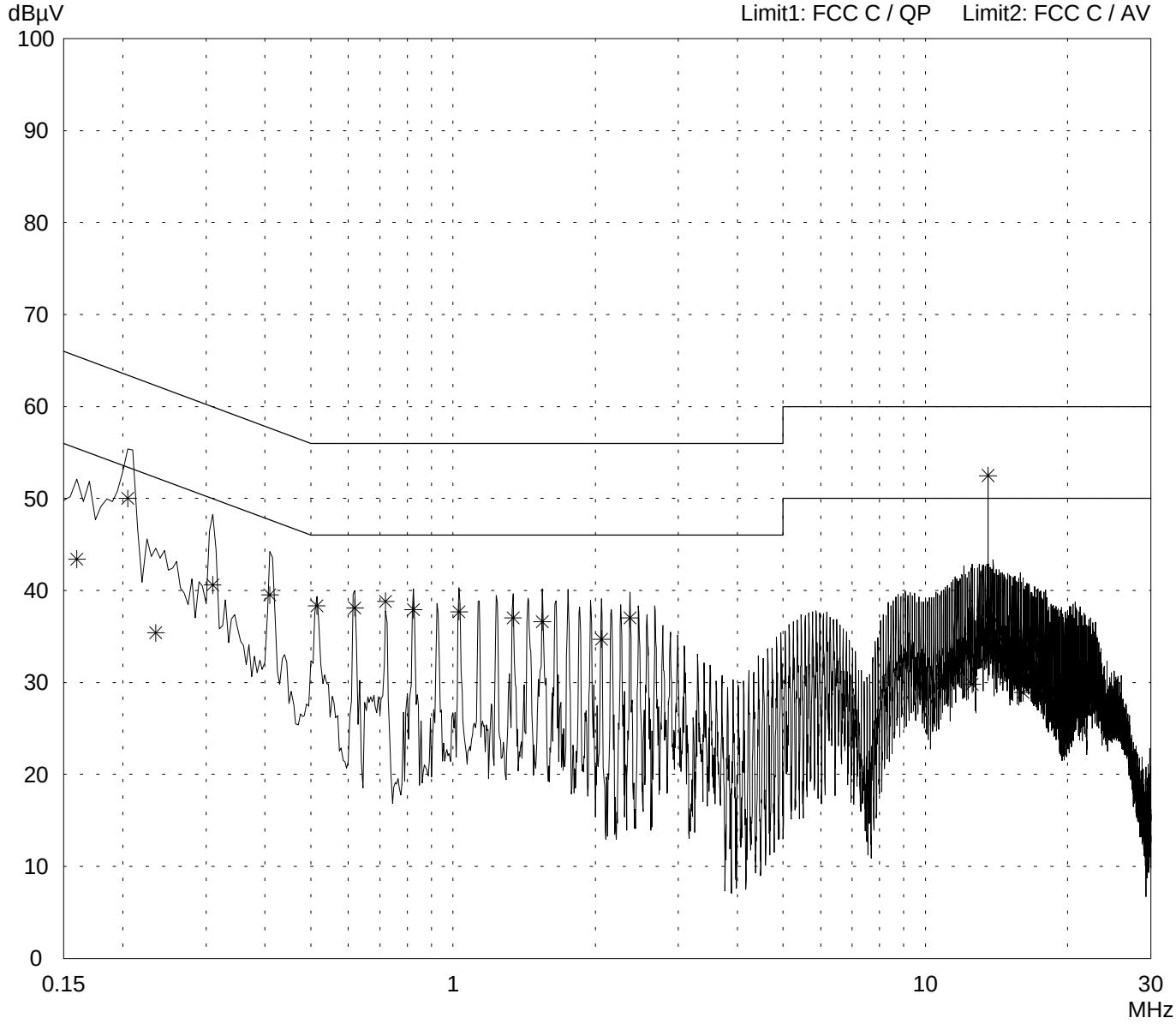


Result: Prescan	Project file: 55449-50287 Page of Pages

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

Model: RDHC-0502N0-01	Mode:
Serial no.: 1005000488	- FCC test setup: AC 115 V power supply - DC 5 V power supply with DELL Latitude - transmitting continiously
Applicant: ACG Identification Technologies AT GmbH	
Test site: Shielded room, cabin no. 4	
Tested on: Linecord Phase L1	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: semi automatically / File name:	

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

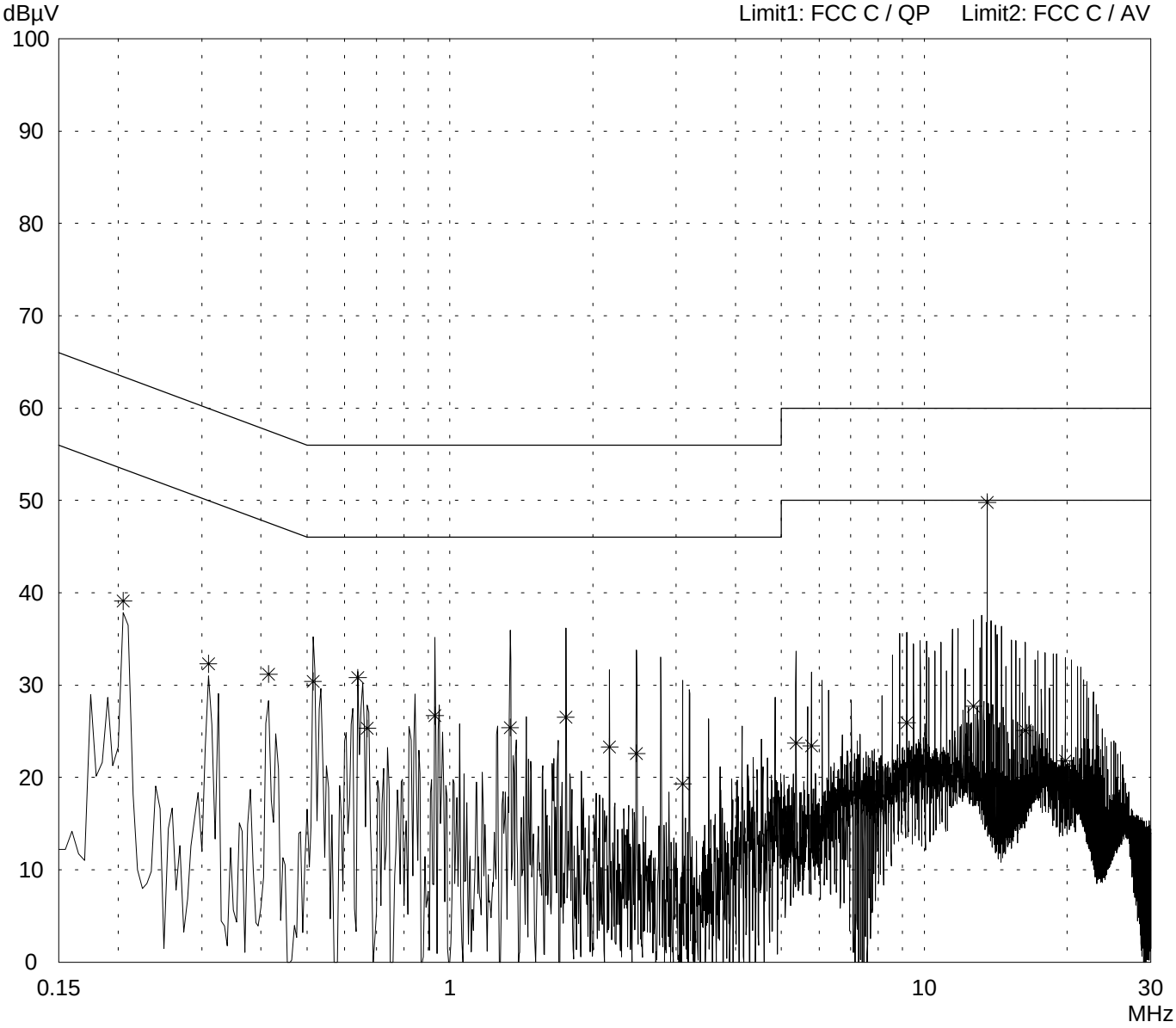


Result: Limit kept	Project file: 55449-50287 Page of Pages

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

Model: RDHC-0502N0-01	Mode:
Serial no.: 1005000488	- FCC test setup: AC 115 V power supply - DC 5 V power supply with DELL Latitude - transmitting continiously
Applicant: ACG Identification Technologies AT GmbH	
Test site: Shielded room, cabin no. 4	
Tested on: Linecord Phase L1	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: automatically / File name:	

Detector: Average / Final Results: AV	Final results: 20 dB Margin 25 Subranges

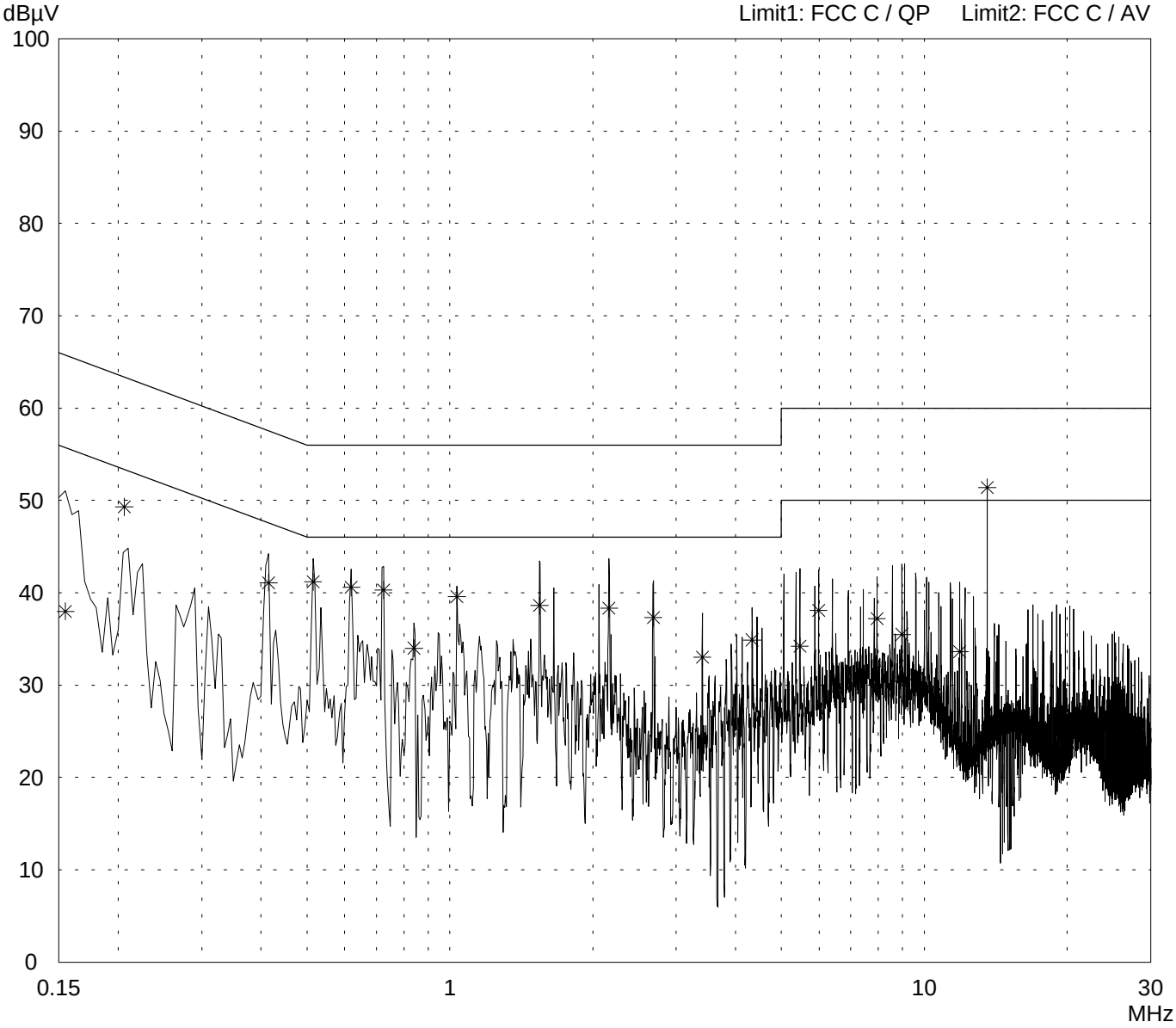


Result: Limit kept	Project file: 55449-50287 Page of Pages

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

Model: RDHC-0502N0-01	Mode:
Serial no.: 1005000488	- FCC test setup: AC 115 V power supply - DC 5 V power supply with DELL Latitude - transmitting continiously
Applicant: ACG Identification Technologies AT GmbH	
Test site: Shielded room, cabin no. 4	
Tested on: Linecord Phase N	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: semi automatically / File name:	

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



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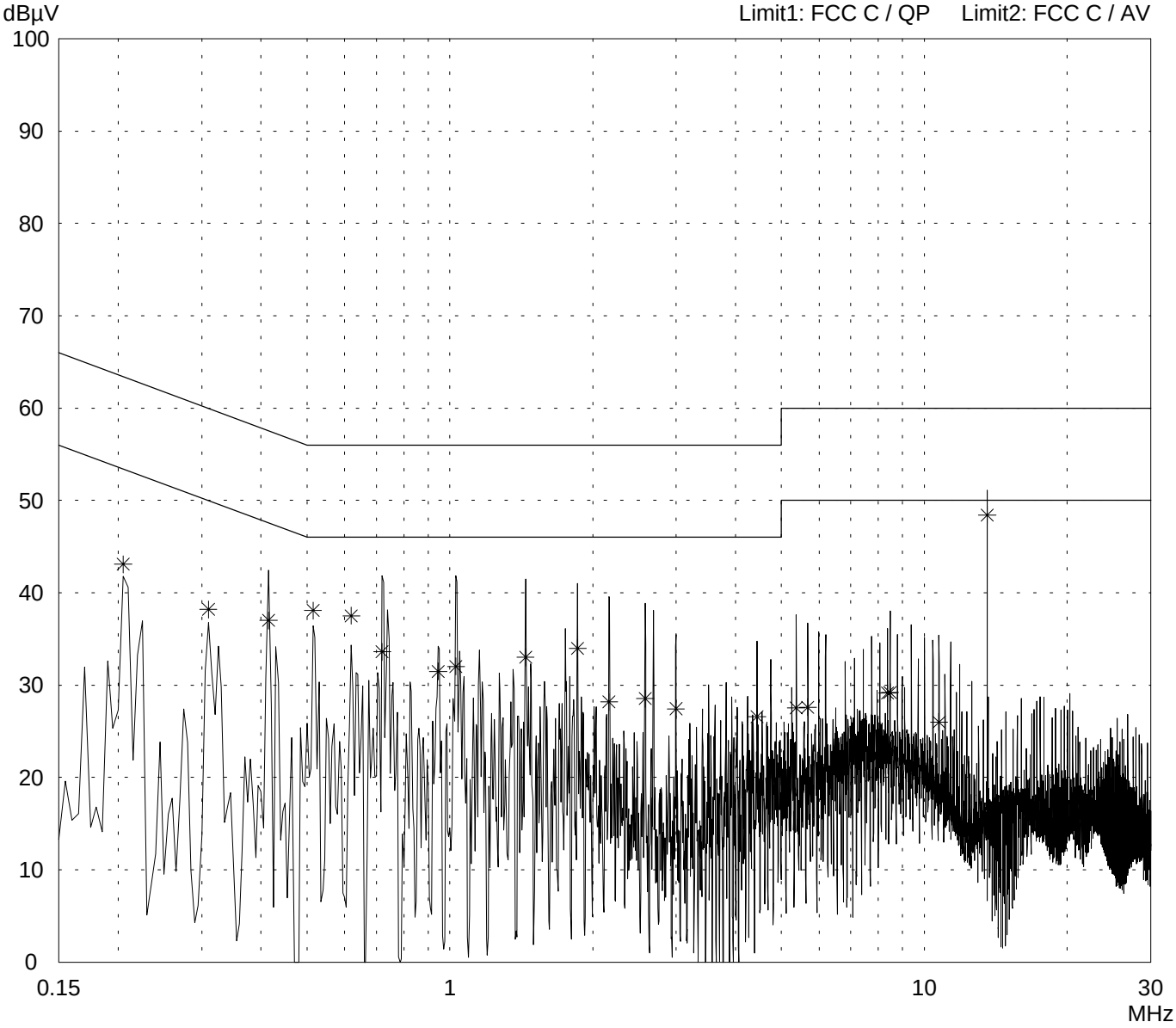
Conducted Emission Test 150 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: RDHC-0502N0-01	Mode:
Serial no.: 1005000488	- FCC test setup: AC 115 V power supply - DC 5 V power supply with DELL Latitude - transmitting continiously
Applicant: ACG Identification Technologies AT GmbH	
Test site: Shielded room, cabin no. 4	
Tested on: Linecord Phase N	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: automatically / File name:	

Detector: Average / Final Results: AV	Final results: 20 dB Margin 25 Subranges



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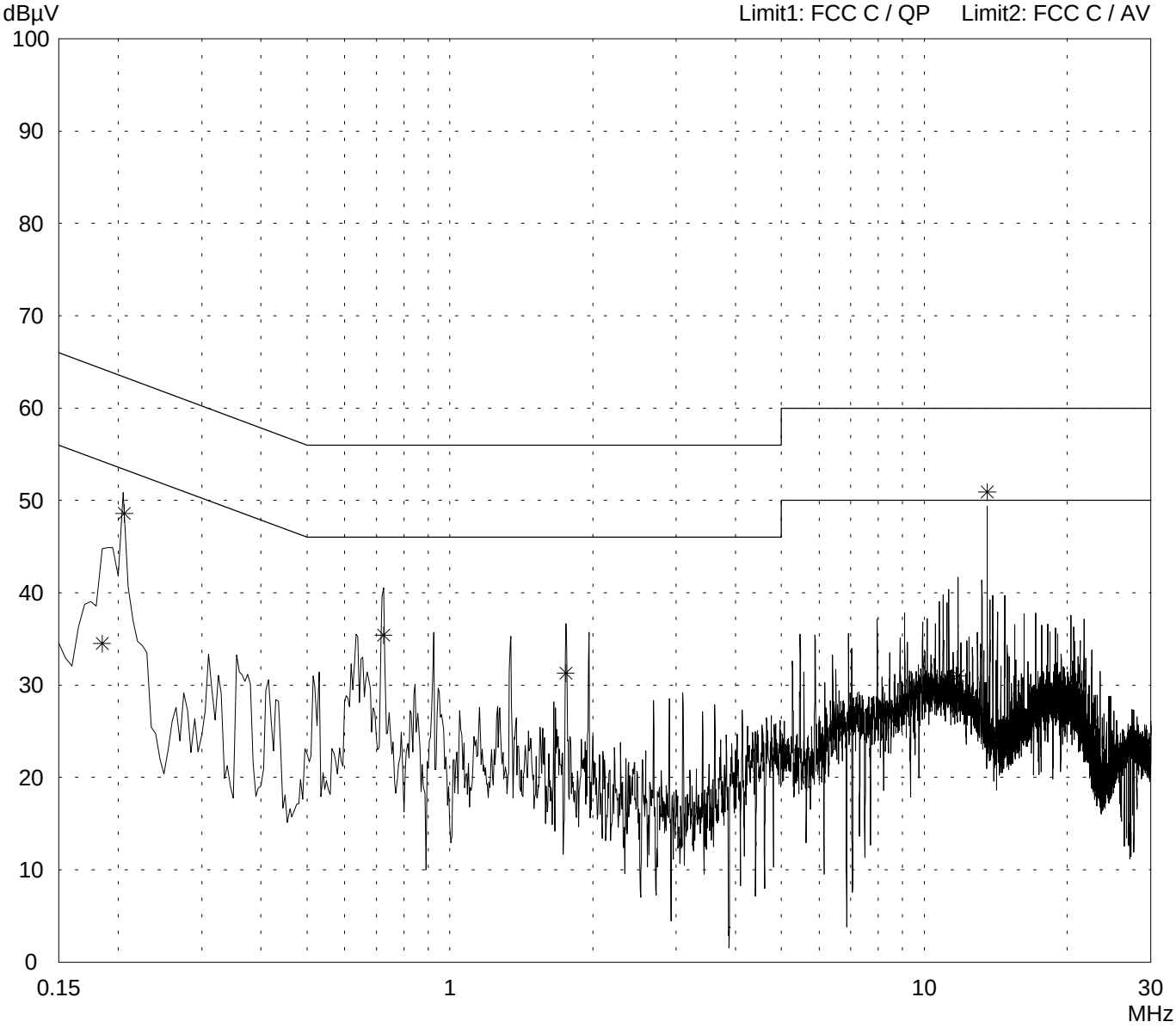
Conducted Emission Test 150 kHz - 30 MHz
according to FCC Part 15 Subpart C

Model: RDHC-0502N0-01	Mode:
Serial no.: 1005000488	- FCC test setup: AC 115 V power supply - DC 5 V power supply with DELL Latitude - reading TAG continiously (Mifare 1k)
Applicant: ACG Identification Technologies AT GmbH	
Test site: Shielded room, cabin no. 4	
Tested on: Linecord Phase L1	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: semi automatically / File name:	

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

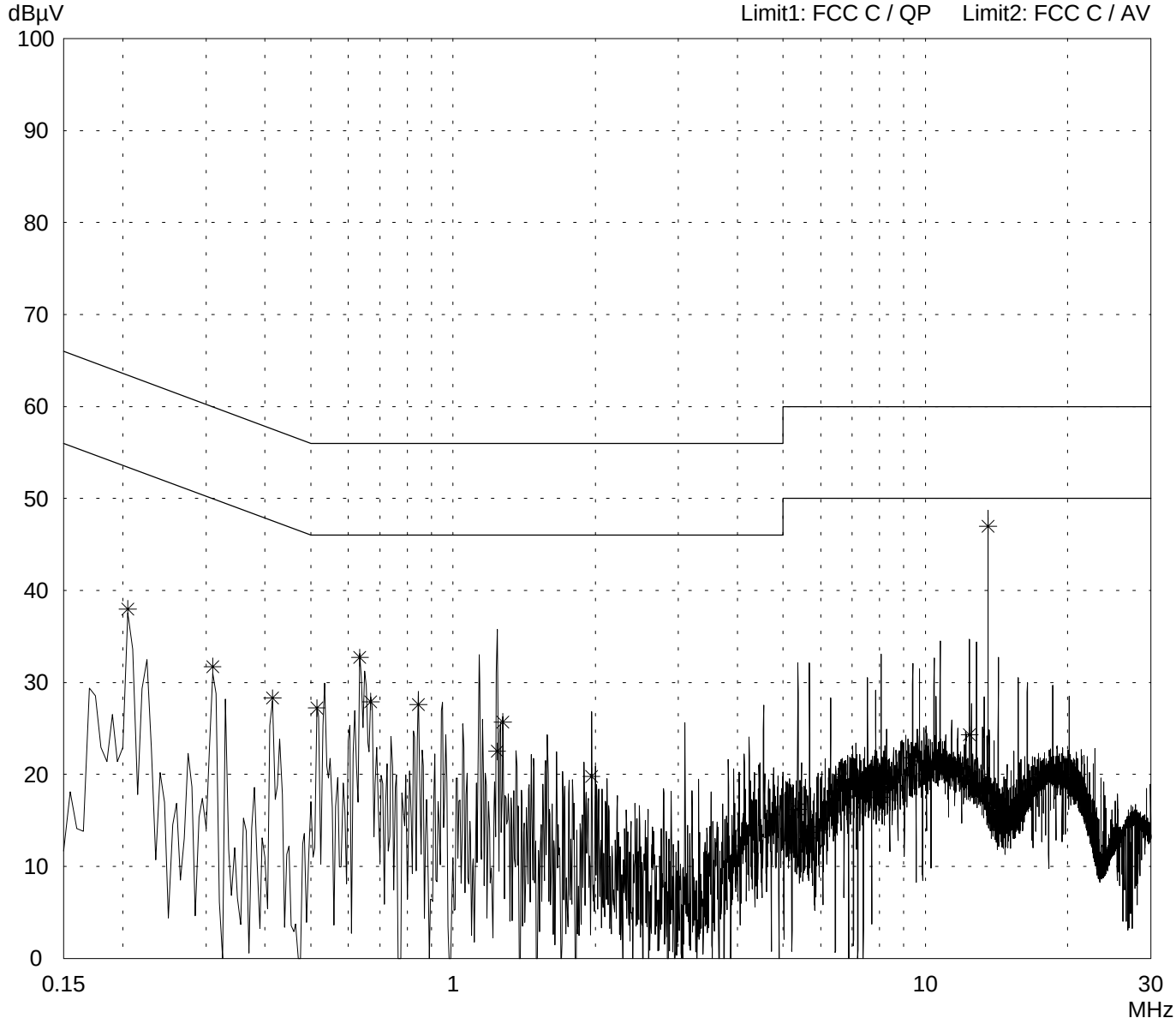


Result: Limit kept	Project file: 55449-50287 Page of Pages

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

Model: RDHC-0502N0-01	Mode:
Serial no.: 1005000488	- FCC test setup: AC 115 V power supply - DC 5 V power supply with DELL Latitude - reading TAG continiously (Mifare 1k)
Applicant: ACG Identification Technologies AT GmbH	
Test site: Shielded room, cabin no. 4	
Tested on: Linecord Phase L1	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: automatically / File name:	

Detector: Average / Final Results: AV	Final results: 20 dB Margin 25 Subranges



Result: Limit kept	Project file: 55449-50287 Page of Pages

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

Model: RDHC-0502N0-01	Mode:
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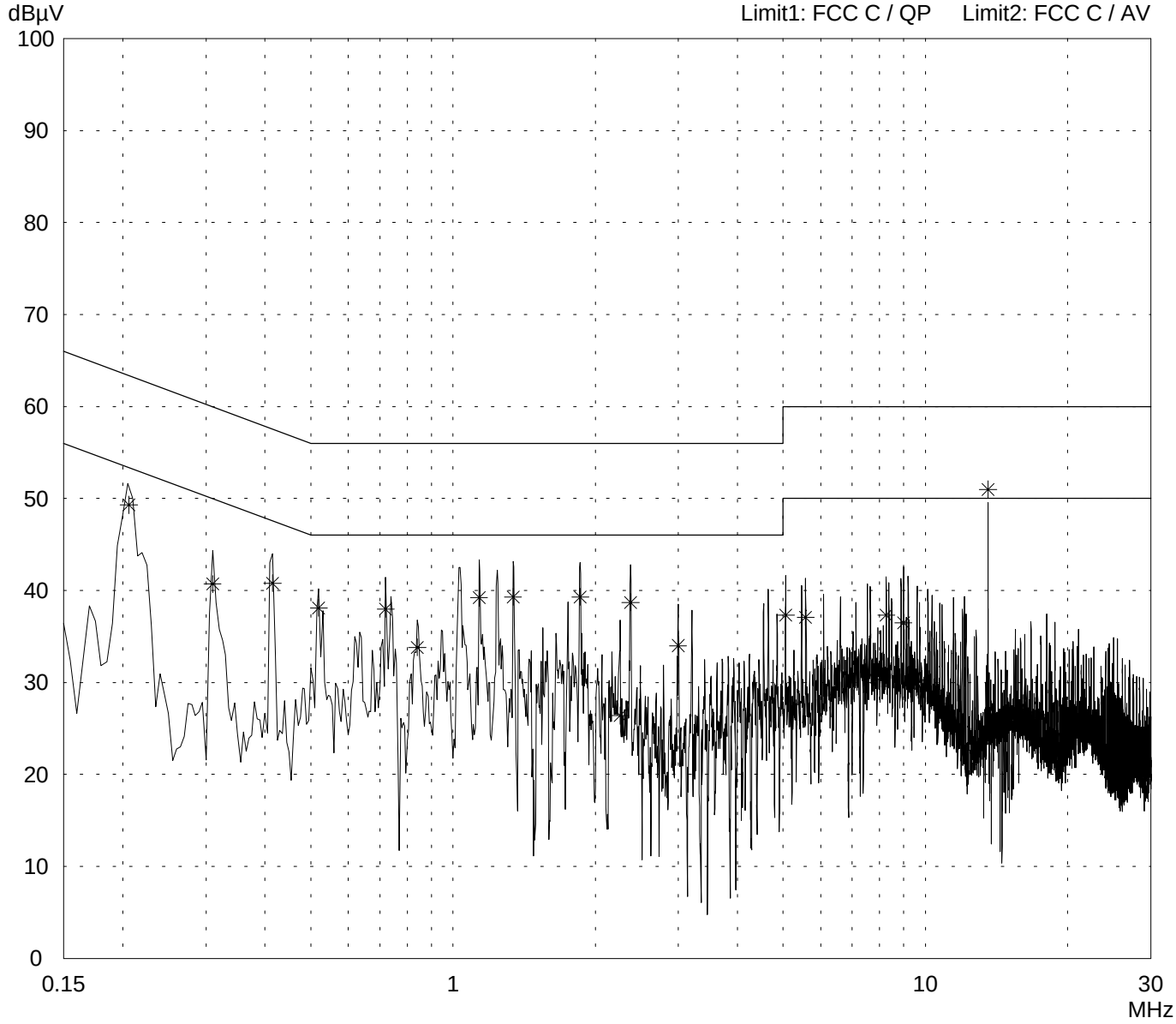
Tested on: Linecord Phase N	
Date of test: 06/13/2005 / Operator: M. Steindl	
Test performed: semi automatically / File name:	

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



Result: Limit kept	Project file: 55449-50287 Page of Pages

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

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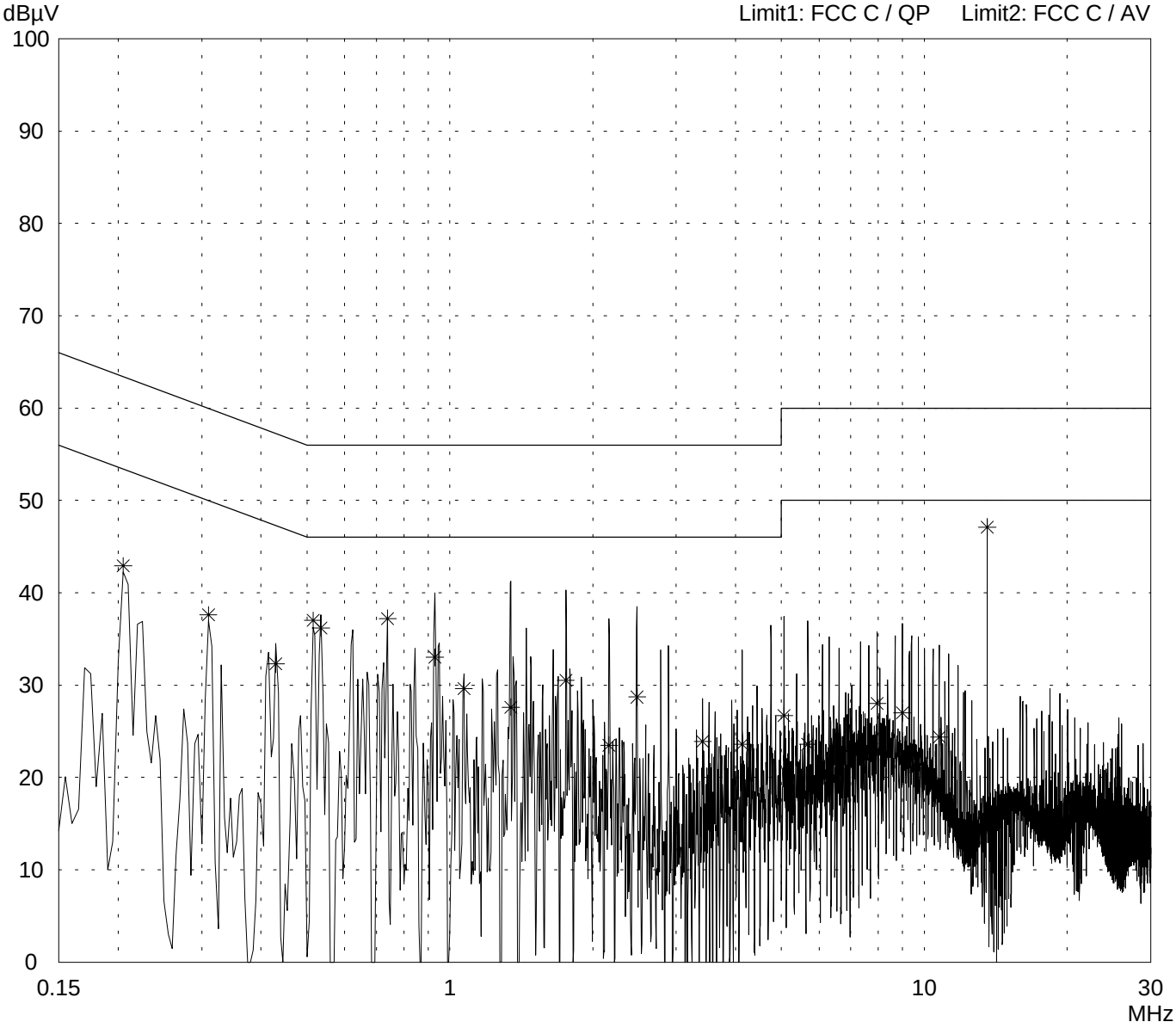
Test performed: automatically / File name:	

Detector: Average / Final Results: AV	Final results: 20 dB Margin 25 Subranges



Result: Limit kept	Project file: 55449-50287 Page of Pages