

CETECOM ICT Services GmbH

Radio Satellite Communication

Untertürkheimer Straße 6-10 . D-66117 Saarbrücken

Telephone: +49 (0)681 598-0

Telefax: -9075

RSC14

issued test report consists of 1 Pages

Page 1 (1)

Recognized by the
Federal Communications Commission
FCC–Identification Number: 90462
TCB ID: DE 0001



Anechoic chamber registration no.: 3463 (IC)

Accredited by the
German Accreditation Council
DAR–Registration Number
TTI–P–G 081/94–D0



Independent ETSI
compliance test house



Accredited Bluetooth™ Test Facility (BQTF)

Test Report No.: 2_3398-02-03/03
FCC Part 74.861 / CANADA RSS-123
AC 3000
FCC ID : DMOAC3KWD
IC : 2099A-AC3K

CETECOM – ICT Services GmbH
Untertürkheimerstr. 6-10
66117 Saarbrücken, Germany

Telephone: + 49 (0) 681 / 598-0
Fax: + 49 (0) 681 / 589-9075

Table of Contents

1 General Information

1.1 Notes

1.2 Testing Laboratory

1.3 Details of Applicant

1.4 Application Details

1.5 Test Item

1.6 Test Specifications

2 Technical Test

2.1 Summary of Test Results

2.2 Test Report

1 General Information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

Test Laboratory Manager:

2004-03-30	RSC8411	Berg M.
Date	Section	Name


Signature

Technical Responsibility for Area of Testing:

2004-03-30	RSC8412	Hausknecht D.
Date	Section	Name


Signature

1.2 Testing Laboratory

CETECOM ICT Services GmbH

Untertürkheimer Straße 6 - 10

66117 Saarbrücken

Germany

Telephone : + 49 681 598 - 0

Telefax : + 49 681 598 - 9075

E-mail : info@ict.cetecom.de

Internet : www.cetecom-ict.de

Accredited testing laboratory

The Test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025.

DAR-registration number : TTI-P-G 166/98-30

Accredited Bluetooth™ Test Facility (BQTF)

[BLUETOOTH is a trademark owned by Bluetooth SIG, Inc. and licensed to CETECOM](#)

1.3 Details of Applicant

Name : Sennheiser electronic GmbH & Co. KG

Street : Am Labor 1

City : D-30900 Wedemark

Country : Germany

Telephone : +49 (0) 5130 600-0

Telefax : +49 (0) 5130 600-324

Contact : Mr. Klaus Willemsen

Telephone : +49 (0) 5130 600-542

E-mail : willemsk@sennheiser.com

1.4 Application Details

Date of receipt of application : 2004-03-10

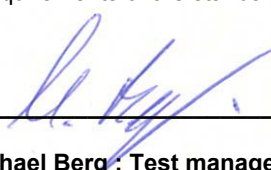
Date of receipt of test item : 2004-03-12

Date of test : 2004-03-12/30

1.5 TEST ITEM

Type of equipment : Transmitter (antenna) combiner 8 in 1
Type designation : **AC 3000**
Manufacturer : see applicant
Street :
City :
Country :
Serial number : --
Additional information :
Frequency : **518 MHz – 864 MHz (518-608 MHz and 614-806 MHz)**
Type of modulation : -
Number of Antenna inputs: **8**
Antenna : BNC connector
Power supply : **100 – 230V AC**
Output power : Max 200 mW
Field strength : 120.5 dBµV/m in 3m
Occupied bandwidth : max. 200 kHz (depends on the input signal)
Transmitter spurious : **-40 dBm (noise floor)**
Receiver spurious : -
Temperature range : -30°C - +50°C
FCC ID : DMOAC3KWD
IC : 2099A-AC3K

DECLARATION OF COMPLIANCE: I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Signature: 

Date: 2004-03-12 Michael Berg ; Test management
NAME AND TITLE (Please print or type):

1.6 Test Specifications:

**FCC Part 74 Subpart H
CANADA RSS-123**

2 Technical Test

The test were done with 3 SR 300 IEM (FCC ID: DMOF2EUVL) as input signal

2.1 Summary of Test Results

TEST PROCEDURE

All tests were done in accordance with the EIA/TIA 603.

THE SUBSTITUTION METHOD (TIA/EIA 603) WAS USED.

This products fulfills also the requirements for CANADA RSS-123

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

Final verdict : PASS

2.2 Test report

TEST REPORT

Test report no.: **2_3398-02-03/03**

TEST REPORT REFERENCE

LIST OF MEASUREMENTS

PARAMETER TO BE MEASURED	PAGE
OUTPUT POWER (radiated) FCC Rule Part 74.861 (e)(1)(ii)	9
AFC FREQ ERROR vs. VOLTAGE FCC Rule Part 74.861	10
AFC FREQ ERROR vs. TEMPERATURE	11
CHARACTERISTICS OF THE AUDIO MODULATION CIRCUITRY	12
OCCUPIED BANDWIDTH FCC Rule Part 74.861(e)(3). (5)/ Sec. 2.1049	13
Emission mask FCC 74 861(e)(6)	14
CONDUCTED EMISSIONS FCC 74 861(e)(6)	20
RADIATED EMISSIONS FCC Rule Part 74 subpart H	23
Conducted emissions § 15.107/207	28
TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS	29
Test setup	31
Photographs of the equipment	34

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

OUTPUT POWER (conducted)

FCC Rule Part 74.861 (e)(1)(ii)

Method of measurement

The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the un-modulated output power was measured by means of a RF power Meter.

Results:

Carrier input level : 20 mW / 13 dBm

TEST CONDITIONS		CARRIER POWER (mW)					
Frequencies (MHz)		518.000	644.300	758.000	804.000	864.000	
T_{nom}(23)°C	V_{nom}(230)V	24,5 mW	22,9 mW	21,9 mW	21.9mW	21.4 mW	
	Gain	+0,9 dB	+0,6 dB	+0,4 dB	+0,4 dB	+0,3 dB	
Measurement uncertainty		< ± 2 dB					

The maximum output power is : 25 mW per Signal.

Calculated max. output power for 8 input signals is 200mW.

LIMIT

FCC Rule Part 74.861

Frequency range MHz	Power level conducted mW
54-72, 76-88, 174-216	50
470-608, 614-806	250

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

AFC FREQ ERROR vs. VOLTAGE

FCC Rule Part 74.861

Method of measurement:

The EUT was fixed in test fixture to a resistive coaxial attenuator of normal load impedance, and the un-modulated carrier was measured by means of a spectrum analyzer .

The input voltage was varied in an range ± 15 % of the nominal voltage and the maximum change in frequency was noted within one minute.

The temperature tests were performed for each frequency range on one channel

LIMIT

FCC Rule Part 74.861(4)

The frequency tolerance of the transmitter shall be 0.005 percent

NOTE:

This test is not required , because the AC 3000 Antenna combiner is an amplifier which does not generate a fundamental frequency.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64 ; 05

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

AFC FREQ ERROR vs. TEMPERATURE

Method of measurement:

The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the un-modulated carrier was measured by means of a spectrum analyzer .

With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours . Power was applied and the maximum change in frequency was noted within one minute.

With power OFF , the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency error was noted within one minute .

The temperature tests were performed for each frequency range on one channel

LIMIT

FCC Rule Part 74.861

The frequency tolerance of the transmitter shall be 0.005 percent
--

NOTE:

This test is not required , because the AC 3000 Antenna combiner is an amplifier which does not generate a fundamental frequency.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64 ; 05

Test report no.: **2_3398-02-03/03** Issue Date: 12.03.2004 Page 12 (12)

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

CHARACTERISTICS OF THE AUDIO MODULATION CIRCUITRY

FCC Rule Part 74 .861 (e)(3)

Method of measurement :

The audio frequency responds was measured in accordance with EIA/TIA 603.

The plots shows 10 curves with different modulation levels. starting from 0.02mV to 2000 mV (30%+20 dB Modulation). the frequency is varied from 10 Hz to 25 kHz .

Limit : max Deviation $\pm$ 75 kHz

NOTE:

This test is not required , because the AC 3000 Antenna combiner is an amplifier which does not generate a fundamental frequency.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

Equipment under test : AC 3000
 Ambient temperature : 23°C
 Relative humidity : 36%

OCCUPIED BANDWIDTH

FCC Rule Part 74.861(e)(3). (5)/ Sec. 2.1049

Test method :

The audio frequency responds was measured in accordance with EIA/TIA 603.

Data in the plots show that all sidebands between 50 & 100% for the authorized bandwidth are attenuated by at least 25dB. From 100 to 250% of the authorized bandwidth they are attenuated by at least 35dB and beyond 250% 43 log(Po) dB. The plot shows the transmitter modulated with 15000 Hz (the highest modulation frequency). adjusted for 50% modulation plus 16 dB. The spectrum analyzer was set with the un-modulated carrier at the top of the screen. The test procedure diagram and occupied bandwidth plots follow.

TEST CONDITIONS		OCCUPIED BANDWIDTH (kHz)					
Frequency (MHz)		518.2	758.0	864.0			
T _{nom} (23)°C	V _{nom} (115.0)V	91.182	89.178	89.178			
max. Deviation (FM)		47 kHz					
Measurement uncertainty		±0.5%					

Limits

FCC Rule Part 74.861(e)(5)

The operating bandwidth shall not exceed 200 kHz

Carson's Rule: (Section 2.202(g))

$B_n = 2M + 2DK$, $K=1$

$M = 18 \text{ kHz}$

$D = 47 \text{ kHz}$

$B_n = 2(18) + 2(47)(1) = 130 \text{ kHz}$

B_n = Bandwidth

M = Maximum Modulating Frequency

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

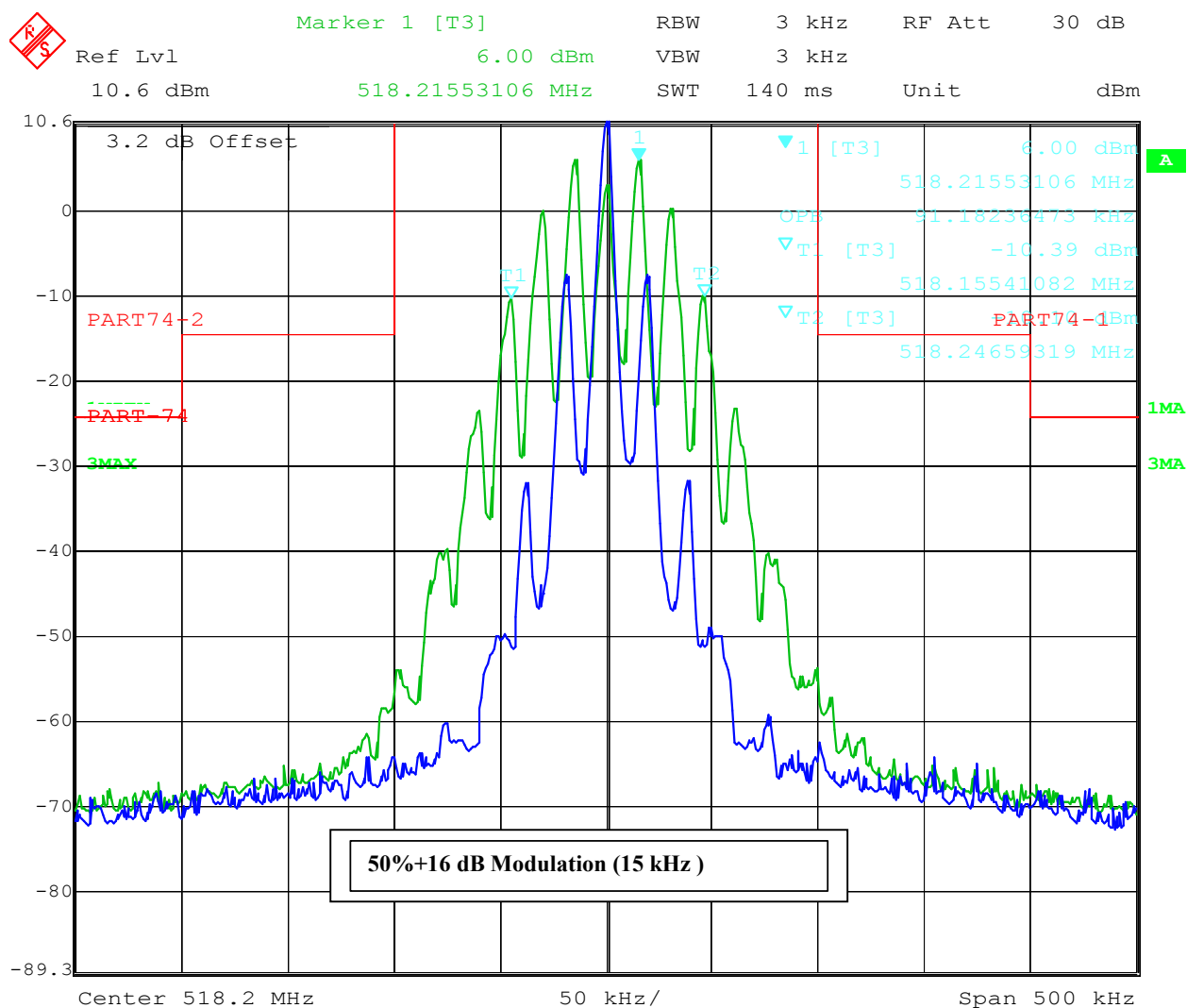
Test report no.: **2_3398-02-03/03** Issue Date: 12.03.2004 Page 14 (14)

Equipment under test : AC 3000
Ambient temperature : 23°C
Relative humidity : 36%

OCCUPIED BANDWIDTH
Emission mask

FCC Rule Part 74.861(e)(3). (5)/ Sec. 2.989
FCC 74 861(e)(6)

Frequency: 518.200 MHz / max. deviation : ± 47 kHz (Limit ± 75 kHz)



Date: 30.MAR.2004 07:12:19

Limits

FCC Rule Part 74.861(e)(6)

$f \pm 100$ kHz to $f \pm 200$ kHz	$f \pm 200$ kHz to $f \pm 500$ kHz	$f \pm 500$ kHz
25 dBc	35 dBc	-43 +10 log ₁₀ (mean output power in watts) dB below the mean output power

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

Test report no.: **2_3398-02-03/03** Issue Date: 12.03.2004 Page 15 (15)

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

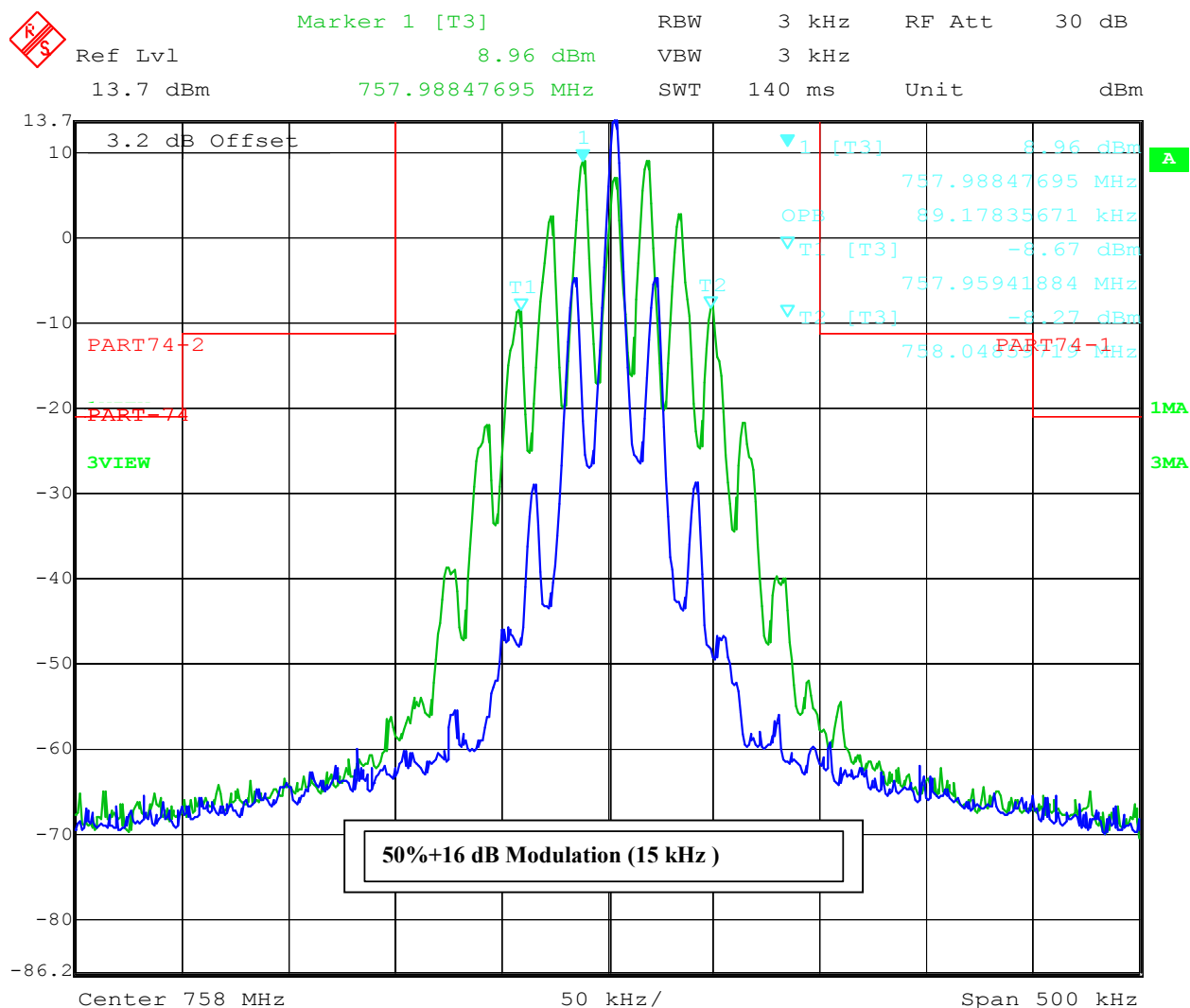
OCCUPIED BANDWIDTH

EMISSION MASK

FCC Rule Part 74.861(e)(3). (5)/ Sec. 2.1049

FCC 74 861(e)(6)

Frequency: 758.00 MHz / max. deviation : ± 47 kHz (Limit ± 75 kHz)



Date: 30.MAR.2004 07:09:16

Limits

FCC Rule Part 74.861(e)(6)

$f \pm 100$ kHz to $f \pm 200$ kHz	$f \pm 200$ kHz to $f \pm 500$ kHz	$f \pm 500$ kHz
25 dBc	35 dBc	-43 +10 log ₁₀ (mean output power in watts) dB below the mean output power

OCCUPIED BANDWIDTH

FCC Rule Part 74.861(e)(3). (5)/ Sec. 2.1049

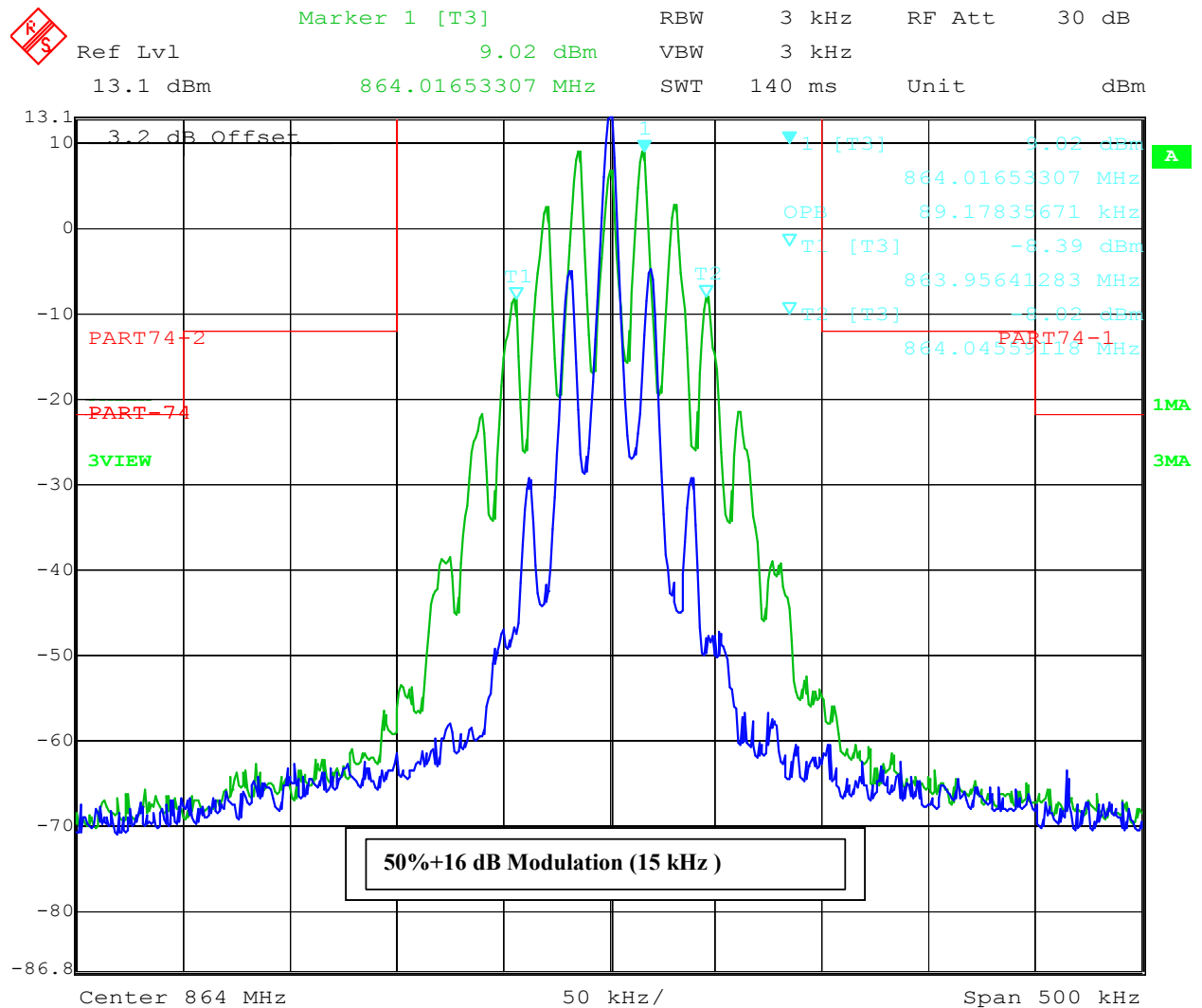
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

FCC 74 861(e)(6

Frequency: 864.000 MHz / max. deviation : ± 47 kHz (Limit ± 75 kHz)



Date: 30.MAR.2004 07:18:40

Limits

FCC Rule Part 74.861(e)(6)

f ± 100 kHz to f ± 200 kHz	f ± 200 kHz to f ± 500 kHz	f ± 500 kHz
25 dBc	35 dBc	-43 + 10 log₁₀(mean output power in watts) dB below the mean output power

SIGNAL IN VERSUS SIGNAL OUT

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

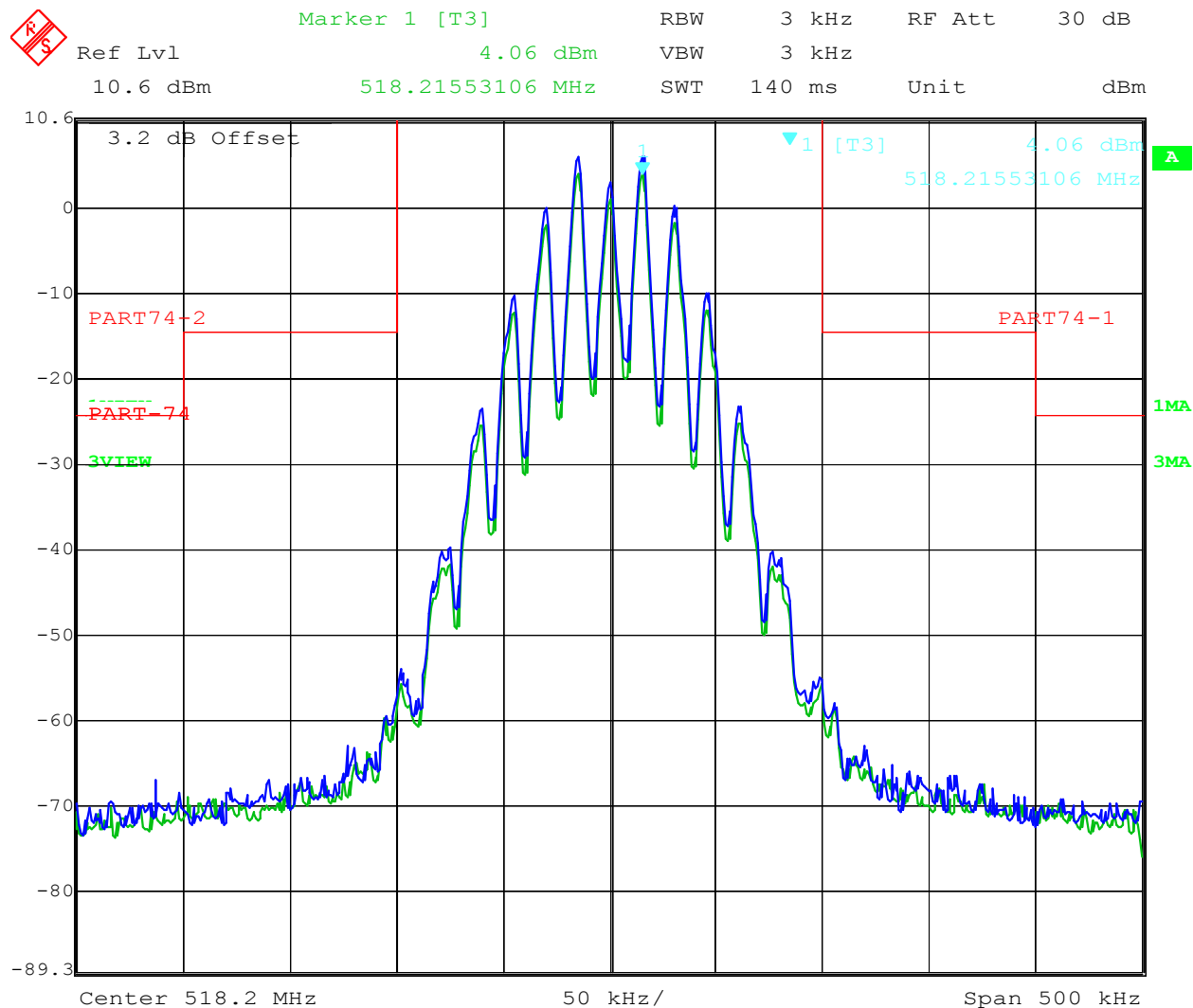
Test report no.: **2_3398-02-03/03** Issue Date: 12.03.2004 Page 17 (17)

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

518.20 MHz



Date: 30.MAR.2004 07:14:11

Green = Input
Blue = Output

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64, 05, 51

Test report no.: **2_3398-02-03/03** Issue Date: 12.03.2004 Page 18 (18)

Equipment under test : AC 3000

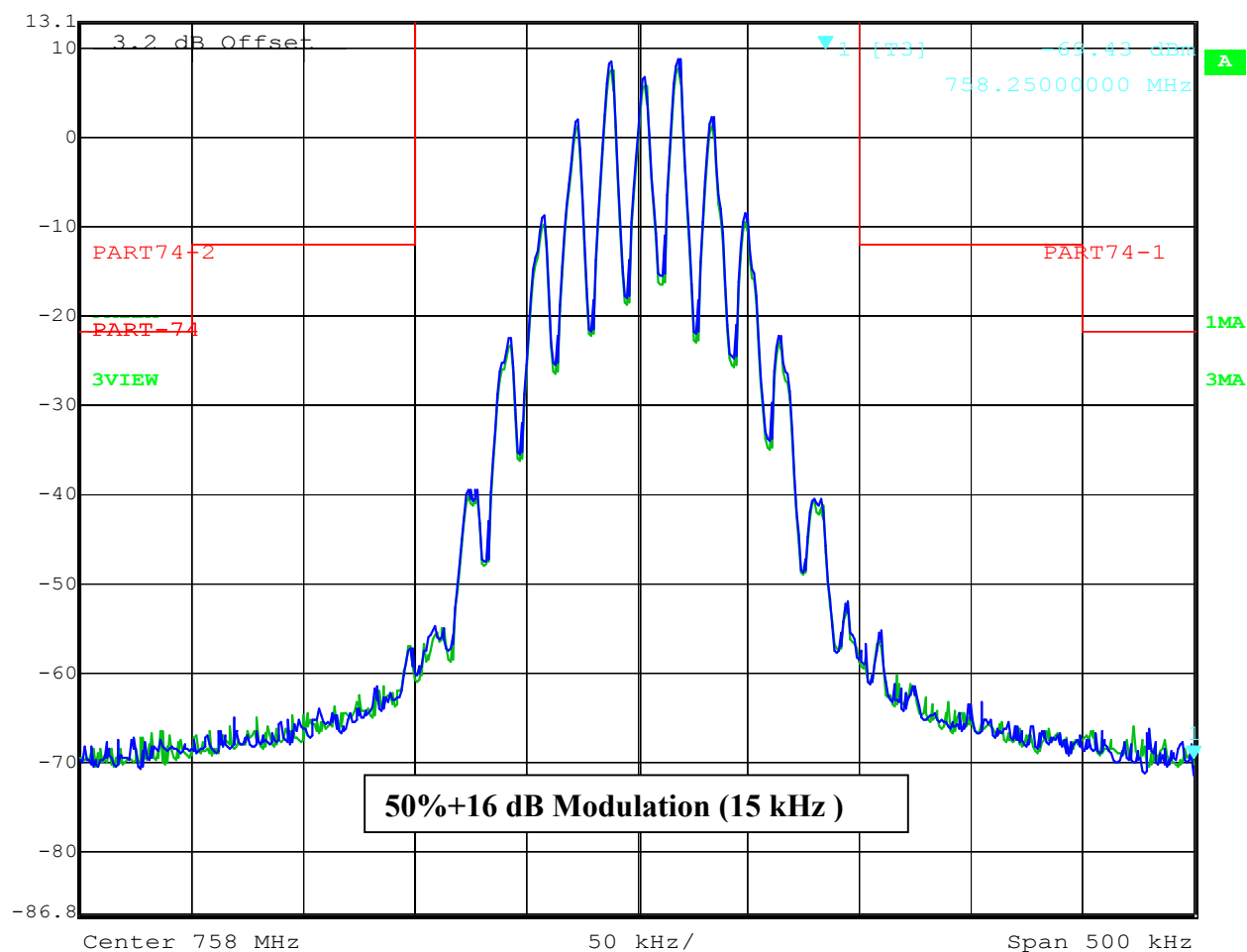
Ambient temperature : 23°C

Relative humidity : 36%

SIGNAL IN VERSUS SIGNAL OUT

758.00 MHz

	Marker 1 [T3]	RBW	3 kHz	RF Att	30 dB
	Ref Lvl	-69.43 dBm	VBW	3 kHz	
	13.1 dBm	758.2500000 MHz	SWT	140 ms	Unit dBm



Date: 30.MAR.2004 07:50:01

Green = Input

Blue = Output

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

Test report no.: 2_3398-02-03/03 Issue Date: 12.03.2004 Page 19 (19)

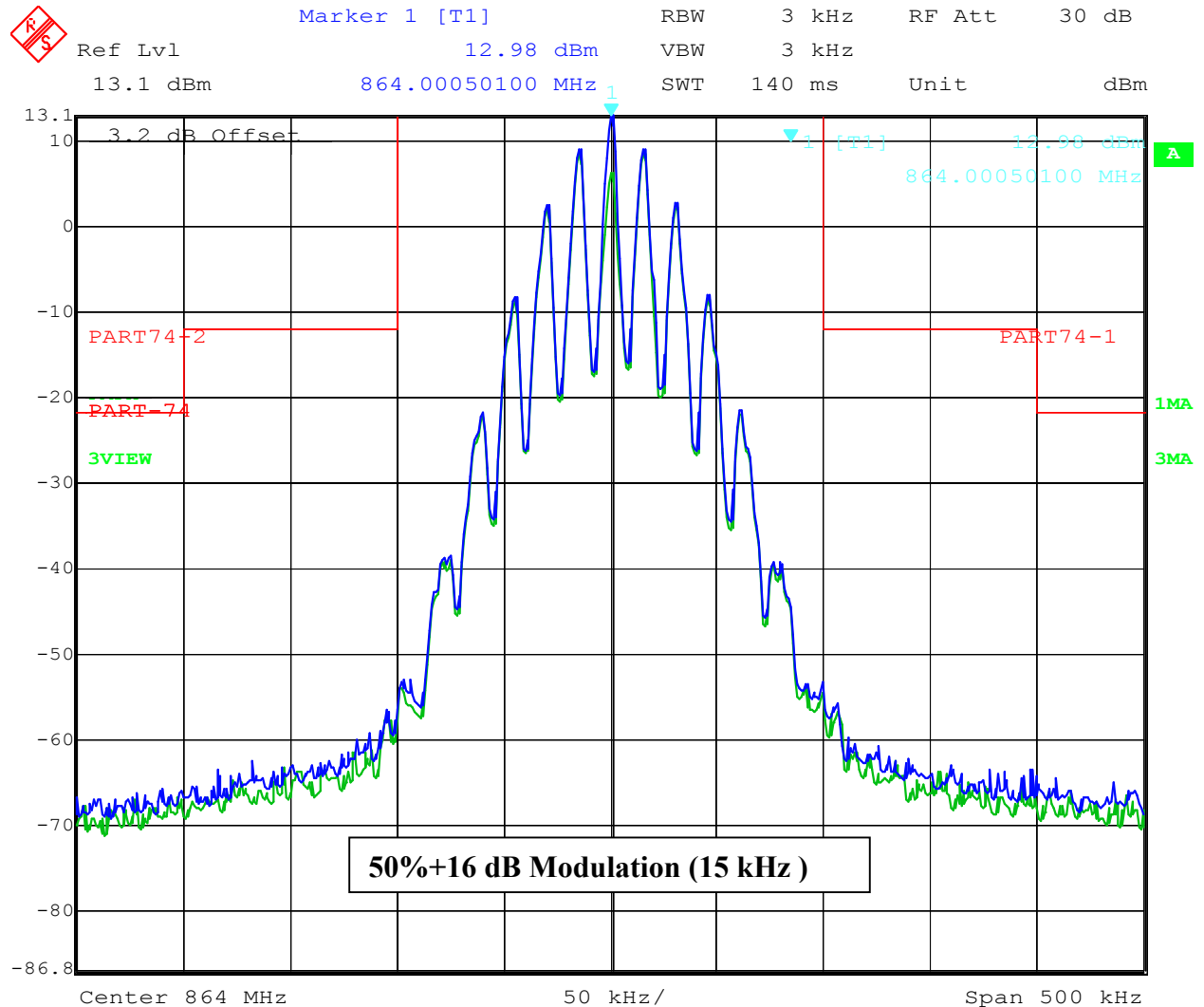
Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

SIGNAL IN VERSUS SIGNAL OUT

864.00 MHz



Date: 30.MAR.2004 07:16:41

Green = Input
 Blue = Output

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

CONDUCTED EMISSIONS

FCC 74 861(e)(6)

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBm)	limit max. allowed emission power (dBm)	actual attenuation below frequency of operation (dBc)	results
518.0 MHz					
518.2		13.9	-13.0 (26.9 dBc)		carrier
no	peak	found			complies
758.0 MHz					
758.0		13.4	-13.0 (26.4 dBc)		carrier
no	peak	found			complies
864.0 MHz					
864		13.3	-13.0 (24.3 dBc)		carrier
no	peak	found			complies
Measurement uncertainty			± 0.5dB		

Limits

FCC Rule Part 74.861(e)(6)

(6) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (i) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;
- (ii) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;
- (iii) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least 43+10log10 (mean output power in watts) dB.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

Test report no.: **2_3398-02-03/03** Issue Date: 12.03.2004 Page 21 (21)

Equipment under test : AC 3000

Ambient temperature : 23°C

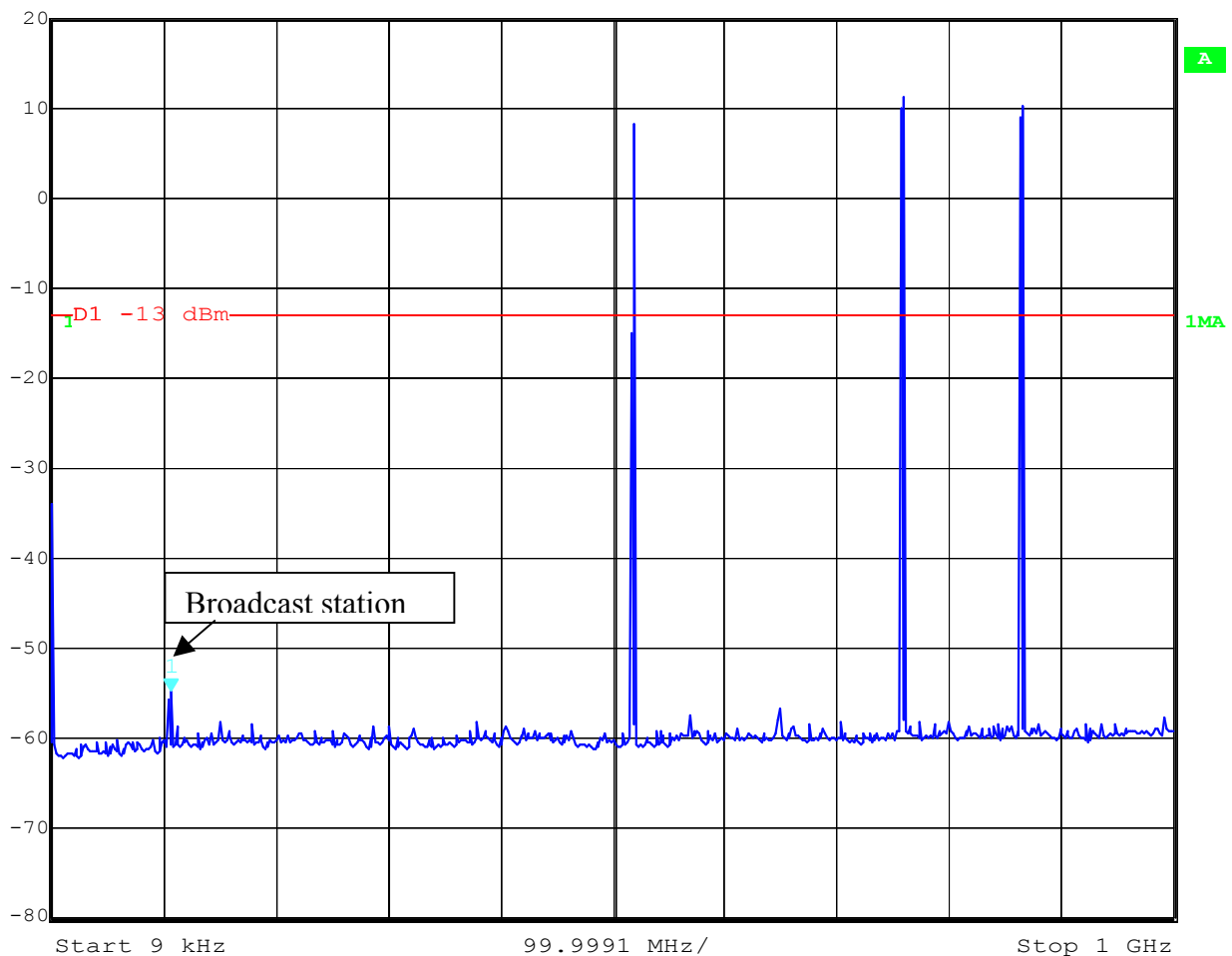
Relative humidity : 36%

CONDUCTED EMISSIONS

FCC 74 861(e)(6)

Frequency range 9 kHz - 1 GHz

	Marker 1 [T1]	RBW	100 kHz	RF Att	30 dB
	Ref Lvl	-54.79 dBm	VBW	100 kHz	
	20 dBm	106.22046894 MHz	SWT	250 ms	Unit dBm



Date: 29.MAR.2004 14:41:53

Limits

FCC Rule Part 74.861(e)(6)

(6) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (i) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;
- (ii) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;
- (iii) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least $43 + 10 \log_{10}$ (mean output power in watts) dB.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

Test report no.: 2_3398-02-03/03 Issue Date: 12.03.2004 Page 22 (22)

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

CONDUCTED EMISSIONS

FCC 74 861(e)(6)

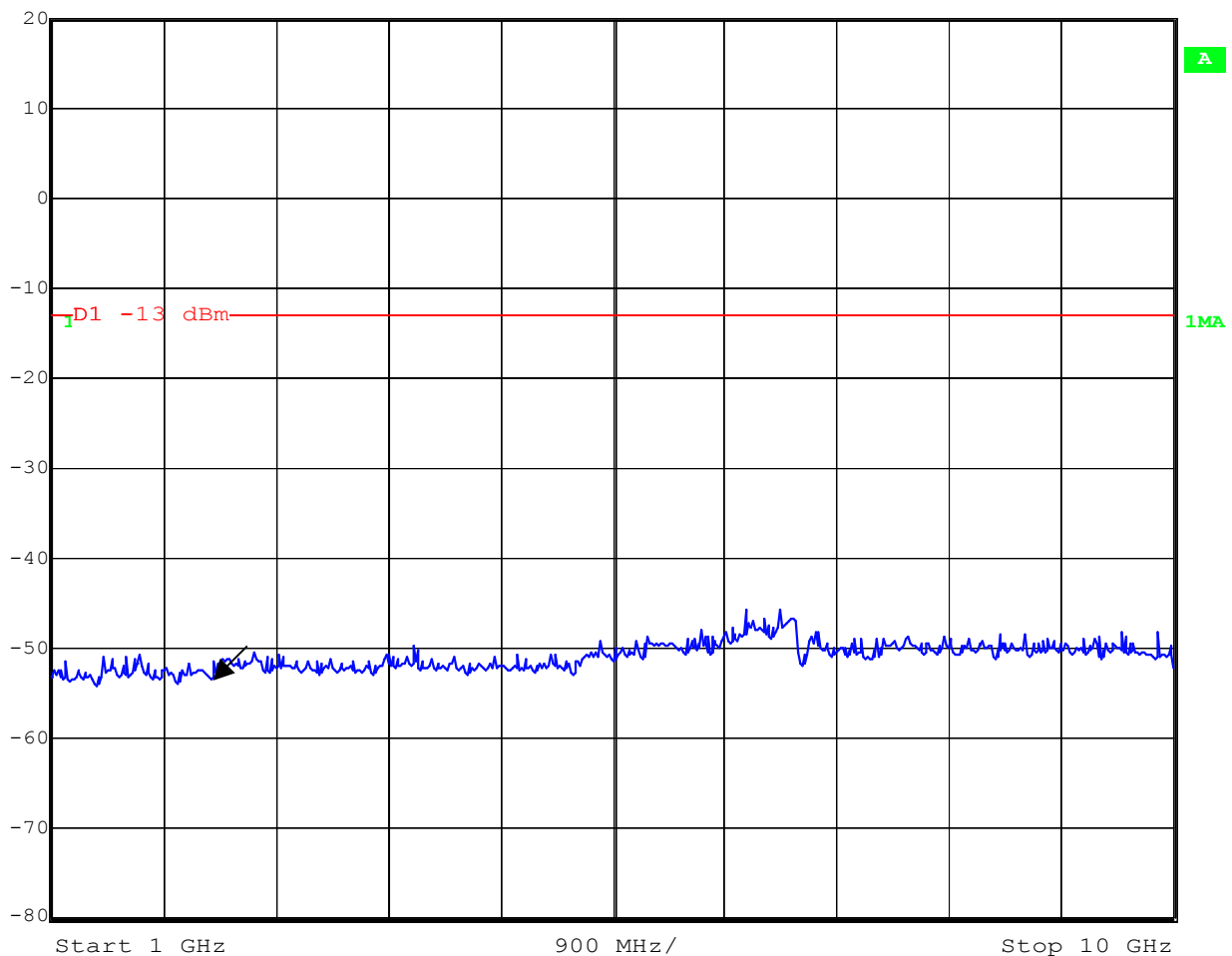
Frequency range 1 – 10 GHz



Ref Lvl

20 dBm

RBW	1 MHz	RF Att	30 dB
VBW	1 MHz		
SWT	52 ms	Unit	dBm



Date: 29.MAR.2004 14:41:03

Limits

FCC Rule Part 74.861(e)(6)

(6) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (i) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;
- (ii) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;
- (iii) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least $43+10\log_{10}$ (mean output power in watts) dB.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

64, 05, 51

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

RADIATED EMISSIONS

FCC Rule Part 74 subpart H

Test procedure

- 1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
- 2). The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the frequency of the transmitter.
- 3). The output of the test antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- 4). The transmitter shall be switched on, if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- 5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- 6). The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- 7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- 8). The maximum signal level detected by the measuring receiver shall be noted.
- 9). The transmitter shall be replaced by a substitution antenna (tuned dipole for f less than 1GHz and horn for frequency higher than 1GHz).
- 10). The substitution antenna shall be oriented for vertical polarization and the length (if a dipole antenna is used) of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- 11). The substitution antenna shall be connected to a calibrated signal generator.
- 12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- 13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
- 14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
- 15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
- 16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.
- 17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.
- 18). Repeat above substitution measurement procedure for fundamental and all harmonica emissions.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 - 24

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

Freg	SA Reading	SG Setting	Ant. gain	Dipole gain	Cable loss	ERP Result	Limit	Margin	Pol
MHz	dBμV	dBm	dBd	dBd	dB	dBm	dBm	dBm	H/V
518.0	110.2	15.5		0.0	2.7	12.8			V
518.0	108.4	12.9		0.0	2.7	10.2			H
no traceable peak found									
758.0	109.1	14.4		0.0	2.9	11.5			V
758.0	106.5	12.0		0.0	2.9	9.1			H
no traceable peak found									
864.0	107.6	13.0		0.0	3.2	9.8			V
864.0	104.9	10.4		0.0	3.2	7.2			H
no traceable peak found									

Limits

FCC Rule Part 74.861(e)(6)

$f \pm 100 \text{ kHz to } f \pm 200 \text{ kHz}$	$f \pm 200 \text{ kHz to } f \pm 500 \text{ kHz}$	$f \pm 500 \text{ kHz}$
25 dBc	35 dBc	-43 +10 log ₁₀ (mean output power in watts) dB below the mean output power

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Test report no.: **2_3398-02-03/03** Issue Date: 12.03.2004 Page 25 (25)

Equipment under test : AC 3000

Ambient temperature : 23°C

Relative humidity : 36%

RADIATED EMISSIONS

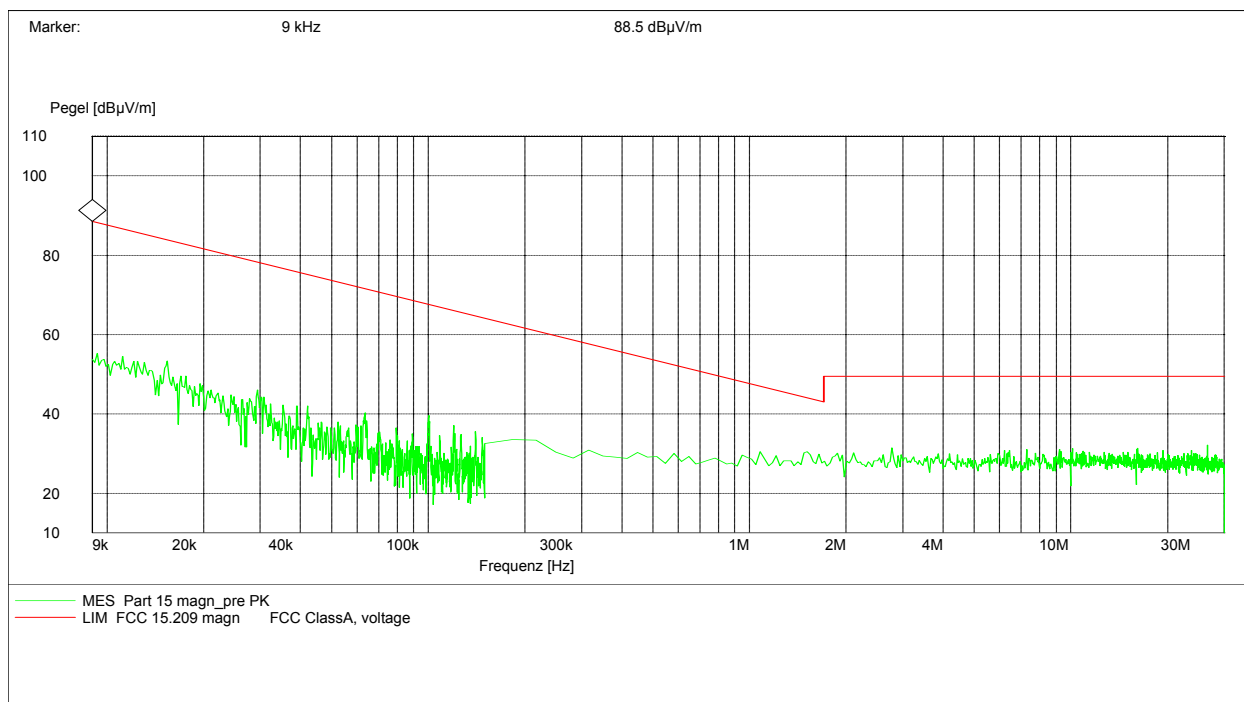
FCC Rule Part 74 subpart H

for all measurements the carrier suppressed with a rejection filter

(this plot is valid for all channels)

Part 15.209 Magnetics

EUT: AC 3000 with 3 x SR 300
Manufacturer: Sennheiser electronic GmbH & Co. KG
Operating Condition: Antenna combiner AC 3000 with 3 SR 300 (3 Carrier)
Test Site: Cetecom, Room 6
Operator: Berg M.
Test Specification:
Comment: 115V / 60 Hz
Start of Test: 15.03.04 / 07:53:27



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 - 24

Test report no.: **2_3398-02-03/03** Issue Date: 12.03.2004 Page 26 (26)

Equipment under test : AC 3000

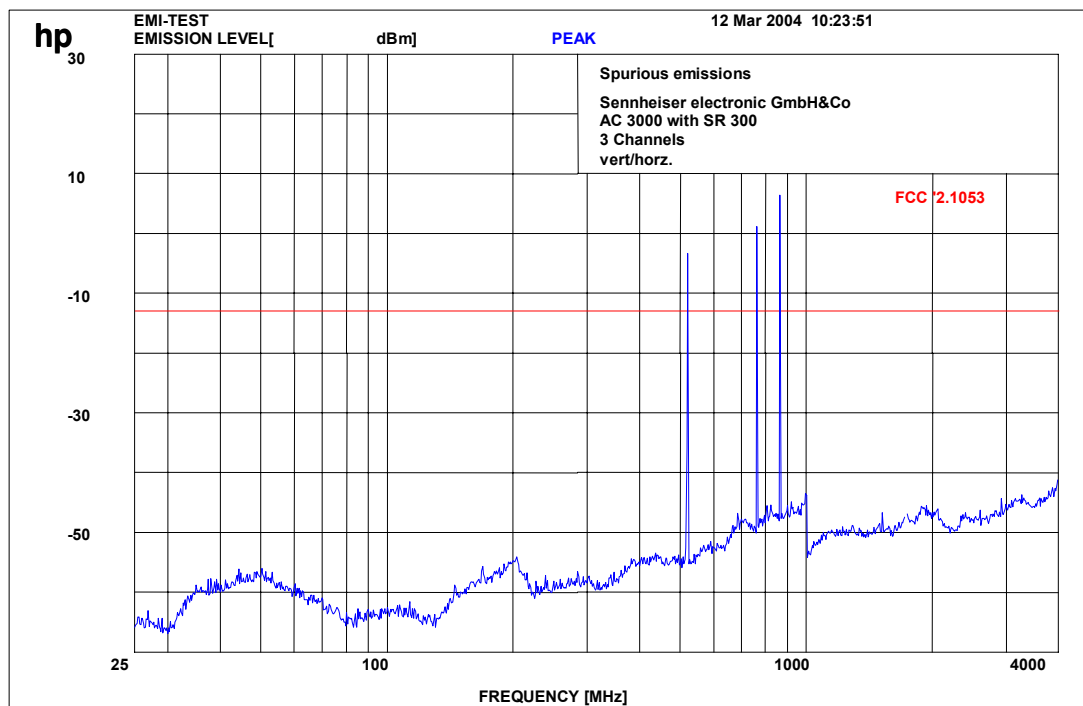
Ambient temperature : 23°C

Relative humidity : 36%

RADIATED EMISSIONS

FCC Rule Part 74 subpart H

Up to 4 GHz



Measured with 3 Input signals (SR 300 IEM (FCC ID: DMOF2EUVL))

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 - 24

Test report no.: **2_3398-02-03/03** Issue Date: 12.03.2004 Page 27 (27)

Equipment under test : AC 3000

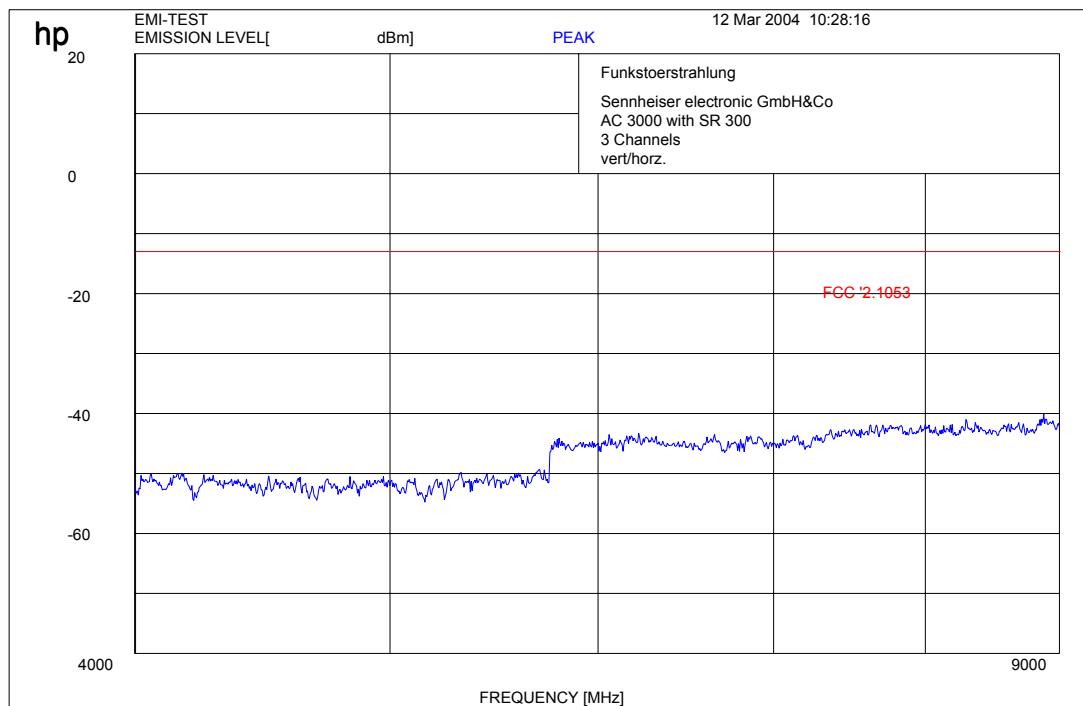
Ambient temperature : 23°C

Relative humidity : 36%

RADIATED EMISSIONS

FCC Rule Part 74 subpart H

Up to 12 GHz



Measured with 3 Input signals (SR 300 IEM (FCC ID: DMOF2EUVL))

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 - 24

Equipment under test : AC 3000

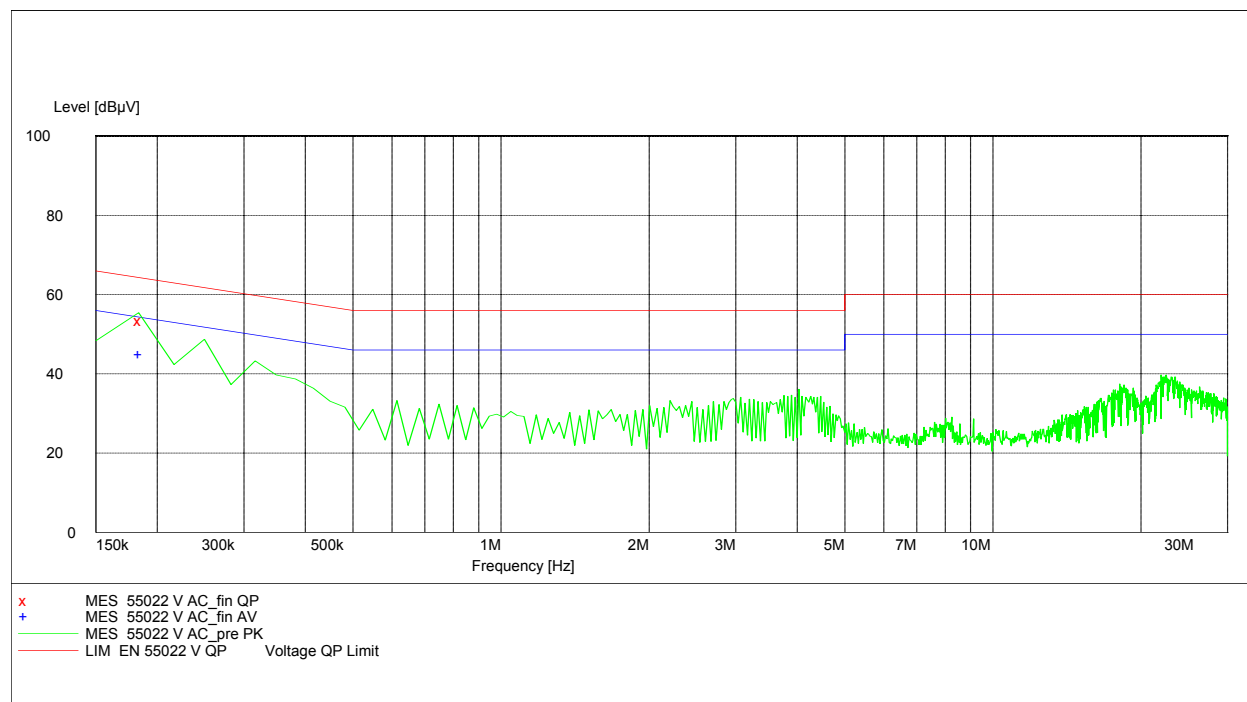
Ambient temperature : 23°C

Relative humidity : 36%

Conducted emissions

§ 15.107/207

EUT: AC 3000 with 3 x SR 300 (3 Carrier)
 Manufacturer: Sennheiser electronic GmbH & Co. KG
 Operating Condition: AC 3000 with 3 carriers
 Test Site: Room 006 (Shielded chamber)
 Operator: Berg M.
 Test Specification: EN 55022
 Comment: 115 V / 60 Hz
 Start of Test: 15.03.04 / 07:56:47



MEASUREMENT RESULT: "55022 V AC_fin QP"

15.03.04 07:59

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.187500	53.40	11.3	64	10.7	L1	FLO

MEASUREMENT RESULT: "55022 V AC_fin AV"

15.03.04 07:59

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.187500	44.90	11.3	54	9.2	L1	FLO

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

52-63

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

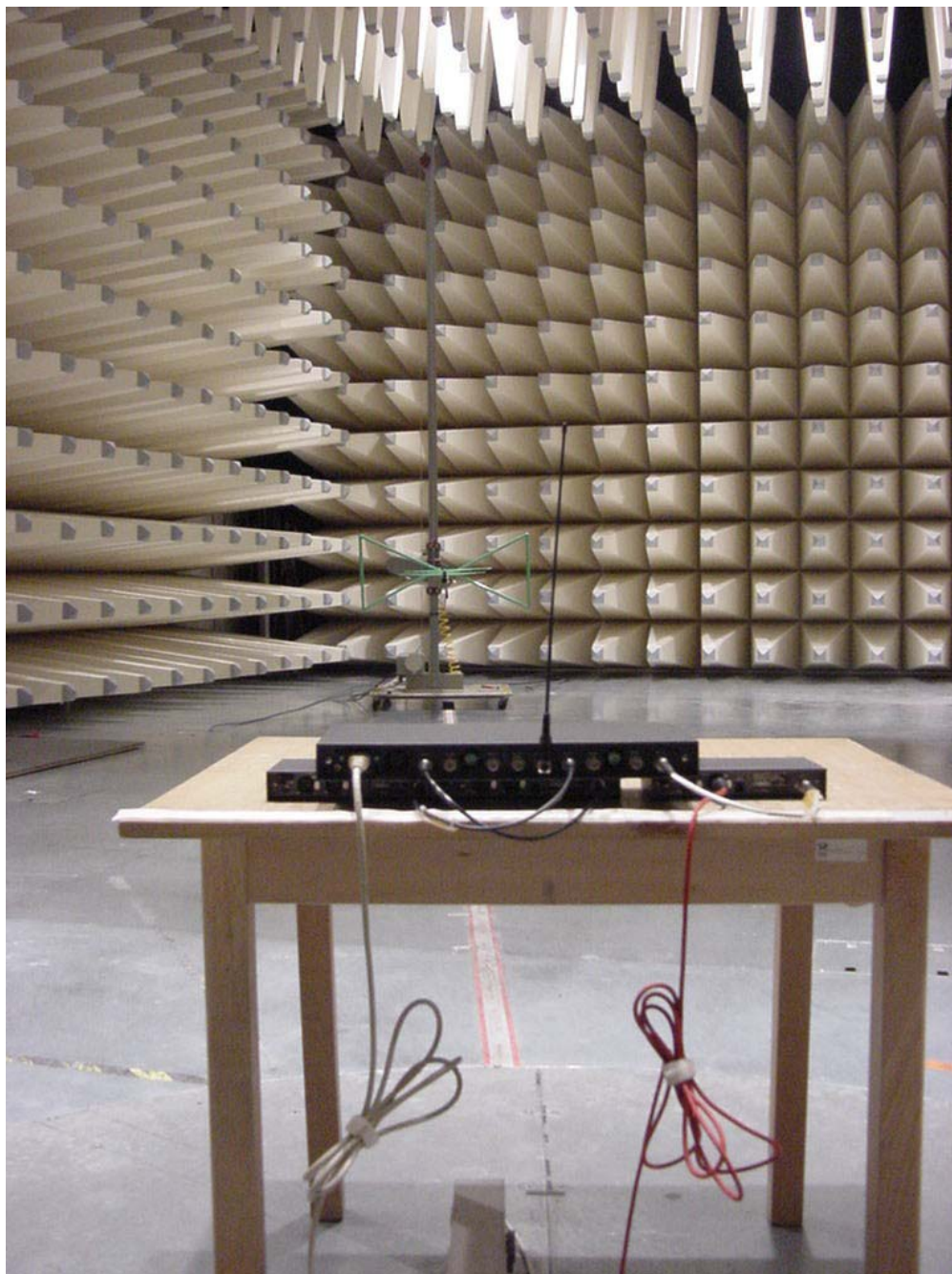
No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Calibrated
01	Spectrum Analyzer	8566 A	Hewlett-Packard	1925A00257	Yes
02	Analyzer Display	8566 A	Hewlett-Packard	1925A00860	Yes
03	Oscilloscope	7633	Tektronix	230054	Yes
04	Radio Communication Analyzer	CMTA 54	Rohde & Schwarz	894 043/010	Yes
05	System Power Supply	6038 A	Hewlett-Packard	2848A07027	Yes
06	Signal Generator	8111 A	Hewlett-Packard	2215G00867	Yes
07	Signal Generator	8662 A	Hewlett-Packard	2224A01012	Yes
08	Function Generator	AFGU	Rohde & Schwarz	862 480/032	Yes
09	Regulating Transformer	MPL	Erfi	91350	n.a.
10	LISN	NNLA 8120	Schwarzbeck	8120331	Yes
11	Relay-Matrix	PSU	Rohde & Schwarz	893 285/020	Yes
12	Power-Meter	436 A	Hewlett-Packard	2101A12378	Yes
13	Power-Sensor	8484 A	Hewlett-Packard	2237A10156	Yes
14	Power-Sensor	8482 A	Hewlett-Packard	2237A00616	Yes
15	Modulation Meter	9008	Racal-Dana	2647	Yes
16	Frequency Counter	5340 A	Hewlett-Packard	1532A03899	Yes
17	Anechoic Chamber	---	MWB	87400/002	Yes
18	Spectrum Analyzer	85660 B	Hewlett-Packard	2747A05306	Yes
19	Analyzer Display	85662 A	Hewlett-Packard	2816A16541	Yes
20	Quasi Peak Adapter	85650 A	Hewlett-Packard	2811A01131	Yes
21	RF-Preselector	85685 A	Hewlett-Packard	2833A00768	Yes
22	Biconical Antenna	3104	Emco	3758	Yes
23	Log. Per. Antenna	3146	Emco	2130	Yes
24	Double Ridged Horn	3115	Emco	3088	Yes
25	EMI-Testreceiver	ESAI	Rohde & Schwarz	863 180/013	Yes
26	EMI-Analyzer-Display	ESAI-D	Rohde & Schwarz	862 771/008	Yes
27	Biconical Antenna	HK 116	Rohde & Schwarz	888 945/013	Yes
28	Log. Per. Antenna	HL 223	Rohde & Schwarz	825 584/002	Yes
29	Relay-Switch-Unit	RSU	Rohde & Schwarz	375 339/002	Yes
30	Highpass	HM985955	FSY Microwave	001	n.a.
31	Amplifier	P42-GA29	Tron-Tech	B 23602	Yes
32	Anechoic Chamber		Frankonia		Yes
33	Control Computer	PSM 7	Rohde & Schwarz	834 621/004	Yes
34	EMI Test Receiver	ESMI	Rohde & Schwarz	827 063/010	Yes
35	EMI Test Receiver	Display	Rohde & Schwarz	829 808/010	Yes

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To simplify the identification on each page of the test equipment used. on each page of the test report. each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory. below.

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Calibrated
36	Control Computer	HD 100	Deisel	100/322/93	n.a.
37	Relay Matrix	PSN	Rohde & Schwarz	829 065/003	Yes
38	Control Unit	GB 016 A2	Rohde & Schwarz	344 122/008	Yes
39	Relay Switch Unit	RSU	Rohde & Schwarz	316 790/001	Yes
40	Power Supply	6032A	Hewlett Packard	2846A04063	Yes
41	Spectrum Monitor	EZM	Rohde & Schwarz	883 720/006	n.a.
42	Measuring Receiver	ESH 3	Rohde & Schwarz	890 174/002	Yes
43	Measuring Receiver	ESVP	Rohde & Schwarz	891 752/005	Yes
44	Bicon Ant. 20-300MHz	HK 116	Rohde & Schwarz	833 162/011	Yes
45	Logper Ant. 0.3-1 GHz	HL 223	Rohde & Schwarz	832 914/010	Yes
46	Amplifier 0.1-4 GHz	AFS4	Miteq Inc.	206461	Yes
47	Logper Ant. 1-18 GHz	HL 024 A2	Rohde & Schwarz	342 662/002	Yes
48	Polarisation Network	HL 024 Z1	Rohde & Schwarz	341 570/002	Yes
49	Double Ridged Horn Antenna 1-26.5 GHz	3115	EMCO	9107-3696	Yes
50	Microw. Sys. Amplifier 0.5- 26.5 GHz	8317A	Hewlett Packard	3123A00105	Yes
51	Audio Analyzer	UPD	Rohde & Schwarz	1030.7500.04	Yes
52	Controler	PSM 7	Rohde & Schwarz	883 086/026	Yes
53	DC V-Network	ESH3-Z6	Rohde & Schwarz	861 406/005	Yes
54	DC V-Network	ESH3-Z6	Rohde & Schwarz	893 689/012	Yes
55	AC 2 Phase V-Network	ESH3-Z5	Rohde & Schwarz	861 189/014	Yes
56	AC 2 Phase V-Network	ESH3-Z5	Rohde & Schwarz	894 981/019	Yes
57	AC-3 Phase V-Network	ESH2-Z5	Rohde & Schwarz	882 394/007	Yes
58	Power Supply	6032A	Rohde & Schwarz	2933A05441	Yes
59	RF-Test Receiver	ESVP.52	Rohde & Schwarz	881 487/021	Yes
60	Spectrum Monitor	EZM	Rohde & Schwarz	883 086/026	n.a.
61	RF-Test Receiver	ESH3	Rohde & Schwarz	881 515/002	Yes
62	Relay Matrix	PSU	Rohde & Schwarz	882 943/029	Yes
63	Relay Matrix	PSU	Rohde & Schwarz	828 628/007	Yes
64	Spectrum Analyzer	FSIQ 26	Rohde & Schwarz	119.6001.27	Yes
65	Spectrum Analyzer	HP 8565E	Hewlett Packard	3473A00773	Yes
68					

Test setup
Radiated Emissions
AC 3000



Test site
Radiated Emissions



Test site Conducted emissions



Photographs of the equipment

AC 3000

Photograph no.: 1



Photographs of the equipment

AC 3000

Photograph no.: 2



Photographs of the equipment

AC 3000

Photograph no.: 3



Photographs of the equipment

AC 3000

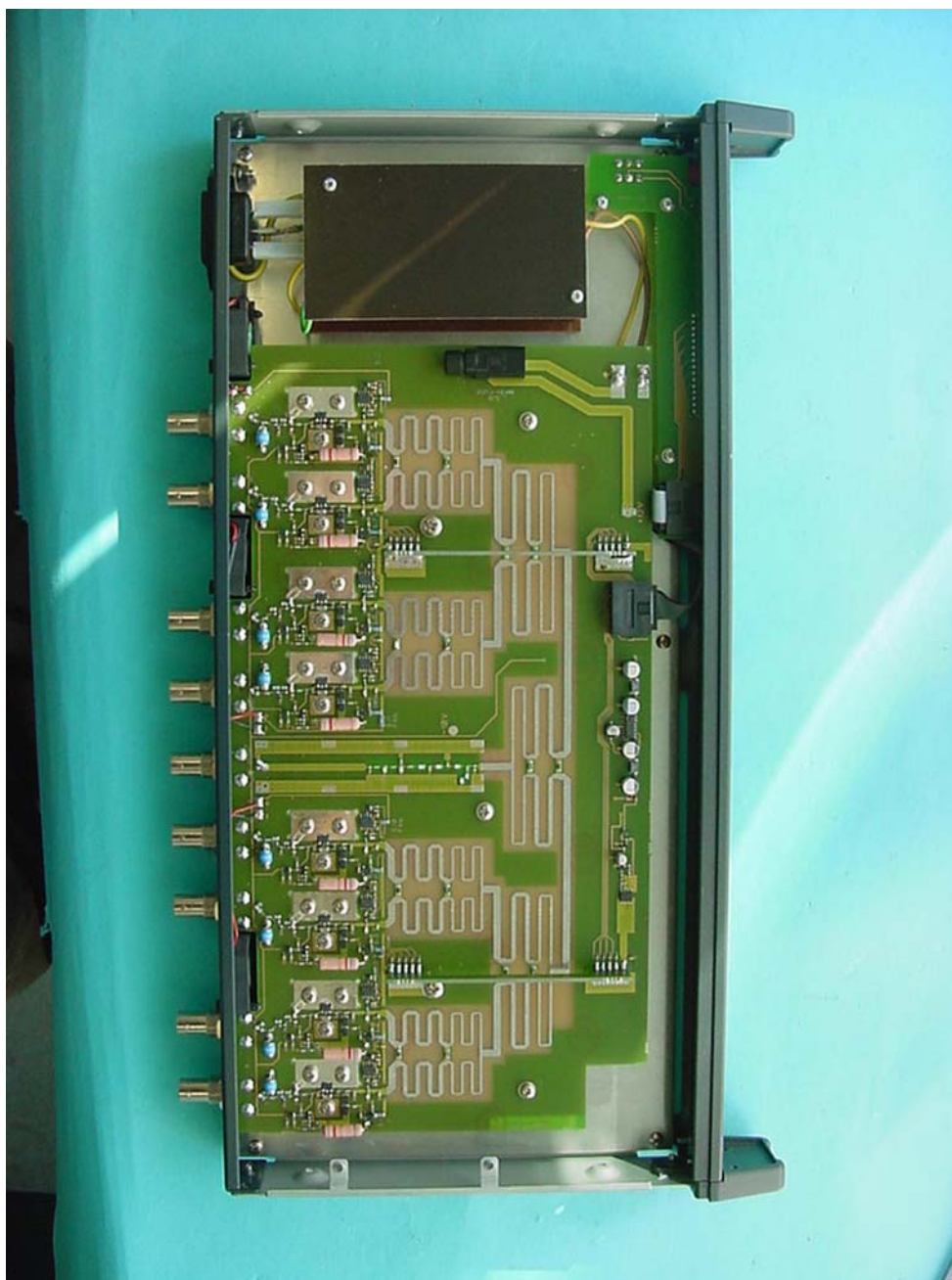
Photograph no.: 4



Photographs of the equipment

AC 3000

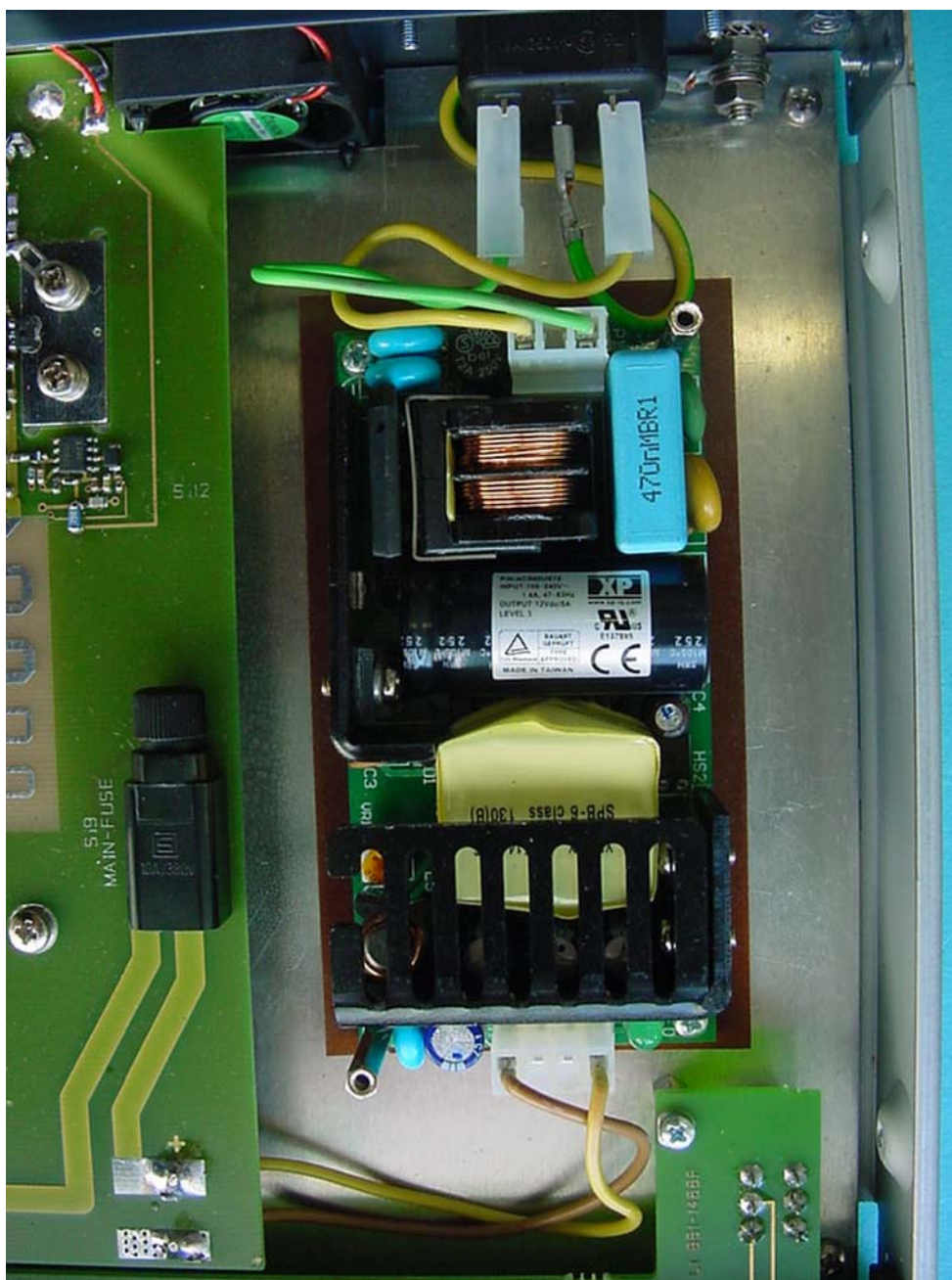
Photograph no.: 5



Photographs of the equipment

AC 3000

Photograph no.: 6



Photographs of the equipment

AC 3000

Photograph no.: 8

