

# Bundesamt für Post und Telekommunikation

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# BZT

13-83

Vorliegender Prüfbericht besteht aus 22 Seiten Seite 1 (22)

FCC/MELLON

DEC 14 1998

## Akkreditiertes Prüflaboratorium

DAR-Registriernummer:  
TTI-P-066/94-40 vom 02.12.1996

# KOPIE

Testreport nr.: 523-13f/00067/97

I-ETS 300 422

SR 3056-U (470.300 - 484.750)



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1 General information

1.1 Notes

The test results of this test report relate exclusively to the item tested as specified in 1.5.

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## 1.2 Testing laboratory

**Bundesamt für Post und Telekommunikation**

Postfach 10 04 43, 66004 Saarbrücken

Talstraße 34-42 , 66119 Saarbrücken

Deutschland

Telefone : + 49 681 598 - 0

Telefax : + 49 681 598 - 1600

e-mail : bapt-sb@t-online.de

Accredited testing laboratory

DAR-registration number : TTI-P-G-066/94-40 vom 02.12.96

## 1.3 Details of applicant

Name : Sennheiser electronic GmbH & Co. KG

Street : Am Labor 1

City : 30900 Wedemark

Country : Deutschland

Telephone : +49 (0) 5130/600-0

Telefax : +49 (0) 5130/6312

Contact : Mr. Willemsen

Telephone : +49 (0) 5130/600324

## 1.4 Application details

Date of receipt of application : 04.12.1997

Date of receipt of test item : 17.12.1997

Date of test : 17.12.1997

## 1.5 Test item

Type of equipment : radio microphone class 1

Type designation : SR 3056-U with two moduls: SR 3054-U

Manufacturer : applicant

Street :

City :

Country :

Serial number : --

Additional informations:

Frequency : 470.300 - 484.750 MHz

Modulation : F 3 E

Number of channels : 16

Channel bandwidth : R (200 kHz)

Antenna : BNC

Power supply : 230 V AC

Category of the alignment range : AR1

## 1.6 Test standards

ETS 300 422 (Issue : December 1995)

2 Technical test

2.1 Summary of test results

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

Tester :

23.12.1997

523-13f

Hohnhorst



Date

Section

Name

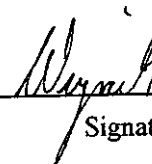
Signature

Technical responsibility for area of testing :

28.01.98

523-6

Weyrich



Date

Section

Name

Signature

## Test Report I-ETS 300 422

Radio Equipment and Systems (RES);  
for wireless microphones in the 25 MHz to 3 GHz frequency range

**TEST REPORT REFERENCE:****LIST OF MEASUREMENTS**

The complete list of measurements called for in I-ETS 300 422 is given below.

<b>CLAUSE</b>	<b>PARAMETER TO BE MEASURED</b>	<b>PAGE</b>
	<b>Transmitter parameters</b>	
8.1	Frequency error	7
8.2	Carrier power (conducted)	8
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	<b>Test equipment listing</b>	16
	<b>Photographs of the equipment</b>	18

Equipment under test : SR 3054-U (Modul)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

FREQUENCY ERROR

SUBCLAUSE 8.1

TEST CONDITIONS		FREQUENCY ERROR (kHz)		
		470.300	476.750	484.750
Frequencies				
$T_{nom}(23)^{\circ}C$	$V_{nom}(230)V$	1.53	1.54	1.53
$T_{min}(-10)^{\circ}C$	$V_{min}(207)V$	1.35	1.37	1.25
	$V_{max}(253)V$	1.35	1.37	1.25
$T_{max}(+45)^{\circ}C$	$V_{min}(207)V$	1.54	1.54	1.53
	$V_{max}(253)V$	1.53	1.54	1.58
Maximum freq. error (kHz)		1.54	1.54	1.58
Measurement uncertainty		$< \pm 10^{-7}$		

LIMITS

SUBCLAUSE 8.1.3

Operating frequency (MHz)	Normal test conditions		Extreme test conditions	
	Channel bandwidths of 100,150 and 200 kHz	Channel bandwidths of 75 and 50 kHz	Channel bandwidths of 100,150 and 200 kHz	Channel bandwidths of 75 and 50 kHz
25 to 88 MHz	3 kHz	2 kHz	5 kHz	3 kHz
> 88 to 300 MHz	7 kHz	3 kHz	10 kHz	5 kHz
> 300 to 1000 MHz	10 kHz	6 kHz	15 kHz	7 kHz
> 1000 MHz 3000 MHz	17 kHz	8 kHz	25 kHz	12 kHz

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 05

Equipment under test : SR 3054-U (Modul)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

## CARRIER POWER (CONDUCTED)

## SUBCLAUSE 8.2

Rated output power level : 50.0 mW

TEST CONDITIONS		TRANSMITTER POWER (mW)		
		470.300	476.750	484.750
Frequencies				
$T_{nom}(23)^{\circ}C$	$V_{nom}(230)V$	45.2	45.2	45.2
$T_{min}(-10)^{\circ}C$	$V_{min}(207)V$	45.0	45.0	45.0
	$V_{max}(253)V$	45.0	45.0	45.0
$T_{max}(+45)^{\circ}C$	$V_{min}(207)V$	45.2	45.2	45.2
	$V_{max}(253)V$	45.2	45.2	45.2
Deviation from rated output power under normal test conditions (dB)		0.4	0.4	0.4
Deviation from rated output power under extreme test conditions (dB)		0.5	0.5	0.5
Measurement uncertainty		< ± 3 dB		

## LIMITS

## SUBCLAUSE 8.2

Equipment	erp or conducted (note)	
	class 1	class 2
Radio microphone	50 mW	2 mW
Tour guide systems	10 mW	2 mW
Aids for the handicapped	10 mW	2 mW

NOTE : Measurement should normally be erp unless declared by the applicant as conducted

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 04 ; 05 ; 51



Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

8.3 CHANNEL BANDWIDTH

SUBCLAUSE 8.3

TEST CONDITIONS	CHANNEL BANDWIDTH ( kHz )			
	-20 dBc	-60 dBc	-80 dBc	-90 dBc
Reference level				
$f_c + \Delta f$	34.1	95.5	173.3	<< 1000
$f_c - \Delta f$	34.3	98.1	172.2	<<1000
Measurement uncertainty	< ± 5%			

DEFINITIONS	
$f_c$ = Center frequency	: 470.300 MHz
B = Bandwidth declared by manufacturer	: 200 kHz
Audio input limiting threshold declared by manufacturer	: 180 mV
Audio level for the weighted noise source (+12 dB(lim))	: 720 mV

LIMITS

SUBCLAUSE 5.1 Table 1

Declared channel bandwidth (B)	Designation
50 kHz	L
75 kHz	M
100kHz	P
150 kHz	Q
200 kHz	R

SUBCLAUSE 8.3.3

REFERENCE LEVEL	-20 dBc	-60 dBc	-80 dBc	-90 dBc
MAX. BANDWIDTH	$f_c \pm 0,35 B$	$f_c \pm 0,50 B$	$f_c \pm B$	$f_c \pm 1 \text{ MHz}$

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

## 8.3 CHANNEL BANDWIDTH

## SUBCLAUSE 8.3

TEST CONDITIONS	CHANNEL BANDWIDTH ( kHz )			
	-20 dBc	-60 dBc	-80 dBc	-90 dBc
Reference level				
$f_c + \Delta f$	34.5	97.7	173.3	<< 1000
$f_c - \Delta f$	34.9	96.9	174.3	<<1000
Measurement uncertainty	< ± 5%			

DEFINITIONS	
$f_c$ = Center frequency	: 476.750
B = Bandwidth declared by manufacturer	: 200 kHz
Audio input limiting threshold declared by manufacturer	: 180 mV
Audio level for the weighted noise source (+12 dB(lim))	: 720 mV

## LIMITS

## SUBCLAUSE 5.1 Table 1

Declared channel bandwidth (B)	Designation
50 kHz	L
75 kHz	M
100kHz	P
150 kHz	Q
200 kHz	R

## SUBCLAUSE 8.3.3

REFERENCE LEVEL	-20 dBc	-60 dBc	-80 dBc	-90 dBc
MAX. BANDWIDTH	$f_c \pm 0,35 B$	$f_c \pm 0,50 B$	$f_c \pm B$	$f_c \pm 1 \text{ MHz}$

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

## 8.3 CHANNEL BANDWIDTH

## SUBCLAUSE 8.3

TEST CONDITIONS	CHANNEL BANDWIDTH ( kHz )			
	-20 dBc	-60 dBc	-80 dBc	-90 dBc
Reference level				
$f_c + \Delta f$	35.1	96.8	179.1	<< 1000
$f_c - \Delta f$	34.9	97.5	180.2	<<1000
Measurement uncertainty	< ± 5%			

DEFINITIONS	
fc = Center frequency	: 484.750
B = Bandwidth declared by manufacturer	: 200 kHz
Audio input limiting threshold declared by manufacturer	: 180 mV
Audio level for the weighted noise source (+12 dB(lim))	: 720 mV

## LIMITS

## SUBCLAUSE 5.1 Table 1

Declared channel bandwidth (B)	Designation
50 kHz	L
75 kHz	M
100kHz	P
150 kHz	Q
200 kHz	R

## SUBCLAUSE 8.3.3

REFERENCE LEVEL	-20 dBc	-60 dBc	-80 dBc	-90 dBc
MAX. BANDWIDTH	$f_c \pm 0,35 B$	$f_c \pm 0,50 B$	$f_c \pm B$	$f_c \pm 1 \text{ MHz}$

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

## SPURIOUS EMISSIONS

## SUBCLAUSE 8.4

Conducted carrier power level at which the measurement has been performed : max 45.2 mW

Transmitter operating

Modulated/Unmodulated\*  
 \*(Delete whichever is inappropriate)

SPURIOUS EMISSIONS LEVEL (nW)								
470.300			476.750			484.750		
f (MHz)	Band-width (kHz)	Level (nW)	f (MHz)	Band-width (kHz)	Level (nW)	f (MHz)	Band-width (kHz)	Level (nW)
1393.4	1000	61.2	1393.4	1000	61.2	1393.4	1000	61.2
1451.0	1000	12.3	1451.0	1000	12.3	1451.0	1000	12.3
Measurement uncertainty					< ± 3 dB			

## LIMITS

## SUBCLAUSE 8.4.3

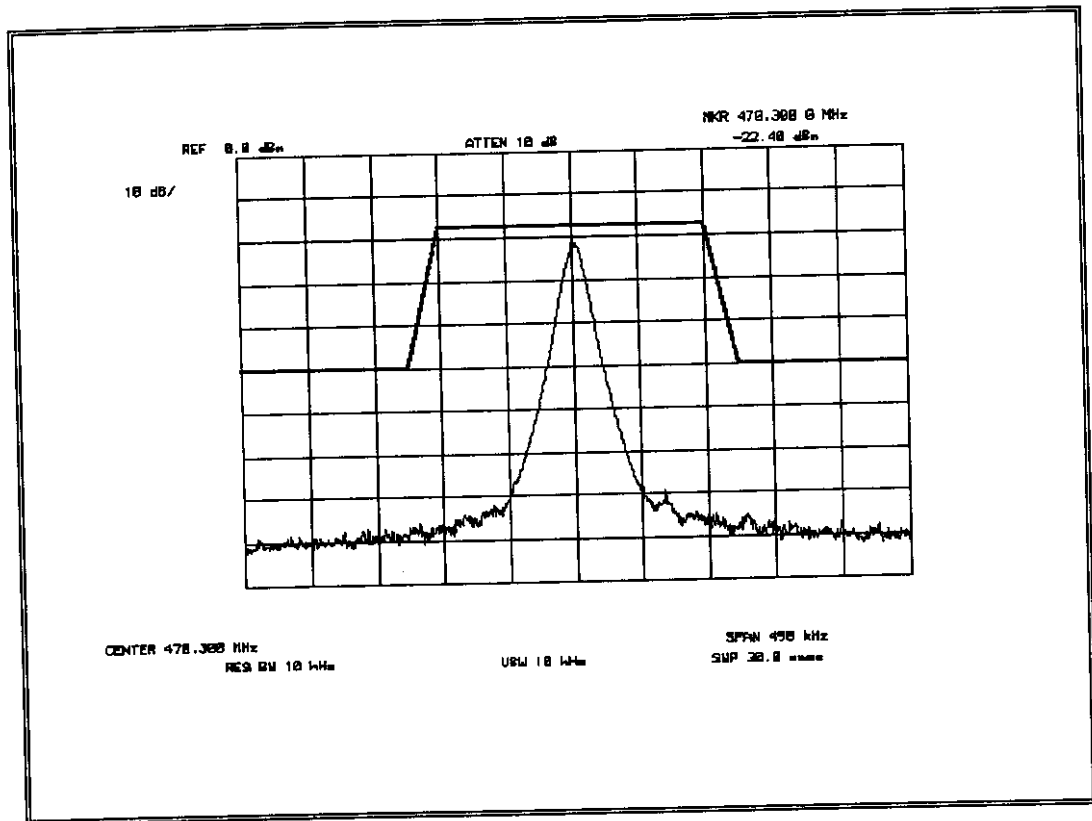
State	47 MHz to 74 MHz 87,5 to 118 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤ 1000 MHz	Frequencies > 1000 MHz
Operating	4,0 nW	250 nW	1,00 µW
Standby	2,0 nW		

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

Equipment under test : SR 3054-U  
 Ambient temperature : 23°C  
 Relative humidity : 54%

## TRANSIENT FREQUENCY BEHAVIOUR OF THE TRANSMITTER

SUBCLAUSE 8.5



FREQUENCY: 470.300 MHz

LIMITS

SUBCLAUSE 8.5.4

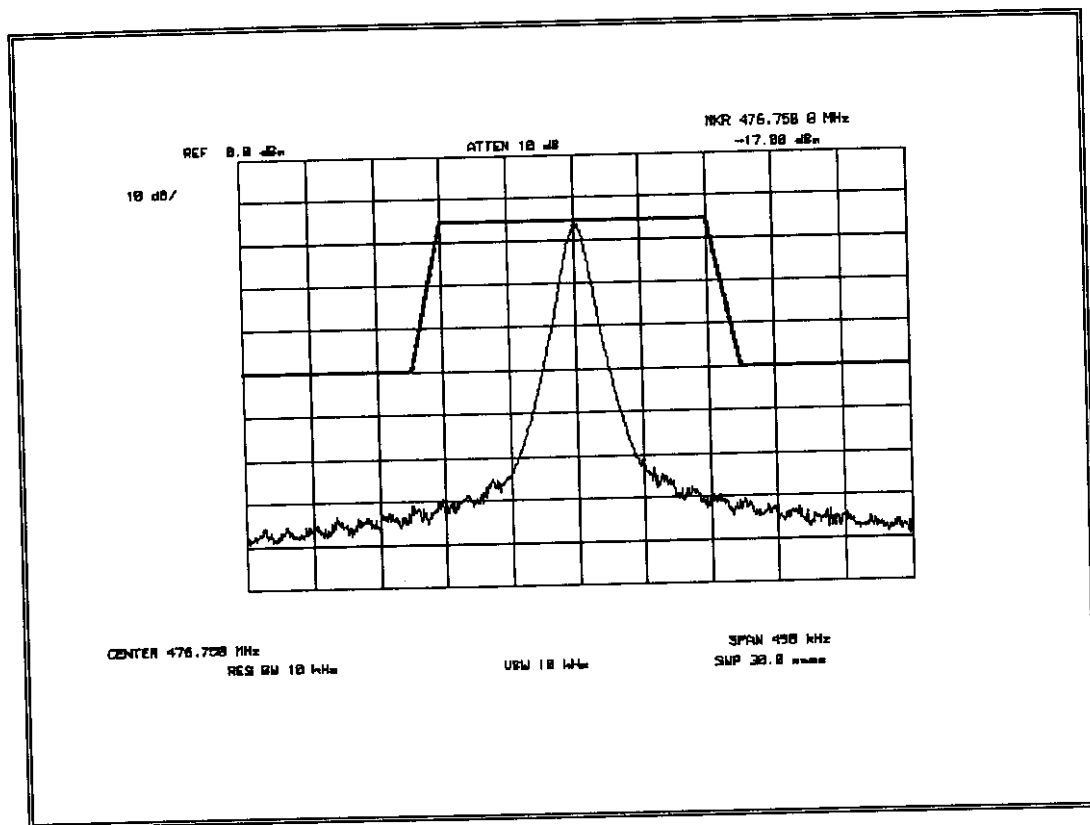
Output power :  $\leq -30$  dBc (until the carrier power is within the mask given in figure 6, I-ETS 300 422)  
 cycle starts when RF power exceeds 250 nW

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 05

Equipment under test : SR 3054-U  
 Ambient temperature : 23°C  
 Relative humidity : 54%

## TRANSIENT FREQUENCY BEHAVIOUR OF THE TRANSMITTER

SUBCLAUSE 8.5



FREQUENCY : 476.750 MHz

LIMITS

SUBCLAUSE 8.5.4

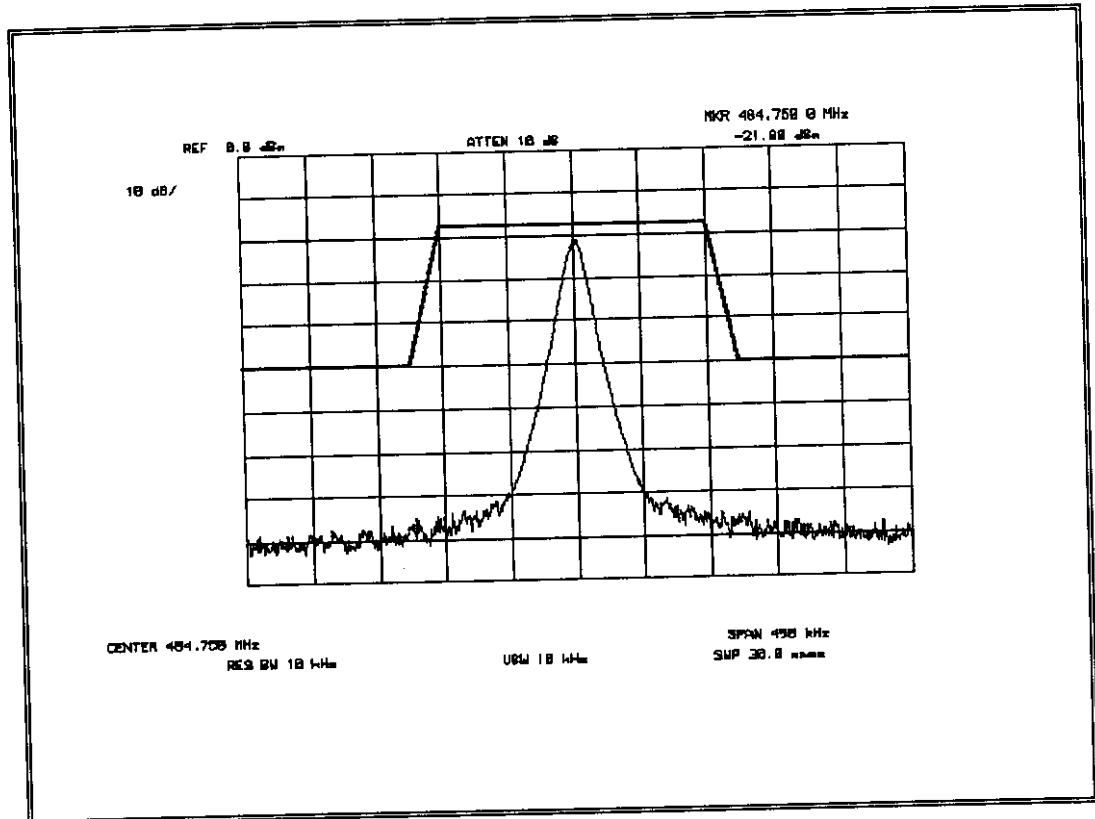
Output power :  $\leq -30$  dBc (until the carrier power is within the mask given in figure 6, I-ETS 300 422)  
 cycle starts when RF power exceeds 250 nW

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 05

Equipment under test : SR 3054-U  
 Ambient temperature : 23°C  
 Relative humidity : 54%

## TRANSIENT FREQUENCY BEHAVIOUR OF THE TRANSMITTER

SUBCLAUSE 8.5



FREQUENCY: 484.750 MHz

LIMITS

SUBCLAUSE 8.5.4

Output power :  $\leq -30$  dBc (until the carrier power is within the mask given in figure 6, I-ETS 300 422)  
 cycle starts when RF power exceeds 250 nW

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 05

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.
01	Spectrum Analyzer	8566 A	Hewlett-Packard	1925A00257
02	Analyzer Display	8566 A	Hewlett-Packard	1925A00860
03	Oscilloscope	7633	Tektronix	230054
04	Radio Analyzer	CMTA 54	Rohde & Schwarz	894 043/010
05	System Power Supply	6038 A	Hewlett-Packard	2848A07027
06	Signal Generator	8111 A	Hewlett-Packard	2215G00867
07	Signal Generator	8662 A	Hewlett-Packard	2224A01012
08	Funktionsgenerator	AFGU	Rohde & Schwarz	862 480/032
09	Regeltrenntrafo	MPL	Erfi	91350
10	Netznachbildung	NNLA 8120	Schwarzbeck	8120331
11	Relais-Matrix	PSU	Rohde & Schwarz	893 285/020
12	Power-Meter	436 A	Hewlett-Packard	2101A12378
13	Power-Sensor	8484 A	Hewlett-Packard	2237A10156
14	Power-Sensor	8482 A	Hewlett-Packard	2237A00616
15	Modulationsmeter	9008	Racal-Dana	2647
16	Frequenzzähler	5340 A	Hewlett-Packard	1532A03899
17	Absorber Schirmkabine	---	MWB	87400/002
18	Spectrum Analyzer	85660 B	Hewlett-Packard	2747A05306
19	Analyzer Display	85662 A	Hewlett-Packard	2816A16541
20	Quasi Peak Adapter	85650 A	Hewlett-Packard	2811A01131
21	RF-Preselector	85685 A	Hewlett-Packard	2833A00768
22	Biconical Antenne	3104	Emco	3758
23	Log. Per. Antenne	3146	Emco	2130
24	Double Ridge Horn	3115	Emco	3088
25	EMI-Testreceiver	ESAI	Rohde & Schwarz	863 180/013
26	EMI-Analyzer-Display	ESAI-D	Rohde & Schwarz	862 771/008
27	Biconical Antenne	HK 116	Rohde & Schwarz	888 945/013
28	Log. Per. Antenne	HL 223	Rohde & Schwarz	825 584/002
29	Relais-Switch-Unit	RSU	Rohde & Schwarz	375 339/002
30	Highpass	HM985955	FSY Microwave	001
31	Amplifier	P42-GA29	Tron-Tech	B 23602
32	Absorber Schirmkabine		Frankonia	
33	Steuerrechner	PSM 7	Rohde & Schwarz	834 621/004
34	EMI Test Reciever	ESMI	Rohde & Schwarz	827 063/010
35	EMI Test Receiver	Display	Rohde & Schwarz	829 808/010



No	Instrument/Ancillary	Type	Manufacturer	Serial No.
36	Controler	HD 100	Deisel	100/322/93
37	Relais Matrix	PSN	Rohde & Schwarz	829 065/003
38	Control Unit	GB 016 A2	Rohde & Schwarz	344 122/008
39	Relais Switch Unit	RSU	Rohde & Schwarz	316 790/001
40	Power Supply	6032A	Hewlett Packard	2846A04063
41	Spektrum Monitor	EZM	Rohde & Schwarz	883 720/006
42	Meßempfänger	ESH 3	Rohde & Schwarz	890 174/002
43	Meßempfänger	ESVP	Rohde & Schwarz	891 752/005
44	Biconi Ant. 20-300MHz	HK 116	Rohde & Schwarz	833 162/011
45	Logper Ant. 0.3-1 GHz	HL 223	Rohde & Schwarz	832 914/010
46	Amplifier 0.1-4 GHz	AFS4	Miteq Inc.	206461
47	Logper Ant. 1-18 GHz	HL 024 A2	Rohde & Schwarz	342 662/002
48	Polarisationsnetzwerk	HL 024 Z1	Rohde & Schwarz	341 570/002
49	Double Ridge G Horn Antenne 1-26.5 GHz	3115	EMCO	9107-3696
50	Microw. Sys. Amplifier 0.5-26.5 GHz	8317A	Hewlett Packard	3123A00105
51	Audio Analyzer	UPD	Rohde & Schwarz	1030.7500.04
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13-83

Vorliegender Prüfbericht besteht aus 22 Seiten Seite 1 (22)

## Akkreditiertes Prüflaboratorium

DAR-Registriernummer:  
TTI-P-066/94-40 vom 02.12.1996

**KOPIE**

Testreport nr.: 523-13f/00071/97

I-ETS 300 422

SR 3056-U (674.125 - 697.500)



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- 1 General information
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- 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 item tested as specified in 1.5.

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## 1.2 Testing laboratory

**Bundesamt für Post und Telekommunikation****Postfach 10 04 43, 66004 Saarbrücken****Talstraße 34-42, 66119 Saarbrücken****Deutschland****Telefone : + 49 681 598 - 0****Telefax : + 49 681 598 - 1600****e-mail : bap-t-sb@t-online.de**

Accredited testing laboratory

DAR-registration number : TTI-P-G-066/94-40 vom 02.12.96

## 1.3 Details of applicant

**Name : Sennheiser electronic GmbH & Co. KG****Street : Am Labor 1****City : 30900 Wedemark****Country : Deutschland****Telephone : +49 (0) 5130/600-0****Telefax : +49 (0) 5130/6312****Contact : Mr. Willemsen****Telephone : +49 (0) 5130/600324**

## 1.4 Application details

**Date of receipt of application : 04.12.1997****Date of receipt of test item : 17.12.1997****Date of test : 17.12.1997**

## 1.5 Test item

**Type of equipment : radio microphone class 1****Type designation : SR 3056-U with two moduls: SR 3054-U****Manufacturer : applicant****Street :****City :****Country :****Serial number : --**

Additional informations:

**Frequency : 674.125 - 697.500 MHz****Modulation : F 3 E****Number of channels : 16****Channel bandwidth : R (200 kHz)****Antenna : BNC****Power supply : 230 V AC****Category of the alignment range : AR1**

## 1.6 Test standards

**ETS 300 422 (Issue : December 1995)**

2 Technical test

2.1 Summary of test results

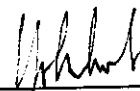
No deviations from the technical specification(s) were ascertained in the course of the tests performed.

Tester :

23.12.1997

523-13f

Hohnhorst



Date

Section

Name

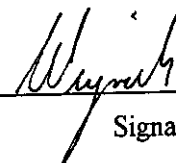
Signature

Technical responsibility for area of testing :

28.01.98

523-6

Weyrich



Date

Section

Name

Signature

## Test Report I-ETS 300 422

Radio Equipment and Systems (RES);  
for wireless microphones in the 25 MHz to 3 GHz frequency range

## TEST REPORT REFERENCE:

## LIST OF MEASUREMENTS

The complete list of measurements called for in I-ETS 300 422 is given below.

CLAUSE	PARAMETER TO BE MEASURED	PAGE
	<b>Transmitter parameters</b>	
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8.3	Channel bandwidth	9
8.4	Spurious radiations (radiated)	12
8.5	Transient frequency behaviour of the transmitter	13
	<b>Test equipment listing</b>	16
	<b>Photographs of the equipment</b>	18

Equipment under test : SR 3054-U (Modul)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

## FREQUENCY ERROR

## SUBCLAUSE 8.1

TEST CONDITIONS		FREQUENCY ERROR (kHz)		
		674.125	684.250	697.500
Frequencies				
$T_{nom}(23)^{\circ}C$	$V_{nom}(230)V$	0.59	0.59	0.59
$T_{min}(-10)^{\circ}C$	$V_{min}(207)V$	0.83	0.83	0.84
	$V_{max}(253)V$	0.83	0.83	0.83
$T_{max}(+45)^{\circ}C$	$V_{min}(207)V$	0.62	0.62	0.62
	$V_{max}(253)V$	0.62	0.62	0.62
Maximum freq. error (kHz)		0.83	0.83	0.84
Measurement uncertainty		$< \pm 10^{-7}$		

## LIMITS

## SUBCLAUSE 8.1.3

Operating frequency (MHz)	Normal test conditions		Extreme test conditions	
	Channel bandwidths of 100,150 and 200 kHz	Channel bandwidths of 75 and 50 kHz	Channel bandwidths of 100,150 and 200 kHz	Channel bandwidths of 75 and 50 kHz
25 to 88 MHz	3 kHz	2 kHz	5 kHz	3 kHz
> 88 to 300 MHz	7 kHz	3 kHz	10 kHz	5 kHz
> 300 to 1000 MHz	10 kHz	6 kHz	15 kHz	7 kHz
> 1000 MHz 3000 MHz	17 kHz	8 kHz	25 kHz	12 kHz

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

01 ; 02 ; 05



Equipment under test : SR 3054-U (Modul)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

**CARRIER POWER (CONDUCTED)**

SUBCLAUSE 8.2

Rated output power level : 50.0 mW

TEST CONDITIONS		TRANSMITTER POWER (mW)		
		674.125	684.250	697.500
T <sub>nom</sub> (23)°C	V <sub>nom</sub> ( 230 )V	46.5	46.5	46.5
	V <sub>min</sub> ( 207 )V	46.0	46.0	46.0
T <sub>min</sub> (-10)°C	V <sub>max</sub> ( 253 )V	46.0	46.0	46.0
	V <sub>min</sub> ( 207 )V	46.3	46.3	46.3
T <sub>max</sub> (+45)°C	V <sub>max</sub> ( 253 )V	46.3	46.3	46.3
	V <sub>min</sub> ( 207 )V	46.3	46.3	46.3
Deviation from rated output power under normal test conditions (dB)		0.3	0.3	0.3
Deviation from rated output power under extreme test conditions (dB)		0.4	0.4	0.4
Measurement uncertainty		< ± 3 dB		

**LIMITS**

SUBCLAUSE 8.2

Equipment	erp or conducted (note)	
	class 1	class 2
Radio microphone	50 mW	2 mW
Tour guide systems	10 mW	2 mW
Aids for the handicapped	10 mW	2 mW

NOTE : Measurement should normally be erp unless declared by the applicant as conducted

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

8.3 CHANNEL BANDWIDTH

SUBCLAUSE 8.3

TEST CONDITIONS	CHANNEL BANDWIDTH ( kHz )			
	-20 dBc	-60 dBc	-80 dBc	-90 dBc
Reference level				
$f_c + \Delta f$	35.0	97.8	181.3	<< 1000
$f_c - \Delta f$	34.9	98.2	182.1	<<1000
Measurement uncertainty	< ± 5%			

DEFINITIONS	
$f_c$ = Center frequency	: 674.125 MHz
B = Bandwidth declared by manufacturer	: 200 kHz
Audio input limiting threshold declared by manufacturer	: 180 mV
Audio level for the weighted noise source (+12 dB(lim))	: 720 mV

LIMITS

SUBCLAUSE 5.1 Table 1

Declared channel bandwidth (B)	Designation
50 kHz	L
75 kHz	M
100kHz	P
150 kHz	Q
200 kHz	R

SUBCLAUSE 8.3.3

REFERENCE LEVEL	-20 dBc	-60 dBc	-80 dBc	-90 dBc
MAX. BANDWIDTH	$f_c \pm 0,35 B$	$f_c \pm 0,50 B$	$f_c \pm B$	$f_c \pm 1 \text{ MHz}$

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

8.3 CHANNEL BANDWIDTH

SUBCLAUSE 8.3

TEST CONDITIONS	CHANNEL BANDWIDTH ( kHz )			
	-20 dBc	-60 dBc	-80 dBc	-90 dBc
Reference level				
$f_c + \Delta f$	35.0	97.8	181.3	<< 1000
$f_c - \Delta f$	34.9	98.0	182.1	<<1000
Measurement uncertainty	< ± 5%			

DEFINITIONS	
$f_c$ = Center frequency	: 684.250
B = Bandwidth declared by manufacturer	: 200 kHz
Audio input limiting threshold declared by manufacturer	: 180 mV
Audio level for the weighted noise source (+12 dB(lim))	: 720 mV

LIMITS

SUBCLAUSE 5.1 Table 1

Declared channel bandwidth (B)	Designation
50 kHz	L
75 kHz	M
100kHz	P
150 kHz	Q
200 kHz	R

SUBCLAUSE 8.3.3

REFERENCE LEVEL	-20 dBc	-60 dBc	-80 dBc	-90 dBc
MAX. BANDWIDTH	$f_c \pm 0,35 B$	$f_c \pm 0,50 B$	$f_c \pm B$	$f_c \pm 1 \text{ MHz}$

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

8.3 CHANNEL BANDWIDTH

SUBCLAUSE 8.3

TEST CONDITIONS	CHANNEL BANDWIDTH ( kHz )			
	-20 dBc	-60 dBc	-80 dBc	-90 dBc
Reference level				
$f_c + \Delta f$	34.9	97.8	180.6	<< 1000
$f_c - \Delta f$	34.8	98.2	181.5	<<1000
Measurement uncertainty	< ± 5%			

DEFINITIONS	
$f_c$ = Center frequency	: 697.500
B = Bandwidth declared by manufacturer	: 200 kHz
Audio input limiting threshold declared by manufacturer	: 180 mV
Audio level for the weighted noise source (+12 dB(lim) )	: 720 mV

LIMITS

SUBCLAUSE 5.1 Table 1

Declared channel bandwidth (B)	Designation
50 kHz	L
75 kHz	M
100kHz	P
150 kHz	Q
200 kHz	R

SUBCLAUSE 8.3.3

REFERENCE LEVEL	-20 dBc	-60 dBc	-80 dBc	-90 dBc
MAX. BANDWIDTH	$f_c \pm 0,35 B$	$f_c \pm 0,50 B$	$f_c \pm B$	$f_c \pm 1 \text{ MHz}$

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

## SPURIOUS EMISSIONS

### SUBCLAUSE 8.4

Conducted carrier power level at which the measurement has been performed : max 46.5 mW

Transmitter operating

Modulated/Unmodulated\*  
 \*(Delete whichever is inappropriate)

SPURIOUS EMISSIONS LEVEL (nW)								
674.125			684.250			697.500		
f (MHz)	Bandwidth (kHz)	Level (nW)	f (MHz)	Bandwidth (kHz)	Level (nW)	f (MHz)	Bandwidth (kHz)	Level (nW)
1393.4	1000	85.2	1393.4	1000	85.2	1393.4	1000	85.2
1706.6	1000	14.8	1706.6	1000	14.8	1706.6	1000	14.8
3418.2	1000	28.2	3418.2	1000	28.2	3418.2	1000	28.2
Measurement uncertainty			< ± 3 dB					

## LIMITS

### SUBCLAUSE 8.4.3

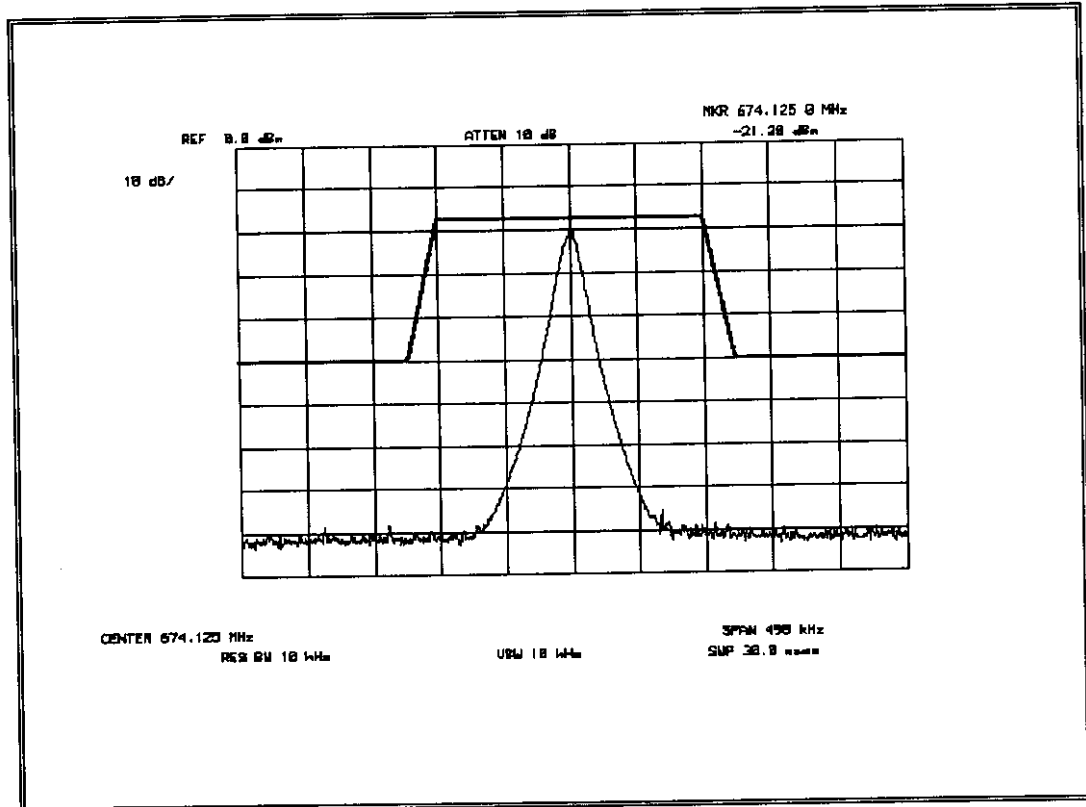
State	47 MHz to 74 MHz 87,5 to 118 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤ 1000 MHz	Frequencies > 1000 MHz
Operating	4,0 nW	250 nW	1,00 μW
Standby	2,0 nW		

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

Equipment under test : SR 3054-U  
Ambient temperature : 23°C  
Relative humidity : 54%

TRANSIENT FREQUENCY BEHAVIOUR OF THE TRANSMITTER

SUBCLAUSE 8.5



FREQUENCY: 674.125 MHz

LIMITS

SUBCLAUSE 8.5.4

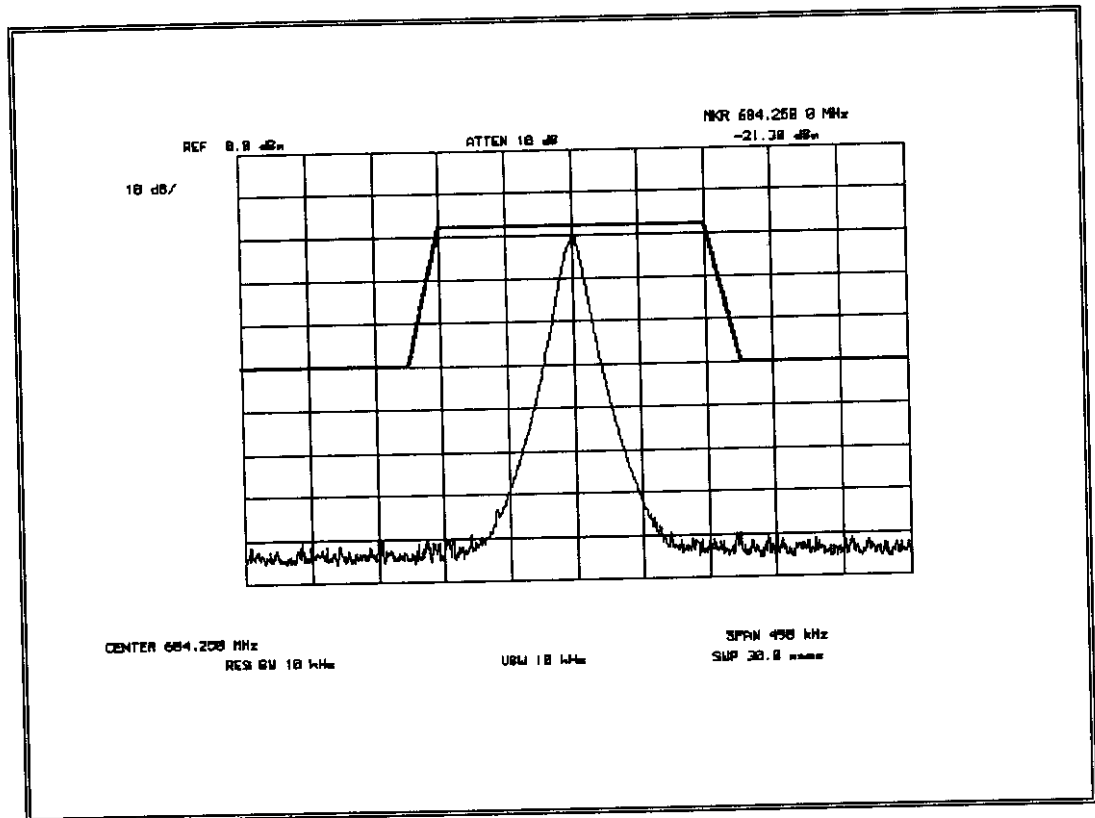
Output power :  $\leq -30$  dBc (until the carrier power is within the mask given in figure 6, I-ETS 300 422)  
cycle starts when RF power exceeds 250 nW

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

Equipment under test : SR 3054-U  
Ambient temperature : 23°C  
Relative humidity : 54%

TRANSIENT FREQUENCY BEHAVIOUR OF THE TRANSMITTER

SUBCLAUSE 8.5



FREQUENCY : 684.250 MHz

LIMITS

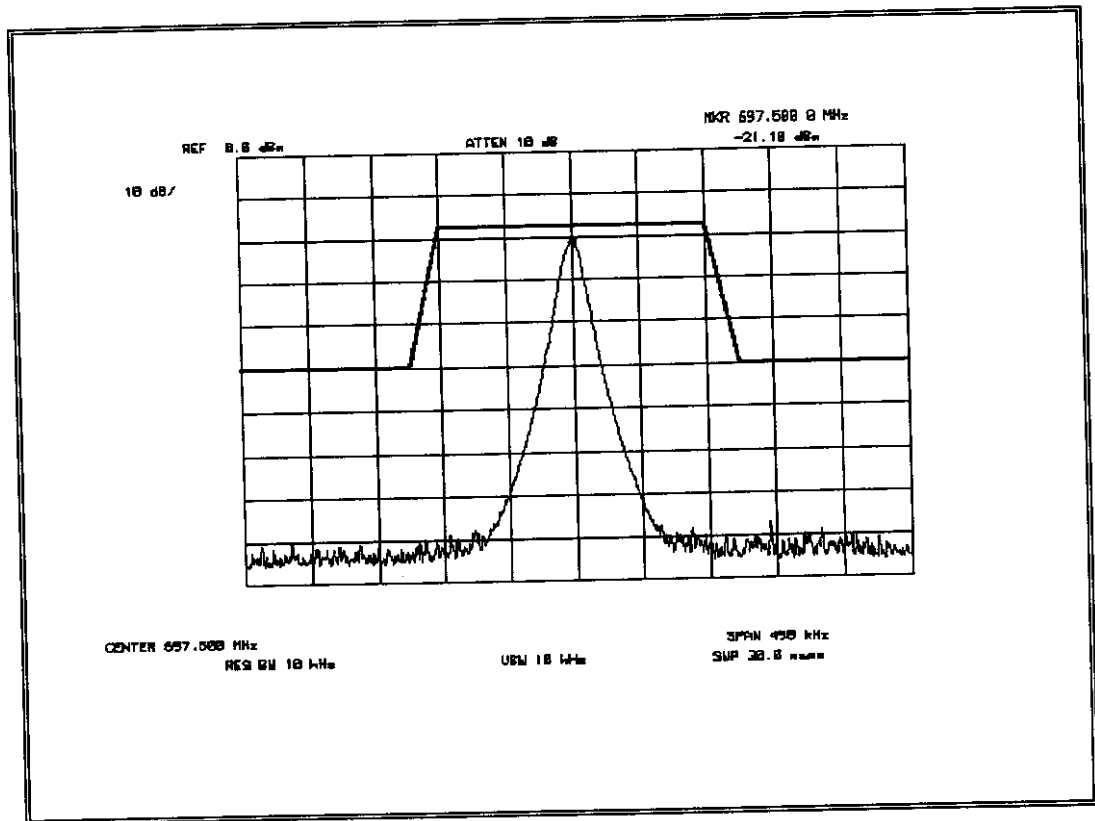
SUBCLAUSE 8.5.4

Output power :  $\leq -30$  dBc (until the carrier power is within the mask given in figure 6, I-ETS 300 422)  
cycle starts when RF power exceeds 250 nW

Equipment under test : SR 3054-U  
Ambient temperature : 23°C  
Relative humidity : 54%

TRANSIENT FREQUENCY BEHAVIOUR OF THE TRANSMITTER

SUBCLAUSE 8.5



FREQUENCY: 697.500 MHz

LIMITS

SUBCLAUSE 8.5.4

Output power :  $\leq -30$  dBc (until the carrier power is within the mask given in figure 6, I-ETS 300 422)  
cycle starts when RF power exceeds 250 nW

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

01.03.05



## 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.
01	Spectrum Analyzer	8566 A	Hewlett-Packard	1925A00257
02	Analyzer Display	8566 A	Hewlett-Packard	1925A00860
03	Oscilloscope	7633	Tektronix	230054
04	Radio Analyzer	CMTA 54	Rohde & Schwarz	894 043/010
05	System Power Supply	6038 A	Hewlett-Packard	2848A07027
06	Signal Generator	8111 A	Hewlett-Packard	2215G00867
07	Signal Generator	8662 A	Hewlett-Packard	2224A01012
08	Funktionsgenerator	AFGU	Rohde & Schwarz	862 480/032
09	Regeltrenntrafo	MPL	Erfi	91350
10	Netznachbildung	NNLA 8120	Schwarzbeck	8120331
11	Relais-Matrix	PSU	Rohde & Schwarz	893 285/020
12	Power-Meter	436 A	Hewlett-Packard	2101A12378
13	Power-Sensor	8484 A	Hewlett-Packard	2237A10156
14	Power-Sensor	8482 A	Hewlett-Packard	2237A00616
15	Modulationsmeter	9008	Racal-Dana	2647
16	Frequenzzähler	5340 A	Hewlett-Packard	1532A03899
17	Absorber Schirmkabine	---	MWB	87400/002
18	Spectrum Analyzer	85660 B	Hewlett-Packard	2747A05306
19	Analyzer Display	85662 A	Hewlett-Packard	2816A16541
20	Quasi Peak Adapter	85650 A	Hewlett-Packard	2811A01131
21	RF-Preselector	85685 A	Hewlett-Packard	2833A00768
22	Biconical Antenne	3104	Emco	3758
23	Log. Per. Antenne	3146	Emco	2130
24	Double Ridge Horn	3115	Emco	3088
25	EMI-Testreceiver	ESAI	Rohde & Schwarz	863 180/013
26	EMI-Analyzer-Display	ESAI-D	Rohde & Schwarz	862 771/008
27	Biconical Antenne	HK 116	Rohde & Schwarz	888 945/013
28	Log. Per. Antenne	HL 223	Rohde & Schwarz	825 584/002
29	Relais-Switch-Unit	RSU	Rohde & Schwarz	375 339/002
30	Highpass	HM985955	FSY Microwave	001
31	Amplifier	P42-GA29	Tron-Tech	B 23602
32	Absorber Schirmkabine		Frankonia	
33	Steuerrechner	PSM 7	Rohde & Schwarz	834 621/004
34	EMI Test Reciever	ESMI	Rohde & Schwarz	827 063/010
35	EMI Test Receiver	Display	Rohde & Schwarz	829 808/010

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
36	Controler	HD 100	Deisel	100/322/93
37	Relais Matrix	PSN	Rohde & Schwarz	829 065/003
38	Control Unit	GB 016 A2	Rohde & Schwarz	344 122/008
39	Relais Switch Unit	RSU	Rohde & Schwarz	316 790/001
40	Power Supply	6032A	Hewlett Packard	2846A04063
41	Spektrum Monitor	EZM	Rohde & Schwarz	883 720/006
42	Meßempfänger	ESH 3	Rohde & Schwarz	890 174/002
43	Meßempfänger	ESVP	Rohde & Schwarz	891 752/005
44	Biconi Ant. 20-300MHz	HK 116	Rohde & Schwarz	833 162/011
45	Logper Ant. 0.3-1 GHz	HL 223	Rohde & Schwarz	832 914/010
46	Amplifier 0.1-4 GHz	AFS4	Miteq Inc.	206461
47	Logper Ant. 1-18 GHz	HL 024 A2	Rohde & Schwarz	342 662/002
48	Polarisationsnetzwerk	HL 024 Z1	Rohde & Schwarz	341 570/002
49	Double Ridge G Horn Antenne 1-26.5 GHz	3115	EMCO	9107-3696
50	Microw. Sys. Amplifier 0.5-26.5 GHz	8317A	Hewlett Packard	3123A00105
51	Audio Analyzer	UPD	Rohde & Schwarz	1030.7500.04
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13-83

Vorliegender Prüfbericht besteht aus 22 Seiten Seite 1 (22)

## Akkreditiertes Prüflaboratorium

**DAR-Registriernummer:**  
**TTI-P-066/94-40 vom 02.12.1996**

**Testreport nr.: 523-13f/00072/97**

**I-ETS 300 422**

**SR 3056-U (854.900 - 861.750)**

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 standards

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 item tested as specified in 1.5.

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 Bundesamt für Post und Telekommunikation.

## 1.2 Testing laboratory

**Bundesamt für Post und Telekommunikation**

Postfach 10 04 43, 66004 Saarbrücken

Talstraße 34-42, 66119 Saarbrücken

Deutschland

Telefon : + 49 681 598 - 0

Telefax : + 49 681 598 - 1600

e-mail : bapt-sb@t-online.de

Accredited testing laboratory

DAR-registration number : TTI-P-G-066/94-40 vom 02.12.96

## 1.3 Details of applicant

**Name : Sennheiser electronic GmbH & Co. KG**

**Street : Am Labor 1**

**City : 30900 Wedemark**

**Country : Deutschland**

**Telephone : +49 (0) 5130/600-0**

**Telefax : +49 (0) 5130/6312**

**Contact : Mr. Willemsen**

**Telephone : +49 (0) 5130/600324**

## 1.4 Application details

**Date of receipt of application : 04.12.1997**

**Date of receipt of test item : 17.12.1997**

**Date of test : 17.12.1997**

## 1.5 Test item

**Type of equipment : radio microphone class 1**

**Type designation : SR 3056-U with two moduls: SR 3054-U**

**Manufacturer : applicant**

**Street :**

**City :**

**Country :**

**Serial number : --**

Additional informations:

**Frequency : 854.900 - 861.750 MHz**

**Modulation : F 3 E**

**Number of channels : 16**

**Channel bandwidth : R (200 kHz)**

**Antenna : BNC**

**Power supply : 230 V AC**

**Category of the alignment range : AR1**

## 1.6 Test standards

**ETS 300 422 (Issue : December 1995)**

2 Technical test

2.1 Summary of test results

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

Tester :

23.12.1997

523-13f

Hohnhorst



Date

Section

Name

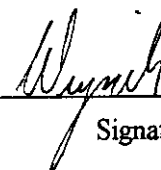
Signature

Technical responsibility for area of testing :

28.01.98

523-6

Weyrich



Date

Section

Name

Signature

## Test Report I-ETS 300 422

Radio Equipment and Systems (RES);  
for wireless microphones in the 25 MHz to 3 GHz frequency range

TEST REPORT REFERENCE:

LIST OF MEASUREMENTS

The complete list of measurements called for in I-ETS 300 422 is given below.

CLAUSE	PARAMETER TO BE MEASURED	PAGE
	<b>Transmitter parameters</b>	
8.1	Frequency error	7
8.2	Carrier power (conducted)	8
8.3	Channel bandwidth	9
8.4	Spurious radiations (radiated)	12
8.5	Transient frequency behaviour of the transmitter	13
	<b>Test equipment listing</b>	16
	<b>Photographs of the equipment</b>	18



Equipment under test : SR 3054-U (Modul)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

FREQUENCY ERROR

SUBCLAUSE 8.1

TEST CONDITIONS		FREQUENCY ERROR (kHz)		
		854.900	858.200	861.750
Frequencies				
T <sub>nom</sub> (23)°C	V <sub>nom</sub> ( 230 )V	0.95	0.95	0.95
T <sub>min</sub> (-10)°C	V <sub>min</sub> ( 207 )V	0.85	0.85	0.85
	V <sub>max</sub> ( 253 )V	0.85	0.83	0.85
T <sub>max</sub> (+45)°C	V <sub>min</sub> ( 207 )V	0.97	0.97	0.97
	V <sub>max</sub> ( 253 )V	0.97	0.97	0.97
Maximum freq. error (kHz)		0.97	0.97	0.97
Measurement uncertainty		< ± 10 <sup>-7</sup>		

LIMITS

SUBCLAUSE 8.1.3

Operating frequency (MHz)	Normal test conditions		Extreme test conditions	
	Channel bandwidths of 100,150 and 200 kHz	Channel bandwidths of 75 and 50 kHz	Channel bandwidths of 100,150 and 200 kHz	Channel bandwidths of 75 and 50 kHz
25 to 88 MHz	3 kHz	2 kHz	5 kHz	3 kHz
> 88 to 300 MHz	7 kHz	3 kHz	10 kHz	5 kHz
> 300 to 1000 MHz	10 kHz	6 kHz	15 kHz	7 kHz
> 1000 MHz 3000 MHz	17 kHz	8 kHz	25 kHz	12 kHz

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

01 ; 02 ; 05

Equipment under test : SR 3054-U (Modul)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

**CARRIER POWER (CONDUCTED)**

**SUBCLAUSE 8.2**

Rated output power level : 50.0 mW

TEST CONDITIONS		TRANSMITTER POWER (mW)		
		854.900	858.200	861.750
Frequencies				
$T_{nom}(23)^{\circ}C$	$V_{nom}(230)V$	46.2	46.2	46.2
$T_{min}(-10)^{\circ}C$	$V_{min}(207)V$	45.8	45.8	45.8
	$V_{max}(253)V$	45.8	45.8	45.8
$T_{max}(+45)^{\circ}C$	$V_{min}(207)V$	46.2	46.2	46.2
	$V_{max}(253)V$	46.2	46.2	46.2
Deviation from rated output power under normal test conditions (dB)		0.4	0.4	0.4
Deviation from rated output power under extreme test conditions (dB)		0.4	0.4	0.4
Measurement uncertainty		< ± 3 dB		

**LIMITS**

**SUBCLAUSE 8.2**

Equipment	erp or conducted (note)	
	class 1	class 2
Radio microphone	50 mW	2 mW
Tour guide systems	10 mW	2 mW
Aids for the handicapped	10 mW	2 mW
NOTE : Measurement should normally be erp unless declared by the applicant as conducted		

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

8.3 CHANNEL BANDWIDTH

SUBCLAUSE 8.3

TEST CONDITIONS	CHANNEL BANDWIDTH ( kHz )			
	-20 dBc	-60 dBc	-80 dBc	-90 dBc
Reference level				
$f_c + \Delta f$	<b>34.3</b>	<b>98.1</b>	<b>180.9</b>	<b>&lt;&lt; 1000</b>
$f_c - \Delta f$	<b>34.6</b>	<b>97.6</b>	<b>181.2</b>	<b>&lt;&lt;1000</b>
Measurement uncertainty	<b>&lt; ± 5%</b>			

DEFINITIONS	
fc = Center frequency	: 854.900 MHz
B = Bandwidth declared by manufacturer	: 200 kHz
Audio input limiting threshold declared by manufacturer	: 180 mV
Audio level for the weighted noise source (+12 dB(lim) )	: 720 mV

LIMITS

SUBCLAUSE 5.1 Table 1

Declared channel bandwidth (B)	Designation
50 kHz	L
75 kHz	M
100kHz	P
150 kHz	Q
200 kHz	R

SUBCLAUSE 8.3.3

REFERENCE LEVEL	-20 dBc	-60 dBc	-80 dBc	-90 dBc
MAX. BANDWIDTH	$f_c \pm 0,35 B$	$f_c \pm 0,50 B$	$f_c \pm B$	$f_c \pm 1 \text{ MHz}$

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

8.3 CHANNEL BANDWIDTH

SUBCLAUSE 8.3

TEST CONDITIONS	CHANNEL BANDWIDTH ( kHz )			
	-20 dBc	-60 dBc	-80 dBc	-90 dBc
Reference level				
$f_c + \Delta f$	34.3	98.2	180.8	<< 1000
$f_c - \Delta f$	34.3	97.3	181.7	<<1000
Measurement uncertainty	< ± 5%			

DEFINITIONS	
$f_c$ = Center frequency	: 858.200
B = Bandwidth declared by manufacturer	: 200 kHz
Audio input limiting threshold declared by manufacturer	: 180 mV
Audio level for the weighted noise source (+12 dB(lim) )	: 720 mV

LIMITS

SUBCLAUSE 5.1 Table 1

Declared channel bandwidth (B)	Designation
50 kHz	L
75 kHz	M
100kHz	P
150 kHz	Q
200 kHz	R

SUBCLAUSE 8.3.3

REFERENCE LEVEL	-20 dBc	-60 dBc	-80 dBc	-90 dBc
MAX. BANDWIDTH	$f_c \pm 0,35 B$	$f_c \pm 0,50 B$	$f_c \pm B$	$f_c \pm 1 \text{ MHz}$

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
 (for reference numbers see test equipment listing)  
 01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

**8.3 CHANNEL BANDWIDTH**

**SUBCLAUSE 8.3**

TEST CONDITIONS	CHANNEL BANDWIDTH ( kHz )			
	-20 dBc	-60 dBc	-80 dBc	-90 dBc
Reference level				
$f_c + \Delta f$	<b>33.9</b>	<b>98.0</b>	<b>181.4</b>	<b>&lt;&lt; 1000</b>
$f_c - \Delta f$	<b>34.6</b>	<b>98.2</b>	<b>180.4</b>	<b>&lt;&lt;1000</b>
Measurement uncertainty	<b>&lt; ± 5%</b>			

DEFINITIONS	
$f_c$ = Center frequency	: 861.750
B = Bandwidth declared by manufacturer	: 200 kHz
Audio input limiting threshold declared by manufacturer	: 180 mV
Audio level for the weighted noise source (+12 dB(lim) )	: 720 mV

**LIMITS**

**SUBCLAUSE 5.1 Table 1**

Declared channel bandwidth (B)	Designation
50 kHz	L
75 kHz	M
100kHz	P
150 kHz	Q
200 kHz	R

**SUBCLAUSE 8.3.3**

REFERENCE LEVEL	-20 dBc	-60 dBc	-80 dBc	-90 dBc
MAX. BANDWIDTH	$f_c \pm 0,35 B$	$f_c \pm 0,50 B$	$f_c \pm B$	$f_c \pm 1 \text{ MHz}$

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

01 ; 02 ; 04 ; 05 ; 51

Equipment under test : SR 3056-U (with two moduls: SR 3054-U)  
 Ambient temperature : 23°C  
 Relative humidity : 54%

SPURIOUS EMISSIONS

SUBCLAUSE 8.4

Conducted carrier power level at which the measurement has been performed : max 46.2 mW

Transmitter operating

Modulated/Unmodulated\*  
 \*(Delete whichever is inappropriate)

SPURIOUS EMISSIONS LEVEL (nW)								
854.900			858.200			861.750		
f (MHz)	Band-width (kHz)	Level (nW)	f (MHz)	Band-width (kHz)	Level (nW)	f (MHz)	Band-width (kHz)	Level (nW)
1400.4	1000	29.5	1400.4	1000	29.5	1400.4	1000	29.5
1715.3	1000	12.6	1715.3	1000	12.6	1715.3	1000	12.6
2560.3	1000	151.4	2560.3	1000	151.4	2560.3	1000	151.4
Measurement uncertainty			< ± 3 dB					

LIMITS

SUBCLAUSE 8.4.3

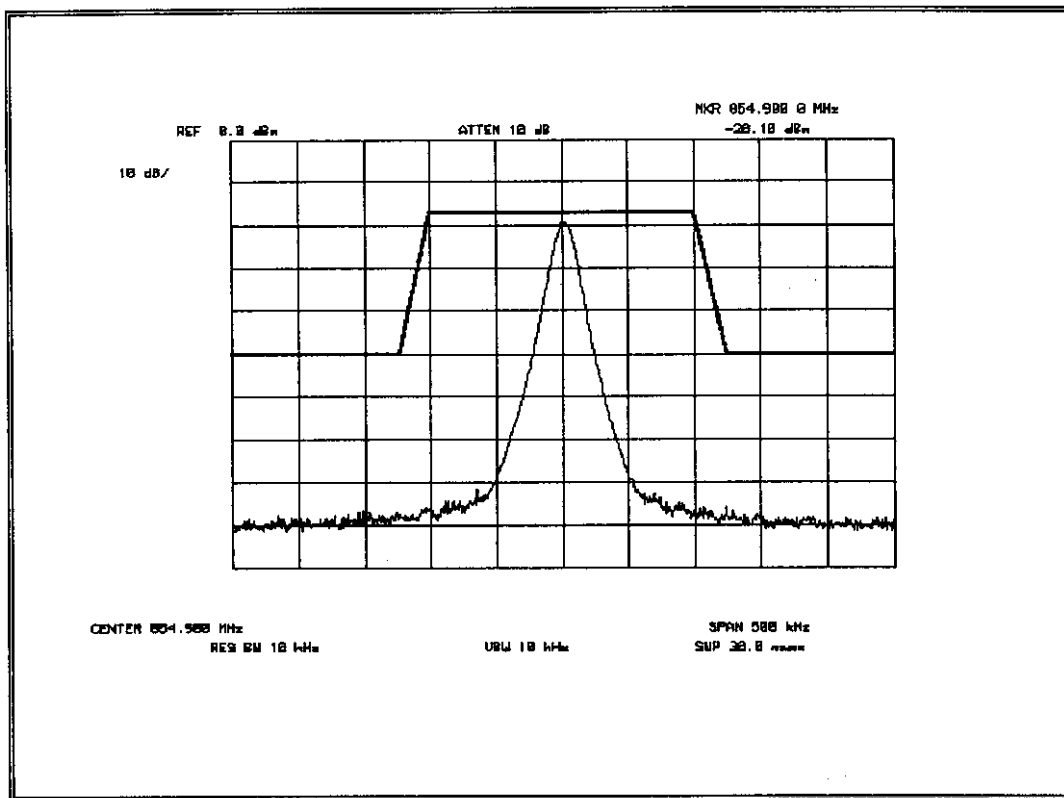
State	47 MHz to 74 MHz 87,5 to 118 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤ 1000 MHz	Frequencies > 1000 MHz
Operating	4,0 nW	250 nW	1,00 µW
Standby	2,0 nW		

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

Equipment under test : SR 3054-U  
Ambient temperature : 23°C  
Relative humidity : 54%

TRANSIENT FREQUENCY BEHAVIOUR OF THE TRANSMITTER

SUBCLAUSE 8.5



FREQUENCY: 854.900 MHz

LIMITS

SUBCLAUSE 8.5.4

Output power :  $\leq -30$  dBc (until the carrier power is within the mask given in figure 6, I-ETS 300 422)  
cycle starts when RF power exceeds 250 nW

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

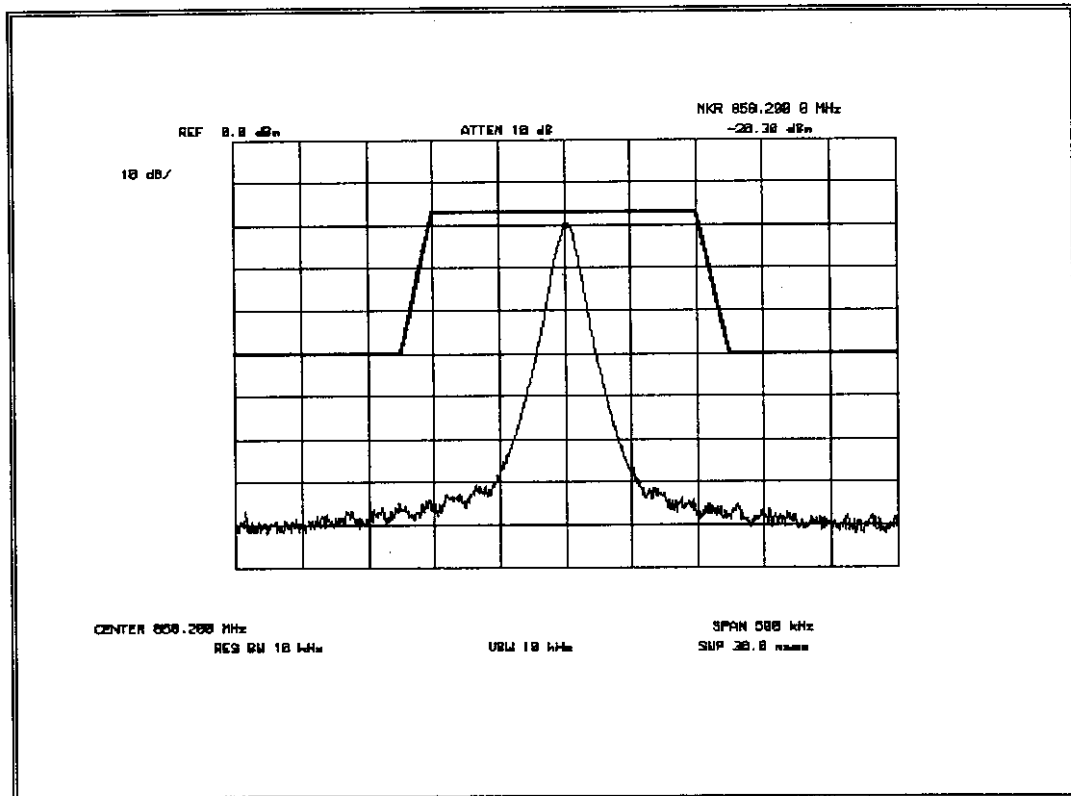
(for reference numbers see test equipment listing)

01 ; 02 ; 05

Equipment under test : SR 3054-U  
 Ambient temperature : 23°C  
 Relative humidity : 54%

TRANSIENT FREQUENCY BEHAVIOUR OF THE TRANSMITTER

SUBCLAUSE 8.5



FREQUENCY : 858.200 MHz

LIMITS

SUBCLAUSE 8.5.4

Output power :  $\leq -30$  dBc (until the carrier power is within the mask given in figure 6, I-ETS 300 422)  
 cycle starts when RF power exceeds 250 nW

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

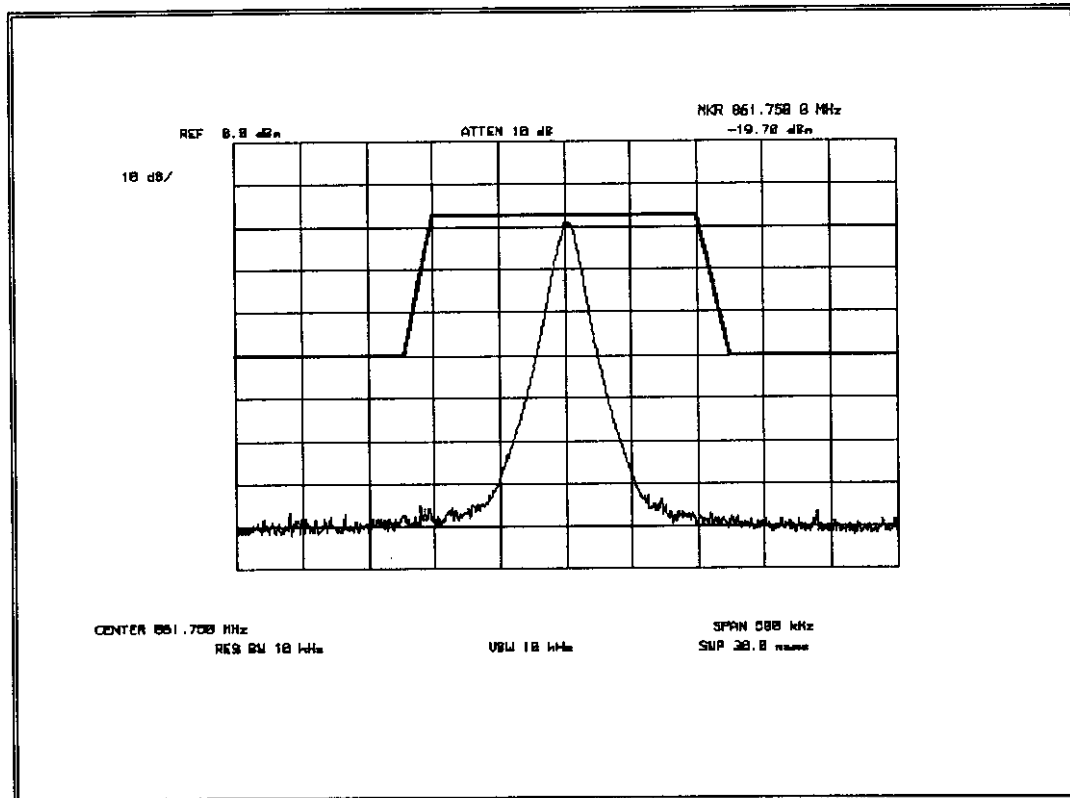
01 ; 02 ; 05



Equipment under test : SR 3054-U  
 Ambient temperature : 23°C  
 Relative humidity : 54%

TRANSIENT FREQUENCY BEHAVIOUR OF THE TRANSMITTER

SUBCLAUSE 8.5



FREQUENCY: 861.750 MHz

LIMITS

SUBCLAUSE 8.5.4

Output power :  $\leq -30$  dBc (until the carrier power is within the mask given in figure 6, I-ETS 300 422)  
 cycle starts when RF power exceeds 250 nW

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

01 ; 02 ; 05

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.
01	Spectrum Analyzer	8566 A	Hewlett-Packard	1925A00257
02	Analyzer Display	8566 A	Hewlett-Packard	1925A00860
03	Oscilloscope	7633	Tektronix	230054
04	Radio Analyzer	CMTA 54	Rohde & Schwarz	894 043/010
05	System Power Supply	6038 A	Hewlett-Packard	2848A07027
06	Signal Generator	8111 A	Hewlett-Packard	2215G00867
07	Signal Generator	8662 A	Hewlett-Packard	2224A01012
08	Funktionsgenerator	AFGU	Rohde & Schwarz	862 480/032
09	Regeltrenntrafo	MPL	Erfi	91350
10	Netznachbildung	NNLA 8120	Schwarzbeck	8120331
11	Relais-Matrix	PSU	Rohde & Schwarz	893 285/020
12	Power-Meter	436 A	Hewlett-Packard	2101A12378
13	Power-Sensor	8484 A	Hewlett-Packard	2237A10156
14	Power-Sensor	8482 A	Hewlett-Packard	2237A00616
15	Modulationsmeter	9008	Racal-Dana	2647
16	Frequenzzähler	5340 A	Hewlett-Packard	1532A03899
17	Absorber Schirmkabine	---	MWB	87400/002
18	Spectrum Analyzer	85660 B	Hewlett-Packard	2747A05306
19	Analyzer Display	85662 A	Hewlett-Packard	2816A16541
20	Quasi Peak Adapter	85650 A	Hewlett-Packard	2811A01131
21	RF-Preselector	85685 A	Hewlett-Packard	2833A00768
22	Biconical Antenne	3104	Emco	3758
23	Log. Per. Antenne	3146	Emco	2130
24	Double Ridge Horn	3115	Emco	3088
25	EMI-Testreceiver	ESAI	Rohde & Schwarz	863 180/013
26	EMI-Analyzer-Display	ESAI-D	Rohde & Schwarz	862 771/008
27	Biconical Antenne	HK 116	Rohde & Schwarz	888 945/013
28	Log. Per. Antenne	HL 223	Rohde & Schwarz	825 584/002
29	Relais-Switch-Unit	RSU	Rohde & Schwarz	375 339/002
30	Highpass	HM985955	FSY Microwave	001
31	Amplifier	P42-GA29	Tron-Tech	B 23602
32	Absorber Schirmkabine		Frankonia	
33	Steuerrechner	PSM 7	Rohde & Schwarz	834 621/004
34	EMI Test Reciever	ESMI	Rohde & Schwarz	827 063/010
35	EMI Test Receiver	Display	Rohde & Schwarz	829 808/010

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
36	Controler	HD 100	Deisel	100/322/93
37	Relais Matrix	PSN	Rohde & Schwarz	829 065/003
38	Control Unit	GB 016 A2	Rohde & Schwarz	344 122/008
39	Relais Switch Unit	RSU	Rohde & Schwarz	316 790/001
40	Power Supply	6032A	Hewlett Packard	2846A04063
41	Spektrum Monitor	EZM	Rohde & Schwarz	883 720/006
42	Meßempfänger	ESH 3	Rohde & Schwarz	890 174/002
43	Meßempfänger	ESVP	Rohde & Schwarz	891 752/005
44	Biconi Ant. 20-300MHz	HK 116	Rohde & Schwarz	833 162/011
45	Logper Ant. 0.3-1 GHz	HL 223	Rohde & Schwarz	832 914/010
46	Amplifier 0.1-4 GHz	AFS4	Miteq Inc.	206461
47	Logper Ant. 1-18 GHz	HL 024 A2	Rohde & Schwarz	342 662/002
48	Polarisationsnetzwerk	HL 024 Z1	Rohde & Schwarz	341 570/002
49	Double Ridge G Horn Antenne 1-26.5 GHz	3115	EMCO	9107-3696
50	Microw. Sys. Amplifier 0.5-26.5 GHz	8317A	Hewlett Packard	3123A00105
51	Audio Analyzer	UPD	Rohde & Schwarz	1030.7500.04
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**7. Statement of Attestation for FCC ID: DMOFT30UMB**

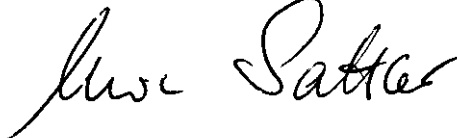
This equipment has been tested in accordance with the requirements contained in the appropriate Commission regulations. To the best of my knowledge, these tests were performed using measurement procedures consistent with industry or Commission standards, and demonstrate that the equipment complies with the appropriate standards.

Each unit manufactured, imported or marketed, as defined in the Commission's regulations, will conform to the samples tested within the variations that can be expected due to quantity production and testing on a statistical basis.

I further testify that the necessary measurements were made by:

Bundesamt für Zulassungen in der Telekommunikation  
Talstrasse 43-42  
D-66119 Saarbrücken  
Germany

Signature of authorized signer:



Printed name of authorized signer: Uwe Sattler

Title of authorized signer: Technical Manager

Date: December 10, 1998