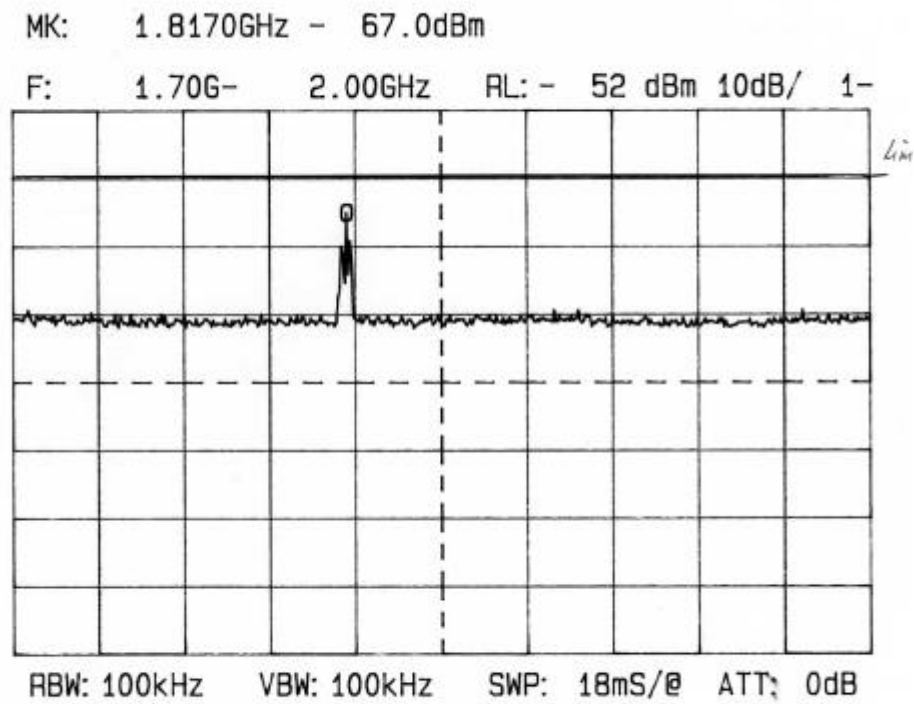




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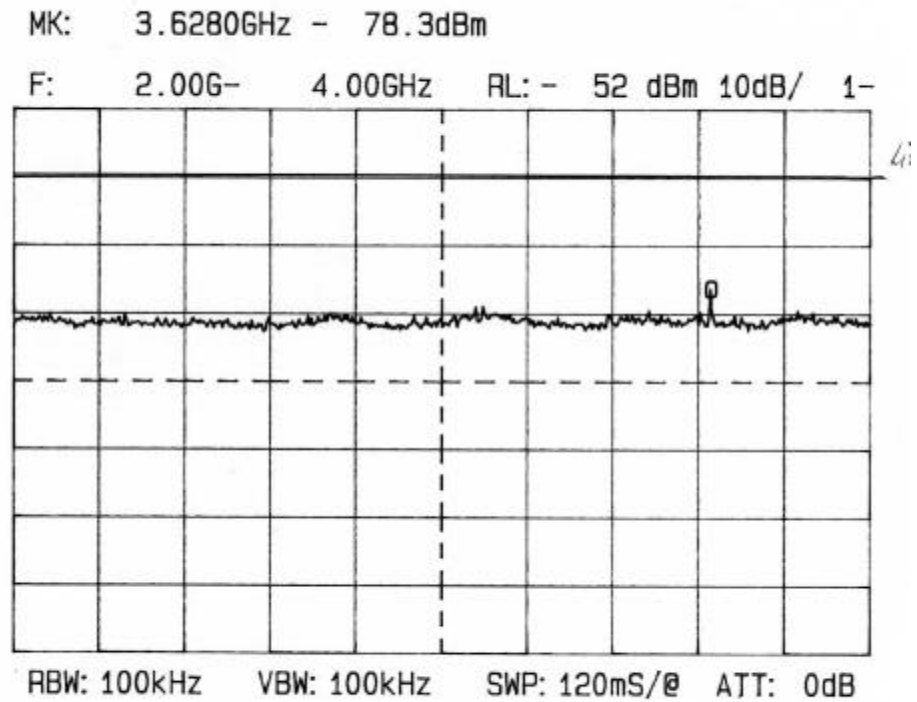
Plot 4.4.9
Spurious emissions





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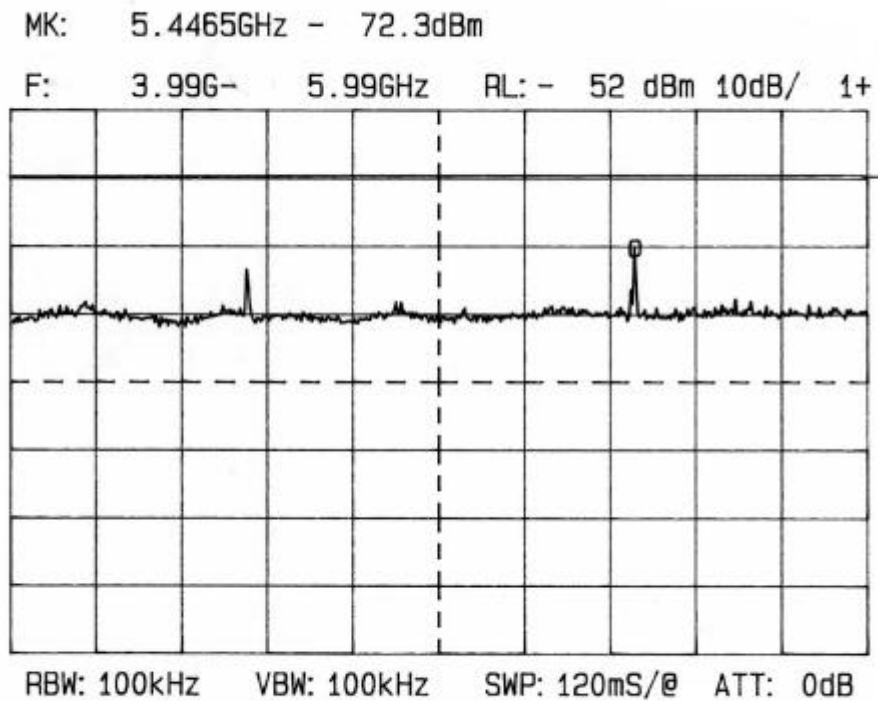
Plot 4.4.10
Spurious emissions





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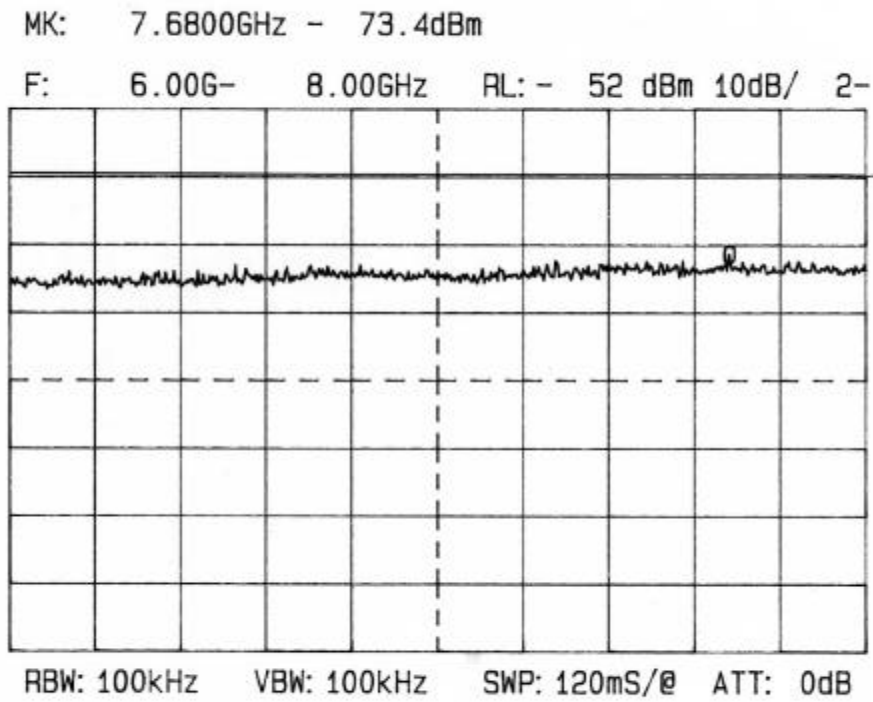
Plot 4.4.11
Spurious emissions





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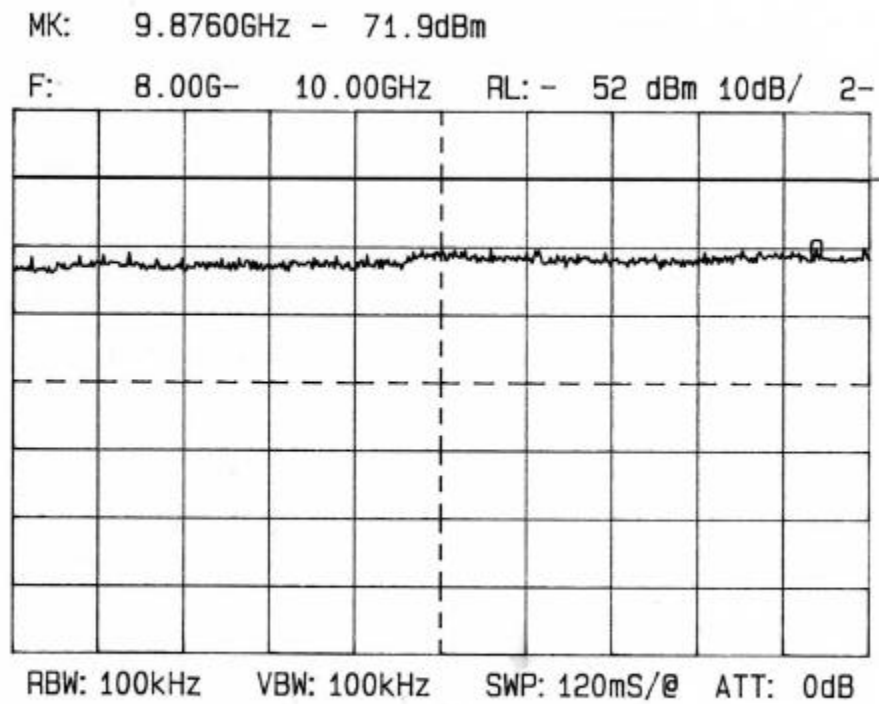
Plot 4.4.12
Spurious emissions





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Plot 4.4.13
Spurious emissions





4.5 Frequency stability measurements according to FCC part 90 paragraph 213

4.5.1 General

According to paragraph 90.213, the minimum frequency stability limit (in parts per million) is 2.5 ppm for mobile equipment in frequency range 902 – 928 MHz.

For frequency 908 000 700 Hz the specified limit is 2270 Hz.

4.5.2 Test procedure

The EUT was set up as shown in Photographs 4.5.1, 4.5.2.

The frequency stability was investigated for various temperatures in the range from –30°C to +50°C.

Test results are recorded in Table 4.5.1.

The EUT was found to comply with requirements of paragraph 90.213.

Reference numbers of test equipment used

HL 0027	HL 0056	HL 0493	HL 0872
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Full description is in Appendix A.



Table 4.5.1
Frequency stability test results

Temperature, °C	Voltage, V	Frequency, Hz	Displacement, Hz	Limit, Hz	Pass/ Fail
-30	12.6	907 997 210	290	2270	Pass
-20	12.6	907 996 980	570	2270	Pass
-10	12.6	907 997 330	170	2270	Pass
0	12.6	907 997 950	450	2270	Pass
10	12.6	907 997 560	60	2270	Pass
22	12.6	907 997 500	Reference	Reference	
22	11.34	907 997 500	0	2270	Pass
22	13.86	907 997 580	80	2270	Pass
30	12.6	907 997 380	120	2270	Pass
40	12.6	907 997 320	180	2270	Pass
50	12.6	907 996 690	810	2270	Pass



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Photograph 4.5.1
Frequency stability test setup





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Photograph 4.5.2
Frequency stability test setup



**APPENDIX A - Test equipment and ancillaries used for tests**

HL Serial No.	Serial No.	Description	Manufacturer	Model No.	Due Calibr.
0025	5837	Spectrum analyzer, 10 kHz-23 GHz	Anritsu	MS-710C	8/00
0027	4838	Spectrum analyzer, 50 Hz-2 GHz	Anritsu	MS-611A	10/00
0041	2811	Double ridged guide antenna, 1-18 GHz	Electro-Metrics	RGA 50/60	8/00
0053	7538	Attenuator, 50 Ohm, 2W, 0-18 GHz, 10 dB	Hewlett Packard	8492A	2/00
0056	2627	Attenuator, 50 Ohm, 2W, 0-18 GHz, 30 dB	Hewlett Packard	8492A	2/00
0315	DM551 0548	Oscilloscope meter, 50 MHz	Fluke	Fluke, 97	8/00
0316	02BK	Power meter, RF, IEEE-488, 100 kHz-100GHz, -70 to +37 dBm	Boonton	4220-01	02/00
0465	023	Anechoic chamber 9 (L) x 6.5 (W) x 5.5 (H) m	Hermon Labs	AC-1	3/00
0493	4016	Oven temperature	Thermotron	S-1.2 Mini-Max	3/00
0507	2926U 00162	Spectrum analyzer, 9 kHz - 1.8 GHz	Hewlett Packard	HP 8591A	5/00
0521	0319	Spectrum analyzer with RF filter section (EMI receiver 9 kHz - 6.5 GHz)	Hewlett Packard	8546A	7/00
0589	589	Cable coaxial, GORE A2POL118.2, 3m	Hermon Labs	GORE-3	11/00
0604	9611-1011	Antenna biconilog log-periodic/T bow-tie, 26 - 2000 MHz	EMCO	3141	7/00
0872	8767	Cable coax	Amplifier Research	PFP01P0103 94	7/00

**APPENDIX B-Test equipment correction factors****Antenna Factor
Double Ridged Guide Antenna
Model RGA-50/60
S/N 2811**

Frequency, MHz	Antenna Factor, dB
1000	24.3
1500	25.4
2000	28.4
2500	29.2
3000	30.5
3500	31.6
4000	33.7
4500	32.2
5000	34.5
5500	34.5
6000	34.6
6500	35.3
7000	35.5
7500	35.9
8000	36.6
8500	37.3
9000	37.7
9500	37.7
10000	38.2
10500	38.5
11000	39.0
11500	40.1
12000	40.2
12500	39.3
13000	39.9
13500	40.6
14000	41.1
14500	40.5
15000	39.9
15500	37.8
16000	39.1
16500	41.1
17000	41.7
17500	45.1
18000	44.3

Antenna factor is to be added to receiver meter reading in dB(μ V) to convert to field intensity in dB(μ V)/meter



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Antenna factor
Biconilog antenna EMCO, model 3141
Ser.No.1011

Frequency, MHz	Antenna Factor, dB(1/m)	Frequency, MHz	Antenna Factor, dB(1/m)
26	7.8	940	24.0
28	7.8	960	24.1
30	7.8	980	24.5
40	7.2	1000	24.9
60	7.1	1020	25.0
70	8.5	1040	25.2
80	9.4	1060	25.4
90	9.8	1080	25.6
100	9.7	1100	25.7
110	9.3	1120	26.0
120	8.8	1140	26.4
130	8.7	1160	27.0
140	9.2	1180	27.0
150	9.8	1200	26.7
160	10.2	1220	26.5
170	10.4	1240	26.5
180	10.4	1260	26.5
190	10.3	1280	26.6
200	10.6	1300	27.0
220	11.6	1320	27.8
240	12.4	1340	28.3
260	12.8	1360	28.2
280	13.7	1380	27.9
300	14.7	1400	27.9
320	15.2	1420	27.9
340	15.4	1440	27.8
360	16.1	1460	27.8
380	16.4	1480	28.0
400	16.6	1500	28.5
420	16.7	1520	28.9
440	17.0	1540	29.6
460	17.7	1560	29.8
480	18.1	1580	29.6
500	18.5	1600	29.5
520	19.1	1620	29.3
540	19.5	1640	29.2
560	19.8	1660	29.4
580	20.6	1680	29.6
600	21.3	1700	29.8
620	21.5	1720	30.3
640	21.2	1740	30.8
660	21.4	1760	31.1
680	21.9	1780	31.0
700	22.2	1800	30.9
720	22.2	1820	30.7
740	22.1	1840	30.6
760	22.3	1860	30.6
780	22.6	1880	30.6
800	22.7	1900	30.6
820	22.9	1920	30.7
840	23.1	1940	30.9
860	23.4	1960	31.2
880	23.8	1980	31.6
900	24.1	2000	32.0
920	24.1		

Antenna factor is to be added to receiver meter reading in dB(μ V) to convert to field intensity in dB(μ V/meter).