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32825 Blomberg
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TEST REPORT

Test Report Reference: R30764 TX Edition 3

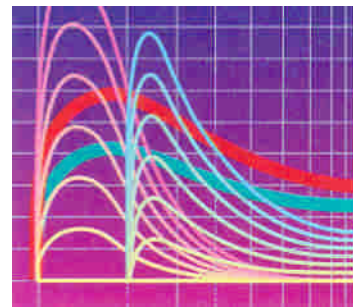
Equipment under Test: Evolution 5000 Transmitter

FCC ID: RPNE5KTX1004634

Applicant: MSA Auer GmbH

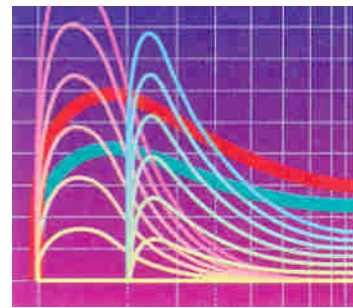
Manufacturer: VTQ Videotronik GmbH

**Test Laboratory
(CAB)
accredited by
DATech e.V.
in compliance with DIN EN ISO/IEC 17025
under the
Reg. No. TTI-P-G071/94-11
and listed by
FCC 31040/SIT1300F2**



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1 IDENTIFICATION

1.1 APPLICANT

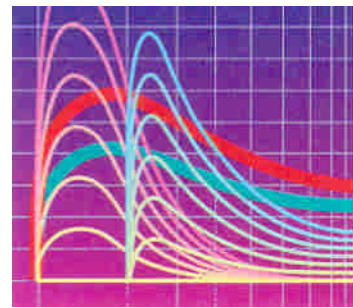
Name:	MSA AUER GmbH
Address:	Thielemannstraße 1 12059 Berlin
Country:	Germany
Name for contact purposes:	-
Phone:	-
Fax:	-
Mail address:	-
Applicant represented during the test by the following person:	-

1.2 MANUFACTURER

Name:	VTQ Videotronik GmbH
Address:	Grüne Straße 2 06268 Querfurt
Country:	Germany
Name for contact purposes:	Mr. Richter
Phone:	+49-(0)34771-5189
Fax:	+49-(0)34771-22044
Mail address:	h.richter@vtq.de
Applicant represented during the test by the following person:	Mr. Richter

1.3 DATES

Date of receipt of test sample:	24 September 2003
Start of test:	24 September 2003
End of test:	26 September 2003

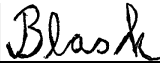



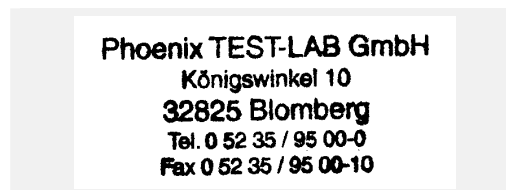
TEST REPORT REFERENCE: R30764 TX Edition 3

1.4 TEST LABORATORY

The tests were carried out at: **PHOENIX TEST-LAB GmbH**
Königswinkel 10
D-32825 Blomberg Phone: **+49 (0) 52 35 / 95 00-0**
Germany Fax: **+49 (0) 52 35 / 95 00-10**

accredited by DATech e.V. in compliance with DIN EN ISO/IEC 17025 under Reg. No. TTI-P-G071/94-11 and listed by FCC 31040/SIT1300F2.

Test engineer:	Raimund Blask		3 December 2003
	name	signature	date
Test report checked:	Bernd Steiner		3 December 2003
	name	signature	date



stamp

1.5 RESERVATION

This test report is only valid in its original form.

Any reproduction of its contents without written permission of the accredited test laboratory PHOENIX TEST-LAB GmbH is prohibited.

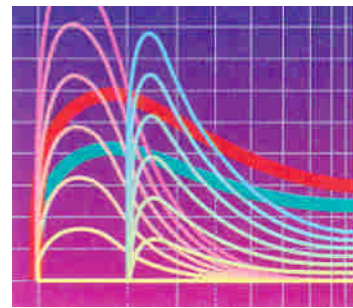
The test results herein refer only to the tested sample. PHOENIX TEST-LAB GmbH is not responsible for any generalisations or conclusions drawn from these test results concerning further samples. Any modification of the tested samples is prohibited and leads to the invalidity of this test report. Each page necessarily contains the PHOENIX TEST-LAB Logo and the TEST REPORT REFERENCE.

1.6 NORMATIVE REFERENCES

- [1] **ANSI C63.4 (1992)** American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
- [2] **FCC 47 CFR Part 90 (October 2003), Private Land Mobile Radio Service**
- [3] **FCC 47 CFR Part 2 (October 2003)**

1.7 TEST RESULTS

The requirements of this test document are fulfilled by the equipment under test. The complete test results are presented in the following.



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2 TECHNICAL DATA OF EQUIPMENT

2.1 DEVICE UNDER TEST

Type of equipment:	2.4 GHz video-transmitter
Type designation:	Evolution 5000 Transmitter
Highest operating frequency	2474 MHz

* declared by the applicant

The following external I/O cables were used:

Cable	Length	Shielding	Connector
DC-power-supply	1.5 m	no	Not specified
Video-Signal-Generator	1.5 m	yes	BNC

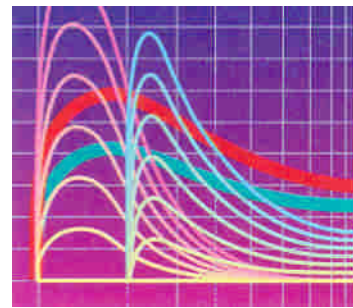
2.2 PERIPHERY DEVICES

The ancillary equipment mentioned below was in use:

The EUT (transmitter) was powered with an external DC-power supply.
 A colour TV pattern generator Type "Philips PM 5418" was used to generate a "colour bar" (according to CCIR 405, 525 lines NTSC video) to modulate the transmitter.

2.3 MODIFICATIONS

No modifications were necessary to fulfil the requirements.



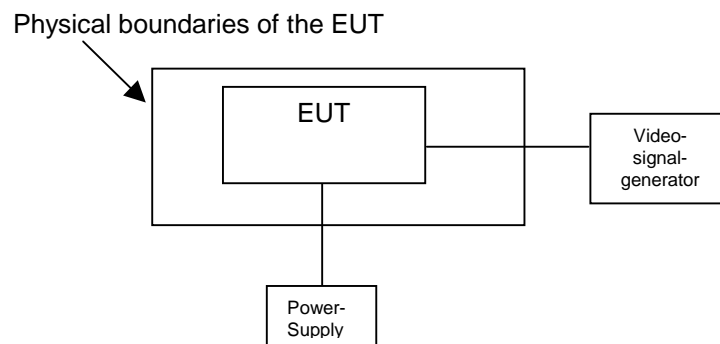
3 OPERATIONAL STATES AND PHYSICAL BOUNDARIES

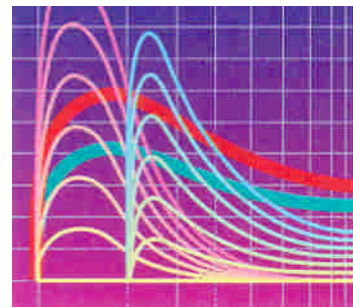
The EUT (transmitter) was powered with an external DC-power supply.

A colour TV pattern generator Type "Philips PM 5418" was used to generate a "colour bar" (according to CCIR 405, 525 lines NTSC video) to modulate the transmitter. The modulation signal-amplitude to the EUT was 2 V (peak to peak). The transmitter was tested on the following frequencies:

Channel:	Transmit frequency:
1	2458 MHz
2	2474 MHz

The physical boundaries of the Equipment Under Test are shown below.



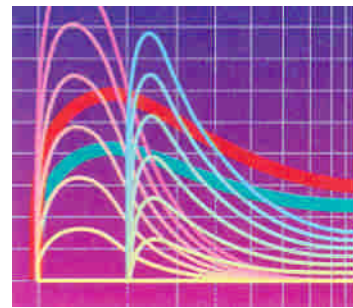


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4 LIST OF MEASUREMENTS

No.	Test:	Procedure:	Subpart of test report:	Result:
1	RF power output	Conducted at the antenna connector (unmodulated)	4.2.1	Passed
2	RF-power output	Radiated (modulated with normal modulation)	4.2.2	Passed
3	Spurious emission	Radiated (modulated with normal modulation)	4.2.3	Passed
4	Spurious emission	Radiated (modulated with normal modulation)	-	-
5	Frequency stability	Voltage variation (unmodulated)	4.3	Passed
6	Frequency stability	Temperature variation (unmodulated)	4.4	Passed
7	Occupied bandwidth	Radiated (Coupling unit) (modulated with NTSC-colour-bar-signal)	4.5	Passed

Remark: The conducted spurious emission measurement was not applicable because of an integral antenna without commercial connector.



RADIATED EMISSIONS (TRANSMITTER)

4.1.1 METHOD OF MEASUREMENT

The radiated emission measurement is subdivided in two stages.

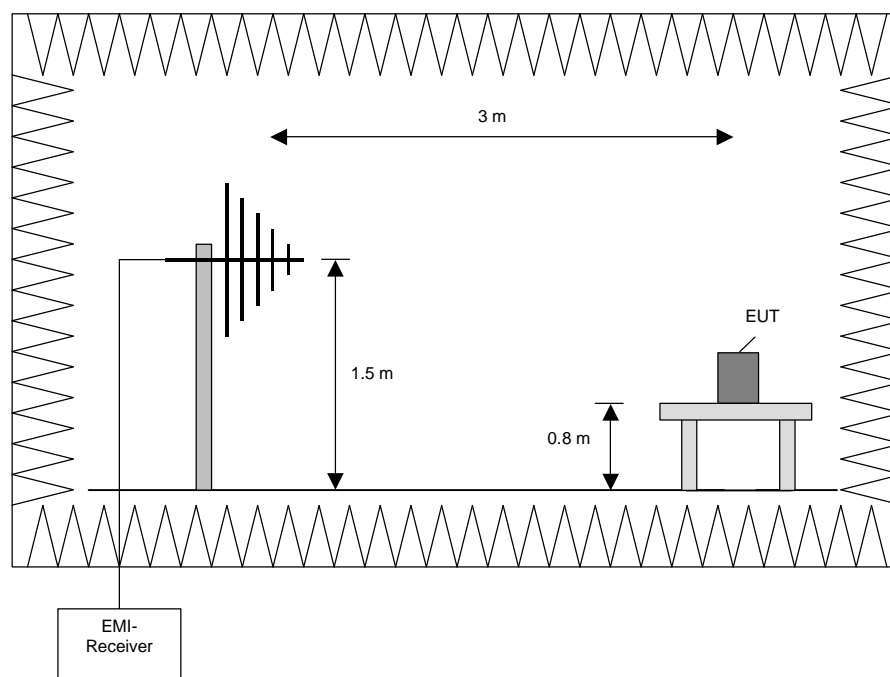
Preliminary measurement:

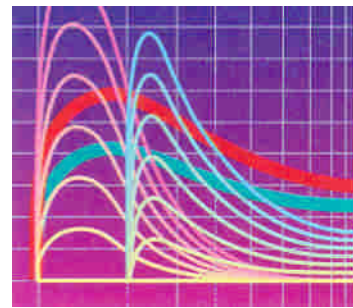
In the first stage a preliminary measurement will be performed in a fully anechoic chamber with a measuring distance of 3 meter. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-1992 [1].

The frequency range 30 MHz to 1 GHz will be measured with an EMI Receiver set to MAX Hold mode and a resolution bandwidth of 120 kHz. The frequency range 1 GHz to 26 GHz will be measured with an EMI Receiver set to MAX Hold mode and a resolution bandwidth of 1 GHz. The measurement will be performed in horizontal and vertical polarisation of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0° to 360° and three orthogonal axis.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
30 MHz to 230 MHz	100 kHz
230 MHz to 1 GHz	100 kHz
1 GHz to 26 GHz	1 MHz





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Procedure of preliminary measurement:

Prescans were performed in the frequency range 30 MHz to 200 MHz, 200 MHz to 1 GHz, 1 GHz to 4 GHz, 4 GHz to 12 GHz, 12 GHz to 18 GHz and 18 GHz to 26 GHz.

The following procedure will be used:

- 1) Monitor the frequency range at horizontal polarisation and a EUT azimuth of 0°
- 2) Manipulate the system cables within the range to produce the maximum level of emission
- 3) Rotate the EUT by 360° to maximize the detected signals.
- 4) Make a hardcopy of the spectrum
- 5) Measure the frequency of 3 highest detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
- 6) Repeat steps 1) to 4) with the other orthogonal axes
- 7) Repeat steps 1) to 5) with the vertical polarisation of the measuring antenna.

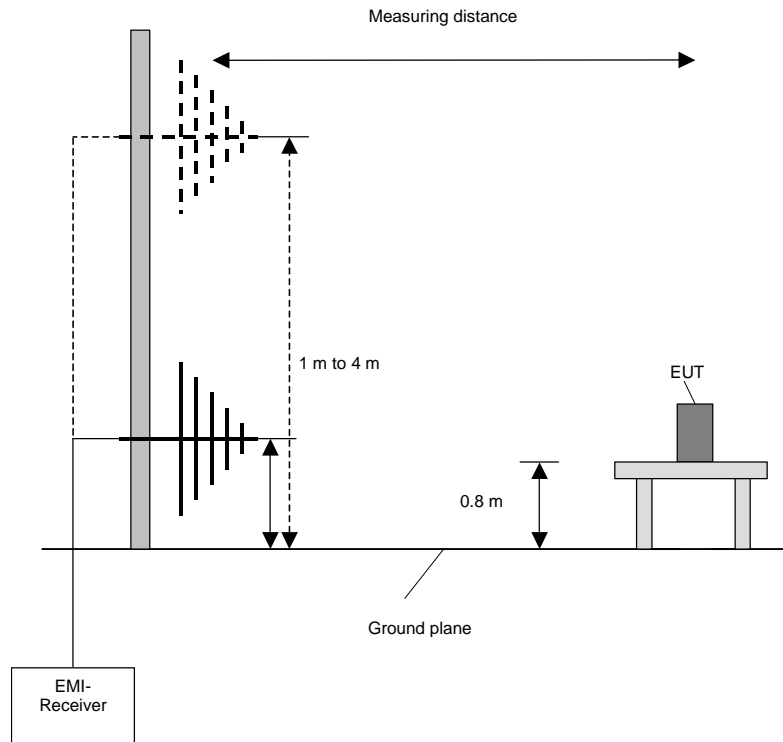
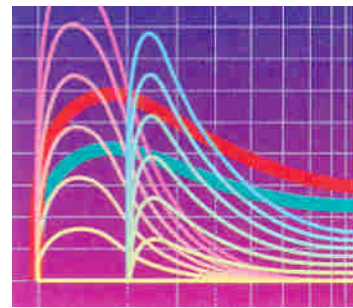
Final Measurement (30 MHz to 1 GHz):

In the second stage a final measurement will be performed on selected frequencies found in the preliminary measurement. The final measurement in the frequency range 30 MHz to 1 GHz was done on an open area test site during this test the EUT will be rotated in three orthogonal axis in the range of 0° to 360°, the measuring antenna will be set to horizontal and vertical polarisation and raised and lowered in the range from 1 m to 4 m to find the maximum level of emissions.

The final measurement in the frequency range 1 GHz to 26 GHz was done in the fully anechoic chamber. During this test the EUT will be rotated in three orthogonal axis in the range of 0° to 360°, the measuring antenna will be set to horizontal and vertical polarisation to find the maximum level of emissions.

The resolution bandwidth of the EMI Receiver will be set to the following values:

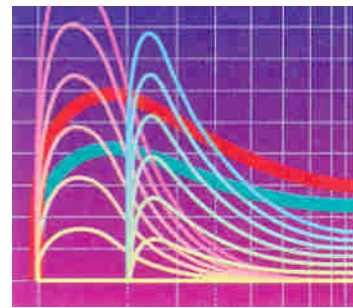
Frequency range	Resolution bandwidth
30 MHz to 1 GHz	120 kHz
1 GHz to 26 GHz	1 MHz



Procedure of final measurement:

The following procedure will be used:

- 1) Measure on the selected frequencies at an antenna height of 1 m and a EUT azimuth of 23°
- 2) Move the antenna from 1 m to 4 m and note the maximum value at each frequency.
- 3) Rotate the EUT by 45° and repeat 2) until an azimuth of 337° is reached.
- 4) Repeat 1) to 3) for the other orthogonal antenna polarization.
- 5) Move the antenna and the turntable to the position where the maximum value is detected.
- 6) Measure while moving the antenna slowly +/- 1 m
- 7) Set the antenna to the position where the maximum value is found
- 8) Measure while moving the turntable +/- 45°
- 9) Set the turntable to the azimuth where the maximum value is found
- 10) Measure with Final detector (QP or AV) and note the value
- 11) Repeat 5) to 10) for each frequency
- 12) Repeat 1) to 11) for each orthogonal axes of the EUT



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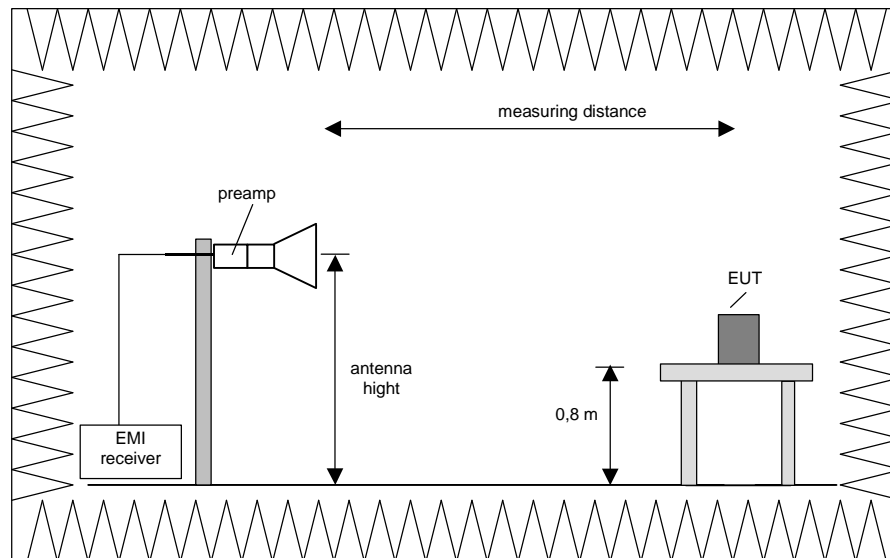
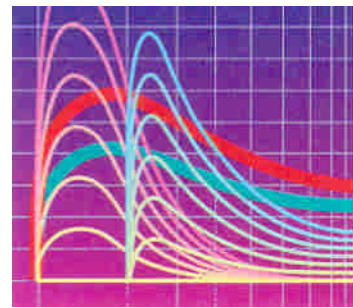
Final measurement (1 GHz to 26 GHz)

This measurement will be performed in a fully anechoic chamber with a measuring distance of 3 meter. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-1992 [1].

The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to MAX Hold mode and a resolution bandwidth of 1 MHz. The measurement will be performed in horizontal and vertical polarisation of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 ° to 360 °. If the EUT is larger than the antenna beamwidth, the antenna will be moved to various positions, to cover the whole surface of the EUT. It might be possible to shorter the measuring distance to higher the measurement sensitivity.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
1 GHz to 26 GHz	1 MHz

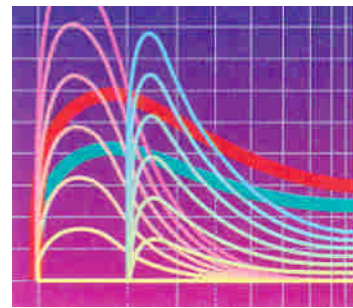


Procedure of measurement:

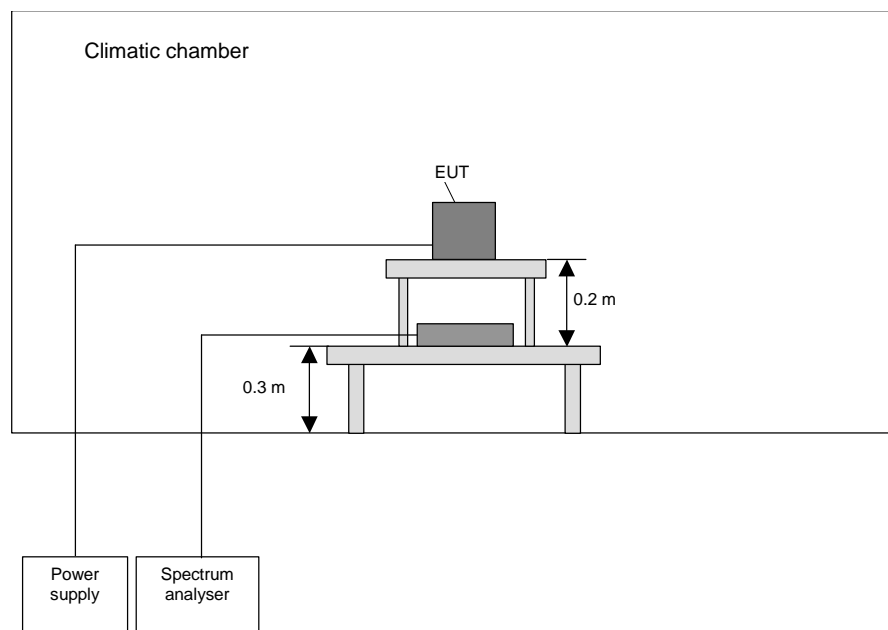
The measurements were performed in the frequency range 1 GHz to 26 GHz.

The following procedure will be used:

- 1) Monitor the frequency range at horizontal polarisation and a EUT azimuth of 0 °.
- 2) Rotate the EUT by 360 ° to maximize the detected signals.
- 3) Change the antenna polarisation.
- 4) Rotate the EUT by 360 ° to maximize the detected signals.
- 5) Make a hardcopy of the spectrum.
- 6) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
- 7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarisation and azimuth and the peak and average detector, which causes the maximum emission.
- 8) Repeat steps 1) to 7) with the other orthogonal axes of the EUT if handheld equipment.
- 9) Repeat steps 1) to 8) for the next antenna spot if the EUT is larger than the antenna beamwidth.

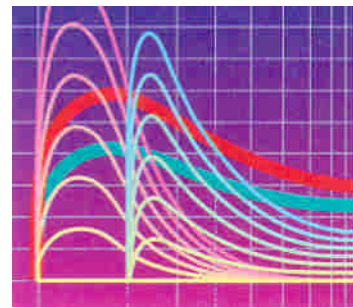


4.2 FREQUENCY STABILITY WITH RESPECT TO AMBIENT TEMPERATURE AND SUPPLY VOLTAGE



The following procedure will be used:

- 1) Place the EUT in the climatic chamber
- 2) Switch on the EUT and check the correct function and the settings of the spectrum analyser
- 3) Switch off the EUT and tune the climatic chamber to a temperature of 20 °C. Wait until the thermal balance is obtained
- 4) Switch the EUT on and record the frequency at start-up and 2, 5 and 10 minutes after powering on.
- 5) Repeat 4) with 85 % and 115 % of the nominal supply voltage (AC only)
- 6) Switch off the EUT and tune the climatic chamber to a temperature of 50 °C. Wait until the thermal balance is obtained
- 7) Switch the EUT on and record the frequencies at start-up and 2, 5 and 10 minutes after powering on.
- 8) Repeat 7) with 85 % and 115 % of the nominal supply voltage (AC only)
- 9) Switch off the EUT and tune the climatic chamber to a temperature of -20 °C. Wait until the thermal balance is obtained
- 10) Switch the EUT on and record the frequencies at start-up and 2, 5 and 10 minutes after powering on.
- 11) Repeat 10) with 85 % and 115 % of the nominal supply voltage (AC only)



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4.2.1 POWER OUTPUT CONDUCTED

Ambient temperature	20 °C	Relative humidity	55 %
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Test record: The test was carried out in transmit mode of the EUT.
All results are shown in the following.

Supply voltage: During all measurements the EUT was supplied with 6 V DC.
A coaxial cable was connected to the rf-output of the transmitter instead of the integral antenna. The output power was measured without modulation.

Power measurement (conducted):

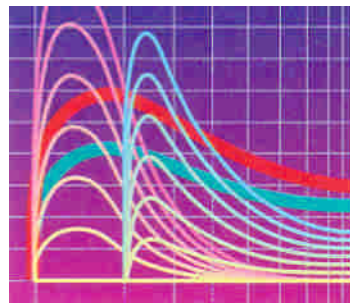
Channel:	Frequency:	Analyser reading:	Cable loss:	Output power:
1	2458 MHz	+25.4 dBm	1.0 dB	+26.4 dBm
2	2474 MHz	+25.3 dBm	1.0 dB	+26.3 dBm

Calculation:

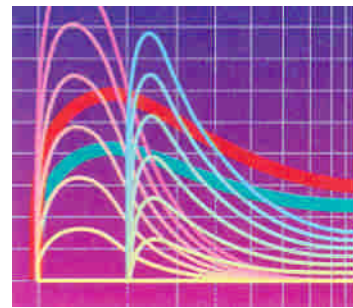
Output power = Analyser reading + Cable loss

TEST EQUIPMENT USED FOR THE TEST:

31, 54, 55



TEST REPORT REFERENCE: R30764 TX Edition 3



TEST REPORT REFERENCE: R30764 TX Edition 3

4.2.2 POWER OUTPUT RADIATED

Ambient temperature	20 °C	Relative humidity	55 %
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Position of EUT: The EUT was set-up on a wooden table of a height of 0.8 m.
The distance between EUT and antenna was 3 m.

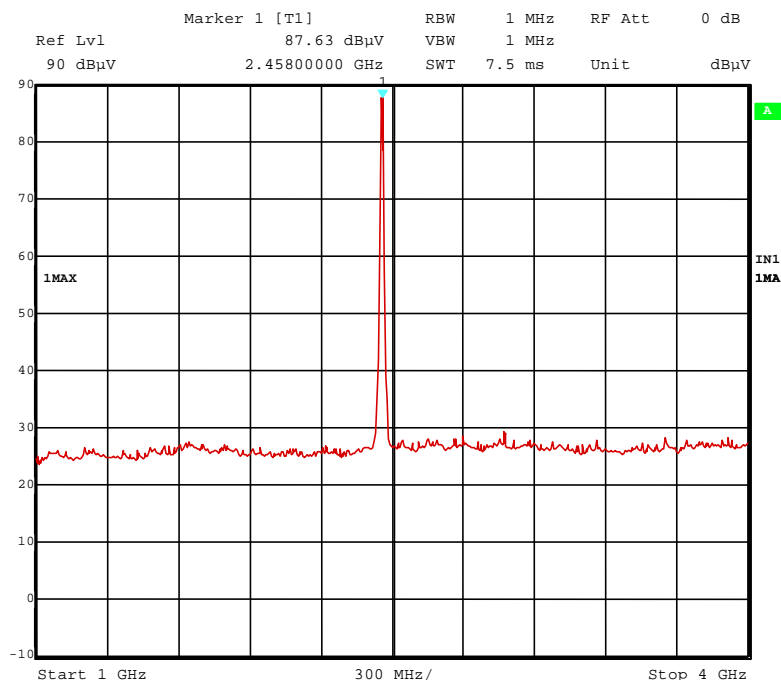
Cable guide: No cable run necessary.

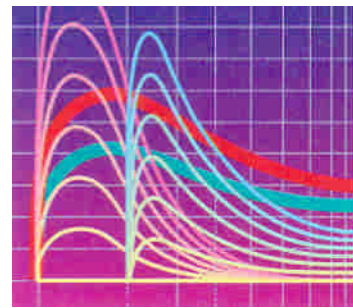
Test record: The test was carried out in transmit mode of the EUT.
All results are shown in the following.

Supply voltage: During the measurements the EUT was supplied with the integral rechargeable battery.

Power measurement (radiated):

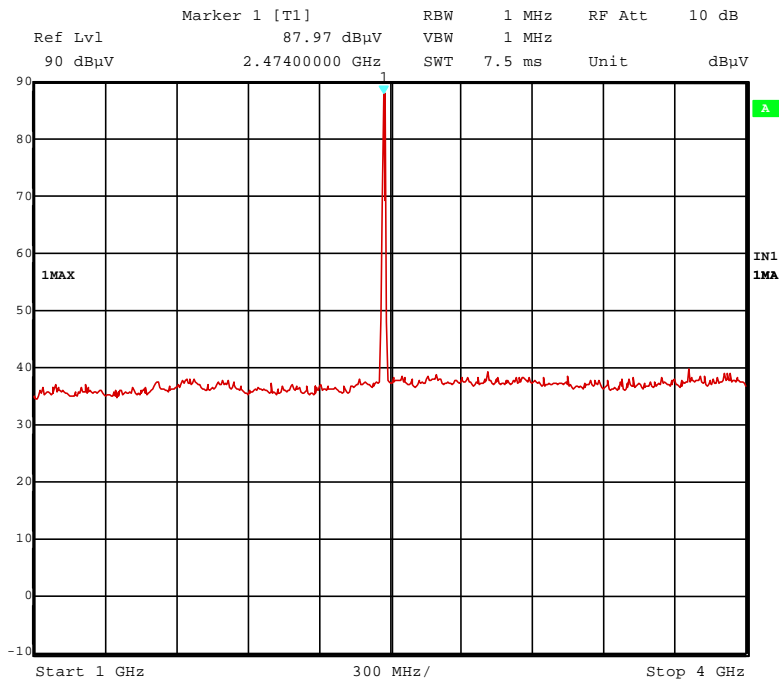
30764Ch1_3.wmf: 1 GHz to 4 GHz, transmit, channel 1





TEST REPORT REFERENCE: R30764 TX Edition 3

30764Ch2_3.wmf: 1 GHz to 4 GHz, , transmit, channel 2



Measurement results:

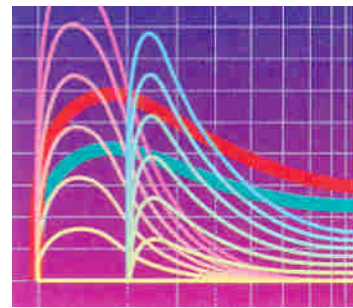
Channel:	Frequency: MHz	Analyser reading: dBµV	Cable loss: dB	Antenna factor: dB/m	Field strength: dBµV/m
1	2458 MHz	87.63	4.15	29.3	121.1
2	2474 MHz	87.97	4.35	28.7	121.0

Calculation:

Field strength = Analyser reading + Cable loss + Antenna factor

TEST EQUIPMENT USED FOR THE TEST:

29, 31-34, 36, 43, 44, 54



4.2.3 SPURIOUS EMISSIONS RADIATED

Ambient temperature	20 °C	Relative humidity	55 %
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Position of EUT: The EUT was set-up on a wooden table of a height of 0.8 m.
The distance between EUT and antenna was 3 m.

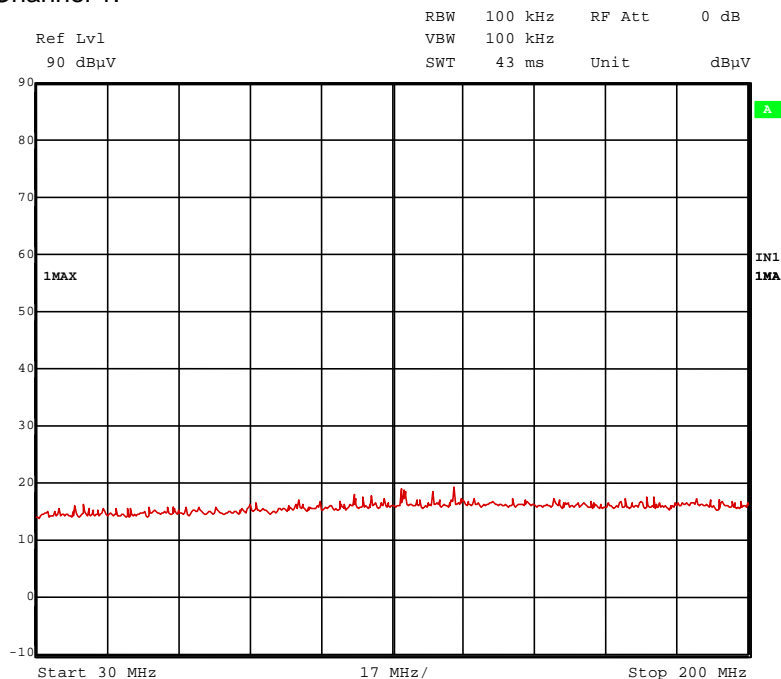
Cable guide: No cable run necessary.

Test record: The test was carried out in transmit mode of the EUT. All results are shown in the following.

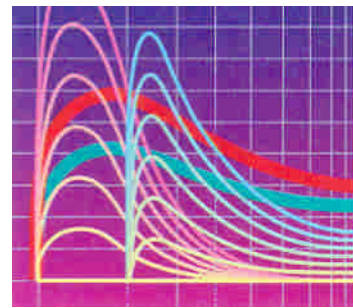
Supply voltage: During the measurements the EUT was supplied with the integral rechargeable battery.

Measurement results (radiated):

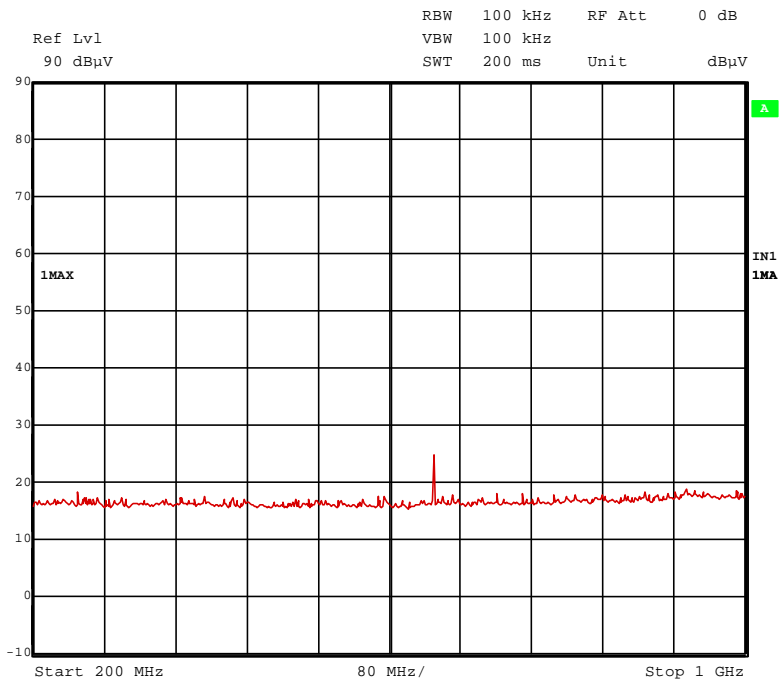
Channel 1:



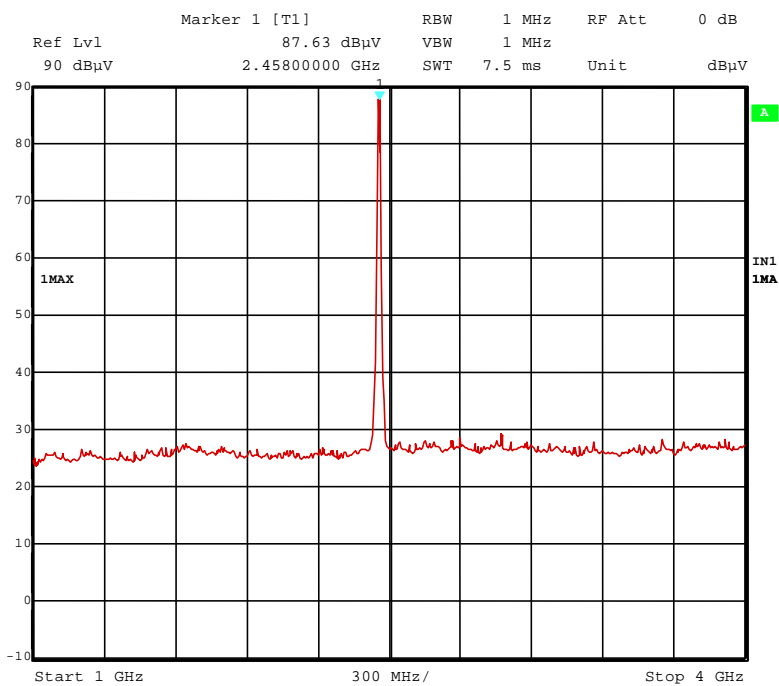
30764Ch1_1.wmf: 30 MHz to 200 MHz, transmit, channel 1



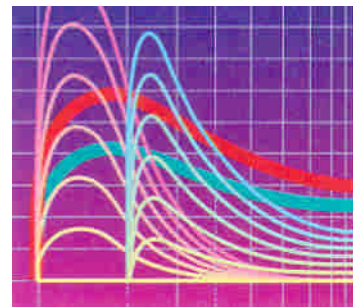
TEST REPORT REFERENCE: R30764 TX Edition 3



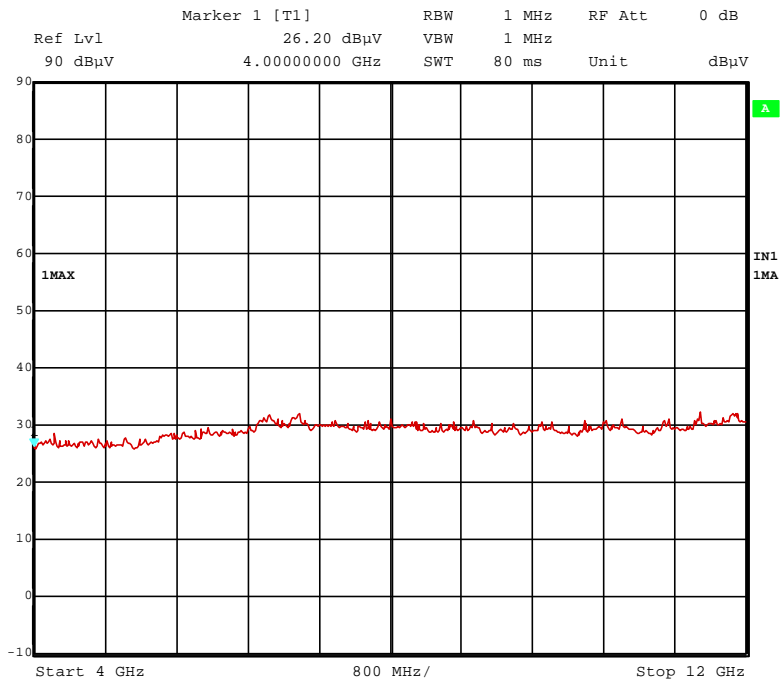
30764Ch1_2.wmf: 200 MHz to 1000 MHz, transmit, channel 1



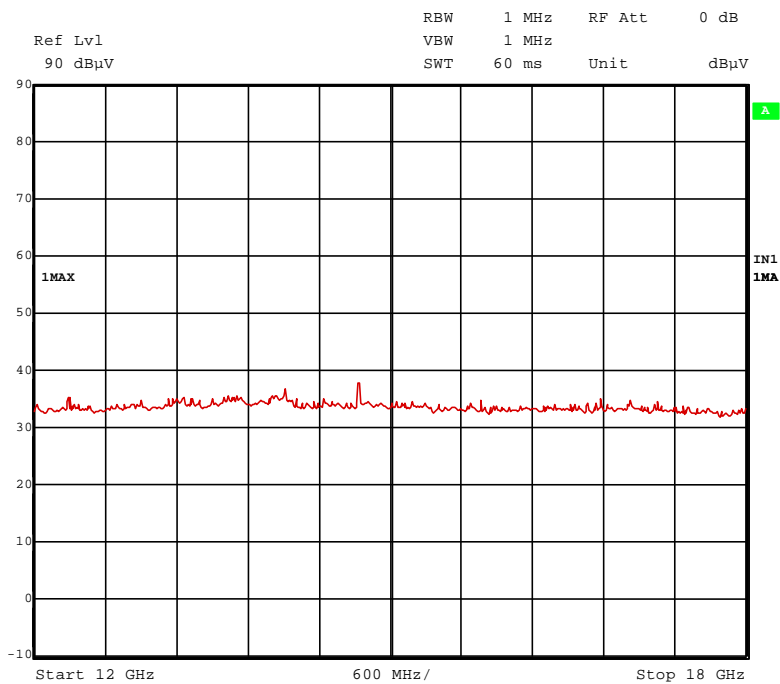
30764Ch1_3.wmf: 1 GHz to 4 GHz, transmit mode, channel 1



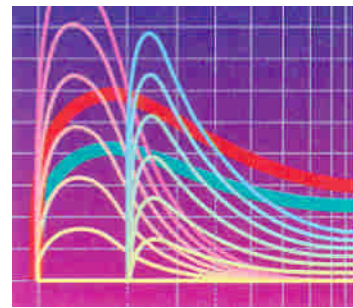
TEST REPORT REFERENCE: R30764 TX Edition 3



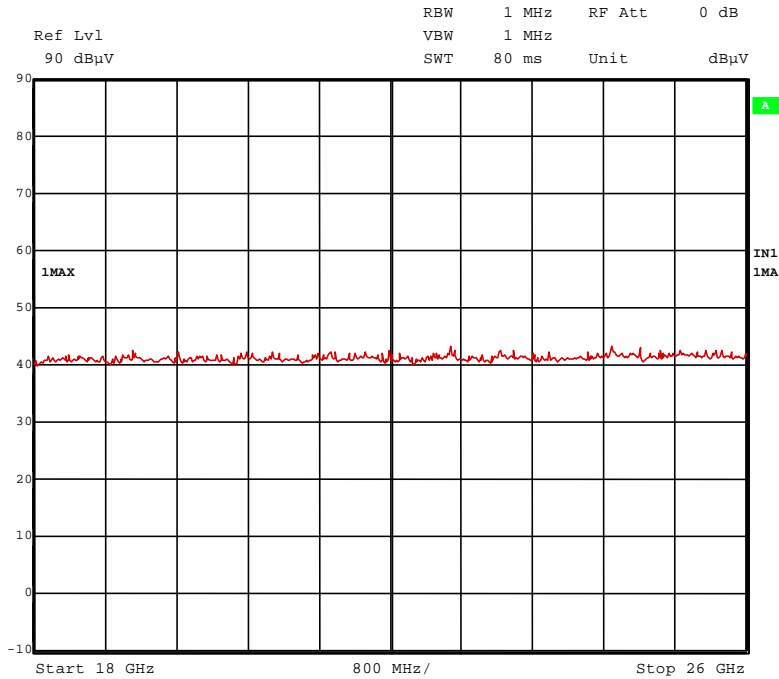
30764Ch1_4.wmf: 4 GHz to 12 GHz, transmit, channel 1



30764Ch1_5.wmf: 12 GHz to 18 GHz, transmit, channel 1



TEST REPORT REFERENCE: R30764 TX Edition 3



30764Ch1_6.wmf: 18 GHz to 26 GHz, transmit, channel 1

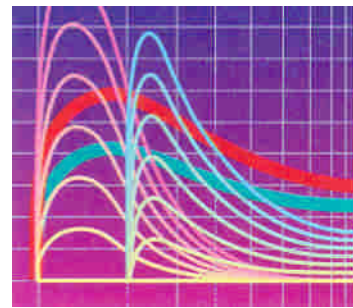
Limit of the spurious emission:

Limit = 43 + 10 x log P, P (conducted) = 26.4 dBm = 437 mW

Limit = 39.4 dBc

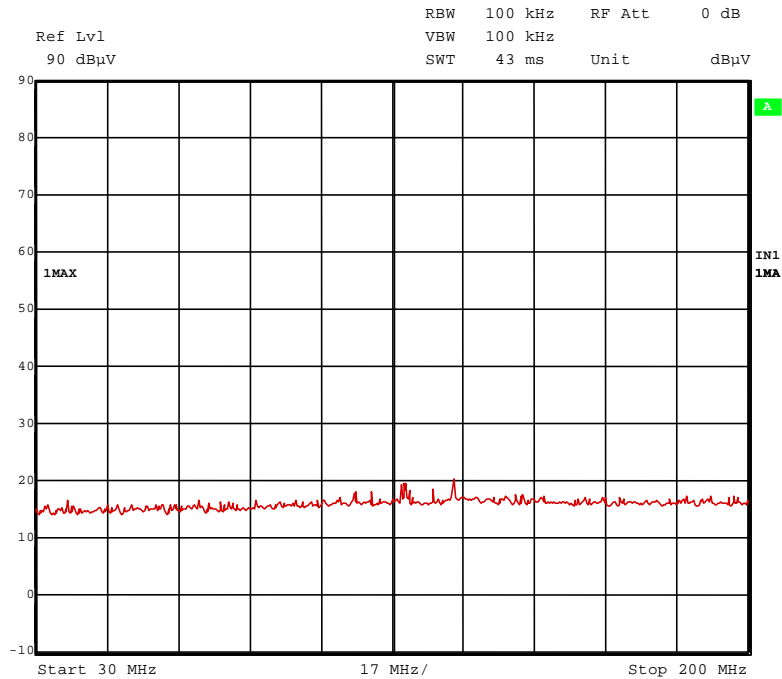
Frequency: MHz	Spectrum analyser level: dB μ V	Signal Generator level: dBm	Cable loss: dB	Antenna gain: dB	Corrected Generator level dBc	Limit: dBc	Margin: dB	Result:
649.995	24.5	-54	0.5	6.4	74.6	39.4	35.2	Passed
No other spurious emission found.								

Continued next page:

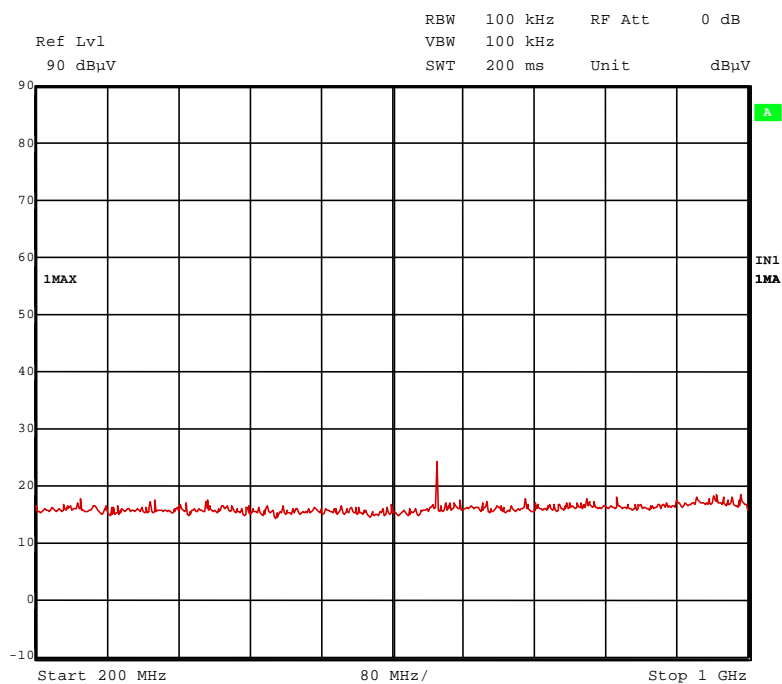


TEST REPORT REFERENCE: R30764 TX Edition 3

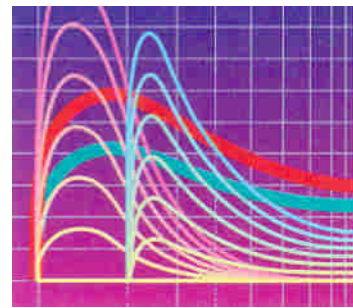
Channel 2:



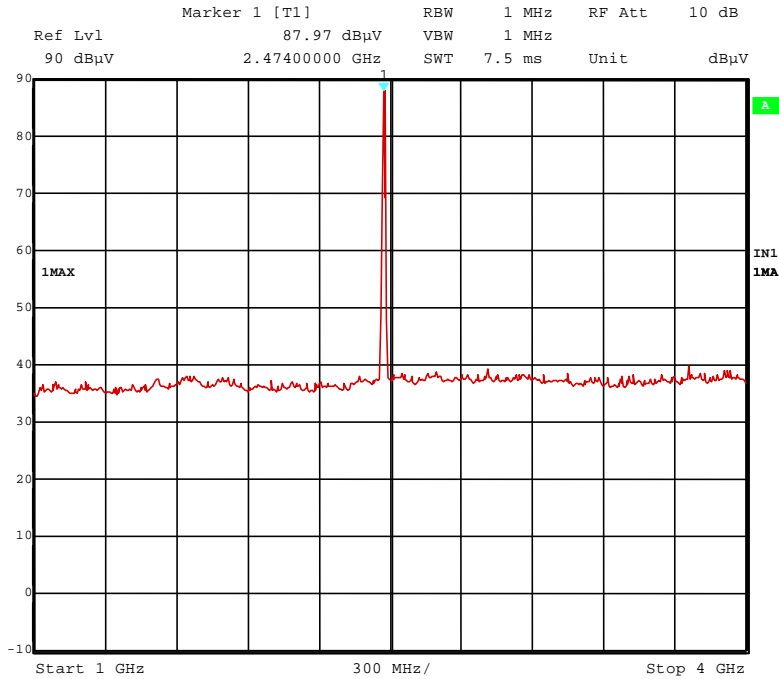
30764Ch2_1.wmf: 30 MHz to 200 MHz, transmit, channel 2



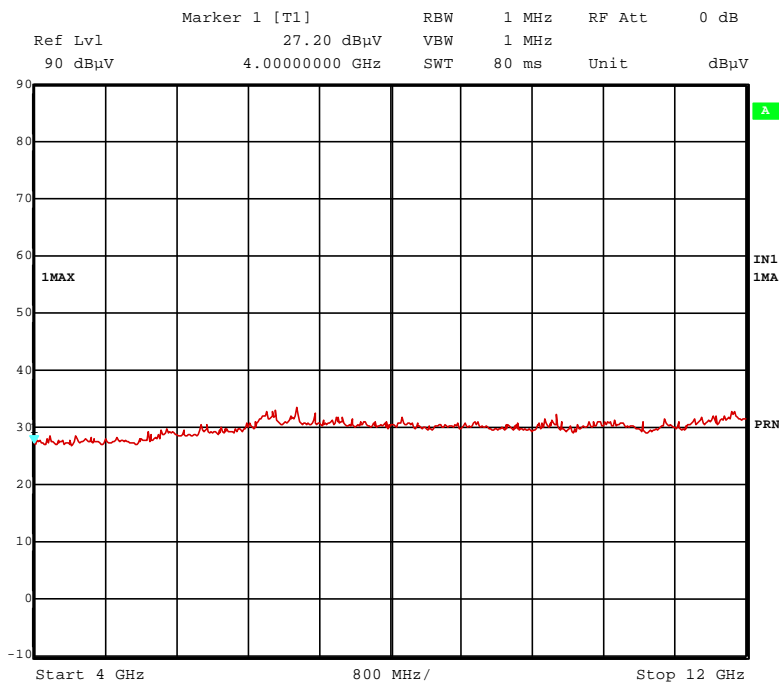
30764Ch2_2.wmf: 200 MHz to 1000 MHz, transmit, channel 2



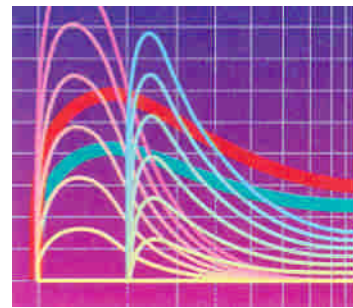
TEST REPORT REFERENCE: R30764 TX Edition 3



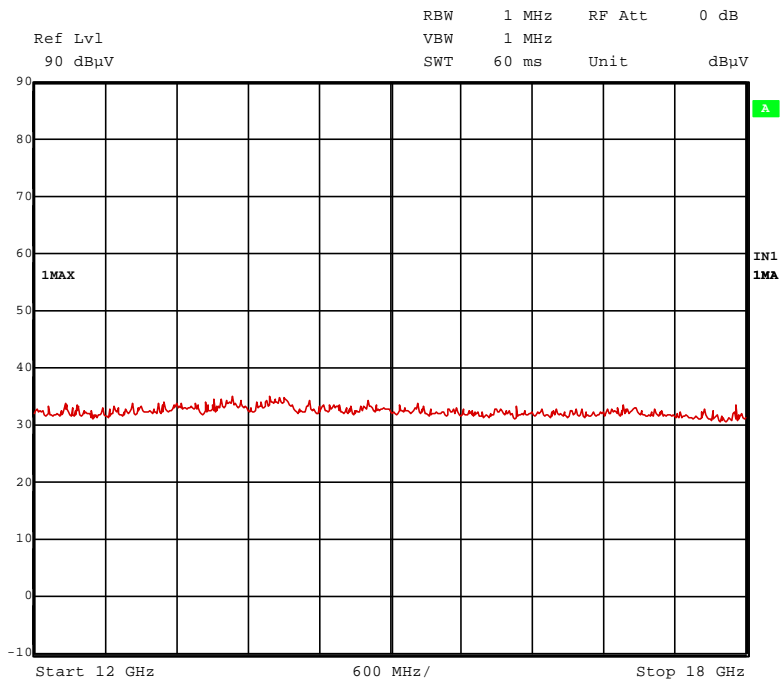
30764Ch2_3.wmf: 1 GHz to 4 GHz, transmit, channel 2



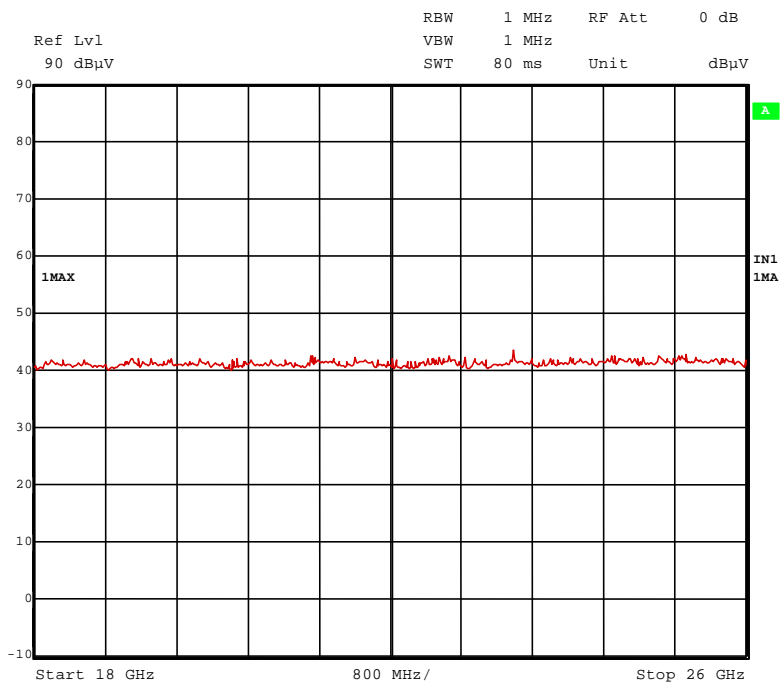
30764Ch2_4.wmf: 4 GHz to 12 GHz, transmit, channel 2



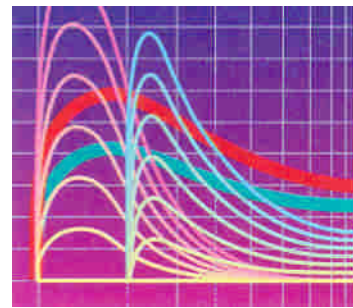
TEST REPORT REFERENCE: R30764 TX Edition 3



30764Ch2_5.wmf: 12 GHz to 18 GHz, transmit, channel 2



30764Ch2_6.wmf: 18 GHz to 26 GHz, transmit, channel 2



TEST REPORT REFERENCE: R30764 TX Edition 3

Limit of the spurious emission:

Limit = $43 + 10 \times \log P$, P (conducted) = 26.3 dBm = 427 mW

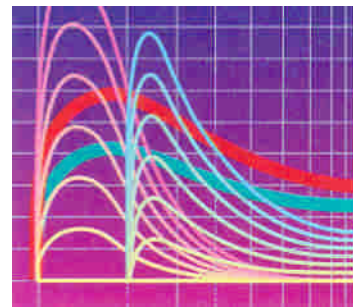
Limit = 39.3 dBc

Frequency: MHz	Spectrum analyser level: dB μ V	Signal Generator level: dBm	Cable loss: dB	Antenna gain: dB	Corrected Generator level dBc	Limit: dBc	Margin: dB	Result:
649.995	24.5	-54	0.5	6.4	74.6	39.3	35.3	Passed
No other spurious emission found								

Test: Passed

TEST EQUIPMENT USED FOR THE TEST:

29, 31-34, 36, 43, 44, 54



TEST REPORT REFERENCE: R30764 TX Edition 3

4.3 FREQUENCY STABILITY / VOLTAGE VARIATION

Ambient temperature	20 °C	Relative humidity	50 %
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Test record: The test was carried out in normal operation mode (without modulation).
All results are shown in the following.

Measuring results: Channel 1

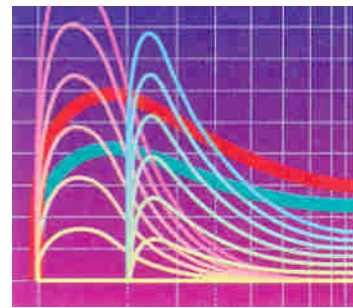
Temperature:	Voltage:	Measured frequency:	Relative error:
+20° C	6.8 V DC	2458.000125 MHz	+0.020 ppm
	7.0 V DC	2458.000129 MHz	+0.021 ppm
	7.2 V DC	2458.000120 MHz	+0.017 ppm
	7.4 V DC	2458.000120 MHz	+0.017 ppm
	7.6 V DC	2458.000078 MHz	Reference
	7.8 V DC	2458.000082 MHz	+0.002 ppm
	8.0 V DC	2458.000085 MHz	+0.003 ppm
	8.2 V DC	2457.000087 MHz	+0.004 ppm
	8.4 V DC	2457.000085 MHz	+0.003 ppm

Measuring results: Channel 2

Temperature:	Voltage:	Measured frequency:	Relative error:
+20° C	6.8 V DC	2474.000129 MHz	+0.017 ppm
	7.0 V DC	2474.000128 MHz	+0.026 ppm
	7.2 V DC	2474.000125 MHz	+0.015 ppm
	7.4 V DC	2474.000118 MHz	+0.013 ppm
	7.6 V DC	2474.000086 MHz	Reference
	7.8 V DC	2474.000081 MHz	-0.002 ppm
	8.0 V DC	2474.000080 MHz	-0.002 ppm
	8.2 V DC	2474.000078 MHz	-0.003 ppm
	8.4 V DC	2474.000075 MHz	-0.004 ppm

TEST EQUIPMENT USED FOR THE TEST:

31, 54, 55, 56, 57



TEST REPORT REFERENCE: R30764 TX Edition 3

4.4 FREQUENCY STABILITY / TEMPERATURE VARIATION

Ambient temperature	20 °C	Relative humidity	50 %
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Test record: The test was carried out in normal operation mode (without modulation).
All results are shown in the following.

Measuring results: Channel 1

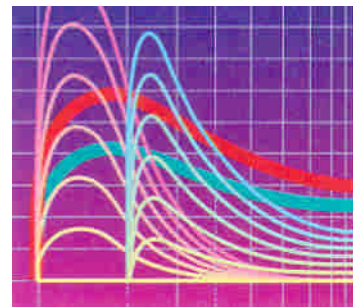
Temperature:	Voltage:	Measured frequency:	Relative error:
+20° C	7.6 V DC	2458.000 MHz	Reference
-30° C		2458.595 MHz	+242 ppm
-20° C		2458.585 MHz	+237 ppm
-10° C		2458.125 MHz	+50 ppm
0° C		2458.013 MHz	+5.3 ppm
+10° C		2458.002 MHz	+0.8 ppm
+20° C		2458.000 MHz	+0.0 ppm
+30° C		2457.998 MHz	-0.2 ppm
+40° C		2457.995 MHz	-0.4 ppm
+50° C		2457.990 MHz	-0.6 ppm

Measuring results: Channel 2

Temperature:	Voltage:	Measured frequency:	Relative error:
+20° C	7.6 V DC	2474.000 MHz	Reference
-30° C		2474.706 MHz	+285 ppm
-20° C		2474.655 MHz	+264 ppm
-10° C		2474.165 MHz	+66 ppm
0° C		2474.075 MHz	+30 ppm
+10° C		2474.002 MHz	+0.8 ppm
+20° C		2474.000 MHz	+0.0 ppm
+30° C		2473.997 MHz	-0.3 ppm
+40° C		2473.995 MHz	-0.4 ppm
+50° C		2473.990 MHz	-0.6 ppm

TEST EQUIPMENT USED FOR THE TEST:

31, 54, 55, 56, 57



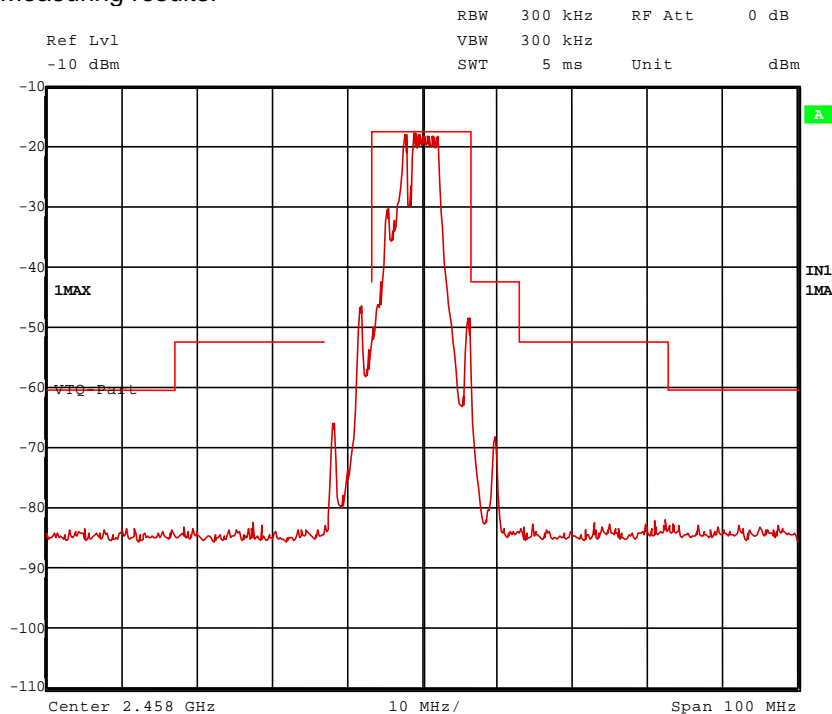
TEST REPORT REFERENCE: R30764 TX Edition 3

4.5 OCCUPIED BANDWIDTH

Ambient temperature	20 °C	Relative humidity	50 %
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Test record: The test was carried out in normal operation mode (modulated with NTSC-colour bar). All results are shown in the following.

Measuring results:



30764FCC_OBW.wmf: Occupied bandwidth

Calculation:

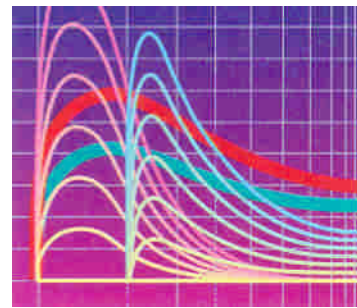
Max modulation M: $M = 4.25 \text{ MHz}$ (525 lines NTSC video according CCIR 405)
Max. deviation D: $D = 4 \text{ MHz}$
Bandwidth B: $B = 2 \times (M + D) = 16.5 \text{ MHz}$
Emission designator: 16M5F3E

Measurement: 99.75 % (Occupied Bandwidth)
Bandwidth: $B = 13.1 \text{ MHz}$
Band designator: 13M1F3E

Test: Passed

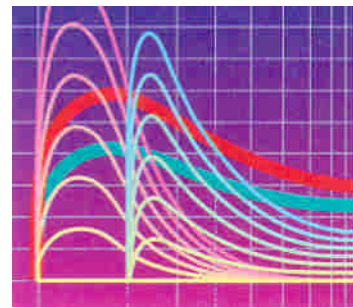
TEST EQUIPMENT USED FOR THE TEST:

31, 54, 55, 57



TEST REPORT REFERENCE: R30764 TX Edition 3

5 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

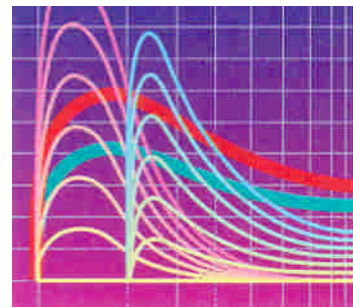


TEST REPORT REFERENCE: R30764 TX Edition 3

Emission measurement at AC mains and DC in / out ports at M4					
No.	Test equipment	Type	Manufacturer	Serial No.	PM-No
1	Shielded chamber M4	-	Siemens	B83117S1-X158	480088
2	Measuring receiver	ESAI	Rohde & Schwarz	831953/001 833181/018	480025 480026
3	LISN	NSLK8128	Schwarzbeck	8128155	480058
4	DC-filter	B84266-A21-E13	Siemens	940164525	480099
5	AC-filter	B84299-D87-E3	Siemens	930262292	480097
6	EMI-Software	ES-K1	Rohde & Schwarz	-	480111

Radiated emission measurement at M5					
No.	Test equipment	Type	Manufacturer	Serial No.	PM-No
7	Fully anechoic chamber M5	-	Siemens	B83177-S1-X156	480073
8	Measuring receiver	ESVS30	Rohde & Schwarz	829673/012	480024
9	Controller	HD100	Deisel	100/324	480067
10	Antenna support	MA240	Deisel	228/314	480069
11	Turntable	DS412	Deisel	412/317	480070
12	Antenna	CBL6112C	Chase	2689	480327
13	EMI Software	ES-K1	Rohde & Schwarz	-	480111

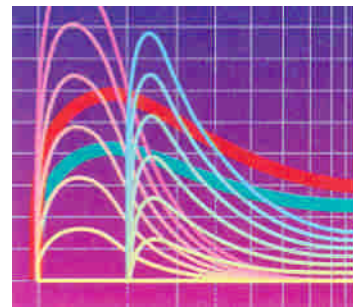
Radiated emission measurement at M6					
No.	Test equipment	Type	Manufacturer	Serial No.	PM-No
14	Open area test site	-	Phoenix Test-Lab	-	480085
15	Measuring receiver	ESVS30	Rohde & Schwarz	829673/012	480024
16	Controller	HD100	Deisel	100/670	480139
17	Turntable	DS420HE	Deisel	420/620/80	480087
18	Antenna support	AS615P	Deisel	615/310	480086
19	Antenna	CBL6111 A	Chase	1643	480147
20	EMI Software	ES-K1	Rohde & Schwarz	-	480111



TEST REPORT REFERENCE: R30764 TX Edition 3

Radiated emission measurement at M8					
No.	Test equipment	Type	Manufacturer	Serial No.	PM-No
21	Fully anechoic chamber M8	-	Siemens	B83117-E7019-T231	480190
22	Measuring receiver	ESMI	Rohde & Schwarz	843977/001 843530/018	480179 480180
23	Measuring receiver	ESCS 30	Rohde & Schwarz	828985/014	480270
24	Controller	HD100	Deisel	100/427	480181
25	Turntable	DS420	Deisel	420/435/97	480186
26	Antenna support	AS615P	Deisel	615/310	480187
27	Antenna	CBL6112 A	Chase	2034	480185
28	EMI Software	ES-K1	Rohde & Schwarz	-	480111

Radiated emission measurement at M20					
No.	Test equipment	Type	Manufacturer	Serial No.	PM-No
29	Fully anechoic chamber M20	-	Albatross Projects	B83107-E2439-T232	480303
30	Measuring receiver	ESMI	Rohde & Schwarz	843977/001 843530/018	480179 480180
31	Measuring receiver	ESI 40	Rohde & Schwarz	100064	480355
32	Controller	HD100	Deisel	100/670	480326
33	Turntable	DS420HE	Deisel	420/620/80	480315
34	Antenna support	AS615P	Deisel	615/310	480187
35	Antenna	CBL6112 B	Chase	2688	480328
36	Antenna	3115 A	EMCO	9609-4918	480183
37	Standard Gain Horn 11.9GHz – 18GHZ	18240-20	Flann Microwave	483	480294
38	Standard Gain Horn 11.9GHz – 18GHZ	18240-20	Flann Microwave	482	480295
39	Standard Gain Horn 17.9GHz – 26.7GHZ	20240-20	Flann Microwave	411	480297
40	Standard Gain Horn 17.9GHz – 26.7GHZ	20240-20	Flann Microwave	410	480296
41	Standard Gain Horn 26.4GHz – 40.1GHZ	22240-20	Flann Microwave	469	480299

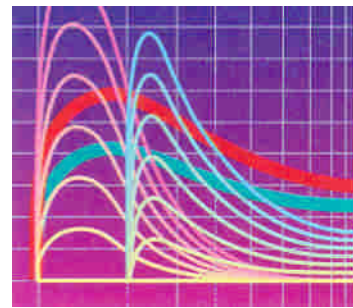


TEST REPORT REFERENCE: R30764 TX Edition 3

No.	Test equipment	Type	Manufacturer	Serial No.	PM-No
42	Standard Gain Horn 26.4GHz – 40.1GHZ	22240-20	Flann Microwave	468	480298
43	RF-cable No. 30	RTK 081	Rosenberger	-	410141
44	RF-cable No. 31	RTK 081	Rosenberger	-	410142
45	RF-cable 1m	KPS-1533- 400-KPS	Insulated Wire	-	480300
46	RF-cable 1m	KPS-1533- 400-KPS	Insulated Wire	-	480301
47	RF-cable 2m	KPS-1533- 400-KPS	Insulated Wire	-	480302
48	RF-cable No. 5	RTK 081	Rosenberger		410097
49	Preamplifier	JS3- 00101200- 23-5A	Miteq	681851	480337
50	Preamplifier	JS3- 12001800- 16-5A	Miteq	571667	480343
51	Preamplifier	JS3- 18002600- 20-5A	Miteq	658697	480342
52	Preamplifier	JS3- 26004000- 25-5A	Miteq	563593	480344
53	EMI Software	ES-K1	Rohde & Schwarz	-	480111

Ancillary equipment used for testing					
No.	Test equipment	Type	Manufacturer	Serial No.	PM-No
54	Power supply	TOE 8752	Toellner	31566	480010
55	RF-cable No. 5	RTK 081	Rosenberger	-	410097
56	Climatic chamber	GTS500.40	GTS	1660	490073
57	Test fixture	-	Phoenix Test-Lab	-	410160

All used measurement equipment was calibrated (if necessary). The calibration intervals and the calibration history will be given out on request.



TEST REPORT REFERENCE: R30764 TX Edition 3

6 LIST OF ANNEXES

ANNEX A	INTERNAL PHOTOGRAPHS OF THE TEST SAMPLE:	3 pages
	EUT (transmitter) internal view	30445tx01.jpg
	PCB (transmitter) top view	30445tx03.jpg
	PCB (transmitter) rear view	30445tx04.jpg
ANNEX B	EXTERNAL PHOTOGRAPHS OF THE TEST SAMPLE:	3 pages
	EUT (transmitter) front view	30445tx1.jpg
	EUT (transmitter) rear view	30445tx2.jpg
	EUT (transmitter) external power supply	30445tx4.jpg
ANNEX C	PHOTOGRAPHS OF THE TEST SET-UP:	2 pages
	Test set-up radiated emission (anechoic chamber)	30445emi_tx.jpg
	Test set-up radiated emission (open area test-site)	30445emi_tx_ff2.jpg