CETECOM ICT Services GmbH

Radio Satellite Communication
Untertürkheimer Straße 6–10, D-66117 Saarbrücken, Telephone +49 (0) 681 598 - 0 , Fax +49 (0) 681 598 – 9075

Member of RWTÜV Group

Recognized by the
Federal Communications Commission and Industry Canada
Anechoic chamber registration No.: 90462 (FCC)
Anechoic chamber registration No.: 3463 (IC)
TCB ID: DE0001

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

Independent ETSI
compliance test house

Test report No. 2-3629-01-02/04
Applicant: KROHNE Messtechnik GmbH & Co. KG
Type: OPTIWAVE 7300 C
Test standard : FCC Part 15

Table of contents

1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item .

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Tester :

Date	Name	Signature
25.05.2004	Manfred Paschwitz	

Technical responsibility for area of testing:

Date	Name	Signature
25.05.2004	Klaus Kammerinke	

1.2 Testing laboratory

CETECOM ICT Services GmbH
Untertürkheimerstraße 6–10
D-66117 Saarbrücken
Germany

CETECOM ICT Services GmbH
P.O. Box 10 04 45
D-66004 Saarbrücken
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e-mail : info@ict.cetecom.de
Internet : http://www.cetecom.de

Accredited testing laboratory
Accredited by : Regulierungsbehörde für Telekommunikation und Post (RegTP)
Listed by : Federal Communications Commission (FCC)
Industry Canada (IC)

Authority	Identification/Registration No.
RegTP	TTI-P-G 081/94-D0
FCC	90462
IC	3463

Testing location, if different from CETECOM ICT Services GmbH: (Not applicable)

1.3 Details of applicant

Name : KROHNE Messtechnik GmbH & Co. KG
Street : Ludwig-Krohne-Straße 5
Town : D-47058 Duisburg
Country : Germany
Phone : +49 203 301 0
Fax : +49 203 301 368

Contact person
Name : Mr. Uwe Wegemann
Phone : +49 203 301 459
Fax : +49 203 301 368
E–Mail : uwegemann@krohne.de

1.4 Application details

Date of receipt of application : 28.05.2004
Date of receipt of test item : 17.05.2004
Date of test : 17.05.2004 - 28.05.2004
Person(s) who have been present during the test : Mr. Uwe Wegemann
: Mr. Charalambos Ouzounis

1.5 Test item (EUT)

Description	:	Short range device; Tank Radar
Type designation	:	OPTIWAVE 7300 C
Manufacturer		
Name	:	KROHNE Messtechnik GmbH & Co. KG
Street	:	Ludwig-Krohne-Strasse 5
Town	:	D-47058 Duisburg
Country	:	Germany

1.6 Technical data

Frequency range	:	24.060 GHz ... 26.105 GHz
Operational frequency	:	24.060 GHz ... 26.105 GHz
Field strength PEP	:	< 500 µV/m (EUT operating inside metal tanks)
Type of modulation	:	2G05F0N (FMCW)
Frequency deviation	:	2.045 GHz
Sweep time	:	7 ms
Measurement repetition	:	45 ms; 100 ms; 500 ms
Microwave modules	:	TX / RX – Module with VCO
Antenna	:	Horn Antenna operating within metal tanks
Normal power supply (U nom)	:	24.0 V DC
Extreme power supply (U min)	:	14.0 V DC
(U max)	:	30.0 V DC

1.6.1 Operation conditions

Operation:	:	As soon as the equipment is powered up, TX and RX start operating
Purpose of operation	:	Level measurement within closed metal tanks

1.6.2 Equipment under test

OPTIWAVE 7300 C

1.7 Test standards

	Code of Federal Regulations (CFR 47) Federal Communications Commission (FCC)
FCC Part 15	Radio Frequency Devices (08/2003)
	SECTION 15.245 Operation within the band 24.075 GHz to 24.175 GHz
	SECTION 15.205 Restricted bands of operation.
	SECTION 15.209 Radiation emission limits, general requirements

2 Technical test

2.1 Summary of test results

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

[ ] The deviations as specified in 2.5 were ascertained in the course of the performed tests.

This test report :

[X] describes the first test

[ ] describes an additional test

[ ] is a verification of documents

[ ] is only valid with the test report no.

2.2 Test environment

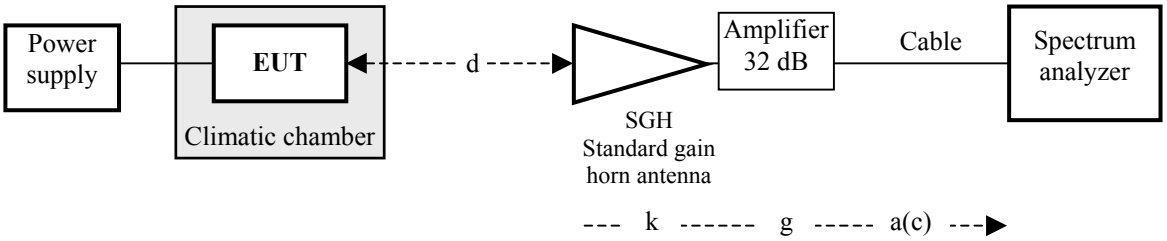
The environmental conditions are documented especially for each test.

2.3 Measurement and test set-up

The measurement and test set-up is defined in the technical specification .

2.4 Test equipment utilized and test set-up

2.4.1 Field strength measurement of fundamental and spurious radiation in the frequency range 0.9 GHz to 26 GHz



Frequency f [GHz]	Distance d [m]	Antenna factor k [dB(1/m)]	Amp.gain g [dB]	Cable loss a(c) [dB]
0.9 to 2.0	3.0	23.45	32.0	0.5 ... 0.7
2.0 to 4.0	3.0	23.68	32.0	0.7 ... 0.9
4.0 to 6.0	3.0	27.31	32.0	0.9 ... 1.3
6.0 to 8.0	3.0	30.06	32.0	1.3 ... 1.8
8.0 to 12.0	3.0	33.70	32.0	1.8 ... 2.5
12.0 to 18.0	3.0	33.97	32.0	2.5 ... 3.5
18.0 ... 26.0	3.0	40.22	32.0 to 28.0	3.5 ... 4.7

Calculation :

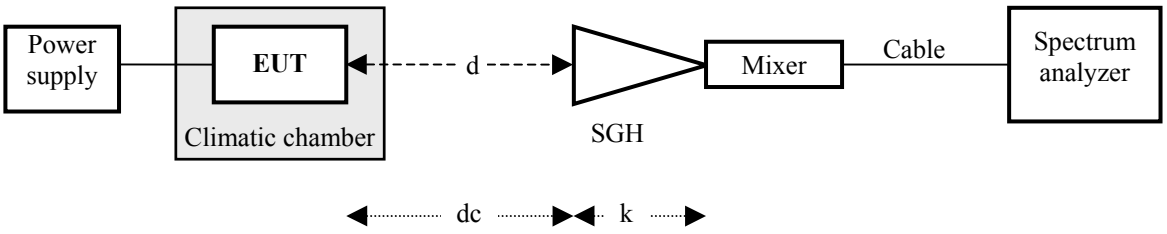
Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+	antenna factor
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+	k [dB(1/m)]

Test equipment	Manufacturer	Type	CETECOM reference
Spectrum Analyser	HP	HP 8565E	300001665
SGH 1.0 to 2.0 GHz	flann	0624-10	300000225
SGH 2.0 to 4.0 GHz	narda	644	300000769
SGH 4.0 to 6.0 GHz	narda	643	300002447
SGH 6.0 to 8.0 GHz	narda	642	300000767
SGH 8.0 to 12.5 GHz	narda	640	300000784
SGH 12.0 to 18.0 GHz	narda	639	300000787
SGH 18.0 to 26.5 GHz	narda	V637	300000487
Amplifier 0.1 ... 26 GHz	HP	HP 83017A	300002267
Climatic chamber	Vötsch	VUK 04/500	300000297
DC Power supply	HP	HP 6038A	300001174
RF-cable	HP	5061-5359	300002033

Measurement uncertainties

Test parameter	Measurement uncertainty
DC Power supply	±0.5 V
Temperature	±0.2 °C
Frequency	±0.01 ppm
eirp	±1.5 dB

2.4.3 Field strength and spurious radiation in the frequency range 33 GHz to 110 GHz



Frequency range [GHz]	Distance d [m]	Distance correction dc (3 m/Xm) [dB]	Antenna factor k [dB 1/m]
33.0 ..... 50.0	0.250	-21.58	39.10
50.0 ..... 75.0	0.125	-27.60	40.67
75.0 ... 110.0	0.125	-27.60	45.07

Calculation : Field strength = Analyser reading + Antenna factor + Distance correction
e = u + k + dc

Remark: Cable loss is automatically taken into account if the S.A. is operating with external mixers

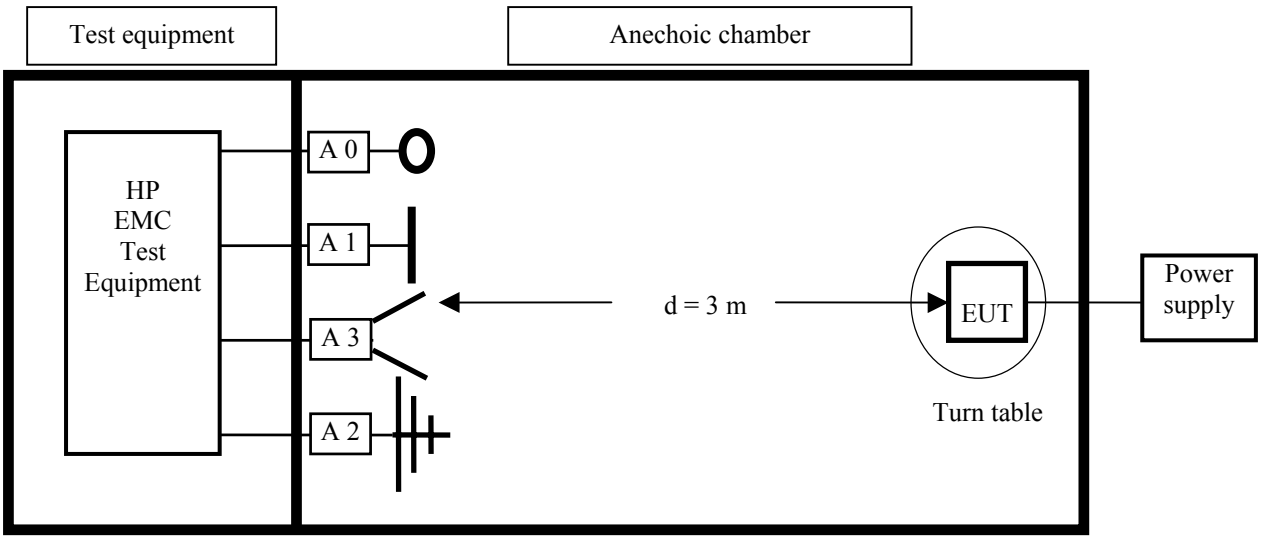
Test equipment	Manufacturer	Type	CETECOM reference
Spectrum Analyser	HP	HP 8565E	300001665
Power supply	HP	6032A	300002115
SGH 33 ... 50 GHz	Thomson	COR 33_50	300000812
Mixer 33 ... 50 GHz	HP	11970Q	300000781j
SGH 50 ... 75 GHz	Thomson	COR 50_75	300000789k
Mixer 50 ... 75 GHz	HP	11970V	300000871o
SGH 75 ... 110 GHz	Thomson	COR 75_110	300000789m
Mixer 75 ... 110 GHz	HP	11970W	300000871v

Measurement uncertainty

Test parameter	Measurement uncertainty
Power supply	±0.1 VDC
Temperature	±0.2 °C
Frequency	±0.01 ppm
Field strength <50 GHz	±1.0 dB
Field strength >50 GHz	±3.0 dB

2.4.2 Field strength and spurious radiation in the frequency range 9 kHz to 4 GHz

Set-up for radiated measurements



Test equipment	Manufacturer	Type	Serial No.
Spectrum analyser	HP	HP 85660B	2478A05306
Analyser display	HP	HP 85662A	2816A16541
Quasi peak adapter	HP	HP 85650A	2811A01131
RF-preselector	HP	HP 85685A	2833A00768
Loop Antenna A 0	R&S	HFH 2–Z2	881 058/42
Biconical antenna A 1	Emco	3104	3758
Log.-per.-antenna A 2	Emco	3146	2304
Double ridge horn ant. A 3	Emco	3115	3007
Relay switch	R&S	RSU	375 339/002
High pass filter	FSY Microwave	HM 985955	001
Amplifier	Tron-Tech	P42-GA29	B2302
DC Power supply	HP	HP 6038A	300001174
RF-cable	HP	5061-5359	P36303

Measurement uncertainties

Performance	Measurement uncertainty
Input power (DC)	±0.5 V
Temperature	±0.2 °C
Frequency	±0.01 ppm
RF-power	±1.5 dB

2.5 Test results

2.5.1 Test results overview

This test was performed :

☐ in addition to the test report no.

Verification of EUT :

☒ EUT is in accordance with the technical description

☐ EUT is not in accordance with the technical description

☒ The equipment is compliant to FCC requirement

2.5.2 Remarks on methods of measurements

The EUT inclusive fixed horn antenna is positioned on top of a portable metal tank. This model tank simulates the operation within a normal size metal tank. The Radar level gauge plus metal tank is fixed on a non-conductive support and can be rotated and tilted in all angles. A variable DC power supply drives the level gauge. The operation of the system is controlled by a service PC that is connected to the system by means of a twisted pair signal wire.

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 26 GHz in a semi-anechoic chamber. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are conform with specifications ANSI C63.2-1987 clause 15 and ANSI C63.4-1992 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test set–ups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.

The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths (RBW) over various frequency ranges are set according to requirement ANSI C63-4-1992 clause 4.2.

1. Measurements of ERP/EIRP at fundamental and spurious frequencies

Spurious frequencies are produced by transmitter and receiver when the EUT is active. According to FCC requirements 15.209, spurious emissions have to be investigated as maximum field strength values in the frequency range from 9 kHz to 960 MHz. Where possible, the measurement distance shall be 3 m. If other distances are used, the distance correction is added to the test result.

In the low frequency range (9 kHz to 30 MHz), the receiving antenna is an active loop antenna which is positioned at 3 m distance in a shielded, anechoic chamber (see page 8). In case of required measuring distances > 3 m, a distance correction factor is used to calculate the received field strength.

Spurious EIRP measurements in the frequency range 960 MHz to 22 GHz are carried out in a shielded semi-anechoic test chamber. The measurement distance is 3.0 m.

In the frequency range 4 GHz to 40 GHz, spurious EIRP measurements are performed in a shielded fully anechoic chamber with rectangular SGH´s. The measurement distances are indicated underneath each plot, and a calculation for field strength is added, where all relevant factors like cable losses, antenna factors, etc are taken into account.

As a first step the UWB field disturbance sensor (FMCW Radar) is operating without a metal tank in order to measure the occupied bandwidth and the EIRP of the fundamental frequency and possible harmonic emissions. As a next step the EUT is positioned on top of a portable metal tank which simulates the operation under real life conditions. This test set-up allows to measure all RF leaking emissions from the EUT plus metal tank. As the FCC requirements for UWB applications are very tight, a broadband linear amplifier (frequency range: 0.1 to 26 GHz with linear gain of 32 dB) is used in the receiver chain.

2.5.3 Test results in details

Equipment under test (EUT) : see page 5
Ambient temperature : 23 °C
Relative humidity : 55 %

TRANSMITTER PARAMETERS SECTION 15.245

Fundamental frequency

Microwave module : OPTIWAVE 7300 C operating in FMCW

Test condition t = 23.0 ° C	EUT operating outside metal tank:			
TX on and RX on **Test operation**	Start Frequency f [GHz]	Stop Frequency f [GHz]	EIRP [dBm]	See plot no.:
U DC = 24.0 V	24.060	26.105	16.1	1 / 2 / 3

Test condition t = 23.0 ° C	EUT operating inside metal tank:			
TX on and RX on **Normal operation**	Start Frequency f [GHz]	Stop Frequency f [GHz]	E [µV/m]	See plot no.:
U DC = 24.0 V	24.060	26.105	20.4 to 19.3	4

REFERENCE OF TEST EQUIPMENT USED : see test set-up on page 8 / 9

LIMITS: SECTION 15.245

Frequency range (MHz)	Measurement distance [m]	Field strength e [dBµV/m] @ 3 m	Field strength E [µV/m]
24,075 to 24,175	3	124.0	2 500 mV/m
Harmonics	3	68.0	25,000

Verdict :	Field strength limits and frequency band are kept if EUT is operating inside metal tanks

Equipment under test (EUT) : see page 5
Ambient temperature : 23 °C
Relative humidity : 55 %

TRANSMITTER PARAMETERS SECTION 15.245
Spurious Frequencies SECTION 15.205 / 15.209

Microwave module : OPTIWAVE 7300 C operating in FMCW

Test condition t = 23.0 ° C	EUT operating inside metal tank Test set-up see pages 8, 9, 10			
Frequency range [GHz]	Spurious frequencies [GHz]	S A u [dBmV]	E [µV/m]	See plot no.:
0.009 to 30.0 MHz (h + v) horizontal and vertical plane	1.670 MHz 54.0 kHz	40.2 dBµV/m 58.0	102.3 794.3	5 6
0.030 to 4.0 (h + v)	noise	35.0 (PK/AV)	56.2	7 / 8
4.0 to 6.0 (h + v)	noise	-12.3 (PK)	158.5	9
6.0 to 8.0 (h + v)	noise	-12.0 (PK)	237.1	10
8.0 to 12.0 (h + v)	noise	-13.6 (PK)	338.8	11
12.0 to 18.0 (h + v)	12.370	-12.3 (PK)	426.5	12
12.120 to 12.620 (v)	12.379	-12.0 (PK)	441.6	13
12.120 to 12.620 (v)	noise	-37.8 (AV)	22.6	14
18.0 to 22.0 (h + v)	noise	-46.3 (PK)	18.6	15
29.0 to 40.0 (h + v)	noise	-47.0 (PK)	14.1	16
33.0 to 50.0 (h + v)	noise	-24.8 (PK)	436.5	17
33.0 to 50.0 (h + v)	noise	-36.0 (AV)	120.2	18
50.0 to 75.0 (h + v)	noise	-14.6 (PK)	831.7	19
50.0 to 75.0 (h + v)	noise	-23.8 (AV)	288.4	20
75.0 to 110.0 (h + v)	noise	-29.8 (PK)	239.8	21

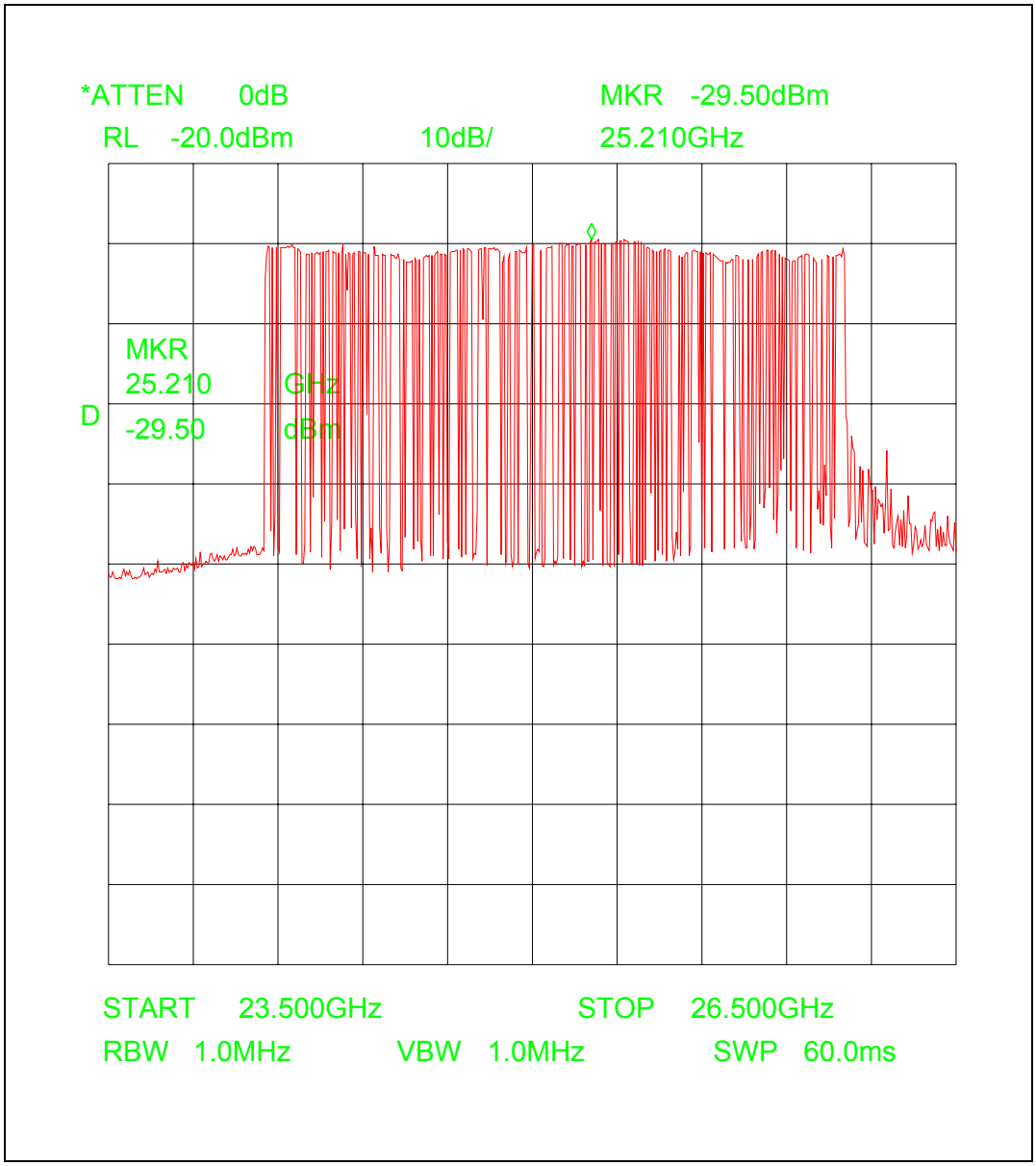
LIMITS: SECTION 15.205 / 15.209 / 15.245

Frequency range (MHz)	Measurement distance [m]	Field strength e [dBµV/m] @ 3 m	Field strength E [µV/m]
0.009 – 0.490	300	88.5 ... 53.8	2400/F(kHz)
0.490 – 1.705	30	53.8 ... 43.0	24000/F(kHz)
1.705 – 30.0	30	49.5	30
30.0 – 88.0	3	40.0	100
88.0 – 216.0	3	43.5	150
216.0 – 960.0	3	46.0	200
> 960.0	3	54.0 (AV)	500
> 960.0	3	74.0 (PK)	5,000
Harmonics	3	68.0	2,500
Harmonics >17,700	3	77.5	7,500

Verdict :	Field strength limits are kept if EUT is operating inside metal tanks

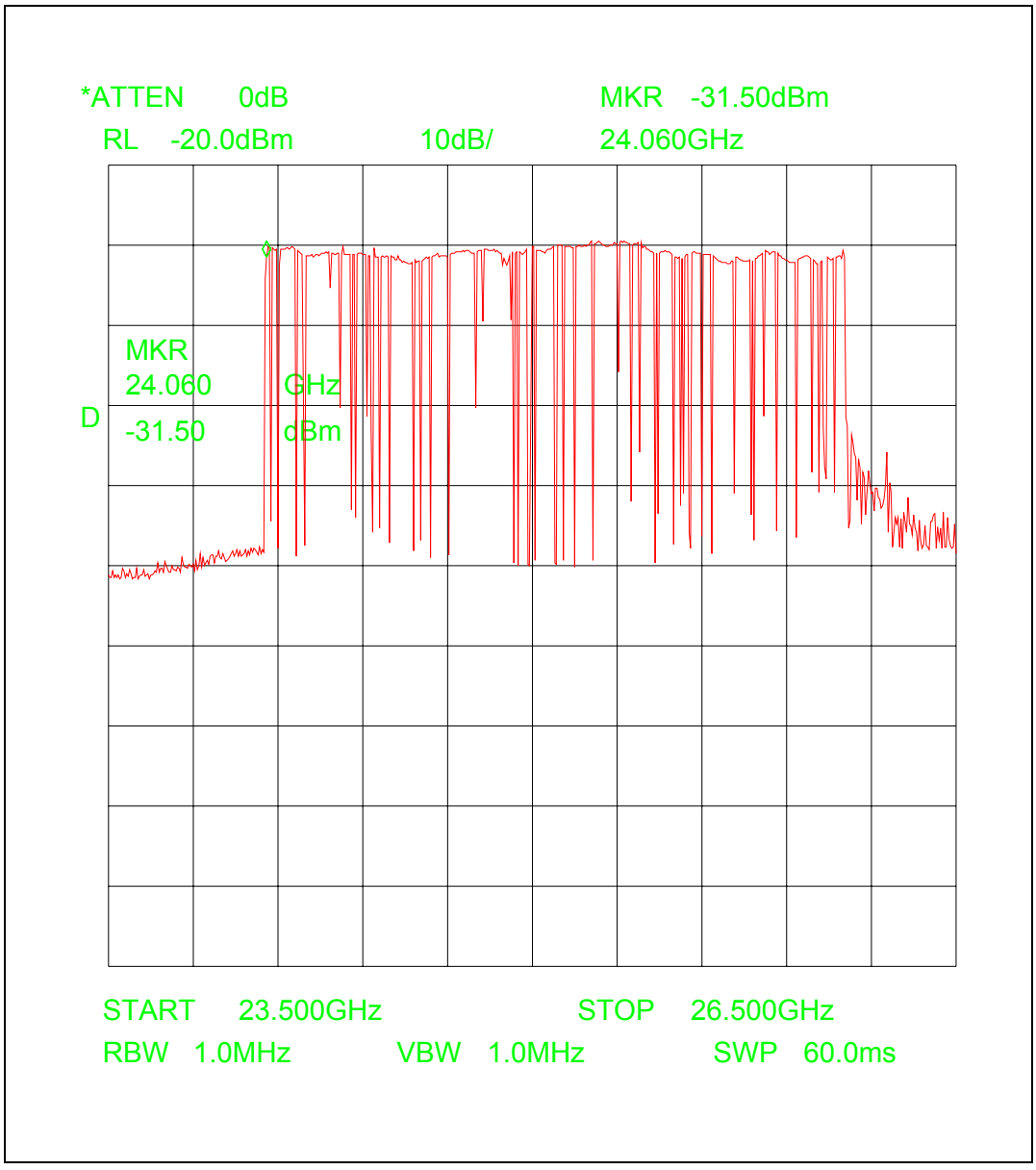
3 Plots, graphs and data sheets

Plot 1



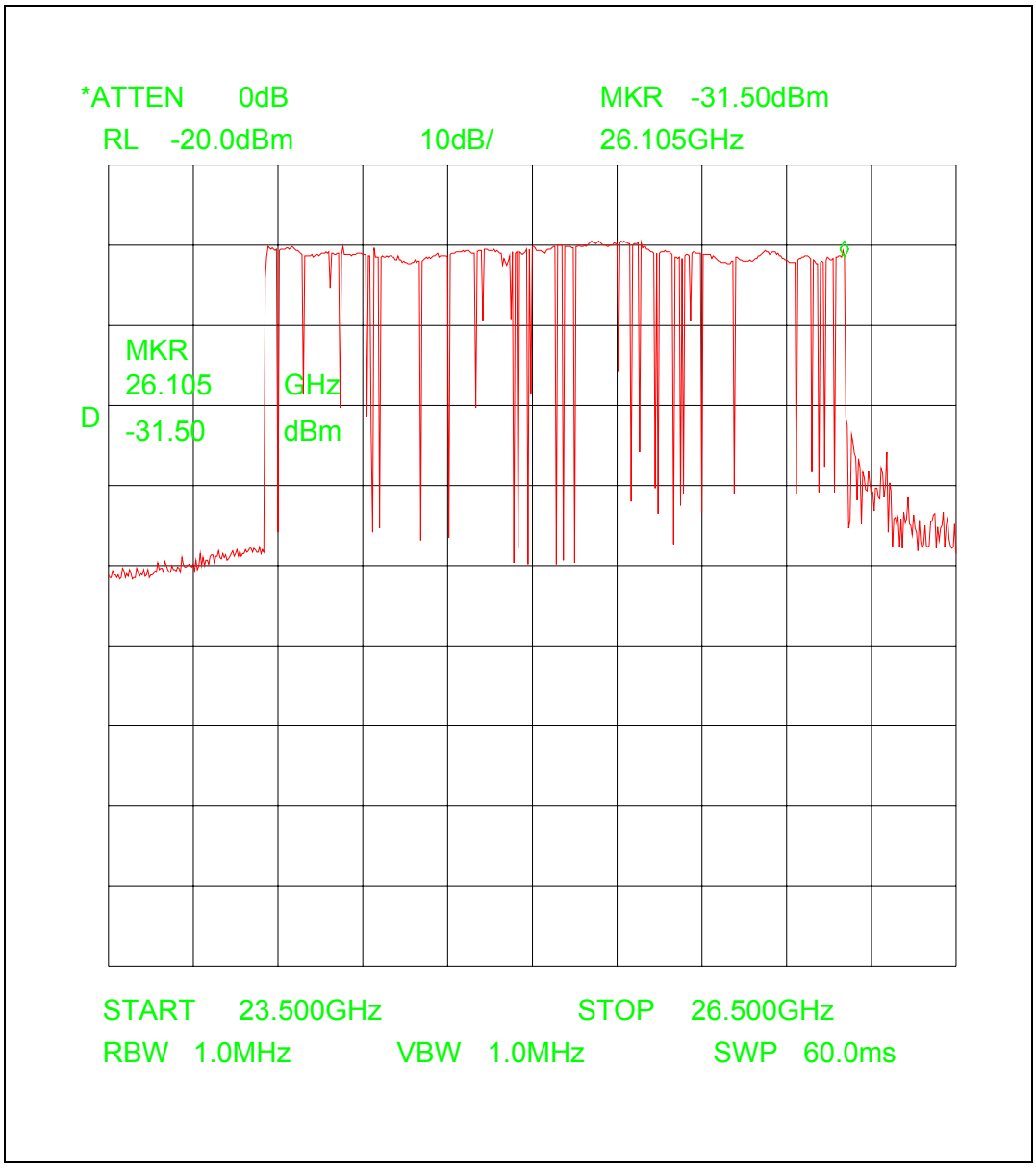
EUT in test operation outside the metal tank
Measurement distance d = 1.0 m
EIRP = 40 mW

Plot 2



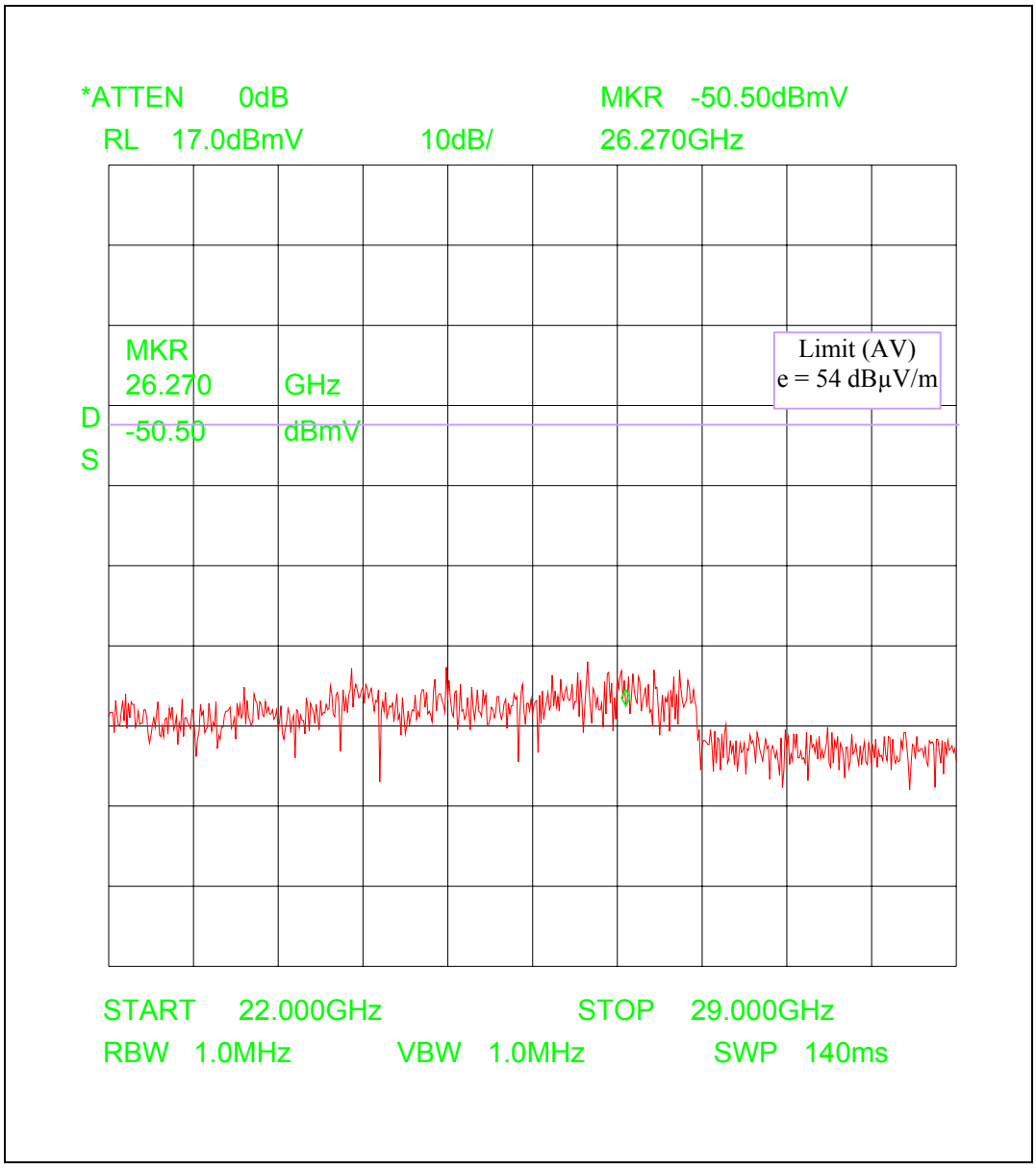
EUT in test operation outside the metal tank
F start = 24.060 500 GHz

Plot 3



EUT in test operation outside the metal tank
F stop = 26.105 500 GHz

Plot 4



Measurement distance d = 3.0 m

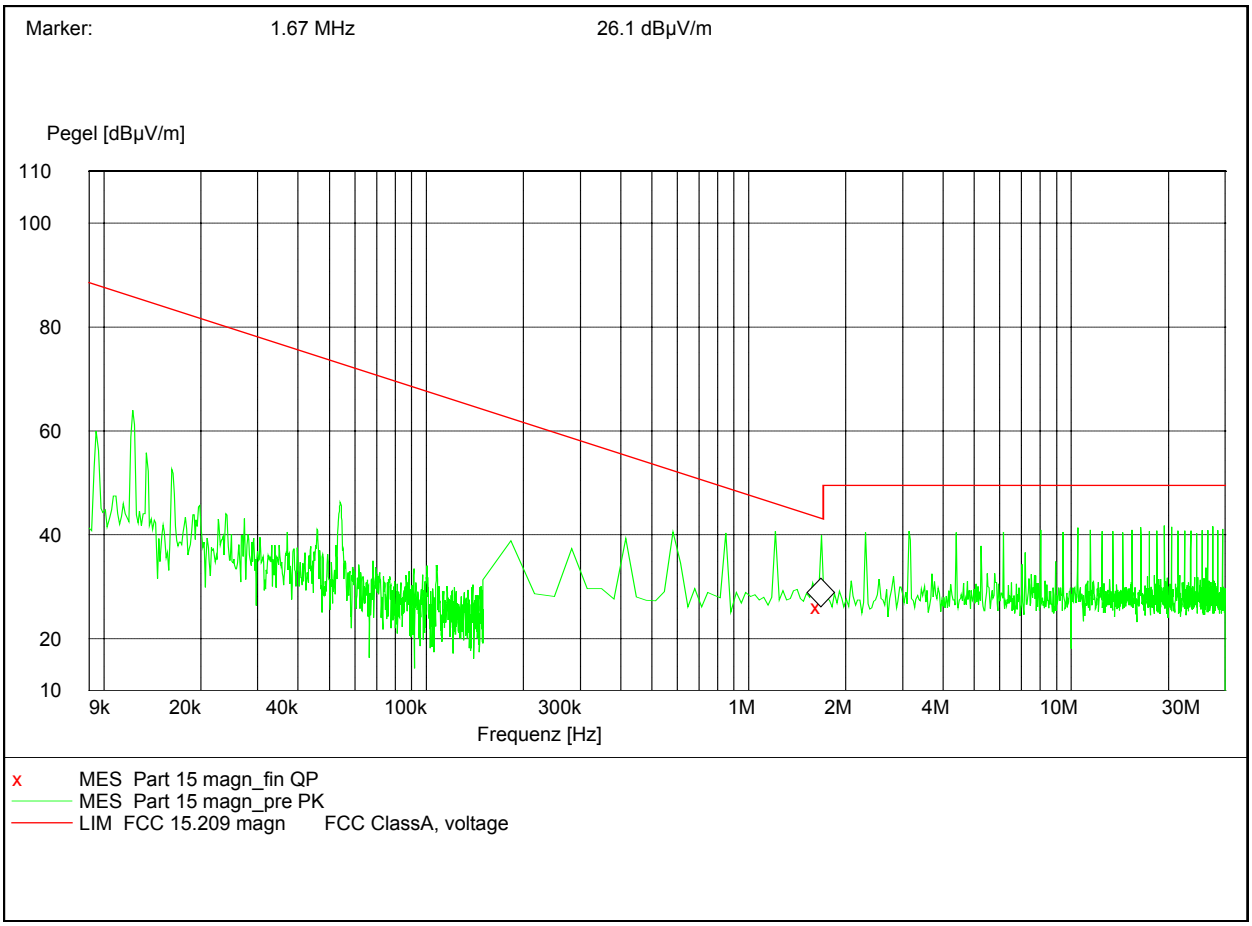
F start = 24.060 GHz

Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+ antenna factor
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+ k [dB(1/m)]
e	=	-45.5	+	3.5	-	32.0	+ 40.2
e	=	-33.8 dB(mV/m)					
e	=	26.2 dB(µV/m)					
E	=	20.42 µV/m (F start)					

F stop = 24.105 GHz

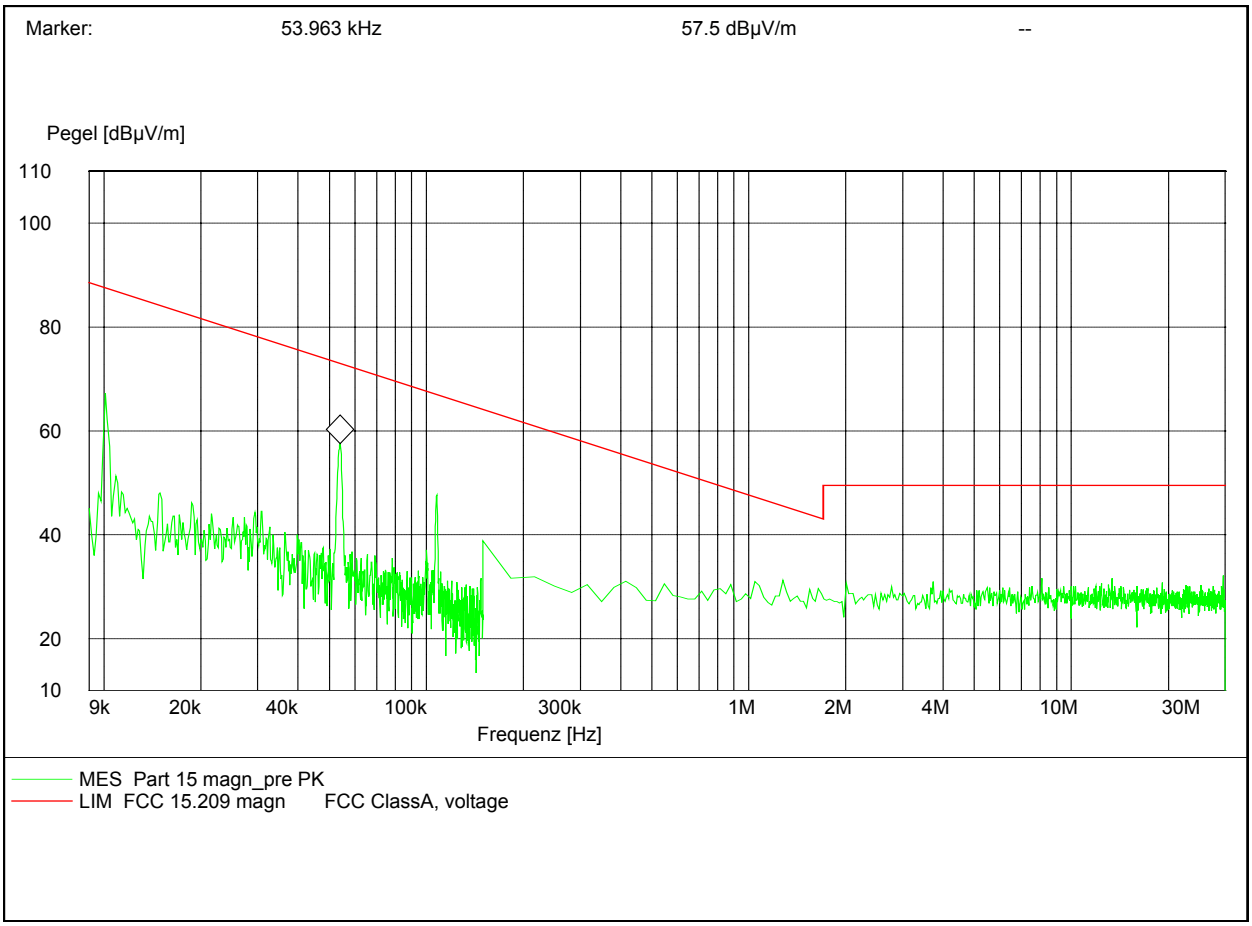
e	=	-46.0	+	3.5	-	32.0	+ 40.2
e	=	-34.3 dB(mV/m)					
e	=	25.7 dB(µV/m)					
E	=	19.28 µV/m (F stop)					

Plot 5



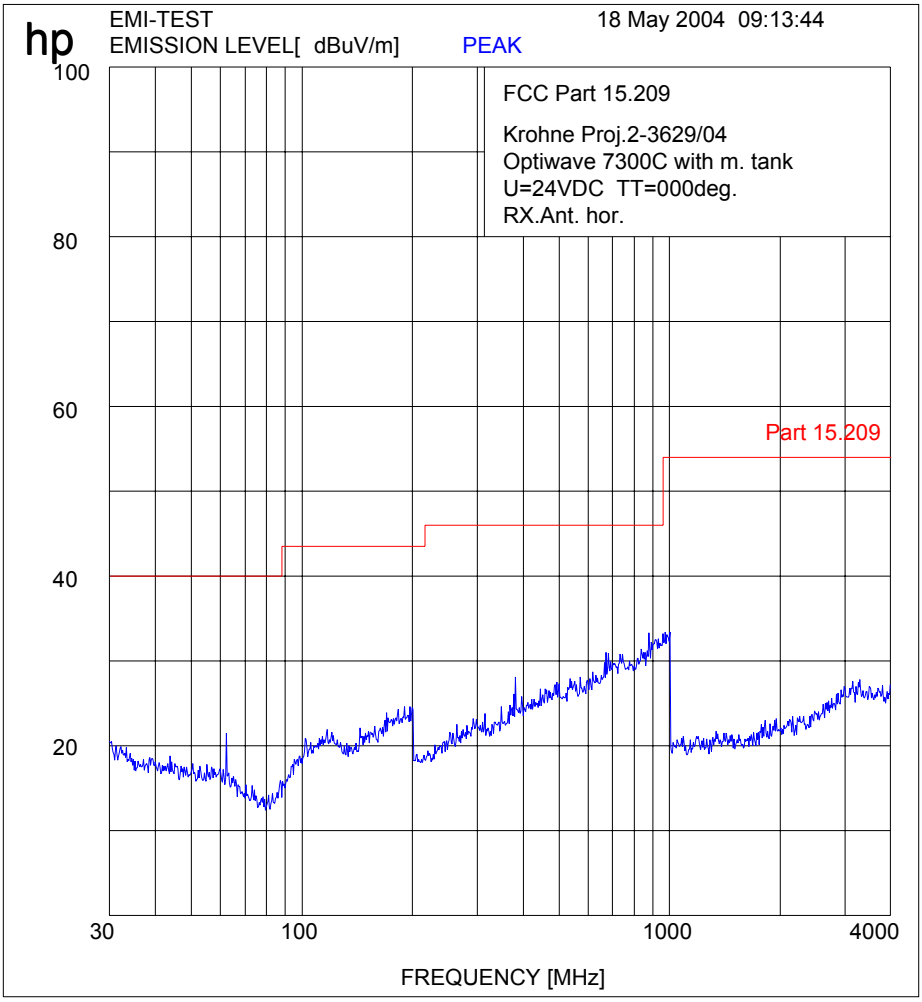
RX-Antenna horizontal

Plot 6

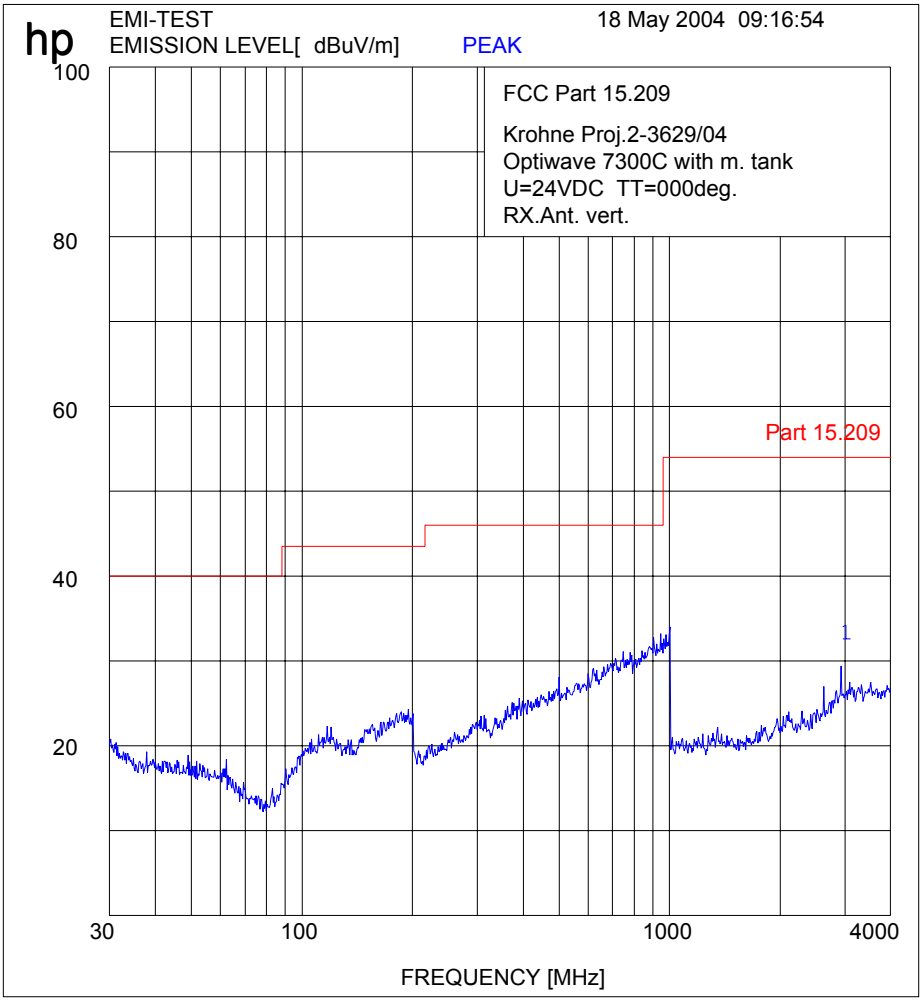


RX-Antenna vertical

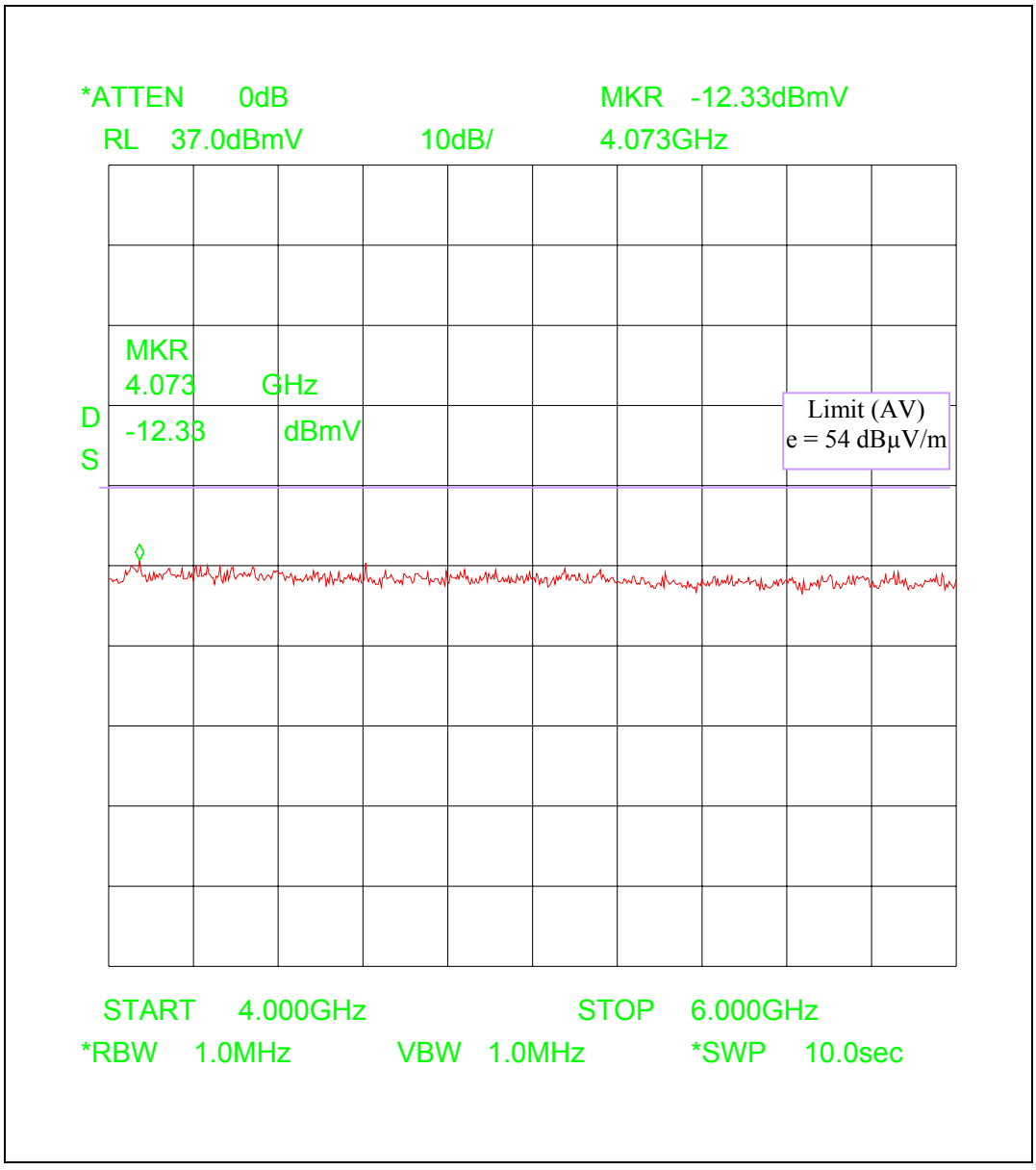
Plot 7


hp
EMI-TEST
18 May 2004 09:13:44
EMISSION LEVEL[dBuV/m]
PEAK
FCC Part 15.209
Krohne Proj.2-3629/04
Optiwave 7300C with m. tank
U=24VDC TT=000deg.
RX.Ant. hor.
Part 15.209
100
80
60
40
20
30
100
1000
4000
FREQUENCY [MHz]

Plot 8


hp
EMI-TEST
18 May 2004 09:16:54
EMISSION LEVEL[dBuV/m]
PEAK
FCC Part 15.209
Krohne Proj.2-3629/04
Optiwave 7300C with m. tank
U=24VDC TT=000deg.
RX.Ant. vert.
Part 15.209
100
80
60
40
20
30
100
1000
4000
FREQUENCY [MHz]

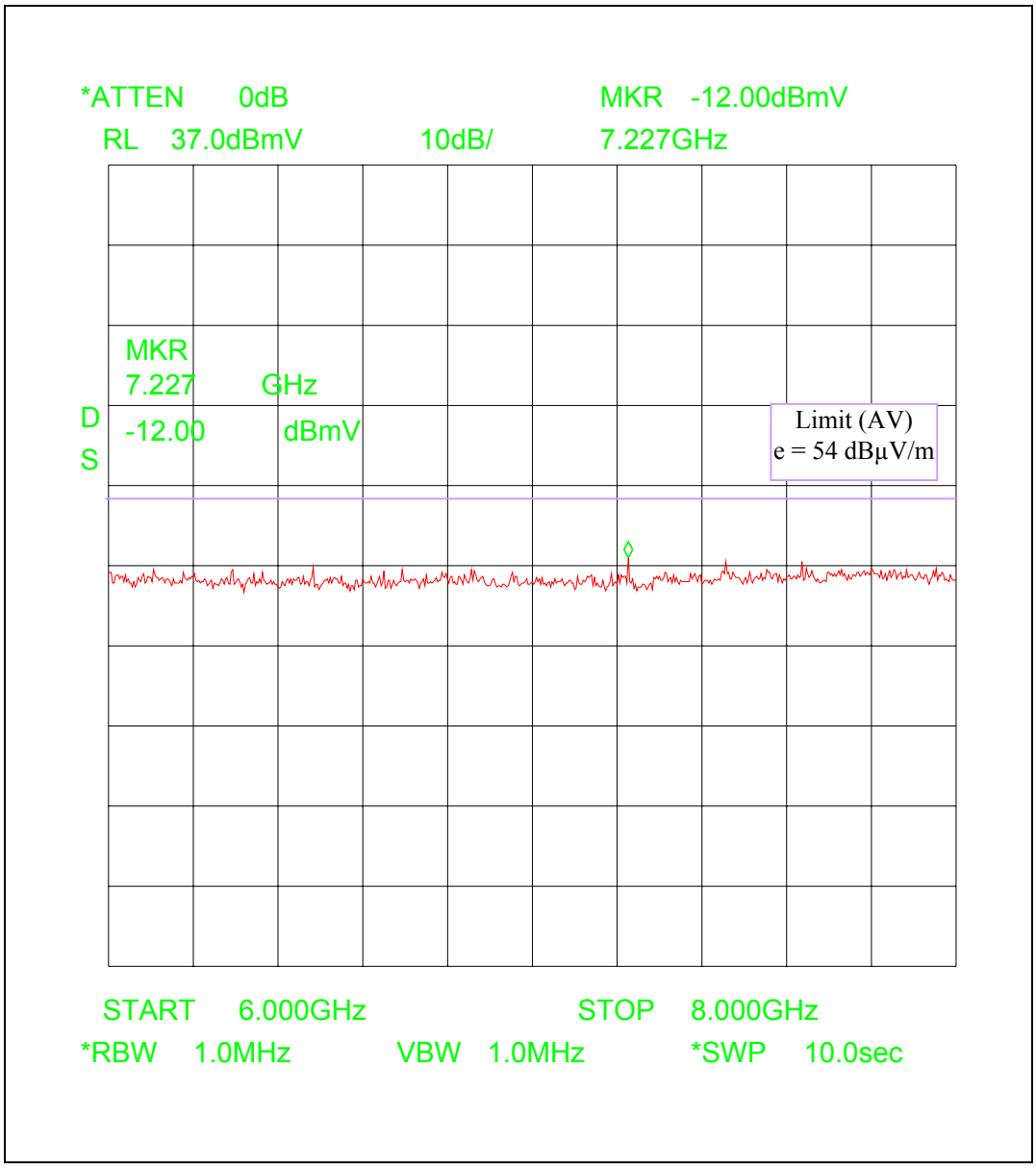
Plot 9



Measurement distance d = 3.0 m

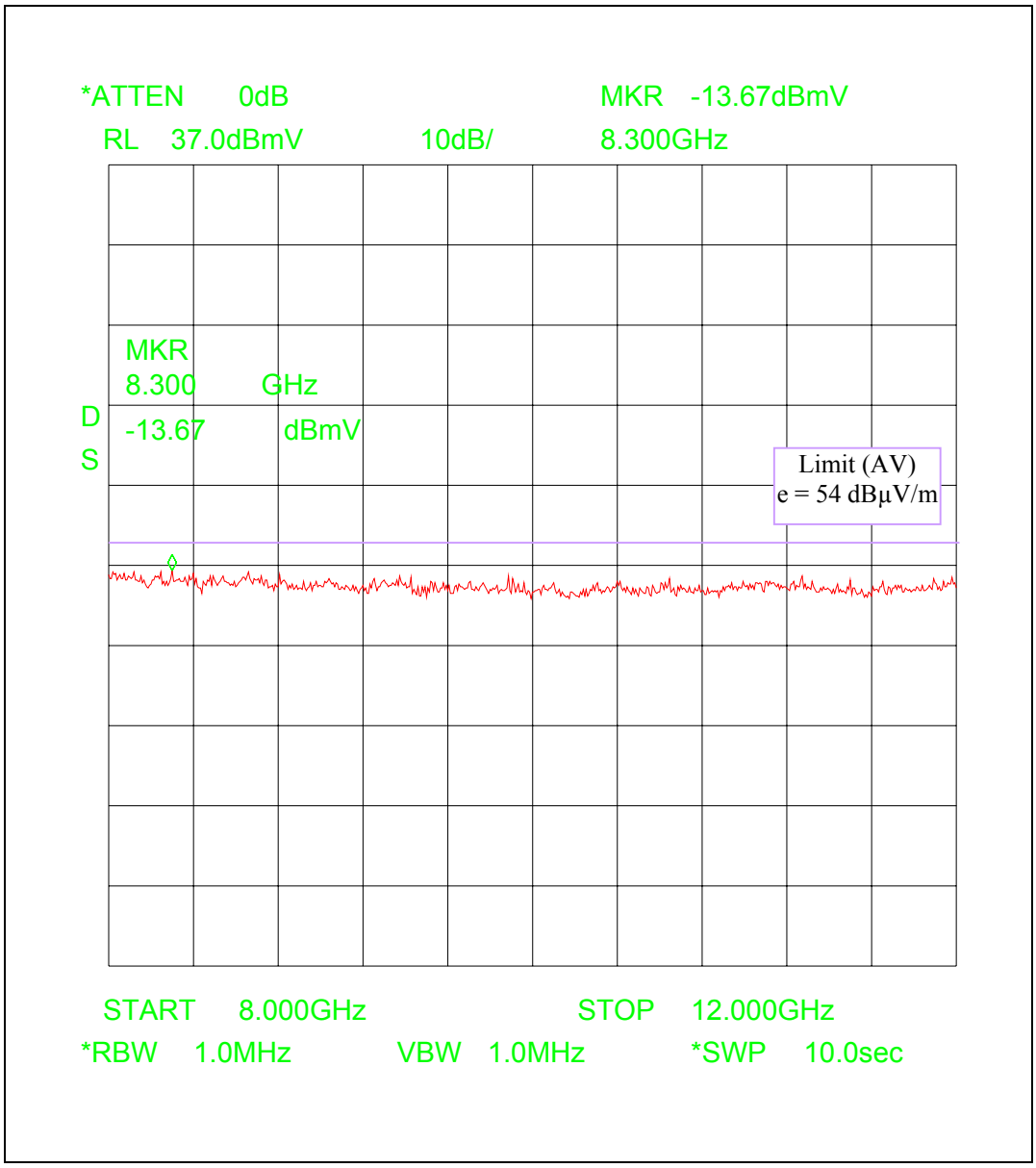
Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+ antenna factor
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+ k [dB(1/m)]
e	=	-12.3	+	1.0	-	32.0	+ 27.3
e	=	-16.0 dB(mV/m)					
e	=	44.0 dB(µV/m)					
E	=	158.49 µV/m (Noise) PEAK Measurement					

Plot 10



Measurement distance		d	=	3.0 m				
Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+	antenna factor
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+	k [dB(1/m)]
e	=	-12.0	+	1.5	-	32.0	+	30.0
e	=	-12.5 dB(mV/m)						
e	=	47.5 dB(µV/m)						
E	=	237.1 µV/m (Noise) PEAK Measurement						

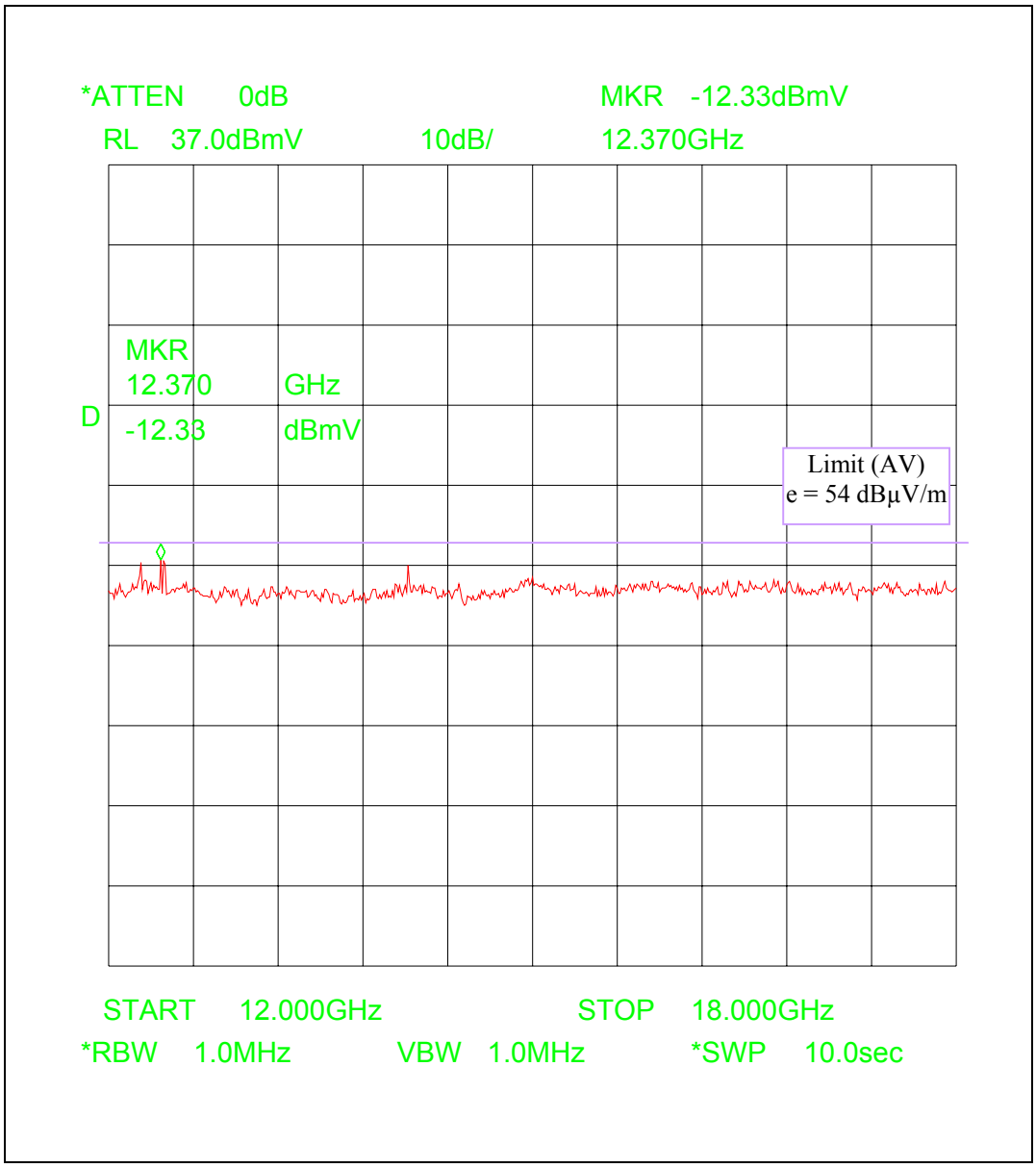
Plot 11



Measurement distance d = 3.0 m

Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+	antenna factor
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+	k [dB(1/m)]
e	=	-13.6	+	2.5	-	32.0	+	33.7
e	=	-9.4 dB(mV/m)						
e	=	50.6 dB(µV/m)						
E	=	338.8 µV/m (Noise)						

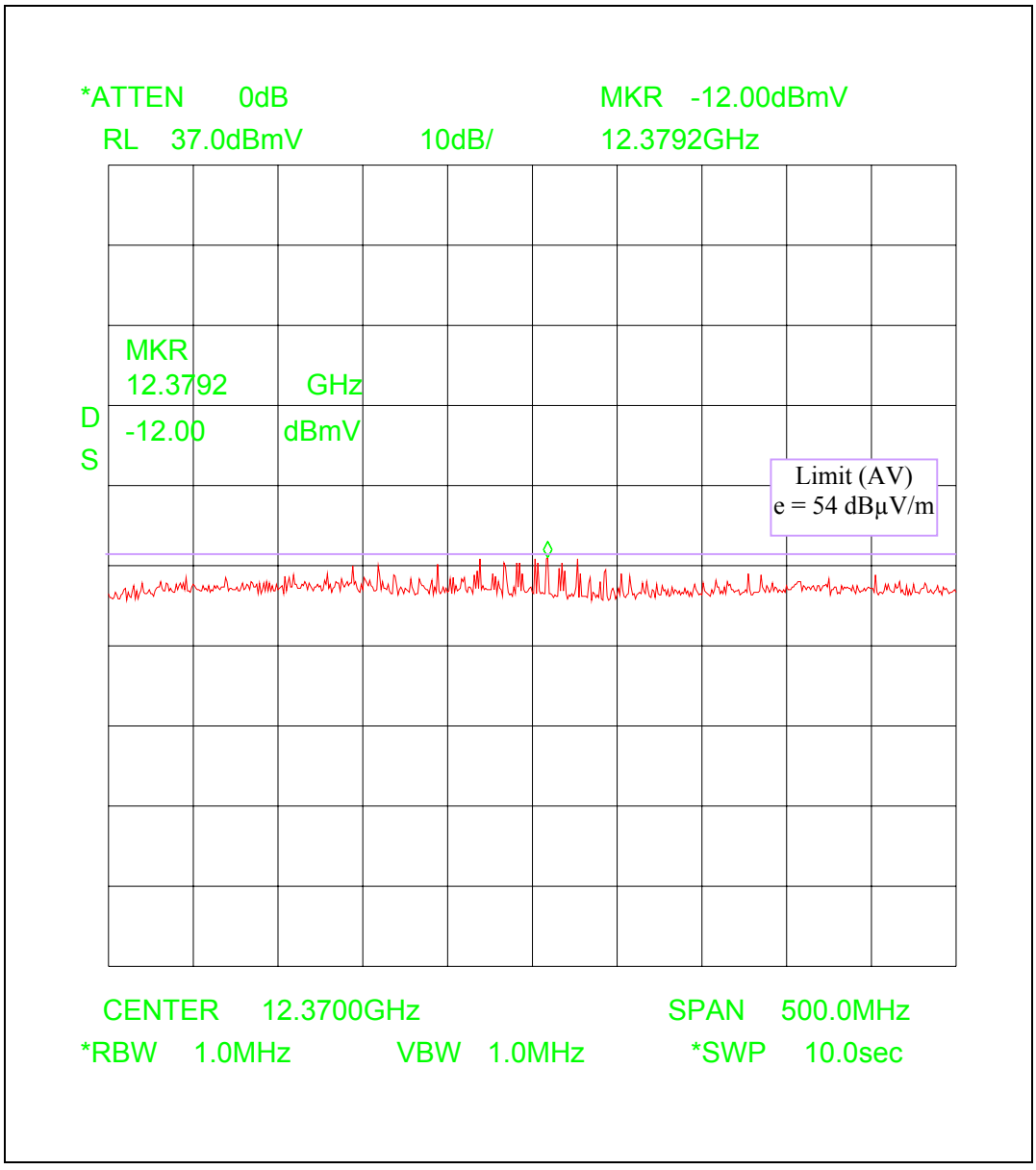
Plot 12



Measurement distance d = 3.0 m

Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+	antenna factor
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+	k [dB(1/m)]
e	=	-12.3	+	3.0	-	32.0	+	33.9
e	=	-7.4 dB(mV/m)						
e	=	52.6 dB(µV/m)						
E	=	426.5 µV/m (Spurious in restricted band) PEAK Measurement						

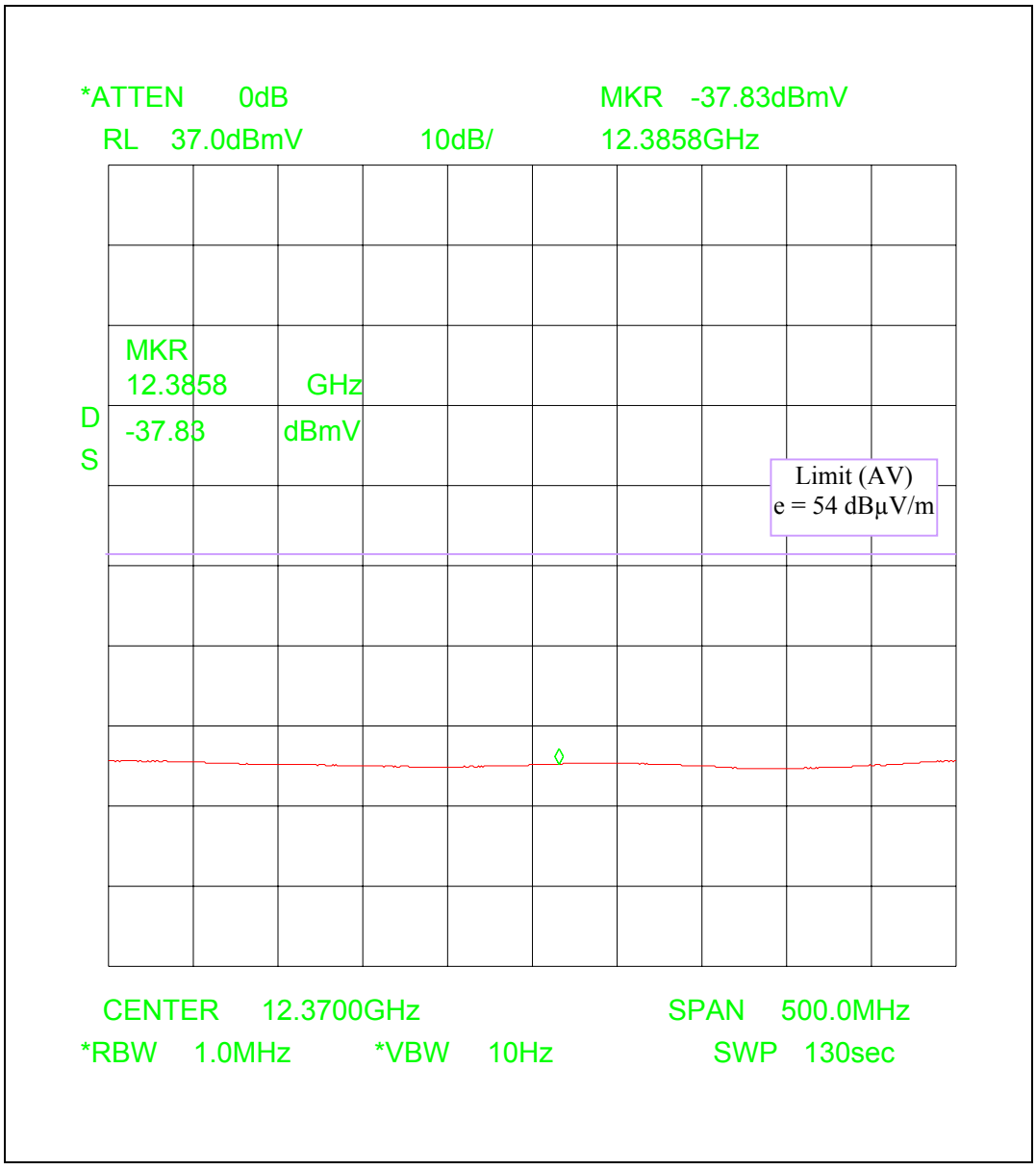
Plot 13



Measurement distance d = 3.0 m

Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+ antenna factor
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+ k [dB(1/m)]
e	=	-12.0	+	3.0	-	32.0	+ 33.9
e	=	-7.1 dB(mV/m)					
e	=	52.9 dB(µV/m)					
E	=	441.6 µV/m (Spurious in restricted band) PEAK Measurement					

Plot 14

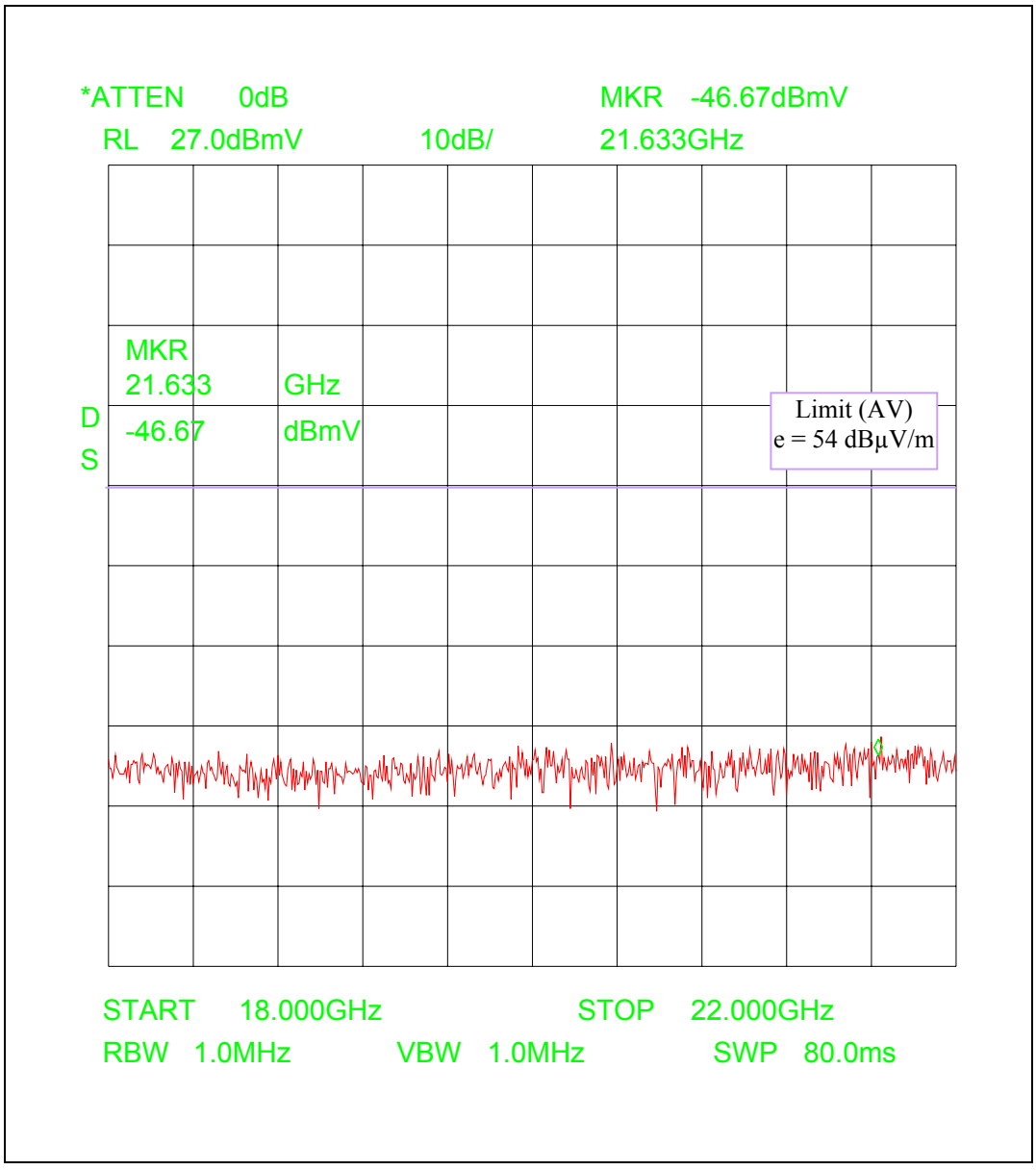


Measurement distance d = 3.0 m

Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+	antenna factor
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+	k [dB(1/m)]
e	=	-37.8	+	3.0	-	32.0	+	33.9

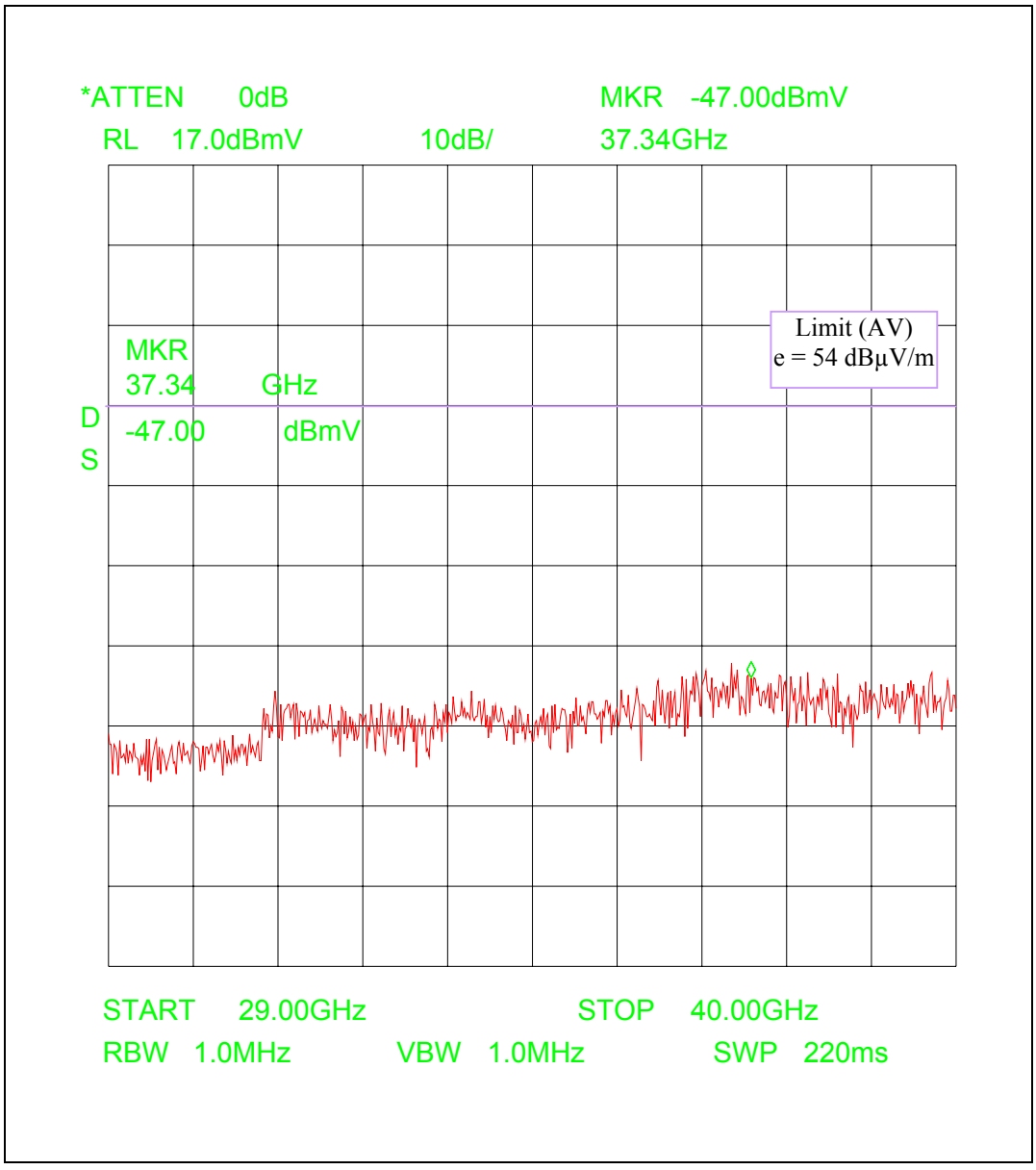
e = -32.9 dB(mV/m)
e = 27.1 dB(µV/m)
E = 22.646 µV/m (Spurious in restricted band) AVERAGE Measurement

Plot 15



Measurement distance		d	=	3.0 m				
Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+	antenna factor
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+	k [dB(1/m)]
e	=	-46.3	+	3.5	-	32.0	+	40.2
e	=	-34.6 dB(mV/m)						
e	=	25.4 dB(µV/m)						
E	=	18.6 µV/m (Noise)		PEAK Measurement				

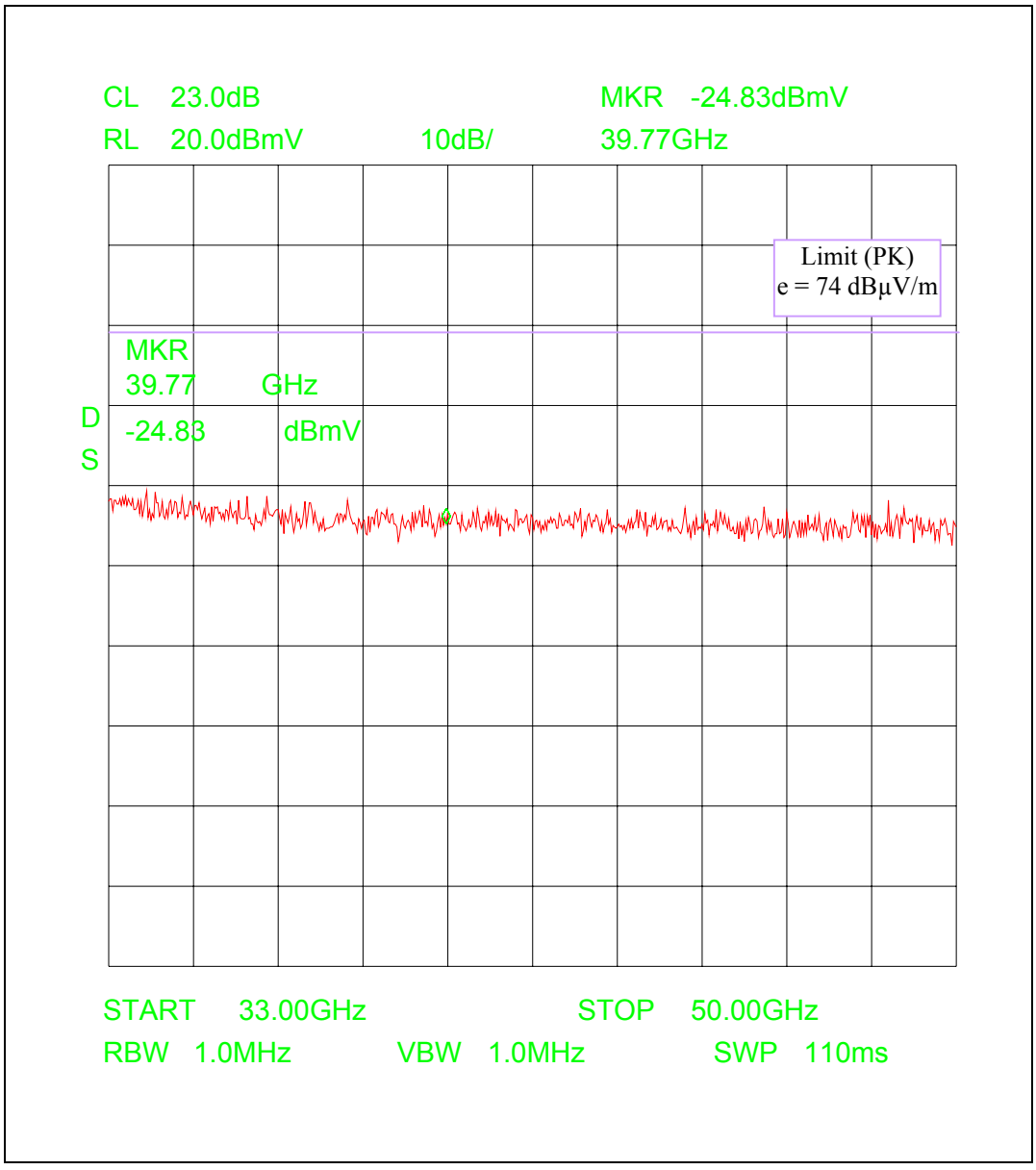
Plot 16



Measurement distance d = 1.0 m

Field strength	=	analyser reading	+	cable loss	-	amplifier gain	+	antenna factor	-	distance corr.
e [dB(mV/m)]	=	u [dB(mV)]	+	a [dB]	-	g [dB]	+	k [dB(1/m)]	-	d [dB]
e	=	-47.0	+	4.5	-	28.0	+	38.5	-	9.5
e	=	-37.0 dB(mV/m)								
e	=	23.0 dB(µV/m)								
E	=	14.1 µV/m (Noise) PEAK Measurement								

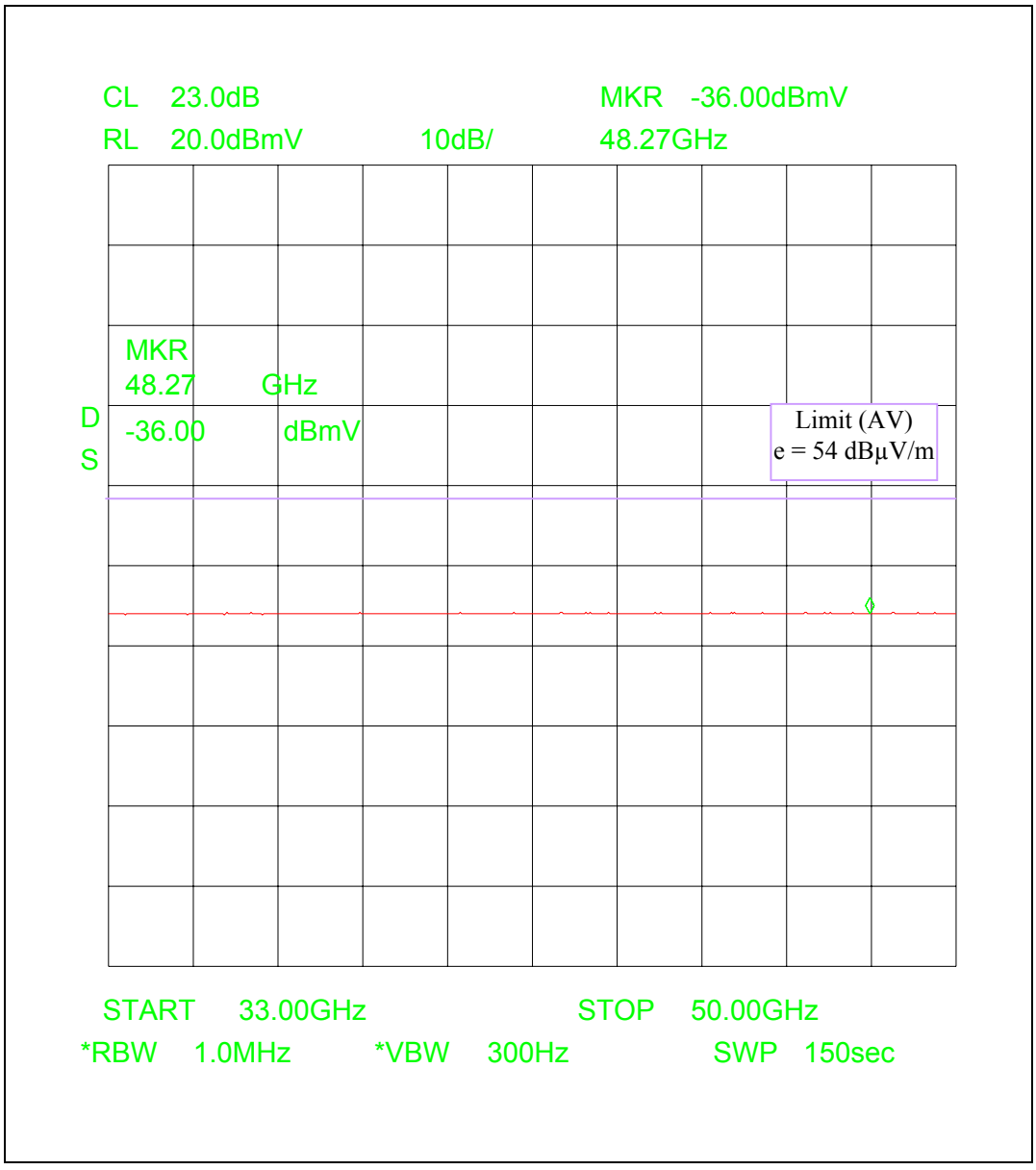
Plot 17



Measurement distance d = 0.25 m

Field strength	=	analyser reading	+	antenna factor	-	distance corr.
e [dB(mV/m)]	=	u [dB(mV)]	+	k [dB(1/m)]	-	d [dB]
e	=	-24.8	+	39.1	-	21.5
e	=	-7.2 dB(mV/m)				
e	=	52.8 dB(µV/m)				
E	=	436.5 µV/m (Noise) PEAK Measurement				

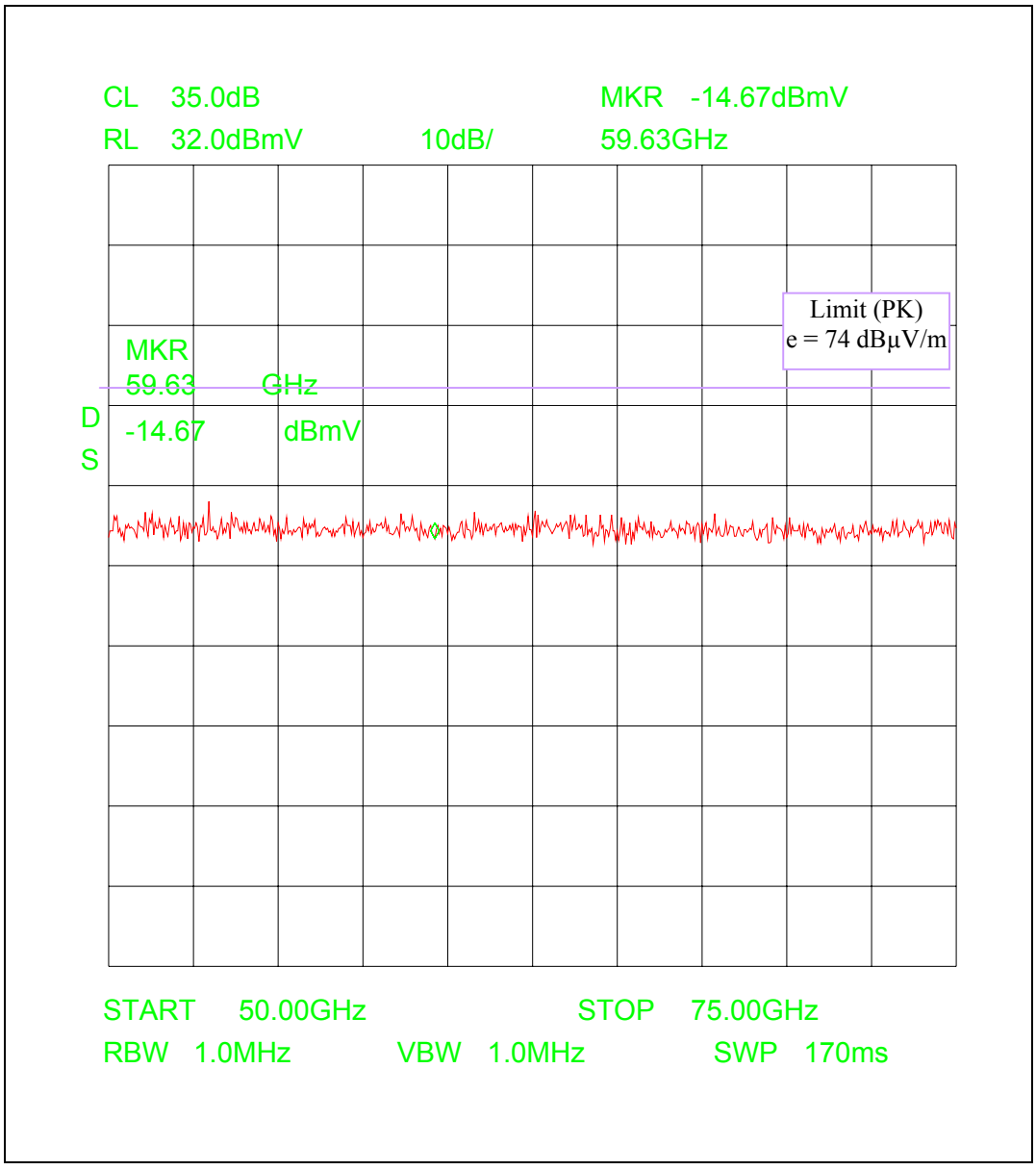
Plot 18



Measurement distance d = 0.25 m

Field strength	=	analyser reading	+	antenna factor	-	distance corr.
e [dB(mV/m)]	=	u [dB(mV)]	+	k [dB(1/m)]	-	d [dB]
e	=	-36.0	+	39.1	-	21.5
e	=	-18.4 dB(mV/m)				
e	=	41.6 dB(µV/m)				
E	=	120.226 µV/m (Noise) AVERAGE Measurement				

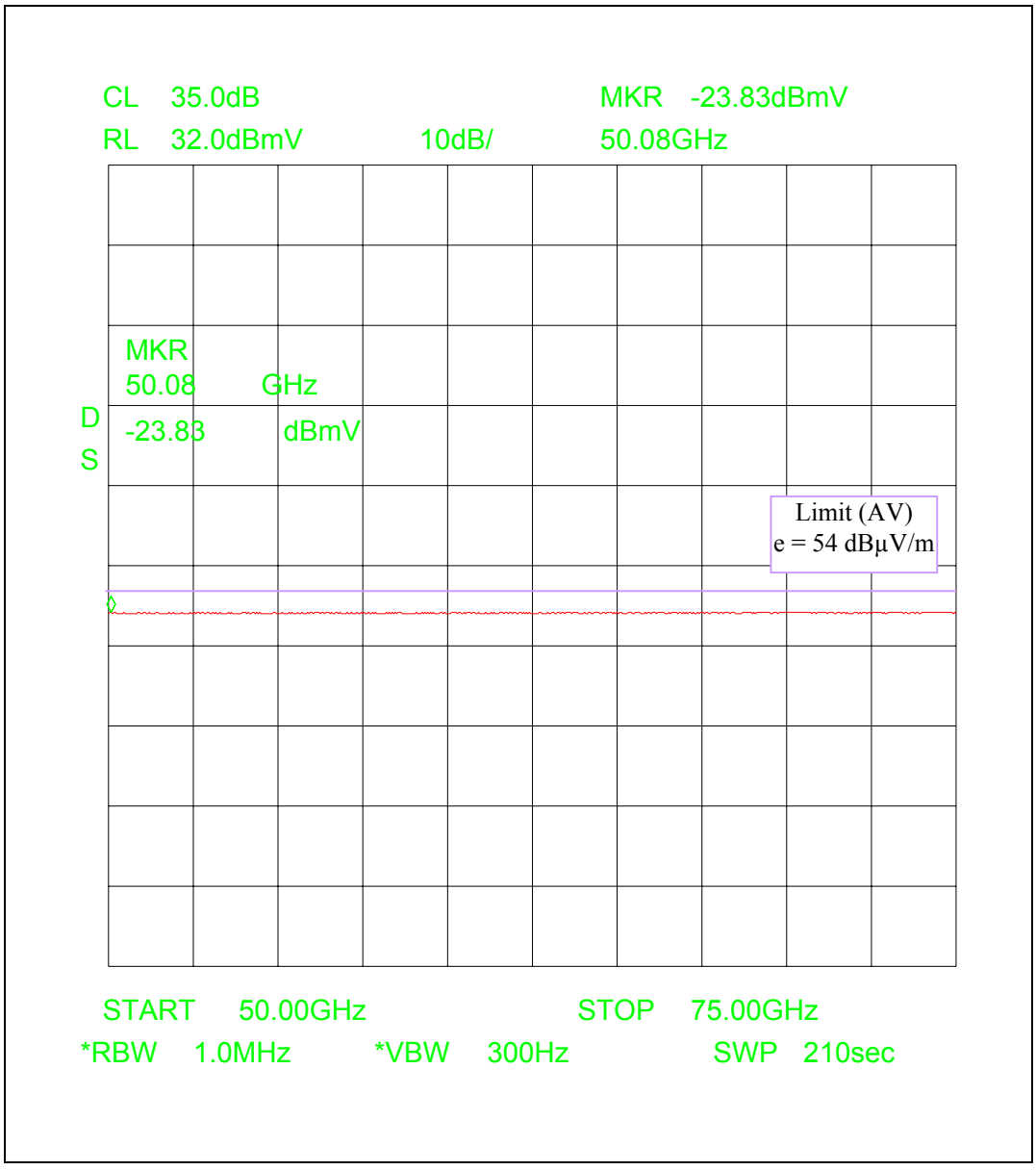
Plot 19



Measurement distance d = 0.125 m

Field strength	=	analyser reading	+	antenna factor	-	distance corr.
e [dB(mV/m)]	=	u [dB(mV)]	+	k [dB(1/m)]	-	d [dB]
e	=	-14.6	+	40.6	-	27.6
e	=	-1.6 dB(mV/m)				
e	=	58.4 dB(µV/m)				
E	=	831.7 µV/m (Noise)	PEAK Measurement			

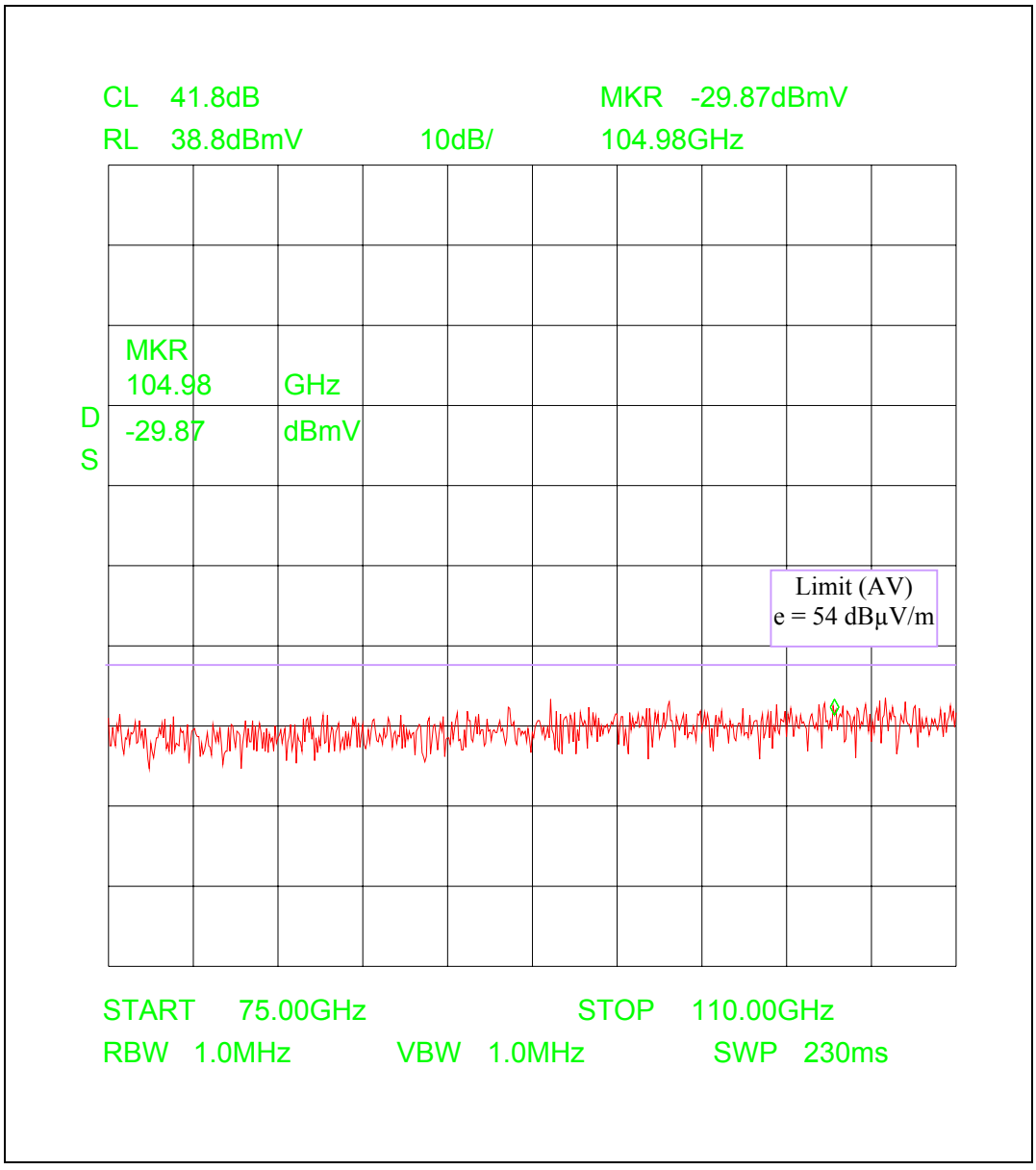
Plot 20



Measurement distance d = 0.125 m

Field strength	=	analyser reading	+	antenna factor	-	distance corr.
e [dB(mV/m)]	=	u [dB(mV)]	+	k [dB(1/m)]	-	d [dB]
e	=	-23.8	+	40.6	-	27.6
e	=	-10.8 dB(mV/m)				
e	=	49.2 dB(µV/m)				
E	=	288.4 µV/m (Noise)	AVERAGE Measurement			

Plot 21



Measurement distance d = 0.125 m

Field strength	=	analyser reading	+	antenna factor	-	distance corr.
e [dB(mV/m)]	=	u [dB(mV)]	+	k [dB(1/m)]	-	d [dB]
e	=	-29.8	+	45.0	-	27.6
e	=	-12.4 dB(mV/m)				
e	=	47.6 dB(µV/m)				
E	=	239.8 µV/m (Noise)				

4 Photographs