Test Report

T-0329-4305-03 JP

Type / Model Name:	**PLB000998**
FCC ID	**W5IPLB000998**
Product Description:	**LPR-1D, LPR-2D**
Applicant:	**Symeo GmbH**

EMC -- TEST REPORT

Test Report No. : T-0329-4305-03 JP	2012-06-11 Date of issue

Type / Model Name : PLB000998

FCC ID W5IPLB000998

Product Description : LPR-1D, LPR-2D

Applicant : Symeo GmbH

Address : Professor-Messerschmitt-Str. 3

85579 Neubiberg / München

Germany

Manufacturer : Symeo GmbH

Address : Professor-Messerschmitt-Str. 3

85579 Neubiberg / München

Germany

Test Result according to the standards listed in clause 1 test standards:	**POSITIVE**

DAkkS Deutsche Akkreditierungsstelle D-PL-12141-01-01

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

Contents

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Part 15 Subpart A October 2010	Code of Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communications Commision (FCC)
FCC Part 15 Subpart C October 2010	Code of Regulations Part 15 (Radio Frequency Devices), Subpart B (Unintentional Radiators) of the Federal Communications Commision (FCC) Applied Paragraphs: §15.209
ANSI C63.4-2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz – 40 GHz

2 OVERVIEW TEST RESULT

Performed test(s)	Result		
	Passed	Failed	Not performed
Radiated disturbance (30MHz – 1000MHz)	X		
Radiated disturbance (1GHz – 40GHz)	X		
Bandedges	X		

3 SUMMARY

GENERAL REMARKS:

The EUT has a TX mode and a RX mode but RX is without TX beacons not possible therefore the measurements were performed in TX mode only.
The EuT was tested with three different host housings and motherboard supplied by manufacturer. For detailed description of the different housings refer to sub part 4.3 of this test report.
Host Variant A is already ceritified with EuT.
To determine worst channel prescans were made. The level of found emission was nearly identical between CH00 (5871MHz), CH27 (5755MHz) and CH53 (5729MHz), the final measurement was performed in CH27 only. The Bandedges requirement was measured in CH00 (high bandedge) and CH53 (low band edge).

FINAL ASSESSMENT:

The equipment under test **fulfills** the EMC requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 2012-02-14

Testing concluded on : 2012-05-29

Checked by:

Frank Scharnowski
2012.06.11
11:18:47 +02'00'

Frank Scharnowski

Tested by:

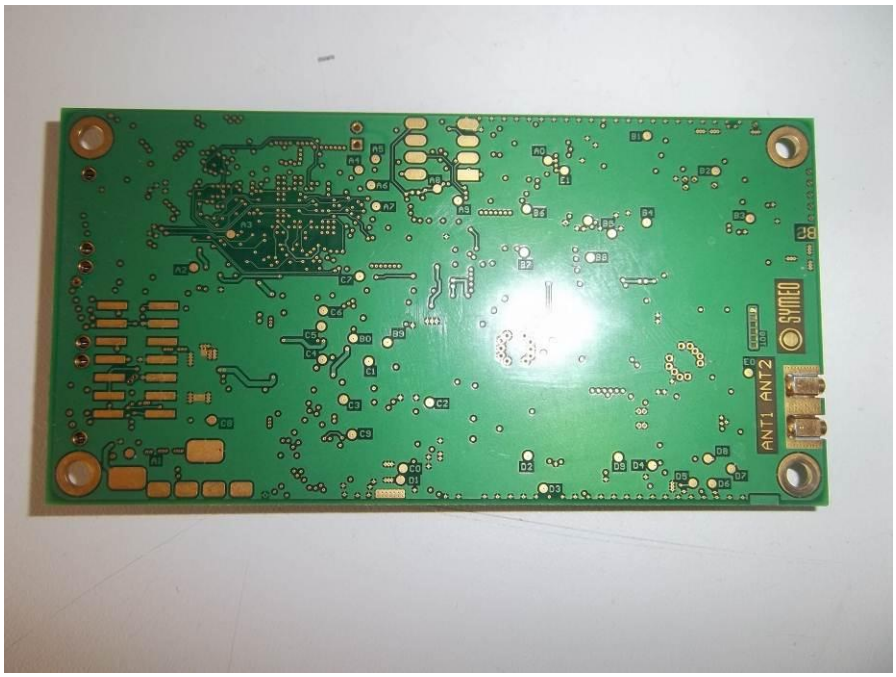
Jürgen Pessinger
2012.06.11
11:17:31 +02'00'

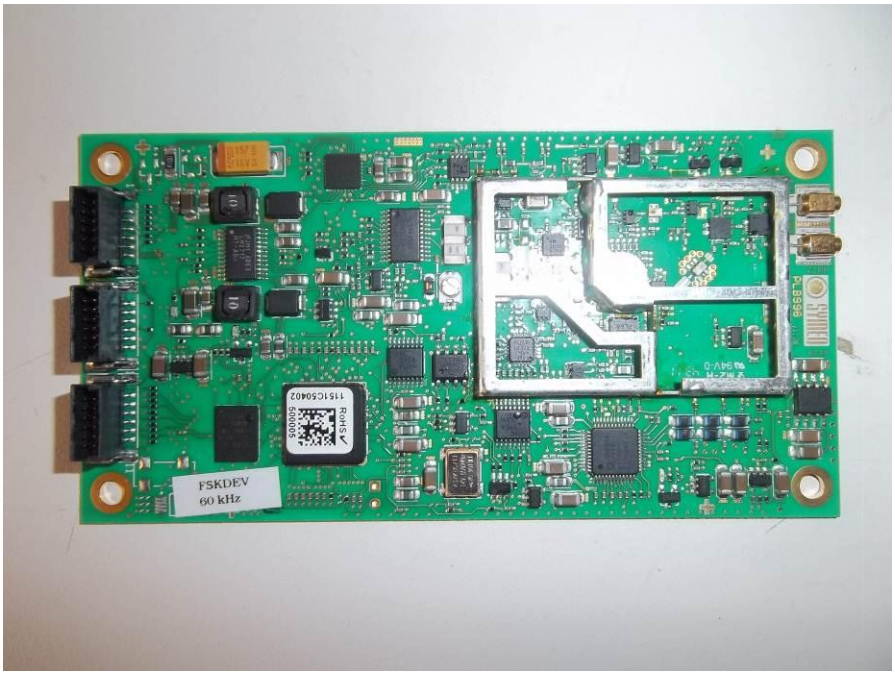
Jürgen Pessinger

4 EQUIPMENT UNDER TEST

4.1 Photo documentation of the EuT

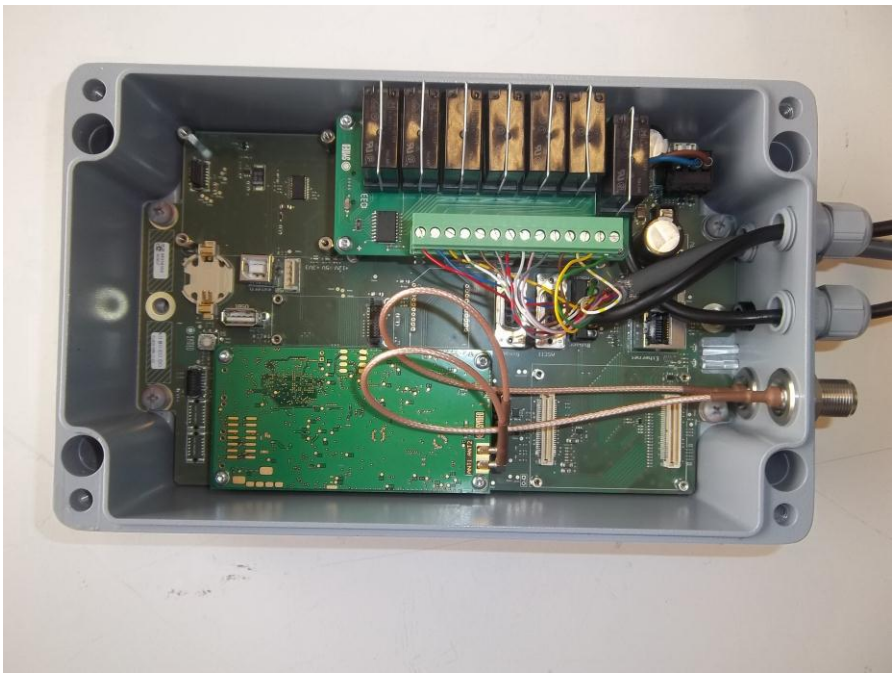
Module W5IPLB000998




FSKDEV
60 kHz

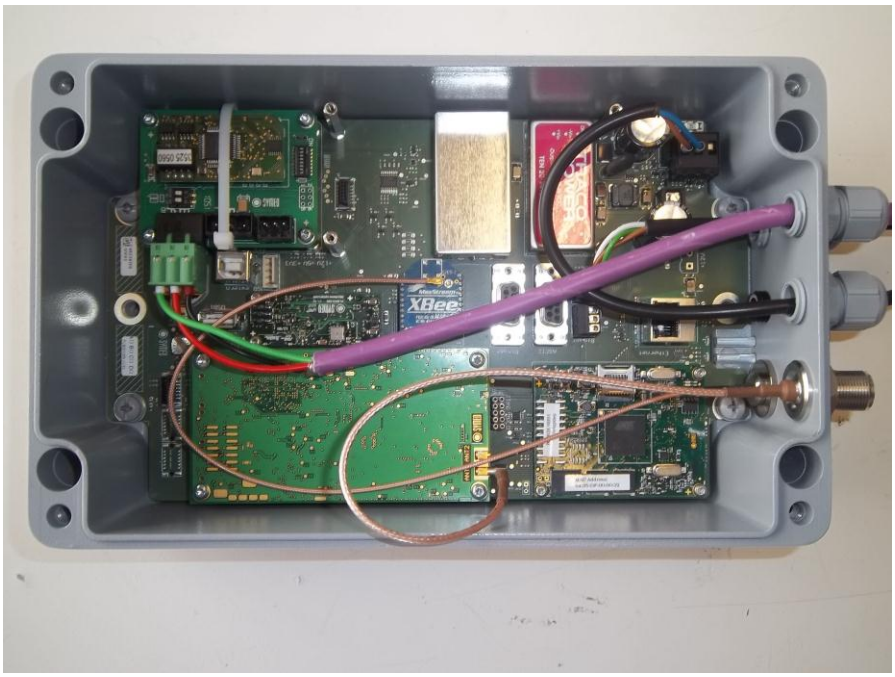
Periphery Host Variant A:


ANT1
POWER
ANT2
BUS OUT

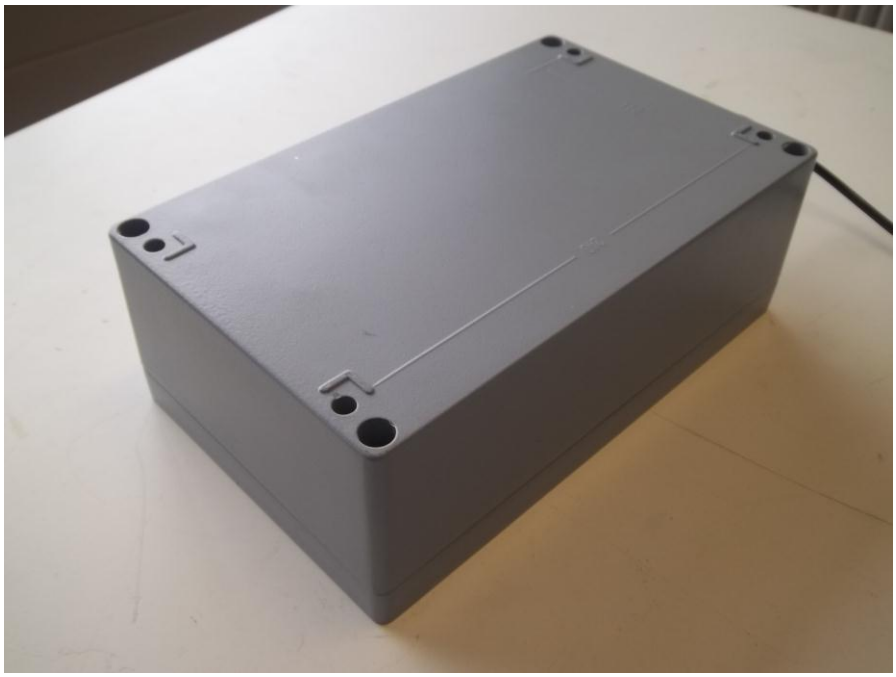


Periphery Host Variant B


LPR
POWER
ZIGBEE
BUS OUT


XBee

Periphery Host Variant C




ANT1
NETWORK
ANT2
RELAY

Antenna cable

Antenna ANC000421, gain 10dBi

4.2 Power supply system

Power supply voltage: 10-36V DC

4.3 Short description of the Equipment under Test (EuT)

The EuT is a wireless module used in systems for contactless, real time determination of distances and positions. The EuT can be used with different antennas. An adjustable attenuator is used to set the transmit power to keep the legal limit.

Configuration overview of tested Host Variants

	Variant A	Variant B	Variant C
Module W5IPLB000998 (EuT)	X	X	X
Module OUR-XBEE		X	
RS232	X	X	
RJ45			X
Profibus		X	
Relais board	X		
CPU board ELKE		X	X
Inertial sensor board		X	

Number of tested samples: 1
Serial number: none

Dimensions: L: 11cm W: 5,5cm H: 1cm

Radio equipment characteristics

FSK Channel

Frequency band(s):	5725MHz – 5875MHz
Operating frequency:	5729MHz – 5871MHz
Channel spacing:	1MHz
Number of RF-channels:	54 channels (CH00 – CH53)
Comments:	None

Measurement band

Frequency band(s):	5725MHz – 5875MHz
Operating frequency:	Depends on FSK channel usage*
Channel spacing:	variable
Number of RF-channels:	1 distance measurement band
Comments:	None

*measurement band is located between last available FSK channel in upper FSK frequency range and the first available FSK channel in the lower FSK frequency range, with a clearance of 3MHz.

EuT operation mode:

The equipment under test was operated during the measurement under the following conditions:

- test software active, CH27 (5755MHz) adjusted

Bandedge test was performed in following operation modes

- test software active, CH00 (5871MHz) adjusted

- test software active, CH53 (5729MHz) adjusted

EuT configuration:

The following interface cables and peripheral devices were connected during the measurements:

Interface cables:

Interface cable	Length [m]	Type	Line		Line termination
			shielded	unshielded	
DC power line	2,3	2-wires	☐	☒	Power supply or battery
Antenna cable 1	4,0	1-wire	☒	☐	Antenna 2
Antenna cable 2[2]	4,0	1-wire	☒	☐	Antenna 1
RS232[3]	2,1	3-wires	☐	☒	Laptop
Relais board[23]	3,1	16-wires	☒	☐	None
Zigbee Antenna Port[13]	0	N/A	☒	☐	50Ohm Termination
Profi bus[13]	20,0	3-wires	☒	☐	PLC
RJ45[12]	3,2	8-wires	☒	☐	Laptop

[1]not for variant A; [2]not for variant B; [3]not for variant C

Peripheral devices:

Kind of equipment		Model and/or Manufacturer
Power supply		EA-PS 3032-10B, emitel ID: 01-05/50-11-014
Antenna 1 & 2		ANC000421 10dBi, Symeo
Laptop		Tecra A2, Toshiba, emitel ID: 01-01/01-05-005
PLC		Simatic S7, Siemens

5 TEST ENVIRONMENT

5.1 Address of the test laboratory

emitel AG
Ohmstrasse 1
94342 STRASSKIRCHEN
DEUTSCHLAND

Laboratory registration numbers:

DAkkS Registration number:	D-PL-12141-01-01
KBA Registration number:	KBA-P 00057-01
SNCH Registration number:	SNCH 001/2005
FCC Registration number:	765810
IC Registration number:	IC 5066A-1

5.2 Statement regarding the usage of logos at test reports

The logos of accreditation- and notification bodies displayed at this test reports are only valid for standards listed at the accreditation- or notification scope of emitel AG.

5.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	86-106 kPa

All atmospheric pressure values refer to our Laboratory altitude of 324m.

5.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 /11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer does have the sole responsibility for the continued compliance of the device.

5.5 Measurement Protocol for FCC, VCCI and AUSTEL

5.5.1 GENERAL INFORMATION

5.5.1.1 Test Methodology

Conducted and radiated disturbance testing is performed according to the procedures in International Special Committee on Radio Interference (CISPR) Publication 22 (1997+A1:2000+A2:2002), European Standard EN 55022 (1998+A1:2000+A2:2003)and Australian Standard AS 3548 (which are based on CISPR 22).

The Japanese standard, "Voluntary Control Council for Interference (VCCI) by Data Processing Equipment and Electronic Office Machines, Technical Requirements" is technically equivalent to CISPR 22 (1997+A1:2000 +A2:2002). For official compliance, a conformance report must be sent to and accepted by the VCCI.

In compliance with FCC Docket 92-152, "Harmonization of Rules for Digital Devices Incorporate International Standards", testing for FCC compliance may be done following the ANSI C63.4-2003 procedures and using the CISPR 22 Limits.

5.5.1.2 Measurement Error

The data and results referenced in this document are true and accurate. The reader is cautioned that there is some measurement variability due to the tolerances of the test equipment that can contribute to a nominal product measurement uncertainty. The measurement uncertainty was calculated for all measurements listed in this test report according to CISPR 16-4-2 and is documented in the emitel AG quality system according to DIN EN ISO/IEC 17025. Furthermore, component differences and manufacturing process variability of production units similar to that tested may result in additional product uncertainty. If necessary, refer to the test lab for the actual measurement uncertainty for specific tests. The manufacturer has the sole responsibility of continued compliance of the device.

5.5.1.3 Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into it's characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum disturbances from the unit.

5.5.2 CONDUCTED DISTURBANCE

The final level, expressed in dBµV, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the CISPR limit, which is equivalent to the Australian AS 3548 limit.

To convert between dBµV and µV, the following conversions apply:
dBµV = 20(log µV)
µV = Inverse log(dBµV/20)

5.5.3 RADIATED DISTURBANCE

The final level, expressed in dBµV/m, is arrived at by taking the reading from the EMI receiver (Level dBµV) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factor are stored. This result then has the CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets in section 5.2. The CISPR 22 limit is equivalent to the Australian AS 3548 limit.

Example: CISPR B Delta

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Final (dBµV/m)	-	Limit (dBµV/m)	=	CISPR B (dB)
37.19	10.2	+	12.0	=	22.2	-	40.0	=	-17.8

5.5.4 DETAILS OF TEST PROCEDURES

5.5.4.1 General Standard Information

The test methods used comply with CISPR Publication 22 (1997+A1:2000+A2:2002), EN 55022 (1998+A1:2000+A2:2003) and AS 3548 (1992) - "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment" and with ANSI C63.4-2003 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

5.5.4.2 Conducted disturbance

Conducted disturbance on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi peak detection, and a Line Impedance Stabilization Network (LISN), with 50Ω/50 µH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimetres above the floor and is positioned 40 centimetres from the vertical ground plane (wall) of the screen room. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi peak and average detection and recorded on the data sheets.

5.5.4.3 Radiated disturbance

Radiated disturbance from the EUT are measured in the frequency range of 30 to 1000 MHz using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and average/peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimetres to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees.

6 TEST CONDITIONS AND RESULTS

6.1 Radiated disturbance (30MHz – 1000MHz)

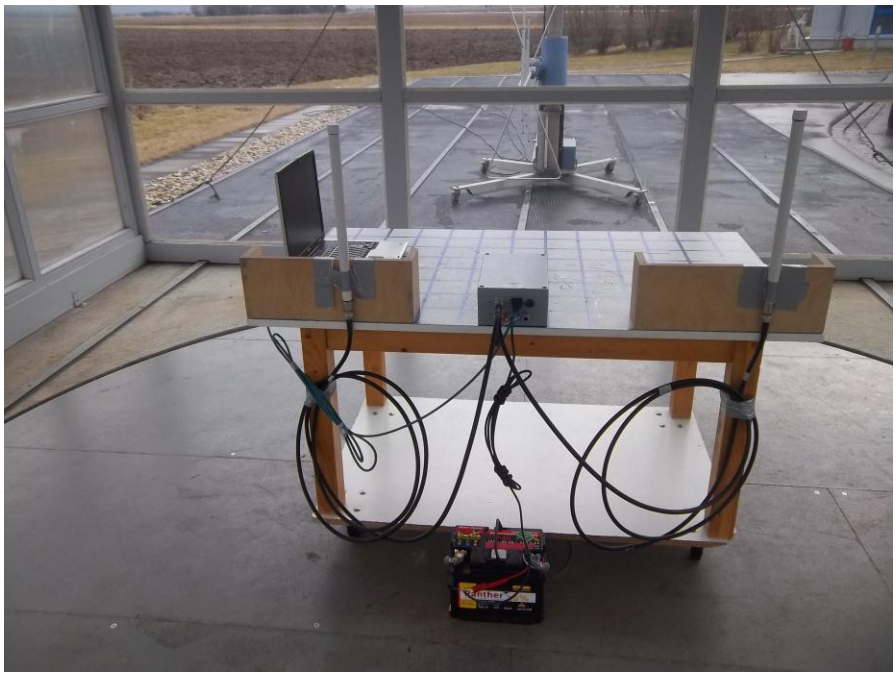
For test instruments and accessories used see section 7 Part **SER 2**.

6.1.1 Description of the test location

Test location: OATS 3

Test distance: 3 metres

6.1.2 Photo documentation of the test set-up



6.1.3 Test specification

Environmental conditions: Temperature: 18 ° C Humidity: 41 % Atmospheric pressure: 98 kPa

Frequency range: 30 MHz - 1000 MHz

The test was carried out in the following operation mode(s):
- test software active, CH27 (5755MHz) adjusted

6.1.4 Test result

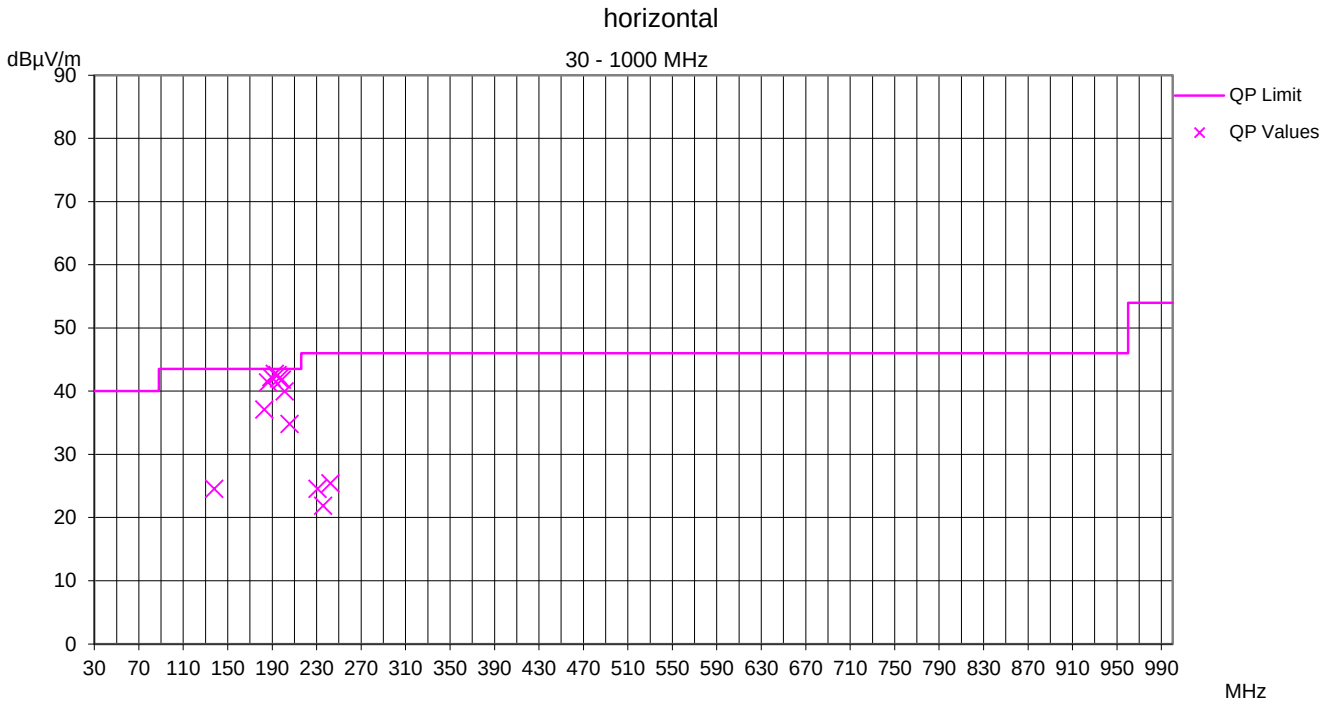
Minimal margin to limit 0,7 dB at 36,4 MHz

The requirements are **FULFILLED.**

Remarks: Test was performed with 3 different host variants.

6.1.5 Test protocol

Operation mode:	test software active, CH27 (5755MHz) adjusted	Result: PASS
Remarks:	Host Variant A adjustable attenuator set to 14dB	
Date:	2012-03-23	
Tested by:	Pessinger Jürgen	

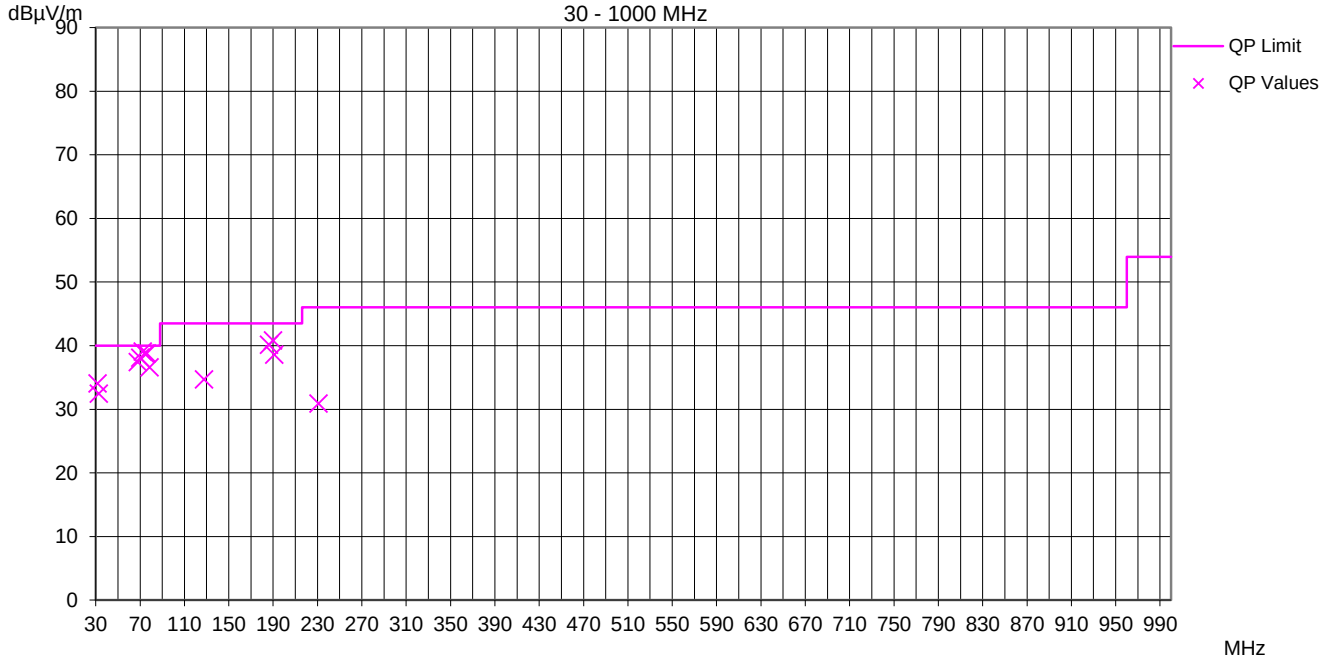


Minimum margin to limit: -0,8 dB

Frequency [MHz]	Reading [dBµV] QP	Correction [dB]	Values [dBµV/m] QP	Limit [dBµV/m] QP	Margin [dB] QP
137,865	13,9	10,6	24,5	43,5	-19,0
183,019	24,6	12,4	37,1	43,5	-6,5
186,274	28,6	12,7	41,3	43,5	-2,2
189,526	29,2	13,0	42,2	43,5	-1,3
192,390	29,6	13,1	42,7	43,5	-0,8
194,818	29,2	13,3	42,5	43,5	-1,0
196,446	28,6	13,3	42,0	43,5	-1,5
198,926	28,4	13,4	41,8	43,5	-1,7
201,331	26,5	13,5	39,9	43,5	-3,6
205,816	21,3	13,5	34,8	43,5	-8,7
231,028	10,0	14,5	24,5	46,0	-21,5
235,922	7,1	14,8	21,9	46,0	-24,2
242,418	10,5	14,9	25,4	46,0	-20,6

Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant A
adjustable attenuator set to 14dB
Date: 2012-03-23
Tested by: Pessinger Jürgen

vertical

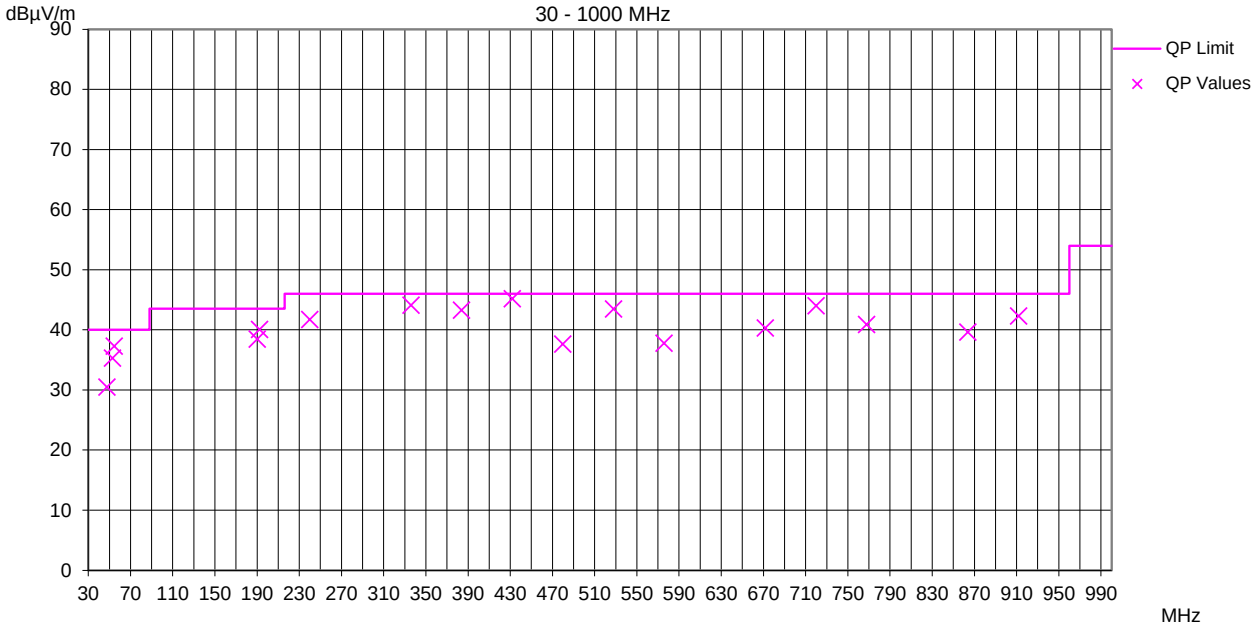


Minimum margin to limit: -1,0 dB

Frequency [MHz]	Reading [dBµV] QP	Correction [dB]	Values [dBµV/m] QP	Limit [dBµV/m] QP	Margin [dB] QP
31,727	20,4	13,6	34,0	40,0	-6,0
32,944	18,7	13,8	32,5	40,0	-7,5
67,935	25,8	11,6	37,4	40,0	-2,6
70,378	26,9	11,2	38,1	40,0	-1,9
72,406	28,0	11,1	39,0	40,0	-1,0
74,850	27,8	10,9	38,7	40,0	-1,3
76,067	27,8	10,9	38,8	40,0	-1,2
78,506	25,7	10,9	36,6	40,0	-3,4
127,733	23,4	11,3	34,7	43,5	-8,8
186,300	27,4	12,7	40,1	43,5	-3,4
189,969	27,8	13,0	40,8	43,5	-2,7
191,194	25,5	13,1	38,6	43,5	-4,9
231,040	16,4	14,5	30,9	46,0	-15,1

Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant B
adjustable attenuator set to 14dB
Date: 2012-03-23
Tested by: Pessinger Jürgen

horizontal

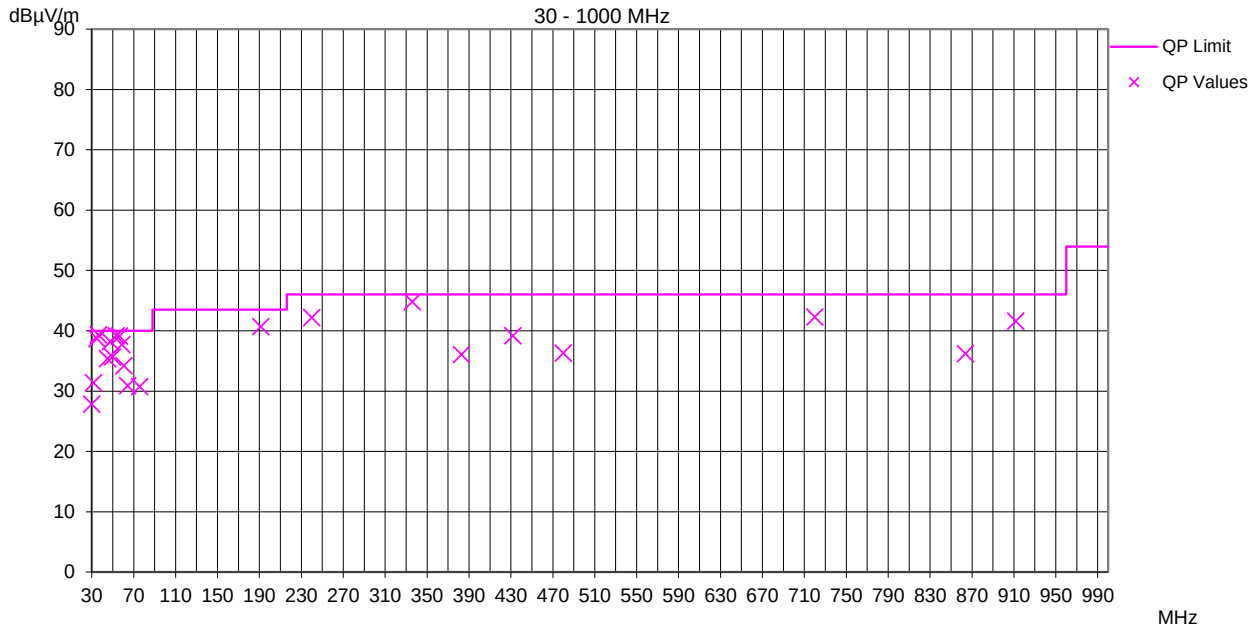


Minimum margin to limit: -0,9 dB

Frequency [MHz]	Reading [dBµV] QP	Correction [dB]	Values [dBµV/m] QP	Limit [dBµV/m] QP	Margin [dB] QP
47,880	15,4	15,1	30,5	40,0	-9,5
53,033	20,4	14,9	35,3	40,0	-4,7
54,624	22,5	14,8	37,3	40,0	-2,7
190,332	25,4	13,0	38,4	43,5	-5,1
192,339	26,9	13,1	40,0	43,5	-3,5
240,000	26,8	14,9	41,7	46,0	-4,3
336,000	26,4	17,7	44,1	46,0	-1,9
383,998	24,7	18,5	43,2	46,0	-2,8
431,998	25,3	19,9	45,2	46,0	-0,9
479,997	16,9	20,7	37,6	46,0	-8,4
528,000	21,7	21,7	43,4	46,0	-2,6
575,997	15,4	22,4	37,8	46,0	-8,3
672,000	16,4	23,9	40,3	46,0	-5,7
719,994	19,3	24,7	44,0	46,0	-2,1
767,990	15,3	25,6	40,9	46,0	-5,2
864,000	13,2	26,4	39,6	46,0	-6,4
912,000	15,3	27,0	42,3	46,0	-3,8

Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant B
adjustable attenuator set to 14dB
Date: 2012-03-23
Tested by: Pessinger Jürgen

vertical



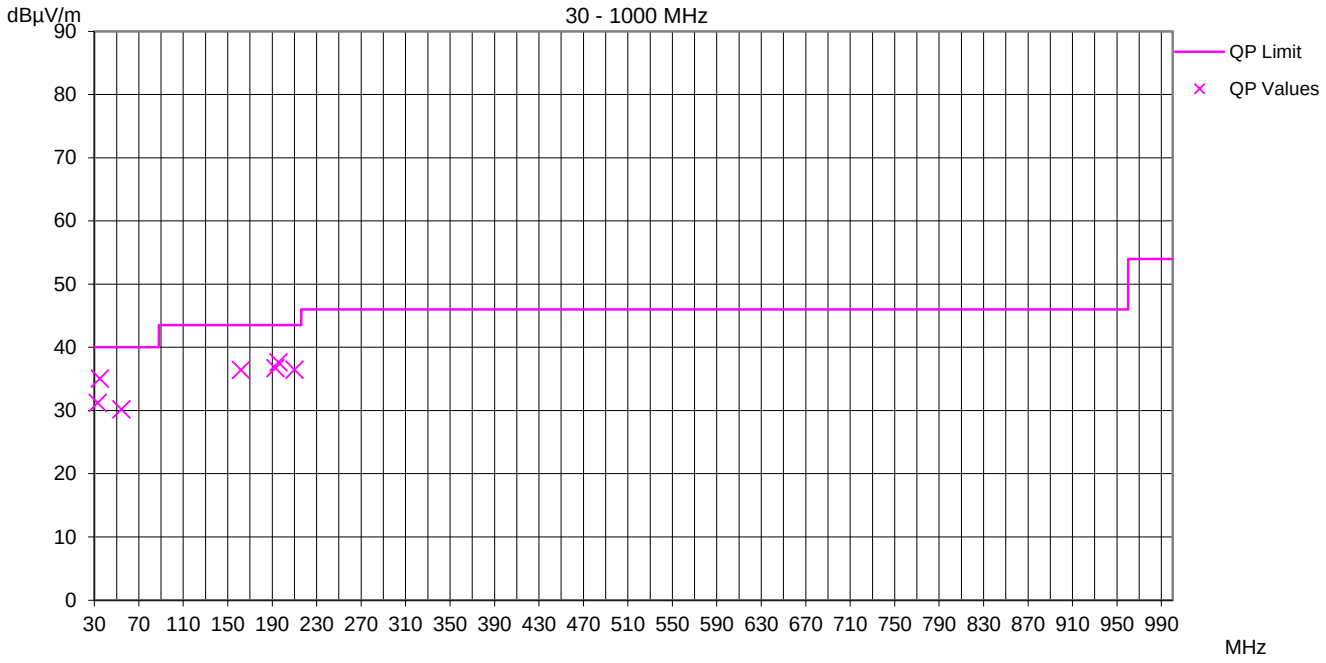
Minimum margin to limit: -0,7 dB

Frequency [MHz]	Reading [dBµV] QP	Correction [dB]	Values [dBµV/m] QP	Limit [dBµV/m] QP	Margin [dB] QP
30,032	14,5	13,3	27,8	40,0	-12,2
31,622	17,8	13,6	31,4	40,0	-8,6
35,189	24,5	14,2	38,7	40,0	-1,3
36,376	25,0	14,3	39,3	40,0	-0,7
45,081	20,3	15,1	35,4	40,0	-4,6
47,850	23,1	15,1	38,2	40,0	-1,8
49,836	20,6	15,1	35,7	40,0	-4,3
53,387	24,3	14,9	39,2	40,0	-0,8
56,554	24,7	14,4	39,1	40,0	-0,9
58,900	23,8	13,9	37,7	40,0	-2,3
60,907	20,8	13,4	34,2	40,0	-5,8
64,470	18,5	12,4	30,9	40,0	-9,1
75,943	19,8	10,9	30,7	40,0	-9,3
191,473	27,6	13,1	40,7	43,5	-2,8
240,000	27,3	14,9	42,2	46,0	-3,8
336,000	27,1	17,7	44,8	46,0	-1,2
383,000	17,5	18,5	36,0	46,0	-10,0
431,992	19,3	19,9	39,2	46,0	-6,9
480,000	15,6	20,7	36,3	46,0	-9,7
719,991	17,6	24,7	42,3	46,0	-3,8
863,987	9,8	26,4	36,2	46,0	-9,8
911,989	14,6	27,0	41,6	46,0	-4,5

File No. **T-0329-4305-03 JP**

Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant C
adjustable attenuator set to 14dB
Date: 2012-03-23
Tested by: Pessinger Jürgen

horizontal

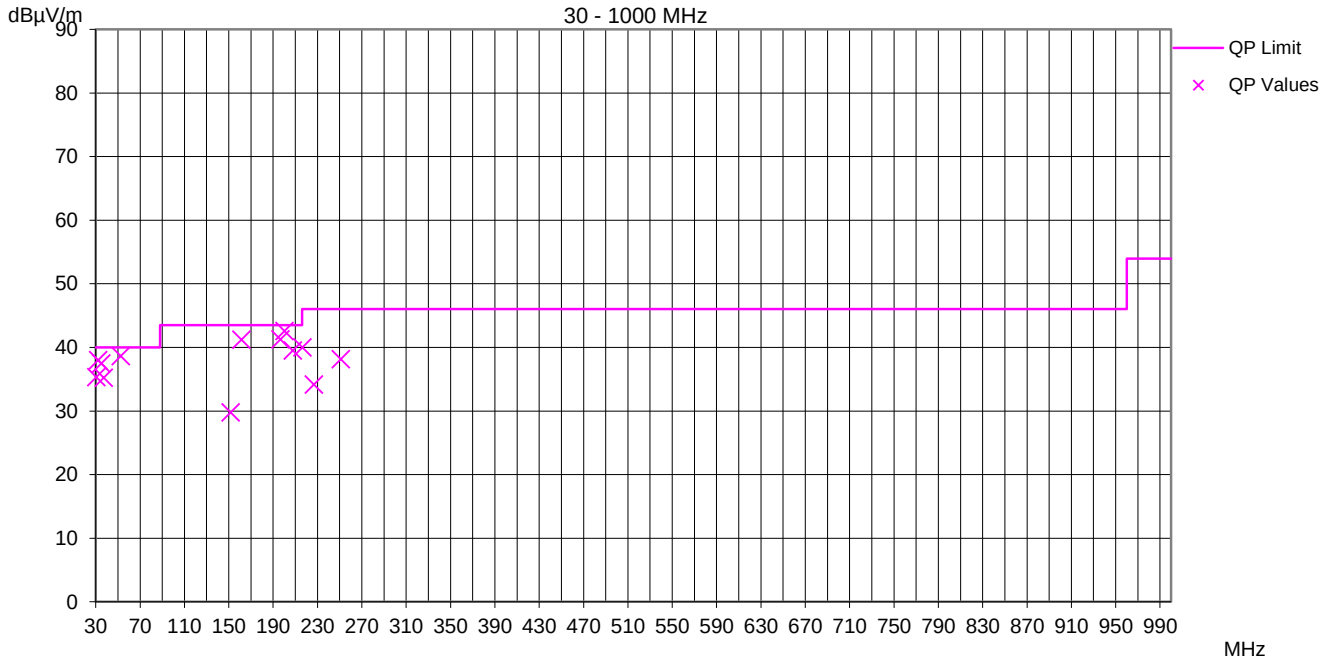


Minimum margin to limit: -5,0 dB

Frequency [MHz]	Reading [dBµV] QP	Correction [dB]	Values [dBµV/m] QP	Limit [dBµV/m] QP	Margin [dB] QP
33,008	17,4	13,8	31,2	40,0	-8,8
35,011	20,9	14,1	35,0	40,0	-5,0
54,514	15,4	14,8	30,2	40,0	-9,8
161,980	25,3	11,1	36,4	43,5	-7,1
193,034	23,5	13,2	36,7	43,5	-6,8
195,829	24,3	13,3	37,6	43,5	-5,9
210,178	22,9	13,5	36,4	43,5	-7,1

Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant C
adjustable attenuator set to 14dB
Date: 2012-03-23
Tested by: Pessinger Jürgen

vertical



Minimum margin to limit: -1,0 dB

Frequency [MHz]	Reading [dBµV] QP	Correction [dB]	Values [dBµV/m] QP	Limit [dBµV/m] QP	Margin [dB] QP
30,653	21,9	13,4	35,3	40,0	-4,7
32,249	24,3	13,7	38,0	40,0	-2,0
35,033	23,3	14,1	37,4	40,0	-2,6
37,422	20,8	14,4	35,2	40,0	-4,8
52,552	23,7	14,9	38,6	40,0	-1,4
151,696	19,1	10,7	29,8	43,5	-13,7
161,654	30,1	11,1	41,2	43,5	-2,3
196,702	27,9	13,4	41,3	43,5	-2,3
200,285	29,1	13,5	42,6	43,5	-1,0
207,839	26,0	13,5	39,5	43,5	-4,0
216,617	26,2	13,8	40,0	46,0	-6,0
226,949	19,8	14,3	34,1	46,0	-11,9
251,255	23,0	15,1	38,1	46,0	-7,9

6.2 Radiated disturbance (1GHz – 40GHz)

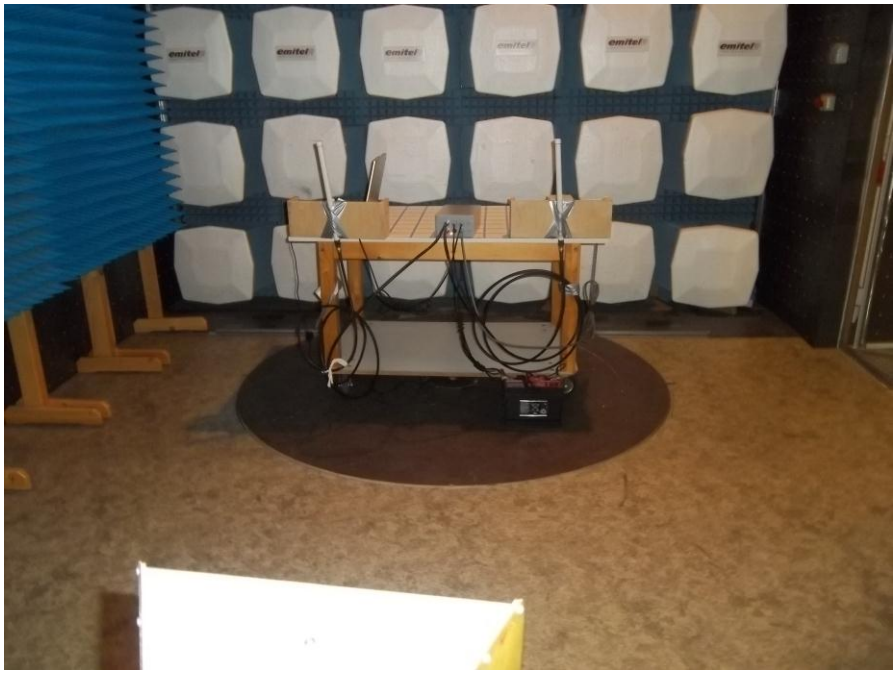
For test instruments and accessories used see section 7 Part **SER 3**.

6.2.1 Description of the test location

Test location: Anechoic Chamber A4

Test distance: 3 metres

6.2.2 Photo documentation of the test set-up



6.2.3 Test specification

Environmental conditions: Temperature: 23 ° C Humidity: 34 % Atmospheric pressure: 96 kPa

Frequency range: 1 GHz – 40GHz

The test was carried out in the following operation mode(s):
- test software active, CH27 (5755MHz) adjusted

6.2.4 Test result

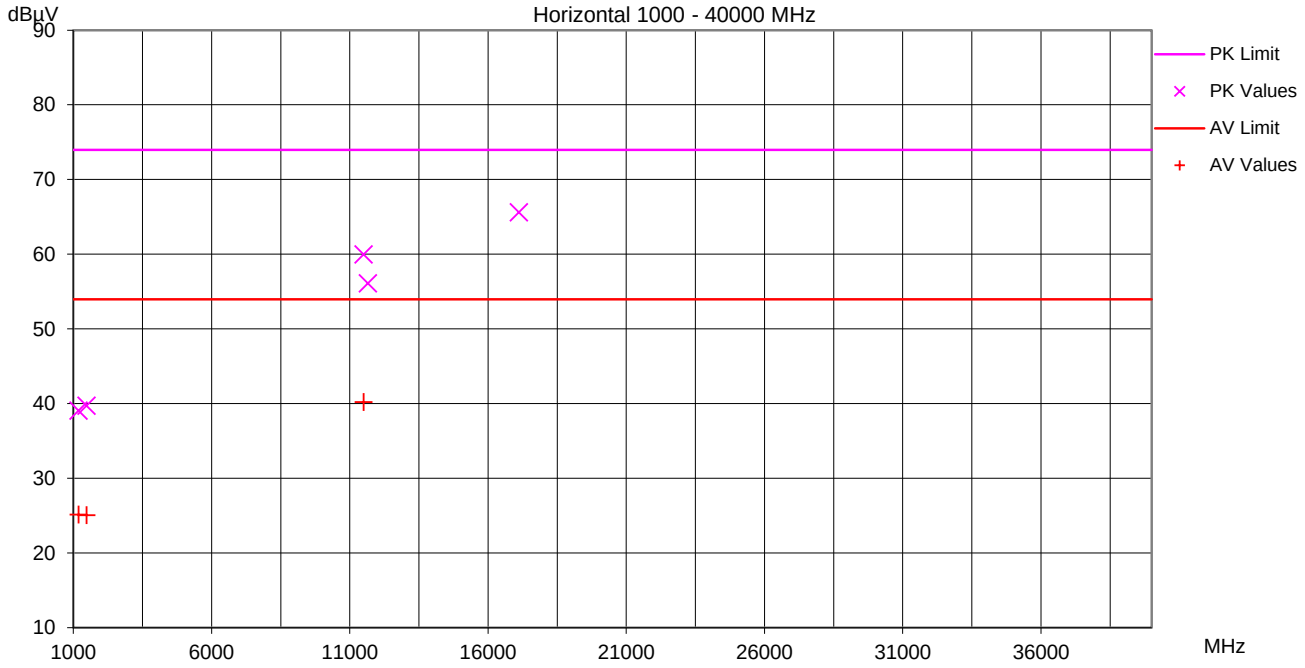
Minimal margin to limit 8,4 dB at 17,1 GHz

The requirements are **FULFILLED.**

Remarks: Test was performed with 3 different host variants.

6.2.5 Test protocol

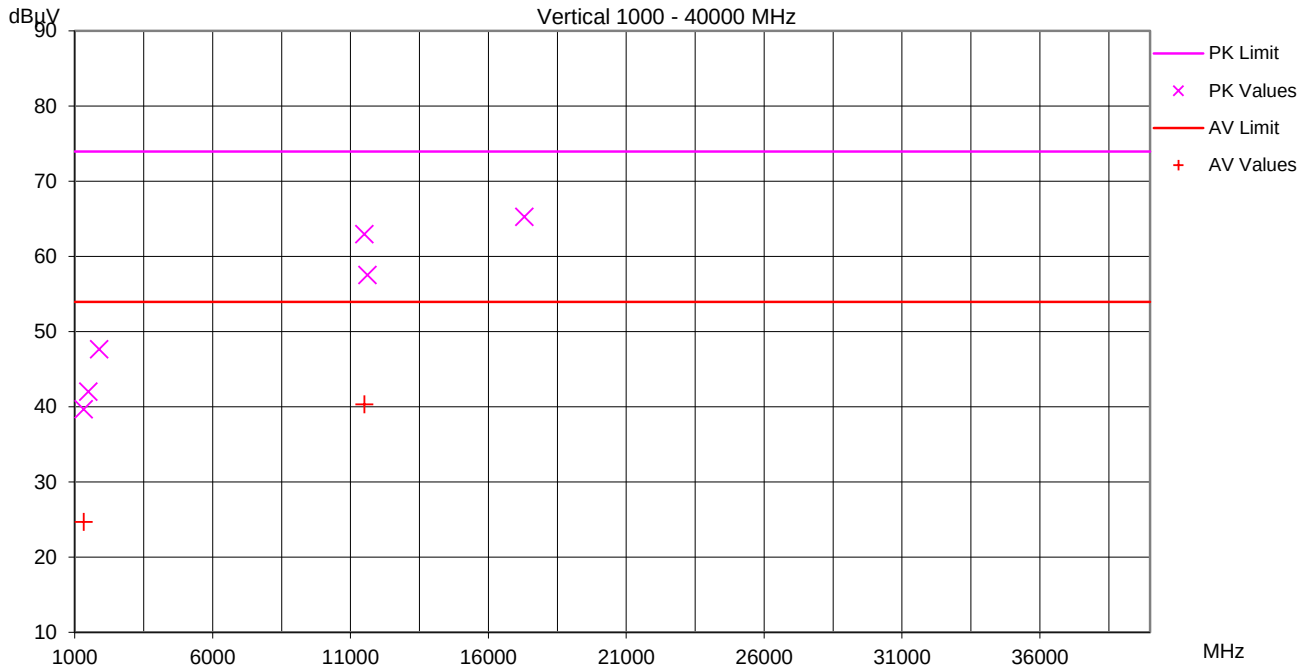
Operation mode:	test software active, CH27 (5755MHz) adjusted	Result: PASS
Remarks:	Host Variant A adjustable attenuator set to 14dB	
Date:	2012-02-16	
Tested by:	Pessinger Jürgen	



Minimum margin to limit: 8,4 dB

Frequency	Reading [dBµV]		Correction	Values [dBµV]		Limit [dBµV]		Margin [dB]	
[MHz]	PK	AV	[dB]	PK	AV	PK	AV	PK	AV
1195,000	50,0	36,1	-10,9	39,0	25,1	74,0	54,0	34,9	28,8
1481,000	49,8	35,2	-10,1	39,7	25,0	74,0	54,0	34,3	28,9
11500,000	51,2	31,4	8,8	59,9	40,2	74,0	54,0	14,0	13,8
11658,000	47,1		9,0	56,1		74,0	54,0	17,9	
17118,000	51,9		13,7	65,6		74,0	54,0	8,4	

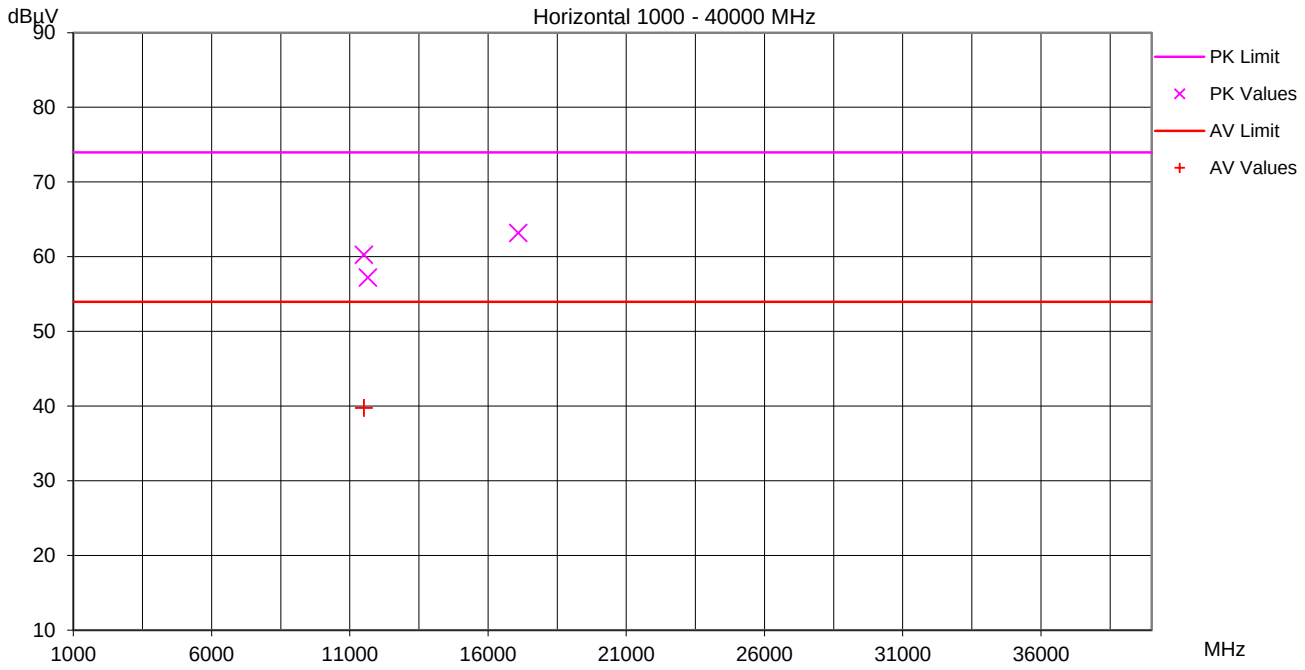
Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant A
adjustable attenuator set to 14dB
Date: 2012-02-15
Tested by: Pessinger Jürgen



Minimum margin to limit: 8,7 dB

Frequency [MHz]	Reading [dBµV] PK	Reading [dBµV] AV	Correction [dB]	Values [dBµV] PK	Values [dBµV] AV	Limit [dBµV] PK	Limit [dBµV] AV	Margin [dB] PK	Margin [dB] AV
1325,000	50,2	35,2	-10,5	39,7	24,7	74,0	54,0	34,3	29,3
1494,000	52,1		-10,1	42,0		74,0	54,0	32,0	
1884,000	54,9		-7,2	47,7		74,0	54,0	26,3	
11511,000	54,2	31,5	8,8	63,0	40,3	74,0	54,0	11,0	13,7
11616,000	48,6		8,9	57,5		74,0	54,0	16,5	
17307,000	50,0		15,3	65,3		74,0	54,0	8,7	

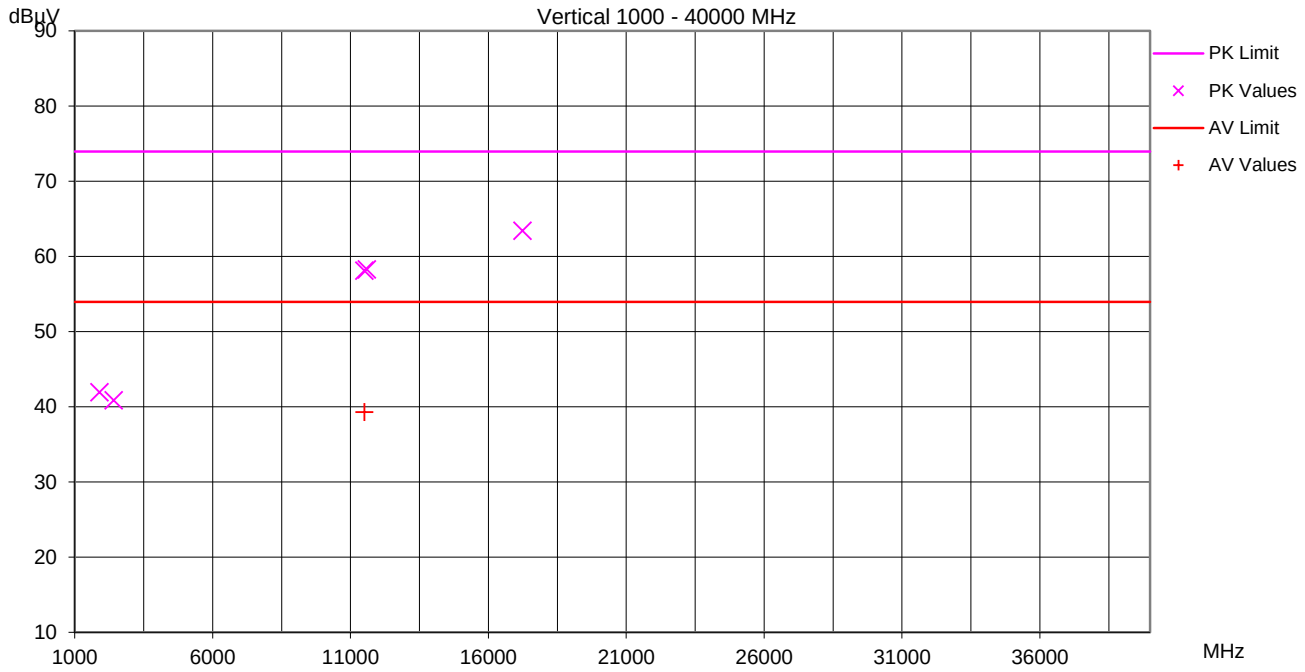
Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant B
adjustable attenuator set to 14dB
Date: 2012-02-16
Tested by: Pessinger Jürgen



Minimum margin to limit: 10,8 dB

Frequency [MHz]	Reading [dBµV] PK	Reading [dBµV] AV	Correction [dB]	Values [dBµV] PK	Values [dBµV] AV	Limit [dBµV] PK	Limit [dBµV] AV	Margin [dB] PK	Margin [dB] AV
11510,000	51,5	31,0	8,8	60,2	39,7	74,0	54,0	13,7	14,2
11658,000	48,2		9,0	57,2		74,0	54,0	16,8	
17097,000	49,6		13,6	63,2		74,0	54,0	10,8	

Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant B
adjustable attenuator set to 14dB
Date: 2012-02-16
Tested by: Pessinger Jürgen



Minimum margin to limit: 10,6 dB

Frequency [MHz]	Reading [dBµV] PK	Reading [dBµV] AV	Correction [dB]	Values [dBµV] PK	Values [dBµV] AV	Limit [dBµV] PK	Limit [dBµV] AV	Margin [dB] PK	Margin [dB] AV
1897,000	49,0		-7,1	41,9		74,0	54,0	32,1	
2417,000	47,2		-6,4	40,8		74,0	54,0	33,1	
11511,000	49,3	30,5	8,8	58,1	39,3	74,0	54,0	15,9	14,7
11595,000	49,3		8,9	58,2		74,0	54,0	15,7	
17244,000	48,7		14,7	63,4		74,0	54,0	10,6	

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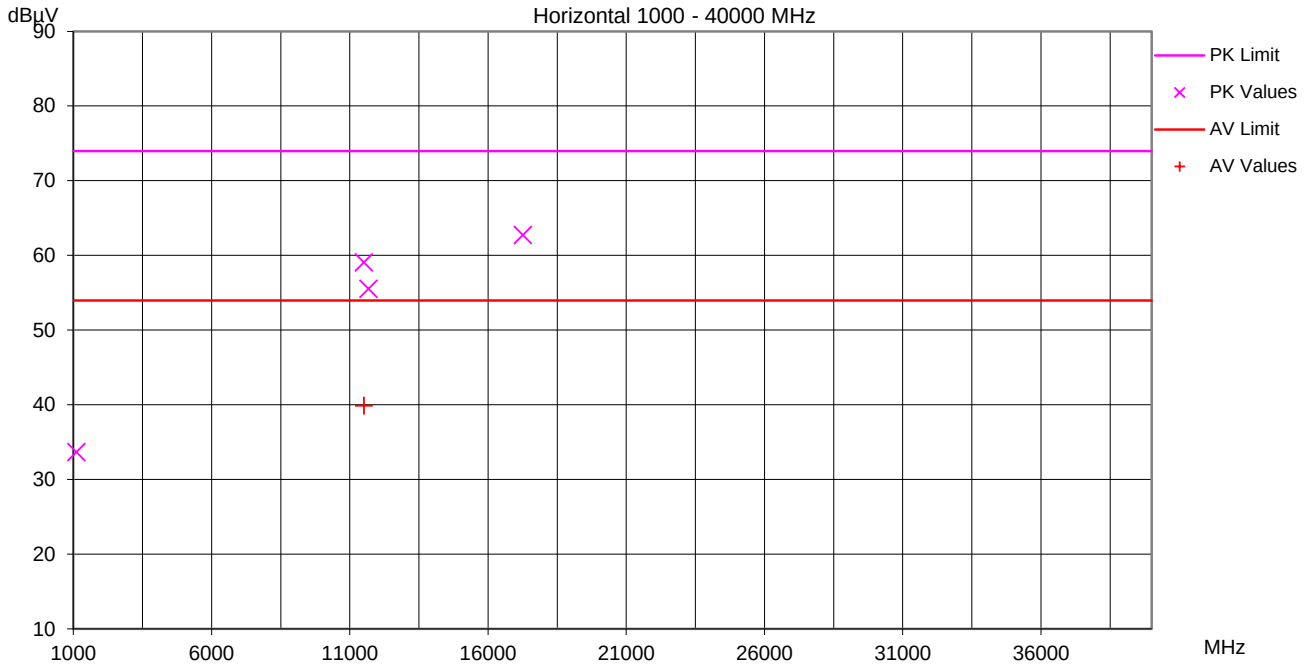
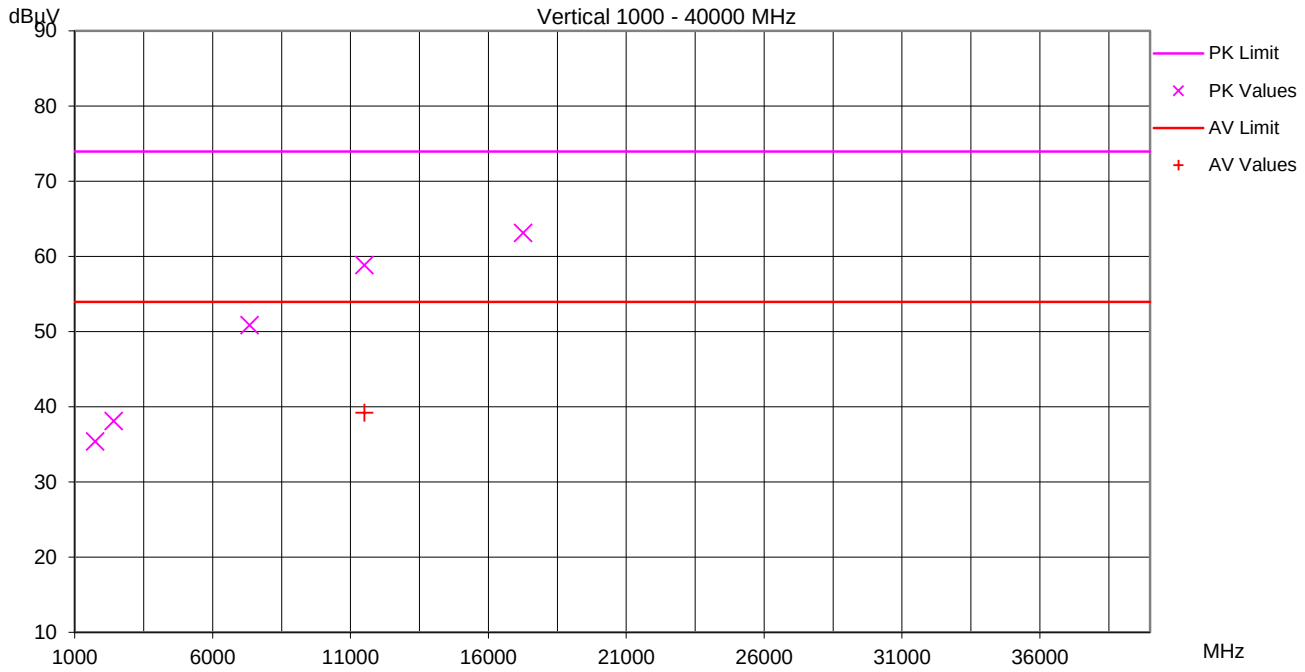
Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant C
adjustable attenuator set to 14dB
Date: 2012-02-16
Tested by: Pessinger Jürgen



Minimum margin to limit: 11,3 dB

Frequency [MHz]	Reading [dBµV] PK	Reading [dBµV] AV	Correction [dB]	Values [dBµV] PK	Values [dBµV] AV	Limit [dBµV] PK	Limit [dBµV] AV	Margin [dB] PK	Margin [dB] AV
1117,000	44,9		-11,2	33,6		74,0	54,0	40,3	
11510,000	50,3	31,1	8,8	59,0	39,9	74,0	54,0	14,9	14,1
11679,000	46,5		9,0	55,5		74,0	54,0	18,4	
17260,000	47,8		14,9	62,7		74,0	54,0	11,3	

Operation mode: test software active, CH27 (5755MHz) adjusted Result: PASS
Remarks: Host Variant C
adjustable attenuator set to 14dB
Date: 2012-02-16
Tested by: Pessinger Jürgen



Minimum margin to limit: 10,9 dB

Frequency [MHz]	Reading [dBµV] PK	Reading [dBµV] AV	Correction [dB]	Values [dBµV] PK	Values [dBµV] AV	Limit [dBµV] PK	Limit [dBµV] AV	Margin [dB] PK	Margin [dB] AV
1741,000	43,2		-7,8	35,4		74,0	54,0	38,6	
2417,000	44,5		-6,4	38,1		74,0	54,0	35,9	
7344,000	45,7		5,2	50,9		74,0	54,0	23,1	
11511,000	50,0	30,4	8,8	58,8	39,2	74,0	54,0	15,2	14,8
17260,000	48,2		14,9	63,1		74,0	54,0	10,9	

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6.3 Bandedges

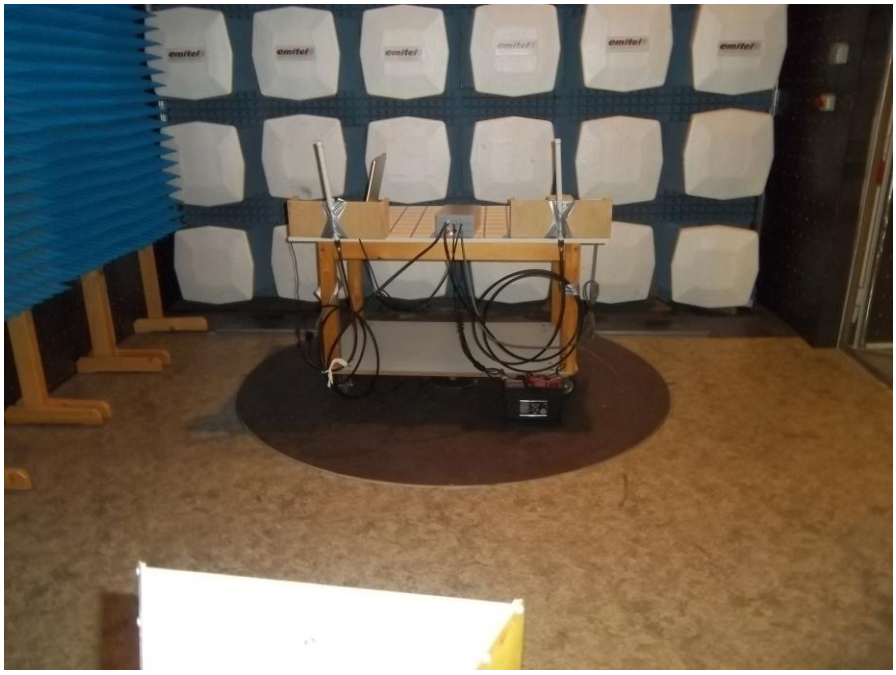
For test instruments and accessories used see section 7 Part **SER 3**.

6.3.1 Description of the test location

Test location: Anechoic Chamber A4

Test distance: 3 metres

6.3.2 Photo documentation of the test set-up



6.3.3 Test specification

Environmental conditions: Temperature: 23 ° C Humidity: 36 % Atmospheric pressure: 98 kPa

Frequency range: 5725MHz – 5875MHz

The test was carried out in the following operation mode(s):
- test software active, CH00 (5871MHz) adjusted
- **Fehler! Verweisquelle konnte nicht gefunden werden.**

6.3.4 Test result

The requirements are **FULFILLED.**

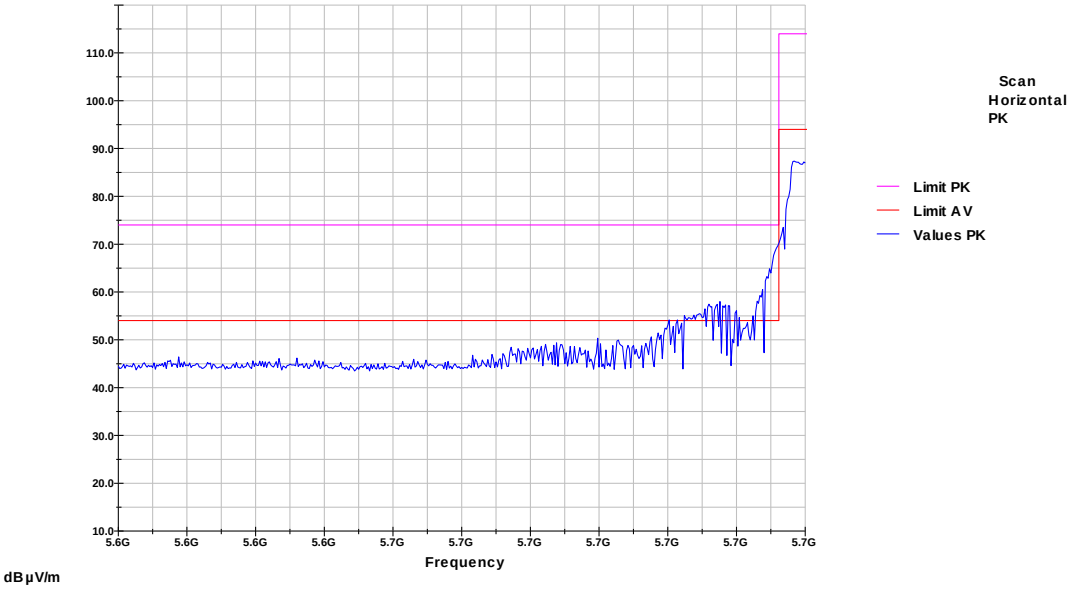
Remarks: Test was performed with 3 different host variants.

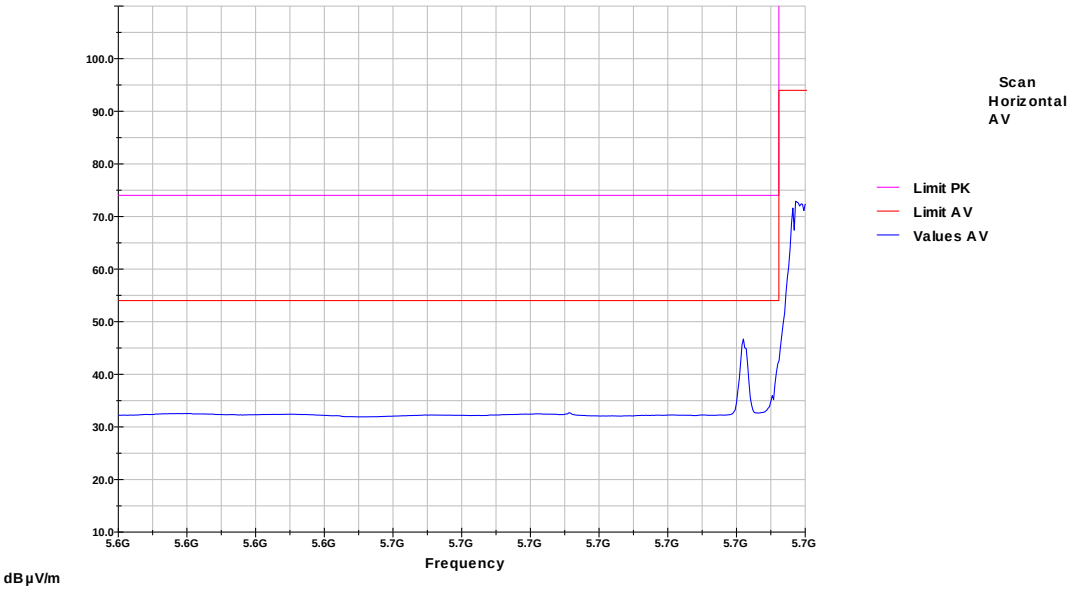
The testing was performed in vertical polarization only, pretests show the highest emission occurs in vertical polarization.

6.3.5 Test protocol

Operation mode:	**Fehler! Verweisquelle konnte nicht gefunden werden.**	Result: PASS
Remarks:	Host Variant A adjustable attenuator set to 14dB	
Date:	2012-02-14	
Tested by:	Pessinger Jürgen	

Band edge low





Operation mode: **Fehler! Verweisquelle konnte nicht gefunden werden.**

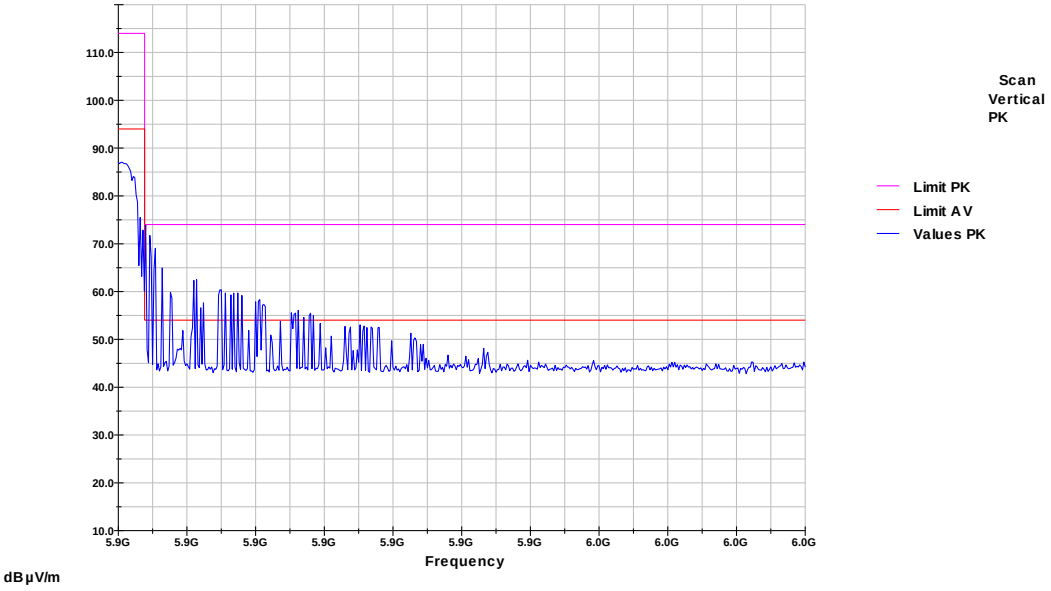
Result: PASS

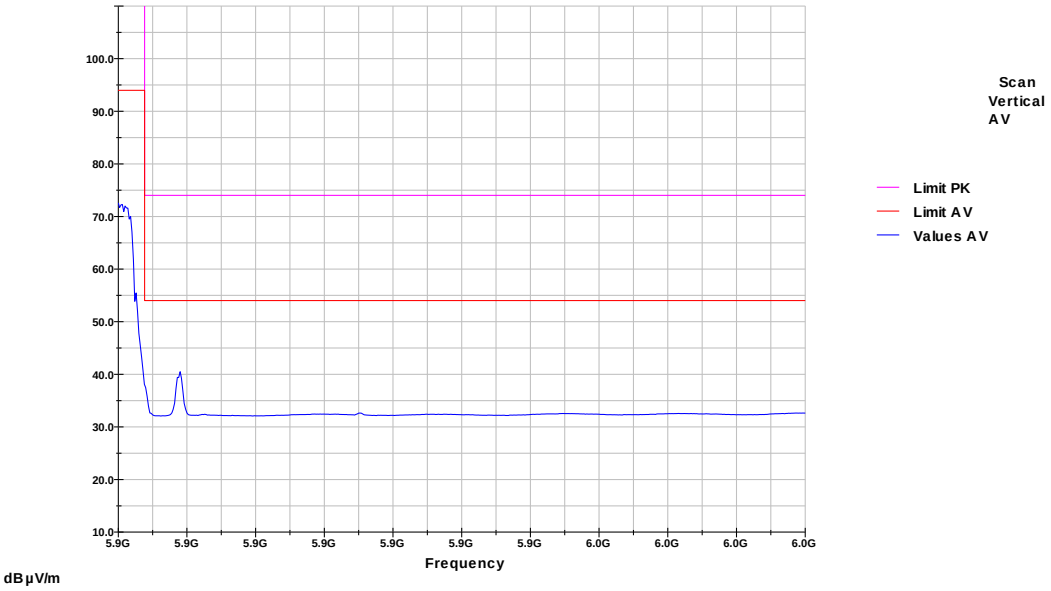
Remarks: Host Variant A
adjustable attenuator set to 14dB

Date: 2012-02-14

Tested by: Pessinger Jürgen

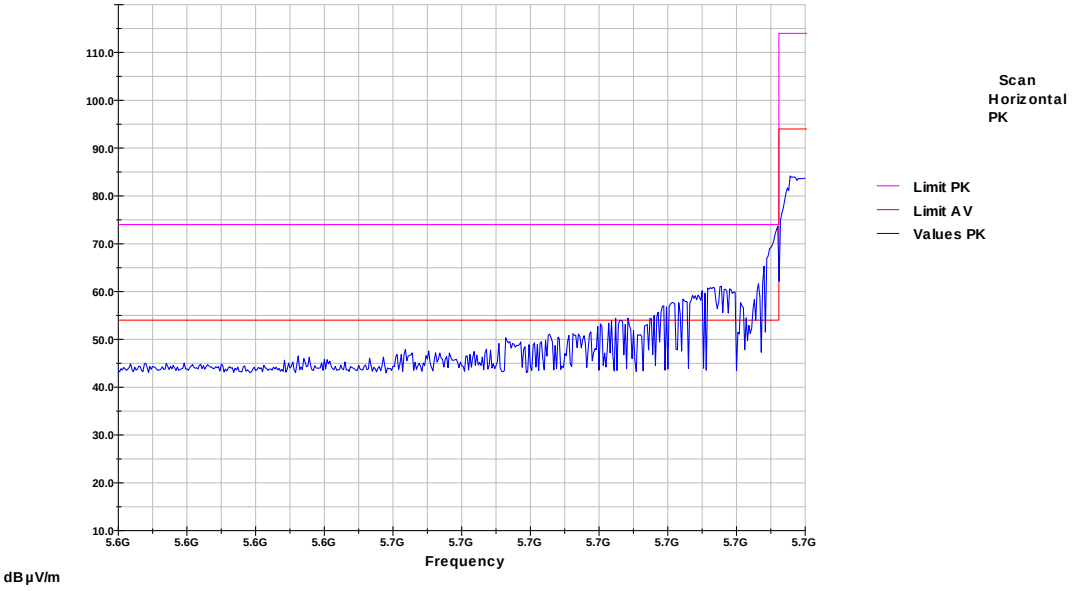
Band edge high

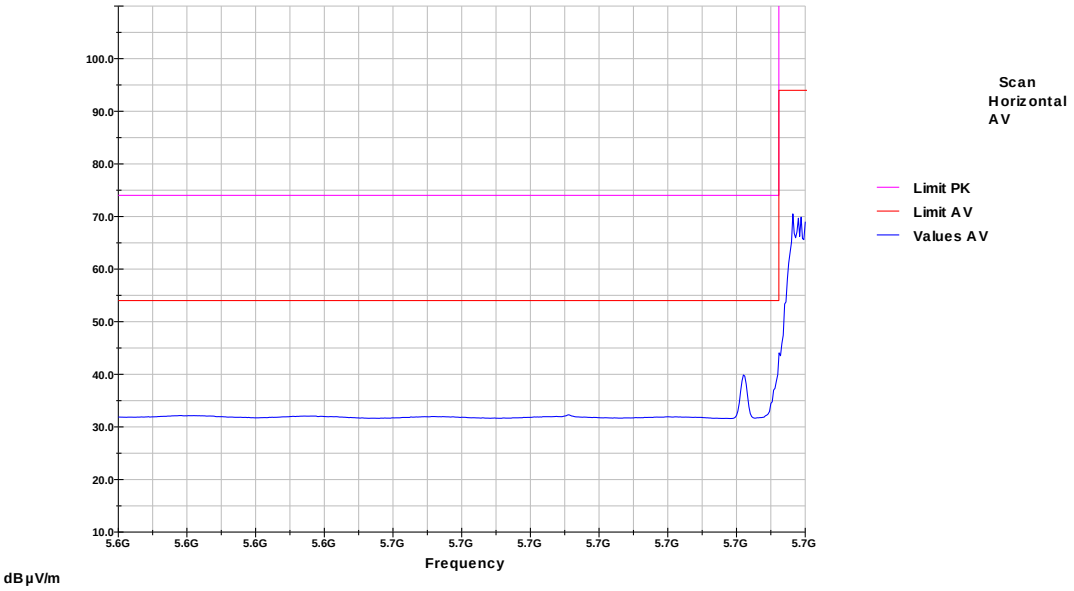




Operation mode:	**Fehler! Verweisquelle konnte nicht gefunden werden.**	Result: PASS
Remarks:	Host Variant B adjustable attenuator set to 14dB	
Date:	2012-05-29	
Tested by:	Pessinger Jürgen	

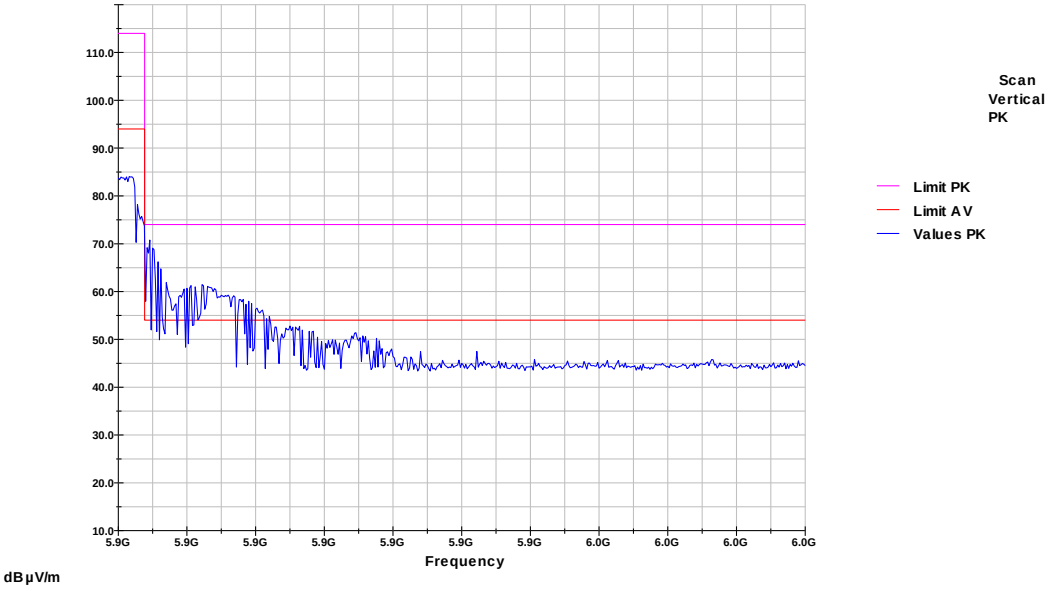
Band edge low

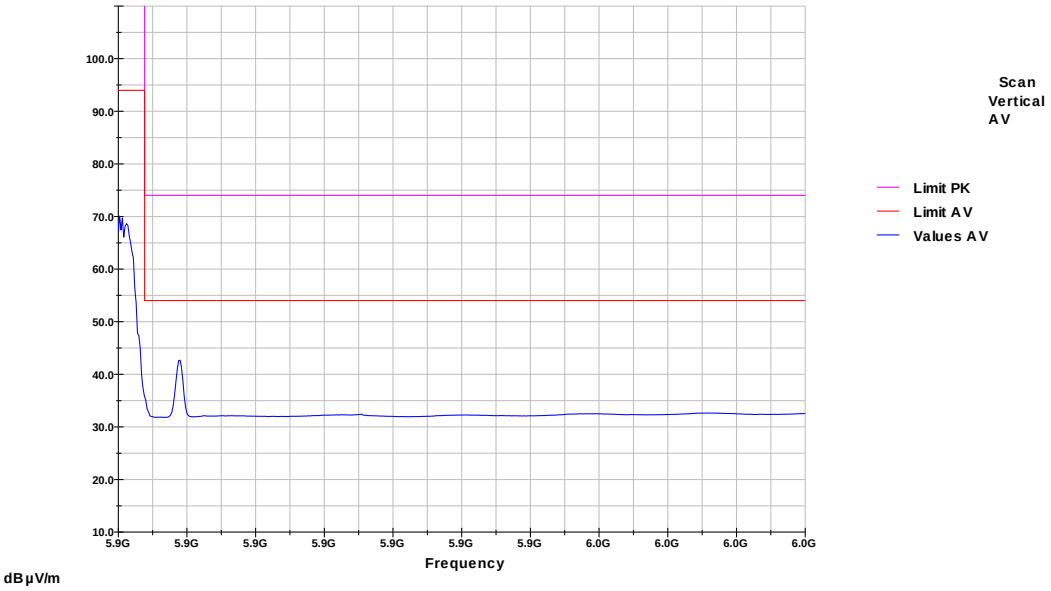




Operation mode:	**Fehler! Verweisquelle konnte nicht gefunden werden.**	Result: PASS
Remarks:	Host Variant B adjustable attenuator set to 14dB	
Date:	2012-05-29	
Tested by:	Pessinger Jürgen	

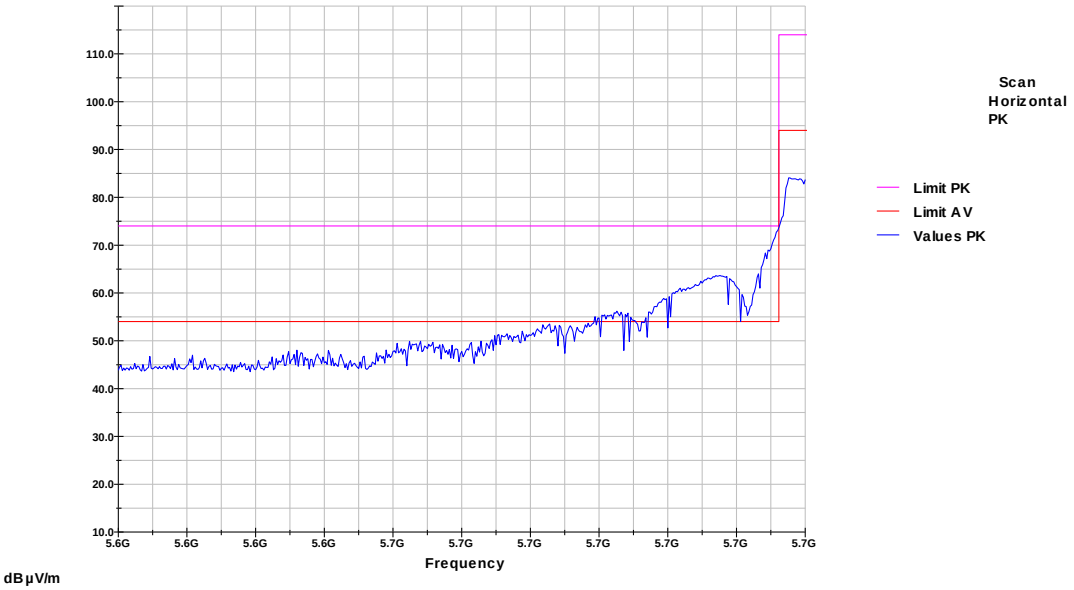
Band edge high

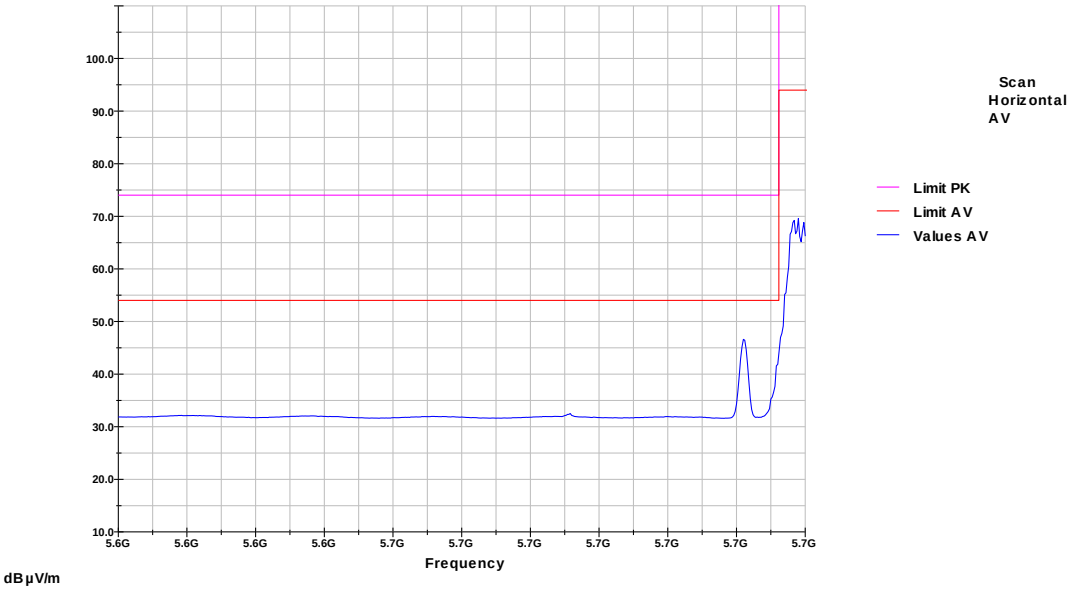




Operation mode:	**Fehler! Verweisquelle konnte nicht gefunden werden.**	Result: PASS
Remarks:	Host Variant C adjustable attenuator set to 14dB	
Date:	2012-05-29	
Tested by:	Pessinger Jürgen	

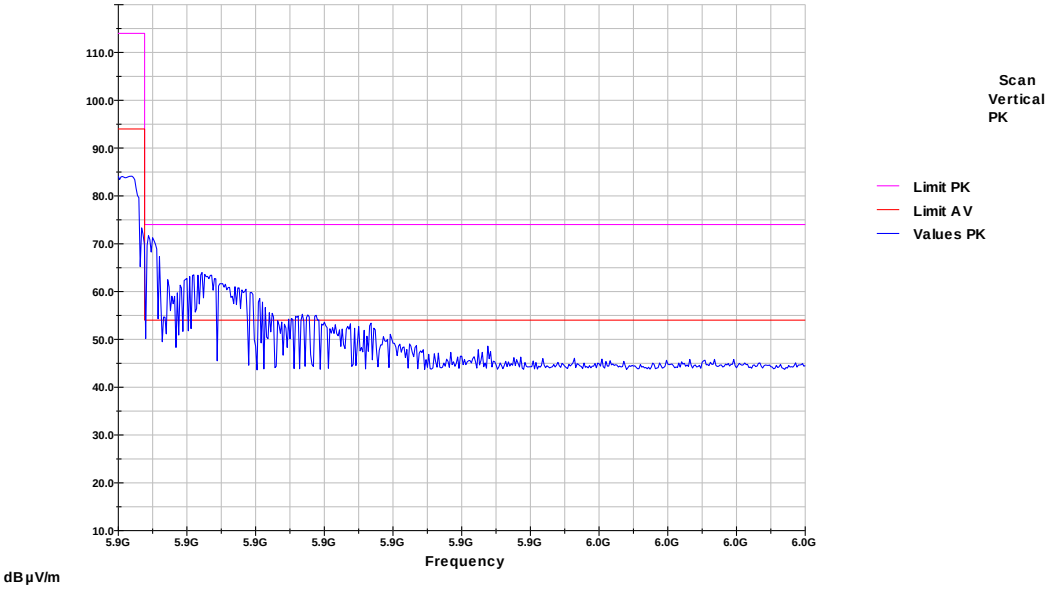
Band edge low

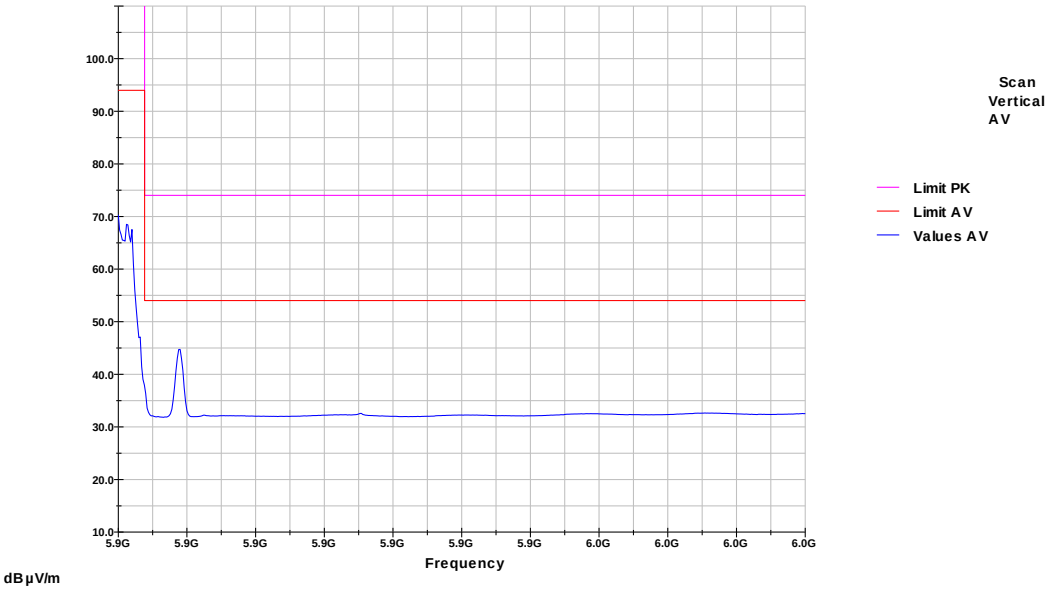




Operation mode:	**Fehler! Verweisquelle konnte nicht gefunden werden.**	Result: PASS
Remarks:	Host Variant C adjustable attenuator set to 14dB	
Date:	2012-05-29	
Tested by:	Pessinger Jürgen	

Band edge high





7 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used, in addition to the test accessories, are calibrated and verified regularly.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
SER 2	ESVP	01-02/03-01-002	27/02/2013	27/02/2012		
	HM 5012	01-02/11-01-001				
	VULB 9163	01-02/24-01-006	09/11/2014	09/11/2011		
	HCC	01-02/50-01-021				
	N-40000-N	01-02/50-05-043				
	N-30000-N	01-02/50-05-044				
	Tile Version 3.4K20	01-02/68-09-001				
	emitel ESW V31	01-02/68-09-002				
	RST 070	01-05/60-02-003				
SER 3	AMF-40-005-180-24-10P	01-02/17-02-009			12/12/2012	12/12/2011
	HCC	01-02/50-01-021				
	FA210A0020000000	01-02/50-06-065				
	FA210A0050000000	01-02/50-10-005				
	Tile Version 3.4K20	01-02/68-09-001				
	emitel ESW V31	01-02/68-09-002				
	RST 070	01-05/60-02-003				
	FSP 40	02-02/11-11-001	02/09/2012	02/09/2011		
	3117	02-02/24-05-009	16/02/2013	16/02/2012		
	R1 _ 18 - 40 GHz	02-02/30-09-002			19/12/2012	19/12/2011