

# Test Report

## T-0329-4305-01 JP

Type / Model Name: BSB

FCC ID W5IBSB

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

Applicant: Symeo GmbH

## EMC -- TEST REPORT

Test Report No. : <b>T-0329-4305-01 JP</b>	2012-04-04 Date of issue
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Type / Model Name : BSB

FCC ID : W5IBSB

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:	<b>POSITIVE</b>
---	-----------------



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.

File No. **T-0329-4305-01 JP**

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## **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 Commission (FCC)

FCC Part 15 Subpart B  
October 2010

Code of Regulations Part 15 (Radio Frequency Devices), Subpart B  
(Unintentional Radiators) of the Federal Communications Commission  
(FCC)

Applied Paragraphs: §15.107, §15.109

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

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## **2 OVERVIEW TEST RESULT**

Performed test(s)	Result		
	Passed	Failed	Not performed
Conducted disturbance FCC Rule Part 15.107a	X		
Radiated disturbance (electric field) FCC Rule Part 15.109a	X		

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### 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 contains radio modules with FCC ID: W5IPLB000998 and FCC ID: OUR-XBEE (only variant B). These modules are not part of this testreport.

The EuT can be configured with several modules. Three Variants with different configurations were tested to ensure that each possible module was tested at least once.

#### 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 : 2012-02-28

Testing concluded on : 2012-03-23

Checked by:

Tested by:

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Wolfgang Straubinger

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Jürgen Pessinger

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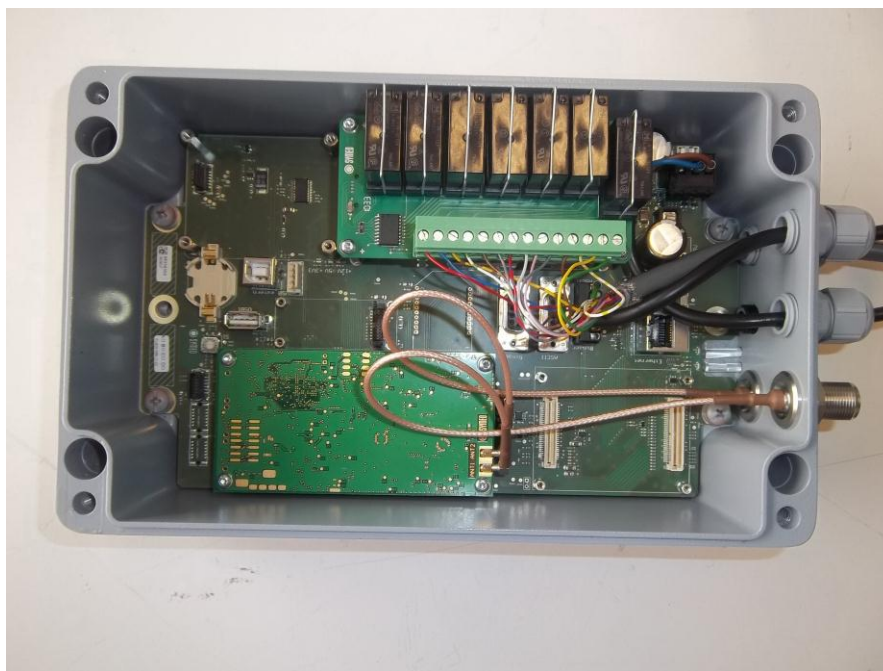
## 4 EQUIPMENT UNDER TEST

### 4.1 Photo documentation of the EuT

Variant A



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File No. **T-0329-4305-01 JP**

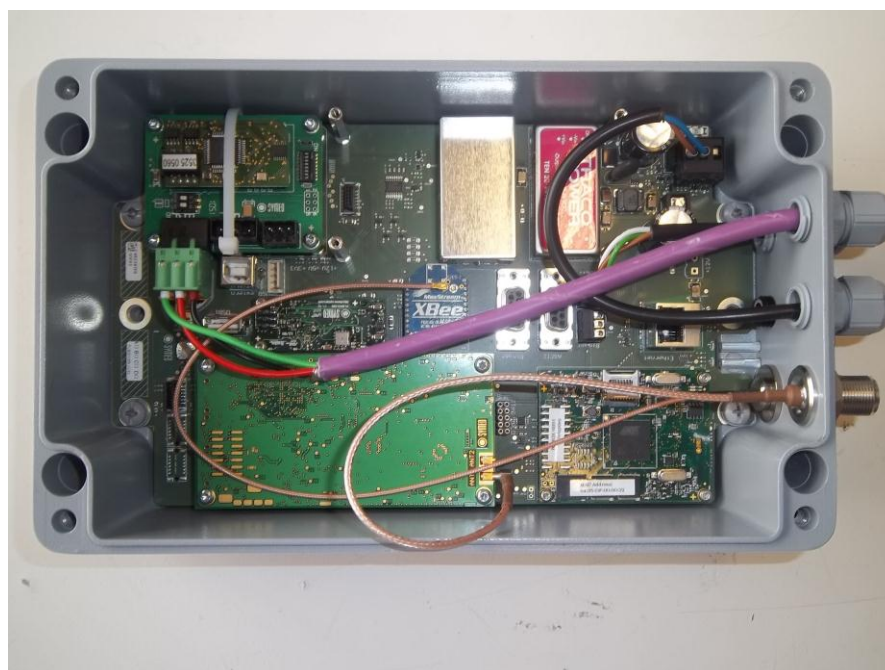


Variant B



File No. **T-0329-4305-01 JP**

emitel AG, Ohmstrasse 1, 94342 STRASSKIRCHEN, DEUTSCHLAND Tel. / Phone: +49 (0) 94 24 94 82-0 Fax: +49 (0) 94 24 94 82-640  
emG\_F510\_02\_Rev9\_0 Freigabedatum / Date of release: 2012-02-07; Autor / Author: Martin Stern  
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Variant C



File No. **T-0329-4305-01 JP**

emitel AG, Ohmstrasse 1, 94342 STRASSKIRCHEN, DEUTSCHLAND Tel. / Phone: +49 (0) 94 24 94 82-0 Fax: +49 (0) 94 24 94 82-640  
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## 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 local positioning radar for contactless, real time determination of distances and positions. It is possible to equip the EuT with different additional modules.

Configuration overview of the tested variants

	Variant A	Variant B	Variant C
Module W5IPLB000998	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: 3  
Serial number: none

Dimensions: L: 22cm W: 16cm H: 9cm

### EuT operation mode:

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

- Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active

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## 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Power supply or battery
Antenna cable 1	4,0	1-wire	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Antenna 2
Antenna cable 2 <sup>2</sup>	4,0	1-wire	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Antenna 1
RS232 <sup>3</sup>	2,1	3-wires	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Laptop
Relais board <sup>23</sup>	3,1	16-wires	<input checked="" type="checkbox"/>	<input type="checkbox"/>	None
Zigbee Antenna Port <sup>13</sup>	0	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	50Ohm Termination
Profi bus <sup>13</sup>	20,0	3-wires	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PLC
RJ45 <sup>12</sup>	3,2	8-wires	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Laptop

<sup>1</sup>not for variant A; <sup>2</sup>not for variant B; <sup>3</sup>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

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## **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.

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## 5.1 Measurement Protocol for FCC, VCCI and AUSTEL

### 5.1.1 GENERAL INFORMATION

#### 5.1.1.1 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.

#### 5.1.1.2 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.

#### 5.1.1.3 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 its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum disturbances from the unit.

### 5.1.2 CONDUCTED DISTURBANCE

The final level, expressed in dB $\mu$ V, 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 dB $\mu$ V and  $\mu$ V, the following conversions apply:

$$\text{dB}\mu\text{V} = 20(\log \mu\text{V})$$

$$\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$$

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### 5.1.3 RADIATED DISTURBANCE

The final level, expressed in dB $\mu$ V/m, is arrived at by taking the reading from the EMI receiver (Level dB $\mu$ V) 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	Level	+	Factor	=	Final	-	Limit	=	CISPR B
(MHz)	(dB $\mu$ V)		(dB)		(dB $\mu$ V/m)		(dB $\mu$ V/m)		(dB)
37.19	10.2	+	12.0	=	22.2	-	40.0	=	-17.8

### 5.1.4 DETAILS OF TEST PROCEDURES

#### 5.1.4.1 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."

#### 5.1.4.2 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 50 $\Omega$ /50  $\mu$ H (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.

#### 5.1.4.3 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.

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## 6 TEST CONDITIONS AND RESULTS

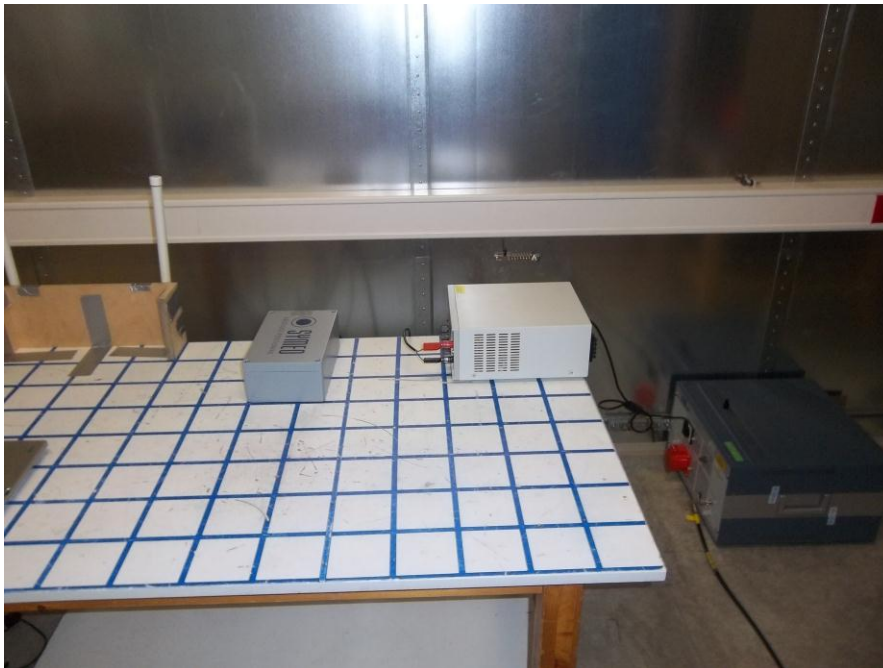
### 6.1 Conducted disturbance

For test instruments and accessories used see section 7 Part A 4.

#### 6.1.1 Description of the test location

Test location:                      Shielded Room SK4

#### 6.1.2 Photo documentation of the test set-up



#### 6.1.3 Test specification

Environmental conditions:    Temperature: 22 ° C                      Humidity: 38 %                      Atmospheric pressure: 98 kPa

Frequency range:                      0.15 MHz - 30 MHz

The test was carried out in the following operation mode(s):

- Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active

#### 6.1.4 Test result

Minimal margin to limit    0,7 dB at 14,3 MHz

The requirements are **FULFILLED**.

Remarks:                      The measurements were made at AC input port of the DC Power supply

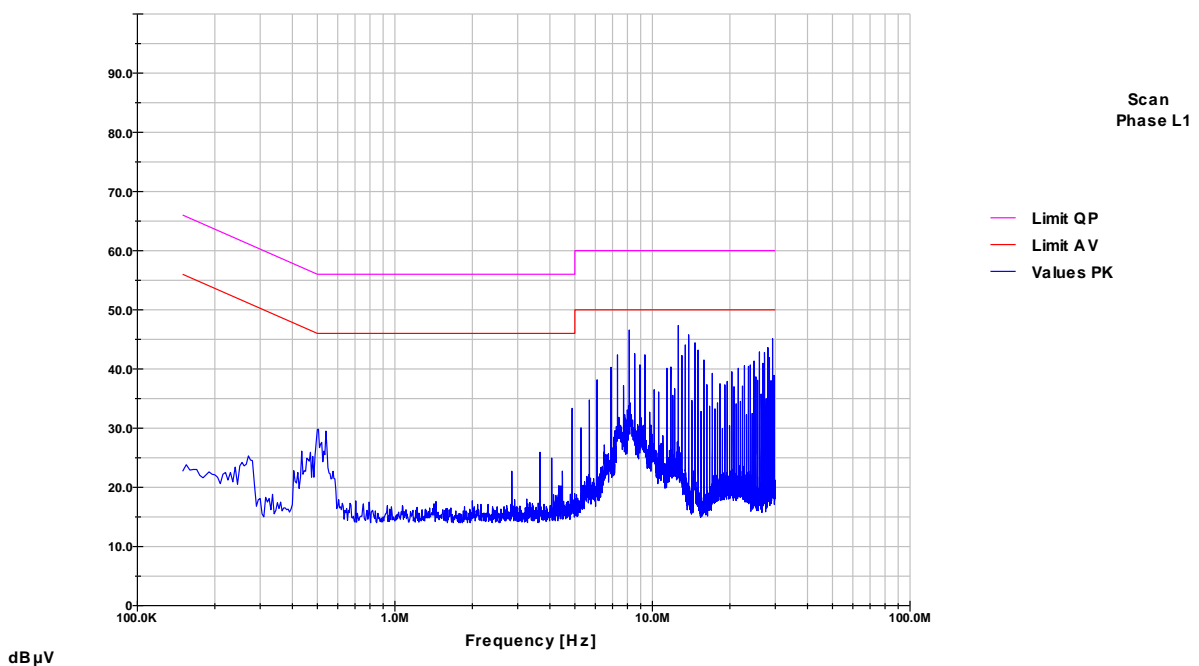
File No. **T-0329-4305-01 JP**

### 6.1.5 Test protocol

Test point: L1  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant A  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: SCAN

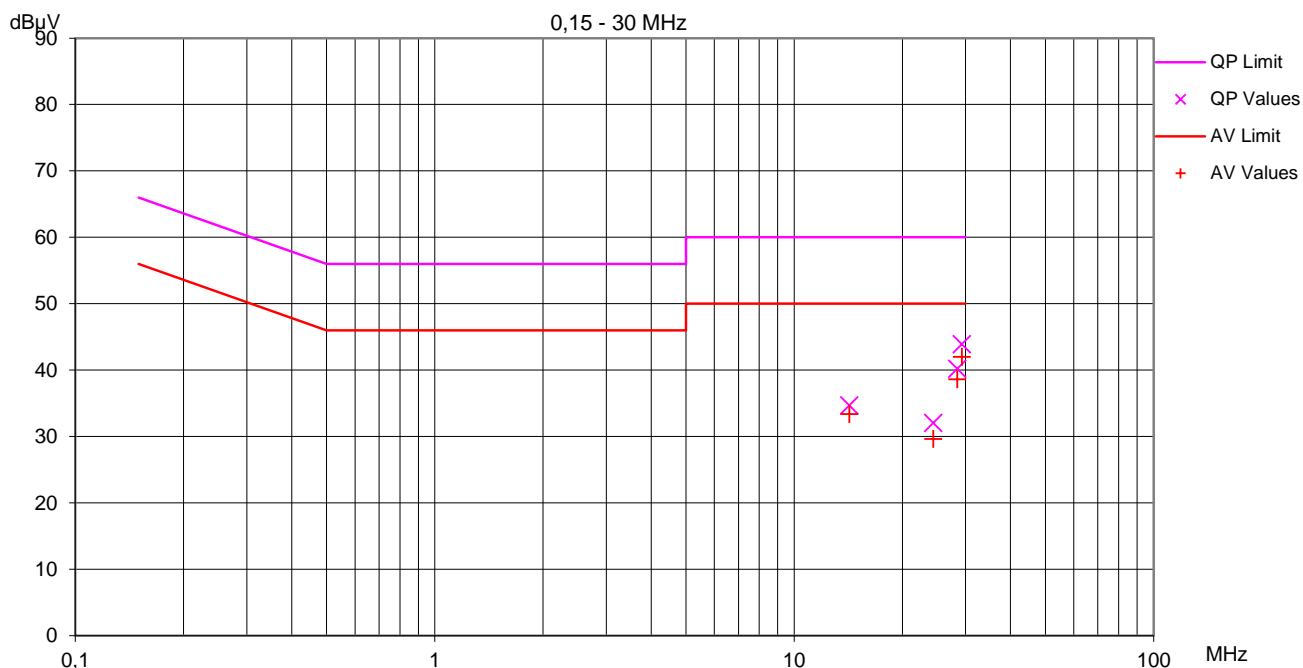
Start frequency [MHz]	Stop frequency [MHz]	Resolution bandwidth	step size	Measurement time	Detector
0.15	30	10 kHz	5 kHz	10 ms	Peak



File No. **T-0329-4305-01 JP**

Test point: L1  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant A  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: PASS



Minimum margin to limit: -8,0 dB

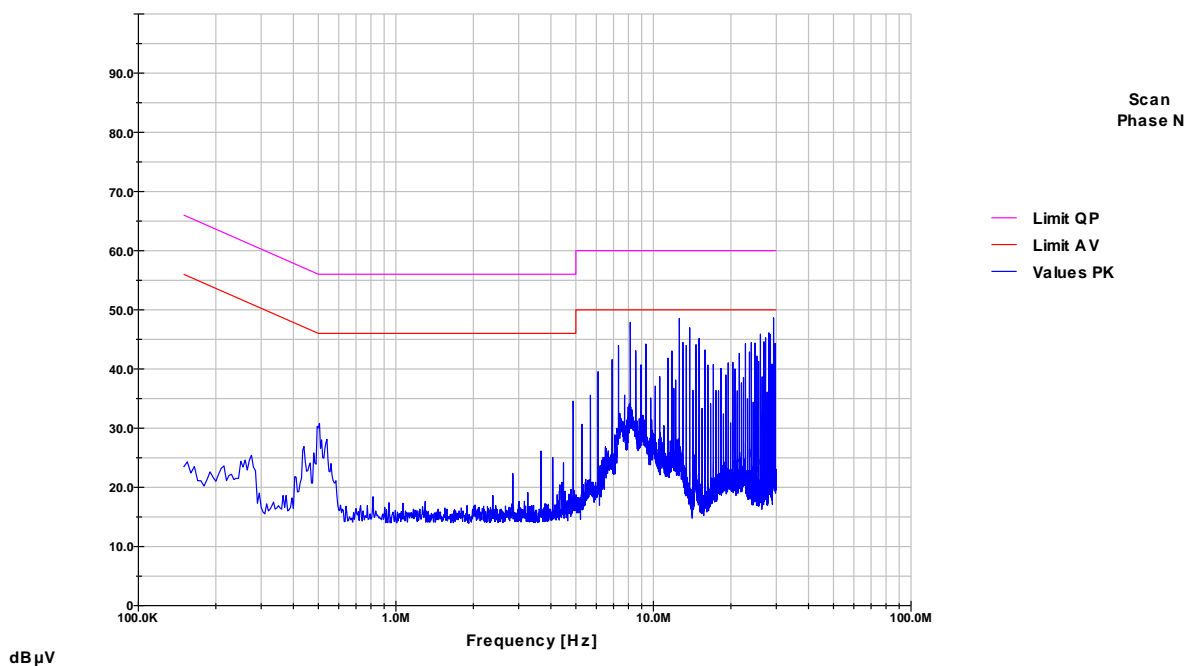
Frequency [MHz]	Reading [dBμV]		Correction [dB]	Values [dBμV]		Limit [dBμV]		Margin [dB]	
	QP	AV		QP	AV	QP	AV	QP	AV
14,239	34,3	33,0	0,4	34,7	33,4	60,0	50,0	-25,3	-16,6
24,409	31,5	29,1	0,5	32,0	29,6	60,0	50,0	-28,0	-20,4
28,478	39,6	38,0	0,6	40,2	38,6	60,0	50,0	-19,8	-11,4
29,291	43,3	41,4	0,6	43,9	42,0	60,0	50,0	-16,1	-8,0

File No. **T-0329-4305-01 JP**

Test point: N  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant A  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: SCAN

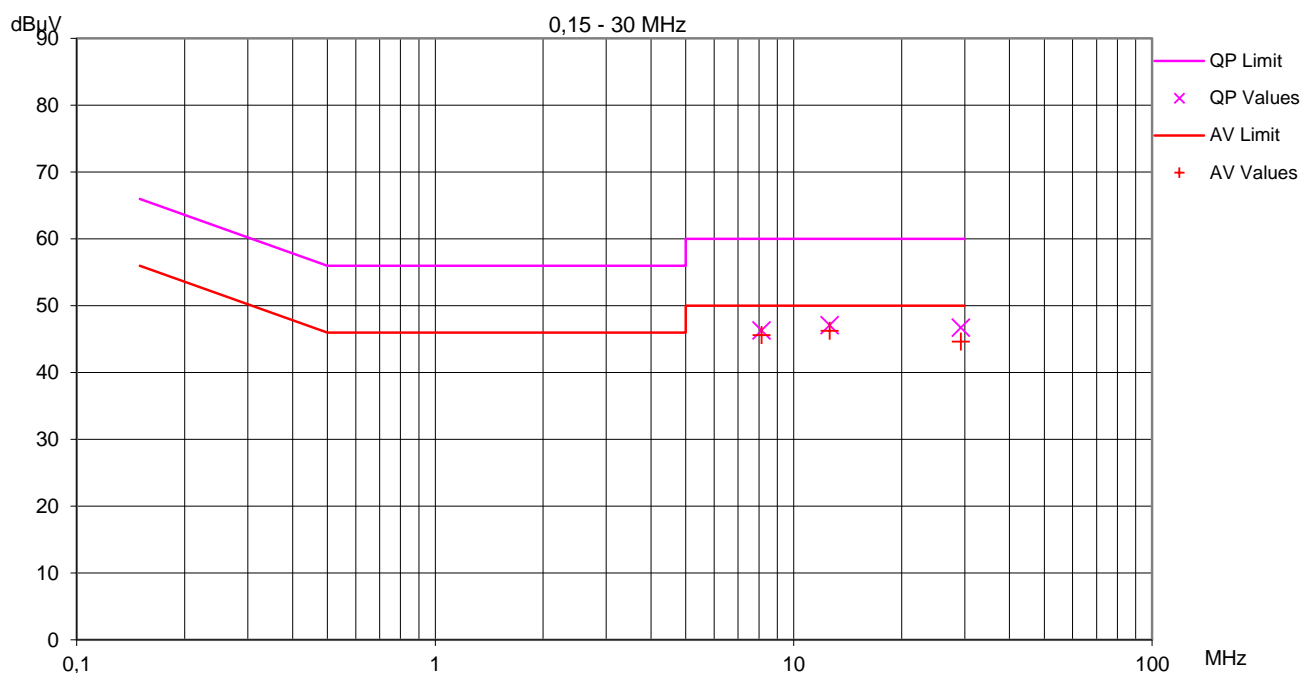
Start frequency [MHz]	Stop frequency [MHz]	Resolution bandwidth	step size	Measurement time	Detector
0.15	30	10 kHz	5 kHz	10 ms	Peak



File No. **T-0329-4305-01 JP**

Test point: N  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant A  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: PASS



Minimum margin to limit: -3,7 dB

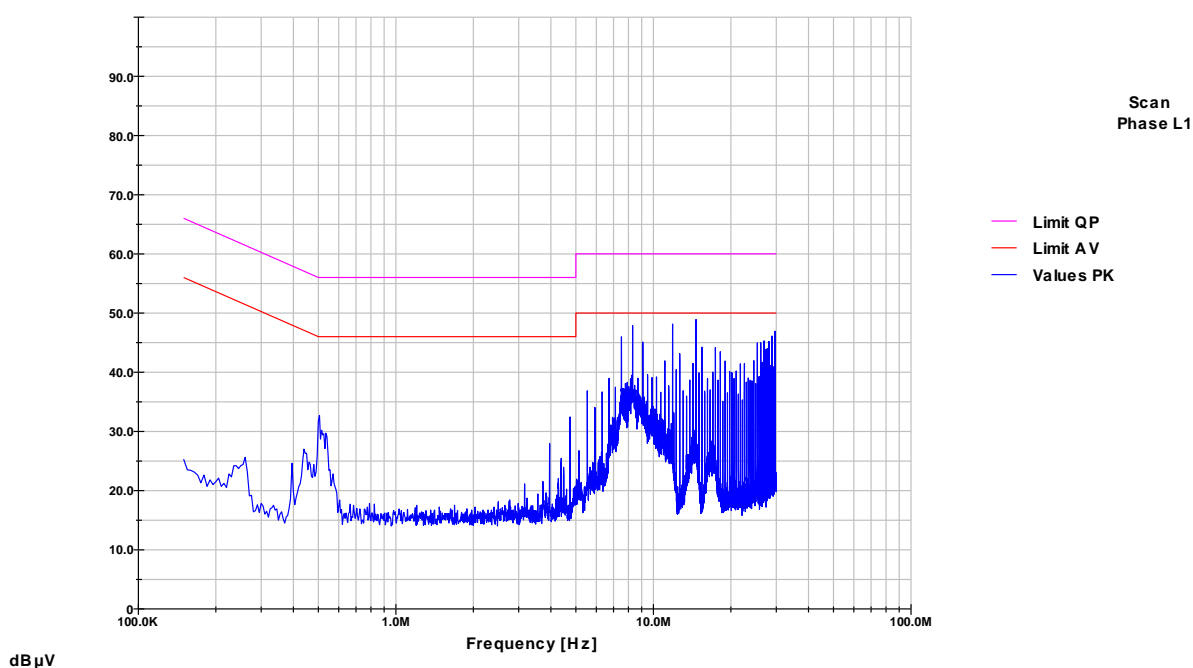
Frequency [MHz]	Reading [dBμV]		Correction [dB]	Values [dBμV]		Limit [dBμV]		Margin [dB]	
	QP	AV		QP	AV	QP	AV	QP	AV
8,137	46,0	45,3	0,3	46,3	45,6	60,0	50,0	-13,7	-4,4
12,612	46,7	45,9	0,4	47,1	46,3	60,0	50,0	-12,9	-3,7
29,291	46,1	44,0	0,6	46,7	44,6	60,0	50,0	-13,3	-5,4

File No. **T-0329-4305-01 JP**

Test point: L1  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant B  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: SCAN

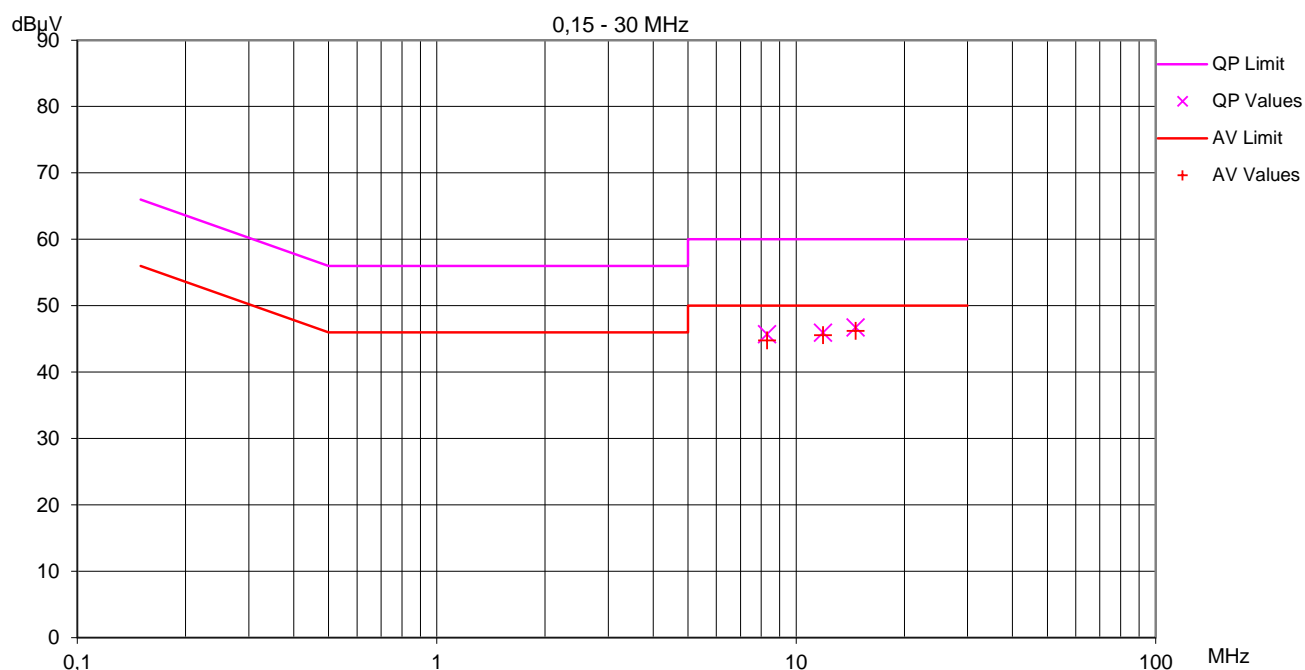
Start frequency [MHZ]	Stop frequency [MHZ]	Resolution bandwidth	step size	Measurement time	Detector
0.15	30	10 kHz	5 kHz	10 ms	Peak



File No. **T-0329-4305-01 JP**

Test point: L1  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant B  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: PASS



Minimum margin to limit: -3,8 dB

Frequency [MHz]	Reading [dBμV]		Correction [dB]	Values [dBμV]		Limit [dBμV]		Margin [dB]	
	QP	AV		QP	AV	QP	AV	QP	AV
8,313	45,4	44,5	0,3	45,7	44,8	60,0	50,0	-14,3	-5,2
11,876	45,6	45,2	0,3	45,9	45,5	60,0	50,0	-14,1	-4,5
14,647	46,3	45,8	0,4	46,7	46,2	60,0	50,0	-13,3	-3,8

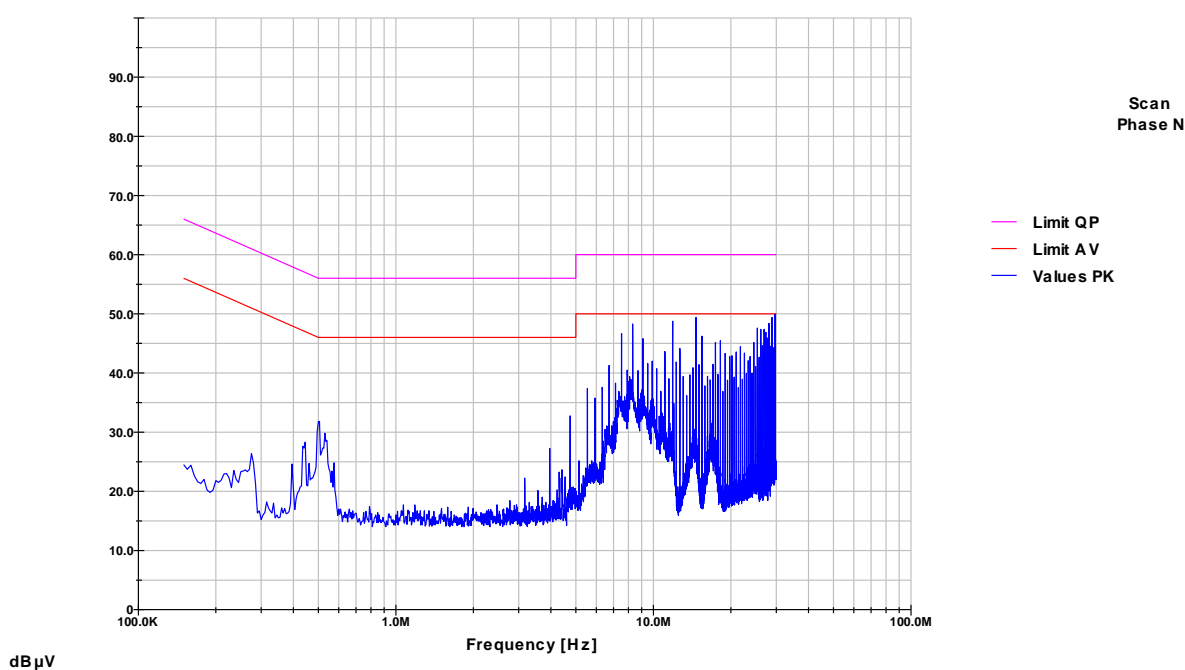
File No. T-0329-4305-01 JP



Test point: N  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant B  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: SCAN

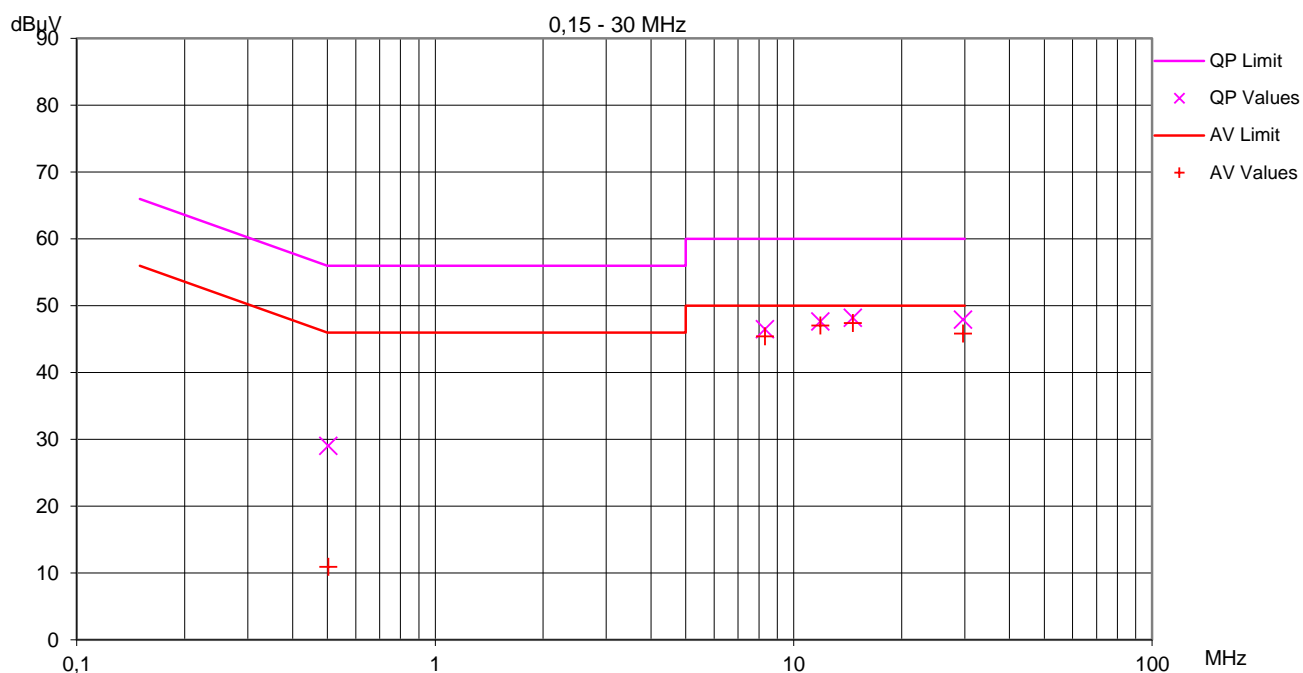
Start frequency [MHz]	Stop frequency [MHz]	Resolution bandwidth	step size	Measurement time	Detector
0.15	30	10 kHz	5 kHz	10 ms	Peak



File No. **T-0329-4305-01 JP**

Test point: N  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant B  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: PASS



Minimum margin to limit: -2,6 dB

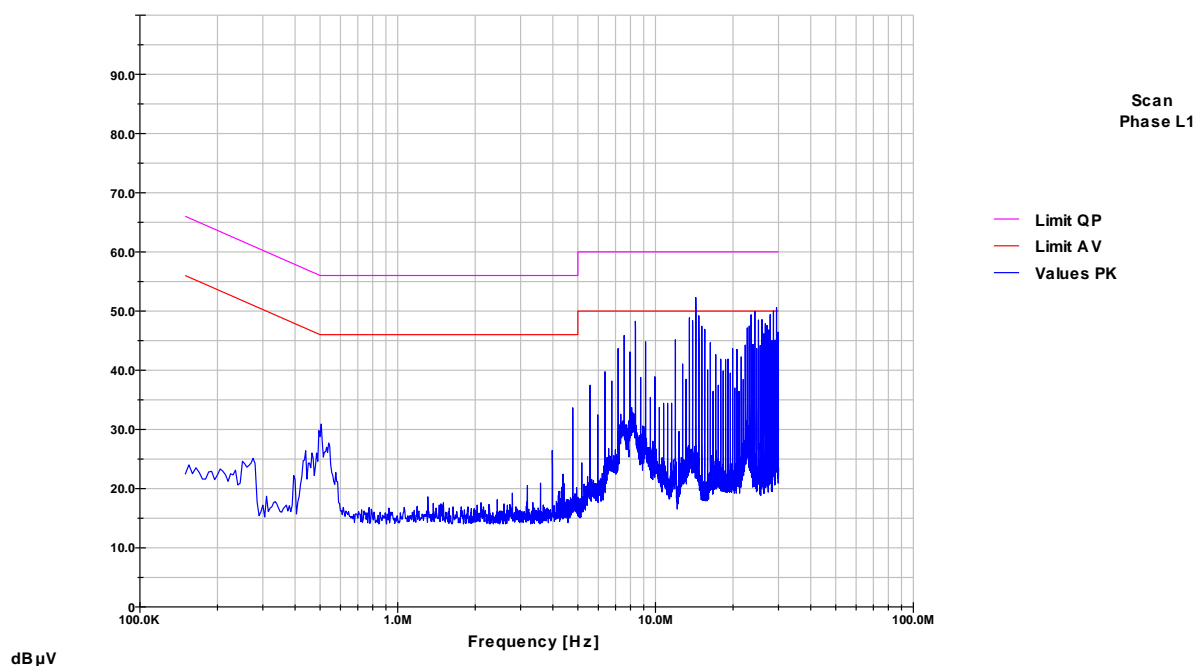
Frequency [MHz]	Reading [dBμV]		Correction [dB]	Values [dBμV]		Limit [dBμV]		Margin [dB]	
	QP	AV		QP	AV	QP	AV	QP	AV
0,504	28,8	10,7	0,2	29,0	10,9	56,0	46,0	-27,0	-35,1
8,314	46,2	45,1	0,3	46,5	45,4	60,0	50,0	-13,5	-4,6
11,875	47,3	46,7	0,3	47,6	47,0	60,0	50,0	-12,4	-3,0
14,648	47,8	47,0	0,4	48,2	47,4	60,0	50,0	-11,8	-2,6
29,690	47,3	45,2	0,6	47,9	45,8	60,0	50,0	-12,1	-4,2

File No. **T-0329-4305-01 JP**

Test point: L1  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant C  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: SCAN

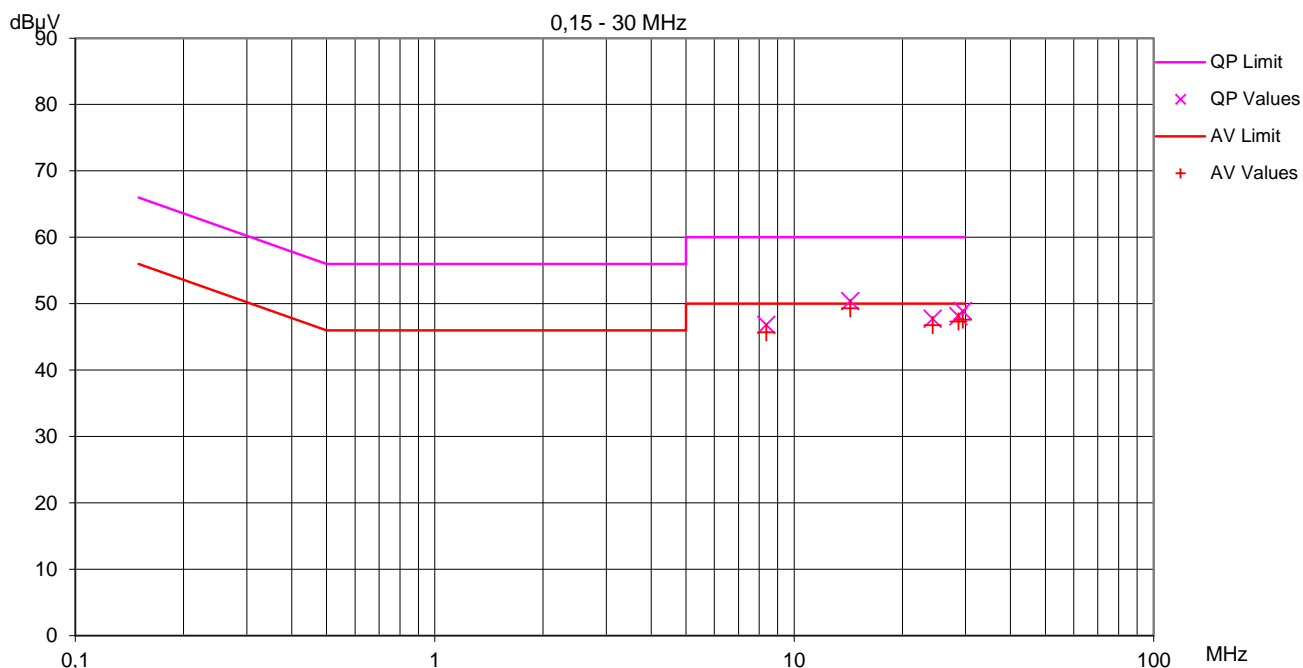
Start frequency [MHZ]	Stop frequency [MHZ]	Resolution bandwidth	step size	Measurement time	Detector
0.15	30	10 kHz	5 kHz	10 ms	Peak



File No. **T-0329-4305-01 JP**

Test point: L1  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant C  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: PASS



Minimum margin to limit: -0,7 dB

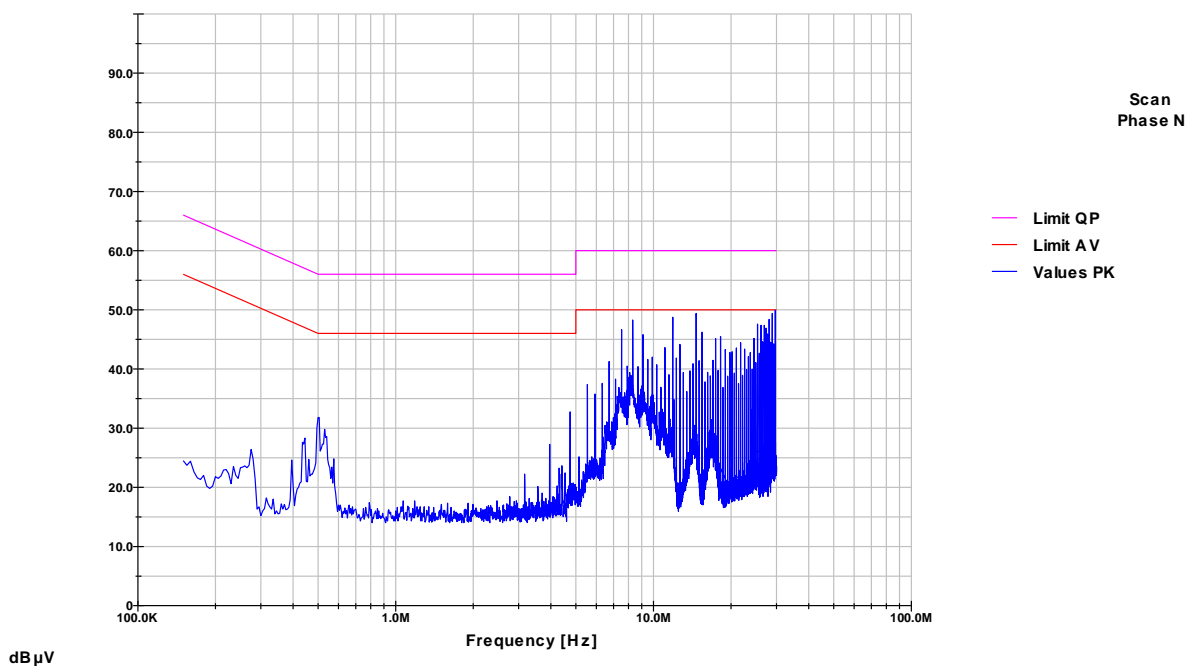
Frequency [MHz]	Reading [dBμV]		Correction [dB]	Values [dBμV]		Limit [dBμV]		Margin [dB]	
	QP	AV		QP	AV	QP	AV	QP	AV
8,363	46,5	45,4	0,3	46,8	45,7	60,0	50,0	-13,2	-4,3
14,337	50,0	48,9	0,4	50,4	49,3	60,0	50,0	-9,6	-0,7
24,292	47,2	46,2	0,5	47,7	46,7	60,0	50,0	-12,3	-3,3
28,673	47,5	46,7	0,6	48,1	47,3	60,0	50,0	-11,9	-2,7
29,468	48,3	47,0	0,6	48,9	47,6	60,0	50,0	-11,1	-2,4

File No. T-0329-4305-01 JP

Test point: N  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant C  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: SCAN

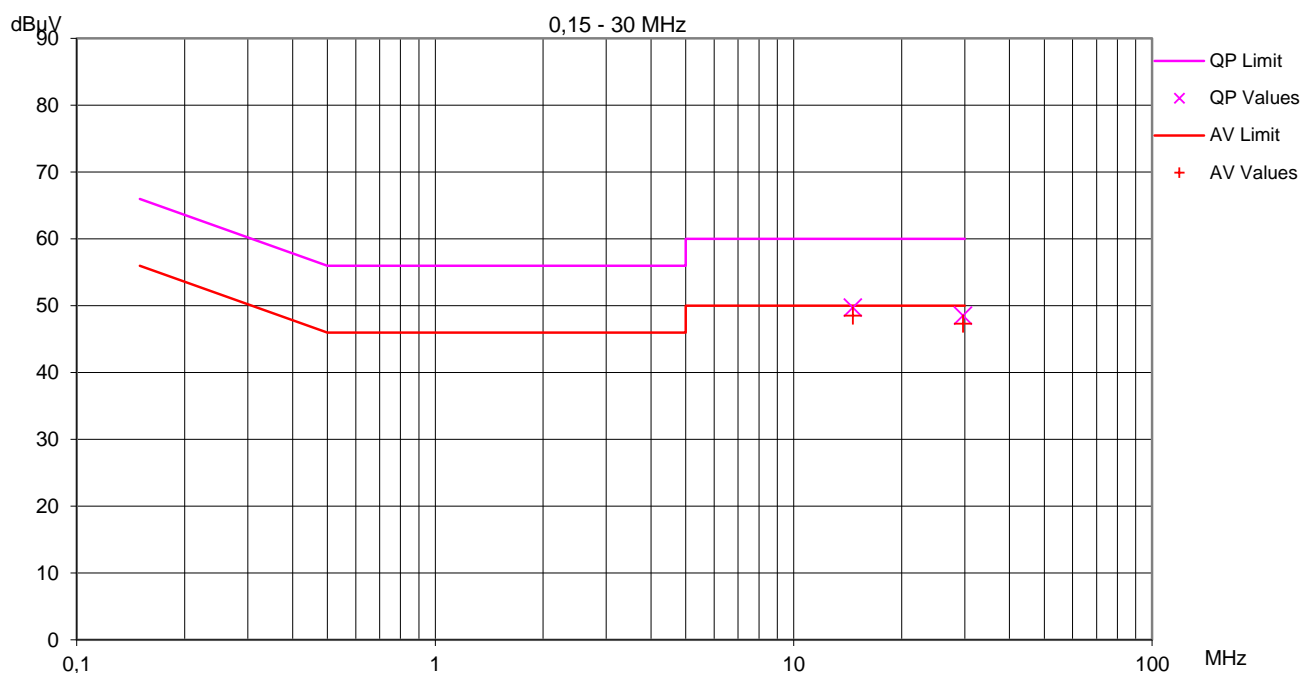
Start frequency [MHz]	Stop frequency [MHz]	Resolution bandwidth	step size	Measurement time	Detector
0.15	30	10 kHz	5 kHz	10 ms	Peak



File No. **T-0329-4305-01 JP**

Test point: N  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: The measurement was made at AC input port of the DC Power supply; Variant C  
 Date: 2012-02-28  
 Tested by: Pessinger Jürgen

Result: PASS



Minimum margin to limit: -1,5 dB

Frequency [MHz]	Reading [dBμV]		Correction [dB]	Values [dBμV]		Limit [dBμV]		Margin [dB]	
	QP	AV		QP	AV	QP	AV	QP	AV
14,645	49,3	48,1	0,4	49,7	48,5	60,0	50,0	-10,3	-1,5
29,690	47,9	46,7	0,6	48,5	47,3	60,0	50,0	-11,5	-2,7

File No. **T-0329-4305-01 JP**

## 6.2 Radiated disturbance (electric field)

For test instruments and accessories used see section 7 Part A 5.

### 6.2.1 Description of the test location

Test location: OATS 3

Test distance: 3 metres

### 6.2.2 Photo documentation of the test set-up



### 6.2.3 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):

- Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active

### 6.2.4 Test result

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

The requirements are **FULFILLED**.

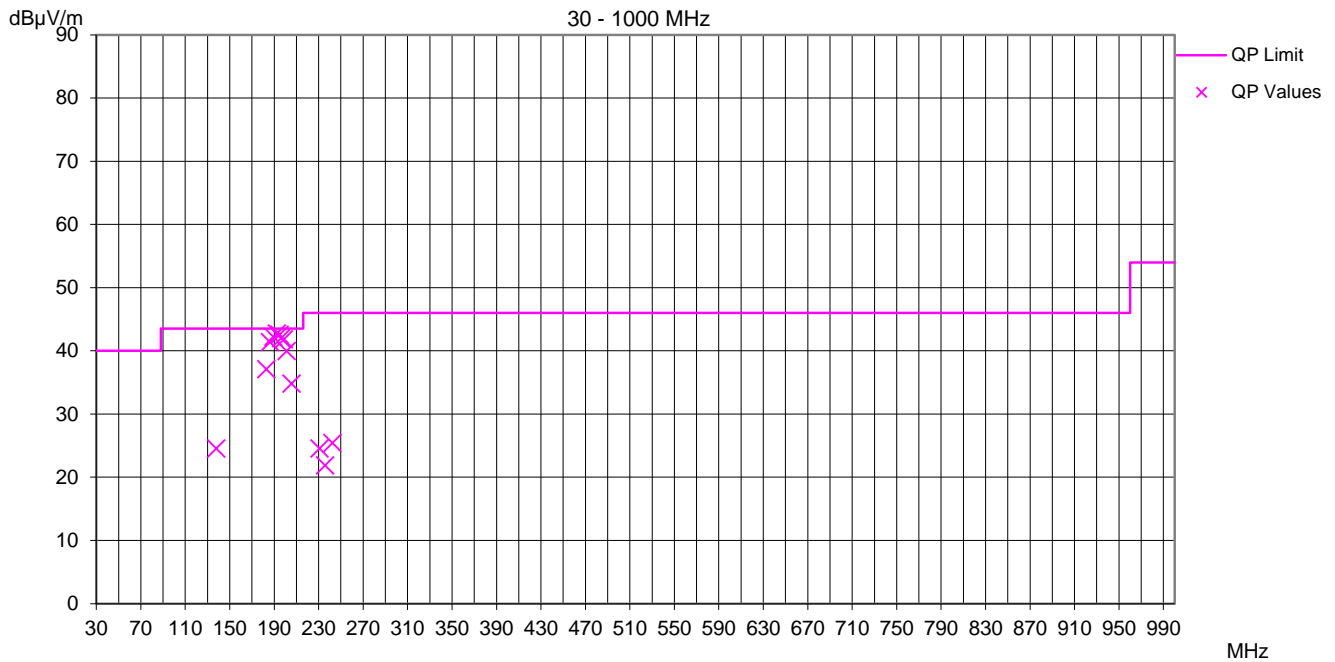
Remarks: none

File No. **T-0329-4305-01 JP**

## 6.2.5 Test protocol

Test point: Horizontal  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: Variant A  
 Date: 2012-03-23  
 Tested by: Pessinger Jürgen

Result: PASS



Minimum margin to limit: **-0,8 dB**

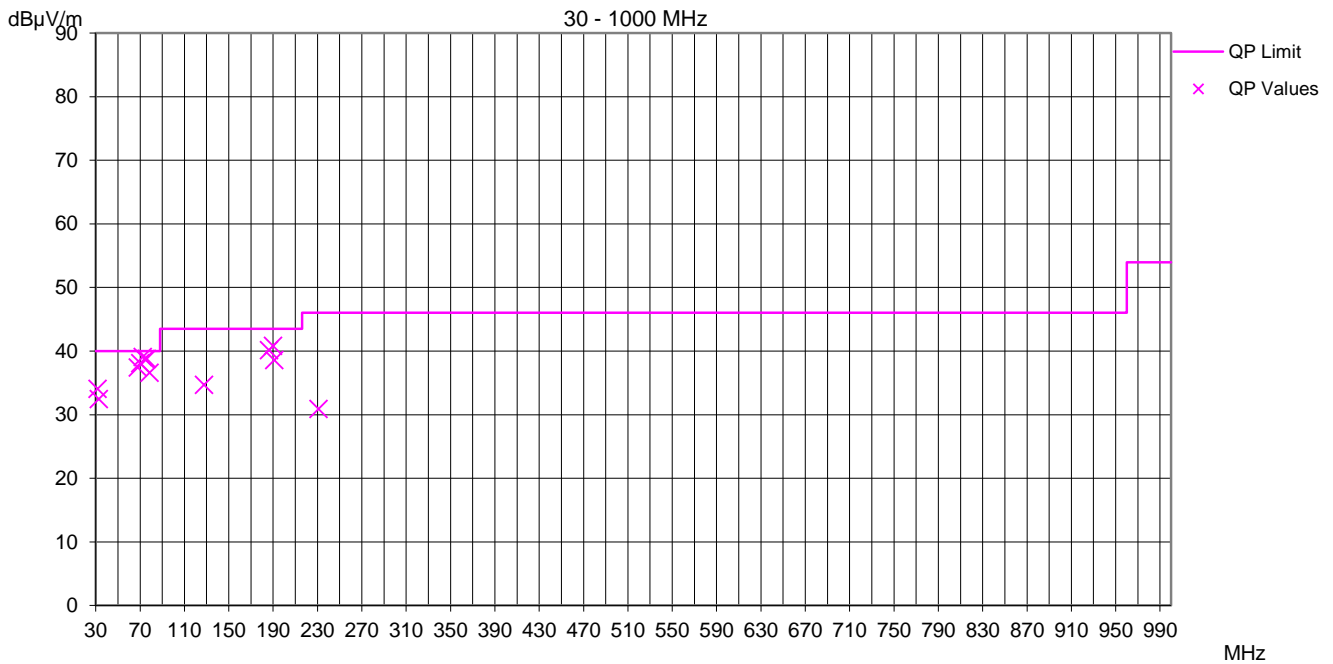
Frequency [MHz]	Reading [dBµV] QP	Correction [dB]	Values [dBµV/m] QP	Limit [dBµV/m] QP	Margin [dB] QP
137,865	13,9	10,6	24,5	43,5	-19,0
183,019	24,6	12,4	37,1	43,5	-6,5
186,274	28,6	12,7	41,3	43,5	-2,2
189,526	29,2	13,0	42,2	43,5	-1,3
192,390	29,6	13,1	42,7	43,5	-0,8
194,818	29,2	13,3	42,5	43,5	-1,0
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

File No. **T-0329-4305-01 JP**



Test point: Vertical  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: Variant A  
 Date: 2012-03-23  
 Tested by: Pessinger Jürgen

Result: PASS



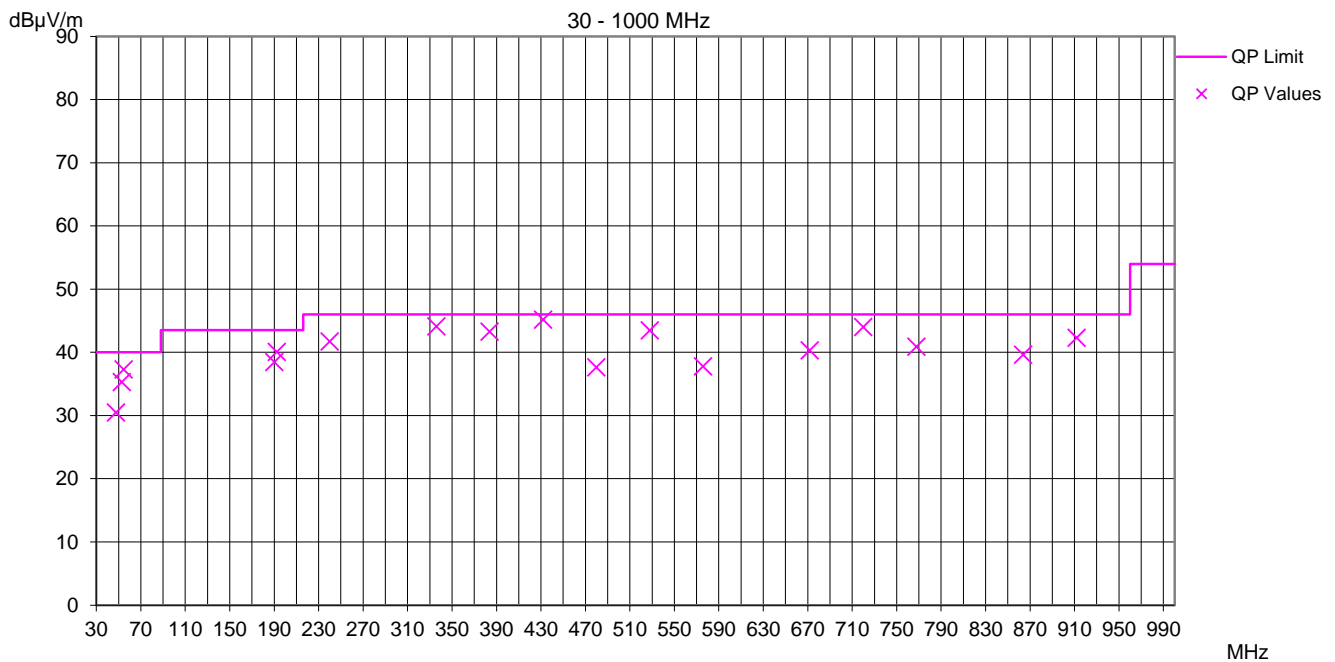
Minimum margin to limit: -1,0 dB

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

File No. T-0329-4305-01 JP

Test point: Horizontal  
 Operation mode: Testsoftware active, data transfer to connected  
 peripheral devices active, RF module(s) active  
 Remarks: Variant B  
 Date: 2012-03-23  
 Tested by: Pessinger Jürgen

Result: PASS



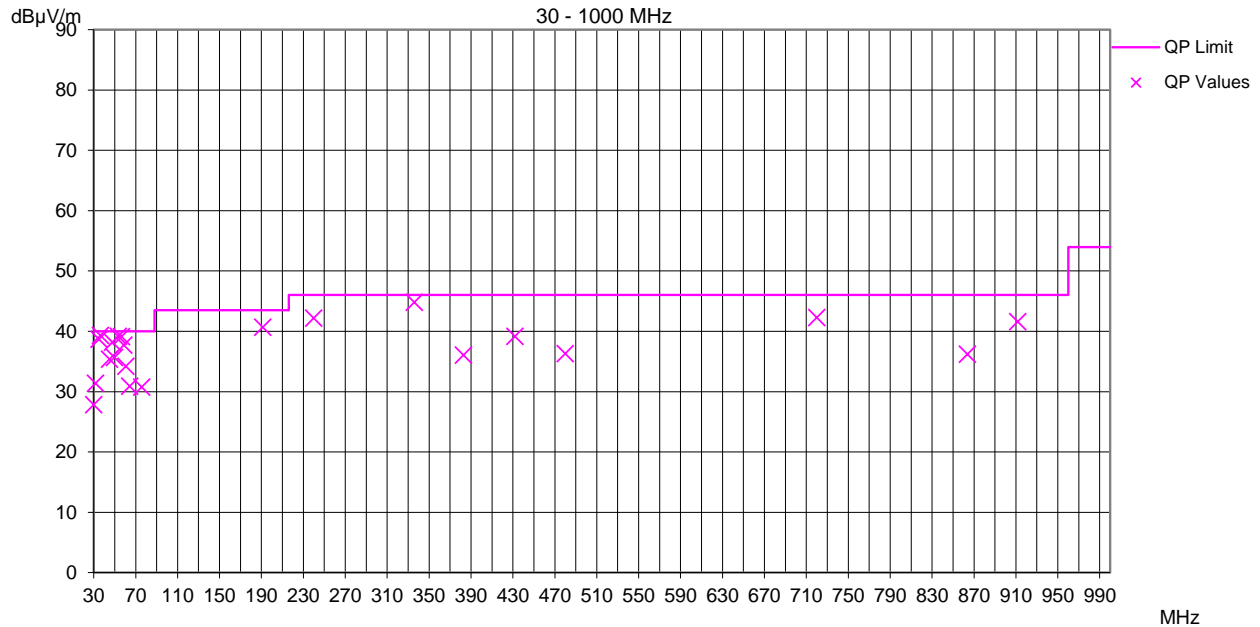
Minimum margin to limit: -0,9 dB

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

File No. T-0329-4305-01 JP

Test point: Vertical  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: Variant B  
 Date: 2012-03-23  
 Tested by: Pessinger Jürgen

Result: PASS

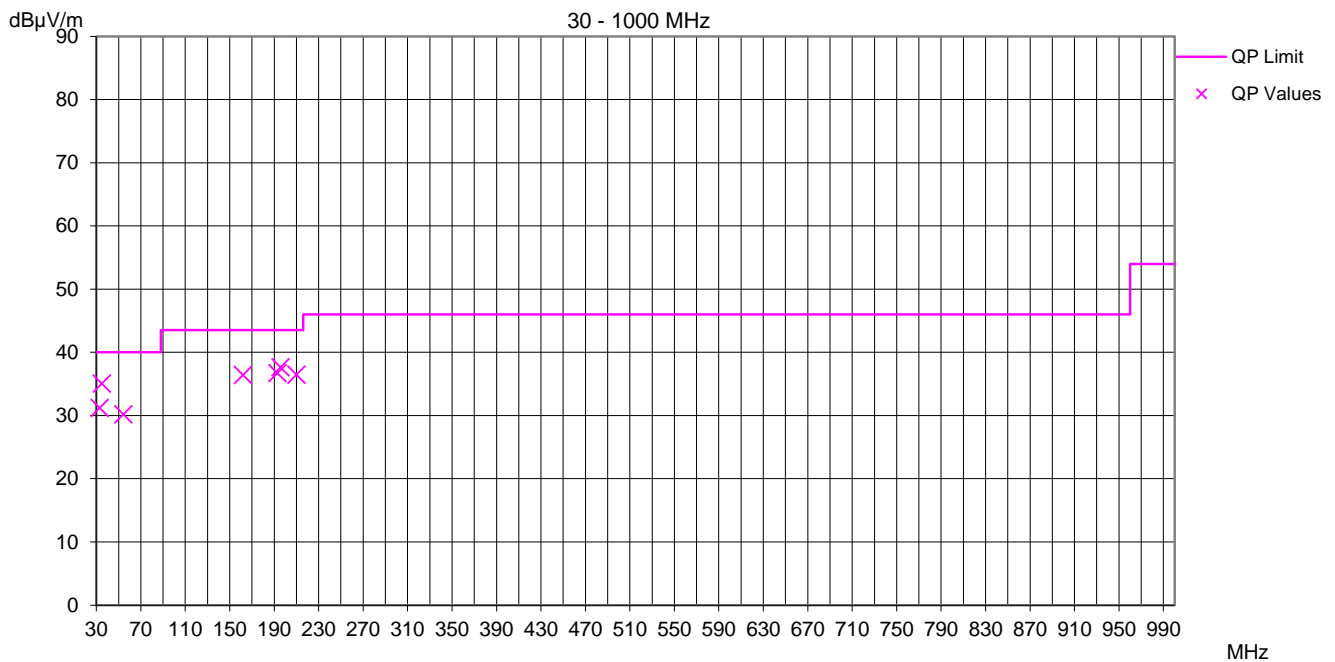


Frequency [MHz]	Reading [dBµV] QP	Correction [dB]	Minimum margin to limit:		
			Values [dBµV/m] QP	Limit [dBµV/m] QP	-0,7 dB Margin [dB] QP
30,032	14,5	13,3	27,8	40,0	-12,2
31,622	17,8	13,6	31,4	40,0	-8,6
35,189	24,5	14,2	38,7	40,0	-1,3
36,376	25,0	14,3	39,3	40,0	-0,7
45,081	20,3	15,1	35,4	40,0	-4,6
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-0329-4305-01 JP

Test point: Horizontal  
 Operation mode: Testsoftware active, data transfer to connected  
 peripheral devices active, RF module(s) active  
 Remarks: Variant C  
 Date: 2012-03-23  
 Tested by: Pessinger Jürgen

Result: PASS



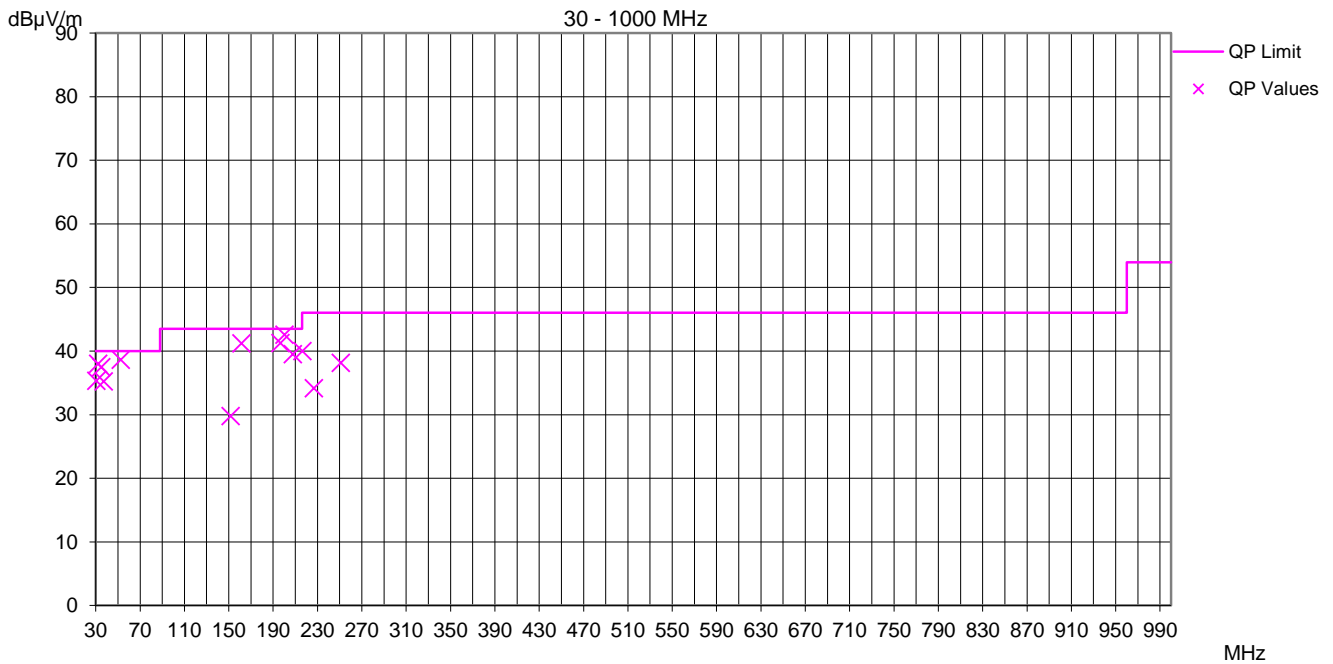
Minimum margin to limit: -5,0 dB

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

File No. **T-0329-4305-01 JP**

Test point: Vertical  
 Operation mode: Testsoftware active, data transfer to connected peripheral devices active, RF module(s) active  
 Remarks: Variant C  
 Date: 2012-03-23  
 Tested by: Pessinger Jürgen

Result: PASS



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

File No. T-0329-4305-01 JP

## **7 USED TEST EQUIPMENT AND ACCESSORIES**

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

<b>Test ID</b>	<b>Model Type</b>	<b>Equipment No.</b>	<b>Next Calib.</b>	<b>Last Calib.</b>	<b>Next Verif.</b>	<b>Last Verif.</b>
A 4	ESH 3	01-02/03-01-005	02/01/2013	02/01/2012		
	ESH 2 - Z 5	01-02/20-01-001	26/01/2014	26/01/2011	02/02/2013	02/02/2012
	ESH 3 - Z 2	01-02/50-02-020	29/12/2012	29/12/2011		
	BNC-3000-N	01-02/50-07-008				
	N-5000-N	01-02/50-07-009				
	Tile Version 3.4K20	01-02/68-09-001				
	emitel ESW V31	01-02/68-09-002				
A 5	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		
	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				

File No. **T-0329-4305-01 JP**