

**RF EXPOSURE REPORT**

OF

**Applicant:** Huawei Technologies Co., Ltd.  
Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

**Product Name:** Smart Phone

**Brand Name:** HUAWEI

**Model No.:** VOG-L29, VOG-L09

**Model Difference:** Please refer to page 4 for more detail

**Report Number:** E2/2019/10107

**FCC ID:** QISVOG-LX9

**FCC Rule Part:** Part 2.1091

**Issue Date:** Jan. 31, 2019

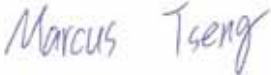
**Date of Test:** Jan. 16, 2019 ~ Jan 28, 2019

**Date of EUT Received:** Dec. 28, 2018

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation in this report is in compliance with FCC Rules Part 2.

The test results of this report relate only to the tested sample identified in this report.

**Tested By:**  
\_\_\_\_\_  
**Marcus Tseng / Sr. Engineer****Approved By:**  
\_\_\_\_\_  
**Yeh John / Asst. Manager**

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## Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
E2/2019/10107	Rev.00	Initial creation of document	All	Jan. 31, 2019	Karen Huang
E2/2019/10107	Rev.01	Update information for section 1.1.	All	Feb. 01, 2019	Karen Huang

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# 1 GENERAL INFORMATION

## 1.1 Product Description

General:

Product Name:	Smart Phone	
Brand Name:	HUAWEI	
Model No.:	VOG-L29, VOG-L09	
Model Difference:	Please refer to page 4 for more detail	
Hardware Version:	HL2VOGUEM	
Software Version:	9.1.0.84(C432E84R1P1)	
Input Rated Voltage	3.82V	
	Battery:	1. Model No.: HB486486ECW, SN: 6DUNACI724G00064 Supplier: HuaweiTechnologies Co., Ltd 2. Model No.: HB486486ECW, SN: 5WNDAYI726 X00085 Supplier: HuaweiTechnologies Co., Ltd

Wireless Charging:

Operating Frequency	110kHz-148kHz
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### Difference between VOG-L29 and VOG-L04

Model	VOG-L29	VOG-L04	
PCB	The same	The same	
Frequency-GSM	The same	The same	
Frequency-WCDMA	The same	The same	
Frequency-LTE	The same Support B32 Unsupport B66	Different Support B66 Unsupport B32	
4*4 Mimo	The same Support B1、 B3、 B7	Different Support B2、 B4、 B7、 B66	
SIM Card	Dual	Single	
Hardware	<b>B32 RF circuit</b>	Support B32 Location ID: SAW filter:Z3401,Z4104, B32 Diplexer:Z3402,Z5403 RF low noise amplifier:U3405,U4103 Capacitor:C3422,C3423,C3425,C3442,C2912,C3411,L3533,L4416,C3418,C4102 Inductor:L3412,L3422,L3413,L3408,L4124,L4137,L4139,L4140 Function Description:B32 main RF circuit and diversity RF circuit	Unsupport B32 Delete components related to the B32 RF circuit.
	<b>4*4 MIMO(the 3rd &amp; 4th antenna)</b>	Support B1/3/7 4*4MIMO and delete/replace components related circuit; Location ID: B1/3/7 SAW filter of the 4th antenna :Z4403 (Vendor:KYOCERA type:SF18-1842M8SUA3) SAW filter of the 3rd antenna :Z4301 (Vendor:KYOCERA type:SF18-1842M8SUA3) Capacitor:L5507,C5401,C5402,C5517,C3411,L3533,L4416 Inductor:L5510,L4330,L5415,L3408,L4419 Function Description: B1/3/7 4*4MIMO RF circuit	Support B2/7/66(4) 4*4MIMO and delete/replace components related circuit;  Location ID: B2/7/66(4) SAW filter: SAW filter of the 4th antenna :Z4403 (Vendor:MURATA type:SATEY1G96AU3F0AR00) SAW filter of the 3rd antenna :Z4301 (Vendor:MURATA type:SATEY1G96AU3F0AR00) Inductor:L4419,L4412,L4416,C5444,C5407,L5510 Function Description:B2/7/66(4) 4*4MIMO RF circuit
	<b>B1/B3/B32 &amp; B2/B66 RF &amp; CA circuit</b>	Unsupport B66 and delete/replace components related circuit;  Support CA_1-3-32 Location ID: B1/B3 Quadruplexer:Z3502(Vendor:QORVO, type:QM25002TR13-5KHW) Capacitor:C3533 B2 SAW filter: Z4101(Vendor:MURATA ect. type:SAFFB1G96ABOF0AR1X ect. ) L4123,L4122,L3523,L3532,C3520,L3512,L4419 Function Description:B2 RX and CA_1-3-32 diplexer RF circuit	Unsupport CA_1-3-32 and delete/replace components related circuit;  Support B66 &Support CA_2-66 Location ID: B2/B7/B66(4) diversity TRI SAW filter:Z4105 (Vendor:MURATA type:SATEY1G96AU3F0AR00) B2/B66(B4) Quadruplexer:Z3502( Vendor:KYOCERA type:SQ25-1745K6SUA4) Capacitor:C3401,C3402,C3504,L4110 Inductor:L3532,L4111,L4112,L4107,L4109,L4114,L4108,L4118,C3520,L3533,L3512 Function Description:B2/B66 Single-band and CA main and diversity RF circuits

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	B7 RX circuit	B7 receive matching circuit include: Inductor:L4127,L4126	B7 receiving matching circuit is adjusted to include: Inductor:C4101 B7 diversity TRI SAW filter:Z4105(Vendor:MURATA type:SATEY1G96AU3F0AR00)
Software		Different	Different
Dimensions		The same	The same
Appearance		The same	The same
main antenna		The same	The same
DIV antenna		The same	The same
BT/Wi-Fi antenna		The same	The same
MIMO antenna		The same	The same
NFC		The same	The same
WPC		The same	The same
Supported CA configurations for DL CA		Different	Different
Supported CA configurations for UL CA		The same	The same
Others		NA	NA

**Difference between VOG-L29 and VOG-L09**

Model		VOG-L29	VOG-L09
PCB		The same	The same
Frequency-GSM		The same	The same
Frequency-WCDMA		The same	The same
Frequency-LTE		The same	The same
4*4 Mimo		The same	The same
SIM Card		Dual	Single
Hardware	B32 RF circuit	The same	The same
	4*4 MIMO(the 3rd & 4th antenna)	The same	The same
	B1/B3/B32 & B2/B66 RF &CA circuit	The same	The same
	B7 RX circuit	The same	The same
Software		The same	The same
Dimensions		The same	The same
Appearance		The same	The same
main antenna		The same	The same
DIV antenna		The same	The same
BT/Wi-Fi antenna		The same	The same
MIMO antenna		The same	The same
NFC		The same	The same
WPC		The same	The same
Supported CA configurations for DL CA		The same	The same
Supported CA configurations for UL CA		The same	The same
Others		NA	NA

According to the difference description above, for Wireless Charging, VOG-L29 and VOG-L09 share the same test data of VOG-L04

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## 2 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### 2.1 Standard Applicable

According to KDB 680106 D01 RF Exposure Wireless Charging App v03

RF exposure potential to users and bystanders is expected to vary according to factors inherent to the design of individual systems, which generally requires different evaluation considerations to show compliance.

When exposure concerns arise; for example, due to evolving products and operations, RF exposure evaluation may be requested under the provisions of Sections 1.1307 (c) and (d) to determine compliance. Because of significant variations in design and operating characteristics, the procedures required to evaluate RF exposure compliance for wireless power transfer are considered according to the exposure potentials of individual implementations

The RF exposure requirements must be determined in conjunction with the device operating characteristics, according to the mobile and portable exposure requirements in Sections 2.1091 and 2.1093 of the rules. SAR and MPE limits do not cover the frequency range for wireless power transfer applications which operate below 100 kHz and 300 kHz respectively; therefore, RF exposure compliance needs to be determined with respect to Sections 1.1307 (c) and (d) of the FCC rules.

### 2.2 Limits for Maximum Permissible Exposure (MPE)

Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz \* = Plane-wave equivalent power density

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**2.3 The Worst Charging Condition:**

Ancillary Equipment	Charging Condition	Verdict
Load	90% Loading	PASS
Load	50% Loading	PASS
Load	10% Loading	PASS

Note: For Wireless Power Consortium Qi specification, a lower operating frequency or high duty cycle result in the transfer of a higher amount of power and charging current.

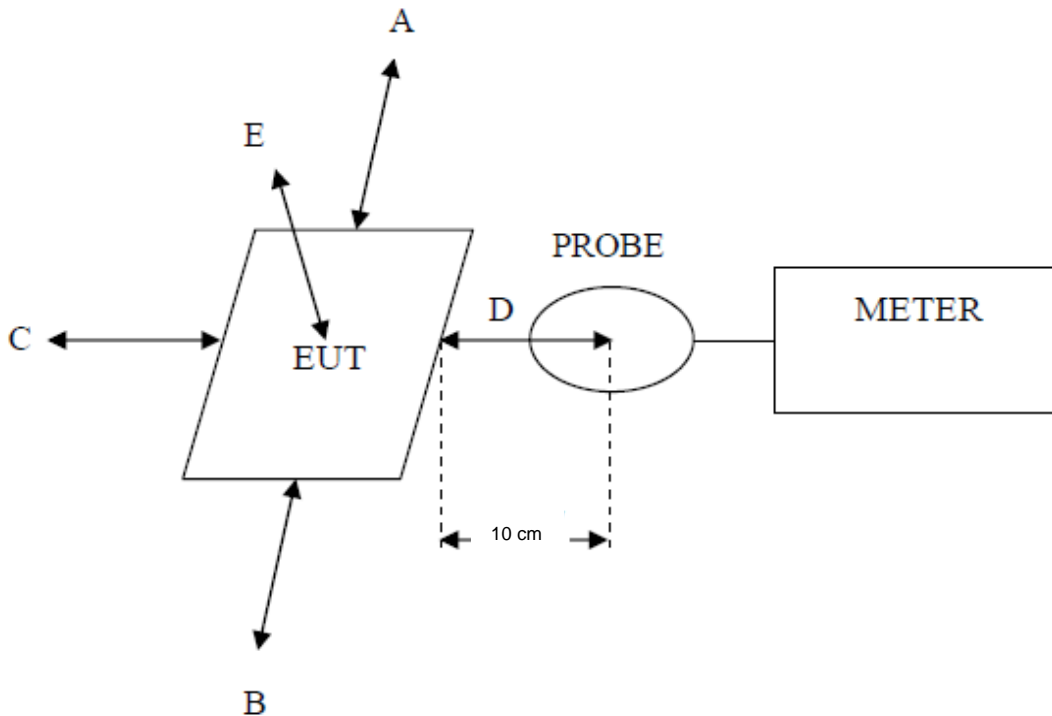
**2.4 Measurement Procedure:**

The electric and magnetic field strength result at 10 cm from the top surface and all applicable edges surrounding the DUT while it is actively charging conditions at 10% 50% and 90% are included.

**2.5 Measurement Equipment Used:**

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
E-field probe	W&G	EF-0691	G-0061	02/22/2018	02/21/2019

**2.6 Test Set-up:**



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**2.7 Maximum Permissible Exposure (MPE) Evaluation:**  
(For Battery SN: 6DUNACI724G00064)

90% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	E-field (V/m)	H-field (A/m)
Front	10 cm	1.41	0.035
Back	10 cm	1.43	0.034
Left	10 cm	1.5	0.038
Right	10 cm	1.53	0.045
Top	10 cm	1.28	0.043
Bottom	10 cm	1.57	0.043
Limit		614	1.63

50% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	E-field (V/m)	H-field (A/m)
Front	10 cm	1.34	0.031
Back	10 cm	1.48	0.034
Left	10 cm	1.3	0.038
Right	10 cm	1.75	0.046
Top	10 cm	1.48	0.039
Bottom	10 cm	1.63	0.038
Limit		614	1.63

10% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	E-field (V/m)	H-field (A/m)
Front	10 cm	1.38	0.036
Back	10 cm	1.46	0.035
Left	10 cm	1.4	0.037
Right	10 cm	1.62	0.043
Top	10 cm	1.37	0.042
Bottom	10 cm	1.59	0.042
Limit		614	1.63

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**Spot check data:**

(For Battery SN: 5WNDAYI726 X00085)

90% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	E-field (V/m)	H-field (A/m)
Front	10 cm	0.46	0.011
Back	10 cm	0.59	0.011
Left	10 cm	0.66	0.015
Right	10 cm	0.69	0.022
Top	10 cm	0.44	0.020
Bottom	10 cm	0.73	0.020
Limit		614	1.63

50% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	E-field (V/m)	H-field (A/m)
Front	10 cm	0.47	0.009
Back	10 cm	0.64	0.011
Left	10 cm	0.46	0.015
Right	10 cm	0.91	0.023
Top	10 cm	0.64	0.016
Bottom	10 cm	0.79	0.015
Limit		614	1.63

10% Loading

Maximum Permissible Exposure			
Probe from EUT Side	Test Distance	E-field (V/m)	H-field (A/m)
Front	10 cm	0.52	0.014
Back	10 cm	0.62	0.012
Left	10 cm	0.56	0.014
Right	10 cm	0.78	0.020
Top	10 cm	0.53	0.019
Bottom	10 cm	0.75	0.019
Limit		614	1.63

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## APPENDIX A. CERTIFICATE OF CALIBRATION



**DARE!! Calibrations**  
Calibration services

Vijzelmolenlaan 7  
3447 GX Woerden  
The Netherlands

Tel. +31 348 431 807  
Fax +31 348 430 645  
www.dare.nl  
calibrations@dare.nl

### CERTIFICATE OF CALIBRATION

**For:** SGS Taiwan Limited

**On behalf of:** EMC Instruments corporation  
1F, No.8, Lane38 WenSan 3rd street  
Kwei-Shan Hsiang Taoyuan Hsien

**Instrument:** E-field probe  
**manufacturer:** Narda / Wandel & Goltermann  
**type:** EF-0691 + NBM-550  
**serial number:** G-0061 + F-0375  
**asset number:** 150000331

**Calibration method:** The calibration is carried out according to IEC 61000-4-3 (2006-02) + A1 (2007-11) + A2 (2010-03).

The instrument was allowed to acclimatize for at least 2 hours before any measurements were made.

During calibration, all axis of the field probe are switched on as in the normal isotropic mode of operation of the probe.

Up to 150 MHz, the calibration is performed in a TEM cell. The calculated field method is used for the calibration.

The calibration of frequencies from 200 MHz is carried out in a full anechoic room. Over the frequency range of 200 MHz to 1000 MHz, the standard transfer method is used. For frequencies from 1200 MHz, the calculated field method is used.

The polarization of the E-field is vertical. For each frequency and field strength setting, the field probe is rotated so that each position is aligned with the E-field. The position under test is always perpendicular to the direction of propagation and parallel to the E-field.

Page 13 and 14 describes the orientation of the DUT during calibration.

$$\text{Correction Factor} = \frac{\text{Applied field strength}}{\text{Measured field strength}}$$

**Position 1:** probe horizontal, perpendicular to the field, display horizontal (up). Probe head aligned with center of the antenna, probe box to the right.

**Position 2:** probe horizontal, perpendicular to the field, display aligned vertical, to the front facing the antenna. Probe head aligned with center of the antenna, probe box to the right.

**Position 3:** probe horizontal, perpendicular to the field, display horizontal (down). Probe head aligned with center of the antenna, probe box to the right.

Certificate number 201800190.00

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The linearity is compared to the limits given by the IEC 61000-4-3 standard as mentioned at page 15.

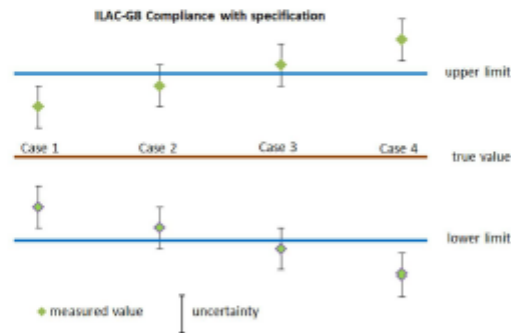
**Ambient conditions:** The calibration was carried out in a screened room, at an ambient temperature of  $(23 \pm 2)^\circ\text{C}$  and a relative humidity of  $(50 \pm 10)\%$ .

**Period of calibration:** 2018 February, 20 to 2018 February, 22.

**Due date:** 2019 February, 22

**Results:** The results are listed on page 3 to 11. The results of comparisons with specifications are shown in the column 'Remarks'. Reported statements comply with ILAC-G8 (2009-03): 'Guidelines on the Reporting of Compliance with Specification'. The following remarks can be reported:

- (a) Case 1 - 'Pass' or no remark if:  
The measurement result is within (or below) the specification limit when the measurement uncertainty is taken into account.
- (b) Case 4 - 'Out of specs.' if:  
The measurement result is outside (or above) the specification limit when the measurement uncertainty is taken into account.
- (c) Case 2 & 3 - 'Border value' if:  
It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty.



No adjustments have been made to the instrument.  
The measured values were calculated from a single sample.

**Uncertainty:** The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA publication EA-4/02.

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The uncertainties refer to the measured values only with no account being taken of the ability of the instruments under test to maintain their calibration.

**Traceability:** The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA.

**Equipment list 9 kHz – 200 MHz:**

Description	Identification	Certificate number	Last calibration date
Signal Generator	ID 7431	RvA K063/201800341.00	January 16, 2018
Power meter	ID 1247	RvA K063/201605321.00	November 29, 2016
Power head	ID 1248	RvA K063/201605321.00	November 29, 2016
RF Amplifier	ID 7304	-/No cal required	-
Coupler	ID 7432	RvA K063/201800384.00	February 7, 2018
TEM cell	ID 1073	-/No cal required	-
Attenuator 30dB	ID 1313	RvA K063/201800016.00	January 11, 2018
Termination 50 ohms, N-type	ID 1545	/No cal required	-
Radicentre, Siemens	ID 7407	-/No cal required	-

**Equipment list 200 MHz – 40 GHz**

Description	Identification	Certificate number	Last calibration date
Signal Generator	ID 7430	RvA K063/201800340.00	January 17, 2018
Signal Generator	ID 7340	RvA K063/201700904.00	March 8, 2017
RF Amplifier	ID 1334	-/No cal required	-
RF Amplifier	ID 1163	-/No cal required	-
RF Amplifier	ID 1164	-/No cal required	-
RF Amplifier	ID 1347	-/No cal required	-
Power head	ID 7406	RvA K063/201700916.00	March 13, 2017
Attenuator 20dB	ID 7462	RvA K063/201800018.00	January 11, 2018
Coupler	ID 1005	RvA K063/201703746.00	August 30, 2017
Coupler	ID 7446	RvA K063/201706907.00	November 21, 2017
Antenna Log periodic 200 – 1000 MHz	ID 1387	-/No cal required	-
Antenna Horn 1.12 - 1.70 GHz	ID 7395	-/No cal required	-
Antenna Horn 1.70 - 2.60 GHz	ID 7499	-/No cal required	-
Antenna Horn 2.60 - 3.95 GHz	ID 7498	-/No cal required	-
Antenna Horn 3.95 - 5.85 GHz	ID 7447	-/No cal required	-
Antenna Horn 5.85 - 8.20 GHz	ID 7448	-/No cal required	-
Antenna Horn 8.20 - 12.40 GHz	ID 7449	-/No cal required	-
Antenna Horn 12.4	ID 7450	-/No cal required	-

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Description	Identification	Certificate number	Last calibration date
- 18.0 GHz			
Antenna Horn 18.0 - 26.5 GHz	ID 7477	-/No cal required	-
Antenna Horn 26.5 - 40.0 GHz	ID 7478	-/No cal required	-
Field sensor	ID 7457	NPL/2017090186-2	October 2017
Field sensor	ID 7273	NPL/2017090186-1	October 2017
Anechoic Room	ID 7092	-/No cal required	-

Date	Calibrated by	Checked by
2018 February, 22	 J. Rodrigues Calibration Engineer	 D. van der Vlugt Team leader

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**E-field Probe linearity (Position 1)**  
Frequency: 50 MHz  
Range: range less

APPLIED FIELD [V/m]	MEASURED FIELD [V/m]	LINEARITY ± UNCERTAINTY	REMARKS DUE TO SPECIFICATIONS	CORRECTION FACTOR
2.99	2.60	(0.0 ± 1.2) dB	Border value	1,15
3.34	2.92	(0.0 ± 1.1) dB	Border value	1,15
3.75	3.27	(0.0 ± 1.1) dB	Border value	1,15
4.23	3.69	(0.0 ± 1.0) dB	Border value	1,15
4.76	4.15	(0.0 ± 0.9) dB	Border value	1,15
5.30	4.61	(0.0 ± 0.9) dB	Border value	1,15
6.00	5.22	0 dB (Reference)		1,15
6.73	5.85	(0.0 ± 0.8) dB	Border value	1,15
7.55	6.56	(0.0 ± 0.8) dB	Border value	1,15
8.45	7.34	(0.0 ± 0.7) dB	Border value	1,15
9.51	8.27	(0.0 ± 0.7) dB	Border value	1,15
10.67	9.26	(0.0 ± 0.7) dB	Border value	1,15
11.97	10.40	(0.0 ± 0.7) dB	Border value	1,15

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E-field Probe linearity (Position 2)				
Frequency: 50 MHz				
Range: range less				
APPLIED FIELD [V/m]	MEASURED FIELD [V/m]	LINEARITY ± UNCERTAINTY	REMARKS DUE TO SPECIFICATIONS	CORRECTION FACTOR
2,99	2,74	(0,0 ± 1,2) dB	Border value	1,09
3,35	3,07	(0,0 ± 1,1) dB	Border value	1,09
3,76	3,44	(0,0 ± 1,0) dB	Border value	1,09
4,22	3,85	(0,0 ± 0,9) dB	Border value	1,10
4,73	4,33	(0,0 ± 0,9) dB	Border value	1,09
5,32	4,85	(0,0 ± 0,8) dB	Border value	1,10
5,95	5,43	0 dB (Reference)		1,10
6,67	6,09	(0,0 ± 0,8) dB	Border value	1,09
7,49	6,83	(0,0 ± 0,7) dB	Border value	1,10
8,38	7,66	(0,0 ± 0,7) dB	Border value	1,09
9,42	8,60	(0,0 ± 0,7) dB	Border value	1,10
10,58	9,65	(0,0 ± 0,7) dB	Border value	1,10
11,87	10,82	(0,0 ± 0,7) dB	Border value	1,10

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E-field Probe linearity (Position 3)				
Frequency: 50 MHz				
Range: range less				
APPLIED FIELD [V/m]	MEASURED FIELD [V/m]	LINEARITY ± UNCERTAINTY	REMARKS DUE TO SPECIFICATIONS	CORRECTION FACTOR
3,02	2,65	(0,0 ± 1,2) dB	Border value	1,14
3,35	2,94	(0,0 ± 1,1) dB	Border value	1,14
3,75	3,29	(0,0 ± 1,1) dB	Border value	1,14
4,25	3,73	(0,0 ± 1,0) dB	Border value	1,14
4,77	4,20	(0,0 ± 0,9) dB	Border value	1,14
5,35	4,71	(0,0 ± 0,9) dB	Border value	1,14
5,99	5,26	0 dB (Reference)		1,14
6,72	5,91	(0,0 ± 0,8) dB	Border value	1,14
7,53	6,62	(0,0 ± 0,8) dB	Border value	1,14
8,44	7,42	(0,0 ± 0,7) dB	Border value	1,14
9,48	8,34	(0,0 ± 0,7) dB	Border value	1,14
10,64	9,35	(0,0 ± 0,7) dB	Border value	1,14
11,94	10,50	(0,0 ± 0,7) dB	Border value	1,14

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**E-field Probe frequency response**

Frequency range: 100 kHz – 150 MHz

Probe orientation: monopole in the same plane as E-field

Septum height: 0.45 m

Range: rangeless

Applied field: 6 V/m

FREQUENCY [MHz]	MEASURED FIELD [V/m]			CF ± UNCERTAINTY			AVERAGE CF
	Pos 1	Pos 2	Pos 3	Pos 1	Pos 2	Pos 3	
0.1	3.9	4.5	4.8	1.53 ± 0.27	1.33 ± 0.23	1.27 ± 0.22	1.38
0.2	5.1	5.8	5.8	1.19 ± 0.21	1.05 ± 0.18	1.02 ± 0.18	1.09
0.3	5.4	6.1	6.0	1.10 ± 0.19	0.99 ± 0.17	0.99 ± 0.17	1.03
0.4	5.6	6.1	5.9	1.07 ± 0.19	0.98 ± 0.17	1.00 ± 0.18	1.02
0.5	5.6	6.1	5.9	1.06 ± 0.19	0.99 ± 0.17	1.02 ± 0.18	1.02
0.6	5.7	6.1	5.8	1.05 ± 0.19	0.99 ± 0.18	1.03 ± 0.18	1.03
0.7	5.7	5.9	5.6	1.06 ± 0.19	1.01 ± 0.18	1.06 ± 0.19	1.04
0.8	5.6	5.9	5.6	1.06 ± 0.19	1.02 ± 0.18	1.07 ± 0.19	1.05
0.9	5.6	5.9	5.6	1.06 ± 0.19	1.03 ± 0.18	1.09 ± 0.19	1.06
1	5.6	5.8	5.4	1.07 ± 0.19	1.04 ± 0.18	1.09 ± 0.19	1.07
2	5.4	5.6	5.4	1.11 ± 0.19	1.06 ± 0.19	1.11 ± 0.20	1.09
3	5.3	5.6	5.3	1.12 ± 0.20	1.07 ± 0.19	1.12 ± 0.20	1.10
4	5.3	5.6	5.3	1.13 ± 0.20	1.07 ± 0.19	1.12 ± 0.20	1.11
5	5.3	5.6	5.4	1.13 ± 0.20	1.07 ± 0.19	1.11 ± 0.20	1.10
6	5.3	5.5	5.4	1.13 ± 0.20	1.07 ± 0.19	1.11 ± 0.20	1.11
7	5.3	5.6	5.4	1.13 ± 0.20	1.07 ± 0.19	1.11 ± 0.20	1.10
8	5.3	5.6	5.4	1.12 ± 0.20	1.07 ± 0.19	1.11 ± 0.20	1.10
9	5.3	5.6	5.4	1.12 ± 0.20	1.07 ± 0.19	1.11 ± 0.20	1.10
10	5.3	5.6	5.4	1.12 ± 0.20	1.07 ± 0.19	1.11 ± 0.19	1.10
20	5.3	5.6	5.3	1.13 ± 0.20	1.07 ± 0.19	1.11 ± 0.20	1.10
30	5.3	5.5	5.4	1.13 ± 0.20	1.08 ± 0.19	1.12 ± 0.20	1.11
40	5.2	5.5	5.3	1.14 ± 0.20	1.08 ± 0.19	1.13 ± 0.20	1.12
50	5.3	5.4	5.3	1.15 ± 0.20	1.09 ± 0.19	1.13 ± 0.20	1.12
60	5.2	5.5	5.2	1.15 ± 0.20	1.10 ± 0.19	1.14 ± 0.20	1.13
70	5.2	5.4	5.3	1.15 ± 0.20	1.10 ± 0.19	1.14 ± 0.20	1.13
80	5.2	5.4	5.2	1.15 ± 0.20	1.10 ± 0.19	1.14 ± 0.20	1.13
90	5.2	5.5	5.3	1.14 ± 0.20	1.09 ± 0.19	1.13 ± 0.20	1.12
100	5.3	5.5	5.3	1.14 ± 0.20	1.08 ± 0.19	1.12 ± 0.20	1.11
150	5.3	5.5	5.3	1.13 ± 0.20	1.08 ± 0.19	1.12 ± 0.20	1.11

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**E-field Probe frequency response**

Frequency range: 200 MHz – 1 GHz

Probe orientation: monopole in the same plane as E-field

Antenna distance: 2,0 m

Range: rangeless

Applied field: 6 V/m

FREQUENCY [MHz]	MEASURED FIELD [V/m]			CF ± UNCERTAINTY			AVERAGE CF
	Pos 1	Pos 2	Pos 3	Pos 1	Pos 2	Pos 3	
200	5,5	5,7	5,5	1,10 ± 0,16	1,05 ± 0,16	1,09 ± 0,16	1,08
250	5,3	5,5	5,3	1,12 ± 0,17	1,09 ± 0,16	1,12 ± 0,17	1,11
300	5,4	5,6	5,4	1,11 ± 0,16	1,07 ± 0,16	1,10 ± 0,16	1,10
350	5,6	5,7	5,5	1,09 ± 0,16	1,06 ± 0,16	1,09 ± 0,16	1,08
400	5,5	5,5	5,5	1,10 ± 0,16	1,09 ± 0,16	1,10 ± 0,16	1,10
450	5,6	5,6	5,5	1,07 ± 0,16	1,07 ± 0,16	1,09 ± 0,16	1,08
500	5,6	5,8	5,5	1,07 ± 0,16	1,04 ± 0,15	1,08 ± 0,16	1,06
550	5,8	6,0	5,8	1,04 ± 0,15	1,00 ± 0,15	1,03 ± 0,15	1,02
600	5,8	6,0	5,7	1,05 ± 0,16	1,01 ± 0,15	1,05 ± 0,16	1,04
650	5,5	6,0	5,5	1,08 ± 0,16	1,01 ± 0,15	1,10 ± 0,16	1,06
700	5,7	6,2	5,7	1,07 ± 0,16	0,98 ± 0,15	1,06 ± 0,16	1,04
750	5,6	6,2	5,7	1,06 ± 0,16	0,96 ± 0,14	1,05 ± 0,16	1,02
800	5,9	6,5	5,9	1,02 ± 0,15	0,93 ± 0,14	1,03 ± 0,15	0,99
850	6,2	6,7	6,2	0,97 ± 0,14	0,90 ± 0,13	0,98 ± 0,14	0,95
900	5,9	6,3	5,9	1,02 ± 0,15	0,95 ± 0,14	1,02 ± 0,15	1,00
950	5,6	5,8	5,6	1,08 ± 0,16	1,04 ± 0,15	1,08 ± 0,16	1,07
1000	5,5	5,6	5,5	1,10 ± 0,16	1,07 ± 0,16	1,10 ± 0,16	1,09

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**E-field Probe frequency response**

Frequency range: 1200 MHz – 6000 MHz  
Probe orientation: monopole in the same plane as E-field  
Antenna distance: 1,0 m  
Range: rangeless  
Applied field: 6 V/m

FREQUENCY [MHz]	MEASURED FIELD [V/m]			CF ± UNCERTAINTY			AVERAGE CF
	Pos 1	Pos 2	Pos 3	Pos 1	Pos 2	Pos 3	
1200	5,3	5,2	5,3	1,11 ± 0,16	1,12 ± 0,17	1,11 ± 0,16	1,11
1400	5,3	5,6	5,2	1,11 ± 0,15	1,06 ± 0,14	1,13 ± 0,15	1,10
1600	5,6	6,1	5,5	1,07 ± 0,14	0,97 ± 0,13	1,07 ± 0,14	1,04
1800	5,6	5,8	5,5	1,08 ± 0,17	1,02 ± 0,16	1,08 ± 0,17	1,06
2000	5,3	5,4	5,3	1,13 ± 0,18	1,12 ± 0,18	1,13 ± 0,18	1,13
2200	5,4	5,6	5,4	1,09 ± 0,17	1,08 ± 0,17	1,10 ± 0,18	1,09
2400	5,6	5,8	5,6	1,09 ± 0,17	1,03 ± 0,16	1,07 ± 0,17	1,06
2600	5,8	6,3	5,8	1,04 ± 0,16	0,96 ± 0,15	1,03 ± 0,16	1,01
2800	5,8	5,9	5,8	1,03 ± 0,17	1,00 ± 0,16	1,03 ± 0,17	1,02
3000	5,7	5,7	5,8	1,06 ± 0,17	1,05 ± 0,17	1,04 ± 0,17	1,05
3200	5,5	5,5	5,5	1,10 ± 0,18	1,09 ± 0,17	1,09 ± 0,17	1,09
3400	5,3	5,8	5,4	1,13 ± 0,18	1,03 ± 0,16	1,11 ± 0,18	1,09
3600	5,6	6,1	5,7	1,07 ± 0,17	0,97 ± 0,15	1,06 ± 0,17	1,03
3800	5,5	5,8	5,5	1,08 ± 0,17	1,03 ± 0,16	1,08 ± 0,17	1,06
4000	5,4	5,6	5,5	1,10 ± 0,17	1,09 ± 0,17	1,09 ± 0,17	1,09
4200	5,3	5,3	5,3	1,12 ± 0,17	1,12 ± 0,17	1,13 ± 0,17	1,12
4400	5,3	5,6	5,4	1,12 ± 0,17	1,06 ± 0,16	1,10 ± 0,17	1,09
4600	4,9	5,4	4,9	1,20 ± 0,18	1,10 ± 0,17	1,21 ± 0,18	1,17
4800	4,8	5,2	4,8	1,24 ± 0,19	1,15 ± 0,18	1,24 ± 0,19	1,21
5000	4,9	5,1	4,8	1,19 ± 0,18	1,18 ± 0,18	1,21 ± 0,18	1,20
5200	4,7	4,8	4,7	1,25 ± 0,19	1,22 ± 0,19	1,25 ± 0,19	1,24
5400	4,7	4,9	4,7	1,26 ± 0,19	1,21 ± 0,18	1,28 ± 0,19	1,25
5600	4,5	4,8	4,6	1,30 ± 0,20	1,24 ± 0,19	1,27 ± 0,19	1,27
5800	4,2	4,5	4,3	1,39 ± 0,21	1,31 ± 0,20	1,38 ± 0,21	1,36
6000	4,2	4,4	4,2	1,40 ± 0,21	1,36 ± 0,21	1,39 ± 0,21	1,38

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E-field Probe isotropy				
Applied field: 6 V/m				
FREQUENCY	MEASURED FIELD	MEASURED FIELD	MEASURED FIELD	ANISOTROPY ± UNCERTAINTY
[MHz]	Position 1 [V/m]	Position 2 [V/m]	Position 3 [V/m]	[dB]
10	5,34 V/m	5,62 V/m	5,42 V/m	(0,2 ± 2,0) dB
100	5,28 V/m	5,54 V/m	5,34 V/m	(0,2 ± 2,0) dB
1000	5,5 V/m	5,6 V/m	5,5 V/m	(0,1 ± 1,8) dB

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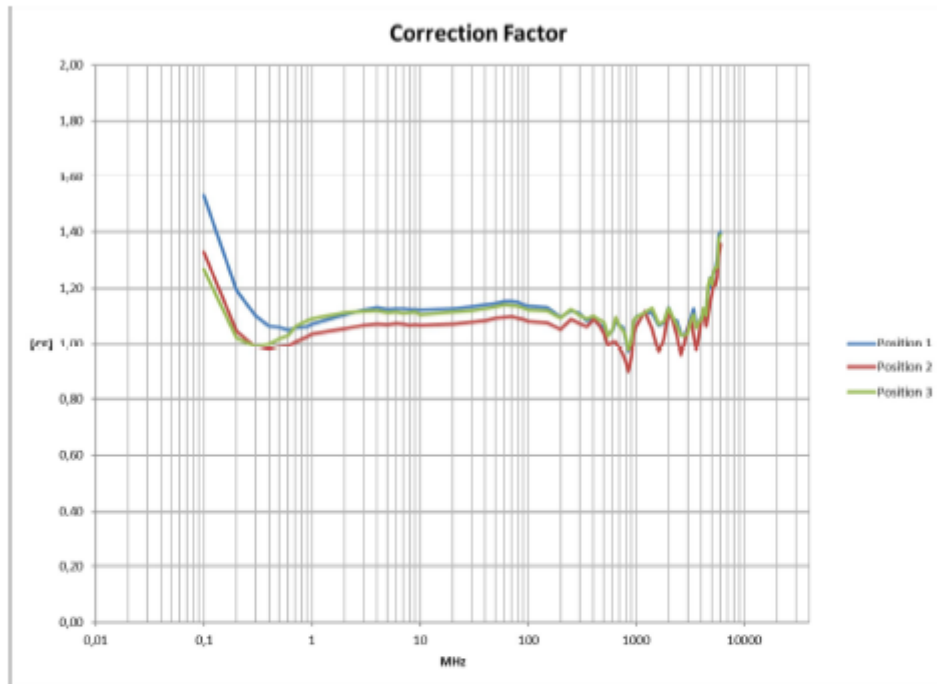
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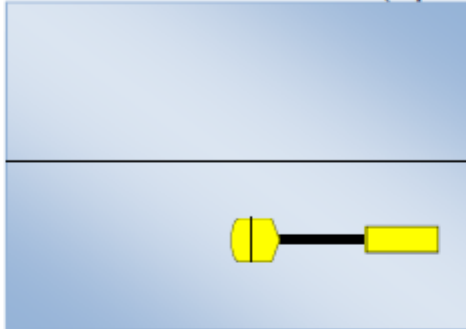
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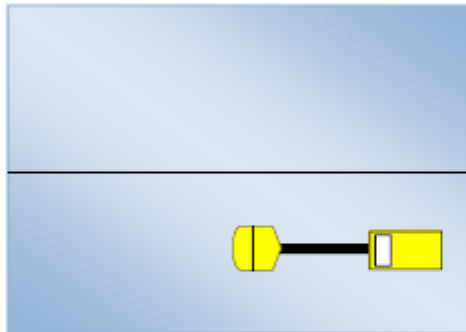
**Probe orientation in Tem Cell 10 kHz – 150 MHz (Input side view)**

**Position 1**



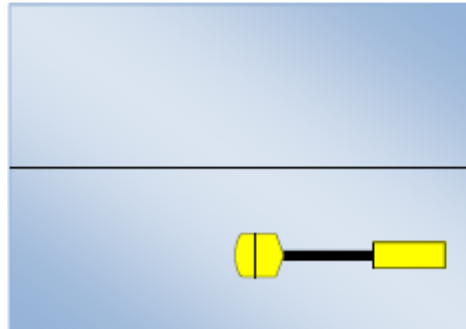
Septum

**Position 2**



Septum

**Position 3**



Septum

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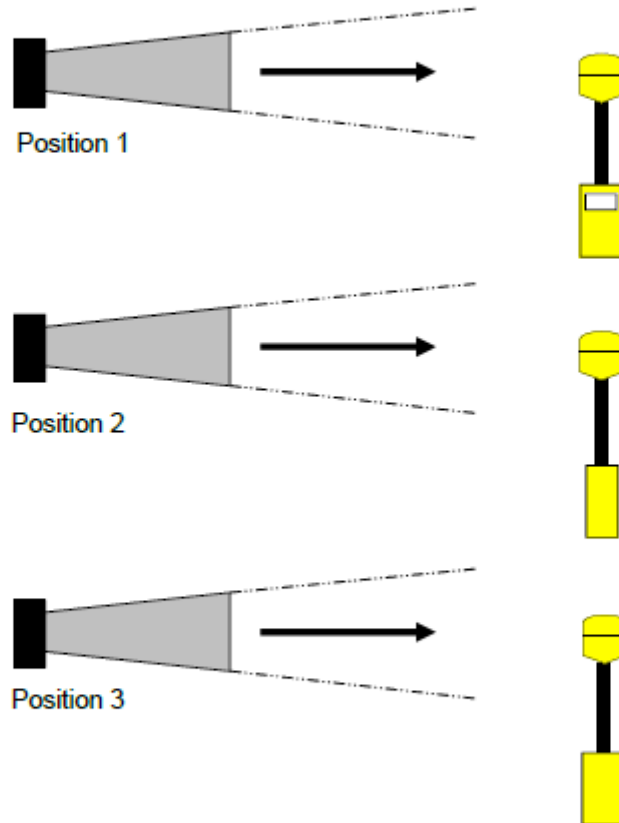


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**Probe orientation in anechoic room 200 MHz – 40 GHz (Top view)**



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**IEC 61000-4-3 (2006-02) + A1 (2007-11) + A2 (2010-03) specifications**

Linearity check ± 0,5 dB

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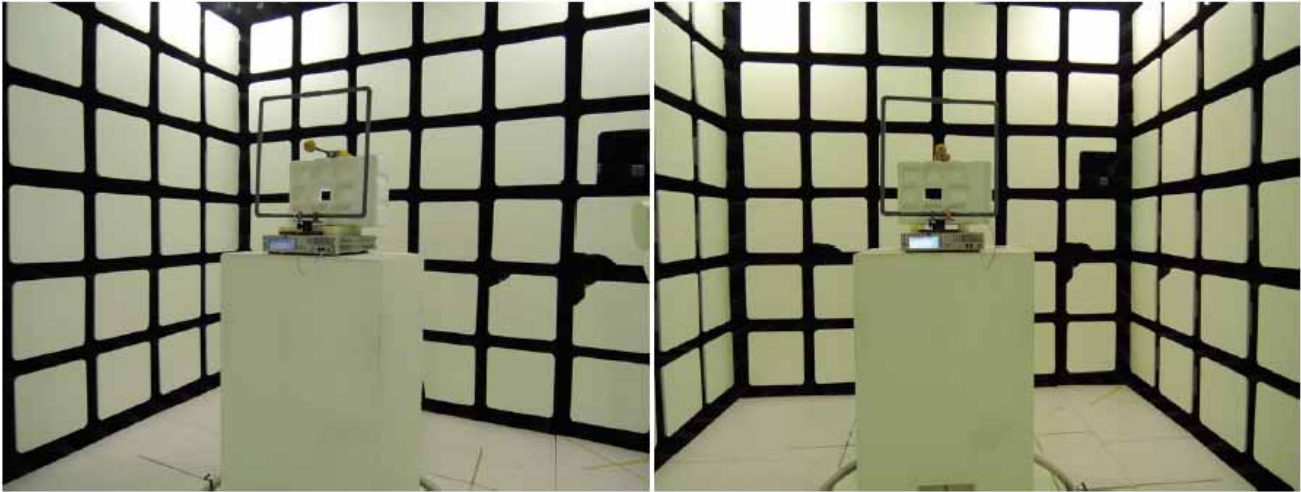
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## APPENDIX B. SYSTEM VALIDATION



EMR-30 E-Field			
Ref.(V/M)	Meas.(V/M)	Result of Deviation(%)	Deviation range(%)
0.8	0.73	8.75	±10
1.13	1.05	7.08	
1.6	1.49	6.88	

## PHOTOGRAPHS OF SET UP

Please refer to the attached file (Setup Photo)

~ End of Report ~

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