

ISED CABid: ES1909

Test report No:
NIE: 66584RAN.002A1

Test report

RF EXPOSURE REPORT ACCORDING TO

IEEE Std C95.3-2002
ISED RSS-102 Issue 5:2015
ISED RSS-102-SPR-002 Issue 1:2016

(*) Identification of item tested	Steering Column Switch Controls Unit
(*) Trademark	VALEO
(*) Model and /or type reference	VALEO-Com2020-CEM00
Other identification of the product	Hw version: B272222-B Sw version: SW C5.4.1 RED (Rev4496dae) FCC ID: N5FCOM2020 IC: 3248A-COM2020
Features	433.92 Mhz RF receiver, 125 Khz LF Rx-Tx
Manufacturer	Valeo Comfort & Driving Assistance Systems 76 rue Auguste Perret Zone Europarc Cedex 94046 Creteil France
Test method requested, standard	IEEE Std C95.3-2002: "IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz–300 GHz". ISED RSS-102 Issue 5 (2015-03) – Radio Frequency Exposure Compliance of Radiocommunication Apparatus RSS-102-SPR-002 Issue 1 (2016-09). – Supplementary Procedure for Assessing Compliance with RSS-102 Nerve Stimulation Exposure Limits (3kHz a 10MHz)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Miguel Lacave Antennas Lab Manager
Date of issue	2021-07-23
Report template No	FDT08_23 (*) "Data provided by the client"

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Competences and guarantees

DEKRA Testing and Certification, S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification, S.A.U. is an ISED-recognized accredited testing laboratory, CABid: ES1909, with the appropriate scope of accreditation that covers the performed tests in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification, S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification at the time of performance of the test.

DEKRA Testing and Certification, S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

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2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
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Uncertainty

Uncertainty (factor $k=2$) was calculated according to the documents:

1. IEEE Std C95.3-2002: "IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz–300 GHz".
2. DEKRA Testing and Certification, S.A.U. internal documents PODT000 and FAN40.

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested", "Other identification of the product", "Features", "Manufacturer" and "Test sample description").
2. Intended use distance.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: the client

Sample M/01 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
66584B/038	Key reader	--	--	2020-11-25
66584B/021	Power cable DC	--	--	2020-11-25
66584B/004	Control Module	VALEO- Com2020-CEM00	720102-00021	2020-11-25
66584B/030	Connector with indicators	--	--	2020-11-25
66584B/009	Car-Key	--	--	2020-11-25

1. Sample M/01 has undergone the test(s) specified in subclause "Test method requested".

Test sample description

The test sample consists of an automotive system with multiple functions like: main controls of lighting, wiping, indicators, pushbuttons on end of lever).

The TCM manages RF frames reception, LF communication with the transponder, sound generation, the controls on the wheel, via LIN or wiring network (SWS, HOD, SWH, shift paddle).

Identification of the client

Company name: Valeo Comfort & Driving Assistance Systems

Postal address: 76 rue Auguste Perret Zone Europarc Cedex

94046 Creteil France

Contact person: Olivier Robineau

Telephone / e-mail: +33 1 48 84 55 74 / olivier.robineau@valeo.com

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2020-12-10
Date (finish)	2020-12-15

Document history

Report number	Date	Description
66584RAN.002	2021-07-09	First release
66584RAN.002A1	2021-07-23	Second release. Added ISED CABid. This version cancels and replaces test report 66584RAN.002

Environmental conditions

Date	Max. Temp.	Min. Temp.	Max. Hum.	Min. Hum.	Limit
	°C	°C	%	%	
From 2020-12-10 to 2020-12-15	22.2	19.8	61.0	43.3	10-40 °C, 0-90 %

Remarks and comments

The tests have been performed by the technical personnel: Francisco J. Sánchez.

The instrumentation utilized to perform the tests covered in this test report is listed in the following table:

	Last Cal. date	Cal. due date	Control N°
1. Narda EHP-200A E and H Field Analyzer	2019/11	2021/11	7860
2. WaveControl WP400-3 E and H Field Analyzer	2020/08	2022/08	8454
3. Low Dielectric Tripod Manfrotto H-491009-01	-	-	5261
4. Temperature and humidity logger HW GROUP HWg-STE	2020/04	2021/04	5780

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

ISED RSS-102 Issue 5 & ISED RSS-102-SPR-002 Issue 1	VERDICT			
	N/A	P	F	NM
LF 125 kHz Tx-Rx		P		

Appendix A: ISED RF Exposure

General description of the device under evaluation

The test sample consists of an automotive system with multiple functions like: main controls of lighting, wiping, indicators, pushbuttons on end of lever).

The TCM manages RF frames reception, LF communication with the transponder, sound generation, the controls on the wheel, via LIN or wiring network (SWS, HOD, SWH, shift paddle).

According to the manufacturer, during its normal use, the separation distance between the device and the body of nearby users will be smaller than 20 cm.

RF Exposure evaluation for LF 125 kHz Tx has been conducted through field measurements (see ISSED LF 125 kHz Tx-Rx Evaluation section below). A worst-case test distance of 0 cm from the radiating structure of the device to the edge of the probe (4.5 cm to the center of the probe), was set to perform measurements. This distance will be a very conservative testing distance because once installed into the car plastics, it will be impossible that any part of the user's body will be at this distance.

Evaluation Results

Following results correspond to maximum measured field values:

Technology	Frequency (MHz)	Max. E-field (V/m rms)	Max. H-field (A/m rms)	Max Power Density (W/m ²)	E-field Limit (V/m rms)	H-field Limit (A/m rms)	Power Density Limit (W/m ²)	Verdict
LF 125 kHz Tx-Rx	0.1255	-	1.451	-	N/A	5.817	-	PASS
LF 125 kHz Tx-Rx - NS	0.1258	21.74	4.903	-	83.00	90.00	-	PASS

Table 1: ISSED Results

ISED LF 125 kHz Tx-Rx Evaluation

Measurements at 0 cm test distance (due to the field probe dimensions, 4.5cm is the closest distance between the device edges and the measurement field probe center) were performed using the equipment listed in the “Used Instrumentation” paragraph of this document to compare the measured H-Field values with the limits shown on table 4 of RSS-102 Issue 5, Paragraph “4.Exposure Limits”, Industry of Canada.

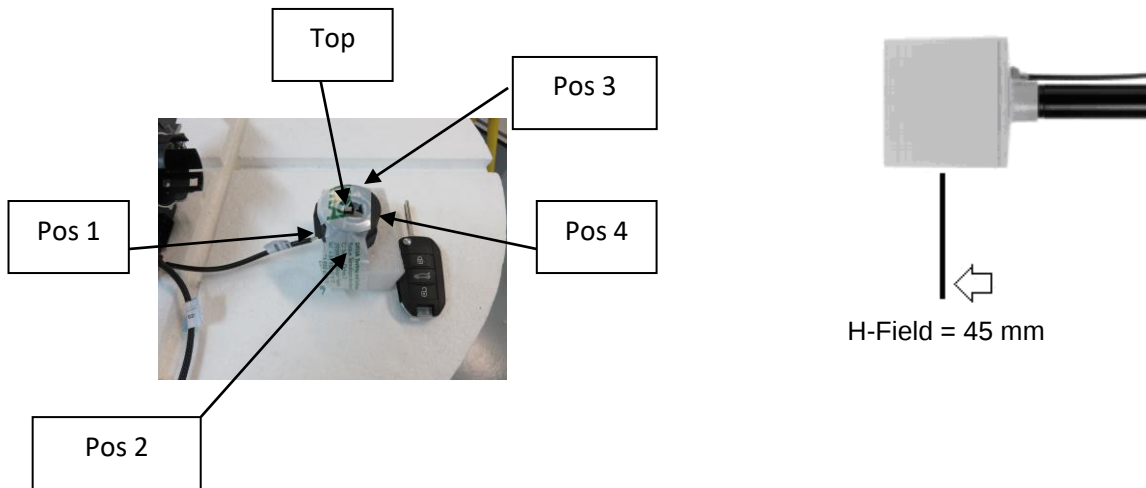


Figure 1: Measurement setup

Measured values for each configuration are listed in the following tables:

Test side	Distance to DUT (cm)	Frequency (MHz)	H-Field (A/m)	Limit (A/m)	% Limit	Verdict
Top	4.5	0.1253	0.360	5.826	6.2	Pass
Pos 1	4.5	0.1253	1.083	5.826	18.6	Pass
Pos 2	4.5	0.1255	1.451	5.817	25.0	Pass
Pos 3	4.5	0.1255	1.365	5.817	23.5	Pass
Pos 4	4.5	0.1250	0.996	5.840	17.0	Pass

Table 2: H-field measurement values

All H-Field values are in compliance to values shown into “Table 4: RF Field Strength Limits for Devices Used by the General Public” for the frequency range used by the device.

ISED LF 125 kHz Tx-Rx Nerve Stimulation evaluation results

According to RSS-102 Issue 5, Nerve Stimulation exposure limits shall be evaluated for transmission into the frequency range from 0.003 to 10 MHz. Supplementary Procedure SPR-002, Issue 1, for Radio Standards Specification RSS-102 sets out the general test methods to be followed when carrying out an assessment to the nerve stimulation exposure requirements of RSS-102 Issue 5.

Measurements have been performed at a compliance distance of 0 cm from the probe edge to the device edge, placing the device system in the edge of the table, using the equipment listed in the “Used Instrumentation” paragraph of this document, and following the measurement method shown in paragraph 6.6.1.1 of “Supplementary Procedure for Assessing Compliance with RSS-102 Nerve Stimulation Exposure Limits SPR-002”:

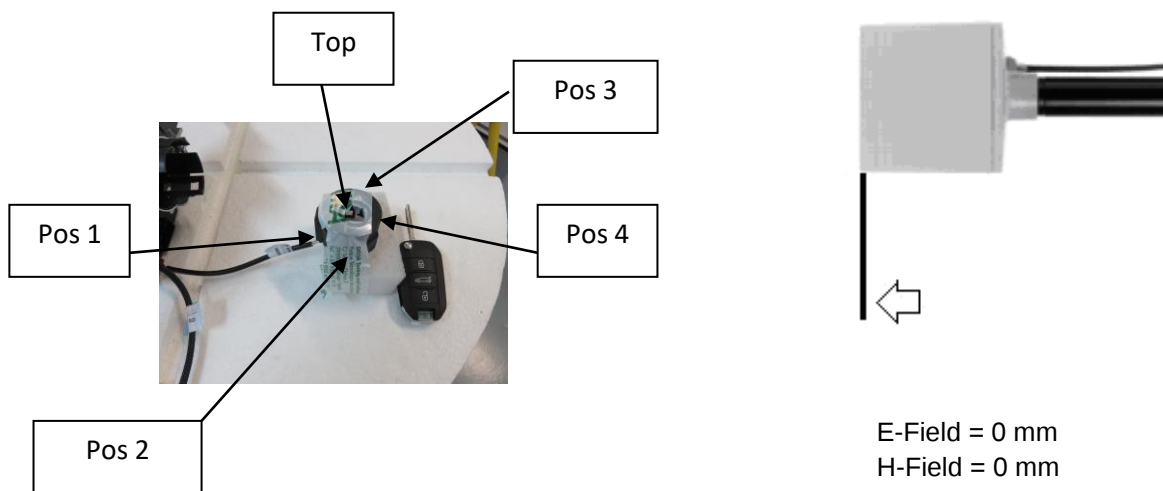


Figure 2: Nerve Stimulation measurement setup

- 3 kHz to 10 MHz H-Field and E-Field frequency scan:

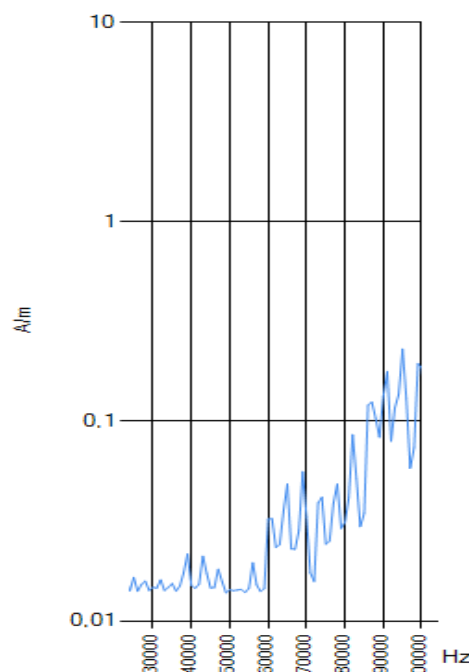


Figure 3: H-Field scan from 3 to 100kHz

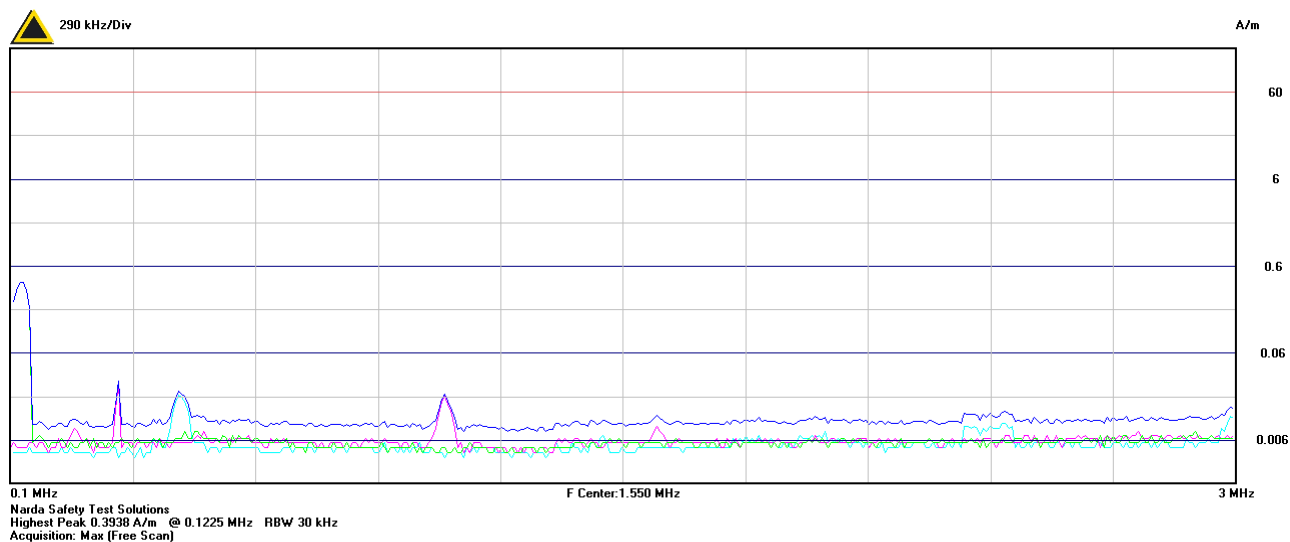


Figure 4: H-Field scan from 100kHz to 3MHz

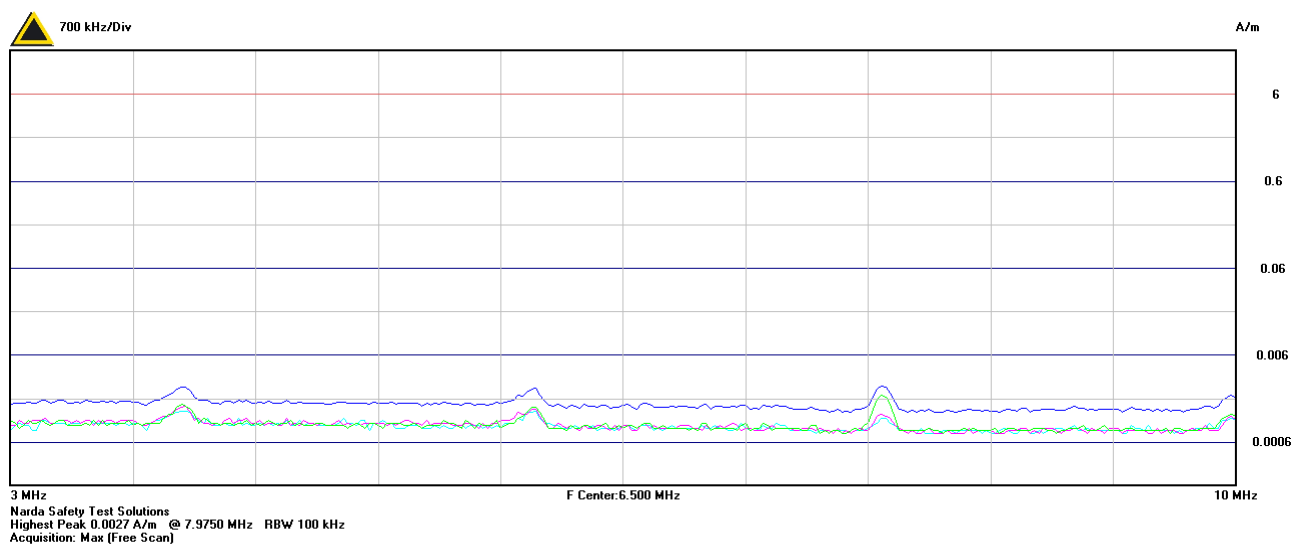


Figure 5: H-Field from 300kHz to 10MHz

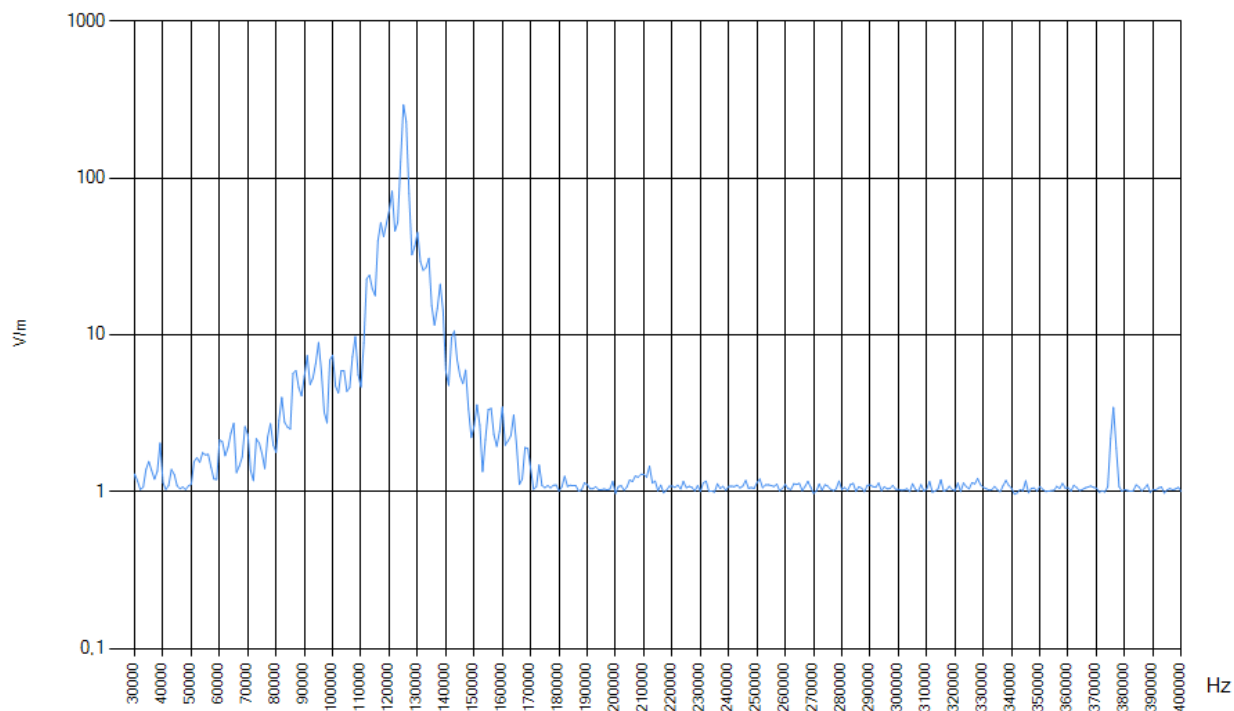


Figure 6: E-Field scan from 3 to 400kHz

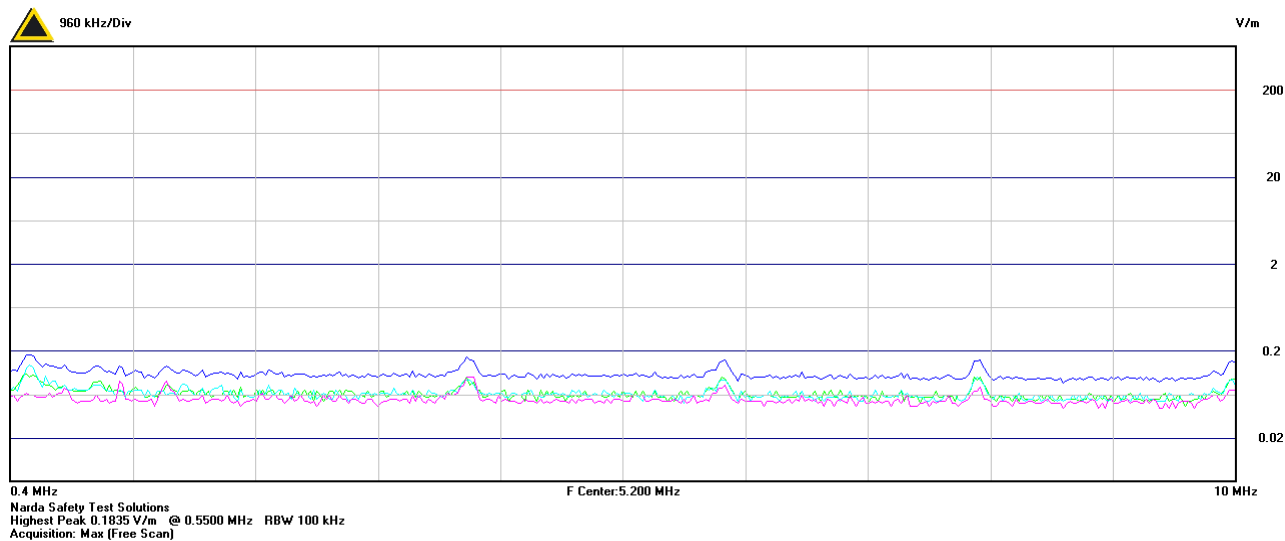


Figure 7: E-Field scan from 400kHz to 10MHz

Measured values for each configuration are listed in the following tables:

Test side	Distance to DUT (cm)	Frequency (MHz)	H-Field (A/m)	Limit (A/m)	% Limit	Verdict
Top	0	0.1253	0.273	90	0.3	Pass
Pos 1	0	0.1250	0.354	90	0.4	Pass
Pos 2	0	0.1255	0.655	90	0.7	Pass
Pos 3	0	0.1258	4.903	90	5.4	Pass
Pos 4	0	0.1238	0.275	90	0.3	Pass

Table 3: H-field measurement values

Test side	Distance to DUT (cm)	Frequency (MHz)	E-Field (V/m)	Limit (V/m)	% Limit	Verdict
Top	0	0.1255	13.21	83	15.9	Pass
Pos 1	0	0.1243	5.49	83	6.6	Pass
Pos 2	0	0.1260	10.32	83	12.4	Pass
Pos 3	0	0.1245	4.72	83	5.7	Pass
Pos 4	0	0.1258	21.74	83	26.2	Pass

Table 4: E-field measurement values

All H-Field and E-Field values are in compliance to values shown into "Table 4: RF Field Strength Limits for Devices Used by the General Public" for the frequency range used by the device.

Appendix B: RF Exposure Information

Appendix C: Photographs

Equipment view



Nerve stimulation H-Field and E-Field measurement setup

Top



Pos 1



Pos 2



Pos 3



Pos 4

