



RF - TEST REPORT

- Human Exposure -

Type / Model Name : QPSP2-Z250

Product Description : Shoe metal detector for QPS security scanner

Applicant : Rohde & Schwarz GmbH & Co. KG

Address : Mühldorfstraße 15

81614 MÜNCHEN, GERMANY

Manufacturer : Rohde & Schwarz GmbH & Co. KG

Address : Mühldorfstraße 15

81614 MÜNCHEN, GERMANY

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

POSITIVE

Test Report No. : 80154472-05 Rev1

19. March 2024

Date of issue



Deutsche
Akkreditierungsstelle
D-PL-12030-01-03
D-PL-12030-01-04

FCC ID: KVV-QPS201SHOE

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ATTACHMENT A as separate supplement

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.

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 1, Subpart I - Procedures Implementing the National Environmental Policy Act of 1969

Part 1, Subpart I, Section 1.1310	Radiofrequency radiation exposure limits
Part 1, Subpart 2, Section 2.1091	Radiofrequency radiation exposure evaluation: mobile devices .
Part 1, Subpart 2, Section 2.1093	Radiofrequency radiation exposure evaluation: portable devices .
KDB 447498 D04	RF Exposure procedures and equipment authorisation policies for mobile and portable devices, November 29, 2021.
KEB 412172 D01	Guidlines for determining the effective radiated power (ERP) and equivalent isotropically radiated power (EIRP) of an RF transmitting source, August 7, 2015.
ANSI C95.1: 2005	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
ANSI C95.3: 2021	IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz
ETSI TR 100 028 V1.3.1: 2001-03,	Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Uncertainties in the Measurement of Mobile Radio Equipment Characteristics—Part 1 and Part 2

2 EQUIPMENT UNDER TEST

2.1 Information provided by the Client

Please note, we do not take any responsibility for information provided by the client or his representative which may have an influence on the validity of the test results.

2.2 Sampling

The customer is responsible for the choice of sample. Sample configuration, start-up and operation is carried out by the customer or according to his/her instructions.

2.3 Photo documentation of the EUT – See ATTACHMENT A

2.4 Equipment type, category

LF metal detector, mobile equipment

2.5 Short description of the equipment under test (EUT)

The EUT is a shoe metal detector for QPS security scanner.

Number of tested samples: 1
Serial number: 101327

2.6 Variants of the EUT

There are no variants.

2.7 Operation frequency and channel plan

The EUT operates at 130 kHz.

2.8 Antennas

The EUT uses integral antennas.

2.9 Power supply system utilised

Power supply voltage, V_{nom} : 5 V DC

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3 TEST RESULT SUMMARY

3.1 General remarks

FCC regulations do not provide power-based exemption limits at this point of time. Therefore and because of the specific properties of the EUT, field measurements are performed, and the the following standards are used for SAR based exempt considerations:

IEEE C95.1 (2005)	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
IEEE C95.3 (2021)	IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz

3.1 Revision history of test report

Test report No	Rev.	Issue Date	Changes
80154472-05	0	20 September 2023	Initial test report
80154472-05	1	18 March 2024	Re-writing test report using field strength considerations

The test report with the highest revision number replaces the previous test reports.

3.2 Final assessment

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

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

Testing commenced on : 22 August 2023

Testing concluded on : 22 August 2023

Checked by:



Klaus Gegenfurtner
I confirm the correctness
and integrity of this
document
2024.03.19 09:33:23
+01'00'

Klaus Gegenfurtner
Teamleader Radio

Tested by:



I am the author of
this document
2024.03.19 08:11:13
+01'00'

Franz-Xaver Schrettenbrunner
Radio Team

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

**CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY**

4.2 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

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor $k = 2$. The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report on basis of the ETSI Technical Report TR 100 028 Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1 and Part 2. The results are 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 has the sole responsibility of continued compliance of the device.

4.4 Conformity Decision Rule

The applied conformity decision rule is based on ILAC G8:09/2019 clause 4.2.1 Binary Statement for Simple Acceptance Rule ($w = 0$).

Details can be found in the procedure CSA_B_V50_29.

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5 HUMAN EXPOSURE

5.1 Electric Field

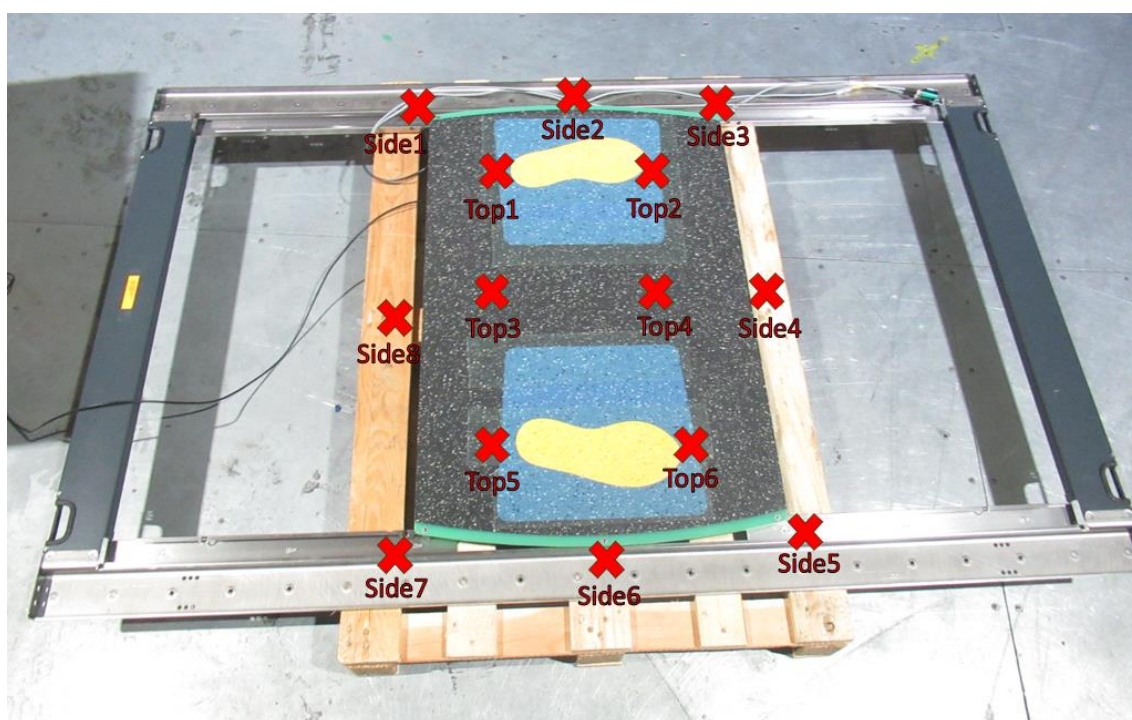
For test instruments and accessories used see section 6 Part HE.

5.1.1 Description of the test location

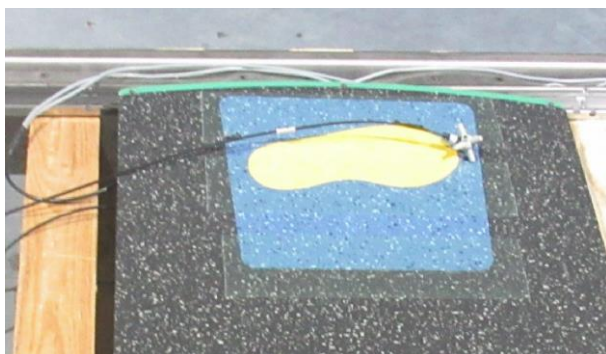
Test location: Anechoic chamber A1

5.1.2 Photo documentation of the test set-up

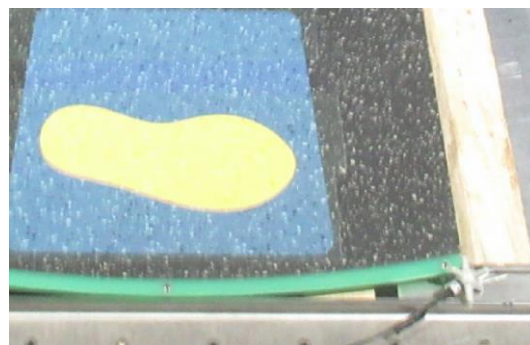
Measurement points



Examples for measurement points



Top2



Side5

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5.1.3 Test configuration

- E-field Probe: EP 602
- Measurement uncertainty: $\pm 15\%$

Measurement points:

- 14 positions, Top1 – Top6 and Side1 – Side8
- Each position was measured in a distance of 0 cm.

5.1.4 Test result details

Hand / Foot

Position	0 cm [V/m]	limit [V/m]	margin [V/m]
Top1	3.8	614	-610.2
Top2	2.8	614	-611.2
Top3	7.2	614	-606.8
Top4	5.8	614	-608.2
Top5	4.1	614	-609.9
Top6	4.8	614	-609.2
Side1	3.1	614	-610.9
Side2	5.2	614	-608.8
Side3	2.0	614	-612.0
Side4	8.0	614	-606.0
Side5	1.9	614	-612.1
Side6	2.9	614	-611.1
Side7	1.8	614	-612.2
Side8	5.2	614	-608.8

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Limits according to ANSI C95.1:

Table 2—Maximum permissible exposure for uncontrolled environments *

Part A: Electromagnetic Fields [†]					
Frequency range (MHz)	Electric field strength (E) (V/m)	Magnetic field strength (H) (A/m)	Power density (S) E-field, H-field (mW/cm ²)	Averaging time $ E ^2, S$ or $ H ^2$ (min)	
1	2	3	4	5	
0.003–0.1	614	163	$(100, 1\,000\,000)^{\ddagger}$	6	6
0.1–1.34	614	$16.3/f$	$(100, 10\,000/f^2)^{\ddagger}$	6	6
1.34–3.0	$823.8/f$	$16.3/f$	$(180/f^2, 10\,000/f^2)$	$f^2/0.3$	6
3.0–30	$823.8/f$	$16.3/f$	$(180/f^2, 10\,000/f^2)$	30	6
30–100	27.5	$158.3/f^{1.668}$	$(0.2, 940\,000/f^{3.336})$	30	$0.0636 f^{1.337}$
100–300	27.5	0.0729	0.2	30	30
300–3000	—	—	$f/1500$	30	
3000–15 000	—	—	$f/1500$	$90\,000/f$	
15 000–300 000			10	$616\,000/f^{1.2}$	
NOTE— f is the frequency in MHz.					

*See Figure E.1 and Figure E.4 for graphical depictions of MPEs.

[†]The exposure values in terms of electric and magnetic field strengths are the mean values obtained by spatially averaging the squares of the fields over an area equivalent to the vertical cross section of the human body (projected area).

[‡]These plane-wave equivalent power density values, although not appropriate for near-field conditions, are commonly used as a convenient comparison with MPEs at higher frequencies and are displayed on some instruments in use.

The requirements are **FULFILLED**.

Remarks: All measurements which have been carried out with the E-field probe EP 602
resulted in true RMS-values.

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5.2 Magnetic Field

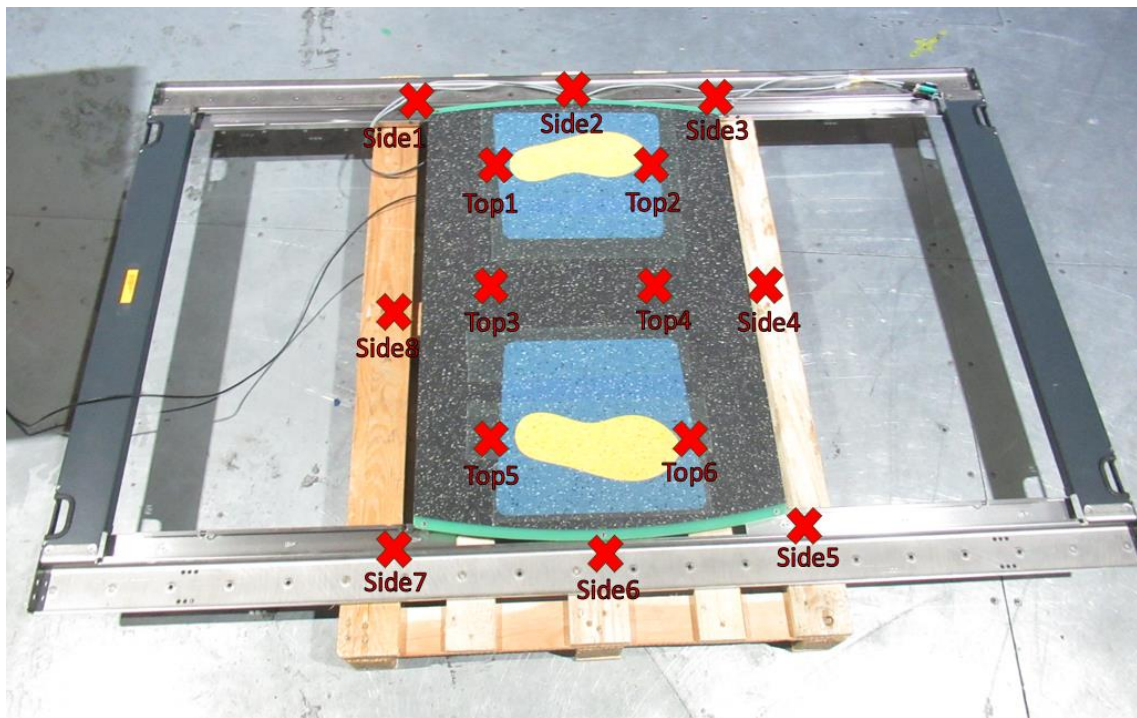
For test instruments and accessories used see section 6 Part HE.

5.2.1 Description of the test location

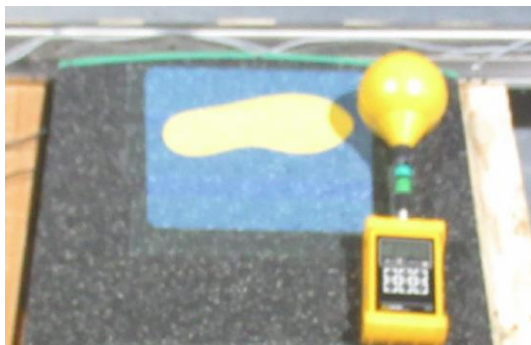
Test location: Anechoic chamber A1

5.2.2 Photo documentation of the test set-up

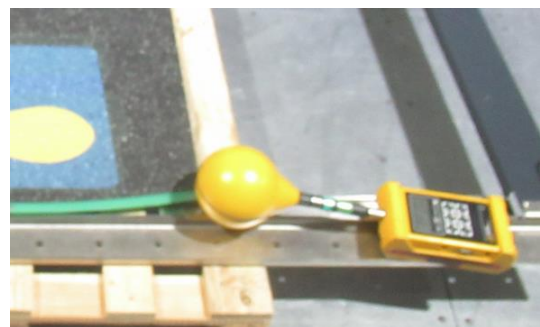
Measurement points



Examples for measurement points



Top2



Side5

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5.2.3 Test configuration

- H-field Probe: ELT-400
- Measurement uncertainty: $\pm 15\%$

Measurement points:

- 14 positions, Top1 – Top6 and Side1 – Side8
- Each position was measured in a distance of 0 cm.

5.2.4 Test result details

Hand / Foot

Position	0 cm [A/m]	limit [A/m]	margin [A/m]
Top1	0.3	125	-124.7
Top2	0.3	125	-124.7
Top3	1.6	125	-123.4
Top4	2.3	125	-122.7
Top5	0.3	125	-124.7
Top6	0.3	125	-124.7
Side1	0.2	125	-124.8
Side2	0.2	125	-124.8
Side3	0.2	125	-124.8
Side4	0.4	125	-124.6
Side5	0.2	125	-124.8
Side6	0.2	125	-124.8
Side7	0.2	125	-124.8
Side8	0.4	125	-124.6

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Limits according to ANSI C95.1:

Table 2—Maximum permissible exposure for uncontrolled environments *

Part A: Electromagnetic Fields [†]					
Frequency range (MHz)	Electric field strength (E) (V/m)	Magnetic field strength (H) (A/m)	Power density (S) E-field, H-field (mW/cm ²)	Averaging time E ² , S or H ² (min)	
1	2	3	4	5	
0.003–0.1	614	163	(100, 1 000 000) [‡]	6	6
0.1–1.34	614	16.3 / f	(100, 10 000 / f ²) [‡]	6	6
1.34–3.0	823.8 / f	16.3 / f	(180 / f ² , 10 000 / f ²)	f ² / 0.3	6
3.0–30	823.8 / f	16.3 / f	(180 / f ² , 10 000 / f ²)	30	6
30–100	27.5	158.3 / f ^{1.668}	(0.2, 940 000 / f ^{3.336})	30	0.0636 f ^{1.337}
100–300	27.5	0.0729	0.2	30	30
300–3000	—	—	f / 1500	30	
3000–15 000	—	—	f / 1500	90 000 / f	
15 000–300 000			10	616 000 / f ^{1.2}	
NOTE—f is the frequency in MHz.					

*See Figure E.1 and Figure E.4 for graphical depictions of MPEs.

[†]The exposure values in terms of electric and magnetic field strengths are the mean values obtained by spatially averaging the squares of the fields over an area equivalent to the vertical cross section of the human body (projected area).

[‡]These plane-wave equivalent power density values, although not appropriate for near-field conditions, are commonly used as a convenient comparison with MPEs at higher frequencies and are displayed on some instruments in use.

The requirements are **FULFILLED**.

Remarks: None.

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.

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6 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.
HE	ELT-400	01-02/40-13-001	19/05/2024	19/05/2022		
	100 cm ²	01-02/40-13-002	19/05/2024	19/05/2022		
	EP-602	01-02/50-14-044	14/04/2024	14/04/2022		