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## 4. 6.) Electrostatic discharge requirements (ESD) EPOSA 04.50

| Type of test | charging voltage | Basic standard | Test set-up | Comment | Performance criteria |
|---|---|---|---|---|---|
| Electrostatic discharge Air discharge | 20 kV charging voltage | EN 61000-4-2 | EN 61000-4-2 | | B |
| Electrostatic discharge Contact discharge | 8 kV charging voltage | EN 61000-4-2 | EN 61000-4-2 | | B |
| | | | | | |

| Operating mode | Test positions | Criteria of compliance |
|---|---|---|
| Normal operation | The 20 test positions are shown in the following graphic. | Before, during and after the test the equipment shall operate as intended, no loss of function or loss of voice or data links shall occur. Short disturbances on the voice link during the test are allowed. After the test there shall be no degradation of performance. |

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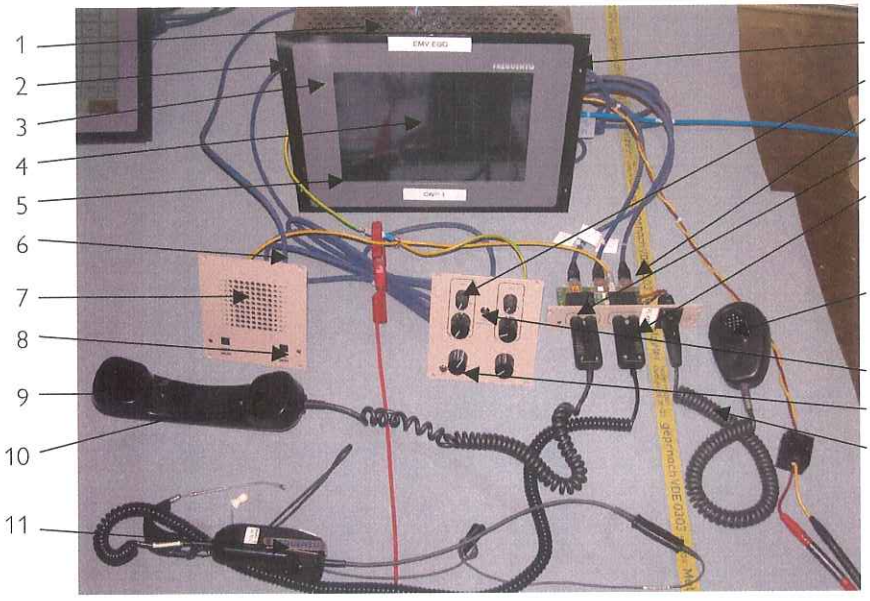
## Test positions for ESD on the EPOSA 04.50



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## Test result for the EPOSA 04.50

| Test position | Charging voltage | Type of discharge | Positive discharge | Negative discharge |
|---|---|---|---|---|
| 1 | 8 kV | contact | OK | OK |
| 2 | 8 kV | contact | OK | OK |
| 3 | 20 kV | air | OK | OK |
| 4 | 20 kV | air | OK | OK |
| 5 | 20 kV | air | OK | OK |
| 6 | 20 kV | air | OK | OK |
| 7 | 20 kV | air | OK | OK |
| 8 | 20 kV | air | OK | OK |
| 9 | 20 kV | air | OK | OK |
| 10 | 20 kV | air | OK | OK |
| 11 | 20 kV | air | OK | OK |
| 12 | 20 kV | air | OK | OK |
| 13 | 20 kV | air | OK | OK |
| 14 | 8 kV | contact | OK | OK |
| 15 | 20 kV | air | OK | OK |
| 16 | 20 kV | air | OK | OK |
| 17 | 20 kV | air | OK | OK |
| 18 | 20 kV | air | OK | OK |
| 19 | 20 kV | air | OK | OK |
| 20 | 20 kV | air | OK | OK |

OK EUT passed
NOK EUT failed

## 4. 7.) Radiated electromagnetic field requirements

| Type of test | Test parameters | Basic standards | Test set-up | Comment | Performance criteria |
|---|---|---|---|---|---|
| Radiated electromagnetic field | 80 MHz – 1000 MHz<br>Fieldstrength: 10 V/m<br>Modulation 80%/1 kHz AM<br>Polarisation H/V<br>Stepsize 1% | EN 61000-4-3 | EN 61000-4-3 | | A |
| | | | | | |

| Operating mode | Criteria of compliance |
|---|---|
| Normal operation | Before, during and after the test the equipment shall operate as intended, no loss of function or loss of voice or data links shall occur. On the handsets there shall be no more noise level than 75 dBA over the whole frequency range (55dBA at 900 MHz). After the test there shall be no degradation of performance. |

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## Test result

| Type of test | Test parameters | Performance criteria | Result |
|---|---|---|---|
| Radiated electromagnetic field | 80 MHz – 1000 MHz<br>Fieldstrength: 10 V/m<br>Modulation 80%/1 kHz AM<br>Polarisation H/V<br>Stepsize 1% | A | OK |

OK EUT passed
NOK EUT failed

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## 4. 8.) Induced RF-field requirements

| Type of test | Test parameters | Basic standards | Test set-up | Comment | Performance criteria |
|---|---|---|---|---|---|
| RF-current common mode | 0,15 MHz – 80 MHz<br>10 Vrms (unmodulated)<br>Modulation 80%/1 kHz AM<br>Stepsize 1 %<br>Source impedance 150 Ohm | EN 61000-4-6 | EN 61000-4-6 | | A |
| | | | | | |

| Operating mode | Criteria of compliance |
|---|---|
| Normal operation | Before, during and after the test the equipment shall operate as intended, no loss of function or loss of voice or data links shall occur. On the handsets there shall be no more noise level than 55 dBA over the whole frequency range. After the test there shall be no degradation of performance. |

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## Test result

| Measured line | Type of coupling | Performance criteria | Result |
|---|---|---|---|
| PCM 30 line EPOSA 04.40 | Clamp Injection | A | OK |
| PCM 30 line EPOSA 04.50 | Clamp Injection | A | OK |
| OK EUT passed<br>NOK EUT failed | | | |

## 4. 9.) Electrical fast transients/burst requirements

| Type of test | Test parameters | Basic standards | Test set-up | Comment | Performance criteria |
|---|---|---|---|---|---|
| Electrical fast transients common mode | 5/50 ns $t_r/t_h$<br>5kHz Burst frequency<br>15 ms Burst time<br>3 Hz Repetition frequency<br>Polarity: positive/negative | EN 61000-4-4 | EN 61000-4-4<br>Coupling clamp | | B |
| | | | | | |

| Operating mode | Criteria of compliance |
|---|---|
| Normal operation | Before, during and after the test the equipment shall operate as intended, no loss of function or loss of voice or data links shall occur. Short disturbances on the voice link during the test are allowed. After the test there shall be no degradation of performance. |

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## Test result

### 4. 9. 1.) Measurement on other lines (coupling clamp)

| Measured line | Test voltage | Performance criteria | Positive pulse | Negative pulse |
|---|---|---|---|---|
| PCM30 - EPOSA 04.50 | 2 kV | B | OK | OK |
| PCM30 - EPOSA 04.40 | 2 kV | B | OK | OK |
| OK EUT passed<br>NOK EUT failed | | | | |

# Appendix 1
# Test equipment used

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| | | |
|---|---|---|
| ☒ | Anechoic Chamber with 3m measurement distance | NT-100 |
| ☐ | Stripline accorcing to ISO 11452-5 | NT-108 |
| ☒ | MA 240 - Antenna mast 1 - 4 m height | NT-110 |
| ☒ | DS 412 - Turntable 0 - 400 ° Azimuth | NT-111 |
| ☒ | HD 100 Controller Mast+Turntable | NT-112 |
| ☐ | HUF-Z2 - Bicon. Antennna 20 - 300 MHz | NT-120 |
| ☐ | HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz | NT-121 |
| ☐ | HFH-Z2 - Loop Antenna. 9 kHz - 30 MHz | NT-122 |
| ☐ | HFH-Z6 - Rod Antenna 9 kHz - 30 MHz | NT-123 |
| ☐ | 3121C - Dipole Antenna 28 - 1000 MHz | NT-124 |
| ☒ | 3115 - Horn Antenna 1 - 18 GHz | NT-125 |
| ☐ | 3116 - Horn Antenna 18 - 40 GHz | NT-126 |
| ☐ | SAS-200/543 - Bicon. Ant. 20 MHz - 300 MHz | NT-127 |
| ☒ | AT-1080 - Log. Per. Ant. 80 - 1000 MHz | NT-128 |
| ☒ | HK-116 - bicon. Ant. 20 MHz - 300 MHz | NT-129 |
| ☐ | HK-116 - bicon. Ant. 20 MHz - 300 MHz | NT-130 |
| ☒ | 3146 - Log. Per. Ant. 200 - 1000MHz | NT-131 |
| ☐ | Loop Antenna H-Field | NT-132 |
| ☐ | Horn Antenna 500 MHz - 2900 MHz | NT-133 |
| ☐ | Log. per. Antenna 800 MHz - 2500 MHz | NT-134 |
| ☐ | Log. per. Antenna 800 MHz - 2500 MHz | NT-135 |
| ☐ | BiConiLog Antenna 26 MHz – 2000 MHz | NT-137 |
| ☐ | Conical Dipol Antenna PCD8250 | NT-138 |
| ☐ | HZ-1 Antenna tripod | NT-150 |
| ☐ | BN 1500 Antenna tripod | NT-151 |
| ☒ | Ant. tripod for EN61000-4-3 Model TP1000A | NT-156 |
| ☐ | Spectrumanalyzer – FSP7 9 kHz – 7 GHz | NT-200 |
| ☐ | ESVP - Test receiver 20 - 1000 MHz | NT-201 |
| ☐ | ESPC - Test receiver 9 kHz - 2,5 GHz | NT-203 |
| ☒ | ESI26 – Test receiver 20 Hz – 26,5 GHz | NT-207 |
| ☐ | Digital Radio Tester CTS55 | NT-208 |
| ☐ | Noise-gen., ITU-R 559-2 20 Hz – 20 kHz | NT-209 |
| ☐ | CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz | NT-210 |
| ☐ | 3271 - Spectrum analyzer 100 Hz - 26,5 GHz | NT-211 |
| ☐ | Radiocommunicationanalyzer Marconi 2945A | NT-212 |
| ☐ | 2855S - Communication analyzer | NT-213 |
| ☐ | Mixer M28HW 26,5 GHz - 40 GHz | NT-214 |
| ☐ | Diode Detector 0,01 GHz - 26,5 GHz | NT-215 |
| ☐ | RubiSource T&M Timing reference | NT-216 |
| ☐ | Radiocommunicationanalyzer SWR 1180 MD | NT-217 |
| ☐ | Mixer M19HWD 40 GHz – 60 GHz | NT-218 |
| ☐ | Mixer M12HWD 60 GHz – 90 GHz | NT-219 |
| ☐ | TDS - 540 DSO Digital scope | NT-220 |
| ☐ | PM97 Scopemeter | NT-221 |
| ☐ | TPS 2014 Digital scope | NT-222 |
| ☐ | Artificial Ear according to IEC 60318 | NT-224 |
| ☐ | 1 kHz Sound calibrator | NT-225 |
| ☐ | B10 - Harmonics and flicker analyzer | NT-232 |
| ☐ | SRM-3000 Spectrumanalyzer | NT-233 |
| ☐ | E-field probe SRM 75 MHz – 3 GHz | NT-234 |
| ☐ | Hall-Teslameter ETM-1 | NT-241 |
| ☐ | EFA-3 H-field- / E-field probe | NT-243 |
| ☐ | E-field measuring instrument EMR-200; 100 kHz – 3 GHz | NT-244 |
| ☐ | E-field probe 100 kHz – 3 GHz | NT-245 |
| ☐ | Magneticfield-Sensor 300 kHz – 30 MHz | NT-246 |
| ☐ | E-field probe 3 MHz – 18 GHz | NT-247 |
| ☐ | H-field probe 27 MHz – 1 GHz | NT-248 |
| ☐ | ELT-400 1 Hz – 400 kHz | NT-249 |

# Appendix 1 (continued)
# Test equipment used

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| | | |
|---|---|---|
| ☐ | MDS 21 - Absorbing clamp 30 - 1000 MHz | NT-250 |
| ☒ | FCC-203I EM Injection clamp | NT-251 |
| ☐ | FCC-203I-DCN Ferrite decoupling network | NT-252 |
| ☐ | PR50 Current Probe | NT-253 |
| ☐ | PR630 Current Probe | NT-254 |
| ☐ | Fluke 87 V True RMS Multimeter | NT-260 |
| ☐ | Model 2000 Digital Multimeter | NT-261 |
| ☐ | Fluke 79 Digital Multimeter | NT-262 |
| ☒ | ESH2-Z5 Artificial mains network 4x25A | NT-300 |
| ☐ | ESH3-Z5 Artificial mains network 2x10A | NT-301 |
| ☐ | ESH3-Z6 Artificial mains network 1x100A | NT-302 |
| ☐ | ESH3-Z4 T-Artificial network | NT-303 |
| ☐ | PHE 4500/B Power amplifier | NT-304 |
| ☐ | EZ10 T-Artificial Network | NT-305 |
| ☐ | ENY22 Artificial Network | NT-308 |
| ☐ | ENY41 Artificial Network | NT-309 |
| ☒ | SMG - Signal generator 0,1 - 1000 MHz | NT-310 |
| ☐ | PM 5518 TXVPS Video generator | NT-311 |
| ☐ | RefRad Reference generator | NT-312 |
| ☐ | SMP 02 Signal generator 10 MHz - 20 GHz | NT-313 |
| ☐ | 40 MHz Arbitrary Generator T1241 | NT-315 |
| ☒ | PEFT - Burst generator up to 4 kV | NT-320 |
| ☒ | ESD 30 System up to 25 kV | NT-321 |
| ☐ | PSURGE 4.1 Surge generator | NT-324 |
| ☐ | TRANSIENT 1000 Immunity test system | NT-325 |
| ☐ | VCS 500-M6 Surge-Generator | NT-326 |
| ☒ | BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W | NT-330 |
| ☐ | T82-50 RF-Amplifier 2 GHz – 8 GHz | NT-331 |
| ☒ | 500W1000M7 - RF-Amplifier 80 - 1000 MHz / 500 W | NT-332 |
| ☐ | AS0102-65R - RF-Amplifier 1 GHz - 2 GHz | NT-333 |
| ☐ | APA01 – RF-Amplifier 0,5 GHz – 2,5 GHz | NT-334 |
| ☐ | Preamplifier 1 GHz - 4 GHz | NT-335 |
| ☐ | Preamplifier for GPS MKU 152 A | NT-336 |
| ☐ | Preamplifier 100 MHz – 23 GHz | NT-337 |
| ☐ | DC Block 10 MHz – 18 GHz Model 8048 | NT-338 |
| ☐ | 2-97201 Electronic load | NT-341 |
| ☐ | TSX3510P - Power supply 0-30 V / 0 - 10 A | NT-344 |
| ☐ | TSX3510P - Power supply 0-30 V / 0 - 10 A | NT-345 |
| ☐ | VDS 200 Mobil-impuls-generator | NT-350 |
| ☐ | LD 200 Mobil-impuls-generator | NT-351 |
| ☐ | MPG 200 Mobil-Impuls-Generators | NT-352 |
| ☐ | EFT 200 Mobil-impuls-generator | NT-353 |
| ☐ | AN 200 S1 Artificial Network | NT-354 |
| ☐ | FP 16/3-1 3 ph. Coupling filter (Burst) | NT-400 |
| ☐ | PHE 4500 - Mains impedance network | NT-401 |
| ☐ | IP 6.2 Coupling filter for data lines (Surge) | NT-403 |
| ☐ | ESH2-Z3 - Probe 9 kHz - 30 MHz | NT-410 |
| ☒ | IP 4 - Capacitive clamp (Burst) | NT-411 |
| ☐ | Highpass-Filter 100 MHz – 3 GHz | NT-412 |
| ☐ | Highpass-Filter 600 MHz – 4 GHz | NT-413 |
| ☐ | Highpass-Filter 1250 MHz – 4 GHz | NT-414 |
| ☐ | Highpass-Filter 1800 MHz – 16 GHz | NT-415 |
| ☐ | Highpass-Filter 3500 MHz – 18 GHz | NT-416 |
| ☐ | RF-Attenuator 20 dB 0,1 - 1000 MHz / 25 W | NT-421 |
| ☐ | RF-Attenuator 10 dB 0,1 - 1000 MHz / 20 W | NT-422 |
| ☐ | RF-Attenuator 30 dB 0,1 - 1000 MHz / 1 W | NT-423 |
| ☐ | RF-Attenuator 30 dB | NT-424 |
| ☐ | RF-Attenuator 6 dB 0,1 - 1000 MHz / 1 W | NT-425 |

# Appendix 1 (continued)
# Test equipment used

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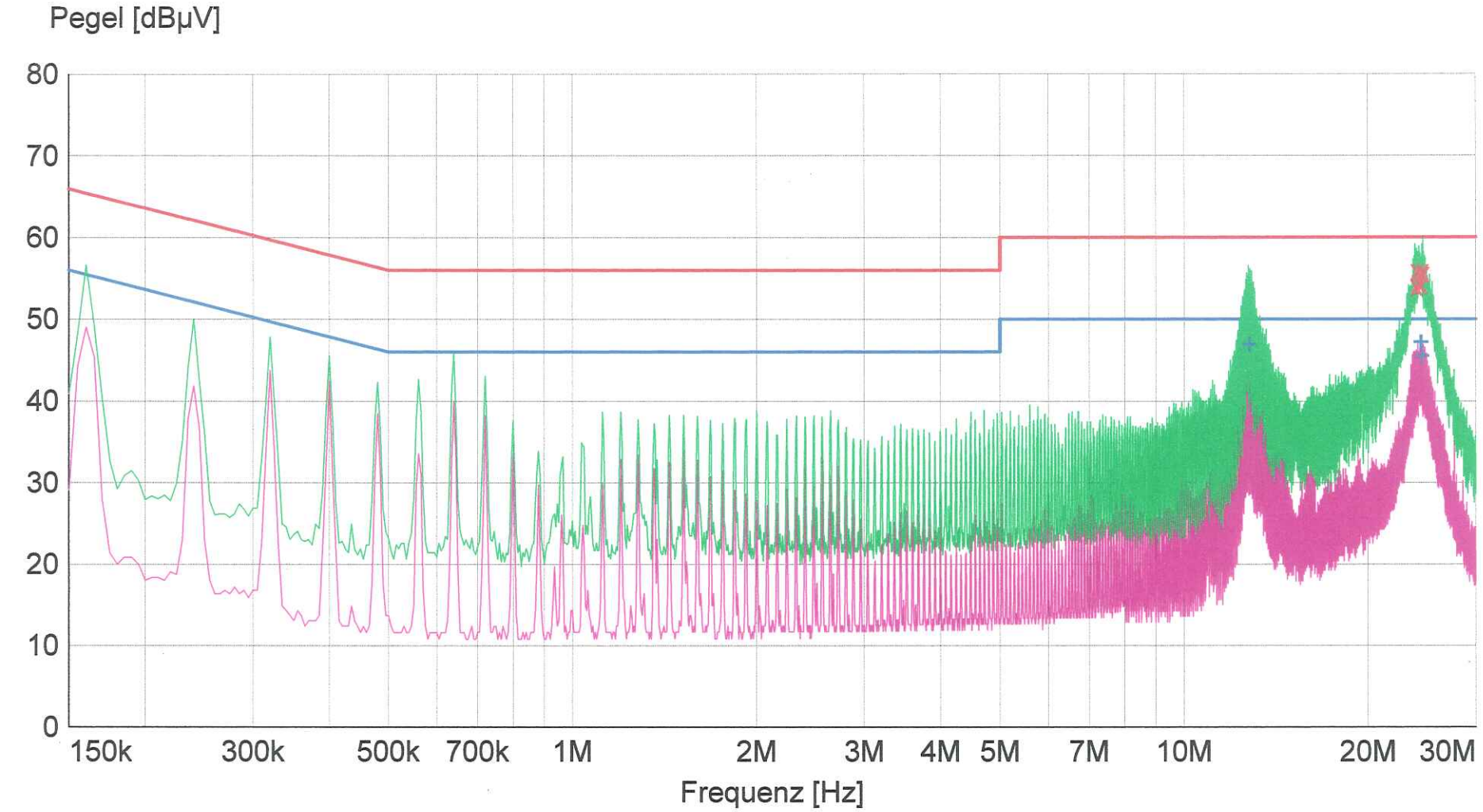
| | | |
|---|---|---|
| ☐ | RF-Attenuator 6 dB 0,1 - 1000 MHz / 1 W | NT-426 |
| ☐ | RF-Attenuator 6 dB | NT-428 |
| ☐ | RF-Attenuator 0 dB - 81 dB | NT-429 |
| ☐ | WRU 27 - Band blocking 27 MHz | NT-430 |
| ☐ | WHJ450C9 AA - High pass 450 MHz | NT-431 |
| ☐ | WHJ250C9 AA - High pass 250 MHz | NT-432 |
| ☐ | RF-Load 150 W | NT-433 |
| ☐ | Impedance transducer 1:4 ; 1:9 ; 1:16 | NT-435 |
| ☐ | RF-Attenuator DC – 18 GHz 6 dB | NT-436 |
| ☐ | RF-Attenuator DC – 18 GHz 6 dB | NT-437 |
| ☐ | RF-Attenuator DC – 18 GHz 10 dB | NT-438 |
| ☐ | RF-Attenuator DC – 18 GHz 20 dB | NT-439 |
| ☐ | I+P 7780 Directional coupler 100 - 2000 MHz | NT-440 |
| ☒ | ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz | NT-441 |
| ☐ | Power Divider 6 dB/1 W/50 Ohm | NT-443 |
| ☐ | Directional coupler 0,1 MHz – 70 MHz | NT-444 |
| ☐ | Directional coupler 0,1 MHz – 70 MHz | NT-445 |
| ☐ | Tube imitations according to EN 55015 | NT-450 |
| ☐ | FCC-801-M2-50A Coupling decoupling network | NT-459 |
| ☐ | FCC-801-M5-25 Coupling decoupling network | NT-460 |
| ☐ | FCC-801-AF10 Coupling decoupling network | NT-461 |
| ☐ | FCC-801-S25 Coupling decoupling network | NT-462 |
| ☐ | FCC-801-T4 Coupling decoupling network | NT-463 |
| ☐ | FCC-801-C1 Coupling decoupling network | NT-464 |
| ☐ | F-16A - Current probe 1kHz - 70MHz | NT-465 |
| ☐ | 95242-1 – Current probe 10 MHz – 400 MHz | NT-468 |
| ☐ | PC P4 3 GHz Test computer | NT-500 |
| ☒ | PC P4 1700 MHz Notebook | NT-505 |
| ☐ | PC Intel Centrino 1600 MHz Notebook | NT-506 |
| ☐ | Monitoring camera with Monitor | NT-511 |
| ☒ | ES-K1 Version 1.71 Test software | NT-520 |
| ☐ | SRM-TS Version 1.3 software for SRM-3000 | NT-522 |
| ☐ | SPS-PHE Test software V2.32 voltage fluctuations/harmonics | NT-525 |
| ☐ | SPS-EM Test software V2.32 for PHE 4500/B | NT-527 |
| ☐ | Noise power test apparatus according to EN 55014 | NT-530 |
| ☐ | Vertical coupling plane (ESD) | NT-531 |
| ☒ | Test cable #4 for EN 61000-4-6 | NT-553 |
| ☒ | Test cable #3 for conducted emission | NT-554 |
| ☐ | Test cable #5 ESD-cable (2x470k) | NT-555 |
| ☐ | Test cable #6 ESD-cable (2x470k) | NT-556 |
| ☐ | Test cable #8 Sucoflex 104EA | NT-559 |
| ☐ | Test cable #9 (for outdoor measurements) | NT-580 |
| ☐ | Test cable #10 (for outdoor measurements) | NT-581 |
| ☐ | Test cable #13 Sucoflex 104PE | NT-584 |
| ☐ | Test cable #21 for SRM-3000 | NT-592 |
| ☐ | Shield chamber | NT-600 |
| ☐ | Climatic chamber -55°C to +180°C | M-512 |
| ☐ | Control and simulation equipment for EUT | --- |

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\+ + MES EP04.40_V01_fin2
MES EP04.40_V01_pre
MES EP04.40_V01_pre2
LIM EN 55022 V QP EN 55022 V QP
LIM EN 55022 V AV EN 55022 V AV



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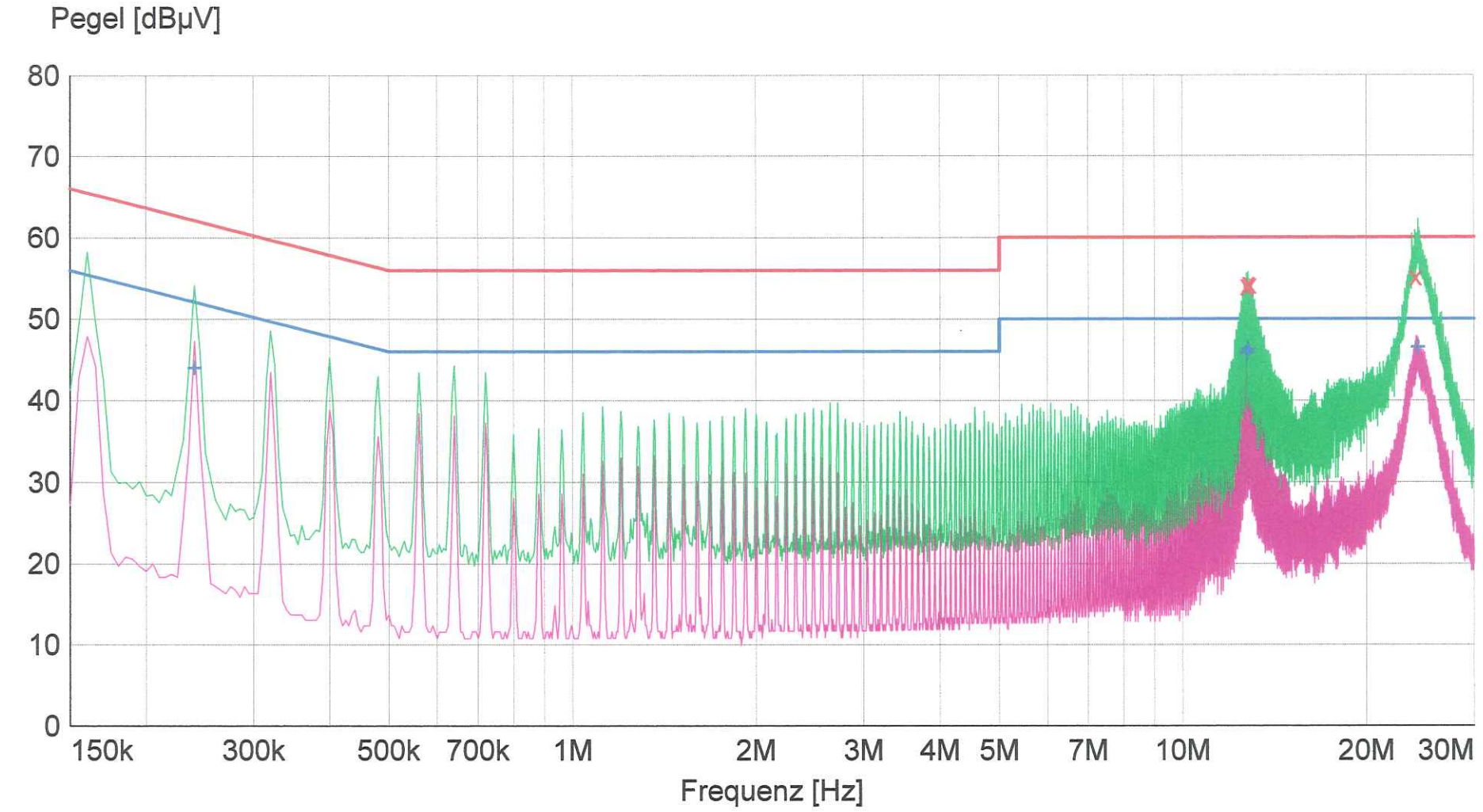
Division Medical Technology/ Communication Technology/ EMC
Department: EMC
Test report reference: M/EMV-06/231
Measurement diagram: 4 of 5
Date: 16.10.2006
checked by:

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\+ + - MES EP04.50_V01_fin2
MES EP04.50_V01_pre
MES EP04.50_V01_pre2
LIM EN 55022 V QP EN 55022 V QP
LIM EN 55022 V AV EN 55022 V AV

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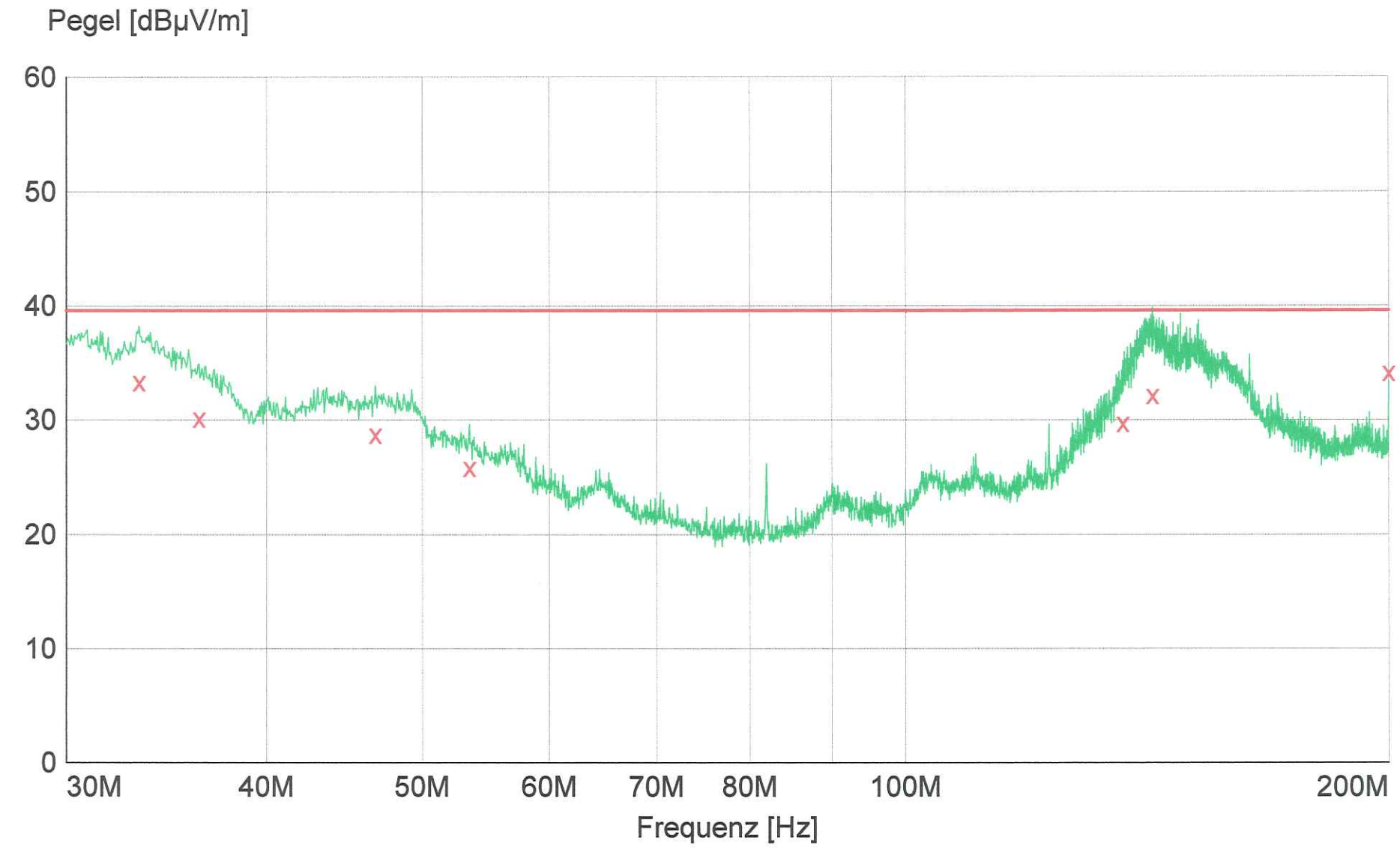
EMC
Department: EMC
Test report reference:
M/EMV-06/231
Measurement diagram:
2 of 5
Date: 16.10.2006
checked by:




x x :MES EPOSAnewinF1_fin
MES EPOSAnewinF1_pre
LIM EN 55022 F QP EN 55022 F QP

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Department: EMC

Test report reference:
M/EMV-06/231

Measurement diagram:
3 of 5

Date: 16.10.2006

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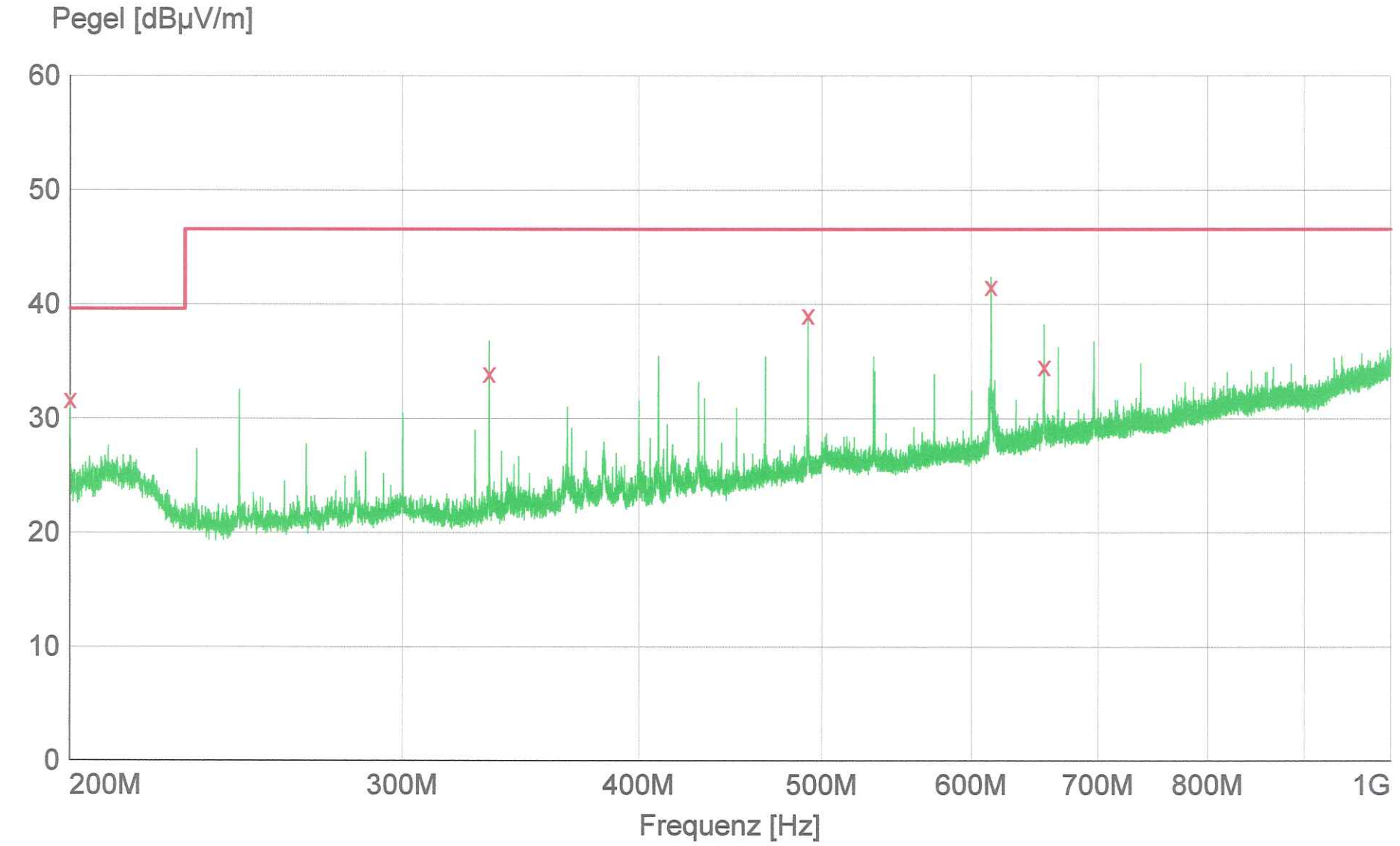


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MES EPOSAnewinF2_pre
LIM EN 55022 F QP EN 55022 F QP

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EMC

Department: EMC

Test report reference:
M/EMV-06/231

Measurement diagram:
4 of 5

Date: 16.10.2006

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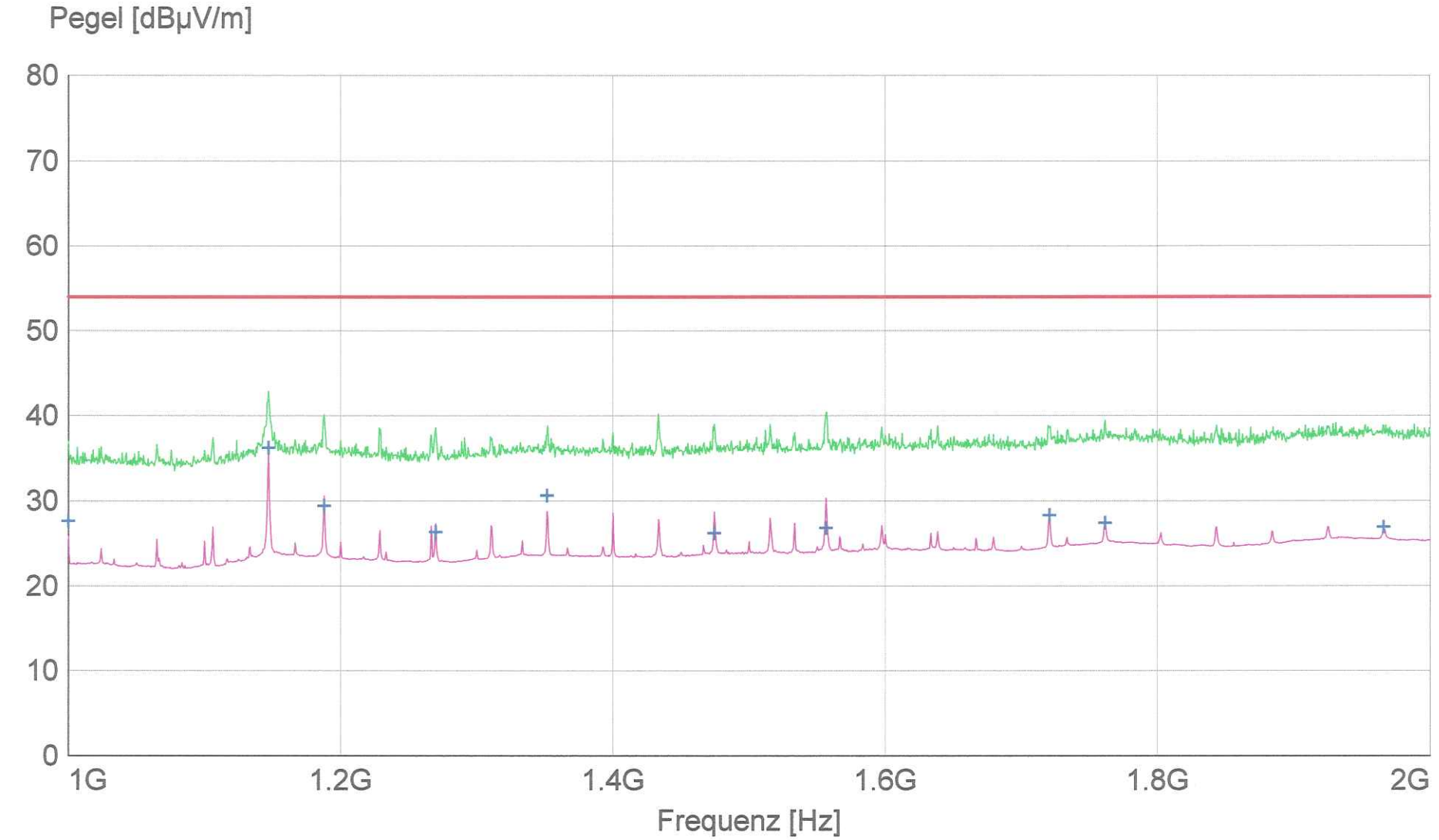


+ + MES EPOSAnewinF3_fin2
MES EPOSAnewinF3_pre
MES EPOSAnewinF3_pre2
LIM FCC ClassB F QP/AV FCC ClassB, field strength 3m



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Measurement diagram: 5 of 5
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**FREQUENTIS Operator Positions (HCR1179 implemented)**
**EPOSA 04.40, EPOSA 04.50**
**Information in respect to EMC testing**

## Device Under Test:

**Operator Positions: EPOSA 04.40, EPOSA 04.50**

## Short description:

The FREQUENTIS Operator Positions EPOSA 04.40 and EPOSA 04.50 conists of the touch entry device and the control electronic covered in a single housing. The Operator Positions form the human interface to operate the full digital Voice Communication System (VCS).

Depending on the business field, the Operator Positions together with the digital switch provide high secure voice and data services to be used in fields of e.g. air traffic management, public transport, public safety, martime and further more applications.

## Dimensions:

The Operator Positions are designed for integration into working consoles.

| (mm) | EPOSA 04.40 | EPOSA 04.50 |
|---|---|---|
| length | 253 | 326 |
| width | 253 | 254 |
| high | 75 | 70 |
| weight | 3,5kg | 4,5kg |

## System configuration:

The Operator Positions EPOSA 04.40 and EPOSA 04.50 were connected via shielded CAT5 cable to the digital switch (GATE X). Outside the EMC absorber chamber, a third Operator Position and the TMCS were connected to the same digital switch.

The following hardware components were used during testing:

Insider EMC absorber chamber:

1 x MOD EPOSA 04.40
1 x MOD EPOSA 04.50
2 x MOD PLSP 03.00
1 x MOD POT 03.00
1 x.MOD POT 03.10
2 x MOD PIPA 04.00
2 x Handset (TAS VT3 PTT)

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2 x Power Supply MeanWell P66A

Outside absorber chamber:

1 x GATE X (1 HU Switch)
1 x TMCS
1 x MOD EPOSA 04.40
1 x PIPA 04.00
1 x POT 03.00
1 x PLSP 03.00
1 x Handset
1 x Power Supply Mean Well P66A

**Serial numbers and software of the tested hardware:**

Test item inside EMC absorber chamber

| Unit | Softwarelevel | Serial Number |
|---|---|---|
| MOD EPOSA 04.40 | IVSR Rel. 4.1 Rev 2.0 | 30-0400204-PT |
| MOD EPOSA 04.50 | IVSR Rel. 4.1 Rev 2.0 | 30-0400205-PT |
| MOD PLSP 03.00 | IVSR Rel. 4.1 Rev 2.0 | 30-0401200-00008 |
| MOD POT 03.10 | IVSR Rel. 4.1 Rev 2.0 | 30-0401401-00007 |
| MOD PIPA 04.00 | IVSR Rel. 4.1 Rev 2.0 | 30-0401000-00080 |
| MOD PLSP 03.00 | IVSR Rel. 4.1 Rev 2.0 | 30-0401200-00006 |
| MOD POT 03.00 | IVSR Rel. 4.1 Rev 2.0 | 30-0401400-00007 |
| MOD PIPA 04.00 | IVSR Rel. 4.1 Rev 2.0 | 30-0401000-00081 |
| Handset TAS | --- | 30-0013802 |
| Handset TAS | --- | 30-0013802 |
| Power Supply | MeanWell P66A-6P5M | EJ103594-0526 |
| Power Supply | MeanWell P66A-6P5M | EJ103601-0526 |

Item outside EMC absorber chamber

| Unit | Softwarelevel | Serial Number |
|---|---|---|
| MOD EPOSA 04.40 | IVSR Rel. 4.1 Rev 2.0 | 30-0400204-PT |
| MOD PLSP 03.00 | IVSR Rel. 4.1 Rev 2.0 | 30-0401200-00001 |
| MOD POT 03.00 | IVSR Rel. 4.1 Rev 2.0 | 30-0401400-00005 |
| MOD PIPA 04.00 | IVSR Rel. 4.1 Rev 2.0 | 30-0401000-00072 |
| Handset TAS | --- | 30-0013802 |
| Power Supply | MeanWell P66A-6P5M | EJ103670-0526 |
| MOD GATE X | IVSR Rel. 4.1 Rev 2.0 | 30-0403601-PT |
| TMCS | IVSR Rel. 4.1 Rev 2.0 (WINDOWS XP) | HP Compaq DC7100 CMP |

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**Seld diagnostic:**

The FREQUENTIS Operator Positions EPOSA 04.40 and EPOSA 04.50 were supervised via a PC based Technical Monitoring and Control System (TMCS) developed by FREQUENTIS.

The TMCS has two main tasks to perform:

1. Providing the possibility to configure and control the Operator Positions and the digital switch.

2. Monitor the status (e.g. ok, not ok) of the HW and SW modules.

For self-diagnostic purposes state changes (e.g. "ok -> not ok" or "not ok -> ok") will be reported to the TMCS which displays the actual state and documents the occurred events in log files.

**Test Setup:**

The proper function of the DUT during testing was monitored by the VCS operator positions and the TMCS. In order to evaluate the performance of the system during testing, active connections were set up. Using the VCS operator positions and TMCS outside the absorber room, active calls and data connections were monitored. These connections were not to be interrupted nor affected.

The following connections were set up:

1) Active TMCS connection

   The Technical Monitoring and Control System (outside the absorber room) was permanently connected via shielded CAT 5 cable to the digital switch (GATE-X). The TMCS shows the current system status. The system status was montitored before, during and after testing

2) Active Call connection: Operator Position No.:1(OP1) to Operator Position No.:2 (OP2) to Operator Position No.:3 (OP3)

   Operator Positions were connected to the digital switch (GATE-X) via shielded CAT 5 cables. An active call connection was setup from OP1 (inside absorber chamber) to OP2 (inside absorber chamber) and to OP3 (outside absorber chamber). The operator positions were switched together via conference feature. During testing the active call was monitored. Additionally the system status was monitored over the connected TMCS. During immunity testing the handset voice level on OP3 was measured and recorded with an artificial ear device.

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