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SIST EN ISO/IEC 17025
LP-009

Test report

Number:	**T251-0909/15**	Project file:	C20151793
		Date:	2015-12-16
		Pages:	66
Product:	**Customer Evaluation Board**		
Type reference:	**PNEV5180B**		
Ratings:	5 Vdc ±5%; 500 mA (via USB) or external power supply 7.5 Vdc ±15%; 500 mA Protection class: III. Maximum clock frequency: 13.56 MHz		
Trademark:	NXP		
Applicant:	**NXP SEMICONDUCTORS GmbH** **Mikron - Weg 1, AT-8101 Gratkorn, Austria**		
Manufacturer:	ČETRTA POT, d.o.o., Kranj Planina 3, SI-4000 Kranj, Slovenia		
Place of manufacture:	ČETRTA POT, d.o.o., Kranj Planina 3, SI-4000 Kranj, Slovenia		

Summary of testing

Testing method:	FCC Part 15, Subpart C
Testing location:	SIQ Ljubljana, Trpinčeva ulica 37 A, SI-1000 Ljubljana, Slovenia
Remarks:	Date of receipt of test items: 2015-08-12 Number of items tested: 2 Date of performance of tests: 2015-10-12 - 2015-11-23 The test results presented in this report relate only to the items tested. The product complies with the requirements of the testing methods.

Tested by: Andrej Škof

Approved by: Marjan Mak

The report shall not be reproduced except in full.

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1 GENERAL

History sheet			
Date	Report No.	Change	Revision
2015-12-16	T251-0909/15	Initial Test Report issued.	--

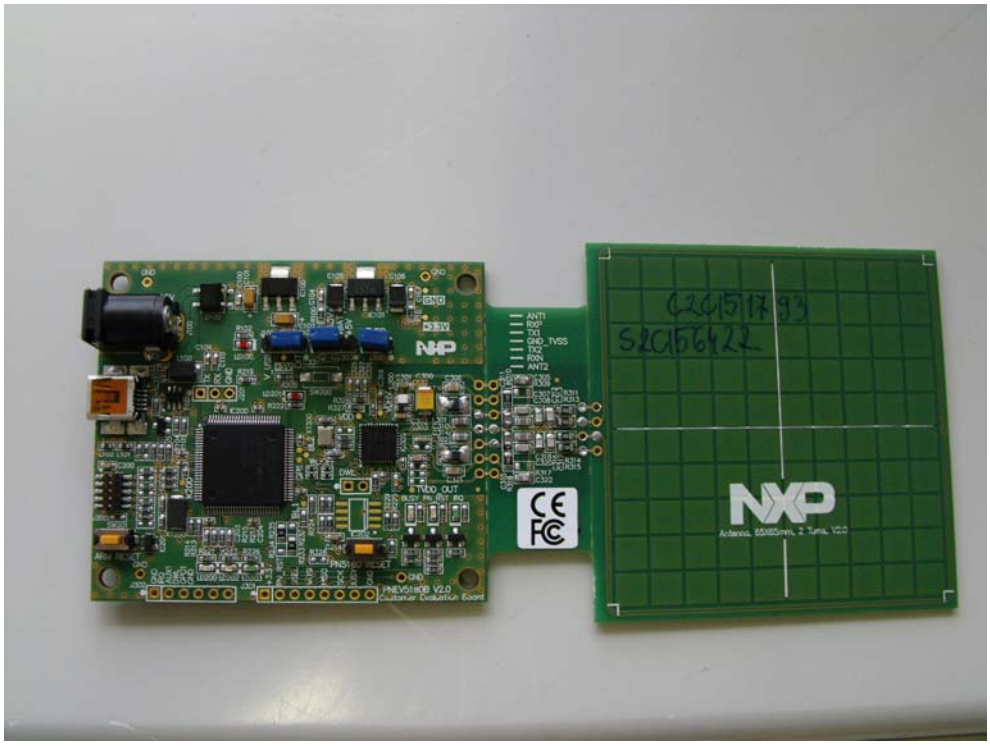
Environmental conditions:
Ambient temperature: 15°C to 35°C
Relative humidity: 30% to 60%
Atmospheric pressure: 860 mbar to 1060 mbar

1.1 Equipment under test

Customer Evaluation Board
Type: PNEV5180B
FCC ID: OWRPNEV5180B

1.1.1 General product information

Tested sample number: S20156422 (Antenna Board 65 x 65 mm),
Measurements done with HP EliteBook 8560p and NPX_PN518_SupportTool_v1_7 software.



Picture of EUT

1.2 ANSI C63.4 Subpart selection

Subpart C: Intentional Radiators

Section 15.203: Antenna Requirement
PNEV5180B has permanently attached antenna and can not be replaced.

1.3 Class statement requirements

- The Class A statement cautions that operation of the device in a residential area is likely to cause harmful interference.
- The Class B statement offers several suggestions for minimizing interference to radio or TV receivers, including reorienting the receiving antenna and moving the Class B device farther away from the receiver.

1.4 List of measurements performed

PART 15 section	Test name
15.207	Conducted emission
15.209	Radiated emission
15.215	Bandwidth of the emission
15.225	Radiated emission

1.5 Occupied bandwidth measurement

Fundamental frequency	Minimum resolution bandwidth
9 kHz to 30 MHz	1 kHz
30 to 1000 MHz	10 kHz
1000 MHz to 40 GHz	100 kHz

1.6 Quasi-peak detector

Frequency range	Bandwidth (-6dB)
10 Hz to 20 kHz	Full range (wideband)
10 kHz to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz

1.7 Peak, rms, and average detectors

Frequency range	Bandwidth (-6dB)
10 Hz to 20 kHz	10, 100, 1000 Hz
10 kHz to 150 kHz	1 and 10 kHz
150 kHz to 30 MHz	1 and 10 kHz
30 MHz to 1 GHz	10 and 100 kHz
1 GHz to 40 GHz	0.1, 1.0 and 10 MHz

2 LIMITS FOR ALL SUBPARTS

2.1 Subpart C: Intentional Radiators

2.1.1 Conducted emission limits:

Limits:

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.5	66 – 56*	56 – 46*
0.5 to 5.0	56	46
5.0 to 30.0	60	50

* Decreases with the logarithm of the frequency.

The shown limits in table shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

- For carrier current systems containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.
- For all other carrier current systems: 1000 µV within the frequency band 535-1705 kHz, as measured using a 50 µH/50 ohms LISN.
- Carrier current systems operating below 30 MHz are also subject to the radiated emission limits as appropriate.

2.1.2 Radiated emission limits:

Limits:

Frequency Range (MHz)	Limits (dBµV/m)		Test distance (m)
	VERTICAL	HORIZONTAL	
0,009 to 0,490	20*log(2400/F(kHz))	20*log(2400/F(kHz))	300
0,490 to 1,705	20*log(2400/F(kHz))	20*log(2400/F(kHz))	30
1,705 to 30,0	30	30	30
30 to 88	40**	40**	3
88 to 216	43.5**	43.5**	3
216 to 960	46**	46**	3
Above 960	54	54	3

** Except as provided in paragraph below, fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz.

Perimeter protection systems may operate in the 54-72 MHz and 76-88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

Additional FCC requirements per clause 15.215.
Intentional radiators operating under the alternative provisions to the general emission limits must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Additional FCC requirements per clause 15.225.

Fundamental Frequency (MHz)	Field strength of fundamental (μV/m)	Test distance (m)
13.553-13.567	15,848	30
13.410-13.553 and 13.567-13.710	334	30
13.110-13.410 and 13.710-14.010	106	30
Outside band 13.110-14.010	As per clause 15.209	30

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

3 ALL TEST EQUIPMENT AND THEIR DESCRIPTION

3.1 General information

Description	Model No.	SIQ No.	Last calibration	Calibrated until	Calibration period	Used
Rohde-Schwarz, RFI receiver	ESU8	105187	2015-10	2017-10	24 months	
Rohde-Schwarz, RFI receiver	ESU26	100428	2014-01	2016-01	24 months	X
Rohde & Schwarz, Artificial main network	ESH2-Z5	106899	2015-05	2017-05	24 months	X
ETS, Anechoic chamber	3m	103949	2014-11	2016-11	24 months	X
R&S, Antenna	HFH2-Z2	/	2015-09	2017-09	24 months	X
EMCO, Antenna	3142B	104351	2015-09	2017-09	24 months	X
EMCO, Antenna	3115	103002	2015-09	2017-09	24 months	X
Heinrich Deisel, Turn table	DS 420.00	103337	NA	NA	NA	X
Antenna tower	/	/	NA	NA	NA	X
Controller for turn table and antenna tower	/	/	NA	NA	NA	X

4 CONVERSION FACTORS AND ALL OTHER FORMULAS

Unit	Conversion unit	Formula of conversion
dBμV	dBμV/m	dBμV/m = dBμV + AF
μV/m	dBμV/m	dBμV/m = 20log(X(μV/m)/1μV)

	Test distance stated in standard	Test distance of measurement	Conversion factor
Class B	3 m	3 m	/
Class A	10 m	3 m	20dB/decade

5 GENERAL AND SPECIAL CONDITIONS DESCRIPTION

5.1 General condition description

Interconnect and power cabling (or wiring)

5.1.1 Test arrangement for conducted emissions

Interconnecting cables that hang closer than 40 cm to the ground-plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground-plane.
All other equipment powered from additional LISN(s).
Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
LISN at least 80 cm from nearest part of EUT chassis.

Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

Non-EUT components of EUT system being tested.

Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground-plane.

5.1.2 Test arrangement for conducted emissions- floor-standing equipment

Excess I/O cables shall be bundled in the center. If bundling is not possible, the cables shall be arranged in serpentine fashion. Bundling shall not exceed 40 cm in length.

Excess power cords shall be bundled in the center or shortened to appropriate length.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. If bundling is not possible, the cable shall be arranged in serpentine fashion.

EUT and all cables shall be insulated, if required, from the ground-plane by up to 12 mm of insulating material.

EUT connected to one LISN. LISN can be placed on top of, or immediately beneath, the ground-plane.
All other equipment powered from a second LISN or additional LISN(s).
Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

5.1.3 Test arrangement for radiated emissions tabletop equipment

Interconnecting cables that hang closer than 40 cm to the ground-plane shall be folded back and forth in the center, forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated if required using the correct terminating impedance. The total length shall not exceed 1 m.

If LISNs are kept in the test setup for radiated emissions, it is preferred that they be installed under the ground-plane with the receptacle flush with the ground-plane.

Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

Non-EUT components of EUT system being tested.

Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

No vertical conducting plane used.

Power cords drape to the floor and are routed over to receptacle.

5.1.4 Test arrangement for radiated emissions floor-standing equipment

Excess I/O cables shall be bundled in center. If bundling is not possible, the cables shall be arranged in serpentine fashion. Bundling not to exceed 40 cm in length.

Excess power cords shall be bundled in the center or shortened to appropriate length.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. If bundling is not possible, the cable shall be arranged in a serpentine fashion.

EUT and all cables shall be insulated, if required, from the ground-plane by up to 12 mm of insulating material.

If LISNs are kept in the test setup for radiated emissions, it is preferred that they be installed under the ground-plane with the receptacle flush with the ground plane.

Overhead cable trays and suspended ceilings

5.1.5 Test arrangement for floor-standing equipment

Only one vertical riser may be used where typical of system under test.

Excess power cord shall be bundled in the center or shortened to appropriate length.

EUT and cables shall be insulated from ground-plane by up to 12 mm. Where the manual has specified or there exists a code of practice for installation of the EUT, the test arrangement shall allow the use of this practice for the tests.

Power cords being measured connected to one LISN. All other system power cords powered through other LISN(s). A multiple receptacle strip may be used for other power cords.

For *conducted* tests, the LISNs may be placed on top of or immediately beneath and bonded directly to the ground-plane. For *radiated* tests, the LISN(s), if used, should be installed under, with the receptacle flush with the ground-plane.

5.1.6 Placement and manipulation of interconnect cabling (or wiring) of tabletop equipment

LISN(s) may have to be positioned to the side of the table to meet the criterion that the LISN receptacle shall be 80 cm away from the EUT. LISN(s) may be above ground-plane only for conducted emission measurements.

Accessories, such as ac power adapter, if typically table-mounted, shall occupy peripheral positions as is applicable.

Accessories, which are typically floor-mounted, shall occupy a floor position directly below the portion of the EUT to which they are typically connected. T

Table length may be extended beyond 1.5 m with peripherals aligned with the back edge. The table depth may be extended beyond 1 m. The 40 cm distance to the vertical conducting plane shall be maintained for conducted emission testing.

Placement of wall-mounted equipment

5.1.7 Test configuration/arrangement for combination floor-standing and tabletop equipment

Interconnecting cables that hang closer than 40 cm to the ground-plane shall be folded back and forth in the center, forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated if required using the correct terminating impedance.

If LISNs are kept in the test setup for radiated emissions, it is preferred that they be installed under the ground-plane with the receptacle flush with the ground-plane.

Cables of hand-operated devices, such as keyboards, mice, etc., have to be placed as for normal use.

Non-EUT components of EUT system being tested.

I/O cable to floor-standing unit drapes to the ground-plane and shortened or excess bundled. Cables not reaching the metal ground-plane are draped to the height of the connector or 40 cm, whichever is lower.

Power cords and signal cables shall drape to the floor. No extension cords shall be used to the power receptacles.

The floor-standing unit can be placed under the table if its height permits.

5.2 Special condition description

If for some reason the above measurement conditions can’t be met, the description below should be used as an appropriate measurement condition and placement.

(Description is written additionally as the measurements differ – all is within test procedure)

6 TEST SUMMARY

STANDARDS (details on first page)	Tested yes	Tested no	Sample pass	Sample not pass
ANSI C63.4-2009; FCC Part 15, Subpart C	☑	☐	☑	☐

Test	Section within the report	Class	Conclusion
Conducted emission	3.1	B	PASS
Radiated emission	3.2	B	PASS

6.1 Operating voltages/frequencies used for testing

Section	Test	Operating conditions
7.1	Conducted emission	5 VDC via USB 7,5 VDC ext.
7.2	Radiated emission	5 VDC via USB 7,5 VDC ext.

7 EMISSION TESTS

7.1 Conducted emission measurement (intentional radiator)

Section 15.207 Conducted limits

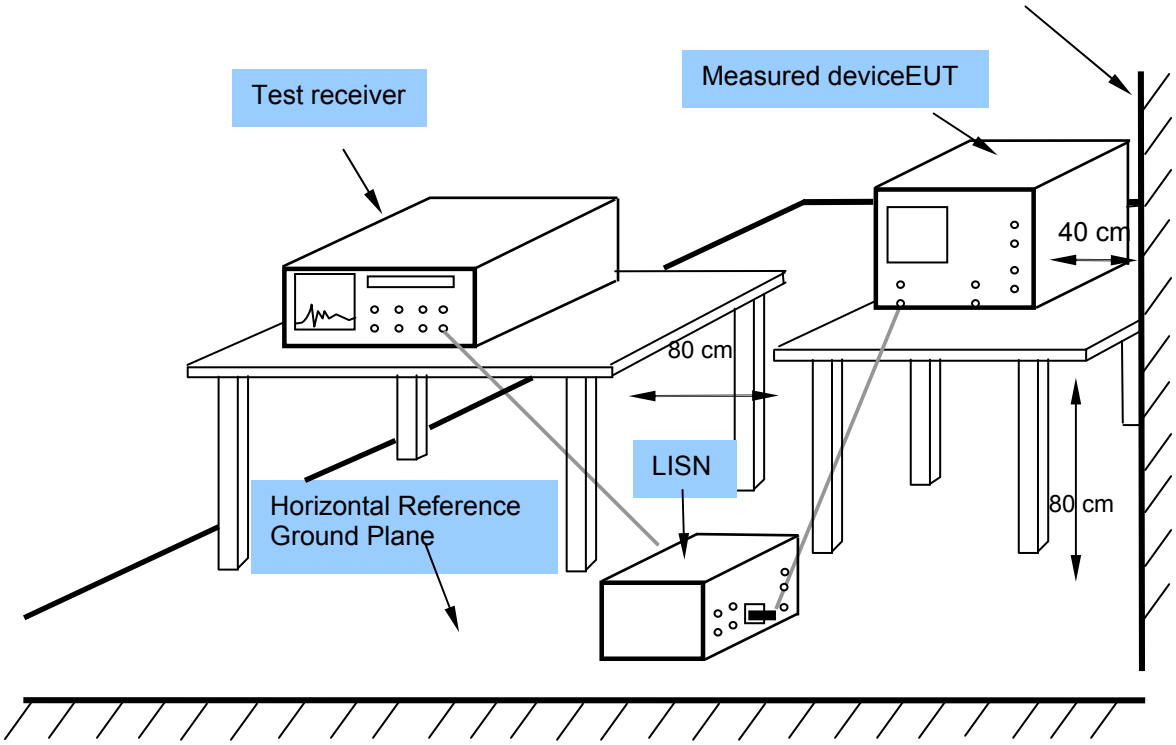
7.1.1 Test instruments

Description	Model No.	SIQ No.	Last calibration	Calibrated until	Calibration period	Used
Rohde-Schwarz, RFI receiver	ESU26	100428	2014-01	2016-01	24 months	X
Rohde & Schwarz, Artificial main network	ESH2-Z5	100406	2015-05	2017-05	24 months	X

7.1.2 Test procedure

- The EUT is placed on a non-conductive 0.8 meters high table, 0.4 meters from the vertical conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). LISN provide 50 Ohm / 50 μH + 5 Ohm of coupling impedance for the measuring instrument.
- Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.
- AC power lines of EUT are checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz is searched using PEAK, QUASI-PEAK and AVERAGE function of the receiver. Bandwidth is set to 9kHz.
- If applicable functions are changed (data transfer speed, clock speed,…)

7.1.3 Test setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.1.4 Test results

ROHDE&SCHWARZ

C20151793

01.Dec 15 10:34

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, D.O.O.
OP Condition	WAITING A TAG
Operator	ANDREJ SKOF

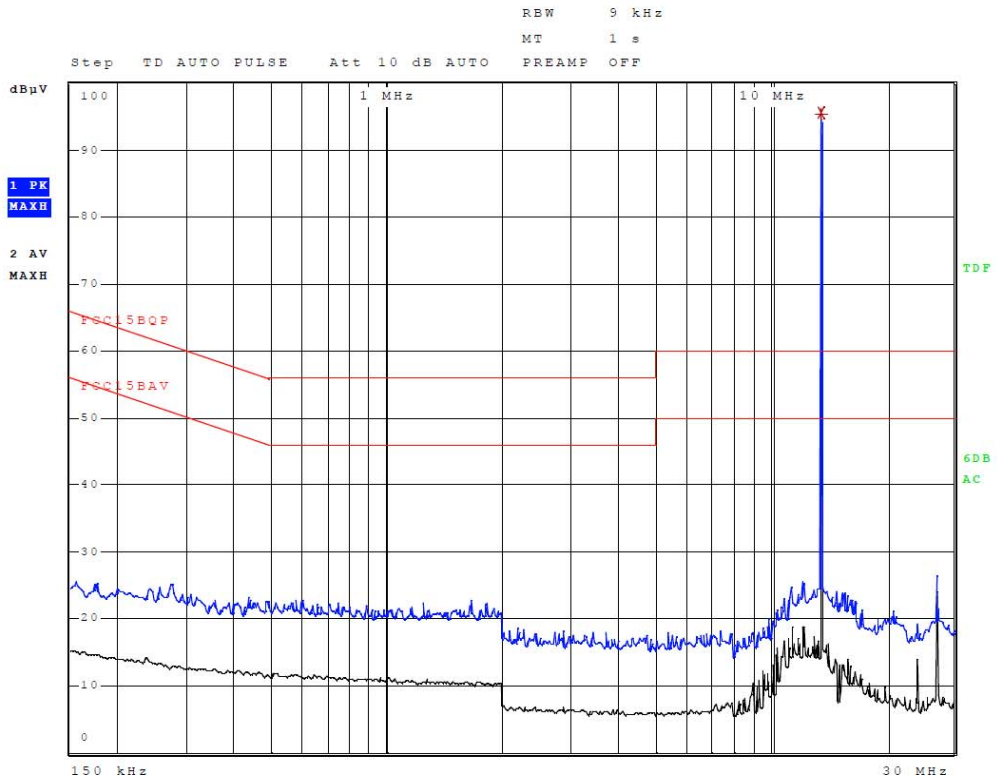
Test Spec

NEUTRAL, Uin: 7,5 V

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ENV216

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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C20151793

01.Dec 15 10:34

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, D.O.O.
OP Condition	WAITING A TAG
Operator	ANDREJ SKOF

Test Spec

NEUTRAL, Uin: 7,5 V

Final Measurement

Meas Time:	1 s
Margin:	6 dB
Peaks:	2

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	13.560000000 MHz	95.27	Quasi Peak	35.27
2	13.560000000 MHz	95.42	CISPR Averag	45.42

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C20151793

01.Dec 15 10:46

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, D.O.O.
OP Condition	WAITING A TAG
Operator	ANDREJ SKOF

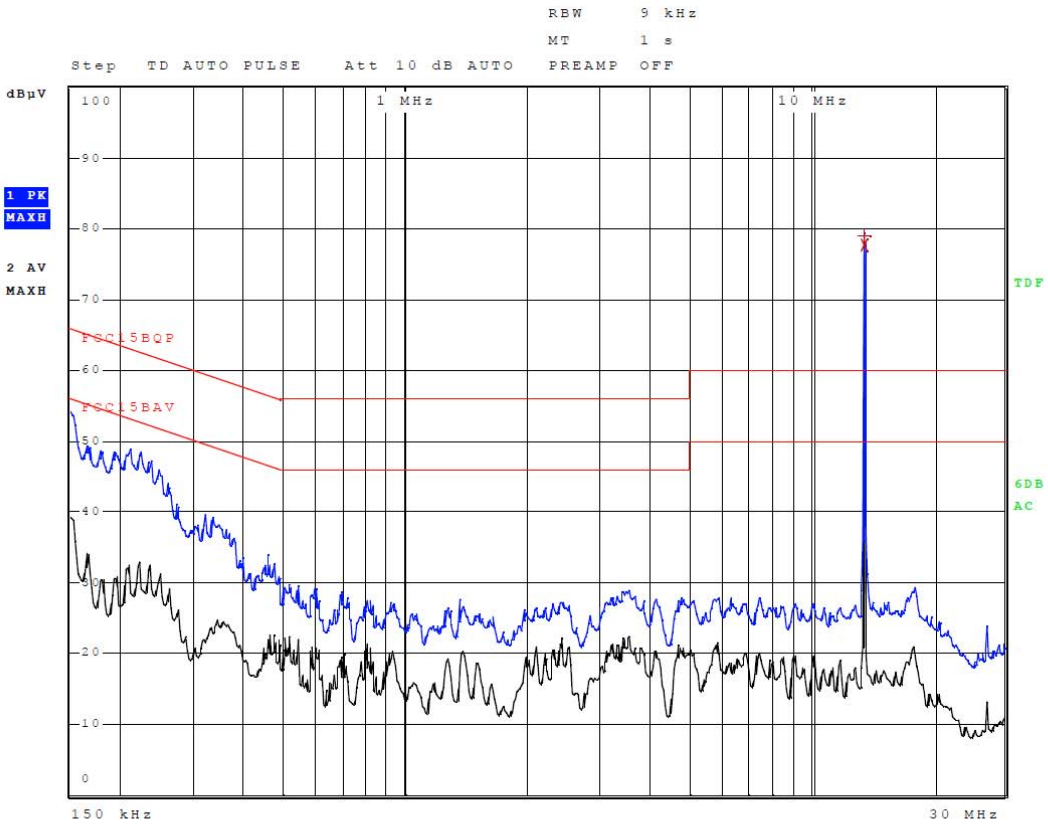
Test Spec

PHASE, Uin: 7,5 V

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ENV216

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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C20151793

01.Dec 15 10:46

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, D.O.O.
OP Condition	WAITING A TAG
Operator	ANDREJ SKOF

Test Spec

PHASE, Uin: 7,5 V

Final Measurement

Meas Time:	1 s
Margin:	6 dB
Peaks:	2

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	13.560000000 MHz	78.87	Quasi Peak	18.87
2	13.560000000 MHz	77.59	CISPR Averag	27.59

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C20151793

01.Dec 15 10:48

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, D.O.O.
OP Condition	READING A TAG
Operator	ANDREJ SKOF

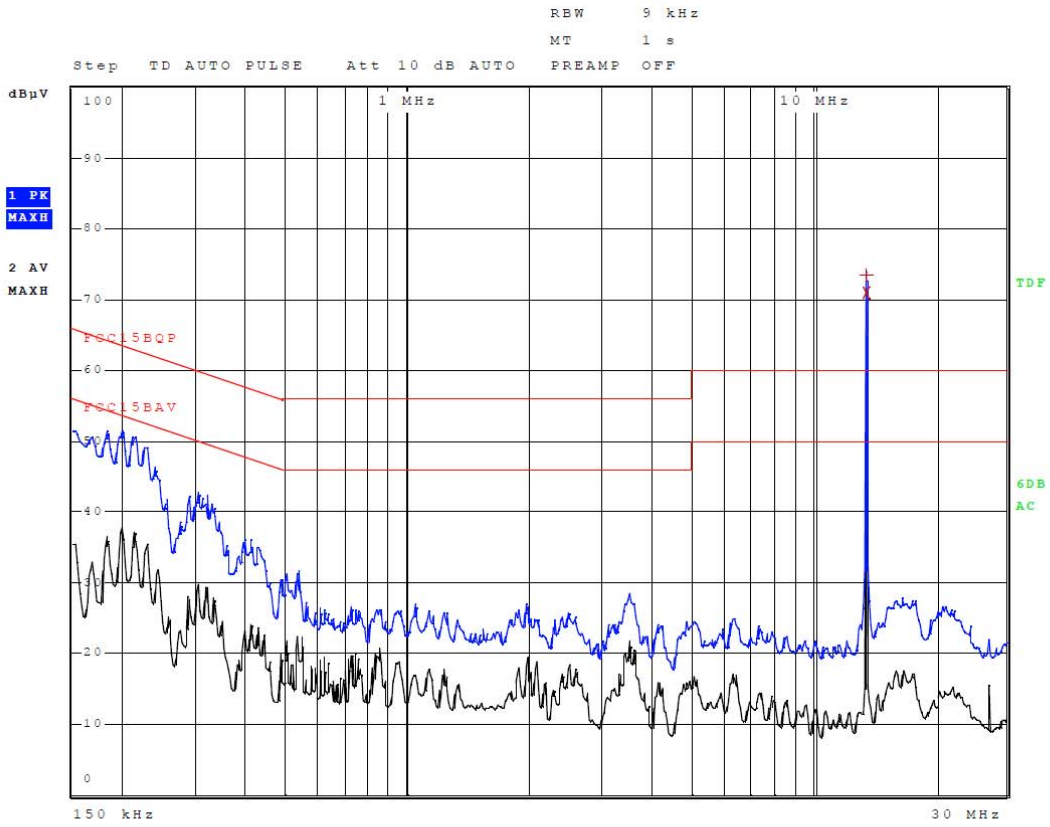
Test Spec

NEUTRAL , Uin: 7,5 V

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ENV216

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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C20151793

01.Dec 15 10:48

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, D.O.O.
OP Condition	READING A TAG
Operator	ANDREJ SKOF

Test Spec

NEUTRAL , Uin: 7,5 V

Final Measurement

Meas Time:	1 s
Margin:	6 dB
Peaks:	2

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	13.560000000 MHz	73.46	Quasi Peak	13.46
2	13.560000000 MHz	70.95	CISPR Averag	20.95

ROHDE&SCHWARZ

C20151793

01.Dec 15 10:47

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, D.O.O.
OP Condition	READING A TAG
Operator	ANDREJ SKOF

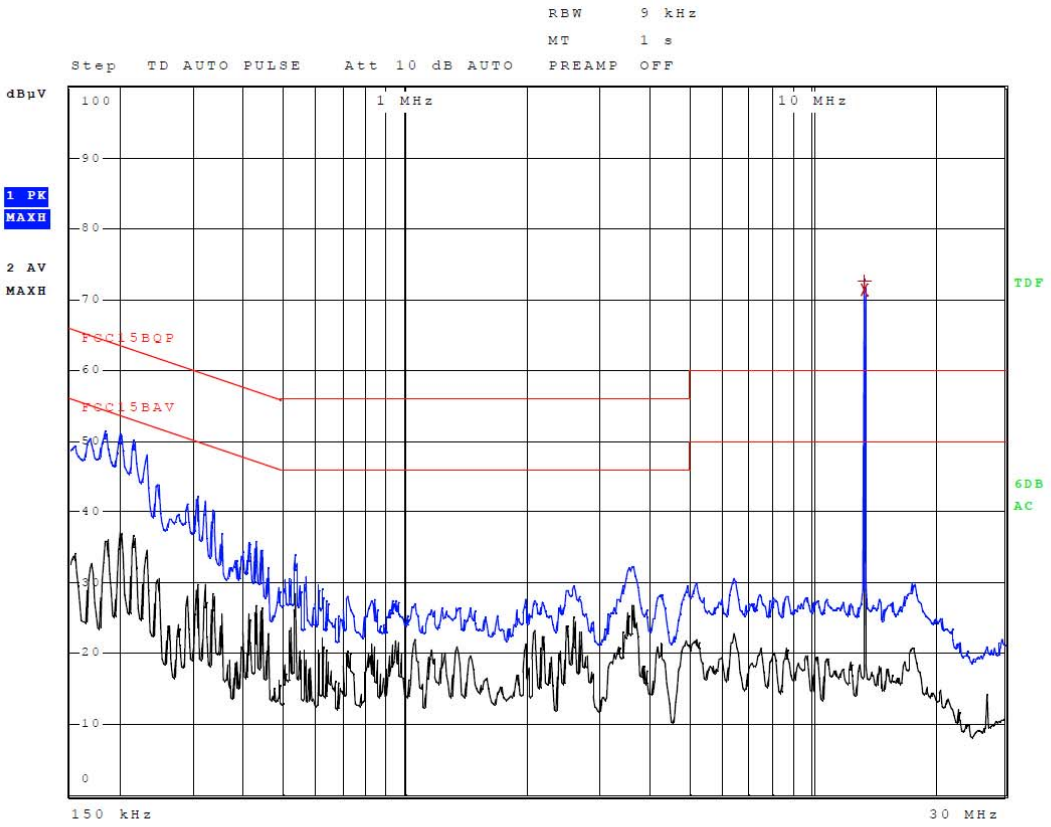
Test Spec

PHASE, Uin: 7,5 V

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ENV216

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



ROHDE&SCHWARZ

C20151793

01.Dec 15 10:47

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, D.O.O.
OP Condition	READING A TAG
Operator	ANDREJ SKOF

Test Spec

PHASE, Uin: 7,5 V

Final Measurement

Meas Time:	1 s
Margin:	6 dB
Peaks:	2

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	13.560000000 MHz	72.49	Quasi Peak	12.49
2	13.560000000 MHz	71.24	CISPR Averag	21.24

C20151793

29.Oct 15 13:42

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, d.o.o.
OP Condition	WAITING A TAG
Operator	ANDREJ SKOF

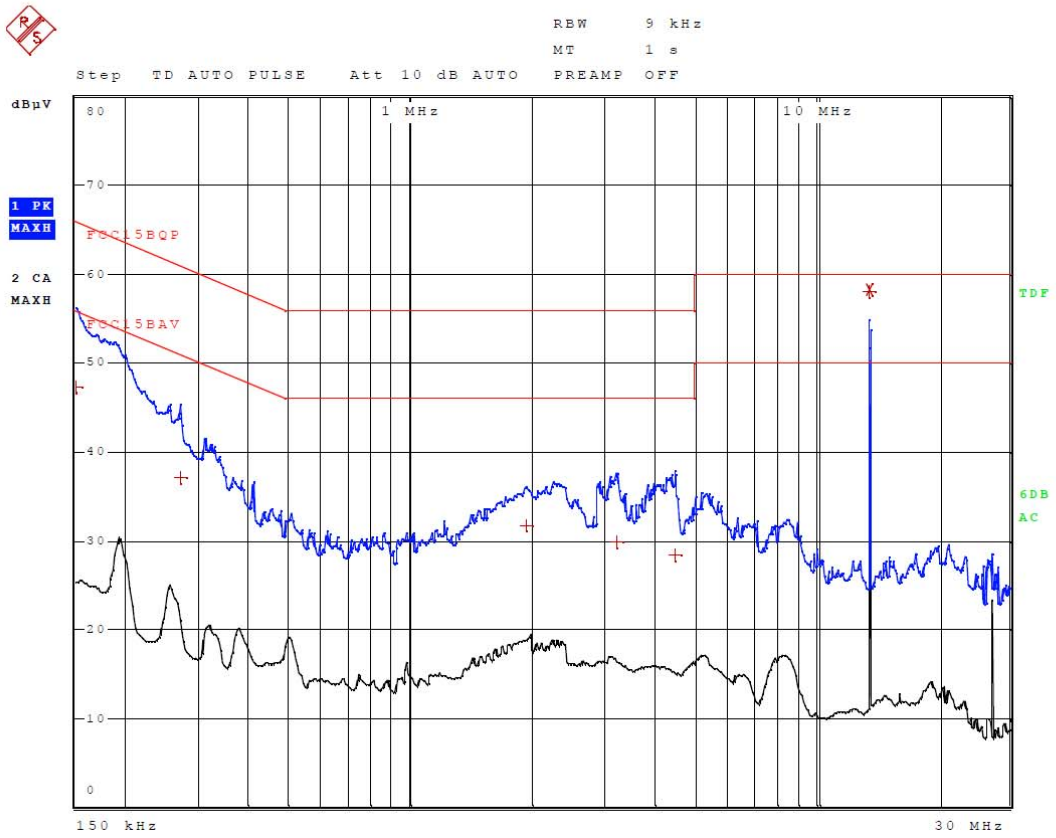
Test Spec

NEUTRAL 120 V, 60 Hz

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: CISPR Average
Transducer: ENV216

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	50 ms	Auto	0 dB	INPUT2



C20151793

29.Oct 15 13:42

Equipment under Test PNEV5180B
Manufacturer CETRTA POT, d.o.o.
OP Condition WAITING A TAG
Operator ANDREJ SKOF
Test Spec
NEUTRAL 120 V, 60 Hz

Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 7

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	58.29	CISPR Averag	8.29
1	13.560000000 MHz	58.03	Quasi Peak	-1.97
1	150.000000000 kHz	47.39	Quasi Peak	-18.61
1	269.250000000 kHz	37.11	Quasi Peak	-24.03
1	1.936500000 MHz	31.63	Quasi Peak	-24.37
1	3.223500000 MHz	29.89	Quasi Peak	-26.11
1	4.492500000 MHz	28.39	Quasi Peak	-27.61

C20151793

29.Oct 15 13:44

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, d.o.o.
OP Condition	WAITING A TAG
Operator	ANDREJ SKOF

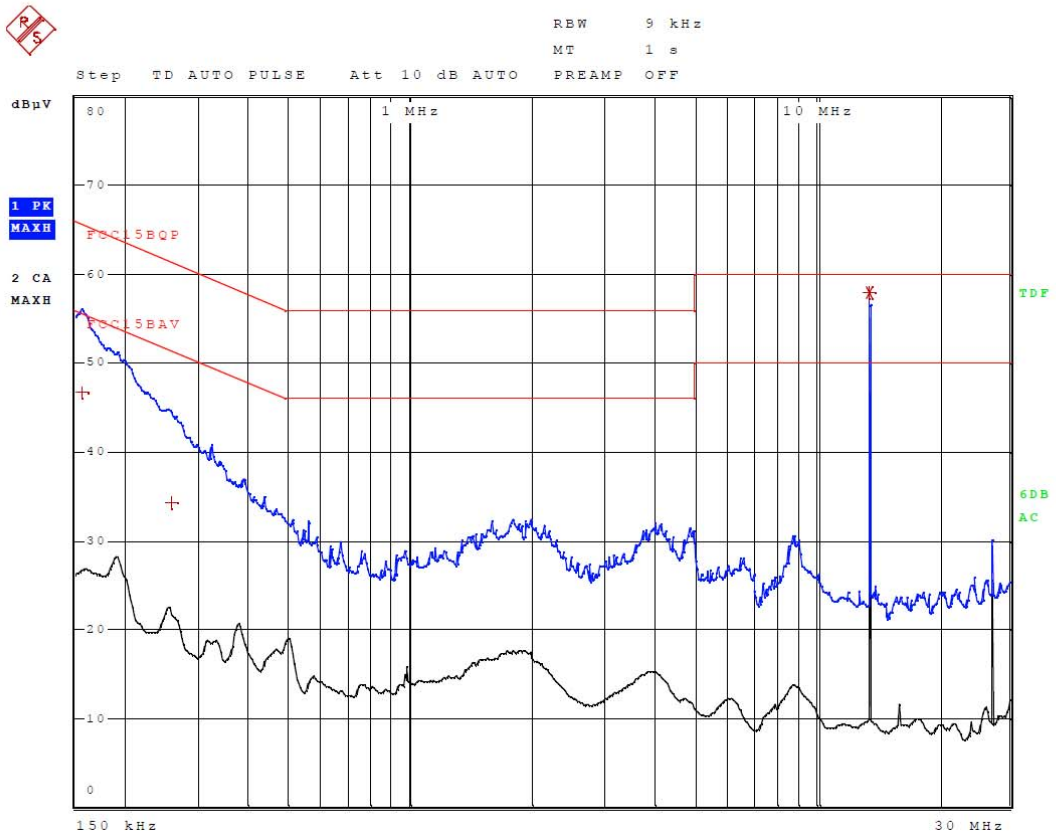
Test Spec

PHASE 120 V, 60 Hz

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: CISPR Average
Transducer: ENV216

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	50 ms	Auto	0 dB	INPUT2



C20151793

29.Oct 15 13:44

Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, d.o.o.
OP Condition	WAITING A TAG
Operator	ANDREJ SKOF

Test Spec
PHASE 120 V, 60 Hz

Final Measurement

Meas Time:	1 s
Margin:	20 dB
Subranges:	4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	57.97	CISPR Averag	7.97
1	13.560000000 MHz	57.82	Quasi Peak	-2.18
1	154.500000000 kHz	46.56	Quasi Peak	-19.19
1	255.750000000 kHz	34.23	Quasi Peak	-27.34

C20151793

29.Oct 15 13:40

Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, d.o.o.
OP Condition	READING A TAG
Operator	ANDREJ SKOF

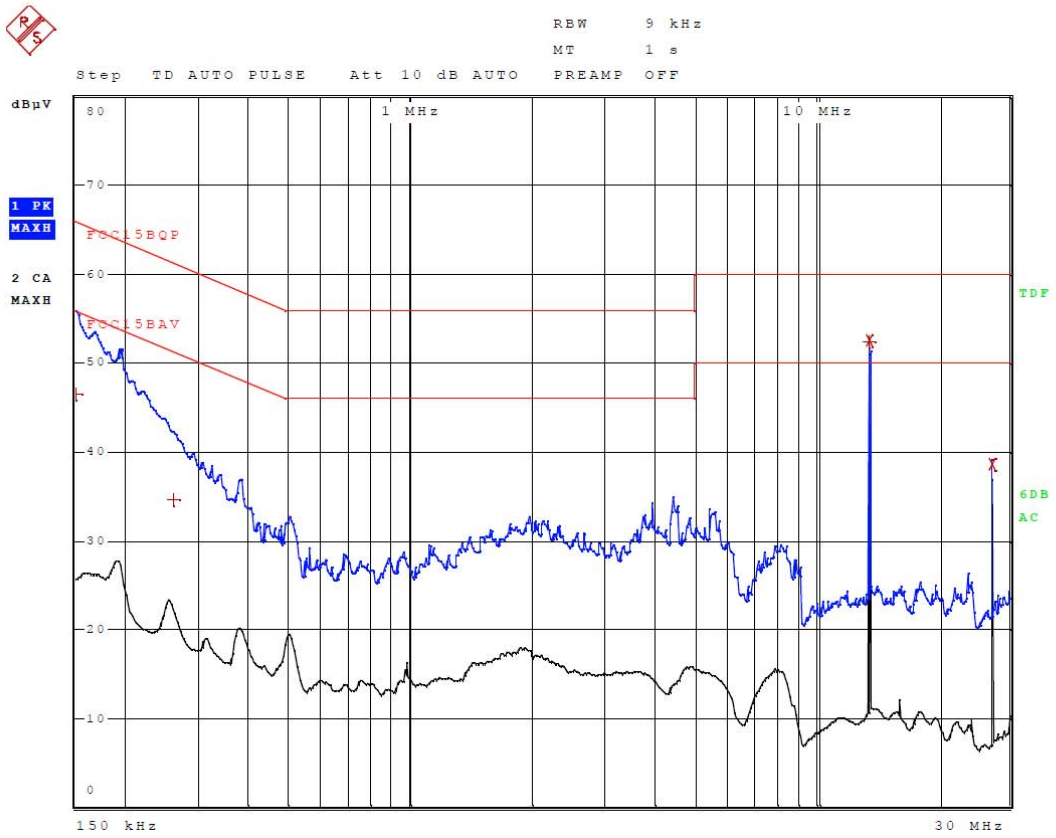
Test Spec

NEUTRAL 120 V, 60 Hz

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: CISPR Average
Transducer: ENV216

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	50 ms	Auto	0 dB	INPUT2



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Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, d.o.o.
OP Condition	READING A TAG
Operator	ANDREJ SKOF

Test Spec

NEUTRAL 120 V, 60 Hz

Final Measurement

Meas Time:	1 s
Margin:	20 dB
Subranges:	5

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	52.54	CISPR Averag	2.54
1	13.560000000 MHz	52.40	Quasi Peak	-7.60
2	27.120750000 MHz	38.54	CISPR Averag	-11.46
1	150.000000000 kHz	46.52	Quasi Peak	-19.48
1	258.000000000 kHz	34.45	Quasi Peak	-27.04

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Meas Type	CONDUCTED EMISSION
Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, d.o.o.
OP Condition	READING A TAG
Operator	ANDREJ SKOF

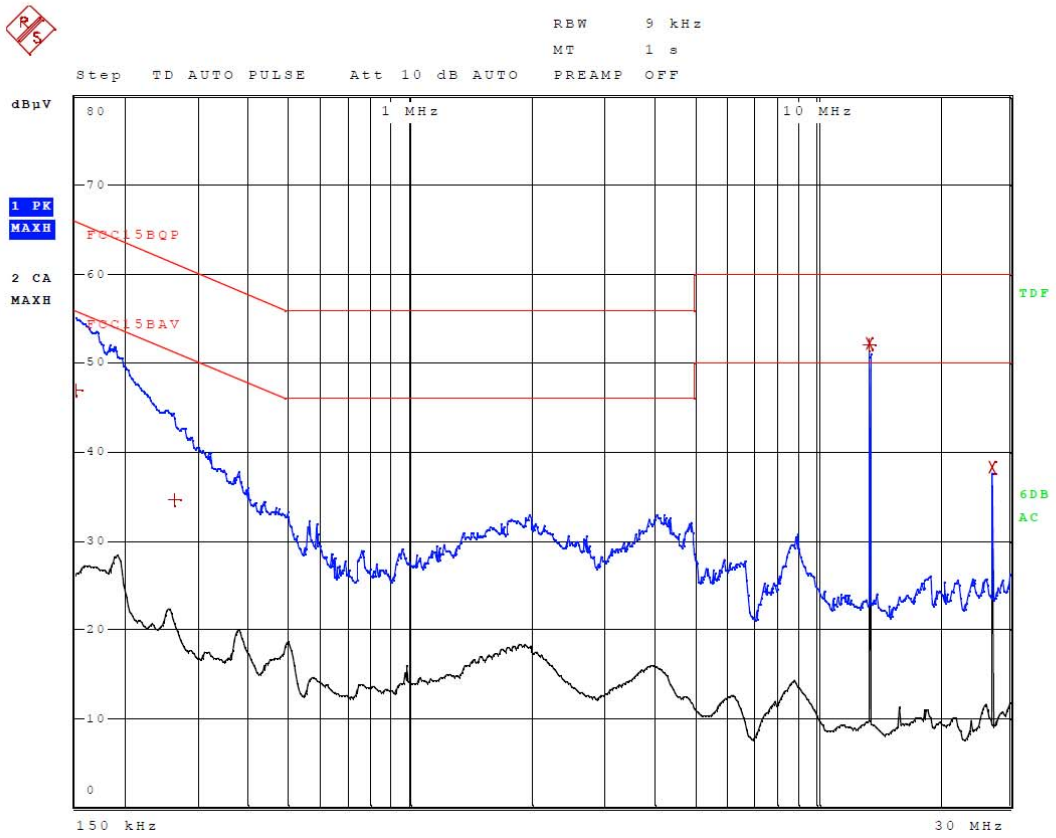
Test Spec

PHASE, 120 V, 60 Hz

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: CISPR Average
Transducer: ENV216

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	50 ms	Auto	0 dB	INPUT2



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29.Oct 15 13:37

Equipment under Test	PNEV5180B
Manufacturer	CETRTA POT, d.o.o.
OP Condition	READING A TAG
Operator	ANDREJ SKOF

Test Spec

PHASE, 120 V, 60 Hz

Final Measurement

Meas Time:	1 s
Margin:	20 dB
Subranges:	5

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	52.24	CISPR Averag	2.24
1	13.560000000 MHz	52.07	Quasi Peak	-7.93
2	27.120750000 MHz	38.31	CISPR Averag	-11.69
1	150.000000000 kHz	46.93	Quasi Peak	-19.07
1	260.250000000 kHz	34.54	Quasi Peak	-26.88

7.2 Radiated emission measurement (intentional radiator)

Section 15.209 Radiated emission limits; general requirements

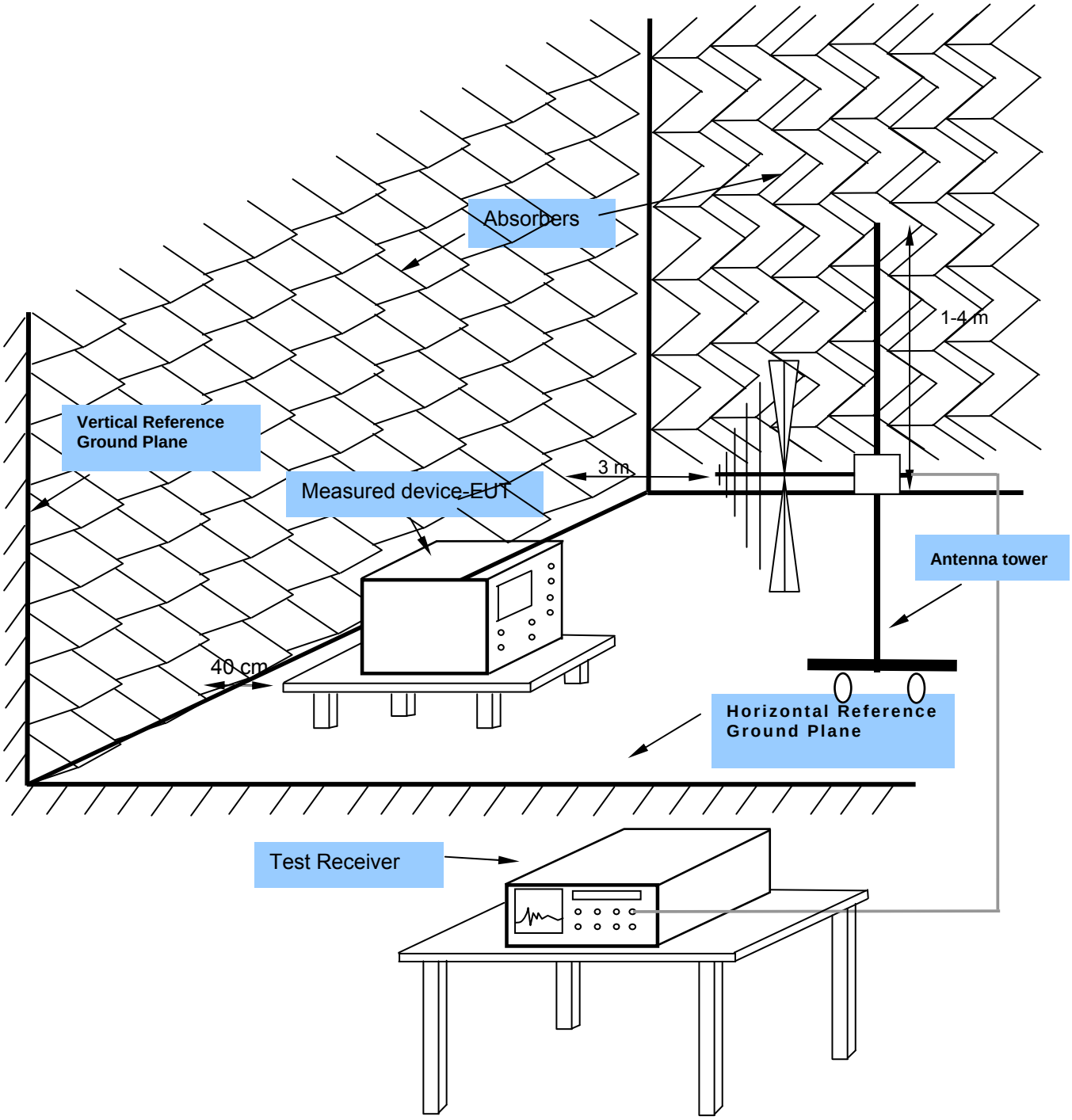
7.2.1 Test instruments

Description & Manufacturer	Model No.	SIQ No.	Last calibration	Calibrated until	Calibration period	Used
ETS, Anechoic chamber	3m	103949	2014-11	2016-01	24 months	X
Rohde-Schwarz, RFI receiver	ESU8	105187	2015-10	2017-10	24 months	
Rohde-Schwarz, RFI receiver	ESU26	100428	2014-01	2016-01	24 months	X
R&S, Antenna	HFH2-Z2	/	2015-09	2017-09	24 months	X
EMCO, Antenna	3142B	104351	2015-09	2017-09	24 months	X
EMCO, Antenna	3115	103002	2015-09	2017-09	24 months	X
Heinrich Deisel, Turn table	DS 420.00	103337	NA	NA	NA	X
Antenna tower	/	/	NA	NA	NA	X
Controller for turn table and antenna tower	/	/	NA	NA	NA	X

7.2.2 Test procedure

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground in an Anechoic Chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 m and 10 m away from the interference-receiving antenna, which was mounted on the top of variable-height antenna tower. Highest peaks were recalculated to proper distance requirement.
3. The antenna is a loop and a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to PEAK and QUAS-PEAK Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The highest points would be re-tested one by one using the quasi-peak method.

7.2.3 Test setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.