

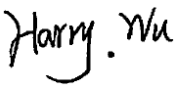
FCC PART 18
TEST REPORT

For

GAVITA HOLLAND B.V.

Oosteinderweg 127,1432 AH Aalsmeer, The Netherlands

FCC ID: 2ADC61861112421

Report Type: Original Report	Product Type: Digital Ballast
Test Engineer: Jone Lv	
Report Number: RBJ150112050-00	
Report Date: 2015-01-30	
Reviewed By: Harry Wu EMC Leader	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The GAVITA HOLLAND B.V.'s product, model number: *Pro 1000e DE US 240* (FCC ID: 2ADC61861112421) or the "EUT" in this report is a *Digital Ballast*, which was measured approximately: 27 cm (L) x 15.8 cm (W) x 14.1 cm (H), the rated with input voltage: AC 240V/60Hz. The highest operating frequency is 180 kHz.

**All measurement and test data in this report was gathered from production sample serial number: 150112050 (Assigned by BACL, Dongguan). The EUT supplied by the applicant was received on 2015-01-13*

Objective

This report is prepared on behalf of GAVITA HOLLAND B.V. in accordance with Part 2-Subpart J, and Part 18-Subparts A, B and C of the Federal Communications Commission's rules and regulations.

The objective of the manufacturer is to determine compliance with FCC Part 18 limits.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with MP-5, FCC Methods of Measurements of Radio Noise Emissions from ISM Equipment, February 1986. All measurements were performed at Bay Area Compliance Laboratory Corporation. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

OPERATING CONDITION/TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

No exercise software was used.

Special Accessories

No special accessory was used.

Equipment Modifications

No modification was made to the EUT tested.

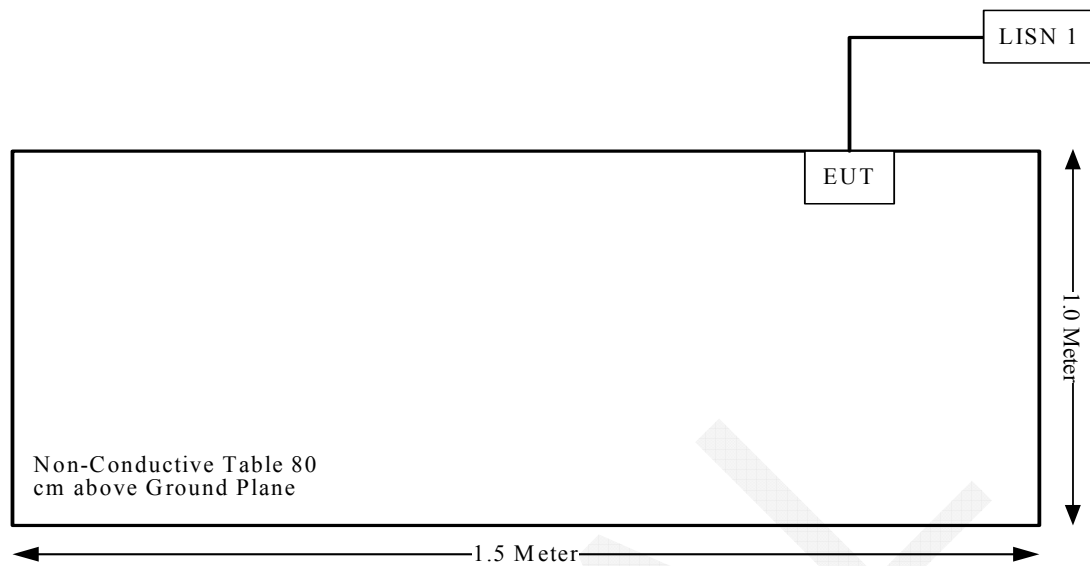
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	N/A	N/A	N/A

External Cable

Cable Description	Length (m)	From Port	To
N/A	N/A	N/A	N/A

Block Diagram of Test Setup



SUMMARY OF TEST RESULT

FCC Rules	Description of Test	Results
§18.307	AC Line Conducted Emissions	Compliance
§18.305	Field Strength	Compliance

FCC §18.307 - AC LINE CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are Receiver, cable loss, and LISN.

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

Applicable Standard

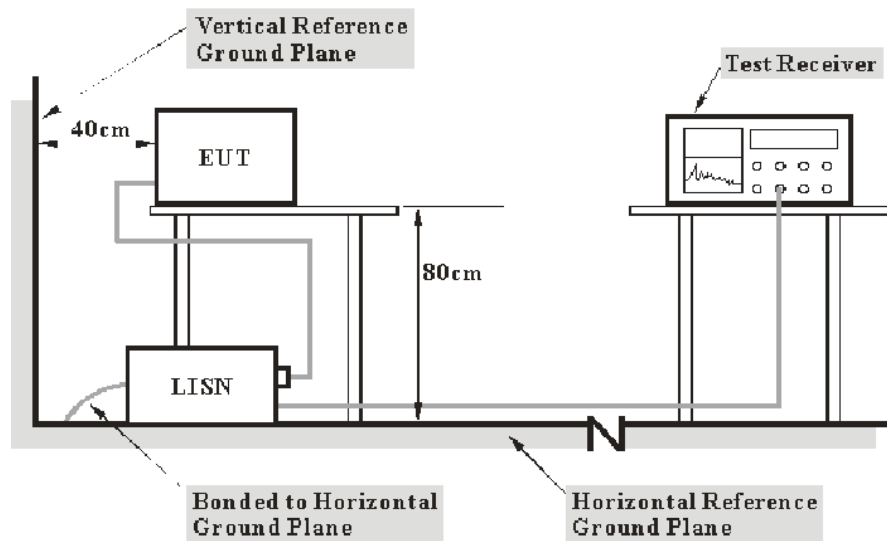
Conduction limits. For the following equipment, when designed to be connected to the public utility (AC) power line the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following tables. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal using a 50 μ H/50 ohms line impedance stabilization network (LISN).

All Induction cooking ranges and ultrasonic equipment

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.009–0.05	110	-
0.05–0.15	90–80	-
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

* Decreases with the logarithm of the frequency *The tighter limits shall apply at the boundary between two frequency ranges

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with MP-5: 1986 measurement procedure. Specification used was with the FCC Part 18 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The EUT was connected to a 240 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 9 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
9 kHz – 150 kHz	200 Hz
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the EUT was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-Peak detection and Average detection mode.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2014-10-16	2015-10-16
R&S	L.I.S.N	ESH3-Z5	843331/015	N/A	N/A
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-12-11	2015-12-11
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 18.307(a), the worst margin reading as below:

0.20 dB at 0.479619 MHz in the Line conducted mode

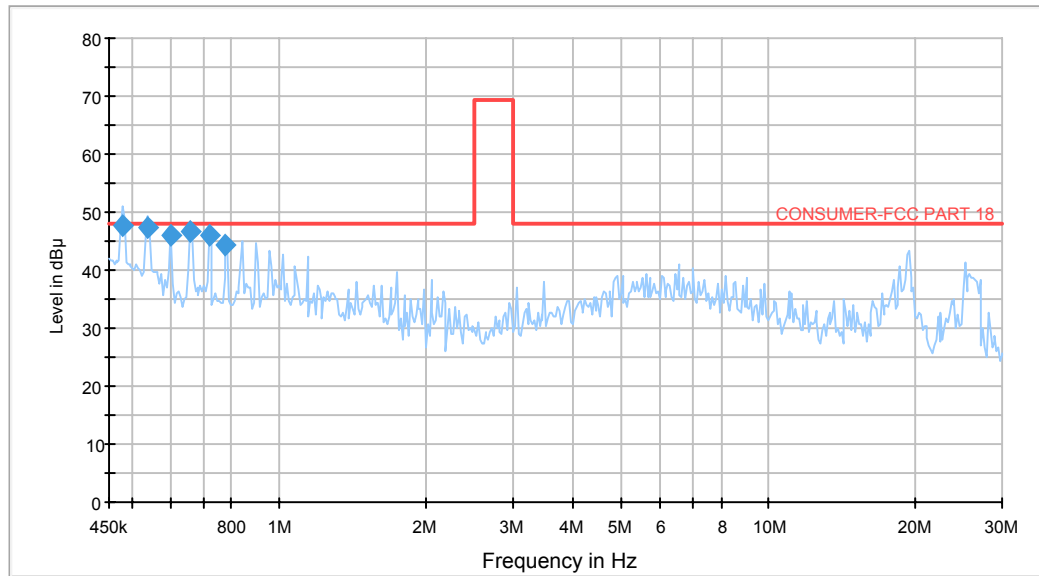
Test Data**Environmental Conditions**

Temperature:	20.6°C
Relative Humidity:	48 %
ATM Pressure:	101.3 kPa

Testing was performed by Jone Lv on 2015-01-28.

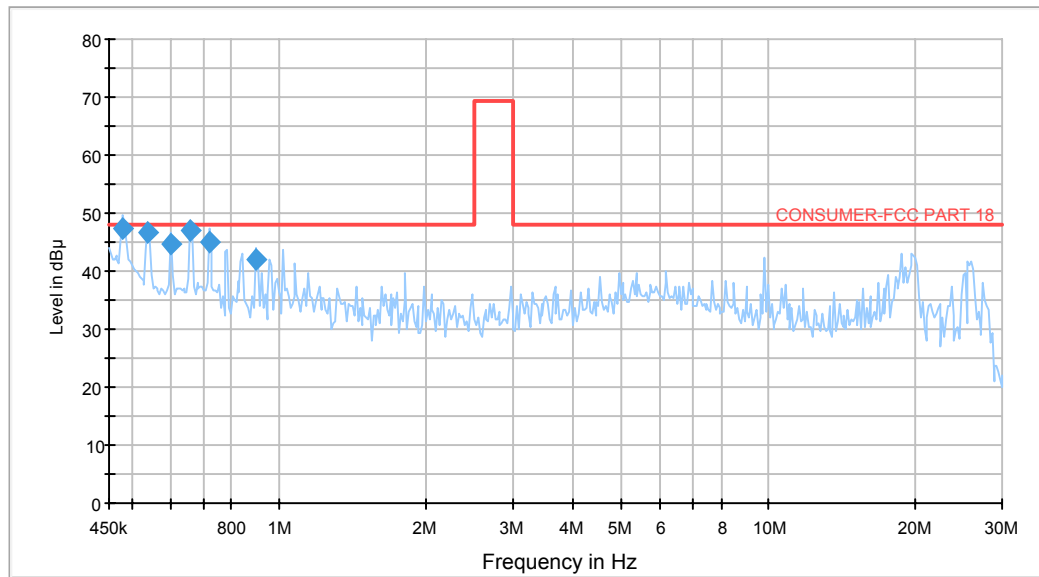
Test Mode: Running

Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.479619	47.8	9.000	L1	10.4	0.2*	48.0	Compliance
0.540511	47.5	9.000	L1	10.3	0.5*	48.0	Compliance
0.599503	46.0	9.000	L1	10.4	2.0*	48.0	Compliance
0.659657	46.6	9.000	L1	10.6	1.4*	48.0	Compliance
0.720085	45.9	9.000	L1	10.6	2.1*	48.0	Compliance
0.779811	44.3	9.000	L1	10.5	3.7	48.0	Compliance

*Within measurement uncertainty!

Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.479619	47.4	9.000	N	10.4	0.6*	48.0	Compliance
0.540511	46.6	9.000	N	10.3	1.5*	48.0	Compliance
0.604299	44.5	9.000	N	10.5	3.5	48.0	Compliance
0.659657	46.9	9.000	N	10.6	1.1*	48.0	Compliance
0.720085	45.1	9.000	N	10.6	2.9*	48.0	Compliance
0.900075	42.1	9.000	N	10.6	5.9	48.0	Compliance

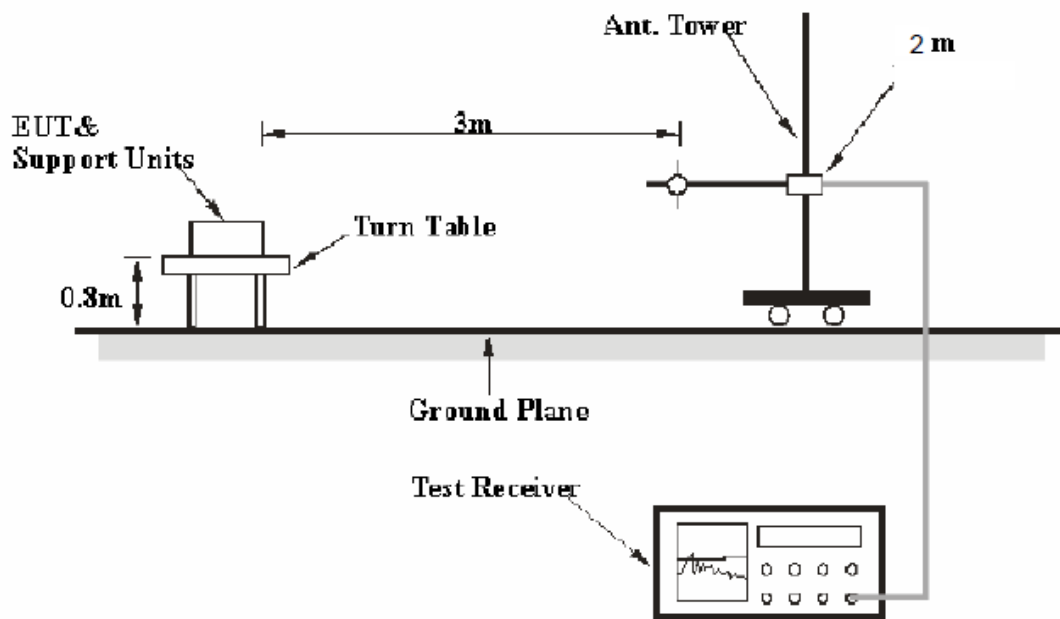
*Within measurement uncertainty!

FCC §18.305 – FIELD STRENGTH

Applicable Standard

FCC §18.305(b)

EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the FCC MP - 5.

The EUT was connected to 240 VAC/60 Hz power source.

EMI Test Receiver Setup and Spectrum Analyzer Setup

The system was investigated from 9 kHz to 1000 MHz.

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
9 kHz – 150 kHz	200 Hz	1 kHz	200 Hz	QP
150 kHz – 30 MHz	9 kHz	30 kHz	9 kHz	QP
30MHz – 1000 MHz	100 kHz	300 kHz	120kHz	QP

Test Procedure

During the conducted emission test, the EUT was connected to the AC floor outlet.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak detection mode.

Corrected Amplitude Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2014-05-09	2015-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

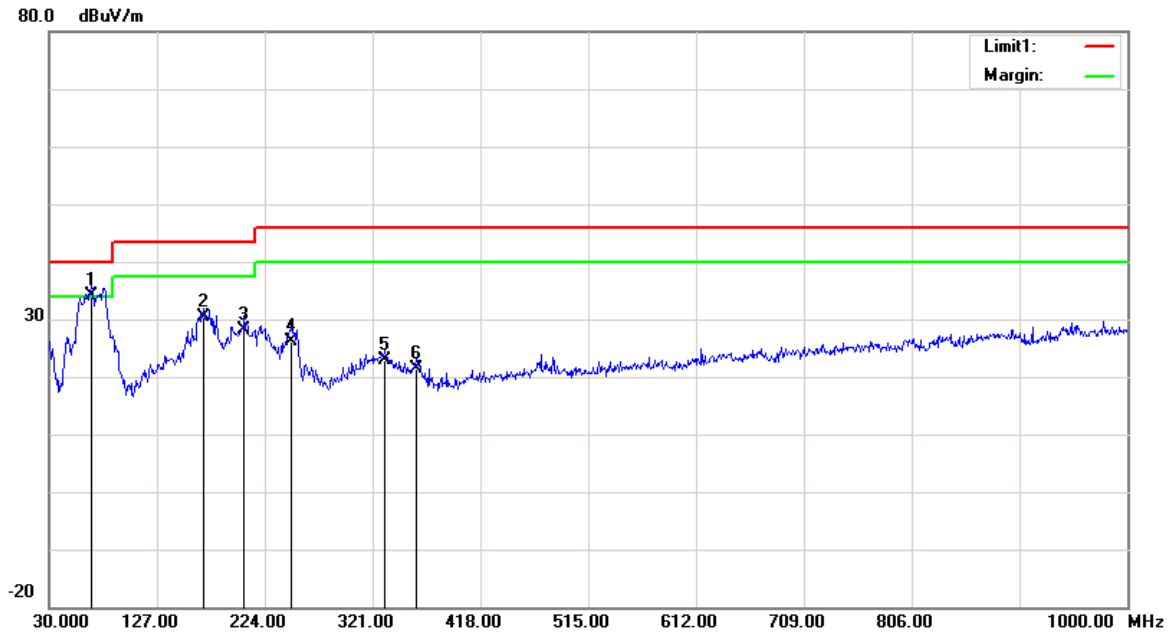
Temperature:	21.3°C
Relative Humidity:	59 %
ATM Pressure:	101.8 kPa

The testing was performed by Jone Lv on 2015-01-30.

Test Mode: Running

1)30MHz-1000 MHz

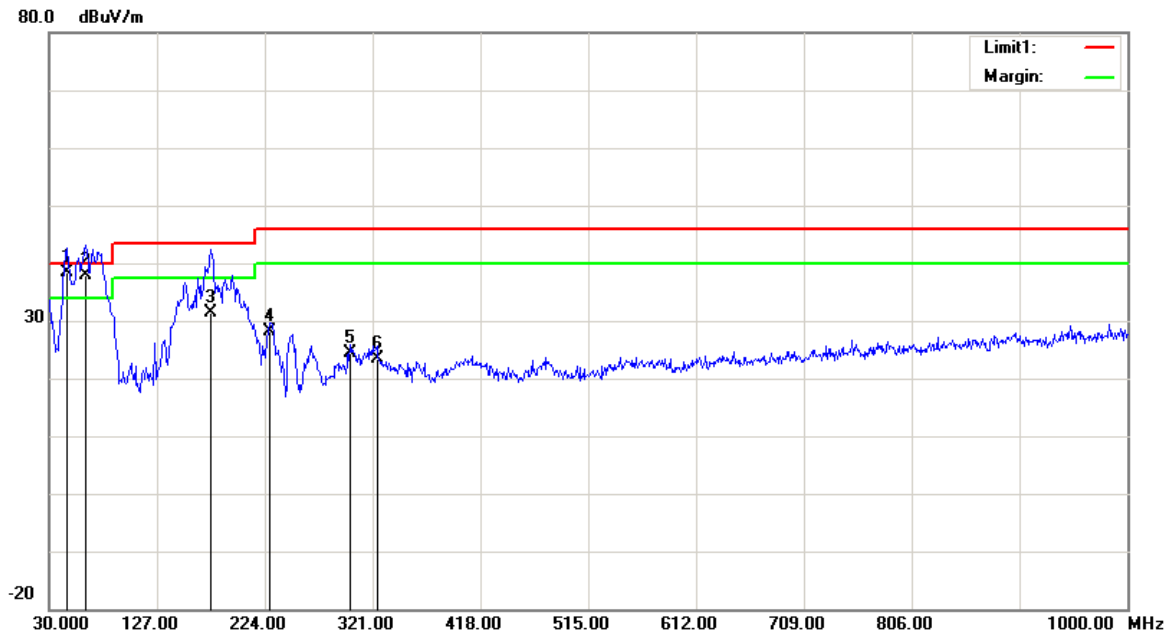
Horizontal



No.	Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP /Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	67.8300	46.05	QP	-11.85	34.20	40.00	5.80
2	168.7100	38.49	QP	-7.99	30.50	43.50	13.00
3	205.5700	36.90	QP	-8.80	28.10	43.50	15.40
4	248.2500	34.20	QP	-8.00	26.20	46.00	19.80
5	331.6700	28.35	QP	-5.35	23.00	46.00	23.00
6	359.8000	25.92	QP	-4.52	21.40	46.00	24.60

2)30 MHz – 1000 MHz

Vertical



No.	Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP /Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	45.5200	48.61	QP	-10.21	38.40	40.00	1.60*
2	62.9800	50.32	QP	-12.42	37.90	40.00	2.10*
3	175.5000	39.84	QP	-8.34	31.50	43.50	12.00
4	228.8500	36.50	QP	-8.40	28.10	46.00	17.90
5	300.6300	30.26	QP	-5.96	24.30	46.00	21.70
6	324.8800	28.97	QP	-5.47	23.50	46.00	22.50

*Within measurement uncertainty!

3) 9 kHz-30 MHz

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Detector (PK/QP/Ave.)	Correction Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
0.17	78.3	QP	60.4	106.5	28.2
1.22	74.2	QP	46.1	106.5	32.3
3.04	71.2	QP	36.3	106.5	35.3
8.98	69.9	QP	32.5	106.5	36.6
19.22	66.9	QP	31.4	106.5	39.6
25.31	61.3	QP	30.6	106.5	45.2

****END OF REPORT****