

**FCC CFR 47 PART 18 Subpart C RF Lightning Devices****E.M.I. TEST REPORT**

Test report No..... : 01SR001EM-R01  
Prepared by..... : C. Carù Signature .....  
Approved by..... : G. Baroni Signature .....  
Date of issue..... : September 20, 2001  
Number of pages..... : 18

**Test Laboratory**

Name..... : CiaoLAB Technologies S.p.A. - Standard Compliance Services  
Address..... : Via ai Laboratori Olivetti, 79 - 20010 Pregnana Milanese (MI) - I

**Applicant for the test**

Name..... : OSRAM S.p.A.

**Equipment under test**

Model..... : CF30EL/CIRC/830/MED  
Serial Number..... : 001\_Proto  
Trade Mark..... : OSRAM SYLVANIA  
Manufacturer..... : OSRAM SUD S.p.A.  
Via delle Ortensie,16 70026 Modugno (Bari) -Italy-  
Rating's..... : 120 VAC / 60Hz  
Operating temperature range..... : From 0°C to +40°C

**Equipment information**

Equipment category..... : RF Lightning Devices  
Classification of the equipment..... : Consumer Equipment  
Weight..... : 218g  
Tested for IT power system..... : No

**Test specification**

Applicable standard..... : FCC CFR 47 - Part 18 - Subpart C  
Additional installation requirements : No

**Test results**

Summary of test results..... : **COMPLIANT**  
Legend..... : NA: Not Applicable - P: Pass - F: Fail

## General Information of the Appliance

Due to the various needing of the improvements of the ballast (either electrical improvements or those connected to the production), some modifications of the product tested in January 2001 have been done.

The modifications have been identified as a Class 2 Permissive Changes as specified in FCC CFR47 Part 2 §2.1043(b)(2).

The new appliance have been tested both for radiated and conducted noise emission measurements and found in compliance with the specified limits.

All the details about the modifications are available in the attached files.

### **Manufacturer**

OSRAM S.p.A.                      Via Castagnole, 65/A  
31100 Treviso - Italy -

### **Applicant for Certification**

OSRAM SUD S.p.A.              Via delle Ortensie, 16  
70026 Modugno (Bari) - Italy -

### **FCC ID**

Original FCC ID not subject to modifications: PKFEB329924A

### **Official of the Responsible Party for Certification**

Name                      Lorenzo Baldo                      Product Development Engineer

Signature                      .....

## Description of the Appliance

The appliance is ballast for circular fluorescent lamp, the power is 30W and it is powered from the standard 120V / 60Hz AC mains, due to its characteristics it is sold to the general public.

The appliance is shown in the following pictures



## General Consideration of the Test

In order to verify and to be sure that all the component set will be in compliance with the applicable limits, the EMI measurements have been performed with two different switching component set (T1, T2, Rs1, Rs2, C14).

In this test report the two set of measurement results will be identified as “ Configuration n.1” MOSFET with package T0251 and “Configuration n. 2” MOSFET with package T0220.

The appliance is classified under the FCC Part 18 INDUSTRIAL, SCIENTIFIC AND MEDICAL EQUIPMENT - Subpart C - RF Lightning Devices - *Consumer Equipment*, and in conformity to the requirements of the table reported in FCC Part 18 Subpart B §18.203, it is subject to “CERTIFICATION” procedure.

As defined in FCC Part 18 Subpart C §18.307 the frequency range for conducted noise measurement is from 450KHz to 30MHz and the Maximum RF line voltage measured specified for RF Lightning Devices - Consumer Equipment is reported in the following table.

|                   |        |          |
|-------------------|--------|----------|
| 0.45MHz ÷ 2.51MHz | 250µV  | 48dbµV   |
| 2.51MHz ÷ 3MHz    | 3000µV | 69.5dbµV |
| 3MHz ÷ 30MHz      | 250µV  | 48dbµV   |

In accordance to FCC Part 18 Subpart C §18.305 the limits for RF Lightning Devices classified as Consumer Equipment are reported in the following table:

| Frequency          | Limit in µV/m at a distance of 30m | Limit in dbµV/m at a distance of 30m | Limit in dbµV/m at a distance of 10m |
|--------------------|------------------------------------|--------------------------------------|--------------------------------------|
| 30MHz ÷ 88MHz      | 30µV/m                             | 20dbµV/m                             | 29.5dbµV/m                           |
| 88MHz ÷ 216MHz     | 50µV/m                             | 23.5dbµV/m                           | 33dbµV/m                             |
| 216 MHz ÷ 1000 MHz | 70µV/m                             | 26dbµV/m                             | 35.5dbµV/m                           |

The measurement have been performed at a distance of 10m due to the extremely low signals generated from the EUT and according to NOTE 2 of §18.305 the field strength limits have been adjusted using the attenuation factor of 1/d

A unit of product “CF30EL/CIRC/830/MED” representative of the production was subjected to the test program.

During the radiated and conducted emission test, the appliance was powered from a standard 120V / 60Hz AC main.

## Date of Test

The test started on September 15, 2001 and concluded on September 18, 2001.

## Reference Documents

FCC CFR 47 Code of Federal Regulations, Title 47 Part 18, Subpart C, RF Lightning Devices, Consumer Equipments.

FCC/OST MP-5 FCC Methods of measurement of radio noise emission from Industrial, Scientific and Medical Equipment

EMC Test Site N.2 description report Code QRD-RQ-0660.

## Test Laboratory Information

Radiated and conducted measurements was performed at the CiaoLAB Technologies EMI Measurement Test Site (Open Area Test Site and Shielded Room) denominated "EMC Test Site N. 2" and located at the following address:

CiaoLab eTechnologies S.p.A.  
Via ai Laboratori Olivetti, 79  
20010 Pregnana Milanese  
Milano - ITALY

The "EMC Test Site N. 2" is compliant with the requirements of section 9.248 of the FCC rules.

The CiaoLAB test facility is in the Commission's list whose measurement data will be accepted in conjunction with application for certification or notification under part 15 and 18 of the FCC Rules.

The "EMC Test Site N. 2" complies also with the radiated and AC line conducted test site criteria described in ANSI C63.4-1992 and it is recognized by FCC with the filing number 90470.

CiaoLAB Technologies S.p.A. is also member of VCCI (Voluntary Control Council for Interference of ITE) in Japan.

The "EMC Test Site N. 2" (Shielded Room) has obtained the approval from VCCI Conference with the registration number C-813.

The "EMC Test Site N. 2" (Free Field) has obtained the approval from VCCI Conference with the registration number R-777.

## Test Equipment List

|                                                                                                                                                 | Instrument Type         | Manufacturer    | Model number | Serial Number | Cal./ Ver. Date  |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|--------------|---------------|------------------|
| N.1                                                                                                                                             | Artificial Main Network | Schwarzbeck     | NNLK8121     | 8121170       | January 26, 2001 |
| N.1                                                                                                                                             | Biconical Antenna       | EMCO            | 3104         | 3503          | February 28 2001 |
| N.1                                                                                                                                             | Log Periodic 200-1GHz   | EMCO            | 3146         | 2198          | February 28 2001 |
| N. 1                                                                                                                                            | EMI RECEIVER            | Hewlett Packard | HP 8574B     |               |                  |
| The system is composed by four parts and it is yearly calibrated from Hewlett Packard, the date of the last calibration is <b>Feb 15, 2001.</b> |                         |                 |              |               |                  |
|                                                                                                                                                 | RF Preselector          | Hewlett Packard | HP 85685A    | 2602A00237    |                  |
|                                                                                                                                                 | Spectrum Analyzer RF    | Hewlett Packard | HP 85680A    | 2634A02785    |                  |
|                                                                                                                                                 | Spectrum Analyzer IF    | Hewlett Packard | HP 85662A    | 2542A12241    |                  |
|                                                                                                                                                 | Quasi peak Adapter      | Hewlett Packard | HP 85650A    | 2521A00799    |                  |
| N.1                                                                                                                                             | EMI TEST RECEIVER       | Rohde & Schwarz | ESBI         |               |                  |
| The system is composed by two parts and it is yearly calibrated from Rohde & Schwarz, the date of the last calibration is <b>Feb. 14, 2001.</b> |                         |                 |              |               |                  |
|                                                                                                                                                 | Display Section         | Rohde & Schwarz |              | 844348/017    |                  |
|                                                                                                                                                 | RF Section              | Rohde & Schwarz |              | 845658/002    |                  |

### Devices

Antenna support  
Control panel  
Antenna tower  
Turntable

## Environmental Conditions

AC Main:                      Voltage:        120V  
                                    Frequency:    60Hz

|                      | <b>Conducted noise emission test</b> | <b>Radiated noise emission test</b> |
|----------------------|--------------------------------------|-------------------------------------|
| Temperature:         | 22°C                                 | 20°C                                |
| Relative Humidity:   | 60%                                  | 55%                                 |
| Atmospheric Pressure | 1015mbar                             | 1015mbar                            |

## Operating Conditions

During the test the appliance was switched ON, a warm up time of few minutes was respected before to start the noise emission measurements.

## EUT Test Setup

During radiated noise emission measurements according to FCC/OST MP-5 Par. 5.4 the appliance was placed on a wooden table 80cm high over the ground plane, the radiated noise emission measurements were performed in free field at antenna to EUT distance of 10mt.

During conducted noise measurements according to FCC/OST MP-5 Par. 7.1 the appliance was installed inside the shielded room and placed on a wooden table 40 high over the ground plane. A distance of 80cm have been kept from any other earthed conducting surface.

It is possible to see the pictures of the radiated and conducted test setups in the pictures paragraph.

## E.M.I. Measurements Procedures

The EUT was installed in the Open Area Test Site and inside the shielded room in accordance to requirements of FCC/OST MP-5, the system setup is prepared in order to maximize the emissions.

The radiated noise emission measurements were performed in the Open Area Test Site and the EUT to antenna distance was 10m as specified in the FCC part 18 Subpart C for RF Lighting Devices - Consumer Equipment §18.305 Note 2.

The maximum radiated emissions are found by using the following step-by-step procedure:

- ↺ The whole frequency range (30MHz ÷ 1GHz) is divided in sub-ranges of about 7 - 8MHz up to 1GHz.
- ↺ For all the sub ranges a peak measurement is performed at fixed antenna high (1m for the Vertical polarization and 3.5m for the Horizontal Polarization), and rotating of 360° the turntable, holding the Spectrum Analyzer in max. hold conditions.
- ↺ The highest peaks are corrected with the antenna factors and cable losses from the software, and they are added to a list called "Suspect List".
- ↺ Now I have the availability of two different lists, the first one for the vertical polarization and the second one for the horizontal polarization.
- ↺ For each one of the Suspect list all the signals with less then 10db of margins from the specific limit are remeasured in Quasi Peak Mode as follows:
  - The test receiver is tuned on the highest point of the signal.
  - The Quasi Peak Detector is activated to store the maximum value.
  - The turntable is rotated of 360°, and the azimuth of maximum emission is found.
  - The turntable is stopped on the angle of maximum emission.
  - The antenna high is varied from 1m to 4m, and the antenna is stopped on the high of maximum emission.
  - The turntable is rotated of 360°, and the new maximum emission is found.
  - The system cables are manipulated to produce the highest amplitude signal.
  - A new scan changing the antenna height and rotating the turntable as described before is performed.
  - The Quasi Peak maximum value is corrected with cable's losses and antenna factors, and it is added to a list called "Final List".

The conducted noise emission measurements were performed in the shielded room.

The maximum conducted emissions were found by using the following step-by-step procedure:

- ↺ A peak scan of the full range of measurement is automatically performed by the measuring software.
- ↺ The peak measurement is automatically plotted on a graphics with the specific limit.
- ↺ The twenty highest signals are automatically chosen from the measurement software and re-measured with the quasi peak detector.
- ↺ The measured signal are reported in a list called "Final List".

## Measurement Results

### *Conducted Emission Summary*

| EQUIPMENT UNDER TEST                      | FCC Part 18 Subpart C<br>RF Lightning Devices<br>Consumer Equipment<br>120v - 60Hz |              |
|-------------------------------------------|------------------------------------------------------------------------------------|--------------|
|                                           | PHASE<br>L1                                                                        | NEUTRAL<br>N |
| CF30EL/CIRC/830/MED<br>Configuration n. 1 | PASS                                                                               | PASS         |
| CF30EL/CIRC/830/MED<br>Configuration n. 2 | PASS                                                                               | PASS         |

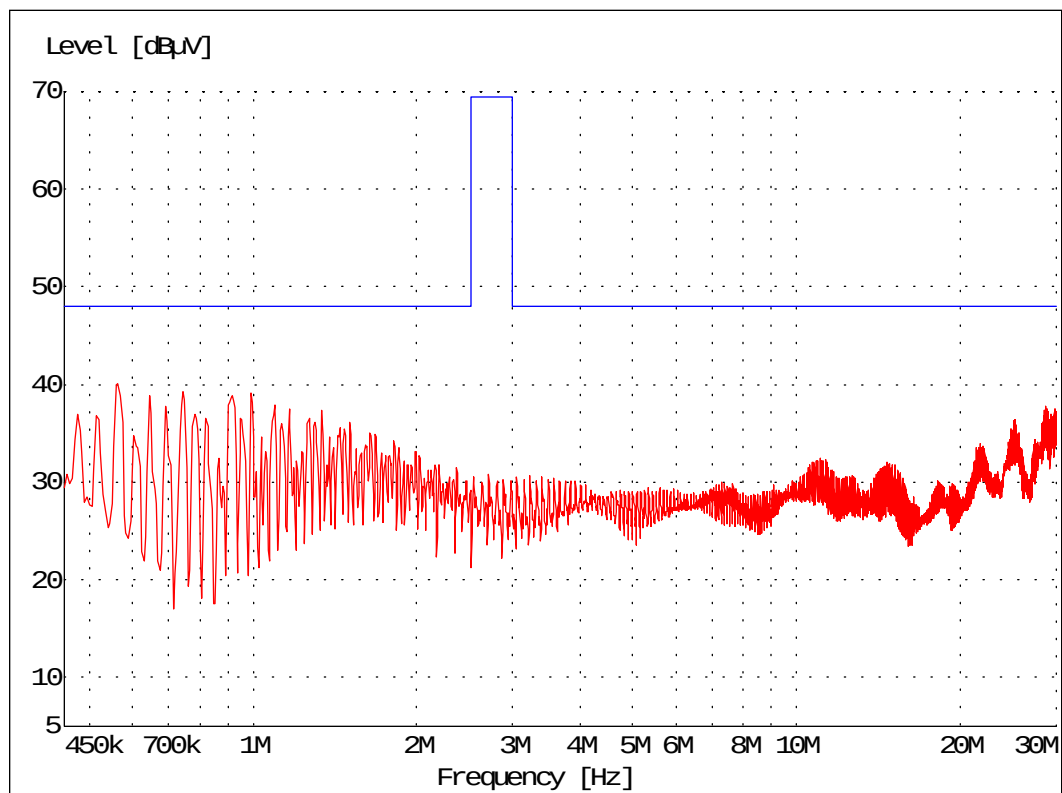
### *Radiated Emission Summary*

| EQUIPMENT UNDER TEST                      | FCC Part 18 Subpart C<br>RF Lightning Devices<br>Consumer Equipment<br>120v - 60Hz |
|-------------------------------------------|------------------------------------------------------------------------------------|
| CF30EL/CIRC/830/MED<br>Configuration n. 1 | PASS                                                                               |
| CF30EL/CIRC/830/MED<br>Configuration n. 2 | PASS                                                                               |

**Configuration n. 1 Package T0251 Conducted Emission Graphics and Tables****Supply Voltage:** 120V**Frequency:** 60Hz**Noise measured on:** N

Red line: Peak measurement results

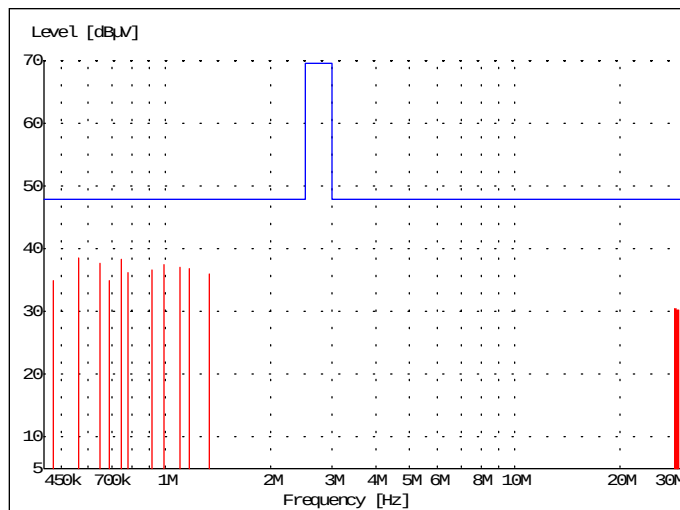
Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment



**Quasi Peak measurement results Phase N**

Red line: Quasi Peak measurement results

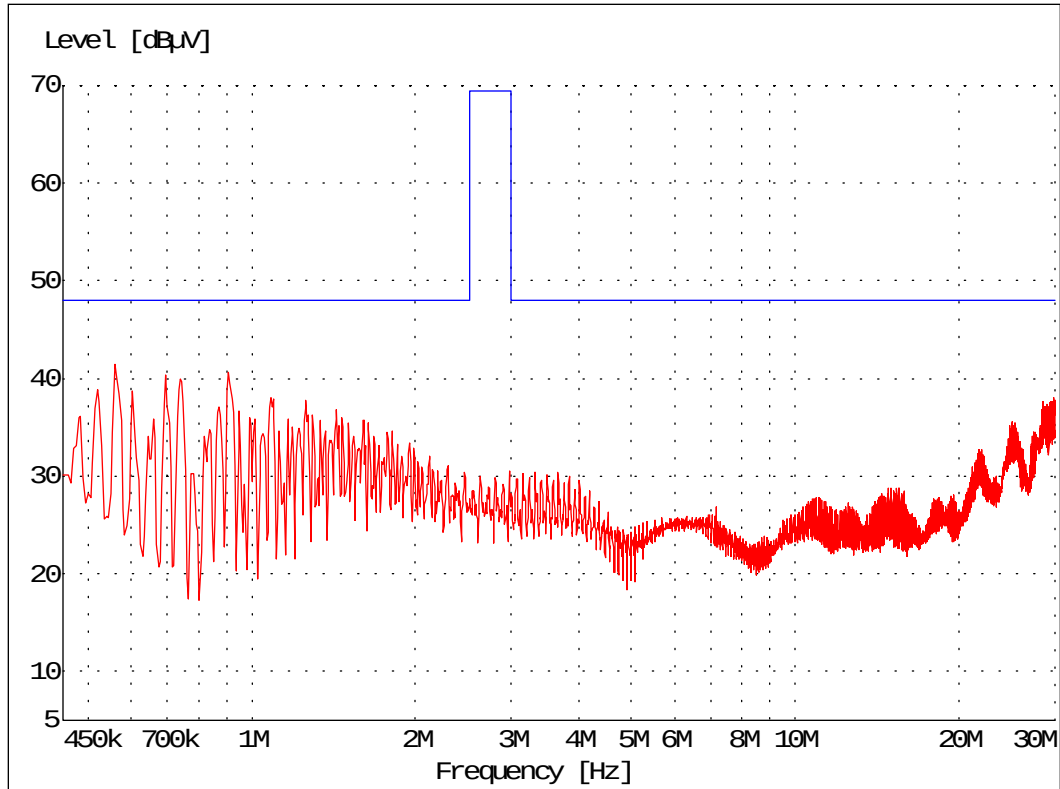
Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment

**Table with the Quasi Peak measurements results**

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Line | PE  |
|---------------|------------|-----------|------------|-----------|------|-----|
| 0.475000      | 34.90      | 0.30      | 48.00      | 13.10     | N    | GND |
| 0.565000      | 38.50      | 0.30      | 48.00      | 9.50      | N    | GND |
| 0.645000      | 37.80      | 0.40      | 48.00      | 10.20     | N    | GND |
| 0.690000      | 34.90      | 0.40      | 48.00      | 13.10     | N    | GND |
| 0.745000      | 38.30      | 0.40      | 48.00      | 9.70      | N    | GND |
| 0.780000      | 36.30      | 0.40      | 48.00      | 11.70     | N    | GND |
| 0.915000      | 36.60      | 0.40      | 48.00      | 11.40     | N    | GND |
| 0.990000      | 37.40      | 0.40      | 48.00      | 10.60     | N    | GND |
| 1.095000      | 37.00      | 0.40      | 48.00      | 11.00     | N    | GND |
| 1.165000      | 36.80      | 0.40      | 48.00      | 11.20     | N    | GND |
| 1.335000      | 36.00      | 0.50      | 48.00      | 12.00     | N    | GND |
| 28.625000     | 30.50      | 1.50      | 48.00      | 17.50     | N    | GND |
| 28.810000     | 30.00      | 1.60      | 48.00      | 18.00     | N    | GND |
| 28.885000     | 30.50      | 1.60      | 48.00      | 17.50     | N    | GND |
| 28.970000     | 30.20      | 1.60      | 48.00      | 17.80     | N    | GND |
| 29.060000     | 29.90      | 1.60      | 48.00      | 18.10     | N    | GND |
| 29.490000     | 30.30      | 1.60      | 48.00      | 17.70     | N    | GND |
| 29.835000     | 31.30      | 1.60      | 48.00      | 16.70     | N    | GND |
| 29.920000     | 31.70      | 1.60      | 48.00      | 16.30     | N    | GND |
| 29.990000     | 32.80      | 1.60      | 48.00      | 15.20     | N    | GND |

**Supply Voltage:** 120V  
**Frequency:** 60Hz  
**Noise measured on:** L1

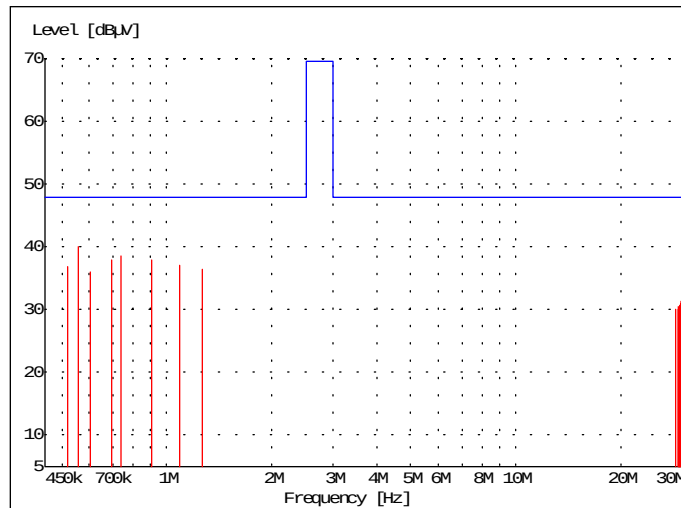
Red line: Peak measurement results  
Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment



**Quasi Peak measurement results Phase L1**

Red line: Quasi Peak measurement results

Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment

**Table with the Quasi Peak measurements results**

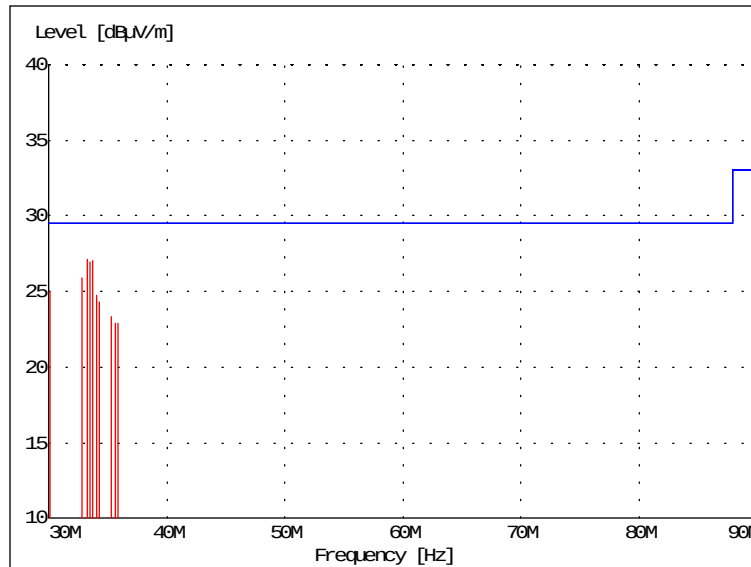
| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Line | PE  |
|---------------|------------|-----------|------------|-----------|------|-----|
| 0.520000      | 36.90      | 0.30      | 48.00      | 11.10     | L1   | GND |
| 0.560000      | 40.00      | 0.30      | 48.00      | 8.00      | L1   | GND |
| 0.605000      | 36.10      | 0.40      | 48.00      | 11.90     | L1   | GND |
| 0.695000      | 37.90      | 0.40      | 48.00      | 10.10     | L1   | GND |
| 0.740000      | 38.50      | 0.40      | 48.00      | 9.50      | L1   | GND |
| 0.905000      | 38.00      | 0.40      | 48.00      | 10.00     | L1   | GND |
| 1.085000      | 37.10      | 0.40      | 48.00      | 10.90     | L1   | GND |
| 1.260000      | 36.50      | 0.50      | 48.00      | 11.50     | L1   | GND |
| 28.635000     | 30.00      | 1.50      | 48.00      | 18.00     | L1   | GND |
| 28.970000     | 30.40      | 1.60      | 48.00      | 17.60     | L1   | GND |
| 29.065000     | 30.10      | 1.60      | 48.00      | 17.90     | L1   | GND |
| 29.315000     | 30.30      | 1.60      | 48.00      | 17.70     | L1   | GND |
| 29.400000     | 30.40      | 1.60      | 48.00      | 17.60     | L1   | GND |
| 29.490000     | 30.70      | 1.60      | 48.00      | 17.30     | L1   | GND |
| 29.575000     | 30.80      | 1.60      | 48.00      | 17.20     | L1   | GND |
| 29.660000     | 31.00      | 1.60      | 48.00      | 17.00     | L1   | GND |
| 29.745000     | 31.40      | 1.60      | 48.00      | 16.60     | L1   | GND |
| 29.835000     | 31.70      | 1.60      | 48.00      | 16.30     | L1   | GND |
| 29.920000     | 32.20      | 1.60      | 48.00      | 15.80     | L1   | GND |
| 29.990000     | 34.70      | 1.60      | 48.00      | 13.30     | L1   | GND |

**Configuration n. 1 Package T0251 Radiated Emission Graphics and Tables**

**Supply Voltage:** 120V  
**Frequency:** 60Hz  
**Measurement distance:** 10m  
**Polarization:** VERTICAL

**Quasi Peak measurement results**

Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment  
 Red bar graph: Quasi Peak measured signals.

**Table with Quasi Peak measurements results****Vertical Polarization**

| Frequency<br>MHz | Level<br>dBμV/m | Transd<br>dB | Limit<br>dBμV/m | Margin<br>dB | IFBW<br>kHz | Height<br>cm | Azi<br>deg | Pol | Comment |
|------------------|-----------------|--------------|-----------------|--------------|-------------|--------------|------------|-----|---------|
| 30.130000        | 25.00           | 15.60        | 29.50           | 4.50         | 120         | 100.0        | 0.00       | VER |         |
| 32.870000        | 25.90           | 13.90        | 29.50           | 3.60         | 120         | 100.0        | 0.00       | VER |         |
| 33.210000        | 27.10           | 13.70        | 29.50           | 2.40         | 120         | 100.0        | 0.00       | VER |         |
| 33.490000        | 26.90           | 13.60        | 29.50           | 2.60         | 120         | 100.0        | 0.00       | VER |         |
| 33.760000        | 27.00           | 13.40        | 29.50           | 2.50         | 120         | 100.0        | 0.00       | VER |         |
| 34.020000        | 24.70           | 13.20        | 29.50           | 4.80         | 120         | 100.0        | 0.00       | VER |         |
| 34.330000        | 24.30           | 13.10        | 29.50           | 5.20         | 120         | 100.0        | 0.00       | VER |         |
| 35.340000        | 23.30           | 12.70        | 29.50           | 6.20         | 120         | 100.0        | 0.00       | VER |         |
| 35.670000        | 22.90           | 12.70        | 29.50           | 6.60         | 120         | 100.0        | 0.00       | VER |         |
| 35.890000        | 22.90           | 12.70        | 29.50           | 6.60         | 120         | 100.0        | 0.00       | VER |         |

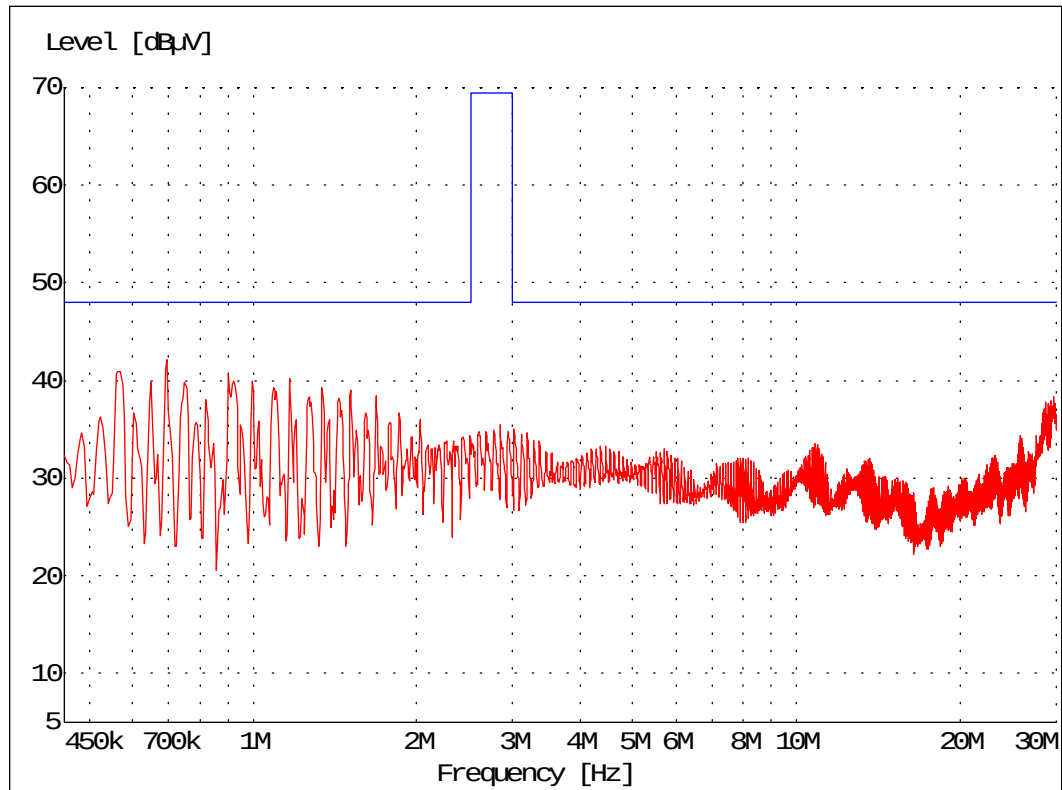
**Polarization:** HORIZONTAL

No significant signals have been found in horizontal polarization.

**Configuration n. 2 Package T0220 Conducted Emission Graphics and Tables****Supply Voltage:** 120V**Frequency:** 60Hz**Noise measured on:** N

Red line: Peak measurement results

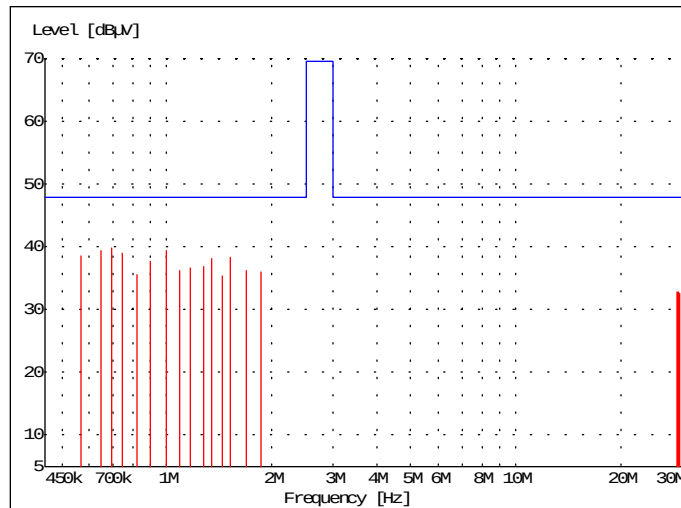
Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment



**Quasi Peak measurement results Phase N**

Red line: Quasi Peak measurement results

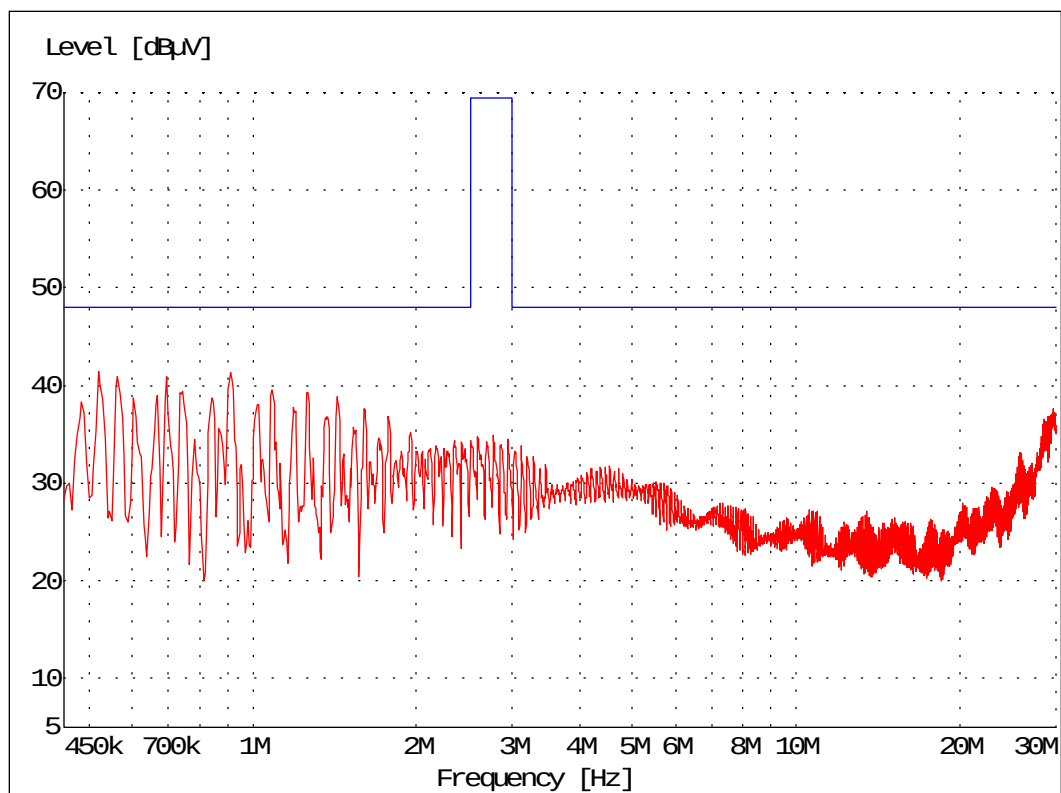
Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment

**Table with the Quasi Peak measurements results**

| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Line | PE  |
|---------------|------------|-----------|------------|-----------|------|-----|
| 0.570000      | 38.50      | 0.30      | 48.00      | 9.50      | N    | GND |
| 0.650000      | 39.30      | 0.40      | 48.00      | 8.70      | N    | GND |
| 0.695000      | 39.80      | 0.40      | 48.00      | 8.20      | N    | GND |
| 0.750000      | 39.00      | 0.40      | 48.00      | 9.00      | N    | GND |
| 0.820000      | 35.60      | 0.40      | 48.00      | 12.40     | N    | GND |
| 0.900000      | 37.70      | 0.40      | 48.00      | 10.30     | N    | GND |
| 0.995000      | 39.40      | 0.40      | 48.00      | 8.60      | N    | GND |
| 1.090000      | 36.30      | 0.40      | 48.00      | 11.70     | N    | GND |
| 1.165000      | 36.70      | 0.40      | 48.00      | 11.30     | N    | GND |
| 1.270000      | 36.90      | 0.50      | 48.00      | 11.10     | N    | GND |
| 1.340000      | 38.20      | 0.50      | 48.00      | 9.80      | N    | GND |
| 1.440000      | 35.30      | 0.50      | 48.00      | 12.70     | N    | GND |
| 1.515000      | 38.30      | 0.50      | 48.00      | 9.70      | N    | GND |
| 1.685000      | 36.20      | 0.50      | 48.00      | 11.80     | N    | GND |
| 1.860000      | 36.10      | 0.50      | 48.00      | 11.90     | N    | GND |
| 28.710000     | 32.80      | 1.50      | 48.00      | 15.20     | N    | GND |
| 29.100000     | 32.20      | 1.60      | 48.00      | 15.80     | N    | GND |
| 29.185000     | 32.80      | 1.60      | 48.00      | 15.20     | N    | GND |
| 29.270000     | 32.60      | 1.60      | 48.00      | 15.40     | N    | GND |
| 29.805000     | 32.20      | 1.60      | 48.00      | 15.80     | N    | GND |

**Supply Voltage:** 120V  
**Frequency:** 60Hz  
**Noise measured on:** L1

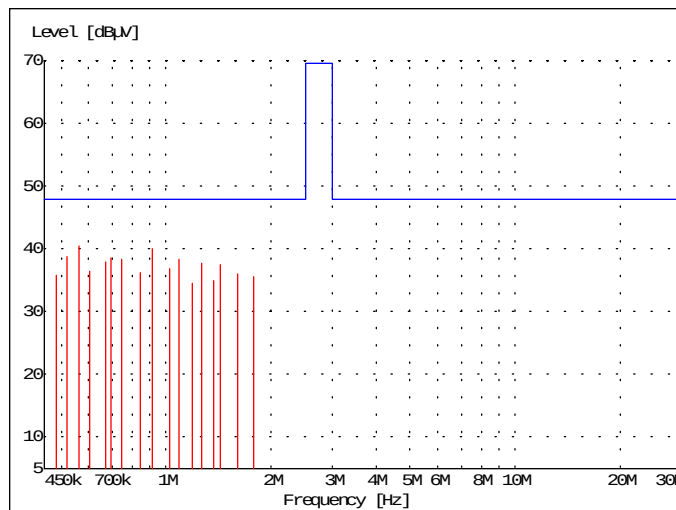
Red line: Peak measurement results  
Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment



**Quasi Peak measurement results Phase L1**

Red line: Quasi Peak measurement results

Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment

**Table with the Quasi Peak measurements results**

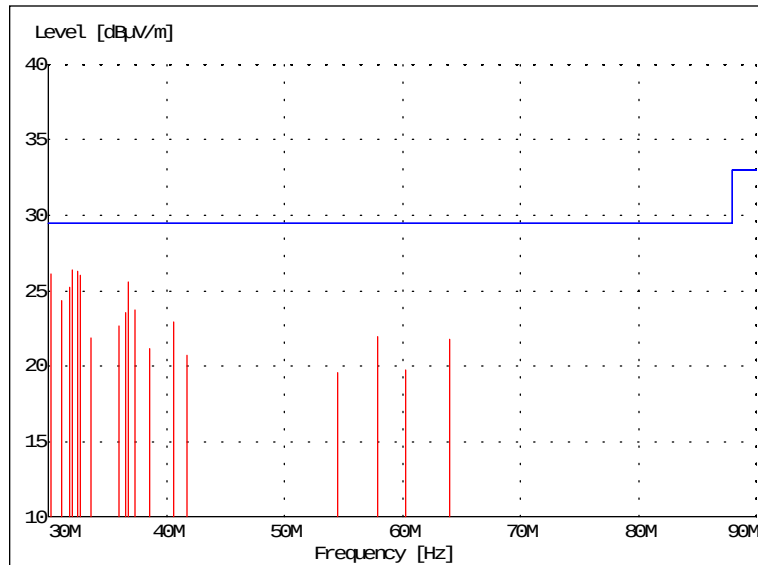
| Frequency MHz | Level dBμV | Transd dB | Limit dBμV | Margin dB | Line | PE  |
|---------------|------------|-----------|------------|-----------|------|-----|
| 0.485000      | 35.90      | 0.30      | 48.00      | 12.10     | L1   | GND |
| 0.520000      | 38.80      | 0.30      | 48.00      | 9.20      | L1   | GND |
| 0.565000      | 40.40      | 0.30      | 48.00      | 7.60      | L1   | GND |
| 0.605000      | 36.50      | 0.40      | 48.00      | 11.50     | L1   | GND |
| 0.670000      | 38.00      | 0.40      | 48.00      | 10.00     | L1   | GND |
| 0.695000      | 38.60      | 0.40      | 48.00      | 9.40      | L1   | GND |
| 0.745000      | 38.30      | 0.40      | 48.00      | 9.70      | L1   | GND |
| 0.840000      | 36.30      | 0.40      | 48.00      | 11.70     | L1   | GND |
| 0.910000      | 40.00      | 0.40      | 48.00      | 8.00      | L1   | GND |
| 1.025000      | 36.90      | 0.40      | 48.00      | 11.10     | L1   | GND |
| 1.085000      | 38.40      | 0.40      | 48.00      | 9.60      | L1   | GND |
| 1.190000      | 34.60      | 0.40      | 48.00      | 13.40     | L1   | GND |
| 1.260000      | 37.80      | 0.50      | 48.00      | 10.20     | L1   | GND |
| 1.370000      | 35.00      | 0.50      | 48.00      | 13.00     | L1   | GND |
| 1.430000      | 37.50      | 0.50      | 48.00      | 10.50     | L1   | GND |
| 1.600000      | 36.00      | 0.50      | 48.00      | 12.00     | L1   | GND |
| 1.775000      | 35.60      | 0.50      | 48.00      | 12.40     | L1   | GND |
| 29.115000     | 31.30      | 1.60      | 48.00      | 16.70     | L1   | GND |
| 29.205000     | 30.90      | 1.60      | 48.00      | 17.10     | L1   | GND |
| 29.690000     | 31.20      | 1.60      | 48.00      | 16.80     | L1   | GND |

**Configuration n. 2 Package T0220 Radiated Emission Graphics and Tables**

**Supply Voltage:** 120V  
**Frequency:** 60Hz  
**Measurement distance:** 10m  
**Polarization:** VERTICAL

**Quasi Peak measurement results**

Blue limit line: FCC CFR 47 Part 18 Subpart C - RF Lightning Devices - Consumer Equipment  
 Red bar graph: Quasi Peak measured signals.

**Table with Quasi Peak measurements results****Vertical Polarization**

| Frequency<br>MHz | Level<br>dBμV/m | Transd<br>dB | Limit<br>dBμV/m | Margin<br>dB | IFBW<br>kHz | Height<br>cm | Azi<br>deg | Pol | Comment |
|------------------|-----------------|--------------|-----------------|--------------|-------------|--------------|------------|-----|---------|
| 30.160000        | 26.10           | 15.60        | 29.50           | 3.40         | 120         | 100.0        | 0.00       | VER |         |
| 31.110000        | 24.30           | 15.00        | 29.50           | 5.20         | 120         | 100.0        | 0.00       | VER |         |
| 31.830000        | 25.20           | 14.60        | 29.50           | 4.30         | 120         | 100.0        | 0.00       | VER |         |
| 32.060000        | 26.40           | 14.40        | 29.50           | 3.10         | 120         | 100.0        | 0.00       | VER |         |
| 32.510000        | 26.30           | 14.20        | 29.50           | 3.20         | 120         | 100.0        | 0.00       | VER |         |
| 32.710000        | 26.00           | 14.00        | 29.50           | 3.50         | 120         | 100.0        | 0.00       | VER |         |
| 33.580000        | 21.90           | 13.50        | 29.50           | 7.60         | 120         | 100.0        | 0.00       | VER |         |
| 36.010000        | 22.70           | 12.70        | 29.50           | 6.80         | 120         | 100.0        | 0.00       | VER |         |
| 36.500000        | 23.50           | 12.70        | 29.50           | 6.00         | 120         | 100.0        | 0.00       | VER |         |
| 36.810000        | 25.60           | 12.70        | 29.50           | 3.90         | 120         | 100.0        | 0.00       | VER |         |
| 37.360000        | 23.70           | 12.80        | 29.50           | 5.80         | 120         | 100.0        | 0.00       | VER |         |
| 38.560000        | 21.20           | 12.80        | 29.50           | 8.30         | 120         | 100.0        | 0.00       | VER |         |
| 40.640000        | 22.90           | 12.80        | 29.50           | 6.60         | 120         | 100.0        | 0.00       | VER |         |
| 41.710000        | 20.70           | 12.70        | 29.50           | 8.80         | 120         | 100.0        | 0.00       | VER |         |
| 54.501000        | 19.60           | 12.40        | 29.50           | 9.90         | 120         | 100.0        | 0.00       | VER |         |
| 57.880000        | 22.00           | 11.70        | 29.50           | 7.50         | 120         | 100.0        | 0.00       | VER |         |
| 60.300000        | 19.70           | 11.10        | 29.50           | 9.80         | 120         | 100.0        | 0.00       | VER |         |
| 64.010000        | 21.80           | 9.80         | 29.50           | 7.70         | 120         | 100.0        | 0.00       | VER |         |

**Polarization:** HORIZONTAL

No significant signals have been found in horizontal polarization.

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