# TEST REPORT

| | | |
|---|---|---|
| **Reference No.** | : | WTA24F02028831E |
| **Applicant** | : | Handian Group Ningbo Washing Machine Co., Ltd. |
| **Address** | : | East Guanhaiwei Industrial Zone, Cixi City, Zhejiang Province, 315314, P. R. China |
| **Manufacturer** | : | The same as above |
| **Address** | : | The same as above |
| **Product Name** | : | Fully Automatic Washing Machine(電気洗濯機) |
| **Model No.** | : | FW30-2039, FW30-U508, FW30-U528, FW30-1508, FW35-2039, FW35-U508, FW35-U528, FW35-1508, FW35-1939, FW35-19399, FW35-HU528 |
| **Test specification** | : | J55014-1(H27) |
| **Date of Receipt sample** | : | 2024-02-29 |
| **Date of Test** | : | 2024-03-01 to 2024-03-25 |
| **Date of Issue** | : | 2024-04-29 |
| **Test Report Form No.** | : | WEH-J55014A-01B |
| **Test Result** | : | **Pass** |

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.


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Tested by: Kyrie Yun

Approved by: Danny Zhou

# 1 Test Summary

| EMISSION | | | |
|---|---|---|---|
| **Test Item** | **Test Standard** | **Class / Severity** | **Result** |
| Mains Terminal Disturbance Voltage, 148.5kHz to 30MHz | J55014-1(H27) | Table 1 of J55014-1 | Pass |
| Disturbance Power, 30MHz to 300MHz | J55014-1(H27) | Table 2a, 2b of J55014-1 | Pass |
| Discontinuous Disturbance (Click) | J55014-1(H27) | Clause 4.2.2 of J55014-1 | Pass |
| Radiated Emission, 30MHz to 1000MHz | J55014-1(H27) | Table 3 of J55014-1 | N/A |

Remark:

| | |
|---|---|
| Pass | Test item meets the requirement |
| Fail | Test item does not meet the requirement |
| N/A | Test case does not apply to the test object |

## 2 Contents

# 3 General Information

## 3.1 General Description of E.U.T.

**Product Name** ..... : Fully Automatic Washing Machine(電気洗濯機)

**Model No.** ..... : FW30-2039, FW30-U508, FW30-U528, FW30-1508, FW35-2039, FW35-U508, FW35-U528, FW35-1508, FW35-1939, FW35-19399, FW35-HU528

**Remark**..... : There are 2 kinds different circuit diagram and PCB layout among all models:
(1) Models from Item 1 to 8 are identical only except for appearance.
(2) Models from Item 9 to 11 are identical only except for appearance.
Other details refer to section 3.2 model list.
Based on the above information, the applicable tests were performed on the two representative models: FW35-1508, FW35-19399.

## 3.2 Details of E.U.T.

**Technical Data** ..... :

| Item | Model | Rated Input | Wash Power | Spin Power |
|---|---|---|---|---|
| 1. | FW30-2039 | AC 100V, 50/60Hz | 240W | 200W |
| 2. | FW30-U508 | AC 100V, 50/60Hz | 240W | 200W |
| 3. | FW30-U528 | AC 100V, 50/60Hz | 240W | 200W |
| 4. | FW30-1508 | AC 100V, 50/60Hz | 240W | 200W |
| 5. | FW35-2039 | AC 100V, 50/60Hz | 240W | 200W |
| 6. | FW35-U508 | AC 100V, 50/60Hz | 240W | 200W |
| 7. | FW35-U528 | AC 100V, 50/60Hz | 240W | 200W |
| 8. | **FW35-1508** | AC 100V, 50/60Hz | 240W | 200W |
| 9. | FW35-1939 | AC 100V, 50/60Hz | 260W | 220W |
| 10. | **FW35-19399** | AC 100V, 50/60Hz | 260W | 220W |
| 11. | FW35-HU528 | AC 100V, 50/60Hz | 260W | 220W |

## 3.3 Description of Support Units

The EUT has been tested as an independent unit. FW35-1508, FW35-19399 are the test samples. All tests were performed in the condition of AC 100V/50Hz and AC 100V/60Hz input.

## 3.4 Standards Applicable for Testing

The tests were performed according to following standards:

J55014-1(H27) 家庭用電気機器，電動工具及び類似品機器からの妨害波の許容値と測定法

## 3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **ISED – Registration No.: 21895**

Waltek Testing Group (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Innovation, Science an Economic Development Canada(ISED). The acceptance letter from the ISED is maintained in our files. Registration ISED number:21895, March 12, 2019

- **FCC – Registration No.: 820106**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 820106, August 16, 2018

- **NVLAP – Lab Code: 600191-0**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

## 3.6 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test items: ---

Lab information: ---

## 3.7 Abnormalities from Standard Conditions

None.

## 4 Equipment Used during Test

| ☒Mains Terminal Disturbance Voltage (Conducted Emission) 1# | | | | | |
|---|---|---|---|---|---|
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Calibration Status** |
| 1. | EMI Test Receiver | R&S | ESR3 | 102423 | Valid |
| 2. | LISN | R&S | ENV216 | 101343 | Valid |
| 3. | Cable 7 | HUBER+SUHNER | CBL2-NN-6M | 223NN624 | Valid |
| 4. | Switch | CD | RSU-A4 18G | RSUA4008 | Valid |
| ☐Mains Terminal Disturbance Voltage (Conducted Emission) 2# | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Calibration Status** |
| 1. | EMI Test Receiver | R&S | ESCI | 101178 | Valid |
| 2. | LISN | R&S | ENV216 | 101215 | Valid |
| 3. | Cable 1 | HUBER+SUHNER | CBL2-NN-6M | 6102701 | Valid |
| 4. | Switch | ESE | RSU/M2 | --- | Valid |
| ☐Mains Terminal Disturbance Voltage (Conducted Emission) 3# | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Calibration Status** |
| 1. | EMI Test Receiver | R&S | ESR3 | 102842 | Valid |
| 2. | LISN | R&S | ENV216 | 101542 | Valid |
| 3. | Cable 12 | YIHENG | LMR195UF-NMNM-2.5 | --- | Valid |
| 4. | Manual RF Switch | YIHENG | SW-2 | RSU0402 | Valid |
| ☒Disturbance Power 1# | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Calibration Status** |
| 1. | EMI Test Receiver | R&S | ESR3 | 102423 | Valid |
| 2. | Absorbing Clamp | TESEQ | MDS21B | 52398 | Valid |
| 3. | Cable 6 | HUBER+SUHNER | CBL2-NN-3m | 223NN322 | Valid |
| 4. | Switch | CD | RSU-A4 18G | RSUA4008 | Valid |
| ☐Disturbance Power 2# | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Calibration Status** |
| 1. | EMI Test Receiver | R&S | ESCI | 101178 | Valid |
| 2. | Absorbing Clamp | LUTHI | MDS21 | 4067 | Valid |
| 3. | Cable 5 | HUBER+SUHNER | CBL2-NN-12m | 223NN121 | Valid |
| 4. | Switch | ESE | RSU/M2 | --- | Valid |
| ☒Discontinuous Disturbance | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Calibration Status** |
| 1. | Discontinues Disturbance Analyzer | TESEQ | DIA1512D | 28302 | Valid |
| 2. | LISN | SCHWARZBECK | NSLK 8128 | 8128-289 | Valid |

☐: ***Not Used***

☒: ***Used***

## 4.1 Software List

| Description | Manufacturer | Model | Version |
|---|---|---|---|
| EMI Test Software (Conducted Emission 1#) | FARATRONIC | EZ-EMC | EMEC-3A1 |
| EMI Test Software (Conducted Emission 2#) | FARATRONIC | EZ-EMC | CON-03A1 |
| EMI Test Software (Conducted Emission 3#) | FARATRONIC | EZ-EMC | COM 3A1.1 |
| EMI Test Software (Disturbance Power 1#) | FARATRONIC | EZ-EMC | EMEC-3A1 |
| EMI Test Software (Disturbance Power 2#) | FARATRONIC | EZ-EMC | CON-03A1 |
| Click Test Software | SCHAFFNER | DIS9966 | V2.5 |

## 4.2 Measurement Uncertainty

| Test Item | Frequency Range | Uncertainty | Note |
|---|---|---|---|
| Conducted Emission | 150kHz~30MHz | ±2.6dB | (1) |
| Disturbance Power | 30MHz~300MHz | ±3.2dB | (1) |

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 4.3 Special Accessories and Auxiliary Equipment

| Item | Equipment | Technical Data | Manufacturer | Model No. | Serial No. |
|---|---|---|---|---|---|
| 1. | / | / | / | / | / |

## 4.4 Decision Rule

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

**If $U_{LAB}$ is less than or equal to $U_{cispr}$, then**

-Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;

-Non-compliance is deemed to occur is any measured disturbance level exceeds the disturbance limt.

**If $U_{LAB}$ is greater than $U_{cispr}$, then**

-Compliance is deemed to occur if no measured disturbance level, increased by($U_{LAB}$-$U_{cispr}$) , exceeds the disturbance limit;

-Non-compliance is deemed to occur if any measured disturbance level, increased by($U_{LAB}$-$U_{cispr}$) , exceeds the disturbance limit.

# 5 Emission Test Results

## 5.1 Mains Terminals Disturbance Voltage, 148.5kHz to 30MHz

**Test Requirement**..... : J55014-1

**Test Method**..... : J55014-1

**Test Result**..... : Pass

**Frequency Range**..... : 148.5kHz to 30MHz

**Class/Severity**..... : Table 1 of J55014-1

### 5.1.1 E.U.T. Operation

**Operating Environment:**

**Temperature** ..... : 24.8°C

**Humidity**..... : 49.3%RH

**Atmospheric Pressure**..... : 101.2kPa

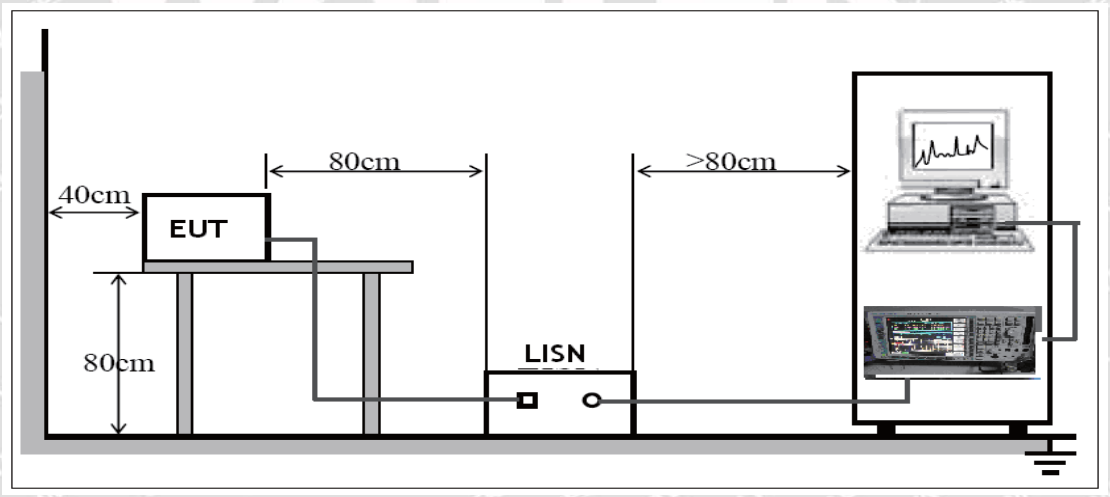
**EUT Operation:**

**Input Voltage** ..... : AC 100V/50Hz, AC 100V/60Hz

**Operating Mode**..... : Wash mode

### 5.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with the J55014-1.




### 5.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

### 5.1.4 Corrected Amplitude & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Measurement = Reading Level + Correct Factor

Correct Factor = LISN VDF + Cable Loss

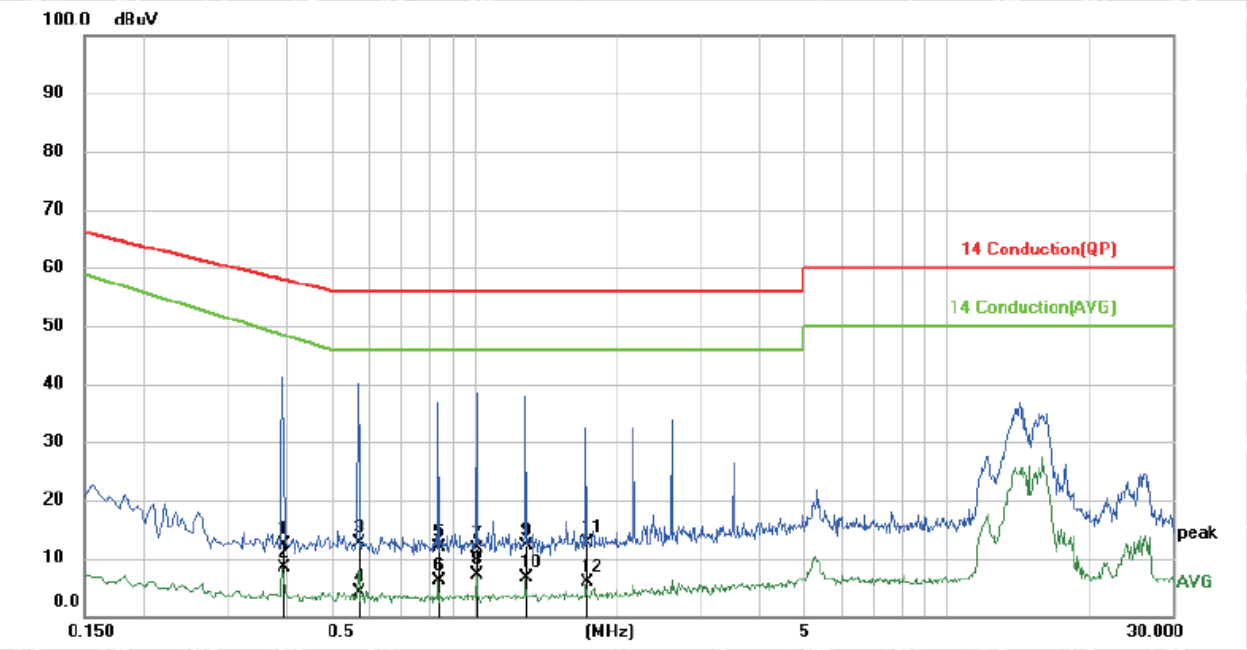
The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Measurement - Limit

### 5.1.5 Mains Terminals Disturbance Voltage Test Data

**Model FW35-1508** **AC 100V/50Hz input**

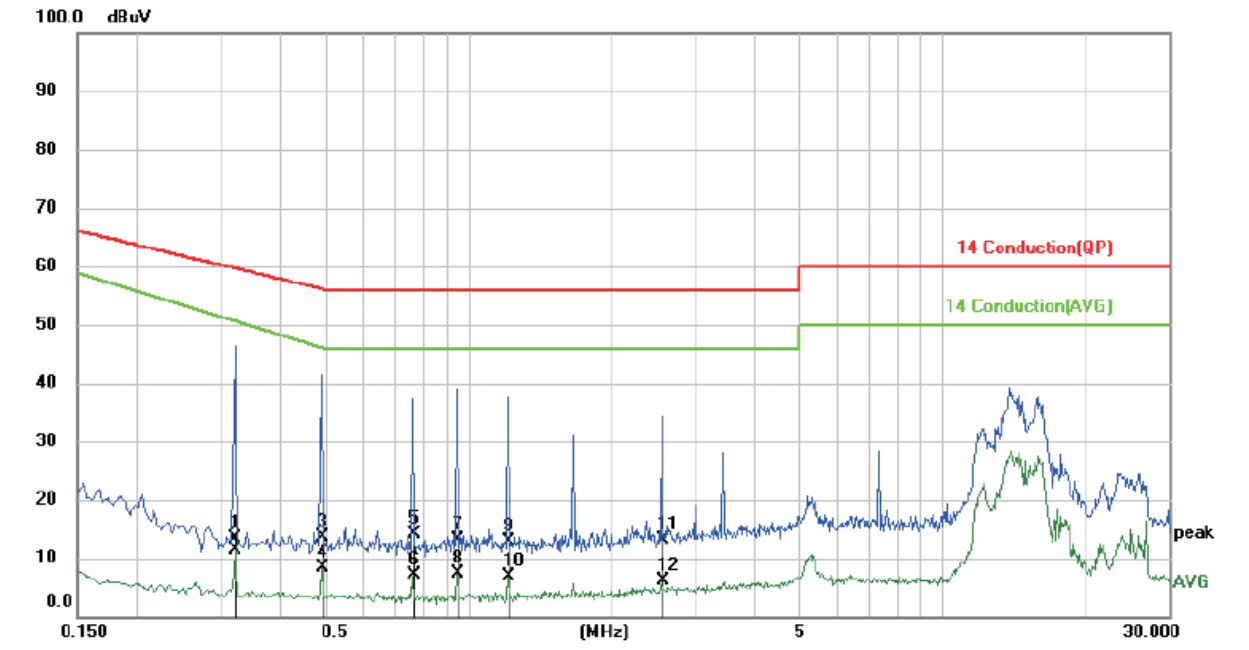
**Live Line**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.3940 | 2.60 | 9.76 | 12.36 | 57.98 | -45.62 | QP | |
| 2 | | 0.3940 | -1.40 | 9.76 | 8.36 | 49.94 | -41.58 | AVG | |
| 3 | | 0.5700 | 2.79 | 9.76 | 12.55 | 56.00 | -43.45 | QP | |
| 4 | | 0.5700 | -5.53 | 9.76 | 4.23 | 46.00 | -41.77 | AVG | |
| 5 | | 0.8420 | 2.20 | 9.78 | 11.98 | 56.00 | -44.02 | QP | |
| 6 | | 0.8420 | -3.67 | 9.78 | 6.11 | 46.00 | -39.89 | AVG | |
| 7 | | 1.0140 | 1.89 | 9.78 | 11.67 | 56.00 | -44.33 | QP | |
| 8 | * | 1.0140 | -2.65 | 9.78 | 7.13 | 46.00 | -38.87 | AVG | |
| 9 | | 1.2860 | 2.25 | 9.79 | 12.04 | 56.00 | -43.96 | QP | |
| 10 | | 1.2860 | -3.07 | 9.79 | 6.72 | 46.00 | -39.28 | AVG | |
| 11 | | 1.7340 | 2.89 | 9.79 | 12.68 | 56.00 | -43.32 | QP | |
| 12 | | 1.7340 | -3.85 | 9.79 | 5.94 | 46.00 | -40.06 | AVG | |

**Model FW35-1508** **AC 100V/50Hz input**

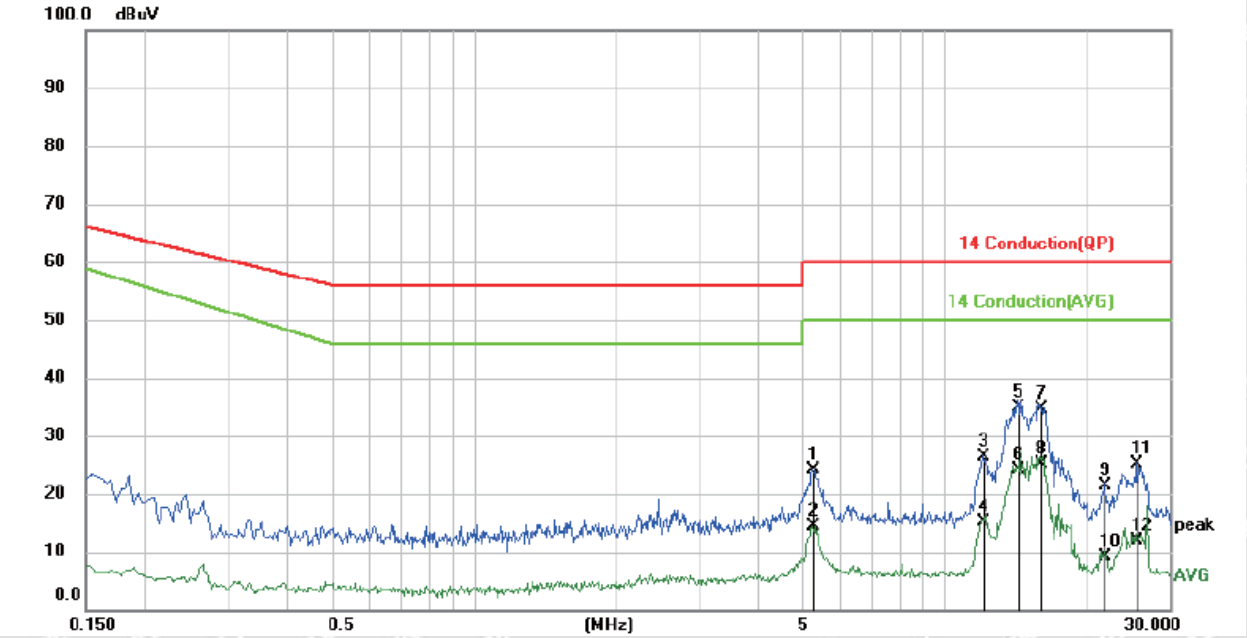
**Neutral Line**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.3220 | 3.76 | 9.69 | 13.45 | 59.66 | -46.21 | QP | |
| 2 | | 0.3220 | 1.59 | 9.69 | 11.28 | 52.61 | -41.33 | AVG | |
| 3 | | 0.4900 | 3.98 | 9.71 | 13.69 | 56.17 | -42.48 | QP | |
| 4 | * | 0.4900 | -1.45 | 9.71 | 8.26 | 46.37 | -38.11 | AVG | |
| 5 | | 0.7660 | 4.49 | 9.73 | 14.22 | 56.00 | -41.78 | QP | |
| 6 | | 0.7660 | -2.63 | 9.73 | 7.10 | 46.00 | -38.90 | AVG | |
| 7 | | 0.9460 | 3.31 | 9.74 | 13.05 | 56.00 | -42.95 | QP | |
| 8 | | 0.9460 | -2.48 | 9.74 | 7.26 | 46.00 | -38.74 | AVG | |
| 9 | | 1.2140 | 3.05 | 9.74 | 12.79 | 56.00 | -43.21 | QP | |
| 10 | | 1.2140 | -2.82 | 9.74 | 6.92 | 46.00 | -39.08 | AVG | |
| 11 | | 2.5579 | 3.29 | 9.79 | 13.08 | 56.00 | -42.92 | QP | |
| 12 | | 2.5579 | -3.58 | 9.79 | 6.21 | 46.00 | -39.79 | AVG | |

**Model FW35-1508** **AC 100V/60Hz input**

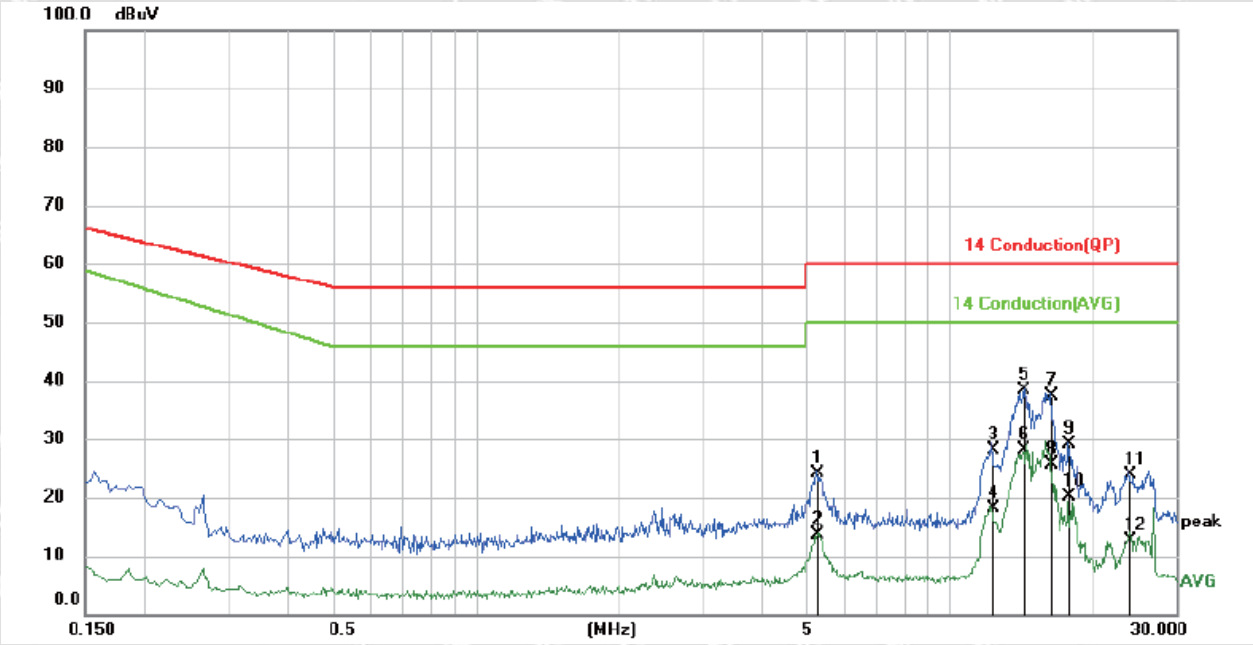
**Live Line**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 5.2260 | 14.29 | 9.92 | 24.21 | 60.00 | -35.79 | QP | |
| 2 | | 5.2260 | 4.34 | 9.92 | 14.26 | 50.00 | -35.74 | AVG | |
| 3 | | 12.0140 | 16.23 | 10.15 | 26.38 | 60.00 | -33.62 | QP | |
| 4 | | 12.0140 | 5.09 | 10.15 | 15.24 | 50.00 | -34.76 | AVG | |
| 5 | | 14.2420 | 24.64 | 10.21 | 34.85 | 60.00 | -25.15 | QP | |
| 6 | | 14.2420 | 14.04 | 10.21 | 24.25 | 50.00 | -25.75 | AVG | |
| 7 | | 15.9980 | 24.44 | 10.25 | 34.69 | 60.00 | -25.31 | QP | |
| 8 | * | 15.9980 | 14.99 | 10.25 | 25.24 | 50.00 | -24.76 | AVG | |
| 9 | | 21.9380 | 11.03 | 10.33 | 21.36 | 60.00 | -38.64 | QP | |
| 10 | | 21.9380 | -1.08 | 10.33 | 9.25 | 50.00 | -40.75 | AVG | |
| 11 | | 25.5140 | 14.77 | 10.37 | 25.14 | 60.00 | -34.86 | QP | |
| 12 | | 25.5140 | 1.43 | 10.37 | 11.80 | 50.00 | -38.20 | AVG | |

**Model FW35-1508** **AC 100V/60Hz input**

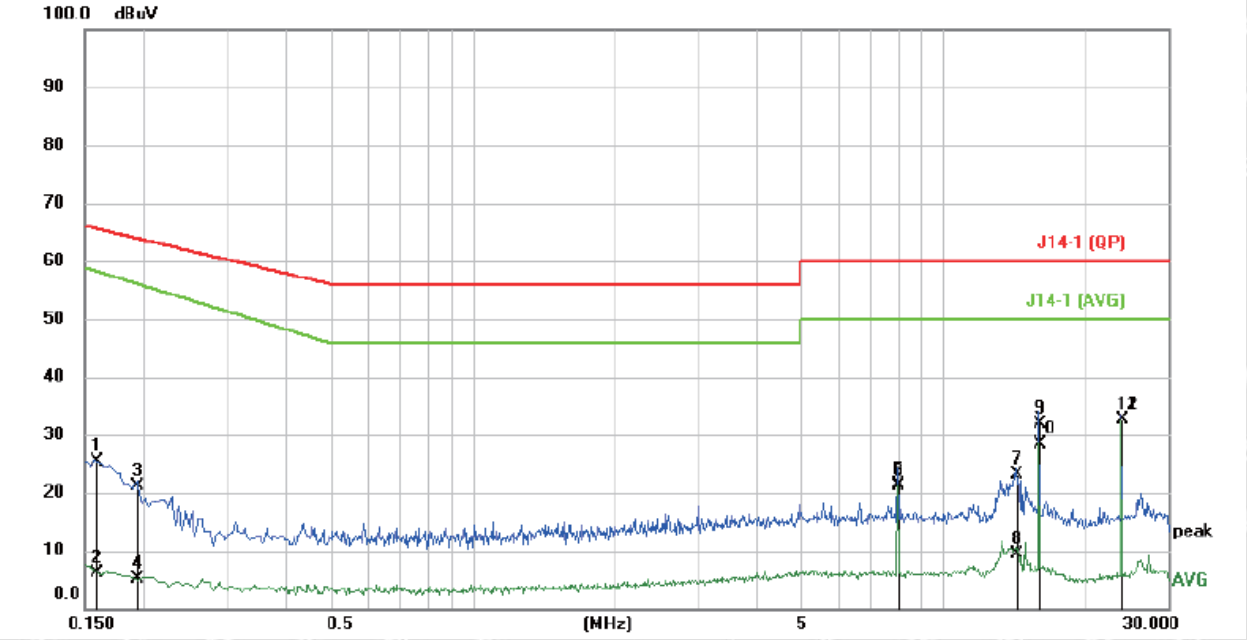
**Neutral Line**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 5.2380 | 14.31 | 9.90 | 24.21 | 60.00 | -35.79 | QP | |
| 2 | | 5.2380 | 3.73 | 9.90 | 13.63 | 50.00 | -36.37 | AVG | |
| 3 | | 12.2700 | 18.08 | 10.16 | 28.24 | 60.00 | -31.76 | QP | |
| 4 | | 12.2700 | 8.08 | 10.16 | 18.24 | 50.00 | -31.76 | AVG | |
| 5 | * | 14.2940 | 28.07 | 10.24 | 38.31 | 60.00 | -21.69 | QP | |
| 6 | | 14.2940 | 17.93 | 10.24 | 28.17 | 50.00 | -21.83 | AVG | |
| 7 | | 16.3340 | 26.99 | 10.30 | 37.29 | 60.00 | -22.71 | QP | |
| 8 | | 16.3340 | 15.33 | 10.30 | 25.63 | 50.00 | -24.37 | AVG | |
| 9 | | 17.8180 | 18.89 | 10.32 | 29.21 | 60.00 | -30.79 | QP | |
| 10 | | 17.8180 | 9.69 | 10.32 | 20.01 | 50.00 | -29.99 | AVG | |
| 11 | | 23.9460 | 13.34 | 10.45 | 23.79 | 60.00 | -36.21 | QP | |
| 12 | | 23.9460 | 2.30 | 10.45 | 12.75 | 50.00 | -37.25 | AVG | |

**Model FW35-19399** **AC 100V/50Hz input**

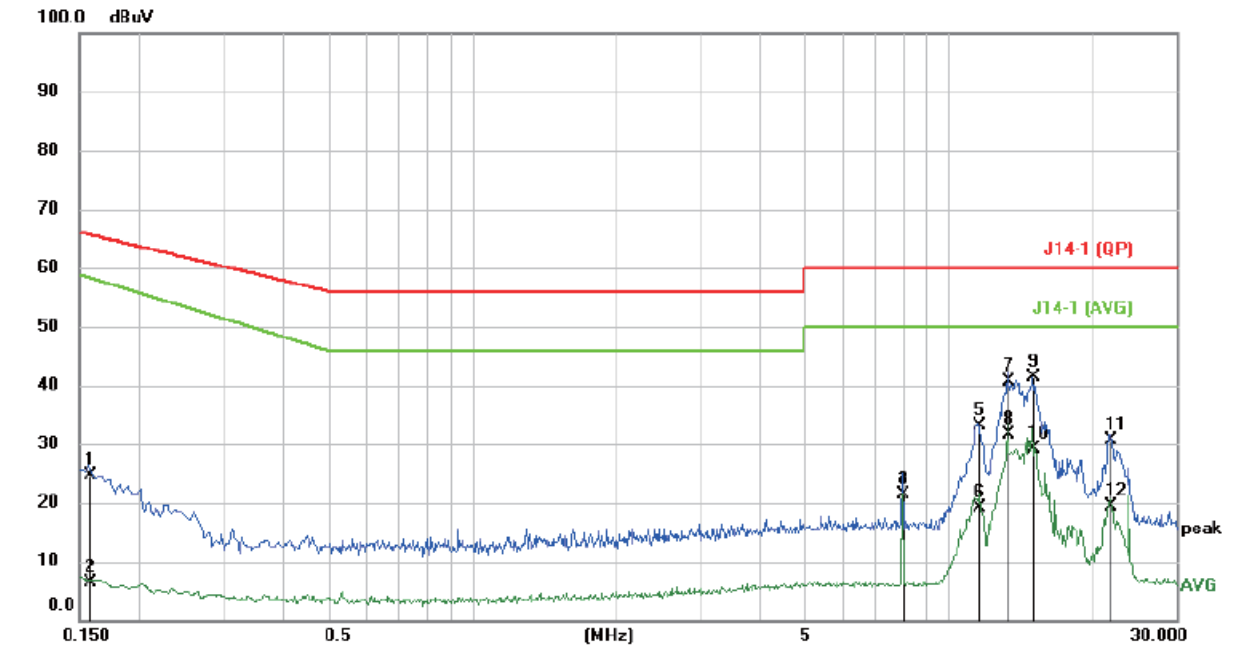
**Live Line**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1590 | 15.59 | 9.71 | 25.30 | 65.52 | -40.22 | QP | |
| 2 | | 0.1590 | -3.46 | 9.71 | 6.25 | 58.37 | -52.12 | AVG | |
| 3 | | 0.1940 | 11.48 | 9.72 | 21.20 | 63.86 | -42.66 | QP | |
| 4 | | 0.1940 | -4.52 | 9.72 | 5.20 | 56.22 | -51.02 | AVG | |
| 5 | | 8.0020 | 11.23 | 10.03 | 21.26 | 60.00 | -38.74 | QP | |
| 6 | | 8.0020 | 11.15 | 10.03 | 21.18 | 50.00 | -28.82 | AVG | |
| 7 | | 14.2780 | 12.98 | 10.22 | 23.20 | 60.00 | -36.80 | QP | |
| 8 | | 14.2780 | -0.82 | 10.22 | 9.40 | 50.00 | -40.60 | AVG | |
| 9 | | 16.0020 | 21.63 | 10.25 | 31.88 | 60.00 | -28.12 | QP | |
| 10 | | 16.0020 | 18.19 | 10.25 | 28.44 | 50.00 | -21.56 | AVG | |
| 11 | | 24.0020 | 22.25 | 10.35 | 32.60 | 60.00 | -27.40 | QP | |
| 12 | * | 24.0020 | 22.30 | 10.35 | 32.65 | 50.00 | -17.35 | AVG | |

**Model FW35-19399** **AC 100V/50Hz input**

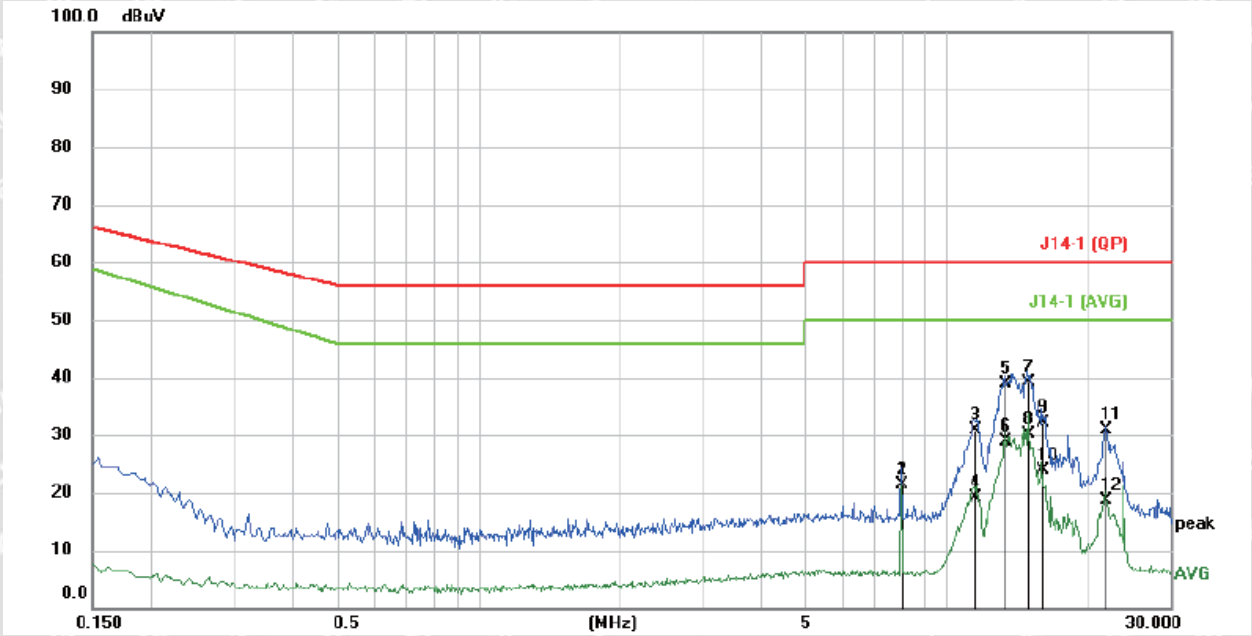
**Neutral Line**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1580 | 14.87 | 9.65 | 24.52 | 65.57 | -41.05 | QP | |
| 2 | | 0.1580 | -3.32 | 9.65 | 6.33 | 58.44 | -52.11 | AVG | |
| 3 | | 7.9980 | 11.32 | 10.02 | 21.34 | 60.00 | -38.66 | QP | |
| 4 | | 7.9980 | 11.29 | 10.02 | 21.31 | 50.00 | -28.69 | AVG | |
| 5 | | 11.5100 | 23.05 | 10.15 | 33.20 | 60.00 | -26.80 | QP | |
| 6 | | 11.5100 | 8.95 | 10.15 | 19.10 | 50.00 | -30.90 | AVG | |
| 7 | | 13.3340 | 30.34 | 10.21 | 40.55 | 60.00 | -19.45 | QP | |
| 8 | * | 13.3340 | 21.31 | 10.21 | 31.52 | 50.00 | -18.48 | AVG | |
| 9 | | 15.0020 | 31.04 | 10.26 | 41.30 | 60.00 | -18.70 | QP | |
| 10 | | 15.0020 | 18.90 | 10.26 | 29.16 | 50.00 | -20.84 | AVG | |
| 11 | | 21.8020 | 20.24 | 10.40 | 30.64 | 60.00 | -29.36 | QP | |
| 12 | | 21.8020 | 9.03 | 10.40 | 19.43 | 50.00 | -30.57 | AVG | |

**Model FW35-19399** **AC 100V/60Hz input**

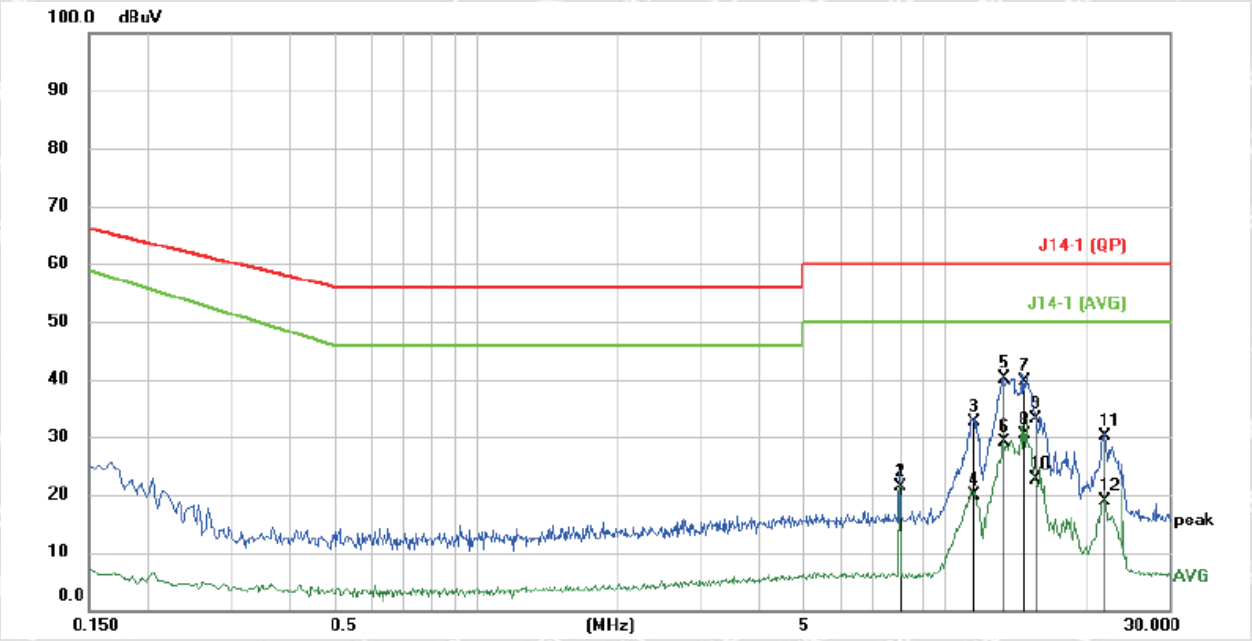
**Live Line**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 7.9980 | 11.27 | 10.03 | 21.30 | 60.00 | -38.70 | QP | |
| 2 | | 7.9980 | 11.26 | 10.03 | 21.29 | 50.00 | -28.71 | AVG | |
| 3 | | 11.4580 | 20.73 | 10.14 | 30.87 | 60.00 | -29.13 | QP | |
| 4 | | 11.4580 | 9.00 | 10.14 | 19.14 | 50.00 | -30.86 | AVG | |
| 5 | | 13.3340 | 28.78 | 10.20 | 38.98 | 60.00 | -21.02 | QP | |
| 6 | | 13.3340 | 18.64 | 10.20 | 28.84 | 50.00 | -21.16 | AVG | |
| 7 | | 14.8500 | 28.96 | 10.24 | 39.20 | 60.00 | -20.80 | QP | |
| 8 | * | 14.8500 | 19.96 | 10.24 | 30.20 | 50.00 | -19.80 | AVG | |
| 9 | | 15.9980 | 21.95 | 10.25 | 32.20 | 60.00 | -27.80 | QP | |
| 10 | | 15.9980 | 13.54 | 10.25 | 23.79 | 50.00 | -26.21 | AVG | |
| 11 | | 21.9300 | 20.64 | 10.33 | 30.97 | 60.00 | -29.03 | QP | |
| 12 | | 21.9300 | 8.24 | 10.33 | 18.57 | 50.00 | -31.43 | AVG | |

**Model FW35-19399** **AC 100V/60Hz input**

**Neutral Line**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 8.0020 | 11.33 | 10.02 | 21.35 | 60.00 | -38.65 | QP | |
| 2 | | 8.0020 | 11.29 | 10.02 | 21.31 | 50.00 | -28.69 | AVG | |
| 3 | | 11.4780 | 22.39 | 10.15 | 32.54 | 60.00 | -27.46 | QP | |
| 4 | | 11.4780 | 9.84 | 10.15 | 19.99 | 50.00 | -30.01 | AVG | |
| 5 | | 13.3340 | 29.99 | 10.21 | 40.20 | 60.00 | -19.80 | QP | |
| 6 | | 13.3340 | 18.89 | 10.21 | 29.10 | 50.00 | -20.90 | AVG | |
| 7 | | 14.7140 | 29.40 | 10.25 | 39.65 | 60.00 | -20.35 | QP | |
| 8 | * | 14.7140 | 20.05 | 10.25 | 30.30 | 50.00 | -19.70 | AVG | |
| 9 | | 15.5260 | 22.93 | 10.28 | 33.21 | 60.00 | -26.79 | QP | |
| 10 | | 15.5260 | 12.29 | 10.28 | 22.57 | 50.00 | -27.43 | AVG | |
| 11 | | 21.9180 | 19.78 | 10.42 | 30.20 | 60.00 | -29.80 | QP | |
| 12 | | 21.9180 | 8.37 | 10.42 | 18.79 | 50.00 | -31.21 | AVG | |

## 5.2 Disturbance Power, 30MHz to 300MHz

**Test Requirement**..... : J55014-1

**Test Method**..... : J55014-1

**Test Result**..... : Pass

**Frequency Range**..... : 30MHz to 300MHz

**Class/Severity**..... : Table 2a, 2b of J55014-1

### 5.2.1 E.U.T. Operation

**Operating Environment:**

**Temperature** ..... : 26.0°C

**Humidity**..... : 60.0%RH

**Barometric Pressure**..... : 101.2kPa

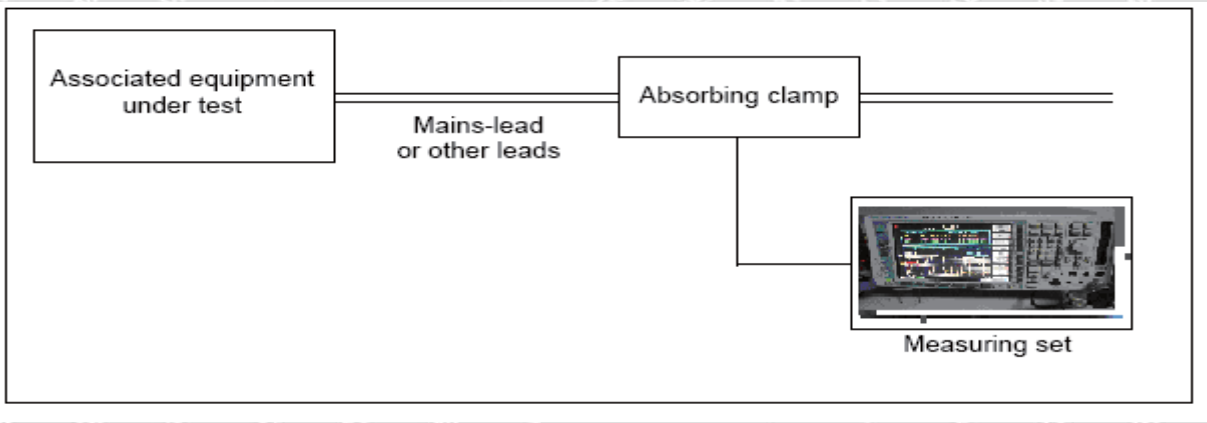
**EUT Operation:**

**Input Voltage** ..... : AC 100V/50Hz, AC 100V/60Hz

**Operating Mode**..... : Wash mode

### 5.2.2 Block Diagram of Test Setup

The Disturbance Power test was performed in accordance with the J55014-1.

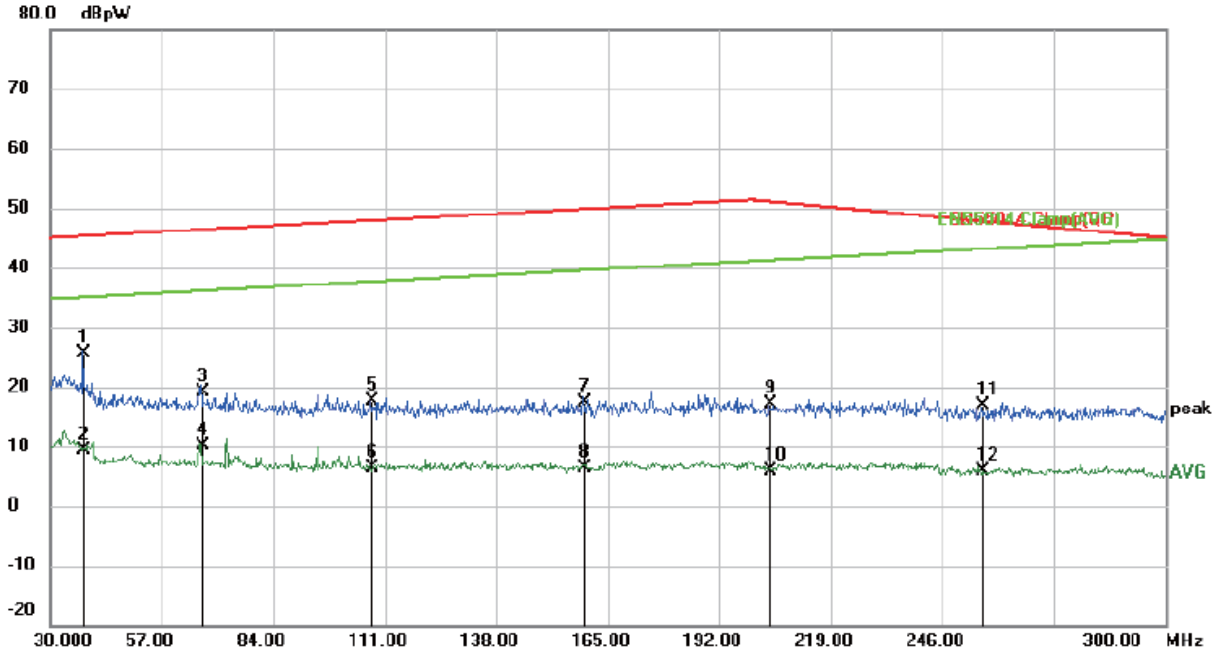



### 5.2.3 Measurement Data

Extending the cable to 6 meters, performed quasi-peak & average measurements since peak emissions from the EUT were detected within 15dB of the limit line. Average measurements were only performed if the quasi-peak measurements were within 15dB of the average limit line.

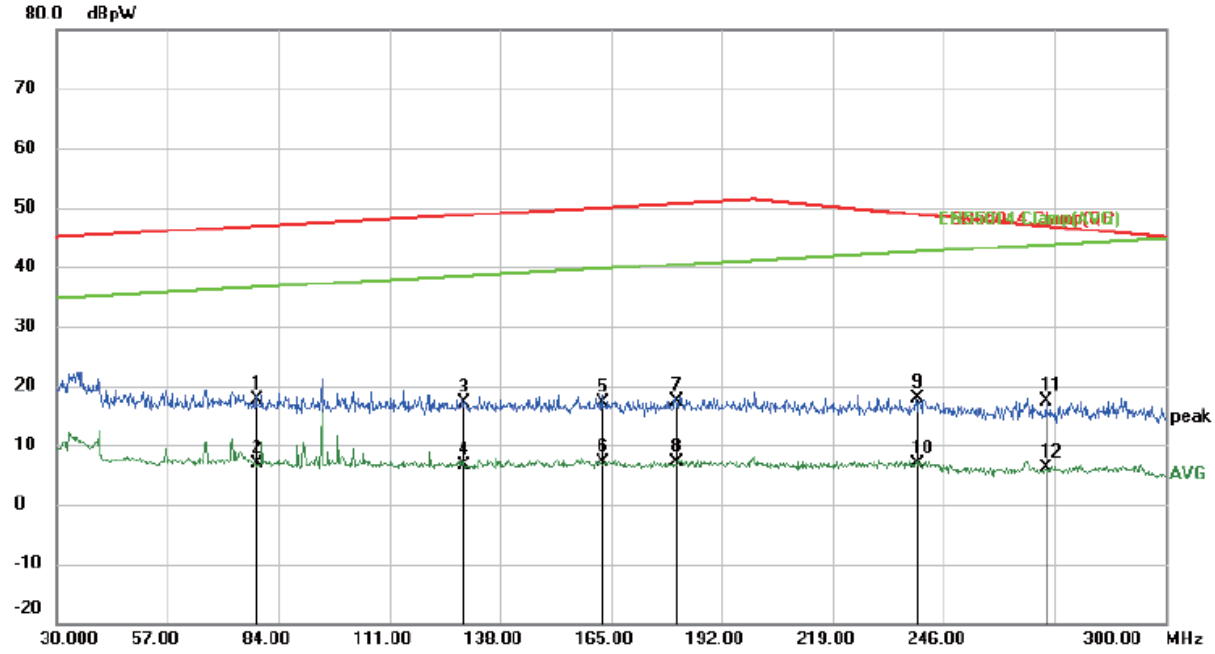
### 5.2.4 Disturbance Power Test Results on AC Line

**Model FW35-1508** **AC 100V/50Hz input**



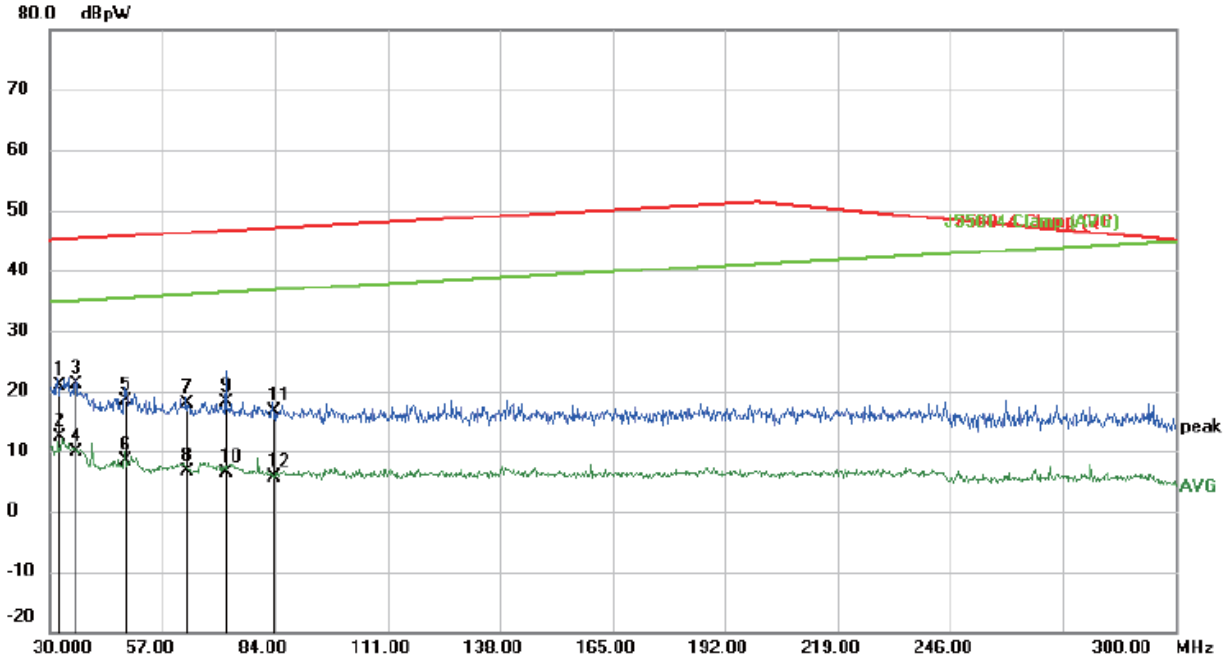

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | Position | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBpW | dB | dBpW | dBpW | dB | Detector | cm | Comment |
| 1 | * | 37.8800 | 17.38 | 8.28 | 25.66 | 45.29 | -19.63 | QP | | |
| 2 | | 37.8800 | 1.04 | 8.28 | 9.32 | 35.29 | -25.97 | AVG | | |
| 3 | | 66.5199 | 13.07 | 6.17 | 19.24 | 46.35 | -27.11 | QP | | |
| 4 | | 66.5199 | 4.04 | 6.17 | 10.21 | 36.35 | -26.14 | AVG | | |
| 5 | | 107.6000 | 12.19 | 5.35 | 17.54 | 47.88 | -30.34 | QP | | |
| 6 | | 107.6000 | 1.01 | 5.35 | 6.36 | 37.87 | -31.51 | AVG | | |
| 7 | | 159.2000 | 13.89 | 3.47 | 17.36 | 49.79 | -32.43 | QP | | |
| 8 | | 159.2000 | 2.84 | 3.47 | 6.31 | 39.79 | -33.48 | AVG | | |
| 9 | | 204.3600 | 13.06 | 4.05 | 17.11 | 51.03 | -33.92 | QP | | |
| 10 | | 204.3600 | 1.93 | 4.05 | 5.98 | 41.46 | -35.48 | AVG | | |
| 11 | | 255.4800 | 12.53 | 4.36 | 16.89 | 47.80 | -30.91 | QP | | |
| 12 | | 255.4800 | 1.42 | 4.36 | 5.78 | 43.35 | -37.57 | AVG | | |

**Model FW35-1508** **AC 100V/60Hz input**



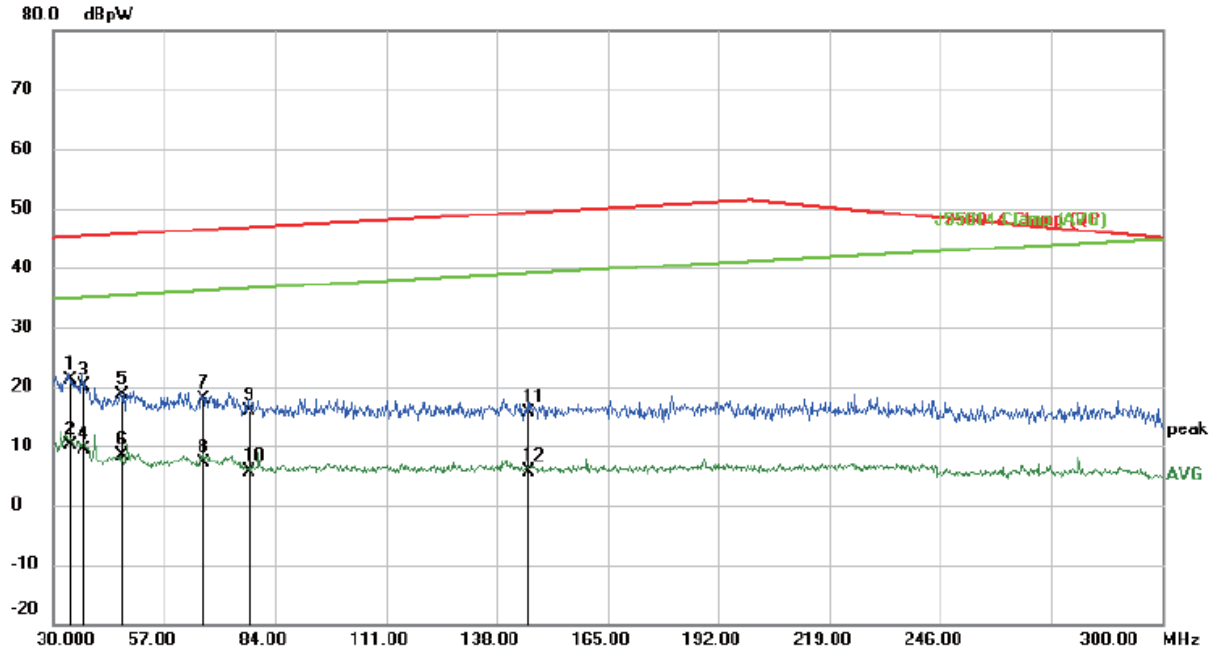

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | Position | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBpW | dB | dBpW | dBpW | dB | Detector | cm | Comment |
| 1 | * | 78.8000 | 11.59 | 5.97 | 17.56 | 46.81 | -29.25 | QP | | |
| 2 | | 78.8000 | 0.92 | 5.97 | 6.89 | 36.81 | -29.92 | AVG | | |
| 3 | | 128.8400 | 13.02 | 4.22 | 17.24 | 48.66 | -31.42 | QP | | |
| 4 | | 128.8400 | 2.50 | 4.22 | 6.72 | 38.66 | -31.94 | AVG | | |
| 5 | | 162.8800 | 13.64 | 3.57 | 17.21 | 49.92 | -32.71 | QP | | |
| 6 | | 162.8800 | 3.44 | 3.57 | 7.01 | 39.92 | -32.91 | AVG | | |
| 7 | | 180.9200 | 13.19 | 4.07 | 17.26 | 50.59 | -33.33 | QP | | |
| 8 | | 180.9200 | 3.16 | 4.07 | 7.23 | 40.59 | -33.36 | AVG | | |
| 9 | | 239.5200 | 13.78 | 4.14 | 17.92 | 48.81 | -30.89 | QP | | |
| 10 | | 239.5200 | 2.84 | 4.14 | 6.98 | 42.76 | -35.78 | AVG | | |
| 11 | | 270.9600 | 12.90 | 4.42 | 17.32 | 46.83 | -29.51 | QP | | |
| 12 | | 270.9600 | 1.79 | 4.42 | 6.21 | 43.92 | -37.71 | AVG | | |

**Model FW35-19399** **AC 100V/50Hz input**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | Position | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBpW | dB | dBpW | dBpW | dB | Detector | cm | Comment |
| 1 | | 32.0000 | 12.01 | 8.96 | 20.97 | 45.07 | -24.10 | QP | | |
| 2 | * | 32.0000 | 3.50 | 8.96 | 12.46 | 35.28 | -22.82 | AVG | | |
| 3 | | 36.1200 | 12.89 | 8.13 | 21.02 | 45.23 | -24.21 | QP | | |
| 4 | | 36.1200 | 1.76 | 8.13 | 9.89 | 35.81 | -25.92 | AVG | | |
| 5 | | 48.0000 | 11.40 | 6.86 | 18.26 | 45.67 | -27.41 | QP | | |
| 6 | | 48.0000 | 1.64 | 6.86 | 8.50 | 37.04 | -28.54 | AVG | | |
| 7 | | 62.8000 | 11.71 | 6.27 | 17.98 | 46.22 | -28.24 | QP | | |
| 8 | | 62.8000 | 0.41 | 6.27 | 6.68 | 38.21 | -31.53 | AVG | | |
| 9 | | 72.1600 | 12.13 | 6.07 | 18.20 | 46.56 | -28.36 | QP | | |
| 10 | | 72.1600 | 0.43 | 6.07 | 6.50 | 38.81 | -32.31 | AVG | | |
| 11 | | 83.6800 | 10.88 | 5.80 | 16.68 | 46.99 | -30.31 | QP | | |
| 12 | | 83.6800 | -0.29 | 5.80 | 5.51 | 39.46 | -33.95 | AVG | | |

**Model FW35-19399** **AC 100V/60Hz input**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | Position | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBpW | dB | dBpW | dBpW | dB | Detector | cm | Comment |
| 1 | * | 33.8800 | 12.83 | 8.37 | 21.20 | 45.14 | -23.94 | QP | | |
| 2 | | 33.8800 | 1.69 | 8.37 | 10.06 | 35.53 | -25.47 | AVG | | |
| 3 | | 37.0800 | 11.99 | 8.21 | 20.20 | 45.26 | -25.06 | QP | | |
| 4 | | 37.0800 | 1.07 | 8.21 | 9.28 | 35.92 | -26.64 | AVG | | |
| 5 | | 46.6800 | 11.47 | 7.13 | 18.60 | 45.62 | -27.02 | QP | | |
| 6 | | 46.6800 | 1.27 | 7.13 | 8.40 | 36.92 | -28.52 | AVG | | |
| 7 | | 66.4000 | 11.80 | 6.18 | 17.98 | 46.35 | -28.37 | QP | | |
| 8 | | 66.4000 | 0.90 | 6.18 | 7.08 | 38.45 | -31.37 | AVG | | |
| 9 | | 77.3200 | 9.89 | 5.99 | 15.88 | 46.75 | -30.87 | QP | | |
| 10 | | 77.3200 | -0.31 | 5.99 | 5.68 | 39.11 | -33.43 | AVG | | |
| 11 | | 145.6799 | 12.11 | 3.58 | 15.69 | 49.29 | -33.60 | QP | | |
| 12 | | 145.6799 | 2.00 | 3.58 | 5.58 | 41.86 | -36.28 | AVG | | |

## 5.3 Discontinuous Disturbance (Click)

**Test Requirement**..... : J55014-1

**Test Method**..... : J55014-1

**Test Result**..... : Pass

**Frequency Range**..... : 150kHz to 30MHz

**Class/Severity**..... : Clause 4.2.2 of J55014-1

### 5.3.1 E.U.T. Operation

**Operating Environment:**

**Temperature** ..... : 22.6°C

**Humidity**..... : 60%RH

**Atmospheric Pressure**..... : 101.8kPa

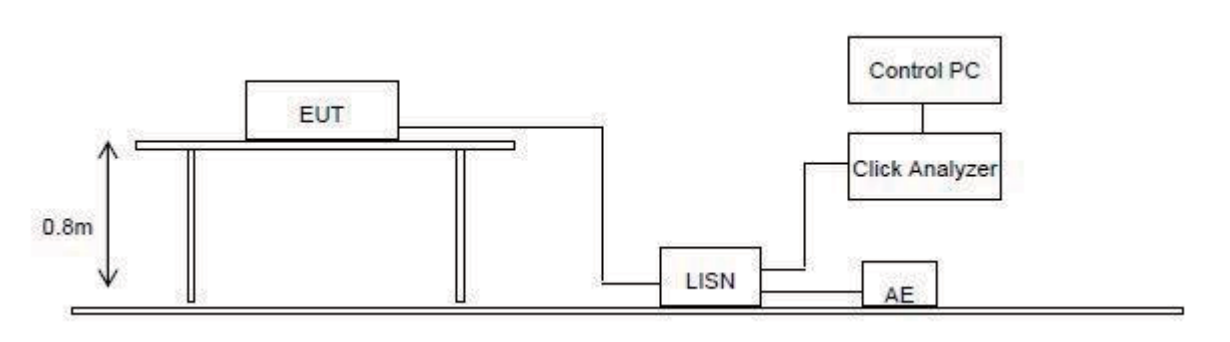
**EUT Operation :**

**Input Voltage** ..... : AC 100V/50Hz, AC 100V/60Hz

**Operating Mode**..... : Wash mode

### 5.3.2 Block Diagram of Setup

The discontinuous disturbance test was performed in accordance with J55014-1.




### 5.3.3 Measurement Data

If none of the caused clicks has a duration longer than 20ms, 90% of the caused clicks have a duration less than 10ms, and the click rate is not more than 5, then the product is deemed to comply with the click requirements of J55014-1. See Clause 4.2.3.4 of J55014-1 for further details.

### 5.3.4 Discontinuous Disturbance(Click) Test Results

**Test Model: FW35-1508** **Input Voltage: AC 100V/50Hz input**

**Run A** **Observation time T1=** 120 mins 0 secs

| **Frequency** | **150kHz** | **500kHz** | **1.4MHz** | **30MHz** |
|---|---|---|---|---|
| **Limit value (L)(dBuV)** | 56 | 46 | 46 | 50 |
| **Short clicks** | 0 | 0 | 0 | 0 |
| **Long clicks** | 0 | 0 | 0 | 0 |
| **Total (short + long) n** | 0 | 0 | 0 | 0 |
| **Click rate** | 0.00 | 0.00 | | |
| **Continuous Interference (max)** | 0.00sec | 0.00sec | 0.00sec | 0.00sec |

**Switching operations:** s= ---

**Click rate formula:** N= n / T1

**Click rate used in calculating Run B limit : N1**= --- **N2**= --- (used for 0.5MHz to 30MHz)

**Run B** **Observation time T2=** N/A

| **Frequency** | **150kHz** | **500kHz** | **1.4MHz** | **30MHz** |
|---|---|---|---|---|
| **Limit value (L)(dBuV) Lq = L + 20 log 30/N (max L + 44)** | --- | --- | --- | --- |
| **Short clicks** | --- | --- | --- | --- |
| **Long clicks** | --- | --- | --- | --- |
| **Total (short + long) n** | --- | --- | --- | --- |
| **Limit = RunA/4** | --- | --- | --- | --- |

**Test Model: FW35-1508** **Input Voltage: AC 100V/60Hz input**

**Run A** **Observation time T1=** 120 mins 0 secs

| **Frequency** | **150kHz** | **500kHz** | **1.4MHz** | **30MHz** |
|---|---|---|---|---|
| **Limit value (L)(dBuV)** | 56 | 46 | 46 | 50 |
| **Short clicks** | 0 | 0 | 0 | 0 |
| **Long clicks** | 0 | 0 | 0 | 0 |
| **Total (short + long) n** | 0 | 0 | 0 | 0 |
| **Click rate** | 0.00 | 0.00 | | |
| **Continuous Interference (max)** | 0.00sec | 0.00sec | 0.00sec | 0.00sec |

**Switching operations:** s= ---

**Click rate formula:** N= n / T1

**Click rate used in calculating Run B limit : N1**= --- **N2**= --- (used for 0.5MHz to 30MHz)

**Run B** **Observation time T2=** N/A

| **Frequency** | **150kHz** | **500kHz** | **1.4MHz** | **30MHz** |
|---|---|---|---|---|
| **Limit value (L)(dBuV) Lq = L + 20 log 30/N (max L + 44)** | --- | --- | --- | --- |
| **Short clicks** | --- | --- | --- | --- |
| **Long clicks** | --- | --- | --- | --- |
| **Total (short + long) n** | --- | --- | --- | --- |
| **Limit = RunA/4** | --- | --- | --- | --- |

**Test Model: FW35-19399** **Input Voltage: AC 100V/50Hz input**

**Run A** **Observation time T1=** 120 mins 0 secs

| **Frequency** | **150kHz** | **500kHz** | **1.4MHz** | **30MHz** |
|---|---|---|---|---|
| **Limit value (L)(dBuV)** | 56 | 46 | 46 | 50 |
| **Short clicks** | 0 | 0 | 0 | 0 |
| **Long clicks** | 0 | 0 | 0 | 0 |
| **Total (short + long) n** | 0 | 0 | 0 | 0 |
| **Click rate** | 0.00 | 0.00 | | |
| **Continuous Interference (max)** | 0.00sec | 0.00sec | 0.00sec | 0.00sec |

**Switching operations:** s= ---

**Click rate formula:** N= n / T1

**Click rate used in calculating Run B limit : N1**= --- **N2**= --- (used for 0.5MHz to 30MHz)

**Run B** **Observation time T2=** N/A

| **Frequency** | **150kHz** | **500kHz** | **1.4MHz** | **30MHz** |
|---|---|---|---|---|
| **Limit value (L)(dBuV) Lq = L + 20 log 30/N (max L + 44)** | --- | --- | --- | --- |
| **Short clicks** | --- | --- | --- | --- |
| **Long clicks** | --- | --- | --- | --- |
| **Total (short + long) n** | --- | --- | --- | --- |
| **Limit = RunA/4** | --- | --- | --- | --- |

**Test Model: FW35-19399** **Input Voltage: AC 100V/60Hz input**

**Run A** **Observation time T1=** 120 mins 0 secs

| **Frequency** | **150kHz** | **500kHz** | **1.4MHz** | **30MHz** |
|---|---|---|---|---|
| **Limit value (L)(dBuV)** | 56 | 46 | 46 | 50 |
| **Short clicks** | 0 | 0 | 0 | 0 |
| **Long clicks** | 0 | 0 | 0 | 0 |
| **Total (short + long) n** | 0 | 0 | 0 | 0 |
| **Click rate** | 0.00 | 0.00 | | |
| **Continuous Interference (max)** | 0.00sec | 0.00sec | 0.00sec | 0.00sec |

**Switching operations:** s= ---

**Click rate formula:** N= n / T1

**Click rate used in calculating Run B limit : N1**= --- **N2**= --- (used for 0.5MHz to 30MHz)

**Run B** **Observation time T2=** N/A

| **Frequency** | **150kHz** | **500kHz** | **1.4MHz** | **30MHz** |
|---|---|---|---|---|
| **Limit value (L)(dBuV) Lq = L + 20 log 30/N (max L + 44)** | --- | --- | --- | --- |
| **Short clicks** | --- | --- | --- | --- |
| **Long clicks** | --- | --- | --- | --- |
| **Total (short + long) n** | --- | --- | --- | --- |
| **Limit = RunA/4** | --- | --- | --- | --- |

Remark:

1) The click rate N shall be determined at 150kHz for the frequency range 150kHz to 500kHz and at 500kHz for the frequency 500kHz to 30MHz ;
2) During RUN A, the click rate is not more than 5 and there is no long click. RUN B is unnecessary;

# 6 Photographs – Test Setup

## 6.1 Photograph – Mains Terminal Disturbance Voltage Test Setup

## 6.2 Photograph – Disturbance Power Test Setup

## 6.3 Photograph – Discontinuous Disturbance (Click) Test Setup

# 7 Photographs – Constructional Details

## 7.1 EUT – External View

**Model FW35-1508**

**Model FW35-19399**

====== End of Report ======