

|  |  |  |  |
|--|--|--|--|
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| <b>Auftraggeber:</b><br><i>Client:</i>   | <b>Beyerdynamic Inc. USA</b><br><b>56 Central Avenue</b><br><b>Farmingdale, NY 11735</b><br><b>United States</b>   |  |  |
| <b>Gegenstand der Prüfung:</b><br><i>Test item:</i>  | <b>10 Channel Stereo Mixing System</b>   |  |  |
| <b>Bezeichnung:</b><br><i>Identification:</i>  | <b>MIX 10 NG2</b>  | <b>FCC ID:</b><br><i>FCC ID:</i>   | <b>OSDMIX10NG2</b>   |
| <b>Wareneingangs-Nr.:</b><br><i>Receipt no.:</i>   | <b>173036671</b>   | <b>Eingangsdatum:</b><br><i>Date of receipt:</i>   | <b>09.Apr.2008</b>   |
| <b>Prüfört:</b><br><i>Testing location:</i>  | <b>China Guangzhou Electrical Safety Testing Institute of Quality and Technical Supervisor (CEST)</b><br><b>No.6 Hai Cheng Dong Street, Xingang Dong Road, Haizhu District, Guangzhou, P. R. China 510330</b>          |  | Listed test laboratory according to FCC rules section 2.948 for measuring devices under Parts 15 |
| <b>Prüfgrundlage:</b><br><i>Test specification:</i>  | <b>ANSI C63.4: 2003</b><br><b>FCC Part 15: 2007-09-20</b><br><b>Conduct Emissions with limits described at Subpart B section 15.107</b><br><b>Radiated Emissions with limits described at Subpart B section 15.109</b> |  |  |
| <b>Prüfergebnis:</b><br><i>Test result:</i>  | <b>Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).</b><br><i>The test item passed the test specification(s).</i>  |  |  |
| <b>Prüflaboratorium:</b><br><i>Testing laboratory:</i>   | <b>China Guangzhou Electrical Safety Testing Institute of Quality and Technical Supervisor (CEST)</b>  |  |  |
| <b>geprüft / tested by:</b>  |  | <b>kontrolliert/ reviewed by:</b>  |  |
| 24.Jul.2008  | Cherry He  | Richard Lu   |  |
|  | Project Engineer <i>Cherry He</i>  | Project Manager <i>Richard Lu</i>  |  |
| <b>Datum</b>   | <b>Name/ Stellung</b>  | <b>Unterschrift</b>  | <b>Datum</b>   |
| <i>Date</i>  | <i>Name/Position</i>   | <i>Signature</i>   | <i>Date</i>  |
|  |  |  |  |
| <b>Sonstiges/ Other aspects:</b>   |  |  |  |
| <b>Abkürzungen:</b> P(ass) = entspricht Prüfgrundlage<br>F(ail) = entspricht nicht Prüfgrundlage<br>N/A = nicht anwendbar<br>N/T = nicht getestet  |  | <b>Abbreviations:</b> P(ass) = passed<br>F(ail) = failed<br>N/A = not applicable<br>N/T = not tested |  |
| Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.<br><i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i> |  |  |  |

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## TEST SUMMARY

**5.1 CONDUCTED EMISSION FOR FCC PART 15 PER SECTION 15.107(A)***RESULT: Pass***5.2 RADIATED EMISSION FOR FCC PART 15 PER SECTION 15.109(A)***RESULT: Pass*

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## 1 General Remarks

### 1.1 Complementary Materials

None

## 2 Test Sites

### 2.1 Test Facilities

**China Guangzhou Electrical Safety Testing Institute of Quality and Technical Supervisor (CEST)**

No.6 Hai Cheng Dong Street, Xingang Dong Road, Haizhu District,  
Guangzhou, P. R. China 510330

The tests at these test sites have been conducted under the supervision of a TÜV Rheinland engineer.

## 2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

| Kind of Equipment        | Manufacturer | Type             | S/N   | Calibrated until |
|--------------------------|--------------|------------------|-------|------------------|
| AMN                      | R/S          | ESH2-Z5          | 08031 | 01.10.2008       |
| EMI Test Receiver        | R/S          | ESCS30           | 08092 | 01.10.2008       |
| Biconilog Antenna        | ETS          | 3142B            | 1642  | 01.10.2008       |
| EMI Test Receiver        | R/S          | ESIB26           | 08102 | 01.10.2008       |
| Audio Generator          | GW           | GAG-810          | 07150 | 01.10.2008       |
| Power quality analyser   | FLUKE        | FLUKE 43B        | 07118 | 01.10.2008       |
| 3m Semi-anechoic chamber | ETS-Lindgren | FACT-49X6X5.8(m) | ---   | 01.10.2008       |
| Shielded Room            | ETS-Lindgren | 8.0x4.5x3.2(m)   | ---   | 01.10.2008       |

## 2.3 Trace ability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations

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## **2.4 Calibration**

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## **2.5 Measurement Uncertainty**

The estimated combined standard uncertainty for conducted emissions measurements is  $\pm 2.8$  dB.  
The estimated combined standard uncertainty for radiated emissions measurements is  $\pm 4.94$  dB.

## **2.6 Location of original data**

The original copies of all test data taken during actual testing were attached on Page 13-16, 18-19 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Guangzhou) file for certification follow-up purposes.

## **2.7 Status of facility used for testing**

China Guangzhou Electrical Safety Testing Institute of Quality and Technical Supervisor (CEST)  
No.6 Hai Cheng Dong Street, Xingang Dong Road, Haizhu District, Guangzhou, 510330 P. R.  
China is listed on the US Federal Communications Commission list of facilities approved to perform measurements, the register no. 820844.

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### 3 General Product Information

#### Brief description of the test sample:

The submitted sample MIX 10 NG2 is a 10 Channel Stereo Mixing System for professional use. It has a RS232 port which can be used to connect to a PC.

According to above information, all the tests are performed on MIX 10 NG2.

#### 3.1 Product Function and Intended Use

For details, refer to Technical Documentation and the User Manual.

#### 3.2 Ratings and System Details

|                      |                  |
|----------------------|------------------|
| Type designation     | MIX 10 NG2       |
| Power Consumption    | 18W              |
| System input voltage | AC 117V, 50/60Hz |
| Protection class     | I                |

Refer to this report Technical Documentation for further information.

### 3.3 Independent Operation Modes

The basic operation modes are:

Off

On

### 3.4 Submitted Documents

Construction Drawing

Circuit Diagram

Components List

PCB Layout

Rating Label

User Manual



## **4 Test Set-up and Operation Mode**

### **4.1 Principle of Configuration Selection**

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

### **4.2 Test Operation and Test Software**

Refer to Test set-up in chapter 5.

### **4.3 Special Accessories and Auxiliary Equipment**

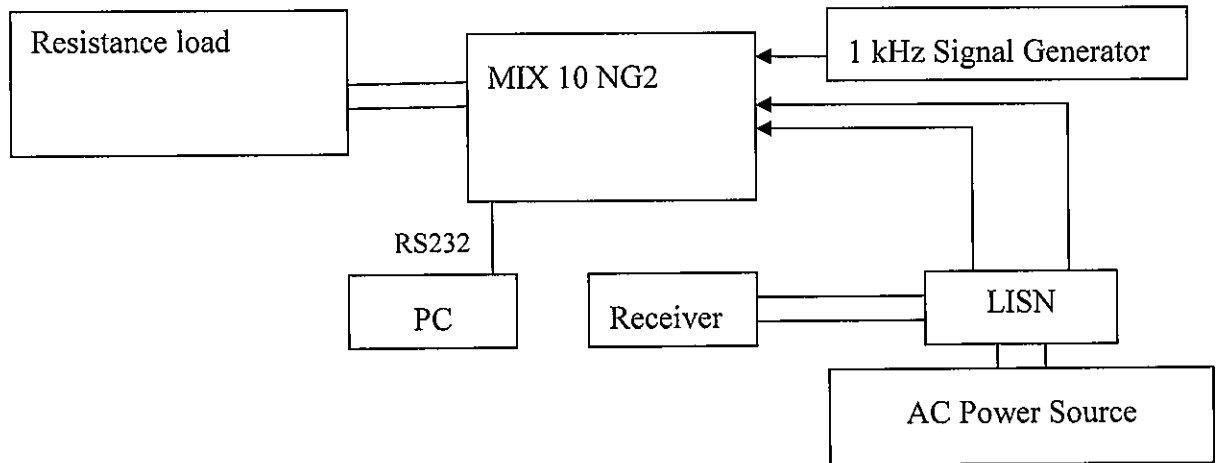
Computer: Dell M1210, connected to EUT with shielded RS232 line.

### **4.4 Countermeasures to achieve EMC Compliance**

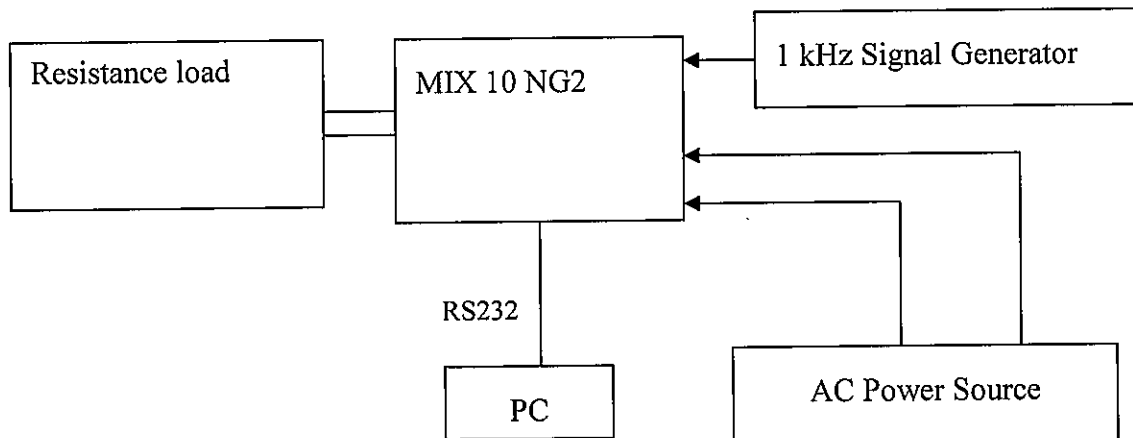
The test sample, which has been tested, contained the noise suppression parts as described in the Constructional Data Form or the Technical Documentation. No additional measures were employed to achieve compliance.



**Diagram 3 of Equipment Configuration for Testing Conducted Emission**



**Diagram 4 of Equipment Configuration for Testing Radiated Emission**



## 5 Test Results EMISSION

### 5.1 Conducted Emission for FCC Part 15 Per Section 15.107(a)

**RESULT:**

**Pass**

|  |   |   |
|--|---|---|
| Date of testing                          | : | 05.Jul.2008                                     |
| Test Basis                               | : | FCC Part 15 Per Section 15.107(a)               |
| Test specification                       | : | Class B   |
| Deviations from Standard Test procedures | : | None  |
| Test procedure                           | : | Procedure specified in ANSI C63.4 were followed |
| Kind of test site                        | : | Shielded room                                   |
| Operation mode                           | : | On  |
| Temperature                              | : | 22°C  |
| Humidity                                 | : | 50%   |

**Test procedure:**

1. Place the EUT as specified in ANSI C63.4 Clause 7.2.1
2. Plug the LISN to a correct power source (pay attention to: AC/DC, voltage, frequency).
3. Connect the LISN to the power source.
4. Connect the EUT to LISN and choose N or L1 on the LISN.
5. Connect ESCS30 and LISN via a 50-ohm coaxial cable and a pulse limiter then begin exploratory measurement as specified in ANSI C63.4 Clause 7.2.3
6. Make final measurement as specified in ANSI C63.4 Clause 7.2.4
7. Switch to the other line on the LISN and repeat step 4 to 6.

If the result of the measurement with the Quasi Peak detector is below the Average limit, the measurement with Average Detector may be omitted.

Please refer to the following graphs. Disturbances are far below the limit.

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150KHz-30MHz

EUT: MIX 10 NG2  
Operator: 115V 60Hz  
Comment: FCC  
L

AUX

Date: 05. Jul 08 15:42

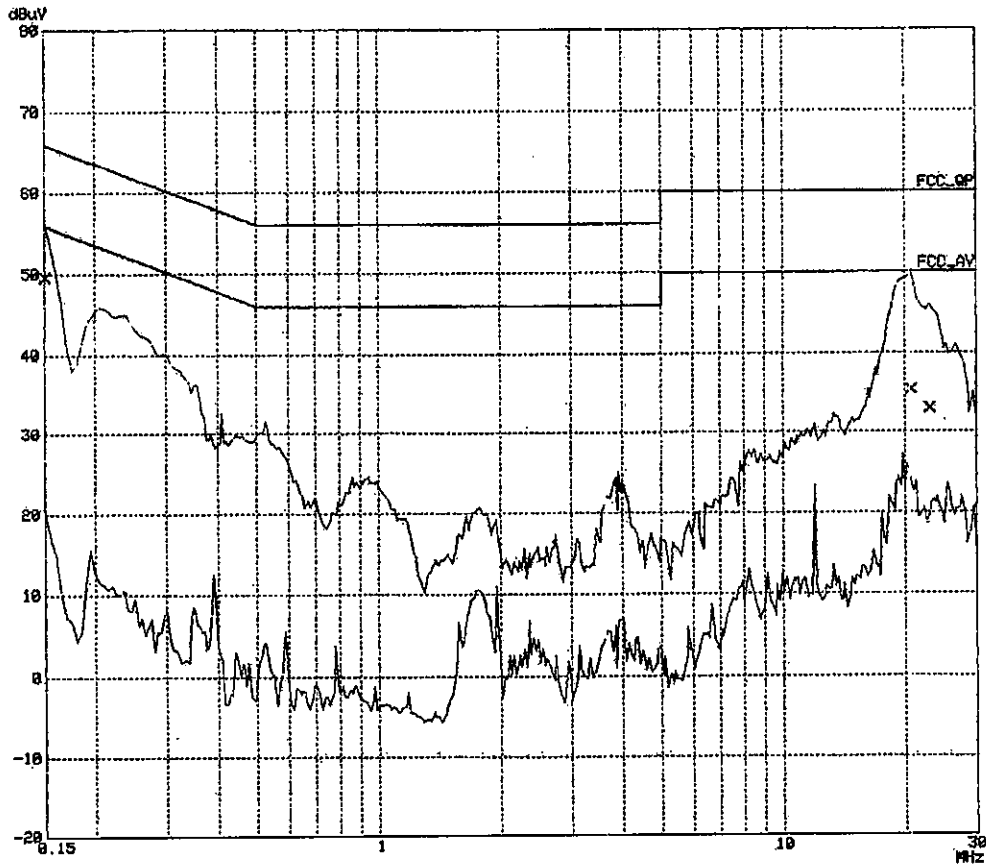
Scan Settings (1 Range)

| Frequencies |      |      | Receiver Settings |          |           |              |
|-------------|------|------|-------------------|----------|-----------|--------------|
| Start       | Stop | Step | IF BW             | Detector | M-Time    | Atten Preamp |
| 150k        | 30M  | 5k   | 9k                | PK+AV    | 20ms AUTO | LN OFF       |

| Transducer No. | Start | Stop | Name    |
|----------------|-------|------|---------|
| 5              | 9k    | 30M  | EHS2_25 |

Final Measurement: ·x QP / + AV

Meas Time: 1 s  
Subranges: 16  
Acc Margin: 16dB



**150KHz-30MHz**

EUT: MIX 10 NG2  
 Operator: 115V 60Hz  
 Comment: FCC  
 L  
 Date: 05. Jul 08 15:42

AUX

**Final Measurement Results:**

Indicated Phase/PE shows Configuration of max. Emission

| Frequency<br>MHz | QP Level<br>dBuV | Delta Limit<br>dB | Phase<br>- | PE<br>- |
|------------------|------------------|-------------------|------------|---------|
| 0.15000          | 49.7             | -16.2             | N          | gnd     |
| 20.77000         | 35.4             | -24.5             | L1         | gnd     |
| 23.00500         | 33.0             | -26.9             | N          | gnd     |

| Frequency<br>MHz | AV Level<br>dBuV | Delta Limit<br>dB | Phase<br>- | PE<br>- |
|------------------|------------------|-------------------|------------|---------|
|                  |                  |                   |            |         |

no Results

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**150KHz-30MHz**

RUT: MIX 10 NG2  
Operator: 115V 60Hz  
Comment: FCC

AUX

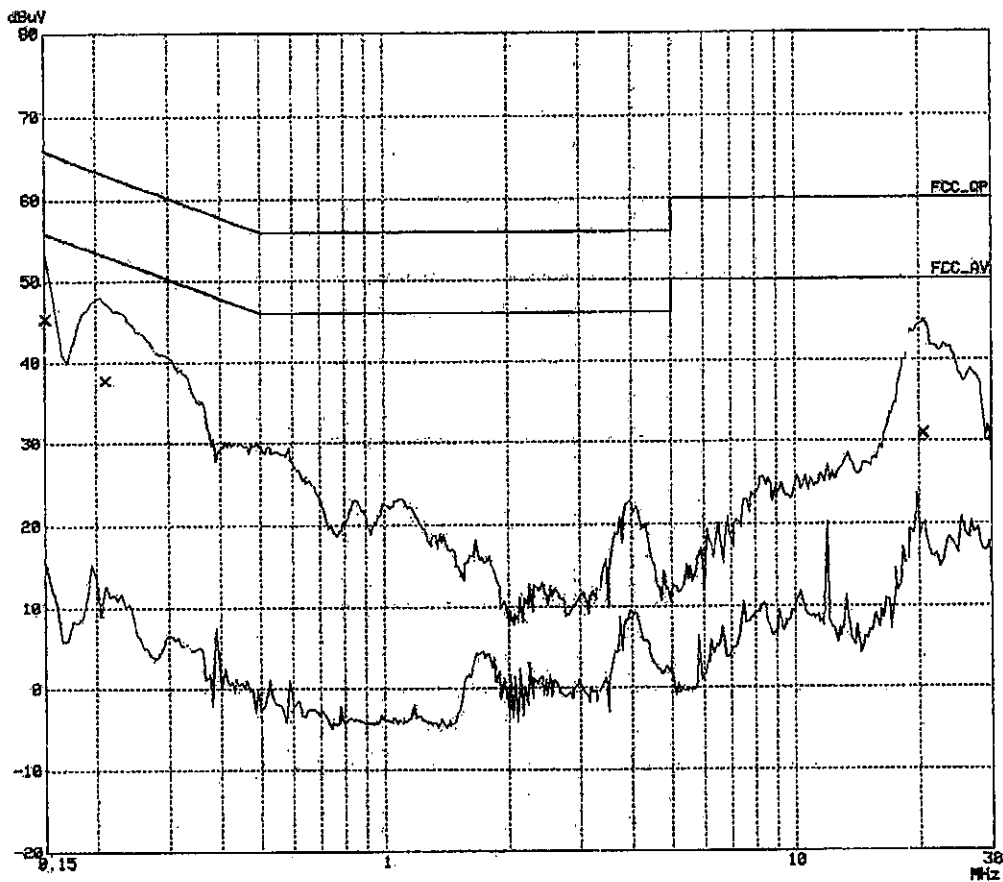
Date: 05. Jul 08 15:28

Scan Settings (1 Range)

| Frequencies |      |      | Receiver Settings |          |           |              |
|-------------|------|------|-------------------|----------|-----------|--------------|
| Start       | Stop | Step | IF BW             | Detector | M-Time    | Atten Preamp |
| 150k        | 30M  | 5k   | 9k                | PK+AV    | 20ms AUTO | LN OFF       |

| Transducer No. | Start | Stop | Name    |
|----------------|-------|------|---------|
| 5              | 9k    | 30M  | EBS2_Z5 |

Final Measurement: x QP / + AV  
Meas Time: 1 s  
Subranges: 16  
Acc Margin: 16dB



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Test Report no.:Seite 16 von 22  
Page 16 of 22**150KHz-30MHz**EUT: MIX 10 NG2  
Operator: 115V 60Hz  
Comment: FCC  
N  
Date: 05. Jul 08 15:28

AUX

## Final Measurement Results:

Indicated Phase/PE shows Configuration of max. Emission

| Frequency<br>MHz | QP Level<br>dBuV | Delta Limit<br>dB | Phase<br>- | PE<br>- |
|------------------|------------------|-------------------|------------|---------|
| 0.15000          | 45.3             | -20.6             | N          | gnd     |
| 0.21000          | 37.7             | -25.4             | N          | gnd     |
| 20.46500         | 30.9             | -29.0             | L1         | gnd     |

| Frequency<br>MHz | AV Level<br>dBuV | Delta Limit<br>dB | Phase<br>- | PE<br>- |
|------------------|------------------|-------------------|------------|---------|
|------------------|------------------|-------------------|------------|---------|

no Results



## 5.2 Radiated Emission for FCC Part 15 Per Section 15.109(a)

**RESULT:**

**Pass**

|  |   |   |
|--|---|---|
| Date of testing                          | : | 05.Jul.2008                                     |
| Test Basis                               | : | FCC Part 15 Per Section 15.109(a)               |
| Test specification                       | : | Class B   |
| Deviations from Standard Test procedures | : | None  |
| Test procedure                           | : | Procedure specified in ANSI C63.4 were followed |
| Kind of test site                        | : | 3m Semi-anechoic chamber                        |
| Operation mode:                          | : | On  |
| Temperature                              | : | 22°C  |
| Humidity                                 | : | 50%   |

**Test procedure:**

1. The EUT was turned on and placed on the top of a rotatable table 0.8 meters above the ground with 3-orthogonal XYZ direction and be kept close enough to the measurement receiving antenna (especially for the measurement frequency range above 1 GHz). The table was then rotated 360 degrees to detect the suspected emission frequency points. The position of the worst radiation case with both horizontal and vertical receiving antenna polarization was then recorded together with the suspected emission frequency points above-mentioned.

2. The EUT was then set 3 meters away from the receiving antenna, which was mounted on a variable-height antenna tower.

3. For each suspected emission frequency point recorded in step 1, the EUT was arranged to its worst case that the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to read the maximum emission.

The final measurement for frequencies below 1000MHz is performed with Quasi Peak detector; the final measurement for frequencies above 1000MHz is performed with Average and Peak detector.

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz at frequency below 1GHz.

The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz at frequency above 1GHz.

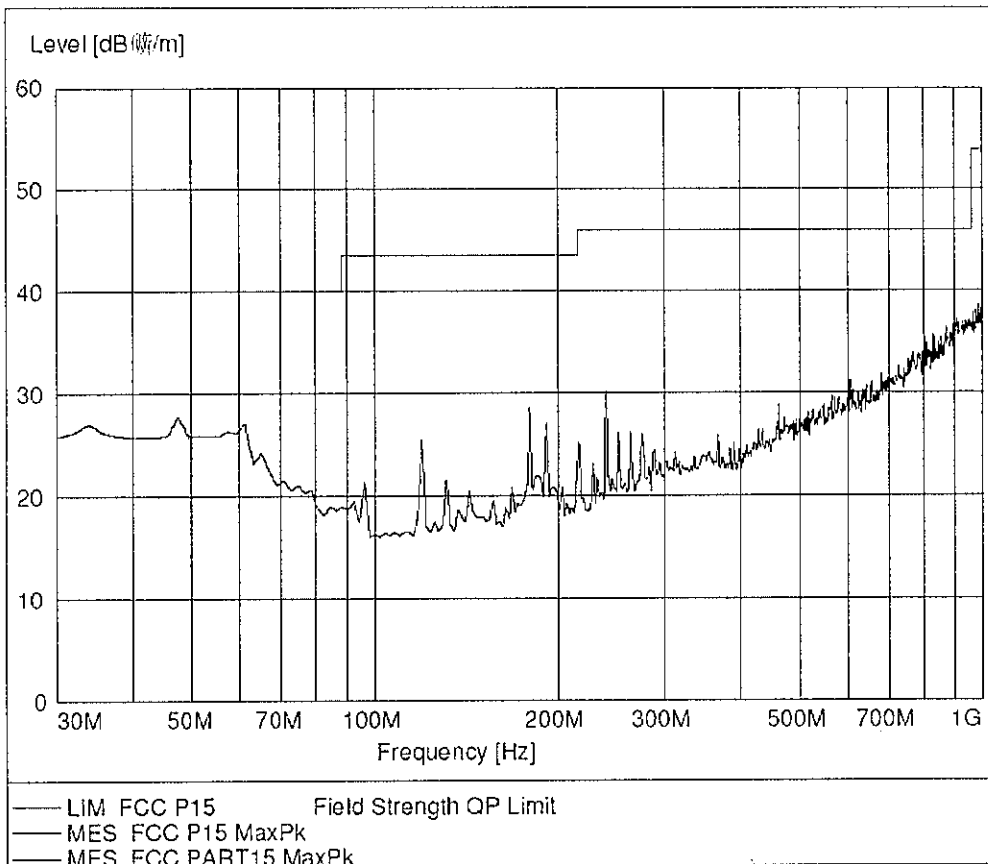
Please refer to the following graphs. Disturbances are far below the limit.

**30MHz-1000MHz**

EUT: MIX 10 NG2  
 Manufacturer:  
 Operating Condition: 115V 60Hz  
 Test Site: H  
 Operator:  
 Test Specification:  
 Comment:

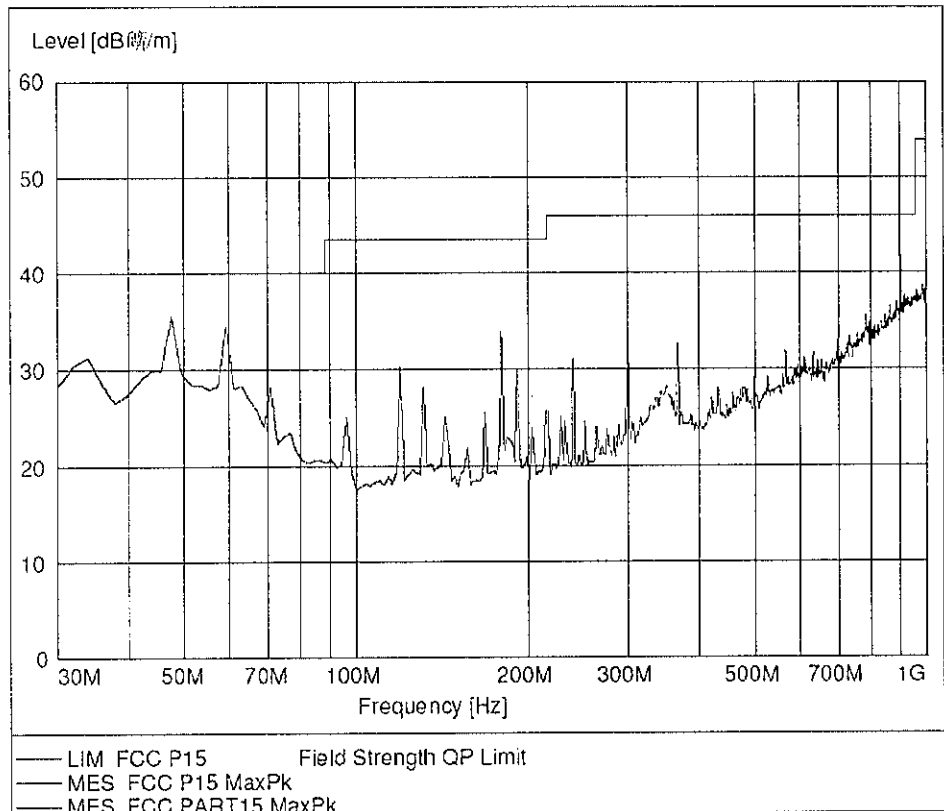
**SWEEP TABLE: "FCC P15"**

Short Description: FCC P15  
 Start Stop Detector Meas. IF Transducer  
 Frequency Frequency Time Bandw.  
 30.0 MHz 1.0 GHz MaxPeak Coupled 120 kHz Antenna3



**30MHz-1000MHz**
**EUT:** MIX 10 NG2  
**Manufacturer:**  
**Operating Condition:** 115V 60Hz  
**Test Site:** V  
**Operator:**  
**Test Specification:**  
**Comment:**
**SWEEP TABLE: "FCC P15"**

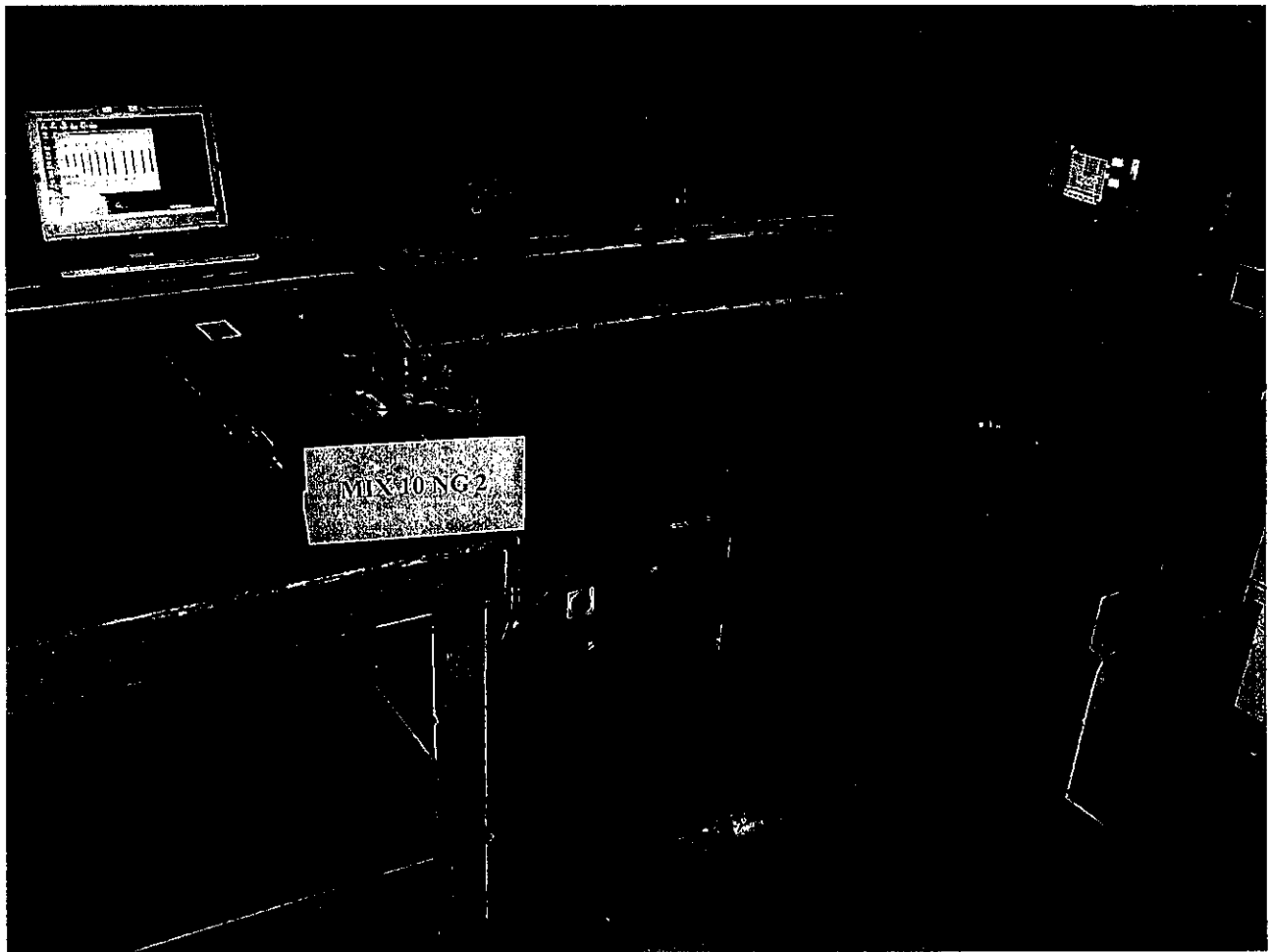
| Short Description: |         | FCC P15  |            |           |            |
|--------------------|---------|----------|------------|-----------|------------|
| Start              | Stop    | Detector | Meas. Time | IF Bandw. | Transducer |
| 30.0 MHz           | 1.0 GHz | MaxPeak  | Coupled    | 120 kHz   | Antenna3   |



| Frequency MHz | Level dBuV/m | Limit dBuV/m |
|---------------|--------------|--------------|
| 47.995992     | 34.43        | 40.0         |
| 1000.0000     | 42.72        | 54.0         |

## 6 Photographs of the Test Set-Up

Photograph 1: Set-up for Conducted Emission



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**Photograph 2: Set-up for Radiated Emission**



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|---|---|

## 8 List of Photographs

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