

**FCC ID PER PART 18**  
**MEASUREMENT AND TEST REPORT**  
**FOR**

**Welltek Electronic Co., Ltd**

4F, No. 86, Yuying St, Shulin City,  
Taipei, Taiwan

**FCC ID: Q4ZWTKGCI20030501**

2003-04-18

<b>This Report Concerns:</b> <input checked="" type="checkbox"/> Original Report	<b>Equipment Type:</b> Energy Saving Lamp
<b>Test Engineer:</b> <u>Jerry Wang</u>	
<b>Report Number:</b> <u>R0304044</u>	
<b>Test Date:</b> <u>2003-04-08</u>	
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**Note:** The test report is specially limited to the use of the above client company and the product model. It may not be duplicated without prior written consent of Bay Area Compliance Laboratory Corporation. This report **must not** be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government

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## 1 - GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

The *Welltek Electronic Co., Ltd*, Model: *GDS-15U-EX*; *GDS-20U-EX*; *GDS-23U-EX*; *GDS-26U-EX* or the "EUT" as referred to in this report is an energy saving lamp. The EUT measures 5.0"L x 2.5"W x 2.5"H (*GDS-15U-EX*) and 5.5"L x 2.5"W x 2.5"H (*GDS-20U-EX*; *GDS-23U-EX*; *GDS-26U-EX*).

*Note: The test data collected are from a representative production sample provided by the manufacturer.*

### 1.2 Objective

This Following test report is prepared on behalf of *Welltek Electronic Co., Ltd* in accordance with Part 2, Subpart J, and Part 18, Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to demonstrate compliance with FCC Part 18 limit requirements for Industrial, Scientific, and Medical Equipment.

### 1.3 Related Submittal(s)/Grant(s)

No Related Submittals.

### 1.4 Test Methodology

All measurements contained in this report were conducted in accordance with MP-5, FCC Methods of Measurements of Radio Noise Emissions from Industrial, Scientific, and Medical Equipment. All radiated and conducted emission measurements were performed at Bay Area Compliance Laboratory Corp. (BACL). The radiated testing was performed at an antenna-to-EUT distance of 3 Meters.

### 1.5 Test Facility

The Open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication 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 11 and December 10, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2000 and FCC MP-5.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and listed under FCC as Test Firm Registration Number: 800513. The test site has been approved by the FCC and VCCI for public use and listed in the FCC Public Access Link (PAL) database.

Additionally Bay Area Compliance Laboratory Corporation (USA) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (NVLAP). The scope of the accreditation covers the FCC Method - 47 CFR Part 15 - Digital Devices, CISPR 22: 1997, and AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment test methods under NVLAP Lab Code 200167-0.

**1.6 Test Equipment List and Details**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Cal. Due Date</b>
R/S	Spectrum Analyzer	FSEM	849720/019	2003-08-05
HP	Receiver	PH8546A	A9704039	2003-08-05
HP	Amplifier	8447D	2944A09795	2003-08-05
ETS	Log Periodic Antenna	3146	9603-4421	2003-09-05
ETS	Biconical Antenna	3110B	3360	2003-08-05
Solar Electronics	LISN	TYPE 8012-50-R-24-BNC	21162	2003-09-05
Solar Electronics	LISN	TYPE 8012-50-R-25-BNC	21163	2003-10-05

**1.7 Equipment under Test (EUT) General Description**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>FCC ID</b>
Welltek Electronic Co., Ltd	Indoor Light	GDS-15U-EX; GDS-20U-EX; GDS-23U-EX; GDS-26U-EX	None	Q4ZWTKGCI20030501

## **2 - SYSTEM TEST CONFIGURATION**

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### **2.1 Justification**

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

### **2.2 EUT Exercise Program**

The sequence used is as follows:

The EUT was switched on after being connected to the mains power supply.

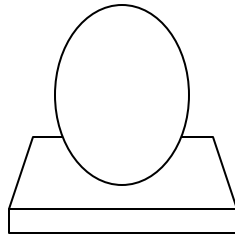
### **2.3 Schematics/Block Diagram**

The EUT's block diagram is presented in Appendix D.

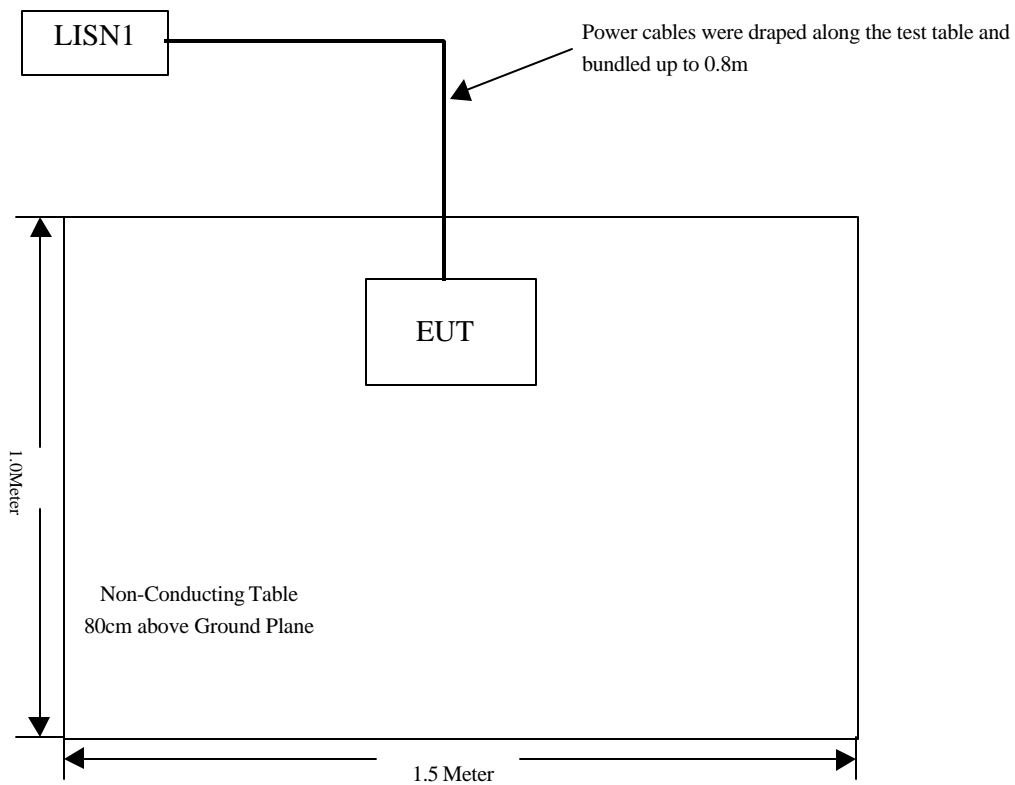
### **2.4 Equipment Modifications**

The EUT was a typical representative production sample with no modifications.

## 2.5 Configuration of Test System



## 2.6 Test Setup Block Diagram



### 3 - CONDUCTED EMISSIONS TEST DATA

#### 3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties. The factors contributing to uncertainties are spectrum analyzer, amplifier, and calibration procedures, LISN etc.

Based on NIS 81, The Treatment of Uncertainty in EMI Measurements, the best estimate of the uncertainty of any conducted emissions measurement at BACL is  $\pm 2.4$  dB.

#### 3.2 EUT Setup

The measurement is performed in the shield room, using the same setup per FCC MP-5 measurement procedure. The specification used was the FCC Part Subpart C 18 limits.

The EUT was placed on the center of the back edge on the test table.

The power cord extension of the EUT was connected with 120 Vac/60 Hz power source.

#### 3.3 EMI Receiver Setup

The EMI receiver is configured during the conduction test is as follows:

Start Frequency .....	450 kHz
Stop Frequency .....	30 MHz
Sweep Speed .....	Auto
IF Bandwidth.....	10 kHz
Video Bandwidth.....	10 kHz
Quasi-Peak Adapter Bandwidth.....	9 kHz
Quasi-Peak Adapter Mode.....	Normal

#### 3.4 Test Procedure

During the conducted emissions test, the power cord of the power cord extension was connected to the auxiliary outlet of the first LISN.

The six highest emissions were maximized to ensure the EUT is in compliance in all possible installation configurations.

All data was recorded in the peak detection mode. Quasi-peak readings were only performed when an emission was found to be marginal (within -4 dB $\mu$ V of the specification limits). Quasi-peak readings are distinguished with a "Qp".

The EUT was tested under the normal modes during the final qualification test to represent the worst case results.

### 3.5 Summary of Test Results

According to the data in section 3.6, the EUT, was found to be in compliance with the FCC 18 Conducted margin for industry, scientific and medical devices, and with the worst margin reading of:

**-16.5 dBμV at 0.45 MHz at the Neutral mode, Model: GDS-15U-EX**

**-16.0 dBμV at 0.45 MHz at the Line mode, Model: GDS-20U-EX**

**-14.0 dBμV at 0.45 MHz at the Neutral mode, Model: GDS-23U-EX**

**-13.3 dBμV at 0.45 MHz at the Line mode, Model: GDS-26U-EX**

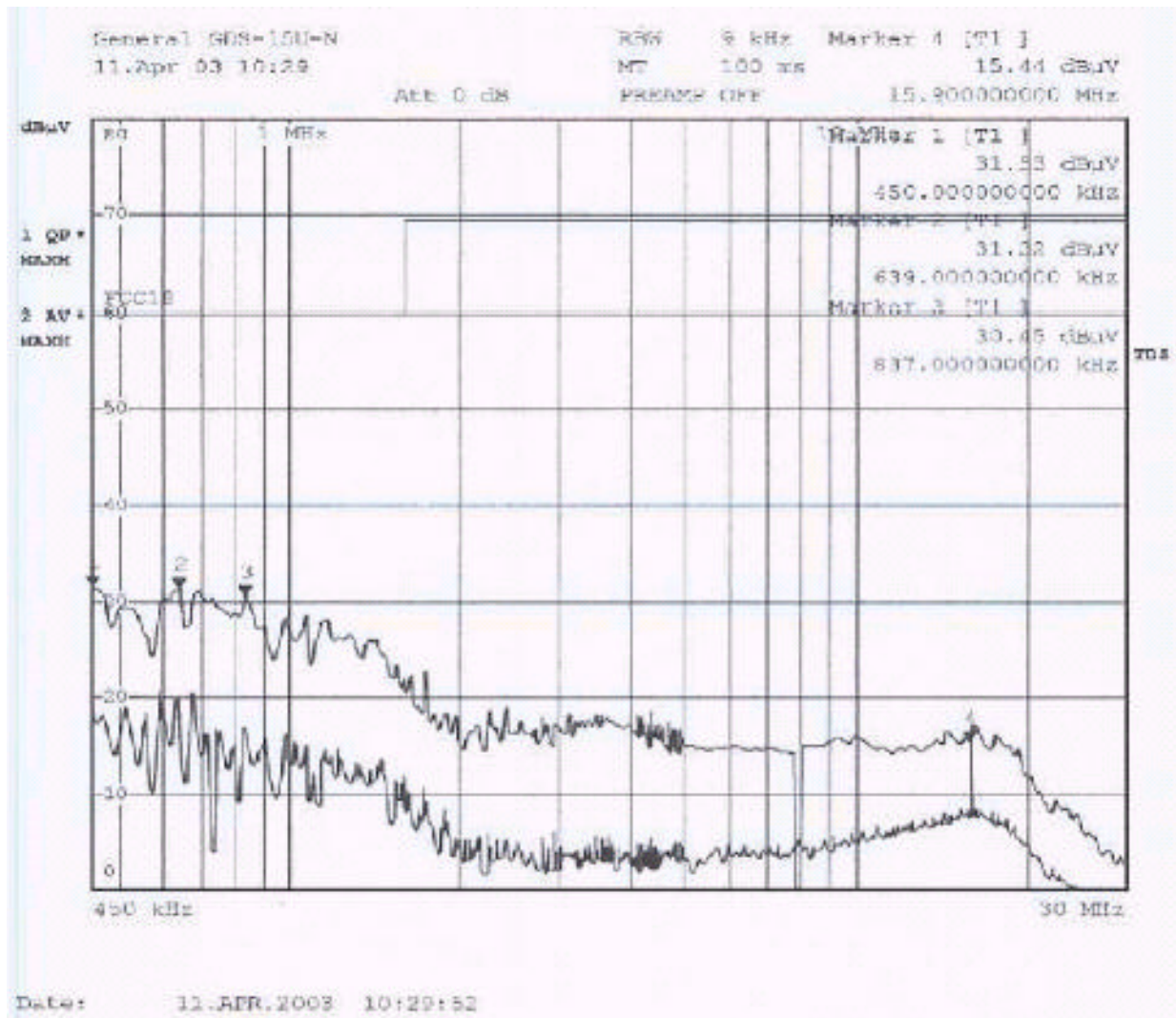
### 3.6 Conducted Emissions Test Data

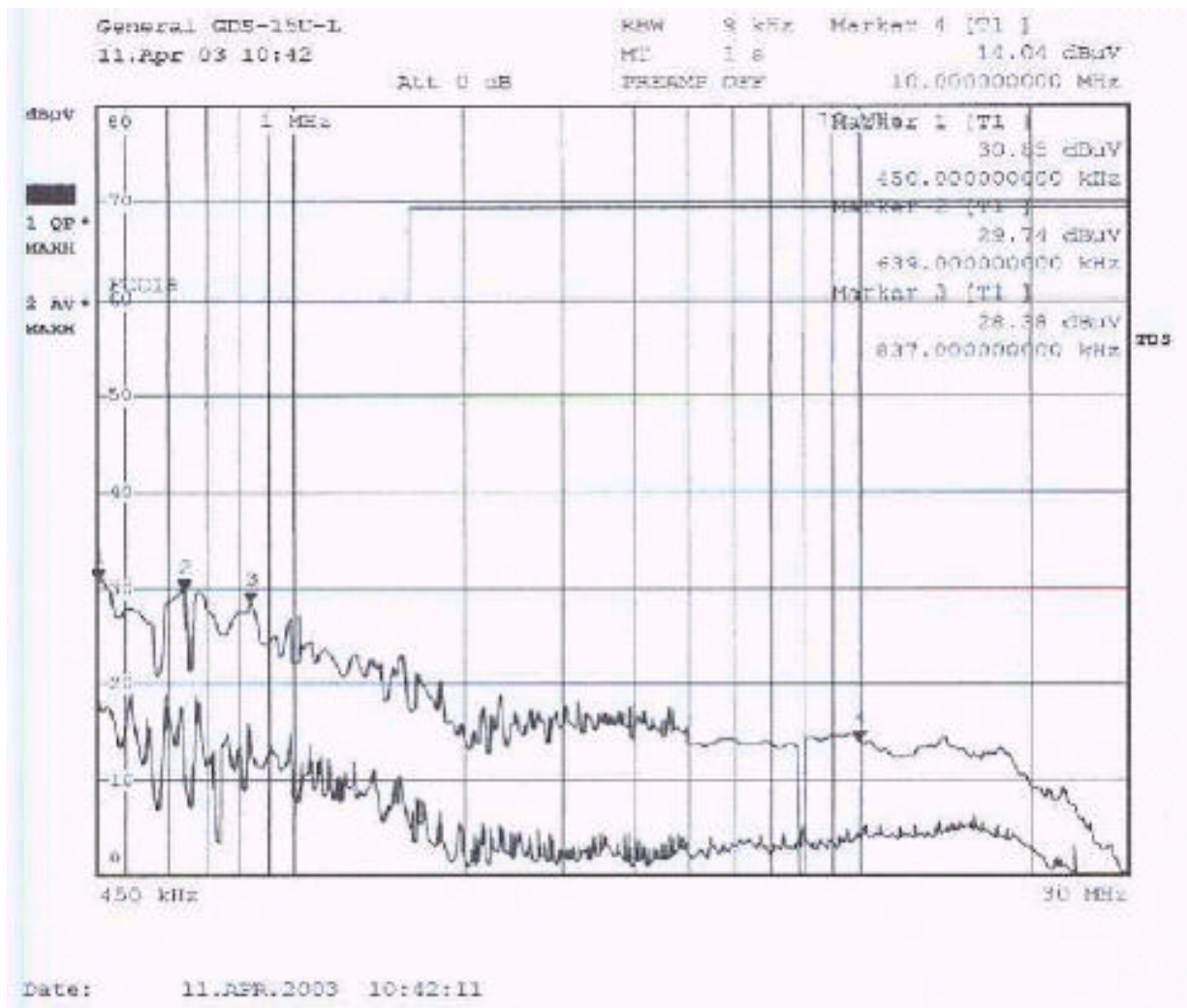
LINE CONDUCTED EMISSIONS				FCC PART 18	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	Qp/Ave/Peak	Line/Neutral	dBμV	dB
GDS-15U-EX					
0.45	31.5	QP	Neutral	48	-16.5
0.64	31.3	QP	Neutral	48	-16.7
0.45	30.9	QP	Line	48	-17.2
0.64	29.7	QP	Line	48	-18.3
15.90	15.4	QP	Neutral	48	-32.6
10.00	14.0	QP	Line	48	-34.0
GDS-20U-EX					
0.45	32.0	QP	Line	48	-16.0
0.53	31.7	QP	Line	48	-16.3
0.45	30.4	QP	Neutral	48	-17.6
1.07	25.9	QP	Line	48	-22.1
2.62	21.5	QP	Neutral	48	-26.5
1.11	21.3	QP	Neutral	48	-26.7
GDS-23U-EX					
0.45	34.0	QP	Neutral	48	-14.0
0.45	33.4	QP	Line	48	-14.6
0.88	31.0	QP	Line	48	-17.0
0.88	29.9	QP	Neutral	48	-18.1
1.00	29.0	QP	Neutral	48	-19.0
21.60	19.0	QP	Line	48	-29.0
GDS-26U-EX					
0.45	34.7	QP	Line	48	-13.3
0.70	34.4	QP	Line	48	-13.6
0.89	33.4	QP	Line	48	-14.6
0.95	31.6	QP	Neutral	48	-16.4
0.45	30.1	QP	Neutral	48	-17.9
8.20	19.3	QP	Neutral	48	-28.7

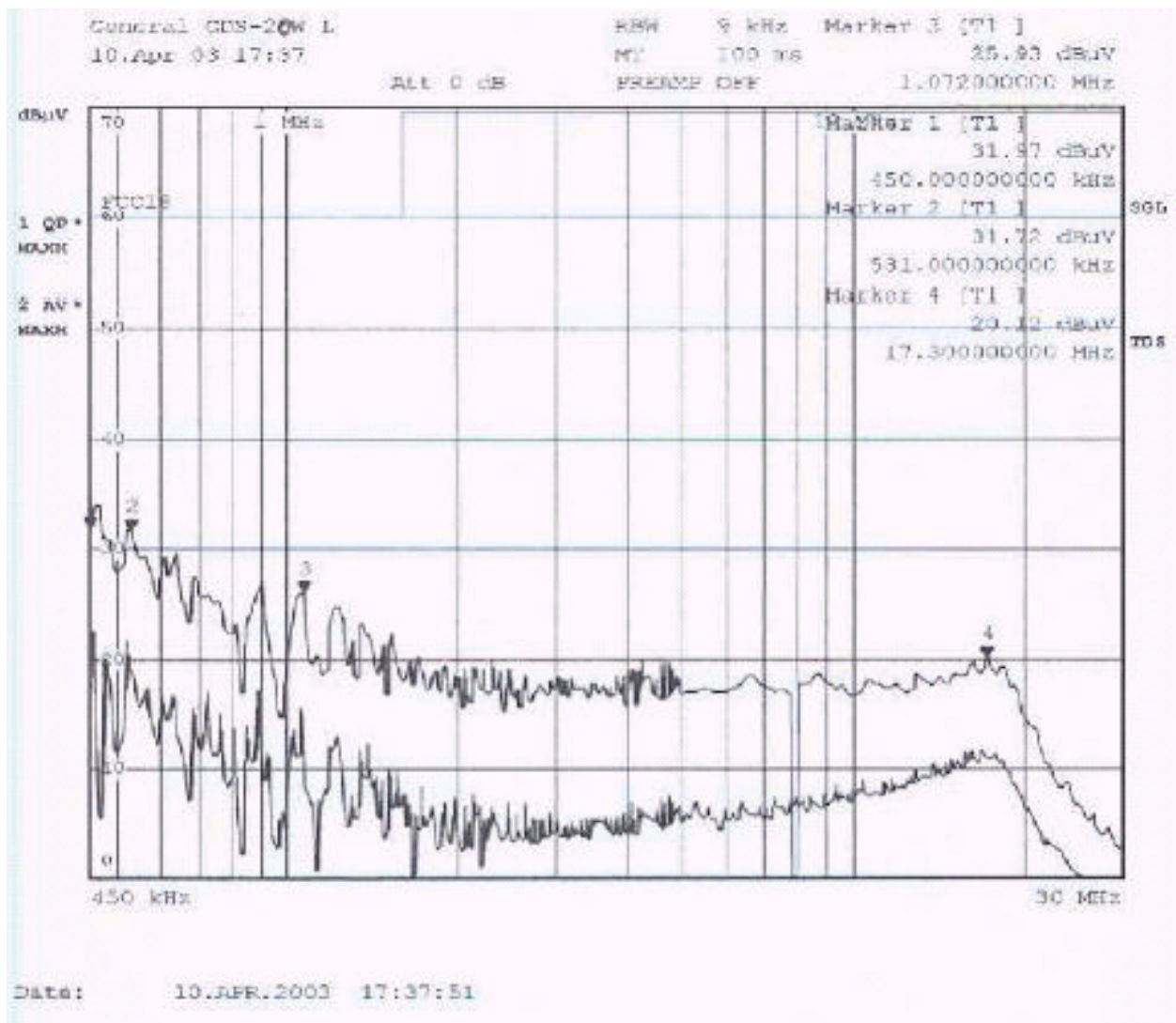
#### 3.6.2 Plot of Conducted Emissions Test Data

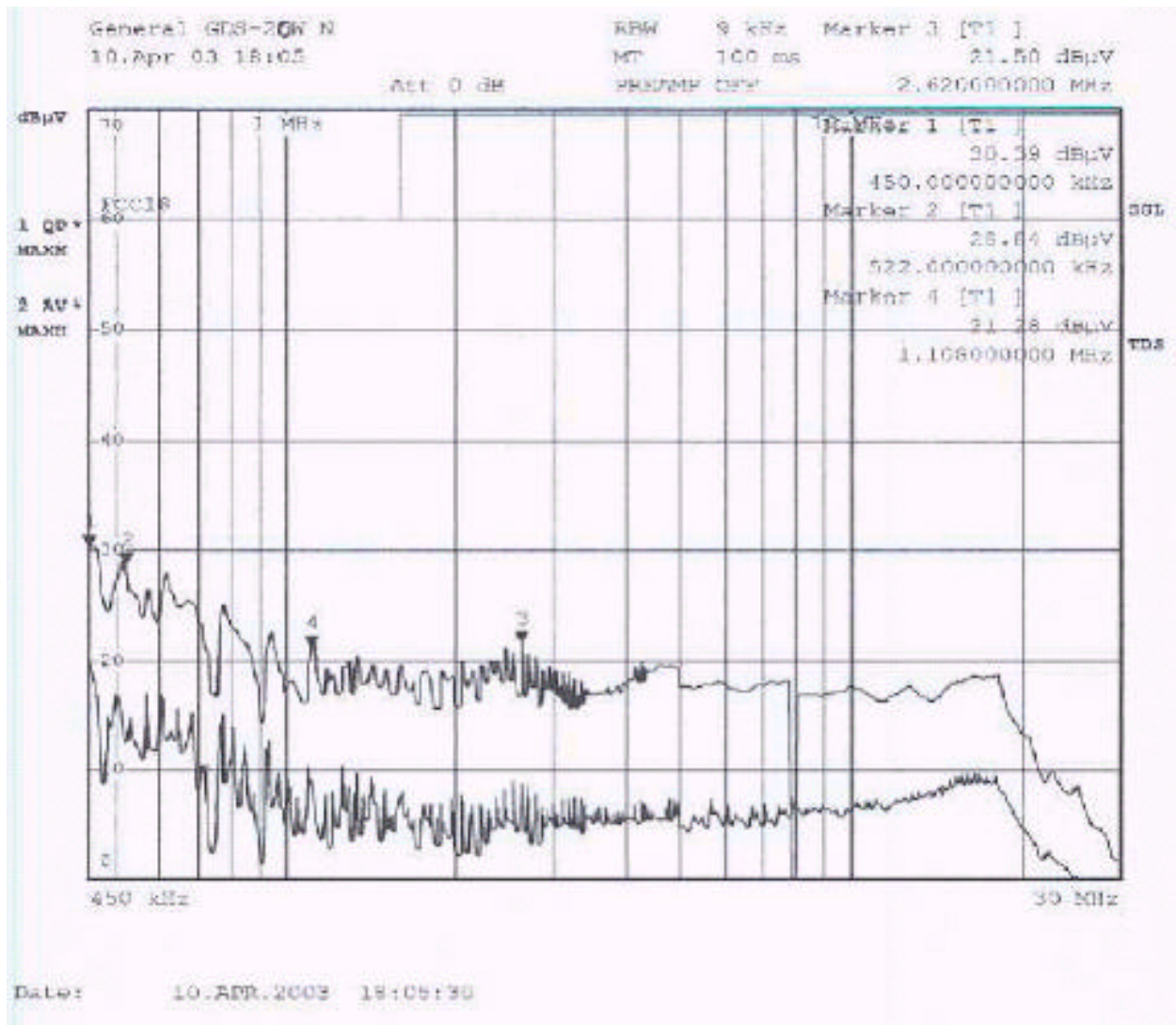
The plot(s) of conducted emission test is presented in the following page as reference.



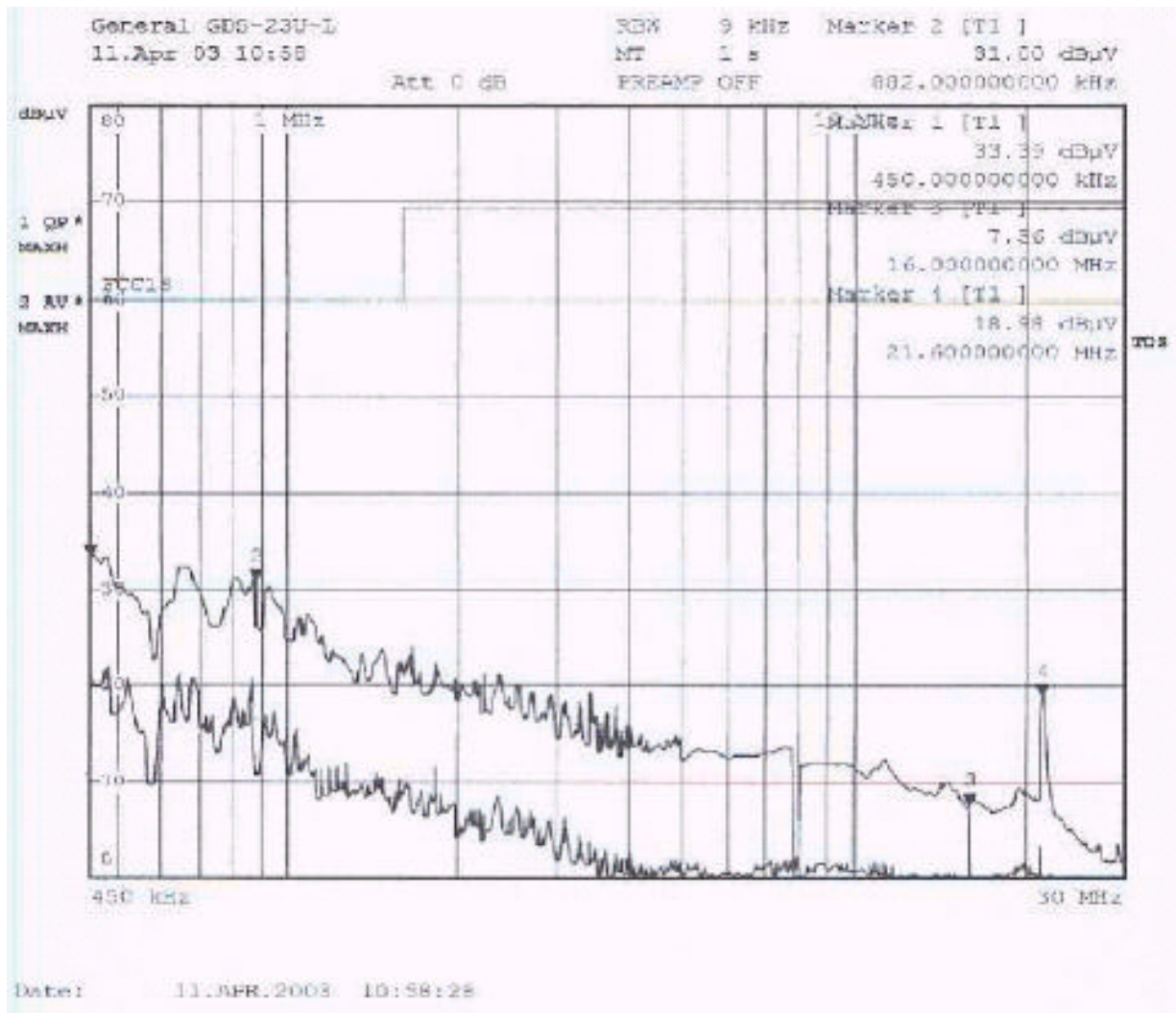


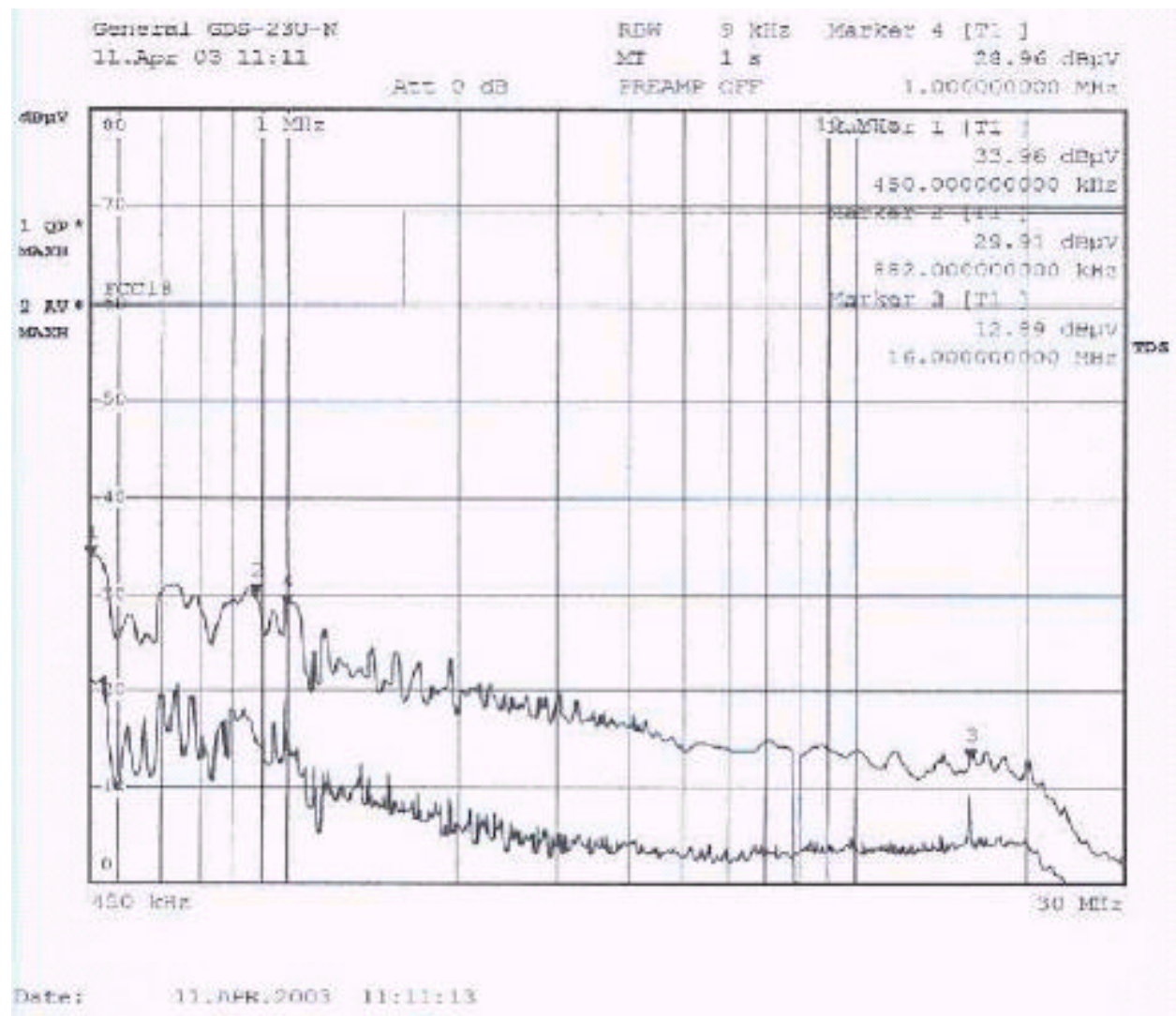


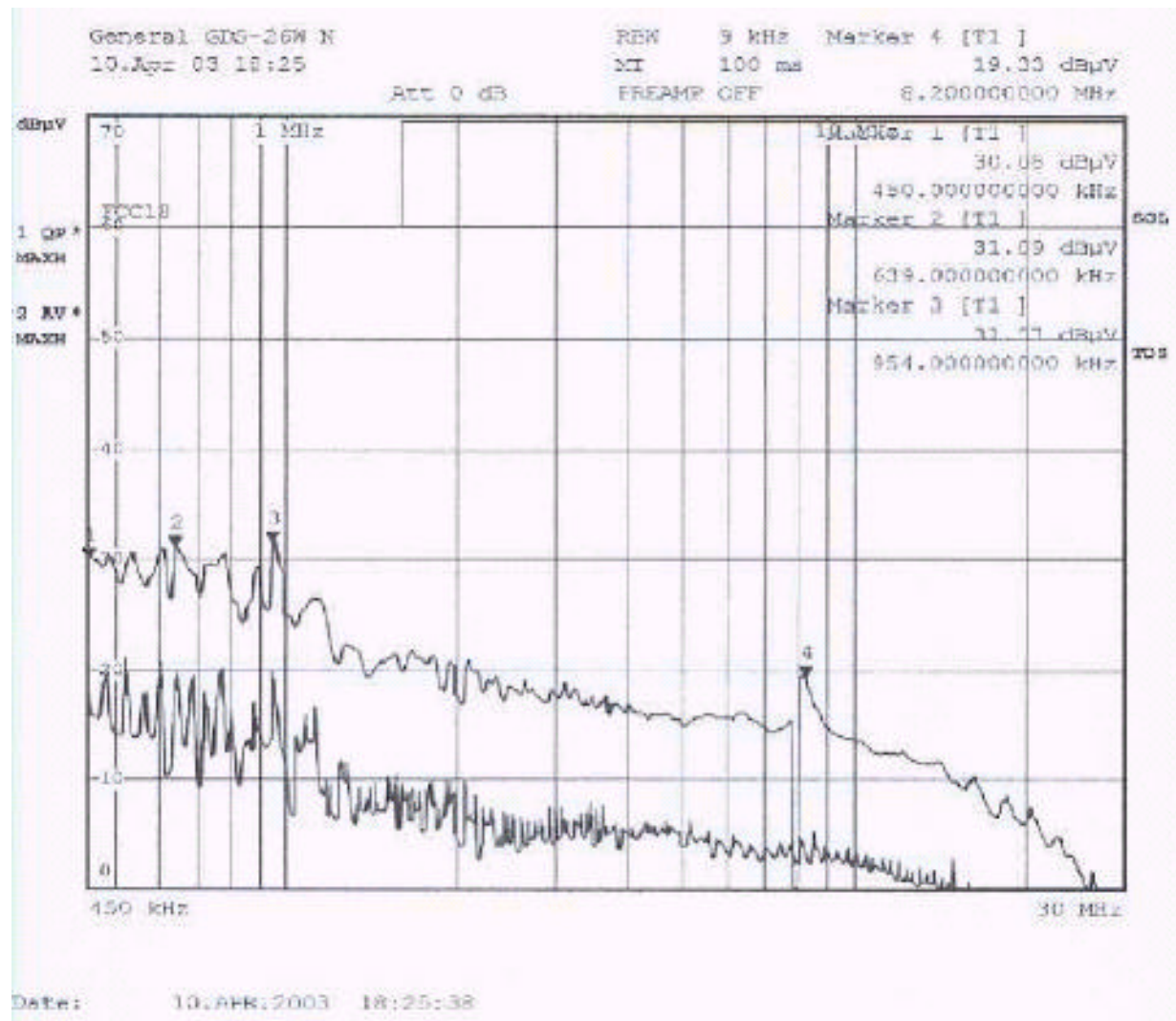


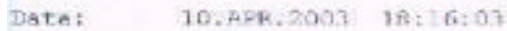














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## **4 – FIELD STRENGTH MEASUREMENTS**

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In accordance with 18.309, there are no specified field strength limits for this device.