

MEASUREMENT AND TECHNICAL REPORT

DIRECTED ELECTRONICS INCORPORATED
1 Viper Way
Vista, CA 92083

DATE: 05 June 2006

This Report Concerns:	Original Grant: X	Class II Change:
Equipment Type:	Hornet, Model 471H	
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?	Yes: Defer until:	No: X
Company Name agrees to notify the Commission by:	N/A	
of the intended date of announcement of the product so that the grant can be issued on that date.		
Transition Rules Request per 15.37?	Yes:	No: X*
(*) FCC Part 15, Paragraph(s) 15.231(a), 15.231(b), 15.231(c), and 15.231(e)		
Report Prepared by: <div style="text-align: right;"> TÜV AMERICA, INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 Fax: 858 546 0364 </div>		

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1.0 GENERAL INFORMATION**1.1 Product Description****General Equipment Description -- NOTE: This information will be input into your test report as shown below.**EUT Description: Hand held keyfob transmitter for car alarm and convenience systems.EUT Name: HornetModel No.: 471H Serial No.: --Product Options: N/AConfigurations to be tested: 1**EUT Specifications and Requirements**Length: 1.86" Width: 1.18" Height: 0.63" Weight: N/A
: _____**Power Requirements****Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)**Voltage: 6V (2 x CR2016) (If battery powered, make sure battery life is sufficient to complete testing.)# of Phases: --Current (Amps/phase(max)): -- Current (Amps/phase(nominal)): --Other: --**Other Special Requirements**

N/A

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)

Automotive

EUT Power Cable

☐ Permanent OR ☐ Removable Length (in meters): _____
☐ Shielded OR ☐ Unshielded
☒ Not Applicable

EUT Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Continuous modulated transmission

EUT System Components -- List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #
Keyfob	471H	N/A	EZSDEI471H

Oscillator Frequencies

Frequency	Derived Frequency	Component # / Location	Description of Use
433.92MHz	433.92MHz	--	Transmitter RF carrier

1.2 Related Submittal Grant

None

1.3 Tested System Details

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system are:

None

1.4 Test Methodology

Purpose of Test: To demonstrate compliance with the following tests.

Test Summary					
Test Description	Paragraph Number	Summary of Results			Pass/Fail
		Low Channel	Mid Channel	High Channel	
Deactivation	15.231(a)	--	Stays off	--	Pass
Field Strength of Fundamental	15.231(b)	--	76.6 dBuV/m	--	Pass
Emissions Bandwidth	15.231(c)	--	10.8 kHz	--	Pass
Field Strength of Emissions	15.231(e)	--	N/A	--	Pass

Testing was performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8-M1983.

1.5 Test Facility

The open area test site and conducted measurement data were tested by:

TÜV AMERICA, INC
 10040 Mesa Rim Road
 San Diego, CA 92121-2912
 Phone: 858 678 1400
 Fax: 858 546 0364

The Test Site Data and performance comply with ANSI C63.4 and are registered with the FCC, 7435 Oakland Mills Road, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

2.0 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was initially tested for FCC emissions in the following configuration:

See Test Setup Photos Exhibit

2.2 EUT Exercise Software

None

2.3 Special Accessories

None

2.4 Equipment Modifications

None

2.5 Configuration of Test System

See Test Setup Photos Exhibit

3.0 DEACTIVATION EQUIPMENT/DATA
FIELD STRENGTH OF FUNDAMENTAL EQUIPMENT/DATA
EMISSION BANDWIDTH EQUIPMENT/DATA
FIELD STRENGTH OF EMISSIONS EQUIPMENT/DATA

Test Conditions: DEACTIVATION: FCC Part 15.231(a)
FIELD STRENGTH OF FUNDAMENTAL: FCC Part 15.231(b)
EMISSION BANDWIDTH: FCC Part 15.231(c)
FIELD STRENGTH OF EMISSIONS: FCC Part 15.231(e)

The following measurements were performed at the San Diego Testing Facility:

☐ - Test not applicable

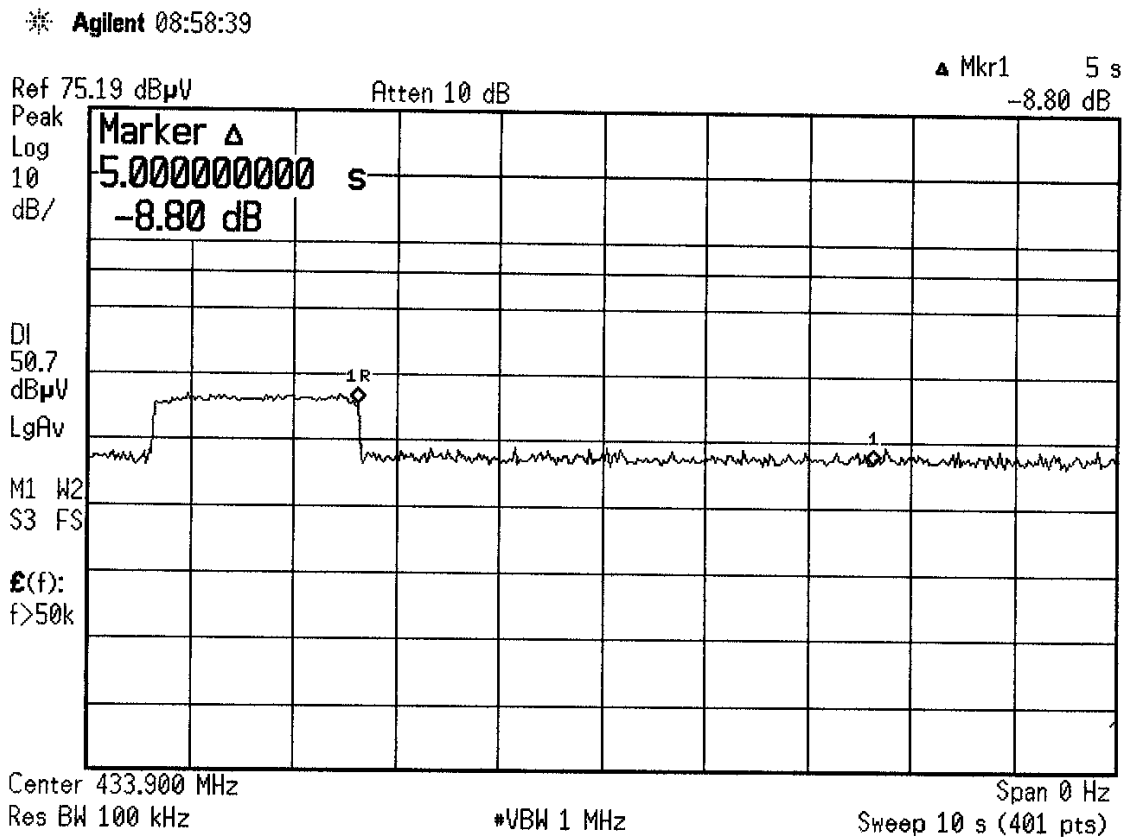
■ - Roof (Small Open Area Test Site)

Test Equipment Used:

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Date Cal'ed
E4440A	7500	Spectrum Analyzer	Hewlett Packard	MY43362168	12/05
3146	6641	Log Periodic Antenna	EMCO	106X	06/05
3115	6669	Double Ridge Antenna	EMCO	9412-4364	08/05
FF6549-1	777	High Pass Filter	Sage	004	Verified
AMF-5D-010180-35-10P	6786	Preamplifier	Miteq	549460	Verified

Remarks: One year calibration cycle for all test equipment and sites.

FCC Part 15.231(a) - Deactivation



FCC Part 15.231(b) - Field Strength of Fundamental

15.231(b) TABLE

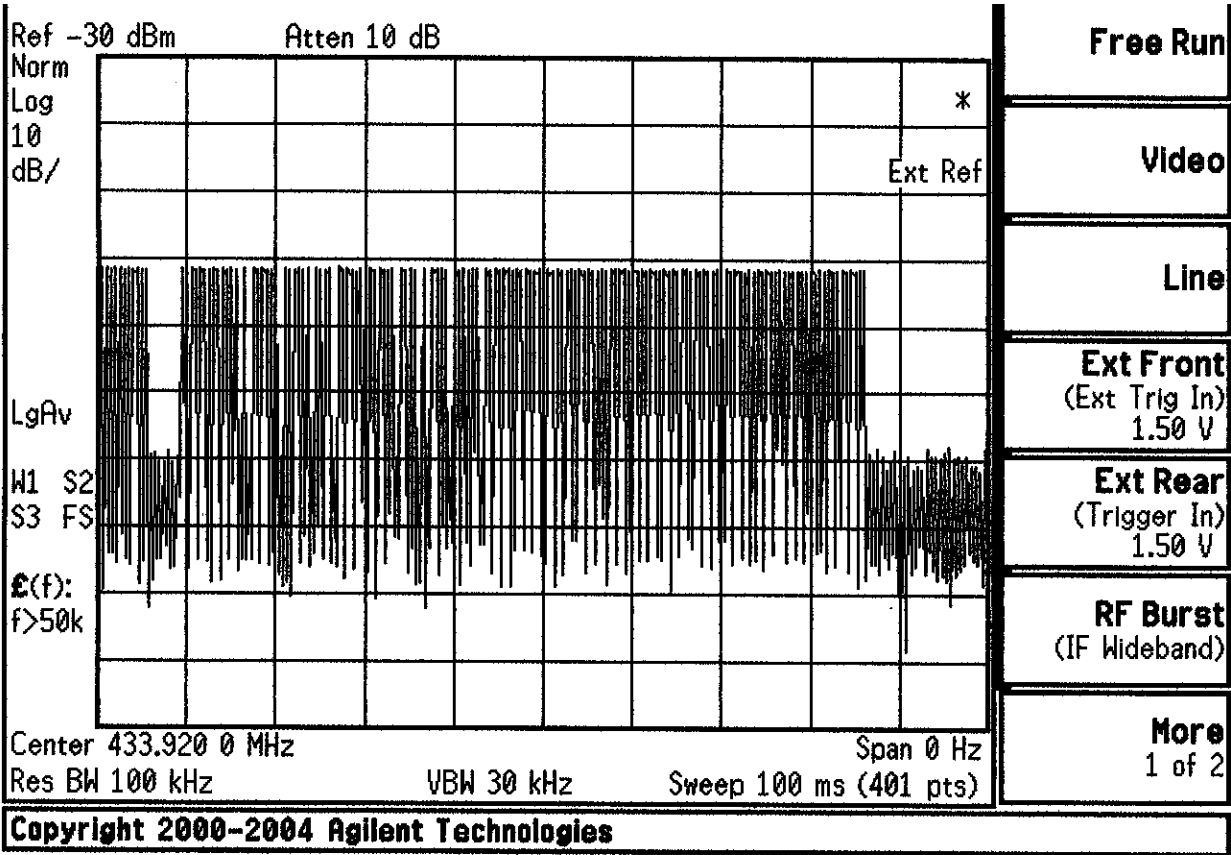
Fundamental Frequency (MHz)	Field Strength of Fundamental ($\mu\text{V/m}$)	Field Strength of Spurious Emission ($\mu\text{V/m}$)
40.66 – 40.70	2250 (67.04 dB $\mu\text{V/m}$)	225 (47.04 dB $\mu\text{V/m}$)
70 – 130	1250 (61.9 dB $\mu\text{V/m}$)	125 (41.9 dB $\mu\text{V/m}$)
130 – 174	(*)1250 – 3750 (61.9 – 71.5 dB $\mu\text{V/m}$)	(*)125 – 375 (41.9 – 51.5 dB $\mu\text{V/m}$)
174 – 260	3750 (71.5 dB $\mu\text{V/m}$)	375 (51.5 dB $\mu\text{V/m}$)
260 – 470	(*)3750 – 12500 (71.5 – 81.9 dB $\mu\text{V/m}$)	(*)375 – 1250 (51.5 – 61.9 dB $\mu\text{V/m}$)
Above 470	12500 (81.9 dB $\mu\text{V/m}$)	1250 (61.9 dB $\mu\text{V/m}$)

(*) Linear interpolations.

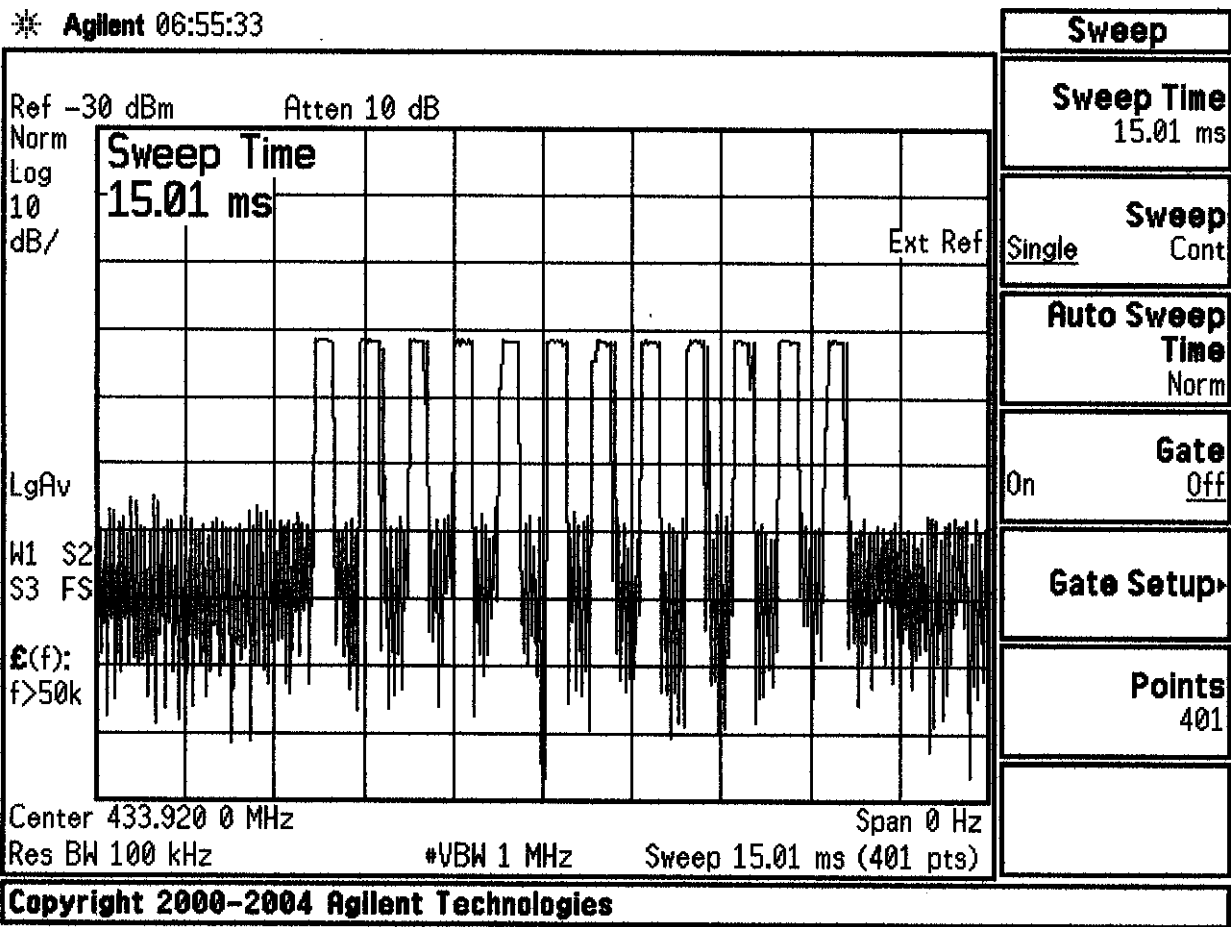
REPORT No: SC603047	SPEC:	FCC Part 15 para 15.231(b)
CUSTOMER: Directed Electronics	TEST DIST:	3 Meters
E U T: 471H HHU	TEST SITE:	Roof
EUT MODE: Transmit 433.92MHz	BICONICAL:	N/A
DATE: May 31, 2006	LOG:	243
NOTES: Duty Cycle= 50%	OTHER:	453
above 1GHz: RBW & VBW 1 MHz for Pk; AVG = PK - 20LOG(Duty Cycle)		
below 1GHz: RBW & VBW 100 kHz for Pk; AVG = PK - 20LOG(Duty Cycle)		
CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss		

[illegible]

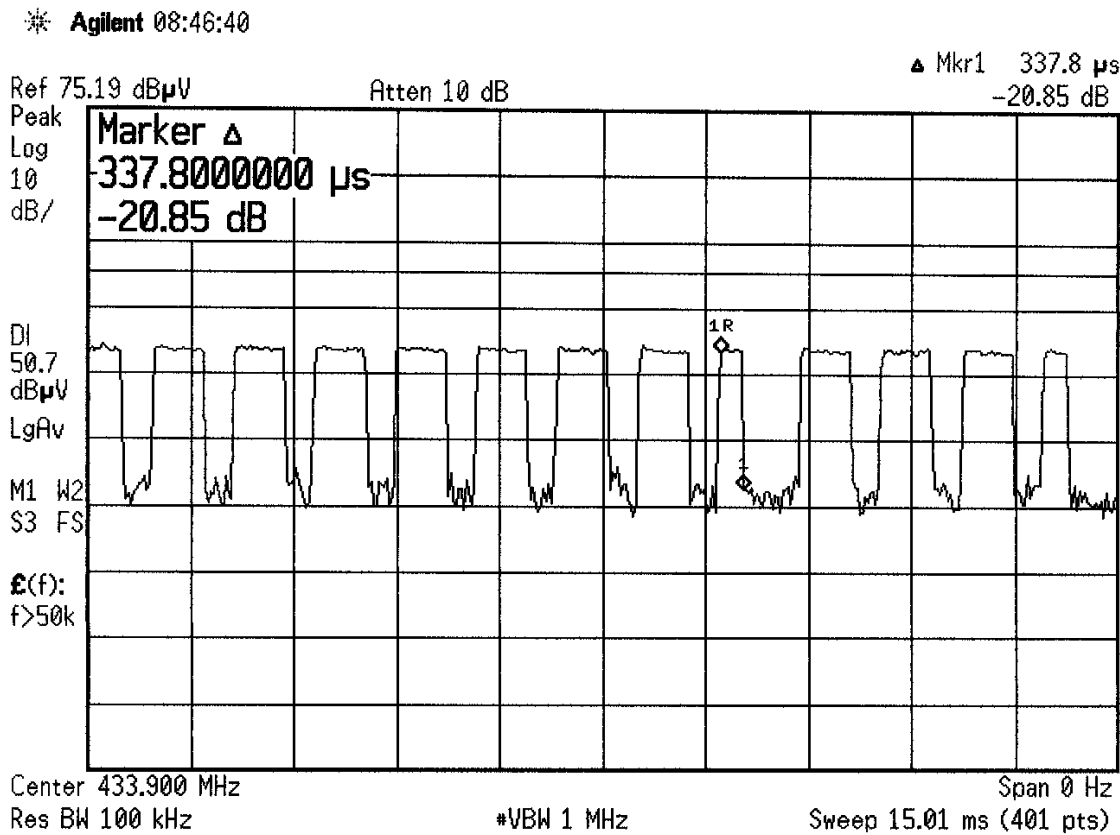
FCC Part 15.231(b) - Duty Cycle



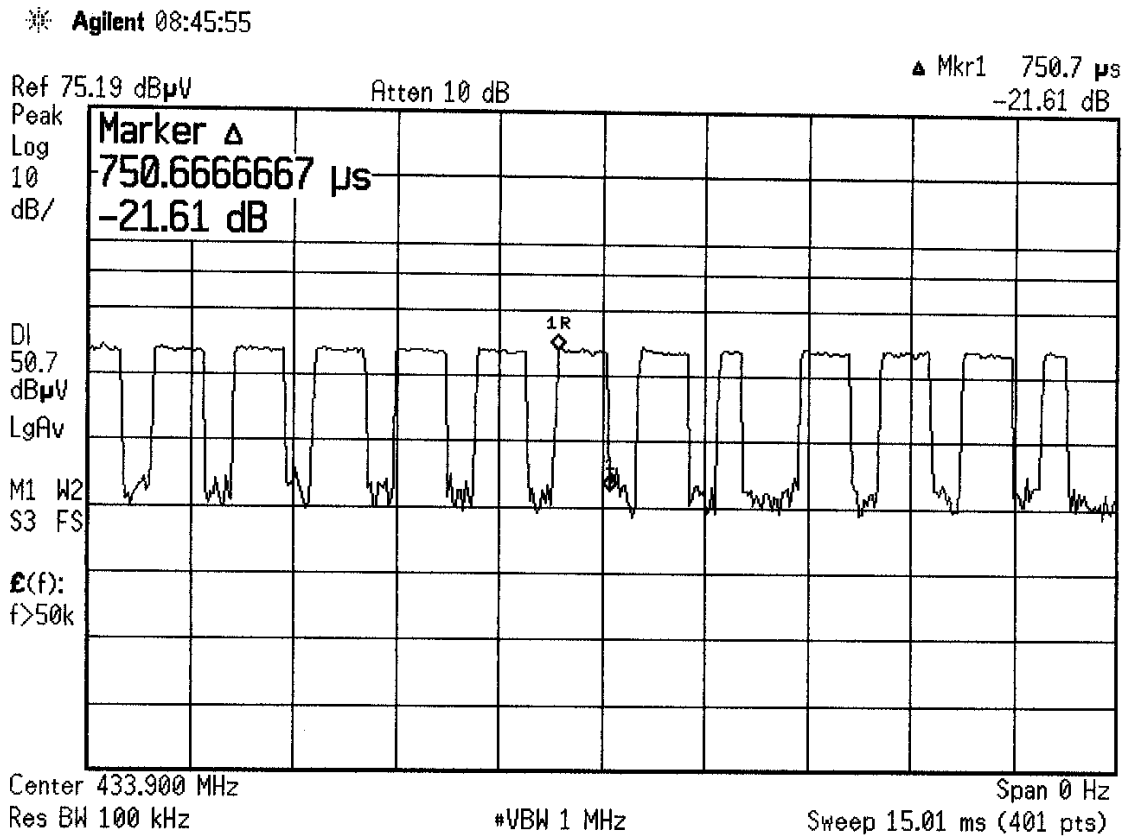
FCC Part 15.231(b) - Duty Cycle



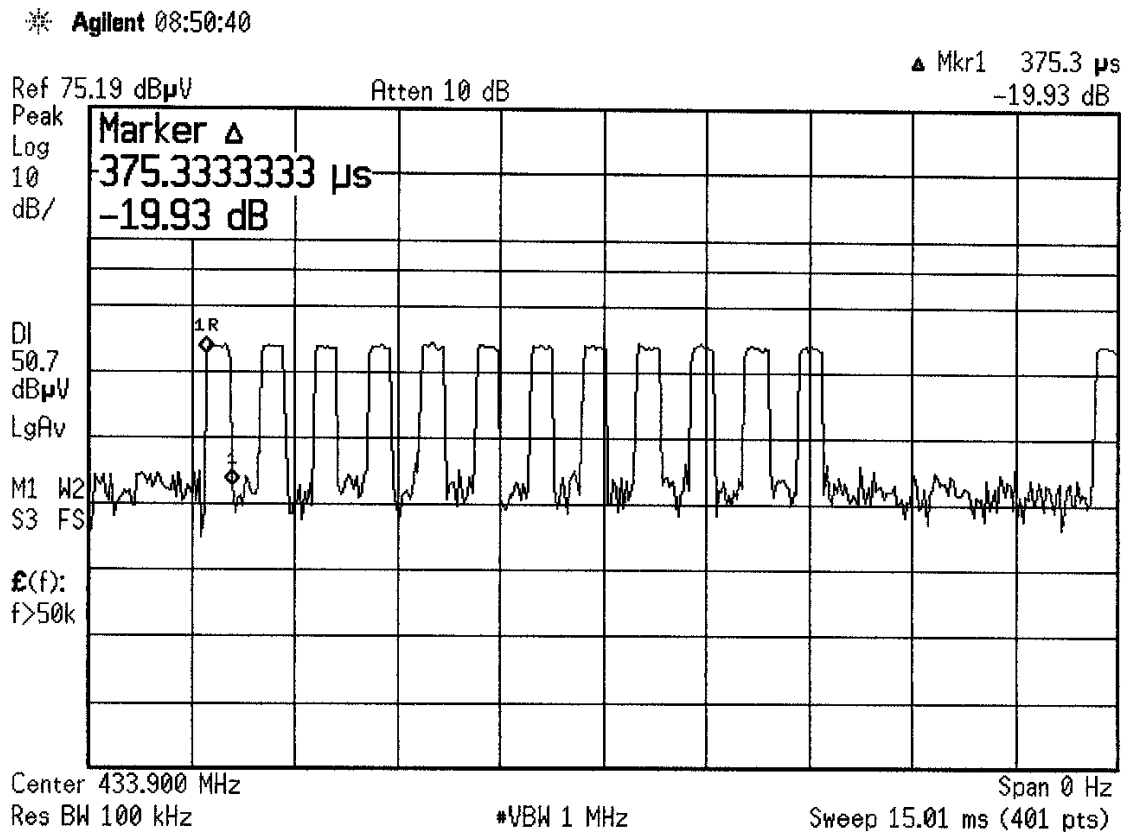
FCC Part 15.231(b) - Duty Cycle



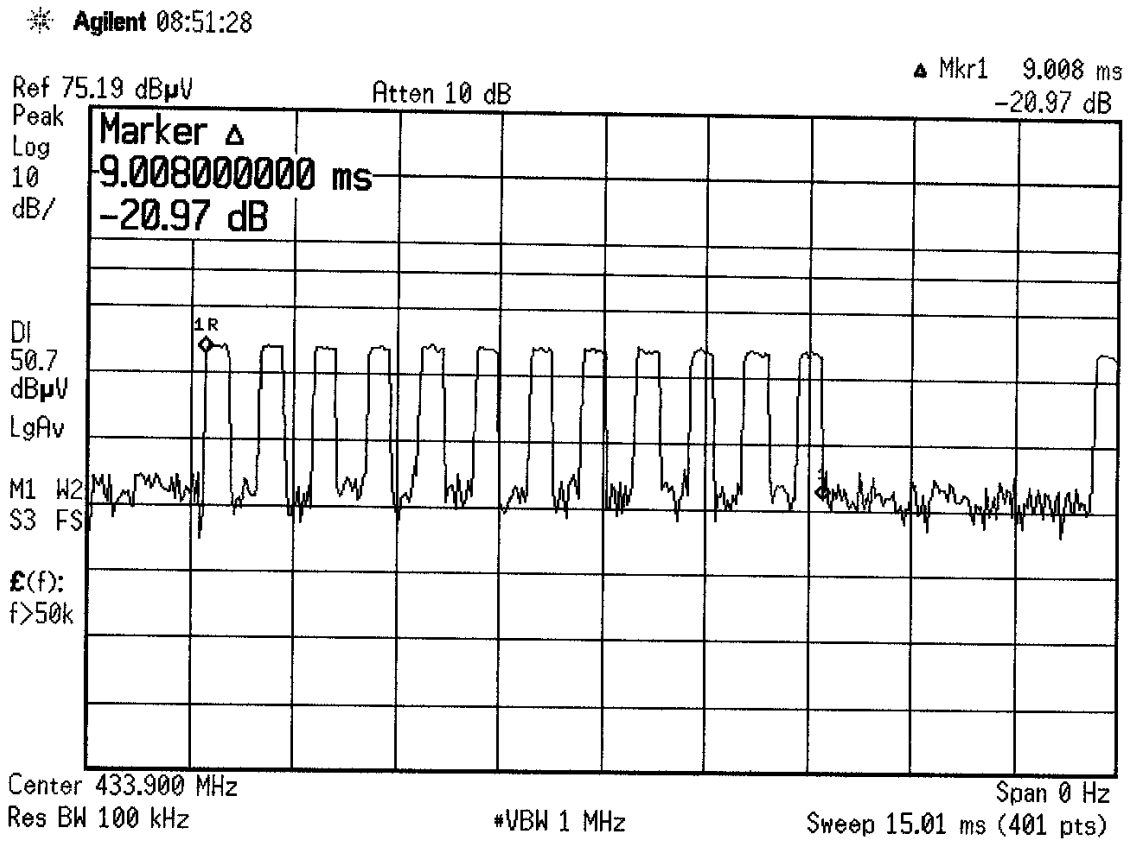
FCC Part 15.231(b) - Duty Cycle



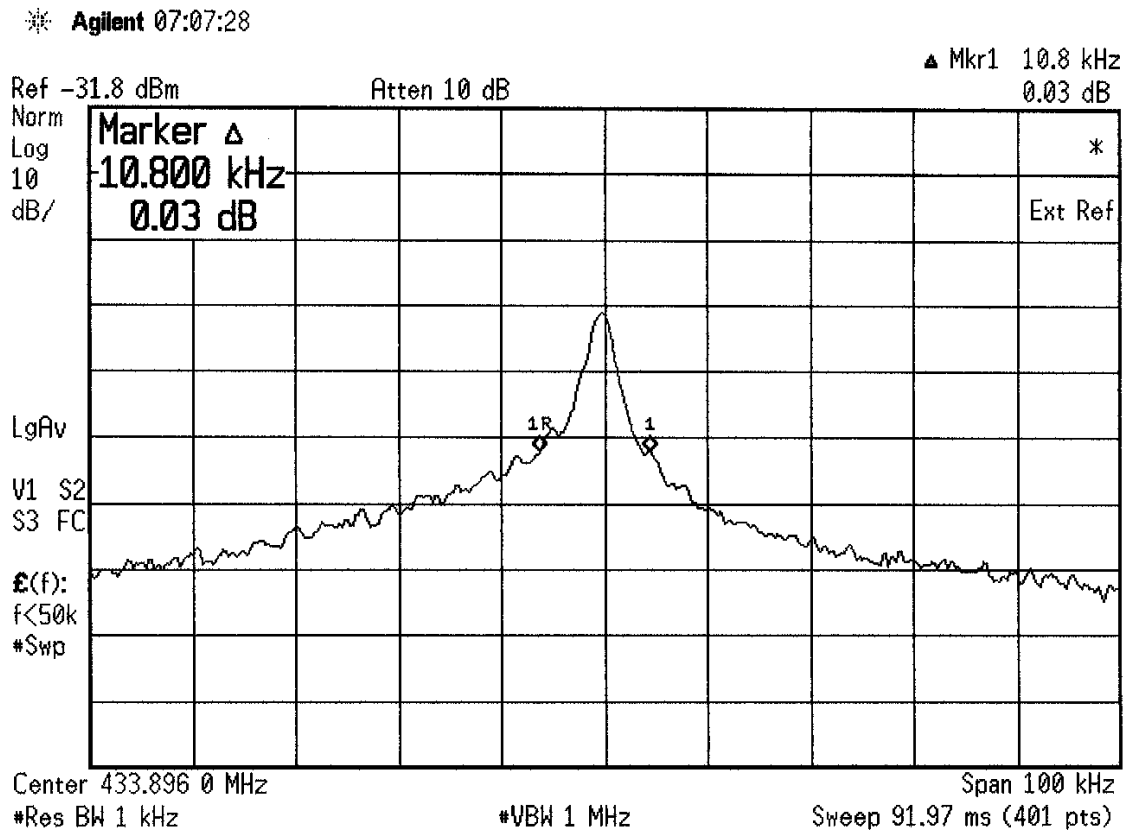
FCC Part 15.231(b) - Duty Cycle



FCC Part 15.231(b) - Duty Cycle



FCC Part 15.231(c) - Emission Bandwidth



FCC Part 15.231(e) - Field Strength of Emissions

15.231(e) TABLE

Fundamental Frequency (MHz)	Field Strength of Fundamental ($\mu\text{V/m}$)	Field Strength of Spurious Emission ($\mu\text{V/m}$)
40.66 – 40.70	1000 (60 dB $\mu\text{V/m}$)	100 (40 dB $\mu\text{V/m}$)
70 – 130	500 (54 dB $\mu\text{V/m}$)	50 (34 dB $\mu\text{V/m}$)
130 – 174	(*)500 – 1500 (54 – 63.5 dB $\mu\text{V/m}$)	(*)50 – 150 (34 – 43.5 dB $\mu\text{V/m}$)
174 – 260	1500 (63.5 dB $\mu\text{V/m}$)	150 (43.5 dB $\mu\text{V/m}$)
260 – 470	(*)1500 – 5000 (63.5 – 73.9 dB $\mu\text{V/m}$)	(*)150 – 500 (43.5 – 53.9 dB $\mu\text{V/m}$)
Above 470	5000 (73.9 dB $\mu\text{V/m}$)	500 (53.9 dB $\mu\text{V/m}$)

(*) Linear interpolations.

4.0 ATTESTATION STATEMENT

GENERAL REMARKS:

SUMMARY:

All tests were performed per CFR 47, Part(s) 15.231(a), 15.231(b), 15.231(c), and 15.231(e)

■ - Performed

The Equipment Under Test

■ - **Fulfills** the requirements of CFR 47, Part(s) 15.231(a), 15.231(b), 15.231(c), and 15.231(e)

Testing Start Date: 31 May 2006

Testing End Date: 01 June 2006

- TÜV AMERICA, INC. -

Reviewing Engineer:



David Gray
(EMC Engineer In Charge)

Test Engineer:



William Dey
(EMC Technician)