

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT  
CERTIFICATION TO FCC PART 15 REQUIREMENTS**

*for*

**SMART FILTER RECEIVER**

**MODEL: SMART FILTER**

**FCC ID NO: KFR-HSFR**

**REPORT NO: 00E9118**

**DATE: DECEMBER 14, 2000**

*Prepared for*

**VISION AUTOMOBILE ELECTRONICS INDUSTRIAL CO., LTD.  
NO. 17, ALLEY 92, LANE 189, SEC. 1,  
AN CHUNG RD., TAINAN,  
TAIWAN, R.O.C.**

*Prepared by*

**COMPLIANCE ENGINEERING SERVICES, INC.  
No. 199, CHUNG SHENG ROAD  
HSIN TIEN CITY, TAIPEI, TAIWAN R.O.C.  
TEL: (02) 2217-0894  
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**NVLAP<sup>®</sup>**  
LAB CODE: SL2-IN-E-0005



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### TEST DATA

- Fundamental Frequency Plot
- Radiated Emission Data

Proposed FCC ID Label.....	Exhibit 1
Agent Authorization Letter.....	Exhibit 2
User Manual.....	Attachment A
Block Diagram/Schematics.....	Attachment B

**1. VERIFICATION OF COMPLIANCE**

COMPANY NAME : VISION AUTOMOBILE ELECTRONICS  
INDUSTRIAL CO., LTD.  
NO. 17, ALLEY 92, LANE 189, SEC. 1,  
AN CHUNG RD., TAINAN,  
TAIWAN, R.O.C.

CONTACT PERSON : WANG TSUNG CHIN / ENGINEER

TELEPHONE NO. : 06-255-1269

EUT DESCRIPTION : 434 MHz RECEIVER

MODEL NAME/NUMBER : SMART FILTER

FCC ID : KFR-HSFR

DATE TESTED : DECEMBER 04, 2000

REPORT NUMBER : 00E9118

TYPE OF EQUIPMENT	SECURITY EQUIPMENT (UNINTENTIONAL RADIATOR)
EQUIPMENT TYPE	434 MHz SUPERREGENERATE RECEIVER
MEASUREMENT PROCEDURE	ANSI 63.4 / 1992
LIMIT TYPE	CERTIFICATION
FCC RULE	CFR 47, PART 15.109

The above equipment was tested by Compliance Engineering Services, Inc. for compliance with the requirements set forth in CFR 47, PART 15. This said equipment in the configuration described in this report shows that maximum emission levels emanating from equipment are within the compliance requirements.

  
\_\_\_\_\_  
RICK YEO / EMC MANAGER  
COMPLIANCE ENGINEERING SERVICES, INC.

## 2. PRODUCT DESCRIPTION

VISION AUTOMOBILE ELECTRONICS INDUSTRIAL CO., LTD., Model SMART FILTER is the receiving portion of a multi-purpose security device. The associated Transmitter is manufactured by VISION AUTOMOBILE ELECTRONICS INDUSTRIAL CO., LTD., FCC ID: KFR-HSFT

## 3. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at No. 199, Chung Sheng Road, Hsin Tien City, Taipei, Taiwan R.O.C. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

The measuring instrument which was utilized in performing the tests documented herein has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment which is traceable to recognized national standards.

## 4. MEASUREMENT EQUIPMENT USED

Manufacturer	Model Number	Description	Cal Due Date
R&S	SMY 02	Signal Generator (9 KHz – 2.08 GHz)	01/2001
H.P.	8595EM	Spectrum Analyzer (9 KHz – 6.5 GHz)	01/2001
EMCO	3142	Antenna (30-2000 MHz)	06/2001
T.E.C.	PA-102	Preamplifier (0.1 - 2000 MHz)	05/2001
EMCO	3115	Antenna(1 – 18 GHz)	09/2001
MITEQ	NSP2600-44	Preamplifier (1 - 26.5 GHz)	12/2000

## 5. TEST CONFIGURATION

Set frequency generator to 434 MHz. EUT receiving transmission continuously. All the wires are placed on the turn table to their maximum length to simulate the worse emission conditions.

## 6. TESTS CONDUCTED

CFR 47, 15.109 RADIATED EMISSION TESTS	CONDUCTED AT 3 METERS
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## 7. RADIATED EMISSION TEST PROCEDURE

The EUT and all other support equipment are placed on a wooden table 80 cm above the ground screen. Antenna to EUT distance is 3 meters. During the test, the table is rotated 360 degrees to maximize emissions and the antenna is positioned from 1 to 4 meters above the ground screen to further maximize emissions. The antenna is polarized in both vertical and horizontal positions.

Monitor the frequency range of interest at a fixed antenna height and EUT azimuth. Frequency span should be small enough to easily differentiate between broadcast stations and intermittent ambients. Rotate EUT 360 degrees to maximize emissions received from EUT. If emission increases by more than 1 dB, or if another emission appears that is greater by 1 dB, return to azimuth where maximum occurred and perform additional cable manipulation to further maximize received emission.

Move antenna up and down to further maximize suspected highest amplitude signal. If emission increased by 1 dB or more, or if another emission appears that is greater by 1dB or more, return to antenna height where maximum signal was observed and manipulate cables to produce highest emissions, noting frequency and amplitude.

## 8. COHERENT TESTS

During Radiated Emission Tests, the transmitter unit (Smart filter transmitter model no: KFR-HSFT) was used to radiate modulated signal (ASK) to EUT at 434 MHz. Please refer to radiated radiate emission plots and data for the highest readings.

## 9. EQUIPMENT MODIFICATIONS

To achieve compliance to FCC section 15.109, the following change(s) were made during compliance testing:

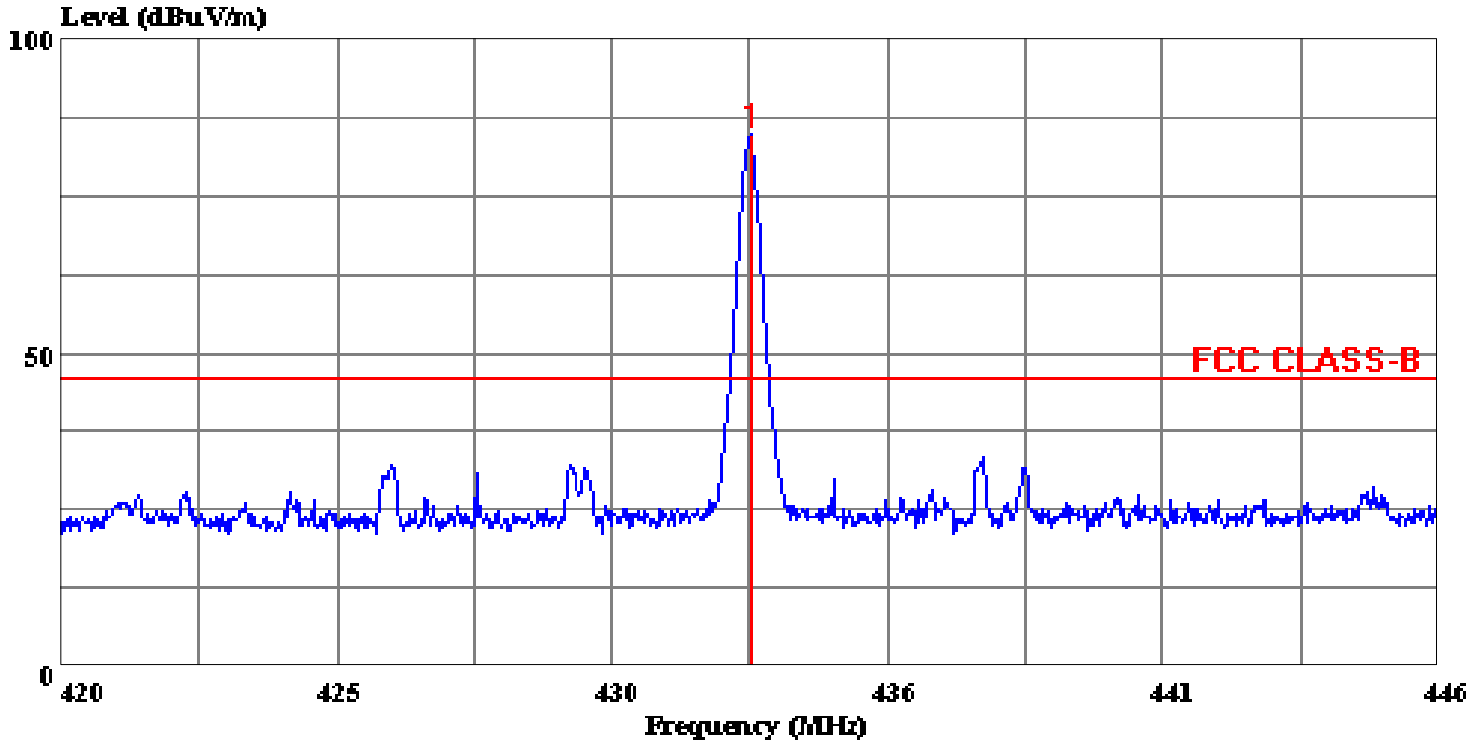
NOT APPLICABLE

**10. TEST CONFIGURATION PHOTOS (Radiated Emission Test)**



Data#: 3 File#: 9118d.emi

Date: 2000-12-04 Time: 13:57:07



(CCS D-Site)

Trace: 1

Ref Trace:

Condition: VERTICAL  
 Report No. : 00E9118  
 Test Engr. : VINCE CHIANG  
 Company : VISION AUTOMOBILE ELECTRONICS INDUSTRIAL  
 EUT : SMART FILTER  
 Test Config : EUT/Tx  
 Type of Test: FCC CLASS B  
 Mode of Op. : NORMAL MODE

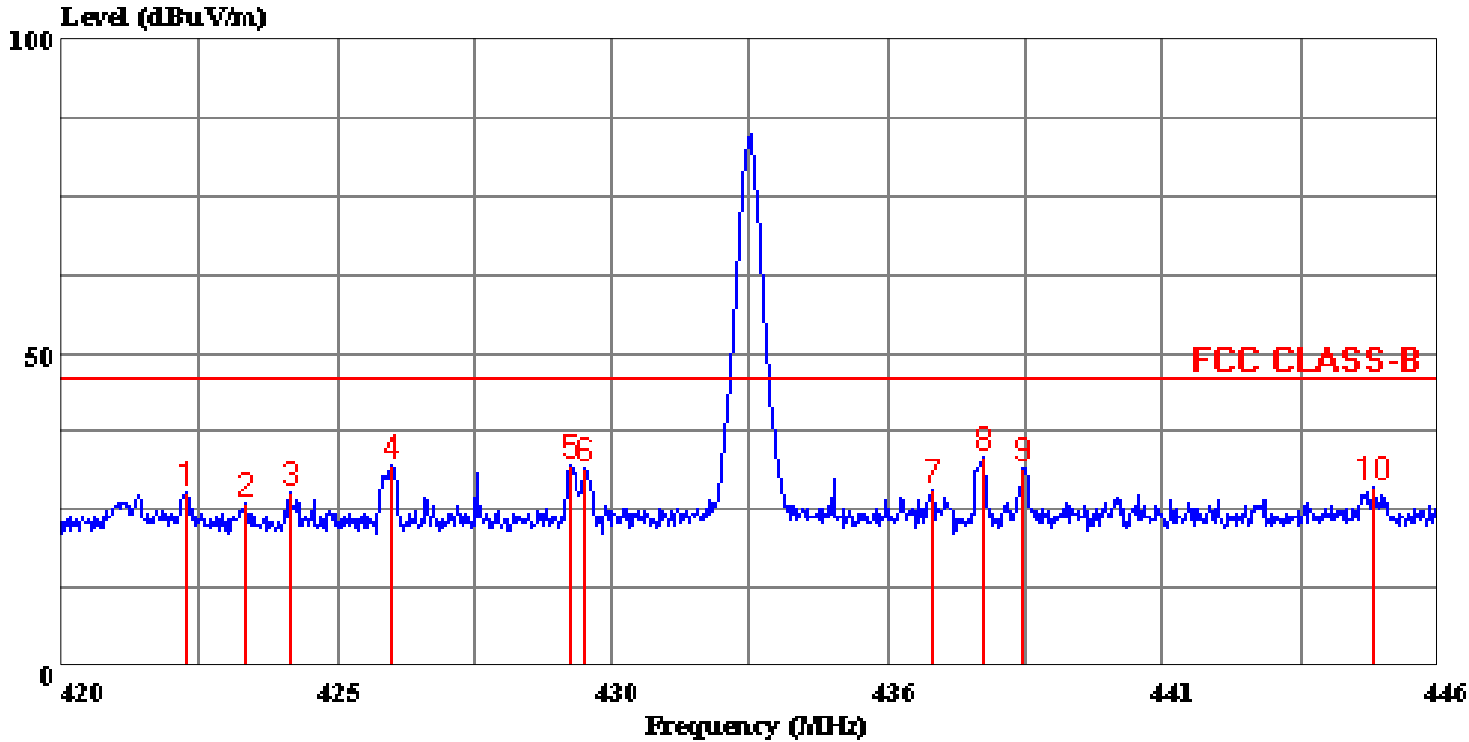
Page: 1

	Read
Freq	Level
MHz	dBuV
1 * 433.000	85.94



Data#: 4 File#: 9118d.emi

Date: 2000-12-04 Time: 13:58:59



(CCS D-Site)

Trace: 1

Ref Trace:

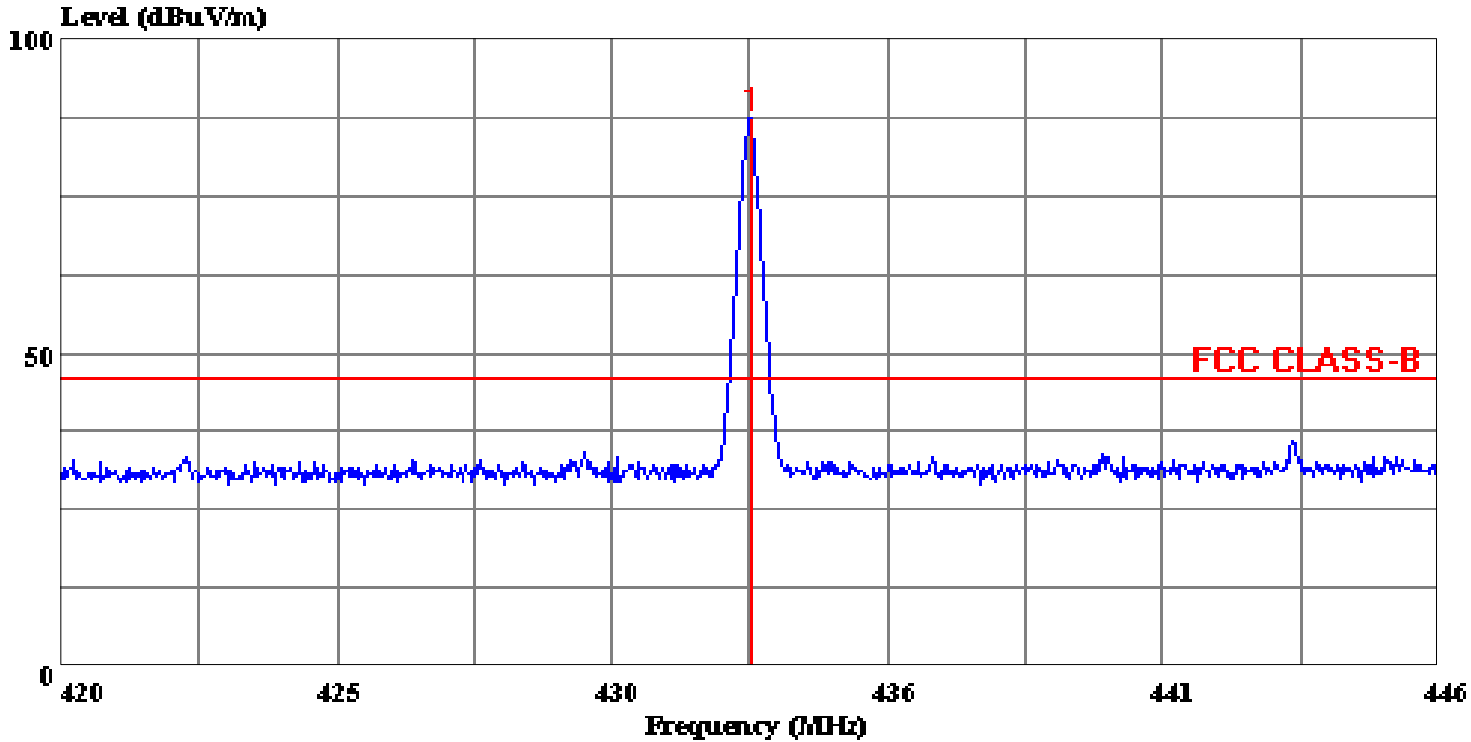
Condition: VERTICAL  
Report No. : 00E9118  
Test Engr. : VINCE CHIANG  
Company : VISION AUTOMOBILE ELECTRONICS INDUSTRIAL  
EUT : SMART FILTER  
Test Config : EUT/Tx  
Type of Test: FCC CLASS B  
Mode of Op. : NORMAL MODE

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	422.340	29.33	17.37	2.45	21.31	27.84	46.00	-18.16	Peak
2	423.458	27.33	17.39	2.45	21.32	25.85	46.00	-20.15	Peak
3	424.316	29.26	17.40	2.44	21.32	27.78	46.00	-18.22	Peak
4	426.214	33.32	17.42	2.45	21.31	31.88	46.00	-14.12	Peak
5	429.620	33.50	17.46	2.52	21.30	32.18	46.00	-13.82	Peak
6	429.906	32.89	17.46	2.52	21.30	31.58	46.00	-14.42	Peak
7	436.432	29.08	17.54	2.65	21.27	28.00	46.00	-18.00	Peak
8	437.394	34.51	17.55	2.66	21.26	33.47	46.00	-12.53	Peak
9	438.148	32.61	17.56	2.68	21.26	31.59	46.00	-14.41	Peak
10	444.778	29.36	17.64	2.79	21.23	28.56	46.00	-17.44	Peak

Data#: 5 File#: 9118d.emi

Date: 2000-12-04 Time: 13:59:59



(CCS D-Site)

Trace: 2

Ref Trace:

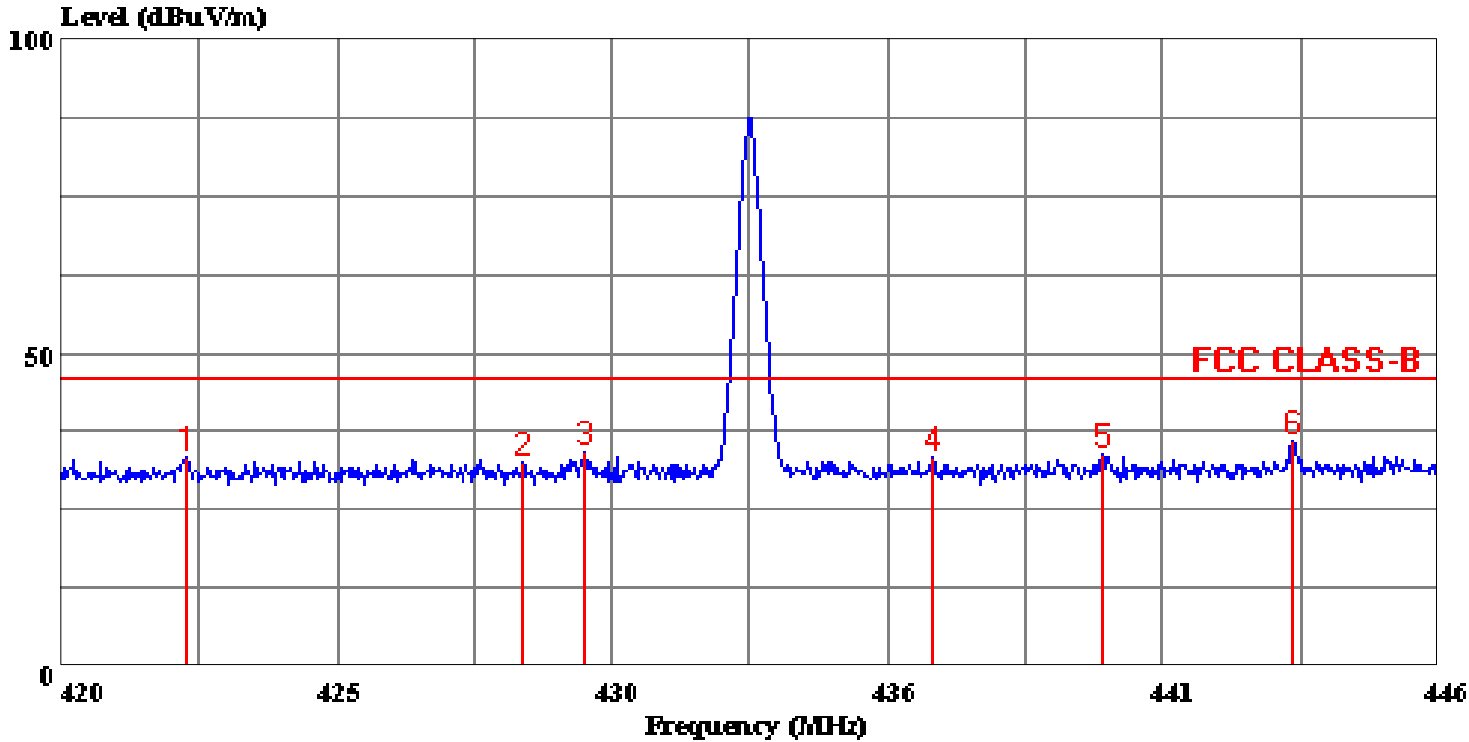
Condition: HORIZONTAL  
 Report No. : 00E9118  
 Test Engr. : VINCE CHIANG  
 Company : VISION AUTOMOBILE ELECTRONICS INDUSTRIAL  
 EUT : SMART FILTER  
 Test Config : EUT/Tx  
 Type of Test: FCC CLASS B  
 Mode of Op. : NORMAL MODE

Page: 1

	Read
Freq	Level
MHz	dBuV
1 * 433.000	88.73

Data#: 6 File#: 9118d.emi

Date: 2000-12-04 Time: 14:03:13



**(CCS D-Site)**

Trace: 2

Ref Trace:

Condition: HORIZONTAL  
Report No. : 00E9118  
Test Engr. : VINCE CHIANG  
Company : VISION AUTOMOBILE ELECTRONICS INDUSTRIAL  
EUT : SMART FILTER  
Test Config : EUT/Tx  
Type of Test: FCC CLASS B  
Mode of Op. : NORMAL MODE

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	422.366	34.89	17.37	2.45	21.31	33.40	46.00	-12.60	Peak
2	428.710	33.77	17.45	2.50	21.30	32.42	46.00	-13.58	Peak
3	429.880	35.35	17.46	2.52	21.30	34.04	46.00	-11.96	Peak
4	436.458	34.51	17.54	2.65	21.27	33.43	46.00	-12.57	Peak
5	439.682	34.81	17.58	2.71	21.25	33.85	46.00	-12.15	Peak
6	443.270	36.92	17.62	2.77	21.24	36.08	46.00	-9.92	Peak

Compliance Engineering Services, Inc.

Project No. : 00E9118

Report No. : 9118#8

Date : 2000-12-04

Test Engr : VINCE CHIANG

>> 3m RADIATED EMISSION DATA <<

Company : VISION

Equipment Under Test : SMART FILTER

Test Configuration : EUT/Tx

Test Spec. : FCC CLASS B

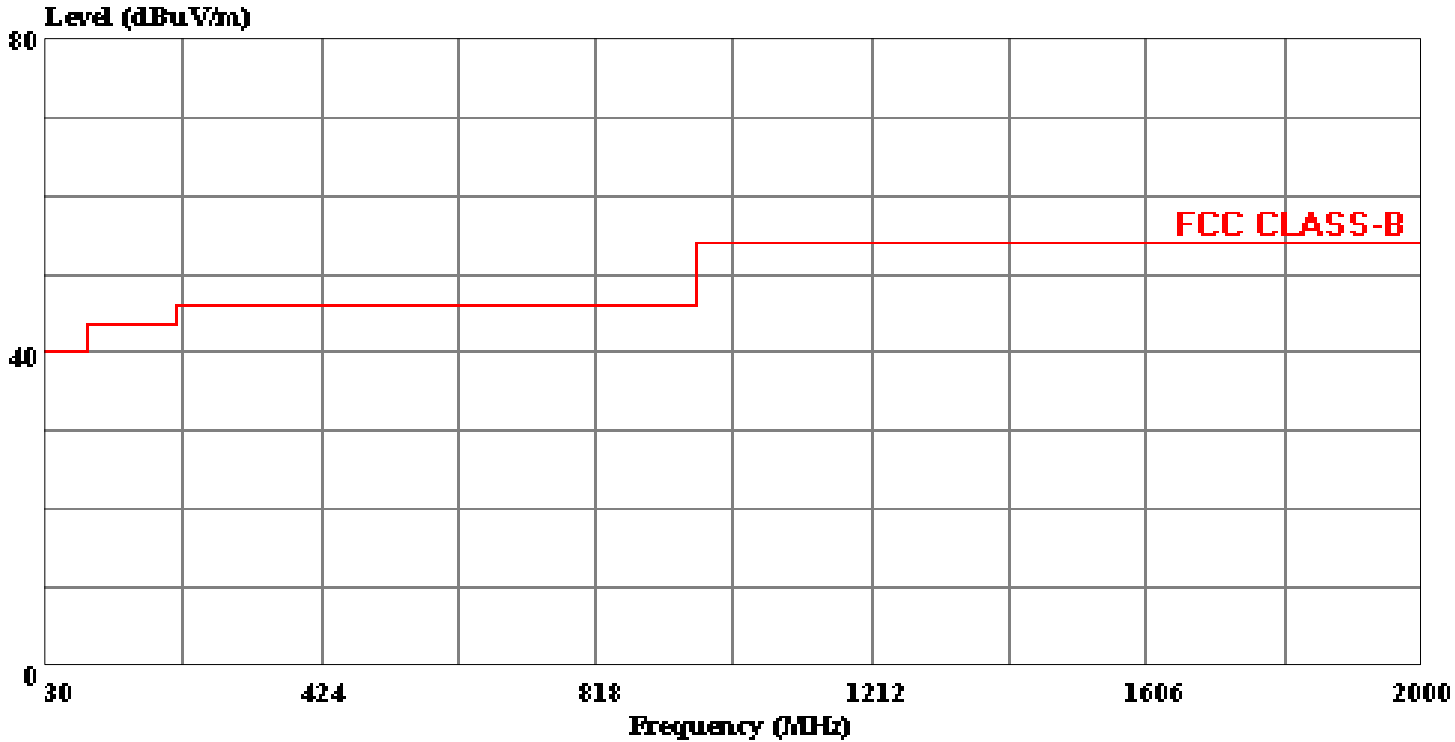
Mode of Operation : 6 Worst Data Readings

Freq. MHz	Reading dBuV	Ant. dB	Cable dB	Amp. dB	Level dBuV/m	Limit dBuV	Margin dB	Remark P/Q/A	Pol. H/V
437.394	34.51	17.55	2.66	21.26	33.47	46.00	-12.53	Peak	V
422.366	34.89	17.37	2.45	21.31	33.40	46.00	-12.60	Peak	H
429.880	35.35	17.46	2.52	21.30	34.04	46.00	-11.96	Peak	H
436.458	34.51	17.54	2.65	21.27	33.43	46.00	-12.57	Peak	H
439.682	34.81	17.58	2.71	21.25	33.85	46.00	-12.15	Peak	H
443.270	36.92	17.62	2.77	21.24	36.08	46.00	-9.92	Peak	H

Total Data#. 6

Data#: 9 File#: 9118d.emi

Date: 2000-12-04 Time: 14:38:29



(CCS D-Site)

Trace:

Ref Trace:

Report No. : 00E9118  
 Test Engr. : VINCE CHIANG  
 Company : VISION AUTOMOBILE ELECTRONICS INDUSTRIAL  
 EUT : SMART FILTER  
 Test Config : EUT/Tx  
 Type of Test: FCC CLASS B  
 Mode of Op. : Except the readings from fundamental  
 : graph, no other emissions were found  
 : between 30-2000MHz.