

	ESTECH Co., Ltd. 3rd Fl., Chungdam Bldg., 119-1 Chungdam-dong, Kangnamgu, Seoul	  	Electromagnetic Interference Test Report
---	---	---	---

Compliance Test Report for FCC

Report Number		ESTF150207-005			
Applicant	Company name	CS Braintech Corp.			
	Address	5th Floor Eunho Bldg, 272-9 Samsung-Dong, Dong-Gu, DaeJeon 300-812, Korea			
	Telephone	82-42-622-0562			
Product	Product name	Neurofeedback system			
	Model No.	NHP1	Manufacturer	CS Braintech Corp.	
	Serial No.	NONE	Country of origin	KOREA	
Test date	2002-07-05 ~ 2002-07-11		Date of issue	2002-07-23	
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea				
Standard	FCC PART 15 2001 , ANSI C 63.4 2001				
Test item	☒ Conducted Emission	☐ Class A	☒ Class B	Test result	OK
	☒ Radiated Emission	☐ Class A	☒ Class B	Test result	OK
Measurement facility registration number		94696			
Tested by	Senior Engineer C.H. Lee (Signature)				
Reviewed by	Director T.K. Lee (Signature)				
Abbreviation	OK, Pass = Passed, Fail = Failed, N/A = not applicable				
* Note - This test report is not permitted to copy partly without our permission - This test result is dependent on only equipment to be used - This test result based on a single evaluation of one sample of the above mentioned					

Contents

1. Laboratory Information	3
2. Description of EUT	4
3. Test Standards	5
4. Measurement condition	6
5. Measurement of radiated emission	10
5.1 Measurement equipment	10
5.2 Environmental conditions	10
5.3 Test data	11
6. Measurement of conducted emission	13
6.1 Measurement equipment	13
6.2 Environmental conditions	13
6.3 Test data	14
7. Photographs of test setup	15
8. Photographs of EUT	18

Appendix 1. Spectral diagram

Appendix 2. Photographs of EUT in side PCB

Appendix 3. Block diagram of EUT

Appendix 4. Circuit Diagram

1. Laboratory Information

1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report.

ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.

ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

1.2 Test Lab.

Corporation Name : ESTECH Co. Ltd

Head Office : 3 rd Fl., Chungdam Bldg., 119-1 Chungdam-dong Kangnam-gu , Seoul, Korea
(Safety & Telecom. Test Lab)

EMC Test Lab : 58-1 Osan-Ri, GaNam-Myon, YeoJoo-Gun, KyungKi-Do, Korea
97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea

Branch Office : USA-ESTECH INC.
21801 Stevens Creek Blvd. Suite 2A Cupertino, CA95014

1.3 Official Qualification(s)

MIC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication

KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC requirements

FCC : Filed Laboratory at Federal Communications Commission

VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

2. Description of EUT

2.1 Summary of Equipment Under Test

Product : Neurofeedback system

Model Number : NHP1

Serial Number : NONE

Manufacturer : CS Braintech Corp.

Country of origin : KOREA

Rating : Adapter(Input : AC110/220V, 60Hz, Output : DC 8V, 1A)

Receipt Date : 2002-06-08

2.2 General descriptions of EUT

This mainframe is a compact type of electroencephalogram gauge (EEG) and has several onboard functions to enable neurofeedback training by expanding the brain wave signal measured from the headband.

The NeuroHarmony portable device provides 2 training modes and 2 additional functions. The training modes consist of the neurofeedback training mode and the sound stimulation training mode. The additional functions are timer and lighting functions. Since the neurofeedback training mode needs to measure brain waves, you can use it only when you are wearing the headband.

3. Test Standards

Test Standard : FCC PART 15 (2001)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

Test Method : ANSI C 63.4 (2001)

This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain devices that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment. These methods apply to the measurement of individual units or systems comprised of multiple units.

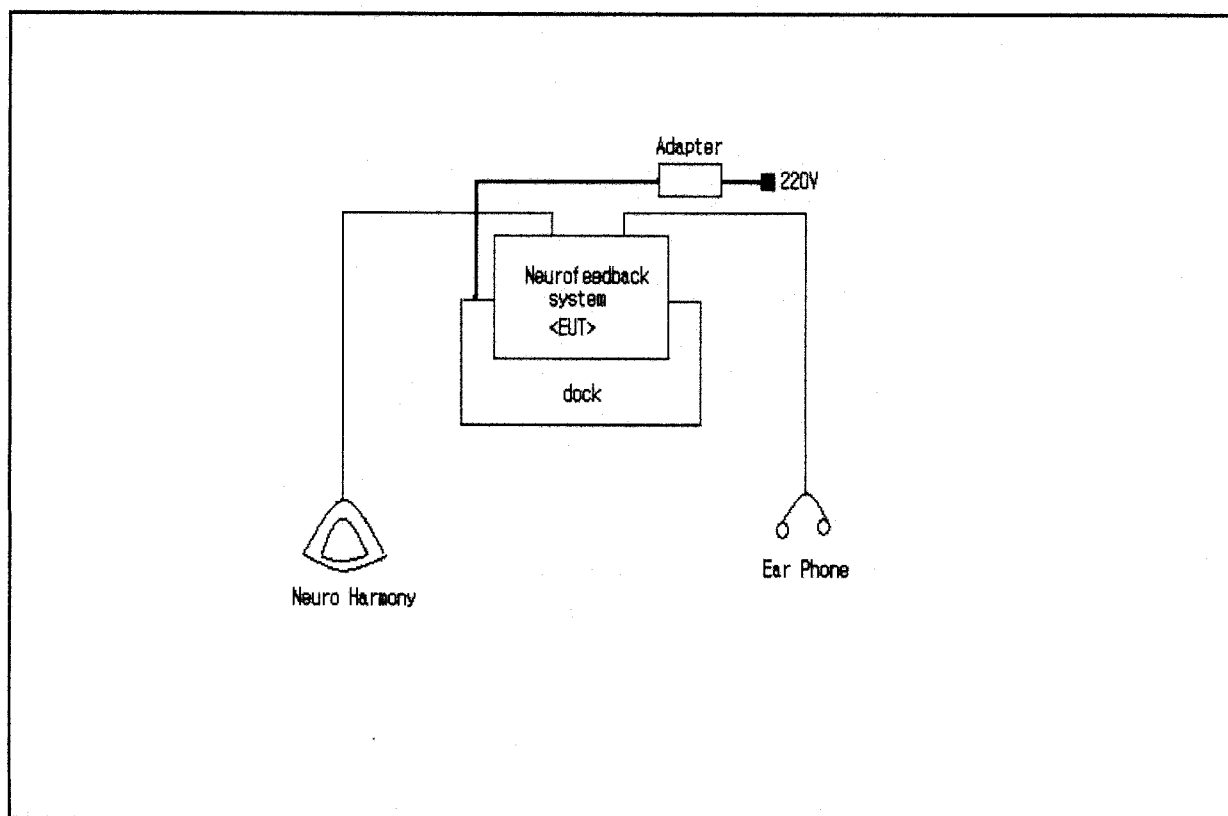
4. Measurement Condition

◆ Neurofeedback system test

4.1 EUT Operation.

- * The EUT was in the following operation mode during all testing
- * The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission
- * Continuous Neurofeedback system playing

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
Neurofeedback System	MHP1	NONE	CSBRAINTECH CORP.	EUT
Earphone	NONE	NONE	jump ®	—
Adapter	DR-081000	NONE	Dream Electronic Co., Ltd.	—
Neuro Harmony	NONE	NONE	NONE	—

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
Neurofeedback System	Earphone	Earphone	—	1.2		
Neurofeedback System	Brainband	Neuro Harmony	—	1.2		
dock	Power	Adapter	—	2		



ESTECH Co., Ltd.
3rd Fl., Chungdam Bldg.,
119-1 Chungdam-dong,
Kangnamgu, Seoul



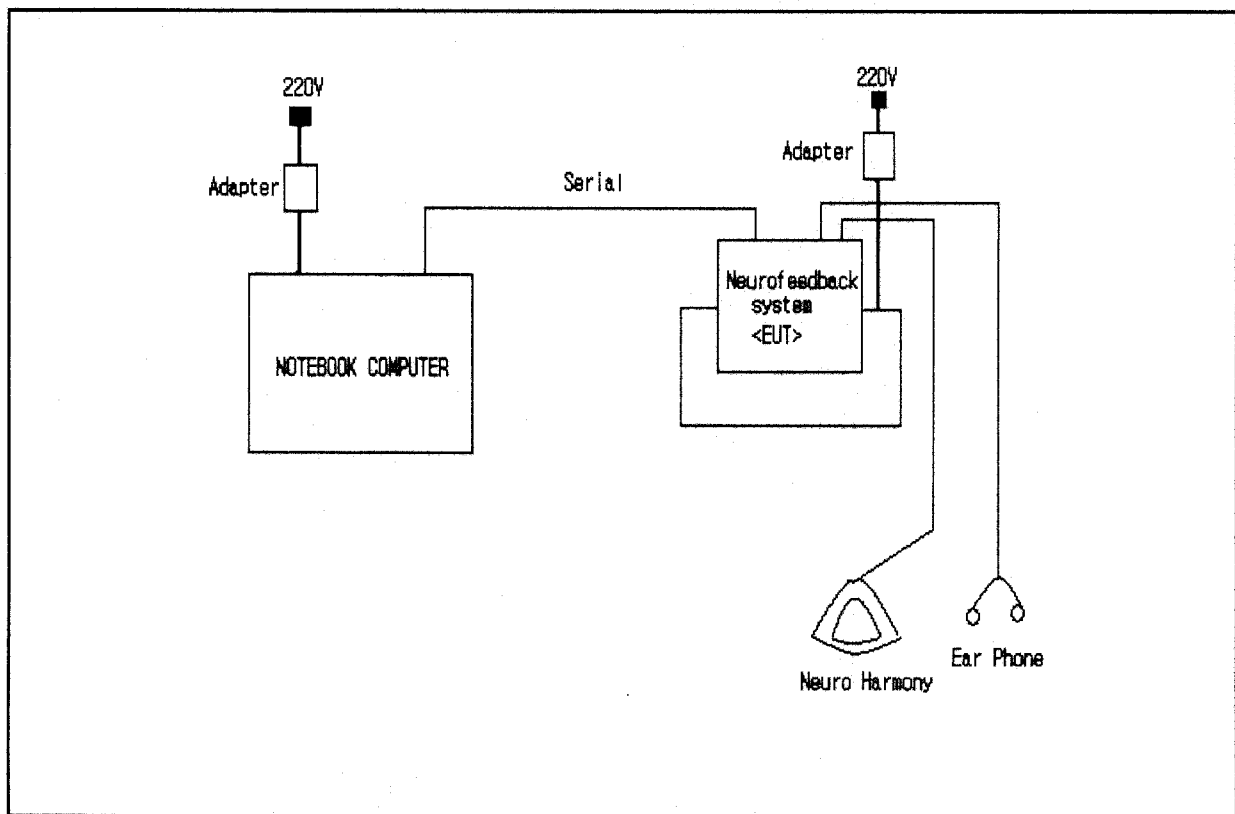
**Electromagnetic
Interference
Test Report**

◆ Neurofeedback system connected Note-PC test

4.5 EUT Operation.

- * The EUT was in the following operation mode during all testing
- * The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission
- * Continuous selftest program playing

4.6 Configuration and Peripherals



4.7 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
Neurofeedback System	MHP1	NONE	CSBRAINTECH CORP.	EUT
Earphone	NONE	NONE	jump ®	—
Adapter	DR-081000	NONE	Dream Electronic Co., Ltd.	—
Neuro Harmony	NONE	NONE	NONE	—
Notebook Computer	S820	392891AK800345	Samsung Electronic Co., Ltd.	—
Adapter	ADP-6019	—	Samsung Electro-Mechanics.	—

4.8 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
Neurofeedback System	Earphone	Earphone	—	1.2		
Neurofeedback System	Brainband	Neuro Harmony	—	1.2		
Neurofeedback System	Serial	Notebook Computer	Serial	1.2		
Neurofeedback System	Power	Adapter	—	2		
Notebook Computer	Power	Adapter	—	2		

5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2001) & ANSI C 63.4 (2001). The test setup was made according to FCC Part 15 (2001) & ANSI C 63.4 (2001) on an open test site, which allows a 3m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test set-up.

5.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
Spectrum Analyzer	8568B	HP	2928A04802	2003.6.17
LogBicon Antenna	VULB 9160	S/B	3106	2003.5.21
RF P reselector	85685A	HP	2510A00137	2003.6.17
Quasi-Peak Adapter	85650A	HP	2811A01224	2003.6.17
Turn Table	2081-1.2M	EMCO	NONE	-
Antenna Mast	2070-01	EMCO	0005-2205	-
Amplifier	8447F	HP	2944A03711	2003. 1. 30
ANT Mast Controller	2090	EMCO	9612-1202	-
Turn Table Controller	1060C	EMCO	1016	-

5.2 Environmental Condition

Test Place : Open site (3m)
 Temperature (°C) : 30 °C
 Humidity (%) : 43 %

5.3 Test data (Neurofeedback system test)

Measurement Distance : 3 m

[illegible]

5.4 Test data (Neurofeedback system connected Note-PC test)

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB μ V/m)
72.00	22.40	H	3.0	10.99	1.4	40.0	34.79	-5.21
75.99	23.30	H	2.6	9.87	1.5	40.0	34.67	-5.33
84.00	22.16	V	1.0	8.77	1.4	43.5	32.33	-11.17
112.00	27.66	H	2.8	11.07	1.7	43.5	40.43	-3.07
164.00	19.32	H	1.7	13.88	2.0	43.5	35.20	-8.30
184.00	24.94	H	1.7	12.44	2.1	43.5	39.48	-4.02
196.00	23.96	H	1.6	11.10	2.1	43.5	37.16	-6.34
200.01	25.50	H	1.8	10.38	2.3	43.5	38.18	-5.32
231.99	21.56	H	1.6	10.76	2.6	46.0	34.92	-11.08
308.00	12.36	H	1.3	13.19	2.7	46.0	28.25	-17.75
599.80	9.40	H	1.4	18.62	4.5	46.0	32.52	-13.48
733.06	9.10	V	1.0	20.60	5.1	46.0	34.80	-11.20
Remark	H : Horizontal, V : Vertical							

6. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.45 to 30 MHz was measured in accordance to FCC Part 15 (2001) & ANSI C 63.4 (2001) The test setup was made according to FCC Part 15 (2001) & ANSI C 63.4 (2001) in a shielded. The EUT was placed on a non-conductive table at least 80 above the ground plan. A grounded vertical reference plane was positioned in a distance of 40cm from the EUT. The distance from the EUT to other metal surfaces was at least 0.8m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0m.. The test receiver with Quasi Peak detector complies with CISPR 16.

6.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
LISN	ESH2-Z5	POLARAD	872461/048	2003. 1. 30
LISN	ESH3-Z5	ROHDE & SCHWARZ	836679/025	2002. 11. 1
TEST Receive	ESPC	Rohde & Schwarz	838248/001	2003. 1. 31
Pulse Limiter	ESH3-Z2	Rohde & Schwarz	NONE	2003. 6. 26

6.2 Environmental Condition

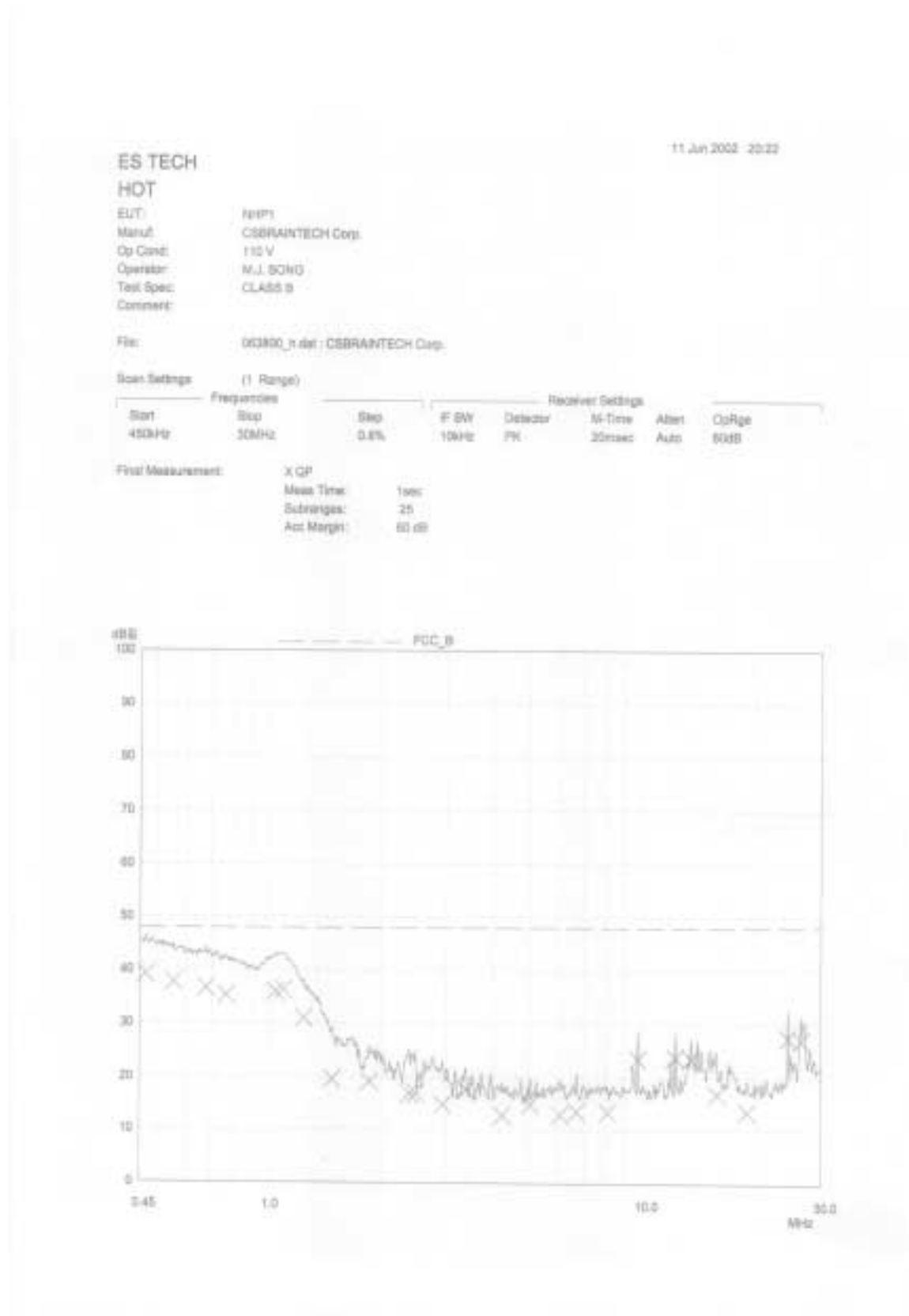
Test Place : Shield Room
 Temperature (°C) : 20 °C
 Humidity (%) : 56 %

6.3 Test data

Frequency (MHz)	Reading (dB μ V)	Line (H/N)	Correction Factor		Limit (dB μ V)	Result (dB μ V)	Margin (dB μ V)
			Lisn (dB)	Cable (dB)			
0.465	39.26	H	0.09	0.0	48.00	39.35	-8.65
0.468	37.81	N	0.11	0.0	48.00	37.92	-10.08
0.554	37.80	H	0.09	0.0	48.00	37.91	-10.09
0.676	36.68	H	0.10	0.1	48.00	36.83	-11.17
1.039	36.01	H	0.12	0.2	48.00	36.33	-11.67
1.090	36.40	H	0.12	0.2	48.00	36.72	-11.28
9.749	24.41	N	0.44	0.4	48.00	25.24	-22.76
12.284	23.85	H	0.57	0.4	48.00	24.86	-23.14
13.516	23.64	H	0.62	0.5	48.00	24.73	-23.27
24.570	27.49	H	0.56	0.7	48.00	28.74	-19.26
26.608	27.02	H	0.56	0.7	48.00	28.32	-19.68
27.251	20.85	N	0.49	0.7	48.00	22.08	-25.92
Remark	H : Hot Line, N : Neutral Line						

Appendix 1. Spectral diagram

* HOT



*NETURAL

ES TECH NEUTRAL

11 Jun 2002 20:16

EUT: NRP1
Manuf: CSBRAITECH Corp.
Op Cond: 110 V
Operator: M.J. SCHG
Test Spec: CLASS B
Comment:

File: 003806_n.dat : CSBRAITECH Corp.

Scan Settings (1 Range)

Frequencies		Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	CpRge
435kHz	30MHz	0.8%	10kHz	PK	20msec	Auto	80dB

Final Measurement: X QP
Max Time: 1sec
Subranges: 25
Acc Margin: 80 dB

