



Test Report

For

Applicant : TECHNICA HOUSE INCORPORATION
Equipment Type : Microflex Mini Desk Top PC
Model : MFIII⁺ -530; Millennium⁺ 100-III
FCC ID : FCC ID: O2PMILLENNIUM-100

Report No. : 004T067FI



Test Report Certification

QuieTek Corporation

No.75-1, Wang-Yeh Valley, Yung-Hsing, Chiung-Lin,
Hsin-Chu County, Taiwan, R.O.C.

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Accredited by NIST(NVLAP), VCCI, BSMI, DNV, TUV

Applicant : TECHNICA HOUSE INCORPORATION
Address : 4F. No.9, Lane 235, Pao Chiao Rd., Hsin Tien City, Taiwan,
R.O.C.
Equipment Type : Microflex Mini Desk Top PC
Model : MFIII⁺ -530; Millennium⁺ 100-III
FCC ID : **FCC ID: O2PMILLENNIUM-100**
Measurement Standard : CISPR 22/1994
Measurement Procedure : ANSI C63.4 /1992
Operation Voltage : 120VAC/60Hz
Classification : Class B
Test Result : Complied
Test Date : May 02, 2000
Report No. : 004T067FI



The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented by: Lisa Chen

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Approved: Gene Chang

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1. General Information

1.1 EUT Description

Applicant	: TECHNICA HOUSE INCORPORATION
Address	: 4F. No.9, Lane 235, Pao Chiao Rd., Hsin Tien City, Taiwan, R.O.C.
Equipment Type	: Microflex Mini Desk Top PC
Model	: MFIII ⁺ -530; Millennium ⁺ 100-III
Operation Voltage	: 120VAC/60Hz
Mother Board	: TECHNICA, MF-530, S/N:005335
CPU	: AMD 266MHz
FDD	: TEAC, FD-235HF,S/N:2320151, P/N:193077A2-91
HDD	: Quantum, 6.4AT, P/N:EX64A012
CD-RAM	: TEAC, CD-532E, S/N:2087961
Switching Power Supply	: CWT, CWT-235ATX, S/N:94131649

Remark:

- 1.The EUT is a Microflex Mini Desk Top PC .
- 2.The different model just for different market. The circuit of them are identical.
3. QuieTek had verified both construction and function in typical operation, then shown in this test report.

1.2 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

1.2.1 Microflex Mini Desk Top PC(EUT)

Model Number : MFIII⁺ -530; Millennium⁺ 100-III
Serial Number : N/A
FCC ID : ~~Q2P~~ MILLENNIUM-100
Manufacturer : TECHNICA HOUSE INCORPORATION
Mother Board : TECHNICA, MF-530, S/N:005335
CPU : AMD 266MHz
FDD : TEAC, FD-235HF,S/N:2320151, P/N:193077A2-91
HDD : Quantum, 6.4AT, P/N:EX64A012
CD-ROM : TEAC, CD-532E, S/N:2087961
Switching Power Supply : CWT, CWT-235ATX, S/N:94131649

1.2.2 Monitor

Model Number : 15CP
Serial Number : AWI980502810
FCC ID : HSUTRLDH-1570
Manufacturer : NEC
Data Cable : Shielded, 1.5m, Bonded Cord 1 pc
Power Cord : Non-Shielded, 1.8m

1.2.3 Keyboard

Model Number : KFKEA4SA
Serial Number : KFKEA4SA94Q20474
FCC ID : CMYKFK7835
Manufacturer : MITSUMI
Data Cable : Shielded, 1.8m

1.2.4 Modem

Model Number : 1414
Serial Number : 980033034
FCC ID : IFAXDM1414
Manufacturer : ACEEX
Data Cable : Shielded, 1.5m
Power Adapter : ACCEX, SCP41-91000A
Cable Output : Shielded, 1.5m

1.2.5 Modem

Model Number : 1414
Serial Number : 980033035
FCC ID : IFAXDM1414
Manufacturer : ACEEX
Data Cable : Shielded, 1.5m
Power Adapter : ACCEX, SCP41-91000A
Cable Output : Shielded, 1.5m

- 1.2.6 Printer**
Model Number : C2642A
Serial Number : MY75N1D2BC
FCC ID : B94C2642X
Manufacturer : HP
Data Cable : Shielded, 1.2m
Power Adapter : NMB, C2175A
Cable for AC IN: Non-Shielded, 0.7m
Cable for AC Out: Non-Shielded, 1.5m
- 1.2.7 Mouse**
Model Number : M-UE55
Serial Number : DVT-324
FCC ID : DoC
Manufacturer : Logitech
Data Cable : Shielded, 1.8m
- 1.2.8 Mouse**
Model Number : M-UB48
Serial Number : LTC74800118
FCC ID : DZL211137
Manufacturer : Logitech
Data Cable : Shielded, 1.8m
- 1.2.9 Mouse**
Model Number : M-UE55
Serial Number : DVT-318
FCC ID : DoC
Manufacturer : Logitech
Data Cable : Shielded, 1.8m
- 1.2.10 Microphone**
Model Number : CD-8000
Serial Number : N/A
FCC ID : DoC
Manufacturer : AIWA
Data Cable : Non-Shielded, 1m
- 1.2.11 Earphone**
Model Number : PH136
Serial Number : N/A
Manufacturer : BSD
Data Cable : Shielded, 1.2m

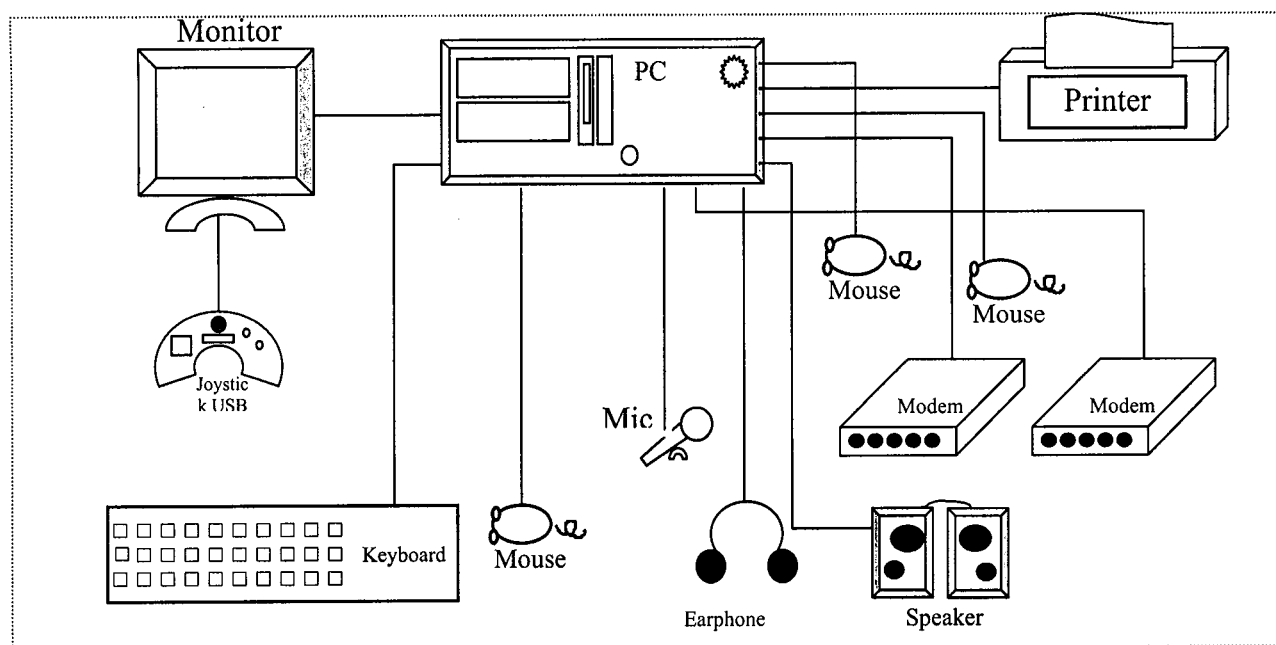


1.2.12 Joystick
Model Number : 8663136-0000
Serial Number : AE83700069
FCC ID : DZLBATMAN
Manufacturer : Logitech
Data Cable : Shielded, 2.0m

1.2.13 Speaker
Model Number : J-009
Serial Number : 97-C-019799-T
FCC ID : DoC
Manufacturer : JS
Data Cable : Shielded, 1.2m

1.2.14 UTP Cable:Non-shielded, 10m, 1pcs

1.3 EUT Configuration



1.4 EUT Exercise Software

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

- 1.4.1 Setup the EUT and simulators as shown on 1.3.
- 1.4.2 Turn on the power of all equipment.
- 1.4.3 Personal Computer reads data from disk.
- 1.4.4 Personal Computer sends “H” pattern to printer, the printer will print “H” pattern on paper.
- 1.4.5 Personal Computer reads and writes data into and from modem.
- 1.4.6 Personal Computer will read data from floppy disk and then writes the data into floppy disk , same operation for hard disk.
- 1.4.7 Repeat the above procedure 1.4.4 to 1.4.6

1.5 Test performed

Conducted emissions were investigated over the frequency range from **0.15MHz to 30MHz** using a receiver bandwidth of 9kHz.

Radiated emissions were investigated over the frequency range from **30MHz to 1000MHz** using a receiver bandwidth of 120kHz. Radiated testing was performed at an antenna to EUT distance of 10 meters .

1.6 Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: November 3, 1998 File on

Federal Communications Commission

FCC Engineering Laboratory

7435 Oakland Mills Road

Columbia, MD 21046

Reference 31040/SIT1300F2



September 30, 1998 Accreditation on NVLAP

NVLAP Lab Code: 200347-0

February 23, 1999 Accreditation on DNV

Statement No. : 413-99-LAB11



December 8, 1998 Registration on VCCI

Registration No. for No.2 Shielded Room C-858

Registration No. for No.1 Open Area Test Site R-823

Registration No. for No.2 Open Area Test Site R-835



January 04, 1999 Accreditation on TÜV Rheinland

Certificate No.: I9865712-9901



Name of firm : QuieTek Corporation

Site location : No.75-1, Wang-Yeh Valley, Yung-Hsing Tsuen,
Chiung-Lin, Hsin-Chu County, Taiwan, R.O.C.

2. Conducted Emission

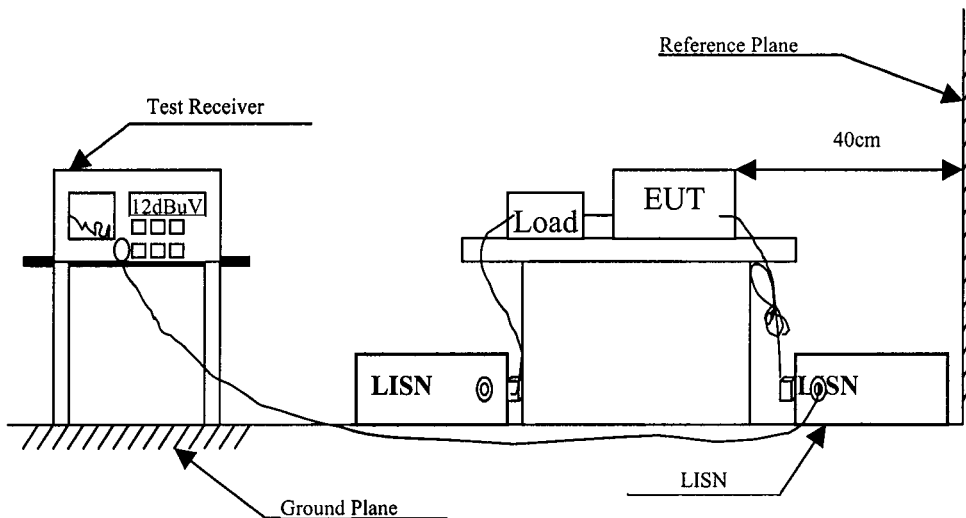
2.1 Test Equipment List

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal..	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 1999	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 1999	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 1999	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	N/A	
5	N0.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2 Test Setup



2.3 Limits

Frequency	Limits dB(uV)			
	Class A		Class B	
MHz	QP	AV	QP	AV
0.15 – 0.50	79	66	66-56	56-46
0.50-5.0	73	60	56	46
5.0 – 30	73	60	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.4 Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 /1992 on conducted measurement.

The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

2.5 Test Results

The emission from the EUT was below the specified limits. The worst case emissions are shown in attachment 1. The acceptance criterion was met and the EUT passed the test.

3. Radiated Emission

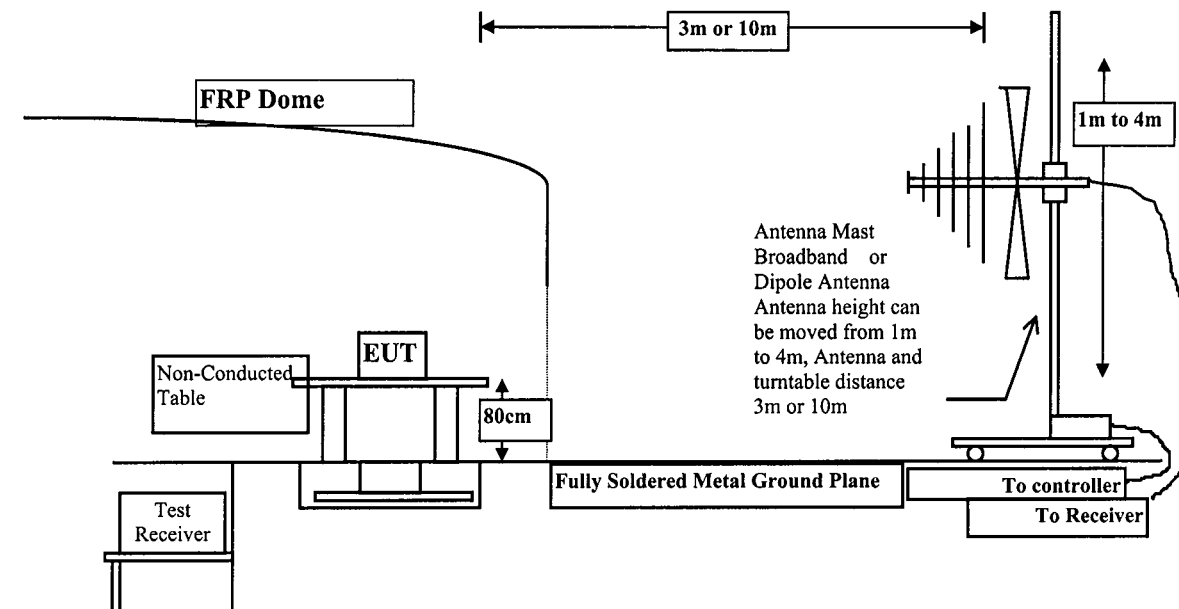
3.1 Test Equipment

The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 1	X	Test Receiver	R & S	ESCS 30 / 825442/14	May, 1999
		Spectrum Analyzer	Advantest	R3261C / 71720140	May, 1999
		Pre-Amplifier	HP	8447D/3307A01812	May, 1999
	X	Bilog Antenna	Chase	CBL6112B / 12452	Sep., 1999
	X	Horn Antenna	EM	EM6917 / 103325	May, 1999
Site # 2	X	Test Receiver	R & S	ESCS 30 / 825442/17	May, 1999
		Spectrum Analyzer	Advantest	R3261C / 71720609	May, 1999
		Pre-Amplifier	HP	8447D/3307A01814	May, 1999
	X	Bilog Antenna	Chase	CBL6112B / 2455	Sep., 1999
	X	Horn Antenna	EM	EM6917 / 103325	May, 1999

- Note:
1. All equipment upon which need to calibrated are with calibration period of 1 year.
 - 2.. Mark "X" test instruments are used to measure the final test results.

3.2 Test Setup



3.3 Limits

CISPR 22 Limits					FCC Part 15 Subpart B				
Frequency	Class A		Class B		Frequency	Class A		Class B	
MHz	Distance (m)	dBuV/m	Distance (m)	dBuV/m		UV/m	dBuV/m	UV/m	dBuV/m
30 – 230	10	40	10	30	30 – 88	90	39	100	40.0
230 – 1000	10	47	10	37	88 – 216	150	43.5	150	43.5
					216 – 960	210	46.5	200	46.0
					960 - 2000	300	49.5	500	54.0

Remark: 1. The tighter limit shall apply at the edge between two frequency bands.

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. RF Line Voltage (dBuV/m) = 20 log RF Line Voltage (uV/m)

3.4 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters . The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4 /1992 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30) is 120 kHz.

3.5 Test Results

The emission from the EUT was below the specified limits. The worst case emissions are shown in attachment 1. The acceptance criterion was met and the EUT passed the test.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.

5. Attachment

Attachment 1: Summary of Test Results	Number of Pages: 5
Attachment 2: EUT Test Photographs	Number of Pages: 2
Attachment 3: EUT detailed photographs	Number of Pages: 11

Attachment 1 : Summary of Test Results

The test results in the emission were performed according to the requirements of measurement standard and process. QuieTek Corporation is assumed full responsibility for the accuracy and completeness of these measurements. The test data of the emission are listed as the attached data.

All the tests were carried out with the EUT in normal operation, which was defined as:

(1) Mode 1 : MFIII⁺ -530; Millennium⁺ 100-III

The EUT passed all the tests.

The uncertainty is calculated in accordance with NAMAS NIS 81, The total uncertainty for this test is as follows:

➤ **Emission Test**

- Uncertainty in the Conducted Emission Test: $< \pm 2.0 \text{ dB}$
- Uncertainty in the field strength measured: $< \pm 4.0 \text{ dB}$

CONDUCTED EMISSION DATA

Date of Test	: May 02, 2000	EUT	: Microflex Mini Desk Top PC
Test Mode	: Mode 1	Detect Mode	: Quasi-Peak & Average

Frequency	Cable	LISN	Reading Level	Measurement Level	Limits
	Loss	Factor	Line1	Line1	
MHz	dB	dB	dBuV	dBuV	dBuV
0.189	0.01	0.10	45.63	45.74	64.10
0.282	0.03	0.10	40.10	40.23	60.77
*0.754	0.09	0.10	40.82	41.01	56.00
0.904	0.09	0.10	40.81	41.00	56.00
1.810	0.14	0.13	34.50	34.76	56.00
5.723	0.21	0.18	32.84	33.23	60.00

Average:

0.189	0.01	0.10	42.30	42.41	54.08
0.282	0.03	0.10	38.60	38.73	50.76
0.754	0.09	0.10	38.50	38.69	46.00
0.904	0.09	0.10	37.70	37.89	46.00
1.810	0.14	0.13	29.80	30.06	46.00
5.720	0.21	0.18	25.00	25.39	50.00

Remarks :

1. " * " means that this data is the worst emission level.

CONDUCTED EMISSION DATA

Date of Test : May 02, 2000 EUT : Microflex Mini Desk Top PC
 Test Mode : Mode 1 Detect Mode : Quasi-Peak & Average

Frequency	Cable	LISN	Reading Level	Measurement Level	Limits
MHz	Loss	Factor	Line1	Line1	
	dB	dB	dBuV	dBuV	dBuV
0.310	0.04	0.10	43.91	44.05	59.96
0.563	0.07	0.10	38.59	38.76	56.00
0.687	0.08	0.10	37.35	37.53	56.00
*0.999	0.10	0.10	41.05	41.25	56.00
5.931	0.22	0.18	34.87	35.27	60.00
7.459	0.24	0.19	30.96	31.39	60.00

Average:

0.310	0.04	0.10	40.70	40.84	49.97
0.563	0.07	0.10	35.10	35.27	46.00
0.687	0.08	0.10	33.82	34.00	46.00
0.999	0.10	0.10	35.60	35.80	46.00
5.931	0.22	0.18	26.30	26.70	50.00
7.459	0.24	0.19	21.90	22.33	50.00

Remarks :

1. “ * ” means that this data is the worst emission level.

RADIATED EMISSION DATA

Date of Test	: May 02, 2000	EUT	: Microflex Mini Desk Top PC
Test Mode	: Mode 1	Test Site	: No.1 Open Test Site

Freq.	Cable	Probe	PreAMP	Reading	Measurement	Margin	Limit	Ant	Turn
	Loss	Factor		Level	Horizontal				
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	cm	deg
*1001.000	2.08	24.60	35.60	54.45	45.53	28.47	74.00	0	0
1068.000	2.17	24.84	35.48	48.13	39.67	34.33	74.00	0	0
1135.000	2.26	25.09	35.40	48.27	40.22	33.78	74.00	0	0
1202.000	2.35	25.33	35.27	47.95	40.36	33.64	74.00	0	0
1268.000	2.44	25.58	35.15	47.12	39.99	34.01	74.00	0	0
1335.000	2.53	25.82	35.07	49.55	42.83	31.17	74.00	0	0
1402.000	2.61	26.07	34.95	46.01	39.75	34.25	74.00	0	0
1469.000	2.70	26.31	34.87	47.03	41.18	32.82	74.00	0	0

Remarks:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + Antenna Factor + Cable loss

RADIATED EMISSION DATA

Date of Test : May 02, 2000 EUT : Microflex Mini Desk Top PC
 Test Mode : Mode 1 Test Site : No.1 Open Test Site

Freq.	Cable	Probe	PreAMP	Reading	Measurement	Margin	Limit	Ant	Turn
	Loss	Factor		Level	Vertical				
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	cm	deg
*1001.000	2.08	24.60	35.60	58.99	50.07	23.93	74.00	0	0
1068.000	2.17	24.84	35.48	51.77	43.31	30.69	74.00	0	0
1135.000	2.26	25.09	35.40	50.01	41.96	32.04	74.00	0	0
1202.000	2.35	25.33	35.27	51.69	44.10	29.90	74.00	0	0
1268.000	2.44	25.58	35.15	52.26	45.13	28.87	74.00	0	0
1335.000	2.53	25.82	35.07	53.89	47.17	26.83	74.00	0	0
1402.000	2.61	26.07	34.95	47.41	41.15	32.85	74.00	0	0
1469.000	2.70	26.31	34.87	49.55	43.70	30.30	74.00	0	0

Remarks:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + Antenna Factor + Cable loss