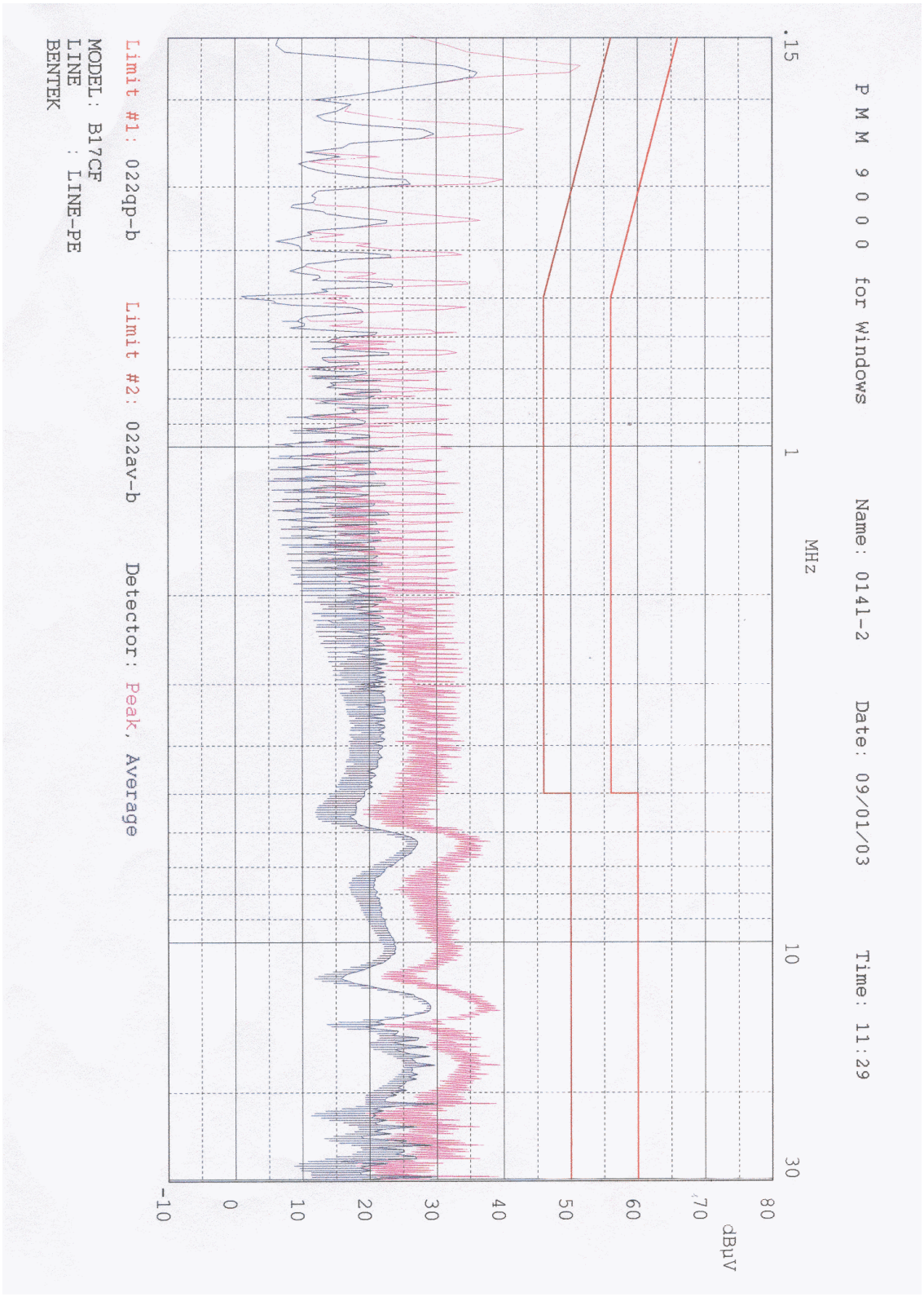
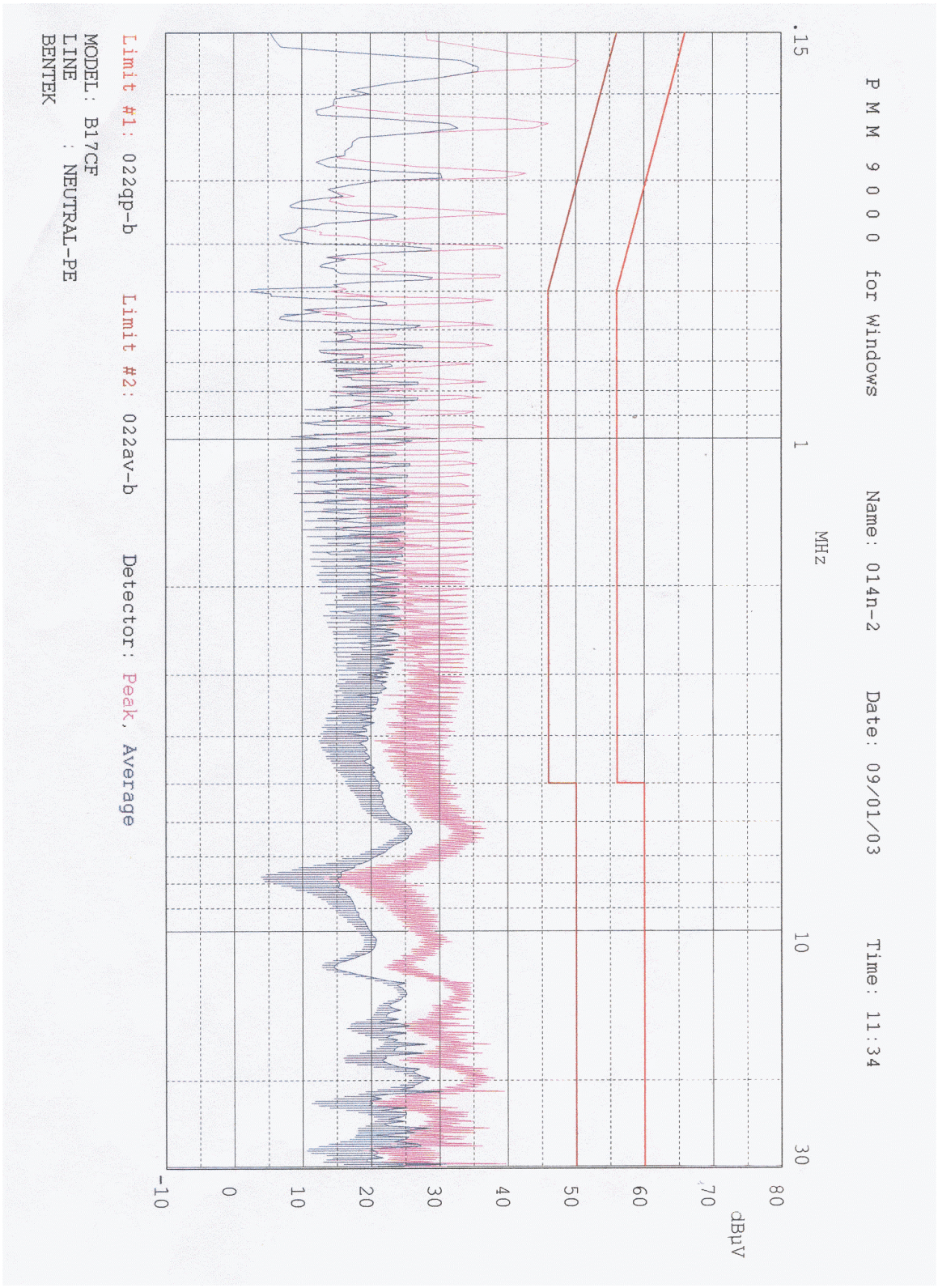
# *PLOTS OF EMISSIONS*

- ***Conducted Emission at the Mains port(Line, AL1724BA)***



# *PLOTS OF EMISSIONS*

- ***Conducted Emission at the Mains port(Neutral, AL1724BA )***



# *SAMPLE CALCULATIONS*

$$dB\ \mu N = 20 \log_{10}(\mu N/m)$$

$$\mu N = 10^{(dB\ \mu N/20)}$$

**EX. 1.**

@20.3 MHz Class B limit = 250 $\mu N$ = 48.0 dB $\mu N$

Reading = 40.8 dB $\mu N$ (calibrated level)
$10^{(40.8/20)}$ = 109.64 $\mu N$
Margin = 48.0 - 40.8 = 7.2
**7.2 dB below limit**

**EX. 2.**

@57.7 MHz Class B limit = 100 $\mu N$/m = 40.0 dB $\mu N$/m

Reading = 19.1 dB $\mu N$(calibrated level)
Antenna factor + Cable Loss = 10.12 dB
Total = 29.22 dB $\mu N$/m
Margin = 40.0 - 29.22 = 10.78
**10.78 dB below the limit**

# *ACCURACY OF MEASUREMENT*

The Measurement Uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 with the confidence level of 95%

### *1. Radiation Uncertainty Calculation*

| *Contribution* | *Probability Distribution* | *Uncertainty(+/-dB)* |
|---|---|---|
| Antenna Factor | Normal (k=2) | ± 0.5 |
| Cable Loss | Normal (k=2) | ± 0.04 |
| Receiver Specification | Rectangular | ± 2.0 |
| Antenna directivity | Rectangular | ± 1.0 |
| Antenna Factor variation with Height | | |
| Antenna Phase Center Variation | | |
| Antenna Factor Frequency Interpolation | | |
| Measurement Distance Variation | | |
| Site Inperfections | Rectangular | ± 2.0 |
| Mismatch:Receiver VRC ri=0.3<br>Antenna VRC rR=0.1(Bi)0.4(Lp)<br>Uncertainty Limits 20Log(1+/-ri rR) | U-Shaped | + 0.25 / - 0.26 |
| System Repeatibilty | Std.deviation | ± 0.05 |
| Repeatability of EUT | - | - |
| Combined Standard Uncertainty | Normal | ± 1.77 |
| Expended Uncertainty U | Normal (k=2) | ± 3.5 |

### *2. Conducted Uncertainty Calculation*

| *Contribution* | *Probability Distribution* | *Uncertainty(+/-dB)* |
|---|---|---|
| Receiver Specification | Normal (k=2) | ± 2.0 |
| LISN coupling spec. | Normal (k=2) | ± 0.4 |
| Cable and input attenuator cal. | Rectangular | ± 0.4 |
| Mismatch:Receiver VRC ri=0.3<br>LISN vrc rg=0.1<br>Uncertainty Limits 20Log(1+/-ri rR) | U-Shaped | ± 0.26 |
| System Repeatibilty | Std.deviation | ± 0.68 |
| Repeatability of EUT | - | - |
| Combined Standard Uncertainty | Normal | ± 1.18 |
| Expended Uncertainty U | Normal (k=2) | ± 2.4 |

# *TEST EQUIPMENT*

| No. | Instrument | Manufacturer | Model | Calibration Date |
|---|---|---|---|---|
| | | | | |
| 1 | *Test Receiver | R & S | ESCS 30 | 2002.02 |
| 2 | *Test Receiver | PMM | PMM9000 | 2002.06 |
| 3 | *Amplifier | HP | 8447F | 2002.09 |
| 4 | *Amplifier | Agilent | 8447F | 2002.07 |
| 5 | *Spectrum Analyzer | Advantest | R3265A | 2002.03 |
| 6 | *Logbicon Super Antenna | Schwarzbeck | VULB9166 | 2002.05 |
| 7 | Log-Periodic Antenna | R & S | HL025 | 2002.01 |
| 8 | Dipole Antenna | R & S | VHA9103 | 2002.05 |
| 9 | Dipole Antenna | R & S | UHA9105 | 2002.05 |
| 11 | Biconical Log Antenna | ARA | LPB-2520/A | 2002.01 |
| 12 | Asorbing Clamp | R & S | MDS21 | 2002.03 |
| 13 | High Voltage Probe | R & S | ESH2-Z3 | 2002.09 |
| 14 | Signal Generater | R & S | SMP02 | 2002.12 |
| 15 | Matching Pad | R & S | RAM358.5414.02 | 2002.05 |
| 16 | *LISN | R & S | ESH3-Z5 | 2002.10 |
| 17 | *LISN | Kyoritsu | KNW-407 | 2002.04 |
| 18 | LISN | Kyoritsu | KNW-408 | 2002.04 |
| 19 | *Position Controller | EM Eng. | N/A | N/A |
| 20 | *Turn Table | EM Eng. | N/A | N/A |
| 21 | *Antenna Mast | EM Eng. | N/A | N/A |
| 22 | *Anechoic Chamber | EM Eng. | N/A | N/A |
| 23 | *Shielded Room | EM Eng. | N/A | N/A |

***) Test equipment used during the test**

# *RECOMMENDATION/CONCLUSION*

The data collected shows that the **Hansol Electronics Inc.**
FCC ID : **MSAB17CF, LCD Monitor.** complies with § 15.107 ,15.109 of the FCC Rules.
The highest emission observed was at **0.24 MHz** for conducted emissions with a margin of **12.4 dB,** at **975.30 MHz** for radiated emissions with a margin of **4.0 dB.**

# *APPENDIX A – SAMPLE LABEL*

## Labelling Requirements

The sample label shown shall be *permanently affixed* at a conspicuous location on the device and be readily visible to the user at the time of purchase.


- **FCC ID Location of EUT**

# *APPENDIX B – CIRCUIT DIAGRAM*

# *APPENDIX E – USER'S MANUAL*

# *APPENDIX F – SCHEMATIC DIAGRAM*