FCC DoC TEST REPORT

According to

FCC Part 15  Subpart B

Test Item : Chipi

Model No. : UC232R

Responsible Party : FUTURE TECHNOLOGY DEVICES INTERNATIONAL LTD.

Address : 373 SCOTLAND ST., GLASGOW G58QB SCOTLAND U.K.

Test Engineer : MICK CHOU

Test Date : SEP. 12, 2005

Issued Date : SEP. 26, 2005

NVLAP Signature : M. Y. Tsui / President

- The test report shall not be reproduced except in full, without the written approval of the laboratory.
- The report must not be used by the client to claim product endorsement by NVLAP or any agency of the United States government.
- This report is only for item test which described in page 5.
- The testing result in this report are traceable to national and international standard.
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1. Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under EUT Docket 95-19 Declaration of Conformity (DoC).

Responsible Party*: FUTURE TECHNOLOGY DEVICES INTERNATIONAL LTD.
Address: 373 SCOTLAND ST., GLASGOW G58QB SCOTLAND U.K.
Contact Person: REX CHENG / F.A.E
Phone No.: 886-2-87913570 Fax No.: 886-2-87913576

✧ Regulation: FCC Part 15 & Part 2; Docket 95-19
✧ Limitation: CISPR 22 CLASS B
✧ Test Procedure: ANSI C63.4(2001)
✧ Test Item: Chipi
✧ Model No.: UC232R
✧ Serial No.: N/A
✧ Place of Test: PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih, Taipei Hsien, Taiwan, R. O. C.
TEL : 886-2-26922097 FAX : 886-2-26956236

Measurement Uncertainty:
The uncertainty of the testing result is given as below. The method of uncertainty Calculation is provided in PEP Testing Lab document No. QP-T-28-B & QP-T-27-B

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>0.15 ~ 30</th>
<th>30 ~ 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded Uncertainty $\mu_c$</td>
<td>1.4 (dB)</td>
<td>2.84 (dB)</td>
</tr>
</tbody>
</table>

※ 95% Confidence Level; K=2
2. Product Information

a. EUT Name: Chipi
b. Model No.: UC232R
c. CPU Type: N/A
d. CPU Frequency: N/A
e. Crystal/Oscillator(s): N/A
f. Chassis Used: N/A
g. Port/Connector(s): USB Connector × 1, RS-232 Connector × 1
h. Power Rating: DC 5V ~~~~~~~~ from PC
i. Condition of the EUT: [ ] Prototype Sample [ ] Engineering Sample [ ] Production Sample
j. Test Item Receipt Date: SEP. 12, 2005
k. Date(s) of performance of test: SEP. 12, 2005 – SEP. 26, 2005
3. EUT Description and Test Conclusion

The equipment under test (EUT) is Chipi model UC232R. The EUT is data cable designed for the application of communicating USB and RS232 interface devices. 5Vdc via USB interface is required to operate EUT. For more detail specification about the EUT, please refer to the user’s manual.

Test method: According to the major function designed, the EUT configuration was set up by the following steps for test:
(A) Connect EUT RS232 connector to modem.
(B) Connect EUT USB connector to PC USB port.
All corresponding peripherals to PC I/O ports and EUT were set to proceed with test. The test was carried out on EUT operational condition and the worst-case test result was recorded and provided in this report.

Conducted emission test:
The system was setup with the EMI diagnostic software running. The power line conducted EMI tests were run on the line and neutral conductors of the power cord and the results were recorded. The effect of varying the position of the interface cables has been investigated to find the worst-case configuration that produces maximum emission. At the frequencies where the peak values of the emission exceeded the quasi-peak limit, the emissions were also measured with the quasi-peak detectors. The average detector also measured the emission either (A) quasi-peak values were under quasi-peak limit but exceeded average limit, or (B) peak values were under quasi-peak limit but exceeded average limit.

Radiated emission test:
The maximum readings were found by varying the height of antenna and then rotating the turntable. Both polarization of antenna, horizontal and vertical, are measured. The effect of varying the position of the interface cables has been investigated to find the configuration that produces maximum emission. The highest emissions were also analyzed in details by operating the spectrum analyzer in fixed tuned quasi-peak mode to determine the precise amplitude of the emissions.
4. Modification(s):

N/A

5. Test Software Used

(A) WinEMC TEST program that continuously generates a complete line of repeating “H” letter was the software used during test.
6. Support Equipment Used

1. Personal Computer
   - CPU: Intel P4 LGA 775 3.0 GHz
   - FCC ID: Declaration of Conformity (DoC)
   - Manufacturer: MSI
   - Model Number: MS-6728
   - Power Supply: Switching
   - Power Cord: N/A
   - Data Cable: N/A

2. Keyboard (KBS1 PS/2)
   - FCC ID: E5XKB5121WTH0110
   - Manufacturer: BTC
   - Model Number: 5121W
   - Power Supply: +5Vdc from PS2 of PC
   - Power Cord: N/A
   - Data Cable: 1 > Shielded, Non-detachable, 1.6m
     2 > Back Shell: Metal

3. Monitor (MON1 15")
   - FCC ID: Declaration of Conformity (DoC)
   - Manufacturer: SAMSUNG
   - Model Number: 550S
   - Power Supply: Switching
   - Power Cord: Non-Shielded, Detachable, 1.8m
   - Data Cable: 1 > Shielded, Non-detachable, 1.5m
     2 > Back Shell: Metal

4. Printer (PRN1)
   - FCC ID: Declaration of Conformity (DoC)
   - Manufacturer: Hewlett-Packard
   - Model Number: C2642E
   - Power Supply: Linear, 30Vdc O/P
   - Power Cable: Non-Shielded, Detachable, 1.7m
   - Data Cable: 1 > Shielded, Detachable, 1m
     2 > Back Shell: Metal
5. Modem (MOD1) x 2

<table>
<thead>
<tr>
<th>FCC ID</th>
<th>IFAXDM1414</th>
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<tr>
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<td>ACEEX</td>
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<tr>
<td>Model Number</td>
<td>1414</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Linear, 9Vac O/P</td>
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<tr>
<td>Power Cable</td>
<td>Non-Shielded, Detachable, 1.7m</td>
</tr>
<tr>
<td>Data Cable 1</td>
<td>Shielded, Detachable, 1m</td>
</tr>
<tr>
<td>Data Cable 2</td>
<td>Back Shell: Metal</td>
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</tbody>
</table>

6. Mouse (MOUS/1 PS/2)

<table>
<thead>
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<th>FCC ID</th>
<th>DZL211106</th>
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<td>Manufacturer</td>
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<td>Model Number</td>
<td>M-S42</td>
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<tr>
<td>Power Supply</td>
<td>+5Vdc from PS2 of PC</td>
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<tr>
<td>Power Cord</td>
<td>N/A</td>
</tr>
<tr>
<td>Data Cable 1</td>
<td>Shielded, Non-detachable, 1.8m</td>
</tr>
<tr>
<td>Data Cable 2</td>
<td>Back Shell: Metal</td>
</tr>
</tbody>
</table>
7. Description of Conducted Emissions Test

7.1 Conducted Emissions

A 1m x1.5m wooden table 80 cm high is placed 40cm away from the vertical wall. Two AMN are bonded to the grounding plane. The EUT is powered from the designated AMN and the support equipment is powered from another designated AMN. Powers to the AMN are filtered by a high-current high insertion loss power line filters. All electrical cables are shielded by braided tinned copper zipper tubing with inner diameter of 1/2”. All interconnecting cables more than 1 meter were shortened by non-inductive bundling (serpentine fashion) to a 1-meter length.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the AMN was connected to the spectrum analyzer to determine the frequency producing the maximum EME from the EUT.

The spectrum was scanned from 150kHz to 30 MHz with1.5 sec sweep time. The frequency producing the maximum level was re-examined using Quasi-Peak adapter. The detector function was set to CISPR quasi-peak mode. The bandwidth of the receiver was set to 10kHz. The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each EME emission. Each emission was maximized by: switching power lines; varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and/or support equipment, and powering the monitor from the floor mounted outlet box and the computer aux AC outlet, if applicable; whichever determined the worst-case emission.

7.2 Conducted Emissions Limits

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Maximum RF Line Voltage dB(uV)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class A</td>
</tr>
<tr>
<td>MHz</td>
<td>QUASI-PEAK</td>
</tr>
<tr>
<td>0.15 - 0.50</td>
<td>79</td>
</tr>
<tr>
<td>0.50 - 5.0</td>
<td>73</td>
</tr>
<tr>
<td>5.0 - 30</td>
<td>73</td>
</tr>
</tbody>
</table>

Remarks: In the above table, the tighter limit applies at the band edges.
8. Description of Radiated Emissions Test

8.1 Radiated Emissions

Preliminary measurements were made indoors chamber at 3 meter using broadband antennas, broadband amplifier, and spectrum analyzer to determine the frequency producing the maximum EME. Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 to 1000 MHz using logbicon antenna. Above 1GHz, linearly polarized double ridge horn antenna was used.

Final measurements were made outdoors at 10-meter test range using logbicon antenna and horn antenna. The test equipment was placed on a wooden bench situated on a 1.5x1 meter area adjacent to the measurement area. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined and investigated using Quasi-Peak Adapter. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120kHz.

The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and/or support equipment, and powering the monitor from the floor mounted outlet box and the computer aux AC outlet, if applicable; and changing the polarity of the antenna, whichever determined the worst-case emission. Photographs of the worst-case emission can be seen in radiated emission test photo.
8.2 Test Configuration

LEGEND
1. Interconnecting cables which hang closer than 40 cm to the ground plane shall be folded back and forth forming a bundle 30 to 40 cm long, hanging approximately in the middle between ground plane and table.
2. I/O cables which are connected to a peripheral shall be bundled in center. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.
3. If LISN are kept in the test setup for radiated emissions, it is preferred that they be installed under the ground if required receptacle flush with the ground plane.
4. Cables of hand-operated devices, such as keyboards, KEYPADs, etc., have to be placed as close as possible to the controller.
5. Non-EUT components of EUT system being tested.
6. The rear of all components of the system under test shall be located flush with the rear of the table.
7. No vertical conducting wall used.
8. Power cords drape to the floor and are routed over to receptacle.
### 8.3 Radiated Emission Limits

Limits for radiated disturbance of Class A ITE at a measuring distance of 10 m

<table>
<thead>
<tr>
<th>Frequency MHz</th>
<th>Field Strength dB(μ V/m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 to 230</td>
<td>40</td>
</tr>
<tr>
<td>230 to 1000</td>
<td>47</td>
</tr>
</tbody>
</table>

NOTES
1. The lower limit shall apply at the transition frequency.
2. Additional provisions may be required for cases where interference occurs.

Limits for radiated disturbance of Class B ITE at a measuring distance of 10 m

<table>
<thead>
<tr>
<th>Frequency MHz</th>
<th>Field Strength dB(μ V/m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 to 230</td>
<td>30</td>
</tr>
<tr>
<td>230 to 1000</td>
<td>37</td>
</tr>
</tbody>
</table>

NOTES
1. The lower limit shall apply at the transition frequency.
2. Additional provisions may be required for cases where interference occurs.
9. Conducted Emissions Test Setup Photo

< FRONT VIEW >

< REAR VIEW >
10. Conducted Emissions Test Data

Model No. : UC232R
Frequency range : 150KHz to 30MHz
Detector : Peak Value
Temperature : 28 °C
Humidity : 58 %

Test Data:

| # 1050 | <LINE> |
| # 1055 | <NEUTRAL> |

Note:
1. Level = Read Level + Probe (LISN) Factor + Cable Loss
2. Over Limit = Level – Limit Line = Margin
**PEP Testing Laboratory**

**Site:** Conduction No.2 (Mick) - Linko site

**Condition:** EN55022-B(QP) LISN.L(32A) LINE

**Type:** E940598

**Power:** AC 120V 60Hz

**Memo:** Peak Value

---

<table>
<thead>
<tr>
<th>Freq (MHz)</th>
<th>Level (dBUV)</th>
<th>Over Limit (dB)</th>
<th>Limit Line (dBUV)</th>
<th>Read Level (dBUV)</th>
<th>Probe Factor (dB)</th>
<th>Cable Loss (dB)</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.160</td>
<td>48.16</td>
<td>-17.31</td>
<td>65.47</td>
<td>47.94</td>
<td>0.20</td>
<td>0.02</td>
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<tr>
<td>0.194</td>
<td>49.95</td>
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<td>63.84</td>
<td>49.69</td>
<td>0.20</td>
<td>0.06</td>
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<tr>
<td>0.226</td>
<td>47.22</td>
<td>-15.39</td>
<td>62.61</td>
<td>46.93</td>
<td>0.20</td>
<td>0.09</td>
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<td>56.00</td>
<td>36.40</td>
<td>0.20</td>
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<tr>
<td>1.569</td>
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<td>56.00</td>
<td>30.96</td>
<td>0.20</td>
<td>0.29</td>
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<td>9.502</td>
<td>38.12</td>
<td>-21.88</td>
<td>60.00</td>
<td>37.29</td>
<td>0.29</td>
<td>0.54</td>
<td></td>
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<tr>
<td>16.140</td>
<td>38.20</td>
<td>-21.80</td>
<td>60.00</td>
<td>36.82</td>
<td>0.67</td>
<td>0.71</td>
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<tr>
<td>18.039</td>
<td>41.37</td>
<td>-18.63</td>
<td>60.00</td>
<td>39.84</td>
<td>0.79</td>
<td>0.74</td>
<td></td>
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<tr>
<td>22.655</td>
<td>36.72</td>
<td>-23.28</td>
<td>60.00</td>
<td>34.91</td>
<td>1.01</td>
<td>0.80</td>
<td></td>
</tr>
</tbody>
</table>
### Data
- **File #:** EN55022-B(QP).emi
- **Date:** 2005-09-12
- **Time:** 16:48:58

### Graph Details
- **Frequency (MHz):**
- **Level (dBuV):**
- **Trace: 1684**

### Measurement Details
- **Site:** Conduction No.2 (Mick) - Linko site
- **Condition:** EN55022-B(QP) LISN.B(32A) NEUTRAL
- **But:** E940698
- **Power:** AC 120V 60Hz
- **Memo:** Peak Value

### Table
<table>
<thead>
<tr>
<th>Freq (MHz)</th>
<th>Level (dBuV)</th>
<th>Over Limit</th>
<th>Limit Line</th>
<th>Read Level</th>
<th>Probe Factor</th>
<th>Cable Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.193</td>
<td>49.17</td>
<td>-14.72</td>
<td>63.89</td>
<td>49.01</td>
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<td>2</td>
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<td>-17.94</td>
<td>62.66</td>
<td>44.53</td>
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<td>36.03</td>
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<td>56.00</td>
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<td>7</td>
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<td>60.00</td>
<td>35.47</td>
<td>0.15</td>
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<td>8</td>
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<td>36.87</td>
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<td>60.00</td>
<td>36.23</td>
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<td>16.140</td>
<td>37.09</td>
<td>-22.91</td>
<td>60.00</td>
<td>36.03</td>
<td>0.35</td>
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<tr>
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<td>35.87</td>
<td>-24.13</td>
<td>60.00</td>
<td>34.46</td>
<td>0.61</td>
</tr>
</tbody>
</table>
11. Radiated Emissions Test Setup Photos

< FRONT VIEW >

< REAR VIEW >
12. Radiated Emissions Test Data

Model No. : UC232R  
Frequency range : 30MHz to 1GHz  
Detector : Quasi-Peak Value  
Temperature : 33°C  
Humidity : 61%  

Antenna polarization : HORIZONTAL ;  
Test distance : 10m ;  

<table>
<thead>
<tr>
<th>Freq. (MHz)</th>
<th>Level (dBuV/m)</th>
<th>Limit (dB)</th>
<th>Read Level (dBuV)</th>
<th>Antenna Factor (dB)</th>
<th>Cable Loss (dB)</th>
<th>Preamp Level Factor (dBuV)</th>
<th>Azimuth</th>
<th>Antenna High(m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>110.780</td>
<td>21.99</td>
<td>-8.01</td>
<td>30.00</td>
<td>29.62</td>
<td>11.86</td>
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<td>-9.58</td>
<td>30.00</td>
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<td>170.311</td>
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<td>30.00</td>
<td>27.73</td>
<td>13.85</td>
<td>1.17</td>
<td>20.30</td>
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<td>13.30</td>
<td>1.79</td>
<td>20.19</td>
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</table>

Note :

1.  Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor  
2.  Over Limit = Level – Limit Line
Model No. : UC232R  
Frequency range : 30MHz to 1GHz  
Detector : Quasi-Peak Value  
Temperature : 33°C  
Humidity : 61%  

Antenna polarization : VERTICAL ;  
Test distance : 10m ;

<table>
<thead>
<tr>
<th>Freq. (MHz)</th>
<th>Level (dBuV/m)</th>
<th>Limit (dB)</th>
<th>Read Level (dBuV)</th>
<th>Antenna Factor (dB)</th>
<th>Cable Loss Factor (dB)</th>
<th>Azimuth Angle</th>
<th>Antenna High (m)</th>
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<td>110.744</td>
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<td>30.00</td>
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Note :
1. Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
### 13. List of Measured Instruments

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14. Duties of The Responsible Party

The responsible party upon signing or accepting the Declaration of Conformity as specified in Section 2.906 of the FCC Rules hereby agrees to the duties listed below:

§2.1073(a).
The responsible party warrants that each unit of equipment marketed under DoC is identical to the unit tested and found acceptable with the standards and that the records maintained by the responsible party continue to reflect the equipment being produced is within the variation that can be expected due to quantity production and testing on a statistical basis.

§2.1073(b).
The responsible party must have a written statement from the manufacturer or accredited test laboratory that the equipment complies with the appropriate technical standards.

§2.1073(c).
In case of transfer of control of equipment, as in the case of sale or merger, the new responsible party shall bear the responsibility of continued compliance of the equipment.

§2.1073(d).
Equipment shall be retested if any modifications or changes are made that could adversely affect the emanation characteristics of the equipment.

§2.1073(e).
If any modifications or changes made by anyone other than the responsible party, the party making the modifications of changes, if located within the U.S., becomes the new responsible part. The new responsible party must comply with all provisions for the DoC, including having test data on file demonstrating that the product continues to comply with all of the applicable technical standards.

§2.1075(a)(1).
The responsible party shall maintain records of the original design drawings and specifications and all changes made to the product that may affect compliance.

§2.1075(a)(2).
The responsible party shall maintain records of the procedures used for production inspection and testing to insure the conformance with the FCC Rules.

§2.946(a)(1).
The test report data shall be provided to the FCC within 14 days of delivery of request. The test sample(s) shall be provided within 60 days of delivery of request.

§2.946(b)
In case involving harmful interference or safety of life or property, the production sample must be provided within 60 days, but not less than 14 days. Failure to comply with such a request with the time frame shown may be cause for forfeiture, pursuant to Section 1.80 of Part 1 of the FCC Rules.

*The Responsible Party is the manufacturer, system integrator, or the importer as defined in Section 2.909 of the FCC Rules. The Responsible Party for a DoC must be located within the United States as specified in Section 2.1077.
15. Labelling Requirements

The sample label shown below shall be permanently affixed at a conspicuous location on the device, instructions manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practicable, only the trade name, model number, and the FCC logo must be displayed on the device per Section §15.19 (b)(1)(i).

![Sample Label]

- Trade Name
- Model Number
16. Information To The User

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.
17. EUT Photographs

Model No. : UC232R
DECLARATION OF CONFORMITY CERTIFICATE

Responsible Party : FUTURE TECHNOLOGY DEVICES INTERNATIONAL LTD.
Address : 373 SCOTLAND ST.,GLASGOW G58QB SCOTLAND U.K.
Contact Person : REX  CHENG / F.A.E
Equipment : Chipi
Model No. : UC232R
Traceability: FCC Part 15 & Part 2; Docket 95-19
Limitation: CISPR 22 CLASS B
Date of issued: SEP. 26, 2005
Report No. : E940698

The device bearing the trade name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2001. (See Test Report if any modifications were made for compliance.)

PEP certifies that no party to this application has been denied the NVLAP benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

M. Y. Tsui/NVLAP Signatory

NVLAP LAB CODE: 200097-0
DECLARATION OF CONFORMITY

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party: FUTURE TECHNOLOGY DEVICES INTERNATIONAL LTD.
Address: 373 SCOTLAND ST., GLASGOW G58QB SCOTLAND U.K.
Contact Person: REX CHENG / F.A.E
Phone No.: 886-2-87913570 Fax No.: 886-2-87913576

Equipment: Chipi
Model No.: UC232R

We hereby declare that the equipment bearing the trade name and model number specified above was tested conforming to the applicable FCC Rules under the most accurate measurement standards possible, and that all the necessary steps have been taken and are in force to assure that production units of the same equipment will continue to comply with the Commission’s requirements.

Signature
Date