FCC TEST REPORT
FOR

APPLICANT : QNAP SYSTEMS, INC
ADDRESS : 21F, No. 77, Sec. 1, Xintai 5th Rd,
Xizhi City, Taipei County, 221 Taiwan

EUT : Network Attached Storage
TS-109 Pro III, TS-109 III

MEASUREMENT PROCEDURE USED

FCC RULES AND CISPR 22-1997 AND FCC / ANSI C63.4-2003

PREPARED BY :
HomeTek Technology Inc.
No. 67-9, Shir Men Road, Tu Cheng City,
Taipei Hsien. Taiwan
Report # : FD7E001
CERTIFICATION
for
FCC Part 15, Subpart B Class B

APPLICANT : QNAP SYSTEMS, INC
ADDRESS : 21F, No. 77, Sec. 1, Xintai 5th Rd,
Xizhi City, Taipei County, 221 Taiwan
Receipt Date : 05/15/2007
EUT : Network Attached Storage
Pro III, TS-109 III

MEASUREMENT PROCEDURE USED :
PART 15 SUBPART B FCC RULES AND CISPR 22-1997
AND FCC / ANSI C63.4-2003
TEST PROCEDURE AND DATA ARE TRACEABLE TO NIST/USA,
TL or NML/TAIWAN.

- THE MAXIMUM EMISSION LEVELS WERE COMPARED TO THE CISPR 22 CLASS B LIMITS
  BOTH RADIATED AND CONDUCTED EMISSION.
- THE ABOVE DEVICE WAS TESTED BY HOMETEK TECHNOLOGY INC. TO SHOWS THE
  MAXIMUM EMISSION LEVEL FROM THE DEVICE.
- THIS TEST RESULTS OF THIS REPORT APPLIES TO ABOVE TESTED SAMPLE ONLY.
- THIS TEST REPORT SHALL NOT BE REPRODUCE IN PART WITHOUT WRITTEN
  APPROVAL OF HOMETEK TECHNOLOGY INC.
- THE REPORT MUST NOT BE USED BY THE CLIENT TO CLAIM PRODUCT ENDORSEMENT
  BY NVLAP, NIST OR ANY AGENCY OF THE U. S. GOVERNMENT.
- THE TEST RESULTS ARE TRACEABLE TO THE NATIONAL OR INTERNATIONAL
  STANDARD.

The new series model no. for OEM manufacturer
APPROVED BY : 5/13/2008
ALAIN LIN / Supervisor
GENERAL INFORMATION

1 APPLICANT : QNAP SYSTEMS, INC
2 ADDRESS : 21F, No. 77, Sec. 1, Xintai 5th Rd,
Xizhi City, Taipei County, 221 Taiwan

3 MANUFACTURER : QNAP SYSTEMS, INC
4 ADDRESS : 21F, No. 77, Sec. 1, Xintai 5th Rd,
Xizhi City, Taipei County, 221 Taiwan

5 DESCRIPTION OF EUT :
EUT : Network Attached Storage
FCC ID : N/A
Model Number : TS-109 Pro, TS-109, VioStor-109, VioStor-109P,
   VioStor-109D, VioStor-109S, VioStor-109PA,
   VioStor-109VA, VioStor-109CA, VioStor-109SA,
   VioStor-109AA, VioStor-109DA, TS-109 Pro II,
Serial # : N/A

5.1 The difference among series of models TS-109 Pro, TS-109, VioStor-109,
   TS-109 III are for different in OEM manufactures. The model TS-109 Pro is worst
   case, and the final test data were shown in this test report.
6 FEATURES OF EUT:

Please refer to user manual or product specification.

7 TEST MODE:

The EUT were investigated with three operation modes shown as below:

(1) 10M-10M Mode;
(2) 100M-100M Mode;
(3) 1G-1G Mode

The test mode of (3) 1G-1G is worst case, and the final test data were shown in this test report.
MODIFICATION LIST

THE FOLLOWING ACCESSORIES WERE ADDED TO THE EUT DURING TESTING:

NO MODIFICATION BY HOMETEK TECHNOLOGY INC.
CONDUCTED POWER LINE TEST

1 TEST INSTRUMENTS & FACILITIES

The following test Instruments was used during the conducted test:

<table>
<thead>
<tr>
<th>Item</th>
<th>Instruments/ Facilities</th>
<th>Specification</th>
<th>Manufacturer/ Model #</th>
<th>Date Of Cal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EMI Receiver</td>
<td>9KHz ~ 30MHz</td>
<td>ROHDE &amp; SCHWARZ/ ESHS 30 844827/007</td>
<td>FEB/2007</td>
</tr>
<tr>
<td>2</td>
<td>LISN (for EUT)</td>
<td>50Ω/50uH/100A 150KHz ~ 30MHz</td>
<td>SCHWARZ BECK/ NNLK 8121 8121370</td>
<td>OCT/2006</td>
</tr>
<tr>
<td>3</td>
<td>LISN (for Support Unit)</td>
<td>50Ω/50uH/10A 9KHz ~ 30MHz</td>
<td>ROHDE &amp; SCHWARZ/ ESH3-Z5 846128/007</td>
<td>MAR/2007</td>
</tr>
<tr>
<td>4</td>
<td>Terminator</td>
<td>50Ω</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>Attenuation</td>
<td>50Ω/10dB</td>
<td>Mini-Circuit/ NAT-10 AT-002</td>
<td>JUL/2006</td>
</tr>
<tr>
<td>6</td>
<td>Cable</td>
<td>5.4m</td>
<td>SUHNER/ RG-223 CON2-002</td>
<td>AUG/2006</td>
</tr>
<tr>
<td>7</td>
<td>ESXS-K1 (software)</td>
<td>Version 2.03b 9KHz ~ 30MHz</td>
<td>ROHDE &amp; SCHWARZ/ 1082.9678.02 840.913/246</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: Items 1 ~ 6 were calibrated within period of 1 year.

2 TEST PROCEDURE

2.1 The EUT was tested according to ANSI C63.4 – 2003 Section 5.2, 7.1, 7.2 & CISPR 22 - 1997 & C18-01-12 (HomeTek test procedure).

2.2 The EUT was placed 0.4 meter from the conducting wall of shielding room and kept at least 0.8 meter from any other grounded conducting surface.

2.3 The frequency range form 0.15 MHz to 30 MHz was investigated.

2.4 The LISN used was 50 Ohm / 50 uHenry as specified by Section 4.1.2 of ANSI C63.4 - 2003.

2.5 All the support peripherals are connect to the other LISN.

2.6 Cables and peripherals were moved to find the maximum emission levels for each frequency.
3 TEST SETUP

3.1 Typical: Setup Of Conducted Test

**ANSI ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE RANGE OF 9kHz TO 40 GHz ANSI C63.4-2003**

+LISNs may have to be moved to the side to meet 3.3 below. (Details for setup configuration, please refer to appendix A.)

**LEGEND:**

1. Interconnecting cables that 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 that 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. EUT connected to one LISN. Unused LISN connectors shall be terminated in 50 $\Omega$. LISN can be placed on top of, or immediately beneath, ground plane.
   3.1 All other equipment powered from second LISN.
   3.2 Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
   3.3 LISN at least 80 cm from nearest part of EUT chassis.

4. Cables of hand-operated devices, such as keyboards, mouses, etc., have to be placed as close as possible to the host.

5. Non-EUT components being tested.

6. Rear of EUT, including peripherals, shall be all aligned and flush with rear of tabletop.

7. Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the floor ground plane (see 5.2).

**Test Configuration**

**Tabletop Equipment Conducted Emission**
3.2  Block Diagram Of Conducted Test

- **EUT**
- **LISN**
- **FILTER**
- **RECEIVER**
- **ISOLATION TRANSFORMER**
- **LOAD (ACTIVE)**

- **PC**
- **Monitor**
- **Printer**
- **Modem**
- **Mouse**
- **Key Board**
- **Mobile Disk x 3**
- **External HDD**
- **Power Adapter**

TO AC SOURCE
4 CONFIGURATION OF THE EUT

The EUT was configured according to ANSI C63.4 - 2003 & CISPR 22 - 1997. All I/O ports were connected to the appropriate peripherals. All peripherals and cables are listed below (including internal device):

4.1 EUT

<table>
<thead>
<tr>
<th>EUT Type</th>
<th>Proto Type</th>
<th>Engineer Type</th>
<th>Mass Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition when received</td>
<td>Good</td>
<td>Damage:</td>
<td></td>
</tr>
<tr>
<td>Device</td>
<td>Network Attached Storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicant</td>
<td>QNAP SYSTEMS, INC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturer</td>
<td>QNAP SYSTEMS, INC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial Number</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCC ID</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB Port x 3</td>
<td>Metal Type Connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RJ-45 Port</td>
<td>Plastics Type Connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e SATA Port</td>
<td>Metal Type Connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Cord (AC)</td>
<td>Un-Shielded, 1.8 m, 3 pin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Cord (DC)</td>
<td>Un-Shielded, 1.8 m, 2 pin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Supply Type</td>
<td>Switching Power Adapter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.2 PERIPHERALS

☑ Host Personal Computer

- Manufacturer: HP/COMPAQ
- Model Number: dc7700CMT
- Serial Number: SGH6510V4B
- FCC ID: FCC DoC
- Data Cable: Un-Shielded, 1.8 m, Connect to the RJ-45 Port
- Power Cord: Un-Shielded, 1.8 m

☑ Monitor

- Manufacturer: SAMSUNG
- Model Number: GH19BS
- Serial Number: GH19H4JW103538B
- FCC ID: FCC DoC
- Data Cable: Shielded, 1.5 m, Connected to the VGA port
- Power Cord: Un-Shielded, 1.8 m

☑ Printer

- Manufacturer: HP
- Model Number: DJ400
- Serial Number: MY7781C1BB
- FCC ID: B94C2642X
- Data Cable: Shielded, 1.5 m, Connected to the Printer port
- Power Cord & Adaptor: Un-Shielded, 1.8 m
Modem

- Manufacturer: ACEEX
- Model Number: 1414
- Serial Number: 9013524
- FCC ID: IFAXDM1414
- Data Cable: Shielded, 1.5 m, Connected to the COM port
- Power Cord & Adaptor: Un-Shielded, 1.8 m

Mouse (PSII)

- Manufacturer: HP
- Model Number: M-S69
- Serial Number: 334684-002
- FCC ID: FCC DoC
- Data Cable: Shielded, 1.8 m, Connected to the PSII port
- Power Cord: N/A

Keyboard (PSII)

- Manufacturer: HP
- Model Number: KB-0133
- Serial Number: 323686-AB1
- FCC ID: FCC DoC
- Data Cable: Shielded, 1.5 m, Connected to the PSII port
- Power Cord: N/A
Mobile Disk x 3
Manufacturer : A DATA
Model Number : PD4 (256M)
Serial Number : N/A
FCC ID : N/A
Data Cable : Connected to the USB port
Power Cord : N/A

External HDD
Manufacturer : RAIDON
Model Number : U6-2S-S2
Serial Number : N/A
FCC ID : N/A
Data Cable : Shielded, 1 m, Connected to the e SATA port
Power Cord : Shielded, 1.8 m

Power Adapter
Manufacturer : DVE
Model Number : DSA-04215-121
Serial Number : N/A
FCC ID : N/A
Data Cable : N/A
Power Cord : Un-Shielded, 1.8 m

Internal Devices
HDD
Manufacturer : WD
Model Number : WD1600AAJS
FCC ID : N/A

REMARK : N/A
5 EUT OPERATING CONDITION

5.1 The crystal frequencies of the EUT are 32.768 KHz, 12 MHz and 25 MHz.

5.2 Configure the EUT according to the ANSI C63.4 - 2003 & CISPR 22 - 1997.

5.3 The test configuration included: PC, monitor, printer, modem, mouse, keyboard, external BOX, external HDD, mobile disk.

5.4 Connect USB external HDD and EUT.

5.5 Connect RJ-45 cable from PC to EUT, and connect necessary peripheral to PC with appropriate cables.

5.6 Turn on all the power of EUT and peripheral.

5.7 Execute read-write program at PC under windows to exercise the EUT via RJ-45 cable.

5.8 Measure the maximum emission noise.

5.9 The photos of conducted test configuration, please refer to appendix A.

6 LIMIT OF CONDUCTED POWER LINE EMISSION CLASS B

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Quasi Peak</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.15 ~ 0.5 MHz</td>
<td>66 - 56 dBuV</td>
<td>56 - 46 dBuV</td>
</tr>
<tr>
<td>0.5 ~ 5 MHz</td>
<td>56 dBuV</td>
<td>46 dBuV</td>
</tr>
<tr>
<td>5 ~ 30 MHz</td>
<td>60 dBuV</td>
<td>50 dBuV</td>
</tr>
</tbody>
</table>

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

7 RESULT OF CONDUCTED POWER LINE TEST

7.1 The frequency range from 0.15 MHz to 30 MHz was investigated. All readings are quasi-peak values and average.

7.2 IF bandwidth : 9 kHz, Meas Time : 1 sec.

7.3 Temperature : 25 °C, Humidity : 61 % RH.

7.4 Deviations from the test standards and rules : None

7.5 The conducted test result were gained by following procedures :
Level = Reading Level + Insertion Loss of LISN + Cable Loss
(All calculation were done by ESHS30 EMI test receiver.)

7.6 Result : PASSED
8 CONDUCTED POWER LINE TEST DATA (PAGE 1)
HomeTek EMC LAB. TEL: 886-2-22608375

CONDUCTED EMISSIONS

EUT: Network Attached Storage
Manuf: GIEO33
Op Cond: LINE 1
Operator: LIAO
Test Spec: FOR CISPR22 CLASS B
Comment: 110W/96Hz
TS-106 Prot(Gbps>1Gbps)
Result File: 6e0533b.dat : TS-106 Prot(Gbps>1Gbps)

Prescan Measurement:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>PK Level</th>
<th>PK Limit</th>
<th>PK Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHz</td>
<td>dBiV</td>
<td>dBiV</td>
<td>dB</td>
</tr>
<tr>
<td>0.18</td>
<td>38.60</td>
<td>64.49</td>
<td>26.40</td>
</tr>
<tr>
<td>0.205</td>
<td>30.10</td>
<td>60.38</td>
<td>30.28</td>
</tr>
<tr>
<td>0.355</td>
<td>20.60</td>
<td>58.84</td>
<td>38.24</td>
</tr>
<tr>
<td>0.525</td>
<td>33.78</td>
<td>56.00</td>
<td>22.22</td>
</tr>
<tr>
<td>0.65</td>
<td>26.38</td>
<td>56.00</td>
<td>29.62</td>
</tr>
<tr>
<td>0.80</td>
<td>18.83</td>
<td>56.00</td>
<td>37.17</td>
</tr>
<tr>
<td>1.6</td>
<td>17.68</td>
<td>56.00</td>
<td>38.02</td>
</tr>
<tr>
<td>1.72</td>
<td>16.69</td>
<td>56.00</td>
<td>39.11</td>
</tr>
<tr>
<td>3.26</td>
<td>10.58</td>
<td>56.00</td>
<td>36.42</td>
</tr>
<tr>
<td>4.12</td>
<td>32.61</td>
<td>56.00</td>
<td>23.40</td>
</tr>
<tr>
<td>5.1</td>
<td>10.96</td>
<td>60.00</td>
<td>43.04</td>
</tr>
<tr>
<td>7.83</td>
<td>19.17</td>
<td>60.00</td>
<td>40.83</td>
</tr>
<tr>
<td>11.02</td>
<td>20.71</td>
<td>60.00</td>
<td>39.29</td>
</tr>
<tr>
<td>16.01</td>
<td>27.34</td>
<td>60.00</td>
<td>32.66</td>
</tr>
<tr>
<td>21.16</td>
<td>34.01</td>
<td>60.00</td>
<td>25.99</td>
</tr>
<tr>
<td>25.92</td>
<td>32.29</td>
<td>60.00</td>
<td>27.74</td>
</tr>
</tbody>
</table>

Peak Search Results:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>AV Level</th>
<th>AV Limit</th>
<th>AV Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHz</td>
<td>dBiV</td>
<td>dBiV</td>
<td>dB</td>
</tr>
<tr>
<td>0.18</td>
<td>23.44</td>
<td>54.49</td>
<td>31.05</td>
</tr>
<tr>
<td>0.265</td>
<td>28.62</td>
<td>50.36</td>
<td>23.66</td>
</tr>
<tr>
<td>0.355</td>
<td>25.52</td>
<td>46.84</td>
<td>22.32</td>
</tr>
<tr>
<td>0.475</td>
<td>30.58</td>
<td>48.45</td>
<td>17.87</td>
</tr>
<tr>
<td>0.65</td>
<td>22.42</td>
<td>46.00</td>
<td>23.58</td>
</tr>
<tr>
<td>0.80</td>
<td>11.69</td>
<td>46.00</td>
<td>34.31</td>
</tr>
<tr>
<td>1.0</td>
<td>9.46</td>
<td>45.00</td>
<td>35.54</td>
</tr>
<tr>
<td>1.78</td>
<td>6.63</td>
<td>46.00</td>
<td>39.37</td>
</tr>
<tr>
<td>3.26</td>
<td>12.22</td>
<td>46.00</td>
<td>33.78</td>
</tr>
<tr>
<td>4.37</td>
<td>12.55</td>
<td>46.00</td>
<td>33.45</td>
</tr>
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<td>8.98</td>
<td>50.00</td>
<td>41.02</td>
</tr>
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<td>7.83</td>
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<td>50.00</td>
<td>38.81</td>
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<td>11.92</td>
<td>13.43</td>
<td>50.00</td>
<td>36.57</td>
</tr>
<tr>
<td>16.19</td>
<td>18.68</td>
<td>50.00</td>
<td>31.32</td>
</tr>
<tr>
<td>21.94</td>
<td>20.36</td>
<td>50.00</td>
<td>29.64</td>
</tr>
<tr>
<td>22.12</td>
<td>20.43</td>
<td>50.00</td>
<td>29.57</td>
</tr>
</tbody>
</table>

* limit exceeded
CONDUCTED EMISSIONS

<table>
<thead>
<tr>
<th>EUT</th>
<th>Network Attached Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manuf.</td>
<td>66033</td>
</tr>
<tr>
<td>Op Cond.</td>
<td>LINE 2</td>
</tr>
<tr>
<td>Operator</td>
<td>LIAO</td>
</tr>
<tr>
<td>Test Spec.</td>
<td>FOR CISPR22 CLASS B</td>
</tr>
<tr>
<td>Comment</td>
<td>110W/8GHz</td>
</tr>
<tr>
<td>Result File</td>
<td>6e53323b.dat : TS-106 Pro(1Gbps+1Gbps)</td>
</tr>
</tbody>
</table>

**Prescan Measurement:**
- Detectors: X PK / + AV
- Meas Time: see scan settings
- Subranges: 16
- Ave Margin: 55 dB

![Graph](image-url)
CONDUCTED POWER LINE TEST DATA (PAGE 4)

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>PK Level (dBrV)</th>
<th>PK Limit (dBrV)</th>
<th>PK Delta (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.176</td>
<td>37.11</td>
<td>84.72</td>
<td>27.61</td>
</tr>
<tr>
<td>0.205</td>
<td>27.61</td>
<td>60.36</td>
<td>32.57</td>
</tr>
<tr>
<td>0.356</td>
<td>30.78</td>
<td>58.84</td>
<td>28.06</td>
</tr>
<tr>
<td>0.525</td>
<td>24.77</td>
<td>59.00</td>
<td>21.23</td>
</tr>
<tr>
<td>0.555</td>
<td>26.13</td>
<td>59.00</td>
<td>27.87</td>
</tr>
<tr>
<td>0.80</td>
<td>21.94</td>
<td>59.00</td>
<td>24.06</td>
</tr>
<tr>
<td>1.42</td>
<td>16.14</td>
<td>59.00</td>
<td>36.88</td>
</tr>
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<td>2.37</td>
<td>17.58</td>
<td>59.00</td>
<td>36.42</td>
</tr>
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<td>3.44</td>
<td>20.69</td>
<td>59.00</td>
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<td>3.91</td>
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<td>35.88</td>
</tr>
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<td>42.46</td>
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<td>38.03</td>
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<td>60.00</td>
<td>35.31</td>
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<td>32.68</td>
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<td>27.32</td>
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<td>29.21</td>
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<tr>
<td>22.95</td>
<td>29.11</td>
<td>60.00</td>
<td>30.89</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>AV Level (dBrV)</th>
<th>AV Limit (dBrV)</th>
<th>AV Delta (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.18</td>
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<td>23.60</td>
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<tr>
<td>22.95</td>
<td>21.31</td>
<td>50.00</td>
<td>28.69</td>
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</table>

*limit exceeded*
# RADIATED EMISSION TEST

## 1 TEST INSTRUMENTS & FACILITIES

The following test Instruments was used during the radiated emission test:

<table>
<thead>
<tr>
<th>Item</th>
<th>Instruments /facilities</th>
<th>Specification</th>
<th>Manufacturer</th>
<th>Model # / S/N#</th>
<th>Date of Cal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OPEN AREA TEST SITE</td>
<td>☑️ OATS 3</td>
<td></td>
<td></td>
<td>JUL/2006</td>
</tr>
<tr>
<td>2</td>
<td>EMI TEST RECEIVER</td>
<td>20Hz ~ 26.5GHz</td>
<td>ROHDE &amp; SCHWARZ</td>
<td>ESMI 845442/006</td>
<td>FEB/2007</td>
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<tr>
<td>3</td>
<td>PRE-AMPLIFIER</td>
<td>9KHz ~ 3000MHz</td>
<td>ADVANTEST</td>
<td>BB525C 90081001</td>
<td>OCT/2006</td>
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<tr>
<td>5</td>
<td>Attenuation</td>
<td>50Ω/6dB</td>
<td>JYE BAO</td>
<td>FAT-N (M-F) 001</td>
<td>JUL/2006</td>
</tr>
<tr>
<td>6</td>
<td>Cable</td>
<td>10m</td>
<td>SUHNER</td>
<td>RG214/U OS3-003</td>
<td>DEC/2006</td>
</tr>
<tr>
<td>7</td>
<td>Cable</td>
<td>14m</td>
<td>BELDEN</td>
<td>9913 OS3-001</td>
<td>DEC/2006</td>
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<tr>
<td>8</td>
<td>EMI 32 (software)</td>
<td>N/A</td>
<td>AUDIX</td>
<td>19991013-0923</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: Items 1 ~ 7 were calibrated within period of 1 year.
2 TEST PROCEDURE

2.1 The EUT was tested according to ANSI C63.4 – 2003 Section 5.4, 5.5, 8.1, 8.2, 8.3 & CISPR 22 - 1997 & C18-01-11 (HomeTek test procedure).

2.2 The radiated test was performed at HomeTek Lab’s Open Site III.

2.3 The frequency range from 30 MHz to 2 GHz, the measurement were made at 10 meters, with a BI-log antenna.

3 TEST SETUP

3.1 TEST SETUP OF OPEN SITE.
3.2 TEST SETUP OF EUT

ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE RANGE OF 9kHz TO 40 GHz ANSI C63.4-2003

LEGEND:
1. Interconnecting cables that 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 that 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 1m.
3. If LISNs are kept in the test setup for radiated emissions, it is preferred that they be installed under the ground plane with the receptacle flush with the ground plane.
4. Cables of hand-operated devices, such as keyboards, mice, 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.

(Details for setup configuration, please refer to appendix A.)

Test Configuration

Tabletop Equipment Radiated Emission
4 CONFIGURATION OF THE EUT

Same as “Conducted Power Line test”, section 4

5 EUT OPERATING CONDITION

5.1 Same as “Conducted Power Line test”, section 5

5.2 The radiated emission in the frequency range from 30 MHz - 2000 MHz was
test in a horizontal and vertical polarization at HomeTek Lab’s open site III.

5.3 The photos of radiated test configuration, please refer to appendix A.

6 LIMIT OF RADIATED EMISSION CLASS B

CISPR 22

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Measurement Distance</th>
<th>Limit (dBuV/m)</th>
</tr>
</thead>
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<tr>
<td>30 - 230</td>
<td>10 (M)</td>
<td>30</td>
</tr>
<tr>
<td>230 - 1000</td>
<td>10 (M)</td>
<td>37</td>
</tr>
<tr>
<td>Above 1000</td>
<td>10 (M)</td>
<td>43.5</td>
</tr>
</tbody>
</table>

6.1 The tighter limit shall apply at the edge between two frequency bands.

6.2 Measurement distance in meters between the measuring instrument antenna and the
closed point of any part of the EUT or peripherals.
RESULT OF RADIATED EMISSION TEST

7.1 The frequency range from 30 MHz to 2 GHz was investigated.

7.2 All readings below or equal 1 GHz are quasi-peak or peak values with resolution bandwidth of 120 KHz.

7.3 All readings above 1 GHz are average or peak values with resolution bandwidth of 1 MHz.

7.4 The measurements were made at 10 meters of HomeTek Lab’s open site III.

7.5 Temperature: 29 °C, Humidity: 45 % RH.

7.6 Deviation from the test standards and rules: None

7.7 The radiation emission result were gained by the following method:
Level = Reading Level + Probe Factor (Antenna Factor) + Cable Loss – Preamp Factor
Over Limit = Level – Limit Line

7.8 The radiated mission test was passed at minimum margin:
Horizontal 750.00 MHz/33.99 dBuV/m, Antenna Height 3.6 Meter,
Turn Table 125 degree, The Mode: 1G-1G Mode, Model: TS-109 Pro.

7.9 Result: PASSED
RADIATED EMISSION TEST DATA (PAGE 1)

![Graph showing CISPR22 CLASS B-2G emission levels](image)

**Trace:**

Condition: CISPR22 CLASS B-2G 10m CHASE 2614 060506 HORIZONTAL

eut : Network Attached Storage

power: 110V/60Hz

memo : TS-109 Pro(1Gbps-1Gbps)

---

<table>
<thead>
<tr>
<th>Freq</th>
<th>Level</th>
<th>Over Limit</th>
<th>ReadAntenna Level Factor</th>
<th>Cable Loss Factor</th>
<th>Remark</th>
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<tr>
<td>MHz</td>
<td>dBuW/m</td>
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<td>dB</td>
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<td>-4.35</td>
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<td>8</td>
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<td>37.00</td>
<td>-3.01</td>
<td>33.09</td>
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# RADIATED EMISSION TEST DATA (PAGE 2)

**Trace:**

Condition: CISPR22 CLASS B-2G 10m CHARGE 2614 060506 VERTICAL

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<th>Level</th>
<th>Limit Line</th>
<th>Over Limit</th>
<th>Read Antenna Level Factor</th>
<th>Cable Preamp Loss Factor</th>
<th>Remark</th>
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<tr>
<td>MHz</td>
<td>dBuV/m</td>
<td>dBuV/m</td>
<td>dB</td>
<td>dB/m</td>
<td>dB</td>
<td></td>
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<tr>
<td>1</td>
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<td>-3.19</td>
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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.
Appendix A

PHOTOS OF TEST CONFIGURATION
PHOTO OF CONDUCTED POWER LINE TEST

Test Mode: 1Gbps-1Gbps, Model: TS-109 Pro

Front View

Rear View
PHOTO OF RADIATED EMISSION TEST

Test Mode: 1Gbps-1Gbps, Model: TS-109 Pro

Front View

Rear View
Appendix B

PHOTOS OF EUT
PHOTO OF EUT

Model: TS-109 Pro

Full View of EUT
PHOTO OF EUT

Full View of Support Unit
PHOTO OF EUT

Component Side of Main Board

Solder Side of Main Board
Declaration of Conformity

Responsible Party Name : 
Address : 
Phone No : 
Fax No : 

Declares under our sole responsibility that the product

Product Name : Network Attached Storage


...to which this declaration relates is in conformity with the following standards or other normative documents...

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.

Representative Person’s Name : ________________________________
Signature : ________________________________
Date : ________________________________
United States Department of Commerce
National Institute of Standards and Technology

NVLAP

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200331-0

HomeTek Technology Inc.
Taipei Shien 236
TAIWAN

is recognized by the National Voluntary Laboratory Accreditation Program for conformance with criteria set forth in NVLAP accreditation documents and all requirements of ISO/IEC 17025:2005.
Accreditation is granted for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

2006-10-01 through 2007-09-30
Effective dates

Sally S. Bruce
For the National Institute of Standards and Technology
SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

HomeTek Technology Inc.
P.O Box: 13-131, Pan-Chiao City
No. 67-9 Shir Men Rd., Tu Chen City
Taipei Shien 236
TAIWAN
Mr. Grant Huang
Phone: 886-2-22608375 Fax: 886-2-22748013
E-Mail: hometek@ms15.hinet.net

ELECTROMAGNETIC COMPATIBILITY
AND TELECOMMUNICATIONS

NVLAP LAB CODE 200331-0

NVLAP Code  Designation / Description

Emissions Test Methods:


12/CIS14a2  BS EN 55014-1 (2001) with A1 and A2: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission


12/CIS14c  CNS 13783-1: Electromagnetic Compatibility Requirements for household appliances, electric tools and similar apparatus - Part 1: Emissions


2006-10-01 through 2007-09-30

Effective dates

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This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communiqué dated 18 June 2005).

2007-10-01 through 2008-09-30
Effective dates

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2006-09-13)
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ELECTROMAGNETIC COMPATIBILITY
AND TELECOMMUNICATIONS

**NVLAP Code**  **Designation / Description**

**Emissions Test Methods:**

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2007-10-01 through 2008-09-30

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For the National Institute of Standards and Technology

NVLAP-01S (REV. 2005-05-19)
**ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS**

**NVLAP Code** | **Designation / Description**
---|---
12/T51a | AS/NZS CISPR 22 (2004): Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement

2007-10-01 through 2008-09-30

Effective dates

For the National Institute of Standards and Technology

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