**HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.**

Product Compliance Division, EMC Team
SAN 136-1, AMI-RI , BUBAL-EUP, ICHEON-SI, KYOUNKI-DO, 467-701, KOREA
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# CERTIFICATION

**Manufacture;**
**HANTEL CO., LTD.**

**#513-15,Suntecity,Sangdaewon-Dong,Jungwon-Gu,**
**Seongnam-Si,Kyunggi-Do 462-806,Korea**

**KONINE FRN : 0007460181**

**Date of Issue : August 12, 2005**

**Test Report No.: HCT-F05-0804**

**Test Site: HYUNDAI CALIBRATION & CERTIFICATION TECHNOLOGIES CO., LTD.**

**HCT FRN : 0005-8664-21**

**FCC ID :** **ODGQOOLQEEI**

**MODEL:** **Qoolqee i**

| | |
|---|---|
| **Rule Part(s):** | **Part 15** |
| **Equipment Class:** | **FCC Class B Peripheral Device (JBP)** |
| **Standard(s):** | **FCC Class B: (CISPR 22)** |
| **EUT Type:** | **MP3 Player** |
| **Memory:** | **256, 512MB,1GB** |
| **Model(s):** | **Qoolqee i** |
| **Port/Connector(s)** | **AUDIO OUT, USB** |

**This equipment has been shown to be in compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003**

**I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.**

Ki Soo Kim

**Report prepared by : Ki-Soo Kim**
**Manager of EMC Tech. Part**

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# MEASUREMENT REPORT

## 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.

| | |
|---|---|
| **Applicant Name:** | **HANTEL CO., LTD.** |
| **Address:** | **#513-15,Suntecity,Sangdaewon-Dong,Jungwon-Gu, Seongnam-Si,Kyunggi-Do 462-806,Korea** |

- **FCC ID : ODGQOOLQEEIII**
- Equipment Class: FCC Class B Peripheral Device (JBP)
- EUT Type: MP3 Player
- Model(s):Qoolqee i
- Memory : 256, 512MB,1GB
- Rule Part(s): FCC Part 15 Subpart B
- Test Procedure(s): ANSI C63.4 (2003)
- Dates of Tests: August 10 ~ August 12, 2005
- Place of Tests: 254-1,MAEKOK-RI,HOBUP-MYUN,ICHON-SI,KYOUNGKI-DO,467-701,KOREA

# 2. INTRODUCTION

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSIC63.4-2001) was used in determining radiated and conducted emissions emanating from **HANTEL CO., LTD. MP3 Player FCC ID: ODGQOOLQEEI**

The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, MAEKOK-RI,HOBUP-MYUN,ICHON-SI,KYOUNGKI-DO, 467-701,KOREA. The site is constructed in conformance with the requirements of ANSI C63.4and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 23,2003 (Confirmation Number: EA90661)

# 3. PRODUCT INFORMATION

## 3.1 Equipment Description

Equipment Under Test (EUT) is the **HANTEL CO., LTD. ( Model : Qoolqee i ) ODGQOOLQEEI**

FCC ID**: ODGQOOLQEEI**

| | |
|---|---|
| Frequency Range : | 20Hz ~ 20kHz |
| Earphone Output : | Left 20mW, Right 20mW<br>(16Ω, Volume Max) |
| Signal to Noise Ratio : | Over 90dB |
| Decoding : | MP3 : MPEG 1/2/2)5 layer 3, 8kbps ~ 320kbps, 8kHz ~ 48kHz, VBR<br>WMA : WMA7 WMA, 20kbps~ 192kbps, 8kHz ~ 48kHz<br>WMA9 CBR, 5Kbps mono ~ 320kbps stereo<br>VBR Average 48kbps ~ Average 256kbps<br>(WMA9 Professional, lossless compression Codec- not support Audio Codec)<br>Ogg: q0 ~ q10 |
| Encoding : | MP3 : 32 ~ 128 kbps |
| Tag Info : ID3 V1/V2 Tag (Song Title, Artist, Album) | |
| LCD : | 128 x 48 Mono STN |
| Languages : | Korean, English, French, German, Spanish, Danish, Swedish, Italian, Hungarian , Portuguese, Czech, Chinese Simple, Chinese Traditional, Japanese, Russian, Turkish, Dutch. |
| Play Time : | 15hours, approx (128kbps MP3 file Play, Volume: 15, EQ: NOR, Backlight & LED Off) |
| Dimension : | 60x25x25.3mm |
| Weight : | 21.9g (not including AAA battery) |
| Battery : | 1)5V AAA |
| Operational Temperature Range : | -5°C ~50°C |

## EMI Suppression Devices:

None

# 4. Description of Tests(Conducted)

## 4.1 Powerline Conducted RFI (150kHz- 30MHz)

The power line conducted RFI measurements were performed according to CISPR 22.
The EUT was placed on a non-conducting 1.0 by 1.5 meter table which is 0.8 meters in height and 0.40 meters away from the vertical wall of the shielded enclosure. Power to the EUT is provided through a Rohde & Schwarz 50 Ω / 50 uH Line Impedance Stabilization Network (LISN) and the support equipment through a separate Solar 50 Ω / 50 uH Line- Conducted Test Facility LISN. Sufficient time for the EUT, support equipment, and test equipment were allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer to determine the frequency producing the maximum EME. The spectrum was scanned from 150kHz to 30 MHz. Each maximum EME was remeasured using an EMI receiver. The detector function of the receiver was set to CISPR quasi- peak and average mode with the bandwidth set to 9 kHz. Each emission was maximized consistent with the typical applications by varying the configuration of the test sample. Interface cables were connected to the available interface ports of the test unit. The effect of varying the position of cables was investigated to find the configuration that produces maximum Diagram emission. Excess cable lengths were bundled at the center with 30- 40cm. in length. The worst-case configuration is noted in the test report and the photographs are attached. Each EME reported was calibrated using the Rohde & Schwarz SMX signal generator and are listed on Table 1. RFI Conducted FCC Class B

| **RFI CONDUCTED** | **CISPR 22 CLASS B Limits dB(uV/m)** | |
|---|---|---|
| **Freq. Range** | **CISPR 22 Quasi-Peak** | **CISPR 22 Average** |
| **150kHz - 0.5MHz** | **66-56**** | **56-46**** |
| **0.5MHz - 5MHz** | **56** | **46** |
| **5MHz - 30MHz** | **60** | **50** |
| ***FCC Class B limits starts from 450kHz<br>**Limits decreases linearly with the logarithm of frequency** | | |

**Table 1. RFI Conducted Limits**

# 4.2 Description of Tests(Radiated)

## Radiated Emissions

Preliminary measurements were made indoors at 1 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 spectrum was scanned from 30 to 300 MHz using biconical antenna, 300 to 1000 MHz using log- periodic antenna, and above 1 GHz using linearly polarized horn antennas. Final measurements were made outdoors at 10-meter test range using Dipole antennas and EMI receiver. For frequencies above 1 GHz, horn antennas were used. Sufficient time for the EUT, support equipment, and test equipment were allowed in order for them to warm up to their normal operating condition. The EMI receiver detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120 kHz. The EUT, support equipment, and interconnecting cables were arranged to the configuration that produces the maximum EME emission found during preliminary scan. 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. Horizontal and vertical antenna polarizations were checked. Each emission was maximized by: 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 the computer aux AC outlet, if applicable; and changing the polarity of the antenna, whichever determined the worst-case emission.

| ITE Radiated Limits | | | |
|---|---|---|---|
| **Frequency (MHz)** | **FCC Limit @ 3m. Quasi-Peak dB[μV/m]** | **FCC Limit @ 10m.* Quasi – Peak dB [μV/m]** | **CISPR Limit @ 10m. Quasi-Peak dB [μV/m]** |
| **30-88** | **40.0** | **29.5** | **30.0** |
| **88-216** | **43.5** | **33.0** | **30.0** |
| **216-230** | **46.0** | **35.6** | **30.0** |
| **230-960** | **46.0** | **35.6** | **37.0** |
| **960-1000** | **54.0** | **43.5** | **37.0** |
| **> 1000** | **54.0** | **43.5** | **No Specified Limit** |
| | | | |
| | | | |
| | | | |
| *** Limit extrapolated 20 dB/decade** | | | |

**Table 2. Radiated Class B limits @ 10-meters**

# 5. Support Equipment Used

| DEVICE TYPE | MANUFACTURER | MODEL NUMBER | FCC ID / DoC | CONNECTED TO |
|---|---|---|---|---|
| MP3 Player(EUT) | HANTEL CO.,LTD. | QoolqeeI | ODGQOOLQEEI | NOTE BOOK |
| MOUSE | Microsoft | Intellimouse optical USB And PS/2 compatible | DoC | NOTEBOOK |
| PRINTER | H/P | C4569A | DoC | NOTEBOOK |
| NOTEBOOK PC | TOSHIBA | PAS50K-04W007 | DoC | EUT |
| NOTEBOOK PC ADAPTOR | DELTA ELECTRONICS (JIANG SU).LTD | ADP-60RH A | DoC | NOTEBOOK |
| EARPHONE | - | - | - | EUT |

## 5.1 Cable Description

### - DATA UP/DOWN Load Mode

| | | Power Cord Shielded (Y/N) | I/O Cable Shielded (Y/N) | Length (M) |
|---|---|---|---|---|
| MP3 Player (EUT) | USB | N | Y | 1.0(D) |
| | Audio out | N | N | 0.5(D) |
| NOTE BOOK | USB (Mouse) | N | Y | 1.8(P,D) |
| | Parallel | N/A | Y | 1.8(D) |
| | DC in | N | N/A | 1.8(P) |
| PRINTER | AC in | N | N/A | 1.8(P) |

**The marked "(D)" means the Data Cable and "(P)" means the Power Cable.**

## 5.2 Noise Suppression Parts on Cable. (I/O CABLE)

### - DATA UP/DOWN Load Mode

| | | Ferrite Bead (Y/N) | Location | Metal Hood (Y/N) | Location |
|---|---|---|---|---|---|
| MP3 Player (EUT) | USB | N | N/A | N | N/A |
| | Audio out | N | N/A | Y | N/A |
| NOTE BOOK | USB (Mouse) | Y | NOTE BOOK END | Y | NOTE BOOK END |
| | Parallel | N | N/A | Y | BOTH END |
| | DC in | Y | NOTE BOOK END | N | N/A |
| PRINTER | AC in | N | N/A | N | N/A |

# 6. PRELIMENARY TEST

## 6.1 AC Power line Conducted Emissions Tests

**During Preliminary Tests, the following operating mode was investigated**

| Operation Mode | The Worse operating condition (Please check one only) |
|---|---|
| 1GB | X |
| 512MB | |
| 256MB | |

## 6. 2 Radiated Emission Test

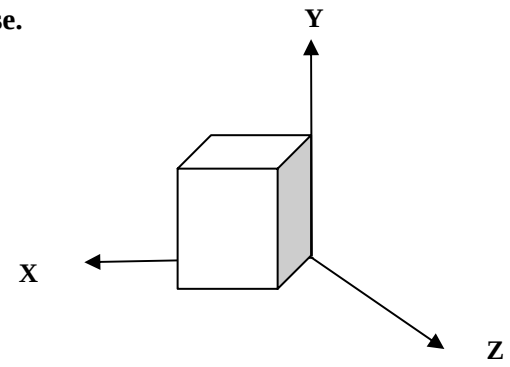
**During Preliminary Test, the Following operation mode was investigated**

| Operation Mode | The Worse operating condition (Please check one only) |
|---|---|
| 1GB | X |
| 512MB | |
| 256MB | |

**During Preliminary Tests, the following operating conditions were investigated**

| Axes | The worst operating condition |
|---|---|
| X | X |
| Y | |
| Z | |

**Note : This transmitter has been investigated with three axes and the reported readings are the worse case.**



# 7. LINE-CONDUCTED TEST DATA

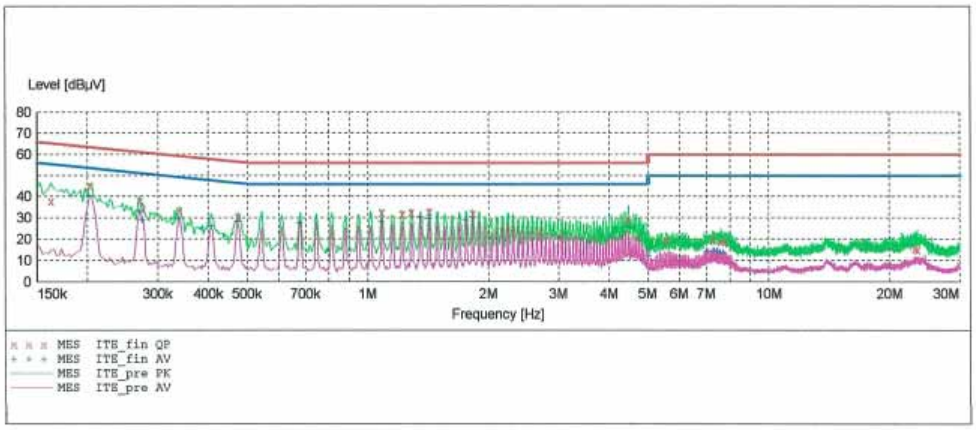
***HCT***

***EMC TEST LAB***

```
EUT:                    Qoolqee I
Manufacturer:           HANTEL
Operating Condition:    NORMAL
Test Site:              SHIELD ROOM
Operator:               KH-SEO
Test Specification:     KN 22 CLASS B
Comment:                N
```

***SCAN TABLE: "KN 22 CLASS B"***

```
  Short Description:                KN22 CLASS B
  Start       Stop        Step      Detector   Meas.     IF       Transducer
  Frequency   Frequency   Width                Time      Bandw.
  150.0 kHz   500.0 kHz   2.5 kHz   MaxPeak    10.0 ms   9 kHz    None
                                    Average
  500.0 kHz   5.0 MHz     5.0 kHz   MaxPeak    10.0 ms   9 kHz    None
                                    Average
  5.0 MHz     30.0 MHz    5.0 kHz   MaxPeak    10.0 ms   9 kHz    None
                                    Average
```




***MEASUREMENT RESULT: "ITE_fin QP"***

8/10/2005 11:37AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Line | PE |
|---|---|---|---|---|---|---|
| 0.162500 | 38.10 | 9.9 | 65 | 27.2 | --- | --- |
| 0.202500 | 45.40 | 9.9 | 64 | 18.1 | --- | --- |
| 0.270000 | 38.00 | 9.9 | 61 | 23.1 | --- | --- |
| 0.275000 | 34.00 | 9.9 | 61 | 27.0 | --- | --- |
| 0.340000 | 33.50 | 9.9 | 59 | 25.7 | --- | --- |
| 0.475000 | 30.60 | 9.9 | 56 | 25.8 | --- | --- |
| 1.085000 | 32.70 | 9.9 | 56 | 23.3 | --- | --- |
| 1.220000 | 32.00 | 10.0 | 56 | 24.0 | --- | --- |
| 1.285000 | 32.60 | 10.0 | 56 | 23.4 | --- | --- |
| 1.425000 | 33.20 | 10.0 | 56 | 22.8 | --- | --- |
| 1.830000 | 32.20 | 10.0 | 56 | 23.8 | --- | --- |
| 4.475000 | 29.50 | 10.3 | 56 | 26.5 | --- | --- |
| 5.560000 | 19.80 | 10.5 | 60 | 40.2 | --- | --- |
| 7.255000 | 19.70 | 10.7 | 60 | 40.3 | --- | --- |
| 7.600000 | 19.20 | 10.7 | 60 | 40.8 | --- | --- |
| 7.800000 | 18.90 | 10.8 | 60 | 41.1 | --- | --- |
| 23.215000 | 15.60 | 10.7 | 60 | 44.4 | --- | --- |
| 23.540000 | 15.30 | 10.7 | 60 | 44.7 | --- | --- |

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*MEASUREMENT RESULT: "ITE_fin AV"*

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| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Line | PE |
|---|---|---|---|---|---|---|
| 0.202500 | 40.30 | 9.9 | 54 | 13.2 | --- | --- |
| 0.270000 | 33.00 | 9.9 | 51 | 18.1 | --- | --- |
| 0.275000 | 28.90 | 9.9 | 51 | 22.1 | --- | --- |
| 0.340000 | 30.10 | 9.9 | 49 | 19.1 | --- | --- |
| 0.407500 | 26.00 | 9.9 | 48 | 21.7 | --- | --- |
| 0.475000 | 28.10 | 9.9 | 46 | 18.3 | --- | --- |
| 0.680000 | 27.80 | 9.9 | 46 | 18.2 | --- | --- |
| 1.085000 | 28.40 | 9.9 | 46 | 17.6 | --- | --- |
| 1.355000 | 30.40 | 10.0 | 46 | 15.6 | --- | --- |
| 1.425000 | 29.90 | 10.0 | 46 | 16.1 | --- | --- |
| 1.760000 | 29.10 | 10.0 | 46 | 16.9 | --- | --- |
| 1.830000 | 30.60 | 10.0 | 46 | 15.4 | --- | --- |
| 5.015000 | 12.10 | 10.4 | 50 | 37.9 | --- | --- |
| 7.050000 | 14.30 | 10.7 | 50 | 35.7 | --- | --- |
| 7.320000 | 14.80 | 10.7 | 50 | 35.2 | --- | --- |
| 7.455000 | 14.50 | 10.7 | 50 | 35.5 | --- | --- |
| 7.590000 | 13.80 | 10.7 | 50 | 36.2 | --- | --- |
| 7.725000 | 13.70 | 10.8 | 50 | 36.3 | --- | --- |

*HCT*

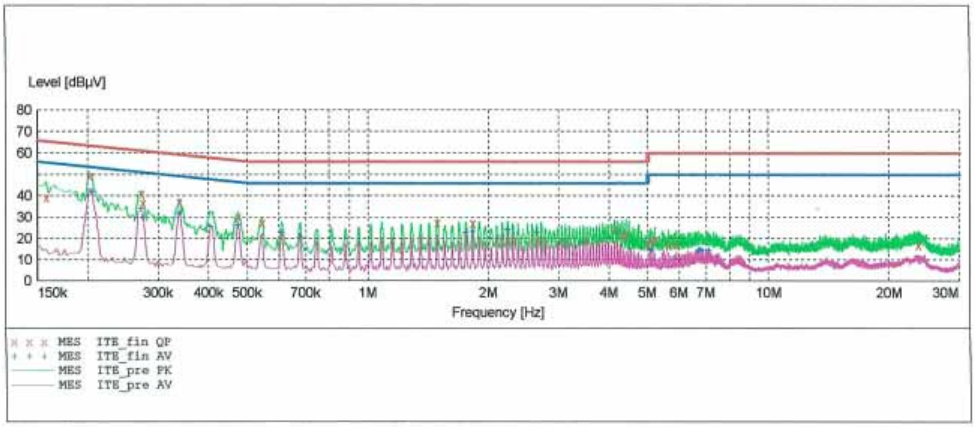
*EMC TEST LAB*

EUT: Qoolqee I
Manufacturer: HANTEL
Operating Condition: NORMAL
Test Site: SHIELD ROOM
Operator: KH-SEO
Test Specification: KN 22 CLASS B
Comment: H

*SCAN TABLE: "KN 22 CLASS B"*

Short Description: KN22 CLASS B

| Start Frequency | Stop Frequency | Step Width | Detector | Meas. Time | IF Bandw. | Transducer |
|---|---|---|---|---|---|---|
| 150.0 kHz | 500.0 kHz | 2.5 kHz | MaxPeak<br>Average | 10.0 ms | 9 kHz | None |
| 500.0 kHz | 5.0 MHz | 5.0 kHz | MaxPeak<br>Average | 10.0 ms | 9 kHz | None |
| 5.0 MHz | 30.0 MHz | 5.0 kHz | MaxPeak<br>Average | 10.0 ms | 9 kHz | None |




*MEASUREMENT RESULT: "ITE_fin QP"*

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| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Line | PE |
|---|---|---|---|---|---|---|
| 0.157500 | 39.50 | 9.9 | 66 | 26.1 | --- | --- |
| 0.202500 | 49.40 | 9.9 | 64 | 14.1 | --- | --- |
| 0.272500 | 40.90 | 9.9 | 61 | 20.1 | --- | --- |
| 0.275000 | 37.00 | 9.9 | 61 | 24.0 | --- | --- |
| 0.340000 | 37.20 | 9.9 | 59 | 22.0 | --- | --- |
| 0.475000 | 30.40 | 9.9 | 56 | 26.1 | --- | --- |
| 0.545000 | 27.50 | 9.9 | 56 | 28.5 | --- | --- |
| 1.490000 | 27.50 | 10.0 | 56 | 28.5 | --- | --- |
| 1.830000 | 27.20 | 10.0 | 56 | 28.8 | --- | --- |
| 4.130000 | 24.80 | 10.3 | 56 | 31.2 | --- | --- |
| 4.330000 | 21.80 | 10.3 | 56 | 34.2 | --- | --- |
| 4.410000 | 22.20 | 10.3 | 56 | 33.8 | --- | --- |
| 5.015000 | 17.70 | 10.4 | 60 | 42.3 | --- | --- |
| 5.085000 | 19.30 | 10.4 | 60 | 40.7 | --- | --- |
| 5.210000 | 19.80 | 10.4 | 60 | 40.2 | --- | --- |
| 5.630000 | 17.10 | 10.5 | 60 | 42.9 | --- | --- |
| 5.885000 | 17.30 | 10.6 | 60 | 42.7 | --- | --- |
| 23.735000 | 17.00 | 10.7 | 60 | 43.0 | --- | --- |

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***MEASUREMENT RESULT: "ITE_fin AV"***

8/10/2005 11:32AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Line | PE |
|---|---|---|---|---|---|---|
| 0.205000 | 41.70 | 9.9 | 53 | 11.7 | --- | --- |
| 0.272500 | 34.30 | 9.9 | 51 | 16.8 | --- | --- |
| 0.275000 | 30.00 | 9.9 | 51 | 21.0 | --- | --- |
| 0.340000 | 31.90 | 9.9 | 49 | 17.3 | --- | --- |
| 0.405000 | 25.80 | 9.9 | 48 | 21.9 | --- | --- |
| 0.475000 | 26.50 | 9.9 | 46 | 19.9 | --- | --- |
| 0.610000 | 23.20 | 9.9 | 46 | 22.8 | --- | --- |
| 0.680000 | 21.10 | 9.9 | 46 | 24.9 | --- | --- |
| 1.760000 | 23.10 | 10.0 | 46 | 22.9 | --- | --- |
| 1.830000 | 23.30 | 10.0 | 46 | 22.7 | --- | --- |
| 2.235000 | 24.20 | 10.1 | 46 | 21.8 | --- | --- |
| 2.640000 | 23.00 | 10.1 | 46 | 23.0 | --- | --- |
| 5.080000 | 14.40 | 10.4 | 50 | 35.6 | --- | --- |
| 5.145000 | 14.80 | 10.4 | 50 | 35.2 | --- | --- |
| 6.700000 | 14.50 | 10.6 | 50 | 35.5 | --- | --- |
| 6.770000 | 15.00 | 10.6 | 50 | 35.0 | --- | --- |
| 6.840000 | 14.30 | 10.6 | 50 | 35.7 | --- | --- |
| 7.110000 | 14.50 | 10.7 | 50 | 35.5 | --- | --- |

**NOTES:**

1. **All modes(256, 512MB,1GB) of operation were investigated and the worst-case emissions are reported.**
2. **The CISPR RFI conducted limits are listed on Table 1 (Page 6).**
3. **Line H = Phase Line N = Neutral**

** Measurements using CISPR quasi-peak mode.

# 8. RADIATED TEST DATA

| Frequency MHz | Reading dBuV | Ant. Factor dB/m | Cable Loss Db | ANT POL (H/V) | Total dBuV/m | Limit dBuV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 77.4 | 12.9 | 8.3 | 1.9 | V | 23.1 | 30.0 | 6.9 |
| 91.5 | 15.3 | 7.8 | 2.1 | V | 25.2 | 30.0 | 4.8 |
| 142.5 | 10.9 | 12.8 | 2.6 | H | 26.3 | 30.0 | 3.7 |
| 166.3 | 8.9 | 12.4 | 2.9 | V | 24.2 | 30.0 | 5.8 |
| 195.4 | 12.1 | 10.0 | 3.2 | H | 25.3 | 30.0 | 4.7 |
| 200.4 | 11.9 | 9.6 | 3.2 | V | 24.7 | 30.0 | 5.3 |
| 260.6 | 10.0 | 11.6 | 3.7 | H | 25.3 | 37.0 | 11.7 |
| 325.7 | 11.8 | 13.5 | 4.1 | V | 29.4 | 37.0 | 7.6 |
| 390.9 | 11.9 | 14.8 | 4.5 | V | 31.2 | 37.0 | 5.8 |
| 456.1 | 10.6 | 16.9 | 4.9 | V | 32.4 | 37.0 | 4.6 |
| 500.2 | 9.8 | 16.9 | 5.1 | V | 31.8 | 37.0 | 5.2 |
| 600.3 | 8.5 | 19.3 | 5.6 | V | 33.4 | 37.0 | 3.6 |

Radiated Measurements at 10-meters.

**1GB**

NOTES:

1. All modes(256, 512MB,1GB) of operation were investigated, and the worst-case emissions are reported.
2. The radiated limits are listed on Table 2 (Page 7).

** AFCL = Antenna Factor (Roberts dipole) and Cable Loss .

*** Measurements using CISPR quasi-peak mode. Above 1GHz, peak detector function mode is used using a resolution bandwidth of 1MHz and a video bandwidth of 1MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized horn antenna and low-loss microwave cable.

# 9. Sample Calculations

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

## 9.1 Example 1:

**@ 1.09 MHz**

| | | |
|---|---|---|
| Class B limit | = | 56.0 dB μV |
| Reading | = | 38.9 dB μV (calibrated level) |
| **Margin** | = | 38.9 –56 = -17.1 dB μV |
| | = | **17.1 dB below limit** |

## 9.2 Example 2:

**@ 591.6 MHz**

| | | |
|---|---|---|
| Class B limit | = | 37 dBμV/m |
| Reading | = | 11.9 dBμV/m (calibrated level) |
| Antenna Factor + Cable Loss | = | 19.3 dB |
| Total | = | 31.2 dBμV/m |
| **Margin** | = | 31.2 - 37.0 = - 5.8 |
| | = | **5.8 dB below limit** |

# 10. Test Equipment

| Type | Manufacture | Model Number | CAL Due Date |
|---|---|---|---|
| EMI Test Receiver | Rohde & Schwarz | ESCI40 | 2005.11.16 |
| EMI Test Receiver | Rohde & Schwarz | ESVS30 | 2006.07.01 |
| EMI Test Receiver | Rohde & Schwarz | ESCI | 2005.09.13 |
| LISN | Rohde & Schwarz | ESH2-Z5 | 2006.04.26 |
| LISN | Rohde & Schwarz | ESH3-Z2 | 2005.11.16 |
| TRILOG Antenna | Schwarzbeck | 9160 | 2006.03.31 |
| Antenna Position Tower | HD | MA240 | N/A |
| Turn Table | EMCO | 1050 | N/A |
| Power Analyzer | Voltech | PM 3300 | 2006.03.22 |
| Reference Network Impedance | Voltech | IEC 555 | N/A |
| AC Power Source | PACIFIC | Magnetic Module | N/A |
| AC Power Source | PACIFIC | 360-AMX | 2005.11.25 |
| Controller | HD GmbH | HD 100 | N/A |
| SlideBar | HD GmbH | KMS 560 | N/A |
| PULSE LIMITER | Rohde & Schwarz | ESH3-Z2 | 2005.11.16 |

# 11. Test Software Used

**The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.**

NOTE: This is a sample of the basic program used during the test. However, during testing, a different software program may be used; whichever determines the worst-case condition. In addition, the program used also depends on the number and type of devices being tested.

# 12. Conclusion

The data collected shows that the **HANTEL CO., LTD**. **MP3 Player FCC ID:ODGQOOLQEEI** complies with §15.107 and §15.109 of the FCC Rules.