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
TEL : +82 31 639 8518 FAX : +82 31 639 8525

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 : June 24, 2005

Test Report No.: HCT-F05-0603

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

HCT FRN : 0005-8664-21

FCC ID : **ODGQOOLQEEX**

MODEL /TYPE: **Qoolqee X**

Rule Part(s):	**Part 15 & 2**
Equipment Class:	**FCC Class B Peripheral Device (JBP)**
Standard(s):	**FCC Class B: (CISPR 22)**
EUT Type:	**Digital Audio Player**
Memory:	**256, 512MB,1GB**
Model(s):	**Qoolqee X**
Port/Connector(s)	**AUDIO IN/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 : ODGQOOLQEEX**
- Equipment Class: FCC Class B Peripheral Device (JBP)
- EUT Type: Digital Audio Player
- Model(s):Qoolqee X
- Memory : 256, 512MB,1GB
- Rule Part(s): FCC Part 15 Subpart B
- Test Procedure(s): ANSI C63.4 (2003)
- Dates of Tests: June 24, 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. Digital Audio Player FCC ID: ODGQOOLQEEX**

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 X) Digital Audio Player**

FCC ID**: ODGQOOLQEEX**

USB VERSION : USB 2.0(High Speed : 25Mbps,transmission speed : 480Mbps),mass storage

Supported OS: Windows98SE / ME / 2000 / XPand MAC 9.2

FM Radio : FM Tuner(20Preset),Band selectable

Music play : 20Hz ~ 20KHz

FM play : 76MHz ~ 108MHz

Distortion : Under 0.1%

Battery : Li-polymer (Under 350mAH)

Earphone : 3.5Φ stereo,16Ω, 110±4dB at 1KHz

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 **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.	QoolqeeX	ODGQOOLQEEX	NOTE BOOK
ADAPTOR	SELIM ELECTRONICS	SR-0512SP	DoC	EUT
MOUSE	Micrsoft	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	Y	Y	1.0(P,D)
	Audio out	N/A	N	1.0(D)
NOTE BOOK	USB	Y	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)

- Charging Mode

		Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
MP3 Player (EUT)	USB	Y	N/A	1.5(P)
	Audio out	N/A	N	1.0(D)

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	Y	BOTH END
	Audio out	N	N/A	Y	EUT END
NOTE BOOK	USB	Y	NOTE BOOK END	Y	NOTE BOOK END
	Parallel	N	N/A	Y	BOTH END
	DC in	N	N/A	Y	NOTE BOOK END

- Charging Mode

		Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
MP3 Player (EUT)	Audio out	N	N/A	Y	EUT END

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

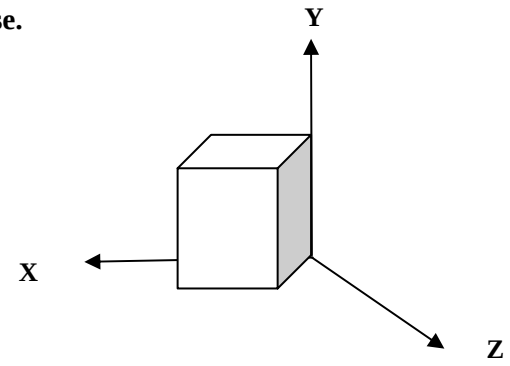
During Preliminary Test, the Following operation mode was investigated

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

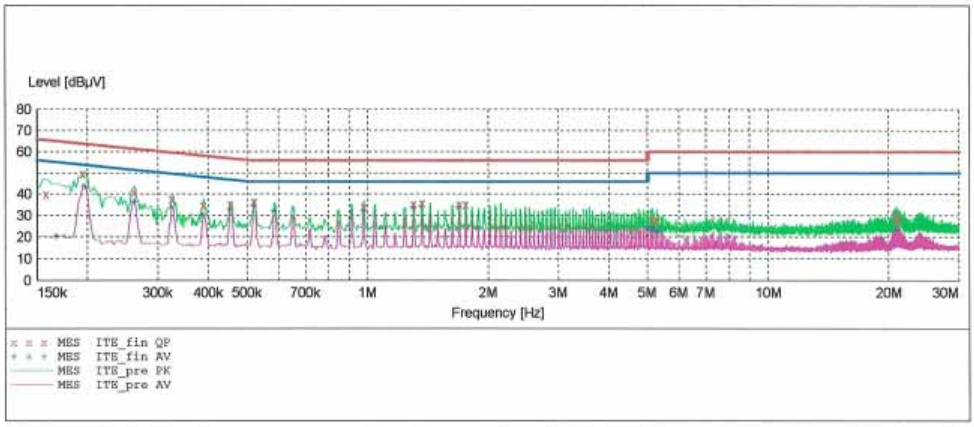
HCT

EMC TEST LAB

```
EUT:                  Qoolqee X
Manufacturer:         HANTEL
Operating Condition:  NORMAL PC
Test Site:            SHIELD ROOM
Operator:             KH-SEO
Test Specification:   CISPR 22 CLASS B
Comment:              H (1G)
```

SCAN TABLE: "CISPR 22 Voltage"

```
  Short Description:                CISPR 22 Voltage
  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"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.157500	40.20	10.1	66	25.4	---	---
0.195000	49.70	10.1	64	14.1	---	---
0.262500	40.90	10.1	61	20.5	---	---
0.325000	37.80	10.1	60	21.8	---	---
0.390000	34.70	10.1	58	23.4	---	---
0.455000	35.10	10.1	57	21.7	---	---
0.520000	36.70	10.1	56	19.3	---	---
0.980000	34.10	10.1	56	21.9	---	---
1.305000	35.40	10.2	56	20.6	---	---
1.370000	35.90	10.2	56	20.1	---	---
1.695000	35.10	10.2	56	20.9	---	---
1.760000	35.10	10.3	56	20.9	---	---
5.150000	28.60	10.3	60	31.4	---	---
5.280000	27.70	10.3	60	32.3	---	---
20.805000	30.30	10.5	60	29.7	---	---
20.935000	29.90	10.5	60	30.1	---	---
20.995000	26.30	10.5	60	33.7	---	---
21.195000	28.40	10.6	60	31.6	---	---

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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
0.167500	20.30	10.1	55	34.7	---	---
0.197500	43.50	10.1	54	10.2	---	---
0.262500	36.70	10.1	51	14.7	---	---
0.325000	33.80	10.1	50	15.8	---	---
0.390000	30.30	10.1	48	17.8	---	---
0.455000	33.00	10.1	47	13.8	---	---
0.520000	34.90	10.1	46	11.1	---	---
0.585000	32.00	10.2	46	14.0	---	---
0.980000	32.80	10.1	46	13.2	---	---
1.305000	34.00	10.2	46	12.0	---	---
1.370000	34.50	10.2	46	11.5	---	---
1.695000	33.90	10.2	46	12.1	---	---
5.020000	24.50	10.3	50	25.5	---	---
5.085000	24.00	10.3	50	26.0	---	---
5.150000	24.20	10.3	50	25.8	---	---
5.215000	23.70	10.3	50	26.3	---	---
5.280000	22.30	10.3	50	27.7	---	---
20.935000	23.50	10.5	50	26.5	---	---

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HCT

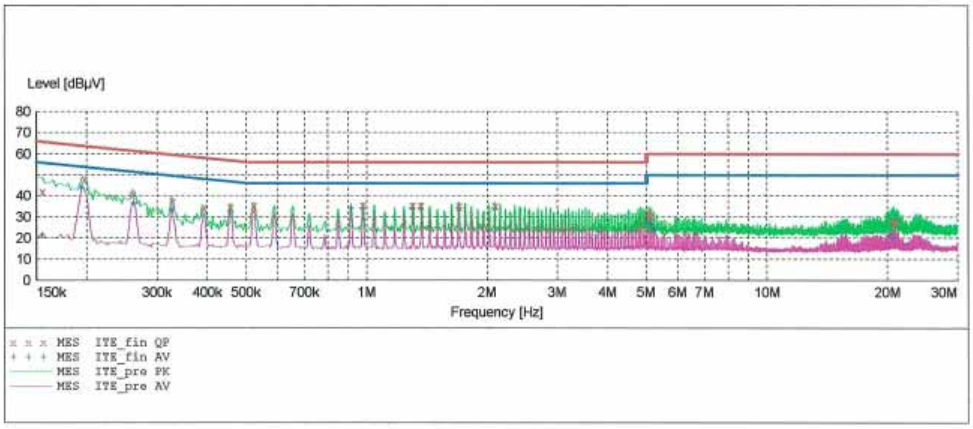
EMC TEST LAB

```
EUT:                  Qoolqee X
Manufacturer:         HANTEL
Operating Condition:  NORMAL PC
Test Site:            SHIELD ROOM
Operator:             KH-SEO
Test Specification:   CISPR 22 CLASS B
Comment:              N (1G)
```

SCAN TABLE: "CISPR 22 Voltage"

Short Description: CISPR 22 Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	2.5 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak 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
0.155000	41.80	10.1	66	23.9	---	---
0.197500	47.70	10.1	64	16.0	---	---
0.260000	40.70	10.1	61	20.7	---	---
0.327500	37.20	10.1	60	22.3	---	---
0.392500	34.60	10.1	58	23.4	---	---
0.457500	34.80	10.1	57	22.0	---	---
0.525000	35.20	10.1	56	20.8	---	---
0.980000	35.40	10.1	56	20.6	---	---
1.305000	35.50	10.2	56	20.5	---	---
1.370000	35.50	10.2	56	20.5	---	---
1.700000	35.20	10.2	56	20.8	---	---
2.090000	35.30	10.3	56	20.7	---	---
5.030000	31.80	10.3	60	28.2	---	---
5.095000	31.30	10.3	60	28.7	---	---
5.160000	30.40	10.3	60	29.6	---	---
20.645000	28.40	10.5	60	31.6	---	---
20.775000	28.00	10.5	60	32.0	---	---
21.170000	27.50	10.6	60	32.5	---	---

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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
0.155000	21.20	10.1	56	34.5	---	---
0.195000	43.90	10.1	54	9.9	---	---
0.262500	36.70	10.1	51	14.6	---	---
0.327500	33.60	10.1	50	16.0	---	---
0.392500	30.90	10.1	48	17.1	---	---
0.457500	32.80	10.1	47	14.0	---	---
0.915000	33.90	10.1	46	12.1	---	---
0.980000	34.30	10.1	46	11.7	---	---
1.305000	34.30	10.2	46	11.7	---	---
1.370000	34.20	10.2	46	11.8	---	---
1.700000	34.20	10.2	46	11.8	---	---
2.090000	34.10	10.3	46	11.9	---	---
5.030000	27.50	10.3	50	22.5	---	---
5.095000	27.50	10.3	50	22.5	---	---
5.160000	26.60	10.3	50	23.4	---	---
5.225000	24.10	10.3	50	25.9	---	---
20.385000	21.20	10.5	50	28.8	---	---
20.775000	20.40	10.5	50	29.6	---	---

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(DATA UP/DOWN Load Mode)

HCT

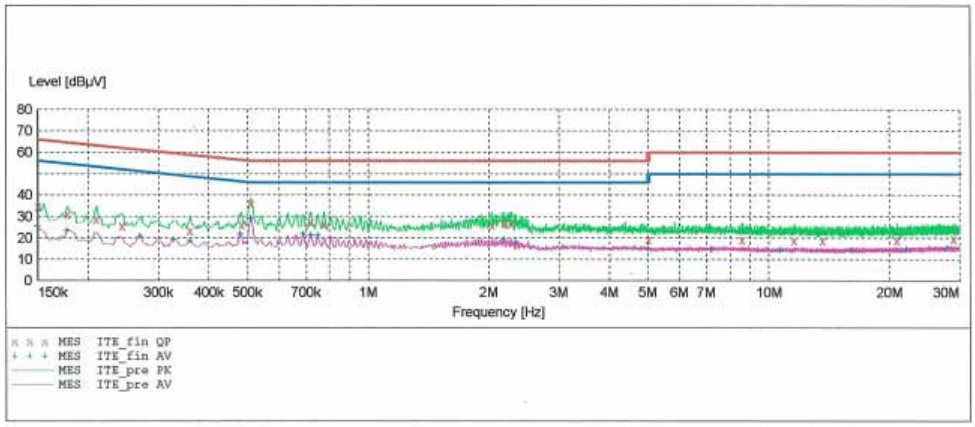
EMC TEST LAB

EUT: Qoolqee X
Manufacturer: HANTEL
Operating Condition: NORMAL CHARGER
Test Site: SHIELD ROOM
Operator: KH-SEO
Test Specification: CISPR 22 CLASS B
Comment: H (1G)

SCAN TABLE: "CISPR 22 Voltage"

Short Description: CISPR 22 Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	2.5 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak 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
0.150000	34.90	10.1	66	31.1	---	---
0.177500	31.30	10.1	65	33.3	---	---
0.210000	29.00	10.1	63	34.2	---	---
0.242500	25.80	10.1	62	36.2	---	---
0.360000	23.60	10.1	59	35.1	---	---
0.482500	26.30	10.1	56	30.0	---	---
0.510000	36.10	10.1	56	19.9	---	---
0.720000	27.50	10.2	56	28.5	---	---
0.775000	26.60	10.2	56	29.4	---	---
2.035000	26.20	10.3	56	29.8	---	---
2.185000	27.10	10.3	56	28.9	---	---
2.275000	26.70	10.3	56	29.3	---	---
5.000000	19.40	10.3	56	36.6	---	---
8.570000	19.30	10.4	60	40.7	---	---
11.575000	19.10	10.4	60	40.9	---	---
13.630000	18.90	10.5	60	41.1	---	---
20.895000	19.20	10.5	60	40.8	---	---
28.960000	19.70	10.6	60	40.3	---	---

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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
0.150000	25.50	10.1	56	30.5	---	---
0.177500	23.70	10.1	55	30.9	---	---
0.270000	21.00	10.1	51	30.1	---	---
0.327500	19.50	10.1	50	30.0	---	---
0.360000	19.00	10.1	49	29.7	---	---
0.480000	21.80	10.1	46	24.5	---	---
0.510000	29.20	10.1	46	16.8	---	---
0.690000	22.00	10.2	46	24.0	---	---
0.720000	21.60	10.2	46	24.4	---	---
0.750000	21.20	10.2	46	24.8	---	---
2.185000	19.30	10.3	46	26.7	---	---
2.335000	18.20	10.3	46	27.8	---	---
5.000000	15.20	10.3	46	30.8	---	---
7.180000	15.00	10.3	50	35.0	---	---
10.695000	14.50	10.4	50	35.5	---	---
16.095000	14.50	10.5	50	35.5	---	---
22.105000	14.70	10.6	50	35.3	---	---
27.995000	15.20	10.6	50	34.8	---	---

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HCT

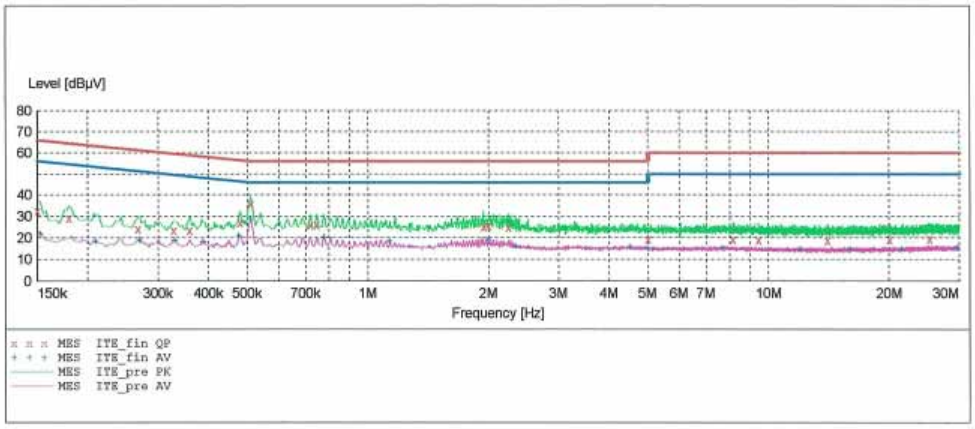
EMC TEST LAB

EUT: Qoolqee X
Manufacturer: HANTEL
Operating Condition: NORMAL CHARGER
Test Site: SHIELD ROOM
Operator: KH-SEO
Test Specification: CISPR 22 CLASS B
Comment: N (1G)

SCAN TABLE: "CISPR 22 Voltage"

Short Description: CISPR 22 Voltage

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	2.5 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak 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
0.150000	32.80	10.1	66	33.2	---	---
0.180000	29.40	10.1	65	35.1	---	---
0.267500	24.20	10.1	61	36.9	---	---
0.327500	23.70	10.1	60	35.9	---	---
0.360000	23.60	10.1	59	35.1	---	---
0.480000	27.20	10.1	56	29.1	---	---
0.510000	35.90	10.1	56	20.1	---	---
0.720000	26.20	10.2	56	29.8	---	---
0.745000	26.00	10.2	56	30.0	---	---
1.940000	25.30	10.3	56	30.7	---	---
2.000000	25.60	10.3	56	30.4	---	---
2.245000	25.00	10.3	56	31.0	---	---
5.000000	19.40	10.3	56	36.6	---	---
8.170000	19.40	10.4	60	40.6	---	---
9.440000	19.20	10.4	60	40.8	---	---
14.090000	19.00	10.5	60	41.0	---	---
20.090000	19.30	10.5	60	40.7	---	---
25.285000	19.60	10.6	60	40.4	---	---

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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
0.152500	21.90	10.1	56	34.0	---	---
0.210000	18.60	10.1	53	34.6	---	---
0.270000	19.10	10.1	51	32.0	---	---
0.330000	18.90	10.1	50	30.5	---	---
0.390000	18.30	10.1	48	29.8	---	---
0.477500	21.00	10.1	46	25.4	---	---
0.510000	28.90	10.1	46	17.1	---	---
0.780000	20.40	10.2	46	25.6	---	---
1.135000	18.40	10.1	46	27.6	---	---
2.000000	19.10	10.3	46	26.9	---	---
2.340000	16.10	10.3	46	29.9	---	---
4.520000	15.50	10.3	46	30.5	---	---
5.000000	15.10	10.3	46	30.9	---	---
7.690000	15.10	10.3	50	34.9	---	---
12.025000	14.60	10.4	50	35.4	---	---
16.080000	14.40	10.5	50	35.6	---	---
21.495000	14.60	10.6	50	35.4	---	---
29.660000	15.20	10.6	50	34.8	---	---

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(Charging Mode)

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

(DATA UP/DOWN Load Mode)

Frequency MHz	Reading dBuV	Ant. Factor dB/m	Cable Loss Db	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
75.2	14.6	8.7	1.9	V	25.2	30	4.8
88.9	15.3	7.7	2.1	V	25.1	30	4.9
139.4	7.7	12.8	2.6	V	23.1	30	6.9
166.4	9.2	12.4	2.9	V	24.5	30	5.5
195.4	12.4	10.0	3.2	V	25.6	30	4.4
200.4	13.5	9.6	3.2	V	26.3	30	3.7
233.1	11.7	10.7	3.5	H	25.9	37	11.1
240.0	11.0	11.0	3.5	V	25.5	37	11.5
260.6	11.4	11.6	3.7	V	26.7	37	10.3
325.7	11.1	13.5	4.1	H	28.7	37	8.3
390.9	12.0	14.8	4.5	V	31.3	37	5.7
399.1	12.9	15.0	4.6	V	32.5	37	4.5

(Charging Mode)

Frequency MHz	Reading dBuV	Ant. Factor dB/m	Cable Loss Db	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
45.8	10.5	12.2	1.5	V	24.2	30	5.8
71.6	14.2	9.4	1.8	V	25.4	30	4.6
195.4	11.9	10.0	3.2	V	25.1	30	4.9
233.2	11.1	10.7	3.5	V	25.3	37	11.7
260.6	11.5	11.6	3.7	V	26.8	37	10.2
299.3	10.0	13.0	4.0	V	27.0	37	10.0
325.7	13.5	13.5	4.1	H	31.1	37	5.9
390.9	12.2	14.8	4.5	V	31.5	37	5.5
399.1	13.3	15.0	4.6	V	32.9	37	4.1
521.2	10.6	17.5	5.2	H	33.3	37	3.7
598.6	8.0	19.3	5.6	V	32.9	37	4.1

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	2005.07.15
EMI Test Receiver	Rohde & Schwarz	ESCI	2005.09.13
LISN	Rohde & Schwarz	ESH2-Z5	2005.07.28
LISN	Rohde & Schwarz	ESH3-Z2	2005.08.10
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**. Digital Audio Player **FCC ID:ODGQOOLQEEX** complies
with §15.107 and §15.109 of the FCC Rules.