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;
KONINE CO., LTD.

#708, BYUCKSAN DIGITAL VALLEY Ⅲ
GURODONG, GUROGU, SEOUL, KOREA

KONINE FRN : 0013364377

Date of Issue : May 19, 2005

Test Report No.: HCT-F05-0504

Test Site: HYUNDAI CALIBRATION & CERTIFICATION TECHNOLOGIES CO., LTD.
HCT FRN : 0005-8664-21

FCC ID : **S86MY-1020**

MODEL /TYPE: **MY-1020**

Rule Part(s):	**Part 15 & 2**
Equipment Class:	**FCC Class B Peripheral Device (JBP)**
Standard(s):	**FCC Class B: (CISPR 22)**
EUT Type:	**MP3 Player**
Memory:	**256, 512MB**
Model(s):	**MY-1020**
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 C63.4-2001

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:	**KONINE CO., LTD.**
Address:	**#708, BYUCKSAN DIGITAL VALLEY Ⅲ GURODONG, GUROGU, SEOUL, KOREA**

- **FCC ID : S86MY-1020**
- Equipment Class: FCC Class B Peripheral Device (JBP)
- EUT Type: MP3 Player
- Model(s): MY-1020
- Memory : 256, 512MB
- Rule Part(s): FCC Part 15 Subpart B
- Test Procedure(s): ANSI C63.4 (2001)
- Dates of Tests: May 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 **KONINE CO., LTD. MP3 Player FCC ID: S86MY-1020**

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 **KONINE CO., LTD. (Model : MY-1020) MP3 Player**

FCC ID**: S86MY-1020**

Audio Frequency : 20Hz-20KHz

Audio Headset output : 20mW(left), 20mW(right) : Max. SRS Effect

FM Radio FM frequency : 87.5 MHz ~ 108MHz(World-wide set)

Port(s)/Input Connector(s): Audio In/Out, USB

Power Battery : Li-polymer, 2 hours of recharging time, 20hours or more playing time,
Recharging by USB connection

General Information Display : OLED Type(96x63Dot, Graphic), 3colors

Display size : 96 x 63(Dot)

Product size : 33mm(W) x 77.5mm(H) x 18mm(D)

Weight : 38g

Memory : 256MB/512MB

USB : 2.0 full speed

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)	KONINE CO.,LTD.	MY-1020	S86MY-1020	NOTE BOOK
NOTE BOOK	TOSHIBA	PAS50K-04W007	DoC	EUT
NOTE BOOK ADAPTOR	DELTA ELECTRONICS (JIANGSU), LTD.	ADP-60RHA	DoC	NOTEBOOK
PRINTER	H/P	C4569A	DoC	NOTEBOOK
MOUSE	Microsoft	Intellimouse Optical USB and PS/2 compatible	DoC	NOTEBOOK

5.1 Cable Description

		Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
MP3 Player (EUT)	USB	N/A	Y	1.2(P,D)
	AUDIO OUT	N/A	Y	1.2(D)
	AUDIO IN	N/A	Y	1.8(D)
NOTE BOOK	USB	N/A	Y	1.8(D)
	Parallel	N/A	Y	1.8(D)

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

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

			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
		AUDIO IN	N	N/A	Y	BOTH END
NOTE BOOK	MOUSE	USB	Y	NOTE BOOK END	Y	NOTE BOOK END
		Parallel	Y	BOTH END	Y	BOTH 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)
MP3 PLAY MODE	X
UPLOAD/DOWNLOAD MODE	
RECHARGING MODE	
RECORDING MODE	

6. 2 Radiated Emission Test

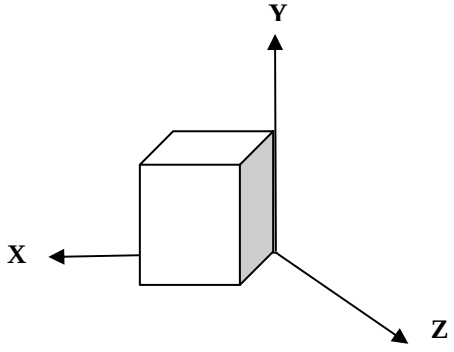
During Preliminary Test, the Following operation mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
MP3 PLAY MODE	X
UPLOAD/DOWNLOAD MODE	
RECHARGING MODE	
RECORDING MODE	

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

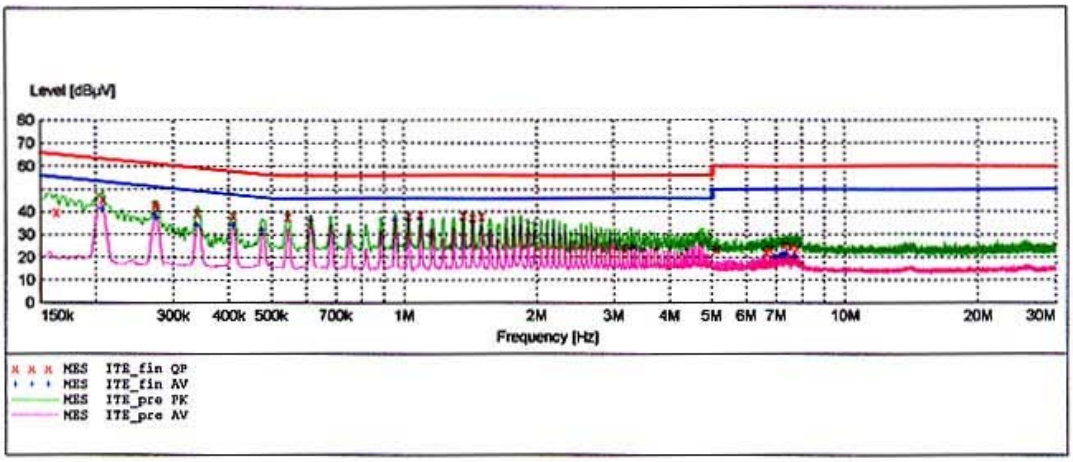
EMC TEST LAB

EUT: MY-1020
Manufacturer: KONINE
Operating Condition: NORMAL
Test Site: SHIELD ROOM
Operator: KH-KIM
Test Specification: KN 22 CLASS B
Comment: N

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 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"

5/12/2005 3:15PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.162500	40.10	9.9	65	25.2	---	---
0.207500	45.60	9.9	63	17.7	---	---
0.272500	43.40	9.9	61	17.6	---	---
0.275000	41.90	9.9	61	19.0	---	---
0.340000	39.80	9.9	59	19.4	---	---
0.410000	38.30	9.9	58	19.4	---	---
0.545000	38.20	9.9	56	17.8	---	---
1.025000	38.30	9.9	56	17.7	---	---
1.090000	38.90	9.9	56	17.1	---	---
1.365000	38.40	10.0	56	17.6	---	---
1.435000	37.60	10.0	56	18.4	---	---
1.500000	38.30	10.0	56	17.7	---	---
5.115000	23.50	10.4	60	36.5	---	---
6.620000	22.70	10.6	60	37.3	---	---
6.755000	23.80	10.6	60	36.2	---	---
7.300000	25.50	10.7	60	34.5	---	---
7.565000	25.00	10.7	60	35.0	---	---
7.775000	23.90	10.8	60	36.1	---	---

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MEASUREMENT RESULT: "ITE_fin AV"

5/12/2005 3:15PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.207500	41.30	9.9	53	12.0	---	---
0.272500	38.90	9.9	51	12.2	---	---
0.275000	37.50	9.9	51	13.5	---	---
0.340000	34.40	9.9	49	14.8	---	---
0.410000	34.40	9.9	48	13.2	---	---
0.477500	32.30	9.9	46	14.0	---	---
0.615000	36.40	9.9	46	9.6	---	---
0.955000	36.50	9.9	46	9.5	---	---
1.025000	37.00	9.9	46	9.0	---	---
1.090000	37.10	9.9	46	8.9	---	---
1.365000	36.80	10.0	46	9.2	---	---
1.430000	36.10	10.0	46	9.9	---	---
6.955000	20.40	10.7	50	29.6	---	---
7.160000	20.80	10.7	50	29.2	---	---
7.230000	21.50	10.7	50	28.5	---	---
7.295000	20.50	10.7	50	29.5	---	---
7.365000	21.90	10.7	50	28.1	---	---
7.710000	20.40	10.8	50	29.6	---	---

HCT

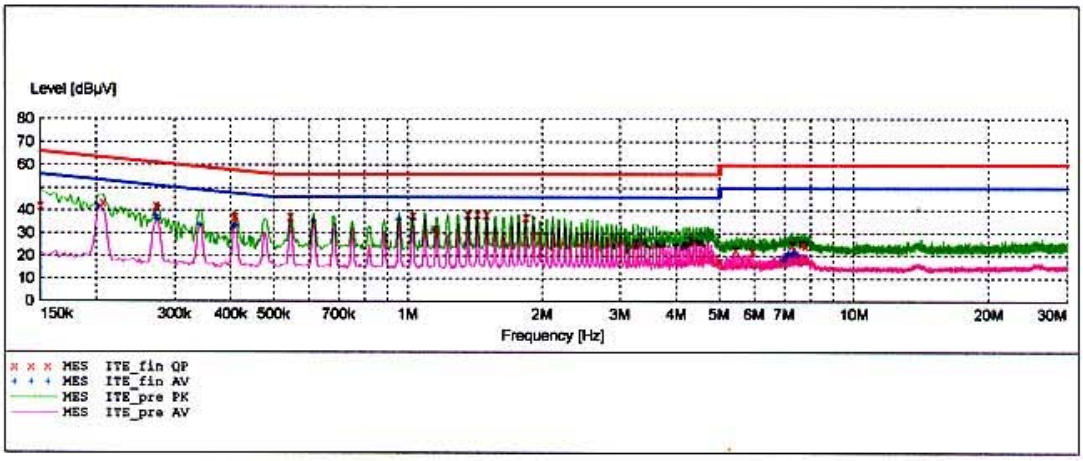
EMC TEST LAB

EUT: MY-1020
Manufacturer: KONINE
Operating Condition: NORMAL
Test Site: SHIELD ROOM
Operator: KH-KIM
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 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	42.20	9.9	66	23.8	---	---
0.207500	43.50	9.9	63	19.8	---	---
0.272500	42.50	9.9	61	18.5	---	---
0.275000	41.30	9.9	61	19.7	---	---
0.407500	37.30	9.9	58	20.4	---	---
0.410000	37.90	9.9	58	19.8	---	---
0.545000	37.60	9.9	56	18.4	---	---
1.025000	38.00	9.9	56	18.0	---	---
1.365000	38.40	10.0	56	17.6	---	---
1.430000	38.70	10.0	56	17.3	---	---
1.500000	38.60	10.0	56	17.4	---	---
1.840000	37.30	10.0	56	18.7	---	---
5.000000	17.70	10.4	56	38.3	---	---
5.450000	23.10	10.5	60	36.9	---	---
5.930000	22.20	10.6	60	37.8	---	---
7.300000	25.30	10.7	60	34.7	---	---
7.635000	25.80	10.7	60	34.2	---	---
7.780000	25.00	10.8	60	35.0	---	---

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MEASUREMENT RESULT: "ITE_fin AV"

5/12/2005 3:11PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.202500	41.40	9.9	54	12.1	---	---
0.272500	37.90	9.9	51	13.2	---	---
0.275000	36.50	9.9	51	14.5	---	---
0.342500	33.80	9.9	49	15.4	---	---
0.407500	33.00	9.9	48	14.7	---	---
0.410000	33.50	9.9	48	14.2	---	---
0.615000	35.40	9.9	46	10.6	---	---
0.955000	36.10	9.9	46	9.9	---	---
1.025000	36.60	9.9	46	9.4	---	---
1.365000	36.90	10.0	46	9.1	---	---
1.430000	36.60	10.0	46	9.4	---	---
1.500000	36.50	10.0	46	9.5	---	---
6.960000	18.20	10.7	50	31.8	---	---
7.090000	19.90	10.7	50	30.1	---	---
7.160000	21.40	10.7	50	28.6	---	---
7.295000	20.80	10.7	50	29.2	---	---
7.365000	21.90	10.7	50	28.1	---	---
7.500000	20.70	10.7	50	29.3	---	---

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NOTES:

1. **All modes(256, 512MB) 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
73.7	11.2	9.0	1.9	V	22.1	30	7.9
83.0	13.2	7.8	2.0	V	23.0	30	7.0
98.3	12.5	8.9	2.3	H	23.7	30	6.3
165.9	7.5	12.5	2.9	V	22.9	30	7.1
171.8	7.4	12.0	3.0	V	22.4	30	7.6
192.0	10.7	10.2	3.1	H	24.0	30	6.0
240.0	15.6	11.0	3.5	H	30.1	37	6.9
287.9	12.6	12.6	3.9	V	29.1	37	7.9
335.9	12.5	13.6	4.2	H	30.3	37	6.7
390.9	11.9	14.8	4.5	H	31.2	37	5.8
456.0	7.7	16.9	4.9	V	29.5	37	7.5
500.3	6.0	16.9	5.1	V	28.0	37	9.0

Radiated Measurements at 10-meters.

512MB

NOTES:

1. All modes(256, 512MB) 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 **KONINE CO., LTD**. MP3 Player **FCC ID:S86MY-1020** complies with §15.107 and §15.109 of the FCC Rules.