# FCC CERTIFICATION On Behalf of Hanshin International Limited

Audience Response Keypad Model No.: HSTNX-0003

FCC ID: WT4HSTNX-0003

Prepared for : Hanshin International Limited

Address : 1/F., Block 3, No. 5 Zhuji Road, Tianhe District, Guangzhou

China

Prepared by : ACCURATE TECHNOLOGY CO. LTD

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Report Number : ATE20090828

Date of Test : May 31 - June 1, 2009

Date of Report : June 2, 2009

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APPENDIX I (TEST CURVES) (22 pages)

#### **Test Report Certification**

Applicant : Hanshin International Limited
 Manufacturer : Hanshin International Limited
 EUT Description : Audience Response Keypad

(A) MODEL NO.: HSTNX-0003

(B) SERIAL NO.: N/A

(C) POWER SUPPLY: DC 3V ("AAA" batteries 2×)

Measurement Procedure Used:

#### FCC Rules and Regulations Part 15 Subpart C Section 15.249 ANSI C63.4: 2003

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section15.249 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test:	May 31 - June 1, 2009	
Prepared by:	sky Long	
	(Engineer)	
Approved & Authorized Signer:	Sean (-)	
	(Manager)	

#### 1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT : Audience Response Keypad

Model Number : HSTNX-0003

Power Supply : DC 3V ("AAA" batteries  $2\times$ )

Operate Frequency : 2410.3-2470.3MHz

Applicant : Hanshin International Limited

Address : 1/F., Block 3, No. 5 Zhuji Road, Tianhe District,

Guangzhou, China

Manufacturer : Hanshin International Limited

Address : 1/F., Block 3, No. 5 Zhuji Road, Tianhe District,

Guangzhou, China

Date of sample received: May 18, 2009

Date of Test : May 31 - June 1, 2009

#### 1.2.Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC

The Registration Number is 752051

Listed by Industry Canada

The Registration Number is 5077A-2

Accredited by China National Accreditation Committee

for Laboratories

The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.

Science & Industry Park, Nanshan, Shenzhen, Guangdong

P.R. China

#### 1.3. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2

(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42 dB, k=2

(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2

(Above 1GHz)

# 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment** 

Kind of equipment	Manufacturer	Туре	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	03.28.2010
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	03.28.2010
Spectrum Analyzer	Agilent	E7405A	MY45115511	03.28.2010
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	03.30.2010
Loop Antenna	Schwarzbeck	FMZB1516	1516131	03.28.2010
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	03.28.2010
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	12.19.2009
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	10.09.2009
LISN	Rohde&Schwarz	ESH3-Z5	100305	03.28.2010
LISN	Schwarzbeck	NSLK8126	8126431	03.28.2010

# 3. SUMMARY OF TEST RESULTS

FCC Rules	<b>Description of Test</b>	Result		
Section 15.249(a)	The fundamental field strength and the harmonics	Compliant		
Section 15.209 Section 15.249(d)	Radiated Emission	Compliant		
Section 15.249(d)	Band Edge	Compliant		
Section 15.207	Conducted Emission	N/A		

Remark: "N/A" means "Not applicable".

# 4. FUNDAMENTAL AND HARMONICS RADIATED EMISSION MEASURMENT

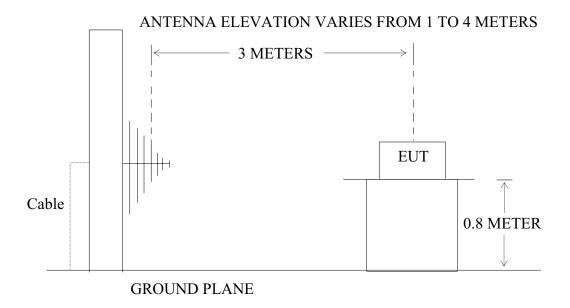
# 4.1.Block Diagram of Test Setup

4.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Audience Response Keypad)

4.1.2.Semi-Anechoic Chamber Test Setup Diagram



(EUT: Audience Response Keypad)

#### 4.2. The Emission Limit

4.2.1.For intentional radiators, According to section 15.249(a), Operation within the frequency band of 2.4 to 2.4835GHz, The fundamental field strength shall not exceed 94 dB $\mu$ V/m and the harmonics shall not exceed 54 dB $\mu$ V/m.

Fundamental	Field Strength of Fundamental	Field Strength of harmonics
Frequency	(millivolts/meter)	(microvolts/meter)
902-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

4.2.2.According to section 15.249(e), as shown in section 15.35(b), the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

#### 4.3. Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.3.1. Audience Response Keypad (EUT)

Model Number : HSTNX-0003

Serial Number : N/A

Manufacturer : Hanshin International Limited

#### 4.4. Operating Condition of EUT

- 4.4.1. Setup the EUT and simulator as shown as Section 4.1.
- 4.4.2. Turn on the power of all equipment.
- 4.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2410.3-2470.3MHz. We are select 2410.3MHz, 2440.3MHz, 2470.3MHz TX frequency to transmit.

#### 4.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 1MHz.

# 4.6. The Field Strength of Radiation Emission Measurement Results **PASS.**

Date of Test: May 31, 2009 Temperature: 25°C

EUT: Audience Response Keypad Humidity: 50%

Model No.: HSTNX-0003 Power Supply: DC 3V ("AAA" batteries 2×)

Test Mode: TX 2410.3MHz Test Engineer: Joe

#### **Fundamental Radiated Emissions**

Frequency	Reading(	dBμV/m)	Factor(dB)	Result(c	lBμV/m)	Limit(dI	BμV/m)	Margi	n(dB)	Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
2410.269	95.32	106.58	-7.43	87.89	99.15	94	114	-6.11	-14.85	Vertical
2410.269	93.93	105.11	-7.43	86.50	97.68	94	114	-7.50	-16.32	Horizontal

#### **Harmonics Radiated Emissions**

Frequency	Reading(c	dBμV/m)	Factor(dB)	B) Result(dBμV/m)		Limit(dBµV/m)		Margin(dB)		Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
4820.574	49.57	60.71	-0.21	49.36	60.50	54	74	-4.64	-13.50	Vertical
4820.574	45.23	56.42	-0.21	45.02	56.21	54	74	-8.98	-17.79	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss (if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test: May 31, 2009 Temperature: 25°C

EUT: Audience Response Keypad Humidity: 52%

Model No.: HSTNX-0003 Power Supply: DC 3V ("AAA" batteries 2×)

Test Mode: TX 2440.3MHz Test Engineer: Joe

#### **Fundamental Radiated Emissions**

Frequency	Reading(c	dBμV/m)	Factor(dB)	Result(c	lBμV/m)	Limit(dF	BμV/m)	Margi	n(dB)	Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
2440.332	95.38	106.64	-7.36	88.02	99.28	94	114	-5.98	-14.72	Vertical
2440.332	94.41	105.60	-7.36	87.05	98.24	94	114	-6.95	-15.76	Horizontal

#### **Harmonics Radiated Emissions**

Frequency	Reading(c	dBμV/m)	Factor(dB)	Result(c	lBμV/m)	Limit(dI	BμV/m)	Margi	n(dB)	Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
4880.305	50.48	61.77	0.13	50.61	61.90	54	74	-3.39	-12.10	Vertical
4880.305	44.86	56.01	0.13	44.99	56.14	54	74	-9.01	-17.86	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss (if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test: May 31, 2009 Temperature: 25°C

EUT: Audience Response Keypad Humidity: 52%

Model No.: HSTNX-0003 Power Supply: DC 3V ("AAA" batteries 2×)

Test Mode: TX 2470.3MHz Test Engineer: Joe

#### **Fundamental Radiated Emissions**

Frequency	Reading(c	dBμV/m)	Factor(dB)	Result(c	lBμV/m)	Limit(dF	BμV/m)	Margi	n(dB)	Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
2470.330	95.17	106.43	-7.36	87.81	99.07	94	114	-6.19	-14.93	Vertical
2470.330	93.67	104.89	-7.36	86.31	97.53	94	114	-7.69	-16.47	Horizontal

#### **Harmonics Radiated Emissions**

Frequency	Reading(c	dBμV/m)	Factor(dB)	Result(c	lBμV/m)	Limit(dI	BμV/m)	Margi	n(dB)	Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
4940.325	50.00	61.27	0.42	50.42	61.69	54	74	-3.58	-12.31	Vertical
4940.325	44.96	56.14	0.42	45.38	56.56	54	74	-8.62	-17.44	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss (if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

# 5. RADIATED EMISSION FOR FCC PART 15 SECTION 15.249(D)

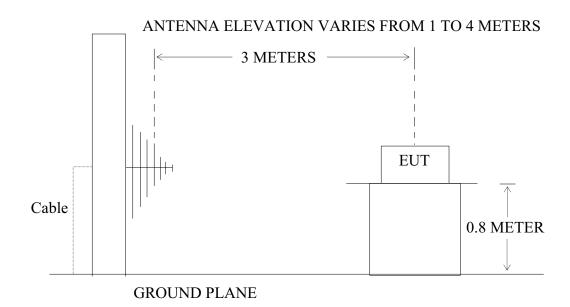
#### 5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Audience Response Keypad)

5.1.2.Semi-Anechoic Chamber Test Setup Diagram



(EUT: Audience Response Keypad)

#### 5.2. The Emission Limit For Section 15.249(d)

5.2.1.Emission radiated outside of the specified frequency bands, except for harmonics, shall be comply with the general radiated emission limits in Section 15.209.

Radiation Emission Measurement Limits According to Section 15.209.

		Limit		
Frequency (MHz)	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dBµV/m)	The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is	
30 - 88	100	40	performed with Average detector.	
88 - 216	150	43.5	Except those frequency bands mention above, the	
216 - 960	200	46	final measurement for frequencies below	
Above 960	500	54	1000MHz is performed with Quasi Peak detector.	

#### 5.3.EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.3.1. Audience Response Keypad (EUT)

Model Number : HSTNX-0003

Serial Number : N/A

Manufacturer : Hanshin International Limited

#### 5.4. Operating Condition of EUT

- 5.4.1. Setup the EUT and simulator as shown as Section 5.1.
- 5.4.2. Turn on the power of all equipment.
- 5.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2410.3-2470.3MHz. We are select 2410.3MHz, 2440.3MHz, 2470.3MHz TX frequency to transmit.

#### 5.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz, and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 25000MHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

#### 5.6. The Emission Measurement Result

#### PASS.

Date of Test:	May 31, 2009	Temperature:	25°C
EUT:	Audience Response Keypad	Humidity:	50%
Model No.:	HSTNX-0003	Power Supply:	DC 3V ("AAA" batteries 2×)
Test Mode:	TX 2410.3MHz	Test Engineer:	Joe

Frequency	Reading	Factor(dB)	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP		QP	QP	QP	
-	-	-	-	-	_	Vertical
-	-	-	-	-	-	Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss (if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test:May 31, 2009Temperature:25°CEUT:Audience Response KeypadHumidity:50%Model No.:HSTNX-0003Power Supply:DC 3V ("AAA" batteries 2×)Test Mode:TX 2440.3MHzTest Engineer:Joe

Frequency	Reading	Factor(dB)	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP		QP	QP	QP	
						Vertical
						Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss (if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test:May 31, 2009Temperature:25°CEUT:Audience Response KeypadHumidity:50%Model No.:HSTNX-0003Power Supply:DC 3V ("AAA" batteries 2×)Test Mode:TX 2470.3MHzTest Engineer:Joe

Frequency	Reading	Factor(dB)	Result	Limit	Margin	Polarization
(MHz)	(dBµV/m)	Corr.	(dBµV/m)	(dBµV/m)	(dB)	
	QP		QP	QP	QP	
						Vertical
						Horizontal

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss (if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

#### 6. BAND EDGES

#### 6.1. The Requirement

6.1.1.Band Edge from 2400MHz to 2483.5MHz. Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

#### 6.2.EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.2.1. Audience Response Keypad (EUT)

Model Number : HSTNX-0003

Serial Number : N/A

Manufacturer : Hanshin International Limited

#### 6.3. Operating Condition of EUT

- 6.3.1. Setup the EUT and simulator as shown as Section 5.1.
- 6.3.2. Turn on the power of all equipment.
- 6.3.3. Let the EUT work in TX modes measure it. The transmit frequency are 2410.3-2470.3MHz. We are select 2410.3MHz, 2470.3MHz TX frequency to transmit.

#### 6.4. Test Procedure

- 1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power. The EUT was tested in 3 orthogonal planes.
- 2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

RBW=1MHz, VBW=1MHz

#### 6.5. The Measurement Result

#### Pass.

Date of Test:June 1, 2009Temperature:25°CEUT:Audience Response KeypadHumidity:50%Model No.:HSTNX-0003Power Supply:DC 3V ("AAA" batteries 2×)Test Mode:TX 2410.3MHzTest Engineer:Joe

Frequency	Reading(c	dBμV/m)	Factor(dB)	Result(c	lBμV/m)	Limit(dl	BμV/m)	Margi	in(dB)	Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
2398.188	48.69	59.89	-7.47	41.22	52.42	54	74	-12.78	-21.58	
2399.138	49.02	60.21	-7.46	41.56	52.75	54	74	-12.44	-21.25	Vertical
2400.000	49.29	60.50	-7.46	41.83	53.04	54	74	-12.17	-20.96	
2397.838	43.61	54.77	-7.48	36.13	47.29	54	74	-17.87	-26.71	
2398.863	43.86	55.05	-7.46	36.40	47.59	54	74	-17.60	-26.41	Horizontal
2400.000	43.58	54.75	-7.46	36.12	47.29	54	74	-17.88	26.71	

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss (if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

Date of Test:June 1, 2009Temperature:25°CEUT:Audience Response KeypadHumidity:50%Model No.:HSTNX-0003Power Supply:DC 3V ("AAA" batteries 2×)Test Mode:TX 2470.3MHzTest Engineer:Joe

Frequency	Reading(c	dBμV/m)	Factor(dB)	Result(c	lBμV/m)	Limit(dl	BμV/m)	Margi	in(dB)	Polarization
(MHz)	AV	PEAK	Corr.	AV	PEAK	AV	PEAK	AV	PEAK	
2483.500	47.36	58.47	-7.37	39.99	51.10	54	74	-14.01	-22.90	
2483.689	47.38	58.56	-7.37	40.01	51.19	54	74	-13.99	-22.81	Vertical
2484.166	46.76	57.93	-7.38	39.38	50.55	54	74	-14.62	-23.45	
2483.500	41.62	52.76	-7.37	34.25	45.39	54	74	-19.75	-28.61	
2485.005	41.75	52.87	-7.38	34.37	45.49	54	74	-19.63	-28.51	Horizontal
2485.628	41.76	52.90	-7.38	34.38	45.52	54	74	-19.62	-28.48	

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss (if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

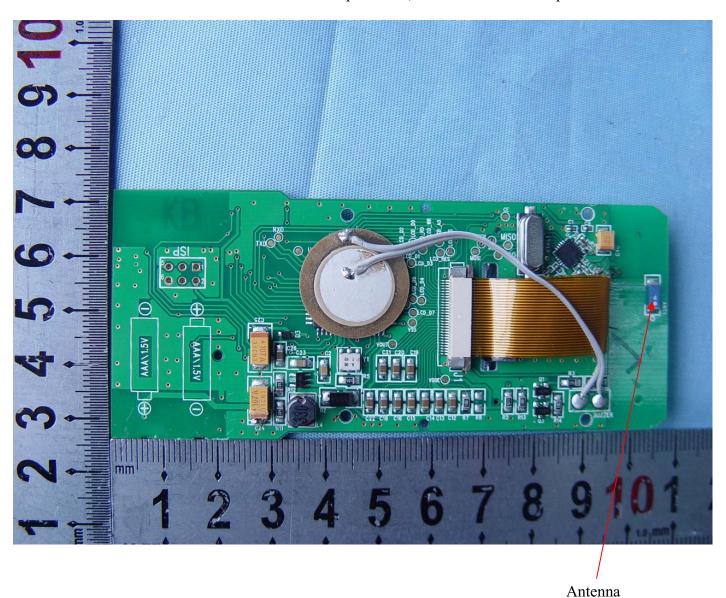
### 7. ANTENNA REQUIREMENT

#### 7.1. The Requirement

7.1.1. According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

#### 7.2. Antenna Construction

The transmitter utilizes SMD chip antenna, no consideration of replacement.



# APPENDIX I (Test Curves)



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Horizontal

Engineer Signature: Joe

Power Source: DC 3V Date: 2009/05/31

Time: 16:12:49

Distance: 3m

Job No.: RTTE #1770

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

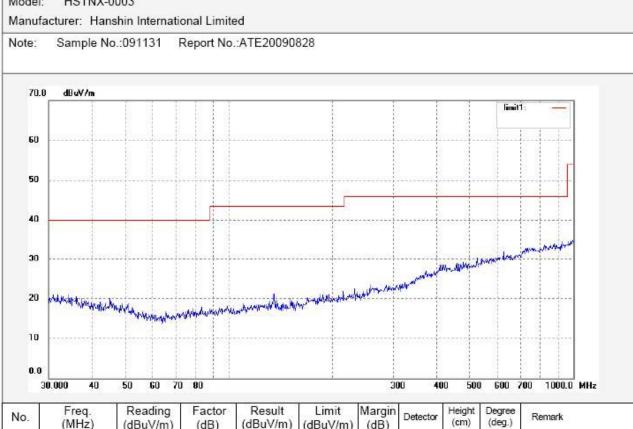
Temp.( C)/Hum.(%) 25 C / 50 % EUT: Audience Response Keypad

(dBuV/m)

(dB)

TX Channel 1 Mode:

HSTNX-0003 Model:



(dBuV/m)

(dB)



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1771 Standard: FCC Class B 3M Radiated

Test item: Radiation Test
Temp.( C)/Hum.(%) 25 C / 50 %
EUT: Audience Response Keypad

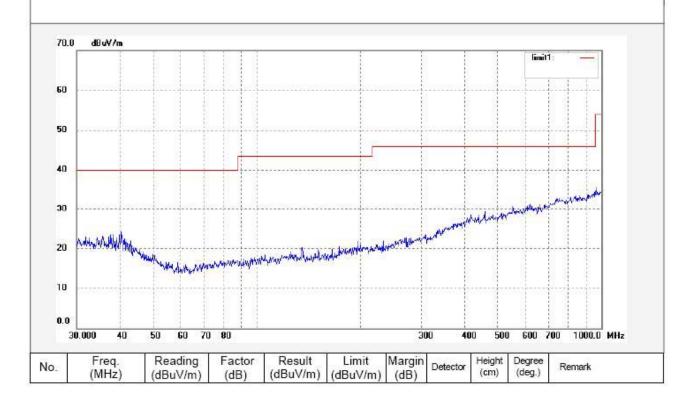
Mode: TX Channel 1 Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828

Polarization: Vertical Power Source: DC 3V Date: 2009/05/31 Time: 16:15:04

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1777 Standard: FCC Class B 3M Radiated

Standard: FCC Class B 3M Radiated Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: Audience Response Keypad

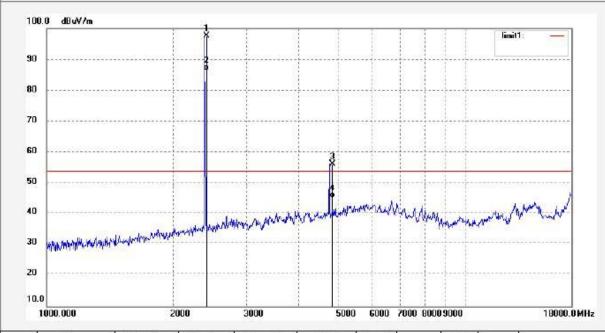
Mode: TX Channel 1 Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828

Polarization: Horizontal Power Source: DC 3V Date: 2009/05/31 Time: 16:38:51

Engineer Signature: Joe



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2410.269	105.11	-7.43	97.68	114.00	-16.32	peak			
2	2410.269	93.93	-7.43	86.50	94.00	-7.50	AVG	ā :	00	
3	4820.574	56.42	-0.21	56.21	74.00	-17.79	peak			
4	4820.574	45.23	-0.21	45.02	54.00	-8.98	AVG	Š .		S



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1776

Standard: FCC Class B 3M Radiated

Test item: Radiation Test Temp.( C)/Hum.(%) 25 C / 50 %

EUT: Audience Response Keypad

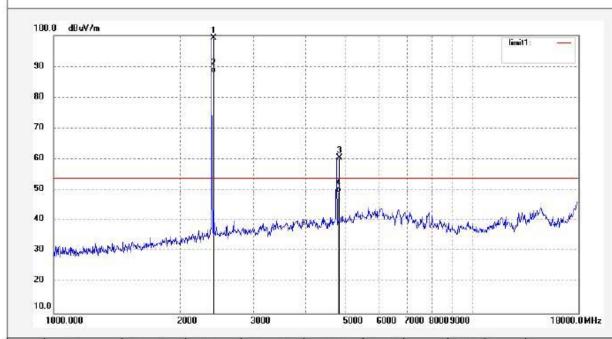
Mode: TX Channel 1 Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828

Polarization: Vertical Power Source: DC 3V Date: 2009/05/31 Time: 16:35:56

Engineer Signature: Joe



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2410.269	106.58	-7.43	99.15	114.00	-14.85	peak				
2	2410.269	95.32	-7.43	87.89	94.00	-6.11	AVG	8	00		
3	4820.574	60.71	-0.21	60.50	74.00	-13.50	peak				
4	4820.574	49.57	-0.21	49.36	54.00	-4.64	AVG	Š .		8	



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Horizontal

Power Source: DC 3V

Job No.: RTTE #1782

Standard: FCC Class B 3M Radiated

Date: 2009/05/31 Test item: Radiation Test Temp.( C)/Hum.(%) 25 C / 50 % Time: 17:10:42 EUT: Audience Response Keypad Engineer Signature: Joe Mode: TX Channel 1 Distance: 3m HSTNX-0003 Model: Manufacturer: Hanshin International Limited Note: Sample No.:091131 Report No.:ATE20090828 70.0 dBuV/m limit1 60 50 40 30 20 10

	18000.000		2000	0						25000.0 MHz	
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

25000.0 MHz

Job No.: RTTE #1783 Standard: FCC Class B 3M Radiated

Test item: Radiation Test
Temp.( C)/Hum.(%) 25 C / 50 %
EUT: Audience Response Keypad

Mode: TX Channel 1 Model: HSTNX-0003

dBuV/m

Note:

70.0

60

50

40

30

20

10

0.0

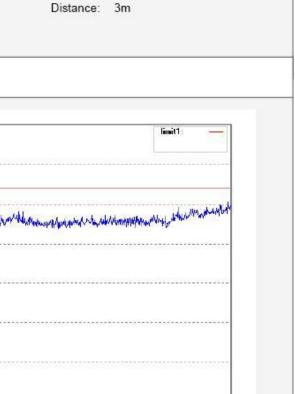
18000.000

Manufacturer: Hanshin International Limited

Sample No.:091131 Report No.:ATE20090828

Polarization: Vertical Power Source: DC 3V Date: 2009/05/31 Time: 17:13:47

Engineer Signature: Joe



Reading Freq. Factor Result Limit Margin Height Degree Detector No. Remark (deg.) (MHz) (dBuV/m) (dBuV/m) (dB) (dBuV/m) (dB)

20000



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1773

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: Audience Response Keypad

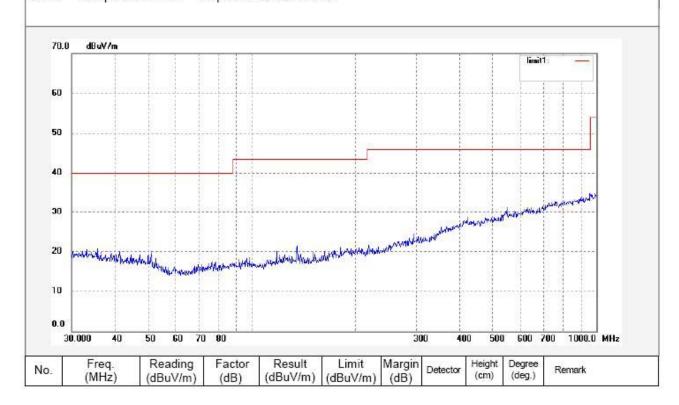
Mode: TX Channel 16 Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828

Polarization: Horizontal Power Source: DC 3V Date: 2009/05/31 Time: 16:20:57

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Vertical

Power Source: DC 3V Date: 2009/05/31

Engineer Signature: Joe

Time: 16:18:28

Job No.: RTTE #1772

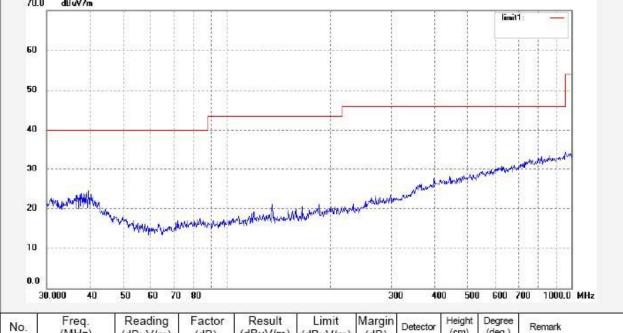
Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: Audience Response Keypad

TX Channel 16 Distance: 3m Mode: HSTNX-0003 Model: Manufacturer: Hanshin International Limited Note: Sample No.:091131 Report No.:ATE20090828 70.0 dBuV/m limit1





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1778 Standard: FCC Class B 3M Radiated

Test item: Radiation Test
Temp.( C)/Hum.(%) 25 C / 50 %
EUT: Audience Response Keypad

Mode: TX Channel 16 Model: HSTNX-0003

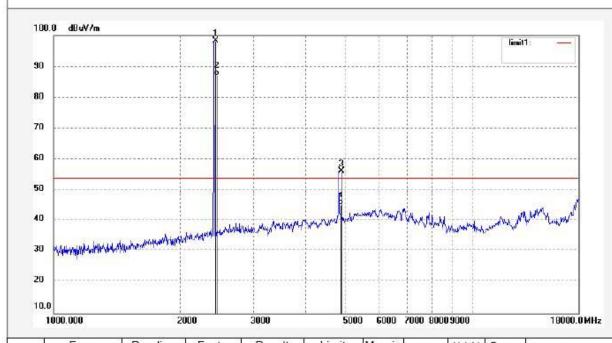
Note:

Manufacturer: Hanshin International Limited

Sample No.:091131 Report No.:ATE20090828

Polarization: Horizontal Power Source: DC 3V Date: 2009/05/31 Time: 16:45:56

Engineer Signature: Joe



No.	Freq. (MHz)	(dBuV/m)	Factor (dB)	(dBuV/m)	(dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2440.332	105.60	-7.36	98.24	114.00	-15.76	peak		,	3.	
2	2440.332	94.41	-7.36	87.05	94.00	-6.95	AVG	S :	0	8	
3	4880.305	56.01	0.13	56.14	74.00	-17.86	peak				
4	4880.305	44.86	0.13	44.99	54.00	-9.01	AVG	8 .	25	3	



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1779

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

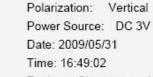
Temp.( C)/Hum.(%) 25 C / 50 %

EUT: Audience Response Keypad

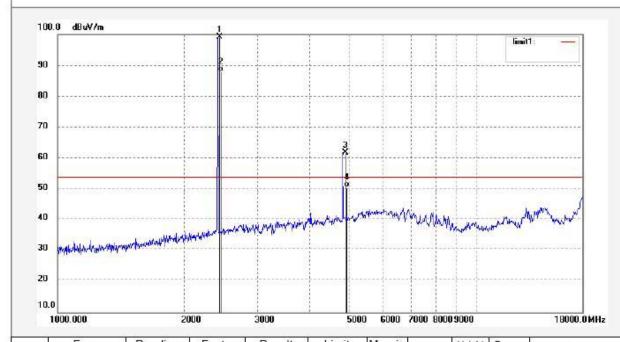
Mode: TX Channel 16 Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828



Engineer Signature: Joe



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)		Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2440.332	106.64	-7.36	99.28	114.00	-14.72	peak				
2	2440.332	95.38	-7.36	88.02	94.00	-5.98	AVG	8 :	0.	5	
3	4880.305	61.77	0.13	61.90	74.00	-12.10	peak				
4	4880.305	50.48	0.13	50.61	54.00	-3.39	AVG	· ·	X:	8	



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

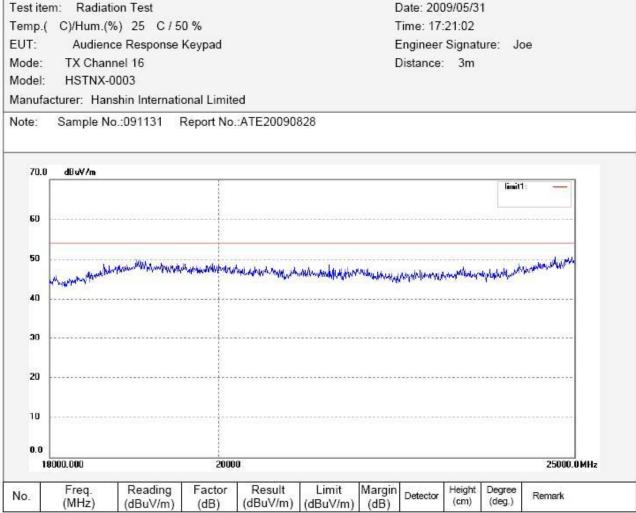
Polarization: Horizontal

Power Source: DC 3V

Job No.: RTTE #1785

Standard: FCC Class B 3M Radiated

Test item: Radiation Test





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Job No.: RTTE #1784

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 % EUT: Audience Response Keypad

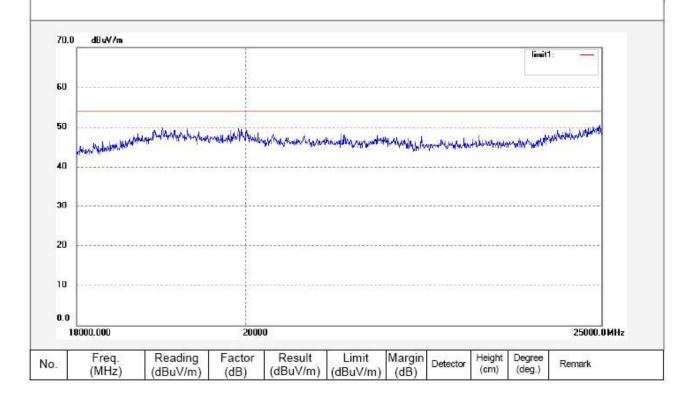
Mode: TX Channel 16 Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828

Polarization: Vertical Power Source: DC 3V Date: 2009/05/31 Time: 17:17:57

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1774

Standard: FCC Class B 3M Radiated

Test item: Radiation Test
Temp.( C)/Hum.(%) 25 C / 50 %
EUT: Audience Response Keypad

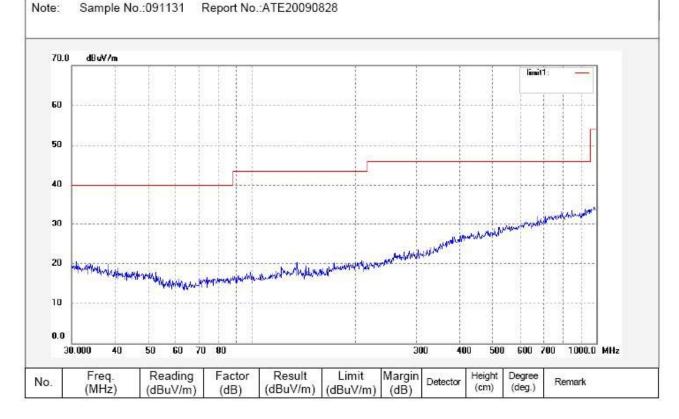
Mode: TX Channel 31 Model: HSTNX-0003

Manufacturer: Hanshin International Limited

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Polarization: Horizontal Power Source: DC 3V Date: 2009/05/31 Time: 16:24:30

Engineer Signature: Joe





Model:

#### ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1775 Standard: FCC Class B 3M Radiated

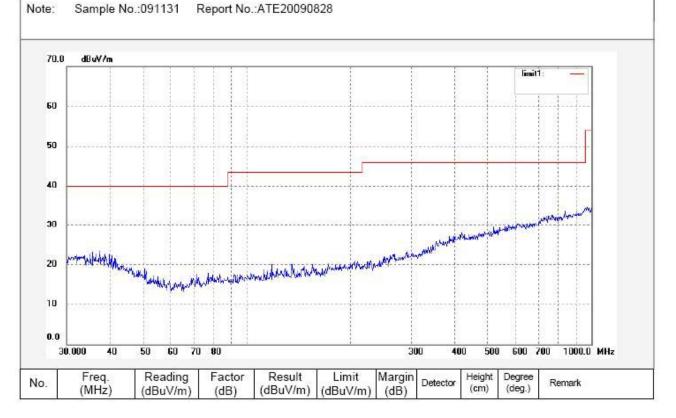
Test item: Radiation Test Temp.( C)/Hum.(%) 25 C / 50 % EUT: Audience Response Keypad

TX Channel 31 Mode: HSTNX-0003

Manufacturer: Hanshin International Limited

Polarization: Vertical Power Source: DC 3V Date: 2009/05/31 Time: 16:27:16

Engineer Signature: Joe





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1781

Standard: FCC Class B 3M Radiated

Test item: Radiation Test
Temp.( C)/Hum.(%) 25 C / 50 %

EUT: Audience Response Keypad

Mode: TX Channel 31 Model: HSTNX-0003

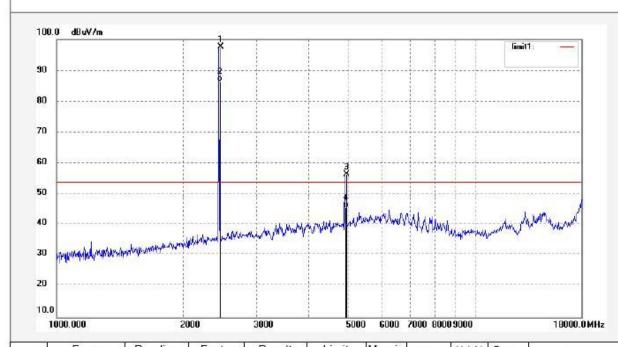
Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828

Polarization: Horizontal Power Source: DC 3V Date: 2009/05/31 Time: 17:03:37

Engineer Signature: Joe





No.	Freq. (MHz)	(dBuV/m)	Factor (dB)	(dBuV/m)	(dBuV/m)	(dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2470.330	104.89	-7.36	97.53	114.00	-16.47	peak		,	0.0	
2	2470.330	93.67	-7.36	86.31	94.00	-7.69	AVG	8	0.	8	
3	4940.325	56.14	0.42	56.56	74.00	-17.44	peak				
4	4940.325	44.96	0.42	45.38	54.00	-8.62	AVG	S .	All and a second	3	



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1780

Standard: FCC Class B 3M Radiated

Test item: Radiation Test Temp.( C)/Hum.(%) 25 C / 50 %

EUT: Audience Response Keypad

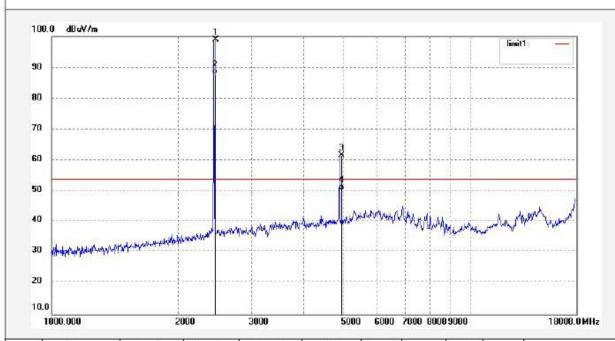
Mode: TX Channel 31 Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828

Polarization: Vertical Power Source: DC 3V Date: 2009/05/31 Time: 16:55:59

Engineer Signature: Joe



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2470.330	106.43	-7.36	99.07	114.00	-14.93	peak				
2	2470.330	95.17	-7.36	87.81	94.00	-6.19	AVG	ā :	00	8	
3	4940.325	61.27	0.42	61.69	74.00	-12.31	peak				
4	4940.325	50.00	0.42	50.42	54.00	-3.58	AVG	8 .		8	



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Polarization: Horizontal

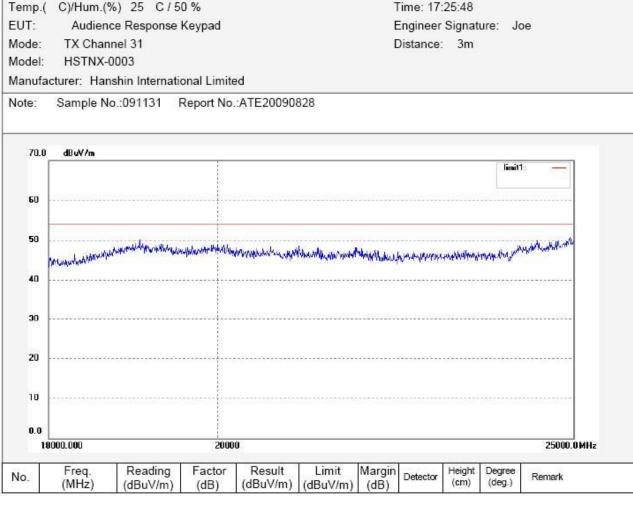
Power Source: DC 3V Date: 2009/05/31

Job No.: RTTE #1786

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

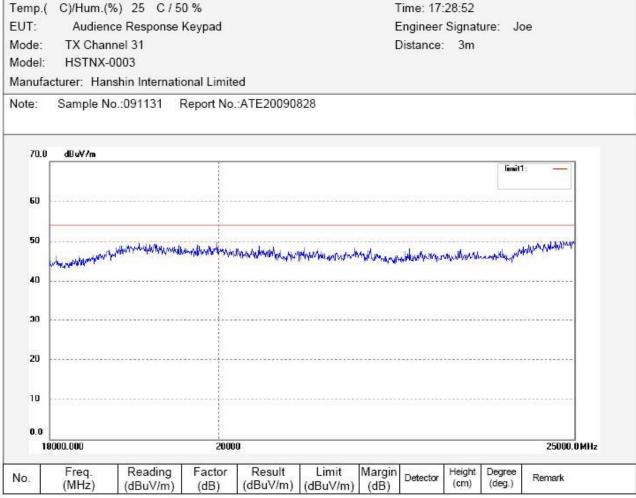
Polarization: Vertical

Power Source: DC 3V Date: 2009/05/31

Job No.: RTTE #1787

Standard: FCC Class B 3M Radiated

Test item: Radiation Test





F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1789 Polarization: Horizontal Standard: FCC Part 15 PEAK 2.4G Power Source: DC 3V

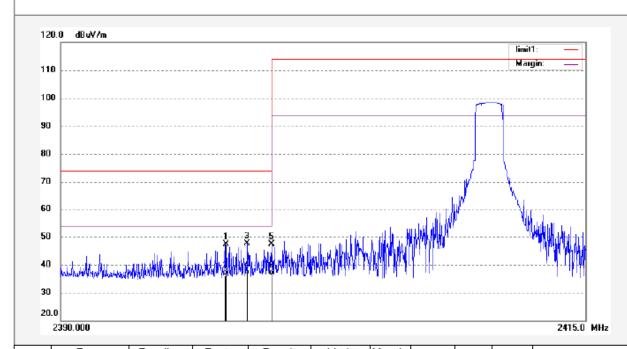
Test item: Radiation Test Date: 09/06/01/
Temp.( C)/Hum.(%) 25 C / 50 % Time: 9/35/55

EUT: Audience Response Keypad Engineer Signature: Joe Mode: TX Channel 1 Distance: 3m

Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2397.838	54.77	-7.48	47.29	74.00	-26.71	peak			
2	2397.838	43.61	-7.48	36.13	54.00	-17.87	AVG			
3	2398.863	55.05	-7.46	47.59	74.00	-26.41	peak			
4	2398.863	43.86	-7.46	36.40	54.00	-17.60	AVG			
5	2400.000	54.75	-7.46	47.29	74.00	-26.71	peak			
6	2400.000	43.58	-7.46	36.12	54.00	-17.88	AVG			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

2415.0 MHz

Job No.: RTTE #1788

Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: Audience Response Keypad

Mode: TX Channel 1 Model: HSTNX-0003

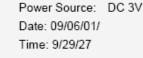
50

30 20.0

2390.000

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828

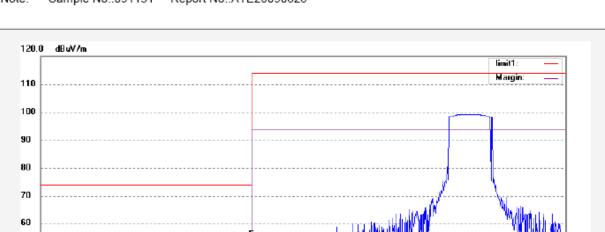


Distance: 3m

Polarization:

Engineer Signature: Joe

Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2398.188	59.89	-7.47	52.42	74.00	-21.58	peak			
2	2398.188	48.69	-7.47	41.22	54.00	-12.78	AVG			
3	2399.138	60.21	-7.46	52.75	74.00	-21.25	peak			
4	2399.138	49.02	-7.46	41.56	54.00	-12.44	AVG			
5	2400.000	60.50	-7.46	53.04	74.00	-20.96	peak			
6	2400.000	49.29	-7.46	41.83	54.00	-12.17	AVG			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1791 Polarization: Horizontal Standard: FCC Part 15 PEAK 2.4G Power Source: DC 3V

 Test item:
 Radiation Test
 Date: 09/06/01/

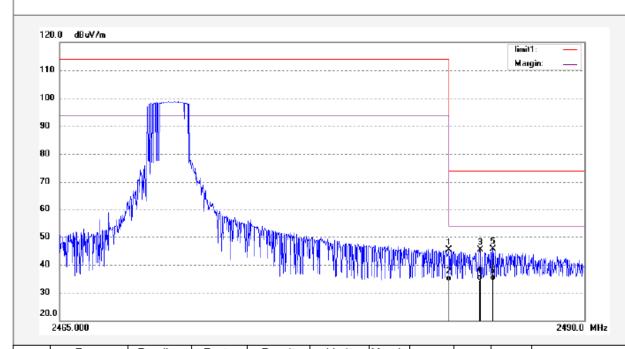
 Temp.(
 C)/Hum.(%)
 25
 C / 50 %
 Time: 9/52/05

EUT: Audience Response Keypad Engineer Signature: Joe Mode: TX Channel 31 Distance: 3m

Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828



N	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1		2483.500	52.76	-7.37	45.39	74.00	-28.61	peak			
2		2483.500	41.62	-7.37	34.25	54.00	-19.75	AVG			
3		2485.005	52.87	-7.38	45.49	74.00	-28.51	peak			
4		2485.005	41.75	-7.38	34.37	54.00	-19.63	AVG			
5		2485.628	52.90	-7.38	45.52	74.00	-28.48	peak			
6		2485.628	41.76	-7.38	34.38	54.00	-19.62	AVG			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 966 chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: RTTE #1790

Standard: FCC Part 15 PEAK 2.4G

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 50 %

EUT: Audience Response Keypad

Mode: TX Channel 31 Model: HSTNX-0003

Manufacturer: Hanshin International Limited

Note: Sample No.:091131 Report No.:ATE20090828

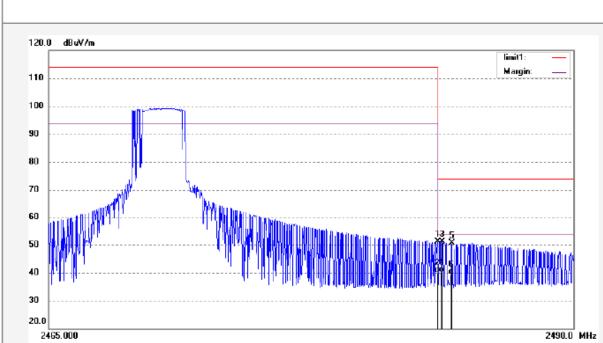


Distance: 3m

Polarization:

Engineer Signature: Joe

Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	58.47	-7.37	51.10	74.00	-22.90	peak			
2	2483.500	47.36	-7.37	39.99	54.00	-14.01	AVG			
3	2483.689	58.56	-7.37	51.19	74.00	-22.81	peak			
4	2483.689	47.38	-7.37	40.01	54.00	-13.99	AVG			
5	2484.166	57.93	-7.38	50.55	74.00	-23.45	peak			
6	2484.166	46.76	-7.38	39.38	54.00	-14.62	AVG			