

APPLICATION CERTIFICATION FCC Part 15B
On Behalf of
Hanshin International Limited

Instructor Response System - Receiver
Model No.: HSTNX-0002

FCC ID: WT4HSTNX-0002

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 : ATE20091164
Date of Test : June 29-30, 2009
Date of Report : July 2, 2009

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Test Report Certification

Applicant : Hanshin International Limited
 Manufacturer : Hanshin International Limited
 EUT Description : Instructor Response System - Receiver
 (A) MODEL NO.: HSTNX-0002
 (B) SERIAL NO.: N/A
 (C) POWER SUPPLY: DC 5V (Connect to PC use USB terminal)

Measurement Procedure Used:

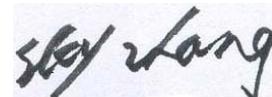
FCC Rules and Regulations Part 15 Subpart B
ANSI C63.4: 2003

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 B 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.

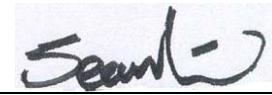
Date of Test : _____ June 29-30, 2009

Prepared by :



(Engineer)

Approved & Authorized Signer :



(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : Instructor Response System - Receiver

Model Number : HSTNX-0002

Frequency Band : 2410.3-2470.3MH

Power Supply : DC 5V (Connect to PC use USB terminal)

PC System : Manufacturer: DELL
M/N: DCNE
Serial No.: 6CQSC2X

Printer : Manufacturer: Canon
Model No.: BJC-1000SP

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 : June 26, 2009

Date of Test : June 29-30, 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 (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	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. OPERATION OF EUT DURING TESTING

3.1. Operating Mode

The mode is used: Connect to PC

3.2. Configuration and peripherals

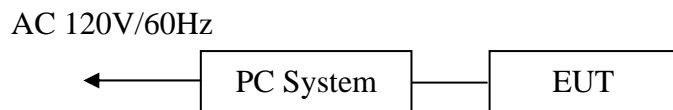


Figure 1 Setup: Connect to PC

(EUT: Instructor Response System - Receiver)

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.107	Conducted Emission Test	Compliant
Section 15.109	Radiated Emission Test	Compliant

5. CONDUCTED EMISSION FOR FCC PART 15 SECTION

15.107(A)

5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators

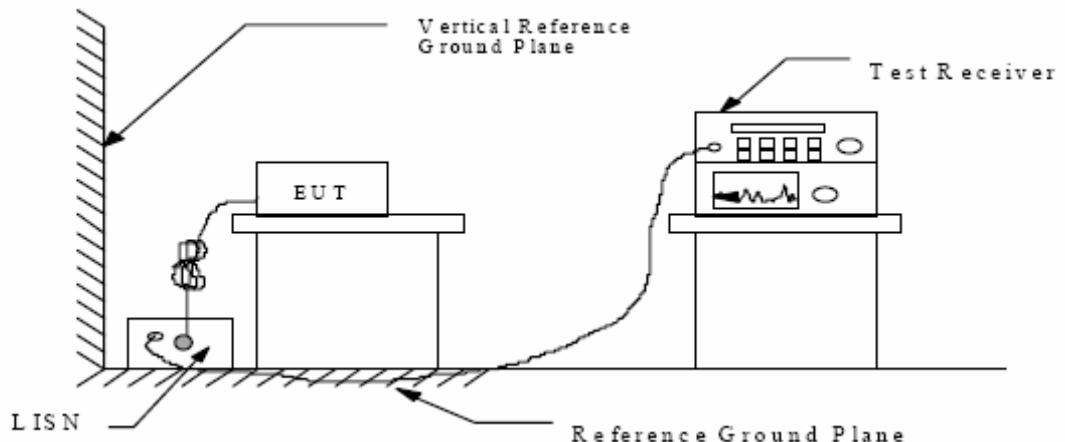
AC 120V/60Hz



Setup: Connect to PC

(EUT: Instructor Response System - Receiver)

5.1.2. Shielding Room Test Setup Diagram



(EUT: Instructor Response System - Receiver)

5.2. The Emission Limit

5.2.1. Conducted Emission Measurement Limits According to Section 15.107(a)

Frequency (MHz)	Limit dB(μ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 - 56.0 *	56.0 - 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

* Decreases with the logarithm of the frequency.

5.3.Configuration of EUT on Measurement

The following equipment are installed on the Conducted 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.Instructor Response System - Receiver (EUT)

Model Number	:	HSTNX-0002
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 Connect to PC mode measure it.

5.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2003 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

5.6.Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Date of Test:	June 29, 2009	Temperature:	25°C
EUT:	Instructor Response System - Receiver	Humidity:	50%
Model No.:	HSTNX-0002	Power Supply:	Connect to PC use USB terminal PC power: AC 120V/60Hz
Test Mode:	Connect to PC	Test Engineer:	Joe

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.591000	31.90	12.0	56	24.1	QP	N	GND
2.976000	28.00	11.6	56	28.0	QP	N	GND
16.728000	39.90	11.1	60	20.1	QP	N	GND
Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.991500	28.90	11.8	46	17.1	AV	N	GND
2.116500	28.10	11.6	46	17.9	AV	N	GND
11.508000	34.40	11.2	50	15.6	AV	N	GND
Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.595500	32.90	12.0	56	23.1	QP	N	GND
2.382000	30.20	11.6	56	25.8	QP	N	GND
11.917500	37.30	11.2	60	22.7	QP	N	GND
Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.199500	36.80	11.2	54	16.8	AV	N	GND
0.595500	28.30	12.0	46	17.7	AV	N	GND
1.257000	28.80	11.8	46	17.2	AV	N	GND

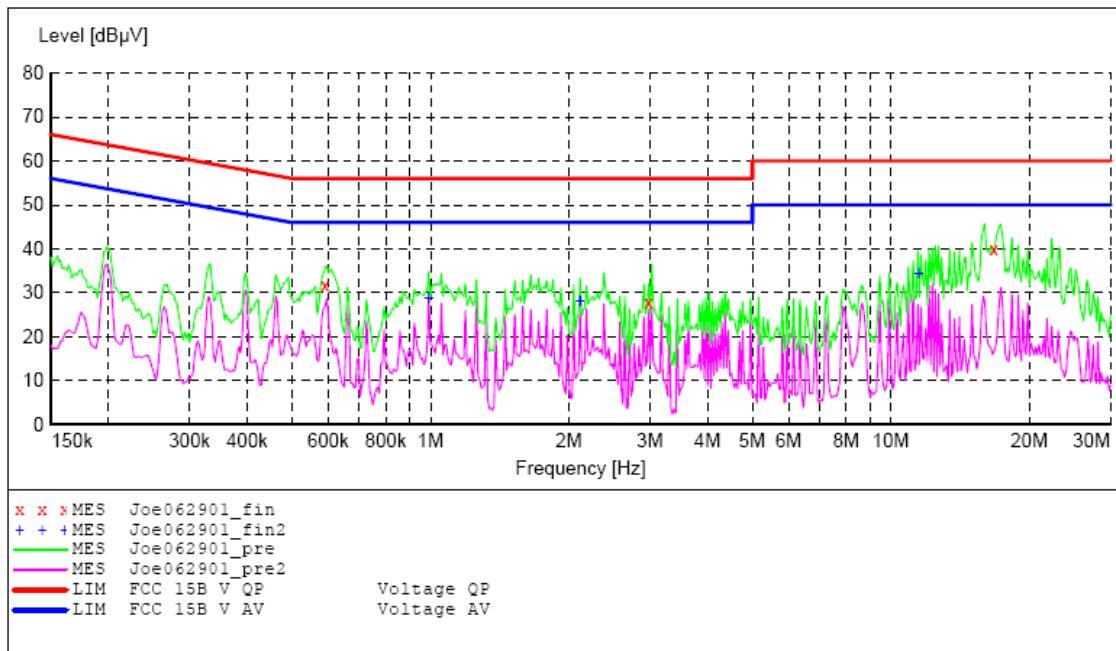
Emissions attenuated more than 20 dB below the permissible value are not reported.
The spectral diagrams are attached as below.

ACCURATE TECHNOLOGY CO., LTD**CONDUCTED EMISSION STANDARD FCC PART 15B**

EUT: Instructor Response System-Receiver M/N:HSTNX-0002
 Manufacturer: Hanshin International Limited
 Operating Condition: Connect to PC
 Test Site: 1#Shielding Room
 Operator: Joe
 Test Specification: Va 120V/60Hz
 Comment: Sample No.:091361 Report No.:ATE20091164
 Start of Test: 6/29/2009 / 6:25:00PM

SCAN TABLE: "V 150K-30MHz fin"

Short Description: SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 0.8 % QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average

**MEASUREMENT RESULT: "Joe062901_fin"**

6/29/2009 6:30PM

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.591000	31.90	12.0	56	24.1	QP	N	GND
2.976000	28.00	11.6	56	28.0	QP	N	GND
16.728000	39.90	11.1	60	20.1	QP	N	GND

MEASUREMENT RESULT: "Joe062901_fin2"

6/29/2009 6:30PM

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.991500	28.90	11.8	46	17.1	AV	N	GND
2.116500	28.10	11.6	46	17.9	AV	N	GND
11.508000	34.40	11.2	50	15.6	AV	N	GND

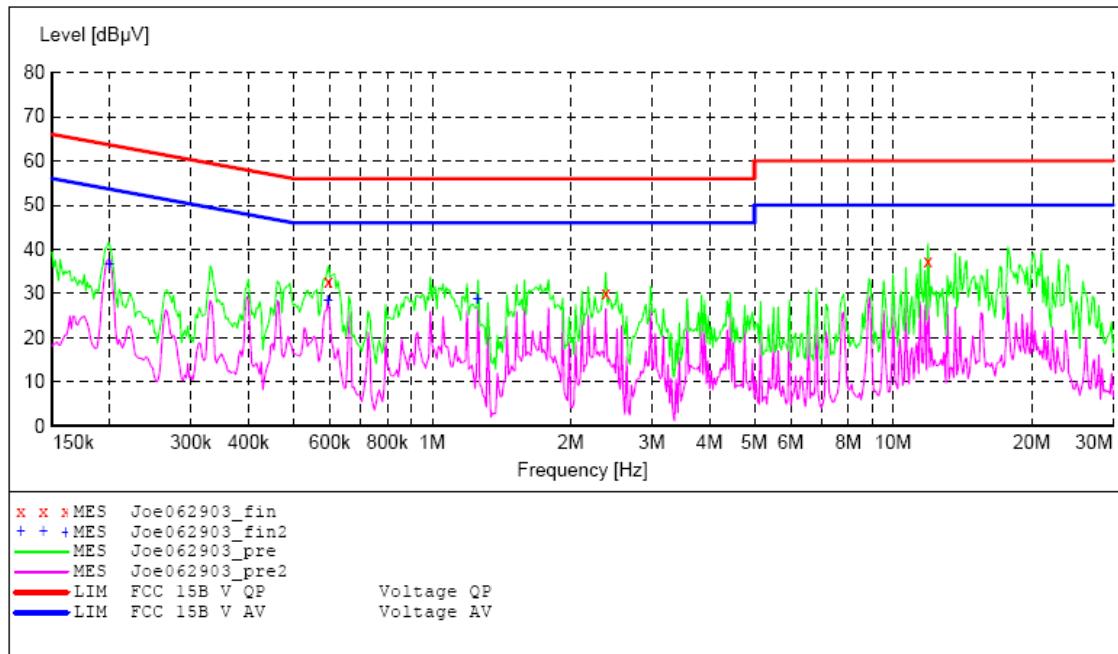
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Instructor Response System-Receiver M/N:HSTNX-0002
 Manufacturer: Hanshin International Limited
 Operating Condition: Connect to PC
 Test Site: 1#Shielding Room
 Operator: Joe
 Test Specification: Vb 120V/60Hz
 Comment: Sample No.:091361 Report No.:ATE20091164
 Start of Test: 6/29/2009 / 6:35:38PM

SCAN TABLE: "V 150K-30MHz fin"

Short Description: -SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 0.8 % QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "Joe062903_fin"

6/29/2009 6:38PM

Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dB μ V	dB	dB μ V	dB			
0.595500	32.90	12.0	56	23.1	QP	L	GND
2.382000	30.20	11.6	56	25.8	QP	L	GND
11.917500	37.30	11.2	60	22.7	QP	L	GND

MEASUREMENT RESULT: "Joe062903_fin2"

6/29/2009 6:38PM

Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dB μ V	dB	dB μ V	dB			
0.199500	36.80	11.2	54	16.8	AV	L	GND
0.595500	28.30	12.0	46	17.7	AV	L	GND
1.257000	28.80	11.8	46	17.2	AV	L	GND

6. RADIATED EMISSION FOR FCC PART 15 SECTION 15.109(A)

6.1. Block Diagram of Test Setup

6.1.1. Block diagram of connection between the EUT and simulators

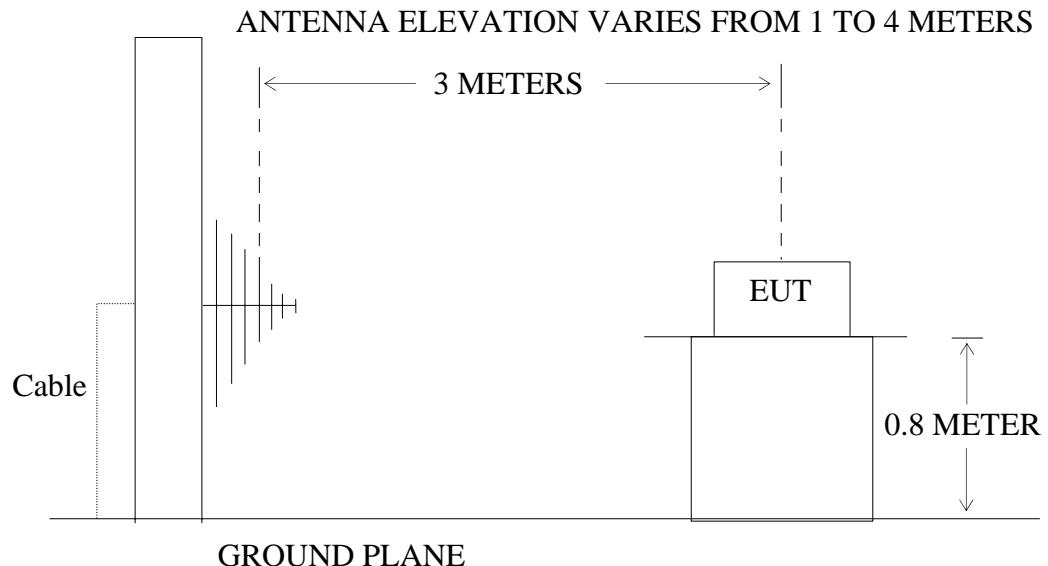
AC 120V/60Hz



Setup: Connect to PC

(EUT: Instructor Response System - Receiver)

6.1.2. Semi-Anechoic Chamber Test Setup Diagram



(EUT: Instructor Response System - Receiver)

6.2.The Emission Limit For Section 15.109 (a)

6.2.1.Radiation Emission Measurement Limits According to Section 15.109 (a).

Frequency (MHz)	Limit	
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dB μ V/m)
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

6.3.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.

6.3.1.Instructor Response System - Receiver (EUT)

Model Number : HSTNX-0002
 Serial Number : N/A
 Manufacturer : Hanshin International Limited

6.4.Operating Condition of EUT

6.4.1.Setup the EUT and simulator as shown as Section 6.1.

6.4.2.Turn on the power of all equipment.

6.4.3. Let the EUT work in Connect to PC mode measure it.

6.5. 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 bandwidth of test receiver is set at 120kHz in 30-1000MHz.

The frequency range from 30MHz to 1000MHz is checked.

The final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

6.6.The Emission Measurement Result

PASS.

Date of Test:	June 30, 2009	Temperature:	25°C
EUT:	Instructor Response System - Receiver	Humidity:	50%
Model No.:	HSTNX-0002	Power Supply:	Connect to PC use USB terminal PC power: AC 120V/60Hz
Test Mode:	Connect to PC	Test Engineer:	Joe

Frequency (MHz)	Reading (dB μ V/m)	Factor(dB) Corr.	Result	Limit	Margin	Polarization
			(dB μ V/m)	(dB μ V/m)	(dB)	
QP	QP	QP	QP	QP	QP	
119.1430	25.16	14.60	39.76	43.50	-3.74	Vertical
131.0590	26.08	14.86	40.94	43.50	-2.56	Vertical
142.9711	26.15	14.48	40.63	43.50	-2.87	Vertical
119.1430	26.00	14.60	40.60	43.50	-2.90	Horizontal
131.0590	26.31	14.86	41.17	43.50	-2.33	Horizontal
142.9711	26.49	14.48	40.97	43.50	-2.53	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

3. The spectral diagrams are attached as below display the measurement of peak values.


ACCURATE TECHNOLOGY CO., LTD.

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

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

Job No.: RTTE #2038

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: DC 5V

Test item: Radiation Test

Date: 09/06/30/

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

Time: 8/56/39

EUT: Instructor Response System - Recei

Engineer Signature: Joe

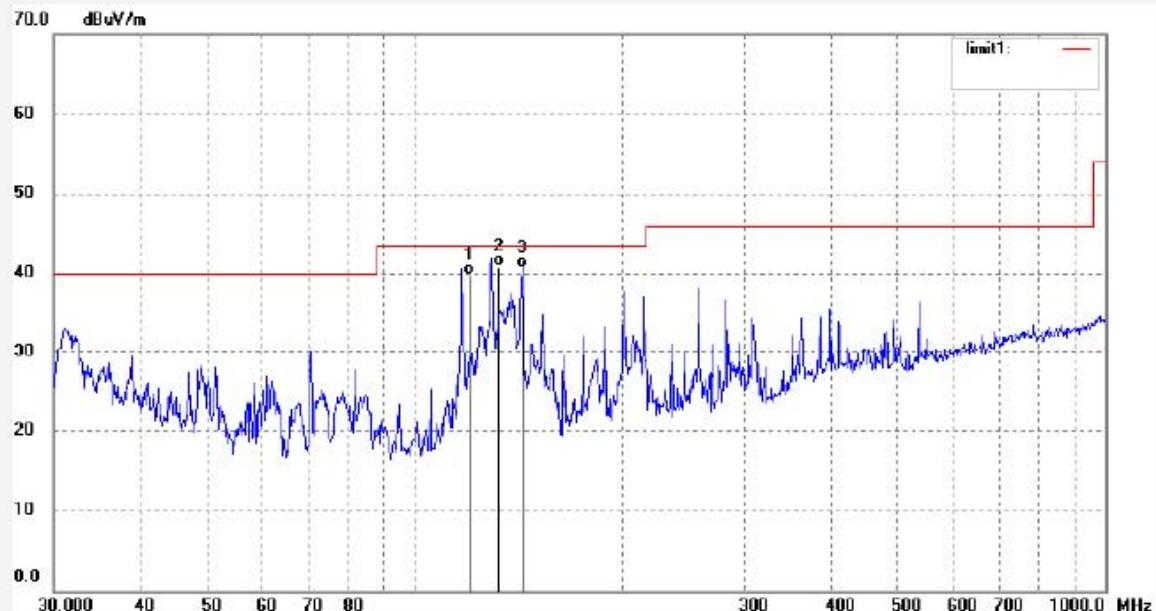
Mode: Connect to PC

Distance: 3m

Model: HSTNX-0002

Manufacturer: Hanshin International Limited

Note: Sample No.:091361 Report No.:ATE20091164



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	119.1430	25.16	14.60	39.76	43.50	-3.74	QP			
2	131.0590	26.08	14.86	40.94	43.50	-2.56	QP			
3	142.9711	26.15	14.48	40.63	43.50	-2.87	QP			

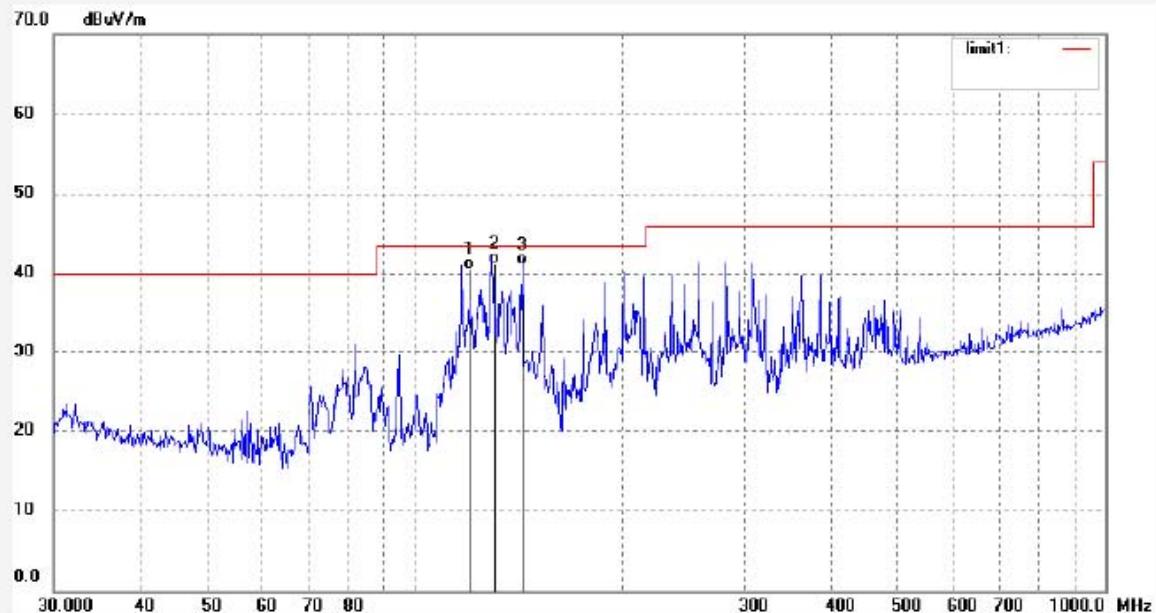

ACCURATE TECHNOLOGY CO., LTD.

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

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

Job No.: RTTE #2037	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 09/06/30/
Temp.(C)/Hum.(%) 25 C / 50 %	Time: 8/54/07
EUT: Instructor Response System - Recei	Engineer Signature: Joe
Mode: Connect to PC	Distance: 3m
Model: HSTNX-0002	
Manufacturer: Hanshin International Limited	

Note: Sample No.:091361 Report No.:ATE20091164



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	119.1430	26.00	14.60	40.60	43.50	-2.90	QP			
2	131.0590	26.31	14.86	41.17	43.50	-2.33	QP			
3	142.9711	26.49	14.48	40.97	43.50	-2.53	QP			