



HCT CO., LTD.

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## EMI DoC REPORT

**Applicant:**

**HANDHELD Group AB.  
Kinnegatan 17,53133 Lidkoping, Sweden  
HandHeld Group AB.**

**Date of Issue: December 14, 2010**

**Test Report No.: HCTE1012FE14**

**Test Site: HCT CO., LTD.**

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

**FCC ID:**

**YY3-NAUTIZX3**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart A / CISPR 22 Class A

Equipment Type : Industrial PDA

Trade Name : HANDHELD Group AB.

Model Name : Nautiz X3

Port / Connector(s) : DC/AC IN Port / Headset Port / USB Data Port

The device bearing the trade name and model specified above, has been shown to comply 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. (See Test Report if any modifications were made for compliance)

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.

**Report prepared by  
: Dong Sup Kim  
Test Engineer of EMC Tech. Part**

**Approved by  
: Gyeong Seon Kim  
Manager of EMC Tech. Part**

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## 1. GENERAL INFORMATION

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### 1.1 Product Description

Equipment Under Test (E.U.T) is **Industrial PDA, Model: Nautiz X3** manufactured by **HANDHELD Group AB**. Its basic purpose is used for communications.

<b>Model</b>	Nautiz X3
<b>FCC ID</b>	YY3-NAUTIZX3
<b>E.U.T Type</b>	Industrial PDA
<b>TX Frequency</b>	824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900) 826.40 MHz to 846.60 MHz (WCDMA 850) 1 852.4 MHz to 1 907.6 MHz (WCDMA 1 900)
<b>RX Frequency</b>	869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 1 900) 871.40 MHz to 891.60 MHz (WCDMA 850) 1 932.4 MHz to 1 987.6 MHz (WCDMA 1 900)

### 1.2 Related Submittal(s) / Grant(s)

Original submittal only.

### 1.3 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Manufacturer	Model Number/ Serial Number	FCC ID / DoC	Connected To
Industrial PDA	HANDHELD	Nautiz X3	YY3 -NAUTIZX3	-
Adaptor Power supply	Bridge power Corp.	BPI010S05C02	-	E.U.T
Multi cradle Power supply	Bridge power Corp.	BPI060S12F03	-	E.U.T
Single cradle Power supply	Bridge power Corp.	JPW128KA0502N04	-	E.U.T
Notebook PC	HP	Compaq6730b /CNU8390H5T	DoC	E.U.T
Notebook PC adaptor	Hipro Electronics Co., Ltd.	PPP014Y-S /DA44-00242A	-	Notebook PC
USB cable	-	-	-	E.U.T Notebook PC
Headset	-	-	-	E.U.T
Single cradle	CATCHWELL	-	-	E.U.T
Multi cradle	CATCHWELL			E.U.T

### 1.4 Cable Description

Power Supply	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded(Y/N)	Length (m)
Single cradle	DC in	Y	Y	(P)1.8
	Headset jack	-	N	(D)1.2
	USB data	N	Y	(D)1.5
	AC in	N	-	(P)1.8
Multi cradle	DC in	Y	Y	(P)1.8
	Headset jack	-	N	(D)1.2
	USB data	N	Y	(D)1.5
	AC in	N	-	(P)1.8
Adaptor	DC in	N	-	(P)1.3

\* The marked "(D)" means the data cable and "(P)" means the power cable.

### 1.5 Noise Suppression Parts on Cable. (I/O cable)

Power Supply	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
Single cradle	DC in	Y	E.U.T end	Y	E.U.T end
	Headset jack	N	-	Y	E.U.T end
	USB data	N	Both end	Y	Both end
	AC in	N	-	Y	Both end
Multi cradle	DC in	N	-	Y	E.U.T end
	Headset jack	N	-	Y	E.U.T end
	USB data	Y	Both end	Y	Both end
	AC in	N	-	Y	Both end
Adaptor	DC in	N	-	Y	E.U.T end

## 1.6 Test Methodology

Both Conducted and Radiated testing was performed according to the procedures in ANSI C63.4/2003. Radiated testing was performed at an antenna to E.U.T distance of 10 m

## 1.7 Test Facility

The 10 m semi anechoic chamber used to collect the radiated data is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyoungki-Do, South Korea, and the conducted measurement facility used to measure the conducted data are located at San 136-1, Ami-Ri Bubal-Eup, Icheon-Si, Kyoungki-Do, 467-701, South Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facilities was submitted to the Commission and accepted dated Sep. 03, 2010 (Registration Number: 90661)

## 1.8 Frequency Range of Radiated Measurements

An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

## 2. Description of Tests

### 2.1 Conducted Emissions Test

E.U.T was connected to LISN via Notebook PC adaptor.  
 Preliminary Power Line Conducted Emission tests were performed by using the procedure in ANSI C63.4/2003 7.2.3 to determine the worst operating conditions.

CISPR 22 CLASS A Limits		
Freq. Range	Quasi-Peak dB( $\mu V$ )	Average dB( $\mu V$ )
150 kHz to 0.5 MHz	79	66
0.5 MHz to 30 MHz	73	60

### 2.2 Radiated Emission Test

Preliminary Radiated Emission tests were performed by using the procedure in ANSI C63.4/2003 8.3.1.1 to determine the worst operating condition. Final Radiated Emission tests were performed at 10 m semi anechoic chamber.

CISPR 22 CLASS A 10 m Limits	
Freq. Range	Quasi-Peak dB( $\mu V$ )
30 MHz to 230 MHz	40
230 MHz to 1 000 MHz	47

### 3. PRELIMINARY TEST

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#### 3.1 Conducted Emission Test

During preliminary tests, the following operating mode was investigated:

**Operation Mode:**  Idle  
 MP3  
 Camera  
 PC Link

**Test Configuration:**  PDA + Headset  
 PDA + Single Cradle + Headset + Notebook PC  
 PDA + Multi Cradle + Headset + Notebook PC

#### 3.2 Radiated Emission Test

During preliminary tests, the following operating mode was investigated:

**Operation Mode:**  Idle  
 MP3  
 Camera  
 PC Link

**Test Configuration:**  PDA + Adaptor  
 PDA + Headset  
 PDA + Single Cradle + Headset + Notebook PC  
 PDA + Multi Cradle + Headset + Notebook PC



## 4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

### 4.1 Conducted Emission Test

Limit apply to	: CISPR 22 Class A
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Test date	: November 30, 2010 / December 07, 2010
Temperature	: 26.8 °C / 25.1 °C
Humidity level	: 46.9 % / 45.7 %

※ **NOTE:** Refer to page 10 to page 53 for details.

[ Adaptor ]

a. Idle Mode

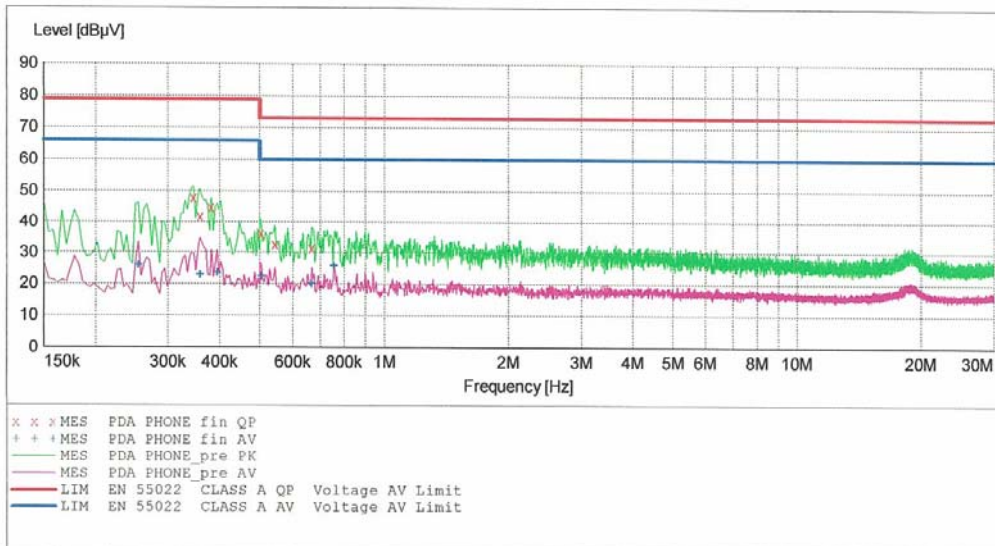
HCT

EMC

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: IDLE MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H (ADAPTER)

SCAN TABLE: "CISPR22 CLASS A"

Start	Stop	Step	EN	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	EN 55022	Voltage	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz		Average	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "PDA PHONE\_fin QP"

12/7/2010 9:32AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.346000	47.80	10.1	79	31.2	---	---
0.358000	41.80	10.1	79	37.2	---	---
0.382000	44.70	10.1	79	34.3	---	---
0.504000	36.20	10.1	73	36.8	---	---
0.544000	32.70	10.1	73	40.3	---	---
0.668000	31.40	10.1	73	41.6	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

12/7/2010 9:32AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.254000	25.80	10.1	66	40.2	---	---
0.358000	22.80	10.1	66	43.2	---	---
0.394000	23.30	10.1	66	42.7	---	---
0.504000	22.30	10.1	60	37.7	---	---
0.668000	19.90	10.1	60	40.1	---	---
0.756000	25.70	10.1	60	34.3	---	---

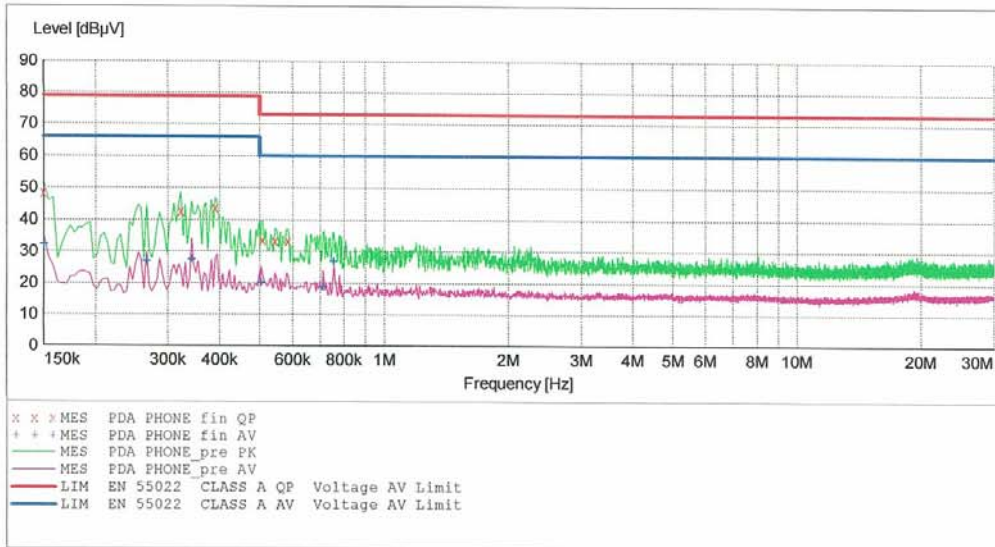
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: IDLE MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N (ADAPTER)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

12/7/2010 9:29AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	48.20	10.1	79	30.8	---	---
0.322000	42.70	10.1	79	36.3	---	---
0.390000	43.70	10.1	79	35.3	---	---
0.508000	33.70	10.1	73	39.3	---	---
0.544000	33.50	10.1	73	39.5	---	---
0.584000	33.30	10.1	73	39.7	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

12/7/2010 9:29AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150000	32.00	10.1	66	34.0	---	---
0.266000	26.90	10.1	66	39.1	---	---
0.342000	27.40	10.1	66	38.6	---	---
0.504000	20.20	10.1	60	39.8	---	---
0.712000	18.70	10.1	60	41.3	---	---
0.756000	26.90	10.1	60	33.1	---	---

**b. Camera Mode**

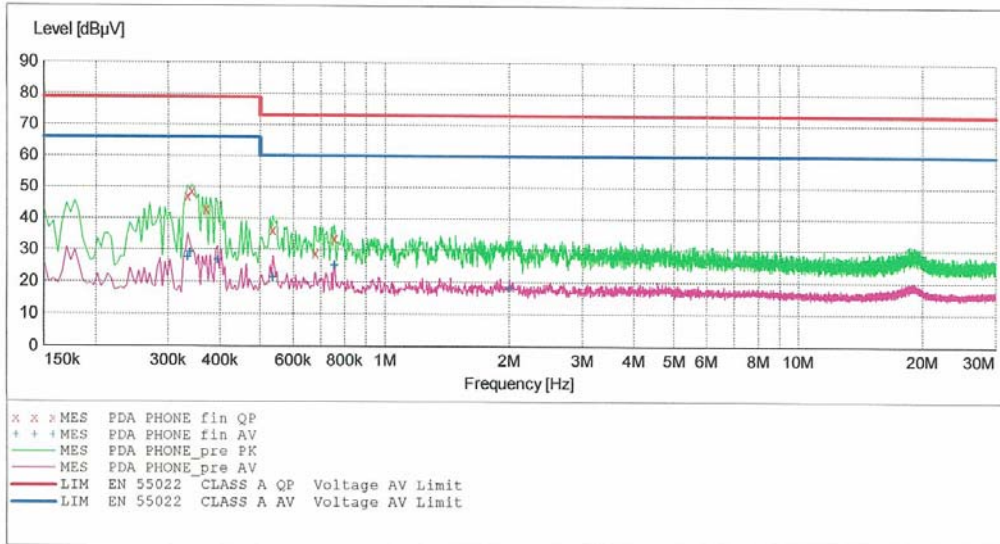
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: CAMERA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H (ADAPTER)

**SCAN TABLE: "CISPR22 CLASS A"**

Short Description:		EN 55022 Voltage				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

12/7/2010 9:35AM

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBµV	dB	dBµV	dB		
0.334000	47.00	10.1	79	32.0	---	---
0.342000	48.60	10.1	79	30.4	---	---
0.370000	42.90	10.1	79	36.1	---	---
0.536000	36.20	10.1	73	36.8	---	---
0.680000	29.00	10.1	73	44.0	---	---
0.756000	33.60	10.1	73	39.4	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

12/7/2010 9:35AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.334000	27.40	10.1	66	38.6	---	---
0.338000	29.20	10.1	66	36.8	---	---
0.394000	26.70	10.1	66	39.3	---	---
0.536000	21.30	10.1	60	38.7	---	---
0.756000	25.00	10.1	60	35.0	---	---
2.000000	18.00	10.3	60	42.0	---	---

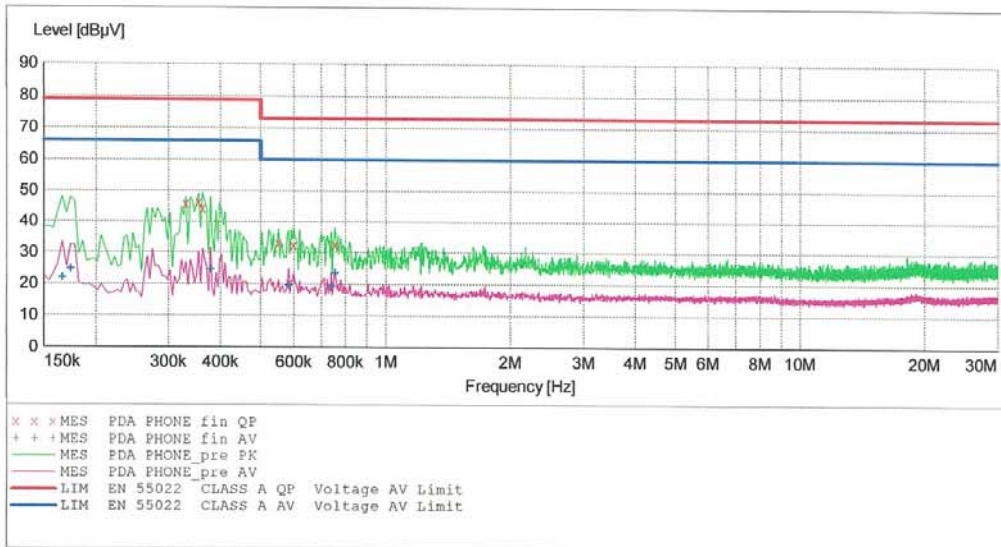
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: CAMERA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N (ADAPTER)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	Short Description	EN	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	EN 55022 Voltage	55022	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz			Average	10.0 ms	9 kHz	None



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

12/7/2010 9:38AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.330000	45.70	10.1	79	33.3	---	---
0.354000	46.30	10.1	79	32.7	---	---
0.362000	44.20	10.1	79	34.8	---	---
0.552000	33.10	10.1	73	39.9	---	---
0.600000	32.40	10.1	73	40.6	---	---
0.756000	32.50	10.1	73	40.5	---	---



**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

12/7/2010 9:38AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.166000	21.70	10.1	66	44.3	---	---
0.174000	24.60	10.1	66	41.4	---	---
0.378000	24.50	10.1	66	41.5	---	---
0.584000	19.50	10.1	60	40.5	---	---
0.740000	19.20	10.1	60	40.8	---	---
0.756000	23.50	10.1	60	36.5	---	---

**c. MP3 Mode**

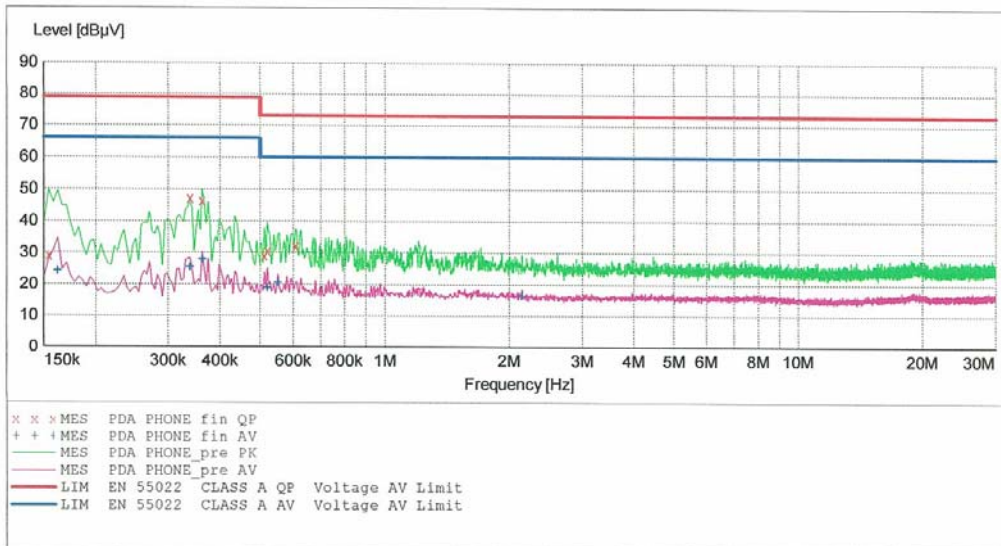
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: MP3 MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H (ADAPTER)

**SCAN TABLE: "CISPR22 CLASS A"**

Short Description:	EN	55022 Voltage	Detector	Meas. Time	IF Bandw.	Transducer
Start	Stop	Step	Frequency	Frequency	Width	
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

12/7/2010 9:44AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154000	29.10	10.1	79	49.9	---	---
0.338000	47.20	10.1	79	31.8	---	---
0.362000	46.40	10.1	79	32.6	---	---
0.512000	29.20	10.1	73	43.8	---	---
0.520000	30.60	10.1	73	42.4	---	---
0.608000	32.00	10.1	73	41.0	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

12/7/2010 9:44AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.162000	24.00	10.1	66	42.0	---	---
0.338000	25.40	10.1	66	40.6	---	---
0.362000	27.80	10.1	66	38.2	---	---
0.520000	18.90	10.1	60	41.1	---	---
0.552000	20.40	10.1	60	39.6	---	---
2.148000	16.20	10.3	60	43.8	---	---

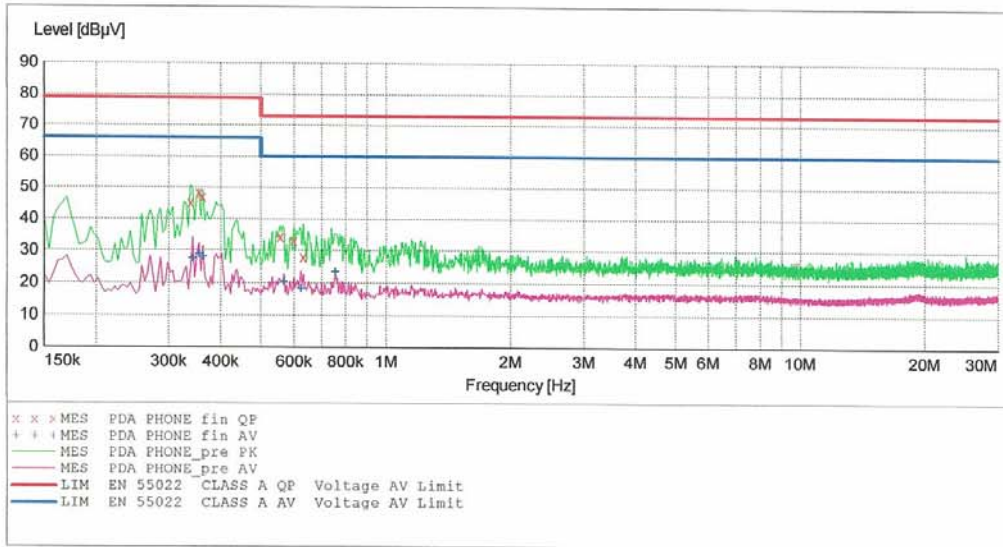
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: MP3 MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N (ADAPTER)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

12/7/2010 9:41AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.338000	45.20	10.1	79	33.8	---	---
0.354000	48.10	10.1	79	30.9	---	---
0.362000	46.90	10.1	79	32.1	---	---
0.556000	34.40	10.1	73	38.6	---	---
0.600000	33.20	10.1	73	39.8	---	---
0.632000	28.10	10.1	73	44.9	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

12/7/2010 9:41AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.342000	27.50	10.1	66	38.5	---	---
0.354000	28.90	10.1	66	37.1	---	---
0.362000	28.00	10.1	66	38.0	---	---
0.568000	20.30	10.1	60	39.7	---	---
0.624000	18.20	10.1	60	41.8	---	---
0.756000	23.30	10.1	60	36.7	---	---

[ **Single Cradle** ]

**a. Idle Mode**

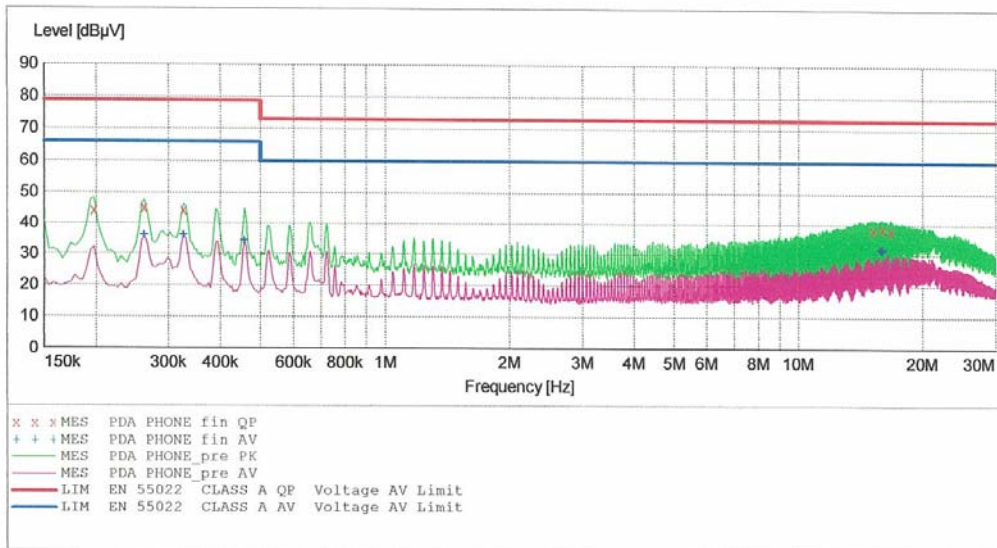
*HCT*

*EMC*

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: IDLE MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H(Singlecradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None
			MaxPeak			
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 2:43PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.198000	44.20	10.1	79	34.8	---	---
0.262000	45.10	10.1	79	33.9	---	---
0.326000	44.10	10.1	79	34.9	---	---
15.152000	38.30	11.2	73	34.7	---	---
15.936000	38.70	11.2	73	34.3	---	---
16.720000	38.00	11.3	73	35.0	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 2:43PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.262000	36.30	10.1	66	29.7	---	---
0.326000	36.30	10.1	66	29.7	---	---
0.458000	34.40	10.1	66	31.6	---	---
15.804000	31.90	11.2	60	28.1	---	---
15.932000	31.50	11.2	60	28.5	---	---
16.000000	31.90	11.2	60	28.1	---	---

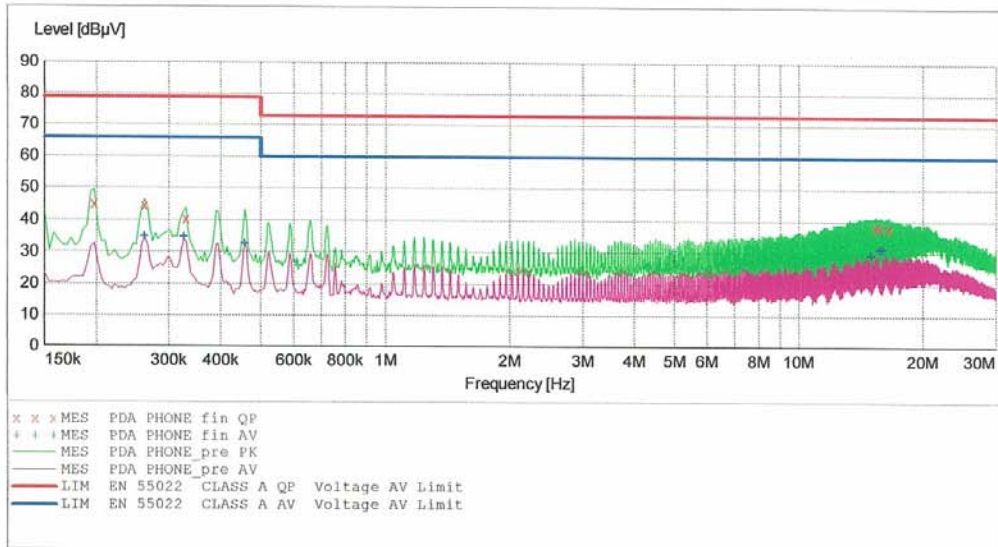
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: IDLE MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N(Singlecradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 2:39PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.198000	44.90	10.1	79	34.1	---	---
0.262000	44.50	10.1	79	34.5	---	---
0.330000	40.50	10.1	79	38.5	---	---
15.340000	38.30	11.2	73	34.7	---	---
15.736000	38.30	11.2	73	34.7	---	---
16.520000	37.90	11.3	73	35.1	---	---



**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 2:39PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.262000	34.90	10.1	66	31.1	---	---
0.326000	34.70	10.1	66	31.3	---	---
0.458000	32.70	10.1	66	33.3	---	---
14.956000	29.40	11.2	60	30.6	---	---
15.736000	31.20	11.2	60	28.8	---	---
15.932000	31.50	11.2	60	28.5	---	---

**b. Camera Mode**

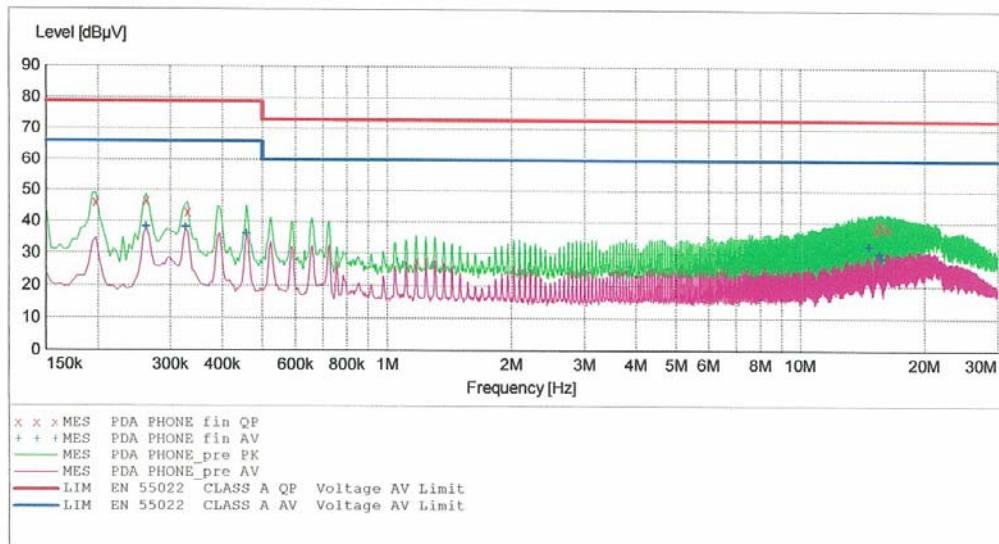
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: CAMERA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H(Singlecradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None
			MaxPeak			
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 2:26PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.198000	46.20	10.1	79	32.8	---	---
0.262000	46.60	10.1	79	32.4	---	---
0.330000	43.10	10.1	79	35.9	---	---
15.296000	37.80	11.2	73	35.2	---	---
15.620000	39.60	11.2	73	33.4	---	---
16.276000	38.10	11.3	73	34.9	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 2:26PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.262000	38.30	10.1	66	27.7	---	---
0.326000	38.10	10.1	66	27.9	---	---
0.458000	36.20	10.1	66	29.8	---	---
14.704000	32.40	11.1	60	27.6	---	---
15.556000	30.20	11.2	60	29.8	---	---
15.752000	28.60	11.2	60	31.4	---	---

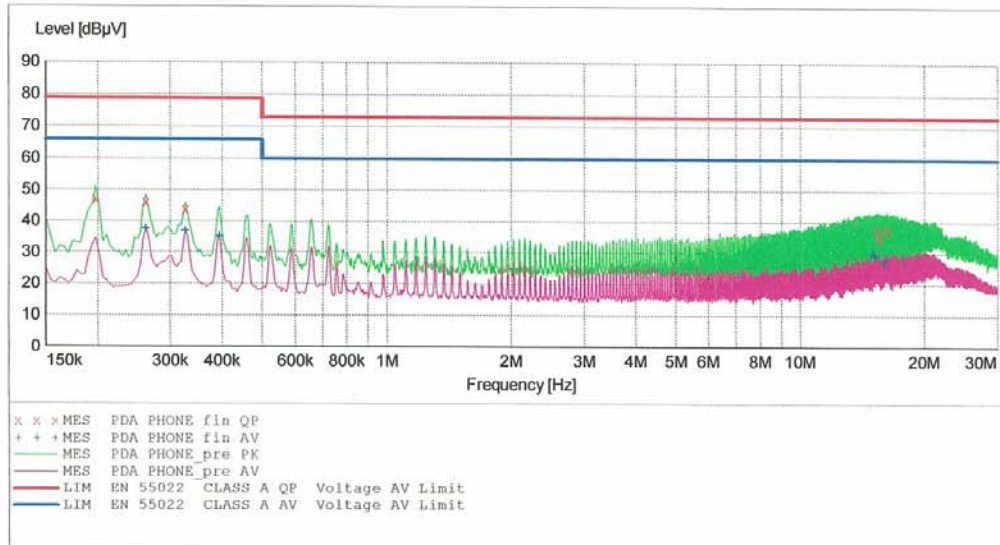
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: CAMERA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N(Singlecradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	Short Description	EN	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	EN 55022 Voltage	55022	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz			Average	10.0 ms	9 kHz	None



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 2:23PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.198000	47.20	10.1	79	31.8	---	---
0.262000	46.10	10.1	79	32.9	---	---
0.326000	43.90	10.1	79	35.1	---	---
15.364000	37.80	11.2	73	35.2	---	---
15.564000	35.10	11.2	73	37.9	---	---
16.216000	37.80	11.3	73	35.2	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 2:23PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.262000	37.50	10.1	66	28.5	---	---
0.326000	36.80	10.1	66	29.2	---	---
0.394000	35.20	10.1	66	30.8	---	---
15.036000	30.00	11.2	60	30.0	---	---
15.168000	29.10	11.2	60	30.9	---	---
16.020000	27.20	11.2	60	32.8	---	---

**c. MP3 Mode**

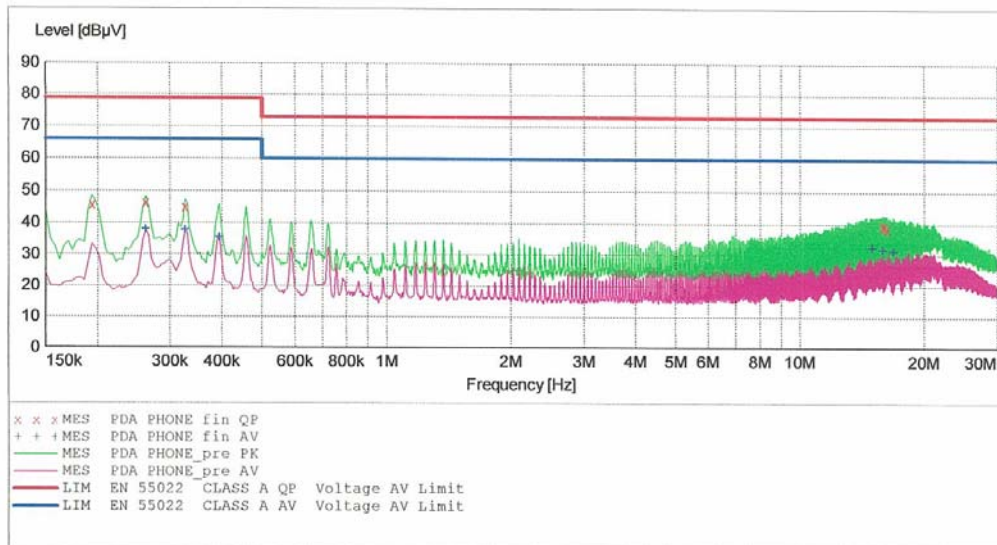
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: MP3 MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H(Singlecradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None
			MaxPeak			
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 2:28PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.194000	45.70	10.1	79	33.3	---	---
0.262000	46.30	10.1	79	32.7	---	---
0.326000	44.90	10.1	79	34.1	---	---
15.872000	39.60	11.2	73	33.4	---	---
16.004000	39.50	11.2	73	33.5	---	---
16.196000	38.60	11.3	73	34.4	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 2:28PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.262000	37.90	10.1	66	28.1	---	---
0.326000	37.80	10.1	66	28.2	---	---
0.394000	35.50	10.1	66	30.5	---	---
14.960000	32.60	11.2	60	27.4	---	---
15.876000	31.90	11.2	60	28.1	---	---
16.856000	31.40	11.3	60	28.6	---	---

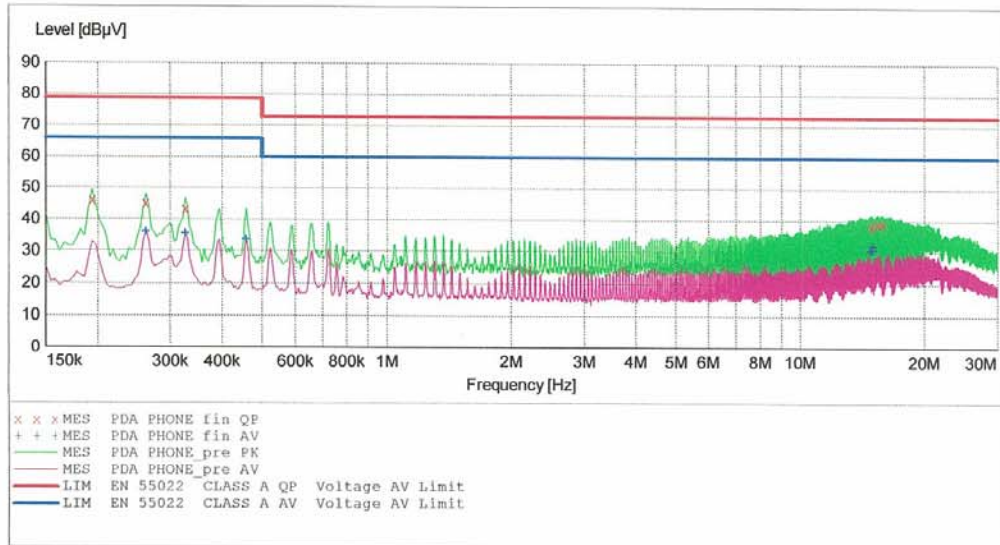
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: MP3 MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N(Singlecradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average			
			MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 2:31PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.194000	46.10	10.1	79	32.9	---	---
0.262000	45.20	10.1	79	33.8	---	---
0.326000	43.40	10.1	79	35.6	---	---
14.892000	38.50	11.2	73	34.5	---	---
15.416000	39.20	11.2	73	33.8	---	---
15.804000	39.10	11.2	73	33.9	---	---



**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 2:31PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.262000	36.00	10.1	66	30.0	---	---
0.326000	35.60	10.1	66	30.4	---	---
0.458000	33.70	10.1	66	32.3	---	---
14.828000	30.40	11.2	60	29.6	---	---
14.956000	30.90	11.2	60	29.1	---	---
15.020000	31.90	11.2	60	28.1	---	---

**d. PC Link Mode**

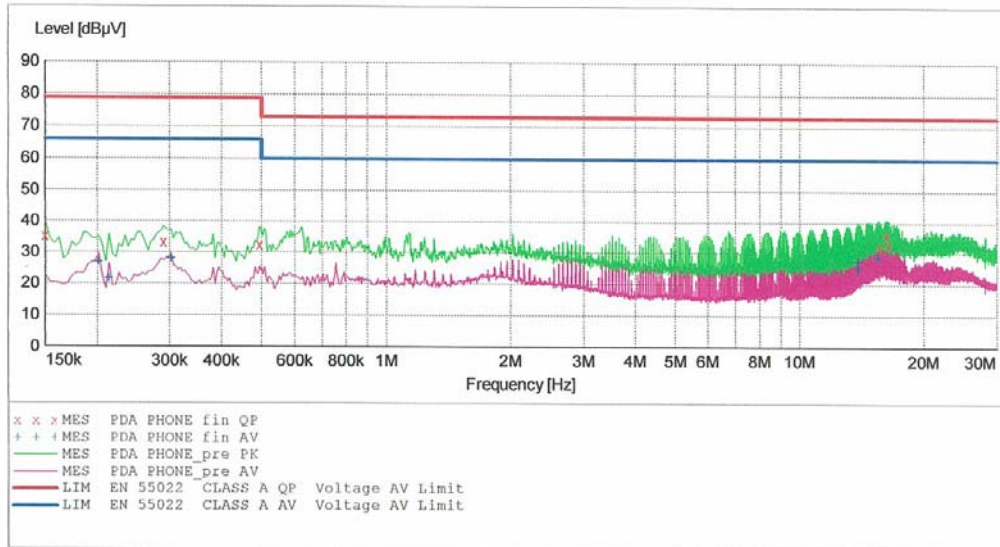
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H(Singlecradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 3:35PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	35.20	10.1	79	43.8	---	---
0.290000	33.30	10.1	79	45.7	---	---
0.494000	32.50	10.1	79	46.5	---	---
15.612000	32.30	11.2	73	40.7	---	---
16.196000	36.10	11.3	73	36.9	---	---
16.460000	32.80	11.3	73	40.2	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:35PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.202000	26.90	10.1	66	39.1	---	---
0.214000	21.60	10.1	66	44.4	---	---
0.302000	28.00	10.1	66	38.0	---	---
13.848000	25.10	11.1	60	34.9	---	---
13.912000	27.60	11.1	60	32.4	---	---
15.480000	28.70	11.2	60	31.3	---	---

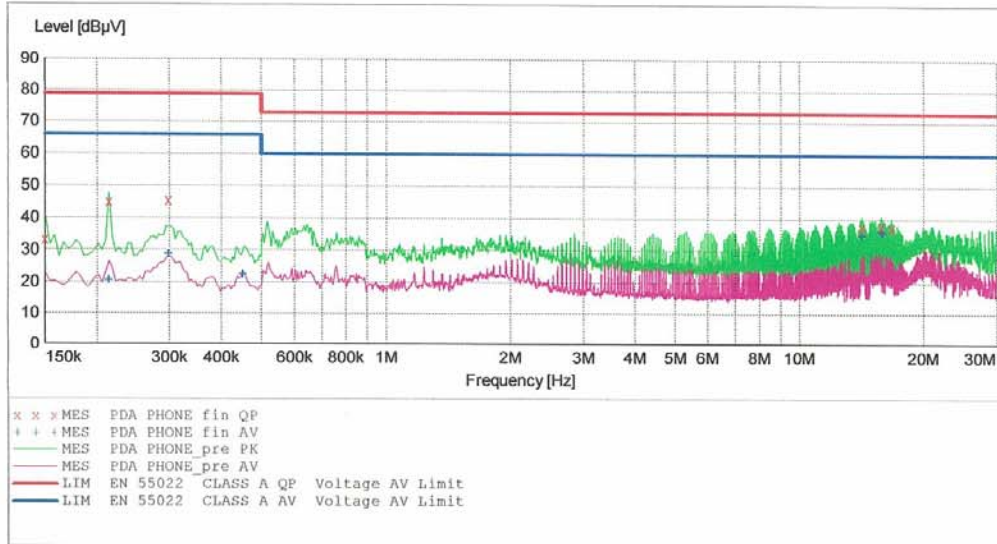
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N(Singlecradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	EN 55022	Voltage	10.0 ms	9 kHz	None
				MaxPeak			
				Average			
500.0 kHz	30.0 MHz	4.0 kHz	EN 55022	Voltage	10.0 ms	9 kHz	None
				MaxPeak			
				Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 3:51PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	33.40	10.1	79	45.6	---	---
0.214000	45.10	10.1	79	33.9	---	---
0.298000	45.50	10.1	79	33.5	---	---
14.172000	37.70	11.1	73	35.3	---	---
15.796000	37.90	11.2	73	35.1	---	---
16.704000	37.30	11.3	73	35.7	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:51PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.214000	20.70	10.1	66	45.3	---	---
0.298000	28.70	10.1	66	37.3	---	---
0.450000	22.50	10.1	66	43.5	---	---
14.172000	34.90	11.1	60	25.1	---	---
15.796000	36.40	11.2	60	23.6	---	---
15.928000	35.70	11.2	60	24.3	---	---

[ Multi Cradle ]

**a. Idle Mode**

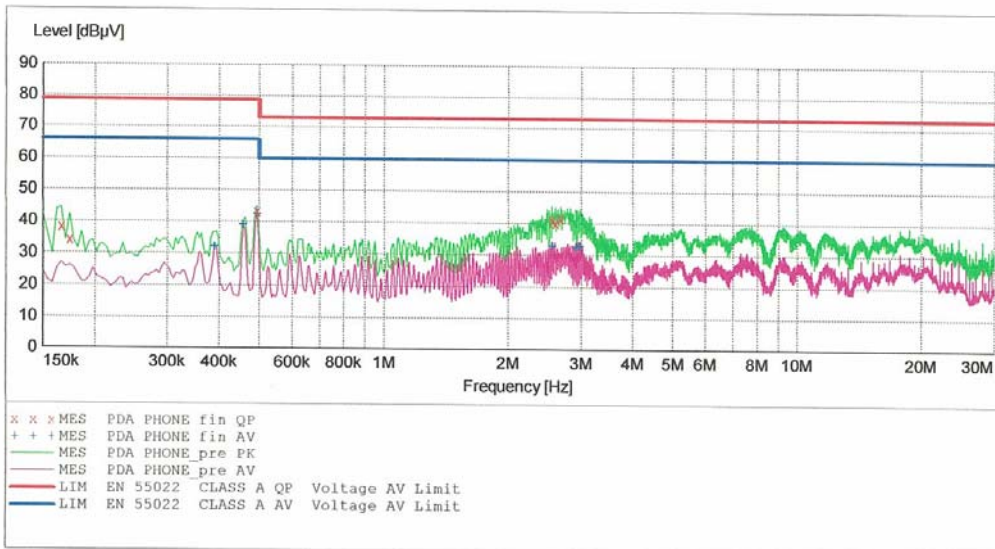
HCT

EMC

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: IDLE MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H(Multicradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average			
			MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin\_QP"**

11/30/2010 3:04PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.166000	38.30	10.1	79	40.7	---	---
0.174000	34.10	10.1	79	44.9	---	---
0.494000	43.30	10.1	79	35.7	---	---
2.552000	41.30	10.3	73	31.7	---	---
2.600000	40.10	10.3	73	32.9	---	---
2.684000	41.70	10.3	73	31.3	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:04PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.390000	32.10	10.1	66	33.9	---	---
0.458000	39.00	10.1	66	27.0	---	---
0.494000	42.50	10.1	66	23.5	---	---
2.560000	33.00	10.3	60	27.0	---	---
2.920000	32.40	10.3	60	27.6	---	---
2.988000	33.00	10.3	60	27.0	---	---

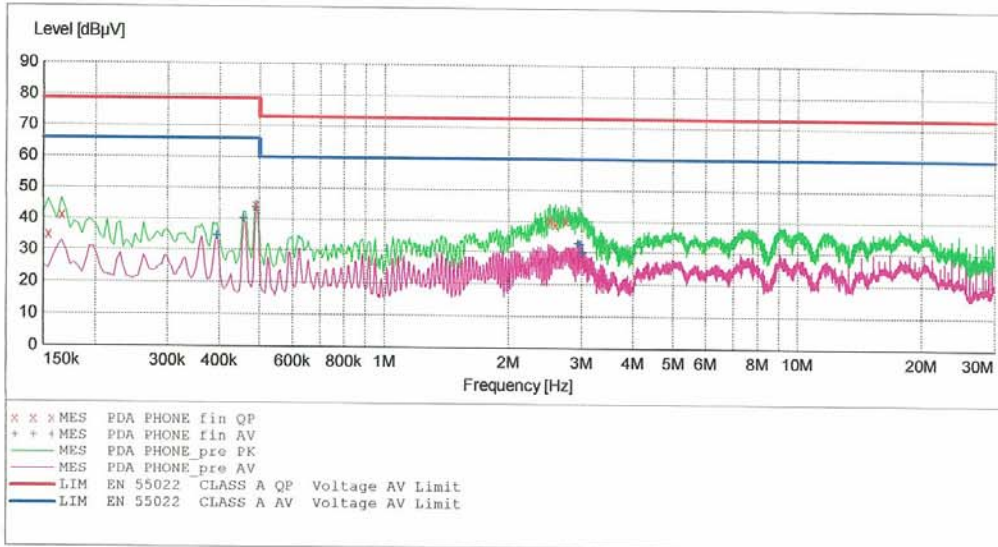
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: IDLE MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N(Multicradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None
			MaxPeak			
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 3:06PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154000	35.00	10.1	79	44.0	---	---
0.166000	41.30	10.1	79	37.7	---	---
0.490000	44.60	10.1	79	34.4	---	---
2.520000	40.50	10.3	73	32.5	---	---
2.596000	39.10	10.3	73	33.9	---	---
2.752000	40.20	10.3	73	32.8	---	---



**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:06PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.394000	34.70	10.1	66	31.3	---	---
0.458000	40.20	10.1	66	25.8	---	---
0.490000	43.70	10.1	66	22.3	---	---
2.948000	32.80	10.3	60	27.2	---	---
2.984000	32.60	10.3	60	27.4	---	---
3.020000	29.90	10.3	60	30.1	---	---

**b. Camera Mode**

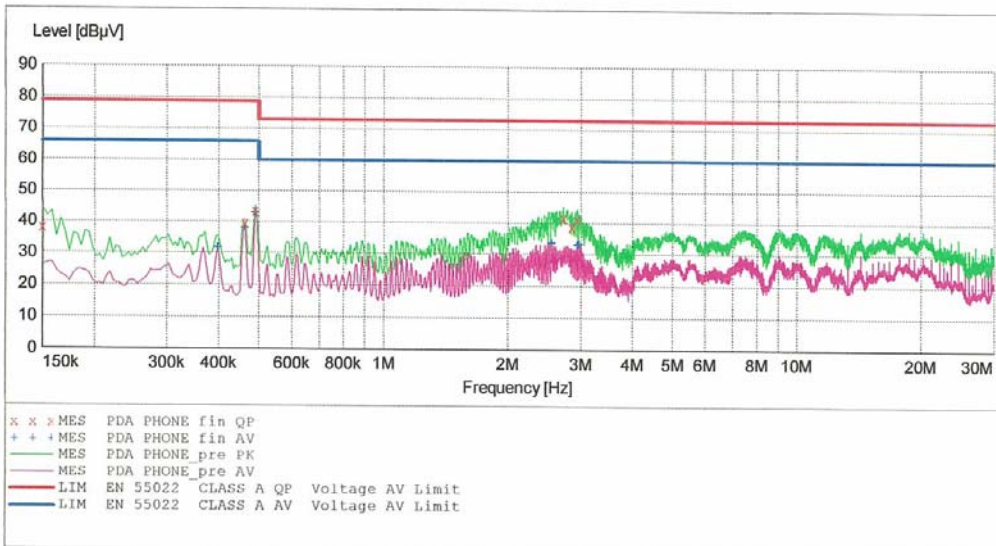
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: CAMERA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H(Multicradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average			
			MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 3:12PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	38.10	10.1	79	40.9	---	---
0.462000	39.50	10.1	79	39.5	---	---
0.490000	43.50	10.1	79	35.5	---	---
2.728000	41.60	10.3	73	31.4	---	---
2.860000	38.80	10.3	73	34.2	---	---
2.944000	41.20	10.3	73	31.8	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:12PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.398000	31.70	10.1	66	34.3	---	---
0.462000	37.90	10.1	66	28.1	---	---
0.490000	43.00	10.1	66	23.0	---	---
2.552000	33.60	10.3	60	26.4	---	---
2.944000	33.00	10.3	60	27.0	---	---
2.980000	33.20	10.3	60	26.8	---	---

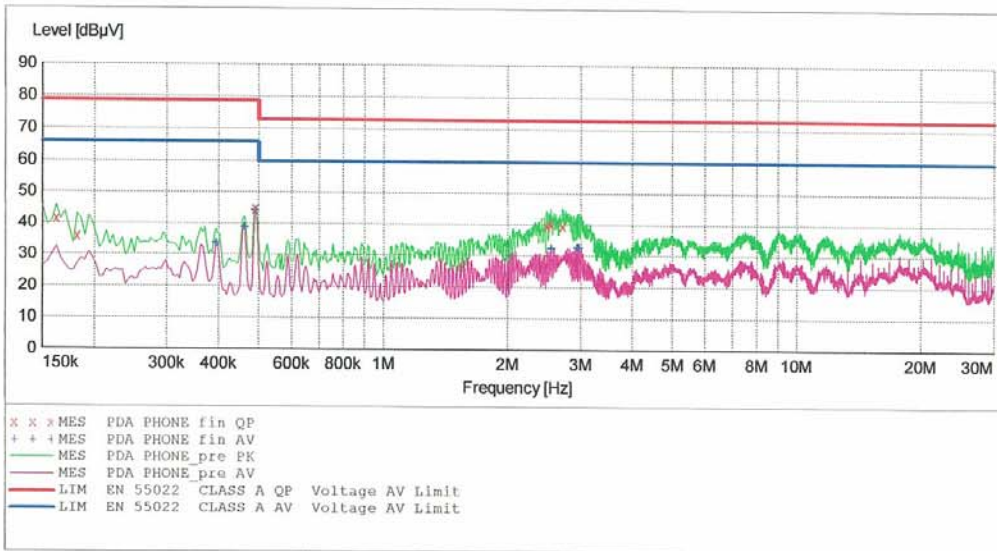
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: CAMERA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N(Multicradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin\_QP"**

11/30/2010 3:10PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.162000	41.50	10.1	79	37.5	---	---
0.182000	36.00	10.1	79	43.0	---	---
0.490000	44.80	10.1	79	34.2	---	---
2.484000	39.60	10.3	73	33.4	---	---
2.544000	40.30	10.3	73	32.7	---	---
2.716000	39.50	10.3	73	33.5	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:10PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.394000	33.80	10.1	66	32.2	---	---
0.462000	38.80	10.1	66	27.2	---	---
0.490000	44.20	10.1	66	21.8	---	---
2.552000	32.40	10.3	60	27.6	---	---
2.948000	32.70	10.3	60	27.3	---	---
2.980000	32.70	10.3	60	27.3	---	---

**c. MP3 Mode**

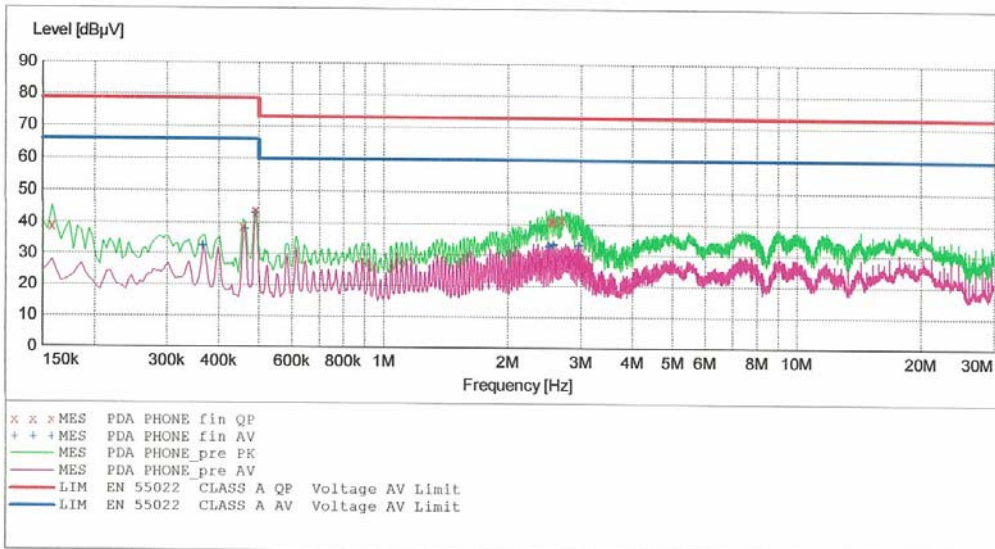
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: MP3 MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H(Multicradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	Short Description	EN	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	EN 55022 Voltage		MaxPeak	10.0 ms	9 kHz	None
					Average			
500.0 kHz	30.0 MHz	4.0 kHz	EN 55022 Voltage		MaxPeak	10.0 ms	9 kHz	None
					Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 3:15PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.158000	39.00	10.1	79	40.0	---	---
0.458000	38.80	10.1	79	40.2	---	---
0.490000	43.60	10.1	79	35.4	---	---
2.540000	41.10	10.3	73	31.9	---	---
2.572000	41.10	10.3	73	31.9	---	---
2.696000	41.50	10.3	73	31.5	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:15PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.366000	32.50	10.1	66	33.5	---	---
0.462000	38.00	10.1	66	28.0	---	---
0.490000	43.10	10.1	66	22.9	---	---
2.520000	32.80	10.3	60	27.2	---	---
2.580000	33.50	10.3	60	26.5	---	---
2.976000	33.20	10.3	60	26.8	---	---

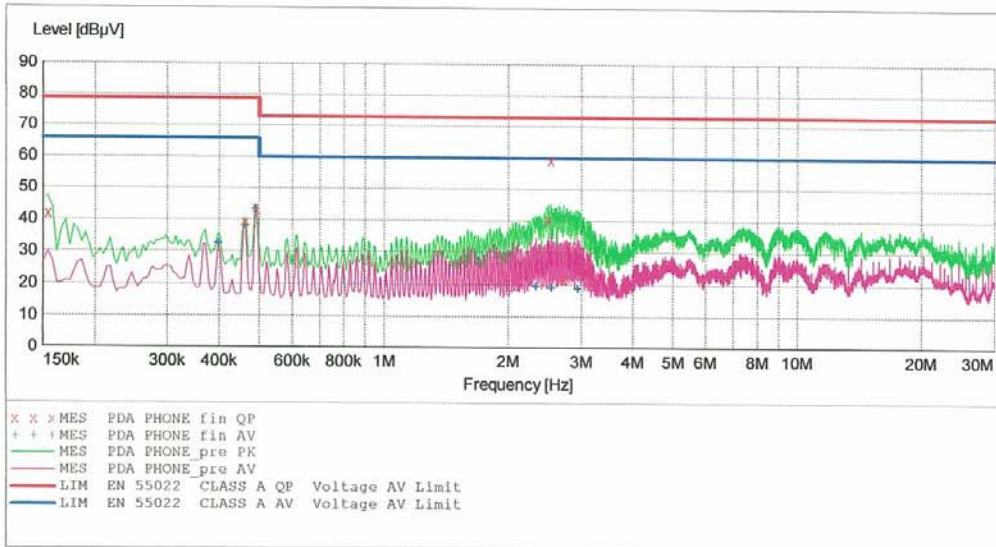
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: MP3 MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N(Multicradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz	Average			
			MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin\_QP"**

11/30/2010 3:18PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154000	41.90	10.1	79	37.1	---	---
0.462000	39.40	10.1	79	39.6	---	---
0.490000	43.60	10.1	79	35.4	---	---
2.508000	40.50	10.3	73	32.5	---	---
2.540000	59.30	10.3	73	13.7	---	---
2.724000	21.90	10.3	73	51.1	---	---



**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:18PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.398000	32.50	10.1	66	33.5	---	---
0.462000	38.10	10.1	66	27.9	---	---
0.490000	43.20	10.1	66	22.8	---	---
2.332000	19.50	10.3	60	40.5	---	---
2.548000	19.30	10.3	60	40.7	---	---
2.944000	18.90	10.3	60	41.1	---	---

**d. PC Link Mode**

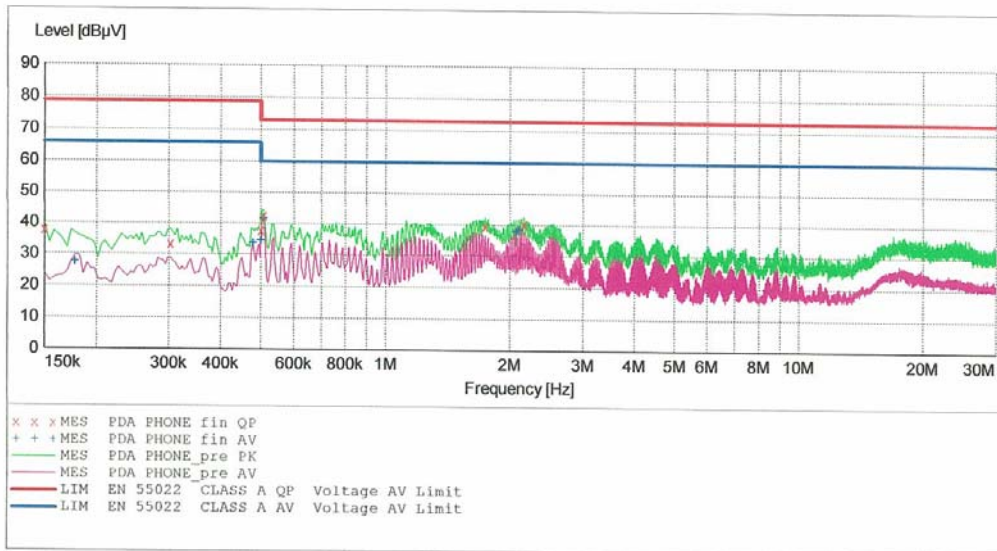
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: H(Multicradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	Short Description	EN	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	EN 55022 Voltage		MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	30.0 MHz	4.0 kHz			Average			
					MaxPeak	10.0 ms	9 kHz	None
					Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 3:26PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	37.80	10.1	79	41.2	---	---
0.302000	33.40	10.1	79	45.6	---	---
0.500000	37.80	10.1	79	41.2	---	---
0.508000	42.50	10.1	73	30.5	---	---
1.744000	39.70	10.2	73	33.3	---	---
2.164000	40.30	10.3	73	32.7	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:26PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.178000	27.40	10.1	66	38.6	---	---
0.478000	33.70	10.1	66	32.3	---	---
0.500000	34.60	10.1	66	31.4	---	---
0.508000	41.70	10.1	60	18.3	---	---
2.080000	38.00	10.3	60	22.0	---	---
2.108000	38.50	10.3	60	21.5	---	---

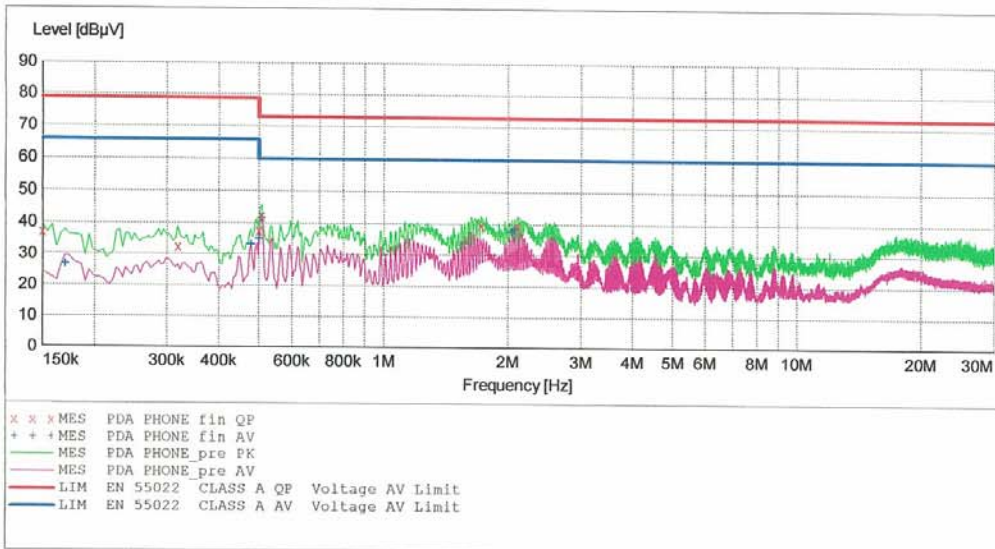
**HCT**

**EMC**

EUT: Nautiz X3  
 Manufacturer: HANDHELD GROUP AB  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: KH, YOON  
 Test Specification: CISPR22 CLASS A  
 Comment: N(Multicradle)

**SCAN TABLE: "CISPR22 CLASS A"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



**MEASUREMENT RESULT: "PDA PHONE\_fin QP"**

11/30/2010 3:23PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	37.20	10.1	79	41.8	---	---
0.318000	32.50	10.1	79	46.5	---	---
0.500000	37.70	10.1	79	41.3	---	---
0.508000	42.30	10.1	73	30.7	---	---
1.724000	39.80	10.2	73	33.2	---	---
2.112000	39.70	10.3	73	33.3	---	---

**MEASUREMENT RESULT: "PDA PHONE\_fin AV"**

11/30/2010 3:23PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.170000	26.90	10.1	66	39.1	---	---
0.478000	33.20	10.1	66	32.8	---	---
0.500000	35.00	10.1	66	31.0	---	---
0.508000	41.60	10.1	60	18.4	---	---
2.052000	37.70	10.3	60	22.3	---	---
2.080000	38.40	10.3	60	21.6	---	---

## 4.2 Radiated Emission Test

Limit apply to : CISPR 22 Class A  
 Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)  
 Test date : December 13, 2010  
 Temperature : 25.5 °C  
 Humidity level : 43.0 %

### [ Adaptor ]

Frequency	Reading	Ant. Factor	Cable Loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB/m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
Idle Mode							
50.4	17.4	12.4	1.2	V	31.0	40	9.0
115.4	17.1	11.1	1.8	V	30.0	40	10.0
MP3 Mode							
47.2	16.5	12.4	1.1	V	30.0	40	10.0
114.4	16.9	10.9	1.8	V	29.6	40	10.4
Camera Mode							
51.3	16.5	12.4	1.2	V	30.0	40	10.0
59.1	21.3	12.0	1.3	V	34.5	40	5.5
113.4	16.8	10.8	1.8	H	29.4	40	10.6

[ Headset ]

Frequency	Reading	Ant. Factor	Cable Loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB/m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
Idle Mode							
113.4	17.4	10.8	1.8	H	30.0	40	10.0
132.8	15.3	12.1	2.0	H	29.4	40	10.6
MP3 Mode							
113.4	17.4	10.8	1.8	H	30.0	40	10.0
Camera Mode							
113.4	17.4	10.8	1.8	H	30.0	40	10.0
285.1	24.2	12.8	3.0	H	40.0	47	7.0
343.1	19.1	14.0	3.3	V	36.4	47	10.6

[ Single Cradle ]

Frequency	Reading	Ant. Factor	Cable Loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB/m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
Idle + PC Link Mode							
51.2	19.5	12.4	1.2	V	33.0	40	7.0
80.4	22.9	8.0	1.5	V	32.4	40	7.6
126.0	17.2	11.9	1.9	V	31.0	40	9.0
218.2	17.6	10.2	2.6	H	30.4	40	9.6
MP3 Mode							
31.9	18.6	11.5	0.9	V	31.0	40	9.0
57.2	18.7	12.1	1.3	V	32.0	40	8.0
79.5	22.7	8.2	1.5	V	32.4	40	7.6
218.2	19.0	10.2	2.6	V	31.8	40	8.2
Camera Mode							
36.8	20.0	11.8	1.0	V	32.8	40	7.2
59.1	18.6	12.0	1.3	V	31.8	40	8.2
285.1	25.7	12.8	3.0	H	41.5	47	5.5



[ Multi Cradle ]

Frequency	Reading	Ant. Factor	Cable Loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB/m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
<b>Idle + PC Link Mode</b>							
48.4	21.0	12.4	1.2	V	34.6	40	5.4
168.7	20.5	12.7	2.2	V	35.4	40	4.6
198.8	21.4	10.0	2.4	H	33.8	40	6.2
229.8	19.3	10.8	2.7	H	32.8	40	7.2
<b>MP3 Mode</b>							
51.3	21.3	12.4	1.2	V	34.8	40	5.2
168.7	18.5	12.7	2.2	V	33.4	40	6.6
202.7	19.6	9.9	2.5	H	32.0	40	8.0
226.9	18.2	10.6	2.6	H	31.4	40	8.6
<b>Camera Mode</b>							
51.3	20.9	12.4	1.2	V	34.4	40	5.6
168.7	18.0	12.7	2.2	V	32.9	40	7.1
202.7	19.6	9.9	2.5	H	32.0	40	8.0
285.1	23.6	12.8	3.0	H	39.4	47	7.6

## 4.3 Test Setup Photos

### [ Conducted Emission\_Adaptor ]



[ **Conducted Emission \_ Single Cradle** ]



[ **Conducted Emission \_ Multi Cradle** ]



[ Radiated Emission\_ Adaptor ]



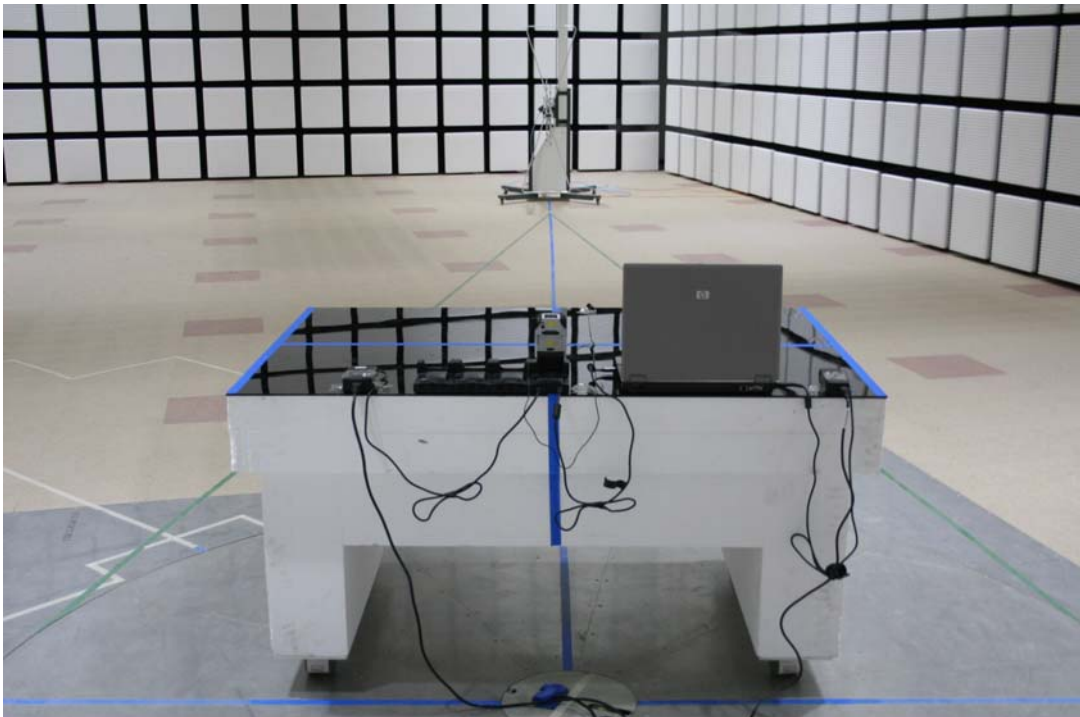
[ Radiated Emission\_ Headset ]



**[ Radiated Emission \_ Single Cradle ]**



[ Radiated Emission \_ Multi Cradle ]



## 5. FIELD STRENGTH CALCULATION

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The field strength is calculated by adding the antenna factor and cable factor.

The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of  $21.5 \text{ dB}\mu\text{V}$  is obtained. The antenna factor of  $7.4 \text{ dB/m}$  and a cable factor of  $1.1 \text{ dB}$  are added. The  $30 \text{ dB}\mu\text{V/m}$  value is mathematically converted to its corresponding level in  $\mu\text{V/m}$ .

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dB}\mu\text{V/m}$$



## 6. TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number</u>	<u>Next CAL Date</u>
<b><u>Conducted Emission</u></b>				
EMI Test Receiver	Rohde & Schwarz	ESCI	100033	2011.02.19
EMI Test Receiver	Rohde & Schwarz	ESU26	100214	2011.04.29
LISN	Rohde & Schwarz	ESH3-Z5	100282	2011.02.05
LISN	Rohde & Schwarz	ENV216	3560.6550.02	2011.04.06
Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.52	2011.10.25
<b><u>Radiated Emission</u></b>				
EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2011.10.29
EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2011.04.29
Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
Horn Antenna	Schwarzbeck	BBHA 9120D	-	2012.04.13
RF-Amplifier	MITEQ	AMF-6D-0010 1800-35.20P.PS	-	2011.05.20
Bluetooth Base Station	TESCOM	TC-3000A	-	2011.01.07
Base Station	Rohde & Schwarz	CMU 200	1100000802	2011.02.17

## **7. CONCLUSION**

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The data collected shows that the **HANDHELD Group AB. Model: Nautiz X3, Industrial PDA** complies with §15.107 and §15.109 of the FCC rules.