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VERIFICATION

Innostream Inc.

9F, Allianz. Bldg, 267-3, Seohyeon-dong,
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FRN: 0009349481

Date of Issue: August 20, 2005

Test Report No.: HCT-SAR05-0815

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

FRN: 0005866421

MODEL

:

INNO-A21

Classification/ Standard(s): FCC PART 15 CLASS B / CISPR 22 CLASS B
Equipment (EUT) Type: Dual- Mode GSM Phone (GSM850/GSM1900) – Prototype
Trade Name/Model(s): Innostream / INNO-A21
Port/ Connector(s): DC Input Port / Ear Phone 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.

HYUNDAI C-Tech. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse of 1988, 21 U.S.C.853(a).

Report prepared by : Ki-Soo Kim
Manager of Product Compliance Team



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1. GENERAL INFORMATION

1.1 Product Description

The Innostream Inc. INNO-A21 Dual-Band GSM Phone.

Its basic purpose is used for communications. It transmits from (824.20 – 848.80MHz (GSM850) / 1850.20MHz – 1909.80MHz (GSM1900) and receives from (869.20 – 893.80MHz (GSM850) / 1930.20MHz – 1989.80MHz (GSM1900).

The RF power is rated at GSM850 (0.818W) and GSM1900 (0.798W).

FCC ID	RJAINNO-A21
EUT Type	Dual- Mode GSM Phone (GSM850/GSM1900) – Prototype
Model	INNO-A21
TX Frequency	824.20 – 848.80MHz (GSM850) / 1850.20MHz – 1909.80MHz (GSM1900)
RX Frequency	869.20 – 893.80MHz (GSM850) / 1930.20MHz – 1989.80MHz (GSM1900)
FCC Classification	Licensed Portable Transmitter Held to Ear (PCE)
Max RF. Output Power	0.818 W ERP GSM850 (29.13 dBm) 0.798 W EIRP GSM1900 (29.02 dBm)
Modulation	GSM850 / GSM1900
Power Voltage	Input AC: AC 100-240V/ 150mA / Output DC: DC 5.1V/ 600mA

1.2 Related Submittal(s) / Grant(s)

ORIGINAL SUBMITTAL ONLY

1.3 Tested System Details

The Model names for all equipment, plus descriptions used in the tested system (including inserted cards) are:

DEVICE TYPE	MANUFACTURER	MODEL NUMBER	FCC ID / DoC	CONNECTED TO
Dual- Mode GSM Phone	InnoStream Inc.	INNO-A21	RJAINNO-P11	Adaptor/ P.C
Adaptor	InnoStream Inc.	TA-2KS-EU	N/A	GSM Phone

1.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 -2003. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, Maekok-Ri, Hobup-Myun, Ichon-Si, Kyoungki-Do, 467-701, KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 23, 2003(Registration Number: 90661)

2.SYSTEM TEST CONFIGURATION

2.1 Cable Description

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

	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
GSM PHONE	N/A	N/A	-
EAR PHONE	N/A	N	1.0(D)
Adapter	N	N/A	1.8(P)

2.2 Noise Suppression Parts on Cable.

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
GSM PHONE	N	N/A	N/A	Adapter END
EAR PHONE	N	N/A	Y	GSM PHONE
Adapter	N	N/A	Y	GSM PHONE

2.3 EUT exercise Software

The EUT was tested on the charging battery during the radiated and conducted emission testing

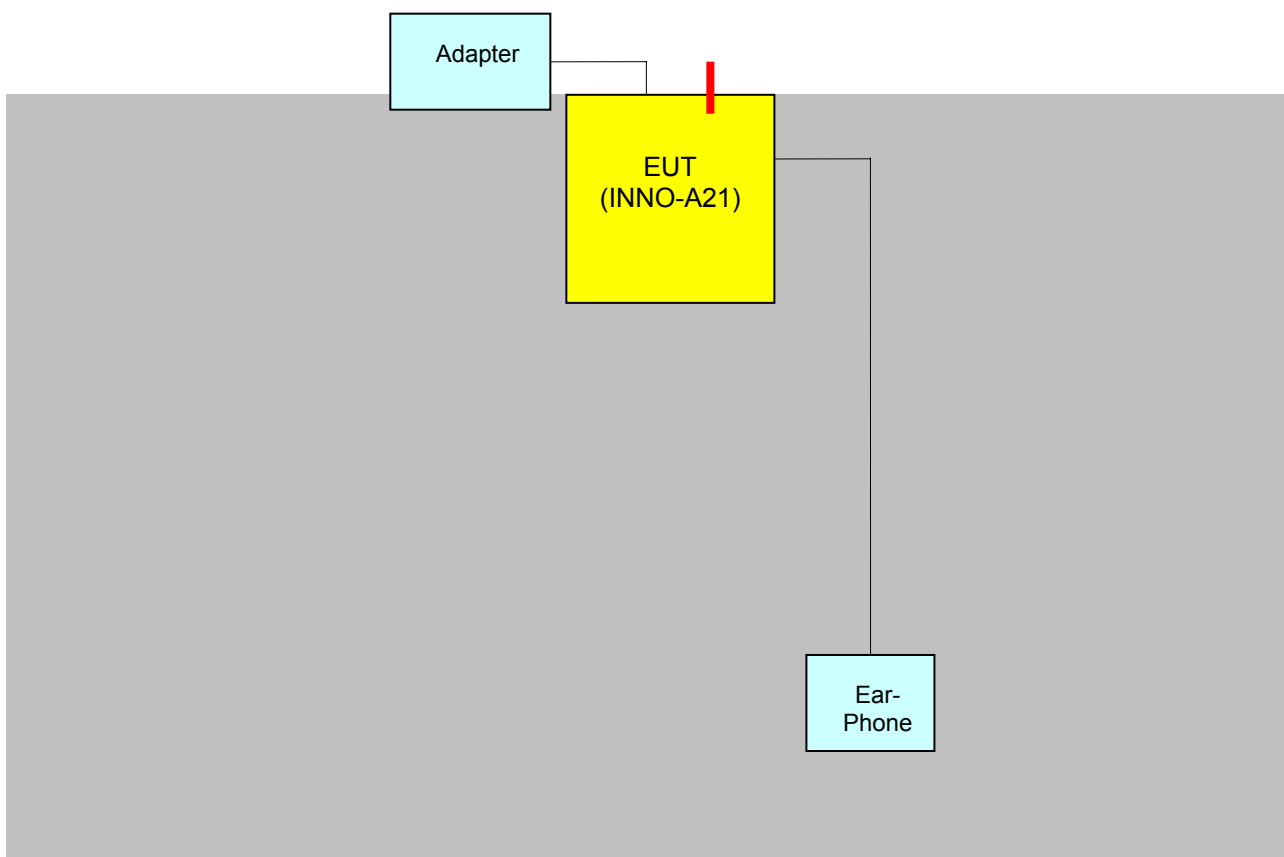
2.4 Equipment Modifications

N/A

2.5 Configuration of Test system

Line Conducted Test : EUT was connected to LISN, all other supporting equipment were connected to another LISN. Preliminary Power line Conducted Emission tests were performed by using the procedure in ANSI C63.4 –2003 7.2.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary Radiated Emissions tests were conducted using the procedure in ANSI C63.4 /2003 8.3.1.1 to determine the worse pirating condition. Final Radiated Emission tests were conducted at 3 meter open area test site.



[Configuration of Tested System]

3. CONDUCTED AND RADIATED EMISSION TESTS SUMMARY

3.1 Conducted Emissions Tests

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

=====

Humidity Level	: 46 %	Temperature	: 22.3 °C
Limit apply to	: CISPR 22 CLASS B		
Result	: PASSED BY -16.4 dB		
Operating Condition	: CHARGING BATTERY		
Detector	: CISPR Quasi-Peak (6 dB Bandwidth: 9 KHz)		

Power Line Conducted Emissions				FCC Class B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Result	Limit (dBuV)	Margin (dB)
0.650000	38.50	HOT	Quasi-Peak	56	-17.5
0.400100	31.40	HOT	Average	48	-16.4
0.437600	39.90	NEUTRAL	Quasi-Peak	57	-17.2
0.492600	26.00	NEUTRAL	Average	46	-20.1

Line Conducted Emissions Tabulated Data

Keun Ho. Park

Measured by : Keun-Ho Park / Engineer

Date : August 18, 2005

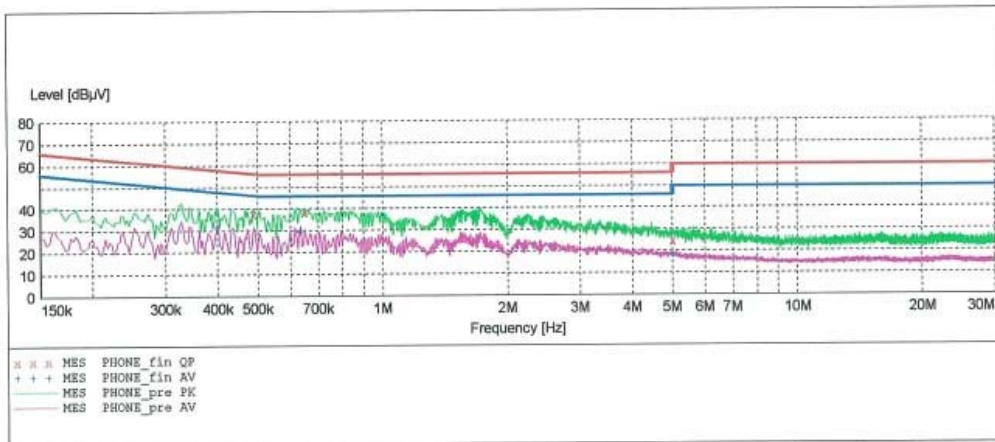
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EMC TEST LAB

EUT: INNO-A21
 Manufacturer: Inostreem
 Operating Condition: Charging mode
 Test Site: Shield Room
 Operator: Keun-Ho Park
 Test Specification: CISPR 22 CLASS B
 Comment: H

SCAN TABLE: "CISPR 22 Voltage"

Short Description:			CISPR 22 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.1 kHz	500.0 kHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.487600	37.90	10.1	56	18.3	---	---
0.650000	38.50	10.2	56	17.5	---	---
5.000000	24.70	10.3	56	31.3	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.400100	31.40	10.1	48	16.4	---	---
0.635000	29.30	10.2	46	16.7	---	---
5.000000	18.70	10.3	46	27.3	---	---

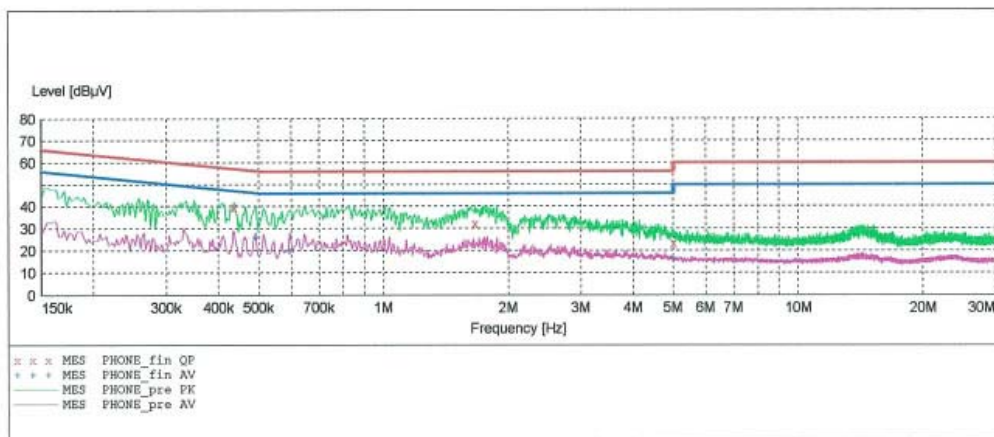
HCT

EMC TEST LAB

EUT: INNO-A21
 Manufacturer: Inostreem
 Operating Condition: Charging mode
 Test Site: Shield Room
 Operator: Keun-Ho Park
 Test Specification: CISPR 22 CLASS B
 Comment: N

SCAN TABLE: "CISPR 22 Voltage"

Short Description:			CISPR 22 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.1 kHz	500.0 kHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.437600	39.90	10.1	57	17.2	---	---
1.665000	32.40	10.2	56	23.6	---	---
5.000000	23.50	10.3	56	32.5	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.492600	26.00	10.1	46	20.1	---	---
0.595000	19.80	10.2	46	26.2	---	---
5.000000	16.40	10.3	46	29.6	---	---

3.2 Radiated Emissions Tests

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

=====

Humidity Level : 46 % Temperature: 22.3 °C
 Limit apply to : FCC PART 15 CLASS B
 Result : PASSED BY -4.8 dB
 Operating Condition : Charging Battery
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 KHz)

Frequency MHz	Reading dBuV	Ant. Factor dB	Cable Loss dB	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
78.60	23.9	6.9	2.0	V	32.8	40	-7.2
97.00	24.5	9.7	2.2	V	36.4	43.5	-7.1
124.50	20.8	13.2	2.6	V	36.5	43.5	-7.0
163.90	19.4	15.5	2.9	V	37.8	43.5	-5.7
253.40	20.1	17.5	3.6	V	41.2	46	-4.8
286.70	15.8	18.8	3.9	V	38.5	46	-7.5
163.90	19.0	15.5	2.9	H	37.4	43.5	-6.1
253.40	16.8	17.5	3.6	H	37.9	46	-8.1
286.70	14.7	18.8	3.9	H	37.4	46	-8.6
350.40	18.4	16.4	4.3	H	39.1	46	-6.9
385.90	17.0	16.8	4.5	H	38.3	46	-7.7
412.70	16.4	17.3	4.7	H	38.4	46	-7.6

Keun Ho. Park

Measured by : Keun-Ho Park / Engineer

Date : August 18, 2005

3.3.1 Conducted Radiated Emission



3.3.2 Radiated Emission



4.1 Field Strength Calculation

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 dBuV is obtained. The Antenna Factor of 7.4 and a Cable Factor of 1.1 is added. The 30 dBuV/m value was mathematically converted to its corresponding level in uV/m.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dBuV/m}$$

$$\text{Level in uV/m} = \text{Common Antilogarithm} [(30 \text{ dBuV/m})/20] = 31.6 \text{ uV/m}$$

5.1 Test Equipment

Type	Manufacture	Model Number	CAL Date
EMI Test Receiver	Rohde & Schwarz	ESI40	2004.11.16
EMI Test Receiver	Rohde & Schwarz	ESVS30	2005.07.16
LISN	Rohde & Schwarz	ESH2-Z5	2005.07.28
LISN	EMCO	ESH3-Z5	2005.07.28
Attenuator	Rohde & Schwarz	ESH3-Z2	2004.11.16
Amplifier	Hewlett-Packard	8447E	2004.08.23
TRILOG Antenna	Schwarzbeck	9160	2005.04.06
Antenna Position Tower	EMCO	1051-12	N/A
Turn Table	EMCO	1060-06	N/A
Power Analyzer	Voltech	PM 3300	2005.02.15
Reference Network Impedance	Voltech	IEC 555	N/A
AC Power Source	PACIFIC	Magnetic Module	N/A
AC Power Source	PACIFIC	360-AMX	2004.11.25
Controller	HD GmbH	HD 100	N/A
Slide Bar	HD GmbH	KMS 560	N/A

6.1 Conclusion

The data collected shows that the Innosteram Inc. Dual- Mode GSM Phone. FCC ID: RJAINNO-A21. Complies with §15.107 and §15.109 of the FCC Rules.