TEST REPORT

Ref. Report No.
05-1341-020-1

Name and address of the applicant

ID-TECK CO., LTD.
684-1, Deungchon-Dong, Gangsuh-Gu,
Seoul, Korea 157-030

Standard / Test regulation

FCC Part 15, Subpart C

Test result

Pass

Incoming date : March 22, 2005

Test date : May 26, 2005

Test item(s) ;

Low Power Transmitter Below 1705 kHz (Fingerprint Access Controller)

Model/type ref. ;

GE314

Manufacturer ;

ID-TECK CO., LTD.

Additional information ;
-Required Authorization : Certification
-FCC ID. : OYUGE314
-Note : Test report(Verification) of Digital Device(Class A) portion of this unit is issued on Ref. Report No. 05-1341-020-2.

Issue date : May 31, 2005

Tested and reported by

Jeong-Min Kim, Senior Engineer

Reviewed by

Won-Seo Cho , Telecommunication Team Manager

KOREA TESTING LABORATORY

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Ⅰ. GENERAL INFORMATION

1. Grantee's Name and Mailing Address : ID-TECK CO., LTD.
684-1, Deungchon-Dong, Gangsuh-Gu, Seoul, Korea, 157-030

2. Manufacturer's Name and Mailing Address : ID-TECK CO., LTD.
684-1, Deungchon-Dong, Gangsuh-Gu, Seoul, Korea, 157-030

3. Equipment Descriptions

3.1 Operating Frequency	:	125 kHz
3.2 Modulation Method	:	PSK
3.3 Used Oscillator	:	4.0 MHz, 32.768 kHz
3.4 Power Supply	:	DC 12 V (Power Supply)
3.5 Used Power Adapter	:	YK-12100U, DC 12 V 1.0A (Youkyoung Electronics Co., Ltd.)

4. Rules and Regulations : FCC Part 15, Subpart C

5. Measuring Procedure : ANSI C63.4-2003

6. Place of Measurement : Absorber-lined Room (KTL)

7. Date of Measurement

7.1 Conducted Emission	:	May 26, 2005
7.2 Radiated Emission	:	May 26, 2005

Ⅱ. GENERAL REQUIREMENTS OF THE EUT

1. Labeling Requirement (Section 15.19)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interface, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.1 Location of Label : Rear side of EUT
1.2 How Applied : By ink-printing on adhesive label

2. Information to User (Section 15.21)

The following or similar statements were provided in the manual for user instruction.
Please refer page 67 of the attached manual for details.

CAUTION : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

3. Special Accessories (Section 15.27)

3.1 Were the special Accessories provided? [ ] yes, [x] no

3.2 If yes, details for the special accessories are as follows :

3.3 If yes, were the appropriate instructions provided on the first page of the text concerned with the device?
[ ] yes, [ ] no

3.4 Are these accessories provided of the type which can be readily obtained from multiple retail outlets ?
[ ] yes, [ ] no

And therefore does the manual specify what additional components or accessories are required to used in order to comply with the Rules?
[ ] yes, [ ] no

Ⅲ. CONDUCTED EMISSION MEASUREMENT (Section 15.207)

1. Test Procedure

Conducted emission measurements on the EUT were performed by "AC Power Line Conducted Emissions Testing" procedure as per ANSI C63.4. The EUT was set up on a wooden table 0.8 meters height, 1.0 by 1.5 meters in size, placed in the shielded enclosed with a side of wall of which constituted a vertical conducting surface of 2.2 m x 3.1 m in size to maintain 40 cm from the rear of EUT

LISN(Line Impedance Stabilization Network, ROHDE & SCHWARZ, ESH3-Z5, 50 ohm / 50 μH) was installed and electrically boned to the conducting ground plane. The EUT was connected to the LISN using a typical power adapter.

One of two 50 ohm output terminals of the LISN was connected to the EMI Receiver (ROHDE & SCHWARZ, ESI, 20 Hz to 7 GHz) and the other was terminated in 50 ohms. Measurements were again performed after interchanging such a connection oppositely.

The frequency range from 150 kHz to 30 MHz was examined and the remarkable frequencies were measured with Quasi-peak and Average values using the EMI receiver instrument (ROHDE & SCHWARZ, ESI, 20 Hz to 7 GHz ; Detector Function ; CISPR Quasi-Peak & Average). The 6 dB bandwidth of the Receiver was set to 9 kHz

The position of connecting cables of the EUT was changed to find the worst case configuration during measurements. The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

2. Photograph for the test configuration

3. Sample Calculation

The emission level measured in decibels above one microvolt (dBμV) was converted into microvolt (μV) as shown in following sample calculation.

For example :

	Measured Value at	0.31 MHz	41.7 dBμV @ Q-Peak mode
+	Cable Losses *		0.0 dB
=	Conducted Emission		41.7 dBμV

* In case of RG214/ RF cable 15 Ft, the loss is about 0.17 dB at the frequency of 30 MHz which is negligible.

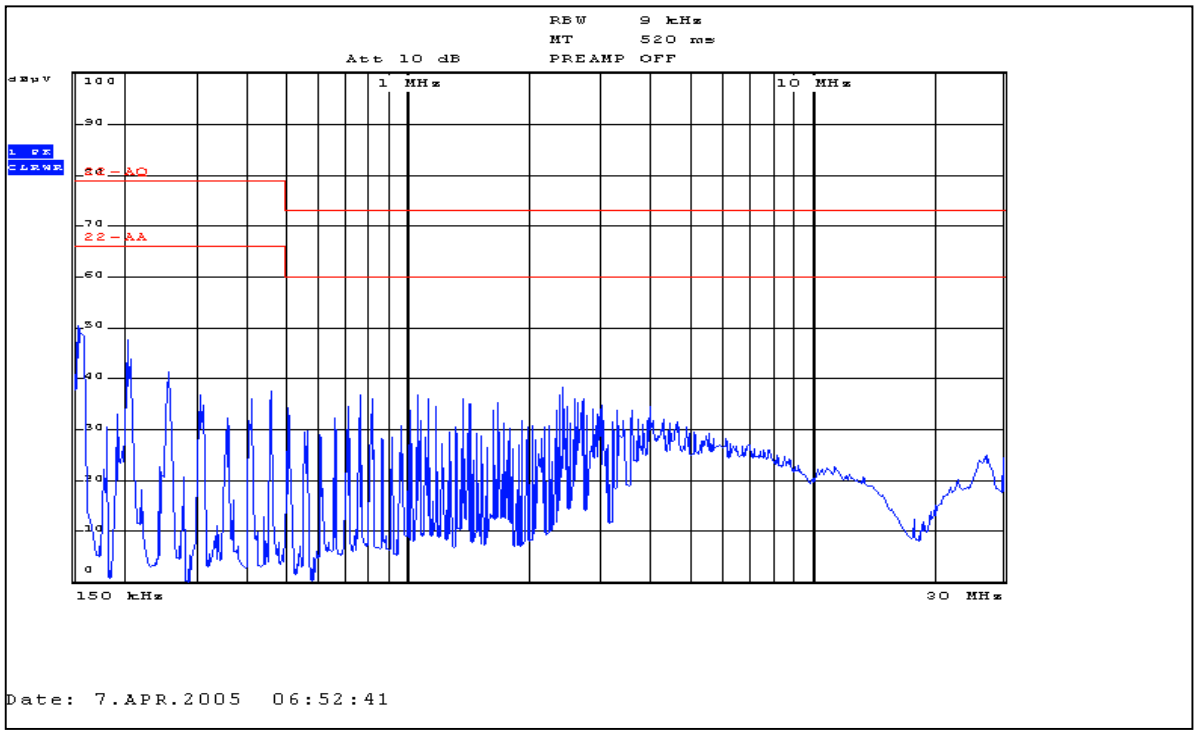
4. Measurement Data

- Resolution Bandwidth : x CISPR Quasi-Peak (6dB Bandwidth : 9 kHz)
  x Average (6dB Bandwidth : 9 kHz)

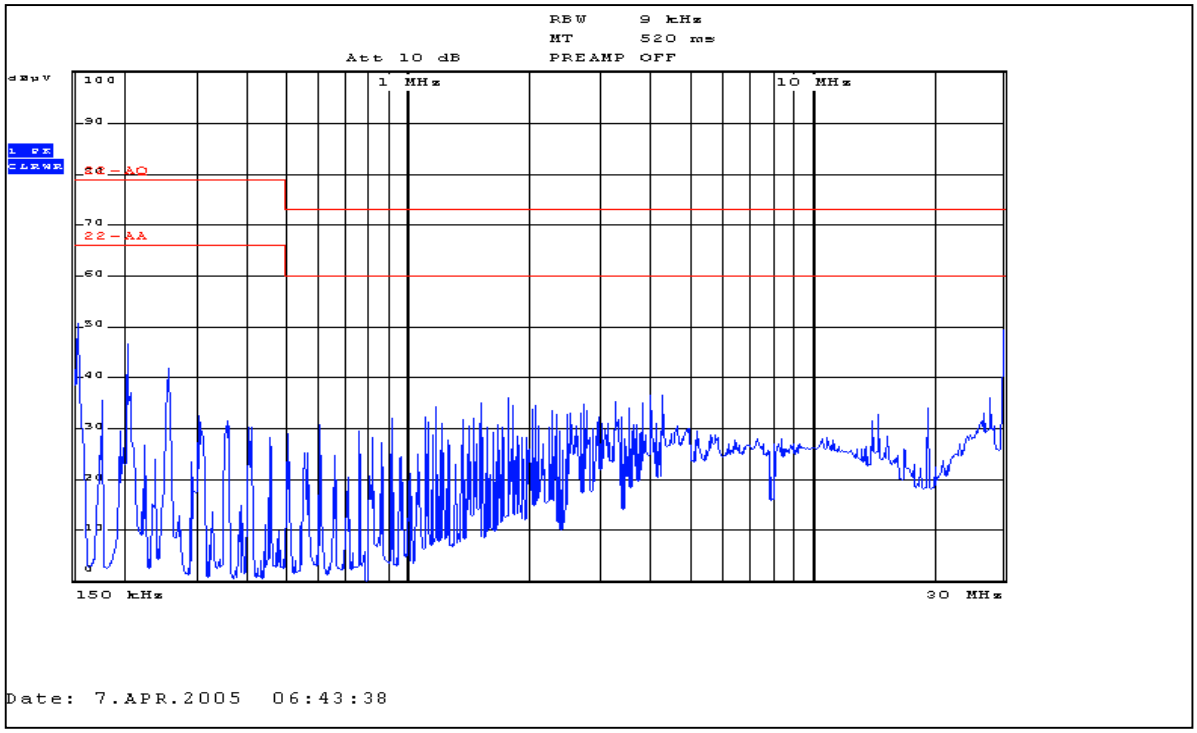
Power Lead Tested	Frequency (MHz)	Emission Level		Limit		(*) Margin	
		Q-Peak (dBμV)	Average (dBμV)	Q-Peak (dBμV)	Average (dBμV)	Q-Peak (dBμV)	Average (dBμV)
Live to Ground	0.31	41.7	15.5	79.0	66.0	-37.3	-50.5
	0.55	35.1	10.4	73.0	60.0	-37.9	-49.6
	8.43	24.2	23.7	73.0	60.0	-48.8	-36.3
	11.06	21.1	20.9	73.0	60.0	-51.9	-39.1
	13.70	22.6	20.4	73.0	60.0	-50.4	-39.6
	19.49	22.8	22.3	73.0	60.0	-50.2	-37.7
	24.75	30.2	29.8	73.0	60.0	-42.8	-30.2
Neutral to Ground	0.31	41.5	15.6	79.0	66.0	-37.5	-50.4
	0.60	33.7	9.4	73.0	60.0	-39.3	-50.6
	8.43	23.8	23.4	73.0	60.0	-49.2	-36.6
	11.06	20.4	20.2	73.0	60.0	-52.6	-39.8
	13.70	21.5	20.9	73.0	60.0	-51.5	-39.1
	17.90	20.3	19.8	73.0	60.0	-52.7	-40.2
	24.75	30.6	30.2	73.0	60.0	-42.4	-29.8

Note : Refer to measured graphs on next page.

* Margin(dB) : Emission Level (dB) - Limit (dB)



(Test side: Live-Ground side)



(Test side: Neutral-Ground side)

Ⅳ. RADIATED EMISSION MEASUREMENT (Section 15.209)

1. Test Procedure

1.1 Preliminary Testing for Reference

Preliminary testing was performed in a KTL absorber-lined room to determine the emission characteristics of the EUT. The EUT was placed on the wooden table which has dimensions of 0.8 meters in height, 1 meter in length and 1.5 meters in width. Receiving antenna(Loop antenna : 0.009 to 30 MHz) was placed at the distance of 1 meter from the EUT.

An attempt was made to maximize the emission level with the various configurations of the EUT while rotating the table.

Emissions level from the EUT with various configurations were examined on a Spectrum Analyzer connected with a RF amplifier and graphed by a plotter.

1.2 Final Radiated Emission Test at a Absorber-Lined Room

The final measurement of radiated field strength was carried out in a KTL absorber-lined room that was listed up at FCC according to the "Radiated Emissions Testing" procedure specified by ANSI C63.4.

Based on the test results in preliminary test, measurement was made in same test set up and configuration which produced maximum emission level. Receiving antenna was installed at 3-meter distance from the EUT, and was connected to an EMI receiver or spectrum analyzer with a RF amplifier.

Turntable was rotated through 360 degrees and the center of the loop antenna was 1 meter above the ground plane. And the loop antenna was rotated about its vertical axis and positioned horizontally to read maximum emission level.

If necessary, the radiated emission measurements could be performed at a closer distance than specified distance to ensure higher accuracy and their results were extrapolated to the specified distance using the square of an inverse linear distance extrapolation factor(40dB/decade) as per Section 15.31(f).

The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

2. Photograph for the test configuration

3. Sample Calculation

The emission level measured in decibels above one microvolt (dB μV) was converted into microvolt per meter (μV/m) as shown in following sample calculation.

For example :

	Measured Value at	0.125 MHz	84.0 dB μV
+	Antenna Factor		9.9 dB
+	Cable Loss		0.0 dB
–	Preamplifier		0.0 dB
–	Distance Correction Factor *		80.0 dB
=	Radiated Emission		13.9 dB μV/m
			(= 5.0 μV/m)

* Extrapolated from the measured distance(3 m) to the specified distance(300 m) using the square of an inverse linear distance extrapolation.

4. Measurement Data

- Resolution Bandwidth : x Average (6dB Bandwidth : 200 Hz)
  x CISPR Quasi-Peak (6dB Bandwidth : 200 Hz)
  Peak (3dB Bandwidth : 100 kHz)
- Measurement Distance : 3 Meter

Frequency (MHz)	* D.M.	* A.P.	Measured Value (dBμV)	* A.F. + C.L (dB)	* A.G. (dB)	* D.C.F. (dB)	Emission Level (dBμV/m)	Emission Level (μV/m)	Limit (μV/m)	** Margin (dB)
0.125	A	H	84.0	9.9	--	-80.0	13.9	5.0	19.2	-11.8
0.250	A	H	42.3	9.8	--	-80.0	-27.9	0.0	9.6	-47.5
0.375	A	H	40.3	9.8	--	-80.0	-29.9	0.0	6.4	-46.0
0.500	Q	H	31.1	9.8	--	-40.0	0.9	1.1	48.0	-32.7
0.625	Q	H/V	< 30.0	9.7	--	-40.0	< -0.3	< 1.0	38.4	< -32.0
--	--	--	--	--	--	--	--	--	--	--

Note
The upper frequency range of this test was 1.25 MHz. The observed EMI Test Receiver's noise floor level was 30.0 dBμV using Quasi-peak mode. And all other emissions not reported on data were more than 30 dB below the permitted level.

* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
A.F. : Antenna Factor
C.L. : Cable Loss
A.G. : Amplifier Gain
D.C.F. : Distance Correction Factor
< : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

Ⅴ. TEST EQUIPMENT USED FOR MEASUREMENTS

Equipment	Model No.	Manufacturer	Serial No.	Effective Cal. Duration
[x] EMI Receiver (20 MHz-1 GHz)	ESVS30	R & S	830516/002	03/14/05-03/14/06
[x] EMI Receiver (20 Hz-7 GHz)	ESI	R & S	835571/004	10/18/04-10/18/05
[x] Spectrum Analyzer (9 kHz-26.5 GHz)	8563A	H. P.	3222A02069	03/16/05-03/16/06
[x] Spectrum Analyzer (3 Hz-50 GHz)	E4448A	Agilent	MY43360322	03/16/05-03/16/06
[ ] Test Receiver (9 kHz-30 MHz)	ESH3	R & S	860905/001	06/18/05-06/18/06
[ ] Pre-Amplifier (0.1-3000 MHz, 30 dB)	8347A	H. P.	2834A00543	05/19/05-05/19/06
[ ] Pre-Amplifier (1-26.5 GHz, 35 dB)	8449B	H. P.	3008A00302	06/22/05-06/22/06
[x] LISN(50 Ω , 50 μH) (10 kHz-100 MHz)	ESH3-Z5	R & S	826789/009	05/16/05-05/16/06
[ ] Tuned Dipole Ant. (30 MHz-300 MHz)	VHA 9103	Schwarzbeck	-	*
[ ] Tuned Dipole Ant. (300 MHz-1 GHz)	UHA 9105	Schwarzbeck	-	*
[ ] Biconical Ant. (30 MHz-300 MHz)	BBA 9106	Schwarzbeck	-	*
[ ] Biconi-Log Ant. (30 MHz-1000 MHz)	VULB9168	Schwarzbeck	9168-167	*
[ ] Log Periodic Ant. (200 MHz-1 GHz)	3146	EMCO	-	*
[ ] Horn Ant. (1 GHz-18 GHz)	3115	EMCO	-	*
[x] Active Loop Ant. (9 kHz-30 MHz)	6502	EMCO	2532	*
[ ] Shielded Room (5.0 m x 4.5 m)	-	SIN-MYUNG	-	-

* Each set of antennas has been calibrated to ensure correlation with ANSI C63.5 standard. The calibration of antennas is traceable to Korea Standard Research Institute(KSRI).