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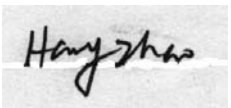
NVLAP Lab code: 200068-0
ISO/IEC 17025:1999, ISO 9002:1994

FCC 15.225 Test Report

On Model Name: Dual Interface (Contact and Contactless) Smart Card Reader
Model Number: SDI010
Trademark: SCM
Prepared for SCM Microsystems Inc.

According to FCC Part 15.225

Test Report#: *SCM-0511-0046SH-FCC*
Prepared by: *Chris Huang*
QC Manager: *Harry Zhao*

Test Report Released by: 

Harry Zhao *2006, March 16*

Date

List of Attached Files

Exhibit Type	File Description	File Name
Test Report	Test Report	Report.pdf
Operation Description	Technical Description	Op-description.pdf
External Photos	External Photos	External photos.pdf
Internal Photos	Internal Photos	Internal photos.pdf
Test Set-up Photos	Set-up Photos	Test Set-up photos.pdf
Block Diagram	Block Diagram	Block.pdf
Schematics	Circuit Diagram	Schematics.pdf
ID Label/Location	Label Artwork and Location	Label.pdf
User Manual	User Manual	Manual.pdf

Test Location

Tests performed at EMC Compliance Management Group (China) in a Certified ANSI Semi-Anechoic Chamber and Shielded Room performed testing.

Tests performed at EMC Compliance Management Group (China) in a Certified ANSI Semi-Anechoic Chamber and Shielded Room performed testing.

Test Site Location:	*Jiangsu Electronic Products Supervision & Inspection Institute No 107 Ge lane ZhongQiao WuXi JiangSu, China*
Tel:	*86-510-85140038*
Fax:	*86-510-85140037*
Registration Number:	*399439*

Accreditation Bodies

EMC Compliance Management Group is a fully accredited Test Laboratory for ITE, ISM and Telecommunications Products.

In compliance with the site registration requirements of Section 2.948 of the FCC Rules to perform EMI measurements for the general public.

Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code # 200068-0.

Table of Contents

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Administrative Data

Test Sample	*: Dual Interface (Contact and Contactless) Smart Card Reader*
Model Name	*: SDI010*
Serial Number	*: Engineering Sample*
Date Tested	*: 2006, January 6*
Manufacturer	*: SCM Microsystems Inc. 466 Kato Terr.. Fremont, CA 94539*
Telephone	*: +1-510-360-2300*
Fax	*: +1-510-360-0211*

EUT Description

SCM Microsystems Inc. model name SDI010 (referred to as the EUT in this report) is a Dual Interface (Contact and Contactless) Smart Card Reader.

Test Summary

This report an application for Certification of a Transmitter operation pursuant to FCC Part 15.225, the product covered by this report is the SCM Model: SDI010. This report is designed to demonstrate the compliance of this device with the requirements outlined in FCC Part 15.225 using the methods in FCC CFR 47 Part 2.

FCC Section	Requirements	Comments	Remark
15.203	The transmitter shall use a transmitting antenna that is an integral part of the device	Compliance	Attachment 1
15.205	Restricted Band of Operation	Compliance	Attachment 2
15.225(a)(b)(c)(d)	Transmitter radiated emissions-Fundamental, Harmonic and Spurious	Compliance	Attachment 3
15.225(e)	Frequency Stability vs Temperature	Compliance	Attachment 4
15.209(a)	Radiated emissions, general requirements	Compliance	Attachment 5
15.207(a)	AC power conducted emissions	Compliance	Attachment 6

Test Mode Justification

The EUT exercise program was used during radiated testing and was designed to exercise the various system components in a manner similar to a typical use.
For emission testing, the unit was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

Equipment Modification

Any modifications installed previous to testing by SCM Microsystems Inc. will be incorporated in each production model sold or leased in United States.

There were no modifications installed by EMC Compliance Management Group.

Test System Details

EUT	
Model Name:	**SDI010**
Description:	**Dual Interface (Contact and Contactless) Smart Card Reader**
Manufacturer:	**SCM Microsystems Inc.**
Input Voltage:	**+5V USB Bus-power**
Operating Frequency:	**13.56MHz**

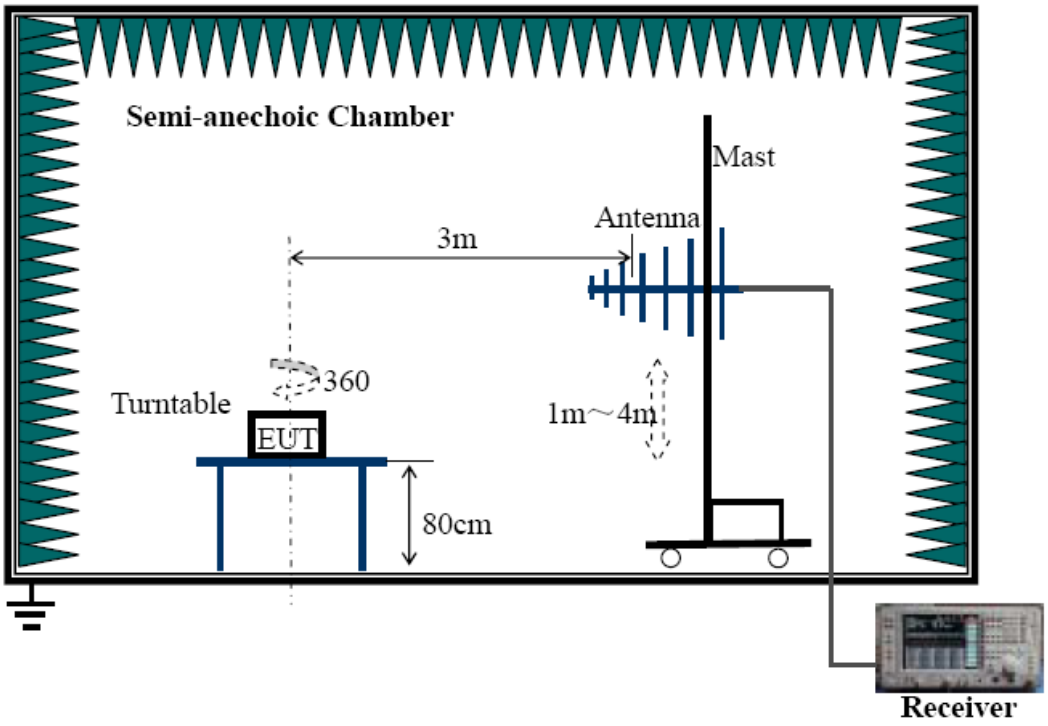
Support Equipment

Description	Model Number	Serial Number	Manufacturer	Power Cable Description
Personal Computer	0D0117	00045-454-020-382	Dell	Unshielded 1.5m
Monitor	M782	CN-05P927-47606-3AM-BK8D	Dell	Unshielded 1.5m
Keyboard	SK-8110	CN-07N244-71616-46L-02GW	Dell	N/A
Mouse	6U220	LZB34107940	Dell	N/A

Cable Description

From	To	Length (Meters)	Shielded (Y/N)	Ferrite Loaded (Y/N)
EUT	Personal Computer	1.5	N	Y(x1)
Keyboard	Personal Computer	1.8	N	N
Mouse	Personal Computer	1.8	N	N
Monitor	Personal Computer	1.5	Y	N

Configuration of Tested System

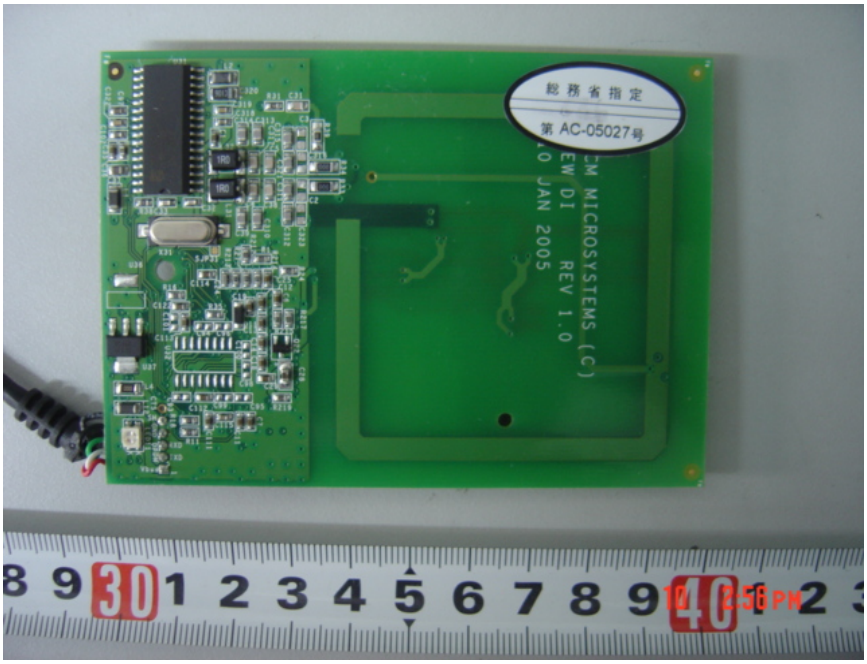


EUT Sample Photos

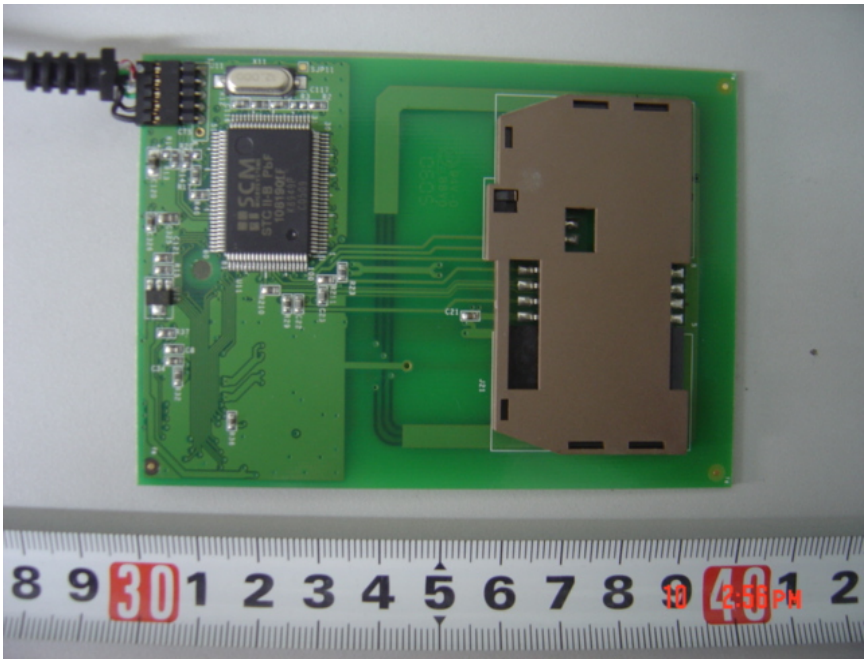
Front View

Back View

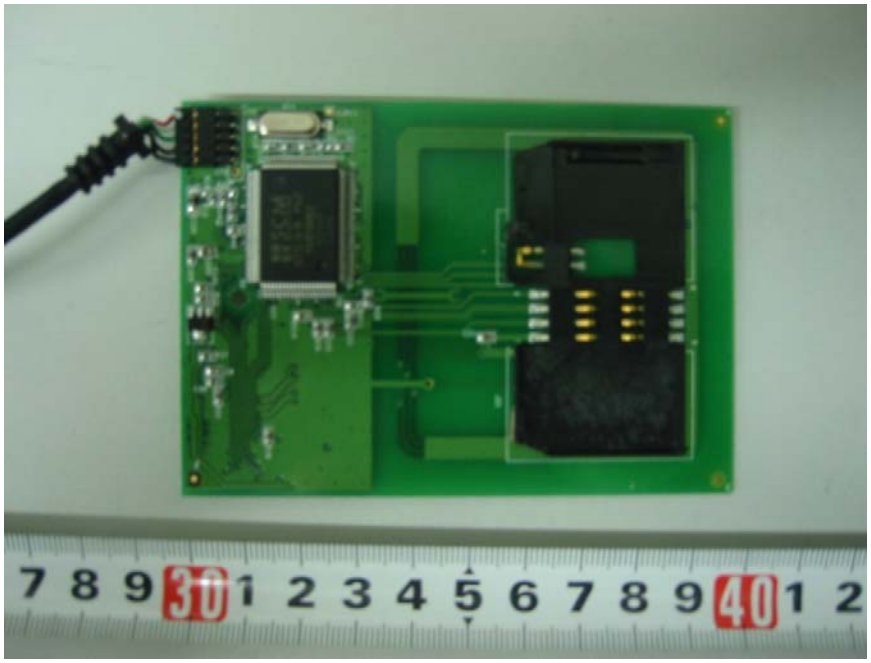
Uncovered View



Main Board Back View



Main Board Front View



Main Board Front View #2

Test Methodology

Radiated emissions testing are performed according to the procedures specified in ANSI C63.4-2001and FCC Part 15.225.

Frequency Range investigated: ***9 KHz to 30 MHz*** *and* ***30 MHz to 1 GHz***

Measurement setup:

Frequency	*RBW*	*VBW*	*Sweep*	*Detector*	*Distance*	*Antenna polarization*	*Antenna height*
9 KHz – 30 MHz	*9KHz*	*≥RBW*	*Auto*	*Peak*	*3 m*	*Vertical & Horizontal*	*1 m – 4 m*
30 – 1000 MHz	*120 KHz*	*≥RBW*	*Auto*	*Peak*	*3 m*	*Vertical & Horizontal*	*1 m – 4 m*

FCC Part 15.225 Radiated emission limits:

Frequency (MHz)	*Fundamental uV/m*	*Fundamental dBuV/m*	*Measured Distance (meter)*
13.553-13.567	*15,848*	*84*	*30*

** dBuV/m=20 x Log (uV/m)*

EUT power Source: *Power through USB bus from PC*

Emission Maximization: *Antenna (1m to 4m) height and Horizontal/Vertical polarization 360-degree turntable rotated and EUT rotated three orthogonal axes.*

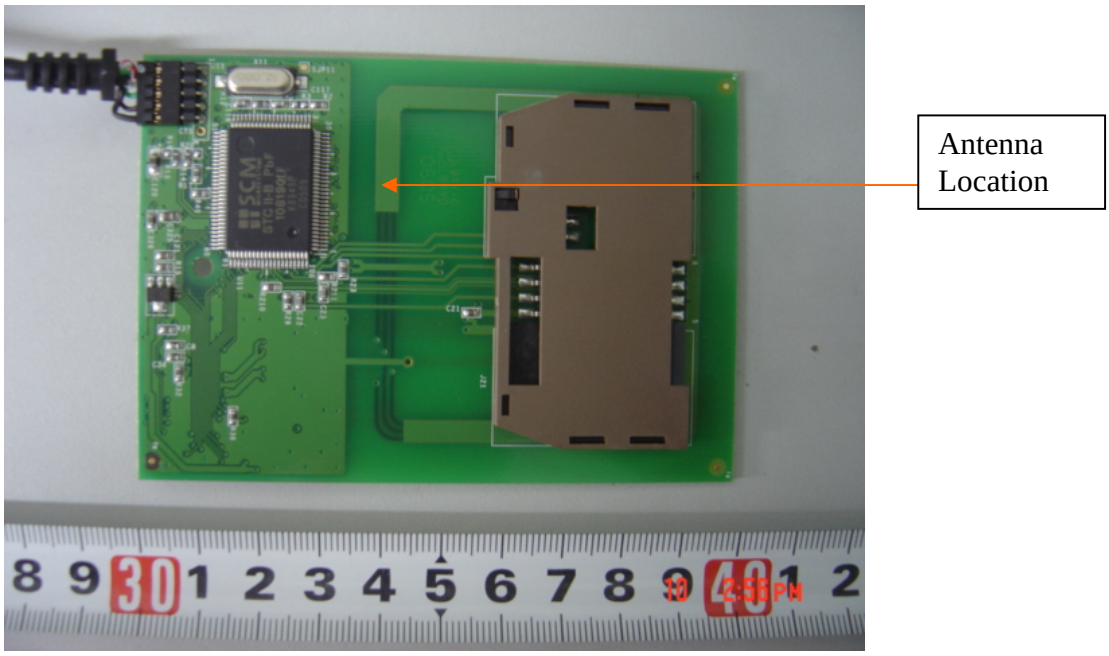
ATTACHMENT 1 – ANTENNA REQUIREMENT

CLIENT:	SCM Microsystems Inc.	**TEST STANDARD:**	FCC Part 15.203 (2004)
MODEL TESTED:	SDI010	**PRODUCT:**	Dual Interface (Contact and Contactless) Smart Card Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	25°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.7 kPa	**GROUNDING:**	Grounding Through PC
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, January 6

SETUP METHOD:	N/A
ANTENNA REQUIREMENT:	An intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.
TEST VOLTAGE:	+5V USB Bus-power
TEST STATUS:	Normal Operation As Usual
RESULTS:	The EUT meets the Antenna requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	N/A

FCC Section	FCC Rules	Conclusion
15.203	***Described how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT.*** ***The exception is in those cases where EUT must be professionally installed. In order to demonstrate that professional installation is required, the following 3 points must be addressed:*** ● ***The application (or intended use) of the EUT*** ● ***The installation requirements of the EUT*** ● ***The method by which the EUT will be marketed***	***The RF Device used a permanent internal antenna.***

Antenna Location



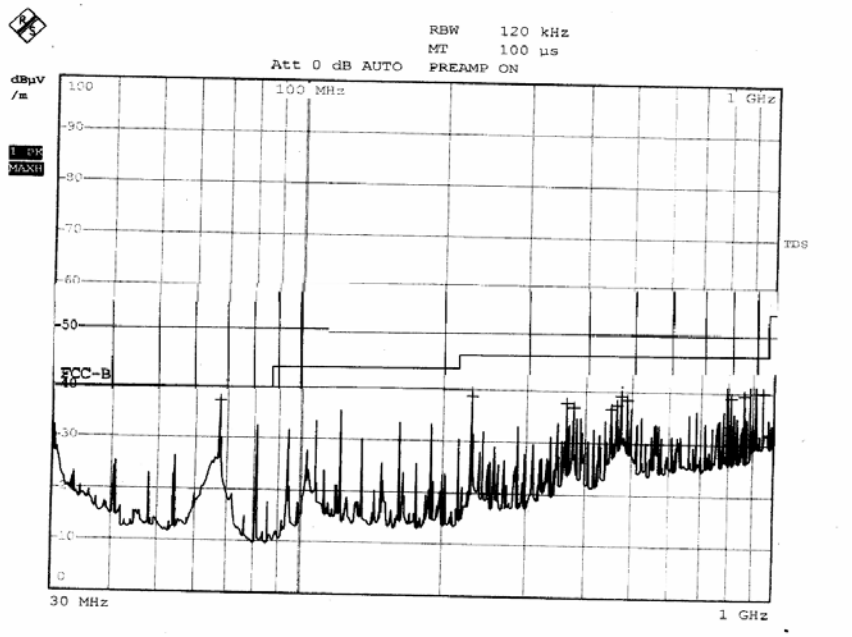
ATTACHMENT 2 – RESTRICTED BAND OF OPERATION

CLIENT:	SCM Microsystems Inc.	***TEST STANDARD:***	FCC Part 15.205 (2004)
MODEL TESTED:	SDI010	**PRODUCT:**	Dual Interface (Contact and Contactless) Smart Card Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	25°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.7 kPa	**GROUNDING:**	Grounding Through PC
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, January 6

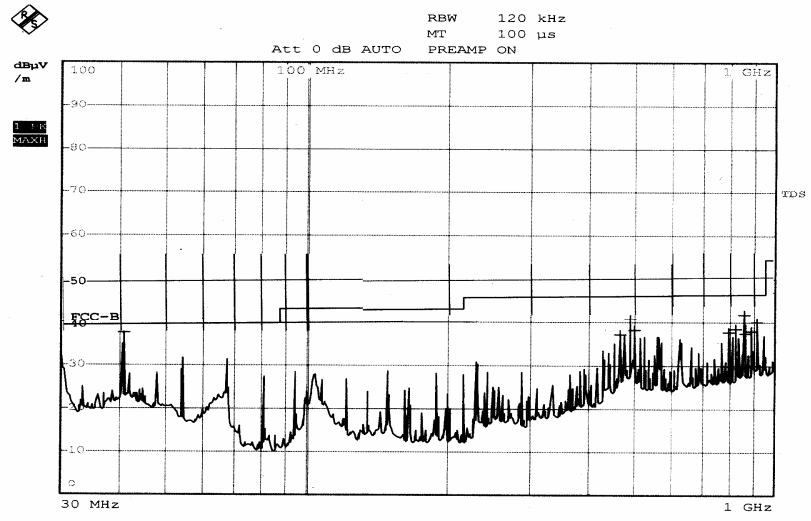
SETUP METHOD:	ANSI C63.4 - 2003
RESTRICTED BANDS OF OPERATION REQUIREMENT:	The only spurious emissions are permitted in any of the frequency bands listed below table of next page.
TESTED RANGE:	30MHz to 1000MHz
TEST VOLTAGE:	+5V USB Bus-power
TEST STATUS:	Keep Tx in continuous transmission mode, modulated
RESULTS:	The EUT meets the restricted bands of operation requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ $2x10^{-7}$ x Center Freq., Amp $\pm$ 2.6 dB

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6



Horizontal Radiated Emission Plot



ABC
Date: 5.JAN.2006 23:00:25

Vertical Radiated Emission Plot

ATTACHMENT 3 - Transmitter radiated emissions-Fundamental, Harmonic and Spurious(9k-30MHz)

CLIENT:	SCM Microsystems Inc.	**TEST STANDARD:**	FCC Part 15.225(a) (b) (c) (d)
MODEL TESTED:	SDI010	**PRODUCT:**	Dual Interface (Contact and Contactless) Smart Card Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	25°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.7 kPa	**GROUNDING:**	Grounding Through PC
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, January 6

SETUP METHOD:	ANSI C63.4 - 2003
FCC 15.225	(a) The field strength of any emissions within the band 13.553-13.567MHz shall not exceed 15,848 microvolts/meter at 30 meters. (b) Within the band 13.410-13.553MHz and 13.567-13.710MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters. (c) Within the band 13.110-13.410MHz and 13.710-14.010MHz, the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters. (d)The field strength of any emissions appearing outside of the 13.110-14.010MHz band shall not exceed the general radiated emission limit in 15.209.
TEST PROCEDURE:	The EUT is set up according to the guidelines of ANSI C63.4 for radiated emissions. The length of the antenna was adjusted to the maximum output level. An EMI receiver employing average detector is used for the test. Peak scan was made at the frequency measurement range (pre-scan) in an Anechoic chamber, and then three significant points were investigated by peak detector and average detector. The frequency investigated is from 13.110MHz to 14.010MHz. The following data lists the significant emission frequencies, measured levels, and the corrected readings against the limits. Explanation of the Correction Factor is given as follows: FS= RA + AF + CF - AG Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain
TESTED RANGE:	9KHz-30MHz
TEST VOLTAGE:	+5V USB Bus-power
TEST STATUS:	Keep Tx in continuous transmission mode, modulated

RESULTS:	**SDI010 -** The EUT meets the requirements of test reference for Radiated Emissions on vertical polarization by 0.7dB for QP reading at 27.122MHz The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

Limit Description:

Fundamental Frequency	*Field Strength of Fundamental uV/m*	*Field Strength of Fundamental dBuV/m*	*Measured Distance (meter)*
13.553-13.567	*15,848*	*84*	*30*

FCC Part 15.225(a) Radiated emission limits:

Frequency (MHz)	*Fundamental uV/m*	*Fundamental dBuV/m (30 m)*	*Fundamental dBuV/m (3 m)*
13.56	*15,848*	*84*	*104*

Note:dBuV/m=20 x Log (uV/m)
dBuV/m=20 x log (15,848 uV/m) = 84

FCC Part 15.225(b)(c)(d) Field Strength limits:

Frequency (MHz)	*Field Strength uV/m (30m)*	*Field Strength dBuV/m (30m)*	*Field Strength dBuV/m (3m)*	*Plot #*
13.410 –13.553	*334*	*50.4*	*70.4*	*In next page.*
13.567 – 13.710	*334*	*50.4*	*70.4*	*In next page*
13.110 – 13.410	*106*	*40.5*	*60.4*	*In next page*
13.710 – 14.010	*106*	*40.5*	*60.4*	*In next page*
Outside of the 13.110 – 14.010	*30*	*29.5*	*49.5*	*In next page*

Note: For test distance other than what is specified, but fulfilling the requirements of section 15.31(f) (1) the field strength is calculated by adding additionally an extrapolation factor of 20 dB/decade. The basic equation with a sample calculation is as follows:
DF = Distance Extrapolation Factor in dB
Where DF=20 log(Dt/Ds) = 20 log(3m/30m)= -20 dB
Dt=Test Distance (3m)
Ds=Specified Distance (30m)

Fundamental (13.110MHz-14.010MHz)

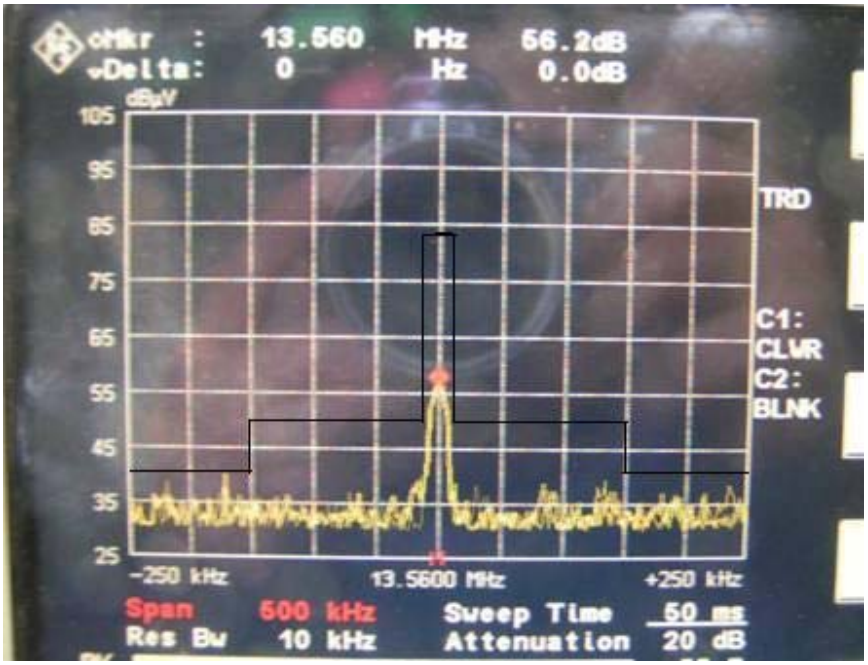
Frequency (MHz)	*Polarity*	*Reading (dBuV)*	*Antenna Factor(dB/m)*	*Cable Loss(dB)*	*Corrected Level(3m)(dBuV/m)*	*Limit(3m) (dBuV/m)*	*Margin (dB)*
13.56	*H*	*48.6*	*19.7*	*0.4*	*68.7*	*104*	*-36.3*
13.56	*V*	*56.1*	*19.7*	*0.4*	*76.2*	*104*	*-27.8*

Note: Corrected level =Reading level+ Antenna Factor+ Cable Loss

13.533MHz-13.567MHz Plot

Frequency (MHz)	*Reading (dBuV)*	*Antenna Factor(dB/m)*	*Cable Loss(dB)*	*Corrected Level(3m)(dBuV/m)*	*Limit(3m) (dBuV/m)*	*Margin (dB)*
13.553	*46.5*	*19.7*	*0.4*	*66.6*	*70.4*	*-3.8*
13.567	*49.1*	*19.7*	*0.4*	*69.2*	*70.4*	*-1.2*

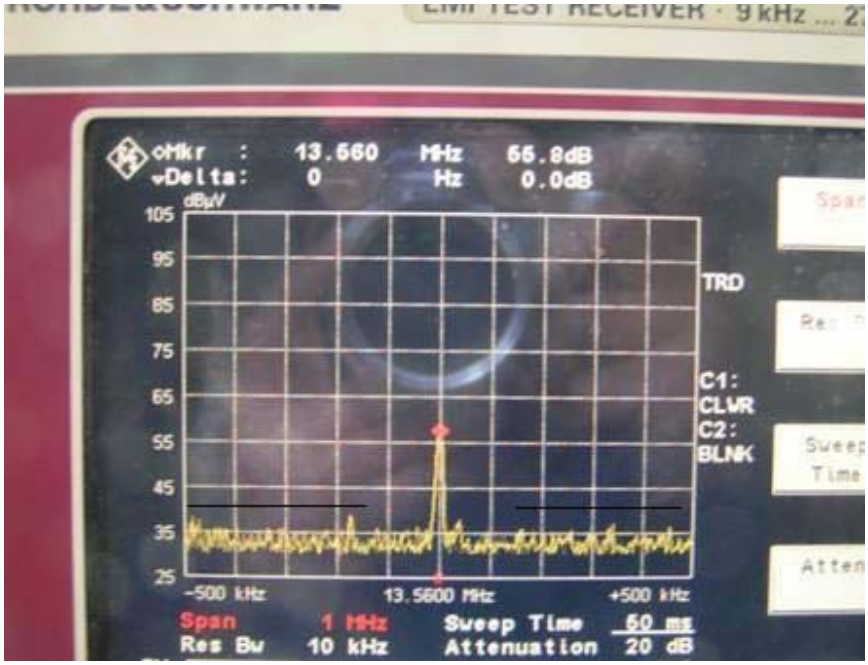
Note: Corrected level =Reading level+ Antenna Factor+ Cable Loss



13.410MHz-13.710MHz Plot

Frequency (MHz)	*Reading (dBuV)*	*Antenna Factor(dB/m)*	*Cable Loss(dB)*	*Corrected Level(3m)(dBuV/m)*	*Limit(3m) (dBuV/m)*	*Margin (dB)*
13.410	*35.5*	*19.6*	*0.4*	*55.5*	*60.4*	*-4.9*
13.710	*34.6*	*19.8*	*0.4*	*54.8*	*60.4*	*-5.6*

Note: Corrected level =Reading level+ Antenna Factor+ Cable Loss



13.110MHz-14.010MHz Plot

Note: There are no other emissions during the frequency band 13.110-13.410MHz and 13.710-14.010MHz.

Spurious (9kHz-30MHz)

Frequency (MHz)	*Polarity*	*Reading (dBuV)*	*Antenna Factor(dB/m)*	*Cable Loss(dB)*	*Corrected Level(3m)(dBuV/m)*	*Limit(3m) (dBuV/m)*	*Margin (dB)*
27.122	*H*	*26.2*	*21.2*	*0.5*	*47.9*	*49.5*	*-1.6*
27.122	*V*	*27.1*	*21.2*	*0.5*	*48.8*	*49.5*	*-0.7*

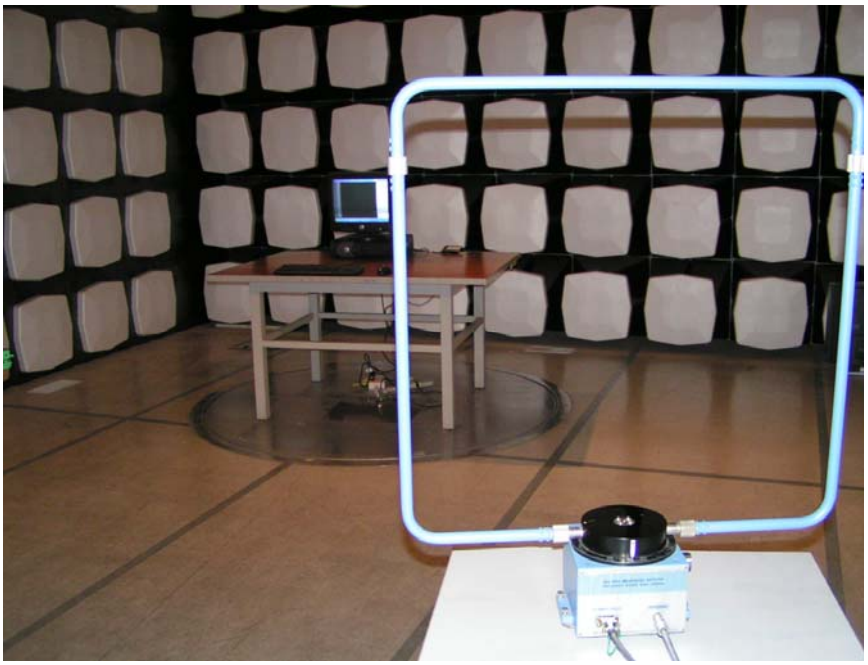
Note: The readings are peak and average, using a QPA bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used. Corrected level =Reading level+ Antenna Factor+ Cable Loss
Memo: No preamp was used. There are no other emissions during the frequency band.

Test Equipment	Model	Serial No.	Manufacturer	Last Cal.	Cal. Due Date
EMI receiver	ESCS30	1102.4500.30	R&S	02/26/05	02/25/06
Loop Antenna	KBA-2402	0-204-4	Kyoritsu	02/26/05	02/25/06
Anechoic Chamber	FACT-3	601	LINDGREN	01/10/05	01/09/06

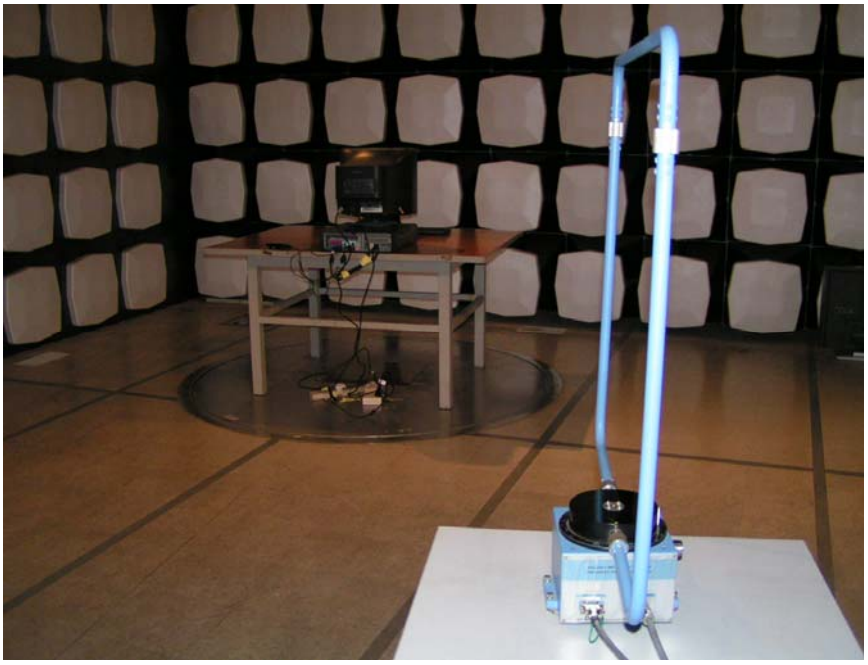
SIGNED BY: Shi-xiting _____ **REVIEWED BY:** _____

ENGINEER **QC**

EUT Model: SDI010



Field Strength within Band Test Set-up – Front View



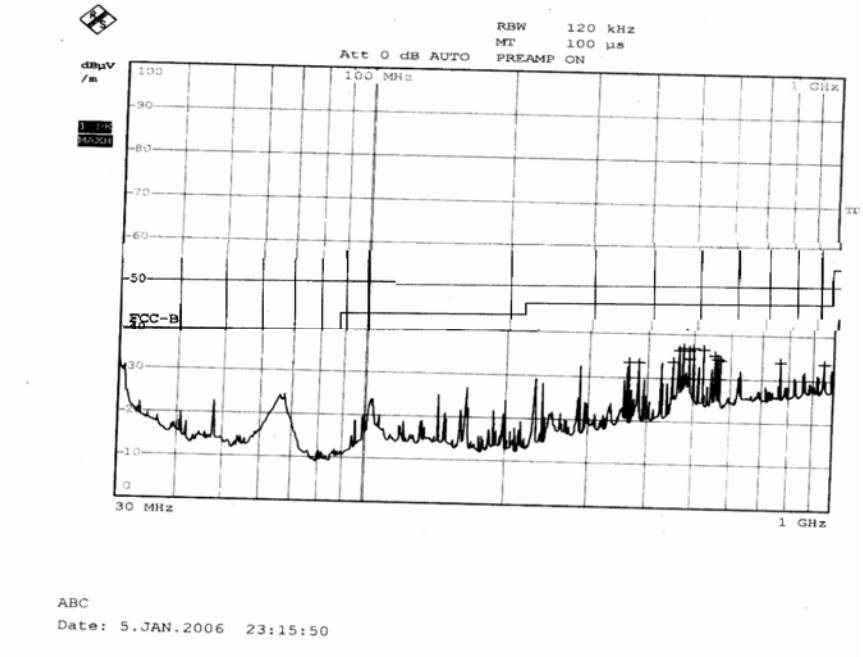
Field Strength within Band Test Set-up – Rear View

ATTACHMENT 4 – General Radiated Emissions

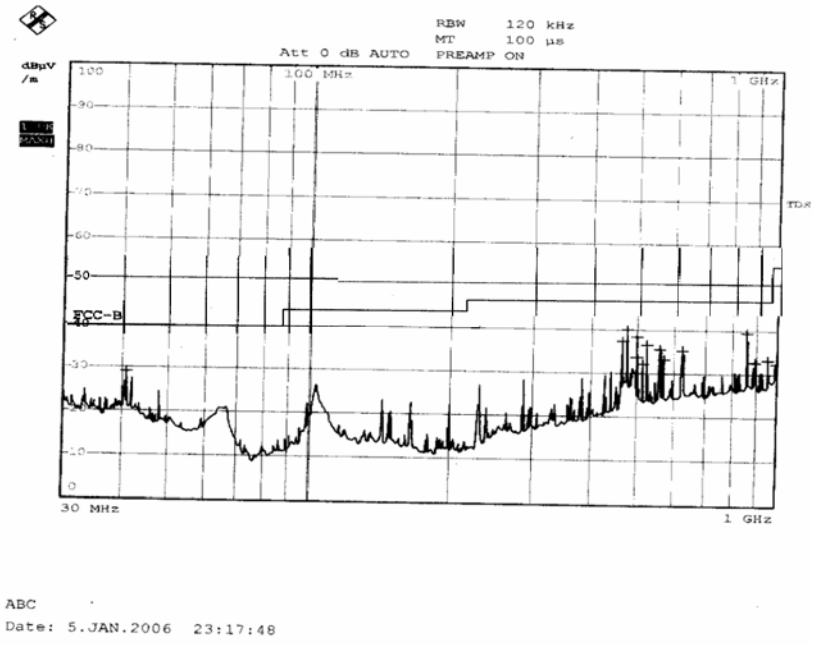
CLIENT:	SCM Microsystems Inc.	**TEST STANDARD:**	FCC Part 15.225(d) FCC Part 15.209 (2004)
MODEL TESTED:	SDI010	**PRODUCT:**	Dual Interface (Contact and Contactless) Smart Card Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	24°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.7 kPa	**GROUNDING:**	Grounding Through PC
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, January 6

SETUP METHOD:	ANSI C63.4 - 2003
TEST PROCEDURE:	The EUT is set up according to the guidelines of ANSI C63.4 for radiated emissions. The length of the antenna was adjusted to the maximum output level. An EMI receiver peak scan is made at the frequency measurement range (pre-scan) in an Anechoic chamber. Signal discrimination is then performed and the significant peaks marked. These peaks are then quasi-peaked for final test at an Open Site Test area. The frequency investigated is from 30MHz to 1GHz. The following data lists the significant emission frequencies, measured levels, correction factors (including cable and antenna correction factors), and the corrected readings against the limits. Explanation of the Correction Factor is given as follows: FS= RA + AF + CF - AG Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain
TESTED RANGE:	30MHz to 1,000MHz
TEST VOLTAGE:	120V/60Hz
RESULTS:	- The EUT meets the requirements of test reference for Radiated Emissions on vertical polarization by 2.3 dB at 41.91MHz for contactless mode. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

Model: SDI010
For Contact Mode:



Horizontal Radiated Emission Plot



Vertical Radiated Emission Plot

30MHz - 1GHz

Horizontal

Signal	Frequency (MHz)	Antenna Factor (dB)	Cable Factor (dB)	Corrected QP Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Angle of Turner (degree)	Height of Tower (cm)
1	105.98	7.2	0.9	29.5	43.5	-14.0	146	200
2	384.04	11.2	1.4	30.6	46.0	-14.5	122	189
3	481.35	14.9	2.2	38.0	46.0	-8.0	345	121
4	504.08	15.2	2.4	33.1	46.0	-12.9	11	176
5	576.00	15..4	2.4	35.3	46.0	-10.7	309	119
6	842.09	16.5	2.7	40.3	46.0	-5.7	178	178

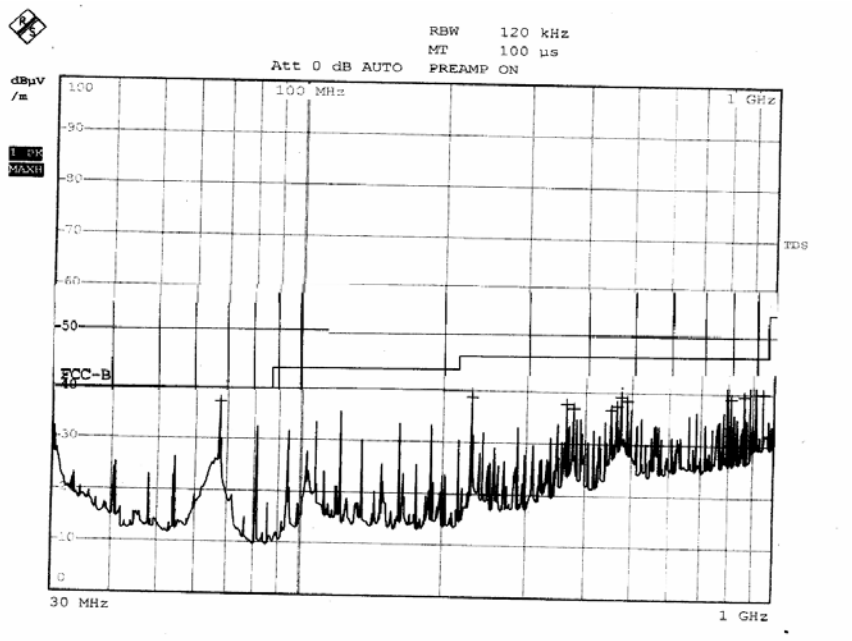
Vertical

Signal	Frequency (MHz)	Antenna Factor (dB)	Cable Factor (Db)	Corrected QP Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Angle of Turner (degree)	Height of Tower (cm)
1	41.09	10.7	0.6	29.4	40.0	-10.6	178	128
2	114.03	7.0	0.9	29.8	43.5	-13.7	200	100
3	370.89	13.2	1.9	29.5	46.0	-16.5	212	123
4	479.38	14.9	2.2	36.9	46.0	-9.1	198	100
5	528.12	15.3	2.3	33.9	46.0	-12.1	110	176
6	845.78	16.5	2.7	40.5	46.0	-5.5	95	100

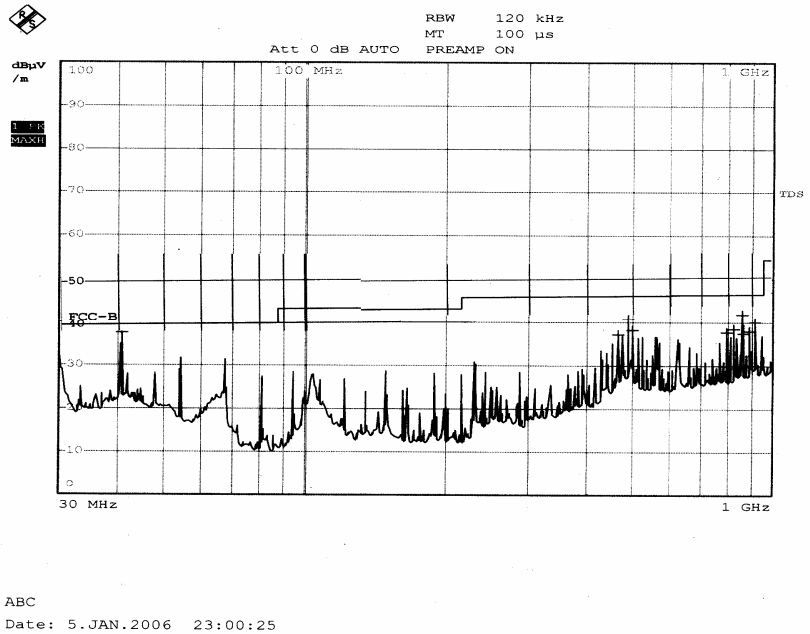
Comments: None

Note: All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.

Model: SDI010
For Contactless Mode:



Horizontal Radiated Emission Plot



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Vertical Radiated Emission Plot

30MHz - 1GHz

Horizontal

Signal	Frequency (MHz)	Antenna Factor (dB)	Cable Factor (dB)	Corrected QP Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Angle of Turner (degree)	Height of Tower (cm)
1	66.90	13.4	0.9	37.1	40.0	-2.9	316	121
2	231.77	9.0	1.7	34.6	46.0	-11.4	189	156
3	379.68	11.7	2.0	36.8	46.0	-9.2	221	110
4	481.89	14.9	2.2	38.0	46.0	-8.0	290	230
5	887.90	17.3	2.9	42.6	46.0	-3.4	78	211
6	949.24	17.6	3.5	37.0	46.0	-9.0	278	221

Vertical

Signal	Frequency (MHz)	Antenna Factor (dB)	Cable Factor (Db)	Corrected QP Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Angle of Turner (degree)	Height of Tower (cm)
1	41.90	14.2	0.7	37.7	40.0	-2.3	299	100
2	188.79	9.5	1.3	33.8	43.5	-9.7	117	200
3	490.13	14.9	2.2	31.9	46.0	-14.1	109	136
4	504.08	15.0	2.3	33.7	46.0	-12.3	187	183
5	872.90	16.5	2.7	40.9	46.0	-5.1	209	100
6	895.00	16.9	3.2	38.3	46.0	-7.7	89	115

Comments: None

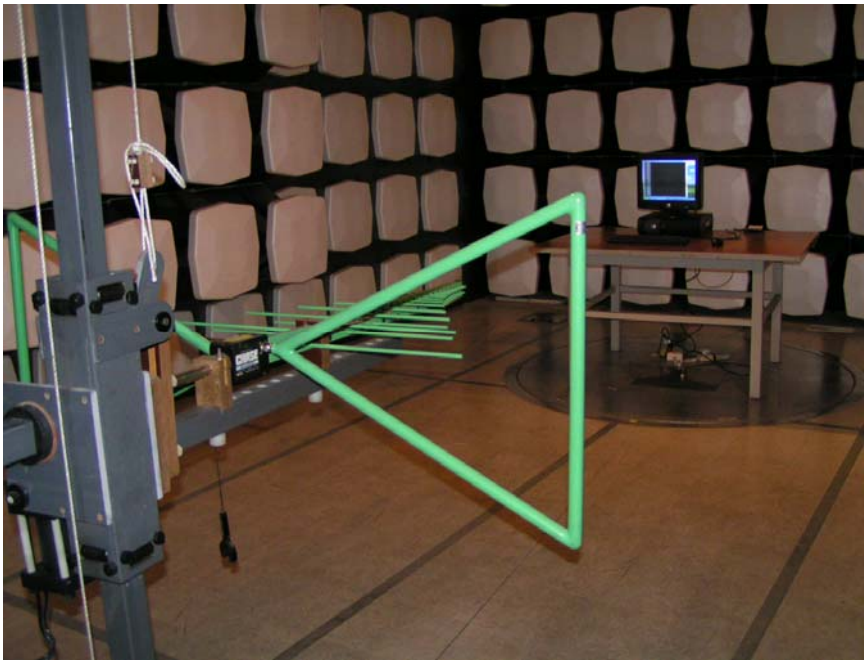
Note: All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.

Test Equipment	Model	Serial No.	Manufacturer	Last Cal.	Cal. Due Date
EMI receiver (9k-30M)	ESCS30	1102.4500.30	R&S	02/26/05	02/25/06
BILOG ANTENNA	CBL6112	117.0800.20	CHASE	02/17/05	02/17/06
Anechoic Chamber	FACT-3	601	LINDGREN	01/10/05	01/09/06

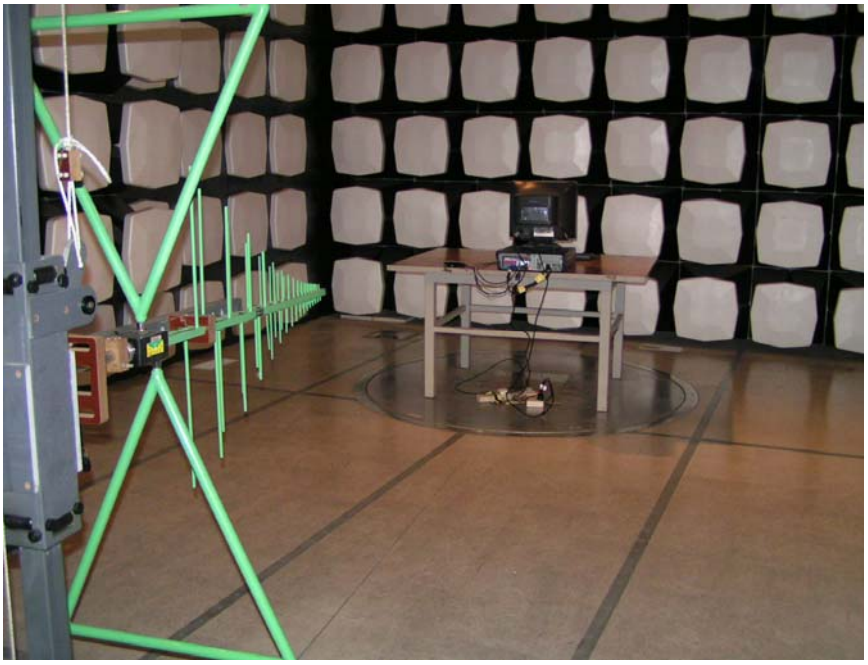
SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hanyzhao _____

ENGINEER **QC**

EUT Model: SDI010



Field Strength Test Set-up – Front View



Field Strength Set-up – Rear View

ATTACHMENT 5 - Frequency Stability, Section 15.225 (e) & 2.1055

CLIENT:	SCM Microsystems Inc.	**TEST STANDARD:**	FCC Part 15.225(e) FCC Part 15.31(e)
MODEL TESTED:	SDI010	**PRODUCT:**	Dual Interface (Contact and Contactless) Smart Card Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	24°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.7 kPa	**GROUNDING:**	Grounding Through PC
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, January 6

TESTED METHOD:	FCC Part 15.225 (e) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
TEST PROCEDURE:	Set the environmental temperature chamber to temperature of (-20°C to +50°C) wait the temperature of the chamber to stabilize. While maintaining a constant temperature inside the environmental chamber, turn the EUT on and measure the EUT operating frequency at the start-up, 10 minutes, and 30 minutes after startup.
TEST VOLTAGE:	+5V USB Bus-power
RESULTS:	The EUT meets the reference requirement of Frequency stability under low voltage conditions at operating mode. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

Frequency stability VS Temperature Measurement Data:

Timing	*-20℃*	*-10℃*	*0℃*	*+10℃*	*+20℃*	*+30℃*	*+40℃*	*+50℃*
Start-up	*13.56020*	*13.56018*	*13.56017*	*13.56018*	*13.56018*	*13.56023*	*13.56025*	*13.56026*
10 Min.	*13.56020*	*13.56017*	*13.56018*	*13.56020*	*13.56018*	*13.56023*	*13.56025*	*13.56026*
30 Min.	*13.56018*	*13.56017*	*13.56015*	*13.56021*	*13.56018*	*13.56025*	*13.56026*	*13.56026*

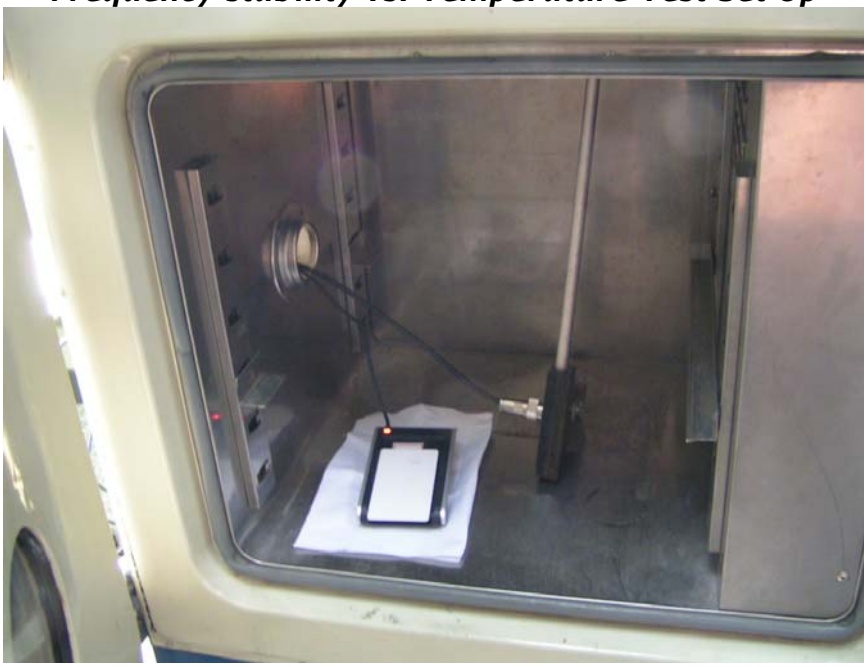
Test Equipment	Model	Serial No.	Manufacturer	Last Cal.	Cal. Due Date
EMI receiver (9k-30M)	ESCS30	1102.4500.30	R&S	02/26/05	02/25/06
Temperature Chamber	MC-71	502600	Espec	03/18/05	03/17/06
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** _____

ENGINEER **QC**

EUT Model: SDI010

Frequency stability vs. Temperature Test Set-Up



Frequency stability vs. Temperature Inside View

ATTACHMENT 6 - AC Power line Conducted Emission Measurement

CLIENT:	SCM Microsystems Inc.	**TEST STANDARD:**	FCC Part 15.205
MODEL TESTED:	SDI010	**PRODUCT:**	Dual Interface (Contact and Contactless) Smart Card Reader
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	25°C	**HUMIDITY:**	55%RH
ATM PRESSURE:	101.7 kPa	**GROUNDING:**	Grounding Through PC
TESTED BY:	Shi Xiting	**DATE OF TEST:**	2006, January 6

SETUP METHOD:	ANSI C63.4 - 2003
TEST PROCEDURE:	a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface. b. Connect EUT to the power mains through a line impedance stabilization network (LISN) c. The LISN provides 50ohm coupling impedance for the measuring instrument d. Both sides of AC line were checked for maximum conduced interference. e. The frequency range from 150KHz to 30MHz was searched. f. Set the test-receiver system to Peak Detect Function and Specified bandwidth. g. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported.
TESTED RANGE:	150kHz-30MHz
TEST VOLTAGE:	120V/60Hz
TEST STATUS:	Contact, Contactless

RESULTS:	SDI010 - The EUT meets the requirements of test reference for Conducted emissions on Line N polarization by 14.3 dB for peak reading and 4.7 dB for average reading at 49.88MHz. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by EMC Compliance Management Group test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

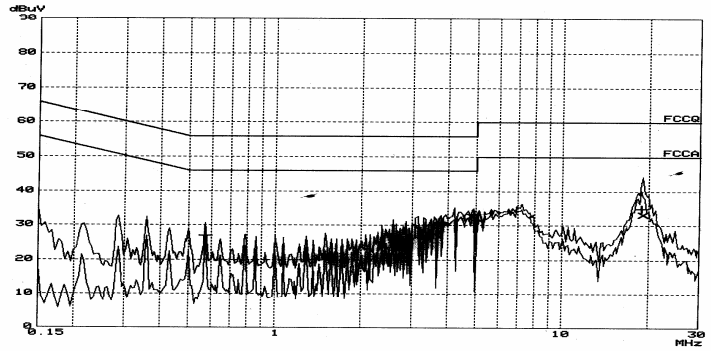
Model: SDI010
For Contact Mode:

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	5M	4.5k	9k	PK+AV	20ms AUTO	LN	OFF
5M	30M	4.5k	9k	PK+AV	1ms AUTO	LN	OFF

Transducer No.	Start	Stop	Name
1	9k	2750M	10dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 8
Acc Margin: 20dB



PAGE 1

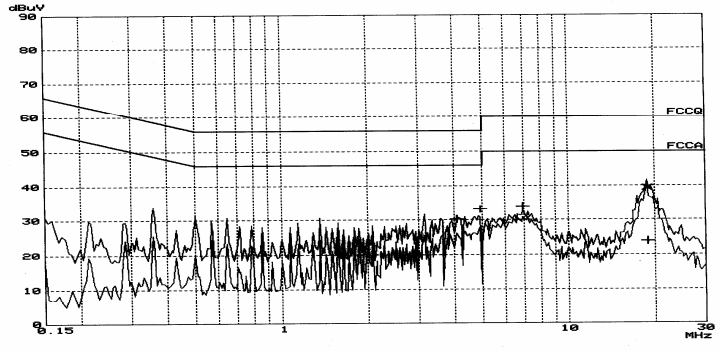
Line L Conducted Emission Graph

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	5M	4.5k	9k	PK+AV	20ms AUTO	LN	OFF
5M	30M	4.5k	9k	PK+AV	1ms AUTO	LN	OFF

Transducer No.	Start	Stop	Name
1	9k	2750M	10dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 8
Acc Margin: 20dB



PAGE 1

Line N Conducted Emission Graph

Line L (Hot Lead)

Signal	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Margin QP (dB)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Margin AVE (dB)
1	0.569	35.8	56.0	-20.2	27.3	46.0	-18.7
2	2.651	30.8	56.0	-25.2	26.9	46.0	-19.1
3	3.791	34.6	56.0	-21.4	30.9	46.0	-15.1
4	4.933	36.9	56.0	-19.1	33.2	46.0	-12.8
5	5.088	33.1	60.0	-26.9	31.5	50.0	-18.5
6	18.783	33.1	60.0	-26.9	34.8	50.0	-15.2

Line N (Neutral Lead)

Signal	Frequency (MHZ)	Corrected QP Level (DBUV)	Limits QP (dBuV)	Margin QP (dB)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Margin AVE (dB
1	0.368	34.8	58.8	-24.0	27.4	48.8	-21.4
2	1.348	30.1	56.0	-25.9	28.1	46.0	-17.9
3	4.074	32.6	56.0	-20.2	30.2	46.0	-15.8
4	5.076	36.3	60.0	-23.7	31.3	50.0	-18.7
5	6.935	34.8	60.0	-25.2	34.1	50.0	-15.1
6	18.792	35.4	60.0	-24.6	23.9	50.0	-26.1

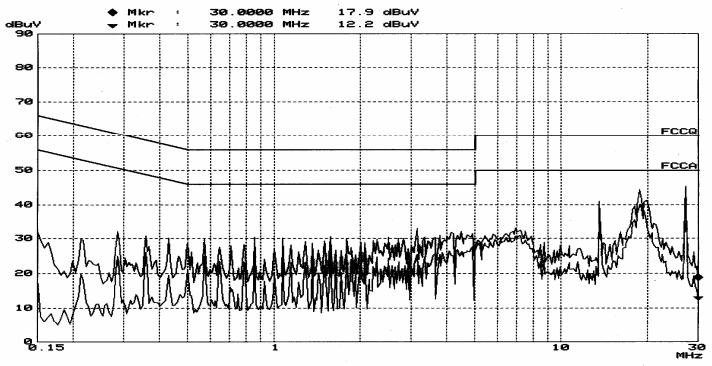
Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.

Model: SDI010
For Contactless Mode

```
Scan Settings (2 Ranges)
|--------- Frequencies ----------||--------- Receiver Settings ---------|
   Start        Stop         Step       IF BW  Detector  M-Time  Atten Preamp
  150k          5M           4.5k         9k     PK+AV     20ms AUTO LN    OFF
    5M          30M          4.5k         9k     PK+AV      1ms AUTO LN    OFF

Transducer No. Start        Stop        Name
             1     9k       2750M       10dB

Final Measurement: x QP / + AV
                   Meas Time:     1 s
                   Subranges:     8
                   Acc Margin:   20dB
```



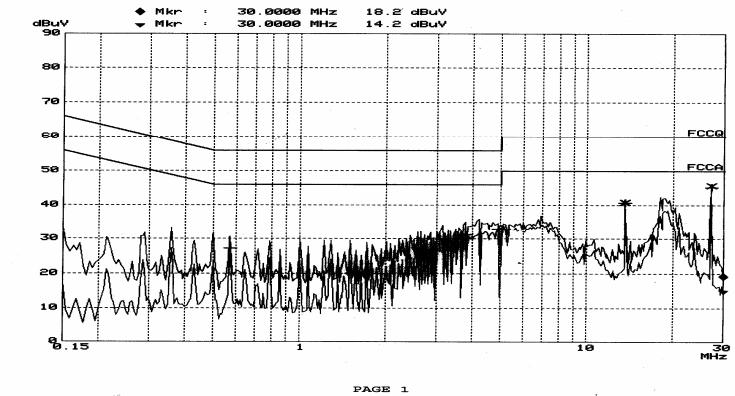
PAGE 1

Line L Conducted Emission Graph

```
Scan Settings (2 Ranges)
|--------- Frequencies ----------||--------- Receiver Settings ---------|
   Start        Stop         Step       IF BW  Detector  M-Time  Atten Preamp
  150k          5M           4.5k         9k     PK+AV     20ms AUTO LN    OFF
    5M          30M          4.5k         9k     PK+AV      1ms AUTO LN    OFF

Transducer No. Start        Stop        Name
             1     9k       2750M       10dB

Final Measurement: x QP / + AV
                   Meas Time:     1 s
                   Subranges:     8
                   Acc Margin:   20dB
```



PAGE 1

Line N Conducted Emission Graph

Line L (Hot Lead)

Signal	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Margin QP (dB)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Margin AVE (dB)
1	0.289	33.8	60.4	26.6	30.3	50.4	-20.1
	1.572	34.9	56.0	-21.1	26.1	46.0	-19.9
	4.098	32.7	56.0	-23.3	26.5	46.0	-19.5
	4.957	36.4	56.0	-19.4	27.7	46.0	18.3
2	13.559	41.0	60.0	-19.0	40.6	50.0	-9.4
3	27.122	45.3	60.0	-14.7	45.0	50.0	-5.0

Line N (Neutral Lead)

Signal	Frequency (MHZ)	Corrected QP Level (DBUV)	Limits QP (dBuV)	Margin QP (dB)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Margin AVE (dB
1	0.508	33.9	56.0	-22.1	29.4	46.0	-16.6
2	0.574	32.0	56.0	-24.0	29.1	46.0	-16.9
3	3.791	38.6	56.0	-17.4	31.1	46.0	-14.9
4	4.928	34.7	56.0	-21.3	33.0	46.0	-13.0
5	13.559	40.9	60.0	-19.1	40.7	50.0	-9.3
6	27.122	45.7	60.0	-14.3	45.3	50.0	-4.7

Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.

Test Equipment	Model	Manufacturer	Serial No.	Last Cal.	Cal. Due
EMI receiver	ESCS30	R&S	1102.4500.30	02/26/05	02/25/06
LISN 1#	ESH3-Z5	R&S	831.5518.52	02/26/05	02/25/06
Shielded Room	P-22	CHINA	4m*3.2m*2.7m	02/20/05	02/19/06
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting _____ **REVIEWED BY:** Hanyzhao _____

ENGINEER **QC**

EUT Model: SDI010

Conducted Emissions Test Set-up - Front View

EUT Model: SDI010

Conducted Emissions Test Set-up - Rear Side View