

TEST REPORT

Report Number: 100140020ATL-005

September 21, 2010

Product Designation: Key Fob, SLC5800TXBDKF

Standard: FCC 15.249 - Operation within the bands 902-928 MHz, 2400-2483.5 MHz,
5725-5875 MHz, and 24.0-24.25 GHz.
RSS-210, Issue 7, 2007

Tested by:

Intertek Testing Services NA Inc.
1950 Evergreen Blvd., Suite 100
Duluth, GA 30096

Client:

Schneider Electric - PMC
320 Tech Park Drive
Suite 100
Lavergne, TN 37086
Contact: Scott Rae
Phone: 615.280.3829

Tests performed by:



Richard C. Bianco
EMC Project Engineer

Report reviewed by:



Troy J. Ihle
EMC Project Engineer

All services undertaken are subject to the following general policy: This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. This report must not be used to claim product endorsement by A2LA, NIST, or any agency of the US Government.

1.0 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2.0 Test Summary

Section	Test Full Name	Test Date	Result
4.0	System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)		PASS
5.0	Overview of EUT (Low Power Transmitters) (FCC 15C - EUT Overview)		PASS
6.0	Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)	06/15/2010	PASS
NA	Duty Cycle Determination (FCC 15A - 15.35(c)) was waived due to is not required for this device.		
7.0	Occupied Bandwidth (FCC Part 2.1049)	06/15/2010	PASS
NA	Conducted emissions on AC power lines (Conducted Emissions) was waived due to the device is battery operated.		
NA	15.249(b): Requirements for fixed, point-to-point operation (FCC 15C - 15.249(b)) was waived due to the device is not a fixed, point-to-point device.		
NA	Additional provisions to the general radiated emission limitations. (FCC 15C - 15.215) was waived due to there are no additional provisions for this device.		

3.0 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
RF Wireless Key Fob	Clipsal/Schneider Electric	SLC5800TXBDKF	104

EUT receive date:	06/09/2010
EUT receive condition:	Good

Description of EUT provided by Client:

The C-Bus™ Wireless RF Key Fob Remote provides C-Bus protocol commands to remotely controlled buttons on RF wireless wall units and plug adapter units.

Description of EUT exercising:

The EUT was placed in a continuous transmit state with modulation for the spurious emissions testing. All other testing was completed in the normal transmit mode.

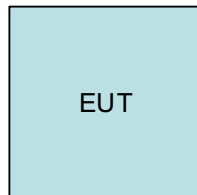
4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

Method:

Record the details of EUT cabling, document the support equipment, and show the interconnections in a block diagram.

Results: The sample tested was found to Comply.

Drawing:



Simplified Block Diagram

Data:

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

EUT Cabling						
ID	Description	Length	Shielding	Ferrites	Connection	
					From	To
No Cabling Required						

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
No Support Equipment Required			

5.0 Overview of EUT (Low Power Transmitters) (FCC 15C - EUT Overview)

Method:

Complete the overview spreadsheet.

Related Submittal(s) Grants: This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application.

Results: The sample tested was found to Comply.

Data:

Applicant	Clipsal/Schneider Electric
	320 Tech Park Drive, Suite 100
	La Vergne, TN, 37086
Trade Name & Model No.	The C-Bus, SLC5800TXBDKF
FCC Identifier	WZC33950
Frequency Range (MHz)	916
Antenna Type (15.203)	Internal/Integral
Manufacturer name & address	Clipsal/Schneider Electric
	320 Tech Park Drive, Suite 100
	La Vergne, TN, 37086

Related Submittals and Grants:	This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application.
Additions, deviations and exclusions from standards	None

6.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)

Method:

Measurements shall be performed with a quasi-peak detector instrument that meets the requirements of Section One of CISPR 16.

Bandwidths:

30 MHz to 1000 MHz: 120 kHz RBW and 1 MHz VBW

Above 1000 MHz: 1 MHz RBW and 3 MHz VBW

Detectors:

Equal to or less than 1000 MHz: CISPR quasi-peak detector (alternative: peak detector)

Above 1000 MHz: Average detector (applies to average limit)

Above 1000 MHz: Peak detector (applies to peak limit)

Limits:

Equal to or less than 1000 MHz, the limits are specified as quasi-peak. If a peak detector is used, the limit does not change.

Above 1000 MHz, the limits are specified as average. The peak limit is 20 dB above the average limit. Both peak and average measurements are required to be reported.

Frequency range of radiated measurements

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in this paragraph:

- (1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
- (2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
- (3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.
- (4) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a)(1) through (a)(3) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this section, whichever is the higher frequency range of investigation.

Measurement antenna requirements:

Below 30 MHz - Loop antenna

30 to 1000 MHz - Biconical, Log Periodic, or equivalent

Above 1000 MHz - Horn or equivalent

Measurements of the radiated field are made with the antenna located at a distance of 3 or 10 meters from the EUT. The limit applied to the measurement shall be appropriate for the test distance. The test distance shall be indicated in the results section.

The EUT shall be arranged and connected with cables terminated in accordance with the product specification.

Exploratory tests should be carried out while varying the cable positions to determine the maximum or near-maximum emission level. During manipulation, cables shall not be placed under or on top of the system test components unless such placement is required by the inherent equipment design.

The antenna shall be adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency.

The antenna-to-EUT azimuth shall be varied during the measurement to find the maximum field-strength readings.

The antenna-to-EUT polarization (horizontal and vertical) shall be varied during the measurements to find the maximum field-strength readings.

If the EUT is handheld, it shall be oriented in each of its orthogonal axes.

If the EUT is intended for tabletop use, it shall be placed on a table whose top is 0.8m above the ground plane. The table shall be constructed of non-conductive materials. Its dimensions are at least 1m by 1.5m, but may be extended for larger EUT.

If EUT is floor standing, the EUT was placed on a horizontal metal ground plane and isolated from the ground plane by up to 12 mm of insulating material.

Equipment setup for radiated disturbance tests shall follow the guidelines of ANSI C63.4:2003.

TEST SITE

The test site for radiated emissions is located at 1950 Evergreen Blvd, Suite 100, Duluth, Georgia 30096.

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
--------------	---------------	--------	---------------	-----------	----------

6.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)**Test Equipment Used:**

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Antenna, BiLog, 20-2000MHz	Chase	CBL6112B	211386	10/02/2009	10/02/2010
Antenna, Horn, <18 GHz	EMCO	3115	213061	05/07/2010	05/07/2011
Cable E01, <18GHz	Pasternack	RG214/U	E01	05/04/2010	05/04/2011
Cable E201, 18 GHz, N, 3m	Megaphase	TM18 NKNK 118	E201	02/02/2010	02/02/2011
Cable MP3, 18 GHz, N, 10m	Megaphase	G919-NKNK-394	MP3	05/04/2010	05/04/2011
Cable, N-N, 3 meters, 18GHz	Megaphase	TM18-NKNK-118	E204	05/04/2010	05/04/2011
EMI Receiver	Hewlett Packard	8546A	211505	02/02/2010	02/02/2011
EMI Receiver, Preselector section	Hewlett Packard	85460A	015762	02/02/2010	02/02/2011
Excel spreadsheet for radiated emissions	Software	Excel - RE Worksh	SW004	12/09/2009	12/09/2010
Preamplifier, 10 MHz to 2000 MHz, 30 dB gain	Mini-Circuits	ZKL-2	200069	04/20/2010	04/20/2011
Preamplifier, 20 MHz to 18 GHz, 40 dB	A.H. Systems	PAM-0118	200108	04/21/2010	04/21/2011
Spectrum Analyzer, 20Hz-40GHz	Rohde & Schwarz	FSEK30	200062	10/19/2009	10/19/2010
Tile - software profile for radiated and conducted emissions testing.	Software	Tile - Emissions	SW006	12/09/2009	12/09/2010

Results: The sample tested was found to Comply.

Photo:

6.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)



Test Setup - Front view

6.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)

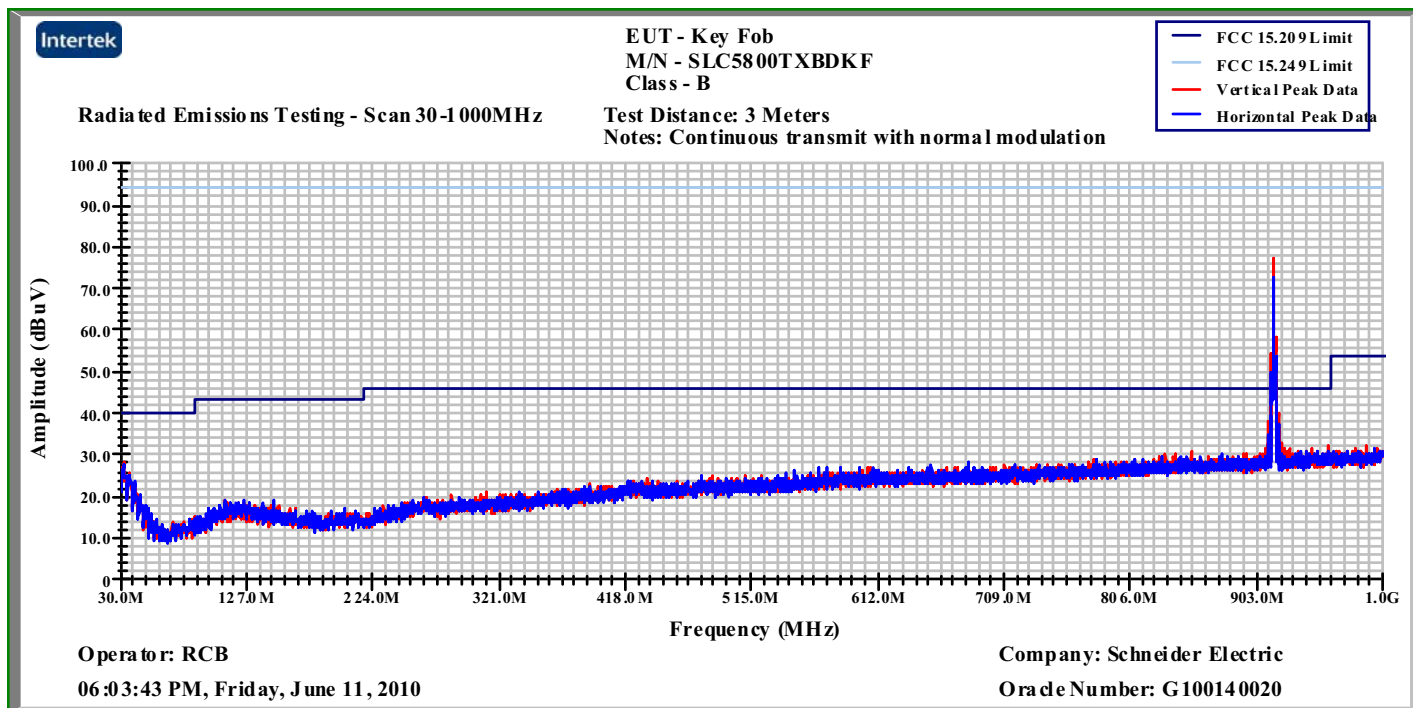
Photo:



Test Setup - Rear view

Plot:

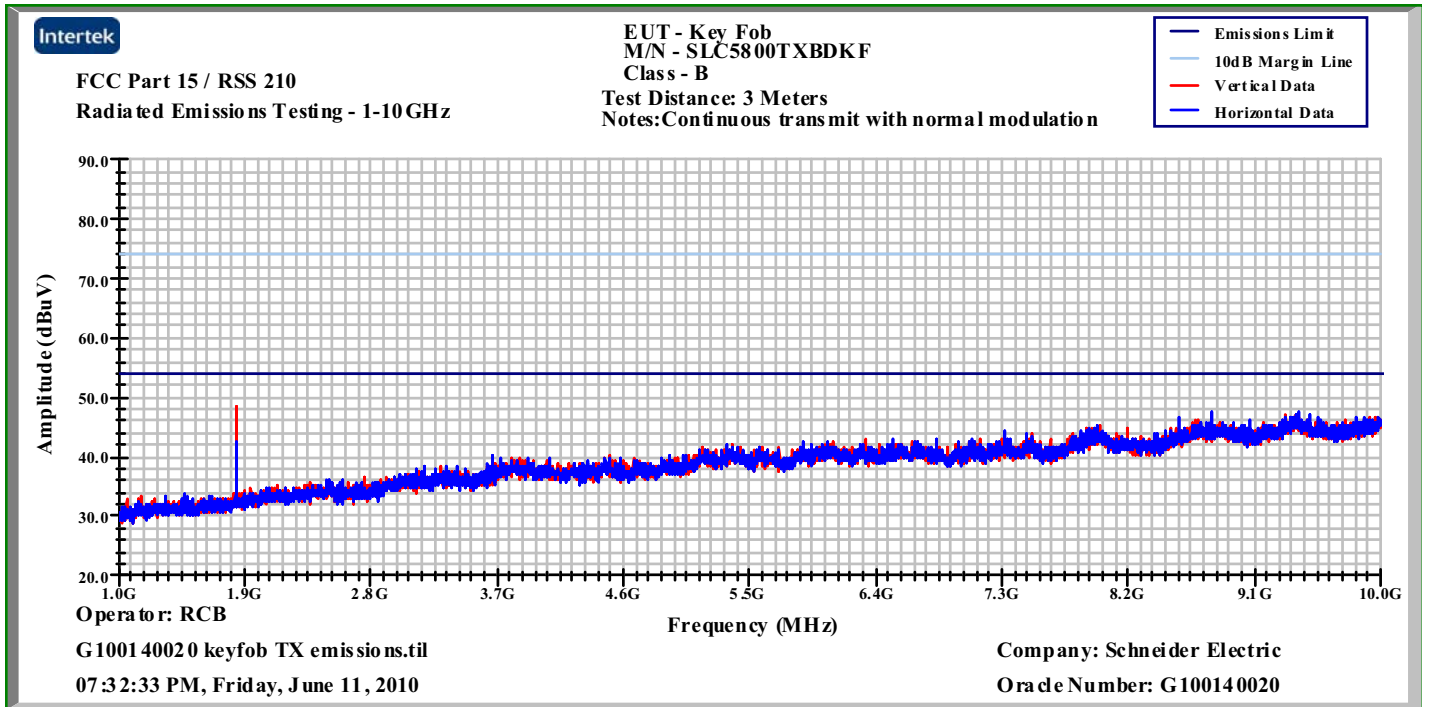
6.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)



Radiated Emissions from 30-1000MHz

6.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)

Plot:



Radiated Emissions from 1000-10000MHz

Data:

6.0 Radiated emissions (E-field) for low power intentional radiators. (Radiated Emissions LPD)

Client: Schneider Electric
 Model Number: SLC5800TXBDF
 Project Number: G100140020
 Tested By: RCB
 Date: 06/11/2010

Receiver: HP 8546A
 Antenna: Chase 2622
 Cables: E-01+E-201+E-204+MP3
 Preamp: AH PAM-0202

Frequency Range (MHz): 30-10000

Test Distance (m): 3

Input power: 3Vdc New Battery

Limit: FCC15.249 Average

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I	J	K
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	3m Limit dB(uV/m)	Margin dB	Detectors / Bandwidths Det/RBW/VBW	Axis
V	917.023	74.5	21.5	7.1	30.6	72.6	94.0	-21.4	Pk/120k/300k	X
H	917.022	79.8	20.4	7.1	30.6	76.8	94.0	-17.2	Pk/120k/300k	X
V	917.026	70.1	21.5	7.1	30.6	68.1	94.0	-25.9	Pk/120k/300k	Y
H	917.025	79.5	20.4	7.1	30.6	76.4	94.0	-17.6	Pk/120k/300k	Y
V	917.021	78.1	21.5	7.1	30.6	76.1	94.0	-17.9	Pk/120k/300k	Z
H	917.025	77.6	20.4	7.1	30.6	74.5	94.0	-19.5	Pk/120k/300k	Z
V	1834.032	48.3	26.8	8.2	37.4	46.0	54.0	-8.0	Pk/120k/300k	X
H	1834.035	49.8	26.6	8.2	37.4	47.5	54.0	-6.5	Pk/120k/300k	X
V	1834.032	47.2	26.8	8.2	37.4	44.9	54.0	-9.1	Pk/120k/300k	Y
H	1834.032	51.0	26.6	8.2	37.4	48.7	54.0	-5.3	Pk/120k/300k	Y
V	1834.031	51.2	26.8	8.2	37.4	48.9	54.0	-5.1	Pk/120k/300k	Z
H	1834.032	50.9	26.6	8.2	37.4	48.6	54.0	-5.4	Pk/120k/300k	Z
Calculations		G=C+D+E-F		I=G-H						

7.0 Occupied Bandwidth (FCC Part 2.1049)

Method:

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Connect the antenna port of the EUT to a spectrum analyzer using a calibrated coaxial cable and attenuator. Set the EUT to transmit at its highest power setting. The 99% bandwidth function of the analyzer was used to automatically generate the occupied bandwidth plots. Repeat for low, mid, and high channels of each band of the EUT.

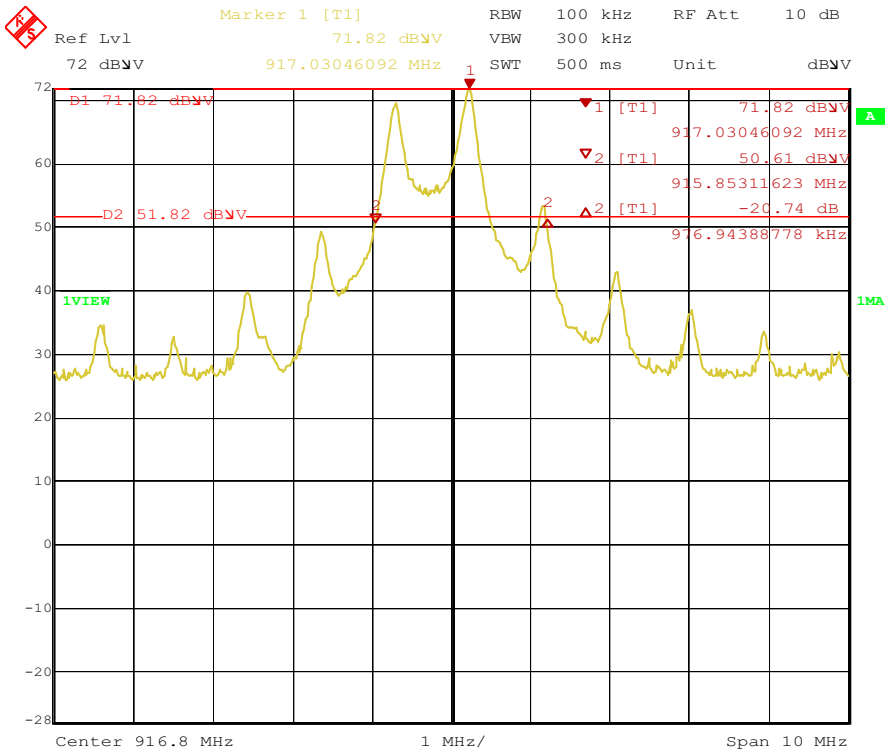
For amplifiers, the output bandwidth shall be less than or equal to the input bandwidth.

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Cable E201, 18 GHz, N, 3m	Megaphase	TM18 NKNK 118	E201	02/02/2010	02/02/2011
Spectrum Analyzer, 20Hz-40GHz	Rohde & Schwarz	FSEK30	200062	10/19/2009	10/19/2010

Results: The sample tested was found to Comply.

Plot:



Date: 15.JUN.2010 15:35:52

20dB Bandwidth

Data:

7.0 Occupied Bandwidth (FCC Part 2.1049)

Mode	Frequency MHz	Resolution Bandwidth (1)	Video Bandwidth	Sweep time Seconds	Output Measured Bandwidth MHz	Input Measured Bandwidth MHz
Normal	916	100 kHz	300 kHz	0.5	0.976943	

Note (1): Greater or equal to 1% of emission bandwidth.