ECMG Worldwide Certification Solutions
ECMG-Worldwide-Certification-Solution, Inc.
684 West Maude Avenue Sunnyvale, CA 94085
Tel. (650) 988-0900 Fax (650) 988-6647
www.emclab2000.com

FCC CERTIFICATION RADIO MEASUREMENT TECHNICAL REPORT

On Model Name: RF Single Pole Switch

Model Number : RF9501

Trademark : Aspire RF

FCC ID : UH2-RF9501

Prepared for Cooper Wiring Devices Inc.

According to FCC part 15 (2007), Subpart C 15.249

Test Report #:	*COO-0805-0328SH-FCC*
Prepared by:	*Chris Huang*
Reviewed by:	*Harry Zhao*
QC Manager:	*Paul Chen*

Test Report Released by: Paul J. Chen

Paul Chen *2008, June 30*

Date

Test Location

Tests performed in a Certified ANSI Semi-Anechoic Chamber and Shielded Room performed testing.

Test Site Location: *ECMG Worldwide Certification Solution, Inc. (Shanghai of China) Building 2, 1298 Lian Xi Road, Pu Dong New Area, Shanghai, P.R. China 201204*

Tel: *86-21-51909300*
Fax: *86-21-51909333*
FCC Registration Number: *172634*

Table of Contents

Disclaimer Notice

When government drawing, specification, or other data are used for any purpose other than in connection with a definitely related government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawing, specifications, or other data, is not to be regarded by implication or otherwise in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell patented invention that may in any way be related thereto. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Reproduction Clause

Any reproduction of this document must be done in full. No single part of this document may be reproduced without permission from ECMG Worldwide Certification Solution, Inc., 684 West Maude Avenue Sunnyvale, CA 94085.

Opinions and Interpretations

This test report relates to the abovementioned equipment under test (EUT). Without the permission of ECMG Worldwide Certification Solution, Inc. Test Lab this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.

Statement of Measurement Uncertainty

The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.

Administrative Data

Test Sample : RF Single Pole Switch

Model Number : RF9501

Trade Mark : Aspire RF

Date Tested : 2008, June 16th

Applicant : Cooper Wiring Devices Inc.
203 Cooper Circle, Peachtree City, GA

Telephone : 770-631-2159

Fax : 770-632-2268

Manufacturer : Cooper Wiring Devices Inc.
203 Cooper Circle, Peachtree City, GA

EUT Description

Cooper Wiring Devices Inc. Model number RF9501 (referred to as the EUT in this report) is a RF Single Pole Switch.

This model has got the FCC certificate under FCC ID "UH2-RF9501". Now only the peripheral circuit changes a little and the main RF circuit keeps identical. This new device applies for FCC class II permissive change, so the conducted emission and radiated emission were checked.

Test Summary

The Electromagnetic Compatibility requirements on model RF9501 for this test are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

EMC Test Items *FCC part 15 (2007)*			
Specification	***Description***	***Test Results***	***Remark***
FCC Part 15.207	*Conducted Emission Limits*	*Compliance*	*Attachment 1*
FCC Part 15.209, 15.249	*Radiated Emission Limits*	*Compliance*	*Attachment 2*
FCC 15.249 (d)	*Band Edge*	*Compliance*	*Attachment 3*

Test Mode Justification

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 interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

EUT Exercise Software

The EUT doesn't use software during test.

Equipment Modification

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

There were no modifications installed by ECMG Worldwide Certification Solution, Inc. (China) test personnel.

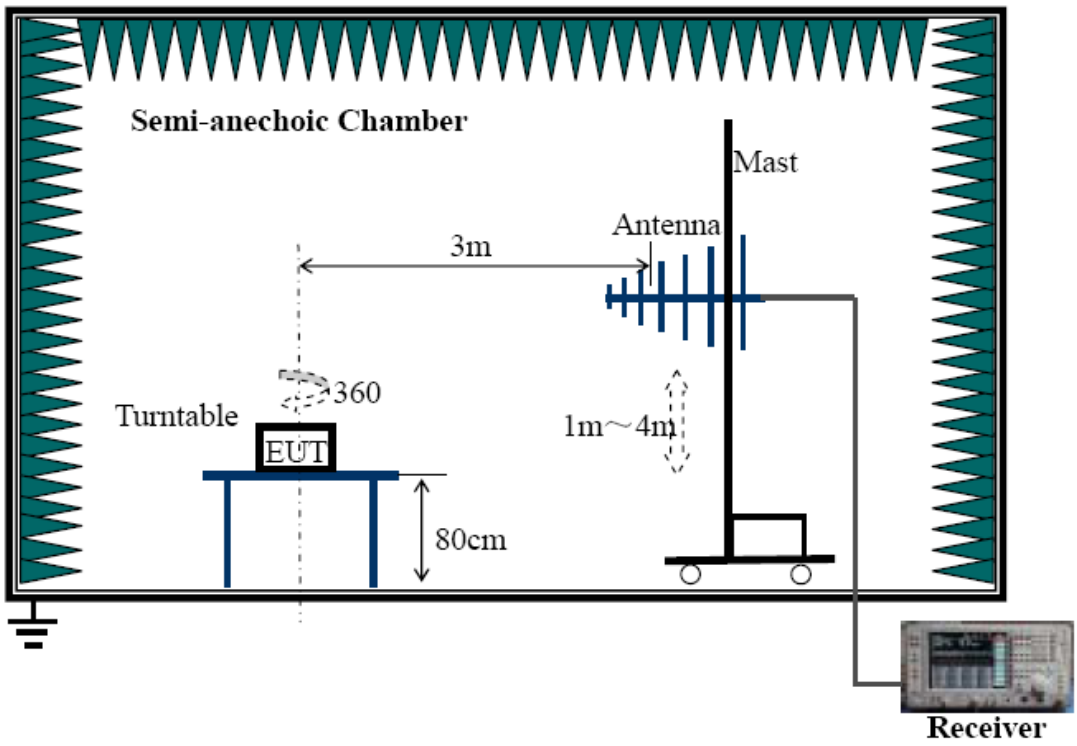
Test System Details

EUT	
Model Number:	RF9501
Trademark:	Aspire RF
Serial Number:	Engineering Sample
Input Voltage:	120V~ 60Hz
Description:	RF Single Pole Switch
Manufacturer:	Cooper Wiring Devices Inc.

Support Equipment			
Description	Model Number	Serial Number	Power Cable Description (Meters)
BULB LAMP	100W	N/A	N/A

Cable Description
None

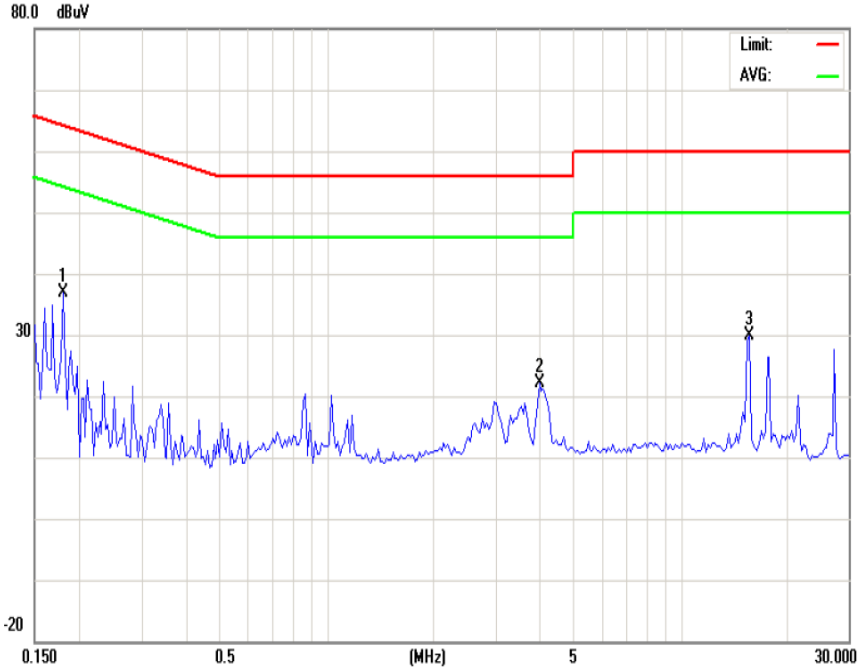
Configuration of Tested System



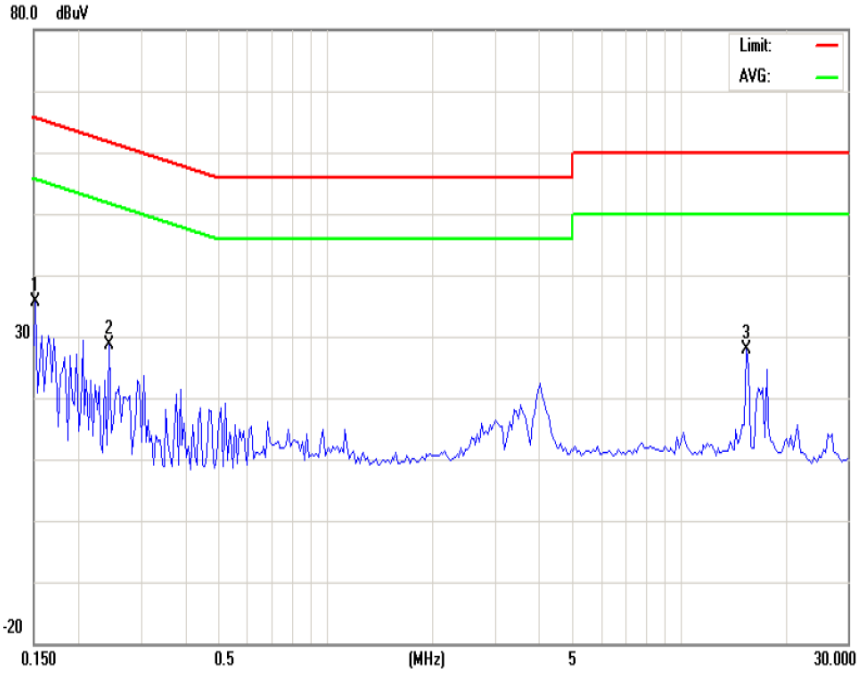
ATTACHMENT 1 - AC Power line Conducted Emission Measurement

CLIENT:	Cooper Wiring Devices Inc.	**TEST STANDARD:**	FCC Part 15.207 RSS-210
MODEL NUMBER:	RF9501	**PRODUCT:**	RF SINGLE POLE SWITCH
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Cloud Feng	**DATE OF TEST:**	2008, June 16

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
RESULTS:	The EUT meets the requirements of test reference for Conducted emissions. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB



Line L Conducted Emission Graph



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	0.1806	36.99	64.45	-27.46	27.38	54.45	-27.07
2	4.0062	22.06	56.00	-33.94	18.88	46.00	-27.12
3	15.6764	29.76	60.00	-30.24	24.85	50.00	-25.15
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	0.1520	35.52	65.88	-30.36	28.14	55.88	-27.74
2	0.2449	28.72	61.93	-33.21	24.93	51.93	-27.00
3	15.4701	27.79	60.00	-32.21	22.28	50.00	-27.72
Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.							

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
EMI Receiver	HP	85462A	3650A00363	11/29/07	11/28/08
LISN	R&S	ESH3-Z5	844249/018	12/04/07	12/03/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Cloud Feng _____ **REVIEWED BY:** Hang Zhao _____

ENGINEER **SENIOR ENGINEER**

ATTACHMENT 2 - RADIATED EMISSION TEST RESULTS

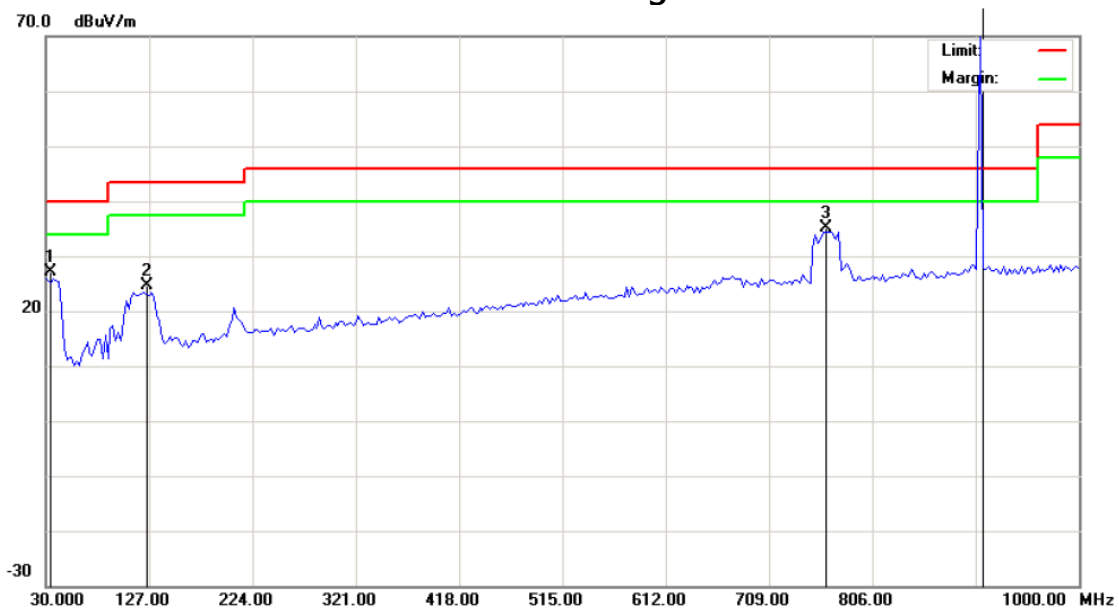
CLIENT:	Cooper Wiring Devices Inc.	**TEST STANDARD:**	FCC Part 15.209, 15.249; RSS-210 2.6, A2.9
MODEL NUMBER:	RF9501	**PRODUCT:**	RF SINGLE POLE SWITCH
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Cloud Feng	**DATE OF TEST:**	2008, June 16

SETUP METHOD:	ANSI C63.4 : 2003
TEST PROCEDURE:	a. The EUT was placed on a rotatable table with 0.8 meters above ground. b. The EUT was set 3 meters from the interference-receiving antenna, which was mounted on the top of a variable height antenna tower. c. The antenna was varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna were set to make measurement. d. For each suspected emission the EUT was arranged to its worst case and then change the antenna tower height (from 1m to 4m) and turn table (from 0 degree to 360 degree) to find the maximum reading. e. 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. f. Broadband antenna (Calibrated antenna) was used as receiving antenna below 1000MHz. Horn antenna were used as receiving antenna above 1000MHz. g. The bandwidth is 120 kHz below 1000 MHz, and 1 MHz above 1000 MHz Explanation of the Correction Factor are 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 10,000MHz
TEST VOLTAGE:	120V/60Hz

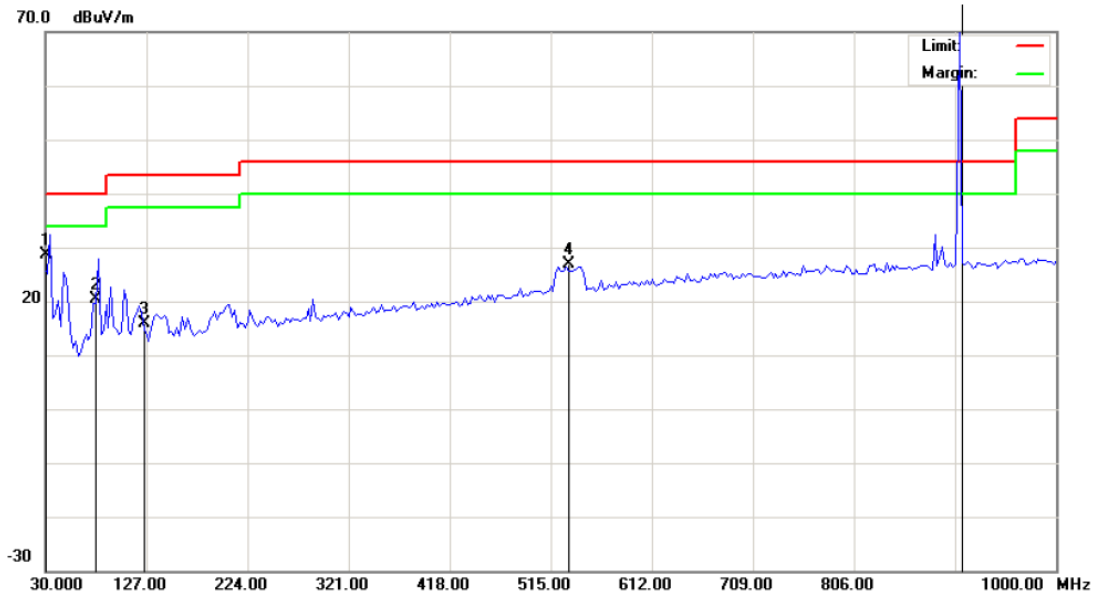
Continue on the next page…

TEST STATUS:	keep EUT in normal continuous transmission mode, modulated; in normal receiving mode
RESULTS:	The EUT meets the requirements of field strength test. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. (China) test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

Model: RF9501
Transmitting



Radiated Emission Plot –Horizontal Polarization
(Peak, Max Hold Mode)



Radiated Emission Plot –Vertical Polarization
(Peak, Max Hold Mode)

Test Results (30MHz~1GHz)

Horizontal							
Signal	**Frequency (MHz)**	**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	34.76	16.95	27.15	40.00	-12.85	208	100
2	122.83	10.92	24.72	43.50	-18.78	340	120
3	760.70	23.55	35.05	46.00	-10.95	14	100
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected Peak Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
4	908.40	25.21	92.59	114.00	-21.41	0	100
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
5	908.40	25.21	89.61	94.00	-4.39	5	100
Vertical							
Signal	**Frequency (MHz)**	**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	31.29	19.10	28.75	40.00	-11.25	348	113
2	78.36	8.98	20.28	40.00	-19.72	165	106
3	124.56	11.00	15.85	43.50	-27.65	45	100
4	531.96	20.33	26.91	46.00	-19.09	109	100
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected Peak Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
5	908.39	25.21	88.06	114.00	-25.94	10	100
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Angle of Turner (degree)**	**Height of Tower (cm)**
6	908.39	25.21	86.03	94.00	-7.97	0	100

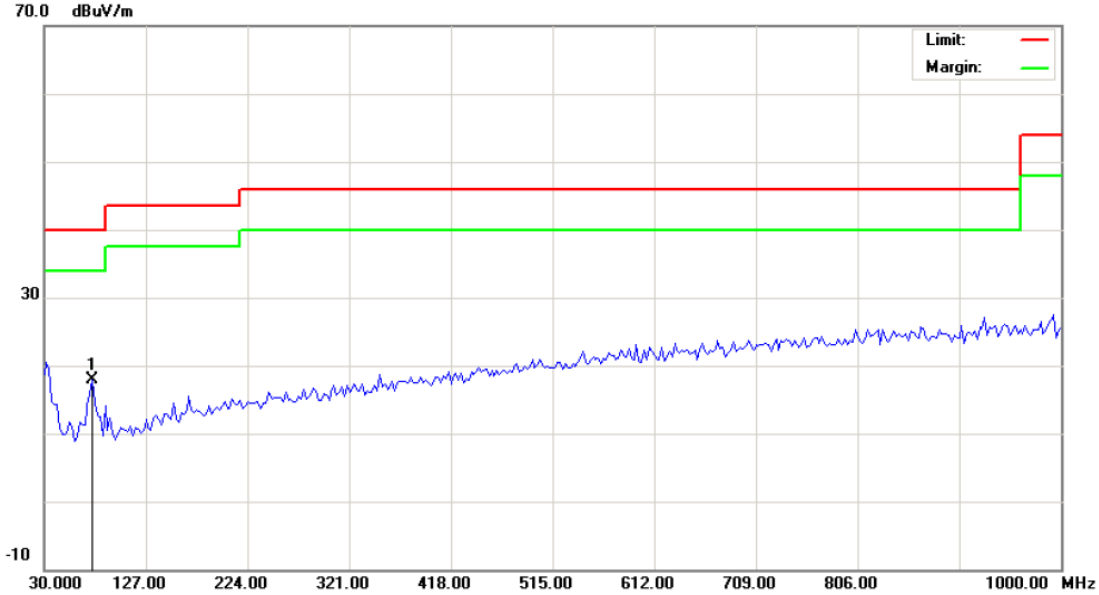
Note: All readings are quasi-peak unless stated otherwise, using a QP bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.

Test Results (1GHz~10GHz)

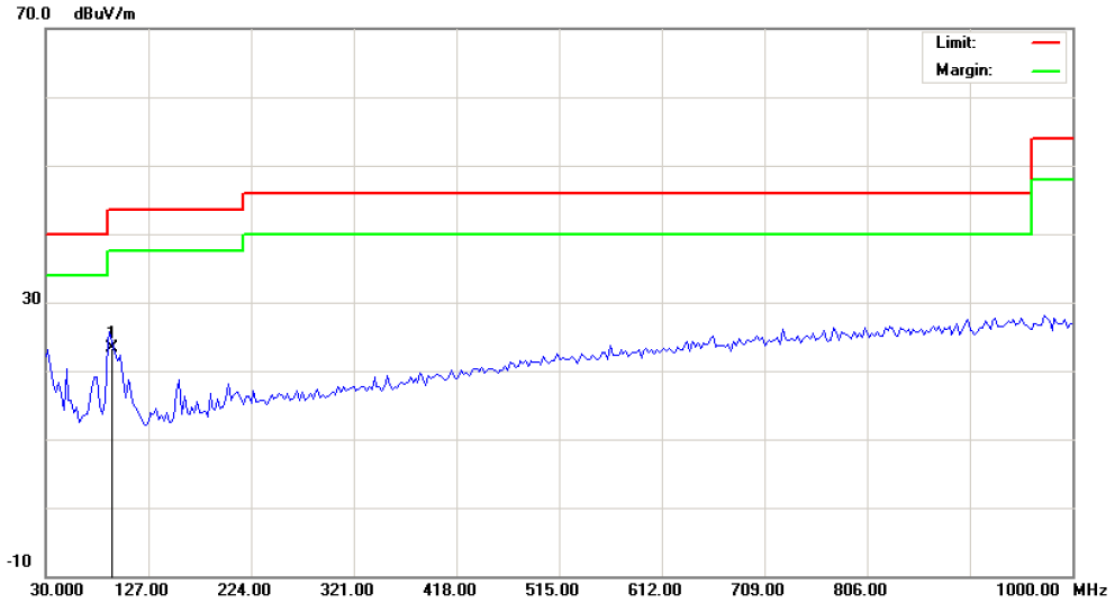
Horizontal								
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Corrected PK Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**
1	1312.8	24.97	27.60	54.00	-26.40	37.77	74.00	-36.23
2	1816.8	28.15	30.69	54.00	-23.31	46.85	74.00	-27.15
3	2440	31.63	32.87	54.00	-21.13	41.13	74.00	-32.87
4	5847	42.23	29.65	54.00	-24.35	47.97	74.00	-26.03
Vertical								
Signal	**Frequency (MHz)**	**Factor (dB)**	**Corrected AV Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**	**Corrected PK Level dB(uV/m)**	**3 Meter Limits dB(uV/m)**	**Margin (dB)**
1	1808	28.09	30.10	54.00	-23.90	41.90	74.00	-32.10
2	2440	31.63	36.01	54.00	-17.99	41.95	74.00	-32.05
3	4342	38.44	42.32	54.00	-11.68	46.44	74.00	-27.56

Note: All readings are average and peak unless stated otherwise, using a bandwidth of 1000kHz, with a 30 ms sweep time. A video filter was not used.

Model: RF9501
Receiving mode



Radiated Emission Plot –Horizontal Polarization
(Peak, Max Hold Mode)



Radiated Emission Plot –Vertical Polarization
(Peak, Max Hold Mode)

Test Results (30MHz~1GHz)

Horizontal							
Signal	**Frequency (MHz)**	**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	76.075	9.10	17.91	40.00	-22.09	200	100
Vertical							
Signal	**Frequency (MHz)**	**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	92.058	8.73	23.33	43.50	-20.17	0	100
Note: All readings are quasi-peak unless stated otherwise, using a QP bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.							

Test Results (1GHz~10GHz)

There is no significant spurious emission.

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
EMI Receiver	HP	85462A	3650A00363	11/29/07	11/28/08
EMI Test Receiver RF Unit	R&S	ESMI-RF	DE23873	11/29/07	11/28/08
EMI Test Receiver Display Unit	R&S	ESAI-D	825035/005	11/29/07	11/28/08
Broadband Antenna	Sunol	JB5	A110503	03/28/08	03/27/09
Horn Antenna	Xibao	Xibao	040507	04/08/08	04/07/09

SIGNED BY: Cloud Feng _____ **REVIEWED BY:** Hany Zhao _____

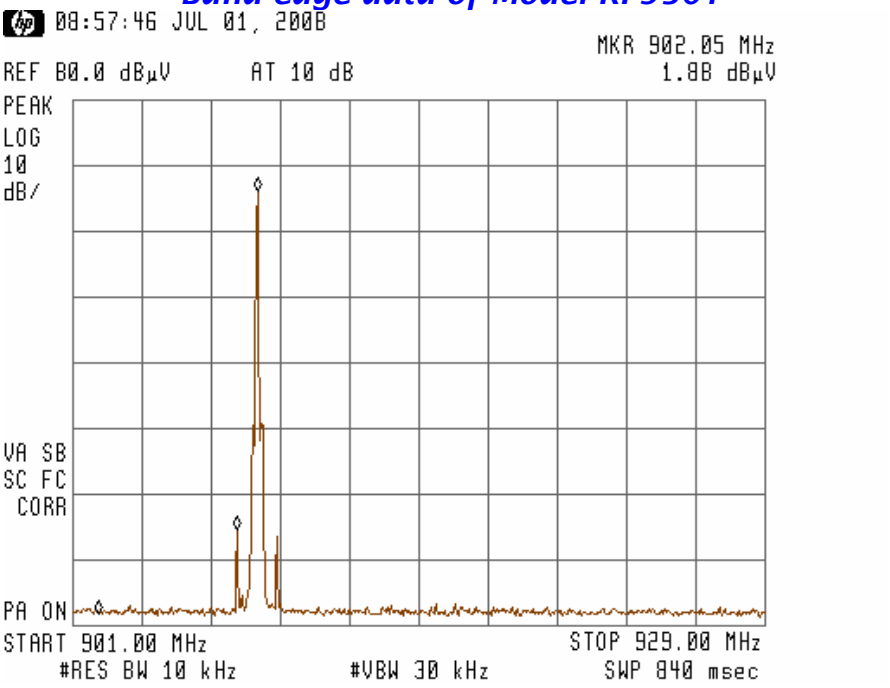
ENGINEER **SENIOR ENGINEER**

ATTACHMENT 3 – Band Edge Test

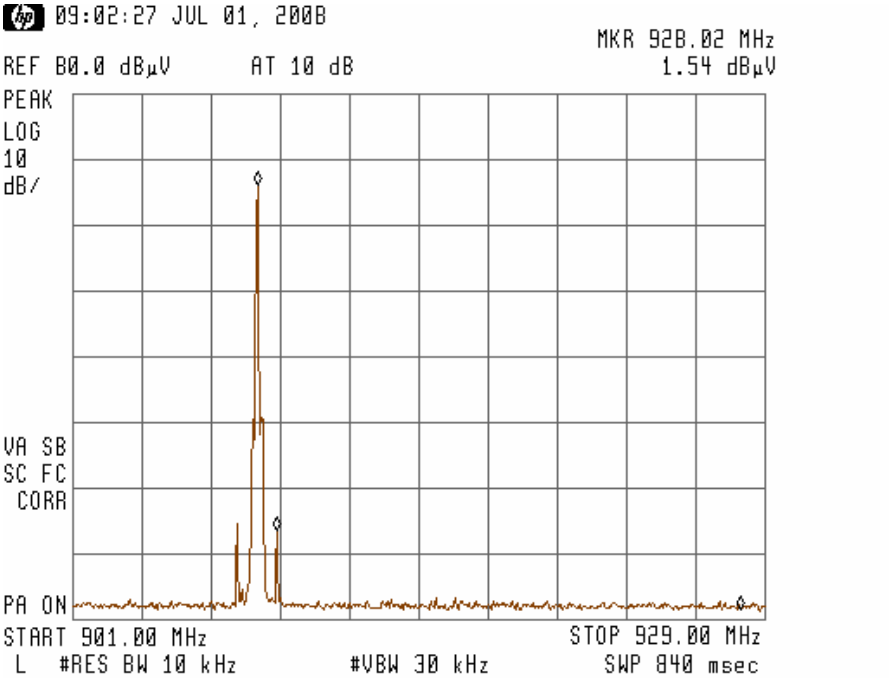
CLIENT:	Cooper Wiring Devices Inc.	**TEST STANDARD:**	FCC Part 15.249 (d)
MODEL NUMBER:	RF9501	**PRODUCT:**	RF SINGLE POLE SWITCH
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	No Grounding
TESTED BY:	Cloud Feng	**DATE OF TEST:**	2008, June 16

SETUP METHOD:	ANSI C63.4 - 2003
BANDEDGE REQUIREMENT:	FCC 15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to general radiated emission limits in Section 15.209, which is the lesser attenuation.
TEST PROCEDURE:	Set the spectrum as follow: Span=wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation. RBW=10kHz; VBW=30kHz; Sweep=Auto; Detector=Peak; Trace=Maxhold; Allow the trace to stabilize and use the search peak function to set the marker to the peak of the useful emission, then use delta-mark function to mark the maximum emission outside of the band, record the delta level to see if it's more than 50dB. Or see if the emissions outside the operating frequencies can satisfy the limit 15.209.
TEST VOLTAGE:	120V/60Hz
TEST STATUS:	TRANSMITTING CONTINUOUSLY
RESULTS:	The EUT meets band edge requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ $2x10^{-7}$ x Center Freq., Amp $\pm$ 2.6 dB

Band edge data of Model RF9501



902MHz band edge



928MHz band edge

Test result:

Pass

The delta level at 902MHz to peak level t is larger than 50dB.
The delta level at 928MHz to peak level t is larger than 50dB.

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
EMI Receiver	HP	85462A	3650A00363	11/29/07	11/28/08
Broadband Antenna	Sunol	JB5	A110503	03/28/08	03/27/09
Horn Antenna	Xibao	Xibao	040507	04/08/08	04/07/09

SIGNED BY: _____ **REVIEWED BY:** _____

ENGINEER **SENIOR ENGINEER**