COMPATIBLE ELECTRONICS

FCC PART 15, SUBPART B and C
TEST REPORT

for

ZWAVE MODULE – DC VERSION

MODEL: DC1-ZW

Prepared for

RS SCENE AUTOMATION
5520 159TH PLACE SE
BELLEVUE, WASHINGTON 98006

Prepared by: _____

KYLE FUJIMOTO

Approved by: _____

MICHAEL CHRISTENSEN

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: OCTOBER 18, 2007

	REPORT	APPENDICES					TOTAL
	BODY	*A*	*B*	*C*	*D*	*E*	
PAGES	16	2	2	2	15	18	**55**

This report shall not be reproduced except in full, without the written approval of Compatible Electronics.

TABLE OF CONTENTS

COMPATIBLE ELECTRONICS

LIST OF APPENDICES

APPENDIX	TITLE
A	Laboratory Recognitions
B	Modifications to the EUT
C	Additional Models Covered Under This Report
D	Diagrams, Charts, and Photos
	• Test Setup Diagrams
	• Radiated Emissions Photos
	• Antenna and Effective Gain Factors
E	Data Sheets

LIST OF FIGURES

FIGURE	TITLE
1	Plot Map And Layout of 3 Meter Radiated Site

COMPATIBLE ELECTRONICS

GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Device Tested:	Zwave Module – DC Version Model: DC1-ZW S/N: N/A
Product Description:	See Expository Statement
Modifications:	The EUT was not modified in order to meet the specifications.
Customer:	RS Scene Automation 5520 159th Place SE Bellevue, Washington 98006
Test Dates:	October 4 and 9, 2007
Test Specifications:	EMI requirements CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.209 and 15.249
Test Procedure:	ANSI C63.4
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207.
2	Radiated RF Emissions, 10 kHz – 9300 MHz (Transmitter Portion)	Complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209, and 15.249.
3	Radiated RF Emissions, 10 kHz – 9300 MHz (Digital and Receiver Portion)	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B.

1.   PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Zwave Module – DC Version, Model: AC1-HW. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4.   The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B for the digital and receiver portion; and the limits defined in Subpart C, sections 15.205, 15.207, 15.209, and 15.249 for the transmitter portion.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

RS Scene Automation

Kendall C Russell   General Manager

Compatible Electronics, Inc.

Kyle Fujimoto   Test Engineer
Michael Christensen   Lab Manager

2.4 Date Test Sample was Received

The test sample was received on September 24, 2007.

2.5 Disposition of the Test Sample

The sample was returned to RS Scene Automation on October 5, 2007.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF   Radio Frequency
EMI   Electromagnetic Interference
EUT   Equipment Under Test
P/N   Part Number
S/N   Serial Number
HP   Hewlett Packard
ITE   Information Technology Equipment
CML   Corrected Meter Limit
LISN   Line Impedance Stabilization Network

COMPATIBLE ELECTRONICS

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4 2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

4.   DESCRIPTION OF TEST CONFIGURATION

4.1   Description Of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

Transmit Mode: The Zwave Module – DC Version, Model: DC1-ZW (EUT) was connected to an DC motor, AC adapter, and a 10 kohm resistor via its motor, AC input, and sensor ports, respectively. The EUT was transmitting on a continuous basis.

Receiver Mode: The Zwave Module – DC Version, Model: DC1-ZW (EUT) was connected to an DC motor, AC adapter, and a 10 kohm resistor via its motor, AC input, and sensor ports, respectively. The EUT was receiving a signal from a remote control located 20 feet away from the test site. The signal from the remote control turned on and off the DC motor.

The final radiated as well as conducted data was taken in both modes above. Please see Appendix E for the data sheets.

4.1.1   Cable Construction and Termination

Cable 1

This is a 10-centimeter unshielded cable connecting the EUT to the DC motor. The cable is hard wired at each end.

Cable 2

This is a 2-meter unshielded cable connecting the EUT to the AC Adapter. The cable is hard wired at each end. The cable was bundled to a length of 1 meter. The cable has a molded ferrite at the EUT end.

Cable 3

This is a 1-meter unshielded cable connecting the EUT to a 10 kohm resistor. The cable is hard wired at each end. This cable, along with Cable #4 was bundled to a length of 1 meter.

Cable 4

This is a 1-meter unshielded cable connecting the EUT to a 10 kohm resistor. The cable is hard wired at each end. This cable, along with Cable #3 was bundled to a length of 1 meter.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
ZWAVE MODULE – DC VERSION (EUT)	RS SCENE AUTOMATION	DC1-ZW	N/A	**VQH-DC1-ZW**
REMOTE CONTROL	INTERMATIC, INC.	HA09	154HA23825	DGZH0009
10 K OHM RESISTOR	N/A	N/A	N/A	N/A
AC ADA[TER	CUI, INC.	A3-60S17R-U	N/A	N/A
DC MOTOR	SOMFY	LT28-B73	0502242402	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
GENERAL TEST EQUIPMENT USED FOR ALL RF EMISSIONS TESTS					
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100149	November 15, 2005	Nov. 15, 2007
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Preamplifier	Com Power	PA-102	1017	January 16, 2007	Jan. 16, 2008
Biconical Antenna	Com Power	AB-900	15227	March 8, 2007	March 8, 2008
Log Periodic Antenna	Com Power	AL-100	16060	July 9, 2007	July 9, 2008
Loop Antenna	Com Power	AL-130	17089	September 24, 2007	Sept. 24, 2008
Horn Antenna	Antenna Research	DRG-118/A	1053	March 6, 2006	March 6, 2008
Microwave Preamplifier	Com Power	PA-122	181921	Feb. 27, 2007	Feb. 27, 2008
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
RF CONDUCTED EMISSIONS TEST EQUIPMENT					
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
Transient Limiter	Seaward	252A910	1	September 19, 2007	September 19, 2008
LISN	Com Power	LI-215	12082	September 26, 2007	September 26, 2008
LISN	Com Power	LI-215	12078	September 26, 2007	September 26, 2008

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was grounded to earth ground via the safety ground of the AC power cord.

7.   TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1   RF Emissions

7.1.1   Conducted Emissions Test

The EMI Receiver was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in EN 55022. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207.

Brea Division	**Agoura Division**	**Silverado Division**	**Lake Forest Division**
114 Olinda Drive	**2337 Troutdale Drive**	**19121 El Toro Road**	**20621 Pascal Way**
Brea, CA 92823	**Agoura, CA 91301**	**Silverado, CA 92676**	**Lake Forest, CA 92630**
(714) 579-0500	**(818) 597-0600**	**(949) 589-0700**	**(949) 587-0400**

COMPATIBLE ELECTRONICS

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The EMI Receiver was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies above 1 GHz. The EMI Receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer or EMI Receiver records the highest measured reading over all the sweeps.

The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 10 Hz and putting the sweep time on AUTO on the EMI Receiver to keep the amplitude reading calibrated.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 9.3 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.

7.1.3   **Radiated Emissions (Spurious and Harmonics) Test (Continued)**

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain the final test data. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.249.

8.   CONCLUSIONS

The Zwave Module – DC Version, Model: DC1-ZW meets all of the **Class B** specification limits defined in CFR Title 47, Part 15, Subpart B for the digital and receiver portion; and the limits defined in Subpart C, sections 15.205, 15.207, 15.209, and 15.249 for the transmitter portion.

APPENDIX A

LABORATORY RECOGNITIONS

COMPATIBLE ELECTRONICS

Report Number: **B71009D2**   **Page A2**
FCC Part 15 Subpart B and **FCC Section 15.249** Test Report
Zwave Module – DC Version
Model: DC1-ZW

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 or FCC Class B specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT.

COMPATIBLE ELECTRONICS

APPENDIX C

ADDITIONAL MODELS COVERED
UNDER THIS REPORT

**COMPATIBLE
ELECTRONICS**

ADDITIONAL MODELS COVERED
UNDER THIS REPORT

USED FOR THE PRIMARY TEST   Zwave Module – DC Version
                                                  Model: DC1-ZW
                                                  S/N: N/A

There were no additional models covered under this report.

COMPATIBLE ELECTRONICS
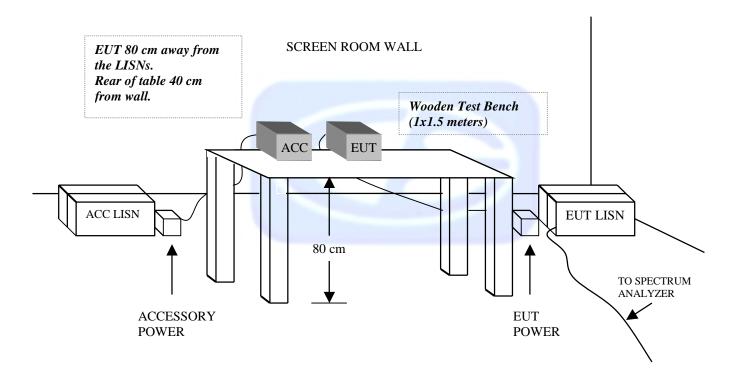
APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

**COMPATIBLE
ELECTRONICS**
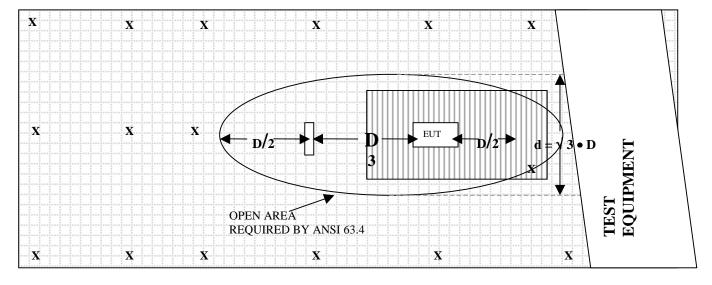
FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

*EUT 80 cm away from the LISNs.
Rear of table 40 cm from wall.*

SCREEN ROOM WALL

*Wooden Test Bench
(1x1.5 meters)*

ACC   EUT

ACC LISN

EUT LISN

80 cm

ACCESSORY
POWER

EUT
POWER

TO SPECTRUM
ANALYZER

COMPATIBLE ELECTRONICS

FIGURE 2: PLOT MAP AND LAYOUT OF 3 METER RADIATED SITE

OPEN LAND > 15 METERS

OPEN LAND > 15 METERS

OPEN AREA
REQUIRED BY ANSI 63.4

TEST EQUIPMENT

OPEN LAND > 15 METERS

X	= GROUND RODS

	= GROUND SCREEN

D	= TEST DISTANCE (meters)

	= WOOD COVER

COMPATIBLE ELECTRONICS

COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15227

CALIBRATION DATE: MARCH 8, 2007

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	12.6	100	12.3
35	10.0	120	14.7
40	9.5	140	13.0
45	9.2	160	13.7
50	9.4	180	16.4
60	7.4	200	17.2
70	6.5	250	14.6
80	7.0	275	19.0
90	8.0	300	22.3

COMPATIBLE ELECTRONICS

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16060

CALIBRATION DATE: JULY 9, 2007

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.5	700	20.5
400	15.8	800	21.6
500	17.0	900	21.3
600	19.2	1000	22.2

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

![Compatible Electronics logo]

Report Number: **B71009D2**   **Page D6**
FCC Part 15 Subpart B and **FCC Section 15.249** Test Report
Zwave Module – DC Version
Model: DC1-ZW

COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 16, 2007

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.4	300	38.2
40	38.3	350	38.2
50	38.2	400	38.1
60	38.3	450	37.8
70	38.4	500	37.8
80	38.6	550	38.1
90	38.3	600	37.8
100	38.4	650	37.8
125	38.3	700	37.6
150	38.2	750	37.9
175	38.4	800	37.6
200	38.4	850	37.2
225	38.4	900	37.4
250	38.3	950	37.0
275	38.3	1000	37.2

COM-POWER PA-122

PREAMPLIFIER

S/N: 181921

CALIBRATION DATE: FEBRUARY 27, 2007

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	36.2	10.0	35.1
1.5	35.4	10.5	34.8
2.0	34.7	11.0	33.5
2.5	34.8	11.5	33.9
3.0	34.8	12.0	34.0
3.5	34.6	12.5	34.4
4.0	34.2	13.0	34.4
4.5	34.1	13.5	34.7
5.0	34.1	14.0	36.0
5.5	34.7	14.5	35.7
6.0	35.6	15.0	36.1
6.5	36.8	15.5	35.6
7.0	36.7	16.0	35.4
7.5	34.9	16.5	35.3
8.0	33.3	17.0	34.9
8.5	33.6	17.5	33.7
9.0	34.6	18.0	33.3
9.5	35.9		

ANTENNA RESEARCH DRG-118/A

HORN ANTENNA

S/N: 1053

CALIBRATION DATE: MARCH 6, 2006

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.46	10.0	39.55
1.5	25.05	10.5	39.86
2.0	28.42	11.0	38.49
2.5	29.91	11.5	40.71
3.0	31.46	12.0	40.59
3.5	31.91	12.5	40.17
4.0	31.55	13.0	39.70
4.5	31.94	13.5	40.84
5.0	32.90	14.0	41.58
5.5	34.07	14.5	45.14
6.0	35.69	15.0	42.20
6.5	33.11	15.5	39.42
7.0	36.51	16.0	38.80
7.5	37.27	16.5	41.08
8.0	37.21	17.0	44.11
8.5	37.16	17.5	46.29
9.0	38.27	18.0	41.61
9.5	39.73		

COMPATIBLE ELECTRONICS

COM-POWER AL-130

LOOP ANTENNA

S/N: 17089
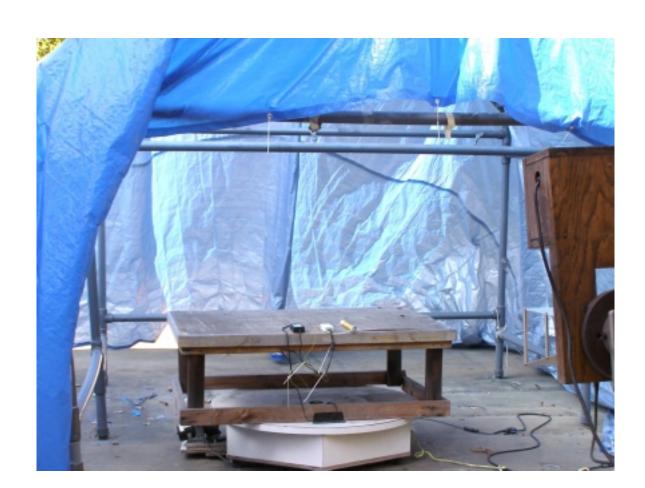
CALIBRATION DATE: SEPTEMBER 24, 2007

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-41.27	10.23
0.01	-41.96	9.54
0.02	-41.73	9.77
0.05	-42.0	9.5
0.07	-41.5	10.0
0.1	-41.43	10.07
0.2	-43.9	7.9
0.3	-41.43	10.07
0.5	-41.40	10.1
0.7	-41.13	10.37
1	-40.83	10.67
2	-40.30	11.20
3	-40.60	10.90
4	-41.00	10.50
5	-40.20	11.30
10	-40.40	11.10
15	-41.67	9.83
20	-41.10	10.40
25	-42.80	8.70
30	-42.80	8.70

COMPATIBLE ELECTRONICS

FRONT VIEW

RS SCENE AUTOMATION
ZWAVE MODULE – DC VERSION
MODEL: DC1-ZW
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB B

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

COMPATIBLE ELECTRONICS

REAR VIEW

RS SCENE AUTOMATION
ZWAVE MODULE – DC VERSION
MODEL: DC1-ZW
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB B

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

COMPATIBLE
ELECTRONICS

FRONT VIEW

RS SCENE AUTOMATION
ZWAVE MODULE – DC VERSION
MODEL: DC1-ZW
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB D

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

REAR VIEW

RS SCENE AUTOMATION
ZWAVE MODULE – DC VERSION
MODEL: DC1-ZW
FCC SUBPART B AND C – RADIATED EMISSIONS – LAB D

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

FRONT VIEW

RS SCENE AUTOMATION
ZWAVE MODULE – DC VERSION
MODEL: DC1-ZW
FCC SUBPART B AND C – CONDUCTED EMISSIONS – LAB D

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

REAR VIEW

RS SCENE AUTOMATION
ZWAVE MODULE – DC VERSION
MODEL: DC1-ZW
FCC SUBPART B AND C – CONDUCTED EMISSIONS – LAB D

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

COMPATIBLE ELECTRONICS

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249

RS Scene Automation   Date: 10/04/07
Zwave Module -- DC Version   Labs: B and D
Model: DC1-ZW   Tested By: Kyle Fujimoto

X-Axis - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
908.4	73.58	V	94	-20.42	Peak	1	180	
1816.8	48.25	V	74	-25.75	Peak	1.3	135	
1816.8	46.58	V	54	-7.42	Avg	1.3	135	
2725.2	40.73	V	74	-33.27	Peak	2.25	270	
2725.2	29.5	V	54	-24.5	Avg	2.25	270	
3633.6	40.41	V	74	-33.59	Peak	1	135	
3633.6	27.09	V	54	-26.91	Avg	1	135	
4542	41.56	V	74	-32.44	Peak	1	180	
4542	27.72	V	54	-26.28	Avg	1	180	
5450.4	42.56	V	74	-31.44	Peak	1	90	
5450.4	29.55	V	54	-24.45	Avg	1	90	
6358.8	42.28	V	74	-31.72	Peak	1	90	
6358.8	29.51	V	54	-24.49	Avg	1	90	
7267.2		V	74	-74	Peak			No Emissions
7267.2		V	54	-54	Avg			Found
8175.6		V	74	-74	Peak			No Emissions
8175.6		V	54	-54	Avg			Found
9084		V	74	-74	Peak			No Emissions
9084		V	54	-54	Avg			Found

FCC 15.249
RS Scene Automation   Date: 10/04/07
Zwave Module -- DC Version   Labs: B and D
Model: DC1-ZW   Tested By: Kyle Fujimoto

X-Axis - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
908.4	78.51	H	94	-15.49	Peak	1.25	135	
1816.8	50.52	H	74	-23.48	Peak	1.17	125	
1816.8	43.52	H	54	-10.48	Avg	1.17	125	
2725.2	39.94	H	74	-34.06	Peak	1.78	135	
2725.2	30.12	H	54	-23.88	Avg	1.78	135	
3633.6	39.26	H	74	-34.74	Peak	1.78	135	
3633.6	27.36	H	54	-26.64	Avg	1.78	135	
4542	40.49	H	74	-33.51	Peak	1.78	125	
4542	27.92	H	54	-26.08	Avg	1.78	125	
5450.4		H	74	-74	Peak			no emissions
5450.4		H	54	-54	Avg			detected
6358.8		H	74	-74	Peak			no emissions
6358.8		H	54	-54	Avg			detected
7267.2		H	74	-74	Peak			no emissions
7267.2		H	54	-54	Avg			detected
8175.6		H	74	-74	Peak			no emissions
8175.6		H	54	-54	Avg			detected
9084		H	74	-74	Peak			no emissions
9084		H	54	-54	Avg			detected

FCC 15.249

RS Scene Automation   Date: 10/04/07
Zwave Module -- DC Version   Labs: B and D
Model: DC1-ZW   Tested By: Kyle Fujimoto

Y-Axis - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
908.4	79.26	V	94	-14.74	Peak	1	135	
1816.8	49.69	V	74	-24.31	Peak	1.25	150	
1816.8	48.58	V	54	-5.42	Avg	1.25	150	
2725.2	42.69	V	74	-31.31	Peak	1.5	180	
2725.2	31.26	V	54	-22.74	Avg	1.5	180	
3633.6	40.25	V	74	-33.75	Peak	1.25	225	
3633.6	26.58	V	54	-27.42	Avg	1.25	225	
4542	42.59	V	74	-31.41	Peak	1.01	315	
4542	28.59	V	54	-25.41	Avg	1.01	315	
5450.4	43.59	V	74	-30.41	Peak	1.25	45	
5450.4	31.25	V	54	-22.75	Avg	1.25	45	
6358.8	43.25	V	74	-30.75	Peak	1.35	45	
6358.8	31.25	V	54	-22.75	Avg	1.35	45	
7267.2		V	74	-74	Peak			No Emissions
7267.2		V	54	-54	Avg			Found
8175.6		V	74	-74	Peak			No Emissions
8175.6		V	54	-54	Avg			Found
9084		V	74	-74	Peak			No Emissions
9084		V	54	-54	Avg			Found

FCC 15.249

RS Scene Automation   Date: 10/04/07
Zwave Module -- DC Version   Labs: B and D
Model: DC1-ZW   Tested By: Kyle Fujimoto

Y-Axis - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
908.4	74.21	H	94	-19.79	Peak	1.25	45	
1816.8	47.21	H	74	-26.79	Peak	2.03	135	
1816.8	44.91	H	54	-9.09	Avg	2.03	135	
2725.2	42.24	H	74	-31.76	Peak	1.72	125	
2725.2	30.74	H	54	-23.26	Avg	1.72	125	
3633.6	40.73	H	74	-33.27	Peak	1.72	125	
3633.6	27.47	H	54	-26.53	Avg	1.72	125	
4542	41.39	H	74	-32.61	Peak	1.72	125	
4542	27.88	H	54	-26.12	Avg	1.72	125	
5450.4		H	74	-74	Peak			No Emissions
5450.4		H	54	-54	Avg			Found
6358.8		H	74	-74	Peak			No Emissions
6358.8		H	54	-54	Avg			Found
7267.2		H	74	-74	Peak			No Emissions
7267.2		H	54	-54	Avg			Found
8175.6		H	74	-74	Peak			
8175.6		H	54	-54	Avg			
9084		H	74	-74	Peak			
9084		H	54	-54	Avg			

FCC 15.249

RS Scene Automation   Date: 10/04/07
Zwave Module -- DC Version   Labs: B and D
Model: DC1-ZW   Tested By: Kyle Fujimoto

Z-Axis - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
908.4	75.26	V	94	-18.74	Peak	1	90	
1816.8	43.33	V	74	-30.67	Peak	1.35	180	
1816.8	39.56	V	54	-14.44	Avg	1.35	180	
2725.2	40.71	V	74	-33.29	Peak	1.97	180	
2725.2	28.46	V	54	-25.54	Avg	1.97	180	
3633.6	41.34	V	74	-32.66	Peak	1.97	125	
3633.6	27.15	V	54	-26.85	Avg	1.97	125	
4542	40.61	V	74	-33.39	Peak	1.97	125	
4542	27.75	V	54	-26.25	Avg	1.97	125	
5450.4	41.72	V	74	-32.28	Peak	1.63	225	
5450.4	29.68	V	54	-24.32	Avg	1.63	225	
6358.8	41.12	V	74	-32.88	Peak	1.65	135	
6358.8	29.51	V	54	-24.49	Avg	1.65	135	
7267.2		V	74	-74	Peak			No Emissions
7267.2		V	54	-54	Avg			Found
8175.6		V	74	-74	Peak			No Emissions
8175.6		V	54	-54	Avg			Found
9084		V	74	-74	Peak			No Emissions
9084		V	54	-54	Avg			Found

FCC 15.249

RS Scene Automation   Date: 10/04/07
Zwave Module -- DC Version   Labs: B and D
Model: DC1-ZW   Tested By: Kyle Fujimoto

Z-Axis - Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
908.4	78.95	H	94	-15.05	Peak	1.25	135	
1816.8	43.38	H	74	-30.62	Peak	1.67	135	
1816.8	40.56	H	54	-13.44	Avg	1.67	135	
2725.2	40.17	H	74	-33.83	Peak	1.35	125	
2725.2	33.51	H	54	-20.49	Avg	1.35	125	
3633.6	38.61	H	74	-35.39	Peak	1.38	125	
3633.6	26.91	H	54	-27.09	Avg	1.38	125	
4542	39.85	H	74	-34.15	Peak	1.32	125	
4542	40.13	H	54	-13.87	Avg	1.32	125	
5450.4	41.93	H	74	-32.07	Peak	1.35	125	
5450.4	29.51	H	54	-24.49	Avg	1.35	125	
6358.8		H	74	-74	Peak			No Emissions
6358.8		H	54	-54	Avg			Found
7267.2		H	74	-74	Peak			No Emissions
7267.2		H	54	-54	Avg			Found
8175.6		H	74	-74	Peak			No Emissions
8175.6		H	54	-54	Avg			Found
9084		H	74	-74	Peak			No Emissions
9084		H	54	-54	Avg			Found

FCC 15.249

RS Scene Automation   Date: 10/03/07
Zwave Module -- DC Version   Labs: B and D
Model: DC1-ZW   Tested By: Kyle Fujimoto

Receive Mode and Digital Portion - 10 kHz to 9300 MHz - Vertical and Horizontal Polarizations
Non-Harmonic Emissions from the Tx - 10 kHz to 9300 MHz - Vertical and Horizontal Polarizations
Worse Case Axis: X-Axis

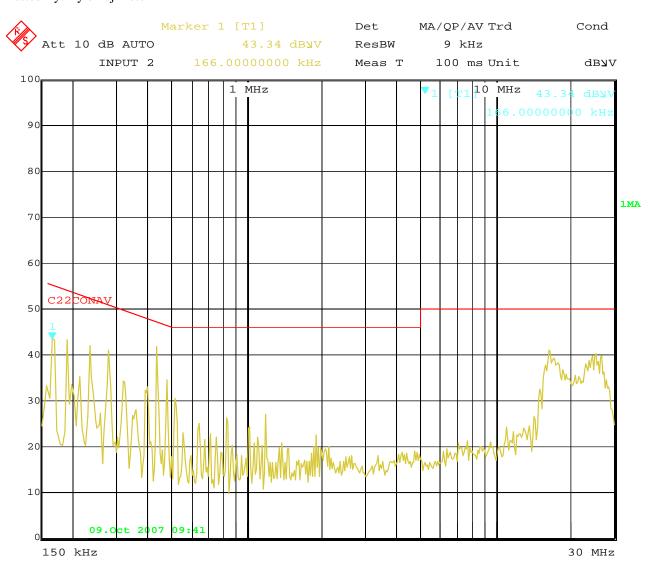| Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions
								found in the Rx Mode
								from 10 kHz to 9300 MHz
								No Emissions Found
								from the Digital
								Portion from 10 kHz
								to 9300 MHz
								No Non-Harmonic
								Emissions from the Tx
								found from 10 kHz
								to 9300 MHz

COMPATIBLE ELECTRONICS

CONDUCTED EMISSIONS

DATA SHEETS

FCC Conducted Emissions
RS Scene Automation
Zwave Module – DC Version
Model: DC1-ZW – Tx Mode
FCC Class B – Black Lead
Tested By: Kyle Fujimoto

FCC Conducted Emissions
RS Scene Automation
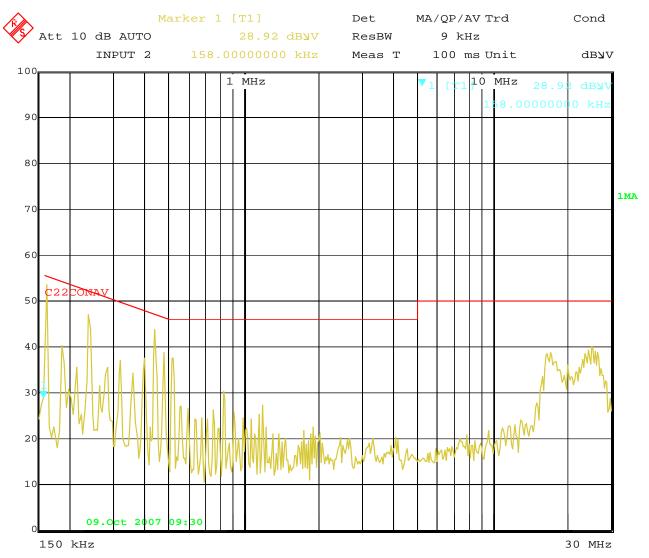Zwave Module – DC Version
Model: DC1-ZW – Tx Mode
FCC Class B – Black Lead
Tested By: Kyle Fujimoto

EDIT PEAK LIST (Final Results)			
Trace1: C22CONAV		Trace2: ---	
Trace3: ---		Trace4: ---	
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Max Peak	170.0000 kHz	43.20	-11.75
1 Max Peak	190.0000 kHz	43.20	-10.83
1 Max Peak	234.0000 kHz	41.84	-10.46
1 Max Peak	278.0000 kHz	40.76	-10.11
1 Max Peak	434.0000 kHz	41.55	-5.62
1 Max Peak	16.3300 MHz	38.16	-11.83
1 Max Peak	16.3820 MHz	39.30	-10.69
1 Max Peak	16.4140 MHz	39.95	-10.04
1 Max Peak	16.4820 MHz	39.70	-10.29
1 Max Peak	16.5380 MHz	40.86	-9.13
1 Max Peak	17.0780 MHz	38.60	-11.39
1 Max Peak	17.2300 MHz	39.24	-10.75
1 Max Peak	17.2500 MHz	39.24	-10.75
1 Max Peak	18.0140 MHz	38.17	-11.83
1 Max Peak	23.8860 MHz	38.61	-11.38
1 Max Peak	24.3940 MHz	38.86	-11.14
1 Max Peak	24.4140 MHz	38.60	-11.39
1 Max Peak	24.5980 MHz	39.73	-10.26
1 Max Peak	24.6220 MHz	39.73	-10.26
1 Max Peak	25.1340 MHz	38.98	-11.01

Date: 9.OCT.2007 09:42:40

FCC Conducted Emissions
RS Scene Automation
Zwave Module – DC Version
Model: DC1-ZW – Tx Mode
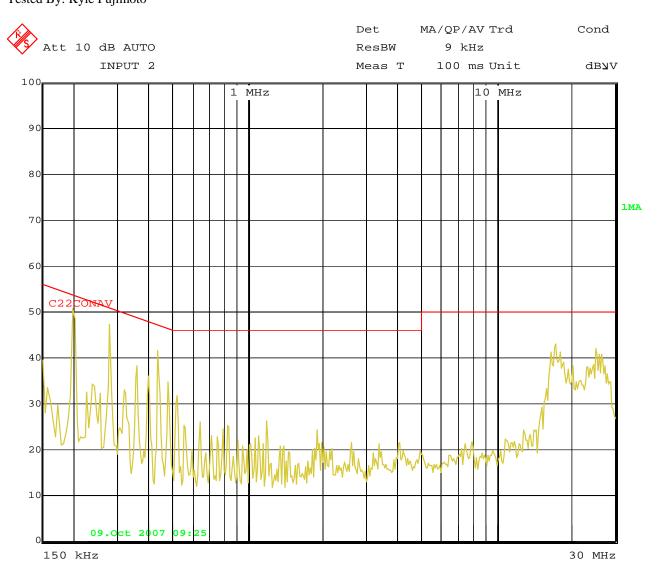FCC Class B – White Lead
Tested By: Kyle Fujimoto

Date: 9.OCT.2007   09:31:01

FCC Conducted Emissions
RS Scene Automation
Zwave Module – DC Version
Model: DC1-ZW – Tx Mode
FCC Class B – White Lead
Tested By: Kyle Fujimoto

EDIT PEAK LIST (Final Results)			
Trace1: C22CONAV		Trace2: ---	
Trace3: ---		Trace4: ---	
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Max Peak	162.0000 kHz	53.39	-1.96
1 Max Peak	238.0000 kHz	46.96	-5.20
1 Max Peak	398.0000 kHz	37.41	-10.48
1 Max Peak	438.0000 kHz	43.64	-3.45
1 Max Peak	474.0000 kHz	38.67	-7.77
1 Max Peak	518.0000 kHz	37.39	-8.60
1 Max Peak	16.5060 MHz	37.77	-12.22
1 Max Peak	16.5340 MHz	37.78	-12.21
1 Max Peak	16.5820 MHz	38.41	-11.58
1 Max Peak	16.6020 MHz	38.41	-11.58
1 Max Peak	16.6380 MHz	38.41	-11.58
1 Max Peak	17.1220 MHz	37.58	-12.41
1 Max Peak	17.1660 MHz	37.71	-12.28
1 Max Peak	17.1940 MHz	38.60	-11.40
1 Max Peak	17.2140 MHz	38.60	-11.40
1 Max Peak	17.2700 MHz	37.60	-12.39
1 Max Peak	17.2980 MHz	37.85	-12.14
1 Max Peak	23.7460 MHz	38.43	-11.56
1 Max Peak	23.9260 MHz	37.54	-12.45
1 Max Peak	24.4100 MHz	39.09	-10.90

Date: 9.OCT.2007 09:31:39

FCC Conducted Emissions
RS Scene Automation
Zwave Module – DC Version
Model: DC1-ZW – Rx Mode
FCC Class B – Black Lead
Tested By: Kyle Fujimoto
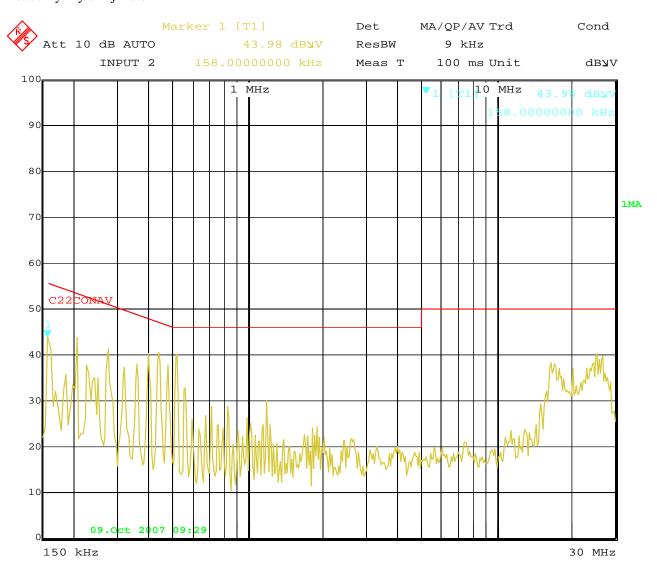

Date: 9.OCT.2007   09:25:56

FCC Conducted Emissions
RS Scene Automation
Zwave Module – DC Version
Model: DC1-ZW – Rx Mode
FCC Class B – Black Lead
Tested By: Kyle Fujimoto

EDIT PEAK LIST (Prescan Results)			
Trace1: C22CONAV		Trace2: ---	
Trace3: ---		Trace4: ---	
TRACE	FREQUENCY	LEVEL dBɣV	DELTA LIMIT dB
1 Max Peak	198.0000 kHz	50.67	-3.02
1 Max Peak	278.0000 kHz	47.04	-3.83
1 Max Peak	358.0000 kHz	38.15	-10.61
1 Max Peak	434.0000 kHz	41.27	-5.89
1 Max Peak	16.6220 MHz	41.01	-8.98
1 Max Peak	16.6580 MHz	39.07	-10.92
1 Max Peak	17.1340 MHz	42.24	-7.76
1 Max Peak	17.1380 MHz	42.24	-7.76
1 Max Peak	17.1820 MHz	41.71	-8.28
1 Max Peak	17.3380 MHz	42.80	-7.19
1 Max Peak	17.3460 MHz	42.80	-7.19
1 Max Peak	17.4220 MHz	40.63	-9.36
1 Max Peak	17.4980 MHz	39.52	-10.47
1 Max Peak	17.8580 MHz	39.28	-10.71
1 Max Peak	18.0860 MHz	41.12	-8.87
1 Max Peak	25.1980 MHz	41.79	-8.20
1 Max Peak	25.3260 MHz	40.50	-9.49
1 Max Peak	25.4020 MHz	40.24	-9.75
1 Max Peak	25.4300 MHz	39.61	-10.38
1 Max Peak	25.9180 MHz	39.24	-10.75

Date: 9.OCT.2007 09:26:18

FCC Conducted Emissions
RS Scene Automation
Zwave Module – DC Version
Model: DC1-ZW – Rx Mode
FCC Class B – White Lead
Tested By: Kyle Fujimoto

Date: 9.OCT.2007   09:29:16

FCC Conducted Emissions
RS Scene Automation
Zwave Module – DC Version
Model: DC1-ZW – Rx Mode
FCC Class B – White Lead
Tested By: Kyle Fujimoto

EDIT PEAK LIST (Prescan Results)			
Trace1: C22CONAV		Trace2: ---	
Trace3: ---		Trace4: ---	
TRACE	FREQUENCY	LEVEL dBɤV	DELTA LIMIT dB
1 Max Peak	158.0000 kHz	43.97	-11.59
1 Max Peak	206.0000 kHz	43.54	-9.81
1 Max Peak	274.0000 kHz	41.19	-9.79
1 Max Peak	358.0000 kHz	37.91	-10.85
1 Max Peak	398.0000 kHz	40.11	-7.77
1 Max Peak	438.0000 kHz	40.37	-6.72
1 Max Peak	474.0000 kHz	37.65	-8.79
1 Max Peak	518.0000 kHz	39.97	-6.02
1 Max Peak	16.6100 MHz	38.16	-11.83
1 Max Peak	16.6260 MHz	37.91	-12.08
1 Max Peak	17.1900 MHz	37.59	-12.40
1 Max Peak	17.2340 MHz	37.85	-12.14
1 Max Peak	24.4780 MHz	37.83	-12.17
1 Max Peak	24.7100 MHz	38.10	-11.90
1 Max Peak	25.1740 MHz	39.01	-10.98
1 Max Peak	25.1980 MHz	39.01	-10.98
1 Max Peak	25.2260 MHz	38.76	-11.23
1 Max Peak	25.2500 MHz	38.12	-11.87
1 Max Peak	25.3780 MHz	40.03	-9.96
1 Max Peak	25.4060 MHz	39.77	-10.22

Date: 9.OCT.2007 09:27:57