

**FCC PART 15 SUBPART B and C
TEST REPORT***for***WIRELESS MOUSE****MODEL: AS03507-002**

Prepared for

SMK-LINK ELECTRONICS
3601-B CALLE TECATE
CAMARILLO, CALIFORNIA 93012

Prepared by: _____

KYLE FUJIMOTO

Approved by: _____

JAMES ROSS

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

DATE: JANUARY 26, 2012

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	16	2	2	2	13	29	64

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

TABLE OF CONTENTS

Section / Title	PAGE
GENERAL REPORT SUMMARY	4
SUMMARY OF TEST RESULTS	4
1. PURPOSE	5
2. ADMINISTRATIVE DATA	6
2.1 Location of Testing	6
2.2 Traceability Statement	6
2.3 Cognizant Personnel	6
2.4 Date Test Sample was Received	6
2.5 Disposition of the Test Sample	6
2.6 Abbreviations and Acronyms	6
3. APPLICABLE DOCUMENTS	7
4. DESCRIPTION OF TEST CONFIGURATION	8
4.1 Description of Test Configuration – Emissions	8
4.1.1 Cable Construction and Termination	8
5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT	9
5.1 EUT and Accessory List	9
5.2 Emissions Test Equipment	10
6. TEST SITE DESCRIPTION	11
6.1 Test Facility Description	11
6.2 EUT Mounting, Bonding and Grounding	11
6.3 Facility Environmental Characteristics	11
7. TEST PROCEDURES	12
7.1 RF Emissions	12
7.1.1 Conducted Emissions Test	12
7.1.2 Radiated Emissions (Spurious and Harmonics) Test	13
7.1.3 RF Emissions Test Results	15
8. CONCLUSIONS	16

LIST OF APPENDICES

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

LIST OF FIGURES

FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Plot Map And Layout of Radiated Test Site – 3 Meters

GENERAL REPORT SUMMARY

Compatible Electronics Inc. generates this electromagnetic emission test report, 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: Wireless Mouse
Model: AS03507-002
S/N: N/A

Product Description: See Expository Statement

Modifications: The EUT was not modified in order to meet the specifications.

Customer: SMK-Link Electronics
3601-B Calle Tecate
Camarillo, California 93012

Test Date(s): December 2 and 7, 2011

Test Specifications: Emissions requirements
CFR Title 47, Part 15, Subpart B and Subpart C, Sections 15.205, 15.209, and 15.249

Test Procedure: ANSI C63.4

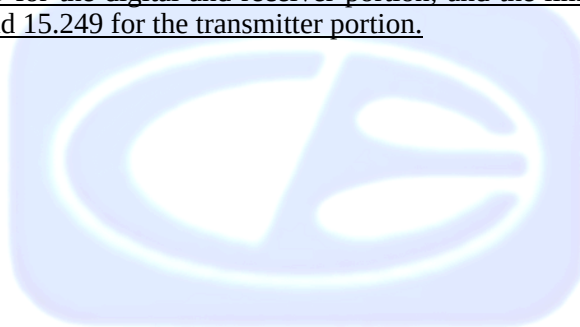
Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions 150 kHz to 30 MHz	This test was not performed because the EUT operates on battery power only and cannot be plugged into the AC public mains.
2	Radiated RF Emissions 10 kHz to 25000 MHz (Transmitter, Receiver, and Digital Portion)	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Wireless Mouse, Model: AS03507-002. The Emissions 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, 15.209, 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.

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

SMK-Link Electronics

Massoud Niakan
Daniel Grieder

G.M. Engineering & Program Management
RF/HW Engineer

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer
James Ross Test Engineer

2.4 Date Test Sample was Received

The test sample was received prior to the date of testing.

2.5 Disposition of the Test Sample

The test sample has not yet been returned as of the date of this report.

2.6 Abbreviations and Acronyms

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

FCC	Federal Communications Commission
RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
ITE	Information Technology Equipment
LISN	Line Impedance Stabilization Network
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
N/A	Not Applicable
Ltd.	Limited
Inc.	Incorporated
NCR	No Calibration Required
R&D	Research and Development
Rx	Receive / Receiver
Tx	Transmit / Transmitter

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4: 2009	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 – Emissions

The Wireless Mouse, Model: AS03507-002 (EUT) was tested as a stand alone unit. The EUT was continuously transmitting and receiving. The EUT had a special program that allowed the low, middle, or high channels to be tested by pressing the button. The EUT was tested in three orthogonal axis.

The antenna is a printed dipole..

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration. The final emissions data was taken in this mode of operation and any cables were maximized. All initial investigations were performed with the measurement receiver in manual mode scanning the frequency range continuously. Photographs of the test setup are in Appendix D of this report.

4.1.1 Cable Construction and Termination

There were no external cables connected to the EUT.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
WIRELESS MOUSE (EUT)	SMK-LINK ELECTRONICS	AS03507-002	N/A	IE3GATM11

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANUFACTURER	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
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	2637A03618	May 27, 2011	May 27, 2012
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A13404	May 27, 2011	May 27, 2012
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	May 27, 2011	May 27, 2012
EMI Receiver	Rohde & Schwarz	ESIB40	100194	November 19, 2010	November 19, 2012
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Loop Antenna	Com-Power	AL-130	17089	January 21, 2011	January 21, 2012
Biconical Antenna	Com Power	AB-900	15250	June 8, 2011	June 8, 2012
Log Periodic Antenna	Com Power	AL-100	16252	June 8, 2011	June 8, 2012
Horn Antenna	Com-Power	AH-118	071175	March 18, 2010	March 18, 2012
Horn Antenna	Com-Power	AH826	71957	NCR	N/A
Preamplifier	Com-Power	PA-102	1017	January 11, 2011	January 12, 2012
Microwave Preamplifier	Com-Power	PA-118	181656	December 28, 2011	December 28, 2012
Microwave Preamplifier	Com-Power	PA-840	711013	March 11, 2010	March 11, 2012
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A

6. TEST SITE DESCRIPTION**6.1 Test Facility Description**

Please refer to section 2.1 and 7.1.2 of this report for Emissions 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 not grounded.

6.3 Facility Environmental Characteristics

When applicable refer to the data sheets in Appendix E for the relative humidity, air temperature, and barometric pressure.

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 measurement receiver was used as a measuring meter. The data was collected with the measurement receiver 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 measurement receiver's input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the measurement receiver. 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 ANSI C63.4. 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 conducted emissions 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:

This test was not performed because the EUT operates on battery power only and cannot be plugged into the AC public mains.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer and EMI Receiver were 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, the Com-Power Microwave Preamplifier Model: PA-118 was used for frequencies from 1 GHz to 18 GHz, and the Com-Power Microwave Preamplifier Model: PA-840 were used for frequencies above 18 GHz. The spectrum analyzer and EMI Receiver were used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets.

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 spectrum analyzer to keep the amplitude reading calibrated.

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 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 25 GHz	1 MHz	Horn Antennas

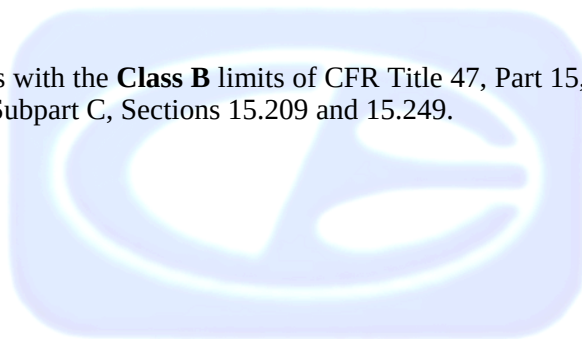
The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. 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 by the Radiated Emission Manual Test software. 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.

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.

Test Results:

The EUT 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, Sections 15.209 and 15.249.



7.1.3 RF Emissions Test ResultsTable 1.0 RADIATED EMISSION RESULTS
Wireless Mouse, Model: AS03507-002

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
2404 (Horizontal)	90.69 (A)	94.00	-3.31
7212 (Horizontal)	49.69 (A)	54.00	-4.31
2480 (Horizontal)	89.63 (A)	94.00	-4.37
2440 (Horizontal)	87.81 (A)	94.00	-6.19
4804 (Vertical)	47.58 (A)	54.00	-6.42
7212 (Vertical)	47.47 (A)	54.00	-6.53

Notes:

- * The complete emissions data is given in Appendix E of this report.
- A Average Reading

8. CONCLUSIONS

The Wireless Mouse, Model: AS03507-002 (EUT), as tested, 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, 15.209, and 15.249 for the transmitter portion.



APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP LAB CODES 200063-0,
200528-0, 200527-0

For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025. Please follow the link to the NIST/NVLAP site for each of our facilities' NVLAP certificate and scope of accreditation

NVLAP listing links[Agoura Division](#) / [Brea Division](#) / [Silverado/Lake Forest Division](#)

.Quote from ISO-ILAC-IAF Communiqué on 17025:

"A laboratory's fulfilment of the requirements of ISO/IEC 17025:2005 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025:2005 (Section 4) are written in language relevant to laboratory operations and meet the principles of ISO 9001:2008 Quality Management Systems — Requirements."

**ANSI listing** [CETCB](#)

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).

US/EU MRA list [NIST MRA site](#)

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).

APEC MRA list [NIST MRA site](#)

We are also listed for IT products by the following country/agency:

**VCCI Support member:** Please visit http://www.vcci.jp/vcci_e/**FCC Listing, from FCC OET site**[FCC test lab search](#) <https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm>

Compatible Electronics IC listing can be found at:

<http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home>

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

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 and/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 during the testing.



APPENDIX C

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Wireless Mouse
Model: AS03507-002
S/N: N/A

ALSO APPROVED UNDER THIS REPORT:

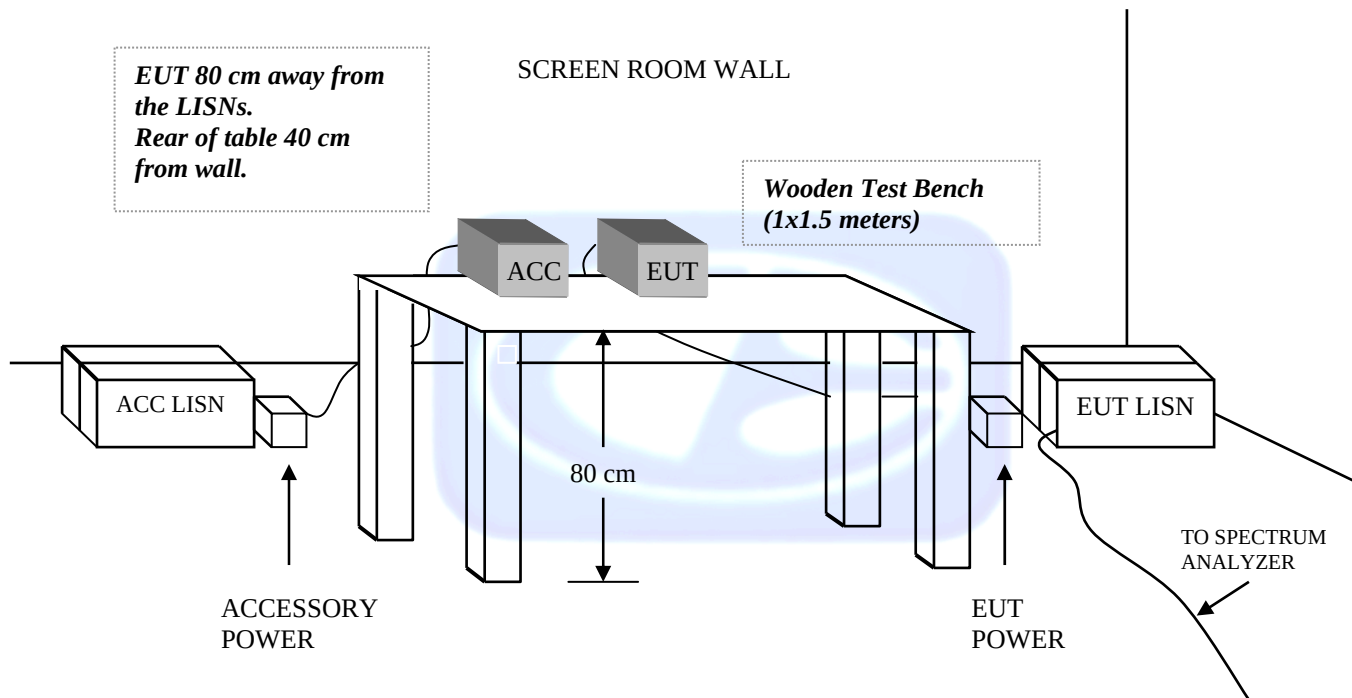
There were no additional models covered under this report.



APPENDIX D

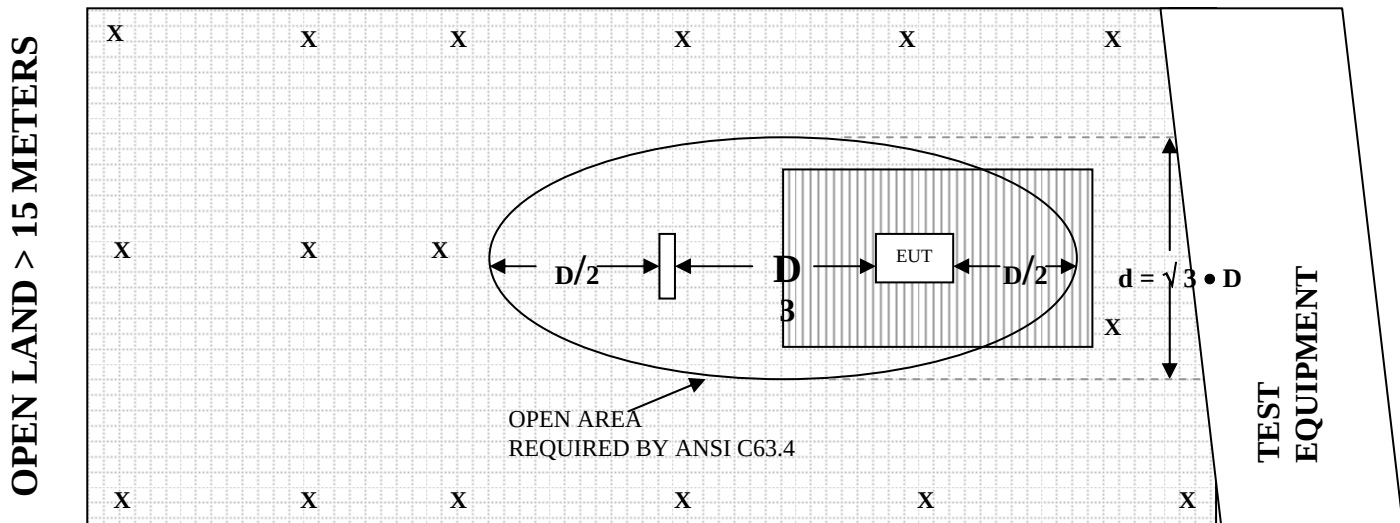
DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP



**FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE –
3 METERS**

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

X	= GROUND RODS		= GROUND SCREEN
D	= TEST DISTANCE (meters)		= WOOD COVER

COM-POWER AL-130**LOOP ANTENNA****S/N: 17089****CALIBRATION DATE: JANUARY 21, 2011**

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-41.9	9.6
0.01	-41.79	9.71
0.02	-41.43	10.07
0.05	-41.53	9.97
0.07	-41.47	10.03
0.1	-41.44	10.06
0.2	-41.61	9.89
0.3	-41.62	9.88
0.5	-41.66	9.84
0.7	-41.48	10.02
1	-41.13	10.37
2	-40.89	10.61
3	-41.00	10.50
4	-41.14	10.36
5	-41.02	10.48
10	-40.69	10.82
15	-40.41	11.09
20	-41.07	10.43
25	-42.10	9.40
30	-41.15	10.35

COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15250

CALIBRATION DATE: JUNE 8, 2011

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	10.90	100	9.50
35	11.00	120	12.10
40	11.80	140	11.40
45	11.60	160	12.40
50	11.40	180	15.70
60	9.80	200	16.20
70	7.00	250	16.10
80	5.70	275	19.00
90	7.00	300	9.50

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16252

CALIBRATION DATE: JUNE 8, 2011

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.30	700	20.40
400	15.50	800	20.60
500	15.80	900	20.10
600	20.20	1000	22.80

COM POWER AH-118**HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: MARCH 18, 2010

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	22.2	10.0	39.8
1.5	24.2	10.5	40.2
2.0	27.2	11.0	39.7
2.5	27.8	11.5	39.9
3.0	30.5	12.0	41.7
3.5	30.9	12.5	42.7
4.0	31.9	13.0	42.3
4.5	33.2	13.5	40.3
5.0	33.6	14.0	42.6
5.5	36.2	14.5	43.4
6.0	35.8	15.0	41.9
6.5	36.1	15.5	40.8
7.0	37.9	16.0	41.0
7.5	37.4	16.5	41.5
8.0	38.0	17.0	44.5
8.5	38.8	17.5	47.6
9.0	38.0	18.0	50.8
9.5	39.2		

COM-POWER AH826

HORN ANTENNA

S/N: 71957

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.5	22.5	35.5
18.5	33.5	23.0	35.9
19.0	34.0	23.5	35.7
19.5	34.0	24.0	35.6
20.0	34.3	24.5	36.0
20.5	34.9	25.0	36.2
21.0	34.7	25.5	36.1
21.5	35.0	26.0	36.2
22.0	35.0	26.5	35.7

COM-POWER PA-102**PREAMPLIFIER**

S/N: 1017

CALIBRATION DATE: JANUARY 11, 2011

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.1	300	38.1
40	38.2	350	38.0
50	38.2	400	37.9
60	38.2	450	37.7
70	38.2	500	37.6
80	38.2	550	37.9
90	38.2	600	37.9
100	38.1	650	37.7
125	38.2	700	37.9
150	38.2	750	37.5
175	38.2	800	37.6
200	38.2	850	37.6
225	38.2	900	37.0
250	38.2	950	37.2
275	38.2	1000	36.8

COM-POWER PA-118**PREAMPLIFIER**

S/N: 181656

CALIBRATION DATE: DECEMBER 22, 2010

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.90	10.0	26.07
1.5	26.50	10.5	24.97
2.0	26.79	11.0	24.79
2.5	26.90	11.5	24.33
3.0	27.03	12.0	24.24
3.5	26.94	12.5	24.92
4.0	27.18	13.0	24.52
4.5	26.79	13.5	24.33
5.0	26.25	14.0	24.56
5.5	26.16	14.5	24.99
6.0	25.52	15.0	26.06
6.5	25.29	15.5	26.87
7.0	24.45	16.0	25.95
7.5	24.18	16.5	24.69
8.0	24.02	17.0	24.20
8.5	24.54	17.5	25.12
9.0	24.91	18.0	26.03
9.5	25.42		

COM-POWER PA-840
MICROWAVE PREAMPLIFIER

S/N: 711013

CALIBRATION DATE: MARCH 11, 2010

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	24.36	29.5	23.52
18.5	24.54	30.0	21.73
19.0	24.06	30.5	22.34
19.5	23.71	31.0	20.06
20.0	23.42	31.5	20.02
20.5	22.87	32.0	18.11
21.0	22.60	32.5	19.35
21.5	21.08	33.0	17.50
22.0	22.13	33.5	17.49
22.5	22.42	34.0	17.48
23.0	22.85	34.5	18.57
23.5	22.85	35.0	18.64
24.0	23.82	35.5	18.82
24.5	22.33	36.0	19.14
25.0	24.09	36.5	18.58
25.5	23.20	37.0	15.07
26.0	23.18	37.5	17.29
26.5	23.50	38.0	20.82
27.0	24.25	38.5	19.96
27.5	23.58	39.0	20.66
28.0	23.81	39.5	21.41
28.5	23.76	40.0	18.89
29.0	24.83		



FRONT VIEW

SMK-LINK ELECTRONICS
WIRELESS MOUSE
MODEL: AS03507-002

FCC SUBPART B AND C – RADIATED EMISSIONS – 12/02/2011, 12/07/2011 and 01/25/2012

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



REAR VIEW

SMK-LINK ELECTRONICS
WIRELESS MOUSE
MODEL: AS03507-002

FCC SUBPART B AND C – RADIATED EMISSIONS – 12/02/2011, 12/07/2011 and 01/25/2012

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

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 12/02/2011
Lab: B
Tested By: Kyle Fujimoto

**Low Channel
X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2404	82.36	V	114	-31.64	Peak	1.25	135	
2404	80.43	V	94	-13.57	Avg	1.25	135	
4808	50.49	V	74	-23.51	Peak	1.25	125	
4808	44.21	V	54	-9.79	Avg	1.25	125	
7212	52.65	V	74	-21.35	Peak	1.35	155	
7212	42.47	V	54	-11.53	Avg	1.35	155	
9616	53.88	V	74	-20.12	Peak	1.25	165	
9616	41.74	V	54	-12.26	Avg	1.25	165	
12020								No Emission
12020								Detected
14424								No Emission
14424								Detected
16828								No Emission
16828								Detected
19232								No Emission
19232								Detected
21636								No Emission
21636								Detected
24040								No Emission
24040								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 12/02/2011
Lab: B
Tested By: Kyle Fujimoto

**Low Channel
X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2404	92.33	H	114	-21.67	Peak	1.25	225	
2404	90.69	H	94	-3.31	Avg	1.25	225	
4808	51.14	H	74	-22.86	Peak	1.25	135	
4808	46.57	H	54	-7.43	Avg	1.25	135	
7212	57.45	H	74	-16.55	Peak	1.35	155	
7212	49.69	H	54	-4.31	Avg	1.35	155	
9616	53.69	H	74	-20.31	Peak	1.25	225	
9616	41.92	H	54	-12.08	Avg	1.25	225	
12020								No Emission
12020								Detected
14424								No Emission
14424								Detected
16828								No Emission
16828								Detected
19232								No Emission
19232								Detected
21636								No Emission
21636								Detected
24040								No Emission
24040								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 12/02/2011
Lab: B
Tested By: Kyle Fujimoto

**Mid Channel
X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2440	80.75	V	114	-33.25	Peak	1.25	155	
2440	79.27	V	94	-14.73	Avg	1.25	155	
4880	45.34	V	74	-28.66	Peak	1.25	165	
4880	39.41	V	54	-14.59	Avg	1.25	165	
7320	49.07	V	74	-24.93	Peak	1.35	175	
7320	37.43	V	54	-16.57	Avg	1.35	175	
9760	53.81	V	74	-20.19	Peak	1.25	165	
9760	41.31	V	54	-12.69	Avg	1.25	165	
12200								No Emission
12200								Detected
14640								No Emission
14640								Detected
17080								No Emission
17080								Detected
19520								No Emission
19520								Detected
21960								No Emission
21960								Detected
24400								No Emission
24400								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 12/02/2011
Lab: B
Tested By: Kyle Fujimoto

**Mid Channel
X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2440	90.62	H	114	-23.38	Peak	1.25	155	
2440	87.81	H	94	-6.19	Avg	1.25	155	
4880	48.48	H	74	-25.52	Peak	1.25	165	
4880	34.71	H	54	-19.29	Avg	1.25	165	
7320	48.68	H	74	-25.32	Peak	1.35	175	
7320	37.46	H	54	-16.54	Avg	1.35	175	
9760	53.06	H	74	-20.94	Peak	1.25	185	
9760	41.15	H	54	-12.85	Avg	1.25	185	
12200								No Emission
12200								Detected
14640								No Emission
14640								Detected
17080								No Emission
17080								Detected
19520								No Emission
19520								Detected
21960								No Emission
21960								Detected
24400								No Emission
24400								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 12/02/2011
Lab: B
Tested By: Kyle Fujimoto

**High Channel
X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	80.56	V	114	-33.44	Peak	1.25	135	
2480	78.73	V	94	-15.27	Avg	1.25	135	
4960	48.89	V	74	-25.11	Peak	1.25	155	
4960	42.73	V	54	-11.27	Avg	1.25	155	
7440	51.06	V	74	-22.94	Peak	1.35	165	
7440	37.64	V	54	-16.36	Avg	1.35	165	
9920	52.78	V	74	-21.22	Peak	1.25	175	
9920	41.35	V	54	-12.65	Avg	1.25	175	
12400								No Emission
12400								Detected
14880								No Emission
14880								Detected
17360								No Emission
17360								Detected
19840								No Emission
19840								Detected
22320								No Emission
22320								Detected
24800								No Emission
24800								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 12/02/11
Lab: B
Tested By: Kyle Fujimoto

**High Channel
X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	91.21	H	114	-22.79	Peak	1	225	
2480	89.63	H	94	-4.37	Avg	1	225	
4960	48.81	H	74	-25.19	Peak	1.25	155	
4960	39.76	H	54	-14.24	Avg	1.25	155	
7440	49.36	H	74	-24.64	Peak	1.25	135	
7440	37.59	H	54	-16.41	Avg	1.25	135	
9920	53.24	H	74	-20.76	Peak	1.25	125	
9920	41.27	H	54	-12.73	Avg	1.25	125	
12400								No Emission
12400								Detected
14880								No Emission
14880								Detected
17360								No Emission
17360								Detected
19840								No Emission
19840								Detected
22320								No Emission
22320								Detected
24800								No Emission
24800								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

Lab: B

Tested By: Kyle Fujimoto

Low Channel

Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2404	82.16	V	114	-31.84	Peak	1.25	135	
2404	80.65	V	94	-13.35	Avg	1.25	135	
4808	52.55	V	74	-21.45	Peak	1.55	155	
4808	47.58	V	54	-6.42	Avg	1.55	155	
7212	52.29	V	74	-21.71	Peak	1.35	155	
7212	47.47	V	54	-6.53	Avg	1.35	155	
9616	52.26	V	74	-21.74	Peak	1.25	165	
9616	43.17	V	54	-10.83	Avg	1.25	165	
12020								No Emission
12020								Detected
14424								No Emission
14424								Detected
16828								No Emission
16828								Detected
19232								No Emission
19232								Detected
21636								No Emission
21636								Detected
24040								No Emission
24040								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

Lab: B

Tested By: Kyle Fujimoto

Low Channel

Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2404	87.28	H	114	-26.72	Peak	1.25	225	
2404	85.47	H	94	-8.53	Avg	1.25	225	
4808	47.08	H	74	-26.92	Peak	1.25	135	
4808	38.62	H	54	-15.38	Avg	1.25	135	
7212	49.15	H	74	-24.85	Peak	1.35	155	
7212	37.61	H	54	-16.39	Avg	1.35	155	
9616	52.24	H	74	-21.76	Peak	1.25	225	
9616	41.91	H	54	-12.09	Avg	1.25	225	
12020								No Emission
12020								Detected
14424								No Emission
14424								Detected
16828								No Emission
16828								Detected
19232								No Emission
19232								Detected
21636								No Emission
21636								Detected
24040								No Emission
24040								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

Lab: B

Tested By: Kyle Fujimoto

Mid Channel

Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2440	85.96	V	114	-28.04	Peak	1.25	90	
2440	83.61	V	94	-10.39	Avg	1.25	90	
4880	53.21	V	74	-20.79	Peak	1.25	0	
4880	45.65	V	54	-8.35	Avg	1.25	0	
7320	49.85	V	74	-24.15	Peak	1.35	175	
7320	38.81	V	54	-15.19	Avg	1.35	175	
9760	53.38	V	74	-20.62	Peak	1.25	165	
9760	41.31	V	54	-12.69	Avg	1.25	165	
12200		V	74	-74	Peak			No Emission
12200		V	54	-54	Avg			Detected
14640		V	74	-74	Peak			No Emission
14640		V	54	-54	Avg			Detected
17080		V	74	-74	Peak			No Emission
17080		V	54	-54	Avg			Detected
19520		V	74	-74	Peak			No Emission
19520		V	54	-54	Avg			Detected
21960		V	74	-74	Peak			No Emission
21960		V	54	-54	Avg			Detected
24400		V	74	-74	Peak			No Emission
24400		V	54	-54	Avg			Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012
Lab: B
Tested By: Kyle Fujimoto

Mid Channel

Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2440	86.23	H	114	-27.77	Peak	1.35	165	
2440	84.44	H	94	-9.56	Avg	1.35	165	
4880	47.16	H	74	-26.84	Peak	1.25	165	
4880	39.01	H	54	-14.99	Avg	1.25	165	
7320	48.64	H	74	-25.36	Peak	1.35	175	
7320	37.31	H	54	-16.69	Avg	1.35	175	
9760	51.24	H	74	-22.76	Peak	1.25	185	
9760	41.74	H	54	-12.26	Avg	1.25	185	
12200		H	74	-74	Peak			No Emission
12200		H	54	-54	Avg			Detected
14640		H	74	-74	Peak			No Emission
14640		H	54	-54	Avg			Detected
17080		H	74	-74	Peak			No Emission
17080		H	54	-54	Avg			Detected
19520		H	74	-74	Peak			No Emission
19520		H	54	-54	Avg			Detected
21960		H	74	-74	Peak			No Emission
21960		H	54	-54	Avg			Detected
24400		H	74	-74	Peak			No Emission
24400		H	54	-54	Avg			Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012
Lab: B
Tested By: Kyle Fujimoto

High Channel

Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	80.55	V	114	-33.45	Peak	1.25	135	
2480	78.59	V	94	-15.41	Avg	1.25	135	
4960	52.41	V	74	-21.59	Peak	1.25	155	
4960	46.19	V	54	-7.81	Avg	1.25	155	
7440	51.75	V	74	-22.25	Peak	1.35	165	
7440	39.81	V	54	-14.19	Avg	1.35	165	
9920	53.55	V	74	-20.45	Peak	1.25	175	
9920	41.32	V	54	-12.68	Avg	1.25	175	
12400								No Emission
12400								Detected
14880								No Emission
14880								Detected
17360								No Emission
17360								Detected
19840								No Emission
19840								Detected
22320								No Emission
22320								Detected
24800								No Emission
24800								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

Lab: B

Tested By: Kyle Fujimoto

High Channel

Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	87.34	H	114	-26.66	Peak	1	225	
2480	85.96	H	94	-8.04	Avg	1	225	
4960	49.94	H	74	-24.06	Peak	1.25	155	
4960	43.91	H	54	-10.09	Avg	1.25	155	
7440	48.17	H	74	-25.83	Peak	1.25	135	
7440	37.67	H	54	-16.33	Avg	1.25	135	
9920	53.09	H	74	-20.91	Peak	1.25	125	
9920	42.44	H	54	-11.56	Avg	1.25	125	
12400								No Emission
12400								Detected
14880								No Emission
14880								Detected
17360								No Emission
17360								Detected
19840								No Emission
19840								Detected
22320								No Emission
22320								Detected
24800								No Emission
24800								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

Lab: B

Tested By: Kyle Fujimoto

Low Channel

Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2404	88.91	V	114	-25.09	Peak	1.25	135	
2404	87.17	V	94	-6.83	Avg	1.25	135	
4808	47.91	V	74	-26.09	Peak	1.55	155	
4808	41.52	V	54	-12.48	Avg	1.55	155	
7212	48.92	V	74	-25.08	Peak	1.35	155	
7212	38.35	V	54	-15.65	Avg	1.35	155	
9616	52.64	V	74	-21.36	Peak	1.25	165	
9616	41.31	V	54	-12.69	Avg	1.25	165	
12020								No Emission
12020								Detected
14424								No Emission
14424								Detected
16828								No Emission
16828								Detected
19232								No Emission
19232								Detected
21636								No Emission
21636								Detected
24040								No Emission
24040								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

Lab: B

Tested By: Kyle Fujimoto

Low Channel

Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2404	76.44	H	114	-37.56	Peak	1.25	225	
2404	73.94	H	94	-20.06	Avg	1.25	225	
4808	50.03	H	74	-23.97	Peak	1.25	135	
4808	41.79	H	54	-12.21	Avg	1.25	135	
7212	48.74	H	74	-25.26	Peak	1.35	155	
7212	38.63	H	54	-15.37	Avg	1.35	155	
9616	51.51	H	74	-22.49	Peak	1.25	225	
9616	42.45	H	54	-11.55	Avg	1.25	225	
12020								No Emission
12020								Detected
14424								No Emission
14424								Detected
16828								No Emission
16828								Detected
19232								No Emission
19232								Detected
21636								No Emission
21636								Detected
24040								No Emission
24040								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

Lab: B

Tested By: Kyle Fujimoto

Mid Channel

Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2440	89.91	V	94	-4.09	Peak	1.25	90	
2440	87.06	V	94	-6.94	Avg	1.25	90	
4880	47.63	V	74	-26.37	Peak	1.25	0	
4880	39.43	V	54	-14.57	Avg	1.25	0	
7320	48.19	V	74	-25.81	Peak	1.35	175	
7320	38.67	V	54	-15.33	Avg	1.35	175	
9760	52.16	V	74	-21.84	Peak	1.25	165	
9760	40.99	V	54	-13.01	Avg	1.25	165	
12200		V	74	-74	Peak			No Emission
12200		V	54	-54	Avg			Detected
14640		V	74	-74	Peak			No Emission
14640		V	54	-54	Avg			Detected
17080		V	74	-74	Peak			No Emission
17080		V	54	-54	Avg			Detected
19520		V	74	-74	Peak			No Emission
19520		V	54	-54	Avg			Detected
21960		V	74	-74	Peak			No Emission
21960		V	54	-54	Avg			Detected
24400		V	74	-74	Peak			No Emission
24400		V	54	-54	Avg			Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

Lab: B

Tested By: Kyle Fujimoto

Mid Channel

Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2440	74.87	H	114	-39.13	Peak	1.35	165	
2440	71.06	H	94	-22.94	Avg	1.35	165	
4880	49.27	H	74	-24.73	Peak	1.25	165	
4880	42.07	H	54	-11.93	Avg	1.25	165	
7320	47.76	H	74	-26.24	Peak	1.35	175	
7320	37.18	H	54	-16.82	Avg	1.35	175	
9760	52.39	H	74	-21.61	Peak	1.25	185	
9760	40.85	H	54	-13.15	Avg	1.25	185	
12200		H	74	-74	Peak			No Emission
12200		H	54	-54	Avg			Detected
14640		H	74	-74	Peak			No Emission
14640		H	54	-54	Avg			Detected
17080		H	74	-74	Peak			No Emission
17080		H	54	-54	Avg			Detected
19520		H	74	-74	Peak			No Emission
19520		H	54	-54	Avg			Detected
21960		H	74	-74	Peak			No Emission
21960		H	54	-54	Avg			Detected
24400		H	74	-74	Peak			No Emission
24400		H	54	-54	Avg			Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

Lab: B

Tested By: Kyle Fujimoto

High Channel

Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	89.22	V	114	-24.78	Peak	1.25	135	
2480	87.25	V	94	-6.75	Avg	1.25	135	
4960	50.33	V	74	-23.67	Peak	1.25	155	
4960	38.63	V	54	-15.37	Avg	1.25	155	
7440	55.92	V	74	-18.08	Peak	1.35	165	
7440	53.42	V	54	-0.58	Avg	1.35	165	
9920	59.92	V	74	-14.08	Peak	1.25	175	
9920	47.63	V	54	-6.37	Avg	1.25	175	
12400								No Emission
12400								Detected
14880								No Emission
14880								Detected
17360								No Emission
17360								Detected
19840								No Emission
19840								Detected
22320								No Emission
22320								Detected
24800								No Emission
24800								Detected

FCC 15.249

SMK-Link Electronics
Wireless Mouse
Model: AS03507-002

Date: 01/25/2012

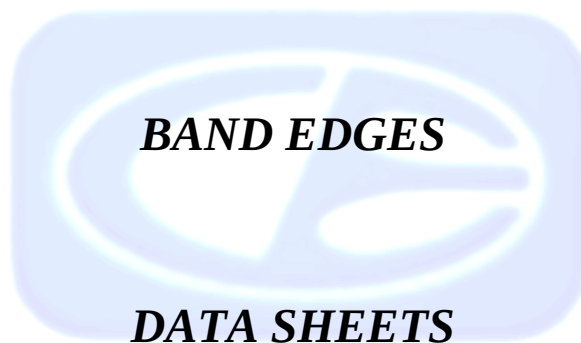
Lab: B

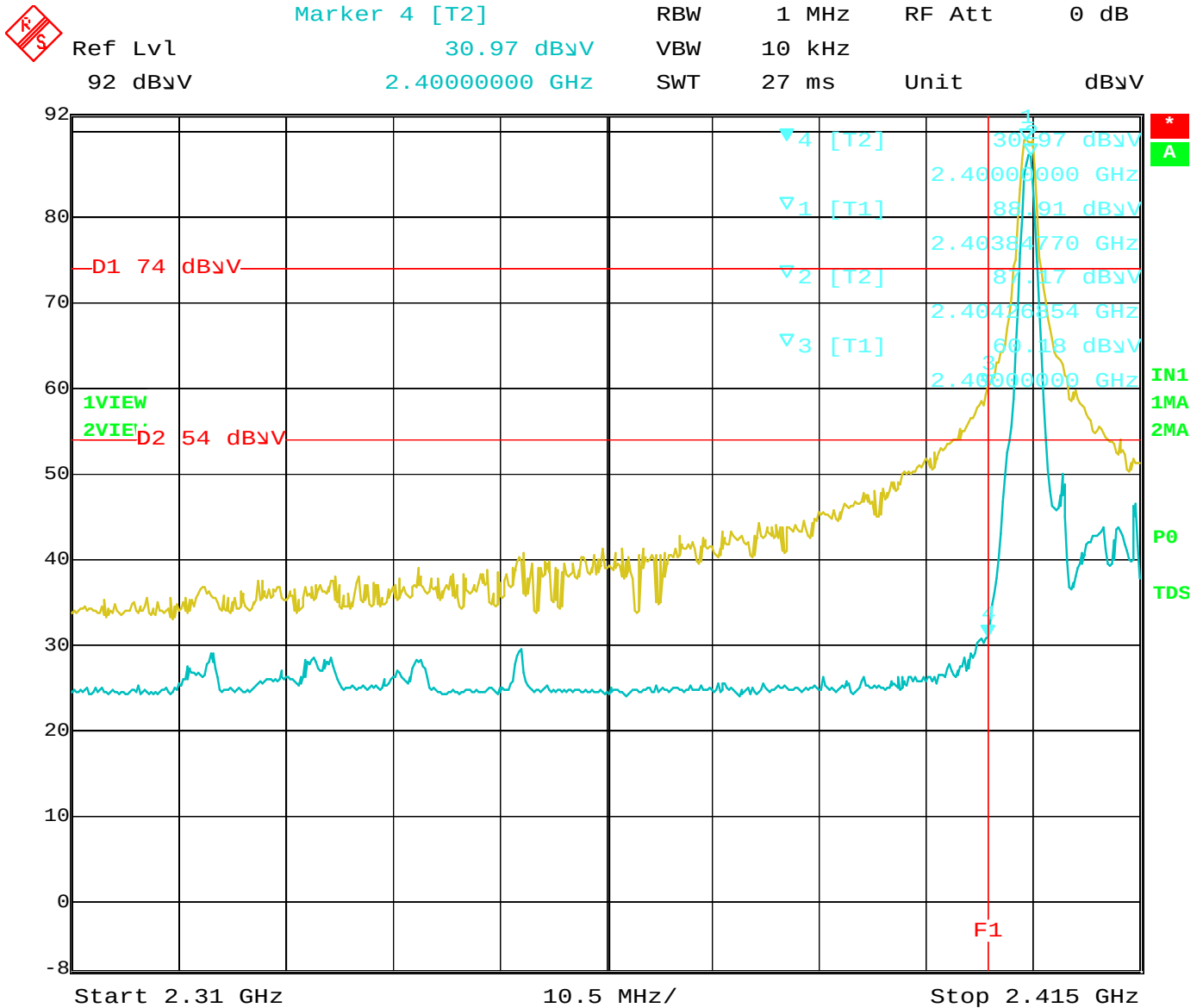
Tested By: Kyle Fujimoto

High Channel

Z-Axis

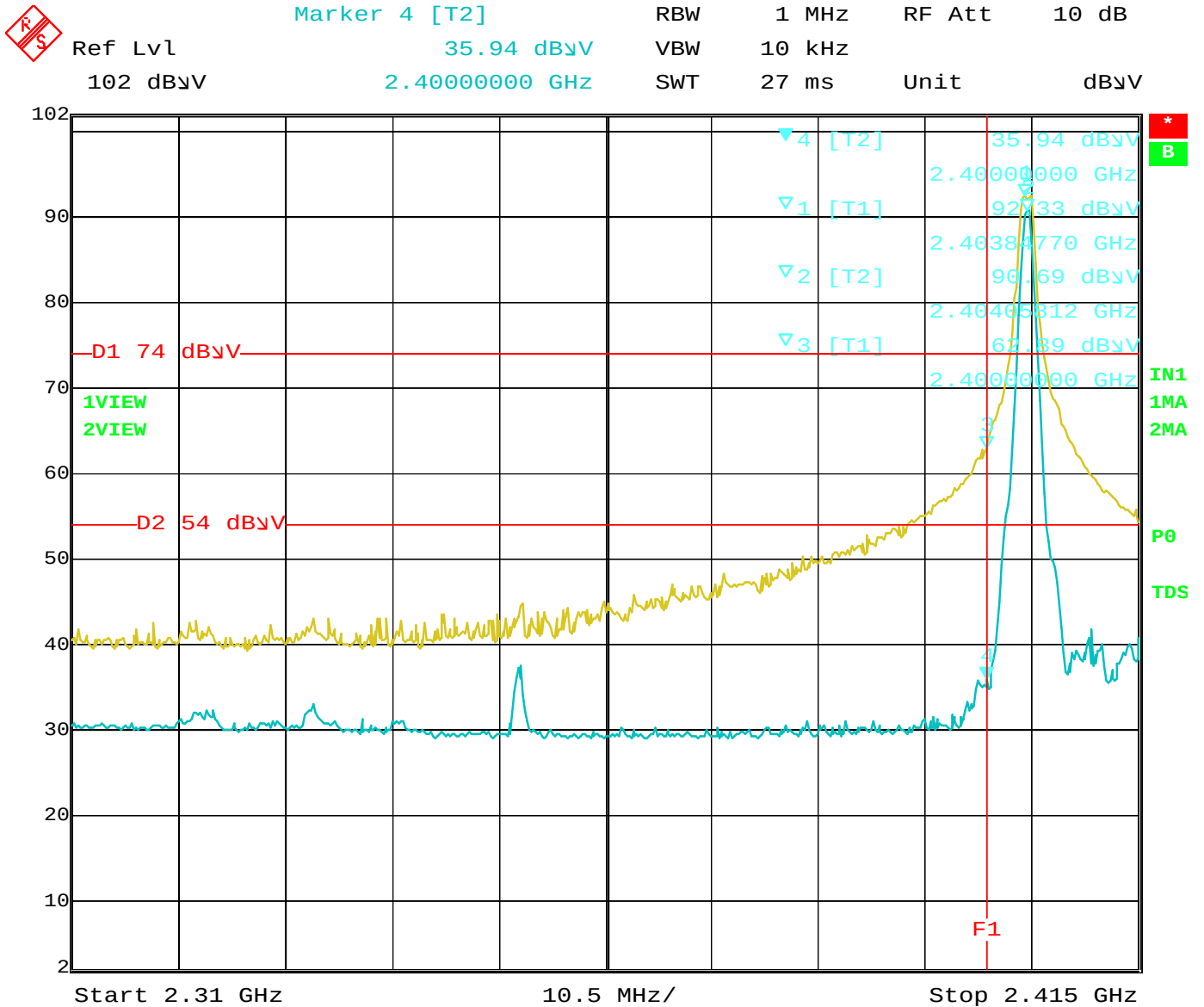
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	77.48	H	94	-16.52	Peak	1	225	
2480	74.34	H	94	-19.66	Avg	1	225	
4960	47.82	H	74	-26.18	Peak	1.25	155	
4960	40.66	H	54	-13.34	Avg	1.25	155	
7440	47.56	H	74	-26.44	Peak	1.25	135	
7440	37.38	H	54	-16.62	Avg	1.25	135	
9920	52.38	H	74	-21.62	Peak	1.25	125	
9920	41.13	H	54	-12.87	Avg	1.25	125	
12400								No Emission
12400								Detected
14880								No Emission
14880								Detected
17360								No Emission
17360								Detected
19840								No Emission
19840								Detected
22320								No Emission
22320								Detected
24800								No Emission
24800								Detected





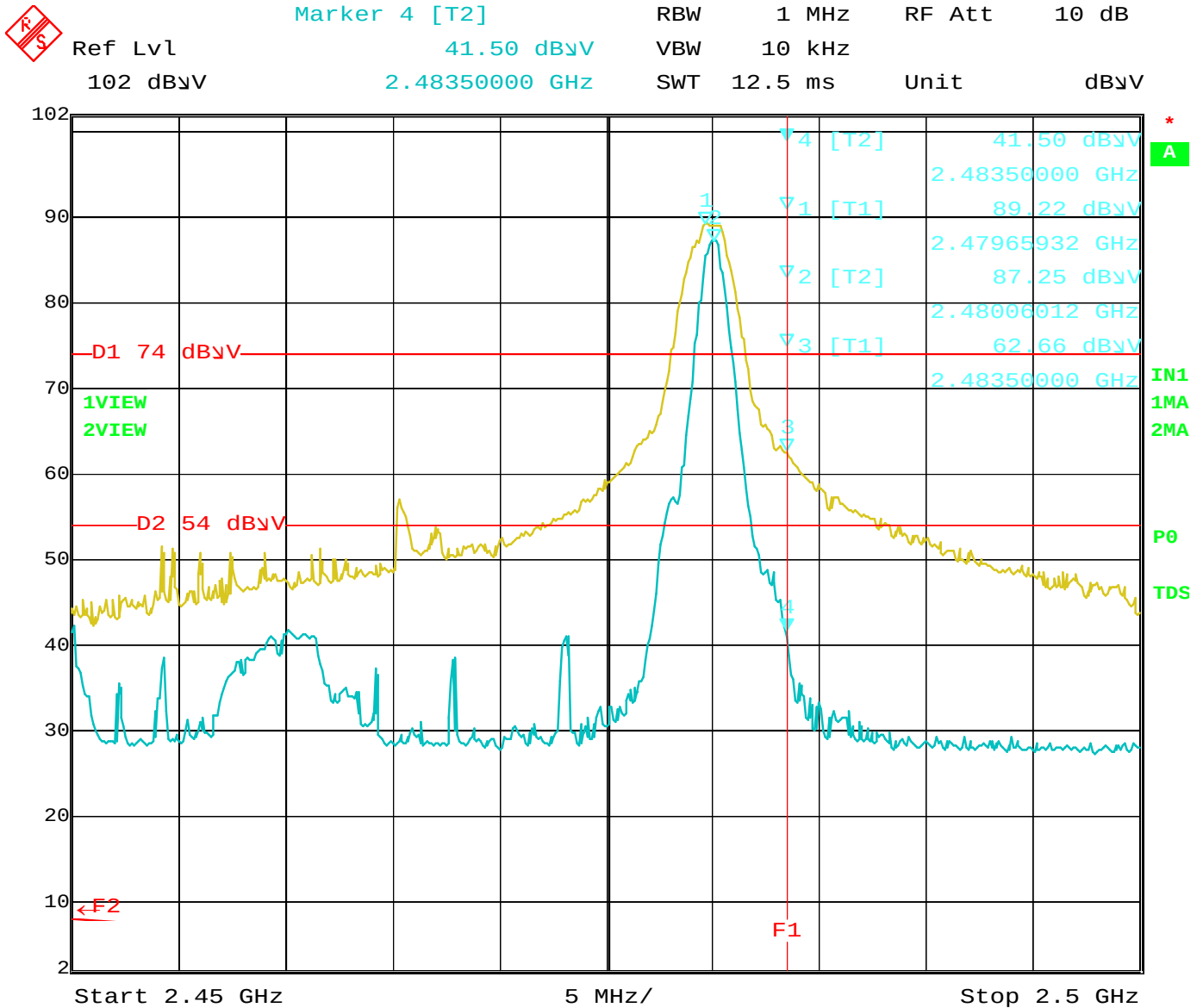
Date: 25. JAN. 2012 11:12:48

Band Edge – Low Channel – Vertical Polarization – Z-Axis Worst Case



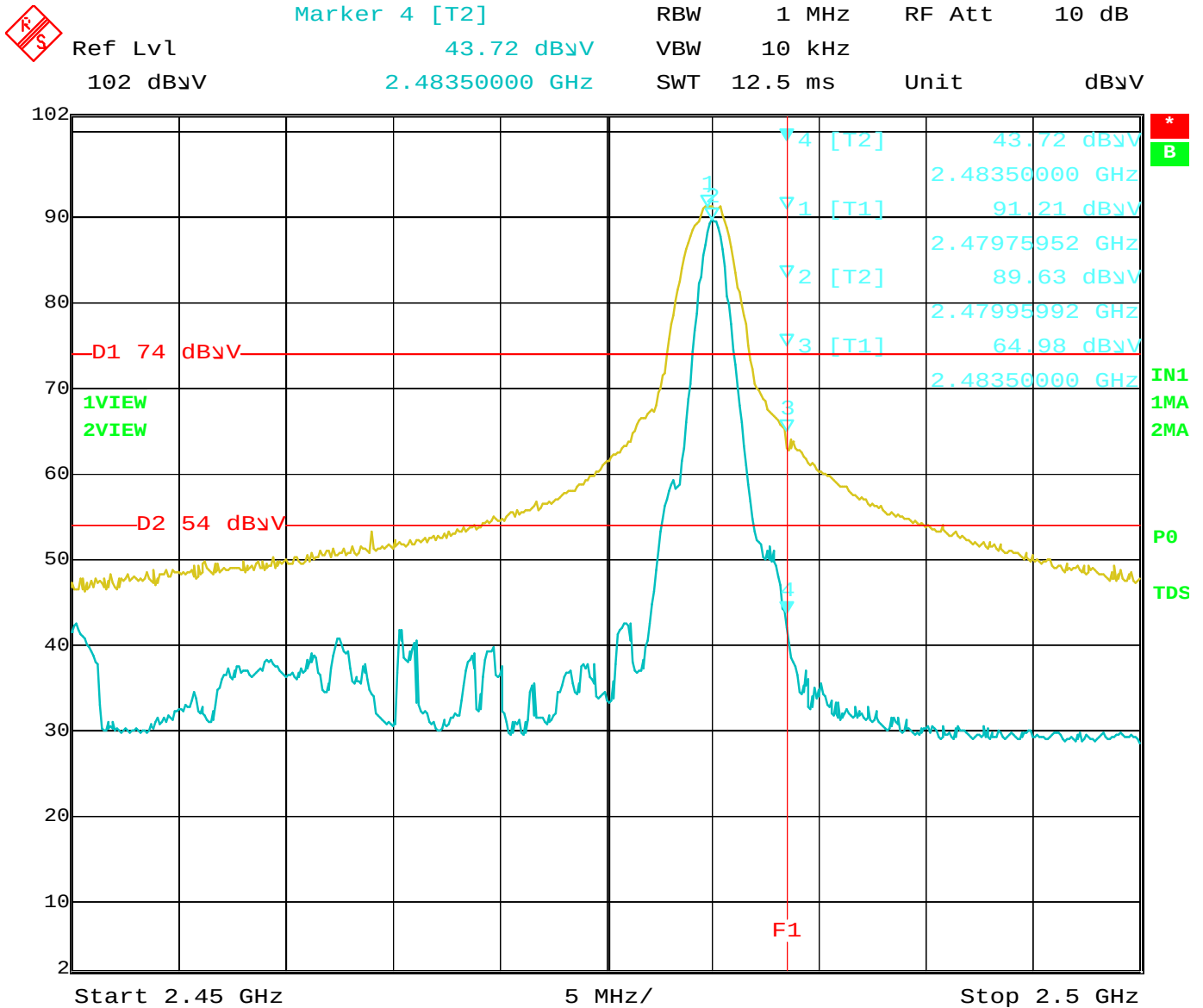
Date: 2.DEC.2011 10:22:02

Band Edge – Low Channel – Horizontal Polarization – X-Axis Worst Case



Date: 25.JAN.2012 10:30:33

Band Edge – High Channel – Vertical Polarization – Z-Axis Worst Case



Date: 2.DEC.2011 11:32:09

Band Edge - High Channel - Horizontal Polarization - X-Axis Worst Case