

*CLASS II PERMISSIVE CHANGE
TEST REPORT*

for

CORDLESS IMPACT WRENCH

MODEL: EYFNA1

Prepared for

C.E. ELECTRONICS, INC.
2107 INDUSTRIAL DRIVE
BRYAN, OHIO 43506

Prepared by: _____

KYLE FUJIMOTO

Approved by: _____

MICHAEL CHRISTENSEN

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

DATE: JANUARY 5, 2016

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	16	2	2	2	13	28	63

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TABLE OF CONTENTS

Section / Title	PAGE
GENERAL REPORT SUMMARY	4
SUMMARY OF TEST RESULTS	5
1. PURPOSE	6
2. ADMINISTRATIVE DATA	7
2.1 Location of Testing	7
2.2 Traceability Statement	7
2.3 Cognizant Personnel	7
2.4 Date Test Sample was Received	7
2.5 Disposition of the Test Sample	7
2.6 Abbreviations and Acronyms	7
3. APPLICABLE DOCUMENTS	8
4. DESCRIPTION OF TEST CONFIGURATION	9
4.1 Description of Test Configuration - Emissions	9
5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT	10
5.1 EUT and Accessory List	10
6. TEST SITE DESCRIPTION	12
6.1 Test Facility Description	12
6.2 EUT Mounting, Bonding and Grounding	12
7. TEST PROCEDURES	13
7.1 RF Emissions	13
7.1.1 Radiated Emissions 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	Diagrams and Charts • Test Setup Diagrams • Antenna and Effective Gain Factors
E	Data Sheets
F	Class I Permissive Change Information

LIST OF FIGURES

FIGURE	TITLE
1	Plot Map And Layout of Radiated Site
2	Layout of the Semi-Anechoic Test Chamber

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 certification, approval or endorsement by NVLAP, NIST or any agency of the federal government.

Device Tested: Cordless Impact Wrench
Model: EYFNA1
S/N: N/A

Product Description: See Expository Statement.

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

Customer: C.E. Electronics, Inc.
2107 Industrial Drive
Bryan, Ohio 43506

Test Date: December 15, 2015

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, ANSI C63.10

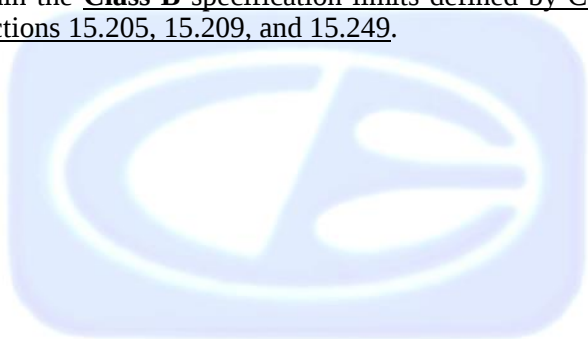
Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Spurious Radiated RF Emissions, 10 kHz – 25,000 MHz (Transmitter and Digital portion)	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 15.205, 15.209 and 15.249
2	Conducted RF Emissions, 150 kHz to 30 MHz	This test was not performed because the EUT operates on battery power and does not connect to the AC mains.

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Cordless Impact Wrench, Model: EYFNA1. 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; and Subpart C, sections 15.205, 15.209, and 15.249.**



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The emissions 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

C.E. Electronics, Inc.

Tony Casterline Systems Design Engineer

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer

Michael Christensen Lab Manager

2.4 Date Test Sample was Received

The test sample was received on December 15, 2015.

2.5 Disposition of the Test Sample

The test sample has not been returned to C.E. Electronics, Inc. as of the date of this test report.

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
N/A	Not Applicable
DNF	Do Not Fit
URC	Universal Remote Control

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators
ANSI C63.4 2014	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
ANSI C63.10 2013	American National Standard for Testing Unlicensed Wireless Devices

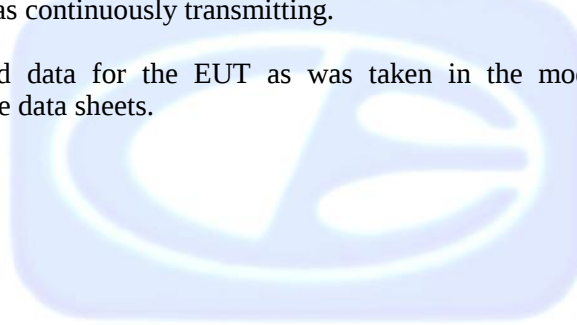
4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - Emissions

The Cordless Impact Wrench, Model: EYFNA1 (EUT) was tested as a stand alone unit.

The EUT was tested for emissions at the low, middle, and high channels while in the X, Y, and Z axis. The EUT was continuously transmitting.

The final radiated data for the EUT as was taken in the mode described above. Please see Appendix E for the data sheets.



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

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
CORDLESS IMPACT WRENCH	C.E. ELECTRONICS, INC.	EYFNA1	N/A	O4O-EYFPA

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
GENERAL TEST EQUIPMENT USED IN LAB D					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
EMI Receiver, 20 Hz – 26.5 GHz	Agilent Technologies	N9038A	MY51100115	April 3, 2015	1 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
CombiLog Antenna	Com-Power	AC-220	61060	September 3, 2015	1 Year
Preamplifier	Com-Power	PA-118	551024	March 6, 2015	1 Year
Preamplifier	Com-Power	PA-840	711013	May 13, 2014	2 Year
Loop Antenna	Com-Power	AL-130	17089	February 6, 2015	2 Year
Horn Antenna	Com-Power	AH-118	071175	February 26, 2014	2 Year
Horn Antenna	Com-Power	AH-826	0071957	N/A	N/A
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
System Controller	Sunol Sciences Corporation	SC110V	112213-1	N/A	N/A
Turntable	Sunol Sciences Corporation	2011VS	N/A	N/A	N/A
Antenna-Mast	Sunol Sciences Corporation	TWR95-4	112213-3	N/A	N/A

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

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

6.2 EUT Mounting, Bonding and Grounding

For frequencies 1 GHz and below: The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

For frequencies above 1 GHz: The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 1.5 meters above the ground plane.

The EUT was not grounded.

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 Radiated Emissions Test

The EMI Receiver was used as the measuring meter. A built-in, internal preamplifier was used to increase the sensitivity of the instrument. The EMI Receiver was initially used with the Analyzer mode feature activated. In this mode, the EMI receiver can then record the actual frequency to be measured. This final reading is then taken accurately in the EMI Receiver mode, which takes into account the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. A quasi-peak reading was taken only for those readings, which are marked accordingly on the data sheets.

For frequencies above 1 GHz, the readings were average by a “duty cycle correction factor”, derived from $20 \log(\text{dwell time} / 100 \text{ ms})$. This duty cycle correction factor was then subtracted from the peak reading.

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	Loop Antenna
150 kHz to 30 MHz	9 kHz	Loop Antenna
30 MHz to 1 GHz	120 kHz	Combilog Antenna
1 GHz to 25 GHz	1 MHz	Horn Antenna

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with 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.

Radiated Emissions Test (Continued)

The EUT was tested at a 3-meter test distance from 10 kHz to 25 GHz.

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 for radiated emissions. Please see Appendix E for the data sheets.



7.1.3 RF Emissions Test ResultsTable 1.0 RADIATED EMISSION RESULTS
Cordless Impact Wrench, Model: EYFNA1

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
2435 (V) (Z-Axis)	91.86	94.00	-2.14
2465 (V) (Z-Axis)	91.53	94.00	-2.47
7395 (H) (X-Axis)	51.25	54.00	-2.75
4820 (H) (Y-Axis)	51.02	54.00	-2.98
7230 (V) (Z-Axis)	50.82	54.00	-3.18
7230 (H) (Z-Axis)	50.82	54.00	-3.18

Notes:

(H) Horizontal

(V) Vertical

(Avg) Averaged Reading

* The complete emissions data is given in Appendix E of this report.

8. CONCLUSIONS

The Cordless Impact Wrench, Model: EYFNA1, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.



APPENDIX A***LABORATORY ACCREDITATIONS AND RECOGNITIONS***

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

LABORATORY ACCREDITATIONS AND RECOGNITIONS



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](http://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm) [https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm](http://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 Subpart B and FCC 15.249 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

Cordless Impact Wrench
Model: EYFNA1
S/N: N/A

There were no additional models covered under this report.



APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE

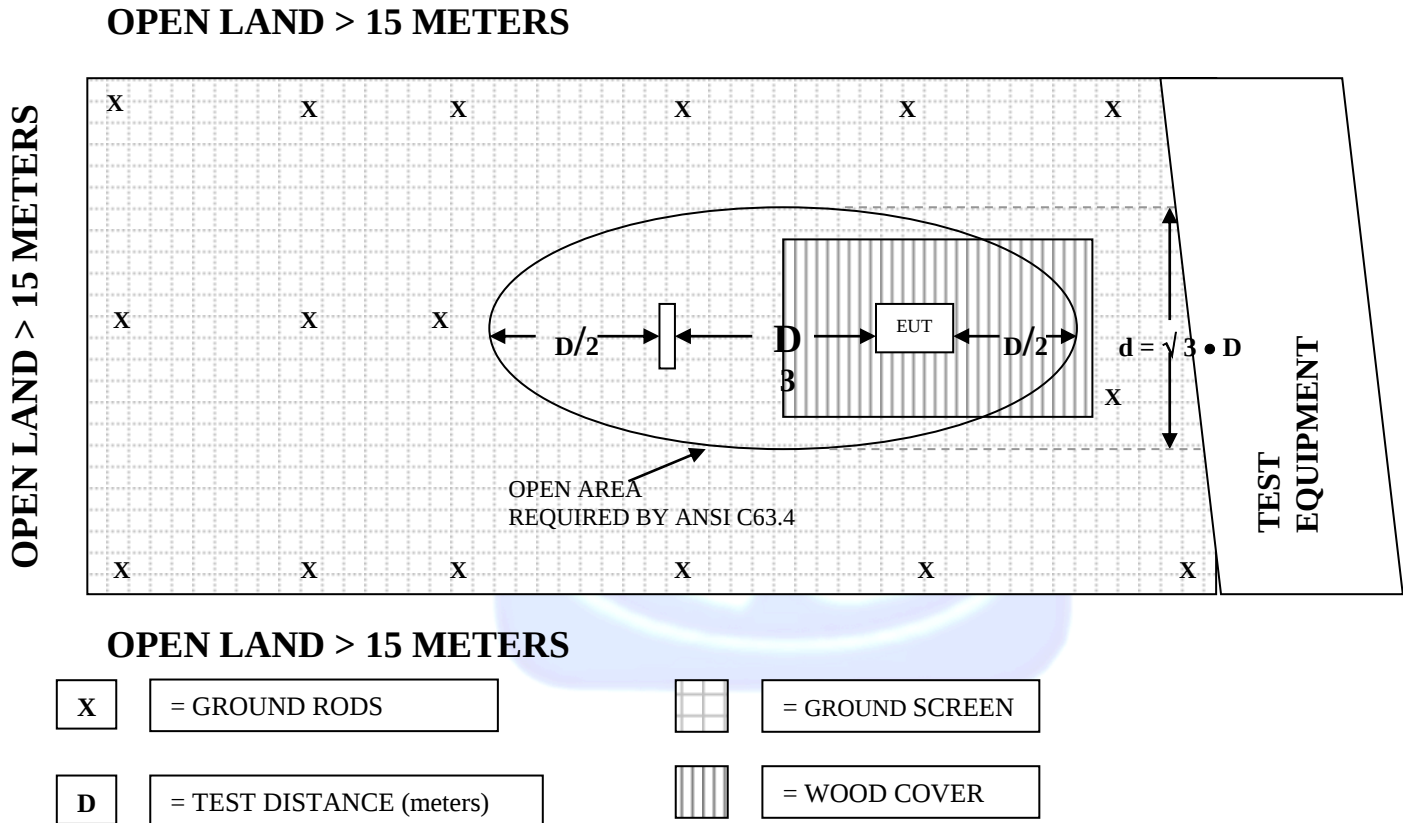
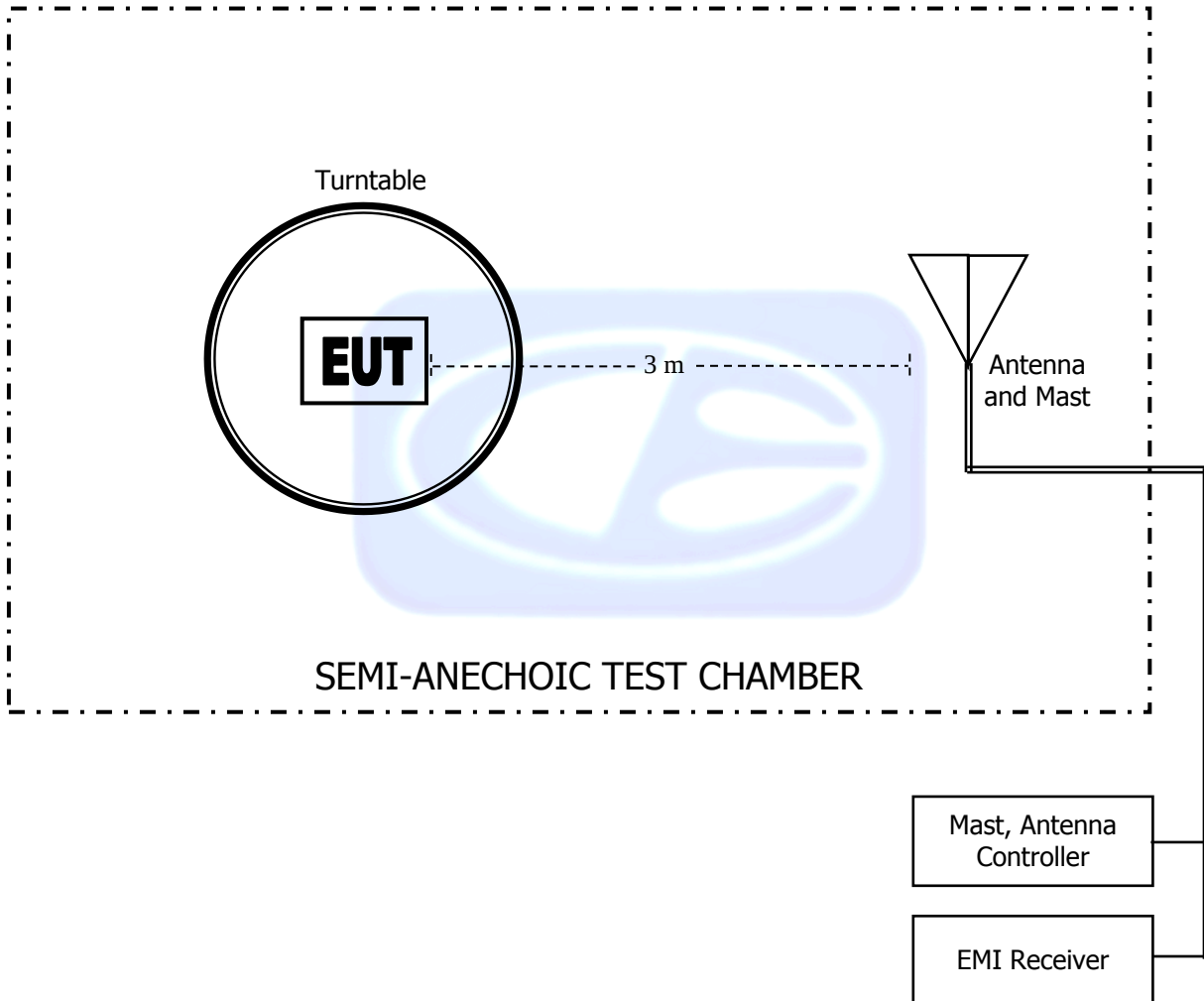


FIGURE 2: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER



COM-POWER AL-130**LOOP ANTENNA**

S/N: 17089

CALIBRATION DATE: FEBRUARY 6, 2015

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-33.18	18.32
0.01	-34.10	17.40
0.02	-38.65	12.85
0.03	-39.28	12.22
0.04	-40.09	11.41
0.05	-40.85	10.65
0.06	-40.88	10.62
0.07	-41.07	10.43
0.08	-41.04	10.46
0.09	-41.19	10.31
0.1	-41.20	10.30
0.2	-41.52	9.98
0.3	-41.53	9.97
0.4	-41.42	10.08
0.5	-41.53	9.97
0.6	-41.53	9.97
0.7	-41.43	10.07
0.8	-41.23	10.27
0.9	-41.13	10.37
1	-41.14	10.36
2	-40.80	10.70
3	-40.66	10.84
4	-40.61	10.89
5	-40.33	11.17
6	-40.53	10.97
7	-40.47	11.03
8	-40.48	11.02
9	-39.93	11.57
10	-39.81	11.69
15	-43.35	8.15
20	-39.16	12.34
25	-40.24	11.26
30	-43.18	8.32

COM-POWER AC-220**COMBILOG ANTENNA****S/N: 61060****CALIBRATION DATE: SEPTEMBER 3, 2015**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	24.00	200	13.00
35	24.30	250	15.30
40	25.40	300	18.20
45	21.50	350	17.90
50	22.50	400	18.60
60	15.40	450	19.80
70	12.70	500	21.60
80	11.10	550	22.40
90	13.40	600	23.70
100	13.80	650	24.30
120	15.40	700	24.00
125	15.40	750	24.50
140	13.10	800	24.30
150	17.20	850	26.30
160	13.20	900	26.90
175	14.20	950	26.00
180	14.30	1000	25.60

COM POWER AH-118**HORN ANTENNA****S/N: 071175****CALIBRATION DATE: FEBRUARY 26, 2014**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.23	10.0	38.43
1.5	25.84	10.5	40.19
2.0	28.14	11.0	40.49
2.5	29.51	11.5	41.39
3.0	31.20	12.0	42.02
3.5	32.17	12.5	43.30
4.0	31.40	13.0	42.77
4.5	31.86	13.5	40.18
5.0	34.82	14.0	42.59
5.5	34.38	14.5	41.74
6.0	36.31	15.0	41.84
6.5	34.81	15.5	38.48
7.0	37.48	16.0	39.52
7.5	36.98	16.5	37.85
8.0	36.66	17.0	41.33
8.5	38.47	17.5	44.96
9.0	37.22	18.0	48.50
9.5	37.86		

COM-POWER PA-118**PREAMPLIFIER**

S/N: 551024

CALIBRATION DATE: MARCH 6, 2015

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	39.76	6.0	38.77
1.1	40.46	6.5	38.46
1.2	40.05	7.0	38.27
1.3	40.58	7.5	38.77
1.4	39.50	8.0	39.25
1.5	39.92	8.5	38.63
1.6	40.40	9.0	39.58
1.7	40.10	9.5	42.12
1.8	40.49	10.0	38.53
1.9	38.86	11.0	40.21
2.0	41.53	12.0	41.15
2.5	41.05	13.0	40.51
3.0	40.29	14.0	40.32
3.5	40.82	15.0	39.47
4.0	40.88	16.0	39.88
4.5	41.37	17.0	39.79
5.0	40.73	18.0	40.61
5.5	39.05		

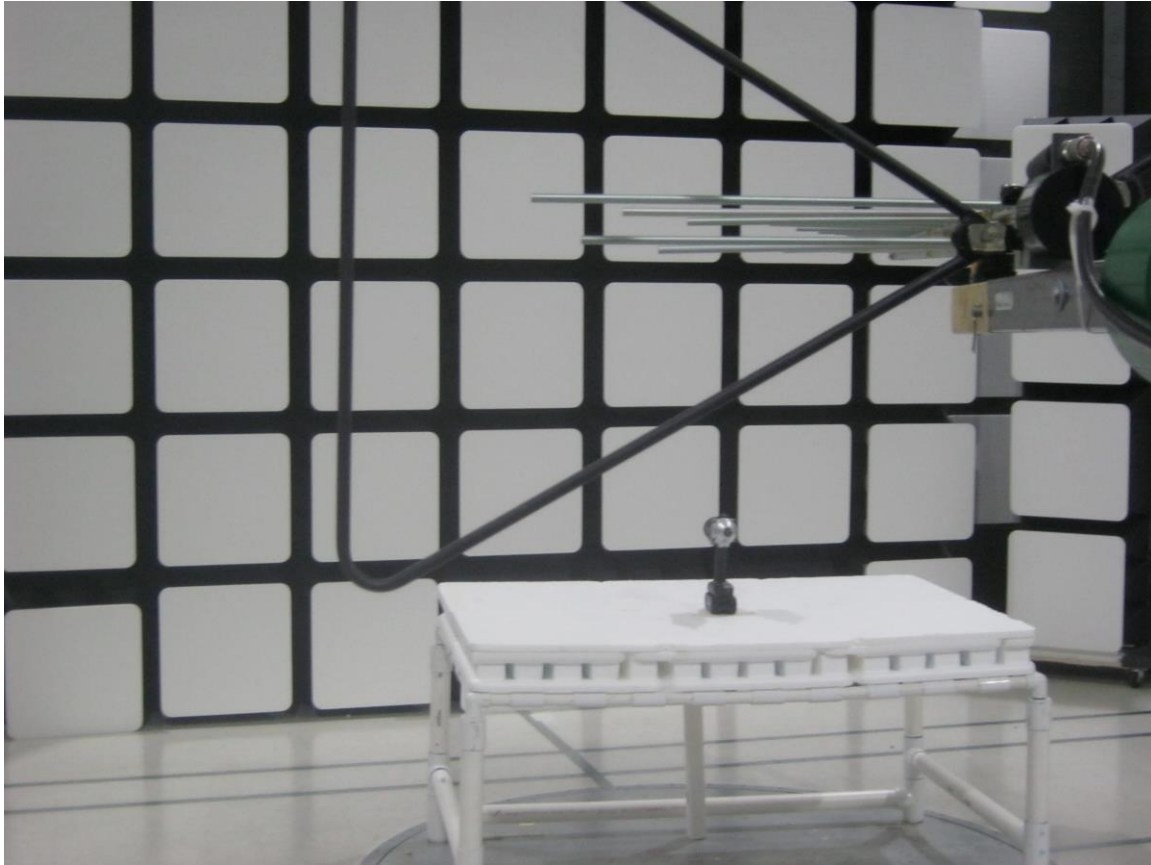
COM-POWER AH-826**HORN ANTENNA**

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-840**MICROWAVE PREAMPLIFIER****S/N: 711013****CALIBRATION DATE: MAY 13, 2014**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	25.19	31.0	25.69
19.0	24.48	31.5	25.74
20.0	24.39	32.0	26.35
21.0	24.73	32.5	26.64
22.0	23.49	33.0	25.98
23.0	24.23	33.5	24.68
24.0	24.59	34.0	24.61
25.0	25.32	34.5	23.78
26.0	25.66	35.0	24.74
26.5	25.99	35.5	24.39
27.0	26.26	36.0	23.46
27.5	25.33	36.5	23.71
28.0	24.49	37.0	26.35
28.5	24.74	37.5	23.49
29.0	25.93	38.0	25.42
29.5	26.28	38.5	24.87
30.0	26.17	39.0	22.60
30.5	26.11	39.5	20.57
		40.0	19.15

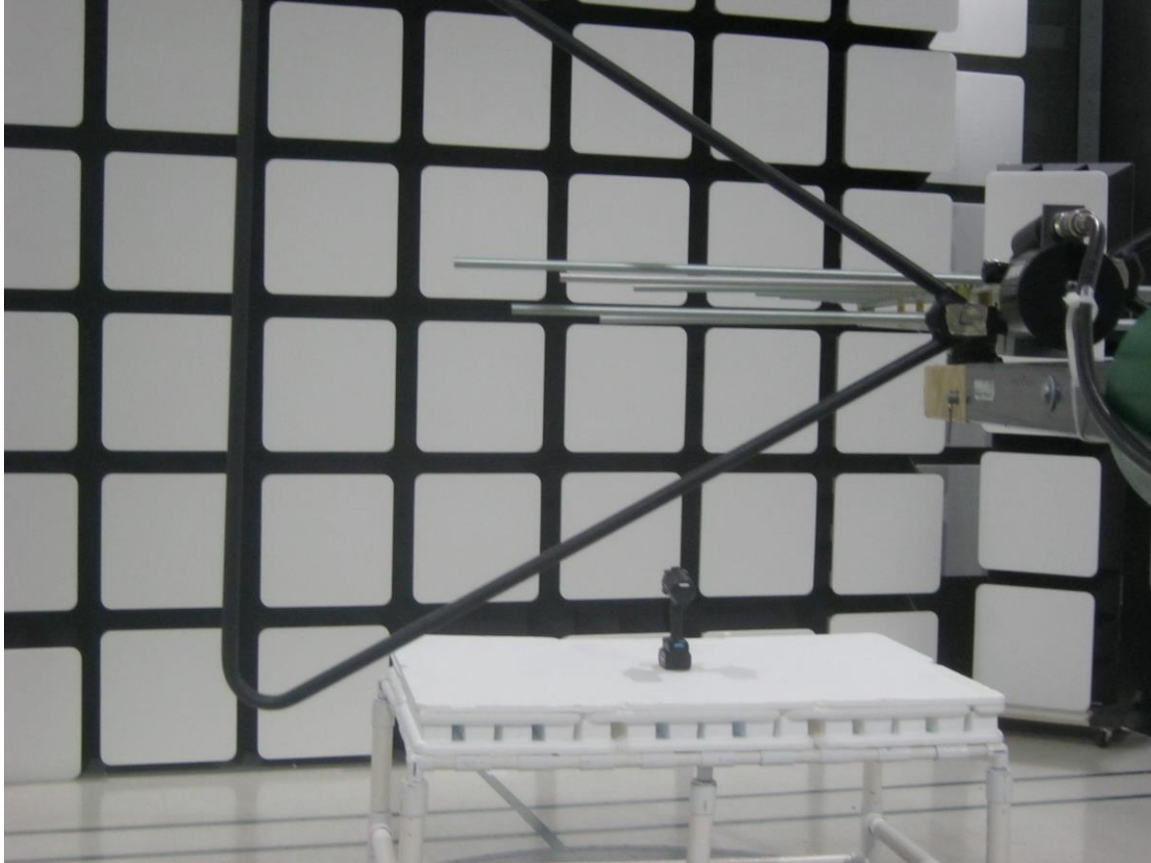


FRONT VIEW

C.E. ELECTRONICS, INC.
CORDLESS IMPACT WRENCH
MODEL: EYFNA1

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

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



REAR VIEW

C.E. ELECTRONICS, INC.
CORDLESS IMPACT WRENCH
MODEL: EYFNA1

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

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



FRONT VIEW

C.E. ELECTRONICS, INC.
CORDLESS IMPACT WRENCH
MODEL: EYFNA1

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

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



REAR VIEW

C.E. ELECTRONICS, INC.
CORDLESS IMPACT WRENCH
MODEL: EYFNA1

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

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

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1Date: 12/17/2015
Lab: D
Tested By: Kyle FujimotoLow Channel
X-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2410	83.72	V	94.00	-10.28	Peak	28.50	137.73	
4820	50.62	V	54.00	-3.38	Peak	92.50	146.50	
7230	49.58	V	54.00	-4.42	Peak	219.00	140.00	
9640								No Emissions Detected
12050								No Emissions Detected
14460								No Emissions Detected
16870								No Emissions Detected
19280								No Emissions Detected
21690								No Emissions Detected
24100								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

Low Channel
X-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2410	87.82	H	94.00	-6.18	Peak	241.50	127.58	
4820	49.28	H	54.00	-4.72	Peak	101.25	127.50	
7230	48.52	H	54.00	-5.48	Peak	220.00	127.58	
9640								No Emissions Detected
12050								No Emissions Detected
14460								No Emissions Detected
16870								No Emissions Detected
19280								No Emissions Detected
21690								No Emissions Detected
24100								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

Low Channel
Y-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2410	88.97	V	94.00	-5.03	Peak	0.00	117.25	
4820	48.26	V	54.00	-5.74	Peak	302.50	100.25	
7230	47.47	V	54.00	-6.53	Peak	11.00	146.80	
9640								No Emissions Detected
12050								No Emissions Detected
14460								No Emissions Detected
16870								No Emissions Detected
19280								No Emissions Detected
21690								No Emissions Detected
24100								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

Low Channel
Y-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2410	84.82	H	94.00	-9.18	Peak	132.25	217.91	
4820	51.02	H	54.00	-2.98	Peak	1.10	235.00	
7230	50.25	H	54.00	-3.75	Peak	209.50	123.34	
9640								No Emissions Detected
12050								No Emissions Detected
14460								No Emissions Detected
16870								No Emissions Detected
19280								No Emissions Detected
21690								No Emissions Detected
24100								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

Low Channel
Z-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2410	87.49	V	94.00	-6.51	Peak	1.00	85.00	
4820	44.86	V	54.00	-9.14	Peak	1.00	15.00	
7230	50.82	V	54.00	-3.18	Peak	1.10	190.00	
9640								No Emissions Detected
12050								No Emissions Detected
14460								No Emissions Detected
16870								No Emissions Detected
19280								No Emissions Detected
21690								No Emissions Detected
24100								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

Low Channel
Z-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2410	83.99	H	94.00	-10.01	Peak	1.00	0.00	
4820	44.12	H	54.00	-9.88	Peak	1.15	160.00	
7230	50.82	H	54.00	-3.18	Peak	1.50	0.00	
9640								No Emissions Detected
12050								No Emissions Detected
14460								No Emissions Detected
16870								No Emissions Detected
19280								No Emissions Detected
21690								No Emissions Detected
24100								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

Middle Channel
X-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2435	89.02	V	94.00	-4.98	Peak	345.50	200.95	
4870	42.25	V	54.00	-11.75	Peak	344.25	100.25	
7305	46.55	V	54.00	-7.45	Peak	85.00	200.95	
9740								No Emissions Detected
12175								No Emissions Detected
14610								No Emissions Detected
17045								No Emissions Detected
19480								No Emissions Detected
21915								No Emissions Detected
24350								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

Middle Channel
X-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2435	88.61	H	94.00	-5.39	Peak	276.00	211.52	
4870	49.52	H	54.00	-4.48	Peak	115.00	197.97	
7305	42.54	H	54.00	-11.46	Peak	120.25	125.55	
9740								No Emissions Detected
12175								No Emissions Detected
14610								No Emissions Detected
17045								No Emissions Detected
19480								No Emissions Detected
21915								No Emissions Detected
24350								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: B
Tested By: Kyle Fujimoto

**Middle Channel
Y-Axis - Vertical**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2435	89.07	V	94.00	-4.93	Peak	5.00	121.61	
4870	49.58	V	54.00	-4.42	Peak	215.50	140.41	
7305	49.53	V	54.00	-4.47	Peak	65.25	132.53	
9740								No Emissions Detected
12175								No Emissions Detected
14610								No Emissions Detected
17045								No Emissions Detected
19480								No Emissions Detected
21915								No Emissions Detected
24350								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

Middle Channel
Y-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2435	88.59	H	94.00	-5.41	Peak	311.50	128.65	
4870	50.15	H	54.00	-3.85	Peak	131.75	111.34	
7305	49.98	H	54.00	-4.02	Peak	355.00	102.25	
9740								No Emissions Detected
12175								No Emissions Detected
14610								No Emissions Detected
17045								No Emissions Detected
19480								No Emissions Detected
21915								No Emissions Detected
24350								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel
Z-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2435	91.86	V	94.00	-2.14	Peak	238.50	134.92	
4870	46.26	V	54.00	-7.74	Peak	69.75	147.46	
7305	42.58	V	54.00	-11.42	Peak	138.25	152.25	
9740								No Emissions Detected
12175								No Emissions Detected
14610								No Emissions Detected
17045								No Emissions Detected
19480								No Emissions Detected
21915								No Emissions Detected
24350								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

Middle Channel
Z-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2435	88.01	H	94.00	-5.99	Peak	337.75	158.98	
4870	46.52	H	54.00	-7.48	Peak	115.75	171.41	
7305	49.32	H	54.00	-4.68	Peak	3.00	177.54	
9740								No Emissions Detected
12175								No Emissions Detected
14610								No Emissions Detected
17045								No Emissions Detected
19480								No Emissions Detected
21915								No Emissions Detected
24350								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

High Channel
X-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2465	89.22	V	94.00	-4.78	Peak	27.50	124.00	
4930	50.12	V	54.00	-3.88	Peak	350.00	102.00	
7395	49.25	V	54.00	-4.75	Peak	325.00	105.00	
9860								No Emissions Detected
12325								No Emissions Detected
14790								No Emissions Detected
17255								No Emissions Detected
19720								No Emissions Detected
22185								No Emissions Detected
24650								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

High Channel
X-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2465	90.75	H	94.00	-3.25	Peak	322.25	155.94	
4930	49.56	H	54.00	-4.44	Peak	103.25	186.74	
7395	51.25	H	54.00	-2.75	Peak	192.00	186.74	
9860								No Emissions Detected
12325								No Emissions Detected
14790								No Emissions Detected
17255								No Emissions Detected
19720								No Emissions Detected
22185								No Emissions Detected
24650								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

High Channel
Y-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2465	88.11	V	94.00	-5.89	Peak	186.25	142.62	
4930	49.58	V	54.00	-4.42	Peak	34.50	142.62	
7395	48.25	V	54.00	-5.75	Peak	36.50	145.65	
9860								No Emissions Detected
12325								No Emissions Detected
14790								No Emissions Detected
17255								No Emissions Detected
19720								No Emissions Detected
22185								No Emissions Detected
24650								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

High Channel
Y-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2465	86.25	H	94.00	-7.75	Peak	192.75	149.19	
4930	45.69	H	54.00	-8.31	Peak	145.75	152.25	
7395	47.25	H	54.00	-6.75	Peak	144.25	165.25	
9860								No Emissions Detected
12325								No Emissions Detected
14790								No Emissions Detected
17255								No Emissions Detected
19720								No Emissions Detected
22185								No Emissions Detected
24650								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

High Channel
Z-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2465	91.53	V	94.00	-2.47	Peak	68.50	148.35	
4930	48.58	V	54.00	-5.42	Peak	45.26	147.25	
7395	47.52	V	54.00	-6.48	Peak	44.36	145.21	
9860								No Emissions Detected
12325								No Emissions Detected
14790								No Emissions Detected
17255								No Emissions Detected
19720								No Emissions Detected
22185								No Emissions Detected
24650								No Emissions Detected

FCC 15.249

C.E. Electronics, Inc.
Cordless Impact Wrench
Model: EYFNA1

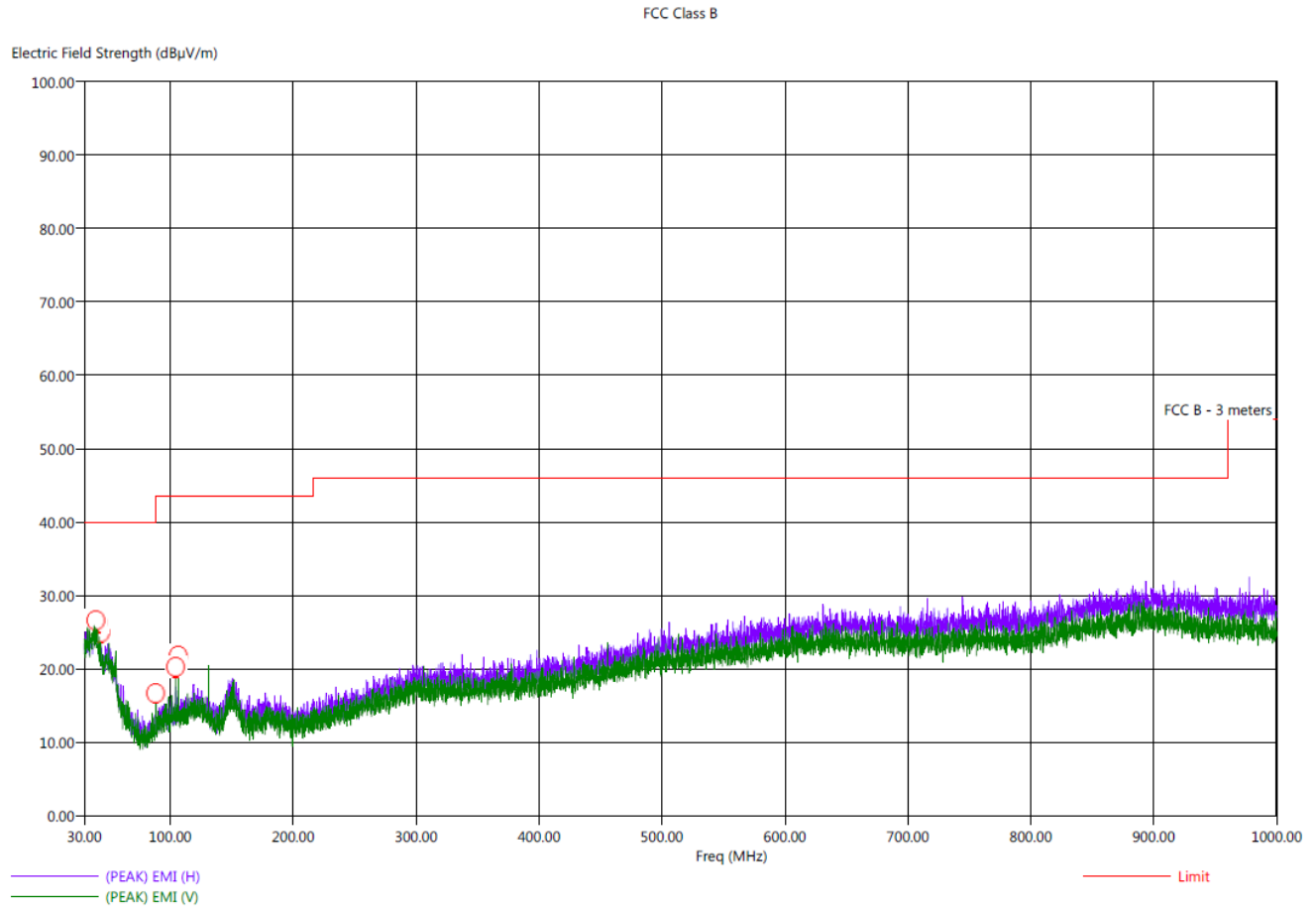
Date: 12/17/2015
Lab: D
Tested By: Kyle Fujimoto

High Channel
Z-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2465	88.33	H	94.00	-5.67	Peak	364.00	151.82	
4930	48.65	H	54.00	-5.35	Peak	165.50	185.25	
7395	49.21	H	54.00	-4.79	Peak	172.25	195.36	
9860								No Emissions Detected
12325								No Emissions Detected
14790								No Emissions Detected
17255								No Emissions Detected
19720								No Emissions Detected
22185								No Emissions Detected
24650								No Emissions Detected

Title: Pre-Scan - 30-1000 MHz - FCC Class B
 File: Agilent - Radiated Pre-Scan - 30-1000 MHz - FCC Class B - 12-18-2015.set
 Operator: Kyle Fujimoto
 EUT Type: Cordless Impact Wrench
 EUT Condition: The EUT is continuously transmitting
 Customer: C.E. Electronics, Inc.
 Model: EYFNA1
 S/N: N/A

12/18/2015 3:53:42 PM
 Sequence: Preliminary Scan



Note #1: No emissions were detected below 30 MHz

Note #2: No emissions were detected above 1GHz for non-harmonic emissions from the EUT.

Note #3: No emissions were detected above 1 GHz for the digital portion of the EUT.

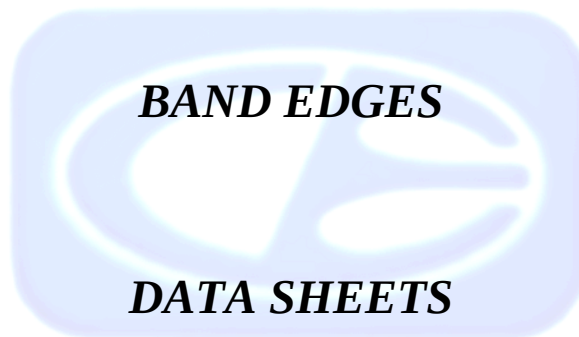
Title: Radiated Final - 30-1000 MHz - FCC Class B
File: Agilent - Radiated Final Scan - 30-1000 MHz - FCC Class B - 12-16-2015.set
Operator: Kyle Fujimoto
EUT Type: Cordless Impact Wrench
EUT Condition: The EUT is continuously transmitting
Comments: Customer: C.E. Electronics, Inc.
Model: EYFPA1

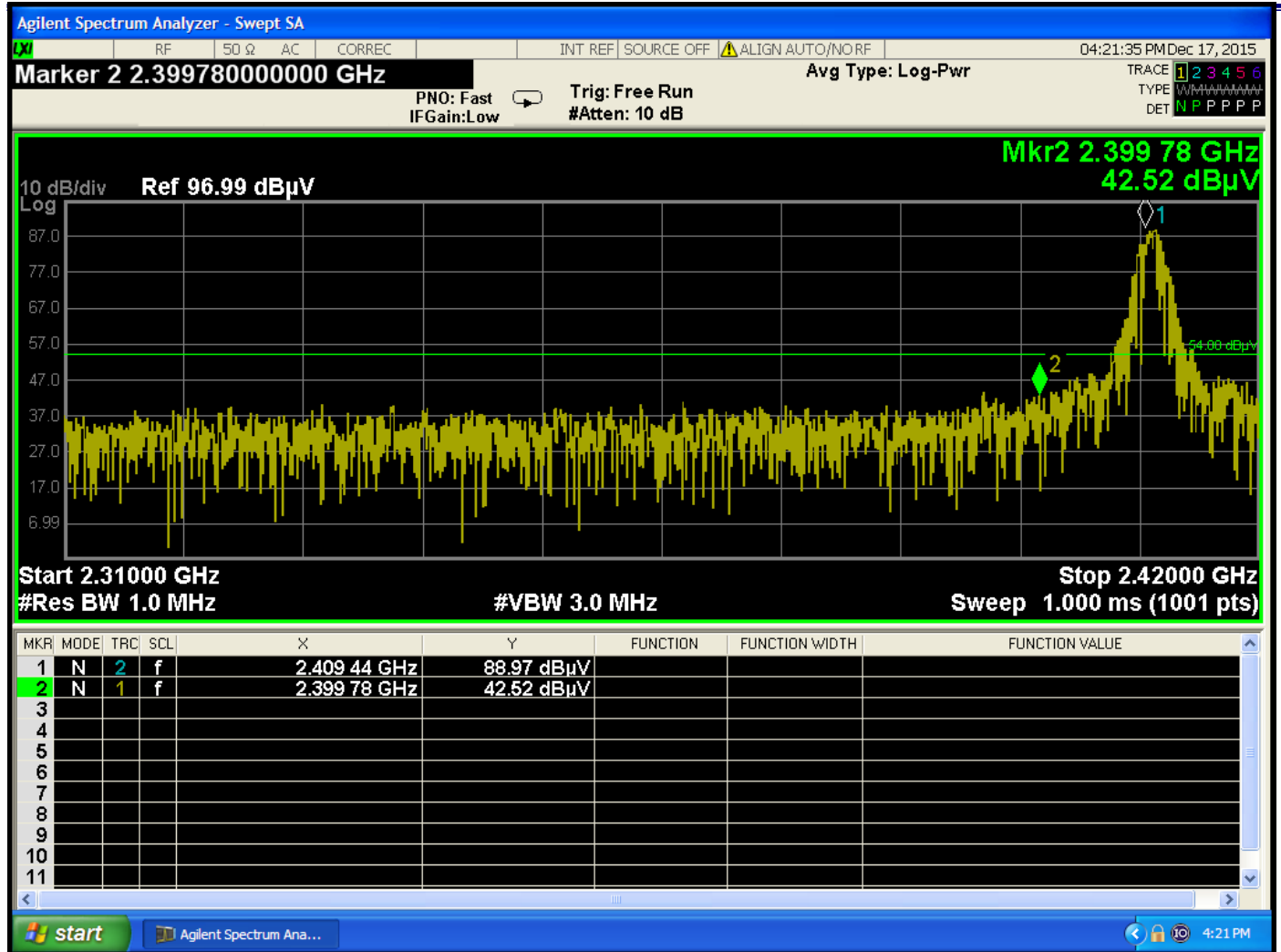
12/18/2015 4:18:19 PM
Sequence: Final Measurements

FCC Class A 30 MHz - 1 GHz

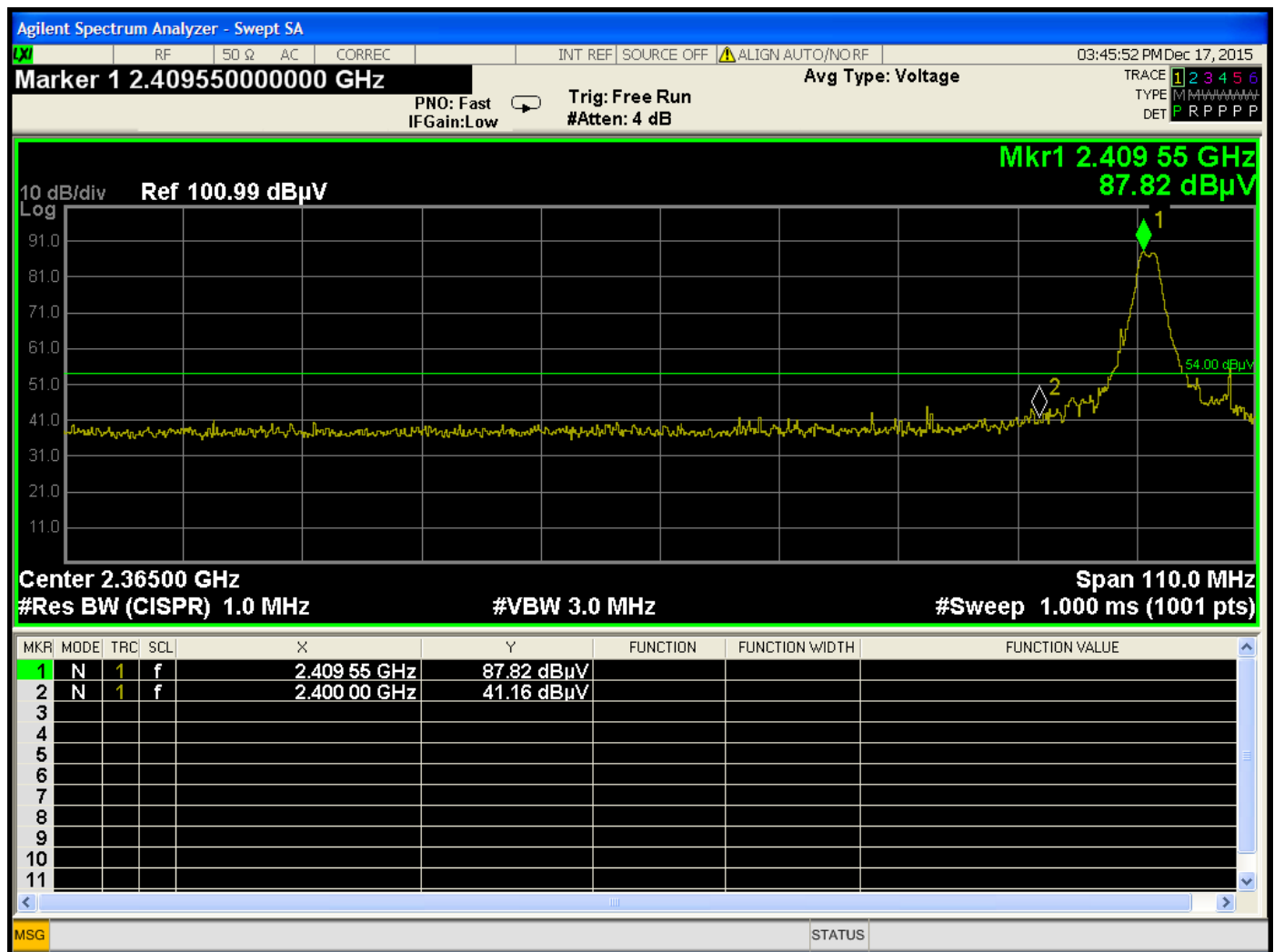
Freq (MHz)	Pol	(PEAK) EMI (dBμV/m)	(OP) EMI (dBμV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBμV/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deq)	Twr Ht (cm)
36.10	H	27.12	22.40	-12.88	-17.60	40.00	24.57	0.40	347.00	300.71
38.80	H	27.29	23.09	-12.71	-16.91	40.00	25.19	0.42	298.25	316.65
39.80	V	28.21	23.11	-11.79	-16.89	40.00	25.32	0.43	310.50	222.68
88.10	V	22.90	20.69	-20.60	-22.81	43.50	12.98	0.65	280.00	159.40
104.30	V	22.26	19.05	-21.24	-24.45	43.50	14.17	0.74	60.75	348.83
106.50	V	28.21	26.22	-15.29	-17.28	43.50	14.35	0.75	360.25	367.70



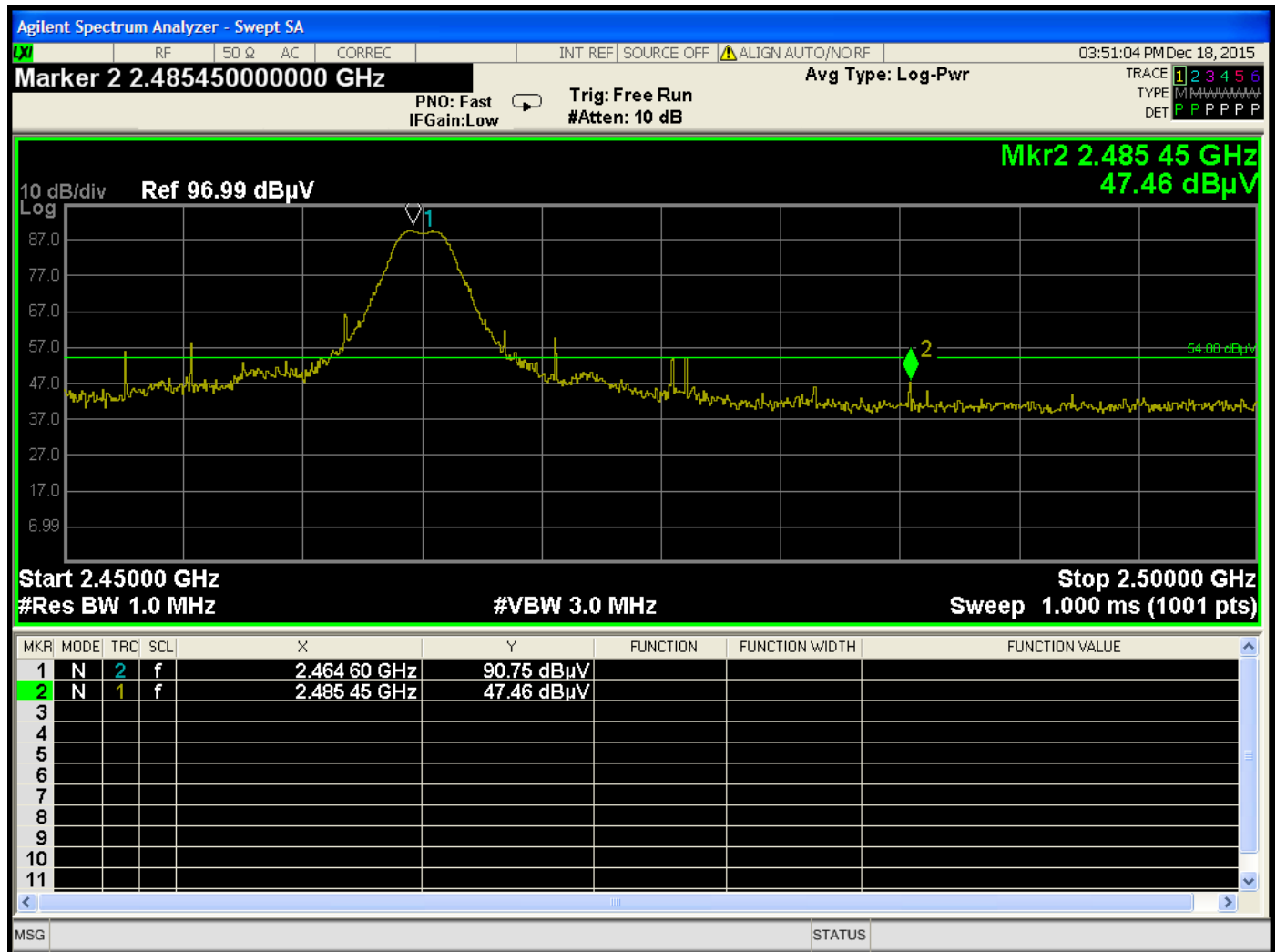




Band Edge – Low Channel – Vertical Polarization – Y-Axis Worst Case



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



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

