FCC PART 15, SUBPART B and C
TEST REPORT

for

LoRa TRANSCEIVER MODULE

MODEL: TL900

Prepared for

APPLIED WIRELESS, INC.
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DATE: SEPTEMBER 9, 2016

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
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NVLAP® TESTING
NVLAP LAB CODE 200528-0

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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:	Lo Ra Transceiver Module Model: TL900 S/N: N/A
Product Description:	The EUT is an RF Module.
Modifications:	The EUT was not modified during the testing.
Customer:	Applied Wireless, Inc. 1250 Avenida Acaso, Unit F Camarillo, California 93012
Test Dates:	July 19, 22, 27, and 28, 2016

Test Specifications covered by accreditation:

NVLAP®
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Emissions requirements
CFR Title 47, Part 15, Subpart B; and
Subpart C, sections 15.205, 15.207, 15.209, and 15.247

Test Procedure: ANSI C63.4 and ANSI C63.10

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	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, section 15.207
2	Spurious Radiated RF Emissions, 30 MHz – 1000 MHz	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, section 15.209
3	Spurious Radiated RF Emissions, 10 kHz – 30 MHz and 1000 MHz – 9300 MHz	The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, section 15.247(d)
4	Fundamental and Emissions produced by the intentional radiator in non-restricted bands, 10 kHz – 9.3 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(d)
5	Emissions produced by the intentional radiator in restricted bands, 10 kHz – 9.3 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209, and section 15.247 (d)
6	DTS Bandwidth	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (a)(2)
7	Peak Power Output	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(3)
8	RF Conducted Antenna Test	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (d)
9	Peak Power Spectral Density from the Intentional Radiator to the Antenna	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (e)

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Lo Ra Transceiver Module, Model: TL900. The emissions measurements were performed according to the measurement procedure described in ANSI C63.10 and 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, 15.207, 15.209, and 15.247.

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

Applied Wireless

Mark Simon	VP, Engineering
Dave Nichols	President

Compatible Electronics Inc.

Kyle Fujimoto	Test Engineer
Michael Christensen	Lab Manager, Brea Division

2.4 Date Test Sample was Received

The test sample was received on July 19, 2016.

2.5 Disposition of the Test Sample

The test sample has not been returned to Applied Wireless 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

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
ANSI C63.4 2014	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
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators
KDB 558074 D01 v03r05	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – Emissions

The Lo Ra Transceiver Module Model: TL900 (EUT) was mounted directly to a host PCB and was tested with both a ½ wave dipole antenna and wired antenna. The EUT was tested in three orthogonal axis. During the transmitter testing, the EUT was continuously transmitting. During the receiver testing, the EUT was continuously receiving.

The EUT was tested in the X, Y and Z axis. The X orientation is when the EUT is parallel to the ground. The Y orientation is when the EUT is perpendicular to the ground mounted vertically. The Z orientation is when the EUT is perpendicular to the ground mounted horizontally.

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. 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

Cable 1 This a 2-meter unshielded cable connecting the EUT to the power supply. The cable has a 1/8 inch power connector at the EUT end.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
LO RA TRANSCEIVER MODULE	APPLIED WIRELESS	TL900	N/A	QY4-618
POWER SUPPLY	CULL POWER	SAW-120500	N/A	N/A
HOST PCB BOARD	APPLIED WIRELESS	400655	N/A	N/A

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
RF EMISSIONS TEST EQUIPMENT					
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	Keysight	N9038A	MY51210150	December 29, 2015	1 Year
CombiLog Antenna	Com-Power	AC-220	61060	September 3, 2015	1 Year
Preamplifier	Com-Power	PAM-118A	551024	May 12, 2016	1 Year
Loop Antenna	Com-Power	AL-130	17089	February 6, 2015	2 Year
Horn Antenna	Com-Power	AH-118	071175	February 26, 2016	2 Year
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
LISN (EUT)	Com-Power	LI-215A	191951	June 9, 2015	2 Year
Transient Limiter	Com-Power	252A910	N/A	October 14, 2015	1 Year

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. CHARACTERISTICS OF THE TRANSMITTER

7.1 Channel Description and Frequencies

The EUT operates on a low channel of 903.05 MHz and a high channel of 926.31 MHz.

7.2 Antenna Gain

See the antenna exhibit for the antenna gain.

8. TEST PROCEDURES

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

8.1 RF Emissions

8.1.1 Conducted Emissions Test

The EMI Receiver was used as a measuring meter. A transient limiter was used for the protection of the EMI Receiver input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the EMI 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 computer software. The final qualification data is located in Appendix E.

The six highest reading are listed in Table 1.0.

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, Section 15.207 for conducted emissions. Please see Appendix E for the data sheets.

8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The EMI Receiver was used as the measuring meter. Below 1 GHz, a built-in, internal preamplifier was used to increase the sensitivity of the instrument. At frequencies above 1 GHz, external preamplifiers were used. The Com Power Microwave Preamplifier Model: PA-118 was used for frequencies above from 1 GHz to 9.3 GHz. 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.

The frequencies above 1 GHz were averaged by using the RMS detector function on the EMI Receiver.

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 9.3 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.

The six highest reading are listed in Table 2.0.

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 15.247 (d) for radiated emissions. Please see Appendix E for the data sheets.

8.1.3 RF Emissions Test Results

Table 1.0 CONDUCTED EMISSION RESULTS
Lo Ra Transceiver Module, Model: TL900

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
0.342 (BL)(TX)(Wired)	43.82 (A)	49.21	-5.39
0.346 (BL)(Tx)(Wired)	43.81 (A)	49.20	-5.39
0.338 (BL)(Tx)(Wired)	43.32 (A)	49.25	-5.92
0.330 (BL)(Tx)(Wired)	41.78 (A)	49.28	-7.51
0.334 (BL)(Tx)(Wired)	41.66 (A)	49.28	-7.63
0.326 (BL)(Tx)(Wired)	40.67 (A)	49.31	-8.64

Table 2.0 RADIATED EMISSION RESULTS
Lo Ra Transceiver Module, Model: TL900

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
3657.3 (H)(Dipole)(Z-Axis)	51.16 (A)	53.97	-2.81
3657.3 (V)(Dipole)(Y-Axis)	50.66 (A)	53.97	-3.31
8336.79 (V)(Dipole)(Z-Axis)	50.36 (A)	53.97	-3.61
8336.79 (V)(Dipole)(Y-Axis)	50.30 (A)	53.97	-3.67
3612.28 (H)(Dipole)(Z-Axis)	50.04 (A)	53.97	-3.93
5418.12 (H)(Wired)(X-Axis)	49.35 (A)	53.97	-4.62

Notes:

Pk	Peak Reading	A	Average Reading
H	Horizontal Polarization	V	Vertical Polarization
QP	Quasi-Peak Reading		

8.2 DTS Bandwidth

The DTS Bandwidth was measured using the EMI Receiver. The bandwidth was measured using a direct connection from the EUT. The following steps were performed for measuring the DTS Bandwidth.

1. Set RBW = 100 kHz
2. Set the video bandwidth (VBW) to equal or greater than 3 times the RBW
3. Detector = Peak
4. Trace Mode = Max Hold
5. Sweep = Auto Couple
6. Allow the trace to stabilize
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(2).

8.3 Peak Output Power

The Peak Output Power was measured using the EMI Receiver. The peak output power was measured using a direct connection from the EUT. The resolution bandwidth was 3 MHz and the video bandwidth was 10 MHz. The cable loss was also added back into the reading using the reference level offset. The Peak Output Power was then taken.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (b)(3).

8.4 Emissions in Non-Restricted Bands

The emissions in the non-restricted frequency bands measurements were performed using the EMI receiver directly connected to the EUT. The reference level was established by setting the instrument center frequency to DTS channel center frequency. The span was set to ≥ 1.5 times the DTS bandwidth. The RBW was set to 100 kHz and the VBW was set to 300 kHz. A peak detector was used with sweep set to auto. A max hold trace was used and allowed to fully stabilize. The peak marker function was used to determine the level and 20 dB below that was the reference level. For emission level measurement, the center frequency and span were set to encompass the frequency range to be measured. The RBW was set to 100 kHz and the VBW was set to 300 kHz. A peak detector was used with a sweep time set to auto. The number of measurement points were greater than the span/RBW. A max hold trace was used and allowed to fully stabilize. The peak marker function was used to determine the maximum amplitude level. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d).

8.5 RF Band Edges

The RF band edges were taken at 902 MHz when the EUT was on the low channel and 928 MHz when the EUT was on the high channel using the EMI Receiver. The band edges were measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The RBW was set to 100 kHz and the VBW was set to 300 kHz. A peak detector was used with sweep set to auto. A max hold trace was used and allowed to fully stabilize. The peak marker function was used to determine the peak level and 20 dB below at the band edge.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). Please see the data sheets located in Appendix E.

8.6 Spectral Density Test

The spectrum density output was measured using the EMI Receiver. The spectral density output was measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The following steps were performed for measuring the spectral density.

1. Set analyzer center frequency to DTS channel center frequency
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to 3 kHz <= RBW <= 100 kHz
4. Set the VBW >= 3 X RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize
9. Use the peak marker function to determine the maximum amplitude level within the RBW
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (e).

9. CONCLUSIONS

The Lo Ra Transceiver Module, Model: TL900, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B, and Subpart C, sections 15.205, 15.207, 15.209 and 15.247.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP®
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For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025.

For the most up-to-date version of our scopes and certificates please visit
http://celectronics.com/quality/scope/

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."

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 15.247 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.

The EUT was not modified during the testing.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Lo Ra Transceiver Module
Model: TL900
S/N: N/A

There are no additional models covered under this report.

APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER

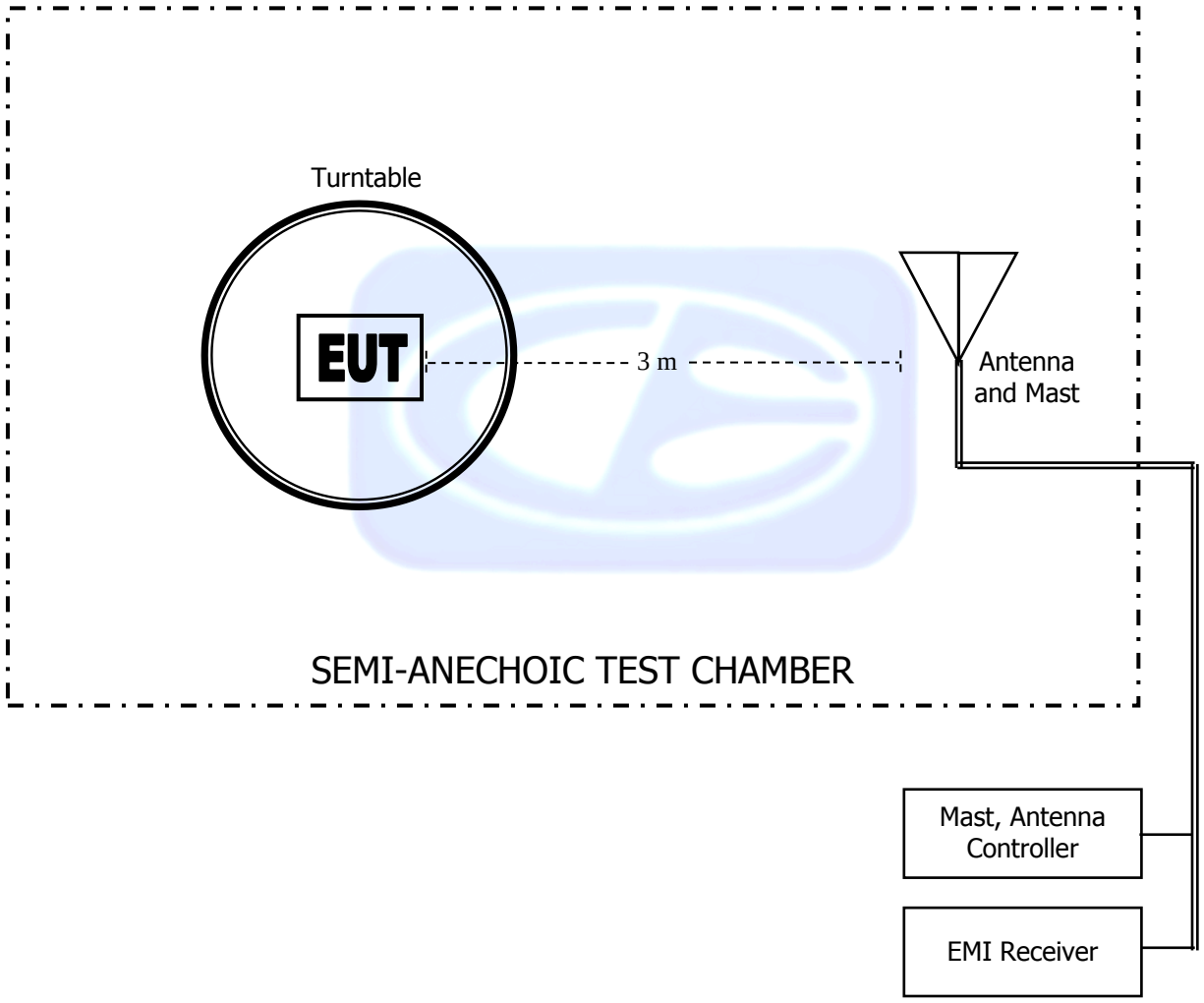
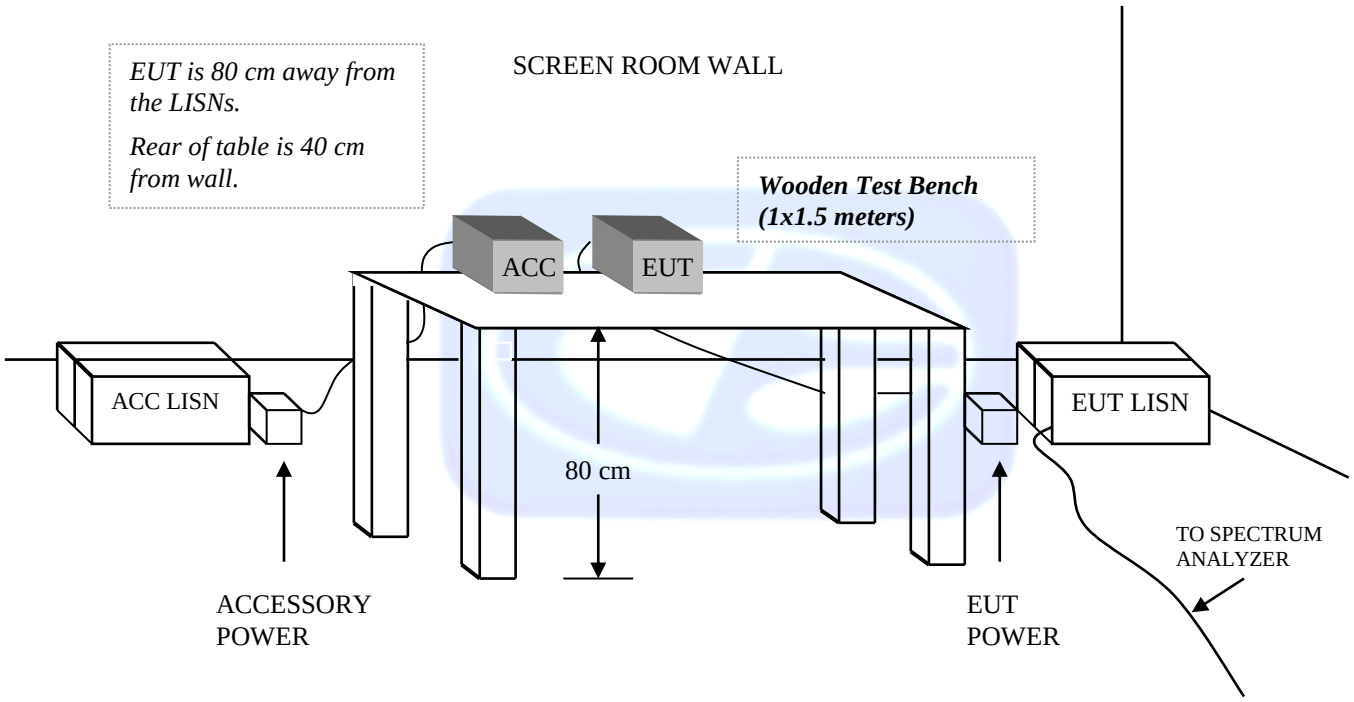


FIGURE 2: CONDUCTED EMISSIONS TEST SETUP



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, 2016

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.93	10.0	39.33
1.5	25.54	10.5	39.64
2.0	28.09	11.0	41.04
2.5	30.21	11.5	44.29
3.0	30.15	12.0	41.22
3.5	30.17	12.5	41.50
4.0	31.90	13.0	41.62
4.5	33.51	13.5	40.63
5.0	33.87	14.0	39.94
5.5	35.08	14.5	41.84
6.0	34.81	15.0	42.69
6.5	34.26	15.5	39.03
7.0	36.33	16.0	39.07
7.5	37.03	16.5	41.40
8.0	37.56	17.0	43.18
8.5	40.07	17.5	47.01
9.0	38.92	18.0	46.48
9.5	38.21		

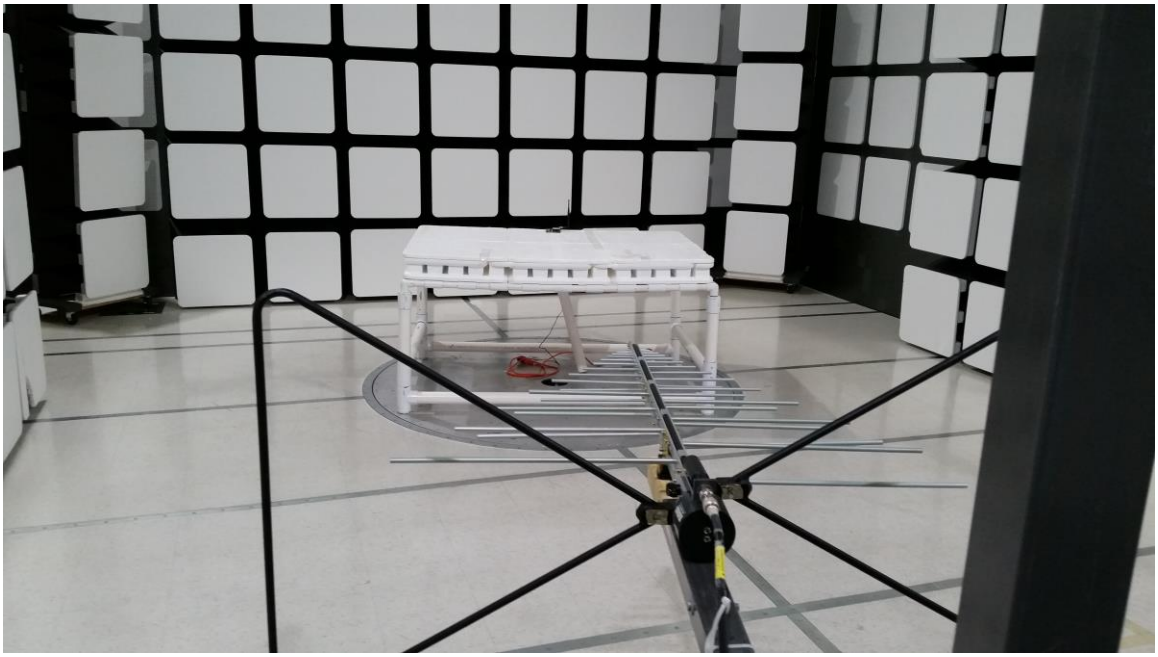
COM-POWER PA-118

PREAMPLIFIER

S/N: 551024

CALIBRATION DATE: MAY 12, 2016

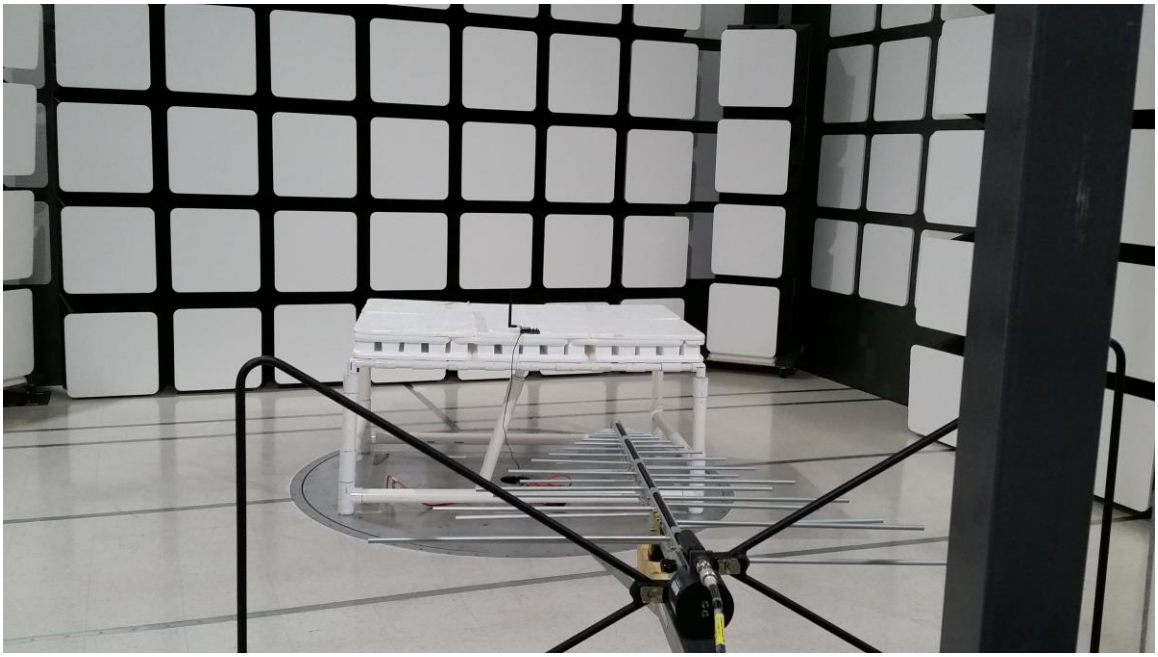
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	39.84	6.0	39.05
1.1	39.40	6.5	38.94
1.2	39.58	7.0	39.25
1.3	39.68	7.5	39.09
1.4	39.91	8.0	39.01
1.5	39.78	8.5	38.60
1.6	39.50	9.0	38.64
1.7	39.81	9.5	39.67
1.8	39.89	10.0	39.30
1.9	39.94	11.0	39.15
2.0	39.57	12.0	39.24
2.5	40.39	13.0	39.49
3.0	40.63	14.0	39.44
3.5	40.80	15.0	39.94
4.0	40.86	16.0	40.09
4.5	39.94	17.0	40.06
5.0	34.47	18.0	39.76
5.5	39.32		



FRONT VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – RADIATED EMISSIONS – ½ WAVE DIPOLE – BELOW 1 GHz

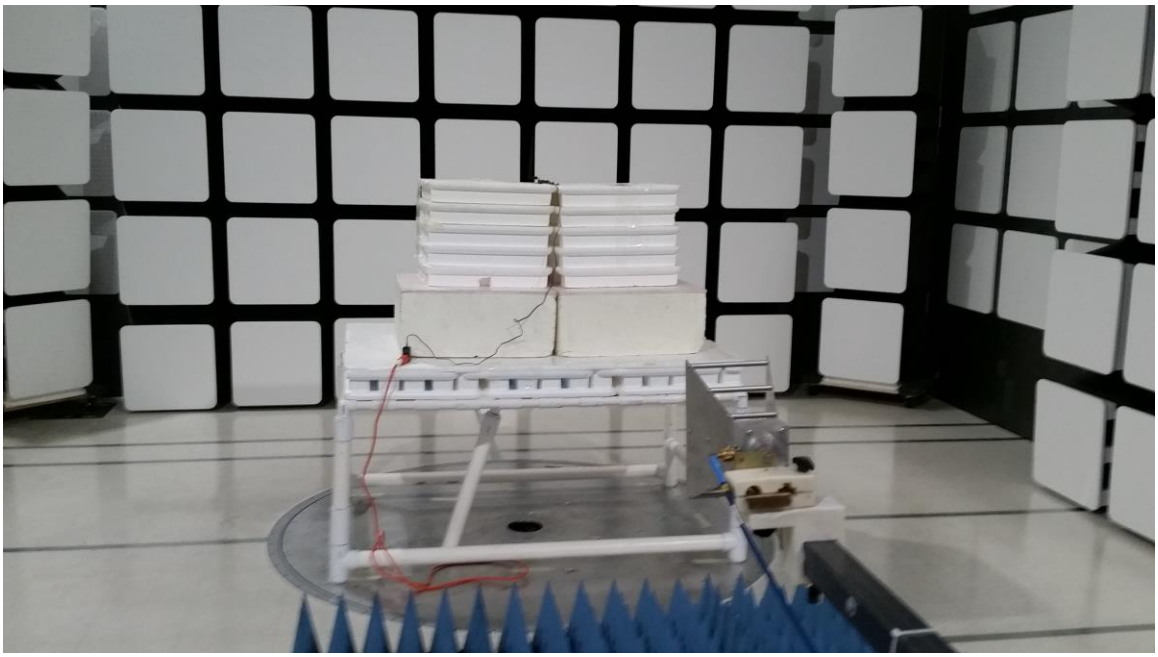
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – RADIATED EMISSIONS – ½ WAVE DIPOLE – BELOW 1 GHz

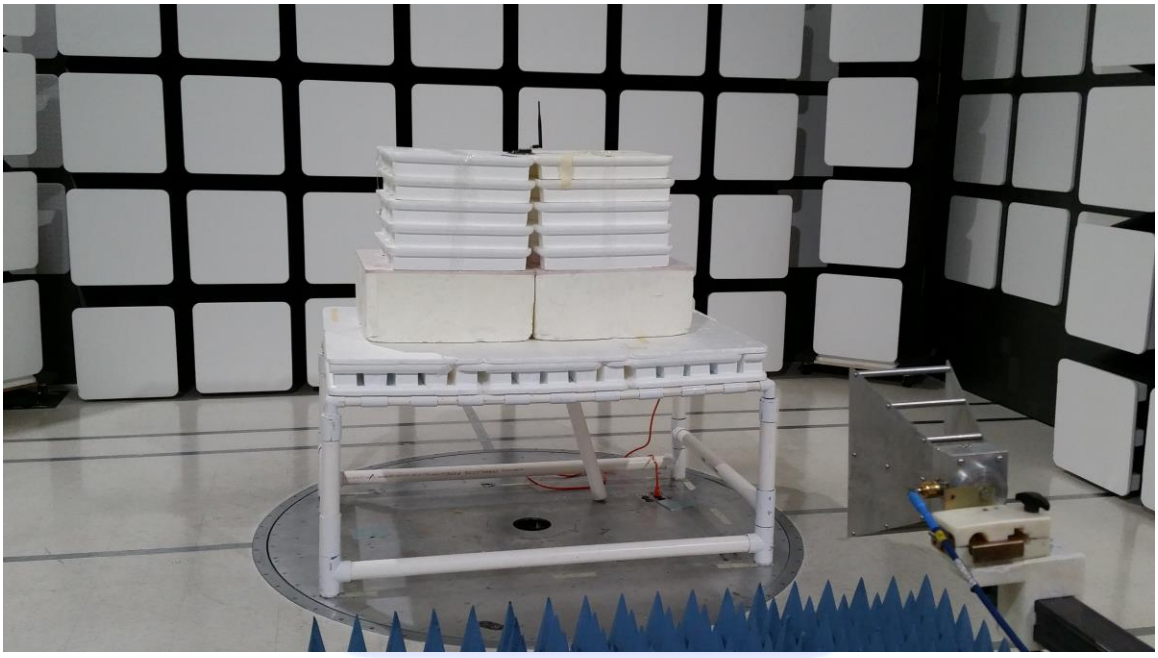
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – RADIATED EMISSIONS – ½ WAVE DIPOLE – ABOVE 1 GHz

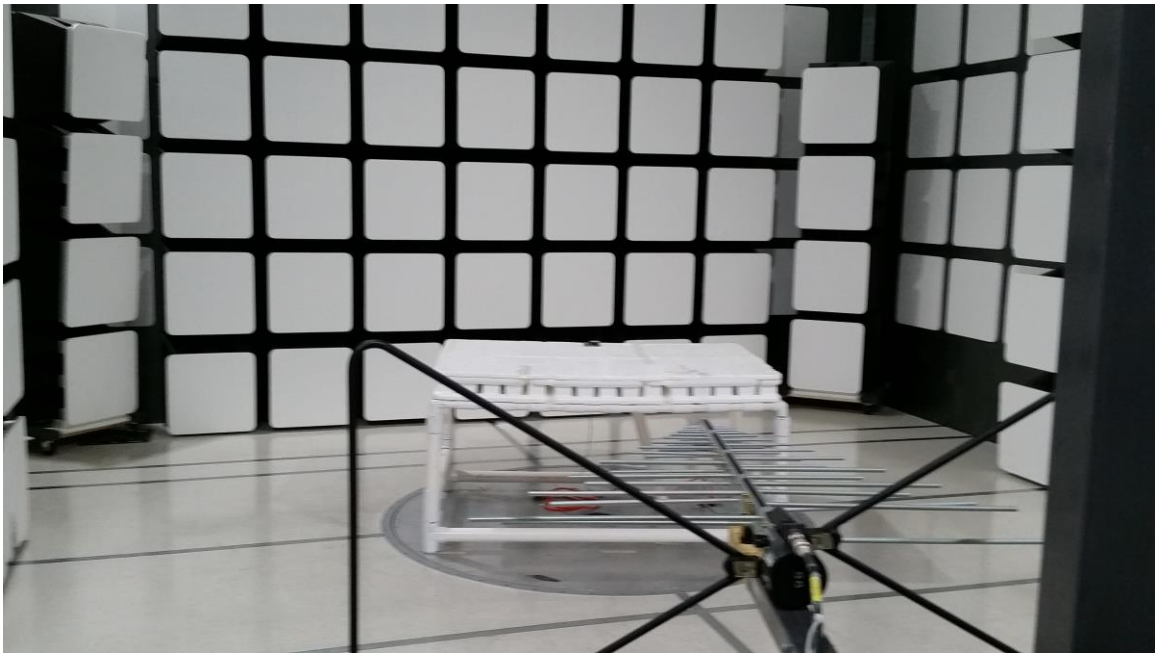
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – RADIATED EMISSIONS – ½ WAVE DIPOLE – ABOVE 1 GHz

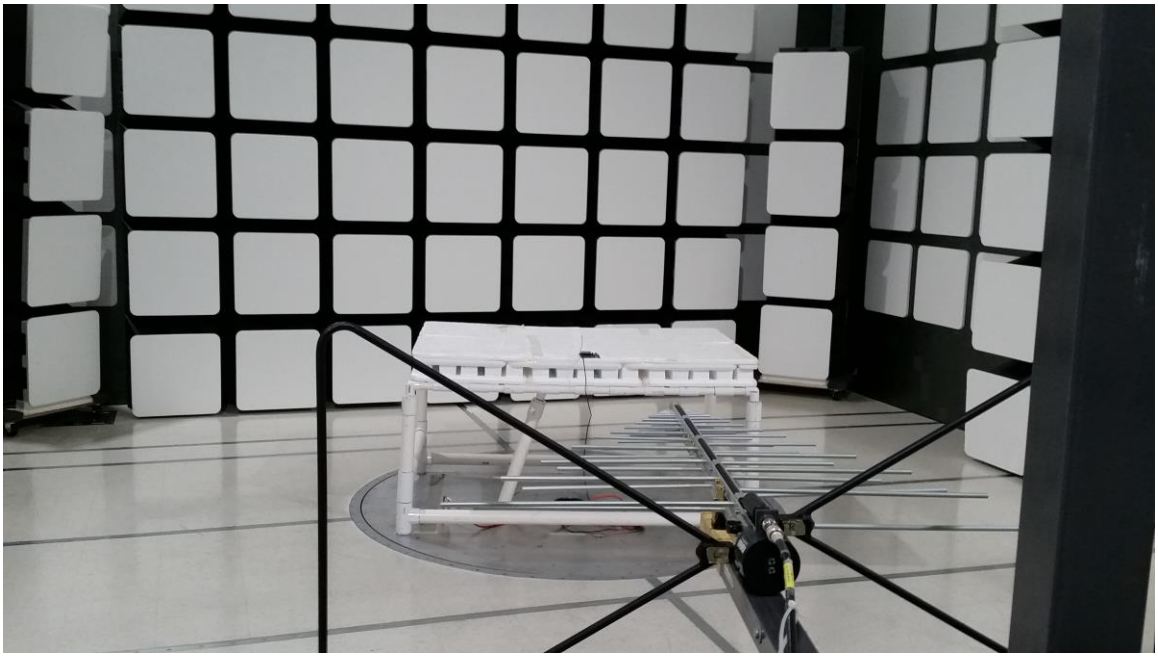
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – RADIATED EMISSIONS – WIRED ANTENNA – BELOW 1 GHz

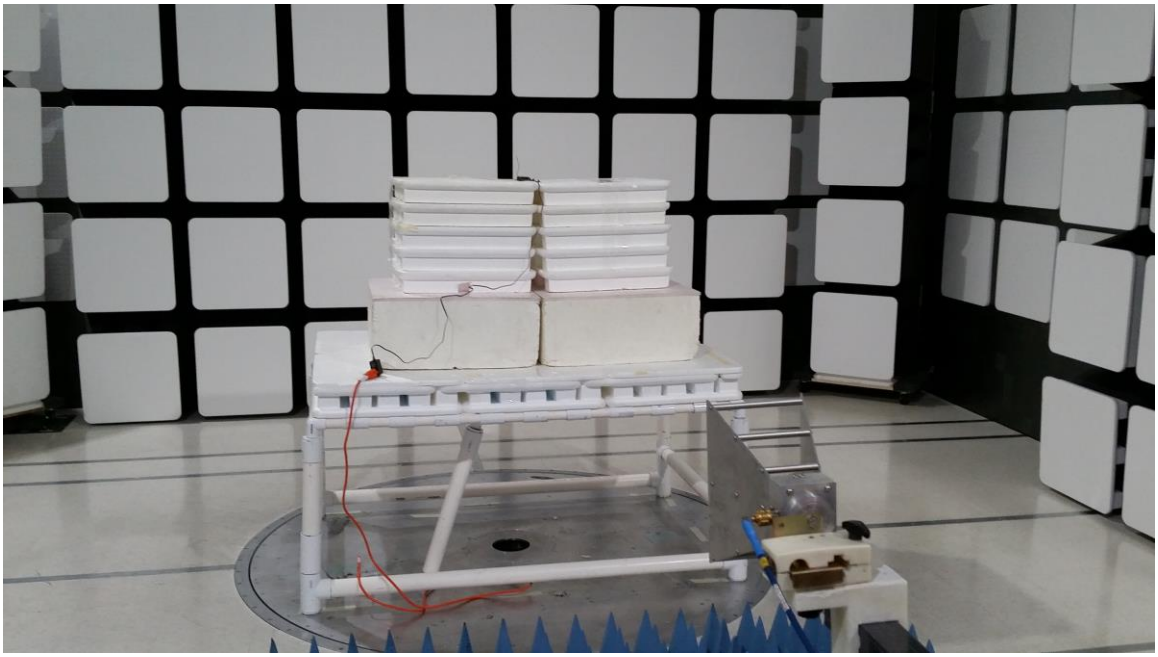
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – RADIATED EMISSIONS – WIRED ANTENNA – BELOW 1 GHz

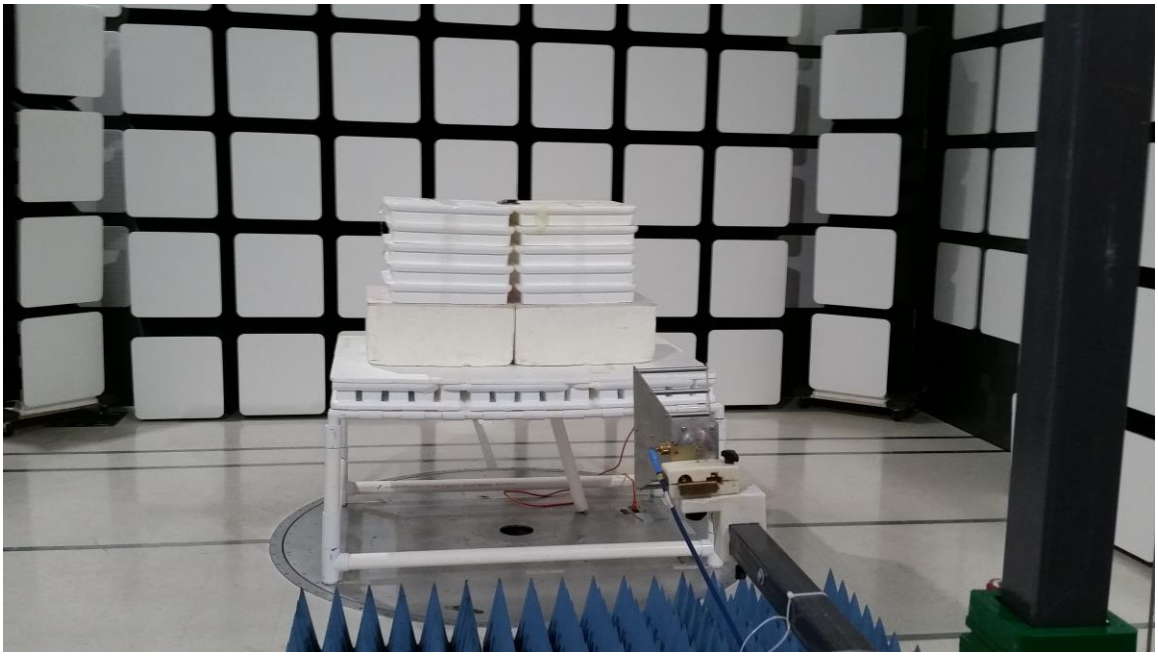
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – RADIATED EMISSIONS – WIRED ANTENNA – ABOVE 1 GHz

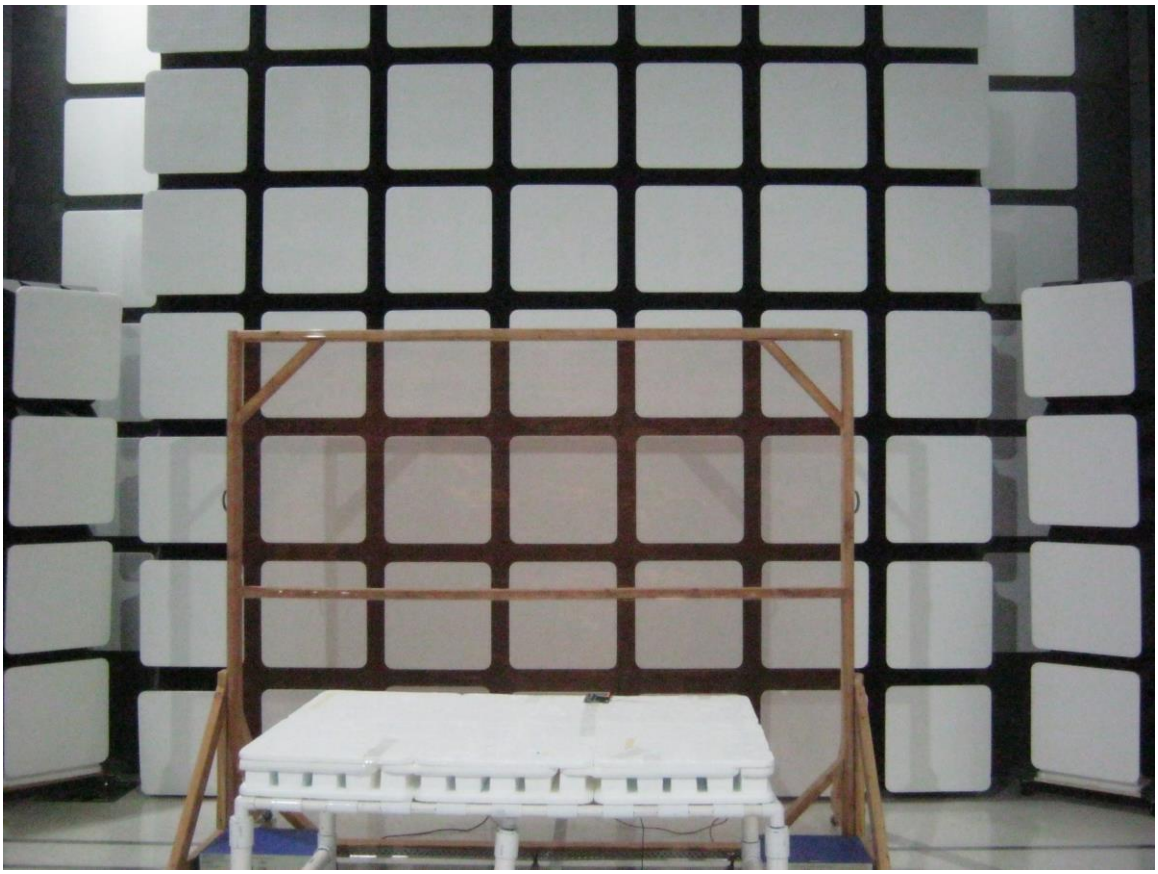
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – RADIATED EMISSIONS – WIRED ANTENNA – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

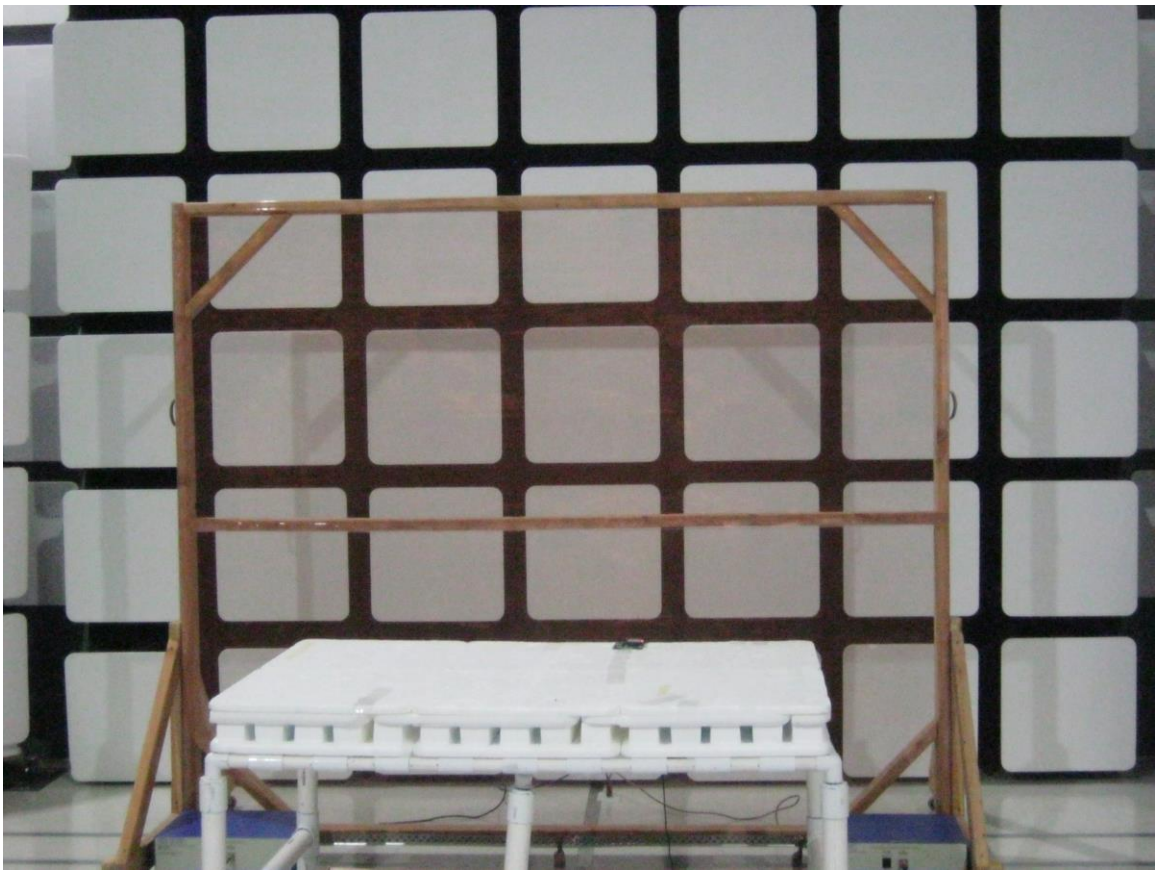
APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – CONDUCTED EMISSIONS – ½ WAVE ANTENNA

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – CONDUCTED EMISSIONS – ½ WAVE ANTENNA

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – CONDUCTED EMISSIONS – WIRED ANTENNA

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

APPLIED WIRELESS, INC.
LO RA TRANSCEIVER MODULE
MODEL: TL900
FCC SUBPART B AND C – CONDUCTED EMISSIONS – WIRED ANTENNA

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Low Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	43.17	V	73.97	-30.80	Peak	293.75	143.91	
2709.21	37.90	V	53.97	-16.07	Avg	293.75	143.91	
3612.28	54.66	V	73.97	-19.31	Peak	135.25	175.79	
3612.28	47.15	V	53.97	-6.82	Avg	135.25	175.79	
4515.35	41.52	V	73.97	-32.45	Peak	108.00	174.95	
4515.35	31.77	V	53.97	-22.20	Avg	108.00	174.95	
5418.42	48.32	V	73.97	-25.65	Peak	111.25	207.13	
5418.42	43.45	V	53.97	-10.52	Avg	111.25	207.13	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	49.13	V	73.97	-24.84	Peak	113.25	222.83	
8127.63	41.92	V	53.97	-12.05	Avg	113.25	222.83	
9030.7	45.91	V	73.97	-28.06	Peak	157.50	223.31	
9030.7	35.01	V	53.97	-18.96	Avg	157.50	223.31	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Low Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	44.68	V	73.97	-29.29	Peak	211.25	190.95	
2709.21	41.12	V	53.97	-12.85	Avg	211.25	190.95	
3612.28	50.89	V	73.97	-23.08	Peak	30.00	125.16	
3612.28	48.63	V	53.97	-5.34	Avg	30.00	125.16	
4515.35	41.17	V	73.97	-32.80	Peak	283.25	159.25	
4515.35	30.22	V	53.97	-23.75	Avg	283.25	159.25	
5418.42	51.46	V	73.97	-22.51	Peak	193.75	109.88	
5418.42	48.65	V	53.97	-5.32	Avg	193.75	109.88	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	48.90	V	73.97	-25.07	Peak	224.75	111.31	
8127.63	44.94	V	53.97	-9.03	Avg	224.75	111.31	
9030.7	47.23	V	73.97	-26.74	Peak	221.75	174.83	
9030.7	39.15	V	53.97	-14.82	Avg	221.75	174.83	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Low Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	45.85	V	73.97	-28.12	Peak	155.00	126.95	
2709.21	42.58	V	53.97	-11.39	Avg	155.00	126.95	
3612.28	53.35	V	73.97	-20.62	Peak	211.25	110.89	
3612.28	45.62	V	53.97	-8.35	Avg	211.25	110.89	
4515.35	40.90	V	73.97	-33.07	Peak	307.50	222.77	
4515.35	29.62	V	53.97	-24.35	Avg	307.50	222.77	
5418.42	47.78	V	73.97	-26.19	Peak	203.25	250.11	
5418.42	42.93	V	53.97	-11.04	Avg	203.25	250.11	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	47.34	V	73.97	-26.63	Peak	227.00	250.05	
8127.63	38.71	V	53.97	-15.26	Avg	227.00	250.05	
9030.7	45.55	V	73.97	-28.42	Peak	93.00	222.65	
9030.7	34.73	V	53.97	-19.24	Avg	93.00	222.65	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Low Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	44.57	H	73.97	-29.40	Peak	322.75	126.83	
2709.21	40.20	H	53.97	-13.77	Avg	322.75	126.83	
3612.28	49.82	H	73.97	-24.15	Peak	170.25	110.95	
3612.28	41.31	H	53.97	-12.66	Avg	170.25	110.95	
4515.35	40.12	H	73.97	-33.85	Peak	303.25	111.19	
4515.35	29.77	H	53.97	-24.20	Avg	303.25	111.19	
5418.42	46.74	H	73.97	-27.23	Peak	212.00	142.77	
5418.42	41.42	H	53.97	-12.55	Avg	212.00	142.77	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	46.33	H	73.97	-27.64	Peak	0.00	159.19	
8127.63	36.99	H	53.97	-16.98	Avg	0.00	159.19	
9030.7	45.37	H	73.97	-28.60	Peak	228.75	206.89	
9030.7	34.64	H	53.97	-19.33	Avg	228.75	206.89	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Low Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	44.59	H	73.97	-29.38	Peak	174.25	126.95	
2709.21	40.90	H	53.97	-13.07	Avg	174.25	126.95	
3612.28	52.44	H	73.97	-21.53	Peak	196.75	141.82	
3612.28	44.91	H	53.97	-9.06	Avg	196.75	141.82	
4515.35	40.12	H	73.97	-33.85	Peak	24.50	239.91	
4515.35	29.60	H	53.97	-24.37	Avg	24.50	239.91	
5418.42	53.26	H	73.97	-20.71	Peak	190.00	142.00	
5418.42	42.70	H	53.97	-11.27	Avg	190.00	142.00	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	48.22	H	73.97	-25.75	Peak	241.50	142.77	
8127.63	42.02	H	53.97	-11.95	Avg	241.50	142.77	
9030.7	47.31	H	73.97	-26.66	Peak	189.75	111.31	
9030.7	39.78	H	53.97	-14.19	Avg	189.75	111.31	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Low Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	43.54	H	73.97	-30.43	Peak	199.00	175.25	
2709.21	39.22	H	53.97	-14.75	Avg	199.00	175.25	
3612.28	57.09	H	73.97	-16.88	Peak	208.25	158.95	
3612.28	50.04	H	53.97	-3.93	Avg	208.25	158.95	
4515.35	40.33	H	73.97	-33.64	Peak	151.25	126.95	
4515.35	29.45	H	53.97	-24.52	Avg	151.25	126.95	
5418.42	54.68	H	73.97	-19.29	Peak	207.25	142.77	
5418.42	44.11	H	53.97	-9.86	Avg	207.25	142.77	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	47.18	H	73.97	-26.79	Peak	139.25	126.71	
8127.63	39.86	H	53.97	-14.11	Avg	139.25	126.71	
9030.7	45.74	H	73.97	-28.23	Peak	99.00	250.05	
9030.7	34.73	H	53.97	-19.24	Avg	99.00	250.05	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Middle Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	44.31	V	73.97	-29.66	Peak	122.75	175.31	
2742.98	39.84	V	53.97	-14.13	Avg	122.75	175.31	
3657.3	53.52	V	73.97	-20.45	Peak	292.75	158.95	
3657.3	45.94	V	53.97	-8.03	Avg	292.75	158.95	
4571.63	40.33	V	73.97	-33.64	Peak	226.75	109.88	
4571.63	29.58	V	53.97	-24.39	Avg	226.75	109.88	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.16	V	73.97	-29.81	Peak	42.00	222.89	
7314.6	33.59	V	53.97	-20.38	Avg	42.00	222.89	
8228.93	50.55	V	73.97	-23.42	Peak	294.00	241.25	
8228.93	46.15	V	53.97	-7.82	Avg	294.00	241.25	
9143.25	46.04	V	73.97	-27.93	Peak	239.25	110.89	
9143.25	35.59	V	53.97	-18.38	Avg	239.25	110.89	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Middle Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	46.67	V	73.97	-27.30	Peak	208.50	159.07	
2742.98	43.15	V	53.97	-10.82	Avg	208.50	159.07	
3657.3	52.29	V	73.97	-21.68	Peak	185.00	249.25	
3657.3	50.66	V	53.97	-3.31	Avg	185.00	249.25	
4571.63	40.45	V	73.97	-33.52	Peak	164.25	111.07	
4571.63	29.61	V	53.97	-24.36	Avg	164.25	111.07	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.05	V	73.97	-29.92	Peak	352.50	206.71	
7314.6	33.63	V	53.97	-20.34	Avg	352.50	206.71	
8228.93	52.03	V	73.97	-21.94	Peak	217.75	110.95	
8228.93	48.44	V	53.97	-5.53	Avg	217.75	110.95	
9143.25	45.77	V	73.97	-28.20	Peak	142.00	189.94	
9143.25	34.91	V	53.97	-19.06	Avg	142.00	189.94	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Middle Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	46.27	V	73.97	-27.70	Peak	164.75	127.01	
2742.98	42.77	V	53.97	-11.20	Avg	164.75	127.01	
3657.3	49.20	V	73.97	-24.77	Peak	190.50	111.19	
3657.3	46.52	V	53.97	-7.45	Avg	190.50	111.19	
4571.63	40.51	V	73.97	-33.46	Peak	155.75	222.83	
4571.63	29.59	V	53.97	-24.38	Avg	155.75	222.83	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.36	V	73.97	-29.61	Peak	274.75	249.28	
7314.6	33.76	V	53.97	-20.21	Avg	274.75	249.28	
8228.93	52.54	V	73.97	-21.43	Peak	230.75	111.31	
8228.93	48.64	V	53.97	-5.33	Avg	230.75	111.31	
9143.25	45.61	V	73.97	-28.36	Peak	216.00	239.55	
9143.25	34.89	V	53.97	-19.08	Avg	216.00	239.55	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Middle Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	44.44	H	73.97	-29.53	Peak	314.50	159.31	
2742.98	40.44	H	53.97	-13.53	Avg	314.50	159.31	
3657.3	48.34	H	73.97	-25.63	Peak	93.50	159.19	
3657.3	45.34	H	53.97	-8.63	Avg	93.50	159.19	
4571.63	43.23	H	73.97	-30.74	Peak	292.75	111.37	
4571.63	35.43	H	53.97	-18.55	Avg	292.75	111.37	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.93	H	73.97	-29.04	Peak	99.00	174.65	
7314.6	33.82	H	53.97	-20.15	Avg	99.00	174.65	
8228.93	49.65	H	73.97	-24.32	Peak	279.25	111.19	
8228.93	43.61	H	53.97	-10.36	Avg	279.25	111.19	
9143.25	45.47	H	73.97	-28.50	Peak	98.00	175.31	
9143.25	34.87	H	53.97	-19.10	Avg	98.00	175.31	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Middle Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	46.38	H	73.97	-27.59	Peak	168.25	143.73	
2742.98	43.07	H	53.97	-10.90	Avg	168.25	143.73	
3657.3	49.20	H	73.97	-24.77	Peak	184.25	127.43	
3657.3	46.49	H	53.97	-7.48	Avg	184.25	127.43	
4571.63	42.24	H	73.97	-31.73	Peak	173.50	127.13	
4571.63	33.61	H	53.97	-20.36	Avg	173.50	127.13	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.82	H	73.97	-29.15	Peak	128.25	191.13	
7314.6	33.82	H	53.97	-20.15	Avg	128.25	191.13	
8228.93	49.25	H	73.97	-24.72	Peak	217.00	111.25	
8228.93	43.94	H	53.97	-10.03	Avg	217.00	111.25	
9143.25	47.29	H	73.97	-26.69	Peak	185.25	127.13	
9143.25	39.85	H	53.97	-14.12	Avg	185.25	127.13	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
Middle Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	41.22	H	73.97	-32.75	Peak	204.50	239.49	
2742.98	34.37	H	53.97	-19.60	Avg	204.50	239.49	
3657.3	58.01	H	73.97	-15.96	Peak	124.00	111.67	
3657.3	51.16	H	53.97	-2.81	Avg	124.00	111.67	
4571.63	45.60	H	73.97	-28.37	Peak	126.50	159.07	
4571.63	39.37	H	53.97	-14.60	Avg	126.50	159.07	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.82	H	73.97	-29.15	Peak	212.00	159.25	
7314.6	36.30	H	53.97	-17.67	Avg	212.00	159.25	
8228.93	49.84	H	73.97	-24.13	Peak	230.25	223.31	
8228.93	44.96	H	53.97	-9.01	Avg	230.25	223.31	
9143.25	45.79	H	73.97	-28.18	Peak	243.75	239.97	
9143.25	34.85	H	53.97	-19.12	Avg	243.75	239.97	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
High Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	43.47	V	73.97	-30.50	Peak	158.50	127.25	
2778.93	38.48	V	53.97	-15.49	Avg	158.50	127.25	
3705.24	54.28	V	73.97	-19.69	Peak	347.00	142.95	
3705.24	47.03	V	53.97	-6.94	Avg	347.00	142.95	
4631.55	44.04	V	73.97	-29.93	Peak	87.00	190.95	
4631.55	35.46	V	53.97	-18.51	Avg	87.00	190.95	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	44.79	V	73.97	-29.18	Peak	336.25	207.25	
7410.48	33.81	V	53.97	-20.16	Avg	336.25	207.25	
8336.79	50.38	V	73.97	-23.59	Peak	299.25	239.55	
8336.79	44.61	V	53.97	-9.36	Avg	299.25	239.55	
9263.1	45.06	V	73.97	-28.91	Peak	31.75	249.11	
9263.1	34.33	V	53.97	-19.64	Avg	31.75	249.11	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
High Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	44.65	V	73.97	-29.32	Peak	103.50	111.13	
2778.93	40.26	V	53.97	-13.71	Avg	103.50	111.13	
3705.24	51.74	V	73.97	-22.23	Peak	334.50	207.31	
3705.24	43.69	V	53.97	-10.28	Avg	334.50	207.31	
4631.55	44.19	V	73.97	-29.78	Peak	156.75	111.31	
4631.55	37.15	V	53.97	-16.82	Avg	156.75	111.31	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	46.07	V	73.97	-27.90	Peak	213.75	191.25	
7410.48	38.33	V	53.97	-15.64	Avg	213.75	191.25	
8336.79	53.42	V	73.97	-20.55	Peak	224.50	127.19	
8336.79	50.30	V	53.97	-3.67	Avg	224.50	127.19	
9263.1	45.17	V	73.97	-28.80	Peak	208.75	159.37	
9263.1	34.30	V	53.97	-19.67	Avg	208.75	159.37	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
High Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	46.54	V	73.97	-27.43	Peak	148.00	127.31	
2778.93	43.47	V	53.97	-10.50	Avg	148.00	127.31	
3705.24	50.16	V	73.97	-23.81	Peak	207.25	126.89	
3705.24	42.11	V	53.97	-11.86	Avg	207.25	126.89	
4631.55	43.62	V	73.97	-30.35	Peak	160.00	110.83	
4631.55	36.06	V	53.97	-17.91	Avg	160.00	110.83	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	47.38	V	73.97	-26.59	Peak	210.25	110.89	
7410.48	39.20	V	53.97	-14.77	Avg	210.25	110.89	
8336.79	53.39	V	73.97	-20.58	Peak	115.75	111.43	
8336.79	50.36	V	53.97	-3.61	Avg	115.75	111.43	
9263.1	45.86	V	73.97	-28.11	Peak	53.75	127.31	
9263.1	34.40	V	53.97	-19.57	Avg	53.75	127.31	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
High Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	44.69	H	73.97	-29.28	Peak	110.25	110.89	
2778.93	40.81	H	53.97	-13.16	Avg	110.25	110.89	
3705.24	48.59	H	73.97	-25.38	Peak	156.00	126.89	
3705.24	45.97	H	53.97	-8.00	Avg	156.00	126.89	
4631.55	43.11	H	73.97	-30.86	Peak	69.25	142.77	
4631.55	33.81	H	53.97	-20.16	Avg	69.25	142.77	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	46.19	H	73.97	-27.78	Peak	127.75	222.89	
7410.48	38.44	H	53.97	-15.53	Avg	127.75	222.89	
8336.79	49.76	H	73.97	-24.21	Peak	276.00	191.43	
8336.79	44.22	H	53.97	-9.75	Avg	276.00	191.43	
9263.1	45.21	H	73.97	-28.76	Peak	251.75	249.95	
9263.1	35.22	H	53.97	-18.75	Avg	251.75	249.95	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
High Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	47.92	H	73.97	-26.05	Peak	24.75	125.94	
2778.93	45.02	H	53.97	-8.95	Avg	24.75	125.94	
3705.24	44.18	H	73.97	-29.79	Peak	79.00	174.83	
3705.24	38.48	H	53.97	-15.49	Avg	79.00	174.83	
4631.55	41.99	H	73.97	-31.98	Peak	178.50	175.37	
4631.55	30.95	H	53.97	-23.02	Avg	178.50	175.37	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	46.45	H	73.97	-27.52	Peak	179.25	100.07	
7410.48	39.16	H	53.97	-14.81	Avg	179.25	100.07	
8336.79	50.25	H	73.97	-23.72	Peak	157.00	110.77	
8336.79	44.98	H	53.97	-8.99	Avg	157.00	110.77	
9263.1	45.41	H	73.97	-28.56	Peak	52.25	111.13	
9263.1	34.45	H	53.97	-19.52	Avg	52.25	111.13	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole
High Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	45.42	H	73.97	-28.55	Peak	201.50	127.13	
2778.93	40.65	H	53.97	-13.32	Avg	201.50	127.13	
3705.24	55.21	H	73.97	-18.76	Peak	118.25	126.47	
3705.24	48.11	H	53.97	-5.86	Avg	118.25	126.47	
4631.55	47.10	H	73.97	-26.87	Peak	128.00	159.13	
4631.55	42.07	H	53.97	-11.90	Avg	128.00	159.13	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	48.36	H	73.97	-25.61	Peak	224.75	111.43	
7410.48	41.71	H	53.97	-12.26	Avg	224.75	111.43	
8336.79	52.47	H	73.97	-21.50	Peak	169.50	110.95	
8336.79	48.98	H	53.97	-4.99	Avg	169.50	110.95	
9263.1	45.62	H	73.97	-28.35	Peak	133.75	249.11	
9263.1	34.55	H	53.97	-19.42	Avg	133.75	249.11	

FCC Class B and RSS-210
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx - 10 kHz to 30 MHz and 1 GHz to 9.3 GHz
Digital Portion from the EUT - 10 kHz to 30 MHz and 1 GHz to 9.3 GHz

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from the Non Harmonic Emissions
								from the Tx
								10 kHz to 30 MHz
								No Emissions Detected
								from the Non Harmonic Emissions
								from the Tx
								1 GHz to 9.3 GHz
								No Emissions Detected
								from the Digital Portion
								of the EUT
								10 kHz to 30 MHz
								No Emissions Detected
								from the Digital Portion
								of the EUT
								1 GHz to 9.3 GHz
								Tested in both Horizontal and
								Vertical Polarizations

FCC Class B
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
1/2 Wave Dipole

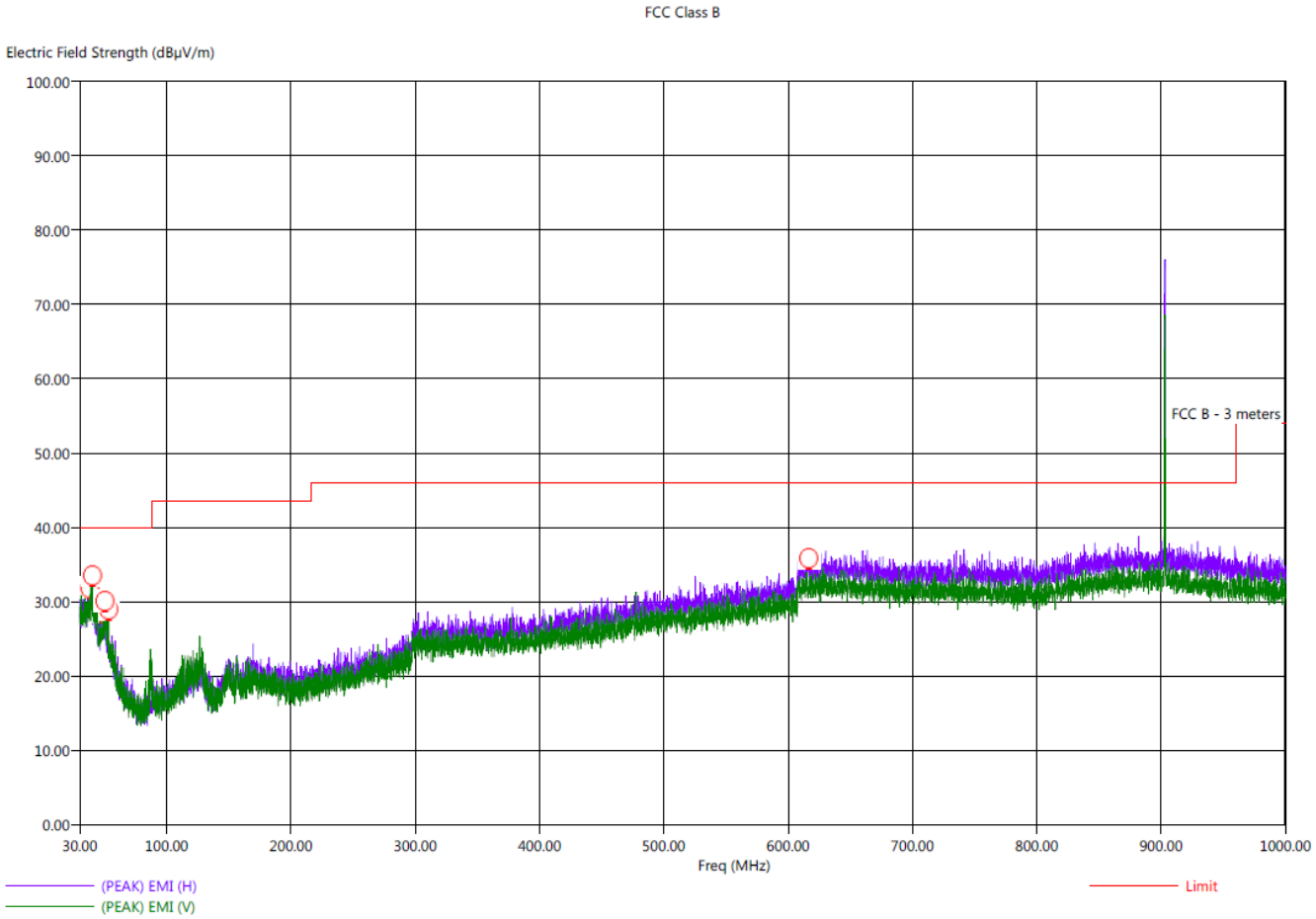
Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Receiver Portion - 30 MHz to 9.3 GHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from the Receiver Portion
								10 kHz to 30 MHz
								No Emissions Detected
								from the Receiver Portion
								of the EUT
								1 GHz to 9.3 GHz
								Tested in both Horizontal and
								Vertical Polarizations

Title: Pre-Scan - FCC Class B
File: Agilent - Pre-Scan - Lo Ra Transceiver Half Wave Dipole - Tx Mode - FCC Class B - 06-23-2016.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900
Note: The Frequency at 903.05 MHz is from the Transmitter and subject to FCC 15.247 limits

7/27/2016 6:09:18 PM
Sequence: Preliminary Scan



Title: Radiated Final - FCC Class B
File: Agilent - Final Scan - Lo Ra Transceiver Half Wave Dipole - Tx Mode - FCC Class B - 06-23-2016.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900
Note: The Frequency at 903.05 MHz is from the Transmitter and subject to FCC 15.247 limits

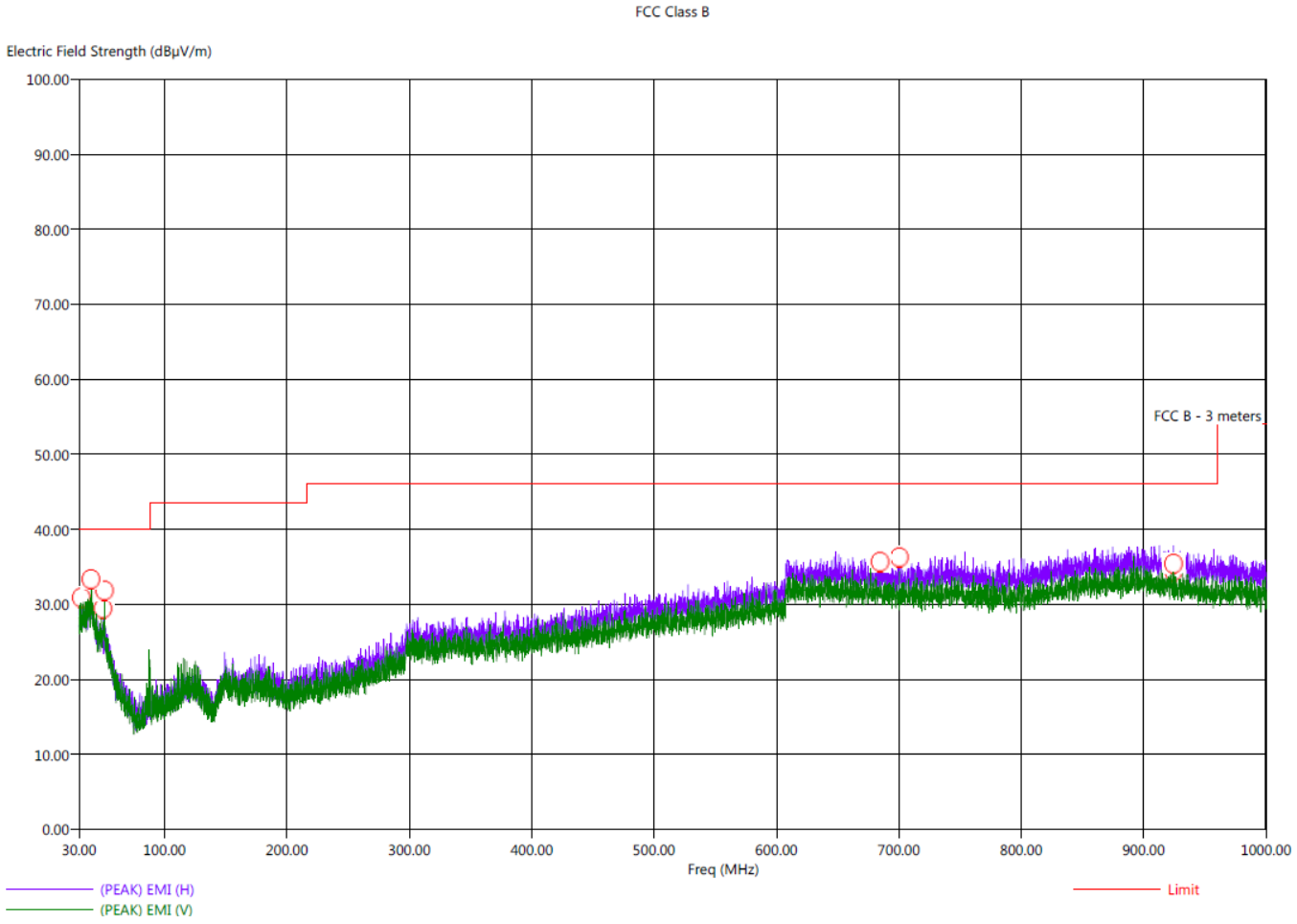
7/27/2016 6:22:04 PM
Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Agl (deg)	Twr Ht (cm)
38.20	H	32.69	27.73	-7.31	-12.27	40.00	25.02	0.38	211.25	207.29
40.40	V	36.61	30.90	-3.39	-9.10	40.00	25.17	0.39	162.25	157.92
48.20	H	30.05	24.47	-9.95	-15.53	40.00	22.13	0.41	8.00	205.26
50.40	V	32.10	26.75	-7.90	-13.25	40.00	22.06	0.43	336.75	142.58
53.40	V	28.63	23.22	-11.37	-16.78	40.00	19.91	0.47	80.25	142.76
616.60	H	36.75	31.54	-9.25	-14.46	46.00	23.91	2.02	176.50	315.89

Title: Pre-Scan - FCC Class B
File: Agilent - Pre-Scan - Lo Ra Transceiver Half Wave Dipole - Rx Mode - FCC Class B - 06-23-2016.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/27/2016 5:02:58 PM
Sequence: Preliminary Scan



Title: Radiated Final - FCC Class B
File: Agilent - Final Scan - Lo Ra Transceiver Half Wave Dipole - Rx Mode - FCC Class B - 06-23-2016.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 5:20:53 PM
Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Agl (deg)	Twr Ht (cm)
31.90	H	31.98	26.66	-8.02	-13.34	40.00	24.13	0.36	186.25	220.91
39.90	V	37.21	29.16	-2.79	-10.84	40.00	25.39	0.39	74.50	127.11
49.70	H	29.33	24.53	-10.67	-15.47	40.00	22.49	0.42	101.50	363.29
50.80	V	32.39	25.96	-7.61	-14.04	40.00	22.00	0.43	60.00	111.11
684.80	H	36.13	31.11	-9.87	-14.89	46.00	24.09	2.12	357.75	347.59
700.60	H	37.22	30.88	-8.78	-15.12	46.00	24.01	2.13	301.50	366.64
924.50	H	37.54	32.45	-8.46	-13.55	46.00	26.45	2.58	102.00	175.17
924.60	H	38.12	32.50	-7.88	-13.50	46.00	26.45	2.58	51.25	398.88
924.70	H	37.67	32.43	-8.33	-13.57	46.00	26.45	2.58	107.25	158.40

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Low Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	44.66	V	73.97	-29.31	Peak	71.75	146.35	
2709.21	41.08	V	53.97	-12.89	Avg	71.75	146.35	
3612.28	47.13	V	73.97	-26.84	Peak	156.00	146.53	
3612.28	42.88	V	53.97	-11.09	Avg	156.00	146.53	
4515.35	40.39	V	73.97	-33.58	Peak	160.00	126.83	
4515.35	29.86	V	53.97	-24.11	Avg	160.00	126.83	
5418.42	50.78	V	73.97	-23.19	Peak	304.50	158.95	
5418.42	47.42	V	53.97	-6.55	Avg	304.50	158.95	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	46.64	V	73.97	-27.33	Peak	279.25	222.17	
8127.63	38.94	V	53.97	-15.03	Avg	279.25	222.17	
9030.7	46.07	V	73.97	-27.90	Peak	167.75	222.89	
9030.7	36.88	V	53.97	-17.09	Avg	167.75	222.89	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Low Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	44.50	V	73.97	-29.47	Peak	159.00	126.17	
2709.21	40.69	V	53.97	-13.28	Avg	159.00	126.17	
3612.28	46.12	V	73.97	-27.85	Peak	200.00	174.95	
3612.28	42.42	V	53.97	-11.55	Avg	200.00	174.95	
4515.35	41.48	V	73.97	-32.49	Peak	243.25	206.89	
4515.35	31.86	V	53.97	-22.11	Avg	243.25	206.89	
5418.42	48.17	V	73.97	-25.80	Peak	133.00	126.59	
5418.42	44.18	V	53.97	-9.79	Avg	133.00	126.59	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	48.05	V	73.97	-25.92	Peak	227.75	142.77	
8127.63	40.69	V	53.97	-13.28	Avg	227.75	142.77	
9030.7	45.93	V	73.97	-28.04	Peak	52.75	207.85	
9030.7	34.94	V	53.97	-19.03	Avg	52.75	207.85	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Low Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	46.68	V	73.97	-27.29	Peak	326.75	142.95	
2709.21	43.90	V	53.97	-10.07	Avg	326.75	142.95	
3612.28	48.28	V	73.97	-25.69	Peak	0.00	110.95	
3612.28	45.33	V	53.97	-8.64	Avg	0.00	110.95	
4515.35	40.77	V	73.97	-33.20	Peak	0.00	250.11	
4515.35	29.59	V	53.97	-24.38	Avg	0.00	250.11	
5418.42	47.19	V	73.97	-26.78	Peak	133.00	126.59	
5418.42	43.22	V	53.97	-10.75	Avg	133.00	126.59	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	44.69	V	73.97	-29.28	Peak	232.75	143.31	
8127.63	34.15	V	53.97	-19.82	Avg	232.75	143.31	
9030.7	46.57	V	73.97	-27.40	Peak	175.25	175.43	
9030.7	34.94	V	53.97	-19.03	Avg	175.25	175.43	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Low Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	44.85	H	73.97	-29.12	Peak	316.00	111.61	
2709.21	41.15	H	53.97	-12.82	Avg	316.00	111.61	
3612.28	46.35	H	73.97	-27.62	Peak	164.75	206.95	
3612.28	42.38	H	53.97	-11.59	Avg	164.75	206.95	
4515.35	40.58	H	73.97	-33.39	Peak	48.50	207.43	
4515.35	30.42	H	53.97	-23.55	Avg	48.50	207.43	
5418.42	51.90	H	73.97	-22.07	Peak	324.00	174.89	
5418.42	49.35	H	53.97	-4.62	Avg	324.00	174.89	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	47.46	H	73.97	-26.51	Peak	99.00	141.88	
8127.63	39.32	H	53.97	-14.65	Avg	99.00	141.88	
9030.7	46.06	H	73.97	-27.91	Peak	280.00	111.13	
9030.7	34.73	H	53.97	-19.24	Avg	280.00	111.13	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Low Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	42.67	H	73.97	-31.30	Peak	272.50	190.89	
2709.21	36.90	H	53.97	-17.07	Avg	272.50	190.89	
3612.28	46.98	H	73.97	-26.99	Peak	19.25	206.77	
3612.28	43.65	H	53.97	-10.32	Avg	19.25	206.77	
4515.35	40.19	H	73.97	-33.78	Peak	217.25	190.83	
4515.35	30.15	H	53.97	-23.82	Avg	217.25	190.83	
5418.42	47.85	H	73.97	-26.12	Peak	91.00	222.71	
5418.42	44.20	H	53.97	-9.77	Avg	91.00	222.71	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	49.40	H	73.97	-24.57	Peak	296.75	158.95	
8127.63	43.19	H	53.97	-10.78	Avg	296.75	158.95	
9030.7	46.18	H	73.97	-27.79	Peak	8.25	223.01	
9030.7	35.82	H	53.97	-18.15	Avg	8.25	223.01	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Low Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1806.14								**Not in Restricted Band**
1806.14								**Done via Conducted**
2709.21	40.94	H	73.97	-33.03	Peak	0.00	239.65	
2709.21	34.64	H	53.97	-19.33	Avg	0.00	239.65	
3612.28	54.19	H	73.97	-19.78	Peak	290.00	109.76	
3612.28	46.86	H	53.97	-7.11	Avg	290.00	109.76	
4515.35	41.11	H	73.97	-32.86	Peak	230.00	142.71	
4515.35	29.83	H	53.97	-24.14	Avg	230.00	142.71	
5418.42	51.06	H	73.97	-22.91	Peak	311.25	126.83	
5418.42	48.37	H	53.97	-5.60	Avg	311.25	126.83	
6321.49								**Not in Restricted Band**
6321.49								**Done via Conducted**
7224.56								**Not in Restricted Band**
7224.56								**Done via Conducted**
8127.63	50.52	H	73.97	-23.45	Peak	41.25	110.77	
8127.63	45.27	H	53.97	-8.70	Avg	41.25	110.77	
9030.7	45.71	H	73.97	-28.26	Peak	355.00	206.95	
9030.7	36.80	H	53.97	-17.17	Avg	355.00	206.95	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Middle Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	44.41	V	73.97	-29.56	Peak	76.00	158.95	
2742.98	39.24	V	53.97	-14.73	Avg	76.00	158.95	
3657.3	50.09	V	73.97	-23.88	Peak	339.50	159.13	
3657.3	47.38	V	53.97	-6.59	Avg	339.50	159.13	
4571.63	40.25	V	73.97	-33.72	Peak	199.25	238.25	
4571.63	29.45	V	53.97	-24.52	Avg	199.25	238.25	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.49	V	73.97	-29.48	Peak	248.00	174.95	
7314.6	33.97	V	53.97	-20.00	Avg	248.00	174.95	
8228.93	47.98	V	73.97	-25.99	Peak	302.00	206.83	
8228.93	41.16	V	53.97	-12.81	Avg	302.00	206.83	
9143.25	45.43	V	73.97	-28.54	Peak	119.25	111.19	
9143.25	34.90	V	53.97	-19.07	Avg	119.25	111.19	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Middle Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	44.29	V	73.97	-29.68	Peak	169.00	141.88	
2742.98	40.02	V	53.97	-13.95	Avg	169.00	141.88	
3657.3	49.84	V	73.97	-24.13	Peak	180.50	243.25	
3657.3	47.69	V	53.97	-6.28	Avg	180.50	243.25	
4571.63	43.76	V	73.97	-30.21	Peak	159.00	127.85	
4571.63	37.04	V	53.97	-16.93	Avg	159.00	127.85	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.41	V	73.97	-29.56	Peak	126.75	250.59	
7314.6	33.65	V	53.97	-20.32	Avg	126.75	250.59	
8228.93	45.28	V	73.97	-28.69	Peak	215.75	127.01	
8228.93	34.51	V	53.97	-19.46	Avg	215.75	127.01	
9143.25	46.01	V	73.97	-27.96	Peak	269.00	191.00	
9143.25	34.94	V	53.97	-19.03	Avg	269.00	191.00	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Middle Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	44.51	V	73.97	-29.46	Peak	163.75	157.82	
2742.98	40.37	V	53.97	-13.60	Avg	163.75	157.82	
3657.3	46.93	V	73.97	-27.04	Peak	184.50	111.37	
3657.3	43.08	V	53.97	-10.89	Avg	184.50	111.37	
4571.63	41.86	V	73.97	-32.11	Peak	199.25	111.31	
4571.63	32.91	V	53.97	-21.06	Avg	199.25	111.31	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.72	V	73.97	-29.25	Peak	258.75	243.25	
7314.6	33.56	V	53.97	-20.41	Avg	258.75	243.25	
8228.93	50.72	V	73.97	-23.25	Peak	232.00	111.01	
8228.93	46.09	V	53.97	-7.88	Avg	232.00	111.01	
9143.25	45.56	V	73.97	-28.41	Peak	183.50	239.25	
9143.25	35.49	V	53.97	-18.48	Avg	183.50	239.25	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Middle Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	37.07	H	73.97	-36.90	Peak	250.75	127.01	
2742.98	25.64	H	53.97	-28.33	Avg	250.75	127.01	
3657.3	40.27	H	73.97	-33.70	Peak	77.00	158.89	
3657.3	31.57	H	53.97	-22.40	Avg	77.00	158.89	
4571.63	38.73	H	73.97	-35.24	Peak	294.00	158.41	
4571.63	27.95	H	53.97	-26.02	Avg	294.00	158.41	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.50	H	73.97	-29.47	Peak	195.25	111.43	
7314.6	33.35	H	53.97	-20.62	Avg	195.25	111.43	
8228.93	46.72	H	73.97	-27.25	Peak	263.00	126.77	
8228.93	37.02	H	53.97	-16.95	Avg	263.00	126.77	
9143.25	46.15	H	73.97	-27.82	Peak	125.00	126.00	
9143.25	35.77	H	53.97	-18.20	Avg	125.00	126.00	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
Middle Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	36.77	H	73.97	-37.20	Peak	267.00	111.43	
2742.98	26.78	H	53.97	-27.19	Avg	267.00	111.43	
3657.3	38.48	H	73.97	-35.49	Peak	67.25	111.19	
3657.3	29.11	H	53.97	-24.86	Avg	67.25	111.19	
4571.63	38.80	H	73.97	-35.17	Peak	305.00	158.71	
4571.63	28.21	H	53.97	-25.76	Avg	305.00	158.71	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.23	H	73.97	-29.74	Peak	293.50	143.07	
7314.6	33.45	H	53.97	-20.52	Avg	293.50	143.07	
8228.93	44.80	H	73.97	-29.17	Peak	94.75	158.77	
8228.93	34.45	H	53.97	-19.52	Avg	94.75	158.77	
9143.25	46.18	H	73.97	-27.79	Peak	352.75	175.07	
9143.25	35.63	H	53.97	-18.34	Avg	352.75	175.07	

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Applied Wireless, Inc.
Lo Ra Transceiver Module
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Wired Antenna
Middle Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1828.65								**Not in Restricted Band**
1828.65								**Done via Conducted**
2742.98	37.70	H	73.97	-36.27	Peak	91.00	143.13	
2742.98	25.78	H	53.97	-28.19	Avg	91.00	143.13	
3657.3	43.68	H	73.97	-30.29	Peak	127.25	127.19	
3657.3	38.96	H	53.97	-15.01	Avg	127.25	127.19	
4571.63	39.41	H	73.97	-34.56	Peak	230.25	111.25	
4571.63	27.91	H	53.97	-26.06	Avg	230.25	111.25	
5485.95								**Not in Restricted Band**
5485.95								**Done via Conducted**
6400.28								**Not in Restricted Band**
6400.28								**Done via Conducted**
7314.6	44.42	H	73.97	-29.55	Peak	224.75	221.76	
7314.6	34.54	H	53.97	-19.43	Avg	224.75	221.76	
8228.93	48.10	H	73.97	-25.87	Peak	219.75	159.01	
8228.93	41.60	H	53.97	-12.37	Avg	219.75	159.01	
9143.25	46.28	H	73.97	-27.69	Peak	163.50	245.25	
9143.25	35.16	H	53.97	-18.81	Avg	163.50	245.25	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
High Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	45.50	V	73.97	-28.47	Peak	123.00	158.89	
2778.93	42.15	V	53.97	-11.82	Avg	123.00	158.89	
3705.24	49.95	V	73.97	-24.02	Peak	347.75	191.31	
3705.24	47.65	V	53.97	-6.32	Avg	347.75	191.31	
4631.55	41.38	V	73.97	-32.59	Peak	323.75	127.43	
4631.55	30.80	V	53.97	-23.17	Avg	323.75	127.43	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	45.32	V	73.97	-28.65	Peak	293.00	175.31	
7410.48	37.23	V	53.97	-16.74	Avg	293.00	175.31	
8336.79	48.31	V	73.97	-25.66	Peak	300.75	175.25	
8336.79	41.57	V	53.97	-12.40	Avg	300.75	175.25	
9263.1	44.79	V	73.97	-29.18	Peak	131.75	174.89	
9263.1	34.84	V	53.97	-19.13	Avg	131.75	174.89	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
High Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	48.59	V	73.97	-25.38	Peak	205.00	159.01	
2778.93	46.91	V	53.97	-7.06	Avg	205.00	159.01	
3705.24	46.60	V	73.97	-27.37	Peak	141.00	159.13	
3705.24	43.01	V	53.97	-10.96	Avg	141.00	159.13	
4631.55	42.25	V	73.97	-31.72	Peak	144.25	174.95	
4631.55	32.31	V	53.97	-21.66	Avg	144.25	174.95	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	45.57	V	73.97	-28.40	Peak	219.25	158.95	
7410.48	37.70	V	53.97	-16.27	Avg	219.25	158.95	
8336.79	51.26	V	73.97	-22.71	Peak	110.25	207.55	
8336.79	46.93	V	53.97	-7.04	Avg	110.25	207.55	
9263.1	45.45	V	73.97	-28.52	Peak	151.25	158.83	
9263.1	34.56	V	53.97	-19.41	Avg	151.25	158.83	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
High Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	50.36	V	73.97	-23.61	Peak	150.25	127.49	
2778.93	49.18	V	53.97	-4.79	Avg	150.25	127.49	
3705.24	47.02	V	73.97	-26.95	Peak	132.75	141.82	
3705.24	43.54	V	53.97	-10.43	Avg	132.75	141.82	
4631.55	41.87	V	73.97	-32.10	Peak	101.50	223.37	
4631.55	30.95	V	53.97	-23.02	Avg	101.50	223.37	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	46.31	V	73.97	-27.66	Peak	114.25	223.31	
7410.48	38.54	V	53.97	-15.43	Avg	114.25	223.31	
8336.79	50.22	V	73.97	-23.75	Peak	226.25	127.43	
8336.79	45.55	V	53.97	-8.42	Avg	226.25	127.43	
9263.1	45.17	V	73.97	-28.80	Peak	265.00	174.65	
9263.1	34.42	V	53.97	-19.55	Avg	265.00	174.65	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
High Channel - X-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	47.11	H	73.97	-26.86	Peak	97.50	129.58	
2778.93	43.91	H	53.97	-10.06	Avg	97.50	129.58	
3705.24	44.94	H	73.97	-29.03	Peak	239.50	127.13	
3705.24	40.34	H	53.97	-13.63	Avg	239.50	127.13	
4631.55	41.88	H	73.97	-32.09	Peak	16.00	222.83	
4631.55	32.63	H	53.97	-21.34	Avg	16.00	222.83	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	46.61	H	73.97	-27.36	Peak	314.75	249.11	
7410.48	39.24	H	53.97	-14.73	Avg	314.75	249.11	
8336.79	49.68	H	73.97	-24.29	Peak	97.00	110.83	
8336.79	41.67	H	53.97	-12.30	Avg	97.00	110.83	
9263.1	45.39	H	73.97	-28.58	Peak	118.25	190.95	
9263.1	34.32	H	53.97	-19.65	Avg	118.25	190.95	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
High Channel - Y-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	47.01	H	73.97	-26.96	Peak	174.25	127.43	
2778.93	44.42	H	53.97	-9.55	Avg	174.25	127.43	
3705.24	46.98	H	73.97	-26.99	Peak	125.00	110.77	
3705.24	43.59	H	53.97	-10.38	Avg	125.00	110.77	
4631.55	41.72	H	73.97	-32.25	Peak	127.25	111.19	
4631.55	31.61	H	53.97	-22.36	Avg	127.25	111.19	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	46.84	H	73.97	-27.13	Peak	131.00	143.37	
7410.48	38.51	H	53.97	-15.46	Avg	131.00	143.37	
8336.79	50.75	H	73.97	-23.22	Peak	123.75	175.31	
8336.79	45.40	H	53.97	-8.57	Avg	123.75	175.31	
9263.1	45.62	H	73.97	-28.35	Peak	323.00	110.77	
9263.1	34.36	H	53.97	-19.61	Avg	323.00	110.77	

FCC 15.247
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna
High Channel - Z-Axis
Transmit Mode

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1852.62								**Not in Restricted Band**
1852.62								**Done via Conducted**
2778.93	44.46	H	73.97	-29.51	Peak	116.75	111.13	
2778.93	40.46	H	53.97	-13.51	Avg	116.75	111.13	
3705.24	45.83	H	73.97	-28.14	Peak	219.25	26.95	
3705.24	41.90	H	53.97	-12.07	Avg	219.25	126.95	
4631.55	43.57	H	73.97	-30.40	Peak	123.50	159.37	
4631.55	35.34	H	53.97	-18.63	Avg	123.50	159.37	
5557.86								**Not in Restricted Band**
5557.86								**Done via Conducted**
6484.17								**Not in Restricted Band**
6484.17								**Done via Conducted**
7410.48	45.33	H	73.97	-28.64	Peak	229.25	127.25	
7410.48	36.38	H	53.97	-17.59	Avg	229.25	127.25	
8336.79	50.17	H	73.97	-23.80	Peak	239.00	110.77	
8336.79	45.48	H	53.97	-8.49	Avg	239.00	110.77	
9263.1	45.37	H	73.97	-28.60	Peak	100.00	222.89	
9263.1	34.57	H	53.97	-19.40	Avg	100.00	222.89	

FCC Class B and RSS-210
Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna

Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx - 10 kHz to 30 MHz and 1 GHz to 9.3 GHz
Digital Portion from the EUT - 10 kHz to 30 MHz and 1 GHz to 9.3 GHz

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from the Non Harmonic Emissions
								from the Tx
								10 kHz to 30 MHz
								No Emissions Detected
								from the Non Harmonic Emissions
								from the Tx
								1 GHz to 9.3 GHz
								No Emissions Detected
								from the Digital Portion
								of the EUT
								10 kHz to 30 MHz
								No Emissions Detected
								from the Digital Portion
								of the EUT
								1 GHz to 9.3 GHz
								Tested in both Horizontal and
								Vertical Polarizations

FCC Class B

Applied Wireless, Inc.
Lo Ra Transceiver Module
Model: TL900
Wired Antenna

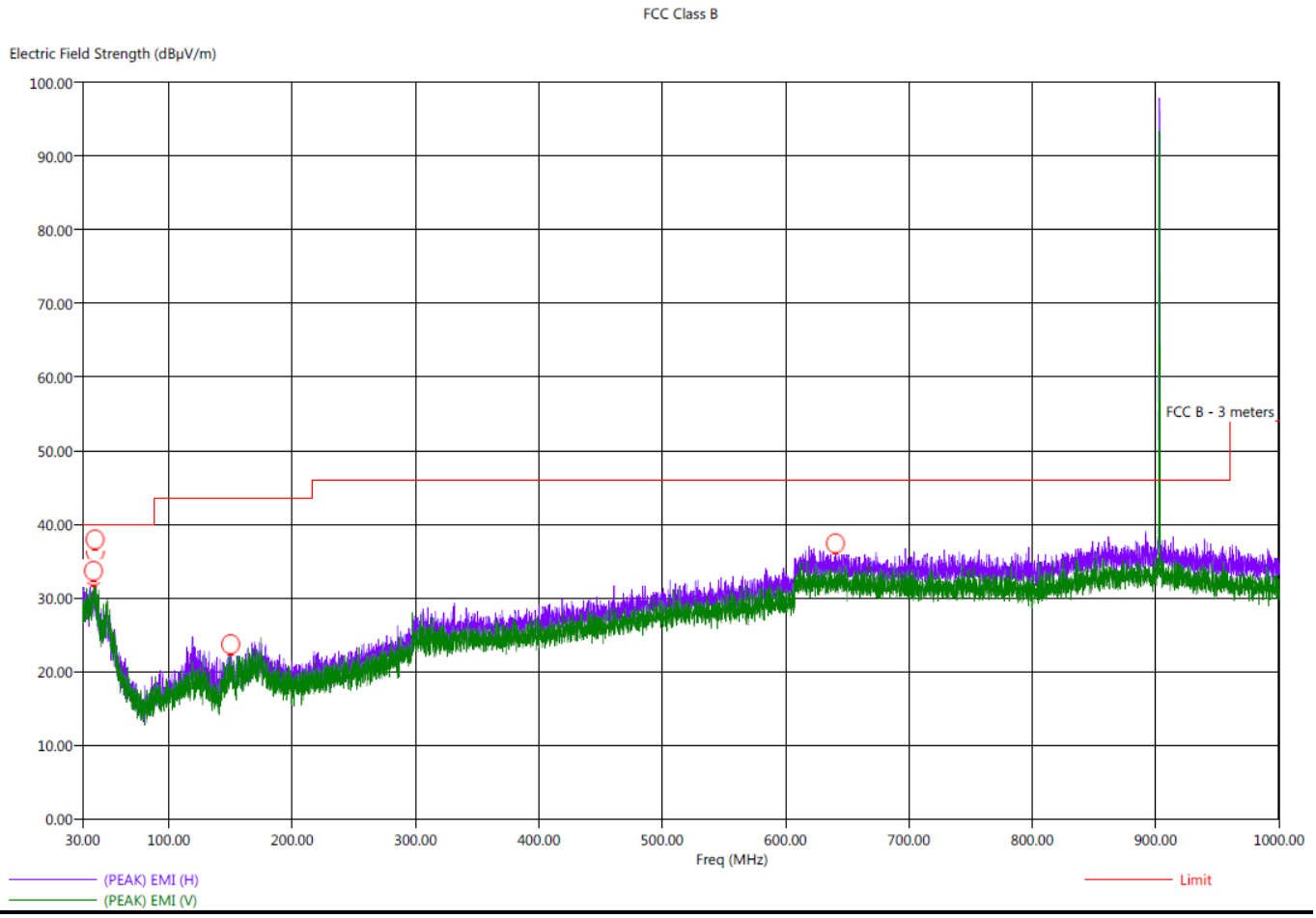
Date: 07/19/2016
Lab: D
Tested By: Kyle Fujimoto

Receiver Portion - 30 MHz to 9.3 GHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from the Receiver Portion
								10 kHz to 30 MHz
								No Emissions Detected
								from the Receiver Portion
								of the EUT
								1 GHz to 9.3 GHz
								Tested in both Horizontal and
								Vertical Polarizations

Title: Pre-Scan - FCC Class B
File: Agilent - Pre-Scan - Lo Ra Transceiver Wired - Tx Mode - FCC Class B - 06-23-2016.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900
Note: Frequency at 903.05 MHz is from Transmitter and subject to FCC 15.247 limits.

7/27/2016 4:00:05 PM
Sequence: Preliminary Scan



Title: Radiated Final - FCC Class B
File: Agilent - Final Scan - Lo Ra Transceiver Wired - Tx Mode - FCC Class B - 06-23-2016.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900
Note: The Frequency at 903.05 MHz is from the Transmitter and subject to FCC 15.247 limits.

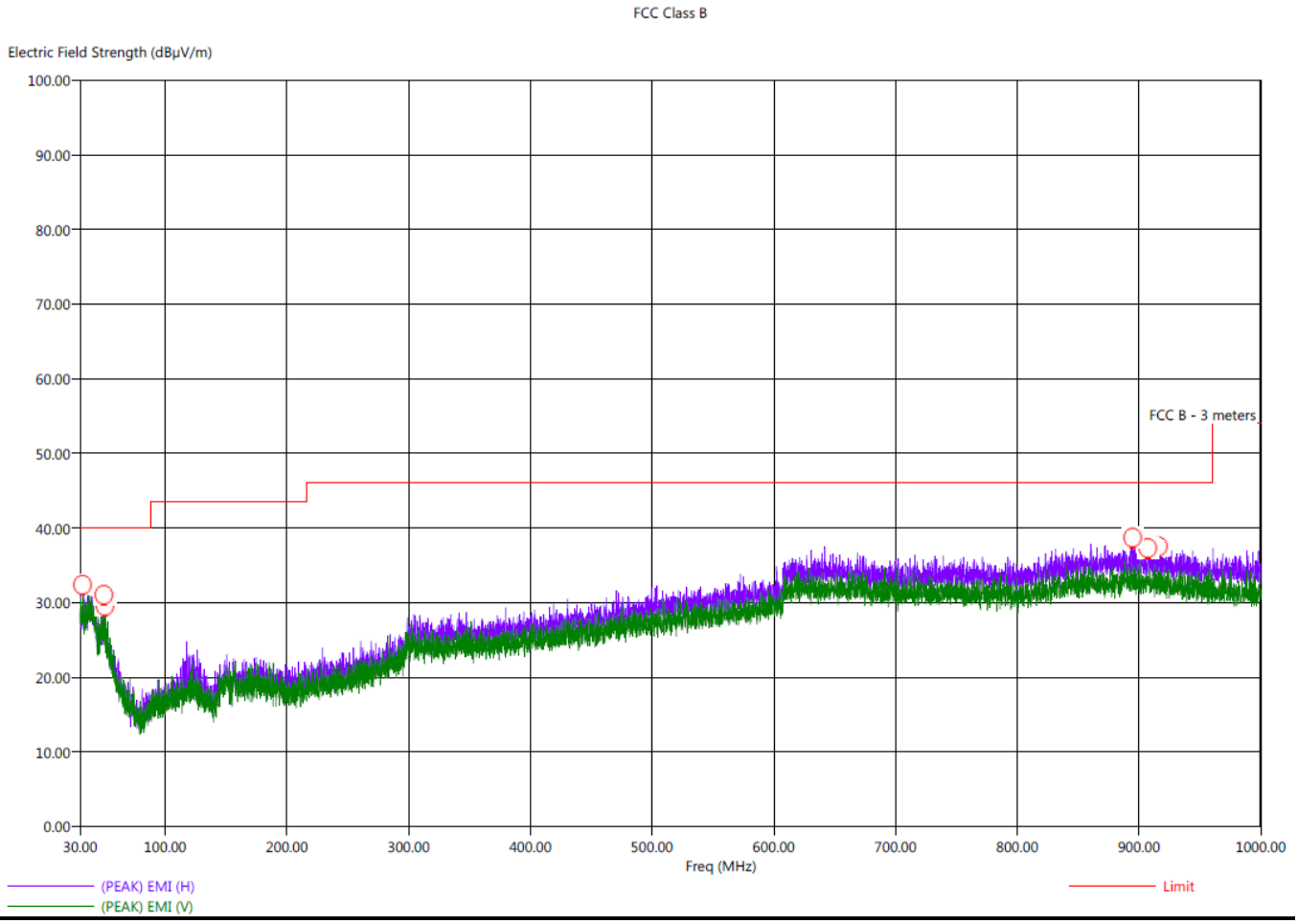
7/27/2016 4:10:58 PM
Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
38.90	V	37.15	30.99	-2.85	-9.01	40.00	25.13	0.39	96.50	142.46
39.20	V	38.60	33.08	-1.40	-6.92	40.00	25.26	0.39	103.75	110.94
40.10	V	40.20	34.78	0.20	-5.22	40.00	25.38	0.39	106.75	110.94
40.40	V	39.35	34.23	-0.65	-5.77	40.00	25.24	0.39	129.75	111.00
150.10	V	23.96	18.97	-19.54	-24.53	43.50	17.17	0.90	237.25	110.58
640.60	H	37.04	31.67	-8.96	-14.33	46.00	24.19	2.09	14.75	143.23

Title: Pre-Scan - FCC Class B
File: Agilent - Pre-Scan - Lo Ra Transceiver Wired - Rx Mode - FCC Class B - 06-23-2016.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/27/2016 4:30:32 PM
Sequence: Preliminary Scan



Title: Radiated Final - FCC Class B
File: Agilent - Final Scan - Lo Ra Transceiver Wired - Rx Mode - FCC Class B - 06-23-2016.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

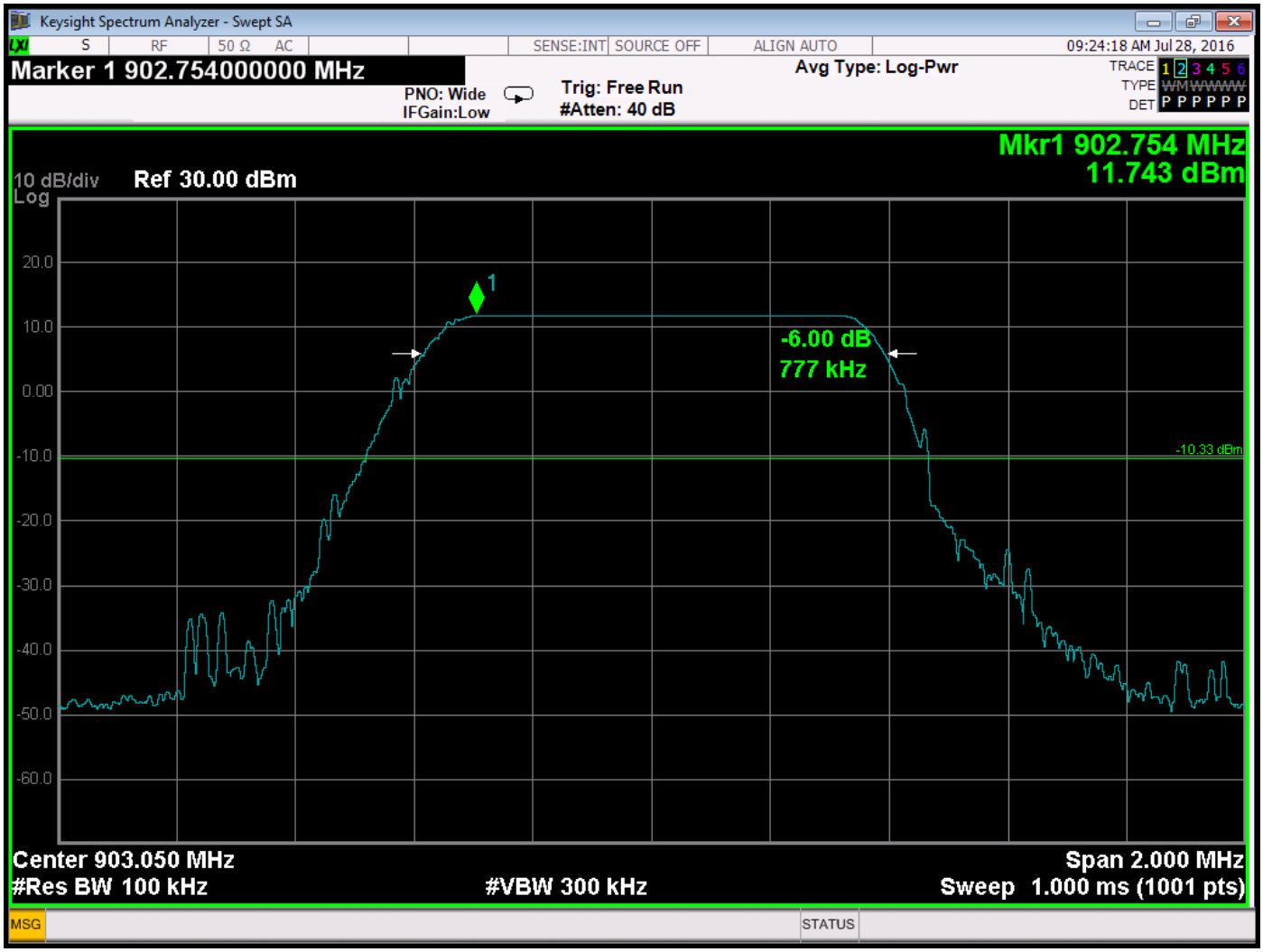
7/27/2016 4:39:27 PM
Sequence: Final Measurements

FCC Class B

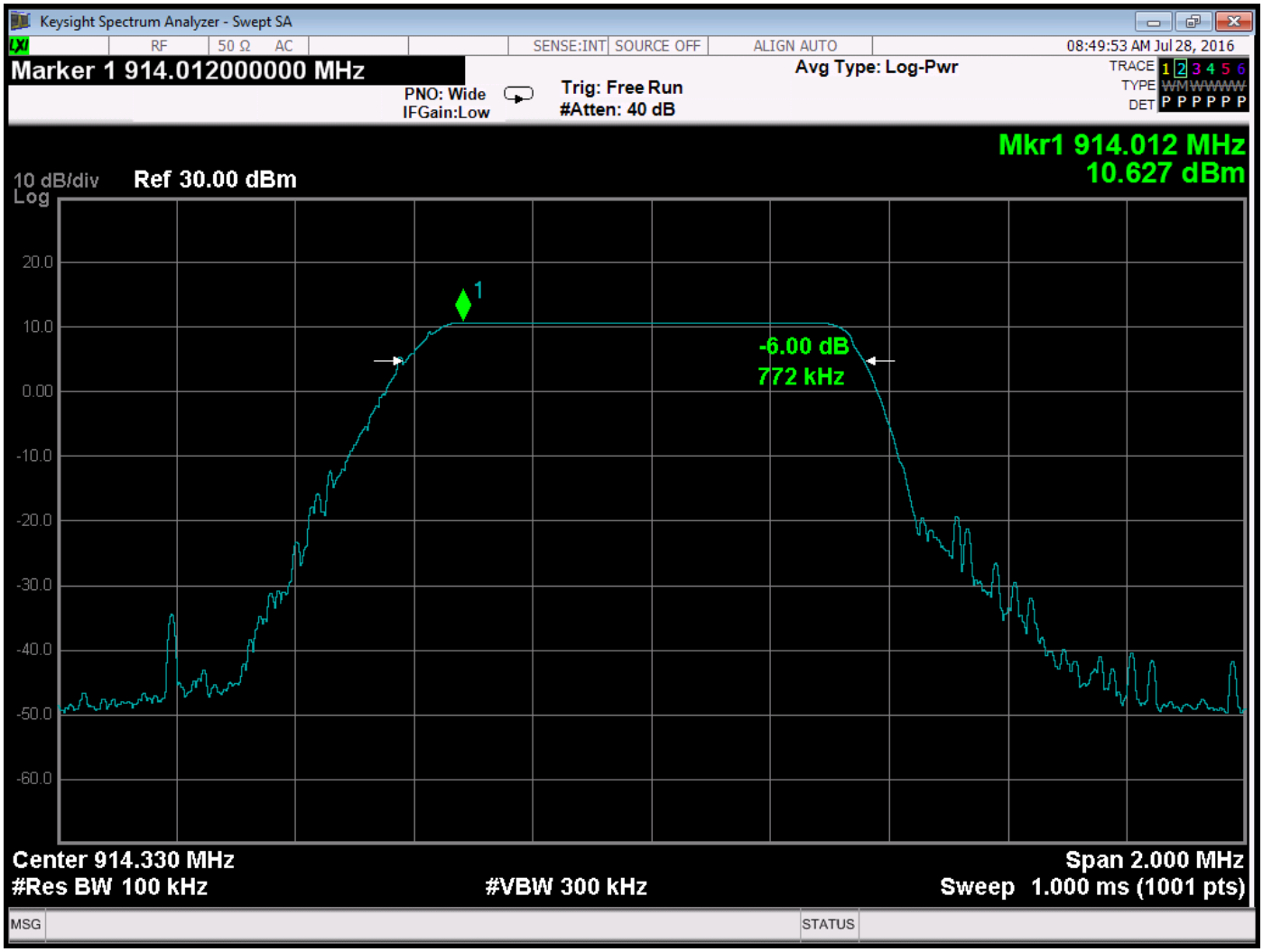
Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Agl (deg)	Twr Ht (cm)
32.10	V	32.14	26.68	-7.86	-13.32	40.00	24.12	0.36	325.75	111.23
49.60	V	32.97	26.66	-7.03	-13.34	40.00	22.45	0.42	28.25	110.22
50.60	V	32.40	26.23	-7.60	-13.77	40.00	22.21	0.43	349.50	144.25
894.90	H	37.78	32.94	-8.22	-13.06	46.00	26.84	2.53	218.25	399.47
907.40	H	37.63	32.83	-8.37	-13.17	46.00	26.77	2.54	75.75	270.70
916.10	H	37.33	32.66	-8.67	-13.34	46.00	26.60	2.56	229.25	283.95

-6 dB BANDWIDTH

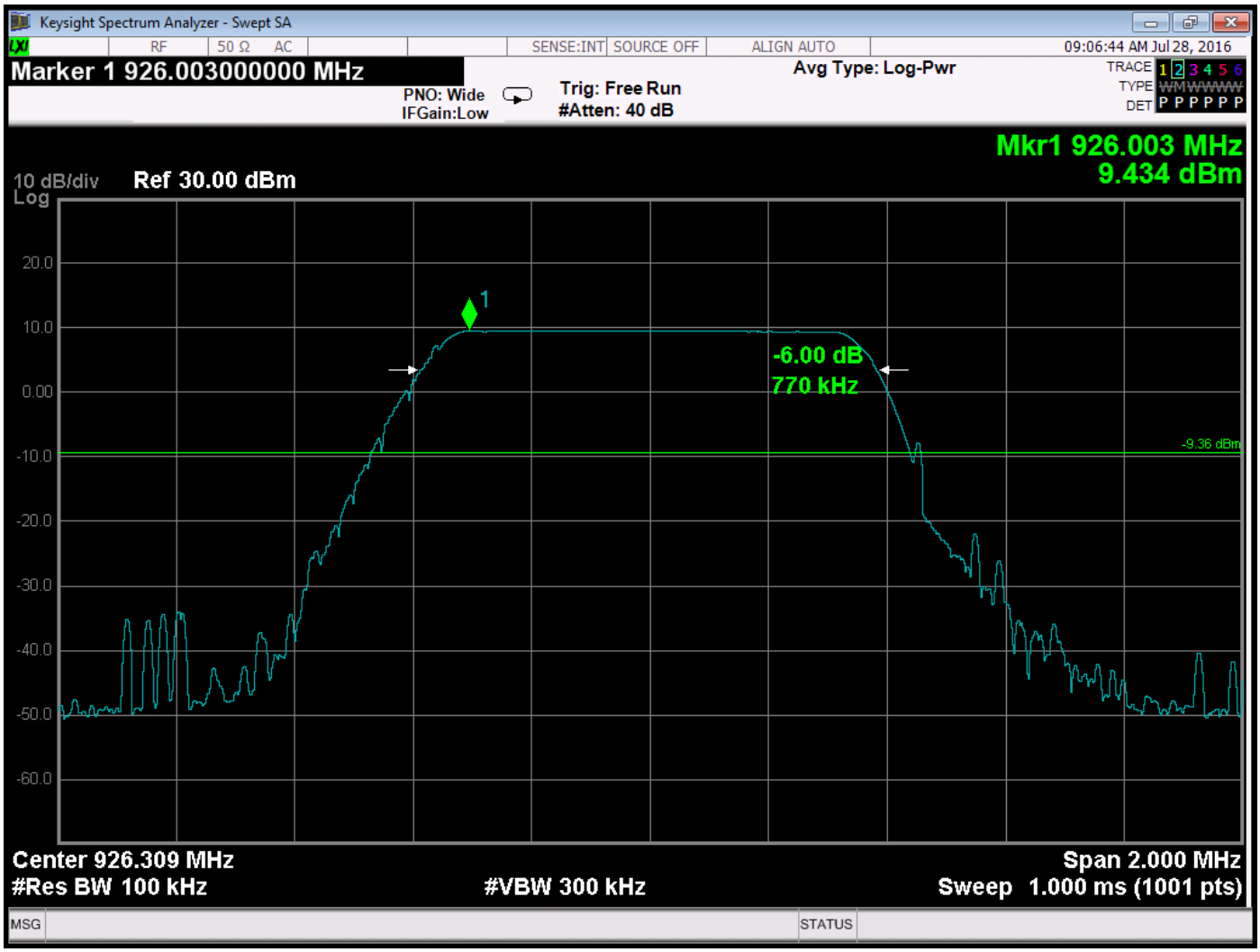
DATA SHEETS



-6 dB Bandwidth – Low Channel



-6 dB Bandwidth – Middle Channel

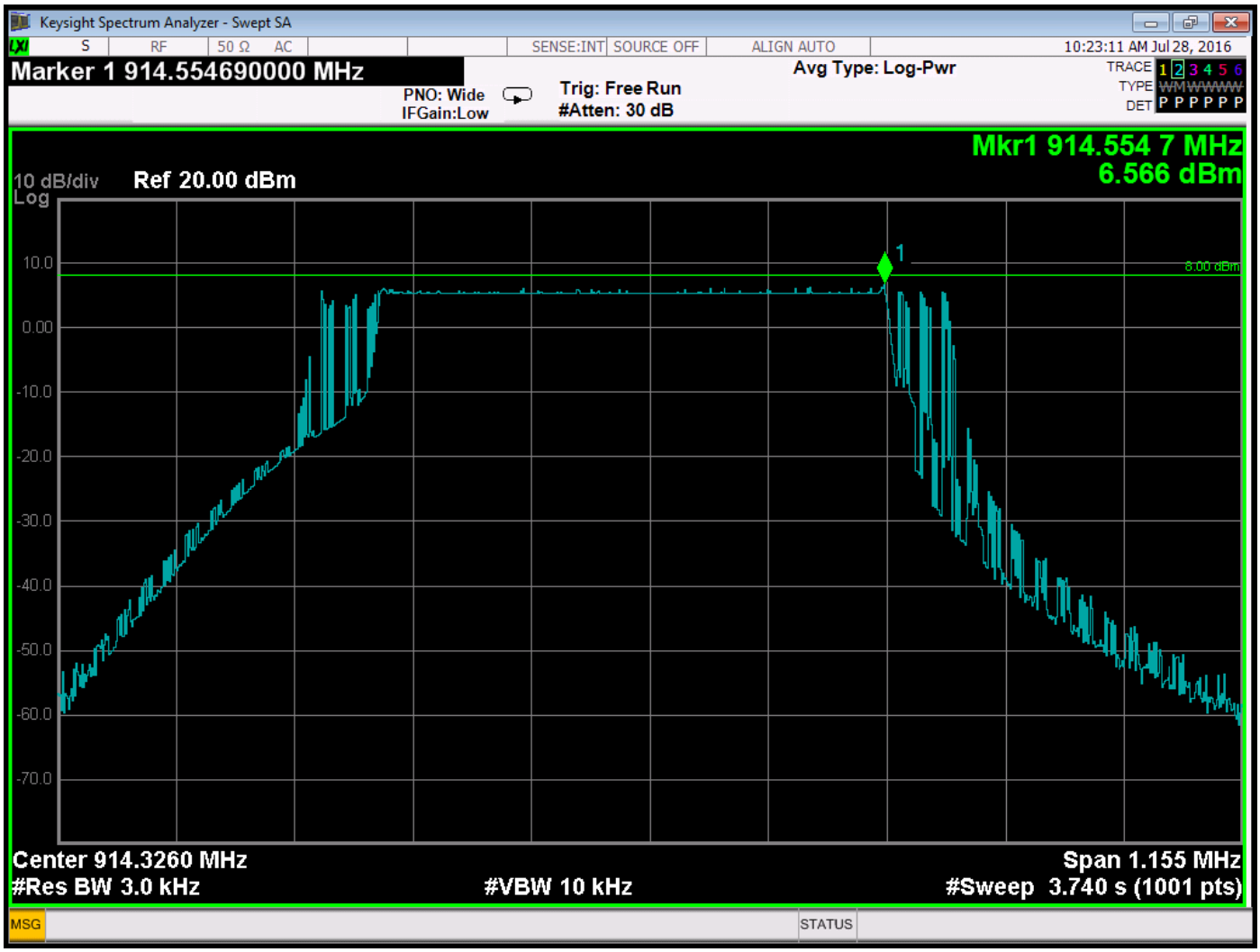


-6 dB Bandwidth – High Channel

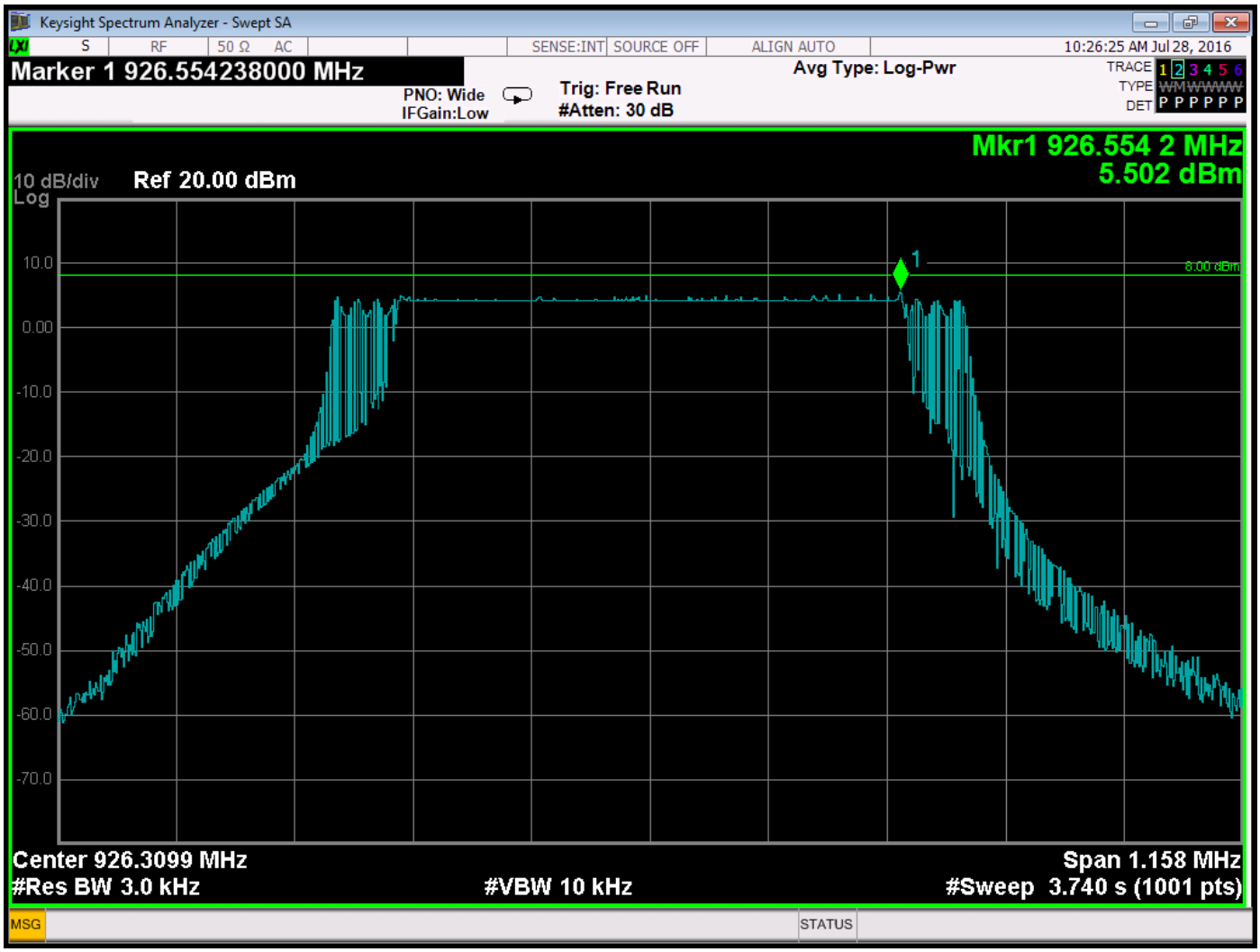
SPECTRAL DENSITY OUTPUT

DATA SHEETS

Spectral Density – Low Channel



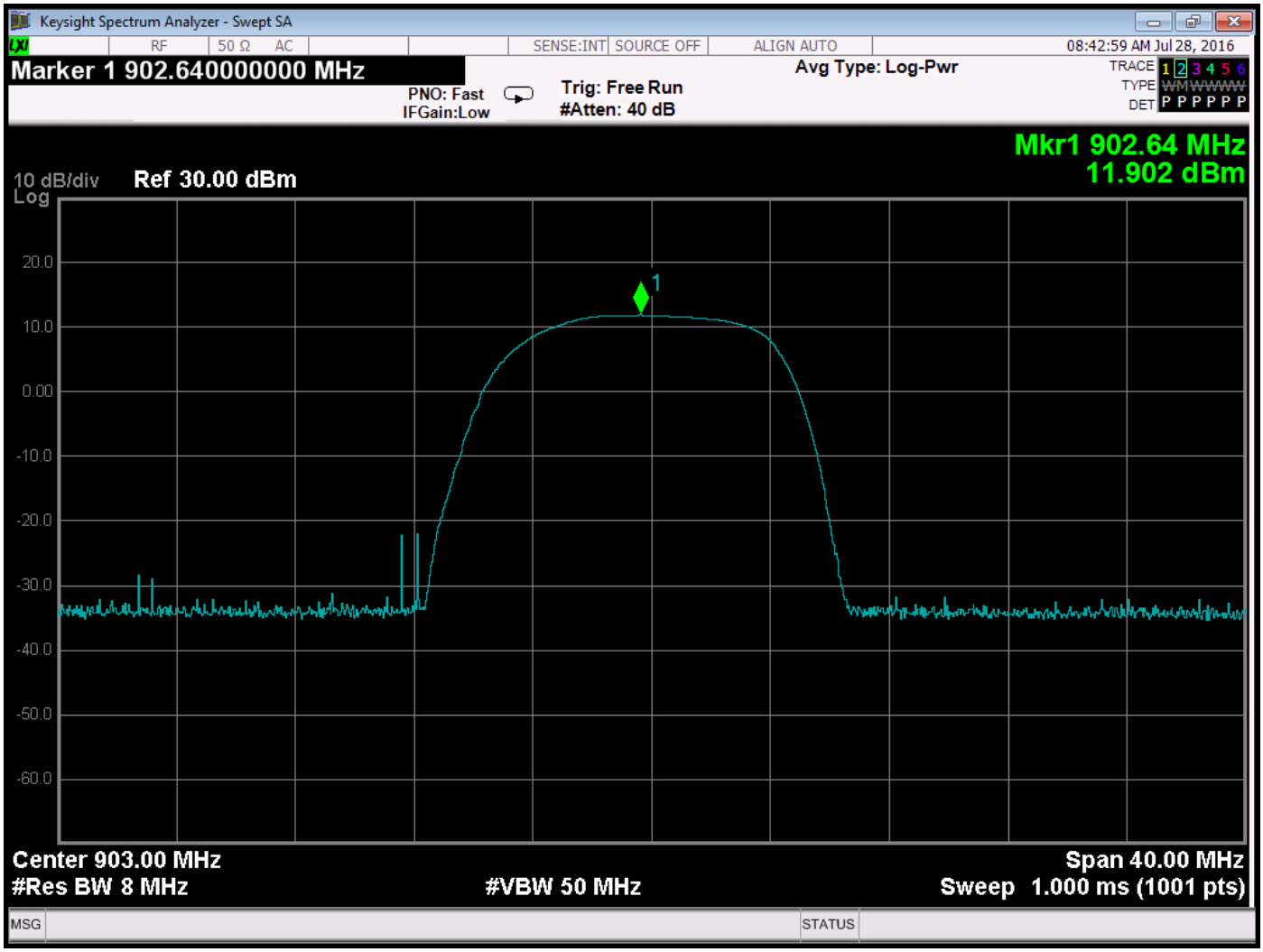
Spectral Density – Middle Channel



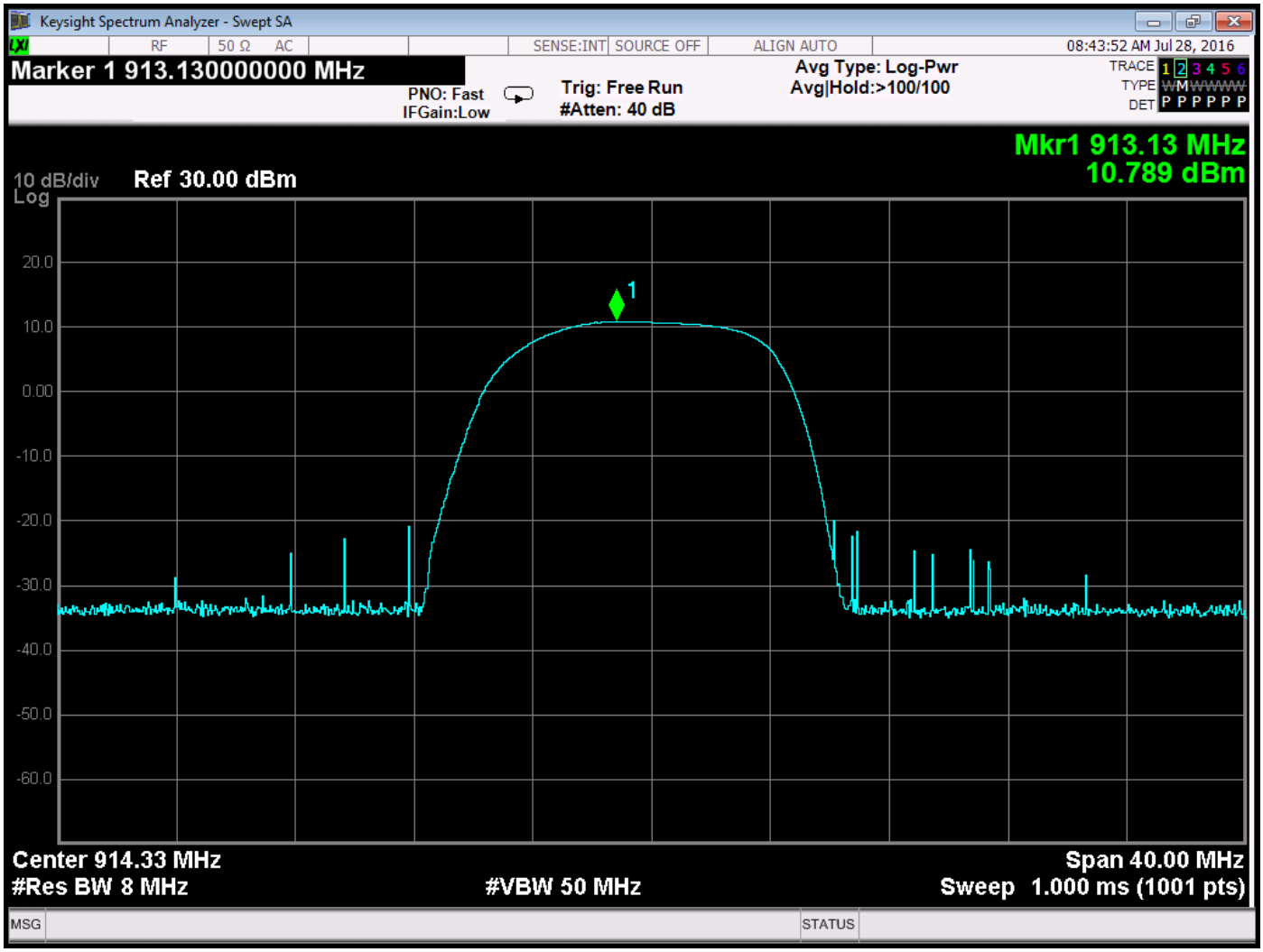
Spectral Density – High Channel

PEAK POWER

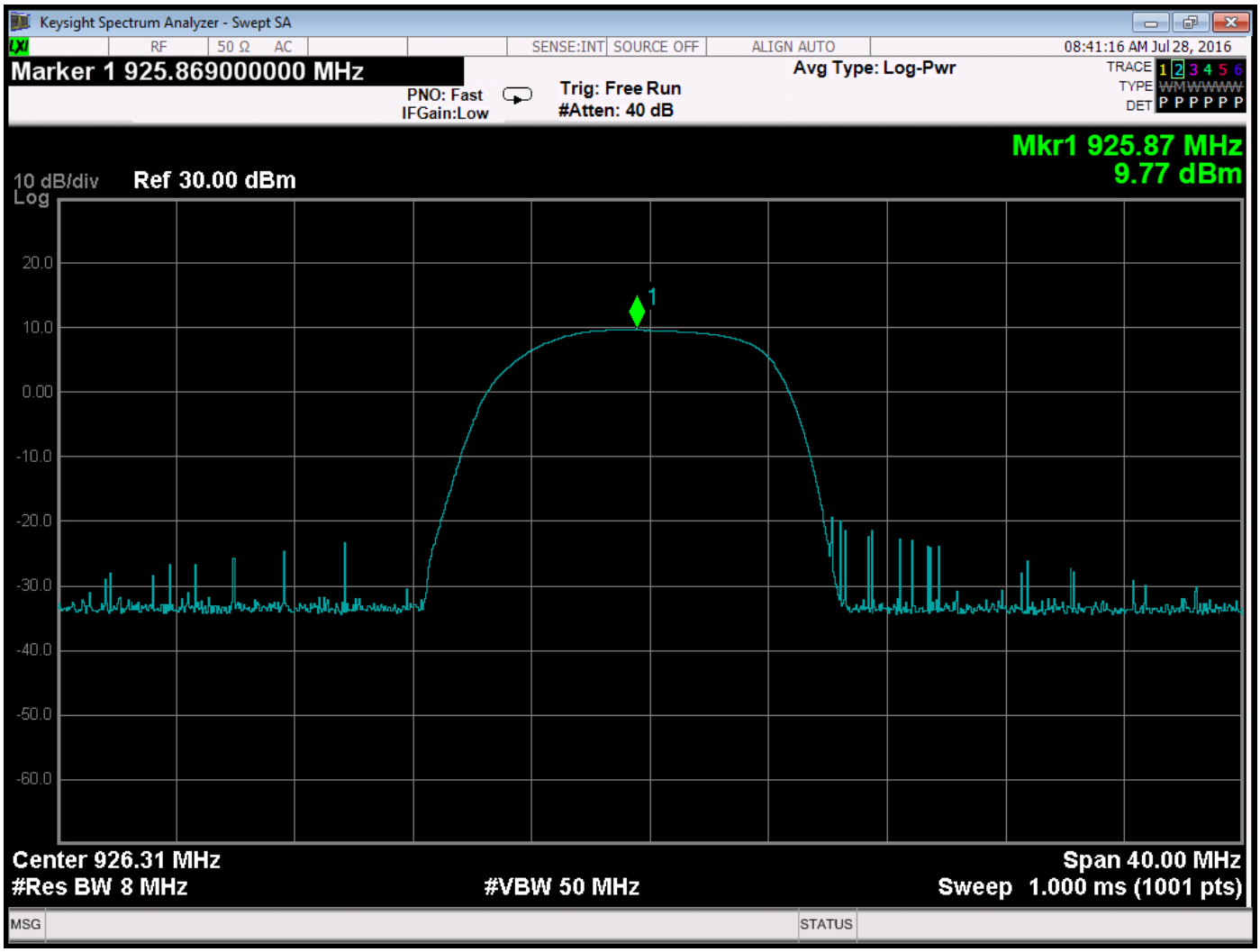
DATA SHEETS



Peak Power Output – Low Channel



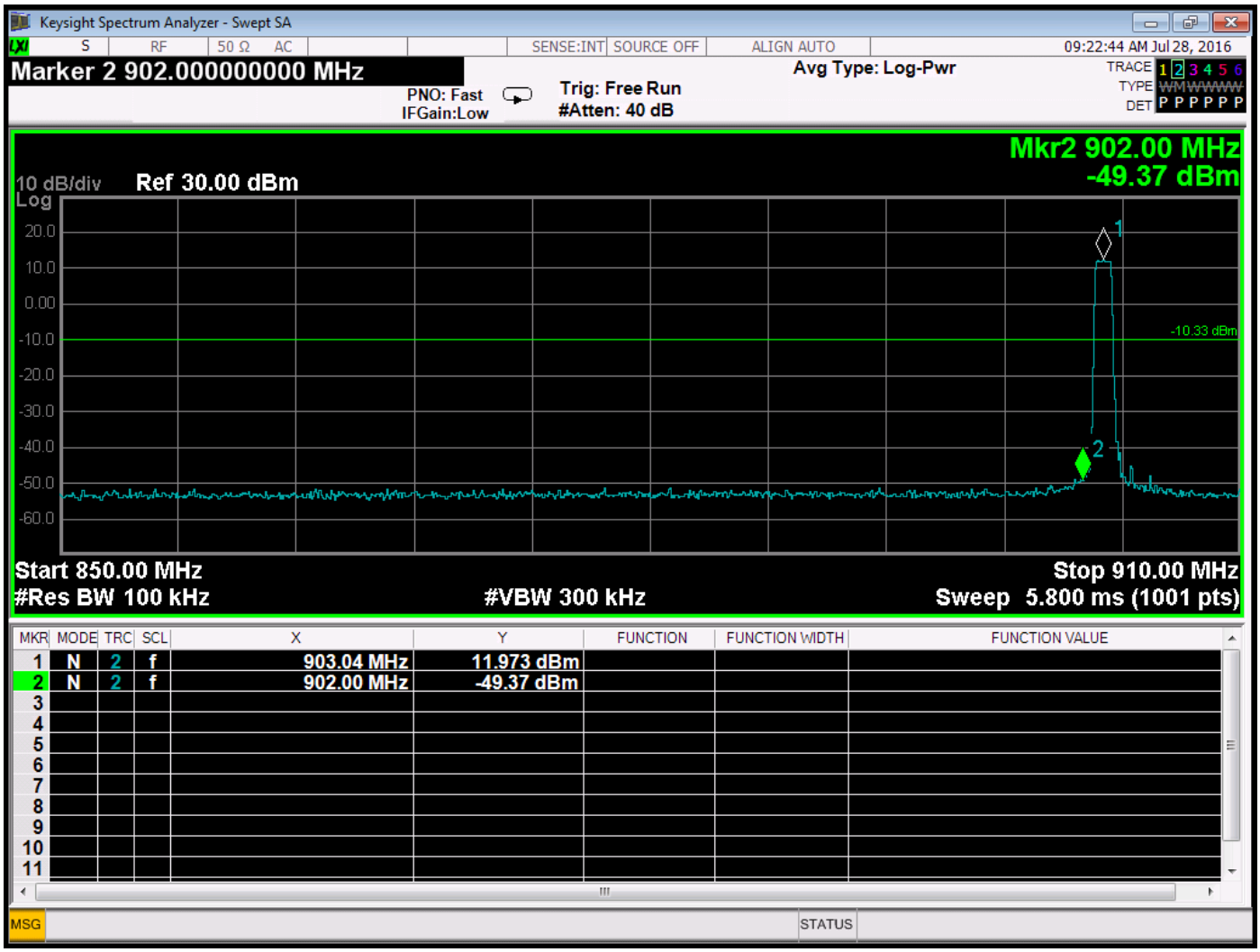
Peak Power Output – Middle Channel



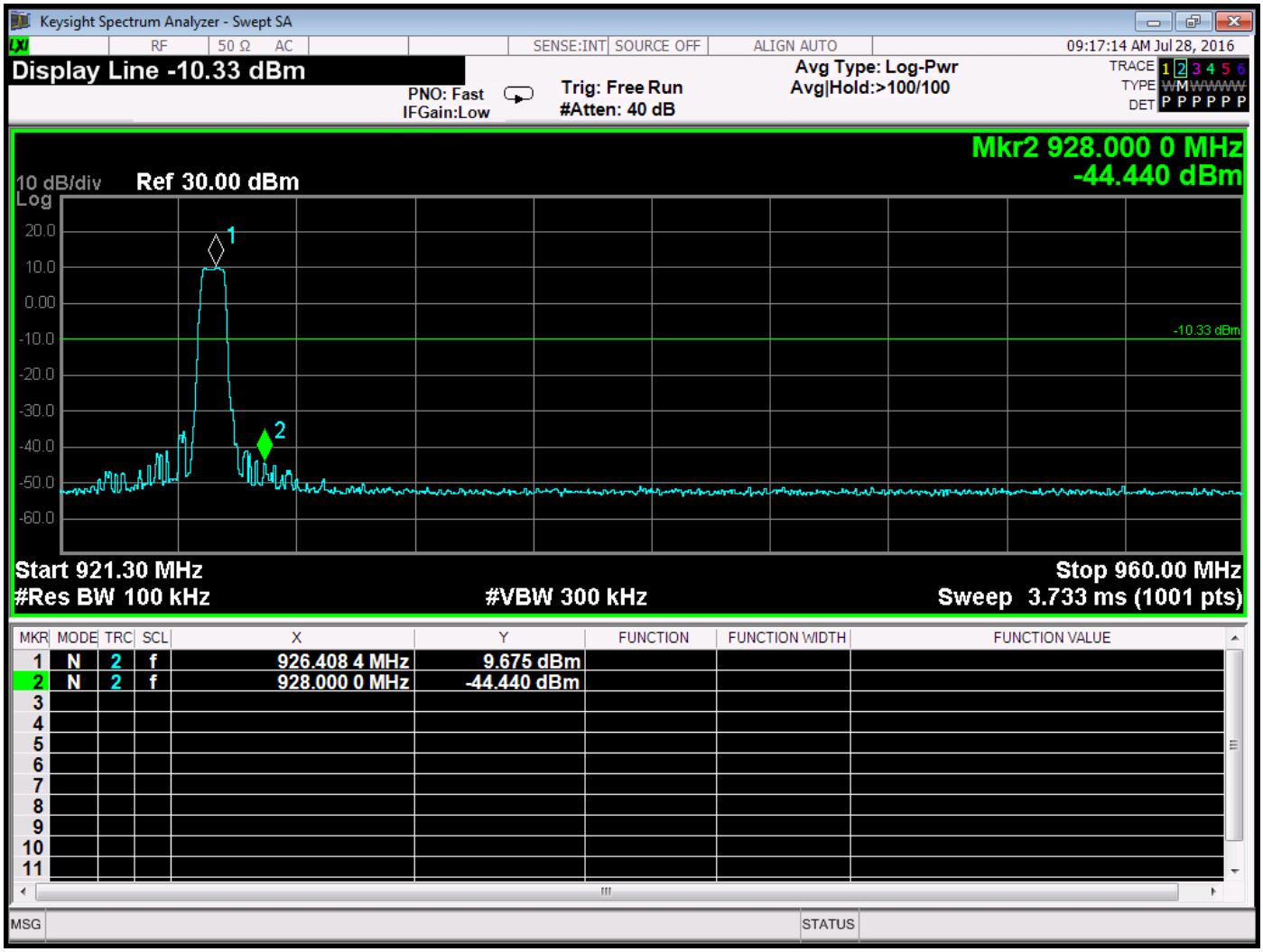
Peak Power Output – High Channel

BAND EDGES

DATA SHEETS

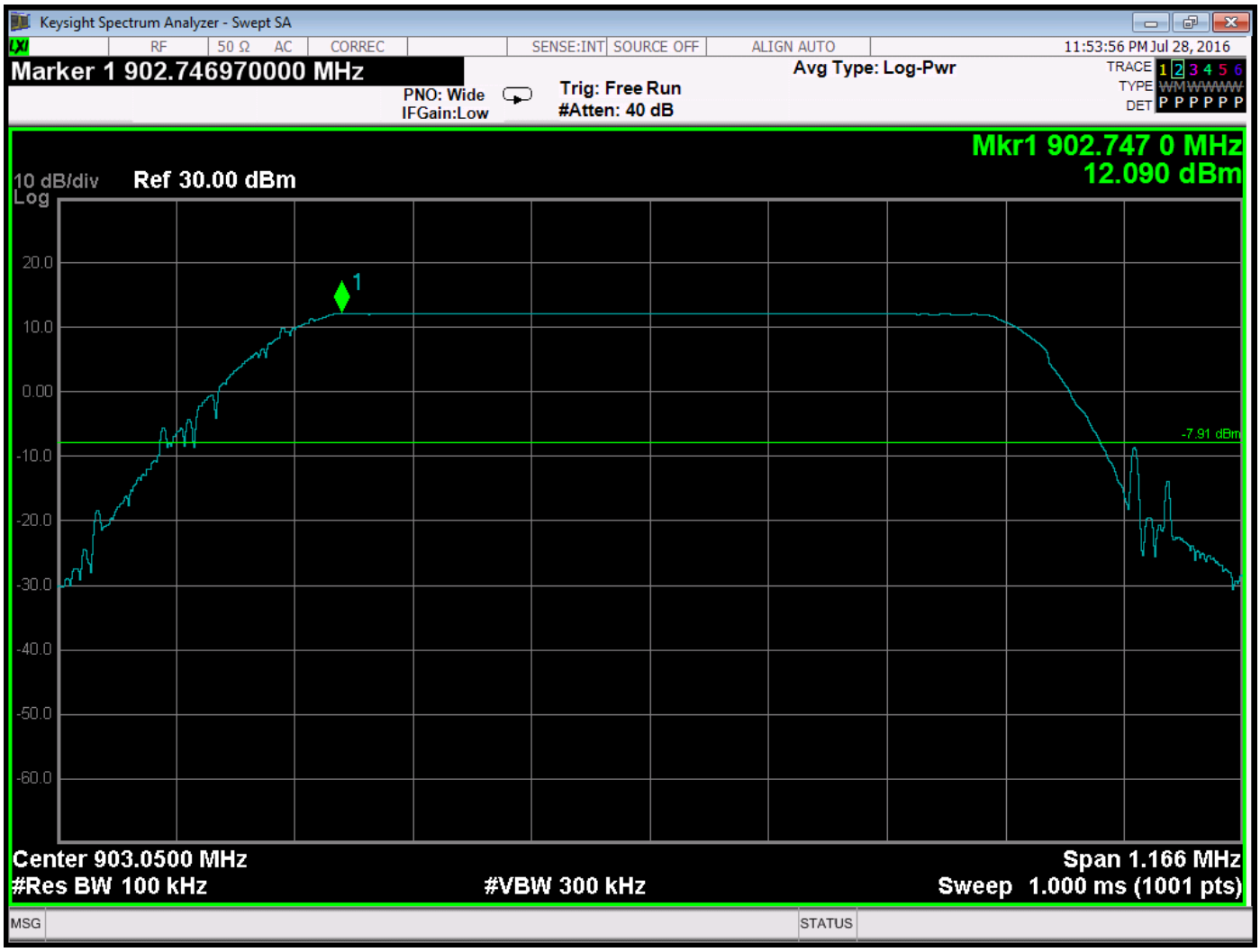


Band Edge – Low Channel

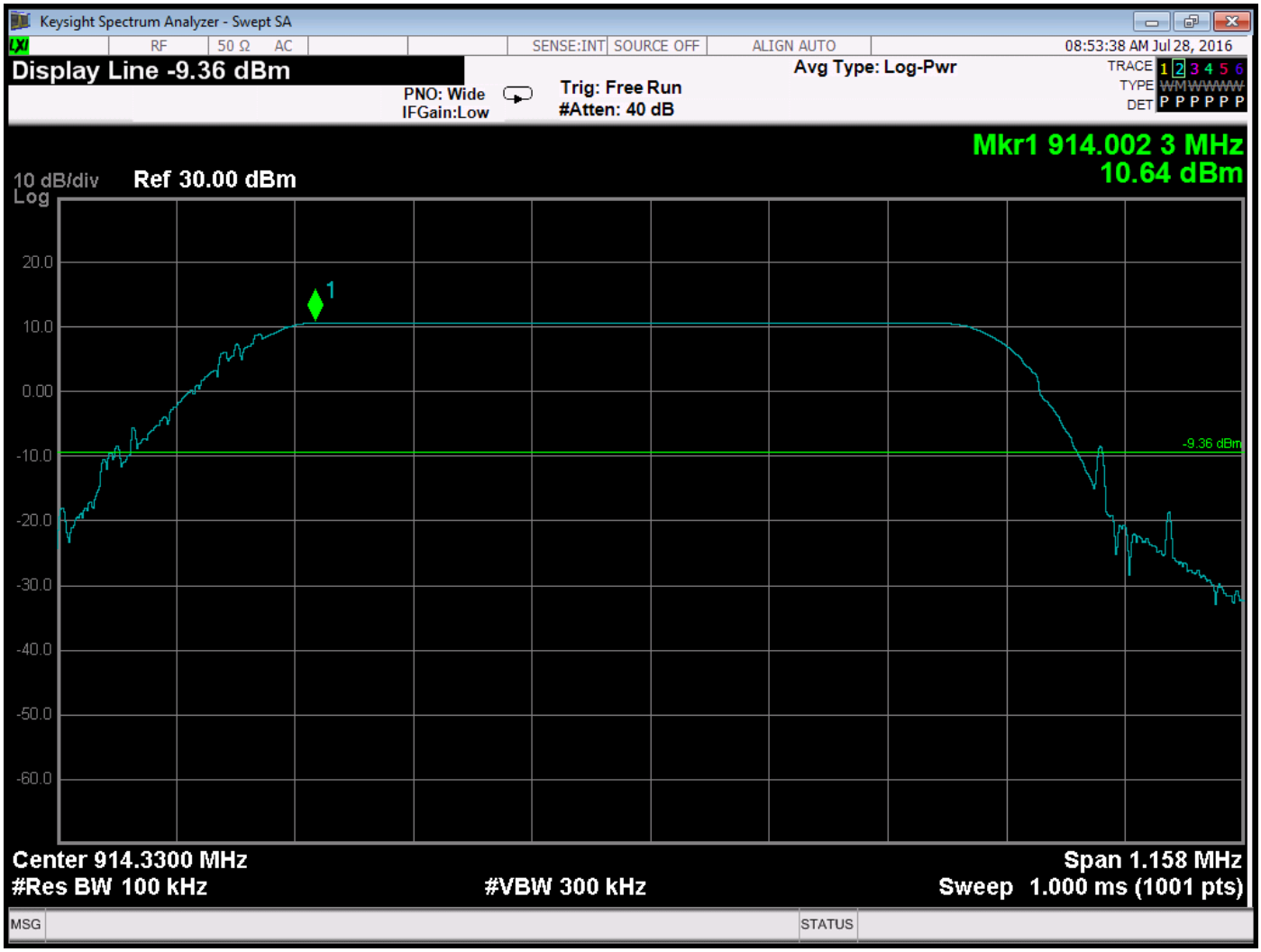


Band Edge – High Channel

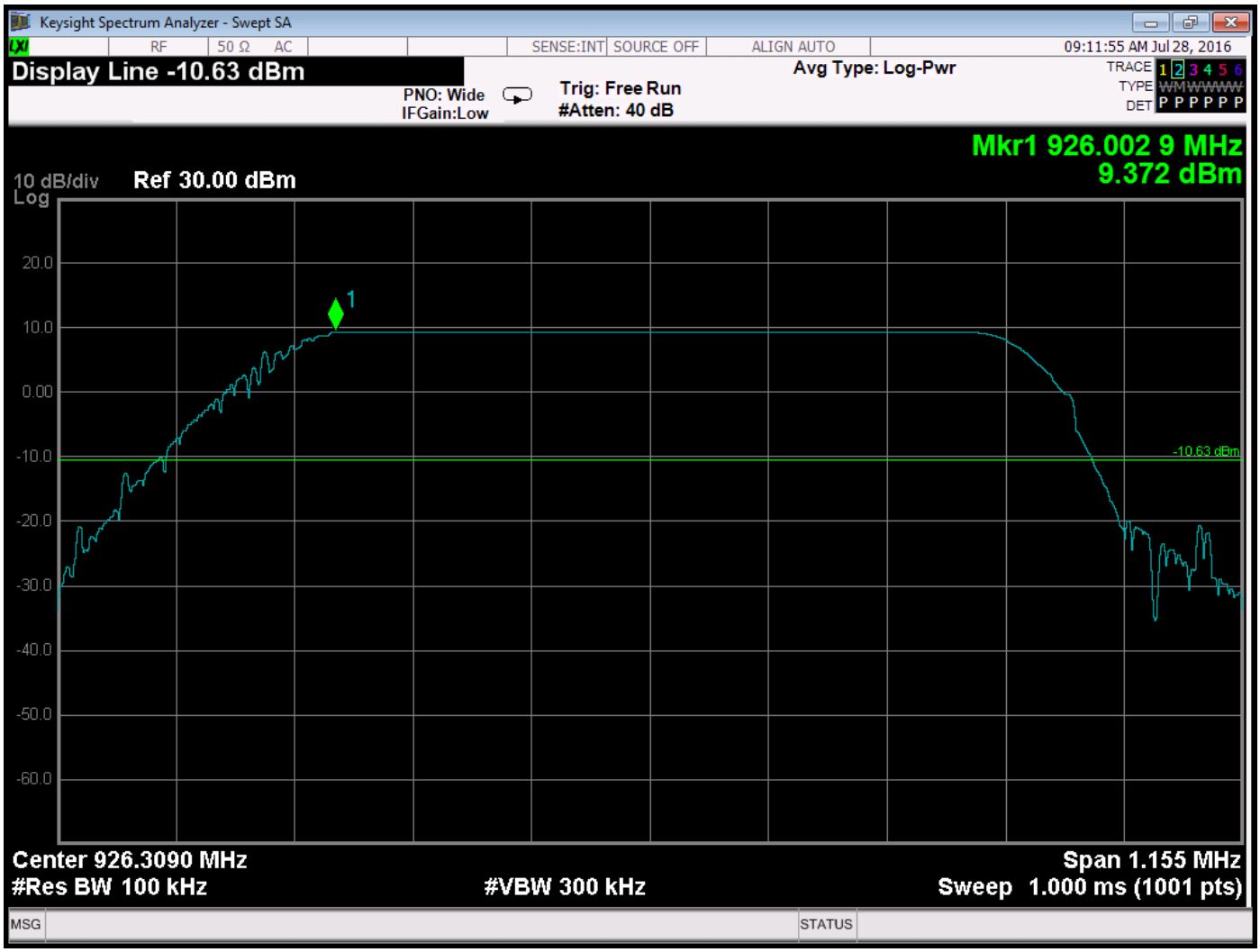
EMISSIONS IN
NON-RESRTICTED BANDS
DATA SHEETS



RF Antenna Conducted – Reference Level – Low Channel



RF Antenna Conducted – Reference Level – Middle Channel



RF Antenna Conducted – Reference Level – High Channel

APPLIED WIRELESS, INC.

LoRa TRANSCEIVER MODULE

MODEL: TL900

EMISSIONS IN NON-RESTRICTED BANDS

FREQUENCY (GHz)	LEVEL (dBm)	Limit* (dBm)	Margin (dB)
0.928072 (High Ch)	-46.296	-10.628	-35.668
3.155 (Mid Ch)	-47.472	-9.36	-38.112
5.566 (Low Ch)	-47.03	-7.91	-39.12

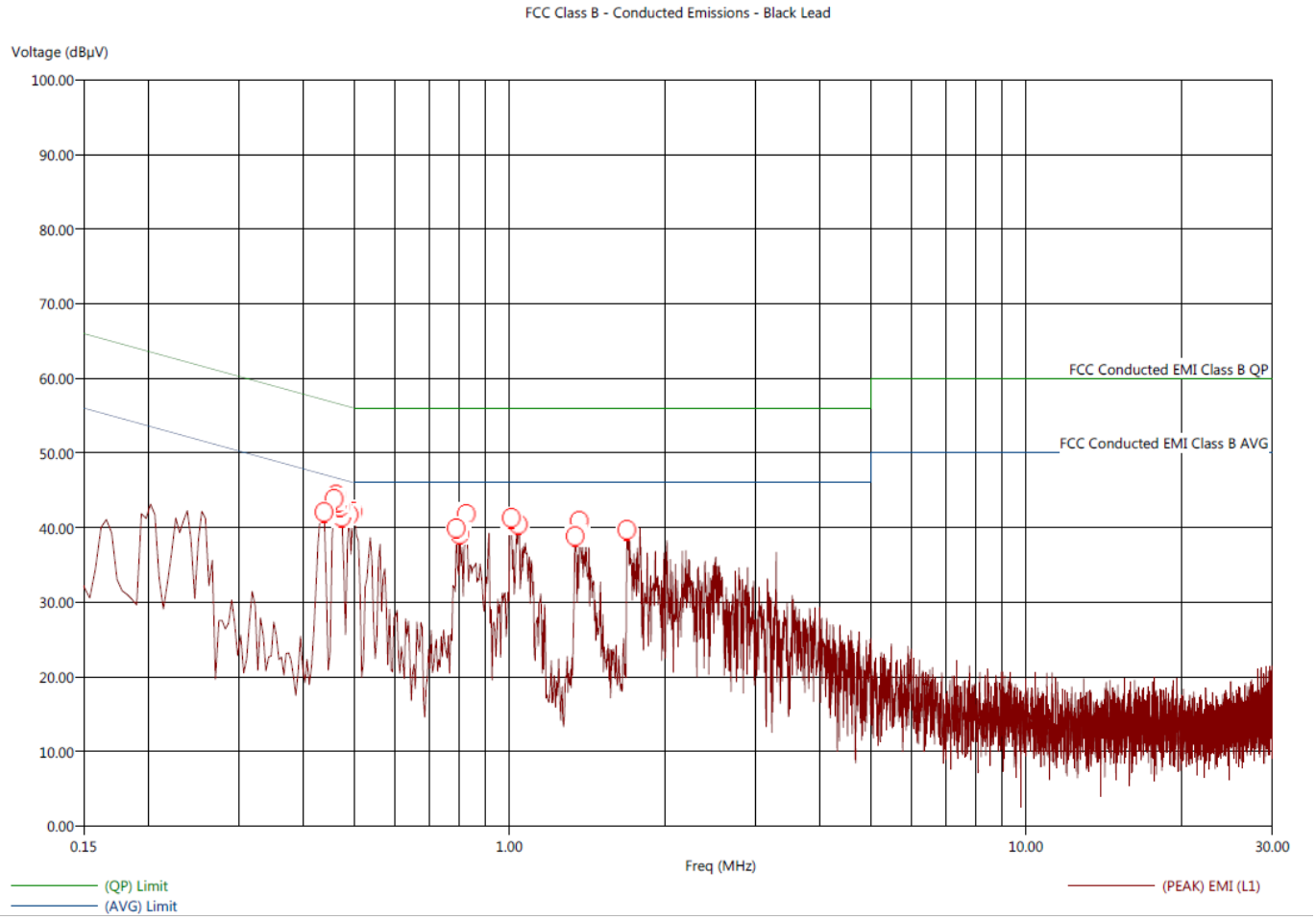
*The Limit is based on 20 dB below the reference levels obtained on the previous pages.

CONDUCTED EMISSIONS

DATA SHEETS

Title: FCC Class B - Conducted Emissions - Black Lead
File: Agilent - Conducted - Pre-Test - Line - Half Wave Dipole - Tx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 3:21:47 AM
Sequence: Preliminary Scan



Title: FCC Class B - Conducted Emissions - Black Lead
File: Agilent - Conducted - Final Test - Line - Half Wave Dipole - Tx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

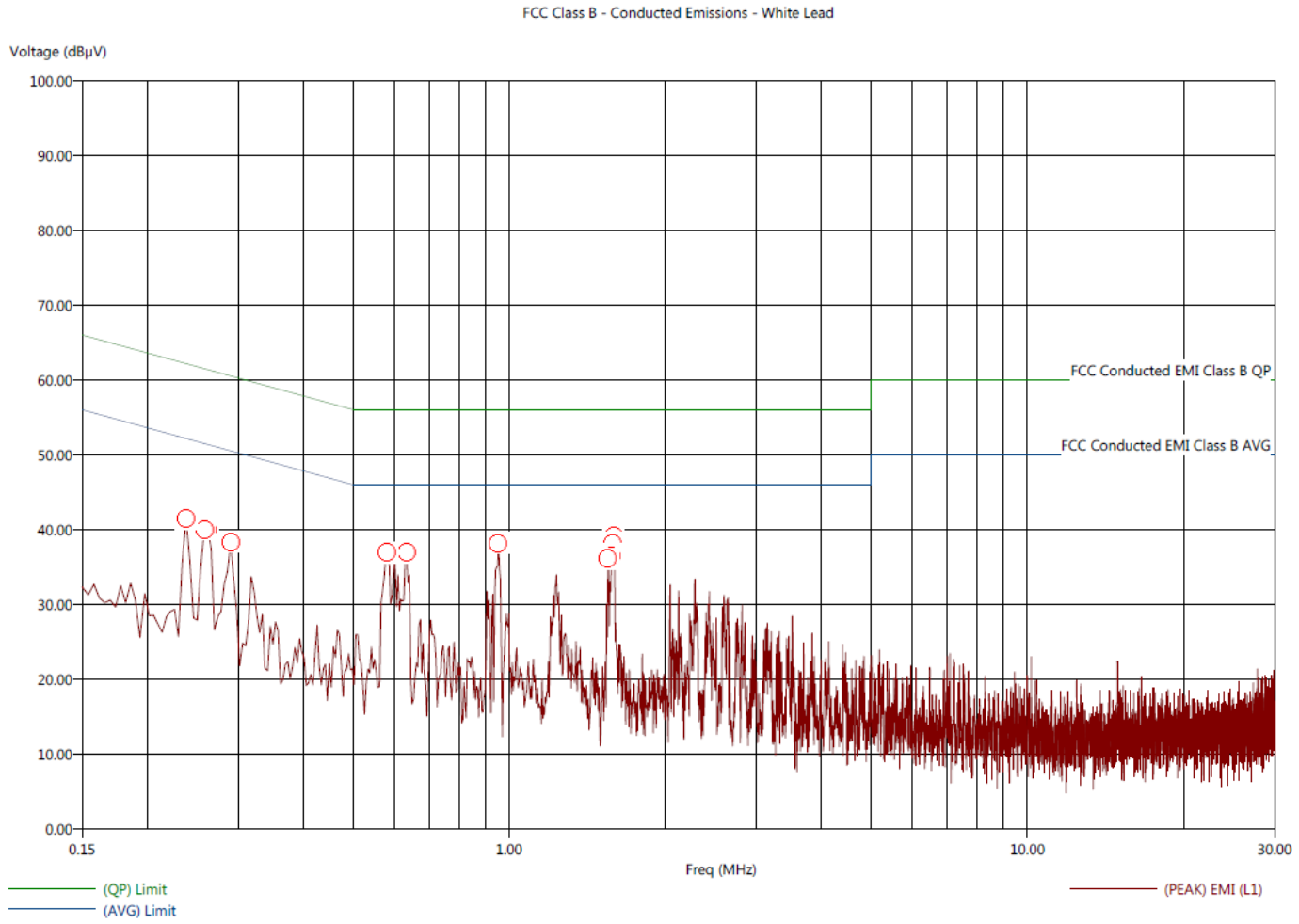
7/22/2016 3:24:17 AM
Sequence: Final Measurements

FCC Class B - Conducted Emissions - Black Lead

Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin AVL (dB)	(AVG) Margin AVL (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)
0.44	43.45	33.62	-3.69	-13.52	47.14	0.08	0.05	9.84
0.46	44.42	32.78	-2.20	-13.84	46.62	0.08	0.05	9.84
0.46	43.77	33.95	-2.70	-12.52	46.47	0.08	0.05	9.84
0.47	44.44	31.89	-2.24	-14.79	46.68	0.08	0.05	9.84
0.47	44.61	28.29	-1.66	-17.98	46.27	0.08	0.05	9.84
0.47	43.83	34.89	-2.69	-11.63	46.52	0.08	0.05	9.84
0.49	43.09	33.46	-2.91	-12.54	46.00	0.08	0.05	9.84
0.50	44.81	28.45	-1.47	-17.83	46.28	0.08	0.05	9.84
0.50	43.63	32.57	-2.38	-13.44	46.01	0.08	0.05	9.84
0.79	43.53	31.87	-2.47	-14.13	46.00	0.10	0.04	9.84
0.80	42.93	29.55	-3.07	-16.45	46.00	0.10	0.04	9.84
0.83	40.40	28.26	-5.60	-17.74	46.00	0.10	0.04	9.84
1.01	42.78	31.03	-3.22	-14.97	46.00	0.11	0.03	9.84
1.04	41.69	30.77	-4.31	-15.23	46.00	0.11	0.03	9.84
1.34	41.01	27.84	-4.99	-18.16	46.00	0.13	0.04	9.85
1.37	41.87	28.87	-4.13	-17.13	46.00	0.14	0.04	9.85
1.69	42.26	30.52	-3.74	-15.48	46.00	0.15	0.04	9.85

Title: FCC Class B - Conducted Emissions - White Lead
File: Agilent - Conducted - Pre-Test - Neutral - Half Wave Dipole - Tx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 3:33:01 AM
Sequence: Preliminary Scan



Title: FCC CLass B - Conducted Emissions - White Lead
File: Agilent - Conducted - Final Test - Neutral - Half Wave Dipole - Tx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

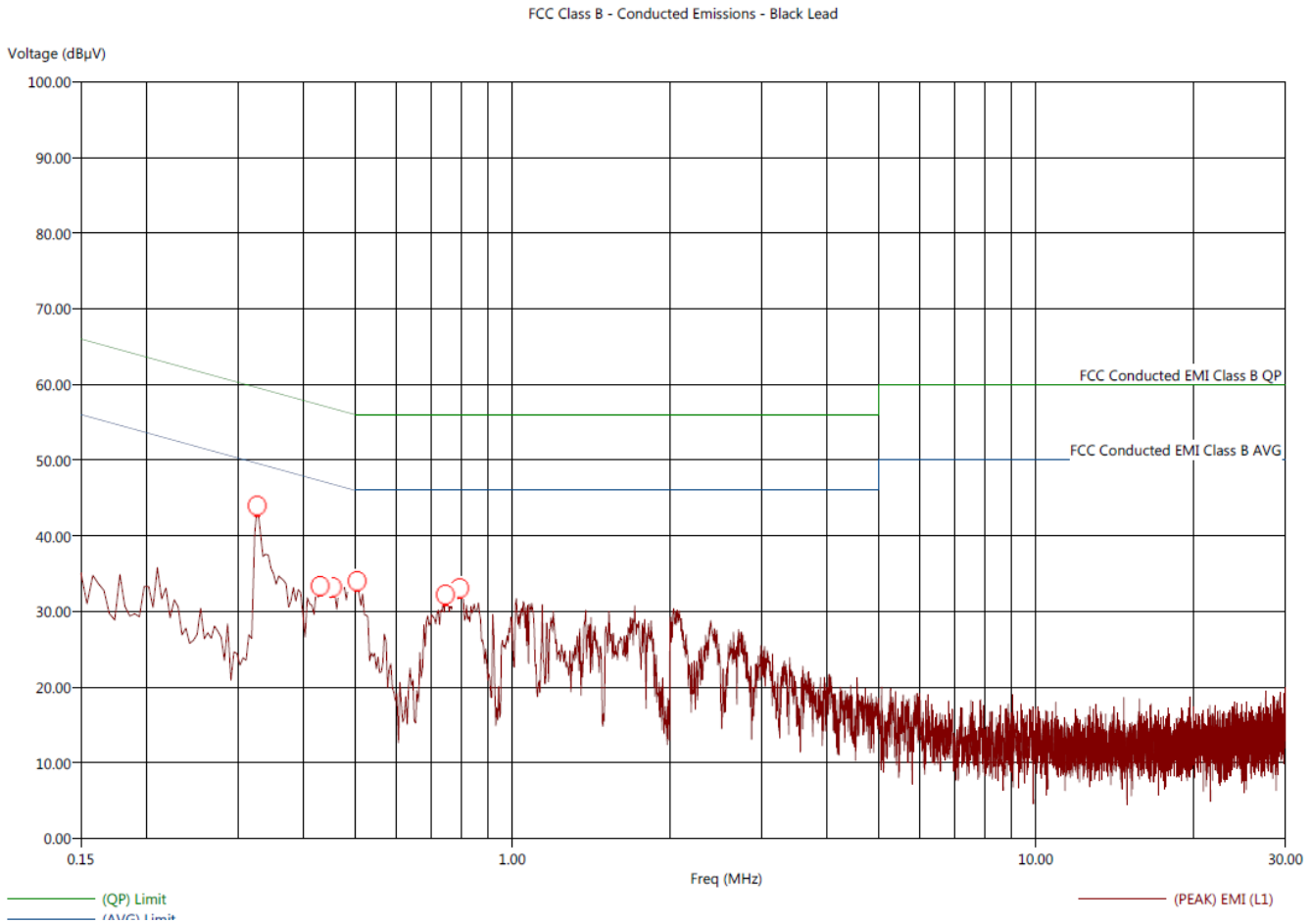
7/22/2016 3:34:57 AM
Sequence: Final Measurements

FCC Class B - Conducted Emissions - White Lead

Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin AVL (dB)	(AVG) Margin AVL (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)
0.238	43.96	27.67	-8.41	-24.70	52.37	0.08	0.26	9.83
0.258	42.21	27.76	-9.38	-23.83	51.59	0.08	0.20	9.83
0.262	40.69	25.04	-10.62	-26.27	51.31	0.08	0.19	9.83
0.290	38.75	24.11	-11.97	-26.61	50.72	0.08	0.15	9.83
0.582	37.82	23.29	-8.18	-22.71	46.00	0.09	0.02	9.84
0.634	39.73	22.03	-6.27	-23.97	46.00	0.09	0.03	9.84
0.954	39.96	23.79	-6.04	-22.21	46.00	0.11	0.03	9.84
1.554	36.25	19.06	-9.75	-26.94	46.00	0.15	0.04	9.85
1.574	38.13	21.58	-7.87	-24.42	46.00	0.15	0.04	9.85
1.578	38.03	22.45	-7.97	-23.55	46.00	0.15	0.04	9.85
1.582	40.32	23.17	-5.68	-22.83	46.00	0.15	0.04	9.85
1.586	40.31	23.47	-5.69	-22.53	46.00	0.15	0.04	9.85
1.590	39.28	21.30	-6.72	-24.70	46.00	0.15	0.04	9.85

Title: FCC Class B - Conducted Emissions - Black Lead
File: Agilent - Conducted - Pre-Test - Line - Half Wave Dipole - Rx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 3:26:48 AM
Sequence: Preliminary Scan



Title: FCC Class B - Conducted Emissions - Black Lead
File: Agilent - Conducted - Final Test - Line - Half Wave Dipole - Rx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

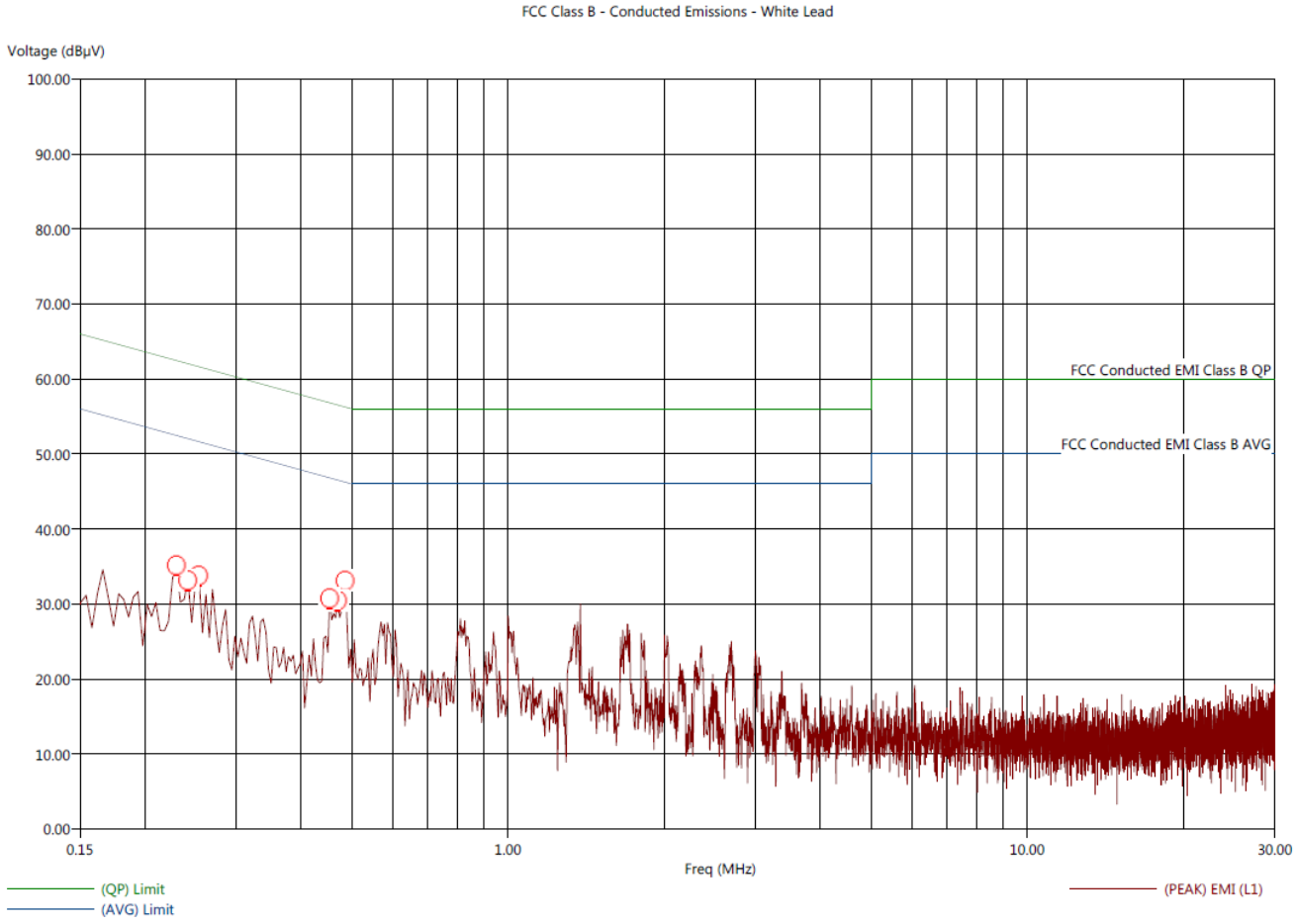
7/22/2016 3:28:02 AM
Sequence: Final Measurements

FCC Class B - Conducted Emissions - Black Lead

Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin AVL (dB)	(AVG) Margin AVL (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)
0.33	46.83	37.40	-2.77	-12.20	49.60	0.08	0.08	9.84
0.43	33.98	24.65	-13.36	-22.69	47.34	0.08	0.05	9.84
0.45	35.70	26.51	-10.97	-20.16	46.67	0.08	0.05	9.84
0.51	34.90	26.45	-11.10	-19.55	46.00	0.08	0.05	9.84
0.75	34.80	24.92	-11.20	-21.08	46.00	0.10	0.04	9.84
0.79	34.46	25.69	-11.54	-20.31	46.00	0.10	0.04	9.84

Title: FCC Class B - Conducted Emissions - White Lead
File: Agilent - Conducted - Pre-Test - Neutral - Half Wave Dipole - Rx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 3:29:49 AM
Sequence: Preliminary Scan



Title: FCC CLass B - Conducted Emissions - White Lead
File: Agilent - Conducted - Final Test - Neutral - Half Wave Dipole - Rx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - 1/2 Wave Dipole Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

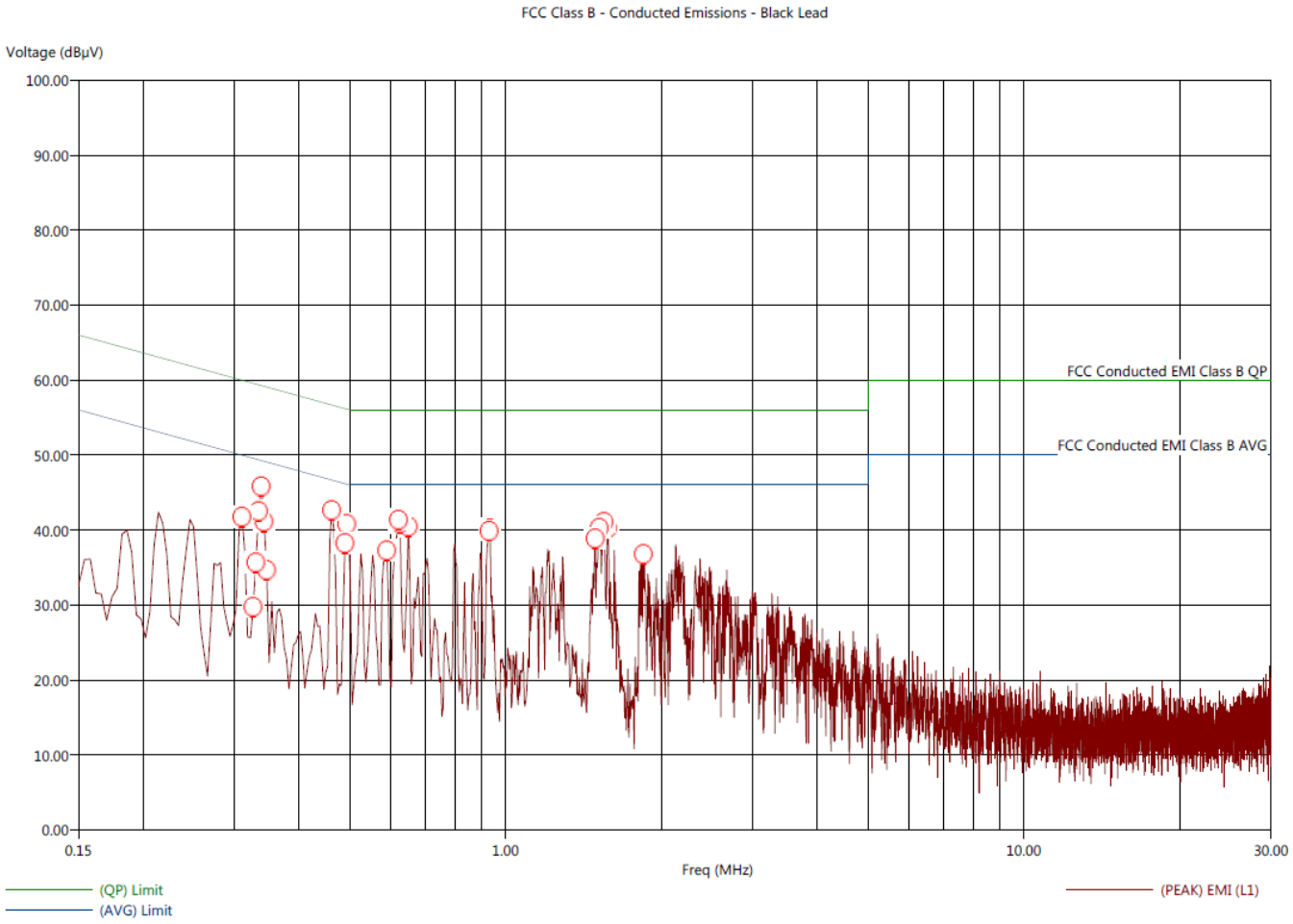
7/22/2016 3:31:12 AM
Sequence: Final Measurements

FCC Class B - Conducted Emissions - White Lead

Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin AVL (dB)	(AVG) Margin AVL (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)
0.230	35.88	21.78	-16.37	-30.47	52.25	0.08	0.25	9.83
0.242	35.43	21.75	-16.77	-30.45	52.20	0.08	0.25	9.83
0.254	35.43	21.60	-16.67	-30.50	52.10	0.08	0.24	9.83
0.454	33.42	19.97	-13.39	-26.84	46.81	0.08	0.03	9.84
0.470	33.10	20.28	-13.65	-26.47	46.75	0.08	0.03	9.84
0.486	33.91	20.27	-12.38	-26.02	46.29	0.08	0.02	9.84

Title: FCC Class B - Conducted Emissions - Black Lead
File: Agilent - Conducted - Pre-Test - Line - Wired Antenna - Tx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 3:50:00 AM
Sequence: Preliminary Scan



Title: FCC Class B - Conducted Emissions - Black Lead
File: Agilent - Conducted - Final Test - Line - Wired Antenna - Tx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

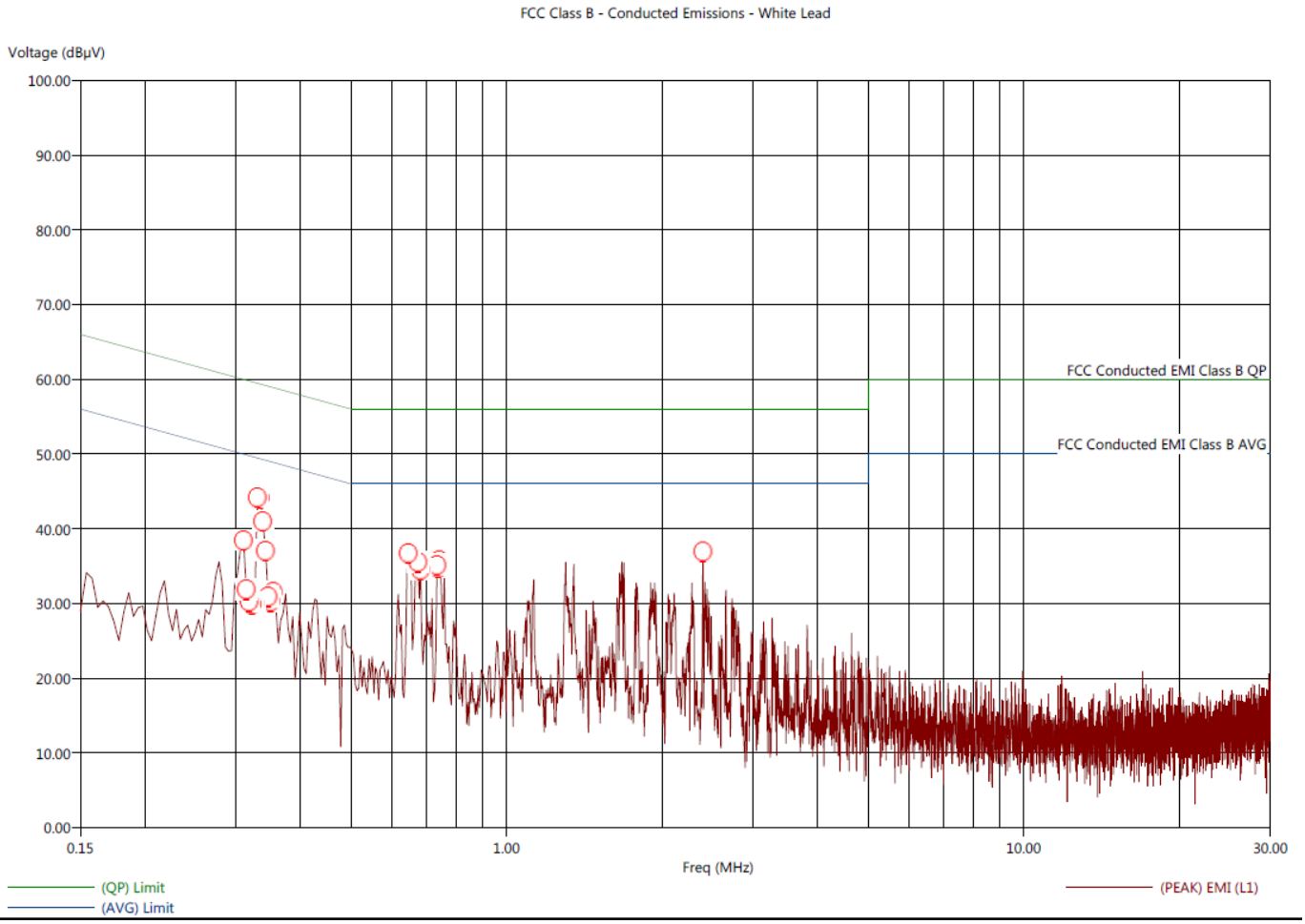
7/22/2016 3:53:30 AM
Sequence: Final Measurements

FCC Class B - Conducted Emissions - Black Lead

Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin AVL (dB)	(AVG) Margin AVL (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)
0.310	45.60	37.51	-4.33	-12.42	49.93	0.08	0.10	9.83
0.326	49.85	40.67	0.54	-8.64	49.31	0.08	0.06	9.84
0.330	49.97	41.78	0.68	-7.51	49.28	0.08	0.06	9.84
0.334	49.93	41.66	0.64	-7.63	49.28	0.08	0.06	9.84
0.338	50.27	43.32	1.03	-5.92	49.25	0.08	0.06	9.84
0.342	50.22	43.82	1.01	-5.39	49.21	0.08	0.06	9.84
0.346	49.92	43.81	0.72	-5.39	49.20	0.08	0.06	9.84
0.462	43.32	35.08	-3.27	-11.51	46.59	0.08	0.05	9.84
0.490	42.21	28.35	-4.00	-17.86	46.21	0.08	0.05	9.84
0.494	41.43	33.64	-4.68	-12.47	46.11	0.08	0.05	9.84
0.590	38.33	30.84	-7.67	-15.16	46.00	0.09	0.05	9.84
0.622	42.75	32.60	-3.25	-13.40	46.00	0.09	0.04	9.84
0.626	41.55	33.04	-4.45	-12.96	46.00	0.09	0.04	9.84
0.650	43.20	32.42	-2.80	-13.58	46.00	0.09	0.04	9.84
0.930	41.58	32.09	-4.42	-13.91	46.00	0.11	0.03	9.84
0.934	43.12	31.95	-2.88	-14.05	46.00	0.11	0.03	9.84
1.490	41.65	29.20	-4.35	-16.80	46.00	0.15	0.04	9.85
1.518	42.06	31.55	-3.94	-14.45	46.00	0.15	0.04	9.85
1.550	41.73	31.24	-4.27	-14.76	46.00	0.15	0.04	9.85
1.574	41.75	30.51	-4.25	-15.49	46.00	0.15	0.04	9.85
1.846	37.52	24.09	-8.48	-21.91	46.00	0.16	0.05	9.86

Title: FCC Class B - Conducted Emissions - White Lead
File: Agilent - Conducted - Pre-Test - Neutral - Wired Antenna - Tx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 3:55:45 AM
Sequence: Preliminary Scan



Title: FCC CLass B - Conducted Emissions - White Lead
File: Agilent - Conducted - Final Test - Neutral - Wired Antenna - Tx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously transmitting - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

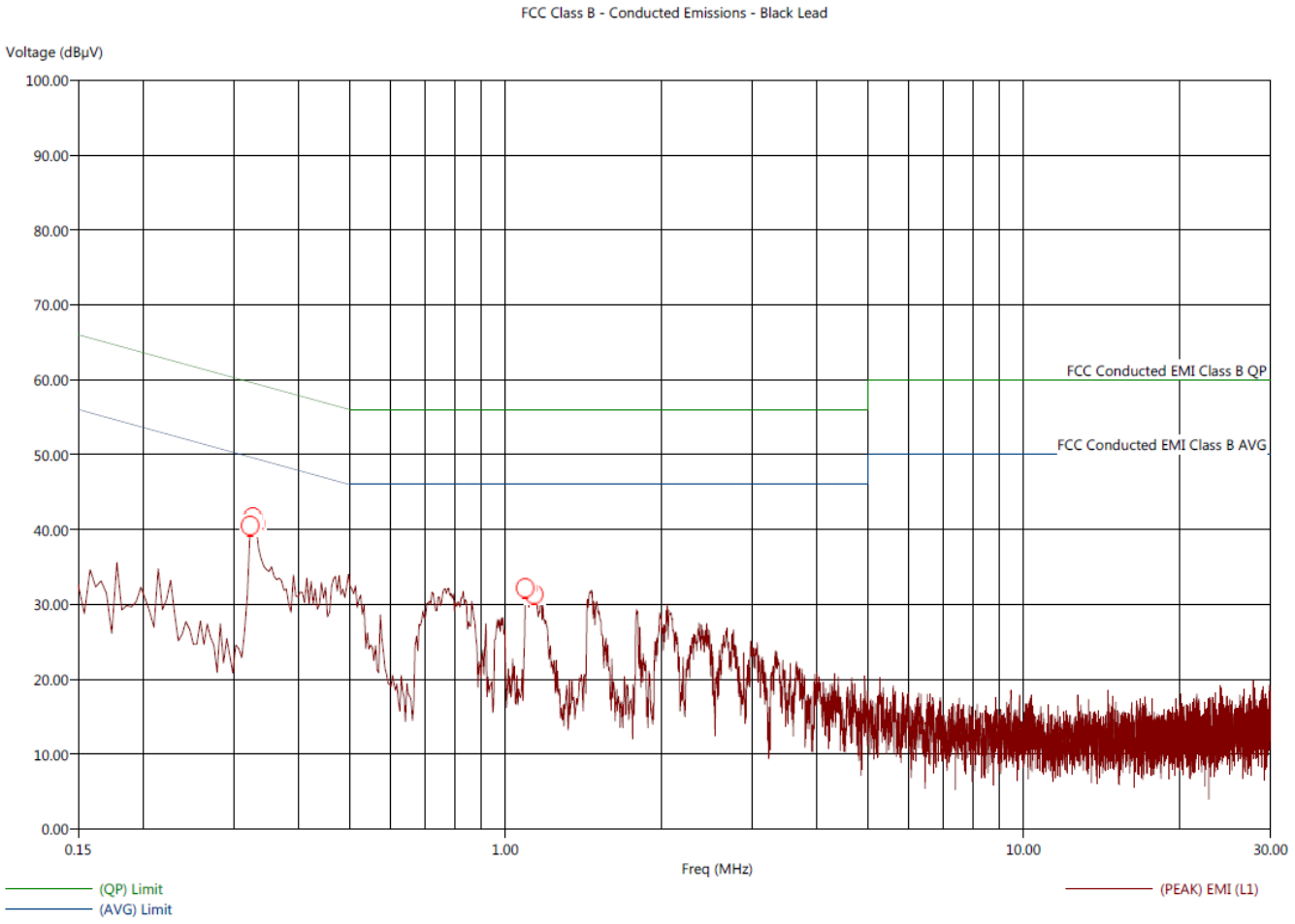
7/22/2016 3:57:31 AM
Sequence: Final Measurements

FCC Class B - Conducted Emissions - White Lead

Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin AVL (dB)	(AVG) Margin AVL (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)
0.310	41.08	28.27	-9.02	-21.83	50.10	0.08	0.11	9.83
0.314	41.42	30.38	-8.56	-19.60	49.98	0.08	0.10	9.83
0.318	42.10	29.10	-7.83	-20.83	49.93	0.08	0.09	9.83
0.322	47.84	34.04	-1.43	-15.23	49.27	0.08	0.05	9.84
0.326	47.68	33.09	-1.63	-16.22	49.31	0.08	0.05	9.84
0.330	47.82	33.90	-1.47	-15.39	49.29	0.08	0.05	9.84
0.334	47.21	23.96	-2.30	-25.55	49.51	0.08	0.07	9.84
0.338	47.88	34.16	-1.39	-15.11	49.26	0.08	0.05	9.84
0.342	47.86	34.20	-1.41	-15.07	49.26	0.08	0.05	9.84
0.346	47.69	32.77	-1.62	-16.54	49.31	0.08	0.05	9.84
0.350	47.74	32.54	-1.58	-16.78	49.32	0.08	0.05	9.84
0.354	44.38	30.44	-4.74	-18.68	49.12	0.08	0.04	9.84
0.646	39.20	26.38	-6.80	-19.62	46.00	0.09	0.03	9.84
0.650	38.45	17.22	-7.55	-28.78	46.00	0.09	0.03	9.84
0.674	39.71	26.22	-6.29	-19.78	46.00	0.09	0.03	9.84
0.682	39.15	25.02	-6.85	-20.98	46.00	0.09	0.03	9.84
0.734	40.12	25.32	-5.88	-20.68	46.00	0.10	0.03	9.84
0.738	38.97	19.33	-7.03	-26.67	46.00	0.10	0.03	9.84
0.742	38.32	24.21	-7.68	-21.79	46.00	0.10	0.03	9.84
0.746	38.67	21.49	-7.33	-24.51	46.00	0.10	0.03	9.84
2.398	33.94	17.40	-12.06	-28.60	46.00	0.18	0.05	9.87

Title: FCC Class B - Conducted Emissions - Black Lead
File: Agilent - Conducted - Pre-Test - Line - Wired Antenna - Rx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 4:02:05 AM
Sequence: Preliminary Scan



Title: FCC Class B - Conducted Emissions - Black Lead
File: Agilent - Conducted - Final Test - Line - Wired Antenna - Rx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

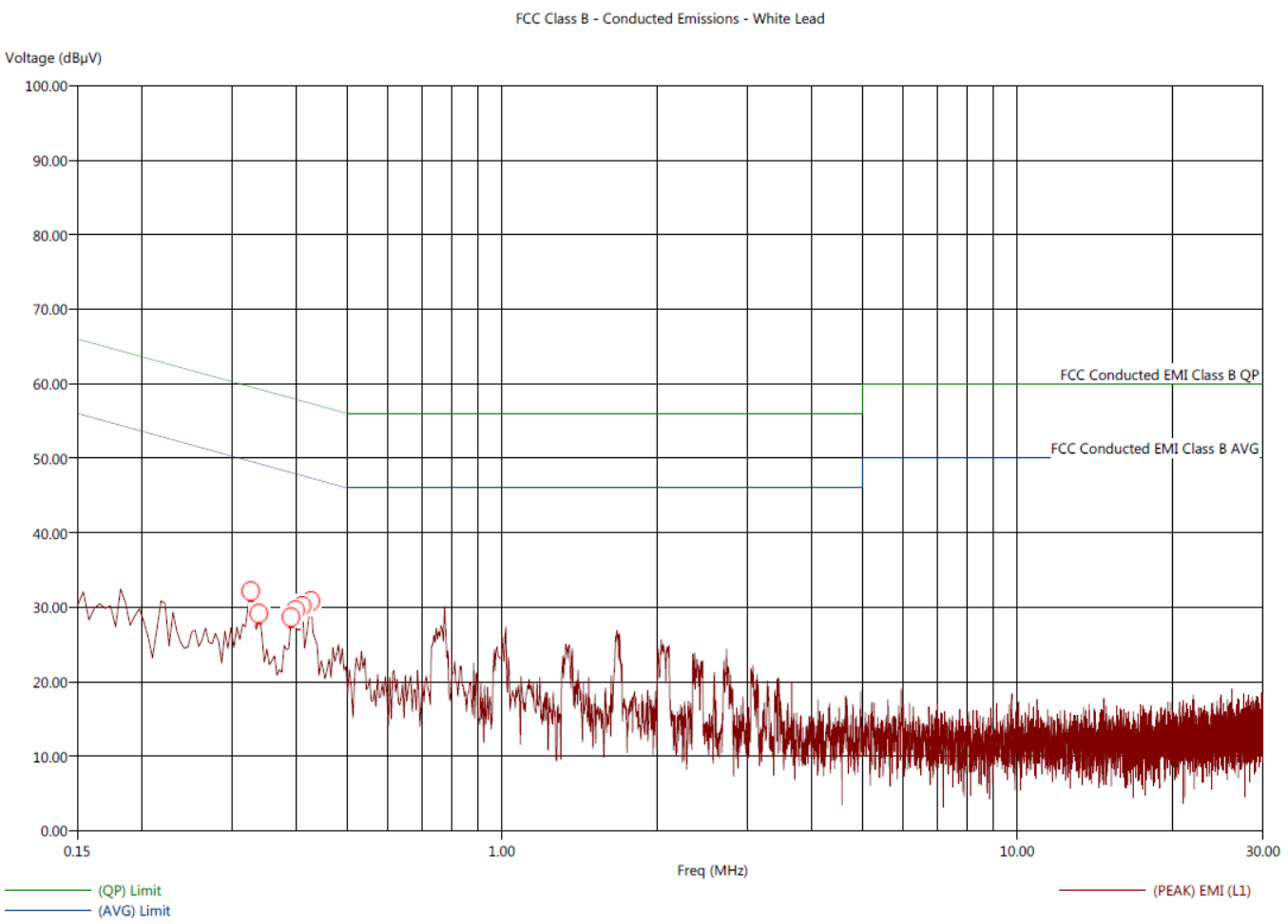
7/22/2016 4:03:30 AM
Sequence: Final Measurements

FCC Class B - Conducted Emissions - Black Lead

Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin AVL (dB)	(AVG) Margin AVL (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)
0.32	44.73	37.19	-4.86	-12.40	49.59	0.08	0.08	9.84
0.33	40.69	32.70	-8.65	-16.64	49.34	0.08	0.07	9.84
0.33	45.18	36.73	-4.34	-12.79	49.52	0.08	0.08	9.84
1.09	33.29	24.83	-12.71	-21.17	46.00	0.12	0.03	9.84
1.11	33.73	24.84	-12.27	-21.16	46.00	0.12	0.03	9.84
1.14	33.63	24.87	-12.37	-21.13	46.00	0.12	0.03	9.84

Title: FCC Class B - Conducted Emissions - White Lead
File: Agilent - Conducted - Pre-Test - Neutral -Wired Antenna - Rx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 3:59:47 AM
Sequence: Preliminary Scan



Title: FCC CLass B - Conducted Emissions - White Lead
File: Agilent - Conducted - Final Test - Neutral - Wired Antenna - Rx Mode - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Lo Ra Transceiver Module
EUT Condition: The EUT was continuously receiving - Wired Antenna Version - X-Axis Worst Case
Comments: Company: Applied Wireless, Inc.
Model: TL900

7/22/2016 4:00:55 AM
Sequence: Final Measurements

FCC Class B - Conducted Emissions - White Lead

Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin AVL (dB)	(AVG) Margin AVL (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)
0.326	41.58	27.87	-8.01	-21.72	49.59	0.08	0.07	9.84
0.338	42.58	27.66	-7.01	-21.93	49.58	0.08	0.07	9.84
0.390	32.33	20.01	-15.95	-28.27	48.28	0.08	0.04	9.84
0.398	32.90	19.67	-15.04	-28.27	47.94	0.08	0.04	9.84
0.410	30.84	19.32	-16.96	-28.48	47.80	0.08	0.04	9.84
0.426	31.75	19.48	-15.54	-27.81	47.29	0.08	0.03	9.84