WaveLynx Technologies Corporation

TEST REPORT FOR

Ethos
Models: ET20-1, ET20-3, ET20-5, ET20-7
ET25-1 ET25-3, ET25-5 and ET25-7

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)

15.207 & 15.209

Report No.: 97757-20

Date of issue: June 16, 2016

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

WaveLynx Technologies Corporation
12303 Airport Way, Suite 200
Broomfield, CO 80021

Representative: Daniel Field
Customer Reference Number: CKPO030916

REPORT PREPARED BY:

Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 97757

DATE OF EQUIPMENT RECEIPT: April 19, 2016
DATE(S) OF TESTING: April 19-29 and May 5- 6, 2016

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.02

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Mariposa D	US0103	SL2-IN-E-1147R	3082A-1	784962	A-0136

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C - 15.207-15.209

Test Procedure	Description	Modifications	Results
15.215(c)	Occupied Bandwidth	NA	Pass
15.209	Field Strength of Fundamental	NA	Pass
15.209	Field Strength of Spurious Emissions	NA	Pass
15.207	AC Conducted Emissions	NA	Pass

NA = Not applicable

Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions
Note: Of the devices being tested, there are 4 which have the ability to operate in both the 125kHz and 13.56MHz band. Those units are: ET20-3, ET20-7, ET25-3 and ET25-7. For these units, they were put into a 125kHz only mode by programming the device with a supplied card that changes the devices state. The customer declares that the unit will never operate both transmitters at the same time and comes from the manufacturer in the radio mode that the client needs. The following units are 125kHz only devices: ET20-1, ET20-5, ET25-1 and ET25-5.

EQUIPMENT UNDER TEST (EUT)

During testing numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

Configuration 1

Equipment Tested:

Device	Manufacturer	Model #	S/N
Ethos	WaveLynx Technologies Corporation	ET20-1	None
Ethos	WaveLynx Technologies Corporation	ET20-3	None

Support Equipment:

Device	Manufacturer	Model #	S/N
DC Power Supply	HP	6205C	2228A01775

Configuration 3

Equipment Tested:

Device	Manufacturer	Model #	S/N
Ethos	WaveLynx Technologies Corporation	ET20-5	None
Ethos	WaveLynx Technologies Corporation	ET20-7	None

Support Equipment:

Device	Manufacturer	Model #	S/N
DC Power Supply	HP	6205C	2228A01775

Configuration 5

Equipment Tested:

Device	Manufacturer	Model #	S/N
Ethos	WaveLynx Technologies Corporation	ET25-1	None
Ethos	WaveLynx Technologies Corporation	ET25-3	None

Support Equipment:

Device	Manufacturer	Model #	S/N
DC Power Supply	HP	6205C	2228A01775

Configuration 7

Equipment Tested:

Device	Manufacturer	Model #	S/N
Ethos	WaveLynx Technologies Corporation	ET25-5	None
Ethos	WaveLynx Technologies Corporation	ET25-7	None

Support Equipment:

Device	Manufacturer	Model #	S/N
DC Power Supply	HP	6205C	2228A01775

Configuration 9

Equipment Tested:

Device	Manufacturer	Model #	S/N
Ethos	WaveLynx Technologies Corporation	ET20-1	None
Ethos	WaveLynx Technologies Corporation	ET20-3	None
Ethos	WaveLynx Technologies Corporation	ET20-5	None
Ethos	WaveLynx Technologies Corporation	ET20-7	None

Support Equipment:

Device	Manufacturer	Model #	S/N
DC Power Supply	HP	6205C	2228A01775

Configuration 10

Equipment Tested:

Device	Manufacturer	Model #	S/N
Ethos	WaveLynx Technologies Corporation	ET25-1	None
Ethos	WaveLynx Technologies Corporation	ET25-3	None
Ethos	WaveLynx Technologies Corporation	ET25-5	None
Ethos	WaveLynx Technologies Corporation	ET25-7	None

Support Equipment:

Device	Manufacturer	Model #	S/N
DC Power Supply	HP	6205C	2228A01775

General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type: (All Units)	Stand-Alone Equipment
Modulation Type(s): (All Units)	CW
Maximum Duty Cycle:	ET20-1 = 4.36% ET20-3 = 4.36% ET20-5 = 4.13% ET20-7 = 4.13% ET25-1 = 4.85% ET25-3 = 4.85% ET25-5 = 5.12% ET25-7 =5.12%
Antenna Type(s) and Gain:	ET20-1 = Coil Antenna (90mm x 62mm), 2dBi Gain ET20-3 = Coil Antenna (85mm x 61mm), 2dBi Gain ET20-5 = Coil Antenna (90mm x 62mm), 2dBi Gain ET20-7 = Coil Antenna (85mm x 61mm), 2dBi Gain ET25-1 = Coil Antenna (90mm x 62mm), 2dBi Gain ET25-3 = Coil Antenna (85mm x 61mm), 2dBi Gain ET25-5 = Coil Antenna (90mm x 62mm), 2dBi Gain ET25-7 = Coil Antenna (85mm x 61mm), 2dBi Gain
Antenna Connection Type: (All Units)	Integral
Nominal Input Voltage: (All Units)	12VDC
Firmware / Software used for Test: (All Units)	WallMountReader_FCC_MULTI_2_WIEG

FCC Part 15 Subpart C

15.215(c) Occupied Bandwidth (20dB BW)

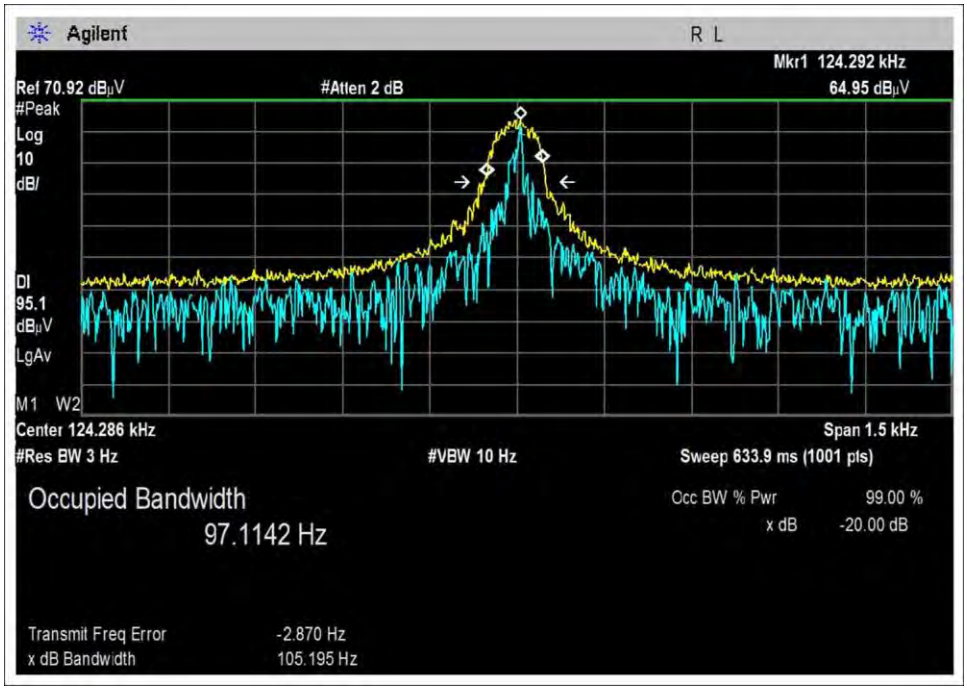
Test Setup/Conditions			
Test Location:	Mariposa Lab D	Test Engineer:	Benny Lovan
Test Method:	ANSI C63.10 (2013)	Test Date(s):	04/19/16
Configuration:	1, 3, 5 & 7		
Test Setup:	Configuration 1 (125kHz Only) – Measured in Y-Axis. These two units are combined into 1 unit that is identical in hardware. Configuration 3 (125kHz Only) – Measured in Y-Axis. These two units are combined into 1 unit that is identical in hardware. Configuration 5 (125kHz Only) – Measured in Y-Axis. These two units are combined into 1 unit that is identical in hardware. Configuration 7 (125kHz Only) – Measured in Y-Axis. These two units are combined into 1 unit that is identical in hardware. The customer has declared that the devices being combined above are identical in hardware and the only difference is the firmware which tells the device to activate only the 125kHz or the 125kHz and 13.56MHz transmitters. Antenna Type: Integral Modulation: CW The EUT is powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation. The EUT is setup on an 80cm foam block. It has been programmed to continuously transmit the RFID signal at 125kHz.		

Environmental Conditions			
Temperature (ºC)	23	Relative Humidity (%):	33

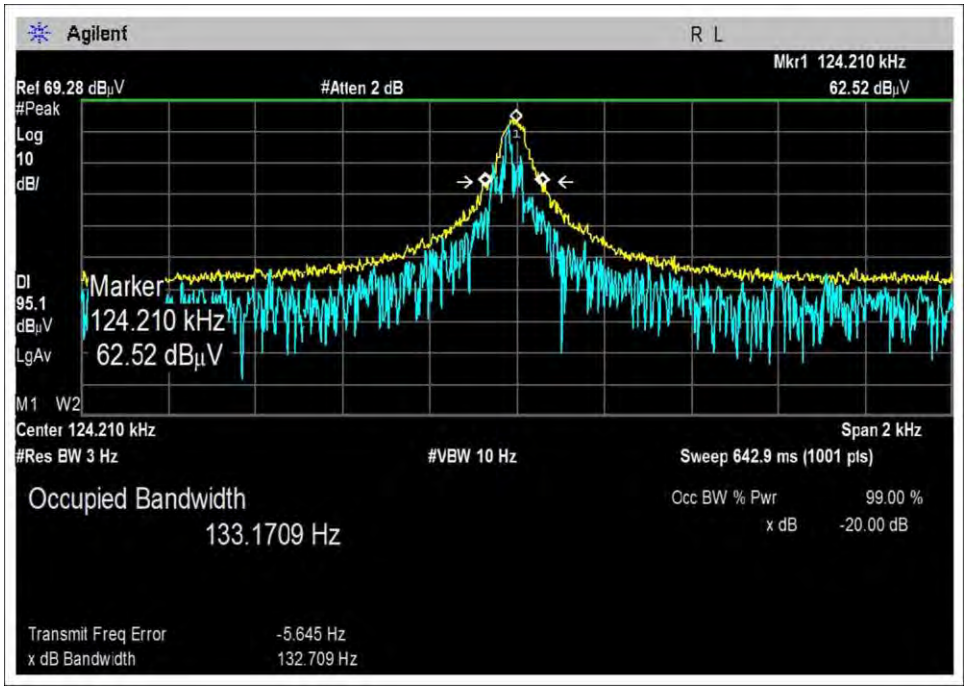
Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
ANSITED 3M	Cable	None	None	11/15/14	11/15/16
ANP06884	Cable	TMS	LMR195-FR-4	10/27/15	10/27/17
AN00226	Loop Antenna	EMCO	6502	4/4/2016	4/4/2018
AN02668	Spectrum Analyzer	Agilent	E4446A	8/14/2015	8/14/2016

Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
124.292kHz Configuration 1	Integral	CW	0.105195	None	NA
125kHz Configuration 3	Integral	CW	0.132709	None	NA
125kHz Configuration 5	Integral	CW	0.123025	None	NA
123.851kHz Configuration 7	Integral	CW	0.098126	None	NA

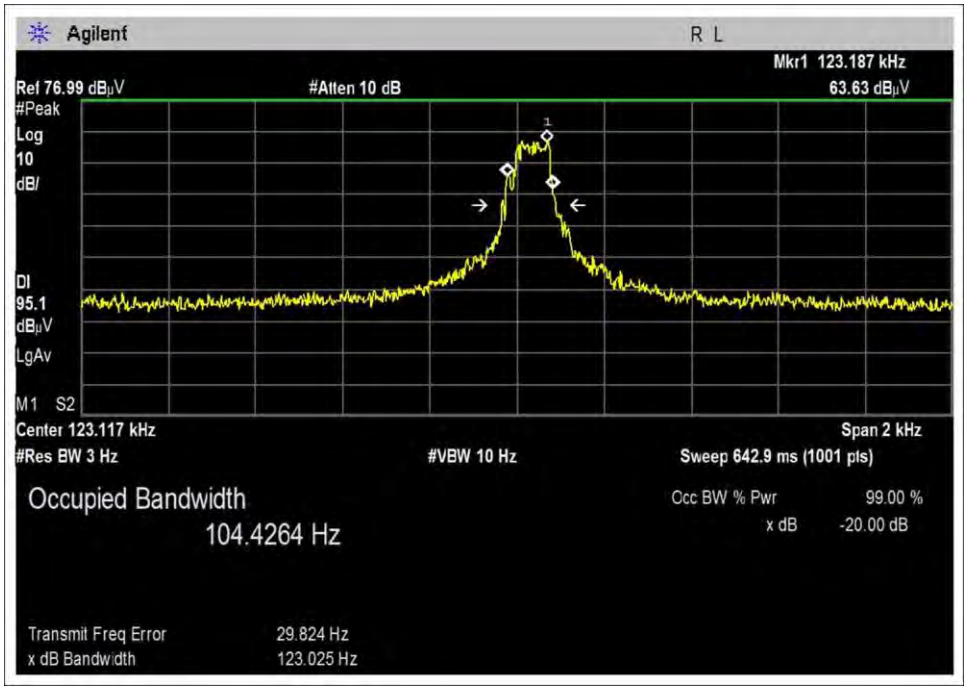
Plot(s)



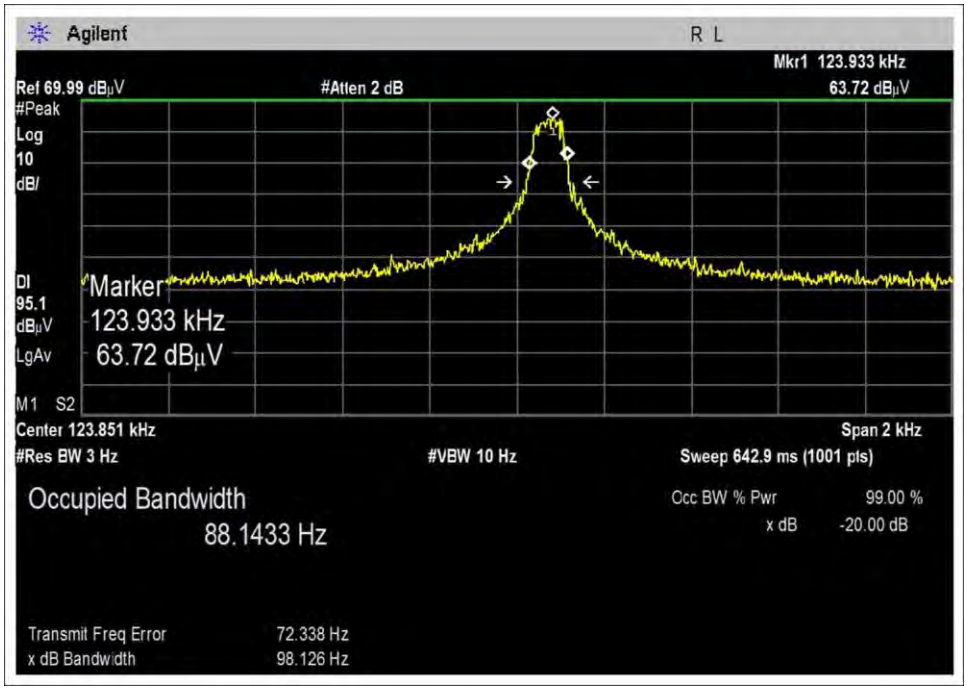
Configuration 1



Configuration 3



Configuration 5



Configuration 7

Test Setup Photo(s)

15.209 Field Strength of Fundamental

Test Data Summary - Voltage Variations					
Frequency (MHz)	**Modulation / Ant Port**	**$V_{Minimum}$ (dBuV/m)**	**$V_{Nominal}$ (dBuV/m)**	**$V_{Maximum}$ (dBuV/m)**	**Max Deviation from $V_{Nominal}$ (dB)**
Configuration 1					
0.12422 Parallel	CW / Integral Antenna	-3.0	-3.1	-3.1	0.1
0.12422 Perpendicular	CW / Integral Antenna	-7.8	-7.9	-7.9	0.1
Configuration 3					
0.124187 Parallel	CW / Integral Antenna	-3.6	-3.6	-3.6	0.0
0.124212 Perpendicular	CW / Integral Antenna	-8.2	-8.2	-8.0	0.2
Configuration 5					
0.123117 Parallel	CW / Integral Antenna	-4.1	-4.2	-4.1	0.1
0.124187 Perpendicular	CW / Integral Antenna	-8.7	-8.8	-8.6	0.2
Configuration 7					
0.123861 Parallel	CW / Integral Antenna	-4.0	-4.0	-3.9	0.1
0.123881 Perpendicular	CW / Integral Antenna	-8.5	-8.4	-8.4	0.1

Test performed using operational mode with the highest output power, representing worst case.

Parameter Definitions:

Measurements performed at input voltage Vnominal ± 15%.

Parameter	Value
$V_{Nominal}$:	12 VDC
$V_{Minimum}$:	10.2 VDC
$V_{Maximum}$:	13.8 VDC

Test Data Summary – Radiated Field Strength Measurement					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Measured (dBuV/m @ 300m)**	**Limit (dBuV/m @ 300m)**	**Results**
Configuration 1					
0.12422 (Parallel)	CW	Integral	-3.1	≤25.7	Pass
0.12422 (Perpendicular)	CW	Integral	-7.9	≤25.7	Pass
Configuration 3					
0.124187 (Parallel)	CW	Integral	-3.6	≤25.8	Pass
0.124212 (Perpendicular)	CW	Integral	-8.2	≤25.8	Pass
Configuration 5					
0.123117 (Parallel)	CW	Integral	-4.2	≤25.7	Pass
0.123317 (Perpendicular)	CW	Integral	-8.8	≤25.7	Pass
Configuration 7					
0.123861 (Parallel)	CW	Integral	--4.0	≤25.7	Pass
0.123881 (Perpendicular)	CW	Integral	-8.4	≤25.7	Pass

Test Data

Test Location:	CKC Laboratories Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209-966-5240		
Customer:	**WaveLynx Technologies Corporation**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**97757**	Date:	4/19/2016
Test Type:	**Radiated Scan**	Time:	11:17:41
Tested by:	Benny Lovan	Sequence#:	1
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

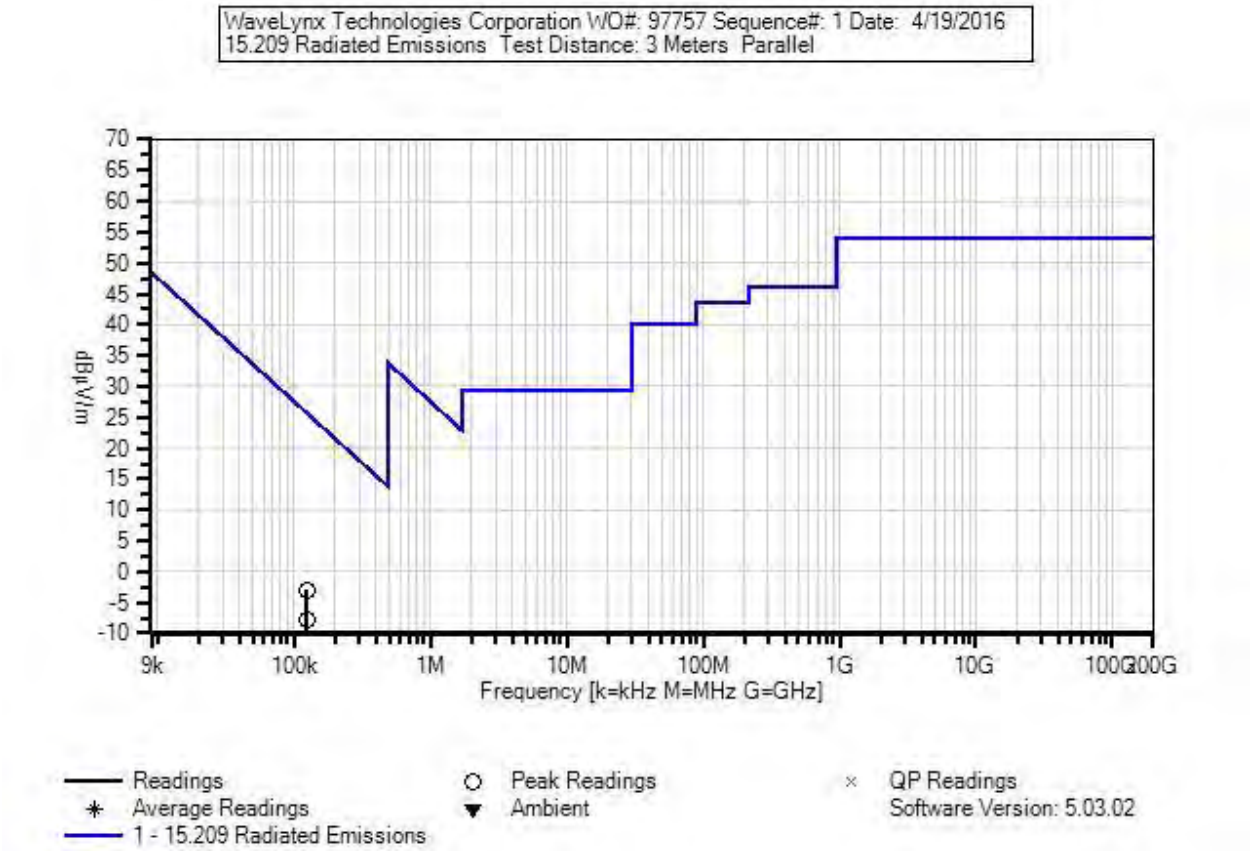
Radiated Emissions Fundamental Measurements (125kHz)

Temperature: 23°C
Humidity:33%
Atmospheric Pressure: 97.6 kPa

Method: ANSI C63.10 2013

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi

The EUT is powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
The EUT is setup on an 80cm foam block. It has been programmed to continuously transmit the RFID signal at 125kHz. Measurements will be made in both polarities as well as with the voltage variation of 10.2VDC and 13.8VDC (+/-15% of nominal).


WaveLynx Technologies Corporation WO#: 97757 Sequence#: 1 Date: 4/19/2016
15.209 Radiated Emissions Test Distance: 3 Meters Parallel
dBµV/m
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
-10
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
Software Version: 5.03.02

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	8/14/2015	8/14/2016
T1	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T2	ANSITED 3M	Cable		11/15/2014	11/15/2016
T3	AN00226	Loop Antenna	6502	4/4/2016	4/4/2018

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	124.251k	66.4	+0.0	+0.1	+10.5		-80.0	-3.0	25.7	-28.7	Paral
									10.2VDC, Y- Axis		
2	124.206k	66.3	+0.0	+0.1	+10.5		-80.0	-3.1	25.7	-28.8	Paral
									13.8VDC, Y- Axis		
3	124.221k	66.3	+0.0	+0.1	+10.5		-80.0	-3.1	25.7	-28.8	Paral
									Nominal 12VDC, Y- Axis		
4	124.251k	61.6	+0.0	+0.1	+10.5		-80.0	-7.8	25.7	-33.5	Perpe
									10.2VDC, Y- Axis		
5	124.206k	61.5	+0.0	+0.1	+10.5		-80.0	-7.9	25.7	-33.6	Perpe
									13.8VDC, Y- Axis		
6	124.221k	61.5	+0.0	+0.1	+10.5		-80.0	-7.9	25.7	-33.6	Perpe
									Nominal 12VDC, Y- Axis		

Test Location:	CKC Laboratories Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209-966-5240		
Customer:	**WaveLynx Technologies Corporation**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**97757**	Date:	4/20/2016
Test Type:	**Radiated Scan**	Time:	10:15:41
Tested by:	Benny Lovan	Sequence#:	2
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 3			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 3			

Test Conditions / Notes:

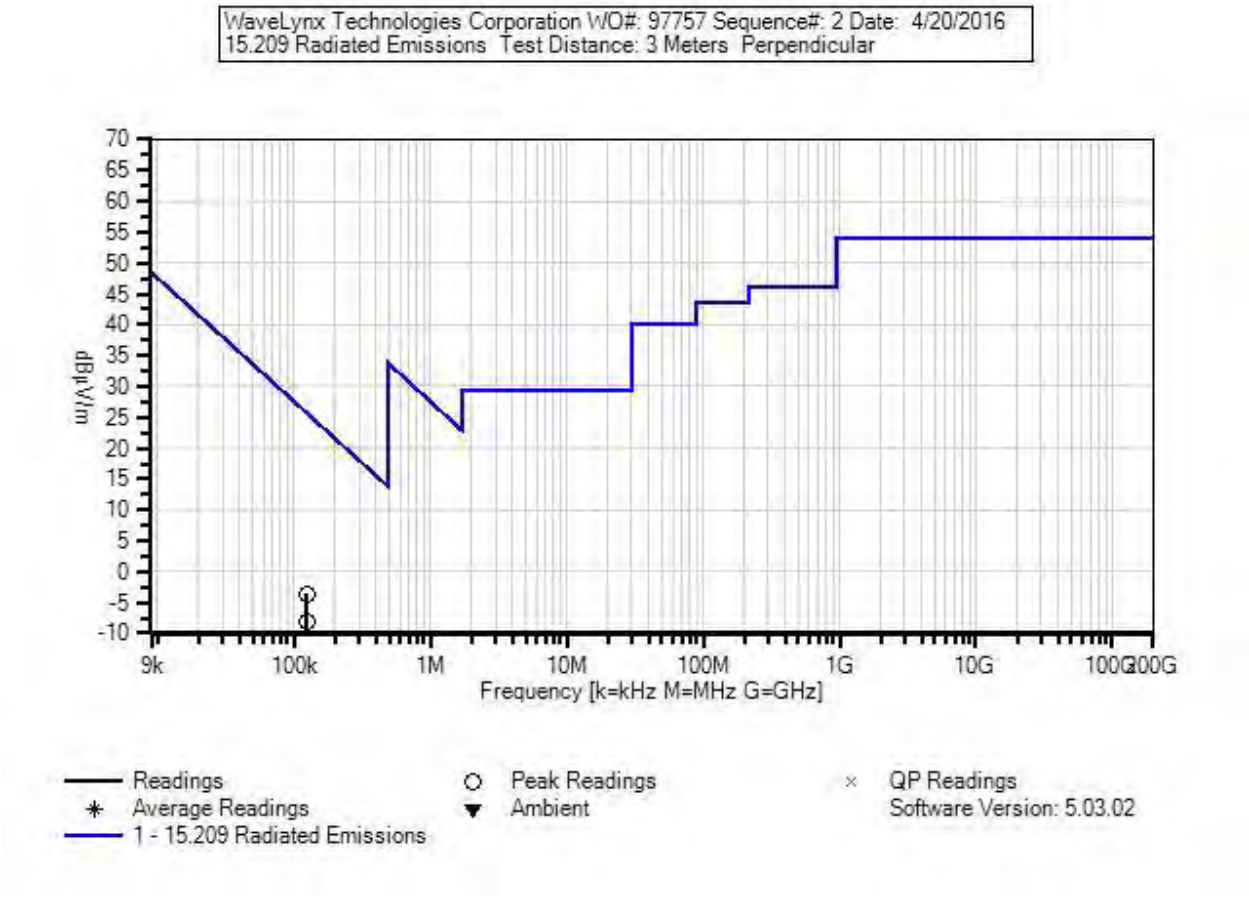
Radiated Emissions Fundamental Measurements (125kHz)

Temperature: 12°C
Humidity:64%
Atmospheric Pressure: 97.4 kPa

Method: ANSI C63.10 2013

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi

The EUT is powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
The EUT is setup on an 80cm foam block. It has been programmed to continuously transmit the RFID signal at 125kHz. Measurements will be made in both polarities as well as with the voltage variation of 10.2VDC and 13.8VDC (+/-15% of nominal).


WaveLynx Technologies Corporation WO#: 97757 Sequence#: 2 Date: 4/20/2016
15.209 Radiated Emissions Test Distance: 3 Meters Perpendicular
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
-10
dBµV/m
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
Software Version: 5.03.02

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	8/14/2015	8/14/2016
T1	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T2	ANSITED 3M	Cable		11/15/2014	11/15/2016
T3	AN00226	Loop Antenna	6502	4/4/2016	4/4/2018

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	124.272k	65.8	+0.0	+0.1	+10.5		-80.0	-3.6	25.7	-29.3	Paral
									13.8VDC, Y- Axis		
2	124.292k	65.8	+0.0	+0.1	+10.5		-80.0	-3.6	25.7	-29.3	Paral
									10.2VDC, Y- Axis		
3	124.187k	65.8	+0.0	+0.1	+10.5		-80.0	-3.6	25.7	-29.3	Paral
									Nominal 12VDC, Y- Axis		
4	124.262k	61.4	+0.0	+0.1	+10.5		-80.0	-8.0	25.7	-33.7	Perpe
									13.8VDC, Y- Axis		
5	124.282k	61.2	+0.0	+0.1	+10.5		-80.0	-8.2	25.7	-33.9	Perpe
									10.2VDC, Y- Axis		
6	124.212k	61.2	+0.0	+0.1	+10.5		-80.0	-8.2	25.7	-33.9	Perpe
									Nominal 12VDC, Y- Axis		

Test Location:	CKC Laboratories Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209-966-5240		
Customer:	**WaveLynx Technologies Corporation**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**97757**	Date:	4/20/2016
Test Type:	**Radiated Scan**	Time:	11:52:23
Tested by:	Benny Lovan	Sequence#:	3
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 5			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 5			

Test Conditions / Notes:

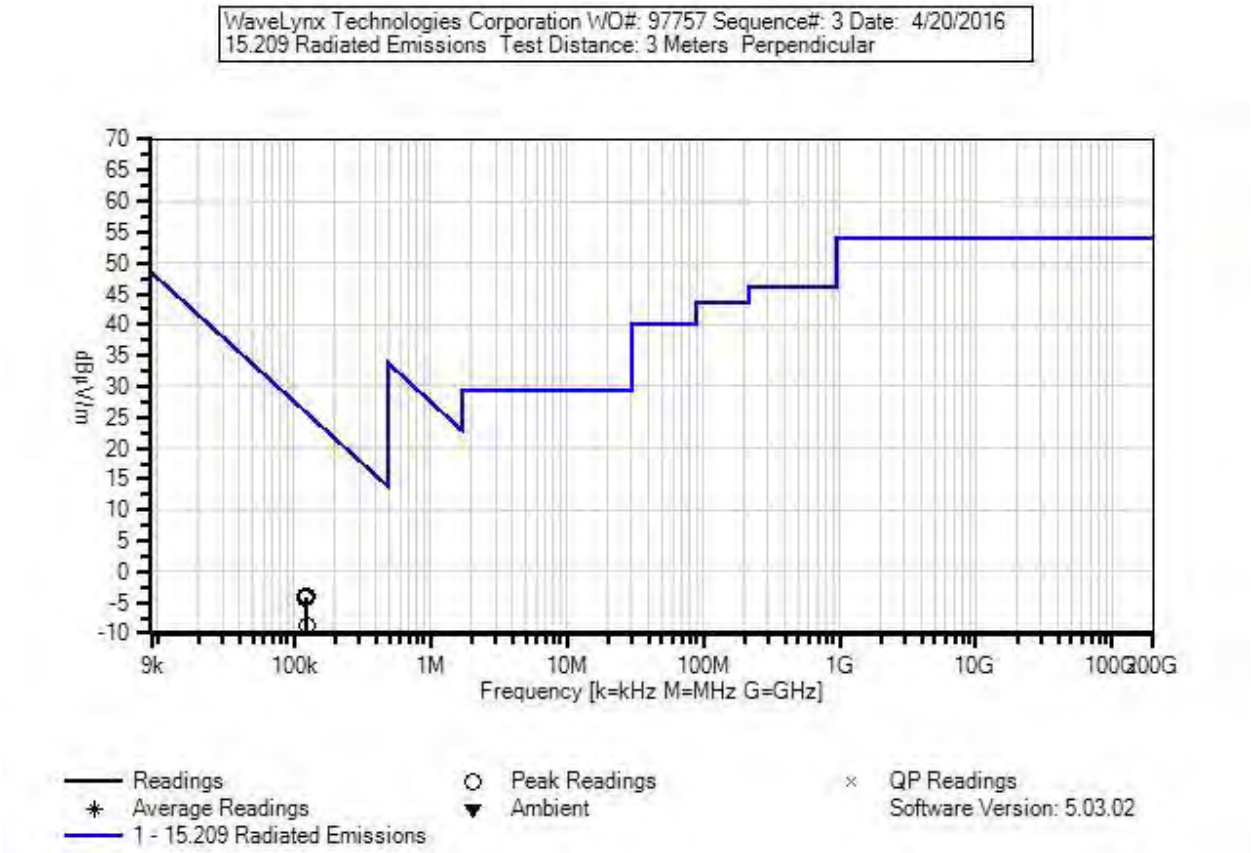
Radiated Emissions Fundamental Measurements (125kHz)

Temperature: 12°C
Humidity:64%
Atmospheric Pressure: 97.4 kPa

Method: ANSI C63.10 2013

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi

The EUT is powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
The EUT is setup on an 80cm foam block. It has been programmed to continuously transmit the RFID signal at 125kHz. Measurements will be made in both polarities as well as with the voltage variation of 10.2VDC and 13.8VDC (+/-15% of nominal).


WaveLynx Technologies Corporation WO#: 97757 Sequence#: 3 Date: 4/20/2016
15.209 Radiated Emissions Test Distance: 3 Meters Perpendicular
dBµV/m
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
-10
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
Software Version: 5.03.02

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	8/14/2015	8/14/2016
T1	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T2	ANSITED 3M	Cable		11/15/2014	11/15/2016
T3	AN00226	Loop Antenna	6502	4/4/2016	4/4/2018

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	123.172k	65.3	+0.0	+0.1	+10.5		-80.0	-4.1	25.8	-29.9	Paral
									10.2VDC, Y- Axis		
2	123.202k	65.3	+0.0	+0.1	+10.5		-80.0	-4.1	25.8	-29.9	Paral
									13.8VDC, Y- Axis		
3	123.117k	65.2	+0.0	+0.1	+10.5		-80.0	-4.2	25.8	-30.0	Paral
									Nominal 12VDC, Y- Axis		
4	123.322k	60.8	+0.0	+0.1	+10.5		-80.0	-8.6	25.8	-34.4	Perpe
									13.8VDC, Y- Axis		
5	123.297k	60.7	+0.0	+0.1	+10.5		-80.0	-8.7	25.8	-34.5	Perpe
									10.2VDC, Y- Axis		
6	123.317k	60.6	+0.0	+0.1	+10.5		-80.0	-8.8	25.8	-34.6	Perpe
									Nominal 12VDC, Y- Axis		

Test Location:	CKC Laboratories Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209-966-5240		
Customer:	**WaveLynx Technologies Corporation**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**97757**	Date:	4/20/2016
Test Type:	**Radiated Scan**	Time:	13:34:31
Tested by:	Benny Lovan	Sequence#:	4
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 7			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 7			

Test Conditions / Notes:

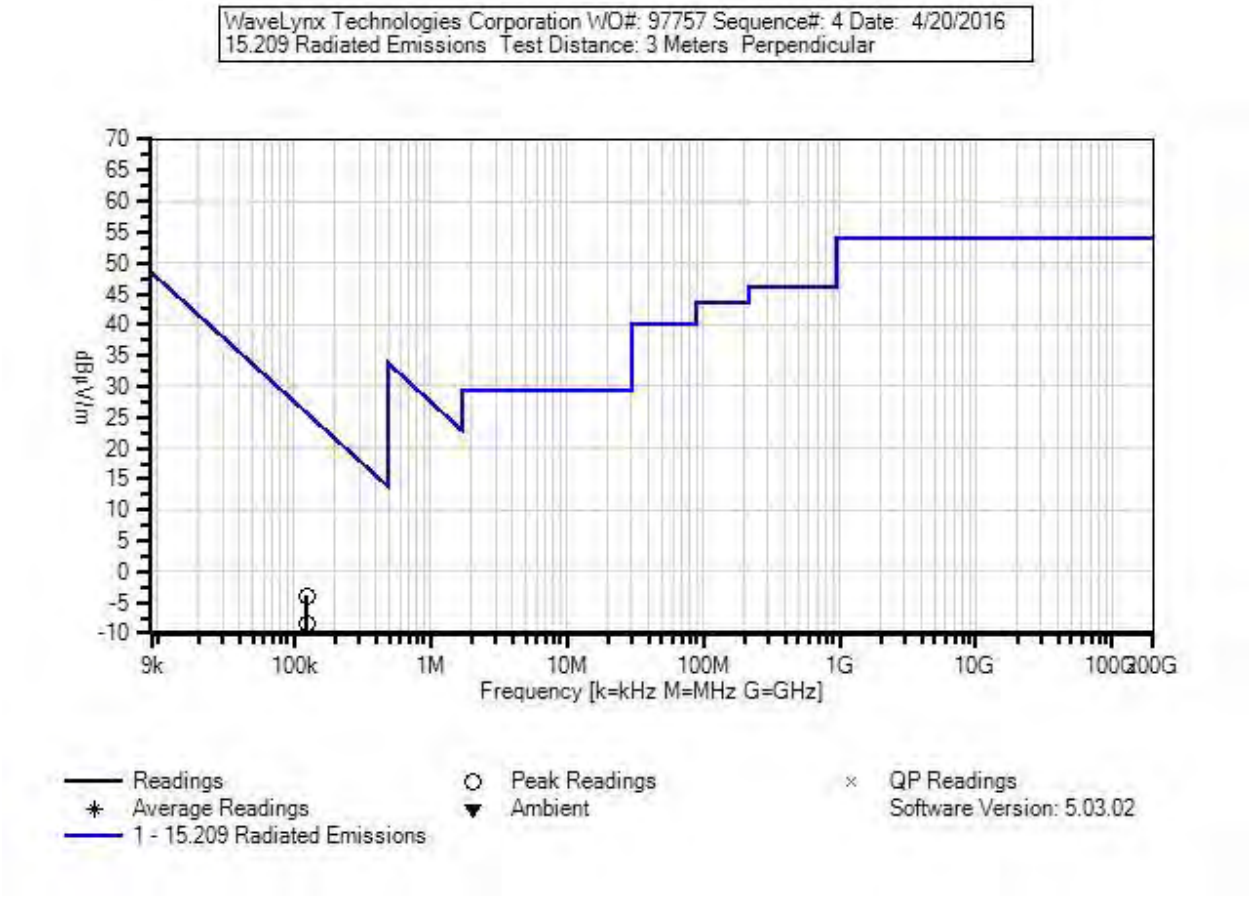
Radiated Emissions Fundamental Measurements (125kHz)

Temperature: 20°C
Humidity:40%
Atmospheric Pressure: 97.4 kPa

Method: ANSI C63.10 2013

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi

The EUT is powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
The EUT is setup on an 80cm foam block. It has been programmed to continuously transmit the RFID signal at 125kHz. Measurements will be made in both polarities as well as with the voltage variation of 10.2VDC and 13.8VDC (+/-15% of nominal).


WaveLynx Technologies Corporation WO#: 97757 Sequence#: 4 Date: 4/20/2016
15.209 Radiated Emissions Test Distance: 3 Meters Perpendicular
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
-10
dBµV/m
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
Software Version: 5.03.02

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	8/14/2015	8/14/2016
T1	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T2	ANSITED 3M	Cable		11/15/2014	11/15/2016
T3	AN00226	Loop Antenna	6502	4/4/2016	4/4/2018

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	123.851k	65.5	+0.0	+0.1	+10.5		-80.0	-3.9	25.7	-29.6	Paral
									13.8VDC, Y- Axis		
2	123.861k	65.4	+0.0	+0.1	+10.5		-80.0	-4.0	25.7	-29.7	Paral
									Nominal 12VDC, Y- Axis		
3	123.876k	65.4	+0.0	+0.1	+10.5		-80.0	-4.0	25.7	-29.7	Paral
									10.2VDC, Y- Axis		
4	123.881k	61.0	+0.0	+0.1	+10.5		-80.0	-8.4	25.7	-34.1	Perpe
									Nominal 12VDC, Y- Axis		
5	123.896k	61.0	+0.0	+0.1	+10.5		-80.0	-8.4	25.7	-34.1	Perpe
									13.8VDC, Y- Axis		
6	123.881k	60.9	+0.0	+0.1	+10.5		-80.0	-8.5	25.7	-34.2	Perpe
									10.2VDC, Y- Axis		

Test Setup Photo(s)

15.209 Radiated Emissions

Test Data

Test Location:	CKC Laboratories Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209-966-5240		
Customer:	**WaveLynx Technologies Corporation**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**97757**	Date:	5/6/2016
Test Type:	**Radiated Scan**	Time:	09:03:05
Tested by:	Benny Lovan	Sequence#:	5
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 9			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 9			

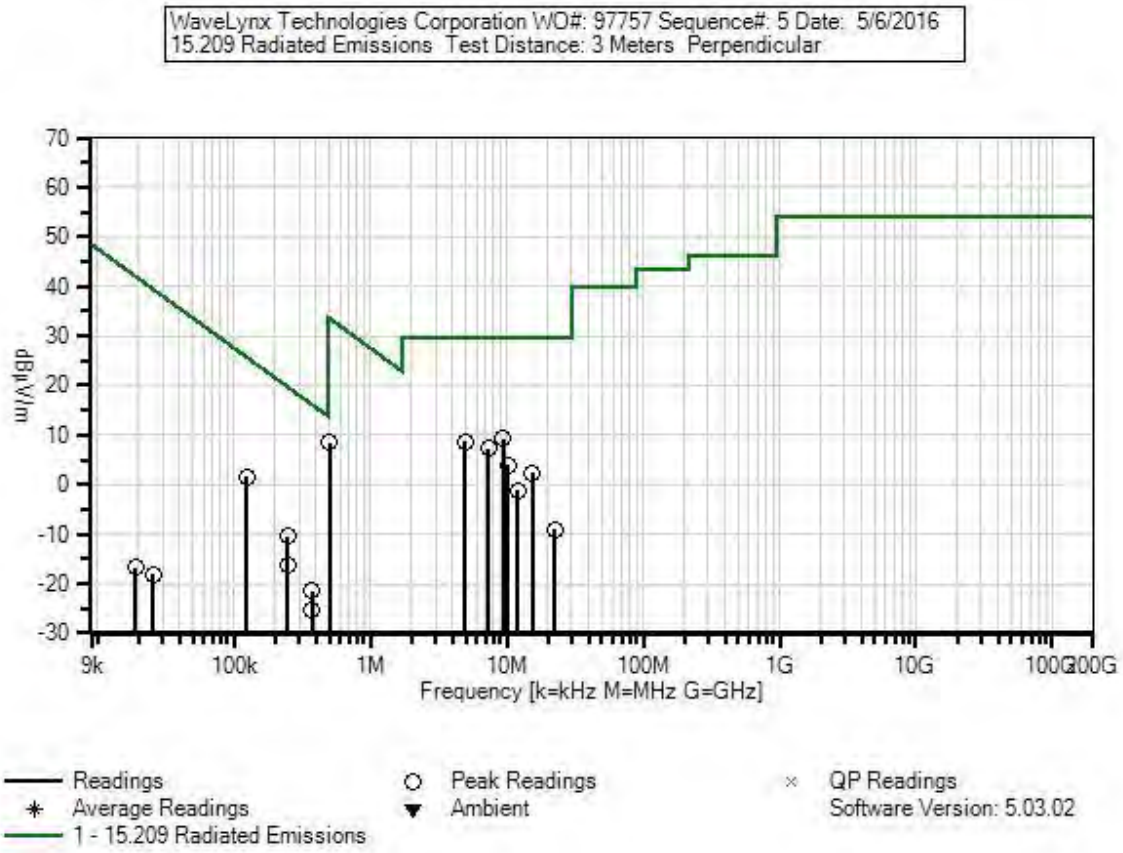
Test Conditions / Notes:

Radiated Spurious Emissions Measurements

Temperature: 22°C
Humidity:42%
Atmospheric Pressure: 97.1 kPa

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi
Transmit Frequency: 125kHz

The EUTs are powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
The EUT is setup on a 1.5meter foam block. It has been programmed to continuously transmit the RFID signal at 125kHz.


WaveLynx Technologies Corporation WO#: 97757 Sequence#: 5 Date: 5/6/2016
15.209 Radiated Emissions Test Distance: 3 Meters Perpendicular
70
60
50
40
30
20
10
0
-10
-20
-30
dBµV/m
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
Software Version: 5.03.02

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T2	AN00226	Loop Antenna	6502	4/4/2016	4/4/2018
	AN02111	Spectrum Analyzer	8593EM	6/4/2015	6/4/2016
T3	ANMD3M	Cable		3/17/2016	3/17/2018
T4	ANP06229	Cable	CXTA04A-50	3/17/2016	3/17/2018

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	9.460M	38.7	+0.1	+9.8	+0.3	+0.3	-40.0	9.2	29.5	-20.3	Perpe
2	4.990M	38.4	+0.0	+9.9	+0.2	+0.2	-40.0	8.7	29.5	-20.8	Paral
3	7.413M	36.9	+0.1	+9.8	+0.3	+0.3	-40.0	7.4	29.5	-22.1	Perpe
4	124.290k	71.0	+0.0	+10.5	+0.0	+0.0	-80.0	1.5	25.7	-24.2	Paral
5	500.600k	38.6	+0.0	+9.7	+0.1	+0.1	-40.0	8.5	33.6	-25.1	Perpe
6	10.140M	33.3	+0.1	+9.8	+0.4	+0.3	-40.0	3.9	29.5	-25.6	Paral
7	15.500M	32.1	+0.1	+9.4	+0.4	+0.4	-40.0	2.4	29.5	-27.1	Perpe
8	248.330k	59.6	+0.0	+9.9	+0.1	+0.0	-80.0	-10.4	19.7	-30.1	Paral
9	12.020M	28.3	+0.1	+9.7	+0.4	+0.3	-40.0	-1.2	29.5	-30.7	Paral
10	249.900k	53.7	+0.0	+9.9	+0.1	+0.0	-80.0	-16.3	19.6	-35.9	Perpe
11	374.000k	48.6	+0.0	+9.8	+0.1	+0.1	-80.0	-21.4	16.1	-37.5	Paral
12	22.610M	22.2	+0.1	+7.7	+0.5	+0.5	-40.0	-9.0	29.5	-38.5	Paral
13	373.100k	44.6	+0.0	+9.8	+0.1	+0.1	-80.0	-25.4	16.2	-41.6	Perpe
14	25.600k	49.5	+0.0	+12.5	+0.0	+0.0	-80.0	-18.0	39.4	-57.4	Perpe
15	18.900k	49.8	+0.0	+13.5	+0.0	+0.0	-80.0	-16.7	42.1	-58.8	Perpe

Test Location:	CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209-966-5240		
Customer:	**WaveLynx Technologies Corporation**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**97757**	Date:	5/6/2016
Test Type:	**Radiated Scan**	Time:	12:50:02
Tested by:	Skip Doyle	Sequence#:	7
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 9			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 9			

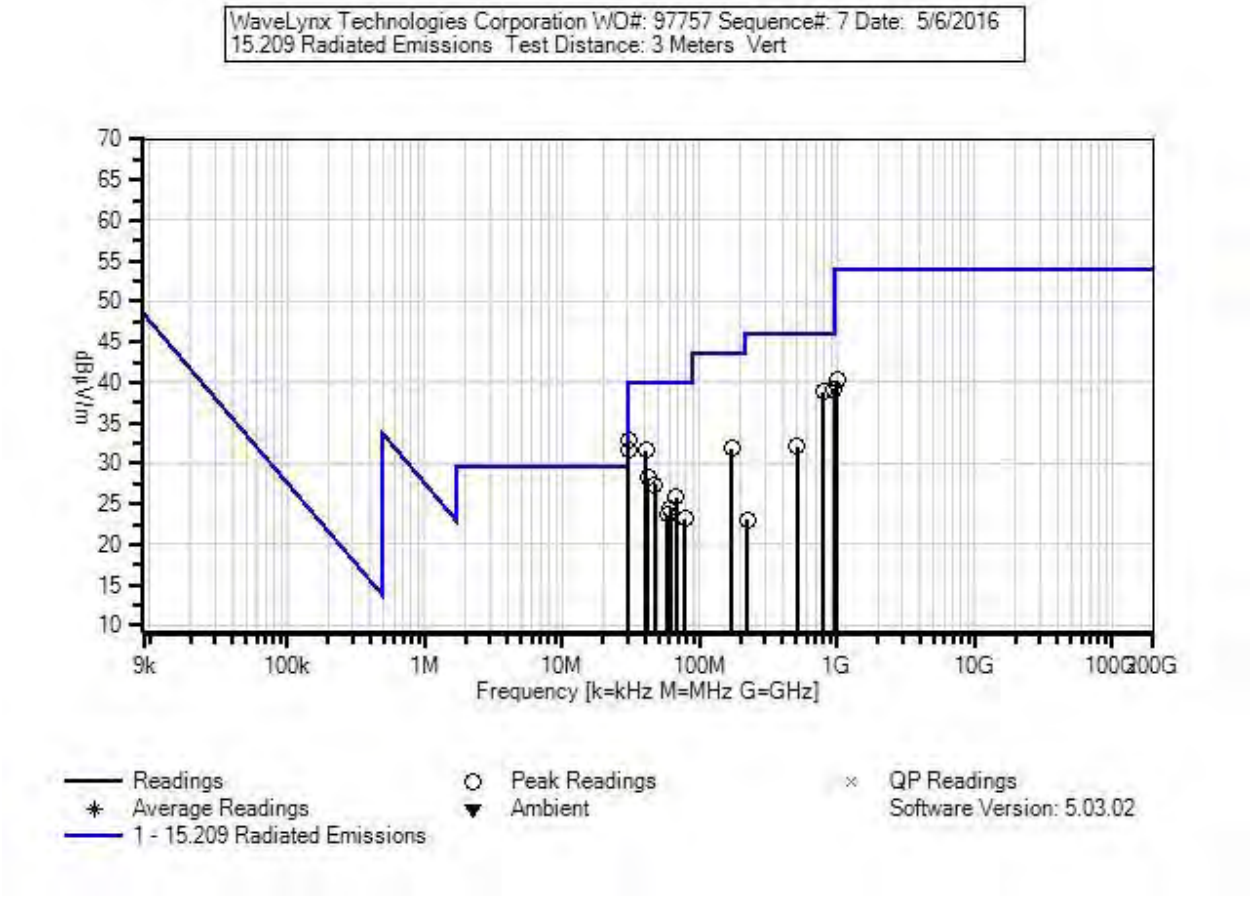
Test Conditions / Notes:

Radiated Spurious Emissions Measurements

Temperature: 12°C
Humidity:69%
Atmospheric Pressure: 97.0kPa

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi
Transmit Frequency: 125kHz

The EUTs are powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
The EUT is setup on an 80cm foam block. It has been programmed to continuously transmit the RFID signal at 125kHz.


WaveLynx Technologies Corporation WO#: 97757 Sequence#: 7 Date: 5/6/2016
15.209 Radiated Emissions Test Distance: 3 Meters Vert
dBµV/m
70
65
60
55
50
45
40
35
30
25
20
15
10
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
Software Version: 5.03.02

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02111	Spectrum Analyzer	8593EM	6/4/2015	6/4/2016
T1	AN01991	Biconilog Antenna	CBL6111C	3/11/2016	3/11/2018
T2	ANMD3M	Cable		3/17/2016	3/17/2018
T3	ANP06229	Cable	CXTA04A-50	3/17/2016	3/17/2018
T4	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T5	ANP06885	Cable	P06885	10/27/2015	10/27/2017
T6	ANP05657	Attenuator	PE7004-6	12/22/2015	12/22/2017
T7	AN00282	Preamp	8447D	4/7/2016	4/7/2018

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	955.400M	27.0	+25.4 +0.7	+3.4 +6.1	+3.7 -27.7	+0.6	+0.0	39.2	46.0	-6.8	Vert
2	30.440M	34.9	+18.3 +0.2	+0.6 +6.0	+0.6 -27.9	+0.1	+0.0	32.8	40.0	-7.2	Horiz
3	797.100M	29.1	+24.3 +0.6	+3.1 +6.0	+3.3 -28.1	+0.5	+0.0	38.8	46.0	-7.2	Vert
4	30.290M	33.7	+18.4 +0.2	+0.6 +6.0	+0.6 -27.9	+0.1	+0.0	31.7	40.0	-8.3	Vert
5	41.020M	38.0	+13.8 +0.2	+0.7 +6.0	+0.7 -27.9	+0.1	+0.0	31.6	40.0	-8.4	Vert
6	172.700M	40.3	+9.6 +0.3	+1.4 +6.0	+1.4 -27.4	+0.2	+0.0	31.8	43.5	-11.7	Horiz
7	42.330M	35.6	+12.8 +0.2	+0.7 +6.0	+0.7 -27.9	+0.1	+0.0	28.2	40.0	-11.8	Horiz
8	46.820M	37.7	+9.9 +0.2	+0.7 +6.0	+0.7 -27.9	+0.1	+0.0	27.4	40.0	-12.6	Vert
9	995.500M	27.5	+25.7 +0.7	+3.5 +6.1	+3.8 -27.6	+0.6	+0.0	40.3	54.0	-13.7	Horiz
10	511.600M	30.0	+18.3 +0.5	+2.5 +6.0	+2.6 -28.3	+0.4	+0.0	32.0	46.0	-13.9	Vert
11	67.850M	38.7	+6.8 +0.2	+0.9 +6.0	+0.9 -27.8	+0.1	+0.0	25.8	40.0	-14.2	Horiz
12	61.030M	38.5	+5.9 +0.2	+0.8 +6.0	+0.8 -27.8	+0.1	+0.0	24.5	40.0	-15.5	Horiz
13	58.280M	37.3	+6.2 +0.2	+0.8 +6.0	+0.8 -27.8	+0.1	+0.0	23.6	40.0	-16.4	Vert
14	78.140M	35.9	+6.9 +0.2	+0.9 +6.0	+0.9 -27.8	+0.2	+0.0	23.2	40.0	-16.8	Vert
15	224.000M	29.5	+10.6 +0.4	+1.6 +6.0	+1.7 -27.1	+0.3	+0.0	23.0	46.0	-23.0	Vert

Test Location:	CKC Laboratories Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209-966-5240		
Customer:	**WaveLynx Technologies Corporation**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**97757**	Date:	5/6/2016
Test Type:	**Radiated Scan**	Time:	09:31:26
Tested by:	Benny Lovan	Sequence#:	6
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 10			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 10			

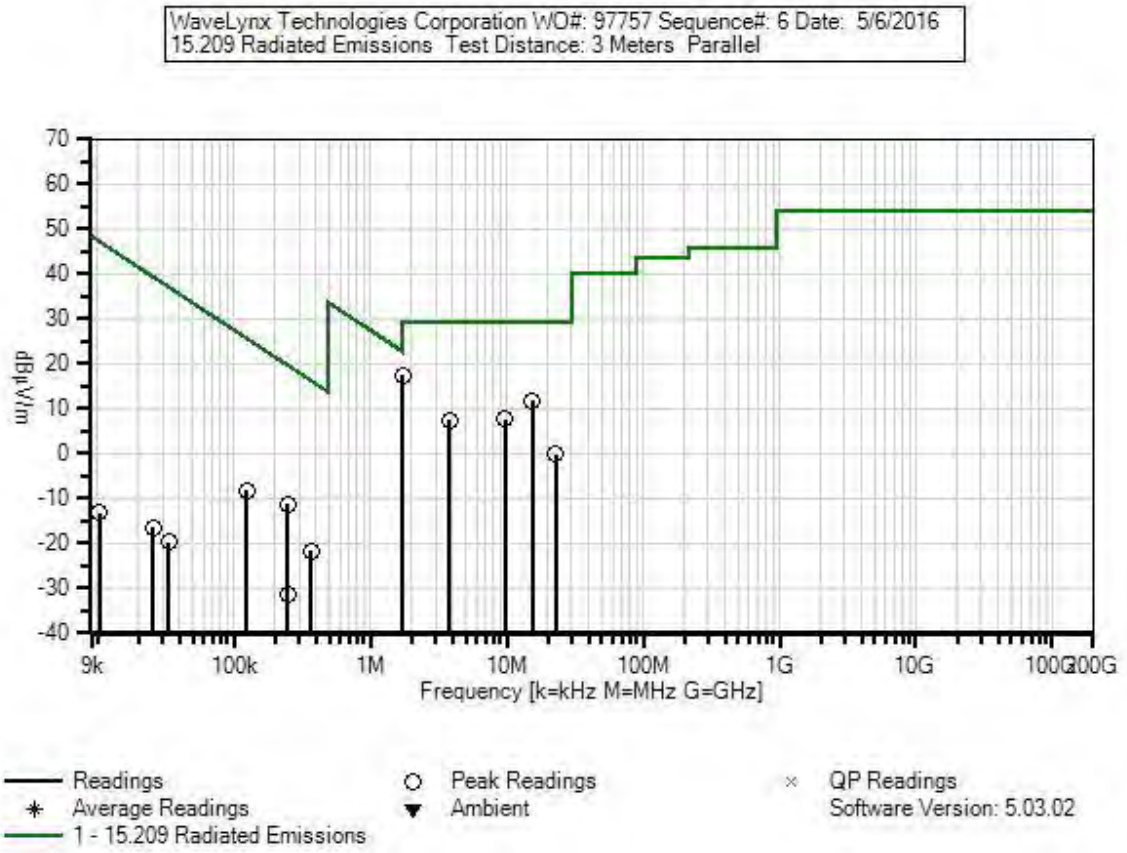
Test Conditions / Notes:

Radiated Spurious Emissions Measurements

Temperature: 12°C
Humidity:69%
Atmospheric Pressure: 97.0 kPa

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi
Transmit Frequency: 125kHz

The EUTs are powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
The EUT is setup on a 1.5meter foam block. It has been programmed to continuously transmit the RFID signal at 125kHz.


WaveLynx Technologies Corporation WO#: 97757 Sequence#: 6 Date: 5/6/2016
15.209 Radiated Emissions Test Distance: 3 Meters Parallel
70
60
50
40
30
20
10
0
-10
-20
-30
-40
dBµV/m
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
Software Version: 5.03.02

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T2	AN00226	Loop Antenna	6502	4/4/2016	4/4/2018
	AN02111	Spectrum Analyzer	8593EM	6/4/2015	6/4/2016
T3	ANMD3M	Cable		3/17/2016	3/17/2018
T4	ANP06229	Cable	CXTA04A-50	3/17/2016	3/17/2018

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	1.730M	47.3	+0.0	+10.1	+0.1	+0.1	-40.0	17.6	29.5	-11.9	Paral
2	15.500M	41.5	+0.1	+9.4	+0.4	+0.4	-40.0	11.8	29.5	-17.7	Perpe
3	9.700M	37.3	+0.1	+9.8	+0.3	+0.3	-40.0	7.8	29.5	-21.7	Paral
4	3.835M	37.1	+0.0	+10.0	+0.2	+0.2	-40.0	7.5	29.5	-22.0	Perpe
5	22.750M	31.1	+0.1	+7.6	+0.5	+0.5	-40.0	-0.2	29.5	-29.7	Paral
6	247.800k	58.7	+0.0	+9.9	+0.1	+0.0	-80.0	-11.3	19.7	-31.0	Paral
7	125.000k	61.3	+0.0	+10.5	+0.0	+0.0	-80.0	-8.2	25.7	-33.9	Paral
8	371.000k	48.3	+0.0	+9.8	+0.1	+0.1	-80.0	-21.7	16.2	-37.9	Paral
9	249.900k	38.5	+0.0	+9.9	+0.1	+0.0	-80.0	-31.5	19.6	-51.1	Perpe
10	25.600k	51.1	+0.0	+12.5	+0.0	+0.0	-80.0	-16.4	39.4	-55.8	Perpe
11	33.300k	48.7	+0.0	+11.7	+0.0	+0.0	-80.0	-19.6	37.1	-56.7	Perpe
12	375.300k	27.3	+0.0	+9.8	+0.1	+0.1	-80.0	-42.7	16.1	-58.8	Perpe
13	10.400k	50.9	+0.0	+16.0	+0.0	+0.0	-80.0	-13.1	47.2	-60.3	Perpe

Test Location:	CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209-966-5240		
Customer:	**WaveLynx Technologies Corporation**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**97757**	Date:	5/6/2016
Test Type:	**Radiated Scan**	Time:	12:51:48
Tested by:	Skip Doyle	Sequence#:	8
Software:	EMITest 5.03.02		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 10			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 10			

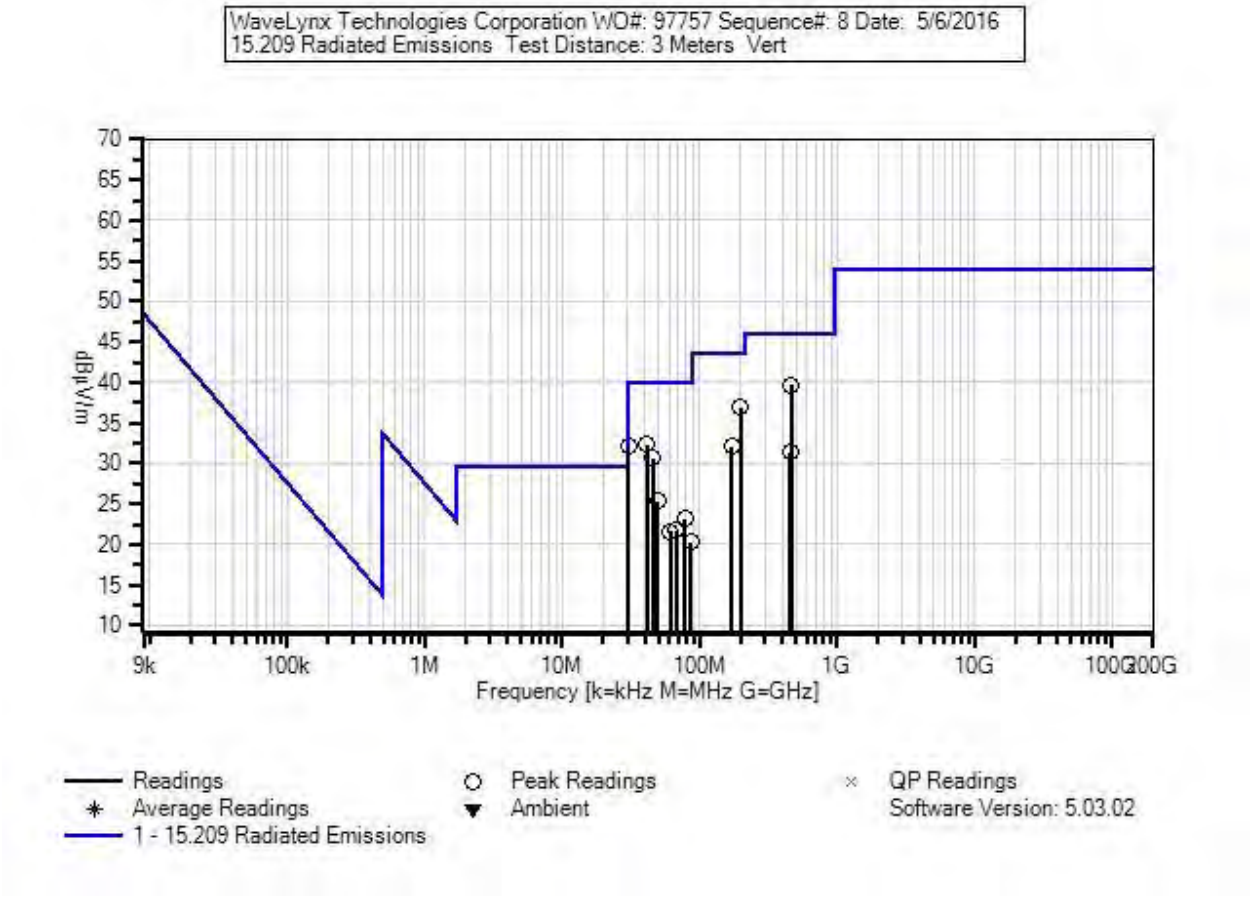
Test Conditions / Notes:

Radiated Spurious Emissions Measurements

Temperature: 12°C
Humidity:69%
Atmospheric Pressure: 97.0kPa

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi
Transmit Frequency: 125kHz

The EUTs are powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
The EUT is setup on an 80cm foam block. It has been programmed to continuously transmit the RFID signal at 125kHz.


WaveLynx Technologies Corporation WO#: 97757 Sequence#: 8 Date: 5/6/2016
15.209 Radiated Emissions Test Distance: 3 Meters Vert
dBµV/m
70
65
60
55
50
45
40
35
30
25
20
15
10
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient
QP Readings
Software Version: 5.03.02

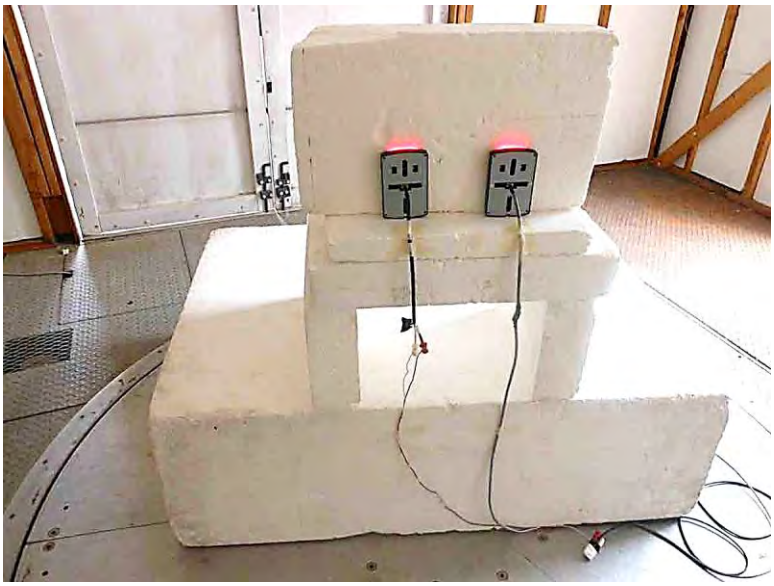
Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02111	Spectrum Analyzer	8593EM	6/4/2015	6/4/2016
T1	AN01991	Biconilog Antenna	CBL6111C	3/11/2016	3/11/2018
T2	ANMD3M	Cable		3/17/2016	3/17/2018
T3	ANP06229	Cable	CXTA04A-50	3/17/2016	3/17/2018
T4	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T5	ANP06885	Cable	P06885	10/27/2015	10/27/2017
T6	ANP05657	Attenuator	PE7004-6	12/22/2015	12/22/2017
T7	AN00282	Preamp	8447D	4/7/2016	4/7/2018

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	464.811M	38.6	+17.4 +0.5	+2.3 +6.0	+2.5 -28.1	+0.4	+0.0	39.6	46.0	-6.4	Horiz
2	199.400M	45.5	+8.9 +0.3	+1.5 +6.0	+1.5 -27.2	+0.3	+0.0	36.8	43.5	-6.7	Horiz
3	41.460M	39.1	+13.4 +0.2	+0.7 +6.0	+0.7 -27.9	+0.1	+0.0	32.3	40.0	-7.7	Horiz
4	30.440M	34.2	+18.3 +0.2	+0.6 +6.0	+0.6 -27.9	+0.1	+0.0	32.1	40.0	-7.9	Vert
5	45.370M	40.2	+10.6 +0.2	+0.7 +6.0	+0.7 -27.9	+0.1	+0.0	30.6	40.0	-9.4	Horiz
6	172.700M	40.6	+9.6 +0.3	+1.4 +6.0	+1.4 -27.4	+0.2	+0.0	32.1	43.5	-11.4	Horiz
7	49.430M	36.6	+8.8 +0.2	+0.8 +6.0	+0.7 -27.9	+0.1	+0.0	25.3	40.0	-14.7	Horiz
8	455.900M	30.6	+17.2 +0.5	+2.3 +6.0	+2.4 -28.1	+0.4	+0.0	31.3	46.0	-14.7	Vert
9	78.140M	35.9	+6.9 +0.2	+0.9 +6.0	+0.9 -27.8	+0.2	+0.0	23.2	40.0	-16.8	Vert
10	67.990M	34.5	+6.9 +0.2	+0.9 +6.0	+0.9 -27.8	+0.1	+0.0	21.7	40.0	-18.3	Horiz
11	61.030M	35.6	+5.9 +0.2	+0.8 +6.0	+0.8 -27.8	+0.1	+0.0	21.6	40.0	-18.4	Horiz
12	86.410M	31.6	+8.1 +0.2	+1.0 +6.0	+1.0 -27.8	+0.2	+0.0	20.3	40.0	-19.7	Vert

Test Setup Photo(s)



15.207 AC Conducted Emissions

Test Data

Test Location:	CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240		
Customer:	**WaveLynx Technologies Corporation.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**97757**	Date:	4/29/2016
Test Type:	**Conducted Emissions**	Time:	4:18:51 PM
Tested by:	Skip Doyle	Sequence#:	9
Software:	EMITest 5.03.02		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 9			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 9			

Test Conditions / Notes:

Test Method: ANSI C 63.4 2014

Frequency Range of Interest:
0.150-30MHz

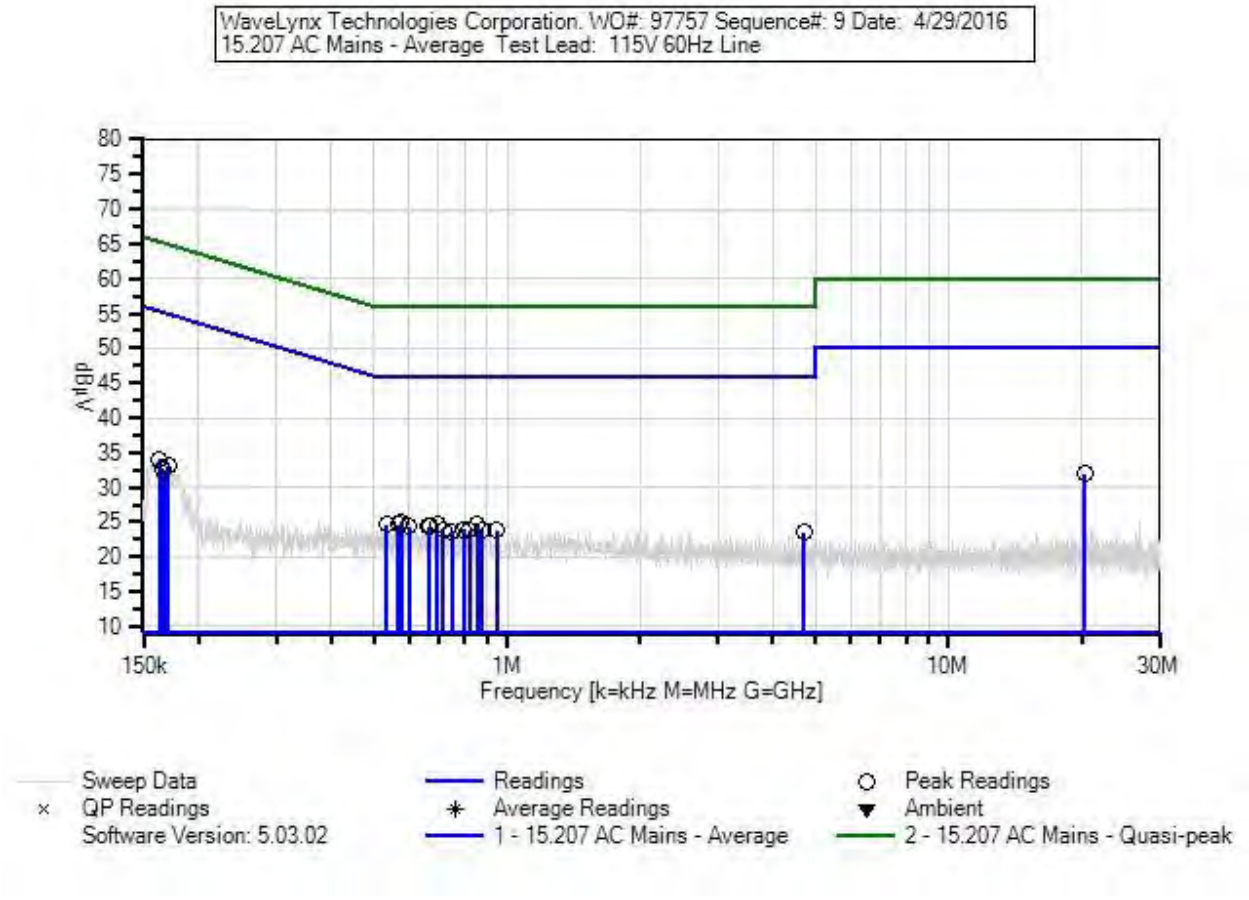
RBW = 9kHz; VBW > 9kHz

Environmental Conditions:
Temperature: 20°C
Relative Humidity: 35%
Atmospheric Pressure: 97.1kPa

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi
Transmit Frequency: 125kHz

The EUTs are powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
It has been programmed to continuously transmit the RFID signal at 125kHz.

Configuration 9 is made up of configurations 1 and 3. Both were tested simultaneously.
Note: A quick "preview" of one-unit vs two units connected to the LISN was performed while the measuring instrument was set to a wide span, there was no difference in the prescan emission observed.


WaveLynx Technologies Corporation. WO#: 97757 Sequence#: 9 Date: 4/29/2016
15.207 AC Mains - Average Test Lead: 115V 60Hz Line
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
dBµV
150k
1M
10M
30M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
QP Readings
Software Version: 5.03.02
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06770	Attenuator	PE7010-10	1/15/2015	1/15/2017
	AN01248	50uH LISN-Line 1 (Return) (dB)	8028-50-TS-24-BNC	1/4/2016	1/4/2017
T2	AN01248	50uH LISN-Line 2 (Line) (dB)	8028-50-TS-24-BNC	1/4/2016	1/4/2017
T3	AN02609	High Pass Filter	HE9615-150K-50-720B	2/18/2016	2/18/2018
	AN02668	Spectrum Analyzer	E4446A	8/14/2015	8/14/2016
T4	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T5	ANMD INT	Cable	Under groun cables only	3/17/2016	3/17/2018
T6	ANP01153	Cable	NA	3/3/2016	3/3/2018

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	20.337M	20.7	+10.1 +0.2	+0.4 +0.2	+0.2	+0.1	+0.0	31.9	50.0	-18.1	Line
2	574.688k	14.6	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	25.1	46.0	-20.9	Line
3	163.089k	23.4	+10.1 +0.0	+0.1 +0.0	+0.5	+0.0	+0.0	34.1	55.3	-21.2	Line
4	565.961k	14.2	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	24.7	46.0	-21.3	Line
5	856.844k	14.1	+10.1 +0.0	+0.2 +0.0	+0.3	+0.0	+0.0	24.7	46.0	-21.3	Line
6	533.237k	14.1	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	24.6	46.0	-21.4	Line
7	695.404k	14.0	+10.1 +0.0	+0.2 +0.0	+0.3	+0.0	+0.0	24.6	46.0	-21.4	Line
8	600.867k	13.9	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	24.4	46.0	-21.6	Line
9	664.861k	13.8	+10.1 +0.0	+0.2 +0.0	+0.3	+0.0	+0.0	24.4	46.0	-21.6	Line
10	667.770k	13.7	+10.1 +0.0	+0.2 +0.0	+0.3	+0.0	+0.0	24.3	46.0	-21.7	Line
11	170.361k	22.5	+10.1 +0.0	+0.1 +0.0	+0.4	+0.0	+0.0	33.1	54.9	-21.8	Line
12	717.947k	13.4	+10.1 +0.0	+0.2 +0.0	+0.3	+0.0	+0.0	24.0	46.0	-22.0	Line
13	796.486k	13.4	+10.1 +0.0	+0.2 +0.0	+0.3	+0.0	+0.0	24.0	46.0	-22.0	Line
14	798.667k	13.4	+10.1 +0.0	+0.2 +0.0	+0.3	+0.0	+0.0	24.0	46.0	-22.0	Line

15	820.483k	13.2	+10.1 +0.0	+0.2 +0.0	+0.3	+0.0	+0.0	23.8	46.0	-22.2	Line
16	875.751k	13.3	+10.1 +0.0	+0.2 +0.0	+0.2	+0.0	+0.0	23.8	46.0	-22.2	Line
17	945.248k	13.2	+10.1 +0.0	+0.3 +0.0	+0.2	+0.0	+0.0	23.8	46.0	-22.2	Line
18	750.672k	13.1	+10.1 +0.0	+0.2 +0.0	+0.2	+0.0	+0.0	23.6	46.0	-22.4	Line
19	4.705M	13.0	+10.1 +0.1	+0.1 +0.1	+0.1	+0.0	+0.0	23.5	46.0	-22.5	Line
20	166.725k	21.9	+10.1 +0.0	+0.1 +0.0	+0.4	+0.0	+0.0	32.5	55.1	-22.6	Line

Test Location:	CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240		
Customer:	**WaveLynx Technologies Corporation.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**97757**	Date:	4/29/2016
Test Type:	**Conducted Emissions**	Time:	4:26:47 PM
Tested by:	Skip Doyle	Sequence#:	10
Software:	EMITest 5.03.02		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 9			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 9			

Test Conditions / Notes:

Test Method: ANSI C 63.4 2014

Frequency Range of Interest:
0.150-30MHz

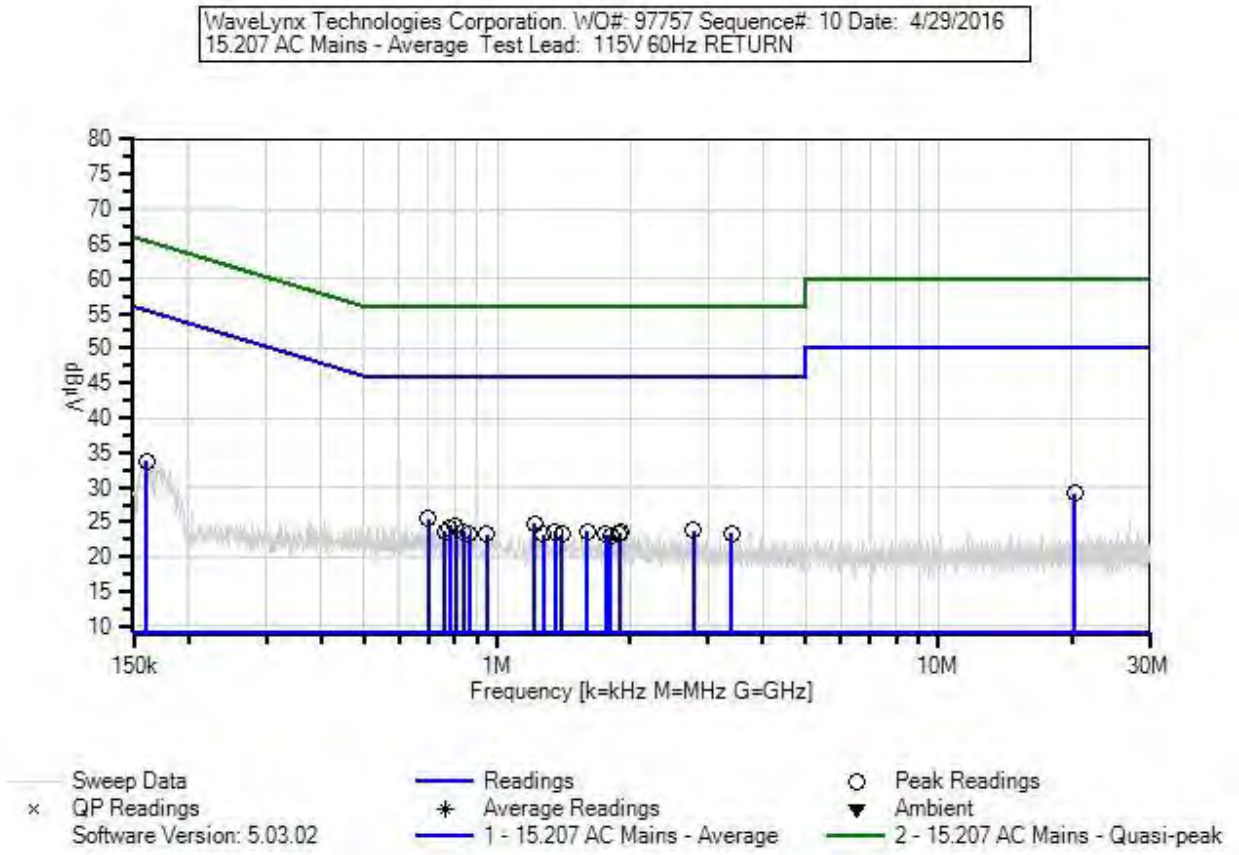
RBW = 9kHz; VBW > 9kHz;

Environmental Conditions:
Temperature: 20°C
Relative Humidity: 35%
Atmospheric Pressure: 97.1kPa

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi
Transmit Frequency: 125kHz

The EUTs are powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
It has been programmed to continuously transmit the RFID signal at 125kHz.

Configuration 9 is made up of configurations 1 and 3. Both were tested simultaneously.
Note: A quick "preview" of one-unit vs two units connected to the LISN was performed while the measuring instrument was set to a wide span, there was no difference in the prescan emission observed.


WaveLynx Technologies Corporation. WO#: 97757 Sequence#: 10 Date: 4/29/2016
15.207 AC Mains - Average Test Lead: 115V 60Hz RETURN
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
dBµV
150k
1M
10M
30M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
QP Readings
Software Version: 5.03.02
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06770	Attenuator	PE7010-10	1/15/2015	1/15/2017
T2	AN01248	50uH LISN-Line 1 (Return) (dB)	8028-50-TS-24-BNC	1/4/2016	1/4/2017
	AN01248	50uH LISN-Line 2 (Line) (dB)	8028-50-TS-24-BNC	1/4/2016	1/4/2017
T3	AN02609	High Pass Filter	HE9615-150K-50-720B	2/18/2016	2/18/2018
	AN02668	Spectrum Analyzer	E4446A	8/14/2015	8/14/2016
T4	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T5	ANMD INT	Cable	Under groun cables only	3/17/2016	3/17/2018
T6	ANP01153	Cable	NA	3/3/2016	3/3/2018

Measurement Data: Reading listed by margin. Test Lead: RETURN

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	697.586k	15.0	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	25.5	46.0	-20.5	RETUR
2	20.337M	17.9	+10.1 +0.2	+0.5 +0.2	+0.2	+0.1	+0.0	29.2	50.0	-20.8	RETUR
3	1.217M	14.3	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	24.8	46.0	-21.2	RETUR
4	806.667k	14.0	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	24.5	46.0	-21.5	RETUR
5	160.908k	23.0	+10.1 +0.0	+0.1 +0.0	+0.6	+0.0	+0.0	33.8	55.4	-21.6	RETUR
6	782.669k	13.7	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	24.2	46.0	-21.8	RETUR
7	2.782M	13.3	+10.1 +0.1	+0.1 +0.1	+0.1	+0.0	+0.0	23.8	46.0	-22.2	RETUR
8	762.307k	13.2	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	23.7	46.0	-22.3	RETUR
9	837.209k	13.2	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	23.7	46.0	-22.3	RETUR
10	1.596M	13.1	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.6	46.0	-22.4	RETUR
11	1.349M	13.1	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.6	46.0	-22.4	RETUR
12	1.898M	13.0	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.5	46.0	-22.5	RETUR
13	1.889M	12.9	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.4	46.0	-22.6	RETUR
14	3.399M	12.9	+10.1 +0.1	+0.1 +0.1	+0.1	+0.0	+0.0	23.4	46.0	-22.6	RETUR

15	1.405M	12.8	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.3	46.0	-22.7	RETUR
16	862.661k	12.8	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	23.3	46.0	-22.7	RETUR
17	949.501k	12.8	+10.1 +0.0	+0.1 +0.0	+0.2	+0.0	+0.0	23.2	46.0	-22.8	RETUR
18	1.766M	12.7	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.2	46.0	-22.8	RETUR
19	1.273M	12.7	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.2	46.0	-22.8	RETUR
20	1.804M	12.6	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.1	46.0	-22.9	RETUR

Test Location:	CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240		
Customer:	**WaveLynx Technologies Corporation.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**97757**	Date:	4/29/2016
Test Type:	**Conducted Emissions**	Time:	5:26:42 PM
Tested by:	Skip Doyle	Sequence#:	12
Software:	EMITest 5.03.02		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 10			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 10			

Test Conditions / Notes:

Test Method: ANSI C 63.4 2014

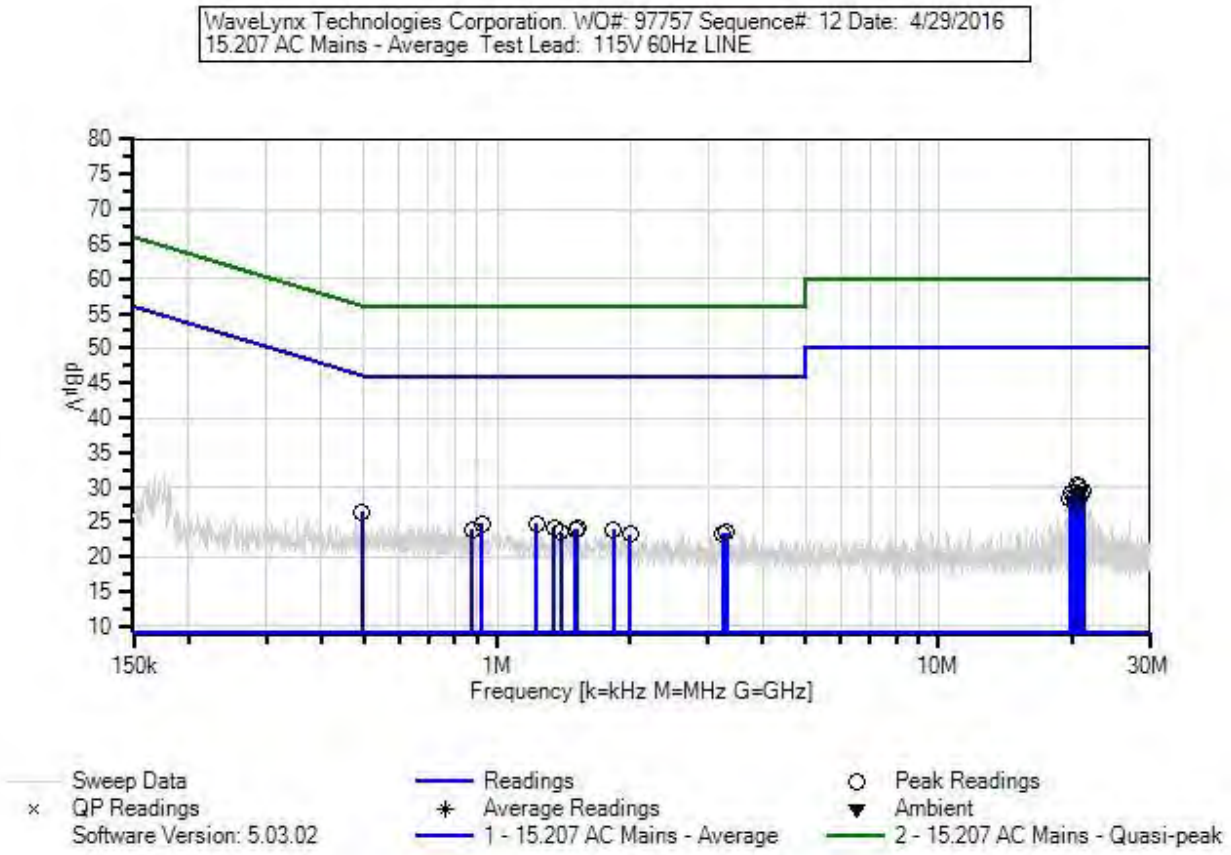
Frequency Range of Interest:
0.150-30MHz

RBW = 9kHz; VBW > 9kHz

Environmental Conditions:
Temperature: 20°C
Relative Humidity: 35%
Atmospheric Pressure: 97.1kPa

The EUTs are powered by a DC power supply at 12VDC. The customer declares it will only ever be wall mounted in an upright/vertical (Y-axis) orientation.
It has been programmed to continuously transmit the RFID signal at 125kHz.

Configuration 10 is made up of configurations 5 and 7. Both were tested simultaneously.
Note: A quick "preview" of one-unit vs two units connected to the LISN was performed while the measuring instrument was set to a wide span, there was no difference in the prescan emission observed.


WaveLynx Technologies Corporation. WO#: 97757 Sequence#: 12 Date: 4/29/2016
15.207 AC Mains - Average Test Lead: 115V 60Hz LINE
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
dBµV
150k
1M
10M
30M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
QP Readings
Software Version: 5.03.02
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06770	Attenuator	PE7010-10	1/15/2015	1/15/2017
	AN01248	50uH LISN-Line 1 (Return) (dB)	8028-50-TS-24-BNC	1/4/2016	1/4/2017
T2	AN01248	50uH LISN-Line 2 (Line) (dB)	8028-50-TS-24-BNC	1/4/2016	1/4/2017
T3	AN02609	High Pass Filter	HE9615-150K-50-720B	2/18/2016	2/18/2018
	AN02668	Spectrum Analyzer	E4446A	8/14/2015	8/14/2016
T4	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T5	ANMD INT	Cable	Under groun cables only	3/17/2016	3/17/2018
T6	ANP01153	Cable	NA	3/3/2016	3/3/2018

Measurement Data: Reading listed by margin. Test Lead: LINE

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	20.553M	19.2	+10.1 +0.2	+0.4 +0.2	+0.2	+0.1	+0.0	30.4	50.0	-19.6	LINE
2	495.422k	16.0	+10.1 +0.0	+0.1 +0.0	+0.2	+0.0	+0.0	26.4	46.1	-19.7	LINE
3	20.806M	18.8	+10.1 +0.2	+0.4 +0.2	+0.2	+0.1	+0.0	30.0	50.0	-20.0	LINE
4	21.292M	18.2	+10.1 +0.2	+0.5 +0.2	+0.2	+0.1	+0.0	29.5	50.0	-20.5	LINE
5	20.049M	18.1	+10.1 +0.2	+0.4 +0.2	+0.2	+0.1	+0.0	29.3	50.0	-20.7	LINE
6	21.040M	17.7	+10.1 +0.2	+0.5 +0.2	+0.2	+0.1	+0.0	29.0	50.0	-21.0	LINE
7	923.984k	14.2	+10.1 +0.0	+0.3 +0.0	+0.2	+0.0	+0.0	24.8	46.0	-21.2	LINE
8	1.230M	14.0	+10.1 +0.1	+0.4 +0.0	+0.2	+0.0	+0.0	24.8	46.0	-21.2	LINE
9	20.337M	17.5	+10.1 +0.2	+0.4 +0.2	+0.2	+0.1	+0.0	28.7	50.0	-21.3	LINE
10	19.806M	17.1	+10.1 +0.2	+0.4 +0.2	+0.2	+0.1	+0.0	28.3	50.0	-21.7	LINE
11	1.345M	13.4	+10.1 +0.1	+0.4 +0.0	+0.2	+0.0	+0.0	24.2	46.0	-21.8	LINE
12	1.524M	13.3	+10.1 +0.1	+0.4 +0.0	+0.2	+0.0	+0.0	24.1	46.0	-21.9	LINE
13	1.507M	13.1	+10.1 +0.1	+0.4 +0.0	+0.2	+0.0	+0.0	23.9	46.0	-22.1	LINE
14	877.205k	13.4	+10.1 +0.0	+0.2 +0.0	+0.2	+0.0	+0.0	23.9	46.0	-22.1	LINE

15	20.301M	16.7	+10.1 +0.2	+0.4 +0.2	+0.2	+0.1	+0.0	27.9	50.0	-22.1	LINE
16	1.838M	12.9	+10.1 +0.1	+0.6 +0.0	+0.2	+0.0	+0.0	23.9	46.0	-22.1	LINE
17	1.396M	12.7	+10.1 +0.1	+0.4 +0.0	+0.2	+0.0	+0.0	23.5	46.0	-22.5	LINE
18	3.314M	13.0	+10.1 +0.1	+0.1 +0.1	+0.1	+0.0	+0.0	23.5	46.0	-22.5	LINE
19	3.246M	12.9	+10.1 +0.1	+0.1 +0.1	+0.1	+0.0	+0.0	23.4	46.0	-22.6	LINE
20	2.000M	12.8	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.3	46.0	-22.7	LINE

Test Location:	CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240		
Customer:	**WaveLynx Technologies Corporation.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**97757**	Date:	4/29/2016
Test Type:	**Conducted Emissions**	Time:	5:31:46 PM
Tested by:	Skip Doyle	Sequence#:	11
Software:	EMITest 5.03.02		115V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 10			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 10			

Test Conditions / Notes:

Test Method: ANSI C 63.4 2014

Frequency Range of Interest:
0.150-30MHz

RBW = 9kHz; VBW > 9kHz

Environmental Conditions:
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Relative Humidity: 35%
Atmospheric Pressure: 97.1kPa

Modulation: CW
Antenna Type: Integral
Antenna Gain 2 dBi
Transmit Frequency: 125kHz

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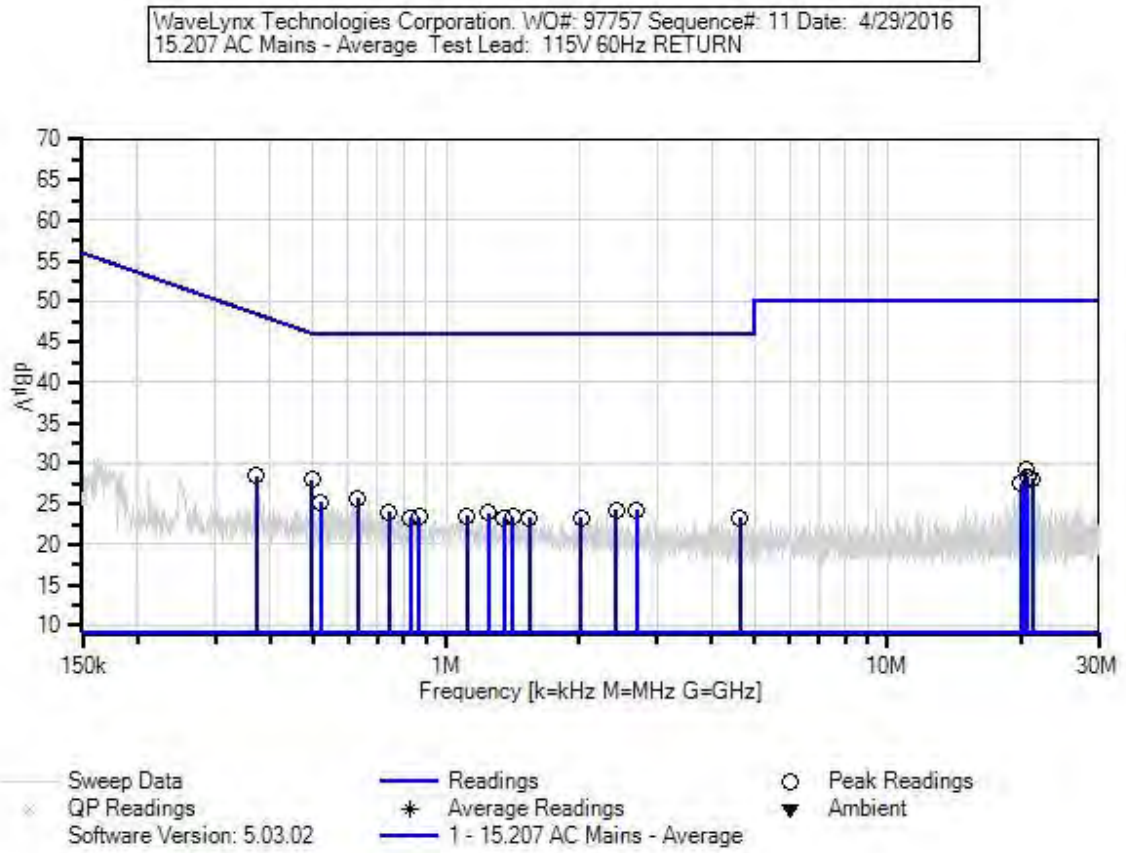

WaveLynx Technologies Corporation. WO#: 97757 Sequence#: 11 Date: 4/29/2016
15.207 AC Mains - Average Test Lead: 115V 60Hz RETURN
70
65
60
55
50
45
40
35
30
25
20
15
10
dBµV
150k
1M
10M
30M
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
QP Readings
Software Version: 5.03.02
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient

Test Equipment:

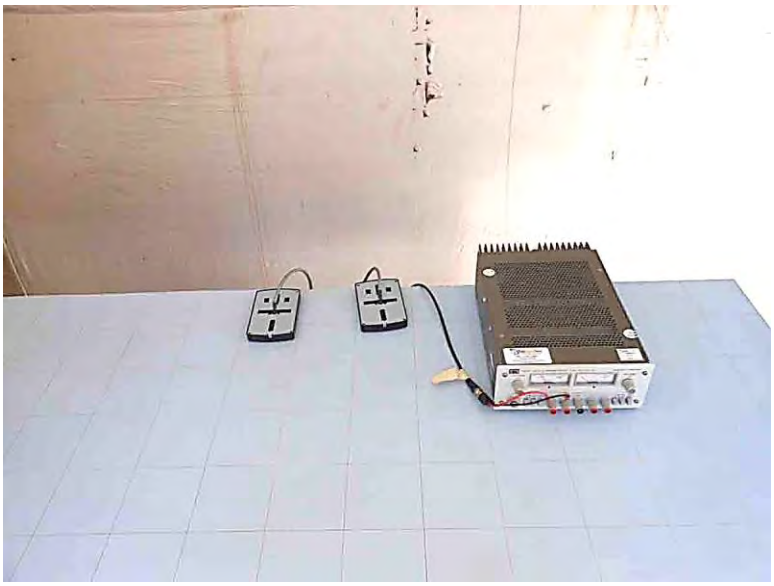
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06770	Attenuator	PE7010-10	1/15/2015	1/15/2017
T2	AN01248	50uH LISN-Line 1 (Return) (dB)	8028-50-TS-24-BNC	1/4/2016	1/4/2017
	AN01248	50uH LISN-Line 2 (Line) (dB)	8028-50-TS-24-BNC	1/4/2016	1/4/2017
T3	AN02609	High Pass Filter	HE9615-150K-50-720B	2/18/2016	2/18/2018
	AN02668	Spectrum Analyzer	E4446A	8/14/2015	8/14/2016
T4	ANP06884	Cable	LMR195-FR-4	10/27/2015	10/27/2017
T5	ANMD INT	Cable	Under groun cables only	3/17/2016	3/17/2018
T6	ANP01153	Cable	NA	3/3/2016	3/3/2018

Measurement Data: Reading listed by margin. Test Lead: RETURN

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	496.150k	17.6	+10.1 +0.0	+0.1 +0.0	+0.2	+0.0	+0.0	28.0	46.1	-18.1	RETUR
2	372.525k	18.1	+10.1 +0.0	+0.1 +0.0	+0.2	+0.0	+0.0	28.5	48.4	-19.9	RETUR
3	632.137k	15.2	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	25.7	46.0	-20.3	RETUR
4	20.553M	18.0	+10.1 +0.2	+0.5 +0.2	+0.2	+0.1	+0.0	29.3	50.0	-20.7	RETUR
5	519.420k	14.7	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	25.2	46.0	-20.8	RETUR
6	2.425M	13.8	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	24.3	46.0	-21.7	RETUR
7	20.797M	17.0	+10.1 +0.2	+0.5 +0.2	+0.2	+0.1	+0.0	28.3	50.0	-21.7	RETUR
8	2.697M	13.7	+10.1 +0.1	+0.1 +0.1	+0.1	+0.0	+0.0	24.2	46.0	-21.8	RETUR
9	21.292M	16.7	+10.1 +0.2	+0.6 +0.2	+0.2	+0.1	+0.0	28.1	50.0	-21.9	RETUR
10	741.218k	13.6	+10.1 +0.0	+0.1 +0.0	+0.2	+0.0	+0.0	24.0	46.0	-22.0	RETUR
11	1.247M	13.4	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.9	46.0	-22.1	RETUR
12	1.115M	13.0	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.5	46.0	-22.5	RETUR
13	20.058M	16.2	+10.1 +0.2	+0.5 +0.2	+0.2	+0.1	+0.0	27.5	50.0	-22.5	RETUR
14	869.206k	13.0	+10.1 +0.0	+0.1 +0.0	+0.2	+0.0	+0.0	23.4	46.0	-22.6	RETUR

15	1.417M	12.9	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.4	46.0	-22.6	RETUR
16	1.354M	12.8	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.3	46.0	-22.7	RETUR
17	830.664k	12.8	+10.1 +0.0	+0.1 +0.0	+0.3	+0.0	+0.0	23.3	46.0	-22.7	RETUR
18	1.545M	12.8	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.3	46.0	-22.7	RETUR
19	4.620M	12.8	+10.1 +0.1	+0.1 +0.1	+0.1	+0.0	+0.0	23.3	46.0	-22.7	RETUR
20	2.021M	12.8	+10.1 +0.1	+0.1 +0.0	+0.2	+0.0	+0.0	23.3	46.0	-22.7	RETUR

Test Setup Photo(s)



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.