FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 7

CERTIFICATION TEST REPORT

FOR

ALTIERRE TETHERED DEVICE

MODEL NUMBER: ATD100

FCC ID: W22- ATD100
IC: 9005A- ATD100

REPORT NUMBER: 10U13260-3, Revision A

ISSUE DATE: AUGUST 05, 2010

Prepared for
ALTIERRE CORPORATION
1980 CONDOURSE DRIVE
SAN JOSE, CA95131, U.S.A.

Prepared by
COMPLIANCE CERTIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	07/26/2010	Initial Issue	T. Chan
A	08/05/2010	Revised Section 5.3; Added Data 200kHz band within the frequency range of 88–108 MHz On Page 15	T. Chan

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: ALTIERRE CORPORATION
1980 CONDOURSE DRIVE
SAN JOSE, CA95131, USA

EUT DESCRIPTION: ALTIERRE TETHERED DEVICE TO REGISTER 2.4GHZ ELECTRONIC SHELF LABEL TAGS

MODEL: ADT100

SERIAL NUMBER: 101

DATE TESTED: JULY 19 – 22, 2010

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 7 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 2	Pass

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For CCS By:

THU CHAN
ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

WILLIAM ZHUANG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 2, and RSS-210 Issue 7.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Altierre Tethered Device (ATD) is a short range radio to provision Altierre Electronic Shelf Labels such as the ATAG400. The ATD makes use of a short range 100MHz loop to identify an Altierre electronic shelf label. Then the ATD uses a 2.4GHz RF link to provision and load data into the Altierre electronic shelf labels.

The radio module is manufactured by Altierre Corp.

5.2. SOFTWARE AND FIRMWARE

The software and firmware installed in the EUT during testing was Test Software 2.4.1.

5.3. WORST-CASE CONFIGURATION AND MODE

The EUT has only single channel operation.

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	0673BHU	L3-AT761 0709	Doc
AC Adapter	Lenovo	92P1156	11S92P1156Z1DX	Doc

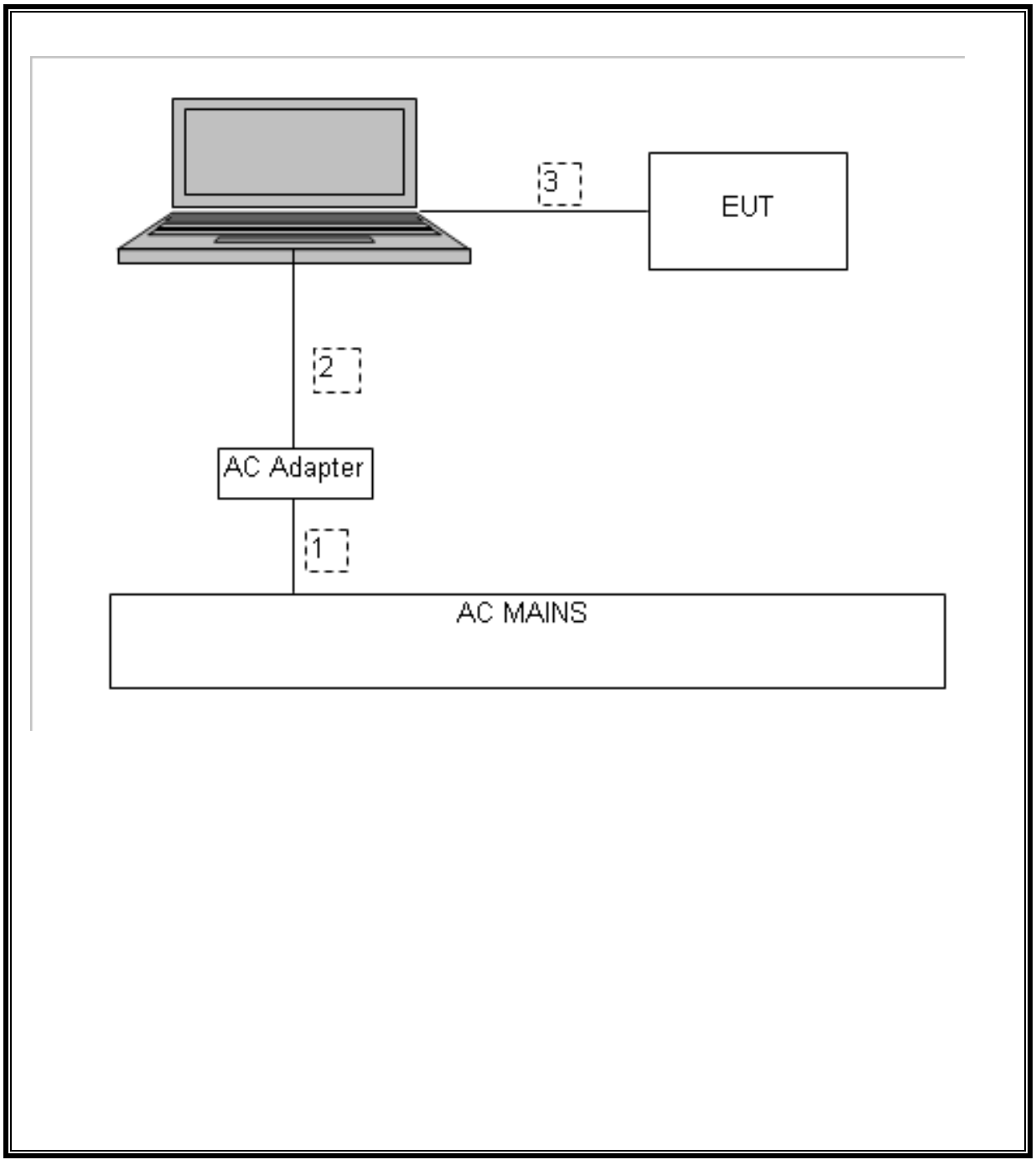
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identica Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115V	Unshielded	1.0m	
2	DC	1	JACK	Unshielded	1.80m	
3	USB	1	USB	Unshielded	1.2m	

TEST SETUP

The EUT is a stand alone device and all support equipments should be in the shielded box during the test

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/31/10
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/14/11
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	07/06/11
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	05/06/11
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/06/10
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	11/05/10

7. RADIATED TEST RESULTS

7.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

FCC §15.239 Operation in the band 88 –108 MHz
IC RSS-210 A2.8

(a) Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88–108 MHz.

(b) The field strength of any emissions within the permitted 200 kHz band shall not exceed 250 microvolts/ meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in § 15.35 for limiting peak emissions
apply.

(c) The field strength of any emissions radiated on any frequency outside of the specified 200 kHz band shall not exceed the general radiated emission limits in § 15.209.

FCC §15.209
IC RSS-210 Clause 2.6 (Transmitter)
IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

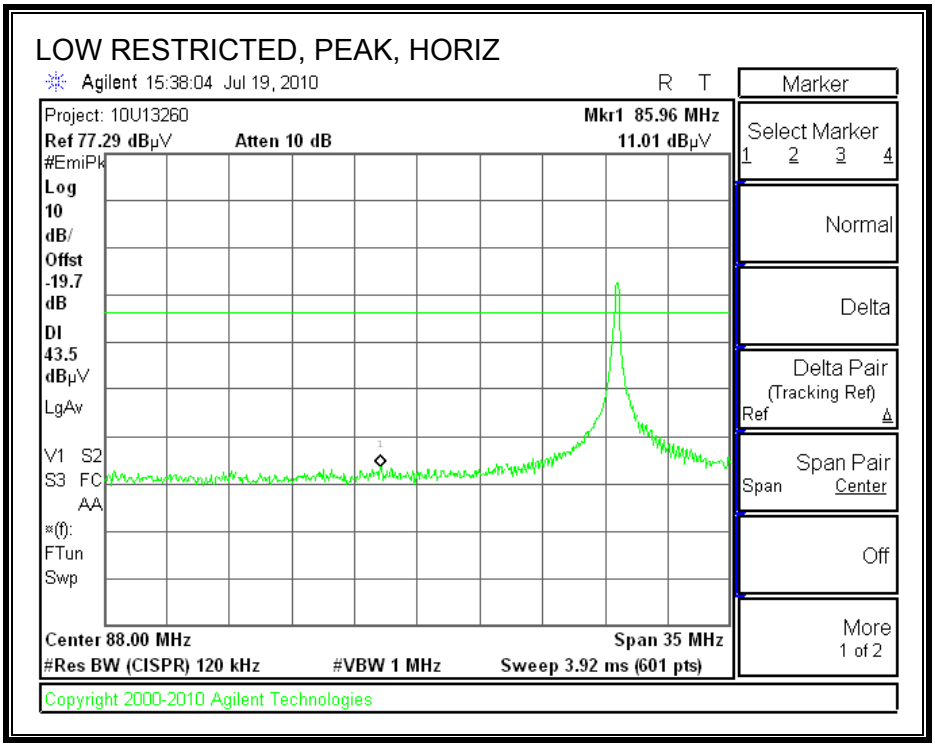
For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

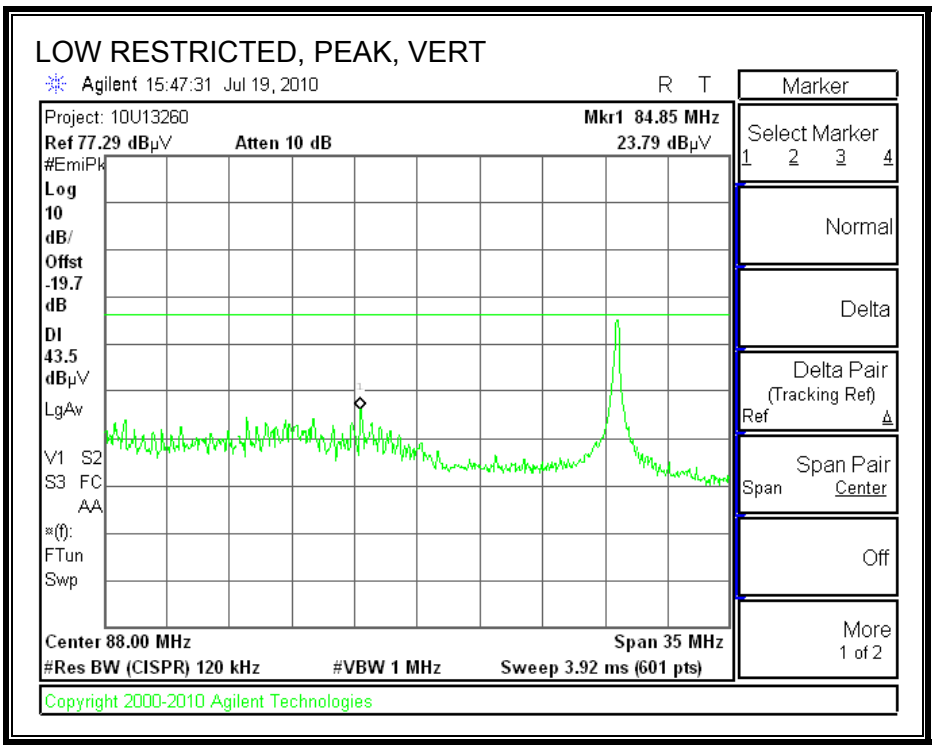
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

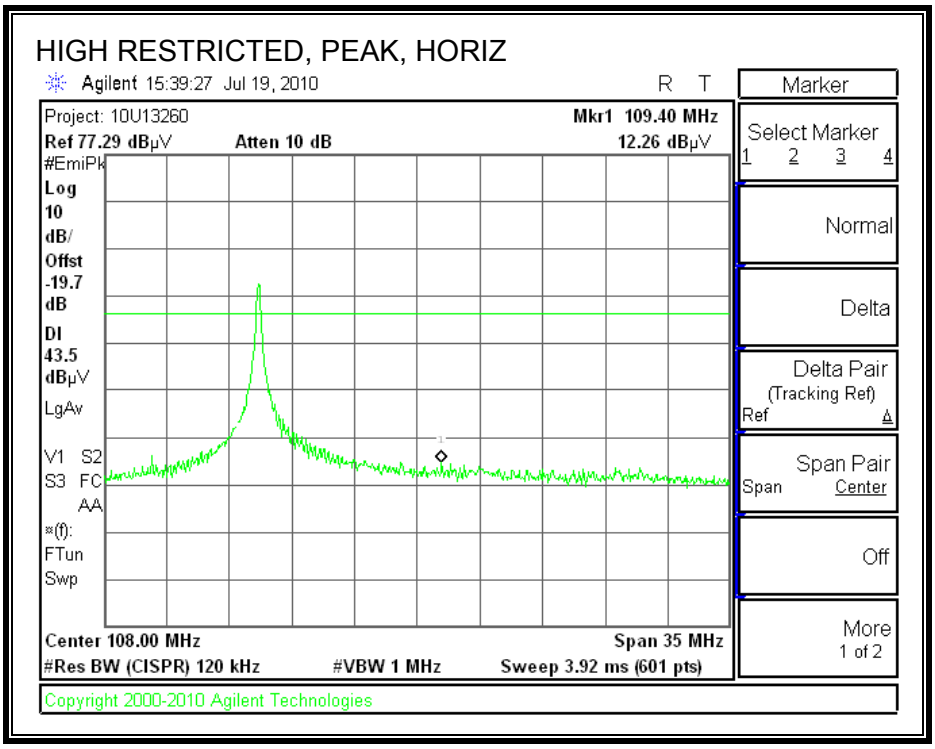
TEST RESULT

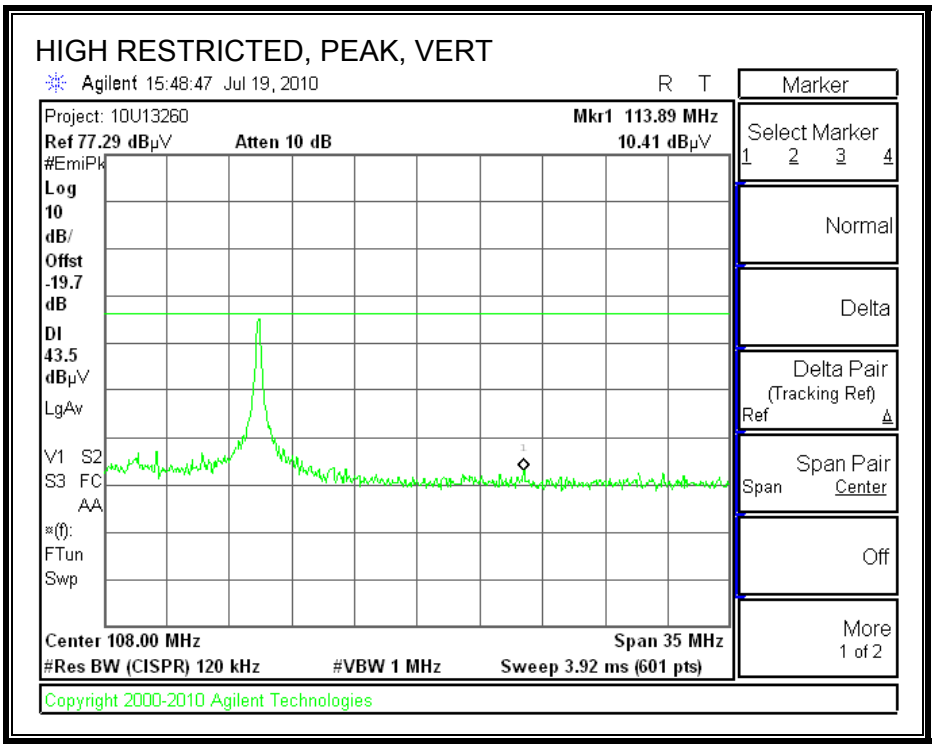
LOW RESTRICTED BANDEDGE (WITHIN THE FREQUENCY RANGE 88 – 108MHz)





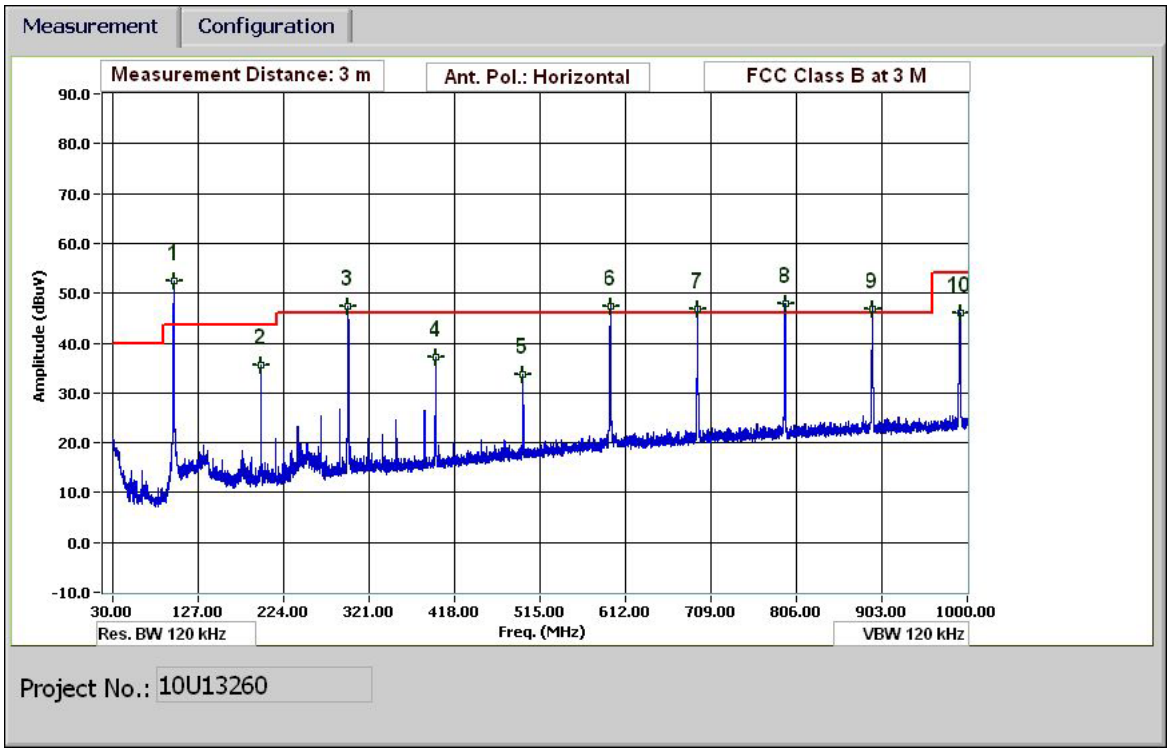
HIGH RESTRICTED BANDEDGE(WITHIN THE FREQUENCY RANGE 88 – 108MHz)





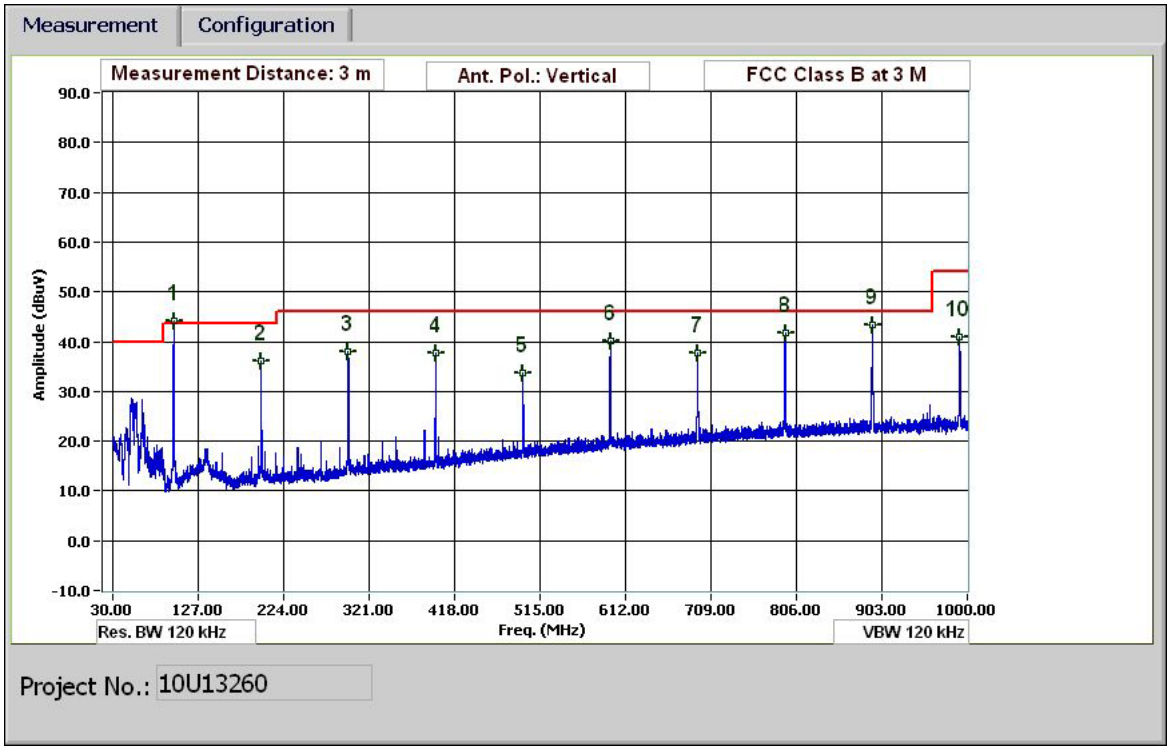
FUNAMENTAL, HARMONIC SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



FUNDAMENTAL, SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

30-1000MHz Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: William Zhuang
Date: 07/19/10
Project #: 10U13260
Company: Altierre
EUT Description: Altierre Tethered Device to Register 2.4GHz
EUT M/N: ATD
Test Target: FCC B
Mode Oper: Tx 100 MHz

f	Measurement Frequency	Amp	Preamp Gain	Margin Margin vs. Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	
Read	Analyzer Reading	Filter	Filter Insert Loss	
AF	Antenna Factor	Corr.	Calculated Field Strength	
CL	Cable Loss	Limit	Field Strength Limit	

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filter dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Ant. High cm	Table Angle Degree	Notes
100 MHz, Vertical															
87.800	3.0	30.7	7.7	0.8	28.3	0.0	0.0	10.9	43.5	-32.6	V	P			
99.123	3.0	61.9	9.7	0.9	28.3	0.0	0.0	44.3	68.0	-23.7	V	P			
99.123	3.0	48.9	9.7	0.9	28.3	0.0	0.0	31.3	48.0	-16.7	V	A			
108.200	3.0	33.0	10.7	1.0	28.3	0.0	0.0	16.4	43.5	-27.1	V	P			
198.247	3.0	51.2	11.9	1.2	28.2	0.0	0.0	36.1	43.5	-7.4	V	P			
297.491	3.0	51.2	13.3	1.5	28.1	0.0	0.0	37.9	46.0	-8.1	V	P			
396.615	3.0	49.1	14.9	1.8	28.1	0.0	0.0	37.7	46.0	-8.3	V	P			
495.739	3.0	42.9	16.7	2.0	27.8	0.0	0.0	33.8	46.0	-12.2	V	P			
594.983	3.0	47.2	18.3	2.2	27.5	0.0	0.0	40.2	46.0	-5.8	V	P			
693.987	3.0	42.9	19.5	2.4	27.2	0.0	0.0	37.7	46.0	-8.3	V	P			
793.351	3.0	45.7	20.9	2.6	27.4	0.0	0.0	41.8	46.0	-4.2	V	P			
892.236	3.0	46.4	21.8	2.8	27.8	0.0	0.0	43.3	46.0	-2.7	V	P			
991.480	3.0	43.5	22.4	3.0	27.9	0.0	0.0	41.0	54.0	-13.0	V	P			
100 MHz, Horizontal															
87.800	3.0	37.0	7.7	0.8	28.3	0.0	0.0	17.2	43.5	-26.3	H	P			
99.123	3.0	70.2	9.7	0.9	28.3	0.0	0.0	52.5	68.0	-15.5	H	P			
99.123	3.0	52.7	9.7	0.9	28.3	0.0	0.0	35.0	48.0	-13.0	H	A			
108.200	3.0	30.1	10.7	1.0	28.3	0.0	0.0	13.5	43.5	-30.0	H	P			
198.247	3.0	50.6	11.9	1.2	28.2	0.0	0.0	35.5	43.5	-8.0	H	P			
297.491	3.0	60.6	13.3	1.5	28.1	0.0	0.0	47.3	46.0	1.3	H	P			
297.491	3.0	58.6	13.3	1.5	28.1	0.0	0.0	45.3	46.0	-0.7	H	QP			
396.615	3.0	48.7	14.9	1.8	28.1	0.0	0.0	37.3	46.0	-8.7	H	P			
495.859	3.0	42.8	16.7	2.0	27.8	0.0	0.0	33.7	46.0	-12.3	H	P			
594.863	3.0	54.5	18.3	2.2	27.5	0.0	0.0	47.5	46.0	1.5	H	P			
594.863	3.0	51.7	18.3	2.2	27.5	0.0	0.0	44.7	46.0	-1.3	H	QP			
694.107	3.0	52.2	19.5	2.4	27.2	0.0	0.0	46.9	46.0	0.9	H	P			
694.107	3.0	49.5	19.5	2.4	27.2	0.0	0.0	44.2	46.0	-1.8	H	QP			
793.231	3.0	51.8	20.9	2.6	27.4	0.0	0.0	47.9	46.0	1.9	H	P			
793.231	3.0	49.1	20.9	2.6	27.4	0.0	0.0	45.2	46.0	-0.8	H	QP			
892.356	3.0	50.0	21.8	2.8	27.8	0.0	0.0	46.9	46.0	0.9	H	P			
892.356	3.0	48.1	21.8	2.8	27.8	0.0	0.0	45.0	46.0	-1.0	H	QP			
991.720	3.0	48.6	22.4	3.0	27.9	0.0	0.0	46.0	54.0	-8.0	H	P			

Rev. 1.27.09
Note: No other emissions were detected above the system noise floor.

7.2. RECEIVER RADIATED SPURIOUS EMISSIONS

Not applicable, the EUT is only transmitter device.

8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

ANSI C63.4

RESULTS

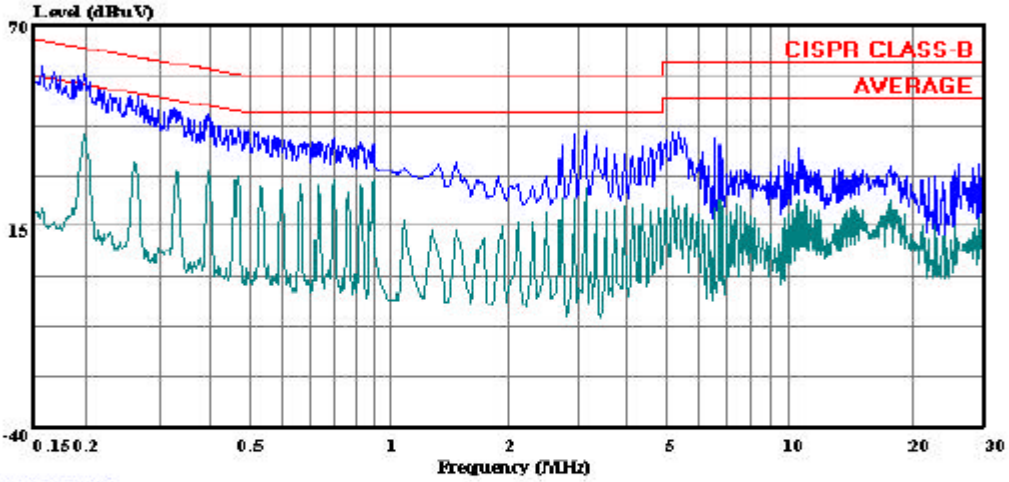
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.16	58.52	--	20.09	0.00	65.62	55.62	-7.10	-35.53	L1
0.20	56.50	--	40.11	0.00	63.69	53.69	-7.19	-13.58	L1
0.39	45.30	--	26.18	0.00	58.00	48.00	-12.70	-21.82	L1
0.16	52.68	--	13.27	0.00	65.26	55.26	-12.58	-41.99	L2
0.20	50.16	--	34.67	0.00	63.82	53.82	-13.66	-19.15	L2
5.28	42.28	--	30.47	0.00	60.00	50.00	-17.72	-19.53	L2
6 Worst Data									

LINE 1 RESULTS

7F #8 Ln120 Neihu Rd Sec1,
Taipei, Taiwan R.O.C.
Tel:02-26594900
Fax:02-26594833

Data#: 22 File#: 10U13260-100MHz-LC.EMI
Date: 07-22-2010 Time: 15:30:21



Trace: 20 Ref Trace:

Condition: CISPR CLASS-B
Test Operator: : Tom
Project #: : 10U13260
Company: : Altierre Corporation
EUT Description:: Access Point at 2.4GHz FHHS
Model: : AP4
Configuration: : EUT, Laptop and minimum configuration
Mode: : TX 100MHz mode
Target: : FCC Class B
Voltage: : 115V / 60Hz
: L1: Peak (Blue); Average (Green)

LINE 2 RESULTS

7F #8 Ln120 Neihu Rd Sec1,
Taipei, Taiwan R.O.C.
Tel:02-26594900
Fax:02-26594833

Data#: 29 File#: 10U13260-100MHz-LC.EMI
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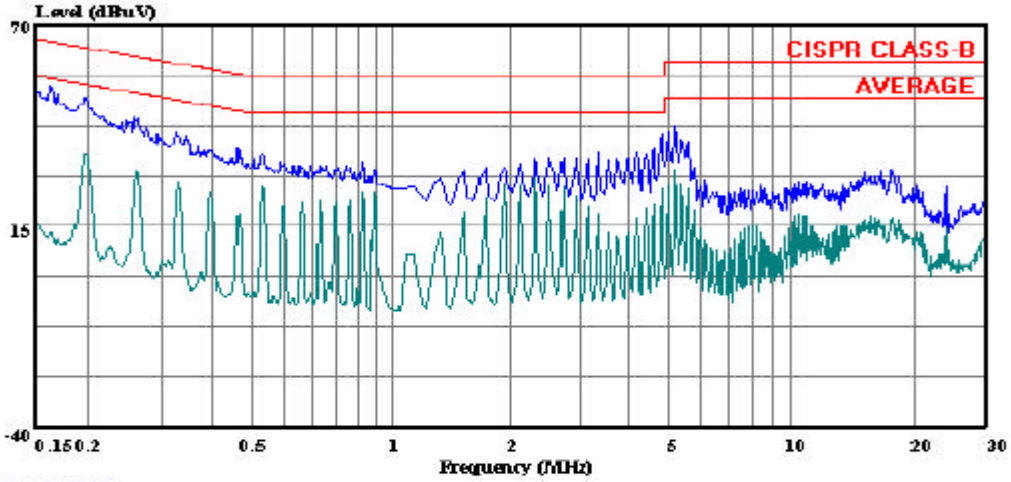

Trace: 27 Ref Trace:

Condition: CISPR CLASS-B
Test Operator: : Tom
Project #: : 10U13260
Company: : Altierre Corporation
EUT Description:: Access Point at 2.4GHz FHHS
Model: : AP4
Configuration: : EUT, Laptop and minimum configuration
Mode: : TX 100MHz mode
Target: : FCC Class B
Voltage: : 115V / 60Hz
: L2: Peak (Blue); Average (Green)