

RADIATED SPURIOUS EMISSIONS PORTIONS OF FCC CFR47 PART 15 SUBPART C INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

TRI BAND CDMA MOBILE PHONE WITH BLUETOOTH + WiFi

MODEL NUMBER: C5121

FCC ID: OVFC51213CD IC: 3572A-C5121

REPORT NUMBER: 11U13924-5

ISSUE DATE: AUGUST 22, 2011

Prepared for

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NVLAP LAB CODE 200065-0

Revision History

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DATE: AUGUST 22, 201 IC: 3572A-C5121

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: KYOCERA COMMUNICATIONS, INC.

9520 TOWNE CENTER DRIVE SAN DIEGO, CA 92121, USA

EUT DESCRIPTION: TRI BAND CDMA MOBILE PHONE WITH BLUETOOTH + WiFi

MODEL: C5121

SERIAL NUMBER: A0000012FF3075

DATE TESTED: AUGUST 15 – 22, 2011

APPLICABLE STANDARDS

STANDARD TEST RESULTS

CFR 47 Part 15 Subpart C PASS (Radiated Portion)

INDUSTRY CANADA RSS-210 Issue 8 Annex 8 PASS (Radiated Portion)

INDUSTRY CANADA RSS-GEN Issue 3 PASS (Radiated Portion)

Compliance Certification Services (UL 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 UL 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 UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL 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 UL CCS By: Tested By:

THU CHAN ENGINEERING MANAGER

UL CCS

STEVE AGUILAR EMC TECHNICIAN

Stone aguilan

UL CCS

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 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

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

UL 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

The EUT is a WLAN featured Tri Band CDMA Phone that is manufactured by Kyocera Communications, Inc.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of -1.0 dBi.

5.3. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 0.300GEN

The test utility software used during testing was FCC Test Application V1.0.

5.4. WORST-CASE CONFIGURATION AND MODE

The worst-position was the EUT with highest emissions. To determine the worst-case, the EUT was investigated for X, Y, and Z-Positions, and the worst position among X, Y, and Z with the phone opened. After the investigation, the worst-position was turned out to be in the Z-position with the phone close and AC/DC adapter.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST									
Description	Description Manufacturer Model Serial Number FCC ID								
AC Adapter	Kyocera Corp.	SCP-30ADT	SSW-2001	DoC					

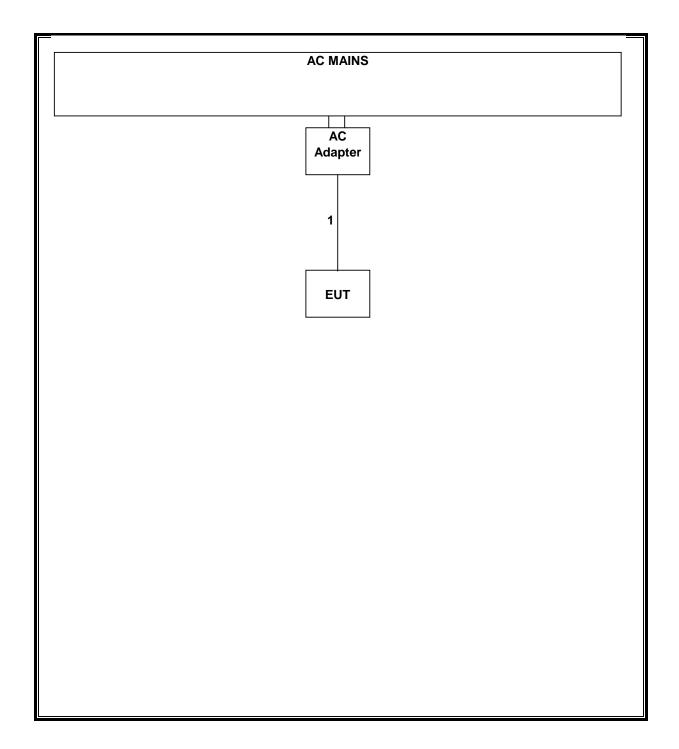
I/O CABLES

	I/O CABLE LIST									
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks				
1	DC	1	DC	Shielded	1m	DCD-1214				

TEST SETUP

The EUT is configured as stand-alone unit with AC/DC adapter for all tests.

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	Asset	Cal Due						
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01176	8/4/2012				
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/16/12				
Antenna, Horn, 18 GHz	EMCO	3115	C00945	06/29/12				
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	7/18/2012				
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/27/12				
EMI Test Receiver, 9 kHz-7 GHz	R&S	ESCI 7	N/A	07/05/12				
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/10/2011				
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02686	CNR				

7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §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, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

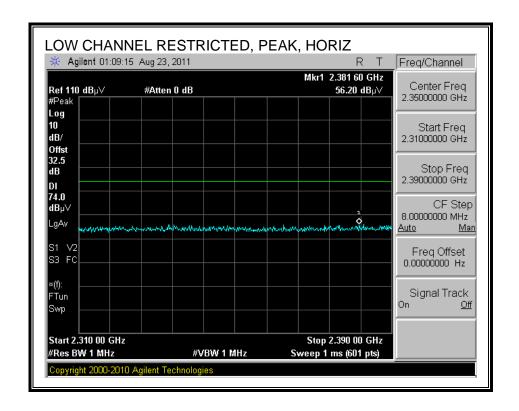
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each appplicable band.

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.

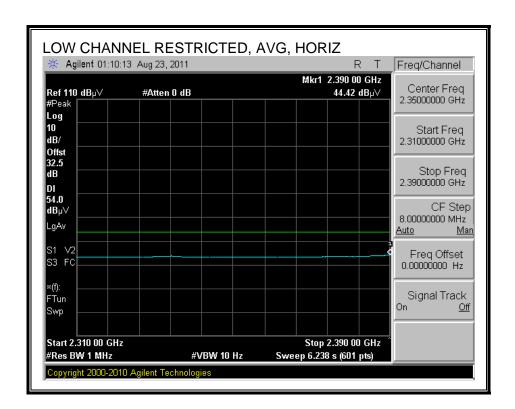
7.2. TRANSMITTER ABOVE 1 GHz

7.2.1. 802.11b MODE

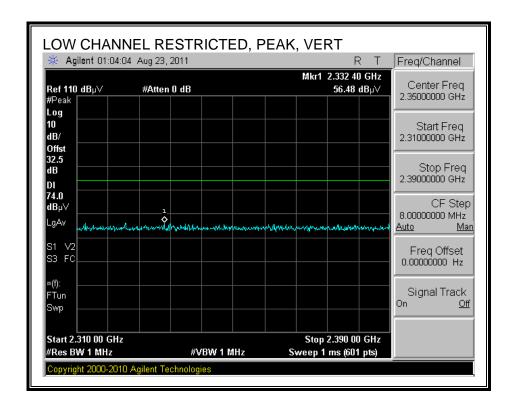
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

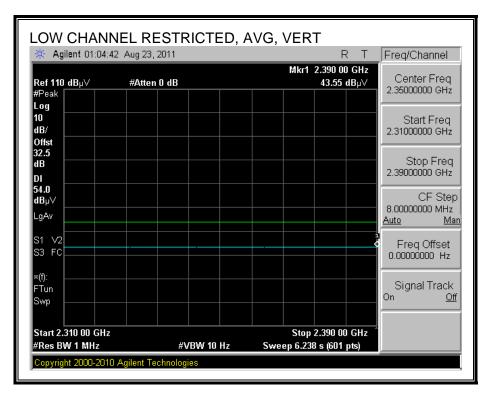


REPORT NO: 11U13924-5 FCC ID: OVFC51213CD

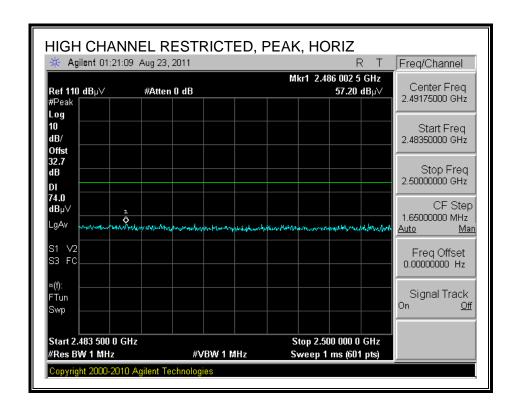


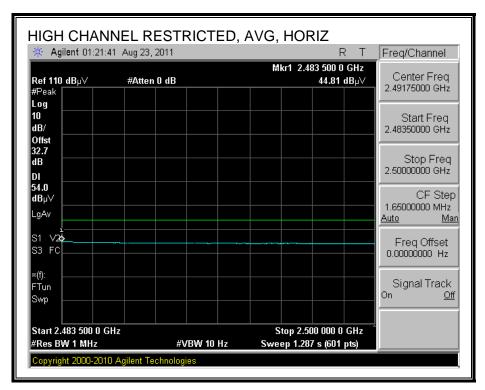
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



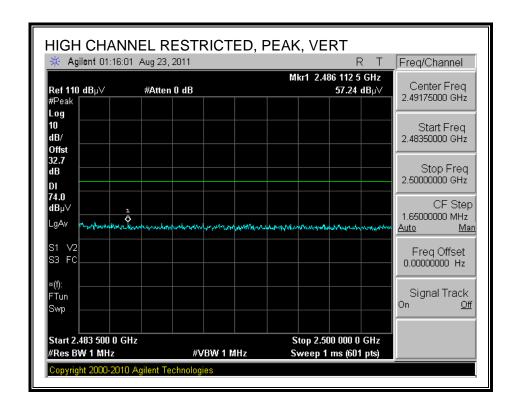


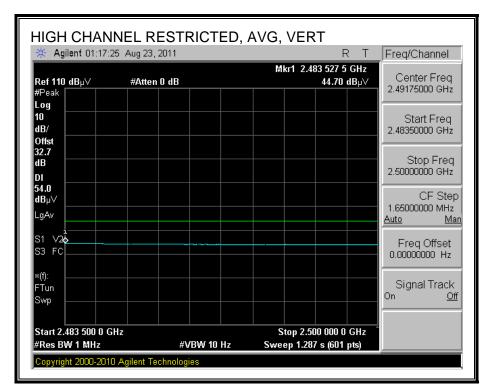
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



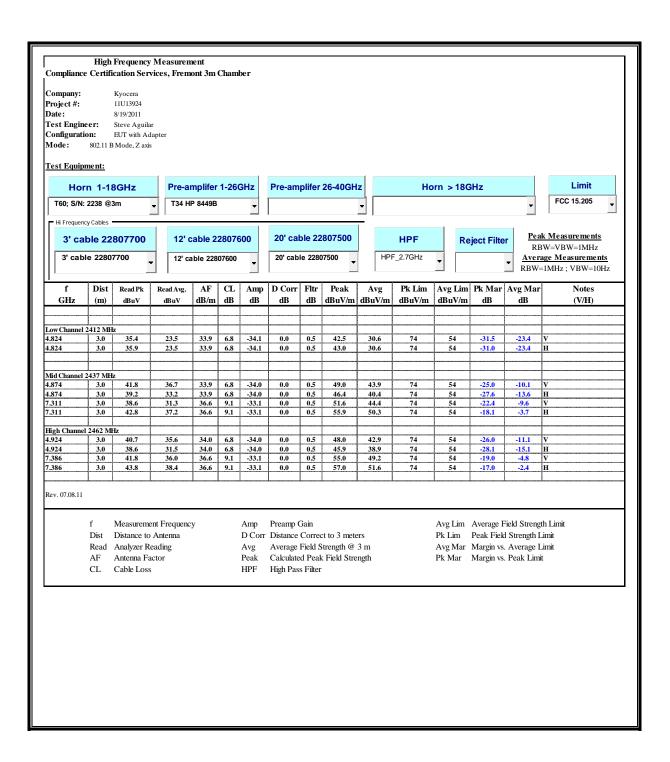


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



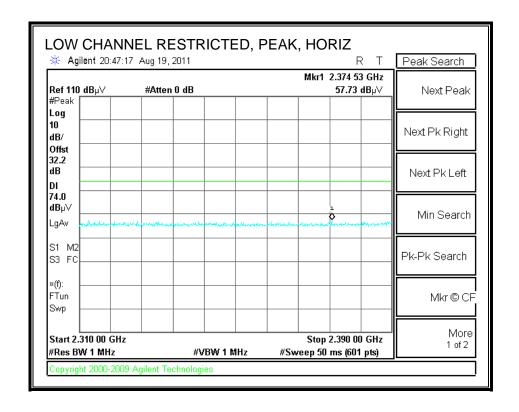


HARMONICS AND SPURIOUS EMISSIONS

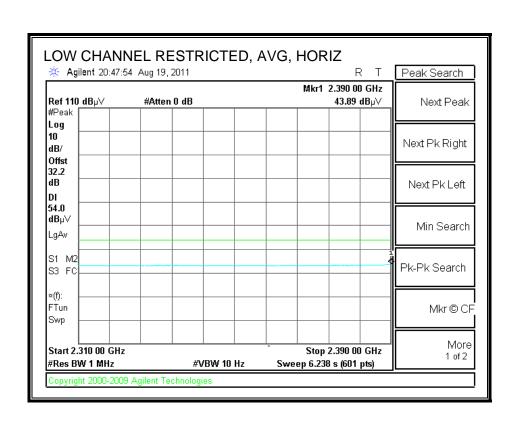


7.2.2. 802.11g MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



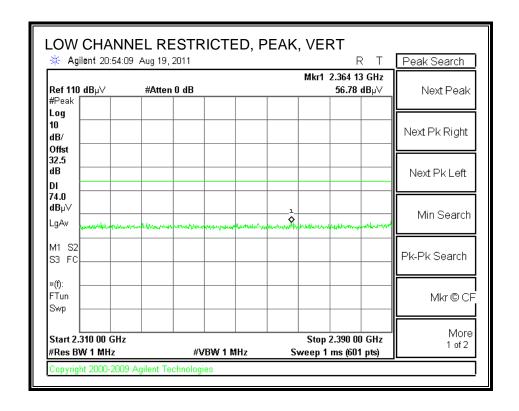
REPORT NO: 11U13924-5 FCC ID: OVFC51213CD

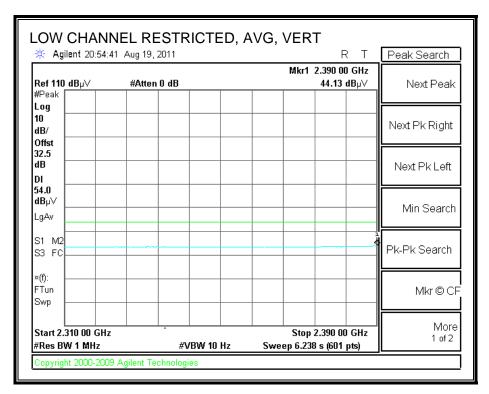


DATE: AUGUST 22, 201

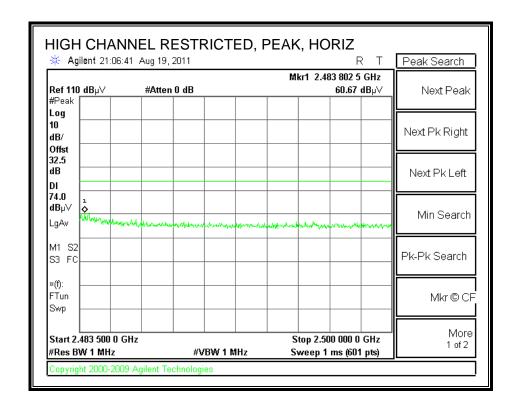
IC: 3572A-C5121

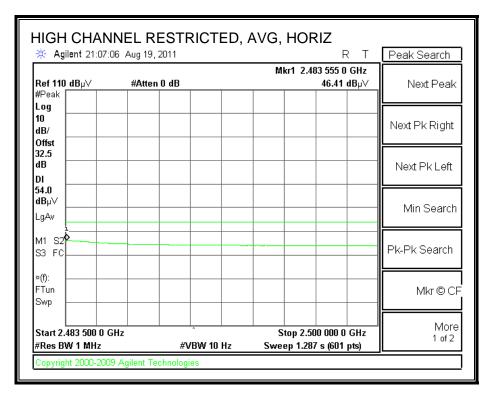
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



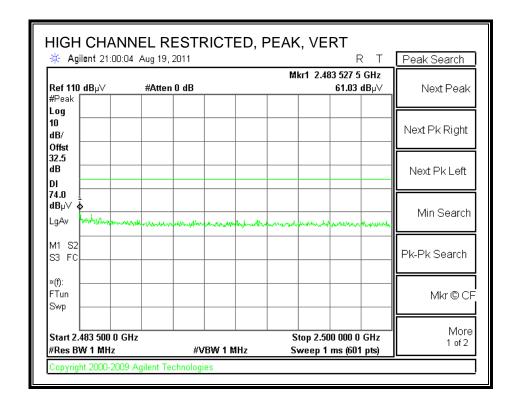


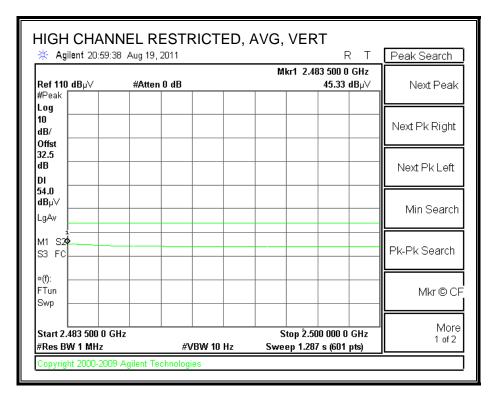
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



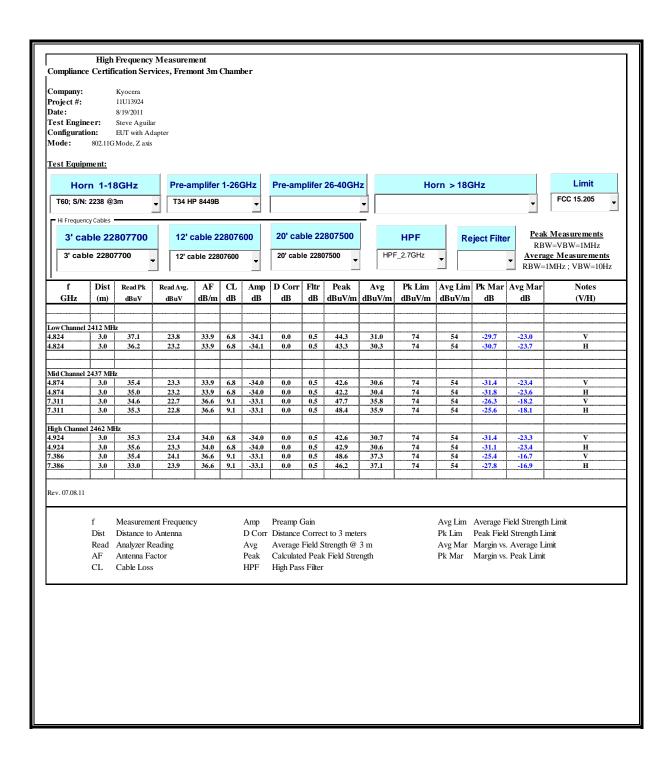


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



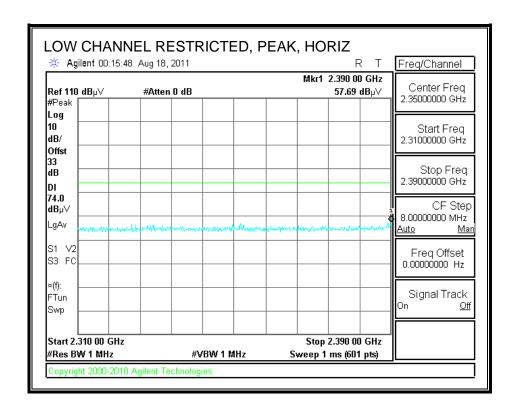


HARMONICS AND SPURIOUS EMISSIONS



7.2.3. 802.11n HT20 SISO MODE

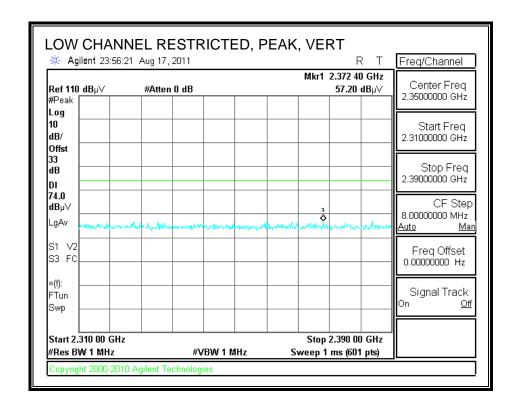
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

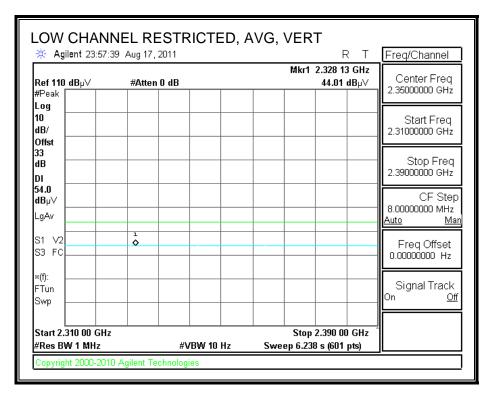


REPORT NO: 11U13924-5 FCC ID: OVFC51213CD DATE: AUGUST 22, 201

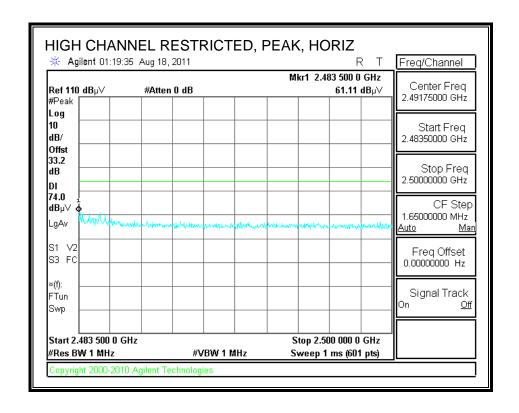
IC: 3572A-C5121

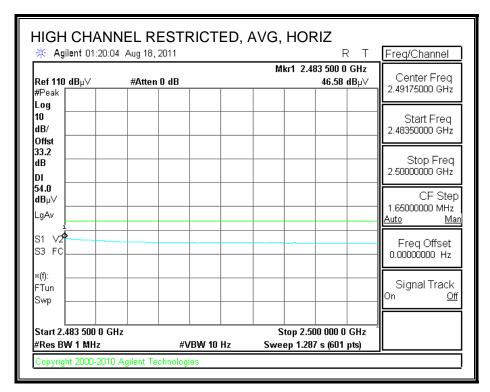
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



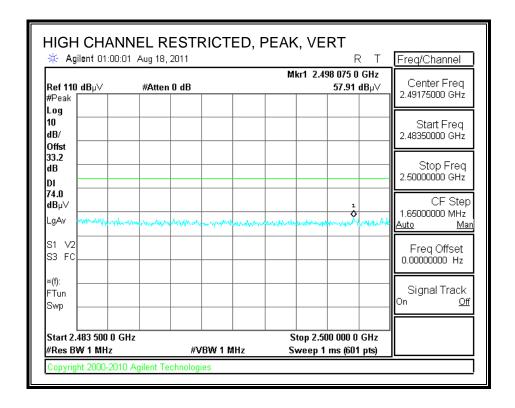


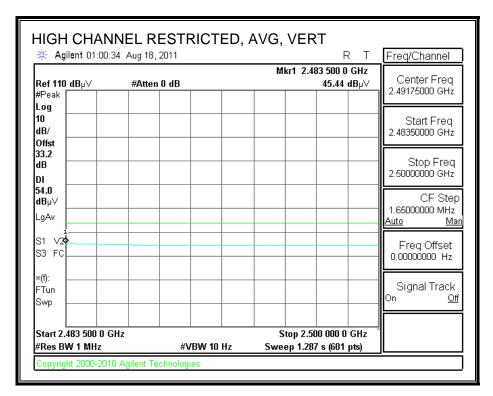
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



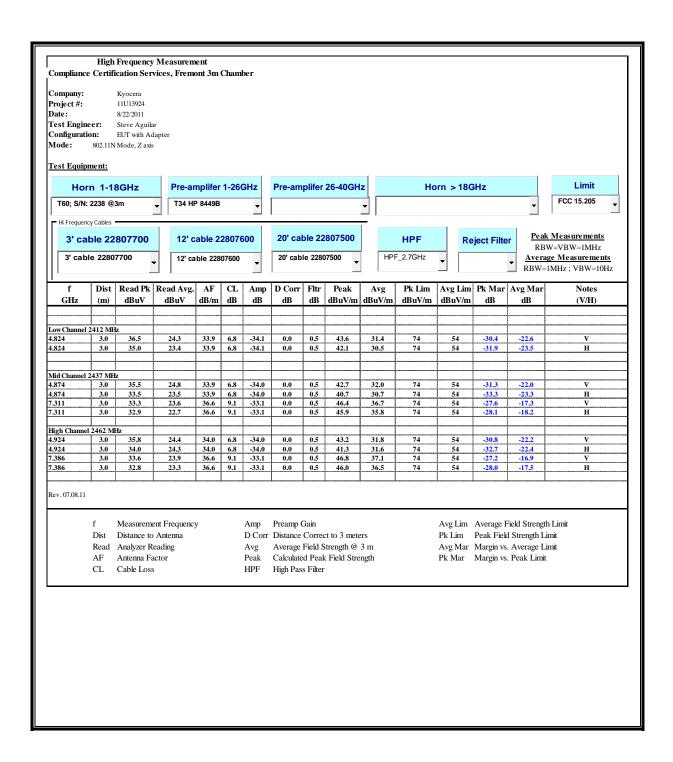


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



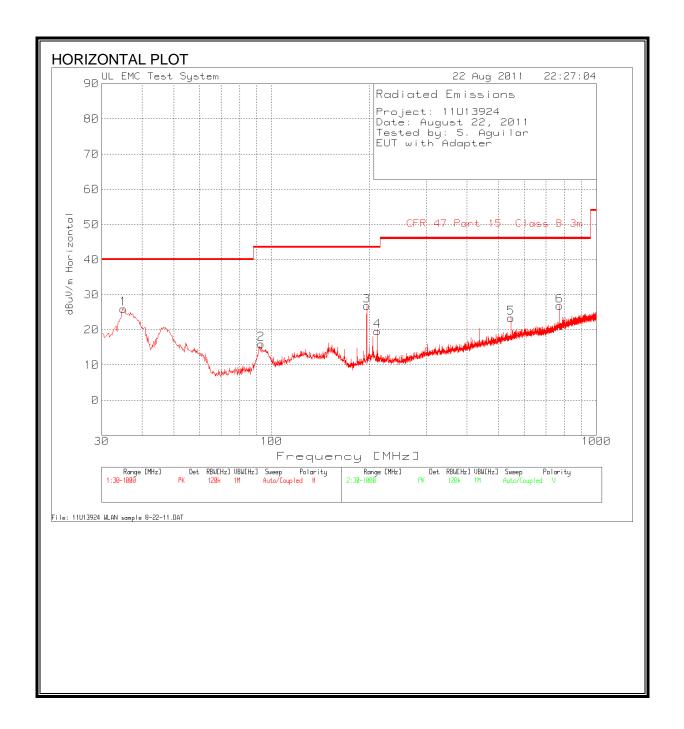


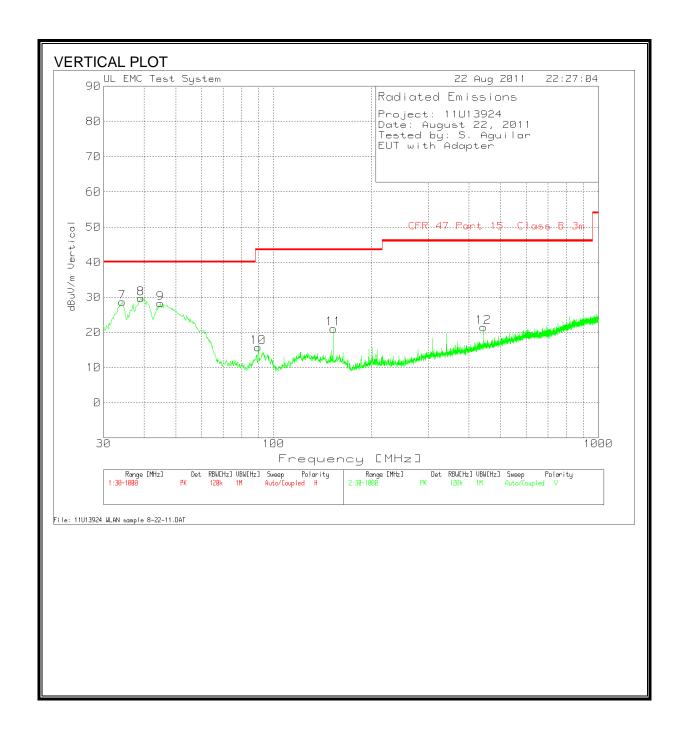
HARMONICS AND SPURIOUS EMISSIONS



7.3. WORST-CASE BELOW 1 GHz

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





HORIZONTAL AND VERTICAL DATA

Project: 11U13924										
Date: Augus										
Tested by: S										
EUT with Ad										
LOT WILLIAM	upter									
Horizontal 30	0 - 1000MF	łz								
Test	Meter		3m Cable	PreAmp	3m Bilog		CFR 47 Part 15			1
Frequency	Reading	Detector	[dB]	[dB]	[dB]	dBuV/m	Class B 3m	Margin	Height [cm]	Polarity
35.04	36.16	PK	0.6	-28.3	17.5	25.96	40	-14.04	101	Horz
92.9996	35.17	PK	1	-28.1	7.9	15.97	43.5	-27.53	176	Horz
196.5128	41.5	PK	1.4	-27.7	11.7	26.9	43.5	-16.6	101	Horz
211.8265	33.93	PK	1.4	-27.6	11.9	19.63	43.5	-23.87	101	Horz
546.5967	31.84	PK	2.4	-28.5	17.6	23.34	46	-22.66	251	Horz
770.2938	31.9	PK	2.8	-28.1	20.3	26.9	46	-19.1	101	Horz
Vertical 30 -	1000MHz									
Test	Meter		3m Cable	PreAmp	3m Bilog		CFR 47 Part 15	 I		1
Frequency	Reading	Detector	[dB]	[dB]	[dB]	dBuV/m	Class B 3m	Margin	Height [cm]	Polarity
34.2646	38.5	PK	0.6	-28.3	17.9	28.7	40	-11.3	101	Vert
39.1107	43.14	PK	0.7	-28.2	14.1	29.74	40	-10.26	101	Vert
44.9261	43.98	PK	0.7	-28.2	11.8	28.28	40	-11.72	101	Vert
89.7042	35.48	PK	1	-28.1	7.4	15.78	43.5	-27.72	175	Vert
153.0915	34.87	PK	1.2	-27.8	12.8	21.07	43.5	-22.43	101	Vert
442.8897	31.51	PK	2.2	-28.1	15.8	21.41	46	-24.59	101	Vert

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

4.074

23.69

Αv

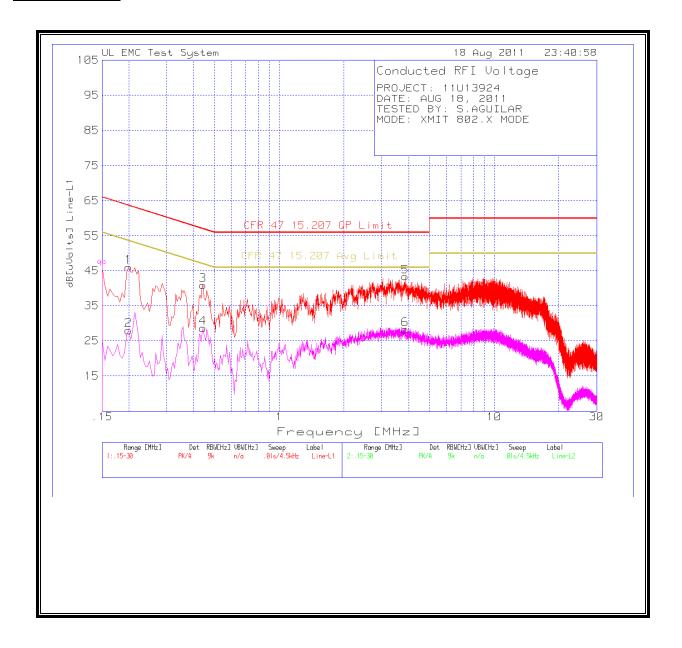
23.69

PROJECT: 11	U13924						
DATE: AUG 1	8, 2011						
TESTED BY: S	.AGUILAR						
MODE: XMIT	802.X MO	DE					
Line-L1 .15 - 3	30MHz						
Test	Meter						
Frequency	Reading	Detector	dB[uVolts]	QP Limit	Margin	Avg Limit	Margin
0.1995	46.09	PK	46.09	63.6	-17.51		
0.1995	27.95	Av	27.95			53.6	-25.65
0.4425	40.86	PK	40.86	57	-16.14		
0.4425	28.62	Av	28.62			47	-18.38
3.849	43.32	PK	43.32	56	-12.68		
3.849	28.2	Av	28.2			46	-17.8
e-L2.15 - 30N	⁄IHz						
Test	Meter						
Frequency	Reading	Detector	dB[uVolts]	QP Limit	Margin	Avg Limit	Margin
0.204	45.28	PK	45.28	63.4	-18.12		
0.204	23.37	Av	23.37			53.4	-30.03
2.3595	38.73	PK	38.73	56	-17.27		
2.3595	22.57	Av	22.57			46	-23.43
4.074	39.42	PK	39.42	56	-16.58		

46

-22.31

LINE 1 RESULTS



LINE 2 RESULTS

