RADIATED SPURIOUS EMISIONS PORTIONS OF FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

TRI-BAND CDMA PHONE WITH BLUETOOTH EDR AND WIFI

MODEL NUMBER: M6000

FCC ID: V65M6000

REPORT NUMBER: 09U12955-4

ISSUE DATE: DECEMBER 31, 2009

Prepared for
KYOCERA WIRELESS CORP.
10300 CAMPUS POINT DRIVE
SAN DIEGO, CA 92121, U.S.A.

Prepared by
COMPLIANCE CERTIFICATION SERVICES
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	12/31/09	Initial Issue	T. Chan

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: KYOCERA WIRELESS CORP.
10300 CAMPUS POINT DRIVE
SAN DIEGO, CA 92121, U.S.A.

EUT DESCRIPTION: TRI-BAND CDMA PHONE WITH BLUETOOTH EDR AND WIFI

MODEL: M6000

SERIAL NUMBER: 1095889600E

DATE TESTED: DECEMBER 4-30, 2009

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	PASS (Radiated Portion)

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
EMC MANAGER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

MONICA HARRISON
SENIOR RF 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, and FCC CFR 47 Part 15.

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

The EUT is a Bluetooth, EDR, and WiFi featured Tri-band CDMA Phone that manufactured by Kyocera Wireless Corporations.

The radio chip is manufactured by Broadcom.

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 version 1.6

The EUT software installed during testing was 0.3.0.5

The EUT hardware installed during testing was Android.0.500.2_Micron.

5.4. WORST-CASE CONFIGURATION AND MODE

The worst-case channel and mode is determined as having the highest output power. For 802.11b mode, 11Mbps had the highest output power. For 802.11g, 6Mbps had the highest output power. The worst case configuration is determined by an evaluation of X, Y, and Z positions. The Y position was determined to have the highest radiated power.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop PC	DELL	D620	CCS # C01095	E2KWM3945ABG
AC Adapter	DELL	LA65NS0-00	CN-ODF263-71615-720-2D21	N/A
Mouse	HP	5184-1244	LZE01650026	DOC
Earphone	KYOCERA	CE90-G2708-01	N/A	N/A

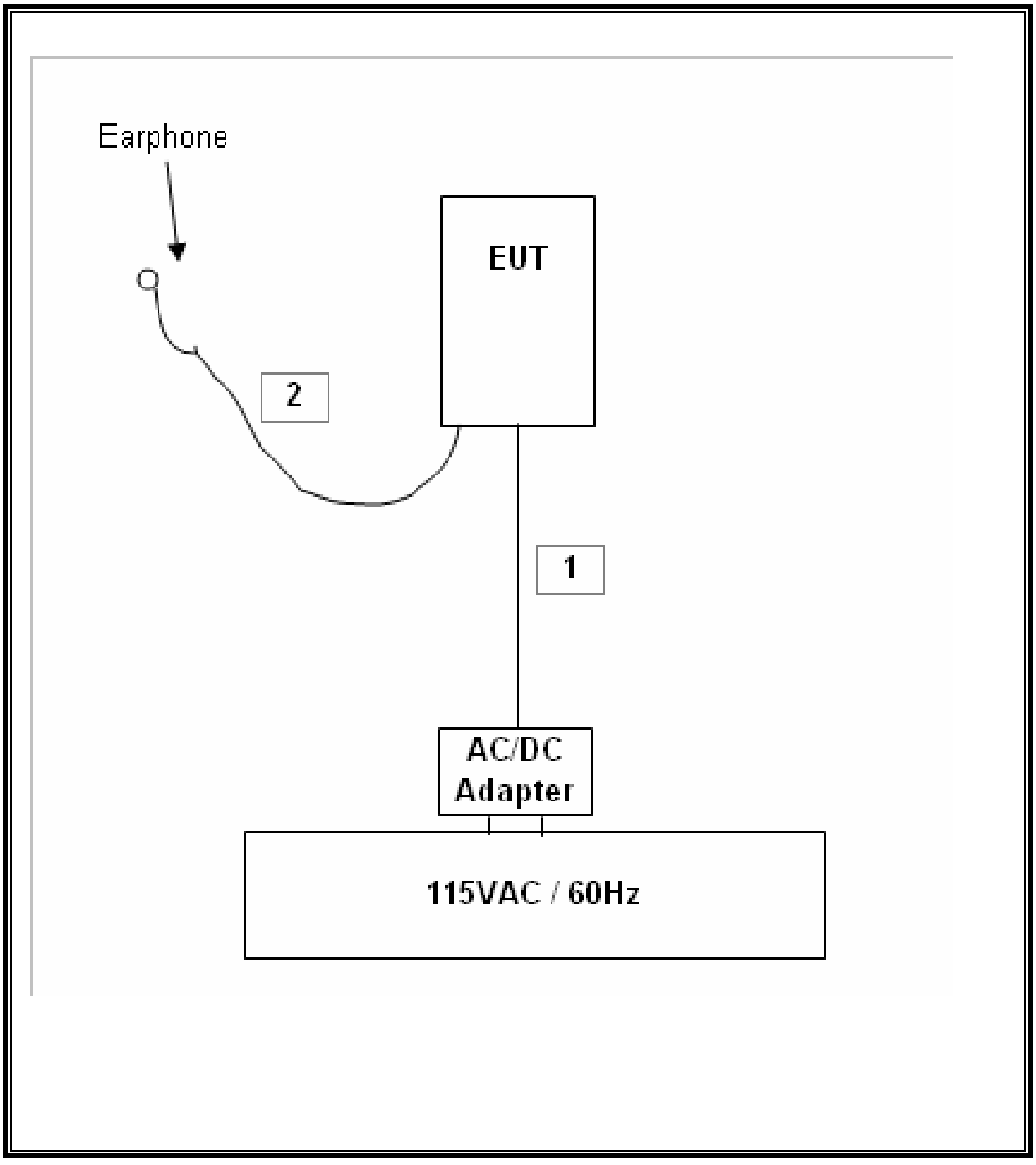
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identica Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	DC Input	1	Mini-USB	Un-Shielded	1.85 m	N/A
2	AUDIO	1	Mini-Jack	Un-Shielded	1.15 m	Volume Control on the Cable
3	USB	1	Mini-USB	Un-Shielded	2 m	N/A

TEST SETUP

The headset attached EUT is tested as stand-alone unit. The support laptop is used only to setup, chage channels and modulations for the EUT.

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
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	02/04/10
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00778	01/16/10
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01171	01/14/10
Antenna, Horn, 18 GHz	EMCO	3115	C00872	01/29/10
2.4 - 2.5 Reject Filter	Micro Tronics	BRC13192	N02683	N/A
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01176	08/24/10
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	11/06/10
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	05/06/11
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/31/10
Antenna, Horn, 18 GHz	EMCO	3115	C00783	01/29/10
Antenna, Horn, 26.5 GHz	ARA	SWH-28	C01015	01/29/10
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	02/04/10

7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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.

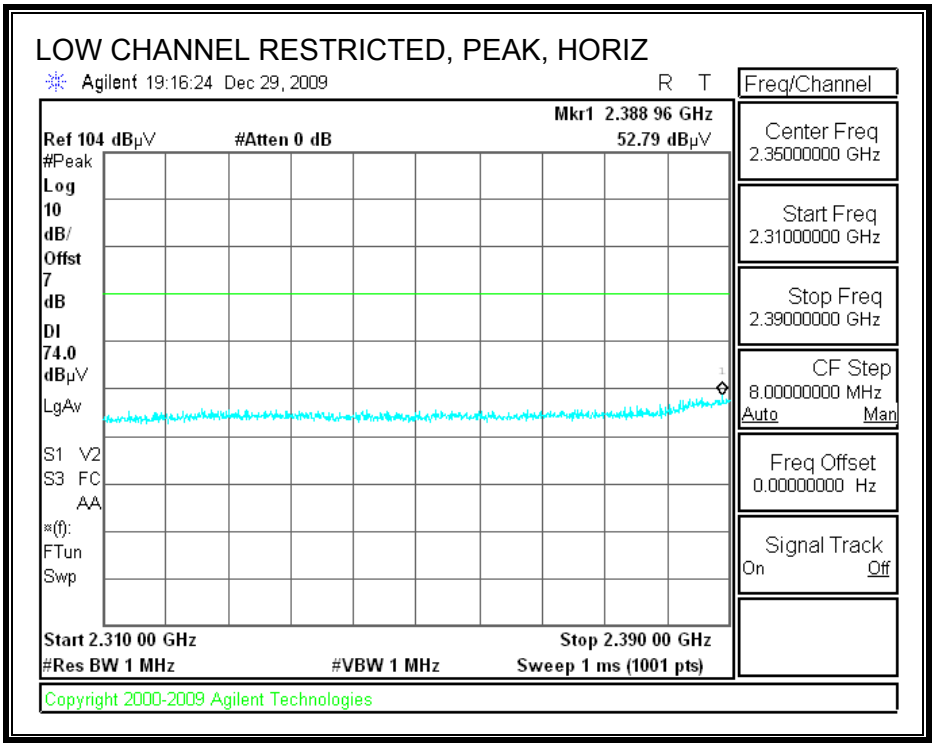
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

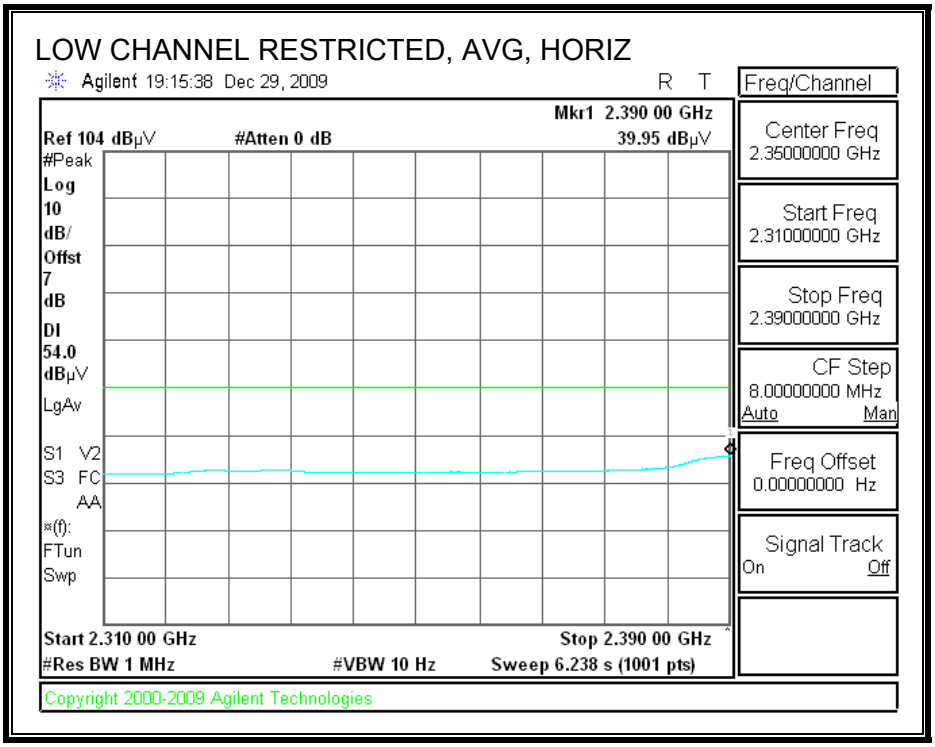
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each appplicable band.

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.

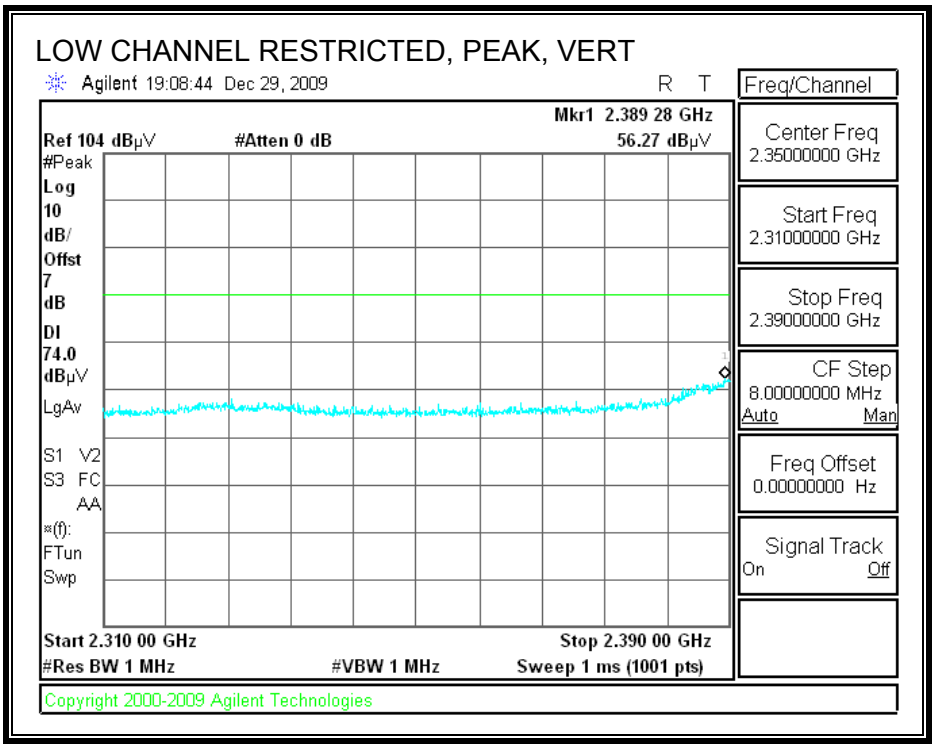
7.1.1. TRANSMITTER ABOVE 1 GHz FOR 802.11b MODE IN THE 2.4 GHz BAND

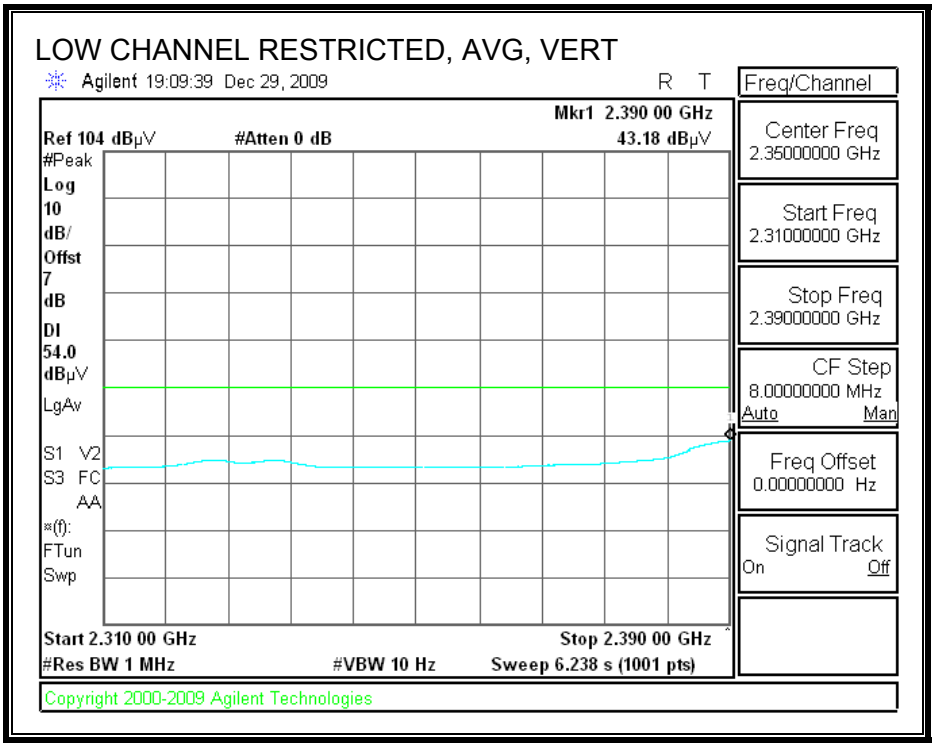
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



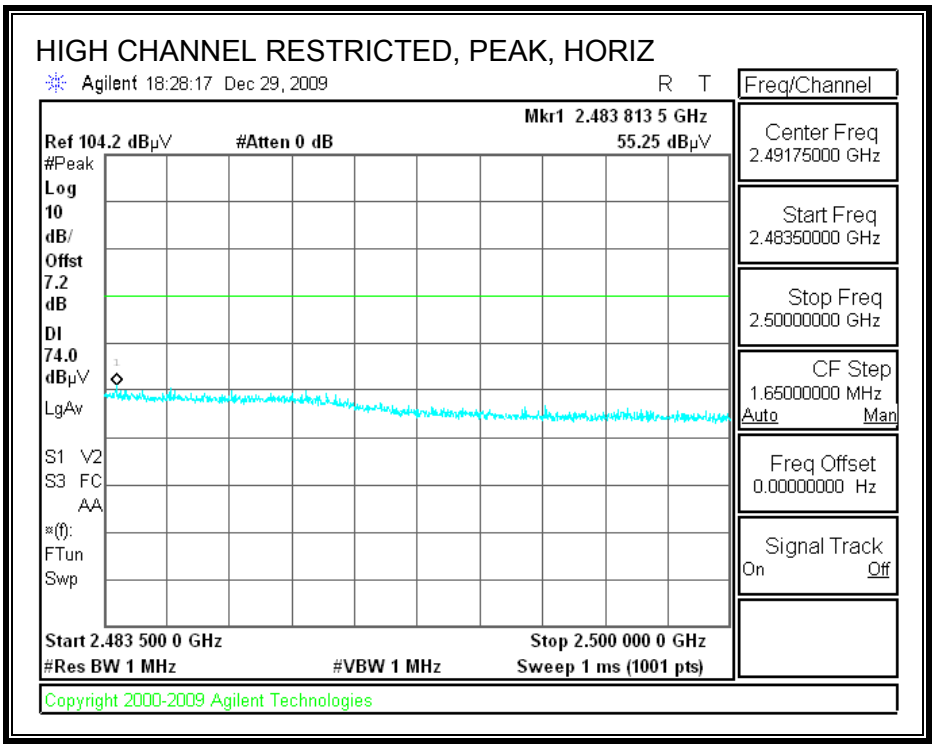


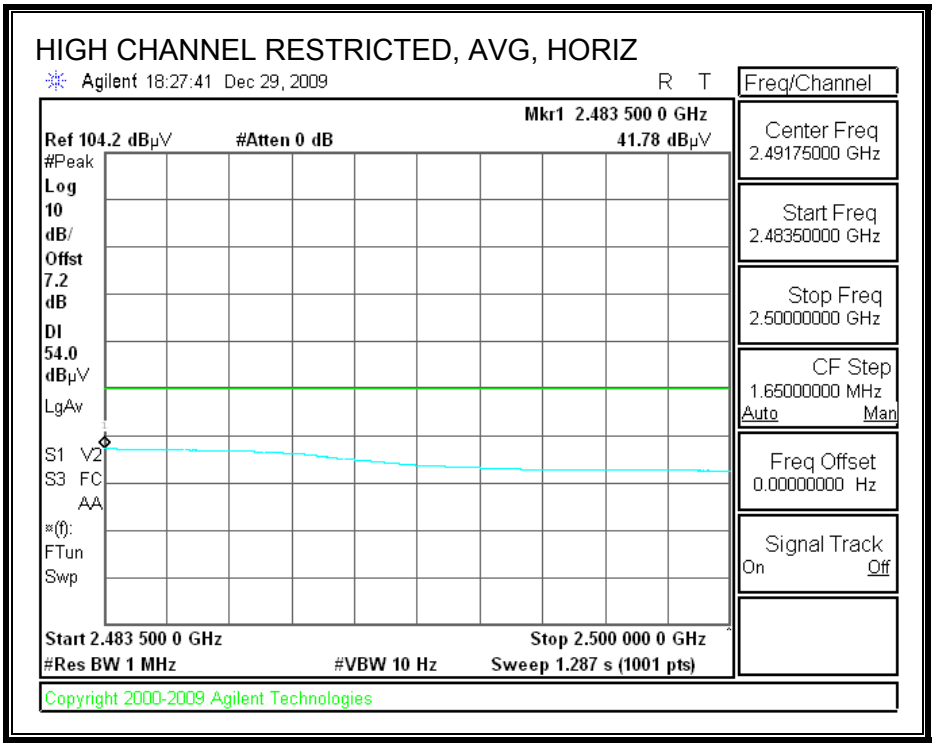
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



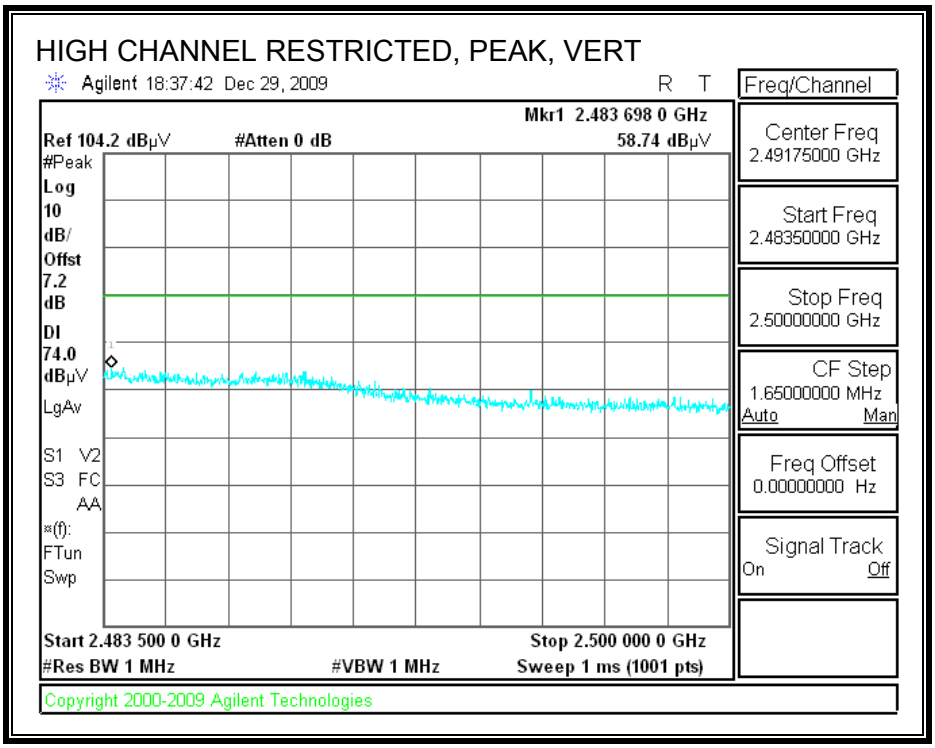


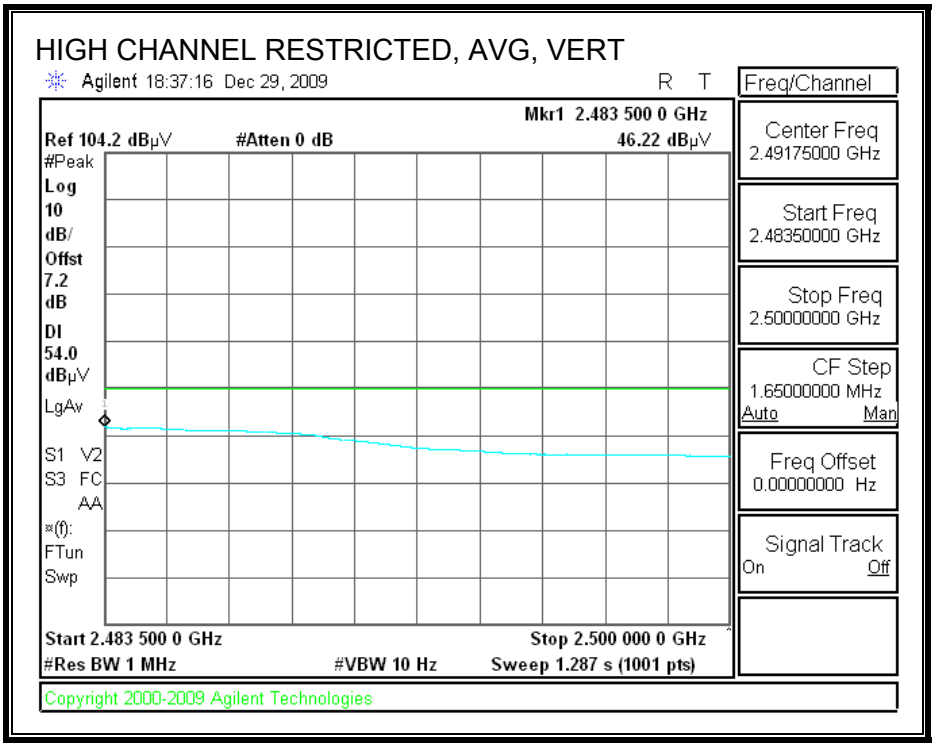
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Kyocera Wireless
Project #: 09U12955
Date: 29-Dec-09
Test Engineer: Monica Harrison
Configuration: EUT w/ AC Power and Headphones
Mode: 802.11b TX

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T59; S/N: 3245 @3m	T145 Agilent 3008A0056		T125; ARA 18-26GHz; S/N:1007	FCC 15.209

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

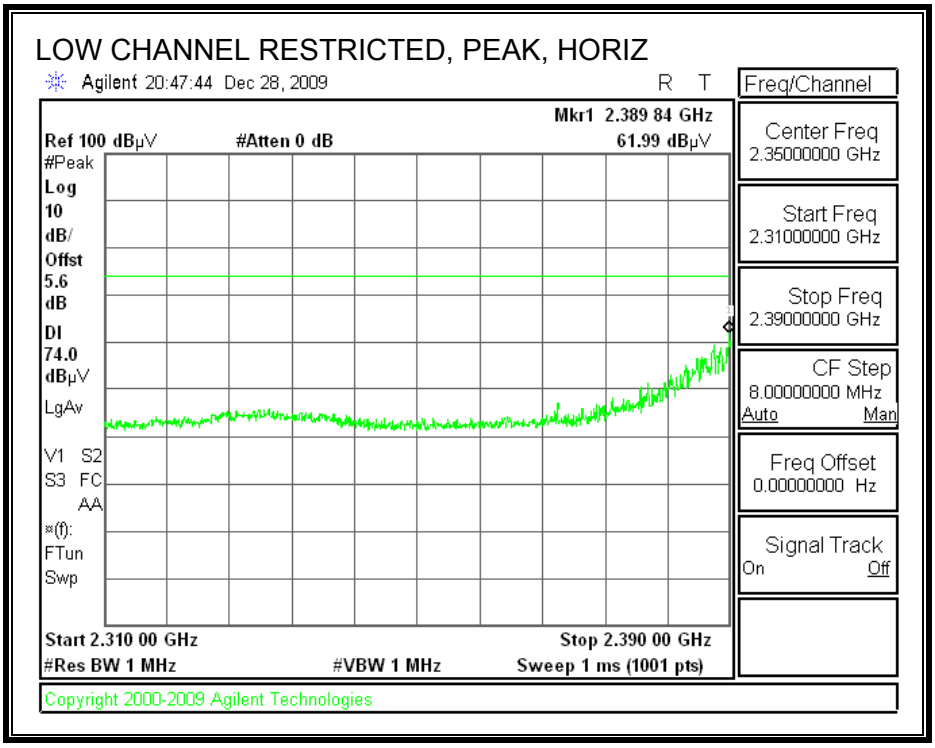
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
2.412															
4.824	3.0	44.0	30.2	32.8	5.8	-34.8	0.0	0.0	47.7	33.9	74	54	-26.3	-20.1	V
7.237	3.0	40.7	27.4	35.1	7.2	-34.7	0.0	0.0	48.3	35.0	74	54	-25.7	-19.0	V
9.647	3.0	38.3	24.7	37.1	8.5	-35.0	0.0	0.0	49.0	35.4	74	54	-25.0	-18.6	V
16.885	3.0	34.8	21.0	41.3	12.0	-32.0	0.0	0.0	56.1	42.3	74	54	-17.9	-11.7	V
4.824	3.0	47.1	32.6	32.8	5.8	-34.8	0.0	0.0	50.8	36.3	74	54	-23.2	-17.7	H
7.236	3.0	43.4	28.8	35.1	7.2	-34.7	0.0	0.0	51.0	36.4	74	54	-23.0	-17.6	H
9.648	3.0	39.9	26.4	37.1	8.5	-35.0	0.0	0.0	50.5	37.0	74	54	-23.5	-17.0	H
16.885	3.0	35.3	21.0	41.3	12.0	-32.0	0.0	0.0	56.5	42.3	74	54	-17.5	-11.7	H
2.437															
4.874	3.0	42.1	28.5	32.8	5.8	-34.9	0.0	0.0	45.9	32.3	74	54	-28.1	-21.7	V
7.309	3.0	41.5	27.6	35.2	7.3	-34.7	0.0	0.0	49.3	35.3	74	54	-24.7	-18.7	V
4.874	3.0	43.5	30.2	32.8	5.8	-34.9	0.0	0.0	47.3	34.0	74	54	-26.7	-20.0	H
7.311	3.0	43.1	29.5	35.2	7.3	-34.7	0.0	0.0	50.9	37.3	74	54	-23.1	-16.7	H
2.462															
4.924	3.0	48.2	35.0	32.8	5.9	-34.9	0.0	0.0	52.0	38.8	74	54	-22.0	-15.2	V
7.386	3.0	46.4	32.6	35.3	7.3	-34.6	0.0	0.0	54.4	40.5	74	54	-19.6	-13.5	V
4.924	3.0	45.9	32.8	32.8	5.9	-34.9	0.0	0.0	49.8	36.6	74	54	-24.2	-17.4	H
7.386	3.0	47.2	33.4	35.3	7.3	-34.6	0.0	0.0	55.2	41.3	74	54	-18.8	-12.7	H
9.848	3.0	39.8	26.1	37.2	8.7	-35.1	0.0	0.0	50.6	36.9	74	54	-23.4	-17.1	H

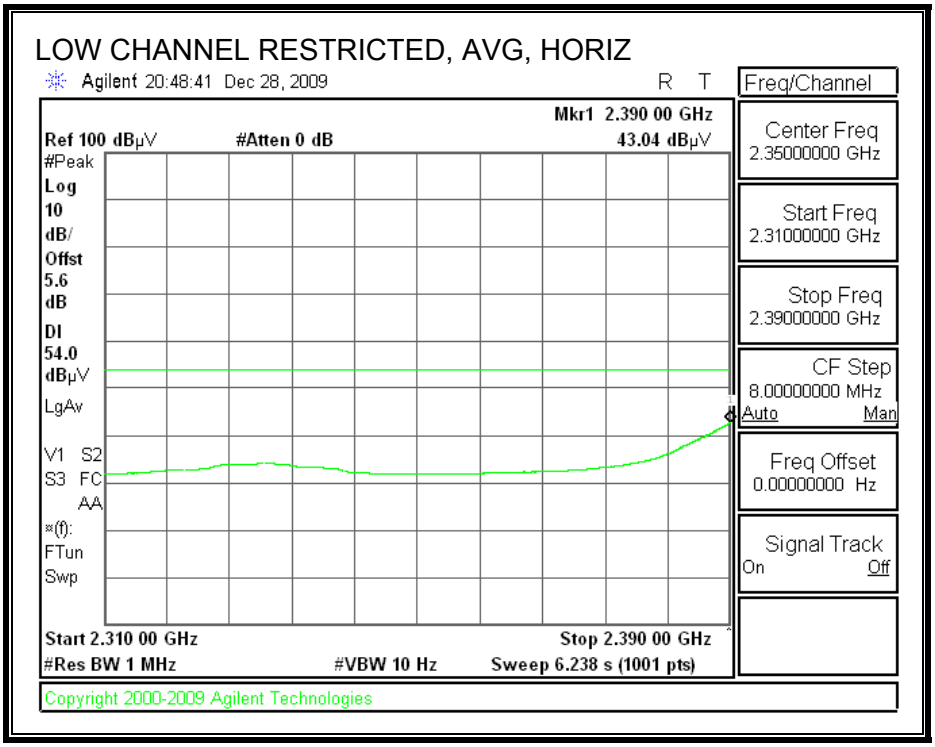
Rev. 11.10.08

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

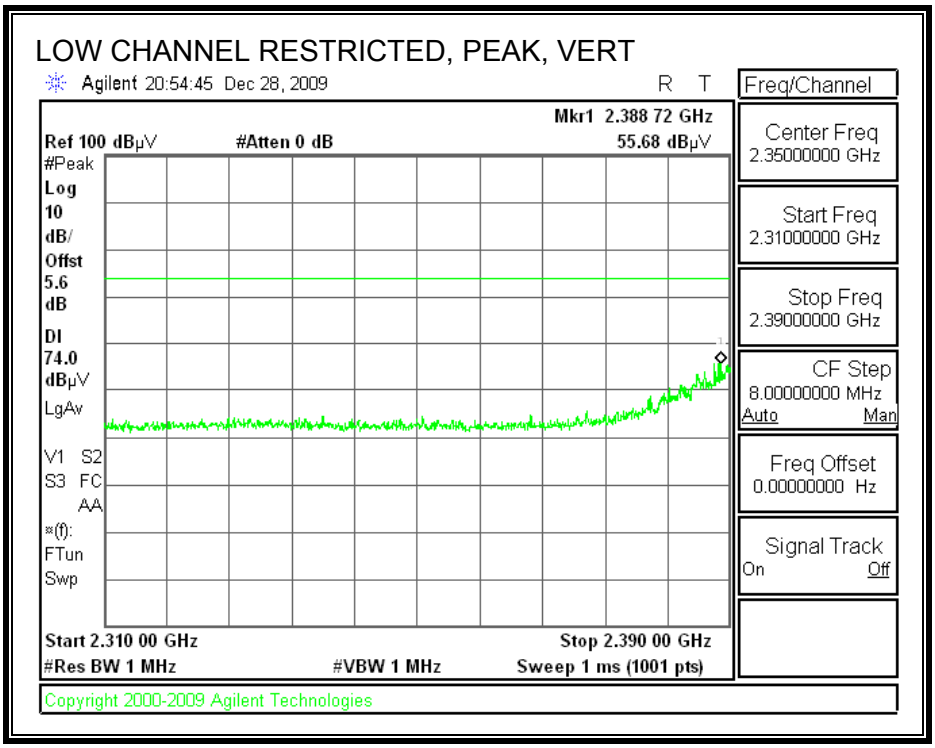
7.1.2. TRANSMITTER ABOVE 1 GHz FOR 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

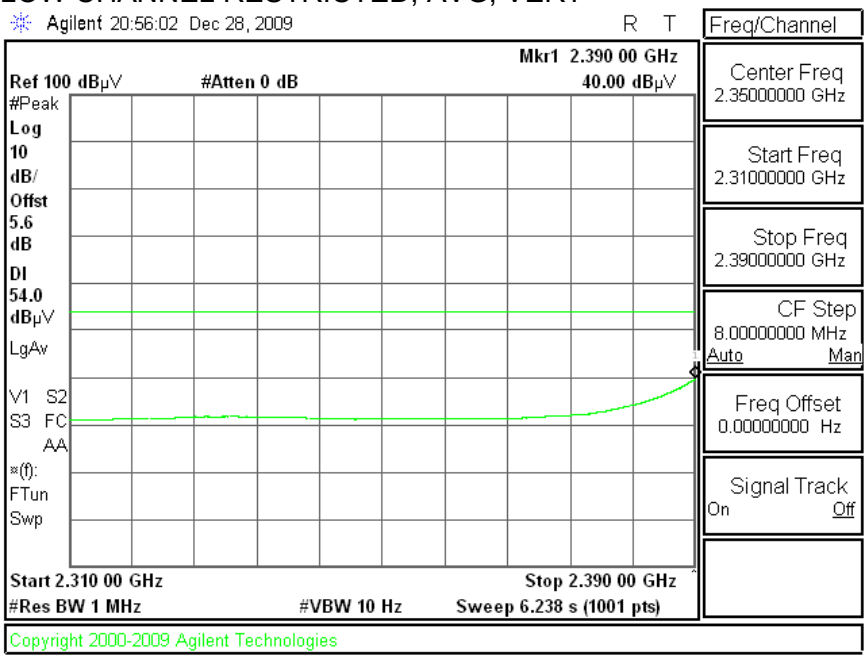




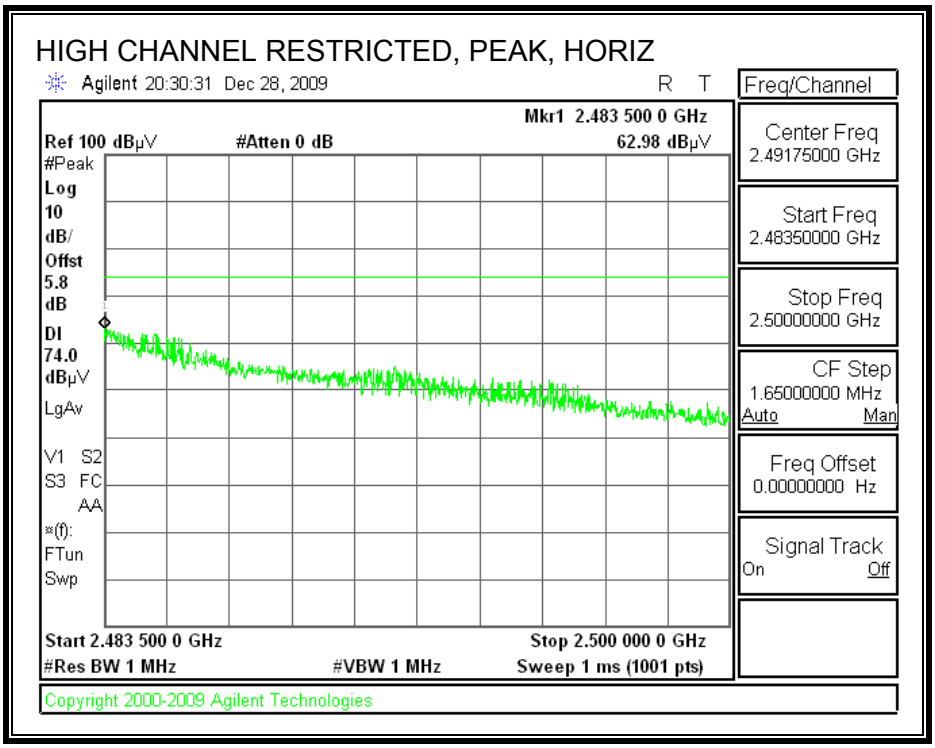
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

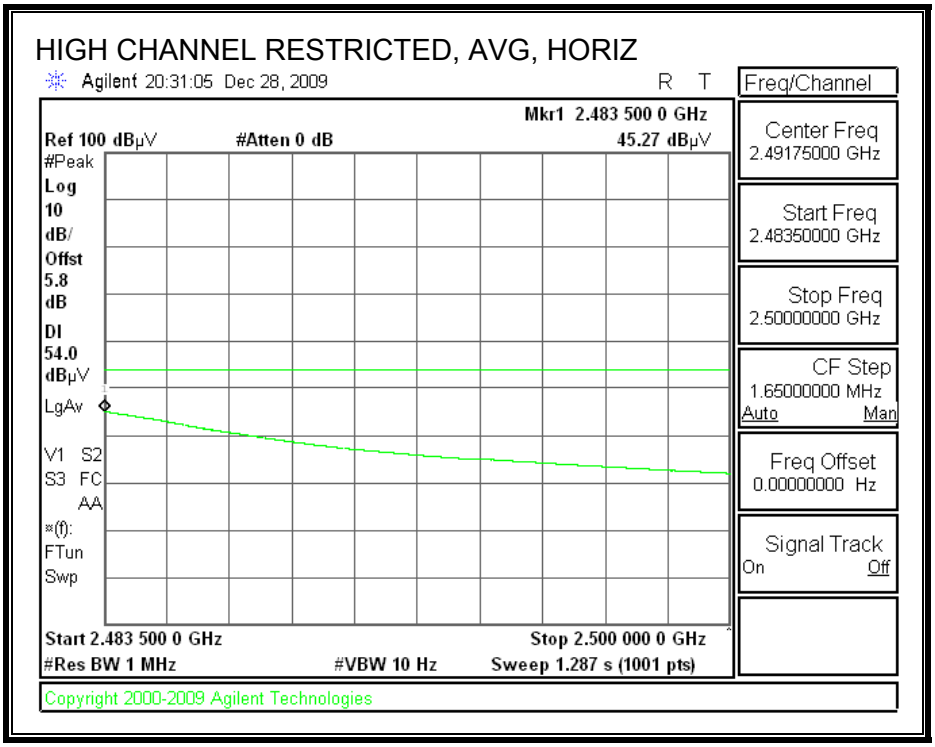


LOW CHANNEL RESTRICTED, AVG, VERT

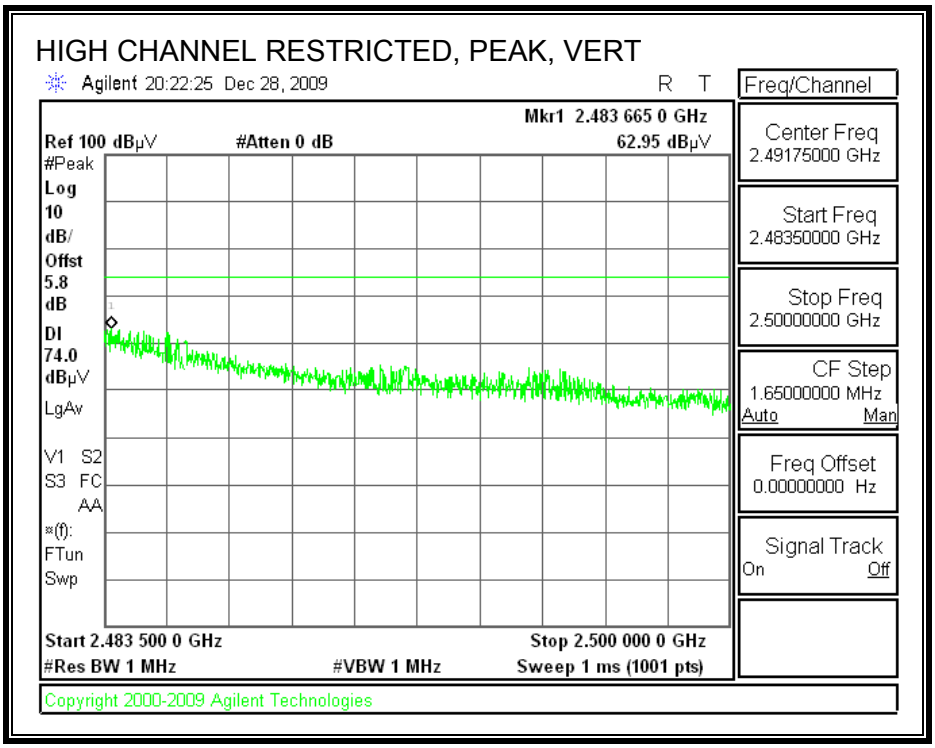


RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

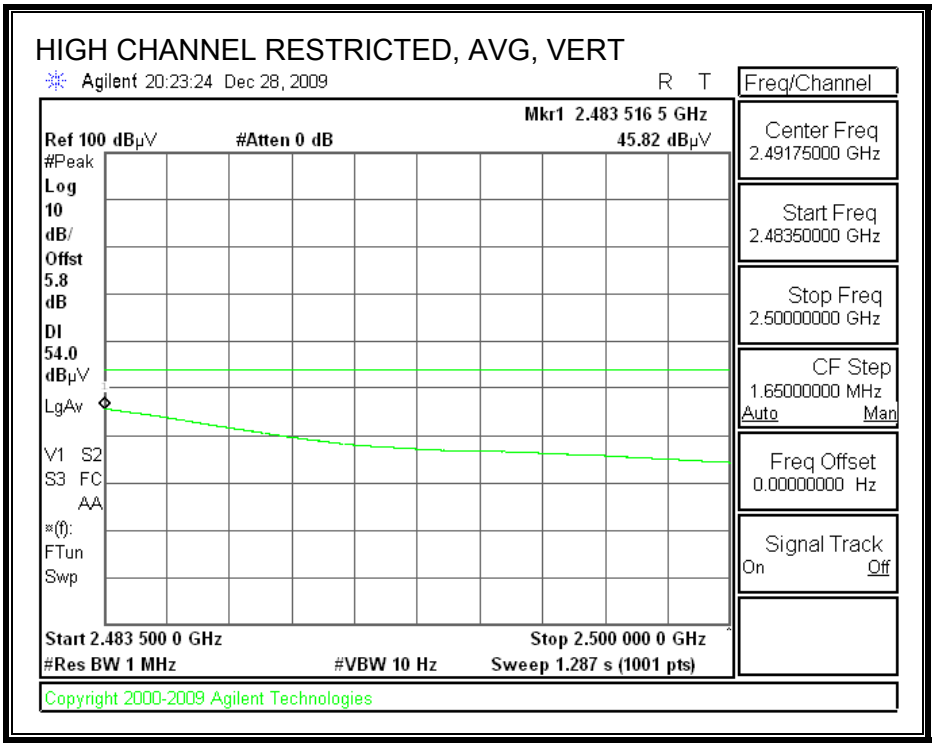




RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HIGH CHANNEL RESTRICTED, AVG, VERT



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company: Kyocera Wireless
Project #: 09U12955
Date: 30-Dec-09
Test Engineer: Monica Harrison
Configuration: EUT w/ AC Power and Headphones
Mode: 802.11g TX

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T59; S/N: 3245 @3m	T145 Agilent 3008A0056		T125; ARA 18-26GHz; S/N:1007	FCC 15.209

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
2.412															
4.810	3.0	40.6	25.8	32.8	5.8	-34.8	0.0	0.0	44.3	29.5	74	54	-29.7	-24.5	V
4.824	3.0	41.6	27.7	32.8	5.8	-34.8	0.0	0.0	45.3	31.4	74	54	-28.7	-22.6	H
7.248	3.0	39.0	25.2	35.1	7.2	-34.7	0.0	0.0	46.7	32.8	74	54	-27.3	-21.2	H
2.437															
4.879	3.0	38.7	25.3	32.8	5.8	-34.9	0.0	0.0	42.5	29.1	74	54	-31.5	-24.9	V
4.877	3.0	41.5	27.8	32.8	5.8	-34.9	0.0	0.0	45.3	31.6	74	54	-28.7	-22.4	H
7.308	3.0	38.8	25.3	35.2	7.3	-34.7	0.0	0.0	46.6	33.1	74	54	-27.4	-20.9	H
2.462															
4.919	3.0	39.1	25.7	32.8	5.9	-34.9	0.0	0.0	42.9	29.5	74	54	-31.1	-24.5	V
4.923	3.0	41.4	27.6	32.8	5.9	-34.9	0.0	0.0	45.2	31.4	74	54	-28.8	-22.6	H
7.391	3.0	39.7	25.7	35.3	7.3	-34.6	0.0	0.0	47.7	33.7	74	54	-26.3	-20.3	H

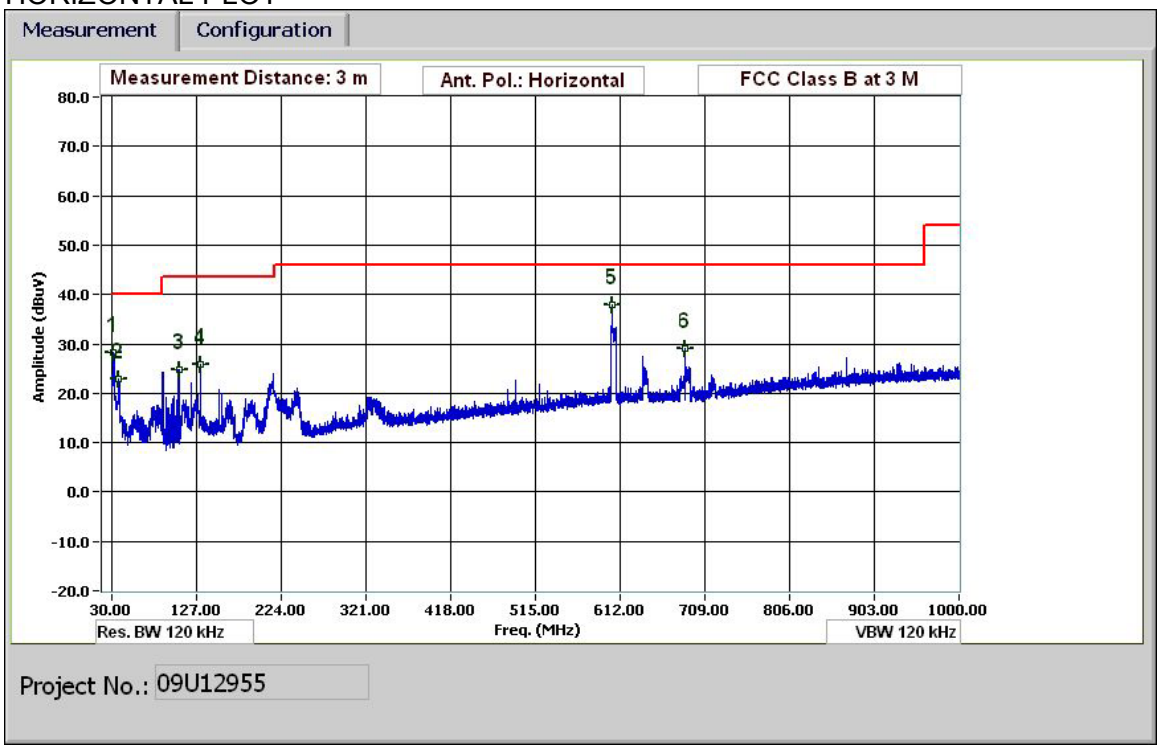
Rev. 11.10.08

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

7.2. WORST-CASE BELOW 1 GHz

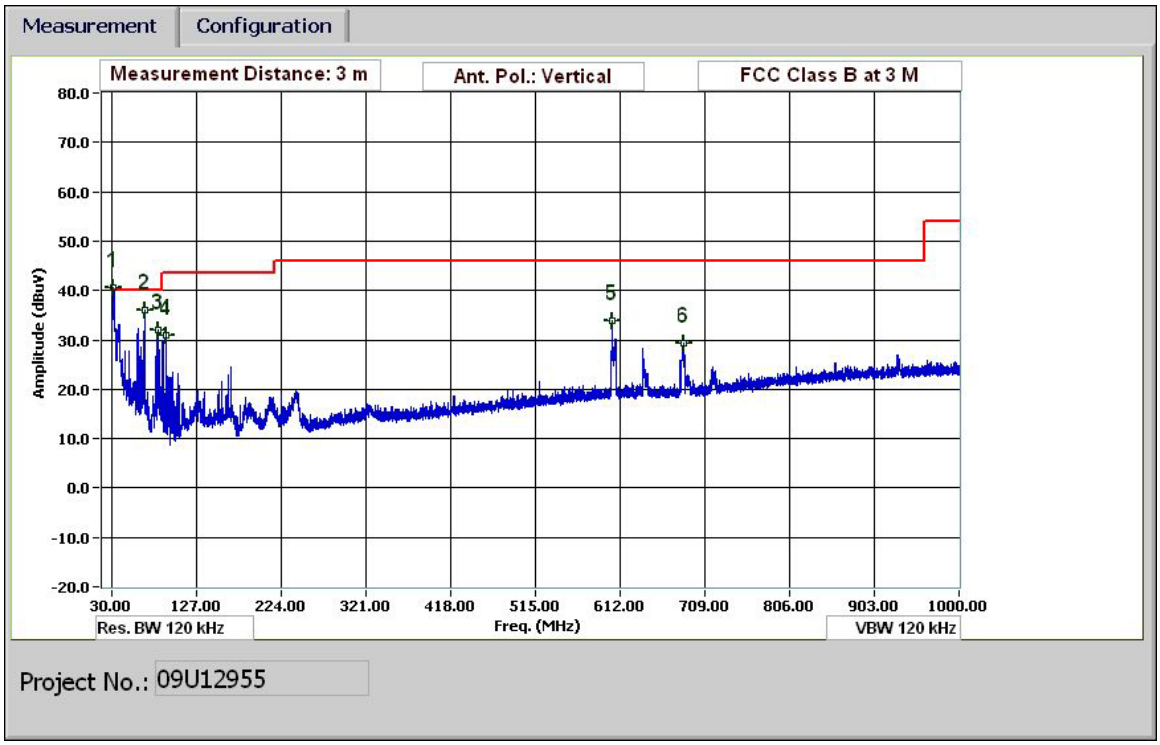
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

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

Test Engr: Tom Chen
Date: 12/09/09
Project #: 09U12955
Company: Kyocera Wireless
EUT Description: WiFi + Tri Band with Bluetooth 2.0 + EDR
EUT M/N: M6000
Test Target: FCC Class B
Mode Oper: TX mode

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	Notes
BT Vertical-CS													
32.160	3.0	46.6	18.9	0.5	28.4	0.0	0.0	37.6	40.0	-2.4	V	QP	
68.402	3.0	55.6	8.2	0.7	28.3	0.0	0.0	36.1	40.0	-3.9	V	P	
83.042	3.0	51.7	7.8	0.7	28.3	0.0	0.0	32.0	40.0	-8.0	V	P	
92.403	3.0	50.6	7.8	0.8	28.2	0.0	0.0	30.9	43.5	-12.6	V	P	
602.304	3.0	41.7	18.5	2.2	28.6	0.0	0.0	33.8	46.0	-12.2	V	P	
685.227	3.0	36.8	18.9	2.4	28.5	0.0	0.0	29.4	46.0	-16.6	V	P	
BT Horizontal-CS													
31.920	3.0	37.0	19.1	0.5	28.4	0.0	0.0	28.1	40.0	-11.9	H	P	
38.160	3.0	35.9	14.9	0.5	28.4	0.0	0.0	22.9	40.0	-17.1	H	P	
106.563	3.0	41.3	10.7	0.8	28.2	0.0	0.0	24.6	43.5	-18.9	H	P	
131.524	3.0	39.2	13.7	1.0	28.0	0.0	0.0	25.9	43.5	-17.6	H	P	
602.304	3.0	45.9	18.5	2.2	28.6	0.0	0.0	38.0	46.0	-8.0	H	P	
686.307	3.0	36.3	18.9	2.4	28.5	0.0	0.0	29.1	46.0	-16.9	H	P	

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

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

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

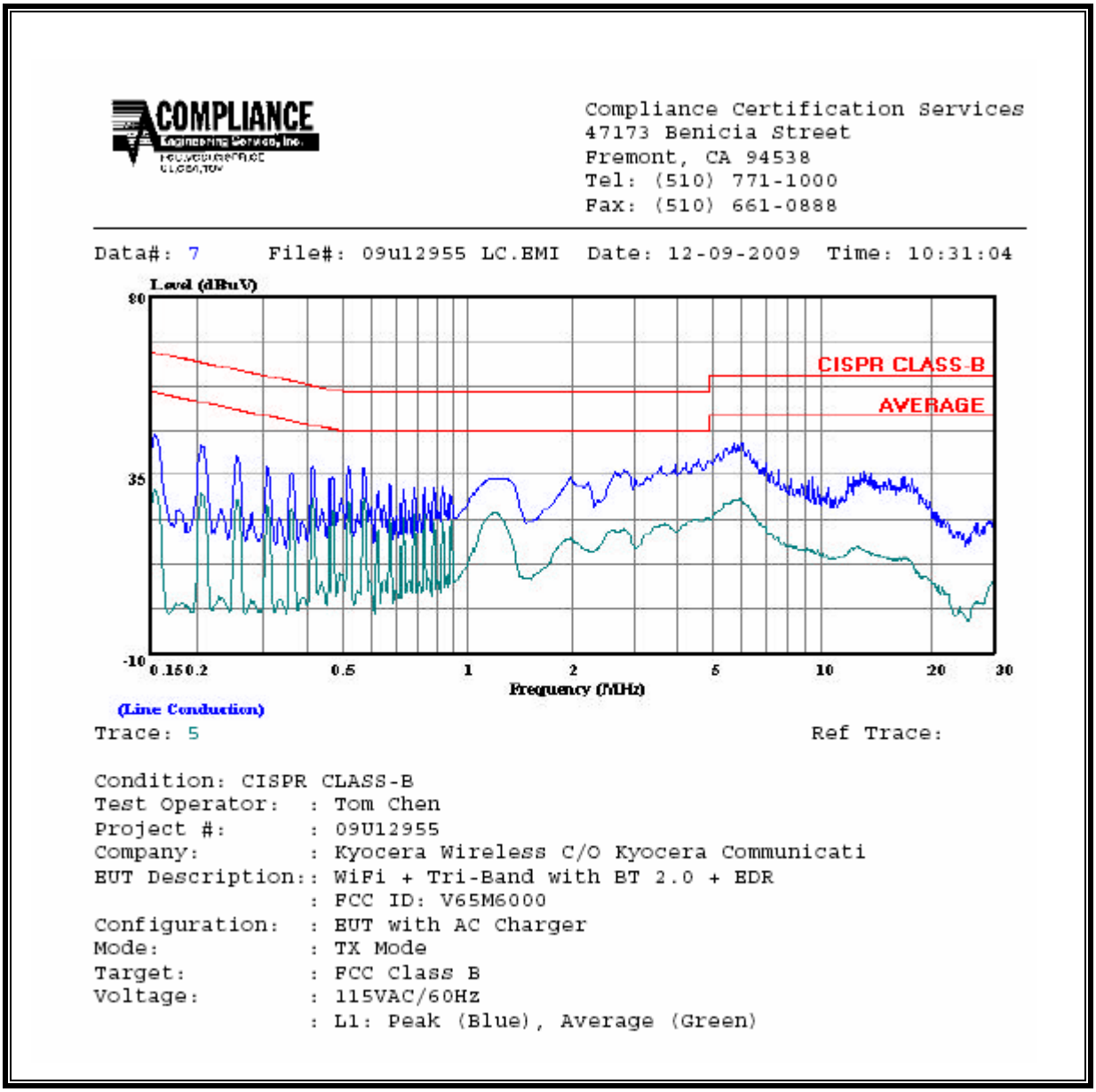
Line conducted data is recorded for both NEUTRAL and HOT lines.

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	44.98	--	30.97	0.00	65.73	55.73	-20.75	-24.76	L1
0.21	42.34	--	30.19	0.00	63.37	53.37	-21.03	-23.18	L1
5.84	43.15	--	28.73	0.00	60.00	50.00	-16.85	-21.27	L1
0.42	37.04	--	30.77	0.00	57.43	47.43	-20.39	-16.66	L2
4.70	44.61	--	28.79	0.00	56.00	46.00	-11.39	-17.21	L2
6.19	47.91	--	34.64	0.00	60.00	50.00	-12.09	-15.36	L2
6 Worst Data									

LINE 1 RESULTS



LINE 2 RESULTS