



**RADIATED SPURIOUS EMISSIONS PORTIONS OF
FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 7**

**CERTIFICATION TEST REPORT
FOR**

TRI-BAND CDMA PHONE WITH BLUETOOTH + EDR

**FCC MODEL NUMBER: K55-02
IC MODEL NUMBER: S2100**

**FCC ID: OVF-K5502
IC: 3572A- S2100**

REPORT NUMBER: 10U13593-2, Revision A

ISSUE DATE: JANUARY 14, 2011

Prepared for
**KYOCERA COMMUNICATIONS, INC.
9520 TOWNE CENTER DRIVE,
SAN DIEGO, CA 92121**

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



NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
---	01/11/11	Initial Issue	T. Chan
A	01/14/11	Updated IC ID in the header	A. Zaffar

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: KYOCERA COMMUNICATIONS, INC.
9520 Towne Center Drive,
San Diego, CA 92121

EUT DESCRIPTION: TRI-BAND CDMA PHONE WITH BLUETOOTH + EDR

MODEL: K55-02 for FCC & S2100 for IC

SERIAL NUMBER: IVS30A23M00042

DATE TESTED: JANUARY 7-10, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	PASS (Radiated Portions)
INDUSTRY CANADA RSS-210 Issue 7 Annex 8	PASS (Radiated Portions)
INDUSTRY CANADA RSS-GEN Issue 2	PASS (Radiated Portions)

Compliance Certification Services, Inc. (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

OLIVER SU
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, 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.

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:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

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 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 EUT driver and utility software installed in the host support equipment during testing was StarGraphitePassThru, rev. 1.0.0.1 and CSR Blue Suite (BtCliCtrl), rev. 2.0.0.0.

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 case is X position with AC/DC adapter.

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	PA-1900-02D	CN-O9T215-71615-55A-0614	N/A
AC Adapter	Kyocera	TXTVL10148	N/A	DOC
Headset	Kyocera	N/A	N/A	N/A

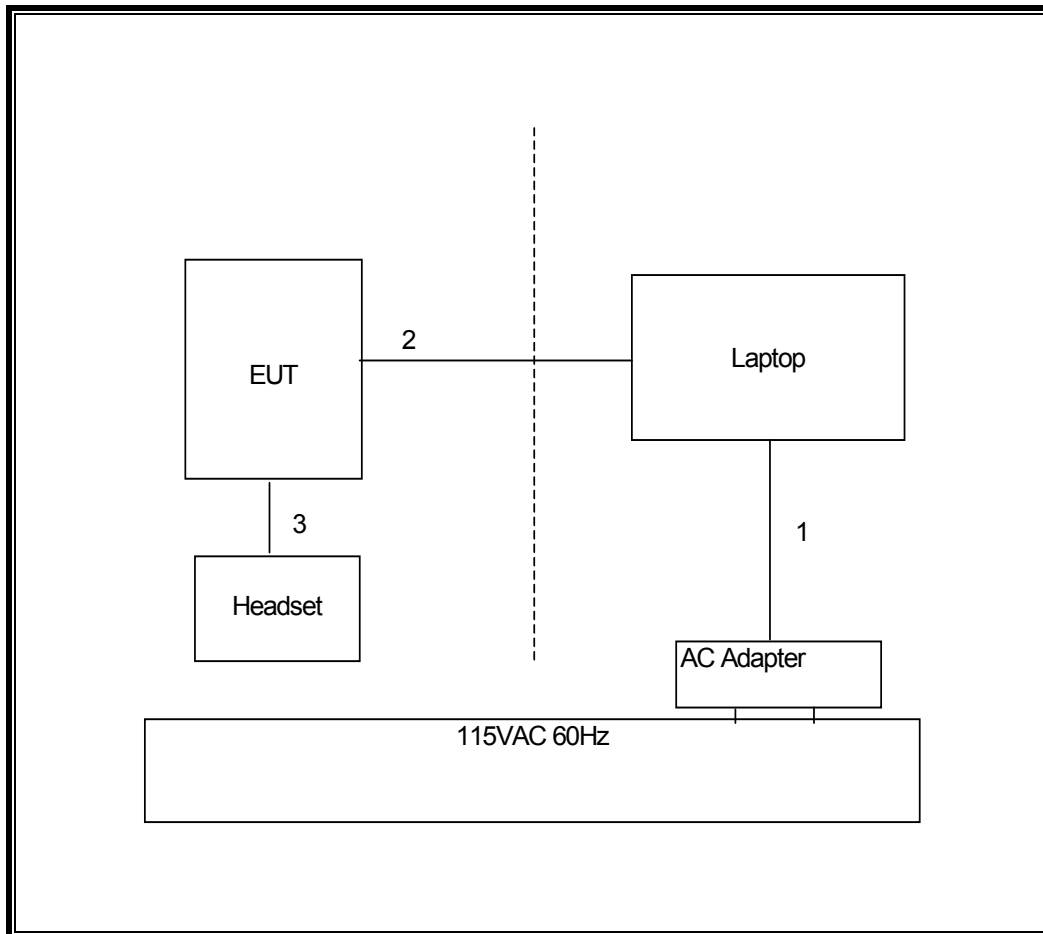
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC Input	1	USB	Un-Shielded	1.85 m	N/A
2	USB	1	USB	Un-Shielded	1 m	N/A
3	AUDIO	1	Jack	Un-Shielded	1.2 m	NA

TEST SETUP

The EUT is a stand alone and with AC/DC adapter for below and above 1GHz radiated emissions, and AC Line Conduction 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	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01079	08/18/11
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	07/14/11
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/06/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/12/11
Antenna, Horn, 18 GHz	EMCO	3115	C00945	06/29/11
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	05/06/11
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/10/11
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02685	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, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

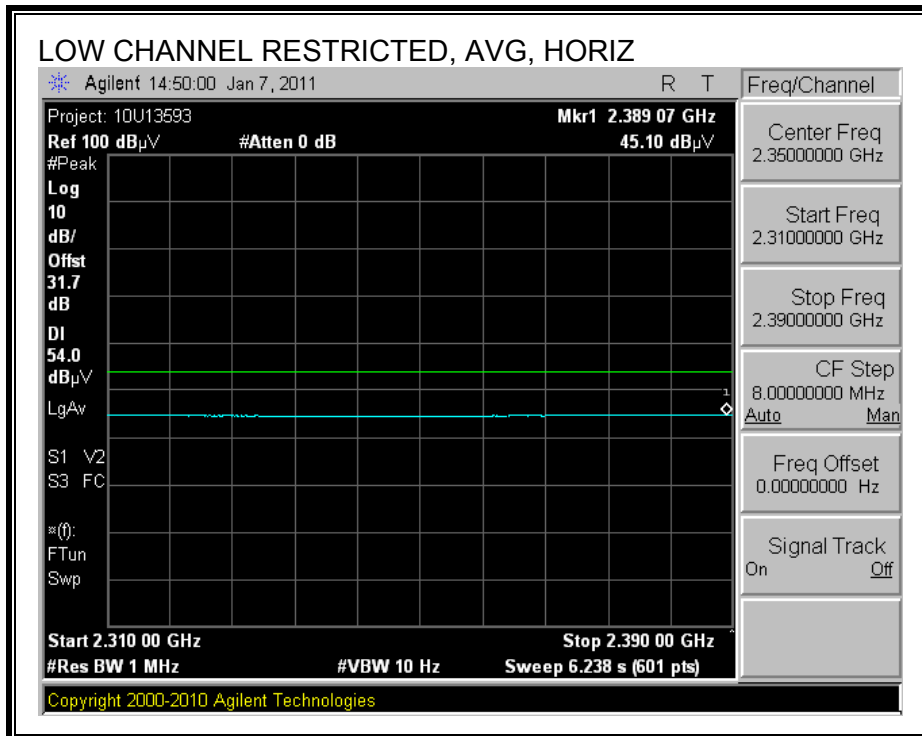
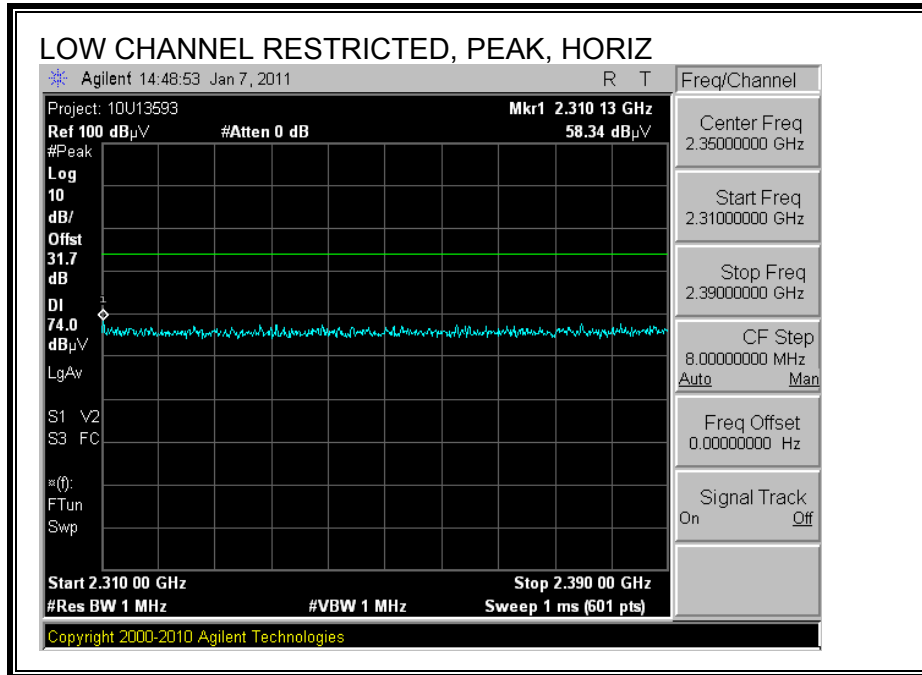
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The 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.

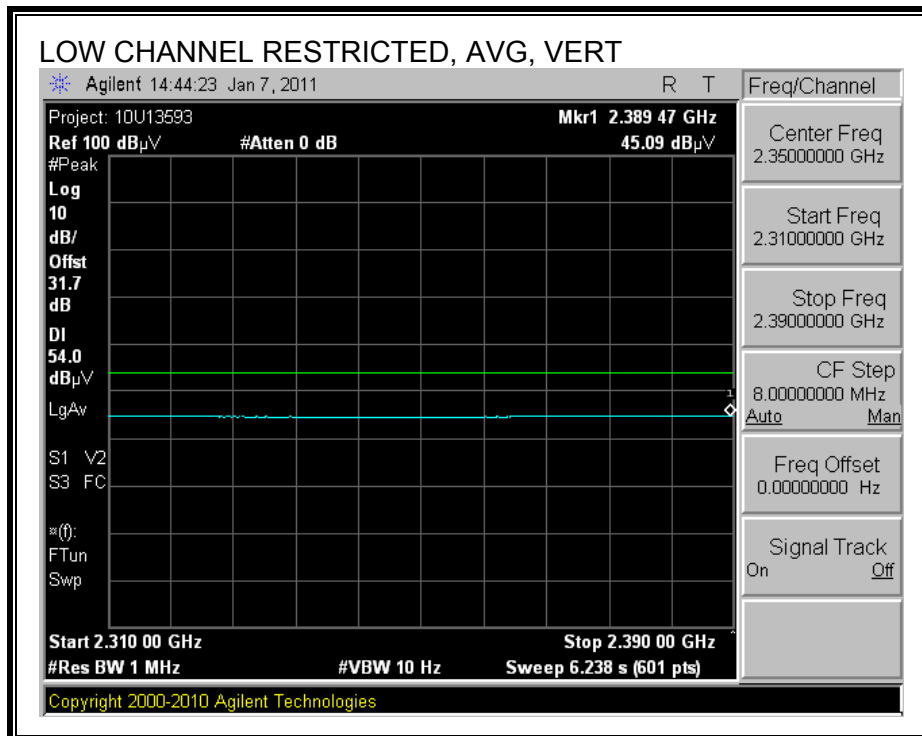
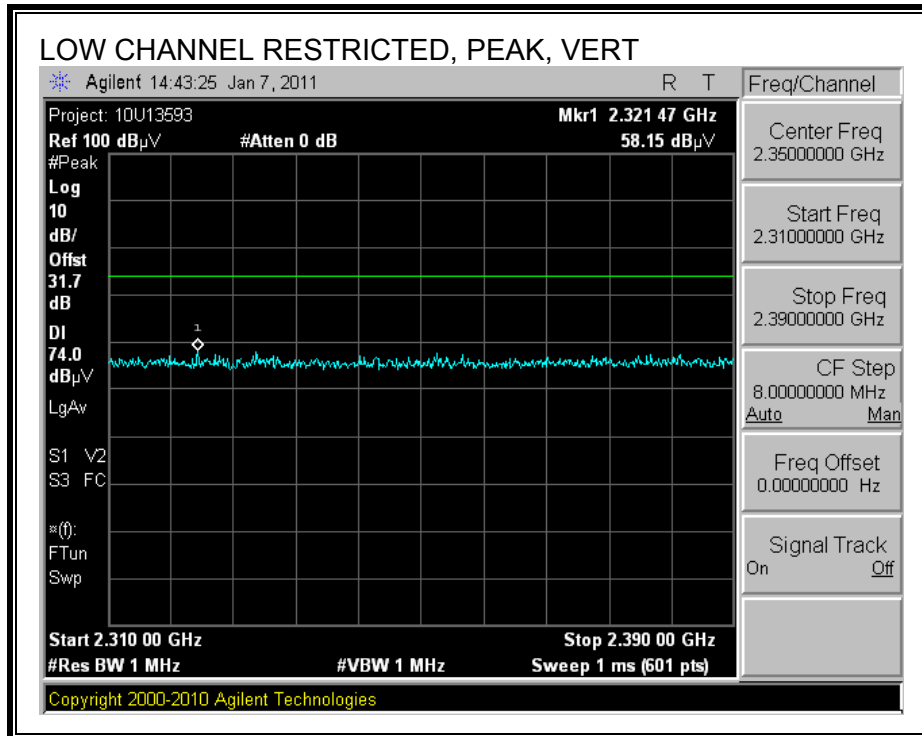
7.2. TRANSMITTER ABOVE 1 GHz

7.2.1. BASIC DATA RATE GFSK MODULATION

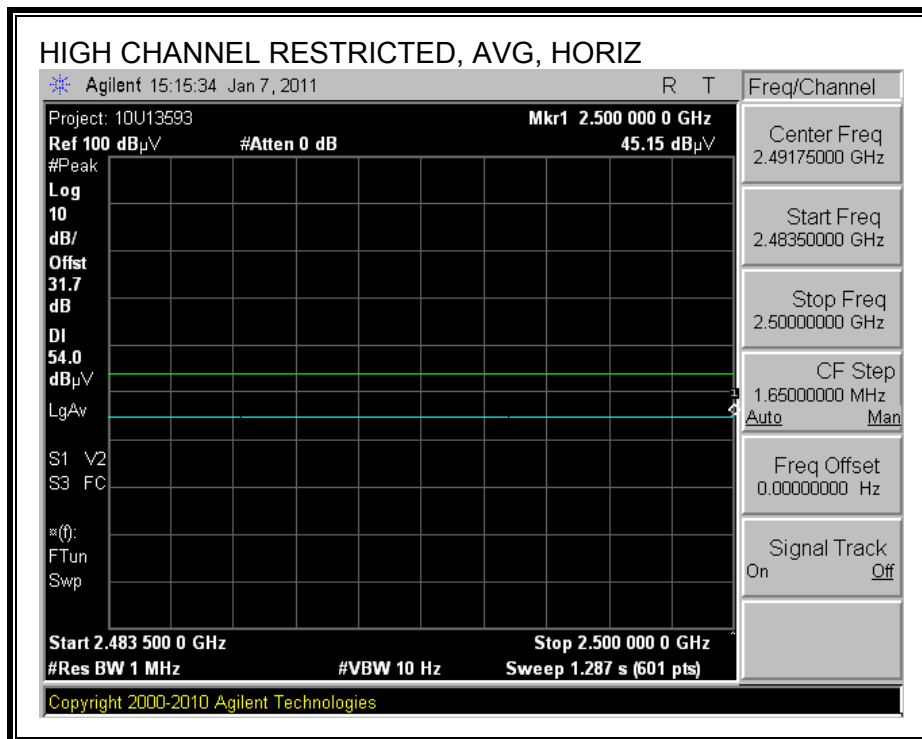
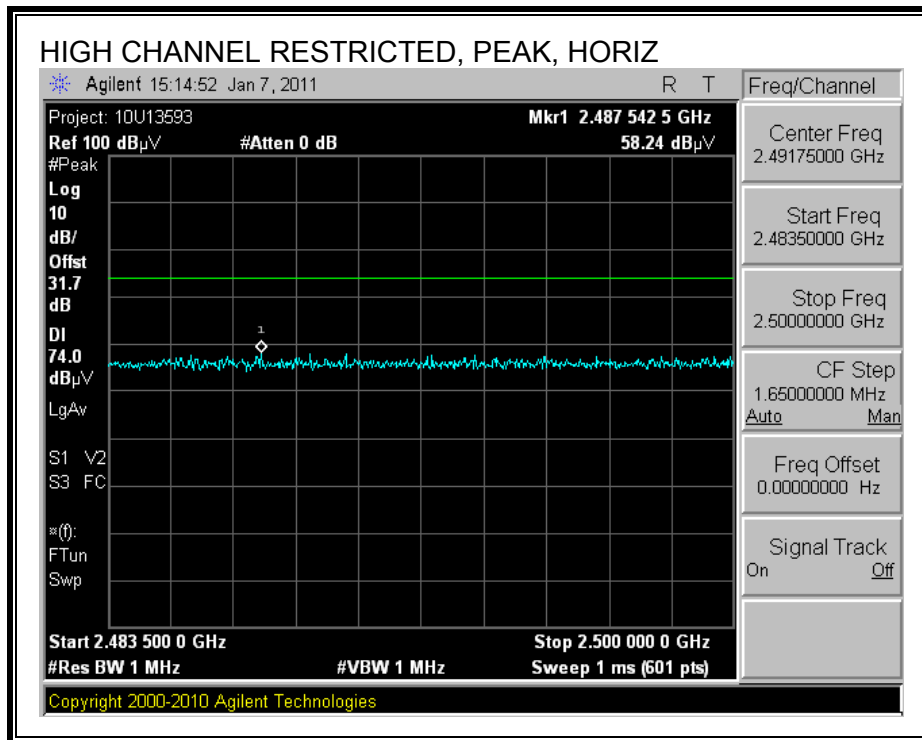
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



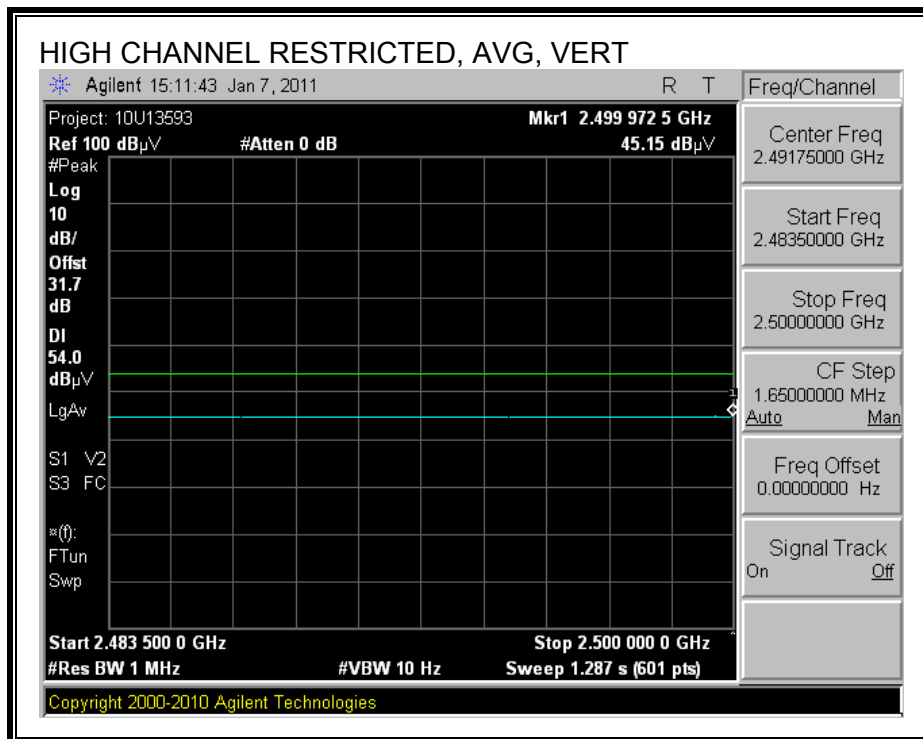
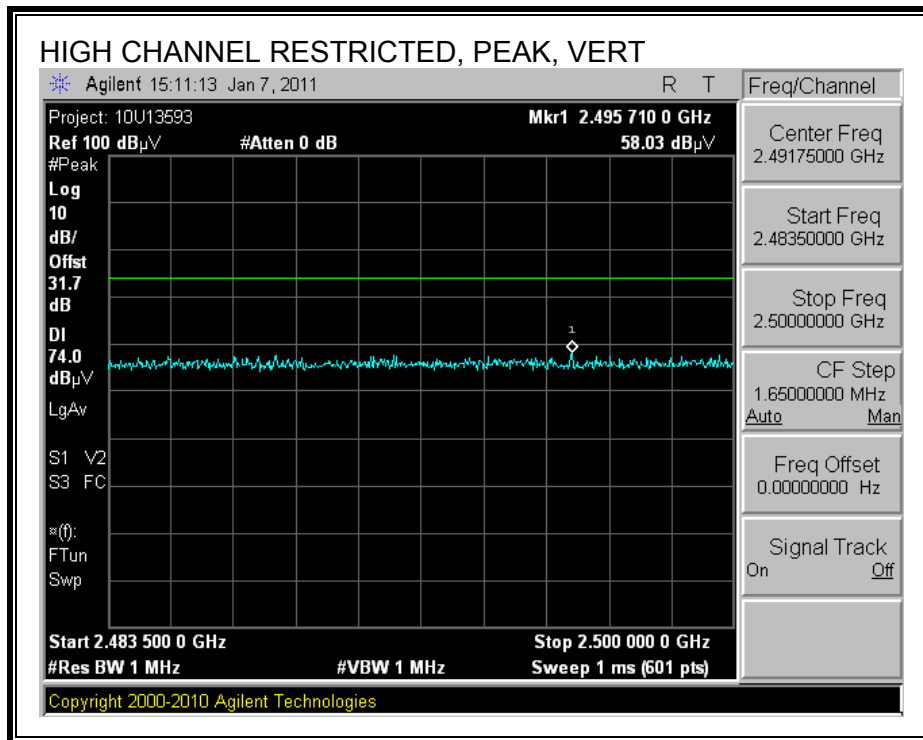
RESTRICTED BANEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

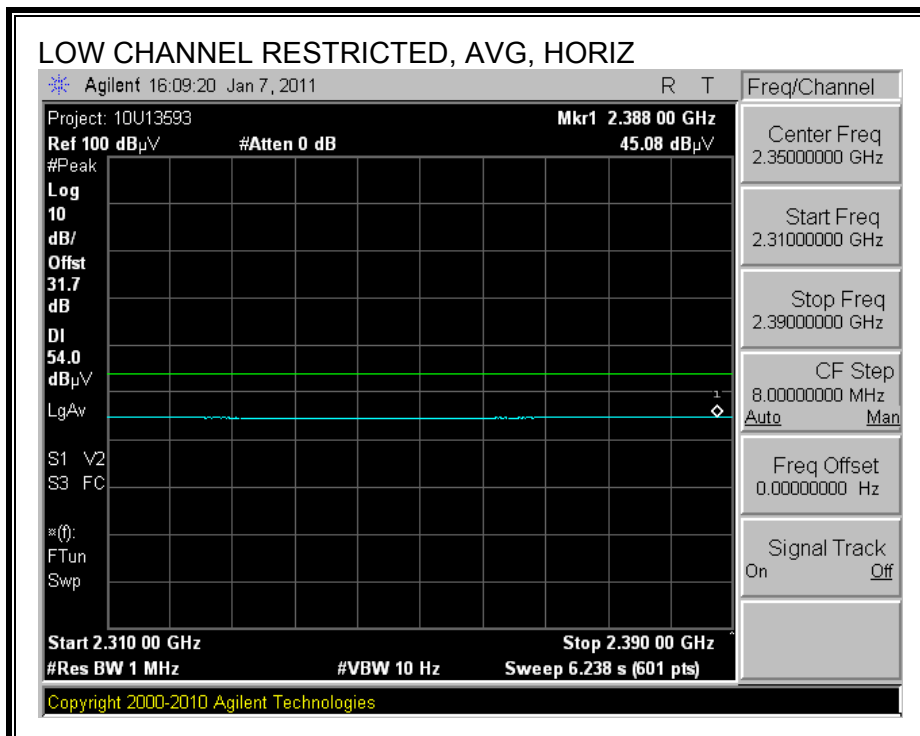
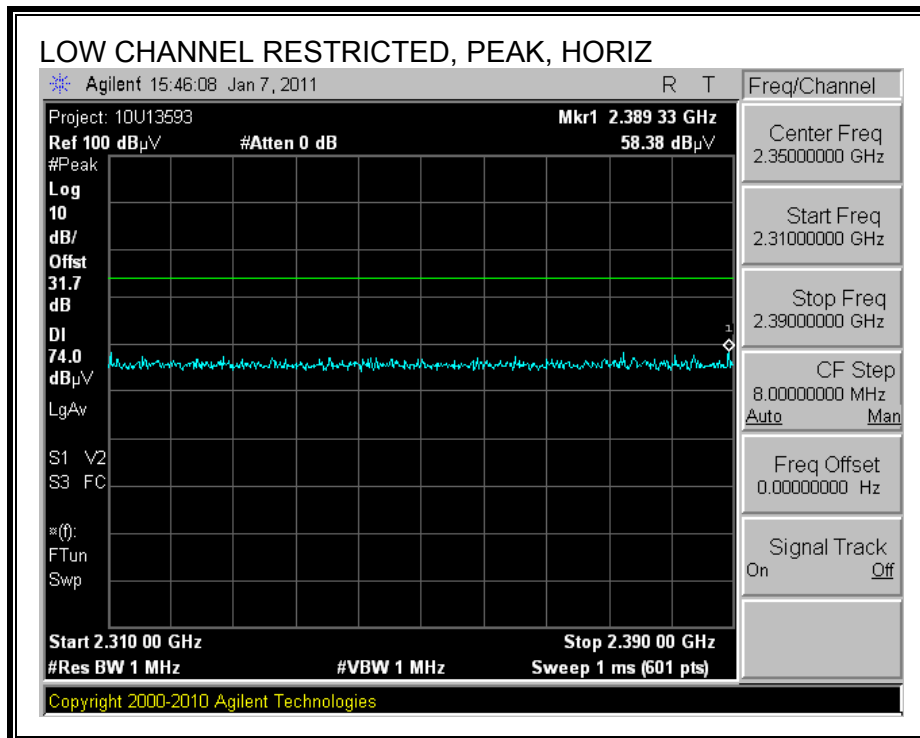
High Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		Oliver Su											
Date:		01/07/11											
Project #:		10U13593											
Company:		Kyocera											
Test Target:		FCC 15.247											
Mode Oper:		BT, GFSK, TX, X position (worst case)											
f	Measurement Frequency			Amp	Preamp Gain			Average Field Strength Limit					
Dist	Distance to Antenna			D Corr	Distance Correct to 3 meters			Peak Field Strength Limit					
Read	Analyzer Reading			Avg	Average Field Strength @ 3 m			Margin vs. Average Limit					
AF	Antenna Factor			Peak	Calculated Peak Field Strength			Margin vs. Peak Limit					
CL	Cable Loss			HPF	High Pass Filter								
f	Dist	Read	AF	CL	Amp	D Corr	Fitr	Corr.	Limit	Margin	Ant. Pol.	Det.	Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
Low ch, 2402 MHz													
4.804	3.0	44.8	33.0	5.8	-36.5	0.0	0.0	47.1	74.0	-26.9	V	P	
4.804	3.0	30.3	33.0	5.8	-36.5	0.0	0.0	32.7	54.0	-21.3	V	A	
4.804	3.0	42.8	33.0	5.8	-36.5	0.0	0.0	45.1	74.0	-28.9	H	P	
4.804	3.0	29.8	33.0	5.8	-36.5	0.0	0.0	32.1	54.0	-21.9	H	A	
Mid ch, 2441 MHz													
4.882	3.0	43.9	33.1	5.8	-36.5	0.0	0.0	46.4	74.0	-27.6	H	P	
4.882	3.0	29.8	33.1	5.8	-36.5	0.0	0.0	32.3	54.0	-21.7	H	A	
7.323	3.0	36.3	35.3	7.3	-36.2	0.0	0.0	42.7	74.0	-31.3	H	P	
7.323	3.0	24.5	35.3	7.3	-36.2	0.0	0.0	30.9	54.0	-23.1	H	A	
4.882	3.0	43.7	33.1	5.8	-36.5	0.0	0.0	46.1	74.0	-27.9	V	P	
4.882	3.0	29.7	33.1	5.8	-36.5	0.0	0.0	32.2	54.0	-21.8	V	A	
7.323	3.0	36.1	35.3	7.3	-36.2	0.0	0.0	42.5	74.0	-31.5	V	P	
7.323	3.0	24.2	35.3	7.3	-36.2	0.0	0.0	30.5	54.0	-23.5	V	A	
High ch, 2480 MHz													
4.960	3.0	45.6	33.2	5.9	-36.5	0.0	0.0	48.2	74.0	-25.8	V	P	
4.960	3.0	30.4	33.2	5.9	-36.5	0.0	0.0	33.1	54.0	-20.9	V	A	
7.440	3.0	44.0	35.5	7.3	-36.2	0.0	0.0	50.6	74.0	-23.4	V	P	
7.440	3.0	27.5	35.5	7.3	-36.2	0.0	0.0	34.1	54.0	-19.9	V	A	
4.960	3.0	45.1	33.2	5.9	-36.5	0.0	0.0	47.7	74.0	-26.3	H	P	
4.960	3.0	30.7	33.2	5.9	-36.5	0.0	0.0	33.3	54.0	-20.7	H	A	
7.440	3.0	37.1	35.5	7.3	-36.2	0.0	0.0	43.7	74.0	-30.3	H	P	
7.440	3.0	25.3	35.5	7.3	-36.2	0.0	0.0	31.9	54.0	-22.1	H	A	

Rev. 4.1.2.7

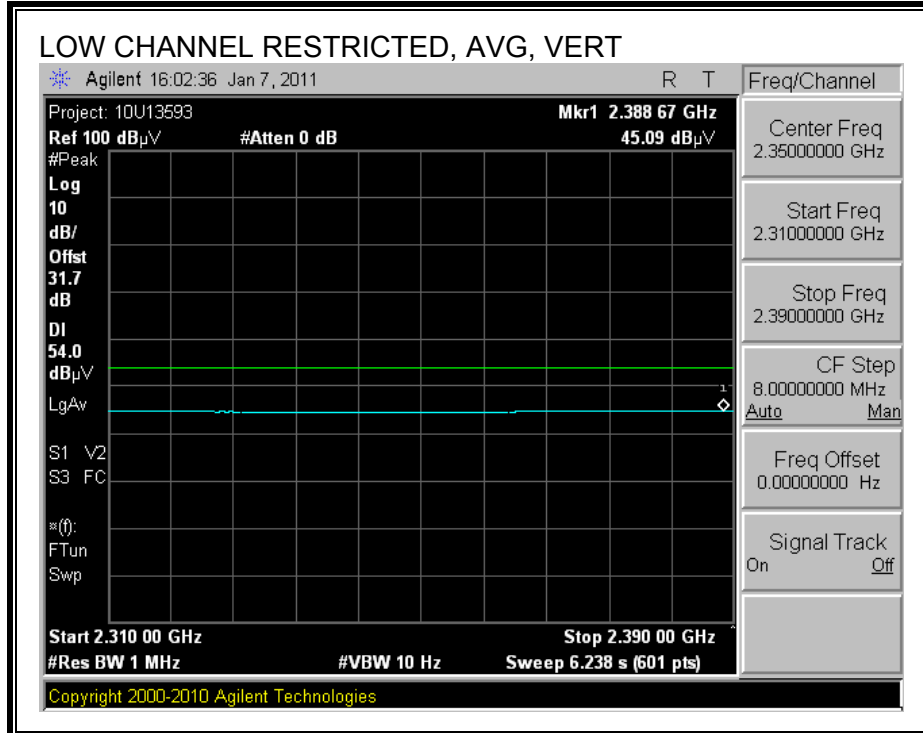
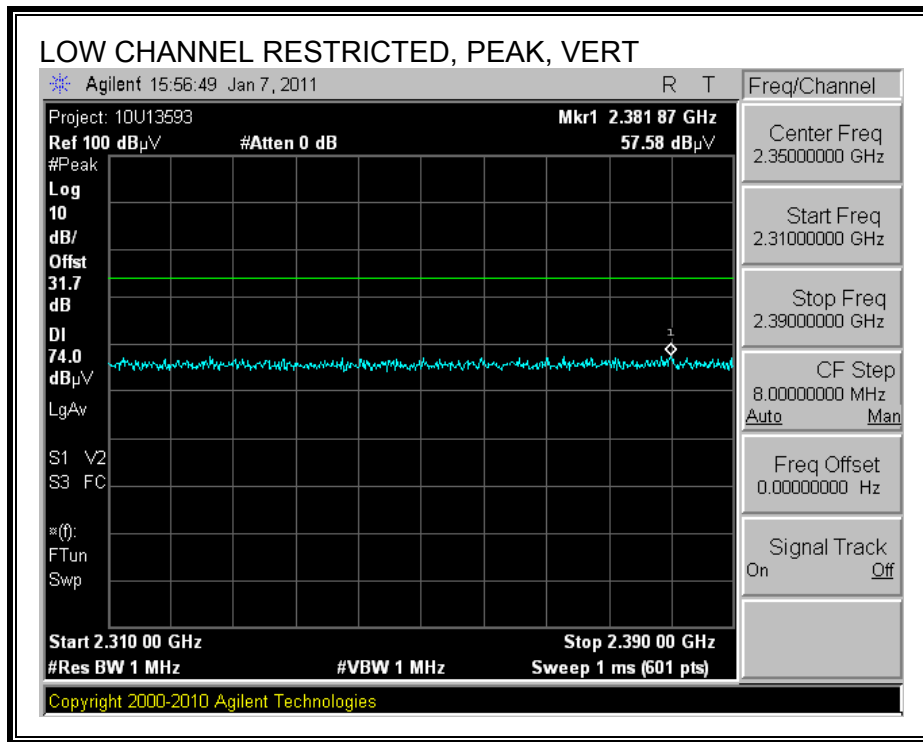
Note: No other emissions were detected above the system noise floor.

7.2.2. ENHANCED DATA RATE 8PSK MODULATION

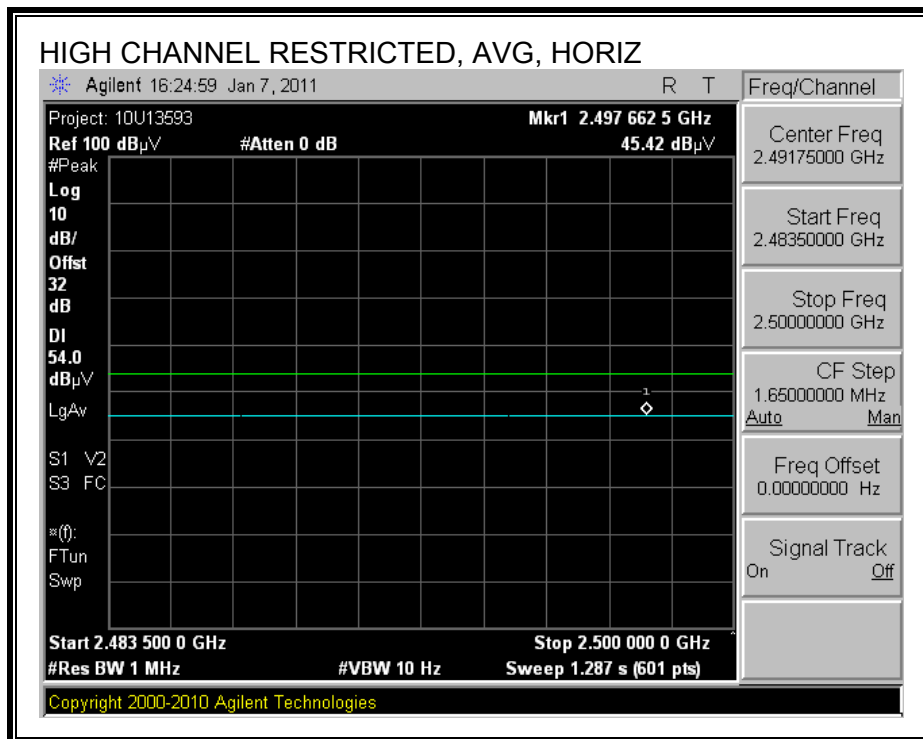
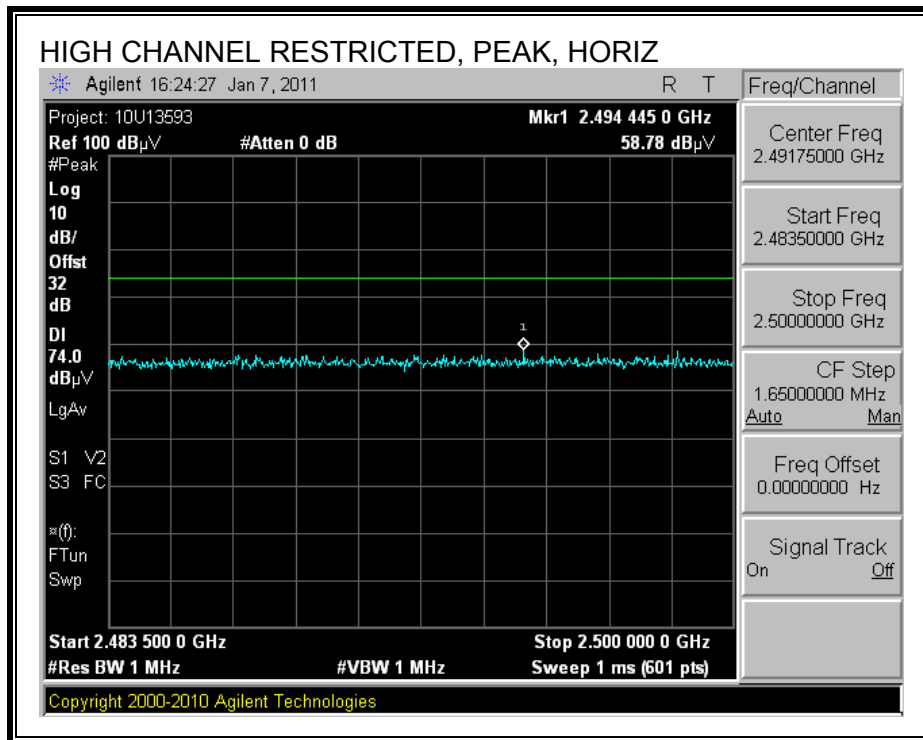
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



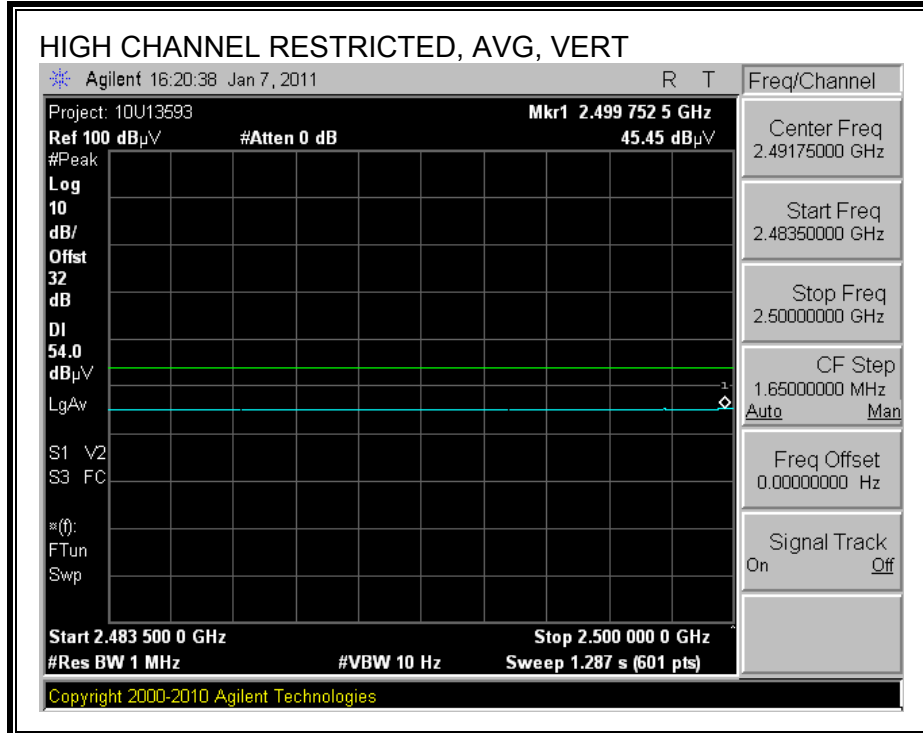
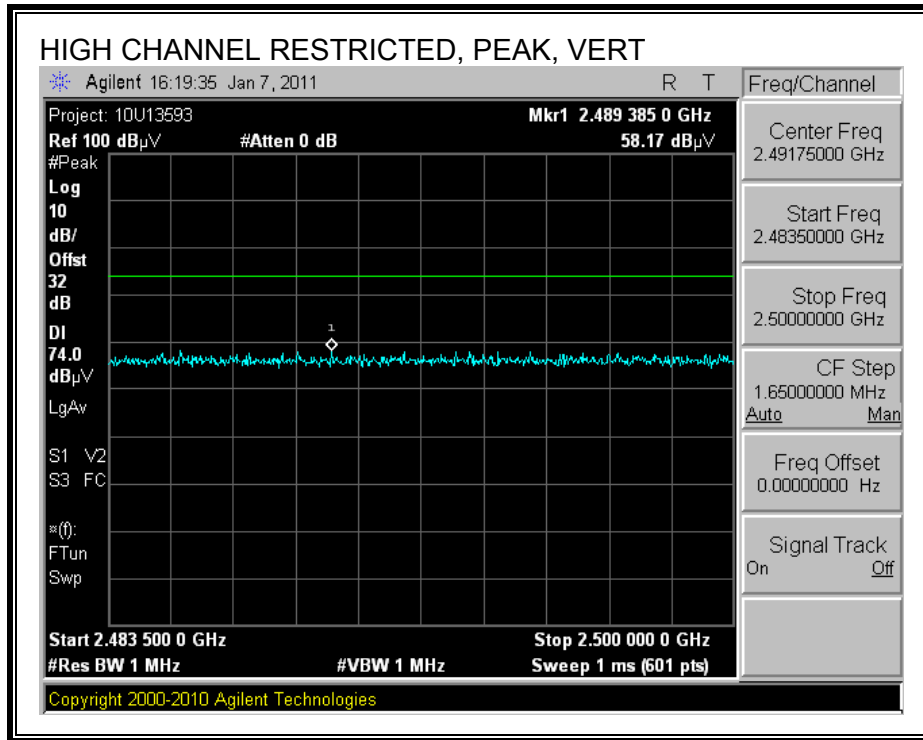
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



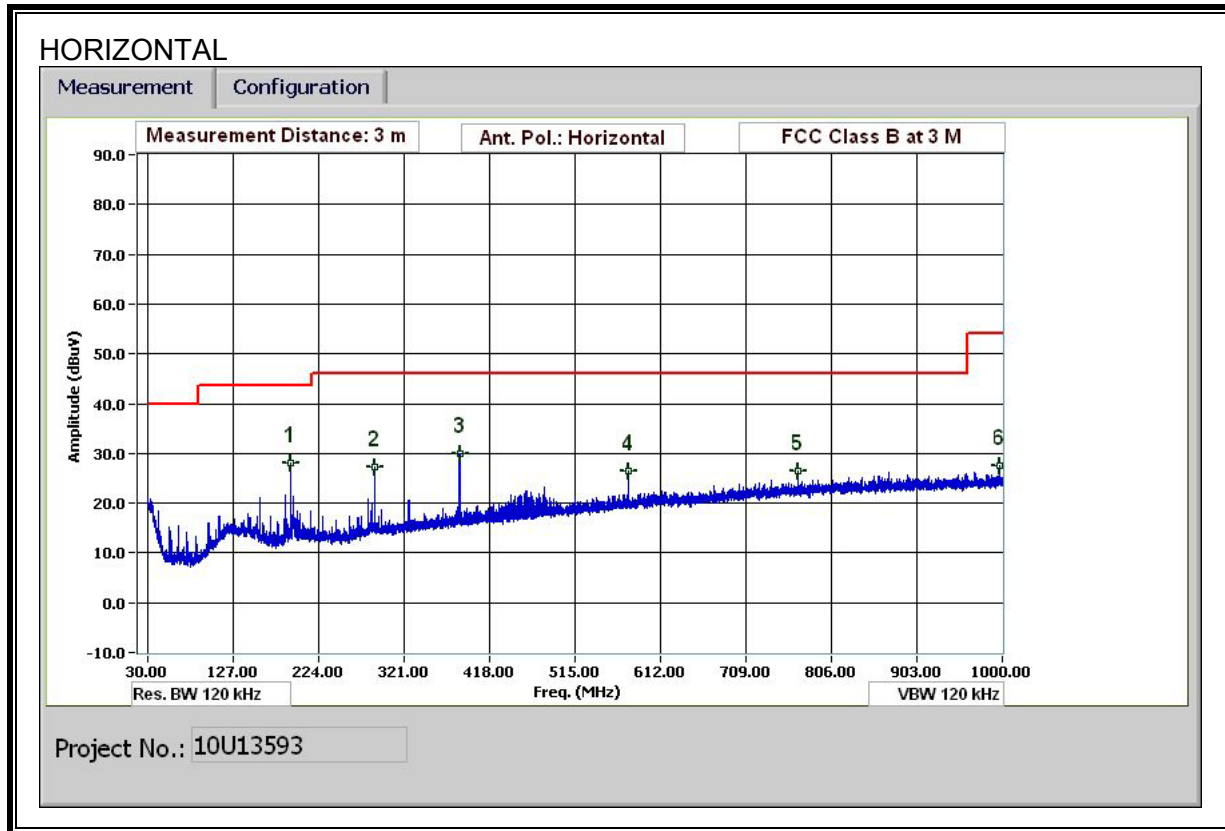
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement															
Compliance Certification Services, Fremont 5m Chamber															
Test Engr:		Oliver Su													
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Test Target:		FCC 15.247													
Mode Oper:		BT, 8PSK, TX, X Position (worst case)													
f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit											
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit											
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit											
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit											
CL	Cable Loss	HPF	High Pass Filter												
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol V/H	Det. P/A/QP	Ant.High cm	Table Angle Degree	Notes
High ch, 2480MHz															
4.960	3.0	40.7	33.2	5.9	-36.5	0.0	0.0	43.3	74.0	-30.7	V	P	100.1	102.1	
4.960	3.0	26.3	33.2	5.9	-36.5	0.0	0.0	28.9	54.0	-25.1	V	A	100.1	102.1	
7.440	3.0	36.9	35.5	7.3	-36.2	0.0	0.0	43.6	74.0	-30.4	V	P	100.1	102.1	
7.440	3.0	24.8	35.5	7.3	-36.2	0.0	0.0	31.4	54.0	-22.6	V	A	100.1	102.1	
4.960	3.0	41.4	33.2	5.9	-36.5	0.0	0.0	44.0	74.0	-30.0	H	P	100.4	5.8	
4.960	3.0	26.5	33.2	5.9	-36.5	0.0	0.0	29.1	54.0	-24.9	H	A	100.4	5.8	
7.440	3.0	37.6	35.5	7.3	-36.2	0.0	0.0	44.2	74.0	-29.8	H	P	100.4	5.8	
7.440	3.0	24.8	35.5	7.3	-36.2	0.0	0.0	31.5	54.0	-22.5	H	A	100.4	5.8	
Mid ch, 2441 MHz															
4.882	3.0	41.1	33.1	5.8	-36.5	0.0	0.0	43.6	74.0	-30.4	H	P	104.3	5.6	
4.882	3.0	26.1	33.1	5.8	-36.5	0.0	0.0	28.6	54.0	-25.4	H	A	104.3	5.6	
7.323	3.0	36.5	35.3	7.3	-36.2	0.0	0.0	42.8	74.0	-31.2	H	P	104.3	5.6	
7.323	3.0	24.2	35.3	7.3	-36.2	0.0	0.0	30.5	54.0	-23.5	H	A	104.3	5.6	
4.882	3.0	40.3	33.1	5.8	-36.5	0.0	0.0	42.8	74.0	-31.2	V	P	100.6	314.2	
4.882	3.0	26.0	33.1	5.8	-36.5	0.0	0.0	28.5	54.0	-25.5	V	A	100.6	314.2	
7.323	3.0	36.6	35.3	7.3	-36.2	0.0	0.0	43.0	74.0	-31.0	V	P	100.6	314.2	
7.323	3.0	24.2	35.3	7.3	-36.2	0.0	0.0	30.5	54.0	-23.5	V	A	100.6	314.2	
Low ch, 2402 MHz															
4.804	3.0	38.0	33.0	5.8	-36.5	0.0	0.0	40.3	74.0	-33.7	V	P	102.1	230.5	
4.804	3.0	26.1	33.0	5.8	-36.5	0.0	0.0	28.4	54.0	-25.6	V	A	102.1	230.5	
4.804	3.0	38.9	33.0	5.8	-36.5	0.0	0.0	41.2	74.0	-32.8	H	P	181.0	307.8	
4.804	3.0	25.8	33.0	5.8	-36.5	0.0	0.0	28.2	54.0	-25.8	H	A	181.0	307.8	
Rev. 4.1.2.7															
Note: No other emissions were detected above the system noise floor.															

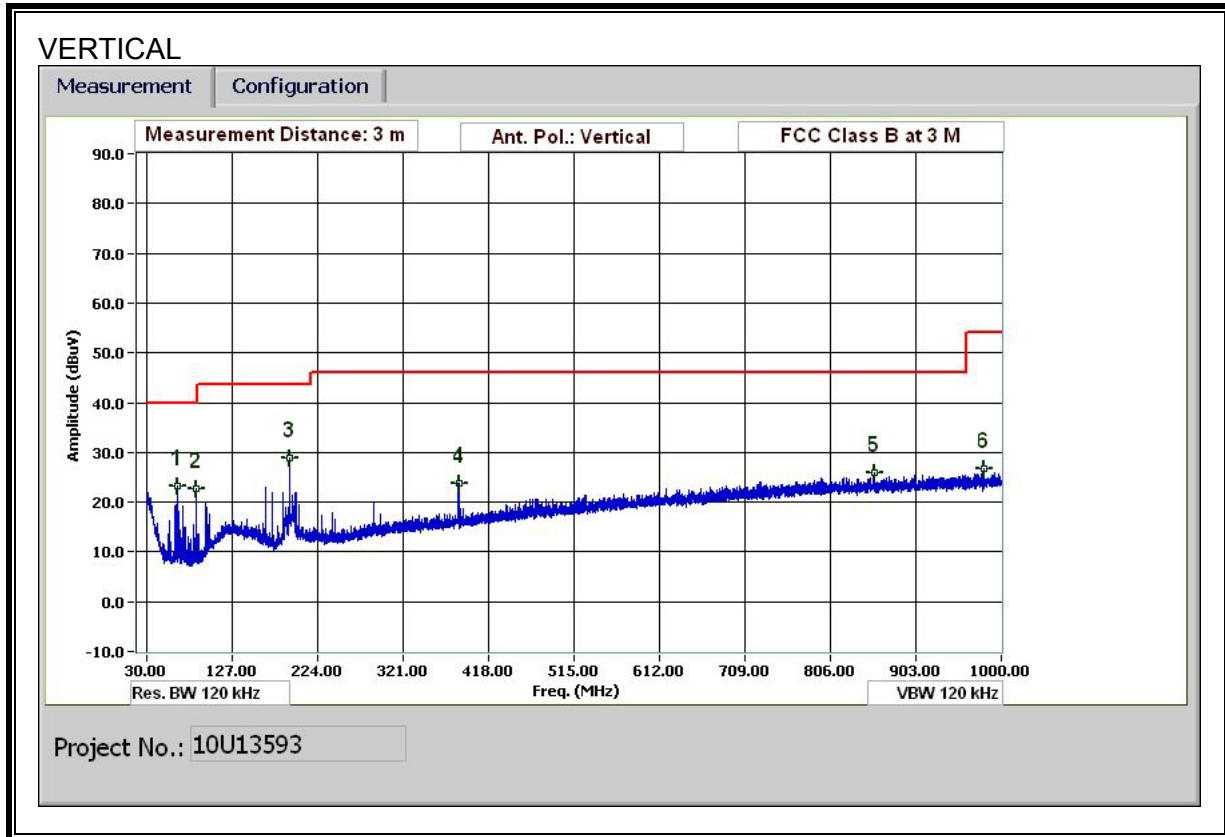
7.3. WORST-CASE BELOW 1 GHz

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

PLOTS



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



DATA

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

Test Engr: Oliver Su
Date: 01/07/11
Project #: 10U13593
Company: Kyocera
Test Target: FCC 15.247
Mode Oper: BT, TX, GFSK, High ch, X Position (worst case)

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	Pad dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
192.007	3.0	43.7	11.5	1.2	28.2	0.0	0.0	28.2	43.5	-15.3	H	P	
288.011	3.0	41.0	13.0	1.5	28.1	0.0	0.0	27.4	46.0	-18.6	H	P	
384.015	3.0	41.7	14.7	1.8	28.1	0.0	0.0	30.1	46.0	-15.9	H	P	
576.023	3.0	33.9	18.0	2.2	27.6	0.0	0.0	26.5	46.0	-19.5	H	P	
768.03	3.0	30.7	20.5	2.6	27.4	0.0	0.0	26.5	46.0	-19.5	H	P	
996.88	3.0	30.1	22.4	3.0	27.9	0.0	0.0	27.6	54.0	-26.4	H	P	
64.441	3.0	43.0	8.0	0.7	28.4	0.0	0.0	23.3	40.0	-16.7	V	P	
86.522	3.0	42.6	7.5	0.8	28.3	0.0	0.0	22.6	40.0	-17.4	V	P	
192.007	3.0	44.5	11.5	1.2	28.2	0.0	0.0	29.0	43.5	-14.5	V	P	
384.015	3.0	35.6	14.7	1.8	28.1	0.0	0.0	23.9	46.0	-22.1	V	P	
855.634	3.0	29.3	21.5	2.7	27.6	0.0	0.0	25.8	46.0	-20.2	V	P	
980.439	3.0	29.2	22.3	3.0	27.9	0.0	0.0	26.6	54.0	-27.4	V	P	

Rev. 1.27.09

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.

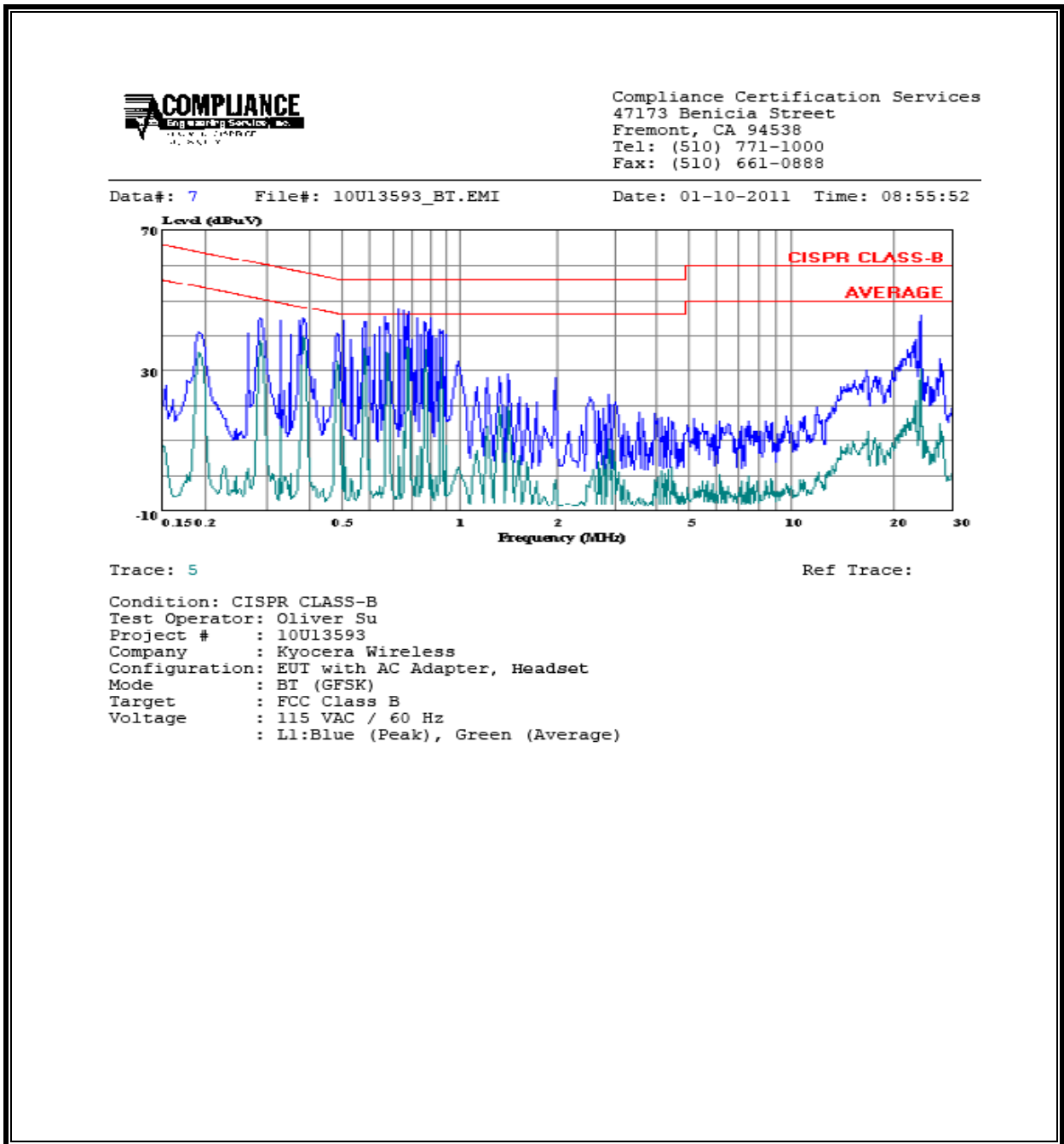
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS (EUT WITH AC ADAPTER)

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Class	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.29	45.04	--	38.33	0.00	60.55	50.55	-15.51	-12.22	L1
0.39	44.92	--	39.39	0.00	58.17	48.17	-13.25	-8.78	L1
0.78	46.87	--	37.55	0.00	56.00	46.00	-9.13	-8.45	L1
0.29	42.60	--	33.11	0.00	60.55	50.55	-17.95	-17.44	L2
0.39	42.51	--	34.19	0.00	58.17	48.17	-15.66	-13.98	L2
24.01	47.31	--	27.49	0.00	60.00	50.00	-12.69	-22.51	L2
6 Worst Data									

LINE 1 RESULTS



LINE 2 RESULTS

