



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

CERTIFICATION TEST REPORT

FOR

TRI-BAND 1xRTT CDMA WITH BLUETOOTH

MODEL NUMBER: K48-02

FCC ID: OVF-K4802

IC ID: 3572A-K48

REPORT NUMBER: 09U12590-2

ISSUE DATE: MAY 27, 2009

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

Prepared by
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NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	05/27/09	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, USA

EUT DESCRIPTION: TRI-BAND 1xRTT CELLULAR PHONE WITH BLUETOOTH

MODEL: K48-02

SERIAL NUMBER: 80F8061A

DATE TESTED: MAY 20 - 22, 2009

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. (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:

Tested By:



THU CHAN
EMC MANAGER
COMPLIANCE CERTIFICATION SERVICES

VIEN TRAN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

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.

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 cell phone with Tri- Band 1xRTT CDMA and Bluetooth capability. The radio module is manufactured by Kyocera Wireless Corp.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of 2.0dBi.

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 EUT has been evaluated at X, Y, Z-axis, and AC/DC adapter. The highest measured output power was at X-Axis with AC/DC adapter and slide open condition.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Dell	PP18L	6364419229	DoC
AC/DC Adapter	Dell	LA65NS0-00	CN-ODF26371615-66C-	DoC
AC/DC Adapter	Kyocera	TXTVL10127	834S-002	DoC
Earphone	N/A	N/A	N/A	N/A

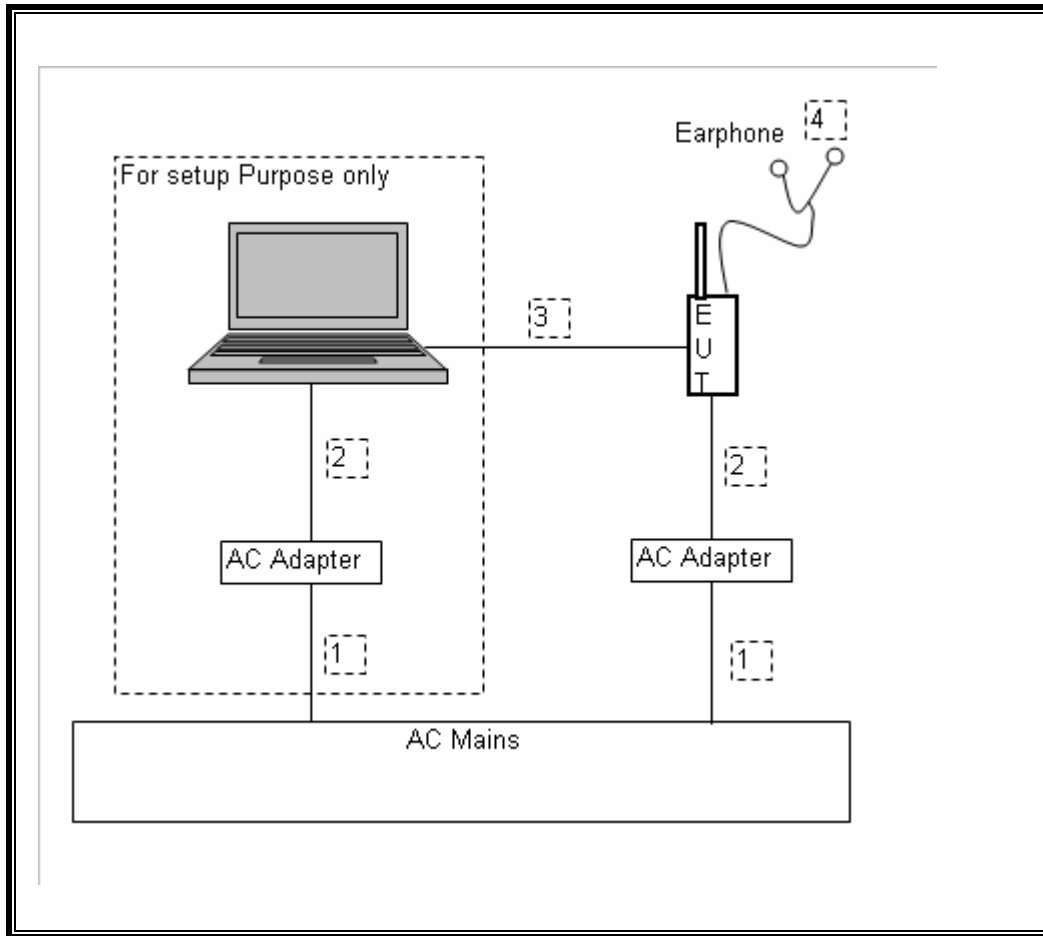
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	US115	Un-Shielded	2.0 m	N/A
2	DC Input	2	DC	Un-Shielded	2.0 m	N/A
3	USB	1	Mini-USB	Un-Shielded	1.0 m	N/A
4	Jack	1	Earphone	Un-shielded	1.0m	N/A

TEST SETUP

The EUT is connected to a laptop computer via a USB cable to setup the modulation, channel and output power. After the setup is done, the laptop can be removed and the EUT can stand alone without operation interrupted.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

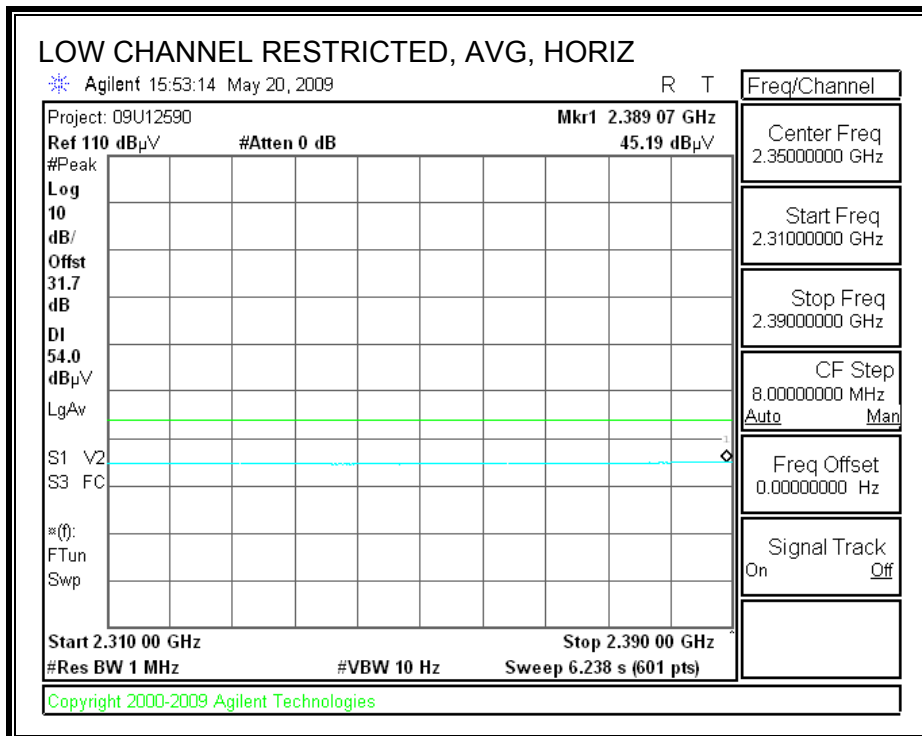
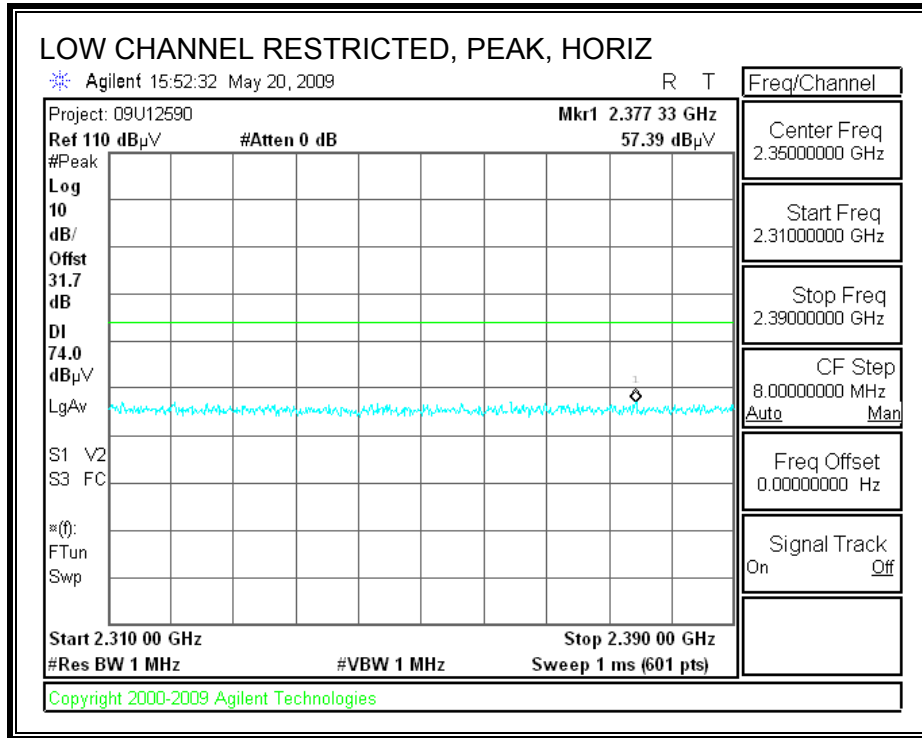
TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer 26.5 GHz	Agilent / HP	N9020A	C01178	10/23/09
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	12/16/09
Antenna, Horn, 18 GHz	EMCO	3115	C00872	04/22/10
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	01/14/10
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	02/04/10
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	02/04/10
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	N02481	10/29/09
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	10/29/09
2.4 - 2.5 Reject Filter	Micro Tronics	BRM50702	N/A	N/A

7. RADIATED TEST RESULTS

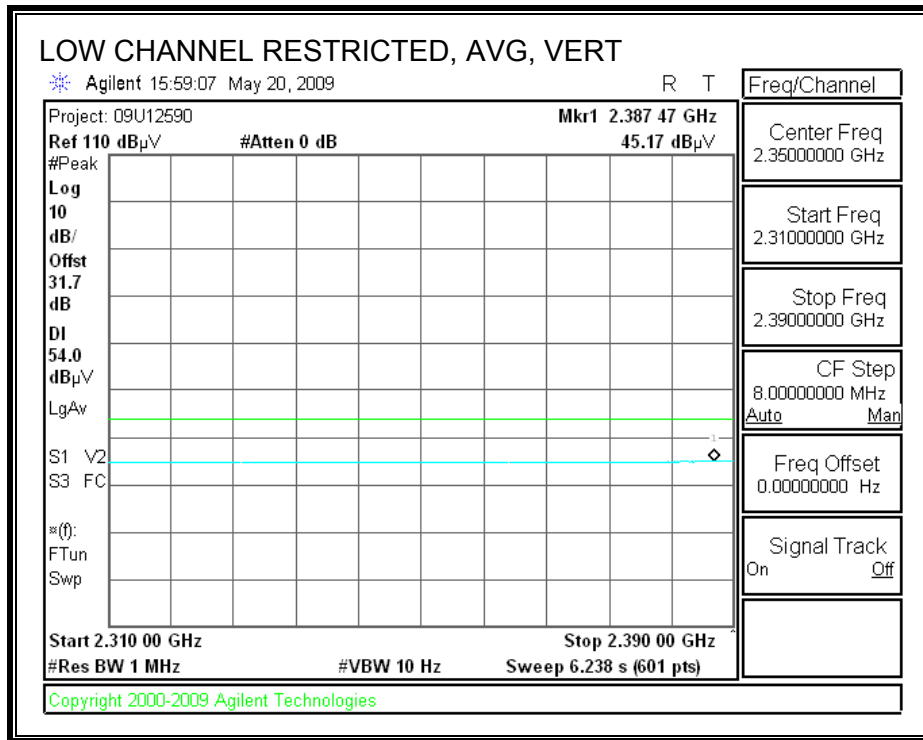
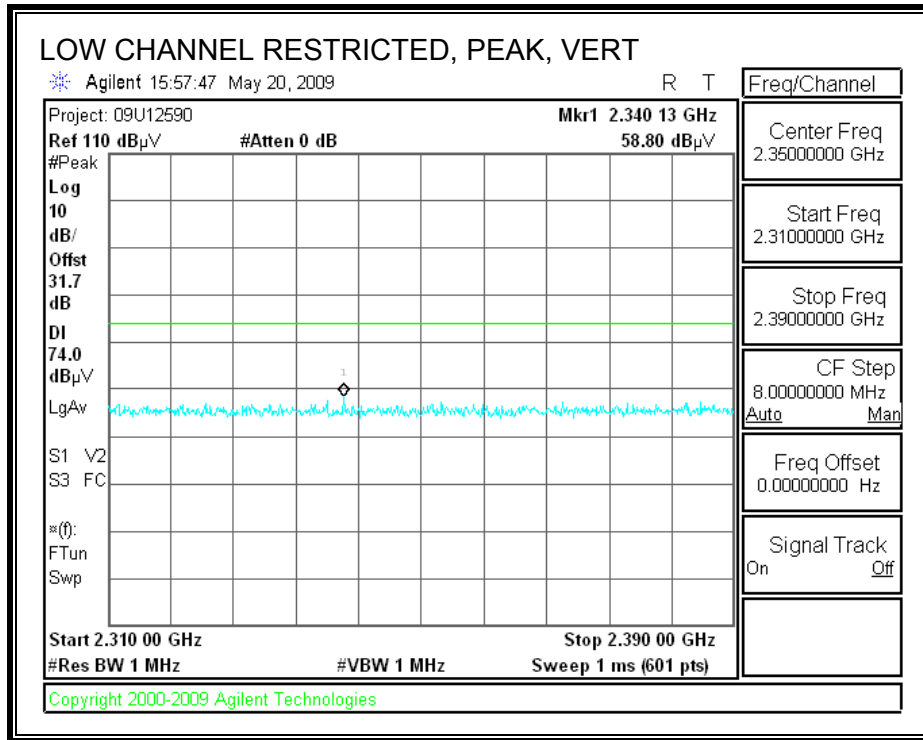
7.1. TRANSMITTER ABOVE 1 GHz

7.1.1. BASIC DATA RATE GFSK MODULATION

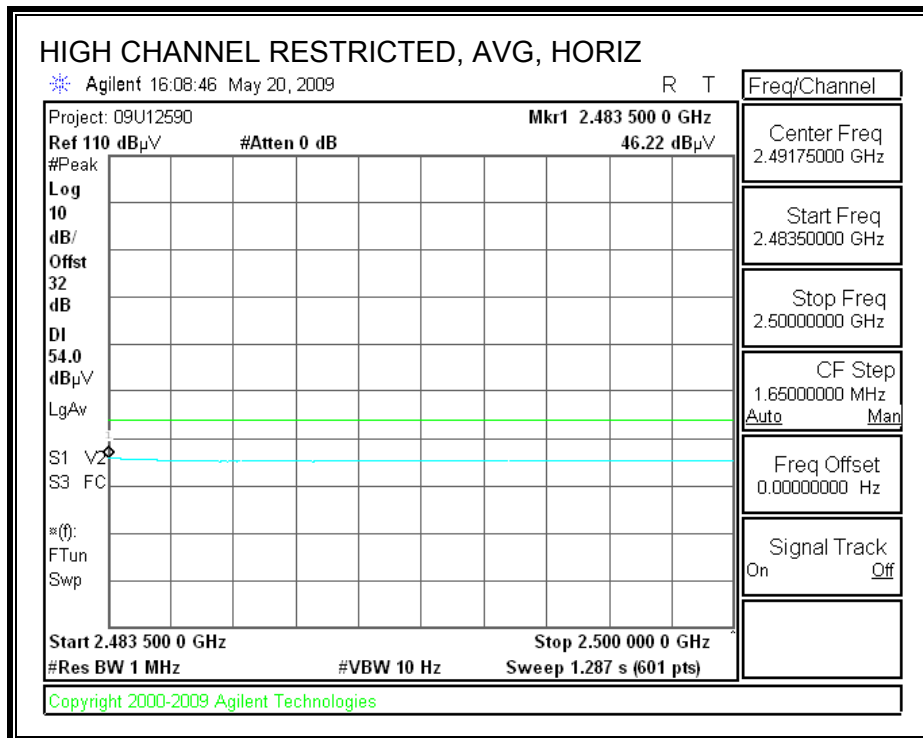
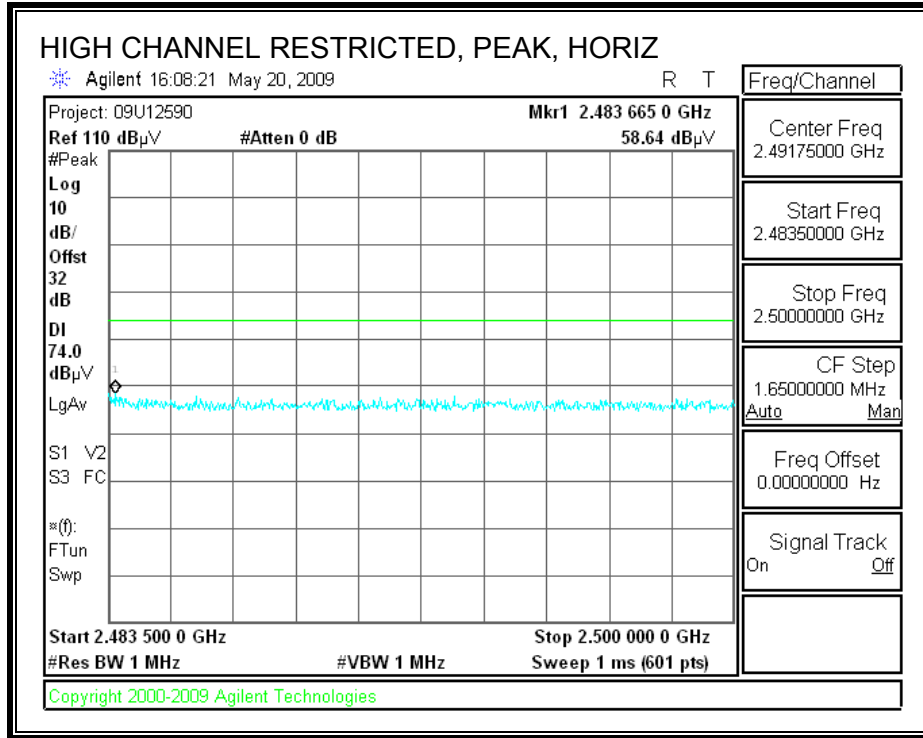
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



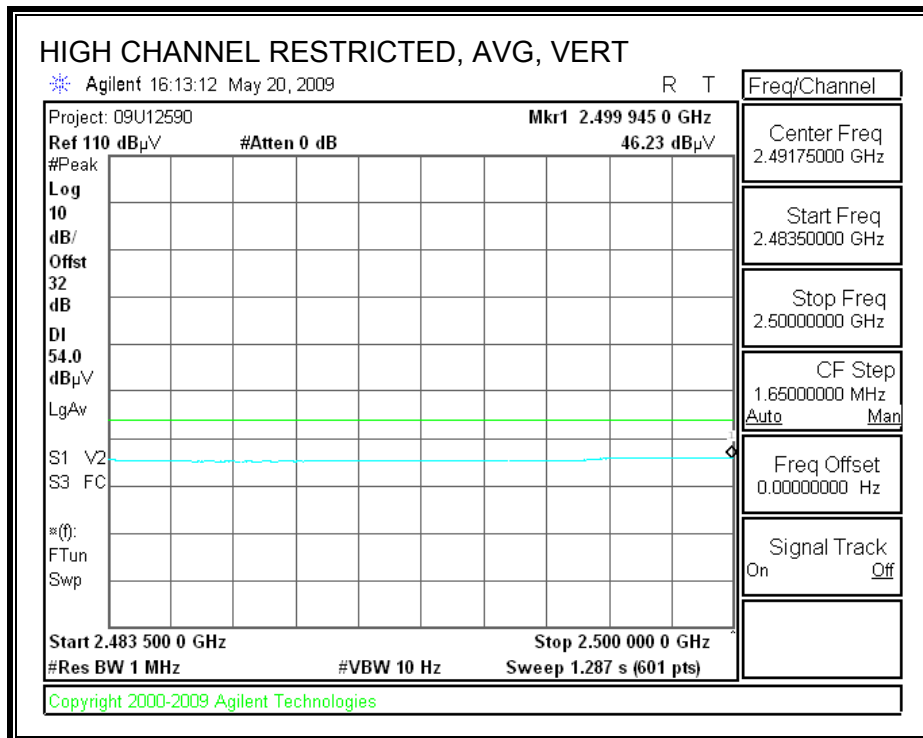
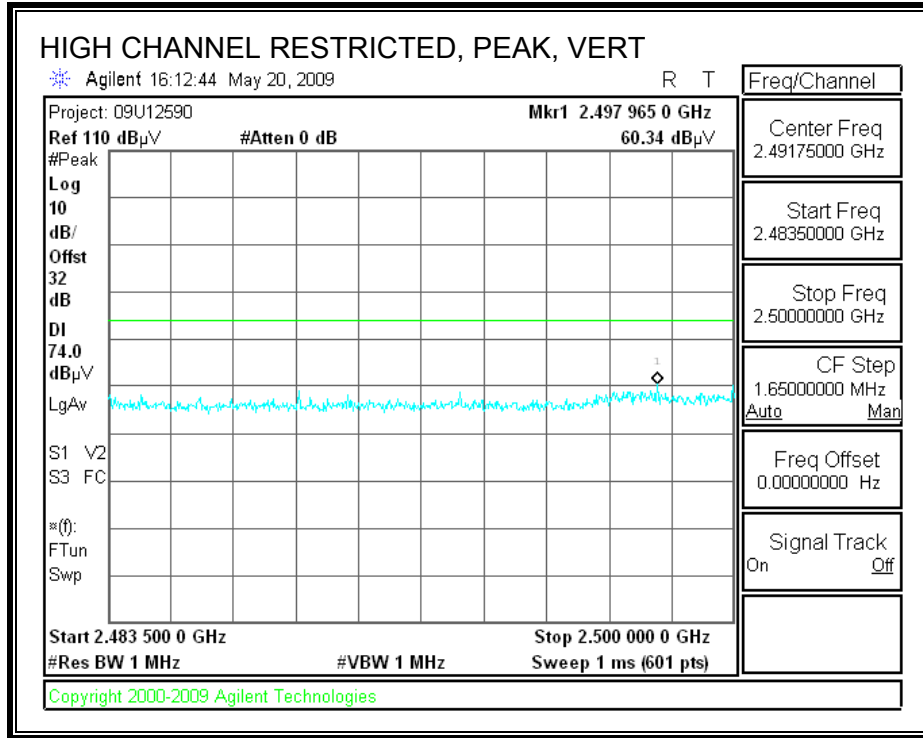
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 3m Chamber

Company: Kyocera
 Project #: 09U12590
 Date: 5/22/2009
 Test Engineer: Vien Tran
 Configuration: EUT with AC Adapter
 Mode: TX GFSK

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			FCC 15.205

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_4.6GHz		Average Measurements RBW=1MHz ; VBW=10Hz

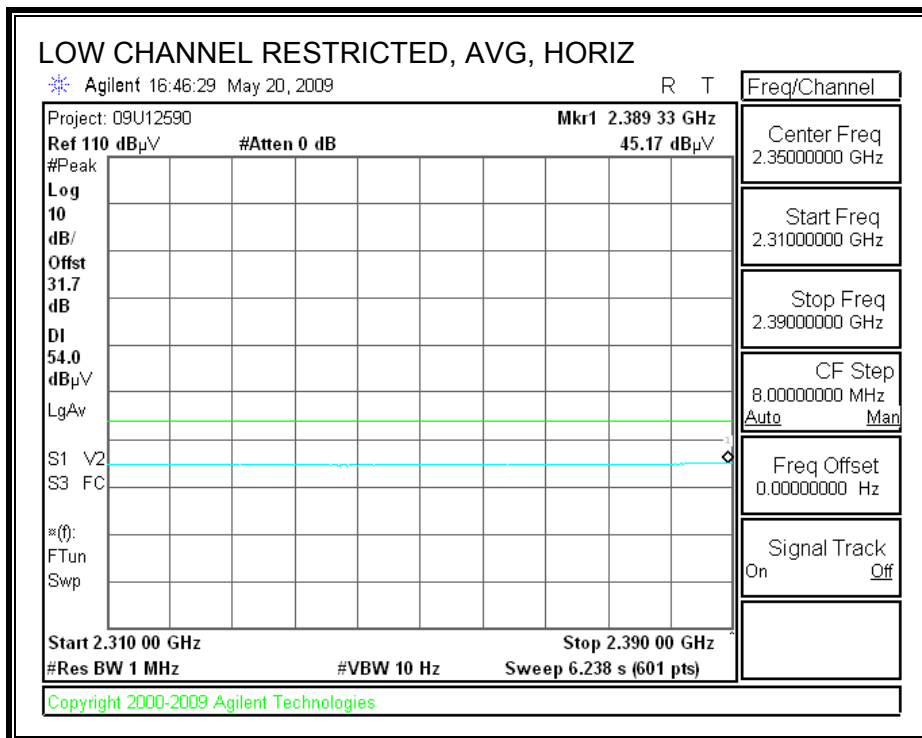
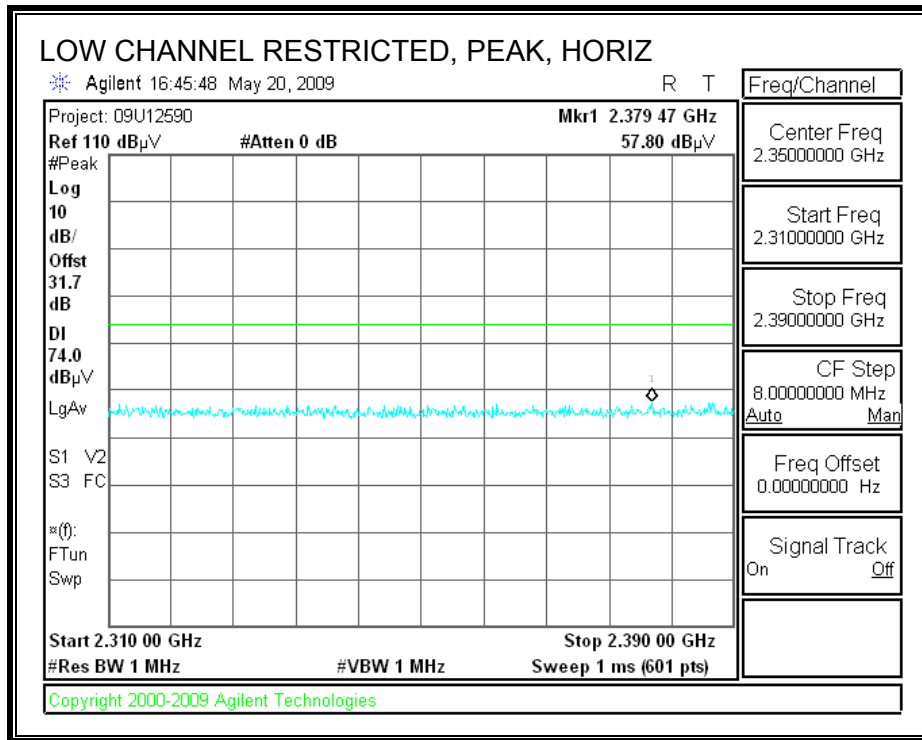
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel, 2402MHz															
4.804	3.0	40.9	26.9	32.7	5.8	-34.8	0.0	2.4	46.9	32.9	74	54	-27.1	-21.1	Vertical Noise Floor
4.804	3.0	39.7	25.6	32.7	5.8	-34.8	0.0	2.4	45.7	31.6	74	54	-28.3	-22.4	Horizontal Noise Floor
Mid Channel, 2441MHz															
4.882	3.0	40.7	26.8	32.7	5.8	-34.8	0.0	2.5	46.9	33.0	74	54	-27.1	-21.0	Vertical Noise Floor
4.882	3.0	39.2	25.2	32.7	5.8	-34.8	0.0	2.5	45.4	31.4	74	54	-28.6	-22.6	Horizontal Noise Floor
High Channel, 2480MHz															
4.960	3.0	40.1	26.2	32.8	5.9	-34.8	0.0	2.5	46.5	32.6	74	54	-27.5	-21.4	Vertical Noise Floor
4.960	3.0	38.8	25.0	32.8	5.9	-34.8	0.0	2.5	45.2	31.4	74	54	-28.8	-22.6	Horizontal Noise Floor
No other emissions were detected above system noise floor															

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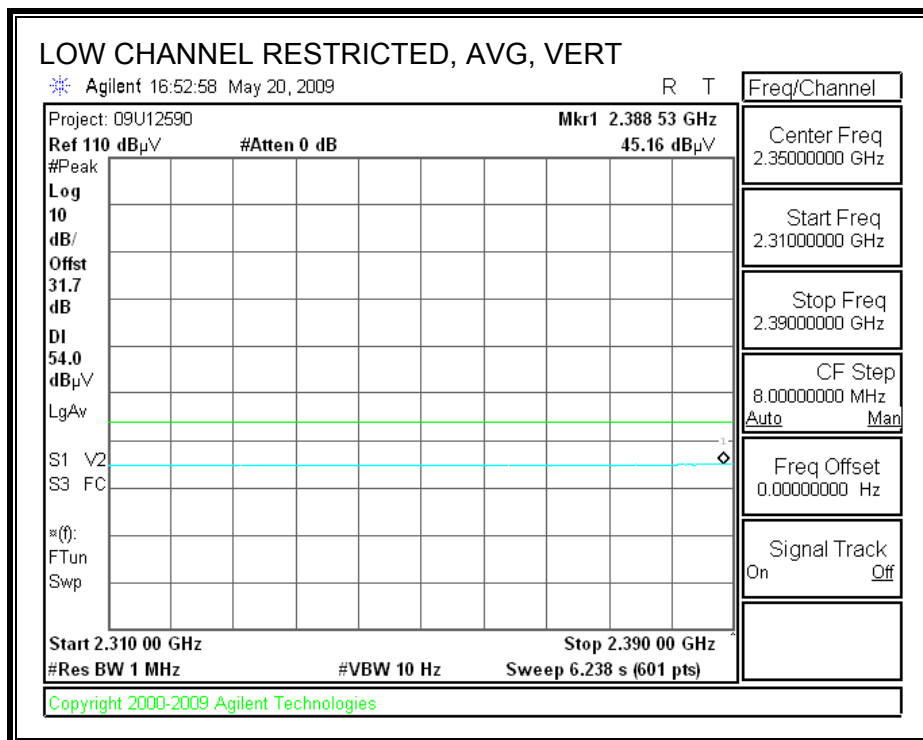
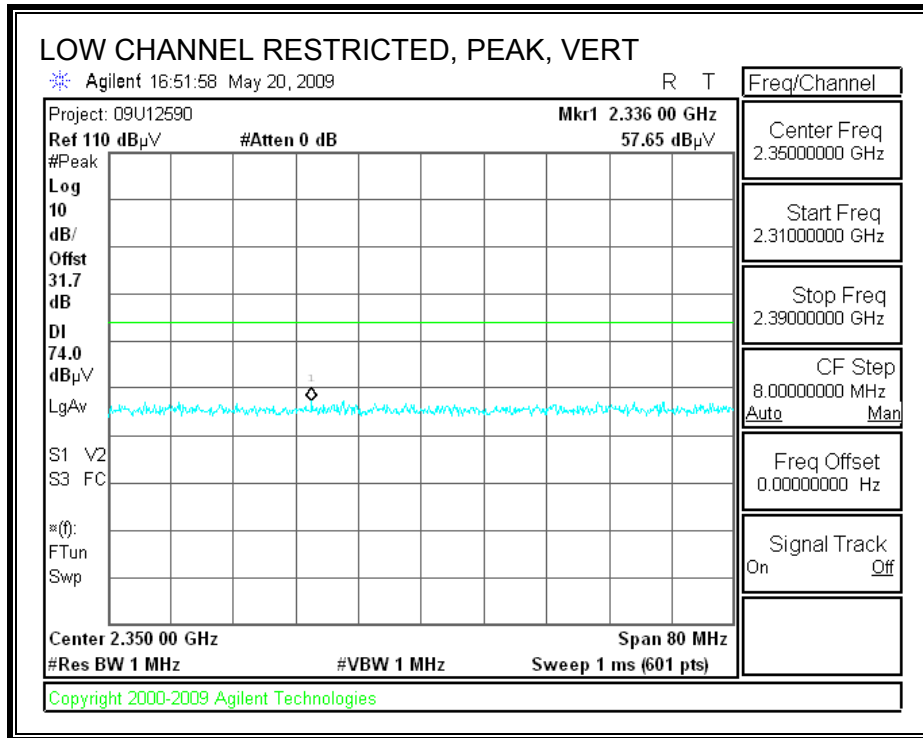
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field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

7.1.2. ENHANCED DATA RATE 8PSK MODULATION

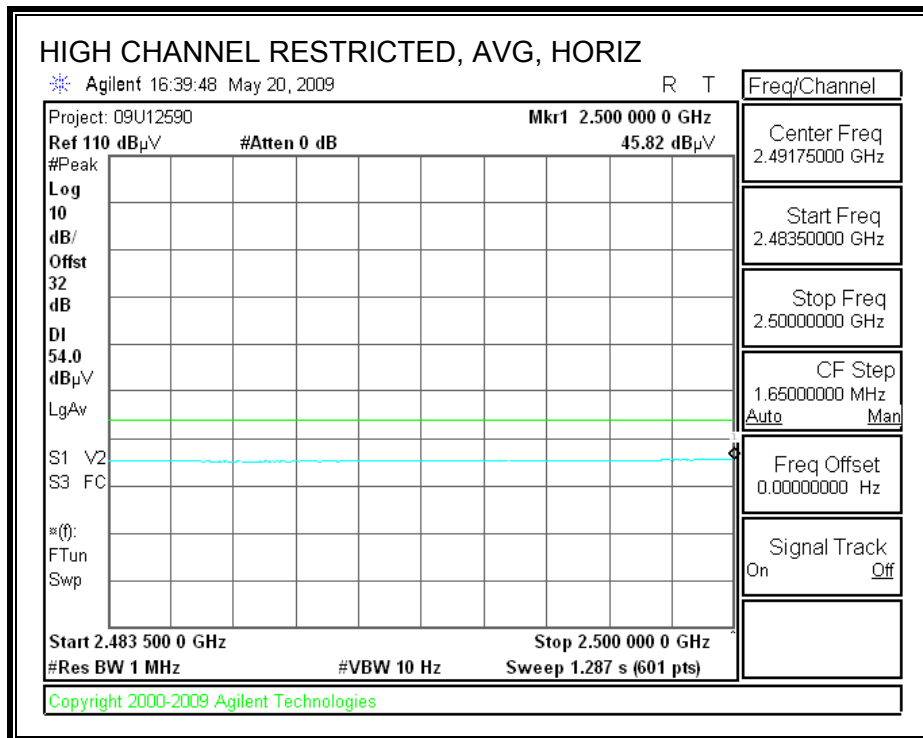
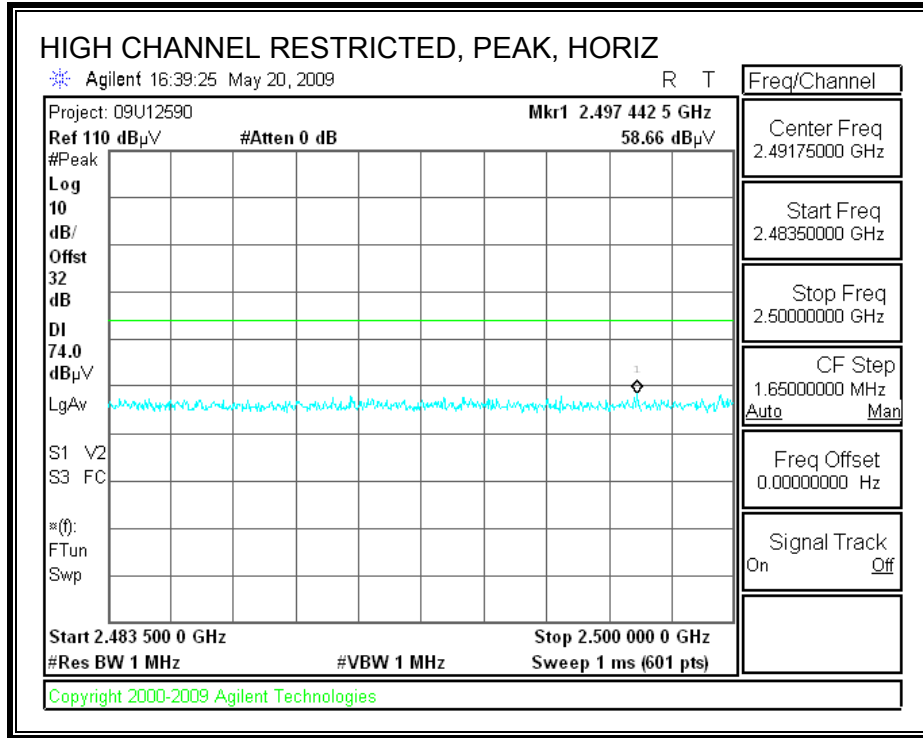
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



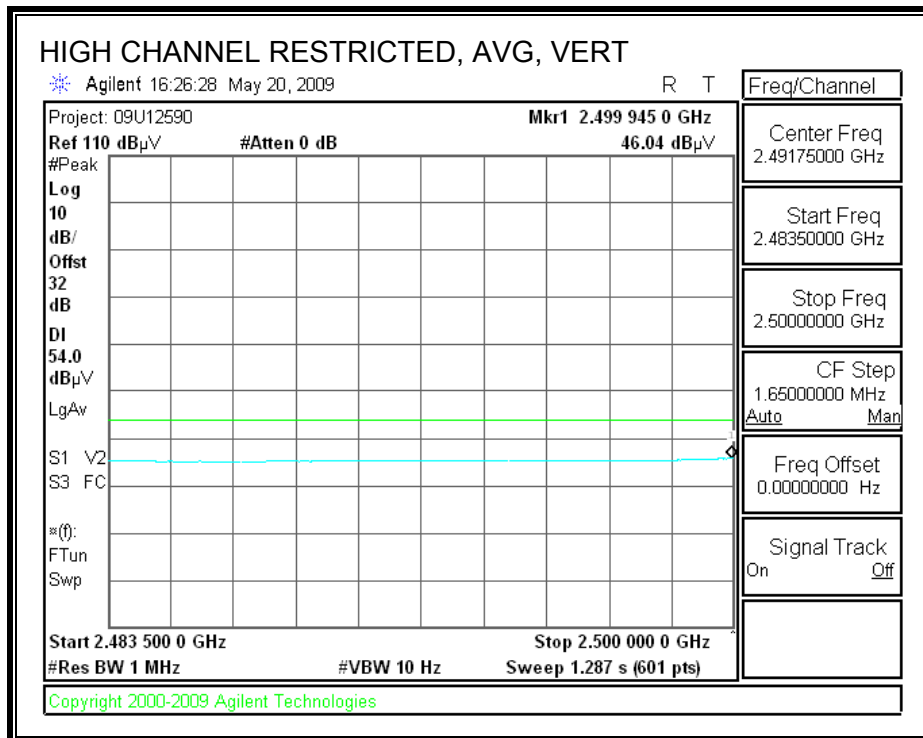
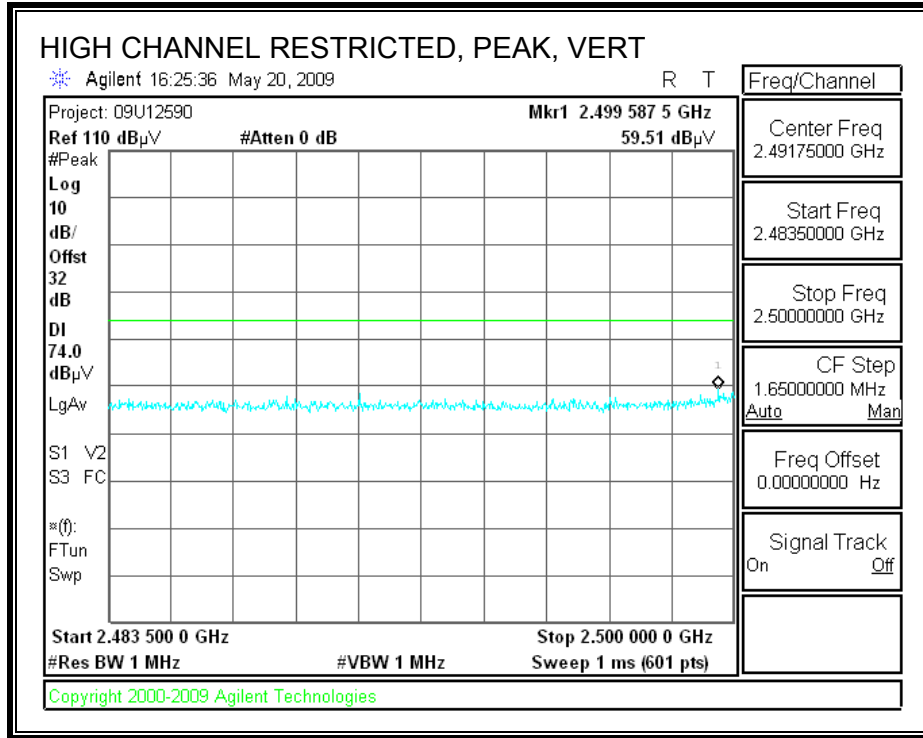
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 3m Chamber

Company: Kyocera
 Project #: 09U12590
 Date: 5/22/2009
 Test Engineer: Vien Tran
 Configuration: EUT with AC Adapter
 Mode: TX 8PSK_DHL_3Mbps

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			FCC 15.205

HI Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_4.6GHz		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	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Channel, 2402MHz															
4.804	3.0	41.2	27.3	32.7	5.8	-34.8	0.0	2.4	47.2	33.3	74	54	-26.8	-20.7	Vertical Noise Floor
4.804	3.0	39.9	26.9	32.7	5.8	-34.8	0.0	2.4	45.9	32.9	74	54	-28.1	-21.1	Horizontal Noise Floor
Mid Channel, 2441MHz															
4.882	3.0	41.1	27.5	32.7	5.8	-34.8	0.0	2.5	47.3	33.7	74	54	-26.7	-20.3	Vertical Noise Floor
4.882	3.0	39.2	25.2	32.7	5.8	-34.8	0.0	2.5	45.4	31.4	74	54	-28.6	-22.6	Horizontal Noise Floor
High Channel, 2480MHz															
4.960	3.0	41.5	27.9	32.8	5.9	-34.8	0.0	2.5	47.9	34.3	74	54	-26.1	-19.7	Vertical Noise Floor
4.960	3.0	39.9	26.3	32.8	5.9	-34.8	0.0	2.5	46.3	32.7	74	54	-27.7	-21.3	Horizontal Noise Floor
No other emissions were detected above system noise floor															

Rev. 03.03.09

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 RECEIVER ABOVE 1 GHz

High Frequency Measurement
 Compliance Certification Services, Fremont 3m Chamber

Company: Kyocera
 Project #: 09U12590
 Date: 5/22/2009
 Test Engineer: Vien Tran
 Configuration: EUT with AC Adapter
 Mode: Rx Worst-Case

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T34 HP 8449B			RX RSS 210

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	
3' cable 22807700	12' cable 22807600	20' cable 22807500			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	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.450	3.0	56.7	43.3	26.0	2.9	-37.6	0.0	0.0	47.9	34.5	74	54	-26.1	-19.5	V
1.823	3.0	59.8	44.8	27.2	3.3	-37.1	0.0	0.0	53.2	38.2	74	54	-20.8	-15.8	V
1.450	3.0	53.8	40.6	26.0	2.9	-37.6	0.0	0.0	45.0	31.8	74	54	-29.0	-22.2	H
1.823	3.0	55.7	41.7	27.2	3.3	-37.1	0.0	0.0	49.1	35.1	74	54	-24.9	-18.9	H
No other emissions were detected above system noise floor															

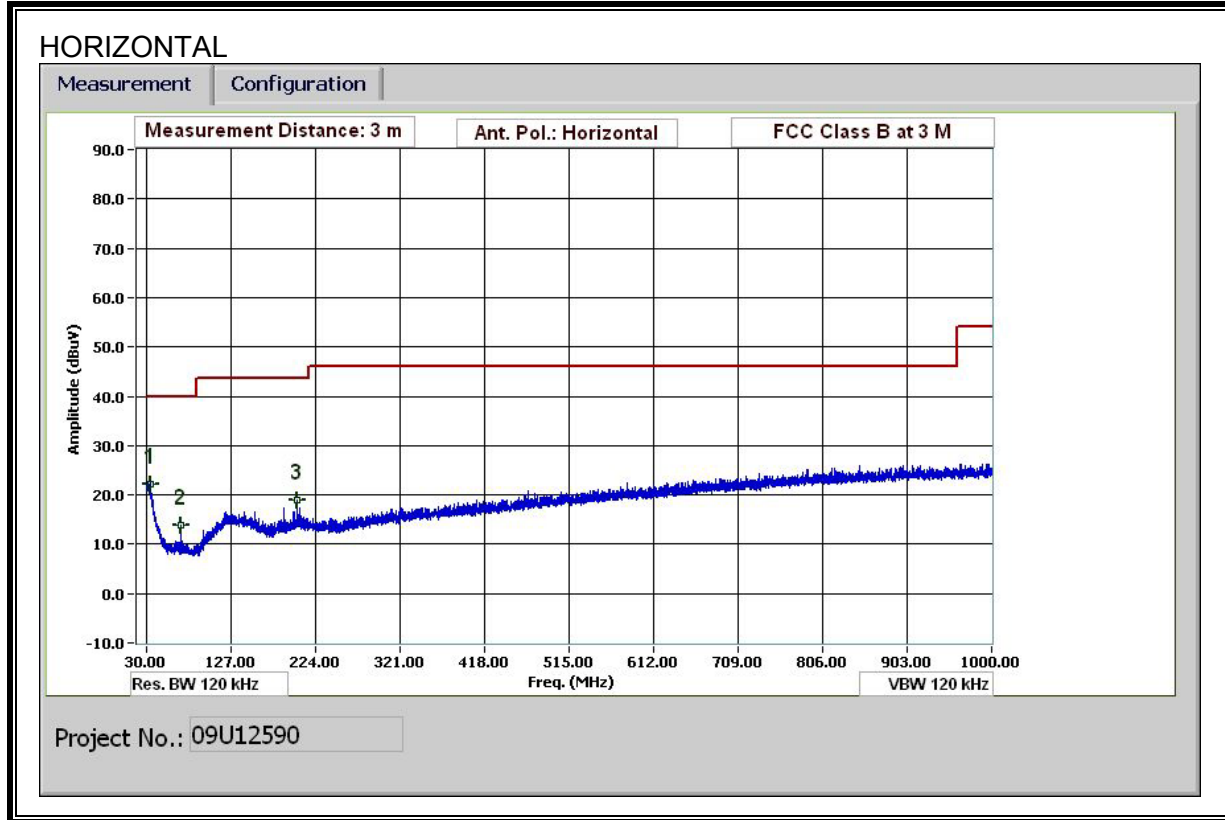
Rev. 03.03.09

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		

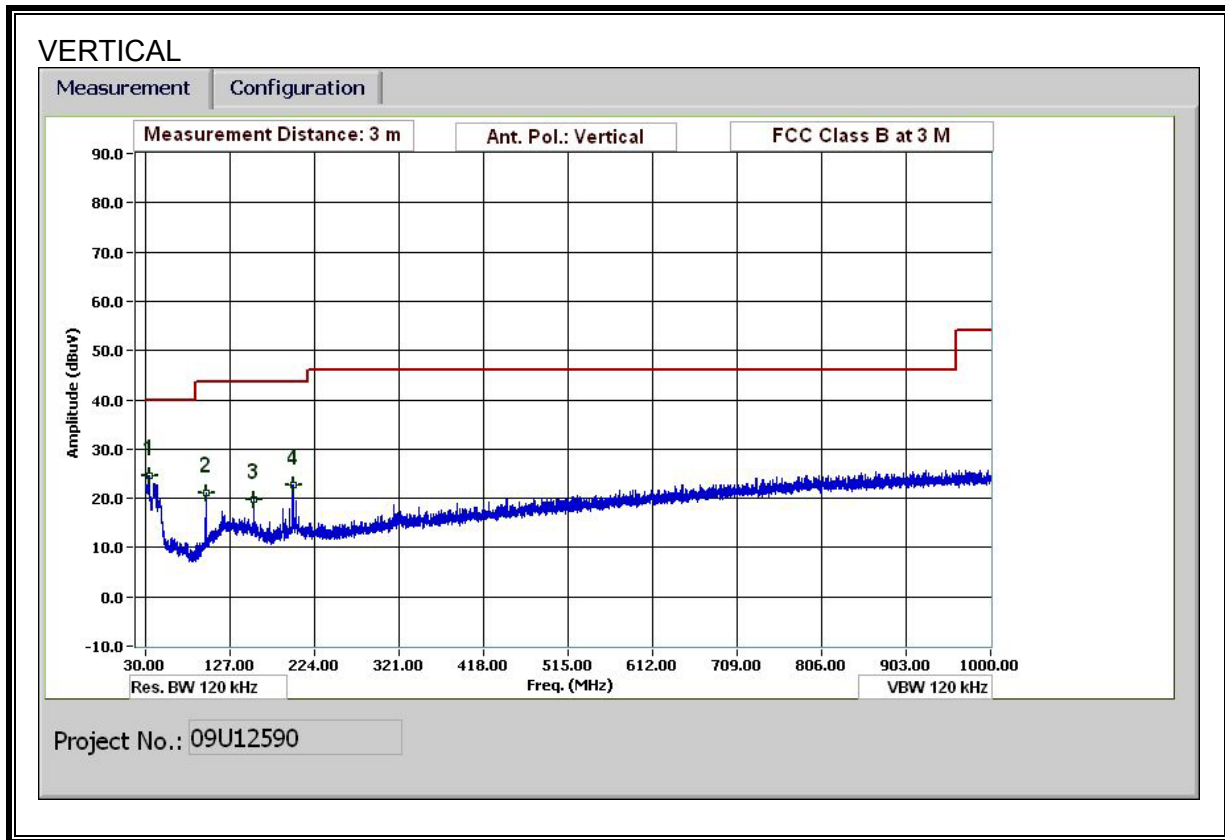
7.3. WORST-CASE BELOW 1 GHz

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

PLOT



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



DATA

30-1000MHz Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		Vien Tran											
Date:		05/22/09											
Project #:		09U12590											
Company:		Kyocera											
EUT Description:		Tri-Band Cell Phone with Bluetooth											
EUT M/N:		K48-02											
Test Target:		FCC Class B											
Mode Oper:		Tx 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	Filter dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol V/H	Det. P/A/QP	Notes
Horizontal													
34.200	3.0	31.7	18.3	0.5	28.4	0.0	0.0	22.1	40.0	-17.9	H	P	
70.082	3.0	33.5	8.1	0.7	28.4	0.0	0.0	14.0	40.0	-26.0	H	P	
202.807	3.0	33.8	12.0	1.3	28.2	0.0	0.0	18.9	43.5	-24.6	H	P	
Vertical													
33.840	3.0	34.1	18.4	0.5	28.4	0.0	0.0	24.7	40.0	-15.3	V	P	
100.203	3.0	38.6	10.0	0.9	28.3	0.0	0.0	21.2	43.5	-22.3	V	P	
154.925	3.0	34.6	12.1	1.1	28.3	0.0	0.0	19.7	43.5	-23.8	V	P	
199.087	3.0	37.7	11.9	1.2	28.2	0.0	0.0	22.7	43.5	-20.8	V	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.

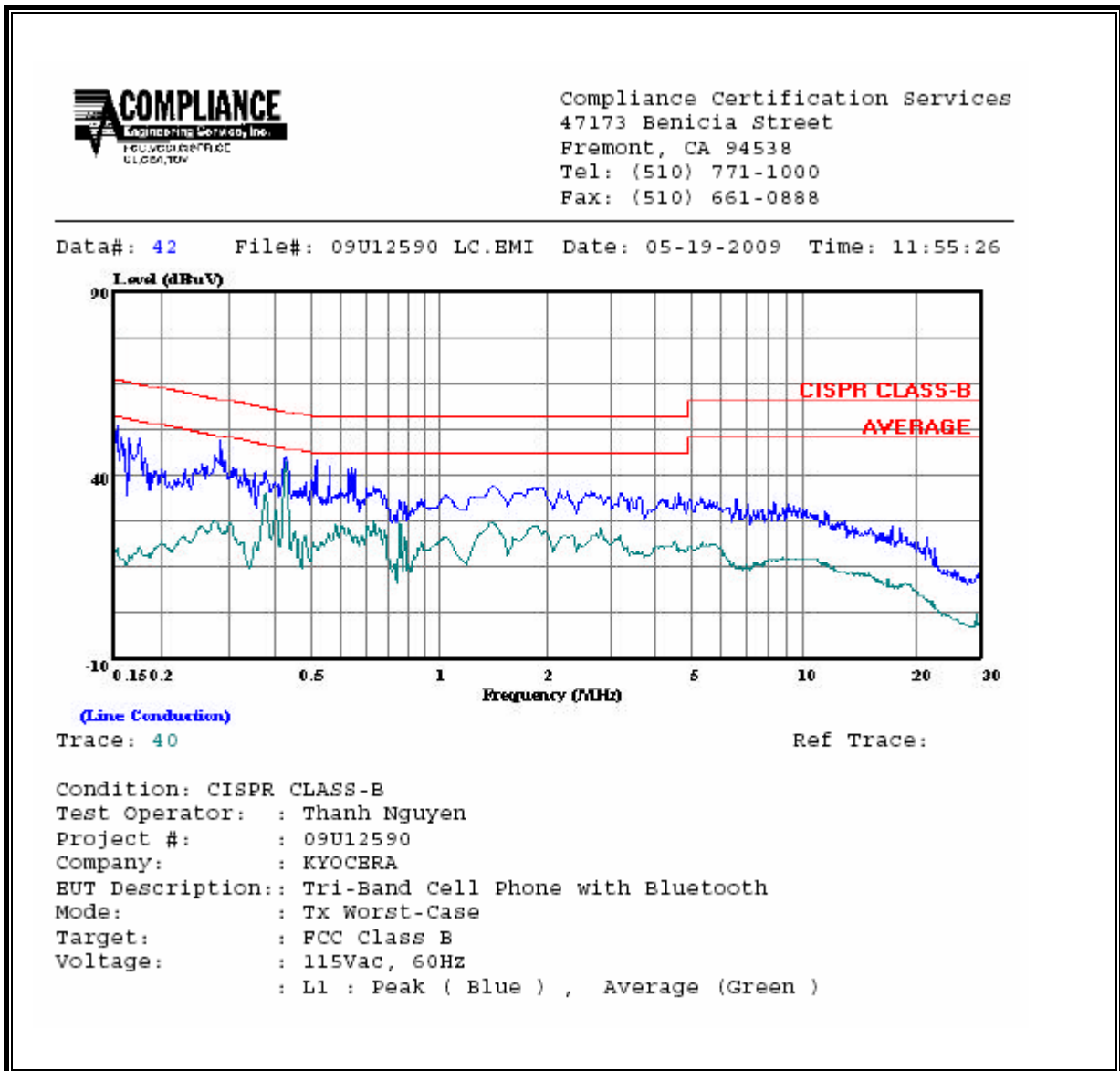
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS (EUT WITH SUPPORT PERIPHERALS)

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
0.15	52.99	--	29.84	0.00	65.84	55.84	-12.85	-26.00	L1
0.43	44.67	--	43.06	0.00	57.33	47.33	-12.66	-4.27	L1
0.52	43.92	--	42.34	0.00	56.00	46.00	-12.08	-3.66	L1
0.16	51.85	--	26.54	0.00	65.62	55.62	-13.77	-29.08	L2
0.30	47.49	--	35.33	0.00	60.33	50.33	-12.84	-15.00	L2
0.43	44.86	--	42.66	0.00	57.33	47.33	-12.47	-4.67	L2
6 Worst Data									

LINE 1 RESULTS

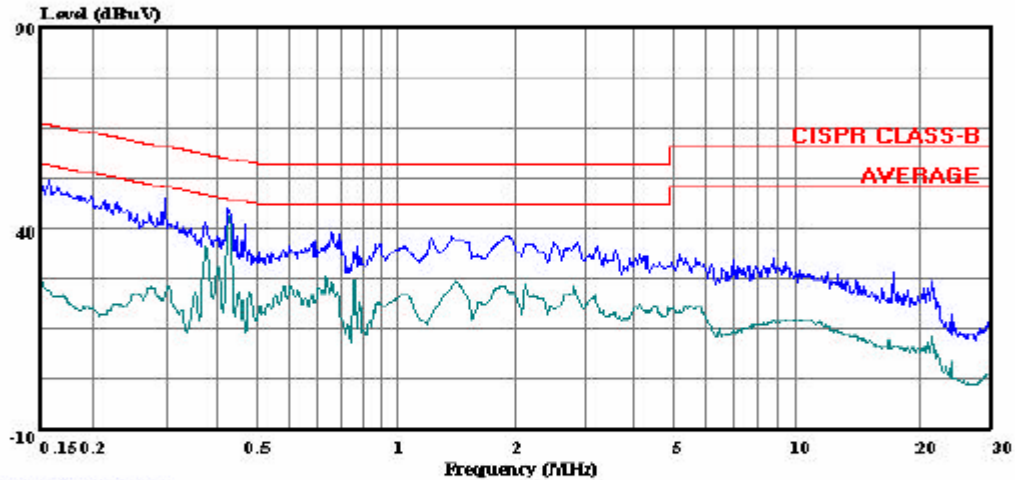


LINE 2 RESULTS



Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 28 File#: 09U12590 LC.EMI Date: 05-19-2009 Time: 11:22:20



(Line Conduction)

Trace: 26

Ref Trace:

Condition: CISPR CLASS-B
Test Operator: : Thanh Nguyen
Project #: : 09U12590
Company: : KYOCERA
EUT Description: : Tri-Band Cell Phone with Bluetooth
Mode: : Tx Worst-Case
Target: : FC Class B
Voltage: : 115Vac, 60Hz
: L2 : Peak (Blue) , Average (Green)