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Project Number:	11U13920-2
FCC ID	OVF-K5301
Date:	July 26, 2011
Model:	K53-01

Electromagnetic Compatibility Test Report

For

KYOCERA Communications, Inc.

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FCC ID OVF-K5301
Model Number: K53-01
Client Name: Kyocera Communications

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Test Report Details

Tests Performed By: **Underwriters Laboratories Inc.
333 Pfingsten Rd.
Northbrook, IL 60062**

Tests Performed For: **KYOCERA Communications, Inc.
8611 Balboa Ave
San Diego, CA 92123**

Applicant Contact: **Thuy To**
Title: **Senior Regulatory Engineer**
Phone: **858-882-2137**
E-mail: **thuy.to@kyocera.com**

Test Report Date: **July 26, 2011**

Product Type: **CDMA Mobile Phone with Bluetooth**

Product standards **FCC Part 15, Subpart C 15.247 – (15.207 and 15.209 tests)**

Product standards **FCC Part 15B**

Model Number: **K53-01**
FCC ID **OVF-K5301**

Sample Serial Number **K100000024492**

EUT Category: **Transceiver**

Testing Start Date: **July 20, 2011**

Date Testing Complete: **July 26, 2011**

Overall Results: Compliant

Underwriters Laboratories Inc. reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. Underwriters Laboratories Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from Underwriters Laboratories Inc. issued reports. This report shall not be used to claim, constitute or imply product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the US government.

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Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None			

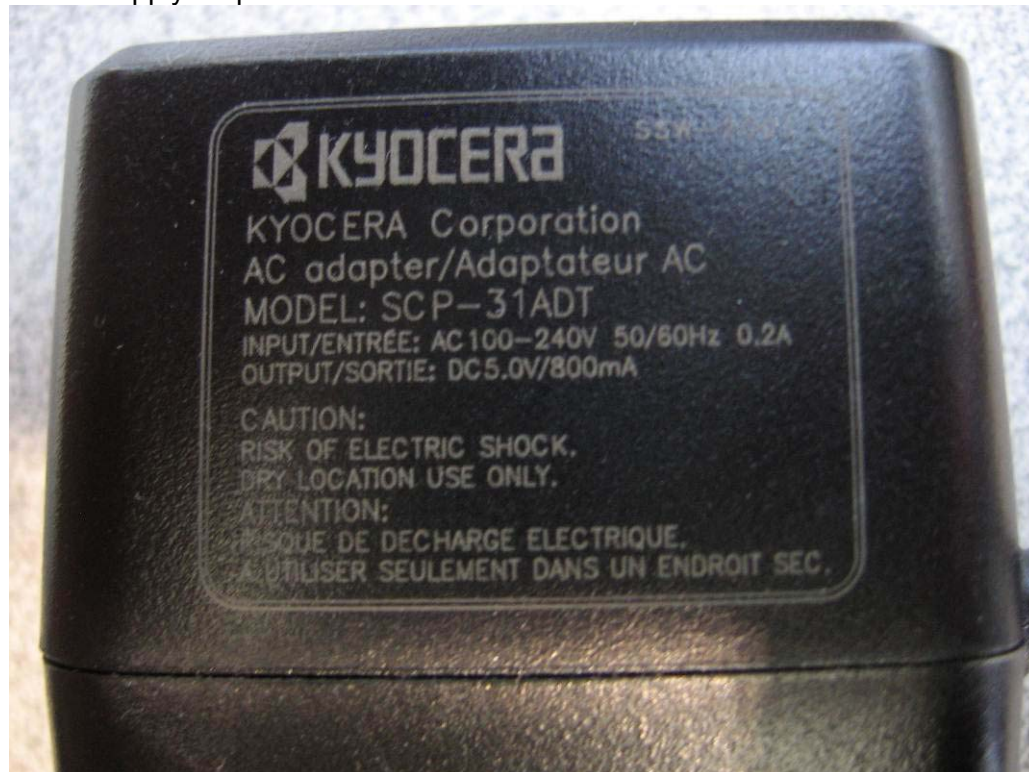
1.0 G E N E R A L - Product Description

1.1 Equipment Description

The K53-01 is a CDMA Mobile Phone with BlueTooth 2.1+EDR.

1.2 Equipment Marking Plate

Power supply for phone:



1.3 Device Configuration During Test

1.3.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	CDMA Mobile Phone	KYOCERA Communications, Inc.	K53-01	None
EUT	Power Supply	KYOCERA Communications, Inc.	SCP-31ADT	Input:100-240Vac 50/60Hz 0.2A Output: 5Vdc 800mA
AE	Ear Phones	-	-	None
AE	Laptop	Lenovo	T410	None

Note: EUT - Equipment Under Test, AE - Auxiliary/Associated Equipment, or SIM - Simulator (Not Subjected to Test)

1.3.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	Mains	AC	N	N	None
2	Mains	Batt	-	-	3.7V Rechargeable battery
3	Headphone	I/O	N	N	None
4	USB	I/O	N	N	None

Note:
 AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
 I/O = Signal Input or Output Port (Not Involved in Process Control)
 TP = Telecommunication Ports

1.3.3 EUT Internal Operating Frequencies:

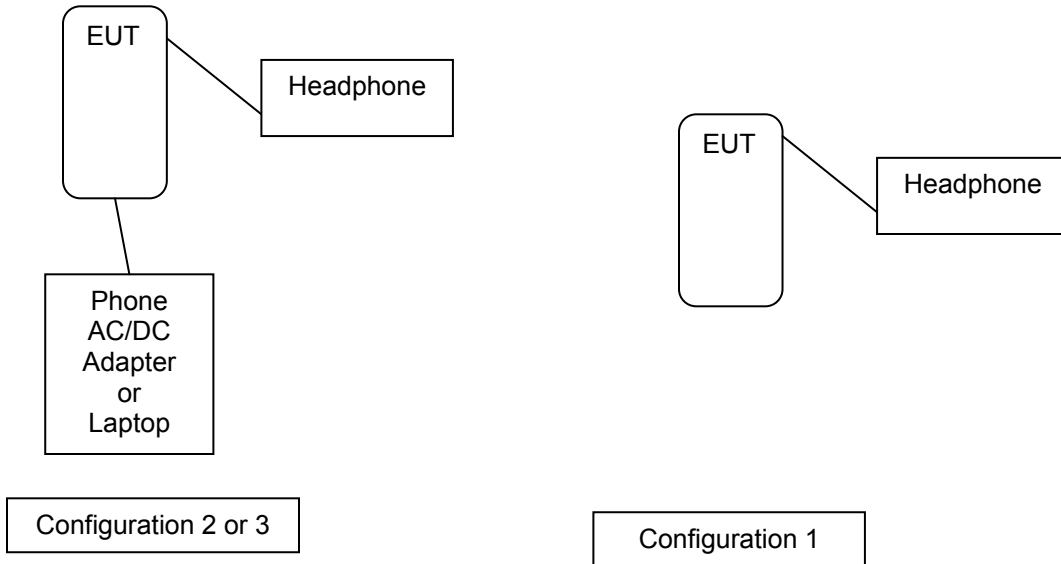
Frequency (MHz)	Description
19.2	TCXO
26	Bluetooth

1.3.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	Battery Operated	-	-	DC	-	None
2	120Vac	-	-	60Hz	Single	None
3	USB	-	-	DC	-	Connected to Laptop

1.4 Block Diagram:

The diagram below illustrates the configuration of the equipment above.



1.5 EUT Configurations

Mode #	Description
1	EUT configured in Battery Mode
2	EUT configured in AC mode using AC adapter
3	EUT configured with Laptop via USB cable

Worst case was in Battery mode and the EUT is in X-axis. This was determined with preliminary measurements

1.6 EUT Operation Modes

Mode #	Description
1	EUT set to single channel, DH5, one modulation
2	EUT set to hopping channel, DH5, one modulation

2.0 **Summary**

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by Underwriters Laboratories Inc. in accordance with the procedures stated in each test requirement and specification. The applicant determined the list of tests performed were applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

2.1 **Deviations from standard test methods**

None

2.2 **Device Modifications Necessary for Compliance**

None

2.3 Reference Standards

Standard Number	Standard Name	Standard Date
FCC Part 15, Subpart C	Code of Federal Regulations, Part 15, Radio Frequency Devices	2011

2.4 Results Summary

This product is considered Class B

Requirement – Test	Result (Compliant / Non-Compliant)*
Conducted Emissions	Compliant
Radiated Emissions including Bandedge	Compliant

Test Engineer:



Michael Ferrer (Ext.41312)
Senior Project Engineer
International EMC Services
Conformity Assessment Services-

Reviewer:



Bartlomiej Mucha(Ext.41216)
Staff Engineer
International EMC Services
Conformity Assessment Services

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

3.0 Calibration of Equipment Used for Measurement

All test equipment and test accessories are calibrated on a regular basis. The maximum time between calibrations is one year or the manufacturers' recommendation, whichever is less.

All test equipment calibrations are traceable to the National Institute of Standards and Technology (NIST); therefore, all test data recorded in this report is traceable to NIST.

4.0 EMISSIONS TEST RESULTS

The emissions tests were performed according to following regulations:

----- United States -----

Code of Federal Regulations Title 47	Part 15, Subpart C, Radio Frequency Devices
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Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be verified at the time the test is conducted.

Ambient Temperature, °C	22.5 ± 2.5	Relative Humidity, %	45 ± 15	Barometric Pressure, mBar	950 ± 150
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Measurement Uncertainty

Test	Uncertainty
Conducted Emissions	+/- 0.6dB (k=2)
Radiated Emissions	+/- 3.1dB (k=2)

Sample Calculations

Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:

- Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)
- Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)
- Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

4.1 Test Conditions and Results – MAINS TERMINAL – CONDUCTED EMISSIONS

Test Description	Measurements were made on a ground plane. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.	
Basic Standard	FCC Part 15.207	
UL LPG	80-EM-S0026	
	Frequency range on each side of line	Measurement Point
Fully configured sample scanned over the following frequency range	150kHz to 30MHz	Mains
Limits - Class B		
Frequency (MHz)	Limit (dBµV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50
Supplementary information: None		

Table 1 Conducted Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
2	2	2
Supplementary information: None		

Table 2 Conducted Emissions Test Equipment

Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	12-28-10	12-30-11
Transient Limiter	Electro-Metrics	EM7600-2	EMC4224	N/A	N/A
HighPass Filter	Solar Electronics	2803-150	EMC4327	N/A	N/A
Attenuator	HP	8494B	2831A00838	N/A	N/A
LISN - L1	Solar	8602-50-TS-50-N	EMC4052	1-6-11	1-6-12
LISN - L2	Solar	8602-50-TS-50-N	EMC4064	1-6-11	1-6-12

Figure 1 Test Setup for Conducted Emissions

See Photos exhibit

Figure 2 Conducted Emissions Graph AC Mode

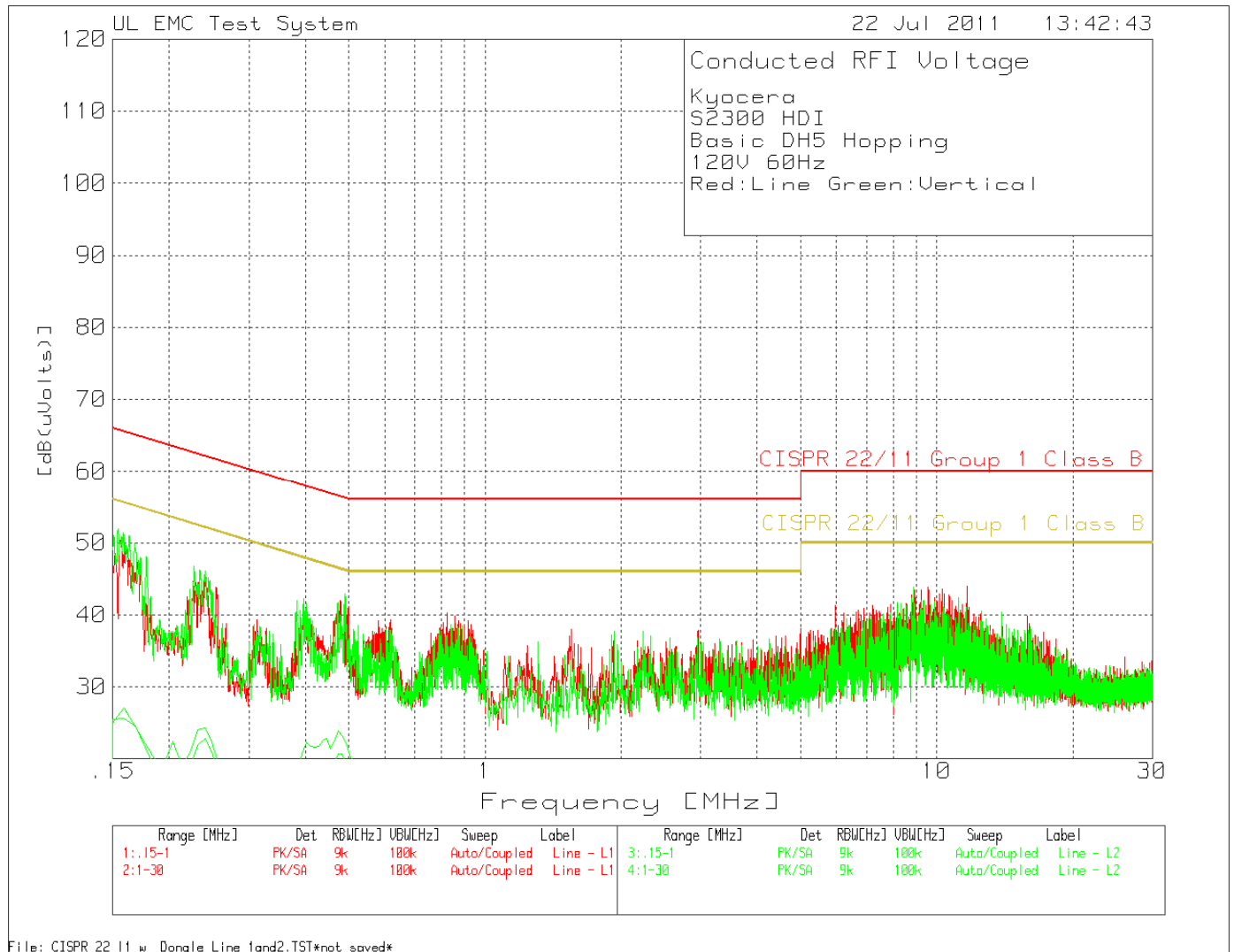


Table 3 Conducted Emissions Data Points AC Mode

Kyocera S2300 HDI Basic DH5 Hopping 120V 60Hz Red:Line Green:Neutral									
Line - L1 .15 - 1MHz									
Test Frequency	Meter Reading	Detector	EMC4052 L1 9k-30m [dB]	GP5 L1 HPFtr STAtt 0db 150k-3 [dB]	[dB(uVolts)]	CISPR 22/11 Group 1 Class B QP	Margin	CISPR 22/11 Group 1 Class B AV	Margin
0.15658	34.82	PK	1.8	13	49.62	65.6	-15.98	55.6	-5.98
0.23982	33.07	PK	0.9	11.3	45.27	62.1	-16.83	52.1	-6.83
0.159	12.57	Av	1.7	12.8	27.07	65.5	-38.43	55.5	-28.43
Line - L2 .15 - 1MHz									
0.16295	36.64	PK	1.7	12.6	50.94	65.3	-14.36	55.3	-4.36
0.23409	33.61	PK	1	11.5	46.11	62.3	-16.19	52.3	-6.19
0.159	10.95	Av	1.8	12.9	25.65	65.5	-39.85	55.5	-29.85
PK - Peak detector									
Av - Average detector									

4.2 Test Conditions and Results – RADIATED EMISSIONS

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10-meter and 3 meter as noted. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. Radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).	
Basic Standard	FCC Part 15	
UL LPG	80-EM-S0029	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	(10 meter measurement distance)
Fully configured sample scanned over the following frequency range	1GHz – 25GHz	(3 meter measurement distance)
Limits - Class B		
Frequency (MHz)	Limit (dBµV/m)	
	Quasi-Peak	Average
30-88	29.6	NA
88-216	33.1	NA
216-960	35.6	NA
960-1000	43.5	NA
960-26500 (3m)	74 (Peak)	54
Supplementary information: If Emissions detected were at least 6dB below the limit no additional measurements were taken after prescan.		

Table 4 Radiated Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1,2
Supplementary information: None		

Table 5 Radiated Emissions Test Equipment

Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	12-30-11	12-31-12
Bicon Antenna	Chase	VBA6106A	EMC4078	12-2-10	12-30-11
Log-P Antenna	Chase	UPA6109	EMC4258	8/20/10	8/31/11
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	12-28-11	12-28-12
Antenna Array	UL	BOMS	EMC4276	10-20-10	10-20-11

Figure 3 Test setup for Radiated Emissions

See Photo Exhibit

X-axis
 See Photo Exhibit

30-1000MHz

Figure 4 Radiated Emissions Graph Hopping Channel DH5

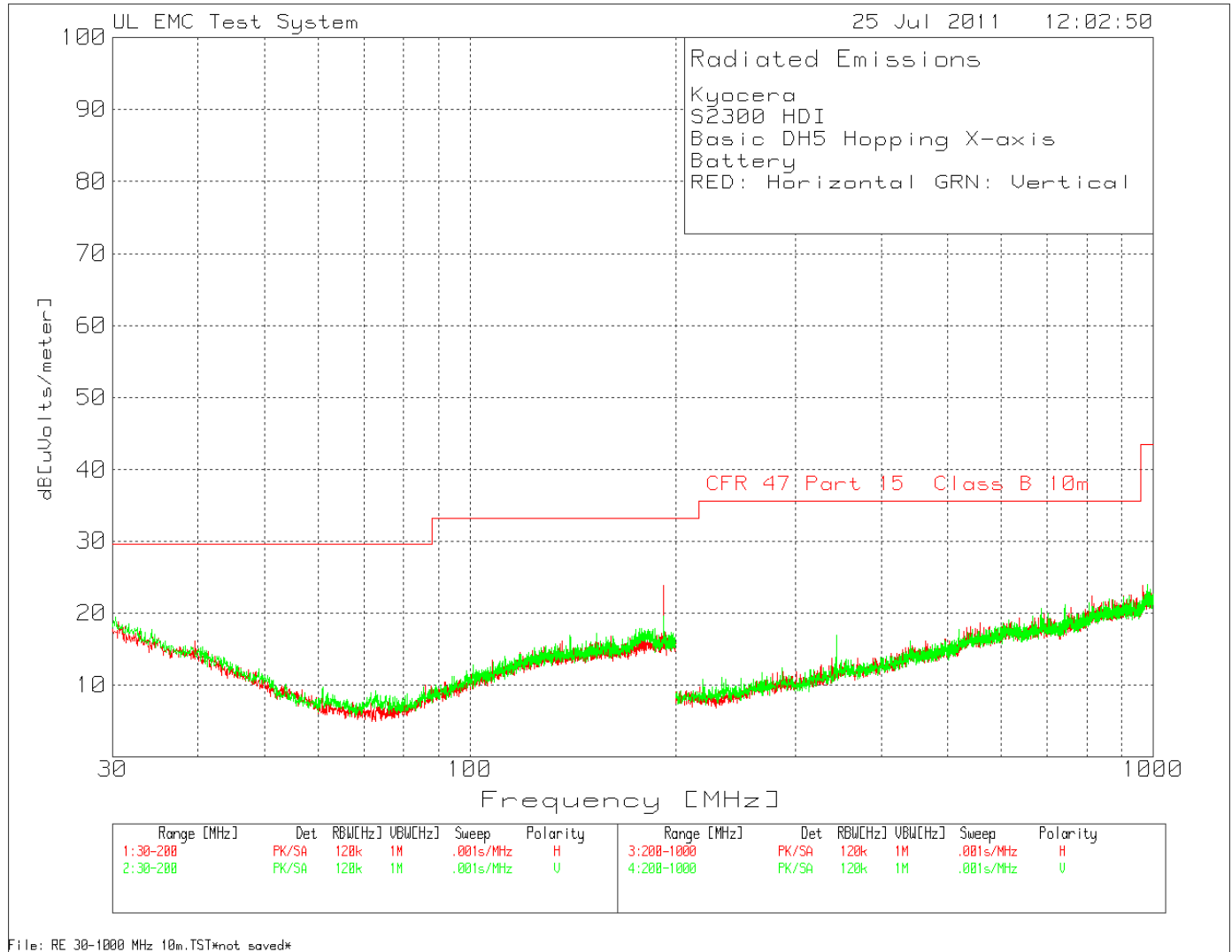


Figure 5 Radiated Emissions Graph Hopping Channel DH5 QPSK

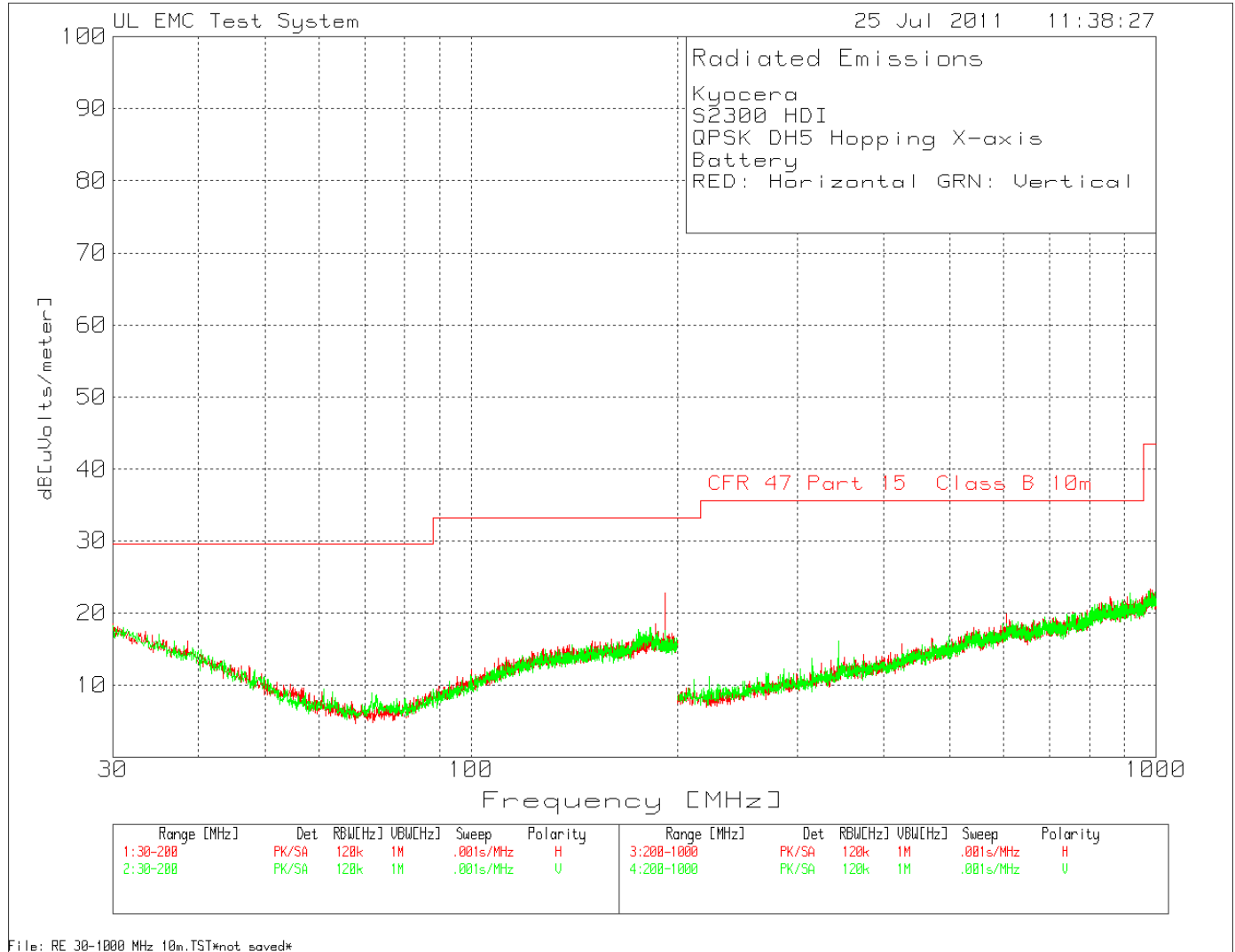
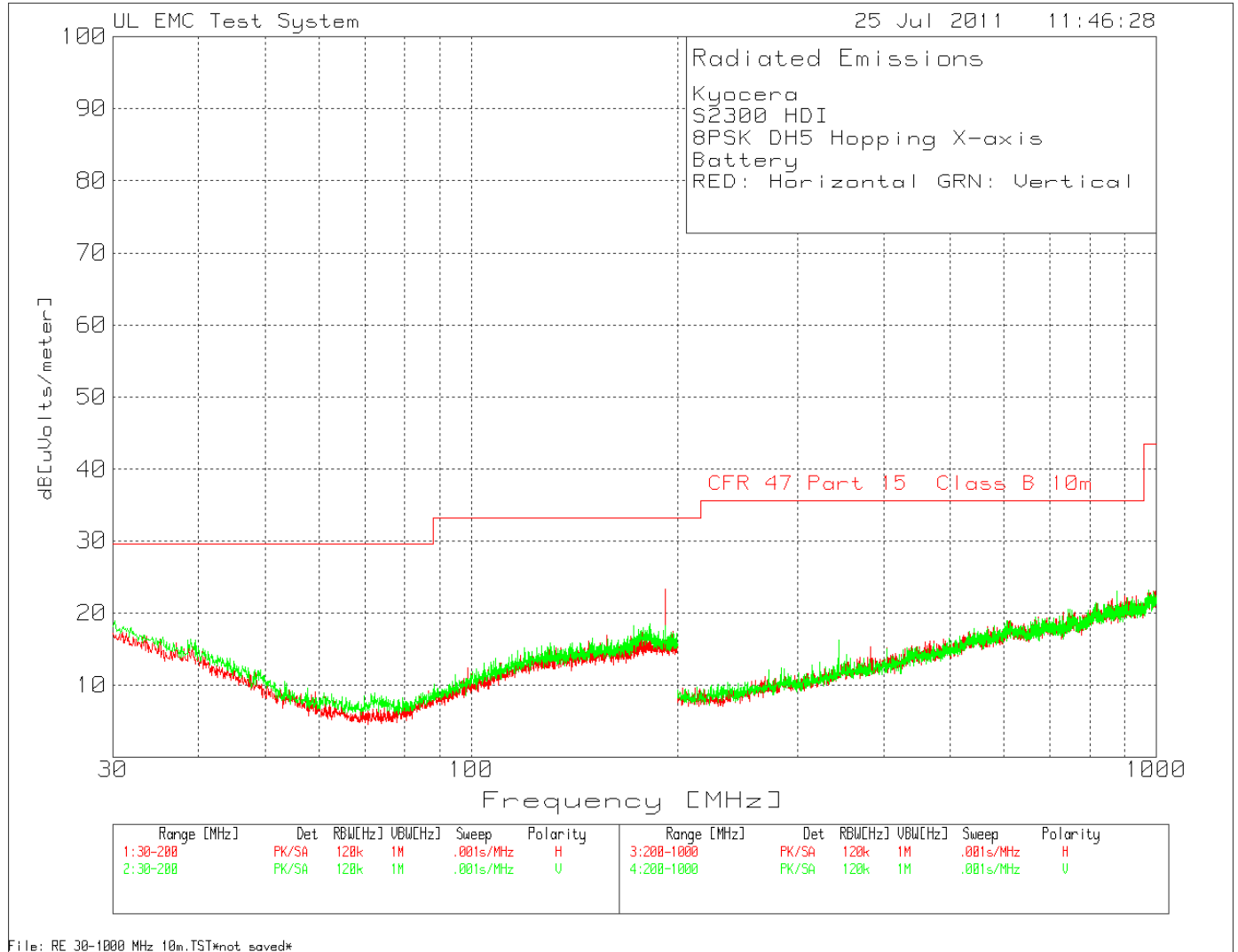
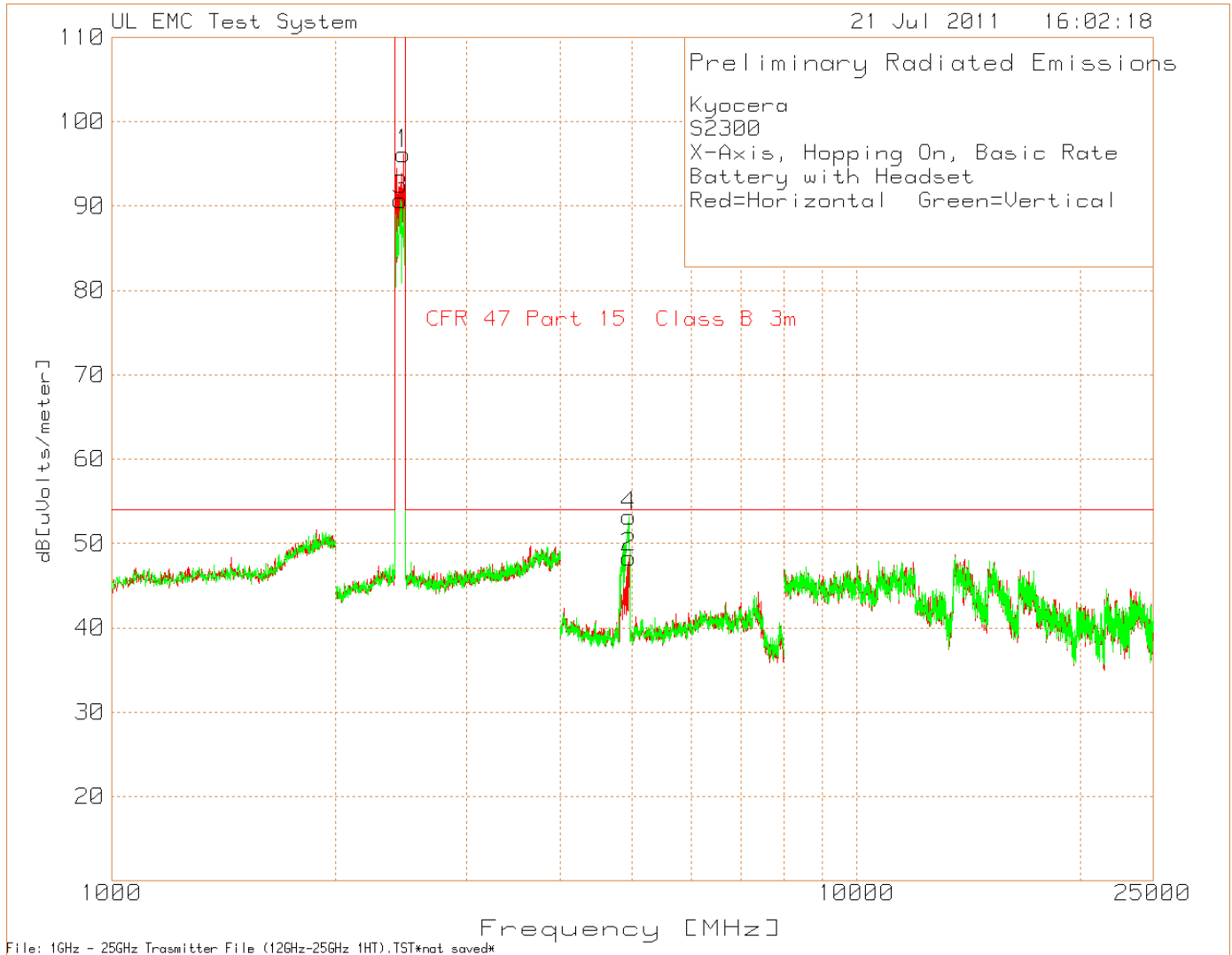


Figure 6 Radiated Emissions Graph Hopping Channel DH5 8PSK



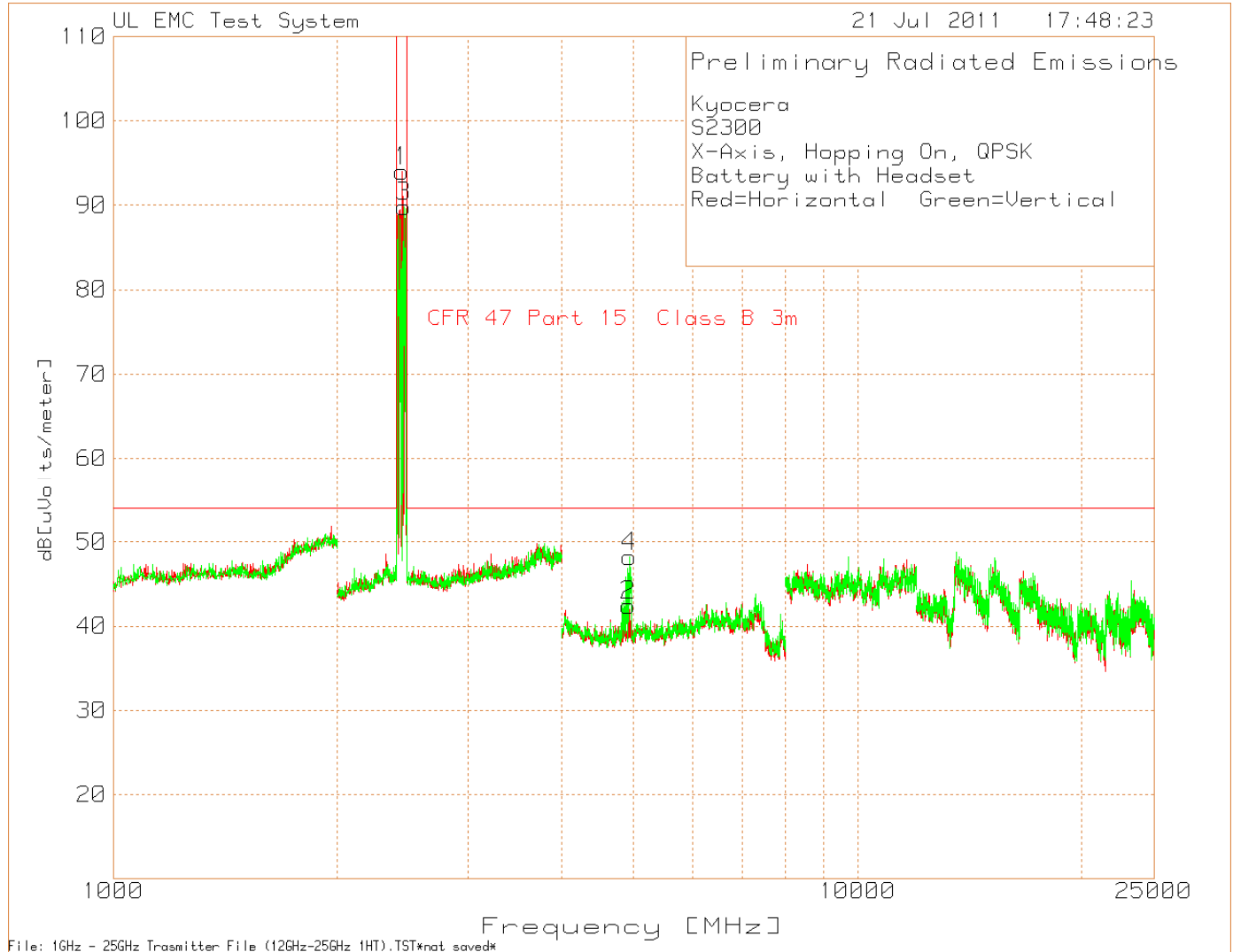
1-25GHz

Figure 7 Radiated Emissions Graph – Hopping Basic DH5



See table 6 for data

Figure 8 Radiated Emissions Graph Hopping QPSK DH5



See table 6 for data

Figure 9 Radiated Emissions Graph Hopping 8PSK DH5



See table 6 for data

Table 6 Radiated Emissions Data Points

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	Result	Limit	Margin	Azimuth [Degs]	Height [cm]	Polarity
Basic DH5										
4804.023	58.88	LnAv	27.7	-51.08	35.5	54	-18.5	208	100	Horz
4804.035	61.99	LnAv	27.7	-51.08	38.61	54	-15.39	183	102	Vert
4882.04	64.27	LnAv	27.7	-50.55	41.42	54	-12.58	197	100	Vert
4882.046	60.7	LnAv	27.7	-50.55	37.85	54	-16.15	161	105	Horz
4960.019	64.66	LnAv	27.8	-50.58	41.88	54	-12.12	156	103	Horz
QPSK DH5										
4804.037	52.59	LnAv	27.7	-51.08	29.21	54	-24.79	134	102	Horz
4804.181	54.22	LnAv	27.7	-51.07	30.85	54	-23.15	173	102	Vert
4882.079	53.39	LnAv	27.7	-50.55	30.54	54	-23.46	150	105	Horz
4882.163	55.06	LnAv	27.7	-50.55	32.21	54	-21.79	185	101	Vert
4960.023	56.72	LnAv	27.8	-50.58	33.94	54	-20.06	190	100	Vert
4960.107	54.89	LnAv	27.8	-50.58	32.11	54	-21.89	148	103	Horz
8PSK DH5										
4804.033	52.61	LnAv	27.7	-51.08	29.23	54	-24.77	204	100	Horz
4804.123	54.01	LnAv	27.7	-51.07	30.64	54	-23.36	186	101	Vert
4882.057	55.06	LnAv	27.7	-50.55	32.21	54	-21.79	196	112	Vert
4882.105	53.37	LnAv	27.7	-50.55	30.52	54	-23.48	147	105	Horz
4960.009	54.85	LnAv	27.8	-50.58	32.07	54	-21.93	152	103	Horz
4960.045	56.52	LnAv	27.8	-50.58	33.74	54	-20.26	193	101	Vert
LnAv - Linear Average detector										

Figure 10 Radiated Emissions Graph Low Channel DH5 Bandedge



Kyocera S2300 X-Axis, Hopping On, Basic Rate Battery with Headset Red=Horizontal, Green=Vertical									
2 - 4GHz 2370 - 2430MHz									
Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	Result dB[uV/m]	BandEdge PK Limit	Margin	Height [cm]	Polarity
2402.224	66.19	PK	21.8	4.32	92.31	-	-	100	Horz
2398.136	26.32	PK	21.8	4.42	52.54	74	-21.46	100	Horz
2402.224	64.28	PK	21.8	4.32	90.4	-	-	100	Vert
2398.497	26.53	PK	21.8	4.41	52.74	74	-21.26	150	Vert
2402.345	29.01	AV	21.8	4.32	55.13	-	-	100	Horz
2398.136	15.13	AV	21.8	4.42	41.35	54	-12.65	100	Horz
2402.104	26.63	AV	21.8	4.32	52.75	-	-	150	Vert
2397.535	14.77	AV	21.8	4.43	41	54	-13	150	Vert
PK – Peak detector									
Av - Average detector									

Figure 11 Radiated Emissions Graph Hi Channel DH5 Bandedge



Figure 12 Radiated Emissions Graph Low Channel DH5 QPSK Bandedge



Kyocera
 S2300
 X-Axis, Hopping On, QPSK
 Rate
 Battery with Headset
 Red=Horizontal, Green=Vertical

2 - 4GHz 2370 - 2430MHz									
Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	Result dB[uV/m]	BandEdge PK Limit	Margin	Height [cm]	Polarity
2403.788	65.83	PK	21.8	4.28	91.91	-	-	100	Horz
2398.016	27.02	PK	21.8	4.42	53.24	74	-20.76	100	Horz
2402.705	62.98	PK	21.8	4.31	89.09	-	-	100	Vert
2397.776	26.07	PK	21.8	4.43	52.3	74	-21.7	150	Vert
2402.104	25.37	AV	21.8	4.32	51.49	999	-947.51	99	Horz
2398.978	15.18	AV	21.8	4.4	41.38	54	-12.62	99	Horz
2401.984	25.15	AV	21.8	4.33	51.28	999	-947.72	100	Vert
2398.497	14.73	AV	21.8	4.41	40.94	54	-13.06	150	Vert
PK – Peak detector									
Av - Average detector									

Figure 13 Radiated Emissions Graph Hi Channel DH5 QPSK Bandedge



Figure 14 Radiated Emissions Graph Low Channel DH5 8PSK Bandedge



Kyocera S2300 X-Axis, Hopping On,8PSK Rate Battery with Headset Red=Horizontal, Green=Vertical									
2 - 4GHz 2370 - 2430MHz									
Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	Result dB[uV/m]	BandEdge PK Limit	Margin	Height [cm]	Polarity
2401.743	63.83	PK	21.8	4.33	89.96	-	-	100	Horz
2398.497	26.69	PK	21.8	4.41	52.9	74	-21.1	150	Horz
2401.623	63.31	PK	21.8	4.33	89.44	-	-	101	Vert
2398.377	26.61	PK	21.8	4.41	52.82	74	-21.18	101	Vert
2401.623	24.94	AV	21.8	4.33	51.07	-	-	99	Horz
2399.218	16	AV	21.8	4.39	42.19	54	-11.81	150	Horz
2401.623	25.06	AV	21.8	4.33	51.19	-	-	101	Vert
2399.218	16.36	AV	21.8	4.39	42.55	54	-11.45	101	Vert
PK – Peak detector									
Av - Average detector									

Figure 15 Radiated Emissions Graph Hi Channel DH5 8PSK Bandedge



5.0 IMMUNITY TEST RESULTS

Immunity tests are not required per the standard

Appendix A

Accreditations and Authorizations



NVLAP Lab code: 100414-0

NVLAP: The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is comprised of laboratory accreditation programs (LAPs) which are established on the basis of requests and demonstrated need. Each LAP includes specific calibration and/or test standards and related methods and protocols assembled to satisfy the unique needs for accreditation in a field of testing or calibration. NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific calibrations or tests. Accreditation criteria are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), NVLAP Procedures and General Requirements, and encompass the requirements of ISO/IEC 17025. For a full scope listing see <http://ts.nist.gov/ts/htdocs/210/214/scopes/1004140.htm>



FCC: Details of the measurement facilities used for these tests have been filed with the Federal Communications Commission's Laboratory in Columbia, Maryland (Ref. No. 91044).



Industry Canada Industrie Canada

Industry of Canada: Accredited by Industry Canada for performance of radiated measurements. Our test site complies with RSP 100, Issue 7, Section 3.3. File #: IC 2180



VCCI: Accepted as an Associate Member to the VCCI. The measurement facilities detailed in this test report have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. Registration Nos.: Radiated Emissions R-621, Conducted Emissions C-642.



ICASA: ICASA (Independent Communications Authority of South Africa) has appointed UL as a Designated Test Laboratory to test Telecommunications equipment for type approval in compliance with CISPR 22 to assist in fulfilling its mandate under section 54(1) of the Telecommunications Act, 1996 (Act 103 of 1996).



NIST/CAB: Validated by the European Commission as a U.S. Conformity Assessment Body (CAB) of the U.S.-EU Mutual Recognition Agreement (MRA) for the Electromagnetic Compatibility - Council Directive 2004/108/EC, Annex III (2-3). Also validated for the Telecommunication Equipment-Council Directive 99/5/EC, Annex III and IV, Identification Number: 0983.

NIST/CAB: Provisioned to act as a U.S. Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the Asia Pacific Economic Cooperation (APEC) MRA between the American Institute in Taiwan (AIT) and the United States. Our laboratory is considered qualified to test equipment subject to the applicable EMC regulations of the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) which require testing to CNS 13438 (CISPR 22).

NIST/CAB: Recognized by the Infocomm Development Authority of Singapore (IDA) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Our laboratory is provisionally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA. Our scope of designation includes IDA TS EMC (CISPR 22), IEC 61000-4-2, -4-3, -4-4, -4-5, and -4-6

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