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Project Number: 12U4359

FCC ID V65C5155

Date: April 27, 2012

Model: C5155 G01

# **Electromagnetic Compatibility Test Report**

# For

# **KYOCERA Communications, Inc.**

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Model Number: C5155 G01

Client Name: Kyocera Communications

**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: April 27, 2012

Product Type: CDMA Mobile Phone with Bluetooth

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

Model Number: C5155 G01 FCC ID V65C5155

EUT Category: Transceiver

Testing Start Date: April 11, 2012

Date Testing Complete: April 27, 2012

Overall Results: Compliant

UL LLC 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. UL LLC shall have no liability for any deductions, inferences or generalizations drawn by the client or others from UL LLC issued reports. 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.

This report may contain test results that are not covered by the NVLAP or A2LA accreditation. The scope of accreditation is limited to the specific tests that are listed on the NVLAP and/or A2LA websites referenced at the end of this report.

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Client Name: Kyocera Communications

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### Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None			

# 1 GENERAL-Product Description

1.1	Equipment	Descr	iption
-----	-----------	-------	--------

FCC V65C5155 Cell phone with BT and Wifi capabilities. Only Radiated Spurious Emissions, Bandedge, and Conducted Emissions AC mains were performed.

## 1.2 Equipment Marking Plate

WA	

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C5155 G01 Model Number:

Client Name: **Kyocera Communications** 

#### **Device Configuration During Test** 1.3

### 1.3.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments	
EUT	CDMA Mobile Phone	KYOCERA Communications, Inc.	C5155 G01	None	
EUT	Power Supply	KYOCERA Communications, Inc.	SCP-31ADT	Input:100-240Vac 50/60Hz 0.2A Output: 5Vdc 800mA	
AE	Ear Phones	-	-	None	
Note: EUT - Equipment Under Test, AE - Auxiliary/Associated Equipment, or SIM - Simulator (Not Subjected to Test)					

#### **Input/Output Ports:** 1.3.2

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

Note:

AC I/O TP N/E = Non-Electrical= AC Power Port DC = DC Power Port

= Signal Input or Output Port (Not Involved in Process Control)

= Telecommunication Ports

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Client Name: Kyocera Communications

# 1.3.3 EUT Internal Operating Frequencies:

Frequency (MHz)	Description
2400	ВТ

#### 1.3.4 Power Interface:

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

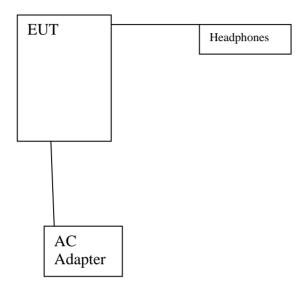
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### 1.4 Block Diagram:

The diagram below illustrates the configuration of the equipment above.



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## 1.5 EUT Configurations

Mode #	Description
1	EUT was configured with headphones connected and either in Battery or AC mode as indicated in the caption of each plot

#### 1.6 EUT Operation Modes

Mode #	Description
1	EUT was programmed to various operating modes indicated by the caption in each plot

# 1.7 Rational for EUT Configuration

Mode #	Description
1	The selected EUT configuration was chosen to maximize emissions

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# 2 Summary

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by UL LLC 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

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Model Number: C5155 G01

Client Name: Kyocera Communications

#### 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:

Reviewer:

Michael Ferrer (Ext.41312) Senior Project Engineer International EMC Services Conformity Assessment Services Mike Antola (Ext. 23053) Senior Project Engineer International EMC Services Conformity Assessment Services

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

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Client Name: Kyocera Communications

## 3 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 EMISSIONS TEST RESULTS

Code of Federal Regulations Title 47	Part 15, Subpart C, Radio Frequency Devices

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

#### **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)

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Client Name: Kyocera Communications

#### 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 Stand	ard			FCC Part 1	5.207			
UL LPG				80-EM-S0	0026			
			Frequency range on each side of line		Measurement Point			
Fully configu the following		nple scanned over ncy range	150kHz to 30MHz		Mains			
			Limits - Class B					
			Limit (	dBµV)				
Frequency (	MHz) Qua		si-Peak		Average			
0.15-0.	5	66	6 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 #
1	1	1
Supplementary information: None		

### **Table 2 Conducted Emissions Test Equipment**

Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	12/28/11	12/28/12
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	1/6/12	1/7/13
LISN - L2	Solar	8602-50-TS-50-N	EMC4064	1/6/12	1/7/13

**Figure 1 Test Setup for Conducted Emissions** 

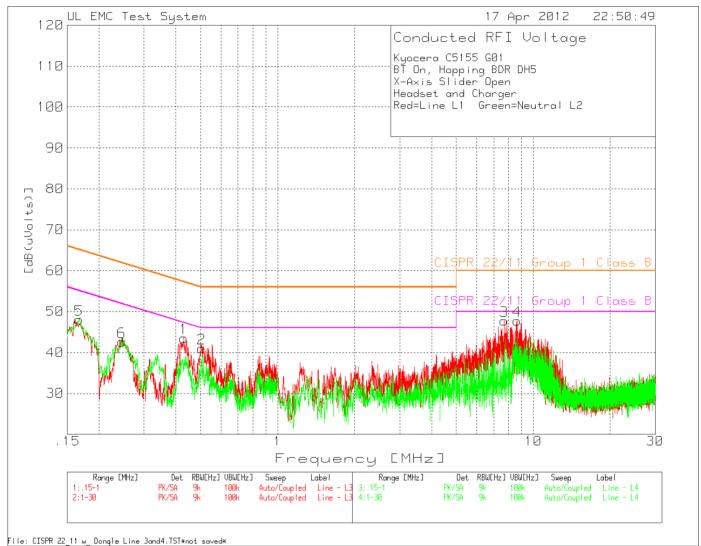
See Photos exhibit

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Client Name: Kyocera Communications

**Figure 2 Conducted Emissions Graph** 



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C5155 G01 Model Number:

**Kyocera Communications** Client Name:

#### **Table 3 Conducted Emissions Data Points**

Kyocera C5155 G01 BT On, Hopping BDR DH5 X-Axis Slider Open Headset and Charger
Red=Line L1 Green=Neutral L2

	. Frequency	Meter	Transducer Factor	Gain/Loss Factor [d			2	3	4	5	6
===			======================================		.======					======	
Lir	ne - L3 .15	- 1MHz									
1	.4288	32.73 PI	K .1	10.7	43.53	-	-	57.3	47.3	-	-
				Margin [d	3]	-	-	-13.77	-3.77	-	-
2	.50397	30.24 PI	K .1	10.7	41.04	-	_	56	46	-	-
				Margin [d	3]	-	-	-14.96	-4.96	-	-
Lir	ne - L3 1 -	30MHz									
3	7.68952	36.57 PI	K 10.9	.3	47.77	-	_	60	50	-	-
				Margin [d	3]	-	_	-12.23	-2.23	-	-
4	8.66017	36.16 P	K 10.9	.7	47.76	-	-	60	50	-	-
				Margin [d	3]	-	-	-12.24	-2.24	-	-
T₁ir	ne - T.4 .15	- 1MHz									
	.16678	35.53 PI		12.4		_	_	65.1	55.1	_	_
				Margin [d		_	_	-17.07		_	_
6	.24577	31.22 PI	K .1	11.3	-	_	_	61.9	51.9	_	_
				Margin [d	3]	-	-	-19.28	-9.28	-	-

LIMIT 1: NONE

LIMIT 2: NONE
LIMIT 3: CISPR 22/11 Group 1 Class B QP LIMIT 4: CISPR 22/11 Group 1 Class B AV

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Model Number: C5155 G01

Client Name: Kyocera Communications

Kyocera C5155 G01 BT On, Hopping BDR DH5 X-Axis Slider Open Headset and Charger

Test		ransducer	Gain/Loss Factor [dE [dB]			2	3	4	5	6
Line - L3	.15 - 1MHz									
.43158	26.06 QP	.1	10.7	36.86	_	-	57.22	47.22	-	-
			Margin [dB]:		-	-	-20.36	-10.36	-	-
.50575	25.13 QP	.1	10.7	35.93	-	-	56	46	-	-
			Margin [dB]:		-	-	-20.07	-10.07	-	-
Line - L3	1 - 30MHz									
7.68907	27.52 QP	10.9	.3	38.72	-	-	60	50	-	-
			Margin [dB]:	:	_	-	-21.28	-11.28	-	_
8.6609	30.71 QP	10.9	.7	42.31	-	-	60	50	-	-
			Margin [dB]:	:	-	-	-17.69	-7.69	-	-
Line - L4	.15 - 1MHz									
.16725	30.13 QP	.1	12.4	42.63	-	-	65.1	55.1	-	-
			Margin [dB]:	:	-	-	-22.47	-12.47	-	-
.24897	24.57 QP	.1	11.2	35.87	-	-	61.79	51.79	-	-
			Margin [dB]:		-	-	-25.92	-15.92	-	-

NOTE: "+" - Indicates an emission level in excess of the applicable limit (s).

QP - Quasi-Peak detector

LIMIT 1: NONE LIMIT 2: NONE

LIMIT 3: CISPR 22/11 Group 1 Class B QP LIMIT 4: CISPR 22/11 Group 1 Class B AV

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Model Number: C5155 G01

Client Name: Kyocera Communications

Kyocera C5155 G01 BT On, Hopping BDR DH5 X-Axis Slider Open Headset and Charger

Red=Line I Test Frequency [MHz]	1 Green=1 Meter		Gain/Loss Factor [dB [dB]		Limit:1	2	3	4	5	6		
Line - L3 .15 - 1MHz												
.43158	19.9 Av	.1	10.7	30.7	-	-	57.22	47.22	-	-		
			Margin [dB]:		-	-	-26.52	-16.52	-	-		
.50575	18.34 Av	J .1	10.7	29.14	-	-	56	46	-	-		
			Margin [dB]:		-	-	-26.86	-16.86	-	-		
Line - L3	1 - 30MHz											
7.68907	18.61 Av	7 10.9	.3	29.81	-	-	60	50	-	-		
			Margin [dB]:		-	-	-30.19	-20.19	-	-		
8.6609	20.93 Av	7 10.9	.7	32.53	-	-	60	50	-	-		
			Margin [dB]:		-	-	-27.47	-17.47	-	-		
Line - L4	.15 - 1MHz	Z										
.16725	15.77 Av	<i>.</i> 1	12.4	28.27	-	-	65.1	55.1	-	_		
			Margin [dB]:		-	-	-36.83	-26.83	-	_		
.24897	15.58 Av	<i>.</i> 1	11.2	26.88	-	-	61.79	51.79	-	_		
			Margin [dB]:		-	-	-34.91	-24.91	-	-		

NOTE: "+" - Indicates an emission level in excess of the applicable limit (s).

Av - average detection

LIMIT 1: NONE LIMIT 2: NONE

LIMIT 3: CISPR 22/11 Group 1 Class B QP LIMIT 4: CISPR 22/11 Group 1 Class B AV

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Model Number: C5155 G01

Client Name: Kyocera Communications

#### 4.2 Test Conditions and Results - RADIATED EMISSIONS

ı	esi	
С	escri)	ption

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 and 3 meter. 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.

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**

	Limit (dBμV/m)						
Frequency (MHz)	Quasi-Peak	Average					
30-88	40	NA					
88-216	43.5	NA					
216-960	46	NA					
960-1000	54	NA					
1000-25000 (3m)	74 (Peak)	54					

Supplementary information: If Emissions detected were at least 6dB below the limit no additional measurements were taken after prescan. The EUT was scanned in three orthogonal axis from 1GHz-25GHz set to BT BDR mode, low, middle and high channels. In addition the EUT was set to BT QPSK mode and BT 8PSK mode to determine if any additional spurious emissions are generated by switching to different modulation. Band-edge scans were conducted at axis determined as worst case from initial 1GHz-25GHz scans in multiple modulation modes and data rates. Below 1GHz the EUT was scanned only in one axis, one modulation. No emissions related to the transmitter were noted.

For Bandedge Z-axis for horizontal polarity and X-axis for vertical polarity was found to be worst case. Emissions found near 1.9GHz is noise floor.

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Client Name: Kyocera Communications

# **Table 4 Radiated Emissions EUT Configuration Settings**

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

## **Table 5 Radiated Emissions Test Equipment**

Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	12/27/11	12/27/12
Bicon Antenna	Chase	VBA6106A	EMC4078	1/17/12	1/31/13
Log-P Antenna	Chase	UPA6109	EMC4313	6/29/11	6/29/12
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	12/27/11	12/31/12
Antenna Array	UL	BOMS	EMC4276	1/2/2012	1/2/2013

Figure 3 Test setup for Radiated Emissions

See Photo Exhibit

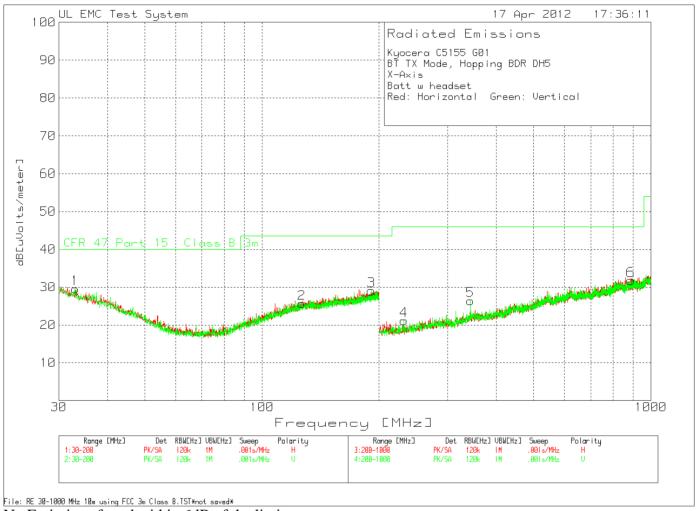
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Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.1.1 Spurious, BT, DH5, BDR, Hopping Channel, Battery Mode, 30MHz - 1GHz

Figure 4 Radiated Emissions Graph X-Axis



No Emissions found within 6dB of the limit

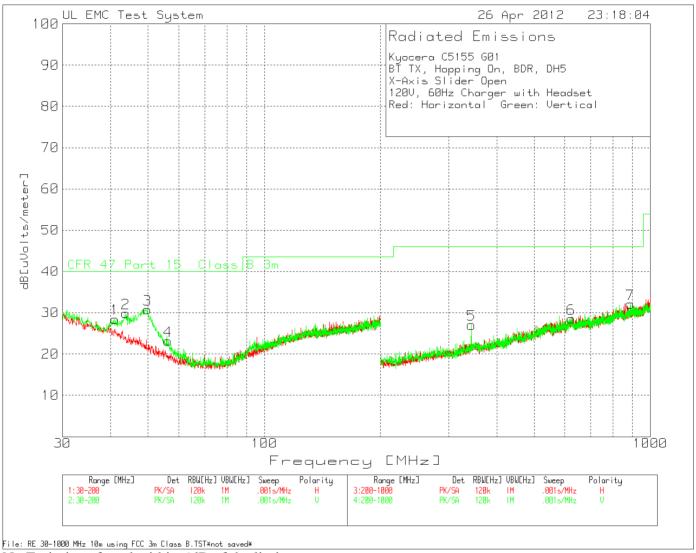
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Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.2 Spurious, BT, BDR, Hopping Channel, Charging Mode, 30MHz – 1GHz

Figure 5 Radiated Emissions Graph X-Axis



No Emissions found within 6dB of the limit

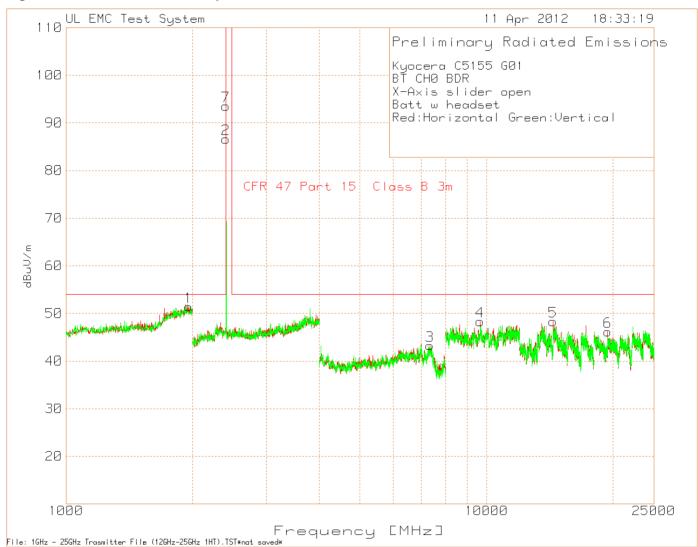
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Client Name: Kyocera Communications

# 4.2.3 Spurious, BT, BDR, Low Channel, 1GHz - 25GHz

#### Figure 6 Radiated Emissions Graph X-Axis



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### **Table 6 Radiated Emissions Data Points X-Axis**

Kyocera C5155 G01

BT CH0 BDR

X-Axis slider open

X-Axis slider open

RED: Horizontal GRN: Vertical

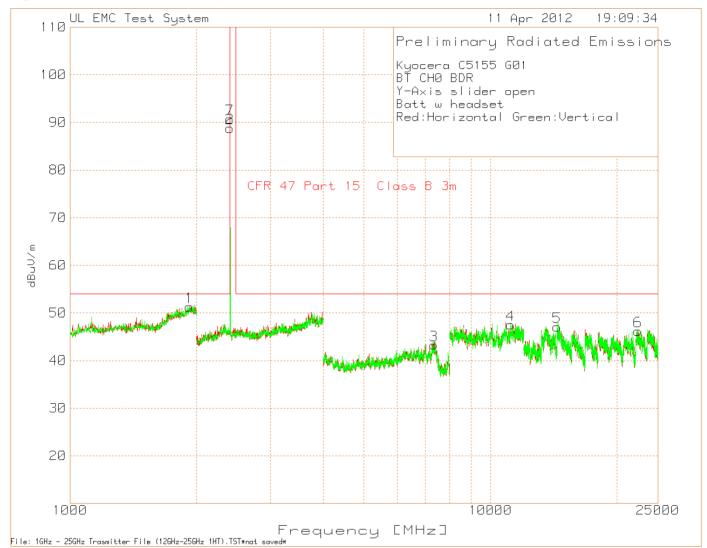
						CFR 47			
			Antenna	Path		Part 15			
Test	Meter		Factor	Loss/Gain	Level	Class B		Height	
Frequency	Reading	Detector	dB	dB	dBuV/m	3m	Margin	[cm]	Polarity
1955.912	20.29	PK	27.4	3.76	51.45	54	-2.55	101	Horz
2402.402	60.63	PK	21.8	4.25	86.68	-	-	99	Horz
7332.889	58.9	PK	30.7	-46.31	43.29	54	-10.71	150	Horz
9673.115	60.59	PK	36.4	-48.67	48.32	54	-5.68	150	Horz
14408.16	47.82	PK	39.8	-39.28	48.34	54	-5.66	100	Horz
19434.17	66.88	PK	40.3	-61.04	46.14	54	-7.86	100	Horz
2402.402	67.47	PK	21.8	4.25	93.52	-	-	150	Vert

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Figure 7 Radiated Emissions Graph Y-Axis



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Model Number: C5155 G01

Client Name: Kyocera Communications

### **Table 7 Radiated Emissions Data Points Y-Axis**

Kyocera C5155 G01

BT CH0 BDR

Y-Axis slider open

Batt w headset

RED: Horizontal GRN: Vertical

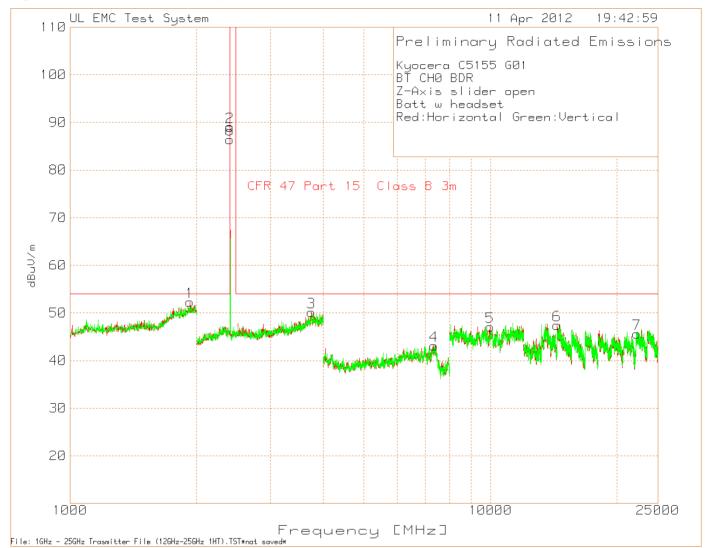
						CFR 47			
			Antenna	Path		Part 15			
Test	Meter		Factor	Loss/Gain	Level	Class B		Height	
Frequency	Reading	Detector	dB	dB	dBuV/m	3m	Margin	[cm]	Polarity
1925.852	19.98	PK	27.4	3.91	51.29	54	-2.71	100	Horz
2400.4	62.69	PK	21.8	4.3	88.79	-	-	99	Horz
7330.22	58.87	PK	30.7	-46.28	43.29	54	-10.71	150	Horz
11180.79	57.62	PK	36.7	-46.83	47.49	54	-6.51	150	Horz
14415.37	46.97	PK	39.8	-39.68	47.09	54	-6.91	99	Horz
22445.38	57.66	PK	40.5	-52.01	46.15	54	-7.85	99	Horz
2402.402	64.7	PK	21.8	4.25	90.75	-	-	100	Vert

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Model Number: C5155 G01

Client Name: Kyocera Communications

### Figure 8 Radiated Emissions Graph Z-Axis



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Model Number: C5155 G01

Client Name: Kyocera Communications

### **Table 8 Radiated Emissions Data Points Z-Axis**

Kyocera C5155 G01

BT CH0 BDR

Z-Axis slider open

Batt w headset

RED: Horizontal GRN: Vertical

						CFR 47			
			Antenna	Path		Part 15			
Test	Meter		Factor	Loss/Gain	Level	Class B		Height	
Frequency	Reading	Detector	dB	dB	dBuV/m	3m	Margin	[cm]	Polarity
1931.864	20.99	PK	27.4	3.96	52.35	54	-1.65	150	Horz
2402.402	62.97	PK	21.8	4.25	89.02	-	-	100	Horz
3753.754	20.41	PK	23.8	5.95	50.16	54	-3.84	150	Horz
7340.894	58.92	PK	30.8	-46.59	43.13	54	-10.87	100	Horz
9966.644	59.94	PK	36.4	-49.21	47.13	54	-6.87	150	Horz
14415.37	47.28	PK	39.8	-39.68	47.4	54	-6.6	99	Horz
22316.53	57.86	PK	40.5	-52.76	45.6	54	-8.4	99	Horz
2400.4	60.3	PK	21.8	4.3	86.4	-	-	100	Vert
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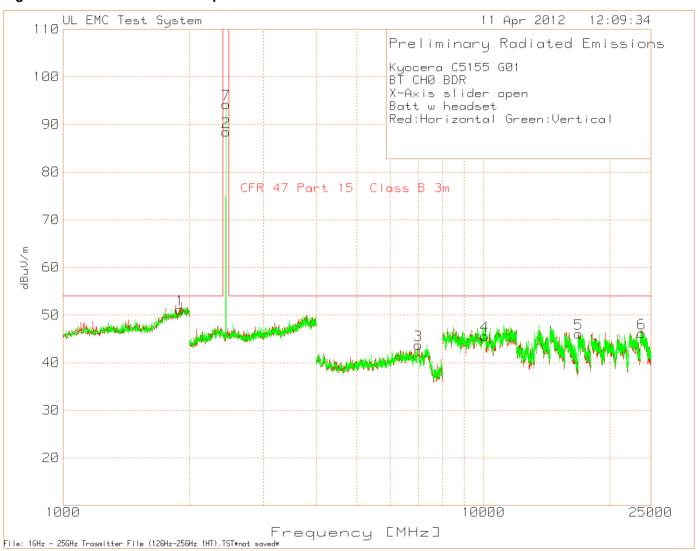
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Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.4 Spurious, BT, BDR, Middle Channel, 1GHz - 25GHz

Figure 9 Radiated Emissions Graph X-Axis



Plot caption should say CH39

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Model Number: C5155 G01

Client Name: Kyocera Communications

### **Table 9 Radiated Emissions Data Points X-Axis**

Kyocera C5155 G01

BT CH39 BDR

X-Axis slider open

Batt w headset

RED: Horizontal GRN: Vertical

						CFR 47			
			Antenna	Path		Part 15			
Test	Meter		Factor	Loss/Gain	Level	Class B		Height	
Frequency	Reading	Detector	dB	dB	dBuV/m	3m	Margin	[cm]	Polarity
1901.804	20.09	PK	27.4	3.72	51.21	54	-2.79	150	Horz
2440.44	62.32	PK	21.9	4.25	88.47	-	-	100	Horz
6999.333	59.63	PK	29.3	-45.19	43.74	54	-10.26	150	Horz
10065.38	57.98	PK	36.3	-48.69	45.59	54	-8.41	150	Horz
16847.54	47.05	PK	40.2	-41.17	46.08	54	-7.92	100	Horz
23806.72	59.92	PK	40.3	-54.02	46.2	54	-7.8	100	Horz
2440.44	68.04	PK	21.9	4.25	94.19	-	-	150	Vert

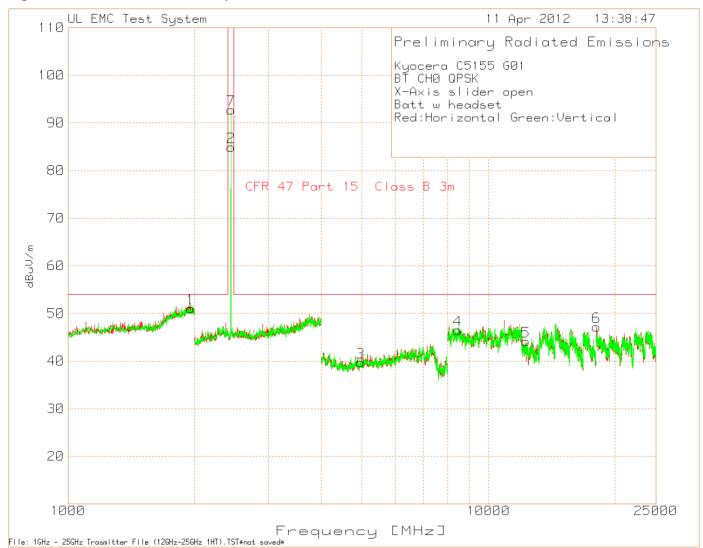
FCC ID: V6C5155 Page 29 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.5 Spurious, BT, QPSK, Middle Channel, 1GHz – 25GHz

Figure 10 Radiated Emissions Graph X-Axis



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Model Number: C5155 G01

Client Name: Kyocera Communications

### **Table 10 Radiated Emissions Data Points X-Axis**

Kyocera C5155 G01

BT CH39 QPSK

X-Axis slider open

Batt w headset

RED: Horizontal GRN: Vertical

						CFR 47			
			Antenna	Path		Part 15			
Test	Meter		Factor	Loss/Gain	Level	Class B		Height	
Frequency	Reading	Detector	dB	dB	dBuV/m	3m	Margin	[cm]	Polarity
1959.92	19.88	PK	27.4	3.75	51.03	54	-2.97	100	Horz
2440.44	58.77	PK	21.9	4.25	84.92	-	-	99	Horz
4965.977	63.34	PK	27.8	-51.38	39.76	54	-14.24	150	Horz
8450.967	59.64	PK	36.6	-49.7	46.54	54	-7.46	150	Horz
12259.3	50.61	PK	39.4	-45.9	44.11	54	-9.89	100	Horz
18081.23	68.17	PK	40	-60.94	47.23	54	-6.77	100	Horz
2440.44	66.6	PK	21.9	4.25	92.75	-	-	101	Vert

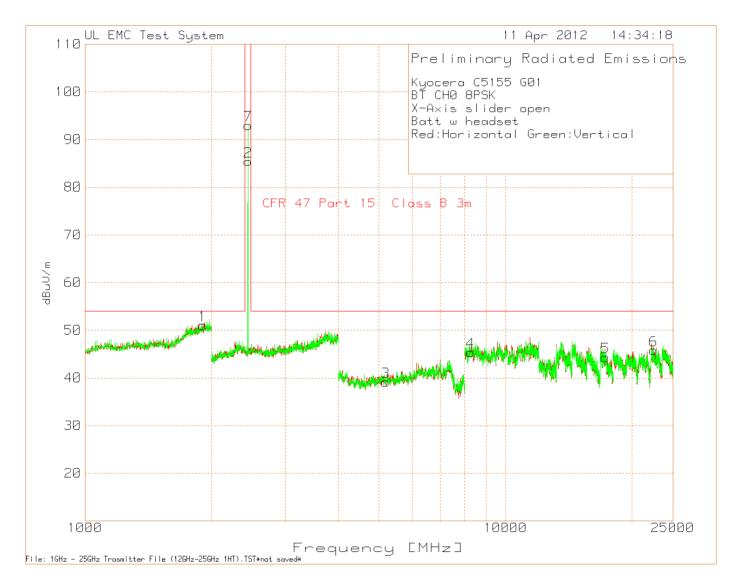
FCC ID: V6C5155 Page 31 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.6 Spurious, BT, 8PSK, Middle Channel, 1GHz - 25GHz

Figure 11 Radiated Emissions Graph X-Axis



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Model Number: C5155 G01

Client Name: Kyocera Communications

### **Table 11 Radiated Emissions Data Points X-Axis**

Kyocera C5155 G01

BT CH39 8PSK

X-Axis slider open

Batt w headset

RED: Horizontal GRN: Vertical

						CFR 47			
			Antenna	Path		Part 15			
Test	Meter		Factor	Loss/Gain	Level	Class B		Height	
Frequency	Reading	Detector	dB	dB	dBuV/m	3m	Margin	[cm]	Polarity
1905.812	19.96	PK	27.4	3.71	51.07	54	-2.93	101	Horz
2440.44	59.3	PK	21.9	4.25	85.45	-	-	100	Horz
5198.132	61.81	PK	28.3	-50.96	39.15	54	-14.85	100	Horz
8261.508	58	PK	36.4	-49.04	45.36	54	-8.64	100	Horz
17294.12	45.61	PK	40.2	-41.49	44.32	54	-9.68	100	Horz
22498.6	57.68	PK	40.5	-52.39	45.79	54	-8.21	100	Horz
2440.44	66.81	PK	21.9	4.25	92.96	-	-	100	Vert

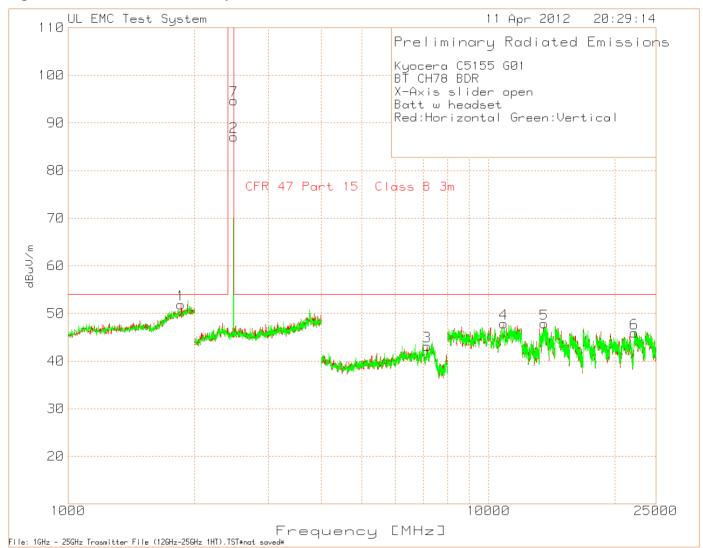
FCC ID: V6C5155 Page 33 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.7 Spurious, BT, BDR, High Channel, 1GHz - 25GHz

Figure 12 Radiated Emissions Graph X-Axis



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Model Number: C5155 G01

Client Name: Kyocera Communications

### **Table 12 Radiated Emissions Data Points X-Axis**

Kyocera C5155 G01

BT CH78 BDR

X-Axis slider open

Batt w headset

RED: Horizontal GRN: Vertical

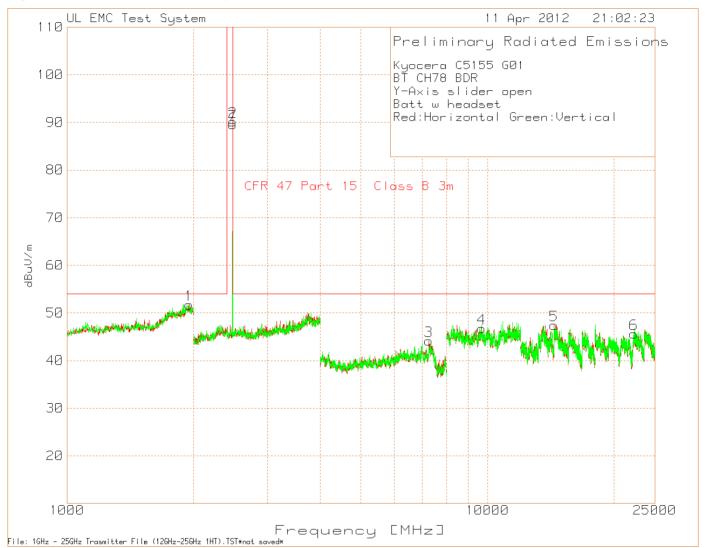
						CFR 47			
			Antenna	Path		Part 15			
Test	Meter		Factor	Loss/Gain	Level	Class B		Height	
Frequency	Reading	Detector	dB	dB	dBuV/m	3m	Margin	[cm]	Polarity
1855.711	20.86	PK	27.2	3.79	51.85	54	-2.15	150	Horz
2480.48	61.35	PK	22	3.77	87.12	-	-	100	Horz
7146.097	60.33	PK	29.6	-46.81	43.12	54	-10.88	100	Horz
10873.92	59	PK	36.4	-47.53	47.87	54	-6.13	150	Horz
13558.22	48.84	PK	39.8	-40.81	47.83	54	-6.17	99	Horz
22240.9	58.33	PK	40.5	-52.93	45.9	54	-8.1	99	Horz
2478.478	68.89	PK	22	3.77	94.66	-	-	150	Vert

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Model Number: C5155 G01

Client Name: Kyocera Communications

Figure 13 Radiated Emissions Graph Y-Axis



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Model Number: C5155 G01

Client Name: Kyocera Communications

### **Table 13 Radiated Emissions Data Points Y-Axis**

Kyocera C5155 G01

BT CH78 BDR

Y-Axis slider open

Batt w headset

RED: Horizontal GRN: Vertical

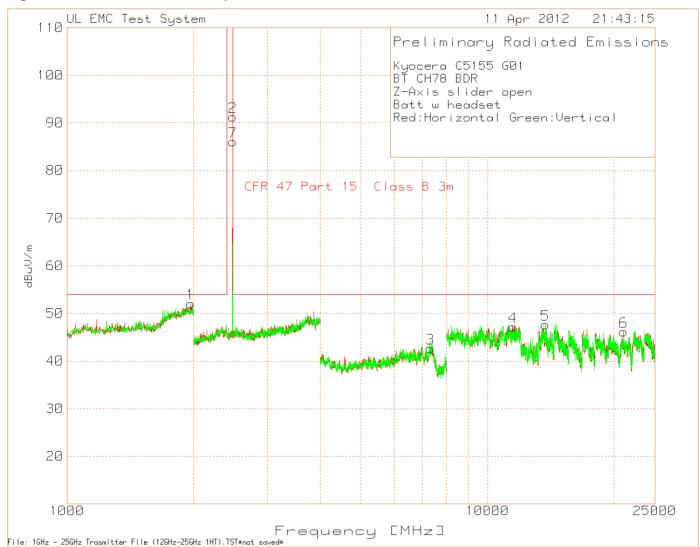
						CFR 47			
			Antenna	Path		Part 15			
Test	Meter		Factor	Loss/Gain	Level	Class B		Height	
Frequency	Reading	Detector	dB	dB	dBuV/m	3m	Margin	[cm]	Polarity
1949.9	20.49	PK	27.4	3.83	51.72	54	-2.28	101	Horz
2480.48	64.39	PK	22	3.77	90.16	-	-	99	Horz
7247.498	60.44	PK	30.1	-46.4	44.14	54	-9.86	99	Horz
9689.126	59.13	PK	36.4	-48.77	46.76	54	-7.24	99	Horz
14403.36	46.84	PK	39.8	-39.23	47.41	54	-6.59	100	Horz
22299.72	57.87	PK	40.5	-52.74	45.63	54	-8.37	100	Horz
2478.478	63.83	PK	22	3.77	89.6	-	-	150	Vert

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Model Number: C5155 G01

Client Name: Kyocera Communications

Figure 14 Radiated Emissions Graph Z-Axis



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Model Number: C5155 G01

Client Name: Kyocera Communications

### **Table 14 Radiated Emissions Data Points Z-Axis**

Kyocera C5155 G01

BT CH78 BDR

Z-Axis slider open

Batt w headset

RED: Horizontal GRN: Vertical

						CFR 47			
			Antenna	Path		Part 15			
Test	Meter		Factor	Loss/Gain	Level	Class B		Height	
Frequency	Reading	Detector	dB	dB	dBuV/m	3m	Margin	[cm]	Polarity
1971.944	20.75	PK	27.5	3.81	52.06	54	-1.94	100	Horz
2480.48	65.56	PK	22	3.77	91.33	-	-	100	Horz
7316.878	58.4	PK	30.6	-46.28	42.72	54	-11.28	99	Horz
11498.33	57.94	PK	37.1	-47.83	47.21	54	-6.79	150	Horz
13750.3	47.94	PK	39.9	-40.16	47.68	54	-6.32	99	Horz
21100.84	61.32	PK	40.1	-55.2	46.22	54	-7.78	99	Horz
2480.48	60.31	PK	22	3.77	86.08	-	-	100	Vert

PK - Peak detector

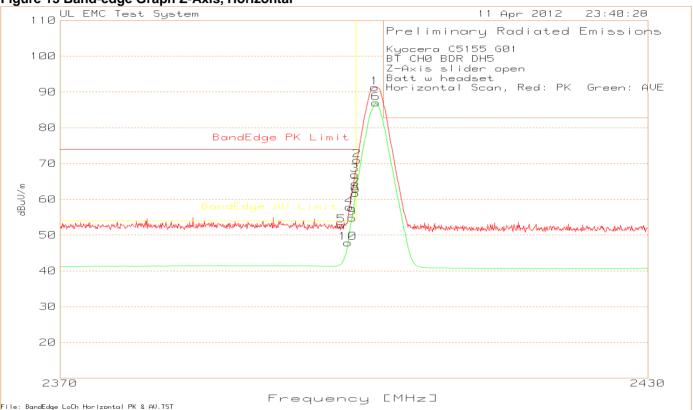
FCC ID: V6C5155 Page 39 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.8 Band-edge, BT, BDR, Low Channel

Figure 15 Band-edge Graph Z-Axis, Horizontal



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Model Number: C5155 G01

Client Name: Kyocera Communications

Figure 16 Band-edge Graph X-Axis, Vertical



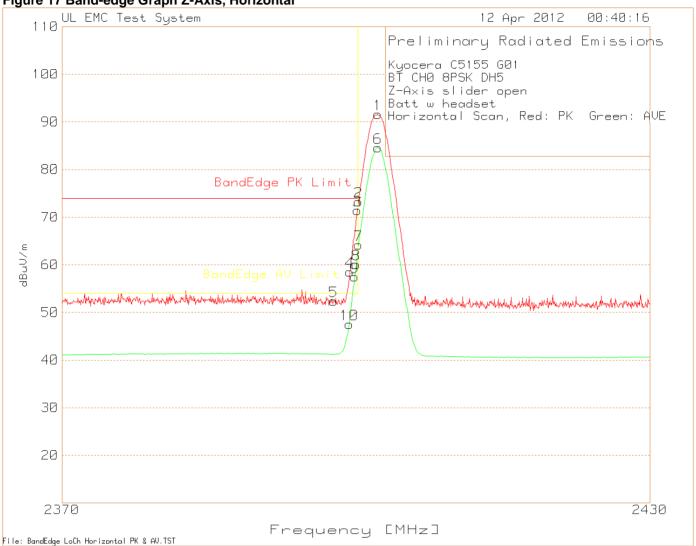
FCC ID: V6C5155 Page 41 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

## 4.2.9 Band-edge, BT, 8PSK, Low Channel

Figure 17 Band-edge Graph Z-Axis, Horizontal



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Model Number: C5155 G01

Client Name: Kyocera Communications

Figure 18 Band-edge Graph X-Axis, Vertical



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Model Number: C5155 G01

Client Name: Kyocera Communications

## 4.2.10Band-edge, BT, BDR, Hopping Channel

Figure 19 Band-edge Graph Z-Axis, Horizontal



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Model Number: C5155 G01

Client Name: Kyocera Communications

Figure 20 Band-edge Graph X-Axis, Vertical



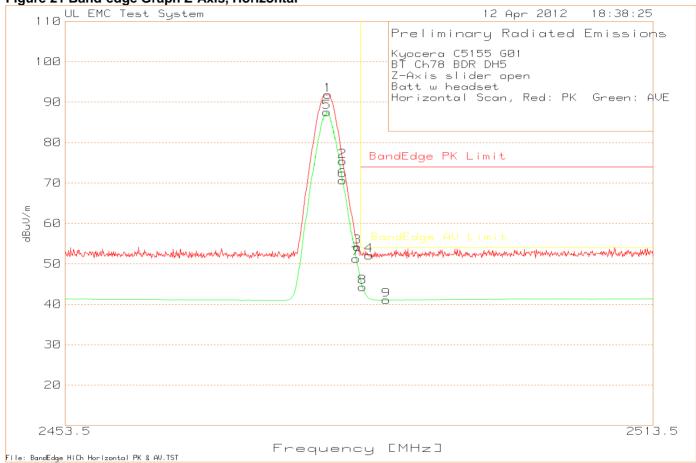
FCC ID: V6C5155 Page 45 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

## 4.2.11Band-edge, BT, BDR, High Channel

Figure 21 Band-edge Graph Z-Axis, Horizontal



### Table 15 Band-edge Data Z-Axis, Horizontal

Kyocera C5155 G01 BT Hopping BDR DH5 Z-Axis slider open Batt w headset

Horizontal Scan, Red: PK Green: AVE

Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss/Gain Factor dB	dBuV/m	BandEdge Limit	Margin	Height [cm]	Polarity
2485.152	27.12	PK	22.1	3.77	52.99	74	-21.01	99	Horz
2484.041	16.4	AV	22.1	3.77	42.27	54	-11.73	100	Horz
2485.392	15.16	AV	22.1	3.77	41.03	54	-12.97	100	Horz

PK - Peak detector

Av - Average detector

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Model Number: C5155 G01

Client Name: Kyocera Communications

Figure 22 Band-edge Graph X-Axis, Vertical



#### Table 16 Band-edge Data X-Axis, Vertical

Kyocera C5155 G01 BT Ch78 BDR DH5 X-Axis slider open Batt w headset

Vertical Scan, Red: PK Green: AVE

Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss/Gain Factor dB	dBuV/m	BandEdge Limit	Margin	Height [cm]	Polarity
2484.371	27.26	PK	22.1	3.77	53.13	74	-20.87	101	Vert
2483.59	21.57	AV	22.1	3.77	47.44	54	-6.56	150	Vert
2485.452	15.22	AV	22.1	3.77	41.09	54	-12.91	150	Vert

PK - Peak detector Av - Average detector FCC ID: V6C5155 Page 47 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

### 4.2.12Band-edge, BT, 8PSK, High Channel

Figure 23 Band-edge Graph Z-Axis, Horizontal



#### Table 17 Band-edge Data Z-Axis, Horizontal

Kyocera C5155 G01 BT Ch78 8PSK DH5 Z-Axis slider open Batt w headset

Horizontal Scan, Red: PK Green: AVE

Test	Meter	Detector	Antenna	Path	dBuV/m	BandEdge	Margin	Height	Polarity
Frequency	Reading		Factor	Loss/Gain		Limit		[cm]	
			dB	Factor dB					
2483.83	26.55	PK	22.1	3.77	52.42	74	-21.58	150	Horz
2486.233	26.6	PK	22.1	3.77	52.47	74	-21.53	150	Horz
2483.71	18.37	AV	22.1	3.77	44.24	54	-9.76	100	Horz
2486.293	15.16	AV	22.1	3.77	41.03	54	-12.97	150	Horz

PK - Peak detector

Av - Average detector

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Model Number: C5155 G01

Client Name: Kyocera Communications

Figure 24 Band-edge Graph X-Axis, Vertical



#### Table 18 Band-edge Data X-Axis, Vertical

Kyocera C5155 G01 BT Ch78 8PSK DH5 X-Axis slider open Batt w headset

Vertical Scan, Red: PK Green: AVE

Test	Meter	Detector	Antenna	Path	dBuV/m	BandEdge	Margin	Height	Polarity
Frequency	Reading		Factor	Loss/Gain		Limit		[cm]	
			dB	Factor dB					
2484.131	27.35	PK	22.1	3.77	53.22	74	-20.78	100	Vert
2485.632	26.2	PK	22.1	3.77	52.07	74	-21.93	150	Vert
2483.65	20.89	AV	22.1	3.77	46.76	54	-7.24	100	Vert
2485.362	15.22	AV	22.1	3.77	41.09	54	-12.91	100	Vert

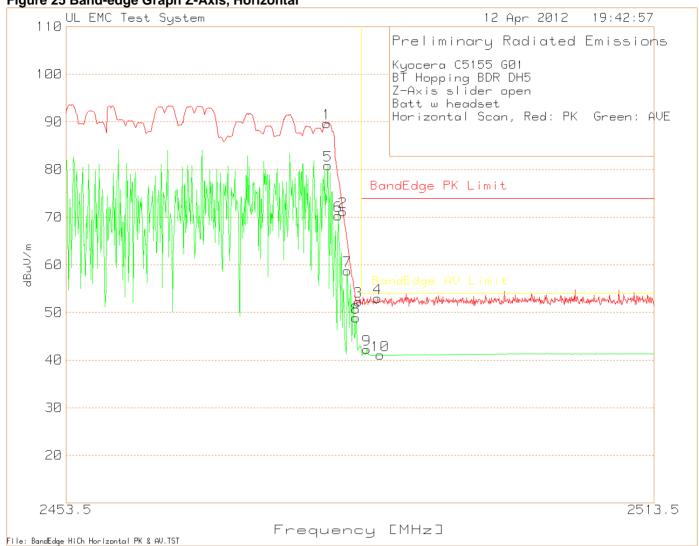
PK - Peak detector Av - Average detector FCC ID: V6C5155 Page 49 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

### 4.2.13Band-edge, BT, BDR, Hopping Channel

Figure 25 Band-edge Graph Z-Axis, Horizontal



#### Table 19 Band-edge Data Z-Axis, Horizontal

Kyocera C5155 G01 BT Hopping BDR DH5 Z-Axis slider open

Batt w headset

Horizontal Scan, Red: PK Green: AVE

Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss/Gain Factor dB	dBuV/m	BandEdge Limit	Margin	Height [cm]	Polarity
2485.152	27.12	PK	22.1	3.77	52.99	74	-21.01	99	Horz
2484.041	16.4	PK	22.1	3.77	42.27	54	-11.73	100	Horz
2485.392	15.16	AV	22.1	3.77	41.03	54	-12.97	100	Horz

PK - Peak detector

Av - Average detector

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Model Number: C5155 G01

Client Name: Kyocera Communications

Figure 26 Band-edge Graph X-Axis, Vertical



#### Table 20 Band-edge Data X-Axis, Vertical

Kyocera C5155 G01 BT Hopping BDR DH5 X-Axis slider open Batt w headset

Vertical Scan, Red: PK Green: AVE

Test	Meter	Detector	Antenna	Path	dBuV/m	BandEdge	Margin	Height	Polarity
Frequency	Reading		Factor	Loss/Gain		Limit		[cm]	
			dB	Factor dB					
2483.95	27.53	PK	22.1	3.77	53.4	74	-20.6	100	Vert
2485.812	26.7	PK	22.1	3.77	52.57	74	-21.43	100	Vert
2484.581	15.21	AV	22.1	3.77	41.08	54	-12.92	102	Vert
2487.194	15.2	AV	22.1	3.77	41.07	54	-12.93	102	Vert

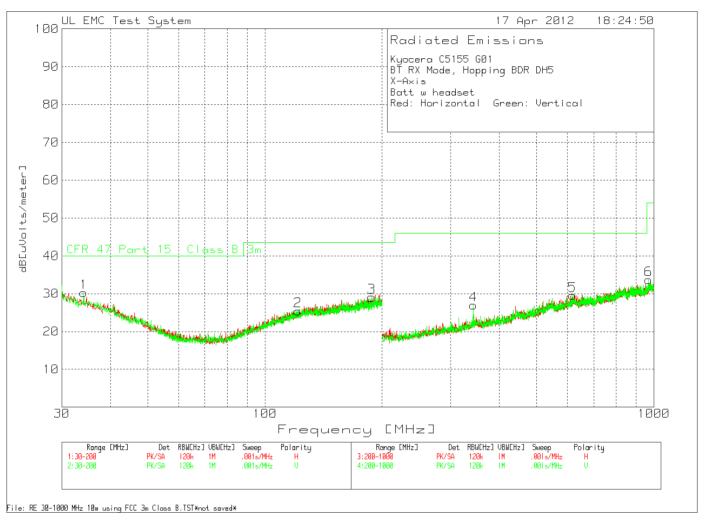
PK - Peak detector Av - Average detector FCC ID: V6C5155 Page 51 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.14Receiver and Digital Radiated Emissions, Battery Mode, 30MHz - 1GHz

Figure 27 Radiated Emissions Graph



No Emissions found within 6dB to the limit

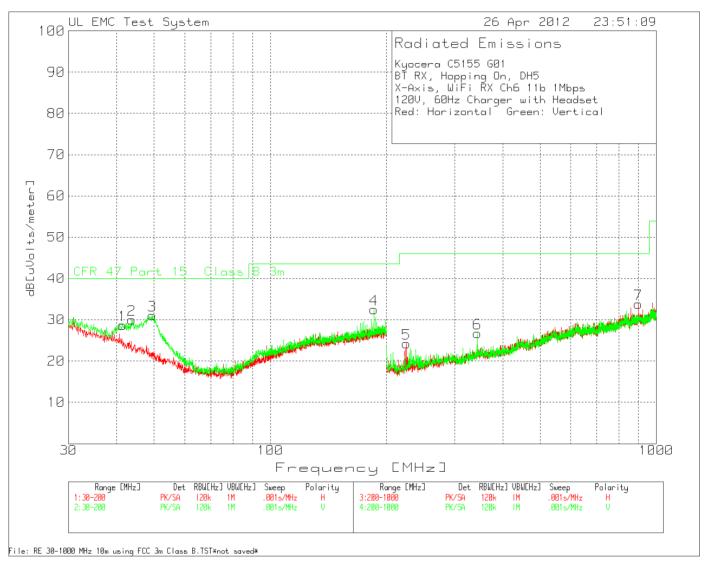
FCC ID: V6C5155 Page 52 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.15 Receiver and Digital Radiated Emissions, Charging Mode, 30MHz - 1GHz

Figure 28 Radiated Emissions Graph



No Emissions found within 6dB to the limit

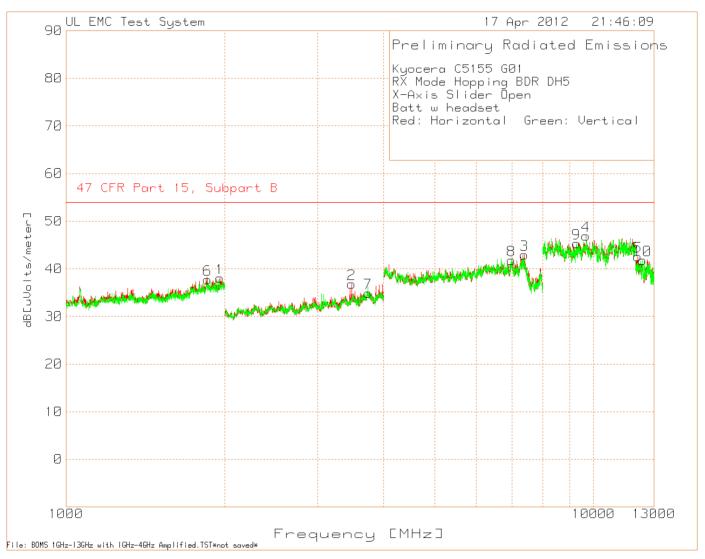
FCC ID: V6C5155 Page 53 of 56

Model Number: C5155 G01

Client Name: Kyocera Communications

# 4.2.16 Receiver and Digital Radiated Emissions, Battery Mode, 1GHz - 13GHz

Figure 29 Radiated Emissions Graph



No Emissions detected above noise floor

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Model Number: C5155 G01

Client Name: Kyocera Communications

### 5 IMMUNITY TEST RESULTS

Immunity tests are not required per the standard

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Model Number: C5155 G01

Client Name: Kyocera Communications

### 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/standards/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 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.

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Model Number: C5155 G01

Client Name: Kyocera Communications



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