CKC LABORATORIES, INC. Testing the Future

ACCREDITED
Certicate Numbers
803.01, 803.02, 803.05, 803.06
EMC

LOGISYS CORPORATION
ADDENDUM TEST REPORT TO FC08-052

FOR THE

HANDSET CONTROLLER, RM01

FCC PART 15 SUBPART C SECTION 15.231 &
SUBPART B SECTIONS 15.107 AND 15.109 CLASS B

TESTING

DATE OF ISSUE: APRIL 24, 2008

PREPARED FOR:

Logisys Corporation
1962 W. Holt Avenue
Pomona, CA 91768

P.O. No.: 63006
W.O. No.: 87451

PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: May 27-28, 2008

Report No.: FC08-052A

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ADMINISTRATIVE INFORMATION

DATE OF TEST: May 27-28, 2008

DATE OF RECEIPT: May 27, 2008

REPRESENTATIVE: Charles Chang

MANUFACTURER:
Logisys Corporation
1962 W. Holt Avenue
Pomona, CA 91768

TEST LOCATION:
CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92823

TEST METHOD: ANSI C63.4 (2003)

PURPOSE OF TEST:
Original: To perform the testing of the Handset Controller, RM01 with the requirements for FCC Part 15 Subpart C Section 15.231 and Subpart B Sections 15.107 & 15.109 Class B devices.
Addendum A: Incorrect spec limit was used for Spurious Emissions. Data files were replaced with corrected data.

APPROVALS

QUALITY ASSURANCE:	**TEST PERSONNEL:**
Steve Behm, Director of Engineering Services	Eddie Wong, Senior EMC Engineer

SUMMARY OF RESULTS

Test	Specification/Method	Results
Mains Conducted Emissions	FCC Part 15 Subpart B Section 15.107 Class B	Pass
Radiated Emissions	FCC Part 15 Subpart B Section 15.109 Class B	Pass
Timing	FCC Part 15 Subpart B Section 15.231(a)(1)	Pass
Field Strength of Spurious Radiation	FCC Part 15 Subpart B Section 15.231(b)	Pass
Occupied Bandwidth	FCC Part 15 Subpart B Section 15.231(c)	Pass

CONDITIONS DURING TESTING

Modification: Addition of tuning network consisting of 2 capacitors and 2 resistors.

FCC 15.31(e) Voltage Variations
Not applicable to this device because it is battery powered and a fresh battery was installed.

FCC 15.31(m) Number Of Channels
This device operates on a single channel.

FCC 15.33(a) Frequency Ranges Tested
15.107 Conducted Emissions: 150 kHz – 30 MHz
15.109 Radiated Emissions: 30 MHz – 3.5 GHz
15.231 Radiated Emissions: 9 kHz – 3.5 GHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	40 GHz	1 MHz

FCC 15.203 Antenna Requirements
The antenna is an integral part of the EUT and is non-removable; therefore the EUT complies with Section 15.203 of the FCC rules.

EUT Operating Frequency
The EUT was operating at 314.99 MHz.

Temperature And Humidity During Testing
The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

The following model has been tested by CKC Laboratories: **RM01**

The manufacturer states that the following additional models are identical electrically to the one which was tested, or any differences between them do not affect their EMC characteristics, and therefore they meet the level of testing equivalent to the tested models. The following model has been tested by CKC Laboratories: **RM02**

EQUIPMENT UNDER TEST

Handset Controller

Manuf:	Logisys Corporation
Model:	RM01
Serial:	NA
FCC ID:	pending

Receiver

Manuf:	Logisys
Model:	RM01
Serial:	NA
FCC ID:	NA

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Power Supply

Manuf:	Topward
Model:	6306
Serial:	988614
FCC ID:	NA

Digital Multimeter

Manuf:	Fluke
Model:	11
Serial:	68090817
FCC ID:	NA

REPORT OF EMISSIONS MEASUREMENTS

TESTING PARAMETERS

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. The following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. When conducted emissions testing was performed, a 10 dB external attenuator was used with internal offset correction in the analyzer.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer/receiver readings were recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.

FCC 15.107 CONDUCTED EMISSIONS

Test Setup Photos

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Logisys Corporation**		
Specification:	**FCC 15.107 Class B COND [AVE]**		
Work Order #:	**87451**	Date:	5/28/2008
Test Type:	**Conducted Emissions**	Time:	10:43:18 AM
Equipment:	**Handset Controller**	Sequence#:	13
Manufacturer:	Logisys	Tested By:	E. Wong
Model:	RM01		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
LISN	1104	11/10/2006	11/10/2008	00847
6dB Attenuator	None	11/21/2006	11/21/2008	P05611
150kHz HPF	G7755	01/09/2008	01/09/2010	02610
Conducted Emission Cable	Cable #21	05/12/2008	05/12/2010	P04358

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Handset Controller*	Logisys	RM01	NA
Receiver	Logisys	RM01	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Digital multimeter	Fluke	11	68090817
Power Supply	Topward	6306	988614

Test Conditions / Notes:

FCC15.107(2007). The Receiver is placed on the table; the DC input is connected to a support power supply and the output is connected to a digital multi-meter for verification of the output voltage. Antenna orientation is vertical to the horizontal plane. The receiver received the transmit command and operated as intended. Receiver frequency = 314.99MHz. 12Vdc from support 110/60 Hz power supply. Modification: Addition of tuning network consisting of 2 capacitors and 2 resistors.

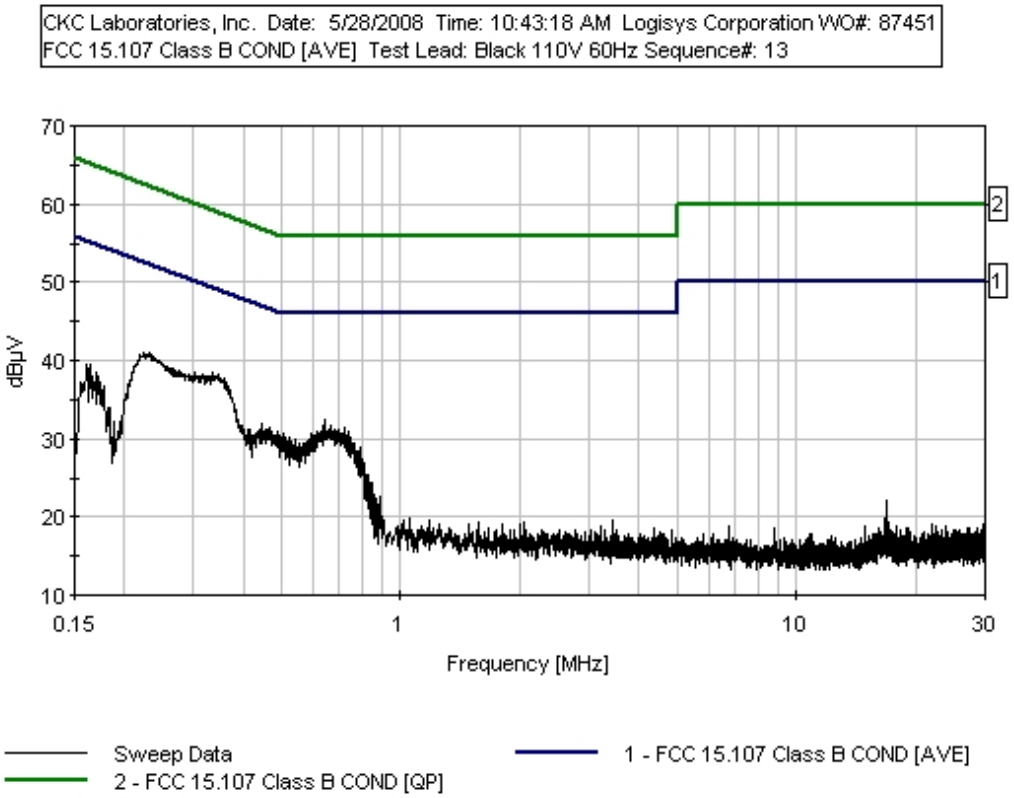
Transducer Legend:

T1=150kHz HPF AN02610_010910	T2=6dB Attenuator P05611 112108
T3=Cable #21 -P04358- Site A 05/12/10	T4=(L1) Insertion Loss 00847 EMCO 3816/2NM

Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	344.891k	31.7	+0.2	+6.2	+0.0	+0.1	+0.0	38.2	49.1	-10.9	Black
2	642.319k	26.0	+0.2	+6.1	+0.0	+0.1	+0.0	32.4	46.0	-13.6	Black
3	165.271k	32.7	+0.5	+6.2	+0.0	+0.1	+0.0	39.5	55.2	-15.7	Black

4	787.760k	22.3	+0.3	+6.1	+0.0	+0.1	+0.0	28.8	46.0	-17.2	Black
5	829.938k	18.9	+0.3	+6.1	+0.0	+0.1	+0.0	25.4	46.0	-20.6	Black
6	837.210k	17.7	+0.3	+6.1	+0.1	+0.1	+0.0	24.3	46.0	-21.7	Black
7	851.027k	17.7	+0.3	+6.1	+0.1	+0.1	+0.0	24.3	46.0	-21.7	Black
8	848.845k	17.6	+0.3	+6.1	+0.1	+0.1	+0.0	24.2	46.0	-21.8	Black
9	843.755k	17.5	+0.3	+6.1	+0.1	+0.1	+0.0	24.1	46.0	-21.9	Black
10	187.815k	25.6	+0.3	+6.1	+0.0	+0.1	+0.0	32.1	54.1	-22.0	Black
11	859.753k	16.3	+0.3	+6.1	+0.1	+0.1	+0.0	22.9	46.0	-23.1	Black
12	889.963k	16.1	+0.3	+6.1	+0.1	+0.1	+0.0	22.7	46.0	-23.3	Black
13	853.935k	16.0	+0.3	+6.1	+0.1	+0.1	+0.0	22.6	46.0	-23.4	Black
14	1.052M	13.2	+0.3	+6.1	+0.1	+0.1	+0.0	19.8	46.0	-26.2	Black
15	1.179M	13.1	+0.3	+6.1	+0.1	+0.1	+0.0	19.7	46.0	-26.3	Black


CKC Laboratories, Inc. Date: 5/28/2008 Time: 10:43:18 AM Logisys Corporation WO#: 87451
FCC 15.107 Class B COND [AVE] Test Lead: Black 110V 60Hz Sequence#: 13
70
60
50
40
30
20
10
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
2 - FCC 15.107 Class B COND [QP]
1 - FCC 15.107 Class B COND [AVE]

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Logisys Corporation**
Specification: **FCC 15.107 Class B COND [AVE]**
Work Order #: **87451** Date: 5/28/2008
Test Type: **Conducted Emissions** Time: 10:58:35 AM
Equipment: **Handset Controller** Sequence#: 14
Manufacturer: Logisys Tested By: E. Wong
Model: RM01 110V 60Hz
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
LISN	1104	11/10/2006	11/10/2008	00847
6dB Attenuator	None	11/21/2006	11/21/2008	P05611
150kHz HPF	G7755	01/09/2008	01/09/2010	02610
Conducted Emission Cable	Cable #21	05/12/2008	05/12/2010	P04358

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Handset Controller*	Logisys	RM01	NA
Receiver	Logisys	RM01	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Digital multimeter	Fluke	11	68090817
Power Supply	Topward	6306	988614

Test Conditions / Notes:

FCC15.107(2007). The Receiver is placed on the table; the DC input is connected to a support power supply and the output is connected to a digital multi-meter for verification of the output voltage. Antenna orientation is vertical to the horizontal plane. The receiver received the transmit command and operated as intended. Receiver frequency = 314.99MHz. 12Vdc from support 110/60 Hz power supply. Modification: Addition of tuning network consisting of 2 capacitors and 2 resistors.

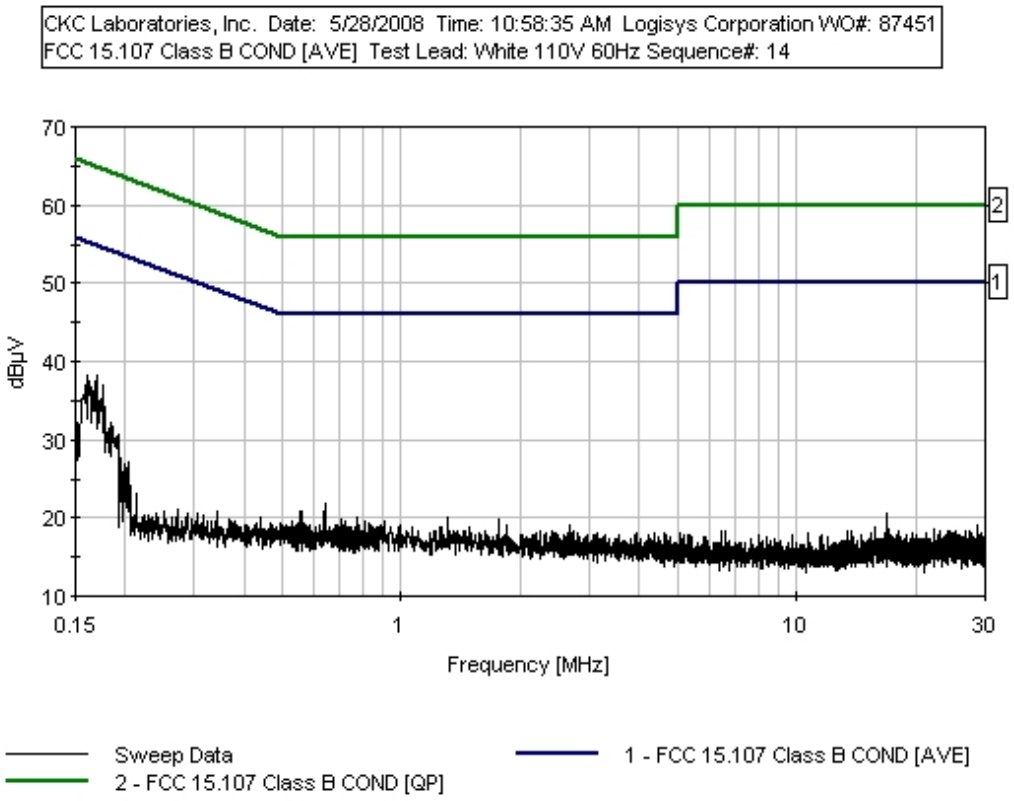
Transducer Legend:

T1=150kHz HPF AN02610_010910	T2=6dB Attenuator P05611 112108
T3=Cable #21 -P04358- Site A 05/12/10	T4=(L2) Insertion Loss 00847 EMCO 3816/2NM

Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	171.089k	31.4	+0.4	+6.2	+0.0	+0.2	+0.0	38.2	54.9	-16.7	White
2	160.908k	31.2	+0.6	+6.2	+0.0	+0.2	+0.0	38.2	55.4	-17.2	White
3	168.907k	30.6	+0.4	+6.2	+0.0	+0.2	+0.0	37.4	55.0	-17.6	White
4	176.179k	30.3	+0.3	+6.1	+0.0	+0.2	+0.0	36.9	54.7	-17.8	White

5	177.634k	27.5	+0.3	+6.1	+0.0	+0.2	+0.0	34.1	54.6	-20.5	White
6	184.906k	25.6	+0.3	+6.1	+0.0	+0.2	+0.0	32.2	54.3	-22.1	White
7	182.724k	24.9	+0.3	+6.1	+0.0	+0.2	+0.0	31.5	54.4	-22.9	White
8	152.182k	24.0	+1.8	+6.2	+0.0	+0.2	+0.0	32.2	55.9	-23.7	White
9	643.773k	15.5	+0.2	+6.1	+0.0	+0.1	+0.0	21.9	46.0	-24.1	White
10	1.311M	13.5	+0.3	+6.1	+0.1	+0.1	+0.0	20.1	46.0	-25.9	White
11	1.766M	13.4	+0.2	+6.1	+0.1	+0.1	+0.0	19.9	46.0	-26.1	White
12	195.087k	21.1	+0.2	+6.1	+0.0	+0.2	+0.0	27.6	53.8	-26.2	White
13	205.268k	20.7	+0.2	+6.1	+0.0	+0.2	+0.0	27.2	53.4	-26.2	White
14	902.721k	13.1	+0.3	+6.1	+0.1	+0.1	+0.0	19.7	46.0	-26.3	White
15	1.001M	12.6	+0.3	+6.1	+0.1	+0.1	+0.0	19.2	46.0	-26.8	White



FCC 15.109 RADIATED EMISSIONS

Test Setup Photos

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Logisys Corporation**
Specification: **FCC 15.109 Class B**
Work Order #: **87451** Date: 5/27/2008
Test Type: **Radiated Scan** Time: 13:36:13
Equipment: **Handset Controller** Sequence#: 12
Manufacturer: Logisys Tested By: E. Wong
Model: RM01
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Horn Antenna	6246	06/29/2006	06/29/2008	00849
Microwave Pre-amp	3123A00281	07/19/2006	07/19/2008	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/18/2006	09/18/2008	P05565
0.5 GHz HPF	2	04/21/2008	04/21/2010	02752
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Handset Controller*	Logisys	RM01	NA
Receiver	Logisys	RM01	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Digital multimeter	Fluke	11	68090817
Power Supply	Topward	6306	988614

Test Conditions / Notes:

FCC15.109(2007). The single channel hand held transmitter is placed on the wooden table with a Styrofoam surface of 5 cm thickness. The Receiver is placed on the table; the DC input is connected to a support power supply and the output is connected to a digital multi-meter for verification of the output voltage. Antenna orientation is vertical to the horizontal plane. The EUT is set in continuous transmit mode, the receiver received the transmit data and operated as intended. Transmit frequency range = 314.99MHz. Transmit Frequency / receiver Frequency = 314.99MHz. Emission profile of three orthogonal orientations was investigated. Fresh battery installed. Frequency range of measurement = 30 MHz - 3.5 GHz. Frequency 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 3500 MHz RBW=1 MHz, VBW=1 MHz. No emission found. Recorded data represents noise floor level. Modification: Addition of tuning network consisting of 2 capacitors and 2 resistors.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15_P05198_ Site A, 010509	T4=HP8447D Pre_amp-AN00309-050210
T5=Filter 500GHz HP AN02752	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

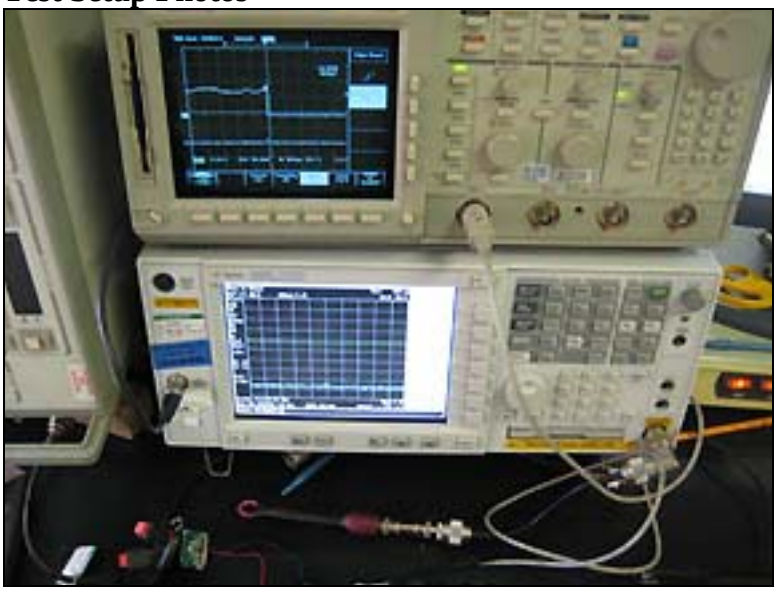
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	310.583M	36.1	+13.5	+0.2	+3.3	-27.8	+0.0	25.3	46.0	-20.7	Horiz
2	306.725M	34.6	+13.4	+0.2	+3.2	-27.8	+0.0	23.6	46.0	-22.4	Horiz
3	322.283M	33.9	+13.9	+0.2	+3.3	-27.8	+0.0	23.5	46.0	-22.5	Horiz
4	318.633M	32.6	+13.8	+0.2	+3.3	-27.8	+0.0	22.1	46.0	-23.9	Vert

FCC 15.231(a)(1) TIMING

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02869	Agilent	E4440A	MY46186290	021207	021209
Oscilloscope	02847	Tektronix	TDS 520B	B020532	031207	031209

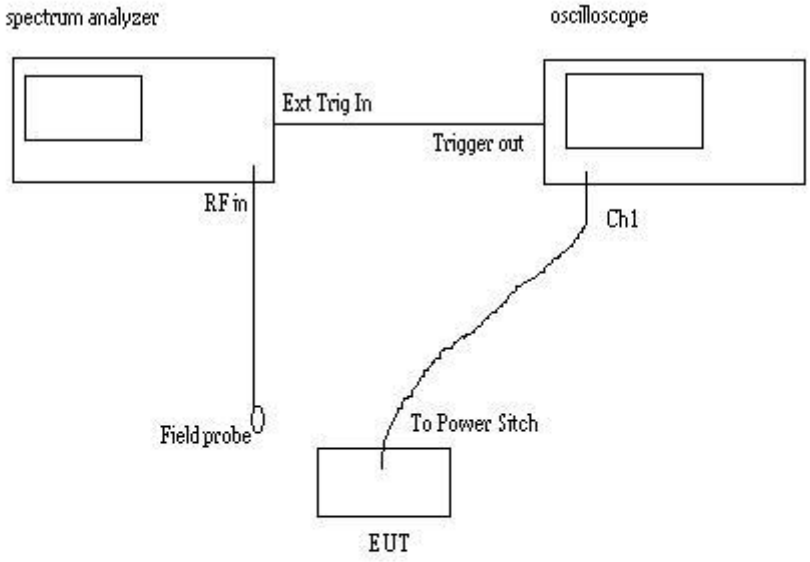
Test Setup Photos



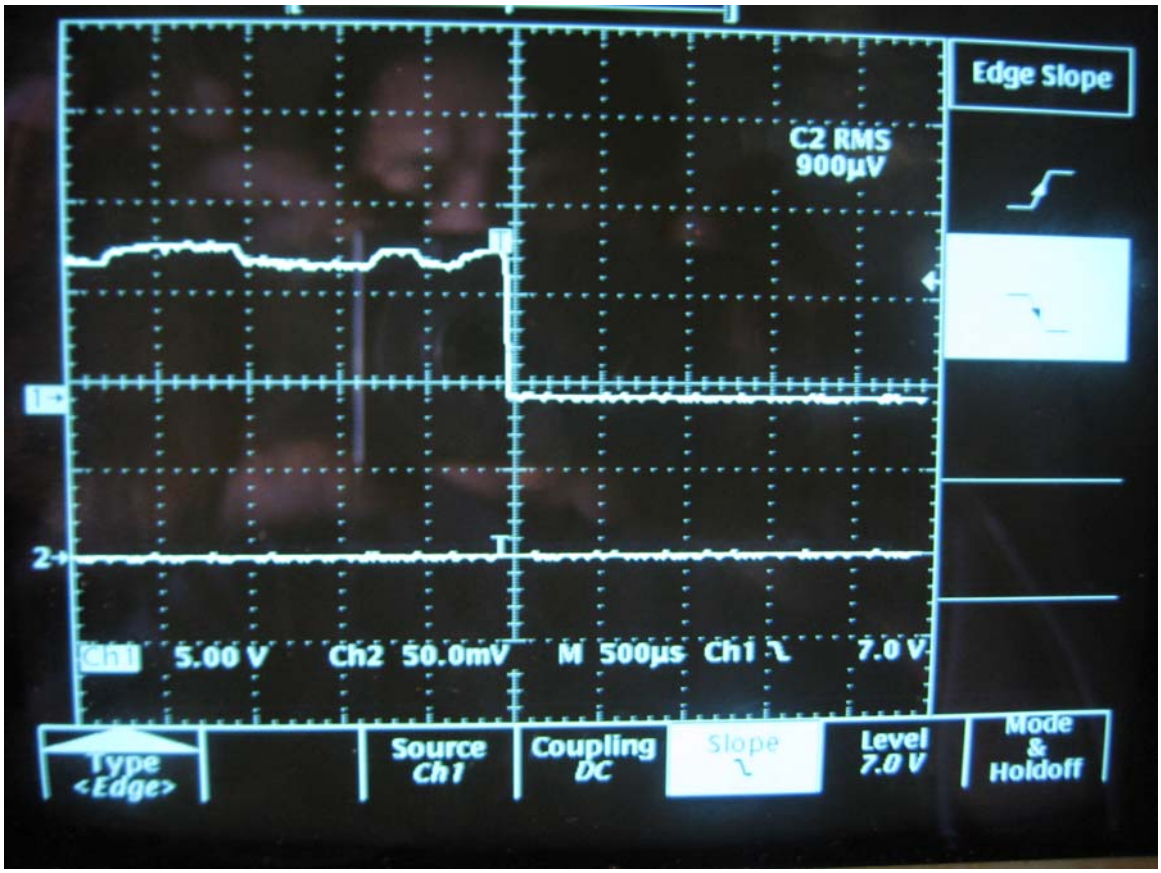
15.231(a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

Declaration: The circuit under evaluation is not capable of toggling the EUT in transmit mode after the power switch is release. Upon release of the power switch, the DC power to the transmitter circuit is removed instantaneously.

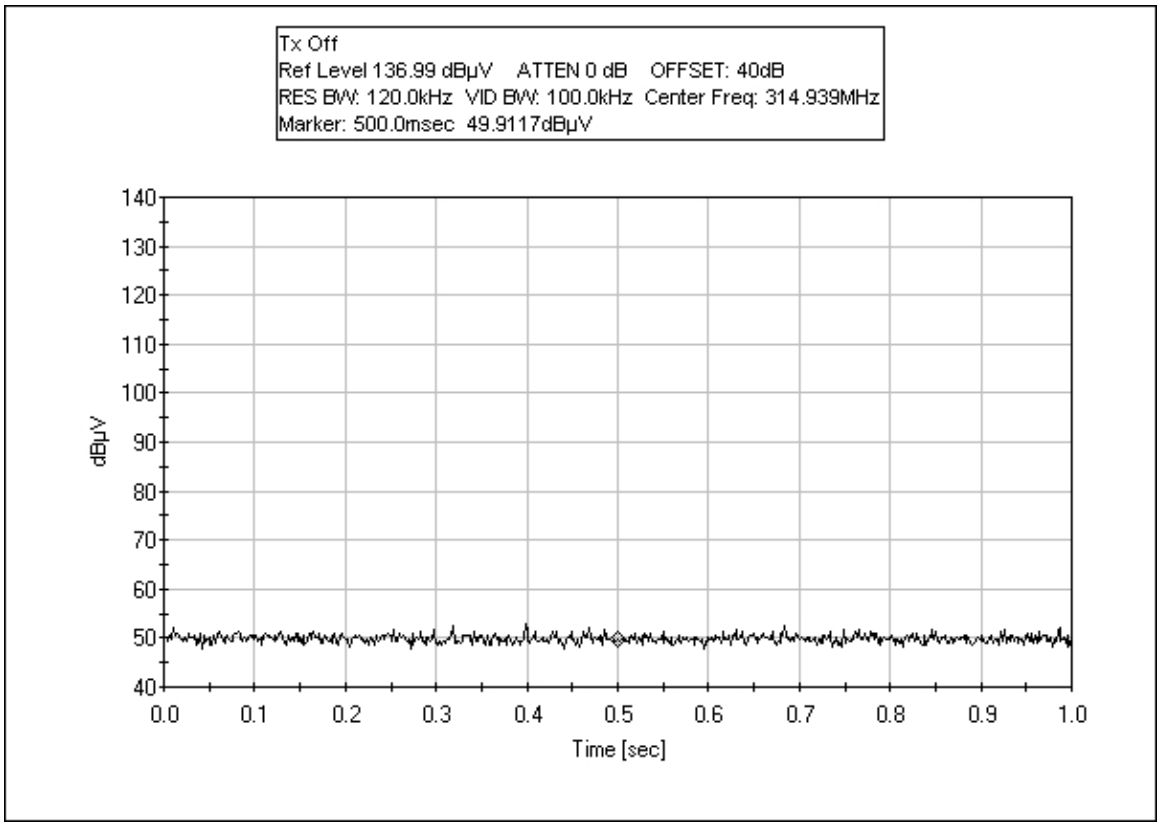
Setup: The following setup was employed to show compliance.



The spectrum analyzer was set in time domain, at 1 second sweep time, externally triggered. Connected to RF port is a field probe capable of capturing the RF signal of the EUT within close proximity.
The Oscilloscope was set to capture the negative edge of the power switch.

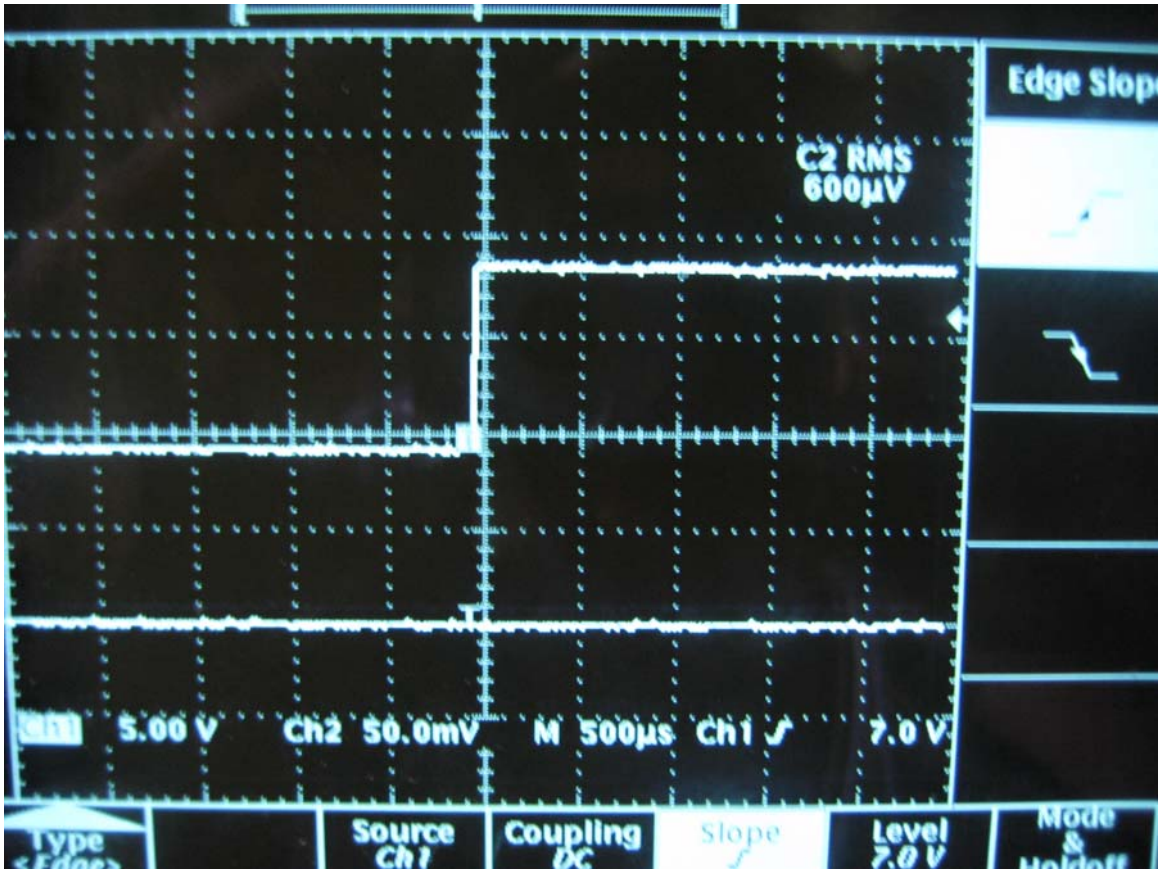


When the power switch of the EUT is released, the +5 to 0 V transition triggered the spectrum analyzer to initial a single sweep at sweep time of 1 second.

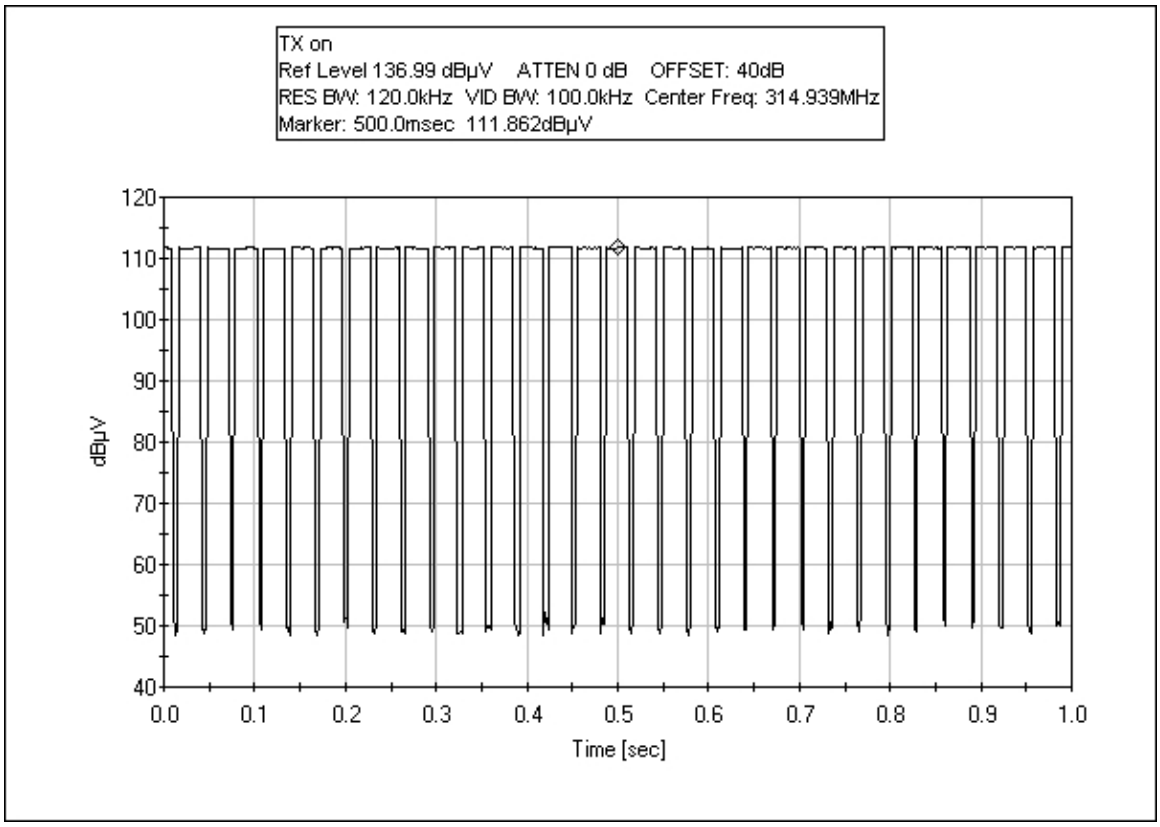


The above diagram shows instant cessation the transmit signal upon release of the switch, therefore comply with 15.231(a)(1) requirement.

For verification purposed, the follow diagrams showed the normal operation when powered up.



Power on



Transmitter on

FCC 15.231(b) SPURIOUS EMISSIONS

Test Setup Photos

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Logisys Corporation**		
Specification:	**FCC 15.231 (b) Field Strength of Fundamental**		
Work Order #:	**87451**	Date:	5/27/2008
Test Type:	**Radiated Scan**	Time:	11:06:28
Equipment:	**Handset Controller**	Sequence#:	10
Manufacturer:	Logisys	Tested By:	E. Wong
Model:	RM01		
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Horn Antenna	6246	06/29/2006	06/29/2008	00849
Microwave Pre-amp	3123A00281	07/19/2006	07/19/2008	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/18/2006	09/18/2008	P05565
0.5 GHz HPF	2	04/21/2008	04/21/2010	02752
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Handset Controller*	Logisys	RM01	NA
Receiver	Logisys	RM01	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Digital multimeter	Fluke	11	68090817
Power Supply	Topward	6306	988614

Test Conditions / Notes:

FCC15.231(2007). The single channel hand held transmitter is placed on the wooden table with a Styrofoam surface of 5 cm thickness. The Receiver is placed on the table; the DC input is connected to a support power supply and the output is connected to a digital multi-meter for verification of the output voltage. Antenna orientation is vertical to the horizontal plane. The EUT is set in continuous transmit mode, the receiver received the transmit data and operated as intended. Transmit frequency range = 314.99MHz. Transmit Frequency = 314.99MHz. Emission profile of three orthogonal orientations was investigated. Fresh battery installed. Frequency range of measurement = Fundamental RBW=120 kHz, VBW=120 kHz. Modification: Addition of tuning network consisting of 2 capacitors and 2 resistors.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15_P05198_ Site A, 010509	T4=HP8447D Pre_amp-AN00309-050210

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	315.000M	81.5	+13.7	+0.2	+3.3	-27.8	+0.0	70.9	74.9	-4.0	Horiz
	Ave								EUT flat		

2	315.000M Ave	75.1	+13.7	+0.2	+3.3	-27.8	+0.0	64.5	74.9 EUT upright	-10.4	Vert
3	315.000M Ave	70.0	+13.7	+0.2	+3.3	-27.8	+0.0	59.4	74.9 EUT upright	-15.5	Horiz
^	315.000M	91.9	+13.7	+0.2	+3.3	-27.8	+0.0	81.3	74.9 EUT flat	+6.4	Horiz
^	314.983M	81.2	+13.7	+0.2	+3.3	-27.8	+0.0	70.6	74.9 EUT upright	-4.3	Horiz
6	315.000M Ave	69.7	+13.7	+0.2	+3.3	-27.8	+0.0	59.1	74.9 EUP flat	-15.8	Vert
^	315.000M	85.6	+13.7	+0.2	+3.3	-27.8	+0.0	75.0	74.9 EUT upright	+0.1	Vert
^	315.000M	80.0	+13.7	+0.2	+3.3	-27.8	+0.0	69.4	74.9 EUP flat	-5.5	Vert

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Logisys Corporation**
Specification: **FCC 15.231(b) Field Strength of Spurious Emission**
Work Order #: **87451** Date: 5/27/2008
Test Type: **Radiated Scan** Time: 15:36:58
Equipment: **Handset Controler** Sequence#: 11
Manufacturer: Logisys Tested By: E. Wong
Model: RM01
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Horn Antenna	6246	06/29/2006	06/29/2008	00849
Microwave Pre-amp	3123A00281	07/19/2006	07/19/2008	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/18/2006	09/18/2008	P05565
0.5 GHz HPF	2	04/21/2008	04/21/2010	02752
Loop Antenna	2014	06/14/2006	06/14/2008	00314
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Handset Controler*	Logisys	RM01	NA
Receiver	Logisys	RM01	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Digital multimeter	Fluke	11	68090817
Power Supply	Topward	6306	988614

Test Conditions / Notes:

The single channel hand held transmitter is placed on the wooden table with a Styrofoam surface of 5 cm thickness. The Receiver is placed on the table. The DC input is connected to a support power supply and the output is connected to a digital multi-meter for verification of the output voltage. Antenna orientation is vertical to the horizontal plane.
The EUT is set in continuous transmit mode, the receiver received the transmit data and operated as intended.
Transmit frequency range = 314.99MHz
Transmit Frequency = 314.99MHz
Emission profile of three orthogonal orientations was investigated.
Fresh battery installed.
Frequency range of measurement = 9 kHz- 3.5 GHz.
Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz- 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz- 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz-3500 MHz RBW=1 MHz, VBW=1 MHz.
Modification: Addition of tuning network consisting of 2 capacitors and 2 resistors.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15_P05198_ Site A, 010509	T4=HP8447D Pre_amp-AN00309-050210
T5=Horn_AN00849_062908	T6=54' Heliax Cable 091808 P05565_091808
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Pre amp_1- 26GHz_AN00786_071908
T9=Filter 500GHz HP AN02752	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	944.960M	47.8	+24.0 +0.0	+0.7 +0.0	+6.1 +0.0	-27.2 +0.0	+0.0	51.4	54.6 upright	-3.2	Horiz
2	944.951M	45.4	+24.0 +0.0	+0.7 +0.0	+6.1 +0.0	-27.2 +0.0	+0.0	49.0	54.6 flat	-5.6	Vert
3	1890.390M	58.0	+0.0 +26.1 +0.2	+0.0 +2.9	+0.0 +0.3	+0.0 -38.9	+0.0	48.6	54.6 flat	-6.0	Horiz
4	944.960M	44.8	+24.0 +0.0	+0.7 +0.0	+6.1 +0.0	-27.2 +0.0	+0.0	48.4	54.6 flat	-6.2	Horiz
5	1260.250M	60.8	+0.0 +24.8 +0.1	+0.0 +2.3	+0.0 +0.3	+0.0 -40.1	+0.0	48.2	54.6 flat	-6.4	Horiz
6	944.957M	42.5	+24.0 +0.0	+0.7 +0.0	+6.1 +0.0	-27.2 +0.0	+0.0	46.1	54.6 upright	-8.5	Vert
7	1889.730M	54.8	+0.0 +26.1 +0.2	+0.0 +2.9	+0.0 +0.3	+0.0 -38.9	+0.0	45.4	54.6 flat	-9.2	Vert
8	3149.800M Ave	48.2	+0.0 +30.7 +0.3	+0.0 +4.1	+0.0 +0.4	+0.0 -38.4	+0.0	45.3	54.6 flat	-9.3	Horiz
9	3149.810M Ave	47.0	+0.0 +30.7 +0.3	+0.0 +4.1	+0.0 +0.4	+0.0 -38.4	+0.0	44.1	54.6 upright	-10.5	Horiz
^	3149.800M	58.7	+0.0 +30.7 +0.3	+0.0 +4.1	+0.0 +0.4	+0.0 -38.4	+0.0	55.8	54.6 flat	+1.2	Horiz
^	3149.810M	57.9	+0.0 +30.7 +0.3	+0.0 +4.1	+0.0 +0.4	+0.0 -38.4	+0.0	55.0	54.6 upright	+0.4	Horiz
12	2519.910M Ave	49.3	+0.0 +28.9 +0.4	+0.0 +3.5	+0.0 +0.4	+0.0 -38.5	+0.0	44.0	54.6 flat	-10.6	Horiz
^	2519.910M	59.9	+0.0 +28.9 +0.4	+0.0 +3.5	+0.0 +0.4	+0.0 -38.5	+0.0	54.6	54.6 flat	+0.0	Horiz

14	1889.830M	52.3	+0.0 +26.1 +0.2	+0.0 +2.9	+0.0 +0.3	+0.0 -38.9	+0.0	42.9	54.6 upright	-11.7	Horiz
15	2520.050M Ave	48.1	+0.0 +28.9 +0.4	+0.0 +3.5	+0.0 +0.4	+0.0 -38.5	+0.0	42.8	54.6 upright	-11.8	Vert
^	2520.050M	61.7	+0.0 +28.9 +0.4	+0.0 +3.5	+0.0 +0.4	+0.0 -38.5	+0.0	56.4	54.6 upright	+1.8	Vert
17	3149.880M Ave	45.1	+0.0 +30.7 +0.3	+0.0 +4.1	+0.0 +0.4	+0.0 -38.4	+0.0	42.2	54.6 upright	-12.4	Vert
^	3149.880M	57.5	+0.0 +30.7 +0.3	+0.0 +4.1	+0.0 +0.4	+0.0 -38.4	+0.0	54.6	54.6 upright	+0.0	Vert
^	3149.860M	54.9	+0.0 +30.7 +0.3	+0.0 +4.1	+0.0 +0.4	+0.0 -38.4	+0.0	52.0	54.6 flat	-2.6	Vert
20	2520.010M Ave	46.6	+0.0 +28.9 +0.4	+0.0 +3.5	+0.0 +0.4	+0.0 -38.5	+0.0	41.3	54.6 upright	-13.3	Horiz
^	2520.010M	59.9	+0.0 +28.9 +0.4	+0.0 +3.5	+0.0 +0.4	+0.0 -38.5	+0.0	54.6	54.6 upright	+0.0	Horiz
22	3149.860M Ave	43.9	+0.0 +30.7 +0.3	+0.0 +4.1	+0.0 +0.4	+0.0 -38.4	+0.0	41.0	54.6 flat	-13.6	Vert
23	2519.830M Ave	45.0	+0.0 +28.9 +0.4	+0.0 +3.5	+0.0 +0.4	+0.0 -38.5	+0.0	39.7	54.6 flat	-14.9	Vert
^	2519.830M	56.1	+0.0 +28.9 +0.4	+0.0 +3.5	+0.0 +0.4	+0.0 -38.5	+0.0	50.8	54.6 flat	-3.8	Vert
25	1889.910M Ave	43.0	+0.0 +26.1 +0.2	+0.0 +2.9	+0.0 +0.3	+0.0 -38.9	+0.0	33.6	54.6 upright	-21.0	Vert
^	1889.910M	60.8	+0.0 +26.1 +0.2	+0.0 +2.9	+0.0 +0.3	+0.0 -38.9	+0.0	51.4	54.6 upright	-3.2	Vert
27	1260.370M Ave	46.0	+0.0 +24.8 +0.1	+0.0 +2.3	+0.0 +0.3	+0.0 -40.1	+0.0	33.4	54.6 upright	-21.2	Vert
^	1260.370M	67.6	+0.0 +24.8 +0.1	+0.0 +2.3	+0.0 +0.3	+0.0 -40.1	+0.0	55.0	54.6 upright	+0.4	Vert
29	1260.460M Ave	42.2	+0.0 +24.8 +0.1	+0.0 +2.3	+0.0 +0.3	+0.0 -40.1	+0.0	29.6	54.6 upright	-25.0	Horiz
^	1260.460M	64.1	+0.0 +24.8 +0.1	+0.0 +2.3	+0.0 +0.3	+0.0 -40.1	+0.0	51.5	54.6 upright	-3.1	Horiz

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Logisys Corporation**
Specification: **FCC 15.231(b) Field Strength of Spurious Emission**
Work Order #: **87451** Date: 4/22/2009
Test Type: **Radiated Scan** Time: 16:41:14
Equipment: **Handset Controler** Sequence#: 12
Manufacturer: Logisys Tested By: E. Wong
Model: RM01
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2009	01/05/2011	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Handset Controler*	Logisys	RM01	NA
Receiver	Logisys	RM01	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Digital multimeter	Fluke	11	68090817
Power Supply	Topward	6306	988614

Test Conditions / Notes:

The single channel hand held transmitter is placed on the wooden table with a Styrofoam surface of 5 cm thickness. The Receiver is placed on the table; the DC input is connected to a support power supply and the output is connected to a digital multi-meter for verification of the output voltage. Antenna orientation is vertical to the horizontal plane.
The EUT is set in continuous transmit mode, the receiver received the transmit data and operated as intended.
Transmit frequency range = 314.99MHz
Transmit Frequency = 314.99MHz
Emission profile of three orthogonal orientations was investigated.
Fresh battery installed.
Frequency range of measurement = 30MHz- 1 GHz.
Frequency 30 MHz- 1000 MHz RBW=120 kHz, VBW=120 kHz
Modification: Addition of tuning network consisting of 2 capacitors and 2 resistors.
Note: Peak and Average measurement at 630MHz

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15_05198_ Site A, 010511	T4=Pre_amp_HP8447D-AN00309-050210

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	629.975M Ave	50.3	+20.2	+0.5	+4.6	-27.3	+0.0	48.3	54.6 upright	-6.3	Vert
2	629.969M Ave	50.2	+20.2	+0.5	+4.6	-27.3	+0.0	48.2	54.6 upright	-6.4	Horiz
3	629.972M Ave	50.0	+20.2	+0.5	+4.6	-27.3	+0.0	48.0	54.6 flat	-6.6	Horiz
^	629.972M	60.6	+20.2	+0.5	+4.6	-27.3	+0.0	58.6	54.6 flat	+4.0	Horiz
^	629.969M	60.6	+20.2	+0.5	+4.6	-27.3	+0.0	58.6	54.6 upright	+4.0	Horiz
6	629.975M Ave	48.9	+20.2	+0.5	+4.6	-27.3	+0.0	46.9	54.6 flat	-7.7	Vert
^	629.975M	60.8	+20.2	+0.5	+4.6	-27.3	+0.0	58.8	54.6 upright	+4.2	Vert
^	629.975M	59.7	+20.2	+0.5	+4.6	-27.3	+0.0	57.7	54.6 flat	+3.1	Vert

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Logisys Corporation**
Specification: **FCC 15.231/15.205**
Work Order #: **87451** Date: 5/27/2008
Test Type: **Radiated Scan** Time: 15:36:58
Equipment: **Handset Controller** Sequence#: 11
Manufacturer: Logisys Tested By: E. Wong
Model: RM01
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Horn Antenna	6246	06/29/2006	06/29/2008	00849
Microwave Pre-amp	3123A00281	07/19/2006	07/19/2008	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/18/2006	09/18/2008	P05565
0.5 GHz HPF	2	04/21/2008	04/21/2010	02752
Loop Antenna	2014	06/14/2006	06/14/2008	00314
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Handset Controller*	Logisys	RM01	NA
Receiver	Logisys	RM01	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Digital multimeter	Fluke	11	68090817
Power Supply	Topward	6306	988614

Test Conditions / Notes:

FCC 15.231(2007)/15.205/15.209 Restricted band. The single channel hand held transmitter is placed on the wooden table with a Styrofoam surface of 5 cm thickness. The Receiver is placed on the table; the DC input is connected to a support power supply and the output is connected to a digital multi-meter for verification of the output voltage. Antenna orientation is vertical to the horizontal plane. The EUT is set in continuous transmit mode, the receiver received the transmit data and operated as intended. Transmit frequency range = 314.99MHz. Transmit Frequency = 314.99MHz. Emission profile of three orthogonal orientations was investigated. Fresh battery installed. Frequency range of measurement = 9 kHz - 3.5 GHz. Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz - 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz - 3500 MHz RBW=1 MHz, VBW=1 MHz. Modification: Addition of tuning network consisting of 2 capacitors and 2 resistors.

Transducer Legend:

T1=Horn_AN00849_062908	T2=54' Heliax Cable 091808 P05565_091808
T3=Hi Freq_40GHz_2ft-ANP02948-091809	T4=Pre amp_1- 26GHz_AN00786_071908
T5=Filter 500GHz HP AN02752	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	1574.910M Ave	57.2	+25.2 +0.1	+2.5	+0.3	-39.1	+0.0	46.2	54.0 upright	-7.8	Vert
^	1574.910M	68.6	+25.2 +0.1	+2.5	+0.3	-39.1	+0.0	57.6	54.0 upright	+3.6	Vert
3	2834.910M Ave	47.4	+29.9 +0.4	+3.9	+0.4	-38.5	+0.0	43.5	54.0 flat	-10.5	Horiz
4	2834.880M Ave	46.3	+29.9 +0.4	+3.9	+0.4	-38.5	+0.0	42.4	54.0 upright	-11.6	Vert
^	2834.880M	57.5	+29.9 +0.4	+3.9	+0.4	-38.5	+0.0	53.6	54.0 upright	-0.4	Vert
^	2834.900M	48.8	+29.9 +0.4	+3.9	+0.4	-38.5	+0.0	44.9	54.0 flat	-9.1	Vert
7	2834.810M Ave	46.2	+29.9 +0.4	+3.9	+0.4	-38.5	+0.0	42.3	54.0 upright	-11.7	Horiz
^	2834.910M	58.5	+29.9 +0.4	+3.9	+0.4	-38.5	+0.0	54.6	54.0 flat	+0.6	Horiz
^	2834.810M	56.7	+29.9 +0.4	+3.9	+0.4	-38.5	+0.0	52.8	54.0 upright	-1.2	Horiz
10	2205.080M Ave	49.2	+27.4 +0.3	+3.6	+0.3	-38.7	+0.0	42.1	54.0 flat	-11.9	Horiz
^	2205.080M	65.7	+27.4 +0.3	+3.6	+0.3	-38.7	+0.0	58.6	54.0 flat	+4.6	Horiz
^	2205.010M	64.5	+27.4 +0.3	+3.6	+0.3	-38.7	+0.0	57.4	54.0 upright	+3.4	Horiz
13	2205.010M Ave	48.9	+27.4 +0.3	+3.6	+0.3	-38.7	+0.0	41.8	54.0 upright	-12.2	Horiz
14	2205.033M Ave	47.6	+27.4 +0.3	+3.6	+0.3	-38.7	+0.0	40.5	54.0 flat	-13.5	Vert
15	2205.020M Ave	47.6	+27.4 +0.3	+3.6	+0.3	-38.7	+0.0	40.5	54.0 upright	-13.5	Vert
^	2205.020M	66.2	+27.4 +0.3	+3.6	+0.3	-38.7	+0.0	59.1	54.0 upright	+5.1	Vert
^	2205.033M	62.6	+27.4 +0.3	+3.6	+0.3	-38.7	+0.0	55.5	54.0 flat	+1.5	Vert

18	1575.390M Ave	48.8	+25.2 +0.1	+2.5	+0.3	-39.1	+0.0	37.8	54.0 flat	-16.2	Horiz
^	1575.390M	65.5	+25.2 +0.1	+2.5	+0.3	-39.1	+0.0	54.5	54.0 flat	+0.5	Horiz
^	1575.470M	60.7	+25.2 +0.1	+2.5	+0.3	-39.1	+0.0	49.7	54.0 upright	-4.3	Horiz
21	1575.480M Ave	44.5	+25.2 +0.1	+2.5	+0.3	-39.1	+0.0	33.5	54.0 flat	-20.5	Vert
^	1575.480M	67.7	+25.2 +0.1	+2.5	+0.3	-39.1	+0.0	56.7	54.0 flat	+2.7	Vert

FCC 15.231(c) OCCUPIED BANDWIDTH

Test Equipment

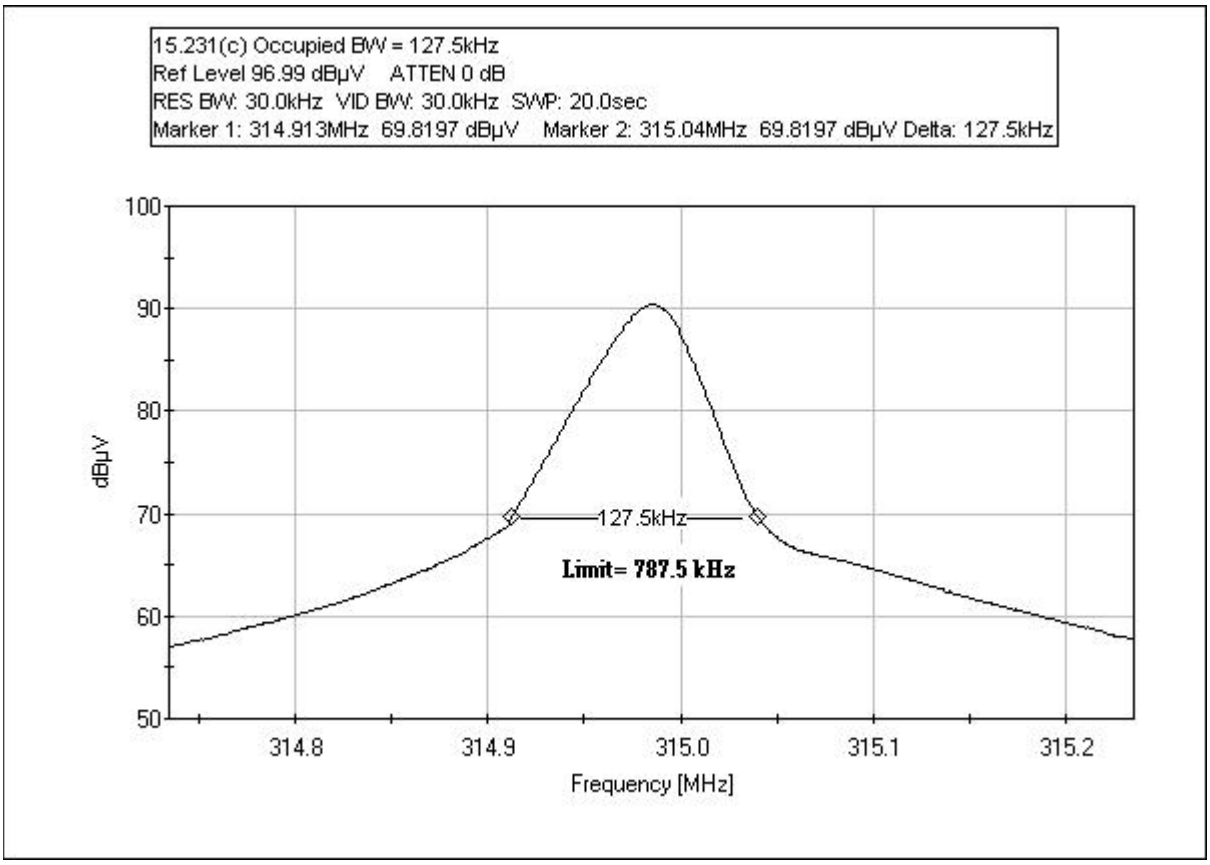
Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02869	Agilent	E4440A	MY46186290	021207	021209
Bilog Antenna	01995	Chase	CBL6111C	2451	012108	022110
Pre-amp	00309	HP	8447D	1937A02548	060106	060108
Antenna cable	P05198	Belden	8268 (RG-214)	Cable#15	010507	010509
Pre-amp to SA cable	P05050	Pasternack	RG223/U	Cable#10	051607	051609

Test Conditions: The single channel hand held transmitter is placed on the wooden table with a Styrofoam surface of 5 cm thickness. The Receiver is placed on the table; the DC input is connected to a support power supply and the output is connected to a digital multi-meter for verification of the output voltage. Antenna orientation is vertical to the horizontal plane. The EUT is set in continuous transmit mode, the receiver received the transmit data and operated as intended. Transmit frequency range = 314.99MHz.

15.231(c) Occupied BW = 127.5kHz.jpg

Test Setup Photos

Plots


15.231(c) Occupied BW = 127.5kHz
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 30.0kHz VID BW: 30.0kHz SWP: 20.0sec
Marker 1: 314.913MHz 69.8197 dBµV Marker 2: 315.04MHz 69.8197 dBµV Delta: 127.5kHz
100
90
80
70
60
50
dBµV
127.5kHz
Limit= 787.5 kHz
314.8
314.9
315.0
315.1
315.2
Frequency [MHz]