



Electromagnetic Compatibility Test Report

Tests Performed on a Macmillan New Ventures

i>cliker Base Unit Transciever, Model ICL24-B

Radiometrics Document RP-7739A



Product Detail:

FCC ID: T24-ICL24B

IC: 6495C-ICL24B

Equipment type: Low power 2.4 GHz transceiver

Test Standards:

US CFR Title 47, Chapter I, FCC Part 15 Subpart C

FCC Part 15 CFR Title 47: 2012

Industry Canada RSS-210, Issue 8: 2010 as required for Category I Equipment

This report concerns: Original Grant for Certification

FCC Part 15.249

Tests Performed For:

Holtzbrinck Publishers, LLC
c/o Macmillan New Ventures
 33 Irving Place, 9th Floor
 New York, NY 10003

Test Facility:

Radiometrics Midwest Corporation
 12 East Devonwood
 Romeoville, IL 60446
 (815) 293-0772

Test Date(s): (Month-Day-Year)

December 5, 2013 to February 5, 2014

Document RP-7739A Revisions:

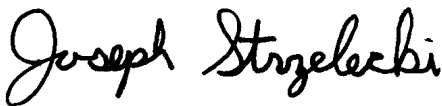
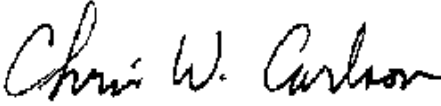
Rev.	Issue Date	Affected Sections	Revised By
0	May 1, 2014		

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1 ADMINISTRATIVE DATA

<i>Equipment Under Test:</i> A Macmillan New Ventures, i>cliker Base Unit Transciever Model: ICL24-B Serial Number: None This will be referred to as the EUT in this Report	
<i>Date EUT Received at Radiometrics: (Month-Day-Year)</i> 12/2/2013	<i>Test Date(s): (Month-Day-Year)</i> December 5, 2013 to January 7, 2014
<i>Test Report Written By:</i> Joseph Strzelecki Senior EMC Engineer	<i>Test Witnessed By:</i> The tests were not witnessed by Macmillan New Ventures
<i>Radiometrics' Personnel Responsible for Test:</i>  <hr/> Joseph Strzelecki Senior EMC Engineer NARTE EMC-000877-NE	<i>Test Report Approved By</i>  <hr/> Chris W. Carlson Director of Engineering NARTE EMC-000921-NE

2 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is an i>cliker Base Unit Transciever, Model ICL24-B, manufactured by Macmillan New Ventures. The detailed test results are presented in a separate section. The following is a summary of the test results.

Emissions Tests Results

Environmental Phenomena	Frequency Range	Basic Standard	Test Result
RF Radiated Emissions	30-25,000 MHz	RSS-210 & FCC Part 15	Pass
Conducted Emissions, AC Mains	0.15 - 30 MHz	RSS-210 & FCC Part 15	Pass
Occupied Bandwidth Test	Fundamental Freq.	RSS-210 & FCC Part 15	Pass

Note: The RSS-210 specification is not currently covered in Radiometrics' Scope of Accreditation. This is technically very similar to FCC, CFR 47 Part 15 which is on Radiometrics scope.

2.1 RF Exposure Compliance Requirements

Since the power output is less than 10 mW, the EUT meets the FCC requirement for RF exposure and it is exempt from RSS102 SAR and RF exposure evaluations. There are no power level adjustments available to the end user. The antenna is permanently attached. The detailed calculations for RF Exposure are presented in a separate document.

3 EQUIPMENT UNDER TEST (EUT) DETAILS

3.1 EUT Description

The EUT is an i>cliker Base Unit Transciever, Model ICL24-B, manufactured by Macmillan New Ventures. The EUT was in good working condition during the tests, with no known defects.

3.1.1 FCC Section 15.203 & RSS-GEN Antenna Requirements

The antenna is permanently attached to the printed circuit board. The antenna is internal to the EUT and it is not readily available to be modified by the end user. Therefore it meets the 15.203 Requirements.

3.2 Related Submittals

The associated transceiver is operated under 15.249. It is subject to the FCC requirements pursuant to the Certification equipment authorization under Part 15 Subpart C, and is being submitted as FCC ID: T24-ICL24, IC: 6495C-ICL24.

The associated transmitter is subject to the IC requirements pursuant to the Certification equipment authorization under RSS-210. The associated receiver is subject to the IC requirements pursuant to the Certification equipment authorization under RSS-210.

4 TESTED SYSTEM DETAILS

4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The EUT was placed on an 80-cm high, nonconductive test stand. The testing was performed in conditions as close as possible to installed conditions. Wiring was consistent with manufacturer's recommendations. Power was supplied via USB connection from the host computer or a USB power supply.

The identification for all equipment, plus descriptions of all cables used in the tested system, are:

Tested System Configuration List

Item	Description	Type*	Manufacturer	Model Number	Serial Number
1	i>cliker Base Unit Transciever	E	Macmillan New Ventures	ICL24-B	None
2	Notebook computer (NB7)	H	Dell	D620 (PP18L)	17171005069
3	Notebook Power Supply (NB7)	H	Dell	AA90PM111	CN-0MV2MM-70163-14G-0GC4-A01
4	Modem (MDM-01)	P	US Robotics	0701	22SBBAC9FPMN
5	USB Power Supply	H	Apple	A1401	0012ADU00

* Type: E = EUT, P = Peripheral, S = Support Equipment; H = Host Computer

List of System Cables

QTY	Length (m)	Cable Description	Shielded?
1	1.8	USB Cable from EUT to PC or USB power supply	Yes
1	1.8	Serial cable from PC to Modem	Yes

4.2 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

4.3 Equipment Modifications

No modifications were made to the EUT at Radiometrics' test facility in order to comply with the standards listed in this report.

5 TEST SPECIFICATIONS AND RELATED DOCUMENTS

Document	Date	Title
FCC CFR Title 47	2013	Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices
ANSI C63.4-2009	2009	Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10-2009	2009	American National Standard for Testing Unlicensed Wireless Devices
IC RSS-210 Issue 8	2010	Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands) Category I Equipment
IC RSS-Gen Issue 3	2010	General Requirements and Information for the Certification of Radiocommunication Equipment (RSS-Gen)

The test procedures used are in accordance with the Industry Canada RSS-GEN and ANSI document C63.10. Radiated testing was performed at an antenna to EUT distance of 3 meters.

6 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 2005 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. Radiometrics' scope of accreditation includes all of the test methods listed herein. A copy of the accreditation can be accessed on our web site (www.radiomet.com). Radiometrics accreditation status can be verified at A2LA's web site (www.a2la2.org).

The following is a list of shielded enclosures located in Romeoville, Illinois used during the tests:

Chamber E: Is a custom made anechoic chamber that measures 52' L X 30' W X 18' H. The walls and ceiling are fully lined with RF absorber. Pro-shield of Collinsville, Oklahoma manufactured the chamber. The floor has a 9' x 9' section of microwave absorber for testing above 1 GHz.

Test Station F: Is an area that measures 10' D X 12' W X 10' H. The floor and back wall are metal shielded. This area is used for conducted emissions measurements.

A separate ten-foot long, brass plated, steel ground rod attached via a 6 inch copper braid grounds each of the above chambers. Each enclosure is also equipped with low-pass power line filters.

The FCC has accepted these sites as test site number US1065. The FCC test site Registration Number is 732175. Details of the site characteristics are on file with the Industry Canada as site number IC8727A-1.

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

A complete list of the test equipment is provided herein. The calibration due dates are indicated on the equipment list. The equipment is calibrated in accordance to ANSI/NCSL Z540-1 with traceability to the National Institute of Standards and Technology (NIST).

7 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

8 CERTIFICATION

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification and the data contained herein was taken with calibrated test equipment. The results relate only to the EUT listed herein.

9 TEST EQUIPMENT TABLE

RMC ID	Manufacturer	Description	Model No.	Serial No.	Frequency Range	Cal Period	Cal Date
AMP-05	RMC/Celeritek	Pre-amplifier	MW110G	1001	1.0-12GHz	12 Mo.	06/25/13
AMP-20	Avantek	Pre-amplifier	SF8-0652	15221	8-18GHz	12 Mo.	01/17/14
AMP-22	Anritsu	Pre-amplifier	MH648A	M23969	0.1-1200MHz	12 Mo.	01/15/14
AMP-29	HP / Agilent	Amplifier	11975A	2304A00158	2-8 GHz	12 Mo.	12/20/13
ANT-03	Tensor	Biconical Antenna	4104	2231	20-250MHz	24 Mo.	11/26/13
ANT-04	Tensor	Biconical Antenna	4104	2246	20-250MHz	24 Mo.	05/02/12
ANT-06	EMCO	Log-Periodic Ant.	3146	1248	200-1000MHz	24 Mo.	11/26/13
ANT-08	RMC	Log-Periodic Ant.	LP1000	1002	200-1000MHz	24 Mo.	08/10/12
ANT-13	EMCO	Horn Antenna	3115	2502	1.0-18GHz	24 Mo.	12/05/12
ANT-44	ARA	Super Log Antenna	SL-20M2G	1002	20-2000MHz	24 Mo.	12/10/13
ANT-48	RMC	Std Gain Horn	HW2020	1001	18-26 GHz	12 Mo.	08/08/13
HPF-01	Solar	High Pass Filter	7930-100	HPF-1	0.15-30MHz	24 Mo.	02/24/14
LSN-01	Electrometrics	50 uH LISN	FCC/VDE 50/2	1001	0.01-30MHz	24 Mo.	06/21/13
LSN-03	Farnell	50 uH LISN	1EXLSN30B	000314	0.01-30MHz	24 Mo.	06/21/13
MXR-02	HP / Agilent	Harmonic Mixer	11970K	2332A00489	18-26.5GHz	12 Mo.	12/20/13
REC-03	Anritsu	Spectrum Analyzer	MS2601B	MT94589	0.01-2200MHz	12 Mo.	04/08/13
REC-07	Anritsu	Spectrum Analyzer	MS2601A	MT53067	0.01-2200MHz	12 Mo.	05/21/13
REC-08	HP / Agilent	Spectrum Analyzer	8566B	2648A13481 2209A01436	30Hz-22GHz	24 Mo.	11/21/13
REC-10	HP / Agilent	EMI Receiver	8546A	3842A00521 3704A00484	30Hz-6GHz	24 Mo.	01/13/14
REC-11	HP / Agilent	Spectrum Analyzer	E7405A	US39110103	9Hz-26.5GHz	12 Mo.	06/13/13
RNT-07	Agilent	Signal Analyzer	N9030A	MY51360006	3Hz-44 GHz	12 Mo.	10/01/13
THM-02	Fluke	Temp/Humid Meter	971	93490471	N/A	24 Mo.	06/27/13

Note: All calibrated equipment is subject to periodic checks.

10 TEST SECTIONS

10.1 Occupied Bandwidth Data

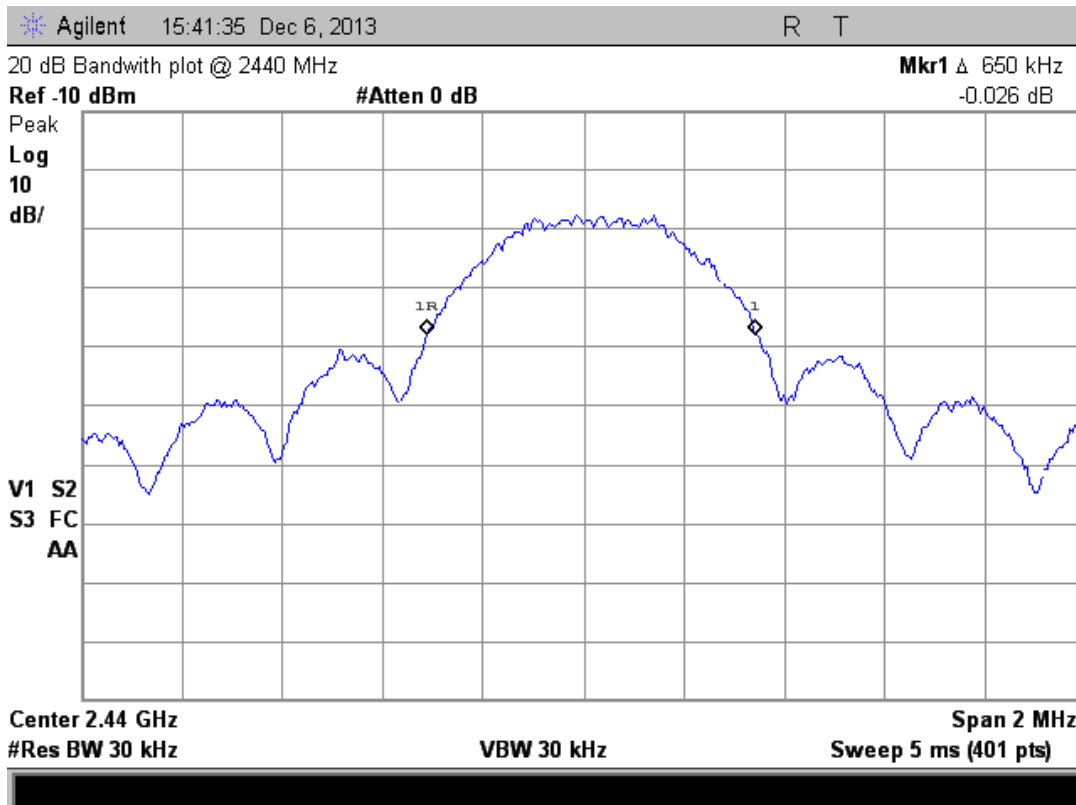
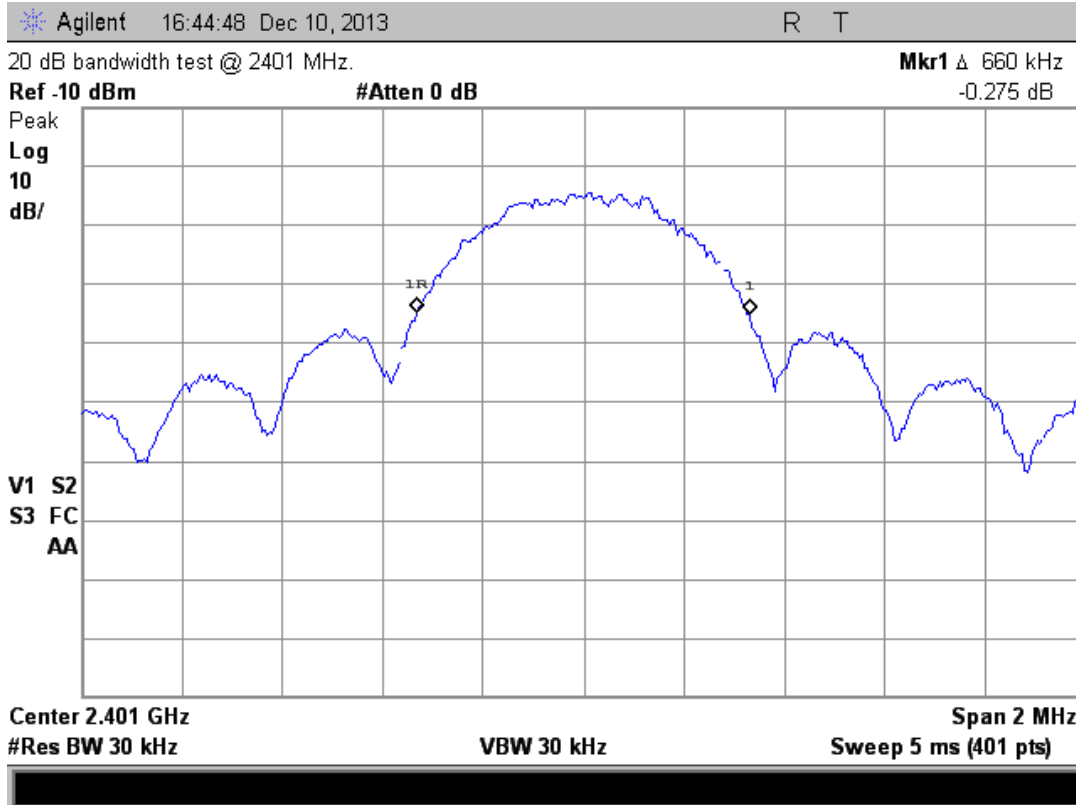
The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation. The EUT was transmitting at its maximum data rate. The trace was allowed to stabilize.

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

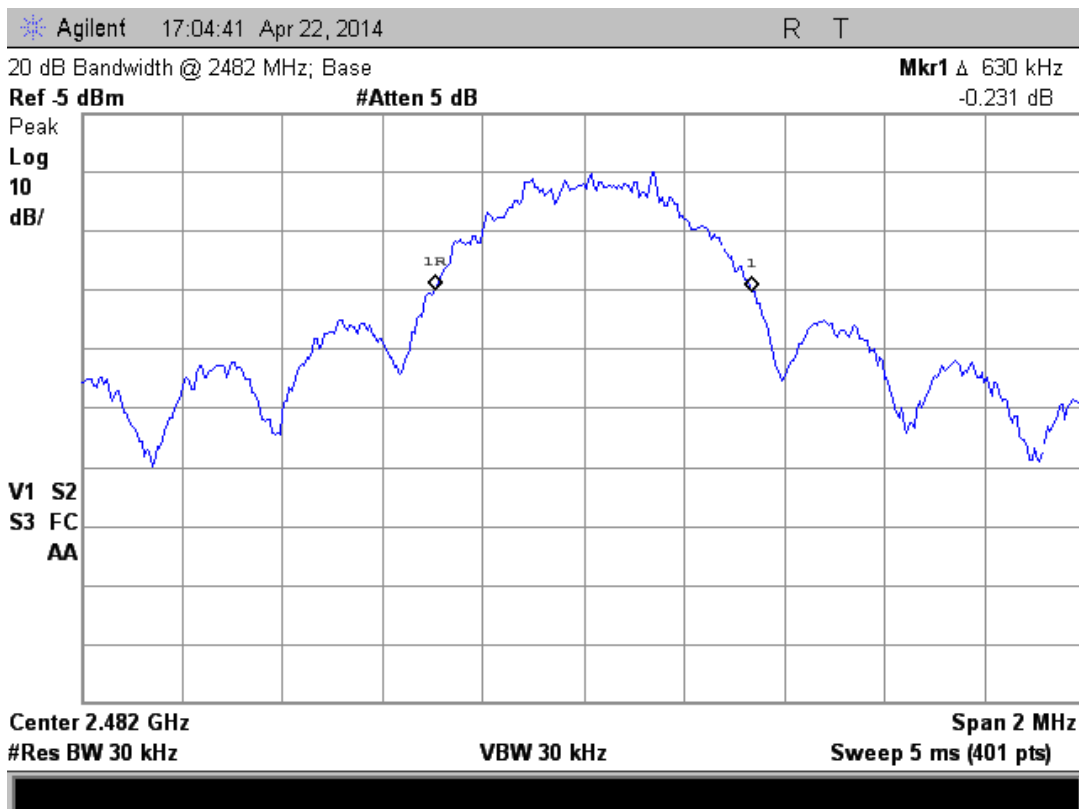
The marker-to-peak function was set to the peak of the emission. Then the marker-delta function was used to measure 20 dB down one side of the emission. The marker-delta function was reset and then moved to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

Channel MHz	20 dB EBW kHz
2401	660
2440	650
2482	630

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever



Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever



10.2 AC Conducted Emissions

The tests and limits are in accordance with FCC section 15.207 and RSS Gen section 7.2.2.

A computer-controlled analyzer was used to perform the conducted emissions measurements. The frequency range was divided into 500 subranges equally spaced on a logarithmic scale. The computer recorded the peak of each subrange. This data was then plotted on semi-log graph paper generated by the computer and plotter. Adjusting the positions of the cables and orientation of the test system then maximizes the highest emissions.

Mains Conducted emission measurements were performed using a 50 Ohm/50 uH Line Impedance Stabilization Network (LISN) as the pick-up device. Measurements were repeated on both leads within the power cord. If the EUT power cord exceeded 80 cm in length, the excess length of the power cord was made into a 30 to 40 cm bundle near the center of the cord. The LISN was placed on the floor at the base of the test platform and electrically bonded to the ground plane.

FCC Limits of Conducted Emissions at the AC Mains Ports

Frequency Range (MHz)	Class B Limits (dBuV)	
	Quasi-Peak	Average
0.150 - 0.50*	66 - 56	56 - 46
0.5 - 5.0	56	46
5.0 - 30	60	50
* The limit decreases linearly with the logarithm of the frequency in this range.		

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

The initial step in collecting conducted data is a peak detector scan and the plotting of the measurement range. Significant peaks are then marked as shown on the following table, and these signals are then measured with the quasi-peak detector. The following represents the worst case emissions from the host computer (with the EUT connected) power cord, after testing all modes of operation.

Test Date : December 5, 2013

The Amplitude is the final corrected value with cable and LISN Loss.

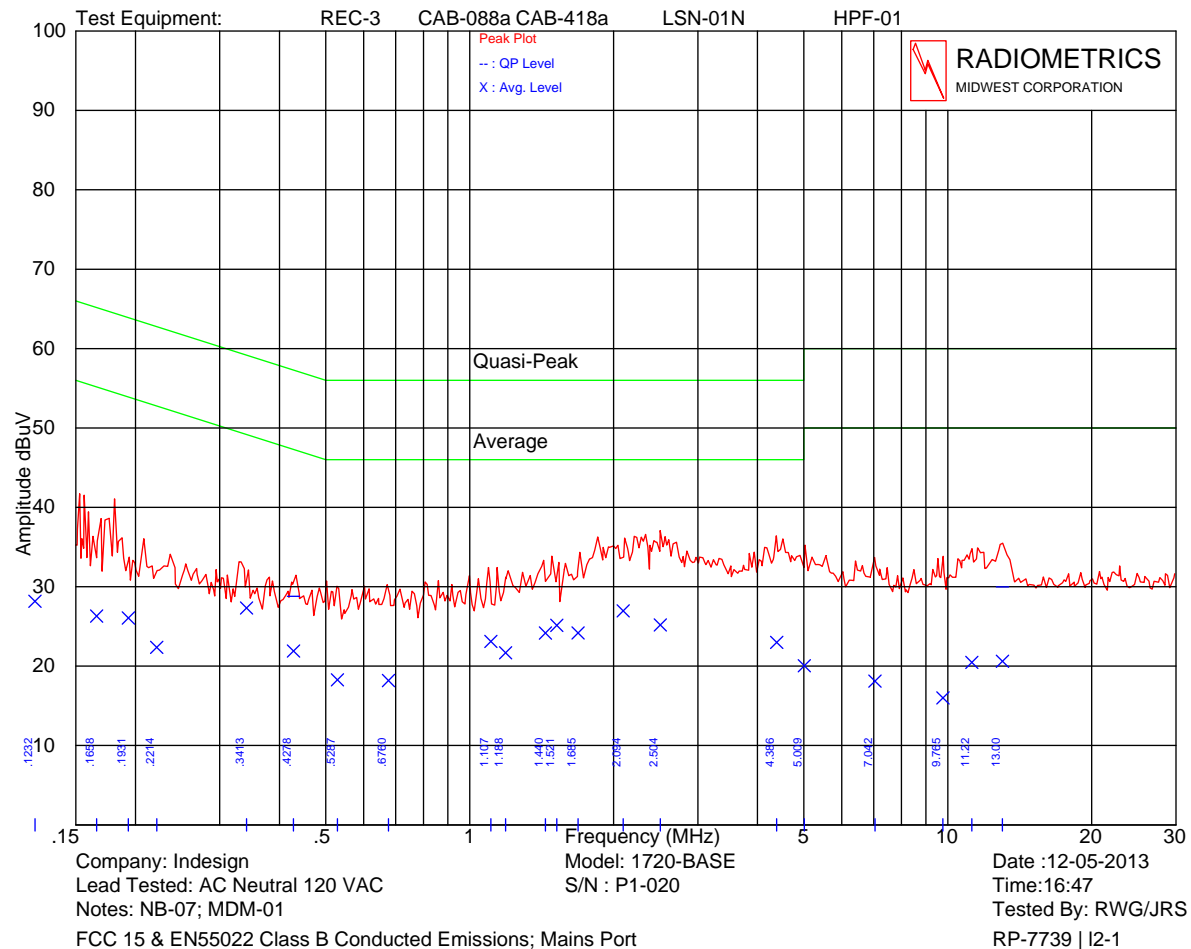
Lead Tested	Frequency MHz	QP Amplitude	QP Limit	Average Amplitude	Average Limit
AC Neutral	0.123	41.5P	67.6	28.2	57.6
AC Neutral	0.166	41.1P	65.2	26.3	55.2
AC Neutral	0.193	36.0P	63.9	26.1	53.9
AC Neutral	0.221	34.1P	62.8	22.4	52.8
AC Neutral	0.341	33.1P	59.2	27.3	49.2
AC Neutral	0.428	28.8Q	57.3	21.9	47.3
AC Neutral	0.529	30.1P	56.0	18.3	46.0
AC Neutral	0.676	30.3P	56.0	18.2	46.0
AC Neutral	1.107	32.4P	56.0	23.1	46.0
AC Neutral	1.189	32.0P	56.0	21.7	46.0
AC Neutral	1.440	33.3P	56.0	24.2	46.0
AC Neutral	1.521	33.1P	56.0	25.1	46.0
AC Neutral	1.685	34.3P	56.0	24.2	46.0
AC Neutral	2.094	36.1P	56.0	27.0	46.0
AC Neutral	2.504	37.1P	56.0	25.2	46.0
AC Neutral	4.387	36.4P	56.0	23.0	46.0
AC Neutral	5.010	35.2P	60.0	20.0	50.0
AC Neutral	7.042	33.7P	60.0	18.1	50.0
AC Neutral	9.765	33.8P	60.0	16.0	50.0
AC Neutral	11.225	34.8P	60.0	20.5	50.0
AC Neutral	13.009	30.0Q	60.0	20.6	50.0
AC Hot	0.166	51.2Q	65.2	28.9	55.2
AC Hot	0.151	37.9Q	66.0	28.9	56.0
AC Hot	0.182	33.5Q	64.4	25.0	54.4
AC Hot	0.207	32.1Q	63.3	24.9	53.3
AC Hot	0.332	32.7Q	59.4	27.3	49.4
AC Hot	1.033	33.0P	56.0	21.7	46.0
AC Hot	1.910	36.2P	56.0	26.1	46.0
AC Hot	2.138	37.2P	56.0	26.9	46.0
AC Hot	2.386	37.3P	56.0	26.9	46.0
AC Hot	2.946	36.6P	56.0	22.9	46.0
AC Hot	4.247	30.9Q	56.0	22.9	46.0
AC Hot	6.647	34.2P	60.0	19.9	50.0
AC Hot	7.372	33.5P	60.0	19.9	50.0
AC Hot	11.259	36.0P	60.0	22.0	50.0
AC Hot	12.923	36.0P	60.0	23.5	50.0
AC Hot	21.183	32.9P	60.0	16.4	50.0
AC Hot	22.821	32.5P	60.0	18.8	50.0
AC Hot	25.641	32.3P	60.0	16.4	50.0
AC Hot	28.465	32.5P	60.0	16.8	50.0

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

The above are the worst case results with three frequencies test for each EUT

* QP readings are quasi-peak with a 9 kHz bandwidth and no video filter.

Judgment: Passed by at least 8 dB



Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

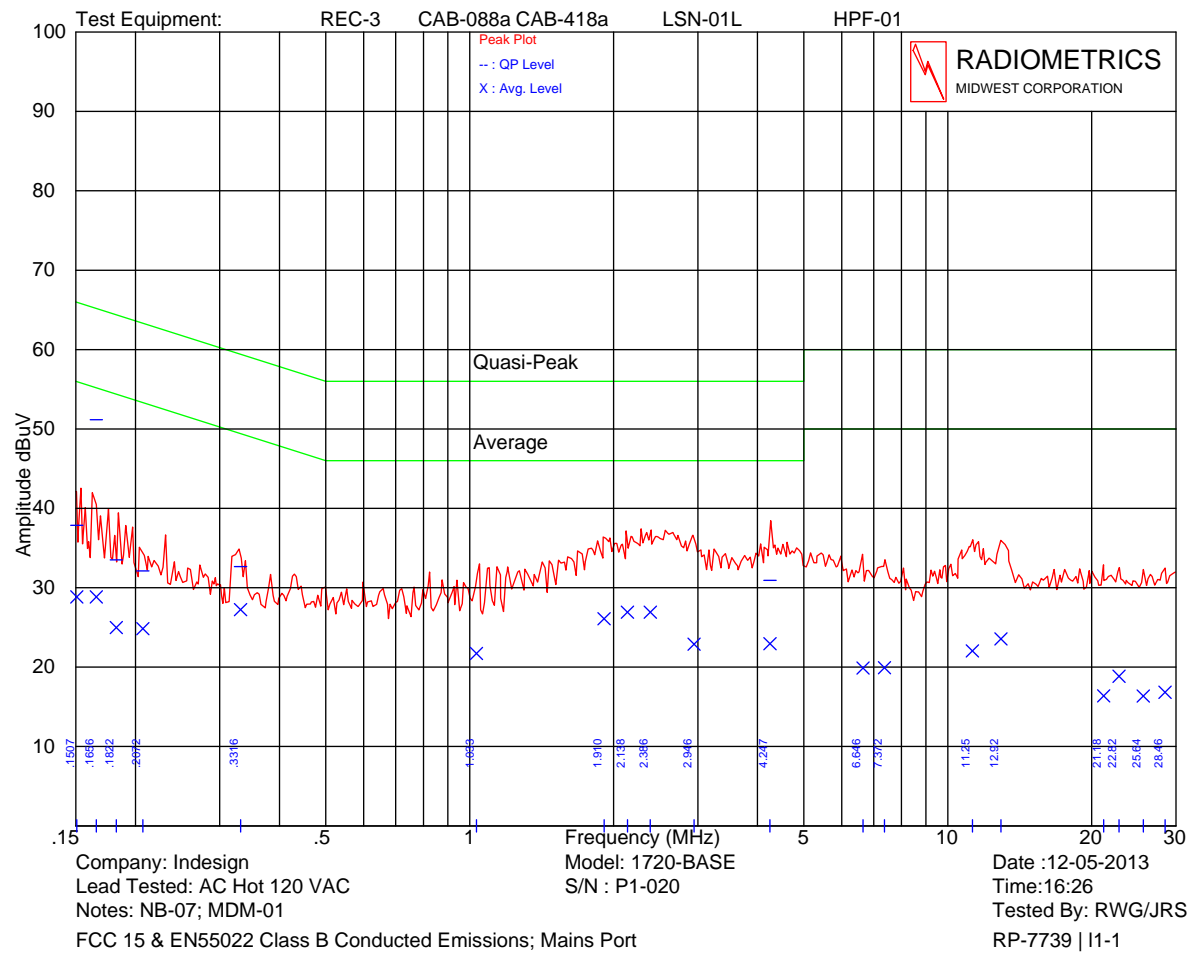
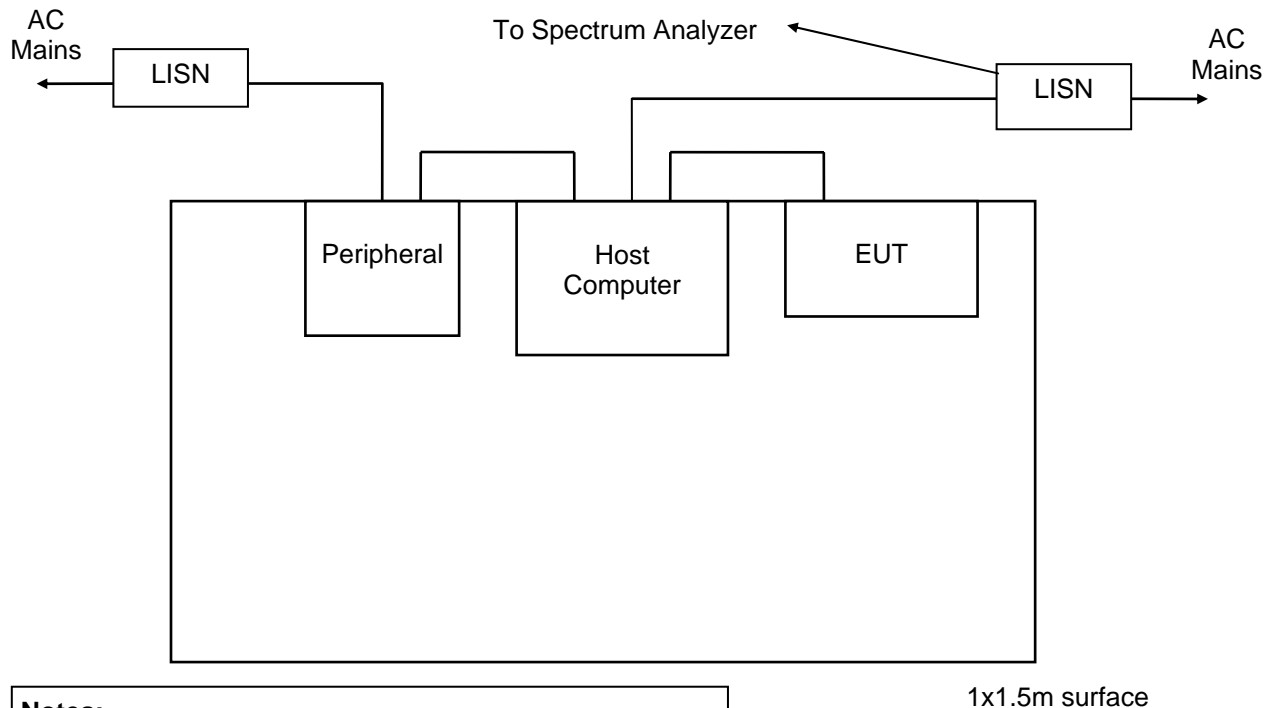


Figure 1. Conducted Emissions Test Setup**Notes:**

- LISN's at least 80 cm from EUT chassis
- Vertical conductive plane 40 cm from rear of table top
- EUT power cord bundled

10.3 Radiated Emissions

Radiated emission measurements were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. The radiated emission measurements were performed with a spectrum analyzer. The bandwidth used from 150 kHz to 30 MHz is 9 or 10 kHz and the bandwidth from 30 MHz to 1000 MHz is 100 or 120 kHz. Above 1 GHz, a 1 MHz bandwidth is used. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists.

From 30 to 1000 MHz, an Anritsu spectrum analyzer was used. For tests from 1 to 25 GHz, an HP 8566 spectrum analyzer was used. For tests from 1 to 10 GHz, a high pass filter was used to reduce the fundamental emission. A harmonic mixer was used from 18 to 25 GHz. Figure 4 herein lists the details of the test equipment used during radiated emissions tests.

The EUT was rotated through three orthogonal axis as per 13.1.4.1 of ANSI C63.4 during the radiated tests.

Final radiated emissions measurements were performed inside of an anechoic chamber at a test distance of 3 meters. The anechoic chamber is designated as Chamber E. This Chamber meets the Site Attenuation requirements of ANSI C63.4 and CISPR 16-1. Chamber E is located at 12 East Devonwood Ave. Romeoville, Illinois EMI test lab.

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

The entire frequency range from 30 to 25,000 MHz was slowly scanned with particular attention paid to those frequency ranges which appeared high. Measurements were performed using two antenna polarizations, (vertical and horizontal). The worst case emissions were recorded. All measurements may be performed using either the peak, average or quasi-peak detector functions. If the peak detector data exceeds or is marginally close to the limits, the measurements are repeated using a quasi-peak detector or average function as required by the specification for final determination of compliance.

The detected emission levels were maximized by rotating the EUT, adjusting the positions of all cables, and by scanning the measurement antenna from 1 to 4 meters above the ground.

10.3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and by subtracting the Amplifier Gain from the measured reading. The basic equation is as follows:

$$FS = RA + AF + CF - AG + HPF + PKA$$

Where: FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

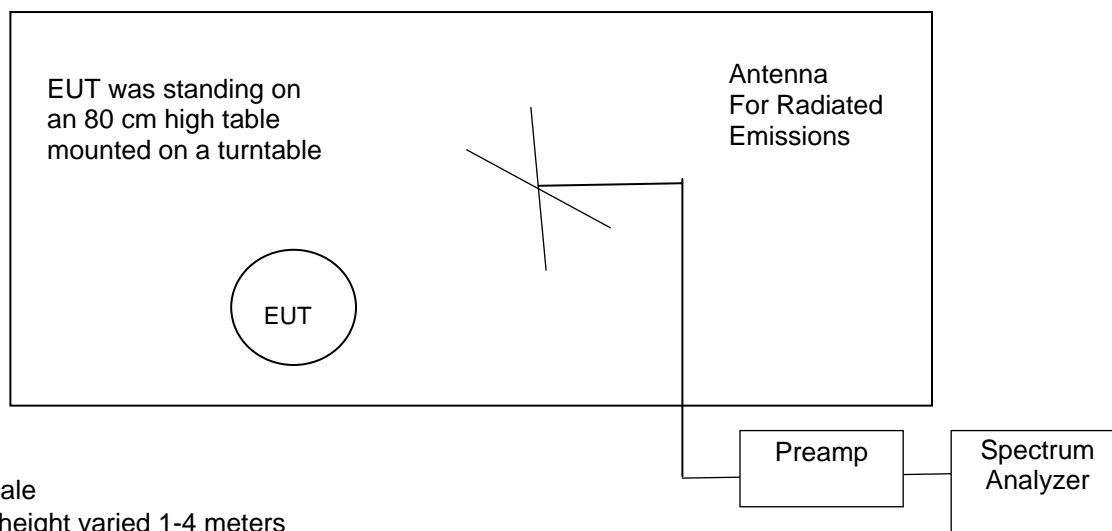
AG = Amplifier Gain

PKA = Peak to Average Factor (This is zero for non-average measurements)

The Peak to average factor is used when average measurements are required. It is calculated by the highest duty cycle in percent over any 100mS transmission. The factor in dB is $20 * \text{Log}(\text{Duty cycle}/100)$.

Figure 2. Drawing of Radiated Emissions Setup

Chamber E, anechoic



Notes:

- Not to Scale
- Antenna height varied 1-4 meters
- Distance from antenna to tested system is 3 meters
- AC cords not shown. They are connected to AC outlet with low-pass filter on turntable

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

Frequency Range	Receive Antenna	Pre-Amplifier	Spectrum Analyzer
30 to 1000 MHz	ANT-44	AMP-22	REC-11
1 to 10 GHz	ANT-13	AMP-05	REC-11
10 to 18 GHz	ANT-13	AMP-20	REC-11
18 to 25 GHz	ANT-48	AMP-29	REC-08; MXR-01

10.3.2 Radiated Emissions Test Results

The following spectrum analyzer settings were used.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

A Video Bandwidth of 10 Hz was used for Average measurements above 1 GHz.

10.3.2.1 Transmit and Receive Emissions Below 1 GHz

Test Date	02/05/2014
Test Distance	3 Meters
Specification	FCC Part 15 Subpart C & RSS-210
Notes	Broad Band Receive and transmit mode
Abbreviations	Pol = Antenna Polarization; V = Vertical; H = Horizontal; P = peak; Q = QP
Configuration	USB Base with computer on table.

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB
36.0	34.1	P	H	16.5	-18.4	0.0	32.1	40.0	7.9
54.2	38.0	P	H	12.7	-18.3	0.0	32.4	40.0	7.6
61.9	37.6	P	H	9.9	-18.2	0.0	29.3	40.0	10.7
99.8	39.0	P	H	9.2	-18.0	0.0	30.2	43.5	13.3
166.4	39.0	P	H	9.9	-17.7	0.0	31.2	43.5	12.3
184.6	39.0	P	H	9.3	-17.6	0.0	30.7	43.5	12.8
209.9	39.9	P	H	10.9	-17.5	0.0	33.3	43.5	10.2
230.2	40.9	P	H	11.9	-17.5	0.0	35.4	46.0	10.6
233.5	41.9	P	H	12.0	-17.5	0.0	36.5	46.0	9.5
240.1	37.8	P	H	12.2	-17.5	0.0	32.6	46.0	13.4
251.9	36.6	P	H	12.6	-17.6	0.0	31.7	46.0	14.3
276.3	40.4	P	H	13.2	-17.5	0.0	36.1	46.0	9.9
299.4	44.2	P	H	13.2	-17.4	0.0	40.0	46.0	6.0
336.3	37.8	P	H	14.6	-17.4	0.0	35.0	46.0	11.0
366.3	38.0	P	H	15.7	-17.4	0.0	36.2	46.0	9.8
400.0	36.9	P	H	16.0	-17.4	0.0	35.5	46.0	10.5
432.5	37.0	P	H	17.0	-17.3	0.0	36.7	46.0	9.3
553.8	34.8	P	H	18.5	-16.8	0.0	36.5	46.0	9.5
566.3	35.2	P	H	19.5	-16.8	0.0	37.9	46.0	8.1

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB
600.0	34.8	P	H	21.6	-16.6	0.0	39.9	46.0	6.1
645.0	36.6	P	H	19.2	-16.3	0.0	39.5	46.0	6.5
691.8	24.7	Q	H	20.1	-16.0	0.0	28.8	46.0	17.2
783.4	31.4	Q	H	20.7	-15.7	0.0	36.5	46.0	9.5
967.5	33.7	P	H	22.3	-14.9	0.0	41.1	54.0	12.9
36.8	33.5	Q	V	16.5	-18.4	0.0	31.6	40.0	8.4
48.4	26.2	Q	V	14.6	-18.3	0.0	22.5	40.0	17.5
60.5	44.6	Q	V	10.5	-18.2	0.0	36.9	40.0	3.1
94.3	43.2	P	V	8.4	-18.0	0.0	33.5	43.5	10.0
109.2	41.5	P	V	11.6	-17.9	0.0	35.1	43.5	8.4
143.9	44.3	P	V	10.5	-17.8	0.0	37.0	43.5	6.5
166.4	39.5	P	V	9.9	-17.7	0.0	31.7	43.5	11.8
184.6	42.1	P	V	9.3	-17.6	0.0	33.7	43.5	9.8
230.8	40.0	P	V	11.9	-17.5	0.0	34.4	46.0	11.6
256.3	33.2	P	V	12.9	-17.6	0.0	28.5	46.0	17.5
276.3	37.5	P	V	13.2	-17.5	0.0	33.2	46.0	12.8
323.1	37.6	P	V	14.2	-17.4	0.0	34.4	46.0	11.6
365.6	35.0	P	V	15.7	-17.4	0.0	33.3	46.0	12.7
433.1	38.5	P	V	17.0	-17.3	0.0	38.2	46.0	7.8
460.5	36.8	Q	V	16.6	-17.2	0.0	36.3	46.0	9.7
496.3	35.9	P	V	17.5	-17.0	0.0	36.3	46.0	9.7
500.0	39.6	P	V	17.3	-17.0	0.0	39.9	46.0	6.1
553.8	37.1	P	V	18.5	-16.8	0.0	38.8	46.0	7.2
566.3	36.4	P	V	19.5	-16.8	0.0	39.1	46.0	6.9
691.3	35.3	P	V	20.0	-16.0	0.0	39.3	46.0	6.7
783.8	33.9	P	V	20.7	-15.7	0.0	38.9	46.0	7.1
922.5	32.2	P	V	22.9	-15.2	0.0	40.0	46.0	6.0
976.3	30.2	P	V	21.9	-14.9	0.0	37.3	54.0	16.7

Judgment: Passed by 3.1 dB

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

10.3.2.2 Transmitter Radiated Emissions Fundamental and Harmonics 2-25 GHz

		Spectrum Analyzer Readings									EUT	Peak	Ave	Pea k	Ave	Margi n
hrm	Tx	Peak		Ave		Peak		Ave		Corr .	Emissio n	Tot. FS		Limit		Under
#	Freq	Vertical Polarization				Horizontal Polarization				Fact.	Freq MHz	dBuV/m		dBuV/m		Limit
		X	Y	Z	Max	X	Y	Z	Max							
1	2401	89.3	92.0	92.0	72.0	94.7	89.3	90.9	74.7	1.2	2401.0	95.9	75.9	114	94	18.1
BE	2401	53.5	56.2	56.2	36.2	58.9	53.5	55.1	38.9	1.2	2400.0	60.1	40.1	74	54	13.9
2	2401	39.8	40.4	42.1	22.1	46.0	39.3	41.8	26.0	7.2	4802.0	53.2	33.2	74	54	20.8
3	2401	37.8	37.3	37.4	17.8	37.7	37.8	37.5	17.8	7.9	7203.0	45.7	25.7	74	54	28.3
1	2440	89.6	92.4	92.1	72.4	88.1	89.2	91.2	0.0	1.2	2440.0	93.6	73.6	114	94	20.4
2	2440	39.2	41.8	41.7	21.8	39.1	41.2	43.1	23.1	6.7	4880.0	49.8	29.8	74	54	24.2
3	2440	37.3	38.2	37.3	18.2	38.4	38.1	37.4	18.4	8.2	7320.0	46.6	26.6	74	54	27.4
1	2482	93.5	95.6	96.0	76.0	97.0	96.9	95.1	77.0	1.4	2482.0	98.4	78.4	114	94	15.6
BE	2482	59.1	61.2	61.6	41.6	62.6	62.5	60.7	42.6	1.4	2483.5	64.0	44.0	74	54	10.0
2	2482	43.7	49.8	46.5	29.8	48.8	49.1	45.0	29.1	6.9	4964.0	56.7	36.7	74	54	17.3
3	2482	38.0	39.3	38.0	19.3	38.3	37.9	39.7	19.7	8.6	7446.0	48.3	28.3	74	54	25.7
Column numbers (see below for explanations)																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Column #1. hrm = Harmonic; BE = Band Edge emissions
 Column #2. Frequency of Transmitter.
 Column #3. Uncorrected readings from the spectrum analyzer with First Axis Rotation.
 Column #4. Uncorrected readings from the spectrum analyzer with Second Axis Rotation.
 Column #5. Uncorrected readings from the spectrum analyzer with Third Axis Rotation.
 Column #6. Average Reading based on peak reading reduced by the Duty cycle correction
 Column #7. Uncorrected readings from the spectrum analyzer with First Axis Rotation.
 Column #8. Uncorrected readings from the spectrum analyzer with Second Axis Rotation.
 Column #9. Uncorrected readings from the spectrum analyzer with Third Axis Rotation.
 Column #10. Average Reading based on peak reading reduced by the Duty cycle correction
 Column #11. Corr. Factors = Cable Loss – Preamp Gain + Antenna Factor
 Column #12. Frequency of Tested Emission
 Column #13. Highest peak field strength at listed frequency.
 Column #14. Highest Average field strength at listed frequency.
 Column #15. Peak Limit. In the non restricted band the limit was set to 20 dB below the level of the Fundamental.
 Column #16. Average Limit. In the non restricted band the limit was set to 20 dB below the level of the Fundamental.
 Column #17. The margin (last column) is the worst case margin under the peak or average limits for that row.

Judgment: Pass by at least 10 dB;

There were no other emissions detected from 2 to 25 GHz within 10 dB of the limits

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

10.3.2.3 Transmitter Spurious Emissions (Non-Harmonics); Above 1 GHz

Manufacturer	Macmillan Publishers	Specification	FCC Part 15.249 & RSS-210
Model	ICL24-B	Test Date	01-07-2014
Serial Number	none	Test Distance	3 Meters
Abbreviations	Pol = Antenna Polarization; V = Vertical; H = Horizontal; P = peak; Q = QP		
Notes	Cbl/amp = Cable Loss – Preamp Gain		

Transmitting at 2401 MHz

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB
1082.5	36.9	P	H	24.8	-28.3	0.0	33.4	54.0	20.6
1990.0	37.4	P	H	27.5	-27.9	0.0	36.9	54.0	17.1
2145.0	37.9	P	H	27.7	-27.7	0.0	37.9	54.0	16.1
2370.0	40.6	P	H	28.1	-27.3	0.0	41.4	54.0	12.6
2432.5	42.9	P	H	28.5	-27.3	0.0	44.1	54.0	9.9
2952.5	38.4	P	H	29.6	-26.3	0.0	41.7	54.0	12.3
3105.0	38.4	P	H	30.5	-26.2	0.0	42.7	54.0	11.3
3972.5	35.3	P	H	32.7	-25.7	0.0	42.4	54.0	11.6
4972.5	36.2	P	H	33.3	-26.4	0.0	43.1	54.0	10.9
5112.5	35.6	P	H	33.7	-26.9	0.0	42.3	54.0	11.7
5937.5	35.7	P	H	34.3	-27.3	0.0	42.7	54.0	11.3
6100.0	35.8	P	H	34.8	-27.7	0.0	42.9	54.0	11.1
6917.5	36.6	P	H	35.2	-28.5	0.0	43.3	54.0	10.7
7137.5	36.8	P	H	35.7	-28.1	0.0	44.4	54.0	9.6
7942.5	36.9	P	H	36.8	-26.9	0.0	46.9	54.0	7.1
1052.5	37.5	P	V	24.6	-28.4	0.0	33.7	54.0	20.3
1922.5	44.3	P	V	27.4	-28.2	0.0	43.6	54.0	10.4
2370.0	39.9	P	V	28.1	-27.3	0.0	40.6	54.0	13.4
2435.0	37.0	P	V	28.5	-27.3	0.0	38.3	54.0	15.7
2972.5	37.7	P	V	29.8	-26.3	0.0	41.2	54.0	12.8
3172.5	38.5	P	V	30.7	-25.9	0.0	43.2	54.0	10.8
3925.0	37.9	P	V	32.8	-25.4	0.0	45.3	54.0	8.7
4172.5	36.5	P	V	32.5	-26.3	0.0	42.7	54.0	11.3
4802.5	40.4	P	V	33.3	-26.1	0.0	47.6	54.0	6.4
5045.0	34.7	P	V	33.5	-26.8	0.0	41.4	54.0	12.6
5925.0	34.7	P	V	34.3	-27.3	0.0	41.7	54.0	12.3
6115.0	36.4	P	V	34.8	-27.8	0.0	43.4	54.0	10.6
6840.0	37.1	P	V	35.2	-28.5	0.0	43.8	54.0	10.2
7372.5	38.6	P	V	36.5	-28.3	0.0	46.8	54.0	7.2
7910.0	38.5	P	V	36.8	-26.8	0.0	48.6	54.0	5.4

Transmitting at 2440 MHz

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB
1082.5	36.8	P	H	24.8	-28.3	0.0	33.4	54.0	20.6
1965.0	37.6	P	H	27.4	-27.8	0.0	37.1	54.0	16.9
2032.5	36.9	P	H	27.6	-27.9	0.0	36.6	54.0	17.4
2980.0	37.9	P	H	29.8	-26.3	0.0	41.3	54.0	12.7
3037.5	38.8	P	H	30.2	-26.4	0.0	42.6	54.0	11.4

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB
3872.5	36.2	P	H	32.7	-25.4	0.0	43.5	54.0	10.5
4072.5	33.9	P	H	32.6	-26.4	0.0	40.1	54.0	13.9
5965.0	34.7	P	H	34.4	-27.3	0.0	41.8	54.0	12.2
6067.5	36.2	P	H	34.7	-27.4	0.0	43.5	54.0	10.5
6857.5	36.0	P	H	35.3	-28.5	0.0	42.8	54.0	11.2
7120.0	36.3	P	H	35.7	-28.1	0.0	43.8	54.0	10.2
7895.0	37.3	P	H	36.8	-26.7	0.0	47.4	54.0	6.6
1052.5	36.5	P	V	24.6	-28.4	0.0	32.8	54.0	21.2
1922.5	44.1	P	V	27.4	-28.2	0.0	43.3	54.0	10.7
2050.0	36.1	P	V	27.6	-27.8	0.0	35.8	54.0	18.2
2990.0	38.6	P	V	29.9	-26.3	0.0	42.2	54.0	11.8
3027.5	38.5	P	V	30.1	-26.4	0.0	42.3	54.0	11.7
3862.5	35.2	P	V	32.7	-25.3	0.0	42.6	54.0	11.4
4040.0	35.6	P	V	32.7	-26.2	0.0	42.2	54.0	11.8
4880.0	39.9	P	V	33.3	-26.6	0.0	46.6	54.0	7.4
5227.5	35.5	P	V	34.0	-26.8	0.0	42.7	54.0	11.3
5787.5	36.3	P	V	34.2	-27.7	0.0	42.8	54.0	11.2
6157.5	36.5	P	V	34.8	-28.2	0.0	43.1	54.0	10.9
6920.0	37.4	P	V	35.2	-28.5	0.0	44.1	54.0	9.9
7132.5	35.8	P	V	35.7	-28.1	0.0	43.4	54.0	10.6
7932.5	37.5	P	V	36.8	-26.8	0.0	47.4	54.0	6.6

Transmitting at 2482 MHz.

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB
1095.0	37.0	P	H	24.9	-28.2	0.0	33.7	54.0	20.3
1917.5	37.6	P	H	27.4	-28.1	0.0	36.8	54.0	17.2
2140.0	35.6	P	H	27.7	-27.7	0.0	35.6	54.0	18.4
2937.5	37.6	P	H	29.5	-26.3	0.0	40.8	54.0	13.2
3125.0	37.8	P	H	30.6	-26.1	0.0	42.3	54.0	11.7
3887.5	35.2	P	H	32.7	-25.4	0.0	42.5	54.0	11.5
4047.5	38.0	P	H	32.7	-26.2	0.0	44.5	54.0	9.5
4952.5	34.8	P	H	33.3	-26.4	0.0	41.7	54.0	12.3
5100.0	35.2	P	H	33.6	-27.0	0.0	41.8	54.0	12.2
5840.0	35.9	P	H	34.2	-27.7	0.0	42.4	54.0	11.6
6150.0	35.8	P	H	34.8	-28.1	0.0	42.5	54.0	11.5
6937.5	35.9	P	H	35.2	-28.5	0.0	42.6	54.0	11.4
7065.0	36.2	P	H	35.5	-28.3	0.0	43.5	54.0	10.5
7945.0	36.7	P	H	36.8	-26.9	0.0	46.7	54.0	7.3
1090.0	36.0	P	V	24.8	-28.2	0.0	32.6	54.0	21.4
1930.0	46.0	P	V	27.4	-28.1	0.0	45.3	54.0	8.7
2082.5	36.1	P	V	27.7	-27.7	0.0	36.1	54.0	17.9
2957.5	38.4	P	V	29.6	-26.3	0.0	41.7	54.0	12.3
3102.5	37.4	P	V	30.5	-26.2	0.0	41.7	54.0	12.3
3800.0	35.5	P	V	32.6	-25.4	0.0	42.7	54.0	11.3
4087.5	36.0	P	V	32.5	-26.4	0.0	42.1	54.0	11.9
4942.5	36.1	P	V	33.3	-26.4	0.0	42.9	54.0	11.1
5207.5	34.5	P	V	33.9	-26.8	0.0	41.6	54.0	12.4

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Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB
5937.5	34.3	P	V	34.3	-27.3	0.0	41.3	54.0	12.7
6127.5	35.5	P	V	34.8	-27.9	0.0	42.4	54.0	11.6
6872.5	35.8	P	V	35.2	-28.5	0.0	42.5	54.0	11.5
7150.0	36.4	P	V	35.8	-28.1	0.0	44.1	54.0	9.9
7975.0	36.9	P	V	36.9	-27.0	0.0	46.8	54.0	7.2

Judgment: Pass by 5.4 dB

The Peak Readings met the average limits. The Average limit is 20 dB lower that the Peak limits

10.3.2.4 Receiver Spurious Emissions above 1 GHz

Manufacturer	Macmillan New Ventures	Specification	FCC Part 15.109 & RSS-210
Model	ICL24-B	Test Date	02-05-2014
Serial Number	none	Test Distance	3 Meters
Abbreviations	Pol = Antenna Polarization; V = Vertical; H = Horizontal; P = peak; Q = QP		
Notes	Cbl/amp = Cable Loss – Preamp Gain		
Configuration	Receive mode; EUT turned on with computer system on table		

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB
1032.5	41.7	P	H	24.4	-27.1	0.0	39.0	54.0	15.0
1167.5	43.4	P	H	25.3	-26.7	0.0	42.0	54.0	12.0
1600.0	39.8	P	H	25.6	-26.5	0.0	38.9	54.0	15.1
1962.5	37.0	P	H	27.4	-26.0	0.0	38.4	54.0	15.6
2390.0	35.2	P	H	28.3	-25.2	0.0	38.3	54.0	15.7
2540.0	36.1	P	H	28.8	-25.0	0.0	39.9	54.0	14.1
2975.0	36.9	P	H	29.8	-24.0	0.0	42.7	54.0	11.3
3087.5	36.9	P	H	30.5	-23.9	0.0	43.5	54.0	10.5
3555.0	35.3	P	H	31.4	-22.6	0.0	44.1	54.0	9.9
3962.5	36.2	P	H	32.8	-22.9	0.0	46.1	54.0	7.9
4505.0	33.1	P	H	33.3	-23.1	0.0	43.3	54.0	10.7
5037.5	34.6	P	H	33.4	-23.1	0.0	44.9	54.0	9.1
5550.0	34.8	P	H	34.3	-22.2	0.0	46.9	54.0	7.1
6065.0	35.0	P	H	34.7	-22.2	0.0	47.5	54.0	6.5
6427.5	36.6	P	H	34.5	-24.8	0.0	46.3	54.0	7.7
7497.5	36.1	P	H	36.6	-23.8	0.0	48.9	54.0	5.1
9072.5	34.6	P	H	37.9	-23.2	0.0	49.3	54.0	4.7
9440.0	35.0	P	H	38.2	-23.5	0.0	49.7	54.0	4.3
1015.0	38.9	P	V	24.2	-27.2	0.0	35.9	54.0	18.1
1032.5	40.3	P	V	24.4	-27.1	0.0	37.6	54.0	16.4
1167.5	43.1	P	V	25.3	-26.7	0.0	41.7	54.0	12.3
1232.5	45.8	P	V	25.4	-26.7	0.0	44.5	54.0	9.5
1367.5	39.8	P	V	25.4	-26.8	0.0	38.4	54.0	15.6
1630.0	39.4	P	V	25.8	-26.7	0.0	38.5	54.0	15.5
1665.0	41.1	P	V	26.0	-26.5	0.0	40.6	54.0	13.4
1767.5	41.0	P	V	26.8	-26.7	0.0	41.1	54.0	12.9
1970.0	36.4	P	V	27.5	-26.0	0.0	37.9	54.0	16.1
2042.5	36.1	P	V	27.6	-26.0	0.0	37.7	54.0	16.3

Testing of the Macmillan New Ventures, Model ICL24-B, i>cliker Base Unit Transciever

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB
2132.5	38.8	P	V	27.7	-25.9	0.0	40.6	54.0	13.4
2365.0	36.0	P	V	28.1	-25.4	0.0	38.7	54.0	15.3
2372.5	36.0	P	V	28.2	-25.3	0.0	38.9	54.0	15.1
2472.5	36.0	P	V	28.6	-25.3	0.0	39.3	54.0	14.7
2545.0	36.0	P	V	28.8	-25.0	0.0	39.8	54.0	14.2
2927.5	38.0	P	V	29.4	-24.0	0.0	43.4	54.0	10.6
3082.5	38.3	P	V	30.4	-24.0	0.0	44.7	54.0	9.3
3650.0	35.2	P	V	31.7	-22.6	0.0	44.3	54.0	9.7
3975.0	36.5	P	V	32.7	-23.0	0.0	46.2	54.0	7.8
4040.0	33.8	P	V	32.7	-23.4	0.0	43.1	54.0	10.9
4512.5	33.8	P	V	33.4	-23.1	0.0	44.1	54.0	9.9
4985.0	34.0	P	V	33.3	-22.8	0.0	44.5	54.0	9.5
5152.5	35.0	P	V	33.8	-23.0	0.0	45.8	54.0	8.2
5520.0	35.2	P	V	34.4	-22.3	0.0	47.3	54.0	6.7
6045.0	35.1	P	V	34.7	-22.1	0.0	47.7	54.0	6.3
6635.0	35.2	P	V	34.8	-24.9	0.0	45.1	54.0	8.9
6977.5	34.5	P	V	35.3	-24.5	0.0	45.3	54.0	8.7
7130.0	35.7	P	V	35.7	-24.2	0.0	47.2	54.0	6.8
7545.0	36.8	P	V	36.5	-23.6	0.0	49.7	54.0	4.3
8042.5	35.5	P	V	37.0	-22.9	0.0	49.6	54.0	4.4
9545.0	34.3	P	V	38.2	-24.0	0.0	48.5	54.0	5.5

Judgment: Pass by 4.3 dB

The Peak Readings met the average limits. The Average limit is 20 dB lower than the Peak limits