

Nemko Test Report: 3L0300RUS1

Applicant: VTECH Engineering Canada
200-7671 Alderbrdge Way
Richmond, B.C. V6X 1Z9
Canada

**Equipment Under Test:
(E.U.T.)** VTECH 9113 900 MHz Cordless Phone

In Accordance With: FCC Part 15, Subpart C, 15.249
For 900 MHz Cordless Telephones

Tested By: Nemko Dallas Inc.
802 N. Kealy
Dallas, Texas 75057

Authorized By:



David Light, Lab Resource Manager

Date: 8/27/03

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EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Section 1. Summary Of Test Results

Manufacturer: VTECH Engineering Canada

Model No.: VTECH 9113

Serial No.: 07/03

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15.249. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated Emissions were made on an open area test site.

New Submission

Production Unit

Class II Permissive Change

Pre-Production Unit

Equipment Code

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE
See " Summary of Test Data".



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EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Summary Of Test Data

Base:

NAME OF TEST	PARA. NO.	RESULT
Conducted Emissions	15.207	Pass
Radiated Emissions	15.249	Pass

Handset:

NAME OF TEST	PARA. NO.	RESULT
Conducted Emissions	15.207	NA
Radiated Emissions	15.249	Pass

Footnotes For N/A's:

Note – The handset is battery powered.

Test Conditions:

Indoor Temperature: 23°C
 Humidity: 41%

Outdoor Temperature: 28°C
 Humidity: 50%

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Section 2A. General Equipment Specification

Base:

Frequency Range: 902.4 – 907.05 MHz Base

Operating Frequency(ies) of Sample: Same as above

Tunable Bands: 902.4 – 907.05 MHz Base

Number of Channels: 30

Channel Spacing: 150 kHz

Crystal Frequencies: Base: RF 8MHz, MCU 6MHz

User Frequency Adjustment:

Integral Antenna

Yes

No

Note: If antenna is not integral to transmitter explain method of attachment and type of unique connector:

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Section 2B. General Equipment Specification

Handset

Frequency Range: 923.4 – 927.75 MHz Handset

Operating Frequency(ies) of Sample: Same as above

Tunable Bands: 923.4 – 927.75 MHz Handset

Number of Channels: 30

Channel Spacing: 150 kHz

Crystal Frequencies: Handset: RF 8MHz, MCU 4MHz

User Frequency Adjustment:

Integral Antenna

Yes

No

Note: If antenna is not integral to transmitter explain method of attachment and type of unique connector:

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Modifications Made During Testing

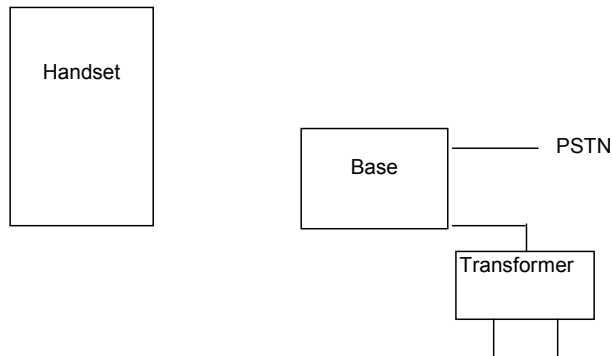
There were no modifications done during this assessment.

Theory of Operation

The EUT is used to place a call on the PSTN, and gives the user mobility being a cordless telephone.

System Diagram

Client Name: VTECH	Work Order #: 3L0300R
Model Number: 9113 900 MHz cordless phone	Date: 8/26/2003
Test Configuration: Test mode	



EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Section 3. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207
TESTED BY: Ed McGrath	DATE: 7/22/03

Minimum Standard:

Frequency range MHz	Limits dB (µV)	
	Quasi-peak	Average
0.15 to 0.50	66 Decreasing linearly with logarithm of frequency to 56	56 Decreasing linearly with logarithm of frequency to 46
0.50 to 5	56	46
5 to 30	60	50

NOTE – Care should be taken to comply with leakage current requirements.

Test Results: Complies. See attached data.

Measurement Data: See attached graph(s).

Method of Measurement: (Procedure ANSI C63.4-1992)

Measurements were made using a spectrum analyzer with 10 kHz RBW, Peak Detector. Any emissions that are close to the limit are measured using a test receiver with 10 kHz bandwidth, CISPR Quasi-Peak Detector.

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Test Data – Powerline Conducted Emissions

Conducted Emissions Powerline Voltage Measurement												
Complete	X		Job # : 3L0300E				Test # : CEPV-01					
Preliminary			Page 1				of 1					
Client Name :	VTECH Engineering											
EUT Name :	VTECH 9113 900MHz Cordless Phone											
EUT Model # :	VTECH 9113 900MHz Cordless Phone											
EUT Part # :	Sample 1											
EUT Serial # :	None											
EUT Config. :	Charging											
Specification :	CFR 47, Part 15 Subpart B Class B						Reference :					
Transducer # :	545	Temp. (deg. C) :	24			Date :	7/22/2003					
HP Filter # :	758	Humidity (%) :	46			Time :	3:00 P.M.					
Cable 1 # :	1332	EUT Voltage :	115			Staff :	Ed McGrath					
Cable 2 # :	1534	EUT Frequency :	60			Location :	Lab 2					
Detector 1 # :	718	Peak Bandwidth:	10 kHz			Photo ID:	3L0300E CEPV-01					
Detector 2 # :	N/A	QP Bandwidth	9 kHz									
Limiter # :	1193	Avg. Bandwidth	9 kHz									

Meas. Freq. (MHz)	EUT Test Point	Detector Type (P,QP, A)	Limit Type (QP, A)	Meter Reading (dBuV)	Path Loss (dB)	Transducer Factor (dB)	Corrected Reading (dBuV)	Spec.limit (dBuV)		CR/SL Diff. (dB)	Pass Fail Unc.	Comment
								Q.P.	Avg.			
0.15	H	P	A	39.0	0.0	0.0	39.0	66.0	56.0	-17.0	Pass	
0.25	H	P	A	36.0	0.0	0.0	36.0	62.6	52.6	-16.6	Pass	
0.493	H	P	A	25.0	0.0	0.0	25.0	58.0	48.0	-23.0	Pass	
0.15	N	P	A	40.0	0.0	0.0	40.0	66.0	56.0	-16.0	Pass	
0.25	N	P	A	37.0	0.0	0.0	37.0	62.6	52.6	-15.6	Pass	
0.495	N	P	A	27.0	0.0	0.0	27.0	58.0	48.0	-21.0	Pass	
												Scanned
												0.15kHz to
												30 MHz

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Conducted Photographs (Worst Case Configuration)



EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Section 4. Radiated Emissions

NAME OF TEST: Radiated Emissions (Base)	PARA. NO.: 15.249
TESTED BY: Brian Boyea	DATE: 8/25/03

Minimum Standard: Para no. 15.249

(a) The field strengths shall not exceed the following:

Fundamental (MHz)	Field Strength (mV/m)	Field Strength (dBµV)	Harmonic (mV/m)	Harmonic (dBµV)
902-928	50	94	0.5	54

(b) Field strength limits are specified at a distance of 3 metres.

(c) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated limits of 15.209 whichever is the less attenuation.

(d) The emission limits shown above are based on measurement instrumentation employing a CISPR quasi-peak detector below 1000 MHz and an averaging detector above 1000 MHz. However, the peak field strength of any emission shall not exceed the average limit by more than 20 dB.

Test Results Base: Complies. The worst-case emission level is 52.2 dBµV/m @ 3m at 904.8 MHz. This is 8.9 dB below the specification limit.

Test Results Handset: Complies. The worst-case emission level is 52.2 dBµV/m @ 3m at 925.35 MHz. This is 9.3 dB below the specification limit.

Measurement Data: See attached table.

Maximizing Emission Levels:

For hand held equipment or equipment that may be mounted in a variety of positions, the E.U.T. was tested on three orthogonal axis to determine orientation of worst-case emission levels.

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Test Data - Radiated Emissions

Radiated Emissions Data												
Complete	<u> X </u>		Job # : <u>3L0300R</u>					Test # : <u>RIHE-01</u>				
Preliminary	<u> </u>		Page <u> 1 </u>					of <u> 2 </u>				
Client Name :	<u>VTECH Engineering</u>											
EUT Name :	<u>VTECH 9113 900MHz Cordless Phone</u>											
EUT Model # :	<u>VTECH 9113 900MHz Cordless Phone</u>											
EUT Part # :	<u>Sample 1</u>											
EUT Serial # :	<u>None</u>											
EUT Config. :	<u>Charging</u>											
Specification :	<u>CFR47 Part 15.249</u>						Reference :					
Rod. Ant. #:	<u>NA</u>		Temp. (deg. C) :		<u>Hot</u>		Date :		<u>8/25/2003</u>			
Bicon Ant.#:	<u>NA</u>		Humidity (%) :		<u>Swetty</u>		Time :		<u>8:00 A.M.</u>			
Log Ant.#:	<u>759</u>		EUT Voltage :		<u>115 Vac</u>		Staff :		<u>Brian Boyea</u>			
Bilog Ant.#:	<u>NA</u>		EUT Frequency :		<u>60 Hz</u>		Photo ID:		<u>3L0300R RIHE-01</u>			
Dipole Ant.#:	<u>NA</u>		Phase:		<u>Single</u>		Peak Bandwidth:		<u>100 kHz</u>			
Cable#:	<u>1983</u>		Location:		<u>Oats A</u>		Video Bandwidth:		<u>100kHz</u>			
Preamp#:	<u>NA</u>		Distance:		<u>3 m</u>							
Limiter#:	<u>NA</u>											
Atten #:	<u>NA</u>											
Detector#:	<u>1036</u>											
Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment	
925.35	V	0	52.2	24.3	8.2	0.0	84.7	94.0	-9.3	Pass	Handset	
904.8	V	0	52.2	24.7	8.2	0.0	85.1	94.0	-8.9	Pass	Base	
											Channel 15	
927.6	V	0	48.7	24.3	8.2	0.0	81.2	94.0	-12.8	Pass	Handset	
906.9	V	0	50	24.7	8.2	0.0	82.9	94.0	-11.1	Pass	Base	
											Channel 29	
927.75	V	0	49.6	24.3	8.2	0.0	82.1	94.0	-11.9	Pass	Handset	
907.05	V	0	49.7	24.7	8.2	0.0	82.6	94.0	-11.4	Pass	Base	
											Channel 0	
927.75	H	0	42.3	24.3	8.2	0.0	74.8	94.0	-19.2	Pass	Handset	
907.05	H	0	42.5	24.7	8.2	0.0	75.4	94.0	-18.6	Pass	Base	
											Channel 0	
925.5	H	0	40.5	24.3	8.2	0.0	73.0	94.0	-21.0	Pass	Handset	
904.8	H	0	45.6	24.7	8.2	0.0	78.5	94.0	-15.5	Pass	Base	
											Channel 15	
927.6	H	0	40.8	24.3	8.2	0.0	73.3	94.0	-20.7	Pass	Handset	
906.9	H	0	41.9	24.7	8.2	0.0	74.8	94.0	-19.2	Pass	Base	
											Channel 29	

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EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Test Data - Radiated Emissions

Radiated Emissions Data

Complete X Job # : 3L0300R Test # : RIHE-01
 Preliminary _____ Page 2 of 2

Client Name : VTECH Engineering
 EUT Name : VTECH 9113 900MHz Cordless Phone
 EUT Model # : VTECH 9113 900MHz Cordless Phone
 EUT Part # : Sample 1
 EUT Serial # : None
 EUT Config. : Charging

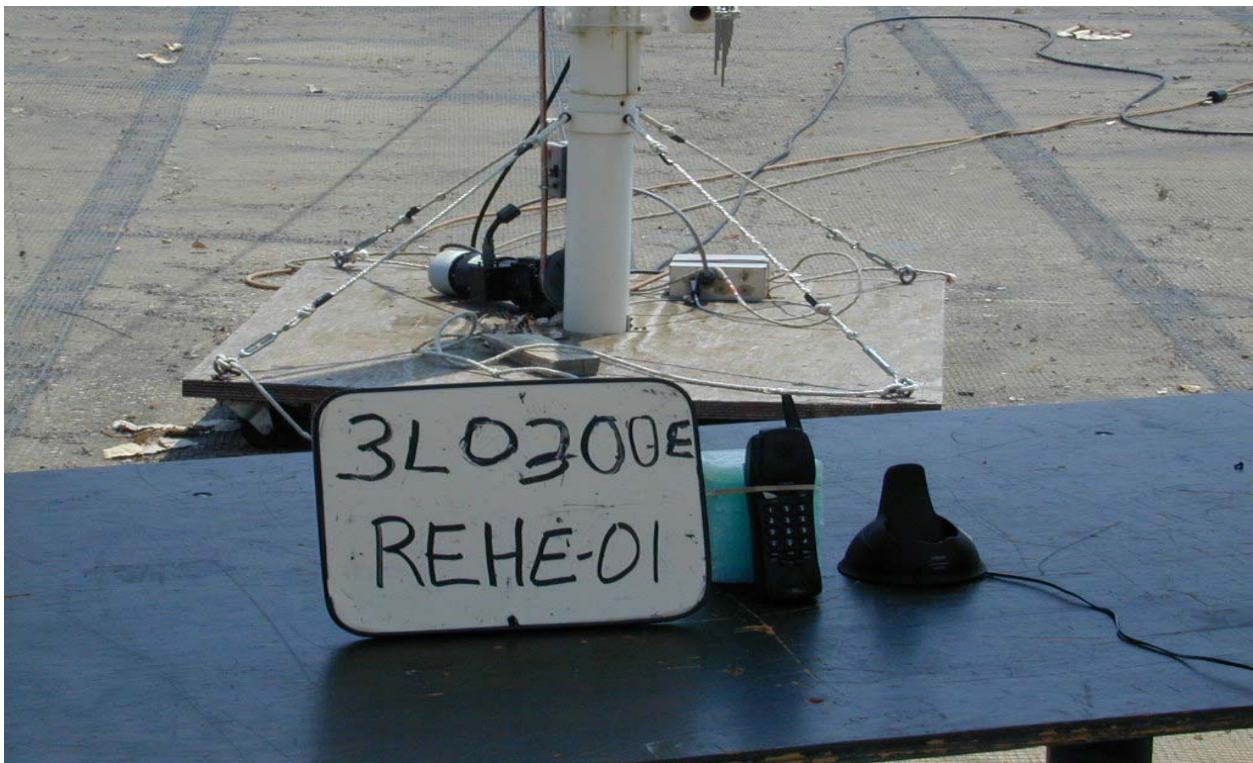
Specification : CFR47 Part 15.249 Reference : _____

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
1851	V	0	31.8	25.1	2.6	0.0	59.5	74.0	-14.5	Pass	Peak
1851	V	0	21	25.1	2.6	0.0	48.7	54.0	-5.3	Pass	Average
1809.6	V	0	23.8	25.1	2.6	0.0	51.5	74.0	-22.5	Pass	Peak
1809.6	V	0	13.7	25.1	2.6	0.0	41.4	54.0	-12.6	Pass	Average
1851	H	0	22.8	25.1	2.6	0.0	50.5	74.0	-23.5	Pass	Peak
1851	H	0	13.7	25.1	2.6	0.0	41.4	54.0	-12.6	Pass	Average
1809.6	H	0	22.5	25.1	2.6	0.0	50.2	74.0	-23.8	Pass	Peak
1809.6	H	0	13.3	25.1	2.6	0.0	41.0	54.0	-13.0	Pass	Average
											Channel 15
1855.2	V	0	22.7	25.1	2.6	0.0	50.4	74.0	-23.6	Pass	Peak
1855.2	V	0	13.4	25.1	2.6	0.0	41.1	54.0	-12.9	Pass	Average
1813.8	V	0	22.5	25.1	2.6	0.0	50.2	74.0	-23.8	Pass	Peak
1813.8	V	0	13.2	25.1	2.6	0.0	40.9	54.0	-13.1	Pass	Average
1855.2	H	0	22.5	25.1	2.6	0.0	50.2	74.0	-23.8	Pass	Peak
1855.2	H	0	14	25.1	2.6	0.0	41.7	54.0	-12.3	Pass	Average
1813.8	H	0	21.6	25.1	2.6	0.0	49.3	74.0	-24.7	Pass	Peak
1813.8	H	0	14	25.1	2.6	0.0	41.7	54.0	-12.3	Pass	Average
											Channel 29
1855.5	V	0	21.8	25.1	2.6	0.0	49.5	74.0	-24.5	Pass	Peak
1855.5	V	0	13.9	25.1	2.6	0.0	41.6	54.0	-12.4	Pass	Average
1814.1	V	0	20.3	25.1	2.6	0.0	48.0	74.0	-26.0	Pass	Peak
1814.1	V	0	13.7	25.1	2.6	0.0	41.4	54.0	-12.6	Pass	Average
1855.5	H	0	21.7	25.1	2.6	0.0	49.4	74.0	-24.6	Pass	Peak
1855.5	H	0	13.7	25.1	2.6	0.0	41.4	54.0	-12.6	Pass	Average
1814.1	H	0	20.3	25.1	2.6	0.0	48.0	74.0	-26.0	Pass	Peak
1814.1	H	0	13.8	25.1	2.6	0.0	41.5	54.0	-12.5	Pass	Average
											Channel 0
											Noise Floor
											Readings

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EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Radiated Photographs (Worst Case Configuration)



EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

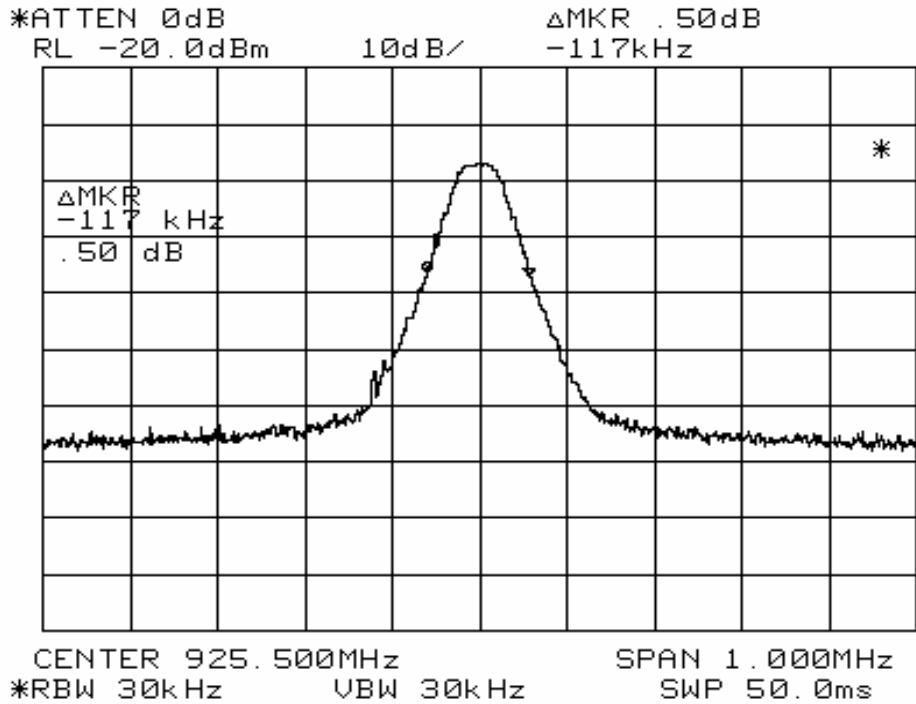
20 dB Bandwidth Plots



Dallas Headquarters:
 802 N. Kealy
 Lewisville, TX 75057
 Tel: (972) 436-9600
 Fax: (972) 436-2667

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Data Plot		Occupied Bandwidth			
Page 1 of 2				Complete	X
Job No.:	3L0300R	Date:	8/27/2003	Preliminary:	
Specification:	15.249	Temperature(°C):	22		
Tested By:	Brian Boyea	Relative Humidity(%)	40		
E.U.T.:	VT 9113				
Configuration:	TX CENTER CHANNEL				
Sample Number:	1				
Location:	Lab 2	RBW:	30 kHz	Measurement	
Detector Type:	Peak	VBW:	30 kHz	Distance:	NA m
Test Equipment Used					
Antenna:	803	Directional Coupler:			
Pre-Amp:		Cable #1:			
Filter:		Cable #2:			
Receiver:	1464	Cable #3:			
Attenuator #1		Cable #4:			
Attenuator #2:		Mixer:			
Additional equipment used:					
Measurement Uncertainty:	+/-1.7 dB				



Notes: VT9113 HANDSET

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

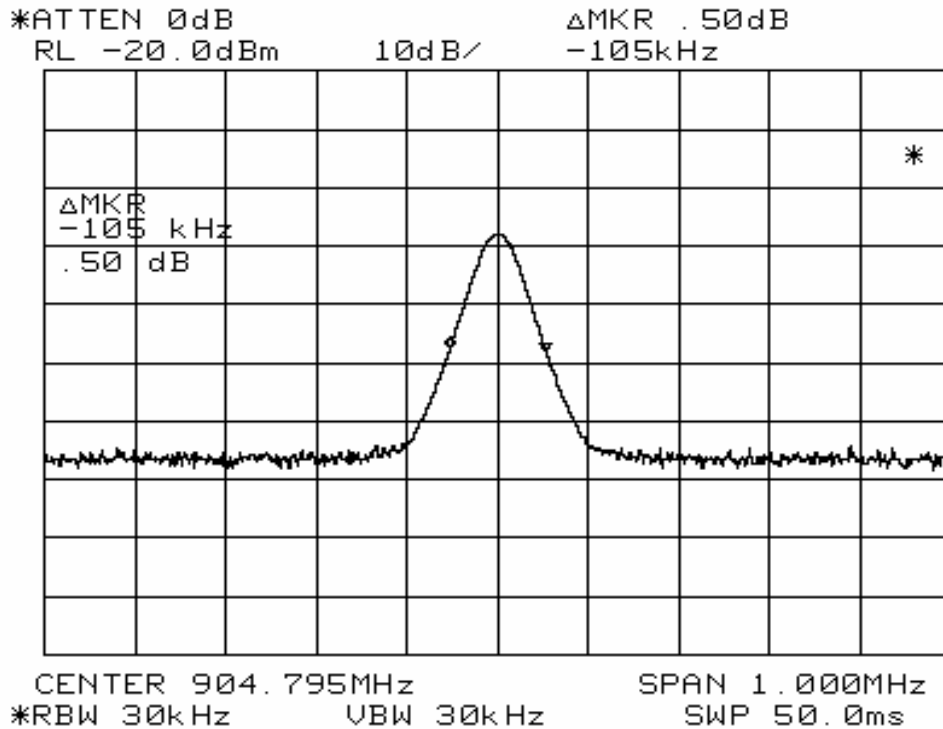
20 dB Bandwidth Plots



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<u>Data Plot</u>		<u>Occupied Bandwidth</u>	
Page 2 of 2			
Job No.:	3L0300R	Date:	8/27/2003
Specification:	15.2	Temperature(°C):	22
Tested By:	Brian Boyea	Relative Humidity(%)	40
E.U.T.:	VT 9113		
Configuration:	TX CENTER CHANNEL		



Notes:	VT9113+B4 BASE

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Section 5. Test Equipment List

Number	Description	Manufacturer	Model Number	Serial Number	Calibrated	Due
1464	Spectrum analyzer	Hewlett Packard	8563E	3551A04428	2/11/2003	2/11/2004
993	Horn antenna	A.H. Systems	SAS-200/571	XXX	1/9/2002	1/9/2004
1016	Pre-Amp	HEWLETT PACKARD	8449A	2749A00159	7/15/2003	7/15/2004
759	ANTENNA, LOG PERIODIC	A.H. SYSTEMS	SAS-200/510	556	7/2/2003	7/2/2004
1484	Cable 2.0-18.0 Ghz	Storm	PR90-010-072	N/A	7/24/2003	7/23/2004
1485	Cable 2.0-18.0 Ghz	Storm	PR90-010-216	N/A	7/24/2003	7/23/2004

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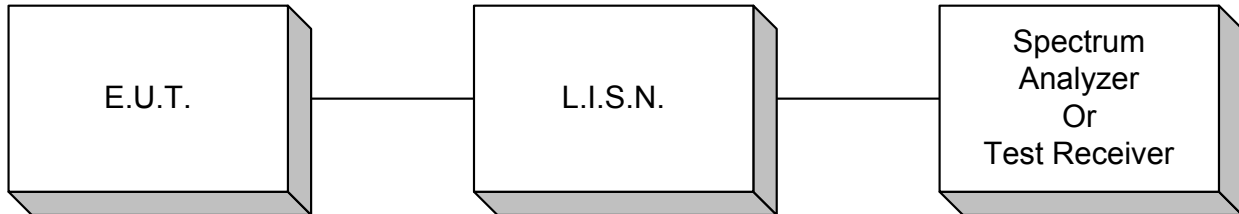
FCC PART 15, SUBPART C
FOR 900 MHz CORDLESS TELEPHONES
PROJECT NO.: 3L0300RUS1
ANNEX B

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

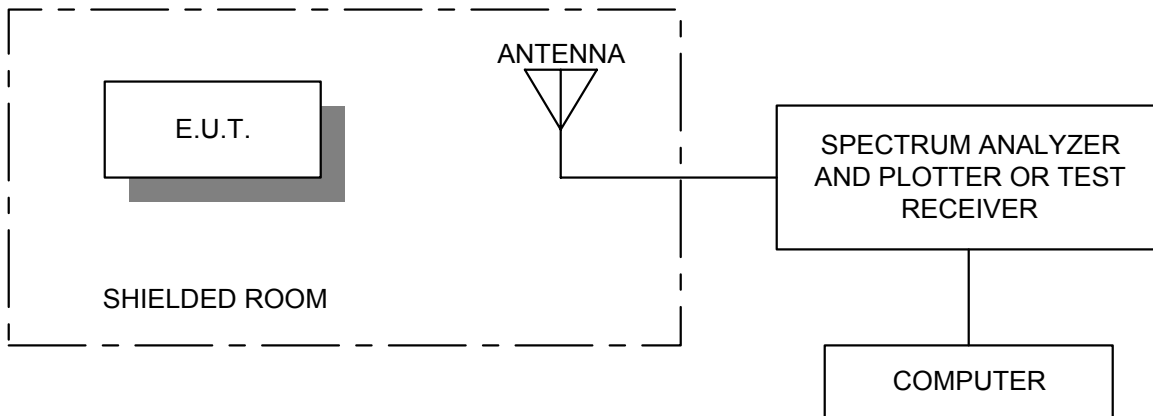
ANNEX A
TEST DIAGRAMS

EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Conducted Emissions



Radiated Prescan



EQUIPMENT: VTECH 9113 900 MHz Cordless Phone

Test Site For Radiated Emissions

