

KTL Test Report: 9R01807

Applicant: VTECH Engineering Canada Ltd.
200-7671 Alderbridge Way
Richmond, BC
V6X 1Z9

**Equipment Under Test:
(E.U.T.)** VTECH VT3921 Cordless PABX Base And
Adapter Module

FCC ID: EW780-4290-00

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

Tested By: KTL Ottawa Inc.
3325 River Road, R.R. 5
Ottawa, Ontario K1V 1H2

Authorized By:

R. Grant, Wireless Group Manager

Date:

Total Number of Pages: 27

Table Of Contents

Section 1. Summary of Test Results

- General
- Summary of Test Data

Section 2. General Equipment Specification

- Specifications
- Modifications
- Theory of Operation
- System Diagram

Section 3. Powerline Conducted Emissions

- Test Results
- Graphs
- Photographs

Section 4A. Radiated Emissions (Base)

- Base Test Results
- Base Data Table
- Base Photographs

Section 4B. Radiated Emissions (Handset)

- Handset Test Results
- Handset Data Table
- Handset Photographs

Section 5. Test Equipment List

Annex A. Test Diagrams

- Conducted Emissions
- Radiated Prescan
- Test Site for Radiated Emissions

Annex B. Restricted Bands

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Section 1. Summary Of Test Results

Manufacturer: VTECH Engineering Canada Ltd.

Model No.: VT3921

Serial No.: None

Date Received In Laboratory: August 30, 1999

KTL Identification No.: 9R01807

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.

- | | | | |
|-------------------------------------|----------------------------|-------------------------------------|---------------------|
| <input checked="" type="checkbox"/> | New Submission | <input type="checkbox"/> | Production Unit |
| <input type="checkbox"/> | Class II Permissive Change | <input checked="" type="checkbox"/> | Pre-Production Unit |

E	T	B
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 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.
See " Summary of Test Data".



NVLAP LAB CODE: 100351-0

TESTED BY: _____ DATE: _____
Kevin Carr, Technologist

TESTED BY: _____ DATE: _____
Kevin Rose, Test Technician

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EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Summary Of Test Data

Base:

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

Handset:

NAME OF TEST	PARA. NO.	RESULT
Radiated Emissions	15.249	Not Applicable

Footnotes For N/A's:

Test Conditions:

Indoor Temperature: 23 °C
 Humidity: 40 %

Outdoor Temperature: 23 °C
 Humidity: 40 %

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Section 2A. General Equipment Specification

Base:

Frequency Range: Tx = 902.3 MHz to 905.0 MHz
Rx = 925.05 MHz to 927.75 MHz

Operating Frequency(ies) of Sample: Tx = 902.3 MHz & 905.0 MHz
Rx = 925.05 MHz & 927.75 MHz

Tunable Bands: 1

Number of Channels: 10

Channel Spacing: 300 kHz

Emission Designator: 100KF1D

User Frequency Adjustment: Software Controlled

Integral Antenna

Yes

No

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

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Section 2B. General Equipment Specification

Handset

Frequency Range:

Operating Frequency(ies) of Sample:

Tunable Bands:

Number of Channels:

Channel Spacing:

Emission Designator:

Crystal Frequencies:

User Frequency Adjustment:

Integral Antenna

Yes

No

NOT APPLICABLE

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

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FCC PART 15, SUBPART C
FOR 900 MHz CORDLESS TELEPHONES
PROJECT NO.: 9R01807

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module

FCC ID: EW780-4290-00

Description of Modification for Class II Permissive Change

NOT APPLICABLE

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module

FCC ID: EW780-4290-00

Modifications Made During Testing

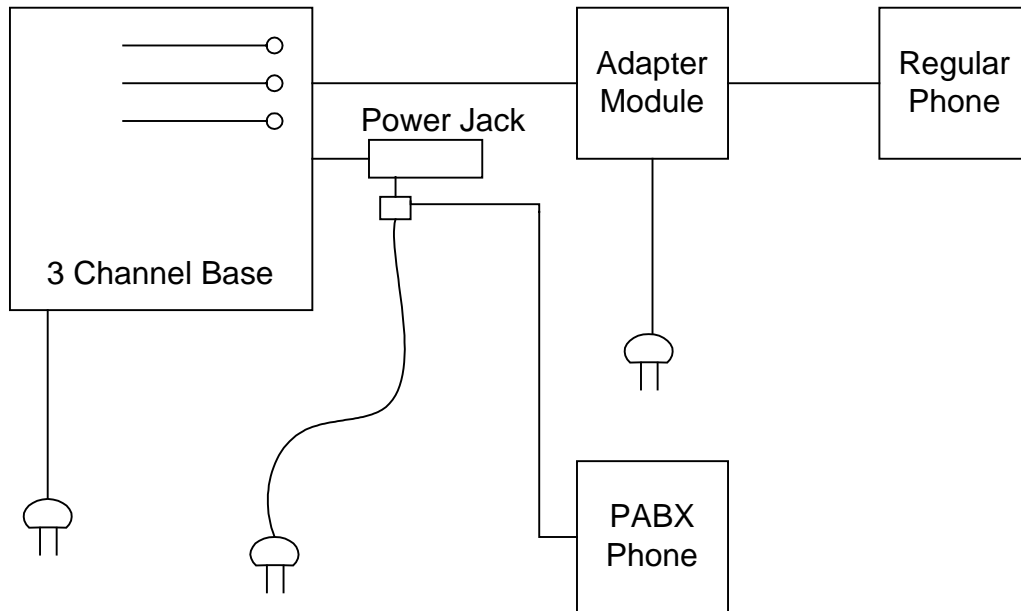
NOT APPLICABLE

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Theory of Operation

The E.U.T. is a 3 channel wireless telephone base unit that connects to a PABX system.

System Diagram



EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Section 3. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207
TESTED BY: Kevin Rose	DATE: September 7, 1999

Minimum Standard:

Frequency (MHz)	Maximum Powerline Conducted RF Voltage	
	(μ V)	(dB μ V)
0.45 - 30.0	250	48

Test Results: Complies. See attached graph(s).

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.

	<u>CISPR</u>	<u>Average</u>	
465 kHz	35.5 dB μ V	-1.2 dB μ V	Phase
465 kHz	35.8 dB μ V	-1.3 dB μ V	Neutral

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FCC PART 15, SUBPART C
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FCC ID: EW780-4290-00

KTL Ottawa

FCC PART 15, SUBPART C
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FCC ID: EW780-4290-00

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FCC ID: EW780-4290-00

Conducted Photographs (Worst Case Configuration)

FRONT VIEW



SIDE VIEW



EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Section 4A. Radiated Emissions (Base)

NAME OF TEST: Radiated Emissions (Base)	PARA. NO.: 15.249
TESTED BY: Kevin Carr	DATE: September 15, 1999

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: Complies. The worst-case emission level is 42.2 dBµV/m @ 3m at 6316.3 MHz. This is 11.8 dB below the specification limit.

Measurement Data: See attached table.

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Test Data - Radiated Emissions (Base)

Test Distance (meters) : 3		Range: A Tower		Receiver: ESVP HP 8565E		RBW: 120 kHz 1 MHz		Detector: CISPR – Q-Peak Peak			
Freq. (MHz)	Ant. *	Pol. (V/H)	Ant. HGT. (m)	Table (deg.)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Channel 1 (Low):											
902.3	E/D4	V			42.0	34.9			76.9	94.0	17.1
902.3	E/D4	H			42.2	34.9			77.1	94.0	16.9
1804.6	Hrn2	V			45.7	30.1	-43.8		32.0	54.0	22.0
1804.6	Hrn2	H			46.5	30.1	-43.8		32.8	54.0	21.2
2706.9	Hrn2	V			45.2	31.9	-45.2		31.9	54.0	22.1
2706.9	Hrn2	H			45.7	31.9	-45.2		32.4	54.0	21.6
3609.2	Hrn2	V			39.8	35.4	-42.3		32.9	54.0	21.1
3609.2	Hrn2	H			42.0	35.4	-42.3		35.1	54.0	18.9
4511.5	Hrn2	V			42.3	37.4	-43.4		36.3	54.0	17.7
4511.5	Hrn2	H			43.7	37.4	-43.4		37.7	54.0	16.3
5413.8	Hrn2	V			41.2	39.9	-43.8		37.3	54.0	16.7
5413.8	Hrn2	H			41.5	39.9	-43.8		37.6	54.0	16.4
6316.1	Hrn2	V			38.7	42.7	-40.8		40.6	54.0	13.4
6316.3	Hrn2	H			40.3	42.7	-40.8		42.2	54.0	11.8
7218.4	Hrn2	V			38.8	44.4	-42.3		40.9	54.0	13.1
7218.4	Hrn2	H			39.3	44.4	-42.3		41.4	54.0	12.6
8120.7	Hrn2	V			34.2	46.8	-43.6		37.4	54.0	16.6
8120.7	Hrn2	H			34.8	46.8	-43.6		38.0	54.0	16.0
9023.0	Hrn2	V			32.0	50.5	-43.4		39.1	54.0	14.9
9023.1	Hrn2	H			32.8	50.5	-43.4		39.9	54.0	14.1
Notes: B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole * Re-measured using dipole antenna. ** Includes cable loss when amplifier is not used. *** Includes cable loss. () Denotes failing emission level.											

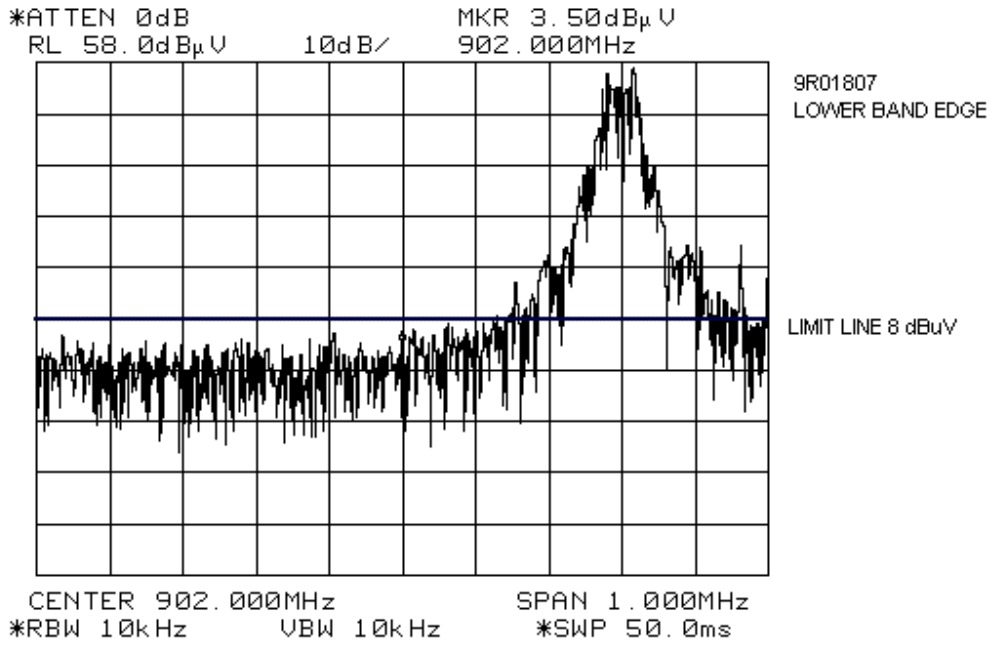
EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Test Data - Radiated Emissions (Base), continued

Test Distance (meters) : 3		Range: A Tower		Receiver: ESVP HP 8565E		RBW: 120 kHz 1 MHz		Detector: CISPR – Q-Peak Peak			
Freq. (MHz)	Ant. *	Pol. (V/H)	Ant. HGT. (m)	Table (deg.)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Channel 10 (High):											
905.0	E/D4	V			39.5	34.9			74.4	94.0	19.6
905.0	E/D4	H			42.3	34.9			77.2	94.0	16.8
1810.0	Hrn2	V			47.2	30.1	-43.9		33.4	94.0	20.6
1810.0	Hrn2	H			46.3	30.1	-43.9		32.5	94.0	21.5
2715.0	Hrn2	V			45.2	31.9	-45.2		31.9	54.0	22.1
2715.0	Hrn2	H			45.3	31.9	-45.2		32.0	54.0	22.0
3620.0	Hrn2	V			42.3	35.5	-42.3		35.5	54.0	18.5
3620.0	Hrn2	H			42.3	35.5	-42.3		35.5	54.0	18.5
4525.0	Hrn2	V			41.5	37.4	-43.4		35.5	54.0	18.5
4525.0	Hrn2	H			42.3	37.4	-43.4		36.3	54.0	17.7
5430.0	Hrn2	V			40.8	40.0	-43.8		37.0	54.0	17.0
5430.0	Hrn2	H			42.2	40.0	-43.8		38.4	54.0	15.6
6335.0	Hrn2	V			38.3	42.7	-40.8		40.2	54.0	13.8
6335.0	Hrn2	H			38.0	42.7	-40.8		39.9	54.0	14.1
7240.0	Hrn2	V			37.5	44.4	-42.3		39.6	54.0	14.4
7240.0	Hrn2	H			37.7	44.4	-42.3		39.8	54.0	14.2
8145.0	Hrn2	V			33.8	47.0	-43.7		37.1	54.0	16.9
8145.0	Hrn2	H			33.8	47.1	-43.7		37.2	54.0	16.8
9050.0	Hrn2	V			31.0	50.5	-43.4		38.1	54.0	15.9
9050.0	Hrn2	H			30.0	50.5	-43.4		37.1	54.0	16.9

Notes:
 B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
 * Re-measured using dipole antenna.
 ** Includes cable loss when amplifier is not used.
 *** Includes cable loss.
 () Denotes failing emission level.

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00



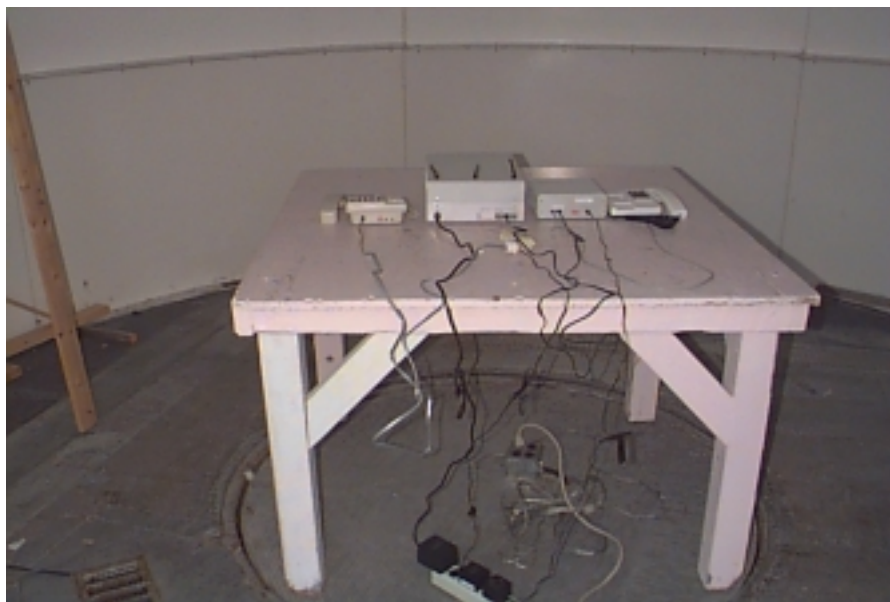
EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Radiated Photographs - Base (Worst Case Configuration)

FRONT VIEW



BACK VIEW



EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Section 4B. Radiated Emissions (Handset)

NAME OF TEST: Radiated Emissions (Handset)	PARA. NO.: 15.249
TESTED BY:	DATE:

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 (m)	Harmonic (dBµV)
902-928	50	94		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: Complies/Does not comply. The worst-case emission level is _____ dBµV/m @ 3m at _____ MHz. This is _____ dB above/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.

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FCC PART 15, SUBPART C
FOR 900 MHz CORDLESS TELEPHONES
PROJECT NO.: 9R01807

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Radiated Photographs - Handset (Worst Case Configuration)

FRONT VIEW

NOT APPLICABLE

REAR VIEW

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Section 5. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.	
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	June 16/99	June 16/00	
1 Year	Spectrum Analyzer-1	Hewlett Packard	8566B	2311A02238	Oct. 22/98	Oct. 22/99	
1 Year	Spectrum Analyzer Display-1	Hewlett Packard	8566B	2314A04759	Oct. 22/98	Oct. 22/99	
1 Year	Quasi-peak adapter-1	Hewlett-Packard	85650A	2043A00302	Oct. 22/98	Oct. 22/99	
	Plotter	Hewlett Packard	7470A	2308A30807	NCR	NCR	
1 Year	LISN	Rohde & Schwarz	ESH2-Z5	890485/017	July 23/98	Sept. 24/99	
1 Year	Receiver	Rohde & Schwarz	ESH3	872079/053	July 23/98	Sept. 24/99	
1 Year	Receiver	Rohde & Schwarz	ESVP	892661/014	Mar. 29/99	Mar. 29/00	
	Biconilog Antenna	EMCO	3143	1038	NCR	NCR	
2 Year	Horn Antenna	EMCO #2	3115	4336	Oct. 30/97	Oct. 30/99	
1 Year	Dipole Antenna Set	EMCO	3121C	1029	Nov. 18/98	Nov. 18/99	
1 Year	Low Noise Amplifier	AVANTEK	AWT-8035	1005	Aug. 4/98	Sept. 24/99	
1 Year	Low Noise Amplifier	DBS Microwave	DWT-13035	9623	Aug. 4/98	Sept. 24/99	

NA: Not Applicable
 NCR: No Cal Required
 COU: CAL On Use

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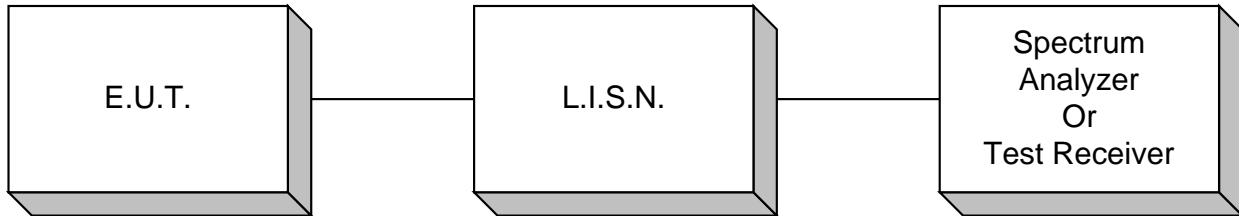
FCC PART 15, SUBPART C
FOR 900 MHz CORDLESS TELEPHONES
PROJECT NO.: 9R01807
ANNEX A

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

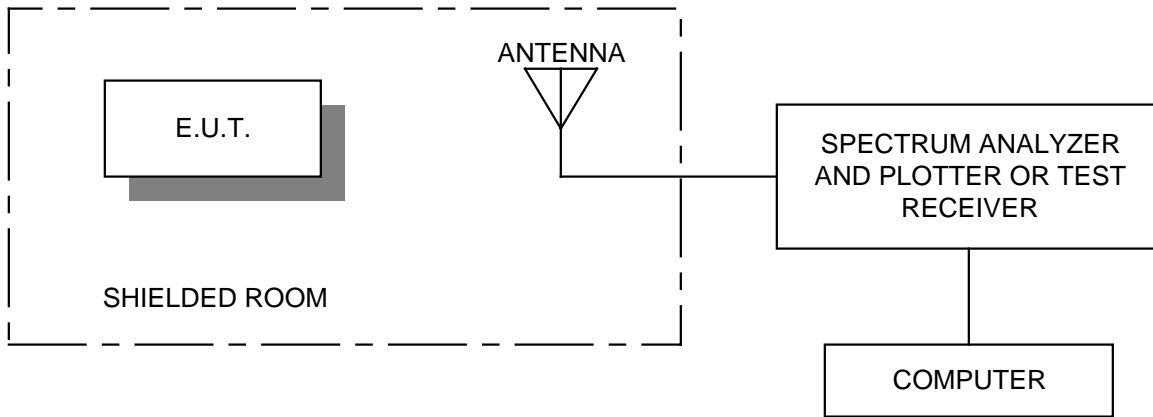
ANNEX A
TEST DIAGRAMS

EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Conducted Emissions

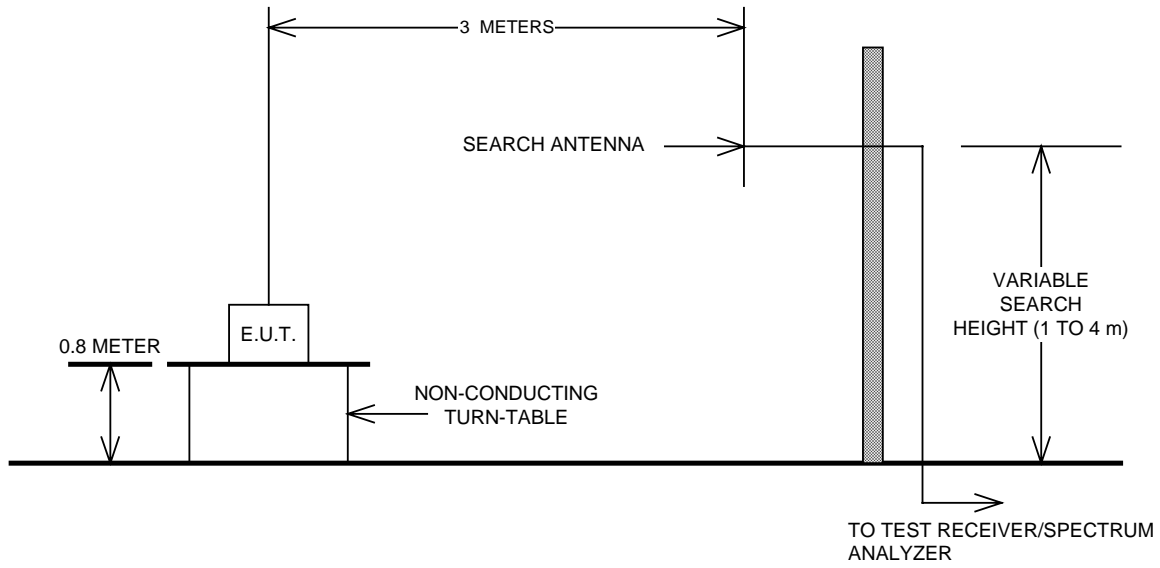


Radiated Prescan



EQUIPMENT: VTECH VT3921 Cordless PABX Base & Adapter Module
FCC ID: EW780-4290-00

Test Site For Radiated Emissions



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FCC PART 15, SUBPART C
FOR 900 MHz CORDLESS TELEPHONES
PROJECT NO.: 9R01807
ANNEX B

EQUIPMENT: VTECH VT3921 Cordless PABX Base
FCC ID: EW780-4290-00

ANNEX B

RESTRICTED BANDS OF OPERATION

EQUIPMENT: VTECH VT3921 Cordless PABX Base
FCC ID: EW780-4290-00

Section B Restricted Bands of Operation

(a) Except as shown in paragraph (d) of this section , only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.15
0.49 - 0.51	16.69475-16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425-16.80475	960-1240	7.25-7.75
3.020 - 3.026	25.5-25.67	1300-1427	8.025-8.5
4.125 - 4.128	37.5-38.25	1435-1626.6	9.0-9.2
4.17725 - 4.17775	73-74.6	1645.5-1646.5	9.3-9.5
4.20725 - 4.20775	74.8-75.2	1660-1710	10.6-12.7
6.215 - 6.218	108-121.94	1718.8-1722.2	13.25-13.4
6.31175 - 6.31225	123-138	2220-2300	14.47-14.5
8.291 - 8.294	149.9-150.05	2310-2390	15.35-16.2
8.362 - 8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625 - 8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425 - 8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29 - 12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975 - 12.52025	240-285	3345.8-3358	36.43-36.5
12.57675 - 12.57725	322-335.4	3600-4400	Above 38.6
13.36 - 13.41			