

KTL Test Report: 9R01601.1

Applicant: VTECH Engineering Canada Ltd.
200 – 7671 Alderbridge Way
Richmond, B.C.
V6X 1Z9

**Equipment Under Test:
(E.U.T.)** SPP-A945 Cordless Telephone

FCC ID: AK8SPP930

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, Senior RF Specialist

Date:

Total Number of Pages: 27

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EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Section 1. Summary Of Test Results

Manufacturer: VTECH Engineering Canada Ltd.

Model No.: SPP-A945

Serial No.: None

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

E	T	S
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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. None
See " Summary of Test Data".



NVLAP LAB CODE: 100351-0

TESTED BY: _____ DATE: _____
Wayne Clarke, Senior EMC Specialist

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EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

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	Complies

Footnotes For N/A's:

Test Conditions:

Indoor Temperature: 22 °C
 Humidity: 30 %

Outdoor Temperature: 26 °C
 Humidity: 30 %

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Section 2A. General Equipment Specification

Base:

Frequency Range: 902 – 928 MHz

Operating Frequency(ies) of Sample: 905.0, 902.3 MHz

Tunable Bands: One

Number of Channels: Ten

Channel Spacing: 300 kHz

Emission Designator: 100K0F3E

Crystal Frequencies: Not Applicable

User Frequency Adjustment: Push Button Channel Selection On Handset

Integral Antenna **Yes** **No**

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

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Section 2B. General Equipment Specification

Handset

Frequency Range: 902 – 928 MHz
Operating Frequency(ies) of Sample: 927.75, 925.05 MHz
Tunable Bands: One
Number of Channels: Ten
Channel Spacing: 300 kHz
Emission Designator: 100K0F3E
Crystal Frequencies: Not Applicable
User Frequency Adjustment: Push Button Selection

Integral Antenna **Yes** **No**

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

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Description of Modification for Class II Permissive Change

The unit was modified by removing two ceramic filters and replacing them with a SAW resonator.

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Modifications Made During Testing

NOT APPLICABLE

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Theory of Operation

The E.U.T. is a 900 MHz cordless telephone.

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Section 3. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207
TESTED BY: Wayne Clarke	DATE: June 9, 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.

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EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

INSERT CONDUCTED EMISSIONS GRAPH(S)

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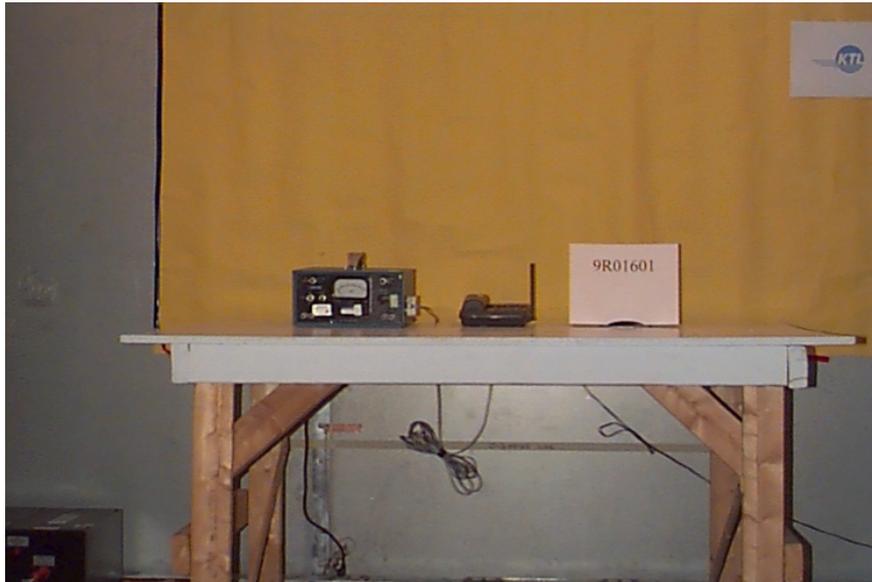
FCC PART 15, SUBPART C
FOR 900 MHz CORDLESS TELEPHONES
PROJECT NO.: 9R01601.1

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

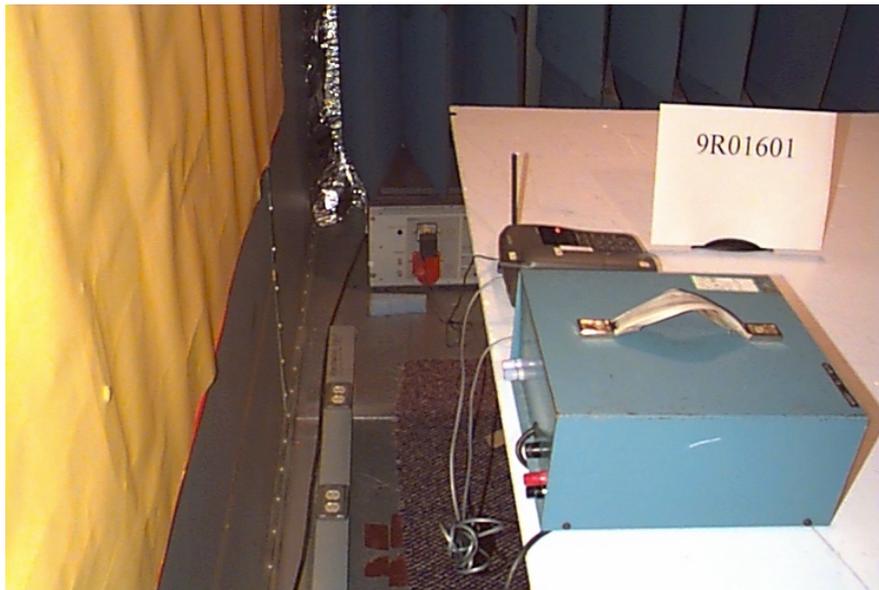
EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Conducted Photographs (Worst Case Configuration)

Side View



Front View



EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Section 4A. Radiated Emissions (Base)

NAME OF TEST: Radiated Emissions (Base)	PARA. NO.: 15.249
TESTED BY: Wayne Clarke	DATE: June 9, 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 902.3 dBµV/m @ 3m at 88.1 MHz. This is 5.9 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: SPP-A945 Cordless Telephone
 FCC ID: AK8SPP930

Test Data - Radiated Emissions (Base)

Test Distance (meters) : 3		Range: A Tower		Receiver: ESVP		RBW(kHz): 120		Detector: CISPR			
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)
905.0	E/D4	V			51.2	34.9			86.1	94.0	7.9
905.0	E/D4	H			44.7	34.9			79.6	94.0	14.4
902.3	E/D4	V			53.2	34.9			88.1	94.0	5.9
902.3	E/D4	H			44.4	34.9			79.3	94.0	14.7
902.3	E/D4	V			46.4	34.9			81.3	94.0	12.7
902.3	E/D4	H			46.8	34.9			81.7	94.0	12.3

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.

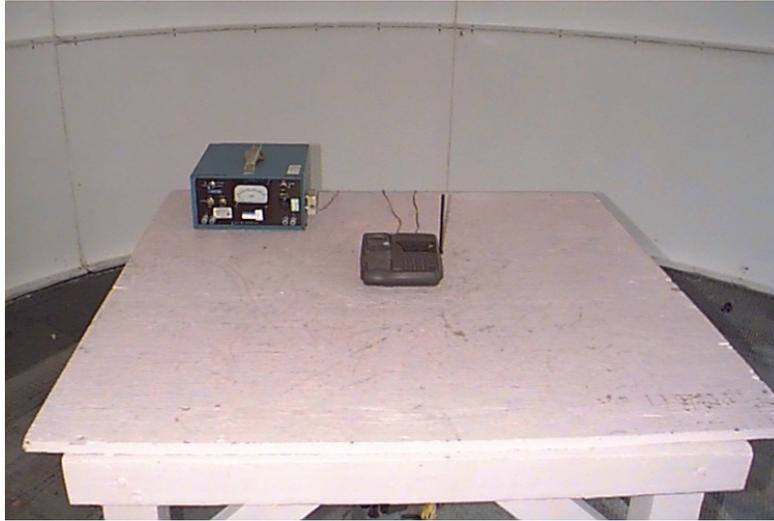
Test Distance (meters) : 3		Range: A Tower		Receiver: 8564E		RBW(kHz): 1MHz		Detector: PEAK			
Freq. (MHz)	Ant. *	Pol. (V/H)	Ant. HGT. (m)	Table (deg.)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1810.0	Hrn2	V			46.3	30.1	-43.9		32.5	54.0	21.5
1810.0	Hrn2	H			43.3	30.1	-43.9		29.5	54.0	24.5
2715.0	Hrn2	V			45.0	31.9	-45.2		31.7	54.0	22.3
2715.0	Hrn2	H			39.5	31.9	-45.2		26.2	54.0	27.8
1804.6	Hrn2	V			46.3	30.1	-43.8		32.6	54.0	21.4
1804.6	Hrn2	H			40.7	30.1	-43.8		27.0	54.0	27.0
2706.9	Hrn2	V			40.5	31.9	-45.2		27.2	54.0	26.8
2706.9	Hrn2	H			38.2	31.9	-45.2		24.9	54.0	29.1

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.

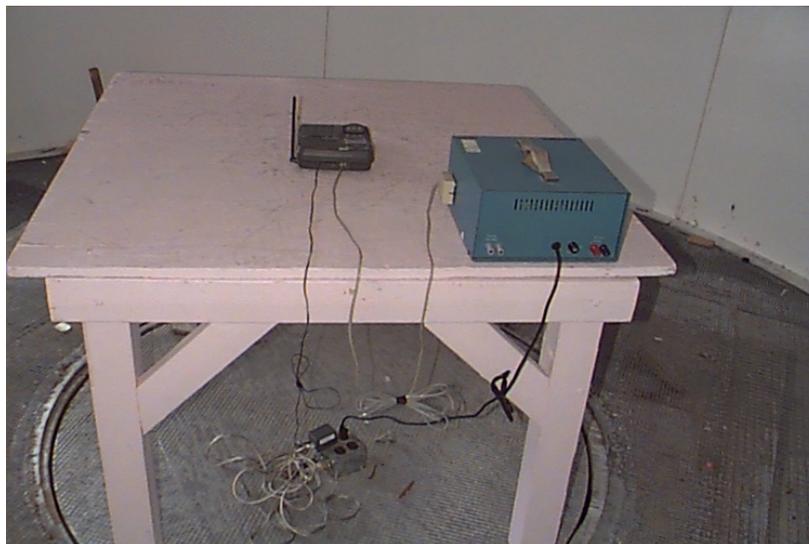
EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Radiated Photographs - Base (Worst Case Configuration)

Front View



Rear View



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FOR 900 MHz CORDLESS TELEPHONES
PROJECT NO.: 9R01601.1

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Lower Band Edge Base Plot

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Section 4B. Radiated Emissions (Handset)

NAME OF TEST: Radiated Emissions (Handset)	PARA. NO.: 15.249
TESTED BY: Wayne Clarke	DATE: June 8, 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 83.2 dBµV/m @ 3m at 927.75 MHz. This is 10.8 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: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Test Data - Radiated Emissions (Handset)

Test Distance (meters) : 3		Range: A Tower		Receiver: ESVP		RBW(kHz): 120		Detector: CISPR			
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)
927.74	E/D4	V			47.9	35.3			83.2	94.0	10.8
927.74	E/D4	H			41.8	35.3			77.1	94.0	16.9
927.74	E/D4	V			41.6	35.3			76.9	94.0	17.1
927.74	E/D4	H			47.2	35.3			82.5	94.0	11.5
927.74	E/D4	V			46.0	35.3			81.3	46.0	12.7
927.74	E/D4	H			47.4	35.3			82.7	46.0	11.3
925.04	E/D4	V			47.3	35.3			82.6	94.0	11.4
925.04	E/D4	H			42.5	35.3			77.8	94.0	16.2
925.04	E/D4	V			46.7	35.3			82.0	94.0	12.0
925.04	E/D4	H			44.0	35.3			79.3	94.0	14.7
925.04	E/D4	V			44.7	35.3			80.0	94.0	14.0
925.04	E/D4	H			46.7	35.3			82.0	94.0	12.0

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.

Test Distance (meters) : 3		Range: A Tower		Receiver: 8364E		RBW(kHz): 1 MHz		Detector: 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)
1850.1	Hrn2	V			41.5	30.3			27.2	54.0	26.8
1850.1	Hrn2	H			43.7	30.3			29.4	54.0	24.6
2775.15	Hrn2	V			43.5	32.0			30.5	54.0	23.5
2775.15	Hrn2	H			45.0	32.0			32.0	54.0	22.0
3700.2	Hrn2	V			38.6	35.6			31.8	54.0	22.2
3700.2	Hrn2	H			37.0	35.6			30.2	54.0	23.8
1855.5	Hrn2	V			45.8	30.3			31.5	54.0	22.5
1855.5	Hrn2	H			44.5	30.3			30.2	54.0	23.8
2783.25	Hrn2	V			42.5	32.0			29.5	54.0	24.5
2783.25	Hrn2	H			48.0	32.0			35.0	54.0	19.0

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: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Radiated Photographs - Handset (Worst Case Configuration)

Front View



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FCC PART 15, SUBPART C
FOR 900 MHz CORDLESS TELEPHONES
PROJECT NO.: 9R01601.1

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Upper Band Edge Handset

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Section 5. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.	
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	
1 Year	LISN	Rohde & Schwarz	ESH2-Z5	890485/017	July 23/98	July 23/99	
1 Year	LISN(peripheral)	Tegam	95300-50	T-109014/15	July 24/98	July 24/99	
1 Year	Receiver	Rohde & Schwarz	ESH3	872079/053	July 23/98	July 23/99	
1 Year	Receiver	Rohde & Schwarz	ESVP	892661/014	Mar. 31/98	Mar. 31/99	
	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	Aug. 4/99	

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

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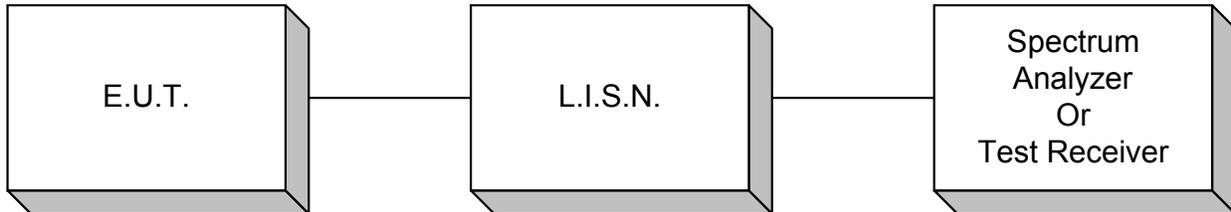
FCC PART 15, SUBPART C
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ANNEX A

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

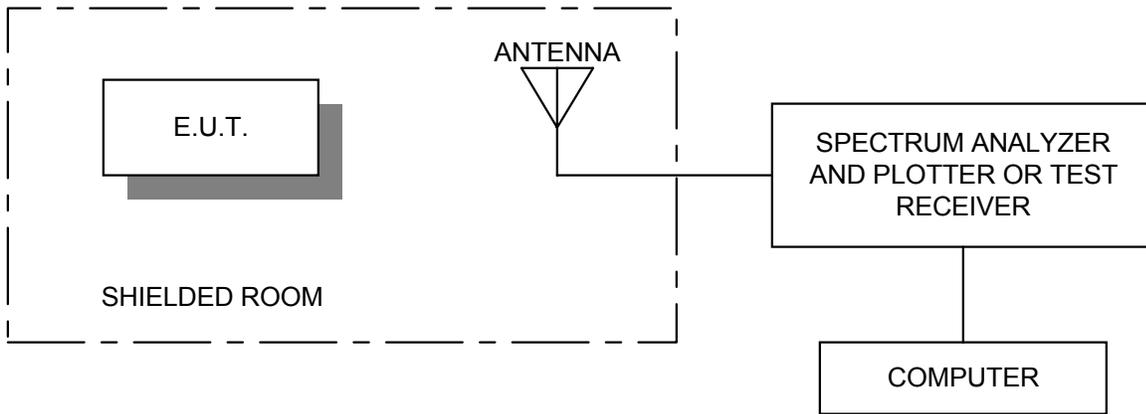
ANNEX A
TEST DIAGRAMS

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Conducted Emissions

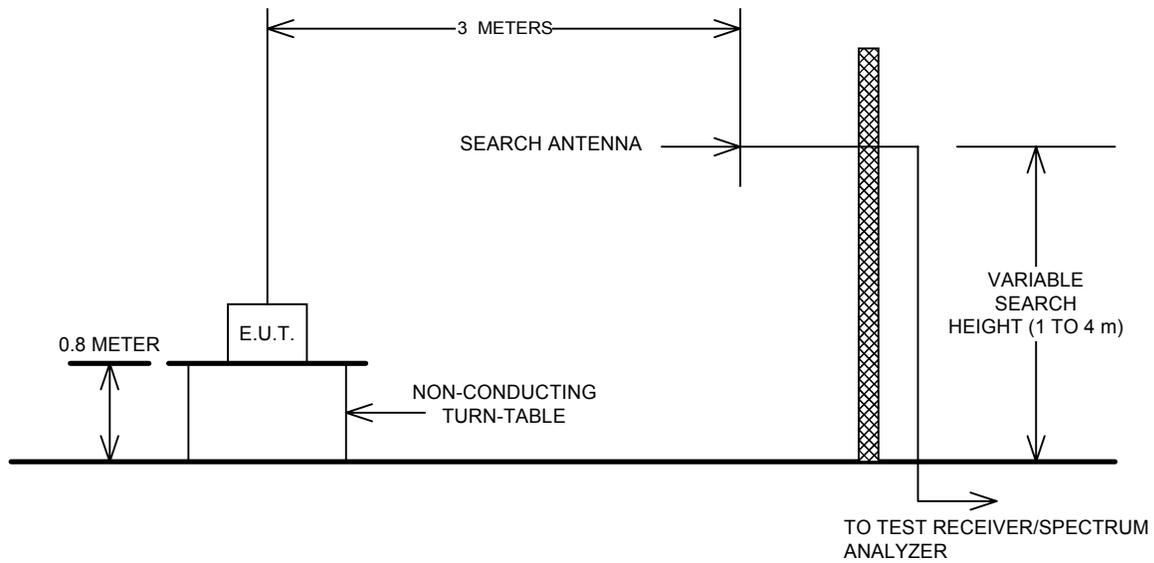


Radiated Prescan



EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

Test Site For Radiated Emissions



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FCC PART 15, SUBPART C
FOR 900 MHz CORDLESS TELEPHONES
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ANNEX B

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

ANNEX B

RESTRICTED BANDS OF OPERATION

EQUIPMENT: SPP-A945 Cordless Telephone
FCC ID: AK8SPP930

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			