KTL Test Report:	8R01229.1
Applicant:	VTECH Engineering Canada Ltd. 200-7671 Alderbridge Way Richmond, BC V6X 1Z9
Equipment Under Test: (E.U.T.)	VT1421 900 MHz Cordless Telephone
FCC ID:	EW780-4227-00
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:	_____ T. Tidwell, Wireless Group Manager
Date:	_____
Total Number of Pages:	28

Table Of Contents

Section 1. Summary Of Test Results

Manufacturer: VTECH Engineering Canada Ltd.

Model No.: VT1421

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

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

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:	23 %
Outdoor	Temperature:	5 °C
	Humidity:	23 %

Section 2A. General Equipment Specification

Base:

Equipment:	900 MHz Cordless Telephone
Model Number:	VT1421
Serial Number:	None
Frequency Range:	902.3 / 905.0 MHz
Operating Frequency(ies) of Sample:	902.6 & 904.7 MHz
Tunable Bands:	1
Number of Channels:	10
Channel Spacing:	30 kHz
Emission Designator:	100KF1D
Crystal Frequencies:	18.25 MHz
User Frequency Adjustment:	None, Software Controlled

	Yes	**No**
Integral Antenna	☒	☐

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

Section 2B. General Equipment Specification

Handset

Equipment:	900 MHz Cordless Telephone
Model Number:	VT1421
Serial Number:	None
Frequency Range:	925.05 / 927.75 MHz
Operating Frequency(ies) of Sample:	925.35 & 927.45 MHz
Tunable Bands:	1
Number of Channels:	10
Channel Spacing:	30 kHz
Emission Designator:	100KF1D
Crystal Frequencies:	18.25 MHz
User Frequency Adjustment:	None, Software Controlled

	Yes	No
Integral Antenna	☒	☐

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

Description of Modification for Class II Permissive Change

NOT APPLICABLE

Modifications Made During Testing

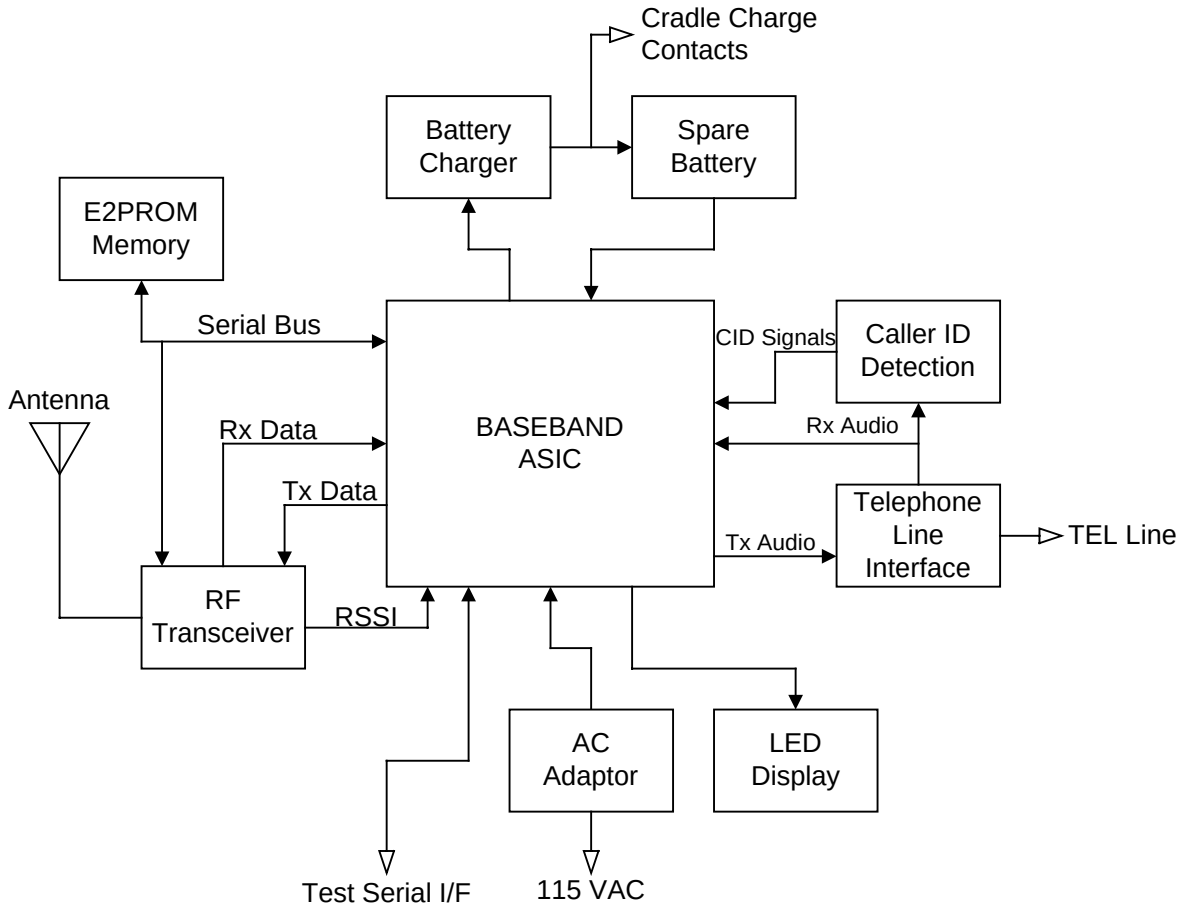
NOT APPLICABLE

Theory of Operation

The E.U.T. is a 900 MHz cordless telephone. The carrier frequency is generated from the second harmonic of a VCO operating at roughly 450 MHz. The unit has 10 channel capability.

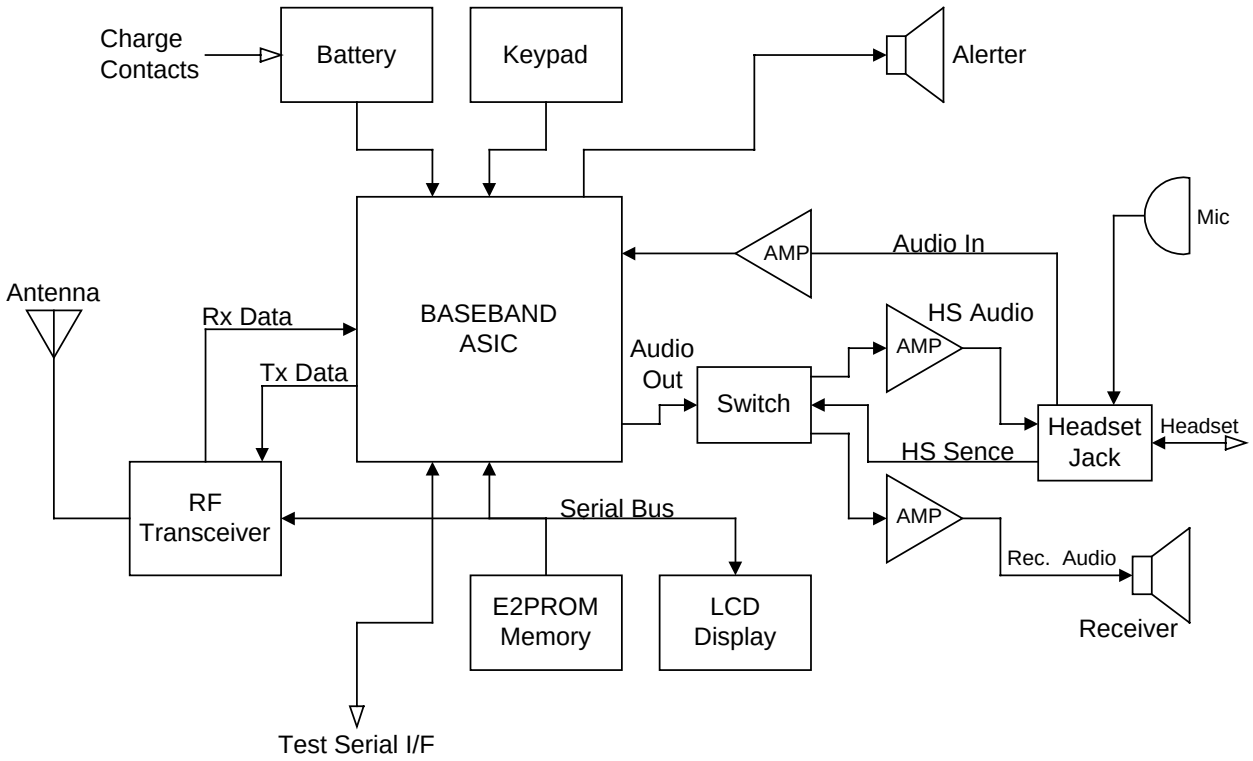
System Diagram

Base Block Diagram



System Diagram, continued

Handset Block Diagram



Section 3. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207
TESTED BY: Kevin Carr	DATE: February 1, 1999

Minimum Standard:

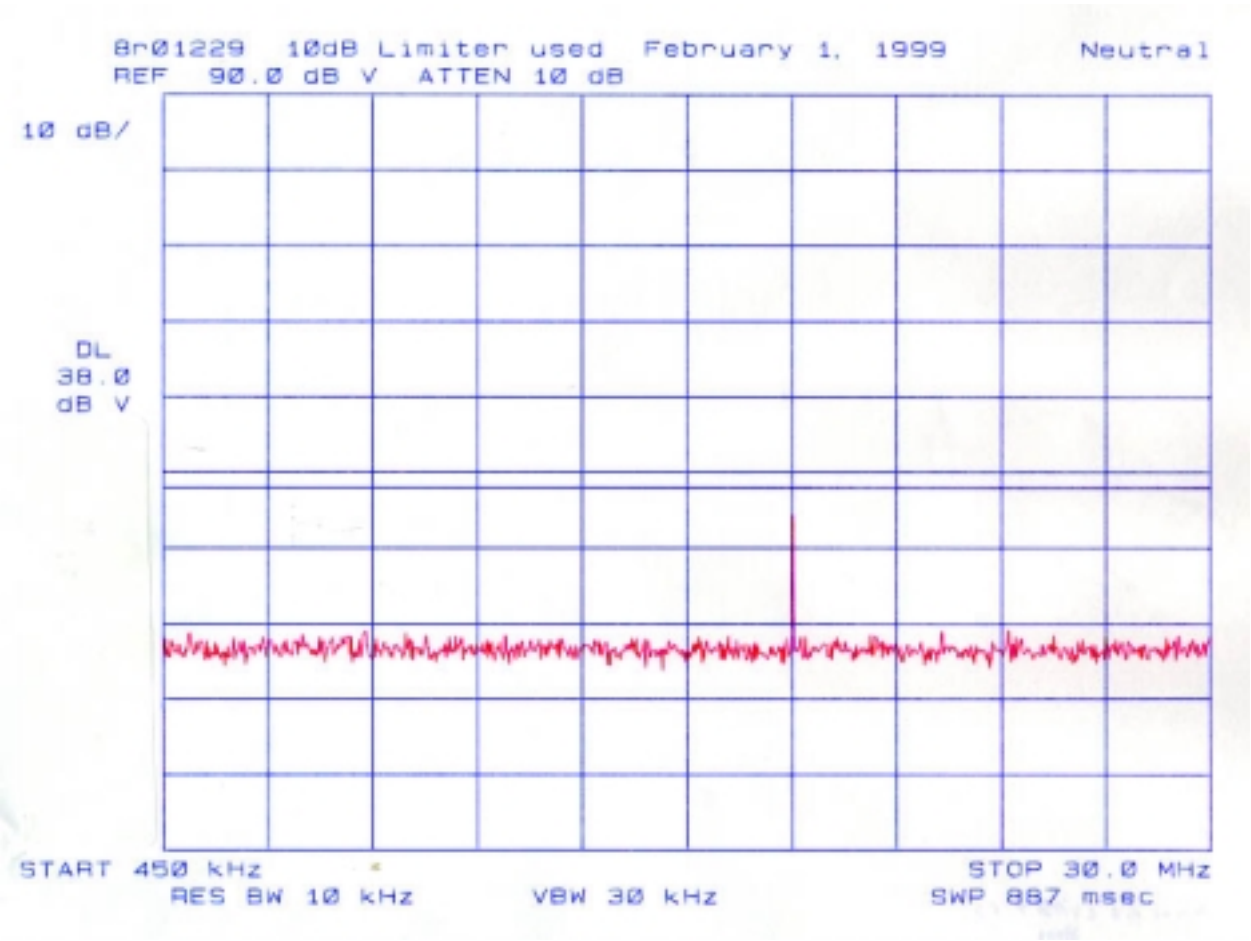
Frequency (MHz)	Maximum Powerline Conducted RF Voltage (μV)	(dBμV)
0.45 - 30.0	250	48

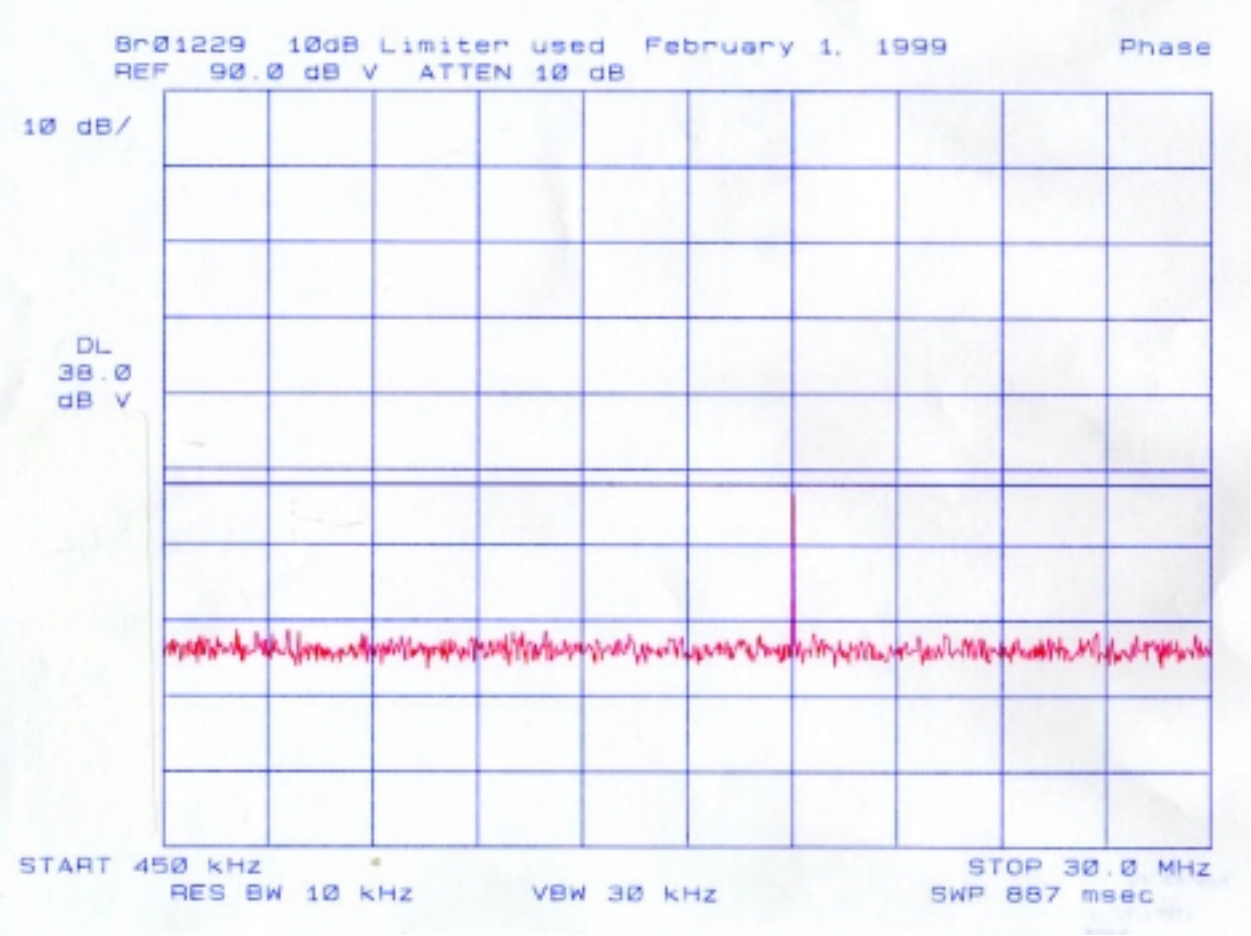
Test Results: Complies. See attached graph(s).

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.


8r01229 10dB Limiter used February 1, 1999 Neutral
REF 90.0 dB V ATTEN 10 dB
10 dB/
DL
38.0
dB V
START 450 kHz
RES BW 10 kHz
VBW 30 kHz
STOP 30.0 MHz
SWP 887 msec


8r01229 10dB Limiter used February 1, 1999 Phase
REF 90.0 dB V ATTEN 10 dB
10 dB/
DL
38.0
dB V
START 450 kHz
STOP 30.0 MHz
RES BW 10 kHz
VBW 30 kHz
SWP 887 msec

Conducted Photographs (Worst Case Configuration)

SIDE VIEW

FRONT VIEW

Section 4A. Radiated Emissions (Base)

NAME OF TEST: Radiated Emissions (Base)	PARA. NO.: 15.249
TESTED BY: Kevin Carr	DATE: February 4, 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 52.1 dBμV/m @ 3m at 9047.0 MHz. This is 1.9 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.

Test Data - Radiated Emissions: Base, Channel 2

Test Distance (meters) : 3		Range: A Tower		Receiver: ESVP, HP8566B		RBW: 120 kHz, 1 MHz		Detector: CISPR, 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)
902.6	E/D4	V			54.4	34.9			89.3	94.0	4.7
902.6	E/D4	H			47.5	34.9			82.4	94.0	11.6
1805.2	Hrn2	V			49.4	30.1	-43.8		35.7	54.0	18.3
1805.2	Hrn2	H			48.6	30.1	-43.8		34.9	54.0	19.1
2707.8	Hrn2	V			45.0	31.9	-45.2		31.7	54.0	22.3
2707.8	Hrn2	H			45.4	31.9	-45.2		32.1	54.0	21.9
3610.0	Hrn2	V			44.6	35.4	-42.3		37.7	54.0	16.3
3610.0	Hrn2	H			44.3	35.4	-42.3		37.4	54.0	16.6
4513.0	Hrn2	V			45.9	37.4	-43.4		39.9	54.0	14.1
4513.0	Hrn2	H			45.6	37.4	-43.4		39.6	54.0	14.4
5415.6	Hrn2	V			43.4	39.9	-43.8		39.5	54.0	14.5
5415.6	Hrn2	H			44.6	39.9	-43.8		40.7	54.0	13.3
6318.0	Hrn2	V			43.3	42.7	-40.8		45.2	54.0	8.8
6318.0	Hrn2	H			44.3	42.7	-40.8		46.2	54.0	7.8
7220.8	Hrn2	V			42.8	44.4	-42.3		44.9	54.0	9.1
7220.8	Hrn2	H			42.7	44.4	-42.3		44.8	54.0	9.2
8123.4	Hrn2	V			38.2	46.8	-43.6		41.4	54.0	12.6
8123.4	Hrn2	H			38.7	46.8	-43.6		41.9	54.0	12.1
9026.0	Hrn2	V			37.9	50.5	-43.4		45.0	54.0	9.0
9026.0	Hrn2	H			37.6	50.5	-43.4		44.7	54.0	9.3

Notes:
B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
* Re-measured using dipole antenna. ( ) Denotes failing emission level.
(1) 120 kHz, Q-Peak, (2) 10 kHz, Peak, (3) 100 kHz RBW, 300 kHz VBW, Peak,
(4) 300 kHz RBW, 1 MHz VBW, Peak, (5) 1 MHz RBW, 3 MHz VBW, Peak, (6) 1 MHz RBW, 10 Hz VBW, Peak

Test Data - Radiated Emissions: Base, Channel 9

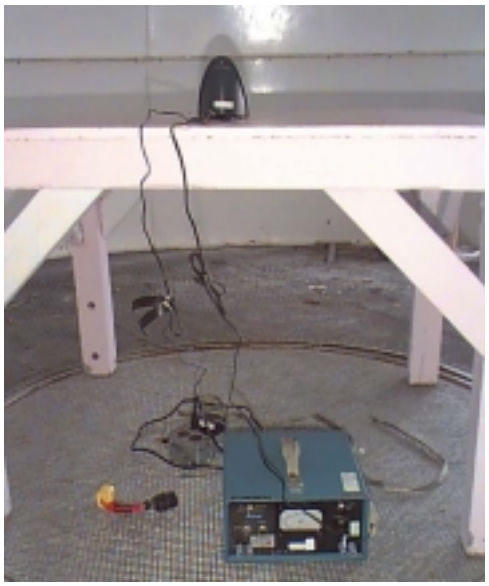
Test Distance (meters) : 3		Range: A Tower		Receiver: ESVP, HP8566B		RBW: 120 kHz, 1 MHz		Detector: CISPR, Peak			
Freq. (MHz)	Ant. *	Pol. (V/H)	Ant. HGT. (m)	Table (deg.)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
904.7	E/D4	V			55.4	34.9			90.3	94.0	3.7
904.7	E/D4	H			51.3	34.9			86.2	94.0	7.8
1809.4	Hrn2	V			48.6	30.1	-43.9		34.8	54.0	19.2
1809.4	Hrn2	H			49.6	30.1	-43.9		35.8	54.0	18.2
2714.1	Hrn2	V			45.6	31.9	-45.2		32.3	54.0	21.7
2714.1	Hrn2	H			46.7	31.9	-45.2		33.4	54.0	20.6
3618.8	Hrn2	V			47.2	35.5	-42.3		40.4	54.0	13.6
3618.8	Hrn2	H			45.9	35.5	-42.3		39.1	54.0	14.9
4523.5	Hrn2	V			46.1	37.4	-43.4		40.1	54.0	13.9
4523.5	Hrn2	H			45.8	37.4	-43.4		39.8	54.0	14.2
5428.2	Hrn2	V			45.7	39.9	-43.8		41.8	54.0	12.2
5428.2	Hrn2	H			44.2	39.9	-43.8		40.3	54.0	13.7
6332.9	Hrn2	V			45.3	42.7	-40.8		47.2	54.0	6.8
6332.9	Hrn2	H			46.8	42.7	-40.8		48.7	54.0	5.3
7237.6	Hrn2	V			46.5	44.4	-42.3		48.6	54.0	5.4
7237.6	Hrn2	H			45.7	44.4	-42.3		47.8	54.0	6.2
8142.3	Hrn2	V			46.3	47.0	-43.7		49.6	54.0	4.4
8142.3	Hrn2	H			44.7	47.0	-43.7		48.0	54.0	6.0
9047.0	Hrn2	V			45.0	50.5	-43.4		52.1	54.0	1.9
9047.0	Hrn2	H			44.4	50.5	-43.4		51.5	54.0	2.5

Notes:
B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
* Re-measured using dipole antenna. ( ) Denotes failing emission level.
(1) 120 kHz, Q-Peak, (2) 10 kHz, Peak, (3) 100 kHz RBW, 300 kHz VBW, Peak,
(4) 300 kHz RBW, 1 MHz VBW, Peak, (5) 1 MHz RBW, 3 MHz VBW, Peak, (6) 1 MHz RBW, 10 Hz VBW, Peak

Radiated Photographs - Base (Worst Case Configuration)

FRONT VIEW

REAR VIEW



Section 4B. Radiated Emissions (Handset)

NAME OF TEST: Radiated Emissions (Handset)	PARA. NO.: 15.249
TESTED BY: Kevin Carr	DATE: February 4, 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 87.9 dBµV/m @ 3m at 925.35 MHz. This is 6.1 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.

Test Data - Radiated Emissions: Handset, Channel 2

Test Distance (meters) : 3		Range: A Tower		Receiver: ESVP, HP8566B		RBW: 120 kHz, 1 MHz		Detector: CISPR, 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)
925.35	E/D4	V			52.6	35.3			87.9	94.0	6.1
925.35	E/D4	H			41.2	35.3			76.5	94.0	17.5
1850.7	Hrn2	V			48.4	30.3	-44.6		34.1	54.0	19.9
1850.7	Hrn2	H			49.7	30.3	-44.6		35.4	54.0	18.6
2776.05	Hrn2	V			44.4	32.0	-45.0		31.4	54.0	22.6
2776.05	Hrn2	H			44.8	32.0	-45.0		31.8	54.0	22.2
3701.4	Hrn2	V			46.4	35.6	-42.4		39.6	54.0	14.4
3701.4	Hrn2	H			45.2	35.6	-42.4		38.4	54.0	15.6
4626.75	Hrn2	V			45.8	37.8	-43.7		39.9	54.0	14.1
4626.75	Hrn2	H			45.2	37.8	-43.7		39.3	54.0	14.7
5552.1	Hrn2	V			41.3	40.3	-43.4		38.2	54.0	15.8
5552.1	Hrn2	H			42.3	40.3	-43.4		39.2	54.0	14.8
6477.45	Hrn2	V			42.3	42.8	-40.8		44.3	54.0	9.7
6477.45	Hrn2	H			42.5	42.8	-40.8		44.5	54.0	9.5
7402.8	Hrn2	V			41.6	44.7	-42.1		44.2	54.0	9.8
7402.8	Hrn2	H			41.3	44.7	-42.1		43.9	54.0	10.1
8328.15	Hrn2	V			38.4	48.4	-44.0		42.8	54.0	11.2
8328.15	Hrn2	H			38.4	48.4	-44.0		42.8	54.0	11.2
9253.5	Hrn2	V			36.6	50.6	-43.4		43.8	54.0	10.2
9253.5	Hrn2	H			36.2	50.6	-43.4		43.4	54.0	10.6

Notes:
B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
* Re-measured using dipole antenna. ( ) Denotes failing emission level.
(1) 120 kHz, Q-Peak, (2) 10 kHz, Peak, (3) 100 kHz RBW, 300 kHz VBW, Peak,
(4) 300 kHz RBW, 1 MHz VBW, Peak, (5) 1 MHz RBW, 3 MHz VBW, Peak, (6) 1 MHz RBW, 10 Hz VBW, Peak

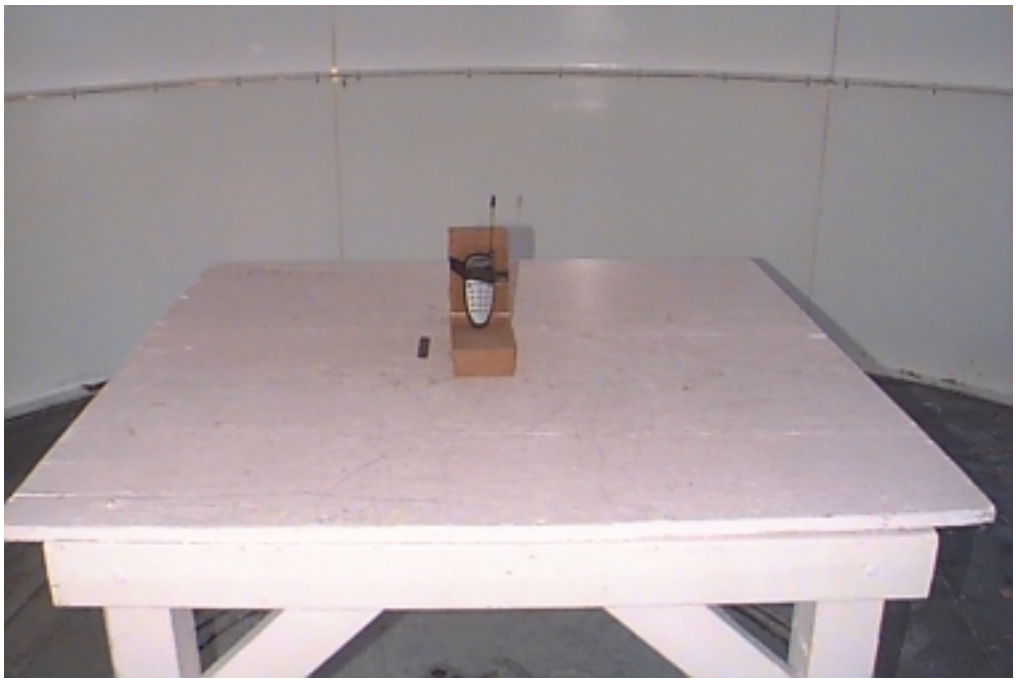
Test Data - Radiated Emissions: Handset, Channel 9

Test Distance (meters) : 3		Range: A Tower		Receiver: ESVP, HP8566B		RBW: 120 kHz, 1 MHz		Detector: CISPR, 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)
927.45	E/D4	V			49.5	35.3			84.8	94.0	9.2
927.45	E/D4	H			41.4	35.3			76.7	94.0	17.3
1854.9	Hrn2	V			46.9	30.3	-44.6		32.6	54.0	21.4
1854.9	Hrn2	H			48.6	30.3	-44.6		34.3	54.0	19.7
2782.35	Hrn2	V			43.4	32.0	-45.0		30.4	54.0	23.6
2782.35	Hrn2	H			44.4	32.0	-45.0		31.4	54.0	22.6
3709.8	Hrn2	V			45.2	35.6	-42.4		38.4	54.0	15.6
3709.8	Hrn2	H			45.5	35.6	-42.4		38.7	54.0	15.3
4637.25	Hrn2	V			45.7	37.9	-43.7		39.9	54.0	14.1
4637.25	Hrn2	H			45.4	37.9	-43.7		39.6	54.0	14.4
5564.7	Hrn2	V			42.0	40.4	-43.3		39.1	54.0	14.9
5564.7	Hrn2	H			44.3	40.4	-43.3		41.4	54.0	12.6
6492.15	Hrn2	V			42.7	42.8	-40.8		44.7	54.0	9.3
6492.15	Hrn2	H			42.6	42.8	-40.8		44.6	54.0	9.4
7419.6	Hrn2	V			41.4	44.7	-42.1		44.0	54.0	10.0
7419.6	Hrn2	H			43.1	44.7	-42.1		45.7	54.0	8.3
8347.05	Hrn2	V			38.0	48.6	-44.0		42.6	54.0	11.4
8347.05	Hrn2	H			37.4	48.6	-44.0		42.0	54.0	12.0
9274.5	Hrn2	V			36.2	50.6	-43.4		43.4	54.0	10.6
9274.5	Hrn2	H			36.9	50.6	-43.4		44.1	54.0	9.9

Notes:
B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
* Re-measured using dipole antenna. ( ) Denotes failing emission level.
(1) 120 kHz, Q-Peak, (2) 10 kHz, Peak, (3) 100 kHz RBW, 300 kHz VBW, Peak,
(4) 300 kHz RBW, 1 MHz VBW, Peak, (5) 1 MHz RBW, 3 MHz VBW, Peak, (6) 1 MHz RBW, 10 Hz VBW, Peak

Radiated Photographs - Handset (Worst Case Configuration)

FRONT VIEW



Section 5. Test Equipment List

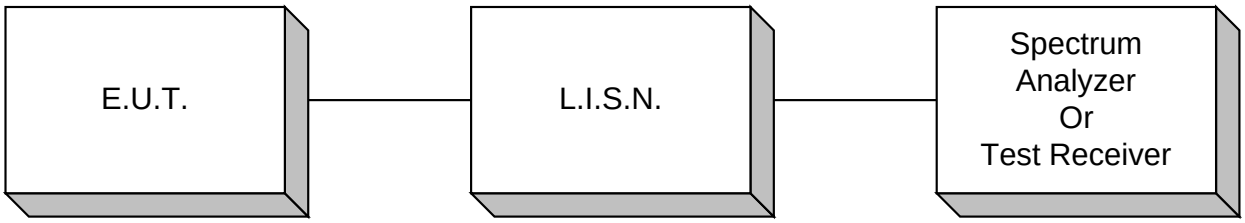
CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.	
1 Year	Spectrum Analyzer-**1**	Hewlett Packard	8566B	2311A02238	Oct. 22/98	Oct. 22/99	
1 Year	Spectrum Analyzer Display-**1**	Hewlett Packard	8566B	2314A04759	Oct. 22/98	Oct. 22/99	
1 Year	Quasi-peak adapter-**1**	Hewlett-Packard	85650A	2043A00302	Oct. 22/98	Oct. 22/99	
1 Year	Spectrum Analyzer-**2**	Hewlett Packard	8566B	1950A00400	July 22/98	July 22/99	
1 Year	Spectrum Analyzer Display-**2**	Hewlett Packard	85662A	1950A01177	July 22/98	July 22/99	
1 Year	Quasi Peak Adaptor-**2**	Hewlett Packard	85650A	2251A00620	July 22/98	July 22/99	
1 Year	LISN	Rohde & Schwarz	ESH2-Z5	890485/017	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	Oct. 28/98	Oct. 28/99	
1 Year	Low Noise Amplifier	Avantek	AWT-8035	1005	Aug. 4/98	Aug. 4/99	
1 Year	Low Noise Amplifier	DBS Microwave	DWT-13035	9623	Aug. 4/98	Aug. 4/99	

NA: Not Applicable
NCR: No Cal Required

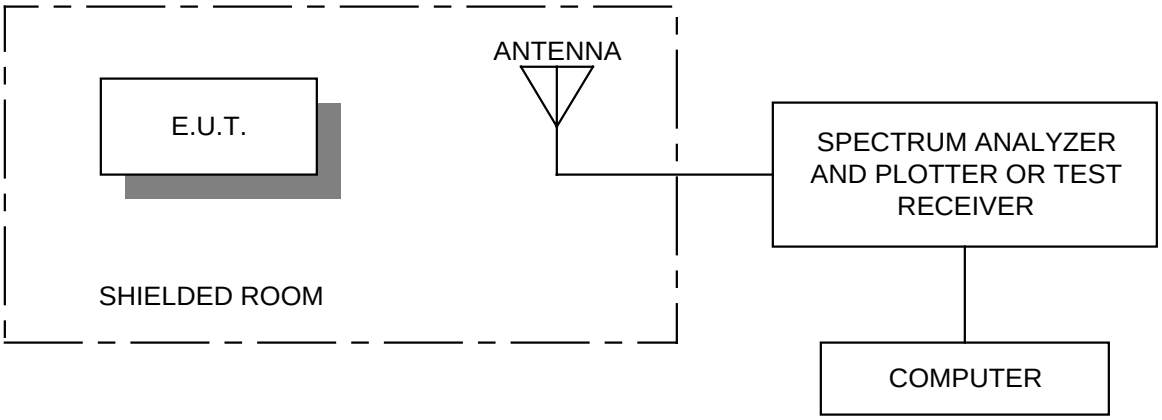
ANNEX A

TEST DIAGRAMS

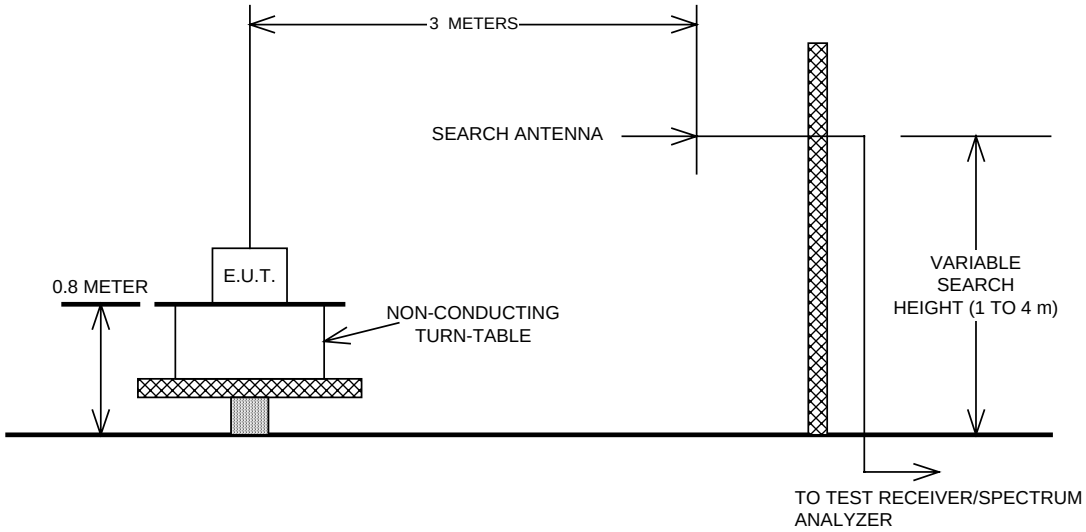
Conducted Emissions



Radiated Prescan



Test Site For Radiated Emissions



ANNEX B

RESTRICTED BANDS OF OPERATION

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			