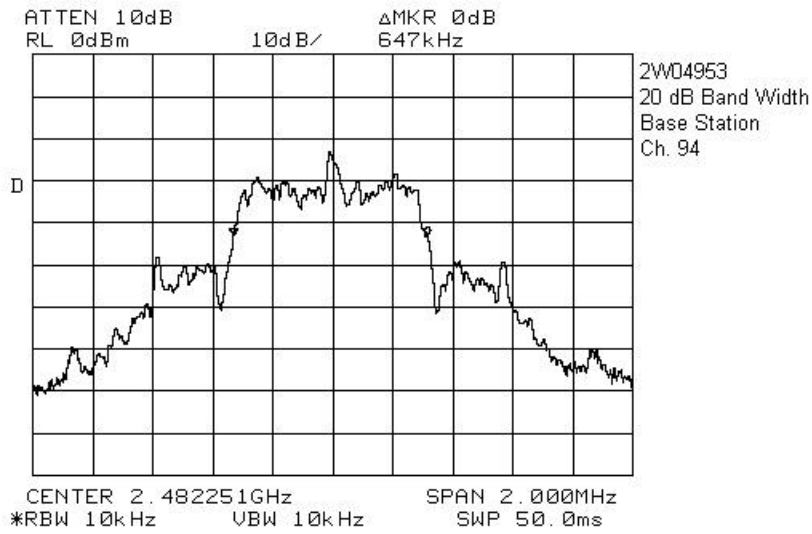
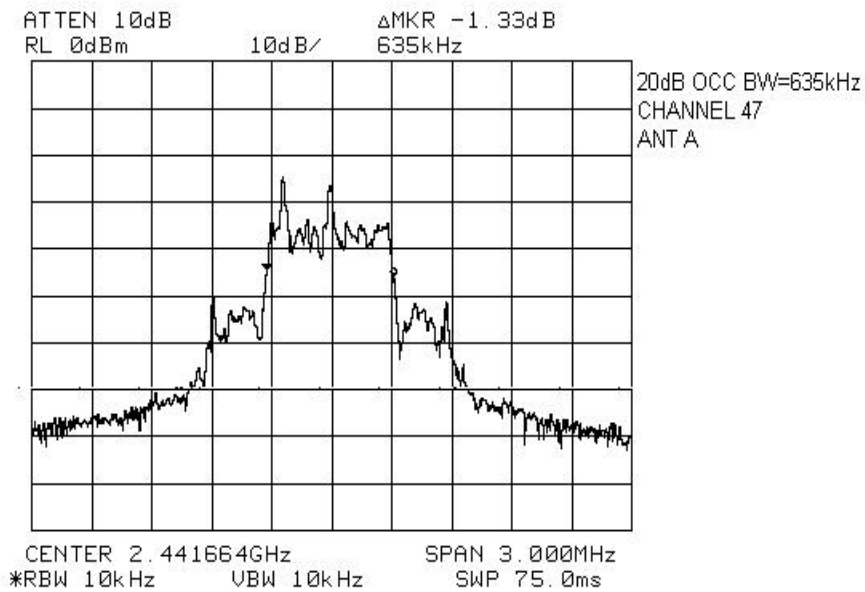
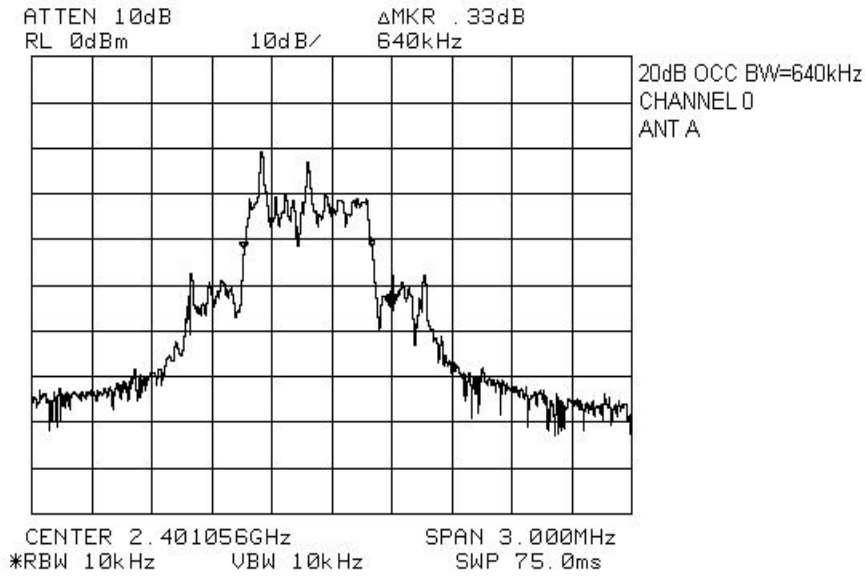


EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

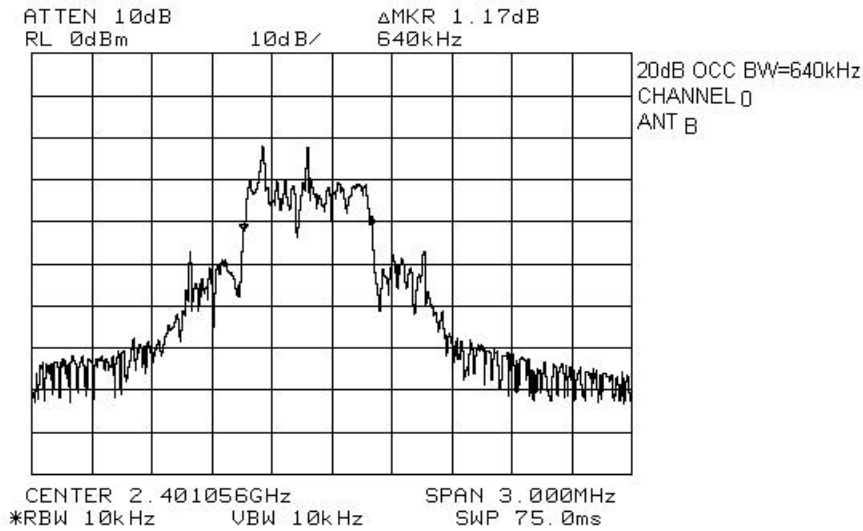
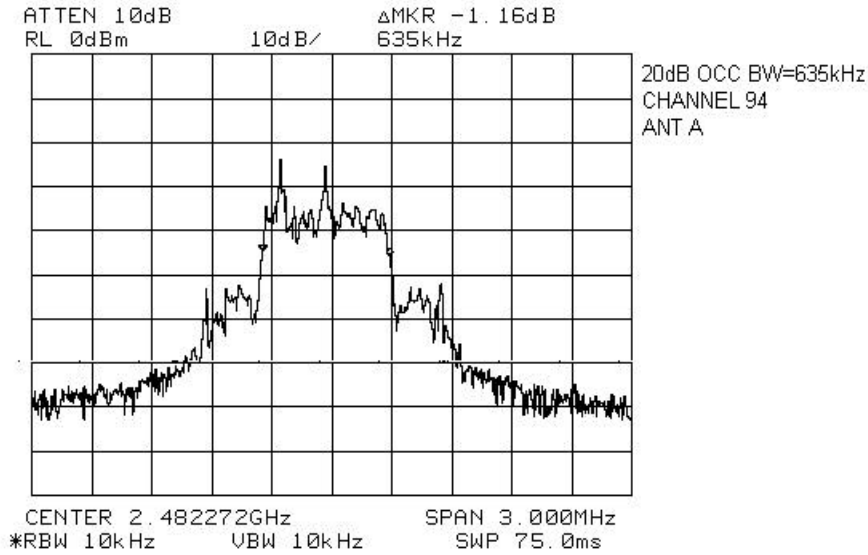


EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

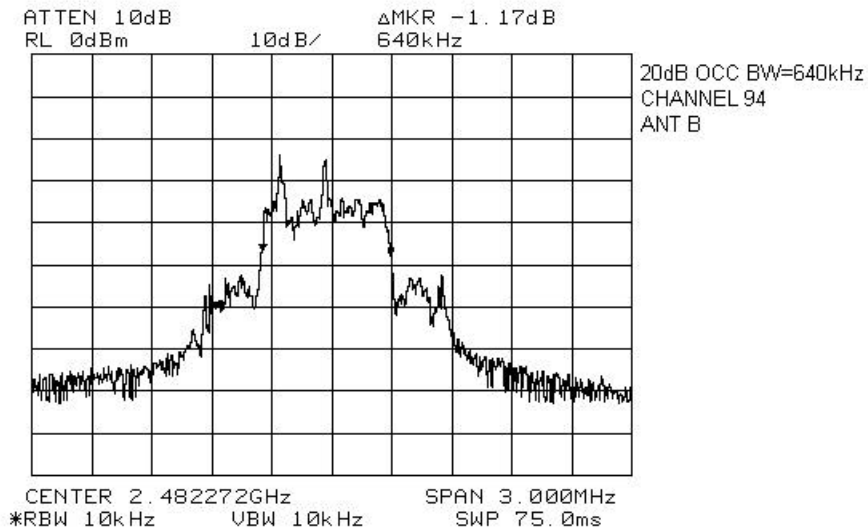
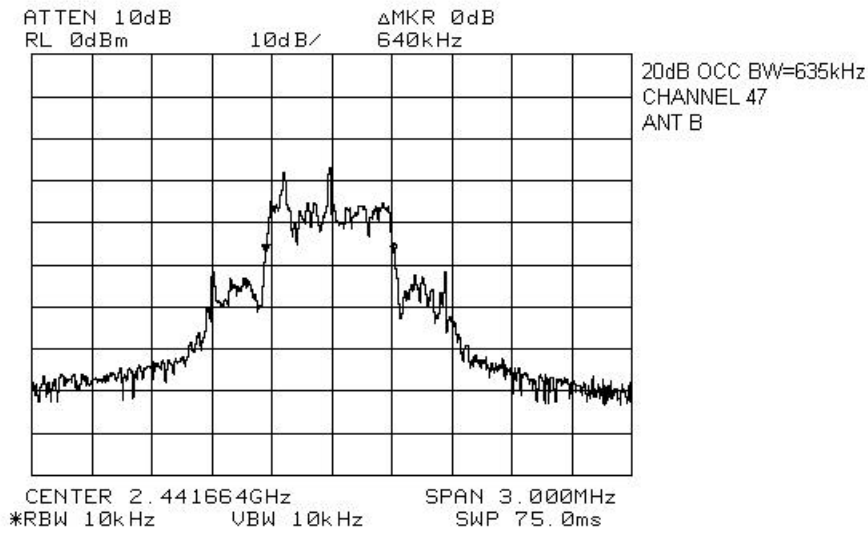
Handset



EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone



EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone



EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Section 8. Peak Power Output

Para. No.: 15.247 (b)

Test Performed By: Kevin Rose	Date of Test: April 24, 2002
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Test Results: Complies. The maximum peak power output of the transmitter is 0.15 watts

Measurement Data: Detachable antenna? Yes No

Handset, Antenna A

Directional Gain of Antenna: 0 dBi or 1 Numeric
Peak Power Output: 0.10 watts.
Field Strength: 115.3 dBµV/m @ 3m or 0.58 V/m @ 3m.

Handset, Antenna B

Directional Gain of Antenna: 0 dBi or 1 Numeric
Peak Power Output: 0.08 watts.
Field Strength: 114.1 dBµV/m @ 3m or 0.51 V/m @ 3m.

Base Station

Directional Gain of Antenna: 0 dBi or 1 Numeric
Peak Power Output: 0.15 watts.
Field Strength: 117.1 dBµV/m @ 3m or 0.72 V/m @ 3m.

See Attached radiated measurements.

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Test Data - Radiated Emissions, Handset A Ant., Peak

Test Distance (meters) : 3		Range: A		Receiver: HP 8565			RBW(kHz): 1000	
No.	Freq. (MHz)	Ant. *	Pol (V/H)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Duty Cycle. Corr. (dB)	Field Strength (dBµV/m)
1	2401	Hrn 1	V	79.3	33.9			113.2
2	2401	Hrn 1	H	80.8	33.9			114.7
3	2482.28	Hrn 1	V	78.6	34.1			112.7
4	2482.28	Hrn 1	H	76.1	34.1			110.2
5	2441.44	Hrn 1	V	81.3	34			115.3
6	2441.44	Hrn 1	H	78.9	34			112.9

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.

N.D. = Not Detected

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Test Data - Radiated Emissions, Handset, B Ant., Peak

Test Distance (meters) : 3		Range: A		Receiver: HP 8565			RBW(kHz): 1000	
No.	Freq. (MHz)	Ant. *	Pol (V/H)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Duty Cycle. Corr. (dB)	Field Strength (dBµV/m)
1	2401	Hrn 1	V	79.6	33.9			113.5
2	2401	Hrn 1	H	80.2	33.9			114.1
3	2482.28	Hrn 1	V	78.2	34.1			112.3
4	2482.28	Hrn 1	H	76.3	34.1			110.4
5	2441.44	Hrn 1	V	81	34			115
6	2441.44	Hrn 1	H	79.2	34			113.2

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.

N.D. = Not Detected

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Test Data - Radiated Emissions, Base Station, Peak

Test Distance (meters) : 3		Range: A		Receiver: HP 8565			RBW(kHz): 1000	
No.	Freq. (MHz)	Ant. *	Pol (V/H)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Duty Cycle. Corr. (dB)	Field Strength (dBµV/m)
1	2482.3	Hrn 1	V	77	34.8			111.8
2	2482.3	Hrn 1	H	78.6	34.8			113.4
3	2401.18	Hrn 1	V	79.8	34.6			114.4
4	2401.18	Hrn 1	H	82.5	34.6			117.1
5	2441.67	Hrn 1	V	76.2	34.7			110.9
6	2441.67	Hrn 1	H	79.2	34.7			113.9

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.

N.D. = Not Detected

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Section 9. Spurious Emissions (Radiated)

Para. No.: 15.247 (c)

Test Performed By: Kevin Rose	Date of Test: April 24, 2002
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Test Results:

The worst case emission level is 48.4 dB μ V/m @ 3m at 4964.31MHz. This is 5.6 dB below the specification limit.

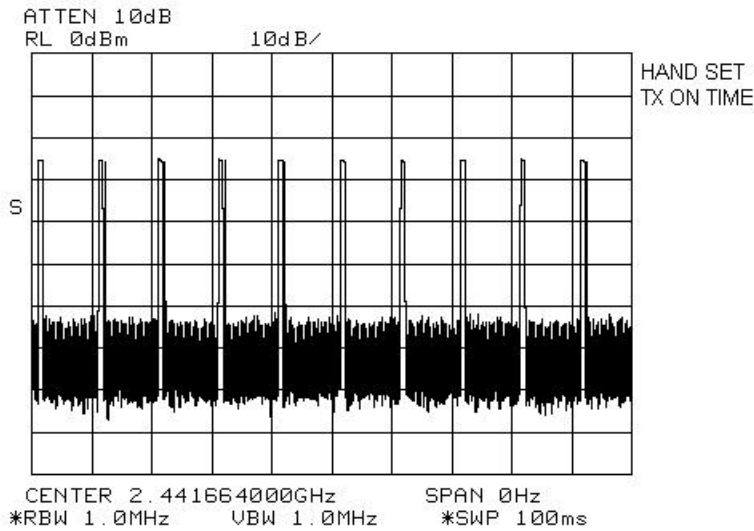
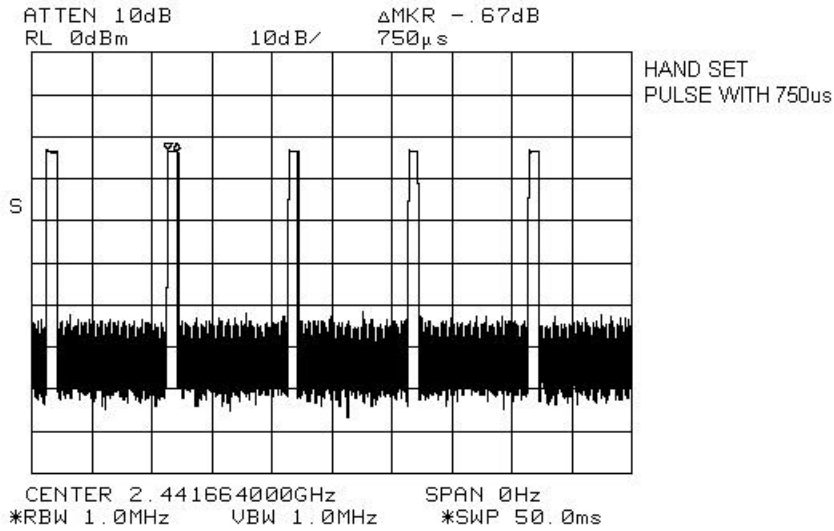
Measurement Data: See attached table.

Duty Cycle Calculation: Handset:
 $20\text{Log}\{(10 \times 0.75)/100\} = -22.5\text{dB}$

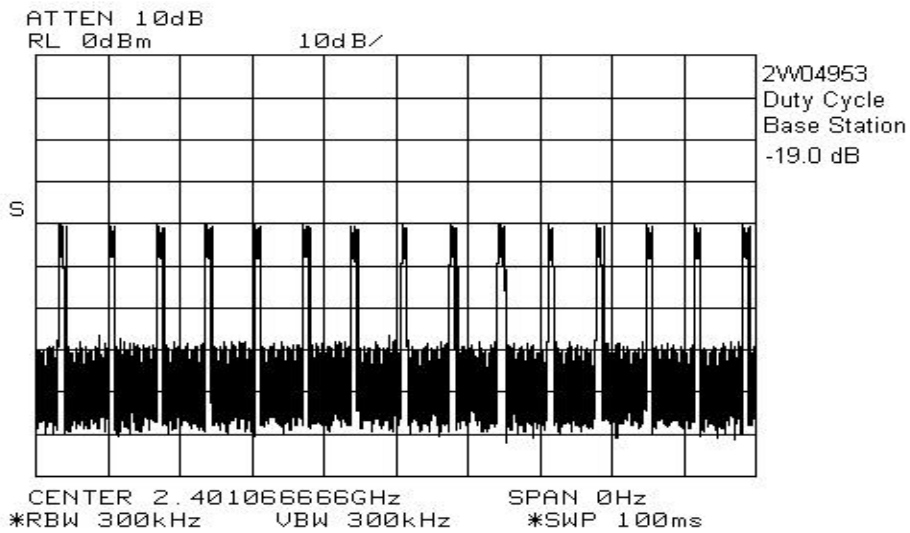
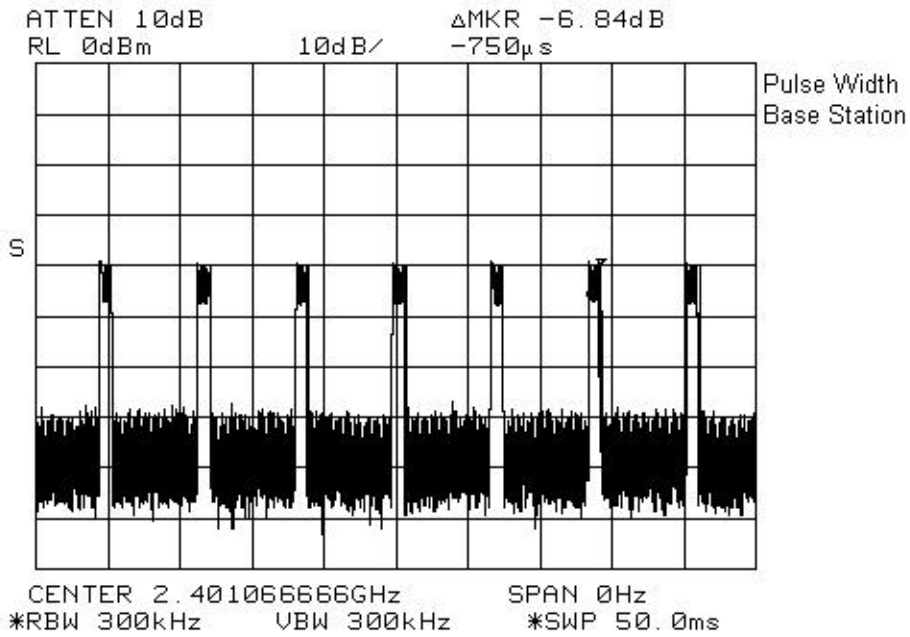
Base Station:
 $20\text{Log}\{(15 \times 0.75)/100\} = -19.0$

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Duty Cycle Plots



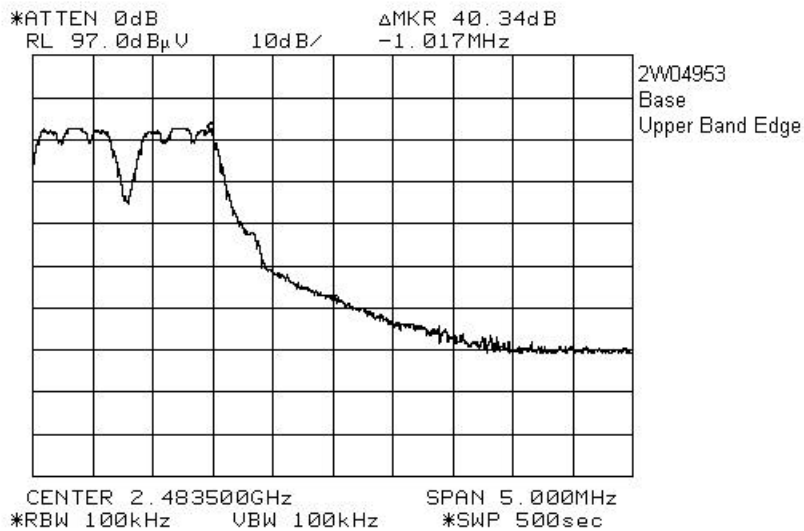
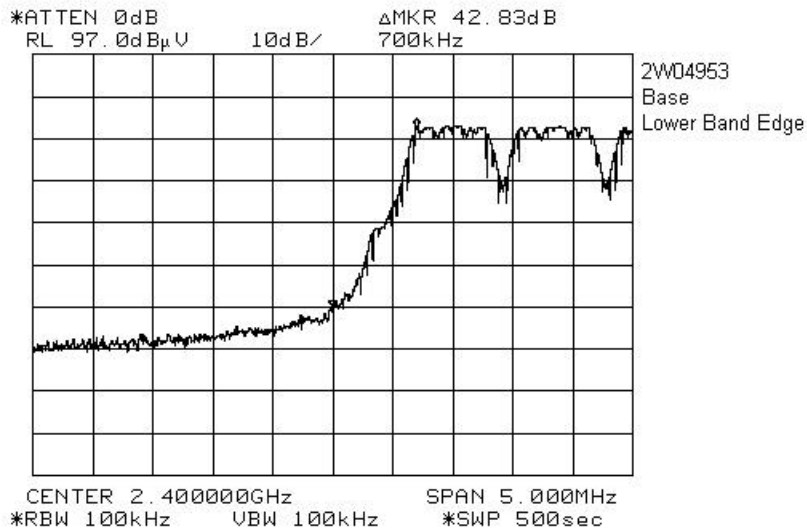
EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone



EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

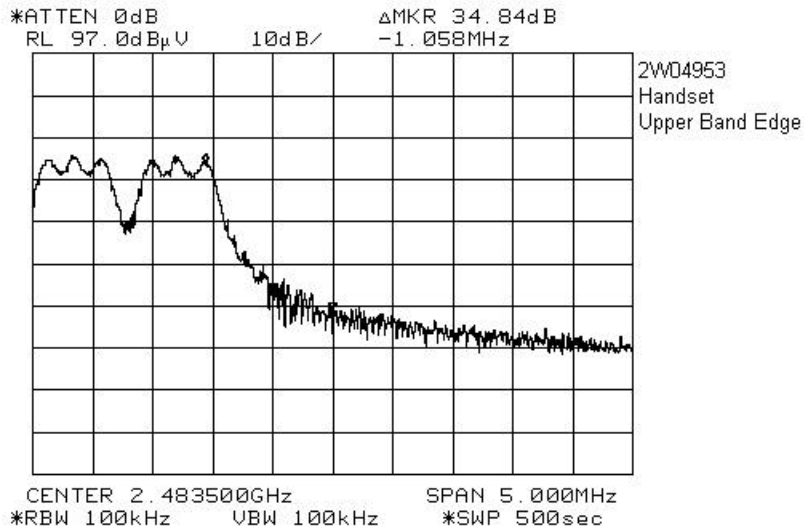
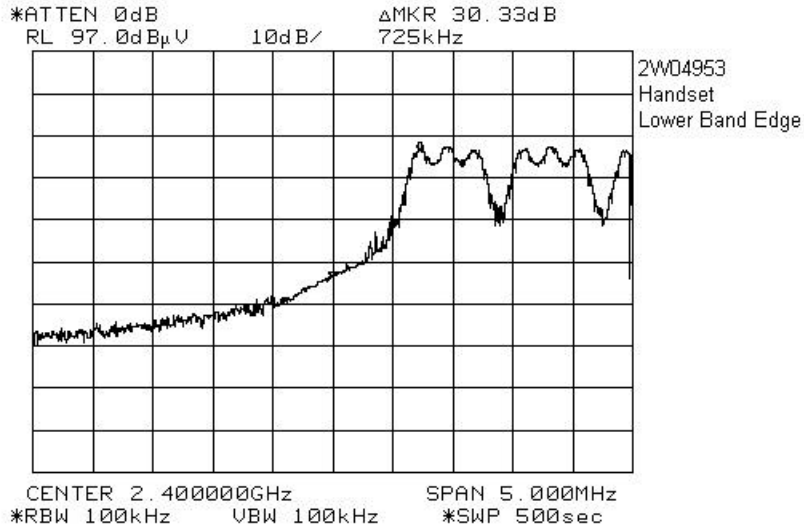
Band Edge Plots, Hopping On

Base Station



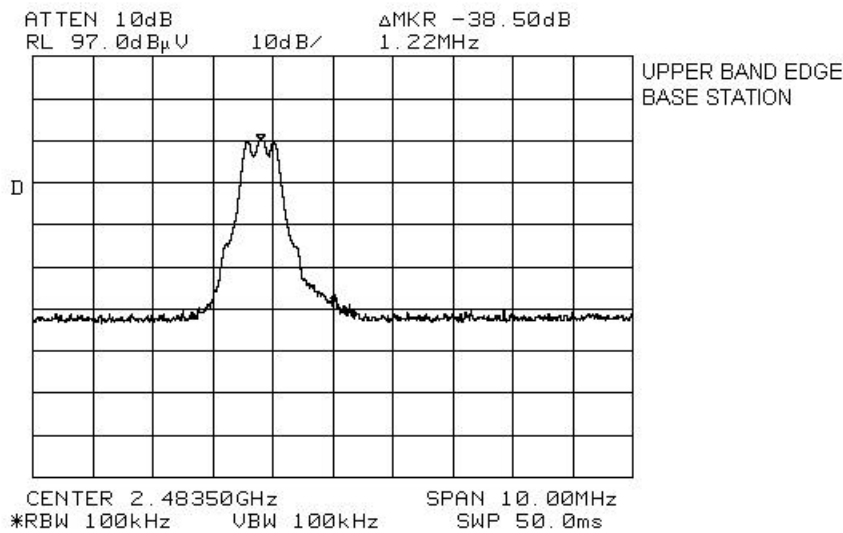
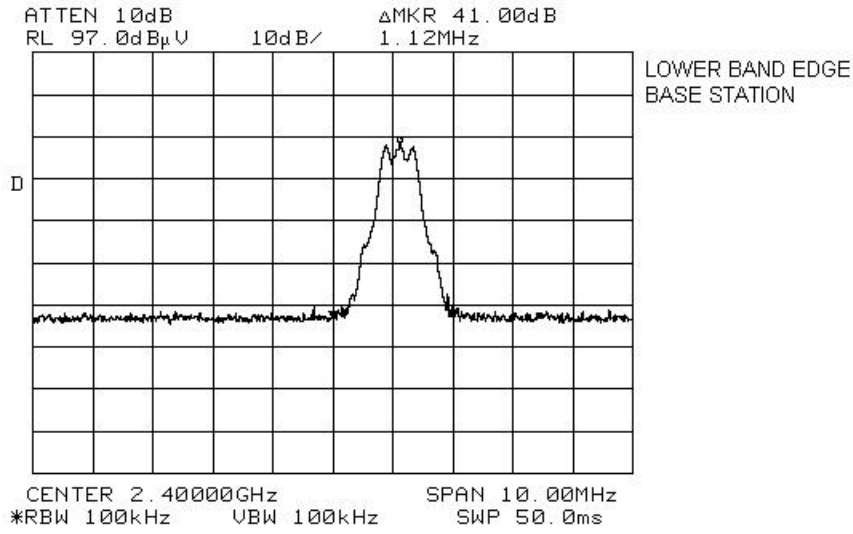
EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Handset, Hopping On



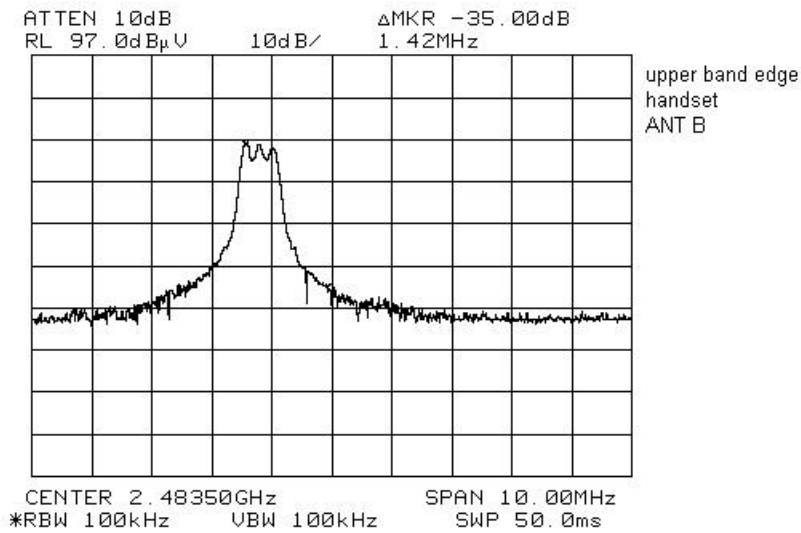
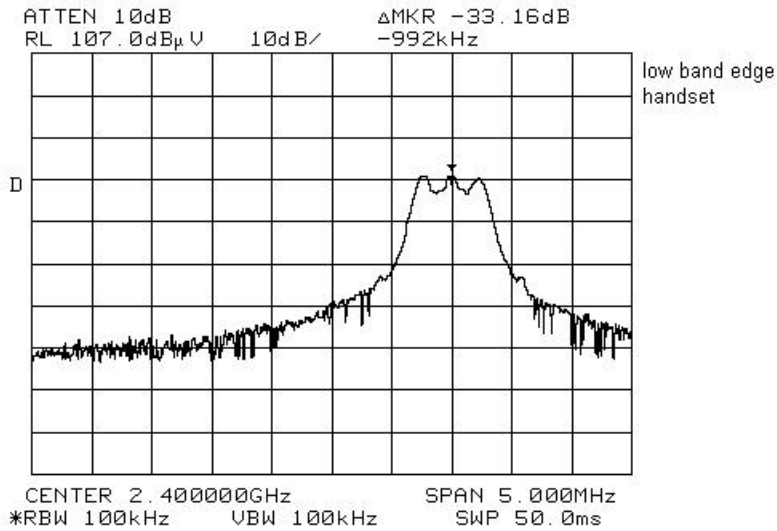
EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Base Station, Hopping Off



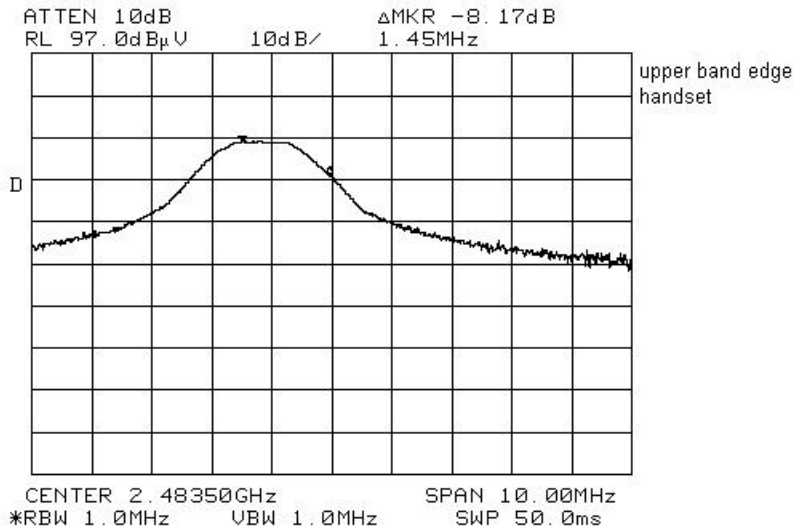
EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Handset, Hopping Off



EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Upper Bandedge, with 1MHz RBW/VBW Handset



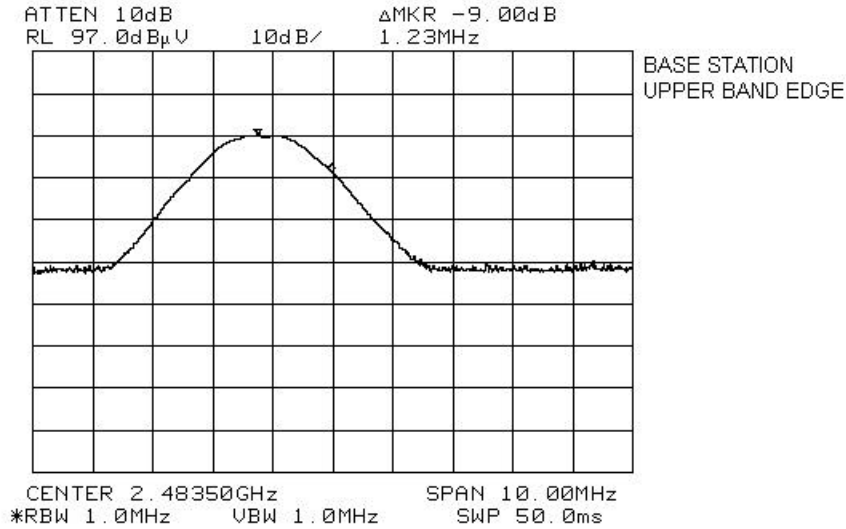
Field Strength at Band edge:
 112.7dBuV/m@3m – 8.2dB= 104.5dBuV/m@3m,

Marker Delta:
 100kHz RBW=35.0 dB

Therefore:
 Peak Field Strength = 104.5dBuV/m@3m – 35.0dB = 69.5dBuV/m@3m
 Average Field Strength = 69.5dBuV@3m - 20dB = 49.5 dBuV/m@3m

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Base Station



Field Strength at Band edge:
 $113.4\text{dBuV/m@3m} - 9\text{dB} = 104.4\text{dBuV/m@3m}$

Marker Delta:
 $100\text{kHz RBW} = 38.5\text{ dB}$

Therefore:
Peak Field Strength = $104.4\text{dBuV/m@3m} - 38.5\text{dB} = 65.9\text{dBuV/m@3m}$
Average Field Strength = $65.9\text{dBuV@3m} - 19\text{dB} = 46.9\text{ dBuV/m@3m}$

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Test Data - Radiated Emissions, Handset, B Ant., Average

Test Distance (meters) : 3		Range: A		Receiver: HP 8565			RBW(kHz): 1000		Detector: Peak	
No.	Freq. (MHz)	Ant. *	Pol (V/H)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Duty Cycle. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	4802.807	Hrn 1	V	74.6	42.2	-54.8	-20	42	54	-12
2	4801.867	Hrn 1	H	76	42.2	-54.8	-20	43.4	54	-10.6
3	7202.43	Hrn 1	V	58	48.3	-56.7	-20	29.6	54	-24.4
4	7202.43	Hrn 1	H	57.6	48.3	-56.7	-20	29.2	54	-24.8
5	4964.08	Hrn 1	V	73.2	42.9	-54.8	-20	41.3	54	-12.7
6	4964.08	Hrn 1	H	74.8	42.9	-54.8	-20	42.9	54	-11.1
7	7446.13	Hrn 1	V	56.7	49.2	-55.8	-20	30.1	54	-23.9
8	7446.13	Hrn 1	H	58.7	49.2	-55.8	-20	32.1	54	-21.9
9	4882.742	Hrn 1	V	75.9	42.5	-55.5	-20	42.9	54	-11.1
10	4882.742	Hrn 1	H	75.8	42.5	-55.5	-20	42.8	54	-11.2
11	7325.467	Hrn 1	V	59.8	48.7	-56.2	-20	32.3	54	-21.7
12	7325.467	Hrn 1	H	58.2	48.7	-56.2	-20	30.7	54	-23.3

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.

N.D. = Not Detected

All spurious and harmonic emissions were searched up to the 10th harmonic

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Test Data - Radiated Emissions, Handset, A Ant., Average

Test Distance (meters) : 3		Range: A		Receiver: HP 8565			RBW(kHz): 1000		Detector: Peak	
No.	Freq. (MHz)	Ant. *	Pol (V/H)	RCVD Signal (dBµV/ m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Duty Cycle. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	4802.807	Hrn 1	V	74.8	42.2	-56.1	-20	40.9	54	-13.1
2	4801.867	Hrn 1	H	76.1	42.2	-56.1	-20	42.2	54	-11.8
3	7202.43	Hrn 1	V	58	48.3	-56.7	-20	29.6	54	-24.4
4	7202.43	Hrn 1	H	57.6	48.3	-56.7	-20	29.2	54	-24.8
5	4964.08	Hrn 1	V	73.2	42.9	-54.8	-20	41.3	54	-12.7
6	4964.08	Hrn 1	H	75.2	42.9	-54.8	-20	43.3	54	-10.7
7	7446.13	Hrn 1	V	56.7	49.2	-55.8	-20	30.1	54	-23.9
8	7446.13	Hrn 1	H	58.7	49.2	-55.8	-20	32.1	54	-21.9
9	4882.742	Hrn 1	V	76.3	42.5	-55.5	-20	43.3	54	-10.7
10	4882.742	Hrn 1	H	75.8	42.5	-55.5	-20	42.8	54	-11.2
11	7325.467	Hrn 1	V	59.8	48.7	-56.2	-20	32.3	54	-21.7
12	7325.467	Hrn 1	H	58.2	48.7	-56.2	-20	30.7	54	-23.3

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.

N.D. = Not Detected

All spurious and harmonic emissions were searched up to the 10th harmonic

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Test Data - Radiated Emissions, Base Station, Average

Test Distance (meters) : 3		Range: A		Receiver: HP 8565			RBW(kHz): 1000		Detector: Peak	
No.	Freq. (MHz)	Ant. *	Pol (V/H)	RCVD Signal (dBµV/ m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Duty Cycle. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	4964.31	Hrn 1	V	79.5	42.7	-54.8	-19	48.4	54	-5.6
2	4964.31	Hrn 1	H	68.7	42.7	-54.8	-19	37.6	54	-16.4
3	7446.9	Hrn 1	V	58.7	48.6	-55.8	-19	32.5	54	-21.5
4	7446.9	Hrn 1	H	59.5	48.6	-55.8	-19	33.3	54	-20.7
5	4802.05	Hrn 1	V	76.2	42	-56.1	-19	43.1	54	-10.9
6	4802.05	Hrn 1	H	73.5	42	-56.1	-19	40.4	54	-13.6
7	7203.3	Hrn 1	V	53.2	47.8	-56.7	-19	25.3	54	-28.7
8	7203.3	Hrn 1	H	53.2	47.8	-56.7	-19	25.3	54	-28.7
9	4883.34	Hrn 1	V	75.3	42.3	-55.5	-19	43.1	54	-10.9
10	4883.34	Hrn 1	H	75.3	42.3	-55.5	-19	43.1	54	-10.9
11	7325.29	Hrn 1	V	59.7	48.2	-56.2	-19	32.7	54	-21.3
12	7325.29	Hrn 1	H	59.6	48.2	-56.2	-19	32.6	54	-21.4

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.

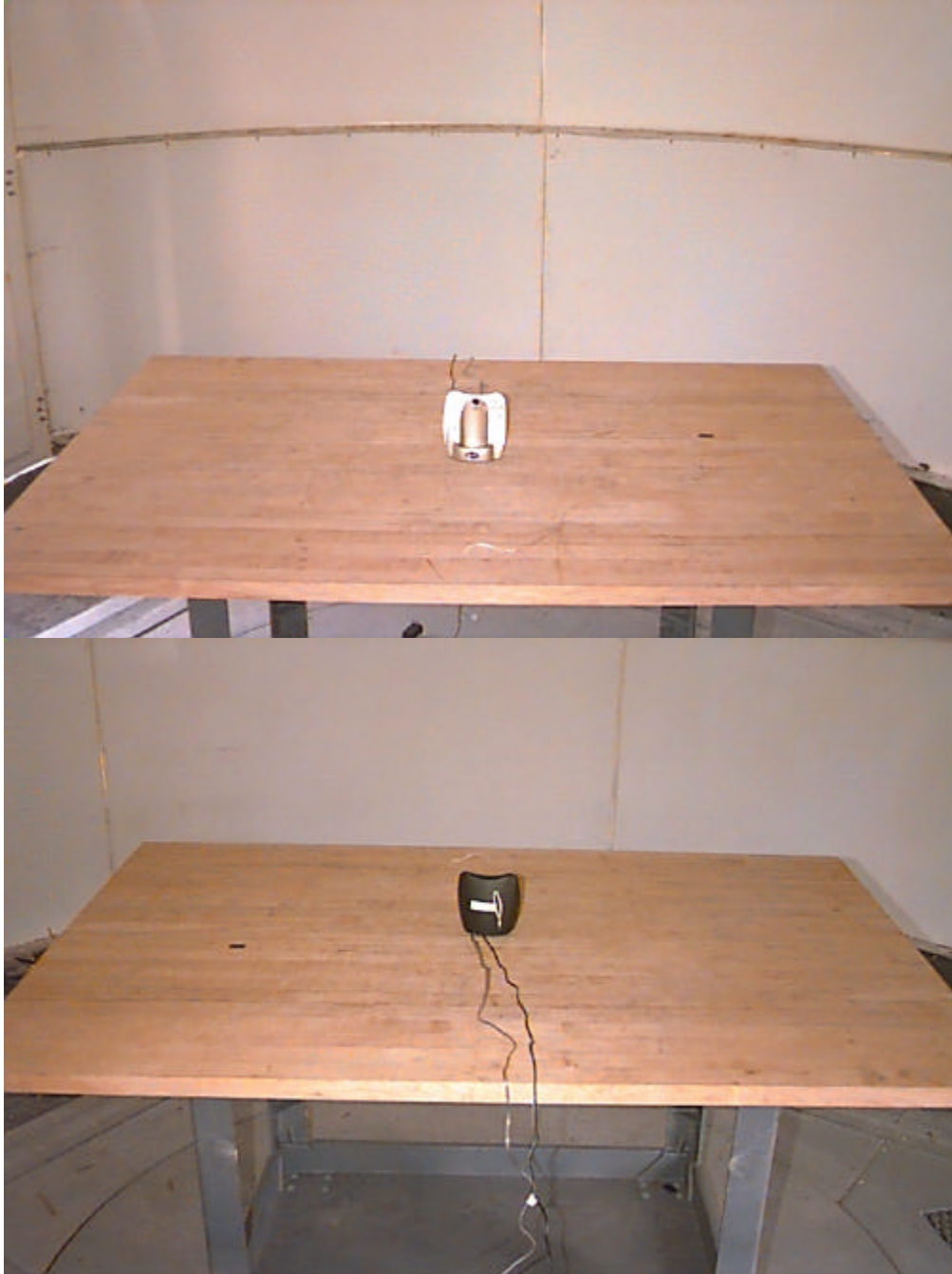
() Denotes failing emission level.

N.D. = Not Detected

All spurious and harmonic emissions were searched up to the 10th harmonic

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

OATS Test Set-up Photo, Base



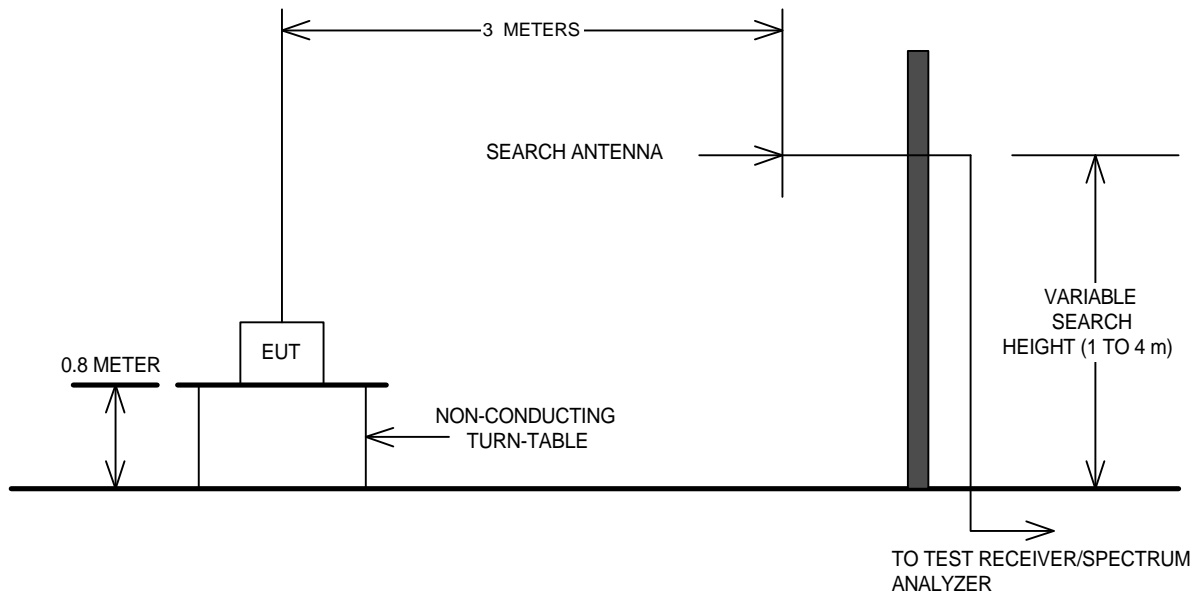
EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

OATS Test Set-up Photo, Handset

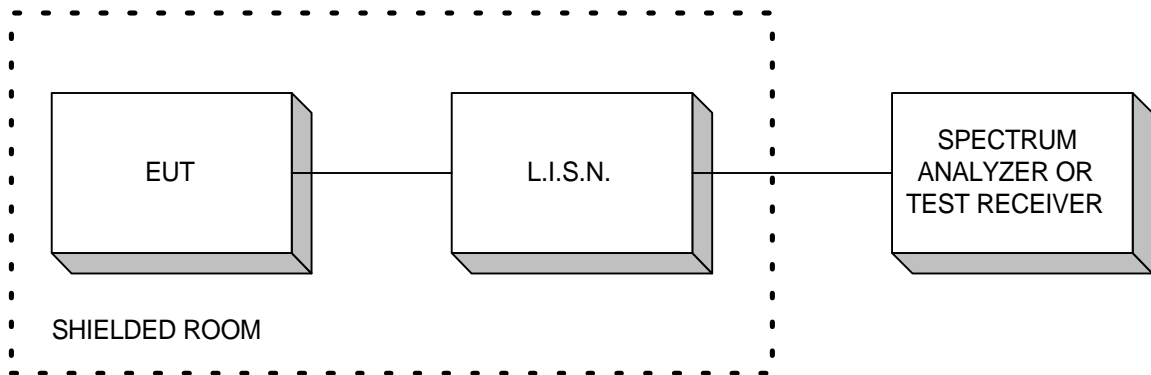


Section 10. Block Diagrams

Test Site For Radiated Emissions

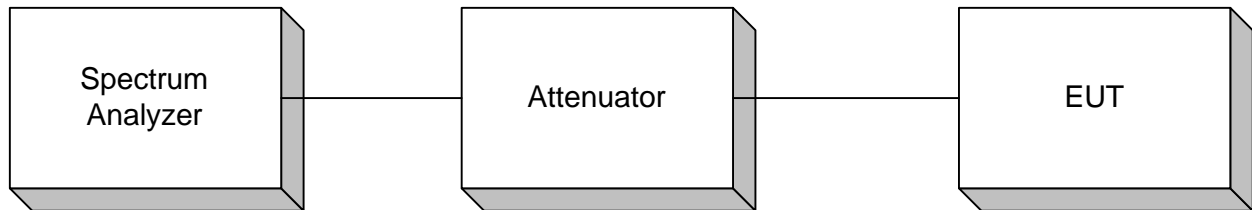


Conducted Emissions



EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Peak Power At Antenna Terminals



EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Section 11. Test Equipment List

TEST EQUIPMENT LIST NEMKO CANADA - OTTAWA

Equipment List – Conducted Emissions - Anechoic Chamber

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	LISN	EMCO	4825/2	FA001545	Oct. 09/01	Oct. 09/02
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	Nov. 27/01	Nov. 27/02
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	Nov. 27/01	Nov. 27/02
1 Year	Quasi-Peak Adapter	Hewlett-Packard	85650A	FA000801	Nov. 27/01	Nov. 27/02
	International Power Supply	California Instruments	1001WP	FA000965	NCR	NCR
1 Year	Transient Limiter	Hewlett-Packard	1194 7A	FA000975	Oct. 19/01	Oct. 19/02

Equipment List – Prescan for Radiated Emissions - Anechoic Chamber

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	Nov. 27/01	Nov. 27/02
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	Nov. 27/01	Nov. 27/02
1 Year	Quasi-Peak Adapter	Hewlett-Packard	85650A	FA000801	Nov. 27/01	Nov. 27/02
	Bilog Antenna	Schaffner	CBL6612B	FA001503	NCR	NCR
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 19/01	Dec. 19/02
3 Year	Horn 18 – 26.5 GHz	Electro-Metrics	SH-50/60-1	FA000479	July. 07/00	July. 07/03
1 Year	0.1 – 1300 MHz Amplifier	Hewlett Packard	8447D	FA001748	May. 14/01	May. 14/02
1 Year	1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	May. 30/01	May. 30/02
1 Year	2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	May. 30/01	May. 30/02
1 Year	4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001498	May. 30/01	May. 30/02
COU	5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU	COU
COU	18.0 – 26.0 GHz Amplifier	NARDA	BBS-1826N612	FA001550	COU	COU

EQUIPMENT: AT&T 2230 LC P2, 2.4GHz FHSS Cordless Phone

Equipment List - Radiated Emissions

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	Receiver	Rohde & Schwarz	ESVS-30	FA001437	June. 27/01	June. 27/02
1 Year	Receiver	Rohde & Schwarz	ESVP	FA000871	Sept. 19/01	Sept. 19/02
1 Year	Spectrum Analyzer	Hewlett-Packard	8565E	FA000981	June. 08/01	June. 08/02
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 19/01	Dec. 19/02
3 Year	Horn 18 – 26.5 GHz	Electro-Metrics	SH-50/60-1	FA000479	July. 07/00	July. 07/03
3 Year	Horn 26.5 – 40 GHz	Electro-Metrics	SH-50/60-2	FA000485	July. 07/00	July. 07/03
1 Year	1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	May. 30/01	May. 30/02
1 Year	2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	May. 30/01	May. 30/02
1 Year	4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001498	May. 30/01	May. 30/02
COU	5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU	COU
COU	18.0 – 26.0 GHz Amplifier	NARDA	BBS-1826N612	FA001550	COU	COU
COU	26 – 40.0 GHz Amplifier	NARDA	DBL-2640N610	FA001556	COU	COU
	High Pass Filter (3.9GHz)	K&L	11SH10-4000	FA001340	COU	COU

Note: N/A = Not Applicable
 NCR = No Cal Required
 COU = CAL On Use
 OUT = Out For CAL/Repair