



Test Report: 4W31926


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

**Equipment Under Test:
(EUT)** AT&T E2715B

FCC ID: EW780-5312-00

In Accordance With: **FCC Part 15, Subpart C**
Class II Permissive Change
Frequency Hopping Transmitters
2400 - 2483.5 MHz

Tested By: Nemko Canada Inc.
303 River Road, R.R. 5
Ottawa, Ontario K1V 1H2



Authorized By: Glen Westwell, Wireless Technologist

Date: 22 November 2004

Total Number of Pages: 31

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EQUIPMENT:AT&T E2715B

Section 1. Summary of Test Results

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 Part 15, Subpart C, Paragraph 15.247 for Frequency Hopping Spread Spectrum devices. Radiated tests were conducted in accordance with ANSI C63.4-1992. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

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".



TESTED BY: _____
Jason Nixon, Telecom Specialist

DATE: 22 November 2004

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This report applies only to the items tested.

EQUIPMENT:AT&T E2715B

Summary Of Test Data

Name Of Test	Para. No.	Result
Powerline Conducted Emissions	15.207(a)	Complies
Channel Separation	15.247(a)(1)	N/A(2)
Time of Occupancy	15.247(a)(1)(iii)	N/A(2)
20 dB Occupied Bandwidth	15.247(a)(1)	N/A(2)
Number of Hopping Channels	15.247(a)(1)(iii)	N/A(2)
Peak Power Output	15.247(b)(1)	Complies
Spurious Emissions (Antenna Conducted)	15.247(d)	N/A(1)
Spurious Emissions (Radiated)	15.247(d)	Complies (3)

Footnotes For N/A's:

1. The apparatus used an integral antenna.
2. The apparatus was originally approved under FCC ID: EW780-5312-00 and this test assessment is only a supplemental to the original for purpose of a class II permissive change to the product. The modifications to the product can be found below as listed by the customer.
3. The spectrum was searched from 30MHz up to 25GHz. All emissions within 20dB of the limit were reported.
4. Using test software the apparatus could be configured to continuously transmit on Channel 00 to 97.

Test Conditions:

Indoor Temperature: 23°C
 Humidity: 22%

Outdoor Temperature: 14°C
 Humidity: 43%

Modifications to the product:

The AT&T E2715B has been derived from the already approved VTECH 2625. The differences between them is that the AT&T E2715B uses a low-cost RF solution, the RF module has been migrated to the main PCB, PCB layout changes to accommodate the migration of RF module and the antenna is the same but the matching has changes.

EQUIPMENT: AT&T E2715B

Section 2. General Equipment Specification

Manufacturer: VTech (Dongguan) Electronics and Communications Ltd.

Model No.: AT&T E2715B

Serial No.: Base: 131
Handset: 131
Charger: N/A

Date Received In Laboratory: October 20, 2004

Nemko Identification No.: Base: 6
Handset: 1
Charger: 11

Frequency Range: 2401.056 – 2482.272 MHz

Modulation: GFSK

Tunable Bands: 1

Number of Channels: 17

Min. Channel Spacing: Base: 864 kHz
Handset: 864 kHz

Emissions Designator: Base: 733K3F1D
Handset: 733K3F1D

User Frequency Adjustment: N/A

Rated Output Power: Base: 125mW (21dBm)
Handset: 125mW (21dBm)

EQUIPMENT: AT&T E2715B

Section 3. Powerline Conducted Emissions

Para. No.: 15.207 (a)

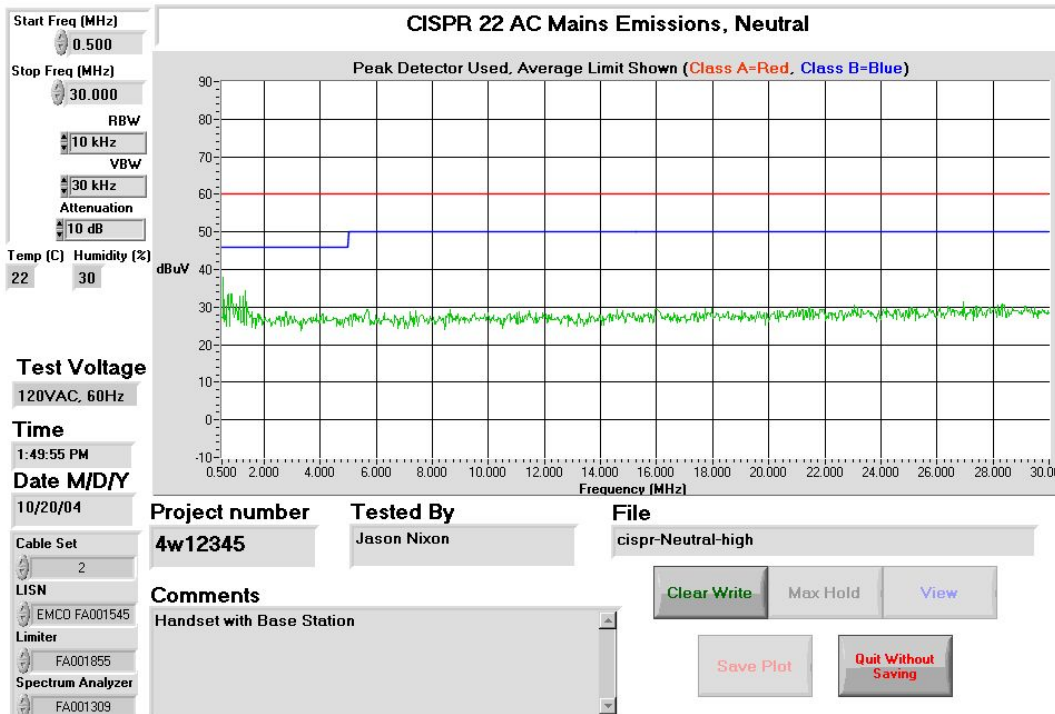
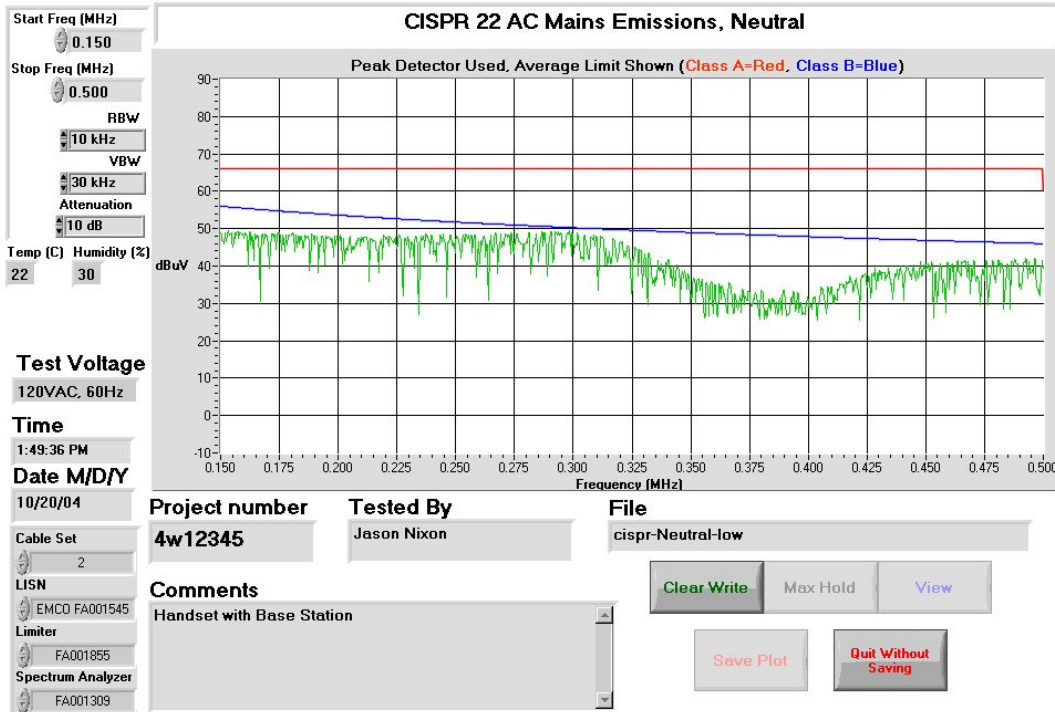
Test Performed By: Jason Nixon	Date of Test: October 20, 2004
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Test Results: Complies

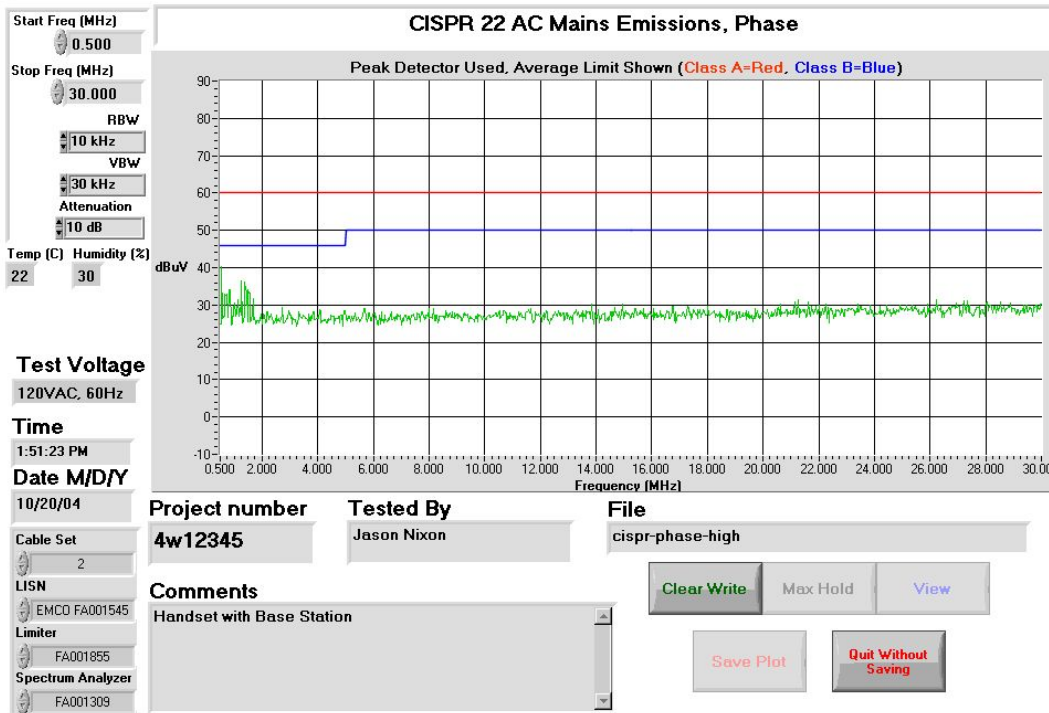
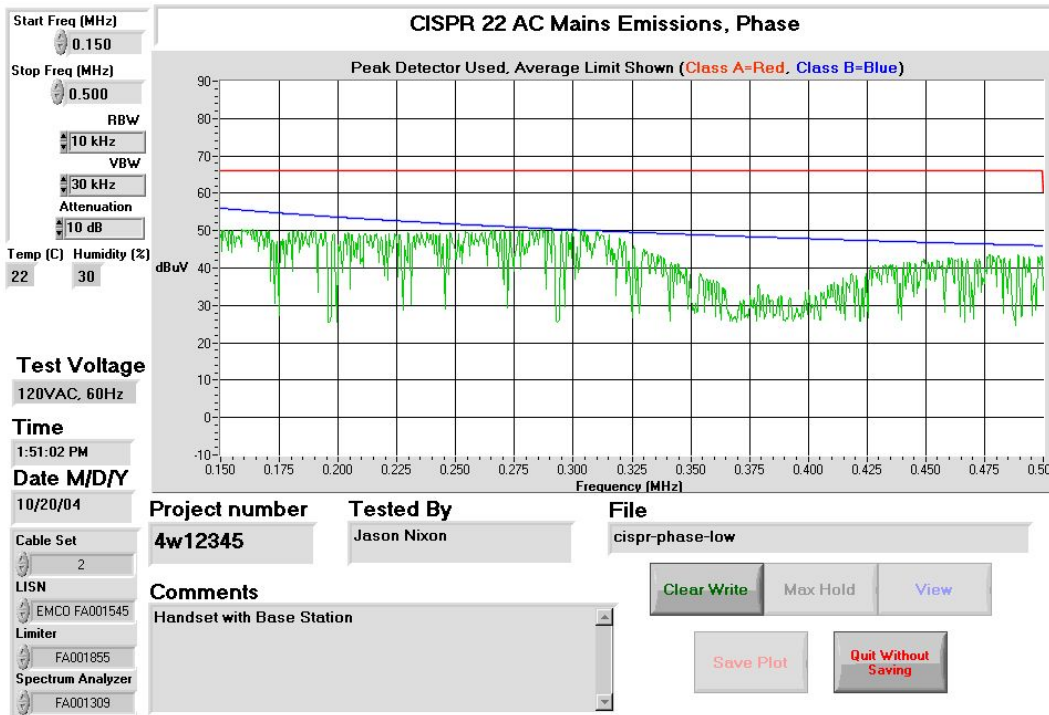
Measurement Data: See attached graph(s).

EQUIPMENT: AT&T E2715B

**Powerline Conducted Emission Plots
 Base Station**

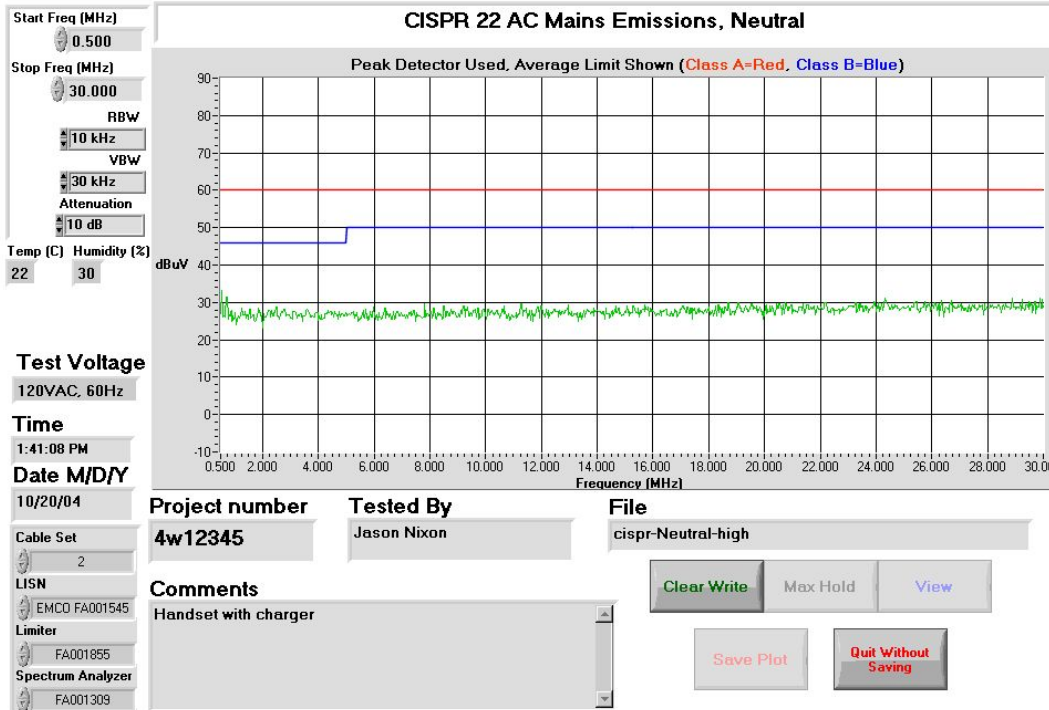
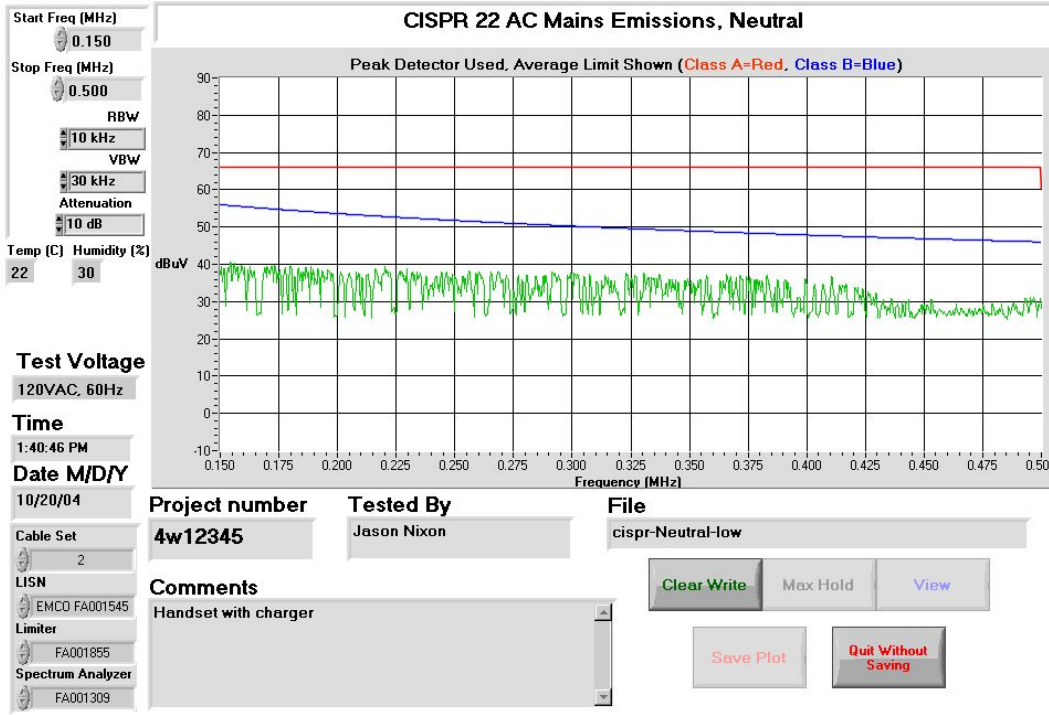


EQUIPMENT: AT&T E2715B

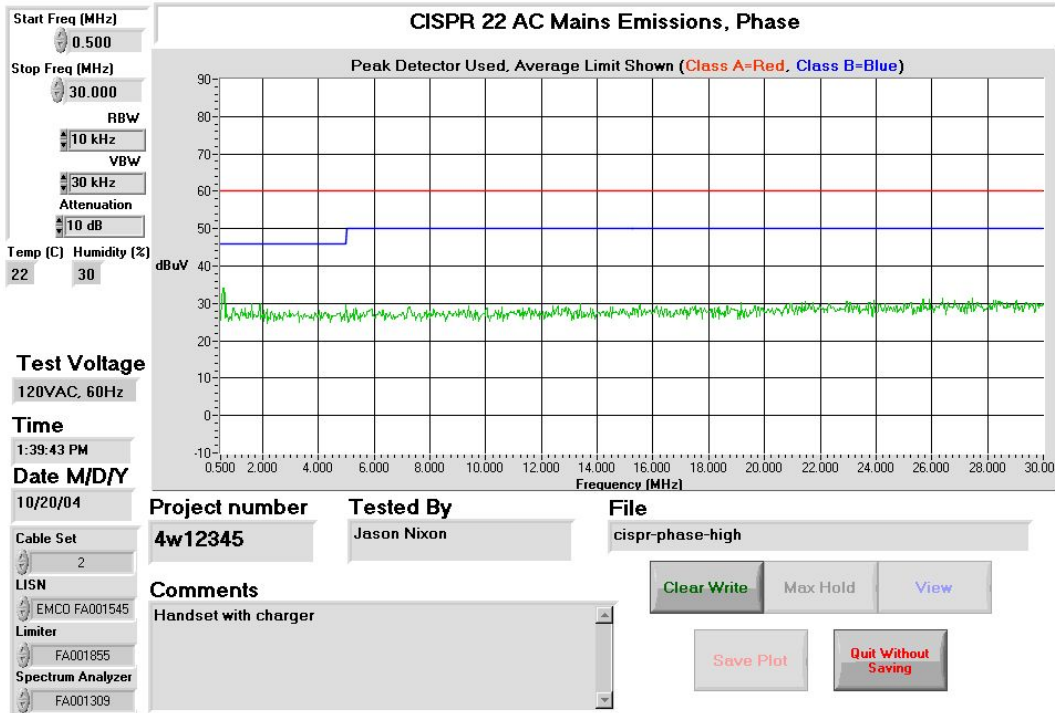
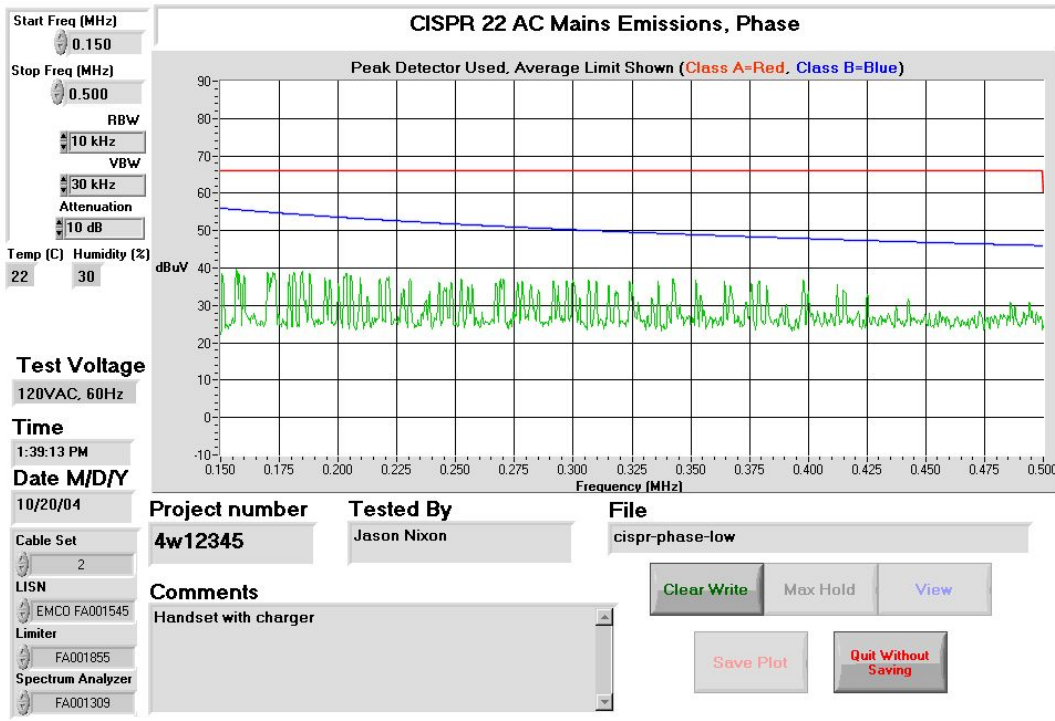


EQUIPMENT: AT&T E2715B

Handset Charger

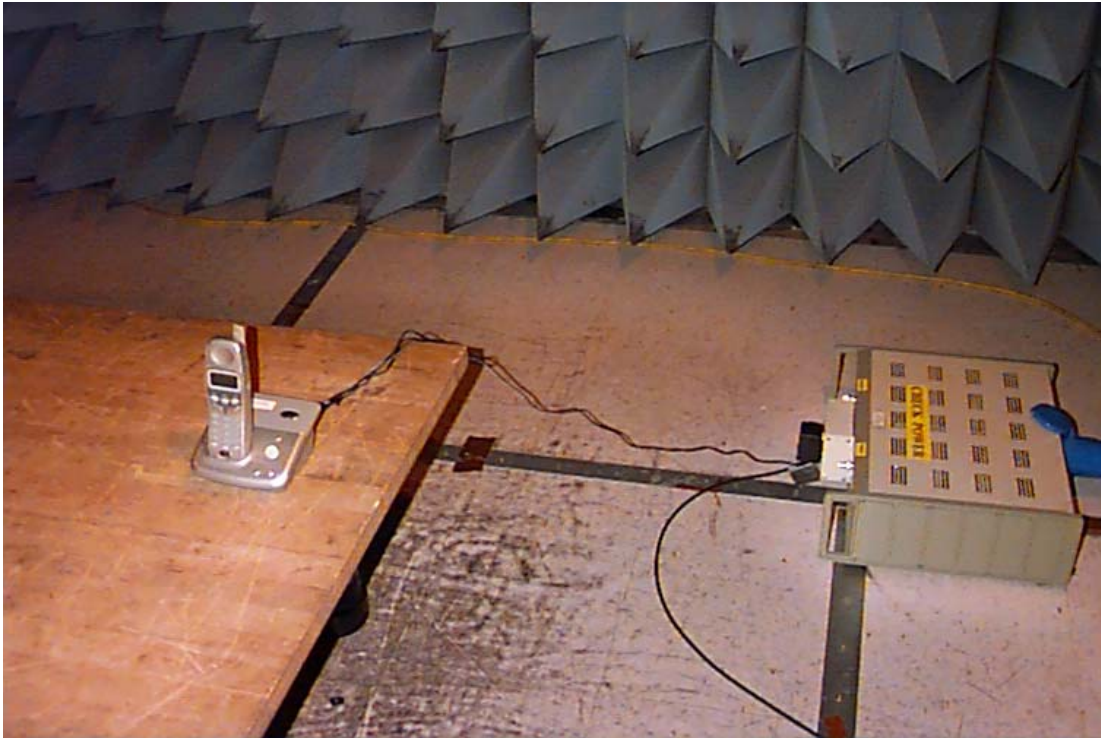


EQUIPMENT: AT&T E2715B



EQUIPMENT: AT&T E2715B

**Set-up Photo:
Base Station**



Handset Charger



EQUIPMENT: AT&T E2715B

Section 4. Peak Power Output

Para. No.: 15.247 (b)(1)

Test Performed By: Jason Nixon	Date of Test: November 4, 2004
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Test Results: Complies. The maximum peak power output of the transmitter is:
Base Station: 0.1047 watts
Handset: 0.1007 watts

Measurement Data: Detachable antenna? Yes No

If yes, state the type of non-standard connector used at the antenna port: N/A

Directional Gain of Antenna: 0 dBi or 1 Numeric.

Note: All power measurements were performed using a conducted power method on specially modified samples provided by the customer.

EQUIPMENT: AT&T E2715B

Section 5. Spurious Emissions (Radiated)

Para. No.: 15.247 (c)

Test Performed By: Jason Nixon	Date of Test: October 22, 2004
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Test Results: Complies

Measurement Data: See attached table.

This EUT was searched in 3 orthogonal axis to determine worst case emissions.
The Handset was tested with fresh batteries.
The Base AC mains was varied +/- 15% for worst case emissions.
All detectable emissions within 20dB of the limit were reported.
All emissions were searched up to the 10th harmonic.
All harmonics and spurious emissions not located in the restricted bands were compared to the 100kHz RBW field strength measured for the fundamental minus 20dB.

Duty Cycle Calculation:

Base: $20\text{Log}\{(40 \times 800\text{usec})/100\} = -9.9\text{dB}$
Handset: $20\text{Log}\{(10 \times 800\text{usec})/100\} = -21.94\text{dB}$, therefore -20.0dB

EQUIPMENT:AT&T E2715B

Radiated Disturbance Test Data: Digital Emissions For Base Station

Test Date: October 26,2004											
Engineer's Name: Jason Nixon											
Temperature (C°): 14						Humidity %: 43					
Tested as per (Table Top/Floor Standing): Table Top											
Test Distance (meters): 3						Range: A					
Emissions within 20 dB of the limit have been recorded.											
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	Cable Loss (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Amp.
41.4736	BC1	V	21.6	10.3	0.0	0.8	32.7	40.0	7.3	Q-peak	N/A
Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole											
Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz RBW											
Notes:											

Radiated Disturbance Test Data: Digital Emissions For Handset

Test Date: October 26,2004											
Engineer's Name: Jason Nixon											
Temperature (C°): 14						Humidity %: 43					
Tested as per (Table Top/Floor Standing): Table Top											
Test Distance (meters): 3						Range: A					
Emissions within 20 dB of the limit have been recorded.											
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	Cable Loss (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Amp.
193.2503	BC1	H	11.9	13.7	0.0	1.8	27.4	43.5	16.2	Q-peak	N/A
193.5368	BC1	H	10.2	13.7	0.0	1.8	25.7	43.5	17.9	Q-peak	N/A
207.3292	BC1	H	14.2	14.4	0.0	1.8	30.4	43.5	13.2	Q-peak	N/A
Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole											
Note 2: Detector Legend: Q-Peak = 120 kHz RBW, Average = 1.0 MHz RBW											
Notes:											

EQUIPMENT: AT&T E2715B

Radiated Disturbance Test Data: Average for the Base Station

Test Date: October 26,2004											
Engineer's Name: Jason Nixon											
Temperature (C°): 14						Humidity %: 43					
Tested as per (Table Top/Floor Standing): Table Top											
Test Distance (meters): 3						Range: A					
Emissions within 20 dB of the limit have been recorded.											
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	Duty Cycle Corr. Factor (dB)	Cable Loss (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Amp.
4802.1120	Horn1	V	66.0	34.3	53.2	-9.9	8.1	45.3	54.0	8.7	4-8GHz
4802.1120	Horn1	H	64.8	34.1	53.2	-9.9	8.1	43.9	54.0	10.1	4-8GHz
12005.280	Horn1	V	54.0	39.4	42.3	-9.9	6.17	47.3	54.0	6.7	5-18GHz
12005.280	Horn1	H	52.5	39.4	42.3	-9.9	6.17	45.8	54.0	8.2	5-18GHz
4883.3280	Horn1	V	65.5	34.4	52.6	-9.9	8.9	46.2	54.0	7.8	4-8GHz
4883.3280	Horn1	H	64.8	34.2	52.6	-9.9	8.9	45.3	54.0	8.7	4-8GHz
7324.9920	Horn1	V	67.5	36.5	53.7	-9.9	10.1	50.6	54.0	3.4	4-8GHz
7324.9920	Horn1	H	66.2	36.5	53.7	-9.9	10.1	49.2	54.0	4.8	4-8GHz
12208.320	Horn1	V	54.0	39.4	42.3	-9.9	6.17	53.2	54.0	0.8	5-18GHz
12208.320	Horn1	H	52.5	39.4	42.3	-9.9	6.17	50.5	54.0	3.5	5-18GHz
4964.5440	Horn1	V	66.7	34.4	52.3	-9.9	9.5	48.3	54.0	5.7	4-8GHz
4964.5440	Horn1	H	67.0	34.2	52.3	-9.9	9.5	48.4	54.0	5.6	4-8GHz
7446.8160	Horn1	V	69.3	36.5	53.2	-9.9	11.1	53.9	54.0	0.1	4-8GHz
7446.8160	Horn1	H	66.2	36.5	53.2	-9.9	11.1	50.7	54.0	3.3	4-8GHz
12411.360	Horn1	V	54.0	39.4	42.3	-9.9	6.17	52.2	54.0	1.8	5-18GHz
12411.360	Horn1	H	52.5	39.4	42.3	-9.9	6.17	50.2	54.0	3.8	5-18GHz
Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, ED = EMCO Dipole											
Notes:		All measurements were performed using a Spectrum analyzer with a peak detector of 1MHz RBW/VBW									

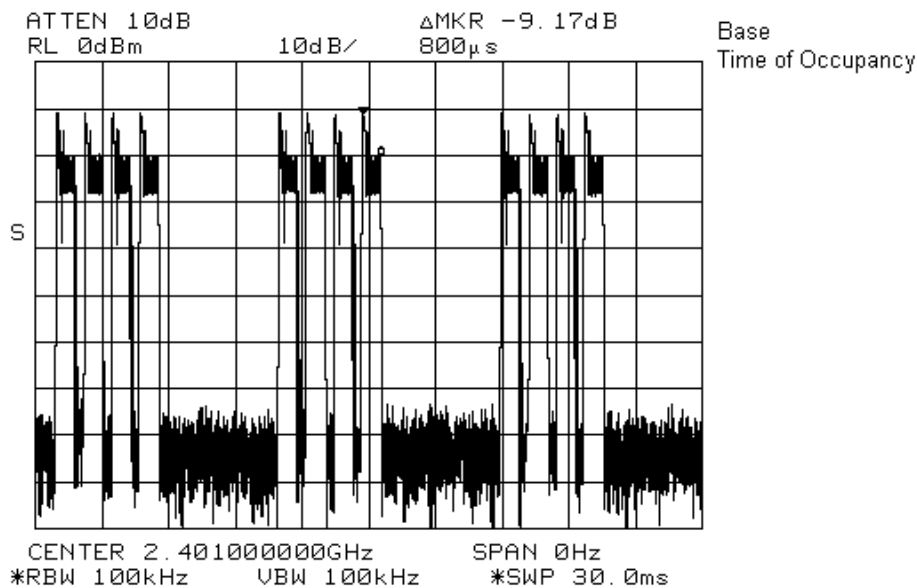
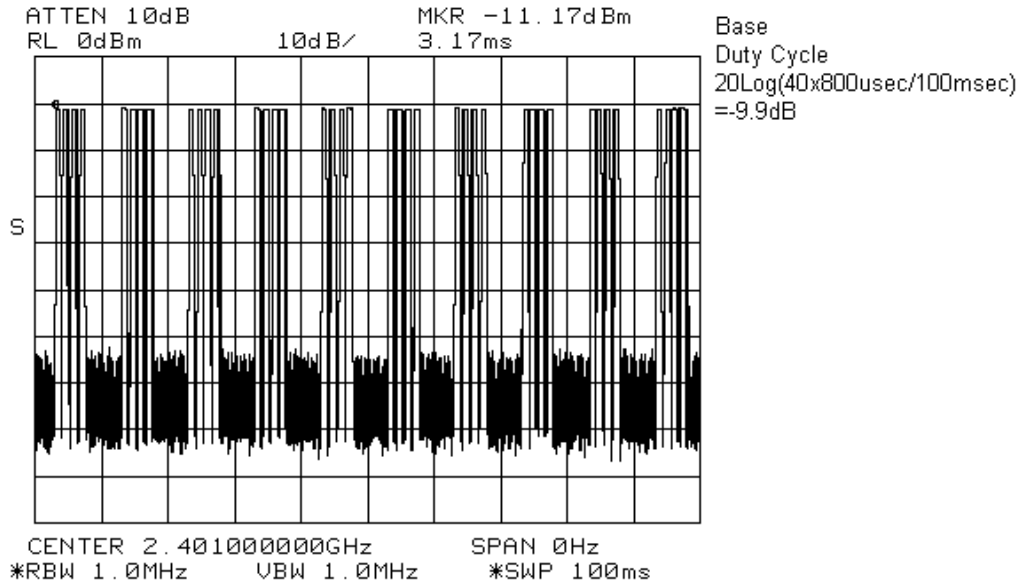
EQUIPMENT: AT&T E2715B

Radiated Disturbance Test Data: Average for the Handset

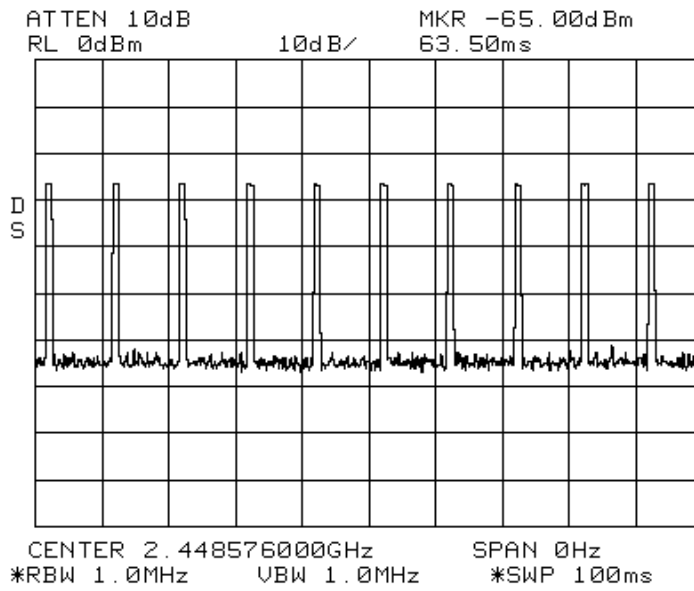
Test Date: October 26, 2004											
Engineer's Name: Jason Nixon											
Temperature (C°): 14						Humidity %: 43					
Tested as per (Table Top/Floor Standing): Table Top											
Test Distance (meters): 3						Range: A					
Emissions within 20 dB of the limit have been recorded.											
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	Duty Cycle Corr. Factor (dB)	Cable Loss (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Amp.
4802.1120	Horn1	V	68.2	34.3	53.2	-20.0	8.1	37.4	54.0	16.6	4-8GHz
4802.1120	Horn1	H	72.3	34.1	53.2	-20.0	8.1	41.3	54.0	12.7	4-8GHz
7203.1680	Horn1	V	65.7	36.5	53.7	-20.0	11.3	39.8	54.0	14.2	4-8GHz
7203.1680	Horn1	H	65.7	36.5	53.7	-20.0	11.3	39.8	54.0	14.2	4-8GHz
12005.280	Horn1	V	57.0	39.4	42.3	-20.0	6.17	40.2	54.0	13.8	5-18GHz
12005.280	Horn1	H	57.8	39.4	42.3	-20.0	6.17	41.1	54.0	12.9	5-18GHz
4883.3280	Horn1	V	68.8	34.4	52.6	-20.0	8.9	39.4	54.0	14.6	4-8GHz
4883.3280	Horn1	H	74.2	34.2	52.6	-20.0	8.9	44.6	54.0	9.4	4-8GHz
7324.9920	Horn1	V	71.7	36.5	53.7	-20.0	10.1	44.6	54.0	9.4	4-8GHz
7324.9920	Horn1	H	70.3	36.5	53.7	-20.0	10.1	43.3	54.0	10.7	4-8GHz
12208.320	Horn1	V	54.2	39.4	42.3	-20.0	6.17	37.4	54.0	16.6	5-18GHz
12208.320	Horn1	H	55.8	39.4	42.3	-20.0	6.17	39.1	54.0	14.9	5-18GHz
4964.5440	Horn1	V	70.5	34.4	52.3	-20.0	9.5	42.0	54.0	12.0	4-8GHz
4964.5440	Horn1	H	72.3	34.2	52.3	-20.0	9.5	43.7	54.0	10.3	4-8GHz
7446.8160	Horn1	V	71.7	36.5	53.2	-20.0	11.1	46.1	54.0	7.9	4-8GHz
7446.8160	Horn1	H	69.0	36.5	53.2	-20.0	11.1	43.5	54.0	10.5	4-8GHz
12411.360	Horn1	V	53.8	39.4	42.3	-20.0	6.17	37.1	54.0	16.9	5-18GHz
12411.360	Horn1	H	53.8	39.4	42.3	-20.0	6.17	37.1	54.0	16.9	5-18GHz
Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, ED = EMCO Dipole											
Notes:		All measurements were performed using a Spectrum analyzer with a peak detector of 1MHz RBW/VBW									

EQUIPMENT: AT&T E2715B

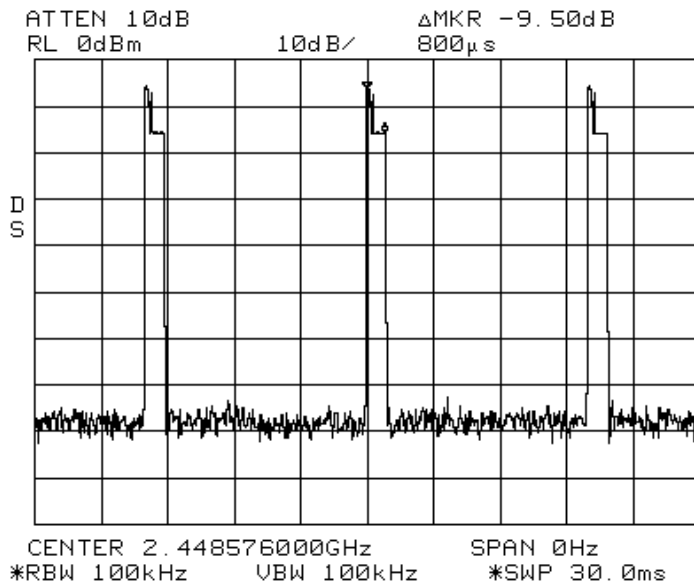
Duty Cycle Plots



EQUIPMENT: AT&T E2715B



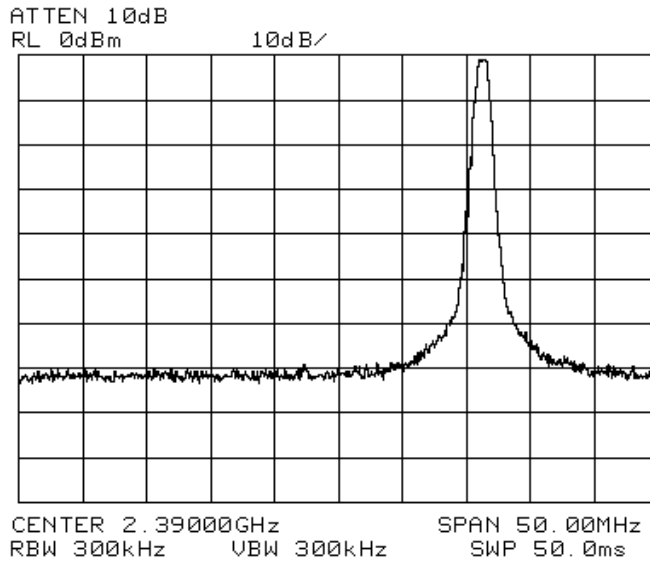
Handset
Duty cycle
 $20\text{Log}(10 \times 800\mu\text{S}/100\text{mS})$
= -21.94dB
therefore -20dB



Handset
Time of Occupancy

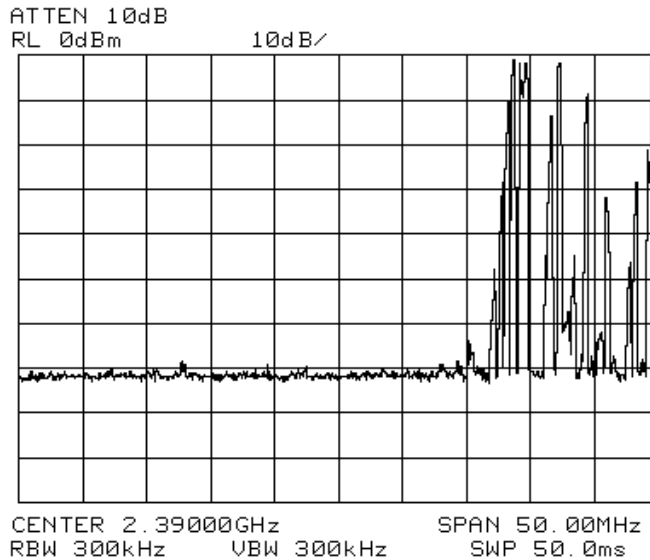
EQUIPMENT: AT&T E2715B

**Base Station Lower Band Edge
Frequency Hopping Off**



Base
20dB Lower Band Edge
Hopping Off

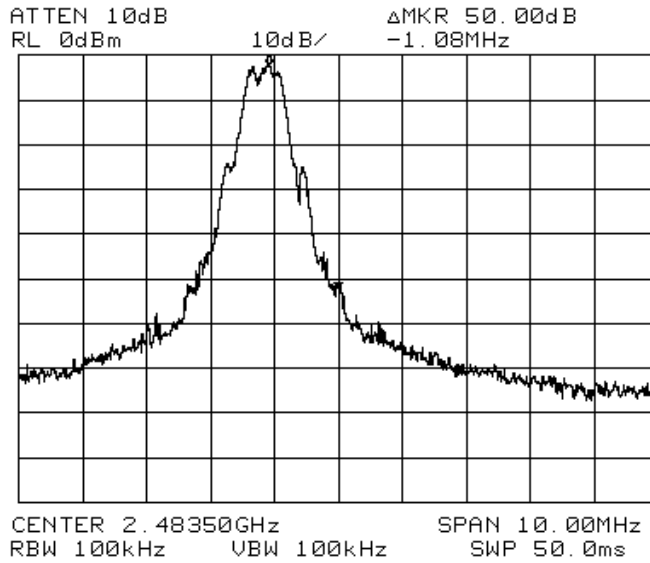
Frequency Hopping On



Base
20dB Lower Band Edge
Hopping On

EQUIPMENT: AT&T E2715B

**Base Station Upper Band Edge
 Frequency Hopping Off**



**Band Edge (Restricted Band)
 Marker Delta Method**

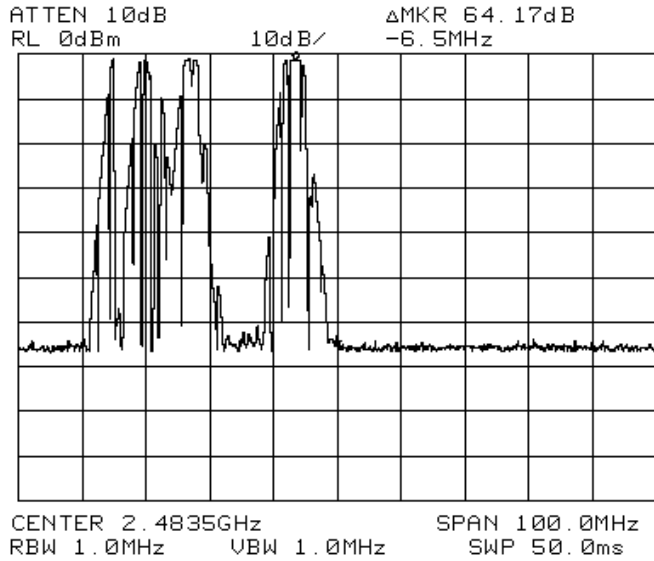
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Amp. Gain (dB)	Duty Cycle Corr. Factor (dB)	Cable Loss (dB)	Field Strength (dBμV/m)	Amp.
2482.2720	Horn2	V	76.2	28.9			5.9	111.0	
2482.2720	Horn2	H	74.5	28.9			5.9	109.3	

Note : The emission was measured using a 1MHz RBW/VBW

Peak Level, Band Edge = 111.0dBuV/m @ 3m
Peak Band Edge Level (Marker Delta) = 111.0dBuV - 50dB = 61dBuV/m @ 3m
Average = 61.0 - 9.9 = 51.1dBuV/m @ 3m

EQUIPMENT: AT&T E2715B

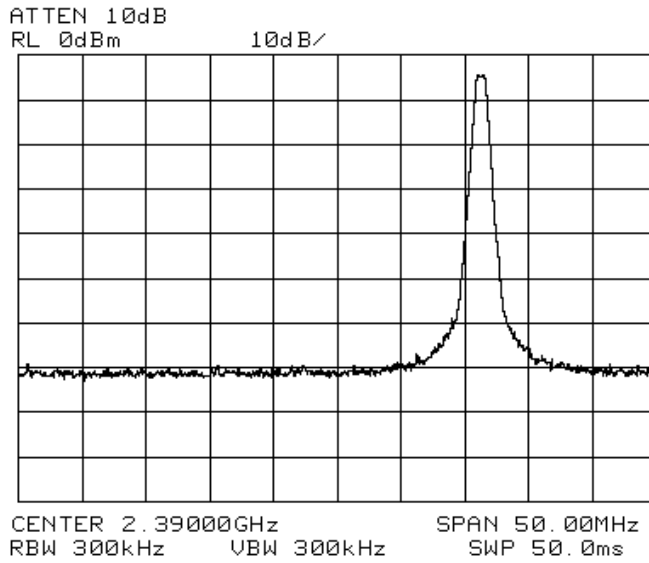
Frequency Hopping On



Base
Upper Band Edge
Hopping On

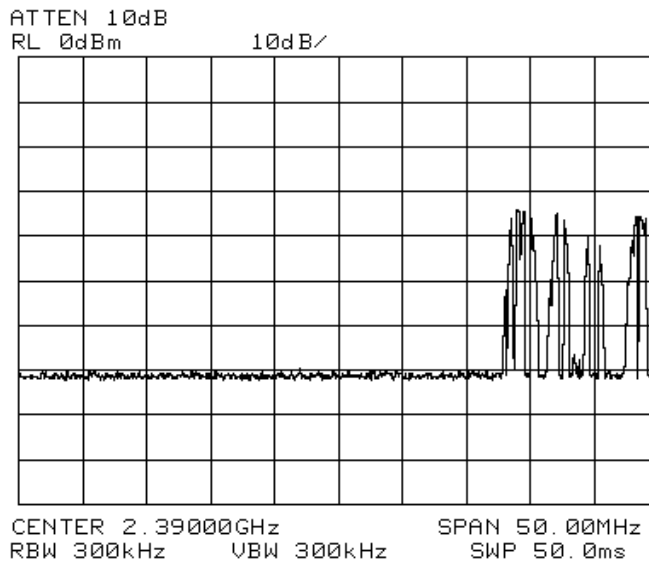
EQUIPMENT: AT&T E2715B

**Handset Lower Band Edge
Frequency Hopping Off**



Handset
20dB Lower Band Edge
Hopping Off

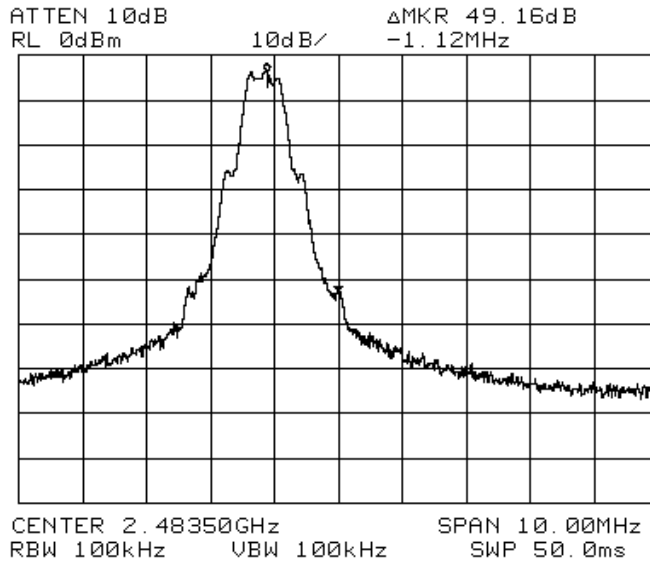
Frequency Hopping On



Handset
20dB Lower Band Edge
Hopping On

EQUIPMENT: AT&T E2715B

**Handset Upper Band Edge
 Frequency Hopping Off**



**Band Edge (Restricted Band)
 Marker Delta Method**

Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Amp. Gain (dB)	Duty Cycle Corr. Factor (dB)	Cable Loss (dB)	Field Strength (dBμV/m)	Amp.
2482.2720	Horn2	V	73.5	28.9			5.9	108.3	
2482.2720	Horn2	H	76.3	28.9			5.9	111.1	

Note : The emission was measured using a 1MHz RBW/VBW

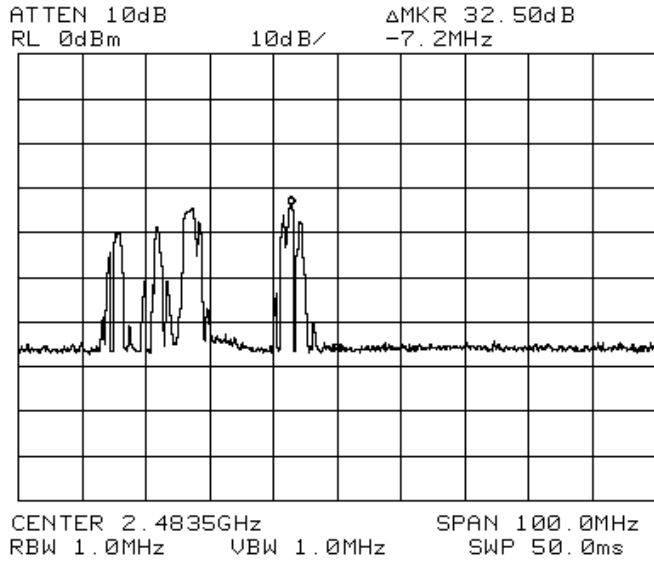
Peak Level, Band Edge = 111.1dBuV/m @ 3m

Peak Band Edge Level (Marker Delta) = 111.1dBuV – 49.16dB = 61.94dBuV/m @ 3m

Average = 61.94 – 20.0 = 41.94dBuV/m @ 3m

EQUIPMENT: AT&T E2715B

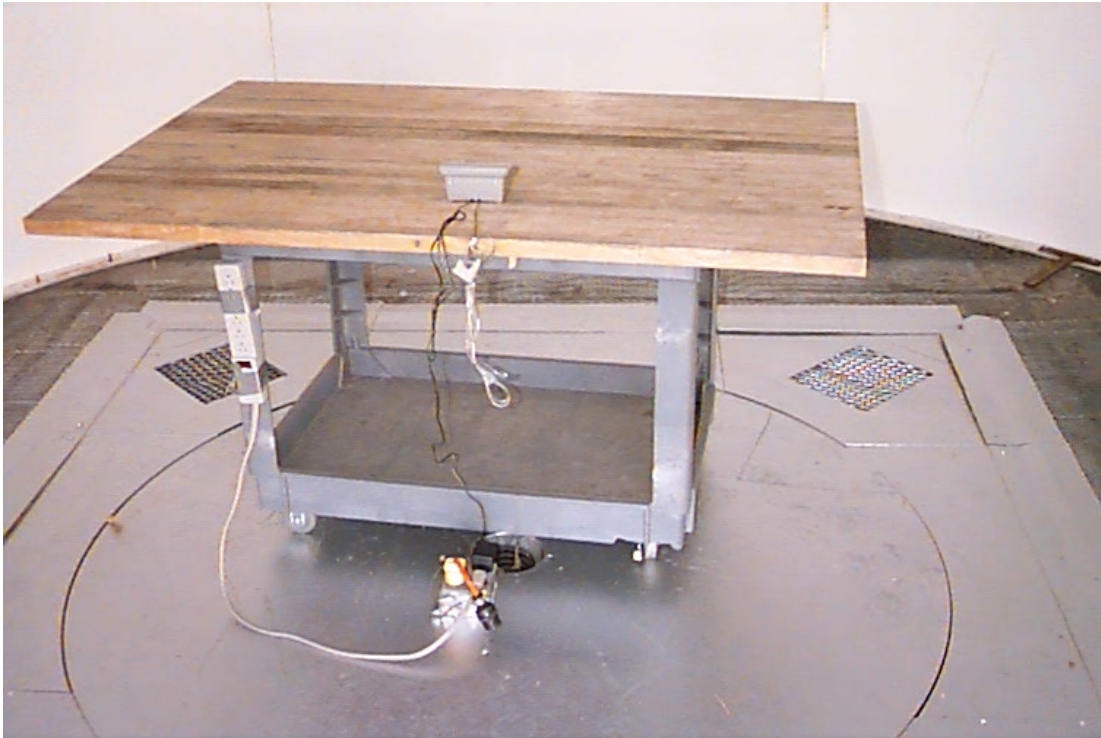
Frequency Hopping On



Handset
Upper Band Edge
Hopping On

EQUIPMENT: AT&T E2715B

**Set-up Photo:
Base**

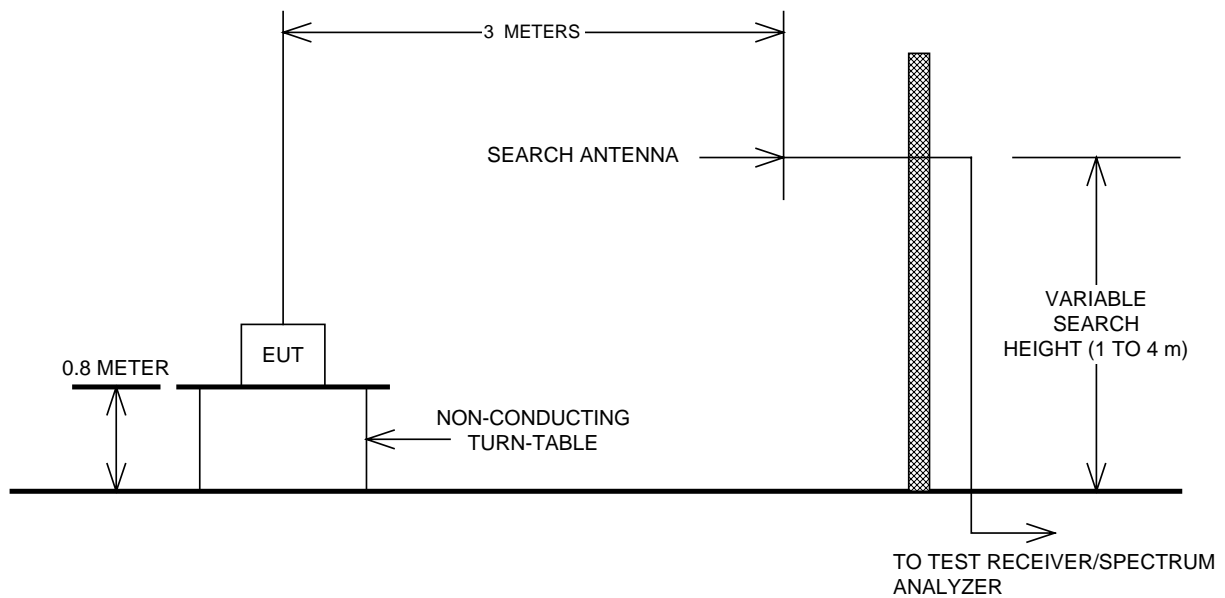


Handset

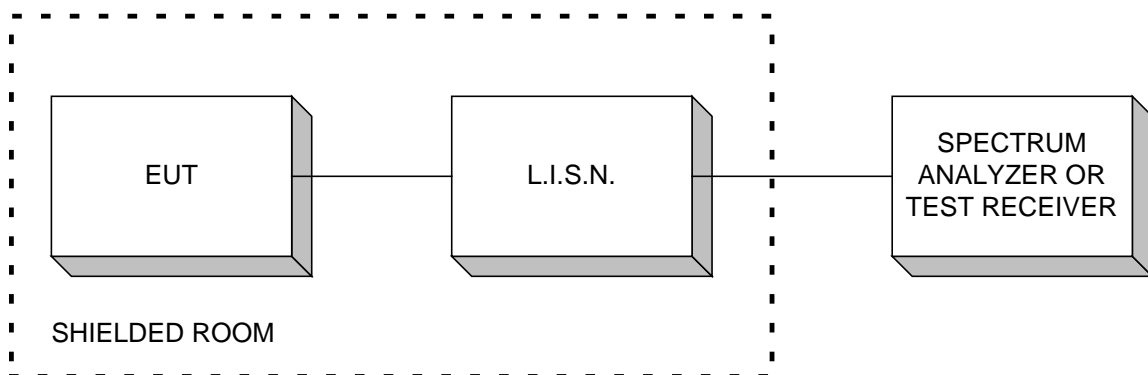


Section 6. Block Diagrams

Test Site For Radiated Emissions

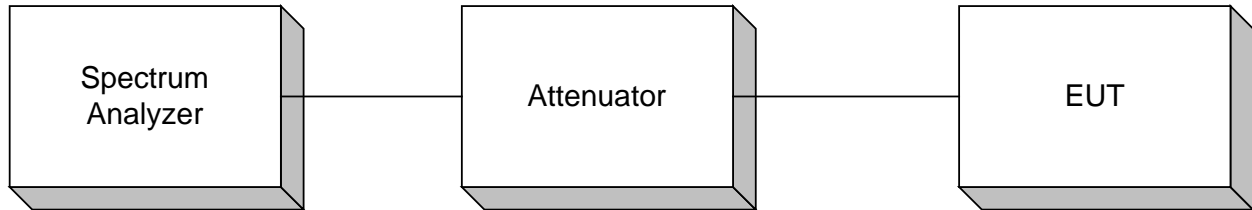


Conducted Emissions



EQUIPMENT: AT&T E2715B

Peak Power At Antenna Terminals



EQUIPMENT:AT&T E2715B

Section 7. Test Equipment List

CAL Cycle	Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
1 Year	LISN	EMCO	4825/2	FA001545	Oct. 30/03	Oct. 30/04
1 Year	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	May 28/04	May 28/05
1 Year	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	May 28/04	May 28/05
1 Year	Transient Limiter	Hewlett-Packard	11947A	FA000975	June. 10/04	June. 10/05
1 Year	Receiver	Rohde & Schwarz	ESVS-30	FA001437	July. 26/04	July. 26/05
1 Year	Horn Antenna #2	EMCO	3115	FA000825	Dec. 10/03	Dec. 10/04
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 18/03	Dec. 18/04
1 Year	18.0 – 40.0GHz Horn Antenna	EMCO	3116	FA001847	Jan. 19/04	Jan. 19/05
1 Year	Log Periodic Antenna #1	EMCO	LPA-25	FA000477	Apr. 23/04	Apr 23/05
1 Year	Biconical (1) Antenna	EMCO	3109	FA000805	Aug. 26/04	Aug. 26/05
1 Year	Spectrum Analyzer	Hewlett-Packard	8564E	FA001367	June 28/04	June 28/05
1 Year	4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	June. 18/04	June. 18/05
1 Year	5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	Aug. 16/04	Aug 16/05

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