Standards Council of Canada
Accredited Laboratory
Scope of Accreditation 75

Conseil canadien des normes
Laboratoire accrédité
Portée d'accréditation 75

TM

Test Report:	4W07975 Issue II
Applicant:	Aastra Telecom Inc. 155 Snow Boulevard Concord, ON L4K 4N9
Equipment Under Test: (EUT)	CM-16, 2.4 GHz Cordless Phone for M1 PBX
FCC ID:	**SDVCM16**
In Accordance With:	**FCC Part 15, Subpart C** Frequency Hopping Systems 2400 - 2483.5 MHz
Tested By:	Nemko Canada Inc. 303 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	Glen Westwell, Wireless Specialist
Date:	21 October 2004
Total Number of Pages:	48

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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 is accordance with ANSI C63.4-2001. 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: Daxesh Thakker, Wireless Test Engineer

TESTED BY: Kevin Carr, EMC/EMI/Wireless Specialist

TESTED BY: _____ DATE: 21 October 2004
Phil Taffinder, EMC Specialist

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This report applies only to the items tested.

Summary Of Test Data

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

Footnotes For N/A's: **(1) No access port.**

Test Conditions:

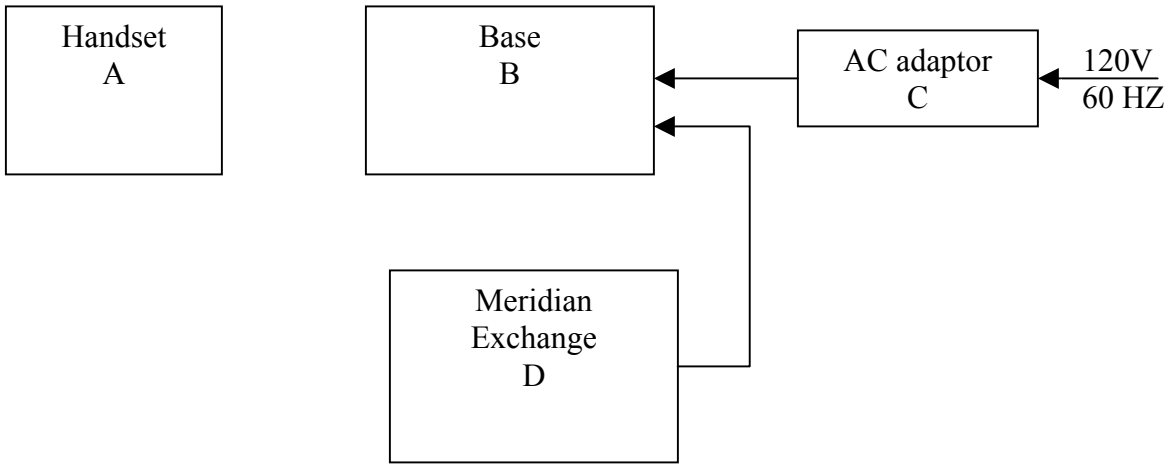
Indoor Temperature: 21° C
Humidity: 30 %

Outdoor Temperature: 20° C
Humidity: 45 %

Section 2. General Equipment Specification

Manufacturer:	Aastra Telecom Inc.
Model No.:	CM-16
Serial No.:	None
Date Received In Laboratory:	5 May 2004
Nemko Identification No.:	16,17, 27 & 29
Frequency Range:	2400-2483 MHz
Modulation	GFSK
Tunable Bands:	1
Number of Channels:	Base: 94 channels Handset: 94 channels
Min. Channel Spacing:	Base: 877 KHz Handset: 860 KHz
Emissions Designator:	667KF1D
User Frequency Adjustment:	None
Rated Output Power:	Base: 29.77 dBm (0.948 W) Handset: 23.77 dBm (0.238 W)

Test Set-up



Equipment Configuration List:		
Item	Description	Identification: *(M/N #, S/N #, P/N #, Rev.)*
(A)	Handset	P/N CM16, S/N None
(B)	Base	P/N CM16, S/N None
(C)	Power Adapter	S/N None
(D)	Meridian Exchange	P/N M1

Section 3. Power line Conducted Emissions

Para. No.: 15.207 (a)

Test Performed By: Phil Taffinder	**Date of Test: 20 April 2004**

Minimum Standard: **CISPR 22-96**

Limits For Conducted Disturbance At The Mains Ports Of Class B

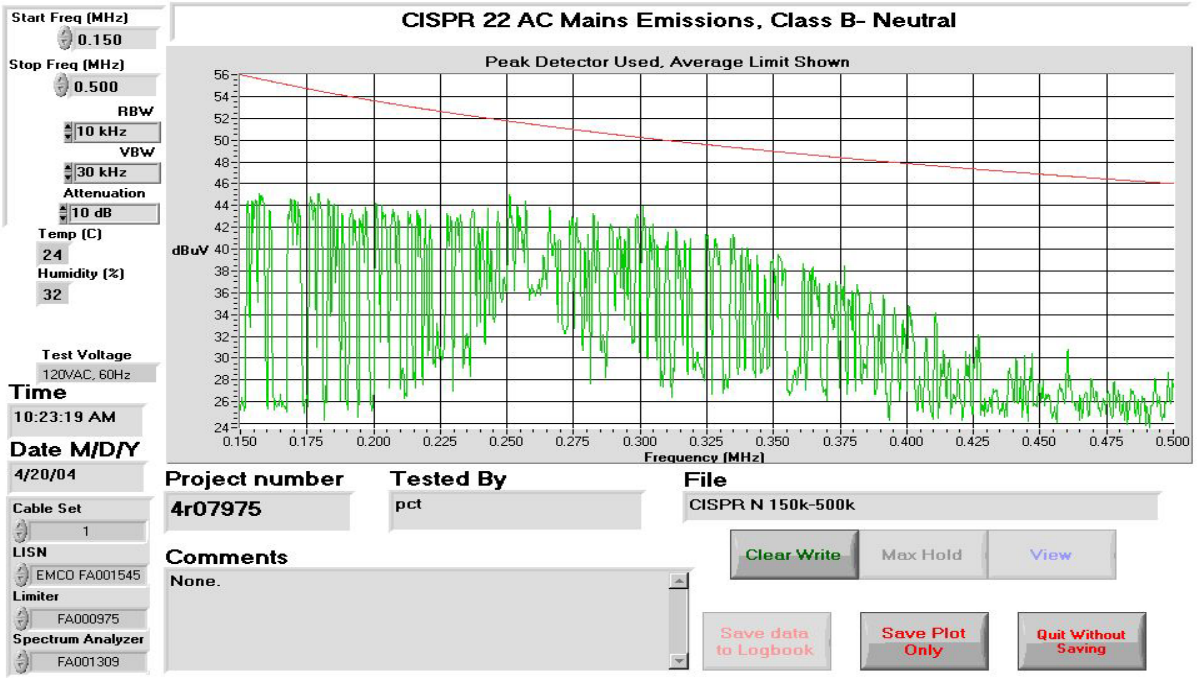
Frequency Range MHz	Limits dB(μV)		Result
	Quasi-Peak	Average	
0.15 to 0.50	66 to 56	56 to 46	Complies
0.5 to 5	56	46	
5 to 30	60	50	

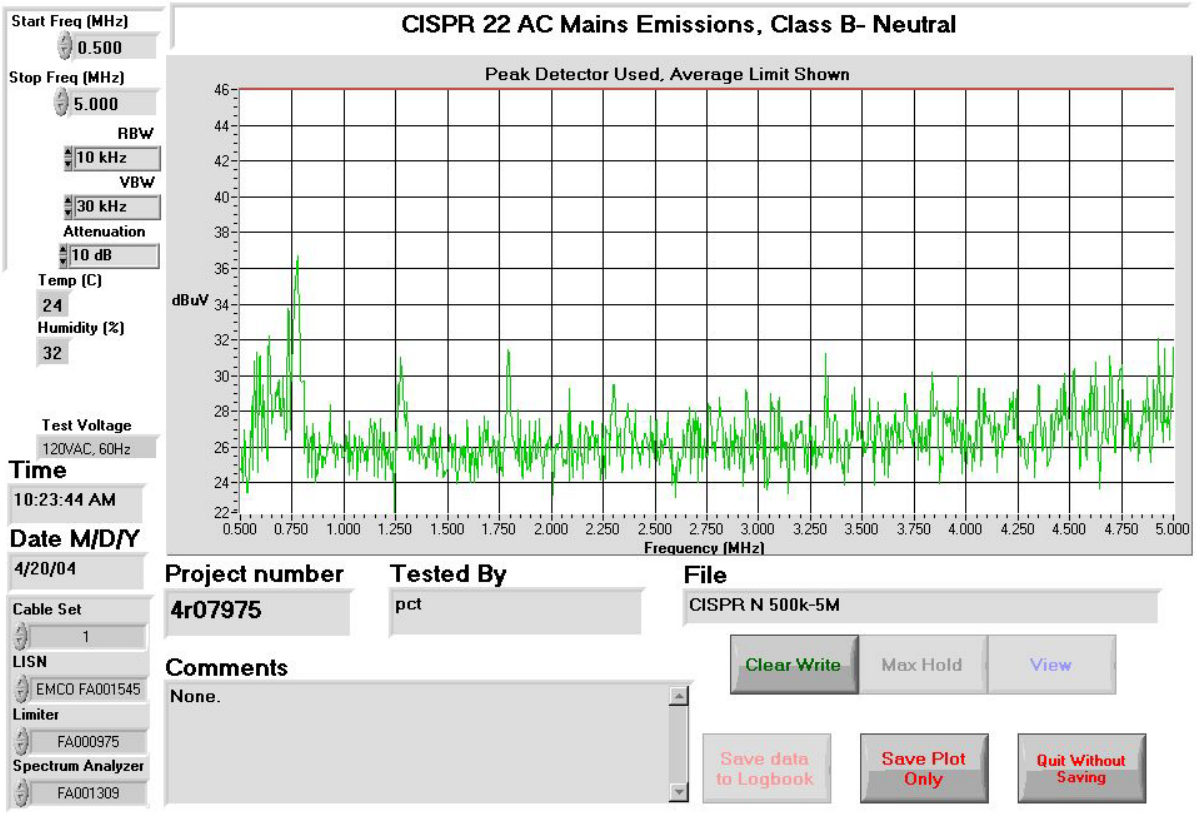
Note:
1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50MHz.

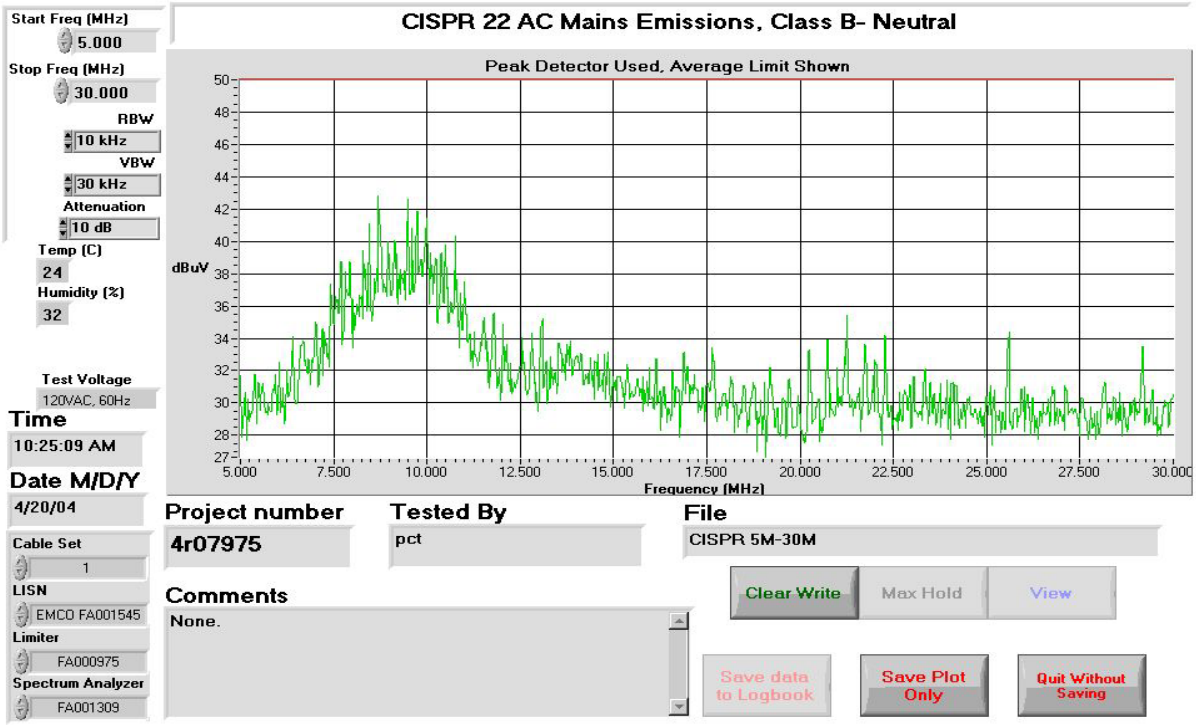
Test Results: Complied.

Measurement Data: See attached graph(s).

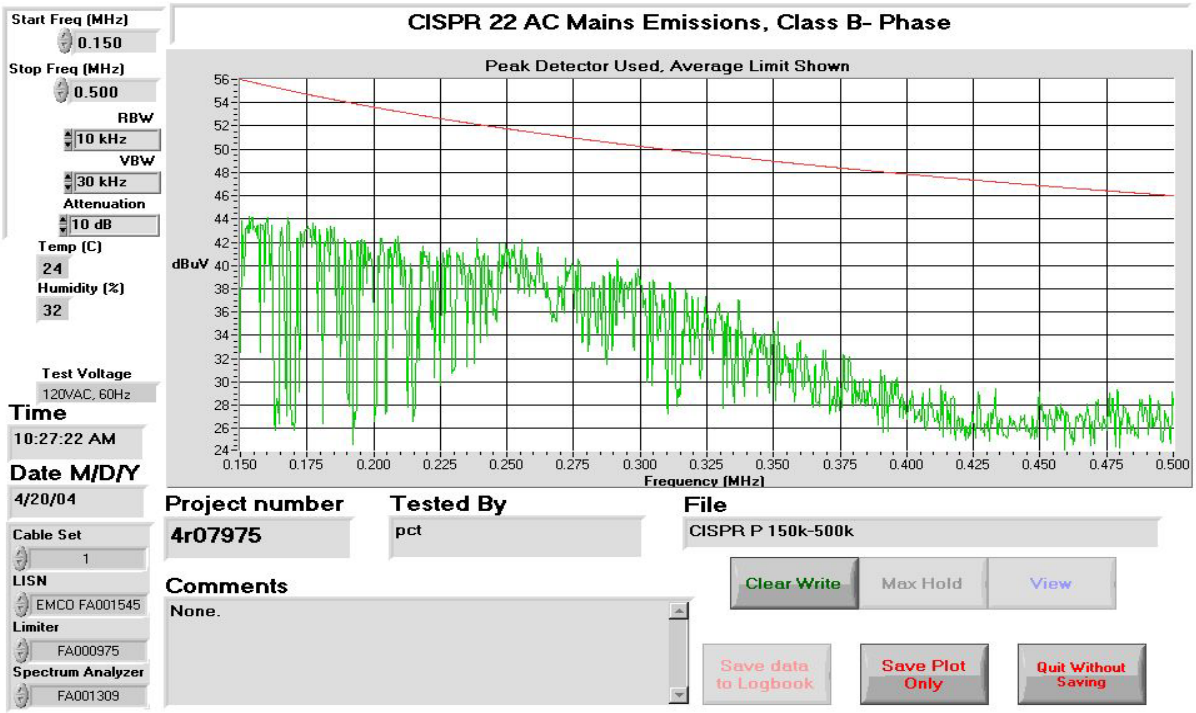
Conducted Disturbance @ Neutral

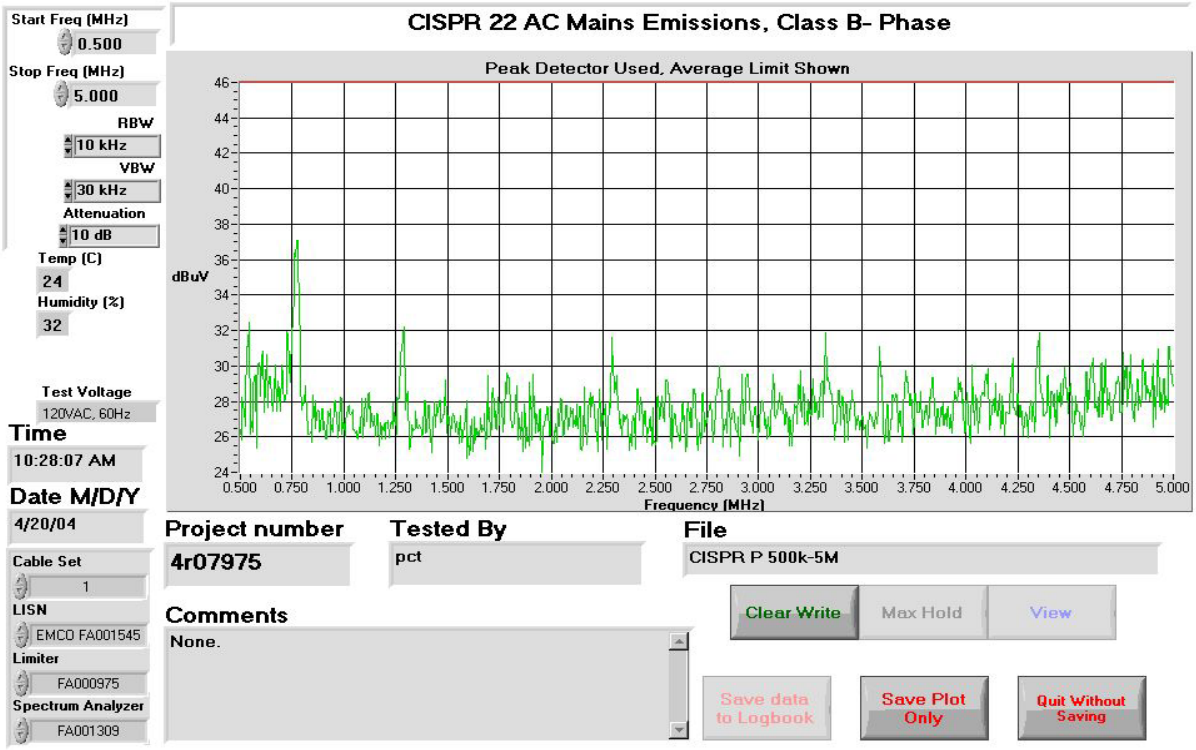


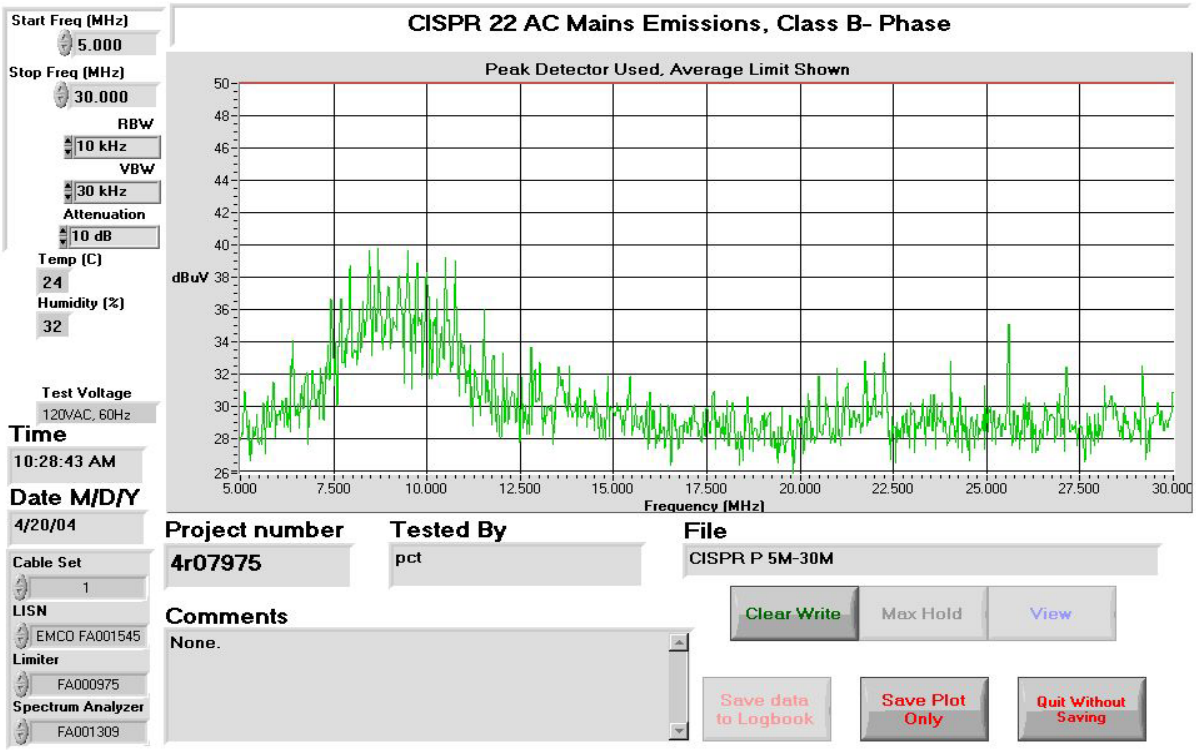




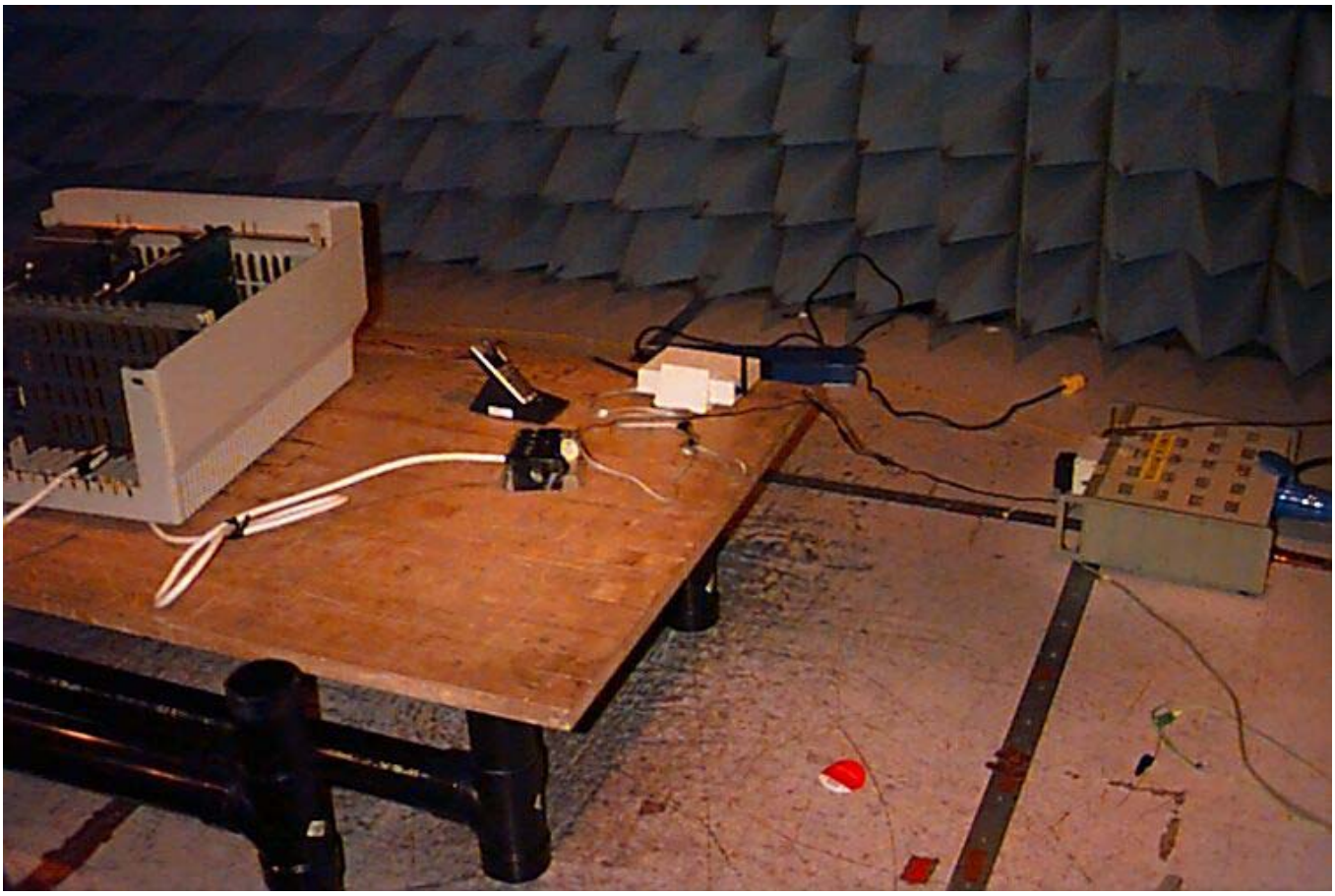
Conducted Disturbance @ Phase




Start Freq (MHz)
0.500
Stop Freq (MHz)
5.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
24
Humidity (%)
32
Test Voltage
120VAC, 60Hz
Time
10:28:07 AM
Date M/D/Y
4/20/04
Cable Set
1
LISN
EMCO FA001545
Limiter
FA000975
Spectrum Analyzer
FA001309
CISPR 22 AC Mains Emissions, Class B- Phase
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Project number
4r07975
Tested By
pct
File
CISPR P 500k-5M
Comments
None.
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving


Start Freq (MHz)
5.000
Stop Freq (MHz)
30.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
24
Humidity (%)
32
Test Voltage
120VAC, 60Hz
Time
10:28:43 AM
Date M/D/Y
4/20/04
Cable Set
1
LISN
EMCO FA001545
Limiter
FA000975
Spectrum Analyzer
FA001309
CISPR 22 AC Mains Emissions, Class B- Phase
Peak Detector Used, Average Limit Shown
dBuV
Frequency (MHz)
Project number
4r07975
Tested By
pct
File
CISPR P 5M-30M
Comments
None.
Clear Write
Max Hold
View
Save data to Logbook
Save Plot Only
Quit Without Saving

Test Setup Photo



Section 4. Channel Separation

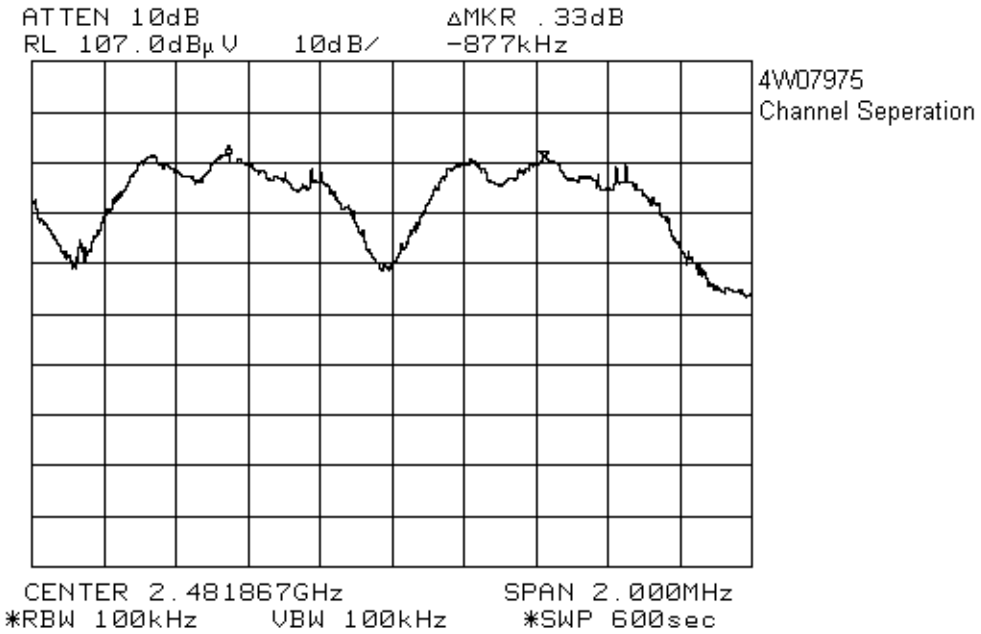
Para. No.: 15.247 (a)(1)

Test Performed By: Kevin Carr & Daxesh Thakker	**Date of Test: 12 May 2004 & 25 June 2004**

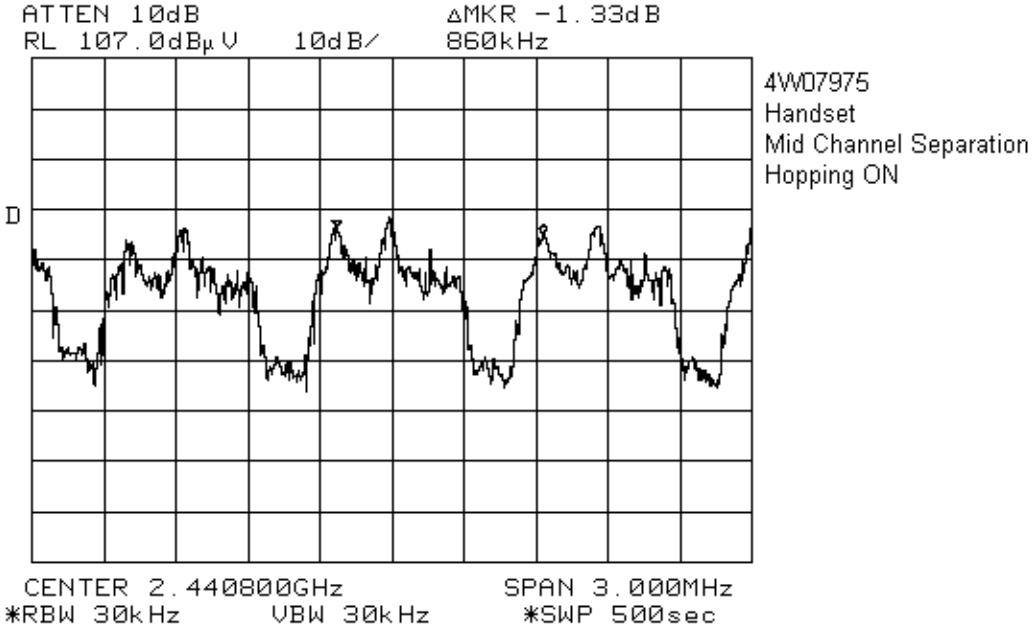
Test Results: Complied.

Measurement Data: **Minimum Channel Separation**
Base: 877 KHz, 20dB BW = 700kHz
Handset: 860 KHz. 20dB BW = 708kHz

Channel Separation Plots
Base



Handset



Section 5. Number of Hopping Channels

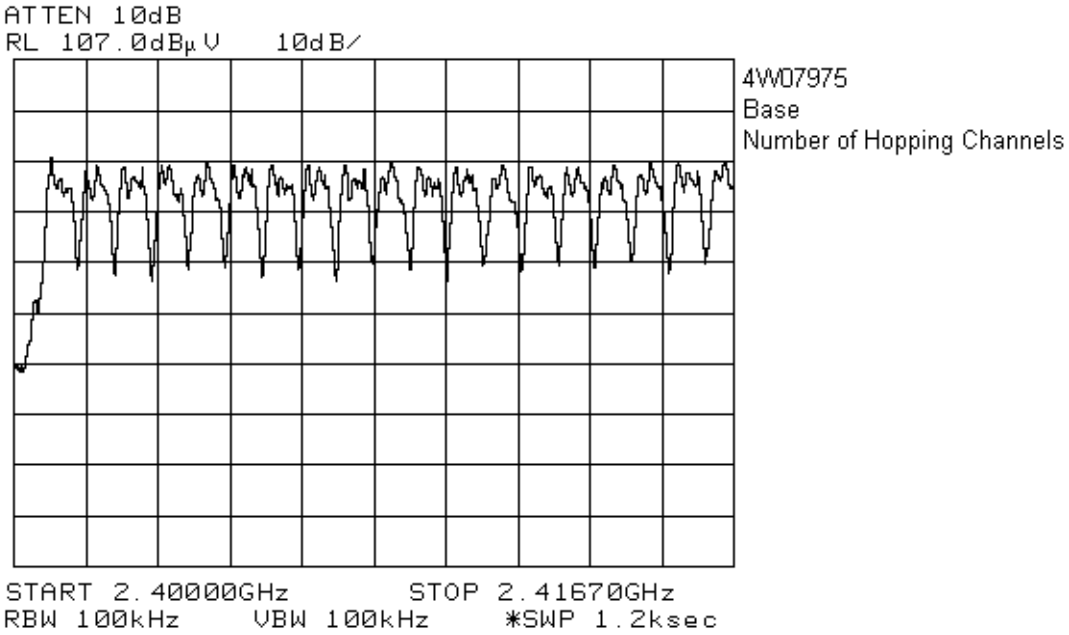
Para. No.: 15.247(a)(1)(iii)

Test Performed By: Kevin Carr & Daxesh Thakker	**Date of Test: 11 May 2004 & 25 June 2004**

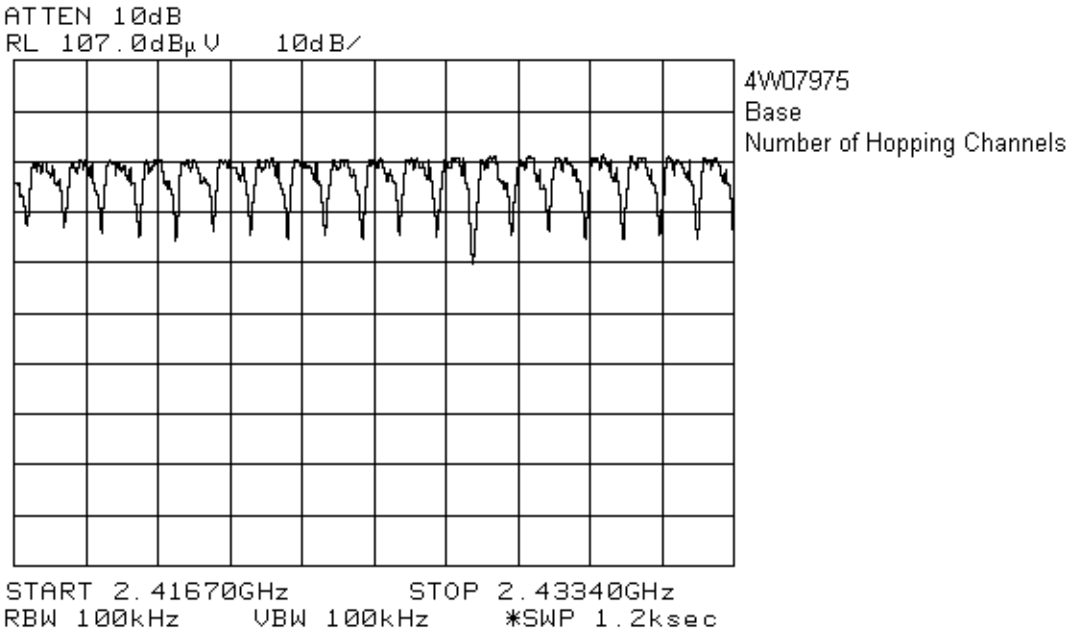
Test Results: Complied

Measurement Data: Number of Hopping Channel Frequencies:
Base: 94 channels
Handset: 94 channels

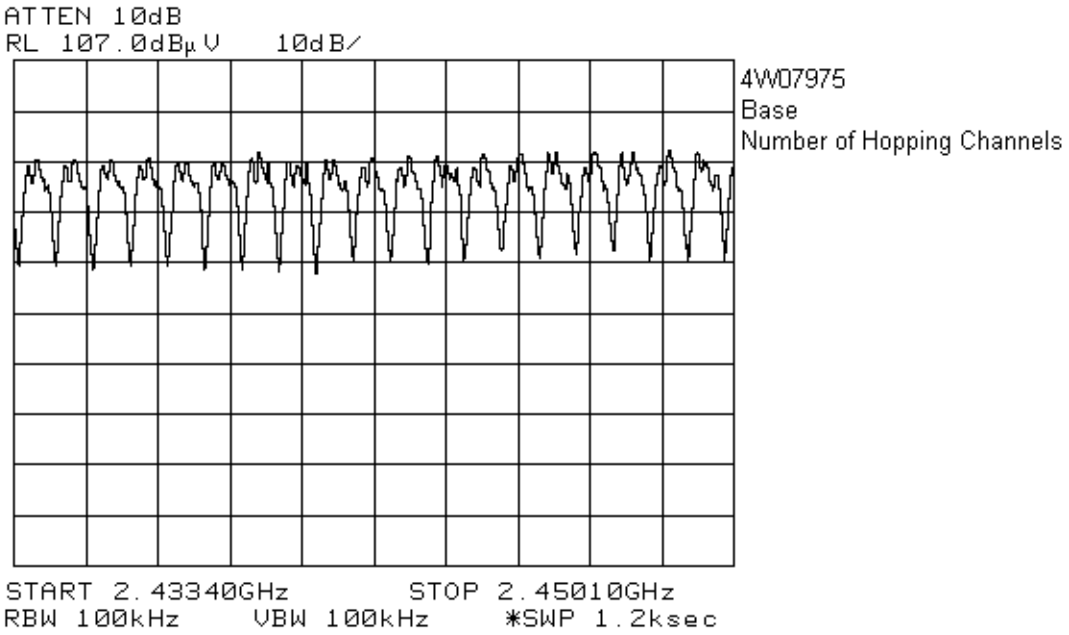
Number of Hopping Channels
Base station



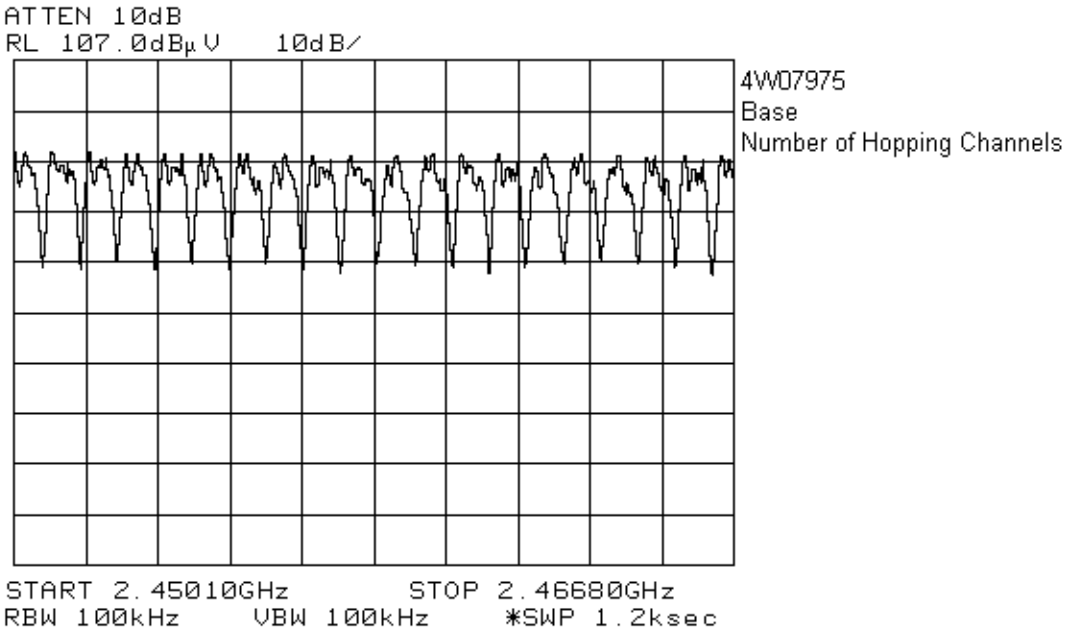
Band 1 showing 19 channels



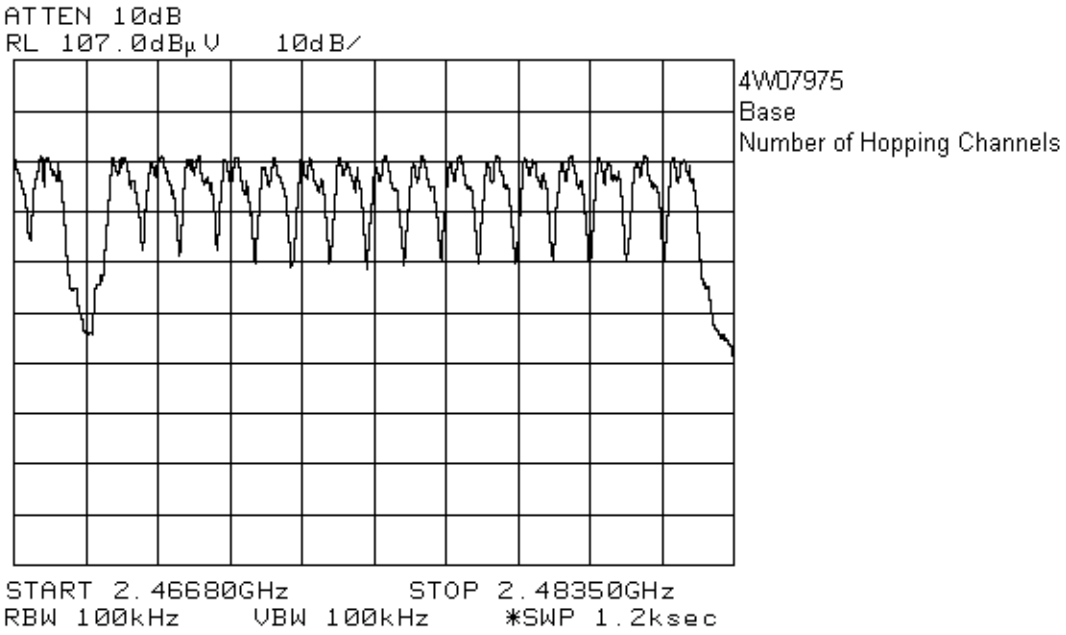
Band 2 showing 19 channels



Band 3 showing 19 channels



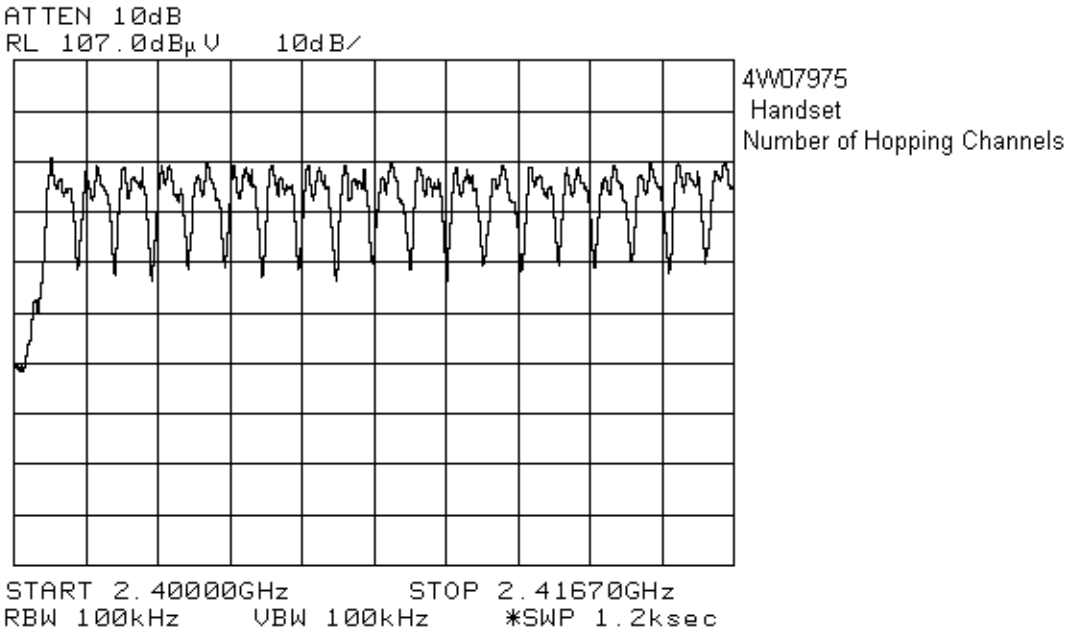
Band 4 showing 20 channels



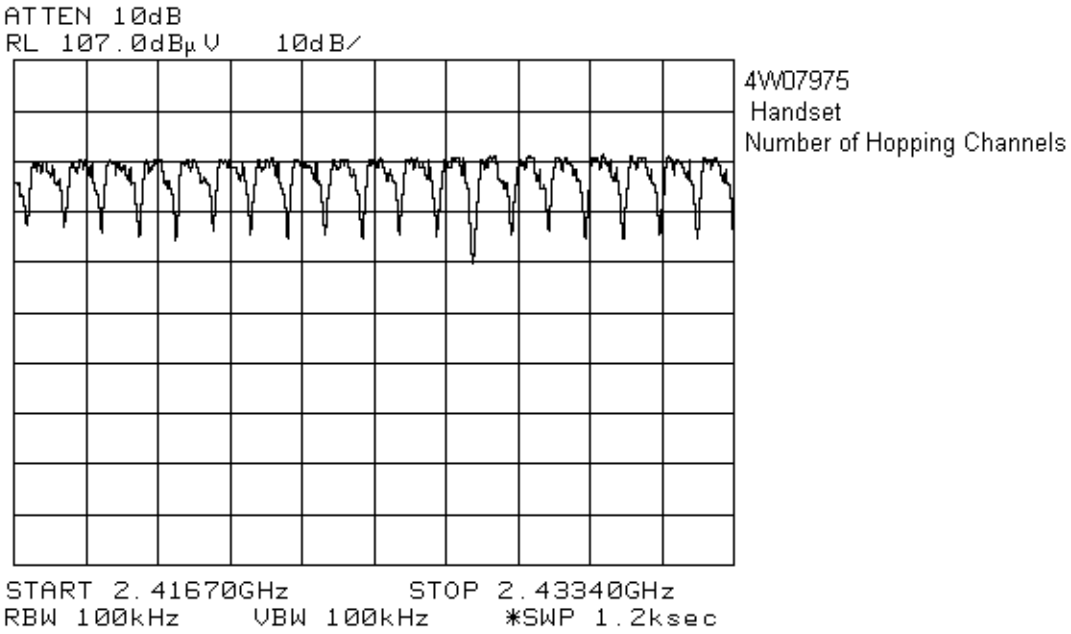
Band 5 showing 17 channels

94 channels total

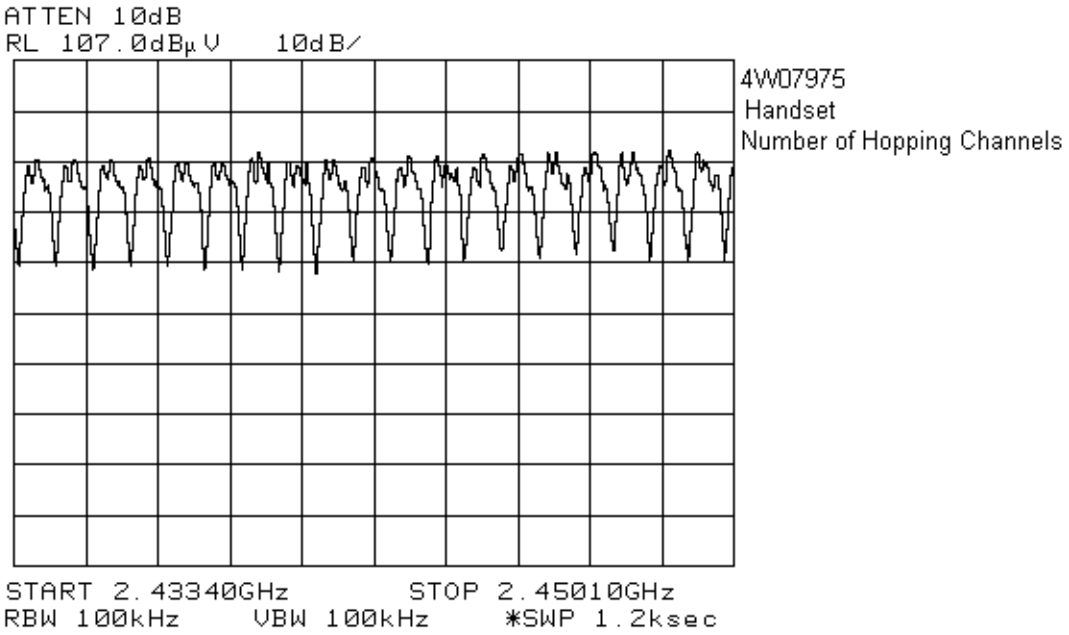
Handset



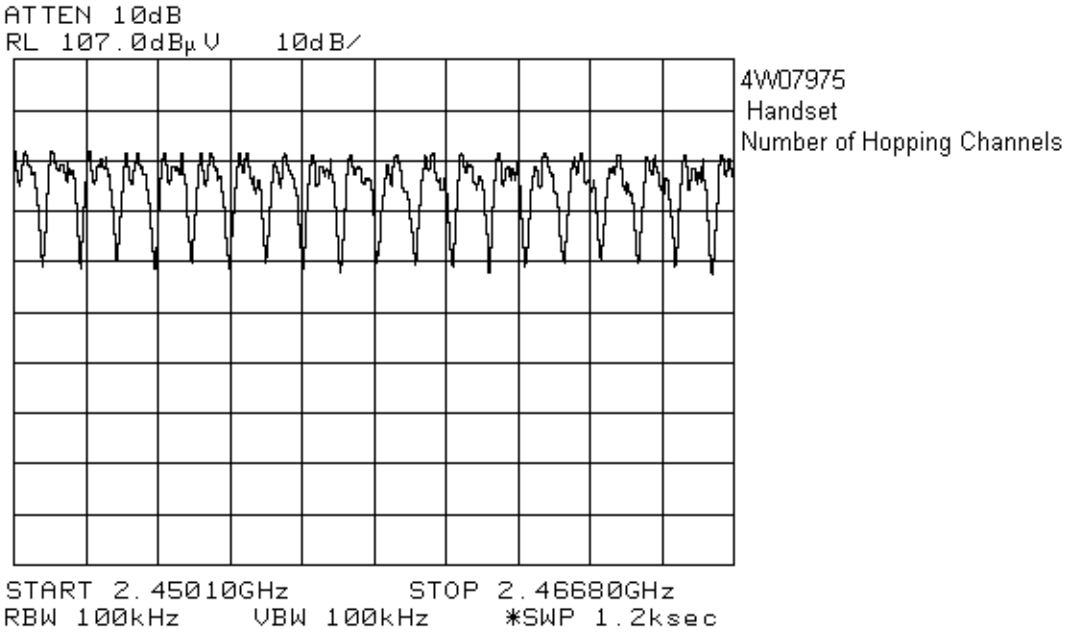
Band 1 showing 19 channels



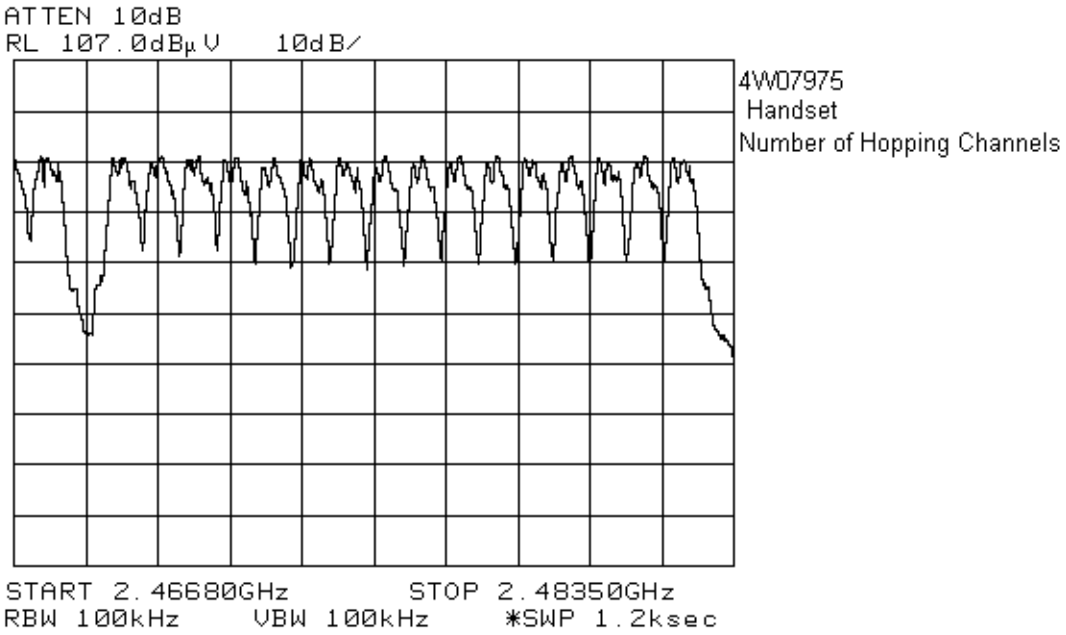
Band 2 showing 19 channels



Band 3 showing 19 channels



Band 4 showing 20 channels



Band 5 showing 17 channels

94 channels total

Section 6. Time of Occupancy

Para. No.: 15.247 (a)(1)(iii)

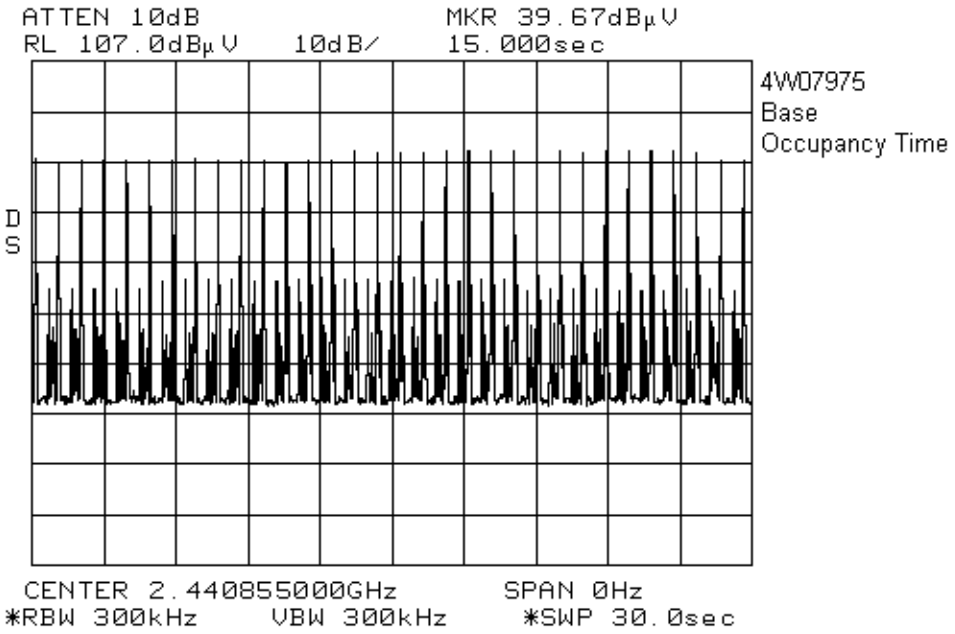
Test Performed By: Kevin Carr & Daxesh Thakker	**Date of Test: May 11, 2004** **June 12, 2004**

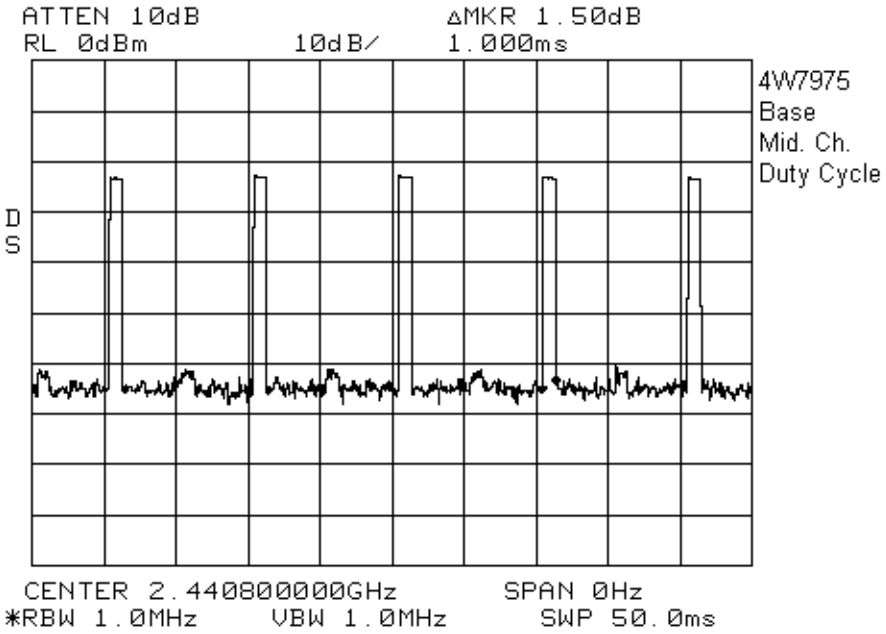
Test Results: Complies

Measurement Data: Maximum Dwell Time On Any Channel:
See Plots.

Base: 32 mSec
Handset: 25.76 mSec

Time Of Occupancy Plots.
Base



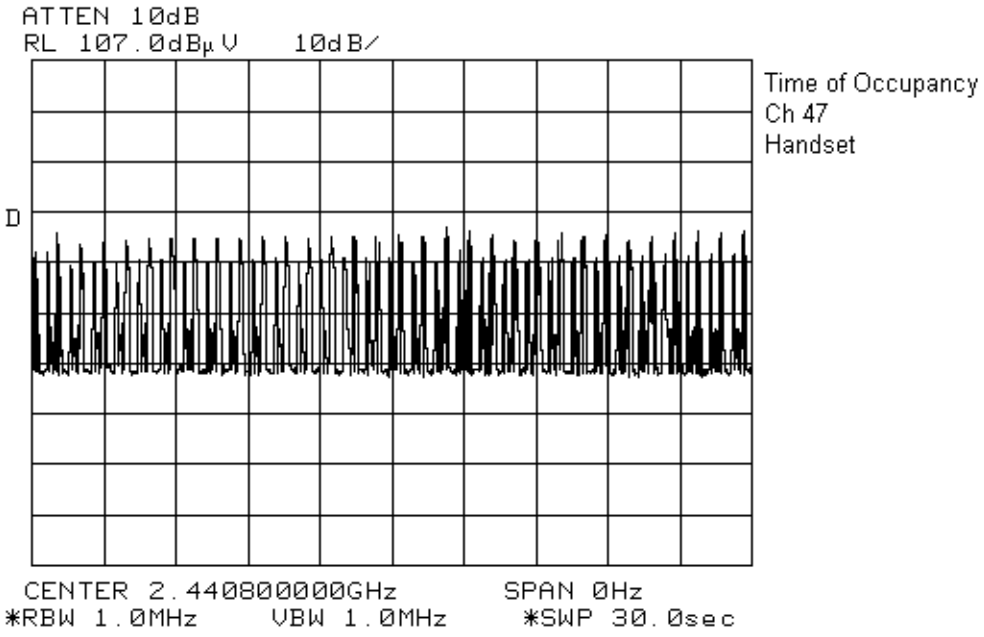


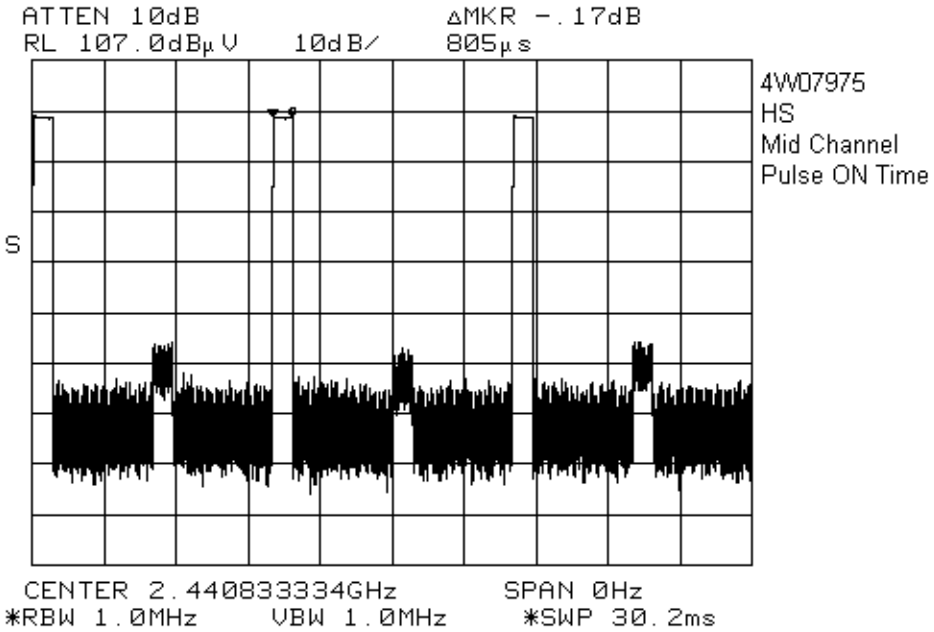
Active Slot showing 1 mSec On-Time

Time of Occupancy showing 32 hits per 30sec

32 * 1 = 32 mSec

Handset





Active Slot showing 805 μSec On-Time

Time of Occupancy showing 32 hits per 30sec

32 * 0.805 = 25.76 mSec

Section 7. Occupied Bandwidth

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

Test Performed By: Kevin Carr & Daxesh Thakker	**Date of Test: 12 May 2004, 25 June 2004, 18 Oct. 2004**

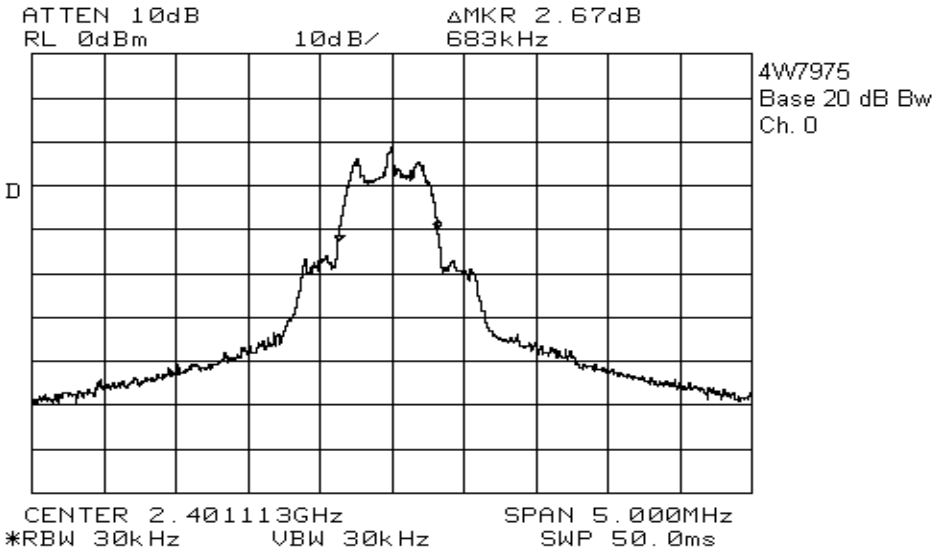
Test Results: Complied

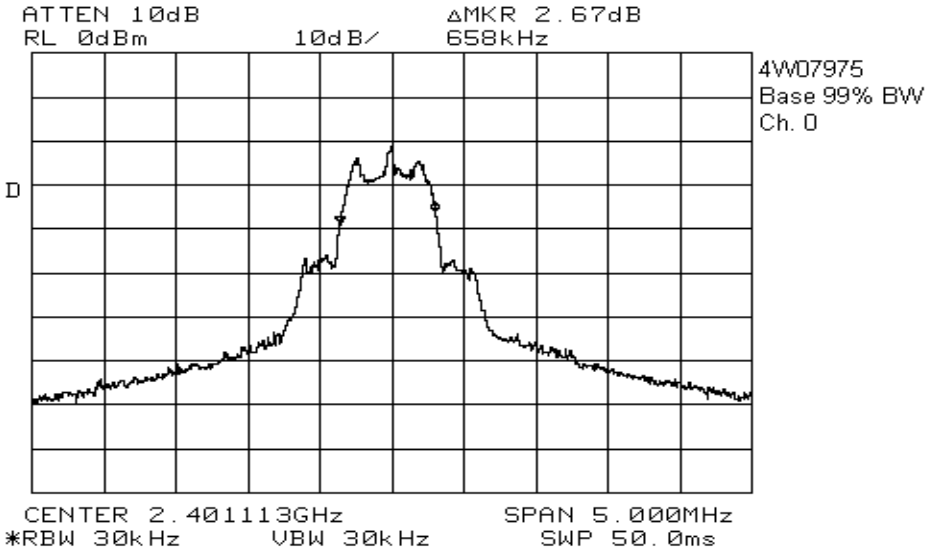
Measurement Data: See attached graphs.

Maximum 20 dB Bandwidth
Base: 700 KHz
Handset: 708 KHz

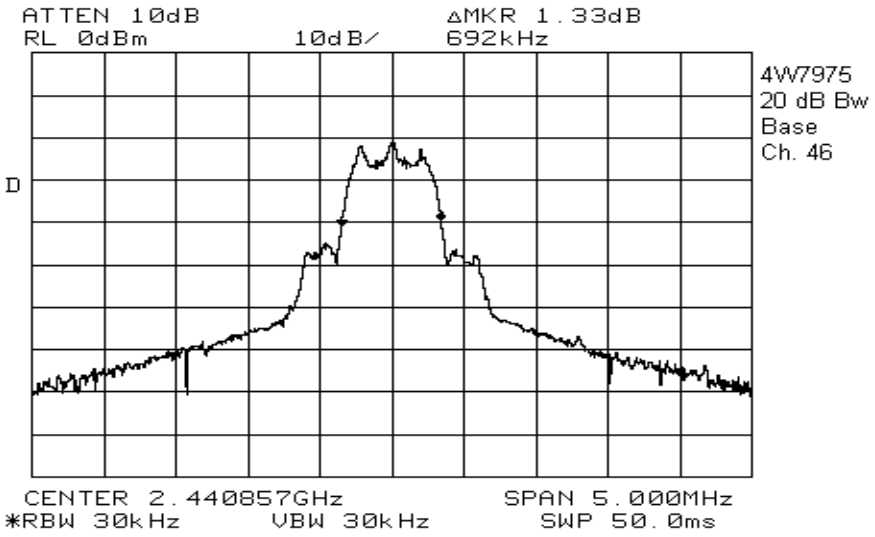
Maximum 99% Occupied Bandwidth
Base: 658 KHz
Handset: 667 KHz

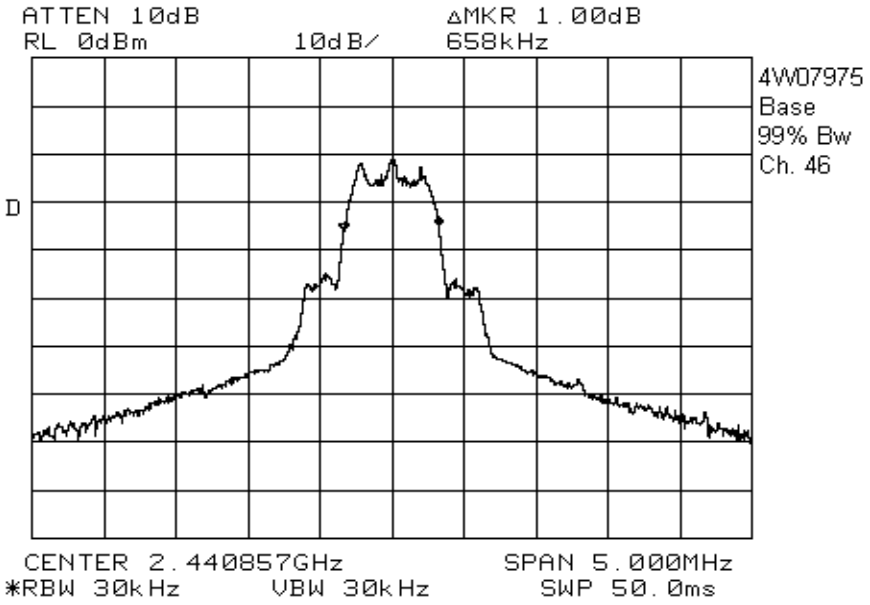
Occupied Bandwidth Plots
Base, Low Channel



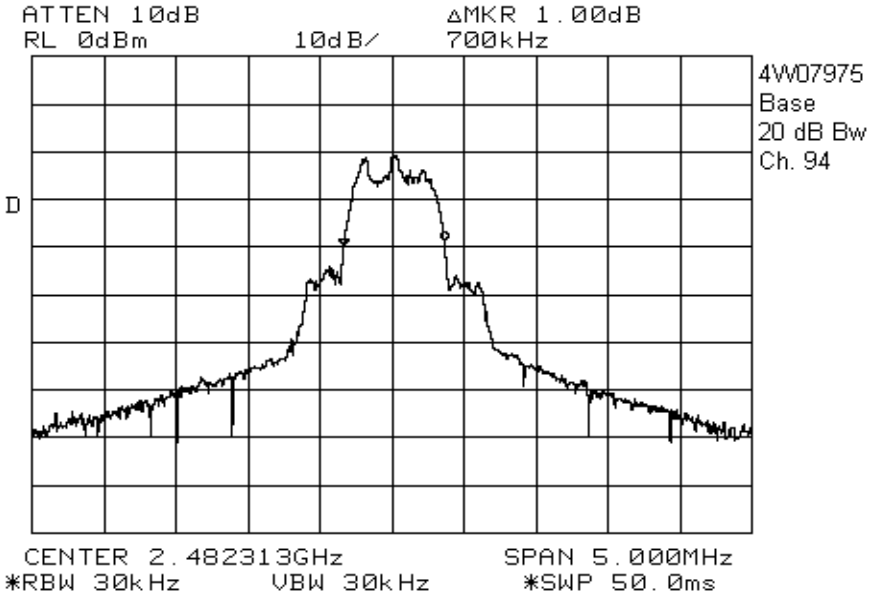


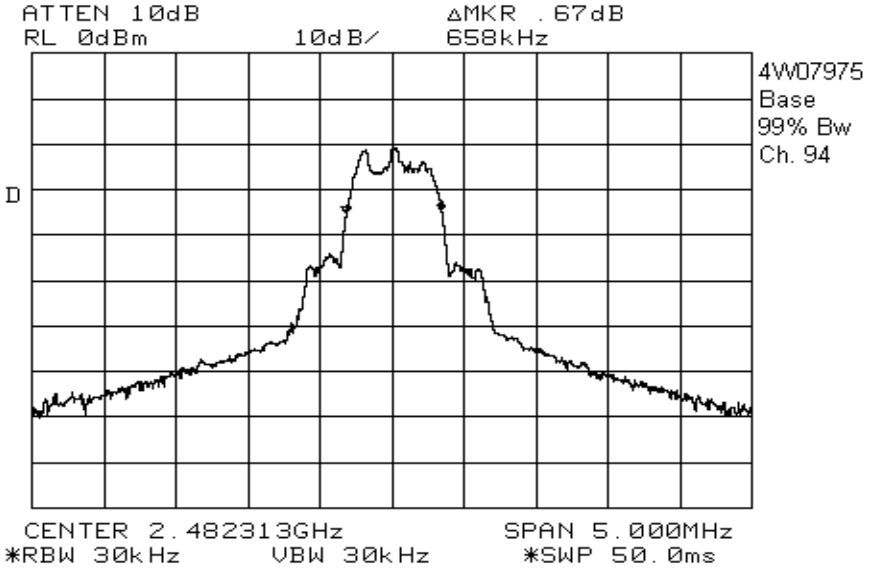
Mid. Channel


ATTEN 10dB
RL 0dBm
10dB/
ΔMKR 1.33dB
692kHz
4W7975
20 dB Bw
Base
Ch. 46
D
CENTER 2.440857GHz
SPAN 5.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

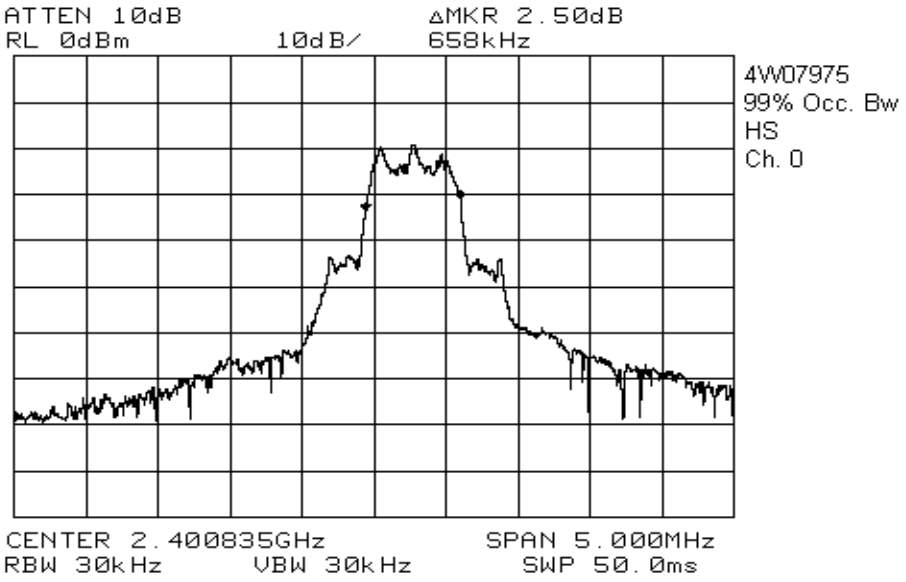

ATTEN 10dB
RL 0dBm
10dB/
ΔMKR 1.00dB
658kHz
4W07975
Base
99% Bw
Ch. 46
D
CENTER 2.440857GHz
SPAN 5.000MHz
*RBW 30kHz
VBW 30kHz
SWP 50.0ms

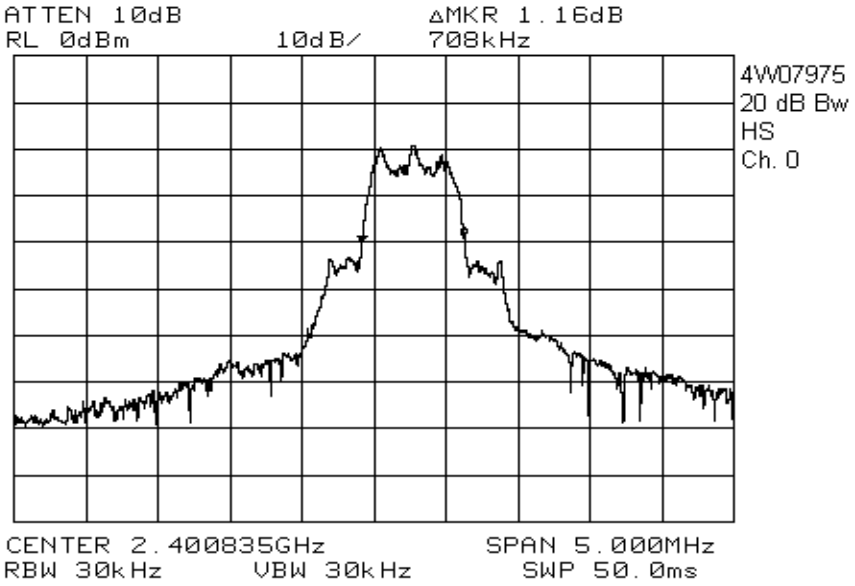
Upper Channel



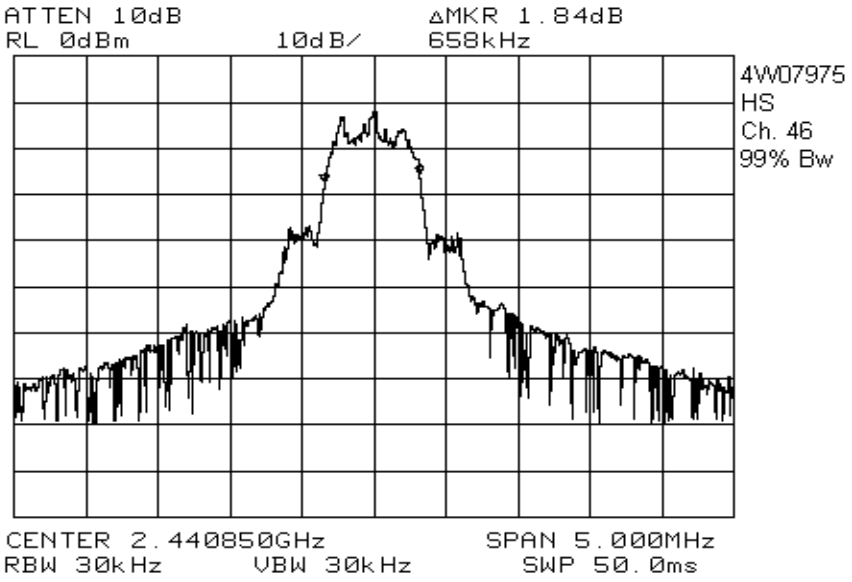


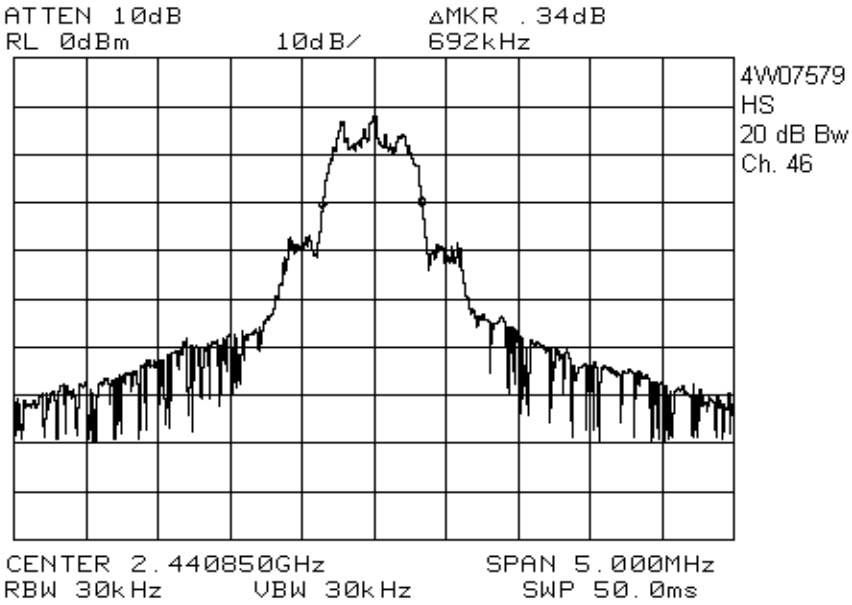
Handset, Low channel



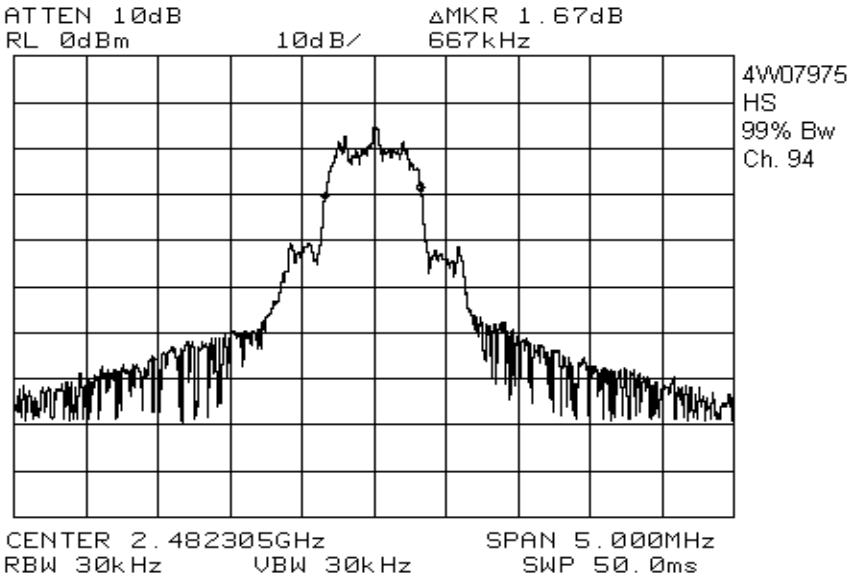


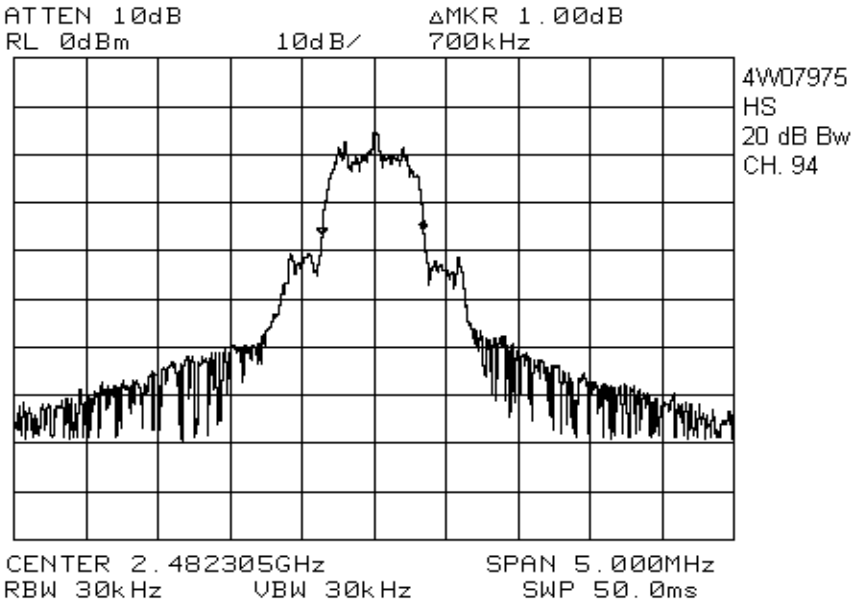
Mid channel


ATTEN 10dB
RL 0dBm
10dB/
ΔMKR 1.84dB
658kHz
4W07975
HS
Ch. 46
99% Bw
CENTER 2.440850GHz
RBW 30kHz
VBW 30kHz
SPAN 5.000MHz
SWP 50.0ms


ATTEN 10dB
RL 0dBm
10dB/
ΔMKR .34dB
692kHz
4W07579
HS
20 dB Bw
Ch. 46
CENTER 2.440850GHz
RBW 30kHz
VBW 30kHz
SPAN 5.000MHz
SWP 50.0ms

Upper channel





Section 8. Peak Power Output

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

Test Performed By: Daxesh Thakker	**Date of Test: 24 June 2004**

Test Results:

Complied. The maximum peak power output of the transmitter is

$P = \{E^2R^2/30G\}$ where

	E, V/mtr @ 3m	R, mtr	G
Base	2.11	3	1.41
Handset	1.49	3	2.81

Base = 0.948W, 29.77dBm
Handset = 0.238W, 23.77dBm

The Base Station was tested at +/- 15% of AC line voltage. The received level did not change
The Handset was tested with a fresh battery.
This EUT was searched in 3 orthogonal axes to determine worst-case emissions.

Measurement Data:

Detachable antenna? ☐ Yes ☒ No
If yes, state the type of non-standard connector used at the antenna port:

Directional Gain of Antenna:
Base: 1.5 dBi or 1.41 Numeric.
Handset: 4.5 dBi or 2.81 Numeric.

Base (worst Case)
Field Strength: 126.5 dBμV/m @ 3m or 2.11 V/m @ 3m.

Handset (worst Case)
Field Strength: 123.5 dBμV/m @ 3m or 1.49 V/m @ 3m.

Radiated Emissions Test Data:

Test Date: 10 June 2004

Engineer's Name: Daxesh Thakker

Base Station fundamental

Tested as per (Table Top/Floor Standing): Table Top

Test Distance (meters): 3 | Range: 1

Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Cable Loss (dB)	Field Strength (dBμV/m)
2401.1300	Horn2	H	84.3	28.9	4.8	118.0
2401.1300	Horn2	V	89.8	28.9	4.8	123.5
2440.8500	Horn2	V	92.3	28.9	5.3	126.5
2440.8500	Horn2	H	88.5	28.9	5.3	122.7
2482.4200	Horn2	H	82.8	28.9	5.9	117.6
2482.4200	Horn2	V	90.1	28.9	5.9	124.9

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: Measurement Receiver = H.P.8565E, RBW = 1MHz

Test Date: 24 June, 2004

Engineer's Name: Daxesh Thakker

Handset fundamental

Tested as per (Table Top/Floor Standing): Table Top

Test Distance (meters): 3 | Range: 1

Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBμV)	Ant. Factor (dB)	Cable Loss (dB)	Field Strength (dBμV/m)
2401.1530	Horn1	V	82.0	29.2	4.8	116.0
2401.1530	Horn1	H	86.9	29.2	4.8	120.9
2440.9200	Horn1	V	81.5	29.2	5.3	116.0
2440.9200	Horn1	H	86.5	29.2	5.3	121.0
2482.2820	Horn1	V	77.6	29.2	5.9	112.7
2482.2820	Horn1	H	88.4	29.2	5.9	123.5

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: Measurement Receiver = H.P.8565E, RBW = 1MHz

Section 9. Spurious Emissions (Radiated)

Para. No.: 15.247 (c)

Test Performed By: Phil Taffinder & Daxesh Thakker	**Date of Test: 19 April 2004 & 10 June 2004**

Test Results: Complied.

The worst-case emissions level is 45.6 dBμV/m @ 3m @ 4964.84 MHz. This is 8.4 dB below the specification limit.

Test Data: See attached table.

Duty Cycle Calculation:

Base: 20Log{(10 X 1mS)/100} = -20dB.
Handset: 20Log{(10 X 0.805)/100} = -38.11dB, max. allowed -20 dB.

Radiated Disturbance Test Data: Digital Emissions

Test Date: 19 April, 2004	
Engineer's Name: Phil Taffinder	
Temperature (C°): 21	Humidity %: 34
Tested as per (Table Top/Floor Standing): Table Top	
Test Distance (meters): 3	Range: Dome 1

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.
199.9980	BC1	V	23.4	14.3	N/A	1.7	39.4	43.5	4.1	Q-Peak	None
199.9980	BC1	H	23.0	14.0	N/A	1.7	38.7	43.5	4.8	Q-Peak	None
51.7130	BC1	V	23.7	9.5	N/A	0.8	34.0	40.0	6.0	Q-Peak	None
51.7130	BC1	H	20.8	10.4	N/A	0.8	32.0	40.0	8.0	Q-Peak	None
50.6891	BC1	V	19.6	9.6	N/A	0.8	30.0	40.0	10.0	Q-Peak	None
50.6891	BC1	H	21.2	10.6	N/A	0.8	32.6	40.0	7.4	Q-Peak	None
51.2012	BC1	V	21.4	9.6	N/A	0.8	31.8	40.0	8.2	Q-Peak	None
51.2012	BC1	H	18.7	10.5	N/A	0.8	30.0	40.0	10.0	Q-Peak	None
52.7370	BC1	V	20.4	9.4	N/A	0.8	30.6	40.0	9.4	Q-Peak	None
52.7370	BC1	H	17.8	10.3	N/A	0.8	28.9	40.0	11.1	Q-Peak	None
53.7610	BC1	H	19.0	10.1	N/A	0.8	29.9	40.0	10.1	Q-Peak	None
53.7610	BC1	V	17.6	9.2	N/A	0.8	27.7	40.0	12.3	Q-Peak	None

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, Peak = 1.0 MHz RBW
Note 3: The EUT was searched up to 5th harmonic of the highest frequency generated in the system

Notes:

Radiated Disturbance Test Data: Base station harmonics, Average

Test Date: 10 June, 2004

Engineer's Name: Daxesh Thakker

Tested as per (Table Top/Floor Standing): Table Top

Test Distance (meters): 3 | Range: 1

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.
Ch. 00											
4802.2600	Horn2	H	65.9	34.3	53.2	-20.0	8.1	35.1	54.0	18.9	4-8GHz
4802.2600	Horn2	V	68.9	34.1	53.2	-20.0	8.1	37.9	54.0	16.1	4-8GHz
7203.3900	Horn2	H	66.1	37.0	53.7	-20.0	11.3	40.7	54.0	13.3	4-8GHz
7203.3900	Horn2	V	66.0	36.8	53.7	-20.0	11.3	40.3	54.0	13.7	4-8GHz
Ch. 47											
4881.6200	Horn2	V	71.0	34.2	52.6	-20.0	8.8	41.4	54.0	12.6	4-8GHz
4881.6200	Horn2	H	68.0	34.4	52.6	-20.0	8.8	38.6	54.0	15.4	4-8GHz
7322.5500	Horn2	V	63.7	36.8	53.7	-20.0	10.1	36.9	54.0	17.1	4-8GHz
7322.5500	Horn2	H	65.8	37.0	53.7	-20.0	10.1	39.3	54.0	14.7	4-8GHz
Ch. 94											
4964.8400	Horn2	H	74.0	34.4	52.3	-20.0	9.5	45.6	54.0	8.4	4-8GHz
4964.8400	Horn2	V	69.7	34.2	52.3	-20.0	9.5	41.1	54.0	12.9	4-8GHz
7447.2600	Horn2	H	67.0	37.0	53.2	-20.0	11.1	42.0	54.0	12.0	4-8GHz
7447.2600	Horn2	V	63.5	36.8	53.2	-20.0	11.1	38.3	54.0	15.7	4-8GHz

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
Note 3: The EUT was searched up to 10 harmonics of the fundamental.

Notes: Measurement Receiver = H.P.8565E, RBW = 1MHz

Radiated Disturbance Test Data: Handset Harmonics, Average

Test Date: 24 June, 2004

Engineer's Name: Daxesh Thakker

Tested as per (Table Top/Floor Standing): Table Top

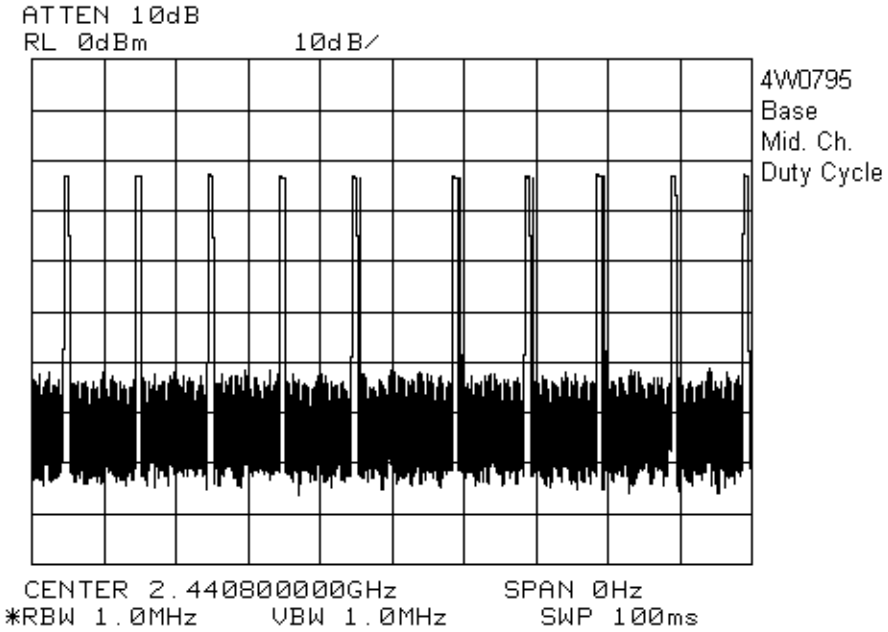
Test Distance (meters): 3 | Range: 1

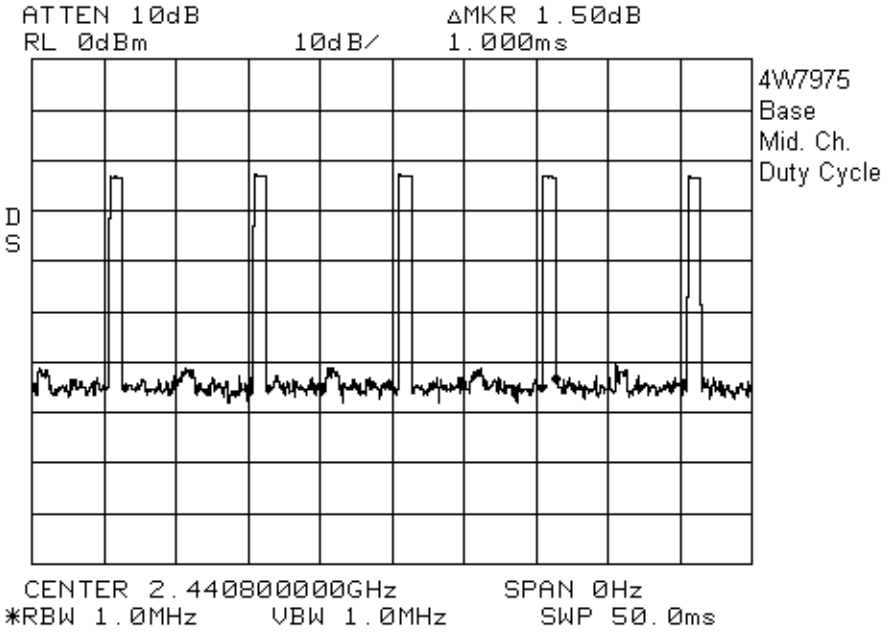
Freq. (MHz)	Ant.	Pol. V/H	RCVD Signal (dBµV)	Ant. Factor (dB)	Amp. Gain (dB)	Duty Cycle Corr. Factor (dB)	Cable Loss (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Amp.
Ch. 00											
4802.2110	Horn1	V	62.8	34.3	53.2	-20.0	8.1	32.0	54.0	22.0	4-8GHz
4802.2110	Horn1	H	61.4	34.1	53.2	-20.0	8.1	30.4	54.0	23.6	4-8GHz
7203.3170	Horn1	V	67.5	36.5	53.7	-20.0	11.3	41.6	54.0	12.4	4-8GHz
7203.3170	Horn1	H	63.9	36.5	53.7	-20.0	11.3	38.0	54.0	16.0	4-8GHz
Ch. 47											
4842.0250	Horn1	V	59.6	34.3	52.9	-20.0	8.5	29.5	54.0	24.5	4-8GHz
4842.0250	Horn1	H	60.4	34.2	52.9	-20.0	8.5	30.1	54.0	23.9	4-8GHz
7243.1310	Horn1	V	60.5	36.5	53.7	-20.0	11.2	34.6	54.0	19.4	4-8GHz
7243.1310	Horn1	H	60.6	36.5	53.7	-20.0	11.2	34.6	54.0	19.4	4-8GHz
Ch. 94											
4964.5000	Horn1	V	60.0	34.4	52.3	-20.0	9.5	31.5	54.0	22.5	4-8GHz
4964.5000	Horn1	H	60.0	34.2	52.3	-20.0	9.5	31.3	54.0	22.7	4-8GHz
7446.7500	Horn1	V	60.3	36.5	53.2	-20.0	11.1	34.8	54.0	19.2	4-8GHz
7446.7500	Horn1	H	60.6	36.5	53.2	-20.0	11.1	35.1	54.0	18.9	4-8GHz

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
Note 3: The EUT was searched up to 10 harmonics of the fundamental.

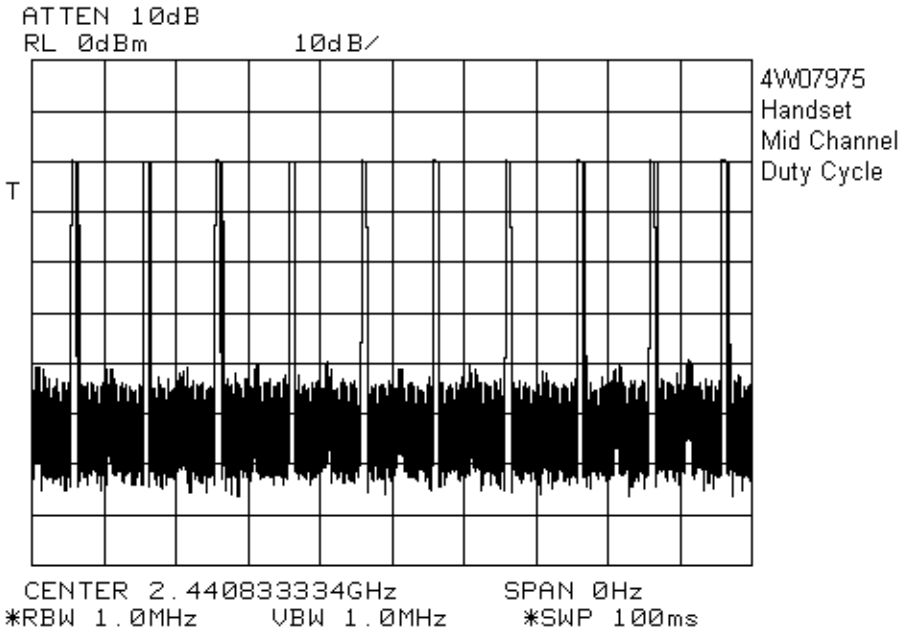
Notes: Measurement Receiver = H.P.8565E, RBW = 1MHz

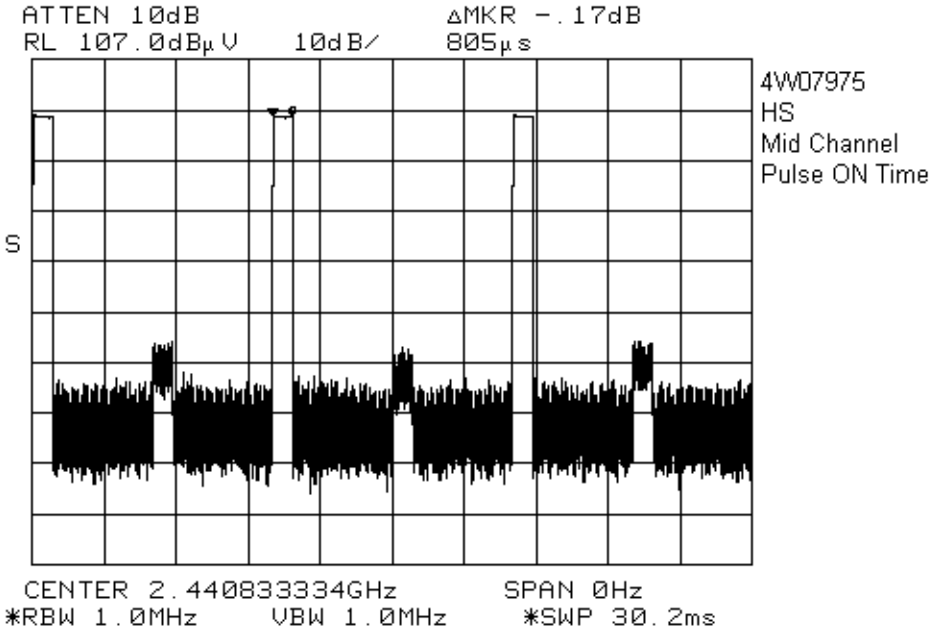
Duty Cycle Plots
Base station



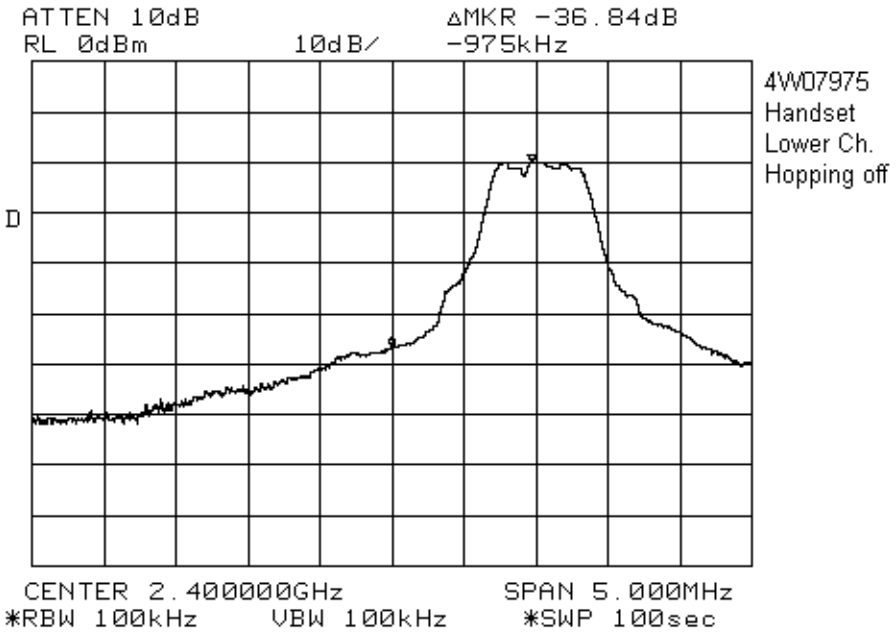


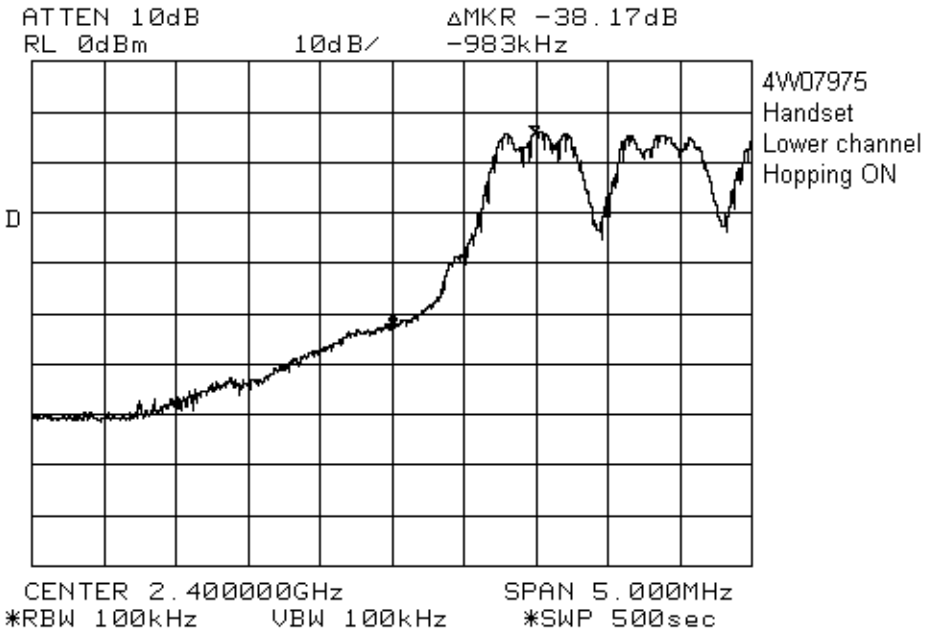
Handset

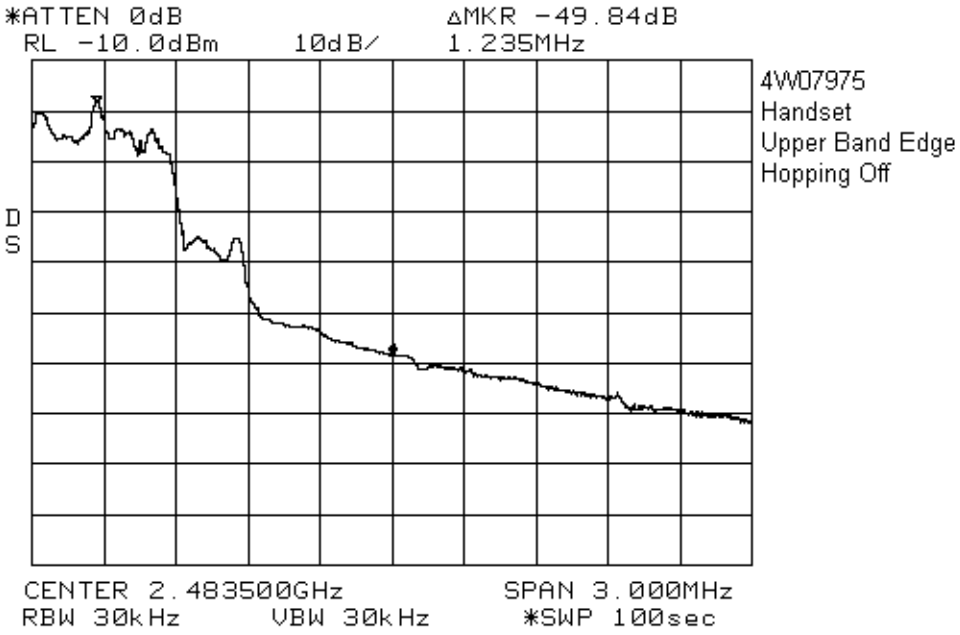

ATTEN 10dB
RL 0dBm
10dB/
4W07975
Handset
Mid Channel
Duty Cycle
T
CENTER 2.440833334GHz
SPAN 0Hz
*RBW 1.0MHz
VBW 1.0MHz
*SWP 100ms

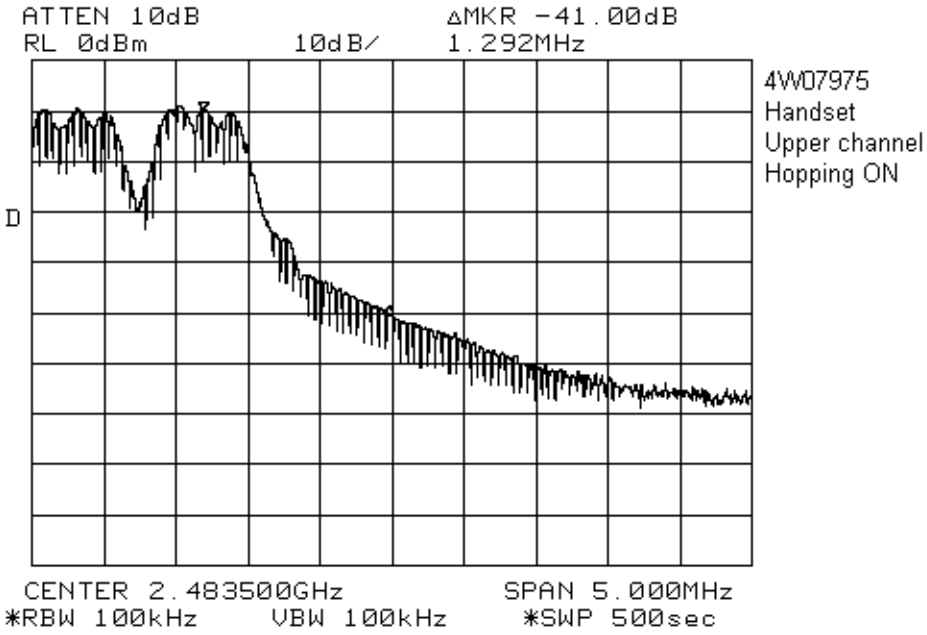

ATTEN 10dB
ΔMKR -.17dB
RL 107.0dBμV
10dB/
805μs
4W07975
HS
Mid Channel
Pulse ON Time
S
CENTER 2.440833334GHz
SPAN 0Hz
*RBW 1.0MHz
VBW 1.0MHz
*SWP 30.2ms

20dB Band Edge
Handset

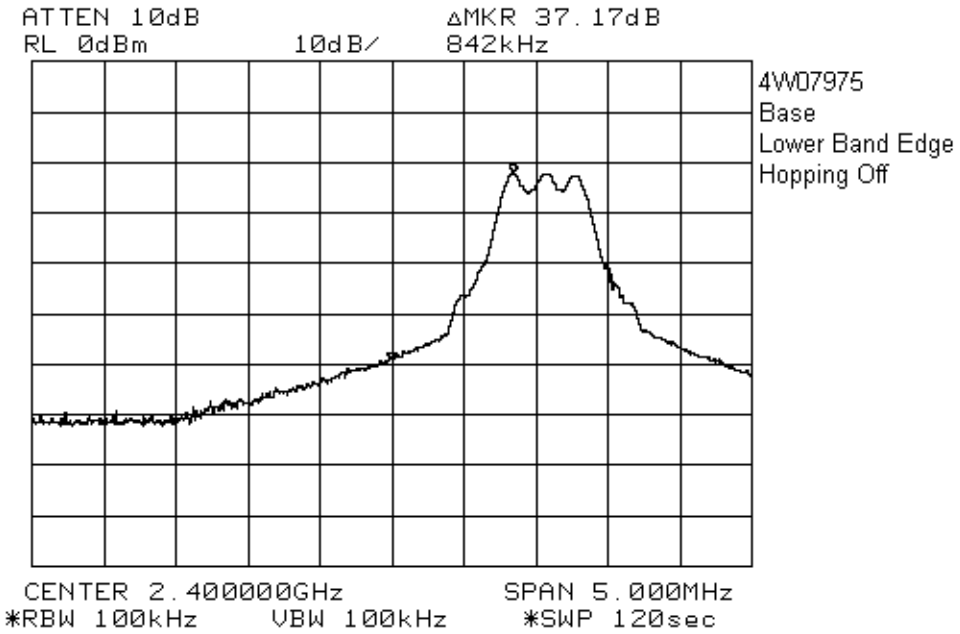


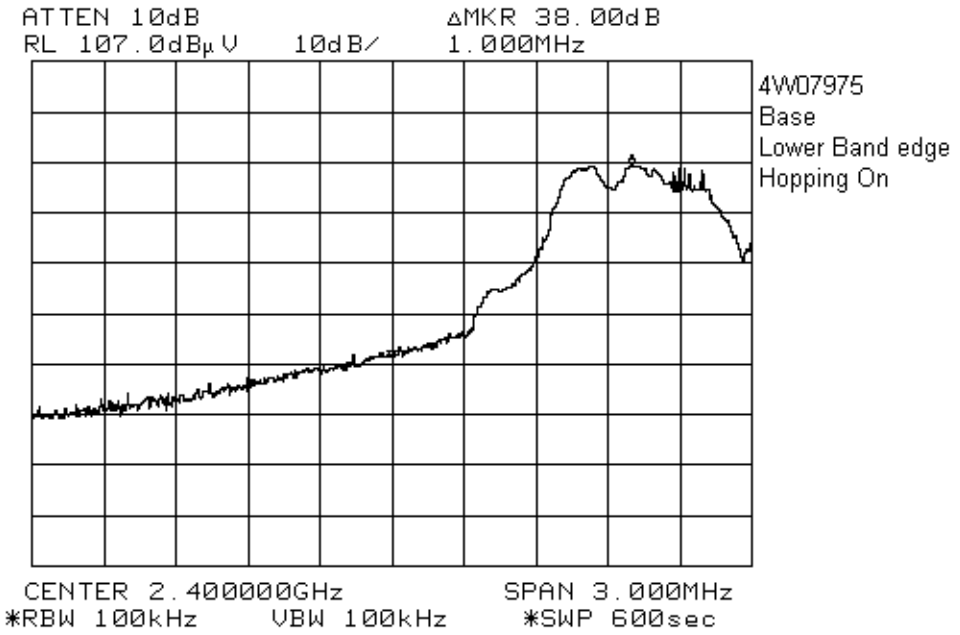


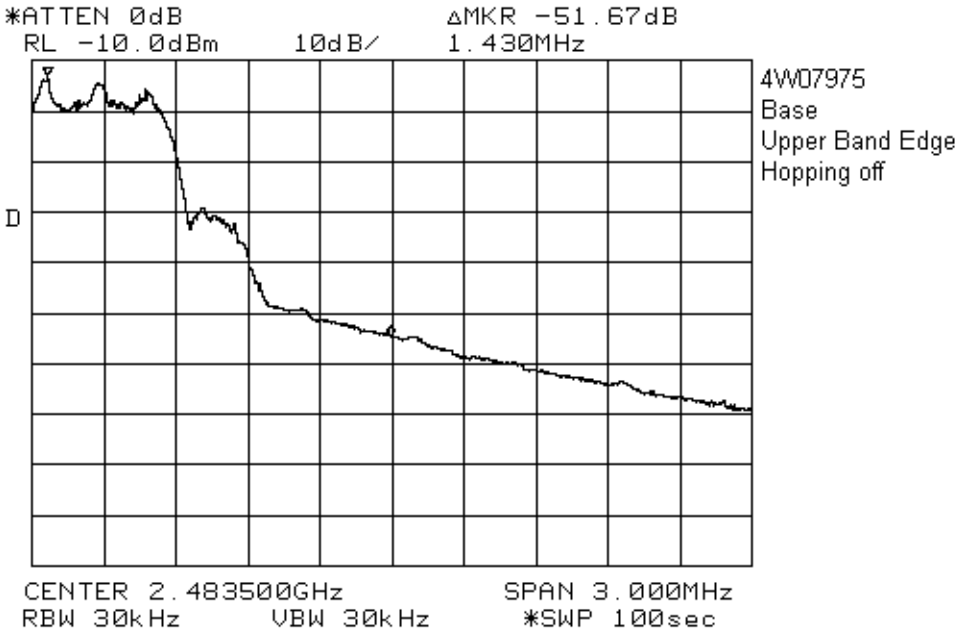

*ATTEN 0dB
ΔMKR -49.84dB
RL -10.0dBm
10dB/
1.235MHz
4W07975
Handset
Upper Band Edge
Hopping Off
D
S
CENTER 2.483500GHz
SPAN 3.000MHz
RBW 30kHz
VBW 30kHz
*SWP 100sec

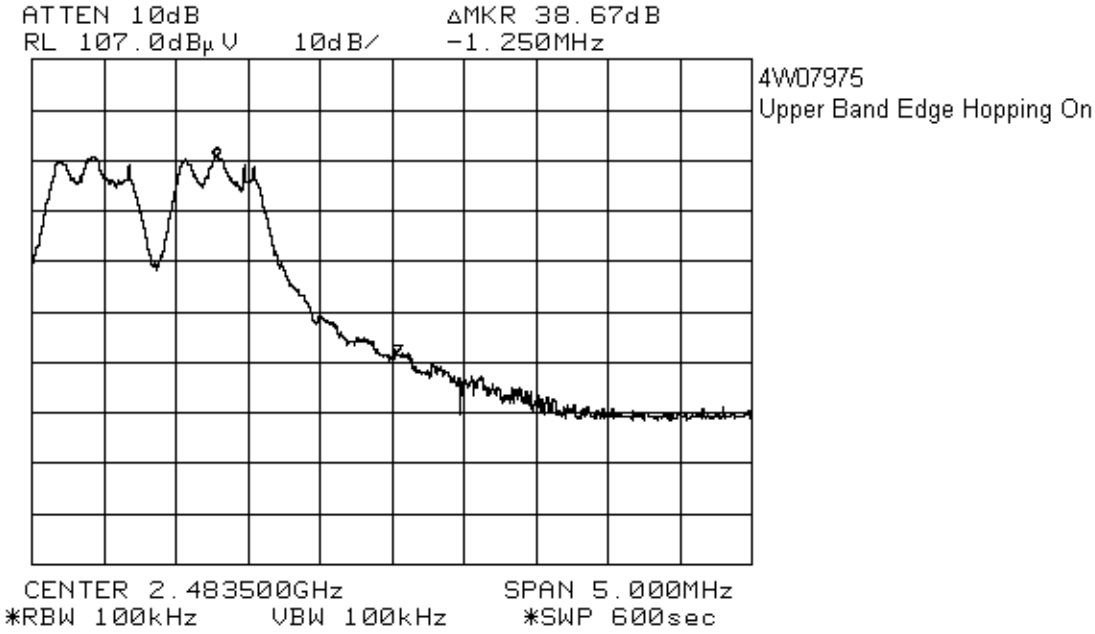

ATTEN 10dB
ΔMKR -41.00dB
RL 0dBm
10dB/
1.292MHz
4W07975
Handset
Upper channel
Hopping ON
D
CENTER 2.483500GHz
SPAN 5.000MHz
*RBW 100kHz
VBW 100kHz
*SWP 500sec

20 dB Band Edge
Base

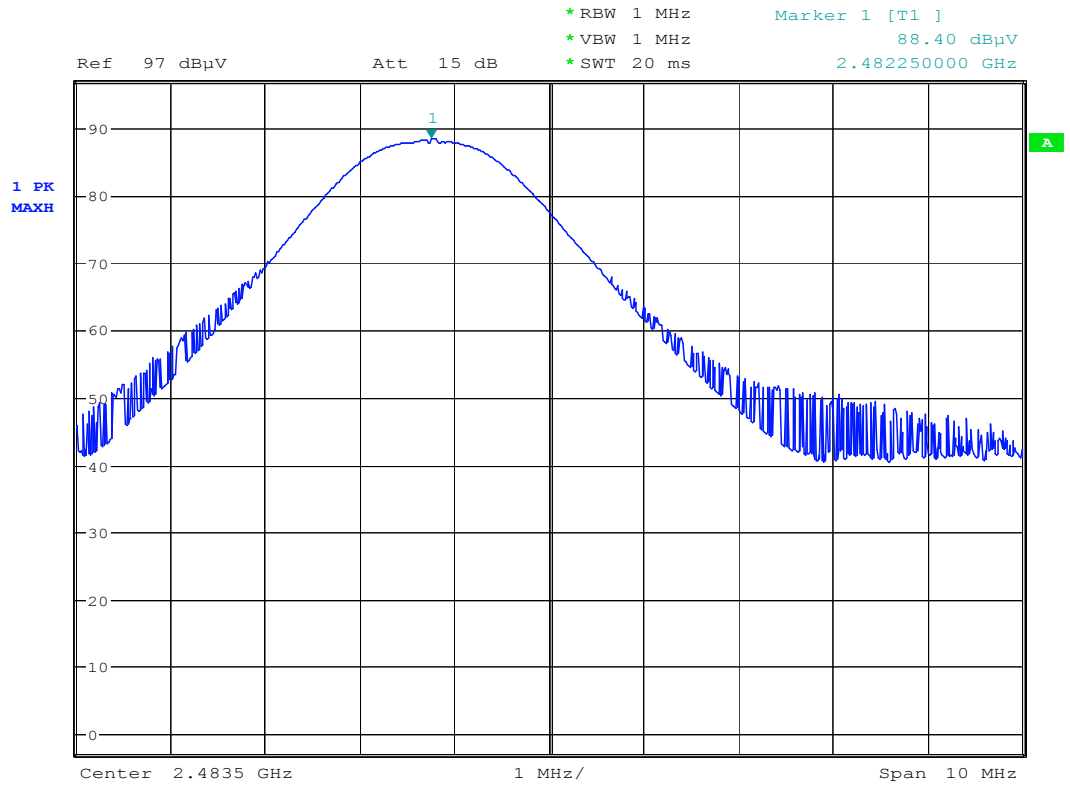





*ATTEN 0dB
ΔMKR -51.67dB
RL -10.0dBm
10dB/
1.430MHz
4W07975
Base
Upper Band Edge
Hopping off
D
CENTER 2.483500GHz
SPAN 3.000MHz
RBW 30kHz
VBW 30kHz
*SWP 100sec


ATTEN 10dB
ΔMKR 38.67dB
RL 107.0dBμV
10dB/
-1.250MHz
4W07975
Upper Band Edge Hopping On
CENTER 2.483500GHz
SPAN 5.000MHz
*RBW 100kHz
VBW 100kHz
*SWP 600sec

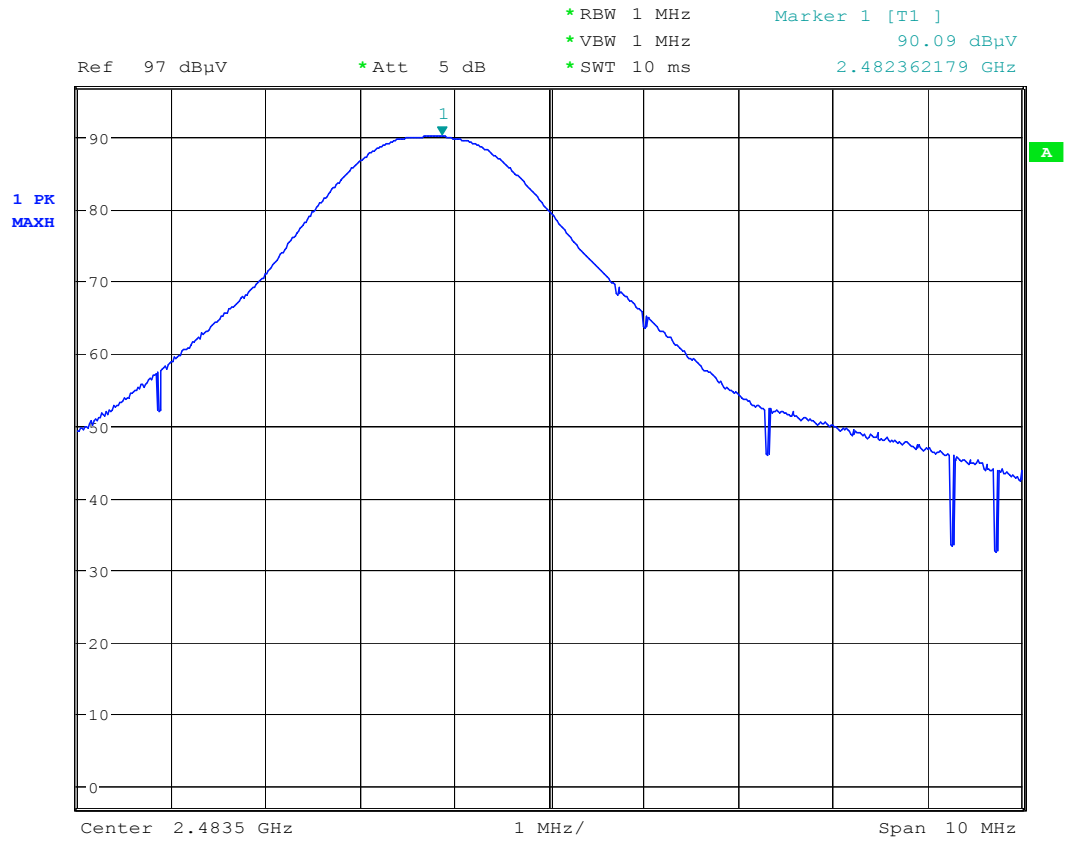
Band Edge (Restricted Band)
Marker Delta Method Calculation:
Handset



Date: 25.JUN.2004 00:44:50

Peak Level, Band Edge = 88.4 dBuV + 29.2dB + 5.9 = 123.5dBuV @ 3m.
Peak Band Edge Level (Marker Delta): = 123.5 dBuV/m – 49.84 = 73.66dBuV/m at 3 m.
Average = 73.66 dBuV/m -20 = 53.66 dBuV/m @ 3m.
Limit is 54 dBuV/m @ 3m.

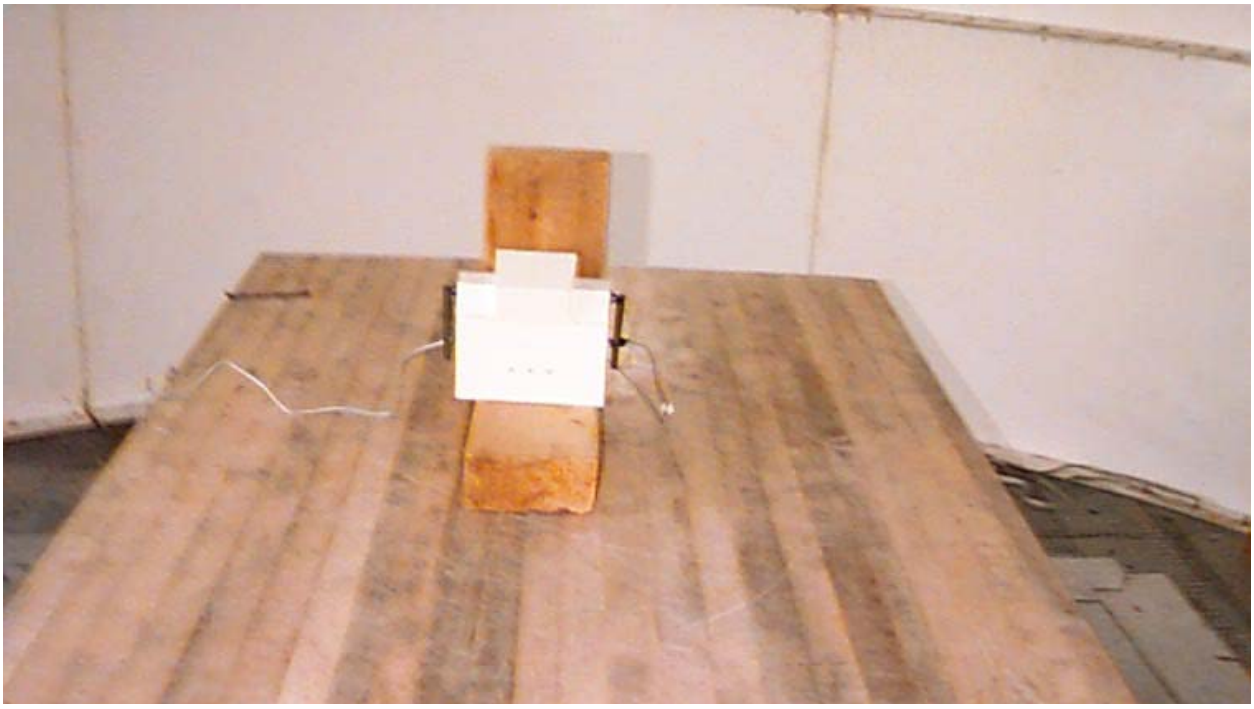
Base

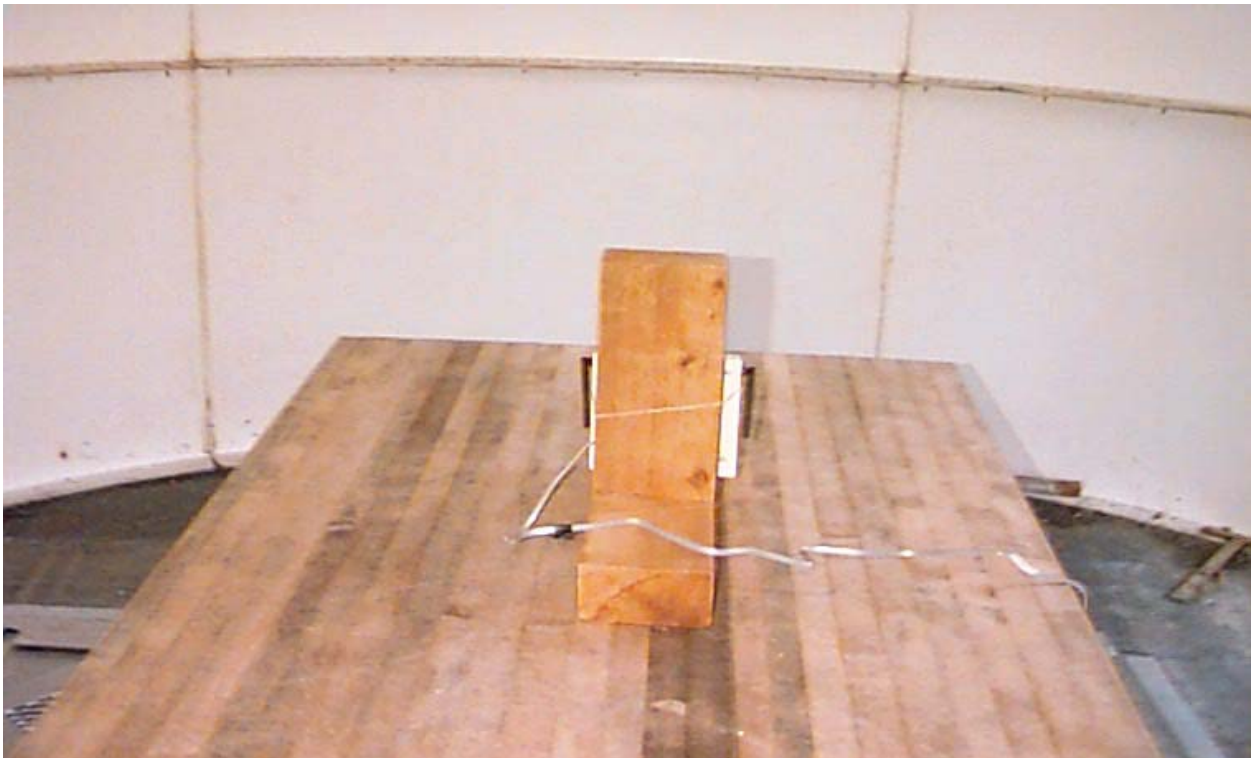


Date: 13.JUL.2004 02:44:35

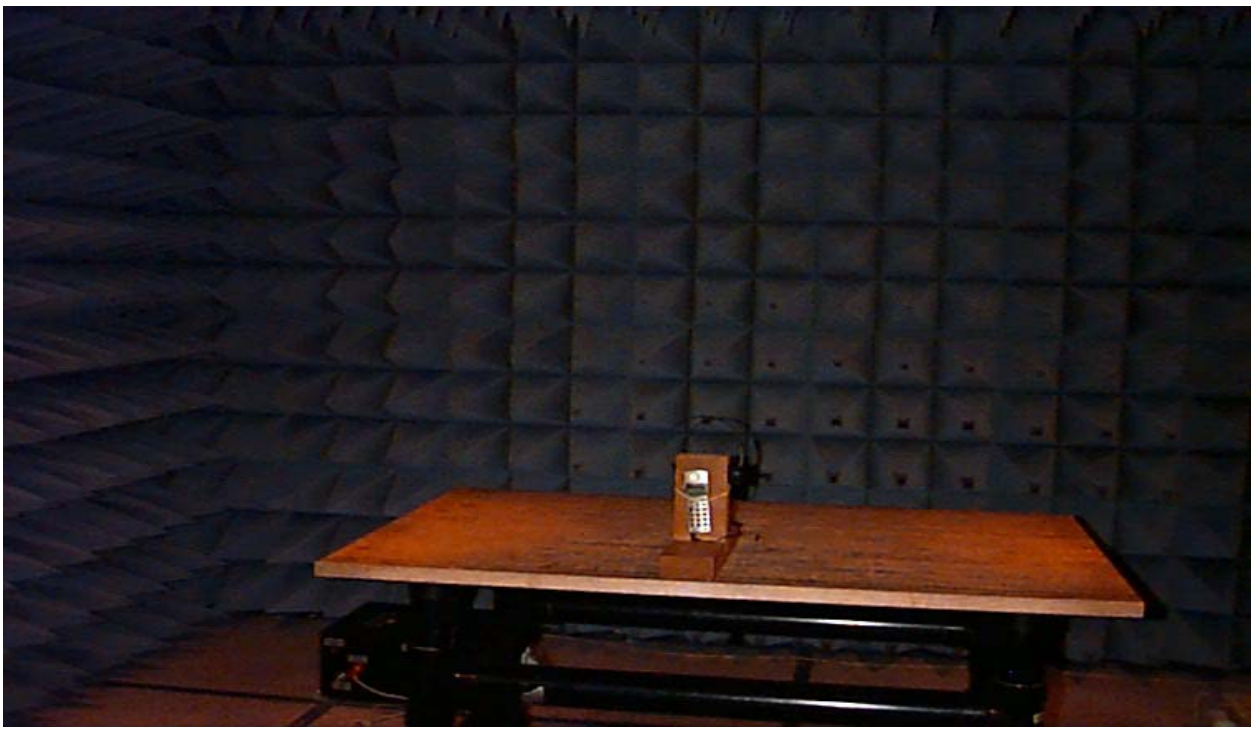
Peak Level, Band Edge = 90.1 dBuV + 29.2dB + 5.9 = 125.2dBuV @ 3m.
Peak Band Edge Level (Marker Delta): = 125.2 dBuV/m – 51.67 = 73.53dBuV/m at 3 m.
Average = 73.53 dBuV/m -20 = 53.53 dBuV/m @ 3m.

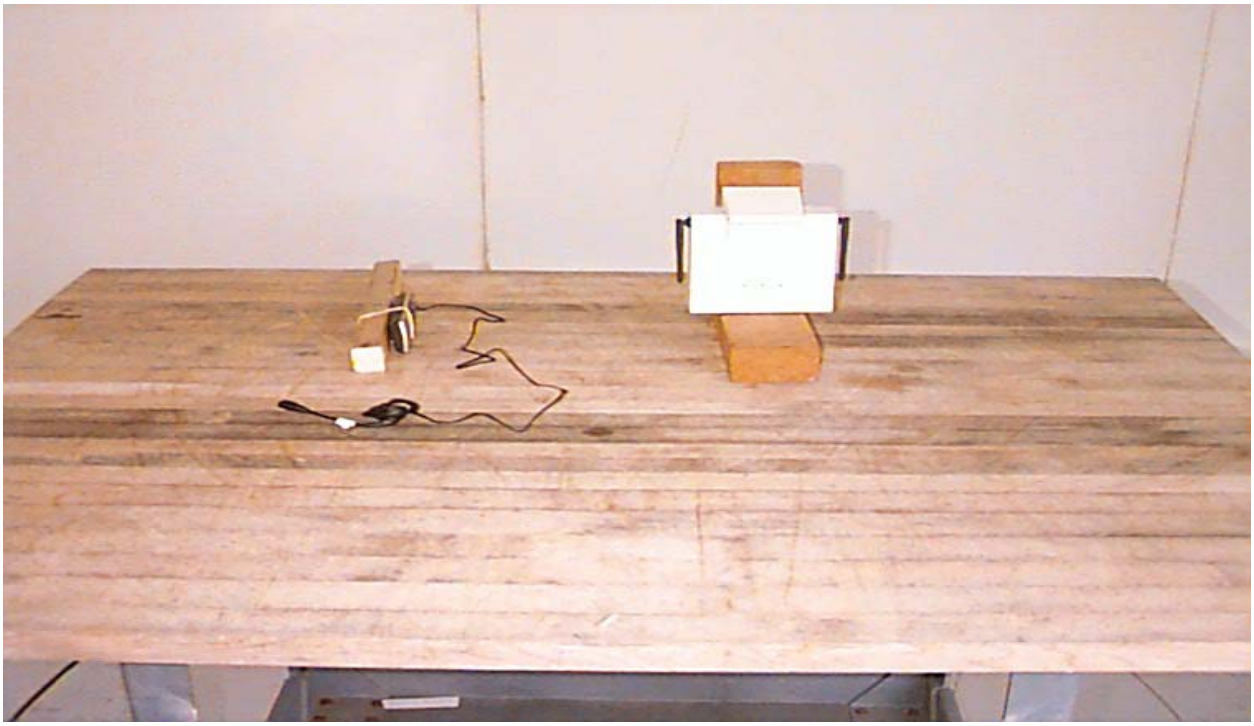
Set-up Photo:
Base





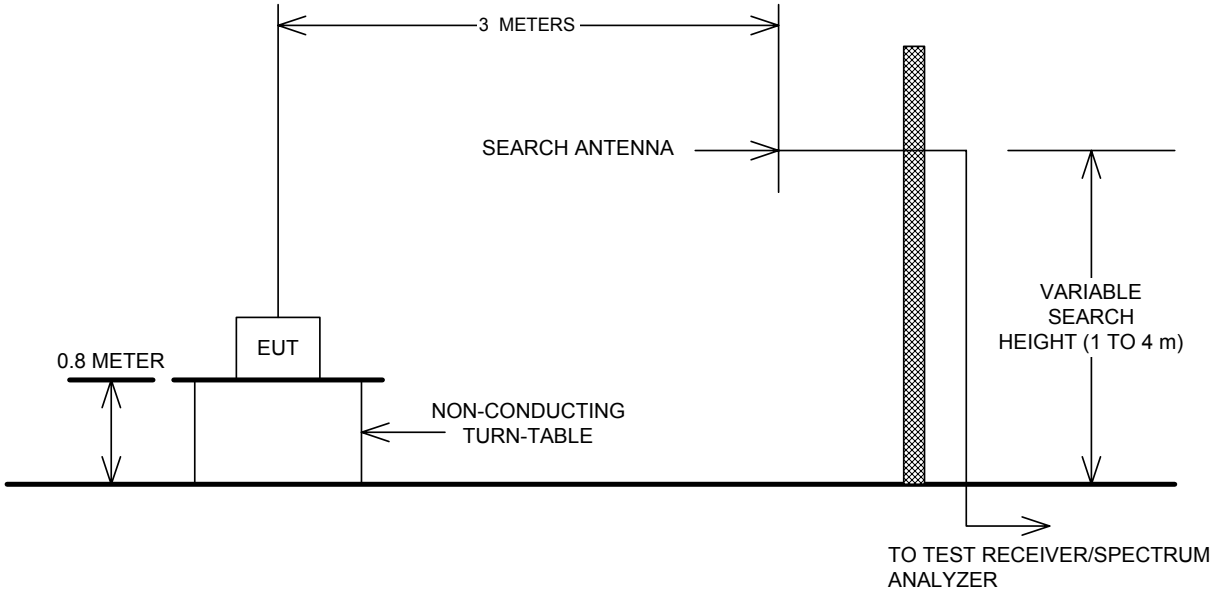
Handset



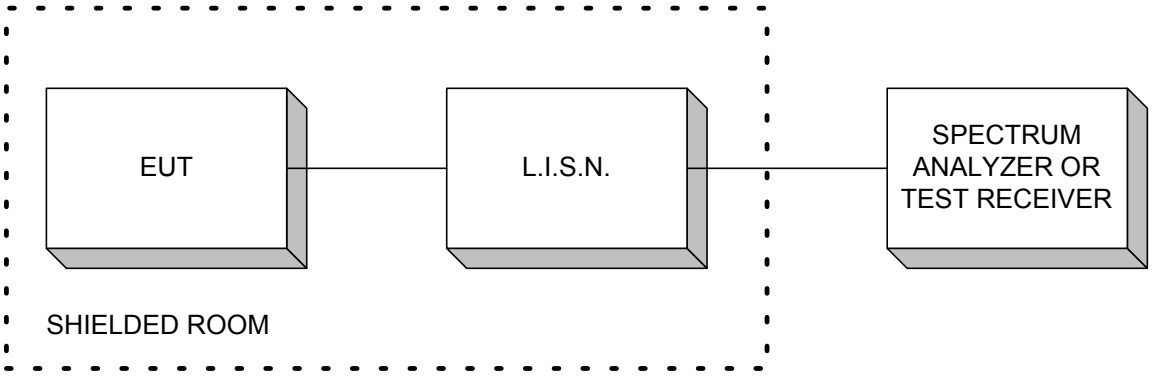


Section 10. Block Diagrams

Test Site For Radiated Emissions



Conducted Emissions



Section 11. Test Equipment List

Conducted Disturbance at Mains Test Equipment Used:

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
Extended	Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	May 26/04	May. 26/05
Extended	Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	May 26/04	May. 26/05
1 Year	Transient Limiter	Hewlett-Packard	1194 7A	FA000975	June. 16/03	June. 16/04

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

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	July. 24/03	July. 24/04
1 Year	Spectrum Analyzer	Hewlett-Packard	8565E	FA000981	May 31/04	May 31/05
1 Year	Biconical (1) Antenna	EMCO	3109	FA000805	Apr. 23/04	Apr. 23/05
1 Year	Horn Antenna #1	EMCO	3115	FA000649	Dec. 18/03	Dec. 18/04
1 Year	Log Periodic Antenna #1	EMCO	LPA-25	FA000477	Sept. 2/03	Sept. 2/04
1 Year	1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	June. 18/04	June. 18/05
1 Year	2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	June. 18/04	June. 18/05
1 Year	4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	June. 18/04	June. 18/05
1 Year	18-40 GHz Horn Antenna #5	ETS	3116	FA001847	Jan. 19/04	Jan. 19/05
1 Year	Horn Antenna #2	EMCO	3115	FA000825	Dec. 10/03	Dec. 10/04
COU	8.2 – 12 GHz Passband Filter	Dorado	WA-90-S	----------	COU	COU
COU	12 – 18 GHz Passband Filter	Dorado	62-SMA	----------	COU	COU
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

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