Type Acceptance Test Report

Broad Band PCS Transceiver

FCC ID: DNY0A5DATA1900

FCC Rule Part: 24E

ACS Report Number: 03-0096-24TA

Manufacturer: EMS Wireless
Model: DataNex (AC and DC Variants)

Test Begin Date: May 14, 2003
Test End Date: May 16, 2003

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This report contains 23 pages

Table of Contents

Additional Exhibits Included In Filing

Occupied Bandwidth Plots
Antenna Conducted Spurious Plots
External Photographs
Product Labeling
Schematics
Manual
System Block Diagram
Bandedge Plots
Internal Photographs
Test Setup Photographs
RF Exposure – MPE Calculations
Parts List
Theory of Operation

1.0 GENERAL

1.1 Introduction
The purpose of this report is to demonstrate compliance with the relevant portions of Parts 2, 15 and 24 of the FCC's Code of Federal Regulations.

1.2 Product Description
The EUT, DataNex, is an FCC Part 24 broadband data transceiver operating in the range of 1850 - 1970 MHz. The EUT is offered in both AC and DC versions.

Detailed photographs of the EUT are included separately with this filing.

1.2.1 Intended Use

The DataNex carriers can reduce site operating costs by eliminating the recurring T1 lease expenses, decrease site downtime attributed to T1 line outages, and speed deployment of networks without waiting for a T1 to be installed. DataNex provides greater control of wireless infrastructure by replacing traditional wireline T1s to carry backhaul traffic while using standard panel antennas to transmit the signal. Now carriers can use their existing spectrum more efficiently while ensuring the integrity and reliability of the datalink.

1.2.2 Technical Specifications

Table 1.2.2-1: General Specifications

DataNex – Specifications

Frequency:	1850 to 1960 MHz, fully synthesized
Tx-Rx Spacing:	80 MHz
Step Size:	25 kHz
Data Rates:	64 – 2048 kbps in 64 kbps step size, 2xE1/T1, 4xE1/T1
Interface:	V.35, RS-422, V.11 (selectable), G.703, E1, T1
Spectral Efficiency:	Up to 5 bps/Hz
Network Mgmt:	On & off line. Full routing and configuration control. SNMP, TCP/IP optional
Diagnostics:	Local and remote loopback, status, and control. Monitoring of BER, RSL, Alarms, Status, and Historical information
Temperature Range:	Full performance: -30 to +60°C
Power Source:	+/-24/48 VDC or 110/220 VAC or 12 VDC. 80 Watts consumption
Unfaded BER:	1 x 10-12
Error Correction:	Reed-Solomon, T=8
Standard Compliance:	FCC/UL (Pending)

DataNex – Options

Overhead Channels:	Up to 4 overhead voice, async or sync channels (any combination)
Command Lines:	4 Channels. Programmable momentary, momentary pulse or latching. Relay 50V -2A
Status Channels:	4 Channels. User programmable N.O./N.C., momentary or latching, alarm indication. TTL-compatible input standard
Telemetry Channels:	4 Channels. Resolution: 8 bits
Orderwire:	2W/4W Tel/Line level. Selective calling

2.0 LOCATION OF TEST FACILTY

All testing was performed by qualified ACS personnel located at the following address:

ACS, Inc.
5015 B.U. Bowman Drive
Buford, GA 30518

2.1 DESCRIPTION OF TEST FACILITY

Both the Open Area Test Site(OATS) and Conducted Emissions site have been fully described, submitted to, and accepted by the FCC, Industry Canada and the Japanese Voluntary Control Council for Interference by information technology equipment.

The following certification numbers have been issued in recognition of these accreditations and certifications:

FCC Registration Number: 89450
Industry Canada Lab Code: IC 4175
VCCI Member Number: 1831

- VCCI OATS Registration Number R-1526
- VCCI Conducted Emissions Site Registration Number: C-1608

2.1.1 Open Area Test Site

The open area test site consists of a 40’ x 66’ concrete pad covered with a perforated electro-plated galvanized sheet metal. The perforations in the sheet metal are 1/8” holes that are staggered every 3/16”. The individual sheets are placed to overlap each other by 1/4” and are riveted together to provide a continuous seam. Rivets are spaced every 3” in a 3 x 20 meter perimeter around the antenna mast and EUT area. Rivets in the remaining area are spaced as necessary to properly secure the ground plane and maintain the electrical continuity.

The entire ground plane extends 12’ beyond the turntable edge and 16’ beyond the antenna mast when set to a 10 meter measurement distance. The ground plane is grounded via 4 - 8’ copper ground rods, each installed at a corner of the ground plane and bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is an all aluminum 10’ flush mounted table installed in an all aluminum frame. The table is remotely operated from inside the control room located 40’ from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Adjacent to the turntable is a 7’ x 7’ square and 4’ deep concrete pit used for support equipment if necessary. The pit is equipped with 5 - 4” PVC chases from the pit to the control room that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit. The pit is covered with 2 sheets of 1/4" diamond style re-enforced steel sheets. The sheets are painted to match the perforated steel ground plane, however the underside edges have been masked off to maintain the electrical continuity of the ground plane. All reflecting objects are located outside of the ellipse defined in ANSI C63.4.

A diagram of the Open Area Test Site is shown in Figure 2.1.1-1 below:

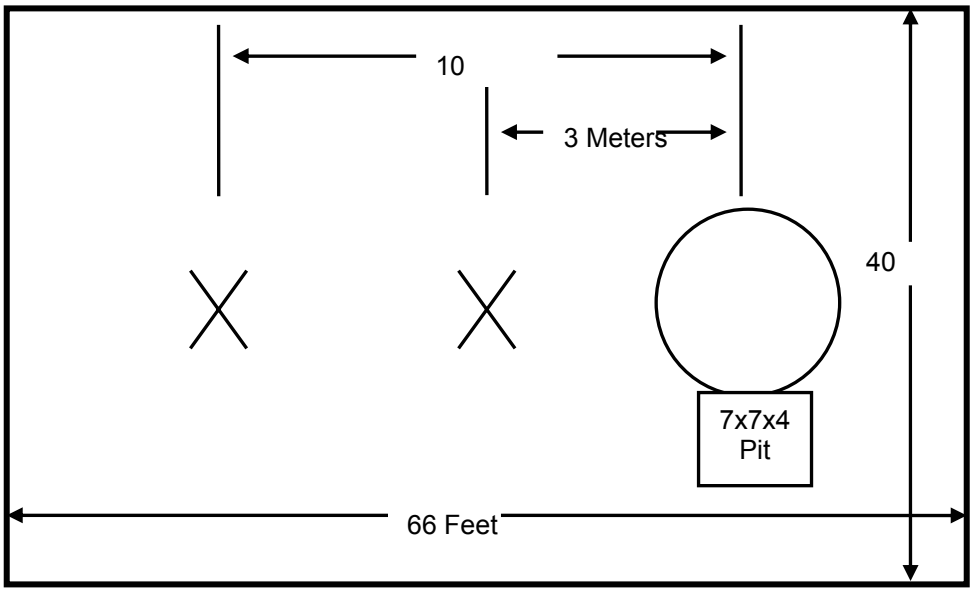


Figure 2.1.1-1: Open Area Test Site

2.1.2 Conducted Emissions Test Site Description
The AC mains conducted EMI site is a shielded room with the following dimensions:

- Height: 3.0 Meters
- Width: 3.6 Meters
- Length: 4.9 Meters

The room is manufactured by Rayproof Corporation and installed by Panashield, Inc. Earth ground is provided to the room via an 8' copper ground rod. Each panel of the room is connected electrically at intervals of 4".

Power to the room is filtered to prevent ambient noise from coupling to the EUT and measurement equipment. Filters are models 1B42-60P manufactured by Rayproof Corporation.

The room is of sufficient size to test table top and floor standing equipment in accordance with section 6.1.4 of ANSI C63.4.

A diagram of the room is shown below in figure 2.1.2-1:

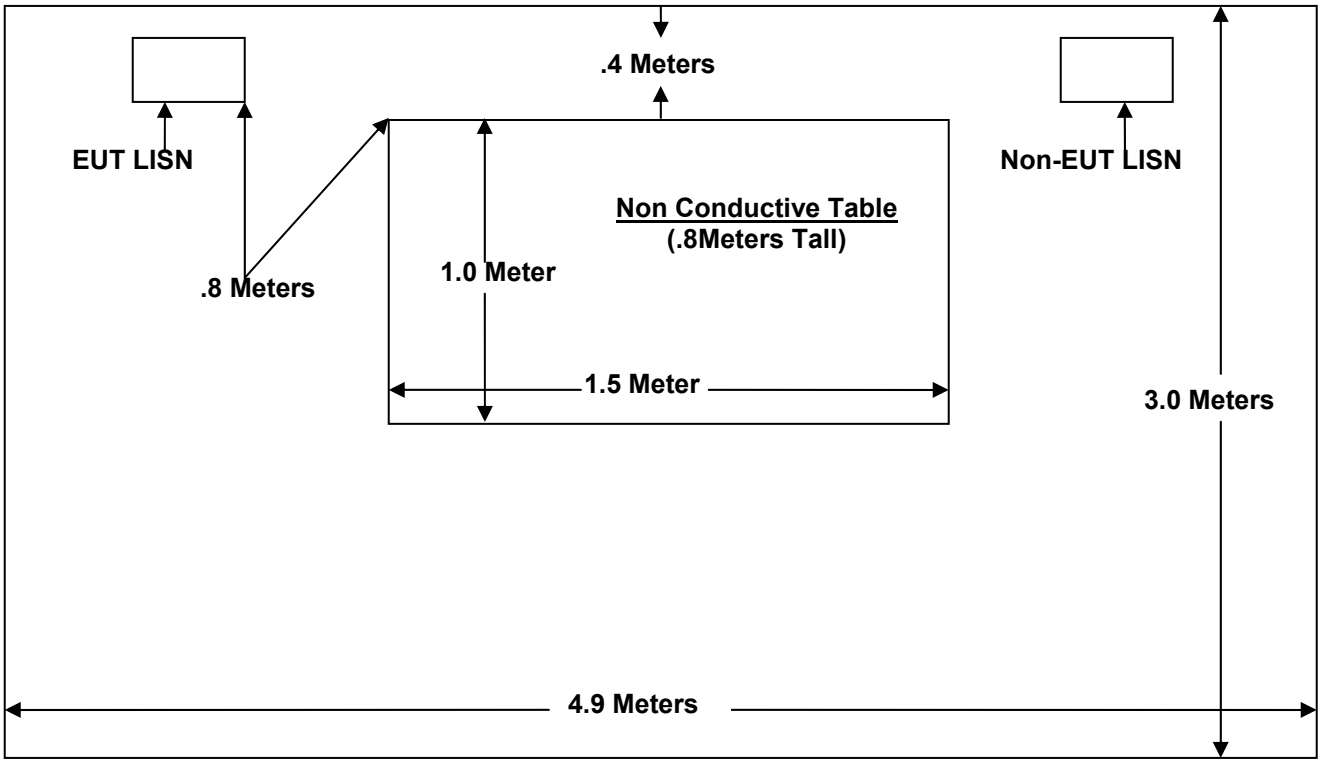


Figure 2.1.2-1: AC Mains Conducted EMI Site

3.0 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.4-1992: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9KHz to 40GHz
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures (October 2002)
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators (October 2002)
- US Code of Federal Regulations (CFR): Title 47, Part 24 Subpart E: Broadband PCS (October 2002)
- FCC OET Bulletin 65 Appendix C - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
- ANSI/TIA/EIA – 603 – A – 2001: Land Mobile or PM Communications Equipment and Performance Standards (August 15, 2001)

4.0 LIST OF TEST EQUIPMENT

All test equipment used for regulatory testing is calibrated yearly or according to manufacturer's specifications.

Table 4.0-1: Test Equipment

Equipment Calibration Information					
ACS #	**Mfg.**	**Eq. type**	**Model**	**S/N**	**Cal. Due**
2	Rohde & Schwarz	Spectrum Analyzer	ESMI	839587/003	12/23/03
1	Rohde & Schwarz	Display Unit	ESDI	839379/011	12/26/03
26	Chase	Bi-Log Antenna	CBL6111	1044	8/26/03
25	Chase	Bi-Log Antenna	CBL6111	1043	9/19/03
71	Chase	LISN	ALN2070A	1028	8/23/03
152	EMCO	LISN	3825/2	9111-1905	12/11/03
153	EMCO	LISN	3825/2	9411-2268	12/11/03
30	Spectrum Technologies	Horn Antenna	DRH-0118	970102	9/17/03
16	ACS	Cable	RG8	16	9/17/03
23	ACS	Cable	RG8	23	1/3/04
24	ACS	Cable	Heliax	24	04/07/04
5	ACS	Cable	LL-335	None	8/20/04
6	ACS	Cable	LL-335	None	8/6/04
22	Agilent	Pre-Amplifier	8449B	3008A0052 6	9/21/03
73	Agilent	Pre-Amplifier	8447D	272A05624	04/15/04
30	Spectrum Technologies	Horn Antenna	DRH-0118	970102	9/17/03
105	Microwave Circuits	High Pass Filter	H1G810G1	2123-01 DC0225	6/17/04

5.0 SYSTEM BLOCK DIAGRAM

Table 5.0: System Block Diagram

Diagram Number	Manufacturer	Equipment Type	Model Number	Serial Number	FCC ID
1	EMS Wireless	Broadband PCS Transceiver (EUT)	DataNex	None	
2	Sorenson	DC Power Supply	DCR-33B	S/N: 841	None

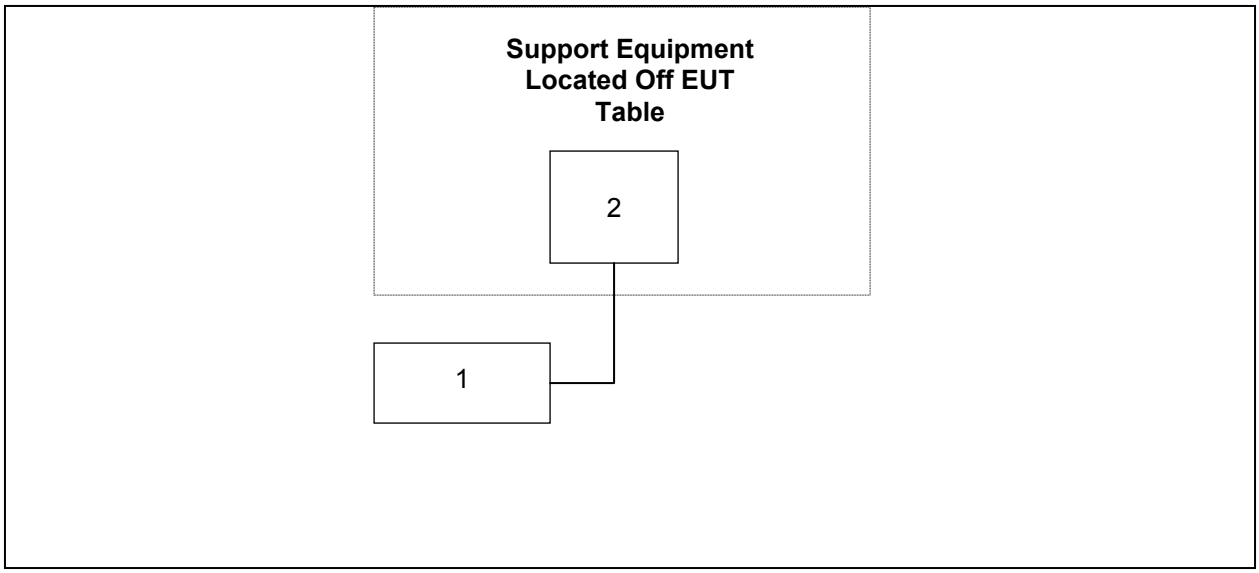


Figure 5.0-1: EUT Test Setup

6.0 SUMMARY OF TESTS

6.1 Power Line Conducted Emissions - FCC Section 15.207

6.1.1 Test Methodology

ANSI C63.4 sections 6 and 7 were the guiding documents for this evaluation. Conducted emissions were performed from 150kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9kHz and the video bandwidth set to 30kHz.

6.1.2 Test Results

Only the AC variant was evaluated to the conducted emissions requirements. Test results are shown in tables 6.1.2-1 through 6.1.2-4 and Figures 6.1.2-1 and 6.1.2-2.

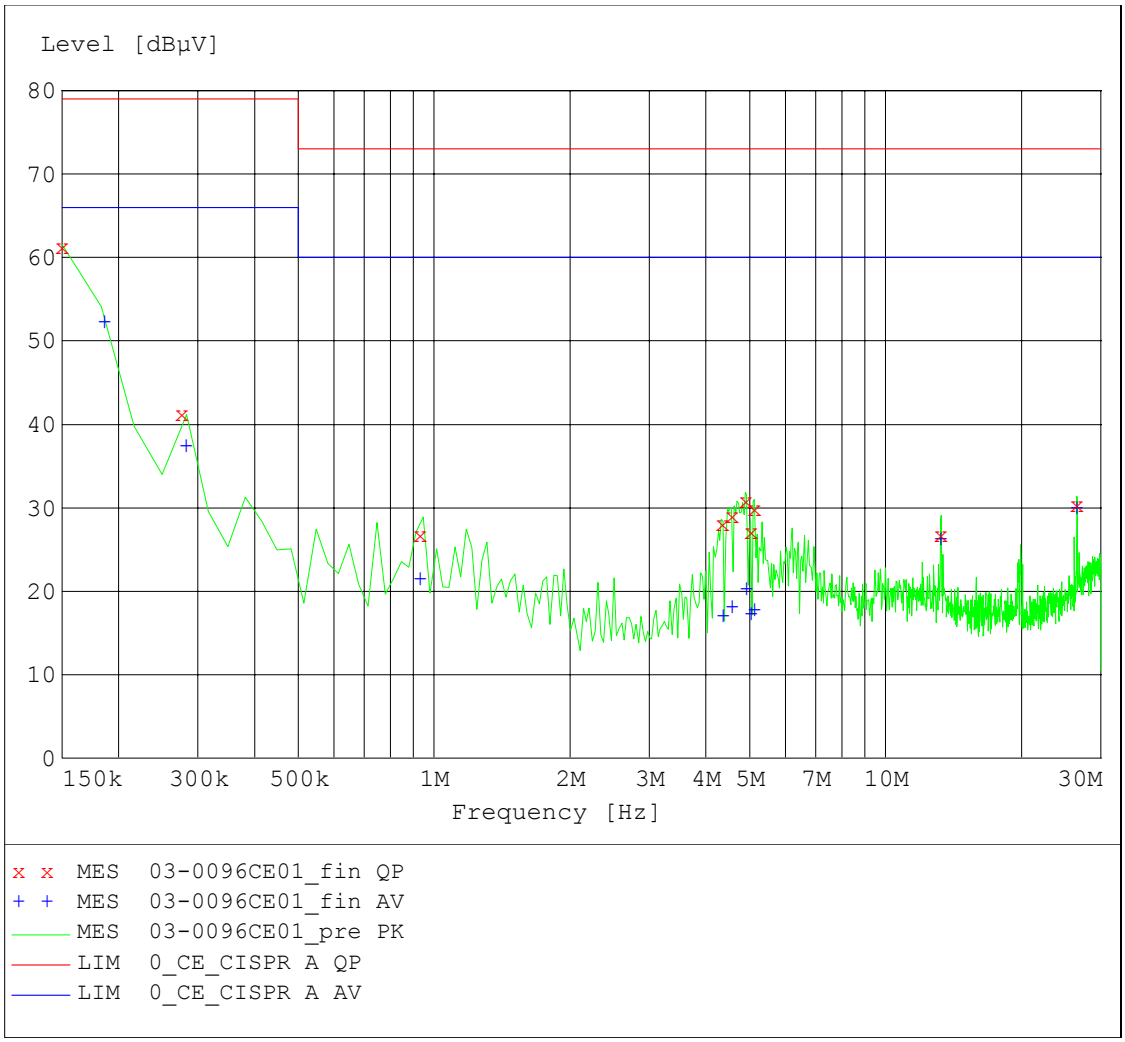


Figure 6.1.2-1: Conducted Emissions Graph – Line 1

Table 6.1.2-1: Conducted Emissions Line 1 Quasi-Peak

Frequency (MHz)	Level (dBµV)	Transducer (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.15	61.3	9.7	79	17.6	L1	GND
0.276	41.4	9.7	79	37.5	L1	GND
0.93	26.8	9.7	73	46.2	L1	GND
4.35	28.1	9.7	73	44.8	L1	GND
4.572	29.1	9.8	73	43.8	L1	GND
4.908	30.9	9.7	73	42	L1	GND
5.04	27.2	9.7	73	45.7	L1	GND
5.124	30	9.7	73	42.9	L1	GND
13.266	26.8	10.1	73	46.1	L1	GND
26.538	30.4	10.6	73	42.5	L1	GND

Table 6.1.2-2: Conducted Emissions Line 1 Average

Frequency (MHz)	Level (dBµV)	Transducer (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.186	52.4	9.7	66	13.5	L1	GND
0.282	37.5	9.7	66	28.4	L1	GND
0.93	21.6	9.7	60	38.3	L1	GND
4.362	17.1	9.7	60	42.8	L1	GND
4.566	18.2	9.8	60	41.7	L1	GND
4.914	20.4	9.7	60	39.5	L1	GND
5.04	17.3	9.7	60	42.6	L1	GND
5.118	17.8	9.7	60	42.1	L1	GND
13.266	26.3	10.1	60	33.6	L1	GND
26.538	30.1	10.6	60	29.8	L1	GND

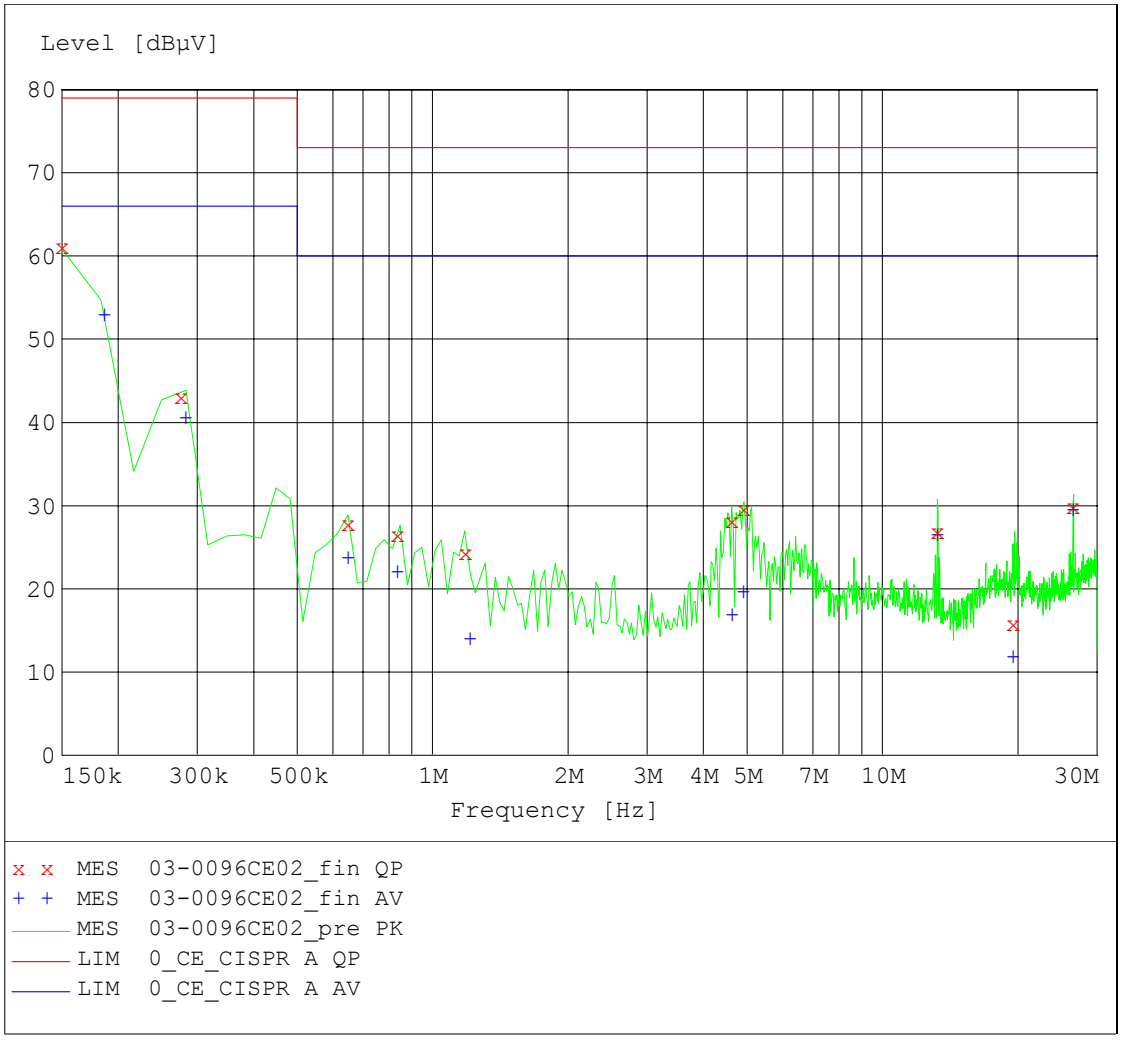


Figure 6.1.2-2: Conducted Emissions Graph – Line 2

Table 6.1.2-3: Conducted Emissions Neutral Quasi-Peak

Frequency (MHz)	Level (dBµV)	Transducer (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.15	61.2	9.7	79	17.7	N	GND
0.276	43.1	9.7	79	35.8	N	GND
0.648	27.8	9.7	73	45.1	N	GND
0.834	26.5	9.7	73	46.4	N	GND
1.182	24.4	9.7	73	48.5	N	GND
4.626	28.2	9.8	73	44.7	N	GND
4.92	29.7	9.7	73	43.2	N	GND
13.266	26.9	10.1	73	46	N	GND
19.494	15.8	10.2	73	57.1	N	GND
26.538	30	10.6	73	42.9	N	GND

Table 6.1.2-4: Conducted Emissions Neutral Average

Frequency (MHz)	Level (dBµV)	Transducer (dB)	Limit (dBµV)	Margin (dB)	Line	PE
0.186	53	9.7	66	12.9	N	GND
0.282	40.6	9.7	66	25.3	N	GND
0.648	23.8	9.7	60	36.1	N	GND
0.834	22.1	9.7	60	37.8	N	GND
1.212	14.1	9.7	60	45.8	N	GND
4.638	16.9	9.8	60	43	N	GND
4.908	19.7	9.7	60	40.2	N	GND
13.266	26.5	10.1	60	33.4	N	GND
19.506	11.9	10.2	60	48	N	GND
26.538	29.6	10.6	60	30.3	N	GND

6.2 Radiated Emissions - FCC Section 15.109(Unintentional Radiation)

6.2.1 Test Methodology

ANSI C63.4 Sections 6 and 8 were the guiding documents for this evaluation. Radiated emissions tests were performed over the frequency range of 30MHz to 1000. Measurements of the radiated field strength were made at a distance of 3m from the boundary of the equipment under test (EUT) and the receiving antenna. The antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. Radiated measurements were made with the Spectrum Analyzer's resolution bandwidth set to 120KHz for measurements above 30MHz.

Pre-scans were performed on both the AC and DC versions. It was determined that the AC version exhibited the worst case emissions, therefore the final scan was performed on that configuration.

6.2.2 Test Results

Results of the test are given in Table 6.2.2-1 below:

Table 6.2.2-1: Radiated Emissions Tabulated Data (Unintentional Radiators)

Frequency (MHz)	Uncorrected Reading (dBµV)	Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Position (°)	Total Correction Factor (dB)	Corrected Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Results
33.12	9.61	V	150	11	17.82	27.43	39	11.6	Pass
72.9	26.75	H	400	360	7.59	34.34	39	4.7	Pass
86.24	28.15	H	400	190	9.25	37.40	39	1.6	Pass
112.8	24.61	H	400	185	12.14	36.75	43.5	6.8	Pass
119.36	22.48	H	400	128	12.66	35.14	43.5	8.4	Pass
126	24.35	H	400	150	12.90	37.25	43.5	6.3	Pass
132.64	19.12	H	400	215	12.90	32.02	43.5	11.5	Pass
152.56	16.72	H	400	219	12.30	29.02	43.5	14.5	Pass
165.84	23.19	H	400	184	11.87	35.06	43.5	8.4	Pass

6.3 Frequencies - FCC Section 24.229

The EUT utilizes the following frequency blocks:

- Block A: 1850–1865 MHz paired with 1930–1945 MHz
- Block B: 1870–1885 MHz paired with 1950–1965 MHz
- Block C: 1895–1910 MHz paired with 1975–1990 MHz
- Block D: 1865–1870 MHz paired with 1945–1950 MHz
- Block E: 1885–1890 MHz paired with 1965–1970 MHz
- Block F: 1890–1895 MHz paired with 1970–1975 MHz.

6.4 Occupied Bandwidth - FCC Section 2.1049

6.4.1 Test Methodology

TIA/EIA-603-A, section 2.2.1 was the guiding document for this evaluation. The EUT was caused to generate a modulated carrier on low, mid and high channels. The occupied bandwidth was measured using a resolution bandwidth of 30kHz.

The measurement setup is as shown below in figure 6.4.1-1.

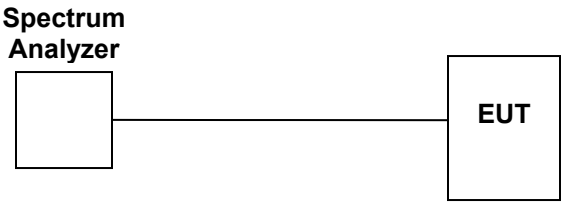


Figure 6.4.1-1: Occupied Bandwidth Test Setup

6.4.2 Test Results

The results are shown in table 6.4.2-1 and figures 6.4.2-1 through 6.4.2-6

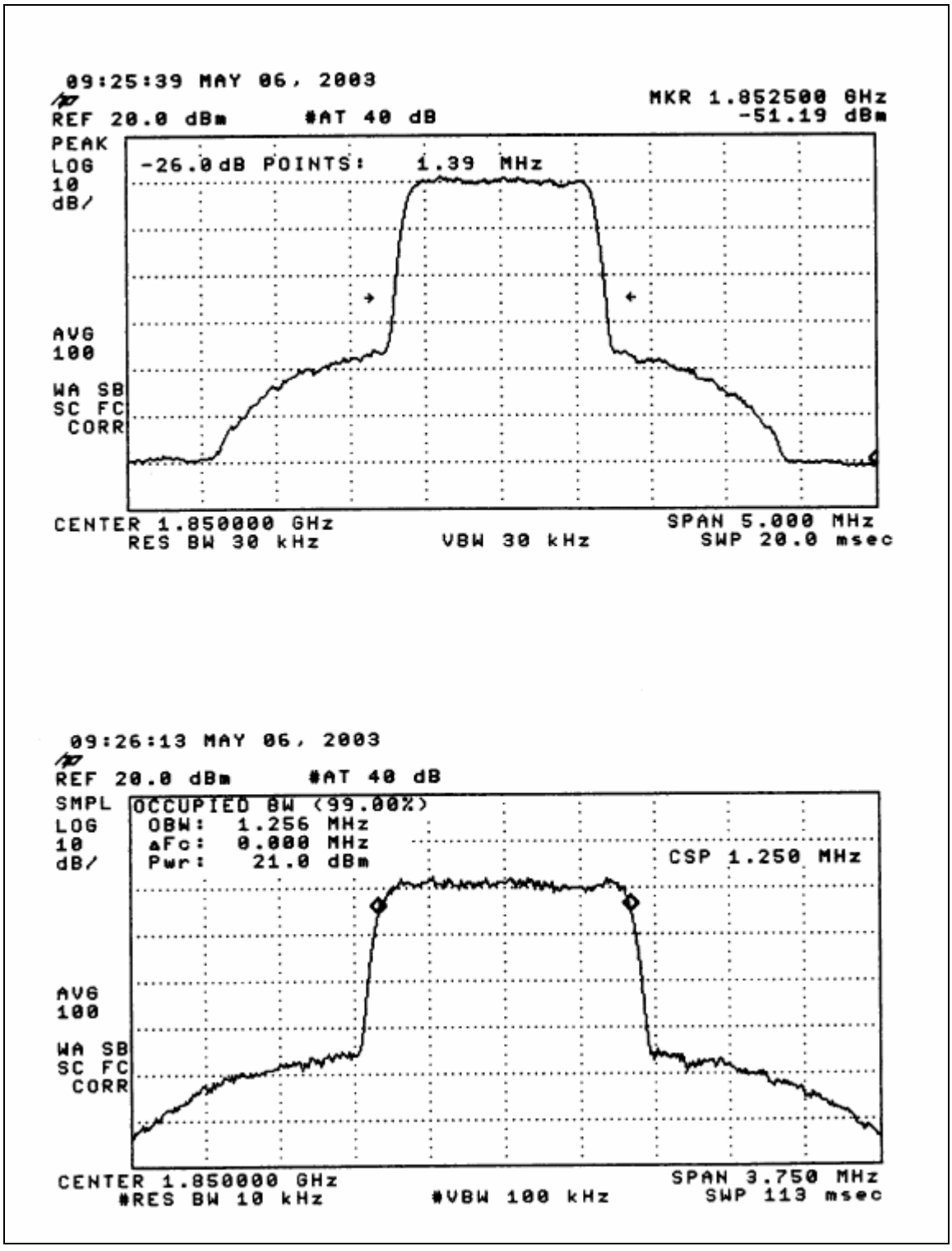


Figure 6.4.2-1: Occupied Bandwidth Plot – Uplink (Low Channel)

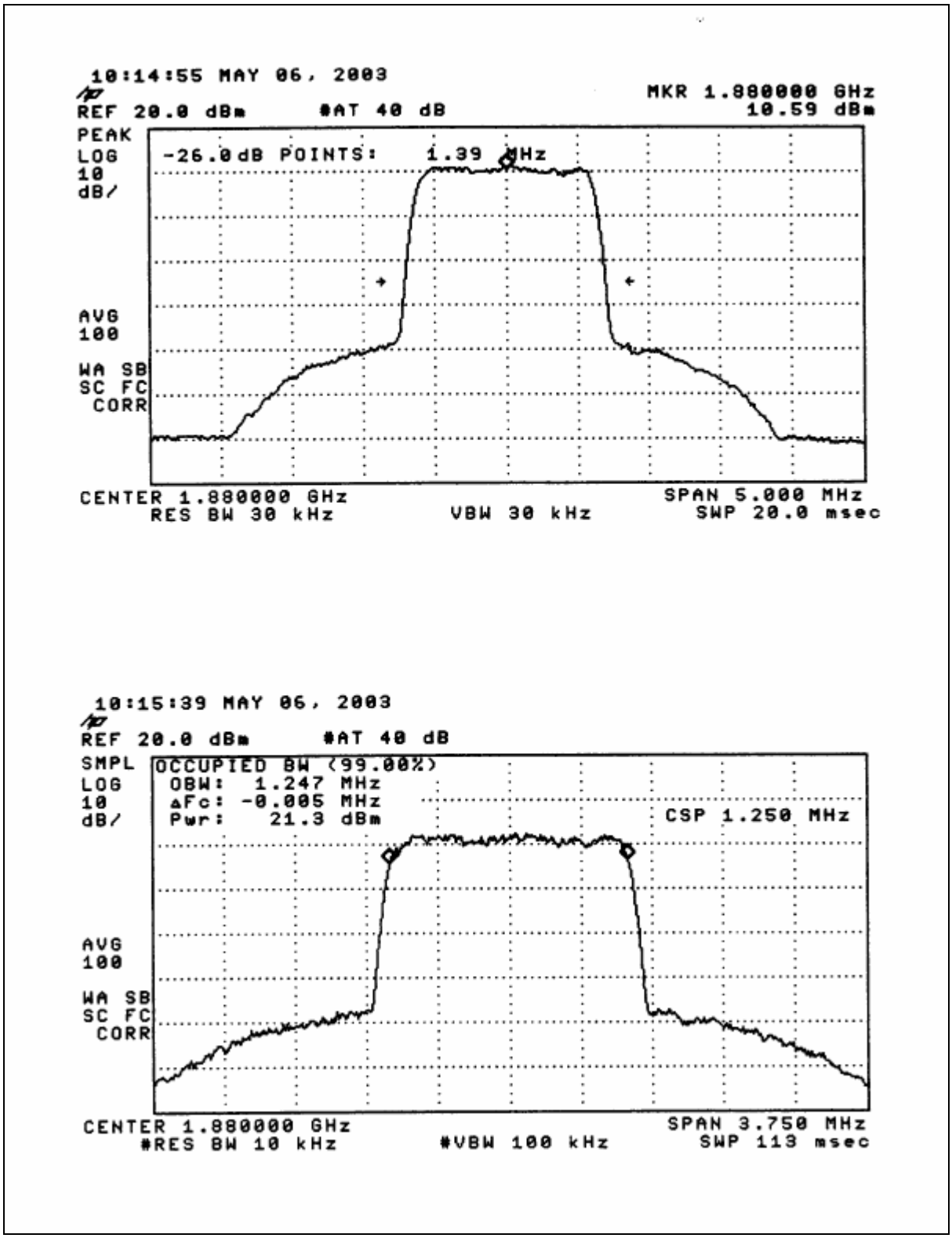


Figure 6.4.2-2: Occupied Bandwidth Plot – Uplink (Mid Channel)

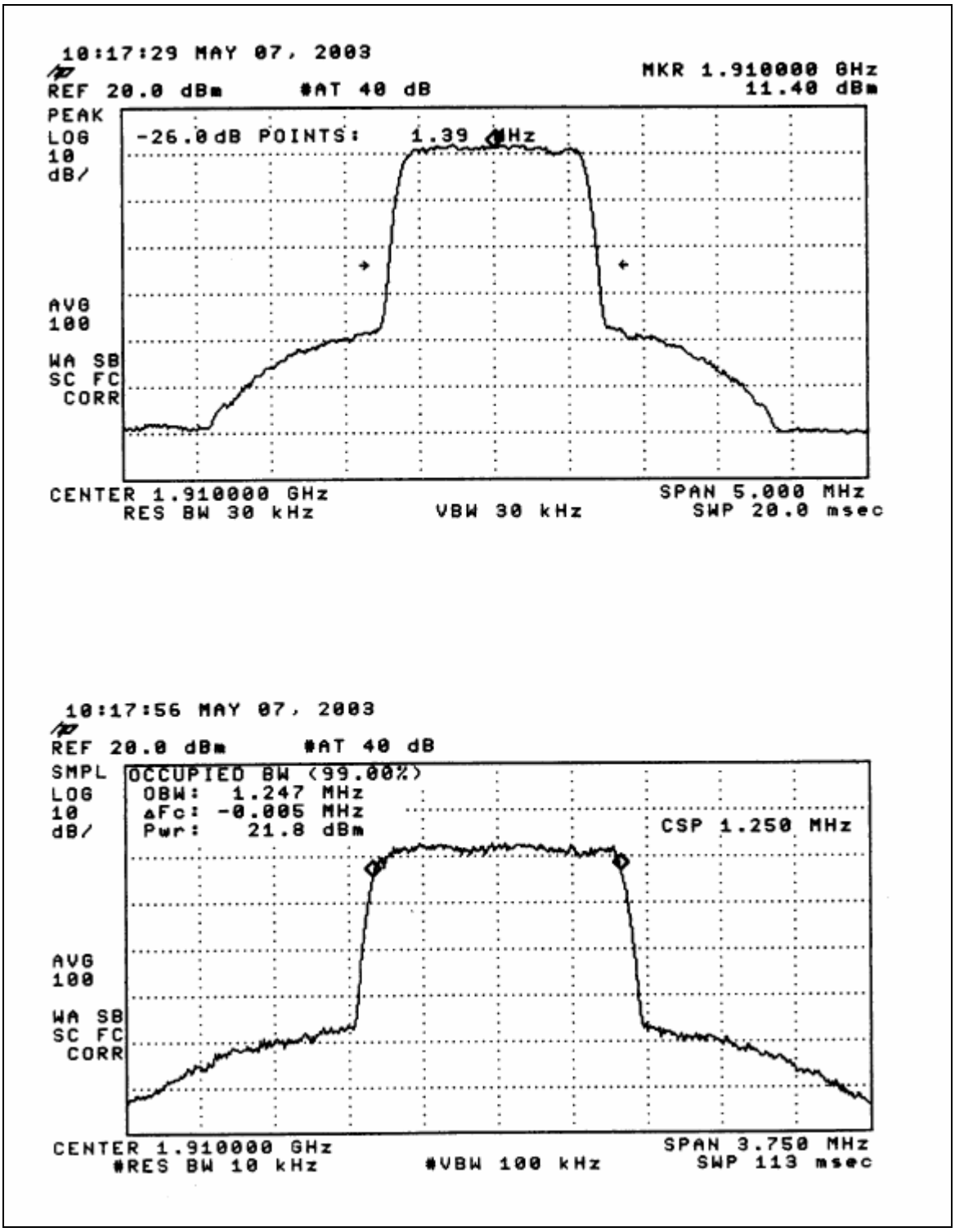


Figure 6.4.2-3: Occupied Bandwidth Plot – Uplink (High Channel)

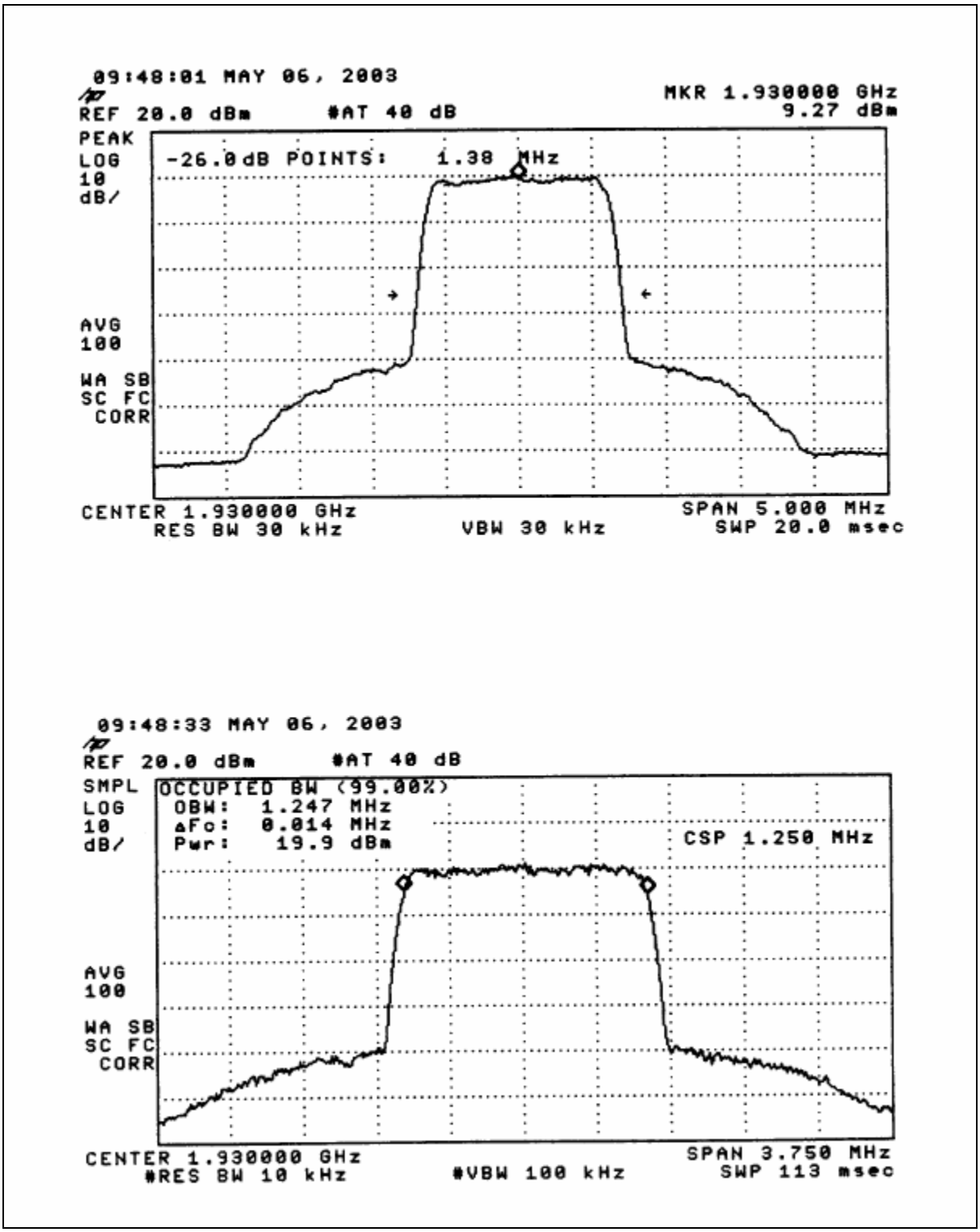


Figure 6.4.2-4: Occupied Bandwidth Plot – Downlink (Low Channel)

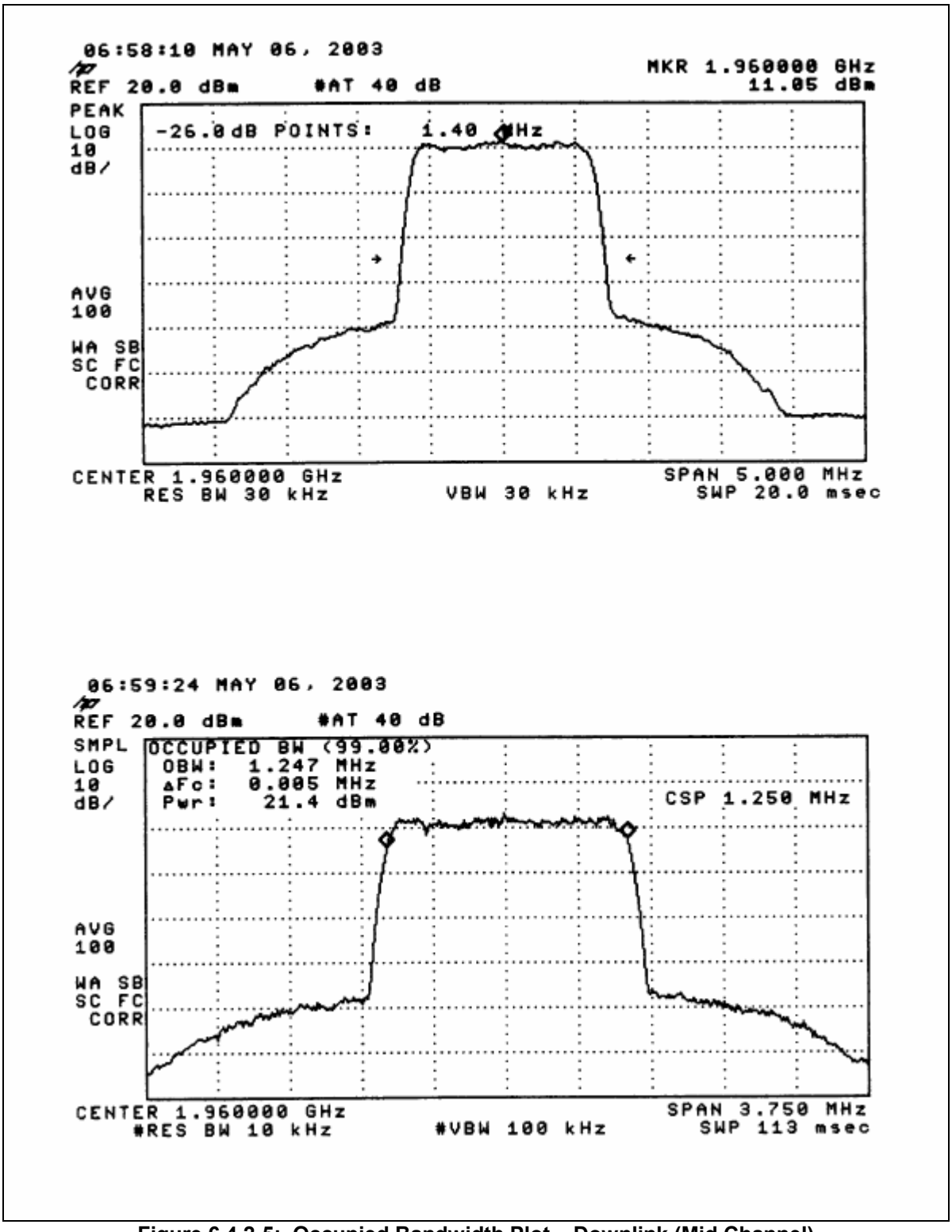
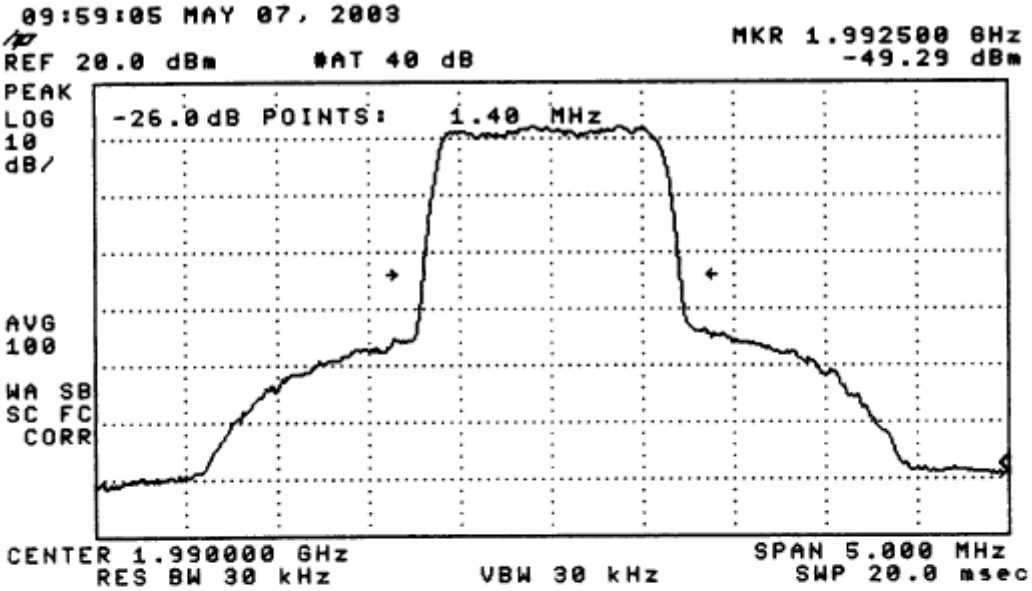


Figure 6.4.2-5: Occupied Bandwidth Plot – Downlink (Mid Channel)



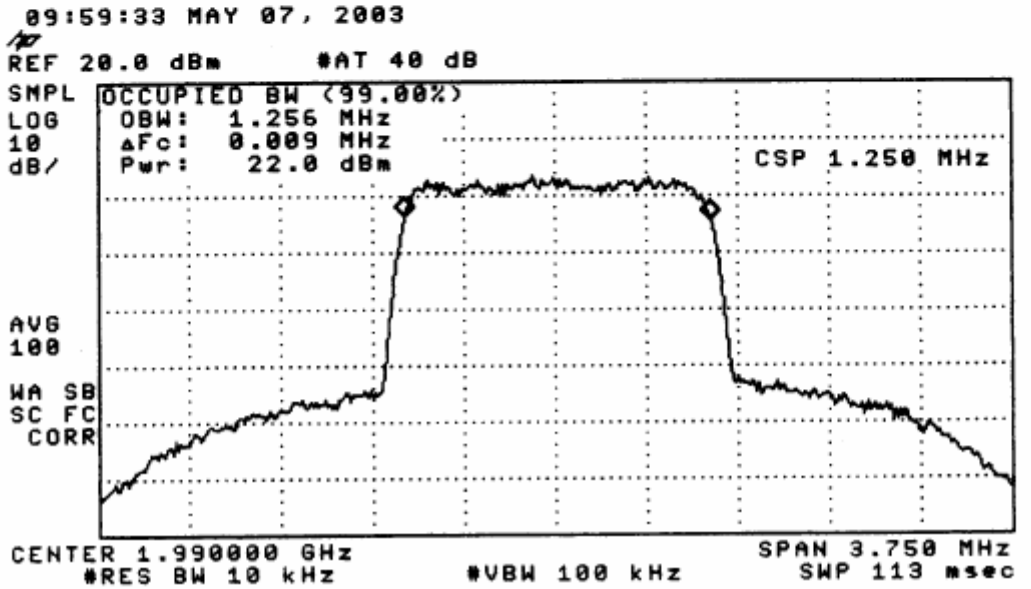


Figure 6.4.2-6: Occupied Bandwidth Plot – Downlink (High Channel)

6.5 Peak Output Power Requirement - FCC Section 2.1046 & 90.205

6.5.1 Test Methodology

TIA/EIA-603-A, section 2.2.1 was the guiding document for this evaluation. The EUT was caused to generate a modulated carrier on low, mid and high channels.

The measurement setup is as shown below in figure 6.5.1-1.

Figure 6.5.1-1: RF Output Power Test Setup

6.5.2 Test Results

Results are given in table's 6.3.2-1 and 6.3.2-2 below.

Table 6.3.2-1: RF Output Power

Uplink			Downlink	
Frequency (MHz)	Power Meter Reading (dBm)		Frequency (MHz)	Power Meter Reading (dBm)
1850	23.4		1930	23.8
1865	23.4		1945	23.6
1870	23.4		1950	23.4
1885	23.2		1965	23.4
1890	23.1		1970	23.4
1895	23.0		1975	23.4
1910	23.1		1990	23.4

6.6 Frequency Stability – FCC Sections 2.1055 & 90.213

6.6.1 Temperature

6.6.1.1 Test Methodology

TIA/EIA-603-A section 2.2.2 was the guiding document for this evaluation. The EUT was soaked at each temperature for 30 minutes to allow the RF circuitry to stabilize before making each measurement. The test was performed on the EUT on low, middle and high channels. The test setup is shown below in figure 6.6.1.1-1.

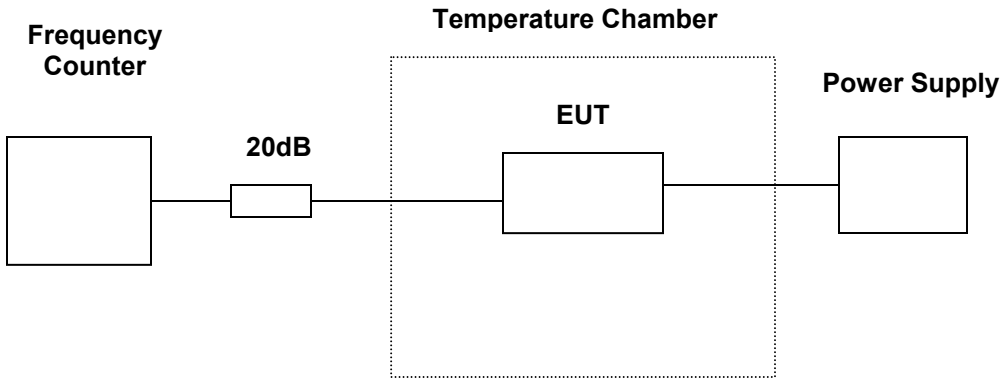


Figure 6.6.1.1-1: Frequency Stability Test Set-Up

6.6.1.2 Test Results

Test results are shown below in table's 6.6.1.2-1 through 6.6.1.2-3:

Table 6.6.1.2-1: Lower Bandedge

Assigned Carrier Frequency (MHz)	Measured Frequency (MHz)	Temperature (C)	Frequency Stability (ppm)	Limit (ppm)
1910	1910.00000	-30	0	N/A
	1909.99998	-20	-0.013089005	N/A
	1909.99982	-10	-0.094240838	N/A
	1910.00040	0	0.209424084	N/A
	1910.00068	10	0.356020943	N/A
	1910.00085	20	0.445026178	N/A
	1910.00010	30	0.052356021	N/A
	1910.00035	40	0.183246073	N/A
	1910.00045	50	0.235602094	N/A

Table 6.6.1.2-2: Upper Bandedge

Assigned Carrier Frequency (MHz)	Measured Frequency (MHz)	Temperature (C)	Frequency Stability (ppm)	Limit (ppm)
1990	1990.000100	-30	0.050251256	N/A
	1990.000130	-20	0.065326633	N/A
	1989.999870	-10	-0.065326633	N/A
	1990.000500	0	0.251256282	N/A
	1990.000700	10	0.351758794	N/A
	1990.000820	20	0.412060301	N/A
	1990.000250	30	0.125628141	N/A
	1990.000130	40	0.065326633	N/A
	1990.000100	50	0.050251256	N/A

6.6.2 Voltage

6.6.2.1 Test Methodology

TIA/EIA-603-A section 2.2.2 was the guiding document for this evaluation. Frequency stability was measured at voltages of 85% of the minimum voltage and 115% of the maximum voltage. The test setup is shown below in Figure 6.6.2.1-1:

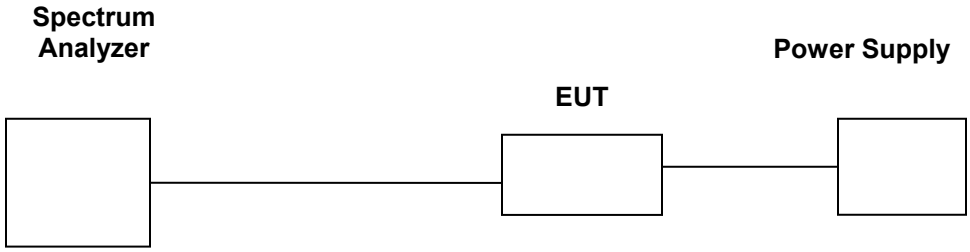


Figure 6.6.2.1-1: Frequency Stability – Voltage Setup

6.6.2.2 Test Results

The test results are shown below in table's 6.6.2.2-1 through 6.6.2.2-2:

Table 6.6.2.2-1: Low Channel

Assigned Carrier Frequency (MHz)	Meter Reading (MHz)	Voltage(%)	Frequency Stability (ppm)	Limit (ppm)
1910	1909.000000	100	---	N/A
	1909.000050	85	0.026191723	N/A
	1909.000050	115	0.026191723	N/A

Table 6.6.2.2-2: High Channel

Assigned Carrier Frequency (MHz)	Meter Reading (MHz)	Voltage(%)	Frequency Stability (ppm)	Limit (ppm)
1990	1909.000000	100	---	N/A
	1909.000025	85	0.013095862	N/A
	1909.000075	115	0.039287585	N/A

6.7 Emissions Limits 24.238

6.7.1 Blockedge compliance

6.7.1.1 Test Methodology
The EUT was caused to generate a continuous signal as close to the Bandedge as possible.

6.7.1.2 Test Results
See file entitled “03-0096 Data Plots A.pdf” for plots of the bandedges.

6.7.2 Antenna Conducted Spurious Emissions

6.7.2.1 Test Methodology
TIA 603-A section 2.2.12 was the guiding document for this test.

6.7.2.2 Test Results
The limit for this test is determined by the formula 43+10log(Pwatts). The limit was determined using the worst case power measurement of 23.8dBm or .240 Watts. Spurious emissions measured in the band of 30MHz to 20GHz GHz are reported in Tables 6.7.2.2-1 and 6.7.2.2-2.

See file entitled “03-0096 Data Plots B.pdf” for plots of the antenna conducted spurious emissions.

6.7.3 Field Strength of Spurious Emissions – FCC Section 2.1053 & 24.238

6.7.3.1 Test Methodology
TIA 603-A section 2.2.12 was the guiding document for this test.

6.7.3.2 Test Results

The limit for this test is determined by the formula 43+10log(Pwatts). The limit was determined using the worst case power measurement of 23.8dBm or .240 Watts. The resulting ERP(dBc) limit is -36.8dBc.

Spurious emissions found in the band of 30MHz to 20GHz GHz are reported in Tables 6.7.3.2-1 and 6.7.3.2-2.

Table 6.7.3.2-1: Field Strength of Spurious Emissions – Downlink

Frequency (MHz)	Generator Level(dBm) P_g	Cable Attenuation(dB) **CL**	Antenna Gain(dB) **AG**	ERP (dBm) P_d	ERP (dBc)	Limit (dBc)	Margin(dB)	Notes
3809.66	-50.00	1.09	9.70	-41.39	-64.99	-36.60	28.39	HC
5714.15	-65.00	1.38	11.20	-55.18	-78.78	-36.60	42.18	HC
7615.18	-63.00	1.50	11.10	-53.40	-77.00	-36.60	40.40	HC
9525.28	-63.00	1.74	12.00	-52.74	-76.34	-36.60	39.74	HC
3759.86	-45.00	1.09	9.50	-36.59	-60.19	-36.60	23.59	MC
5635.75	-63.00	1.38	10.30	-54.08	-77.68	-36.60	41.08	MC
7519.82	-64.00	1.50	11.10	-54.40	-78.00	-36.60	41.40	MC
3699.48	-55.00	1.09	9.50	-46.59	-70.19	-36.60	33.59	LC
5550.04	-55.00	1.38	10.30	-46.08	-69.68	-36.60	33.08	LC
7397.2	-55.00	1.38	11.10	-45.28	-68.88	-36.60	32.28	LC
9249.48	-55.00	1.62	11.30	-45.32	-68.92	-36.60	32.32	LC

Table 6.7.3.2-1: Field Strength of Spurious Emissions – Uplink

Frequency (MHz)	Generator Level(dBm) P_g	Cable Attenuation(dB) **CL**	Antenna Gain(dB) **AG**	ERP (dBm) P_d	ERP (dBc)	Limit (dBc)	Margin(dB)	Notes
3970.22	-44.00	1.09	9.70	-35.39	-59.19	-36.80	22.39	HC
5955.24	-50.00	1.38	10.30	-41.08	-64.88	-36.80	28.08	HC
7937.24	-60.00	1.55	9.70	-51.85	-75.65	-36.80	38.85	HC
9918.06	-60.00	1.74	11.80	-49.94	-73.74	-36.80	36.94	HC
3919.8	-56.00	1.09	9.70	-47.39	-71.19	-36.80	34.39	MC
5879.93	-56.00	1.38	11.20	-46.18	-69.98	-36.80	33.18	MC
7848.44	-61.00	1.55	9.70	-52.85	-76.65	-36.80	39.85	MC
9799.6	-61.00	1.74	11.80	-50.94	-74.74	-36.80	37.94	MC
3859.97	-55.00	1.09	9.70	-46.39	-70.19	-36.80	33.39	LC
5790.81	-70.00	1.38	11.20	-60.18	-83.98	-36.80	47.18	LC
7717.66	-65.00	1.55	9.70	-56.85	-80.65	-36.80	43.85	LC

Sample Calculations

P_o = RF Conducted Power Out(dBm)
P_g = Output generator Level (dBm)
CL = Cable Loss(dB)
AG = Antenna Gain(dBi)
P_d = Corrected Level(dBm) = **Pg-CL+AG**

Substitution Field Strength = P_d- P_o
Limit = 43+10*Log(P)

7.0 CONCLUSION

In the opinion of ACS, Inc. the DataNex, manufactured by EMS Wireless meets the relevant requirements of FCC Parts 2 and 24 as required.