FCC TECHNICAL REPORT FOR THE GROUND DATA LINK (GDL) AIRCRAFT SEGMENT & GROUND SEGMENT

Operational Description

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PREFACE

This system is very similar to a system manufactured by Harris Corporation which was granted an equipment authorization on March 19, 1997, under product codes EL5GDLAS-1A and EL5GDLWR-1A. The major technical difference between the two systems is that the original approved transmitter module FCC ID LOZ025-1A incorporated within the Harris EL5GDLAS-1A and EL5GDLWR-1A Systems has been replaced with a next generation FCC ID LOZ102035 approved transmitter module.

The remaining system components, i.e., LNA/PA RF Assembly and aircraft and ground antennas, are identical to those certified under the original system.

Other differences are administrative. The first administrative difference is that the two equipment configurations (airborne and ground), which are distinguished by their antenna differences, are now being applied for under a single produce code.

The second administrative difference is that the grantee for this application is GE Harris Aviation Information Solutions, LLC, a joint venture between GE and Harris Corporations. Harris will manufacture this system for GE Harris Aviation Information Solutions under the provisions of CFR 47 Part 2.929(b).

Harris will continue to maintain responsibility for the original EL5GDLAS-1A and EL5GDLWR-1A systems.

1.0 APPLICANT INFORMATION

Grantee: GE Harris Aviation Information Solutions, LLC

Physical Address: 2330 Commerce Park Drive (NE #6)
Palm Bay, FL 32905

Mailing Address: P.O. Box 6500
Melbourne, FL 32902

Manufacturer: (under the provisions of CFR 47 Part 2.929 (b))
Harris Corporation
Government Communications Systems Division
P.O. Box 37
Melbourne, FL 32902

FCC Identifier: OMLGDL-002

Configurations: Two; one aircraft mounted, one ground based

Approved Transmitter Module used,

Manufacturer: Aironet Wireless Communications, Inc.

FCC Identifier: FCC ID LOZ102035

Antennas:

Equipment Configuration	Antenna Manufacturer	Model Number	Antenna Gain
Aircraft	Comant Industries	CI 150-32-L	5.15 dBi
Ground	Cushcraft/Signals	S2403B	5.15 dBi

2.0 CERTIFICATION CHECKLIST PER CFR 47, CH. 1, 2.1033

(a) Application filed on Form 731:

Form 731 filed electronically

(b) Accompanying Technical Report:

(1) Name and Mailing Address of the Manufacturer:

GE Harris Aviation Information Solutions, LLC

2330 Commerce Park Drive (NE #6)

Palm Bay, FL 32905

(2) FCC Identifier:

OMLGDL-002

(3) Copy of the installation and operating instructions to be furnished the user:

A Service Bulletin, containing specific installation instructions, is generated for each aircraft type. An example of a B757 Service Bulletin is attached. Separate installation descriptions for the Aircraft and Ground Segments are also attached, including a statement justifying professional installation.

(4) Brief description of the circuit functions of the device along with a statement describing how the device operates:

Both equipment configurations are described in the System Overview section. Block diagrams and schematics are also attached.

(5) A block diagram showing the frequency of all oscillators in the device: This item does not apply since the Part 15.247 transceiver used in the GDL System is an FCC approved transmitter module, FCC ID LOZ102035.

(6) A report of measurements of radiated and conducted emissions:

The FCC Test Report, performed and written by Rubicom Systems, Inc., is attached.

(7) A sufficient number of photographs to clearly show the exterior appearance and construction of the various chassis:

Photos of the various GDL chassis and equipment are contained in the section entitled, Equipment Photographs. Other photos appear throughout the document, including the Installation sections, as well as in the Rubicom Systems, Inc. FCC Test Report.

A sample label (or facsimile therof) together with a sketch showing where the label will be placed on the equipment:

Drawings of the compliance labels and where they will be placed on the equipment are attached.

(8) Brief descriptions of peripheral or accessory equipment:

The GDL system configurations include the chassis containing the radio device as well as separate assemblies containing an LNA/PA and bandpass filter, and an antenna. These assemblies are

described in the System Overview, Installation and FCC Test Plan sections. Photographs are contained in the Equipment Photographs section.

(9) The application shall indicate if the equipment is being authorized pursuant to the transition provisions in Part 15.37:

The transition provisions in Part 15.37 do not apply to this grant.

(10) Devices used in decoding the Emergency Broadcast System Attention Signal:

This equipment is not used in decoding the Emergency Broadcast System Attention Signal.

(11) Applications shall be accompanied by an exhibit demonstrating compliance to the processing gain provisions of Part 15.247(e):

Copies of the test report for the FCC approved transmitter module, FCC ID LOZ102035, demonstrating compliance to the processing gain provisions of Part 15.247(e) are attached.

(12) Applications for the certification of scanning receivers:

This equipment does not contain a scanning receiver.

(c) For a composite system containing multiple devices requiring more than one grant in a single enclosure:

This system does not contain containing multiple devices requiring more than one grant in a single enclosure.

3.0 REQUEST FOR CONFIDENTIALITY

Certain materials provided in support of GE Harris Aviation's Application for Equipment Authorization contains proprietary data belonging to GE Harris Aviation and/or third party suppliers, in which case the data has been released to GE Harris Aviation in accordance with a mutually executed Confidentiality Agreement. Permission has been obtained by GE Harris Aviation from the owner of the data to further release this information to the FCC in support of the above application. All block diagrams and schematics are considered to have been originated by or peculiarly within the knowledge of GE Harris Aviation and/or its third party suppliers and not generally available to others, the disclosure of which could result in substantial harm to GE Harris Aviation's competitive position.

Accordingly, the above items or portions thereof, particularly those associated with the LNA/PA Assembly and Part 15.247 Transmitter Module have been stamped "Proprietary Data" and are requested to be treated as confidential (Fee Code EBC) and not releasable to the general public.

4.0 SYSTEM OVERVIEW WITH LIST OF ANTENNAS USED

The Ground Data Link (GDL) System provides a means of transferring data files to and from air transport aircraft while they are on the ground at GDL equipped airports. GDL supports multiple applications requiring bi-directional data communications. Files can be downloaded from the aircraft or uploaded to the aircraft once the aircraft is within communication range of the fixed airport infrastructure.

Aircraft are equipped with an Aircraft Ground Data Link (GDL) Unit containing an FCC Part 15.247 approved transceiver, an RF Assembly containing an LNA/PA and band pass filter, and an antenna mounted to the top of the fuselage. The RF Assembly contains an automatic level control circuit that assures constant transmit output power as long as the transmit power from the transceiver is within the input dynamic range of the power amplifier. If the transmit power from the transceiver is below the minimum required to switch from receive to transmit, the RF Unit remains in the receive mode. Three different transceiver output power settings (100 mw, 50 mw, and 20 mw) are used to compensate for varying RF cable losses that result from installation in various types of aircraft.

The Ground Segment utilizes Access Points containing the same FCC Part 15.247 approved transceiver. Access Points are the fixed location wireless connection points that the aircraft interface with to access the ground based computer network. The Ground Segment utilizes the identical RF Assembly used in the Aircraft, which interfaces to a roof top or tower mounted omni-directional antenna. As in the airborne case, the RF Assembly's automatic level control circuit in conjunction with 3 different transceiver output power settings are used to compensate for installation dependent RF cable length to assure constant output power delivered to the antenna.

Both the Aircraft and Ground Segment utilize the same FCC Part 15.247 approved transceiver and the same RF Assembly. The only difference between them is the antenna. Therefore, a single Form 731 Application is being submitted which addresses both equipment configurations, under the FCC's rules for modular approval. The make, model number, and gain for the antennas used are:

Equipment Configuration	Antenna Manufacturer	Model Number	Antenna Gain
Aircraft	Comant Industries	CI 150-32-L	5.15 dBi
Ground	Cushcraft/Signals	S2403B	5.15 dBi

Data communication between the aircraft and ground segments consists of bi-directional radio packet data transmission. A carrier sense multiple access protocol is used to allow multiple aircraft to communicate with the same Access Point using different time slots.

The GDL System operates on one of 11 possible frequency channels in the 2412 to 2462 MHz frequency band at data rates of 11 Mbps, 5.5 Mbps, 2 Mbps and 1 Mbps.

This FCC Certification is being applied for by GE Harris Aviation Information Solutions, a Limited Liability Company located in Palm Bay, Florida. The GDL System is manufactured by Harris Corporation, located in Palm Bay, Florida, under the provisions of CFR 47 Part 2.929 (b).

5.0 GDL AIRCRAFT SEGMENT INSTALLATION

The GDL system is designed for commercial airlines and relies on Part 15.247 transceivers for aircraft to fixed ground site communications. All equipment is professionally installed under GE Harris Aviation direction in commercial aircraft. The Part 15.247 transceiver used in the GDL System is an FCC approved transmitter module, FCC ID LOZ102035.

Figure 5.1: Aironet FCC ID LOZ102035 Approved Transmitter Module

Figure 5.2: Both the Aircraft and Ground Segment Utilize the Same FCC Part 15.247 Approved Transceiver

The air transport industry carefully controls the configuration of installed avionics equipment. The FAA issues a Supplemental Type Certificate (STC) for the aircraft on the basis of the newly installed, tested, and approved equipment. Any changes to the product baseline would require their approval. An example of a B757 Service Bulletin containing detailed installation instructions is attached.

Figure 5.3. The GE Harris GDL Aircraft Unit is Professionally Installed in Aircraft Whose Configuration is Controlled Through the STC Process

Figure 5.4: The Same GDL RF Assembly is Used in Both the Aircraft and Ground Segment Configurations

An RF Cable connects the Aircraft Unit to the RF Assembly which is mounted above the passenger cabin, as shown in the following figure. The Aircraft Antenna is mounted to a doubler plate, typically on top of the aircraft. There is a possibility that in future installations the external antenna may be bottom mounted for air to ground communications. A TNC connector underneath the Aircraft Antenna penetrates the doubler plate. A short RF Cable interconnects the output of the RF Assembly and the Aircraft Antenna. The GDL RF Assembly was designed to provide the same electrical performance in both the aircraft and ground environments.

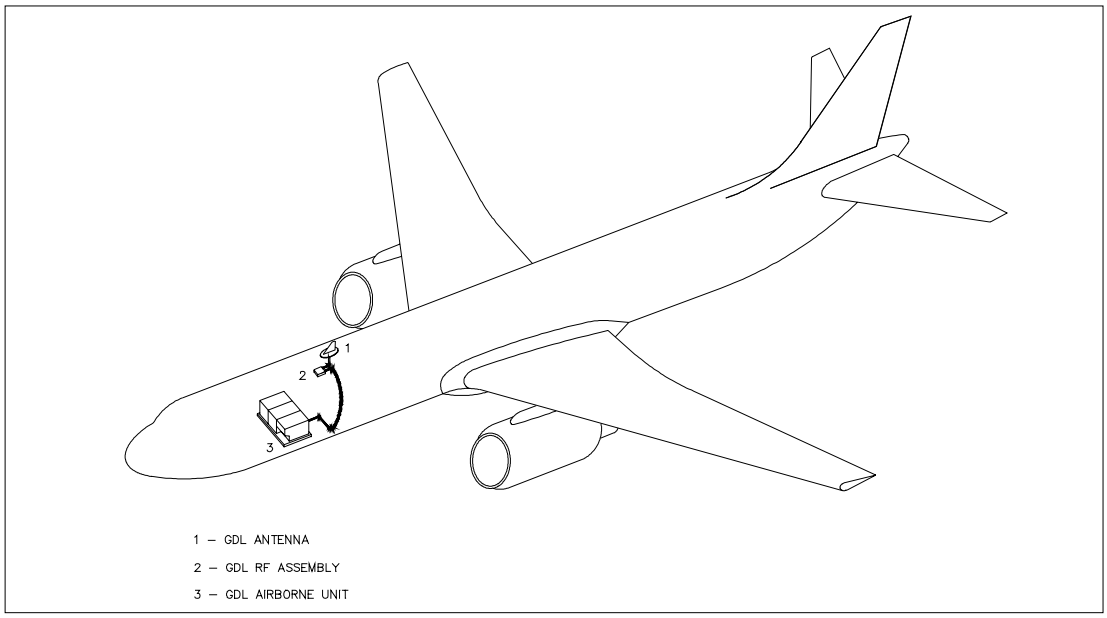

Figure 5.5: Equipment Installation in the Aircraft Mounted Configuration

The nature of the business relationship between GE Harris Aviation and their customers prevents unauthorized changes to the system baseline that would affect its compliance to FCC regulations. GE Harris Aviation believes it has taken the appropriate design measures to provide a high degree of confidence that the system will remain intact once it is professionally installed.

6.0 GDL GROUND SEGMENT INSTALLATION

As described earlier, there are two different system configurations, one mobile and one fixed. In the ground based, fixed configuration, the RF Assembly and antenna are physically secured on top of a building or other permanent structure at an airport, as shown in the following figure.

The RF Assembly and Omni Antenna are typically attached to a 10' high mast that extends line of site coverage beyond the edge of the roof to the jet ways, ramp areas, and taxi ways below. They are professionally installed in order to comply with local structural and safety codes. Roof access at these remote locations is restricted to maintenance personnel.

Figure 6.1: RF Assemblies and Omni Antennas Mounted on Masts at Opposite nds of Railing

The RF Assembly on the roof is connected via a RF Cable to an indoor Access Point. The Access Point is mounted within an Equipment Rack containing other commercial computing, networking, and telecommunications equipment. The Access Point contains the same FCC approved transmitter module as the aircraft unit.

Figure 6.2: Aironet Access Point with FCC ID LOZ102035 Approved Transmitter Module

7.0 STATEMENT JUSTIFYING PROFESSIONAL INSTALLATION

Background: The following statement addresses a requirement in CFR 47, Part 15.203, entitled *Antenna Requirement*. The requirement states that, "An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. This requirement does not apply to intentional radiators that must be professionally installed.... However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded." The purpose of this statement is to provide justification for professional installation.

Aircraft Segment Statement: GDL must be professionally installed because each installation is custom suited to meet the demands of the specific environment. The FAA requires a Supplemental Type Certificate (STC) for any changes to an existing aircraft type. When an airline acquires GDL Aircraft Segments for installation in a specific aircraft type, e.g., B757-200 aircraft, the airline's aircraft engineering personnel meet with GE Harris engineers to jointly develop an installation drawing package. A tray location is identified and selected from available options in the avionics equipment bay. The best way to get power to the tray is determined and a circuit breaker is assigned in the flight deck. If spare wires are not available in existing cable bundles, new wires are pulled. Interfaces to other avionics equipment and aircraft discretes are similarly identified and installed. All new wiring must comply with strict federal regulations and standards for installation.

A location for the aircraft antenna is chosen on the top side of the aircraft taking into account availability, accessibility, electromagnetic compatibility, and aerodynamic efficiency. Once defined, new drawings are created that define how the aircraft skin is penetrated and a doubler plate installed for antenna mounting, structural support, and environmental sealing. A nearby location for the RF Assembly is chosen between the passenger cabin and the aircraft skin. The closest stanchion is identified and the method of mounting the RF Assembly using an adapter plate is documented. The RF Cable is then pulled through the aircraft to its destination. The cable is routed and restrained in compliance with specified installation standards. The cable is cut to length and terminated at both ends. The power level at the input to the RF Assembly is checked to make sure that it is within the input dynamic range of the amplifier. All details of the modification are carefully documented and inspected by the FAA.

The installation is verified by using an installation test set to verify functionality. A variety of ground tests are performed to assess the electromagnetic compatibility of the newly installed equipment with existing flight critical equipment. An STC Aircraft Test is then performed to verify the electromagnetic compatibility of the newly installed equipment with existing flight critical equipment. At the conclusion, an STC package consisting of the drawing package and test data is prepared. The STC package is then submitted for review by the FAA. Upon their approval, an STC for the defined type of aircraft is granted. Once granted, the STC is only valid for that specific aircraft type. If the airline desires to install GDL in another type of aircraft, the process is repeated. All B757-200s are modified in exactly the same fashion based on the STC drawing package. Installations are carefully inspected and discrepancies are documented and properly dispositioned.

Once the installation has been completed, GE Harris does not envision that airline personnel would attempt to tamper with the installation by changing out the LNA/PA or antenna. The air transport industry carefully controls the configuration of installed avionics equipment. The FAA issues a Supplemental Type Certificate for the aircraft on the basis of the newly installed, tested, and approved equipment. Any changes to the product baseline would require their approval. GE Harris will advise its customers in the Service Bulletin that tampering with or modifying installed equipment will void the

warranty. GE Harris will also state that tampering with or modifying installed equipment could result in damage to the installed equipment and a violation of FCC regulations.

The existing business model with potential airline customers provides no motivating cost benefit for these customers to attempt to modify the configuration of this professionally installed equipment. As the installer, GE Harris has a vested interest in bearing the responsibility for ensuring that the proper antenna is employed so that FCC limits are not exceeded. The successful operation of the GDL System depends on it.

Ground Segment Statement: GDL must be professionally installed because each installation is custom suited to meet the demands of the specific environment. GE Harris believes it has taken the appropriate design measures to provide a high degree of confidence that the system will remain intact once it is professionally installed.

GE Harris protects the FCC approved transmitter module from customer tampering by mounting it in a 19" rack mount chassis. These rack-mounted chassis are installed in a locked 5' equipment rack. The rack is installed in a control tower equipment room (or similar). A RF cable connects the indoor equipment rack to the LNA/PA Assembly and Antenna that are mounted outdoors.

Due to the variability in airport terminal designs, no two airport installations are the same. Therefore, site surveys are performed by a GE Harris engineering team at each airport. Prospective locations for Access Point Cells are surveyed. Final selections take into account factors such as antenna height, blockage, proximity to other interferers, and the availability of a nearby indoor facility for equipment rack installation.

Antennas are mounted on masts that are permanently attached to the building or tower. Antenna separation is carefully maintained to minimize adjacent channel interference and prevent maximum signal strength damage. The RF Assembly is also mounted outdoors, just below the antenna on the antenna mast, using an adapter plate. The RF Cable is pulled through the building to its destination on the roof or nearby tower.

All installations are inspected to meet local building and electrical codes. The power level at the input to the RF Assembly is checked to make sure that it is within the input dynamic range of the amplifier. The installation is verified by using an installation test set to verify functionality. A variety of ground tests are performed to assess the electromagnetic compatibility of the newly installed equipment with other existing airline and port authority radio frequency equipment.

Once the installation has been completed, GE Harris does not envision that airline personnel would attempt to tamper with the installation by changing out the LNA/PA or antenna. The system has been carefully designed to assure optimum performance under a variety of operating conditions. Too much transmit power, for example, could damage the sensitive front end of the neighboring diversity receiver in an Access Point cell configuration. GE Harris will advise its customers in the equipment user manual that tampering with or modifying installed equipment will void the warranty. GE Harris will also state that tampering with or modifying installed equipment would likely result in damage to the installed equipment and could result in a violation of FCC regulations.

The existing business model with potential airline customers provides no motivating cost benefit for these customers to attempt to modify the configuration of this professionally installed equipment. As the installer, GE Harris has a vested interest in bearing the responsibility for ensuring that the proper antenna is employed so that FCC limits are not exceeded. The successful operation of the GDL System depends on it.

8.0 PROCESSING GAIN TEST REPORT

Aironet

HIGHLY CONFIDENTIAL DOCUMENT
AIRONET INTERNAL USE ONLY

PRODUCT NAME: AIRONET LM4800 RADIO

NAME OF TEST: The Processing Gain of a Direct Sequence System.

FCC Part 15.247 (e) specifies:

The processing gain of a direct sequence system shall be at least 10 dB.

Guidance on measurement by FCC

The processing gain may be measured using the CW jamming margin method. The test consists of stepping a signal generator in 50khz increments across the passband of the system. At each point, the generator level required to the produce the recommended Bit Error Rate (10-5) is recorded. This is the jammer level. The output power of the transmitting unit is measured at the same point. The Jammer to Signal (J/S) ratio is then calculated. Discard the worst 20% of the J/S data points. Total losses in a system including transmitter and receiver, should be assumed to be no more than 2 dB.

therefore, processing gain = S/N + Mj + Lsys

Where :
S/N = Signal to noise ratio required at the receiver output for 10-5 error rate of a ideal receiver for your demodulation scheme

Mj = Jammer to signal ratio
Lsys = System losses (2dB max)

Test results :

for 1 mb data rate:
S/N = 13 dB ; taken from Wireless Information Networks by Pahlavan & Levesque
Mj = - 2.5 dB ; worst case jamming margin from tests in lab
Lsys = 0.5 dB ; system losses
therefore the processing gain at 1mb is 13 dB - 2.5 dB + 0.5 dB = 11.0 dB

for 2 mb data rate:
S/N = 13 dB ; taken from Wireless Information Networks by Pahlavan & Levesque
Mj = - 2.9 dB ; worst case jamming margin from tests in lab
Lsys = 1.0 dB ; system losses
therefore the processing gain at 2mb is 13 dB - 2.9 dB + 1.0 dB = 11.1 dB

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for 5.5 mb data rate:

S/N = 13.6 dB ; taken from Harris CCK encoding modulation
Mj = - 5.2 dB ; worst case jamming margin from tests in lab
Lsys = 2.0 dB ; system losses

therefore the processing gain at 5.5mb is 13.6 dB - 5.2 dB + 2.0 dB = 10.4 dB

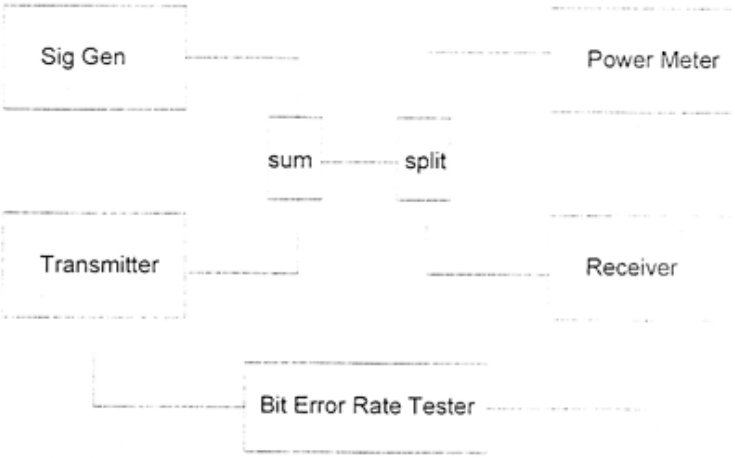
for 11 mb data rate:

S/N = 16.0 dB ; taken from Harris CCK encoding modulation
Mj = - 7.3 dB ; worst case jamming margin from tests in lab (after 20% discarded)
Lsys = 2.0 dB ; system losses

therefore the processing gain at 11mb is 16.0 dB - 7.3 dB + 2.0 dB = 10.7 dB

Aironet

Jamming Test Setup



AIRONET	RF Systems Engineering
2.4 Ghz SPREAD SPECTRUM RADIO, 2nd GEN	
Jammer Test, R240	
eng J. Friedmann dwg J. Friedmann	File:FCC025_2.ds4 Date: 3/21/95 rev:

AIRONET CONFIDENTIAL

Aironet

Radio Circuit Description

HIGHLY CONFIDENTIAL DOCUMENT
AIRONET INTERNAL USE ONLY

The LM4800 Spread Spectrum Transceiver operates in the 2.4 Ghz ISM band, using Direct Sequence modulation techniques.

The transmit/receive and data packetization operations are under the control of a protocol processor (MAC) internal to the transceiver assembly.

Logic Section : A digital ASIC is employed in the logic section of the radio, providing the following functions:

1) Generation of the spreading code, combination of the code with the incoming data stream.
2) Despreading and demodulation of the incoming baseband spread signal.
3) Determination of the transmit/receive sequence.

RF Section (refer to LM4800 radio block diagram) : The transmitter chain includes a shaping bandpass filter followed by a vector modulator. This signal is further filter by a saw filter at the IF frequency of 280 Mhz. This signal is then mixed up to the 2400-2483.5 Mhz band. A RF filter at the output of the mixer removes any other mixing products. A power amplifier chain brings the signal up to the final output level of 250 mwatts. Through the TX/RX switch, the signal is passed through a dielectric bandpass filter to the antenna port. The radio has diversity, so two antenna ports are provided. Transmitter frequency is determined by the 44.0 Mhz reference oscillator, with +/- 12 ppm accuracy.

The receiver utilizes the same antenna filtering and TX/RX, followed by a LNA. A mixer circuit brings the signal to the 280 Mhz IF, where a SAW filter shapes the IF spectral envelope. This filter provides the primary rejection against adjacent channel interference. An IF amplifier followed by an IF limiter brings the signal up to the level needed for the I and Q vector demodulator. A buffer amplifier and filter are used to shape the signal for the PHY digital ASIC which despreads and decodes the signal.

The 280 Mhz voltage controlled oscillator is controlled by a synthesizer/PLL system comprised of a prescaler and programmable dividers. The 2132-2185 Mhz voltage controlled oscillator is also controlled by a synthesizer/PLL system. Both local oscillators use a reference signal for the PLL which is derived from the 44.0 Mhz master reference oscillator.

Aironet

LM4800 Spread Spectrum Transceiver Alignment Procedures

Set frequency, surrent and power out: put radio in TX mode, use frequency counter, power meter and current meter.

1)TX on, ch 2442MHz: set frequency by adjusting the voltage on the varactor cap in the 44 Mhz oscillator. This is done by software, which changes the DAC voltage output.

TX frequency; at room temp. set to 2,442,002,500. to 2,441,997,500.hz, +/- 2 ppm

2)TX on,ch 12-84: set power amp bais current by adjusting voltage to power amp gate pin. This is done by software, which changes the DAC voltage output.

TX current; set current to 500 ma +/- 20 ma

2)TX on,ch 12-84: set power amp output power by adjusting voltage to the RF attenuator in the tx chain. This is done by software, which changes the DAC voltage output.

TX power out; set power to +23dBm + 1dB /- 3 dB for highest power setting

AIRONET CONFIDENTIAL Jamming margin @1 mb (part1) 11/30/98

processing gain by method of jamming margin using Debugger Software Linktest

radio conditions : supply voltage 5v, at room temp, rx s/n = #2000, tx s/n = #2003, Rev AC2 with Harris HFA3860B (CCK modulation)

tester name : Jim Nahra/ Jim Friedmann

test date : 11/17/98 radio carrier freq= 2465

Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0.5 dB

input signal level = -60 dBm, jammer level = - 62.5 dBm, then Mj= -2.5 dB

Gp = 13 dB + -2.5 dB + .5 = 11.0 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE
	MHz	dB			MHz	dB			MHz	dB			MHz	dB	
1	2456.50	17.6	pass	41	2458.50	12.5	pass	81	2460.50	11.5	pass	121	2462.50	11.5	pass
2	2456.55	17.6	pass	42	2458.55	12.5	pass	82	2460.55	11.5	pass	122	2462.55	11.5	pass
3	2456.60	17.1	pass	43	2458.60	12.5	pass	83	2460.60	11.5	pass	123	2462.60	11.5	pass
4	2456.65	17.1	pass	44	2458.65	12.5	pass	84	2460.65	11.5	pass	124	2462.65	11.5	pass
5	2456.70	16.5	pass	45	2458.70	12.5	pass	85	2460.70	11.5	pass	125	2462.70	11.5	pass
6	2456.75	16	pass	46	2458.75	12.5	pass	86	2460.75	11.5	pass	126	2462.75	11.5	pass
7	2456.80	16	pass	47	2458.80	12.5	pass	87	2460.80	11.5	pass	127	2462.80	11.5	pass
8	2456.85	15.5	pass	48	2458.85	12	pass	88	2460.85	11.5	pass	128	2462.85	12	pass
9	2456.90	15	pass	49	2458.90	12	pass	89	2460.90	11.5	pass	129	2462.90	12	pass
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13	2457.10	15	pass	53	2459.10	12	pass	93	2461.10	11.5	pass	133	2463.10	12	pass
14	2457.15	14.5	pass	54	2459.15	12	pass	94	2461.15	11.5	pass	134	2463.15	12	pass
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19	2457.40	14	pass	59	2459.40	12	pass	99	2461.40	11.5	pass	139	2463.40	12	pass
20	2457.45	14	pass	60	2459.45	12	pass	100	2461.45	11.5	pass	140	2463.45	12	pass
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23	2457.60	14	pass	63	2459.60	12	pass	103	2461.60	11.5	pass	143	2463.60	12	pass
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25	2457.70	14	pass	65	2459.70	12	pass	105	2461.70	11.5	pass	145	2463.70	12	pass
26	2457.75	13.5	pass	66	2459.75	12	pass	106	2461.75	11.5	pass	146	2463.75	12	pass
27	2457.80	13.5	pass	67	2459.80	12	pass	107	2461.80	11.5	pass	147	2463.80	12	pass
28	2457.85	13.5	pass	68	2459.85	12	pass	108	2461.85	11.5	pass	148	2463.85	12	pass
29	2457.90	13	pass	69	2459.90	12	pass	109	2461.90	11.5	pass	149	2463.90	12	pass
30	2457.95	13	pass	70	2459.95	12	pass	110	2461.95	11	pass	150	2463.95	12	pass
31	2458.00	13	pass	71	2460.00	12	pass	111	2462.00	11	pass	151	2464.00	12	pass
32	2458.05	13	pass	72	2460.05	11.5	pass	112	2462.05	11	pass	152	2464.05	12	pass
33	2458.10	13	pass	73	2460.10	11.5	pass	113	2462.10	11	pass	153	2464.10	12	pass
34	2458.15	13	pass	74	2460.15	11.5	pass	114	2462.15	11	pass	154	2464.15	12	pass
35	2458.20	13	pass	75	2460.20	11.5	pass	115	2462.20	11	pass	155	2464.20	12	pass
36	2458.25	13	pass	76	2460.25	11.5	pass	116	2462.25	11	pass	156	2464.25	12	pass
37	2458.30	13	pass	77	2460.30	11.5	pass	117	2462.30	11	pass	157	2464.30	12	pass
38	2458.35	12.5	pass	78	2460.35	11.5	pass	118	2462.35	11	pass	158	2464.35	12	pass
39	2458.40	12.5	pass	79	2460.40	11.5	pass	119	2462.40	11	pass	159	2464.40	12	pass
40	2458.45	12.5	pass	80	2460.45	11.5	pass	120	2462.45	11	pass	160	2464.45	12	pass

drop 20% = 340 x 20% = 68 ; therefore can drop 68 failures

AIRONET CONFIDENTIAL Jamming margin @1 mb (part2) 11/30/98

processing gain by method of jamming margin using Debugger Software Linktest

radio conditions : supply voltage 5v, at room temp, rx s/n = #2000, tx s/n = #2003, Rev AC2 with Harris HFA3860B (CCK modulation)

tester name : Jim Nahra/ Jim Friedmann

Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0.5 dB

input signal level = -60 dBm, jammer level = - 62.5 dBm, then Mj= -2.5 dB

Gp = 13 dB + -2.5 dB + .5 = 11.0 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE
	MHz	dB			MHz	dB			MHz	dB			MHz	dB	
161	2464.50	12	pass	206	2466.75	11.5	pass	251	2469.00	11.5	pass	296	2471.25	12.5	pass
162	2464.55	12	pass	207	2466.80	11.5	pass	252	2469.05	11.5	pass	297	2471.30	12.5	pass
163	2464.60	12	pass	208	2466.85	11.5	pass	253	2469.10	11.5	pass	298	2471.35	12.5	pass
164	2464.65	11.5	pass	209	2466.90	11.5	pass	254	2469.15	11.5	pass	299	2471.40	13	pass
165	2464.70	11.5	pass	210	2466.95	11.5	pass	255	2469.20	11.5	pass	300	2471.45	13	pass
166	2464.75	11.5	pass	211	2467.00	12	pass	256	2469.25	11.5	pass	301	2471.50	13	pass
167	2464.80	11.5	pass	212	2467.05	12	pass	257	2469.30	11.5	pass	302	2471.55	13	pass
168	2464.85	11.5	pass	213	2467.10	12	pass	258	2469.35	11.5	pass	303	2471.60	13	pass
169	2464.90	11.5	pass	214	2467.15	12	pass	259	2469.40	11.5	pass	304	2471.65	13.5	pass
170	2464.95	11.5	pass	215	2467.20	12	pass	260	2469.45	11.5	pass	305	2471.70	13.5	pass
171	2465.00	11	pass	216	2467.25	12	pass	261	2469.50	11.5	pass	306	2471.75	13.5	pass
172	2465.05	11	pass	217	2467.30	12	pass	262	2469.55	11.5	pass	307	2471.80	13.5	pass
173	2465.10	11	pass	218	2467.35	12	pass	263	2469.60	11.5	pass	308	2471.85	14	pass
174	2465.15	11	pass	219	2467.40	12	pass	264	2469.65	11.5	pass	309	2471.90	14	pass
175	2465.20	11	pass	220	2467.45	12	pass	265	2469.70	11.5	pass	310	2471.95	14	pass
176	2465.25	11	pass	221	2467.50	12	pass	266	2469.75	11.5	pass	311	2472.00	14	pass
177	2465.30	11	pass	222	2467.55	12	pass	267	2469.80	11.5	pass	312	2472.05	14	pass
178	2465.35	11	pass	223	2467.60	12	pass	268	2469.85	11.5	pass	313	2472.10	14	pass
179	2465.40	11	pass	224	2467.65	12	pass	269	2469.90	11.5	pass	314	2472.15	14	pass
180	2465.45	11	pass	225	2467.70	12	pass	270	2469.95	11.5	pass	315	2472.20	14	pass
181	2465.50	11	pass	226	2467.75	12	pass	271	2470.00	12	pass	316	2472.25	14	pass
182	2465.55	11	pass	227	2467.80	12	pass	272	2470.05	12	pass	317	2472.30	14	pass
183	2465.60	11	pass	228	2467.85	12	pass	273	2470.10	12	pass	318	2472.35	14	pass
184	2465.65	11	pass	229	2467.90	12	pass	274	2470.15	12	pass	319	2472.40	14.5	pass
185	2465.70	11	pass	230	2467.95	12	pass	275	2470.20	12	pass	320	2472.45	14.5	pass
186	2465.75	11	pass	231	2468.00	12	pass	276	2470.25	12	pass	321	2472.50	14.5	pass
187	2465.80	11	pass	232	2468.05	12	pass	277	2470.30	12	pass	322	2472.55	14.5	pass
188	2465.85	11	pass	233	2468.10	12	pass	278	2470.35	12	pass	323	2472.60	14.5	pass
189	2465.90	11	pass	234	2468.15	12	pass	279	2470.40	12	pass	324	2472.65	14.5	pass
190	2465.95	11	pass	235	2468.20	12	pass	280	2470.45	12	pass	325	2472.70	14.5	pass
191	2466.00	11.5	pass	236	2468.25	12	pass	281	2470.50	12	pass	326	2472.75	14.5	pass
192	2466.05	11.5	pass	237	2468.30	12	pass	282	2470.55	12	pass	327	2472.80	14.5	pass
193	2466.10	11.5	pass	238	2468.35	12	pass	283	2470.60	12	pass	328	2472.85	15	pass
194	2466.15	11.5	pass	239	2468.40	12	pass	284	2470.65	12	pass	329	2472.90	15	pass
195	2466.20	11.5	pass	240	2468.45	12	pass	285	2470.70	12	pass	330	2472.95	15	pass
196	2466.25	11.5	pass	241	2468.50	12	pass	286	2470.75	12	pass	331	2473.00	15.5	pass
197	2466.30	11.5	pass	242	2468.55	12	pass	287	2470.80	12	pass	332	2473.05	15.5	pass
198	2466.35	11.5	pass	243	2468.60	12	pass	288	2470.85	12	pass	333	2473.10	16	pass
199	2466.40	11.5	pass	244	2468.65	12	pass	289	2470.90	12	pass	334	2473.15	16	pass
200	2466.45	11.5	pass	245	2468.70	12	pass	290	2470.95	12	pass	335	2473.20	16	pass
201	2466.50	11.5	pass	246	2468.75	12	pass	291	2471.00	12.5	pass	336	2473.25	16.5	pass
202	2466.55	11.5	pass	247	2468.80	12	pass	292	2471.05	12.5	pass	337	2473.30	17	pass
203	2466.60	11.5	pass	248	2468.85	12	pass	293	2471.10	12.5	pass	338	2473.35	17.5	pass
204	2466.65	11.5	pass	249	2468.90	12	pass	294	2471.15	12.5	pass	339	2473.40	17.5	pass
205	2466.70	11.5	pass	250	2468.95	12	pass	295	2471.20	12.5	pass	340	2473.45	18	pass

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AIRONET CONFIDENTIAL Jamming margin @2 mb (part1) 11/30/98

processing gain by method of jamming margin using Debugger Software Linktest

radio conditions : supply voltage 5v, at room temp, rx s/n = #2000, tx s/n = #2003, Rev AC2 with Harris HFA3860B (CCK modulation)

tester name : Jim Nahra / Jim Friedmann

test date : 11/17/98 radio carrier freq= 2465

Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 1.0dB

input signal level = -60 dBm, jammer level = - 62.9 dBm, then Mj= -2.9 dB

Gp = 13.0 dB + -2.9 dB + 1.0 dB = 11.1 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	19.1	pass	41	2458.50	13.6	pass	81	2460.50	11.2	pass	121	2462.50	11.1	pass
2	2456.55	19.1	pass	42	2458.55	13.6	pass	82	2460.55	11.2	pass	122	2462.55	11.1	pass
3	2456.60	19.1	pass	43	2458.60	13.6	pass	83	2460.60	11.2	pass	123	2462.60	11.1	pass
4	2456.65	19.1	pass	44	2458.65	13.6	pass	84	2460.65	11.2	pass	124	2462.65	11.1	pass
5	2456.70	18.6	pass	45	2458.70	13.1	pass	85	2460.70	11.2	pass	125	2462.70	11.1	pass
6	2456.75	18.6	pass	46	2458.75	13.1	pass	86	2460.75	11.2	pass	126	2462.75	11.1	pass
7	2456.80	18.1	pass	47	2458.80	13.1	pass	87	2460.80	11.2	pass	127	2462.80	11.1	pass
8	2456.85	18.1	pass	48	2458.85	12.6	pass	88	2460.85	11.2	pass	128	2462.85	11.1	pass
9	2456.90	17.6	pass	49	2458.90	12.6	pass	89	2460.90	11.2	pass	129	2462.90	11.1	pass
10	2456.95	17.6	pass	50	2458.95	12.6	pass	90	2460.95	11.2	pass	130	2462.95	11.1	pass
11	2457.00	17.1	pass	51	2459.00	12.6	pass	91	2461.00	11.2	pass	131	2463.00	11.1	pass
12	2457.05	17.1	pass	52	2459.05	12.6	pass	92	2461.05	11.2	pass	132	2463.05	11.1	pass
13	2457.10	17.1	pass	53	2459.10	12.6	pass	93	2461.10	11.2	pass	133	2463.10	11.1	pass
14	2457.15	17.1	pass	54	2459.15	12.6	pass	94	2461.15	11.2	pass	134	2463.15	11.1	pass
15	2457.20	17.1	pass	55	2459.20	12.6	pass	95	2461.20	11.2	pass	135	2463.20	11.1	pass
16	2457.25	17.1	pass	56	2459.25	12.6	pass	96	2461.25	11.2	pass	136	2463.25	11.1	pass
17	2457.30	16.6	pass	57	2459.30	12.6	pass	97	2461.30	11.2	pass	137	2463.30	11.1	pass
18	2457.35	16.6	pass	58	2459.35	12.6	pass	98	2461.35	11.2	pass	138	2463.35	11.1	pass
19	2457.40	16.6	pass	59	2459.40	12.6	pass	99	2461.40	11.2	pass	139	2463.40	11.1	pass
20	2457.45	16.1	pass	60	2459.45	12.6	pass	100	2461.45	11.2	pass	140	2463.45	11.1	pass
21	2457.50	16.1	pass	61	2459.50	12.6	pass	101	2461.50	11.2	pass	141	2463.50	11.1	pass
22	2457.55	15.6	pass	62	2459.55	12.6	pass	102	2461.55	11.2	pass	142	2463.55	11.1	pass
23	2457.60	15.6	pass	63	2459.60	12.6	pass	103	2461.60	11.2	pass	143	2463.60	11.1	pass
24	2457.65	15.6	pass	64	2459.65	12.6	pass	104	2461.65	11.2	pass	144	2463.65	11.1	pass
25	2457.70	15.6	pass	65	2459.70	12.6	pass	105	2461.70	11.2	pass	145	2463.70	11.1	pass
26	2457.75	15.1	pass	66	2459.75	12.6	pass	106	2461.75	11.2	pass	146	2463.75	11.1	pass
27	2457.80	15.1	pass	67	2459.80	12.6	pass	107	2461.80	11.2	pass	147	2463.80	11.1	pass
28	2457.85	14.6	pass	68	2459.85	12.6	pass	108	2461.85	11.2	pass	148	2463.85	11.1	pass
29	2457.90	14.6	pass	69	2459.90	12.6	pass	109	2461.90	11.2	pass	149	2463.90	11.1	pass
30	2457.95	14.6	pass	70	2459.95	12.6	pass	110	2461.95	11.2	pass	150	2463.95	11.1	pass
31	2458.00	14.6	pass	71	2460.00	12.6	pass	111	2462.00	11.2	pass	151	2464.00	11.1	pass
32	2458.05	14.6	pass	72	2460.05	12.1	pass	112	2462.05	11.2	pass	152	2464.05	11.5	pass
33	2458.10	14.1	pass	73	2460.10	12.1	pass	113	2462.10	11.2	pass	153	2464.10	11.5	pass
34	2458.15	14.1	pass	74	2460.15	12.1	pass	114	2462.15	11.2	pass	154	2464.15	11.5	pass
35	2458.20	14.1	pass	75	2460.20	11.6	pass	115	2462.20	11.2	pass	155	2464.20	11.5	pass
36	2458.25	14.1	pass	76	2460.25	11.6	pass	116	2462.25	11.1	pass	156	2464.25	11.5	pass
37	2458.30	14.1	pass	77	2460.30	11.1	pass	117	2462.30	11.1	pass	157	2464.30	11.5	pass
38	2458.35	14.1	pass	78	2460.35	11.1	pass	118	2462.35	11.1	pass	158	2464.35	11.5	pass
39	2458.40	13.6	pass	79	2460.40	11.1	pass	119	2462.40	11.1	pass	159	2464.40	11.5	pass
40	2458.45	13.6	pass	80	2460.45	11.1	pass	120	2462.45	11.1	pass	160	2464.45	11.5	pass

drop 20% = 340 x 20% = 68 ; therefore can drop 68 failures

AIRONET CONFIDENTIAL Jamming margin @2mb (part2) 11/30/98

processing gain by method of jamming margin using Debugger Software Linktest

radio conditions : supply voltage 5v, at room temp, rx s/n = #2000, tx s/n = #2003, Rev AC2 with Harris HFA3860B (CCK modulation)

tester name : Jim Nahra/ Jim Friedmann

Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 1.0dB

input signal level = -60 dBm, jammer level = - 62.9 dBm, then Mj= -2.9 dB

Gp = 13.0 dB + -2.9 dB + 1.0 dB = 11.1 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE
	MHz	dB			MHz	dB			MHz	dB			MHz	dB	
161	2464.50	11.1	pass	206	2466.75	11.6	pass	251	2469.00	11.6	pass	296	2471.25	13.1	pass
162	2464.55	11.1	pass	207	2466.80	11.6	pass	252	2469.05	11.6	pass	297	2471.30	13.1	pass
163	2464.60	11.1	pass	208	2466.85	11.6	pass	253	2469.10	11.6	pass	298	2471.35	13.6	pass
164	2464.65	11.1	pass	209	2466.90	11.6	pass	254	2469.15	11.6	pass	299	2471.40	13.6	pass
165	2464.70	11.1	pass	210	2466.95	11.6	pass	255	2469.20	11.6	pass	300	2471.45	13.6	pass
166	2464.75	11.1	pass	211	2467.00	11.6	pass	256	2469.25	11.6	pass	301	2471.50	13.6	pass
167	2464.80	11.1	pass	212	2467.05	11.6	pass	257	2469.30	11.6	pass	302	2471.55	14.1	pass
168	2464.85	11.1	pass	213	2467.10	11.6	pass	258	2469.35	11.6	pass	303	2471.60	14.1	pass
169	2464.90	11.1	pass	214	2467.15	11.6	pass	259	2469.40	11.6	pass	304	2471.65	14.1	pass
170	2464.95	11.1	pass	215	2467.20	11.6	pass	260	2469.45	11.6	pass	305	2471.70	14.1	pass
171	2465.00	11.1	pass	216	2467.25	11.6	pass	261	2469.50	11.6	pass	306	2471.75	14.1	pass
172	2465.05	11.1	pass	217	2467.30	11.6	pass	262	2469.55	11.6	pass	307	2471.80	14.1	pass
173	2465.10	11.6	pass	218	2467.35	11.6	pass	263	2469.60	11.6	pass	308	2471.85	14.1	pass
174	2465.15	11.6	pass	219	2467.40	11.6	pass	264	2469.65	11.6	pass	309	2471.90	14.1	pass
175	2465.20	11.6	pass	220	2467.45	11.6	pass	265	2469.70	11.6	pass	310	2471.95	14.6	pass
176	2465.25	11.6	pass	221	2467.50	11.6	pass	266	2469.75	11.6	pass	311	2472.00	14.6	pass
177	2465.30	11.6	pass	222	2467.55	11.6	pass	267	2469.80	11.6	pass	312	2472.05	15.1	pass
178	2465.35	11.6	pass	223	2467.60	11.6	pass	268	2469.85	11.6	pass	313	2472.10	15.1	pass
179	2465.40	11.6	pass	224	2467.65	11.6	pass	269	2469.90	12.1	pass	314	2472.15	15.1	pass
180	2465.45	11.6	pass	225	2467.70	11.6	pass	270	2469.95	12.6	pass	315	2472.20	15.1	pass
181	2465.50	11.6	pass	226	2467.75	11.6	pass	271	2470.00	13.1	pass	316	2472.25	15.6	pass
182	2465.55	11.6	pass	227	2467.80	11.6	pass	272	2470.05	13.1	pass	317	2472.30	15.6	pass
183	2465.60	11.6	pass	228	2467.85	11.6	pass	273	2470.10	13.1	pass	318	2472.35	15.6	pass
184	2465.65	11.6	pass	229	2467.90	11.6	pass	274	2470.15	13.1	pass	319	2472.40	16.1	pass
185	2465.70	11.6	pass	230	2467.95	11.6	pass	275	2470.20	13.1	pass	320	2472.45	16.1	pass
186	2465.75	11.6	pass	231	2468.00	11.6	pass	276	2470.25	13.1	pass	321	2472.50	16.1	pass
187	2465.80	11.6	pass	232	2468.05	11.6	pass	277	2470.30	13.1	pass	322	2472.55	16.6	pass
188	2465.85	11.6	pass	233	2468.10	11.6	pass	278	2470.35	13.1	pass	323	2472.60	17.1	pass
189	2465.90	11.6	pass	234	2468.15	11.6	pass	279	2470.40	13.1	pass	324	2472.65	17.1	pass
190	2465.95	11.6	pass	235	2468.20	11.6	pass	280	2470.45	13.1	pass	325	2472.70	17.1	pass
191	2466.00	11.6	pass	236	2468.25	11.6	pass	281	2470.50	13.1	pass	326	2472.75	17.1	pass
192	2466.05	11.6	pass	237	2468.30	11.6	pass	282	2470.55	13.1	pass	327	2472.80	17.6	pass
193	2466.10	11.6	pass	238	2468.35	11.6	pass	283	2470.60	13.1	pass	328	2472.85	18.1	pass
194	2466.15	11.6	pass	239	2468.40	11.6	pass	284	2470.65	13.1	pass	329	2472.90	18.1	pass
195	2466.20	11.6	pass	240	2468.45	11.6	pass	285	2470.70	13.1	pass	330	2472.95	18.1	pass
196	2466.25	11.6	pass	241	2468.50	11.6	pass	286	2470.75	13.1	pass	331	2473.00	18.6	pass
197	2466.30	11.6	pass	242	2468.55	11.6	pass	287	2470.80	13.1	pass	332	2473.05	18.6	pass
198	2466.35	11.6	pass	243	2468.60	11.6	pass	288	2470.85	13.1	pass	333	2473.10	19.1	pass
199	2466.40	11.6	pass	244	2468.65	11.6	pass	289	2470.90	13.1	pass	334	2473.15	19.6	pass
200	2466.45	11.6	pass	245	2468.70	11.6	pass	290	2470.95	13.1	pass	335	2473.20	19.6	pass
201	2466.50	11.6	pass	246	2468.75	11.6	pass	291	2471.00	13.1	pass	336	2473.25	20.1	pass
202	2466.55	11.6	pass	247	2468.80	11.6	pass	292	2471.05	13.1	pass	337	2473.30	20.1	pass
203	2466.60	11.6	pass	248	2468.85	11.6	pass	293	2471.10	13.1	pass	338	2473.35	20.6	pass
204	2466.65	11.6	pass	249	2468.90	11.6	pass	294	2471.15	13.1	pass	339	2473.40	21.1	pass
205	2466.70	11.6	pass	250	2468.95	11.6	pass	295	2471.20	13.1	pass	340	2473.45	21.6	pass

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AIRONET CONFIDENTIAL Jamming margin @5.5mb CCK part1 11/30/98

processing gain by method of jamming margin using Debugger Software Linktest

radio conditions : supply voltage 5v, at room temp, rx s/n = #2000, tx s/n = #2003, Rev AC2 with Harris HFA3860B (CCK modulation)

tester name : Jim Nahra / Jim Friedmann

test date : 11/16/98 radio carrier freq= 2465

Gp = S/N + Mj + Lsys; where S/N = 13.6 dB as per CCK modulation; Lsys = 2.0 dB

input signal level = -60 dBm, jammer level = - 65.2 dBm, then Mj= - 5.2 dB for 10-5 BER

Gp = 13.6 dB + -5.2 dB + 2.0 dB = 10.4 dB (worst case point after lowest 20% discarded)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	17.5	pass	41	2458.50	12.5	pass	81	2460.50	11	pass	121	2462.50	10.4	pass
2	2456.55	17.5	pass	42	2458.55	12.5	pass	82	2460.55	11	pass	122	2462.55	10.4	pass
3	2456.60	17	pass	43	2458.60	12.5	pass	83	2460.60	11	pass	123	2462.60	10.4	pass
4	2456.65	17	pass	44	2458.65	12.5	pass	84	2460.65	11	pass	124	2462.65	10.4	pass
5	2456.70	17	pass	45	2458.70	12.5	pass	85	2460.70	11	pass	125	2462.70	10.4	pass
6	2456.75	17	pass	46	2458.75	12.5	pass	86	2460.75	11	pass	126	2462.75	10.4	pass
7	2456.80	16.5	pass	47	2458.80	12.5	pass	87	2460.80	11	pass	127	2462.80	10.4	pass
8	2456.85	16.5	pass	48	2458.85	12.5	pass	88	2460.85	11	pass	128	2462.85	10.4	pass
9	2456.90	16.5	pass	49	2458.90	12.5	pass	89	2460.90	10.5	pass	129	2462.90	10.4	pass
10	2456.95	16.5	pass	50	2458.95	12	pass	90	2460.95	10.5	pass	130	2462.95	10.4	pass
11	2457.00	16.5	pass	51	2459.00	12	pass	91	2461.00	10.5	pass	131	2463.00	10.4	pass
12	2457.05	16.5	pass	52	2459.05	12	pass	92	2461.05	10.5	pass	132	2463.05	10.4	pass
13	2457.10	16.5	pass	53	2459.10	12	pass	93	2461.10	10.5	pass	133	2463.10	10.4	pass
14	2457.15	16	pass	54	2459.15	12	pass	94	2461.15	10.5	pass	134	2463.15	10.4	pass
15	2457.20	16	pass	55	2459.20	12	pass	95	2461.20	10.5	pass	135	2463.20	10.4	pass
16	2457.25	16	pass	56	2459.25	12	pass	96	2461.25	10.5	pass	136	2463.25	10.4	pass
17	2457.30	16	pass	57	2459.30	11.5	pass	97	2461.30	10.5	pass	137	2463.30	10.4	pass
18	2457.35	15.5	pass	58	2459.35	11.5	pass	98	2461.35	10.5	pass	**138**	2463.35	9.5	Fail-discard
19	2457.40	15.5	pass	59	2459.40	11.5	pass	99	2461.40	10.5	pass	139	2463.40	10.4	pass
20	2457.45	15	pass	60	2459.45	11.5	pass	100	2461.45	10.5	pass	140	2463.45	10.4	pass
21	2457.50	15	pass	61	2459.50	11.5	pass	101	2461.50	10.5	pass	141	2463.50	10.4	pass
22	2457.55	15	pass	62	2459.55	11.5	pass	102	2461.55	10.5	pass	142	2463.55	10.4	pass
23	2457.60	15	pass	63	2459.60	11.5	pass	103	2461.60	10.5	pass	143	2463.60	10.4	pass
24	2457.65	14.5	pass	64	2459.65	11.5	pass	104	2461.65	10.5	pass	144	2463.65	10.4	pass
25	2457.70	14.5	pass	65	2459.70	11.5	pass	105	2461.70	10.5	pass	145	2463.70	10.4	pass
26	2457.75	14.5	pass	66	2459.75	11.5	pass	106	2461.75	10.5	pass	146	2463.75	10.4	pass
27	2457.80	14	pass	67	2459.80	11.5	pass	**107**	2461.80	10	pass-disc	147	2463.80	10.4	pass
28	2457.85	14	pass	68	2459.85	11.5	pass	**108**	2461.85	10	pass-disc	148	2463.85	10.4	pass
29	2457.90	13.5	pass	69	2459.90	11.5	pass	**109**	2461.90	10	pass-disc	149	2463.90	10.4	pass
30	2457.95	13	pass	70	2459.95	11.5	pass	**110**	2461.95	10	pass-disc	150	2463.95	10.4	pass
31	2458.00	13	pass	71	2460.00	11.5	pass	**111**	2462.00	9.5	Fail-discard	151	2464.00	10.4	pass
32	2458.05	13	pass	72	2460.05	11.5	pass	**112**	2462.05	10	pass-disc	152	2464.05	10.4	pass
33	2458.10	13	pass	73	2460.10	11.5	pass	**113**	2462.10	9.5	Fail-discard	153	2464.10	10.4	pass
34	2458.15	13	pass	74	2460.15	11.5	pass	**114**	2462.15	10	pass-disc	154	2464.15	10.4	pass
35	2458.20	13	pass	75	2460.20	11.5	pass	**115**	2462.20	9.5	Fail-discard	155	2464.20	10.4	pass
36	2458.25	13	pass	76	2460.25	11.5	pass	**116**	2462.25	10	pass-disc	156	2464.25	10.4	pass
37	2458.30	13	pass	77	2460.30	11.5	pass	**117**	2462.30	9.5	Fail-discard	157	2464.30	10.4	pass
38	2458.35	13	pass	78	2460.35	11.5	pass	**118**	2462.35	10	pass-disc	158	2464.35	10.4	pass
39	2458.40	12.5	pass	79	2460.40	11.5	pass	**119**	2462.40	9.5	Fail-discard	**159**	2464.40	9.5	Fail-discard
40	2458.45	12.5	pass	80	2460.45	11.5	pass	**120**	2462.45	10	pass-disc	160	2464.45	10.4	pass

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AIRONET CONFIDENTIAL Jamming margin @5.5mb CCK part2 11/30/98

processing gain by method of jamming margin using Debugger Software Linktest

radio conditions : supply voltage 5v, at room temp, rx s/n = #2000, tx s/n = #2003, Rev AC2 with Harris HFA3860B (CCK modulation)

tester name : Jim Nahra / Jim Friedmann

Gp = S/N + Mj + Lsys; where S/N = 13.6 dB as per CCK modulation; Lsys = 2.0 dB

input signal level = -60 dBm, jammer level = - 65.2 dBm, then Mj= - 5.2 dB for 10-5 BER

Gp = 13.6 dB + -5.2 dB + 2.0 dB = 10.4 dB (worst case point after lowest 20% discarded)

	jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE		jammer freq	Gp	pass (error rate under 1x10-5) pass / FAILURE
	MHz	dB			MHz	dB			MHz	dB			MHz	dB	
161	2464.50	10	pass-disc	206	2466.75	10.4	pass	251	2469.00	10.4	pass	296	2471.25	13.0	pass
162	2464.55	10.4	pass-disc	207	2466.80	10.4	pass	252	2469.05	10.5	pass	297	2471.30	13.0	pass
163	2464.60	10	pass-disc	208	2466.85	10.4	pass	253	2469.10	11	pass	298	2471.35	13.0	pass
164	2464.65	9.5	Fail-discard	209	2466.90	10.4	pass	254	2469.15	11	pass	299	2471.40	13.5	pass
165	2464.70	9.5	Fail-discard	210	2466.95	10.4	pass	255	2469.20	11	pass	300	2471.45	13.5	pass
166	2464.75	9.5	Fail-discard	211	2467.00	10.4	pass	256	2469.25	11	pass	301	2471.50	13.5	pass
167	2464.80	10	pass-disc	212	2467.05	10.4	pass	257	2469.30	11	pass	302	2471.55	13.5	pass
168	2464.85	9.5	Fail-discard	213	2467.10	10.4	pass	258	2469.35	11	pass	303	2471.60	14.0	pass
169	2464.90	9.5	Fail-discard	214	2467.15	10.4	pass	259	2469.40	11	pass	304	2471.65	14.0	pass
170	2464.95	10	pass-disc	215	2467.20	10.4	pass	260	2469.45	11	pass	305	2471.70	14.0	pass
171	2465.00	10.4	pass	216	2467.25	10.4	pass	261	2469.50	11	pass	306	2471.75	14.0	pass
172	2465.05	10.4	pass	**217**	2467.30	10	pass-disc	262	2469.55	11	pass	307	2471.80	14.5	pass
173	2465.10	10.4	pass	**218**	2467.35	9.5	Fail-discard	263	2469.60	11	pass	308	2471.85	14.5	pass
174	2465.15	10.4	pass	**219**	2467.40	9.5	Fail-discard	264	2469.65	11	pass	309	2471.90	14.5	pass
175	2465.20	10.4	pass	**220**	2467.45	9.5	Fail-discard	265	2469.70	11	pass	310	2471.95	14.5	pass
176	2465.25	10.4	pass	**221**	2467.50	9.5	Fail-discard	266	2469.75	11	pass	311	2472.00	14.5	pass
177	2465.30	10.4	pass	**222**	2467.55	9.5	Fail-discard	267	2469.80	11	pass	312	2472.05	15	pass
178	2465.35	10.4	pass	**223**	2467.60	9.5	Fail-discard	268	2469.85	11	pass	313	2472.10	15.5	pass
179	2465.40	10.4	pass	**224**	2467.65	9.5	Fail-discard	269	2469.90	11	pass	314	2472.15	15.5	pass
180	2465.45	10.4	pass	**225**	2467.70	9.5	Fail-discard	270	2469.95	11	pass	315	2472.20	15.5	pass
181	2465.50	10.4	pass	**226**	2467.75	10	pass-disc	271	2470.00	11	pass	316	2472.25	15.5	pass
182	2465.55	10.4	pass	**227**	2467.80	10	pass-disc	272	2470.05	11	pass	317	2472.30	15.5	pass
183	2465.60	10.4	pass	**228**	2467.85	9.5	Fail-discard	273	2470.10	11	pass	318	2472.35	16	pass
184	2465.65	10.4	pass	**229**	2467.90	9.5	Fail-discard	274	2470.15	11.5	pass	319	2472.40	16.5	pass
185	2465.70	10.4	pass	**230**	2467.95	9.5	Fail-discard	275	2470.20	11.5	pass	320	2472.45	16.5	pass
186	2465.75	10.4	pass	231	2468.00	10.5	pass	276	2470.25	11.5	pass	321	2472.50	16.5	pass
187	2465.80	10.4	pass	232	2468.05	10.5	pass	277	2470.30	11.5	pass	322	2472.55	16.5	pass
188	2465.85	10.4	pass	233	2468.10	10.5	pass	278	2470.35	11.5	pass	323	2472.60	17	pass
189	2465.90	10.4	pass	234	2468.15	10.5	pass	279	2470.40	12	pass	324	2472.65	17	pass
190	2465.95	10.4	pass	235	2468.20	10.5	pass	280	2470.45	12	pass	325	2472.70	17.5	pass
191	2466.00	10.4	pass	236	2468.25	10.5	pass	281	2470.50	12	pass	326	2472.75	17.5	pass
192	2466.05	10	pass-disc	237	2468.30	10.5	pass	282	2470.55	12	pass	327	2472.80	17.5	pass
193	2466.10	9.5	Fail-discard	238	2468.35	10.5	pass	283	2470.60	12	pass	328	2472.85	18	pass
194	2466.15	9.5	Fail-discard	239	2468.40	10.5	pass	284	2470.65	12	pass	329	2472.90	18	pass
195	2466.20	10	pass-disc	240	2468.45	10.5	pass	285	2470.70	12	pass	330	2472.95	18	pass
196	2466.25	10	pass-disc	241	2468.50	10.5	pass	286	2470.75	12.5	pass	331	2473.00	18.5	pass
197	2466.30	10.4	pass	242	2468.55	10.5	pass	287	2470.80	12.5	pass	332	2473.05	18.5	pass
198	2466.35	10.4	pass	243	2468.60	10.5	pass	288	2470.85	12.5	pass	333	2473.10	19	pass
199	2466.40	10.4	pass	244	2468.65	10.5	pass	289	2470.90	12.5	pass	334	2473.15	19	pass
200	2466.45	10.4	pass	245	2468.70	10.5	pass	290	2470.95	12.5	pass	335	2473.20	19	pass
201	2466.50	10.3	pass	246	2468.75	10.5	pass	291	2471.00	12.5	pass	336	2473.25	19	pass
202	2466.55	10.2	pass	247	2468.80	10.5	pass	292	2471.05	12.5	pass	337	2473.30	19	pass
203	2466.60	10.4	pass	248	2468.85	10.5	pass	293	2471.10	12.5	pass	338	2473.35	19	pass
204	2466.65	10.4	pass	249	2468.90	10.4	pass	294	2471.15	13	pass	339	2473.40	20	pass
205	2466.70	10.4	pass	250	2468.95	10.5	pass	295	2471.20	13	pass	340	2473.45	20.5	pass

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AIRONET CONFIDENTIAL Jamming margin @11mb CCK part1 11/30/98

processing gain by method of jamming margin using Debugger Software Linktest

radio conditions : supply voltage 5v, at room temp, rx s/n = #2000, tx s/n = #2003, Rev AC2 with Harris HFA3860B (CCK modulation)

tester name : Jim Nahra / Jim Friedmann

test date : 11/12/98 radio carrier freq= 2465

Gp = S/N + Mj + Lsys; where S/N = 16.0 dB as per CCK modulation; Lsys = 2dB

input signal level = -60 dBm, jammer level = - 67.3 dBm, then Mj= - 7.3 dB for 10-5 BER

Gp = 16.0 dB + -7.3 dB + 2 dB = 10.7 dB (worst case point after lowest 20% discarded)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	19.7	pass	41	2458.50	13.7	pass	81	2460.50	11.7	pass	121	2462.50	10.7	pass
2	2456.55	19.7	pass	42	2458.55	13.7	pass	82	2460.55	11.7	pass	122	2462.55	10.7	pass
3	2456.60	19.7	pass	43	2458.60	13.7	pass	83	2460.60	11.2	pass	123	2462.60	10.7	pass
4	2456.65	19.2	pass	44	2458.65	13.7	pass	84	2460.65	11.2	pass	124	2462.65	10.7	pass
5	2456.70	19.2	pass	45	2458.70	13.7	pass	85	2460.70	11.2	pass	125	2462.70	10.7	pass
6	2456.75	19.2	pass	46	2458.75	13.2	pass	86	2460.75	11.2	pass	126	2462.75	10.7	pass
7	2456.80	19.2	pass	47	2458.80	13.2	pass	87	2460.80	11.2	pass	127	2462.80	10.7	pass
8	2456.85	19.2	pass	48	2458.85	13.2	pass	88	2460.85	11.2	pass	128	2462.85	10.7	pass
9	2456.90	18.7	pass	49	2458.90	13.2	pass	89	2460.90	11.2	pass	129	2462.90	10.7	pass
10	2456.95	18.7	pass	50	2458.95	13.2	pass	90	2460.95	11.2	pass	130	2462.95	10.7	pass
11	2457.00	18.7	pass	51	2459.00	13.2	pass	91	2461.00	11.2	pass	131	2463.00	10.7	pass
12	2457.05	18.7	pass	52	2459.05	12.7	pass	92	2461.05	11.2	pass	132	2463.05	10.7	pass
13	2457.10	18.7	pass	53	2459.10	12.7	pass	93	2461.10	11.2	pass	133	2463.10	10.7	pass
14	2457.15	18.7	pass	54	2459.15	12.7	pass	94	2461.15	11.2	pass	134	2463.15	10.7	pass
15	2457.20	18.2	pass	55	2459.20	12.7	pass	95	2461.20	11.2	pass	135	2463.20	10.7	pass
16	2457.25	18.2	pass	56	2459.25	12.7	pass	96	2461.25	11.2	pass	136	2463.25	10.7	pass
17	2457.30	18.2	pass	57	2459.30	12.7	pass	97	2461.30	11.2	pass	137	2463.30	10.7	pass
18	2457.35	17.7	pass	58	2459.35	12.7	pass	98	2461.35	11.2	pass	138	2463.35	10.7	pass
19	2457.40	17.2	pass	59	2459.40	12.2	pass	99	2461.40	11.2	pass	139	2463.40	10.7	pass
20	2457.45	17.2	pass	60	2459.45	12.2	pass	100	2461.45	11.2	pass	140	2463.45	10.7	pass
21	2457.50	17.2	pass	61	2459.50	11.7	pass	101	2461.50	11.2	pass	141	2463.50	10.7	pass
22	2457.55	17.2	pass	62	2459.55	11.7	pass	102	2461.55	11.2	pass	142	2463.55	10.7	pass
23	2457.60	16.7	pass	63	2459.60	11.7	pass	103	2461.60	11.2	pass	143	2463.60	10.7	pass
24	2457.65	16.7	pass	64	2459.65	11.7	pass	104	2461.65	11.2	pass	144	2463.65	10.7	pass
25	2457.70	16.2	pass	65	2459.70	11.7	pass	105	2461.70	11.2	pass	145	2463.70	10.7	pass
26	2457.75	15.7	pass	66	2459.75	11.7	pass	106	2461.75	11.2	pass	146	2463.75	10.7	pass
27	2457.80	15.7	pass	67	2459.80	11.7	pass	107	2461.80	11.2	pass	147	2463.80	10.7	pass
28	2457.85	15.7	pass	68	2459.85	11.7	pass	108	2461.85	11.2	pass	148	2463.85	10.7	pass
29	2457.90	15.2	pass	69	2459.90	11.7	pass	109	2461.90	11.2	pass	149	2463.90	10.7	pass
30	2457.95	14.7	pass	70	2459.95	11.7	pass	110	2461.95	11.2	pass	150	2463.95	10.7	pass
31	2458.00	14.7	pass	71	2460.00	11.7	pass	111	2462.00	11.2	pass	151	2464.00	10.7	pass
32	2458.05	14.7	pass	72	2460.05	11.7	pass	112	2462.05	11.2	pass	152	2464.05	10.7	pass
33	2458.10	13.7	pass	73	2460.10	11.7	pass	113	2462.10	11.2	pass	153	2464.10	10.7	pass
34	2458.15	13.7	pass	74	2460.15	11.7	pass	114	2462.15	11.2	pass	154	2464.15	10.7	pass
35	2458.20	13.7	pass	75	2460.20	11.7	pass	115	2462.20	11.2	pass	155	2464.20	10.7	pass
36	2458.25	13.7	pass	76	2460.25	11.7	pass	116	2462.25	10.7	pass	156	2464.25	10.7	pass
37	2458.30	13.7	pass	77	2460.30	11.7	pass	117	2462.30	10.7	pass	157	2464.30	10.7	pass
38	2458.35	13.7	pass	78	2460.35	11.7	pass	118	2462.35	10.7	pass	158	2464.35	10.7	pass
39	2458.40	13.7	pass	79	2460.40	11.7	pass	119	2462.40	10.7	pass	159	2464.40	10.7	pass
40	2458.45	13.7	pass	80	2460.45	11.7	pass	120	2462.45	10.7	pass	160	2464.45	10.7	pass

drop 20% = 340 x 20% = 68 ; therefore can drop up to 68 lowest pts

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AIRONET CONFIDENTIAL Jamming margin @11mb CCK part2 11/30/98

processing gain by method of jamming margin using Debugger Software Linktest

radio conditions : supply voltage 5v, at room temp, rx s/n = #2000, tx s/n = #2003, Rev AC2 with Harris HFA3860B (CCK modulation)

tester name : Jim Nahra / Jim Friedmann

Gp = S/N + Mj + Lsys; where S/N = 16.0 dB as per CCK modulation; Lsys = 2dB

input signal level = -60 dBm, jammer level = - 67.3 dBm, then Mj= - 7.3 dB for 10-5 BER

Gp = 16.0 dB + -7.3 dB + 2 dB = 10.7 dB (worst case point after lowest 20% discarded)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
161	2464.50	10.7	pass	206	2466.75	10.7	pass	251	2469.00	11.2	pass	296	2471.25	13.7	pass
162	2464.55	10.7	pass	207	2466.80	10.7	pass	252	2469.05	11.2	pass	297	2471.30	14.2	pass
163	2464.60	10.7	pass	208	2466.85	10.7	pass	253	2469.10	11.2	pass	298	2471.35	14.2	pass
164	2464.65	10.7	pass	209	2466.90	10.7	pass	254	2469.15	11.2	pass	299	2471.40	14.2	pass
165	2464.70	10.7	pass	210	2466.95	10.7	pass	255	2469.20	11.2	pass	300	2471.45	14.2	pass
166	2464.75	10.7	pass	211	2467.00	10.7	pass	256	2469.25	11.2	pass	301	2471.50	14.2	pass
167	2464.80	10.7	pass	212	2467.05	10.7	pass	257	2469.30	11.2	pass	302	2471.55	14.7	pass
168	2464.85	10.7	pass	213	2467.10	10.7	pass	258	2469.35	11.2	pass	303	2471.60	14.7	pass
169	2464.90	10.7	pass	214	2467.15	10.7	pass	259	2469.40	11.2	pass	304	2471.65	14.7	pass
170	2464.95	10.7	pass	215	2467.20	10.7	pass	260	2469.45	11.2	pass	305	2471.70	14.7	pass
171	2465.00	10.7	pass	216	2467.25	10.7	pass	261	2469.50	11.2	pass	306	2471.75	15.2	pass
172	2465.05	10.7	pass	217	2467.30	10.2	pass-disc	262	2469.55	11.2	pass	307	2471.80	15.2	pass
173	2465.10	10.7	pass	218	2467.35	10.2	pass-disc	263	2469.60	11.2	pass	308	2471.85	15.7	pass
174	2465.15	10.7	pass	219	2467.40	10.2	pass-disc	264	2469.65	11.2	pass	309	2471.90	15.7	pass
175	2465.20	10.7	pass	220	2467.45	9.2	Fail-discard	265	2469.70	11.2	pass	310	2471.95	15.7	pass
176	2465.25	10.7	pass	221	2467.50	9.2	Fail-discard	266	2469.75	11.2	pass	311	2472.00	16.2	pass
177	2465.30	10.7	pass	222	2467.55	9.2	Fail-discard	267	2469.80	11.2	pass	312	2472.05	16.2	pass
178	2465.35	10.7	pass	223	2467.60	9.2	Fail-discard	268	2469.85	11.2	pass	313	2472.10	16.2	pass
179	2465.40	10.7	pass	224	2467.65	9.2	Fail-discard	269	2469.90	11.2	pass	314	2472.15	16.7	pass
180	2465.45	10.7	pass	225	2467.70	9.2	Fail-discard	270	2469.95	11.2	pass	315	2472.20	16.7	pass
181	2465.50	10.7	pass	226	2467.75	9.2	Fail-discard	271	2470.00	11.2	pass	316	2472.25	16.7	pass
182	2465.55	10.7	pass	227	2467.80	9.2	Fail-discard	272	2470.05	11.2	pass	317	2472.30	16.7	pass
183	2465.60	10.7	pass	228	2467.85	9.7	Fail-discard	273	2470.10	11.7	pass	318	2472.35	16.7	pass
184	2465.65	10.7	pass	229	2467.90	9.7	Fail-discard	274	2470.15	11.7	pass	319	2472.40	17.2	pass
185	2465.70	10.7	pass	230	2467.95	9.7	Fail-discard	275	2470.20	11.7	pass	320	2472.45	17.2	pass
186	2465.75	10.7	pass	231	2468.00	9.7	Fail-discard	276	2470.25	11.7	pass	321	2472.50	17.7	pass
187	2465.80	10.7	pass	232	2468.05	10.2	pass-disc	277	2470.30	11.7	pass	322	2472.55	17.7	pass
188	2465.85	10.7	pass	233	2468.10	10.2	pass-disc	278	2470.35	11.7	pass	323	2472.60	17.7	pass
189	2465.90	10.7	pass	234	2468.15	10.2	pass-disc	279	2470.40	11.7	pass	324	2472.65	18.2	pass
190	2465.95	10.7	pass	235	2468.20	10.2	pass-disc	280	2470.45	12.2	pass	325	2472.70	18.7	pass
191	2466.00	10.7	pass	236	2468.25	10.2	pass-disc	281	2470.50	12.2	pass	326	2472.75	18.7	pass
192	2466.05	10.7	pass	237	2468.30	10.2	pass-disc	282	2470.55	12.2	pass	327	2472.80	18.7	pass
193	2466.10	10.7	pass	238	2468.35	10.2	pass-disc	283	2470.60	12.7	pass	328	2472.85	19.2	pass
194	2466.15	10.7	pass	239	2468.40	10.2	pass-disc	284	2470.65	13.2	pass	329	2472.90	19.2	pass
195	2466.20	10.7	pass	240	2468.45	10.2	pass-disc	285	2470.70	13.2	pass	330	2472.95	19.7	pass
196	2466.25	10.7	pass	241	2468.50	10.2	pass-disc	286	2470.75	13.2	pass	331	2473.00	19.7	pass
197	2466.30	10.7	pass	242	2468.55	10.2	pass-disc	287	2470.80	13.2	pass	332	2473.05	20.2	pass
198	2466.35	10.7	pass	243	2468.60	10.2	pass-disc	288	2470.85	13.2	pass	333	2473.10	20.2	pass
199	2466.40	10.7	pass	244	2468.65	10.2	pass-disc	289	2470.90	13.2	pass	334	2473.15	20.2	pass
200	2466.45	10.7	pass	245	2468.70	10.2	pass-disc	290	2470.95	13.2	pass	335	2473.20	20.2	pass
201	2466.50	10.7	pass	246	2468.75	10.7	pass	291	2471.00	13.2	pass	336	2473.25	20.7	pass
202	2466.55	10.7	pass	247	2468.80	10.7	pass	292	2471.05	13.7	pass	337	2473.30	20.7	pass
203	2466.60	10.7	pass	248	2468.85	10.7	pass	293	2471.10	13.7	pass	338	2473.35	21.7	pass
204	2466.65	10.7	pass	249	2468.90	10.7	pass	294	2471.15	13.7	pass	339	2473.40	21.7	pass
205	2466.70	10.7	pass	250	2468.95	11.2	pass	295	2471.20	13.7	pass	340	2473.45	22.2	pass

drop 20% = 340 x 20% = 68 ; therefore can drop 68 loweset pts, next lowest pt is 10.7 dB, therefore unit passes proc gain test

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AIRONET CONFIDENTIAL Jamming margin at 11 mb (part1) 12/7/98

processing gain by methode of jamming margin using BER tester

radio conditions : supply voltage 5v, at room temp, rx s/n = #40, tx s/n = #27

tester name : Brian Casto / Jim Friedmann

test date : 3/17/98 radio carrier freq= 2465

Gp = S/N + Mj + Lsys; where S/N = 16.6 dB as per Harris MBOK modulation; Lsys = 2dB

input signal level = -30 dBm, jammer level = - 38.1 dBm, then Mj= - 8.1 dB for 10-5 BER

Gp = 16.6 dB + -7.1 dB + 2 dB = 11.5 dB (worst case point after lowest 20% discarded)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	19	pass	41	2458.50	12	pass	81	2460.50	10.5	pass	121	2462.50	12.5	pass
2	2456.55	19	pass	42	2458.55	12	pass	82	2460.55	10.5	pass	122	2462.55	12.5	pass
3	2456.60	19	pass	43	2458.60	12	pass	83	2460.60	10.5	pass	123	2462.60	12.5	pass
4	2456.65	19	pass	44	2458.65	12	pass	84	2460.65	10.5	pass	124	2462.65	12.5	pass
5	2456.70	19	pass	45	2458.70	12	pass	85	2460.70	10.5	pass	125	2462.70	12.5	pass
6	2456.75	19	pass	46	2458.75	12	pass	86	2460.75	10.5	pass	126	2462.75	11.5	pass
7	2456.80	19	pass	47	2458.80	12	pass	87	2460.80	10.5	pass	127	2462.80	11.5	pass
8	2456.85	19	pass	48	2458.85	12	pass	88	2460.85	10.5	pass	128	2462.85	11.5	pass
9	2456.90	19	pass	49	2458.90	12	pass	89	2460.90	10.5	pass	129	2462.90	11.5	pass
10	2456.95	19	pass	50	2458.95	12	pass	90	2460.95	10.5	pass	130	2462.95	11.5	pass
11	2457.00	19	pass	51	2459.00	10.5	pass	91	2461.00	11.5	pass	131	2463.00	11.5	pass
12	2457.05	16	pass	52	2459.05	10.5	pass	92	2461.05	11	pass	132	2463.05	11.5	pass
13	2457.10	16	pass	53	2459.10	10.5	pass	93	2461.10	11	pass	133	2463.10	11.5	pass
14	2457.15	16	pass	54	2459.15	10.5	pass	94	2461.15	11	pass	134	2463.15	11.5	pass
15	2457.20	16	pass	55	2459.20	10.5	pass	95	2461.20	11	pass	135	2463.20	11.5	pass
16	2457.25	16	pass	56	2459.25	10.5	pass	96	2461.25	11	pass	136	2463.25	11.5	pass
17	2457.30	16	pass	57	2459.30	10.5	pass	97	2461.30	10.5	pass	137	2463.30	11.5	pass
18	2457.35	16	pass	58	2459.35	10.5	pass	98	2461.35	10.5	pass	138	2463.35	11.5	pass
19	2457.40	16	pass	59	2459.40	10.5	pass	99	2461.40	10.5	pass	139	2463.40	11.5	pass
20	2457.45	16	pass	60	2459.45	10.5	pass	100	2461.45	10.5	pass	140	2463.45	11.5	pass
21	2457.50	16	pass	61	2459.50	10.5	pass	101	2461.50	10.5	pass	141	2463.50	11.5	pass
22	2457.55	16	pass	62	2459.55	10.5	pass	102	2461.55	10.5	pass	142	2463.55	11.5	pass
23	2457.60	16	pass	63	2459.60	10.5	pass	103	2461.60	10.5	pass	143	2463.60	11.5	pass
24	2457.65	16	pass	64	2459.65	10.5	pass	104	2461.65	10.5	pass	144	2463.65	11.5	pass
25	2457.70	16	pass	65	2459.70	10.5	pass	105	2461.70	10.5	pass	145	2463.70	11.8	pass
26	2457.75	16	pass	66	2459.75	10.5	pass	106	2461.75	10.5	pass	146	2463.75	11.8	pass
27	2457.80	16	pass	67	2459.80	10.5	pass	107	2461.80	11.5	pass	147	2463.80	11.8	pass
28	2457.85	16	pass	68	2459.85	10.5	pass	108	2461.85	11.5	pass	148	2463.85	11.8	pass
29	2457.90	16	pass	69	2459.90	10.5	pass	109	2461.90	12.5	pass	149	2463.90	11.8	pass
30	2457.95	16	pass	70	2459.95	10.5	pass	110	2461.95	12.5	pass	150	2463.95	11.8	pass
31	2458.00	16	pass	71	2460.00	10.5	pass	111	2462.00	12.5	pass	151	2464.00	11.8	pass
32	2458.05	12	pass	72	2460.05	10.5	pass	112	2462.05	12.5	pass	152	2464.05	11.8	pass
33	2458.10	12	pass	73	2460.10	10.5	pass	113	2462.10	12.5	pass	153	2464.10	11.8	pass
34	2458.15	12	pass	74	2460.15	10.5	pass	114	2462.15	12.5	pass	154	2464.15	11.8	pass
35	2458.20	12	pass	75	2460.20	10.5	pass	115	2462.20	12.5	pass	155	2464.20	11.8	pass
36	2458.25	12	pass	76	2460.25	10.5	pass	116	2462.25	12.5	pass	156	2464.25	11.8	pass
37	2458.30	12	pass	77	2460.30	10.5	pass	117	2462.30	12.5	pass	157	2464.30	11.8	pass
38	2458.35	12	pass	78	2460.35	10.5	pass	118	2462.35	12.5	pass	158	2464.35	11.8	pass
39	2458.40	12	pass	79	2460.40	10.5	pass	119	2462.40	12.5	pass	159	2464.40	11.8	pass
40	2458.45	12	pass	80	2460.45	10.5	pass	120	2462.45	12.5	pass	160	2464.45	11.8	pass

drop 20% = 340 x 20% = 68 ; therefore can drop up to 68 lowest pts

8:58 AM Page 1 48pg_mok, JJF

AIRONET CONFIDENTIAL Jamming margin at 11 mb (part2) 12/7/98

processing gain by methode of jamming margin using BER tester

radio conditions : supply voltage 5v, at room temp

tester name : Brian Casto / Jim Friedmann

Gp = S/N + Mj + Lsys; where S/N = 16.6 dB as per Harris MBOK modulation; Lsys = 2dB

input signal level = -30 dBm, jammer level = - 38.1 dBm, then Mj= - 8.1 dB for 10-5 BER

Gp = 16.6 dB + -7.1 dB + 2 dB = 11.5 dB (worst case point after lowest 20% discarded)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
161	2464.50	11.8	pass	206	2466.75	12	pass	251	2469.00	12	pass	296	2471.25	12.5	pass
162	2464.55	11.8	pass	207	2466.80	12	pass	252	2469.05	12	pass	297	2471.30	12.5	pass
163	2464.60	11.8	pass	208	2466.85	12	pass	253	2469.10	12	pass	298	2471.35	12.5	pass
164	2464.65	11.8	pass	209	2466.90	12	pass	254	2469.15	12	pass	299	2471.40	12.5	pass
165	2464.70	11.8	pass	210	2466.95	12	pass	255	2469.20	12	pass	300	2471.45	12.5	pass
166	2464.75	11.8	pass	211	2467.00	12	pass	256	2469.25	12	pass	301	2471.50	12.5	pass
167	2464.80	11.8	pass	212	2467.05	12	pass	257	2469.30	12	pass	302	2471.55	12.5	pass
168	2464.85	11.8	pass	213	2467.10	12	pass	258	2469.35	12	pass	303	2471.60	12.5	pass
169	2464.90	11.8	pass	214	2467.15	12	pass	259	2469.40	12	pass	304	2471.65	12.5	pass
170	2464.95	11.8	pass	215	2467.20	12	pass	260	2469.45	12	pass	305	2471.70	12.5	pass
171	2465.00	13.5	pass	216	2467.25	12	pass	261	2469.50	12	pass	306	2471.75	12.5	pass
172	2465.05	13.5	pass	217	2467.30	12	pass	262	2469.55	12	pass	307	2471.80	12.5	pass
173	2465.10	13.5	pass	218	2467.35	12	pass	263	2469.60	12	pass	308	2471.85	12.5	pass
174	2465.15	13.5	pass	219	2467.40	12	pass	264	2469.65	12	pass	309	2471.90	12.5	pass
175	2465.20	13.5	pass	220	2467.45	12	pass	265	2469.70	12	pass	310	2471.95	12.5	pass
176	2465.25	13.5	pass	221	2467.50	12	pass	266	2469.75	12	pass	311	2472.00	15	pass
177	2465.30	13.5	pass	222	2467.55	12	pass	267	2469.80	12	pass	312	2472.05	15	pass
178	2465.35	13.5	pass	223	2467.60	12	pass	268	2469.85	12	pass	313	2472.10	15	pass
179	2465.40	13.5	pass	224	2467.65	12	pass	269	2469.90	12	pass	314	2472.15	15	pass
180	2465.45	13.5	pass	225	2467.70	12	pass	270	2469.95	12	pass	315	2472.20	15	pass
181	2465.50	13.5	pass	226	2467.75	12	pass	271	2470.00	12	pass	316	2472.25	15	pass
182	2465.55	13.5	pass	227	2467.80	12	pass	272	2470.05	12	pass	317	2472.30	15	pass
183	2465.60	13.5	pass	228	2467.85	12	pass	273	2470.10	12	pass	318	2472.35	15	pass
184	2465.65	13.5	pass	229	2467.90	12	pass	274	2470.15	12	pass	319	2472.40	15	pass
185	2465.70	13.5	pass	230	2467.95	12	pass	275	2470.20	12	pass	320	2472.45	15	pass
186	2465.75	13.5	pass	231	2468.00	12.5	pass	276	2470.25	12	pass	321	2472.50	15	pass
187	2465.80	13.5	pass	232	2468.05	12.5	pass	277	2470.30	12	pass	322	2472.55	15	pass
188	2465.85	13.5	pass	233	2468.10	12.5	pass	278	2470.35	12	pass	323	2472.60	15	pass
189	2465.90	13.5	pass	234	2468.15	12.5	pass	279	2470.40	12	pass	324	2472.65	15	pass
190	2465.95	13.5	pass	235	2468.20	12.5	pass	280	2470.45	12	pass	325	2472.70	15	pass
191	2466.00	12	pass	236	2468.25	12.5	pass	281	2470.50	12	pass	326	2472.75	15	pass
192	2466.05	12	pass	237	2468.30	12.5	pass	282	2470.55	12	pass	327	2472.80	15	pass
193	2466.10	12	pass	238	2468.35	12.5	pass	283	2470.60	12	pass	328	2472.85	15	pass
194	2466.15	12	pass	239	2468.40	12.5	pass	284	2470.65	12	pass	329	2472.90	15	pass
195	2466.20	12	pass	240	2468.45	12.5	pass	285	2470.70	12	pass	330	2472.95	15	pass
196	2466.25	12	pass	241	2468.50	12.5	pass	286	2470.75	12	pass	331	2473.00	18	pass
197	2466.30	12	pass	242	2468.55	12.5	pass	287	2470.80	12	pass	332	2473.05	18	pass
198	2466.35	12	pass	243	2468.60	12.5	pass	288	2470.85	12	pass	333	2473.10	18	pass
199	2466.40	12	pass	244	2468.65	12.5	pass	289	2470.90	12	pass	334	2473.15	18	pass
200	2466.45	12	pass	245	2468.70	12.5	pass	290	2470.95	12	pass	335	2473.20	18	pass
201	2466.50	12	pass	246	2468.75	12.5	pass	291	2471.00	12	pass	336	2473.25	18	pass
202	2466.55	12	pass	247	2468.80	12.5	pass	292	2471.05	12	pass	337	2473.30	18	pass
203	2466.60	12	pass	248	2468.85	12.5	pass	293	2471.10	12	pass	338	2473.35	18	pass
204	2466.65	12	pass	249	2468.90	12.5	pass	294	2471.15	12	pass	339	2473.40	18	pass
205	2466.70	12	pass	250	2468.95	12.5	pass	295	2471.20	12	pass	340	2473.45	18	pass

drop 20% = 340 x 20% = 68 ; therefore can drop 68 loweset pts, next lowest pt is 11.5 dB, therefore unit passes proc gain test

8:58 AM Page 2 48pg_mok, JJF

AIRONET CONFIDENTIAL Jamming margin at 5.5mb (part1) 12/7/98

processing gain by methode of jamming margin using BER tester

radio conditions : supply voltage 5v, at room temp, rx s/n = #40, tx s/n = #27

tester name : Brian Casto / Jim Friedmann

test date : 3/17/98 radio carrier freq= 2465

Gp = S/N + Mj + Lsys; where S/N = 13.6 dB as per Harris MOK modulation; Lsys = 0.5 dB

input signal level = -30 dBm, jammer level = - 31.1 dBm, then Mj= - 1.1 dB for 10-5 BER

Gp = 13.6 dB + -1.6 dB + 0.5 dB = 12.5 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	19	pass	41	2458.50	18	pass	81	2460.50	13	pass	121	2462.50	13.5	pass
2	2456.55	19	pass	42	2458.55	18	pass	82	2460.55	13	pass	122	2462.55	13.5	pass
3	2456.60	19	pass	43	2458.60	18	pass	83	2460.60	13	pass	123	2462.60	13.5	pass
4	2456.65	19	pass	44	2458.65	18	pass	84	2460.65	13	pass	124	2462.65	13.5	pass
5	2456.70	19	pass	45	2458.70	18	pass	85	2460.70	13	pass	125	2462.70	13.5	pass
6	2456.75	19	pass	46	2458.75	18	pass	86	2460.75	13	pass	126	2462.75	13.5	pass
7	2456.80	19	pass	47	2458.80	18	pass	87	2460.80	13	pass	127	2462.80	13.5	pass
8	2456.85	19	pass	48	2458.85	18	pass	88	2460.85	13	pass	128	2462.85	13.5	pass
9	2456.90	19	pass	49	2458.90	18	pass	89	2460.90	13	pass	129	2462.90	13.5	pass
10	2456.95	19	pass	50	2458.95	18	pass	90	2460.95	13	pass	130	2462.95	13.5	pass
11	2457.00	19	pass	51	2459.00	14	pass	91	2461.00	14	pass	131	2463.00	13.5	pass
12	2457.05	19	pass	52	2459.05	14	pass	92	2461.05	14	pass	132	2463.05	13.5	pass
13	2457.10	19	pass	53	2459.10	14	pass	93	2461.10	14	pass	133	2463.10	13.5	pass
14	2457.15	19	pass	54	2459.15	14	pass	94	2461.15	14	pass	134	2463.15	13.5	pass
15	2457.20	19	pass	55	2459.20	14	pass	95	2461.20	14	pass	135	2463.20	13.5	pass
16	2457.25	19	pass	56	2459.25	14	pass	96	2461.25	14	pass	136	2463.25	13.5	pass
17	2457.30	19	pass	57	2459.30	14	pass	97	2461.30	14	pass	137	2463.30	13.5	pass
18	2457.35	19	pass	58	2459.35	14	pass	98	2461.35	14	pass	138	2463.35	13.5	pass
19	2457.40	19	pass	59	2459.40	14	pass	99	2461.40	14	pass	139	2463.40	13.5	pass
20	2457.45	19	pass	60	2459.45	14	pass	100	2461.45	14	pass	140	2463.45	13.5	pass
21	2457.50	19	pass	61	2459.50	13	pass	101	2461.50	13	pass	141	2463.50	13.5	pass
22	2457.55	19	pass	62	2459.55	13	pass	102	2461.55	13	pass	142	2463.55	13.5	pass
23	2457.60	19	pass	63	2459.60	13	pass	103	2461.60	13	pass	143	2463.60	13.5	pass
24	2457.65	19	pass	64	2459.65	13	pass	104	2461.65	13	pass	144	2463.65	13.5	pass
25	2457.70	19	pass	65	2459.70	13	pass	105	2461.70	13	pass	145	2463.70	13.5	pass
26	2457.75	19	pass	66	2459.75	13	pass	106	2461.75	13	pass	146	2463.75	13.5	pass
27	2457.80	19	pass	67	2459.80	13	pass	107	2461.80	13	pass	147	2463.80	13.5	pass
28	2457.85	19	pass	68	2459.85	13	pass	108	2461.85	13	pass	148	2463.85	13.5	pass
29	2457.90	19	pass	69	2459.90	13	pass	109	2461.90	13	pass	149	2463.90	13.5	pass
30	2457.95	19	pass	70	2459.95	13	pass	110	2461.95	13	pass	150	2463.95	13.5	pass
31	2458.00	16	pass	71	2460.00	14	pass	111	2462.00	13	pass	151	2464.00	13.5	pass
32	2458.05	16	pass	72	2460.05	14	pass	112	2462.05	13	pass	152	2464.05	13.5	pass
33	2458.10	16	pass	73	2460.10	14	pass	113	2462.10	16	pass	153	2464.10	13.5	pass
34	2458.15	16	pass	74	2460.15	14	pass	114	2462.15	16	pass	154	2464.15	13.5	pass
35	2458.20	16	pass	75	2460.20	14	pass	115	2462.20	16	pass	155	2464.20	13.5	pass
36	2458.25	16	pass	76	2460.25	14	pass	116	2462.25	16	pass	156	2464.25	13.5	pass
37	2458.30	16	pass	77	2460.30	14	pass	117	2462.30	16	pass	157	2464.30	13.5	pass
38	2458.35	16	pass	78	2460.35	14	pass	118	2462.35	16	pass	158	2464.35	13.5	pass
39	2458.40	16	pass	79	2460.40	14	pass	119	2462.40	16	pass	159	2464.40	13.5	pass
40	2458.45	16	pass	80	2460.45	14	pass	120	2462.45	16	pass	160	2464.45	13.5	pass

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AIRONET CONFIDENTIAL Jamming margin at 5.5mb (part2) 12/7/98

processing gain by methode of jamming margin using BER tester

radio conditions : supply voltage 5v, at room temp

tester name : Brian Casto / Jim Friedmann

Gp = S/N + Mj + Lsys; where S/N = 16.6 dB as per Harris MOK modulation; Lsys = 0.5 dB

input signal level = -30 dBm, jammer level = - 31.1 dBm, then Mj= - 1.1 dB for 10-5 BER

Gp = 13.6 dB + -1.6 dB + 0.5 dB = 12.5 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
161	2464.50	14	pass	206	2466.75	13	pass	251	2469.00	13.5	pass	296	2471.25	13.0	pass
162	2464.55	14	pass	207	2466.80	13	pass	252	2469.05	13.5	pass	297	2471.30	13.0	pass
163	2464.60	14	pass	208	2466.85	13	pass	253	2469.10	13.5	pass	298	2471.35	13.0	pass
164	2464.65	14	pass	209	2466.90	13	pass	254	2469.15	13.5	pass	299	2471.40	13.0	pass
165	2464.70	14	pass	210	2466.95	13	pass	255	2469.20	13.5	pass	300	2471.45	13.0	pass
166	2464.75	14	pass	211	2467.00	13	pass	256	2469.25	13.5	pass	301	2471.50	13.0	pass
167	2464.80	14	pass	212	2467.05	13	pass	257	2469.30	13.5	pass	302	2471.55	13.0	pass
168	2464.85	14	pass	213	2467.10	13	pass	258	2469.35	13.5	pass	303	2471.60	13.0	pass
169	2464.90	14	pass	214	2467.15	13	pass	259	2469.40	13.5	pass	304	2471.65	13.0	pass
170	2464.95	14	pass	215	2467.20	13	pass	260	2469.45	13.5	pass	305	2471.70	13.0	pass
171	2465.00	14	pass	216	2467.25	13	pass	261	2469.50	12.5	pass	306	2471.75	13.0	pass
172	2465.05	14	pass	217	2467.30	13	pass	262	2469.55	12.5	pass	307	2471.80	13.0	pass
173	2465.10	14	pass	218	2467.35	13	pass	263	2469.60	12.5	pass	308	2471.85	13.0	pass
174	2465.15	14	pass	219	2467.40	13	pass	264	2469.65	12.5	pass	309	2471.90	13.0	pass
175	2465.20	13.5	pass	220	2467.45	13	pass	265	2469.70	12.5	pass	310	2471.95	13.0	pass
176	2465.25	13.5	pass	221	2467.50	13	pass	266	2469.75	12.5	pass	311	2472.00	15	pass
177	2465.30	13.5	pass	222	2467.55	13	pass	267	2469.80	12.5	pass	312	2472.05	15	pass
178	2465.35	13.5	pass	223	2467.60	13	pass	268	2469.85	12.5	pass	313	2472.10	15	pass
179	2465.40	13.5	pass	224	2467.65	13	pass	269	2469.90	12.5	pass	314	2472.15	15	pass
180	2465.45	13.5	pass	225	2467.70	13	pass	270	2469.95	12.5	pass	315	2472.20	15	pass
181	2465.50	13.5	pass	226	2467.75	13	pass	271	2470.00	13	pass	316	2472.25	15	pass
182	2465.55	13.5	pass	227	2467.80	13	pass	272	2470.05	13	pass	317	2472.30	15	pass
183	2465.60	13.5	pass	228	2467.85	13	pass	273	2470.10	13	pass	318	2472.35	15	pass
184	2465.65	13.5	pass	229	2467.90	13	pass	274	2470.15	13	pass	319	2472.40	15	pass
185	2465.70	13.5	pass	230	2467.95	13	pass	275	2470.20	13	pass	320	2472.45	15	pass
186	2465.75	13.5	pass	231	2468.00	13.5	pass	276	2470.25	13	pass	321	2472.50	15	pass
187	2465.80	13.5	pass	232	2468.05	13.5	pass	277	2470.30	13	pass	322	2472.55	15	pass
188	2465.85	13.5	pass	233	2468.10	13.5	pass	278	2470.35	13	pass	323	2472.60	15	pass
189	2465.90	13.5	pass	234	2468.15	13.5	pass	279	2470.40	12.5	pass	324	2472.65	15	pass
190	2465.95	13.5	pass	235	2468.20	13.5	pass	280	2470.45	12.5	pass	325	2472.70	15	pass
191	2466.00	13.5	pass	236	2468.25	13.5	pass	281	2470.50	12.5	pass	326	2472.75	15	pass
192	2466.05	13.5	pass	237	2468.30	13.5	pass	282	2470.55	12.5	pass	327	2472.80	15	pass
193	2466.10	13.5	pass	238	2468.35	13.5	pass	283	2470.60	12.5	pass	328	2472.85	15	pass
194	2466.15	13.5	pass	239	2468.40	13.5	pass	284	2470.65	12.5	pass	329	2472.90	15	pass
195	2466.20	13.5	pass	240	2468.45	13.5	pass	285	2470.70	12.5	pass	330	2472.95	15	pass
196	2466.25	13.5	pass	241	2468.50	12.5	pass	286	2470.75	13	pass	331	2473.00	17	pass
197	2466.30	13.5	pass	242	2468.55	12.5	pass	287	2470.80	13	pass	332	2473.05	17	pass
198	2466.35	13.5	pass	243	2468.60	12.5	pass	288	2470.85	13	pass	333	2473.10	17	pass
199	2466.40	13.5	pass	244	2468.65	12.5	pass	289	2470.90	13	pass	334	2473.15	17	pass
200	2466.45	13.5	pass	245	2468.70	12.5	pass	290	2470.95	13	pass	335	2473.20	17	pass
201	2466.50	13.5	pass	246	2468.75	12.5	pass	291	2471.00	13	pass	336	2473.25	17	pass
202	2466.55	13.5	pass	247	2468.80	12.5	pass	292	2471.05	13	pass	337	2473.30	17	pass
203	2466.60	13.5	pass	248	2468.85	12.5	pass	293	2471.10	13	pass	338	2473.35	17	pass
204	2466.65	13.5	pass	249	2468.90	12.5	pass	294	2471.15	13	pass	339	2473.40	17	pass
205	2466.70	13.5	pass	250	2468.95	12.5	pass	295	2471.20	13	pass	340	2473.45	17	pass

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AIRONET CONFIDENTIAL Jamming margin at 2 mb (part1) 12/7/98

processing gain by methode of jamming margin using BER tester

radio conditions : supply voltage 5v, at room temp, rx s/n = #40, tx s/n = #27

tester name : Brian Casto / Jim Friedmann

test date : 3/17/98 radio carrier freq= 2465

Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0.5dB

input signal level = -30 dBm, jammer level = - 31.5 dBm, then Mj= -1.5 dB

Gp = 13.0 dB + -1.5 dB + 0.5 dB = 12.0 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	18	pass	41	2458.50	16	pass	81	2460.50	14	pass	121	2462.50	13.5	pass
2	2456.55	18	pass	42	2458.55	16	pass	82	2460.55	14	pass	122	2462.55	13.5	pass
3	2456.60	18	pass	43	2458.60	16	pass	83	2460.60	14	pass	123	2462.60	13.5	pass
4	2456.65	18	pass	44	2458.65	16	pass	84	2460.65	14	pass	124	2462.65	13.5	pass
5	2456.70	18	pass	45	2458.70	16	pass	85	2460.70	14	pass	125	2462.70	13.5	pass
6	2456.75	18	pass	46	2458.75	16	pass	86	2460.75	14	pass	126	2462.75	13.5	pass
7	2456.80	18	pass	47	2458.80	16	pass	87	2460.80	14	pass	127	2462.80	13.5	pass
8	2456.85	18	pass	48	2458.85	16	pass	88	2460.85	14	pass	128	2462.85	13.5	pass
9	2456.90	18	pass	49	2458.90	16	pass	89	2460.90	14	pass	129	2462.90	13.5	pass
10	2456.95	18	pass	50	2458.95	16	pass	90	2460.95	14	pass	130	2462.95	13.5	pass
11	2457.00	18	pass	51	2459.00	14.5	pass	91	2461.00	14	pass	131	2463.00	13.0	pass
12	2457.05	18	pass	52	2459.05	14.5	pass	92	2461.05	14	pass	132	2463.05	13.0	pass
13	2457.10	18	pass	53	2459.10	14.5	pass	93	2461.10	14	pass	133	2463.10	13.0	pass
14	2457.15	18	pass	54	2459.15	14.5	pass	94	2461.15	14	pass	134	2463.15	13.0	pass
15	2457.20	18	pass	55	2459.20	14.5	pass	95	2461.20	14	pass	135	2463.20	13.0	pass
16	2457.25	18	pass	56	2459.25	14.5	pass	96	2461.25	14	pass	136	2463.25	13.0	pass
17	2457.30	18	pass	57	2459.30	14.5	pass	97	2461.30	14	pass	137	2463.30	13.0	pass
18	2457.35	18	pass	58	2459.35	14.5	pass	98	2461.35	14	pass	138	2463.35	13.0	pass
19	2457.40	18	pass	59	2459.40	14.5	pass	99	2461.40	14	pass	139	2463.40	13.0	pass
20	2457.45	18	pass	60	2459.45	14.5	pass	100	2461.45	14	pass	140	2463.45	13.0	pass
21	2457.50	18	pass	61	2459.50	14.5	pass	101	2461.50	14	pass	141	2463.50	13.0	pass
22	2457.55	18	pass	62	2459.55	14.5	pass	102	2461.55	14	pass	142	2463.55	13.0	pass
23	2457.60	18	pass	63	2459.60	14.5	pass	103	2461.60	14	pass	143	2463.60	13.0	pass
24	2457.65	18	pass	64	2459.65	14.5	pass	104	2461.65	14	pass	144	2463.65	13.0	pass
25	2457.70	18	pass	65	2459.70	14.5	pass	105	2461.70	14	pass	145	2463.70	13.0	pass
26	2457.75	18	pass	66	2459.75	14.5	pass	106	2461.75	14	pass	146	2463.75	13.0	pass
27	2457.80	18	pass	67	2459.80	14.5	pass	107	2461.80	14	pass	147	2463.80	13.0	pass
28	2457.85	18	pass	68	2459.85	14.5	pass	108	2461.85	13.5	pass	148	2463.85	13.0	pass
29	2457.90	18	pass	69	2459.90	14	pass	109	2461.90	13.5	pass	149	2463.90	13.0	pass
30	2457.95	18	pass	70	2459.95	14	pass	110	2461.95	13.5	pass	150	2463.95	13.0	pass
31	2458.00	16	pass	71	2460.00	14	pass	111	2462.00	13.5	pass	151	2464.00	12.5	pass
32	2458.05	16	pass	72	2460.05	14	pass	112	2462.05	13.5	pass	152	2464.05	12.5	pass
33	2458.10	16	pass	73	2460.10	14	pass	113	2462.10	13.5	pass	153	2464.10	12.5	pass
34	2458.15	16	pass	74	2460.15	14	pass	114	2462.15	13.5	pass	154	2464.15	12.5	pass
35	2458.20	16	pass	75	2460.20	14	pass	115	2462.20	13.5	pass	155	2464.20	12.5	pass
36	2458.25	16	pass	76	2460.25	14	pass	116	2462.25	13.5	pass	156	2464.25	12.5	pass
37	2458.30	16	pass	77	2460.30	14	pass	117	2462.30	13.5	pass	157	2464.30	12.5	pass
38	2458.35	16	pass	78	2460.35	14	pass	118	2462.35	13.5	pass	158	2464.35	12.5	pass
39	2458.40	16	pass	79	2460.40	14	pass	119	2462.40	13.5	pass	159	2464.40	12.5	pass
40	2458.45	16	pass	80	2460.45	14	pass	120	2462.45	13.5	pass	160	2464.45	12.5	pass

drop 20% = 340 x 20% = 68 ; therefore can drop 68 failures

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AIRONET CONFIDENTIAL Jamming margin at 2 mb (part2) 12/7/98

processing gain by methode of jamming margin using BER tester

radio conditions : supply voltage 5v, at room temp

tester name : Brian Casto / Jim Friedmann

Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0.5dB

input signal level = -30 dBm, jammer level = - 31.5 dBm, then Mj= -1.5 dB

Gp = 13.0 dB + -1.5 dB + 0.5 dB = 12.0 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
161	2464.50	12.5	pass	206	2466.75	13	pass	251	2469.00	13.5	pass	296	2471.25	13.0	pass
162	2464.55	12.5	pass	207	2466.80	13	pass	252	2469.05	13.5	pass	297	2471.30	13.0	pass
163	2464.60	12.5	pass	208	2466.85	13	pass	253	2469.10	13.5	pass	298	2471.35	13.0	pass
164	2464.65	12.5	pass	209	2466.90	13	pass	254	2469.15	13.5	pass	299	2471.40	13.0	pass
165	2464.70	12.5	pass	210	2466.95	13	pass	255	2469.20	13.5	pass	300	2471.45	13.0	pass
166	2464.75	12.5	pass	211	2467.00	13	pass	256	2469.25	13.5	pass	301	2471.50	13.0	pass
167	2464.80	12.5	pass	212	2467.05	13	pass	257	2469.30	13.5	pass	302	2471.55	13.0	pass
168	2464.85	12.5	pass	213	2467.10	12.5	pass	258	2469.35	13.5	pass	303	2471.60	13.0	pass
169	2464.90	12.5	pass	214	2467.15	12.5	pass	259	2469.40	13.5	pass	304	2471.65	13.0	pass
170	2464.95	12.5	pass	215	2467.20	12.5	pass	260	2469.45	13.5	pass	305	2471.70	13.0	pass
171	2465.00	12.5	pass	216	2467.25	12.5	pass	261	2469.50	13.5	pass	306	2471.75	13.0	pass
172	2465.05	12.5	pass	217	2467.30	12.5	pass	262	2469.55	13.5	pass	307	2471.80	13.0	pass
173	2465.10	12.5	pass	218	2467.35	12.5	pass	263	2469.60	13.5	pass	308	2471.85	13.0	pass
174	2465.15	12.5	pass	219	2467.40	12.5	pass	264	2469.65	13.5	pass	309	2471.90	13.0	pass
175	2465.20	12	pass	220	2467.45	12.5	pass	265	2469.70	13.5	pass	310	2471.95	14.5	pass
176	2465.25	12	pass	221	2467.50	12.5	pass	266	2469.75	13.5	pass	311	2472.00	14.5	pass
177	2465.30	12	pass	222	2467.55	12.5	pass	267	2469.80	13.5	pass	312	2472.05	14.5	pass
178	2465.35	12	pass	223	2467.60	12.5	pass	268	2469.85	13.5	pass	313	2472.10	14.5	pass
179	2465.40	12	pass	224	2467.65	12.5	pass	269	2469.90	13.5	pass	314	2472.15	14.5	pass
180	2465.45	12	pass	225	2467.70	12.5	pass	270	2469.95	13.5	pass	315	2472.20	14.5	pass
181	2465.50	12	pass	226	2467.75	12.5	pass	271	2470.00	14	pass	316	2472.25	14.5	pass
182	2465.55	12	pass	227	2467.80	12.5	pass	272	2470.05	14	pass	317	2472.30	14.5	pass
183	2465.60	12	pass	228	2467.85	12.5	pass	273	2470.10	14	pass	318	2472.35	14.5	pass
184	2465.65	12	pass	229	2467.90	12.5	pass	274	2470.15	14	pass	319	2472.40	14.5	pass
185	2465.70	12	pass	230	2467.95	12.5	pass	275	2470.20	14	pass	320	2472.45	14.5	pass
186	2465.75	12	pass	231	2468.00	13.3	pass	276	2470.25	14	pass	321	2472.50	14.5	pass
187	2465.80	12	pass	232	2468.05	13.3	pass	277	2470.30	14	pass	322	2472.55	14.5	pass
188	2465.85	12	pass	233	2468.10	13.3	pass	278	2470.35	14	pass	323	2472.60	14.5	pass
189	2465.90	12	pass	234	2468.15	13.3	pass	279	2470.40	14	pass	324	2472.65	14.5	pass
190	2465.95	12	pass	235	2468.20	13.3	pass	280	2470.45	14	pass	325	2472.70	14.5	pass
191	2466.00	12	pass	236	2468.25	13.3	pass	281	2470.50	14	pass	326	2472.75	14.5	pass
192	2466.05	13	pass	237	2468.30	13.3	pass	282	2470.55	14	pass	327	2472.80	14.5	pass
193	2466.10	13	pass	238	2468.35	13.3	pass	283	2470.60	14	pass	328	2472.85	14.5	pass
194	2466.15	13	pass	239	2468.40	13.3	pass	284	2470.65	14	pass	329	2472.90	14.5	pass
195	2466.20	13	pass	240	2468.45	13.3	pass	285	2470.70	14	pass	330	2472.95	14.5	pass
196	2466.25	13	pass	241	2468.50	13.3	pass	286	2470.75	14	pass	331	2473.00	17	pass
197	2466.30	13	pass	242	2468.55	13.3	pass	287	2470.80	14	pass	332	2473.05	17	pass
198	2466.35	13	pass	243	2468.60	13.3	pass	288	2470.85	13	pass	333	2473.10	17	pass
199	2466.40	13	pass	244	2468.65	13.3	pass	289	2470.90	13	pass	334	2473.15	17	pass
200	2466.45	13	pass	245	2468.70	13.3	pass	290	2470.95	13	pass	335	2473.20	17	pass
201	2466.50	13	pass	246	2468.75	13.3	pass	291	2471.00	13	pass	336	2473.25	17	pass
202	2466.55	13	pass	247	2468.80	13.3	pass	292	2471.05	13	pass	337	2473.30	17	pass
203	2466.60	13	pass	248	2468.85	13.3	pass	293	2471.10	13	pass	338	2473.35	17	pass
204	2466.65	13	pass	249	2468.90	13.3	pass	294	2471.15	13	pass	339	2473.40	17	pass
205	2466.70	13	pass	250	2468.95	13.3	pass	295	2471.20	13	pass	340	2473.45	17	pass

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AIRONET CONFIDENTIAL Jamming margin at 1 mb (part1) 12/7/98

processing gain by methode of jamming margin using BER tester

radio conditions : supply voltage 5v, at room temp, rx s/n = #40, tx s/n = #27

tester name : Brian Casto / Jim Friedmann

test date : 3/17/98 radio carrier freq= 2465

Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0dB

input signal level = -30 dBm, jammer level = - 30.1 dBm, then Mj= -0.1 dB

Gp = 13.0 dB + -0.1 dB = 12.9 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	19	pass	41	2458.50	17	pass	81	2460.50	15	pass	121	2462.50	14	pass
2	2456.55	19	pass	42	2458.55	17	pass	82	2460.55	15	pass	122	2462.55	14	pass
3	2456.60	19	pass	43	2458.60	17	pass	83	2460.60	15	pass	123	2462.60	14	pass
4	2456.65	19	pass	44	2458.65	17	pass	84	2460.65	15	pass	124	2462.65	14	pass
5	2456.70	19	pass	45	2458.70	17	pass	85	2460.70	15	pass	125	2462.70	14	pass
6	2456.75	19	pass	46	2458.75	17	pass	86	2460.75	15	pass	126	2462.75	14	pass
7	2456.80	19	pass	47	2458.80	17	pass	87	2460.80	15	pass	127	2462.80	14	pass
8	2456.85	19	pass	48	2458.85	17	pass	88	2460.85	15	pass	128	2462.85	14	pass
9	2456.90	19	pass	49	2458.90	17	pass	89	2460.90	15	pass	129	2462.90	14	pass
10	2456.95	19	pass	50	2458.95	17	pass	90	2460.95	15	pass	130	2462.95	14	pass
11	2457.00	19	pass	51	2459.00	15	pass	91	2461.00	15	pass	131	2463.00	14	pass
12	2457.05	19	pass	52	2459.05	15	pass	92	2461.05	15	pass	132	2463.05	14	pass
13	2457.10	19	pass	53	2459.10	15	pass	93	2461.10	15	pass	133	2463.10	14	pass
14	2457.15	19	pass	54	2459.15	15	pass	94	2461.15	15	pass	134	2463.15	14	pass
15	2457.20	19	pass	55	2459.20	15	pass	95	2461.20	15	pass	135	2463.20	14	pass
16	2457.25	19	pass	56	2459.25	15	pass	96	2461.25	15	pass	136	2463.25	14	pass
17	2457.30	19	pass	57	2459.30	15	pass	97	2461.30	15	pass	137	2463.30	14	pass
18	2457.35	19	pass	58	2459.35	15	pass	98	2461.35	15	pass	138	2463.35	14	pass
19	2457.40	19	pass	59	2459.40	15	pass	99	2461.40	15	pass	139	2463.40	14	pass
20	2457.45	19	pass	60	2459.45	15	pass	100	2461.45	15	pass	140	2463.45	14	pass
21	2457.50	19	pass	61	2459.50	15	pass	101	2461.50	15	pass	141	2463.50	14	pass
22	2457.55	19	pass	62	2459.55	15	pass	102	2461.55	15	pass	142	2463.55	14	pass
23	2457.60	19	pass	63	2459.60	15	pass	103	2461.60	15	pass	143	2463.60	14	pass
24	2457.65	19	pass	64	2459.65	15	pass	104	2461.65	15	pass	144	2463.65	14	pass
25	2457.70	19	pass	65	2459.70	15	pass	105	2461.70	15	pass	145	2463.70	14	pass
26	2457.75	19	pass	66	2459.75	15	pass	106	2461.75	15	pass	146	2463.75	14	pass
27	2457.80	19	pass	67	2459.80	15	pass	107	2461.80	15	pass	147	2463.80	14	pass
28	2457.85	19	pass	68	2459.85	15	pass	108	2461.85	15	pass	148	2463.85	14	pass
29	2457.90	19	pass	69	2459.90	15	pass	109	2461.90	15	pass	149	2463.90	14	pass
30	2457.95	19	pass	70	2459.95	15	pass	110	2461.95	15	pass	150	2463.95	14	pass
31	2458.00	17	pass	71	2460.00	15	pass	111	2462.00	15	pass	151	2464.00	14	pass
32	2458.05	17	pass	72	2460.05	15	pass	112	2462.05	15	pass	152	2464.05	14	pass
33	2458.10	17	pass	73	2460.10	15	pass	113	2462.10	15	pass	153	2464.10	14	pass
34	2458.15	17	pass	74	2460.15	15	pass	114	2462.15	15	pass	154	2464.15	14	pass
35	2458.20	17	pass	75	2460.20	15	pass	115	2462.20	15	pass	155	2464.20	14	pass
36	2458.25	17	pass	76	2460.25	15	pass	116	2462.25	15	pass	156	2464.25	14	pass
37	2458.30	17	pass	77	2460.30	15	pass	117	2462.30	15	pass	157	2464.30	14	pass
38	2458.35	17	pass	78	2460.35	15	pass	118	2462.35	15	pass	158	2464.35	14	pass
39	2458.40	17	pass	79	2460.40	15	pass	119	2462.40	15	pass	159	2464.40	14	pass
40	2458.45	17	pass	80	2460.45	15	pass	120	2462.45	15	pass	160	2464.45	14	pass

drop 20% = 340 x 20% = 68 ; therefore can drop 68 failures

AIRONET CONFIDENTIAL Jamming margin at 1 mb (part2) 12/7/98

processing gain by methode of jamming margin using BER tester

radio conditions : supply voltage 5v, at room temp

tester name : Brian Casto / Jim Friedmann

Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0dB

input signal level = -30 dBm, jammer level = - 33.0 dBm, then Mj= -3.0 dB

Gp = 13.0 dB + -0.1 dB = 12.9 dB (worst case point)

	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
161	2464.50	13	pass	206	2466.75	14	pass	251	2469.00	14	pass	296	2471.25	14	pass
162	2464.55	13	pass	207	2466.80	14	pass	252	2469.05	14	pass	297	2471.30	14	pass
163	2464.60	13	pass	208	2466.85	14	pass	253	2469.10	14	pass	298	2471.35	14	pass
164	2464.65	13	pass	209	2466.90	14	pass	254	2469.15	14	pass	299	2471.40	14	pass
165	2464.70	12.9	pass	210	2466.95	14	pass	255	2469.20	14	pass	300	2471.45	14	pass
166	2464.75	12.9	pass	211	2467.00	14	pass	256	2469.25	14	pass	301	2471.50	14	pass
167	2464.80	12.9	pass	212	2467.05	14	pass	257	2469.30	14	pass	302	2471.55	14	pass
168	2464.85	13	pass	213	2467.10	14	pass	258	2469.35	14	pass	303	2471.60	14	pass
169	2464.90	13	pass	214	2467.15	14	pass	259	2469.40	14	pass	304	2471.65	14	pass
170	2464.95	13	pass	215	2467.20	14	pass	260	2469.45	14	pass	305	2471.70	14	pass
171	2465.00	13	pass	216	2467.25	14	pass	261	2469.50	14	pass	306	2471.75	14	pass
172	2465.05	13	pass	217	2467.30	14	pass	262	2469.55	14	pass	307	2471.80	14	pass
173	2465.10	13	pass	218	2467.35	14	pass	263	2469.60	14	pass	308	2471.85	14	pass
174	2465.15	13	pass	219	2467.40	14	pass	264	2469.65	14	pass	309	2471.90	14	pass
175	2465.20	13	pass	220	2467.45	14	pass	265	2469.70	14	pass	310	2471.95	14	pass
176	2465.25	14	pass	221	2467.50	14	pass	266	2469.75	14	pass	311	2472.00	15	pass
177	2465.30	14	pass	222	2467.55	14	pass	267	2469.80	14	pass	312	2472.05	15	pass
178	2465.35	14	pass	223	2467.60	14	pass	268	2469.85	14	pass	313	2472.10	15	pass
179	2465.40	14	pass	224	2467.65	14	pass	269	2469.90	14	pass	314	2472.15	15	pass
180	2465.45	14	pass	225	2467.70	14	pass	270	2469.95	14	pass	315	2472.20	15	pass
181	2465.50	14	pass	226	2467.75	14	pass	271	2470.00	14	pass	316	2472.25	15	pass
182	2465.55	14	pass	227	2467.80	14	pass	272	2470.05	14	pass	317	2472.30	15	pass
183	2465.60	14	pass	228	2467.85	14	pass	273	2470.10	14	pass	318	2472.35	15	pass
184	2465.65	14	pass	229	2467.90	14	pass	274	2470.15	14	pass	319	2472.40	15	pass
185	2465.70	14	pass	230	2467.95	14	pass	275	2470.20	14	pass	320	2472.45	15	pass
186	2465.75	14	pass	231	2468.00	14	pass	276	2470.25	14	pass	321	2472.50	15	pass
187	2465.80	15	pass	232	2468.05	14	pass	277	2470.30	14	pass	322	2472.55	15	pass
188	2465.85	15	pass	233	2468.10	14	pass	278	2470.35	14	pass	323	2472.60	15	pass
189	2465.90	15	pass	234	2468.15	14	pass	279	2470.40	14	pass	324	2472.65	15	pass
190	2465.95	15	pass	235	2468.20	14	pass	280	2470.45	14	pass	325	2472.70	15	pass
191	2466.00	15	pass	236	2468.25	14	pass	281	2470.50	14	pass	326	2472.75	15	pass
192	2466.05	15	pass	237	2468.30	14	pass	282	2470.55	14	pass	327	2472.80	15	pass
193	2466.10	15	pass	238	2468.35	14	pass	283	2470.60	14	pass	328	2472.85	15	pass
194	2466.15	15	pass	239	2468.40	14	pass	284	2470.65	14	pass	329	2472.90	15	pass
195	2466.20	15	pass	240	2468.45	14	pass	285	2470.70	14	pass	330	2472.95	15	pass
196	2466.25	15	pass	241	2468.50	14	pass	286	2470.75	14	pass	331	2473.00	18	pass
197	2466.30	15	pass	242	2468.55	14	pass	287	2470.80	14	pass	332	2473.05	18	pass
198	2466.35	15	pass	243	2468.60	14	pass	288	2470.85	14	pass	333	2473.10	18	pass
199	2466.40	15	pass	244	2468.65	14	pass	289	2470.90	14	pass	334	2473.15	18	pass
200	2466.45	15	pass	245	2468.70	14	pass	290	2470.95	14	pass	335	2473.20	18	pass
201	2466.50	15	pass	246	2468.75	14	pass	291	2471.00	14	pass	336	2473.25	18	pass
202	2466.55	15	pass	247	2468.80	14	pass	292	2471.05	14	pass	337	2473.30	18	pass
203	2466.60	15	pass	248	2468.85	14	pass	293	2471.10	14	pass	338	2473.35	18	pass
204	2466.65	15	pass	249	2468.90	14	pass	294	2471.15	14	pass	339	2473.40	18	pass
205	2466.70	15	pass	250	2468.95	14	pass	295	2471.20	14	pass	340	2473.45	18	pass

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9.0 FCC TEST PLAN

The GDL aircraft segment and ground segment configurations are being tested and submitted on a single Form 731 application. The only difference between the two configurations is the antenna. Both utilize the same approved transmitter module, FCC ID LOZ102035 and the same RF Assembly, as shown in the following figure. The only difference between the two configurations is the antenna. The aircraft segment utilizes a Comant Industries, CI 150-32-L, 5.15 dBi antenna. The ground segment utilizes a Cushcraft/Signals, S2403B, 5.15 dBi antenna. Although the max antenna gain is the same for both antennas, the antenna patterns are different.

The RF Assembly contains an adaptive level control circuit (ALC) which assures constant output power delivered to the antenna, independent of input power level. The input dynamic range of the power amplifier is 10 dB, which accommodates a wide range of installation dependent RF cable lengths. The ALC circuit also compensates for variations in components due to production tolerances and temperature changes.

The LOZ102035 approved transmitter module provides configurable output power settings of 100 mw, 50 mw, and 20 mw. The various aircraft and airport installations require different lengths of cable and the configurable output power settings are needed to compensate for the varying losses in the cable to assure that the power delivered to the RF Assembly is within its input dynamic range.

All testing will be performed using the maximum 100 mw output power setting which presents the power amp in the RF Assembly with the worst case spurious emissions test signal. In actual system deployment, the 50 mw and 20 mw power settings may be utilized in installations requiring shorter interconnecting cables.

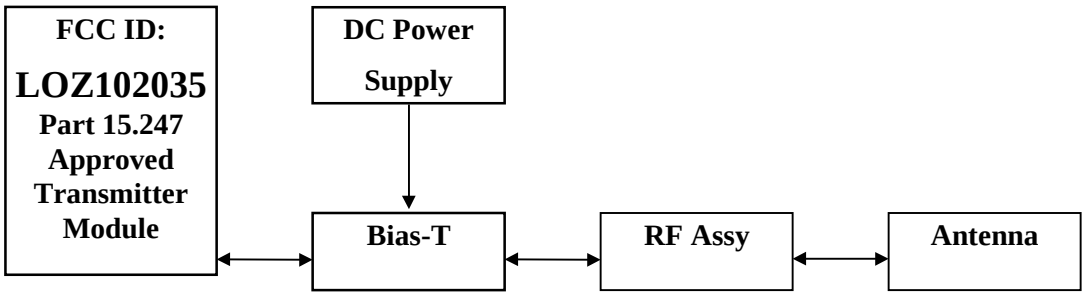

Figure 9.1: Aircraft and Ground Segment Configurations

Because both the Aircraft and Ground Segment Configurations utilize the same approved transmitter module and the same RF Assembly, the test article for all conducted testing is the same and therefore independent of air or ground installation. The antenna patterns, however, are different between the aircraft and ground segments, and therefore radiated spurious testing is required for both configurations.

The following steps are required to certify the GDL aircraft and ground segment configurations:

- Submit a new FCC Form 731 application for product certification approval
- Take advantage of the existing Part 15.247 approval of the LOZ102035 Transmitter Module
- Repeat tests where the characteristics of the LOZ102035 Part 15.247 approved transmitter module would be affected by the changes made

Attach copies of the original LOZ102035 test data for tests that are not affected by the changes made

9.1 15.247 (a) (2) Bandwidth

The minimum 6 dB bandwidth of the LOZ102035 approved transmitter module should not be affected by the RF Assembly and antennas. Perform test and measure the 6 dB Bandwidth for each data rate at 2412 MHz, 2442 MHz, and 2462 MHz to show that the 500 kHz minimum 6 dB bandwidth requirement has been met.

9.2 15.247 (b) Peak Power

The peak power of the LOZ102035 approved transmitter module is affected by the RF Assembly and antennas. Perform test and measure conducted peak power. Measure radiated peak power while performing radiated spurious emissions testing, using all possible antenna configurations.

9.3 15.247 (c) Spurious Emissions

The spurious emissions of the LOZ102035 approved transmitter module can be affected by the RF Assembly and antennas as a result of changes in gain and amplifier non-linearity. Perform tests. Measure conducted emissions for all harmonics/spurs not in a restricted band. Measure radiated emissions for all harmonics/spurs in a restricted band.

9.4 15.247 (d) Power Spectral Density

The power spectral density of the LOZ102035 approved transmitter module can be affected by the RF Assembly and antennas as a result of changes in gain. Perform test using the test approach described in NPRM FCC 96-36.

9.5 15.247 (e) Processing Gain

The processing gain of the LOZ102035 approved transmitter module is not affected by the changes made. Testing not required. Attach copies of previous test data.

9.6 Part 15 Subpart B Unintentional Radiators Test Approach

- No testing required
- The receiver portion of the type accepted transceiver module is exempt because it operates above 960 MHz and is not a CB receiver
- As a digital device, the airborne configuration is installed in a transportation vehicle and is therefore exempt under Part 15.103 (a)

9.7 15.107 Line Conducted Tests

Line conducted tests are not required for the Ground Segment. In the Ground Segment, the Aironet Model AP4800-E Access Point is packaged within a shielded enclosure. The same power line connector, ferrite choke, and cable assembly that is furnished by the manufacturer with the Access Point is used to interconnect the Access Point to the shielded enclosure bulkhead connector. The bulkhead power connector contains a feed through filter to further suppress any high frequency conducted emissions. Instead of connecting directly to the ac power line via an ac adapter, the Access Point Assembly is powered by a Xantrex Model HPD30-10, DC Power Supply that is FCC certified under Part 15.107(a) as a Class A digital device. The Xantrex Model HPD 30-10 DC Power Supply receives ac power from a Compaq 1500VA, PN 242704-001, Uninterruptible Power Supply, also contained in the 19" equipment rack (refer to the Ground Segment Block Diagram), which is also FCC certified under Part 15.107(a) as a Class B digital device. The Compaq UPS in turn plugs in to a Marway MPD 80-003 Power Distribution Unit (PDU), which is neither a digital device nor a receiver and is therefore exempt from Subpart B. The Marway PDU provides power line filtering, over voltage protection, and

over current protection. The Marway PDU plugs directly into the public utility power line. The Aironet Model AP4800-E Access Point, the Xantrex Model HPD 30-10 DC Power Supply and the Compaq 1500VA, PN 242704-001, Uninterruptible Power Supply are all commercial-off-the-shelf products that have already been verified to meet FCC requirements for power line emissions.

In the Ground Segment, all installed digital devices are commercial-off-the-shelf products that are already FCC authorized under Part 15.101(a). GE Harris Aviation envisions that the specific vendor and model numbers may change over time as a result of technology obsolescence or site specific requirement differences. Nevertheless, the GE Harris Aviation philosophy is to always utilize commercial-off-the-shelf digital devices that are already FCC authorized under Part 15.101(a). The following table contains a list of all of the FCC authorized digital devices by configuration. A photograph of a representative equipment rack is contained in the External Photographs file.

Table 9.1: List of Ground Segment Equipment in Equipment Rack

FCC Part 15 Subpart B Classification	Description	Vendor	Part No
	Computer, Basic Availability		
B	Computer, (1) p2/400, 512KB L2, 64MB, 10/100 NIC, 5 HP drives, dual SCSI-3, SVGA, kybd, mouse, CD, flop, rackmount	Compaq	315580-001
B	CPU, 2nd p2/400	Compaq	313612-B21
B	RAM, add'l 64MB	Compaq	313614-B21
B	Drive Cage, Ultra2, HS	Compaq	382159-B21
B	Disk, OS, 4.3GB, 10K, Ultra2, HS	Compaq	328938-B21
	Ground Network, Basic Availability		
B	Router, 3 port, incl 10/100BT	Cisco	CISCO1720
B	Router, 1700 16MB to 20MB DRAM upgrade	Cisco	MEM1700-16U20D
B	Router, 1700 4MB to 8MB flash upgrade	Cisco	MEM1700-4U8MFC
B	Router, 1-Port T1/Fractional T1 DSU/CSU WIC	Cisco	WIC-1DSU-T1
A	Switch, 12 Port	Cisco	WS-C1912-A
B	Terminal server, 8 port	Digi	70001433
	Radio Cell, Basic Availability		
Exempt	LNA/PA	Harris	2005063
A	DC Power Supply	Xantrex	HPD 30-10
B	Access Point	Aironet	AP4800-E
	Rack, Basic Avail		
Exempt	PDU	marway	MPD 80-003
B	UPS, 1500VA	compaq	242704-001
B	keyboard/trackball, rackmount	compaq	185152-406
B	monitor, 9" rackmount, color, vga	viewsonic	E651-2