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TEST REPORT
Covering the
DYNAMIC FREQUENCY SELECTION (DFS) REQUIREMENTS
OF
FCC Part 15 Subpart E (UNII)
Summit Data Communications, Inc.
Model(s): SDC-CF10AG

UPN:	6616A-SDCCF10AG
FCC ID:	TWG-SDCCF10AG
COMPANY:	Summit Data Communications, Inc. 526 South Market Suite 407 Akron, OH, 94085
TEST SITE:	Elliott Laboratories 684 W. Maude Ave Sunnyvale, CA 94085
REPORT DATE:	June 12, 2008
FINAL TEST DATE:	June 2, 2008
TEST ENGINEER:	Mehran Birgani
AUTHORIZED SIGNATORY:	David W. Bare Chief Engineer

ACCREDITED
2016-01

REVISION HISTORY

Rev #	Date	Comments	Modified By
1.0	July 17, 2008	First Release	

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SCOPE

The Federal Communications Commission and the European Telecommunications Standards Institute (ETSI) publish standards regarding ElectroMagnetic Compatibility and Radio spectrum Matters for radio-communications devices. Tests have been performed on the Summit Data Communications, Inc. model SDC-CF10AG in accordance with these standards.

Test data has been taken pursuant to the relevant DFS requirements of the following standard(s):

- FCC Part 15 Subpart E Unlicensed National Information Infrastructure (U-NII) Devices

Tests were performed in accordance with these standards together with the current published versions of the basic standards referenced therein as outlined in Elliott Laboratories test procedures.

The test results recorded herein are based on a single type test of the Summit Data Communications, Inc. model SDC-CF10AG and therefore apply only to the tested sample. The sample was selected and prepared by Ron Seide of Summit Data Communications, Inc.

OBJECTIVE

The objective of the manufacturer is to comply with the standards identified in the previous section. In order to demonstrate compliance, the manufacturer or a contracted laboratory makes measurements and takes the necessary steps to ensure that the equipment complies with the appropriate technical standards. Compliance with some DFS features is covered through a manufacturer statement or through observation of the device.

STATEMENT OF COMPLIANCE

The tested sample of Summit Data Communications, Inc. model SDC-CF10AG complied with the DFS requirements of:

FCC Part 15.407(h)(2)

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

DEVIATIONS FROM THE STANDARD

The following deviations were made from the test methods and requirements covered by the scope of this report:

1. As the typical host system for this product is unable to play the FCC movie file specified in FCC 06-96, an alternate method of exercising the EUT was used. This method was approved by the FCC, see Appendix F.

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Summit Data Communications model SDC-CF10AG is an 802.11a/g wireless LAN radio module, which is designed to send and receive wireless data communication. Normally, the EUT would be installed in a mobile device during operation. The EUT was, therefore, placed in this position during emissions testing to simulate the end user environment. The electrical rating of the EUT is 3.3V.

The sample was received on April 30, 2008 and tested on June 2, 2008. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number
Summit Data Communications, Inc.	SDC-CF10AG	802.11 a/g Compact Flash Adapter with Antenna Connectors	Various

The manufacturer declared values for the EUT operational characteristics that affect DFS are as follows:

<u>Operating Modes (5250 – 5350 MHz, 5470 – 5725 MHz)</u>

☐ Master Device

☒ Client Device (no In Service Monitoring, no Ad-Hoc mode)

☐ Client Device with In-Service Monitoring

<u>Antenna Gains / EIRP (5250 – 5350 MHz, 5470 – 5725 MHz)</u>

	5250 – 5350 MHz	5470 – 5725 MHz
Lowest Antenna Gain (dBi)	1.9	1.9
Highest Antenna Gain (dBi)	5.1	5.1
Output Power (dBm)	16.6	16.2

☐ Power can exceed 200mW eirp

<u>Channel Protocol</u>

☒ IP Based

☐ Frame Based

☐ OTHER ______________________

ENCLOSURE

The EUT enclosure is primarily constructed of Stainless steel. It measures approximately 4.3 cm wide by 5.5 cm deep by 0.5 cm high.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with the requirements of the standard(s) referenced in this test report.

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for testing:

Manufacturer	Model	Description	Serial Number	FCC ID
Cisco Systems	*Aironet 1250AG Series*	*Access Point*	*FTX1209906V*	*LDK102061*
HP	iPAQ	PDA	2CK5510K22	X11-21264

The italicized device was the master device.

EUT INTERFACE PORTS

The I/O cabling configuration during testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length (m)
None	-	-	-	-

EUT OPERATION

The EUT was operating with the following software. The software is secured by binary encryption to prevent the user from disabling the DFS function.

Client Device: V2.01.12 SCU: V2.01.11

During the channel move tests the system was configured with a FTP file transfer of the FCC video file from the master device (sourced by the PC connected to the master device via an Ethernet interface) to the client device.

The transferred file was the “FCC” test file and the client device was using an FTP as a FCC approved alternate method, required by FCC Part 15 Subpart E.

RADAR WAVEFORMS

Table 1 FCC Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses / burst	Minimum Detection Percentage	Minimum Number of Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Table 2 FCC Long Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Pulses / burst	Number of *Bursts*	Minimum Detection Percentage	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 3 FCC Frequency Hopping Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses / hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Detection Percentage	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

TEST RESULTS

TEST RESULTS SUMMARY – FCC Part 15, CLIENT DEVICE

Table 4 FCC Part 15 Subpart E Client Device Test Result Summary

Description	Radar Type	Radar Frequency	Measured Value	Requirement	Test Data	Status
Channel closing transmission time	Type 1	5320MHz	12.92ms	60ms	Appendix C	Complied
Channel move time	Type 1	5320MHz	8.745s	10s	Appendix C	Complied
Non-occupancy period - associated	Type 1	5320MHz	>30 Minutes	> 30 minutes	Appendix C	Complied
Passive Scanning	N/A	N/A	Refer to manufacturer attestation			

Notes:
1) Tests were performed using the radiated test method.
2) Channel availability check, detection threshold and non-occupancy period are not applicable to client devices.

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level, with a coverage factor (k=2) and were calculated in accordance with UKAS document LAB 34.

Measurement	Measurement Unit	Expanded Uncertainty
Timing (Channel move time, aggregate transmission time)	ms	Timing resolution +/- 0.24%
Timing (non occupancy period)	seconds	5 seconds
DFS Threshold (radiated)	dBm	1.6
DFS Threshold (conducted)	dBm	1.2

DFS TEST METHODS

RADIATED TEST METHOD

The combination of master and slave devices is located in an anechoic chamber. The simulated radar waveform is transmitted from a directional horn antenna (typically an EMCO 3115) toward the unit performing the radar detection (radar detection device, RDD). Every effort is made to ensure that the main beam of the EUT's antenna is aligned with the radar-generating antenna.

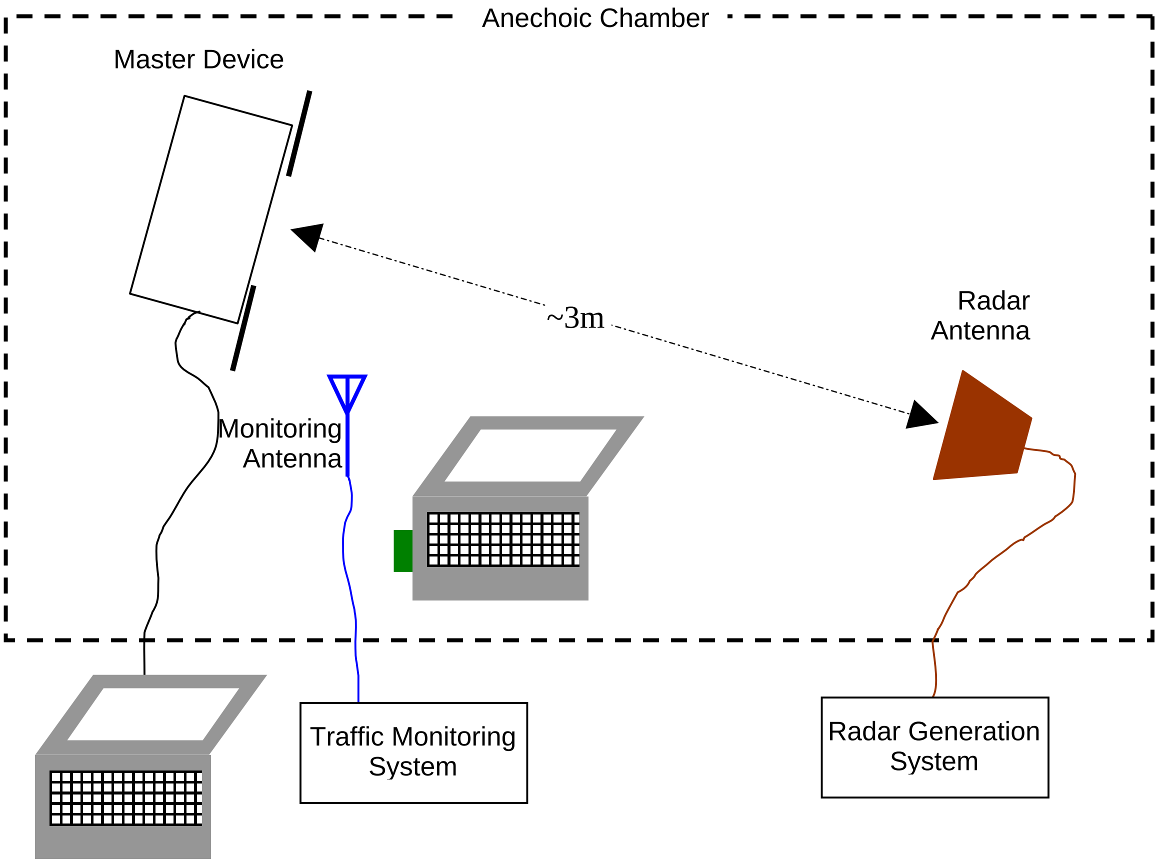

Figure 1 Test Configuration for radiated Measurement Method

The signal level of the simulated waveform is set to a reference level equal to the threshold level (plus 1dB if testing against FCC requirements). Lower levels may also be applied on request of the manufacturer. The level reported is the level at the RDD antenna and so it is not corrected for the RDD's antenna gain. The RDD is configured with the lowest gain antenna assembly intended for use with the device.

The signal level is verified by measuring the CW signal level from the radar generation system using a reference antenna of gain G (dBi). The radar signal level is calculated from the measured level, R (dBm), and any cable loss, L (dB), between the reference antenna and the measuring instrument:

Applied level (dBm) = R – GREF + L

If both master and client devices have radar detection capability then the device not under test is positioned with absorbing material between its antenna and the radar generating antenna, and the radar level at the non RDD is verified to be at least 20dB below the threshold level to ensure that any responses are due to the RDD detecting radar.

The antenna connected to the channel monitoring subsystem is positioned to allow both master and client transmissions to be observed, with the level of the EUT's transmissions between 6 and 10dB higher than those from the other device.

The combination of master and slave devices is located in an anechoic chamber. The simulated radar waveform is coupled into the unit performing the radar detection (radar detection device, RDD) via couplers and attenuators.

The signal level of the simulated waveform is set to a reference level equal to the threshold level (plus 1dB if testing against FCC requirements). Lower levels may also be applied on request of the manufacturer.

The signal level is verified by measuring the CW signal level at the coupling point to the RDD antenna port. The radar signal level is calculated from the measured level, R (dBm) and the lowest gain antenna assembly intended for use with the RDD, GRDD (dBi):

Applied level (dBm) = R – GRDD

If both master and client devices have radar detection capability then the radar level at the non-RDD is verified to be at least 20dB below the threshold level to ensure that any responses are due to the RDD detecting radar.

The antenna connected to the channel monitoring subsystem is positioned to allow both master and client transmissions to be observed, with the level of the EUT's transmissions between 6 and 10dB higher than those from the other device.

DFS MEASUREMENT INSTRUMENTATION

RADAR GENERATION SYSTEM

An Agilent PSG is used as the radar-generating source. The integral arbitrary waveform generators are programmed using Agilent's "Pulse Building" software and Elliott custom software to produce the required waveforms, with the capability to produce both un-modulated and modulated (FM Chirp) pulses. Where there are multiple values for a specific radar parameter then the software selects a value at random and, for FCC tests, the software verifies that the resulting waveform is truly unique.

With the exception of the hopping waveforms required by the FCC's rules (see below), the radar generator is set to a single frequency within the radar detection bandwidth of the EUT.

Frequency hopping radar waveforms are simulated using a time domain model. A randomly hopping sequence algorithm (which uses each channel in the hopping radar's range once in a hopping sequence) generates a hop sequence. A segment of the first 100 elements of the hop sequence are then examined to determine if it contains one or more frequencies within the radar detection bandwidth of the EUT. If it does not then the first element of the segment is discarded and the next frequency in the sequence is added. The process repeats until a valid segment is produced. The radar system is then programmed to produce bursts at time slots coincident with the frequencies within the segment that fall in the detection bandwidth. The frequency of the generator is stepped in 1 MHz increments across the EUT's detection range.

The radar signal level is verified during testing using a CW signal with the AGC function switched on. Correction factors to account for the fact that pulses are generated with the AGC functions switched off are measured annually and an offset is used to account for this in the software.

The generator output is connected to the coupling port of the conducted set-up or to the radar-generating antenna.

CHANNEL MONITORING SYSTEM

Channel monitoring is achieved using a spectrum analyzer and digital storage oscilloscope. The analyzer is configured in a zero-span mode, center frequency set to the radar waveform's frequency or the center frequency of the EUT's operating channel. The IF output of the analyzer is connected to one input of the oscilloscope.

A signal generator output is set to send either the modulating signal directly or a pulse gate with an output pulse co-incident with each radar pulse. This output is connected to a second input on the oscilloscope and the oscilloscope displays both the channel traffic (via the if input) and the radar pulses on its display.

For in service monitoring tests the analyzer sweep time is set to > 20 seconds and the oscilloscope is configured with a data record length of 10 seconds for the short duration and frequency hopping waveforms, 20 seconds for the long duration waveforms. Both instruments are set for a single acquisition sequence. The analyzer is triggered 500ms before the start of the waveform and the oscilloscope is triggered directly by the modulating pulse train. Timing measurements for aggregate channel transmission time and channel move time are made from the oscilloscope data, with the end of the waveform clearly identified by the pulse train on one trace. The analyzer trace data is used to confirm that the last transmission occurred within the 10-second record of the oscilloscope. If necessary the record length of the oscilloscope is expanded to capture the last transmission on the channel prior to the channel move.

Channel availability check time timing plots are made using the analyzer. The analyzer is triggered at start of the EUT's channel availability check and used to verify that the EUT does not transmit when radar is applied during the check time.

The analyzer detector and oscilloscope sampling mode is set to peak detect for all plots.

DFS MEASUREMENT METHODS

DFS – CHANNEL CLOSING TRANSMISSION TIME AND CHANNEL MOVE TIME

Channel clearing and closing times are measured by applying a burst of radar with the device configured to change channel and by observing the channel for transmissions. The time between the end of the applied radar waveform and the final transmission on the channel is the channel move time.

The aggregate transmission closing time is measured in one of two ways:

FCC – the total time of all individual transmissions from the EUT that are observed starting 200ms at the end of the last radar pulse in the waveform. This value is required to be less than 60ms.

ETSI[1] – the total time of all individual transmissions from the EUT that are observed from the end of the last radar pulse in the waveform. This value is required to be less than 260ms.

DFS – CHANNEL NON-OCCUPANCY AND VERIFICATION OF PASSIVE SCANNING

The channel that was in use prior to radar detection by the master is additionally monitored for 30 minutes to ensure no transmissions on the vacated channel over the required non-occupancy period. This is achieved by tuning the spectrum analyzer to the vacated channel in zero-span mode and connecting the IF output to an oscilloscope. The oscilloscope is triggered by the radar pulse and set to provide a single sweep (in peak detect mode) that lasts for at least 30 minutes after the end of the channel move time.

For devices with a client-mode that are being evaluated against FCC rules the manufacturer must supply an attestation letter stating that the client device does not employ any active scanning techniques (i.e. does not transmit in the DFS bands without authorization from a Master device).

DFS CHANNEL AVAILABILITY CHECK TIME

It is preferred that the EUT report when it starts the radar channel availability check. If the EUT does not report the start of the check time, then the time to start transmitting on a channel after switching the device on is measured to approximate the time from power-on to the end of the channel availability check. The start of the channel availability check is assumed to be 60 seconds prior to the first transmission on the channel.

To evaluate the channel availability check, a single burst of one radar type is applied within the first 2 seconds of the start of the channel availability check and it is verified that the device does not use the channel by continuing to monitor the channel for a period of at least 60 seconds. The test is repeated by applying a burst of radar in the last 2 seconds (i.e. between 58 and 60 seconds after the start of CAC) of the channel availability check.

TRANSMIT POWER CONTROL (TPC)

Compliance with the transmit power control requirements for devices is demonstrated through measurements showing multiple power levels and manufacturer statements explaining how the power control is implemented.

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[1] This measurement method is used for MIC Table No. 45.

SAMPLE CALCULATIONS

DETECTION PROBABILITY / SUCCESS RATE

The detection probability, or success rate, for any one radar waveform equals the number of successful trials divided by the total number of trials for that waveform.

THRESHOLD LEVEL

The threshold level is the level of the simulated radar waveform at the EUT’s antenna. If the test is performed in a conducted fashion then the level at the rf input equals the level at the antenna plus the gain of the antenna assembly, in dBi. The gain of the antenna assembly equals the gain of the antenna minus the loss of the cabling between the rf input and the antenna. The lowest gain value for all antenna assemblies intended for use with the device is used when making this calculation.

If the test is performed using the radiated method then the threshold level is the level at the antenna.

Appendix A Test Equipment Calibration Data

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Spectrum Analyzer	8595EM	1141	09-Nov-08
Tektronix	Digital Oscilloscope	TDS 5104	20408	04-Apr-09
Agilent Technologies	PSG Vector Signal Generator	E8267C	1877	15-Feb-10
EMCO	1-18GHz Horn Antenna	3115	487	06-Jun-08
ETS Lindgren	1-18GHz Horn Antenna	3117	1662	04-Nov-10

Appendix B Test Data Tables for Radar Detection Probability

The plot below shows the channel loading during testing as evaluated over a 1 second period. FTP transfer of the movie file generated the traffic, as there was not a host capable of running the movie using Media Player.

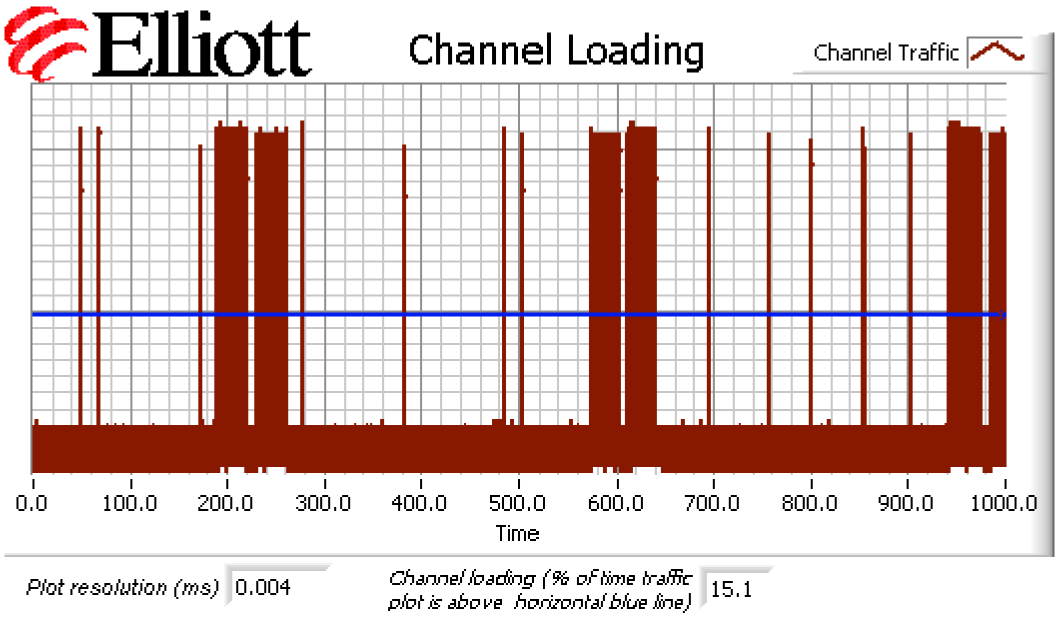


Figure 2 Channel Utilization During In-Service Detection Measurements

Appendix C Test Data Tables and Plots for Channel Closing

FCC PART 15 SUBPART E Channel Closing Measurements

Table 5 FCC Part 15 Subpart E Channel Closing Test Results

Waveform Type	Channel Closing Transmission Time [1]		Channel Move Time		Result
	Measured	Limit	Measured	Limit	
Radar Type 1	12.92ms	60 ms	8.745 s	10 s	Complies

After the final channel closing test the channel was monitored for a further 30 minutes. No transmissions occurred on the channel.

[1] Channel closing time for FCC measurements is the aggregate transmission time starting from 200ms after the end of the radar signal to the completion of the channel move.

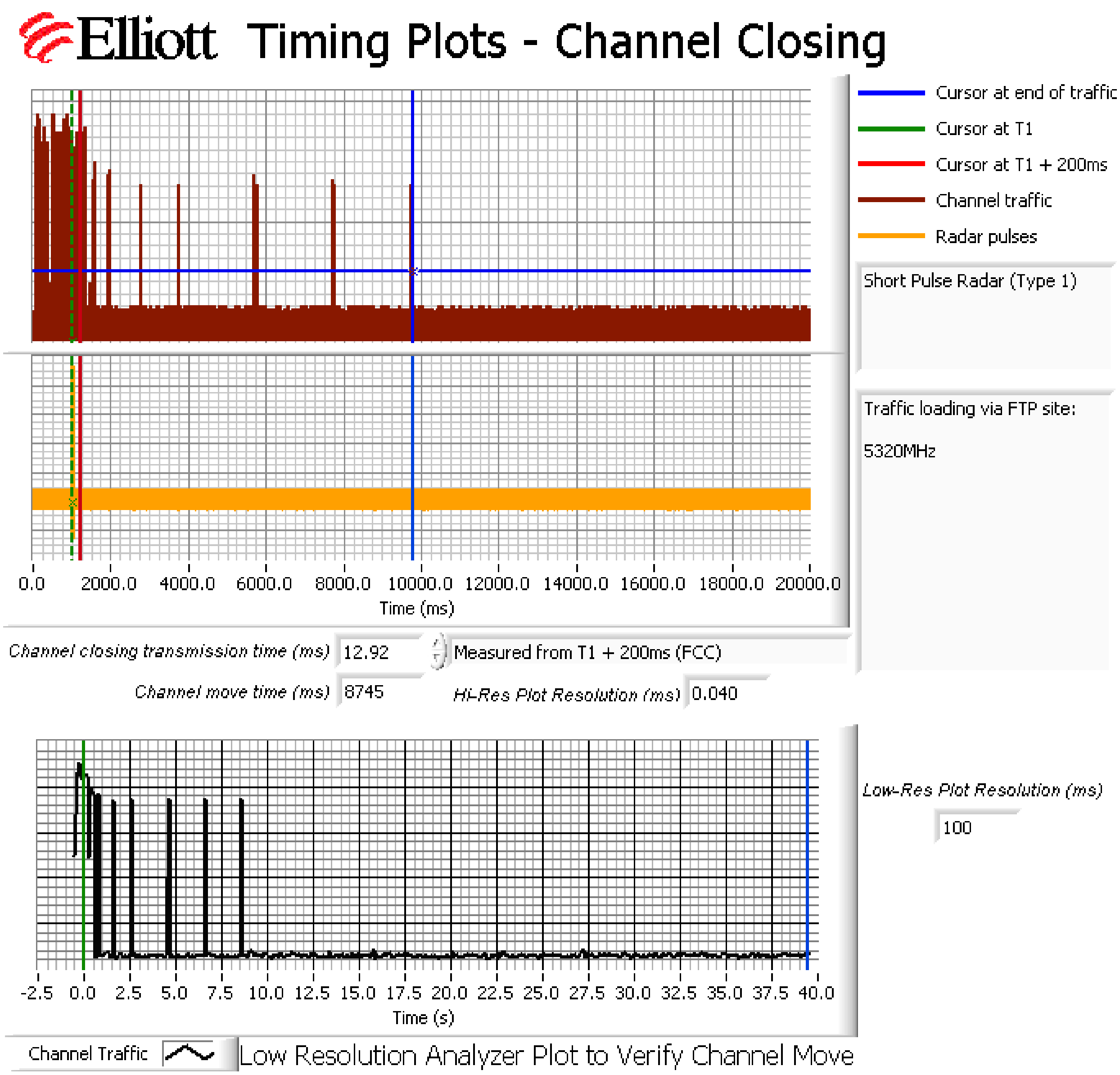


Figure 3 Channel Closing Time and Channel Move Time – 40 second plot 5320MHz

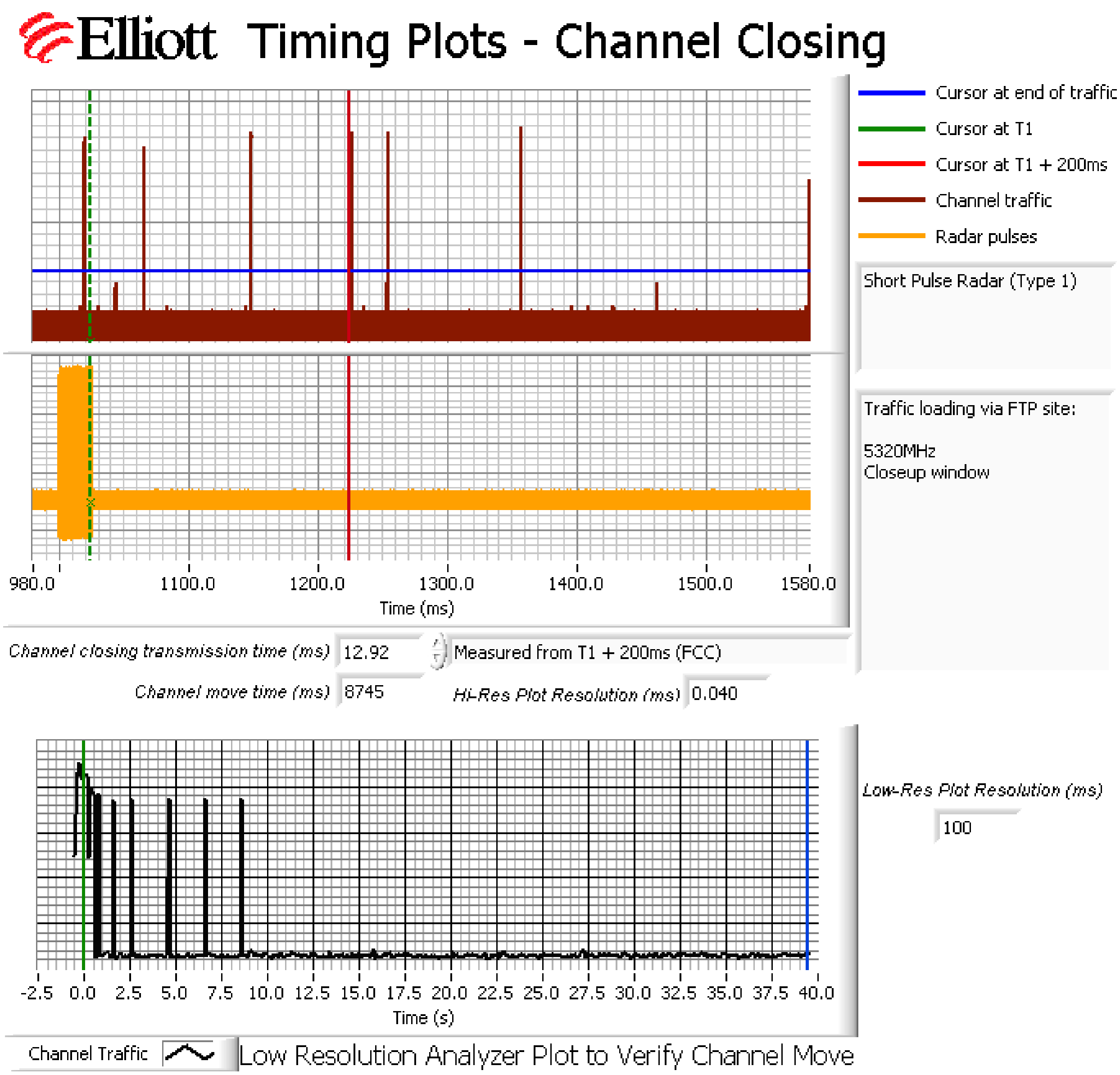


Figure 4 Close-Up of Transmissions Occurring More Than 200ms After The End of Radar 5320MHz

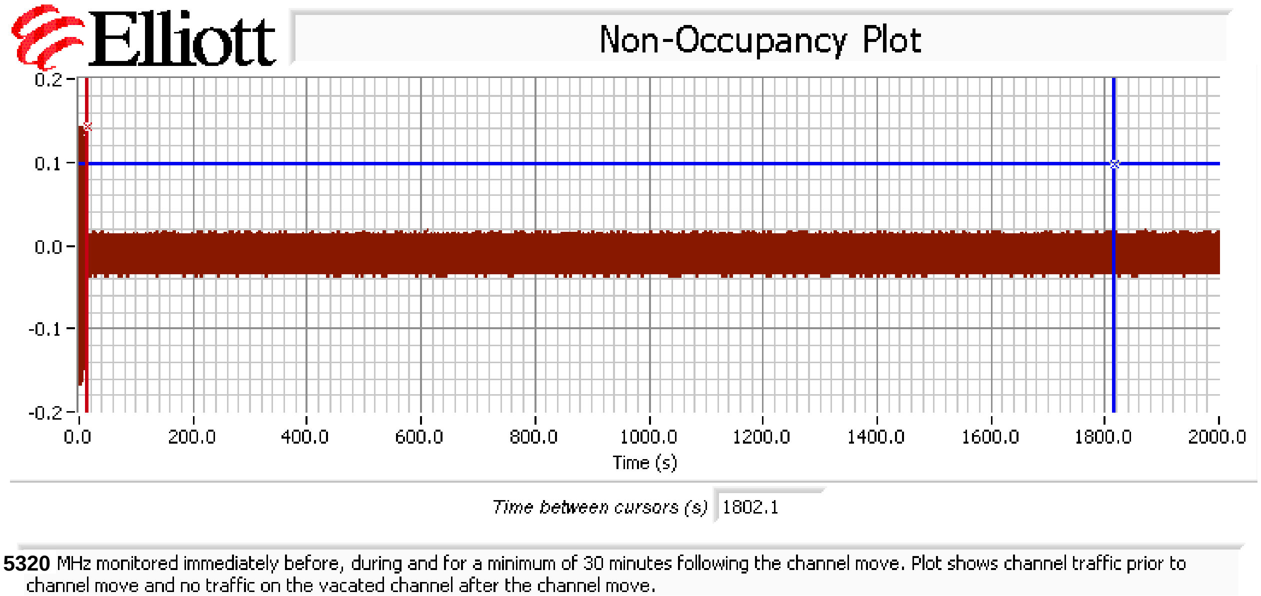


Figure 5 Radar Channel Non-Occupancy Plot

The non-occupancy plot was made over a 30-minute time period following the channel move time with the analyzer IF output connected to the scope and tuned to the vacated channel. No transmissions were observed after the channel move had been completed.

After the channel move the client re-associated with the master device on the new channel.

Appendix D Antenna Specification Sheet

CENTURION™ **Specifications**

NanoBlade

Internal Antenna - Embedded

Model Number:
NanoBlade

Specifications:

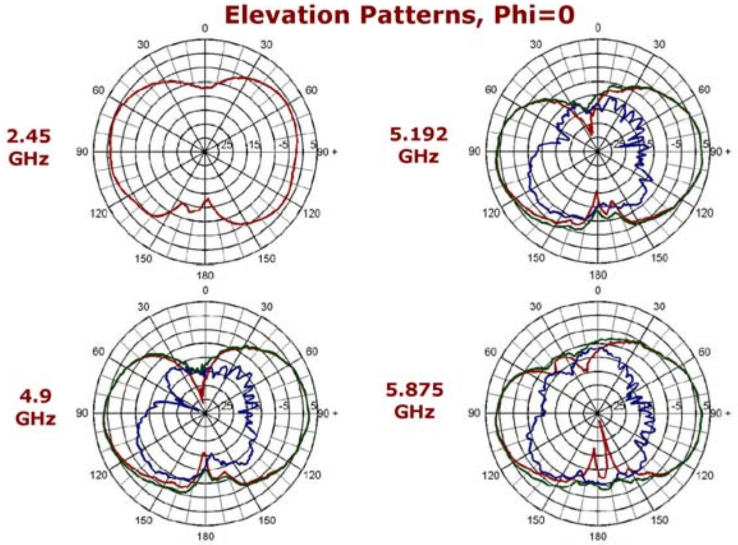
- Covers 2.4 to 2.5 GHz for 802.11b, and 4.9 to 6 GHz for 802.11a and all US, European, and Japanese WLAN applications
- Coaxial cable pigtail with various connector choices
- Omni-directional patterns at all frequencies with increased gain in upper bands for optimal coverage
- Conformance to European RoHS Directive 2002/95/EC

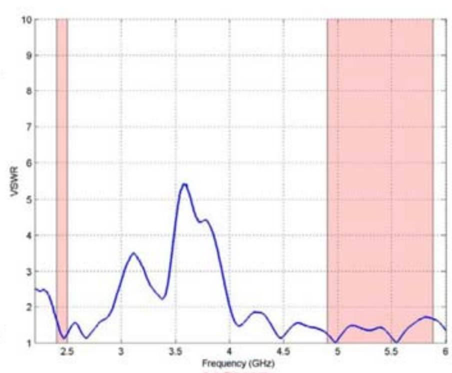
Frequency	2.4 - 2.5 GHz 4.9 – 6.0 GHz
Gain	3.8 dBi (2.45 GHz) 4.7 dBi (4.9 GHz) 5.1 dBi (5.25 GHz) 4.5 dBi (5.875 GHz)
Polarization	Vertical, Omni-directional
Nominal Impedance	50 ohms
VSWR	<2:1
Size	2" x 0.65"

Cables & Connectors:

Model #	Part #	Cable	Connector
NanoBlade-IP04	CAF94505	100mm, Ø 1.13mm	IPEX MHF
NanoBlade-FL04	MAF95056	100mm RG-178	Flying Lead
NanoBlade-MMCX4	CAF94504	100mm RG-178	RA-MMCX

Elevation Patterns, Phi=0





VSWR

Specifications subject to change without notice.

NanoBlade a – 12/23/05

CENTURION
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www.centurion.com • sales@centurion.com

QS-9000 REGISTERED ISO 9001

LARSEN® DUAL/WIDE BAND ANTENNAS

WLAN and Wi-Fi deployment is growing rapidly and so is the need for advanced technologies and multi band antennas. The roll-out of the 4.9 GHz band for public safety networks, requiring virtually the same antenna technology, represented a challenge for equipment manufacturers desiring to keep costs down and unique inventory to a minimum.

In response to these demands, Larsen has developed a unique line of products with "dual/wide band" capabilities. These products are designed to cover 802.11a, b and g, as well as the 4.9 GHz band. They are also designed to deliver superior electrical performance through efficient signal coverage. Larsen antenna designs cover virtually every requirement from the router to complete indoor coverage.

R380.900.500
Dual band omni ceiling

R380.900.908
Bi-directional ceiling mount

R380.500.314
Dual band swivel mount dipole

R380.900.909
Dual band mast/wall mountable directional patch

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L603.A (02/07)
Dual/Wide Band

Pulse® A TECHNITROL COMPANY

LARSEN® DUAL/WIDE BAND ANTENNAS

MODEL	FREQUENCY (MHz)
R380.500.314	2400-2500 / 4900-5900
SPECIFICATIONS	
GAIN	1.6 dBi / 5 dBi Max
VSWR	2:1
IMEPDANCE	50 Ohms
POLARIZATION	Linear Vertical
RADIATION PATTERN	E Plane: 85° Low Band 30° High Band H Plane: Omni-directional
OPERATING TEMPERATURE	-22° to +158° F
RADOME ENCLOSURE	PC / ABS
CONNECTOR	RP-TNC
COAX	Order Separately
DIMENSIONS	Bent: 6.1" H x 1.55" W Straight 7.15" H x .57" Dia

MODEL	FREQUENCY (MHz)
R380.900.908	2400-2500 / 4900-5900
SPECIFICATIONS	
GAIN	4.5 dBi / 5 dBi
VSWR	2 Maximum
IMEPDANCE	50 Ohms
POLARIZATION	Linear Vertical
RADIATION PATTERN	Omni-directional
MAXIMUM INPUT POWER	10 Watts
OPERATING TEMPERATURE	+32° to +167° F
RADOME ENCLOSURE	UV Stabalized ABS
CONNECTOR	SMA Jack (Female)
COAX	2' RG-58A/U (white)
DIMENSIONS	3" H x 6.9" L x 1.8" D
MOUNTING	Direct Feed 3/4" hole

MODEL	FREQUENCY (MHz)
R380.900.909	2400-2500 / 4900-5900
SPECIFICATIONS	
GAIN	5.5 dBi / 9 dBi
VSWR	2 Typical
IMEPDANCE	50 Ohms
POLARIZATION	Linear Vertical
PATTERN	Directional Patch
3 dB BEAMWIDTH IN H PLANE	97° / 65°
3 dB BEAMWIDTH IN E PLANE	68° / 50°
FRONT TO BACK RATIO	-15 dB Minimum
MAXIMUM INPUT POWER	20 Watts
OPERATING TEMPERATURE	+32° to +167° F
RADOME ENCLOSURE	UV Stabalized ABS / PC
CONNECTOR	RP-TNC Plug (Male)
COAX	3' RG-58A/U (white)
DIMENSIONS	4.72" H x 3.5" W x 1.65" D
MOUNTING	Wall / Corner / Mast

MODEL	FREQUENCY (MHz)
R380.900.500	2400-2500 / 4900-5900
SPECIFICATIONS	
GAIN	2 dBi
VSWR	2 Maximum
IMEPDANCE	50 Ohms
POLARIZATION	Vertical
RADIATION PATTERN	E Plane: Dipolar H Plane: Omni-directional
CROSS POLARIZATION	-15 dB
MAXIMUM INPUT POWER	20 Watts
OPERATING TEMPERATURE	-49° to +194° F
RADOME ENCLOSURE	ABS
CONNECTOR	N
COAX	12" RG-58A/U (white)
DIMENSIONS	.44" H x 3" Diameter
MOUNTING	Direct Feed 3/4" hole

LARSEN® ANTENNAS

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L603.A (02/07)
Dual/Wide Band

Pulse® A TECHNITROL COMPANY

09/21/2007 12:53 3304347931 SUMMIT PAGE 02/03
09/17/2007 17:44 7704476928 LXE INC PAGE 02/03

RF ANTENNA ASSEMBLY
Volex Part Number VLX-510004-A

Specification:

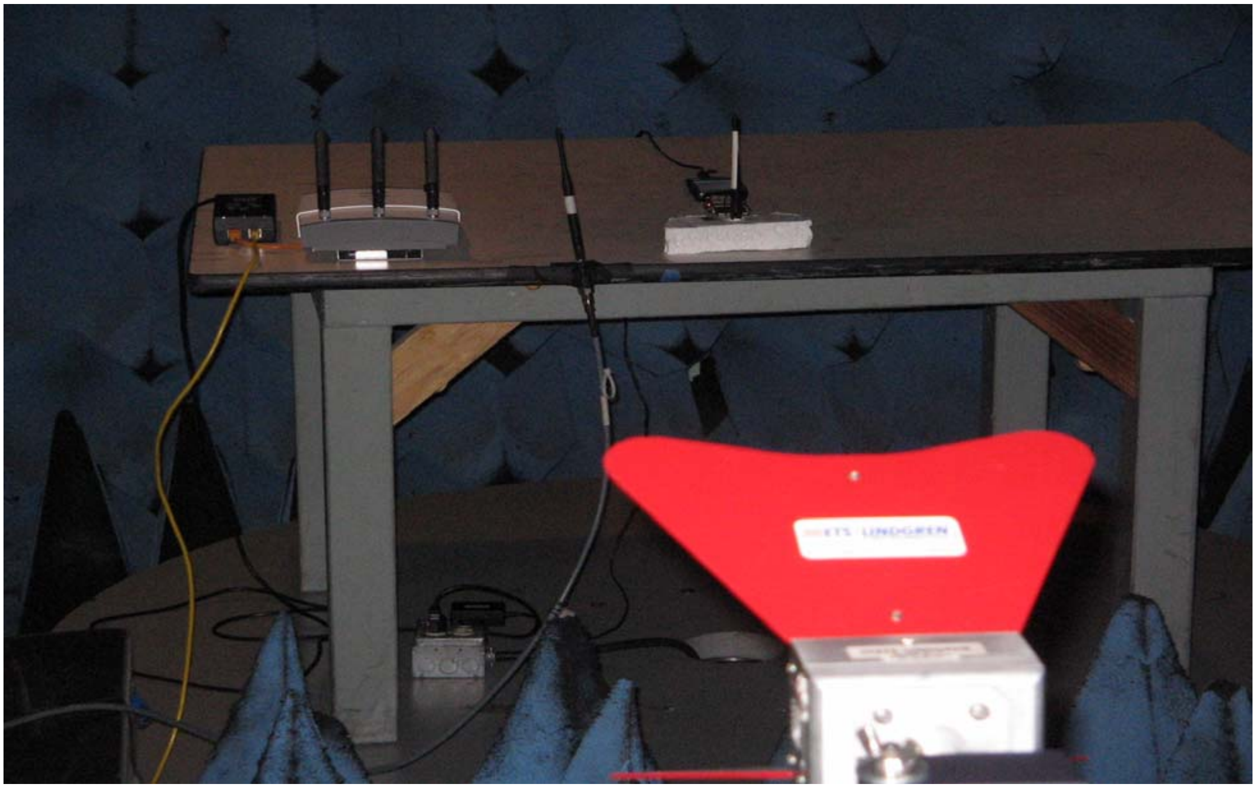
1. Electrical Properties:

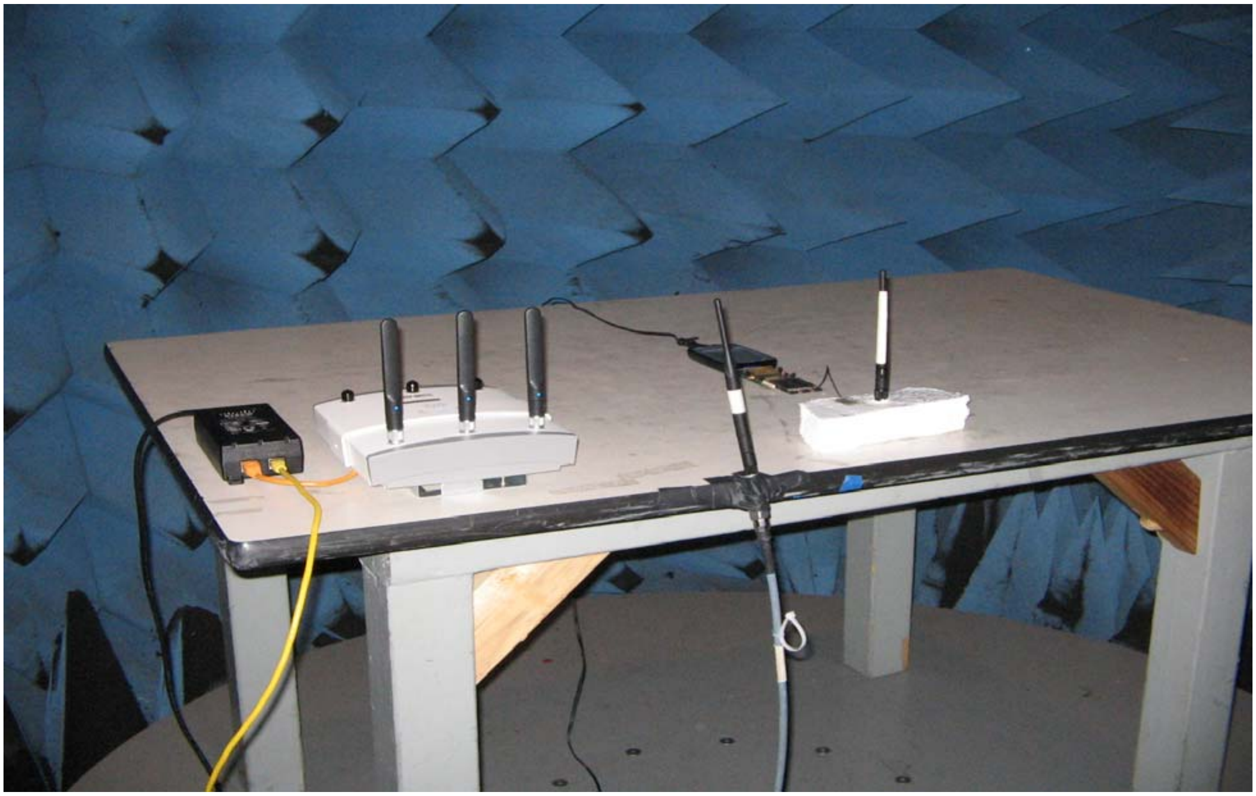
1.1	Frequency Range	2.4~ 2.5GHz * 4.9GHz~5.825GHz
1.2	Impedance	50 ohms Nominal
1.3	VSWR	1.92 Max
1.4	Return Loss	-10 dB Maximum
1.5	Radiation	Omni-directional
1.6	Gain (peak)	2.4Hhz~2.5Ghz @2.3dBi (real) 4.9Hhz~5.825Ghz @1.9dBi (real)
1.7	Polarization	Linear Vertical
1.8	Admitted Power	1 W

2. Physical Properties

2.1	Cable	RG-178 Coaxial Cable
2.2	Operating Temp	-20°C ~ +65°C
2.3	Storage Temp	-30°C ~ +75°C
2.4	Antenna Cover	TPE
2.5	Antenna Base	PC
2.6	Antenna Base	PBT
2.7	Connector	TNC Plug Reverse
2.8	Color	Black

Appendix E Test Configuration Photographs





Appendix F Alternate Test Procedure Proposal

Office of Engineering and Technology

Inquiry Tracking Number:	**536826**
Date of Submission:	**12/20/2007**
Subject:	**Alternate DFS Test Configuration**
Question:	**I have a 15.401 intentional radiator that is running on a Windows CE platform. I am seeking authorization for operation in the 5250-5350 and 5470-5725 MHz bands. The device would be classified as a client without radar detection. We are unable to operate our device in accordance with Section 7.7 of FCC 06-96. The processing power and memory resources of Windows CE are much less than the typical Windows 2000/XP/Vista laptop computer for which this test was intended. We know of no MPEG2 decoder for Windows CE that would make it possible for us to stream the audio/video file specified by the FCC test. We propose a change in the test methodology that would still allow us to demonstrate our ability to meet the DFS requirements. Rather than streaming the file, we propose that we FTP (File Transfer Protocol) the video file from the server to the client device or from the client to the server. The FTP protocol operates using TCP over IP and will attempt to fill the channel as much as possible given the data transfer rate of the RF connection. In light of the test purposes (having the client change channel and not probe the previous channel), we feel that this methodology would be a suitable alternative to audio/video streaming. Please let us know if you have any questions regarding our proposal and if it is acceptable for the DFS test.**