

PCTEST ENGINEERING LABORATORY, INC.

6660-B Dobbin Road, Columbia, MD 21045 USA Tel. 410.290.6652 / Fax 410.290.6554 http://www.pctestlab.com



# MEASUREMENT REPORT FCC PART 15.407 / IC RSS-210

### **Company Name:**

Pantech Co. Ltd. Pantech Building, I-2, DMC Sangam-dong, Mapo-gu, Seoul, KOREA 121-792 Date of Testing: March 7, 2012 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 0Y1202100191.JYC

FCC ID:	JYCP8010
COMPANY:	Pantech Co. Ltd.
Model(s):	P8010
EUT Type:	Portable Handset
Type of Device:	Client Only Device, No Radar Detection Capability
Frequency Range:	5260 – 5320 MHz (UNII-II Band)
	5500 – 5700 MHz (UNII-III Band)
Output Power:	9.333 mW (9.70 dBm) Conducted (802.11a UNII Band 2)
	9.333 mW (9.70 dBm) Conducted (802.11a UNII Band 3)
FCC Classification:	Unlicensed National Information Infrastructure (UNII)
FCC Rule Part(s):	Part 15.407(UNII)

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003 and FCC 06-96 Appendix B Compliance Measurement Procedures for Unlicensed-National Information Infrastructure Devices Operating in the 5.25 - 5.35 GHz and 5.47 - 5.725 GHz Bands Incorporating Dynamic Frequency Selection. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.

Randy Ortanez President



FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	ραντεςη	Reviewed by: Quality Manager
Test Report S/N: Test Dates:		EUT Type:		Page 1 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 10124
© 2012 PCTEST Engineering Laboratory, Inc.			REV 1.3DFS	



# TABLE OF CONTENTS

FCC I	PART 1	15.407 MEASUREMENT REPORT	3
1.0	INTR	RODUCTION	4
	1.1	SCOPE	4
	1.2	EVALUATION PROCEDURE	4
	1.3	SUMMARY OF TEST RESULTS	4
2.0	PRO	DUCT INFORMATION	5
	2.1	EQUIPMENT DESCRIPTION	5
	2.2	MODIFICATIONS	5
3.0	DES	CRIPTION OF DYNAMIC FREQUENCY SELECTION TEST	6
	3.1	APPLICABILITY	
	3.2	REQUIREMENTS	6
	3.3	DFS DETECTION THRESHOLD VALUES	8
	3.4	PARAMETERS OF DFS TEST SIGNALS	
	3.5	PROCEDURE	
4.0	TES	T EQUIPMENT	
	4.1	ADDITIONAL EQUIPMENT	11
5.0		T PLOTS AND DATA UNII - II BAND	
6.0		T PLOTS AND DATA UNII – III BAND	
7.0	CON	ICLUSION	24

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 2 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Faye 2 01 24
© 2012 PCTEST Engineering Laboratory, Inc.			REV 1.3DFS	





# DFS MEASUREMENT REPORT FCC Part 15.407



## § 2.1033 General Information

APPLICANT: APPLICANT ADDRESS:	Pantech Co. Ltd. Pantech Building, I-2, DMC			
	Sangam-dong,	Mapo-gu, Seou	I, KOREA 121-792	
TEST SITE:	PCTEST ENGIN	IEERING LABOR	ATORY, INC.	
TEST SITE ADDRESS:	6660-B Dobbin I	Road, Columbia, I	MD 21045 USA	
FCC RULE PART(S):	Part 15.407(h)			
BASE MODEL:	P8010			
FCC ID:	JYCP8010			
Test Device Serial No.:	EMC	Production	Pre-Production	Engineering
DEVICE CLASSIFICATION:	Client Only, No I	Radar Detection		
DATE(S) OF TEST:	March 7, 2012			
TEST REPORT S/N:	0Y1202100191.	JYC		

# **Test Facility / Accreditations**

### Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21045, U.S.A.



- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (IC-2451).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).



- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (IC-2451) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N: Test Dates:		EUT Type:		Dage 2 of 24
0Y1202100191.JYC March 7, 2012		Portable Handset		Page 3 of 24
© 2012 PCTEST Engineering Laboratory. Inc.			REV 1.3DFS	



#### INTRODUCTION 1.0

#### 1.1 Scope

This report has been prepared to demonstrate compliance with the requirements for Dynamic Frequency Selection (DFS) as stated in FCC 06-96. Testing was performed on the Pantech Co. Ltd. P8010 in accordance with the measurement procedure described in Appendix B of FCC 06-96. As of July 20, 2007 all devices operating in the 5250 - 5350 MHz and/or the 5470 - 5725 MHz bands must comply with the DFS requirements. As the EUT does not have radar detection capability it was evaluated as a Client Only Device.

All test results reported herein are applicable to the sample selected for testing. The unit used for testing was supplied by Pantech Co. Ltd..

#### 1.2 **Evaluation Procedure**

A radiated test methodology was used for the DFS evaluation procedure of the Portable Handset. No deviations to the test procedure and test methods occurred during the evaluation of the EUT.

#### 1.3 Summary of Test Results

The Portable Handset was found to be compliant with the requirements for DFS as required for a Client Device per Part 15.407(h) and FCC 06-96. The following table lists the measured parameters. The actual data and plots can be found in Section 5 and 6 of this report.

	Parameter	Measured	Limit	Result
Hz d	Channel Move Time	497.38 ms	10 seconds	Pass
- 5320 MHz – II Band	Channel Closing Transmission Time	< 200ms + 649.92 µs (aggregate)	200ms + aggregate of 60ms over remaining 10 second period	Pass
5260 - UNII -	Non-occupancy Period	Monitored > 30 minutes (No transmission occurred)	30 minutes	Pass
zHM	Channel Move Time	2167.00 ms	10 seconds	Pass
- 5725 MHz – III Band	Channel Closing Transmission Time	< 200ms + 4939.88 μs (aggregate)	200ms + aggregate of 60ms over remaining 10 second period	Pass
5470 – UNII -	Non-occupancy Period	Monitored > 30 minutes (No transmission occurred)	30 minutes	Pass

### Table 1-1. DFS Test Results Summary

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N: Test Dates:		EUT Type:		Page 4 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Faye 4 01 24
© 2012 PCTEST Engineering Laboratory. Inc. REV				REV 1.3DFS

ngineering Laboratory,



# 2.0 PRODUCT INFORMATION

# 2.1 Equipment Description

The Equipment Under Test (EUT) is the Pantech Portable Handset FCC ID: JYCP8010.

### Mode of Operation:

Master Device	
Client Device (No radar detection)	$\square$
Client Device with Radar Detection	

Parameters of EUT:	
Frequency	5260 – 5320 MHz 5500 – 5700 MHz
Output Power:	9.333 mW (9.70 dBm) Conducted (802.11a UNII Band 2) 9.333 mW (9.70 dBm) Conducted (802.11a UNII Band 3)
Modulation:	OFDM
Channel Bandwidth:	20 MHz

# 2.2 Modifications

No modifications to the EUT were required in order to comply with the DFS specifications.

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 5 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 5 01 24
© 2012 PCTEST Engineering Laboratory, Inc.			REV 1.3DFS 3/3/08	



#### DESCRIPTION OF DYNAMIC FREQUENCY SELECTION TEST 3.0

#### 3.1 Applicability

The following table from FCC 06-96 lists the applicable requirements for the DFS testing. The device evaluated in this report is considered a client device without radar detection capability.

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 3-1. DFS Applicability

Requirement	Operational Mode				
	Master	Client Without Radar Detection	Client With Radar Detection		
DFS Detection Threshold	Yes	Not required	Yes		
Channel Closing Transmission Time	Yes	Yes	Yes		
Channel Move Time	Yes	Yes	Yes		
U-NII Detection Bandwidth	Yes	Not required	Yes		
Client Beacon Test	N/A	Yes	Yes		

### Table 3-2. DFS Applicability During Normal Operation

#### 3.2 Requirements

Per FCC 06-96 the following are the requirements for Client Devices:

- a) A Client Device will not transmit before having received appropriate control signals from a Master Device.
- b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements.

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 6 of 24	
0Y1202100191.JYC	March 7, 2012	Portable Handset		Page 6 01 24	
© 2012 PCTEST Engineering Laboratory. Inc.					

Engineering Laboratory, I



The Client Device will not resume any transmissions until it has again received control signals from a Master Device.

- c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.
- d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.

Channel Move Time and Channel Closing Transmission Time requirements are listed in the following table.

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 80% of the U- NII 99% transmission power bandwidth. See Note 3.

Note 1: The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:

• For the Short Pulse Radar Test Signals this instant is the end of the Burst.

• For the Frequency Hopping radar Test Signal, this instant is the end of the last radar Burst generated.

• For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the Radar Waveform.

**Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at** the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3: During the U-NII Detection Bandwidth detection test, radar type 1 is used and for each** 

frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

### Table 3-3: DFS Response Requirements

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 7 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Page 7 of 24
© 2012 PCTEST Enginee	ring Laboratory, Inc.	•		REV 1.3DFS



#### 3.3 **DFS Detection Threshold Values**

The DFS detection thresholds are defined for Master devices and Client Devices with In-service monitoring. These detection thresholds are listed in the following table.

Maximum Transmit Power	Value (See Notes 1 and 2)			
≥ 200 milliwatt	-64 dBm			
< 200 milliwatt	-62 dBm			
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.				
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of				

the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Table 3-4: Detection Thresholds for Master Devices and Client Devices with Radar Detection

#### 3.4 **Parameters of DFS Test Signals**

As the EUT is a Client Device with no Radar Detection only one type radar pulse is required for the testing. Radar Pulse type 1 was used in the evaluation of the Client device for the purpose of measuring the Channel Move Time and the Channel Closing Transmission Time. Table 3-5 lists the parameters for the Short Pulse Radar Waveforms. A plot of the Radar Pulse Type 1 used for testing is included in Section 5.0 of this report.

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	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 (Ra	adar Types 1-4)	80%	120		

Table 3-5: Parameters for Short Pulse Radar Waveforms

Radar Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per <i>Burst</i>	Number of <i>Burst</i> s	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50 - 100	5 - 20	5 – 20	1 - 3	8 - 20	60%	30

Table 3-6. Parameters for Long Pulse Radar Waveforms

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	Рантесн	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 8 of 24	
0Y1202100191.JYC	March 7, 2012	Portable Handset		Page 6 01 24	
© 2012 PCTEST Engineering Laboratory, Inc.					

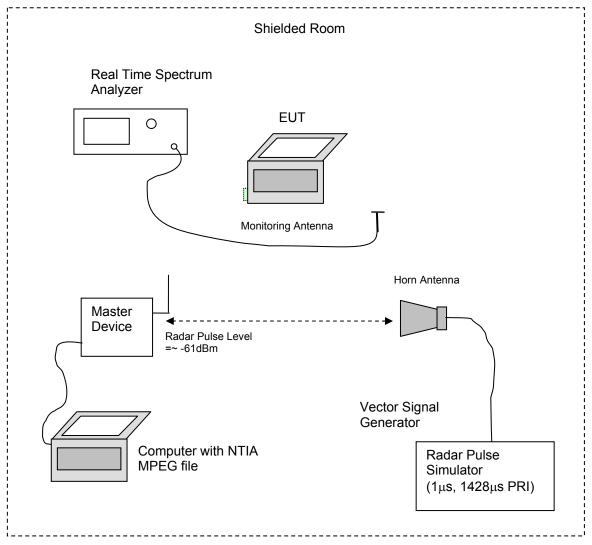


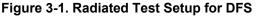
Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

Table 3-7. Parameters for Frequency Hopping Radar Waveforms

## 3.5 Procedure

The FCC 06-96 describes a radiated test setup and a conducted test setup. A radiated test setup was used for this testing. Figure 3-1 shows the typical test setup. One channel selected between 5260 and 5350 MHz is chosen for the testing.





FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	Рантесн	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 9 of 24	
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 9 01 24	
© 2012 PCTEST Engineering Laboratory, Inc.					



- 1. The radar pulse generator is setup to provide a pulse at the frequency that the Master and Client are operating. A Type 1 radar pulse with a 1μs pulse width and a 1428μs PRI is used for the testing.
- 2. The vector signal generator is adjusted to provide the radar burst (18 pulses) at a level of approximately -62dBm at the antenna of the Master device.
- 3. A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4. The Client Device (EUT) is set up per the diagram in Figure 3-1 and communications between the Master device and the Client is established.
- 5. The MPEG file specified by the FCC (*"6 ½ Magic Hours"*) is streamed from the "file computer" through the Master to the Slave Device and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network.
- 6. The real time spectrum analyzer is set to record a 16sec window to any transmissions occurring up to and after 10sec.
- 7. The system is again setup and the monitoring time is shortened in order to capture the Channel Closing Transmission Time. This time is measured to insure that the Client ceases transmission within 200ms and the aggregate of emissions occurring after 200ms up to 10 sec do not exceed 60ms.

(Note: the channel may be different since the Master and Client have changed channels due to the detection of the initial radar pulse.)

8. After the initial radar burst the channel is monitored for 30 minutes to insure no transmissions or beacons occur. A second monitoring setup is used to verify that the Master and Client have both moved to different channels.

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 10 of 24	
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 10 01 24	
© 2012 PCTEST Engineering Laboratory, Inc.					



# 4.0 TEST EQUIPMENT

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E4448A	PSA (3Hz-50GHz) Spectrum Analyzer	2/15/2012	Annual	2/15/2013	US42510244
Agilent	E8267C	Vector Signal Generator	10/10/2011	Biennial	10/10/2013	US42340152
Emco	3115	Horn Antenna (1-18GHz)	1/12/2012	Biennial	1/12/2014	9704-5182
Emco	3115	Horn Antenna (1-18GHz)	4/8/2010	Biennial	4/8/2012	9205-3874
Tektronix	RSA-6114A	Real Time Spectrum Analyzer	4/7/2011	Annual	4/7/2012	B010177

Table 4-1. Annual Test Equipment Calibration Schedule

# 4.1 Additional Equipment

The following equipment was used in support of the DFS testing.

Device	Manufacturer	Model/Description	Description	S/N:	FCC ID:
Master	Cisco Systems	Aironet AIR- AP1242AG-A-K9	Access Point	FTX1114B151	LDK102056

 Table 4-2. Support Equipment

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	ραντεςη	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 11 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 11 01 24
© 2012 PCTEST Engineer	ring Laboratory, Inc.			REV 1.3DFS



#### **TEST PLOTS AND DATA UNII - II BAND** 5.0

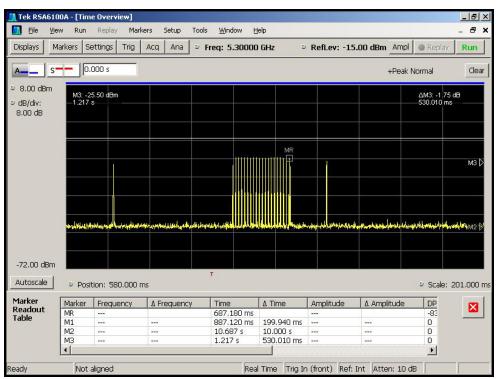
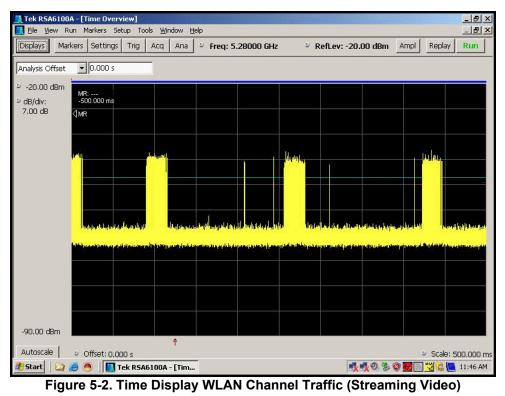


Figure 5-1. Type 1 Radar Pulse



FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 12 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Faye 12 01 24
© 2012 PCTEST Engineer	ing Laboratory. Inc.	•		REV 1.3DFS

© 2012 PCTEST Engineering Laboratory, Inc.



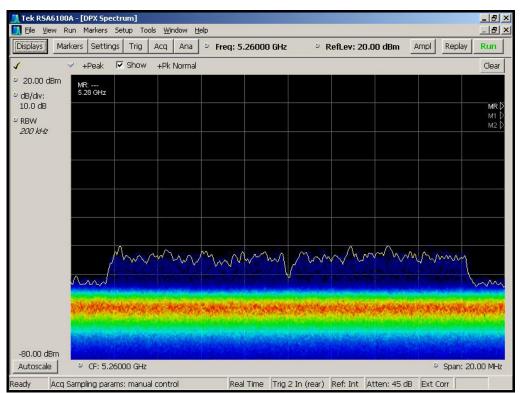


Figure 5-3. Real-Time Spectrum Display, No WLAN Traffic

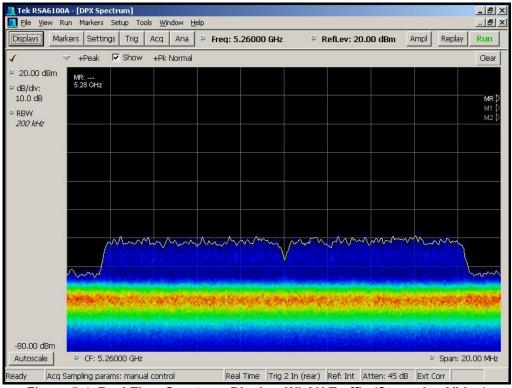


Figure 5-4. Real-Time Spectrum Display, WLAN Traffic (Streaming Video)

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	Рантесн	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 13 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 13 01 24
© 2012 PCTEST Enginee	ring Laboratory, Inc.			REV 1.3DFS



👖 Eile Vi	jew Run	e Overview] Replay Mari	kers Setup Too	ils <u>W</u> indow <u>H</u>	elp			-	- 8 . 8
Displays	Markers S	ettings Trig	Acq Ana 👳	Freq: 5.30000	GHz 9	RefLev: -37	7.50 dBm Ampl	Replay	Run
A S	<b>;</b> _ [0.	000 s					+Peak N	lormal	Clea
-13.50 dBr	m								
dB/div:	M3: -4 -1.291	3.80 dBm s		5	2		0	ΔM3: -13.35 dE 497.380 ms	
6.50 dB									
			-						
		M3							
	MIN								
		M1 while a the floor of	ور الله من الله ولا والله والله و وهوار وال	able tempione des la trice des	n da a biska sa sufinda sa sa da da a	the state of the state of the	er fan de men alle steretike in er befan a	n alkula di <sup>M2</sup> dalata	- and
				e) laterature de la tricte d		think the f	id film in the destrict of the destrict of the second second second second second second second second second s	M2 Jahon	
			, fån, skoner gettä och av är jutt ved är är ju mite de gegen de soner och av soner av de soner av soner a	ablatestices of a kit for the	n ka bula Mandud bardak ka Mana atau ang mana ang		de, kir de netwer die ster finst de ster die die de st generatie waarde die ster die s		
.79 50 dPm	***		, f.k., skoner a stild oster sky sett v se ded er	a <mark>hlaterina seria ki de de</mark> n	n ka bisha da privi instalik ka Mana ang ka bisha ang ka bisha da pana ang ka bisha ang ka bisha ang ka bisha ang ka bisha da pang ka bisha da	alalan ha talan talah ki fa	id (i) de néver die statie i de lief af de 1999 - Statie Generalise de lief af de lief 1999 - Statie Generalise de lief af de lief af de lief af de lief af		
-78.50 dBm				abletere en de la trie de la	n ka suka ang suka su da kasa da kasa		sis (1) de ante de la complete de la Complete de la complete de la complete Complete de la complete		
	ר <mark>ב</mark>		s ( <del>de s</del> e des se sent de se a se se se de se de se de se de se se se de se se se de se	ahl der geweinigt state der		sin to sident and a f		9 Scale: 12.	000 :
Autoscale	ר <mark>ב</mark>		Δ Frequency	Aldragen (a) Para	Δ Time	Amplitude	Δ Amplitude		
Autoscale 1arker teadout	n T Posi Marker MR	tion: 0.000 s	Δ Frequency	Time 793.260 ms	Δ Time	Amplitude	Δ Amplitude	9 Scale: 12.	000 s
Autoscale 1arker teadout	n T Posi Marker MR M1	tion: 0.000 s	Δ Frequency	Time 793.260 ms 993.330 ms	Δ Time 200.070 ms	Amplitude	Δ Amplitude	© Scale: 12.	
Autoscale Marker Readout	m T Posi Marker MR M1 M2	tion: 0.000 s	Δ Frequency	Time 793.260 ms 993.330 ms 10.793 s	∆ Time 200.070 ms 10.000 s	Amplitude	Δ Amplitude	<ul> <li>Scale: 12.</li> <li>DP</li></ul>	
Autoscale 1arker teadout	n T Posi Marker MR M1	tion: 0.000 s	Δ Frequency	Time 793.260 ms 993.330 ms	Δ Time 200.070 ms	Amplitude	Δ Amplitude	<ul> <li>Scale: 12.</li> <li>DP</li> <li></li> <li>0</li> <li>0</li> </ul>	
-78.50 dBm Autoscale 1arker teadout able	n T ♥ Posi Marker MR M1 M2 M3	tion: 0.000 s	Δ Frequency	Time 793.260 ms 993.330 ms 10.793 s 1.291 s	∆ Time 200.070 ms 10.000 s	Amplitude	Δ Amplitude	<ul> <li>Scale: 12.</li> <li>DP</li></ul>	
Autoscale 1arker teadout	n T ♥ Posi Marker MR M1 M2 M3	Con: 0.000 s	Δ Frequency	Time 793.260 ms 993.330 ms 10.793 s	∆ Time 200.070 ms 10.000 s	Amplitude	Δ Amplitude	<ul> <li>Scale: 12.</li> <li>DP</li> <li></li> <li>0</li> <li>0</li> </ul>	

Figure 5-5. Channel Move Time (< 10sec)

### Marker Descriptions:

- MR = End of Radar Burst
- M1 = 200ms from end of Radar Burst
- M2 = 10sec from end of Burst

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 14 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 14 01 24
© 2012 PCTEST Engineerin	g Laboratory, Inc.			REV 1.3DFS



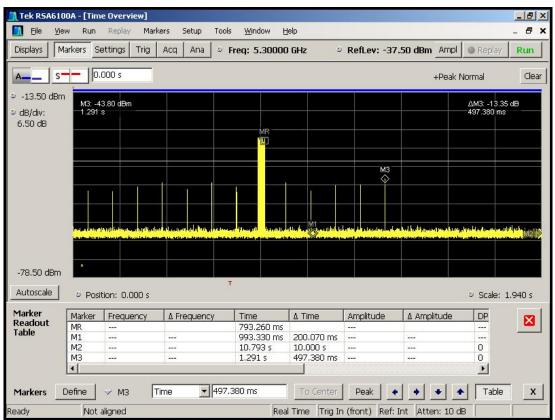


Figure 5-6. Channel Closing Transmission Time, Aggregate Time After 200ms

# **Calculation of Aggregate Time:**

Pulse width = 216.64  $\mu$ s (Reference Figure 5-7 )

Number of pulses occurring after 200ms from end of burst = 3

Aggregate time from 200ms to 10sec after burst = 3 x 216.64  $\mu s$  = 649.92  $\mu s$ 

Aggregate Time: 649.92 µs

Limit: 60ms

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 15 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 15 01 24
© 2012 PCTEST Engineering	g Laboratory, Inc.			REV 1.3DFS



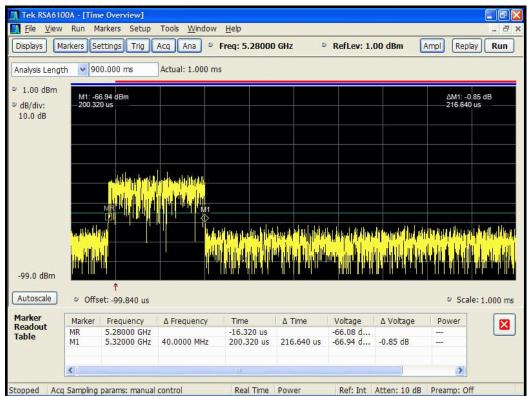


Figure 5-7. Pulse Width After 200ms

K Agilent					Freq/Channe
ef 0 dBm Peak	Atten 10 dB		Mkr1	5.264 850 GHz -66.93 dBm	Center Fre 5.28000000 GH
og Ø IB/					Start Fre 5.27500000 GH
					<b>Stop Fre</b> 5.28500000 GH
gAv					CF Ste 1.0000000 MH <u>Auto</u> Ma
11 S2 3 FC AA	Line, 7 449 44 404 404 404 404 404 404 404 404	n hayaka ya mana ta ta ya	halitalista angenata an Manyawaki	1 	<b>FreqOffse</b> 0.00000000 ⊦
:(f): Tun wp					<b>Signal Trac</b> On <u>O</u>
Center 5.280 000 Res BW 1 MHz		1 MHz	#Sweep 1.8	Span 10 MHz 3 ks (601 pts)	
	2007 Agilent Tech		"Oncop 1.	7 K3 (001 þ(3)	

Figure 5-8 Non-occupancy Period - Monitoring live real time spectrum - Elapse time 30 minutes

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 16 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 10 01 24
© 2012 PCTEST Engineer	ng Laboratory, Inc.			REV 1.3DFS



#### TEST PLOTS AND DATA UNII - III BAND 6.0

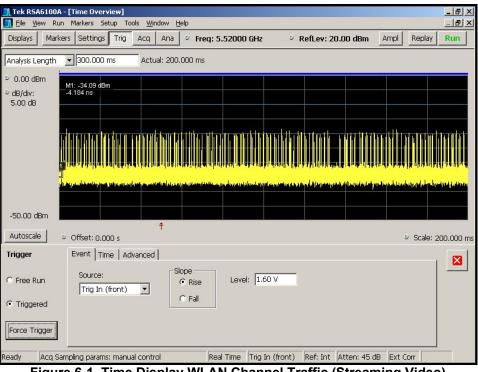
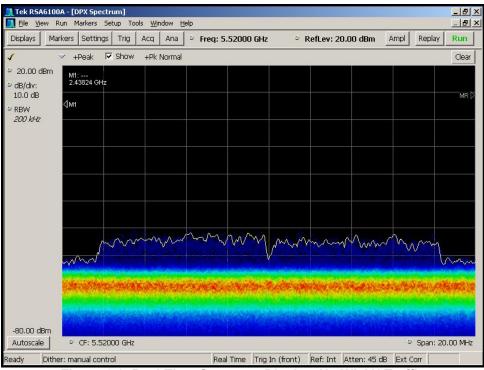


Figure 6-1. Time Display WLAN Channel Traffic (Streaming Video)



### Figure 6-2. Real-Time Spectrum Display, No WLAN Traffic

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 17 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 17 01 24
© 2012 PCTEST Engineer	ing Laboratory Inc			REV 1 3DES

2012 PCTEST Engineering Laboratory, Inc



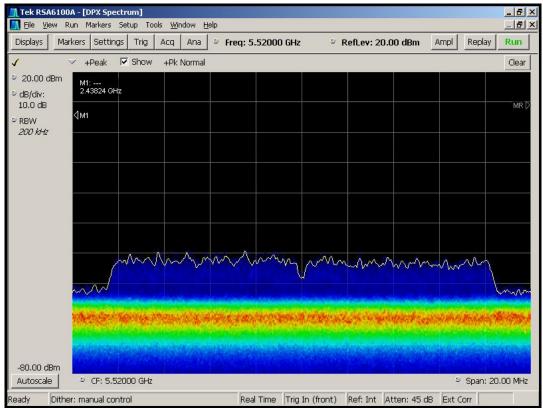


Figure 6-3. Real-Time Spectrum Display, WLAN Traffic (Streaming Video)

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	<b>Рантесн</b>	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 18 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 10 01 24
© 2012 PCTEST Engineerir	ng Laboratory, Inc.	·		REV 1.3DFS



Eile Vie	6	Replay Marl	kers Setup Too	ols <u>W</u> indow <u>H</u>	elp				- 8
)isplays M	arkers Se	ettings Trig	Acq Ana 🙂	Freq: 5.58000	GHz e	RefLev: -37	.50 dBm Ampl	Replay	Run
s	- 20	00.000 ms					+Peak I	Normal	Clea
-13.50 dBm	1								
dB/div:	M3: -2 —2.960	8.92 dBm s						∆M3: 3.51 a —2.167 s	18
6.50 dB									
			M3						
	IF I		Y						
		Les santes	ويعمده وبالمروسان وقار والمروان والمرو						M2
				Alley (M. M. M			And of seconds investigation		$\overline{\mathbf{v}}$
			kin eksisten hiden in hiden.	فنالعاندانيك والناوار فالذافية			فظن يفظفنا فللاعامقيل ال		
	10								
	*								
-78.50 dBm	-								
Autoscale	<b>4</b> Т								
Rutoscale	9 Posr	tion: 762.000 r	ns					<ul><li>♥ Scale:</li></ul>	10.300 9
larker	Marker	Frequency	∆ Frequency	Time	∆ Time	Amplitude	∆ Amplitude	DP	×
eadout able	MR			793.390 ms				0	
able	M1	- 5112 	412	993.460 ms	200.070 ms	212	112	0	
	M2	222		10.793 s	10.000 s			0	
	M3 ∢			2.960 s	2.167 s			0	

Figure 6-4. Channel Move Time (< 10sec)

### Marker Descriptions:

- MR = End of Radar Burst
- M1 = 200ms from end of Radar Burst
- M2 = 10sec from end of Burst

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 19 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 19 01 24
© 2012 PCTEST Engineering Laboratory, Inc.				REV 1.3DFS



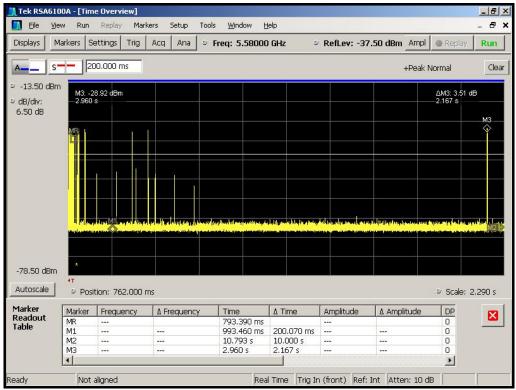


Figure 6-5. Channel Closing Transmission Time, Aggregate Time After 200ms

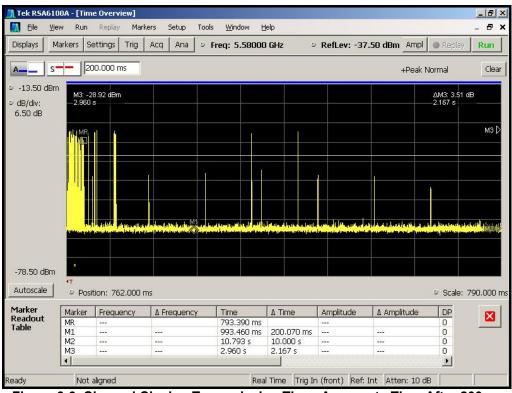


Figure 6-6. Channel Closing Transmission Time, Aggregate Time After 200ms

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 20 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 20 01 24
© 2012 PCTEST Engineering Laboratory, Inc.				REV 1.3DFS



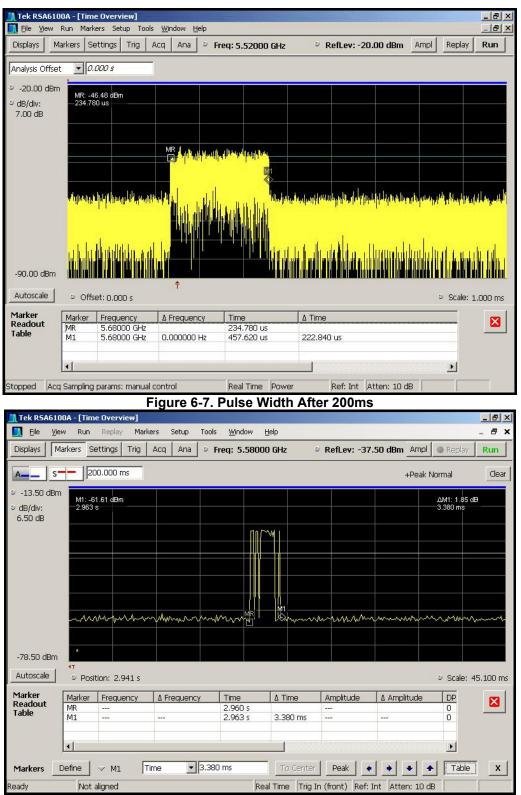


Figure 6-8. Channel Closing Transmission Time, Aggregate Time After 200ms - Final pulse

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 21 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Page 21 01 24
© 2012 PCTEST Engineering Laboratory. Inc.				



# **Calculation of Aggregate Time:**

Pulse width = 222.84  $\mu$ s (Reference Figure 6-7)

Number of pulses occurring after 200ms from end of burst = 7

Aggregate time from 200ms to 10sec after burst = 7 x 222.84  $\mu s$  = 1559.9  $\mu s$  + 3380  $\mu s$  (final pulse at Marker 3)

### Aggregate Time: 4939.88 µs

Limit: 60ms

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	<b>Рантесн</b>	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 22 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Faye 22 01 24
© 2012 PCTEST Engineering Laboratory, Inc.				



🔆 Agilent					Freq/Channel
Ref 0 dBm #Peak	Atten 10	dB		7 100 GHz 68.24 dBm	Center Freq 5.56000000 GHz
Log 10 dB/					Start Freq 5.55500000 GHz
					<b>Stop Freq</b> 5.56500000 GHz
LgAv					<b>CF Step</b> 1.00000000 MHz <u>Auto</u> Man
M1 S2 S3 FC	1 	uyandarafiraaliyaaliyaali	dethal-calleday-ch-styrees-coursepartition-	ajulungadari na hisikari	Freq Offset 0.00000000 Hz
£(f): FTun Swp					<b>Signal Track</b> On <u>Off</u>
Center 5.560 00 #Res BW 1 MHz	0 GHz	#VBW 1 MHz	Sp #Sweep 1.8 ks	an 10 MHz (601 pts)	
Unable to save	file				

Figure 6-9 Non-occupancy Period - Monitoring live real time spectrum - Elapse time 30 minutes

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 23 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Fage 23 01 24
© 2012 PCTEST Engineering Laboratory, Inc.				REV 1.3DFS



#### CONCLUSION 7.0

The data collected relate only to the item(s) tested and show that the Pantech Portable Handset FCC ID: JYCP8010 is in compliance with the DFS requirements for a Client Device without radar detection in accordance with Part 15.407 of the FCC Rules.

FCC ID: JYCP8010		FCC Pt. 15.407 DFS TEST REPORT (CERTIFICATION)	PANTECH	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 24 of 24
0Y1202100191.JYC	March 7, 2012	Portable Handset		Faye 24 01 24
© 2012 PCTEST Engineering Laboratory, Inc.				