Table 2.1
Key Components (including anticipated future components) Comprising the Experimental Wireless Radios

Sub System	Component	Manufacturer	Model Numbers	Comments
RF RX	Two-channel RF to baseband converter	APCOM or Advanced Radio Concepts	1610 RB28 and 1610 RBC40 or ADV-3000T	Receive-only 28 MHz and 40 MHz (upgrade)
	Synthesizer for Receive Channels	APCOM or Advanced Radio Concepts	1610-SYN-140C or ADV-3000S	Provides tunable LO for RF downconverters
RF Tx	Signal Generators	Agilent	Model 4433B ESG-D Model E4438C (upgrade)	IF to RF upconversion (<20 MHz) IF to RF upconversion (>20 MHz)
	Power Amplifiers	OPHIR	Model 5802054	5 Watt Amplifier
Antenna Configuration 1	Straight 3 dBi stub Antenna	unknown	unknown	Handset antenna
Antenna Configuration 2	Beam-switched antenna array	Custom GT design (See exhibit 4)	N/A	Provides beam selection capability
Antenna Configuration 3	Sector Antennas	Superpass	SPLG12 Or SPDG11T2	Sector antennas with 60 degree and 120 degree beamwidths
Antenna Configuration 4	5 dBi Omni Antennas	Wifi-Plus	WFP0200507	360 degree horizontal coverage, hemispherical vertical coverage
Antenna Configuration 5	3 dBi Magnetic Mount Antennas	HyperLink Technologies	HG2403MGURW	360 degree horizontal coverage hemispherical vertical coverage
Antenna Configuration 6	Dual Polarized Omni-Directional Antennas	SuperPass	SPDPG-40-H20	360 degree horizontal coverage, 24 to 30 degree vertical coverage
Antenna Configuration 7	Integrated WLAN Switch and Multi-Sector Antennas	Xirrus	XS-3500 of Similar Model	Contains four internal 180 degree sector antennas, and one 360 degree omni antenna
IF Rx	Wideband Digital Receiver	Pentek	Model 1616 (26 MHz max BW) and Model 6235 (50MHz max BW) upgrade	Provides A/D conversion and digital downconversion to complex baseband; The model 6235 has an embedded FPGA
IF/ Baseband Processing	Quad Processor boards	Pentek	Models 4291, and 4291-330, and 4294	Quad processing boards based on the TI C6701 and also Motorola's Altivec G4 Power PC processors; For IF and Baseband processing
	FPGA boards	Pentek	Model 6250	
IF Tx	D/A Conversion boards	Pentek	Model 6229 or Model 6228 (upgrade)	Digital to analog conversion and I/Q upconversion to IF frequency; Max BW per DAC channel is 12 .5 MHz or 80 MHz (upgrade)

I/O	VME-based FPDP I/O boards	Pentek	Model 6226	FPDP I/O channel (via parallel cable) from software radio to application PC
	PC-based FPDP I/O boards	VMETRO	DPIO	Provides FPDP I/O link to the PCI bus in the application PC
	PCI-to-VME I/O boards	Pentek	Model 4229	VME-to-PCI interface data link with host PC
	Raceway Interconnect boards	Pentek	Model 6219	Provides high-rate data path across multiple quad DSP boards
System Clock	Rubidium Clock	Symmetricon	Model 8040	Frequency stable system clock
Data Collection	1GB and 2 GB buffer	Communication Automation Corporation	6VDL2A	High data rate buffers
Computers	Host Computers	Dell Computers	Dell WorkStations	Host development tools and control/programming of software radio
	Application PCs	Dell Computers	Dell WorkStations	Hosts the MAC and other higher layers in the system