2. Technical Description {2.983(d)}

This equipment has been developed to be used in the broadband PCS personal communications service described in 47 CFR 24 Subpart E.

This transceiver MT-279XG01A is designed in compliance with the FCC Rules and Regulations parts 2 and 24. The transceiver has a retractable type antenna or fixed antenna on the top of the unit and an external RF connector on the side of the unit.

The rated transmitter output power of the transceiver is 1 watt peak at antenna terminal (+30 dBm). It is controlled to reduce its level in 15 steps of 2 dBm each on command from land station. Each power level is maintained within the range of ± 2 dB normal and ± 2.5 dB extreme over the ambient temperature range of -30 to +60 °C, and over the supply voltage range of ±10% from nominal value, cumulative.

The transmitter operates in the frequency range 1850.2 MHz and 1909.8 MHz. This output frequency is produced in the frequency synthesizer circuits, and its stability is determined by the voltage controlled temperature compensated crystal oscillator (VC-TCXO) located in the frequency synthesizer circuits of the T/U board, and the frequency tolerance is within ±0.1 ppm over the operating temperature range.

The IQ modulator is an IC contained on the T/U board.

Audio signals from the microphone are added and fed to the audio codec where it is converted to a digital representation using a Full Rate Speech @ 13 kbps or Enhanced Full Rate Speech @ 13 kbps coding algorithm.

All other transmitted information is generated in the Base-Band LSIC and DSP IC and controlled by the microprocessor.

Filters and shielding sufficiently suppress the spurious and harmonic frequencies from transmitter.

Required explanation of each circuit is described in more detail in each section.

2.1 Type of Emission {2.983(d)(1)}

250KGXW

2.2 Frequency Range {2.983(d)(2)}

1850.2 MHz to 1910.8 MHz

2.3 Power Rating {2.983(d)(3-5)}

(1) Input Power for Final Amplifier

+4 dBm

(2) Input Voltages for Final Amplifier

+3.8 Vdc

(3) Input Current for Final Amplifier

1250 mA max.

(4) Rated Output Power

1 W

2.4 Functions of All Active Devices {2.983(d)(6)}

Table 2.4.1 Active Devices of Transceiver Unit

Symbol	Part number	Manufacturer	Function
D101	PY1111C650	Stanley	Diode (LED)
D102	PY1111C650	Stanley	Diode (LED)
D103	PY1111C650	Stanley	Diode (LED)
D104	PY1111C650	Stanley	Diode (LED)
D105	RB715F-T107	Rohm	Diode (DC Control)
D106	PY1111C650	Stanley	Diode (LED)
D107	PY1111C650	Stanley	Diode (LED)
D108	PY1111C650	Stanley	Diode (LED)
D109	PY1111C650	Stanley	Diode (LED)
D110	PY1111C650	Stanley	Diode (LED)
D111	PY1111C650	Stanley	Diode (LED)
D112	PY1111C650	Stanley	Diode (LED)
D115	PY1111C-650	Stanley	Diode (LED)
D116	SML-020MLT	Rohm	Diode (LED)
D117	UPR5	Microsemi	Diode (DC Control)
D118	UPS5817	Microsemi	Diode (Schottky Barrier)
D119	UPS5817	Microsemi	Diode (Schottky Barrier)
D120	UPS5817	Microsemi	Diode (Schottky Barrier)
D122	RB715F	Rohm	Diode (Schottky Barrier)
D124	UPS5817	Seimens	Diode (Schottky Barrier)
D125	RB715F	Rohm	Diode (Schottky Barrier)
D1600	BBY57	Seimens	Diode (Varactor)
D1700	HSMS-2805	Hewlett Packard	Diode (Schottky Barrier)
FL100	MG064L18X500	AVX	Diode (EMI Filter)
FL101	VC060309A200	AVX	Diode (EMI Filter)
FL102	MG064L18X500	AVX	Diode (EMI Filter)
FL201	VC060305A150	AVX	Diode (EMI Filter)
IC100	BH6070KU	Rohm	IC (DSP)
IC201	29LV800	Fujitsu	IC Memory (Flash)
IC202	5V108CKV-70HI	Mitsubishi	IC Memory (SRAM)
IC203	X25650/1-2.5	Xicor	IC Memory (EEPROM)
IC300	VWS22100-2	VLSI	IC DSP
IC301	TC75S51FU	Toshiba	IC OPAMP
IC303	NJM2135R	NJR	IC AF Amplifier
IC304	NJM2135R	NJR	IC AF Amplifier
IC1600	AM50_0006	Macom	IC RF Amplifier
IC1602	HD155121F	Hitachi	IC RF IC
IC1603	LMX2331LTM	National Semiconductor	IC Synth IC
IC1604	VOU1740N30USA	Samsung	IC VCO
Symbol	**Part number**	**Manufacturer**	**Function**
IC1605	MM1385KN	Mitsumi	IC Voltage Regulator

IC1700	LMV821M7	National Semiconductor	IC OPAMP
IC1701	PF04115B-01	Hitachi	IC Power Amplifier
IC1702	UPC2763TB	NEC	IC RF Amplifier
IC1703	VOU1880N30USA	Samsung	IC VCO
IC1704	MM1385KN	Mitsumi	IC Voltage Regulator
IC1710	CXG1028ATN	Sony	IC RF Switch
TR100	FMMT717-7	Zetex	Transistor (NPN)
TR101	SI2301DS	Temic	Transistor (PMOS)
TR102	UMH9N	Rohm	Transistor (Digital)
TR103	FMMT717	Zetez	Transistor (NPN)
TR104	UMD2N/XP4312	Rohm	Transistor (Digital)
TR106	2SC4617	Rohm	Transistor (NPN)
TR107	NDH834P	Fairchild	Transistor (PFET)
TR108	UMH6N	Rohm	Transistor (Digital)
TR201	2SC4617	Rohm	Transistor (NPN)
TR202	2SA1774	Rohm	Transistor (PNP)
TR203	2SK2035	Toshiba	Transistor (PFET)
TR300	DTA114YE	Rohm	Transistor (Digital)
TR1601	2SC4617	Rohm	Transistor (NPN)
TR1700	UMH11N	Rohm	Transistor (Digital)
TR1701	IRLML6302	International Rectifier	
TR1702	DTC144EE	Rohm	Transistor (Digital)
TR1703	IRLML6302	International Rectifier	
TR1704	DTC144EE	Rohm	Transistor (Digital)
TR1705	UMC3N	Rohm	Transistor (Digital)
X300	MC-206-32.768K-6.7*R1*	Epson	Crystal
X1600	KT14-FEU27L-13.0M-T	Kyocera	TCXO

2.5 Schematic Diagrams {2.983(d)(7)}

Refer to Exhibit 9.

2.6 Instruction Book {2.983(d)(8)}

As the instruction book is not yet available, a draft instruction book is in the Appendix folder enclosed with this application. The file is called InstructionBook.pdf. The complete instruction book will be submitted as soon as available.