APPLICANT:
TOSHIBA CORPORATION

TRANSCEIVER TYPE:
CJ6DCE34608A

DESCRIPTIVE INFORMATION

Subsection 2.983 (a). APPLICANT: TOSHIBA Corporation
ADDRESS: l-l, Shibaura 1-Chome, Minato-ku, Tokyo, 1058001 JAPAN

MANUFACTURER: TOSHIBA Corporation/
Toshiba America Information Systems, Inc.1
Welco China Limited
ADDRESS: l-l, Shibaura 1-Chome, Minato-ku, Tokyo, 1058001 JAPAN/
9740 Irvine Boulevard, Irvine, California 92618-1697 U.S.A./
Man Fung Industrial Estate, Shajing, PO On, Shenzhen, Guang Dong Province, Peoples Republic of China

Subsection 2.983 (b). FCC ID: CJ6DCE34608A

Subsection 2.983 (c). QUANTITY: Quantity Production is planned

Subsection 2.983 (d). Type of Emissions: 40K0F8W, 40K0F1D, 1M25F9W

Technical Descriptions:

This Transmitter has been specifically designed for the Domestic Public Cellular Radiotelephone Communications Service. The rated maximum Power Output of the Transmitter is 0.6Watts ERP with the Capability of reducing the Maximum Power in Five Steps of 4dB each on Command from a Land Station. Each Power Level is maintained within 0dB/-4dB of its Nominal Level over Temperature Range from -20 degrees Celsius to +60degrees Celsius and +/-10% Change of the Supply Voltage, accumulative. This Transmitter operates in the Frequency Range of 824 to 849MHz. The Frequencies are generated by Phase Locked Loop Frequency Synthesizer designated by the closest Land Station in the System. The Transmitter is equipped with a 2:1 Syllabic Compressor, a Pre-Emphasis Audio Circuit having a 6dB/octave Response, an Instantaneous Deviation Limiter to limit Deviation to +/-12kHz, a Post Deviation Limiter Filter having better than -36dB/octave Response above 3,000Hz and a Frequency Stabilizing circuit of the Carrier which is maintained within +/-2.5ppm (+/-0.00025%).

This transmitter is available as a dual mode phone.

Namely, this transmitter is designed to operate under both CDMA (Code Division Multiple Access) digital cellular system and AMPS analog cellular system.

The maximum Power Output of the Transmitter is 0.3Watts ERP under digital mode and it is 0.6Watts ERP under analog mode. The maximum Power Output of the Transmitter is maintained within 0.2Watts to 0.3Watts under digital mode and it is maintained within OdB/-4dB under analog mode of its maximum rated power (0.6watts) over Temperature Range from -20 degrees Celsius to +60degrees Celsius and +/-10% Change of the Supply Voltage.

The Power Amplifier Circuit has a AGC (Automatic Gain Control function) performed with IF AGC Amplifier and a Power Control Circuit.

The Microwave Power Amplifier Module amplifies the 5milliwatt Input from the Modulator Circuit and provides about 0.95Watts Output when the rated Maximum Power is requested by Land Station. The Power Amplifier Output is then led to the Antenna Terminal through RF Band Pass Filter.

The 130.38MHz IF signal is amplified, frequency up-converted and led to Power Amplifier Module. The input power level to the Power Amplifier Module is controlled by the voltage controlled IF Amplifier. The Power Amplifier Circuit has about 80dB of dynamic range in output power under the Digital Mode operation. Therefore it is available to send out power from less than -50dBm up to about 24.7dBm (0.3watts) at the Antenna Terminal which is requested by the Land Station with good linearity. And meantime, the Power Amplifier circuit has about 20 dB of dynamic range in output power under the Analog Mode operation. Therefore it is also available to send out power from 7.8dBm up to 27.8dBm(0.6watts) at the Antenna Terminal which is requested by the Land Station with good linearity. A peak Detector at the Power Amplifier output provides a Carrier Power Indication Signal. This Signal level is compared with limited maximum power (setting for this transmitter is about 0.5watts) by the CPU. And the CPU controls maximum power within the maximum set power of 0.5watts of this transmitter. The power Amplifier output (about lwatts) is led to the antenna terminal through the RF Band Pass Filter etc.. An insertion Loss of these RF Components is approximately 3.0dB, then the Effective Radiated Power from the. Antenna will be 0.5watts including Antenna Gain. of 0dB. That means 0.5watts of output power at the External RF Connector will gives 0.5watts of ERP from the Antenna

If Power Output is detected in spite of the CARRIER ON command is not enabled by the LOGIC Circuitry, the Transmitter will be deactivated through independent action to the Control Regulator.

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Subsection 2.983 (d)(5) Voltage and Current-into the Final Amplifier Module:

Supply Voltage = 3.7Vdc
Collector Voltage = 3.5Vdc
Collector Current = 0.7 - 0.1Amp.

(d)(6). Function of Semi-conductors and Active Circuit Devices in the Audio and RF Circuitry of the Transmitter.

Base-Band CIRCUIT		
DBP (Digital Baseband Processor)	MSM-3000	(PAGE 2 of EXHIBIT No.5)
ABP (Analog Baseband Processor)	AK2484	(PAGE 3 of EXHIBIT No.5)
MODULATOR CIRCUIT		
Synthesizer	MB15F02	(PAGE 6 of EXHIBIT No.5)
AGC Amplifier	TA31194FN	(PAGE 8 of EXHIBIT No.5)
Mixer	uPC8106TB	(PAGE 9 of EXHIBIT No.5)
SYNTHESIZER CIRCUIT		
Synthesizer	MB15F02	(PAGE 6 of EXHIBIT No.5)
VCTCXO	DSA751HAC	(PAGE 10 of EXHIBIT No.5)
	or	
	TSA3355A	(PAGE 12 of EXHIBIT No.5)
POWER AMPLIFIER CIRCUIT		
Power Amplifier Module	UN0231C001TH	(PAGE 13 of EXHIBIT No.5)
Amplifier	GN01100B0L	(PAGE 14 of EXHIBIT No.5)

(d)(7). List of Schematics:

Schematic Diagram of HANDHELD PORTABLE TRANSCEIVER RF/BB (EXHIBIT No. 10)

(d)(8). Instruction Book:
Operating Instruction (EXHIBIT No. 11)

(d)(9). Tune-up Procedure:
Tune-up Procedure (EXHIBIT No. 12)

(d)(10). Means for Frequency Stabilization:
The output frequency of the VCTCXO is frequency locked to the RF signal transmitted from a cellular base station by an AFC circuit. Therefore the frequency stability of an RF signal transmitted from a cellular base station is maintained. The Transmitter -- Frequencies are determined by a Voltage Controlled Oscillator Phase Locked to a 30kHz Signal derived from this High Stability Oscillator known as the Reference Oscillator.

(d)(11) Circuit for Suppression of Spurious Radiation, Limiting of Modulation and Limiting of Power

(i). Means for suppression of Spurious Emissions:
Spurious and Harmonic suppression is obtained by proper Shielding Techniques, and the use of Band pass Dielectric Filters. Under digital mode, in order to keep the transmission level within the linear operation range of the power amplifier, the highest gain of the Transmission Variable Amplifier is limited.
This enable to suppress "conductive Spurious Emissions" under the specified values

(ii). Means for Limiting Modulation:
This transmitter is equipped with a device that prevent modulation in excess of 100%. This device, an instantaneous deviation control (IDC) precedes the modulator of the transmitter. It is instantaneous in action for controlling the modulating wave from introduced into the transmitter's frequency modulator. The deviation limit is set by means of an electronic master deviation adjust stage (Exhibit No.12). This allows maximum audio deviation to be set to +/-12kHz. Under digital mode, in order to limit the Modulation Frequency Range, the low pass filter which limits the frequency range is adopted to each of DBP transmitter and ABP transmitter.

(iii). Means for Limiting Power:
A Peak Detector at the Output of the Power Amplifier provides a Carrier Power Indicator Signal. This Signal level is Compared with limited power by CPU. A power level is limited setting for level controlled by CPU.

(d)(12). Digital Modulation
Transmitter IF signal generation at 130.38MHz is performed by combining digitally generated I and Q signals. The tin-and quadrate-phase 130.38MHz local signals are derived from a 260.76MHz phase locked loop.