

APPLICANT:
TOSHIBA CORPORATION

TRANSCIVER TYPE:
CJ6DCE34608A

DESCRIPTIVE INFORMATION

Subsection

2.983 (a).

APPLICANT: TOSHIBA Corporation

ADDRESS: 1-1, Shibaura 1-Chome, Minato-ku, Tokyo, 1058001 JAPAN

MANUFACTURER: TOSHIBA Corporation/

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Welco China Limited

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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 **0dB/-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.

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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 1watts) 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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(d)(6) Page 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)

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(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.