EXHIBIT 20

Invalidity of U.S. Patent No. 6,408,193
by
Japanese Unexamined Patent Application Publication No. JP H10-285059 to Nakayama ("Nakayama")

The excerpts cited herein are exemplary. For any claim limitation, Defendant may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference's disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

Except where specifically noted otherwise, this chart applies the apparent constructions of claim terms as used by Plaintiff in its infringement contentions; such use, however, does not imply that Defendant adopts or agrees with Plaintiff's constructions in any way.

U.S. Patent No. 6,408,193 ("the '193 Patent") claims priority to Japanese Application No. 10-318689, filed November 10, 1998. For purposes of these invalidity contentions, Defendant applies the November 10, 1998, priority date for the '193 Patent. However, Defendant reserves the right to contest Plaintiff's reliance on the November 10, 1998, priority date, should the priority date become an issue in this proceeding.

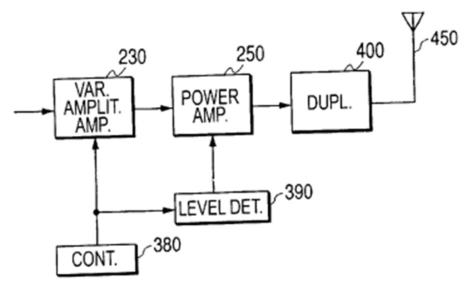
Nakayama was published on October 23, 1998. As such, Nakayama qualifies as prior art with regard to the '193 Patent under 35 U.S.C. § 102(a) (pre-AIA). Using Plaintiff's interpretation of the claims, Nakayama anticipates or renders obvious claims 1, 6, and 7 under 35 U.S.C. § 103(a).

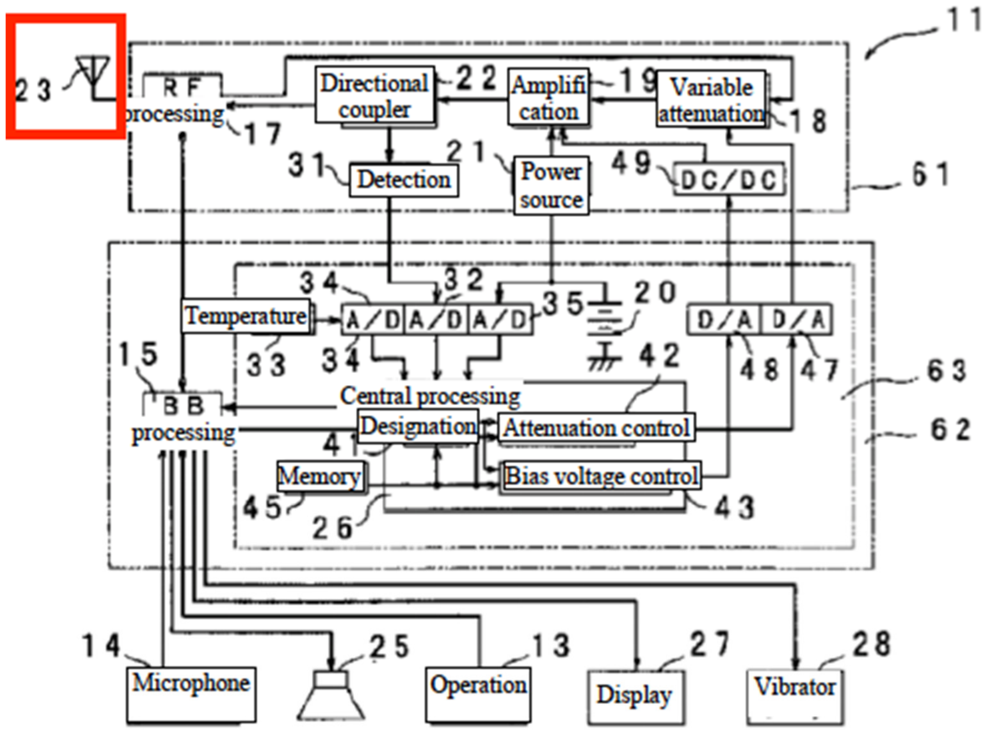
Alternatively, Nakayama in view of Applicant Admitted Prior Art ("AAPA") renders obvious claims 1, 6, and 7 under 35 U.S.C. § 103(a).

Alternatively Nakayama in view of U.S. Patent No. 6,236,863 to Waldroup, *et al.* ("Waldroup") renders obvious claims 1, 6, and 7 under 35 U.S.C. § 103(a). Waldroup was filed on March 17, 1998 claiming priority to a provisional application filed on March 31, 1997. As such, Waldroup qualifies as prior art with regard to the '193 Patent under at least 35 U.S.C. § 102(e) (pre-AIA).

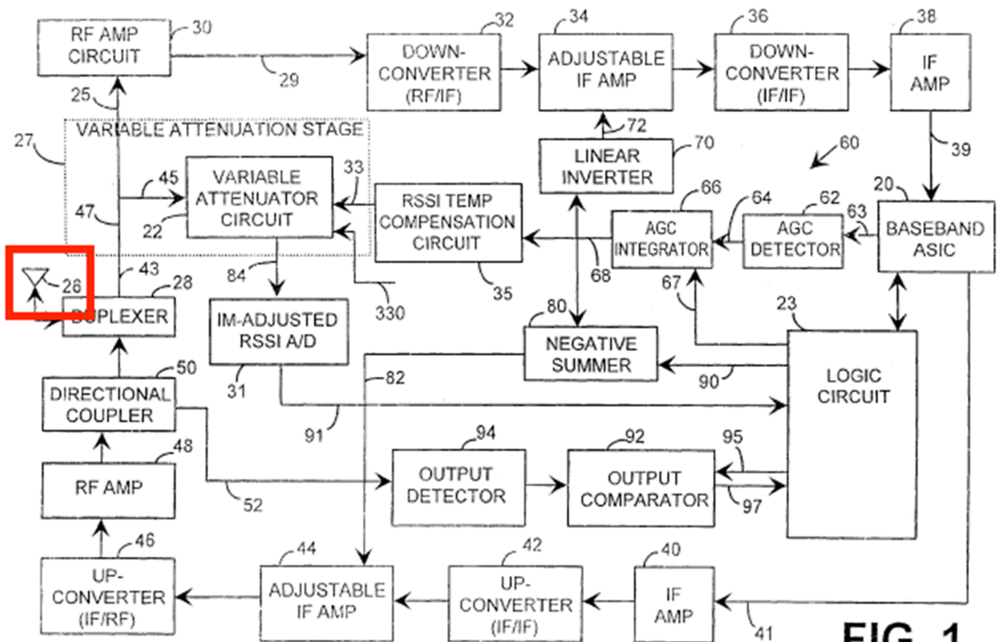
U.S. Patent No. 6,408,193	Nakayama
Claim 1	

[1(pre)] A cellular telephone adapted to be used in a CDMA system, comprising:	Nakayama discloses a celluar telephone. *See, e.g.*, Nakayama at [0001], [0007], [0009]. To the extent the preamble is limiting, Nakayama in view of Waldroup renders this element obvious. In particular, Waldroup teaches "output power control" in CDMA wireless telephones: *The present invention relates generally to the field of radio communication, and more specifically, to the field of output power control in code division multiple access (CDMA) wireless telephones incorporating intermodulation (IM) spurious response attenuation.* Waldroup at 1:13-17. It would be obvious to adapt Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results. Additionally, the '193 Patent admits that CDMA telephones are well known in the art: *The typical standard for the CDMA cellular telephone system enacted in the U.S. is TIA IS-95 (hereinafter IS-95). An example of a transmitter applying IS-95 is shown in FIG. 11. In this example, a modulated signal converted into a transmitting frequency band is supplied to a variable amplitude amplifier 230 and the output of the variable amplitude amplifier 230 is further amplified by a power amplifier means 250 and transmitted to an antenna 450 through a duplexer 400. A controller 380 supplies a gain control signal to the variable amplitude amplifier 230 in order to adjust the gain such that the power transmitted from the antenna 450 will satisfy the required value of transmitting power. The gain control signal is also supplied to a level detecting means 390. The level detecting means 390 supplies a bias signal to the power amplifier means 250 for adjusting the transmitting power. The level detecting means 390 detects a level of the gain control signal, and as shown in FIG. 12, when the level is high (e.g. Gn), it outputs bias value of B2. Then the level decreases, and the level crosses a threshold value, the level detecting means 390 changes the bias abruptly from B2 to B1. Current of the power amplifier means change abruptly when the gain level crosses the threshold value. In IS-95, open-loop power control and closed-loop power control are employed in order to regulate a receiving power at the cell-site station. The open-loop power control, which definitely*

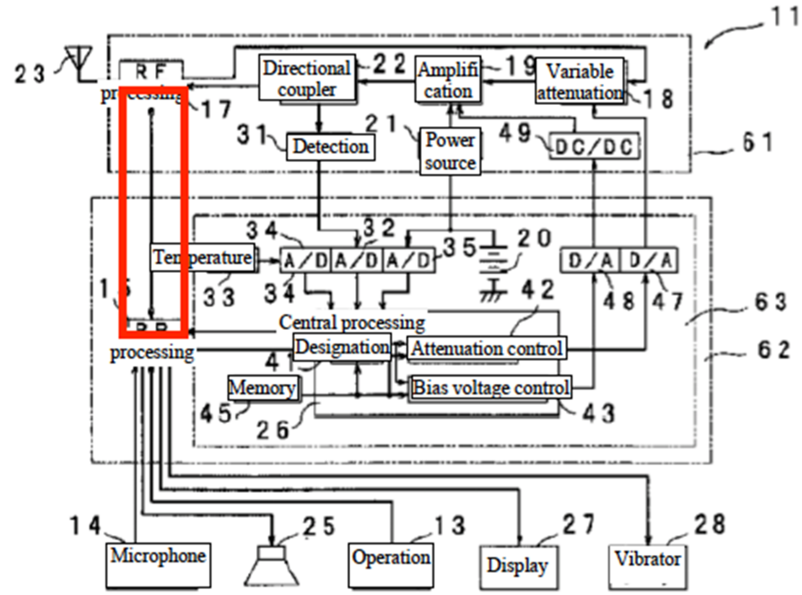
	determines a transmitting power according to an information indicating an intensity of electric field detected by a receiver, does not require a severe accuracy (generally within the range of 9.5 dB). On the other hand, the closed-loop power control performs fine control according to an information indicating a variation of a gain of the signal transmitted from the cell-site station (generally 1 dB step). In this case, the transmitter performs the open-loop power control at first, then it performs the closed-loop power control for the transmitted power to converge into a desired value which the cell-site station requires. '193 Patent at 1:24-59; see also FIG. 11 (depicting a block diagram of a prior art CMDA transmission circuit): FIG. 11 RELATED ART 
[1(a)] an antenna for receiving a first communication signal and a transmitting power control signal from a cell-site station and transmitting a second communication signal to the cell-site station,	Nakayama teaches this limitation. In particular, Nakayama teaches an antenna as part of the disclosed cell phone: *FIG. 1 is a block diagram expressing the electrical configuration of a communicator 11 that is the first embodiment of the present invention. For example, the communicator 11 is a time division multiplexing wireless communication mobile phone. The communicator 11 includes an operation part 13, microphone 14, baseband processing circuit 15, high frequency processing circuit 17, variable attenuator 18, amplifier 19, reference power source 20, power source circuit 21, directional coupler 22, antenna 23, speaker 25, central processing unit 26, display part 27,*

	vibrator 28, detector circuit 31, temperature sensor 33, and memory 45. Among these, the variable attenuator 18, amplifier 19, reference power source 20, power source circuit 21, directional coupler 22, central processing unit 26, detector circuit 31, temperature sensor 33, and memory 45 configure the level control circuit of the claims. Nakayama at ¶ [0019]; see also FIG. 1 (depicting antenna 23): [FIG. 1]  Nakayama teaches that antenna 23 *Furthermore, a target signal transmitted from another communicator as an electromagnetic wave is received by the antenna 23 via a base station. A signal representing an output power*

	change request imparted from the base station to the communicator 11 may be added to this target signal. *Id.* at ¶ [0022]. Nakayama further teaches that antenna 23 transmits a second communication signal to the base station ("cell-site station"): *The high frequency processing circuit 17 modulates a high-frequency carrier signal having a frequency predetermined by the baseband signal and generates a target signal. […] The target signal output from the amplifier 19 is again imparted to the high frequency processing circuit 17 after a portion thereof is extracted by the directional coupler 22, is imparted from the high frequency processing circuit 17 to the antenna 23, and is transmitted from the antenna 23 as an electromagnetic wave. This electromagnetic wave is received by another communicator via a base station.* *Id.* at ¶ [0021]. Additionally, Waldroup teaches this limitation. In particular, Waldroup teaches this limitation. In particular, Waldroup teaches "antenna 26," which receives radio signals: *As a radio signal is received through an antenna 26, a duplexer 28 directs the signal to a variable attenuation stage 27 including a variable attenuator circuit 22 (discussed in greater detail below) through an RF signal input line 47.* Waldroup at 8:10-13. This signal includes both power control data in addition to communication data: *According to this first preferred embodiment of the present invention, this delay corresponds to the period of time between receiving closed loop power control information from the base station, such as 1.25 ms.* *Id.* at 15:9-13. Waldroup's antenna alto transmits a communication signal back to the cell-site station: *A directional coupler 50 passes the RF signal through to the duplexer 28 which directs the RF 35 transmitter output signal to the antenna 26 for final output.* *Id.* at 8:33-35.

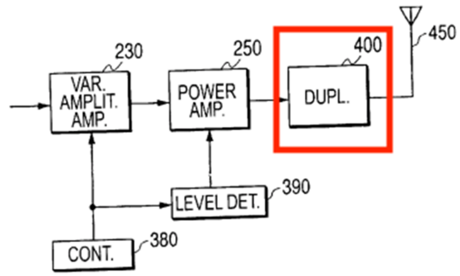
	 FIG. 1 It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.
[1(b)] a duplexer connected to said antenna,	Nakayama teaches this element. In particular, Nakayama teaches that antenna 23 is used for both sending and receiving communication signals. *See* element 1(a) *supra.* As such, a duplexer is inherently taught to allow both sending and receiving. This can be seen at least by virtue of the double-headed arrow between baseband processing circuit 15 and high-frequency processing circuit 17 in FIG. 1:

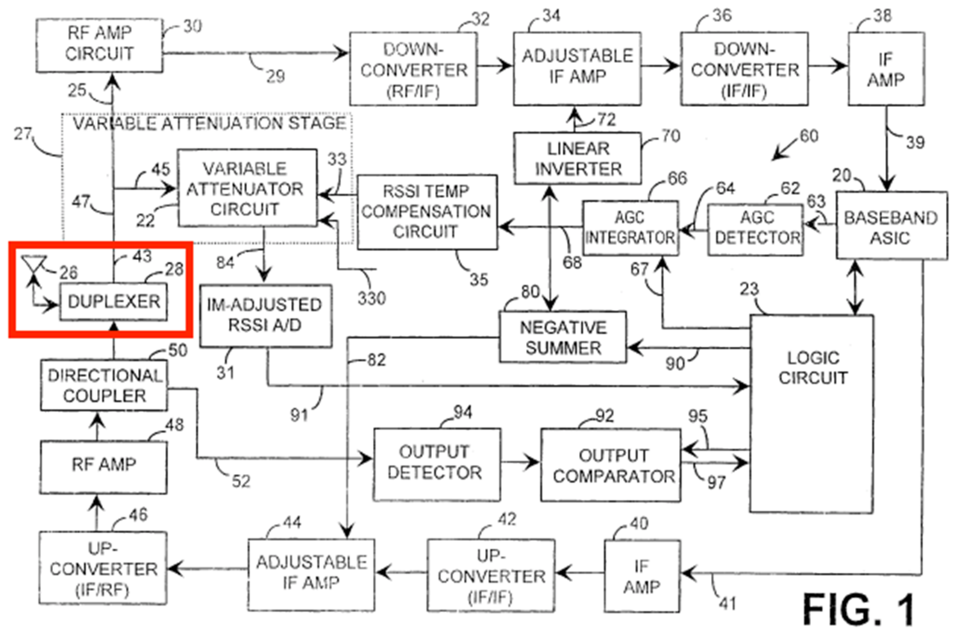
[FIG. 1]



Additionally, the '193 Patent admits that duplexers are a conventional part of a CDMA telephone and are conventionally connected to the antenna:

> *The typical standard for the CDMA cellular telephone system enacted in the U.S. is TIA IS-95 (hereinafter IS-95). An example of a transmitter applying IS-95 is shown in FIG. 11. In this example, a modulated signal converted into a transmitting frequency band is supplied to a variable amplitude amplifier 230 and the output of the variable amplitude amplifier 230 is further amplified by a power amplifier means 250 and transmitted to an antenna 450 through a duplexer 400. A controller 380 supplies a gain control signal to the variable amplitude amplifier 230 in order to adjust the gain such that the power transmitted from the antenna 450 will satisfy the required value of transmitting power. The gain control signal is also supplied to a level detecting means 390. The level detecting means 390 supplies a bias signal to the power amplifier means 250 for adjusting the transmitting power.*

	'193 Patent at 1:24-35; see also FIG. 11 (depicting duplexer 400 as a part of a prior art transmitter): FIG. 11 RELATED ART  Additionally, Waldroup teaches this limitation. In particular, Waldroup teaches duplexer 28 connected to antenna 26: *As a radio signal is received through an antenna 26, a duplexer 28 directs the signal to a variable attenuation stage 27 including a variable attenuator circuit 22 (discussed in greater detail below) through an RF signal input line 47.* Waldroup at 8:10-13; *see also* FIG. 1:

	 FIG. 1 It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.
[1(c)] a receiver connected to said antenna through said duplexer for converting said first communication signal into a voice signal code, and	Nakayama teaches this limitation. In particular, Nakayama teaches that the disclosed mobile phone receives communication signals from the antenna (and therefore via the duplexer; *see* element [1(b)] *supra*) and converts them into a baseband signal and then an electric signal representing a voice: *Furthermore, a target signal transmitted from another communicator as an electromagnetic wave is received by the antenna 23 via a base station. A signal representing an output power change request imparted from the base station to the communicator 11 may be added to this target signal. After reception, the electromagnetic wave of the target signal is demodulated in*

	the high frequency processing circuit 17, made into a baseband signal, and made into an electric signal representing a voice after a predetermined processing determined corresponding to the communication system by the baseband processing circuit 15 is performed. The electric signal is output as a voice from the speaker 25. Nakayama at ¶ [0022]. Additionally, Waldroup teaches this claim element. In particular, Waldroup teaches a receiver connected to antenna 26 though duplexer 28 for converting the received signal into a voice code to be passed to logic circuit 23: *As a radio signal is received through an antenna 26, a duplexer 28 directs the signal to a variable attenuation stage 27 including a variable attenuator circuit 22 (discussed in greater detail below) through an RF signal input line 47. After the variable attenuation stage 27, signals are input through an amplifier input line 25 to an RF amplifier (RFAMP) circuit radio frequency (RF) receiver amplifier 30 which amplifies the received signal before supplying it to a downconverter circuit 32 which converts the amplified RF signal into an IF signal. An adjustable gain IF receiver amplifier circuit 34 receives and amplifies the IF signal before directing it to another downconverter circuit 36 which converts the received IF signal into a lower frequency IF signal. An IF receiver amplifier circuit 38 provides additional amplification before the receiver IF signal is provided to the baseband ASIC 20 through an IF input line 39.* Waldroup at 8:10-26. *In accordance with the first preferred embodiment of the present invention, the baseband ASIC 20 includes customary means for providing low frequency analog processing and conversion of signals to and from the digital domain for interfacing with the logic circuit 23. In particular, functions of the baseband ASIC 20 include intermediate frequency (IF) to baseband conversion (and vice-versa), baseband and IF filtering, baseband signal quadrature splitting and combining, baseband analog to digital and digital to analog conversion, baseband direct current (DC) offset control, local oscillator quadrature generation, and clock amplitude adjustments. Further in accordance with the first preferred embodiment of the present invention, the logic circuit 23 conventionally provides the majority of physical layer signaling through a demodulating unit, a decoding unit, and an interleaving/deinterleaving unit.* Waldroup at 7:24-40; *see also* FIG. 1:

Defendant's Invalidity Contentions
Exhibit D2

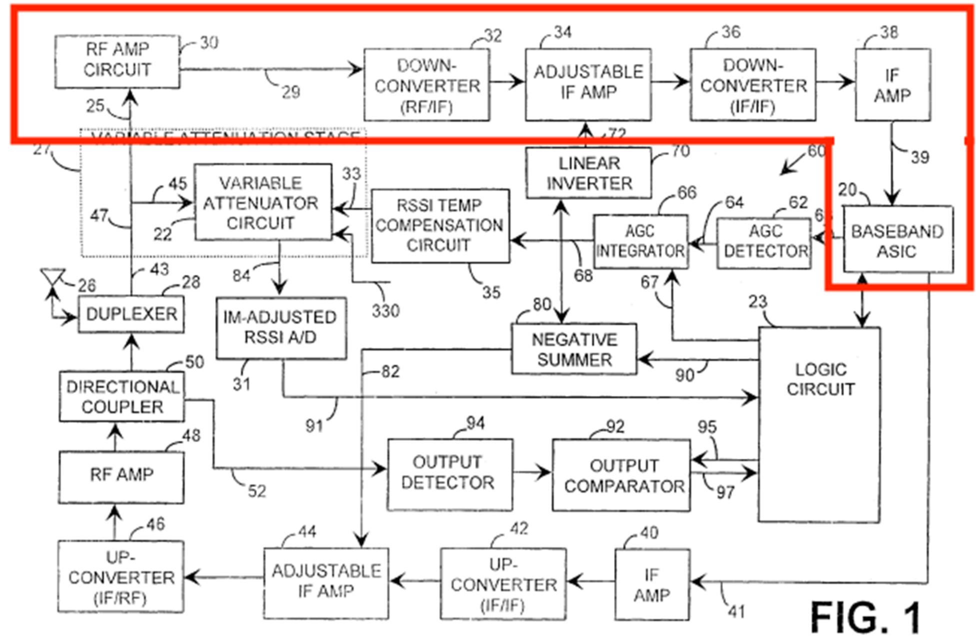


FIG. 1

The motivation to combine Nakayama's transmission power control circuit into Waldroup's CDMA telephone would be to improve the power efficiency of a CMDA handset, which is taught as being desirable by Waldroup. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). The known work of Nakayama in the field of TDMA transmission power control would prompt a variation thereof in the field of CDMA transmission power control based on the design incentive of "efficient operation of a CDMA wireless telephone system," and this variation would be predictable to one of ordinary skill in the art.

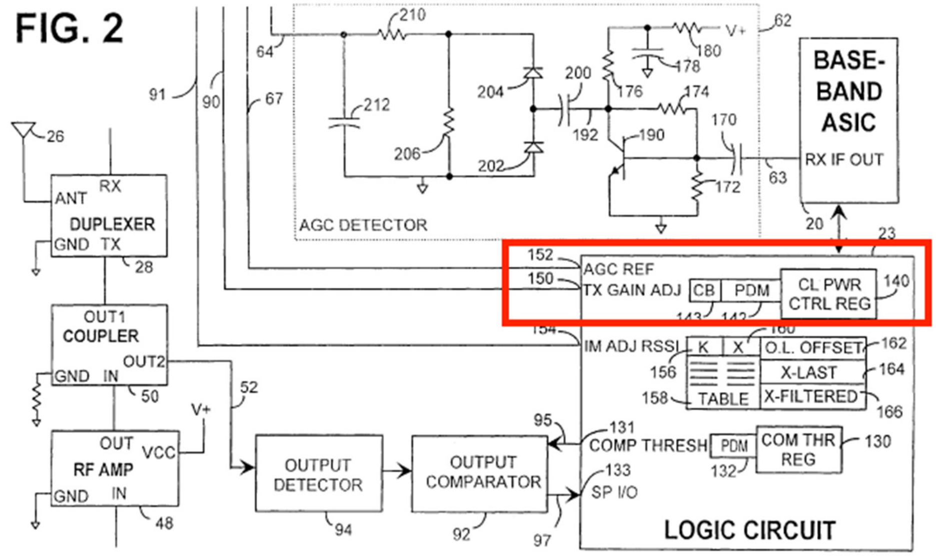
Additionally, such a receiver is a necessary part of any CDMA telephone and as such, is taught by applicant-admitted prior art. *See* element [1(pre)]; *see also* '193 Patent at 1:60-61 ("Japanese Patent Laid-open No. Hei-9-46152 discloses a mobile unit including a receiver and a transmitter…").

[1(d)] for outputting a power control signal derived from said transmitting power control signal sent from said cell-site station,	Nakayama teaches this limitation. In particular, Nakayama teaches that the receiver receives a signal including both communications information and power control information, which are separated by baseband processing circuit 15: *After reception, the electromagnetic wave of the target signal is demodulated in the high frequency processing circuit 17, made into a baseband signal, and made into an electric signal representing a voice after a predetermined processing determined corresponding to the communication system by the baseband processing circuit 15 is performed. The electric signal is output as a voice from the speaker 25. After a signal representing an output-power change request is separated from the target signal by the baseband processing circuit 15, it is imparted to the central processing unit 26 from the baseband processing circuit 15.* Nakayama at ¶ [0022]. Additionally, Waldroup teaches this limitation. In particular, Waldroup teaches that baseband ASIC 20 (part of the receiver) outputs information to logic circuit 23 that is used to perform power control (gain adjustment): *The transmit gain adjust signal on the transmit gain adjust line 90 is generated by the logic circuit 23 in response to processes internal to the logic circuit 23 as well as input received from the baseband ASIC 20, an IM-adjusted RSSI A/D circuit 31, and an output comparator circuit 92.* Waldroup at 9:64-10:1 Waldroup further teaches that this received power control signal is output from baseband ASIC 20 to logic circuit 23, where it is used to modify the contents of "closed loop power control register" 140: *Through methods which are discussed in greater detail below, the logic circuit 23 utilizes the signal levels detected from the output comparator 92 to modify a closed loop power control register (CL PWR CTRL REG) 140 located within the logic circuit 23. Like the comparator threshold register 130 and PDM 132, a PDM 142 provides an analog representation of values stored in the closed loop power control register 140. This analog representation is output through a transmit gain adjust (TX GAIN ADJ) output 150 of the logic circuit 23 onto the transmit gain adjust line 90 which is connected to the negative summer 80 shown in FIG. 1. An AGC reference output 152 is also shown supplying the AGC reference signal onto the AGC*

> *reference line 67. The logic circuit 23 also includes a control bit (CB) 143 located in another area of logic circuit 23 memory which is writeable by the logic circuit 23 and which controls whether the logic circuit 23 controls the closed loop power control register 140 or the logic circuit 23 controls the closed loop power control register 140 through conventional closed loop power control techniques.*

Waldroup at 10:64-11:16; *see also* FIG. 2:

FIG. 2



It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.

Additionally, performing such closed-loop power control is a necessary part of any CDMA telephone (and is required by IS-95A) and as such, is taught by applicant-admitted prior art. *See* element [1(pre)].

[1(e)] an encoder/decoder apparatus connected to said receiver and	Nakayama teaches this claim limitation under Plaintiff's interpretation. In particular, Nakayama teaches that baseband processor 15 performs a "predetermined processing" to convert a modulated signal into an electric signal representing a voice and further "predetermined processing to convert an electric signal representing voice data from the microphone to generate a baseband signal: *After reception, the electromagnetic wave of the target signal is demodulated in the high frequency processing circuit 17, made into a baseband signal, and made into an electric signal representing a voice after a predetermined processing determined corresponding to the communication system by the baseband processing circuit 15 is performed. The electric signal is output as a voice from the speaker 25. After a signal representing an output-power change request is separated from the target signal by the baseband processing circuit 15, it is imparted to the central processing unit 26 from the baseband processing circuit 15.* Nakayama at ¶ [0022]. *When performing communication from the communicator 11 to another communicator, the operator of the communicator 11 inputs phone numbers and the like of other communicators by operating a key provided on the operation part 13, and inputs a voice via the microphone 14. The baseband processing circuit 15 performs predetermined processing determined corresponding to the communication system to an electrical signal representing the voice given from the microphone 14, adds a data signal related to further input phone numbers and the like, and generates and delivers a baseband signal to the high frequency processing circuit 17.* *Id.* at ¶ [0020]. Nakayama also teaches this limitation to the extent that the limitation "an encoder/decoder apparatus" is governed by 35 U.S.C. § 112(6). Nakayama's baseband processing circuit 15 performs the claimed function of "encoding" and "decoding" *Id.* Additionally, such an encoder/decoder apparatus is a necessary part of any CDMA telephone and as such, is taught by applicant-admitted prior art. *See* element [1(pre)].
[1(f)] an acoustic transducer for converting said voice signal code into an audio signal for driving said acoustic	Nakayama teaches this limitation. In particular, Nakayama teaches "speaker 25" and "microphone 14," which are acoustic transducers that are connected to and driven by the "encoder/decoder" functionality of baseband processor 15:

transducer and converting an audio input signal from said acoustic transducer into an input voice code signal,	*Furthermore, a target signal transmitted from another communicator as an electromagnetic wave is received by the antenna 23 via a base station. A signal representing an output power change request imparted from the base station to the communicator 11 may be added to this target signal. After reception, the electromagnetic wave of the target signal is demodulated in the high frequency processing circuit 17, made into a baseband signal, and made into an electric signal representing a voice after a predetermined processing determined corresponding to the communication system by the baseband processing circuit 15 is performed. The electric signal is output as a voice from the speaker 25. After a signal representing an output-power change request is separated from the target signal by the baseband processing circuit 15, it is imparted to the central processing unit 26 from the baseband processing circuit 15.* Nakayama at ¶ [0022]. *When performing communication from the communicator 11 to another communicator, the operator of the communicator 11 inputs phone numbers and the like of other communicators by operating a key provided on the operation part 13, and inputs a voice via the microphone 14. The baseband processing circuit 15 performs predetermined processing determined corresponding to the communication system to an electrical signal representing the voice given from the microphone 14, adds a data signal related to further input phone numbers and the like, and generates and delivers a baseband signal to the high frequency processing circuit 17.* *Id.* at ¶ [0020]; *see also FIG. 1:*

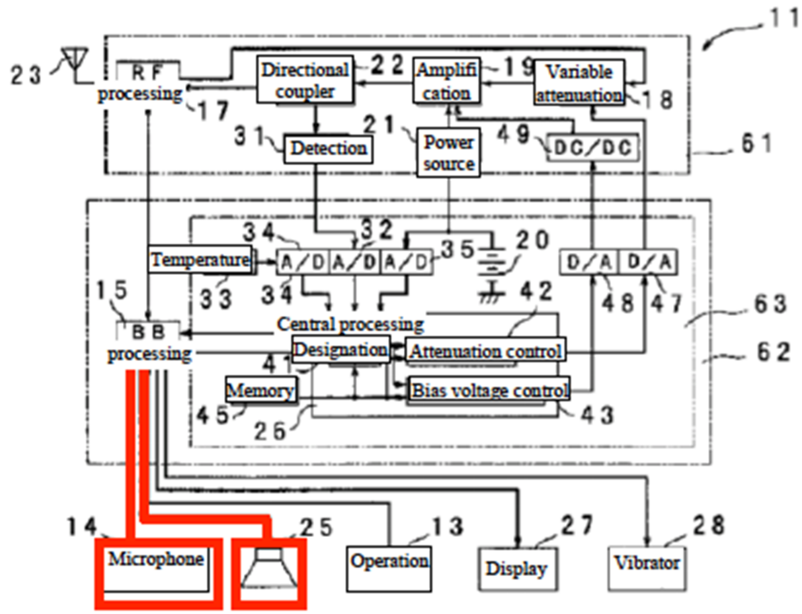
	[FIG. 1]  Additionally, such transducers are a necessary part of any CDMA telephone and, as such, are taught by applicant-admitted prior art. *See* element [1(pre)].
[1(g)] a transmitter connected to said encoder/decoder apparatus and to said antenna through said duplexer for converting said input voice code signal into said second communication signal, and	Nakayama teaches this limitation. In particular, Nakayama discloses a "transmission circuit" "suitably implemented in […] a mobile telephone." Nakayama at ¶¶ [0003], [0001]. This transmission circuit is depicted in FIG. 1 (where the "transmitter" corresponds to "high-frequency substrate 61):

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Exhibit D2

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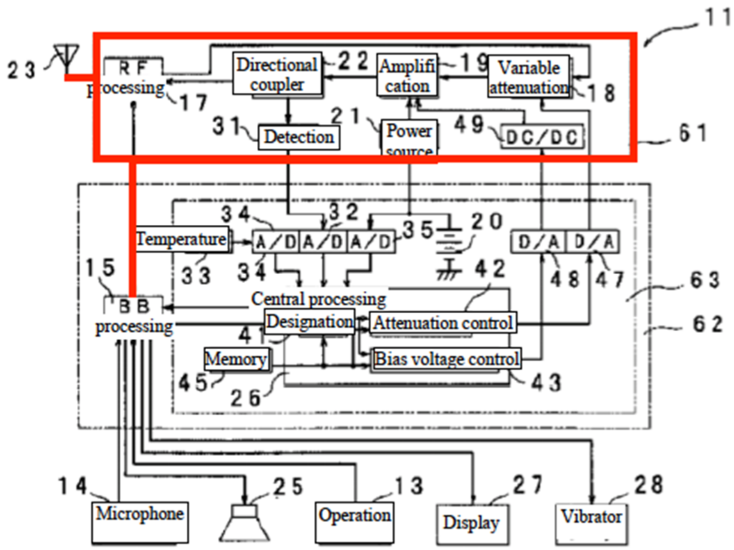
[FIG. 1]



Nakayama depicts this transmitter 61 being connected to antenna 23 and to baseband processing circuit 15 (which includes duplexing functionality as described above; *see* element [1(b)], *supra*).

Nakayama additionally describes how many of these components are known in the prior art. *See* FIG. 5 (depicting transmission circuit 1 connected to antenna 6):
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	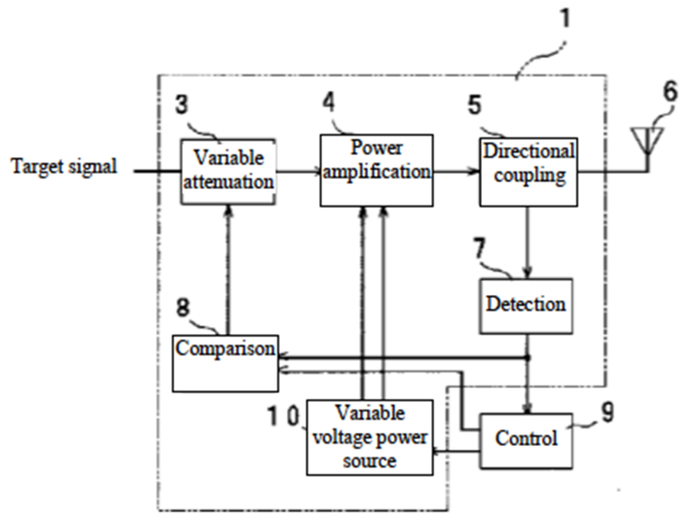 Additionally, Waldroup teaches this claim limitation. In particular, Waldroup teaches a transmitter that receives voice data from baseband circuit 41 and passes it to antenna 26 via duplexer 28: *The baseband ASIC 20 also supplies a transmitter IF signal to an IF transmitter amplifier circuit 40 through an IF output line 41. After amplification, the transmitter signal is converted to a higher IF frequency through upconverter 42 30 and then adjustably amplified through an adjustable gain IF amplifier circuit 44. An upconverter circuit 46 then converts the IF signal into an RF signal which is then amplified by an RF amplifier 48. A directional coupler 50 passes the RF signal through to the duplexer 28 which directs the RF 35 transmitter output signal to the antenna 26 for final output.* Waldroup at 26-35.

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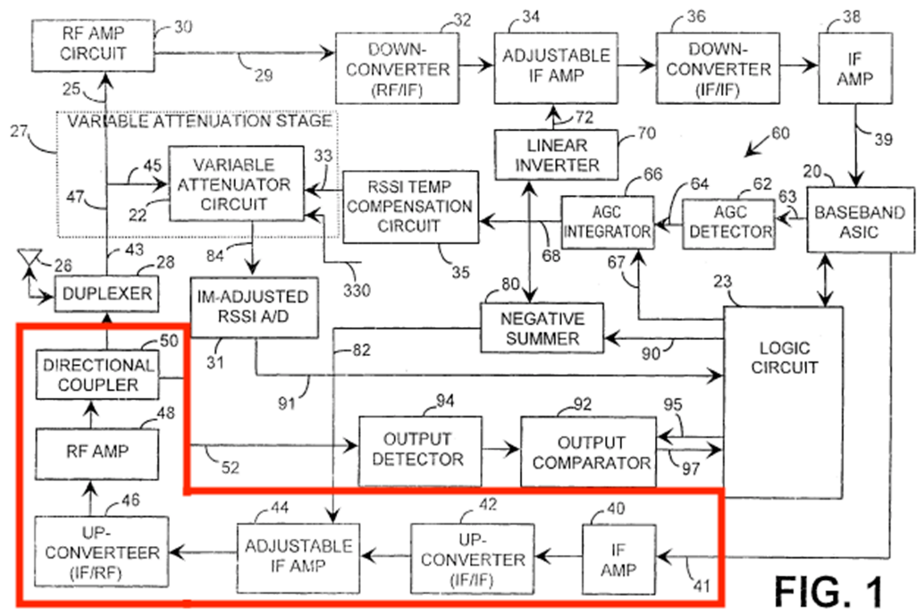
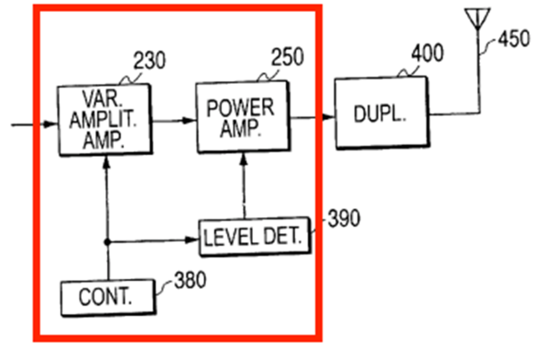
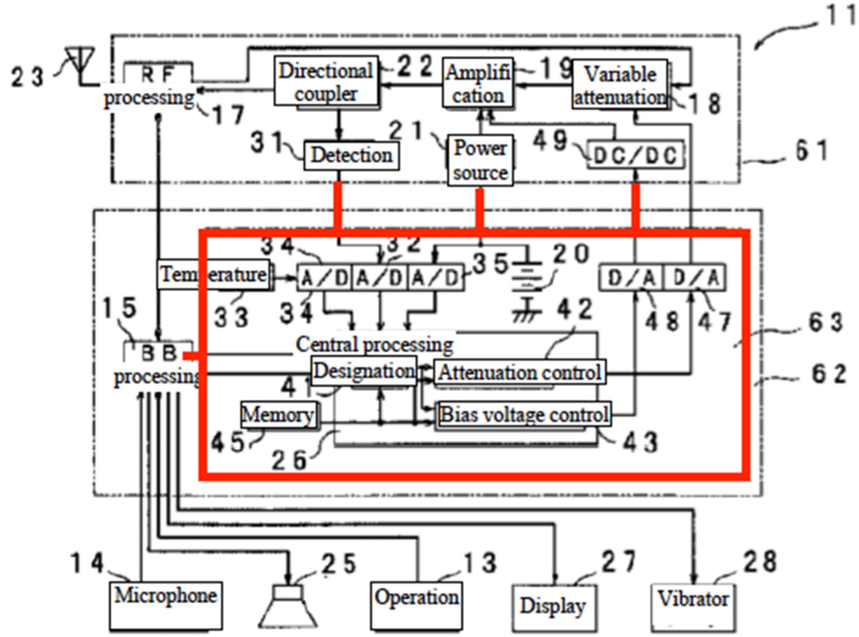


FIG. 1

It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.

Additionally, such a transmitter is a necessary part of any CDMA telephone and as such, is taught by applicant-admitted prior art. *See* element [1(pre)]; see also '193 Patent at FIG. 11 (depicting a transmitter connected to duplexer 400:

	FIG. 11 RELATED ART 
[1(h)] a controller connected to said receiver and said transmitter for controlling an amplitude of said transmitter,	Nakayama teaches this claim limitation under Plaintiff's interpretation. In particular, Nakayama teaches that "integrated circuit 63," which is connected to the receiver (part of baseband processing circuit 15) and to the transmitter (via baseband processing circuit 15 and the various control lines for controlling the transmitter). *See* FIG. 1:

	[FIG. 1]  Nakayama further discloses that this controller controls an amplitude of the transmitter, at least via "attenuation control part 42": *The central processing unit 26 includes a designation part 41, attenuation control part 42, and bias-voltage control part 43. The central processing unit 26 is realized, for example, in a microcomputer, and the parts 41 to 43 are, respectively, virtual circuits realized by arithmetic processing of the central processing unit 26. Moreover, the parts 41 to 43 may, respectively, be individually realized by independent circuit components.* Nakayama at ¶ [0024]. Waldroup teaches this claim limitation under Plaintiff's interpretation. In particular, Waldroup teaches that logic circuit 3 is "a controller":

	Further in accordance with the first preferred embodiment of the present invention, the logic circuit 23 conventionally provides the majority of physical layer signaling through a demodulating unit, a decoding unit, and an interleaving/deinterleaving unit. Among other functional elements, the demodulating unit includes multiple path and searching receivers along with a signal combiner; the decoding unit includes a viterbi decoder and data quality verification means; and the interleaving/deinterleaving unit includes a convolutional encoder, an interleaver, a deinterleaver, a psuedo-random number (PN) sequence spreader, a data burst randomizer, and a finite impulse response (FIR) filter. The logic circuit 23 also includes customary memory and support circuitry such as a conventional static CMOS (complementary-symmetry metal-oxide-semiconductor) high-integration microprocessor with general registers, segment registers, base registers, index registers, status registers, and control registers. In this preferred embodiment, the logic circuit 23 is a combination mobile station modem (MSM) application specific hardware (ASIC) and central processing unit (CPU). Waldroup at 7:35-56. Waldroup's logic circuit 23 is also "connected to said receiver and said transmitter. *See* FIG. 1:

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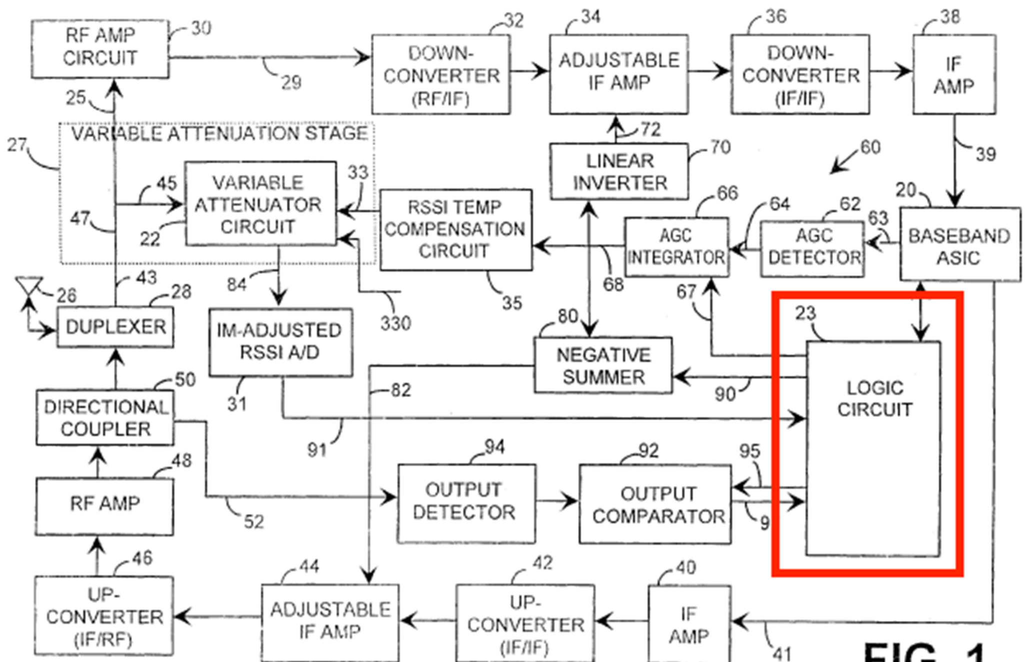


FIG. 1

Waldroup's logic circuit 23 (controller) also "control[s] an amplitude of said transmitter":

> *The open loop output line 68 also provides an input to a negative summer circuit 80 which controls the adjustable gain IF transmitter amplifier circuit 44 through a transmitter amplification control line 82.*

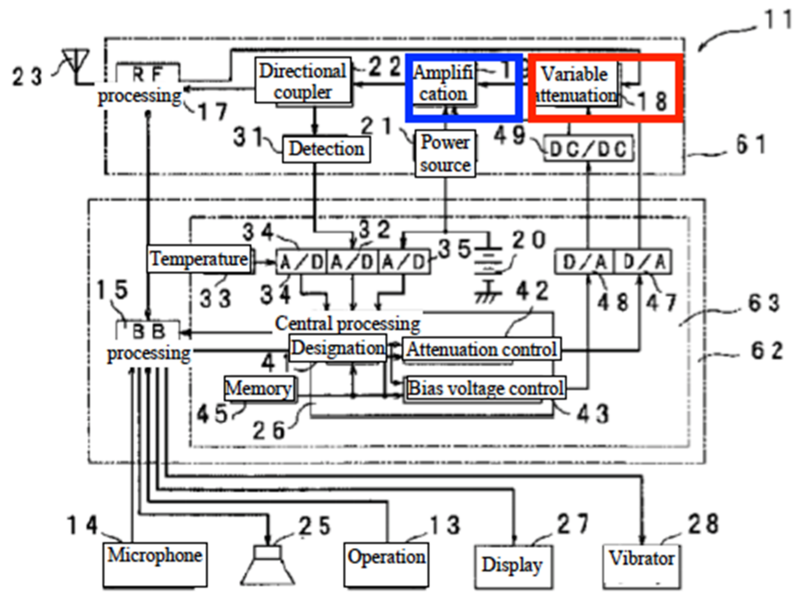
Id. at 8:63-66.

> *Regarding closed loop control, the negative summer circuit 80 also receives input directly from the logic circuit 23 through a transmit gain adjust line 90. As explained below, the transmit gain adjust signal on the transmit gain adjust line 90 is an analog signal representing the closed loop gain control and attenuation correction portions of total output power control as dictated by the transmitter amplification control signal on the transmitter amplification control line 82.*

Id. at 9:10-18.

	The operational amplifier 300 is biased, through elements 302, 304, 306, 308, 320, and 322 to amplify and invert the sum of the two input signals and provide output on the transmitter amplification control line 82. Thus, it is through the operational amplifier 300 that both closed loop gain control and open loop gain control components are combined to control total output power of the radio telephone. *Id.* at 12:23-30. It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results. Nakayama also teaches this limitation under Defendant's interpretation of the claims. To the extent that the limitation "a controller … for controlling an amplitude of said transmitter" is governed by 35 U.S.C. § 112(6), Nakayama's "integrated circuit 63" also performs the claimed function of "controlling an amplitude of said transmitter." *Id.* Waldroup also teaches this limitation under Defendant's interpretation of the claims. To the extent that the limitation "a controller … for controlling an amplitude of said transmitter" is governed by 35 U.S.C. § 112(6), Waldroup's "logic circuit 63" also performs the claimed function of "controlling an amplitude of said transmitter." *Id.* It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.

[1(i)] wherein said transmitter includes a variable amplitude amplifier and a power amplifier,	Nakayama teaches this limitation. In particular, Nakayama teaches that the amplitude of the transmitted power can be controlled via "variable attenuator 18" (red box below) and fixed-gain "amplifier 19": *First, the target signal is attenuated by the variable attenuator 18 of a varying attenuation of a signal level and further amplified by the amplifier 19. The gain of the amplifier 19 is, for example, always constant, and the signal level of the target signal when output from the amplifier 19 is proportional to the signal level of the target signal when output from the variable attenuator 18. Therefore, the signal level of the target signal is adjusted to a reference signal level described hereafter.* Nakayama at ¶ [0021]. Nakayama further teaches that a variable gain amplifier can be used instead of a variable attenuator: *Furthermore, the detailed configuration and behavior of each circuit part of the communicator 11 is exemplary, and circuit parts having other configurations and behaviors may be used. For example, a variable gain amplifier having variable gain may be used instead of the variable attenuator.* *Id.* at ¶ [0056]. Nakayama further discloses that the transmitter includes a power amplifier 19 (blue box below): *Furthermore, the reference bias voltage corresponding to the maximum reference transmission power within the adjustment period W1 of the attenuation and the reference bias voltage corresponding to the designated transmission power after the attenuation has been determined are imparted to the power amplifier 19.* *Id.* at [0051]. Nakayama also discloses that power amplifier 19 is a variable-bias amplifier: *A bias voltage of the amplifier 19 is imparted by a method described hereafter, and the value thereof is variable.* *Id.* at [0021]. These components are depicted in FIG. 1:

	[FIG. 1]  These components are additionally described with reference to FIG. 5 (prior art): *FIG. 5 is a block diagram expressing an electrical configuration of the transmission circuit 1 described above. The signal level of a target signal which is an electrical signal to be transmitted differs from a reference signal level which can emit the electromagnetic wave of the transmission power from an antenna. This target signal is first attenuated by a variable attenuator 3 having a variable attenuation rate, then amplified by a power amplifier 4 having a variable bias voltage, and thereby the signal level thereof is adjusted to the reference signal level. This target signal is then imparted from the power amplifier 4 to an antenna 6 via a directional coupler 5 and transmitted from the antenna 6 as an electromagnetic wave.* Nakayama at ¶ [0003]; see also FIG. 5 below:

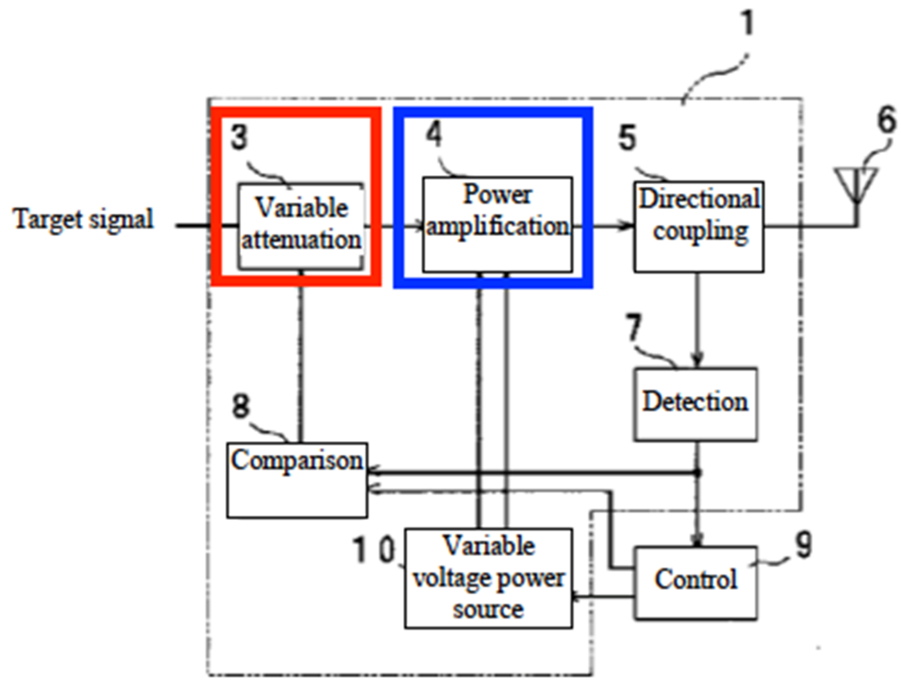
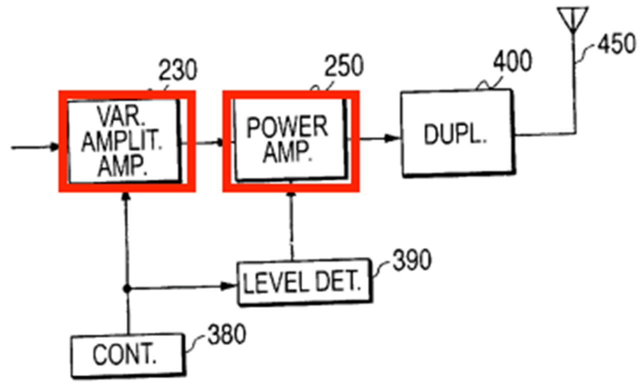
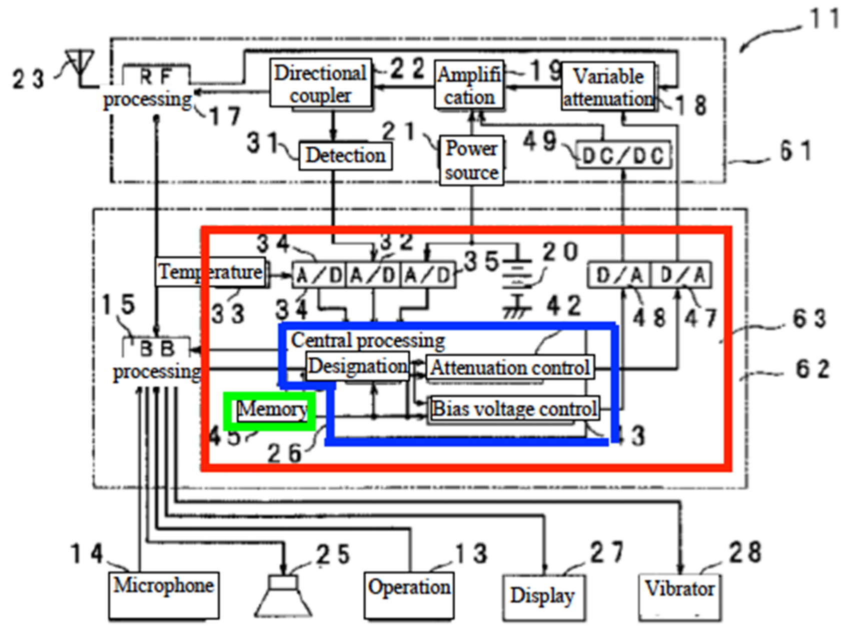
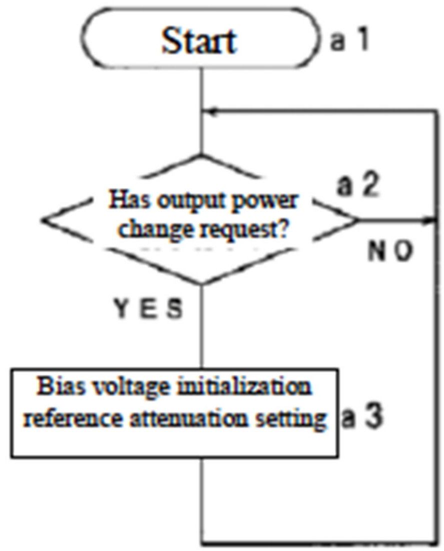
	[FIG. 5]  Additionally, the '193 Patent admits that a transmitter including a variable-bias power amplifier and a variable gain amplifier is well known in the prior art. *See, e.g.,* FIG. 11:

	FIG. 11 RELATED ART 
[1(j)] said controller includes a central processing unit and a memory,	Nakayama teaches this limitation. In particular, Nakayama teaches that the control circuit ("integrated circuit 63") includes a "central processing unit 26" and a "memory 45": *Additionally, it is possible to, among the circuit parts implemented in the baseband circuit board 62, integrate the central processing unit 26, the reference power source 20, the analog/digital conversion circuits 32, 34, 35, the temperature sensor 33, the memory 45, and the digital/analog conversion circuits 47 and 48 to make a single integrated circuit (LSI) 63.* Nakayama at ¶ [0055]; see also FIG. 1 (depicting controller (red box), central processing circuit (blue box) and memory (green box)):

	[FIG. 1]  Additionally, Waldroup teaches this claim limitation. In particular, Waldroup teaches that logic circuit 23 includes a "central processing unit (CPU)" and a "customary memory": *The logic circuit 23 also includes customary memory and support circuitry such as a conventional static CMOS (complementary-symmetry metal-oxide-semiconductor) high-integration microprocessor with general registers, segment registers, base registers, index registers, status registers, and control registers. In this preferred embodiment, the logic circuit 23 is a combination mobile station modem (MSM) application specific hardware (ASIC) and central processing unit (CPU).* Waldroup at 7:43-56. It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power

	efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.
[1(k)] said controller controls said transmitter so that an open-loop power control is performed and	Nakayama teaches this limitation. In particular, Nakayama teaches that the mobile phone measures the received electromagnetic field strength: *Thus, when communication is begun, the communicator 11 sequentially performs in this order over time: the transmission operation, a measurement operation for measuring reception electric field strength of the electromagnetic field, the reception operation, and an idle operation for stopping both transmission and reception, and periodically repeats these operations.* Nakayama at ¶ [0032], A POSITA would understand that this received field strength can be used to initialize the transmission power prior to receiving any transmission power control signals. *Cf.* ''193 Patent at 1:48-51: ("The open-loop power control, which definitely determines a transmitting power according to an information indicating an intensity of electric field detected by a receiver…"). Waldroup also teaches this claim element. In particular, Waldroup teaches that the disclosed cellular telephone performs open-loop power control: *Thus, according to the open loop gain control system, as the received signal strength increases (the mobile station nearing the base station), the amount of output power is decreased. A typical open loop gain control system includes a conventional automatic gain control system which detects received signal strength and uses that value to control an adjustable gain transmitter amplifier which accordingly varies the amount of gain applied to the radio transmission signal. Thus, the open loop gain control system is solely a mobile station operation based upon the strength of the signal received at the mobile station from the base station.* Waldroup at 1:55-65. The "controller" controls this process at least insofar as this received signal strength is processed via logic circuit 23 and used to generate the automatic gain control signal: *Control of the adjustable gain IF receiver amplifier circuit 34 is accomplished by an automatic gain control (AGC) circuit 60. An AGC detector circuit 62 receives a representative IF signal*

	through AGC input line 63. As is discussed in greater detail below, a direct current (DC) signal is output from the AGC detector circuit 62 through an AGC detector output line 64 which represents the strength of the received signal. An AGC integrator circuit 66 compares the DC signal to a relatively constant AGC reference signal received over an AGC reference line 67 from the logic circuit 23. The integrated difference between the two signals produces a received signal strength indication (RSSI) which is output onto an open loop output line 68 connected to a linear inverter 70 supplying an AGC control signal to the adjustable gain IF receiver amplifier circuit 34 over a receiver amplification control line 72. *Id.* at 8:40-55. It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results. Additionally, performing open-loop power control is required by the CDMA standard and is therefore a necessary part of any CDMA telephone and as such, is taught by applicant-admitted prior art. *See* element [1(pre)].
[1(l)] then a closed-loop power control is performed according to said power control signal so as to control the transmitted power to converge into a range required by said cell-site station, and	Nakayama teaches this claim limitation. In particular, Nakayama described how "designation part 41" (part of the controller; *see* ¶ [0024]) determines whether an output power change request has been received: *The base station receives this electromagnetic wave, determines a reference transmission output of an electromagnetic wave to be sent by the communicator 11 from the reception electromagnetic field strength of this electromagnetic wave, and outputs an output power change request.* *In the step a2, the designation part 41 determines whether the output power change request has been imparted from the baseband processing circuit 15.*

	Id. at ¶¶ [0033] - [0034].; *see also* FIG. 3 *infra*; *cf.* '193 Patent at 1:52-55 ("On the other hand, the closed loop power control performs fine control according to an information indicating a variation of a gain of the signal transmitted from the cell-site station…"). [FIG. 3]  Waldroup also Waldroup teaches this limitation. In particular, Waldroup teaches that the disclosed cellular telephone also performs closed-loop power control: *A closed loop gain control system, on the other hand, involves both the mobile station and the base station. In a closed loop gain control system, the base station detects the strength of the signal received from the mobile station and then accordingly instructs the mobile station to increase or decrease power. Thus, the mobile station continually analyzes control data from the base station (typically in the form of a single bit commanding either an increase or a decrease in power) to determine whether to increase or decrease output power. A closed loop gain control system is typically implemented using a closed loop power control register which is functionally connected to a pulse density modulator within a mobile station modem*

	application-specific integrated circuit (MSM ASIC) to provide an analog output representation of the value stored in the register. This analog representation is then combined with output from the open loop gain control system to assist in controlling the adjustable transmitter amplifier. The register value and adjustable transmitter amplifier are also usually in an inverse relationship such that an increase in the register value (typically due to receiving a "1" from the base station) results in a decrease in overall power. Waldroup at 1:66-2:20. *Regarding closed loop control, the negative summer circuit 80 also receives input directly from the logic circuit 23 through a transmit gain adjust line 90. As explained below, the transmit gain adjust signal on the transmit gain adjust line 90 is an analog signal representing the closed loop gain control and attenuation correction portions of total output power control as dictated by the transmitter amplification control signal on the transmitter amplification control line 82. The present invention pertains primarily to the process of generating this transmit gain adjust signal on the transmit gain adjust line 90.* *Id.* at 9:10-20. It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results. Additionally, performing closed-loop power control is required by the CDMA standard and is therefore a necessary part of any CDMA telephone and as such, is taught by applicant-admitted prior art. *See* element [1(pre)].
[1(m)] said controller controls a gain of said variable amplitude amplifier and a bias condition of said power amplifier	Nakayama teaches this limitation. In particular, Nakayama teaches that the controller includes an attenuation control unit 42 and a bias voltage control unit 43: *Each time the designation part 41 designates a new reference transmission power, the attenuation control part 42 references a detection data signal imparted from the analog/digital conversion circuit 32 and a reference signal level data signal stored in the memory 45, and designates an attenuation control data signal for controlling the attenuation for the variable*

	attenuator 18 using a method described hereafter. A reference signal level data signal is a digital signal expressing the power value of a predetermined reference signal level, and is predetermined corresponding to each reference transmission power separately. A reference signal level corresponding to a certain reference transmission power is the signal level of the target signal output from the amplifier 19 when transmitting an electromagnetic wave of the reference transmission power from the antenna 23. After being digital/analog converted in the digital/analog conversion circuit 47, an attenuation control data signal is imparted to the variable attenuator 18. The variable attenuator 18 designates the attenuation based on the voltage of the output signal from the digital/analog conversion circuit 47. Nakayama at ¶ [0026]. *In the step b5, the bias voltage control part 43 first acquires the measurement signal from the temperature sensor 33 via the analog/digital conversion circuit 34 and further acquires the voltage of the reference power source 20 via the analog/digital conversion circuit 35. Subsequently, the reference bias voltage control data signal corresponding to the designated reference transmission power, the air temperature expressed by the measurement signal, and the voltage of the reference power source 20 are read from the memory 45 and imparted to the DC/DC conversion circuit 49 via the digital/analog conversion circuit 48 at a time t12 in the nth receiving and idle period Rn and In. Thereby, the DC/DC conversion circuit 49 imparts the reference bias voltage corresponding to the designated reference transmission power and corresponding to the air temperature and the voltage of the reference power source 20 to the amplifier 19. After reference bias voltage supply, processing operation is ended, and it returns from the step b5 to the step b2. Thereafter, the operations of the steps b2, b3, and b5 are periodically repeated until an output power change request is again imparted from the base station or until communication operations end.* *Id.* at ¶ [0047]. Nakayama also describes this process with reference to FIG. 5 (prior art): *FIG. 5 is a block diagram expressing an electrical configuration of the transmission circuit 1 described above. The signal level of a target signal which is an electrical signal to be transmitted differs from a reference signal level which can emit the electromagnetic wave of the transmission power from an antenna. This target signal is first attenuated by a variable*

	attenuator 3 having a variable attenuation rate, then amplified by a power amplifier 4 having a variable bias voltage, and thereby the signal level thereof is adjusted to the reference signal level. This target signal is then imparted from the power amplifier 4 to an antenna 6 via a directional coupler 5 and transmitted from the antenna 6 as an electromagnetic wave. *Id.* at ¶ [0003]. Additionally, Waldroup teaches that the controller controls the "adjustable IF amp" (variable amplitude amplifier): *Regarding closed loop control, the negative summer circuit 80 also receives input directly from the logic circuit 23 through a transmit gain adjust line 90. As explained below, the transmit gain adjust signal on the transmit gain adjust line 90 is an analog signal representing the closed loop gain control and attenuation correction portions of total output power control as dictated by the transmitter amplification control signal on the transmitter amplification control line 82. The present invention pertains primarily to the process of generating this transmit gain adjust signal on the transmit gain adjust line 90.* Waldroup at 9:10-20; *see also* FIG. 1:

Defendant's Invalidity Contentions
Exhibit D2

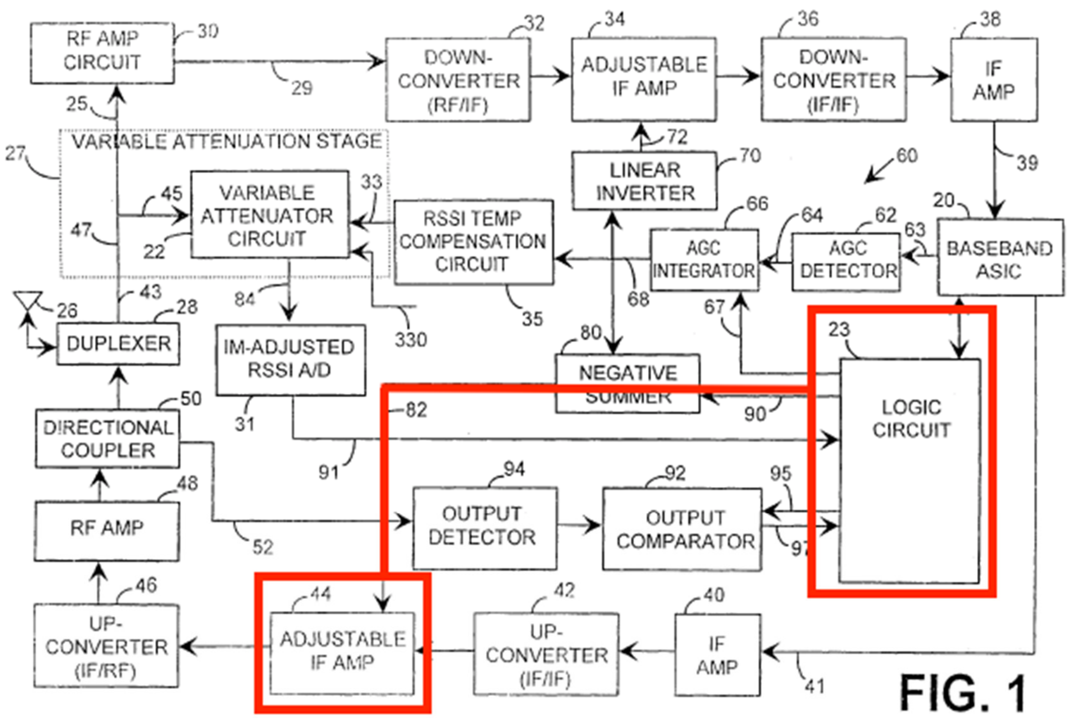
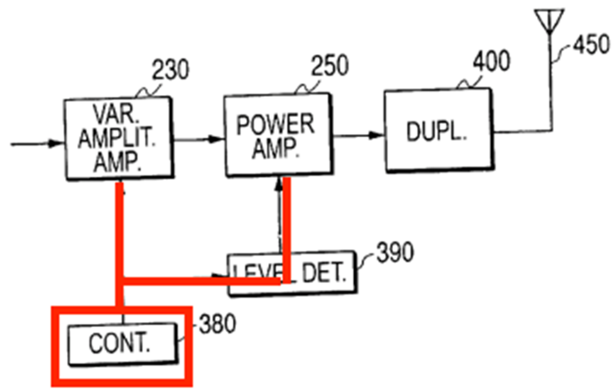


FIG. 1

It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.

Additionally, the '193 Patent admits that a controller controlling the bias of a power amplifier and the gain of a variable gain amplifier is well known in the prior art. *See, e.g.,* FIG. 11:

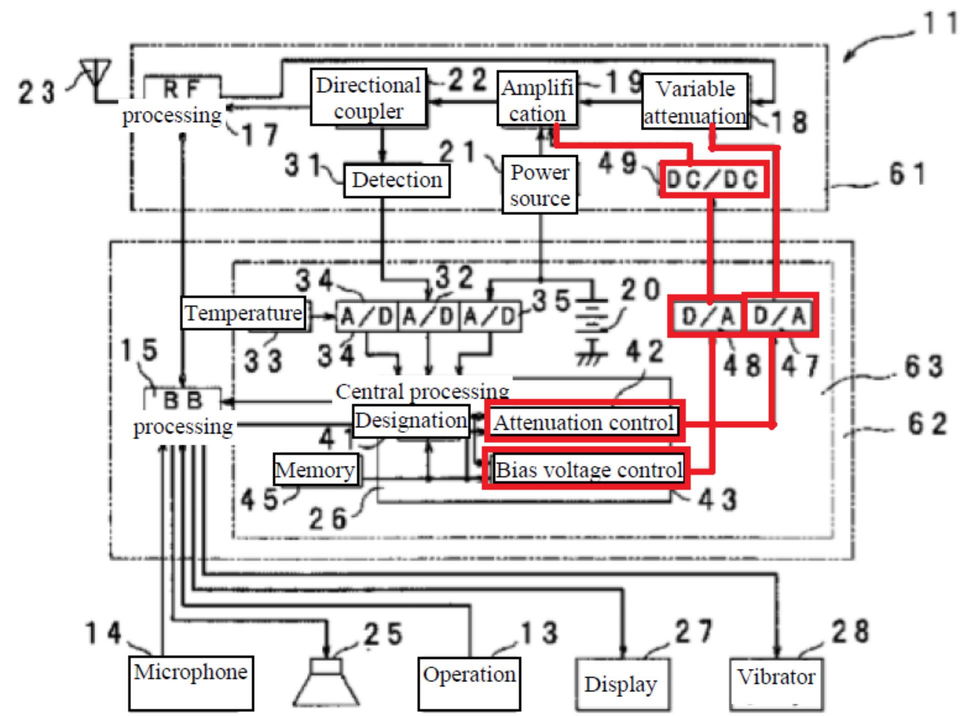
	FIG. 11 RELATED ART 
[1(n)] using a set of bias and gain data stored in said memory.	Nakayama teaches this limitation. In particular, Nakayama teaches that the attenuation control unit controls the attenuation level based on data stored in memory: *Each time the designation part 41 designates a new reference transmission power, the attenuation control part 42 references a detection data signal imparted from the analog/digital conversion circuit 32 and a reference signal level data signal stored in the memory 45, and designates an attenuation control data signal for controlling the attenuation for the variable attenuator 18 using a method described hereafter. A reference signal level data signal is a digital signal expressing the power value of a predetermined reference signal level, and is predetermined corresponding to each reference transmission power separately.* Nakayama at ¶ [0026]. Similarly, the bias control unit controls the bias based on data stored in memory: *After the attenuation control part 42 designates the attenuation using the method described above, the bias voltage control part 43 references the measurement signal of the temperature sensor 33 and the voltage of the reference power source 20 and reads out a reference bias*

	voltage control data signal for controlling the bias voltage of the amplifier 19 from the memory 45 using a method described hereafter. The reference bias voltage control data signal is a controlling digital signal for causing a predetermined reference bias voltage to be output from a DC/DC conversion circuit 49, and is predetermined separately corresponding to each reference transmission power. *Id.* at ¶ [0027]. *In the memory 45, the reference signal level data signal, the reference bias voltage control data signal, and the predetermined reference attenuation control data signal are stored associated with reference transmission powers for each reference transmission power, respectively. The reference attenuation control data signal is a controlling digital signal for designating a predetermined reference attenuation in the variable attenuator 18 and separately corresponds to each reference transmission power. A reference attenuation corresponding to a certain reference transmission power is an ideal attenuation of the variable attenuator 18 when the signal level of the target signal output from the high frequency processing circuit 17 is made into a reference signal level corresponding to the reference transmission power.* *Id.* at ¶ [0029]. Additionally, Waldroup teaches this limitation. In particular, Waldroup teaches that the controller controls the adjustable IF amp using gain data stored in memory. In particular, Waldroup teaches that the power control signal values corresponding to equal steps of the power control range are stored in incremental memory values: *In addition to these requirements, the closed loop gain control system must have a range of at least 24 dB above and 24 dB below the open loop estimate. In other words, regardless of where the open loop estimate places the total output power along the -50 dBm to 30 dBm range, the closed loop gain control system is required to be able to increase or decrease the total output power by at least 24 dB upward or downward from that open loop estimate. In one implementation of the closed loop gain control system, the closed loop range is divided into equal steps represented by incremental memory values corresponding to one dB units of gain. Thus, as the base station instructs the mobile station to increase or decrease power, the closed*

	loop gain control system attempts to increase or decrease, respectively, the total output power by one dB. Waldroup at 3:5-20. It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.
Claim 6	
[6(pre)] A cellular telephone according to claim 1, wherein	Nakayama, alone or in combination with Waldroup and/or AAPA, teaches all the elements of claim 1. *See* claim [1] *supra.*
[6(a)] said transmitter further includes a signal generator connected to said controller	Nakayama teaches this element. In particular, Nakayama teaches "attenuation control unit 42," "bias voltage control 43": *Each time the designation part 41 designates a new reference transmission power, the attenuation control part 42 references a detection data signal imparted from the analog/digital conversion circuit 32 and a reference signal level data signal stored in the memory 45, and designates an attenuation control data signal for controlling the attenuation for the variable attenuator 18 using a method described hereafter. A reference signal level data signal is a digital signal expressing the power value of a predetermined reference signal level, and is predetermined corresponding to each reference transmission power separately.* Nakayama at ¶ [0026]. *After the attenuation control part 42 designates the attenuation using the method described above, the bias voltage control part 43 references the measurement signal of the temperature sensor 33 and the voltage of the reference power source 20 and reads out a reference bias voltage control data signal for controlling the bias voltage of the amplifier 19 from the memory 45 using a method described hereafter. The reference bias voltage control data signal is a controlling digital signal for causing a predetermined reference bias voltage to be output from a DC/DC conversion circuit 49, and is predetermined separately corresponding to each reference transmission power.*

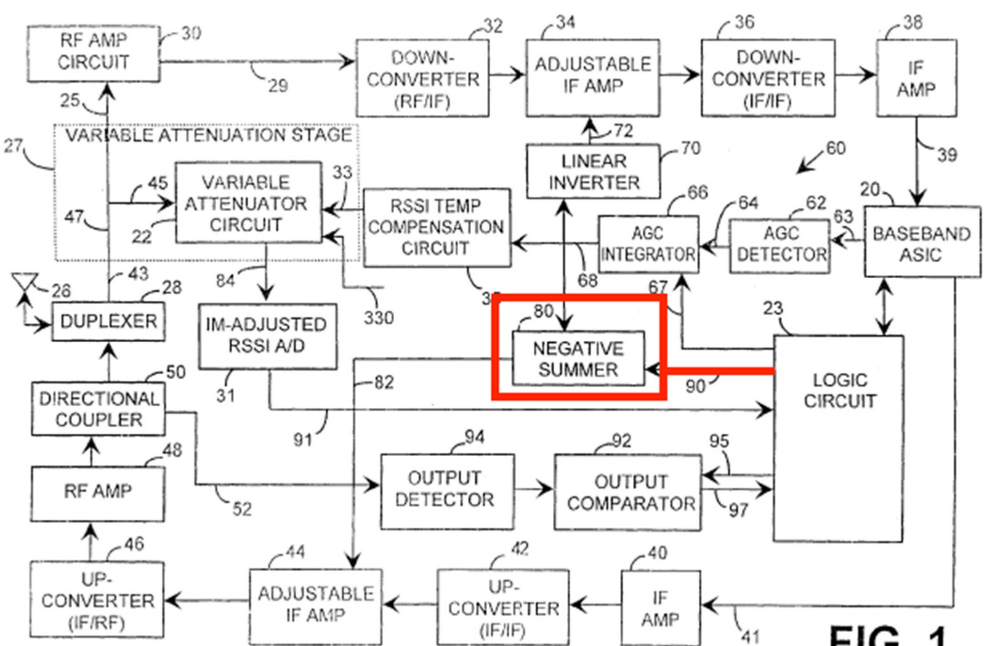
	Id. at ¶ [0027]. These components, alone or in combination with "digital/analog conversion circuit 47," "digital/analog conversion circuit 48," and "DC/DC/ conversion circuit 49," make up the claimed "signal generator": *After being digital/analog converted in the digital/analog conversion circuit 47, an attenuation control data signal is imparted to the variable attenuator 18. The variable attenuator 18 designates the attenuation based on the voltage of the output signal from the digital/analog conversion circuit 47.* *Id.* at ¶ [0026]. *After being digital/analog converted in a digital/analog conversion circuit 48, the reference bias voltage control data signal is imparted to the DC/DC conversion circuit 49. The DC/DC conversion circuit 49 increases or reduces the output signal from digital/analog conversion circuit 48 by a predetermined rate of change, and generates an output signal of the bias voltage which is imparted to amplifier 19.* *Id.* at ¶ [0027]; *see also* FIG. 1:

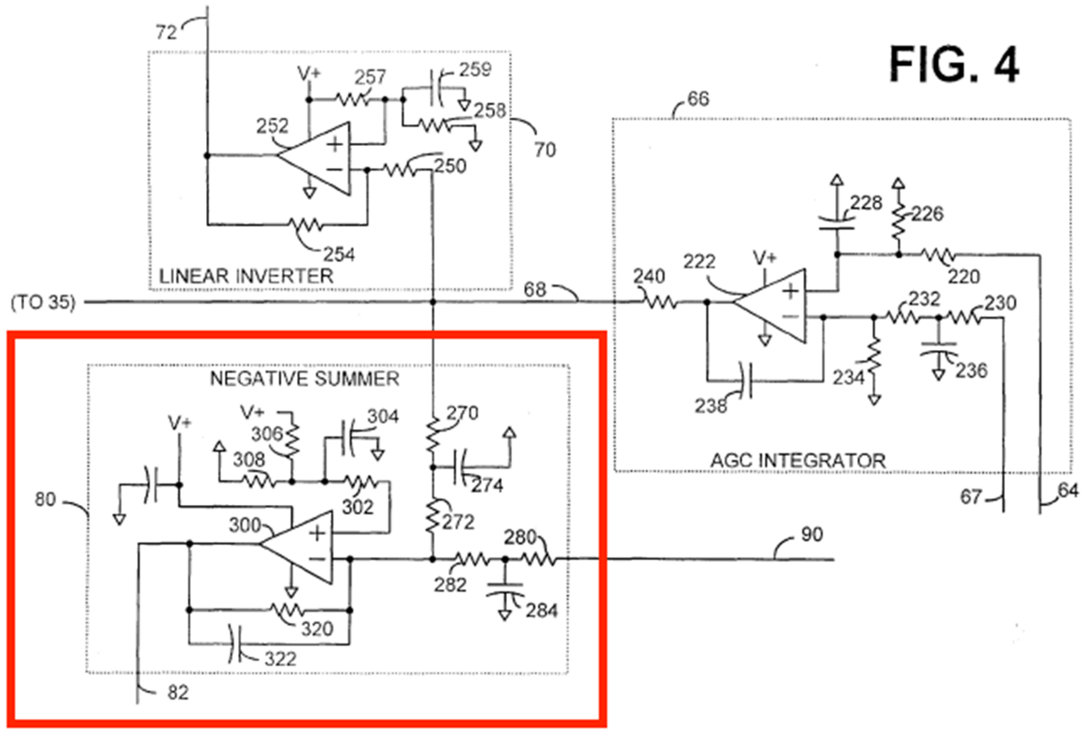
[FIG. 1]



Additionally, Waldroup teaches this limitation. In particular, Waldroup teaches negative summer 80, which is connected to logic circuit 23 and generates the signal used to control the adjustable IF amp:

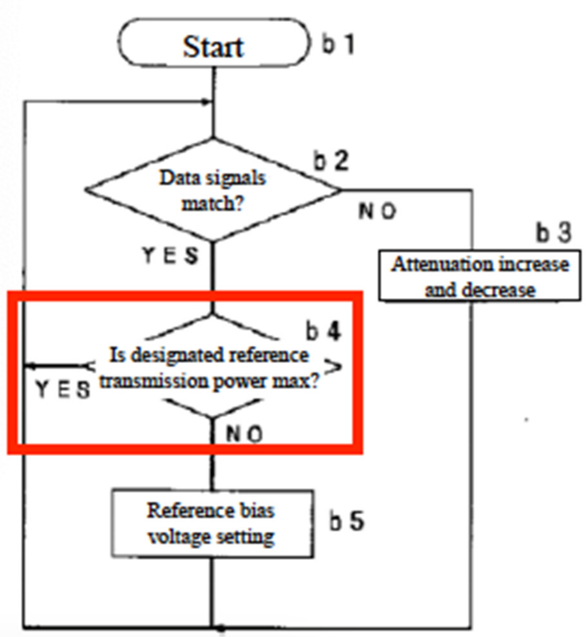
> *The open loop output line 68 also provides an input to a negative summer circuit 80 which controls the adjustable gain IF transmitter amplifier circuit 44 through a transmitter amplification control line 82. In this way, the open loop output line 68 provides the open loop component of the total output power control so that the AGC integrator circuit 66 and AGC detector circuit 62 also contribute to open loop gain control. One of the functions of the negative summer circuit 80, that of creating an inverse relationship between received signal strength and amplification, is similar to that of the linear inverter circuit 70. Thus, for example,*

	without regard to closed loop effects as received signal strength drops, the amount of amplification provided by the adjustable gain IF transmitter amplifier circuit 44 increases. Regarding closed loop control, the negative summer circuit 80 also receives input directly from the logic circuit 23 through a transmit gain adjust line 90. As explained below, the transmit gain adjust signal on the transmit gain adjust line 90 is an analog signal representing the closed loop gain control and attenuation correction portions of total output power control as dictated by the transmitter amplification control signal on the transmitter amplification control line 82. The present invention pertains primarily to the process of generating this transmit gain adjust signal on the transmit gain adjust line 90. Waldroup at 8:63-9:20; *see also* FIGs 1, 4, rn 80:  FIG. 1

	FIG. 4 It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.
[6(b)] said signal generator is connected to said variable amplitude amplifier and said power amplifier so as to supply a gain control signal and a bias control signal to	Nakayama teaches this element. In particular, Nakayama teaches that that the analog signals output by "digital/analog converter 47" and by "DC/DC converter 49" that ultimately derive from "attenuation control unit 42" and "bias voltage control 43" control the bias of power amplifier 19 and the attenuation (gain) of variable attenuator 18. *See* element [6(a)], *supra*.

said variable amplitude amplifier and said power amplifier respectively.	Additionally, Waldroup teaches this element. In particular, Waldroup teaches that this negative summer (signal generator) controls the gain of adjustable IF amp 44. *See* element [6(a)] above. It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.
Claim 7	
[7(pre)] A cellular telephone adapted to be used in a CDMA system, comprising:	To the extent the preamble is limiting, Nakayama, alone or in combination with Waldroup and/or AAPA, teaches this limitation. *See* element [1(pre)], *supra*.
[7(a)] an antenna for receiving a first communication signal and a transmitting power control signal from a cell-site station and transmitting a second communication signal to the cell-site station,	Nakayama teaches this limitation. *See* element [1(a)], *supra*. Waldroup also teaches this limitation. *See id.* Additionally, this element is AAPA. *See id.*
[7(b)] a duplexer connected to said antenna,	Nakayama teaches this limitation. *See* element [1(b)], *supra*. Waldroup also teaches this limitation. *See id.* Additionally, this element is AAPA. *See id.*
[7(c)] a receiver connected to said antenna through said duplexer for converting said first communication signal into a voice signal code, and	Nakayama teaches this limitation. *See* element [1(c)], *supra*. Waldroup also teaches this limitation. *See id.* Additionally, this element is AAPA. *See id.*
[7(d)] for outputting a power control signal derived from said transmitting power	Nakayama teaches this limitation. *See* element [1(d)], *supra*. Waldroup also teaches this limitation. *See id.*

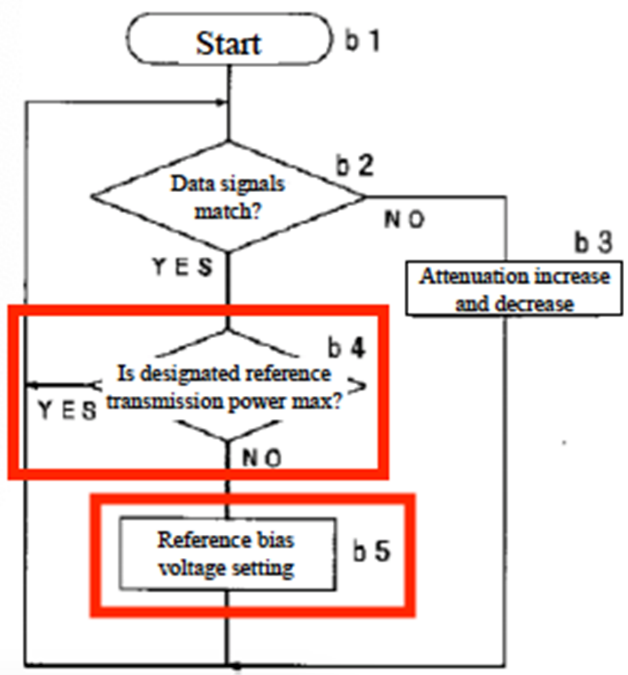
control signal sent from said cell-site station,	Additionally, this element is AAPA. *See id.*
[7(e)] an encoder/decoder apparatus connected to said receiver and	Nakayama teaches this limitation. *See* element [1(e)], *supra*. Additionally, this element is AAPA. *See id.*
[7(f)] an acoustic transducer for converting said voice signal code into an audio signal for driving said acoustic transducer and converting an audio input signal from said acoustic transducer into an input voice code signal,	Nakayama teaches this limitation. *See* element [1(f)], *supra*. Additionally, this element is AAPA. *See id.*
[7(g)] a transmitter connected to said encoder/decoder apparatus and to said antenna through said duplexer for converting said input voice code signal into said second communication signal, and	Nakayama teaches this limitation. *See* element [1(g)], *supra*. Waldroup also teaches this limitation. *See id.* Additionally, this element is AAPA. *See id.*
[7(h)] a controller connected to said receiver and said transmitter for controlling an amplitude of said transmitter,	Nakayama teaches this limitation. *See* element [1(h)], *supra*. Waldroup also teaches this limitation. *See id.* Additionally, this element is AAPA. *See id.*
[7(i)] wherein said transmitter includes a variable amplitude amplifier and a power amplifier,	Nakayama teaches this limitation. *See* element [1(i)], *supra*. Additionally, this element is AAPA. *See id.*
[7(j)] said power amplifier includes a maximum power detector,	Nakayama teaches this limitation. In particular, Nakayama teaches "detection circuit 31" that determines whether the output power is at a maximum level:

	The target signal extracted by directional coupler 20 is imparted to the detector circuit 31. The detector circuit 31 detects via AM and further smoothens the target signal, detects the signal level of the target signal, and generates a detection signal expressing the signal level of the target signal. After being converted to a detection-data digital signal by an analog/digital conversion circuit 32, this detection signal is imparted to the central processing unit 26. Nakayama at ¶ [0023]. *In the step b4, the bias voltage control part 43 determines whether the designated reference transmission power is the maximum reference transmission power among all reference transmission powers* *Id.* at ¶ [0046]; *see also* FIG. 4: [FIG. 4] 

	Additionally, Waldroup teaches this limitation. In particular, Waldroup teaches this limitation. In particular, Waldroup teaches that the logic circuit continually checks to see whether the maximum power has been reached. *The output detector generates a direct current (DC) representation of the total output power of the radio telephone which is continuously compared to a constant DC value by an operational amplifier in the output comparator to determine if the total output power has exceeded an output power trigger level to reach a maximum output power level. The results of this continuous comparison are input into the logic circuit through a readable input/output (1/0) port which is continually examined by the logic circuit (a specially-programmed central processing unit (CPU)) every 1.25 ms.* Waldroup at 4:8-18. It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.
[7(k)] said controller includes a central processing unit and a memory,	Nakayama teaches this limitation. *See* element [1(j)], *supra*. Waldroup also teaches this limitation. *See id.* Additionally, this element is AAPA. *See id.*
[7(l)] said controller controls said transmitter so that an open-loop power control is performed and	Nakayama teaches this limitation. *See* element [1(k)], *supra*. Waldroup also teaches this limitation. *See id.* Additionally, this element is AAPA. *See id.*
[7(m)] then a closed-loop power control is performed according to said power	Nakayama teaches this limitation. *See* element [1(l)], *supra*. Waldroup also teaches this limitation. *See id.*

control signal so as to control the transmitted power to converge into a range required by said cell-site station,	Additionally, this element is AAPA. *See id.*
[7(n)] said controller controls a gain of said variable amplitude amplifier using a function defining a relation between bias data and gain data stored in said memory, and	Nakayama teaches that the controller controls a gain of said variable amplitude amplifier using bias data and gain data stored in said memory. *See* elements [1(m)] and [1(n)], *supra*. Waldroup also teaches that the controller controls a gain of said variable amplitude amplifier using data stored in said memory. *See* elements [1(m)] and [1(n)], *supra*. Nakayama also teaches that this set of bias and gain data is based on a function defining a relation between bias data and gain data. In particular, Nakayama teaches that the controller controls the gain and bias using bias and gain data stored in memory and based on the desired transmission power. This data in turn is generated using the measured relationship between transmission power and output signal level and power consumption: *For example, when the communicator 11 is produced in a factory, each reference signal level actually causes an electromagnetic wave of each reference transmission power to transmit to the communicator 11, and a signal level of the target signal output from the amplifier 19 at this time is measured and obtained using a measurement device such as a power meter and a tester. After the communicator 11 is produced, each reference bias voltage similarly causes an electromagnetic wave of each reference signal power having optimal line quality to actually transmit to the communicator 11, changes the bias voltage in various manners at the same time, and measures and obtains the bias voltage when the electrical current consumption from the amplifier 19 is at a minimum. It is preferable to measure each reference signal level and reference bias voltage separately for every produced communicator 11 because they are different for each individual communicator due to, for example, variations in the characteristics of the circuit components of the communicator 11.* Nakayama at ¶ [0030]. Thus, the data in Nakayama's memory details the function mapping desired transmission power to gain and bias signals for a particular device. This data relates gain and bias data because the gain and a bias are stored for each desired output power level.

[7(o)] said maximum power detector controls an output power of said power amplifier.	Nakayama teaches this limitation. In particular, Nakayama teaches that the maximum output detector is used to determine the bias of the power amplifier, and thereby controls its output power: *Furthermore, according to the present invention, the communicator imparts the reference bias voltage corresponding to the maximum reference transmission power while the change rate of the level changing means is increased or decreased. Thereby, for example, when the reference signal level newly designated by the designation means is higher than the reference signal level designated by the level control circuit before this designation, it is possible to prevent the amplification means from becoming saturated, the spectrum of the target signal from warping, and therefore, the line quality of the electromagnetic wave from worsening.* Nakayama at ¶ [0062]. *Furthermore, the reference bias voltage corresponding to the maximum reference transmission power within the adjustment period W1 of the attenuation and the reference bias voltage corresponding to the designated transmission power after the attenuation has been determined are imparted to the power amplifier 19.* *Id.* at ¶ [0051]; see also FIG. 4:

	[FIG. 4]  Additionally, Waldroup teaches this claim limitation. In particular, Waldroup teaches that in response to detecting that output power has reached maximum, the output power will be decreased until the total output power falls below the maximum power value: *When the total output power rises above the output power trigger level, the logic detects the occurrence through the logic circuit 1/0 port and begins operation according to a second (saturation prevention) mode and first mode operation is temporarily shut down. One preferred method of controlling the closed loop power control register during the second (saturation prevention) mode of operation includes modifying the closed loop power control register to*

	decrement the total output power until the total output power falls below the output power trigger level. Thus, as long as the output comparator indicates through the logic circuit I/O port that the total output power has reached a maximum level by exceeding the output power trigger level, the logic circuit will continue to decrement the closed loop power control register. (Since the open loop component of the total output varies, the term "maximum power," etc., should be understood to be one of a very small range of output power levels above the output power trigger level.) In this way, the logic circuit disregards any closed loop power control information received from the base station or attenuation information received from the attenuator circuit by both decrementing the closed loop power control register without evaluating the attenuation and closed loop control information as well as disabling the effect of such information. Waldroup at 4:61-5:16. It would be obvious to modify Nakayama's mobile phone using the CDMA teachings of Waldroup to operate in a CDMA network. The motivation to do so would be to enjoy the improved power efficiency of Nakayama's phone in a CDMA network. *See* Waldroup at 1:32-34 ("Precise mobile station power control is a very important requirement for proper and efficient operation of a CDMA wireless telephone system."). Doing do would be a simple application of a known technique to a known device ready for improvement to yield predictable results.