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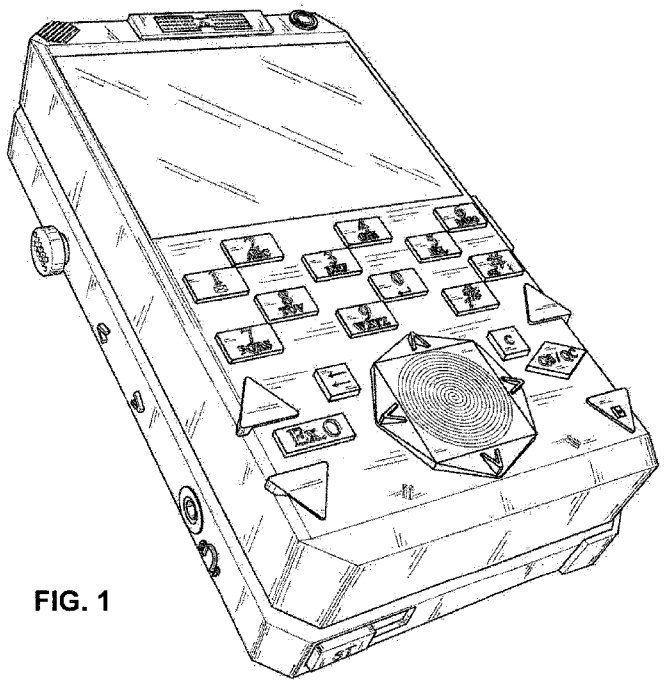

FIG. 1

(57) Abstract: A mobile device having a display module and a main module wherein the display module comprises of a primary display and a secondary display, the mobile device comprising seven linear LEDs on the display module that blink in a spectrum of selectable colors, wherein the blinking patterns are associated to notify a plurality of tasks; a merged dialing keypad having selectable colors; a pair of accessed easily buttons assigned for a specific task are designed in a way that easy accessibility in shortest time is possible allowing optimized battery power consumption. An extra option button for capturing film and photo by pressing the extra option button; recording at covert mode by pressing the extra option button and saving contact information by pressing the extra option button. A pair of invalidation buttons each, for stopping or canceling a process; silencing the mobile phone and cleaning a piece of data, and selecting and cleaning a piece of data, a special-paste option for editing a text. To instantly halt or reverse the hardware outputs of LED,

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SMARTPHONE

FIELD OF THE INVENTION

[1] The present invention relates in general to the mobile devices and in particular to a specific mobile/smart phone with novel features, attributes and unique functionalities.

BACKGROUND OF THE INVENTION

[2] The original inspirations to design a mobile phone was not based on improving what there is but based on what is needed that others have not been able to comply, and the design process started from scratch all the way to perfection.

[3] Nowadays there are almost unlimited numbers of thirds party developers that come up with so many applications and features designed for variety of operating systems. The inventor believes that a unit must be as inclusive as possible to the limit of its perfection and to anticipate the user's needs providing them with a comprehensive set of features and functions that are exclusive to the design.

SUMMARY OF THE INVENTION

[4] A mobile device having a display module and a main module connected by a pivotal joint allowing to fold/unfold of 0 to 180 swivel motion, wherein said display module comprises of a primary display and a secondary display, said mobile device comprising seven linear LEDs on said display module that blink in a spectrum of selectable colors, wherein the blinking patterns are associated to notify a plurality of tasks; a merged dialing keypad having selectable colors; a pair of accessed easily buttons assigned for a specific task are designed in a way that easy accessibility in shortest time is possible allowing optimized battery power consumption. An extra option button for capturing film and photo by pressing the extra option button; recording at covert mode by pressing the extra option button, and saving contact information by pressing the extra option button. A pair of invalidation buttons each, for stopping or canceling a process; silencing the mobile phone and cleaning a piece of data, and selecting and cleaning a piece of data, a special-paste option for editing a text, and a display off/on button to turn off and on the display module of the mobile device.

BRIEF DESCRIPTION OF THE DRAWINGS

[5] Embodiments herein will hereinafter be described in conjunction with the appended drawings provided to illustrate and not to limit the scope of the claims, wherein like designations denote like elements, and in which:

FIG. 1 shows a perspective view of the present invention;

FIG. 2 shows a perspective view of the present invention;

FIG. 3 shows a front view of the present invention;

FIG. 4 shows a front view of the display module of the present invention;

FIG. 5 shows a perspective view of the present invention;

FIG. 6 shows a perspective view of the rotational movement of the present invention;

FIG. 7 shows a perspective view of the hinge in the present invention;

FIG. 8 shows a back view of the present invention;

FIG. 9 shows a wire structure of the present invention;

FIG. 10 shows a wire structure of the present invention;

FIG. 11 shows a schematic diagram for LED main setup menu in the present invention;

FIG. 12 shows a schematic diagram for LED main setup menu in the present invention;

FIG. 13 shows a schematic diagram for LED feature in the present invention;

FIG. 14 shows a schematic diagram for LED feature in the present invention;

FIG. 15 shows a schematic diagram for LED feature in the present invention;

FIG. 16 shows a schematic diagram for LED feature in the present invention;

FIG. 17 shows a schematic diagram for LED feature in the present invention;

FIG. 18 shows a schematic diagram for LED feature in the present invention;

FIG. 19 shows a schematic diagram for LED feature in the present invention;

FIG. 20 shows a schematic diagram for LED feature in the present invention;

FIG. 21 shows a schematic diagram for LED feature in the present invention;

FIG. 22 shows a schematic diagram for setup colors of the LED for hard keys;

FIG. 23 shows a schematic diagram for setup colors of the LED for soft keys;

FIG. 24 shows a schematic diagram for accessed easily feature in the present invention;

FIG. 25 shows a schematic diagram for accessed easily feature in the present invention;

FIG. 26 shows a schematic diagram for extra option feature in the present invention ;

FIG. 27 shows a schematic diagram for extra option button in the present invention;

FIG. 28 shows a schematic diagram for extra option button in the present invention;

FIG. 29 shows a schematic diagram for extra option button in the present invention;

FIG. 30 shows a schematic diagram for extra option button in the present invention;

FIG. 31 shows a schematic diagram for extra option button in the present invention;

FIG. 32 shows a schematic diagram for extra option button in the present invention;

FIG. 33 shows a schematic diagram for extra option button in the present invention;

FIG. 34 shows a schematic diagram for extra option button in the present invention;

FIG. 35 shows a schematic diagram for extra option button in the present invention;

FIG. 36 shows a schematic diagram for extra option button in the present invention ;

FIG. 37 shows a schematic diagram for QS/QC feature in the present invention ;

FIG. 38 shows a schematic diagram for QS/QC feature in the present invention;

FIG. 39 shows a schematic diagram for QS/QC feature in the present invention;

FIG. 40 shows a schematic diagram for QS/QC feature in the present invention;

FIG. 41 shows a schematic diagram for QS/QC feature in the present invention;

FIG. 42 shows a schematic diagram for QS/QC feature in the present invention;

FIG. 43 shows a schematic diagram for QS/QC feature in the present invention;

FIG. 44 shows a schematic diagram for QS/QC feature in the present invention;

FIG. 45 shows a schematic diagram for QS/QC feature in the present invention;

FIG. 46 shows a schematic diagram for QS/QC feature in the present invention;

FIG. 47 shows a schematic diagram for special paste feature in the present invention;

FIG. 48 shows a schematic diagram for special paste feature in the present invention;

FIG. 49 shows a schematic diagram for special paste feature in the present invention;

FIG. 50 shows a schematic diagram for screen off/on feature in the present invention;

FIG. 51 shows a schematic diagram for screen off/on feature in the present invention;

FIG. 52 shows a schematic diagram for screen off/on feature in the present invention.

FIG. 53 shows a schematic diagram for screen off/on feature in the present invention, and

FIG. 54 shows a schematic diagram for screen off/on feature in the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[6] The present invention is a mobile device with novel features and functionalities as follow:

1- Blinking LED;
2- Merged Dialing Keypad;
3- Accessed easily buttons;
4- Extra Options button(Ex.o);
5- Invalidations button(QS/QC);
6- Special paste feature(SP), and
7- Screen off button.

[7] As shown in FIG. 1-10, the present invention comprises of two modules, the display module that is on top and is the face of the unit, and the main module that sits beneath having most of the PCBs, controls, connectors and etc. Only the display module is foldable.

[8] There are two full sides to the display module that a single side comes to contact with the user only. There are two displays to the module, one per each side. At one side is the half size, non-touch which is the secondary display accompanied by keys and controls. On the other side is the full size, multi-touch display which is the primary display.

[9] The two modules are connected by a special pivotal joint allowing the both fold/unfold of 0 to 180 swivel motion as well as the Display Module's pivot motion onto the Main Module. A combination of a 90° unfold swivel motion and a 180° CW pivotal rotation of the display module allows a swap of display accessibility from the secondary display to main display availability.

The hinge to the unit is designed and constructed in a way that is capable of maintaining any angle it is adjusted to, depending on the application in use.

[10] On the top wall pass the corner is Lock/Unlock switch, and further to the right before the corner is the first Band slot. On the following corner are the partial view of L1 and L2, of Arcade group.

[11] On the upper right wall and at the corner L1, L2 come to full view. Half way before the center joint is HDMI port. Past the center, where the connector joint is, sits Charger/PC connector. Lastly is the full view of R1 and R2 of Arcade group at the corner.

[12] Now that the task and capabilities of the two modules are described each individually, the knowhow to display positioning with respect to the Main Module is as follows:

[13] Applied Positions: Based on the user's intended application(s), the Smartphone could be used either in a folded position or the unfolded. The positions and the proposed corresponding applications are as follow:

1- The Folded Position:

1A- The secondary display (Non-touch) and FPS are outward. The user has access to the Merged keypad, and the Button Field when carried around.

1B- The primary display is outward. The user has access to all the keys in soft touch mode in the larger Multi-touch display.

2- The Unfolded Position:

2A- The user has access to full hard QWERTY keyboard and the large display where it stands at a nearly 90° to watch a movie or surf the internet, while has access to just about all other functions as seen in the image.

2B- In addition to QWERTY keyboard and the large display, the user has full access to Arcade group to enjoy the games and the potential to maneuver the display per desired positioning up to 180 ° angles.

Note: In order to switch from 1A to 1B position it is required to unfold the Display Module by 90° perpendicular with respect to the Main Module, then rotate the Display Module by 180° CW and finally refold back by 90° to the closed position.

[14] Texture & Applied Material: The enclosure material is made out of Aluminum alloy and PVC. The exterior of the Smartphone; however, is wrapped in fine snake skin leather which are in two different tones and colors. The Display Module is covered with a design resembling Indian King Cobra with tan or beige patterns where as the Main Module is wrapped in a Brown Cobra design

which is mainly the patterns of the same color as seen in the images. To satisfy the users preferring materials other than natural leather, the unit could be wrapped using synthetic leather(s) having individually selected patterns and designs per customer orders.

[15] On the very top, near the edge, above the display and to the very left is the 7 segment linear LED array sitting at an angle. In the center is the Ear-set assembly, and to the very right is the secondary camera mounted on a frame.

[16] LED Blinking Light: It is with the help of a little LED and finely designed software that it gets to blink in a spectrum of selectable colors. The blinking types are task selectable and sensitive to whatever it is previously programmed to comply to. The tasks include, the call results immediately after connections, Missed Calls, and the users pre-designated Alerts. A prominent LED positioned on top, simply allows the users of their Smartphone status without having to actually confer to it.

- Function selectable for each and every single one of the incoming communication subjects separately, including Incoming messages, receiving calls, missed calls, and the outgoing calls, also the alerts such as clock alarm, the battery alert, etc.
- The color selectable blinking each time up to 10 blinks, and maximum time length of 5 seconds from 1 to 4 sets of subjects including:
  - I- Line Busy; doesn't have call waiting or busy dialing;
  - II- Rejected; either rejected and rerouted to the voice mail or in absence of the voice mail, just disconnected;
  - III- Line Free Tone; ringing on a free line, and
  - IV- Upon ringing, a successful phone call has begun.
- Subject selectable for each set (singular, plural, or more) and also for individuals whose numbers are not saved in the contact list;
- Multi-color selectable for multi-communication receivables including the ability to blink every other one or even by selection of a third color which could be picked randomly. The third color represents a combination of the other 2 colors and is inclusive to represent 2 or more incoming communication;
- The in-between blinks time interval (IBTI) set ups (5 Sec. by default), the number of (Burst) pulses per blink (Max. 2 pulses) the time length that blinking are to prolong (even unlimited) along with color(s) from the vast color array,

- The LED blinking light is by far a greater power optimizations, and is frugal to the battery life on a single charge in comparison to turning the LCD on to check the communication receivables repeatedly.

[17] To simplify the programming, of all the 81000 available colors in the intended LED, the suggested ones to implement in the design are only 125 selected ones. With reference to the PDF data sheet, the 125 different colors of the light array are constructed in a way that of the existing bandwidth for each and every one of them the main colors Red, Green, or Blue, only five different wavelengths in equal intervals are selected. The grand product (multiplication) of each 5 wavelength samples to the 3 colors (5X5X5=125) will produce 125 different colors of lights. FIGs. 11-13 show the diagram for LED blinking light process.

[18] When a predefined software event occurs, they are sent to the LED MCU along with all the specifications. All the intended events will translate into an interrupt introduced to the Main MCU. The CPU in the Main MCU then will abandon all the on-going tasks, to attend and to service the interrupt. Consequently the software could be appended to the end of any interrupt function as a single subroutine entity as shown in FIG. 14.

[19] Upon dialing and an established connection, with respect to the responses received such as: Line Busy, Rejected call, Line Free Tone, or upon ringing, a successful phone call has begun and the received result must be reported to LED MCU so it can display the selected colors as shown in FIG. 15.

[20] The LED MCU will be the software driven entity to the LED. This unit will receive the data from the Main MCU, and based on what is programmed, will produce the output signals at the appropriate timing. The description to the task and algorithm of the unit are shown in FIG. 16.

[21] An EEPROM data bank to include the user setup data and the latest events list, a flash data bank to include the default values, the initial setups, and a table to produce different colors is shown in FIG. 17.

[22] Susceptibility to receive data from the main MCU at any given time and to store them in EEPROM is shown in FIG. 18. The codes to the colors in the determined time frame in the form of electrical signals are sent to the output. The codes are generated based upon the stored data in flash memory as shown in FIG. 19. A macro to retrieve the original factory setups, when the smartphone is formatted is shown in FIG. 20.

[23] The objectives of the new mobile phone as designed with the mentioned features is for users who simply possess the sight sense only and for users who prefer not to hold the phone to their head up until the status of the connection is made clear to them and then proceed as desired and also for users who attend formal meetings, sessions, conferences, and so on; therefore, they are restricted to reach out for their smart phone.

[24] About the entire upper half of the face is occupied by the secondary display, designated for basic observation functions. The display placement is slightly to the left leaving a wider margin to the right for the sake of practicality and proper fitting when the Smartphone unfolds.

[25] In accordance to the merged keys standard, every 2 semi-transparent brown keys on the present invention are connected in a way that the even keys are attached and stand to the upper right corner of the odd keys bonding a pair. They are laid on a handsome background.

[26] Merged Dialing Keypad: The Buttons are either hardware incorporated on the smartphone or software buttons which are displayed through handsome graphics allowing a greater appearance with respect to the plane and old phones. "Breaking the old rules", they are all based on the same foundation of innovative architecture and construction philosophies. For an example, all AMIR models include one stylish button that consists of two merged octagon button, one button that consists of two half-circle buttons which are merged into one physical button, two button merged into one rectangular button, two button merged into a single triangle button, and so on.

- Innovative design, attractive and shapely new look
- Slightly taller even keys for easily accessed buttons
- "Choose Your Favorite Color for Each Keys" compatibility for on the display soft-keys as well as hard keys.

[27] All the Smartphones in the collection have either hardware integrated dialing keys or they are incorporated through software using graphics which require implementations. There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow.

[28] The old dialing key pads are in 4 columns and 3 rows, and normally they are scanned in a Matrix. To do the same in the present invention design since typical Matrix scan might have deficiencies, the key pads are designed for multiplexer scan. Comprehensive studies of how multiplexer scans of the key pads are done in details are as follows:

[29] Multiplexer is a Compound Digital Circuitry for which "N" is the number of address lines and is capable of switching 2N number of input lines converted to a single output line. In another word, this is a "Parallel to Serial Convertor". In the design a multiplexer with 16 input lines is incorporated.

[30] To sweep the keys a "16 to 1" multiplexer is designed in. Every single one of the intended keys is connected to a VCC through a "Pull-up" resistor, so that it can generate "0" and "1" signals to the multiplexer. Multiplexer's address pins and the output pins are connected to the respective Main MCU pins.

[31] The design and physical appearance of the key pad layout differs from one model to another, so does their PCB boards. The hardware design of every single key pads arranged in pairs, using fundamental yet simple geometry in directions to satisfy both the simplicity and the beauty of a personal item requirement for the users. There are two parts to the subject. One is to scan the hard keys, and the other one is the graphical design of the touch screen keys (Soft Keys).

[32] To scan the keys by MAIN MCU, the address of the input ports to the multiplexer are generated one by one; therefore, the input signals and their correlated addresses are transferred to output together so that the Main MCU can read its value as shown in FIG. 21.

[33] To design the graphics of the soft keys on the touch screen, the geometrical positioning of the key with respect to the X-position and Y-position is calculated and then they are plugged in. Since the right side of the even keys is to be designed so they can clearly appear to be prominent; therefore, the inserted value of the key design with regards to their prominent look must be "True".

[34] The objectives of the new mobile phone as designed with the mentioned features is for people who are bored with the plane and dull look of everyday smart phones, seeking a more attractive appearance and design, and users who believe in human beings ability to run on his cunning edge of craftsmanship, but not repetitiously makes, an original work of art that is continuously on a path of innovative evolution, for all those users who gave in to the designs of "what there is" although holding their hope high, in anticipation of diversities in any of nowadays Smart Phones, while demanding an elegant appearance, and also convenience of use for visually impaired, although not Braille.

[35] There is an independent Multi-Color LED designated beneath every hard key of the Smartphone to provide the users with options to choose from an array of colors in the pallet they desire to

illuminate their keys. The users also have the option to the graphical personalization of both back-colors and fore-colors of the soft-keys displayed over their LCDs.

[36] The option to choose from 125 varieties of colors for every one of the hard-keys as well as soft-keys (both for back-color & fore-color sections; soft-keys only)

- Capable to comply with all types of desires in colors and tastes;
- Once color selected, it will look quite modern, handsome, and could be color picked as each key / each color or all the keys in the same color, and
- After the initial use, they could be set to "random color selectable" for the desired quantity to be used in the times after.

[37] There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow. The intended architecture for the design has included a number of SIPO (Serial In Parallel Out shift register) Shift Registers laid out in sequence for which they receive the commands from the Main MCU. They move the data concerning each color of the LED to DACs for every LED there designated three DACs. Each DAC is for either one of the Red, Green or Blue colors.

[38] To isolate the emitted light from each LED, they are secured by a black shroud around them. The designated task for the unit is to generate the color signals for the shift registers through three traces Data, Clock, and Strobe. To change the color of the emitted light, the LED data for all the keys are re-transmitted in a frame.

[39] The specific shift register implemented in the design is an 8 bit type of SIPO. To calculate the required number of SIPOs needed to have the necessary signals transmitted to the DACs, an equation is used as below:

The Required Number of Shift Registers = Quantity of LEDs X 3

[40] They are used to convert the digital signals received from the shift registers. Since the speed in how fast they operate is not of a great importance, the serial type of them is used. This will allow us to need a lesser numbers of shift registers. The needed quantity of the DACs will equal to the one of shift registers.

[41] The implemented LEDs are in SMD package. The detailed specification to the LED is as follows: The menu for the desired setups is made available in personalization section of the hard-keys. In the menu the user can setup the keys to choose desired colors for the intended keys. The user can also setup each and every one of the keys for a picked and or random selection of colors to

illuminate. The other choice would be the blank option (LED remains off) located at the color pallet. For a random display of colors, the varieties of the displayable colors are user selectable. For a random display of colors, a Timer is used for an automatic display of the sequential colors as shown in FIGs. 22 and 23.

[42] The menu will allow the user to modify certain attributes of the dialing soft keys. The modifications include Back-Colors and Fore-Colors of the soft keys. Through a software implementation, the modifications are made possible to apply to both dialer keys and also to the alphanumeric keyboard.

[43] The designated location to store the data is the Flash memory which is to store the implemented colors of the LED at the time of the initial software design of the Smartphone. It must be noted that the default color is "Ice White".

[44] The data includes the software controlled colors both to the icons of the soft keys, and also to the hard keys. The original data as a default value is loaded in the Flash memory when the Smartphone is manufactured. A copy of it exists in EEPROM memory as well. The user can modify the data per their preferences later on. In case and if the user attempts to execute the "Restore to Factory Default", then all the modifications per choice will be purged, and will be replaced with the original data from the Flash that will be reloaded into the EEPROM.

[45] The LED data originated from the Main MCU runs through the shift registers in series via three I/O pins whose name are the Data pin, the Clock pin and the Strobe pin. Every transmitted frame includes all the data for the colors of all the LEDs and their consequent color components. To every LED, there are 3 color components and each component includes 1 Byte; therefore, the data to the color of every LED will be 3 Bytes (totals to 24 bites). Every data frame includes (24bites x the Quantities of the LEDs). With reference to the described architecture, in order to transmit a single frame, they must be sent in 8 phases and in sequence starting from the LSb (Least Significant bites) up to MSb (Most Significant bites) of every color component there are to the LEDs. This is how every DAC receive the color component to each LED in 8 phases and each in 8 binary digits.

[46] The objectives of the new mobile phone as designed with the mentioned features is for Ladies who care to have a greater dress and appearance color compatibilities including their Smartphone, the art enthusiasts or the artists, who have the passion and wish to have everything around them to be a manifestation of artistic values, can use the modification capabilities of the hard keys and

the soft keys to demonstrate their feelings, for users who wish to have their Smartphone to represent them as a person of different taste, (in terms of appearance and form), so that the personalization of the Smartphone would stand out symbolizing its owner even in comparison to the similar Smartphone, for users who are bored with the "all the same look" of everyday Smartphone and their typical key pads; therefore, preferring color beautified keys.

[47] The bottom quarter of the module face is dedicated to a well grouped Button Field. On the top left corner of the button field, below number 7 key and nearly passed the edge is 1st R of the Accessed easily buttons. Immediately below and slightly to the right of 1st R is the Ex.O button. Near the bottom left of the module face is 2nd G button. Both 1st R & 2nd G buttons have passed and protruded the left edge. In the center of Button Field is FPS assembly. In between 1st R and the upper left corner of FPS sits the orange square "Back" button. Passed FPS and across from the "Back" button there located the "C" button that is orange square too. With respect to an imaginary line running through the width of the Smartphone and above 1st R button, the 1st G button stands clearly higher and above the line, protruding past the right edge. Slightly below the "C" button sits the first set of red, diamond shaped QS/QC button. To the very right corner of the module is the 2nd R button which is also Power On/Off button. All of the Accessed easily button are triangular shaped, and the entire Button Field is semi-transparent. The Microphone set is at the very lowest part of the module's face, near the center edge.

[48] Accessed easily: Old school phone lay outs used to include two buttons. The one in Green was to respond, and the other one in Red was to disconnect. As production technology advanced, so did the usage of single task buttons became dull and outdated. As a part of an attractive design, Mr. AMIR has implemented a couple of Green and Red buttons below the old and existing Green and Red ones in order to create a balance to the design. The added new capabilities contributes to the improvement, while breaking the old rules and fashion, provides a more handsome appearance into nowadays basic had sets, facilitating the operations to the end-user.

- While simplicity is the foundation of the design, button accessibility is handled in a symmetric and in a fashionable way to ease the use both by right or left handed users.
- To activate the "Loud-speaker" (Once the telephone connection is made, the pressing of the Secondary green button will activate the "Loudspeaker" function and vice versa. By pressing the Primary green button, it will place the caller on "Hold", and vice versa) option an automated shortcut is allocated by pressing the Green button once. This is done by selecting

the second pair, and adjustability in the set-up menu. To press the Red button for three seconds, will turn the phone On or Off.

- To press and hold the secondary Green button, will recover the hand set from "power saver mode" and for as long as the button is kept pressed, the screen will remain On for the user to inspect the latest events, or functions. The feature is design to further optimize and maximize on the life of a battery charge (also known as "Status @ a Finger Tip").
- The ability to "hang up" on a phone conversation is made possible via pressing of the Red button, even if the user is not on the Main Call menu page.
- The Green and the Red buttons are designed in a way that easy accessibility in shortest time is made possible, even if it is in any unusual conditions such as working with wet fingers.

[49] There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow. The signals are generated by hardware when a button is pressed. A Button Driver then receives the electrical signals and after decoding them, will send it to the Main MCU (Main Micro Controller Unit). Then the received signals by the Main MCU analyzed. The Analyses are as follows:

[50] To generate the electrical signals and to send them to the Main MCU, two buttons are employed which are in SMD (Surface Mount Device) package. The buttons are positioned right below primary Green and Red buttons per displayed figure.

[51] They are employed to receive the electrical signals which were generated by the buttons. The received signals are then sent to the I/O (Input / Output) ports of the Main MCU and then the appropriate commands are sent to the CPU (Central Processing Unit) of the Smartphone.

[52] It is the main processing unit of the Smartphone which is allocated to communicate with Button Drivers and their electrical signals, whenever they are generated. The software basically designed to provide certain series of communication bridges. So that it comes to a greater perspective, a more precise evaluation of the software is conducted in the chapters sections, and subsections yet to come.

[53] In the design, the expected performance from the Main MCU is to responds to the calls include; to fulfill the obligations toward green and red buttons as it has been in the past, to activate the loud-speaker immediately after the Secondary Green button is pressed, to disconnect the phone conversation, once the user is not in the caller's main page and also it is capable of handling an added responsibility of turning the phone On or Off via Secondary Red button. The

responsibilities of the Main MCU and the algorithms for which they are designed to execute are evaluated and considered below.

[54] At any given time the commands state that either one of the secondary Green or the Red button is pressed. The Main MCU then will decide which one of the subroutines to execute depending on which buttons are pressed. To prevent the Button Driver from a time consuming "Hand-Shake Scans" the "Read Commands" are "Interrupt Driven", thus allowing optimized battery power consumption as shown in FIG. 24.

[55] This feature provides features for people who are bored with the plane and dull looks of everyday Smartphone which are designed based on the outdated structure of green & red button layouts, and seeking a more attractive appearance while capable of greater options. Typical phones fail to possess either one of Mr. AMIR's "Accessed Easily" button. Green and red buttons of typical Smartphone are situated individually at the either side of the Smartphone; therefore, with the implementation of this function, the users are not forced to exert their thumb any more than they have to hold the Smartphone thus bringing along the ease of use. For the people who seek "easy to use" Smartphone; therefore, it is designed having a shortcut option to activate the loud-speaker when trying to call just by touching the secondary Green button once as shown in FIG. 25. This will facilitate the use while optimizes on the time of the user.

[56] Extra Options (Ex.O Blue Button): A Blue color hard key button assigned to implement Mr. AMIR's Smartphone designs. There are 3 attributes designated aiming for 3 separate distinct functions in 3 different situations. The possibility of an unwanted and an accidental press of the Blue key might result in some dire consequences which will be in contradictions with the easy and fast activations of the desired programs, the mechanical and the hardware design of the key devised in a way that to press the Blue key, is going to require some more effort.

[57] Quick Film & Photo @ a Finger Tip: Here is the first feature in its category allowing the user a swift access to either a motion picture recording(s) or shooting a picture(s), set by default without any delay, even if the Smartphone is locked. The implemented Blue key is a dual task SPST (Single Pole Single Through) switch. The dual task means that when the user presses the Blue key, activating the first task of having all other running application(s) coming to a halt and the shooting program activates quickly also by releasing the key (the second task), the filming program is commenced to actual filming. The in-between press and release time allows the user to proceed with the positioning, and zooming to fine tune the camera.

[58] The Outline to the Competitive Capabilities (Attributes and Advantages):

- Extraordinarily quick access to filming or snapshots just by pressing and releasing of the hard key once.
- The user will never lose precious or critical moments.
- The user will never have to abandon nor to exit any other running application in order to reach out for filming / photo options in the camera menu.

[59] There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow: the hardware execution of the design begins with the generation of electrical signals by pressing of the Blue key. A designated Button Driver receives the signals, and when they are manipulated and converted to decodable signals, and then they are placed at the output of the button driver to transmit to the Main MCU. Further description to how hardware proceeds in details are as follow: to generate the electrical signals, to produce the transmitting commands to the Main MCU, a dual task STSP switch (with Push Button Switch in SMD package) is designed in.

[60] It is used to receive the generated electrical signals by the pressing of the key. The generated electrical signals once received, are processed and placed on the I/O ports of the Main MCU, so the appropriate commands are issued to the CPU of the Smartphone.

[61] This is the main processor of the Smartphone as hardware. It is responsible for the communication with the Button Driver so that at any given time receives the commands in terms of electronic signals.

[62] The software execution of the design counts on the high speed of the system processor. The processor has to be fast enough so that in fractions of a second after pressing of the key, suspends all the running applications, and applies for the execution of all the filming and photo functions.

[63] The Key Sweep Acknowledgement, When Pressed: as it has been mentioned above this is a STSP, dual task switch key whose first task is the acknowledgement of the key once it is pressed. While it is pressed and held, the key will transmit a "0" signal to the Main MCU. The external interrupt to the Main MCU has to be made sensitive to the down going edge of the signal from "1" to "0" to perform the execution of External Driven Interrupt Call Command as shown in FIG. 26.

[64] To Disrupt the Applications While in Execution: The external interrupt driven subroutine is called upon, once the key is pressed. The subroutine is designed to suspend any and all the running

applications. This is done in a way so when the filming or photo process ends, the program counter follows up to the address where previously running application was before.

[65] So whatever is the occupying data sitting in RAM is transferred to EEPROM. First of all this will clear the way to a greater RAM capacity for filming or photo data, and secondly the entire unsaved suspended applications will not be lost. For the purpose of what is mentioned above a predetermined amount of memory is reserved permanently in EEPROM. Ultimately all the applications are suspended. The execution of the said process in the manner expressed herein is performed much faster than the pressing of the finger. The effort to close the applications manually is by far a slower process that any comparison is out of a question.

[66] The Filming or Photo Program Execution: A comparison command is set forth based upon how and what the user has picked his / her setting with reference to which program is called upon, once the key is pressed. For as long as the user's fingertip is press-hold of the Blue key, it will proceed with neither one of filming nor the photo recording. In the case of the locked Smartphone, if the filming / photo program is executed, once the filming / photo session ends, the user has no option in accessing any of the programs, or menus. Ultimately the Smartphone will go back into the locked mode.

[67] The Key Sweep for Its Released Position: The key sweep on its released position is performed after the key is pressed. In this position the external driven interrupt now is sensitive to up-going edge of the signal, and is activated based upon the transmitted signal sign change from "0" to "1". This is done quite quickly and is followed by the execution of external interrupt subroutine call command. The external interrupt subroutine is now made back sensitive to the down-going edge of the signal, so it would be ready for the next key press occurrence as shown in FIG. 27.

[68] External Driven Interrupt Subroutine: The subroutine is designed to comply with both tasks of pressed key and the released key. The other 2 options under "Extra Options" too, are handled by the same subroutine. It is important to take notice of the fact that to recall the subroutine, it must check to see how the Smartphone software is positioned. Then based on that, can decide which functions need to be called upon. When the Blue key is pressed, only one of the three "Extra Options" function is executable at a time. With the exception of 2 situations (Except the second and the third capabilities of the same key in the menu and the subsequent sections 1 and 2 in which "1": while the user is in a conversation and "2": When the user is in Original History and Secondary Call History menus, on an unsaved number which is perceived as a new individual,

will not be utilized), even when the Smartphone is locked, the function is available and executable in all menus and situations.

[69] The Recovery of the Disrupted Applications: Upon the completion of the filming or photo recording, what was paused and moved from RAM and stored at EEPROM, now must be retrieved from EEPROM back into RAM again. The program counter will follow up from the same address where it was left off, and will execute the rest. Ultimately all the applications are recalled and the executions of them will be completed.

[70] It is in this menu where the pressing of the Blue key will lead to the execution of either filming or photo session. Please note that the Blue key default setting points to the filming application.

[71] The adjustment to filming and photo set ups are also accessed by the same key. The setup configurations include:

I- Filming Set ups: Display Brightness, Image Size, Secondary Camera. Filming Resolution, Data Storage Location, etc.

II- Photo Set ups: Display Brightness, Image Size, Flash, Secondary Camera, Photo Resolution, Data Storage Location, etc. (as shown in FIG. 28)

[72] Targeted market for this feature is for the less educated users who don't care for Smartphone with complicated to access applications or the elderly. For Journalists, the environmental and nature research photographers, whose constant use of filming or photo camera is a necessity. Users who need a quickly accessed camera to record a scene could use the capability without the loss of focus and to concentrate on the recording object and the surroundings, without having to go for the menu setup, can benefit from the both photo and or filming capabilities, even if it is in locked mode.

[73] Quick & Covert Recording @ a Finger Tip: Here is the second feature in its category allowing the user a quick access to a concealed audio recording capability while a phone conversation is in progress.

- A convenient and quick availability;
- A repeated function of making the capability active and inactive in a single phone conversation;
- Instead of a typical iconic activation of a recording session, a programmable vibration symbolizes the start of a completely concealed phone conversation recording(s);

- The activation ability of the feature on the Smartphone for an automatic conversation recording on certain desired individual(s);
- After the activation of the feature, and the disconnection of the call, is the automatic storage of the recordings, and
- The ability to save the recorded phone conversation in separate files also the ability to access them in a single list.

[74] There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow. The software will produce the shortcut to an audio recording application. This will eliminate the struggle with the menu, and will prevent the loss of precious time. To achieve the goal, the shortest and the quickest route is explained step by step as follow:

[75] While a conversation is in progress, the press of the Blue key will result in the execution of an externally driven interrupt subroutine. In the subroutine the conversation recording command call is executed. The execution process of the subroutine is shown in the data flow diagram as FIG. 29.

[76] Under external interrupt subroutine, the recording application is called upon, and it is by this program that the voices of both sides are recorded all the way to the end of conversation or by the repressing of the Blue key. If the recording has been activated in a concealed fashion, it will not display the voice recording icon, and instead a user's preselected vibration will manifest the start and also the end of each recording session up to and within 0.5 second as shown in FIG. 30.

[77] The subroutine, when in "Quick Recording" mode, will perform two separate functions:

I- The Recording Has Commenced

II- The Recording Has Ended (Only when the key is pressed while the conversation is still in progress)

[78] Every time the subroutine is activated, the variable function "Value" is saved, so at the time of the next command call the "Counter-Value" is called upon. The program ability and how it records conversation(s) at any given and desired time period is per FIG. 31.

[79] The data of a conversation while in progress is saved in RAM. Once the conversation ends, the data is sent for format conversion, and ultimately the formatted data along with the inclusive specifications (Date, Time, the Contact, and so on...) are stored in an EEPROM file per Diagram in FIG. 32.

[80] The audio data which are the samples of the real voice signals then converted to a standard format, such as Wave (.WAV) which resembles the data of real voice signals. (FIG. 33) To display the audio files, they are sorted based upon one of their four attributes. They are as follow:

I- The Last Events:

This type of sorting is based upon the latest recorded conversation event, going on descending.

II- The Numbers or the Contact's names:

If numbers, the lowest number goes on top, if names, they are alphabetically sorted on the files (ascending). If there is more than one incident of recordings per day to a number or to a name, the name or the number will not be repeated, but it will be sorted along with its specifications such as date, time underneath the name or the number.

III- Time & Date Stamp of the Conversation: Based upon the exact time of the recorded conversation and upon the time and date of the files, they are sorted and displayed. In this type of arrangement, they can be sorted to start from a certain time, and then they go on from there after, or even it is possible to sort them in an array of time frame(s).

IV- Duration Time based on Recorded Conversation: In this type, they are sorted based upon their duration of recorded conversation in which the longest duration is displayed on top, going down on descending values.

[81] EEPROM Memory Data Bank: In the EEPROM resides the data in which certain names / numbers are automatically made active / inactive. Initially the data is downloaded from the Flash memory, and then the user will rewrite them. There also reside the formatted audio files which were recorded previously. The availability is made possible through "Quick Recording" menu. In the Flash memory resides the default data regarding the automatically recorded conversations of certain names / numbers.

[82] Targeted Market: For users whose occupation demand proves, and verbal reasoning, based on the words of which they have been talking to such as attorneys, private investigators, and detectives. For those who might be in desperate situations that might require a quick access to a Smartphone conversation recording. In the heat of a Smartphone conversation, trying to go for the menus and step by step accessing the recording options might lose a critical part of the dialog. It is also for users who are reluctant to be exposed to certain types of crowd. It is great for users who working with menu and sub menu details are mind exerting and laborious such as elderly and mentally impaired individuals. For users who might have to lend out the Smartphone while in a

conversation and wish to record it without the third party's acknowledgement and without the dialog recording Icon displayed (but along with a vibration alert).

[83] Quick Contact Saving @ a Finger Tip: Here is the third feature in its category allowing the user an instantaneous savings of numbers and their needed details just by pressing of the button once.

- The entire required details and specifications a user might have to save from a number
- The users physical geographic positioning registered when a number is saved
- The first 30 seconds of the first future conversation with the party whose number is just saved, will be recorded
- Ability to copy an unsaved number to the contact list

[84] There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow. The program basically is the management of the data bank allowing the user a quick and easy storage of a number(s) along with the needed specifications. Step by step execution of the program analyzed. The subroutine is to provide the users with the ability to save up, and when they are pointing to a specific number. The issues concerning the saving of the numbers include:

I- The unsaved numbers in the Call Histories (the Original History and Secondary Call History);

II- The punched in number at the dialing section, and

III- Any given number located within any types of text.

[85] To achieve the desired results and to provide the user with certain capabilities here said above, the key must be scanned accordingly. To accomplish them, the external interrupts are implemented. To differentiate the said capability from the other 2 abilities, the Extra Options key has in itself when in the mentioned positions, a variable flag is check marked so when compared in the interrupt subroutine, the desired function will be made available as shown in FIG. 34.

[86] The external driven interrupt subroutine is called upon by this subroutine. The subroutine then stores the information with regards to the number in accordance to the table (1) below:

Table-1

#	The List of the Details Regarding to the Saved Number	The Unsaved Numbers in the Call Histories	The Number Punched in the Dialling Section	Any Number Within Any Types of Text	Read Only
1	Caller's Name	The Callers are Labelled as Default1, Default2, Default3, and so on			
2	The Date of the Event	Time & Date Stamp in the Call Histories	Time & Date Stamp of the Punched-in Number	The Date on the Number Retrieved from the Text	✓
3	The Duration of the Conversation	Save the Duration of Conversation, if Any	----------		✓
4	Save Location	If connected to the internet or to A-GPS when a number is saved, the Geo Mapping of the number is also saved			✓
5	The First 30 Seconds of the 1st conversation is Recorded	The first 30 seconds of the first future conversation with the party whose number is saved will be recorded.			
6	Comment	The intended description to the number here is user defined.			

[87] The information is placed in a list designated for the saved numbers according to "Extra Options" method. The selected numbers and their relevant specifications per table above are made available for editing with the exception of those which are check marked "Read Only".

[88] To transfer the intended numbers from numbers in "Extra Options" list to the contact list, the user can take advantage of "Copy to Contacts" option. In doing so, only a copy of the contact's name and the phone number is transferred to the contact list. This way, there will be two independent copies. Only if the name of a number is edited in one copy, the change will never apply to the second copy.

[89] If a number is saved through this method, since there is a probability that the user doesn't identify the saved number, or among some familiar / similar numbers received, the user is uncertain to distinguish a number from another, the program will proceed with an automatic recording of the contact's first 30 seconds of the first call. The user has the opportunity to listen to the recording to make a definite identification of the contact. As a result, the 30 second call recording subroutine is executed on the future first time call, consequently a flag on the corresponding number is check marked so it does not proceed with the same task thereafter. The steps to the proceedings are as shown in the data flow diagram shown in FIG. 35.

[90] The numbers saved through "Extra Options" method is in a list which can be found in the corresponding menu. The list of the capabilities per FIG. 36 is analyzed. In the data bank, the detailed specifications of the numbers saved through "Extra Options" are stored.

[91] Targeted Market: For individuals who need to keep in touch with high numbers of people such as marketers and middlemen. For users who refuse to have their thoughts and focus interrupted because of trying to save a number. For those who often are not in the mood of saving numbers.

[92] Invalidations (QS/QC Red Button): A Red color hard key button assigned to implement Mr. AMIR's Smartphone designs. There are 3 attributes designated aiming for 3 separate distinct functions in 3 different situations.

[93] Quick Stopping or Quick Canceling: Of all the tasks in the group, this is the first attribute of the topic, capable of "Instantaneous Cancelation" of any transmission in progress for Packeted messages including Messages, Emails, or any sort of transmittable file including BlueTooth which is covered for the user up to and above 100%.

- A rapid and instantaneous cancelation of transmittable files such as, Messages, Emails, or any data file through BlueTooth.
- Once the button is pressed, Cancelation command executed through the shortest possible time and route.
- The data send "Cancel" possibility is increased to 102% (3%more)
- To select and edit either one of the LED Attributes
- To apply QS/QC, any kind of packeted messages are revisited up to 102%

[94] To execute the first of the QS/QC option, must evaluate the both parts to the program. There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow.

[95] The hardware execution of the program in sequence is originated by the generation of electrical signals via keys, the signals are received by the Button Driver, the signals are then decoded to Main MCU legible format, placed at the Button Driver output, and finally the Main MCU receives them. The detailed description of the process of the hardware is as follows: Electrical signals are generated and sent to the Main MCU by a Push Button Switch in SMD package.

[96] The Button Driver is to receive the electrical signals which were generated the button is pressed. The received signals are processed, and then sent to the I/O ports of the Main MCU to issue the appropriate commands to the CPU of the Smartphone.

[97] The main processing unit as a hardware is designated to communicate with the Button Driver and consequently to receive the commands in the forms of electrical signals at any given time. The designed software for this part includes the transmission control of the commands indicated in the introduction section in a way that the software is to remain in transmission alert waiting to receive the "Disconnect the Communication" command from the Main MCU.

[98] To begin with, all the sending functions as a part of transmissions must be defined. The simplest way to carry out the task primarily is to disable / inactivate the respective communication port. Once the port is disabled, no other data will ever leave the Smartphone and the reconnection of the communication from the incoming side (packeted message to Federal Telecommunication Dept. or the Bluetooth file to another Smartphone) will be cancelled. The software then at the second stage of execution will exit the transmission program. The details for how the program proceeds are indicated by the Data Flow Diagram as shown in FIG. 37.

[99] When the execution of transmission function is in process, the hard key primarily is scanned by external interrupt, and then the "disruption of communication" command is issued from the user side to the Main MCU. The details for how the program proceeds are indicated by the Data Flow Diagram as shown in FIG. 38.

[100] Presentation of Transmission Process Routine: To present the process of transmission on the basis of the subject, a progress bar is used. What is needed at this stage of the program is to display the steps of progress up to 103%, instead of 100%. The transmission cancelation ability of a message or a file goes on up to 102%. Based on that, an equation is formed to convert the efficiency from "0 to 100" to "0 to 103", and it is as indicated below:

$100 - 0 = 100$

$103 - 0 = 103$

$$\frac{103 \times \text{Real Progress}}{100}$$

[101] The subjects will include, Text messages SMS, MMS, Out-going Data (via BlueTooth) along with an Alert or combination of Alerts among which LED, Vibrate, Tone(s) are user selectable and editable as shown in FIG. 39.

[102] In Data Bank Memory, the data to setup the alert is stored. The default data is restored from the Flash memory and later on it will be replaced by the users preferred setup and personalization.

Every time when a "restore from Factory default" is run, then this data bank memory will be restored by the pre-stored Flash memory.

[103] In Flash Data Bank Memory the default data regarding the alert setup is stored. The default data includes, double blinking of the red LED, single and short vibration, and a short and predetermined tone.

[104] Targeted Market:

- This option is quite handy for those users who might have a sudden change of mind to cancel a transmission of file or data.
- For user who might require a cancelation capability above 100% (up to 102%).
- Easy access for elderly and ones whose abilities are limited or impaired.

[105] Quick Silencing & Quick Cleaning: Here is the second in the group of QS/QC abilities. A user who is "called" whether in his/her contact list or not and is not willing to accept the call, can simply "Silent" the call. The trace of the call too is removed automatically. Once the "Quick Silencing & Quick Cleaning" is applied to a caller, his/her phone number then will be whipped out of the "Secondary Call History" permanently, but will be placed under the "call received history" of this category. A QS/QC labeled caller info; however, will be registered clearly in the Original History and will be marked as QS/QC person.

- Quick and easy way to "Silent" an incoming call, and to purge "Missed Call" which was registered after the fact.
- Allows the Smartphone user in preventing disturbances, and mind occupying involvements which is likely in conversations with those the user reluctant to talk.
- Variety of Editable Alerts
- The ability to select and edit the "LED" option

There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow.

[106] The process begins when a call is received. The user presses the red QS/QC button, and the command is executed fully. The expected outcome of the software is to Silent the Smartphone instantly, and then to produce the Alert(s) whose attributes are personalized and selected. Finally when the call ends, the caller's name will be removed from the display, and the Missed Call message box will not be displayed. The caller and a comprehensive call details will be on file in "Original History" records, available when needed. A detailed explanation of each and every part

of the software is as follows: The scan of the key begins when a call is initiated. Once the user presses the key, the external interrupt driven subroutine is set in motion. As a part of other external interrupt driven subroutine, the executable functions for this program is called upon as shown in FIG 40.

I- The Alerts Before the Activation: When a "receive call" in the "External Interrupt Subroutine" is in progress one of the summoned instructions is "Disconnection Alert" and it is dispatched. The Alerts could include: Tone, Blinking LED, and the Vibration.

II- The Alerts After the Activation: After the key is pressed, the sound file in execution will be closed, the output to the LED and the Vibration will be made Inactive, and then the previously personalized alerts of the feature will be issued.

[107] Before the existence of this feature, the initial process and the steps for which a Missed Call display was that a variable Macro designated for the initial display of a "Missed Call" issued by the software. Upon the confirmation of the user, the Macro was check marked, and the software by performing a comparison command would notice the confirmation by the user, and then wouldn't place / show it on the display.

[108] By pressing the red key, the respective variable color of the program, with the confirmation of an observed "Missed Call", will be check marked automatically. The software evaluates the data, and the name, and the number of the caller will no longer displayed, once a disconnection of the call is completed as shown in FIG. 41.

[109] Through this program, to have access to contact details located in the Missed Call history, once the call has ended, it won't be placed in Secondary History, but will be kept as a received call and also it will be kept in the Original History as a number along with QS/QC marking. To diversify the QS/QC marked Missed Calls from those not marked, the program allocates a single Bit for the Missed Calls. As a default they are check marked "True", but once they are QS/QC marked at the receiving time, the "False" value will be given to them.

[110] The Issued Alerts once a hard key is pressed, with reference to the setup(s) made by the user, or the default setups executed on blinking LED, Vibrate, and Tones as shown in FIG. 42. The details to the setup menu of the section are as follow:

In EEPROM memory, the Alert data setting with regards to this capability is saved. The default data is downloaded from the existing Flash memory; it is only later when it is replaced by the

user's edits and settings. Every time when a "restore factory default" command is performed, it will be replaced by what there is in Flash memory over again.

In Flash memory, all the data for Alerts, on this capability are stored as a default setting. The default setting includes a "red LED Blinking twice", a single, short pulse of vibration, and a short, preset Tone.

[111] Targeted Market:

- For all the uses that are subject to receive disturbing calls. This will accommodate for them when the user doesn't want to respond, nor the user want to have the resulting missed call Alert.
- For all the uses who do not want to have any Missed Call trace, nor the future distractions afterward.

[112] Quick Selecting & Quick Cleaning: The third one of the 3, as a part of QS/QC capabilities, will conveniently and automatically allow the user to clean out the messages, at the moment of the reception coming from the preselected contacts / numbers without the need to see them at all.

- The ability to choose intended people whether they are in the phone book or not.
- Quite simple and convenient of use to select, regardless of how many times this option is accessed anything from 1 to 9 and up to indefinite number of times.
- Once the feature is activated, the user is not distracted, and ultimately the user is not disturbed by the intended caller(s).
- Messages marked QS/QC along with their precise details are stored in the Original History and available when accessed.

[113] There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow. To implement the third of the QS/QC capabilities from software standpoint which is based upon the management of a new ability for both saved callers and the unsaved callers, are defined in EEPROM memory. The value maintained (the given data) here represents the accumulative number of times for which an Alert should not be issued for that message (or to issue a user's pre-designated Alert) and that the entered message is logged into the Original History without the initial display. With regards to the function and to facilitate ability to refer to the function, from here on it is labeled, "Garbage Message". To further describe the details of the process, it is explained step by step and they are as follows. Once the caller is on an

individual's name from the contact list or on a phone number, the hard key scan is commenced, and re-executes every time it is accessed via external interrupt as shown in FIG. 43.

[114] Once the key is pressed on a contact / number, the process of the given numeric value is initiated in a consecutive incrimination of correct numbers as shown in FIG. 44.

[115] To assign a value to the function, the formulated cyclic program is as follows.

```
Garbage Message = (Garbage Message + 1)%11
if (Garbage Message == 10)        return (Unlimited)
else                              return (Garbage Message)
```

[116] With reference to the formula above, the value assigned to Garbage Message is incremented, by "1" unit, every time the key is pressed. The sequence of the foreseen value in the function will be returned to "0", once it reaches the 10^{th} time bench mark, and the cycle will go on. In the second line of program, instead of the number "10" the "Unlimited" value will be returned to the function call. In the third line of the program, if the given value equated to Garbage Message is from "0" to "9", the "Garbage Message" will be returned to the function call.

[117] In the Smartphone when a "message receive" is in progress; the value of the Garbage Message is checked. If greater than "0", the received message as intended should not result in the production of an Alert [or it should result in the activation of pre set Alert(s)]. It is then to be sent to the Original History only, but in the case of having the Garbage Message Unequal to Unlimited, then the value is decremented by "1" as shown in FIG. 45.

[118] After the activation of the function to the intended individuals in the contact list and to certain selected numbers, the associated messages along with their attributes and details (excluding the text / content) are accessible from the Original History. The numbers in A- two Vectors and B- where they are displayed are at two locations. They are as follow.

A. The Two Numeric Vectors Include:

1. The quantity of the messages marked QS/QC,
2. The total quantity of the messages that must be marked QS/QC

N of X

N; The Number (quantity) of the messages marked QS/QC

X; The total Number (quantity) of the messages that must be marked QS/QC

B. The Two Places Where They are Displayed Include:

1. The contact list QS/QC marked

2. The Original History list (excluding the text / content) as shown in FIG. 46

[119] The assigned data with regards to Alert setups and also the selection of disposable message quantity are maintained in EEPROM memory. The setup includes the LED (Blinking Light), Vibrate, & Tones. The data is retrieved from the Flash as default data, and it is later when the users have the option to replace them with their own edited and selected settings. Every time the factory default setting command is executed, the setup will be retrieved back from Flash memory.

[120] The Alert settings as well as the quantity of the disposable messages are set as default data In the Flash memory. The default set up includes the receipt of the messages with no indicating Alert and the quantity of the disposable messages are zero.

[121] Targeted Market:

- For users who simply care to have high restriction on receiving any kind of messages from certain known numbers, neither advertisement, nor certain prefix numbers.
- For users who might be victim of abuse.
- For users who wish not to receive any message, neither from saved, nor from unsaved contacts.

[122] The inner side of the Display Module face is mostly taken by a large Multi-touch display, as it was declared as the primary display. Over the upper edge and also over the lower edge there are two protruded (Tongue) mechanism. Over onto the upper Tongue and in the middle is the second Ear-set assembly. There are two stacked up rows of each 7 Doted LEDs adding up to 14 on each sides of the Ear-set assembly totaling to 28 Dots. This is the second set of LEDs which is designated to this side of the module only.

[123] Below the display and over onto the lower protruded edge (the lower Tongue) is another Microphone set. Looking around the sides and only onto the right side, there are two Loudspeakers occupying the entire right hand side wall. The two are separated by the pivotal joint in the center.

[124] It contains the main PCB inside and also all the exterior components that are described below. To have access to QWERTY Keyboard and the remaining controls of the Main Module, the user must unfold the Smartphone first. It opens on a single hinge that is connected from one side to the Main (base) Module and from the other side to the Display Module. The connecting joint is placed in the center, in a way that not only allows the unfolding, but also the pivotal joint allows the rotation of the Display Module as well. A Loudspeaker of about 1cm in width and about 7cm in length has been placed on the very upper edge of the Main Module.

[125] Immediately below the Loudspeaker and center aligned is a full QWERTY keyboard. There is more to "AMIR Designs Ltd's" QWERTY keyboard than the typical ones. To the top row of "AMIR Designs Ltd's" full QWERTY keyboard, there are 12 function keys marked as F1 to F12. Other additions include "SP" button near Carriage return. To the left and slightly lower is the second set of QS/QC in red and rectangular. Further to the right are 4 "Q" buttons (abbreviated for Quick buttons) marked as Q1 to Q4. They are to assign certain tasks depending on the user's needs and preference. A Ball track mouse sitting below the center.

[126] All the way to the lower left of the keyboard, the 3rd from the left is a special key designated to directly connect to "AMIR Designs Ltd's" website allowing the user an immediate access to the hyperlink. The key is specifically decorated with "AMIR Designs Ltd's" emblem.

[127] On the left side of the QWERTY keys, there are the quad directional arrows of Arcade group. On the right hand side of QWERTY keys are "1, 2, 3, and 4" number buttons. Another designation of the number "1" button is to perform as "Back", and the "3" button is to perform as "C". Near the bottom center there are two rectangular orange buttons. The one on the left is the Reset and on the right is the Start buttons of Arcade group.

[128] Special Paste (SP): When exposed to certain issues, conversations, and even thinking about some similar subjects, it is inevitable to reach a point where a mix up of issues creates confusion and hesitance. A program to remedy such situation, should the need arises; the user can pick and rewrite a character(s) right off a sentence efficiently and conveniently. This is how it is done. The entire sentence along with the characters within are selected and copied under. The user then can replace the desired characters which were replaced by dots within the brackets with what he/she desires to.

- When presenting someone with a text and are in doubt about the accuracy of the text, or have to recompose another new text
- To rewrite another text that has only a character(s) different with the last one.
- The ability to rewrite a text as many times as desired
- The use and presence of the SP key both in the hard and soft keys
- Compatibility with all the word processing applications

[129] There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow. The hardware execution of the design begins with the

generation of electrical signals by pressing of the key. A designated Button Driver receives the signals, and when they are manipulated and converted to decodable signals, and then they are placed at the output of the button driver to transmit to the Main MCU. Further description to how hardware proceeds in details are as follow.

[130] Electrical signals are generated and sent to the Main MCU by a Push Button Switch in SMD package. The Button Driver is to receive the electrical signals which were generated the button is pressed. The received signals are processed, and then sent to the I/O ports of the Main MCU to issue the appropriate commands to the CPU of the Smartphone. The main processing unit as a hardware is designated to communicate with the Button Driver and consequently to receive the commands in the forms of electrical signals at any given time.

[131] The software execution of the design follows a pattern similar to the typical "Copy & Paste" function. The sequence to the program execution is to first reserve some space in the RAM for a temporary storage of the text. Then, is to come up with methods to edit the text and to create a transitional environment to actually perform the user's desired editing. Ultimately, it is to take delivery of the intended output. The step by step of the procedure is explained in details and is as follows:

[132] Since the function applies to both hard key and also the soft key, the scanning function will be described on both of them. Once activating any word processor application (The environment in which one can type) the scanning of the key will commence by activation of an external driven interrupts. Once the key is pressed the external interrupt subroutine command call is executed as shown in FIG. 47.

[133] Over the touch screen where the soft key resides, certain specifications must be assigned both to the key and the icon. When the key is pressed, the respective program event and consequently the executable function subroutine will be called upon.

[134] To maintain the editable block of text, it has to be "Selected" first. When the SP key is pressed, the entire phrase from where the first character has begun, to where it is marked with a point (dot) will be registered. The address to the beginning and the end address of the selected text also will be registered, meanwhile if another text block is selected and the SP key pressed, the far end address of total text will be transferred to the end piece of the secondly selected text block. This is how all other text blocks are selected too. The resulting output of the subroutine will include

two addresses to the beginnings and the end totals also the addresses of beginnings and the ends of the selected text blocks.

[135] In case and if the user chooses to repress the SP key for the next phrase, the address from the beginning to the end of the stored data will be saved and transferred to the RAM. In the RAM where the starts and the ends of the selected texts are, there will be placed '['and ']' bracket characters. Every single character(s) of the text will be replaced by a single"." point(s). The assigned value to every dot by default is "True". Ultimately the data from the RAM will appear on the display and the value of the main text for selected text(s) will always remain to be "True". As an example, a sample of the output format is as shown in FIG. 48.

[136] Per example 2, the program takes the unrefined text with blank intervals which originally was selected, and then the users can insert their own desired character(s) where they were marked with dots. This is done by moving the cursor over the dots, and by entering the first desired character, the dots will disappear. Eventually no matter how many the characters might be, they all will be displayed with "underline" markings. The unselected remaining parts of the text(s) are still editable. Some examples of the resulting outputted texts are shown in FIG. 48.

[137] In example 3, the user shows jack's phone numbers. In the second phrase the applied changes to the digits of the Fax which are the three digits of it as displayed are to take measure to express a different message similar to the first one shown in FIG. 48.

[138] In example 4, the user is replacing 4 selected character sets with another 4 intended sets, without having to rewrite the entire address there in, to simply implement "whether these numbers are correct" underneath shown in FIG. 48.

[139] In example 5, similar to the 4th one, instead of repeating the extra characters, implementing the said capability, the user has simply tried to type certain intended characters. The caller "Julia" is another example of how the second address typed is done with a minimal efforts. In example 5, the user is unsure about the extension and or the end pieces of an internet address, and simply attempts to propose 4 possible corrective options shown in FIG. 49.

[140] Targeted Market: For users who often in their communication have to deal with too many confusing figures causing doubts, and forgetfulness with regards to objects, statistics, and numbers. For users who have to retype similarly formatted texts over and over again, could do with least numbers of characters typed at the shortest possible time allowing a greater focus on

the subject of their concern. For users who wish to evade answering to all the details, respond equivocally, and pretentious to forgetfulness.

[141] The two grooves implemented along the length both on the left and right hand sides of the Main Module are designated to receive the protruded edge allocated onto the Display Module to reinforce the integrity of the two when folded. The two "Protruded edges" and the two "Grooves" function like a Tongue & Groove mechanism.

[142] Around the side walls, starting from the bottom is the partial view of R1, R2 buttons of Arcade group, then is the first Band slot and near the left corner is ST switch. On the left side wall starting from the lower end is the Headphone plug, to the center are Volume adjusters, and half way before the corner is Screen Off/On.

[143] Screen Off/On: As a part of Mr. AMIR's Smartphone design a hard key in black color has been implemented. There are 2 attributes designated aiming for 2 separate distinct functions in 2 different situations.

[144] Screen Off, Silent & Reverse (FIG. 50): This is the first feature in its category. Just in case if there is going to be a receiving call or a message, pressing the button will black-out all the alert outputs from the Smartphone such as LED, Vibration, Loud-speaker, and the Display, but the actual receiving will go on. Once the same button is repressed, all the outputs as mentioned above will be resume operating as normal.

- Applicable while in process of receiving a call or a message
- An instantaneous disruption of the hardware to present the alerts specifically the display
- This will optimize the battery power
- This will cloak the operation of the Smartphone, and prevents anyone from having their attention sidetracked to a call or a message as if there is nothing received.

[145] There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow. The hardware implementation of the design begins with the generation of electrical signals by the key. A button driver will then receive the signals and by converting them to appropriate codes, will place them at the output of the button driver and finally transmitted to the Main MCU. The operation process in details is as follows: To generate the electronic signals and to transmit them to the Main MCU a push button switch in SMD package is used. This is to receive the electrical signals, generated by the switch as a result of the user pressing the key. The received signals are then processed by the driver and sent to the I/O ports

of the Main MCU. The appropriate commands then issued to the CPU of the Smartphone. The main MCU of the Smartphone is the hardware designated to maintain the communication with the Button Driver, so that it can receive the commands in the form of electronic signals at any given time.

[146] The program is to operate as an Off/On switch designated to control either one of the hardware devices such as LED, Vibration mechanism, Display, and the Loud-speaker. The software controls them when they are to have inputs. The step by step details are as follow: The key scan is made possible by the external driven interrupt program. A user pressed key will execute the interrupt driven subroutine command, and as a part of its performance, the needed functions of the subroutine are called upon as shown in FIG. 51.

[147] When the key is pressed, the interrupt subroutine module of the program will be called upon to determine to check the functional status of the Smartphone at the moment it is. If the Smartphone is in the process of receiving a call or a message, then the value "True" will be given to the called function.

[148] Once the output to the function has identified the status as being "True", then the program is called upon. The program is designed to swap the flag, thus the On / Off status as well. The process to the program is as shown by the Data Flow Diagram shown in FIG. 38.

[149] Once the flag status has been swapped, the program will execute the **Off/On** task. Upon a positive identification of the flag being "False", the hardware components such as LED, Vibration mechanism, Display, and the Loud-speaker temporarily will be Disabled, and if the status is swapped to "True", then all the hardware components will be Enabled again.

[150] Targeted Market:

- For users who are reluctant to receive certain call(s) or message(s), before an audience, and wish to be discreet, and even the display will be switched to sleep mode for a greater discretion.
- Since the received calls and messages are accompanied with certain sounds, will suite certain users who wish to remain anonymous and not to attract the attention of the present audience.
- For users whose Smartphone battery power is depleted and along with avoiding certain calls (but not rejecting) and messages, desire to optimize on the remaining battery power left.

[151] Any Other Receivables/Display Will be Off & Vice versa: This is the second feature in its category. While a call is in progress and the user chooses to press and hold the button for 2 seconds, all the hardware outputs (LED, Vibration mechanism, Loud-speaker, Display) and their alerts including messages are temporarily but totally disabled without any manifestation. This applies only to the duration of the conversation; therefore, the function is reversed and the hardware is back to normal. The trace to the parallel call(s) and received messages are not found anywhere else but just in the Original History only. The button repressed again, will disable the function on the same call.

- Applicable to any and all the future incoming calls and messages
- The ability to cloak the received calls and messages, even if the Smartphone is handed out to another person while in the middle of a phone conversation.
- The ability to accomplish the same task either by the display of an icon or in a totally secretive way by vibration.
- Allows the user to focus on the on-going call

[152] There are two parts to execute the program. Each one of the Hardware / Software is analyzed separately and they are as follow. From a software standpoint the program is to append a condition and it is to check, once the key is pressed and if there is any incoming call or message while a conversion is in progress. The step by step details are as follow. The scan of the hard key is done by an external driven interrupts. If the key is pressed while a conversation is in progress, then the scan will prolong for 2 full seconds. If the key has been continuously in pressed position for the 2 seconds, and the Flag is set to "no alert to receivables" and then it will swap. The steps to the process are shown in the data flow diagram shown in FIG. 52.

[153] By adding a condition, all the incoming communication is filtered (with the exception of the call in progress). With respect to the result of the condition an appropriate value is given to the flag to whether proceed with the Filtration or Not. The process in which the transition is executed is shown in the data flow diagram shown in FIG. 53.

[154] There are two methods to alert the user whether the feature is enabled or disabled. When the Black key is pressed, the feature is activated, then the menu defines whether to choose the Iconic indicator to display enabled feature, or instead, choose and then perform a single vibration and to indicate the feature enabled or disabled. The maximum vibration time length is 0.5 second as shown in FIG. 54.

[155] Targeted Market:

- Some users who have to hand out their Smartphone to another individual(s) occasionally, and are concerned about the privacy of other incoming calls and messages.
- For users who tend to have extremely important calls, and that they wish not be distracted nor interrupted while on those special calls such as conversations with high ranking politicians, scientist, emergency medical doctors, and even highly valued emotional conversations.
- For users who hold highly sensitive and formal positions and in their official phone conversations, they are obligated to uphold the highest level of respect.

[156] The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

[157] With respect to the above description, it is to be realized that the optimum relationships for the parts of the invention in regard to size, shape, form, materials, function and manner of operation, assembly and use are deemed readily apparent and obvious to those skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

WHAT IS CLAIMED IS:

1) A smartphone having a display module and a main module connected by a pivotal joint allowing to fold/unfold of 0 to 180 swivel motion, wherein said display module comprises of a primary display and a secondary display, said mobile device comprising:
   a) a plurality of LEDs on said display module that blink in a spectrum of selectable colors, wherein a set of blinking patterns are predefined to notify a plurality of tasks;
   b) a merged dialing keypad having selectable colors;
   c) a pair of buttons each assigned for a specific task and are located on said main module for easy access and optimized battery power consumption;
   d) an extra option button to capturing film and photo, record at covert mode, and save contact information, by pressing the extra option button,
   e) a pair of invalidation buttons each to stop or cancel a process, silence the mobile device and delete a piece of data, and select and clear a piece of data,
   f) a special-paste option for editing a text, and
   g) a display off/on button to turn off and on the display module of the mobile device.
2) The smartphone of the claim 1, wherein said plurality of tasks comprising:
   i) a notification to show a call result immediately after a connection;
   ii) a notification to show missed call;
   iii) a notification to show incoming messages;
   iv) a notification to show receiving calls;
   v) a notification to show outgoing calls, and
   vi) a notification to show a plurality of pre-designated alerts.
3) The smartphone of the claim 2, wherein said pre-designated alerts is selected from the groups consisting of a clock alarm and a battery alert.
4) The smartphone of the claim 1, wherein said merged dialing keypad comprises of two adjacent buttons which even number keys are slightly higher than odd number keys to provide easily accessed feature.

5) The smartphone of the claim 1, wherein said merged dialing keypad having colour personalization.

6) The smartphone of the claim 1, wherein said process is a transmission in progress for a text message, a multimedia message, an email, or a transmittable file by Bluetooth.

7) The smartphone of the claim 1, wherein said plurality of LEDs comprise of:

a) a first array of LEDs on the secondary display that consists of seven individual LEDs;

b) a second array of LEDs on the primary display that consists of two sets of 14 LEDs each arrayed on each side of a secondary ear-set assembly,

wherein said plurality of LEDs notify a plurality of tasks for the subjects of receiving calls, outgoing calls, missed calls and a pre-designated alert subject, and wherein blinking is assigned each time up to 10 blinks, and maximum time length of 5 seconds from 1 to 4 sets of subjects including line busy; rejected; line free tone, and upon ringing.

8) The smartphone of the claim 1, wherein said merged dialing keypad starts in a harmonious way from number 2, followed by number 4, and finally number 6 in a first row, a second row consists of key numbers 1,3 and 5, the second row is attached by the following greater sequence from the first row corner to corner, same positionings apply to key numbers 8,0 and pound key with respect to key numbers 2,4 and 6, and a fourth row for numbers 7,9 and Asterisk key same as the second row.

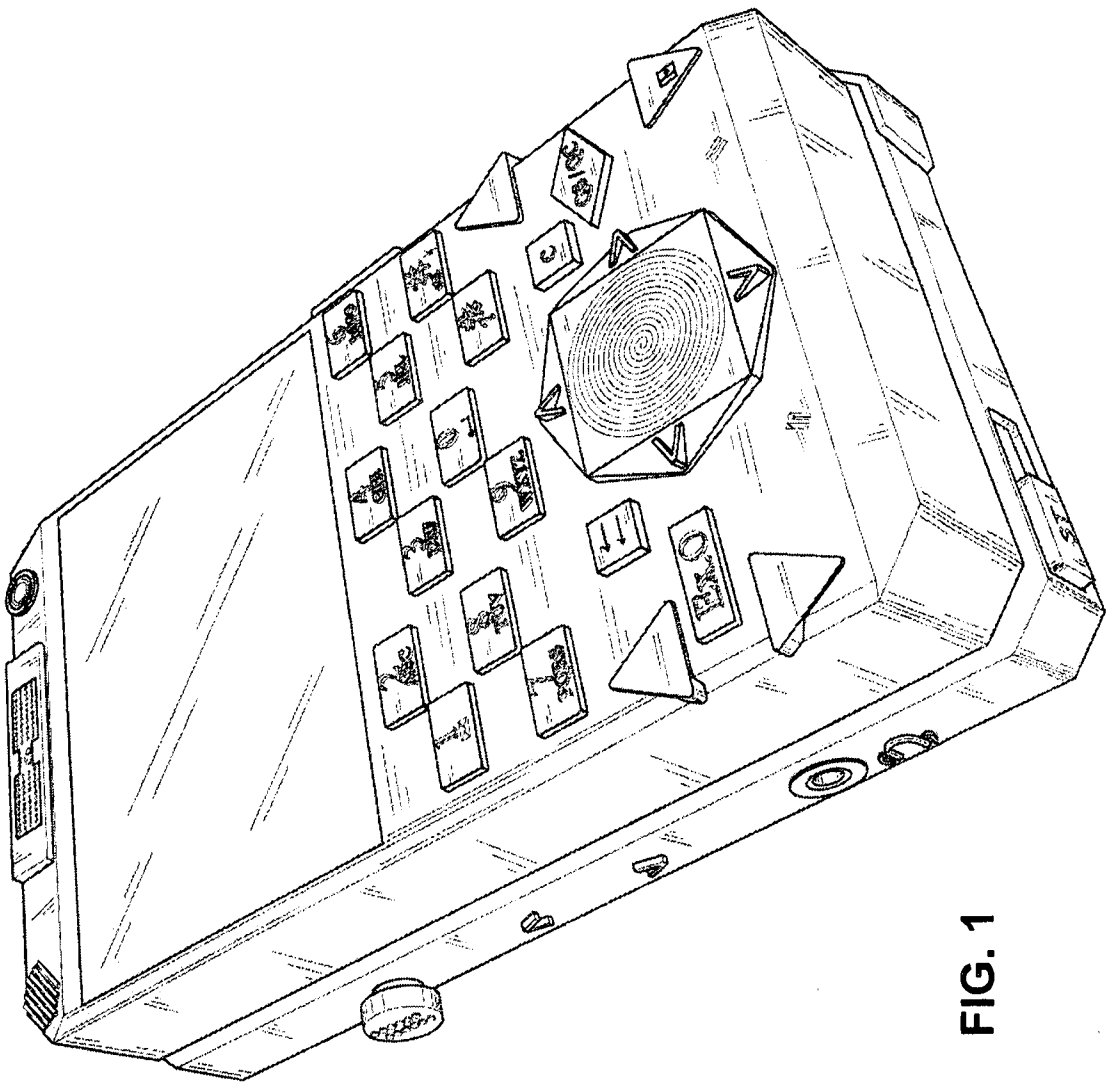


FIG. 1

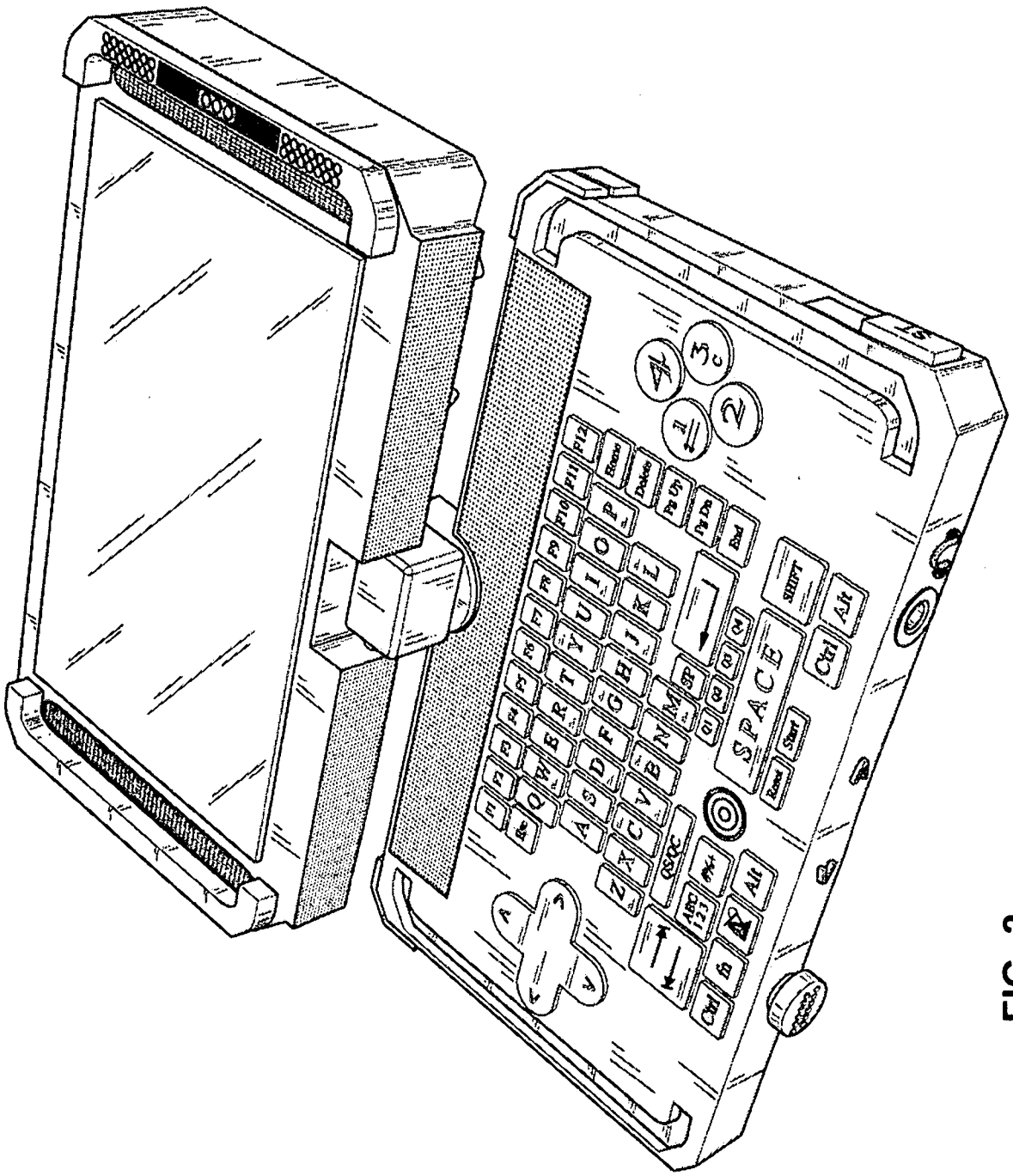


FIG. 2

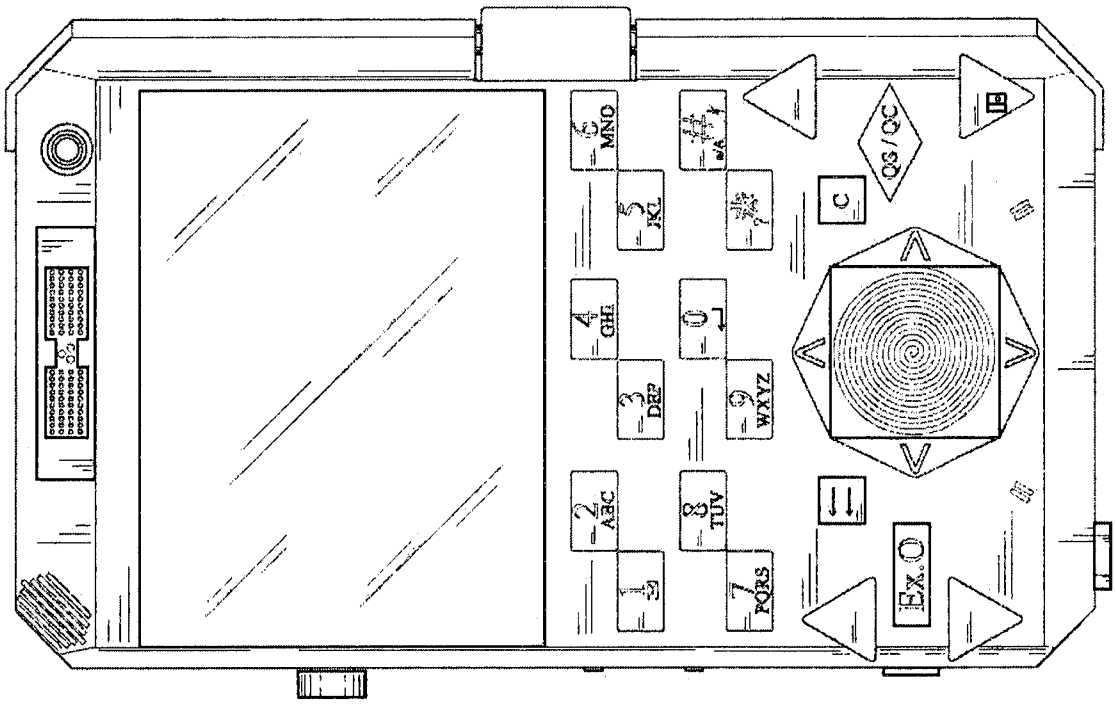


FIG. 3

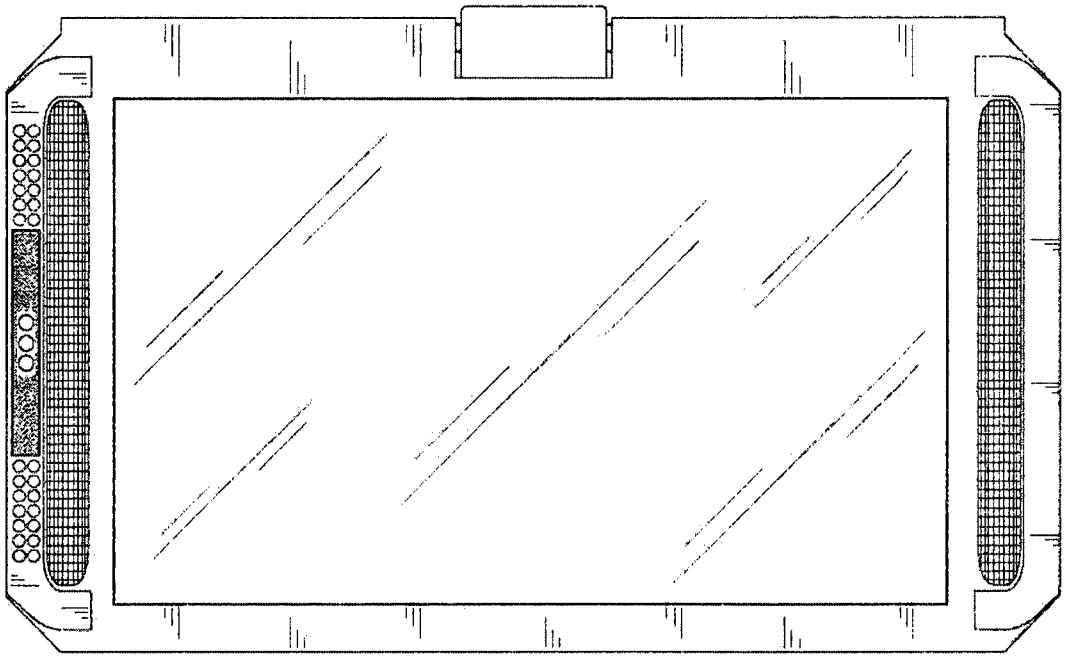


FIG. 4

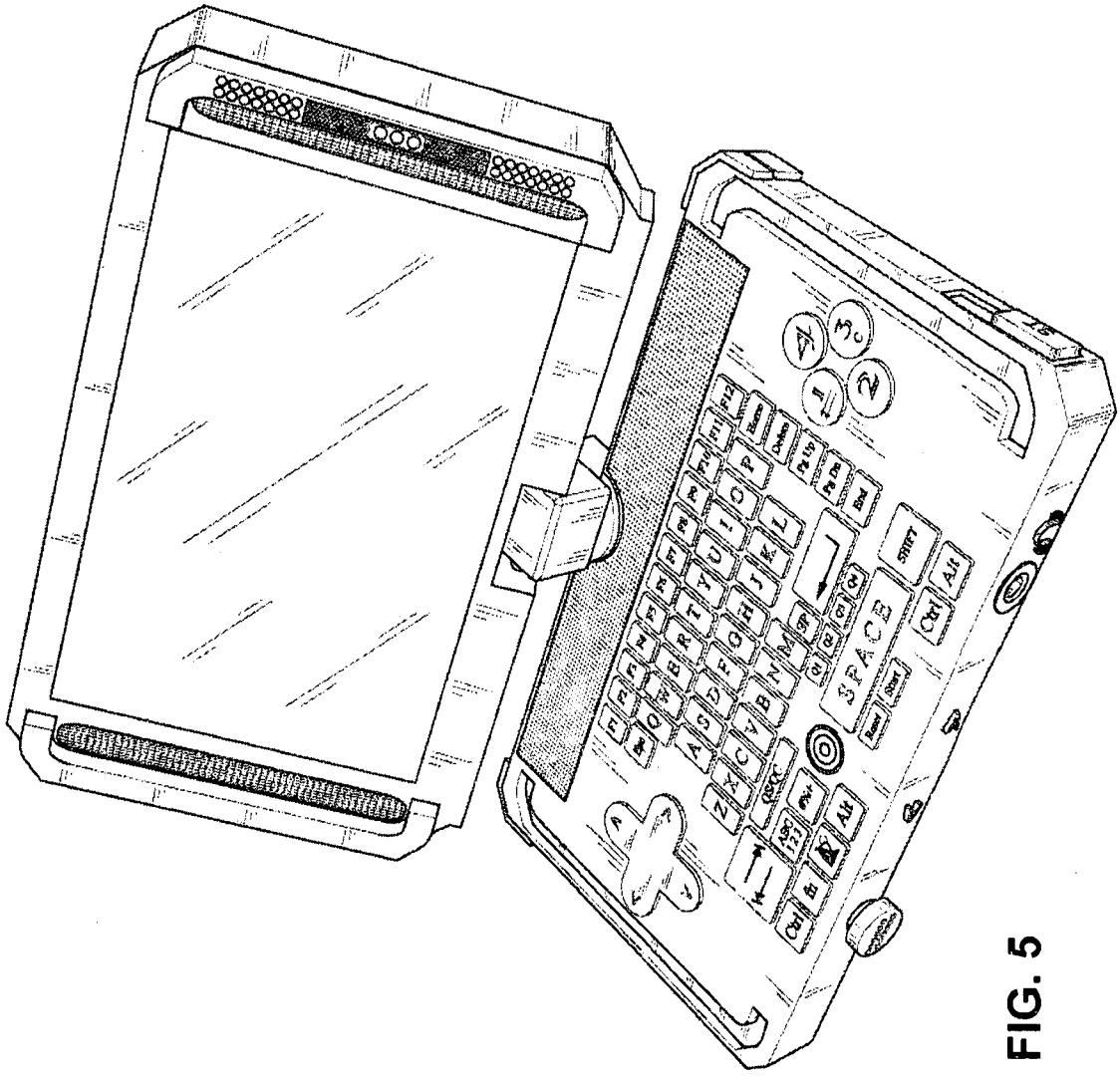


FIG. 5

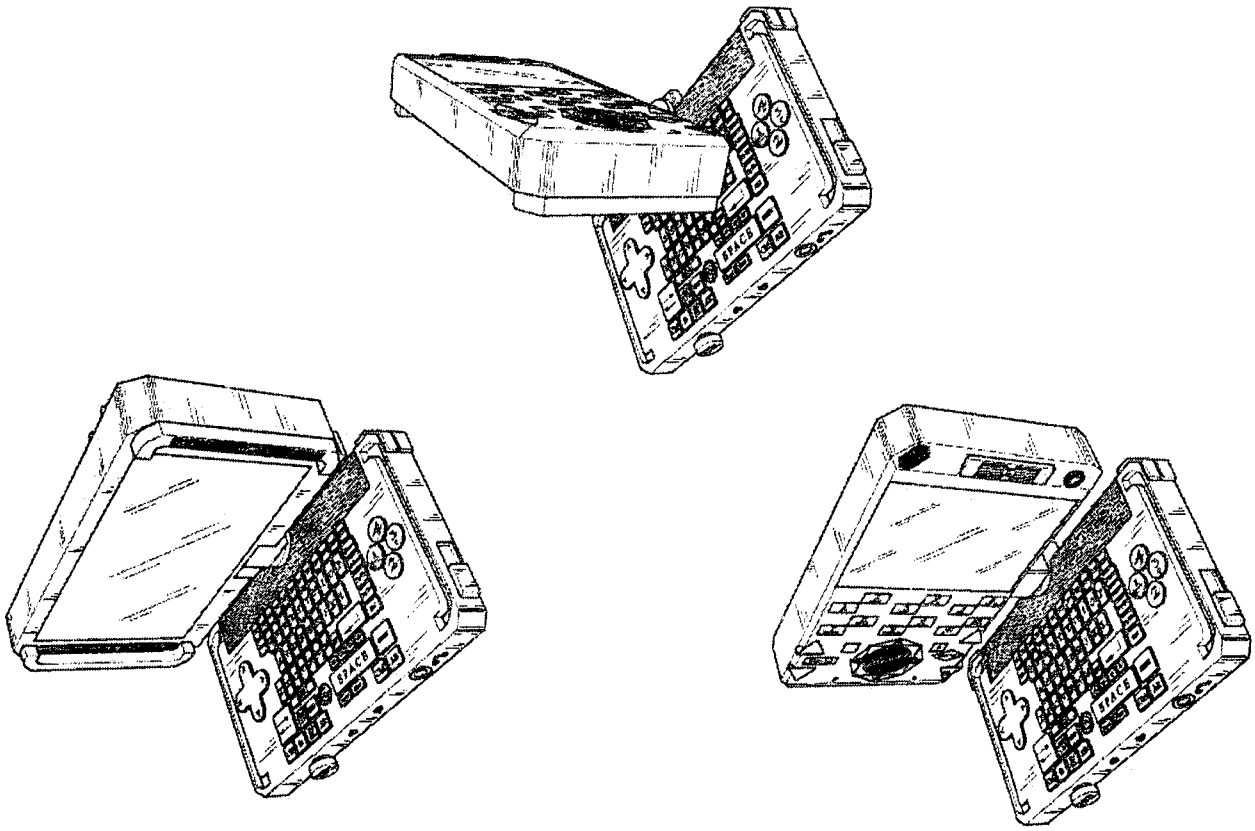


FIG. 6

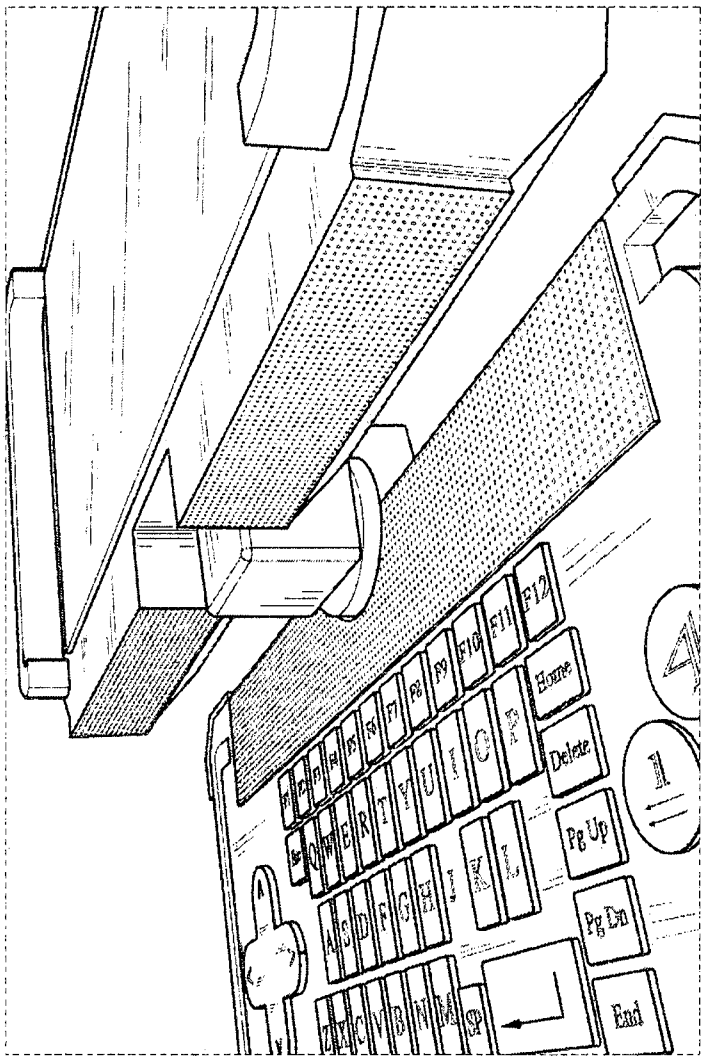
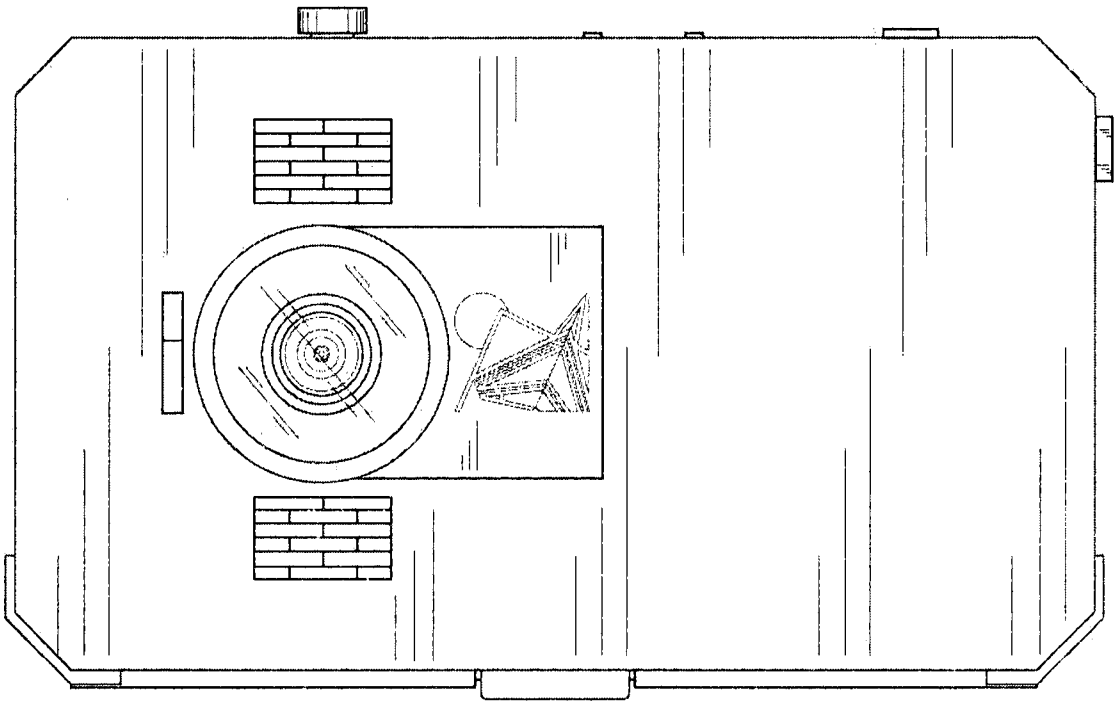


FIG. 7

FIG. 8



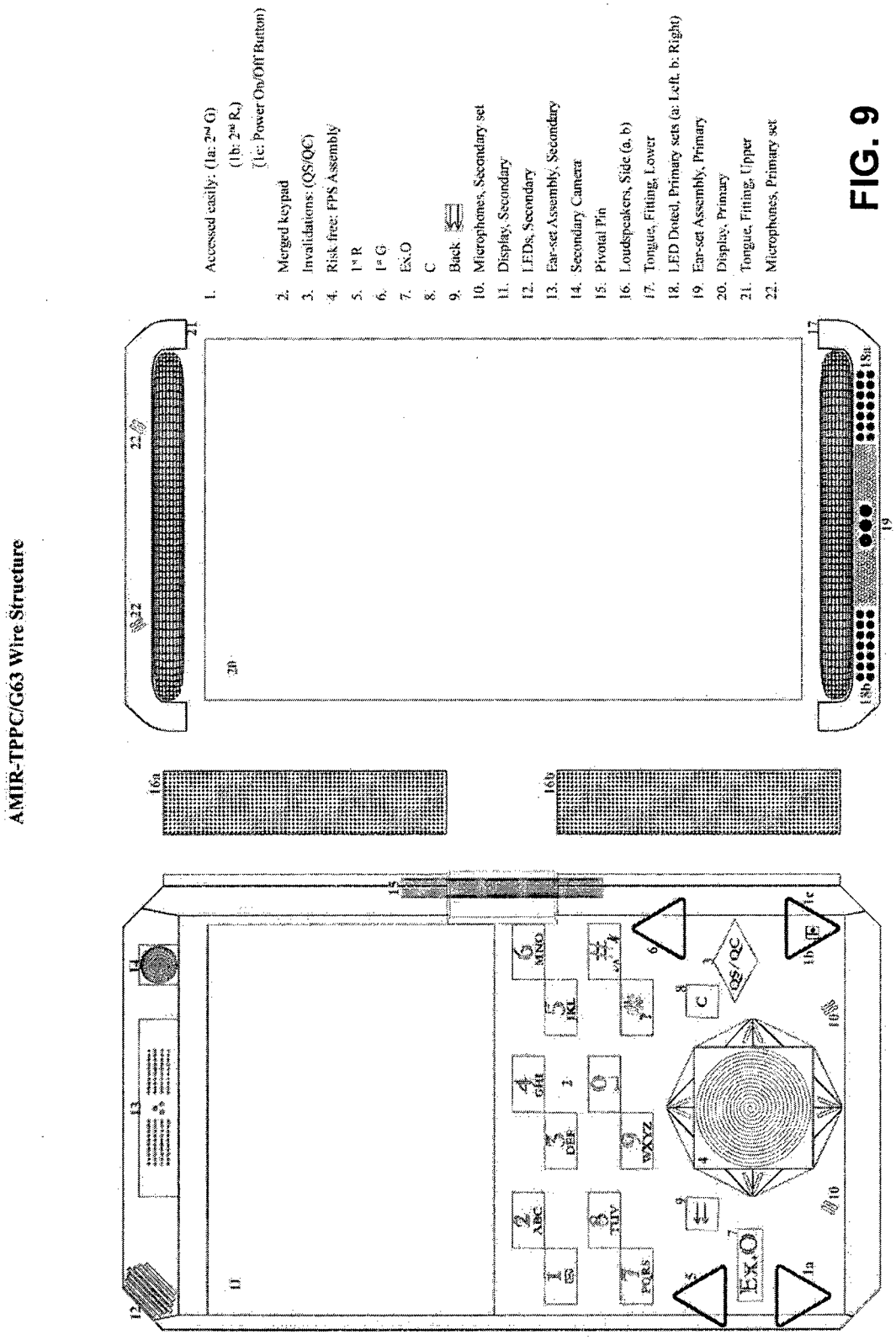

AMIR-TPPC/G63 Wire Structure
1. Accessed easily: (1a: 2nd G)
(1b: 2nd R,)
(1c: Power On/Off Button)
2. Merged keypad
3. Invalidations: (QS/QC)
4. Risk free: FPS Assembly
5. 1st R
6. 1st G
7. EX.O
8. C
9. Back
10. Microphones, Secondary set
11. Display, Secondary
12. LEDs, Secondary
13. Ear-set Assembly, Secondary
14. Secondary Camera
15. Pivotal Pin
16. Loudspeakers, Side (a, b)
17. Tongue, Fitting, Lower
18. LED Doted, Primary sets (a: Left, b: Right)
19. Ear-set Assembly, Primary
20. Display, Primary
21. Tongue, Fitting, Upper
22. Microphones, Primary set

FIG. 9

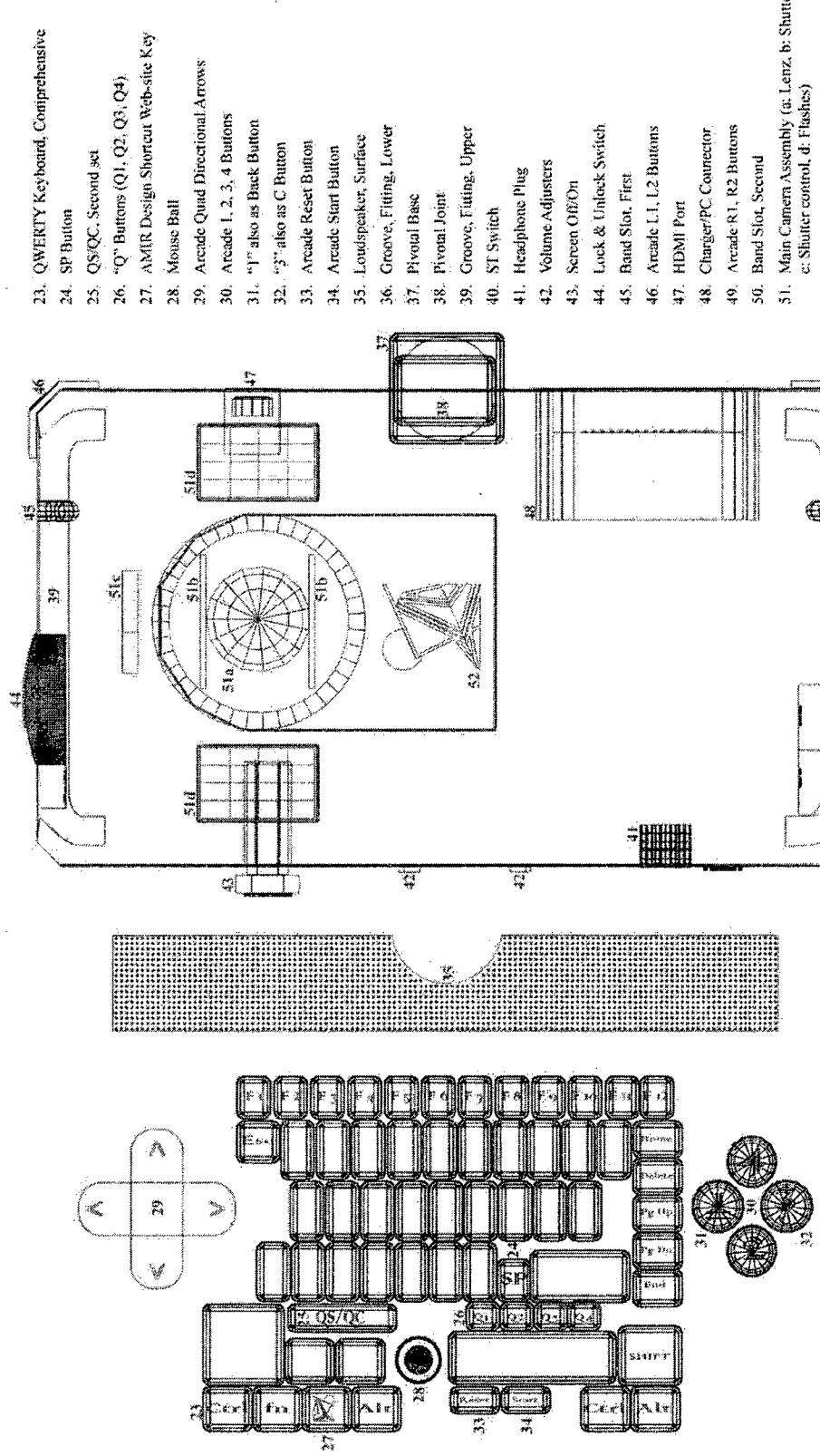

23. QWERTY Keyboard, Comprehensive
24. SP Button
25. QS/QC, Second set
26. "Q" Buttons (Q1, Q2, Q3, Q4)
27. AMIR Design Shortcut Web-site Key
28. Mouse Ball
29. Arcade Quad Directional Arrows
30. Arcade 1, 2, 3, 4 Buttons
31. "1" also as Back Button
32. "3" also as C Button
33. Arcade Reset Button
34. Arcade Start Button
35. Loudspeaker, Surface
36. Groove, Fitting, Lower
37. Pivotal Base
38. Pivotal Joint
39. Groove, Fitting, Upper
40. ST Switch
41. Headphone Plug
42. Volume Adjusters
43. Screen Off/On
44. Lock & Unlock Switch
45. Band Slot, First
46. Arcade L1, L2 Buttons
47. HDMI Port
48. Charger/PC Connector
49. Arcade R1, R2 Buttons
50. Band Slot, Second
51. Main Camera Assembly (a: Lenz, b: Shutters, c: Shutter control, d: Flashes)
52. The Logo
SP
QS/QC
Ctrl
Fn
Alt
Shift

FIG. 10

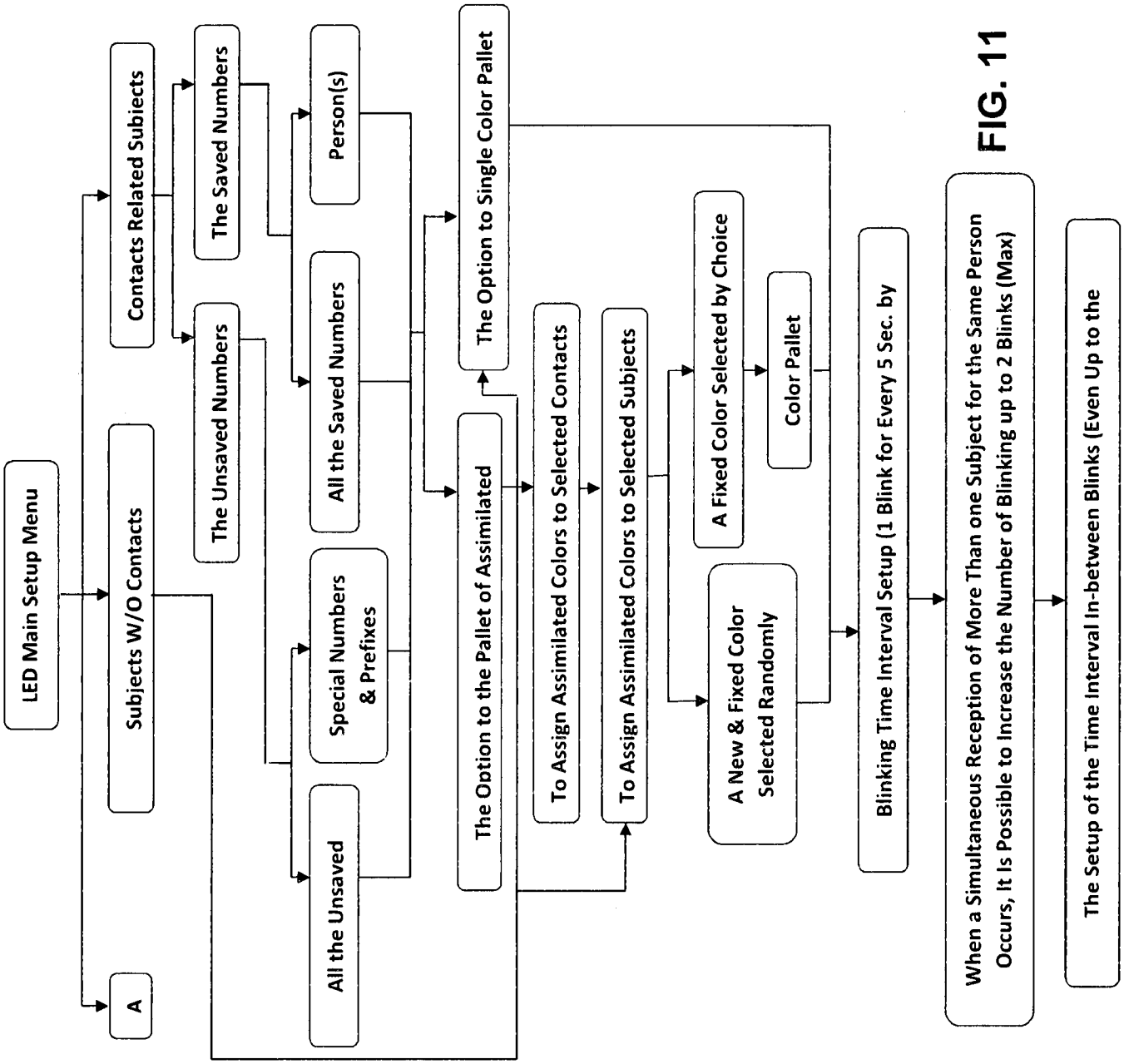

LED Main Setup Menu
A
Subjects W/O Contacts
Contacts Related Subjects
The Unsaved Numbers
The Saved Numbers
All the Unsaved
Special Numbers & Prefixes
All the Saved Numbers
Person(s)
The Option to the Pallet of Assimilated
The Option to Single Color Pallet
To Assign Assimilated Colors to Selected Contacts
To Assign Assimilated Colors to Selected Subjects
A New & Fixed Color Selected Randomly
A Fixed Color Selected by Choice
Color Pallet
Blinking Time Interval Setup (1 Blink for Every 5 Sec. by
When a Simultaneous Reception of More Than one Subject for the Same Person Occurs, It Is Possible to Increase the Number of Blinking up to 2 Blinks (Max)
The Setup of the Time Interval In-between Blinks (Even Up to the

FIG. 11

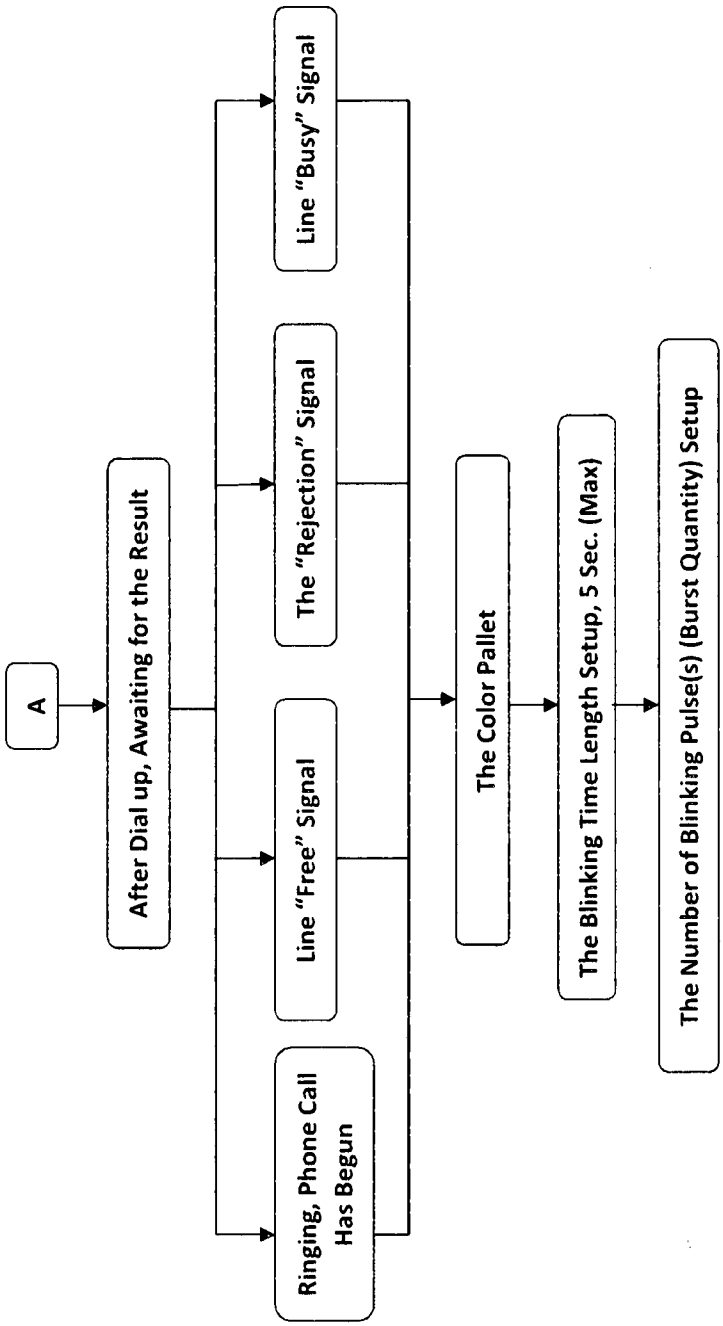

A
After Dial up, Awaiting for the Result
Ringing, Phone Call Has Begun
Line "Free" Signal
The "Rejection" Signal
Line "Busy" Signal
The Color Pallet
The Blinking Time Length Setup, 5 Sec. (Max)
The Number of Blinking Pulse(s) (Burst Quantity) Setup

FIG. 12

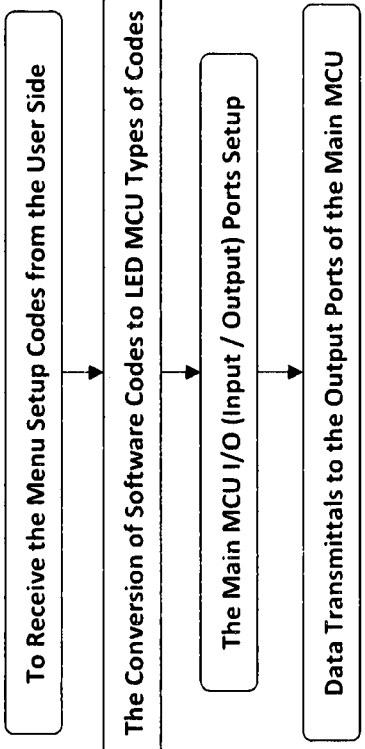

To Receive the Menu Setup Codes from the User Side
The Conversion of Software Codes to LED MCU Types of Codes
The Main MCU I/O (Input / Output) Ports Setup
Data Transmittals to the Output Ports of the Main MCU

FIG. 13

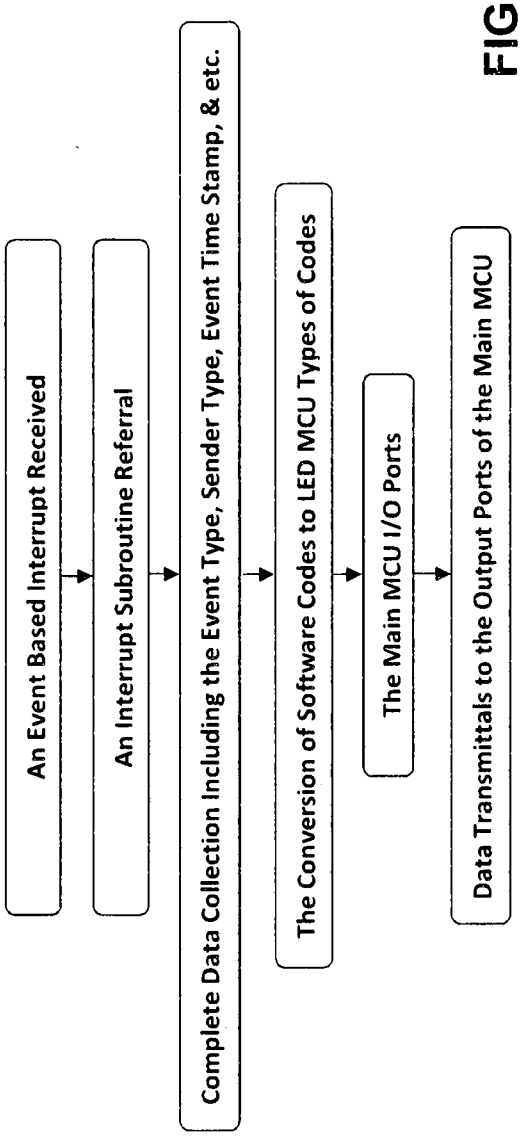

An Event Based Interrupt Received
An Interrupt Subroutine Referral
Complete Data Collection Including the Event Type, Sender Type, Event Time Stamp, & etc.
The Conversion of Software Codes to LED MCU Types of Codes
The Main MCU I/O Ports
Data Transmittals to the Output Ports of the Main MCU

FIG. 14

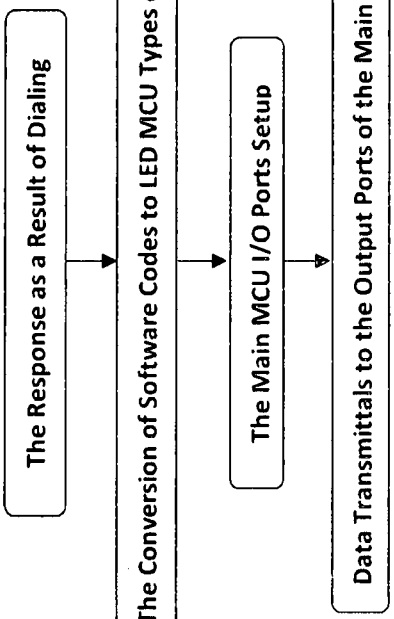

The Response as a Result of Dialing
The Conversion of Software Codes to LED MCU Types of Codes
The Main MCU I/O Ports Setup
Data Transmittals to the Output Ports of the Main MCU

FIG. 15

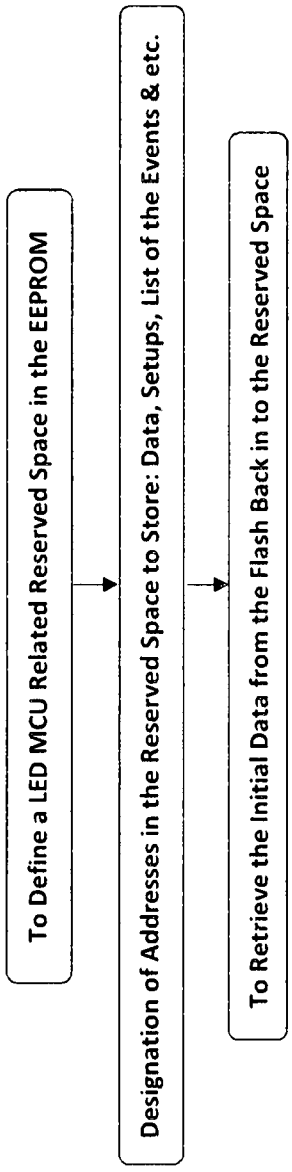

To Define a LED MCU Related Reserved Space in the EEPROM
Designation of Addresses in the Reserved Space to Store: Data, Setups, List of the Events & etc.
To Retrieve the Initial Data from the Flash Back in to the Reserved Space

FIG. 16

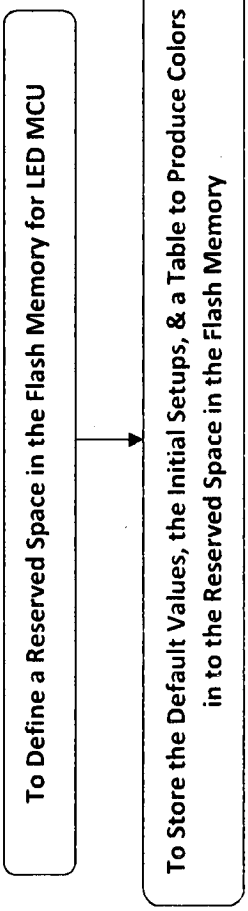

To Define a Reserved Space in the Flash Memory for LED MCU
To Store the Default Values, the Initial Setups, & a Table to Produce Colors in to the Reserved Space in the Flash Memory

FIG. 17

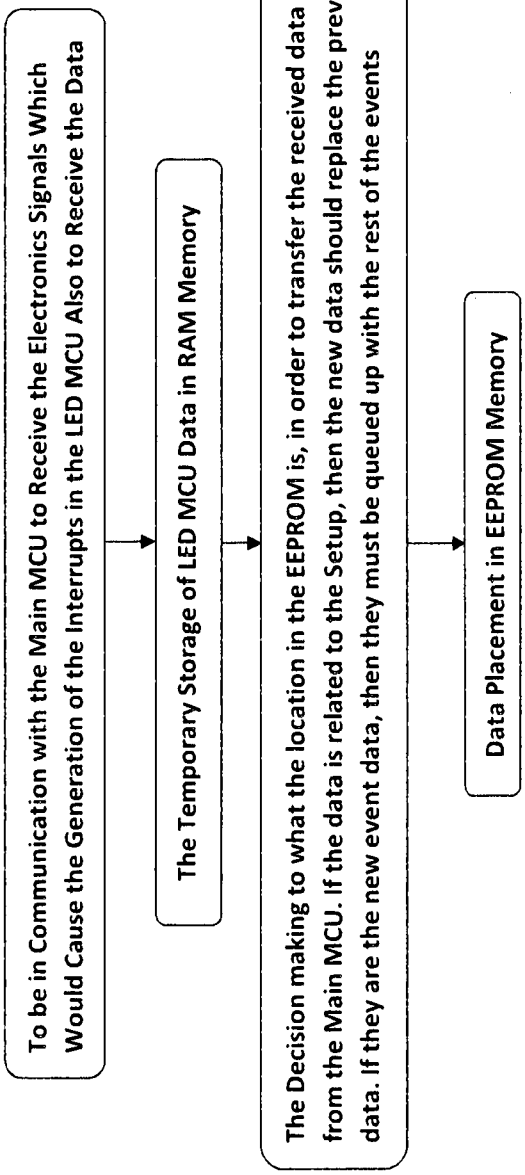

To be in Communication with the Main MCU to Receive the Electronics Signals Which Would Cause the Generation of the Interrupts in the LED MCU Also to Receive the Data
The Temporary Storage of LED MCU Data in RAM Memory
The Decision making to what the location in the EEPROM is, in order to transfer the received data from the Main MCU. If the data is related to the Setup, then the new data should replace the previous data. If they are the new event data, then they must be queued up with the rest of the events
Data Placement in EEPROM Memory

FIG. 18

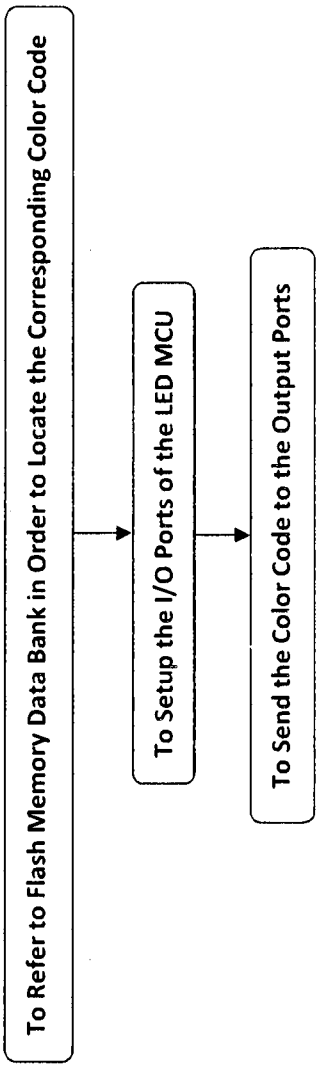


FIG. 19

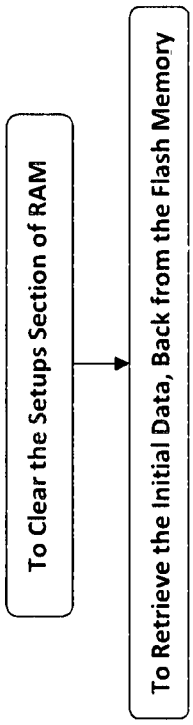


FIG. 20

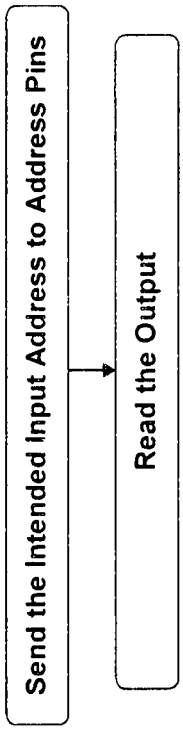


FIG. 21

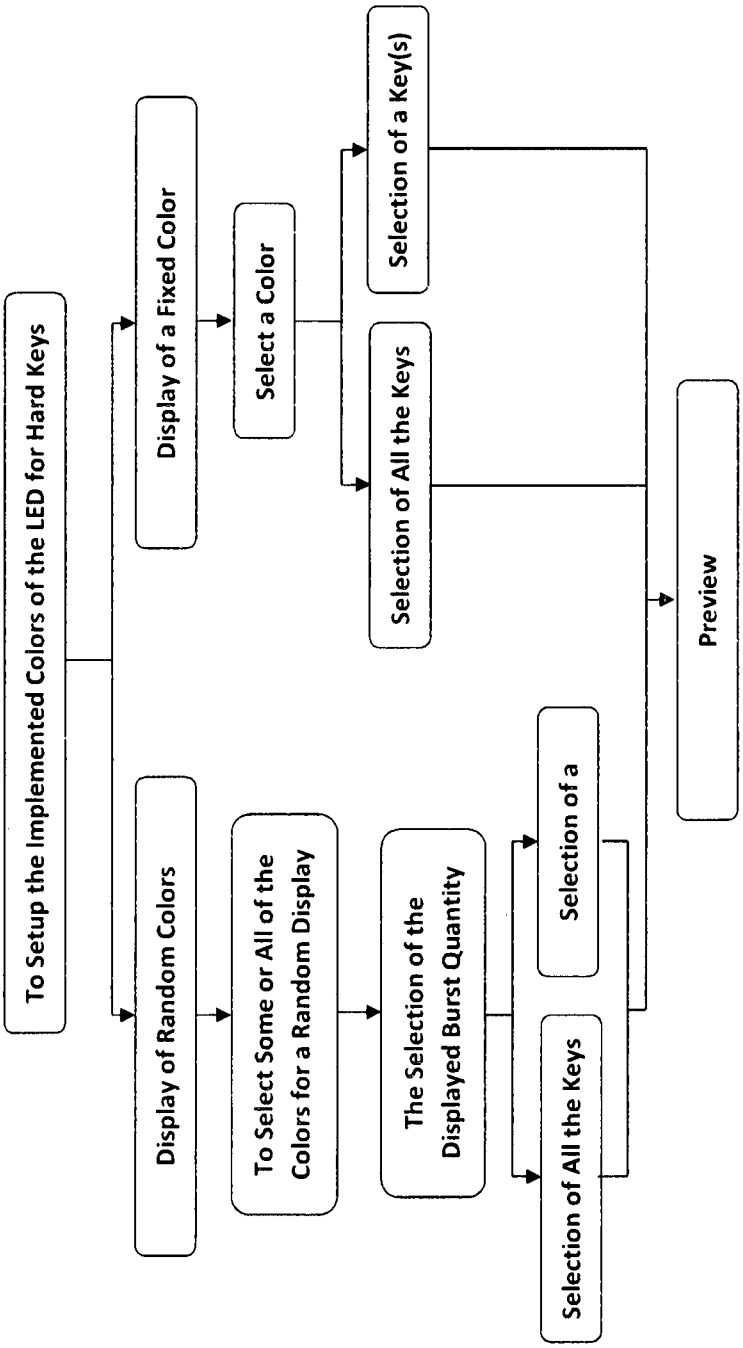

To Setup the Implemented Colors of the LED for Hard Keys
Display of Random Colors
To Select Some or All of the Colors for a Random Display
The Selection of the Displayed Burst Quantity
Selection of All the Keys
Selection of a
Display of a Fixed Color
Select a Color
Selection of All the Keys
Selection of a Key(s)
Preview

FIG. 22

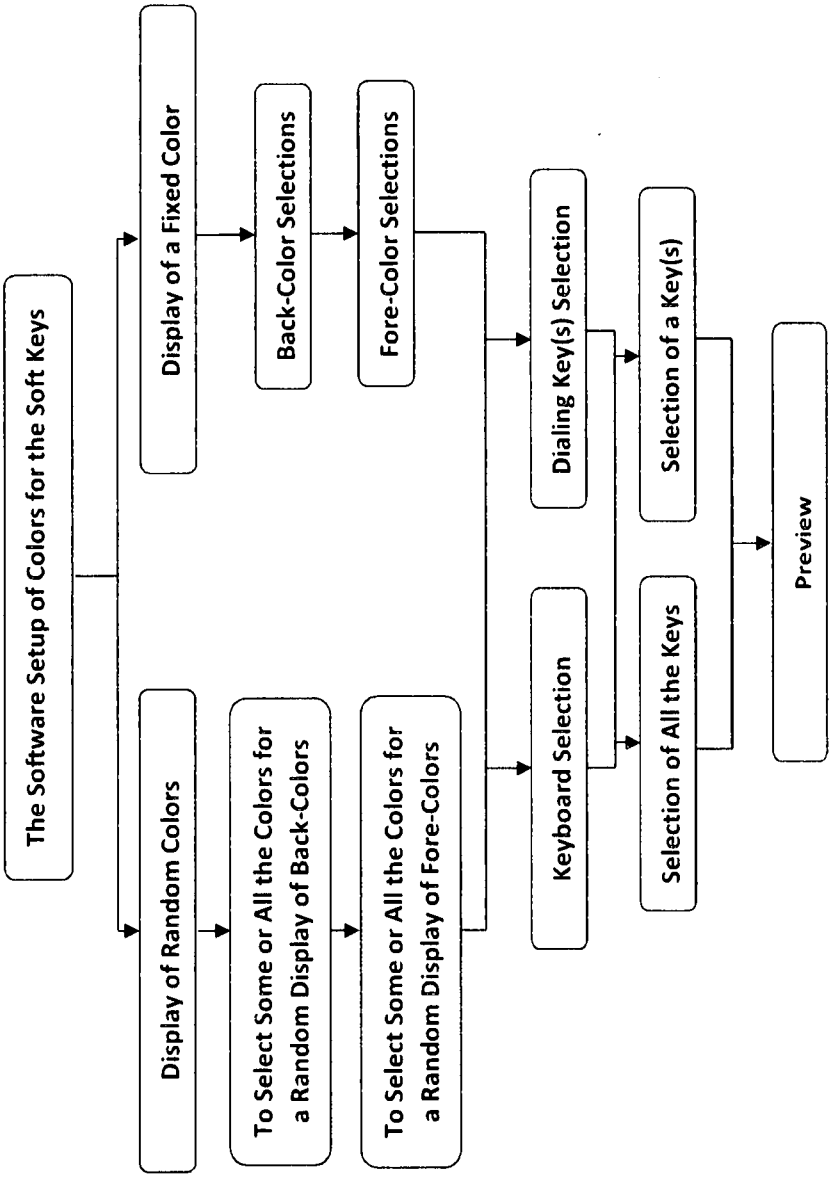

The Software Setup of Colors for the Soft Keys
Display of Random Colors
To Select Some or All the Colors for a Random Display of Back-Colors
To Select Some or All the Colors for a Random Display of Fore-Colors
Display of a Fixed Color
Back-Color Selections
Fore-Color Selections
Keyboard Selection
Dialing Key(s) Selection
Selection of All the Keys
Selection of a Key(s)
Preview

FIG. 23

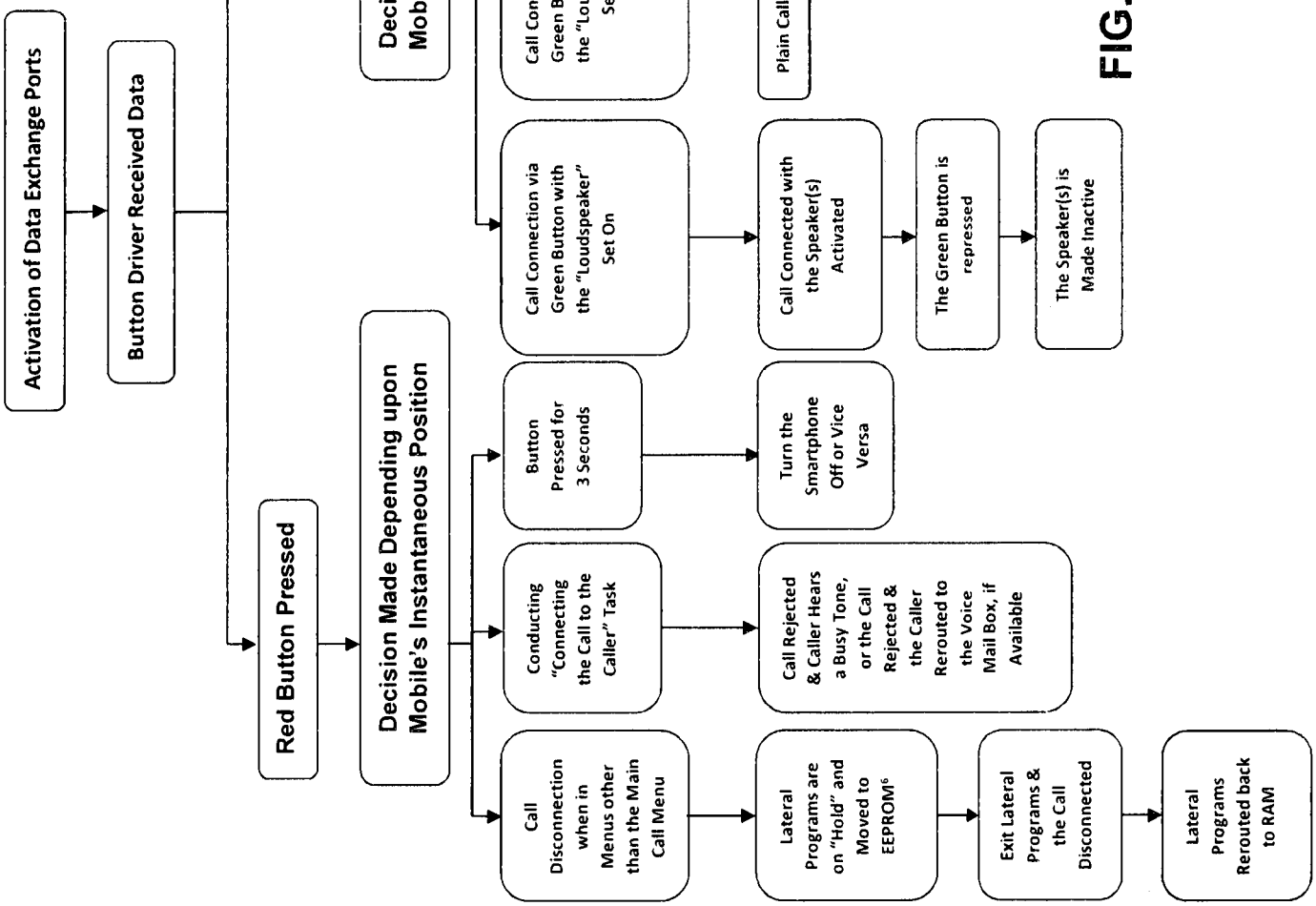

Activation of Data Exchange Ports
Button Driver Received Data
Red Button Pressed
Green Button Pressed
Decision Made Depending upon Mobile's Instantaneous Position
Decision Made Depending upon Mobile's Instantaneous Position
Call Disconnection when in Menus other than the Main Call Menu
Conducting "Connecting the Call to the Caller" Task
Button Pressed for 3 Seconds
Call Connection via Green Button with the "Loudspeaker" Set On
Call Connection via Green Button with the "Loudspeaker" Set Off
When the User is in Any Menu
Smartphone is Either in Sleep Mode or Locked
Lateral Programs are on "Hold" and Moved to EEPROM[6]
Call Rejected & Caller Hears a Busy Tone, or the Call Rejected & the Caller Rerouted to the Voice Mail Box, if Available
Turn the Smartphone Off or Vice Versa
Call Connected with the Speaker(s) Activated
Plain Call Connection
The Button is Set as a Case Selector Button
The Display is Turned on & Awaits until the Button is no Longer Pressed "Status at a Finger tip"
Exit Lateral Programs & the Call Disconnected
The Green Button is repressed
The Speaker(s) is Made Inactive
The Display is Turned Off and the Smartphone Switches to Sleep Mode
Lateral Programs Rerouted back to RAM

FIG. 24

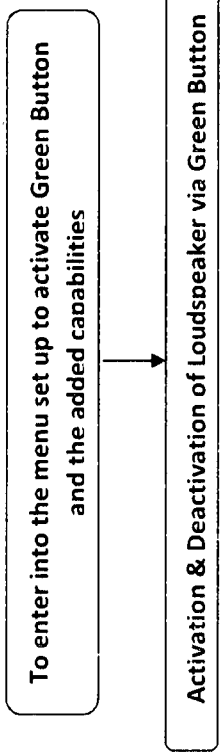

To enter into the menu set up to activate Green Button and the added capabilities
Activation & Deactivation of Loudspeaker via Green Button

FIG. 25

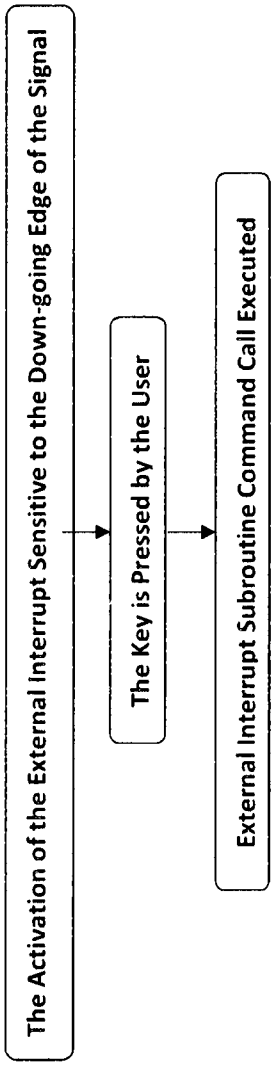

The Activation of the External Interrupt Sensitive to the Down-going Edge of the Signal
The Key is Pressed by the User
External Interrupt Subroutine Command Call Executed

FIG. 26

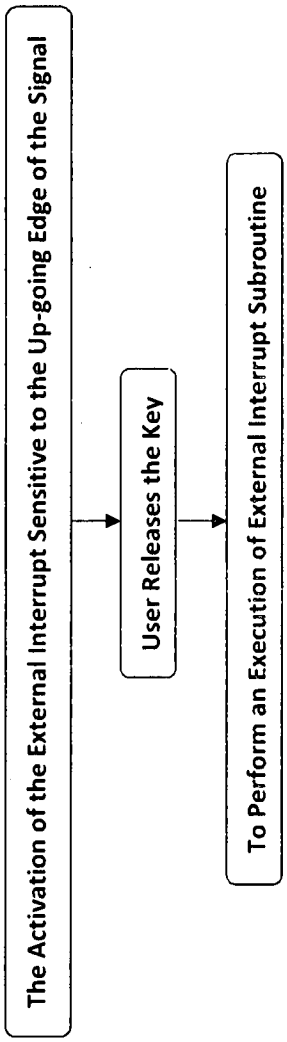

The Activation of the External Interrupt Sensitive to the Up-going Edge of the Signal
User Releases the Key
To Perform an Execution of External Interrupt Subroutine

FIG. 27

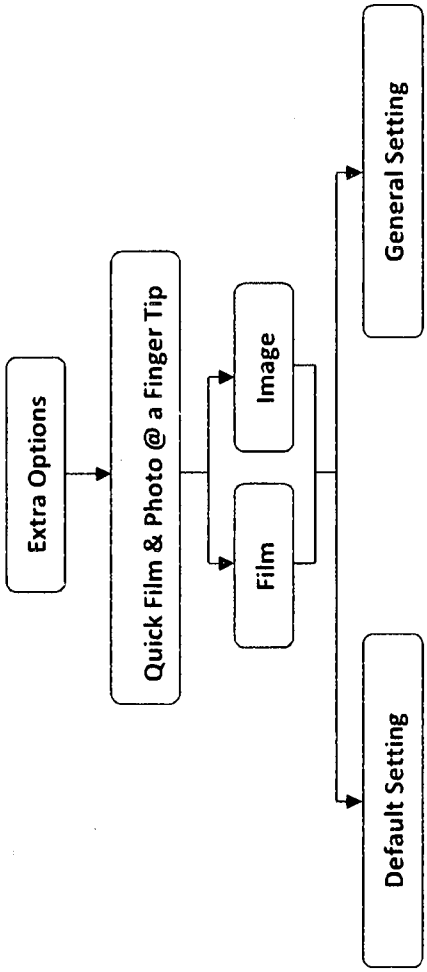

Extra Options
Quick Film & Photo @ a Finger Tip
Film
Image
General Setting
Default Setting

FIG. 28

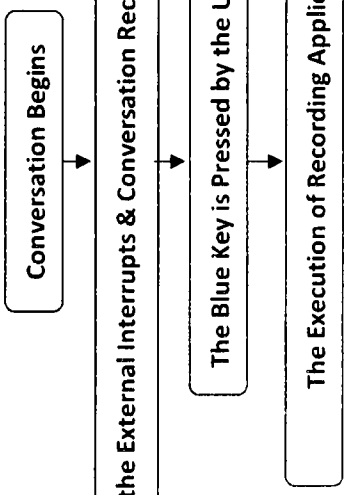

Conversation Begins
The Activation of the External Interrupts & Conversation Recording Program is Check Marked
The Blue Key is Pressed by the User
The Execution of Recording Application

FIG. 29

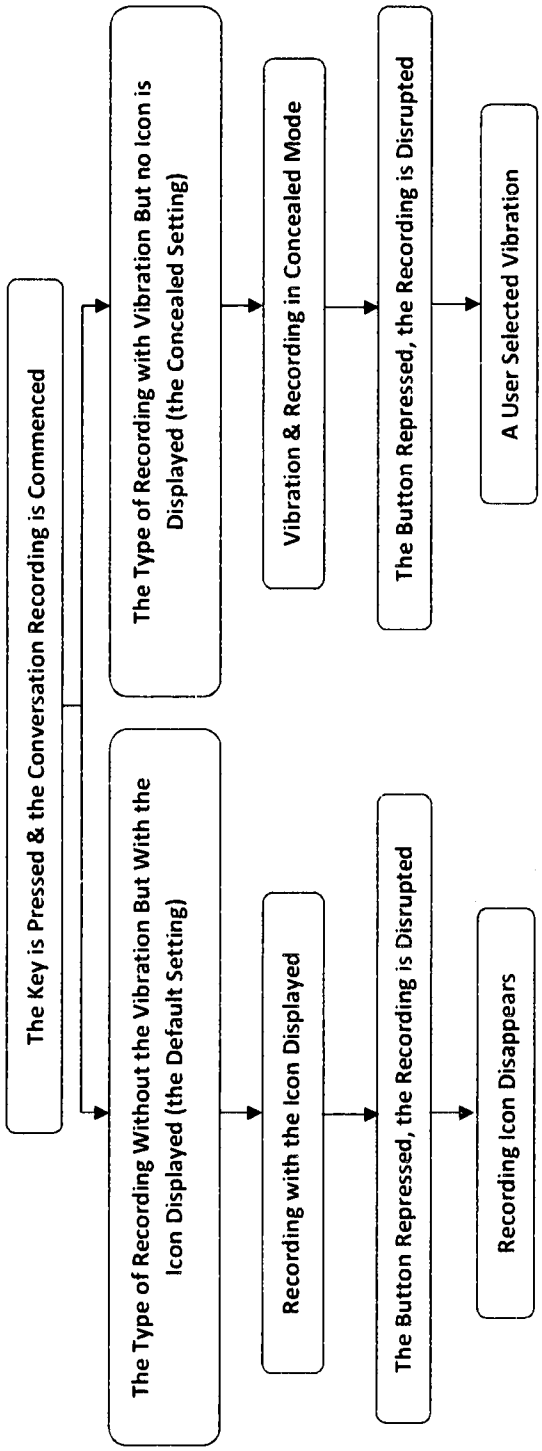

The Key is Pressed & the Conversation Recording is Commenced
The Type of Recording Without the Vibration But With the Icon Displayed (the Default Setting)
Recording with the Icon Displayed
The Button Repressed, the Recording is Disrupted
Recording Icon Disappears
The Type of Recording with Vibration But no Icon is Displayed (the Concealed Setting)
Vibration & Recording in Concealed Mode
The Button Repressed, the Recording is Disrupted
A User Selected Vibration

FIG. 30

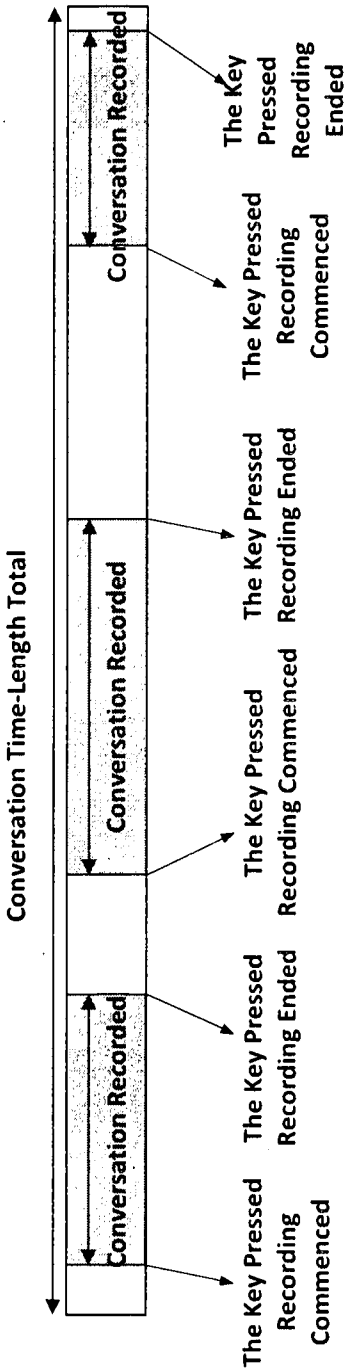

Conversation Time-Length Total
Conversation Recorded
Conversation Recorded
Conversation Recorded
The Key Pressed Recording Commenced
The Key Pressed Recording Ended
The Key Pressed Recording Commenced
The Key Pressed Recording Ended
The Key Pressed Recording Commenced
The Key Pressed Recording Ended

FIG. 31

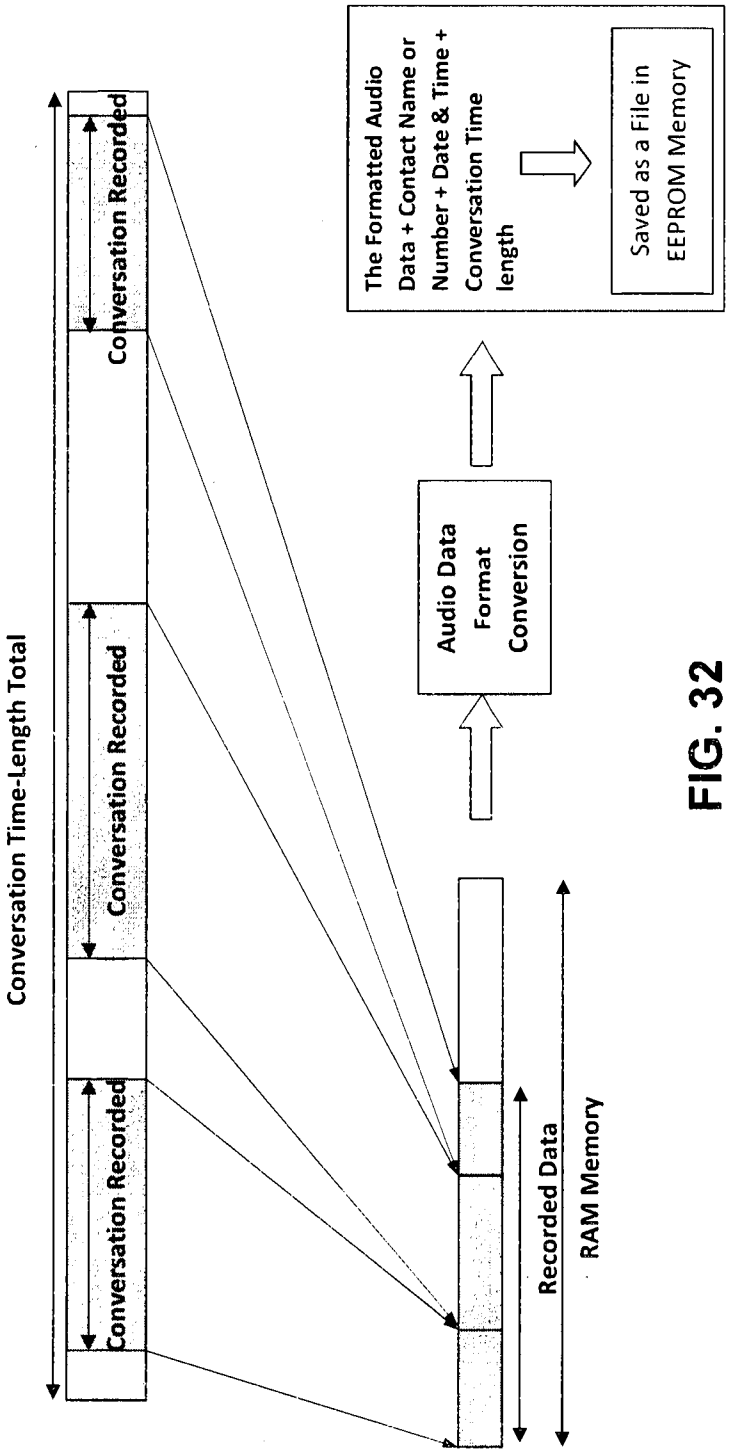

Conversation Time-Length Total
Conversation Recorded
Conversation Recorded
Conversation Recorded
Audio Data Format Conversion
Recorded Data
RAM Memory
The Formatted Audio Data + Contact Name or Number + Date & Time + Conversation Time length
Saved as a File in EEPROM Memory

FIG. 32

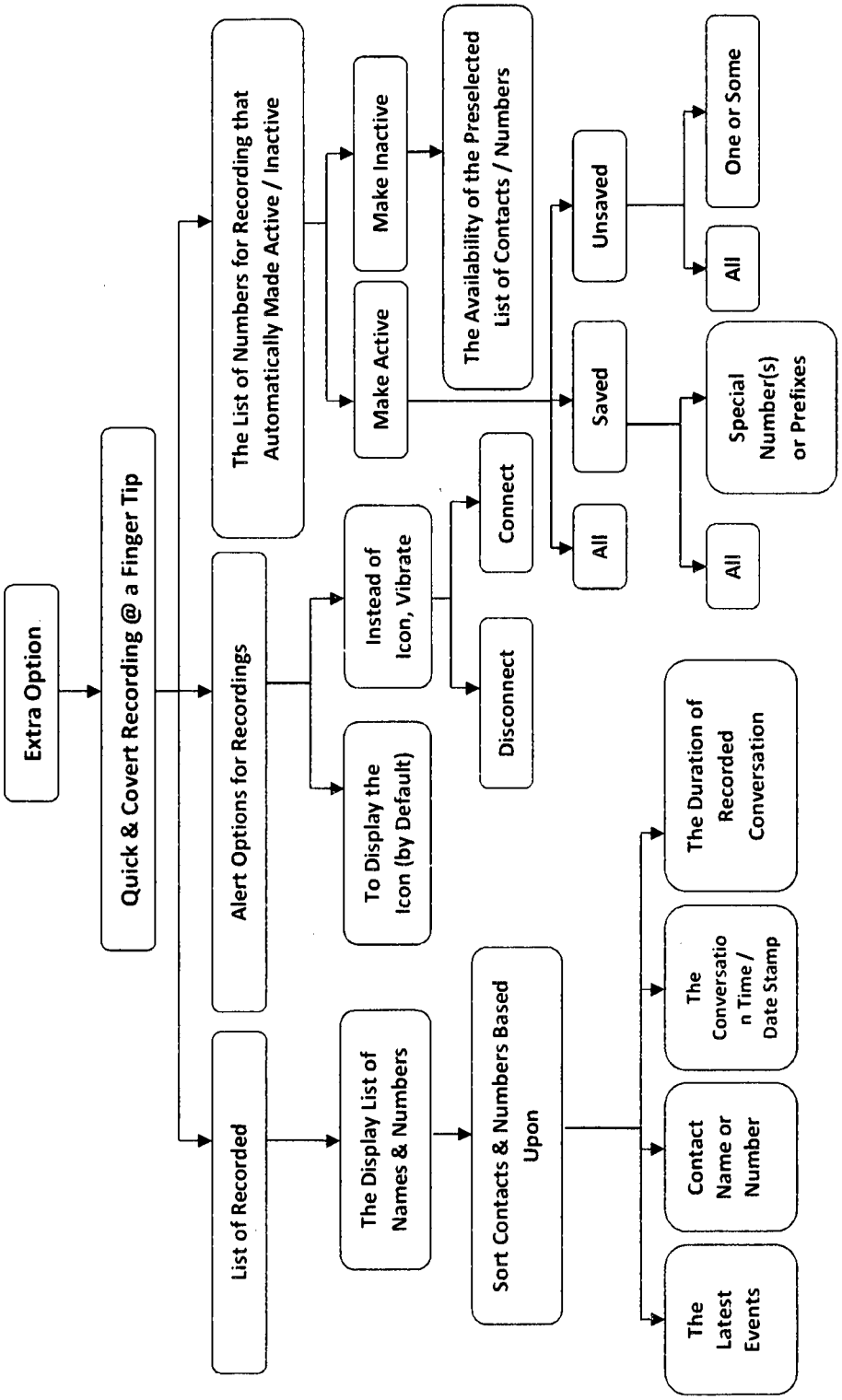

Extra Option
Quick & Covert Recording @ a Finger Tip
List of Recorded
The Display List of Names & Numbers
Sort Contacts & Numbers Based Upon
The Latest Events
Contact Name or Number
The Conversation Time / Date Stamp
The Duration of Recorded Conversation
Alert Options for Recordings
To Display the Icon (by Default)
Instead of Icon, Vibrate
Connect
Disconnect
The List of Numbers for Recording that Automatically Made Active / Inactive
Make Active
Make Inactive
The Availability of the Preselected List of Contacts / Numbers
All
Saved
Unsaved
All
Special Number(s) or Prefixes
All
One or Some

FIG. 33

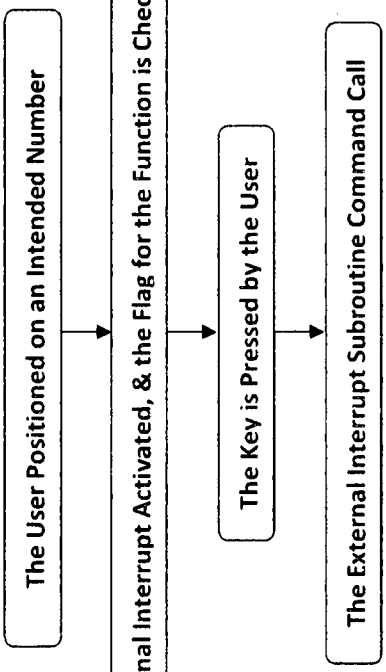

The User Positioned on an Intended Number
The External Interrupt Activated, & the Flag for the Function is Check Marked
The Key is Pressed by the User
The External Interrupt Subroutine Command Call

FIG. 34

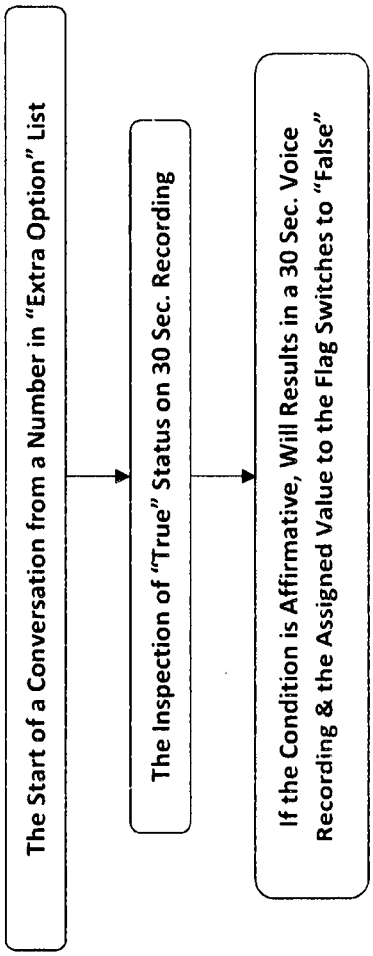

The Start of a Conversation from a Number in "Extra Option" List
The Inspection of "True" Status on 30 Sec. Recording
If the Condition is Affirmative, Will Results in a 30 Sec. Voice Recording & the Assigned Value to the Flag Switches to "False"

FIG. 35

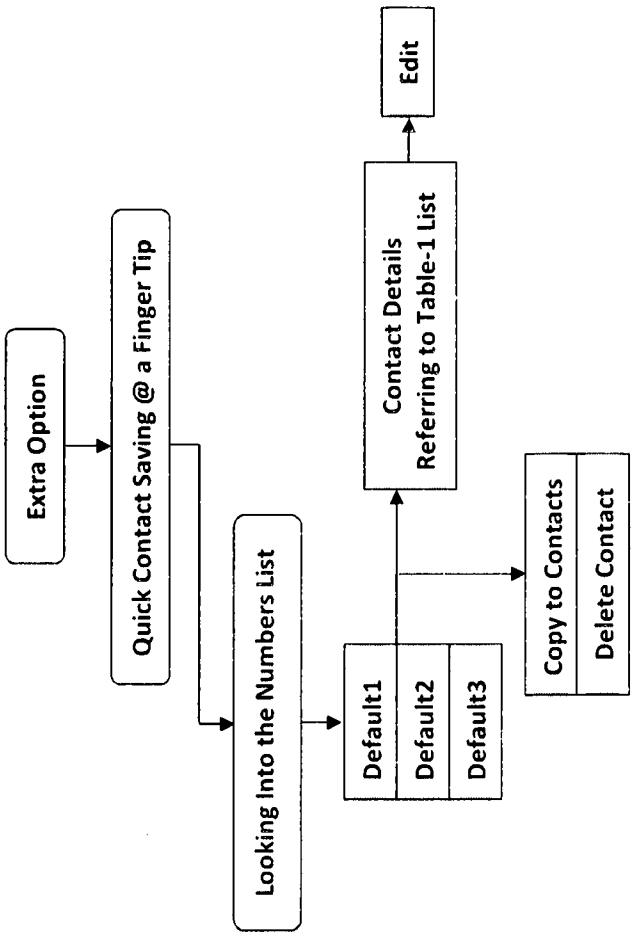

Extra Option
Quick Contact Saving @ a Finger Tip
Looking Into the Numbers List
Default1
Default2
Default3
Contact Details Referring to Table-1 List
Edit
Copy to Contacts
Delete Contact

FIG. 36

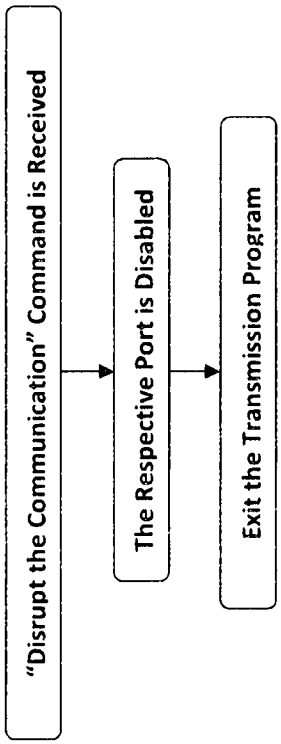

"Disrupt the Communication" Command is Received
The Respective Port is Disabled
Exit the Transmission Program

FIG. 37

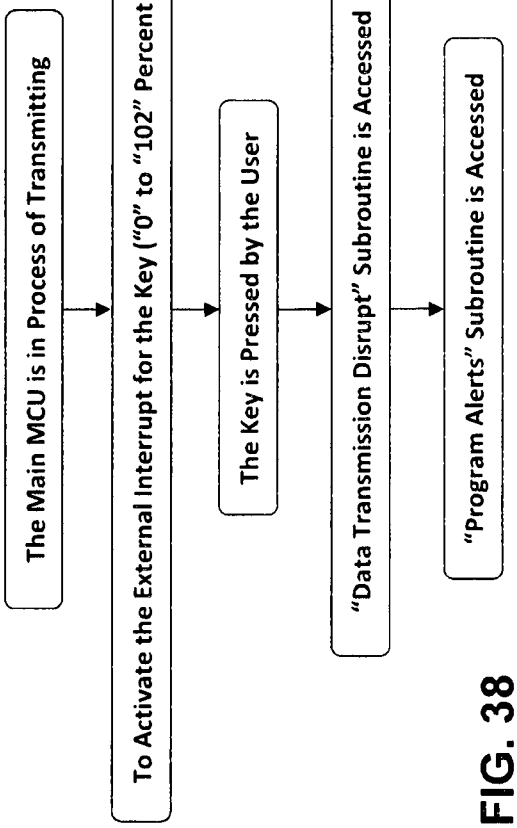

The Main MCU is in Process of Transmitting
To Activate the External Interrupt for the Key ("0" to "102" Percent Time Interval)
The Key is Pressed by the User
"Data Transmission Disrupt" Subroutine is Accessed
"Program Alerts" Subroutine is Accessed

FIG. 38

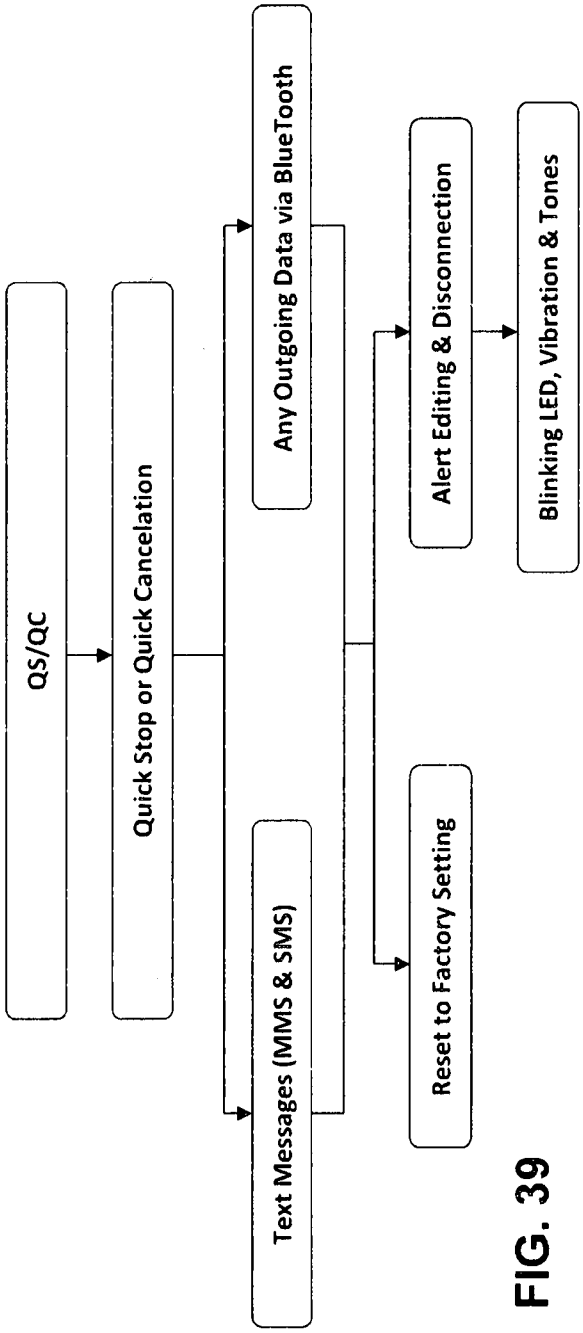

QS/QC
Quick Stop or Quick Cancelation
Any Outgoing Data via BlueTooth
Text Messages (MMS & SMS)
Reset to Factory Setting
Alert Editing & Disconnection
Blinking LED, Vibration & Tones

FIG. 39

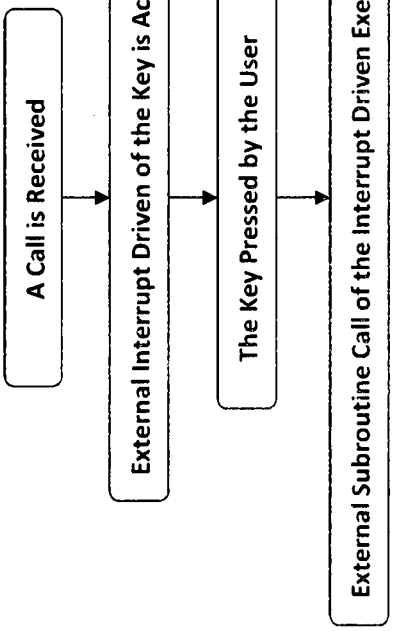

A Call is Received
External Interrupt Driven of the Key is Activated
The Key Pressed by the User
External Subroutine Call of the Interrupt Driven Executable Function

FIG. 40

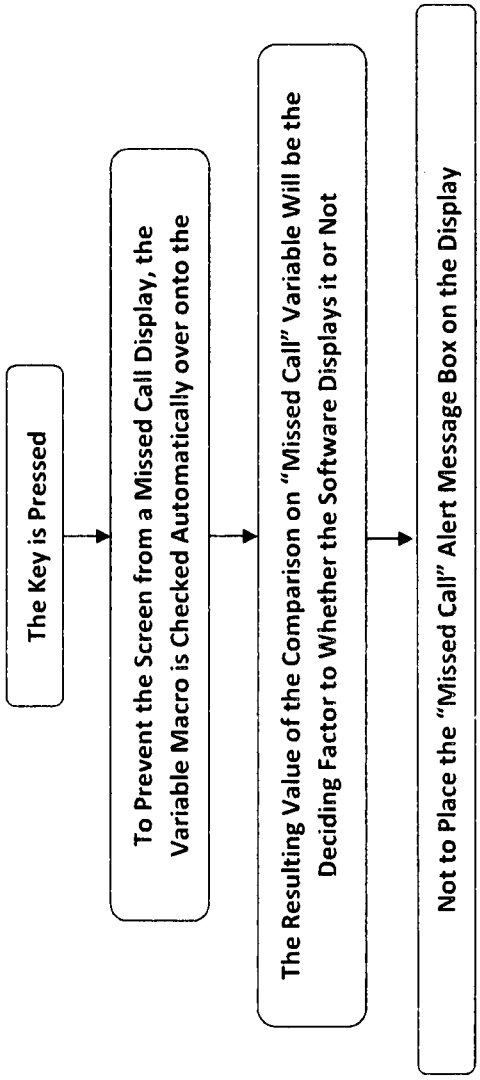

The Key is Pressed
To Prevent the Screen from a Missed Call Display, the Variable Macro is Checked Automatically over onto the
The Resulting Value of the Comparison on "Missed Call" Variable Will be the Deciding Factor to Whether the Software Displays it or Not
Not to Place the "Missed Call" Alert Message Box on the Display

FIG. 41

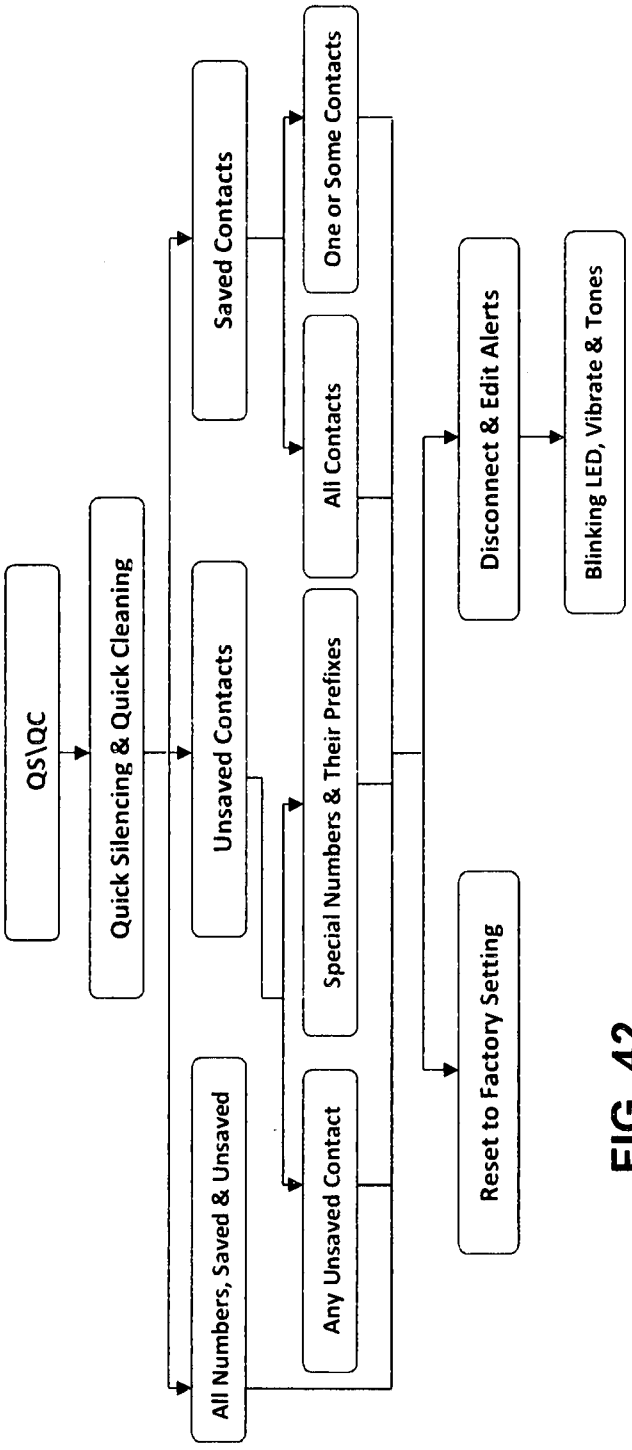

QS\QC
Quick Silencing & Quick Cleaning
All Numbers, Saved & Unsaved
Unsaved Contacts
Any Unsaved Contact
Special Numbers & Their Prefixes
Saved Contacts
All Contacts
One or Some Contacts
Reset to Factory Setting
Disconnect & Edit Alerts
Blinking LED, Vibrate & Tones

FIG. 42

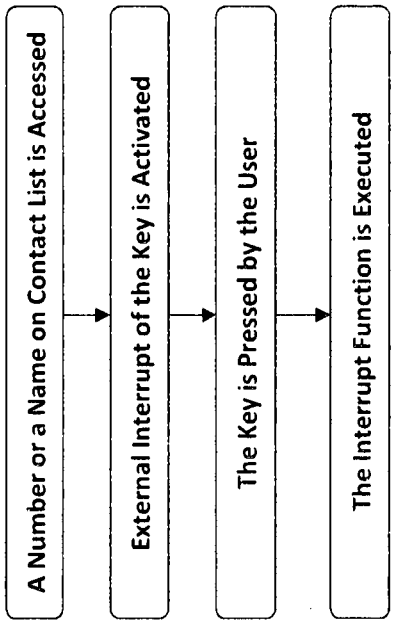

A Number or a Name on Contact List is Accessed
External Interrupt of the Key is Activated
The Key is Pressed by the User
The Interrupt Function is Executed

FIG. 43

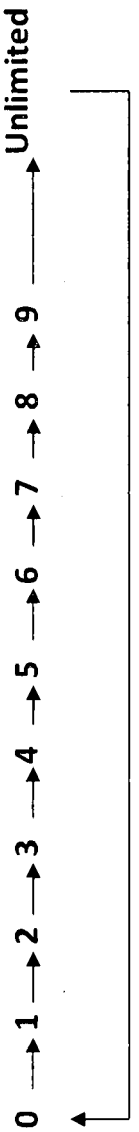

0
1
2
3
4
5
6
7
8
9
Unlimited

FIG. 44

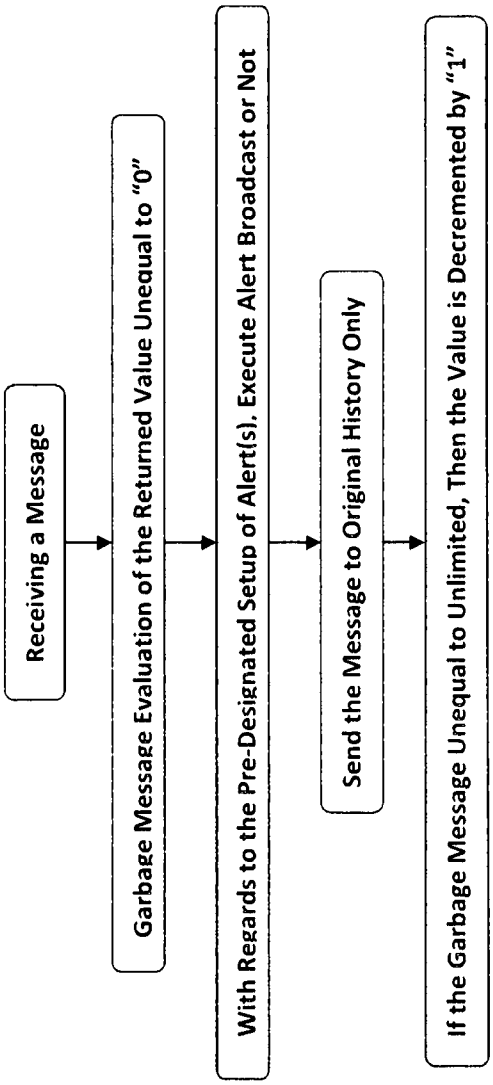

Receiving a Message
Garbage Message Evaluation of the Returned Value Unequal to "0"
With Regards to the Pre-Designated Setup of Alert(s), Execute Alert Broadcast or Not
Send the Message to Original History Only
If the Garbage Message Unequal to Unlimited, Then the Value is Decremented by "1"

FIG. 45

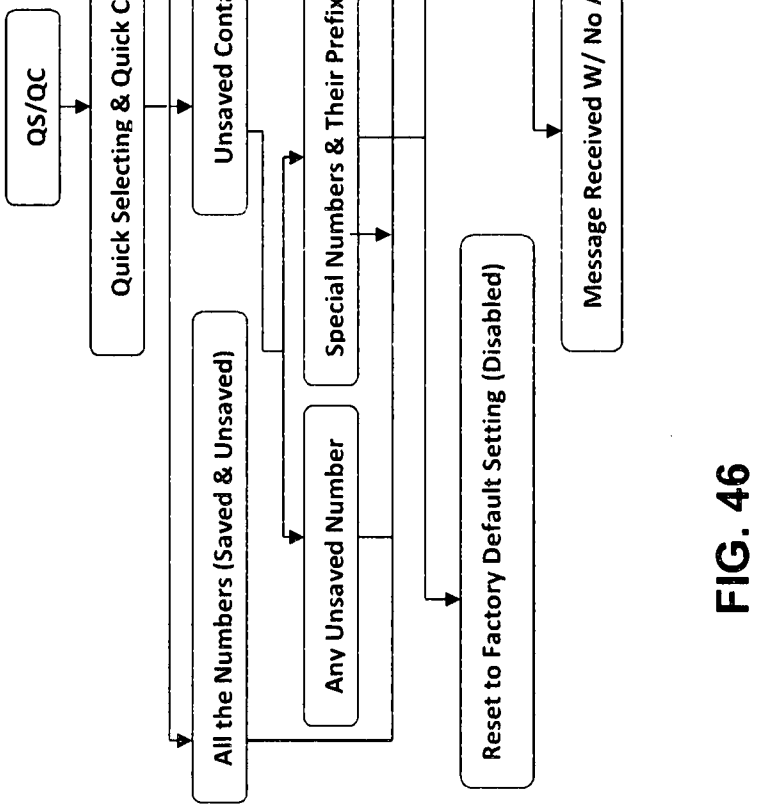

QS/QC
Quick Selecting & Quick Cleaning
All the Numbers (Saved & Unsaved)
Unsaved Contacts
Saved Contacts
Any Unsaved Number
Special Numbers & Their Prefix
All Contacts
One or Some Contacts
Reset to Factory Default Setting (Disabled)
Pressed Key in Desired Quantities
Message Received W/ No Alert
Message Received along with the Alert(s)
LED, Vibrate, Tones

FIG. 46

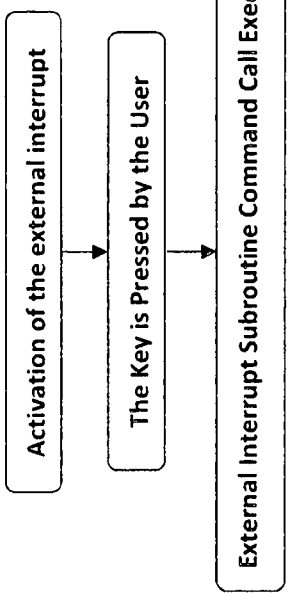

Activation of the external interrupt
The Key is Pressed by the User
External Interrupt Subroutine Command Call Executed

FIG. 47

Example 1

My phone number is 905-997-1499

My [.....] number is 905-997-1[...]

Example 2

1- My phone number is 905-997-1499

My phone number is 905-997-1499

My [.....] number is 905-997-1[...]

[Student] [5661]

2- My [Student] number is 905-997-1[5661]

Example 3

Jack's phone/fax numbers are;

Phone: 647-233-2247

1- Fax: 416-873-9231

Fax: 416-873-9231

Fax: 416-8[.....]31

[69-78]

2- Fax: 416-8 [69-78] 31

Example 4

Julia's Address;

1- 3791 Victoria Park Ave Unit 1, Toronto, Canada

3791 Victoria Park Ave Unit 1, Toronto, Canada

[....] [.....] Ave[.]Unit [.], Toronto, Canada

[140] [Sheppard] [E] [15]

2- [140] [Sheppard] Ave [E] Unit[15], Toronto,

FIG. 48

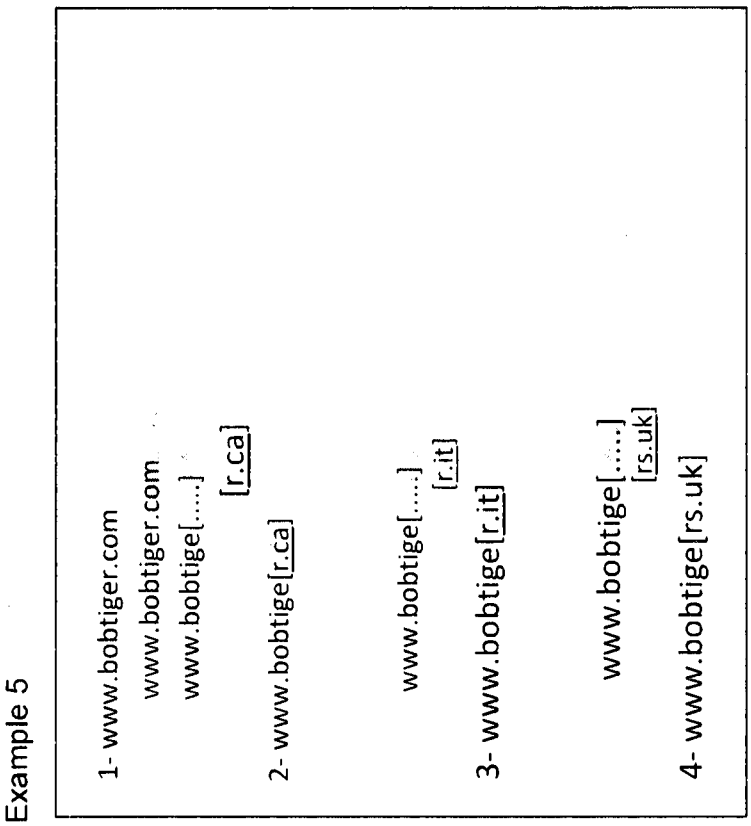

Example 5
1- www.bobtiger.com
www.bobtiger.com
www.bobtige[.....]
[r.ca]
2- www.bobtige[r.ca]
www.bobtige[.....]
[r.it]
3- www.bobtige[r.it]
www.bobtige[.....]
[rs.uk]
4- www.bobtige[rs.uk]

FIG. 49

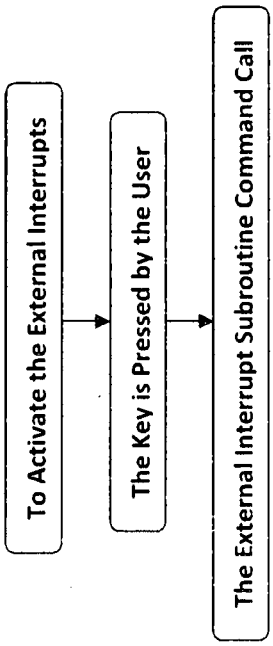

To Activate the External Interrupts
The Key is Pressed by the User
The External Interrupt Subroutine Command Call

FIG. 50

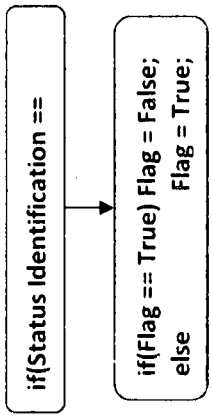

if(Status Identification ==
iff(Flag == True) Flag = False;
else Flag = True;

FIG. 51

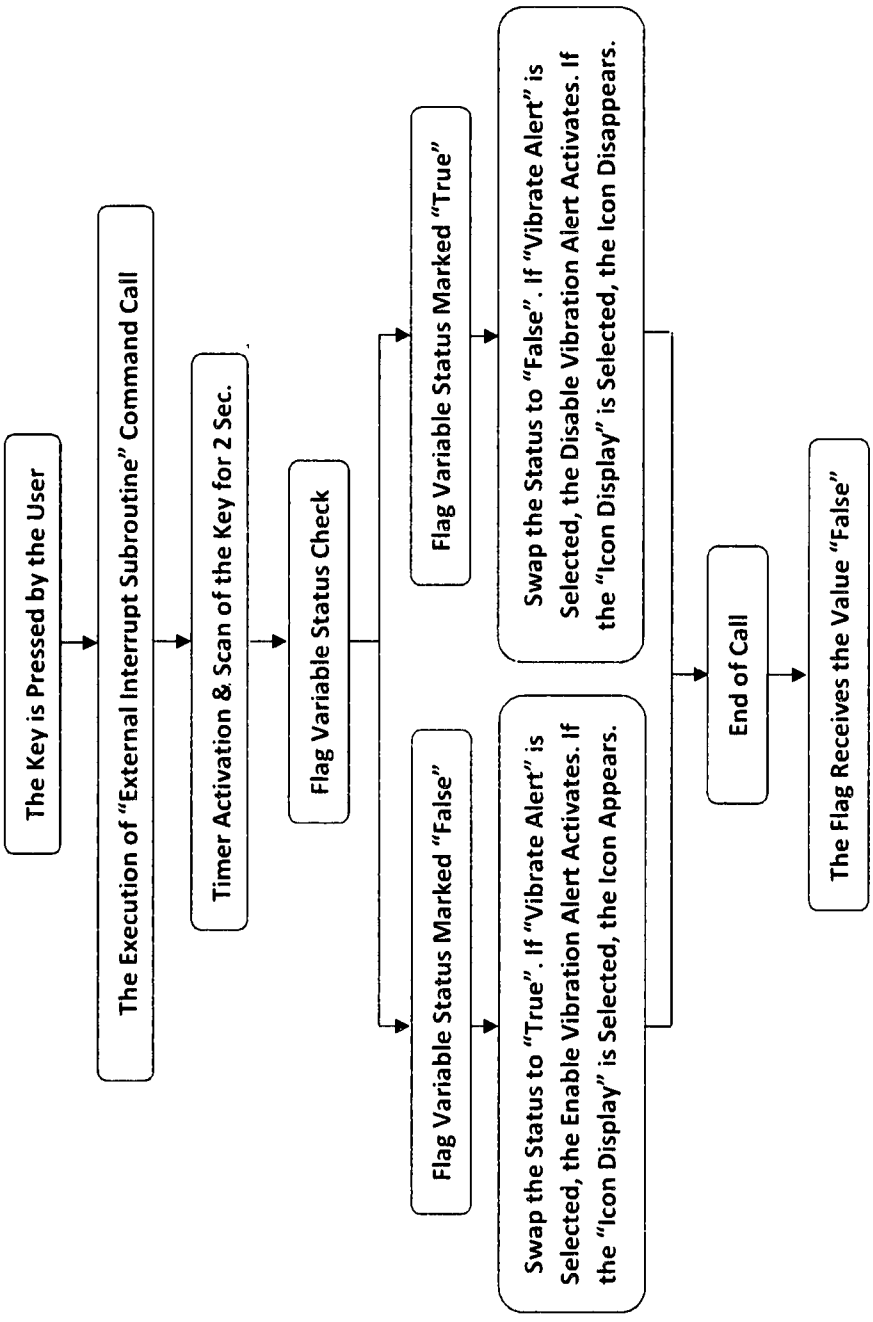

The Key is Pressed by the User
The Execution of "External Interrupt Subroutine" Command Call
Timer Activation & Scan of the Key for 2 Sec.
Flag Variable Status Check
Flag Variable Status Marked "False"
Swap the Status to "True". If "Vibrate Alert" is Selected, the Enable Vibration Alert Activates. If the "Icon Display" is Selected, the Icon Appears.
Flag Variable Status Marked "True"
Swap the Status to "False". If "Vibrate Alert" is Selected, the Disable Vibration Alert Activates. If the "Icon Display" is Selected, the Icon Disappears.
End of Call
The Flag Receives the Value "False"

FIG. 52

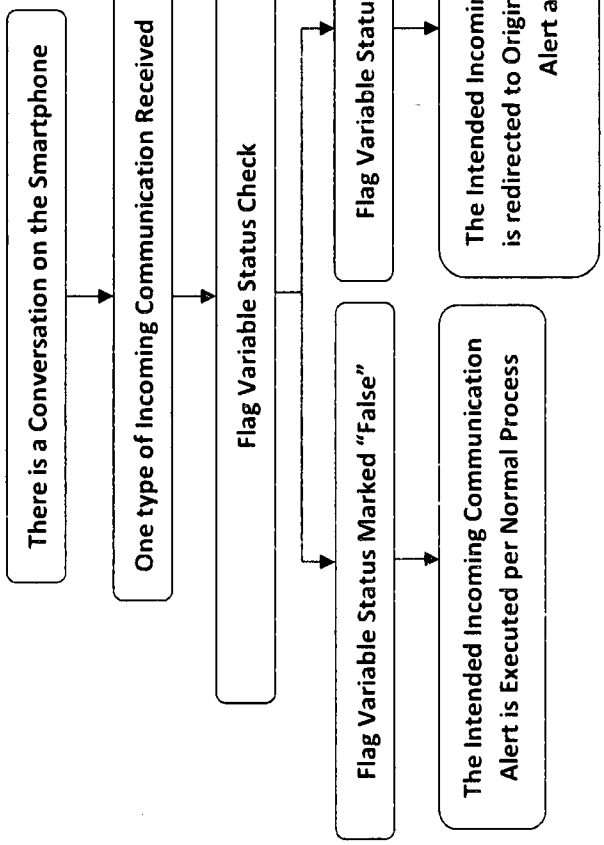

There is a Conversation on the Smartphone
One type of Incoming Communication Received
Flag Variable Status Check
Flag Variable Status Marked "False"
The Intended Incoming Communication Alert is Executed per Normal Process
Flag Variable Status Marked "True"
The Intended Incoming Communication is redirected to Original History with No Alert at all

FIG. 53

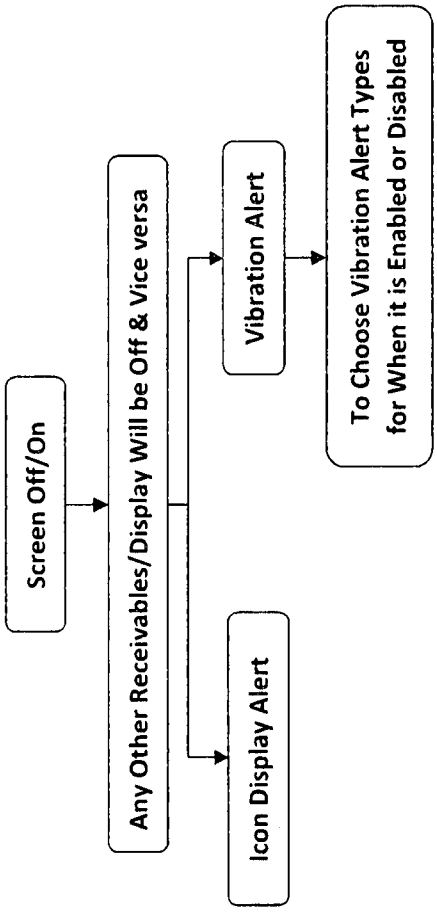

Screen Off/On
Any Other Receivables/Display Will be Off & Vice versa
Icon Display Alert
Vibration Alert
To Choose Vibration Alert Types for When it is Enabled or Disabled

FIG. 54

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2019/000538

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04M1/02 G06F3/02 H04M1/22 H04M1/725
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04M G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/298850 A1 (MIYATA YUSUKE [JP] ET AL) 27 December 2007 (2007-12-27) paragraph [0001] paragraph [0018] - paragraph [0023] paragraph [0029] - paragraph [0031] paragraph [0046] - paragraph [0048] paragraph [0055] paragraph [0066] - paragraph [0085] paragraph [0095] - paragraph [0119] paragraph [0136] paragraph [0141] paragraph [0152] paragraph [0158] - paragraph [0162] paragraph [0174] paragraph [0174] - paragraph [0183] paragraph [0188] - paragraph [0189] figures 1-14, 17-24,26, 27,29	1-8

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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Date of the actual completion of the international search	Date of mailing of the international search report
29 August 2019	09/09/2019

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Banerjea, Robin

INTERNATIONAL SEARCH REPORT

International application No
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