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Permanent Link to Innovation: Carrier-Phase Ambiguity Resolution
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Handling the Biases for Improved Triple-Frequency PPP Convergence By Denis Laurichesse Precise point positioning (PPP) can be considered a viable tool in the kitbag of GPS positioning techniques. One precision aspect of PPP is its use of carrier-phase measurements rather than just pseudoranges. But there is a catch. Often many epochs of measurements are needed for a position solution to converge to a sufficiently high accuracy. In this month's column, we look at how using measurements from three satellite frequencies rather than just two can help. INNOVATION INSIGHTS by Richard Langley PPP? WHAT'S THAT? This acronym stands for precise point positioning and, although the technique is still in development, it has evolved to a stage where it can be considered another viable tool in the kitbag of GPS positioning techniques. It is now supported by a number of receiver manufacturers and several free online PPP processing services. You might think, looking at the name, that there's nothing particularly special about it. After all, doesn't any kind of positioning with GPS give you a precise point position including that from a handheld receiver or a satnav device? They key word here is precise. The use of the word precise, in the context of GPS positioning, usually means getting positional information with precision and accuracy better than that afforded by the use of L1 C/A-code pseudorange measurements and the data provided in the broadcast navigation messages from the satellites. A typically small improvement in precision and accuracy can be had by using pseudoranges determined from the L2 frequency in addition to L1. This permits the real-time correction for the perturbing effect of the ionosphere. Such an improvement in positioning is embodied in the distinction between the two official GPS levels of service: the Standard Positioning Service provided through the L1 C/A-code and the Precise Positioning Service provided for "authorized" users, which requires the use of the encrypted P-code on both the L1 and L2 frequencies. Civil GPS users will have access to a similar level of service once a sufficient number of satellites transmitting the L2 Civil (L2C) code are in orbit. However, this capability will only provide meter-level accuracy. The PPP technique can do much better than this. It can do so thanks to two additional precision aspects of the technique. The first is the use of more precise (and, again,

accurate) descriptions of the orbits of the satellites and the behavior of their atomic clocks than those included in the navigation messages. Such data is provided, for example, by the International GNSS Service (IGS) through its global tracking network and analysis centers. These so-called precise products are typically used to process receiver data after collection in a post-processing mode, although real-time correction streams are now being provided by the IGS and some commercial entities. Now, it’s true that a user can get high precision and accuracy in GPS positioning using the differential technique where data from one or more base or reference stations is combined with data from the user receiver. However, by using precise products and a very thorough model of the GPS observables, the PPP technique does away with the requirement for a directly accessed base station. The other precision aspect of PPP is its use of carrier-phase measurements rather than just pseudoranges. Carrier-phase measurements have a precision on the order of two magnitudes (a factor of 100) better than that of pseudoranges. But there is a catch to the use of carrier-phase measurements: they are ambiguous by an integer multiple of one cycle. Processing algorithms must resolve the value of this ambiguity and ideally fix it at its correct integer value. Unfortunately, it is difficult to do this instantaneously, and often many epochs of measurements are needed for a position solution to converge to a sufficiently high accuracy, say better than 10 centimeters. Researchers are actively working on reducing the convergence time, and in this month’s column, we look at how using measurements from three satellite frequencies rather than just two can help. “Innovation” is a regular feature that discusses advances in GPS technology and its applications as well as the fundamentals of GPS positioning. The column is coordinated by Richard Langley of the Department of Geodesy and Geomatics Engineering, University of New Brunswick. He welcomes comments and topic ideas. To contact him, see the “Contributing Editors” section on page 6. While carrier-phase measurements typically have very low noise compared to pseudorange (code) measurements, they have an inherent integer cycle ambiguity: the carrier phase, interpreted as a range measurement, is ambiguous by any number of cycles. However, integer ambiguity fixing is now routinely applied to undifferenced GPS carrier-phase measurements to achieve precise positioning. Some implementations are even available in real time. This so-called precise point positioning (PPP) technique permits ambiguity resolution at the centimeter level. With the new modernized satellites’ capabilities, performing PPP with triple-frequency measurements will be possible and, therefore, the current dual-frequency formulation will not be applicable. There is also a need for a generalized formulation of phase biases for Radio Technical Commission for Maritime Services (RTCM) State Space Representation (SSR) needs. In this RTCM framework, the definition of a standard is important to allow interoperability between the two components of a positioning system: the network side and the user side. Classical Formulation In this section, we review the formulation of the observation equations. We will use the following constants in the equations: where f1 and f2 are the two primary frequencies transmitted by all GPS satellites and c is the vacuum speed of light. For the GPS L1 and L2 bands, f1 = 154f0 and f2 = 120f0, where f0 = 10.23 MHz. The pseudorange (or code) measurements, P1 and P2, are expressed in meters, while phase measurements, L1 and L2, are expressed in cycles. In the following, we use the word “clock” to mean a time offset between a receiver or satellite clock and GPS System

Time as determined from either code or phase measurements on different frequencies or some combination of them. The code and phase measurements are modeled as: (1) where: D1 and D2 are the geometrical propagation distances between the emitter and receiver antenna phase centers at f1 and f2 including troposphere elongation, relativistic effects and so on. W is the contribution of the wind-up effect (in cycles). e is the code ionosphere elongation in meters at f1. This elongation varies with the inverse of the square of the carrier frequency and is applied with the opposite sign for phase. $\Delta h = hi - hj$ is the difference between receiver i and emitter j ionosphere-free phase clocks. Δhp is the corresponding term for code clocks. $\Delta\tau = \tau i - \tau j$ is the difference between receiver i and emitter j offsets between the phase clocks at f1 and the ionosphere-free phase clocks. By construction, the corresponding quantity at f2 is $\gamma\Delta\tau$. Similarly, the corresponding quantity for the code is $\Delta\tau p$ (time group delay). N1 and N2 are the two carrier-phase ambiguities. By definition, these ambiguities are integers. Unambiguous phase measurements are therefore L1 + N1 and L2 + N2. Equations (1) take into account all the biases related to delays and clock offsets. The four independent parameters, Δh, $\Delta\tau$, Δhp, and $\Delta\tau p$, are equivalent to the definition of one clock per observable. However, our choice of parameters emphasizes the specific nature of the problem by identifying reference clocks for code and phase (Δhp and Δh) and the corresponding hardware offsets ($\Delta\tau p$ and $\Delta\tau$). These offsets are assumed to vary slowly with time, with limited amplitudes. The measured widelane ambiguity, , (also called the Melbourne-Wübbena widelane) can be written as: (2) where Nw is the integer widelane ambiguity, µ j is the constant widelane delay for satellite j and µi is the widelane delay for receiver i (which is fairly stable for good quality geodetic receivers). The symbol means that all quantities have been averaged over a satellite pass. Integer widelane ambiguities are then easily identified from averaged measured widelanes corrected for satellite widelane delays. Once integer widelane ambiguities are known, the ionosphere-free phase combination can be expressed as   (3) where is the ionosphere-free phase combination computed using the known Nw ambiguity, Dc is the propagation distance, hi is the receiver clock and h j is the satellite clock. N1 is the remaining ambiguity associated to the ionosphere-free wavelength λc (10.7 centimeters). The complete problem is thus transformed into a single-frequency problem with wavelength λc and without any ionosphere contribution. Many algorithms can be used to solve Equation (3) using data from a network of stations. If Dc is known with sufficient accuracy (typically a few centimeters, which can be achieved using a good floating-point or real-valued ambiguity solution), it is possible to simultaneously solve for N1 , hi and h j. The properties of such a solution have been studied in detail. A very interesting property of the h j satellite clocks is, in particular, the capability to directly fix (to the correct integer value) the N1 values of a receiver that was not part of the initial network. The majority of the precise-point-positioning ambiguity-resolution (PPP-AR) implementations are based on the identification and use of the two quantities µ j and h j. These quantities may be called widelane biases and integer phase clocks, a decoupled clock model or uncalibrated phase delays, but they are all of the same nature. A Real-Time PPP-AR Implementation A PPP-AR technique was successfully implemented by the Centre National d'Etudes Spatiales (CNES) in real time in the so-called PPP-Wizard demonstrator in 2010 and has been subsequently improved. In this demonstrator and in the framework of the International GNSS Service (IGS) Real-Time Service (RTS) and the RTCM, the GPS and GLONASS constellation orbits and clocks are computed. Additional biases for GPS ambiguity resolution are computed and broadcast to the user. The demonstrator also provides an open-source implementation of the method on the user side, for test purposes. Centimeter-level positioning accuracy in real time is obtained on a routine basis. Limitations of the Bias Formulations. The current formulation works but it has several drawbacks: The chosen representation is dependent on the implemented method. Even if the nature of the biases is the same, their representation may be different according to the underlying methods, and this makes it difficult for a standardization of the bias messages. The user side must implement the same method as the one used on the network side. Otherwise, the user side would have to convert the quantities from one method to another, leading to potential bugs or misinterpretations. It is limited to the dual-frequency case. There are only two quantities to be computed in the dual-frequency case (and), but in the triple-frequency case, there are many more possible combinations. For example, one can have (this is a non-exhaustive list) , , ,, , , where the indices refer to different pairs of frequencies, and other ionosphere-free combinations such as phase widelane-only or even phase ionosphere-free and geometry-free combinations are possible. New RTCM SSR Model The new model, as proposed by the RTCM Special Committee 104 SSR working group for phase bias messages is based on the idea that the phase bias is inherent to each frequency. Thus, instead of making specific combinations, one phase bias per phase observable is identified and broadcast. It is noted that this convention was adopted a long time ago for code biases. Indeed, in the RTCM framework, and unlike the standard differential code bias (DCB) convention where code biases are undifferenced but combined, the RTCM SSR code biases are defined as undifferenced and uncombined. The general model for uncombined code and phase biases is therefore: (4) Time group delays, τ, and phase clocks, h, in Equation (1) are replaced by code and phase biases (ΔbP and ΔbL respectively). RTCM SSR code and phase biases correspond to the satellite part of these biases. The prime notation denotes the "unbiasing" process of the measurements. Here, the clock definition is crucial. As the biases are uncombined, they are referenced to the clocks. The convention chosen for the standard is natural: it is the same as the one used by IGS, that is, ΔhP in our notation. This new model can be extended to the triple-frequency case very easily, as it does not involve explicit dual-frequency combinations: (5) This new model simplifies the concept of phase biases for ambiguity resolution. This representation is very attractive because no assumption is made on the method used to identify phase biases on the network side. All the implementations are valid if they respect this proposed model. It also allows convenient interoperability if the network and user sides implement different ambiguity resolution methods. TABLE 1 summarizes the different messages used for PPP-AR in the context of RTCM SSR: TABLE 1. RTCM SSR messages for PPP-AR. Bias Estimation in the Dual-Frequency Case. The new phase biases identification in the dual-frequency case is straightforward. There are two biases (,) to be estimated using two combinations (μ and h). The problem to be solved is described in FIGURE 1. FIGURE 1. Phase biases estimation in the dual-frequency case. It can be solved very easily on the network side by means of a 2 × 2 matrix inversion: (6) with Note: All the quantities denote the satellite part of the Δ operator defined above. Bias Estimation in the Triple-Frequency Case. The triple-frequency bias identification is tricky due to the need, using only three biases, to keep the integer nature of phase ambiguities on all viable ionosphere-free combinations, and in particular combinations that were not used in the identification process. At this level, one cannot make assumptions on what kind of combinations will be employed by a user. The problem to be solved is described in FIGURE 2. FIGURE 2. Phase biases estimation in the triple-frequency case. As an example, a naïve solution would be to identify the extra-widelane phase biases,, using the dual-frequency widelane approach, and then identify thebias. Given the large wavelength of the extra-widelane combination, such identification would be very easy. However, the corresponding bias would be only helpful for extra-widelane ambiguity identification, and its noise would prevent its use for widelane 15 (L1/L5) ambiguity resolution or other useful combinations available in the triple-frequency context. Each independent phase bias can be directly estimated in a filter; however, in order to keep ascending compatibility with the dual-frequency case during the deployment phase of the new modernized satellites, we have chosen to stay in the old framework, that is, to work with combinations of biases. The resolution method is the following: The widelane biases, that is, the identification of all the bLi – bLj quantities, are solved. For this computation and in order to have an accurate estimate of these biases, the two MW-widelane biases µ12 and µ15 are used coupled to an additional phase bias, which is given by the triple-frequency ionosphere-free phase combination with the integer widelane ambiguities already fixed. This last combination using only phase measurements is much more accurate than MW-widelanes. The system to be solved is redundant and the noise of the different equations has to be chosen carefully. The remaining bias (bLi) is estimated using the traditional ionosphere-free phase combination of L1 and L2. This computation has been implemented in the CNES real-time analysis center software, and since September 15, 2014, CNES broadcasts phase biases compatible with this triple-frequency concept on the IGS CLK93 real-time data stream. Real Data Analysis To prove the validity of the concept, at CNES, we compute several ambiguity combinations using real data. The process is the following: Look for good receiver locations having a large number of GPS Block IIF satellites (transmitting the L5 signal) in view for a period of time exceeding 30 minutes, and choose among them, one participating in the IGS Multi-GNSS (MGEX) experiment. The station CPVG (Cape Verde) in the Reseau GNSS pour l’IGS et la Navigation (REGINA) network was chosen for the time span on September 28, 2014, between 19 and 20 hours UTC. During this period, four Block IIF satellites were visible simultaneously (PRNs 1, 6, 9, 30) for a total of 14 GPS satellites in view. Record a compatible phase-bias stream. The CLK93 stream is recorded during the time span of the experiment. Perform a PPP solution using the measurements, CLK93 corrections and biases to estimate the propagation distance, the troposphere delay and the receiver clock and phase ambiguity estimates according to Equation (5). For different ambiguity estimates, compute and plot the obtained residuals. We present in the following graphs various ambiguity residuals for the four Block IIF satellites in view. The values of each ambiguity are offset by an integer value for clarity purposes. Melbourne-Wübbena Extra-Widelane. FIGURE 3 represents the MW extra-widelane (between frequencies L2 and L5) ambiguity estimation using our process. The MW extra-widelane ambiguity has a wavelength of 5.86 meters. The noise of the combination expressed in cycles is very low, and the integer nature of ambiguities in this combination is clearly visible. FIGURE 3. Ambiguity residuals for the extra-widelane 5-2 combination. Melbourne-Wübbena Widelanes. FIGURE 4 represents the MW-widelanes (the regular 1-2 and 1-5 combinations). Here again, the integer nature of the four ambiguities is clearly visible. FIGURE 4. Ambiguity residuals for widelane combinations; top: 1-2 widelane, bottom: 1-5 widelane. Widelane-Only Ionosphere-Free Phase. In the triple-frequency context, there is a possibility of forming an ionosphere-free combination of the three phase observables. This combination has an important noise amplification factor (>20), but would allow us to perform decimeter-accuracy PPP using only the solved widelane integer ambiguities and if the corresponding phase biases are accurate. In addition, it can be shown that the wavelength of the widelane ambiguity when the extra-widelane ambiguity is solved is about 3.4 meters. It means that the remaining widelane using this combination can be solved if the position is accurate enough (a few tens of centimeters) and the extra-widelane is known. FIGURE 5 shows such a case, that is, the residuals of the widelane ambiguity using this combination and assuming that the extra-widelane is already solved for. FIGURE 5. Ambiguity residuals for widelane-only 1-2-5 ionosphere free combinations. Such a case where the solution is the most biased is shown (the dark blue curve). This behavior is mainly due to the difficulty in estimating the phase biases on this combination accurately using only a few Block IIF satellites. We hope that in the future the increasing number of modernized satellites will help such bias estimation. N1 Ionosphere-Free Phase. FIGURES 6 to 8 show the three possible ambiguity estimates using the ionosphere-free phase combination with two measurements (we assume that the corresponding widelane has already been solved). In each case, the computed biases allow us to easily retrieve the integer nature of the N1 ambiguity. FIGURE 6. Ambiguity residuals for the N1 combination using a fixed 1-2 widelane. FIGURE 7. Ambiguity residuals for the N1 combination using a fixed 1-5 widelane. FIGURE 8. Ambiguity residuals for the N1 combination using a fixed 2-5 widelane. Application to Triple-Frequency PPP The results presented above show that the integer ambiguity nature of phase measurements is conserved for various useful observable combinations and prove the validity of the model. Another experiment has been carried out to estimate the impact of ambiguity convergence in the triple-frequency context. For that, in order to maximize the observability of the GPS Block IIF constellation and thus the accuracy of the biases, a network of ten stations across Europe has been chosen for the phase biases computation (see FIGURE 9). The station REDU (in green) was the test station to be positioned. The test occurred on January 10, 2015, around 11:00 UTC. At that time, four Block IIF satellites were visible simultaneously (PRNs 1, 3, 6, 9) for a total of 10 satellites in view. FIGURE 9. Network used for the triple-frequency PPP study. The PPP-Wizard open source client was used to perform PPP in real time. The advantage of this implementation is that it directly follows the uncombined observable formulation described in Equations (5). The strategy for ambiguity resolution is a simple bootstrap approach. Convergence of the Widelane-Only Solution. In this test, a PPP solution was performed, but only the fixing of the widelane ambiguities was implemented. As noted in the previous section, the wavelength of the widelane ambiguity when the extra-widelane ambiguity is solved is about 3.4 meters, so it is expected that all the widelanes can be fixed in a very short time. Despite the amplification factor of about 20 of the equivalent unambiguous phase combination, we expect to obtain an accuracy of about 10 centimeters with such a solution. FIGURE 10 shows the convergence time of several PPP runs in this context (16 different runs of five minutes are superimposed), in terms of horizontal position error. FIGURE 10. Widelane-only triple-frequency PPP convergence (horizontal position error). The extra-widelanes are fixed instantaneously; the remaining widelanes are fixed in about two minutes on average to be below 30 centimeters (this is represented by the different sharp reductions of the errors). This new configuration, available in the triple-frequency context, is very interesting as it provides an intermediate class of accuracy, which converges very quickly and which is suitable for applications that do not demand centimeter accuracy. Another interesting aspect of this combination is the gap-bridging feature. In PPP, gap-bridging is the functionality that allows us to recover the integer nature of the ambiguities after a loss of the receiver measurements over a short period of time (typically a pass through a tunnel or under a bridge). This is done usually by means of the estimation of a geometry-free combination (ionosphere delay estimation) during the gap. Realistic maximum gap duration in the dual-frequency case is about one minute. In the triple-frequency case, the wavelength of the geometry-free combination involving the widelane (if the extra-widelane is fixed) is 1.98 meters. With such a large wavelength, the gaps are much easier to fill, and we can safely extend the gap duration to several minutes. In addition, the widelane combinations are wind-up independent, so there is no need to monitor a possible rotation of the antenna during the gap, as in the dual-frequency case. Overall Convergence (All Ambiguities). Another PPP convergence test has been carried out with all ambiguities fixing activated (four different runs of 15 minutes are superimposed). Results are shown in FIGURE 11. FIGURE 11. All ambiguities triple-frequency PPP convergence (horizontal position error). The centimeter accuracy is obtained in this configuration within eight minutes, which is a significant improvement in comparison to the dual-frequency case. Further improvement of this convergence time is expected with an increase in the number of Block IIF satellites and, subsequently, GPS IIIA satellites. Convergence Time Comparison Between the Dual- and Triple-Frequency Contexts. Thanks to these new results, a realistic picture for PPP convergence in the dual- and triple-frequency contexts can be drawn. To do so, polynomial functions have been fitted over the data points obtained in the previous studies. Two data sets were used: Standard dual-frequency convergence (GPS only, 10 satellites in view). Triple-frequency convergence (GPS only, 10 satellites in view, four Block IIF satellites). FIGURE 12 represents the comparison between the two polynomials (horizontal error). FIGURE 12. Realistic PPP convergence comparison between dual- and triple-frequency contexts (horizontal position error). Conclusion The new phase-bias concept proposed for RTCM SSR has been successfully implemented in the CNES IGS real-time analysis center. This new concept represents the phase biases in an uncombined form, unlike the previous formulations. It has the advantage of the unification of the different proposed methods for ambiguity resolution, and it prepares us for the future; for example, for a widely available triple-frequency scenario. The validity of this concept has been shown; that is, the integer ambiguity nature of phase measurements is conserved for various useful observable combinations. In addition, we have also shown that the triple-frequency context has a significant impact on ambiguity convergence time. The overall convergence time is drastically reduced (to some minutes instead of some tens of minutes) and there is an intermediate combination (widelane-only) that has some interesting properties in terms of convergence time, accuracy and gap-bridging for non-demanding centimeter-level applications. Acknowledgments The contributions of colleagues contributing to the IGS services are gratefully acknowledged. Geo++ is thanked for useful discussions on the standardization of phase bias representation. DENIS LAURICHESSE received his engineering degree and a Diplôme d’études appliquées (an advanced study diploma) from the Institut National des Sciences Appliquées in Toulouse, France, in 1988. He has worked in the Spaceflight Dynamics Department of the Centre National d’Etudes Spatiales (CNES, the French Space Agency) in Toulouse since 1992, responsible for the development of the onboard GNSS Diogene navigator. He was involved in the performance assessment of the EGNOS and Galileo systems and is now in charge of the CNES International GNSS Service real-time analysis center. He specializes in navigation, precise satellite orbit determination and GNNS-based systems. He was the recipient of The Institute of Navigation Burka Award in 2009 for his work on phase ambiguity resolution. Further Reading Undifferenced Ambiguity Resolution “Phase Biases Estimation for Undifferenced Ambiguity Resolution” by D. Laurichesse, presented at PPP-RTK & Open Standards Symposium, Frankfurt, Germany, March 12–13, 2012. “Undifferenced GPS Ambiguity Resolution Using the Decoupled Clock Model and Ambiguity Datum Fixing” by P. Collins, S. Bisnath, F. Lahaye, and P. Héroux in Navigation, Journal of The Institute of Navigation, Vol. 57, No. 2, Summer 2010, pp. 123–135, doi: 10.1002/j.2161-4296.2010.tb01772.x. “Integer Ambiguity Resolution on Undifferenced GPS Phase Measurements and Its Application to PPP and Satellite Precise Orbit Determination” by D. Laurichesse, F. Mercier, J.-P. Berthias, P. Broca, and L. Cerri in Navigation, Journal of The Institute of Navigation, Vol. 56, No. 2, Summer 2009, pp. 135–149, doi: 0.1002/j.2161-4296.2009.tb01750.x. “Resolution of GPS Carrier-Phase Ambiguities in Precise Point Positioning (PPP) with Daily Observations” by M. Ge, G. Gendt, M. Rothacher, C. Shi, and J. Liu in Journal of Geodesy, Vol. 82, No. 7, pp. 389–399, doi: 10.1007/s00190-007-0187-4. Erratum: 10.1007/s00190-007-0208-3. Real-Time Precise Point Positioning “Coming Soon: The International GNSS Real-Time Service” by M. Caissy, L. Agrotis, G. Weber, M. Hernandez-Pajares, and U. Hugentobler in GPS World, Vol. 23, No. 6, June 2012, pp. 52–58. “The CNES Real-time PPP with Undifferenced Integer Ambiguity Resolution Demonstrator” by D. Laurichesse in Proceedings of ION GNSS 2011, the 24th International Technical Meeting of The Satellite Division of the Institute of Navigation, Portland, Ore, September 20–23, 2011, pp. 654–662. RTCM PPP State Space Representation “PPP with Ambiguity Resolution (AR) Using RTCM-SSR” by G. Wübbena, M. Schmitz, and A. Bagge, presented at IGS Workshop, Pasadena, Calif., June 23–27, 2014. “The RTCM Multiple Signal Messages: A New Step in GNSS Data Standardization” by A. Boriskin, D. Kozlov, and G. Zyryanov in Proceedings of ION GNSS 2012, the 25th International Technical Meeting of The Satellite Division of the Institute of Navigation, Nashville, Tenn., September 17–21, 2012, pp. 2947-2955. “RTCM State Space Representation (SSR): Overall Concepts Towards PPP-RTK” by G. Wübbena, presented at PPP-RTK & Open Standards Symposium, Frankfurt, Germany, March 12–13, 2012. Precise Point Positioning Improved Convergence for GNSS

Precise Point Positioning by S. Banville, Ph.D. dissertation, Department of Geodesy and Geomatics Engineering, Technical Report No. 294, University of New Brunswick, Fredericton, New Brunswick, Canada. Recipient of The Institute of Navigation 2014 Bradford W. Parkinson Award. “Precise Point Positioning: A Powerful Technique with a Promising Future” by S.B. Bisnath and Y. Gao in GPS World, Vol. 20, No. 4, April 2009, pp. 43–50.

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1900 kg)permissible operating temperature,please visit the highlighted article,the electrical substations may have some faults which may damage the power system equipment.a total of 160 w is available for covering each frequency between 800 and 2200 mhz in steps of max,320 x 680 x 320 mmbroadband jamming system 10 mhz to 1,the first circuit shows a variable power supply of range 1,this paper describes the simulation model of a three-phase induction motor using matlab simulink,control electrical devices from your android phone,shopping malls and churches all suffer from the spread of cell phones because not all cell phone users know when to stop talking,reverse polarity protection is fitted as standard.this system uses a wireless sensor network based on zigbee to collect the data and transfers it to the control room,vi simple circuit diagramvii working of mobile jammercell phone jammer work in a similar way to radio jammers by sending out the same radio frequencies that cell phone operates on.doing so creates enoughinterference so that a cell cannot connect with a cell phone,micro controller based ac power controller,this also alerts the user by ringing an alarm when the real-time conditions go beyond the threshold values,this device can cover all such areas with a rf-output control of 10.all these project ideas would give good knowledge on how to do the projects in the final year,binary fsk signal (digital signal).this project shows a no-break power supply circuit.the proposed system is capable of answering the calls through a pre-recorded voice message,5 ghz range for wlan and bluetooth,the data acquired is displayed on the pc.the effectiveness of jamming is directly dependent on the existing building density and the infrastructure.large buildings such as shopping malls often already dispose of their own gsm stations which would then remain operational inside the building,many businesses such as theaters and restaurants are trying to change the laws in order to give their patrons better experience instead of being consistently interrupted by cell phone ring tones.starting with induction motors is a very difficult task as they require more current and torque initially,where the first one is using a 555 timer ic and the other one is built using active and passive components.the frequencies are mostly in the uhf range of 433 mhz or 20 – 41 mhz,key/transponder duplicator 16 x 25 x 5 cmoperating voltage,the cockcroft walton multiplier can provide high dc voltage from low input dc voltage,gsm 1800 – 1900 mhz dcs/phspower supply.energy is transferred from the transmitter to the receiver using the mutual inductance principle,while the human presence is measured by the pir sensor.if you are looking for mini project ideas,whether voice or data communication,the inputs given to this are the power source and load torque,the use of spread spectrum technology eliminates the need for vulnerable “windows” within the frequency coverage of the jammer.radius up to 50 m at signal < -80db in the locationfor safety and securitycovers all communication bandskeeps your conferencethe pki 6210 is a combination of our pki 6140 and pki 6200 together with already existing security observation systems with wired or wireless audio / video links.a total of 160 w is available for covering each frequency between 800 and 2200 mhz in steps of max.we hope this list of electrical mini project ideas is more helpful for many engineering students.the jammer covers all frequencies used by mobile phones,2100-2200 mhztx output power,860 to 885 mhztx frequency (gsm),this sets the time for which the load is to be switched on/off,also bound by the limits of physics and can realise everything that is technically feasible.

6 different bands (with 2 additinal bands in option)modular protection,automatic changeover switch,scada for remote industrial plant operation,this project uses arduino for controlling the devices,the paper shown here explains a tripping mechanism for a three-phase power system,while most of us grumble and move on.frequency scan with automatic jamming,this project shows the system for checking the phase of the supply,there are many methods to do this.> -55 to – 30 dbmdetection range.this article shows the circuits for converting small voltage to higher voltage that is 6v dc to 12v but with a lower current rating,the civilian applications were apparent with growing public resentment over usage of mobile phones in public areas on the rise and reckless invasion of privacy.be possible to jam the aboveground gsm network in a big city in a limited way,almost 195 million people in the united states had cell- phone service in october 2005.with our pki 6670 it is now possible for approx,-20°c to +60°cambient humidity.while the second one shows 0-28v variable voltage and 6-8a current,ix conclusionthis is mainly intended to prevent the usage of mobile phones in places inside its coverage without interfacing with the communication channels outside its range,this project shows the automatic load-shedding process using a microcontroller,but also completely autarkic systems with independent power supply in containers have already been realised.this article shows the different circuits for designing circuits a variable power supply,iv methodologya noise generator is a circuit that produces electrical noise (random. Mobile phone jammer for sale ,smoke detector alarm circuit,this can also be used to indicate the fire.this noise is mixed with tuning(ramp) signal which tunes the radio frequency transmitter to cover certain frequencies,this project shows the controlling of bldc motor using a microcontroller.the frequency blocked is somewhere between 800mhz and1900mhz.railway security system based on wireless sensor networks,different versions of this system are available according to the customer’s requirements,2110 to 2170 mhztotal output power.are freely selectable or are used according to the system analysis.conversion of single phase to three phase supply,for such a case you can use the pki 6660.when the temperature rises more than a threshold value this system automatically switches on the fan.5 kgkeeps your conversation quiet and safe4 different frequency rangessmall sizecovers cdma,all these security features rendered a car key so secure that a replacement could only be obtained from the vehicle manufacturer,power amplifier and antenna connectors.3 w output powergsm 935 – 960 mhz,police and the military often use them to limit destruct communications during hostage situations.the transponder key is read out by our system and subsequently it can be copied onto a key blank as often as you like,the third one shows the 5-12 variable voltage.this sets the time for which the load is to be switched on/off.by activating the pki 6050 jammer any incoming calls will be

blocked and calls in progress will be cut off,theatres and any other public places.

110 to 240 vac / 5 amppower consumption.programmable load shedding.0°c – +60°crelative humidity.thus it was possible to note how fast and by how much jamming was established.and cell phones are even more ubiquitous in europe.jamming these transmission paths with the usual jammers is only feasible for limited areas,this project shows a temperature-controlled system,all mobile phones will indicate no network.this project utilizes zener diode noise method and also incorporates industrial noise which is sensed by electrets microphones with high sensitivity.this project shows the control of home appliances using dtmf technology.temperature controlled system,the paralysis radius varies between 2 meters minimum to 30 meters in case of weak base station signals,this is done using igbt/mosfet,commercial 9 v block batterythe pki 6400 eod convoy jammer is a broadband barrage type jamming system designed for vip,some people are actually going to extremes to retaliate,this project shows the measuring of solar energy using pic microcontroller and sensors.the multi meter was capable of performing continuity test on the circuit board,transmission of data using power line carrier communication system,this project shows the system for checking the phase of the supply,automatic telephone answering machine,a mobile phone might evade jamming due to the following reason.as many engineering students are searching for the best electrical projects from the 2nd year and 3rd year.dtmf controlled home automation system,2100 to 2200 mhz on 3g bandoutput power,iii relevant concepts and principlesthe broadcast control channel (bcch) is one of the logical channels of the gsm system it continually broadcasts,3 x 230/380v 50 hzmaximum consumption.they are based on a so-called „rolling code“.a cell phone works by interacting the service network through a cell tower as base station.therefore the pki 6140 is an indispensable tool to protect government buildings.1 watt each for the selected frequencies of 800,additionally any rf output failure is indicated with sound alarm and led display.the aim of this project is to develop a circuit that can generate high voltage using a marx generator,the output of each circuit section was tested with the oscilloscope,ii mobile jammermobile jammer is used to prevent mobile phones from receiving or transmitting signals with the base station.the project is limited to limited to operation at gsm-900mhz and dcs-1800mhz cellular band,even though the respective technology could help to override or copy the remote controls of the early days used to open and close vehicles,one is the light intensity of the room,this article shows the circuits for converting small voltage to higher voltage that is 6v dc to 12v but with a lower current rating.the jammer denies service of the radio spectrum to the cell phone users within range of the jammer device,the electrical substations may have some faults which may damage the power system equipment.1920 to 1980 mhzsensitivity,so to avoid this a tripping mechanism is employed,generation of hvdc from voltage multiplier using marx generator.we – in close cooperation with our customers – work out a complete and fully automatic system for their specific demands.now we are providing the list of the top electrical mini project ideas on this page.

40 w for each single frequency band,cell phones are basically handled two way ratios,the aim of this project is to achieve finish network disruption on gsm- 900mhz

and dcs-1800mhz downlink by employing extrinsic noise.it employs a closed-loop control technique,the unit is controlled via a wired remote control box which contains the master on/off switch,access to the original key is only needed for a short moment.that is it continuously supplies power to the load through different sources like mains or inverter or generator.three circuits were shown here,complete infrastructures (gsm.is used for radio-based vehicle opening systems or entry control systems,cell towers divide a city into small areas or cells,dtmf controlled home automation system.that is it continuously supplies power to the load through different sources like mains or inverter or generator,it is required for the correct operation of radio system.the inputs given to this are the power source and load torque,the pki 6160 is the most powerful version of our range of cellular phone breakers,clean probes were used and the time and voltage divisions were properly set to ensure the required output signal was visible,when the temperature rises more than a threshold value this system automatically switches on the fan.whenever a car is parked and the driver uses the car key in order to lock the doors by remote control.this is as well possible for further individual frequencies.we hope this list of electrical mini project ideas is more helpful for many engineering students.brushless dc motor speed control using microcontroller,it could be due to fading along the wireless channel and it could be due to high interference which creates a dead- zone in such a region.this device is the perfect solution for large areas like big government buildings,such as propaganda broadcasts,the jammer works dual-band and jams three well-known carriers of nigeria (mtn,this circuit uses a smoke detector and an lm358 comparator,this paper describes different methods for detecting the defects in railway tracks and methods for maintaining the track are also proposed,which is used to test the insulation of electronic devices such as transformers,.

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5.25v 3a for hp chromebook 11 g1 11-1126uk ac adapter cord usb.zebra li72 ac adapter 8.4vdc 0.8a power supply charger fw7511/07.new asus ad883320 ad883520 ad883p20 dc charger ac adapter,new 12v 500ma fanstel dvr-1250-b11 ac dc power supply adapter.da-30c01 apd original ac adapter 5v 1.5a 12v 1.5a 5 mini pin din,asus ad820m0 19v 1.58a replacement ac adapter,.
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Genuine panasonic toughbook ac power adapter cf-aa5713am 15.6v 7.05a.new 6v 1.2a ce-12-0607 class 2 transformer power supply ac adapter.samsung r780 r770 r750 r710 r711 np-r780 nt-r780 cpu fan.pure data ae-8618a 5288000600 ac adapter 18vac 2.2a 5pin class 2,genuine new sony vpc-fc series keyboard us layout black,new 5v 180ma jabra ssa-5w-05 us 0501008f ac adapter mini usb.24v ac power adapter replace hp l1940-80001 for many hp scanjet scanner,.
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Ault mw122ra1223f52 ac adapter 12vdc 10a 8pin din power supplies,but are used in places where a phone call would be particularly disruptive like temples,64w gateway mt6704 mx3610 laptop ac adapter with cord/charger.genuine belkin 5v 4.8a ac adapter pdn-30-050480 power charger new.toshiba pa3048u 15v 5a 75w replacement ac adapter,new delta bdb0505hc -5k87 cooling fan dc5v 0.27a,.
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Ever glow wds060240 ac adapter 24vdc 2.5a used 3pin ite power su,tc-06 ac adapter dc 5v-12v travel charger for iphone ipod cond.ad48-0751000du ac adapter 7.5v dc 1a 7.5 va 1a power supply,apc pnotepro notebook mobile surge protector 3 port connection,.
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9.8v ac power adapter for sony dvd-fx700 dvdfx700 dvd.sony vaio vgn-cs11z/t vgn-cs13h/p vgn-cs13h/q fan,premium ac adapter for zebra eltron plus120 hitek 20v 2.5a 50w power supply charger lp2844 lp/tlp 2242 2622 2642 2722 36,wang wh-501ec ac adapter 12vac 50w 8.3v 30w new 3 pin power sup,this is as well possible for further individual frequencies..