WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Universal Charging Pin

Akshay Gaikwad

Keraleeya Samajam's Model College, Dombivli East, Mumbai, Maharashtra, India
akshaygiakwad81299@gmail.com

ABSTRACT

More than a thousand millions of latest cell telephones are offered yearly, whilst almost the equal quantity of older gadgets are being disposed, contributing to the e-waste challenge. Furthermore, old chargers, often not compatible with the new phones, are sent to dump too, adding up to the e-waste problem and increasing the costs for the end user. This paper reports an analysis performed on a wide number of mobile charger currently available in the market. In particular, such analysis gives the distribution of: output voltages and currents, type of connectors, efficiency, sizes, weights, etc. trying at same time to highlight the correlations (if present) among such variables and identifying the best available solution. Then, further studies based on LCA will also be presented, with the goal to analyse the mobile charger efficiencies and their related environmental impacts concerning the use phase as well as the manufacturing one. As a conclusion, the paper will provide some suggestions on the main features that a Universal Mobile Charger should have.

Introduction

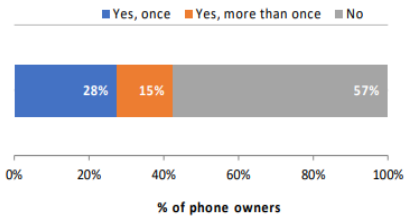
A cell phone charger is a device used to recharge the battery in a mobile phone unit. Often, a basic charger comes with the cell phone when it is purchased. In some cases, additional chargers may be purchased that have added features.Prior to the signature of the MoU, cell telephones had been frequently best well matched with chargers that had proprietary charging connections among the tool and the charger, i.e. they may best be charged the use of unique chargers. It became envisioned that at the moment there had been greater than 30 different kinds of chargers at the market.As a end result of the 2009 Memorandum of Understanding (MoU), cell telecellsmartphone producers adopted a not unusual place specification primarily based totally at the USB 2.zero Micro B (Micro-USB) or well suited adaptors for those telephones that did now no longer have a Micro-USB interface. The MoU changed into later prolonged through letters of intent.It acquired a brand new voluntary settlement from cellular phone manufacturers, which declared their aim to "keep to permit smartphones to be charged thru a not unusual place charging interface". As proprietary answers have been proposed collectively with the preceding USB 2.zero Micro B and the brand new USB Type C solutions.Universal Mobile Phone Charger. Charge any cell phone battery with just one universal travel charger. Compatible with batteries of cell phones, PDAs, digital cameras and digital camcorders with an output of less than 4.3V or less under 2,000 mAh capacity. Input power: 100 - 240 V 50/60 Hz; India plug

Objectives of the Common Charger 2.0 study

• conduct a market analysis.
• forecast the uptake of the different wired charging solutions over the next 5 years; and
• compare several policy scenarios (the MoU and a regulatory option), including their cost effectiveness, impacts on consumers, the industry, and the environment.

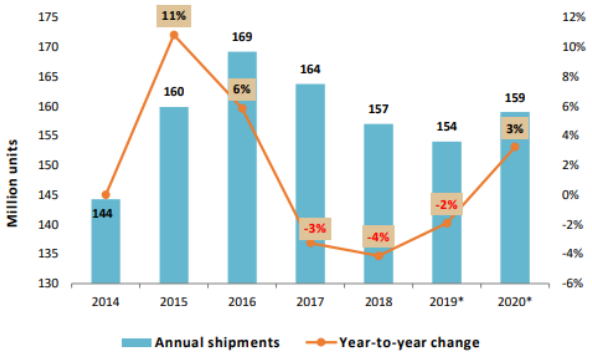
Market analysis

The approach to the analysis of the evolution of the market for the charging solutions draws partiallyupon the results of the market analysis carried out in the previous section. Information relative to thetrend in the sales of phones and the EU market shares of the manufacturers will feed into the task offorecasting the evolution of the stock of chargers and breaking it down by the connector type.
Evidence strongly points to the fact that USB-C is going to become the predominant charging interface for smartphones(absent any government or other intervention); it is, however, recognised that MicroUSB may still remain the preferred solution for some low-end smartphones. Many manufacturershave already released models with USB-C charging capacity.
A few questions of the customer survey have been in particular designed to shed mild on customer habitsthat can significantly influence the evolution of the stock of chargers over the next years. Respondentswere asked to indicate how often they purchase new chargers or cables, either in addition or toreplace the ones initially supplied with their device.



Mobile phone market

In order to estimate the figures of annual phone income with inside the EU, exceptional reasserts of statistics havebeen scrutinized and compared, such as Statists, GSMArena and Canalys. The estimates assume that shipments figures translate directly into sales to end consumers. Sales for year 2019 and 2020 have been estimated on the basis of global forecasts. The available data indicate sluggish sales of smartphones in the lastcouple of years, which more orless resembles the downward global trend but the overall level of sales is still greater than in 2014. Itis noted that the decline in the level of shipments in the EU stems mostly from falling sales in WesternEurope due to slowing replacement rates and a high level of saturation.



Charger market

The key developments within side the charger marketplace include:

• extensively comparable numbers of chargers sold/provided;

• shift from incorporated chargers to charging blocks with a removable cable; and

• improvement of USB Type-C and its adoption.

Mobile telecellsmartphone chargers can both come within side the field inside a brand new cell telecellsmartphone, or theyare able to be bought on a ‘standalone’ foundation for exclusive forms of reasons (e.g. substitute of damagedchargers, want for a charger to price a couple of devices). No information were recognized to signify thatfewer chargers are provided these days than have been provided in 2014. This is because of fundamental reasons:

• the income of latest telephones and chargers have now no longer decoupled, with a pilot decoupling programmedwithin side the UK seeing very re-strained hobby from consumers, who with inside the primary nonetheless assume a chargerto be furnished with inside the field with a brand new tele-cellsmartphone (as showed via way of means of the consequences of the survey carriedout for this modern-day observe);

• income of standalone chargers seem like at a extensively just like pre-2014 levels. RPA (2014)cited that annual income of standalone chargers (2011-2013) accounted for 9% to 14% of allcell chargers provided in any given year. This extensively ties in with 43% of respondents tothe survey completed for this observe which bought an extra charger or cable at leastas soon as in view that acquiring their number one cell telecellsmartphone and the envi-sioned telecellsmartphone alternative cycle of round 30 months.

Cost of chargers

The volume to which blessings and/or expenses might rise up for clients below a situation wherein acommon charger is mandated will depend, to a large degree, on the extent to which consumers facea ‘problem’ charging their phones and other devices and how willing they are to incur any costs (notjust financial) that might arise. Potential costs arising include those relating to having to purchase areplacement charger in the event that they do not have access to their own or another compatiblecharger or higher costs of different types of chargers/cables that they may be forced to purchase (dueto lack of availability or a particular charger having been mandated)

Costs (or fee savings) bobbing up to customers below the exclusive situations regarding charging solutions
• Costs arising from needing to purchase chargers/cables in the event that consumers do not
Have access to a compatible charger and need to charge their phone
• The need to purchase additional chargers when purchasing a new device or switching from
Their existing one
• Additional costs arising from higher prices when the current connectors are cheaper than
Those that might be mandated under potential regulation

Impacts on manufacturers of mobile phones and chargers

• Cost of remodelling currentmerchadise/designing new merchandise that meet the requirements;
• Lost sales due to earlier than planned phase-out of non-compliant products;
• If redesign is impossible within the timeframe required or not commercially viable, temporary
or permanent cessation of shipments of certain products;
• Potential need for two product lines, one for EU and another one for the rest of the world;
• Costs associated with providing alternative (more expensive) chargers/connectors;
• Lost sales of proprietary chargers or revenue from licensing;
• Breach of long-term contracts and potential penalties;
• Impaired innovation and building to the lowest common denominator
• Impacts on safety and reliability – performance, warranty and liability issues;
• Negative effects on competitiveness of EU companies; and
• Negative impact on competition should the intervention disproportionately affect companies
Those rely on the Lightning or Micro-USB connector in all or some product categories.

Enviromental impact

One of the arguments brought forward in support of a mandatory use of a standardized charging solution is that it would help to reduce electronic waste and by this means the economic andenvironmental cost associated with its disposal. The quantity of e-waste generated from chargers and cables is driven by the level of sales, the total stock and consumer habits. If all phones and other devices had the same connector, the idea is, consumers would be able to usethe same charger or cable with different devices, or re-use an oldcharger or cable when they purchasea new phone. Although speculative, this could reduce the number of new chargers purchased as wellas the number of chargers held by consumers. The hypothetical benefits associated with thesepotential reductions could be the saving of raw materials and reduction in CO2 emissions producedthroughout the complete existence cycle of a charger or cable.

As concluded in a report on the potential environmental benefits of a mandated actioncablesappear to be considerably less impactful than charging blocks, in all the examined aspects, except for the impact category abiotic depletion. This entails that even if realized, the hypothetical benefits of a reduction in the sales of new charging blocks and cables might be limited.The gradual detachment of the cable from the charging block, hasresulted in a decline of integrated chargers and the possibility to reuse a charging block with othercables or to plug a cable directly into a power source (i.e. USB socket in a computer, on the wall, etc.).

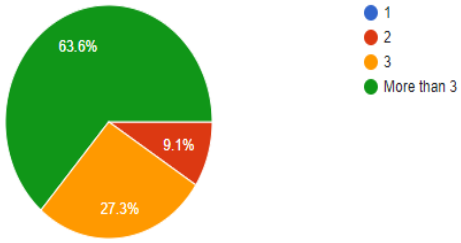
This has reduced consumers' need to buy a new charging block whenever they just need to replace their cables, that are considerably more consumable than the blocks. In this way, the detachment haseffectively brought about a reduction in raw material consumption and consequently in e-waste generation when compared with a situation where cables cannotbe separated from the mains block.

Other devices

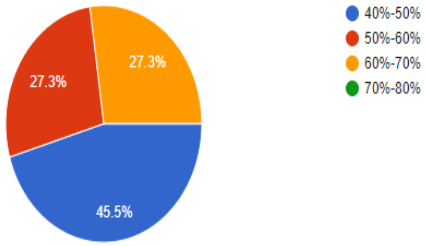
The centrality of smartphones overfeature phones and the other devices that consumers use to access internet services. 94.3% of allrespondents currently own at least a smartphone, whereas only 4.8% of them currently own a featurephone but not a smartphone. The percentage of smartphone ownership is highest among youngconsumers as 98% of respondents aged 18 to 29 own a smartphone, as opposed to 93% ofrespondents aged 60+. This is indicative of the fact that feature phones will still be present in theEuropean market in the next upcoming years, but their share in the mobile phone market is set tofurther shrink. This consideration will feed into the estimation of the stock of chargers and its breakingdown by charging solutions.Concerning other devices, 47% said that they also use a tablet, while 58% also use a laptop. There aresome hints that regulation to mandate a common charger might be extended to cover laptops andtablets. Nevertheless, such an extension of the scope of the legislation presents risks and challengesthat can hardly be solved.

Survey and Analysis

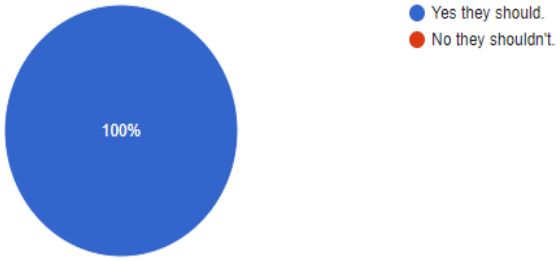
How many charging cable in your house ?

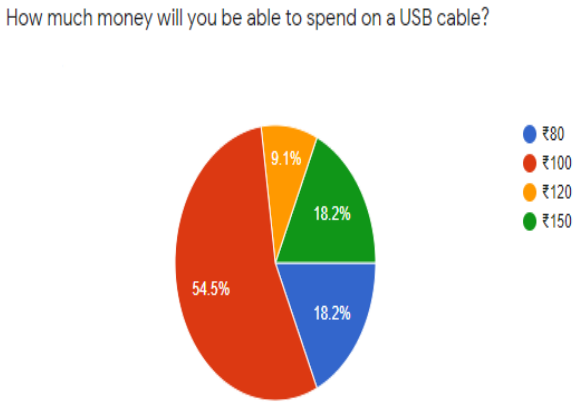


How much e-waste will be reduced using universal charging PIN ?



What do think if all the smart phone manufacturing companies use same charging port in all device?





Conclusion

The shift to USB-C / USB 3.1+ power delivery protocols offers endless opportunities for innovation, but as is often the case, it needs to be steered in the direction of cooperation and standardisation. Our policy recommendations ensure that innovation proceeds at its current pace, guided in a direction that is less harmful to the environment, and ensuring a level playing field for the market. Furthermore, the suggested implementation makes it possible to bypass the shift to USB-C connectors and move straight to innovative wireless solutions when needed.

Reference

RPA-Study-Common-Charger
Common charger Wikipedia
Charging technology