Streamlining the FCC Equipment Authorization Process in Response to Changing Global Markets

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ABSTRACT

Telecommunications equipment and certain electronic products require approval by the Federal Communications Commission (FCC) before they may be imported and marketed in the United States. There is growing worldwide interest in streamlining equipment approval processes for a number of reasons. This paper describes the current FCC equipment authorization requirements and the forces at work seeking to streamline equipment approval processes. Special attention is devoted to international developments. The paper goes on to discuss a recent major FCC action to deregulate the equipment authorization process for personal computer equipment, that is perhaps a first step towards an equipment approval process that will be consistent with these international developments.

INTRODUCTION

The Federal Communications Commission has established an equipment authorization program to ensure that telecommunications and electronic products meet standards that are designed to control radio frequency interference. The markets for telecommunications and electronics products have become increasingly global in nature. Industry has expressed a strong desire to reduce the burdens of testing and obtaining product approvals for multiple markets. As a result, there has been growing support for negotiation of mutual recognition agreements on testing and product approvals. Such trade negotiations are currently underway in several fora. The results of these negotiations will likely require significant changes in existing international and FCC product approval requirements. At the same time, there is strong interest in further streamlining the FCC product approval process and eliminating unnecessary filing requirements. The FCC recently adopted new provisions for authorization of personal computer equipment and their peripherals that will both advance United States interests with regard to mutual recognition agreements and streamline the equipment approval process. This new equipment authorization process may serve as a model for other equipment currently subject to FCC approval. This paper will describe the current FCC equipment authorization program, the status of various negotiations of mutual recognition agreements, the FCC’s decision to deregulate personal computer equipment, and possible future actions.

BACKGROUND

Section 302 of the Communications Act of 1934, 47 U.S.C. Section 302, authorizes the FCC to establish reasonable regulations to control the import and marketing of devices that may cause harmful interference to radio communications. The Commission has exercised this authority by establishing an equipment authorization program to ensure compliance with Commission standards that are designed to control radio frequency interference.

The equipment authorization procedures are set forth in Part 2, Subpart J of the FCC Rules, 47 CFR Part 2, Subpart J. The standards that apply to a given device and the required equipment authorization procedure are specified in the rule parts governing those devices. For example, Part 22 contains the Rules for the cellular radio service, including the technical standards that must be met by cellular transmitters and the requirement that such equipment must be type accepted by the FCC; Part 24 contains the requirements for equipment operating in the Personal Communication Service; Part 15 contains requirements for intentional and unintentional radiators; etc.
CURRENT FCC EQUIPMENT AUTHORIZATION REQUIREMENTS

The FCC has evolved its equipment authorization procedures over time such that there are now several different processes, each with its own set of rules. The processes differ largely in the extent of Commission oversight. The Commission determines which procedure is appropriate for a given type of device based on such factors as the risk of harmful interference, particularly to safety services; the overall compliance record for that type of device; and, the likelihood of continued compliance if there were little FCC oversight.

The equipment authorization procedures are described briefly as follows:

Certification: Certification requires submittal of a written application to the FCC that includes an application Form 731, fee, complete technical description of the product and a measurement report showing compliance with the FCC technical standards. This procedure applies to certain equipment operating under Parts 15 and 18 of the Rules, such as unlicensed low power radio transmitters, personal computers and personal computer peripherals designed for use in residential environments (Class B), and consumer ISM (Industrial, Scientific and Medical) equipment.

Type Acceptance: A procedure that is similar to "certification," except that it typically applies to radio transmitter equipment that is used in licensed radio services.

Notification: A procedure that requires submittal of an abbreviated application, that does not include a measurement report, to the FCC. A measurement report showing compliance of the product with the FCC technical standards must be retained by the applicant and must be submitted upon request by the FCC. This procedure applies to certain microwave and broadcast transmitters and certain radio receivers.

Verification: A self-approval process whereby the manufacturer (or importer for an imported device) is required to ensure that the measurements necessary to determine compliance with the technical standards are performed. A copy of the measurement report showing compliance with the FCC standards must be retained by the manufacturer or importer, and if requested, submitted to the FCC. This procedure applies to business computer equipment intended for use exclusively in a business or industrial environment (Class A); TV and FM receivers; and non-consumer ISM equipment.

Registration: A procedure that applies to telephone equipment subject to Part 68 of the Rules that is intended to be connected to the public switched telephone network. This procedure is designed to protect against harm to the telephone network.

Approximately 7000 applications (excluding applications for telephone registration) for equipment authorization are submitted to the FCC each year. Most applications are processed in about 35 days from the date they are received.

Laboratories performing measurements for certification purposes must file a description of their measurement facilities as required by Section 2.948 of the Rules, 47 CFR Section 2.948. Briefly, they must submit a description of the facility used to make measurements of radiated and power line conducted emissions. Approximately 550 laboratories have filed test site descriptions. More than half are located outside the United States. Thus, the Commission freely accepts measurement reports from laboratories all around the world and treats them no differently than those from laboratories in the United States. Equipment generally may not be imported or marketed in the United States until it has been authorized as required. See 47 CFR Part 2, Subparts I & K.

Further information on the FCC equipment authorization processes is available from reviewing the FCC Rules and from Office of Engineering and Technology (OET) Bulletin 61 available on the FCC Internet home page http://www.fcc.gov. Information is also available on the FCC Public Access Link (PAL) by dialing 301 725 1072. PAL’s modem set up is 8 bits, no parity, 1 stop bit.

FORCES FOR STREAMLINING AUTHORIZATION PROCESS

Several forces are at work that are driving the need to streamline and improve product approval processes, for both domestic and international reasons. In the past, most manufacturers were able to plan for the time required for FCC approval so that there was little or no actual delay in the product reaching the market. For example, product approval would be done in parallel with other necessary tasks, such as actual production, preparation for shipping, preparation of advertising, etc. However, the pace of technology has been getting faster. Many telecommunications products today have
a life cycle of only six months. Thus, manufacturers have expressed a desire to continue to reduce the FCC applications processing time. At the same time, the Federal Government and the FCC are focusing efforts on the need to provide services in a way that best meets customers needs and as efficiently as possible.

The Commission has taken several steps to improve the equipment authorization process, such as reducing processing time from 55 days to 35 days, developing with industry a standardized test report for computer equipment, 2-week approval for permissive changes, sponsoring workshops, improving access to information on the equipment approval process, etc. Further improvements are expected, such as through implementation of electronic fee payment and filing of applications, increased availability of information over the Internet, and access to a data base of rule interpretations.

While it is recognized that improvements to the existing process are of interest, there are two areas of note that are of perhaps landmark importance. The first is in the area of international mutual recognition agreements which may require significant changes to the existing equipment authorization processes. The second is in the area of deregulation of the equipment authorization process for personal computers and personal computer peripherals. This equipment makes up approximately 55% of all applications currently filed (not including applications for telephone equipment registration filed under Part 68). The new authorization process for personal computer equipment may serve as a model for other equipment currently subject to FCC equipment authorization.

INTERNATIONAL DEVELOPMENTS IN CONFORMITY ASSESSMENT

As mentioned above, there is growing world-wide interest in the international harmonization of standards, test methods and product approval procedures to better facilitate trade. This is evident in the General Agreement for Tariffs and Trade and several multilateral agreements, which have all identified standards and conformity assessment issues as potential technical barriers to trade. For example, the North American Free Trade Agreement (NAFTA) Article 1304-6 calls for each of the parties to adopt, as part of their conformity assessment procedures, provisions necessary to accept the test results from laboratories in the territory of the other for product approvals. The Asia Pacific Economic Community (APEC) has adopted guidelines promoting the regional harmonization procedures for the certification of telecommunications equipment. These guidelines state that APEC Member Economies should accord mutual recognition of laboratory test data from other members that is performed in accordance with the accepting economy's standards and technical requirements. The APEC guidelines also call for the certification procedures to be streamlined, to provide equipment supplies with a rapid approval process containing the minimum of administrative obstacles. In addition, at the December 1994 Summit of the Americas hosted by the United States, the Organization of American States Inter-American Telecommunications Commission (CITEL) was tasked with examining ways to promote greater consistency of the authorization processes for telecommunications equipment among member countries.

The United States is also currently engaged in negotiations with the European Union (EU) on a Mutual Recognition Agreement for Conformity Assessment of certain products. Since in many respects the EU is leading the world on negotiations for conformity assessments, it may helpful to the reader to describe in some detail the EU situation and the negotiations between the EU and the United States Government (USG). The EU is 12 independent countries forming the largest single world market with a single set of rules. (It may eventually also include the six EFTA countries.) The framework of the rules are contained in what is referred to as the EU Directives. Figure 1 contains a partial listing of those directives.

Three of these EU Directives are of primary interest to U.S. manufacturers of telecommunication equipment -- Low voltage, EMC and TTE. The EMC Directives covers all electrical and electronic products and all aspects of electromagnetic compatibility -- radiated and conducted emissions, radiated and conducted immunity, electrostatic discharge, power quality, etc. The EMC Directive is a so-called new approach Directive containing only the essential elements. New approach Directives uses harmonized standards, which have been published in the European Journal to demonstrate compliance with the essential elements of the Directive. Implementation of the Directive has or will be adopted into the national law of the EU Member States. Under the EMC Directive, there are two routes to market. If harmonized standards exist for the product, the manufacturer must accomplish whatever is necessary to assure compliance, self-declare compliance and apply the CE mark. If harmonized standards do not exist, the manufacturer must establish a Technical Construction File (TCF), which is verified and approved
by a Competent Body. A Competent Body, which is only mentioned in the EMC Directive, is typically a laboratory that has been deemed competent to perform the required measurements and accredited by a EU Member State. The manufacturer then completes the TCF, declares conformity with the EMC Directive and attaches the CE mark to the product. Radio transmission equipment, although technically under the EMC Directive, has not been addressed and is still under the jurisdiction of the national authorities. This is a simple explanation of a complex subject is not meant to be comprehensive.

The Telephone Terminal Equipment (TTE) is even more complex and is in the process of being rewritten within the next few years. Briefly, the TTE Directive covers health, safety and protection aspects of the public telephone network. The technical aspects of the regulations are being written by the European Telecommunications Standards Institute (ETSI) and the European Committee for Electrotechnical Standardization (CENELEC). To date only a few standards, called Common Technical Regulations (CTRs) have been adopted. The TTE Directive has a complicated route to market, typically through a Member State Accredited Laboratory, called a Notified Body. This is aspect of the TTE Directive is being revised.

The EU has stated that Competent Bodies and Notified Bodies must be physically located in Europe, unless there is agreement for mutual recognition for product approval. About three years ago, the Telecommunication Industry Association (TIA), International Telecommunication Industry Council (ITI), American Council of Independent Laboratories (ACIL) and others representing the Telecommunication Industries in the U.S. petitioned the Department of Commerce to enter into negotiations with the EU to develop a Mutual Recognition Agreement (MRA) for Conformity Assessment. Briefly, an MRA establishes conditions for all aspects of conformity assessment, including product approvals, with non-member states. If accepted, it empowers non-European entities to test and approve equipment for sale in Europe. The EU will also attempt to obtain the same privilege for European manufacturers. In 1993, the EU announced that it was willing to enter into negotiations for an MRA with the U.S., Canada, Australia, Japan and six others countries. From the start, the EU has insisted on the following conditions for an MRA: (a) Competence of testing and approval on par with EU laboratories; (b) the MRA is limited reports, certificates and marks (i.e., it will not address the issue of standards); and (c), the MRA must ensure a "balanced situation".

The first formal negotiations between the EU and U.S. began in April, 1994 followed by five additional meetings. The talks have been centered around the following product sectors: Telecommunication Equipment, Pharmaceuticals, Medical Devices, Recreational Craft, Pressure Vessels and others. U.S. players have included: Department of Commerce and the Office of the United States Trade Representative in the lead and the Department of State, National Institute of Standards and Technology, Federal Communications Commission, Food and Drug Administration, Department of Agriculture and others. The talks have also been supported by some industry trade groups, particularly in the Telecommunication Sector. It should also be mentioned that for negotiation reasons, several of the product sectors have been linked together, so that an MRA may not occur in one product sector, if an agreement is not reached in another product sector. Telecommunication equipment and pharmaceuticals have been so linked.

After more than two years of negotiations involving U.S., EU and Member States representatives, most of the technical differences and regulatory objectives have been identified for the Telecommunication Sector. Negotiating texts have been developed by the U.S. for the three Directives (TTE, EMC and Low Voltage) covering Telecommunication equipment. Negotiations to address the proposed text were held in Brussels in June, 1996, just before the publication of this paper. Results of these negotiations will be presented at the Symposium in August, 1996.

For telecommunication equipment, the U.S. is proposing mutual recognition of product certification after a transition period during which both the U.S. and the EU make necessary legislative and regulatory changes. From the beginning of the negotiations, the EU has insisted on nothing less than mutual recognition of product approvals. The transition period is expected to allow for up to two years for changes in regulations and for building confidence in each other's approval system.

If accepted, the MRA will, after a transition period, allow U.S. manufacturers to test and approve covered products going to Europe. Conversely, it will allow European manufacturers to test and approve covered products coming into the U.S. market. Under an MRA, conformity assessment for products going to the European market could be performed at the same time as testing for the domestic market, thereby reducing
associated time, costs and uncertainties. The MRA, if accepted, might cover: analog and digital telephone terminal equipment, information technology equipment (e.g., computers), unintentional and intentional radiators covered by Parts 15 and 18 of the FCC Rules, transmitters, medical devices, recreational crafts and pharmaceuticals.

Both the U.S. and EU governments, through the new Transatlantic Business Dialogue Initiative, have endorsed the conclusion of an MRA at the earliest possible date. The MRA will facilitate trade and allow manufacturers quicker access to the U.S. and European markets by reducing time and transaction costs for bringing products to market. DOC estimates that 50-80 percent of testing and certification costs can be eliminated with the implementation of the proposed MRA text. DOC also estimates that more than 60 percent of the 260 Billion USD in U.S.-EU trade could benefit from the MRA. Eventually, it may also save regulatory resources by reducing the need to approve products.

While many of the details need to be resolved, there are a number of identifiable steps that need to be taken before the MRA becomes a reality. For example, the FCC must initiate one or more rule makings to change its current equipment authorization programs to empower European Laboratories to approve U.S. bound products. The USG will need to empower U.S. Laboratories to approve European bound equipment to the European Standards. NIST has in fact already taken the first step by releasing a Federal Register Notice requesting interested laboratories and accreditors to identify their interest in testing and approving equipment to EU standards. A number of laboratories already test equipment to EU standards under a contractual relationship with a competent EU laboratory. A joint committee must be established to oversee the implementation of the MRA and to resolve disputes. A system to ensure consistent interpretations of FCC and EU regulations needs to be developed. Post market surveillance programs need to be strengthened to ensure a level playing field for U.S. manufacturers.

The question might be asked if we can expect other countries to request similar treatment. The answer is an unequivocal yes. We can expect a number of different countries and WTO groups (e.g., APEC, CITEL, etc.) to request similar treatment. The program developed should eventually be transparent and should not require additional MRAs.

From the FCC perspective, we have been supportive of industry and the USG in the U.S. - EU MRA initiative, even though it will mean possible changes to the FCC's equipment authorization programs. If it helps U.S. manufacturers and supports overall trade, the FCC is willing to support and consider such initiatives.

**TELECOMMUNICATIONS ACT OF 1996**

The Communications Act of 1934 was recently amended such that the Commission now has the clear authority to take the actions that may be needed to implement MRAs. Specifically, Section 403(f) of the Telecommunications Act of 1996, Pub. L. 104-114, 110 Stat. 56 (1996), amended Section 302 of the Communications Act of 1934 by adding a new paragraph (e) to provide that the Commission may --

1. authorize the use of private organizations for testing and certifying the compliance of devices or home electronic equipment and systems with regulations promulgated under this section;
2. accept as prima facie evidence of such compliance the certification by any such organization; and,
3. establish such qualifications and standards as it deems appropriate for such private organizations, testing, and certification.

As noted above, the European Union and others are seeking mutual recognition agreements whereby parties in Europe would be permitted to authorize equipment that is currently required to be authorized by the FCC. The legislation provides the Commission with the specific authority to permit both foreign and domestic organizations to authorize equipment under conditions that may be prescribed by the FCC. An FCC rule making will be required to implement this authority with regard to MRAs. A key consideration would be to ensure that U.S. manufacturers are afforded all the same privileges and efficiencies as may be made available to foreign manufacturers under the MRA. Also, we anticipate that U.S. manufacturers will continue to be able to perform compliance tests on their own, without having to use a third-party laboratory unless they choose to do so.
DIGITAL DEVICE DEREGULATION

ET Docket No. 95-19. On May 9, 1996, the FCC adopted a Report and Order in ET Docket No. 95-19 amending Parts 2 and 15 of the Commission's Rules to streamline the equipment authorization requirements for personal computers and personal computer peripherals. This action was taken after careful consideration of the comments filed in response to the Notice of Proposed Rule Making in this proceeding. Personal computers and personal computer peripherals are currently required to be authorized by the Commission under the certification procedure. The Report and Order provides a new option that would permit these devices to be authorized based on a manufacturer's or supplier's Declaration of Conformity (DoC) that the computer product complies with all FCC requirements, provided that the compliance tests are performed by an accredited laboratory. The Report and Order also permitted the marketing of personal computers assembled from separate components that have themselves been authorized under a DoC. In such cases, no further testing of the completed assembly is required. The key points of this decision are summarized below.

Declaration of Conformity. Under the new Rules, the manufacturer or supplier would be permitted to issue a Declaration of Conformity for its personal computer equipment to show that it meets FCC requirements. Under the DoC procedure the responsible party, normally the manufacturer or importer, has measurements made at an accredited laboratory to ensure that the equipment complies with the appropriate technical standards. The manufacturer must include a copy of the Declaration of Conformity with the literature provided with the equipment. The Declaration must contain the following information:

1. Unique identification of the product, e.g., name and model number.
2. A statement that the product complies with Part 15 of the FCC regulations.
3. The identification, by name, address and telephone number, of a responsible party located in the United States.

The party responsible for ensuring compliance will be required to submit, upon request, documentation verifying compliance, including test reports, to the Commission within 14 days of receiving such a request.

The Commission stated that it believed the new process would provide a number of important benefits to manufacturers of personal computers and personal computer peripherals. The new process would enable manufacturers to authorize their equipment quickly and avoid delays associated with the current FCC equipment authorization process. And by reducing time-to-market, manufacturers would be able to compete more effectively. Further, manufacturers would not risk premature disclosure of information about their new products that can occur in the current FCC process because information about product approvals is public after the equipment authorization has been granted.

The Commission also stated that it believed personal computer equipment would continue to comply with FCC standards under the new procedure. Further, it was noted that the DoC process was similar to processes used for authorization of personal computer equipment in other parts of the world. In Europe, for example, manufacturers are permitted to self-declare compliance with radio noise standards for personal computer equipment. The DoC plan may advance the acceptance of U.S. product approvals for personal computers and their associated peripherals in other countries. This new procedure could potentially provide U.S. manufacturers easier access to foreign markets, thereby creating jobs and enhancing U.S. economic growth.

Labeling Requirement. Under the DoC procedure, the existing FCC ID label on personal computer equipment would be replaced with a new, simplified label that includes a compliance logo. The new logo is designed to increase public awareness of the FCC technical standards and testing requirements for personal computers and personal computer peripherals. The new labels must uniquely identify the product with a trade name and type or model number. In choosing a logo and label format, the Commission considered the following factors: 1) the logo should be easily recognizable; 2) the logo and label should convey information about its purpose; and 3) the label information and message should be simple and easily understandable. The Commission recognized the advantages of having a uniform labeling requirement and logo that could be accepted throughout North America or the world. The Commission will support efforts to develop a common international compliance label and will revisit this requirement if such a label is developed.
Accreditation of Test Laboratories. The new Rules stipulated that parties that use the DoC process must use an accredited laboratory to perform the compliance measurements. This was the most controversial issue addressed in this proceeding.

In the Notice, the Commission proposed to require laboratory accreditation under the National Institute of Standards and Technology’s National Voluntary Laboratory Accreditation Program (NIST/NVLAP). Comments were invited on the possibility of recognizing other accreditors. Comments were also requested as to whether the requirement for laboratory accreditation should apply to manufacturer’s test laboratories as well as independent (third party) test laboratories. A two year transition period was proposed to permit laboratories to obtain NVLAP accreditation. Within this two-year period, laboratories that had not been accredited would be allowed to continue to obtain authorization of personal computers and peripheral devices under the certification procedure.

Several parties supported the proposal to require laboratory accreditation by NVLAP. They stated that this would offer a number of advantages to U.S. industry and would support U.S. efforts for international harmonization of equipment approvals. Others supported laboratory accreditation provided the Commission would recognize other accrediting organizations such as the American Association for Laboratory Accreditation (A2LA). Other parties supported laboratory accreditation for independent laboratories, but not for manufacturer’s laboratories. Still others opposed any requirement for mandatory accreditation of test laboratories. They argue that the added cost and burden of laboratory accreditation is not warranted. Some argued that mandatory accreditation would not promote international harmonization and would be viewed as a trade barrier by off-shore manufacturers.

The Commission decided that some form of laboratory accreditation is important and necessary for ensuring the proper testing of digital devices for compliance with the Rules. While laboratory accreditation is not required under the existing certification procedure, the FCC staff has the opportunity to review the test methods and results through the applications process. Under the DoC process, the Commission will be relying solely on the test laboratories to perform the measurements properly. The accreditation requirement will provide greater confidence that the tests will be performed correctly and that products will comply with the standards. The Commission noted that while accreditation may not always be explicitly required by foreign countries, their procedures often effectively impose an accreditation requirement.

In order to facilitate accreditation of laboratories, the Commission stated that it would recognize accreditations performed by either NIST/NVLAP or A2LA. Further, authority was delegated to the Chief of the Office of Engineering and Technology to recognize additional accrediting organizations and to make determinations regarding the continued acceptability of individual accrediting organizations and accredited laboratories. Accreditation bodies must be approved by the FCC’s Office of Engineering and Technology, to perform such accreditation based on International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) 58, “Calibration and Testing laboratory Accreditation Systems - General Requirements for Operation and Recognition.” The laboratories must be accredited to ISO/IEC Guide 25, "General Requirements for the Competence of Calibration and Testing Laboratories."

The laboratory accreditation requirement was applied to all laboratories, including manufacturers’ laboratories. No persuasive evidence had been submitted showing that manufacturers’ laboratories are more likely to perform compliance testing of personal computers in a manner that is more acceptable than independent laboratories. Also, excluding manufacturers’ laboratories from the required accreditation would place small manufacturers who must use independent test laboratories at a disadvantage.

The Commission stated that it believed the laboratory accreditation requirement will provide the assurance of testing quality needed by our foreign administrations to accept U.S. test results. In the interests of promoting free trade, the Commission stated that it intended to work closely with the administrations of other countries to develop mutual recognition agreements regarding acceptance of the accreditation of both U.S. and foreign laboratories. At the same time, it would be unfair to accept the accreditation of labs from foreign countries that either do not accept U.S. accreditations or that impose additional barriers on U.S. companies. Therefore, for purposes of the DoC procedure, the Commission will accept accreditation of foreign laboratories from countries with whom the United States has a mutual recognition agreement to accept the accreditation of U.S. laboratories. Foreign manufacturers using non-accredited laboratories may continue to seek equipment approval for personal computing devices under our certification procedure.
A specific transition period was not considered necessary since the Commission decided to allow certification of personal computer equipment on an indefinite basis. While it was recognized that currently accredited laboratories may have some initial advantage in that they will be able to perform testing under the DoC procedure sooner than others, this advantage should be mitigated by the decision to permit additional parties to accredit laboratories. Further, the Commission did not find any compelling reason to penalize manufacturers and importers desiring to take advantage of the DoC process by delaying implementation of that procedure.

Authorization of Modular Personal Computers. Under the current FCC Rules, equipment authorization is permitted only for a complete personal computer in the form marketed to the public. Each time a manufacturer used a different case or power supply with a given CPU board, new tests and a new application are required. Manufacturers indicated that this process was extremely burdensome and costly. Further, there has been a growing trend for systems integrators to market computers that they assemble for the customer at the point of sale. The personal computers assembled by systems integrators would typically consist of various combinations of CPU boards, power supplies, cases and other components. They would generally assemble only small quantities of any given combination and the costs of testing and obtaining equipment authorization could not be spread over high production volumes as is done by major manufacturers. Thus, many small businesses found it impractical to comply with the FCC regulations.

The Commission proposed to approach this problem by allowing the CPU board, power supply and case to be tested and authorized individually. The party assembling the final computer from the authorized components would issue a new Declaration of Conformity stating that they assembled the computer from authorized components. The party issuing the declaration would be responsible for compliance of the product they assembled, however, testing of the combination would not be required. The Commission proposed that the CPU board, when tested without a case, be no more than 6 dB over the FCC radiated emissions standards. The unit had to be tested to demonstrate compliance when tested with a typical case. The Commission proposed to permit power supplies to be authorized based on a single test with the power supply installed in a typical configuration. Enclosures for personal computers were required to demonstrate 6 dB of shielding effectiveness across the spectrum from 30 MHz to 1000 MHz. The DoC for the enclosure would be required to specify the types of CPU boards for which it is authorized (e.g., for use with "486 "DX2" CPU boards.) The Commission also proposed to require that any special steps necessary to ensure compliance be explained in the installation instructions.

The comments on this issue varied greatly. Many parties supported the general thrust of the Commission's proposal. They argued that this proposal will increase the likelihood that systems integrators will comply with the Commission's Rules. They also stated that the new procedure would help to level the playing field between manufacturers who have been complying with current testing rules and system integrators who have not been complying with the FCC Rules.

Many parties expressed concern that personal computers assembled from components without further testing would lead to increased interference to radio communications. They stated that the emissions of personal computers depend on a complex interaction between the CPU board, power supply, case and peripherals. They contended that tests and authorization of components would not adequately ensure that the final assembled computer would comply with the FCC emissions standards. They argued that tests of the fully assembled computer should always be required.

There was also disagreement as to the proposed testing requirements. Some parties argued that CPU boards and power supplies should be subject to even more rigorous testing and emissions standards than the Commission proposed. On the other hand, some argued that the proposed testing was unnecessarily burdensome. Most were opposed to any requirements for enclosures.

The Commission believed that on balance, the benefits of permitting Declarations of Conformity to be made based on use of authorized components outweighed the risks. The Commission noted that the modular computer approach provides manufacturers and system integrators flexibility to produce a wide variety of equipment models to meet consumer needs. The Commission found that such an approach with an additional requirement for some additional testing would provide both flexibility for systems integrators and manufacturers and provide adequate assurance that such modular computers will comply with the FCC standards.
The Commission required that, for authorization of CPU boards, testing for radiated emissions shall be performed with the CPU board installed in a typical enclosure but with the enclosure's cover removed so that the internal circuitry is exposed at the top and at least two sides. Aside from this, the tests would be performed as called out in the ANSI C63.4 test procedure referenced in 47 CFR Section 15.31. Without the case, the personal computer may not exceed the FCC emissions limits by more than 3 dB. If the personal computer complies with the FCC standards with the case removed, no further tests are required. If the personal computer exceeds the standards by up to 3 dB, further tests must be performed with the case closed to ensure that the computer meets the FCC standards. The tests showing that the CPU board complies with the AC power line conducted limits must be performed in a typical configuration, as normally required.

For authorization of power supplies, the Commission required that tests of AC line conducted emissions and radiated emissions be performed in a typical configuration. The Commission noted the comments explaining the difficulties in testing the shielding effectiveness of enclosures. The Commission believed that the standards and test procedures established for CPU boards and power supplies should be sufficient to eliminate the need to specify standards for enclosures. The need for specific standards for enclosures may be revisited at a later time.

Consistent with the proposal, in the Report and Order the Commission permitted the assembly, without additional testing, of personal computer systems from separate authorized components. The assembler must follow all of the installation instructions for the separate components in assembling the system. The DoC must provide a list of all the individual components used in assembling the system along with the name, address, and telephone number of the company performing the assembly. The assembler of the system is the party responsible for ensuring that the system complies with the standards. The assembler must immediately cease marketing a particular combination of components if it is discovered that the combination does not meet FCC standards. Authorization will not be permitted for CPU boards or internal power supplies that require complex electrical changes to the host system, such as by soldering parts or altering circuitry.

Further Actions in Docket 95-19. The Commission believes that the decisions in this proceeding will greatly benefit the computer industry and consumers. Notably, manufacturers will now have the opportunity to self-declare conformity to the Commission Rules, thereby saving considerable time and expense. Further, the provision to permit systems integrators to declare conformity based on use of authorized components will make compliance with the FCC Rules practical for small manufacturers and vendors. While the Commission believes it has duly considered all the comments and arrived at well reasoned, balanced decisions, it would not be unexpected for parties to file petitions for reconsideration given the extent of the interest in this proceeding, the diversity of views and the potential impact.

CONCLUSION

The developments above will represent significant changes in the current FCC equipment authorization program. If MRAs are in fact concluded, rule making is likely to be required to propose specific ways to implement them. The new Declaration of Conformity procedure for personal computer equipment may serve as a model for other equipment covered by MRAs. In the meantime, the FCC will continue its efforts to further improve its existing process. As a final note, the opinions expressed in this paper are those of the authors and do not necessarily reflect the opinions of the Commission or the staff.
### FIGURE 1 -- PARTIAL LIST OF EC DIRECTIVES

<table>
<thead>
<tr>
<th>Directive</th>
<th>Title</th>
<th>Applicability</th>
</tr>
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<tbody>
<tr>
<td>88/378</td>
<td>Toy Safety</td>
<td>any product intended for play by children &gt; 14 years</td>
</tr>
<tr>
<td>87/404</td>
<td>Pressure Vessels</td>
<td>any welded vessel containing air or nitrogen</td>
</tr>
<tr>
<td>89/336</td>
<td>EMC</td>
<td>all electrical and electronic products</td>
</tr>
<tr>
<td>89/392</td>
<td>Machinery</td>
<td>functioning machinery</td>
</tr>
<tr>
<td>89/686</td>
<td>Protective Equipment</td>
<td>any device worn or held for protection for safety or health hazard</td>
</tr>
<tr>
<td>90/384</td>
<td>Weighing Instrument</td>
<td>instruments relating to weighing result or measured quantity</td>
</tr>
<tr>
<td>90/385</td>
<td>Medical Devices</td>
<td>implantable powered medical devices which are permanently implanted</td>
</tr>
<tr>
<td>91/263</td>
<td>Telephone Term. Equip.</td>
<td>telephone terminal equipment intended to be connected to the public switched network</td>
</tr>
<tr>
<td>73/23</td>
<td>Low Voltage</td>
<td>all electrical and electronic equipment operating between 50 and 1000 VAC</td>
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<tr>
<td>90/396</td>
<td>Gas Appliances</td>
<td>certain appliances that burn gaseous fuels</td>
</tr>
<tr>
<td>91/263</td>
<td>TTE</td>
<td>products connected to the public telephone network</td>
</tr>
<tr>
<td>93/42</td>
<td>Medical Devices</td>
<td>most medical devices (pending)</td>
</tr>
<tr>
<td></td>
<td>Constr. Products</td>
<td>products produced for incorporation in a permanent manner in construction works</td>
</tr>
</tbody>
</table>

### ENDNOTES

1. See Report and Order in ET Docket No. 95-19, in the matter of amendment of Parts 2 and 15 of the Commission’s Rules to deregulate the equipment authorization requirements for Digital Devices, adopted on May 9, 1996 and released on May 14, 1996. At the time of this writing the Report and Order had not yet been published in the Federal Register, however, it is available on the FCC Internet home page. See also the Notice of Proposed Rule Making in this proceeding, which published in the Federal Register on March 22, 1995, 60 FR 15116.


3. A CPU board is defined as a circuit board that contains a microprocessor, or frequency determining circuitry for the microprocessor, the primary function of which is to execute user-provided programming, but not including: (1) a circuit board that contains only a microprocessor intended to operate under the primary control or instruction of a microprocessor external to such a circuit board; or, (2) a circuit board that is a dedicated controller for a storage or input/output device.