

as electromagnetic energy exposure, interference, tower appearance (*e.g.*, lighting and marking) and tower height. In addition, broadcasters often find themselves in protracted and expensive administrative and legal battles when these issues are raised at the local level. As further explained in our petition, these concerns are appropriately matters of comprehensive federal regulation. Moreover, and because delay in construction authorization jeopardizes the timely build-out of DTV, the NAB/MSTV petition further argues that the Commission has the authority to establish procedural constraints on tower siting requests and to preempt local regulations which conflict with federal policies and interests.

Broadcasters believe the Commission should complete the task that it started with the DTV orders and adopt a rule preempting generally those state and local regulations which impede the ability of broadcasters to alter or construct broadcast transmission facilities. Such a rule, as NAB and MSTV have set forth in the petition, should not be restricted to just the DTV buildout but should apply to *all* radio and television broadcasters seeking to site, construct or modify transmission facilities.

This week the FCC initiated our requested rule making.²⁴ In adopting such a rule in this new proceeding the Commission should be sensitive to legitimate local interests relating to land use regulation; but it must act to preempt those local regulations that interfere with the federal regulatory scheme. The Commission can take such action by crafting a rule -- such as proposed in the broadcaster petition -- that is narrowly drawn to specify the regulations which are preempted and which focuses on procedural aspects of the local regulatory process.

²⁴ *Notice of Proposed Rule Making* in MM Docket No. 97-182, FCC 97-296, released August 19, 1997

VI. CONCLUSION

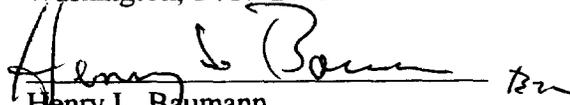
The compulsory license granted by Congress to satellite carriers in 1988 was well designed to serve its purposes and should not be the subject of tampering. The “reforms” advocated by the satellite industry -- which has massively infringed the copyrights of broadcasters under the existing law -- would put the entire network/affiliate system at risk. That system has served this nation well for five decades, and should not be sacrificed to increase the short-term profits of satellite carriers.

Additionally, and consistent with the recommendations advanced above and in other pleadings submitted by NAB and others, the Commission must adopt rules and policies – including those of federal preemption – that will ensure consumers’ ready access to over-the-air broadcast signals.

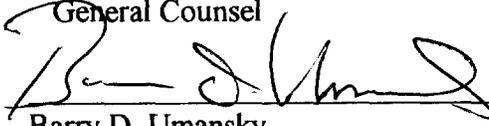
Respectfully submitted,

**NATIONAL ASSOCIATION OF
BROADCASTERS**

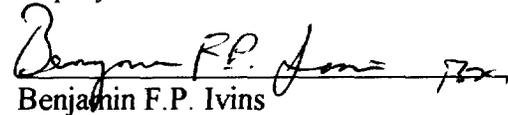
1771 N Street, N.W.
Washington, D.C. 20036



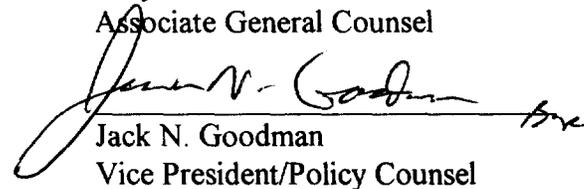
Henry L. Baumann
Executive Vice President and
General Counsel



Barry D. Umansky
Deputy General Counsel



Benjamin F.P. Ivins
Associate General Counsel



Jack N. Goodman
Vice President/Policy Counsel

August 20, 1997

EXHIBIT 1
Declaration of Michael J. Remington

GENERAL COUNSEL
OF COPYRIGHT

JUN 20 1997

RECEIVED

DECLARATION OF MICHAEL J. REMINGTON
Before the Copyright Office
Library of Congress

Comment Letter
RM 97-1
No. 30

Docket No. 97-1

I have prepared this Declaration to assist the Copyright Office ("Office") which, pursuant to a Notice of Inquiry (62 Fed. Reg. 13,396 (March 17, 1997)), is examining the compulsory licensing of broadcast retransmissions for the purpose of recommending legislative changes to Congress. This Declaration is focused on one specific element -- the retransmission of network signals by satellite carriers to unserved households (that is, "white areas") -- of the compulsory license created by the Satellite Home Viewer Act of 1988. Pub. L. No. 100-667 (Title II), 100th Cong., 2d Sess. (1988), codified at 17 U.S.C. § 119 ("1988 SHVA"). This Declaration is also designed to assist the Office in answering several of the questions set forth in the Office's letter to commenting parties dated May 23, 1997.

CONCLUSIONS

- First, the 1988 SHVA was enacted to benefit satellite home viewers who reside in rural (and not urban or suburban) parts of the country.
- Second, the plain language of the 1988 SHVA clearly sets forth an objective standard for determining whether a household is "unserved," and an analysis of legislative history confirms the objective standard.
- Third, Congress considered and expressly rejected a subjective (subscriber or carrier-administered) test in favor of the objective standard.
- Fourth, without the objective standard and resultant protection of the network/affiliate relationship, the 1988 SHVA would not have been enacted.

QUALIFICATIONS AND BACKGROUND

I am, and have been since July of 1996, a partner in the Washington, D.C., office of Drinker Biddle & Reath LLP, a law firm with its home office in Philadelphia. I specialize in the field of intellectual property law. Having been a member of the bar of the State of Wisconsin since 1973, and the bar of the District of Columbia since 1980, I am admitted to practice before the United States Supreme Court, the United States Court of Appeals for the Federal Circuit, and several other circuit courts.

From 1983 until 1991, I served as Chief Counsel of the Subcommittee on Courts, Intellectual Property and the Administration of Justice ("Subcommittee") (under the chairmanship of Robert W. Kastenmeier of Wisconsin) of the House Committee on the Judiciary. In that capacity, I held the principal staff position for the Subcommittee and not only served the Chairman in a variety of capacities, but specialized in matters relating to intellectual property. For example, I served as "lead counsel" to the Subcommittee that produced over 20 public laws relating to intellectual property, including the 1988 SHVA, the Semiconductor Chip Protection Act of 1984, the Berne Convention Implementation Act of 1988, and the Architectural Works Copyright Protection Act of 1990.

I also served the Committee on the Judiciary in two other capacities: from 1977 to 1981 as counsel specializing in court reform and the administration of justice; and from 1991 to 1992 as a special transition counsel to assist the new Chairman of the Subcommittee on Intellectual Property and Judicial Administration (William Hughes of New Jersey) specifically in matters relating to intellectual property.

I additionally have professional experience in the executive and judicial branches of the United States government, having served as an Honors Program Attorney, Criminal Division, United States Department of Justice (from 1975 to 1977) and Deputy Legislative Affairs Officer for the

Administrative Office of the United States Courts under then-Chief Justice Warren E. Burger (from 1981 to 1982). I currently serve as Adjunct Professor of Law at George Mason University, where I co-teach copyright law with a former Register of Copyrights. In the past, I have taught law school seminars and continuing legal education programs, with a focus on copyright law and an occasional focus on the legislative process. In this category are classes at Harvard University, University of Wisconsin, Vanderbilt University, University of Pennsylvania, and Catholic University Law Schools, as well as lectures for the World Intellectual Property Organization, the Copyright Institute, the Library of Congress, and the United States Information Agency. Finally, I have authored or co-authored several articles about copyright law reform.

By way of background, the 1988 SHVA took almost three years (1985-1988) to enact. From initial identification of the issues addressed in the legislation to final enactment, the Chairman of the Subcommittee, Robert W. Kastenmeier, played a pivotal role in the legislative process. He chaired all four days of hearings held by Congress (no hearings were held in the Senate) on issues regarding the copyright liability of satellite carriers. See Copyright and New Technologies: Hearings Before the House Judiciary Subcomm. on Courts, Civil Liberties and the Administration of Justice, 99th Cong. 1st & 2d Sess. (1985-86) ("99th Cong. House Hearings"); see also Satellite Home Viewer Act: Hearings Before the House Judiciary Subcomm. on Courts, Civil Liberties and the Administration of Justice, 100th Cong., 1st & 2d Sess. (1987-88) ("100th Cong. House Hearings"). Chairman Kastenmeier also served as chief sponsor of the legislative reform proposal (H.R. 2848) that ultimately was enacted into law, authored the principal House Committee report, and served as floor manager for debate in the U.S. House of Representatives. I served at his side during every step in the process.

Chairman Kastenmeier's leadership role does not detract from the contributions of several other members of Congress: Representatives Synar, Boucher and Moorhead (all of whom served both on the Kastenmeier Subcommittee and the House Committee on Energy and Commerce, which received a sequential referral), Representatives Markey, Rinaldo and Tauzin (who led the bill through the Commerce Committee), and Senators Leahy, DeConcini, Hatch and Hollings (who steered the House-passed bill through the Senate).

In preparation for this Declaration, I have examined the legislative history (e.g., bills, amendments, committee reports, official debates, and floor statements) of the 1988 SHVA during the relevant time period (1985-1988). I also have examined my own personal files and the archives (official bill files and background legislative materials) maintained by the House Committee on the Judiciary.

1. The 1988 SHVA Was Enacted to Benefit Satellite Home Viewers In Rural (and Not Urban or Suburban) Areas of This Country.

The network retransmission provisions in Section 119 were clearly designed by Congress to permit and promote the delivery of network programming to rural areas of the country.

"The Senate has before it legislation that will help those who live in rural areas" 134 Cong. Rec. at 32055 (Oct. 20, 1988) (Senator Leahy) (emphasis added).

"[T]he statutory license for network signals applies in areas where the signals cannot be received via rooftop antennas or cable." H. Rep. No. 100-887, Part 1, 100th Cong., 2d Sess. 15 (1988) ("House Report (Part 1)").

"Because many . . . dishes are located in rural areas where access to broadcast signals is limited, this legislation will make available for the first time, a luxury most of us take for granted - network news." H. Rep. No. 100-887, Part 2, 100th Cong., 2d Sess. 44 (1988) ("House Report (Part 2)") (Additional Views of Representative Tauzin) (emphasis added).

"[T]his agreement . . . advances the public interest by ensuring the availability of network signals throughout rural America." Transcript of House Judiciary Committee hearing on pending business at 178 (Aug. 2, 1988) (remarks of Representative Boucher) (emphasis added).

"The goal of the bill is to stimulate communications, especially to unserved areas of the country, and to place rural households on a more or less equal footing with their urban counterparts." 134 Cong. Rec. at 28,582 (Oct. 5, 1988) (remarks of Chairman Kastenmeier) (emphasis added).

See also id. at 28,583 (remarks of Representative Olin: "My congressional district . . . is rural and mountainous."); id. at 28585 (remarks of Representative Slattery: "This legislation will increase television viewing choices for many rural Americans."); id. at 28587 (remarks of Representative Roth: "[T]elevision programming in rural areas is often limited."). Finally, in their lobbying efforts to support the legislation, satellite carrier interests emphasized the needs of rural America. See, e.g., letter from Carolyn Herr Watts (on behalf of the National Rural Electric Cooperative Association) to Hon. Robert W. Kastenmeier (dated Aug. 1, 1988), reprinted at 100th Cong. House Hearings at 702.

In short, to achieve the policy objective of helping individuals "who live in rural areas" or "just on the wrong side of a mountain" (Senator Leahy's words), 134 Cong. Rec. at 32055-56 (Oct. 20, 1988), Congress created an objective standard to determine whether a household is "unserved."

2. The Plain Language of the 1988 SHVA Clearly Sets Forth an Objective Standard For Determining "Unserved Household" and an Analysis of the Legislative History Confirms the Objective Standard.

Congress expressly defined the term "unserved household" to mean (in relevant part) a "household . . . that cannot receive through the use of a conventional outdoor rooftop receiving antenna, an over-the-air signal of grade B intensity (as defined by the Federal Communications Commission) of a primary network station affiliated with that network" 17 U.S.C. § 119(d)(10)(A) (1988) (emphasis added). This language, initially developed by the House Judiciary

Committee, was not only confirmed by the House Committee on Energy and Commerce but by the full House and Senate as well. Compare H.R. 2848, as favorably reported by the House Committee on the Judiciary on August 2, 1988; H.R. 2848, as favorably reported by the House Committee on Energy and Commerce on September 27, 1988; H.R. 2848, as passed by the U.S. House of Representatives on October 5, 1988; H.R. 2848, as amended and again passed by the U.S. House of Representatives on October 19, 1988; H.R. 2848, as passed by the U.S. Senate on October 20, 1988, and sent to President Reagan who signed it on November 16, 1988. The above-cited language remained unambiguous and clear from August 2, 1988 until November 16, 1988.

The plain language of the Satellite Home Viewer Act and all its legislative history lead me to the same conclusion: Grade B intensity is an objective standard.

Although neither compelling need nor canon of construction require resort to legislative history, analysis of that history confirms that the definition of "unserved household" creates an objective standard. As explained in the Committee reports, the definition refers to the FCC's longstanding recitation of "Grade B" signal strengths in 47 C.F.R. § 73.683(a). See House Report (Part 1) at 26; House Report (Part 2) at 25-26. See also incorporation of House Report (Part 1) into Senate floor debate by Senator Leahy (134 Cong. Rec. at 32056 (Oct. 20, 1988)); and incorporation of House Report (Parts 1 & 2) into House floor debate by Chairman Kastenmeier (134 Cong. Rec. at 31853) (Oct. 19, 1988).

3. During the Legislative Process, Congress Considered and Expressly Rejected a Subjective (Subscriber or Carrier Administered) Test in Favor of an Objective Standard.

Further review of the legislative history reveals that Congress expressly considered -- and rejected -- a subjective standard for determining which households would be eligible to receive distant network stations. During the 99th Congress, when the satellite home viewer copyright issues were

first considered, legislative proposals did not contemplate retransmission of any network signals by satellite carriers to home viewers. See, e.g., H.R. 5572, 99th Cong., 2d Sess. (1986). Therefore, a long march through the 99th Congress legislative history is not necessary. During the 100th Congress, H.R. 2848 was introduced on June 30, 1987. See Tab A hereto. Building upon the work of the predecessor Congress, H.R. 2848 contemplated retransmission only of superstation, and not network, signals. 133 Cong. Rec. 18358 (June 30, 1987) (floor statement of Chairman Kastenmeier on introduction of H.R. 2848); id. at 18357 (floor statement of Representative Synar on introduction of H.R. 2848). See Tab B hereto. Following two days of hearings, on April 27, 1988, the House Judiciary Subcommittee marked up H.R. 2848 and, after initial debate, Chairman Kastenmeier offered a substitute amendment to replace the original text of H.R. 2848. See Tab C hereto; see also Report on the Activities of the Committee on the Judiciary of the House of Representatives During the 100th Congress, H. Rep. No. 100-1124, 100th Cong., 2d Sess. 107 (1988) (Tab D hereto). The Substitute Amendment would have permitted any dish owner to obtain network signals by satellite provided that the dish owner "files with the network station a signed affidavit that states that the [dish] owner cannot receive an adequate over-the-air television signal from the network station." Substitute Amendment, p. 4 (emphasis added). In other words, the Substitute Amendment would have given each dish owner the ability to determine for itself whether it was eligible based on its own subjective determination of whether it receives an "adequate" signal. Due to controversy raised by the Substitute Amendment in this regard and several others, the Subcommittee adjourned and took no further action for almost three months.

After the April 27th adjournment, satellite carriers strongly urged the Subcommittee to adopt this subjective standard or a closely related standard (with distributors playing a role in the determination). Specifically, by letter dated May 19, 1988, PrimeTime 24 asked the Subcommittee

to adopt the Substitute Amendment with certain minor wording changes. See Tab E hereto. But the Subcommittee never adopted the Substitute Amendment supported by PrimeTime 24 and other satellite carriers.

On July 7, 1988, the Subcommittee returned to the mark-up table and approved a proposal made by the television networks and offered by Chairman Kastenmeier, which jettisoned the subjective "adequate signal" standard advocated by the satellite carriers and replaced it with the language codified in Section 119(d)(10)(A) (1988): "an over-the-air signal of grade B intensity (as defined by the Federal Communications Commission)." See Tab F hereto.

In preparation for the Subcommittee mark-up, and among other duties, I prepared a "Comparison of Earth Station/Copyright Bills - As Pertains to the Network Superstations." Dated June 2, 1988, the Chart clearly shows the movement of the bill from the subjective test ("determined by dish owners through affidavits") to the objective standard ("based on signal intensity as defined by the F.C.C."). See Tab G hereto.

On August 2, 1988, the full Judiciary Committee considered H.R. 2848, and after a friendly amendment by Representative Boucher to clarify and refine provisions of the bill regarding the impact of cable subscriptions on eligibility to receive network signals and two other friendly amendments, approved the measure by voice vote, no objections being heard. See House Report (Part 1) at 32.

The reasons for Congressional rejection of a subjective (in the eyes of the viewer or the eyes of the distributor) standard are clear. First, a subjective test would not be consistent with the policy goal of helping rural households, because urban or suburban households could easily bypass the statute by merely stating that their reception of network signals is unsatisfactory in order to receive network signals from satellite carriers. Second, and more importantly, a subjective standard would do significant harm to the existing network/affiliate distribution relationship by permitting the

reception of duplicative network signals. These results plainly conflict with the underlying Congressional goals.

4. Without the Objective Standard and Protection of the Network/Affiliate Relationship, the 1988 SHVA Would Not Have Been Enacted.

The legislative history of Section 119 is replete with references by key members of Congress to "compromise" or "compromises." See, e.g., 134 Cong. Rec. 28582 (Oct. 5, 1988) (remarks of Chairman Kastenmeier); id. at 28583 (remarks of Representative Moorhead); id. at 28585 (remarks of Representative Tauzin). The principal floor managers in the House and Senate recognized those who participated in the process of achieving the legislative compromise:

I would also like to acknowledge those who represent the satellite dish industry, the dish owners, the cable industry, the satellite carriers, independent television, network television, the electric cooperatives, the motion picture industry, and all others who recognized that many parties had a stake in solving this very difficult problem. 134 Cong. Rec. 32056 (Oct. 20, 1988) (remarks of Senator Leahy).

In drafting the bill, we worked very hard with representatives of the Earth station industry, consumers, the motion picture industry, the cable television industry, the common carriers, the superstations, independent television and the three networks, and the rural electric cooperatives in order to arrive at a solution. 134 Cong. Rec. 28582 (Oct. 5, 1988) (remarks of Chairman Kastenmeier).

It is abundantly clear that one of the key compromises dealt with the retransmission by satellite carriers of network signals to unserved areas and the objective standard by which determinations were to be made about whether a household was unserved.

The objective standard received the support of the television networks and their affiliate associations, because it preserved and protected the existing network/affiliate distribution system by prohibiting the delivery of competing network signals to served areas.

The objective standard also received the support of the satellite carrier industry. See letter from Mark C. Ellison (on behalf of Satellite Broadcasting and Communications Association of America) to Hon. Strom Thurmond (dated Sept. 30, 1988), reprinted at 100th Cong. House Hearings at 620.

The Copyright Office played a key role not only in advising Congress but in the drafting process as well. The Register of Copyrights and the General Counsel's office participated in the hearings and drafting process, and working closely with Members, Committee staff and the professional drafters in the House Legislative Counsel's office. See 99th Cong. House Hearings at 3 (testimony of Ralph Oman); 100th Cong. House Hearings at 174 (testimony of Ralph Oman).

The 1988 SHVA passed the House and Senate, both unanimously by voice vote, no objections being heard, during the waning days of the 100th Congress. Without development of the objective standard for the delivery of network signals to unserved households, and the other compromises incorporated in the bill, it is safe to say that objections to scheduling the measure would have been conveyed to the House and Senate leadership; even a request for a recorded vote or the opportunity to amend the bill on either the House or Senate floors would have doomed its prospects for success.

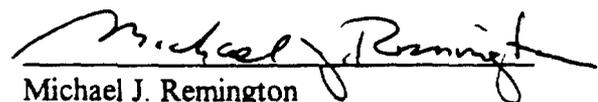
Finally, although I was no longer working on Capitol Hill when Congress extended for five more years and amended, in certain regards, the 1988 SHVA (Pub. L. No. 103-369, 103rd Cong., 2d Sess. (1994) ("1994 SHVA")), a review of the express amendatory language of the 1994 SHVA reveals that it did not modify the objective standard set forth in the 1988 SHVA. Nor did Congress take any steps that would conflict with any of the observations set forth in this Declaration: see, e.g., 140 Cong. Rec. S 6156 (daily ed. May 23, 1994) (remarks of Senator Leahy re need to protect constituents in rural areas); id. at H 8419 (daily ed. Aug. 16, 1994) (remarks of Representative Hughes). See also S. Rep. No. 103-407, 103rd Cong., 2d Sess. 8 (1994): "The committee is

especially aware of the importance of home satellite viewing to households in rural areas;" *Id.* at 5: "[T]he limitation on delivery of network signals is designed to 'respect [] the public interest in protecting the network-affiliate distribution system.' H.R. 887 (Part 2), 100th Cong., 2d Sess. 20 (1988)."

* * * * *

It sometimes occurs that statutes are not clearly drafted, or that legislative history conflicts with the express words of a statute, or that legislative materials conflict with themselves. After all, law-making and legislative history are the work-products of a bicameral legislature and the elected representatives of the people from both political parties. But, from the perspective of one who was there and participated in the creation of the SHVA, absolutely no inconsistencies exist between a clear and unambiguous statute and its legislative history. Contrary to the statement in this docket of PrimeTime 24 Chairman and CEO (Sid Amira), who had no involvement in the drafting of the SHVA, the original intent of Congress is absolutely clear. The language of the SHVA is not "technical." Congress deliberately and consciously created an objective standard for determining whether a household is "unserved" in an effort to benefit satellite home viewers who reside in rural parts of the country and to preserve the network/affiliate relationship.

Respectfully submitted,



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June 20, 1997

EXHIBIT 2
Engineering Statement of Jules Cohen

GENERAL COUNSEL
OF COPYRIGHT

JUN 20 1997

RECEIVED

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Washington, D.C. 20540

Comment Letter

RM 97-1

No. 30

In the Matter of)

Revision of the Cable)
and Satellite Carrier)
Compulsory Licenses)

) Docket No. 97-1

Engineering Statement of Jules Cohen

Submitted in Support of the Reply Comments of the
National Association of Broadcasters

June 20, 1997

ENGINEERING STATEMENT OF JULES COHEN

1. My name is Jules Cohen. I have been a professional engineer with particular emphasis on the fields of broadcasting and signal propagation since the end of 1945 upon my release from active duty as a commissioned officer in the U.S. Navy. I was awarded the degree of Bachelor of Science in Electrical Engineering by the University of Washington (Seattle) in 1938. My initial employment in the field of broadcasting was as a Senior Engineer in the consulting firm of Weldon and Carr. Since 1952, I have been either a sole practitioner, partner or officer of a firm in consulting practice. Clients served have included, among numerous others, five television broadcast networks (ABC, NBC, CBS, PBS and Fox), group owners of radio and television stations, the Association for Maximum Service Television, Inc., the National Association of Broadcasters (NAB), and the Electronic Industries Association. My testimony as a qualified professional engineer has been accepted by Federal and State courts, the Federal Communications Commission (FCC), and various local boards. I hold professional engineer licenses issued by the District of Columbia, the location of my office, and by the Commonwealth of Virginia, the place of my residence. I am a Life

Fellow in both the Institute of Electrical and Electronics Engineers and the Society of Motion Picture and Television Engineers. I am a member of the National Society of Professional Engineers and the American Association for the Advancement of Science. I was elected to membership in Tau Beta Pi, the engineering scholastic honorary. I received the 1988 Engineering Achievement Award of the NAB and the 1992 Engineering Achievement Award of the Broadcast Pioneers Washington Chapter.

2. This engineering statement is directed to conclusions expressed by Professor Russell Neuman with respect to the purported absence of a relationship between picture quality and field intensity (or field strength, which means the same thing). Mr. Neuman's expressed belief that field intensity cannot be relied upon as a measure of picture quality is contrary to my decades of experience with television performance and contrary to the results of a comprehensive study described below. Mr. Neuman's conclusion appears to be based on a small study he supervised in Pittsburgh, Pennsylvania; as discussed below, that study is fatally flawed.

Charlotte Field Tests

3. To test the suitability of a system of digital transmission for the new generation of television broadcasting, field testing was conducted in, and in the vicinity of Charlotte, North Carolina. The data reported herein were from testing performed in 1994. The 1994 tests were part of a field test program conducted by the Field Testing Task Force under the Advisory Committee on Advanced Television Service of the Federal Communications Commission. I chaired the Field Testing Task Force, and was the principal author of the test procedures and of the narrative portion of the report dated September 16, 1994. The purpose of the testing was to determine the suitability of a system devised to provide over-the-air television broadcasting using digital technology. An important aspect of the testing was a comparison of the digital transmissions with the analog broadcast system now used in North America and other parts of the world.

4. The Charlotte testing was designed to achieve statistically significant results. That objective was achieved

by specifying that the pattern of locations for measurements and observations followed either grid configurations or even intervals along radial lines extending from the transmitter location. Grid configurations were used in two communities. The first community was Charlotte, a city of substantial size (1990 population 314,447) with tall buildings downtown and residential areas with structures of more moderate size. Rock Hill, South Carolina, the second community, provided a medium-sized city (1990 population 35,344). Within each community, an additional "cluster" configuration was used. The cluster was also a grid, but with closer spacing between grid lines than for the primary grid. A third small cluster was located within a few miles of the transmitter to test performance at locations where the vertical plane radiation pattern of the transmitting antenna reduces signal strength. Radials, eight in number, were selected to traverse terrain of different characteristics, ranging from relatively smooth to decidedly irregular. The team conducting the study was required to locate the test vehicle as close to the grid line intersections and to the evenly spaced radial locations as the availability of roads permitted. The sum of locations, including the grid intersections and even spacing along the radials, was approximately two hundred.

5. To carry out the proposed test program, a specially-designed and equipped transmitting plant was constructed. Testing was conducted on both channel 6, a low-band VHF channel, and on channel 53, a UHF channel. Channel 53 field strength measurements and picture observations were made at all 199 locations. Because of complaints of interference from the channel 6 operation to cable channel 6, measurements and observations on that channel were made at only 169 locations.

6. At each location, the test vehicle, with mast extended to 30 feet above ground, was first used to conduct continuous measurements of field strength in accordance with 47 C.F.R. § 73.686 over a 100-foot path for the purpose of determining the variability of signal strength in the vicinity. The vehicle was then relocated to the center of the run, the antenna was rotated to achieve the best picture, the signal strength was measured at that location, and the picture quality was evaluated by a team of three observers. The picture quality recorded, based on the CCIR five-point rating scale, with intermediate rating points, represented the consensus of the three observers. Picture quality observations were made while looking at the receiver screen while at the site. Although

recordings were made, they were strictly for archival purposes. No picture ratings were made based on those recordings.

7. Although median signal strength from the 100-foot runs was available in the Charlotte study, signal strength was also measured at the precise location where picture observations were made. To have meaning, picture quality and signal strength must be for the same location. Since in any 100-foot run signal strength may vary greatly, and the vehicle could be placed at any arbitrary location for the picture observation, the median is not a proper parameter from which to draw conclusions about the relationship between signal strength and assessments of picture quality.

8. The foregoing description of the Charlotte testing is in marked contrast to Mr. Neuman's Pittsburgh study, discussed below. In Pittsburgh, the locations were not made in a way that would guarantee randomness; approximately half of the observations were made with the antenna directed deliberately in a direction away from the station being observed; and the picture ratings were made by a single person from a recording.

The Unsuitability of Placing Reliance on Charlotte Channel 6 Data

9. As pointed out in the report of the 1994 Charlotte study, channel 6 suffered from significant handicaps that eliminate its usefulness for relating picture quality to signal strength. To avoid interference to licensed channel 6 operations, the power of the experimental channel 6 station had to be reduced to only one-tenth of that used normally for channel 6 operation. The result of that reduced power was a susceptibility to power line and other man-made noise not experienced by the usual channel 6 operation. An additional handicap was the interference from noncommercial FM stations that operate on frequencies immediately above channel 6. Channel 6 broadcast stations are protected from FM interference by the rules of the Federal Communications Commission. Since no regularly licensed channel 6 station exists in Charlotte, the restrictions on the FM stations normally invoked are not present. As a consequence, the experimental operation received interference not expected normally, and that interference was further aggravated by reduced transmitting power. The channel 6 portion of the Charlotte study was useful to compare the

performance of digital and analog television, but not as a guide to the relationship of field strength and picture quality.

Analysis of Channel 53 Data

10. The Channel 53 picture observations do not present the considerations that make the channel 6 data unsuitable for a picture quality versus signal strength analysis. The relationship of signal strength to picture quality was not an objective of the Charlotte study, but the data are there for such an analysis.

11. A statistical analysis of the data from channel 53 in the Charlotte study shows a very strong likelihood of a positive relationship between signal strength and picture quality. Mr. Neuman's contention that the two factors are not related is inconsistent with the facts derived from the Charlotte field experience. It is also inconsistent with my observations during more than four decades as a broadcast engineer.

Mr. Neuman's Pittsburgh Study is Fatally Flawed

12. Mr. Neuman's study suffers from a number of critical flaws that render his data of no value for drawing