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WILKINSON) BARKER) KNAUER) LLP

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

2300 N STREET, NW
SUITE 700
WASHINGTON, DC 20037-1128
TEL 202.783.4141
FAX 202.783.5851
www.wbklaw.com

EX PARTE OR LATE FILED

JONATHAN V. COHEN
(202) 383-3416
joncohen@wbklaw.com

November 17, 2000

By Hand Delivery

Magalie Roman Salas
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: *Written Ex Parte Presentation — WT Docket No. 00-19*

Dear Ms. Salas:

Revelation L.L.C. (“Revelation”), by its attorneys, by this letter makes a written *ex parte* presentation regarding the Commission’s pending *Notice of Proposed Rule Making* in the above-referenced proceeding, which seeks comment on various proposals to streamline Part 101 of the Commission’s rules.¹ In the *Streamlining Notice*, the Commission stated the general purpose of the proceeding is to “. . . eliminat[e] regulations that are duplicative, outmoded, or otherwise unnecessary.”² As demonstrated below, Section 101.111(c) of the Commission’s rules, 47 C.F.R. § 101.111(c), should be eliminated from the Commission’s rules. This rule no longer serves a valid purpose, it thwarts technological development and innovation, and thus it no longer serves the public interest.

As explained in detail in section II below, Revelation has developed an innovative new technology for conducting advanced radiofrequency identification (“RFID”) operations. This technology will enable industry and public safety agencies to conduct identification operations that

¹ *Amendment of Part 101 of the Commission’s Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services*, WT Docket No. 00-19, *Notice of Proposed Rule Making*, 15 FCC Rcd 3129 (2000) (“*Streamlining Notice*”).

² *Id.* at 3149.

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heretofore have not been possible, thereby bringing substantial cost-savings and other public interest benefits to consumers and the general public. Section 101.111(c), however, arguably stands in the way of this new technology. Revelation has sought confirmation from the Commission that Section 101.111(c) is inapplicable to its new RFID technology or, in the alternative, grant of a waiver of the rule.³ Ideally, however, the Commission should simply repeal this rule so as to allow new advanced technologies like Revelation's to develop without unnecessary regulatory impediments.

As shown below, elimination of Section 101.111(c) is consistent with the standards set forth in the *Streamlining Notice*.

I. Section 101.111(c) Fails to Serve a Viable Purpose.

Section 101.111(c) prohibits the emission of an unmodulated carrier except for test purposes as required for proper station and system maintenance. This rule was originally adopted 25 years ago, formerly as Section 94.71(e).⁴ Despite the passage of a quarter century, with countless leaps in technology, the rule has remained unchanged. The Commission advanced no particular reason for this outright ban on unmodulated signals when it first adopted the rule, and has since failed to articulate an underlying policy the rule aims to serve.⁵ While the original purpose of this rule may have been to safeguard against wasteful use of spectrum by a licensee transmitting an open carrier only to preserve its right to a channel, this purpose is no longer served by the breadth of the rule's prohibition.

When the Commission first adopted Section 94.71(e), the predecessor to Section 101.111(c), it also adopted Section 94.69, which authorized any type of emission, method of modulation, and transmission characteristic, consistent with efficient use of the spectrum and good engineering practice. This appropriately more flexible provision remains in place today, codified in Section 101.109(b). When adopting Section 94.69, the Commission stated that it was seeking a "reasonable approach" and that "the type of modulation should be left up to the user, even when it may not be the most efficient method, in the interest of permitting full scope for development of new techniques which could ultimately lead to improvement of the state-of-the-art."⁶ Thus, in light of Section 101.109(b), Section 101.111(c) is overbroad and unnecessary.

³ See *Request for Confirmation or, in the Alternative, Rule Waiver*, filed with the Public Safety and Private Wireless Division by Revelation, L.L.C. (Sept. 14, 2000).

⁴ See *Amendment of the Commission's Rules to Establish a Private Operational Fixed Radio Service (Part 94)*, Docket No. 19869, *Report and Order*, 52 FCC 2d 894 (1975).

⁵ When this rule was incorporated into Part 101, there again was no discussion as to why the prohibition remained in place.

⁶ 52 FCC 2d at 904.

Similar to Section 101.111(c), Section 90.403(f) prohibits stations licensed under Part 90 from continuously radiating an unmodulated carrier. However, *unlike* Section 101.111(c), Section 90.403(f) specifically recognizes that the transmission of an unmodulated carrier may be authorized elsewhere in Part 90. In any event, while again there was no specific rationale provided when the Part 90 rule was adopted in 1978, one reason appears to be to prevent interference to an ongoing communications by the transmission of a “dead carrier . . . not intended to make any purposeful communication.”⁷

As an initial matter, and as clearly demonstrated in section II below, Revelation’s communications certainly serve many useful purposes. Further, there is no evidence that Section 101.111(c) is necessary to ensure that Part 101 licensees use spectrum efficiently or to prevent interference, and in any event there are numerous other technical rule requirements that result in efficient spectrum use and which provide adequate interference protection.⁸ In fact, this 25-year old rule is an anachronism in light of the Commission’s contradictory rule, Section 101.109(b). Accordingly, Section 101.111(c) presently serves no useful purpose and should be eliminated.

III. The Prohibition of Section 101.111(c) Discourages the Development of New Technologies.

By failing to eliminate the prohibition of unmodulated signals imposed by Section 101.111(c), the Commission will discourage innovative entities from developing new and efficient uses of spectrum under Part 101. For example, application of the Section 101.111(c) prohibition could thwart Revelation from providing advanced radiofrequency identification (“RFID”) services to public and private consumers.

Revelation has developed an innovative technology for conducting advanced RFID operations. While traditional RFID consists of short-range, low power, bar code reading, Revelation’s advanced RFID equipment has the ability to detect, identify, sort, count, locate, operate and electronically secure various objects. Revelation’s technology is further distinguished from other traditional RFID methods by its ability (1) to accomplish all of these functions in a relatively faster and more cost-effective manner, and (2) to be used on large quantities of items, located in large volumes of space, and over long distances.

⁷ See *John A. Acconey, Forfeiture Order*, 13 FCC Rcd 20075, ___ (Dir., Legal Servs. Group, Compliance and Info. Bur. 1998).

⁸ See §§ 101.103 (setting forth frequency coordination procedures and requirements), 101.107 (frequency tolerance), 101.109 (bandwidth limitations), 101.111(a) (emission requirements), 101.113 (power limits), 101.115 (antenna standards), 101.141 (modulation and channel loading requirements), and 101.143 (minimum path length requirements).

Specifically, Revelation's advanced RFID system would consist of multiple temporary fixed base stations ("interrogators") and fixed and mobile transponders ("tags"). The tags would be affixed to various articles, such as inventory, vehicles, persons, valuables, animals, hazardous materials, *etc.* The interrogators would transmit a signal designed to be received by the tags. The tags may or may not have separate power supplies or transmitters, but would reflect the signal at low power levels back to the interrogator at the same frequency, along with information stored in the tag.

The cost-effective and technological capabilities of Revelation's advanced RFID technology have the potential to bring substantial benefits to the general public, industry and government. Examples of potential applications include:

- detecting and alerting air traffic control of misdirected airplanes and other vehicles on runways.
- detecting persons entering restricted areas.
- detecting and sorting airplane parts based on FAA approval for installation.
- conducting inventory of substantial quantities of items in a large warehouse.
- locating specific objects over large industrial campuses.
- locating persons who may be in hazardous areas.
- operating gates, doors, toll booths, medicine dispensers, *etc.*, for certain individuals.
- detecting unauthorized movement (theft) of tagged articles, including intellectual properties.

The Revelation system has almost endless potential applications, and the ability to increase personal safety, prevent theft, improve productivity, reduce business and governmental costs, improve accounting accuracy, greatly reduce time for inventory determination, and locate people and objects. Numerous potential customers, including both private firms and governmental agencies, have approached Revelation for its technology and products, recognizing the benefits of enhanced efficiency in obtaining data concerning remote objects.

The rules in Part 101 for Multiple Address Systems ("MAS") provide an appropriate framework for licensing Revelation's interrogator/tag architecture. Furthermore, the propagation characteristics of the 900 MHZ frequencies allocated to MAS are the most technically suitable and cost effective for Revelation's functional requirements. Section 101.111(c) is generally applicable to all Part 101 operations, and thus would apply to Revelation's proposed use of MAS.

The emission of Revelation's transmitters exhibits a hybrid of on/off keying and amplitude modulated waveforms. As the interrogator's signal detects transponders, the signal is characterized by ramped amplitude and periodic operation, mimicking a modulated signal. Thus, Revelation utilizes a novel type of emission that exhibits characteristics of modulation that clearly distinguish the emission from an "unmodulated" carrier. However, because Revelation's emission could under a strict reading of Section 101.111(c) be interpreted to constitute an unmodulated carrier, it is uncertain whether Revelation could seek to license its advanced RFID systems under the Part 101

MAS rules.⁹ If Revelation's technology is thwarted by such a reading of Section 101.111(c), the benefits of this innovative new technology would remain unrealized.

The Commission has in the past accommodated new technologies that did not fit within current rules. The Commission has permitted the transmission of unmodulated carriers for certain new Part 90 technologies.¹⁰ The Commission has also recognized that it should encourage novel types of emissions in Part 101. Specifically, in the context of MAS licensees, the Commission modified its rules to permit the development and deployment of new technologies proposed in an *ex parte* presentation by CellNet Data Systems, Inc. ("CellNet"), a company which developed a novel method of emissions. In that case, the Commission permitted CellNet to operate MAS systems on subfrequencies, stating that ". . . one of our continuing objectives is to provide more flexible rules, so that new technologies and different system designs can be licensed to provide valuable services to the public."¹¹ Absent similar relief for Revelation's unique technology, Section 101.111(c) would suppress the beneficial applications of Revelation's advances in RFID design.

III. Consistent with the Underlying Purpose of the *Streamlining Notice*, the Commission Should Repeal Section 101.111(c).

As noted above, the purpose of the Commission's rulemaking proceeding in WT Docket No. 00-19 is to eliminate unnecessary rules in Part 101.¹² While the *Streamlining Notice* does not directly address Section 101.111(c), this rule clearly falls into the "outmoded" category. In sum, the

⁹ See *Request for Confirmation or, in the Alternative, Rule Waiver*, filed with the Public Safety and Private Wireless Division by Revelation, L.L.C. (Sept. 14, 2000).

¹⁰ See *Rangemaster Golf Enterprises*, DA 95-1034, *Order*, 10 FCC Rcd 5043 (1995); *partial recon. granted*, 1995 FCC LEXIS 3714 (1995) (granting a blanket waiver of § 90.403(f), permitting Rangemaster to offer a golf location service using several low-power transmitters, operating on a continuous basis, because the Rangemaster system utilized low power, low antenna heights, and bandwidths which did not cause interference problems with other users of the spectrum and "no reasonable alternative solutions existed within the rules."). See also *Amendment of Part 90 of the Commission's Rules Concerning Private Land Mobile Radio Services*, WT Docket No. 97-153, *Report and Order*, 14 FCC Rcd 3023 (1999) (establishing § 90.103(c)(22), which reserves 24.10 GHz frequency for a continuous wave emission to be employed for the purpose of alerting motorists of hazardous driving conditions, and exempting the continuous emission from the prohibition established by 90.403(f)).

¹¹ *Reorganization and Revision of Parts 1, 2, 21 and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services*, WT Docket No. 94-148, *Report and Order*, 11 FCC Rcd 13499, 13469 (1996).

¹² See *supra* note 2.

Commission has historically failed to articulate the purpose behind Section 101.111(c), a broad construction of Section 101.111(c) contradicts the stated purpose of other rules in Part 101, and the practical effect of this rule is to thwart the innovative and efficient utilization of spectrum by technologies such as Revelation's RFID operations.

Therefore, for the reasons discussed above, Revelation submits that the Commission should "streamline" Part 101 by eliminating the prohibition of unmodulated emissions set forth Section 101.111(c) of the Commission's rules. By eliminating this prohibition, the Commission will further its stated goals and serve the public interest.

Pursuant to Section 1.1206(b) of the Commission's rules, Revelation is submitting an original and one copy of this letter for inclusion in the public record of the above referenced docket. Please direct any questions regarding this matter to the undersigned.

Sincerely,

REVELATION, LLC

By: 

Jonathan V. Cohen
Lawrence J. Movshin
Jeffrey S. Cohen
WILKINSON BARKER KNAUER, LLP
2300 N Street, N.W., Suite 700
Washington, D.C. 20037-1128
(202) 783-4141

Its Attorneys

cc: D'wana R. Terry, WTB
Herb Zeiler, WTB
John Schauble, WTB
Julius Knapp, OET
Tom Derenge, OET