

WT 16-239

Keesha Lomax

From: Hans-Peter Helfert <peter.helfert@scs-ptc.com>
Sent: Monday, June 11, 2018 11:20 AM
To: Scot Stone; info@scs-ptc.com; pactor@farallon.us
Cc: Stanislava Kimball; Paul Moon; 'Steve Waterman'
Subject: Re: Pactor 3 and 4

Accepted / Filed

NOV 7 2018

Federal Communications Commission
Office of the Secretary

Dear Mr. Stone,

Thank you for your inquiry regarding technical information on the PACTOR-3 and PACTOR-4 protocols.

As far as we know, the FCC already received that information many years ago. Comprehensive waveform information was/is presented on the SCS website and on some other sites, like the ITU data base server.

We are surprised that the on-going discussion about symbol rate and the latest corresponding NPRM now raised the question whether PACTOR-3 is "clear speech". All PACTOR modes are not "open source" but definitely "open speech". All PACTOR modems provide a comprehensive "monitor mode" in order to allow monitoring the PACTOR traffic by "third parties". PACTOR-3/4 cannot be used as a means of hidden communications. PACTOR-3/4 have nothing to do with encryption but only are complex, modern HF communications protocols, even recommended by the ITU for maritime mobile use.

Meanwhile there are at least some dozens of different HF radio protocols available for use on the amateur radio bands. Only a few of them are "open source", most of them even are not published in a way that allows to understand the waveform details, and obviously nobody cares. Only PACTOR seems to be "a special case" due to the permanent defamation by some notoric "PACTOR haters".

Nevertheless, PACTOR-3 and PACTOR-4 are well-documented protocols and additionally there are different sources of third party monitoring software supporting "recon".

<http://www.hoka.com/products/code300-32-options/pactor-iii-hoka.html>
<http://www.wavecom.ch/content/ext/DecoderOnlineHelp/default.htm#!worddocuments/pactoriii.htm>
<https://saab.com/globalassets/commercial/land/istar/medav-radio-monitoring/demodulators-and-decoders--vd-technology.pdf>

SCS documentation on the protocols can be download from the site:
<https://www.p4dragon.com/en/Downloads.html>

PACTOR Source Encoding:
https://www.p4dragon.com/download/PACTOR_Advanced_Data_Compression.pdf

PACTOR-3:

No. of Copies rec'd 0
List ABCDE

<https://www.p4dragon.com/download/PACTOR-3%20Protocol.pdf>

PACTOR-4:

<https://www.p4dragon.com/download/PACTOR-4%20Protocol.pdf>

ITU/PACTOR-3:

https://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.1798-1-201004-!!!PDF-E.pdf

Offering complete insight to our technologies also means releasing corporate secrets. We always obeyed the U.S. laws, we voluntarily published PACTOR protocol details already in the 1990's.

No other authority from any other country ever asked us to publish details on the PACTOR-3/4 protocols, since also PACTOR-3/4 are "open speech" (can be monitored easily).

Regarding symbol rate, we have to say that serial modems (single carrier, high symbol rate) are state-of-the-art on HF channels for at least 20 years, see STANAG 4539 or MIL-STD-188-110 B.

<http://www.wavecom.ch/content/ext/MonitoringSystemOnlineHelp/default.htm#!worddocuments/mil188110bappendixcs.htm>

The MIL-STD HF modems utilize a symbol rate of 2400 sps whereas PACTOR-4 only works at 1800 sps in order to meet the 2400 Hz bandwidth constraint.

Serial modems (PACTOR-4) provide some essential advantages compared to OFDM (PACTOR-3): More throughput under adverse HF signal conditions using identical power and bandwidth, and lower crest factor, i.e. lower IMD3 spurious transmissions in case of non-linear class A/B, B power amplifiers.

We hope that our information helps to support a positive decision regarding the use of PACTOR-4 on the amateur radio bands in the U.S.

Thank you.

Sincerely,

Hans-Peter Helfert

Head of Software Department
peter.helfert@scs-ptc.com

SCS GmbH & Co. KG
Roentgenstr. 36
63454 Hanau
GERMANY

Von: Scot Stone <Scot.Stone@fcc.gov>
Gesendet: Freitag, 8. Juni 2018 16:23

An: info@scs-ptc.com; pactor@farallon.us; peter.helfert@scs-ptc.com

Cc: Stanislava Kimball <Stanislava.Kimball@fcc.gov>; Paul Moon <Paul.Moon@fcc.gov>

Betreff: RE: Pactor 3 and 4

Resending due to a typo in some addresses:

Dear Sir or Madam,

We are contacting you on behalf of the Federal Communications Commission (FCC), which regulates radio communications in the United States, including amateur radio. SCS manufactures and markets equipment utilizing Pactor mode. We seek certain information regarding Pactor 3 and Pactor 4.

Some segments of the amateur radio community in the United States use Pactor 3 equipment. Section 97.309(a) of the FCC's rules provides that amateur stations transmitting a RTTY or data emission using Baudot, AMTOR, or ASCII digital codes "may use any technique whose technical characteristics have been documented publicly, such as CLOVER, G-TOR, or PacTOR, for the purpose of facilitating communications."

In a current rulemaking proceeding, some commenters have questioned whether Pactor 3 is permitted under this rule. See, for example, comments of W. Lee McVey at page 3 (https://ecfsapi.fcc.gov/file/109151227915014/McVey_Comments_RM11708RM.pdf), Ron Kolarik at page 1 (<https://ecfsapi.fcc.gov/file/1110986323171/WT%2016-239%20Reply%20to%20comments.pdf>), Salvatore Irato at page 3 (<https://ecfsapi.fcc.gov/file/10822805622607/Docket%2016-239%20filing%2002.pdf>). They argue that while the original version of Pactor was open source, the technical characteristics of subsequent versions of Pactor have not been documented publicly, since SCS has not released the protocol specification definition and mathematical modulation functions. They assert that because a Pactor 3 transmission can be decoded only by equipment that employs proprietary compression algorithms, use of Pactor 3 by U.S. amateur radio licensees is not permitted by Section 97.309(a).

We ask you to direct us to where the technical characteristics of Pactor 3 and Pactor 4 have been publicly documented. (The FCC is considering a change to the amateur technical rules that would permit use of Pactor 4, provided that we deem it to be a technique whose technical characteristics have been documented publicly. See <https://www.fcc.gov/edocs/search-results?t=quick&fccdaNo=16-96>.)

If the FCC concludes that the technical characteristics of Pactor 3 have not been documented publicly to the extent required by Section 97.309(a), use of Pactor 3 by the amateur radio operators in the United States is prohibited, and the FCC would so inform the amateur community.

We look forward to hearing from you soon. If you have any questions, you may contact me at this email address or by telephone at (202) 418-0638.

Scot Stone
Deputy Chief, Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission