Exhibit A
FAA Coordination
TPX 56

From: timothy.j.pawlowitz@faa.gov [mailto:timothy.j.pawlowitz@faa.gov]
Sent: Friday, November 02, 2007 10:46 AM
To: Jardine, David J
Cc: Chris.Tourigny@faa.gov; Charles.Cassella@faa.gov; Donald.Bristol@faa.gov
Subject: Re: FW: FAA Coordination for PSTAR system

David,

A general comment with respect to the information below: by law, interrogators are not allowed to interrogate at an average PRF of 450 hz.
I know the high PRF capability of the TPX-56 was an issue when that system was submitted to be certified and supposedly the manufacturer had made a modification to cap the maximum PRF to 450. I am hoping that the manufacturer of the TPX-56 is not selling and deploying systems without this modification. I just wanted to bring this to your attention. Because of the experimental nature of your operation I will not push this issue provided that you strictly comply with the assigned PRF and other caveats listed below.

One other thing---for operations in Syracuse coordination with the FAA should be accomplished through the FAA's Eastern Regional Frequency Management Office, Charlie Cassella at 718-977-6511 or Don Bristol at 718-977-6611.

As for your coordination, please indicate in your application to the FCC that coordination was accomplished with HQ FAA, Tim Pawlowitz, via e-mail dated Nov. 2, 2007. The FAA's concurrence is based on the following conditions being detailed in the license and the operation strictly complying with these conditions:

1. The average PRF shall be set to 194 Hz.

2. The pulse width shall be 0.8 microseconds. No Mode-4 nor a pulse width of 0.5 microseconds is authorized.

3. Transmissions shall be blanked between the azimuths 000 - 045 degrees and 270 -330 degrees referenced to true north from the coordinates 430643N 0761118W. This is to protect operations in Canada.

Tim Pawlowitz
202-267-9739

"Jardine, David J"

	<david.j.jardine@	
To	lmco.com>	Timothy J Pawlowitz/AWA/FAA@FAA
cc	10/31/2007 02:14 PM	Chris Tourigny/AWA/FAA@FAA
Subject		FW: FAA Coordination for PSTAR system

Tim,

We are attempting add a 1030MHz frequency to an existing FCC temporary license for Lockheed Martin - Syracuse. Note, we have an existing radar which is getting an IFF radar added to it (TPX-56). We do not build the IFF system, we just need to demonstrate it works to customers from time to time. We need to get prior coordination with you guys in order for the FCC add the frequency. I had originally been working this through Chris but I understand he has transitioned to a different job. Please read the following emails and contact me if you have questions.

One more thing:
When we had originally sent you guys the parameters for the radar, we thought it could only operate at 450 Hz PRF which Chris indicated was a problem. We have since found a way to operate it with any PRF from 10-663Hz which we think will ease the concerns over IFF saturation in the Northeast.

Thanks

D.J. Jardine
Lockheed Martin
MS2 Syracuse - Frequency Coordinator
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david.j.jardine@lmco.com

From: Jardine, David J
Sent: Tuesday, October 30, 2007 7:45 AM
To: 'Chris.CTR.Tourigny@faa.gov'
Subject: RE: FAA Coordination for PSTAR system

Chris,

See responses below. Please let me know if additional information is needed.

D.J. Jardine
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From: Chris.CTR.Tourigny@faa.gov [mailto:Chris.CTR.Tourigny@faa.gov]
Sent: Tuesday, September 25, 2007 1:11 PM
To: Jardine, David J
Cc: donald.nellis@faa.gov; timothy.j.pawlowitz@faa.gov
Subject: RE: FAA Coordination for PSTAR system

David,
From a policy perspective, it will be difficult to support this system as presented primarily due to the fixed PRF. The FAA assigns average PRFs to all IFF systems based on the location in order to protect National Airspace System (NAS) secondary radars. If the FAA can not assign a PRF to this system consistent with existing engineering criteria, it will not be able to operate in many areas.
From an EMC perspective, the requested PRF is not available at the location requested. The operation may interfere with NAS radars in the area.

Please answer the following questions and we will see if we can find a way to support this testing.

Who is/are the customer(s) for this system? Please provide agency, country, and specific equipment nomenclature.
The name of the system is PSTAR.
The customers are the Commonwealth of Australia (SHOREAD-19) and Switzerland (Arma Swiss).
Is the system Export Only, i.e. it will never be operational in the US?
The system is not export only. It has the potential to be sold to US customers (ex. US Army) .
What is the projected number of units the TPX-56 will be integrated on and what cities will they be located?
For the purposes of the FCC Temporary experimental license there will be 1 or 2 units periodically operating in Syracuse, NY.
If the system will operate in the US, a range of PRFs will be required for the FAA to choose from, even if it is only 10 from 350 to 450 Hz for short ranges. Will the system be capable of this requirement?
The system has an adjustable PRF from 10-663Hz. We are flexible on the PRF. We only need to demonstrate that the system works periodically.
The range discussed previously of 200 - 250Hz would not be a problem.

Please provide a complete description of the stagger sequence. What does it look like in time?
The system uses a pseudo random stagger to its nominal PRF. The PRF moves on the order of +/- 5%.
It is unusual that the system will only operate Mode-3/A. Please verify no other modes will be used.
The system will potentially use any of the following modes:
Modes 1,2,3/A, and C

Thanks,
Chris W. Tourigny
Electronics Engineer
ATC Spectrum Engineering Services
Federal Aviation Administration
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"Jardine, David J"
<david.j.jardine@lmco.com>

To
09/25/2007 10:19 AM
Chris CTR

Tourigny/AWA/CNTR/FAA@FAA

cc

Subject
RE: FAA Coordination for
PSTAR system

Chris,

I believe I have answered your questions below - in blue. Sorry it took so long... I had to dig for some of the answers. Let me know if you need anything else.

Thanks

D.J. Jardine
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From: Chris.CTR.Tourigny@faa.gov [mailto:Chris.CTR.Tourigny@faa.gov]
Sent: Wednesday, July 11, 2007 4:56 PM
To: Jardine, David J
Cc: Low, Aaron S; Wells, Claude
Subject: Re: FAA Coordination for PSTAR system

David,

The use of Mode-4 is restricted to the DoD only and the geographic area requested may even preclude a DoD request. Recent analysis has shown the Northeast is saturated with secondary radar interrogations. We have to prevent any further increase in transponder occupancy. If required, Mode-4 requests will need to come from the DoD Mode-4 POC and have a DoD frequency assignment.

DJ: No need to add Mode 4 to the license at this time.

We can probably support the Mode-3/A request, but we will need to assign an average PRF. The FAA is required to assign a PRF to all IFF systems. The PRF range listed below probably came from the TPX-56 spec. sheet. This interrogator is integrated in many types of systems and the PRF range is usually reduced when the 56 is integrated into a platform. It is our responsibility to assign the lowest average PRF possible in order to reduce the amount of interrogations in the environment. What is the range and selection increment the FAA can assign to the interrogator integrated into the PSTAR platform? With Mode-3/A-only, the range should be low (closer to 200 - 250 Hz).

DJ: The TPX-56 uses a PRF of 442 Hz. Note: the range of the radar is shorter with a higher PRF.

The staggered question was not answered below, but I know the 56 is capable of PRF staggering and the FAA will require this mode. Please verify that staggered mode will be used and describe the stagger method when integrated into the platform. The 56 will need to stagger about the average PRF assigned.

DJ: The TPX-56 adds a pseudo random stagger to its nominal PRF. The PRF moves on the order of +/-5%.

The location also falls in an area that requires coordination with Canada.
Can the interrogator blank in the direction of Canada? If not, the Canadian coordination process takes a minimum of 3 months and the FAA will need to complete this requirement before FAA coordination is granted.

DJ: The radar does have blanking and we can blank Canada.

If you have any further questions, please don't hesitate to ask.

Thanks,
Chris W. Tourigny
Spectrum Engineer, Contractor
ATC Spectrum Engineering Services
Federal Aviation Administration
(O) 202-267-3071
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"Jardine, David J"
<david.j.jardine@lmco.com>

To
07/11/2007 01:46 PM

Chris CTR Tourigny/AWA/CNTR/FAA@FAA

cc

"Wells, Claude" <claude.wells@lmco.com>, "Low, Aaron S" <aaron.s.low@lmco.com>

Subject

FAA Coordination for PSTAR system

Chris,

We would like to add the following IFF system to the PSTAR KE2XZF license.
I am sending the parameters of the TPX-56 IFF system which is now a part of the overall system. We need show prior coordination with the FAA to add the 1030MHz frequency to the FCC temp license. Please let me know if you need anything else. If not, can you send us the NGT numbers so we can add the frequency?

Thanks

D.J. Jardine
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david.j.jardine@lmco.com

Please report the following information to the FAA Regional Frequency Management Offices for the frequencies below (Ensure that the information indicated by the asterisks (*) is reported for the frequencies 1030 MHz and 1090 MHz and the bands 1215-1390 MHz, 2700-3000 MHz and 9000-9200 MHz).
Write "None" for a parameter if it is considered not applicable to the experiment:

(*) - peak envelope power (PEP); 13 dBi antenna + 25 dBW Transmit power - loss in cable of 6dB = 32dBW

- type of antenna; Flat Planar Array

- transmit antenna gain; 25 dBW

- elevation above sea level of the antenna site; 450 ft

- height above ground of the focal point of the antenna;~ 4 ft

- antenna polarization; Vertical

- the azimuth that the antenna is pointed or appropriate

designator to indicate whether the antenna is rotating,

non-directional, etc.; Rotating

(*) - pulse repetition rate (PRR) that the equipment is capable of

operating on to include PRR stagger sequences if appropriate,

whether the PRR is adjustable and what PRR's the equipment can

accept, and any other information that would be helpful in

understanding the pulse characteristics (staggered, jittered,

fixed) of the equipment; 50hz to 450 Hz

(*) - pulse width; 0.8 us, and 0.5 usec

- equipment nomenclatures; AN/TPX-56 IFF Interrogator on PSTAR-ER system

(*) - whether the equipment is capable of blanking transmissions in

certain azimuths and any limitations with respect to blanking; Includes Blanking capability

- radius of operations if appropriate; System can operate over 360 degrees with two rotation Rates 10 RPM and 20 RPM

- detailed description of the proposed operation to include any

technical parameters that will be altered during operations. System Transmits at 1030 MHz in accordance with DoD AIMS 65-1000

The following is requested when using 1030 MHz and 1090 MHz for IFF:

- What is the maximum flight altitude? This is a ground based interrogator

- Does the applicant want to interrogate (transmit) on 1090 MHz as well as 1030 MHz (airborne transponders typically only transmit on 1090 MHz and receive on 1030 MHz)? No

- If the applicant will be transmitting on 1030 MHz, in what modes of operation does the applicant want to operate (Modes 1, 2, 3A, 3C, 4, 5, Mode-S)? Is this a TCAS and is TCAS the only reason why the 1030 MHz transmissions are needed (airborne Mode 4 and/or 5 operations will be very difficult if not impossible to authorize and airborne Mode-S is not authorized)? Modes 3/A and Mode 4

- To whom is this product being sold? Is this confined to overseas customers or US customers?

This product is sold to both U.S. customers and to overseas customers.

- Does the waveform meet all of the required ICAO Annex 10 requirements and appropriate RTCA Document? Unknown, but the system is compliant to the SIF and Mode 4 transmission requirements of section 5.1 of DoD AIMS 65-1000 and the ISLS transmission requirements of section 8 of DoD AIMS 65-1000.