



INTERNATIONAL CIVIL AVIATION ORGANIZATION

COM CO-ORDINATION MEETING
(People's Republic of China, Lao PDR, Nepal,
Myanmar and Thailand)
18 – 19 February 2014, Chengdu, China



Agenda Item 2: Review the current implementation and operational status of AFS communications between States including follow-up actions by Administrations to the Action Plan adopted in March 2013

REVIEW STATUS OF BEIJING/YANGON SATELLITE COMMUNICATION CHANNEL

(Presented by the China)

SUMMARY

It is informed by International Civil Aviation Organization (ICAO) that a five-country coordination communication meeting will be held in Chengdu. As a topic of the meeting, the reconstruction of VSAT satellite communication channel will be discussed. In order to ensure the communication guarantee between Kunming-Yangon and Lhasa-Katmandu.

1. Introduction

1.1 According to the consensus about the VSAT system recovery agreement reached among China, Myanmar and Nepal in 2013 at Kunming Meeting, the reconstruction of the satellite communication channel between Beijing-Yangon, Beijing-Katmandu, Kunming-Yangon and Lhasa-Katmandu will be promoted together.

1.2 ATNC engineer visited Yangon in June 2013, and conducted the test for Yangon TES VSAT equipment. At present, all outdoor and indoor equipment in Yangon is suffering serious aging and cannot be recovered through maintenance.

1.3 We made technical proposal for the satellite communication channel between Beijing-Yangon, Beijing-Katmandu, Kunming-Yangon and Lhasa-Katmandu.

1.4 We immediately contacted China SATCOM Group for consultation on satellite resource, rental charge and relative matters. The related satellite equipment test was completed in the Lab based on the use of practical application. Now the budget for China side has been carried out.

2. Discussion

2.1 As a result of study, it is suggested that IP-based satellite communication terminal device shall be used to replace all TES satellite device for Myanmar/China AFS circuits.

2.2 It is suggested that the VSAT satellite channel between Nepal-China shall be reconstructed using the same technical proposal mentioned above.

2.3 We propose the VSAT satellite solution can be discussed and can be approved in this meeting. If that is acceptable, we further propose:

- a) the antenna foundation for Yangon can be completed before June 2014;
- b) the site shall be decided for Nepal. We propose the current Kathmandu VSAT station will be kept running in the period of new VSAT station setup. So additional site for the new station shall be selected. The site survey may be completed before end of April 2014;
- c) for the indoor unit, it is strongly recommended to have same type for all VSAT site. ATNC will provide the type for each site for consideration before May 2014. The antenna and ODU equipment can be different, but the type for antenna and ODU equipment should be recognized and confirmed by satellite equipment company;
- d) all equipment can be purchased by every side. **(Satellite Equipment Technical Specifications listed in Annex)** we propose the equipment reach the side before June 2014. ATNC can also supply all equipment above-mentioned; and
- e) the installation shall be completed before July 31 2014, and the parameter and circuit trial can be conducted before 20 August 2014.

3. Action by the meeting

3.1 The meeting is invited to note the information contained this paper, Promote establishment the Beijing-Yangon VSTA satellite communication channel.

3.2 The meeting also invited to note the concern expressed in this paper that the existing satellite terminal equipment becoming aging which would have positional problems.

Annex: Satellite Equipment Technical Specifications

1. Indoor equipment:

- a. Carrier data rate From 16kbps-4Mbps, 1bps stepping
- b. IF band using L-band frequency range 950-1450MHz, 100Hz step
- c. Carriers can transmit multicast traffic and unicast traffic
- d. Support BPSK / QPSK modulation, such as manual selection
- e. Transceiver supports the use of asymmetric
- f. Support TPC 1/2, 3/4 Encoding
- g. Demodulation threshold requirements, using TPC, BER $\leq 10e-8$, QPSK-3/4 than 4.6dB, QPSK-7/8 than 4.7dB
- h. With less than a standard Ethernet 10/100M Interface
- i. Support TCP / IP network protocol support network multicast protocol that supports SNMP network management protocol that supports H.323 protocol
- j. Supports static routing function
- k. With remote monitoring, remote monitoring, including HTTP, SNMP, Telnet, etc., remote site monitoring functions best with an LCD panel for easy on-site operation and maintenance.
- l. Indoor Operating temperature -10 ~ 45
- m. Support satellite MODEM1: 1 hot backup
- n. Operating humidity 40 degrees from 5% to 95%
- o. the device must be installed on a 19 'standard communication cabinet
- p. SCPC carrier rate of not less than 130Kbps

2. Transmit Characteristics

Frequency Range 5.850 to 6.425 GHz
Frequency Resolution 100 Hz
Max. Power (P1 dB) 5 W +37 dBm at 25°C
Power Resolution 0.1 dB steps
Power Stability
(Over Temp.)
4 dB p-p typical w/o Power Leveling
1 dB p-p typical with Power Leveling
Spurious (Not Intermods) < -15 dBm/4 kHz
Spectral Re-growth
(Pout=6 dB below P1dB)
< -33 dBc
TX Phase Noise (DSB) < 2.8° RMS integrated 100 Hz to 1 MHz
Frequency Stability ± 0.02 ppm
Receive
Input Frequency Range 3.625 to 4.200 GHz
Frequency Resolution 100 Hz
Noise Temperature $\leq 35^\circ$ K (typical @ 25° C [77° F])
RX Image Rejection 45 dB, minimum

3. Environmental and Physical

ODU - BUC

Operating Temperature -40° to +55°C (-40° to +131°F)

Operating Humidity 0 to 100% RH

Storage Temperature -50° to +80°C (-58° to +176°F)

Connectors (In/Out) Type N/CPR-137G

Weight 15 lbs. (6.8 kg) typical

ODU - LNB

Operating Temperature -40° to +55°C (-40° to +131°F)

Operating Humidity 0 to 100% RH

Storage Temperature -50 to +80°C (-58° to +176°F)

Connectors (In/Out) CPR-229C/Type N

Weight 2 lbs. (0.9 kg) typical
