EUROVISION SERVICES TECHNICAL NOTICE

PGA TOUR - International Distribution Asia
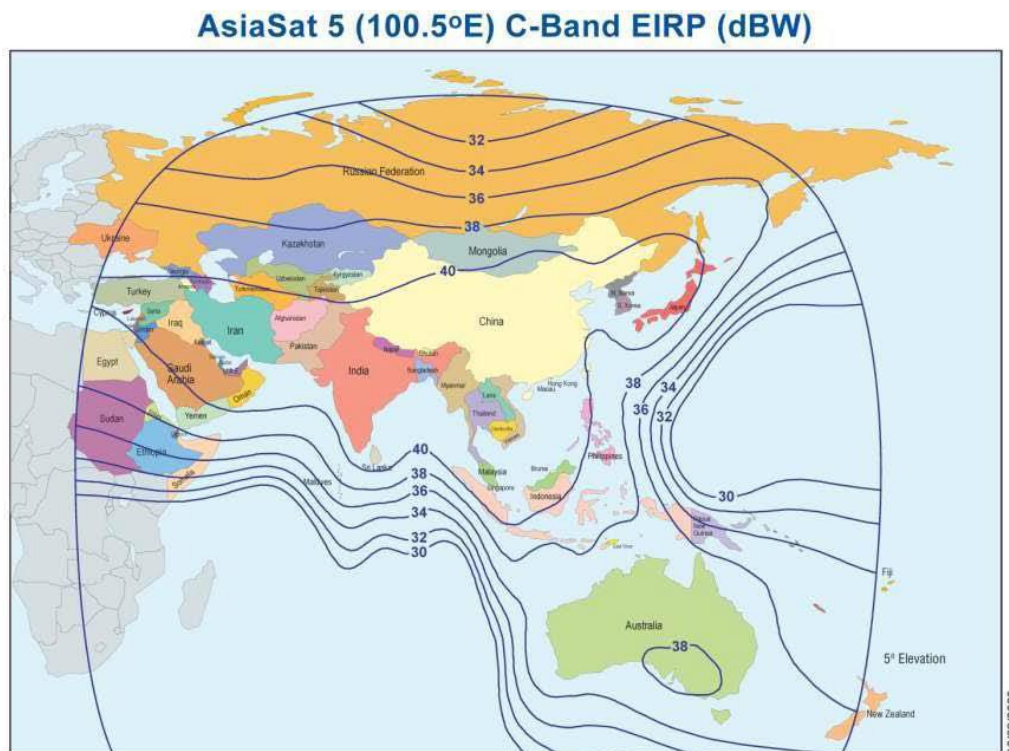
24 June 2022

Version 4.0

CONTENTS

INTRODUCTION

Eurovision Services is establishing a permanent satellite multiplex to distribute the PGA TOUR content across Asia. This satellite multiplex will enhance and facilitate broadcasters' technical ability to access PGA TOUR content more easily, as it will be permanently available throughout PGA TOUR Tournament event days.

In order to provide a highly efficient service to Asia, Eurovision services will use the NS4 modulation scheme for this permanent satellite multiplex. The carrier parameters are optimised to achieve higher spectrum efficiency and an improved C/N margin on the receive side.

The Eurovision Services will set up a permanent satellite multiplex, which will operate in NS4 mode encrypted in HMcrypt to the Asiasat 5 transponder C11V as of 23. June 2022.

SATELLITE ASIASAT 5

SATELLITE	ASIASAT 5
ORBITAL POSITION	100.5 DEG E
TRANSPONDER	C11V
DOWNLINK FREQUENCY	4080,00 (POLARIZATION V)
BANDWIDTH	72 MHZ

SATELLITE RECEPTION

Antenna Requirements

ANTENNA DIAMETER	3.0M
GAIN RX	BETTER THAN 39.8 DBI
VSWR RX	BETTER THAN 1.5:1
OPERATING FREQUENCY	3.625 - 4.200 GHZ
POLARIZATION	LINEAR VERTICAL
ANTENNA NOISE TEMPERATURE (AT ELEVATION 30 DEG)	31DEGK
ISOLATION PORT-TO-PORT RX	BETTER THAN 65DB
LNB PLL TYPE	WITH L.O. STABILITY BETTER THAN +/- 25 KHZ

ANTENNA DIAMETER	4.5M
GAIN RX	BETTER THAN 42.8DBI
VSWR RX	BETTER THAN 1.5:1
OPERATING FREQUENCY	3.625 - 4.200 GHZ
POLARIZATION	LINEAR VERTICAL
ANTENNA NOISE TEMPERATURE (AT ELEVATION 30 DEG)	31DEGK
ISOLATION PORT-TO-PORT RX	BETTER THAN 65DB
LNB PLL TYPE	WITH L.O. STABILITY BETTER THAN +/- 25 KHZ

Equipment

In order to receive the signal from the satellite, each receiving Broadcaster in Asia will need to install NS4 demodulators (NS2000) with DRM license for HMcrypt and MPEG4 compatible decoders.

For any questions regarding NS4 modulation, please contact: demodsupport@eurovision.net

The receiving broadcasters are invited to make contact the relevant manufacturers to purchase directly the adequate equipment.

![Eurovision Services - An EBU Company logo]

MODULATION SCHEME (NS4 -HMcrypt)

Total TS Rate	encoder or mux output	169,317307
		NS4
Modulator		
	Info bit-rate (188) [Mb/s]	169,317307
	Modulation	16APSK
	FEC (LDPC)	19/30
	Pilot	ON
	Frame	normal
	Roll-off factor [%]	2
	Symbol rate [Ms/s]	70
	Occupied bandwidth [MHz]	72
	Allocated bandwidth [MHz]	72

The NS2000 demodulator needs to be configured accordingly. Please see screenshot attached

NovelSat — Making space in space

● ALARM ● RX ● TEST

| home | log in | manual | calculator | contact | Logged in as admin |

NS2000 Menu
- monitor ▶
- system ▶
- system config ▶
- demodulator config ▶

Line settings

Line Mode	NS4	
Dual Channel Mode	Single channel	
Symbol Rate	70.000000	MSPS
LNB LO Freq	5150.00000	MHz
RF Freq	4080.00000	MHz
Roll Off	0.02	
Golden Seq	0	
LNB Control	OFF	
NS4 NLC Mode	ON	
Input Level Mode	Constant-Power	
Fast Sync Mode	Disable	
ACM Mode	Disable	
Auto CCM Mode	Disable	

MULTIPLEX PLATFORM

Eurovision Services uses the Hypermux-1 (HM1) platform for the distribution of premium content in Asia via the Asiasat-5 satellite, transponder C11V with encryption HMcrypt. The multiplex platform used allows for 6 channels of MPEG4 encoded streams (service 13 to service 18) to be individually encrypted (BISS) for PGA Tour. The mode used for each service is communicated separately with the Eurovision Services Synopsis.

Following services are used in the framework of PGA tour:

xxxs13 - A - EIF
xxxs14 - B - Main Feed - Ftr Grp
xxxs15 - C - Marquee Grp - Ftr Grp
xxxs16 - D - Ftr Grps - Ftr Hole
xxxs17 - E - Ftr Holes - Ftr Hole
xxxs18 - F - Champ - Korn Ferry

Following encoding profiles are planned to be used:

<u>Video</u>
HD_16 Profile PGA - MPEG-4 AVC/H.264 (4:2:0 8-bit) - HD

<u>Audio</u>
Stereo - MPEG-1 Layer II

TYPICAL RECEPTION INSTALLATION

Any number of additional decoders can be connected