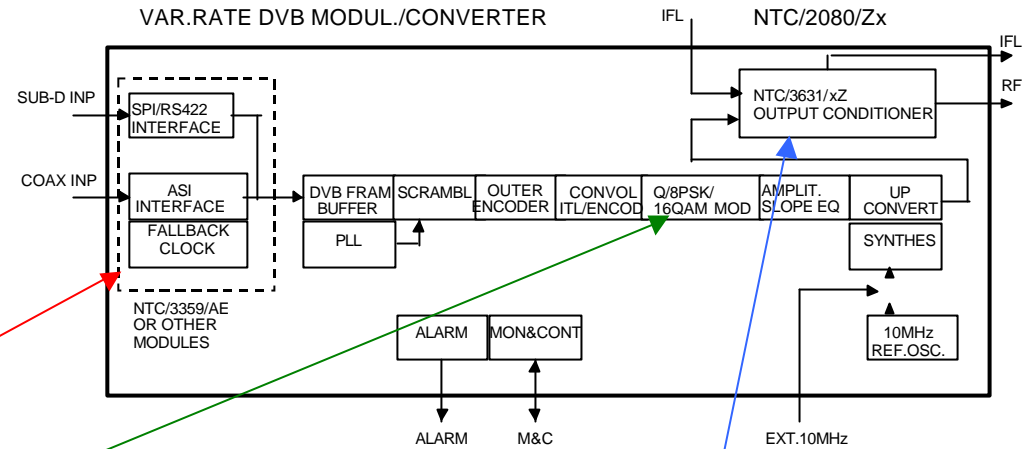


DVB Modulator : NTC/2080

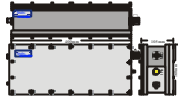


VARIABLE RATE (0.05 - 45/60 Mbaud)
QPSK/8PSK/16QAM
IF/L-band/C-band/Ku-band

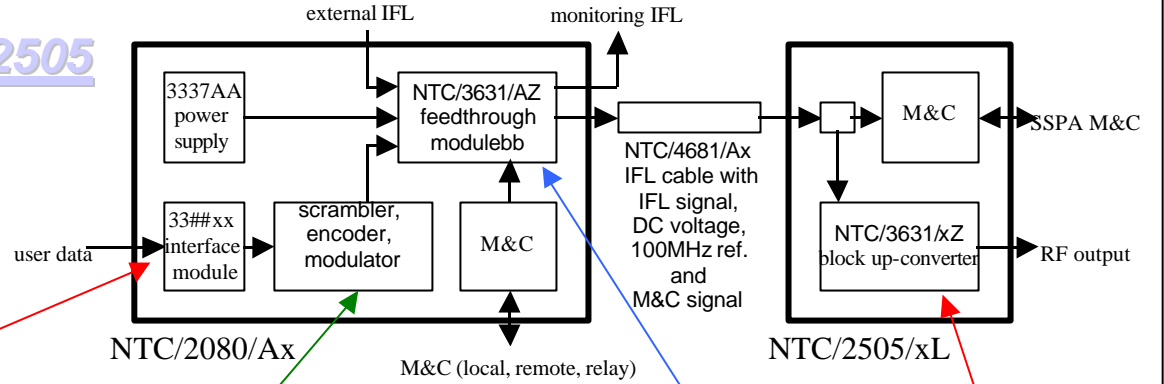


Number	Input Interface Options	Number	Device Capability Options	Number	Output Interface Options
NTC/3359/AE	ASI/SPI/RS422 Rate Adaptor (coax)	NTC/2080/ZP	0.922 to 18 Mb/s Variable rate L-band DVB QPSK Modulator	NTC/3631/LZ	L-band to 2 x 50-180 MHz output Converter module
NTC/3359/OE	ASI/SPI/RS422 Rate Adaptor (coax/optical)	NTC/2080/ZR	0.992 to 25 Mb/s Variable rate L-band DVB QPSK Modulator	NTC/3631/TZ	L-band to L-Band direct output module
NTC/3361/HG	HSSI + triple rate G703 naked interface (3 possible rates)	NTC/2080/ZT	1.0 to 30 MBaud Variable rate L-band DVB QPSK Modulator	NTC/3631/TB	L-band to triple L-Band direct output module
NTC/3325/SG	Triple rate G703 & SPI/RS422 interface (3 possible rates)	NTC/2080/ZQ	1.0 to 60 MBaud Variable rate L-band DVB QPSK Modulator	NTC/3631/DZ	L-band to 5925-6425 MHz Converter module
NTC/3349/AA	G703 @ 2.048 Mb/s submodule	NTC/2080/ZK	0.922 to 18 Mb/s Variable rate L-band DVB QPSK/8PSK/16QAM Modulator	NTC/3631/EZ	L-band to 12890-13250 MHz Converter module
NTC/3343/AB	G703 @ 6.312 Mb/s submodule	NTC/2080/ZM	0.922 to 25 Mb/s Variable rate L-band DVB QPSK/8PSK/16QAM Modulator	NTC/3631/FZ	L-band to 13750-14250 MHz Converter module
NTC/3343/AA	G703 @ 8.448 Mb/s submodule	NTC/2080/ZO	1.0 to 30 MBaud Variable rate L-band DVB QPSK/8PSK/16QAM Modulator	NTC/3631/GE	L-band to 13750-14500 MHz Converter Module
NTC/3344/AA	G703 @ 16.896 Mb/s submodule	NTC/2080/ZL	1.0 to 45/60 MBaud Variable rate L-band DVB QPSK/8PSK/16QAM Modulator	NTC/3631/GZ	L-band to 14000-14500 MHz Converter module
NTC/3344/AB	G703 @ 34.368 Mb/s submodule			NTC/3631/HZ	L-band to 17300-17700 MHz Converter module
NTC/3348/AA	G703 @ 44.736 Mb/s submodule			NTC/3631/IZ	L-band to 17700-18100 MHz Converter module
				NTC/3631/KZ	L-band to 18100-18400 MHz Converter module

DVB Modulator : NTC/2080 & NTC/2505



VARIABLE RATE (0.05 - 45/60 Mbaud)
QPSK/8PSK/16QAM
Outdoor IF/L-band/C-band/Ku-band

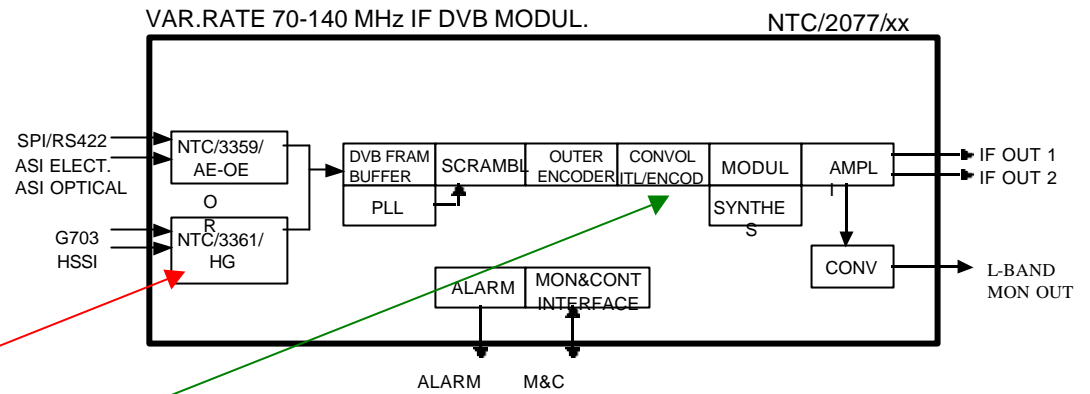


Number	Input Interface Options	Number	Device Capability Options	Number	Output interface to Outdoor Upconverter
NTC/3359/AE	ASI/SPI/RS422 Rate Adaptor (coax)	NTC/2080/ZP	0.922 to 18 Mb/s Variable rate L-band DVB QPSK Modulator	NTC/3631/AZ	L-band outdoor conditioner module + Ref. & Mon/Control
NTC/3359/OE	ASI/SPI/RS422 Rate Adaptor (coax/optical)	NTC/2080/ZR	0.992 to 25 Mb/s Variable rate L-band DVB QPSK Modulator	NTC/3337/AA	Power supply for NTC/2505/ZL used on DVB+8/16 Modulators
NTC/3361/HG	HSSI + triple rate G703 naked interface (3 possible rates)	NTC/2080/ZT	1.0 to 30 MBaud Variable rate L-band DVB QPSK Modulator	NTC/4681/Ax	IFL cable with IFL signal, DC voltage, 100 MHz and M&C signal
NTC/3325/SG	Triple rate G703 & SPI/RS422 interface (3 possible rates)	NTC/2080/ZQ	1.0 to 60 MBaud Variable rate L-band DVB QPSK Modulator	Number	Output Upconverter Options
NTC/3349/AA	G703 @ 2.048 Mb/s submodule	NTC/2080/ZK	0.922 to 18 Mb/s Variable rate L-band DVB QPSK/8PSK/16QAM Modulator	NTC/3631/DZ	L-band to 5925-6425 MHz Converter module
NTC/3343/AB	G703 @ 6.312 Mb/s submodule	NTC/2080/ZM	0.922 to 25 Mb/s Variable rate L-band DVB QPSK/8PSK/16QAM Modulator	NTC/3631/EZ	L-band to 12890-13250 MHz Converter module
NTC/3343/AA	G703 @ 8.448 Mb/s submodule	NTC/2080/ZO	1.0 to 30 MBaud Variable rate L-band DVB QPSK/8PSK/16QAM Modulator	NTC/3631/FZ	L-band to 13750-14250 MHz Converter module
NTC/3344/AA	G703 @ 16.896 Mb/s submodule	NTC/2080/ZL	1.0 to 45/60 MBaud Variable rate L-band DVB QPSK/8PSK/16QAM Modulator	NTC/3631/GE	L-band to 13750-14500 MHz Converter Module
NTC/3344/AB	G703 @ 34.368 Mb/s submodule			NTC/3631/GZ	L-band to 14000-14500 MHz Converter module
NTC/3348/AA	G703 @ 44.736 Mb/s submodule			NTC/3631/HZ	L-band to 17300-17700 MHz Converter module
				NTC/3631/IZ	L-band to 17700-18100 MHz Converter module
				NTC/3631/KZ	L-band to 18100-18400 MHz Converter module
				NTC/2505/ZL	L-band outdoor unit

DVB Modulator : NTC/2077

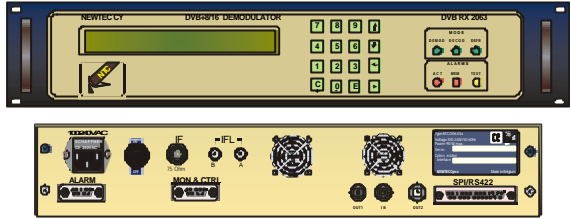


VARIABLE RATE (0.05 - 45/60 Mbaud)
QPSK/8PSK/16QAM
User selectable 70 & 140 MHz IF

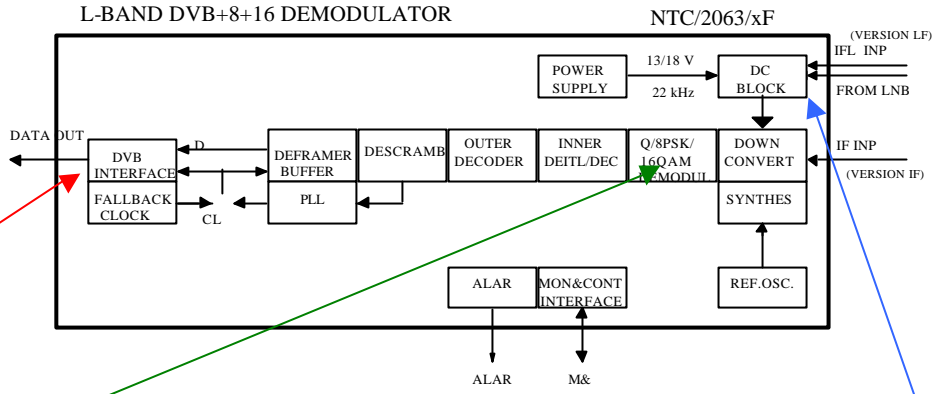


Number	Input Interface Options	Number	Device Capability Options	Number	Output Interface
NTC/3359/AE	ASI/SPI/RS422 Rate Adaptor (coax)	NTC/2077/FP	0.922 to 18 Mb/s Variable rate IF DVB QPSK Modulator		User selectable 70 or 140 MHz output through frontpanel
NTC/3359/OE	ASI/SPI/RS422 Rate Adaptor (coax/optical)	NTC/2077/FR	0.992 to 25 Mb/s Variable rate IF DVB QPSK Modulator		
NTC/3361/HG	HSSI + triple rate G703 naked interface (3 possible rates)	NTC/2077/FT	1.0 to 30 MBaud Variable rate IF DVB QPSK Modulator		
NTC/3325/SG	Triple rate G703 & SPI/RS422 interface (3 possible rates)	NTC/2077/FQ	1.0 to 60 MBaud Variable rate IF DVB QPSK Modulator		
NTC/3349/AA	G703 @ 2.048 Mb/s submodule	NTC/2077/FK	0.922 to 18 Mb/s Variable rate IF DVB QPSK/8PSK/16QAM Modulator		
NTC/3343/AB	G703 @ 6.312 Mb/s submodule	NTC/2077/FM	0.922 to 25 Mb/s Variable rate IF DVB QPSK/8PSK/16QAM Modulator		
NTC/3343/AA	G703 @ 8.448 Mb/s submodule	NTC/2077/FO	1.0 to 30 MBaud Variable rate IF DVB QPSK/8PSK/16QAM Modulator		
NTC/3344/AA	G703 @ 16.896 Mb/s submodule	NTC/2077/FL	1.0 to 45/60 MBaud Variable rate IF DVB QPSK/8PSK/16QAM Modulator		
NTC/3344/AB	G703 @ 34.368 Mb/s submodule				
NTC/3348/AA	G703 @ 44.736 Mb/s submodule				

DVB Demodulator : NTC/2063



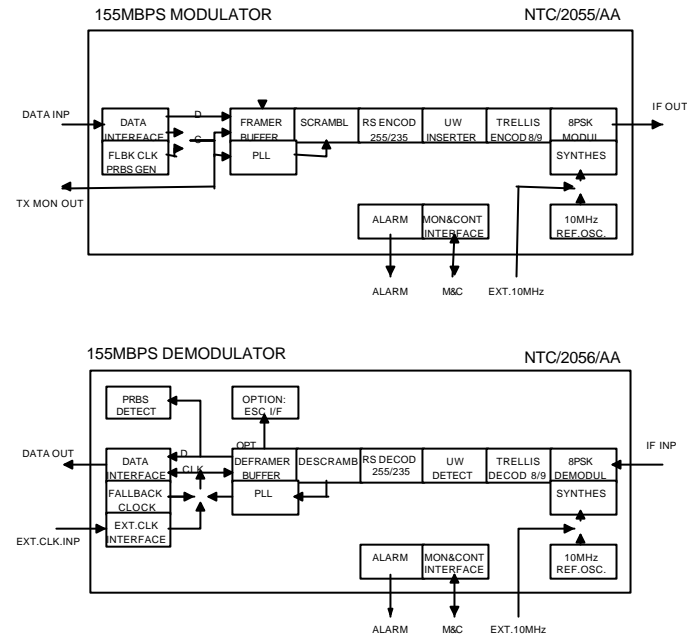
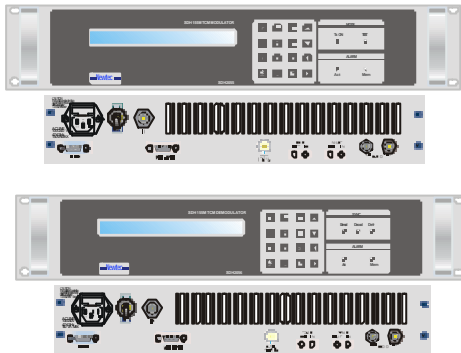
VARIABLE RATE (0.9 - 45 Mbaud)
QPSK/8PSK/16QAM
IF / L-band



Number	Output Interface Options	Number	Device Capability Options	Number	Input Interface Options
NTC/3326/EM	SPI/RS422 & Triple rate G703 naked interface (3 possible rates)	NTC/2063xK	1.41 to 18 Mb/s Variable rate L-band DVB QPSK/8PSK/16QAM Demodulator	NTC/2063/x	1 * IF from 52 to 176 MHz and 1 * IFL from 920 to 2150 MHz
NTC/3326/DG	SPI/RS422 & Dual rate G703 naked interface (2 possible rates)	NTC/2063xM	1.41 to 25 Mb/s Variable rate L-band DVB QPSK/8PSK/16QAM Demodulator	NTC/2063/Lx	2 * IFL from 920 to 2150 MHz
NTC/3389/AA	ASI/SPI/RS422 & SSI Rate Adaptor (coax)	NTC/2063xN	1.41 to 22.5 Mbaud Variable rate L band DVB QPSK/8PSK/16QAM Demodulator		
NTC/3361/DG	HSSI + dual rate G703 naked interface (2 possible rates)	NTC/2063xF	1.41 to 45 Mbaud Variable rate L-band DVB QPSK/8PSK/16QAM Demodulator		
NTC/3361/HG	Extended HSSI + triple rate G703 naked interface (3 possible rates)				
NTC/3349/AA	G703 @ 2.048 Mb/s submodule				
NTC/3343/AB	G703 @ 6.312 Mb/s submodule				
NTC/3343/AA	G703 @ 8.448 Mb/s submodule				
NTC/3344/AA	G703 @ 16.896 Mb/s submodule				
NTC/3344/AB	G703 @ 34.368 Mb/s submodule				
NTC/3348/AA	G703 @ 44.736 Mb/s submodule				

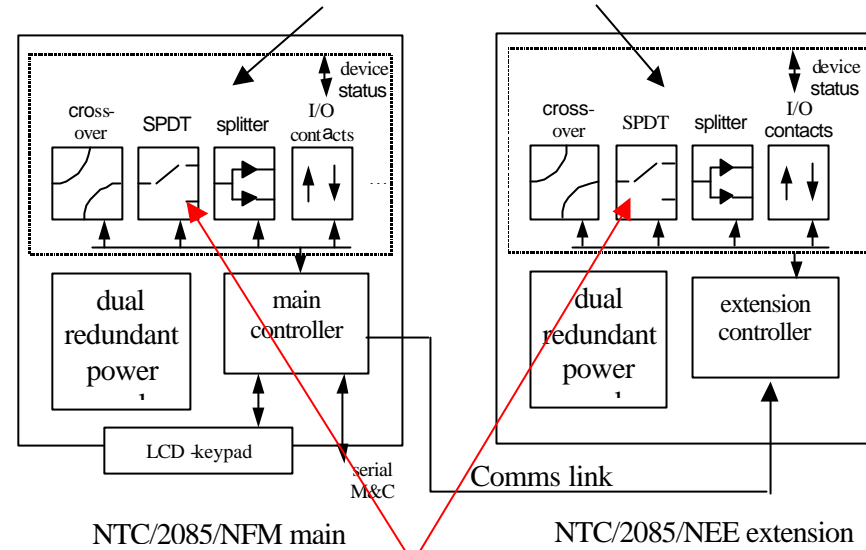
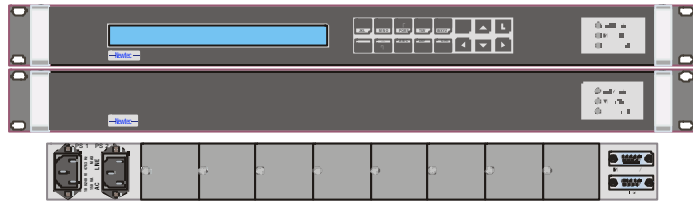
SDH Modulator & Demodulator

NTC/2055 & NTC/2056



Number	SDH Modulator/Demodulator	Input	Output
NTC/2055/AA	155 Mbps SDH Modulator	G703 (BNC-F)	Frequency range from 100 MHz to 180 MHz
		Optical Multi Mode (SC)	8PSK, 6D Trellis, RS (255, 235) outer coding
		Optical Single Mode (SC)	155.52 Mbps (63.283 Mbaud)
NTC/2056/AA	155 Mbps SDH Demodulator	Frequency range from 100 MHz to 180 MHz	G703 (BNC-F)
			Optical Multi Mode (SC)
			Optical Single Mode (SC)
			No options , to be used on 72 MHz transponder

Universal Switching System : NTC/2085

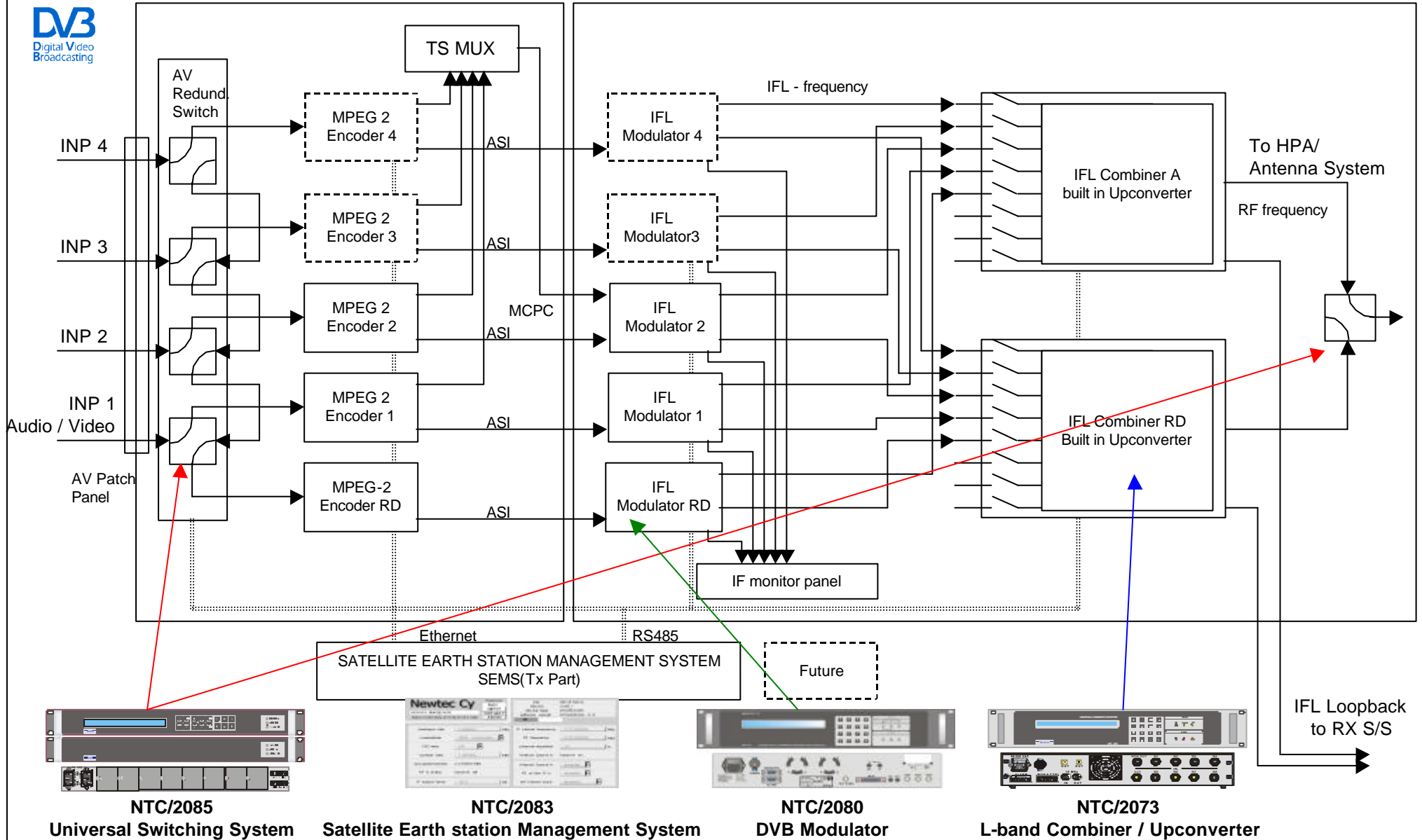


Number	Universal Switching System	Number	Modules	Use
NTC/2085/NF	Main unit	NTC/3410/CA	Cross over SMA – RF	DC – 18 GHz (L band and RF)
NTC/2085/NE	Extension unit (up to 8)	NTC/3410/CC	Cross over BNC 50 Ohm : Baseband and IF	IF at modulator output and demodulator input
		NTC/3410/CD	Cross over BNC 75 Ohm : Baseband and IF	Video, G703, ASI, SSI and ECL BB
		NTC/3410/C3	Triple cross over BNC 75 Ohm : Baseband and IF	Video, G703, ASI, SSI and ECL BB
		NTC/3410/D2	Cross over 25p sub-D Baseband	SPI, RS422 and full HSSI
		NTC/3410/DA	Cross over 15p sub-D : four balanced signals	Analog and digital audio (AES-EBU)
		NTC/3410/DH	Cross over 25p sub-D HSSI	HSSI interface
		NTC/3410/FC	Cross over SC Fiber Optic	SDH (Sonet)
		NTC/3410/EB	Dual external switch driver/contact inputs	Input for device alarm contacts and external switch control and position feedback

DVB Earth Station

BASEBAND TRANSMIT RACK

RF TRANSMIT RACK

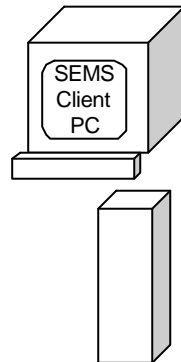


DVB Earth Station



Tx RF Rack

Blank Panel
SSPA 2
SSPA 1
Blank Panel
IFL Comb/UPC 1
IFL Comb/UPC RD
Modulator 1
Master Switch Unit
Modulator 2
Switch Ext Unit 1
Modulator 3
Switch Ext Unit 2
Modulator RD
Blank Panels



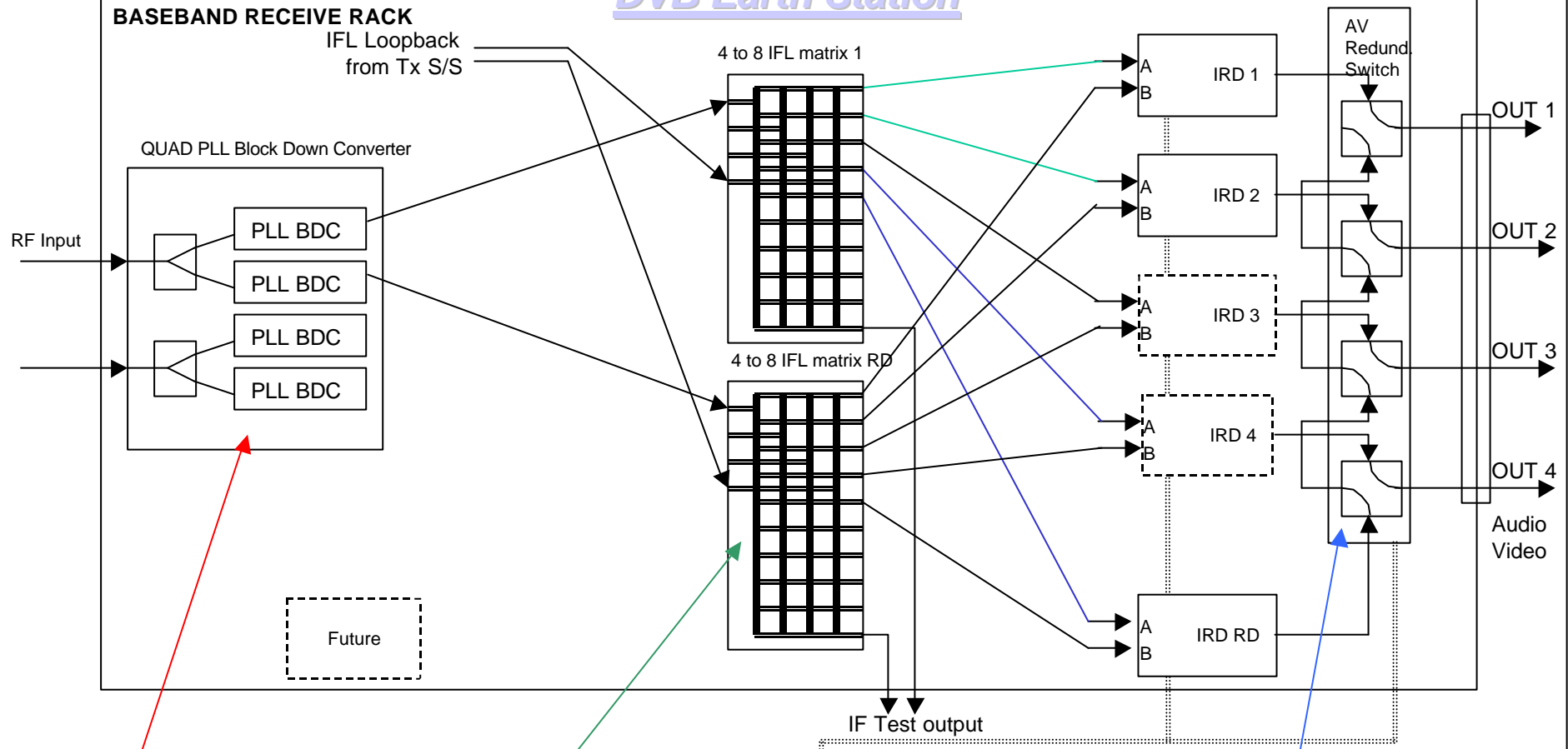
Rx BB Rack

Blank Panels
Demod Analog. 2
Demod Analog. 1
Encoder 1
Audio Patch Panel
Video Patch Panel
SEMS
IRD 3
Switch Ext Unit 2
IRD 2
Switch Ext Unit 1
IRD 1
Master Switch Unit
IRD RD
Audio Path Panel
Video Patch Panel
IRD Mon.
Blank Panels





DVB Earth Station



SATELLITE EARTH STATION MANAGEMENT SYSTEM
SEMS (Cold Standby Unit)

SATELLITE EARTH STATION MANAGEMENT SYSTEM
SEMS (Rx Part)

LAN INTERFACE
SEMS CLIENT PC



NTC/2093

Quad PLL Block Down Converter



NTC/2088

L-band splitter / switching matrix



NTC/2083

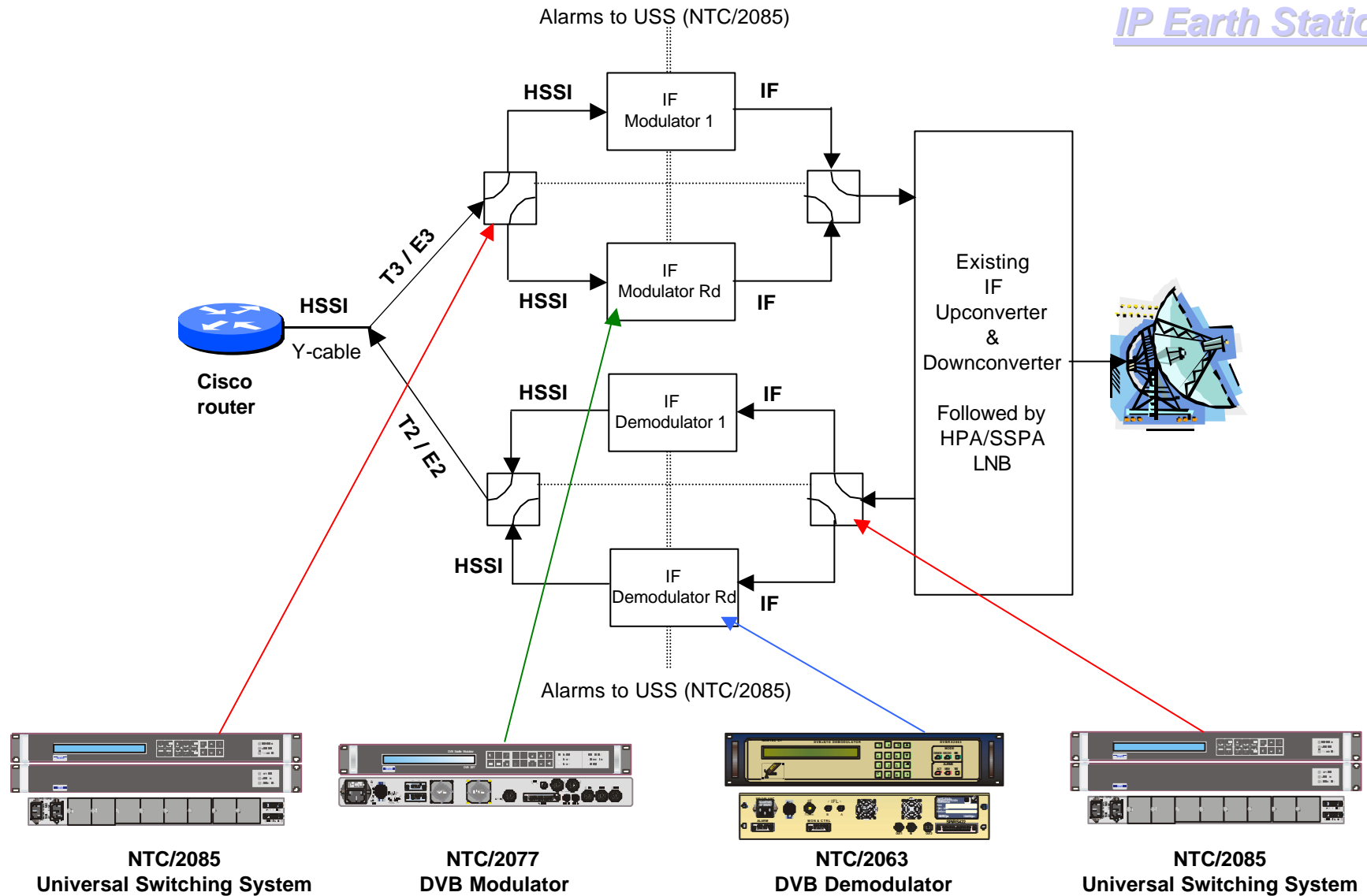
Satellite Earth station Management System



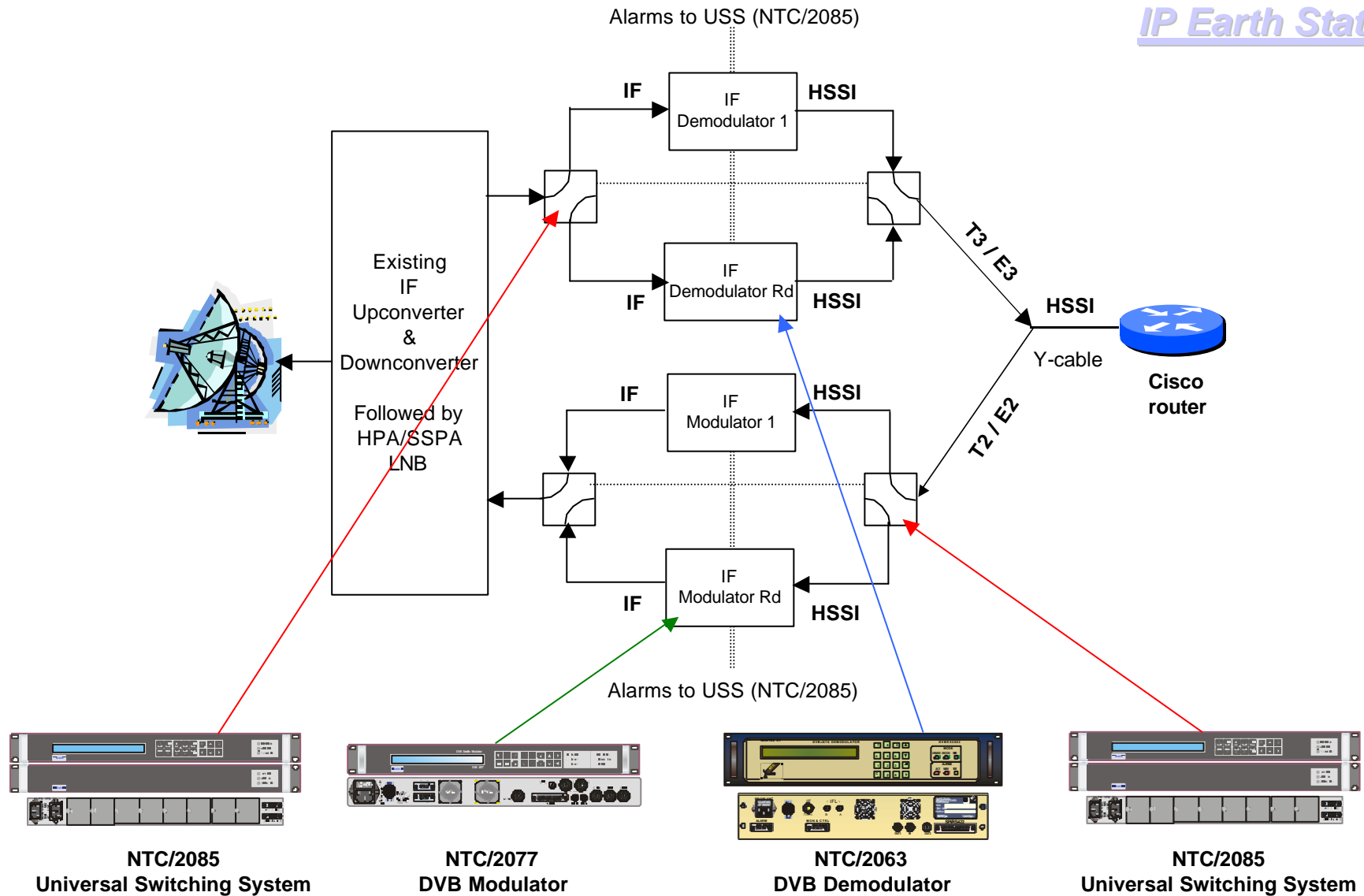
NTC/2085

Universal Switching System

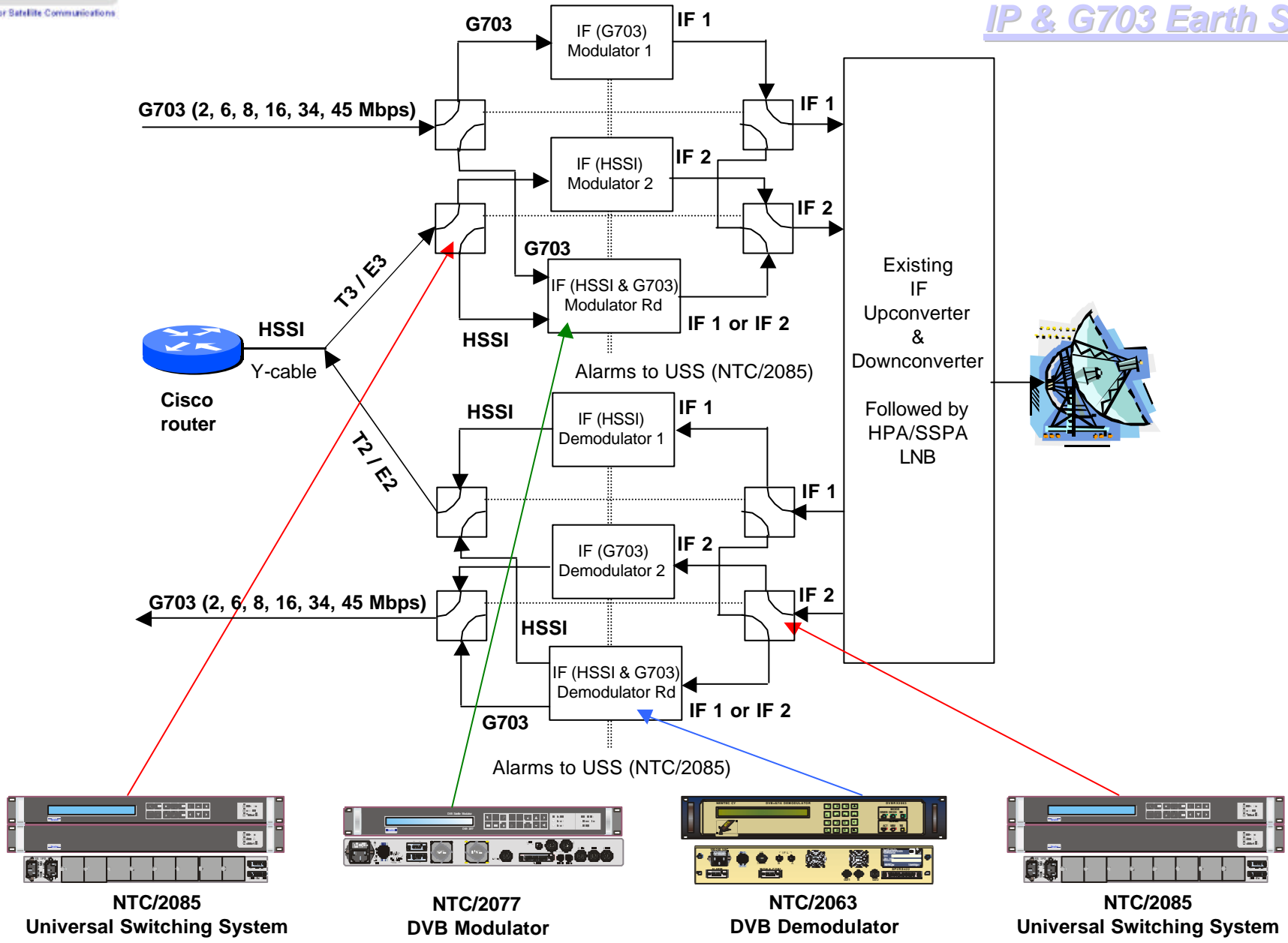
IP Earth Station



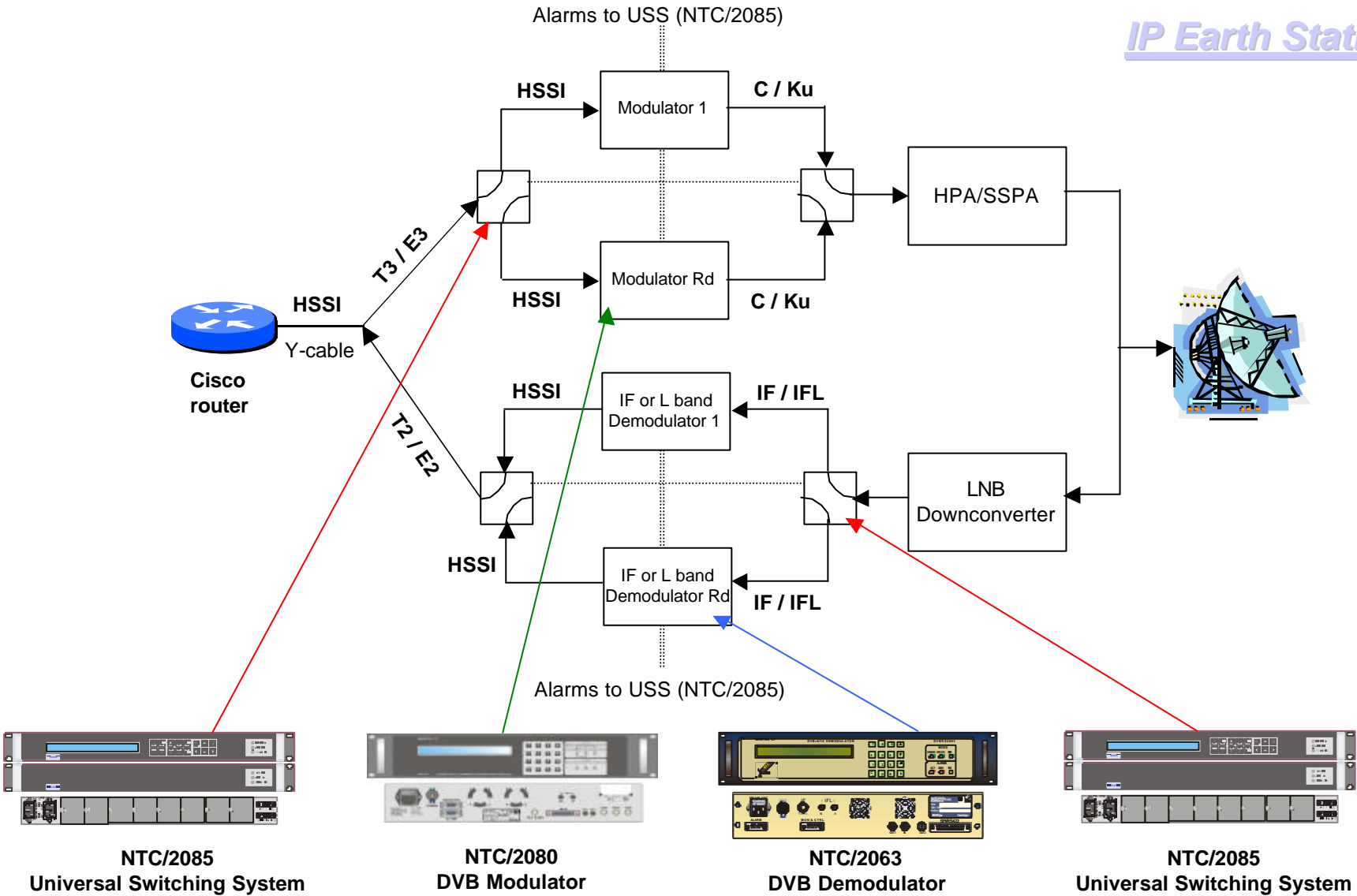
IP Earth Station

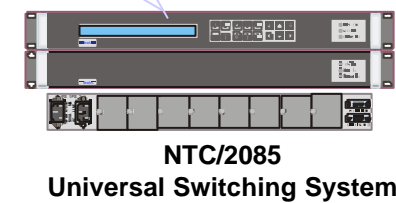
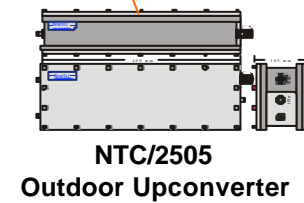
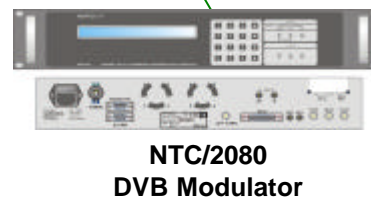
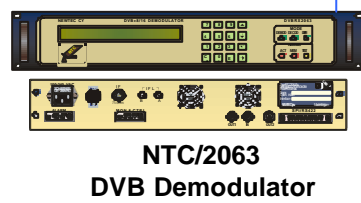
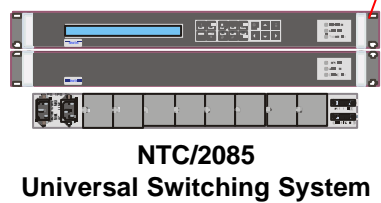
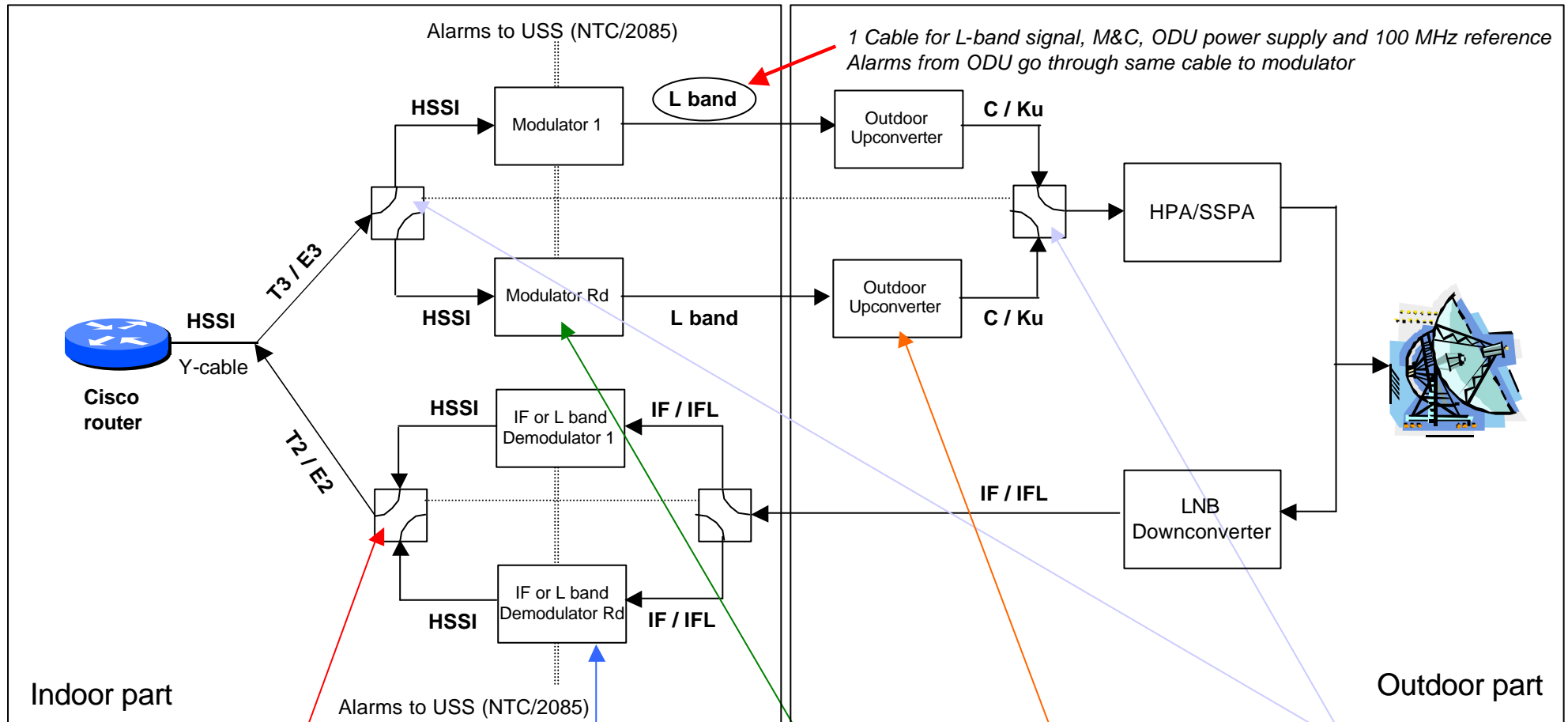


IP & G703 Earth Station



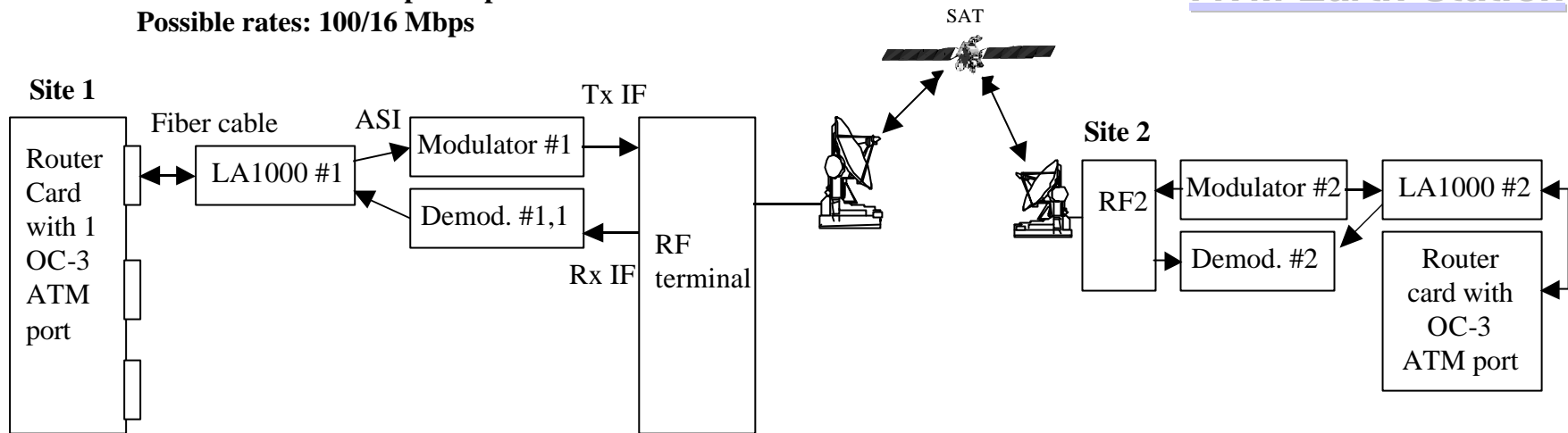
IP Earth Station





Point to Point Full Duplex Operation
Possible rates: 100/16 Mbps

ATM Earth Station



Distance considerations in the HUB :

- . optical fiber: several miles or km
- . electrical ASI: 100 m
- . for long distances with ATM switch, LA1000 and modulator are close to HPA

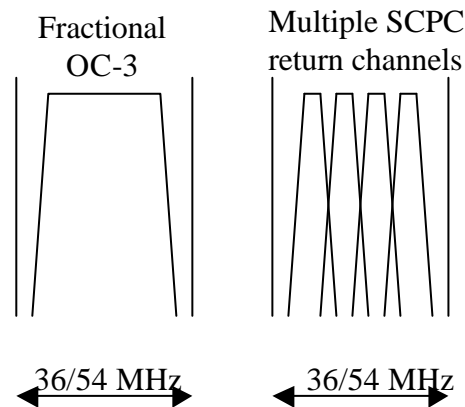
Modulator settings :

- .external data
- .external clocking
- .internal framing

Demodulator settings :

- .satellite clocking
- .internal framing

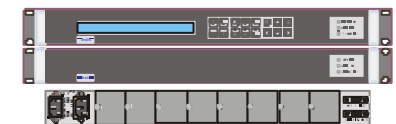
Transponder considerations



NTC/2077
DVB Modulator



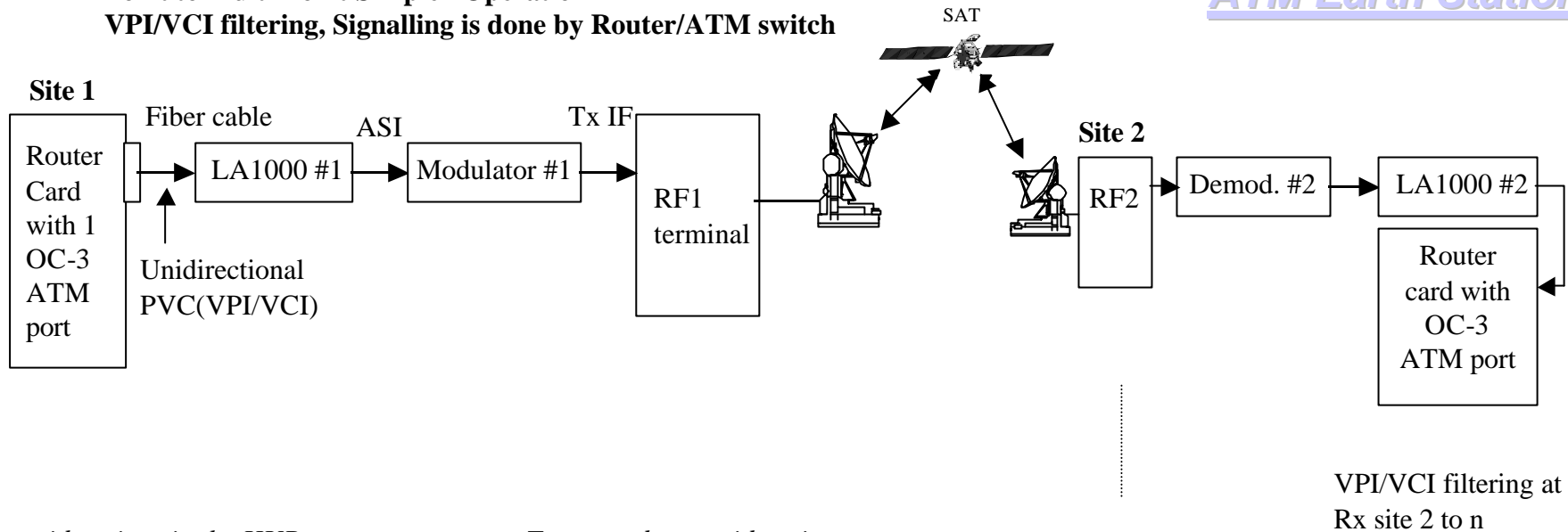
NTC/2063
DVB Demodulator



NTC/2085
Universal Switching System

Point to Multi-Point Simplex Operation
VPI/VCI filtering, Signalling is done by Router/ATM switch

ATM Earth Station



Distance considerations in the HUB :

- . optical fiber: several miles or km
- . electrical ASI: 100 m
- . for long distances with ATM switch, LA1000 and modulator are close to HPA

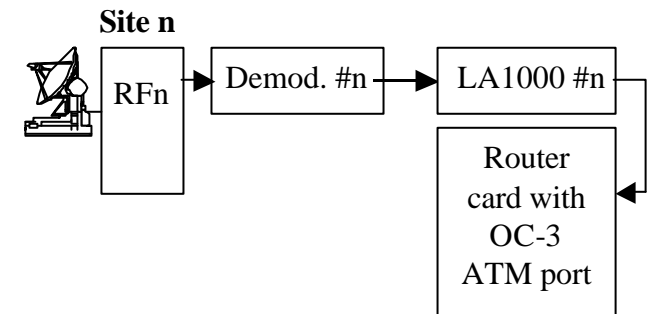
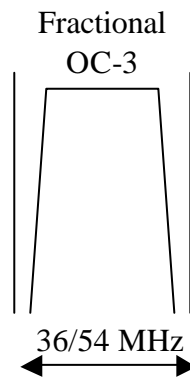
Modulator settings :

- .external data
- .external clocking
- .internal framing

Demodulator settings :

- .satellite clocking
- .internal framing

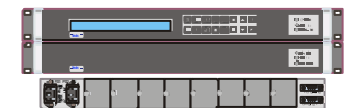
Transponder considerations



NTC/2077
DVB Modulator



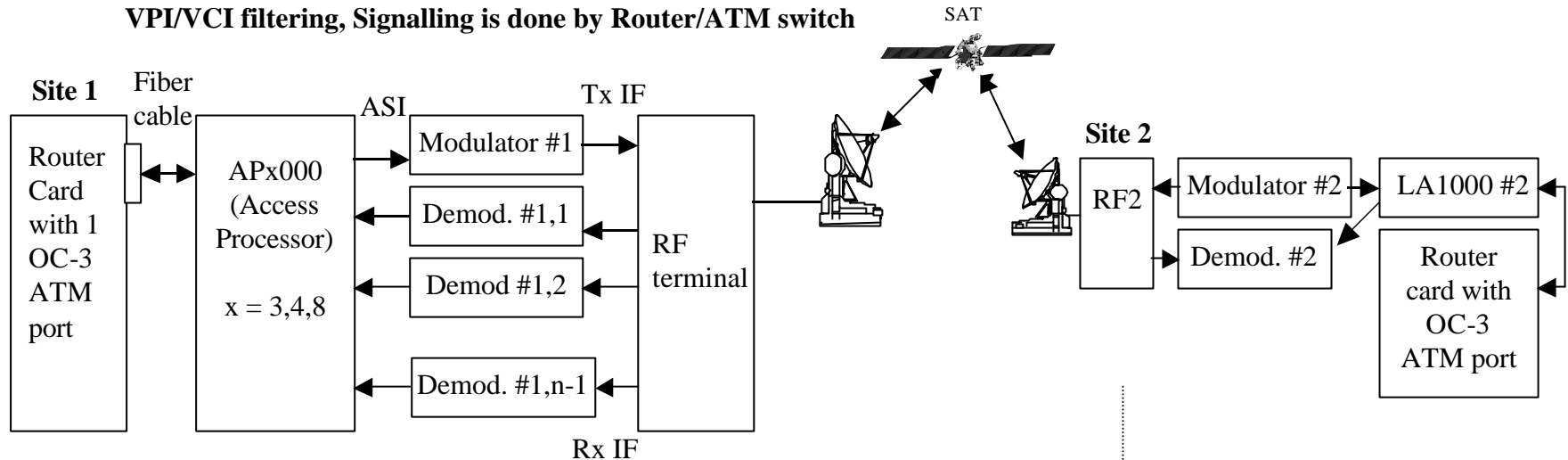
NTC/2063
DVB Demodulator



NTC/2085
Universal Switching System

ATM Earth Station

Point to Multi-Point Full Duplex Asymmetrical Operation VPI/VCI filtering, Signalling is done by Router/ATM switch



Distance considerations in the HUB :

- . optical fiber: several miles or km
- . electrical ASI: 100 m
- . for long distances with ATM switch, Apx000 and modulator are close to HPA

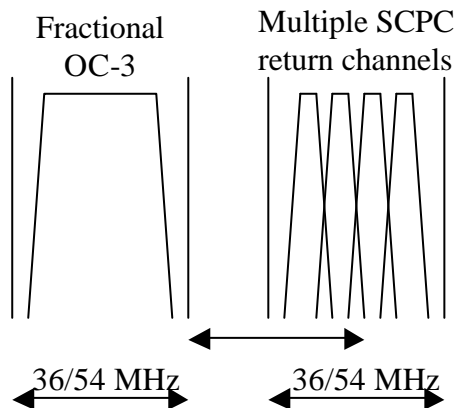
Modulator settings :

- .external data
- .external clocking
- .internal framing

Demodulator settings :

- .satellite clocking
- .internal framing

Transponder considerations



VPI/VCI filtering at Rx site 2 to n

