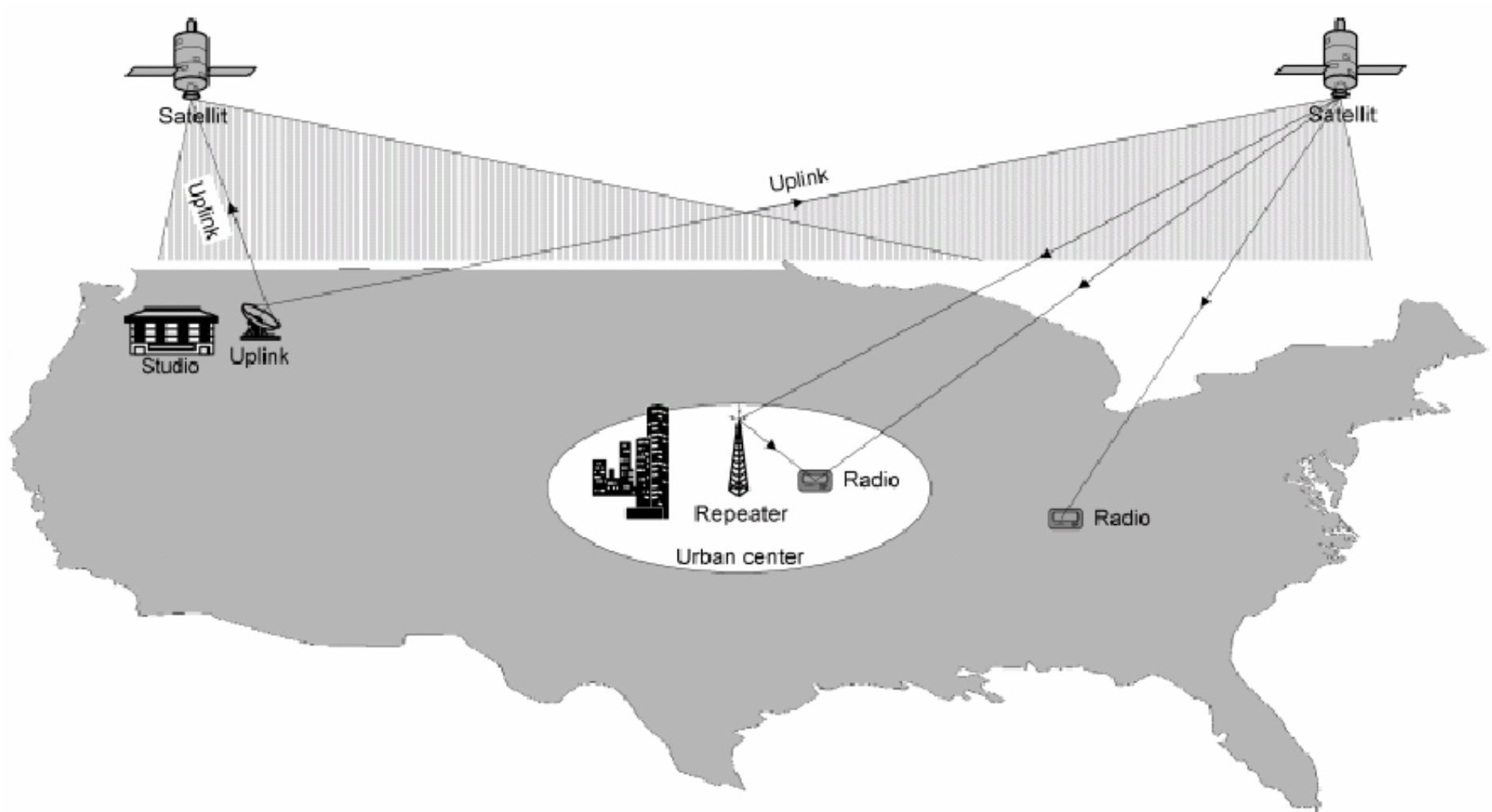


IZT S2000
Signal Simulator
Sirius
XM
DVB-T/H



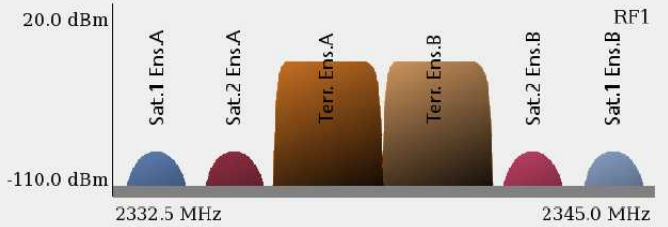
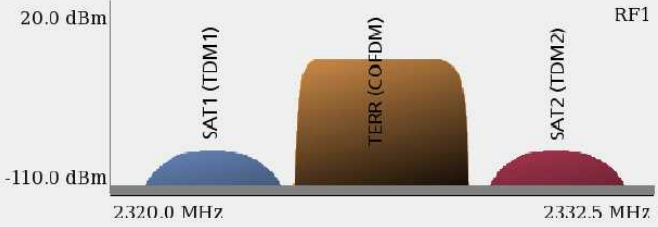


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アイジーティーパシフィック株式会社

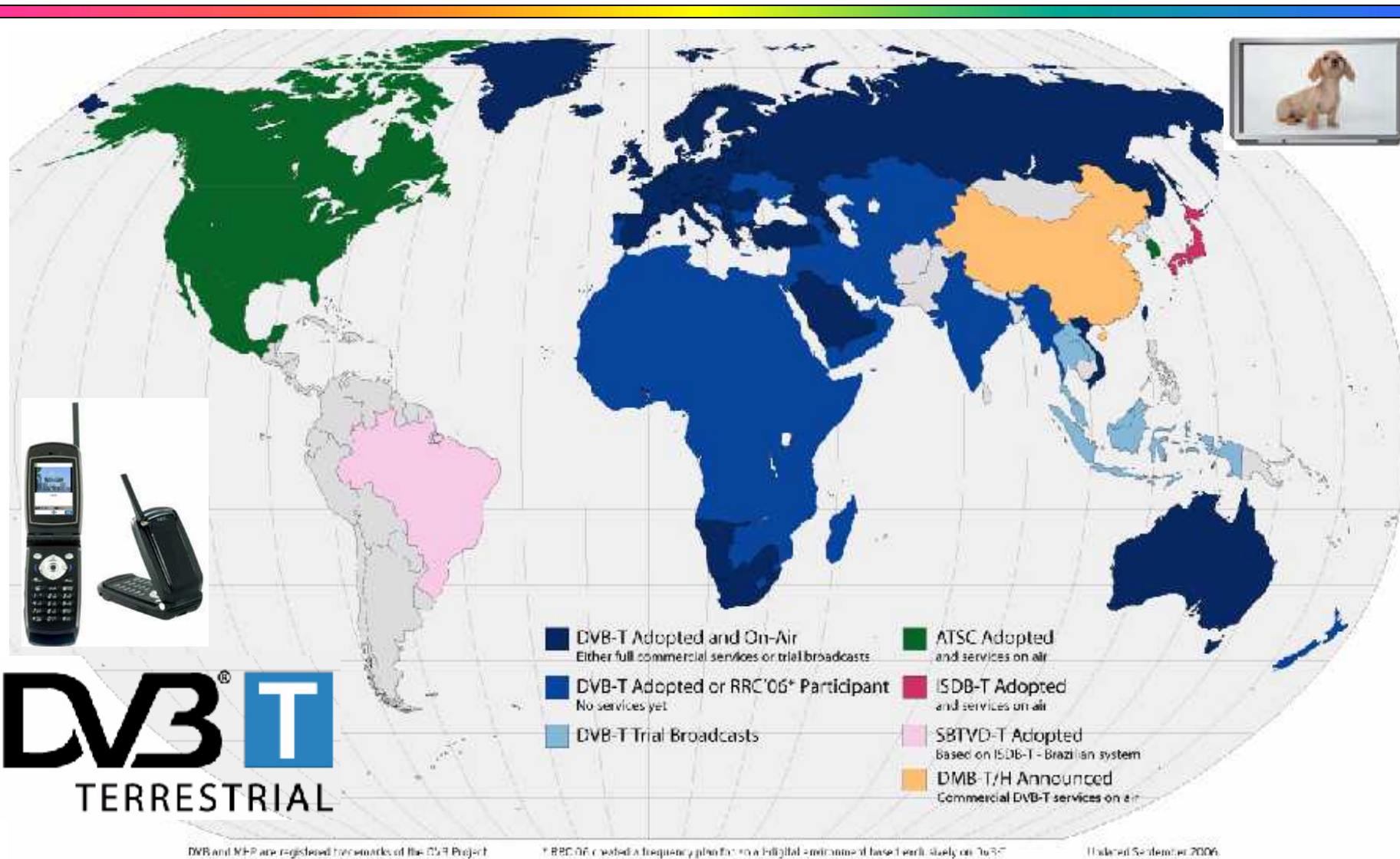
・デジタル衛星ラジオ



XM/SIRIUS

		
放送開始	2001年9月	2002年2月
衛星	静止衛星 (2衛星)	楕円軌道衛星 (3衛星)
サービス料金(1ヶ月)	12ドル95セント	12ドル95セント
番組	約170CH 音楽、ニュース、トーク、 スポーツ(MLB等)	約130CH 音楽、ニュース、トーク、 スポーツ(NFL、NBA等)
周波数	2332.5 ~ 2345.0 MHz	2320.0 ~ 2332.5 MHz
変調方式	衛星: QPSK変調 地上: MCM変調 衛星: 4波 地上2波	衛星: QPSK変調 地上: COFDM変調 衛星: 2波 地上1波
		

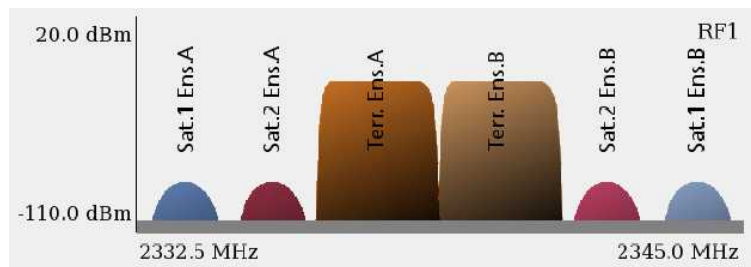
-DVB-T/H



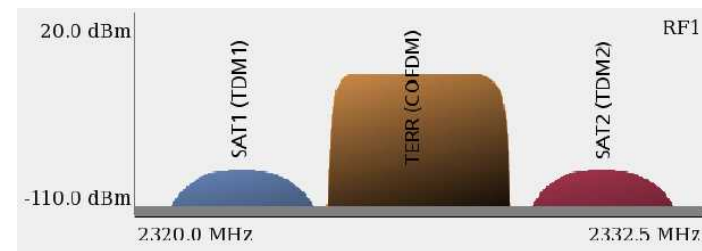
Signal Simulator (SIRIUS・XM・DVB-T/H)

1台(ユニット)で衛星波/地上波を出力可能(XM・SIRIUS)

XM(衛星4、地上2)

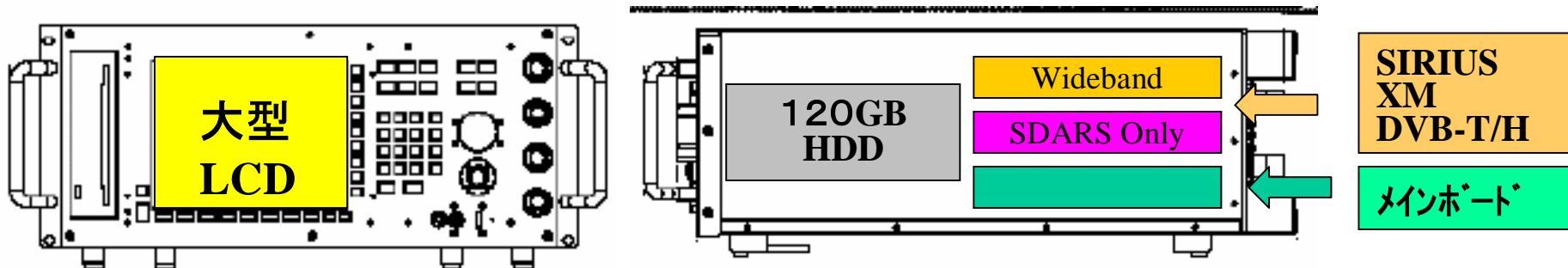


SIRIUS(衛星2、地上1)



2種類の衛星放送とDVB-T/Hを1台に

XM・SIRIUS・DVB-T/Hの信号発生器を1台に集約(OPTION対応)



衛星放送各社(XM・SIRIUS)のTAに対応

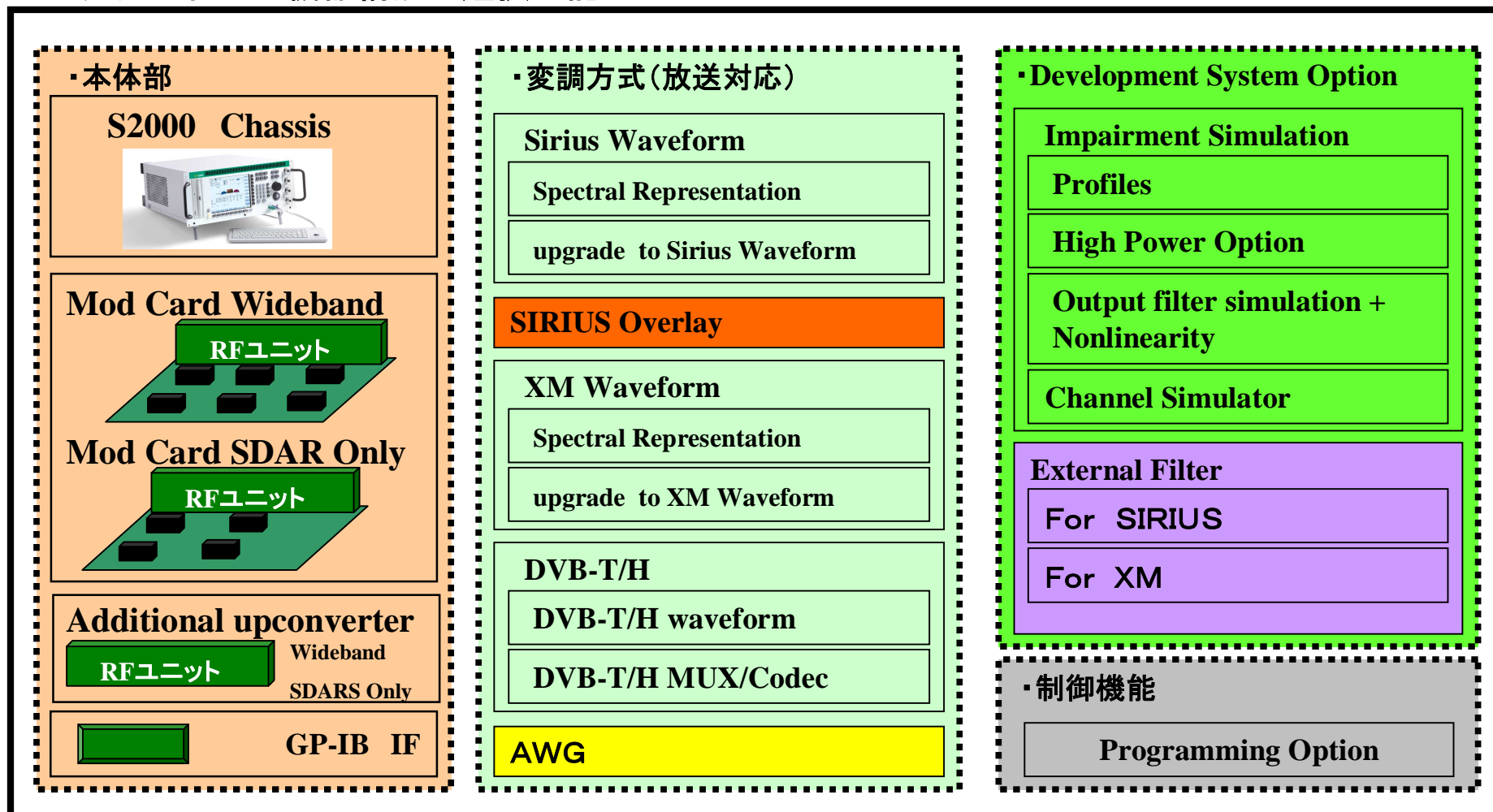
XM: Type Approval 、 SIRIUS: Type Acceptance



・S2000 商品構成

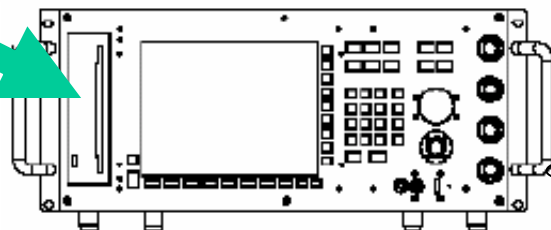
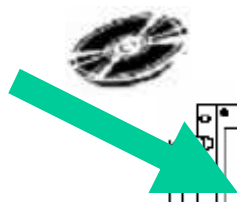
・ WidebandとSDARS (SIRIUS/XM)の2種類のModulator Card

用途に合せた機器構成が選択可能

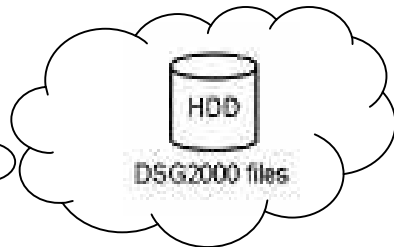


・S2000 標準機能

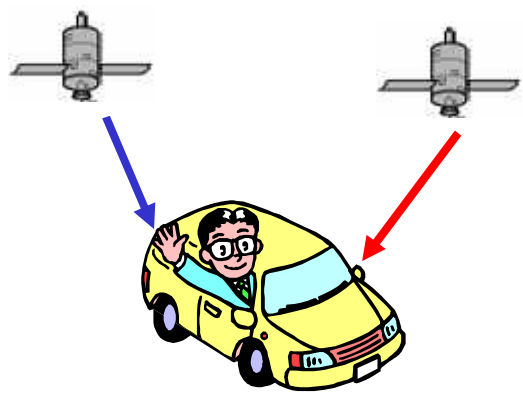
SIRIUS/XM TS データ



- ・SIRIUS/XM用IZTオリジナルTSをインストール済
- ・120GB HDD搭載
- ・SIRIUS/ XM社より供給されるTSに対応
(SIRIUS/XMとの契約が必要です)



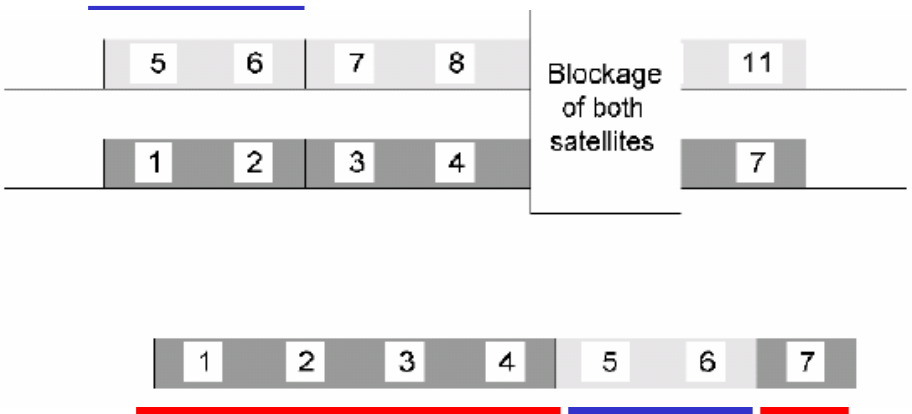
Delay



"early" satellite

"late" satellite

Selected signal



・S2000 標準機能

SIRIUS/XM SG パラメータ

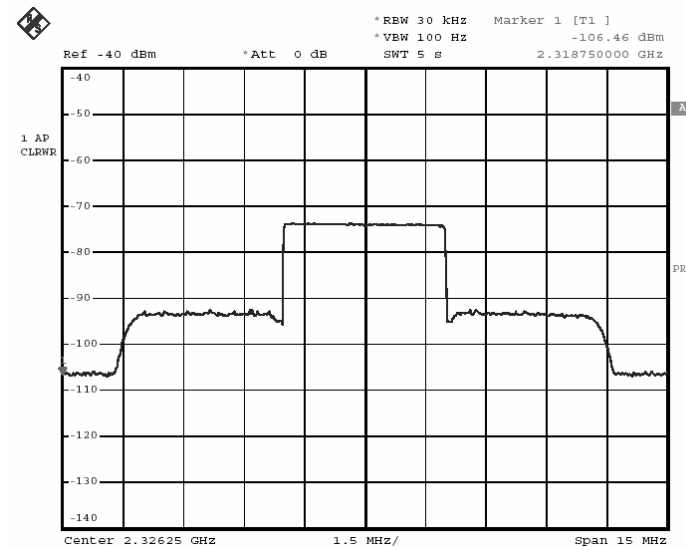


Sirius signal - 2 QPSK, 1 COFDM

The default frequencies for SIRIUS are:

- 2322.293 MHz for satellite 1
- 2326.250 MHz for terrestrial
- 2330.207 MHz for satellite 2

XM:Sat.1EnsA/B Terr.EnsAB Sat.2EnsA/B
SIRIUS:SAT1 TERR SAT2
各信号波で周波数/出力のコントロールが可能



XM default frequencies reside at

- 2333.460 MHz for satellite 1 ensemble A
- 2335.300 MHz for satellite 2 ensemble A
- 2337.485 MHz for terrestrial ensemble A
- 2340.015 MHz for terrestrial ensemble B
- 2342.200 MHz for satellite 2 ensemble B
- 2344.040 MHz for satellite 1 ensemble B

・S2000 標準機能

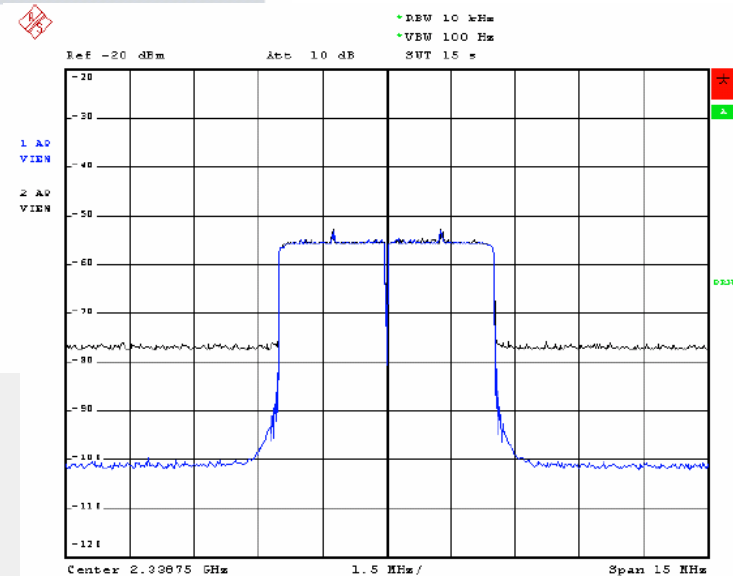
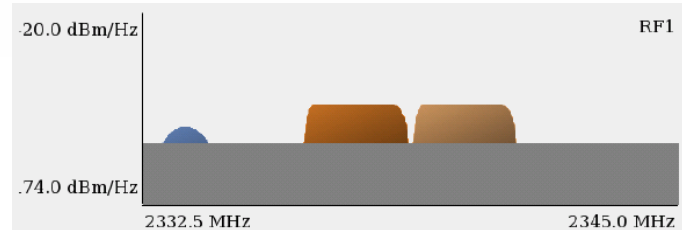
CN付加/シミュレート機能

XM/SIRIUS 1st/2nd(option)個別にノイズ
付加が可能
更にレベル/幅が設定可能

	RF1			RF2					
	Lin	Filter	Sim	Pow [dBm]	C/No [dBHz]	C/N [dB]	Pow [dBm]	C/No [dBHz]	C/N [dB]
SAT1	OFF	OFF	OFF	-110.0	64.0	-1.8	-110.0	64.0	-1.8
TERR	OFF	OFF	OFF	-110.0	64.0	-2.0	-110.0	64.0	-2.0
SAT2	OFF	OFF	OFF	-110.0	64.0	-1.8	-110.0	64.0	-1.8
NOISE [dBm/Hz]				-174.0 *			-174.0 *		

AWGN settings of the DSG2000

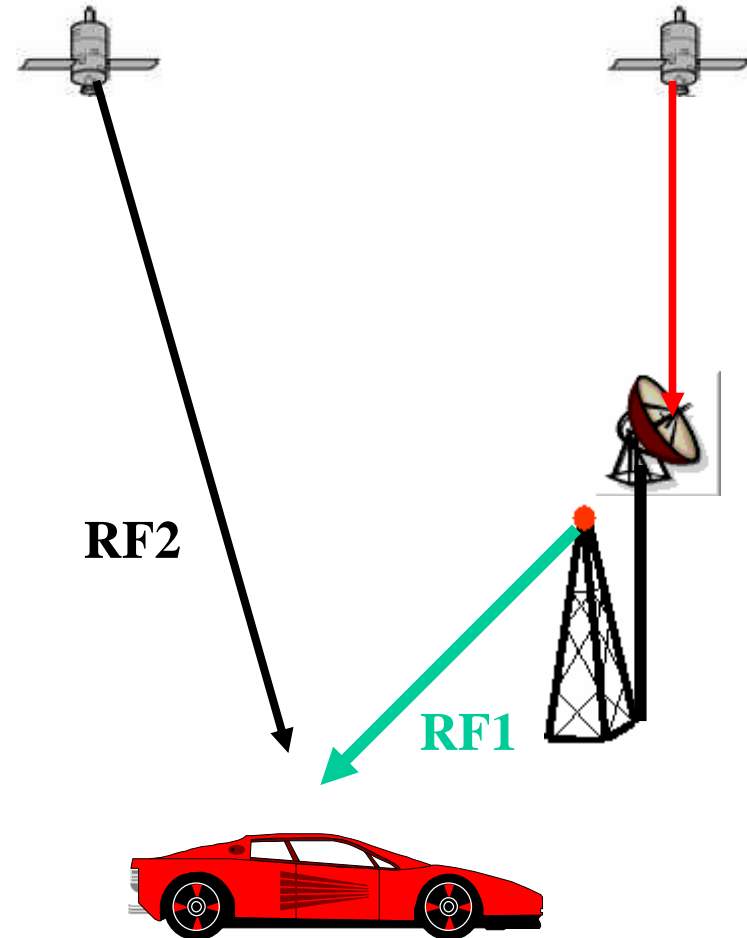
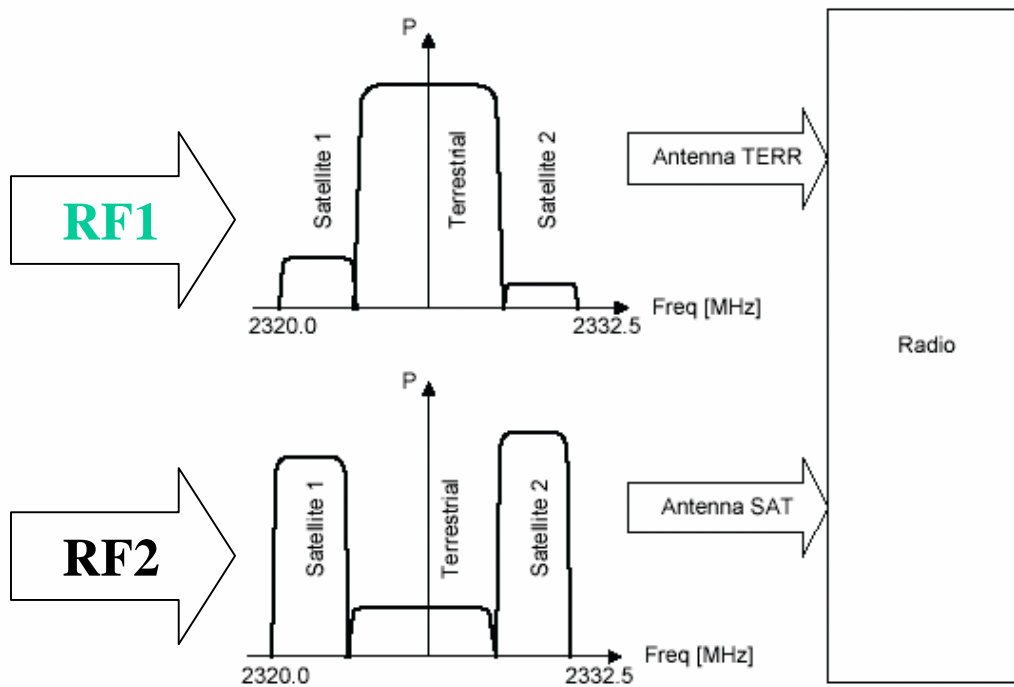
- [1] Power level of the carriers
- [2] Noise density of the RF output
- [3] C/No of the carriers
- [4] C/N of the carriers
- [5] LOCK indicator



・S2000 オプション

2nd RF Option

1st,2nd各RF独立制御が可能

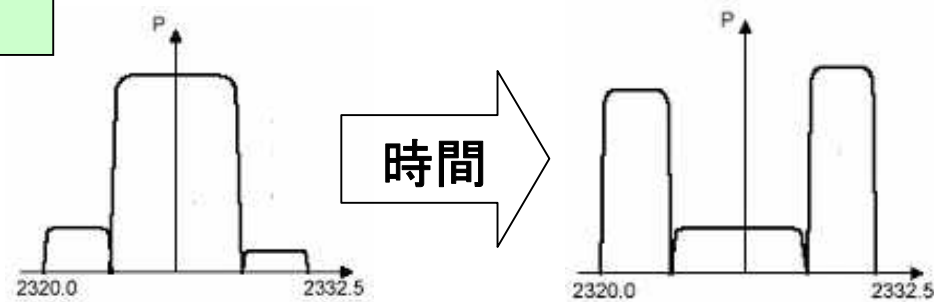


・S2000 オプション

Profiles

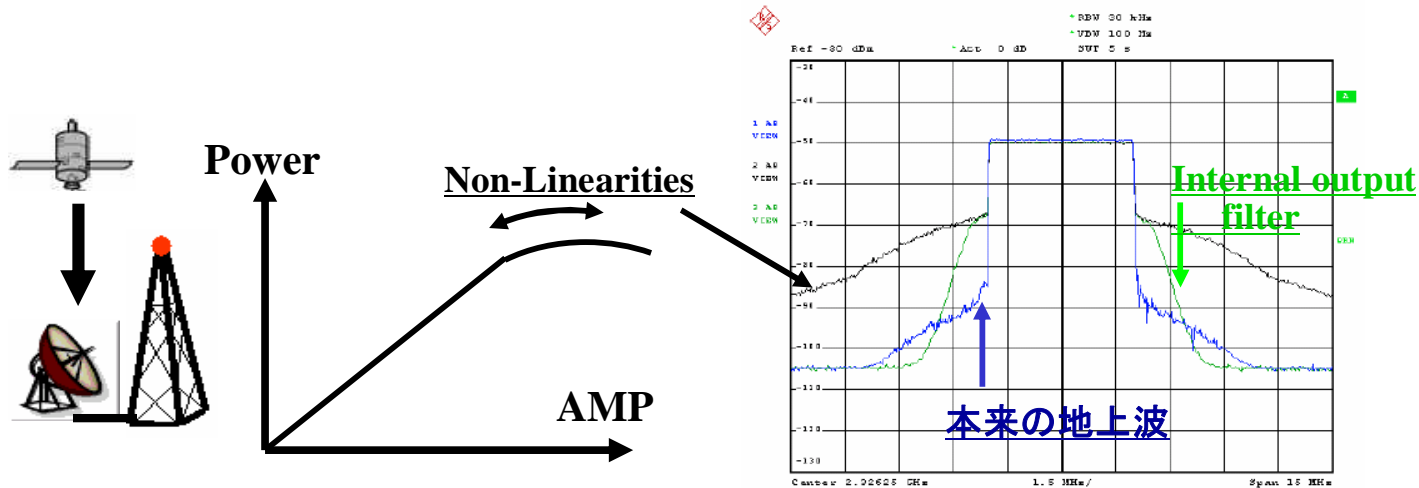
```
channel sirius_attenuation_sat1_rf1
{
  stay      0.0  10ms
  ramp     -25.0 1000ms
  ramp     -10.0 1000ms
  ramp      0.0  50ms
}

channel sirius_attenuation_terr_rf1
{
  stay      0.0  10ms
  stay     -30.0  10ms
  stay      0.0 3000ms
}
```



各信号のパラメーターコントロールが可能

Internal output Filter /Non-Linearities Simulation External output Filter



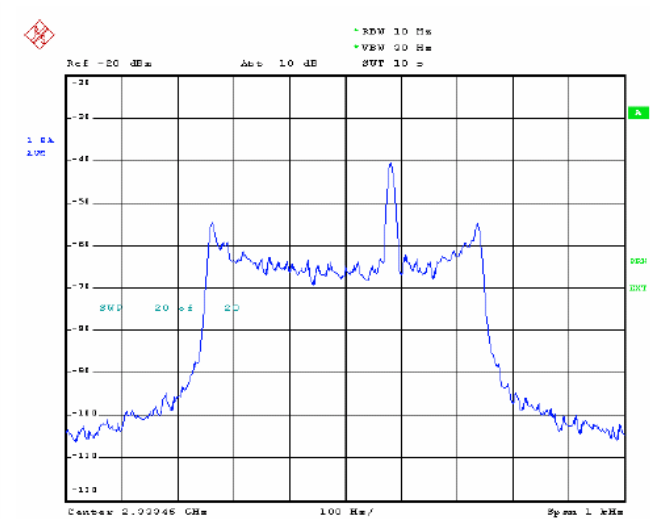
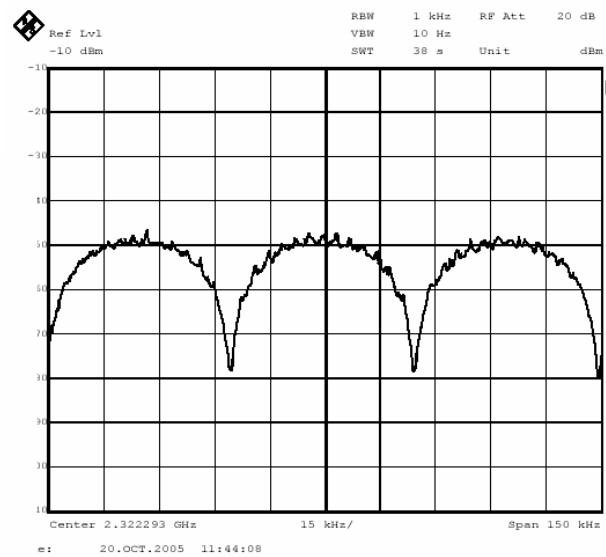
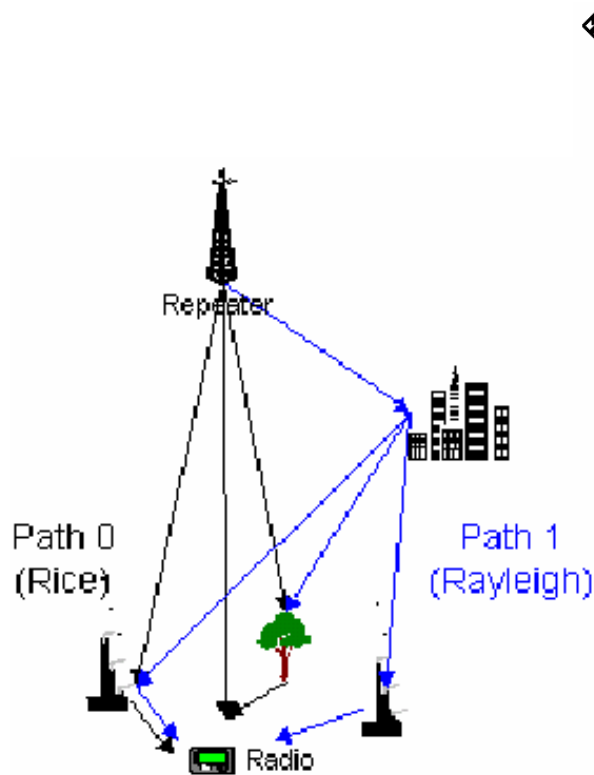
External Output Filter

Internal Filterでは効果が少なく、また他の衛星ラジオの影響を確認する為に使用する

・S2000 オプション

チャンネルシミュレータ

フェージングシミュレート機能

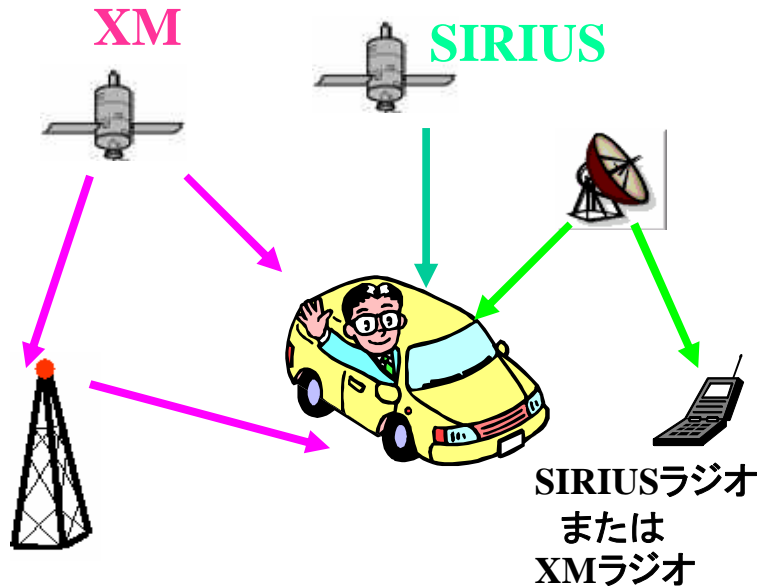


Parameter	Unit	Min	Default	Max
Delay	μ s	0	0	80
Doppler	Hz	0	10	3000
Loss	linear	-1	1 and 0	1
Rice K	value	0	0	10
Rice Angle	degree	-180	0	180
State	enum	OFF	ON	JAKES

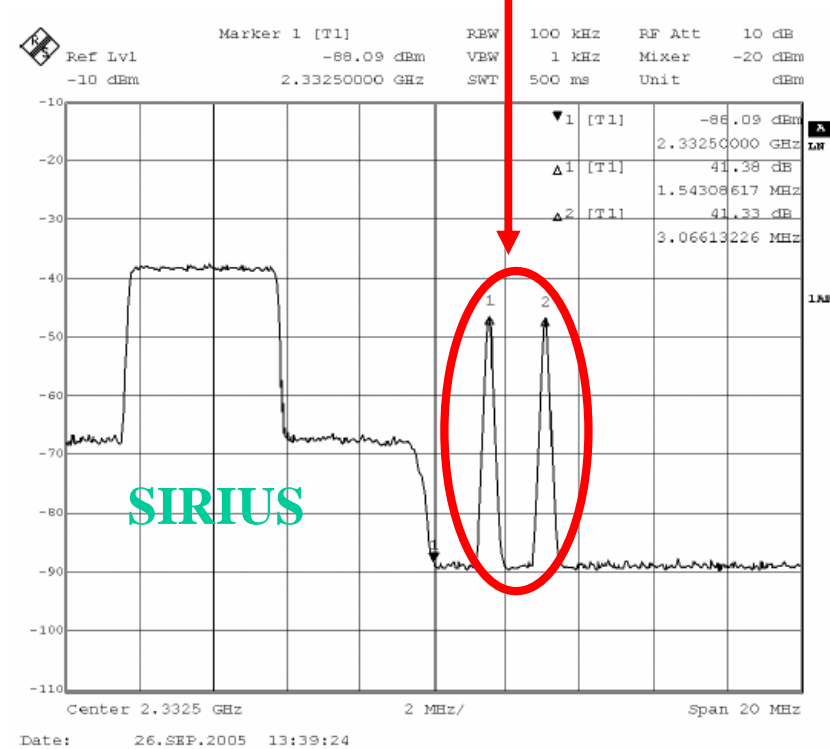
・S2000 オプション

Arbitrary waveform generator (AWG)

他のWide Bandの妨害波(キャリア信号のみ)を出力する事が出来る



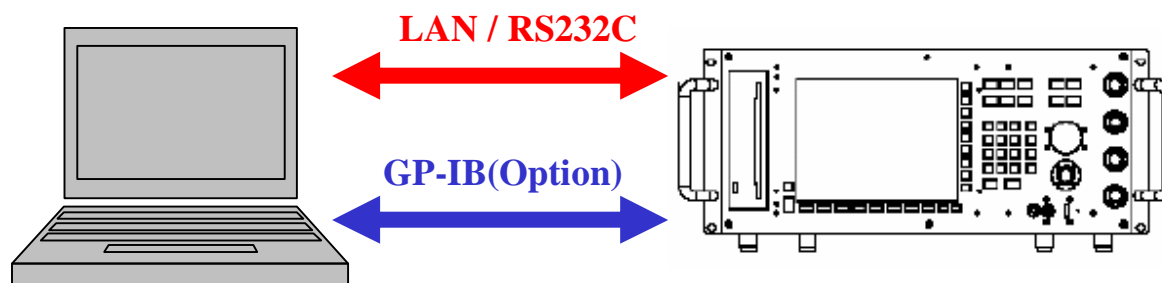
妨害波(他のWide Band キャリア)



・S2000 オプション

Programming Option

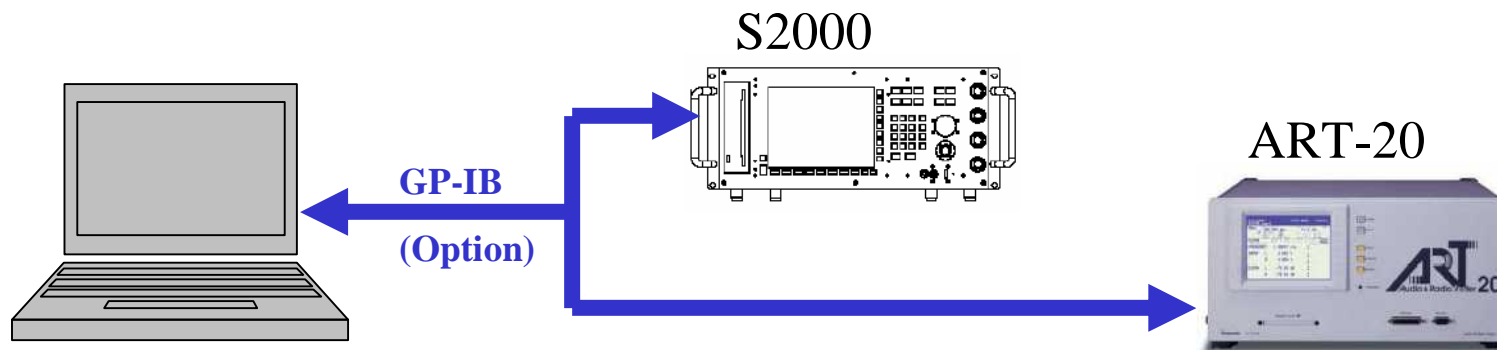
PCよりS2000の制御が可能→自動計測対応



- Visual C++
- HT Basic
- Labview (推奨)
(Programming Opに添付)

GP-IB

GP-IBインターフェースをS2000に追加、他の測定器との自動計測も可能



・S2000 仕様 - Sirius

Option IZT S2000-001: Sirius Basic Unit		
Signal	2xQPSK	2322.293 MHz / 2330.207 MHz
	COFDM	2326.250 MHz
	frequency	2320.000 MHz to 2332.500 MHz, stepsize 1 Hz
	delay	SAT1: 228 to 322 ms TERR: fixed SAT2: 4397 to 4490ms
	stability	5x10-8 (OCXO)
Impairments	AWGN	assignable in C/N, C/No and No
I/Q baseband output	channels	2 (I and Q)
	level	-6 dBm max
	attenuation	0 to -96.0 dB, stepsize 0.1 dB

▪ S2000 仕様 - Sirius

S-band output	output power	-110 to +10(+20) dBm, stepsize 0.1 dB
	level uncertainty	absolute < ± 0.5 dB
	auto-calibration	user initiated auto-calibration
	QPSK/COFDM	maximum output power difference between QPSK and COFDM: 45 dB
	QPSK/QPSK	maximum difference between QPSK signals: 35 dB
Front panel connectors	RF output	one N-type output per upconverter, impedance 50 Ohms
Rear panel connectors	SAT 1 outputs, SAT 2 outputs, TERR outputs	I and Q outputs analog, BNC, impedance 50 Ohms
	1 PPS input	accepts an 1 PPS reference (timebase) input; SMB, impedance 50 ohms, TTL
	10 MHz input/output	accepts an external reference (timebase) input; BNC, impedance 50 ohms, 100 mVPP - 5 VPP outputs int. or ext. reference signal. BNC, impedance 50 ohms, 1 VPP
	GPS input	GPS-time information to synchronize timebase to GPS (RS232)
	event output (1,2)	outputs a pattern for triggering external equipment during large scale fading SMB, impedance 50 Ohms, 1 VPP
	Remote access	remote programming

▪ S2000 仕様 - XM

Option IZT S2000-002: XM Basic Unit		
Signal	4xQPSK	2333.465 MHz / 2335.305 MHz / 2342.205 MHz / 2344.045 MHz / 2342.205 MHz / 2344.045 MHz
	2xMCM	2337.490 MHz / 2340.020 MHz
	frequency	2332.500 MHz to 2345.000 MHz, stepsize 1 Hz
	delay	SAT1,2: ± 6 ms TERR: 10 to 30 ms processing delay
	stability	5x10 ⁻⁸ (OCXO)
Impairments	AWGN	assignable in C/N, C/No and No
I/Q baseband output	channels	2 (I and Q)
	level	-6 dBm max
	attenuation	0 to -96.0 dB, stepsize 0.1 dB
S-band output	output power	-110 to +10(+20) dBm, stepsize 0.1 dB
	level uncertainty	absolute < ± 0.5 dB
	calibration	user initiated autocalibration
	QPSK/MCM	maximum output power difference between QPSK and MCM: 35 dB
	QPSK/QPSK	maximum difference between QPSK signals: 35 dB
Front panel connectors	RF output	one N-type, impedance 50 Ohms

▪ S2000 仕様 - XM

Rear panel connectors	SAT I output	outputs the „I“ part of the satellites analog, BNC, impedance 50 Ohms
	SAT Q output	outputs the „Q“ part of the satellites analog, BNC, impedance 50 Ohms
	TERR I output	outputs the „I“ part of the terr. Signal analog, BNC, impedance 50 Ohms
	TERR Q output	outputs the „Q“ part of the terr. Signal analog, BNC, impedance 50 Ohms
	1 PPS input	accepts an 1 PPS reference (timebase) input; SMB, impedance 50 Ohms, TTL
	10 MHz input/output	accepts an external reference (timebase) input; BNC, impedance 50 Ohms, 100 mVPP - 5 VPP outputs int. or ext. reference signal BNC, impedance 50 Ohms, 1 VPP
	GPS input	GPS-Time information to synchronize timebase to GPS (RS232)
	event output (1,2)	outputs a pattern for triggering external equipment during large scale fading; SMB, impedance 50 Ohms, 1 VPP
	Remote access	remote programming via LAN, RS-232 or GP-IB (option)

・S2000 仕様 – DVB-T/H

Option IZT S2000-003: DVB-T/H Basic Unit		
Signal	COFDM	QPSK, QAM16, QAM64
	transmission mode	2K, 4K, 8K
	guard interval	1/4, 1/8, 1/16, 1/32
	frequency	30...3000 MHz with stepsize of 1 Hz
	delay	0 to 4490 ms in steps of 1μs
	stability	5x10 ⁻⁸ (OCXO)
	Impairments	AWGN
I/Q baseband output	channels	1 (I and Q)
	level	-6 dBm max
	attenuation	0 to -96.0 dB, stepsize 0.1 dB
RF output	output power	-110 to +10 dBm, stepsize 0.1 dB
	level uncertainty	absolute < ± 0.5 dB
	auto-calibration	user initiated auto-calibration (distinguishable between short/long cal.)
Front panel connectors	RF output	one N-type output per RF upconverter, impedance 50 ohms

・S2000 仕様 – DVB-T/H

Rear panel connectors	I and Q outputs	analog, BNC, impedance 50 Ohms
	1 PPS input	accepts an 1 PPS reference (timebase) input; SMB, impedance 50 Ohms, TTL
	10 MHz input/output	accepts an external reference (timebase) input; BNC, impedance 50 ohms, 100 mVPP - 5 VPP outputs int. or ext. reference signal; BNC, impedance 50 Ohms, 1 VPP
	GPS input	GPS-Time information to synchronize timebase to GPS (RS232)
	event output (1,2)	outputs a pattern for triggering external equipment during large scale fading SMB, impedance 50 Ohms, 1 VPP
Remote access	remote programming	via LAN, RS-232 or GP-IB (option)

・S2000 仕様 – DVB-H Codec

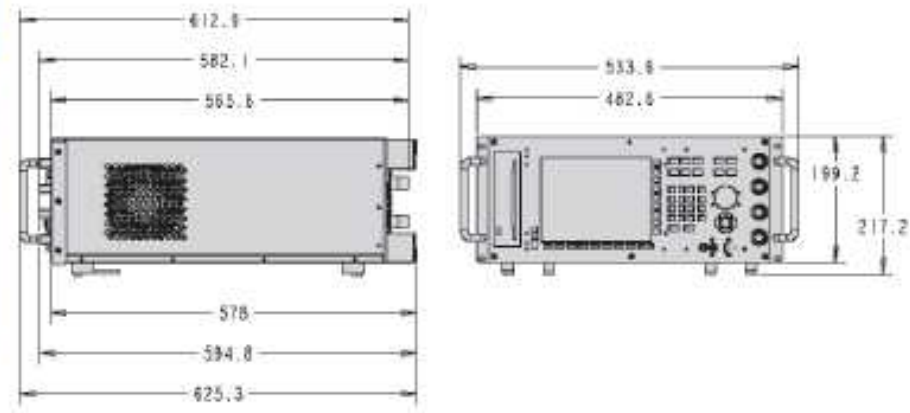
Features of the DVB-H Codec

Input data	RTP / UDP via LAN and H.264 from file in either constant or variable bitrate.
Multiple IP streams	Multiple IP streams can be processed in parallel and additionally from file (number of streams limited by CPU-resources).
MPE	DVB-H IP Encapsulation.
MPE-FEC	Reed-Solomon RS(255,191,64) with rows selectable from 128 / 256 / 512 or 1024. Possible to switch RS off/on and to transfer selectable number of RS columns from 1 to 64.
Time slicing	Configurable time slicing cycle and jitter per service, constant bandwidth per service.
Multiplexing	PSI /SI table scheduling and multiplexing into the data stream.
Output	Selectable output speed. Transport Stream after multiplexing can be saved to hard disk with selectable output speed.
Capture / replay (optional)	IP streams can be captured to hard disk and played back.
PSI /SI table generation	NIT, INT, PAT, PMT, SDT.
Service parameter editing	name, program number, PID, etc of service can be changed. IP-number(s) of receiver(s) can be changed.

・S2000 仕様 - 本体

General Specifications	
Harddisk	120 GB
Power requirements	90 to 264 Vac, 47 to 63 Hz, 400 W maximum
Temperature range	0 to 40 °C
Weight	depending on equip- ment; approx. 25 kg

Dimensions



Innovationszentrum  Telekommunikations-
technik GmbH

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