Spin Telecom

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The Corporation that Create of the Future
Human-oriented technology, Trusted supplier

INTRODUCTION

The Company

Spin Telecom Co., Ltd is a venture business established in 2001, aiming to become a reliable company for developing human-oriented technology and pioneering the future. We develop and manufacture lots of products related to mobile communications and satellite broadcasting as well as terrestrial broadcastings.We have had not only deep experiences at the development of modulation/demodulation technology in the (W)CDMA, ATSC, DVB-S/T/T2 etc., but also system integration techniques. Based on such highly experienced and with unceasing efforts, we are reforming ourselves into a small but strong company in the world.

Company history

2013.08	Supplying PN Canceller to SoftBank Mobile, Japan
2012.12	Development of DVB-T2 EXCITER
2011	Development STUD LADAR(Laser Radar) platform for ETRI
2010~2012	Selected by KBS as a supplier of ATSC-EXCITER, ATSC-ACU for DTVR system Development WAPA(W-CDMA Air Protocol Analyzer) with Sastech Co., Ltd
2009.12	Development of PN Canceller system
2009.11	Development DTV ACU for ATSC
2009.08	Delivering PN Canceller sample to SoftBank Mobile, Japan
2008.11	Development DTV EXCITER for ATSC
2007.11	Supplying ST-TDM5500(DVB-S Digital Modulator for S-DMB) to TU Media
2006.12	Development of PN Canceller system for W-CDMA
2006.11	Development of 4x4 MIMO-OFDM detection unit for Wibro modem
2006~2004	Supplying Gap-Filler signal processor to SK Telecom for Satellite-DMB
2003.12	Development Gap-Filler system and it's Analyzer(GATT-4000B)
2003.09	Designated as best technology company by Ministry of Information & Communication
2002.04	ETRI venture business registration
2002.01	Development of base station channel card for IMT-2000 smart antenna
2001.10	Establishment of Spin Telecom Co., Ltd

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PN Canceller

PN Canceller is not just a conventional repeater such as RF or ICS repeater but a smart repeater system with identifying the cells and analyzing the link quality between node-Bs and service area. PN Canceller can convey only the good signal by cancellation the other bad signals which invokes the unnecessary network resources such as channel card, radio link in RNC etc,.
It includes interference cancellation function as well to suppress the feedback signal.

Features	Values	Unit
Frequency Range	2150 ~ 2160	MHz
Maximum System Gain	115±2	dB
Frequency Stability	≤0.02	ppm
Maximum Output Power	100(20dBm)	mW
Maximum Input Power	-30 ~ -90(based on RSSI)	dBm
Error Vector Magnitude	≤12.5(@ Maximum Power)	%
Peak Code Domain Error	≤-35	dB
System Group Delay	≤8	us
FA Capacity	4	FA
PN Cancellation Range	≤15	dB
PN Cancellation Number	4	PN/FA
PN Selection	Auto/Manual	
PN Selection criteria	RSCP	

W-CDMA Air Protocol Analyzer

WAPA is the state of art monitoring equipment that can catch up the Uu signal on UTRAN and analyze the control messages and traffic data(voice or image) in real time.It can monitor up to 8 cells and 16 UEs which belongs to the monitored cells concurrently with multiple channel cards. WAPA also has the ability of high speed traffic(HSDPA) monitoring up to 4 UEs per cell and cell can be expanded up to 4 cells. WAPA can cover not only Downlink, but also Uplink.

Features	Values	Unit
Frequency Range	FA2150 ~ 2160	MHz
Maximum System Gain	115 ± 2	dB
Frequency Stability	≤ 0.02	ppm
Maximum Output Power	100(20dBm)	mW
Maximum Input Power	-30 ~ -90(based on RSSI)	dBm
Error Vector Magnitude	≤ 12.5% (@ Maximum Power)	%
Peak Code Domain Error	≤ -35	dB
System Group Delay	≤ 8	us
FA Capacity	4	FA
PN Cancellation Range	≥ 15	dB
PN Cancellation Number	4	PN/FA
PN Selection	Auto / Manual	
PN Selection criteria	RSCP	

RFA-300A(DTVR-ACU)

ACU(Automatic Control Unit) is equipment for maintaining broadcasting service by controlling error occurrence by observing and analyzing the status of digital broadcasting system.

Features	
Operation	Local or Remote Manual/Auto
Controlling	TX On & OFF, Fault Reset Main ↔ Sub Auto Change over TX-A/B Ant. Select
Monitoring	Receiving status Normal/Abnormal Indication TX ON & Off Indication
Alarming	Exciter A/B fault, HPA fault, Power supply fault, TX output low/high fault, etc,.

Shape Features	
Form Factor	19" Rack Type Height : 3RU or less Weigth : 5Kg or less
Control LCD	16x2 Character LCD
Control Keys	TX ON/OFF, RESET, EXCITER CHANGE, AUTO/MANUAL, LOCAL/REMOTE
Fault LEDs	TOTAL, EXC-A, EXC-B, PA, P/S, VSWR
Signal Status	Diagram with LEDs
Interfaces	↔ EXCITER #1, #2 with RS-232C ↔ HPA #1, #2 with RS-232C ↔ Switch Module with RS-232C ↔ PSU #1, #2 with RS-232C ↔ Power Monitor with RS-232C ↔ Upper Controller with RS-485

ATSC EXCITER

ATSC-EXCITER is the DTV repeater which follows ATSC standard, commonly adopted through North America and Korea as well. The weaken or impaired signal can be regenerated by digital demodulation and modulation processing with frequency shift function. SMPTE320 and ASI inputs are also available for digital interface. ATSC-EXCITER has a versatile Digital Pre-Distortion functionality, Amp. and BPF coupling ports provide non-linear and/or linear DPD. User can operate DPD with adaptive or manual mode.

Features	Min	Typical	Max	Unit
Output Frequency	470		806	MHz
Output Power		5	7	dBm
Output variable range			20	dB
Frequency Stability			±0.4	ppm
SNR	40			dB
MER	40			dB
Shoulder distance	50			dB
Carrier suppression(CW)	35(70)			dB
Frequency Response			±0.2	dB
Group Delay			±10	ns
Pilot Amplitude Error			±0.2	dB
Phase Noise(@20KHz)			-108	dBc/Hz
Amplitude Distortion			1	dB
Phase Distortion			±5	degree
PAPR	6.4			dB
Frequency Error tolerance			±1	ppm
Spurious Intensity	55			dB
Harmonics	35			dB
Power Consumption			50	W

ST-BS100(DVB-T2 EXCITER)

DVB-T2 is the world's most advanced digital terrestrial TV system, offering more flexibility and efficiency. ST-BS100 is compliant to EN 302 755 v1.2.1 specification from ETSI. Besides BICM and OFDM generation, the advanced technology such as Multi-PLP, PAPR are also included. Digital Pre-Distortion can be handled via Amp. and BPF coupling ports with by manual or adaptively.

Modulation features	
PLPs	≤ 8
PLP Constellation	QPSK, 16QAM, 64QAM, 256QAM
Constellation Rotation	Unrotated, Rotated
FEC Type	16K, 64K
Guard Interval	1/32, 1/16, 1/8, 1/4, 1/128, 19/128, 19/256
MER	40
PAPR Reduction	Tone Reservation
FFT Mode	1K, 2K, 4K, 8K, 16K, 32K
Carrier Mode	Normal, Extended
Channel Bandwidth	5, 6, 7, 8MHz
Pilot Pattern	PP1, PP2, PP3, PP4, PP5, PP6, PP7, PP8

System features	
T2-MI Inputs	x2 DVB-ASI, x1 Gigabit Ethernet
Control(network)	10/100 Ethernet
SFN	Internal GPS and output 1pps, External 1 pps
RF In/out	x1 RF out, x1 RF Monitor, Amp, BPF couple
Control(local)	x2 RS-232
User Interface	6 buttons, 16x2 character LCD

RF features	Min	Typical	Max	Unit
Output Frequency	470		806	MHz
Output Power		5	7	dBm

DTVR System

Our DTVR system is total solution for high quality and reliable Digital-TV Broadcasting service. As a repeater system, DTVR system is composed with 2 power supplies, 2 HPAs, 2 BPFs, 2 Exciters and a ACU for control. User can check the system's status and control these units via ACU locally or remotely. The system properties can be customized as customer's needs.

Features		
Dimension	40RU, HxWxD = 1900x600x740 [mm]	
Components	x2 Exciter, x2HPA, x2BPF, x2PSU, x1ACU	
EXCITER Unit	#1 #2	ATSC 8-VSB DVB-T2 EN302 755
ACU Unit	#1	Local Control : RS232 2 Port Network Control : Ethernet 10/100
HPA Unit	#1 #2	Output Power : Max 120W Output Controller by ACU
BPF Unit	#1 #2	ATSC 8-VSB : BW = 6MHz DVB-T2 : BW = 5,6,7,8MHz
P.S Unit	#1 #2	AC 110V ~ 230V

PRODUCT SATELLITE BROADCASTING EQUIPMENT

TDM Digital Modulator

ST-DM5500 is a signal modulator which compliant with DVB-S standard for satellite-DMB in Korea. It receive time multiplexed CDM signal with FEC coding and QPSK modulation to produce 140MHz IF signal and 1476.6MHz RF signal. It can also generate the ASI signal for digital interfacing with other equipments.

Features		
Output Frequency	140MHz ± 1MHz(IF)	1476.5MHz ±1MHz(RF)
Serial Output	Support DVB-ASI	
Output range	0 ~ -20dBm(IF)	-20 ~ -60dBm(RF)
Output Spurious	-55dBc at fc ± 25MHz(IF)	-55dBc at fc±25MHz(RF)
Input Signal	Time Multiplexed CDM	
Output Impedance	75 Ohm	
Symbol Rate	16.384Mbps(Input)	18.432Mbps(Output)
Modulation Type	QPSK	
CH. EA	32(1 pilot + 31 broadcasting)	CH. EA
Error Correction Code	Shortened RS Code(204, 188)	Convolution Code(1/2, K=7)
Interleave	Convolutional Interleave	
Roll Off	0.35 Root Raised Cosine	
Reference Clock	Internal and External Selected	
CW mode	CW mode On/Off Selelct	

TECHNOLOGY

Mobile Communication

CDMA/W-CDMA Simulator/Modem Design
Channel Card Technology
Wibro MIMO Detection Technology
PNC/ICS Smart Wireless Repeater Technology
W-CDMA Air Protocol Analysis Technology
Giga-bit Transceiver Technology

Broadcasting Communication

ATSC 8-VSB Encoding/Modulation
DVB-S/T/T2 Channel Coding & Modulation
DTV Exciter & Automatic Control Unit
Manual/Adaptive Digital Pre-Distortion Technology

Hardware

High speed Digital Signal Processing
VLSI/FPGA Design Technology
Giga-bit Ethernet solution
CAD/PCB Artwork Technology
Lidar Signal Processing Technology

Software

C/C++, Matlab Programming
Device Driver on Windows/Embedded Linux
TCP/IP Protocol Stack

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