SPECIFICATION

DVB-C / Worldwide NIM Tuner Revision:1.0

1.Feature

* All-in-one full NIM function with compact size, optimal solution for cost reduction and shortening product development lead-time.
* ITU J.83 Annex A/C and DVB-C (ETSI EN 300 429) compliant demodulator and FEC decoder
* NorDig Unified 2.1, C-Book compliant
* 1 to 7.2 MBaud symbol

2.Applications

* Digital cable iDTV set, NIM, and STB
* Personal Video Recorder (DVD or HDD-based)
* Digital cable PC-TV tuner peripheral

3.GENERAL SPECIFICATIONS

3-1. RECEIVING FREQUENCY RANGE : 43 ~1002MHz

3-2. Temperature Range

Storage Temperature : -20°C ~ + 80°C

Operation Temperature : 0°C ~ + 50°C

3-3. Input impedance 75 OHM unbalanced

3-4. serial and parallel master MPEG transport stream (TS) output modes

3-5. IF bandwidth 6,7,8 MHz

3-6. Weight : 19g

3-7 Holding strength of ant jack

Initial Inserting Force :Max. 5.0 kg

Extracting Force After 5 Cycles :Min. 0.7 kg

4.TEST CONDITIONS

4-1. Test conditions : All data held under following conditions

: +25+/-2°C / Humidity : 45 ~ 65% RH

4-2. SUPPLY VOLTAGE :B1 1.2V +/-2% Ripple < 7mV

B2 3.3V +/-2% Ripple < 7mV

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5.RF Electrical Specification (Control refer to Si2140 data sheet)

NO	ITEM	CONDITION	MIN	TYP	MAX	NOTES
5.1	GENERAL SPECIFICATIONS					
5.2	Receiving frequency range		43		1002	MHz
5.3	RF input impedance	IEC CONNECTOR 75 OHM				
5.4	L.O PLL synthesizer IC	SL2140				
5.5	PLL synthesizer crystal	+/- 50 ppm		24		MHz
5.6	Noise Figure	Maximum gain		4		dB
5.7	Input return loss			6		dB
5.8	RF Max Gain			42		dB
5.9	RF Front end gain range			55		dB
5.10	1% Cross Modulation (NOTE 1,2)	N +/- 1		-34		dBm
		N +/- 6		-28		dBm
		N +/ 18		-19		dBm
5.11	Image rejection	Desired and undesired carriers of equal amplitude; undesired 72 MHz higher in frequency.		-70		dBc
5.12	CSO	Input 133 CW carriers @ +15dBmV,IF gain control voltage at for 1VP-P output		-59		dBc
5.13	CTB			-62		dBc
5.14	Spurious			-59		dBc
5.15	CONSUMPTION CURRENT	:B1 1.2V :B2 3.3V		300 350		mA mA

Notes:

1. Performed with AGC frozen at maximum RF gain and minimum IF gain (zero RF gain backoff).
2. Unmodulated desired signal at −50 dBm. Undesired signal modulated at 80% at 23.625 kHz. Parameter refers to power

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NO	ITEM	CONDITION	MIN.	TYP.	MAX.	NOTES
6	Digital DVB-C Electrical characteristics Control refer to Si2163 data sheet					
6.1 6.2	FEC DVB-C Annex A & C Roll-off factor			0.13	0.15	
6.3	Input sensitivity nominal ber of 2.10^{-4} 6.5Msymb/s	64QAM		38		dBuV
		256QAM		46		dBuV
6.4	MAX Input Level	64QAM			90	dBuV
		256QAM			90	dBuV
6.5	Performance with AWGN nominal ber of 2.10^{-4} 6.5Msymb/s Wanted signal 63dBuV 500MHz	16QAM		18.0		dB
		32QAM		20.8		dB
		64QAM		24.2		dB
		128QAM		27.3		dB
		256QAM		31.4		dB
6.6	SYMBOL RATE		1		7.2	Msps

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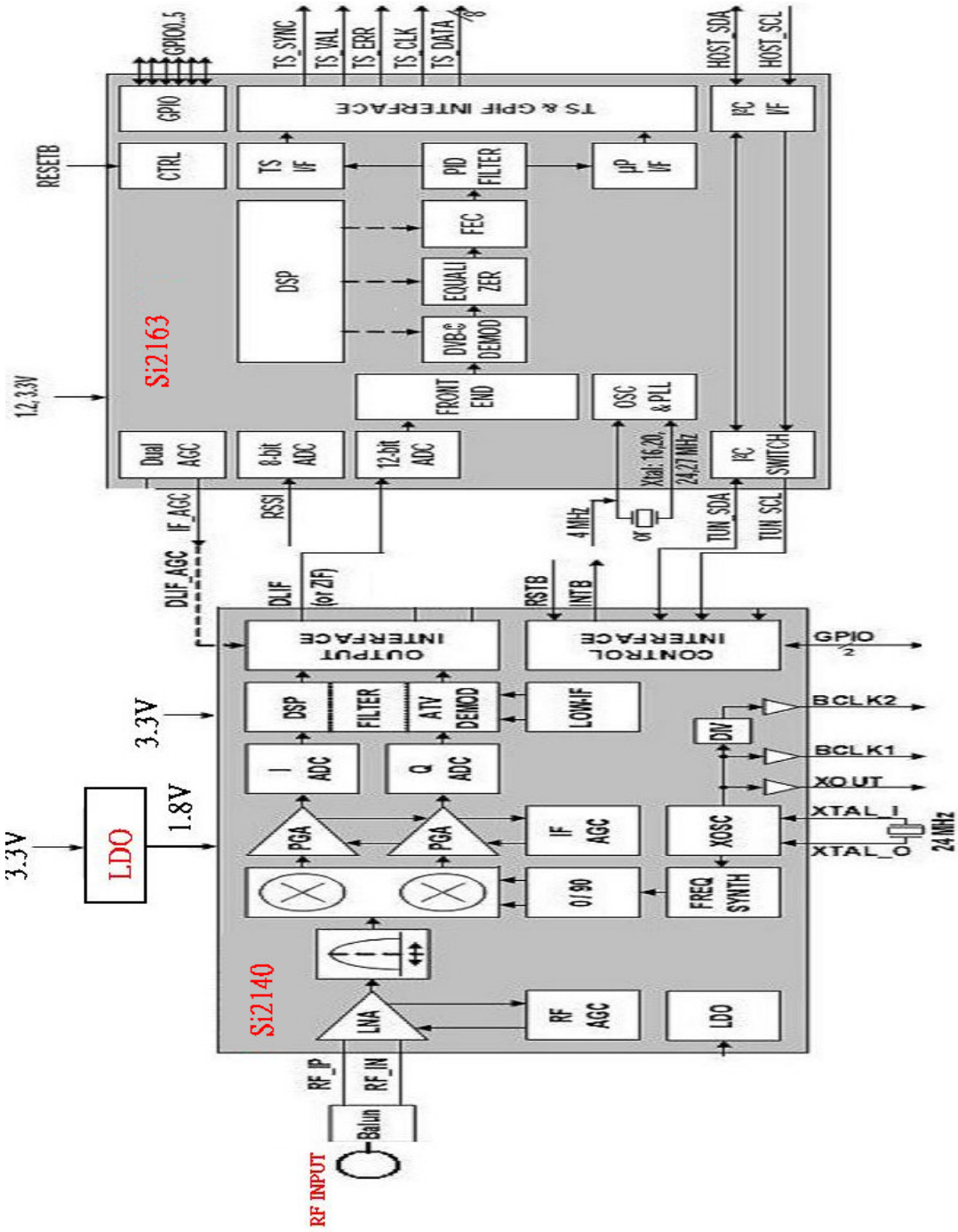
7.0 Application



8. **Electorstic discharge**

8.1 **Test**

Each front-end must be capable of normal performance following its subjection to the following tests:

MIL STD 883C HBM

Test is performed with a voltage discharge from a 100 **PF** capacitor over a 1500 **OHM** series resistance in the discharge path. There is a direct contact between the test probe head and the unit under test, using the test points and conditions detailed below:

o Test to pins 1 through 22:
3 successive ESD discharges of **+/-2 KVDC** between each pin and the front-end frame.

IEC 1000-4-2

Test is performed with a voltage discharge from a 150 **PF** capacitor over a 330 **OHM** series resistance in the discharge path. There is a direct contact between the test probe head and the unit under test, using the test points and conditions detailed below:

o Test for antenna input socket +/-8 **KVDC**

8.2 **Handling**

Anyone handling a front-end must wear a properly grounded anti-static discharge bracelet to minimize **ESD** damage.
After each front-end is aligned and tested, it will be packed with anti-static material prior to transportation and storage. This package is to remain in place until the front-end is assembled and soldered onto the receiver main board.

9 **Reliability test procedure & conditions**

Note:Room temperature = 25°C +/- 2°C

9.1 **Heat load test**

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature	=	60 °C
Period	=	500 hrs
Cycle	=	1.5 hrs on; 0.5 hrs off
Quantity	=	10 pcs

- o Cool-down 0.5 hr at room temperature, then measured the DUTs within 1 hr
- o The test shall be continued to 1000 cycles for information only

9.2 **Humidity load test**

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature	=	40 +/- 5 °C
Period	=	24 hrs
Cycle	=	constantly on
Quantity	=	24 pcs

- o Cool-down 0.5 hr at room temperature, then measured the DUTs within 1 hr
- o Load the DUTs again into chamber of the following conditions:

Temperature	=	40+/-5°C
Humidity	=	90 to 95%
Period	=	500 hrs
Cycle	=	1.5 hrs on; 0.5 hr off
Quantity	=	20 pcs

- o Cool down 0.5hr at room temperature, then measured the DUTs within 1 hr

9.3 **Cold test**

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = -2 +/-5 °C
Period = 500 hrs
Cycle = constantly on
Quantity = 10 pcs

- o Warm up for 2 hrs at room temperature, then measured the DUTs within 1 hr

9.4 **Thermal shock**

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = -25°C for 60 min
↓ ↑
80°C for 60 min
Period = 200 cycles
Power = power off
Quantity = 10 pcs

- o Cool-down 0.5 hr at room temperature then measured the DUTs within 1 hr

9.5 **Temperature cycle test**

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = -5°C for 16 hrs then 60°C for 8 hrs
Period = 500 hrs
Cycle = constantly on
Quantity = 10pcs

- o Cool down 0.5 hr at room temperature, then measured the DUTs within 1 hr
- o Load the DUTs again into chamber of the following conditions:

Temperature = 40 +/- 5°C
Humidity = 90 to 95%
Period = 500 hrs
Cycle = 1.5 hrs on; 0.5 hrs off
Quantity = 10 pcs

- o Cool down 0.5 hr at room temperature, then measured the DUTs within 1hr

9.6 **Vibration test**

- o Frequency: 3.5 Hz
- o Vertical amplitude: 15 to 25 mm
- o Duration: 1 hr
- o Quantity: 1 carton

9.7 **Drop test**

- o Packaged apparatus: <or = 50 kg
- o Height: depend on weight
- o 1 corner + 3 edge + 6 faces

Drop on the weakest corner (point G)
Drop on the shortest edge on contact with point G
Drop on average edge in contact with point G
Drop on the longest edge in contact with point G
Drop flat wise on the side of minimum surface
Drop flat wise on the side of opposite minimum surface
Drop flat wise on the side of average surface
Drop flat wise on the side of opposite average surface
Drop flat wise on the side of maximum surface
Drop flat wise on the side of opposite maximum surface

- o Quantity :1 carton

9.8 Life test

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = 60 °C
Period = 500 hrs
Cycle = constantly on
Quantity = 20 pcs

- o Cool down 0.5 hr at room temperature, then measure the DUTs within 1hr

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