



SPECIFICATION

DVB-T / Worldwide NIM Tuner

Revision:1.0

1.Feature

- * DVB-T demodulator for COFDM with excellent multipath performance, meeting:
- * DVB-T Digital Television Standard ETS 300744
- * Nordig-Unified v1.0.3 Receiver Specification

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



SPECIFICATION						
DVB-T / Worldwide NIM Tuner				Revision:1.0		
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
<p>Notes:</p> <ol style="list-style-type: none"> 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 						



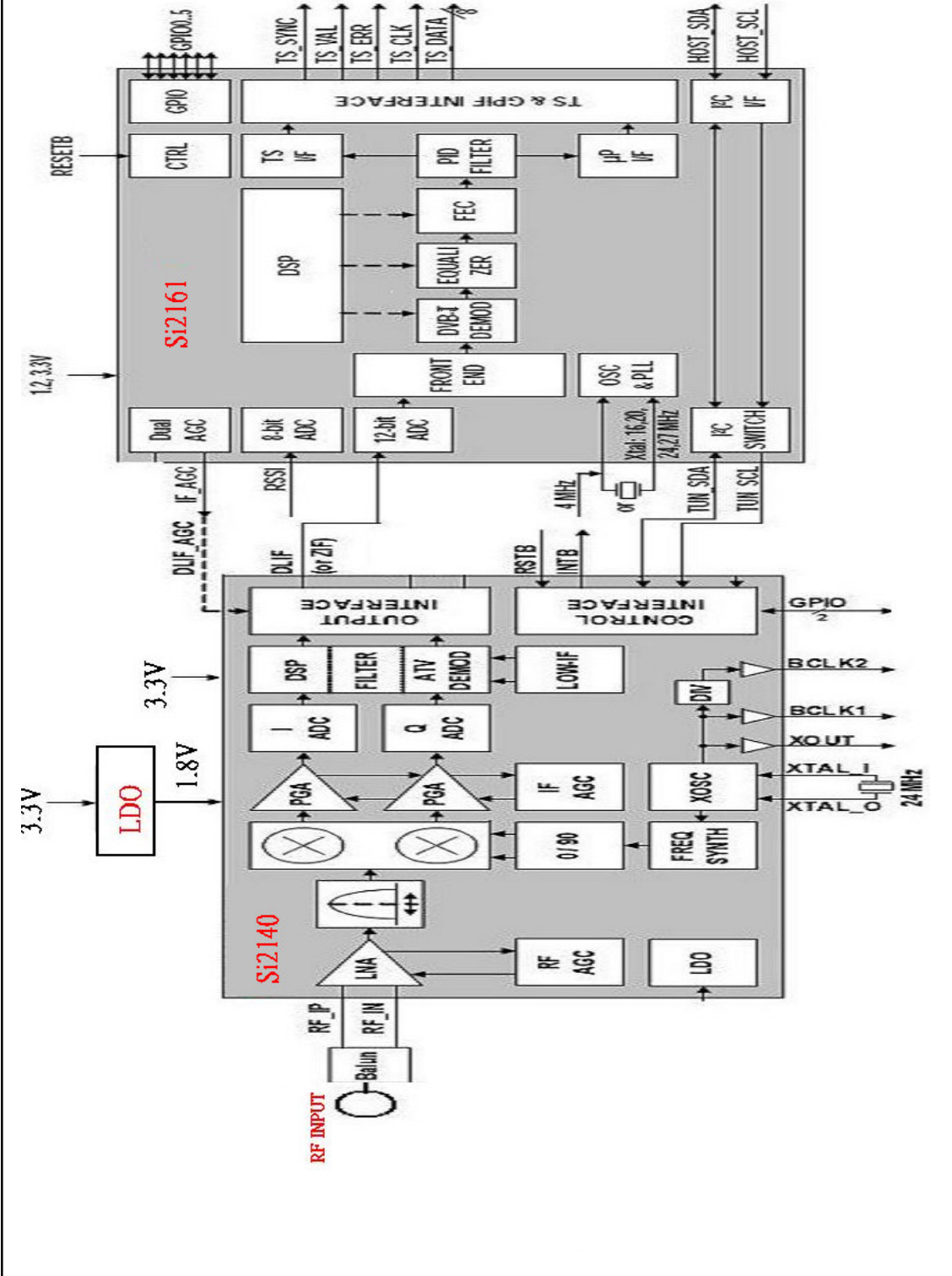
SPECIFICATION						
DVB-T / Worldwide NIM Tuner				Revision:1.0		
NO	ITEM	CONDITION	MIN.	TYP.	MAX.	NOTES
6.0	Digital DVB-T Electrical characteristics (Application frequency range: 177.5~226.5MHz ; 474~858MHz) Control refer to Si2161 data sheet					
6.1	C / N in AWGN 8MHz, G1/4, RF=50dBm RS uncorrected error=0	8K 64QAM R7/8		22.5		dB
		8K 64QAM R2/3		18.7		dB
		8K 64QAM R1/2		16.5		dB
		8K 16QAM R3/4		14.6		dB
		8K 16QAM R2/3		13.1		dB
		8K QPSK R1/2		5.1		dB
6.2	C / N in AWGN 8MHz, G1/4, RD=50dBm RS uncorrected error=0	8K 64QAM R7/8		22.5		dB
		8K 64QAM R2/3		18.7		dB
		8K 64QAM R1/2		16.5		dB
		8K 16QAM R3/4		14.6		dB
		8K 16QAM R2/3		13.1		dB
		8K QPSK R1/2		5.1		dB
6.3	Sensitivity in AWGN 8MHz, GI=1/4 RS uncorrected error=0	8K 64QAM R7/8		-72		dBm
		8K 64QAM R2/3		-76		dBm
		8K 64QAM R1/2		-80		dBm
		8K 16QAM R3/4		-81		dBm
		8K 16QAM R2/3		-84		dBm
		8K QPSK R1/2		-91		dBm
6.4	C / N in 0dB Echo 8MHz, 658MHz, G1/4, RF=-50dBm Cratation:Picture Quality	8K 64QAM R3/4		27.6		dB
		8K 64QAM R2/3		23.2		dB
6.5	Frequency Offset	8K 8MHz 64QAM R2/3	-190		+190	KHz
		G1/8 -60dBm				
6.6	Mobile Performance RF Level=-50dBm, 658MHz 8MHz, C/N=OFF Average Packet Error Rate < 5x10 ⁻³	2K 16QAM R3/4, GI=1/4		30		Km
		8K 64QAM R1/2, GI=1/4		15		Km
		8K 64QAM R/2/3, GI=1/4		10		Km
6.7	RF Max Input Level 8MHz GI=1/4 RS uncorrected error=0	8K 64QAM R7/8		-20		dB

SPECIFICATION

DVB-T / Worldwide NIM Tuner

Revision:1.0

7.0 Block Diagram





SPECIFICATION

DVB-T / Worldwide NIM Tuner

Revision:1.0

8. **Electorstic discharge**

8.1 **Test**

Each front-end must be capable of normal performance following its subsection 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.



SPECIFICATION

DVB-T / Worldwide NIM Tuner

Revision:1.0

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



SPECIFICATION

DVB-T / Worldwide NIM Tuner

Revision:1.0

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 = $40 \pm 5^{\circ}\text{C}$
 - 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



SPECIFICATION

DVB-T / Worldwide NIM Tuner

Revision:1.0

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

