

## **Customer Specification File**

**Customer:**

**Project : ETSI TS 101 952-1-1 Splitter for ADSL Application**

**Request from :**

**Magcom PN: ACO600P24ZY-D**

<b>Revision</b>	<b>Realized By</b>	<b>Modification Description</b>	<b>Date</b>	<b>Last Pages</b>
<b>A01</b>	<b>Paul Su</b>	<b>New Release</b>	<b>Sep-05-2006</b>	<b>10</b>

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**1 Preliminary:**

This is a Customer design project for \_\_\_\_\_-. This Document is for Specification Review

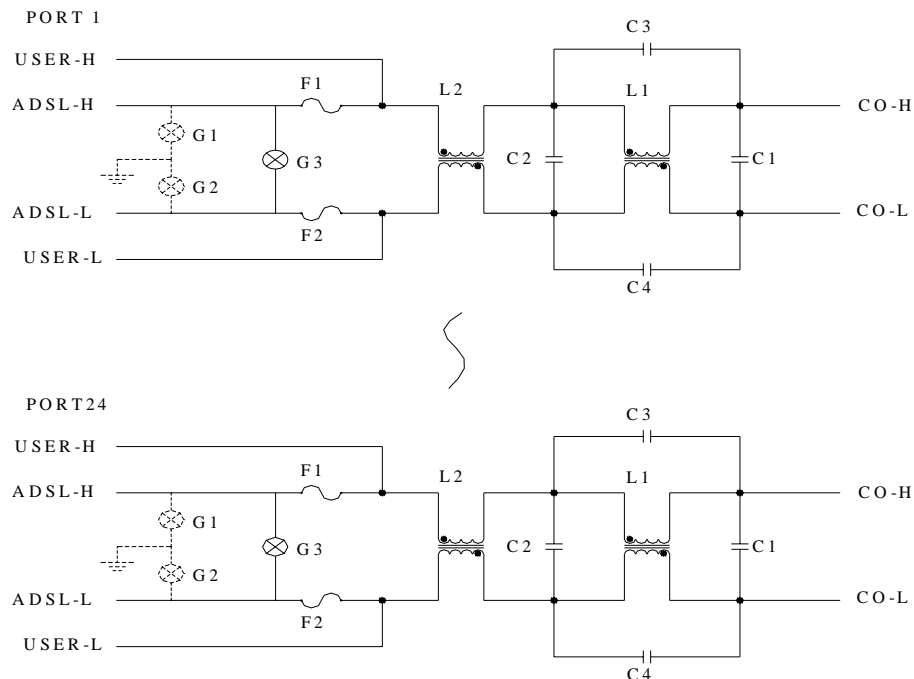
**2 Customer reference documents:****3 Standard reference documents:**

- ANSI T1.413
- ETSI TS 101 952-1-1 (ADSL)

**4 Features (Blank)**

## 5 Design Requirement

### 5.1 Schematic



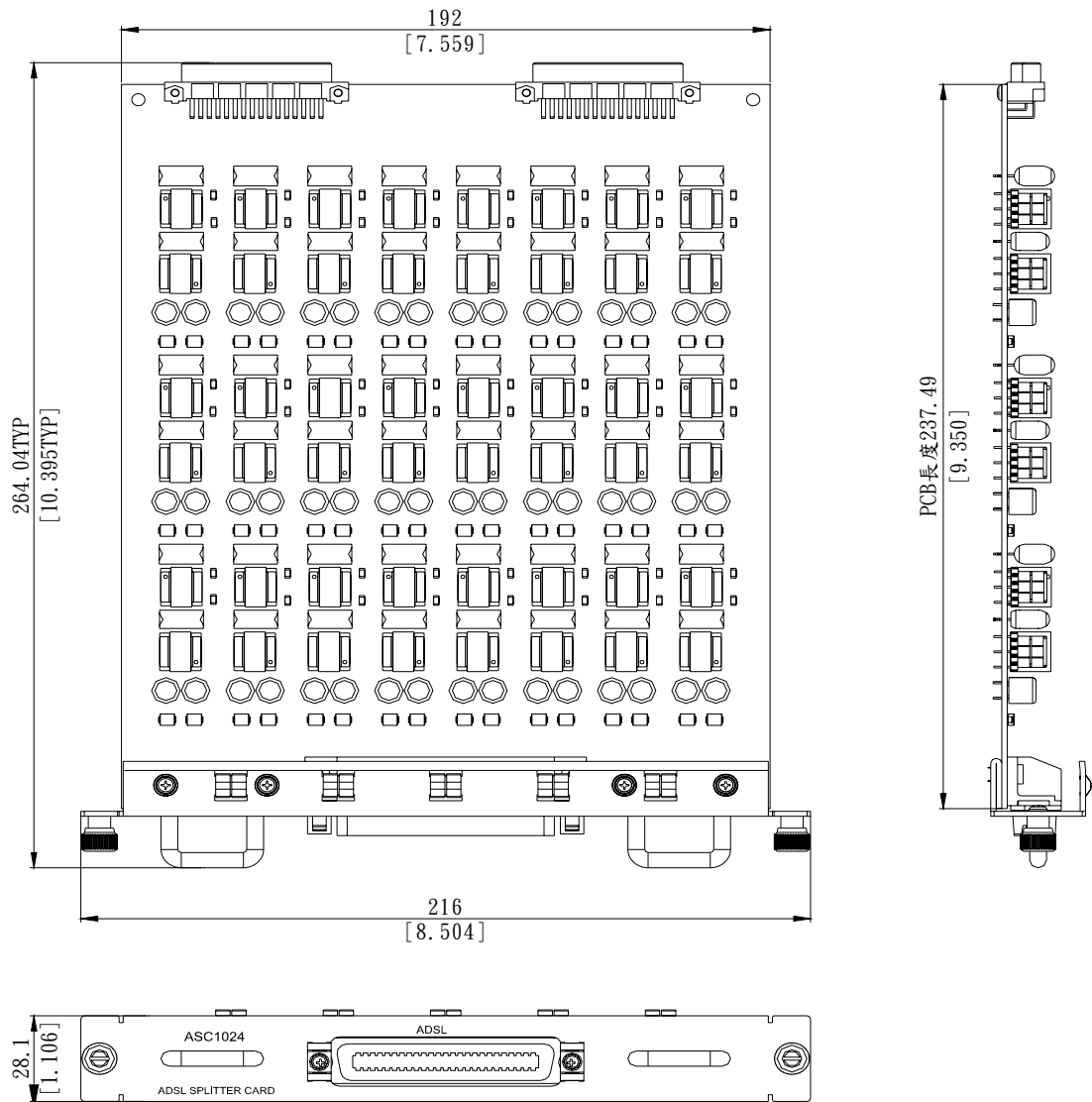
## 5.2 Electrical Performance

### 5.2.1 General conditions

General conditions		
	Conditions	Values
Splitter bandwidth		DC-4kHz
Voice band		DC-4kHz
Ringing frequency		15.3Hz ~ 68Hz
VDSL frequency band		32kHz~1.1MHz
POTS band impedance-Z <sub>L</sub>	0Hz ~ 3.4kHz	600 Ω
Modem Impedance	32kHz~30MHz	100 Ω
Z <sub>ADSL</sub>	0Hz ~ 4kHz	27nF + (100Ω//470uH)
VDSL band impedance	32kHz~1.1MHz	100Ω
Modem impedance	32kHz~1.1MHz	ZHPc
Max. operating voltage to ground		250VDC
DC Loop current		<100mA

### 5.2.2 Electrical Requirement

Electrical Requirement		
DC requirements		
	Conditions	Values
TIP and RING to Earth	100VDC	> 20 MΩ
TIP to RING	100VDC	> 5 MΩ
TIP to RING	POTS port shorted	<25Ω
Voice band loss requirements		
Insertion loss	Short Loop/ @1004Hz	<1.0 dB
	Long Loop/ @1004Hz	<0.75 dB
Attenuation distortion	Short Loop/ 0.2-3.4 kHz	+1.5 to -1.5 dB
	Short Loop/ 3.4-4.0 kHz	+2.0 to -2.0 dB
	Long Loop/ 0.2-3.4 kHz	+0.5 to -1.5 dB
	Long Loop/ 3.4-4.0 kHz	+1.0 to -1.5 dB
Return loss	200 Hz – 500Hz	>14dB
	500 Hz – 2000Hz	>18dB
	2000 Hz – 3400Hz	>14dB
Delay distortion	Short Loop/ 0.6-3.2 kHz	<200 μs
	Short Loop/ 0.2-4.0 kHz	<250 μs
	Long Loop/ 0.6-3.2 kHz	<200 μs
	Long Loop/ 0.2-4.0 kHz	<250 μs
	0.2 kHz to 4.0 kHz	< 250 us
Intermodulation distortion	2 <sup>nd</sup>	> 57 dB
	3 <sup>nd</sup>	> 60 dB
Unbalance about Earth	200 Hz-1 kHz	< 58 dB
	3 kHz	< 53 dB
	4KHz to 30KHz	< 40 dB
	30KHz to 1104KHz	< 45 dB
	1104K to 30MHz	< 38 dB
Metering pulses (200Ω)	16k	-3 dB -- -5 dB
VDSL band requirements		
Stop band attenuation	32kHz~1.1MHz	>55dB
Input impedance	32kHz~1.1MHz	<0.25dB
Near-end cross talk NEXT	32kHz~1.1MHz	>45dB

**5.3 Mechanical**


## 5.4 Pin Assignments

		CON1(USER)	CON2(CO)			CON1(USER)	CON2(CO)
PORT1	H	C2	C2	PORT13	H	C9	C9
	L	B2	B2		L	B9	B9
PORT2	H	C4	C4	PORT14	H	C11	C11
	L	B4	B4		L	B11	B11
PORT3	H	C6	C6	PORT15	H	C13	C13
	L	B6	B6		L	B13	B13
PORT4	H	C8	C8	PORT16	H	C15	C15
	L	B8	B8		L	B15	B15
PORT5	H	C10	C10	PORT17	H	A2	A2
	L	B10	B10		L	A1	A1
PORT6	H	C12	C12	PORT18	H	A4	A4
	L	B12	B12		L	A3	A3
PORT7	H	C14	C14	PORT19	H	A6	A6
	L	B14	B14		L	A5	A5
PORT8	H	C16	C16	PORT20	H	A8	A8
	L	B16	B16		L	A7	A7
PORT9	H	C1	C1	PORT21	H	A10	A10
	L	B1	B1		L	A9	A9
PORT10	H	C3	C3	PORT22	H	A12	A12
	L	B3	B3		L	A11	A11
PORT11	H	C5	C5	PORT23	H	A14	A14
	L	B5	B5		L	A13	A13
PORT12	H	C7	C7	PORT24	H	A16	A16
	L	B7	B7		L	A15	A15

Pin N°	Symbol	PIN N°	Symbol
1	NONE	26	NONE
2	ADSL-24H	27	ADSL-24L
3	ADSL-23H	28	ADSL-23L
4	ADSL-22H	29	ADSL-22L
5	ADSL-21H	30	ADSL-21L
6	ADSL-20H	31	ADSL-20L
7	ADSL-19H	32	ADSL-19L
8	ADSL-18H	33	ADSL-18L
9	ADSL-17H	34	ADSL-17L
10	ADSL-16H	35	ADSL-16L
11	ADSL-15H	36	ADSL-15L
12	ADSL-14H	37	ADSL-14L
13	ADSL-13H	38	ADSL-13L
14	ADSL-12H	39	ADSL-12L
15	ADSL-11H	40	ADSL-11L
16	ADSL-10H	41	ADSL-10L
17	ADSL-9H	42	ADSL-9L
18	ADSL-8H	43	ADSL-8L
19	ADSL-7H	44	ADSL-7L
20	ADSL-6H	45	ADSL-6L
21	ADSL-5H	46	ADSL-5L
22	ADSL-4H	47	ADSL-4L
23	ADSL-3H	48	ADSL-3L
24	ADSL-2H	49	ADSL-2L
25	ADSL-1H	50	ADSL-1L

**6 Environmental conditions:****6.1 Resistibility to over voltages and over currents:**

Comply with the resistibility requirements per ITU-T Recommendation K.20 electrical safety requirements

**6.2 Climatic conditions:****6.2a. Operating temperature:**

-20 °C to +60°C

**6.2b. Storage and transportation:**

Low ambient temperature - 40°C

High ambient temperature +80°C

**6.2c. Operation humidity:**

0 to 95% (non-condensing)

**7 Reliability conditions:****7.1 Thermal shock:**

Temperature from -20 °C to +85 °C for 5 cycles

**7.2. Temperature humidity exposure:**

+50 °C / 95 RH, 96hrs

**7.3. Vibration test:**

Random vibration / Overall: 1.15 g rms

Freq. (Hz): 1 → 4 → 100 → 200

PSD (g<sub>2</sub>/ Hz): 0.0001 → 0.01 → 0.01 → 0.001

Test Axis / Time: Top / 30 mins Bottom / 10 mins

X axis / 10 mins Y axis / 10 mins

**8 Note:**