EMI Common Mode Choke

BWCU Series

Overview

An EMI common mode choke (CMC) for power lines is a passive component specifically designed to suppress electromagnetic interference (EMI) in power supply circuits
A full series of common mode choke is designed for excellent noise attenuation with compact sizing for use in wide range of applications. Both standard series and custom designs are available.

Benefits

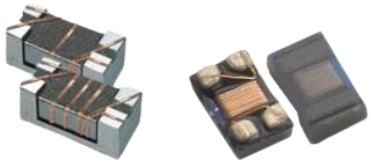
1. EMI/RFI Suppression
2. Improved Signal Integrity
3. Effectively suppresses noise over a wide frequency spectrum, including low-frequency and high-frequency EMI.
4. Common mode chokes are compact and suitable for applications where space is limited.

Applications

1. USB line for personal computers and peripheral
2. IEEE 1394 line for personal computers, DVC, STB
3. LVDS, panel line for liquid display panels, graph card,etc

Product Information

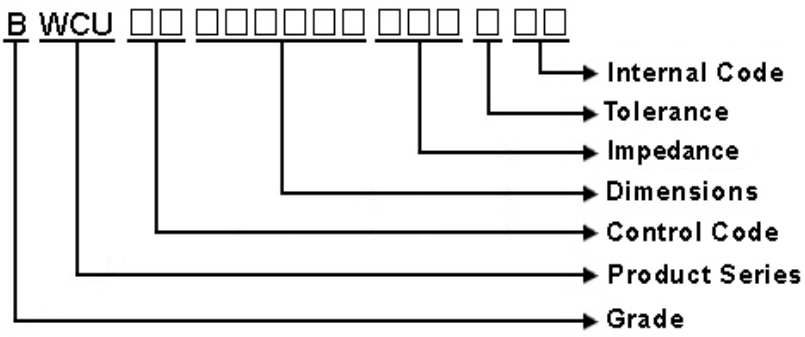
Series	Size Code (JIS/EIA)	Impedance (Ω)
BWCU	1608/0603 2012/0805 1210/0504 3216/1206 2520/1008 3225/1210	22 ~ 2200



BWCU00121008 Series Specification

1 Scope:
This specification applies to BWCU Wire Wound Common Mode Choke Coil

2 Part Numbering:



3 Rating:

Operating Temperature: - 40℃ ~ 105℃
(Including self - temperature rise)

Storage Temperature: - 40℃ ~ 105℃
(The storage temperature range is for after the assembly)

4 Marking:

No Marking

5 Standard Testing Condition

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35℃)	20 to 30℃
Humidity	Ordinary Humidity(25 to 85% RH)	50 to 80 %RH

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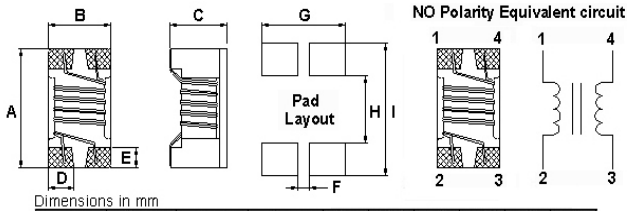
6 Configuration and Dimensions and Unit Weight:



Dimensions in mm

TYPE	A	B	C	D	E	F	G	H	I
121008	1.25±0.2	1.0±0.2	0.8±0.1	0.32	0.33	0.36	1.0	0.59	1.75

Net Weight (grms)

SIZE CODE	Net Weight (grms)
121008	0.005 (typ.)

7 Electrical Characteristics:

Part No.	Z (Ω)	RDC (Ω)Max.	IDC (mA)	Rated Voltage (Vdc)	Withstanding Voltage (Vdc)	Insulation Resistance (MΩ)(min)	Tolerance (±%)	Test Freq. (MHz)
BWCU00121008150□03	15	0.18	420	50	125	100	20,25	100
BWCU00121008220□03	22	0.2	400	50	125	100	20,25	100
BWCU00121008350□03	35	0.23	350	50	125	100	20,25	100
BWCU00121008400□03	40	0.25	350	50	125	100	20,25	100
BWCU00121008450□03	45	0.27	300	50	125	100	20,25	100
BWCU00121008600□03	60	0.4	250	50	125	100	20,25	100
BWCU00121008800□03	80	0.3	250	50	125	100	20,25	100
BWCU00121008900□03	90	0.3	250	50	125	100	20,25	100

NOTE: □-tolerance M=±20% / Y=±25%

1.Operating temperature range －４０℃～１０５℃(Including self - temperature rise)

2.RDC: SINGLE WIRE TEST VALUE

3.IDC for Inductance drop 10% from its value without current.

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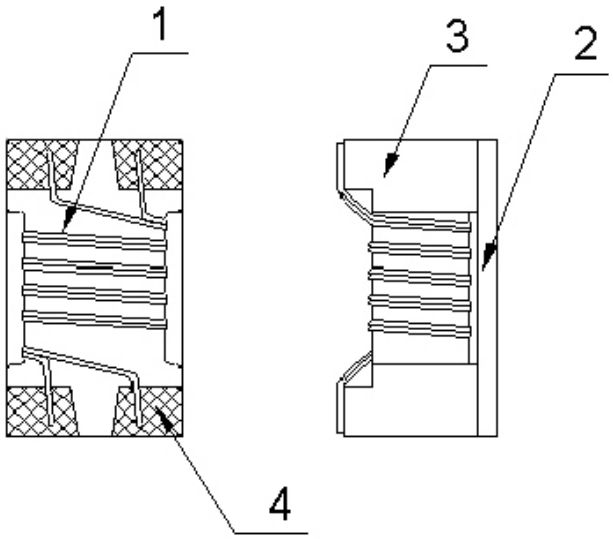
8.1 Construction:



8.2 Material List:

NO	PART	MATERIAL
1	WIRE	COPPER 180
2	Cover sheet	FERRITE
3	CORE	FERRITE
4	TERMINAL	Ag/Cu/Ni/Sn

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9 Common Mode Choke / RELIABILITY TEST

1-1.Environmental Performance

No	Item	Specification	Test Method
1-1-1	Temperature Cycle	Appearance: No Damage Impedance: within±20% of initial value	One cycle: Step / Temperature (℃) / Time (min) 1 / -40±3 / 30 2 / 25±2 / 3 3 / 105±3 / 30 4 / 25±2 / 3 Total: 5 cycles Measured After Exposure in The Room Condition For 1hrs
1-1-2	High Temperature Resistance		Temperature: 105±3℃ Time: 1000Hrs Measured After Exposure In The Room Condition For 1Hrs
1-1-3	Low Temperature Resistance		Temperature: -40±3℃ Time: 1000Hrs Measured After Exposure In The Room Condition For 1Hrs
1-1-4	Humidity Load Life	There should be no evidence of short or open circle	Temperature: 40±2℃ Relative Humidity: 90~95% Load: Allowed DC Current Time: 96Hrs

1-2.Mechanical Performance

No	Item	Specification	Test Method
1-2-1	Resistance To Soldering Heat	Appearance: No Damage	1. The device should be reflow soldered on PCB (peak 260℃±5℃ for 10 seconds) 2. Solder Composition: Sn/Ag3.0/Cu0.5 3. Test time: 6 minutes
1-2-2	Solder ability	The electrodes shall be at least 95% covered with new solder coating	1. Pre-Heating: 150℃,1min. 2. Solder Composition: Sn/Ag3.0/Cu0.5 3. Solder Temperature: 245±5℃. 4. Immersion Time: 4±1 sec.
1-2-3	Commponent Adhesion (Push Test)	1 Lbs. For 1210 Size 2 Lbs. For other	The device should be reflow soldered (245±5℃ For 10 seconds) to a tinned copper substrate. A force guauge should be applied to the side of the component. The device must withstand a minimum force of 2 pounds without a failure of the termination attached to component

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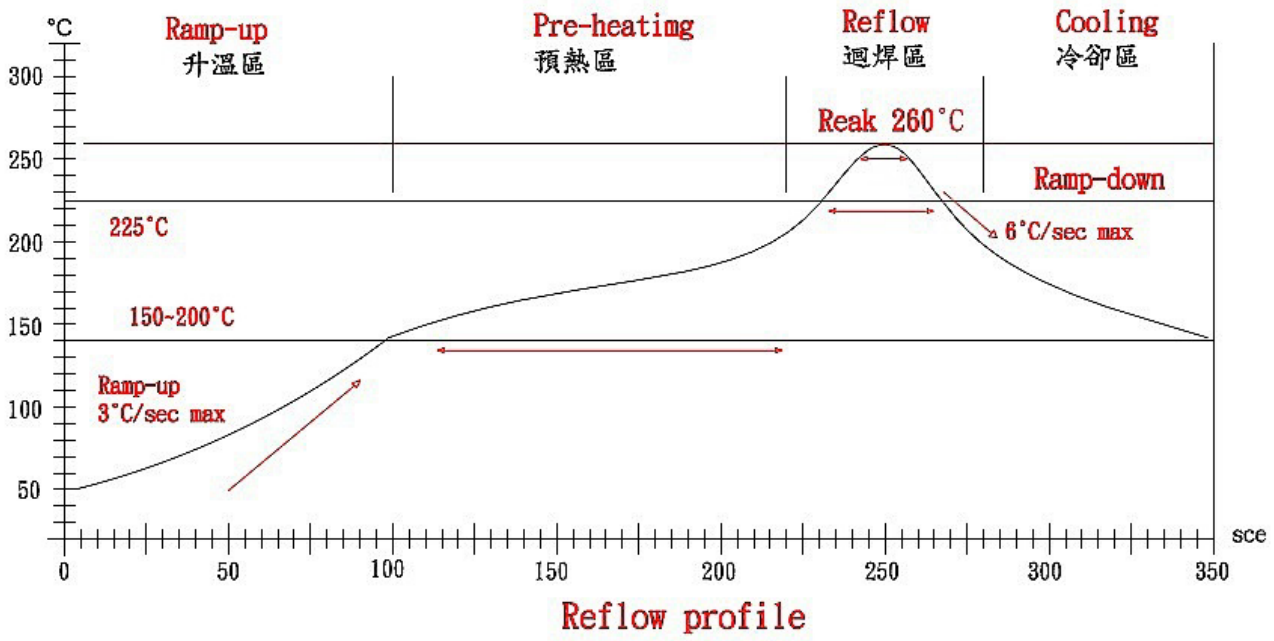

Reflow profile

Lead-Free(LF)標準溫度分析範圍 Refer to J-STD-020C

管制項目 Item.	升溫區 Ramp-up	預熱區 Pre-heating	迴焊區 Reflow	Peak Temp	冷卻區 Cooling
溫度範圍 Temp.scope	R.T ~ 150℃	150℃ ~ 200℃	Above 217°C	260±5℃	Peak Temp.~150℃
標準時間 Time spec.	-	60 ~ 180 sec	60 ~ 150 sec	20 ~ 40 sec	-
實際時間 Time result	-	75 ~ 100 sec	90 ~ 120 sec	20 ~ 35 sec	-

NOTE :

1. Re-flow possible times : within 2 times
2. Nitrogen adopted is recommended while in re-flow
3. Products can only be soldered with reflow

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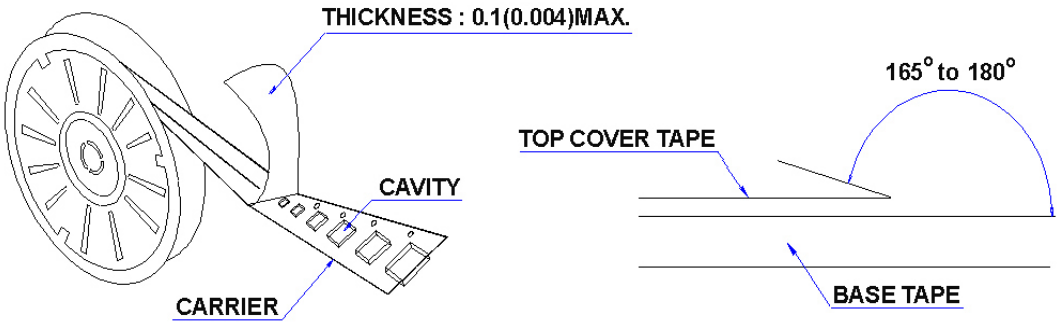
10 Packaging:

10.1 Packaging -Cover Tape

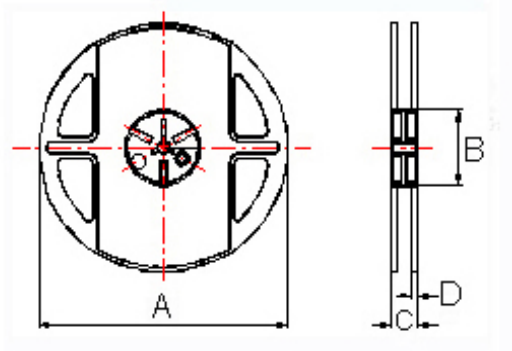
The force for tearing off cover tape is 10 to 100 grams in the arrow direction.



10.2 Packaging Quantity

TYPE	PCS/REEL
121008	2000

10.3 Reel Dimensions



Dimensions in mm

TYPE	A	B	C	D
121008	178±1	60±0.5	12±0.5	1.5±0.5

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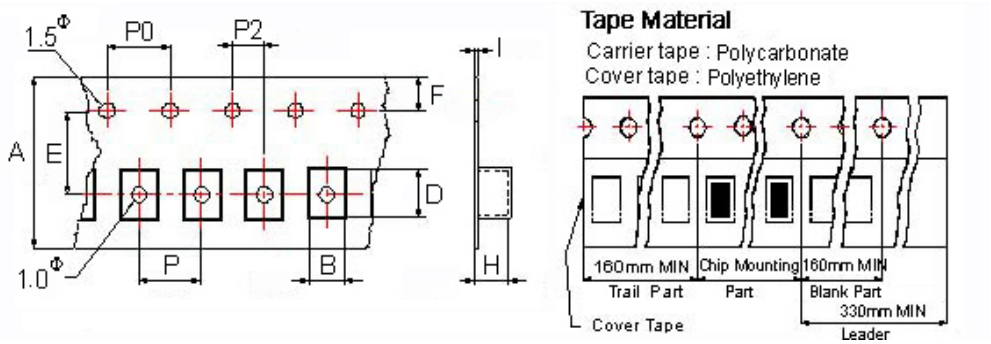
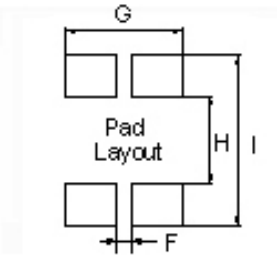
10 Packaging:

10.4 Tape Dimensions in mm



TYPE	A	B	D	E	F	H	I	P	P0	P2
121008	8	1.15	1.5	3.5	1.75	1.00	0.24	4	4	2

12 Recommended Land Pattern:



Dimensions in mm

TYPE	F(In/mm)	G(In/mm)	H(In/mm)	I(In/mm)
121008	0.014/0.36	0.039/1.0	0.023/0.59	0.069/1.75

13 Note:

1. Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
2. Do not knock nor drop.
3. All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose,under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.
4. The storage period is less than 12 months. Be sure to follow the storage conditions (Temperature: 5 to 40°C, Humidity: 10 to 75% RHor less).
   If the storage period elapses, the soldering of the terminal electrodes may deteriorate.
5. Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
6. The moisture sensitivity level (MSL) of products is classified as level 1.

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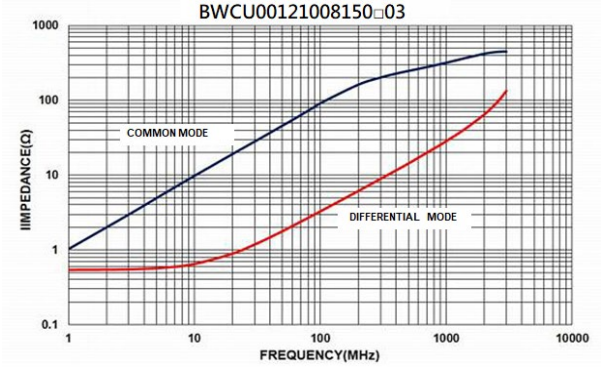
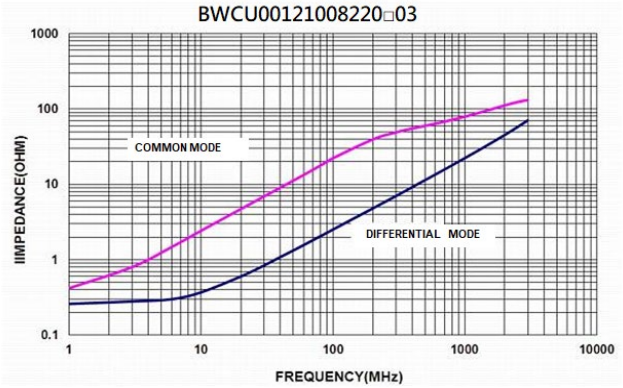
14 Graph:

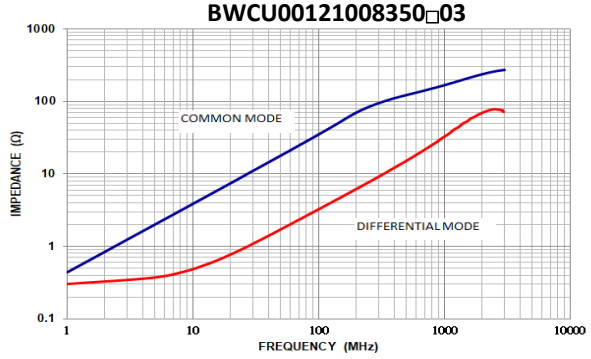
BWCU00121008150□03



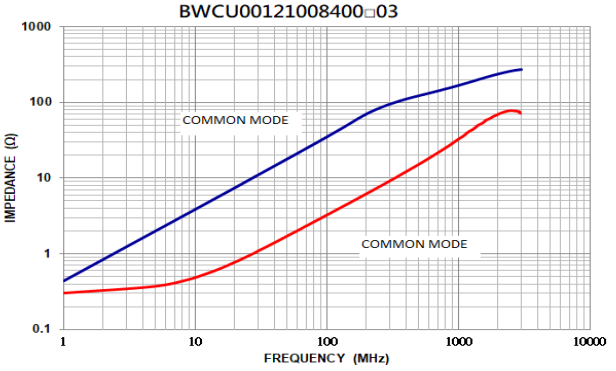
BWCU00121008220□03



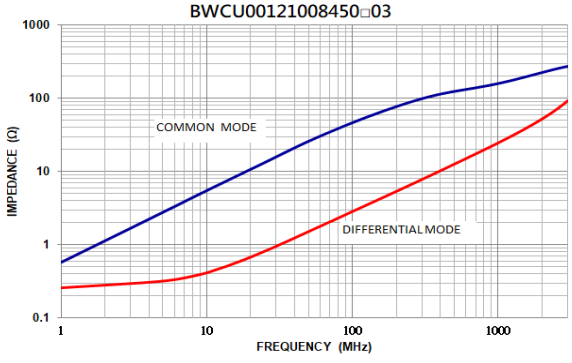
BWCU00121008350□03



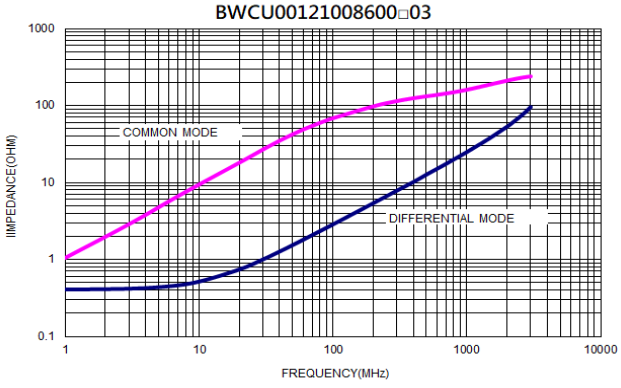
BWCU00121008400□03



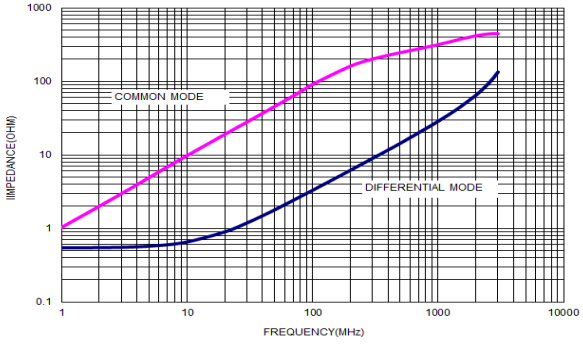
BWCU00121008450□03



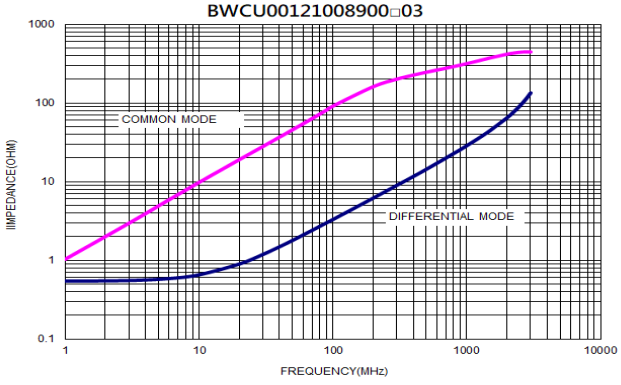
BWCU00121008600□03



BWCU00121008800□03



BWCU00121008900□03



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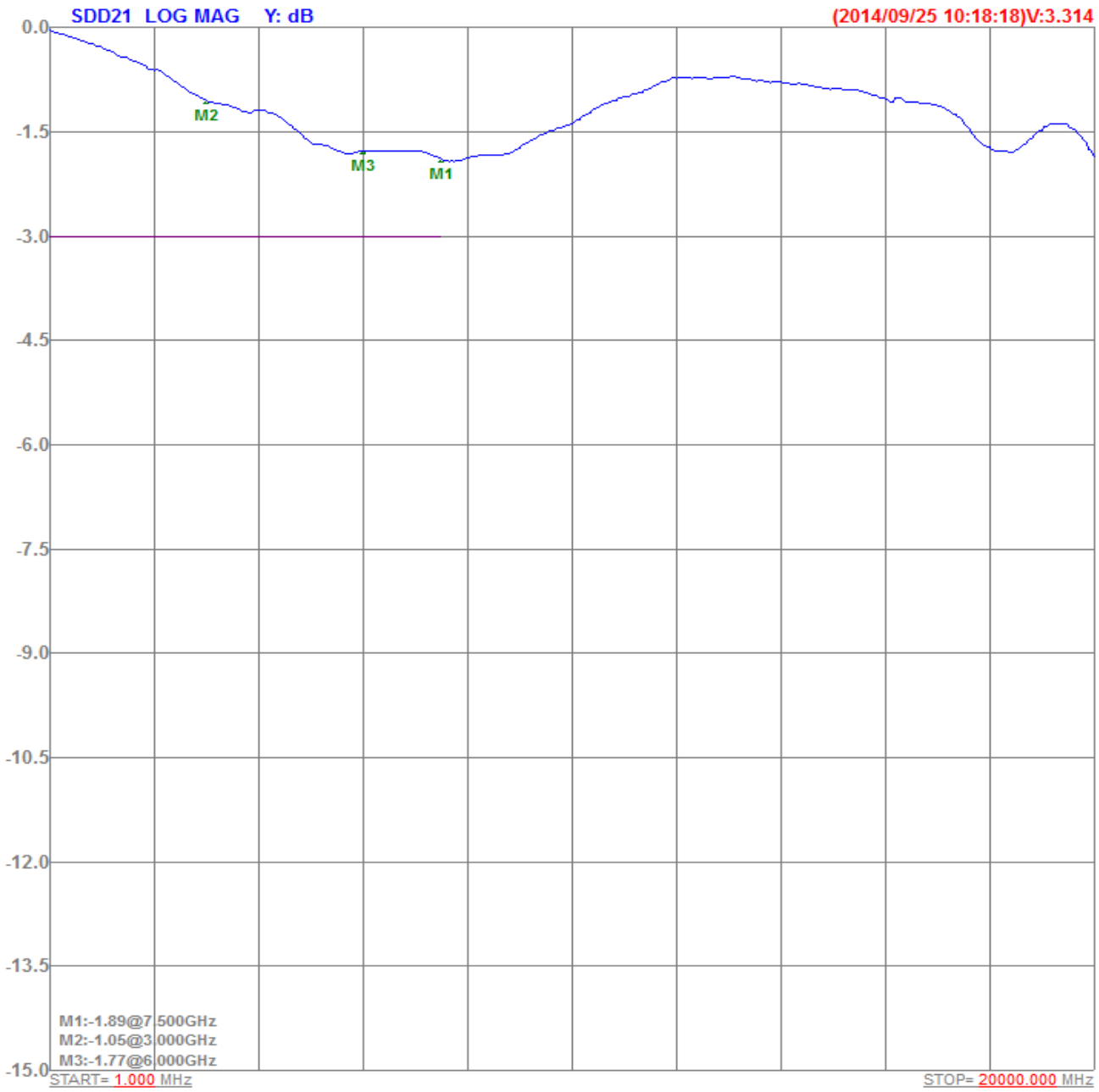
15 Insertion Loss For HDMI2.0 Testing:

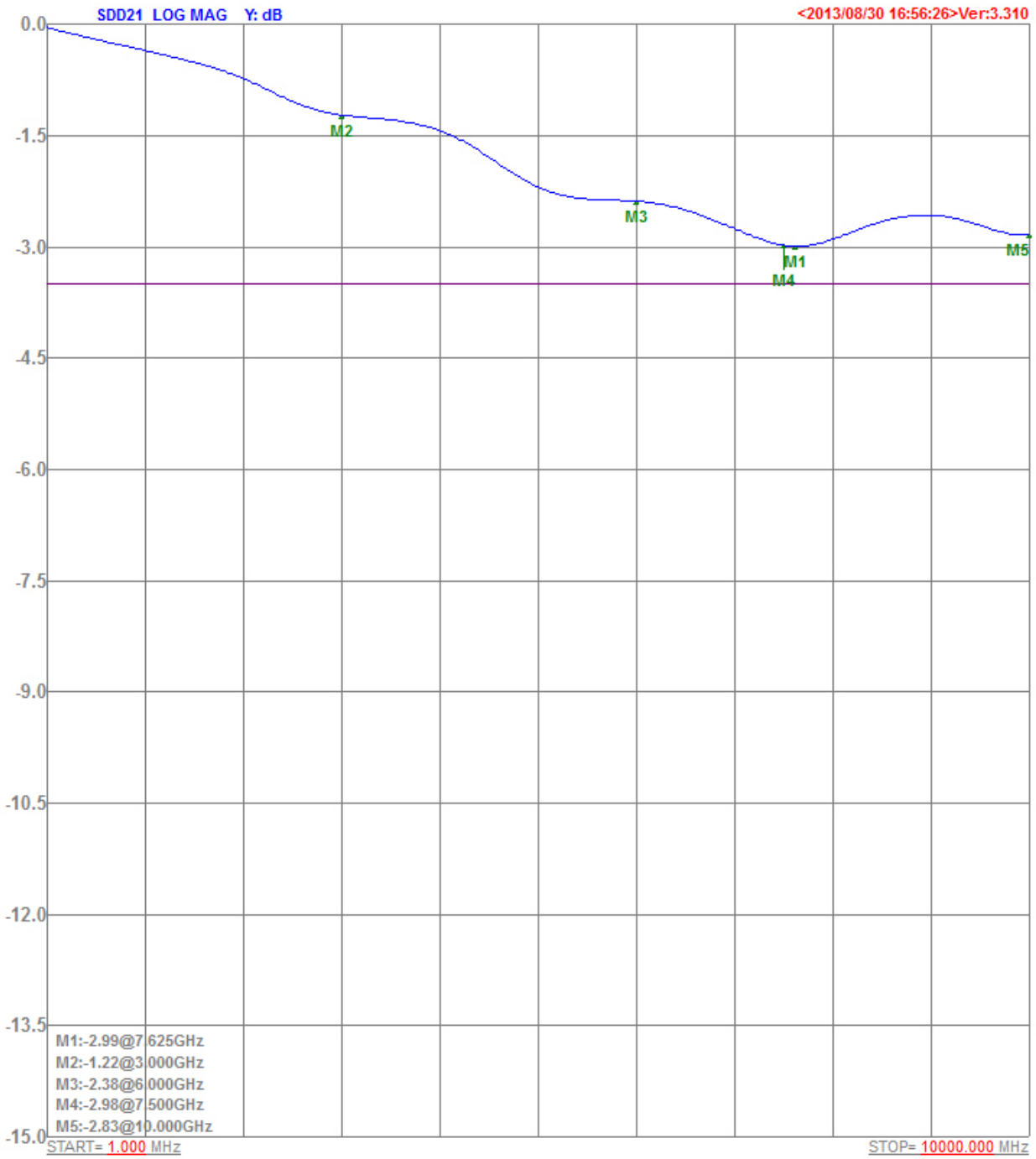
Choke Insertion Loss Graphic result

C1 -(PASS)



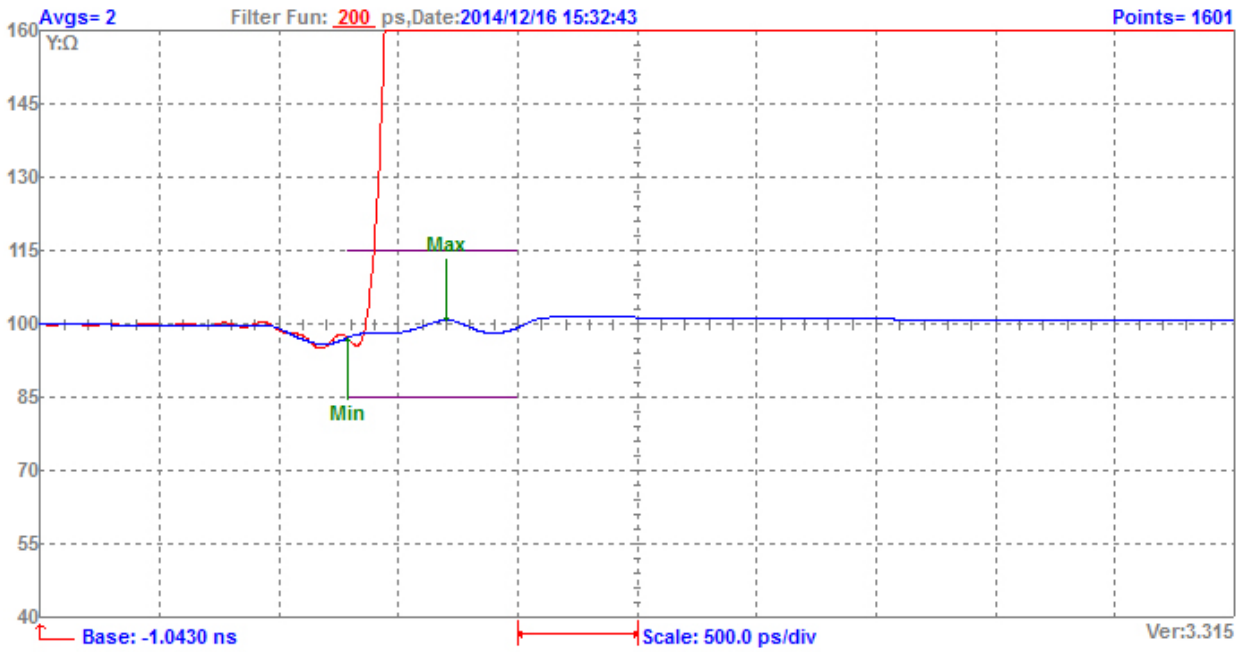
12GHz @ -0.75dB

15 Insertion Loss For USB3.X Testing:



12GHz @ -0.75dB

16 TDR For HDMI2.0 Testing:



Parameter Name: HDMI Choke Impedance C1	
Spc Max: 115 Ω	Spc Min: 85 Ω
Max:100.87 Ohms at 0.6605 ns	Min:97.31 Ohms at 0.2449 ns
ΔΩ: 3.56	Avg: 99.09 Ohms
	Result: Pass

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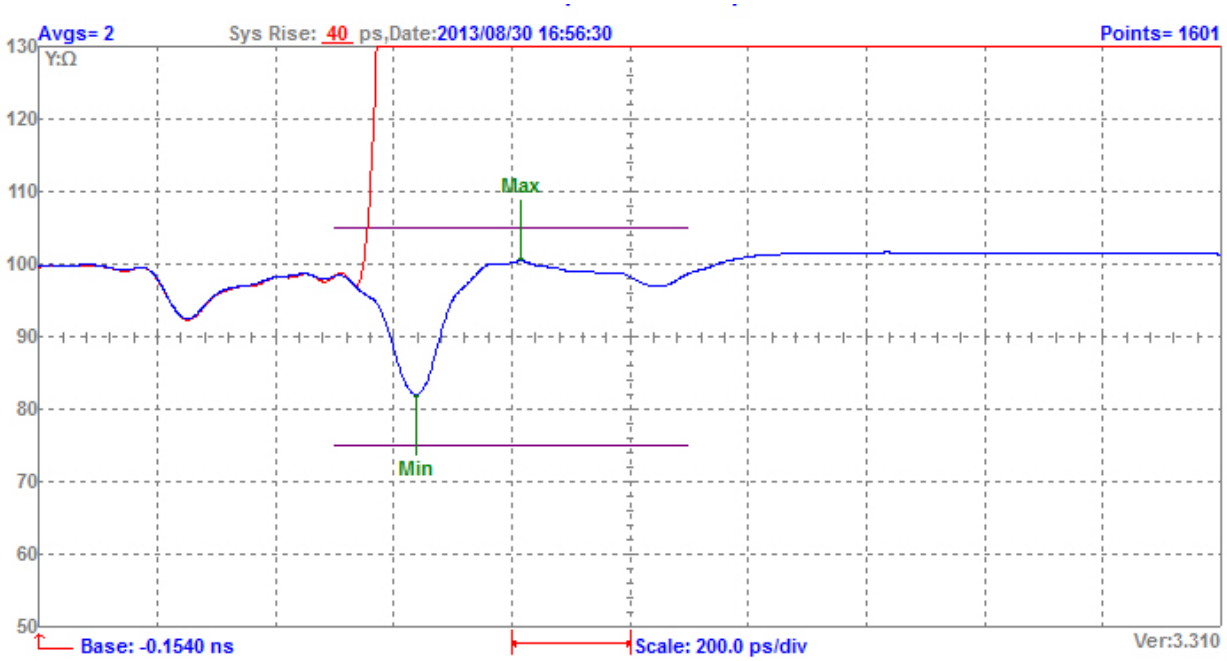
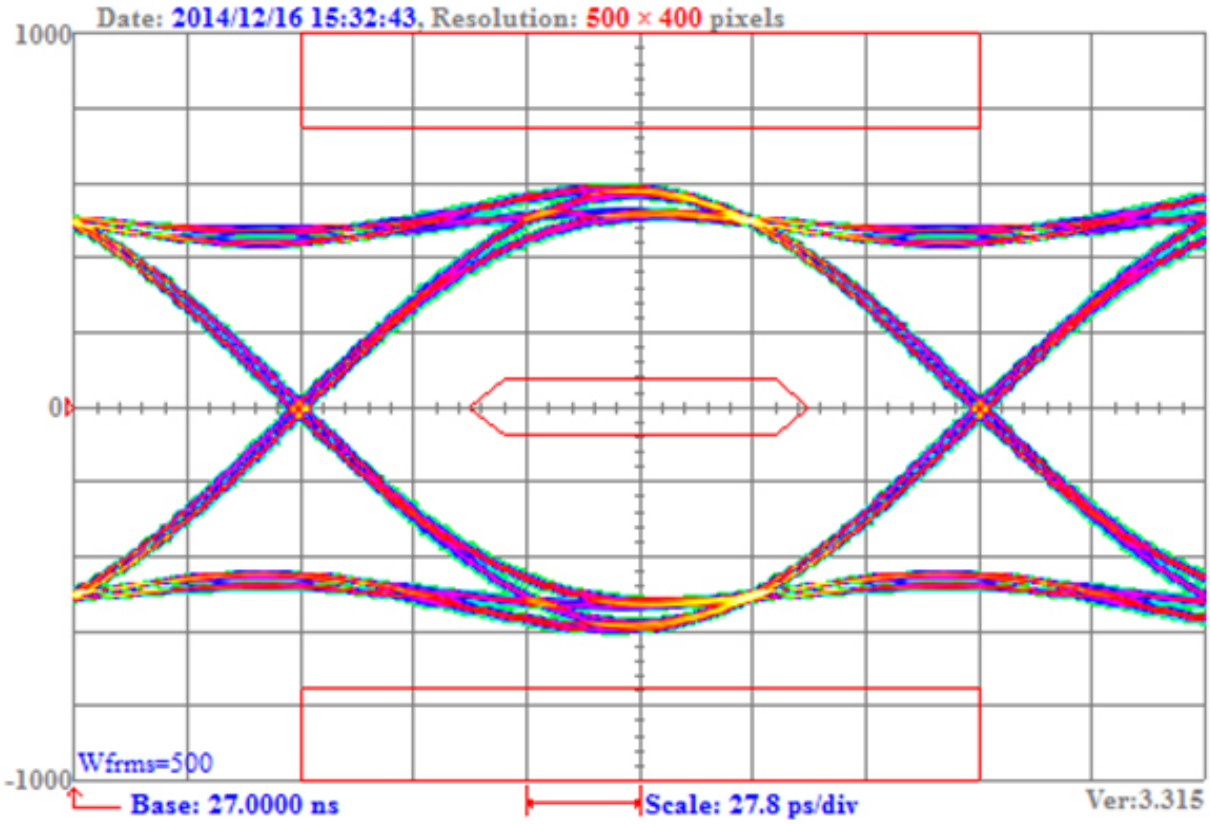
16 TDR For USB3.X Testing:



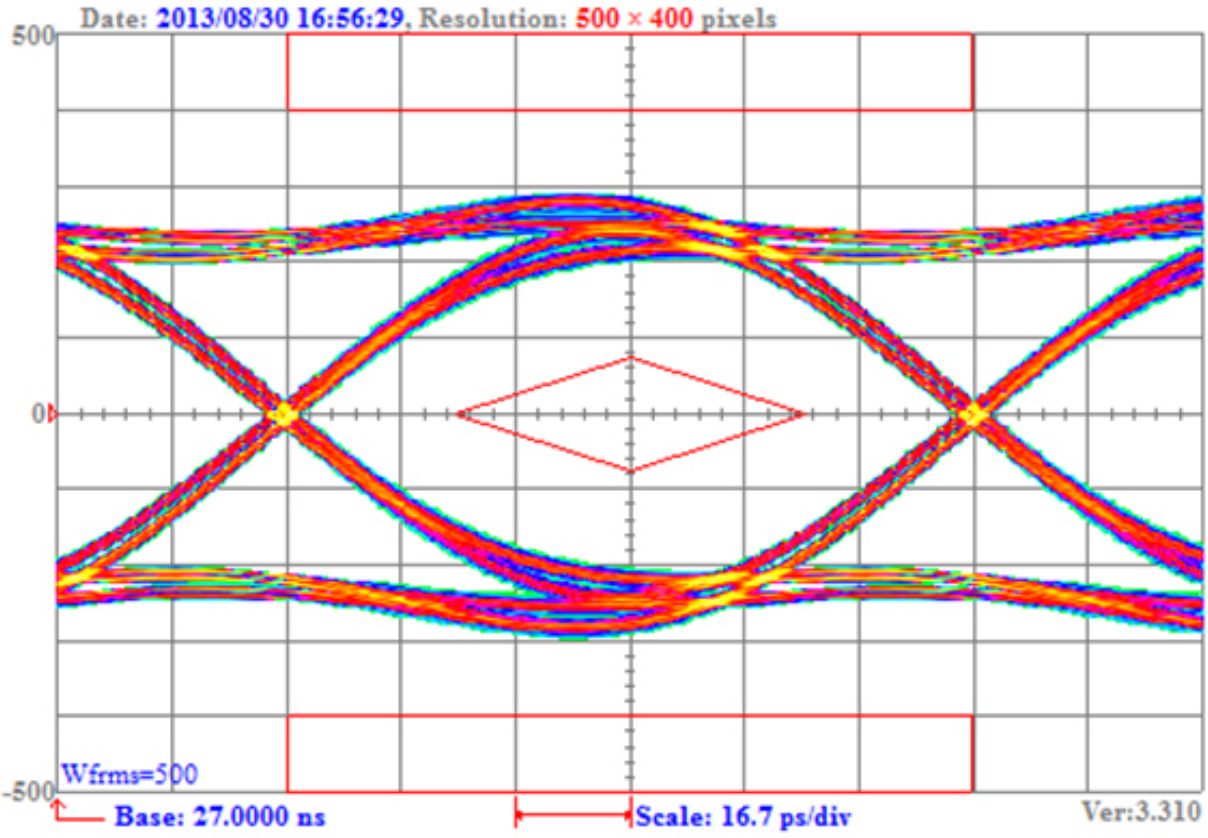
Parameter Name: Choke Impedance C1	
Spc Max: 105 Ω	Spc Min: 75 Ω
Max:100.51 Ohms at 0.6601 ns	Min:82.07 Ohms at 0.4839 ns
ΔΩ: 18.43	Avg: 91.29 Ohms
	Result: Pass

17 Eye DiagramFor HDMI2.0 Testing:



Parameter Name: **Choke Eye Diagram C1**	
Display Mode: **Not a standard mode**	
dRate: **6** Gbits/s; **166.7** ps	V: **500** mV;Gain: **0** dB;Off: **0** mV
CAL: DONE,JGen: OFF	Result: Pass

17 Eye DiagramFor USB3.X Testing:



Parameter Name: USB3.0 Choke Eye Diagram C1	
Display Mode: Not a standard mode	
dRate: 10 Gbits/s; 100.0 ps	V: 250 mV;Gain: 0 dB;Off: 0 mV
CAL: DONE,JGen: OFF	Result: Pass