

PTZ balun validation

Tests results

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1. Introduction

Summary

This report contains the test results of the PTZ balun conducted to confirm its conformity to new PELCO Inc. MPT9500 camera-controller PTZ system.

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Standard

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2. Test results

2.1 Situation

The PTZ balun was tested and developed at the time when Pelco 32 bit PTZ system MPT9500 (and DD5A series Dome Drive) was not available.

To date the old PELCO MPT9000-PZ 15-bit system was replaced by the new one, however, still remains in sales in residual quantities. It remains question of product survival on the market if NHC PTZ balun M500007 can support new PELCO product.

By definition, each of PELCO products must respect of COAXITRON 2000 15-bit or 32-bit protocol.

2.2 Test methodology

Test materials:

1. Controller PELCO MPT9500-PZ
2. Dome Drive DD5AC (color NTSC)
3. Balun NHC M500007 3 pairs as Device Under Test (DUT)
4. Balun AT&T 380A 1 pair (DUT)
5. Frame with cable UTP cat5, variable length, 3000-ft. max.
6. TV set SANYO AVM-1423U
7. Camera SANYO CDD 3974 3 ea.
8. Dummy load 75Ω 3 ea.
9. ASCII symbols table; sizes from 28 to 9 points. See ATTACHMENTS.

Test objectives:

1. Verify the maximum length of link in respect to:
 - Image quality
 - PTZ control
2. Verify the existence of possible interferences between 4 video channels simultaneously transmitted through UTP at maximum length.
3. Verify the PTZ System ability to work in real NHC UTP cable wiring environment.

2.2.1 Test Setup 1

1. Accordingly to PELCO requirements (PELCO document C535-B, see ATTACHMENTS) the Controller was connected with the Dome using short coaxial type cable. The test setup was powered, and the image on TV screen appeared. The camera position was under control. The ASCII symbols table was exposed at 44'' distance towards camera. ZOOM was set to fit the screen.

The additional light of 60W was illuminating the table from the distance of 3-ft. FOCUS was set to achieve the best quality of image.

2. The first pair of DUT and UTP cable replaced the coaxial cable. The image on TV screen appeared. The camera position was under control.
3. By modifying length of UTP cable the maximum distance has been achieved where the full control over camera was possible.
4. The test was repeated for second, third and fourth pairs of DUT.

2.2.2 Test Setup 2

1. The Test Setup 1 was arranged using one of four available pairs of UTP (pair number 4).
2. The second pair of UTP was used to link the second camera and dummy load.
3. The third pair of UTP was used to link the third camera and another dummy load.
4. The fourth pair of UTP was used to link the fourth camera and another dummy load.
5. Each of dummy loads was substituted one by one by TV Set and quality of the transmitted image was monitored. During this test procedure each link was loaded by Dummy Load or TV Set instead.

2.2.3 Test Setup 3

1. The camera was located in NHC server room.
2. The TV Set and PTZ Controller was located in NHC Conference room
3. The link was created using PTZ baluns and existing NHC LAN cabling system, UTP Cat5. The hook-up diagram is provided by PELCO; see ATTACHMENTS.

2.2.4 Test Results

	DUT	UTP length short	Image Quality	UTP length full	Image Quality	PTZ control Quality	Distortions
1	NHC#1	80 ft	*1	1330 ft	*2	*3	*4
2	NHC#2	80 ft	*1	1330 ft	*2	*3	*4
3	NHC#3	80 ft	*1	1330 ft	*2	*3	*4
4	AT&T	80 ft.	*1	1330 ft.	*2	*3	*4

Table 1. Test Results of the TEST SETUP 1

	DUT	UTP length	Image Quality	PTZ control Quality	Distortions
1	Pair 1	1330 ft.	*2	*3	*4
2	Pair 2	1330 ft.	*2	*3	*4
3	Pair 3	1330 ft.	*2	*3	*4
4	Pair 4	1330 ft.	*2	*3	*4

Table 2. Test Results of the TEST SETUP 2

	DUT	UTP length	Image Quality	PTZ control Quality	Distortions
1	Pair 4	200 ft.	*1	*3	*5

Table 3. Test Results of the TEST SETUP 3

Notes:

- *1** symbols in rows 1~8 are unconditionally clear, row 9 is readable with 50% of certainty, rows 10~13 are not readable
- *2** symbols in rows 1~7 are unconditionally clear, row 8 is readable with 50% of certainty, rows 9~13 are not readable
- *3** very good
- *4** not significant rainbow type intermittent interferences are visible. The contrast of the image is more pronounced if the UTP link is short.
- *5** none

End of test specification.

3. Solutions

The above test results may lead to the following conclusions:

- The maximum length of the link using NHC M500007 balun must not exceed 1330 feet (405m) total if UTP cat5 is used. The UTP cat5 Ultraclear can extend this length of 10% or up to 1463-ft (446m) – theoretically.
- The similar product AT&T balun (actually obsolete as we were told by AT&T component distributors) exhibit similar properties as NHC balun; the differences regarding the image and PTZ control quality were not noted.
- The quality of the transferred image (regarding contrast, resolution and distortions) insignificantly deteriorates with the length of the link. The indicated phenomena refer rather to the transfer function of the UTP, not to NHC M500007 balun itself.
- There are no visible distortions caused by the crosstalk between different pairs of UTP, if another video signals are transferred in the same 4-pair type UTP cat5.
- It is not important which pair of the UTP is used to make up the link.
- PTZ system working within NHC LAN structured wires behaves very well. The image was even better quality then this one observed in TEST 1; this is probably due to the high quality TV set located in NHC conference room.
- The NHC M500007 balun is compatible with the new 32 bit PELCO MPT9500 System.

3.1 Recommended course of action

1. Notify PELCO about the above test results and conclusions.
2. There are more products PTZ type on the market; to repeat above tests using third party PTZ product, if the results are positive, may open more opportunities for NHC.

4. Attachments

1. ASCII code table
2. NHC M500007 PTZ balun manual: [PTZman1.DOC](#)
3. PELCO C535MB Controller Manual, C1488M PTZ Camera Manual

To open these files copy ” *.pdf” files to c:\Temp directory and click the respective symbols below.

[..\..\Temp\c1488ma.pdf](#)

[..\..\Temp\C535MB.pdf](#)

also see: <http://www.pelco.com>

1	WE[PRJYW]T[PUVKKK	[28p]
2	ZSDFPJ,\$-59=7FJHLTI	[26p]
3	ERPOGPRO=-K;M\FB	[24p]
4	;DFH[JRT[PJHKEP	[22p]
5	PEL;SFGH[IWRUT[PHI	[20p]
6	D;LOHGPOB IWJRH	[18p]
7	D;LGH[AIUT[H[JRT]H-IW	[16p]
8	A;DSOIGJWROIPJTH[POKWR[]O	[14p]
9	ADHGN[WOIJTR[HIJW[JTHWRTJH	[12p]
10	PAOFGHPWOEIJTPHIJW[SRH	[11p]
11	PDFHG[IA[H[PIA]EOPIH]POKAS]OPJH	[10p]
12	ALSKJGH POIAEFPOGJIPOWIJTH	[9p]
13	ALSIHGPOHAE[PFGHI[ROT[HIJWR[TH	[8p]

Table 3. ASCII Code Table