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The following material resulting from the investigation under the above numbers is enclosed.

**Issue**

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	X1		Index Page(s)	
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Product Type	Model/Type Reference	Report Reference #	Status
Digital Video Recorder	SVR-430	E158873-A2-UL	
Video Presenter	UF-80, UF-80DX, UF-80ST	E158873-A4-UL	
Video Presenter	SVP-5300N	E158873-A5-UL	
Video Presenter	SDP-900DXAN, SDP-950DXAN, SDP-950STAN	E158873-A6-UL	
Video Presenter	SDP-850, SDP-850DX	E158873-A9-UL	
Digital Video Recorder	SVR-1650, SVR-1650E, SVR-1640, SVR-1640E, SVR-950, SVR-950E and SVR-1640A	E158873-A11-UL	
Video Presenter	SDP-6500DXA	E158873-A12-UL	
Video Presenter	UF-130DX	E158873-A14-UL	
Video Presenter	UF-130ST	E158873-A15-UL	
Network Video Recorder	SNR-6400, SNR-3200, SRN-3250, SRN-6450	E158873-A16-UL	
Digital Video Recorder.	SVR-480	E158873-A17-UL	Withdrawn
Video Presenter	SDP-860	E158873-A18-UL	
Digital Video Recorder.	SVR-1670	E158873-A19-UL	
UTP Power Supply Unit	SPU-400	E158873-A20-UL	Withdrawn
Digital Presenter	SDP-760	E158873-A44-UL	
Network Camera	SNP-5300H*, SNP-6201H* (* is Blank or N or P: N = NTSC, P=PAL)	E158873-A45-UL	
Network Camera	SND-7011*, SND-5011*, SND-5061*, SND-7061*, SNV-5010*, SNZ-5200* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A46-UL	
Network Camera	SNP-5300*, SNP-6201* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A47-UL	
Digital Color Camera	SCP-3371H*, SCP-2371H*, SCP-2271H*, SCP-2373H*, SCP-2273H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A48-UL	
Digital Color Camera	SCP-3371*, SCP-2371*, SCP-2271*, SCP-2373*, SCP-2273* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A49-UL	
Network Camera	SND-7082*, SND-7082F*, SNV-7082* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A50-UL	
Network Camera	SNB-7001*, SNB-5001*, SNB-3002* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A51-UL	
Network Camera	SNO-7082R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A52-UL	
Network Camera	SNB-7002* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A53-UL	

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DIGITAL COLOR CAMERA	SCV-2010F*, SCD-1020R*, SCD-2080R*, SCD-2020R*, SCD-2010*, SCD-2010B*, SCD-2010F*, SCB-3020*, SCB-3021*, SCB-2010*, SCO-1020R* (* is blank or N or P: N=NTSC, P=PAL)	E158873-A54-UL	
Network Camera	SNB-6004*, SNB-6003*, SNB-5004*, SNB-5003*, SNB-7004*, SNB-6005* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A55-UL	
Network Camera	SND-6084*, SND-6083*, SND-5084*, SND-5083*, SND-7084* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A56-UL	
DIGITAL COLOR CAMERA	SCD-2022*, SCD-2022R*, SCD-2042R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A58-UL	
Digital Color Camera	SCB-2004*, SCB-2005* (* is blank or N or P: N = NTSC, P=PAL);	E158873-A59-UL	
Digital Color Camera	SCD-2082*, SCV-2082R*, SCV-3083*, SCD-3083* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A60-UL	
Network Camera	SND-6084R*, SND-7084R*, SND-5084R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A61-UL	
NETWORK CAMERA	SNO-6084R*. SNO-7084R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A62-UL	
Network Camera	SNV-6084R*, SNV-6084*, SNV-5084*, SNV-7084*, SNV-7084R*, SNV-5084R*, SNV-6084T* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A63-UL	
Digital Color Camera	SCO-2081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A64-UL	
DIGITAL COLOR CAMERA	SCB-2004*D, SCB-2005*D (* is blank or N or P: N = NTSC, P=PAL)	E158873-A65-UL	
DIGITAL VIDEO RECORDER	SRD-1673D*, SRD-1654D*, SRD-854D*, SRD-852D*, SRD-1673*, SRD-1653*, SRD-873*, SRD-1640*, SRD-840*(* is blank or N or P, N=NTSC / P=PAL)	E158873-A66-UL	
Network Camera	SNP-6200RH*, SCP-2370RH* (* is blank or N or P: N=NTSC,P=PAL )	E158873-A67-UL	
Network Camera	SNV-6012M* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A68-UL	
Network Camera	SNF-7010*, SNF-7010V*, SNF-7010VM* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A69-UL	
Network Camera	SNO-6011R* (* is blank or N or	E158873-A72-UL	

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	P: N = NTSC, P=PAL)		
Network Camera	SND-6011R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A73-UL	
Digital Video Recorder	SRD-1680D*, SRD-880D* (* is blank or N or P : N=NTSC, P=PAL)	E158873-A74-UL	
DIGITAL COLOR CAMERA	SCZ-2373*, SCZ-2273* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A75-UL	
NETWORK CAMERA	SCO-6081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A76-UL	
DIGITAL COLOR CAMERA	SCV-6081R* and SCD-6081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A77-UL	
NETWORK VIDEO RECORDER	SRN-4000	E158873-A78-UL	
DIGITAL COLOR CAMERA	SCD-6021* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A81-UL	
NETWORK CAMERA	SNV-6013* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A83-UL	
NETWORK CAMERA	SNB-6010*, SNB-6010A*, SNB-6011*, SNB-6010B*, SNB-6011B* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A85-UL	
NETWORK CAMERA	SNP-6320H*, SNP-5430H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A86-UL	
NETWORK CAMERA	SNP-6320*, SNP-5430* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A87-UL	
Network Video Recorder	SRN-472S, XRN-810S* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A88-UL	
Digital Video Recorder	SRD-1676D*, SRD-1656D*, SRD-876D* (* is blank or N or P, N=NTSC/ P=PAL)	E158873-A89-UL	
DIGITAL COLOR CAMERA	SCB-5000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A90-UL	
DIGITAL COLOR CAMERA	SCB-5000*D (* is blank or N or P: N = NTSC, P=PAL)	E158873-A91-UL	
DIGITAL COLOR CAMERA	SCD-5080* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A92-UL	
DIGITAL COLOR CAMERA	SCB-5003*, SCB-5005*, HCB-6001* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A94-UL	
DIGITAL COLOR CAMERA	SCV-5082* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A95-UL	
DIGITAL COLOR CAMERA	SCD-5083*, SCD-5083R*, SCD-5082*, SCD-5083B*, SCD-5081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A96-UL	
DIGITAL COLOR CAMERA	SCV-5083* (* is blank or N or P: N = NTSC, P=PAL) SCV-5083R* (* is blank or N or	E158873-A97-UL	

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	P: N = NTSC, P=PAL) SCV-5081R* (* is blank or N or P: N = NTSC, P=PAL)		
NETWORK CAMERA	SNF-8010VM*, SNF-8010* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A98-UL	
DIGITAL COLOR CAMERA	SCD-5030*, SCD-5020* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A99-UL	
NETWORK CAMERA	SNO-5084R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A100-UL	
DIGITAL COLOR CAMERA	SCO-5083R*, SCO-5081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A101-UL	
NETWORK CAMERA	SNP-6321*, SNP-L6233* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A102-UL	
NETWORK CAMERA	SNP-6321H*, SNP-L6233H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A103-UL	
DIGITAL COLOR CAMERA	SCV-5085* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A104-UL	
NETWORK CAMERA	SNB-8000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A105-UL	
NETWORK CAMERA	SNV-8080* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A106-UL	
NETWORK CAMERA	SNZ-6320	E158873-A107-UL	
NETWORK CAMERA	SNP-6320RH*, SNP-L6233RH* (* is blank or N or P: N=NTSC,P=PAL)	E158873-A108-UL	
NETWORK CAMERA	SNP-5321H*, SNP-L5233H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A109-UL	
NETWORK CAMERA	SNP-5321*, SNP-L5233* (* is blank or N: NTSC or P:PAL)	E158873-A110-UL	
NETWORK CAMERA	SND-L6013R*, SND-L6013*, SND-L6012*, SND-L5013* (* is blank or N or P: N:NTSC/P:PAL)	E158873-A111-UL	
NETWORK CAMERA	SNO-L6083R*, SNO-L5083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A113-UL	
Network Video Recorder	SRN-1673S* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A115-UL	
NETWORK CAMERA	SNO-L6013R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A118-UL	
NETWORK CAMERA	SND-L6083R*, SND-L5083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A119-UL	
Network Video Recorder	SRN-873S* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A120-UL	
NETWORK CAMERA	SNV-L6083R*, SNV-L5083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A121-UL	

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NETWORK CAMERA	SNB-9000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A122-UL	
Optical PTZ Accessary	SBP-301HF	E158873-A125-UL	
Optical PTZ Accessary	SBP-300HF	E158873-A126-UL	
NETWORK CAMERA	SNV-8081R* (* is Blank or N or P: N = NTSC, P=PAL)	E158873-A127-UL	
NETWORK CAMERA	SNO-8081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A128-UL	
NETWORK CAMERA	SNV-6085R* (* is blank or N or P: N = NTSC, P=PAL) SNV-6085* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A129-UL	
DIGITAL COLOR CAMERA	SCB-6003* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A130-UL	
DIGITAL COLOR CAMERA	SCO-6023R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A132-UL	
DIGITAL COLOR CAMERA	SCV-6083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A133-UL	
DIGITAL COLOR CAMERA	SCV-6023R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A135-UL	
DIGITAL COLOR CAMERA	SCD-6023R*, SCD-6013* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A136-UL	
DIGITAL COLOR CAMERA	SCD-6083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A137-UL	
DIGITAL COLOR CAMERA	SCO-6083R*(* is blank or N or P: N = NTSC, P=PAL)	E158873-A138-UL	
NETWORK CAMERA	SNV-L6014RM*, SNV-L6013R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A139-UL	
DIGITAL COLOR CAMERA	PNO-9080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A140-UL	
NETWORK CAMERA	PNV-9080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A141-UL	
NETWORK CAMERA	PND-9080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A142-UL	
Digital Video Recorder	SRD-1685*, SRD-894*, HRD-842* (* is blank or N or P, N=NTSC/ P=PAL)	E158873-A143-UL	
Digital Video Recorder	SRD-1694*, HRD-1642* (* is blank or N or P, N=NTSC/ P=PAL)	E158873-A144-UL	
Network Video Recorder (NVR)	XRN-2011*, XRN-2010*, XRN-3010*, XRN-1610* (* is blank or N or P: N=NTSC, P=PAL) XRN-2010P/DM, XRN-3010P/DM, XRN-3010A, XRN-2011A, XRN-2010A, XRN-1610A	E158873-A146-UL	
NETWORK CAMERA	QNO-7030R*, QNO-7020R*, QNO-7010R*, QNO-6030R*, QNO-6020R*, QNO-6010R*, QNO-6070R*, QNO-7080R* (* is N or P: N = NTSC, P=PAL)	E158873-A147-UL	

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NETWORK CAMERA	QND-7030R*, QND-7020R*, QND-7010R*, QND-6030R*, QND-6020R*, QND-6010R*, QND-6070R*, QND-7080R* (* is N or P: N = NTSC, P=PAL)	E158873-A148-UL	
NETWORK CAMERA	QNV-7030R*, QNV-7020R*, QNV-7010R*, QNV-6030R*, QNV-6020R*, QNV-6010R*, QNV-6070R*, QNV-7080R* (* is N or P: N = NTSC, P=PAL)	E158873-A149-UL	
Network Video Recorder	XRN-1610S* (* is N or P: N=NTSC, P=PAL)	E158873-A150-UL	
NETWORK CAMERA	PNF-9010RV*, PNF-9010R*, PNF-9010RVM* (* is N or P: N = NTSC, P=PAL)	E158873-A151-UL	
NETWORK CAMERA	PNM-9020V* (* is N or P: N = NTSC, P=PAL)	E158873-A152-UL	
Network Video Recorder	PRN-4011* (* is N or P: N=NTSC, P=PAL)	E158873-A153-UL	
DIGITAL COLOR CAMERA	HCP-6320* (* is N or P: N = NTSC, P=PAL)	E158873-A154-UL	
DIGITAL COLOR CAMERA	HCP-6320H* (* is N or P: N = NTSC, P=PAL)	E158873-A155-UL	
NETWORK CAMERA	PNP-9200RH*, XNP-6370RH* (* is N or P: N=NT, P=PAL)	E158873-A156-UL	
NETWORK CAMERA	XNB-8000*, XNB-6000* (* is N or P: N = NTSC, P=PAL)	E158873-A157-UL	
NETWORK CAMERA	XNO-8080R*, XNO-6080R* (* is N or P: N = NTSC, P=PAL)	E158873-A158-UL	
NETWORK CAMERA	XNV-8040R*, XNV-8030R*, XNV-8020R*, XNV-6020*, XNV-6010* (* is N or P: N = NTSC, P=PAL)	E158873-A159-UL	
NETWORK CAMERA	XND-8040R*, XND-8030R*, XND-8020R*, XND-6020*, XND-6010* (* is N or P: N = NTSC, P=PAL)	E158873-A160-UL	
NETWORK CAMERA	XNV-8080R* (* is N or P: N = NTSC, P=PAL) XNV-6080R* (* is N or P: N = NTSC, P=PAL) XNV-6080* (* is N or P: N = NTSC, P=PAL)	E158873-A161-UL	
NETWORK CAMERA	XND-8080RV*, XND-8080R*, XND-6080RV*, XND-6080R*, XND-6080V*, XND-6080* (* is N or P: N = NTSC, P=PAL)	E158873-A162-UL	
AHD Multi Directional Camera	HCM-9020VQ* (* is N or P: N = NTSC, P=PAL)	E158873-A163-UL	
NETWORK CAMERA	XNO-8020R*, XNO-8030R*, XNO-8040R*, XNO-6010R*, XNO-6020R* (* is N or P: N = NTSC, P=PAL)	E158873-A164-UL	
NETWORK CAMERA	XNV-6011* (* is N or P: N =	E158873-A165-UL	

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	NTSC, P=PAL)		
DIGITAL COLOR CAMERA	HCD-6080R*, HCD-6070R* (* is N or P: N = NTSC, P=PAL)	E158873-A167-UL	
DIGITAL COLOR CAMERA	HCV-6080R*, HCV-6070R* (* is N or P: N = NTSC, P=PAL)	E158873-A168-UL	
NETWORK CAMERA	XNP-6120H* (* is N or P: N = NTSC, P=PAL)	E158873-A169-UL	
NETWORK CAMERA	XND-8020F*, XND-6011F* (* is N or P: N = NTSC, P=PAL)	E158873-A170-UL	
NETWORK CAMERA	PNM-9080VQ* (* is N or P: N = NTSC, P = PAL)	E158873-A172-UL	
Network Storage	SRB-160S	E158873-A173-UL	
NETWORK CAMERA	TNB-6030* (* is N or P: N = NTSC, P = PAL)	E158873-A174-UL	
NETWORK CAMERA	PNM-9081VQ* (* is N or P: N = NTSC, P = PAL)	E158873-A176-UL	
NETWORK CAMERA	XNO-6085R* (* is N or P: N = NTSC, P=PAL)	E158873-A177-UL	
NETWORK CAMERA	XNB-6005* (* is N or P: N = NTSC, P=PAL)	E158873-A178-UL	
NETWORK VIDEO RECORDER	SNR-D5401N	E158873-A179-UL	
NETWORK CAMERA	XND-6085*, XND-6085V* (* is N or P: N = NTSC, P=PAL)	E158873-A180-UL	
NETWORK CAMERA	XNV-6085* (* is N or P: N = NTSC, P=PAL)	E158873-A181-UL	
NETWORK CAMERA	XNP-6040H* (* is N or P: N = NTSC, P=PAL)	E158873-A182-UL	
NETWORK VIDEO DECODER	SPD-150* (* is N or P: N = NTSC, P=PAL)	E158873-A184-UL	
DIGITAL COLOR CAMERA	HCB-6000*, HCB-7000* (* is N or P: N = NTSC, P=PAL)	E158873-A185-UL	
DIGITAL COLOR CAMERA	HCZ-6320* (* is N or P: N = NTSC, P=PAL)	E158873-A186-UL	
NETWORK CAMERA	XNF-8010RVM*, XNF-8010RV*, XNF-8010R* (* is N or P: N = NTSC, P=PAL)	E158873-A187-UL	
DIGITAL COLOR CAMERA	HCO-6070R*, HCO-6080R* (* is N or P: N = NTSC, P=PAL)	E158873-A188-UL	
NETWORK CAMERA	XNB-6001* (* is N or P: N = NTSC, P=PAL)	E158873-A189-UL	
DIGITAL COLOR CAMERA	HCO-7070R* (* is N or P: N = NTSC, P=PAL)	E158873-A190-UL	
LENS MODULE	SLA-T2480*, SLA-T2480V*, SLA-T4680*, SLA-T4680V* (* is N or P: N = NTSC, P=PAL), SLA-T4680D, SLA-T4680DW, SLA-T4680DS, SLA-T2415, SLA-T2815B.	E158873-A191-UL	
DIGITAL COLOR CAMERA	HCD-7070R* (* is N or P: N = NTSC, P=PAL)	E158873-A192-UL	
DIGITAL COLOR CAMERA	HCV-7070R* (* is N or P: N = NTSC, P=PAL)	E158873-A193-UL	



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NETWORK VIDEO RECORDER	TRM-1610S	E158873-A194-UL	
LENS MODULE	SLA-T1080F* (* is N or P: N = NTSC, P=PAL)	E158873-A195-UL	
NETWORK SWITCH	SPN-10080P, SPN-10080PM	E158873-A196-UL	
ANALOG CAMERA	HCV-7010R*, HCV-7020R*, HCV-7030R* (* is N or P: N = NTSC, P=PAL)	E158873-A197-UL	
DIGITAL COLOR CAMERA	HCD-7010R*, HCD-7020R*, HCD-7030R* (* is N or P: N = NTSC, P=PAL)	E158873-A198-UL	
DIGITAL COLOR CAMERA	HCO-7010R*, HCO-7020R*, HCO-7030R* (* is N or P: N = NTSC, P=PAL)	E158873-A199-UL	
NETWORK CAMERA	XNP-6320, QNP-6230, XNP-6321	E158873-A200-UL	
NETWORK CAMERA	XNP-6320H, XNP-6320HS, QNP-6230H, XNP-6321H	E158873-A201-UL	
NETWORK THERMAL CAMERA	TNO-4050T, TNO-4030T, TNO-4040T	E158873-A202-UL	
NETWORK THERMAL CAMERA	TNO-4051T, TNO-4041T	E158873-A204-UL	
NETWORK CAMERA	XNV-6013M	E158873-A205-UL	
NETWORK CAMERA	XNV-6012M, XNV-6012	E158873-A206-UL	
NETWORK CAMERA	XNV-6022R, XNV-6022RM	E158873-A207-UL	
NETWORK CAMERA	LNO-6070R, LNO-6071R	E158873-A208-UL	
NETWORK CAMERA	LNO-6030R, LNO-6020R, LNO-6010R, LNO-6031R, LNO-6021R, LNO-6011R, LNO-6011RW	E158873-A209-UL	
NETWORK CAMERA	LNV-6070R	E158873-A210-UL	
NETWORK CAMERA	LND-6070R, LND-6071R	E158873-A213-UL	
NETWORK CAMERA	LNV-6030R, LNV-6020R, LNV-6010R, LNV-6031R, LNV-6021R, LNV-6011R	E158873-A214-UL	
NETWORK CAMERA	LND-6030R, LND-6020R, LND-6010R	E158873-A215-UL	
NETWORK CAMERA	XNV-L6080R, XNV-L6080	E158873-A216-UL	
NETWORK CAMERA	XND-L6080RV, XND-L6080R, XND-L6080V	E158873-A217-UL	
NETWORK CAMERA	XNO-L6080R	E158873-A218-UL	
NETWORK CAMERA	PNM-7000VD	E158873-A220-UL	
NETWORK VIDEO ENCODER	SPE-410, SPE-410A* (* is Blank or N or P, N = NTSC, P = PAL)	E158873-A222-UL	
NETWORK VIDEO ENCODER	SPE-1610, SPE-1610A* (* is Blank or N or P, N = NTSC, P = PAL), NVE3016	E158873-A223-UL	
NETWORK POSITIONING CAMERA	TNU-6320	E158873-A224-UL	
Network Video Recorder	QRN-1610S	E158873-A225-UL	

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E158873	Index	X1	9	11-Oct-19

NETWORK CAMERA	QNE-7080RV, QNE-6080RV	E158873-A226-UL	
NETWORK CAMERA	PNM-9000VQ	E158873-A227-UL	
Network Camera	XNP-6550RH, XNP-6320RH, XNP-6250RH, QNP-6230RH	E158873-A229-UL	
NETWORK CAMERA	PNM-9320VQP, PNM- 9321VQP.	E158873-A230-UL	
NETWORK CAMERA	XNZ-6320	E158873-A231-UL	
NETWORK ENCODER	SPE-110N, SPE-110A* (* is Blank or N or P, N = NTSC, P = PAL)	E158873-A232-UL	
THERMAL POSITIONING CAMERA	TNU-4041T, TNU-4051T	E158873-A233-UL	
NETWORK CAMERA	PNM-9030V	E158873-A234-UL	
NETWORK CAMERA	TNV-7010RC	E158873-A235-UL	
NETWORK CAMERA	XND-8081VZ, XND-8081FZ, XND-6081VZ, XND-6081FZ	E158873-A236-UL	
DIGITAL COLOR CAMERA	HCF-8010V	E158873-A239-UL	
ANALOG CAMERA	HCO-6020R	E158873-A241-UL	
NETWORK CAMERA	XNV-6081, XNV-6081R, XNV- 8081R	E158873-A242-UL	
NETWORK VIDEO RECORDER	TRM-810S, TRM-410S	E158873-A243-UL	
ANALOG CAMERA	HCD-6020R, HCD-6010	E158873-A244-UL	
NETWORK CAMERA	XND-6081V, XND-6081F, XND- 6081RV, XND-6081RF, XND- 8081RV, XND-8081RF	E158873-A245-UL	
NETWORK CAMERA	XND-L6080	E158873-A246-UL	
NETWORK CAMERA	TNO-6010M	E158873-A247-UL	
ANALOG CAMERA	SCO-6085R	E158873-A248-UL	
NETWORK CAMERA	PNM-9000VD	E158873-A249-UL	
NETWORK CAMERA	QND-6083R, QND-6082R, QND-6073R, QND-6072R, QND-6032R, QND-6022R, QND-6012R	E158873-A250-UL	
NETWORK CAMERA	QNE-8021R, QNE-8011R	E158873-A251-UL	
NETWORK CAMERA	QND-8021, QND-8011	E158873-A252-UL	
NETWORK CAMERA	QNO-8080R, QNO-8010R, QNO-8020R, QNO-8030R	E158873-A253-UL	
NETWORK CAMERA	QND-6021, QND-6011	E158873-A254-UL	
NETWORK CAMERA	QNO-6083R, QNO-6082R, QNO-6012R, QNO-6022R, QNO-6032R, QNO-6072R, QNO-6073R	E158873-A255-UL	
NETWORK CAMERA	QNV-6083R, QNV-6082R, QNV- 6073R, QNV-6072R, QNV- 6012R, QNV-6022R, QNV- 6032R	E158873-A256-UL	
NETWORK CAMERA	QNV-8080R, QNV-8010R, QNV- 8020R, QNV-8030R	E158873-A257-UL	
NETWORK CAMERA	QND-8080R, QND-8010R, QND-8020R, QND-8030R	E158873-A258-UL	

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E158873	Index	X1	10	11-Oct-19

NETWORK CAMERA	QNF-8010	E158873-A259-UL	
NETWORK CAMERA	LNV-6012R, LNV-6022R, LNV-6032R	E158873-A260-UL	
NETWORK CAMERA	LNV-6072R	E158873-A261-UL	
NETWORK CAMERA	LND-6012R, LND-6022R, LND-6032R	E158873-A262-UL	
NETWORK CAMERA	LND-6072R	E158873-A263-UL	
NETWORK CAMERA	QNV-6024RM, QNV-6023R	E158873-A264-UL	
NETWORK CAMERA	LNO-6012R, LNO-6022R, LNO-6032R	E158873-A265-UL	
NETWORK CAMERA	LNO-6072R	E158873-A266-UL	
Digital Video Recorder	HRX-1621* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A267-UL	
Digital Video Recorder	HRX-821* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A268-UL	
NETWORK THERMAL CAMERA	TNO-3010T, TNO-3020T, TNO-3030T	E158873-A269-UL	

# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20191014-E158873  
**Report Reference** E158873-A269-UL  
**Issue Date** 2019-OCTOBER-14

**Issued to:** Hanwha Techwin Co Ltd  
6, Pangyo-ro 319beon-gil, Bundang-gu  
Seongnam-si Gyeonggi-do 13488 KOREA

**This certificate confirms that  
representative samples of**

INFORMATION TECHNOLOGY EQUIPMENT INCLUDING  
ELECTRICAL BUSINESS EQUIPMENT  
NETWORK THERMAL CAMERA  
TNO-3010T, TNO-3020T, TNO-3030T

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.


**Standard(s) for Safety:** UL 60950-1 and CAN/CSA C22.2 No. 60950-1-07 -  
Information Technology Equipment - Safety - Part 1:  
General Requirements

**Additional Information:** See the UL Online Certifications Directory at  
<https://iq.ulprospector.com> for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program  
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2019-05-09 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Listing
<b>CCN:</b>	NWQG, NWGQ7 (Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	NETWORK THERMAL CAMERA
<b>Model:</b>	TNO-3010T, TNO-3020T, TNO-3030T
<b>Rating:</b>	Rated Input: 24 Vac, 50/60 Hz, 0.7 A or 12 Vdc, 0.65 A or PoE (48 Vdc), 0.18 A
<b>Applicant Name and Address:</b>	HANWHA TECHWIN CO LTD 6, PANGYO-RO 319BEON-GIL, BUNDANG-GU SEONGNAM-SI KOREA, REPUBLIC OF

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: Sungil Kim

Reviewed by: Seungtae Kim

**Supporting Documentation**

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
  - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
  - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
  - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

**Product Description**

NETWORK THERMAL CAMERA intended for indoor use. Electronic components were mounted on PWB and housed in metal enclosure and supplied by SELV and LPS.

**Model Differences**

- Basic model is TNO-3030T. (Lens size: 13.7mm)
- Model TNO-3020T is identical to basic model TNO-3030T except for Lens size. (Lens size: 4.7 mm)
- Model TNO-3010T is identical to basic model TNO-3030T except for Lens size. (Lens size: 2.7 mm)

**Technical Considerations**

- Equipment mobility : Fixed
- Connection to the mains : N/A
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC I
- Mains supply tolerance (%) or absolute mains supply values : No direct connection
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class III (supplied by SELV)
- Considered current rating of protective device as part of the building installation (A) : N/A
- Pollution degree (PD) : PD 2
- IP protection class : IP 66
- Altitude of operation (m) : less than 2000 meters
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : 2.61
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 60 °C
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual

<b>Additional Information</b>	
Original (4789142682) - Maximum normal load: Continuous operation.	
<b>Additional Standards</b>	
The product fulfills the requirements of: N/A	
<b>Markings and instructions</b>	
Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
Replaceable batteries	"CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions."
Website Manual -1	This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from 24 Vac (50/60 Hz) min.0.7 A or 12 Vdc, min. 0.65 A or PoE(48V), 0.18 A.
Website Manual -2	The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802-3af shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1.
Website Manual -3	ITE is to be connected only to PoE networks without routing to the outside plant.  Unit is intended for installation in a Network Environment 0 as defined in IEC TR 62102. As such, associated Ethernet wiring shall be limited to inside the building.
Hard Copy	A. IMPORTANT B. See Installation Instructions Before Connecting to the Supply C. Company website URL ( <a href="https://www.~~">https://www.~~</a> )

<b>Special Instructions to UL Representative</b>	
N/A	

**Production-Line Testing Requirements**

**Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.**

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
N/A	N/A	N/A	N/A	N/A	N/A	N/A

**Earthing Continuity Test Exemptions - This test is not required for the following models:**

All models

**Electric Strength Test Exemptions - This test is not required for the following models:**

All models

**Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:**

**Sample and Test Specifics for Follow-Up Tests at UL**

Model	Component	Material	Test	Sample(s)	Test Specifics
N/A					



1.5.1	TABLE: list of critical components					Pass
Object/part or Description	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
Enclosure (Metal)	Interchangeable	Interchangeable	Aluminium, Min. 3.0 mm thickness, see enclosure for dimension.	-	-	
Interface board cover (Internal)	LOTTE ADVANCED MATERIALS CO LTD	NH-1035(+)	Min. 1.5 mm thickness, rated V-0, 80 deg.C.	QMFZ2/8	UL (E115797)	
Fuse (F1) - Interface board	LITTELFUSE INC	449 Series	125 V, 2 A	JDYX2/8	UL (E10480)	
Fuse (F1) - Power board	LITTELFUSE INC	449 Series	125 V, 2 A	JDYX2/8	UL (E10480)	
Lithium Battery (BAT1)	SEIKO INSTRUMENTS INC MICRO-ENERGY DIV	ML414H	Lithium (Coin), Rechargeable, Max Charging voltage: 3.4 Vdc, Max Charging current: 300 mA	BBCV2	UL (MH15628)	
Transformer (T8)	SHENZHEN GROUP-TEK ELECTRONICS TECHNOLOGY CO LTD	EE1936R	130 deg.C, see enclosure for mode detail.	-	-	
Line Filter (T3)	SHENZHEN GROUP-TEK ELECTRONICS TECHNOLOGY CO LTD	PCM10020R	130 deg.C, Rated Min. 3.0 mH, Base: V-0	-	-	
Line Filter (T7)	SHENZHEN GROUP-TEK ELECTRONICS TECHNOLOGY CO LTD	PCM10021R	130 deg.C, Rated Min. 18.0 mH, Base: V-0	-	-	
Connectors and Receptacles (Secondary circuits)	Interchangeable	Interchangeable	-	ECBT2 or RTRT2	UL	
Connectors and Receptacles (Secondary circuits) (alternate)	Interchangeable	Interchangeable	Copper alloy pins housed in bodies of plastic rated Min. V-2	QMFZ2	UL	

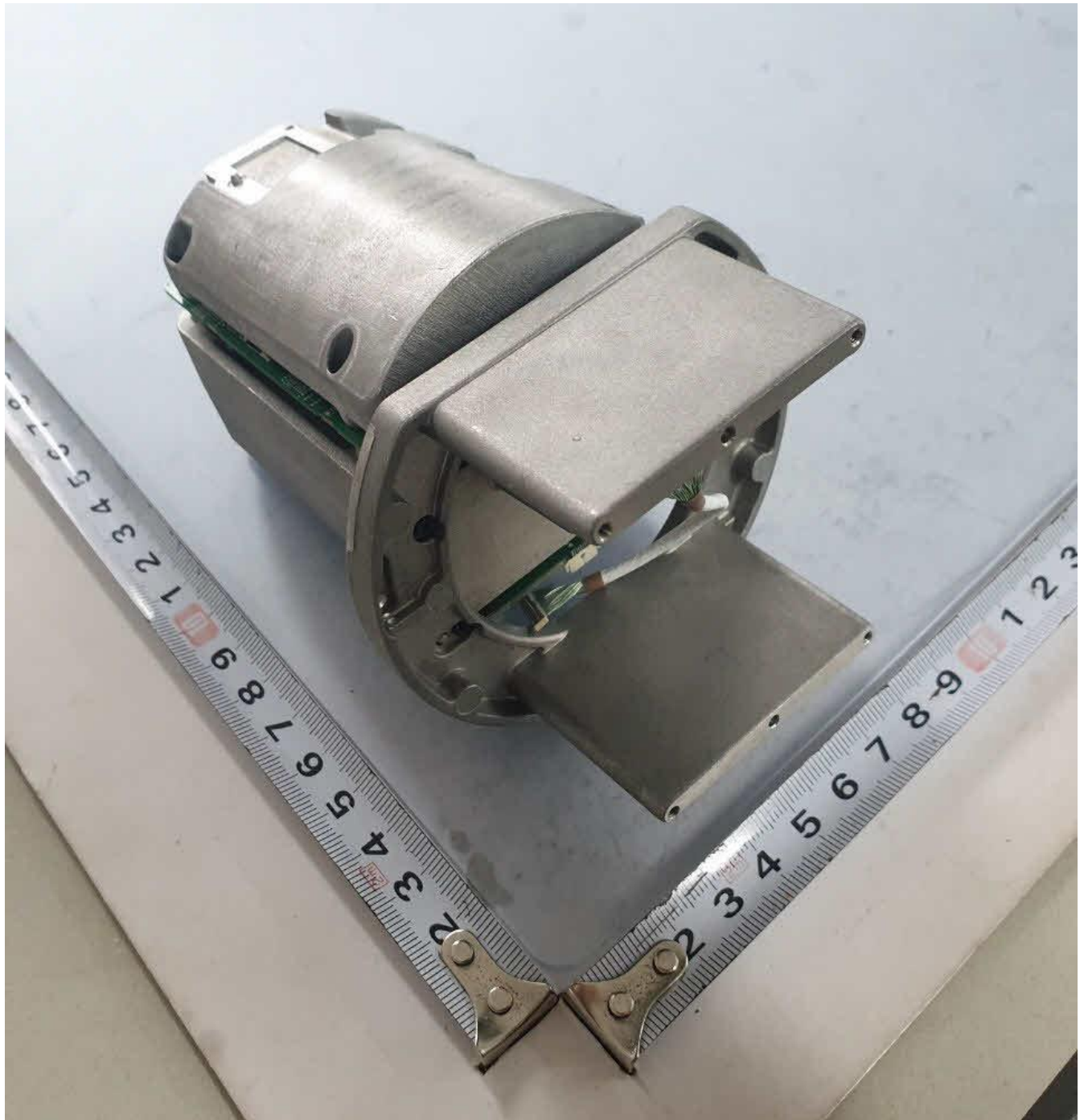
Internal Wiring (Secondary)	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; Min. 30 V, 80 deg.C	AVLV2	UL	
Thermal Pad	KOMOTECH CO LTD	KGP-1(a)	Min. 0.35 mm thickness, rated V-0, 150 deg.C	QMFZ2/8	UL (E245303)	
Cable	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; Min. 30 V, 80 deg.C	AVLV2	UL	
FPWB	Interchangeable	Interchangeable	Min. V-0, 80 deg.C.	QMFZ2 or QMTS2	UL	
PWB	Interchangeable	Interchangeable	Min. V-1, 105 deg.C.	ZPMV2	UL	
Label	Interchangeable	Interchangeable	Min. 60 deg.C, if max. surface temperature not specified.	PGDQ2 or PGJ12	UL	

## **Enclosures**

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	Overall -1
Photographs	3-02	Overall -2
Photographs	3-03	Internal -1
Photographs	3-04	Internal -2
Photographs	3-05	Power board (Top)
Photographs	3-06	Power board (Bottom)
Photographs	3-08	Main board (Top)
Photographs	3-09	Main board (Bottom)
Photographs	3-10	Interface board (Top)
Photographs	3-11	Interface board (Bottom)
Photographs	3-12	Camera sensor (Top)
Photographs	3-13	Camera sensor (Bottom)
Manuals	6-01	Manual
Miscellaneous	7-01	Enclosure dimension
Miscellaneous	7-02	Transformer (T8) spec
Miscellaneous	7-03	Label
Miscellaneous	7-04	Dual language safety labeling CRD

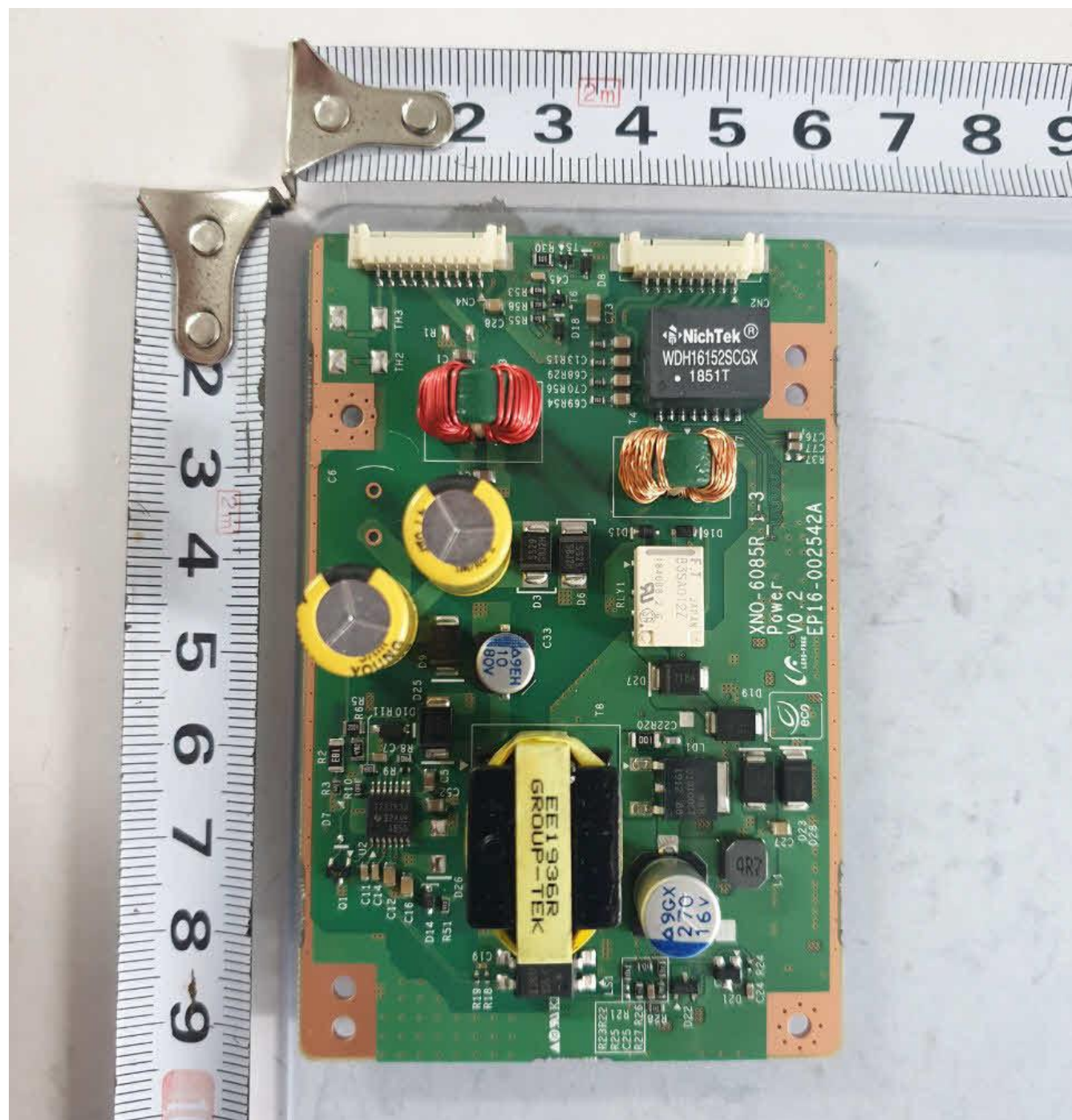




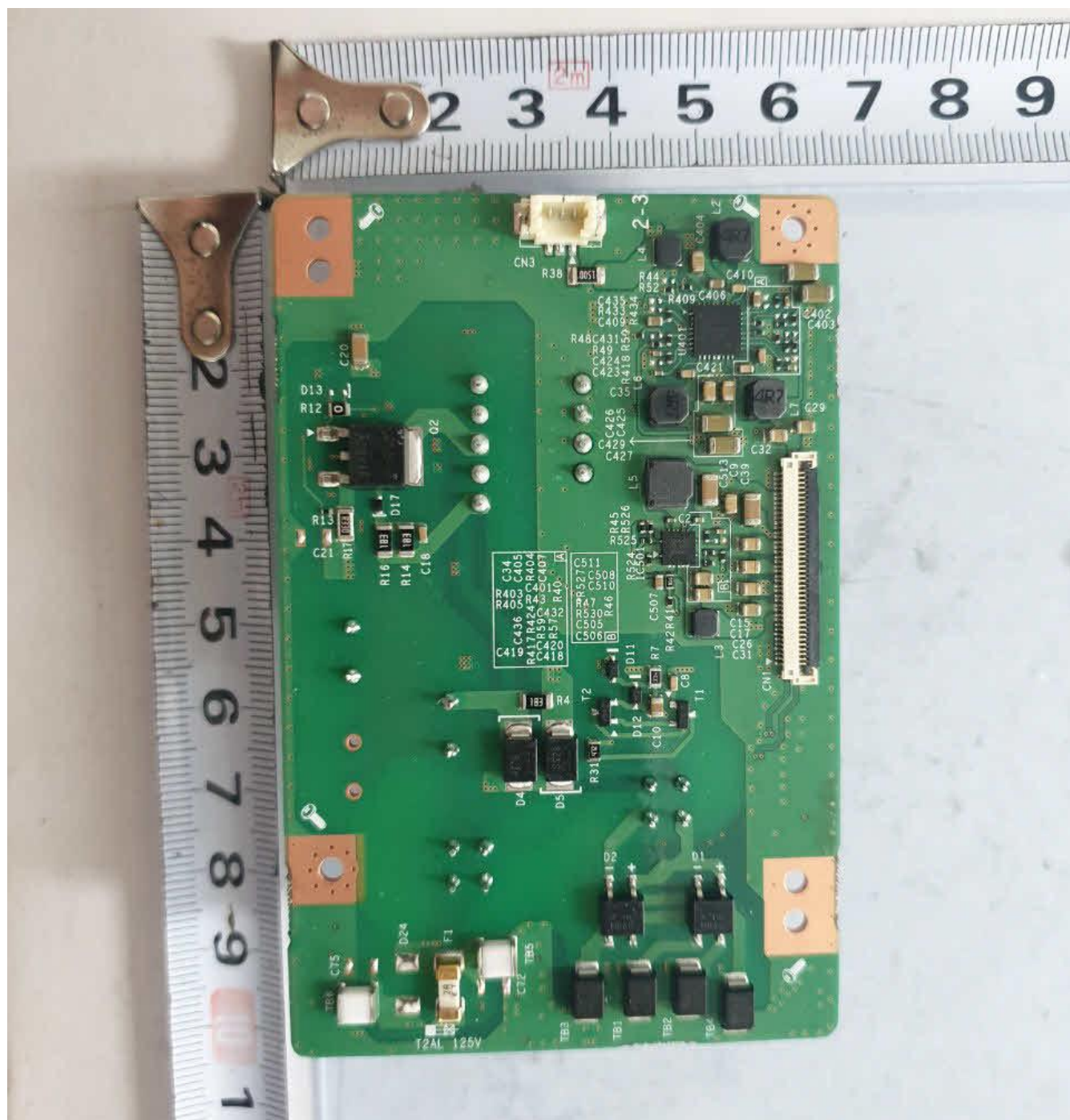


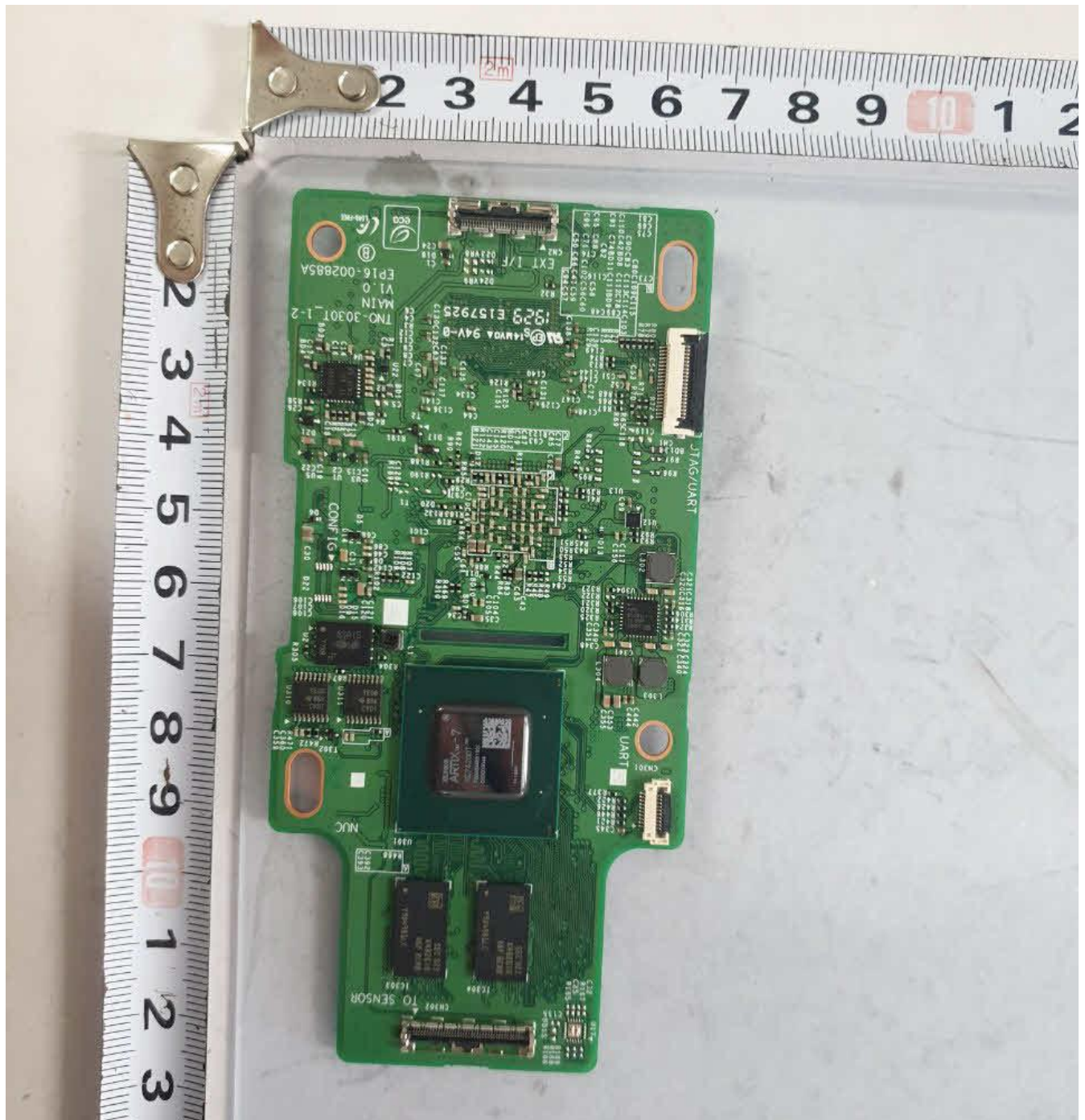






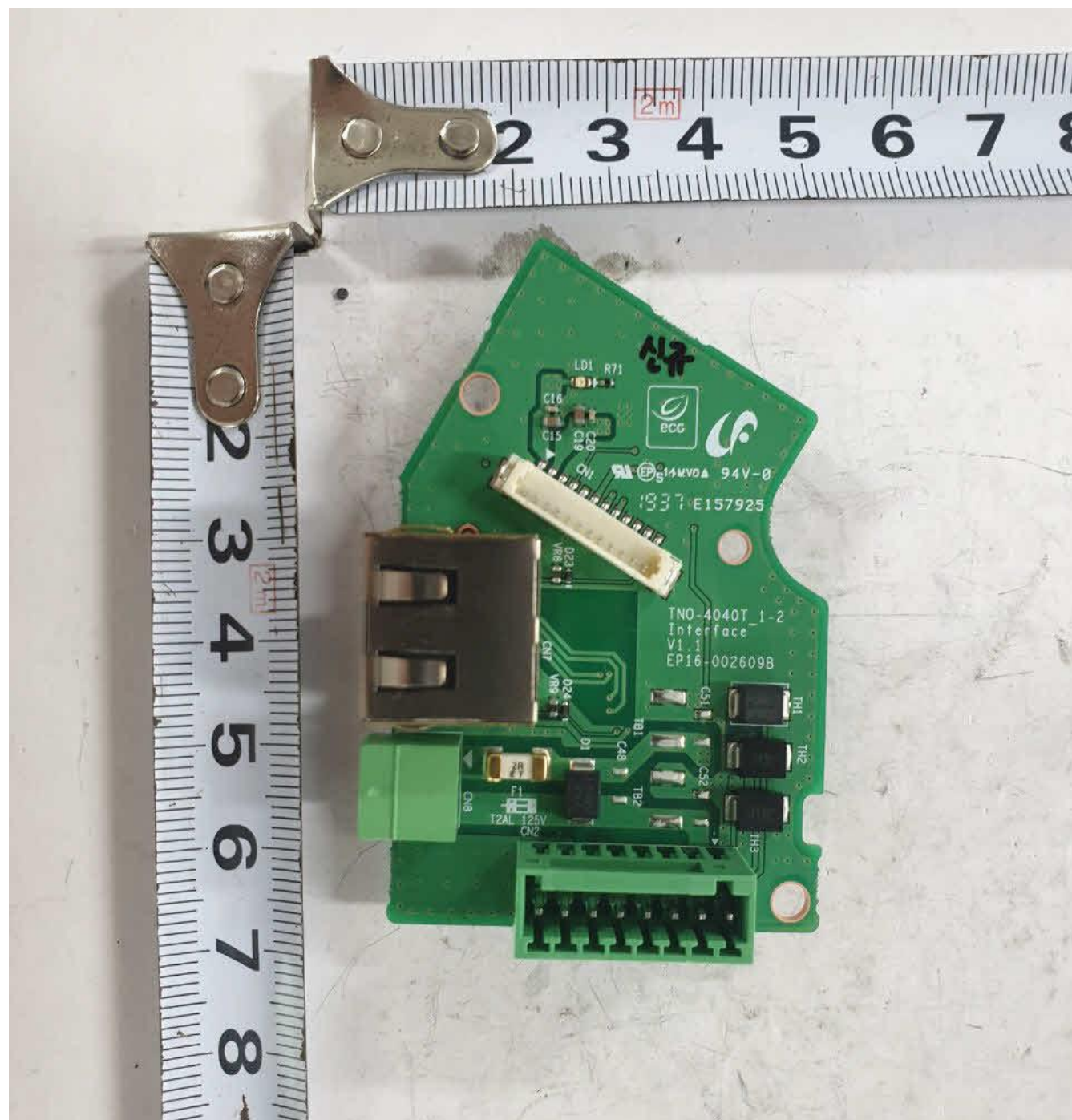




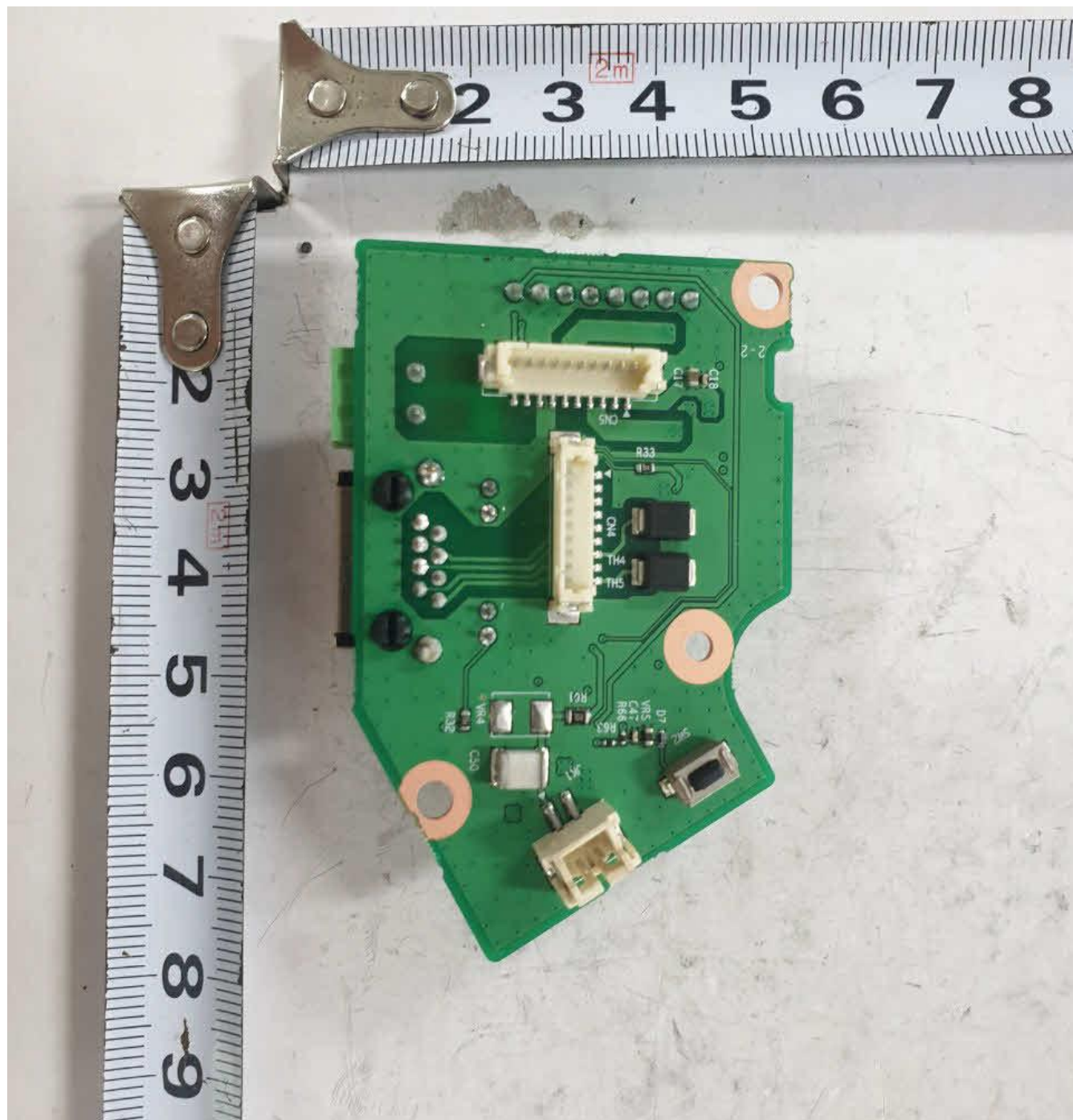




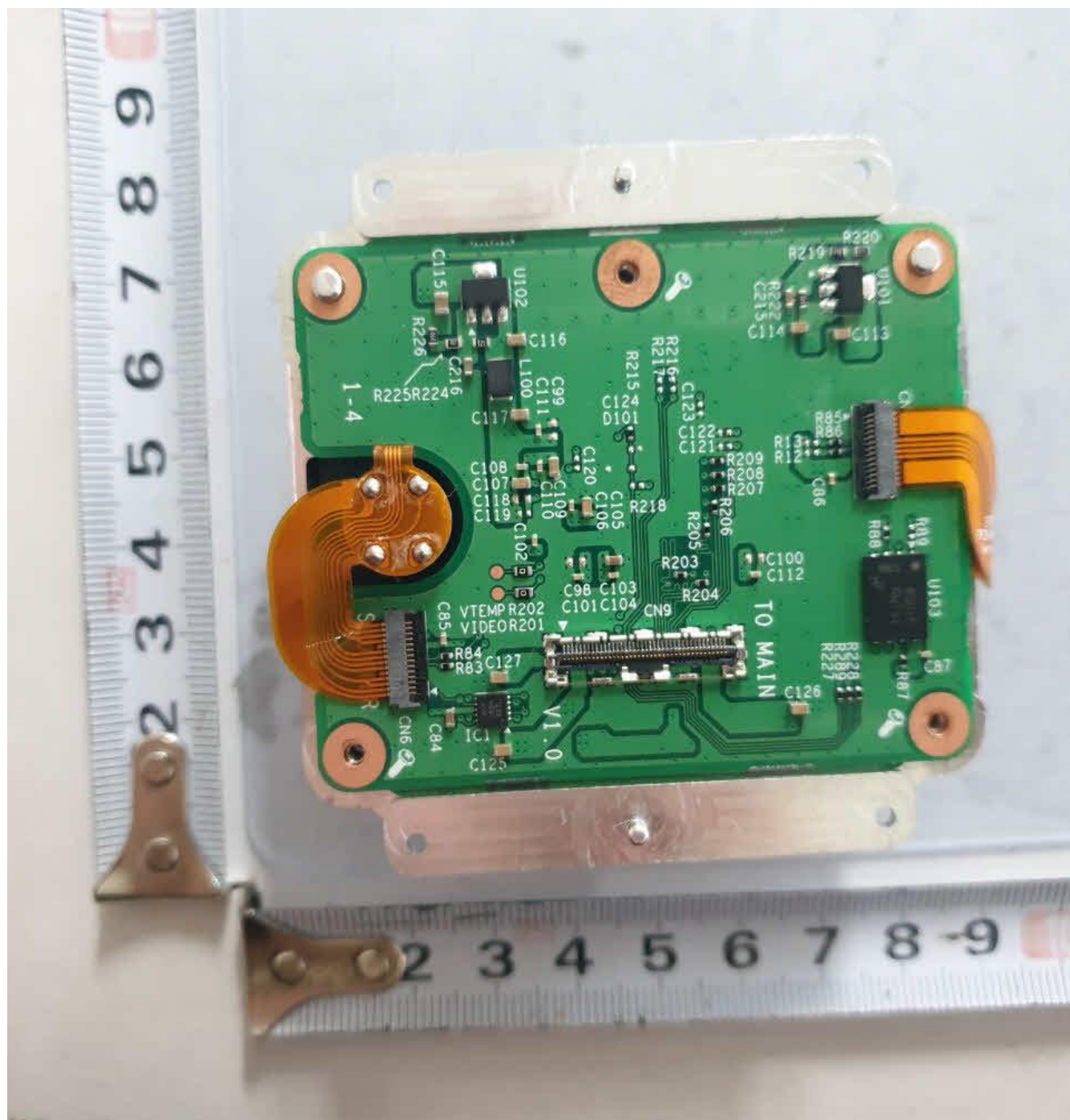












## overview

## IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth.  
(Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/ accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from 24 Vac (50/60 Hz) min. 0.7 A or 12 Vdc, min. 0.65 A or PoE(48 V), 0.18 A.
16. This product is intended to be supplied by isolation power.
17. If you use excessive force when installing the product, the camera may be damaged and malfunction. If you forcibly install the product using non-compliant tools, the product may be damaged.
18. Do not install the product in a place where chemical substances or oil mist exists or may be generated. As edible oils such as soybean oil may damage or warp the product, do not install the product in the kitchen or near the kitchen table.  
This may cause damage to the product.
19. When installing the product, be careful not to allow the surface of the product to be stained with chemical substance.  
Some chemical solvents such as cleaner or adhesives may cause serious damage to the product's surface.
20. If you install/disassemble the product in a manner that has not been recommended, the production functions/ performance may not be guaranteed.  
Install the product by referring to "Installation & connection" in the user manual.
21. Installing or using the product in water can cause serious damage to the product.



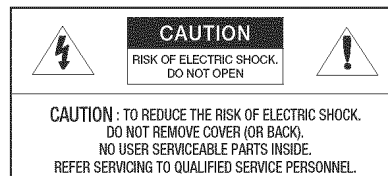
## WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECT THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

Apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

To prevent injury, this apparatus must be securely attached to the Wall/ceiling in accordance with the installation instructions.

## CAUTION



## EXPLANATION OF GRAPHICAL SYMBOLS



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.



## overview

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### Class I construction

An apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

### Battery

Batteries (battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like.

### Disconnection Device

Disconnect the main plug from the apparatus, if it's defected. And please call a repair man in your location.

**When used outside of the U.S., it may be used HAR code with fittings of an approved agency is employed.**

### CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.  
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

### ATTENTION

IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT.

METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

These servicing instructions are for use by qualified service personnel only.

To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

The CVBS out terminal of the product is provided for easier installation, and is not recommended for monitoring purposes.

Please use the input power with just one camera and other devices must not be connected.

**The ITE is to be connected only to PoE networks without routing to the outside plant.**

The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802-3af shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1.

Unit is intended for installation in a Network Environment 0 as defined in IEC TR 62102.  
As such, associated Ethernet wiring shall be limited to inside the building.

Please read the following recommended safety precautions carefully.

- Do not place this apparatus on an uneven surface.
- Do not install on a surface where it is exposed to direct sunlight, near heating equipment or heavy cold area.
- Do not place this apparatus near conductive material.
- Do not attempt to service this apparatus yourself.
- Do not place a glass of water on the product.
- Do not install near any magnetic sources.
- Do not block any ventilation openings.
- Do not place heavy items on the product.
- Please wear protective gloves when installing/removing the camera.  
The high temperature of the product surface may cause a burn.

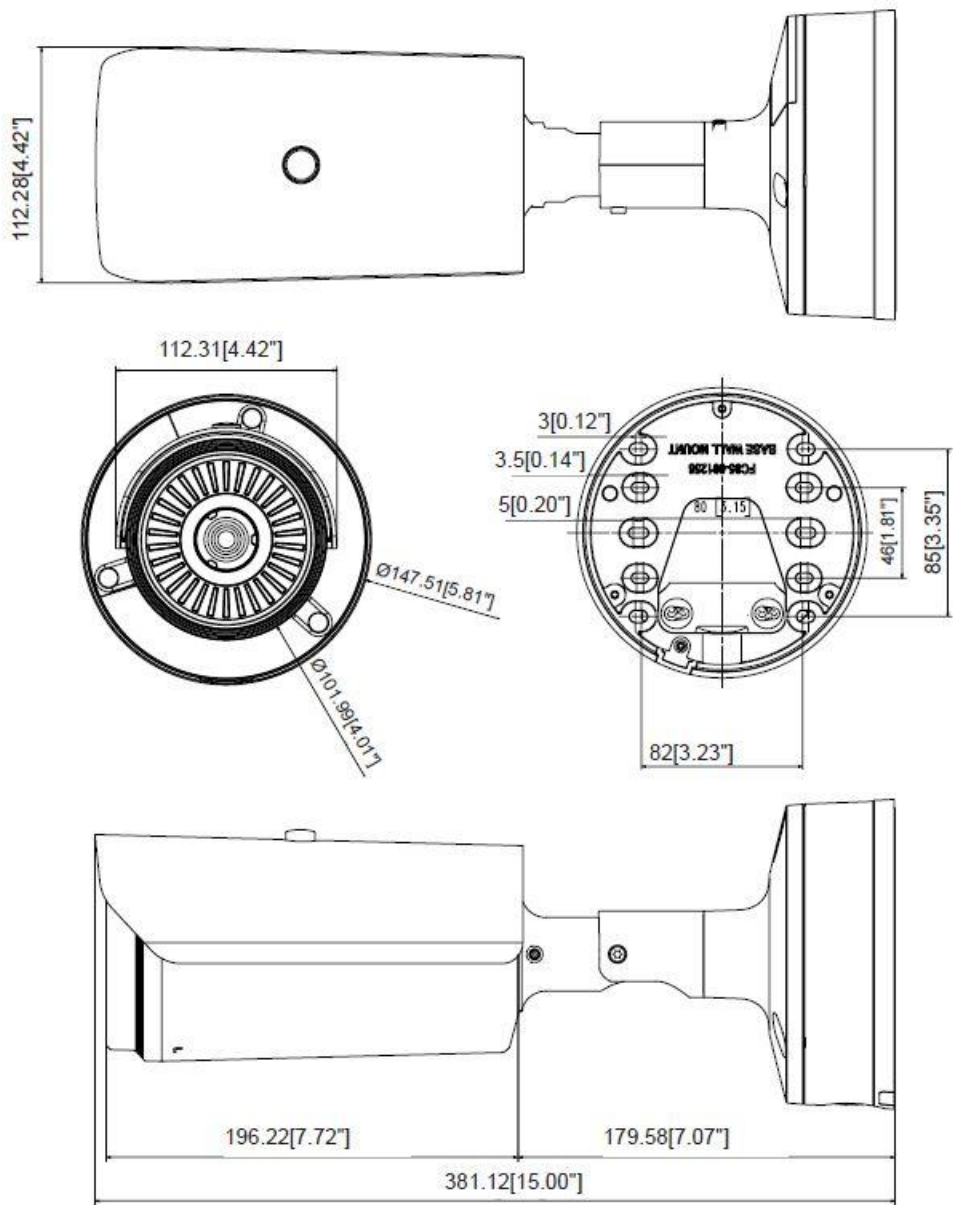
User's Manual is a guidance book for how to use the products.

The meaning of the symbols are shown below.

- Reference : In case of providing information for helping of product's usages
  - Notice : If there's any possibility to occur any damages for the goods and human caused by not following the instruction
- ※ Please read this manual for the safety before using of goods and keep it in the safe place.

PRODUCT OVERVIEW

Unit : mm [inch]



GROUP-TEK<sup>®</sup>

## 承认书

## SPECIFICATION FOR APPROVAL

客户名称 CUSTOMER	
客户料号 MODEL NO.	EP23-001074A
产品名称 PART NAME	POWER TRANSFORMER
产品型号 PART TYPE	EE1936R
版本 REV	X1
签名 SIGNATURE	制图:  审核:  批准:
客户承认 CUSTOMER APPROVAL	承认印: SIGNET 签名: SIGNATURE

深圳市联泰兴电子科技有限公司

SHENZHEN GROUP-TEK ELECTRONICS TECHNOLOGY CO., LTD

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ADD: No.1 Block, WeiTai Rd. Ying Ren Shi Industry Park, Shi Yan Sub-District, Bao'An ShenZhen,

TEL: +86-755-29810619 29810976 FAX: +86-755-29810159

Http://www.group-tek.com E-mail:sale1@group-tek.com

**Revision History:**

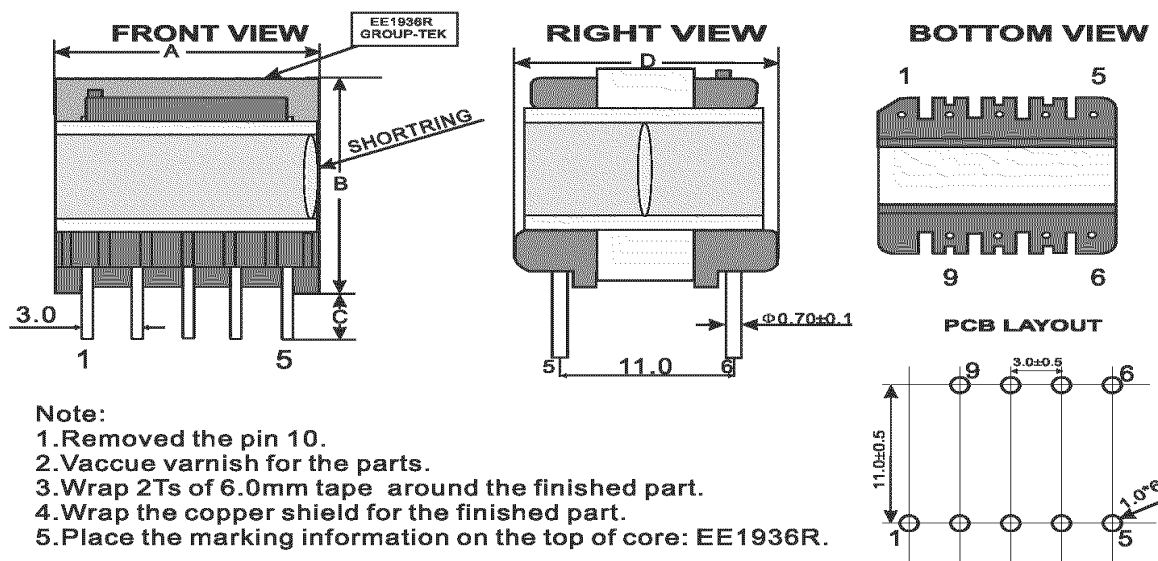
Revision	Revision Descriptions	Drawn by	Checked by	Approved by	Issued data
X0	New revision	黄春梅	杨时启	欧阳佰萍	2016-12-05
X1	Update the varnish UL file No.	黄春梅	杨时启	欧阳佰萍	2016-12-16

# GROUP-TEK<sup>®</sup>

A Leading Supplier of Magnetic Components

## EE1936R

### 2. Mechanical Dimensions:



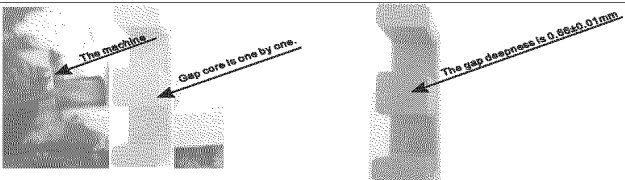

Unit: mm

A Max	B Max	C +/-0.5	D Max
20.5	20.0	3.5	16.5

**3. Electrical Characteristics :**

Specifications: at 25°C . Operating Temperature -40 to +125°C			
NO.	ITEM	TEST CONDITION	SPECIFICATION
1	Inductance	(1-3)@200kHz, 1.0Vac	160uH±7%.
2	Inductance	(4-5)@200kHz, 1.0Vac	76.5uH±15%.
3	Inductance	(7-9)@200kHz, 1.0Vac	60uH±15%.
4	Leakage Inductance	(1-3)@200kHz, 1.0Vac shorted other pins.	15uH Max.
5	DCR	(1-3) @ 25°C	0.265Ω Max.
6	DCR	(4-5) @ 25°C	0.970Ω Max.
7	DCR	(7-9) @ 25°C	0.096Ω Max.
8	HI-POT	PRI--SEC,AUX	1000Vac,5mA,60SEC
9	HI-POT	PRI,SEC,AUX--CORE	1000Vac,5mA,60SEC
10	INSULATION RESISTANCE	PRI--SEC DC500V	100MΩ Min.
11		PRI--CORE DC500V	100MΩ Min.
12		SEC--CORE DC500V	100MΩ Min.

**4.Overhauling List.**

NO.	ITEM	SPECIFICATION
1	Tape turns	2T
2	Shield copper	0.025mm*7mm
3	Winding turns	N1:50T N2:30T N3:50T N4:32T
4	Pins order/Pin connection .	1T
5	Marking Information	EE1936R GROUP-TEK
6	Gap the center leg	
7	Solder Temperature	

# GROUP-TEK<sup>®</sup>

A Leading Supplier of Magnetic Components

## EE1936R

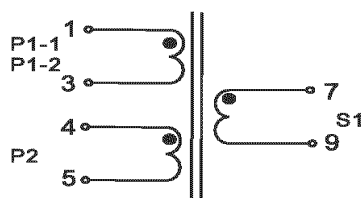
### 4. Winding Information:

WINDING SEQ.	ST-FN	WIRE/FOIL	TURNS	TURNS/LAYER (REF)	WRAP INSUL.	SLEEVE	NOTE
P1-1	1--3	0.30mm 2UEW	50	50	2T w9.3mm	N/A	1,2.
S1	7--9	3*0.32mm 2UEW	30	30	2T w9.3mm	N/A	1,2.
P1-2	1--3	0.30mm 2UEW	50	50	2T w9.3mm	N/A	1,2.
P2	4--5	0.20mm 2UEW	32	32	3T w9.3mm	N/A	1,2.

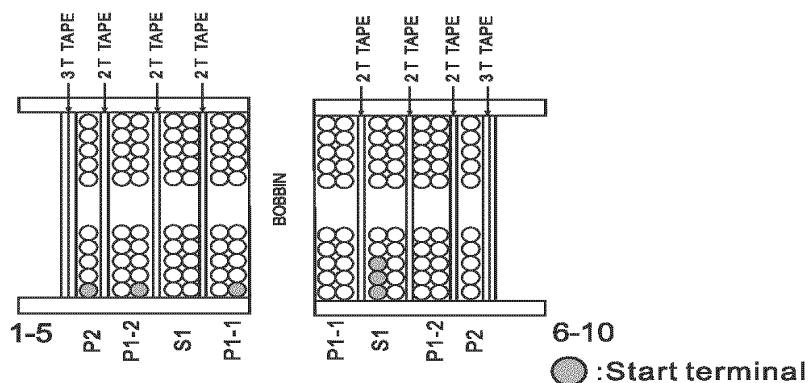
#### Note:

1. Place the bobbin pins left side of operator.
2. Clockwise and close winding.

### 5. Schematic:



### 6. Winding construction



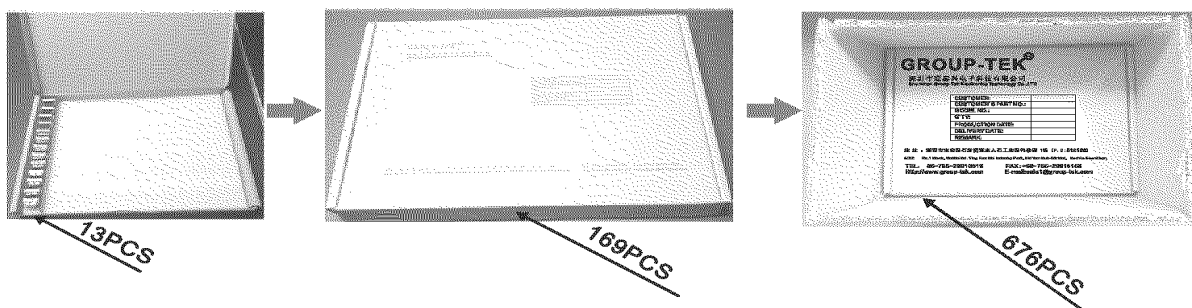


## 7. Material List

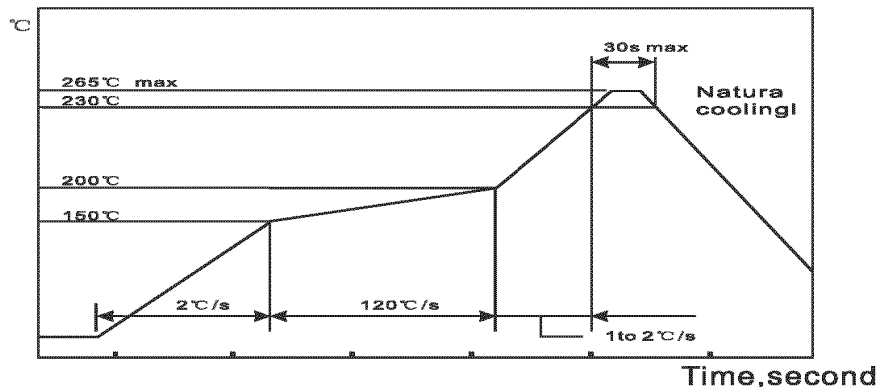
NO.	ITEM.	MATERIALS	SUPPLIERS/MANUFACTURES	UL FILE NO.
1	BOBBIN	PHENOLIC T375J UL RATING: 94V-0	CHANG CHUN PLASTICS CO LTD.	QMFZ2.E59481
2	CORE	EE 19 PG 232	High-tech Electronics Co.,Ltd	N/A
3	WIRE	POLYURETHANE ENAMELED TYPE NO: 2UEW / MW82-C THERMAL RATING:180°C	ZHU HAI SUNTEK WIRE COLTD	OBMW2.E234867
4	TAPE	ADHESIVE POLYESTER TAPE TYPE NO.:HMT803(YELLOW) THERMAL RATING:130°C	Shen zhen XinHuaHui Packing material Co.,Ltd	E328315
5	SOLDER	SN/CU: 99.3/0.7	Gao Xin stannum industry Co.,Ltd	N/A
6	Varnish	E962	ZHU HAI CHANGXIAN NEW MATERIALS TECHNOLOGY CO LTD.	OBOR2.E335405

## 8. Packing Information:

DESCRIPTION	QTY
PIECES PER CELL	1
PIECES PER TRAY	169
PIECES PER BOX	676
GROSS WEIGHT PER BOX(KG)	7.85
NET WEIGHT PER BOX(KG)	9.25



Recommended Lead Free IR Reflow Curve



Item	Solder chuique simulation	Tempe rature (°C")	Time (°C)	Temperature ramp/immersion and emerion rate
1	Solder irom	350±10 (solder iron temp)	4~5	
2	IR/convection reflow	255±5 (component temp)	30±5	1°C/s~4°C/s time above 183°C 90~120s

\* The curve includes recommended value only, please adjust your equipment to make sure the solder process. Details please refers to the standard J-STD-020.

## 2. Reliability Test Criteria.

- 2.1 Operating temperature range: -40°C to +85°C
- 2.2 Terminal strength: Pull test withstand 9.8N 60+/-0.5S no looseness or movement.
- 2.3 Solderbilty: Dipped in 245°C +/-5°C molten solder for 3+/-0.5 seconds, 95% min shall be smooth any and bright.
- 2.4 Resistance to soldering heat : Convection reflow condition setting: peak temperature at 260°C +0/-5°C above 217°C for 90-180 seconds, ramp-up rate 2-3°C/s. Ramp-down rate 6°C/s Max. No mechanical problem found. No electrical failure found per our specification.
- 2.5 Vibration: 1.5mm amplitude total excursion 10-55-10 Hz traversed in 1minute, x.y.z, axis for 2 hours. Shall not be any abnormality.
- 2.6 Random drop (Packing condition): Height 60cm, 3 times on the wood floorboard ,shall not be any abnormality.
- 2.7 Dry heat: 100+/-2°C 96 hours.
- 2.8 Cold: -20+/-2°C 96 hours.
- 2.9 Damp Heat: 60+/-2°C , 93+/-3% RH 96 hours.
- 2.10 Change of temperature: exposed 5 cycle; each consisting of 30 minutes at -20+/-2°C ,2-3 minutes at 20+/-2°C ,30 minutes at 85+/-2°C , 2-3 minutes at 20+/-2°C .

Remarks: After reliability test per item 7,8,9,10 in prior to the test as specified, the transformer / coil would be exposed to the room temperature for 1-2 hours, the component meets all requirements according to this specification.

GROUP-TEK®

深圳市联泰兴科技电子有限公司

样品测试记录表

日期:2016-12-16

产品型号: EE1936R			样品数量: 5 PCS		测试仪器: TH-2819		页码: 1/1	
No.	ITEM	CONDATION	SPEC.	sample #1	sample #2	sample #3	sample #4	sample #5
1	Inductance	(1-3)@200kHz, 1.0v	160uH±7.0%	163.1	165.2	163.2	160.3	166.3
2	Inductance	(4-5)@200kHz, 1.0v	76.5uH±15.0%	69.39	70.5	72.1	73.4	70.2
3	Inductance	(7-9)@200kHz, 1.0v	60.0uH±15.0%	60.38	61.2	62.34	63.15	61.2
4	Leakage Inductance	(1-3)@200kHz, 0.1v	15uH Max	2.15	1.84	2.12	2.03	2.16
5	DCR	(1-3) @ 25° C	0.265 Ω Max	0.219	0.217	0.216	0.213	0.216
6	DCR	(4-5) @ 25° C	0.970 Ω Max	0.816	0.803	0.813	0.821	0.8212
7	DCR	(7-9) @ 25° C	0.096 Ω Max	0.0784	0.0779	0.0789	0.0765	0.0769
8	HI-POT	PRI TO SEC	1000Vac 5mA 60Sec.	PASS	PASS	PASS	PASS	PASS
9	HI-POT	PRI, SEC TO CORE	1000Vac 5mA 60Sec.	PASS	PASS	PASS	PASS	PASS
10	INSULATION RESISTANCE	PRI--SEC DC500V	100M Ω Min	300	300	300	300	300
11	INSULATION RESISTANCE	PRI--CORE DC500V	100M Ω Min	300	300	300	300	300
12	INSULATION RESISTANCE	SEC--CORE DC500V	100M Ω Min	300	300	300	300	300
13	DIM A		20.5mmMAX	19.63	19.62	19.56	19.73	19.34
14	DIM B		20.0mmMAX	18.00	18.23	18.15	18.34	18.13
15	DIM C		3.5±0.5mm	3.54	3.65	3.76	3.54	3.63
16	DIM D		16.5mmMax	15.12	15.32	15.13	15.12	15.12
17	Pitch		3.0mm±0.5mm	3.07	3.04	3.06	3.04	3.04
18	Row Spacing		11.0mm±0.5mm	11.14	11.19	11.20	11.21	11.29
测试环境:			25℃	湿度:	65%			
测试: 吴伟康				审核:	欧阳佰萍			

**Manufacturing Process Diagram**

Effective date: 2016-10-31

P/N: EE1936R

version: A

No.	Process name	Equipment	Jig	Control points	documents	Control method	Frequency	Responsible	Related records	remark		
1	Winding	Manual winding machine	Small scissors	1.wirespecifications, tape specifications. 2 winding number, cable, winding direction, start stop pin.	Work instructions	First piece inspection	when changing bobbins.	IPQC	1.Process inspection table 2.First article inspection table	Equipment daily maintenance record		
		Automatic winding machine	The clamping head			Patrol	2H/time					
						Self check	100%				operator	
2	Connection	N/A	pliers	height, wire according to seek into the groove, when wire can not touch the bent pin cause unevenness.	Work instructions/ Process standards	Patrol	2H/time	IPQC	Process inspection table			
						Self check	100%		operator		N/A	
3	Semi finished products solder	solder tin pot	dip tin jig	Temperature	Work instructions/ Process standards	Measurement	time/day	IPQC	The curve of temperature	Equipment daily maintenance record		
				The pin should be light, can not have even tin, tin hook.		Patrol	2H/time		Process inspection table			
						Self check	100%		operator		N/A	
4	Assemble magnetic core	N/A	N/A	Paired assembly, core P/N, damaged.	Work instructions	Patrol	time/2H	IPQC	Process inspection table			
						Self check	100%		operator		N/A	
5	Wrap tape	tape wrapping machine	The clamping head	Tape head position, tape turns, tape P/N, tape damaged.	Work instructions/ Process standards	Patrol	time/2H	IPQC	Process inspection table	Equipment daily maintenance record		
						Self check	100%		operator		N/A	
6	Semi finished product testing	Comprehensive tester	test jig	1. identification good and NG parts 2. The golden sample, 3. Test conditions.	Work instructions	Patrol	time/2H	IPQC	Straightening machine record/ Process inspection table	Equipment daily maintenance record		
						check by the golden samples	Replacement of P/N:		IPQC/operator		Process inspection table	
						Self check	100%		operator		N/A	
7	varnish/baking	Dispensing machine	The dispensing tube / needle	The period of validity, foot glue, less viscose glue, adhesive to tape	Work instructions/ Process standards	Patrol	time/2H	IPQC	Process inspection table	Equipment daily maintenance record		
						Self check	100%		N/A			
		Oven	N/A	Temperature		Measurement	time/day	IPQC	The curve of temperature			
				baking time		Patrol	time/2H		operator		Process inspection table	
						Self check	100%		operator		baking record table	
8	Printing	Printing machine	Printing tool/ Printing plate	Printing information	Work instructions/ Process standards	First piece inspection	Replacement of P/N:	IPQC	Process inspection table	Equipment daily maintenance record		
						Patrol	time/2H					
						Self check	100%		operator		N/A	
9	solder tinning	solder tin pot	dip tin jig	Temperature	Work instructions/ Process standards	Measurement	time/day	IPQC	The curve of temperature	Equipment daily maintenance record		
				The pin should be light, can not have even tin, tin hook.		Patrol	time/2H		Process inspection table			
						Self check	100%		operator		N/A	

10	inspection	N/A	jig	Printing information/core loose / core damage /wire not in the slo/the solder joint height/ poor tinning/bobbin damaged/ surface dirty,etc	Work instructions/ Process standards	Patrol	time/2H	IPQC	Process inspection table	
						Self check	100%	operator	N/A	
11	Hi-pot test	Hi-pot tester	test jig	1. identification good and NG parts 2. The golden sample, 3. Test conditions.	Work instructions	Patrol	time/2H	IPQC	Process inspection table	Equipment daily maintenance record
						check by the golden samples	Replacement of P/N:	IPQC/operator	Straightening machine record/ Process inspection table	
						Self check	100%	operator	N/A	
12	Finished product testing	Comprehensive tester	test jig	identification good and NG parts	Work instructions	Patrol	time/2H	IPQC	Straightening machine record/ Process inspection table	Equipment daily maintenance record
						check by the golden samples	Replacement of P/N:	IPQC/operator	Straightening machine record	
						Self check	100%	operator	N/A	
13	Template	template	Parallel-jaw vice	Solder joints, feet high tilt/deformation	Work instructions	Patrol	time/2H	IPQC	Process inspection table	Equipment daily maintenance record
						Self check	100%	operator	N/A	
14	Packing	N/A	Box sealing machine	Pull cover check	1. Work instructions 2. Packing specification 3. Packaging and shipment labeling instructions	AQL check	Replacement of P/N:	FQC	pull test record	Equipment daily maintenance record
				check model / pin#1 / qty /the qty per box		1. Sequential inspection 2. FQC checks 3. Rewind the tape to check	Each batch	operator FQC	N/A	
				check label		1. Sequential inspection 2. FQC checks	Each batch	operator FQC	N/A	

PM-004 REV:C

Making:

Checked:

Approved:





Project No. 4789142682 File E158873 Page 1  
 Compliance Review Conducted by: \_\_\_\_\_ Date \_\_\_\_\_  
 Printed Name Signature

Standard SCC Requirements and Guidance - Product Certification Body Accreditation Program Edition/ Revision Date 2016-04-06

Clause/Par. Reference and Construction Requirement	Comply			Comments/Measurements	Inst. ID No.
	Yes	No	N/A		
9.2.3 CBs shall include dual language safety labeling within their product certification requirements, if so required by the standard or by the authority having jurisdiction.					
The manufacturer has confirmed they have the ability to include English and French safety labeling exactly as specified in the product standard; or, if NOT specified in the product standard, the ability to include English and French safety labelling consisting of markings associated with the signal words DANGER, WARNING, and CAUTION when required.	X			The ability of the manufacturer to include these markings was verified by either (1) visual inspection of the markings on the actual product or (2) draft of labels that will be applied to the product or (3) written confirmation from the customer of the markings that will appear on the product. If the product standard provides the exact translation, the evidence must match the exact translation. If the product standard does NOT provide the exact translation, the evidence must simply include both the English and French text (no verification of translation is required).	N/A

Project No. 4789142682

File E158873

Page 2

Compliance

Review

Conducted by:

Date

Printed Name

Signature

Clause/Par. Reference and Construction Requirement	Comply			Comments/Measurements	Inst. ID No.
	Yes	No	N/A		
Manufacturer has a method to manage distribution of products, IF all products with the Canadian certification mark are NOT going to include the dual language.	X			<p>Evaluation staff are to only verify that the manufacturer has a method to control distribution.</p> <p>Evaluation staff do not have to record the method of control nor are the evaluation staff expected to verify the effectiveness of the method of control. This requirement to verify that a method exists will be noted in the FUS Procedure. The UL Field Engineer will verify the method during surveillance.</p> <p>If the manufacturer is going to include the dual language on all products with the Canadian certification mark, then this item is N/A; no further action required.</p>	N/A

## Test Record

**Test Record No. 1**

1. Test result relate only to the items tested.

2. The manufacturer submitted representative production samples of NETWORK THERMAL CAMERA, Model TNO-3030T.,.

3. Only the test listed were considered necessary.

The following tests were conducted:

Test	Testing Location/Comments
End Product Reference Page	
General Guidelines	
Input: Single-Phase (1.6.2)	
SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4, Part 22 6.1)	
Determination of Working Voltage; Working Voltage Measurement (2.10.2)	
Loading - Wall and Ceiling Mounted Equipment (4.2.10)	
Battery (4.3.8)	
Heating (4.5.1, 1.4.12, 1.4.13)	
Component Failure (5.3.1, 5.3.4, 5.3.7)	
Locked-Rotor Overload for DC Motors in Secondary Circuits (Annex B.7)	

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following supplements are provided as a part of this Test Record. NOTE: These supplements are only available to the Applicant via the CDA system.

Type	Supplement Id	Description
Attachment	2-01	Datasheet