DIVISION – 28 ELECTRONIC SAFETY AND SECURITY
LEVEL 1__28 20 00 ELECTRONIC SURVEILLANCE
LEVEL 2__28 23 00 VIDEO SURVEILLANCE
LEVEL 3__28 23 29 VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS

PART 2 – PRODUCTS

2.01 GENERAL

A. All equipment and materials used shall be standard components that are regularly manufactured and used in the manufacturer's system.

B. All systems and components shall have been thoroughly tested and proven in actual use.

C. All systems and components shall be provided with an explicit manufacturer warranty.

2.02 SRD-1654D 16 CHANNEL H.264 REAL TIME DIGITAL VIDEO RECORDER

A. The digital video recorder (DVR) shall support 16 channels and provide recording rates of 480 frames per second (fps) on NTSC systems and 400 fps on PAL systems. The DVR shall display high-resolution images at a maximum of 928 x 480 pixels on NTSC systems and 928 x 576 on PAL systems.

B. The DVR shall offer combined VGA/HDMI video output for main display; H.264 video compression and G.711 audio compression; up to 4 audio inputs and 1 audio output, and PTZ control using RS-485.

C. The DVR shall support network monitoring and integration using Samsung central monitoring system.

D. All operation and configuration menus shall be provided in several languages, including English, French, German, Spanish, Italian, Russian, Polish, Czech, Turkish, Netherlands, Portuguese, Swedish, Danish, Rumania, Serbia, Croatia, Hungary, Greek, Finnish, Norwegian, Korean, Japanese, Chinese (Traditional), Thai, Taiwanese.

2.03 DISPLAY

A. Video	
1. Inputs	16 Composite video 0.5-1 Vpp, 75 ohm automatic termination
2. Resolution	NTSC : 928 x 480, 704 x 480 PAL : 928 x 576, 704 x 576
B. Live	
1. Frame Rate	NTSC : 480fps PAL : 400fps
2. Resolution	NTSC : 928 x 480, 704 x 480 PAL : 928 x 576, 704 x 576
3. Multi Screen Display	1 , 4 , 7 , 9 , 13 , 16 , 16A , Sequence , PIP

2.04 PERFORMANCE

A. Operating System	Embedded Linux
B. Recording	

1. Compression	H.264
2. Record Rate	NTSC : Up to 120fps@928 x 480 / PAL : Up to 100fps@928 x 576 NTSC : Up to 120fps@704 x 480 / PAL : Up to 100fps@704 x 576 NTSC : Up to 240fps@704 x 240 / PAL : Up to 200fps@704 x 288 NTSC : Up to 480fps@352 x 240 / PAL : Up to 400fps@352 x 288
3. Mode	NTSC : Manual, Schedule (Continuous / Event), Event (Pre / Post), Time lapse (1~30 fps) PAL : Manual, Schedule (Continuous / Event), Event (Pre / Post), Time lapse (1 ~ 25fps)
4. Event	Video loss, Motion (Level 1 ~ 10), Alarm
5. Overwrite Modes	Selectable (Stop / Continuous)
6. Pre-alarm	Up to 30sec (5, 10, 20, 30sec)
7. Post-alarm	Up to 6hour (5,10, 20, 30sec, 1, 3, 5, 10, 20min, 1, 2, 3, 4, 5, 6hour)
C. Search & Playback	
1. Search Mode	Date/Time, Event, Back up, POS, Motion (*All search include preview function)
2. Playback Function	Fast forward / backward (2x, 4x, 8x, 16x, 32x, 64x) Slow forward / backward (1/2x, 1/4x, 1/8x) Step forward / backward (2x, 4x, 8x, 16x, 32x, 64x) *In Fast and Step backward, backward play with i-frame only
D. Network	
1. Transmission Speed	4CIF / 2CIF / CIF (NTSC : 120 / 240 / 480fps, PAL : 100 / 200 / 400fps)
2. Bandwidth	Up to 32Mbps
3. Bandwidth Control	Selectable
4. Stream	H.264 (4CIF / 2CIF / CIF selectable)
5. Max. Remote Users	Search 3 / Live unicast 10 / Live multicast 20
6. Protocol Support	TCP/IP, DHCP, PPPoE, SMTP, NTP, HTTP, DDNS, RTP, RTSP, SNMP
7. Monitoring	SmartViewer, Webviewer, SSM (CMS)
E. Smartphone	
1. Platform	Android, iOS
2. Protocol Support	RTP, RTSP, HTTP, CGI
3. Monitoring	Live 2, Search 1
F. Storage	
1. Internal HDD	Up to 4 SATA HDDs
2. DVD Writer(Back up)	Yes
3. USB (Back up)	2 USB Ports
4. File Format (Back up)	BU (DVR Plater), EXE(Include player), AVI
G. Security	
1. Password Protection	1 Admin, 10 Group, 10 User per 1 group
2. Data Authentication	Watermark

2.05 INTERFACE

A. Monitors	
1. VGA	1 VGA (1280 x 720, 1280 x 1024, 1920 x 1080)
2. HDMI	1 HDMI (1280 x 720, 1280 x 1024, 1920 x 1080)
3. Spot Composite	Digital spot (2CH) *Incldued OSD on screen, multi mode support (1CH)

B. Audio

1. Inputs	4CH line in
2. Outputs	1CH line out
3. Compression	G.711
4. Sampling Rate	8KHz

C. Alarm

1. Inputs	Terminal 16 inputs (NO/NC)
2. Outputs	Terminal 4 relay outputs (NO/NC)
3. Rating	30V DC/2A, 250V AC/0.25A
4. Remote Notification	Notification via e-mail

D. Connections

1. Ethernet	1 RJ-45 10/100/1000 Base-T
2. Serial Interface	RS-232/RS-485 for PTZ, Samsung system keyboard
3. USB	USB 2.0, 2 ports
4. Application Support	Mouse, Remote controller
5. RS-485 Protocol	Samsung-T/E, Pelco-D/P, Panasonic, Phillips, AD, DIAMOND, ERNA, KALATEL, VCL TP, VICON, ELMO, GE

2.06 GENERAL

A. Electrical

1. Input Voltage/Current	100 ~ 240V AC ±10%, 50/60Hz, Auto ranging
2. Power Consumption	Max. 60W (With 1x HDD)

B. Environmental

1. Operating Temperature	+0°C ~ +40°C (+32°F ~ +104°F)
2. Operating Humidity	20% ~ 85% RH

C. Mechanical

1. Dimensions	W440.0 x H88.0 x D246.8mm (17.32" x 3.46" x 9.72")
2. Weight(with HDDs)	Approx. 5.2Kg (11.46 lb)
3. Rack Mount Kit	2ea

B. Audio	English, French, German, Spanish, Italian, Russian, Polish, Czech, Turkish, Netherlands, Portuguese, Swedish, Danish, Rumania, Serbia, Croatia,Hungary, Greek, Finnish, Norwegian, Korean, Japanese, Chinese (Traditional), Thai, Taiwanese (25 Language)

2.07 CERTIFICATIONS

A. CE mark
B. FCC mark

2.08 WARRANTY

3 years, parts and labor.