

IT Convergence LED Lightng Security

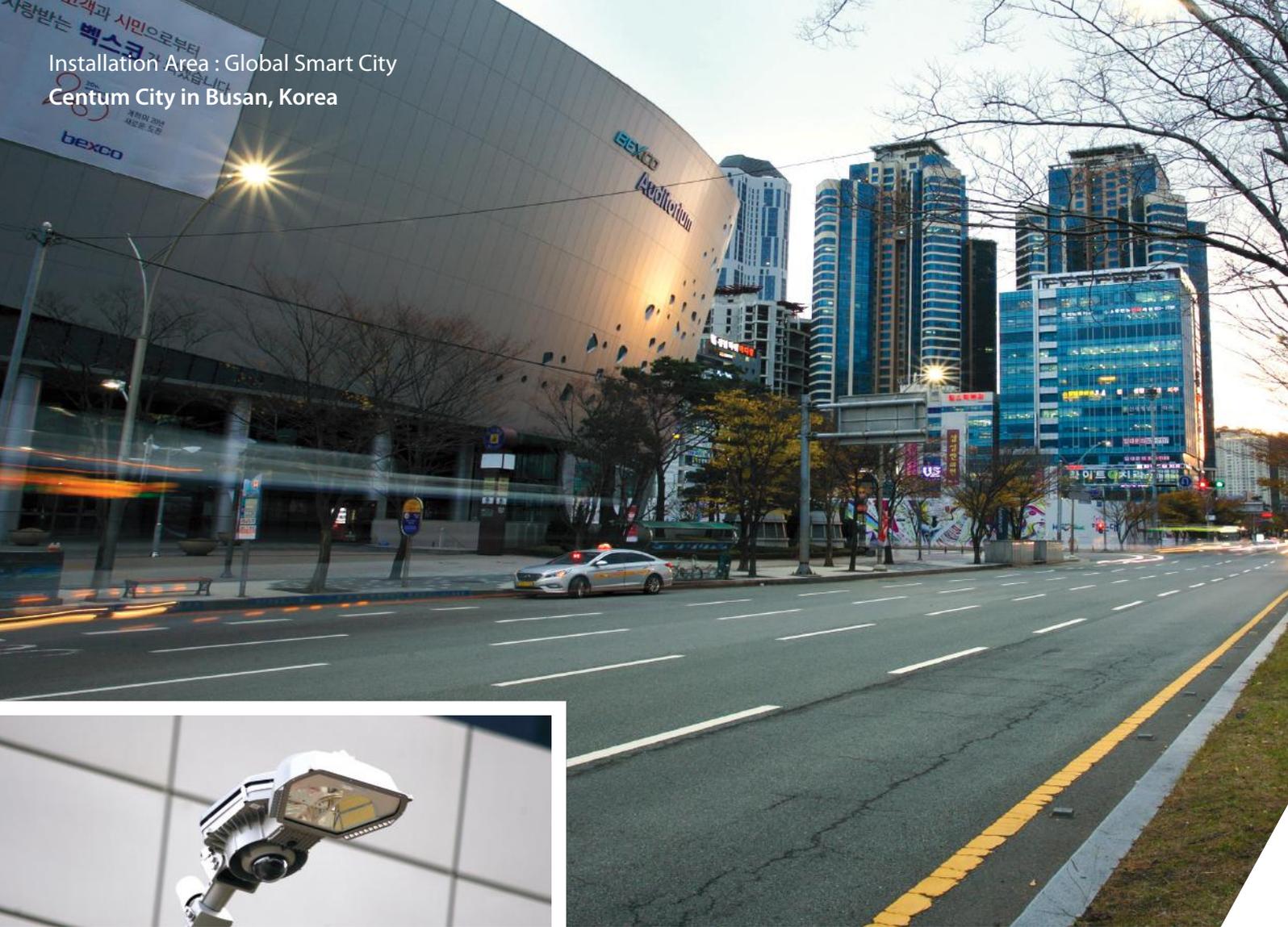
CASE STUDY

Global Smart City

Centum City In Busan, Korea

GigaTera[®]
beyond

Installation Area : Global Smart City Centum City in Busan, Korea



Summary

'Busan's Global Smart City TestBed Complex Development Project' to be built in the surrounding area of Haeundae Busan will develop the Test-Bed foundation for the internet of Things (*IoT), and provide cutting edge technology and services as part of a project that is being implemented to promote the spread of IoT service not to mention industrial activation, will build an open smart city platform based on SKT*, and will even provide 30 substantiation services from 4 fields that were developed by small and medium IT enterprises across Korea. The projects major TestBed services include everything from smart streetlights, smart parking and other advanced transportation amenity services to protection for the vulnerable in society, lost child prevention, maritime safety, context-aware and other security services, energy management for stores and buildings, marketing support for small merchants and other transportation and safety, and small and medium enterprise support fields.

GigaTera installed 39 units of 'SPES-SETA, the IT convergence streetlights,' and together installed 22 units of general security lighting, 'SETA(LT)'. More specifically, with this project, aside from the basic functions of SPES-SETA, the product was seen as loyal to the role of IoT based smart streetlights as it was true to its name when it was connected to other brands of IT technology.

- * IoT (Internet of Things): intelligent technology and service based on the internet by connecting all things and allowing for a mutual interaction between people and things, things and things and things and systems.
- * Test-Bed, a test environment where the diverse software or equipment that has been developed can be tested under the same environment as in real life before the product is released into the market
- * SKT (SK Telecom)

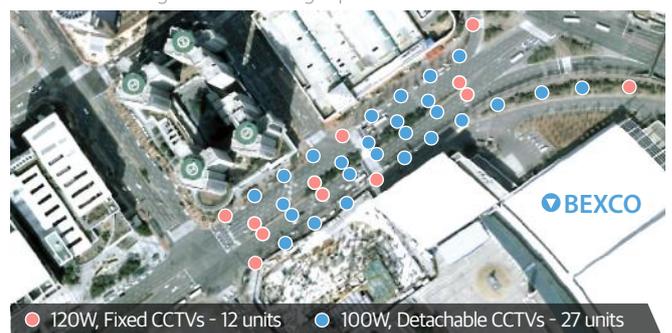
Project

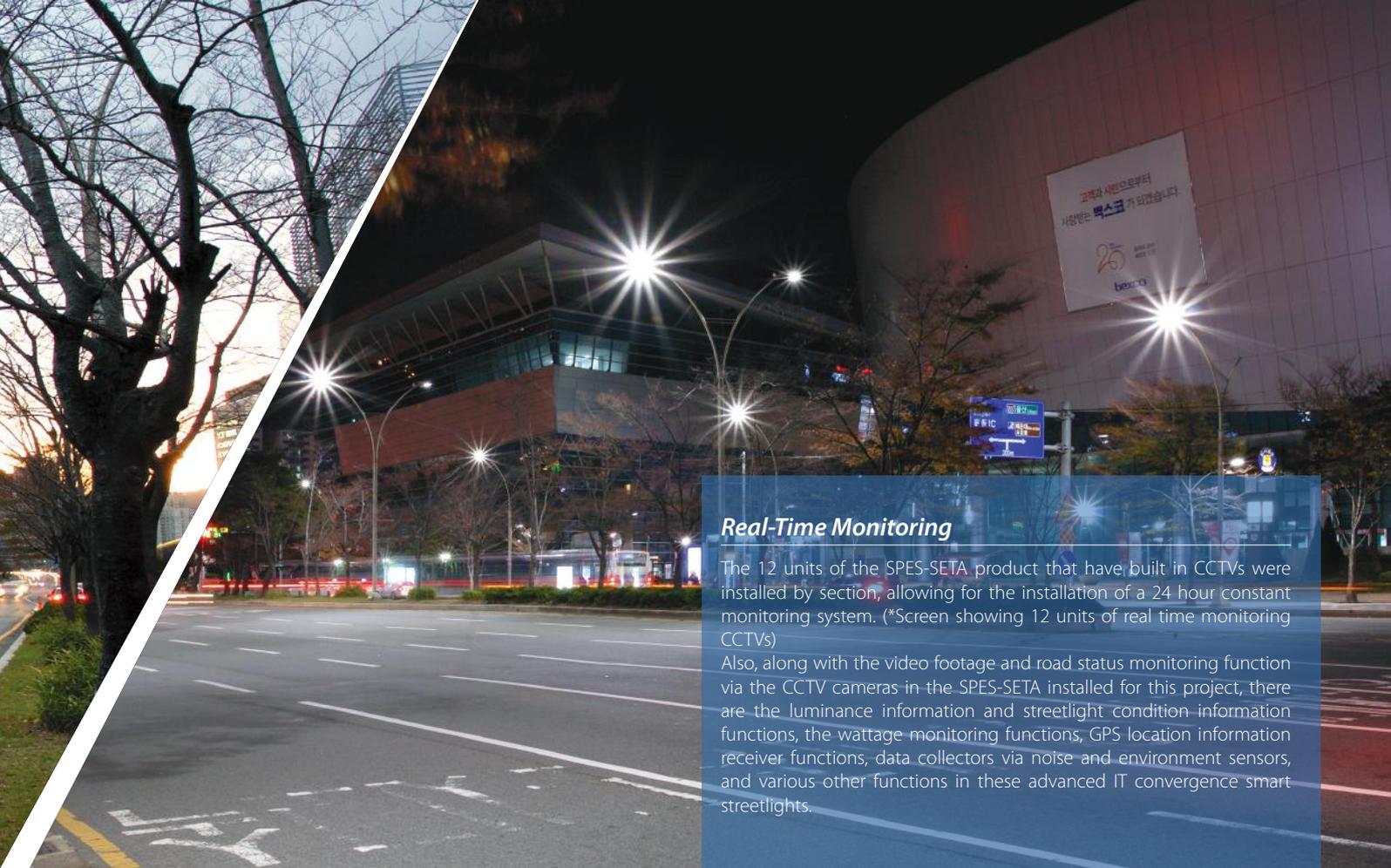
GigaTera's SPES-SETA product was installed in a section of Centum City along about 300 meters of road, and together with department store and hypermarkets that went in nearby it is located across the street from the BEXCO* international exhibition center, where there is much foot traffic and nearby landmark buildings. It could be said to have the optimal conditions for a test bed.

An energy reduction of 60% was achieved by replacing 250W of metal halide lighting at a 1:1 ratio with SPES-SETA 100W, and this made additional energy reductions possible through wireless lighting controls. 2 units of SPES-SETA, and 2 units of SETA (LT) have been installed along the median and both sides of the 12 lane road, and 2 units of SPES-SETA were installed along the median lane. The total 39 units of SPES-SETA and 22 units of SETA were installed.

* BEXCO : Busan Exhibition & Convention Center

* The image only shows the SPES-SETA product, but the SETA security lighting was installed together with the light poles located on either side.





Real-Time Monitoring

The 12 units of the SPES-SETA product that have built in CCTVs were installed by section, allowing for the installation of a 24 hour constant monitoring system. (*Screen showing 12 units of real time monitoring CCTVs)

Also, along with the video footage and road status monitoring function via the CCTV cameras in the SPES-SETA installed for this project, there are the luminance information and streetlight condition information functions, the wattage monitoring functions, GPS location information receiver functions, data collectors via noise and environment sensors, and various other functions in these advanced IT convergence smart streetlights.



Results & Benefits

- Solve various urban problems of safety and security using advanced ICT technology
- The role of a public platform that actively handles all situations that may occur on the street by integrating LED lighting, security cameras, and wireless network technology
- Reductions in labor and costs related to maintenance thanks to individual and the situation monitoring of streetlights via control devices are possible
- Diverse convergence related services available for the streetlights and poles for the use of an expanded infrastructure
- 60% energy reduction by replacing existing 250W lighting with 100W lighting

Site Information

Application	IT Convergence LED Lighting
Location	Area Surrounding the Busan Centum City
Light sources	SEPE-SETA SETA(Linear Tilt)
Lighting support	GigaTera SPES Team

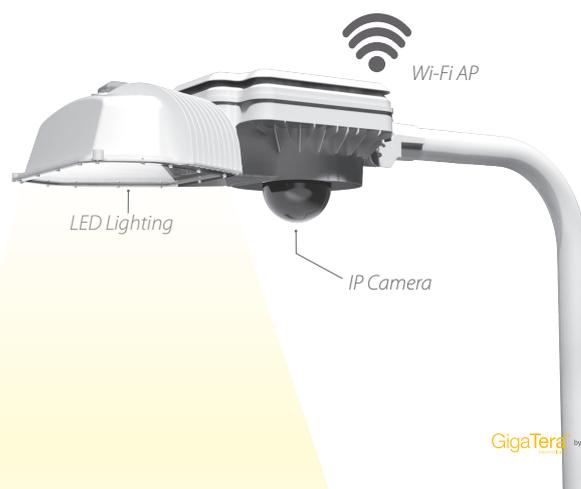
SPES-SETA Specification

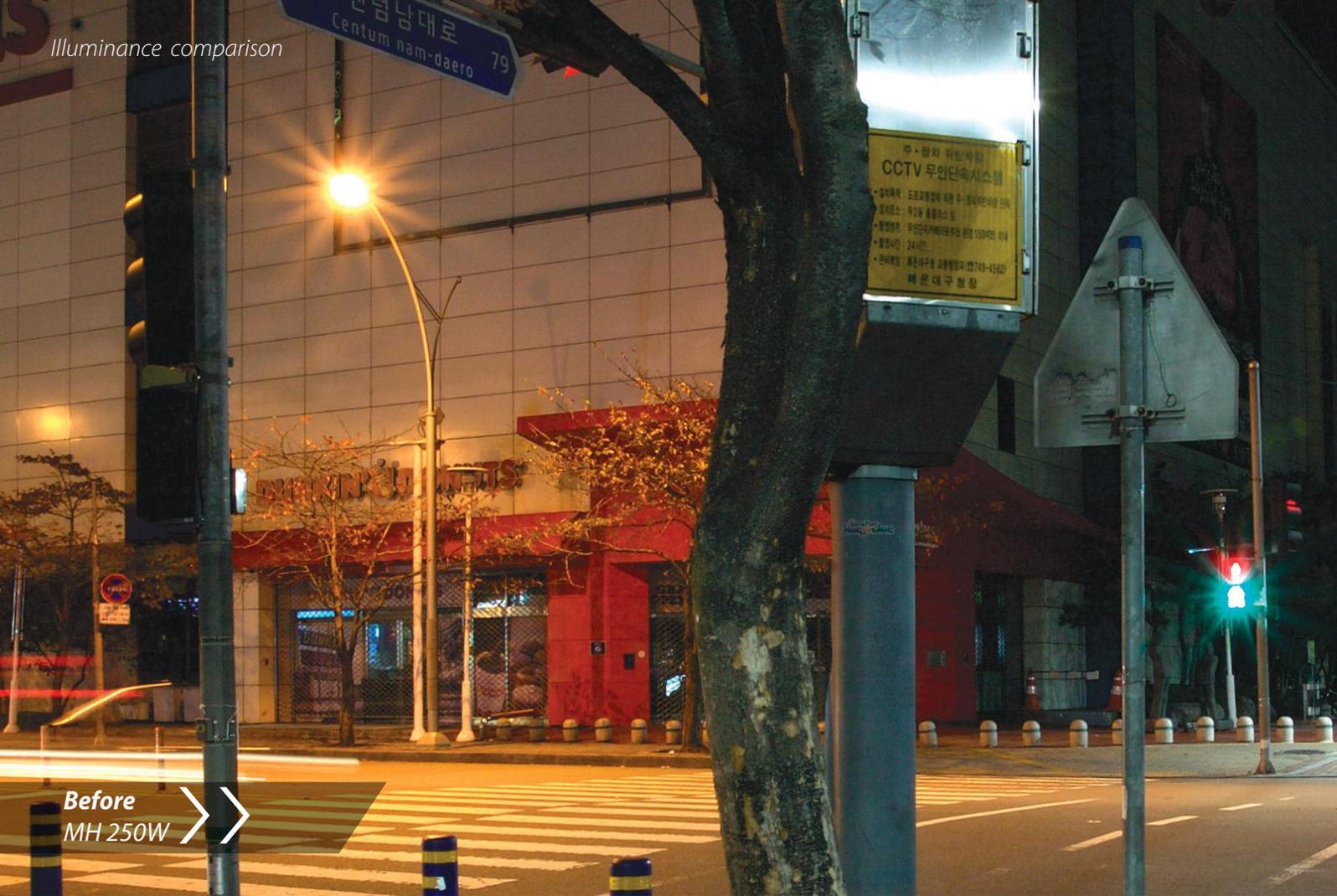
Model Name	SPES-ST-WP	IP Rating	IP66
Power Consumption	LED 100W, AP/CAM 20W	Control System	Wireless
Luminous Efficacy	125 lm/W	Sensor (Daylight / Motion)	
Luminous Flux	12,500 lm	Weight (Driver Included)	26.5 lb (12kg)
CCT	5000K	Size (L x W x H)	29.1 x 16.6 x 9.7 (inch)
CRI	80Ra		740X421.5X245.5(mm)
Light Distribution	Type II-S	Operating Temperature	-30°C~60°C

Install Data

	Before (Simulation)	After
Model Name	MH 250W	SPES-SETA
Power Consume	250W	100 W
Fixture Quantity	39ea	39ea
Total Power	9.75kW	3.9kW
Energy Saving(%)		60%

* The SETA security lighting product was not installed on a 1:1 ratio, but rather using a new layout, so the above installation data has been excluded from the breakdown.





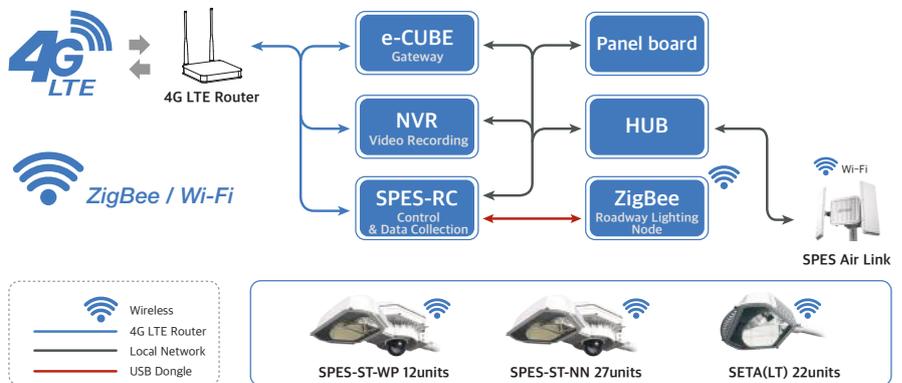
Before MH 250W >>

System Configurations

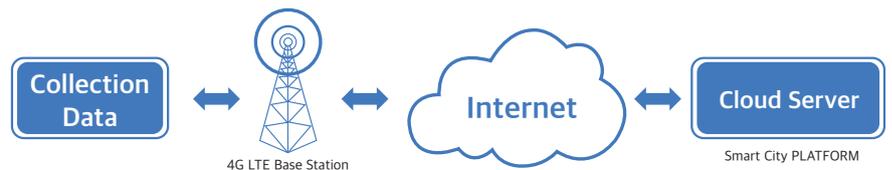
The 39 units of SPES-SETA that were installed onsite, and the 22 units of SETA that were installed onsite are controlled wirelessly via Wi-Fi and ZigBee and 1 additional unit has been added to expand the reception range.

Onsite, the 2 racks required to operate the system have been mounted to the poles, and each of the functions is as follows.

- 1) SPES-RC: control signal processing and data collection / onsite video recording using NVR
- 2) e-CUBE : Gateway for transmitting the collected data to the cloud server



All the data collected using the SPES-SETA's NEMA sensors passes through each operating rack and after converting it into data that can be used by the cloud server it is then transmitted to the cloud server via the LTE modem. Once the cloud server data upload is complete, connect the collected data to the multiple agencies that require it and the desired data can be accessed once having connected to the relevant server.





Energy Saving
60%

Enhance Illuminance
110% Ave.

Air View



Installation



SPES-SETA Installation



Routing communication cable



Installation of operating equipment housing



Routing power line panel board



Airlink Gateway installation



CCTV setup



Control equipment setup



Integrated test

Illuminance measurement data

With a brightness that measures more than 1.0cd/m², an overall uniformity of more than 0.4, and a longitudinal uniformity of more than 0.5 these all more than exceed the standard by far, testifying to the performance and excellence of the product. Compared to what it looked like before the installation, there is a noticeable difference in the field of view and visibility. Also, as expected levels of more than 50 lx were measured on the sidewalk, greatly improving the lighting environment allowing for pedestrians to walk the streets safely at night. Based on the road lighting for pedestrians, the average surface luminance of the sidewalk in the commercial area where there is a lot of traffic was more than 20 lx.

* U_o (Overall Uniformity): Ratio of surface brightness determined using the methods of viewing a dry surface

* U_l (Longitudinal Uniformity): Ratio of brightness shown by the uniformity of a brightness distribution that can be seen on a dry surface ahead

Road brightness and measurement data

Category		Max (cd/m ²)	Min (cd/m ²)	Ave (cd/m ²)	U _o	U _l
1st lane	Before	2.2	0.2	1.04	0.19	0.47
	After	3.5	1.5	2.28	0.66	0.65
2st lane	Before	1.78	0.2	1.09	0.18	0.61
	After	2.2	1.7	1.88	0.91	0.85
3st lane	Before	1.5	0.5	1.11	0.45	0.74
	After	2.2	1.6	1.88	0.85	0.85
4st lane	Before	2.45	0.9	1.57	0.57	0.64
	After	2.5	1.8	2.18	0.83	0.87
5st lane	Before	2.4	1.7	2.06	0.83	0.86
	After	2.4	1.7	2.06	0.83	0.86

Sidewalk luminance measurement data

Category		Max (lx)	Min (lx)	Ave (lx)	U _o (Min/Ave)
Sidewalk	Before	56.2	4.2	24.03	0.17
	After	82.4	10.1	50.46	0.20

Unique & Better

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SPES-SETA

GigaTera® Global Directory

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beyond light

