

Hardware Unit Test Report

IR Range Test

Hardware version	FW version	eMMC Flash P/N
V025	BFX_AT100_eng 9 PI20190819	KLM8G1GETF-B041

1. IR Range TestSetup

Equipment:

Monitor x 1, DUT x 1, adapter x 1, remote control BRM-BA01, HDMI cable x1, and table lamp x1.

Top cover material of housing: **Short-term solution: Old mold for PC + B tv part modified + ABS material**

Bottom cover material of housing: **ABS material**



New test material: ABS material

Material thickness: 2.05mm(As the same as the original material thickness)

A new material will paste at the front side of IR sensor for replacing original material(ABS).



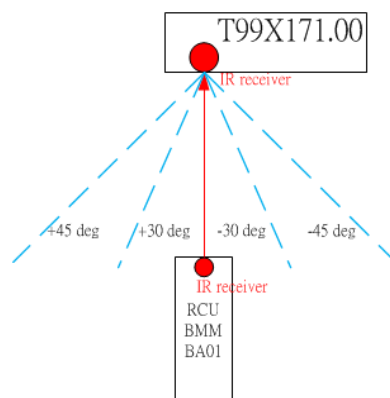
Criteria:

DUT MUST be able to receive and acknowledge commands transmitted by the Remote Control
at a distance of 10M in 0 deg/30 deg and 7M in 45 deg

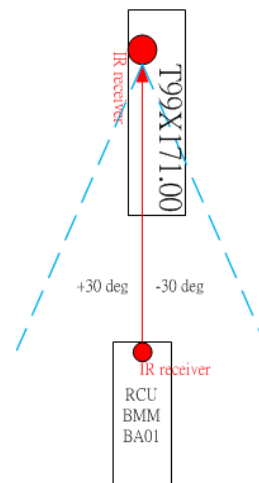
Environment setup:

Test w/o desk lamp

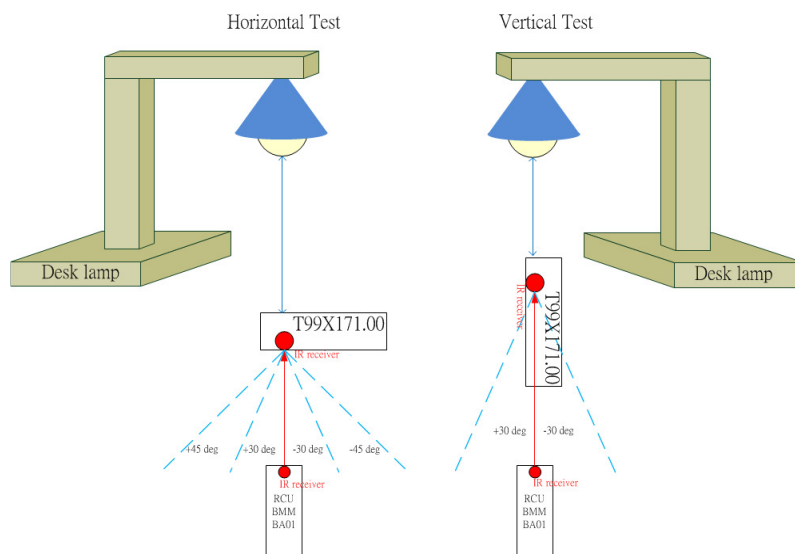
Horizontal Test



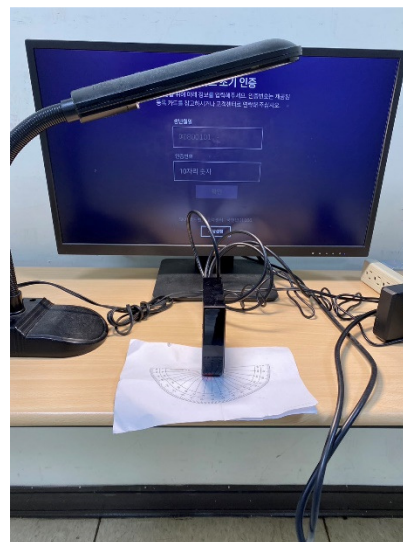
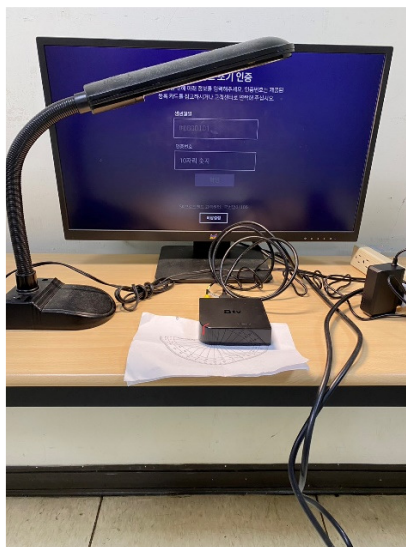
Vertical Test



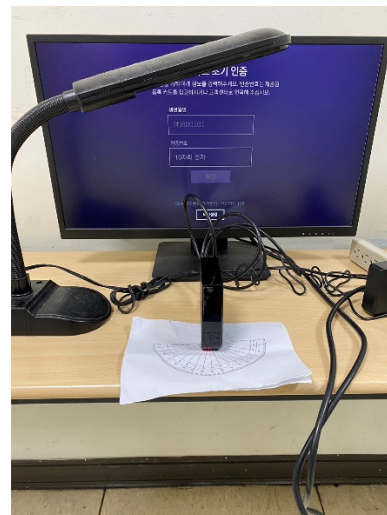
Test w/ desk lamp



Setup for horizontal test (Desk lamp on) Setup for vertical test(Desk lamp on)



Setup for horizontal test (Desk lamp off) Setup for vertical test(Desk lamp off)



2. Specification Analysis

1.1 Horizontal Deflection

	Azimuth: +45°	Azimuth: +30°	Azimuth: 0°	Azimuth: -30°	Azimuth: -45°
Available Receiver Distance (meter)	>7M	>10M	>10M	>10M	>7M

1.2 Vertical Deflection

	Elevation +30°	Elevation 0°	Elevation -30°
Available Receiver Distance (meter)	>10M	>10M	>10M

Component Specification Analysis

Component Specification Compare Result	
IR Component P/N	Vishay / TSOP75338TR
IR Carrier Frequency (KHz)	38
Minimum Irradiance, Ee min (mW/m2)	0.15

ELECTRICAL AND OPTICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply voltage		V _S	2.5		5.5	V
Supply current	E _v = 0, V _S = 3.3 V	I _{SD}	0.27	0.35	0.45	mA
	E _v = 40 klx, sunlight	I _{SH}		0.45		mA
Transmission distance	E _v = 0, test signal see fig. 1, IR diode TSAL6200, I _F = 250 mA	d		45		m
Output voltage low	I _{OSL} = 0.5 mA, E _e = 0.7 mW/m ² , test signal see fig. 1	V _{OSL}			100	mV
Minimum irradiance	Pulse width tolerance: t _{pi} - 5/f _o < t _{po} < t _{pi} + 6/f _o , test signal see fig. 1	E _e min.		0.15	0.35	mW/m ²
Maximum irradiance	t _{pi} - 5/f _o < t _{po} < t _{pi} + 6/f _o , test signal see fig. 1	E _e max.	30			W/m ²
Directivity	Angle of half transmission distance	Φ _{1/2}		± 50		deg

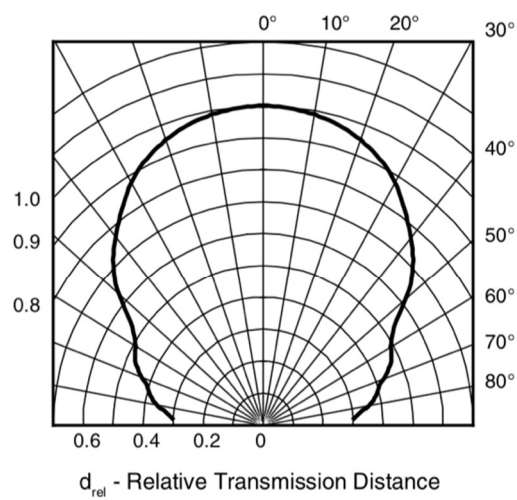


Fig. 12 - Horizontal Directivity

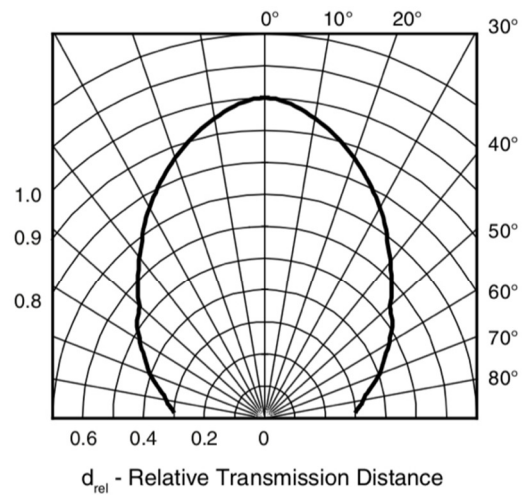


Fig. 13 - Vertical Directivity

3. Test Result

Vishay/TSOP75338TR :

Test Item	W/O desk lamp		W/ desk lamp	
Nearby: $\geq 20\text{cm}$	$\geq 20\text{cm}$	Pass	$\geq 20\text{cm}$	Pass
Horizontal: $+45^\circ$	$> 20\text{m}$	Pass	13.2m	Pass
Horizontal: $+30^\circ$	$> 20\text{m}$	Pass	18m	Pass
Horizontal: 0°	$> 20\text{m}$	Pass	$> 20\text{m}$	Pass
Horizontal: -30°	$> 20\text{m}$	Pass	18.6m	Pass
Horizontal: -45°	$> 20\text{m}$	Pass	13.2m	Pass
Vertical: $+30^\circ$	$> 20\text{m}$	Pass	18.6m	Pass
Vertical: 0°	$> 20\text{m}$	Pass	$> 20\text{m}$	Pass
Vertical: -30°	$> 20\text{m}$	Pass	18.9m	Pass