

Hardware Unit Test Report

IR Range Test

Hardware version	FW version	Main source P/N	2 nd source
V025	BFX_AT100 userdebug 10 QTT5.200429.010 15.534.28-20220818-release keys	TSOP75338TR	Everlight/IRM-V838J12-S/TR1(KU)(HFX)

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: ABS housing(new logo)



New test material: PC Fliger MABS TR557

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

T99X171T00 2nd source introduce IRM-V838J12-S/TR1(KU)(HFX)



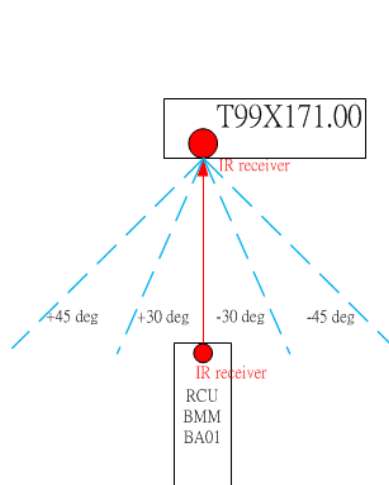
Criteria:

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

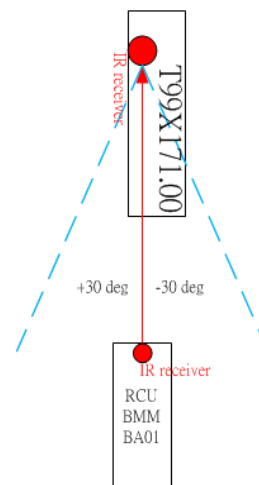
Environment setup:

Test w/o desk lamp

Horizontal Test

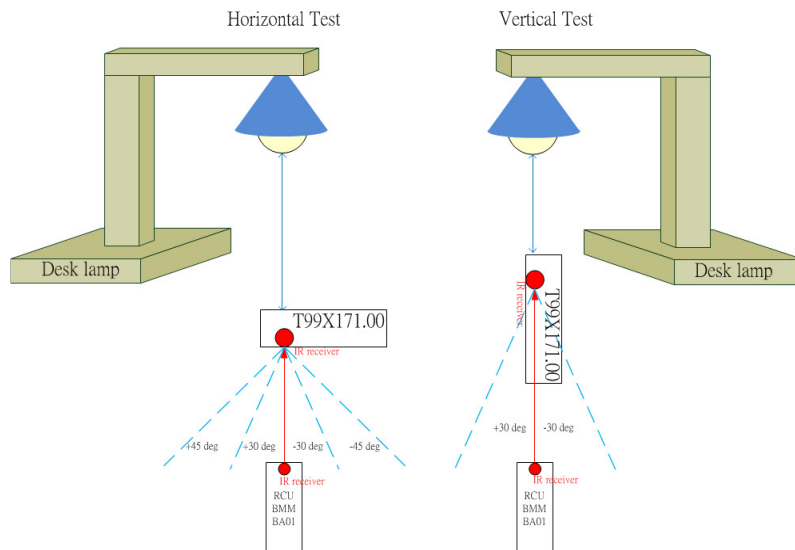


Vertical Test

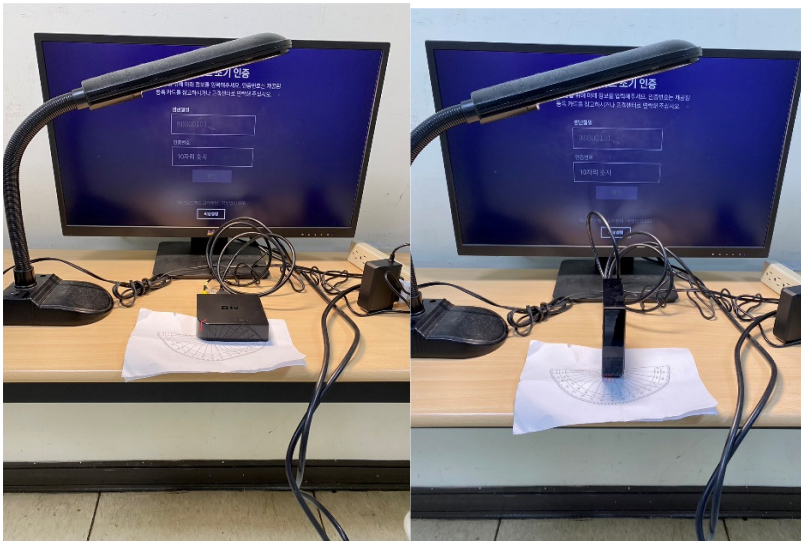


T99X171T00 2nd source introduce IRM-V838J12-S/TR1(KU)(HFX)

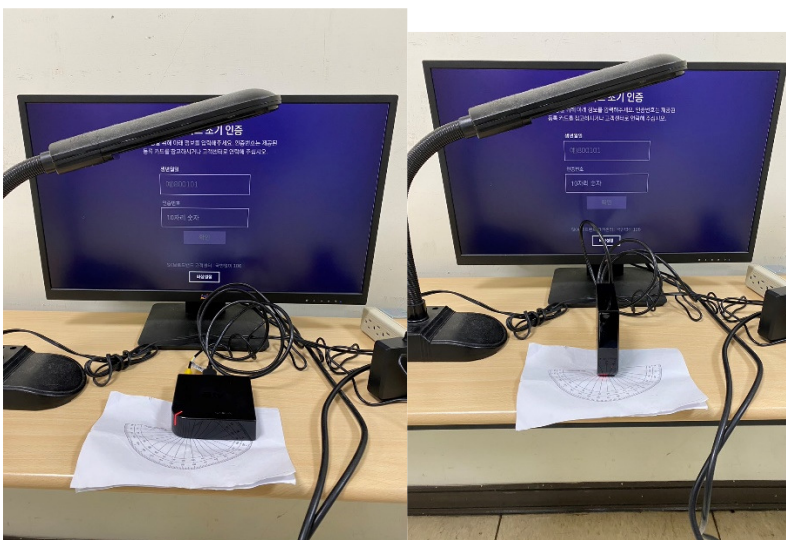
Test w/ desk lamp



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 ₀ < t _{po} < t _{pi} + 6/f ₀ , test signal see fig. 1	E _e min.		0.15	0.35	mW/m ²
Maximum irradiance	t _{pi} - 5/f ₀ < t _{po} < t _{pi} + 6/f ₀ , test signal see fig. 1	E _e max.	30			W/m ²
Directivity	Angle of half transmission distance	Φ _{1/2}		± 50		deg

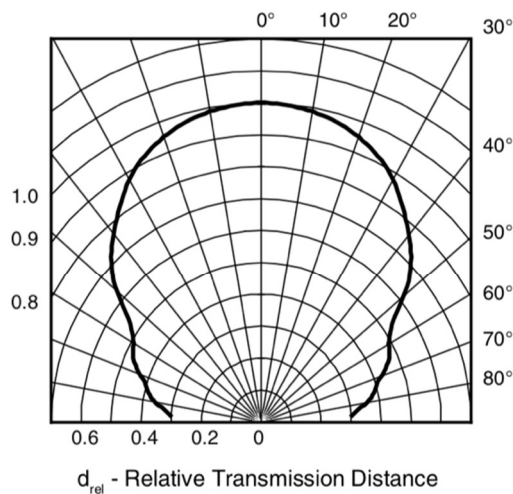


Fig. 12 - Horizontal Directivity

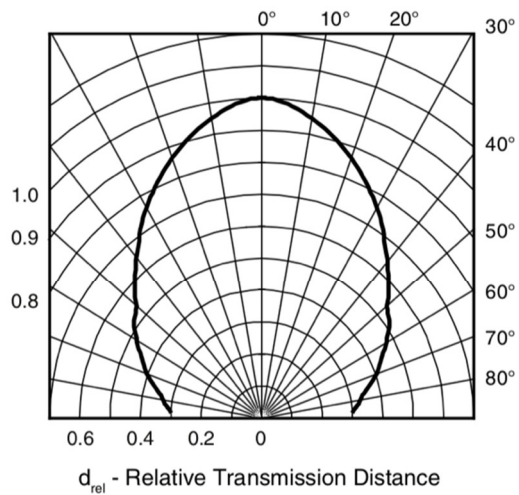


Fig. 13 - Vertical Directivity

3. Test Result

The test results are fail for 2 kinds of new material placed at the front side of IR sensor. RCU's (BRM-BA01).

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	7.8m	Pass
Horizontal: $+30^\circ$	$> 20\text{m}$	Pass	12.6m	Pass
Horizontal: 0°	$> 20\text{m}$	Pass	18.6m	Pass
Horizontal: -30°	$> 20\text{m}$	Pass	12m	Pass
Horizontal: -45°	$> 20\text{m}$	Pass	7.5m	Pass
Vertical: $+30^\circ$	$> 20\text{m}$	Pass	18m	Pass
Vertical: 0°	$> 20\text{m}$	Pass	18.5m	Pass
Vertical: -30°	$> 20\text{m}$	Pass	17.7m	Pass

Everlight/IRM-V838J12-S/TR1(KU)(HFX)(2nd):

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	9m	Pass
Horizontal: $+30^\circ$	$> 20\text{m}$	Pass	15.3m	Pass
Horizontal: 0°	$> 20\text{m}$	Pass	18.6m	Pass
Horizontal: -30°	$> 20\text{m}$	Pass	15m	Pass
Horizontal: -45°	$> 20\text{m}$	Pass	9.3m	Pass
Vertical: $+30^\circ$	$> 20\text{m}$	Pass	18m	Pass
Vertical: 0°	$> 20\text{m}$	Pass	19.2m	Pass
Vertical: -30°	$> 20\text{m}$	Pass	18.3m	Pass

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4. Conclusion

	TSOP75338TR (main)	IRM-V838J12-S/TR1(KU)(HFX) (2 nd)
Total test Results	PASS	
Can it be introduced?	Yes	