




Prüfbericht-Nr.: <i>Test Report No.:</i>	60412555 001	Auftrags-Nr.: <i>Order No.:</i>	238486184	Seite 1 von 7 <i>Page 1 of 7</i>	
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	238038629	Auftragsdatum: <i>Order date:</i>	05.05.2020		
Auftraggeber: <i>Client:</i>	BenQ Corporation 16 Jihu Road, Neihu, Taipei 114, Taiwan				
Prüfgegenstand: <i>Test item:</i>	Interactive Flat Panel				
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	RE6501, RE6501A, RE6501B, RE6501C, RE6501D, RE6501E, RE6501P, RE6501X, RE6501S (BenQ)				
Auftrags-Inhalt: <i>Order content:</i>	TÜV Rheinland Flicker Free approval				
Prüfgrundlage: <i>Test specification:</i>	2 PfG1797 / 12.13 Flicker Free Devices				
Wareneingangsdatum: <i>Date of receipt:</i>	31.07.2020				
Prüfmuster-Nr.: <i>Test sample No.:</i>	A002878953-001				
Prüfzeitraum: <i>Testing period:</i>	14.08.2020 - 01.09.2020				
Ort der Prüfung: <i>Place of testing:</i>	Taipei Laboratory				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland Taiwan Ltd.				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft / tested by:	 14.08.2020 Tom Shen / Project Handler				kontrolliert / reviewed by:  01.09.2020 Pei-Wen Chan / Technical Reviewer
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>
Sonstiges / Other:					
LCD panel and LCD panel manufacturer: K650WDG1 (KTC)					
The EUT is with the touch module ME65AC-KGD2 (HUAXIN).					
Note: The report issued date the same as reviewed date.					
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>			Test item complete and undamaged <i>Prüfmuster vollständig und unbeschädigt</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested					
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

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Verwendete Meßgeräte/Prüfmittel

Messung / <i>measurement</i>	Geräte- Ident.-Nummer <i>equipment ident. Number</i>	nächste Kalibrierung / <i>next calibration</i>
Optiscope-SA-12 Response time module	TW-Ergo-116	Oct-20
Microvision SS 420 Display Analysis System Luminance, Distance and Color	TW-Ergo-171	Jan-21

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Measurement Uncertainty

The reported measurement uncertainty is estimated based on CIPM:
GUIDE TO THE EXPRESSION OF UNCERTAINTY IN MEASUREMENT
(Corrected and Reprinted 1993)

Visual Ergonomics

Coverage Factor $k = 2$

Confidence Level = 95%

Luminance (cd/m^2) = $\pm 4.77\%$ ($\geq 1\text{cd}/\text{m}^2$)

Luminance (cd/m^2) = $\pm 7.47\%$ ($< 1\text{cd}/\text{m}^2$)

Note

Criteria are fulfilled without adding or subtracting the overall measurement uncertainty.

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Test sample set up and configuration

VDU:	Interactive Flat Panel
Identification:	RE6501, RE6501A, RE6501B, RE6501C, RE6501D, RE6501E, RE6501P, RE6501X, RE6501S (BenQ)
Manufacturer:	BenQ Corporation 16 Jihu Road, Neihu, Taipei 114, Taiwan
LCD brand/model:	KTC / K650WDG1
LCD S/N and Rev.:	Revision 3.0
Surface treatment:	Haze 1%, 3H, Anti-glare treatment (Front Polarizer) Haze 1%, 3H, Anti-glare treatment (Bottom Polarizer)
Test mode:	3840 x 2160 (H x V) @ 60Hz
Test luminance level:	Default & Low luminance mode
Color mode setting:	Normal
Image type:	2D Images
Input port used:	HDMI
Ambient Condition:	Dark-room screen illuminance < 2 lux Room temperature: 21°C Relative humidity: 60%
Power Rating:	100-240Vac, 50/60Hz, 3.5A Class I
AC-Adapter:	--
Remark:	This is 64.5 inch Interactive Flat Panel with LED Backlight.

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Attribute	Result
5.1.1 Prerequisite-safety Mandate: The product must be safe to be operated during normal operation as well as in single fault condition. A test report or better a certificate as evidence is required. Safety certified: CB Certificate is provided Certificate No.: FR_708381	Pass
5.1.2 Setup Mandate: For measurements the device under test shall be set up as described by the manufacturer. Minimum configuration requirements have to be considered Setup: Default mode if not specified otherwise in test result	Pass
5.1.3 Laboratory condition Mandate: The test shall be conducted under an ambient temperature of 23°C ±5°C with a relative humidity of 30% to 60%. The test sample shall be warmed up until the luminance level of the Display system is reasonably stable. Ambient temperature: 21°C Relative Humidity: 60%	Pass

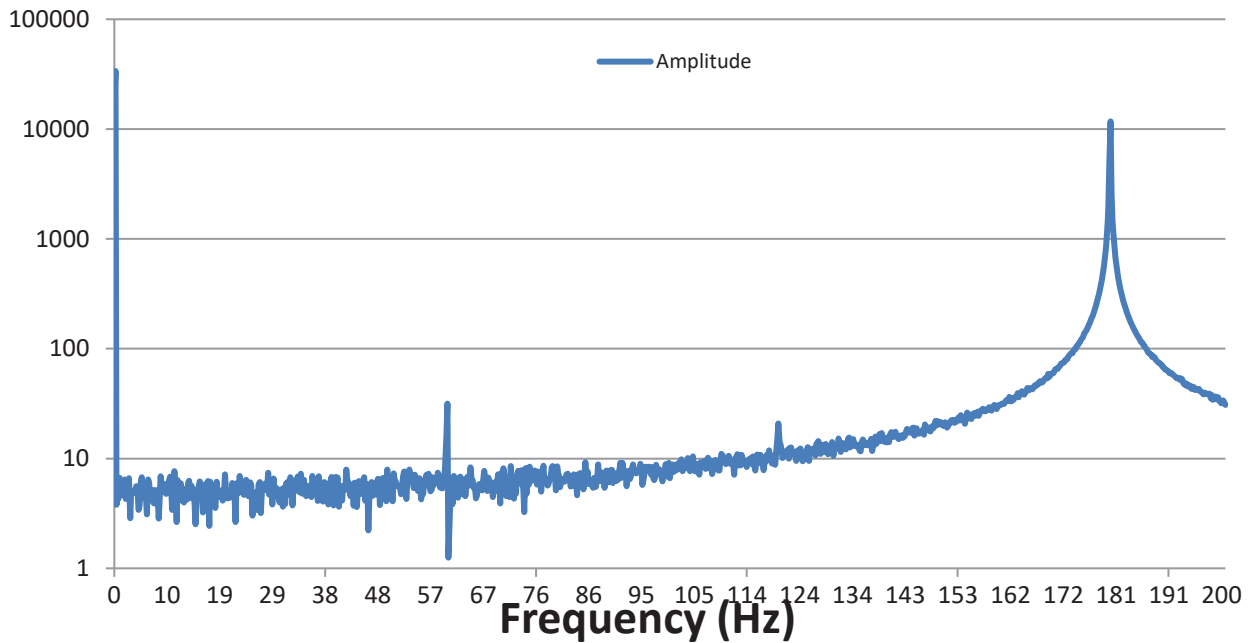
Attribute	Result																																																														
5.2 Temporal instability (flicker)	Pass																																																														
<p>Mandate: The image shall be free of flicker to at least 90% of the user population. 2D images: Eobs,n ≤ Epred,n → Display System is flickerfree</p> <p>Condition 1 (default luminance) Brightness: <u>50/100</u> Contrast: <u>50/100</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">screen diagonal:</td> <td style="text-align: right;">117.2°</td> </tr> <tr> <td>pupil area:</td> <td style="text-align: right;">5.38 mm²</td> </tr> <tr> <td>c₀:</td> <td style="text-align: right;">187.8 cd/m²</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>n</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>f,n [Hz]</td> <td>31</td> <td>60</td> <td>90</td> <td>120</td> </tr> <tr> <td>AMPn [1]</td> <td>0.0006</td> <td>0.0037</td> <td>0.0009</td> <td>0.0025</td> </tr> <tr> <td>Eobs,n [td]</td> <td>0.7</td> <td>3.8</td> <td>0.9</td> <td>2.5</td> </tr> <tr> <td>Epred,n [td]</td> <td>11.1</td> <td>209.4</td> <td>3931.8</td> <td>79641.6</td> </tr> </tbody> </table> <p>Condition 2 (low luminance) Brightness: <u>0/100</u> Contrast: <u>34/100</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">screen diagonal:</td> <td style="text-align: right;">117.2°</td> </tr> <tr> <td>pupil area:</td> <td style="text-align: right;">7.19 mm²</td> </tr> <tr> <td>c₀:</td> <td style="text-align: right;">30.8 cd/m²</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>n</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>f,n [Hz]</td> <td>31</td> <td>60</td> <td>90</td> <td>120</td> </tr> <tr> <td>AMPn [1]</td> <td>0.0007</td> <td>0.0233</td> <td>0.0016</td> <td>0.0135</td> </tr> <tr> <td>Eobs,n [td]</td> <td>0.2</td> <td>5.2</td> <td>0.3</td> <td>3.0</td> </tr> <tr> <td>Epred,n [td]</td> <td>11.4</td> <td>209.4</td> <td>4083.5</td> <td>79641.6</td> </tr> </tbody> </table>		screen diagonal:	117.2°	pupil area:	5.38 mm ²	c ₀ :	187.8 cd/m ²	n	1	2	3	4	f,n [Hz]	31	60	90	120	AMPn [1]	0.0006	0.0037	0.0009	0.0025	Eobs,n [td]	0.7	3.8	0.9	2.5	Epred,n [td]	11.1	209.4	3931.8	79641.6	screen diagonal:	117.2°	pupil area:	7.19 mm ²	c ₀ :	30.8 cd/m ²	n	1	2	3	4	f,n [Hz]	31	60	90	120	AMPn [1]	0.0007	0.0233	0.0016	0.0135	Eobs,n [td]	0.2	5.2	0.3	3.0	Epred,n [td]	11.4	209.4	4083.5	79641.6
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Attribute

See the Fourier Transform of Condition 1 (default luminance) below:



See the Fourier Transform of Condition 2 (low luminance) below:

