TEST REPORT

Applicant:	Ugreen Group Limited
Address of Applicant:	UGREEN Building, Longcheng Industrial Park, Longguanxi Road, Longhua, Shenzhen, Guangdong, 518000, China
Manufacturer:	Ugreen Group Limited
Address of Manufacturer:	UGREEN Building, Longcheng Industrial Park, Longguanxi Road, Longhua, Shenzhen, Guangdong, 518000, China
Product name:	65W 2-in-1 GaN Desktop Fast Charger
Model:	X555
Rating(s):	Input: 100-240V~ 50/60Hz 1.8A Max; USB-C1/C2 Output: 5.0Vdc, 3.0A/ 9.0Vdc, 3.0A/ 12.0Vdc, 3.0A/ 15.0Vdc, 3.0A/ 20.0Vdc, 3.25A, 65.0W Max USB-A Output: 5.0Vdc, 3.0A/ 9.0Vdc, 2.0A/ 12.0Vdc, 1.5A/ 10.0Vdc, 2.25A, 22.5W Max. Wireless Charging Output Power: 15.0W Max Total Output Power: 65.0W Max
Trademark:	UGREEN
Standards:	47 CFR PART 15 Subpart C
FCC ID:	2AQI5-X555
Data of Receipt:	2024-08-21
Date of Test:	2024-08-21~2024-09-30
Date of Issue:	2024-09-30
Test Result	**Pass***

* In the configuration tested, the test item complied with the standards specified above.

Authorized for issue by:

Test by:			***Reviewed by:***		
Sep. 30, 2024	Chivas Tsang	Chivas	Sep. 30, 2024	Victor Meng	Victor
	Project Engineer			Project Engineer	
Date	*Name/Position*	*Signature*	*Date*	*Name/Position*	*Signature*

Possible test case verdicts:

test case does not apply to the test object .. :	N/A
test object does meet the requirement ..... :	P (Pass)
test object does not meet the requirement .. :	F (Fail)

Testing Laboratory information:

Testing Laboratory Name	:	ITL Co., Ltd.
Address	:	No.8, JinQianLing street 5, DongHuan Road, Huangjiang Town, Dongguan, China.
Testing location	:	Same as above
Tel	:	0086-769-39001678
Fax	:	0086-20-62824387
E-mail	:	itl@i-testlab.com

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report would be invalid test report without all the signatures of testing technician and approver.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General product information:

P/N code in the below table, for marketing purpose, will be marked on the marking plate.

55320	55320P	55320X	55320A	55320B	55320U	55320JP

1 Test Summary

Test	Test Requirement	Test method	Result
Antenna Requirement	FCC PART 15 section 15.203	FCC PART 15 section 15.203	PASS
Radiated Emission	FCC PART 15 section 15.209	ANSI C 63.10	PASS
Conducted Emission	FCC PART 15 section 15.207	ANSI C 63.10	PASS
Emission Bandwidth	FCC PART 15 section 15.215(c)	ANSI C 63.10	PASS

Remark:

N/A: because the device is battery operated.
EUT: In this whole report EUT means Equipment Under Test.
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radio Frequency.
ANSI C63.10: the detail version is ANSI C63.10:2013 in the whole report.

2 Contents

3 General Information

3.1 Client Information

Applicant:	Ugreen Group Limited
Address of Applicant:	UGREEN Building, Longcheng Industrial Park, Longguanxi Road, Longhua, Shenzhen, Guangdong, 518000, China

3.2 General Description of E.U.T.

Name:	65W 2-in-1 GaN Desktop Fast Charger
Model No.:	X555
P/N	55320
Trade Mark:	UGREEN
Operating Frequency:	127.8kHz, 360kHz
Type of Modulation	ASK
Antenna Type:	Coil Antenna

3.3 Details of E.U.T.

EUT Power Supply:	120Vac, 60Hz
Test mode:	Mode 1: base station in stand-by, idle mode Mode 2: Communication and charging

All test modes were pre-tested, but we only recorded the worst case in this report.

3.4 Details of Support Equipment(s)

Description	Manufacturer	Model No.	Connection	Working state
Wireless Charging load	Ugreen	5W/7.5W/15W	/	Normal

3.5 Test Location

All tests were performed at:

ITL Co., Ltd.
No.8, JinQianLing street 5, DongHuan Road, Huangjiang Town, Dongguan, China.
0086-769-39001678
itl@i-testlab.com

No tests were sub-contracted.

3.6 Deviation from Standards

None.

3.7 Abnormalities from Standard Conditions

None.

3.8 Other Information Requested by the Customer

None.

3.9 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS Lab code:L9342**
- **FCC Designation No.:CN5035**
- **IC Registration NO.: 12593A**
- **NVLAP LAB CODE: 600199-0**

3.10 Measurement Uncertainty

The below measurement uncertainties given below are based on a 95% confidence level (base on a coverage factor (k=2).)

Parameter	Uncertainty
Radio frequency	$\pm 1.06 \times 10^{-7}$
total RF power, conducted	1.37 dB
RF power density , conducted	2.89 dB
All emissions, radiated	±3.35 dB
Temperature	±0.23 °C
Humidity	±0.3 %
DC and low frequency voltages	±0.3 %

4 Instruments Used during Test

No.	Test Equipment	Manufacturer	Model	Serial No.	Cal Data	Due Date
DGITL- 301	Semi-Anechoic chamber	ETS•Lindgren	9*6*6	CT000874-1181	2023.08.02	2026.08.02
DGITL- 307	EMI test receiver	SCHWARZBECK	ESVS10	833616/003	2024.03.15	2025.03.15
DGITL-376	Wideband Radio Communication Tester	SCHWARZBECK	CMW500	LR114195	2024.03.15	2025.03.15
DGITL-349a	Vector Signal Generator	ROHDE&SCHWARZ	SMBV100A	259268	2024.03.15	2025.03.15
DGITL- 306	Spectrum Analyzer	Agilent Technologies	N9010A	MY54200334	2024.03.15	2025.03.15
DGITL- 352	Pre Amplifier	Mlnl-Clrcuits	ZFC-1000HX	SN292801110	2024.03.15	2025.03.15
DGITL-375	Spectrum Analyzer	SCHWARZBECK	FSV40-N	6625-01-588-5515	2024.03.15	2025.03.15
DGITL-309	Horn Antenna	ETS Lindgren	3117	SN00152265	2023.05.14	2025.05.14
DGITL-308	Bilog Antenna	ETS· Lindgren	3142E	156975	2023.05.14	2025.05.14
DGITL-350	Wideband Amplifier Super Ultra	Mlnl-Clrcuits	ZVA-183X-S+	SN986401426	2024.03.15	2025.03.15
DGITL-371	Pre Amplifier	teramicrowave	TALA-0040G35	18081001	2024.03.15	2025.03.15
DGITL-363	Active Loop Antenna	SCHWARZBECK	FMZB1519B	00062	2024.05.15	2026.05.11

5 Test Results

5.1 Antenna Requirement

According to FCC Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

Test Result

This product uses permanently attached internal coil antenna that meets the requirement in 15.203.

5.2 Radiated Emissions

Test Requirement: FCC Part 15 C section 209(a)

Test Method: ANSI C63.10

Operating Environment:

Temperature: 24.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa

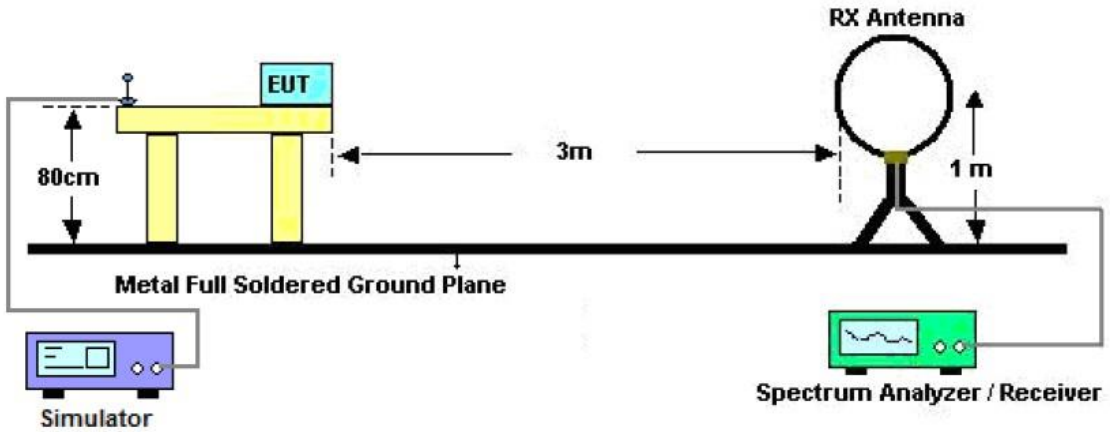
Test Status: Test the transmitter in continuous transmitting mode.

Limit: The field strength of emissions from intentional radiators operated under this Section shall not exceed the following:

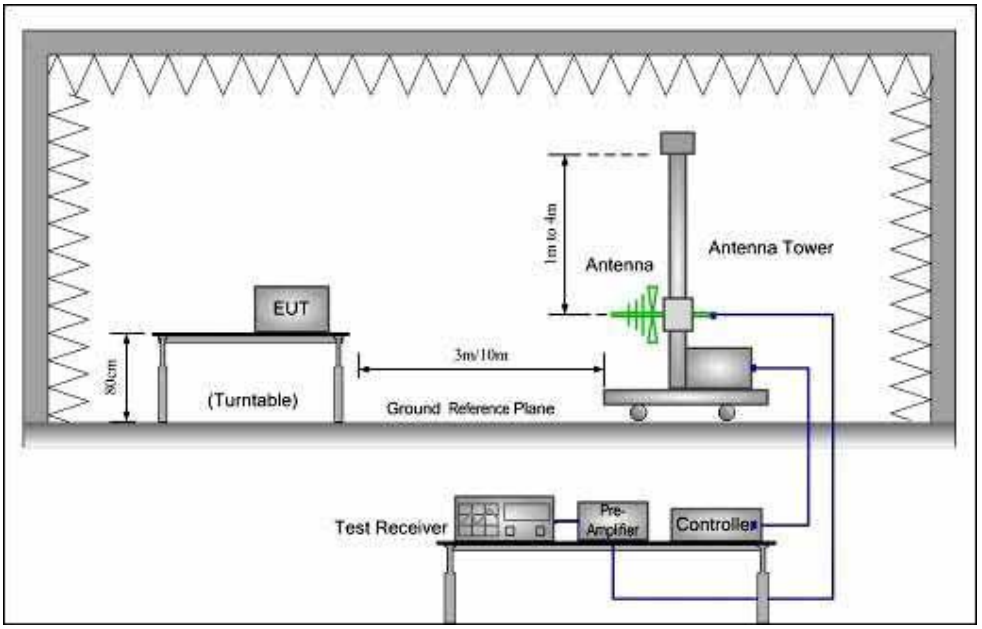
Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

Test Configuration:

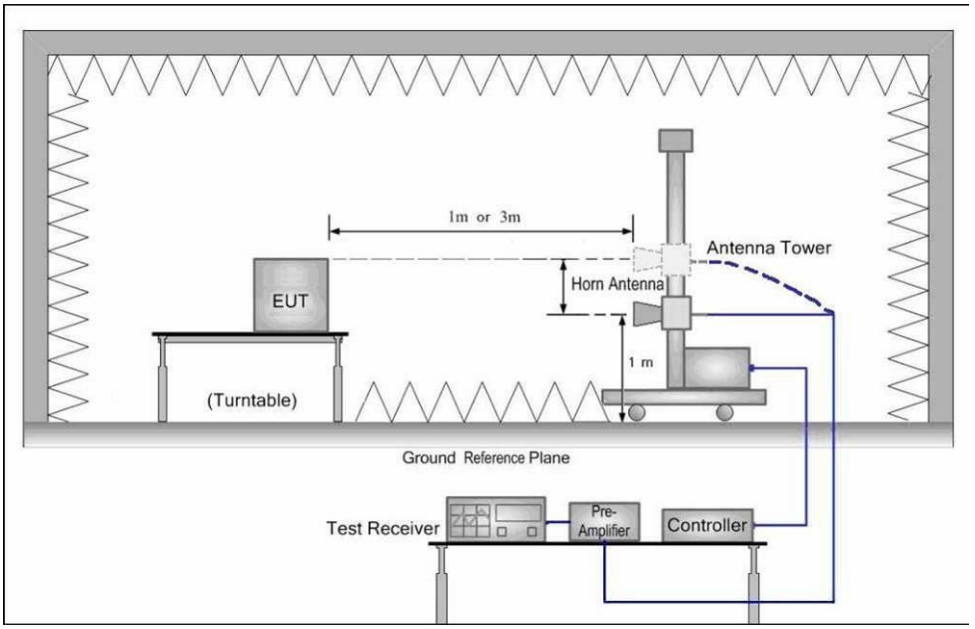
1) 9 kHz to 30 MHz emissions:



2) 30 MHz to 1 GHz emissions:



3) 1 GHz to 40 GHz emissions:



Test Procedure:

1) 9 kHz to 30 MHz emissions:

For testing performed with the loop antenna. The centre of the loop was positioned 1 m above the ground and positioned with its plane vertical at the special distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

2) 30 MHz to 1 GHz emissions:

For testing performed with the bi-log type antenna. The measurement is performed with the EUT rotated 360º, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

3) 1 GHz to 40 GHz emissions:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2007 was used to perform radiated emission test above 1 GHz.

For testing performed with the horn antenna. The measurement is performed with the EUT rotated 360º, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

The field strength of radiation emission was measured in the following position: EUT stand-up position (Y axis), lie-down position (X, Z axis). The worst case of X axis was reported.

Detector: Resolution bandwidth for Peak and Quasi-Peak value:

200 Hz for 9 kHz to 150 kHz

9 kHz for 150 kHz to 30 MHz

120 kHz for 30 MHz to 1GHz

1 MHz for above 1 GHz,

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

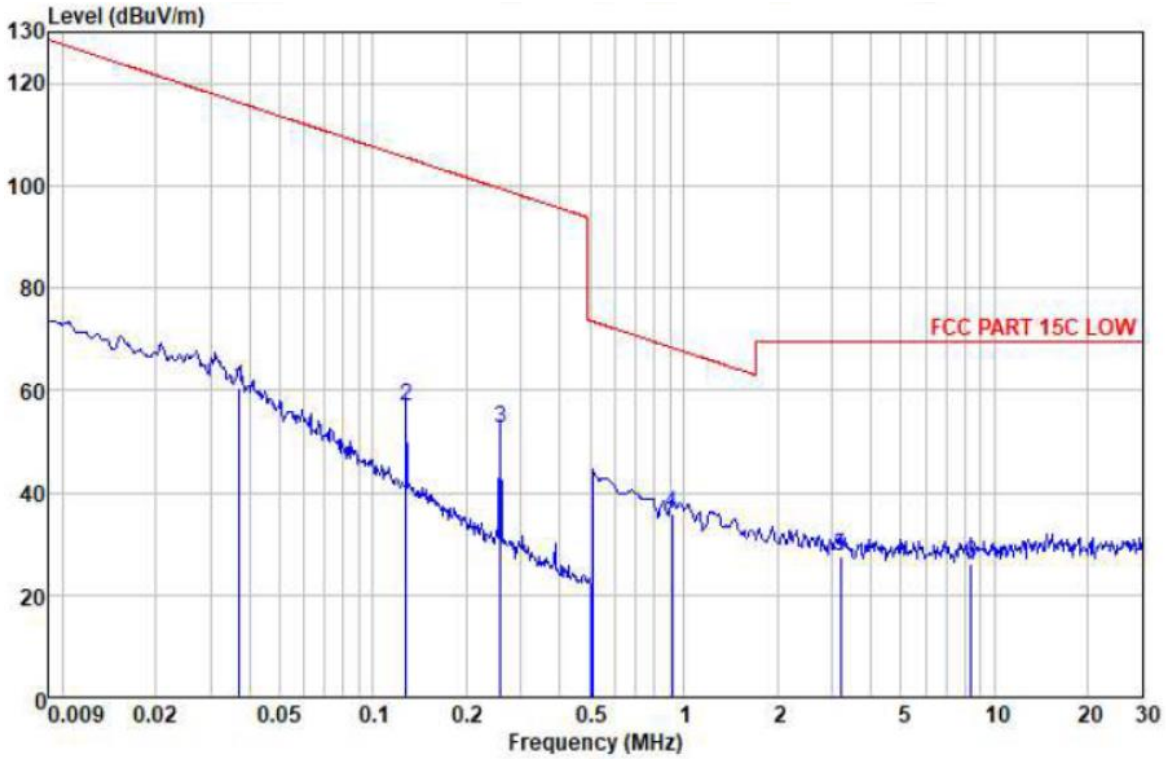
For AV value:

Average = Peak value + 20log (Duty cycle)

Measurement Data

Evaluation has been done with the antenna placed vertically and horizontally. Only the worst test data in the report.

9kHz~30MHz Test result

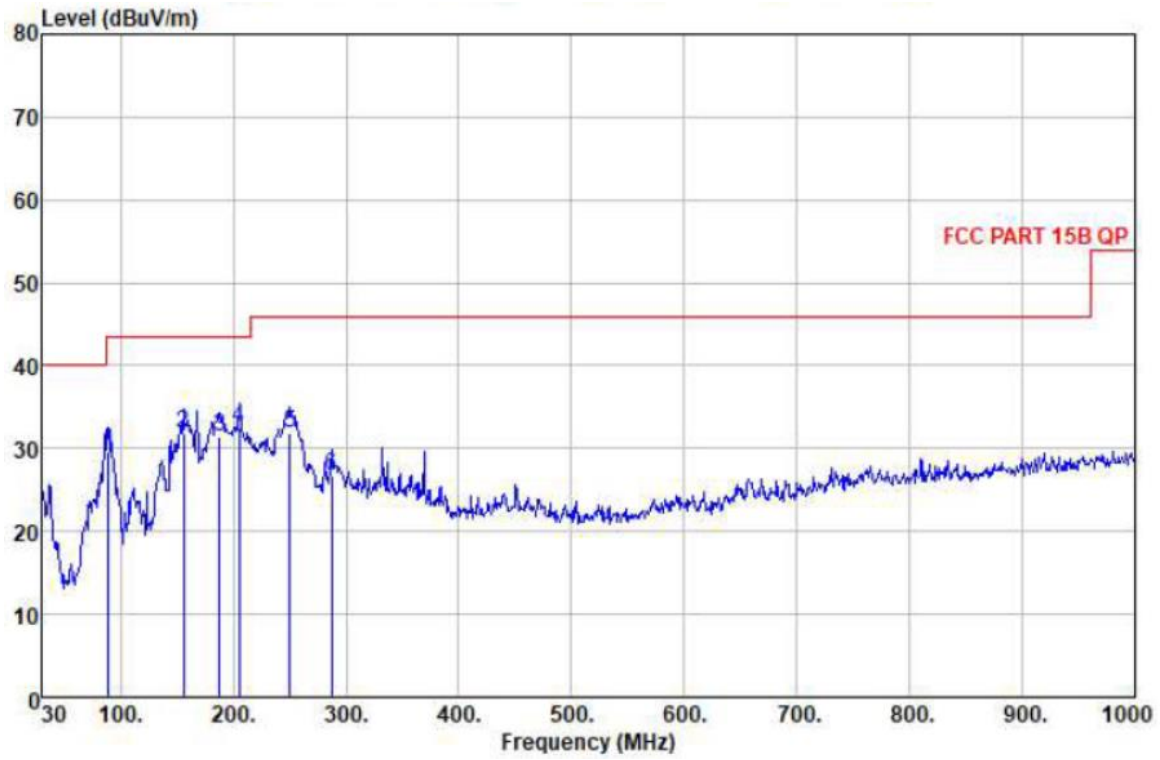


Frequency (MHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
0.037	60.61	116.19	55.58	PK
0.128	56.77	105.48	48.71	PK
0.257	52.43	99.42	46.99	PK
0.917	35.82	68.36	32.51	PK
3.197	27.63	69.54	41.91	PK

30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement

Horizontal:

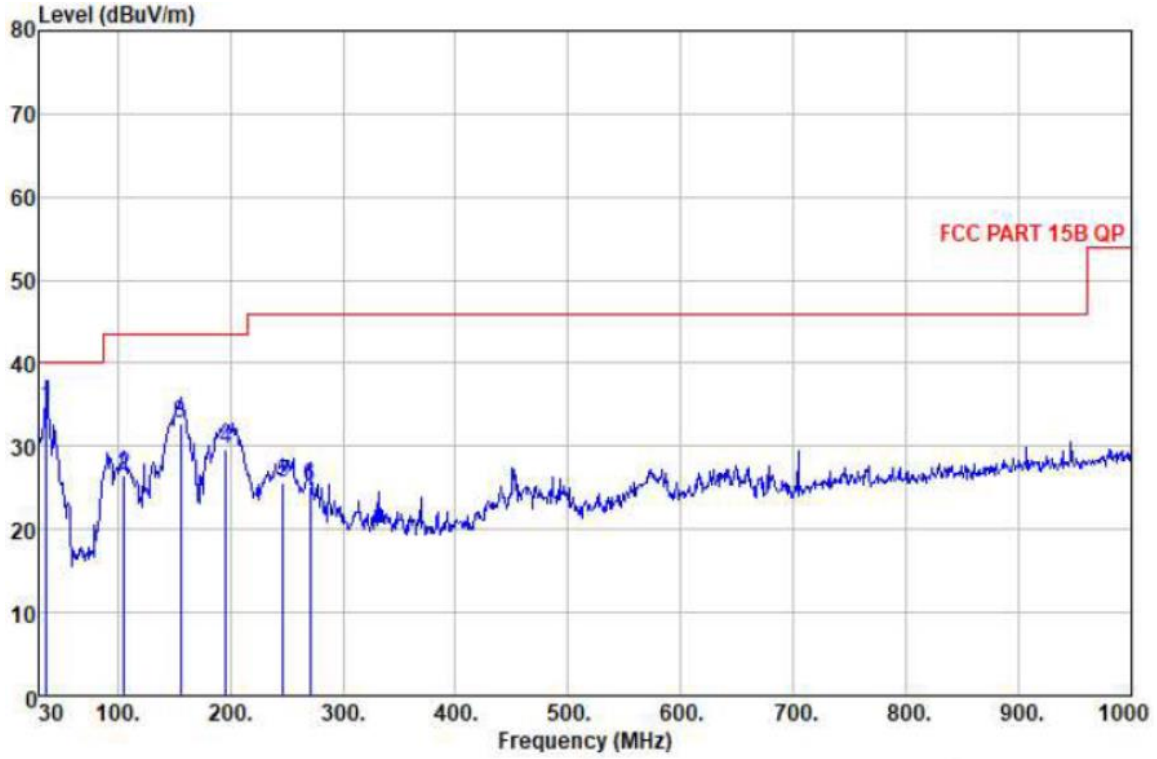
Peak scan



No.	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB		
1	89.170	49.08	7.77	1.10	28.38	29.57	43.50	-13.93	HORIZONTAL	QP
2	156.100	50.60	8.02	1.49	28.29	31.82	43.50	-11.68	HORIZONTAL	QP
3	188.110	47.32	10.07	1.65	27.64	31.40	43.50	-12.10	HORIZONTAL	QP
4	205.570	48.43	9.97	1.73	27.67	32.46	43.50	-11.04	HORIZONTAL	QP
5	250.190	44.44	12.90	1.93	27.31	31.96	46.00	-14.04	HORIZONTAL	QP
6	287.050	39.06	13.27	2.07	27.56	26.84	46.00	-19.16	HORIZONTAL	QP

Vertical:

Peak scan



No.	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB		
1	36.790	44.80	17.78	0.69	28.41	34.86	40.00	-5.14	VERTICAL	QP
2	105.660	44.79	9.11	1.21	28.68	26.43	43.50	-17.07	VERTICAL	QP
3	156.100	51.65	8.02	1.49	28.29	32.87	43.50	-10.63	VERTICAL	QP
4	195.870	45.83	9.97	1.69	27.78	29.71	43.50	-13.79	VERTICAL	QP
5	247.280	38.13	12.79	1.92	27.27	25.57	46.00	-20.43	VERTICAL	QP
6	270.560	37.54	12.82	2.01	27.23	25.14	46.00	-20.86	VERTICAL	QP

5.3 Emission Bandwidth

Test Requirement: FCC Part 15 C section 15.215 (c)

Test Method: ANSI C63.10:

Operating Environment:

Temperature: 24.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa

Requirements:

According to 15.215 (c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Method of measurement: The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector. Record the 20 dB bandwidth of the carrier.

According to the ANSI 63.10-2013, the emission bandwidth test method as follows.

Set span = 10kHz, centered on a transmitting channel

RBW≥1% 20dB Bandwidth, VBW ≥RBW

Sweep = auto

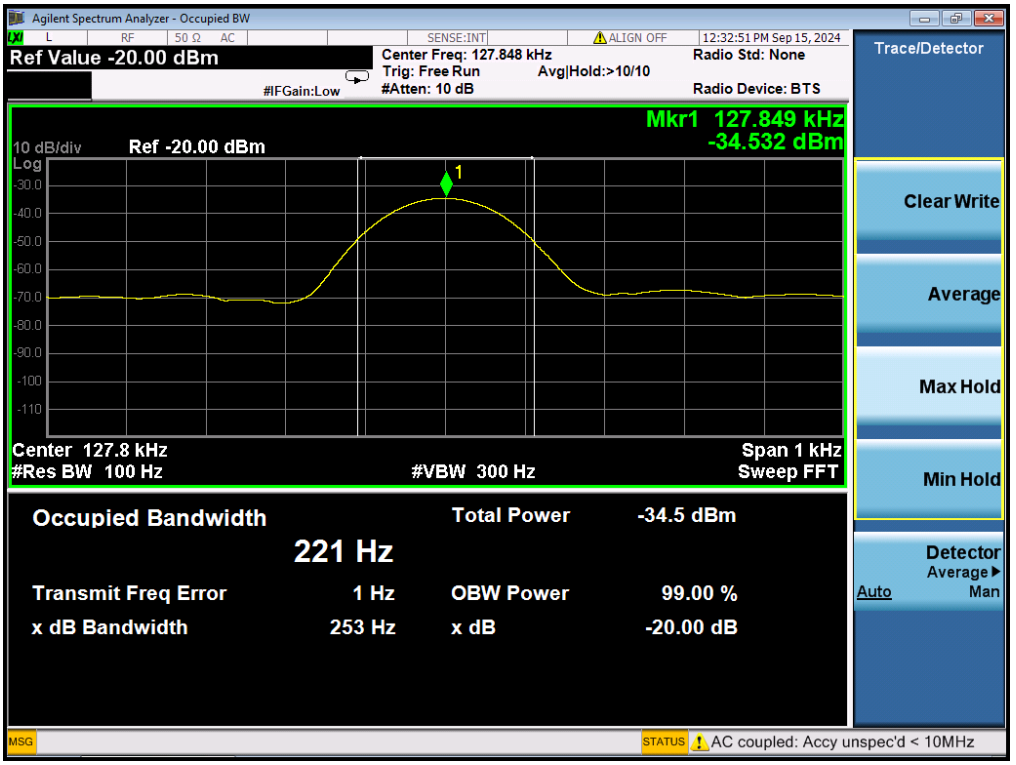
Detector function = peak

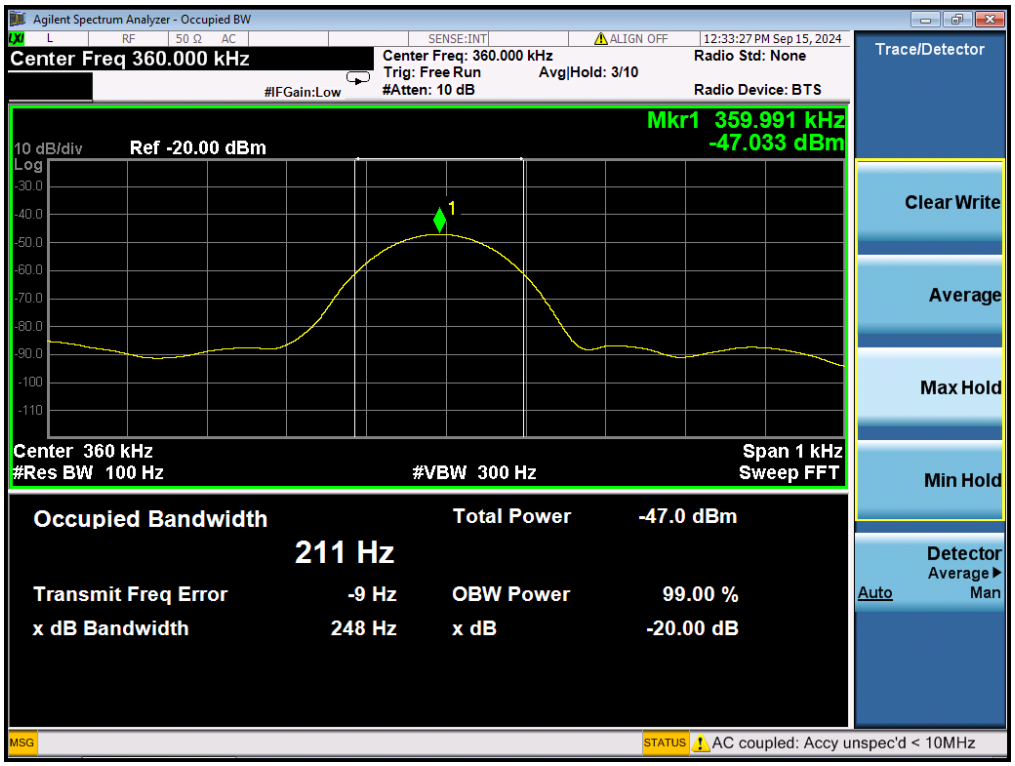
Trace = max hold

Test result:

Test Frequency kHz	20dB Bandwidth Hz
127.8	253
360	248

Test plot:


Agilent Spectrum Analyzer - Occupied BW
Ref Value -20.00 dBm
Center Freq: 127.848 kHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
12:32:51 PM Sep 15, 2024
Trace/Detector
Mkr1 127.849 kHz
-34.532 dBm
10 dB/div
Ref -20.00 dBm
Log
Center 127.8 kHz
#Res BW 100 Hz
#VBW 300 Hz
Span 1 kHz
Sweep FFT
Occupied Bandwidth
221 Hz
Total Power -34.5 dBm
Transmit Freq Error 1 Hz
OBW Power 99.00 %
x dB Bandwidth 253 Hz
x dB -20.00 dB
Clear Write
Average
Max Hold
Min Hold
Detector
Average
Auto
Man
MSG
STATUS
AC coupled: Accy unspec'd < 10MHz


Agilent Spectrum Analyzer - Occupied BW
Center Freq 360.000 kHz
Center Freq: 360.000 kHz
Trig: Free Run
Avg|Hold: 3/10
#IFGain:Low
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
12:33:27 PM Sep 15, 2024
Trace/Detector
Mkr1 359.991 kHz
-47.033 dBm
10 dB/div
Ref -20.00 dBm
Log
Center 360 kHz
#Res BW 100 Hz
#VBW 300 Hz
Span 1 kHz
Sweep FFT
Occupied Bandwidth
211 Hz
Total Power -47.0 dBm
Transmit Freq Error -9 Hz
OBW Power 99.00 %
x dB Bandwidth 248 Hz
x dB -20.00 dB
Clear Write
Average
Max Hold
Min Hold
Detector
Average
Auto
Man
MSG
STATUS
AC coupled: Accy unspec'd < 10MHz

5.4 Conducted Emissions at Mains Terminals 150 kHz to 30MHz

Test Requirement: FCC Part 15 C section 15.207

Test Method: ANSI C63.10

Operating Environment:

Temperature: 24 °C Humidity: 51 % RH Atmospheric Pressure: 101 kPa

Frequency Range: 150 kHz to 30 MHz

Detector: Peak for pre-scan (9 kHz Resolution Bandwidth)

Test Limit

Limits for conducted disturbance at the mains ports of class B

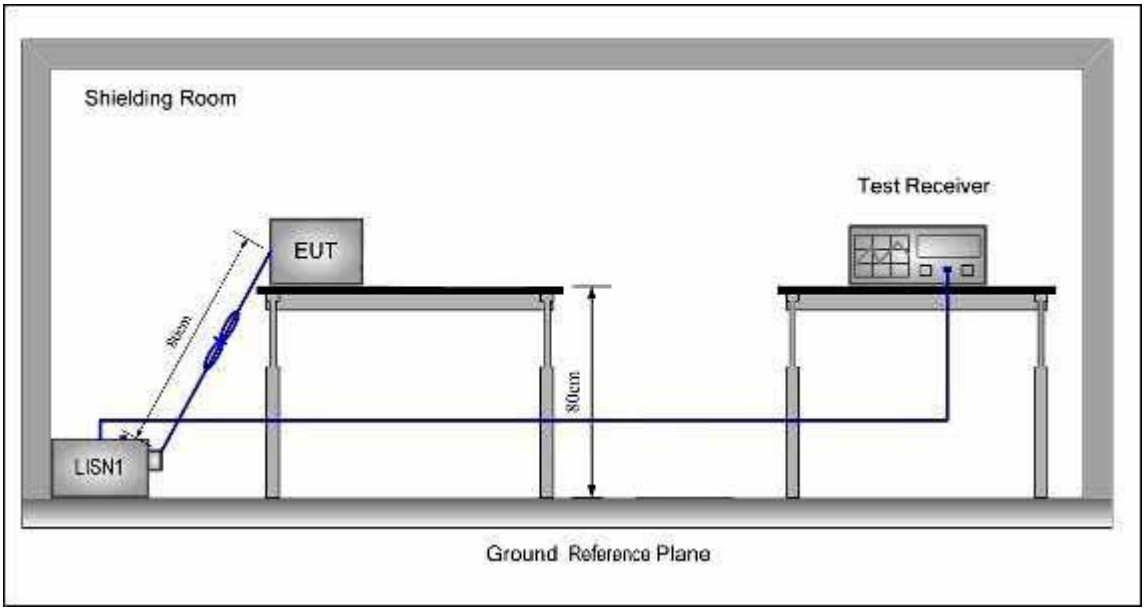
Frequency Range (MHz)	Class B Limit dB(μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
NOTE 1 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

EUT Operation:

Test in normal operating mode. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, channels and antenna ports (if EUT with antenna diversity architecture).

Test Configuration:



Test procedure:

1. The mains terminal disturbance voltage test was conducted in a shielded room.

2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

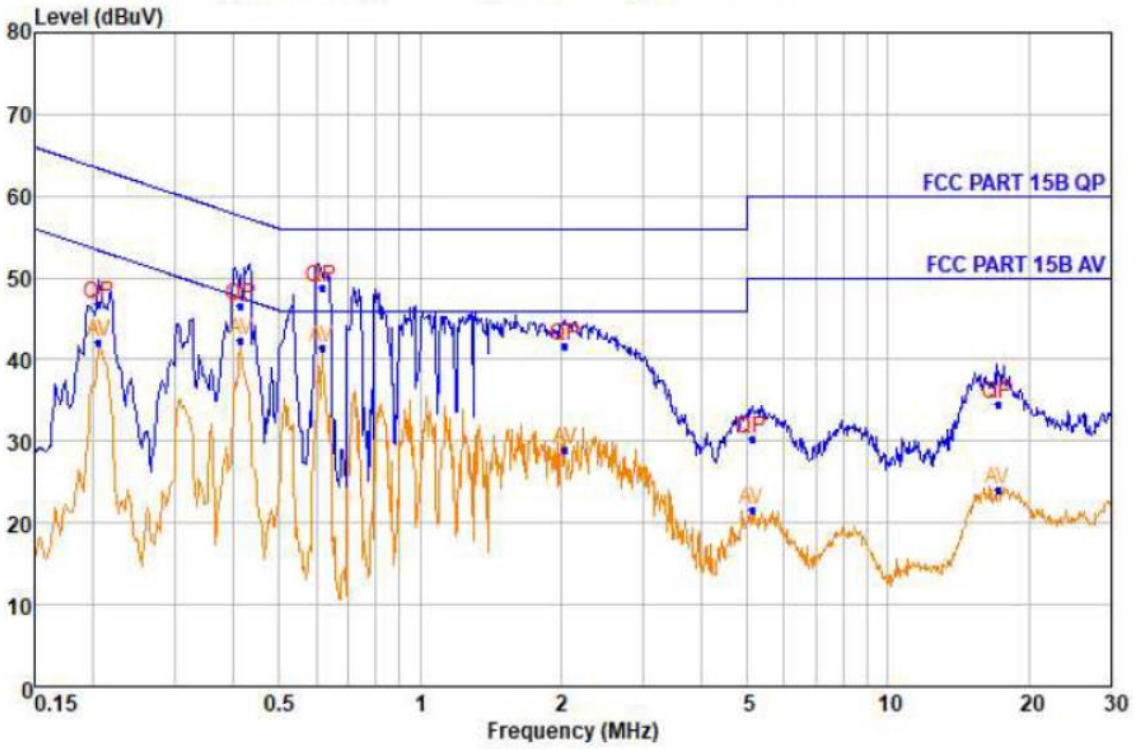
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected. For EUT the communicating was worst case mode.

The following Quasi-Peak and Average measurements were performed on the EUT

Live line

Peak Scan:

Level (dBµV)



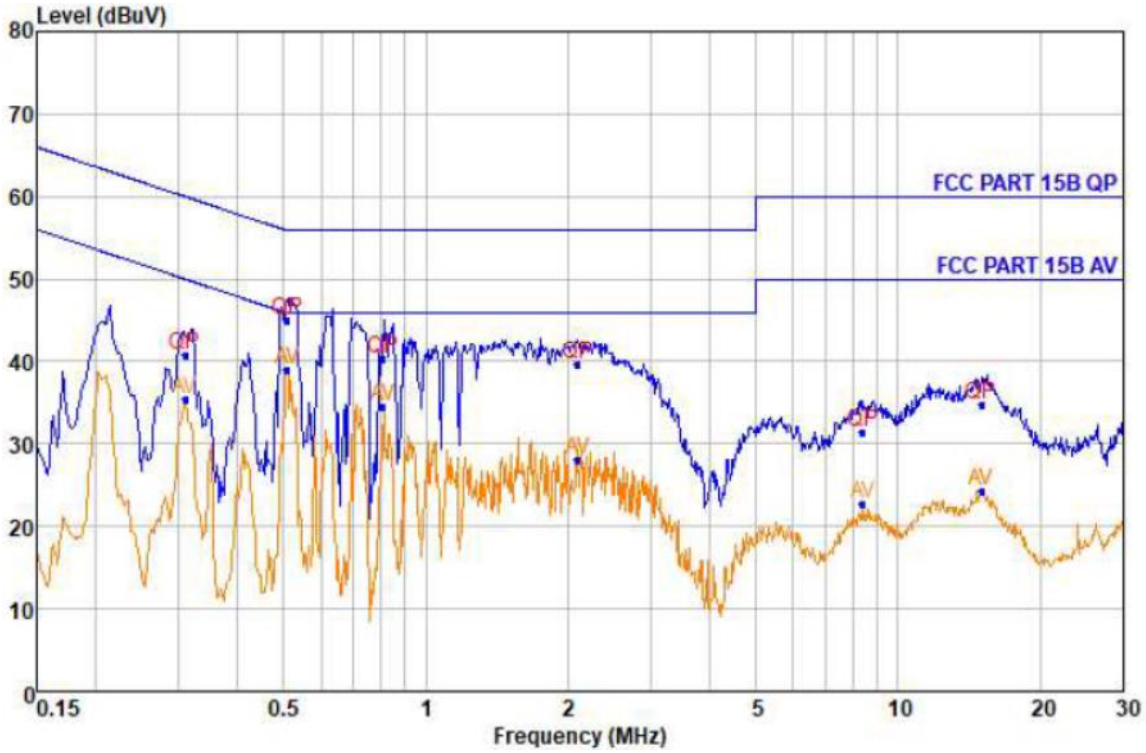
Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Margin dB
1	0.206	46.76	QP	9.68	0.22	63.38	-16.62
2	0.206	42.02	Average	9.68	0.22	53.36	-11.34
3	0.415	46.59	QP	9.66	0.26	57.55	-10.96
4	0.415	42.37	Average	9.66	0.26	47.55	-5.18
5	0.617	48.70	QP	9.69	0.28	56.00	-7.30
6	0.617	41.50	Average	9.69	0.28	46.00	-4.50
7	2.039	41.64	QP	9.65	0.35	56.00	-14.36
8	2.039	28.94	Average	9.65	0.35	46.00	-17.06
9	5.110	30.35	QP	9.61	0.40	60.00	-29.65
10	5.110	21.54	Average	9.61	0.40	50.00	-28.46
11	17.159	34.63	QP	9.70	0.47	60.00	-25.37
12	17.159	24.06	Average	9.70	0.47	50.00	-25.94

Neutral Line

Peak Scan:

Level (dBμV)



Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Margin dB
1	0.310	40.73	QP	9.65	0.24	59.97	-19.24
2	0.310	35.45	Average	9.65	0.24	49.97	-14.52
3	0.509	44.97	QP	9.67	0.27	56.00	-11.03
4	0.509	38.98	Average	9.67	0.27	46.00	-7.02
5	0.811	40.34	QP	9.62	0.30	56.00	-15.66
6	0.811	34.58	Average	9.62	0.30	46.00	-11.42
7	2.094	39.75	QP	9.62	0.35	56.00	-16.25
8	2.094	27.99	Average	9.62	0.35	46.00	-18.01
9	8.410	31.53	QP	9.62	0.43	60.00	-28.47
10	8.410	22.65	Average	9.62	0.43	50.00	-27.35
11	15.000	34.87	QP	9.63	0.46	60.00	-25.13
12	15.000	24.26	Average	9.63	0.46	50.00	-25.74

-- End of test report --