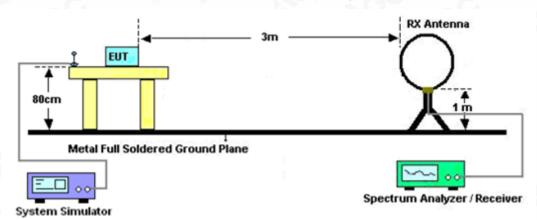
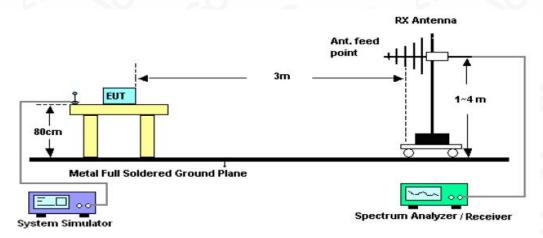


#### 11.2. TEST SETUP

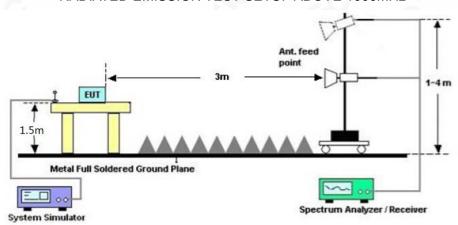
# Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



# RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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#### 11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

### 11.4. TEST RESULT

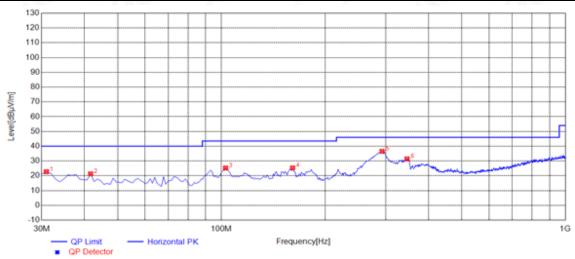
#### Radiated emission below 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.



# Radiated emission from 30MHz to 1000MHz

EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHz	Antenna	Horizontal



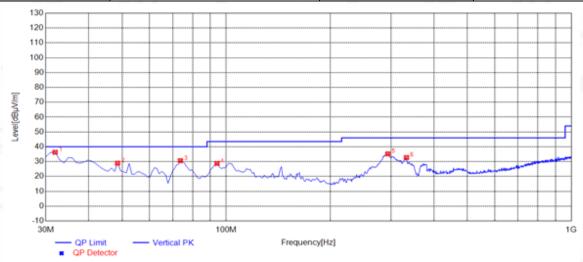
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	30.9710	22.71	10.02	40.00	17.29	100	124	Horizontal
2	41.6517	21.27	10.89	40.00	18.73	100	360	Horizontal
3	102.8228	25.22	11.67	43.50	18.28	100	169	Horizontal
4	161.0811	25.31	14.83	43.50	18.19	100	86	Horizontal
5	293.1331	36.54	15.24	46.00	9.46	100	74	Horizontal
6	346.5365	31.39	15.92	46.00	14.61	100	322	Horizontal

**RESULT: PASS** 

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EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHz	Antenna	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	31.9419	36.30	10.19	40.00	3.70	100	95	Vertical
2	48.4484	28.93	11.53	40.00	11.07	100	82	Vertical
3	73.6937	30.63	8.46	40.00	9.37	100	51	Vertical
4	94.0841	28.76	8.94	43.50	14.74	100	95	Vertical
5	294.1041	35.23	15.16	46.00	10.77	100	101	Vertical
6	332.9429	32.71	15.58	46.00	13.29	100	152	Vertical

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Limit-Level.

- 2. The "Factor" value can be calculated automatically by software of measurement system.
- 3. All test modes had been pre-tested. The 802.11b at low channel is the worst case and recorded in the report.

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### Radiated emission above 1GHz

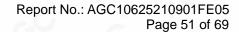
EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHz	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4824.000	54.63	0.08	54.71	74	-19.29	peak
4824.000	45.17	0.08	45.25	54	-8.75	AVG
7236.000	49.32	2.21	51.53	74	-22.47	peak
7236.000	40.26	2.21	42.47	54	-11.53	AVG
	6	5				-C
emark:		10	2.0	0		

EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHz	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tree
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4824.000	55.31	0.08	55.39	74	-18.61	peak
4824.000	45.36	0.08	45.44	54	-8.56	AVG
7236.000	51.07	2.21	53.28	74	-20.72	peak
7236.000	40.84	2.21	43.05	54	-10.95	AVG
		8		_ (1)		<u> </u>
			©			

Factor = Antenna Factor + Cable Loss – Pre-amplifier.



c/Inspection
The test results
the test report.

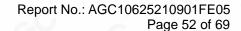


EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHz	Antenna	Horizontal

Meter Reading	Factor	Emission Level	Limits	Margin	\/alica Tim
(dBµV)	(dB)	(dBµV/m)	(dBµV/m) (dB)	Value Type	
56.39	0.14	56.53	74	-17.47	peak
45.95	0.14	46.09	54	-7.91	AVG
51.02	2.36	53.38	74	-20.62	peak
40.27	2.36	42.63	54	-11.37	AVG
8			- 6	8	
					8
	(dBμV) 56.39 45.95 51.02	(dBμV) (dB) 56.39 0.14 45.95 0.14 51.02 2.36	(dBμV)     (dB)     (dBμV/m)       56.39     0.14     56.53       45.95     0.14     46.09       51.02     2.36     53.38	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)       56.39     0.14     56.53     74       45.95     0.14     46.09     54       51.02     2.36     53.38     74	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)     (dB)       56.39     0.14     56.53     74     -17.47       45.95     0.14     46.09     54     -7.91       51.02     2.36     53.38     74     -20.62

EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHz	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tree
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.000	55.33	0.14	55.47	74	-18.53	peak
4874.000	46.18	0.14	46.32	54	-7.68	AVG
7311.000	50.22	2.36	52.58	74	-21.42	peak
7311.000	40.37	2.36	42.73	54	-11.27	AVG
	©			G	8	
emark:			®			<u> </u>
$actor = \Delta nten$	na Factor + Cable	I nes - Pre-	amplifier			





EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHz	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4924.000	54.37	0.22	54.59	74	-19.41	peak
4924.000	43.26	0.22	43.48	54	-10.52	AVG
7386.000	49.25	2.64	51.89	74	-22.11	peak
7386.000	40.08	2.64	42.72	54	-11.28	AVG
0				8		
G	(3)			- C	@	
temark:						
actor = Anter	nna Factor + Cable	Loss - Pre-	amplifier.			

EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHz	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin 💿	\/alua Tima
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	- Value Type
4924.000	56.15	0.22	56.37	74	-17.63	peak
4924.000	45.11	0.22	45.33	54	-8.67	AVG
7386.000	51.09	2.64	53.73	74	-20.27	peak
7386.000	42.38	2.64	45.02	54	-8.98	AVG
	<b>C</b>	C	®			
emark:			- G	©		
ctor = Anter	nna Factor + Cable	Loss – Pre-a	mplifier.	C)	(8)	

### Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin=Level-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

All test modes had been pre-tested. The 802.11b mode is the worst case and recorded in the report.

The test results

the test report.



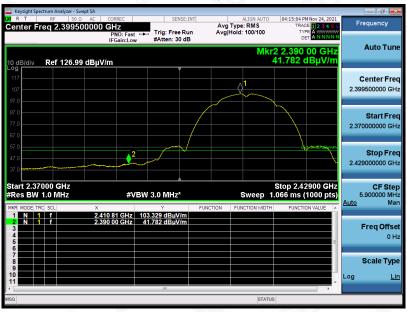
## Test result for band edge emission at restricted bands

EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHz	Antenna	Horizontal

# Test Graph for Peak Measurement



#### Test Graph for Average Measurement



**RESULT: PASS** 



EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement





EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



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EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



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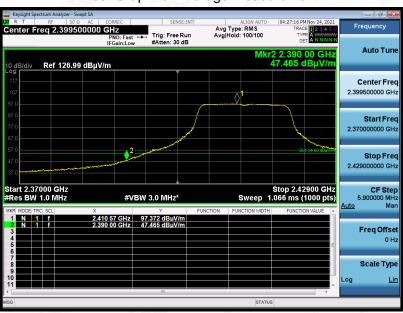


EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



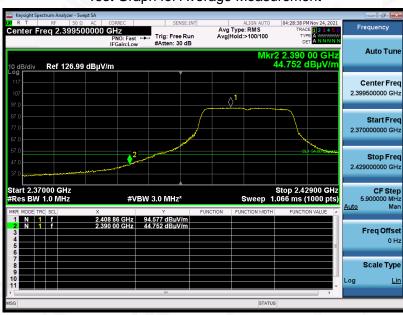


EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement





EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity 60%	
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement





EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement





EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20 with data rate 6.5 2412MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



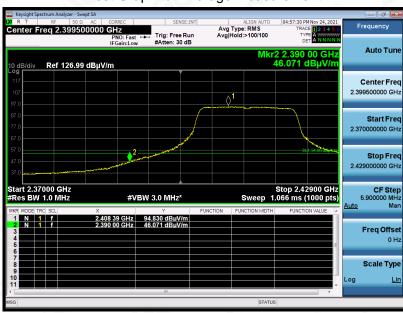


EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20 with data rate 6.5 2412MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



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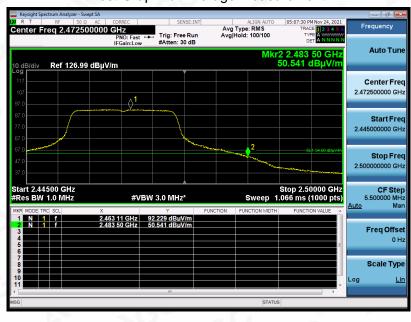


EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20 with data rate 6.5 2462MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement





EUT	Outdoor Smart plug	Model Name	WP7
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20 with data rate 6.5 2462MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement





# 12. LINE CONDUCTED EMISSION TEST

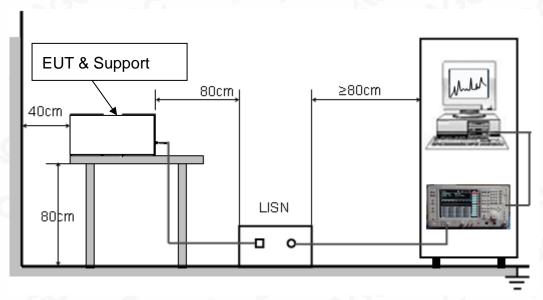
### 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

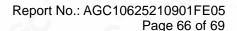
Francos	Maximum RF Line Voltage			
Frequency	Q.P (dBμV) Average (dBμV)			
150kHz~500kHz	66-56	56-46		
500kHz~5MHz	56	46		
5MHz~30MHz	60	50		

### Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

# 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST







#### 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 Ohm load; the second scan had Line 1 connected to a 50 Ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

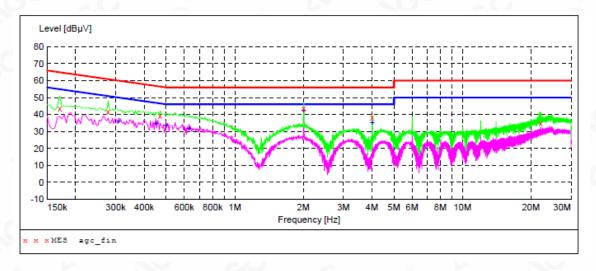
## 12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less – 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case was reported on the Summary Data page.



### 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

#### Line Conducted Emission Test Line 1-L



#### MEASUREMENT RESULT: "agc fin"

2021/10/29 21:16

_	etector Line
21.2 Q	P L1
19.4 Q	P L1
7 17.2 Q	P L1
12.7 Q	P L1
18.0 Q	P L1
25.1 Q	P L1
	7 dB 5 21.2 Q 1 19.4 Q 7 17.2 Q 5 12.7 Q 5 18.0 Q

### MEASUREMENT RESULT: "agc fin2"

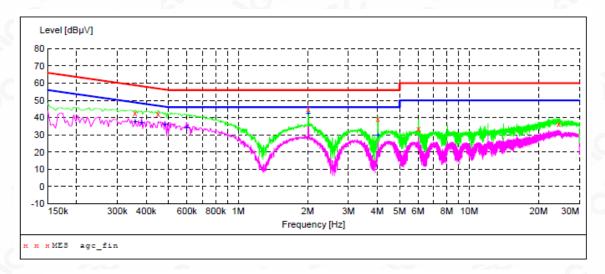
2021/10/29 21:16

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.310000 0.450000 0.498000 0.630000 2.006000 4.014000	36.20 34.80 34.00 31.90 42.40 35.40	6.0 5.5 5.4 5.4 6.5 6.5	50 47 46 46 46 46	13.8 12.1 12.0 14.1 3.6 10.6	AV AV AV	L1 L1 L1 L1 L1 L1

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#### Line Conducted Emission Test Line 2-N



# MEASUREMENT RESULT: "agc\_fin"

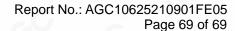
202	21/10/29 21 Frequency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line
	0.358000 0.450000 2.010000	42.70 41.90 44.80	5.8 5.5 6.5	59 57 56		QP	N N
	4.022000 6.034000 24.398000	39.30 33.60 36.10	6.5 6.6 9.1	56 60 60		QP	N N N

#### MEASUREMENT RESULT: "agc fin2"

2021/10/29 Level Transd Limit Margin Detector Frequency Line MHz dΒμV dΒ dΒμV dB 0.358000 37.80 5.8 49 11.0 ΑV Ν 0.382000 37.40 5.7 48 10.8 ΑV Ν 0.482000 36.20 5.4 46 10.1 ΑV Ν 0.598000 34.40 5.4 46 11.6 Ν ΑV 2.010000 42.60 6.5 46 3.4 ΑV Ν 4.026000 30.20

#### **RESULT: PASS**

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# APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC10625210901AP01

**APPENDIX B: PHOTOGRAPHS OF EUT** 

Refer to the Report No.: AGC10625210901AP02

----END OF REPORT----



# Conditions of Issuance of Test Reports

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- 2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
- 3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
- 4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
- 5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
- 6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
- 7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
- 8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
- 9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.