

# **FCC Test Report**

Report No.: AGC08791220805FE02

FCC ID : 2A8JCA3

**APPLICATION PURPOSE**: Original Equipment

**PRODUCT DESIGNATION**: Unmanned aerial vehicle

**BRAND NAME** : N/A

**MODEL NAME** : A3(Series model name please see page 5)

**APPLICANT**: TENG SU TOYS FACTORY

**DATE OF ISSUE** : Sep. 20, 2022

**STANDARD(S)** : FCC Part 15.247

**REPORT VERSION**: V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

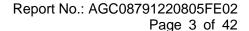




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## **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 20, 2022	Valid	Initial Release





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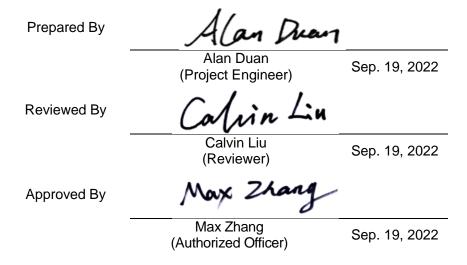
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## 1. VERIFICATION OF COMPLIANCE

Applicant	TENG SU TOYS FACTORY			
Address	No. 23, Middle Road, Huaize Dongguahu Industrial Zone, Lianxia Town, Chenghai District, Shantou City, Guangdong Province, China			
Manufacturer	TENG SU TOYS FACTORY			
Address	No. 23, Middle Road, Huaize Dongguahu Industrial Zone, Lianxia Town, Chenghai District, Shantou City, Guangdong Province, China			
Factory	TENG SU TOYS FACTORY			
Address	No. 23, Middle Road, Huaize Dongguahu Industrial Zone, Lianxia Town, Chenghai District, Shantou City, Guangdong Province, China			
Product Designation	Unmanned aerial vehicle			
Brand Name	N/A			
Test Model	A3			
Series Model	A1, A2, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12, X13, X14, X15, Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M11, M12, M13, M14, M15, W1, W2, W3, W4, W5, W6, W7, W8, W9, W10, W11, W12, W13, W14, W15, F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, F13, F14, F15			
<b>Declaration of Difference</b>	Only the product batch number is different, and the others are the same.			
Date of test	Aug. 24,2022 to Sep. 20, 2022			
Deviation	No any deviation from the test method			
<b>Condition of Test Sample</b>	Normal			
Test Result	Pass			
Report Template	AGCRT-US-BLE/RF			

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC part 15.247.





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## 2. GENERAL INFORMATION

## 2.1. PRODUCT DESCRIPTION

The EUT is designed as a "Unmanned aerial vehicle". It is designed by way of utilizing the GFSK technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.420 GHz to 2.473GHz		
RF Output Power	-2.018dBm (Max)		
Modulation	GFSK		
Number of channels	54 Channel		
Antenna Designation	wire antenna (Comply with requirements of the FCC part 15.203)		
Antenna Gain	0dBi		
Hardware Version	V3		
Software Version	V2		
Power Supply	DC 4.5V by battery		



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## 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency	Channel Number	Frequency
	1	2420 MHz	28	2447 MHz
	2	2421 MHz	29	2448 MHz
	3	2422 MHz	30	2449 MHz
	4	2423 MHz	31	2450 MHz
	5	2424 MHz	32	2451 MHz
	6	2425 MHz	33	2452 MHz
	7	2426 MHz	34	2453 MHz
	8	2427 MHz	35	2454 MHz
	9	2428 MHz	36	2455 MHz
	10	2429 MHz	37	2456 MHz
	11	2430 MHz	38	2457 MHz
	12	2431 MHz	39	2458 MHz
	13	2432 MHz	40	2459 MHz
2420~2473MHz	14	2433 MHz	41	2460 MHz
	15	2434 MHz	42	2461 MHz
	16	2435 MHz	43	2462 MHz
	17	2436 MHz	44	2463 MHz
	18	2437 MHz	45	2464 MHz
	19	2438 MHz	46	2465 MHz
	20	2439 MHz	47	2466 MHz
	21	2440 MHz	48	2467 MHz
	22	2441 MHz	49	2468 MHz
	23	2442 MHz	50	2469 MHz
	24	2443 MHz	51	2470 MHz
	25	2444 MHz	52	2471 MHz
	26	2445 MHz	53	2472 MHz
	27	2446 MHz	54	2473 MHz



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## 2.3. RELATED SUBMITTAL(S)/GRANT(S)

This submittal(s) (test report) is intended for FCC ID: 2A8JCA3 filing to comply with the FCC Part 15.247 requirements.

#### 2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

#### 2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

## 2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

#### 2.7. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device. For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.



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## 3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty	
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1 \text{ dB}$	
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0 \text{ dB}$	
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8 \text{ dB}$	
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$	
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$	
Uncertainty of spurious emissions, conducted	$U_c = \pm 2 \%$	
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$	



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## 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION	
1	Low channel TX_CH01	
2	Middle channel TX_CH31	
3	High channel TX_CH54	

#### Note:

- 1. Only the result of the worst case was recorded in the report, if no other cases.
- 2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
- 3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.
- 4. The EUT adjusts the frequency through the button.

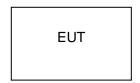


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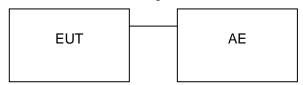
## 5. SYSTEM TEST CONFIGURATION

## **5.1. CONFIGURATION OF TESTED SYSTEM**

Radiated Emission Configure:



Conducted Emission Configure:



## **5.2. EQUIPMENT USED IN TESTED SYSTEM**

Item Equipment		Model No.	ID or Specification	Remark	
1	Unmanned aerial vehicle	A3	2A8JCA3	EUT	

## **5.3. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
15.247 (b)(3)	Peak Output Power	Compliant
15.247 (a)(2)	6 dB Bandwidth	Compliant
15.247 (d)	Conducted Spurious Emission	Compliant
15.247 (e)	.247 (e) Maximum Conducted Output Power Density	
15.209	15.209 Radiated Emission	
15.207 Conducted Emission		Not applicable

Note: The EUT is battery operated without AC mains.



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## **6. TEST FACILITY**

Test Site Attestation of Global Compliance (Shenzhen) Co., Ltd	
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance (Shenzhen) Co., Ltd is accredited by A2LA

#### TEST EQUIPMENT OF CONDUCTED EMISSION TEST

1201 2011 11211 01 0011200122 21111001011 1201						
	Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
	TEST RECEIVER	R&S	ESPI	101206	Mar. 28, 2022	Mar. 27, 2023
	LISN	R&S	ESH2-Z5	100086	Jun. 09, 2022	Jun. 08, 2023
	Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A

## **TEST EQUIPMENT OF RADIATED EMISSION TEST**

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Mar. 28, 2022	Mar. 27, 2023
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Nov. 17, 2021	Nov. 16, 2022
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	N/A	N/A
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 02, 2022	Sep. 01, 2024
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 02, 2022	Sep. 01, 2024
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A

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## 7. PEAK OUTPUT POWER

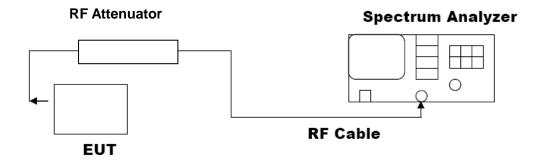
## 7.1. MEASUREMENT PROCEDURE

For peak power test:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. RBW ≥ DTS bandwidth
- 3. VBW≥3\*RBW.
- 4. SPAN≥VBW.
- 5. Sweep: Auto.
- 6. Detector function: Peak.
- 7. Trace: Max hold.

Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power, after any corrections for external attenuators and cables.

## 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) PEAK POWER TEST SETUP





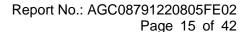
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## 7.3. LIMITS AND MEASUREMENT RESULT

	10. 2 7 7 7 7 7 7						
	Test Data of Conducted Output Power						
Test Mode	Pass or Fail						
	2420	-2.018	≤30	Pass			
GFSK 1M	2450	-5.116	≤30	Pass			
	2473	-5.414	≤30	Pass			

**Test Graphs of Conducted Output Power** 











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## 8. BANDWIDTH

#### 8.1. MEASUREMENT PROCEDURE

#### 6dB bandwidth:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 kHz, VBW ≥ 3×RBW.
- 4. Set SPA Trace 1 Max hold, then View.

#### Occupied bandwidth:

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hoping channel
  The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video
  bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
- 4. Set SPA Trace 1 Max hold, then View.

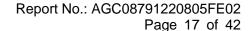
**Note:** The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

## 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 7.2.

#### 8.3. LIMITS AND MEASUREMENT RESULTS

Test Data of Occupied Bandwidth and DTS Bandwidth						
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-6dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail	
GFSK 1M	2420	1.020	0.670	≥0.5	Pass	
	2450	1.021	0.669	≥0.5	Pass	
	2473	1.021	0.669	≥0.5	Pass	

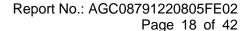




**Test Graphs of Occupied Bandwidth** |02:47:34 PM Sep 05, 2022 Radio Std: None Frequency Center Freq: 2.420000000 GHz
Trig: Free Run Avg|Hold: 10/10 Center Freg 2.420000000 GHz Trig: Free Run #Atten: 30 dB #IFGain:Low Radio Device: BTS Ref 30.00 dBm Center Freq 2.420000000 GHz Center 2.42 GHz #Res BW 30 kHz Span 3 MHz Sweep 4.133 ms CF Step 300.000 kHz **#VBW 100 kHz** <u>Auto</u> Man 4.51 dBm **Total Power** Occupied Bandwidth 1.0202 MHz Freq Offset 0 Hz **Transmit Freq Error** -4.193 kHz **OBW Power** 99.00 % x dB Bandwidth 1.239 MHz -26.00 dB x dB Test\_Graph\_LE1M\_ANT1\_2420\_1Mbps\_OBW 02:58:25 PM Sep 05, 202 Radio Std: None Center Freq: 2.450000000 GHz Trig: Free Run Avg|Ho Frequency Center Freq 2.450000000 GHz Avg|Hold: 10/10 #IFGain:Low #Atten: 30 dB Radio Device: BTS Ref 30.00 dBm Center Freq 2.450000000 GHz Span 3 MHz Sweep 4.133 ms Center 2.45 GHz #Res BW 30 kHz CF Step 300.000 kHz **#VBW 100 kHz** Auto Mar **Total Power** 1.33 dBm Occupied Bandwidth 1.0208 MHz Freq Offset Transmit Freq Error -5.906 kHz **OBW Power** 99.00 % x dB Bandwidth 1.239 MHz x dB -26.00 dB

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Test\_Graph\_LE1M\_ANT1\_2450\_1Mbps\_OBW



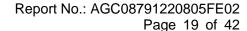








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## 9. CONDUCTED SPURIOUS EMISSION

## 9.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

## 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

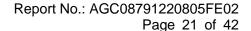
The same as described in section 7.2.

#### 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

#### 9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT					
AB. at L. Danie	Measurement Result				
Applicable Limits	Test Data	Criteria			
In any 100 kHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.	At least -20dBc than the reference level	PASS			





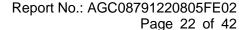
Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands



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Test\_Graph\_LE1M\_ANT1\_2420\_1Mbps\_Lower Band Emissions

Web: http://www.agccert.com/



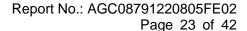




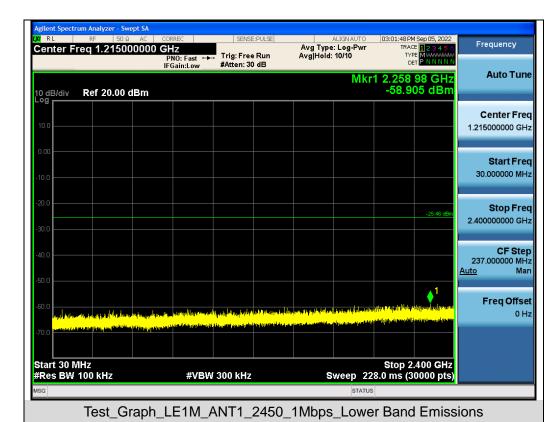
Test\_Graph\_LE1M\_ANT1\_2420\_1Mbps\_Higher Band Emissions



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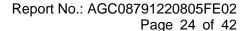




gilent Spectrum Analyzer - Swept SA Frequency Avg Type: Log-Pwi Avg|Hold: 10/10 Center Freq 13.741750000 GHz Trig: Free Run #Atten: 30 dB IFGain:Low **Auto Tune** Mkr1 21.882 1 GHz -48.447 dBm 10 dB/div Ref 20.00 dBm Center Freq 13.741750000 GHz Start Freq 2.483500000 GHz Stop Freq 25.000000000 GHz CF Step 2.251650000 GHz Man <u>Auto</u> Frea Offset 0 Hz Start 2.48 GHz #Res BW 100 kHz Stop 25.00 GHz Sweep 2.152 s (30000 pts) #VBW 300 kHz

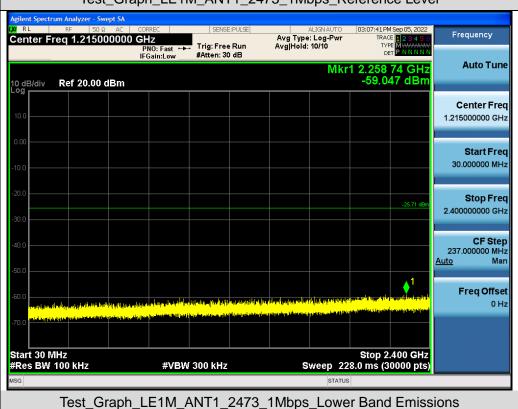
Test\_Graph\_LE1M\_ANT1\_2450\_1Mbps\_Higher Band Emissions

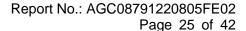
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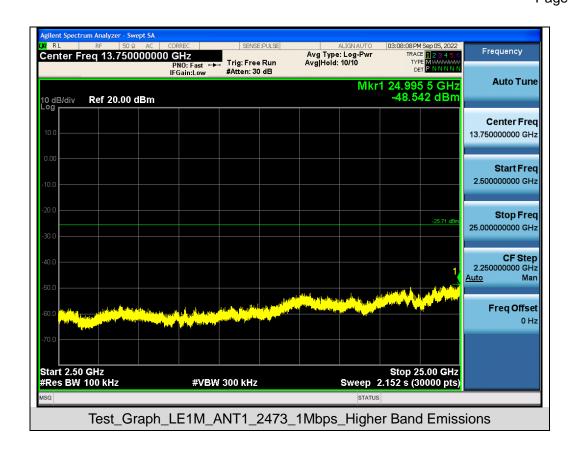


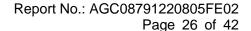














Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands



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Test\_Graph\_LE1M\_ANT1\_2473\_1Mbps\_Higher Band Edge Emissions

Web: http://www.agccert.com/



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## 10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

#### 10.1. MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set the SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the KDB 558074 item 8.4 was used in this testing.

## 10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer to Section 7.2.

#### 10.3. MEASUREMENT EQUIPMENT USED

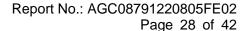
Refer to Section 6.

#### 10.4. LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power Spectral Density						
Test Mode	Test Channel (MHz)	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail		
	2420	-18.328	<b>≤8</b>	Pass		
GFSK 1M	2450	-21.417	≤8	Pass		
	2473	-21.705	<b>≤8</b>	Pass		

Test Graphs of Conducted Output Power Spectral Density











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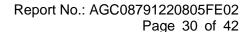


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## 11. RADIATED EMISSION

#### 11.1. MEASUREMENT PROCEDURE

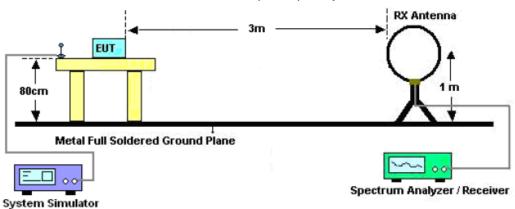
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.



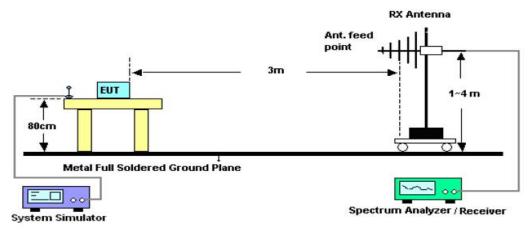


## 11.2. TEST SETUP

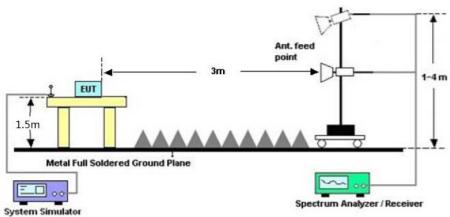
## Radiated Emission Test-Setup Frequency Below 30MHz



## RADIATED EMISSION TEST SETUP 30MHz-1000MHz



## RADIATED EMISSION TEST SETUP ABOVE 1000MHz





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## 11.3. LIMITS AND MEASUREMENT RESULT

15.209 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

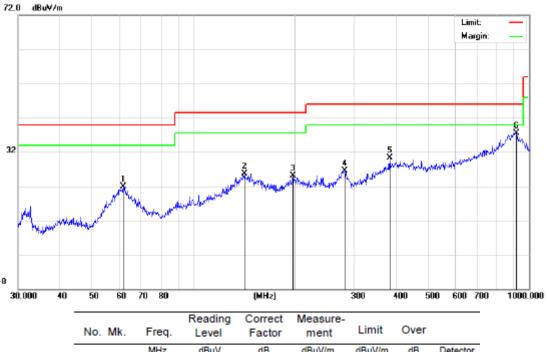
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.



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## Radiated emission from 30MHz to 1000MHz

EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal



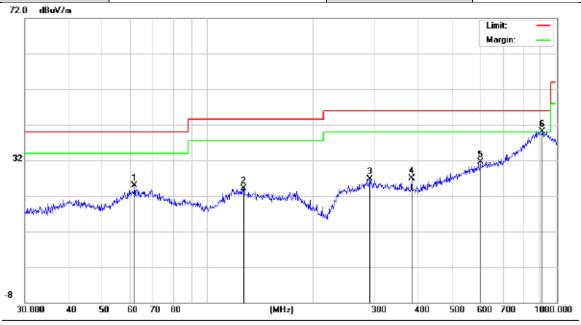
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		61.7781	6.38	15.53	21.91	40.00	-18.09	peak
2		141.8262	6.19	19.51	25.70	43.50	-17.80	peak
3		197.8928	5.32	19.74	25.06	43.50	-18.44	peak
4		281.9946	5.05	21.49	26.54	46.00	-19.46	peak
5		383.9318	7.58	22.68	30.26	46.00	-15.74	peak
6	*	916.0687	6.47	31.08	37.55	46.00	-8.45	peak

**RESULT: PASS** 





EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		61.7781	7.08	17.91	24.99	40.00	-15.01	peak
2	•	126.7723	5.71	18.38	24.09	43.50	-19.41	peak
3	2	292.0583	5.95	20.66	26.61	46.00	-19.39	peak
4		383.9318	7.73	19.22	26.95	46.00	-19.05	peak
5	(	603.5392	6.59	24.99	31.58	46.00	-14.42	peak
6	* (	906.4824	5.59	34.44	40.03	46.00	-5.97	peak

## RESULT: PASS

- 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.
- 2. All test modes had been tested. The mode 3 is the worst case and recorded in the report.



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## Radiated emission above 1GHz

EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Meter Reading	Factor	Emission Level	Limits	Margin	- Value Type	
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
43.5	0.08	43.58	74	-30.42	peak	
35.44	0.08	35.52	54	-18.48	AVG	
38.71	2.21	40.92	74	-33.08	peak	
31.37	2.21	33.58	54	-20.42	AVG	
	(dBµV) 43.5 35.44 38.71	(dBµV) (dB) 43.5 0.08 35.44 0.08 38.71 2.21	(dBμV)     (dB)     (dBμV/m)       43.5     0.08     43.58       35.44     0.08     35.52       38.71     2.21     40.92	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)       43.5     0.08     43.58     74       35.44     0.08     35.52     54       38.71     2.21     40.92     74	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)     (dBμV/m)       43.5     0.08     43.58     74     -30.42       35.44     0.08     35.52     54     -18.48       38.71     2.21     40.92     74     -33.08	

Remark:

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

EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

( 15 ) 0			Limits	Margin	Value Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
44.41	0.08	44.49	74	-29.51	peak
34.76	0.08	34.84	54	-19.16	AVG
38.39	2.21	40.6	74	-33.4	peak
30.73	2.21	32.94	54	-21.06	AVG
	34.76 38.39	34.76     0.08       38.39     2.21	34.76     0.08     34.84       38.39     2.21     40.6	34.76     0.08     34.84     54       38.39     2.21     40.6     74	34.76     0.08     34.84     54     -19.16       38.39     2.21     40.6     74     -33.4

Remark:

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



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EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.000	44.72	0.14	44.86	74	-29.14	peak
4880.000	35.8	0.14	35.94	54	-18.06	AVG
7320.000	39.33	2.36	41.69	74	-32.31	peak
7320.000	31.68	2.36	34.04	54	-19.96	AVG
emark:						

EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	─ Value Type
4880.000	45.25	0.14	45.39	74	-28.61	peak
4880.000	38.13	0.14	38.27	54	-15.73	AVG
7320.000	40.62	2.36	42.98	74	-31.02	peak
7320.000	32.39	2.36	34.75	54	-19.25	AVG

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



Vertical

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EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	44.72	0.22	44.94	74	-29.06	peak
4960.000	35.56	0.22	35.78	54	-18.22	AVG
7440.000	38.63	2.64	41.27	74	-32.73	peak
7440.000	29.76	2.64	32.4	54	-21.6	AVG
emark:						

EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage

**Antenna** 

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	42.83	0.22	43.05	74	-30.95	peak
4960.000	34.11	0.22	34.33	54	-19.67	AVG
7440.000	38.76	2.64	41.4	74	-32.6	peak
7440.000	29.62	2.64	32.26	54	-21.74	AVG
emark:						

#### **RESULT: PASS**

**Test Mode** 

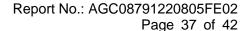
#### Note:

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, Over=Measure-Limit.

Mode 3

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

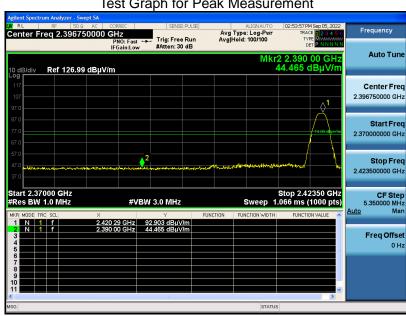




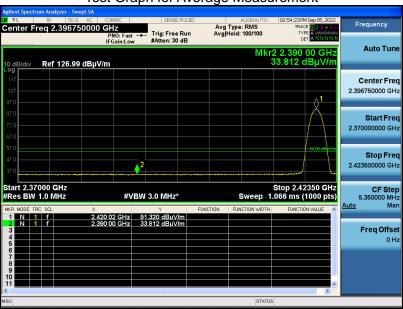
Test result for band edge emission at restricted bands

EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Test Graph for Peak Measurement



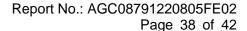




**RESULT: PASS** 

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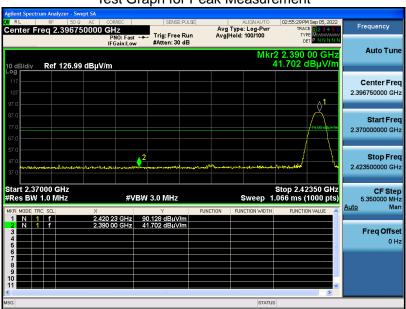
Web: http://www.agccert.com/



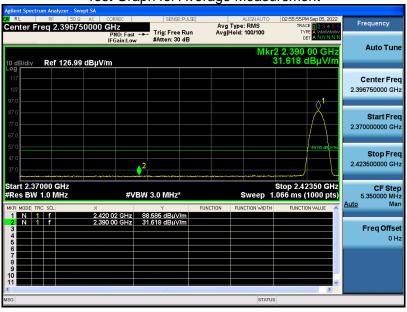


EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

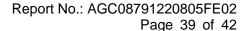
Test Graph for Peak Measurement



Test Graph for Average Measurement



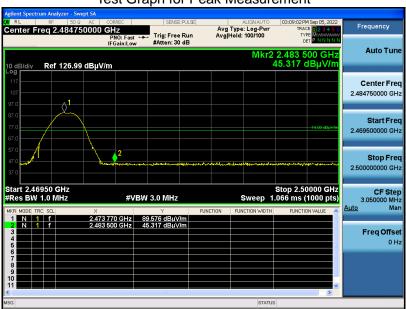
**RESULT: PASS** 



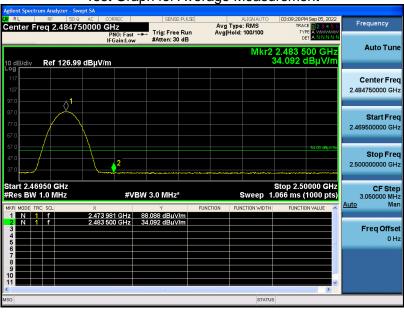


**EUT** Unmanned aerial vehicle **Model Name A3** 25° C **Temperature Relative Humidity** 55.4% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 3 **Antenna** Horizontal

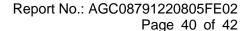
Test Graph for Peak Measurement



Test Graph for Average Measurement



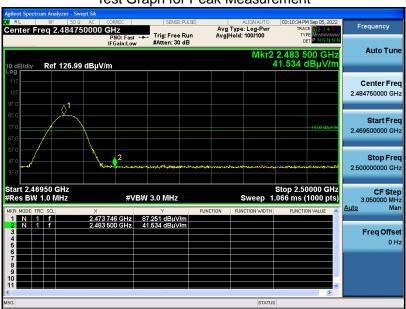
**RESULT: PASS** 





EUT	Unmanned aerial vehicle	Model Name	A3
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



## **RESULT: PASS**

Note: The factor had been edited in the "Input Correction" of the Spectrum Analyzer.



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## 12. LINE CONDUCTED EMISSION TEST

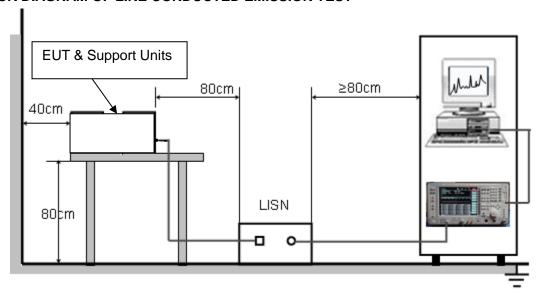
## 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Francis	Maximum RF Line Voltage		
Frequency	Q.P.( dBuV)	Average( dBuV)	
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





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#### 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 condition(s) was reported on the Summary Data page.

## 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

N/A

Note: The EUT is battery operated without AC mains.



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## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC08791220805AP01

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC08791220805AP02



## Conditions of Issuance of Test Reports

- 1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd. (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").
- 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.