

# **FCC Test Report**

Report No.: AGC03773210602FE02

FCC ID	) 	2AZDM-WIFIBT
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	USB WiFi Bluetooth Adapter
BRAND NAME	:	EDUP
MODEL NAME	:	EP-N8568, EP-N8567
APPLICANT	:	Nebra Ltd
DATE OF ISSUE	© ;	Jul. 08, 2021
STANDARD(S)	:	FCC Part 15.247
REPORT VERSION	:	V1.0





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#### **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0		Jul. 08, 2021	Valid	Initial Release

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# **1. VERIFICATION OF COMPLIANCE**

Applicant	Nebra Ltd	
Address	Unit 4 Bells Yew Green Business Court, Bells Yew Green, East Sussex, TN3 9BJ, United Kingdom	
Manufacturer	Shenzhen EDUP Electronics Technology Co., Ltd	
Address	6 Floor, #6 Building, No.48, Kangzheng Road Liantang Industrial Area, Buji Town, Shenzhen, China	
Factory	Shenzhen EDUP Electronics Technology Co., Ltd	
Address	6 Floor, #6 Building, No.48, Kangzheng Road Liantang Industrial Area, Buji Town, Shenzhen, China	
Product Designation	USB WiFi Bluetooth Adapter	
Brand Name	EDUP	
Test Model	EP-N8568	
Series Model	EP-N8567	
Declaration of Difference	All the series models are the same as the test model except for the model names and the shape of appearance.	
Date of test	Jun. 25, 2021 to Jul. 08, 2021	
Deviation	No any deviation from the test method	
Condition of Test Sample	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.

Prepared By

well chang

Cool Cheng (Project Engineer)

Jul. 08, 2021

Max Zhans

Reviewed By

Max Zhang (Reviewer)

Jul. 08, 2021

Approved By

oWe

Forrest Lei (Authorized Officer)

Jul. 08, 2021

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# 2. GENERAL INFORMATION

# 2.1. PRODUCT DESCRIPTION

The EUT is designed as a "USB WiFi Bluetooth Adapter". 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	2.402 GHz to 2.480GHz
RF Output Power	2.993dBm (Max)
Bluetooth Version	V4.0
Modulation	BR
Number of channels	40 Channels
Antenna Designation	PCB Antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	2.07dBi
Hardware Version	V1.2
Software Version	V2.1
Power Supply	DC 5V by PC

# 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	0	2402 MHz
	1	2404 MHz
2400~2483.5MHz	G a a	
c.C	38	2478 MHz
	39	2480 MHz

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

This submittal(s) (test report) is intended for FCC ID: 2AZDM-WIFIBT 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  $\pm U$ , 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 <sub>c</sub> = ±3.1 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		
2	Middle channel TX		
3	High channel TX		

#### 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.

# Software Setting

Bluetooth RF Test Tool V2017.10.20			
Aode Interface USB T Pott=1 T	Open Close	DL Patch	REALTER
Non Link Mode   Hopping LE Test   RW			Hot Key
LE PKT TX (for MP)			HCI Reset
			Test Mode
Channel 39	Le Tx Gain Index 5	-	Patch code
Data Len 0x25 👻			GetChipInfo
Payload Type Pseudo-Random bit sequence 9 👻			Get BT Stage
			0
			Load Script
Stat Stop			Read Thermal
State State			Read BD Address
LE Rx Count 0			ShowTxPower
			Disable Power Trackir
Message			Enable PowerTrackin
>>LeTest_Stop I			
>>LeTest_Start : PKT TX >>LeTest_Stop			
>>LeTest_Start : PKT TX			
A STATE OF A			
	应用程序 5	537 KB	

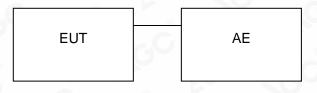
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# **5. SYSTEM TEST CONFIGURATION**

# 5.1. CONFIGURATION OF TESTED SYSTEM

Radiated Emission Configure:



Conducted Emission Configure:

EUT	AE

# 5.2. EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	USB WiFi Bluetooth	EP-N8568	2AZDM-WIFIBT	EUT
2	PC	Nbl-WAQ9R	N/A	AE
3	Control Box	N/A	USB-TTL	AE

# 5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT				
15.247 (b)(3)	Peak Output Power	Compliant				
15.247 (a)(2)	247 (a)(2) 6 dB Bandwidth					
15.247 (d)	15.247 (d) Conducted Spurious Emission					
15.247 (e)	Maximum Conducted Output Power Density	Compliant				
15.209	Radiated Emission	Compliant				
15.207	Conducted Emission	Compliant				

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# 6. TEST FACILITY

Test Site	Attestation of 0	Global Compliance (Sl	henzhen) Co.,	Ltd	8							
Location		-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China										
Designation Number	CN1259	J1259										
FCC Test Firm Registration Number	975832											
A2LA Cert. No.	5054.02	5054.02										
Description	Attestation of 0	Global Compliance (Sl	henzhen) Co.,	Ltd is accredited I	by A2LA							
TEST EQUIPMENT OF	CONDUCTED E	MISSION TEST										
Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due							
TEST RECEIVER	R&S	ESPI	101206	May 15, 2021	May 14, 2022							
LISN	R&S	ESH2-Z5	100086 Jun. 09, 202		Jun. 08, 2022							
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	May 15, 2021	May 14, 2022
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 07, 2020	Dec. 06, 2021
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 21, 2019	Sep. 20, 2021
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2022
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
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

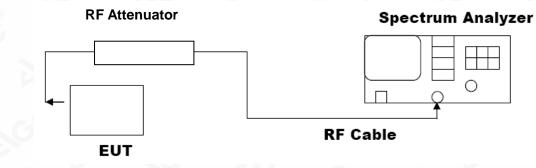
# 7.1. MEASUREMENT PROCEDURE

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

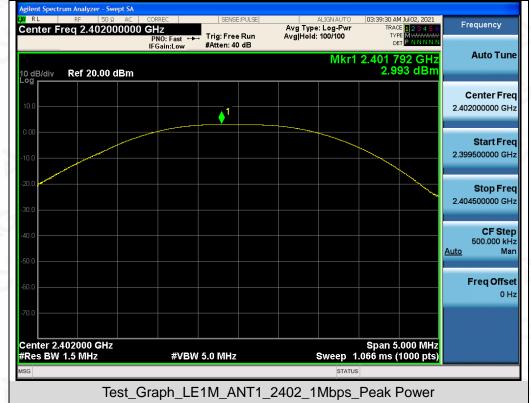


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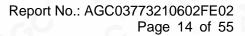
#### 7.3. LIMITS AND MEASUREMENT RESULT

Test Data of Conducted Output Power										
Test ModeTest Channel (MHz)Peak Power (dBm)Limits (dBm)Pass or										
	2402	2.993	≤30	Pass						
GFSK 1M	2440	-1.027	≤30	Pass						
0	2480	-0.935	≤30	Pass						



#### **Test Graphs of Conducted Output Power**

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#### Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Peak 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 $\ge$ 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.
- 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
   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)

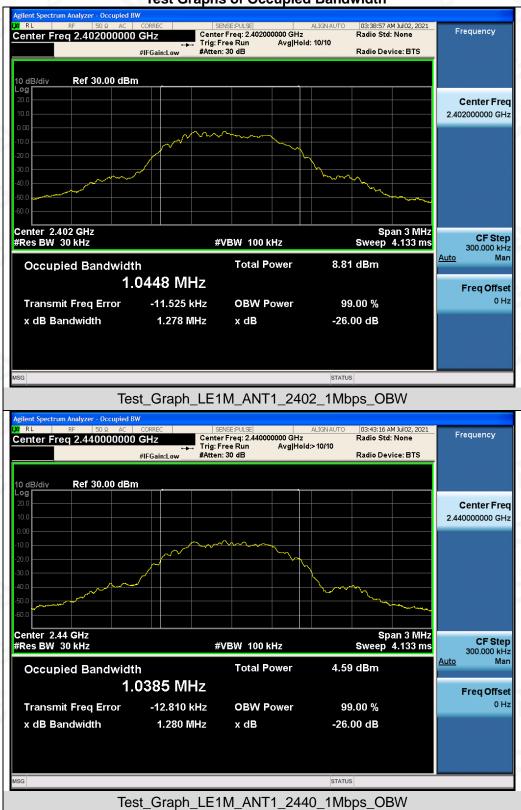
The same as described in section 7.2.

### 8.3. LIMITS AND MEASUREMENT RESULTS

	Test Data of Occupied Bandwidth and DTS Bandwidth										
Test ModeTest Channel (MHz)99% Occupied Bandwidth (MHz)-6dB Bandwidth (MHz)Limits (MHz)Pass											
- 60	2402	1.045	0.722	≥0.5	Pass						
GFSK 1M	2440	1.039	0.717	≥0.5	Pass						
8	2480	1.040	0.726	≥0.5	Pass						

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### Test Graphs of Occupied Bandwidth

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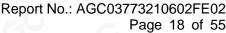


# Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_OBW



# Test Graphs of DTS Bandwidth

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#### Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_DTSBW

STATUS



#### Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_DTSBW

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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									
Applicable Limite	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							

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#### Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands

Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Lower Band Emissions

#VBW 300 kHz

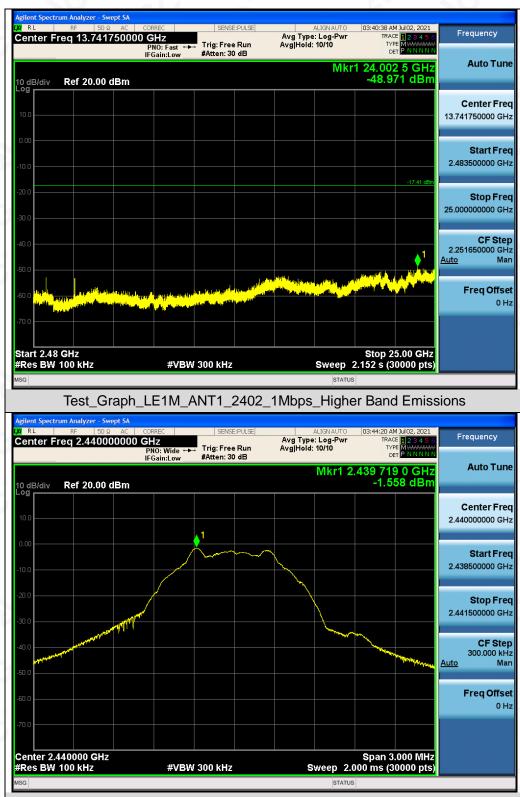
Stop 2.390 GHz Sweep 226.0 ms (30000 pts)

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Start 30 MHz #Res BW 100 <u>kHz</u>

#### Report No.: AGC03773210602FE02 Page 21 of 55



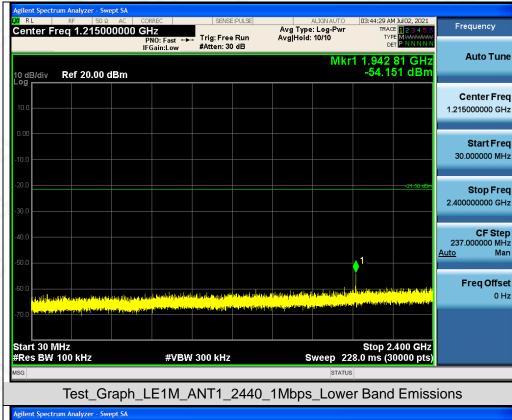


Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Reference Level

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#### Report No.: AGC03773210602FE02 Page 22 of 55





enter F	req 13.741	750000	PNO:Fast ↔	_ Trig: Free Ru #Atten: 30 dB	Avg T <sub>i</sub> in Avg Ho	ALIGN AUTO /pe: Log-Pwr ild: 10/10	TRAC TYP	4 Jul 02, 2021 E 1 2 3 4 5 6 E MW//////// T P N N N N N	Frequency
I0 dB/div	Ref 20.00		FGain:Low	#Atten: 30 di	J	Mkı	1 24.100 -48.60	) 8 GHz )2 dBm	Auto Tun
- <b>og</b> 10.0									Center Fre 13.741750000 G⊦
0.00 10.0									<b>Start Fre</b> 2.483500000 GH
30.0								-21.56 dDm	<b>Stop Fre</b> 25.000000000 GH
-40.0								<b>↓</b> 1	CF Ste 2.251650000 GH <u>Auto</u> Ma
-60.0									Freq Offs 0 F
Start 2.48	GHz 100 kHz		#VBV	V 300 kHz		Sweep	2.152 s (3	5.00 GHz 0000 pts)	

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the stand of the test results of the test results is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the writter aphorization of AGE in the test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15day after the issue of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

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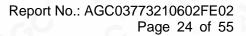




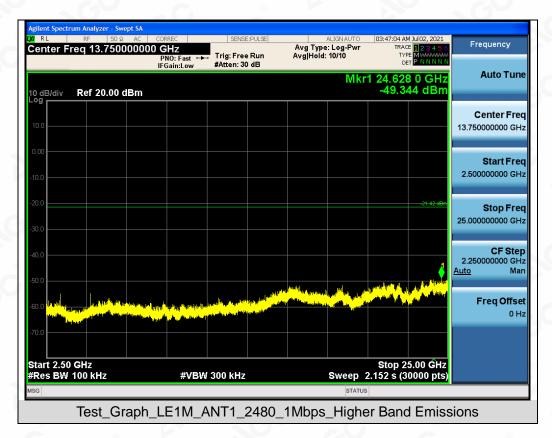
im Analyzer - Swept SA Frequency Avg Type: Log-Pwi Avg|Hold: 10/10 Center Freq 1.215000000 GHz Trig: Free Run #Atten: 30 dB PNO: Fas IFGain:Low Auto Tune Mkr1 2.3 343 91 GHz -58.707 dBm I0 dB/div Ref 20.00 dBm Center Freq 1.215000000 GHz Start Freq 30.000000 MHz Stop Freq 2.40000000 GHz CF Step 237.000000 MHz Mar Auto Freq Offset 0 Hz Start 30 MHz #Res BW 100 kHz Stop 2.400 GHz Sweep 228.0 ms (30000 pts) #VBW 300 kHz Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Lower Band Emissions

Test\_Graph\_LE1M\_ANT1\_2480\_1Mbps\_Reference Level

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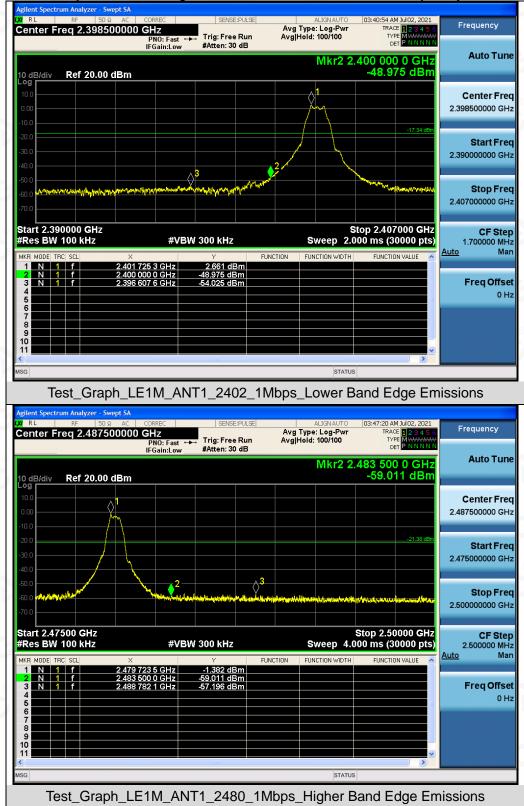
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 Attestation of Global Compliance(Shenzhen)Co., Ltd

 Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

 Tel: +86-755 2523 4088
 E-mail: agc@agc-cert.com





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

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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.

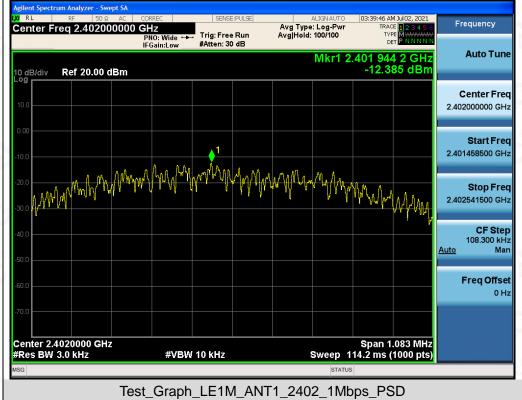
#### **10.3. MEASUREMENT EQUIPMENT USED**

Refer to Section 6.

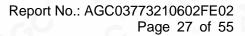
#### **10.4. LIMITS AND MEASUREMENT RESULT**

	Test Data of Conducted Output Power Spectral Density										
Test Mode	Test Channel (MHz)	Power density (dBm/3kHz)	Limit (dBm/3kHz)	Pass or Fail							
	2402	-12.385	≪8	Pass							
GFSK 1M	2440	-17.431	≤8	Pass							
e Cui e	2480	-16.345	≤8	Pass							

### Test Graphs of Conducted Output Power Spectral Density



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#### Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_PSD



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# **11. RADIATED EMISSION**

#### **11.1. MEASUREMENT PROCEDURE**

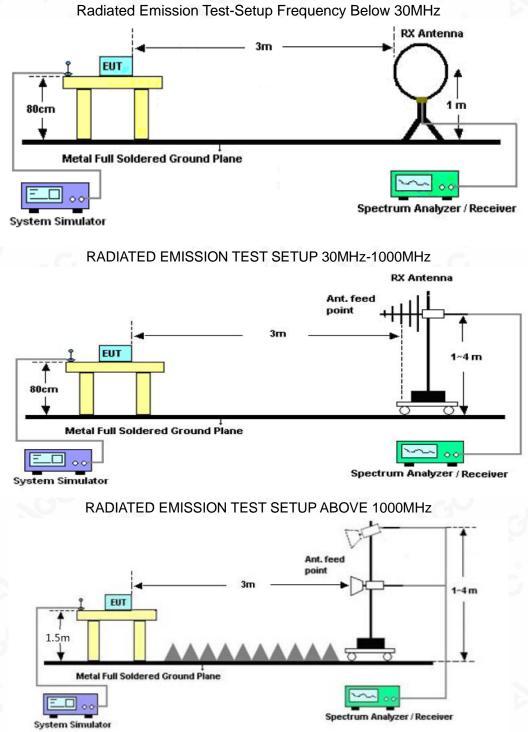
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated 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.

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#### 11.2. TEST SETUP



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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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# Report No.: AGC03773210602FE02 Page 31 of 55

EUT		USE	USB WiFi Bluetooth Adapter				Nodel N	lame		E	EP-N8568									
Temp	perat	ure		25°	25° C Relative Humidity 55.4%							Relative Humidity		55.4%						
Press	Pressure			960hPa						<b>d</b> 1	Fest Vol	ltage		Normal Voltage				< <u>C</u>		
Test	Mode	ode Mode 1				Mode 1 Antenna Horiz							Antenna			Horizontal				
		120 <sub>[</sub>	1				1	1	F	CC PAPT	15C									
		110																		
		100																		
		90														+				
		80														+				
	Ē	70														+				
	Level[dBµV/m]	60														+				
	evel[c	50																		
	-	40																<b>8</b> 6	we w	
		30		^ ₩1	<b>~</b> <sup>2</sup>				3			an <sup>4</sup>	and the Manuar And	menter Stor	Normalicette					
		20		MA	$\sim$	$\sim$	m		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-borthank	mm	New York Contraction of the Cont								
		10														1				
		-10														1				
		-10 - 30N	1	I			1	00M									1	1	1G	
			QP Limit		Horizo	ontal F	۶κ		1	Frequency	/[Hz]									

#### Radiated emission from 30MHz to 1000MHz

		<ul> <li>QP Determination</li> </ul>	ector		, , ,					
	NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]			Height [cm]	Angle [°]	Polarity	
1	1	52.3100	27.67	11.49	40.00	12.33	100	189	Horizontal	
	2	66.8600	21.83	9.76	40.00	18.17	100	202	Horizontal	
	3	130.8800	20.99	14.21	43.50	22.51 100		105	Horizontal	
	4	270.5600	21.42	15.47	46.00	24.58	100	209	Horizontal	
	5	463.5900	27.35 21	21.27	46.00	18.65	100	8	Horizontal	
	6	824.4300	36.61	28.88	46.00	9.39	100	359	Horizontal	

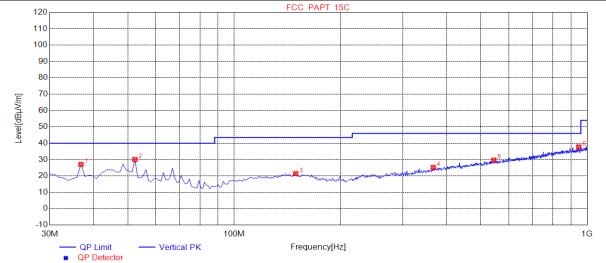
### **RESULT: PASS**

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#### Report No.: AGC03773210602FE02 Page 32 of 55

EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.7900	27.05	11.16	40.00	12.95	100	257	Vertical
2	52.3100	30.07	11.49	40.00	9.93	100	352	Vertical
3	149.3100	21.43	14.88	43.50	22.07	100	355	Vertical
4	366.5900	25.23	18.50	46.00	20.77	100	309	Vertical
5	544.1000	29.69	23.14	46.00	16.31	100	34	Vertical
6	946.6500	37.73	30.65	46.00	8.27	100	267	Vertical

#### RESULT: PASS Note:

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

2. All test modes had been tested. The mode 1 is the worst case and recorded in the report.

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# Report No.: AGC03773210602FE02 Page 33 of 55

EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568			
Temperature	25° C	Relative Humidity	55.4%			
Pressure	960hPa	Test Voltage	Normal Voltage			
Test Mode	Mode 1	Antenna	Horizontal			

#### **Radiated emission above 1GHz**

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	43.56	0.08	43.64	74	-30.36	peak
4804.000	34.29	0.08	34.37	54	-19.63	AVG
7206.000	39.51	2.21	41.72	74	-32.28	peak
7206.000	30.28	2.21	32.49	54	-21.51	AVG
		0				®
			8			

EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	⊙ (dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	45.16	0.08	45.24	74	-28.76	peak
4804.000	36.27	0.08	36.35	54 💿	-17.65	AVG
7206.000	40.87	2.21	43.08	74	-30.92	peak
7206.000	29.98	2.21	32.19	54	-21.81	AVG
(2)		<u> </u>	•	6		

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# Report No.: AGC03773210602FE02 Page 34 of 55

EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
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	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4880.000	45.38	0.14	45.52	74	-28.48	peak
4880.000	36.27	0.14	36.41	54	-17.59	AVG
7320.000	40.15	2.36	42.51	74	-31.49	peak
7320.000	31.59	2.36	33.95	54	-20.05	AVG
20				-0		
emark:	6		6		<u> </u>	
actor = Anter	na Factor + Cable	e Loss – Pre-	amplifier.			<b>S</b>

EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
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	46.29	0.14	46.43	74	-27.57	peak
4880.000	38.52	0.14	38.66	54 💿	-15.34	AVG
7320.000	41.58	2.36	43.94	74	-30.06	peak
7320.000	32.66	2.36	35.02	54	-18.98	AVG
		100	3	G		

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

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#### Report No.: AGC03773210602FE02 Page 35 of 55

EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
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	45.39	0.22	45.61	74	-28.39	peak
4960.000	36.47	0.22	36.69	54	-17.31	AVG
7440.000	41.98	2.64	44.62	74	-29.38	peak
7440.000	30.58	2.64	33.22	54	-20.78	AVG
60		6 F		00		0
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EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
43.28	0.22	43.5	74	-30.5	peak
33.67	0.22	33.89	54	-20.11	AVG
39.57	2.64	42.21	74 💿	-31.79	peak
29.51	2.64	32.15	54	-21.85	AVG
	0			69	.0
	(dBµV) 43.28 33.67 39.57	(dBµV)         (dB)           43.28         0.22           33.67         0.22           39.57         2.64	(dBµV)         (dB)         (dBµV/m)           43.28         0.22         43.5           33.67         0.22         33.89           39.57         2.64         42.21	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)           43.28         0.22         43.5         74           33.67         0.22         33.89         54           39.57         2.64         42.21         74	(dBµV)         (dB)         (dBµV/m)         (dBµV/m)         (dB)           43.28         0.22         43.5         74         -30.5           33.67         0.22         33.89         54         -20.11           39.57         2.64         42.21         74         -31.79

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

#### **RESULT: PASS**

#### 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.

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

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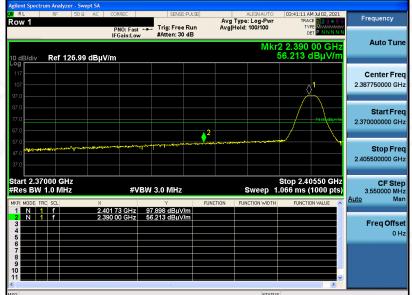


#### Report No.: AGC03773210602FE02 Page 36 of 55

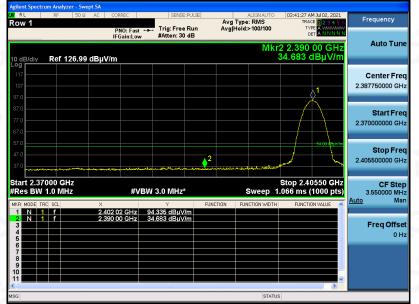
EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

#### Test result for band edge emission at restricted bands

Test Graph for Peak Measurement



Test Graph for Average Measurement



**RESULT: PASS** 

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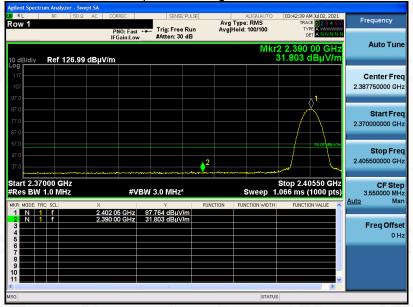
#### Report No.: AGC03773210602FE02 Page 37 of 55

CUT	LICD W//F: Diveteeth Adepter	Medel Nome	
EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
Temperature	25° C	<b>Relative Humidity</b>	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** 

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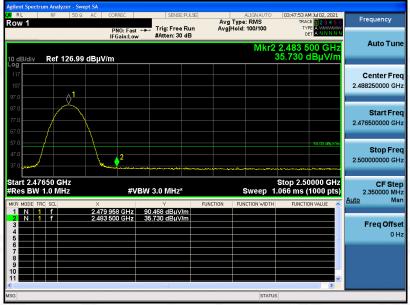
#### Report No.: AGC03773210602FE02 Page 38 of 55

EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Test Graph for Peak Measurement



#### Test Graph for Average Measurement



**RESULT: PASS** 

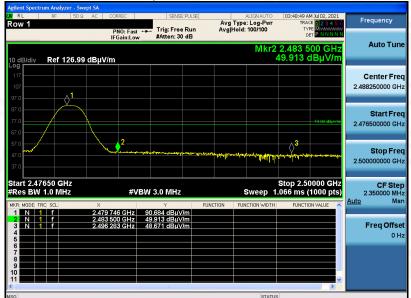
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EUT	USB WiFi Bluetooth Adapter	Model Name	EP-N8568
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

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

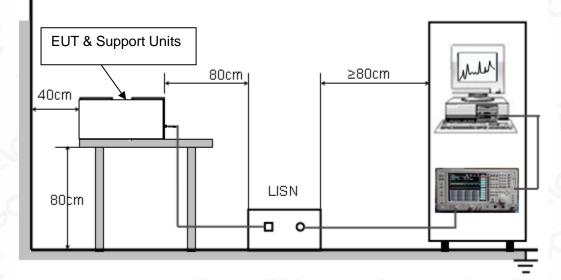
### **12.1. LIMITS OF LINE CONDUCTED EMISSION TEST**

Francianau	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

- 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 PC 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.

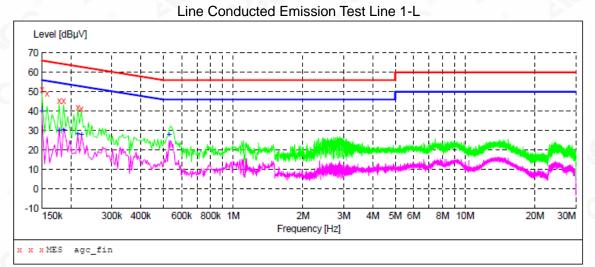
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### 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.
- 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.

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

#### MEASUREMENT RESULT: "agc\_fin"

2021/6/30 21:03 Frequency Level Transd Limit Margin Detector Line MHz dBµV dB dBµV dB 0.150000 50.90 7.4 66 15.1 QP ь1 49.00 0.158000 16.6 7.4 66 QP ь1 0.178000 45.40 7.4 65 19.2 ь1 QP 0.186000 45.40 7.4 64 18.8 QP ь1 0.214000 42.00 7.4 63 21.0 ь1 QP 0.222000 41.00 7.4 63 21.7 ь1 QP

#### MEASUREMENT RESULT: "agc\_IInz"

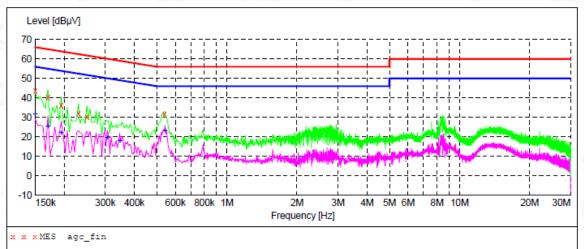
2021/6/30 21:	03					
Frequency	Level	Transd	Limit	Margin	Detector	Line
MHz	dBµV	dB	dBµV	dB		
0.150000	39.90	7.4	56	16.1	AV	L1
0.178000	29.80	7.4	55	24.8	AV	ь1
0.186000	30.10	7.4	54	24.1	AV	ь1
0.214000	28.00	7.4	53	25.0	AV	L1
0.222000	27.80	7.4	53	24.9	AV	L1
0.530000	27.90	7.4	46	18.1	AV	ь1

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Line Conducted Emission Test Line 2-N



#### MEASUREMENT RESULT: "agc fin"

2021/6/30 21:12

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.150000 0.170000 0.194000	43.60 40.20 36.30	7.4 7.4 7.4	66 65 64	22.4 24.8 27.6	QP	N N N
0.230000 0.250000 0.538000	32.10 30.20 31.60	7.4 7.4 7.4	62 62 56	30.3 31.6 24.4	QP QP	N N N

#### MEASUREMENT KESULT: "agc\_IInz"

2021/6/30	21:12					
Frequen M	cy Level Hz dBµV			Margin dB	Detector	Line
0.1500	00 31.50	7.4	56	24.5	AV	N
0.1700	00 25.30	7.4	55	29.7	AV	N
0.1940	00 22.00	7.4	54	31.9	AV	N
0.3060	00 19.40	7.4	50	30.7	AV	Ν
0.3460	00 18.00	7.4	49	31.1	AV	N
0.5420	00 23.10	7.4	46	22.9	AV	N

#### **RESULT: PASS**

Note: All the test modes had been tested, the mode 1 was the worst case. Only the data of the worst case would be record in this test report.

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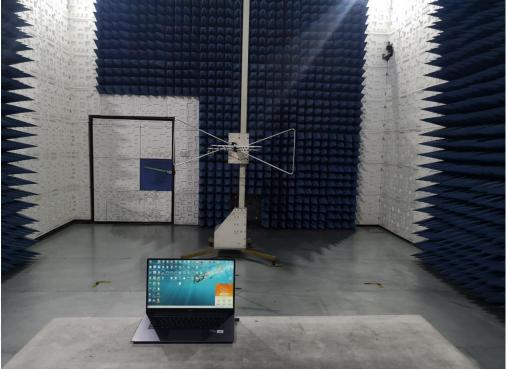
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# APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST SETUP BELOW 1GHZ



RADIATED EMISSION TEST SETUP ABOVE 1GHZ



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