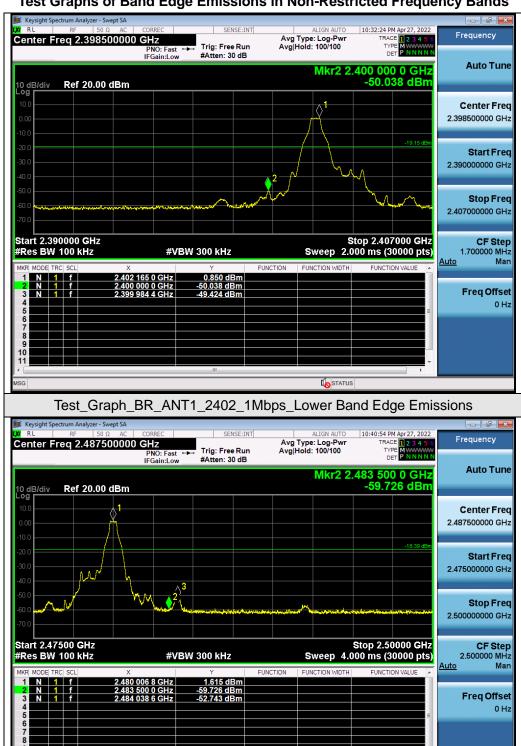




Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands

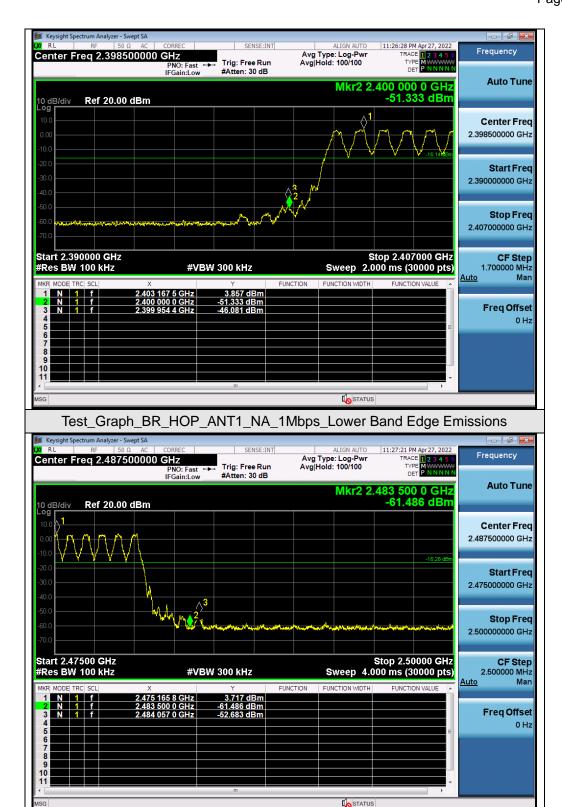


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Test_Graph_BR_ANT1_2480_1Mbps_Higher Band Edge Emissions

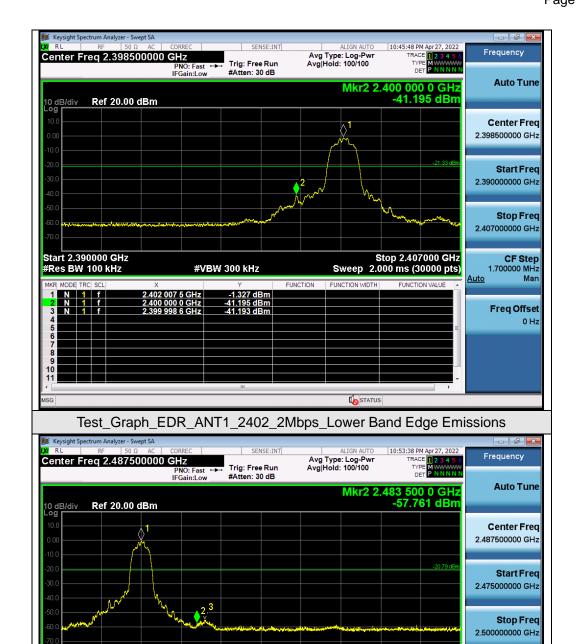
Web: http://www.agccert.com/





Test_Graph_BR_HOP_ANT1_NA_1Mbps_Higher Band Edge Emissions





Stop 2.50000 GHz Sweep 4.000 ms (30000 pts)

FUNCTION VALUE

FUNCTION WIDTH

STATUS

CF Step 2.500000 MHz

Freq Offset

Mar

<u>Auto</u>

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. 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 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

#VBW 300 kHz

2.480 006 0 GHz 2.483 500 0 GHz 2.483 970 3 GHz FUNCTION

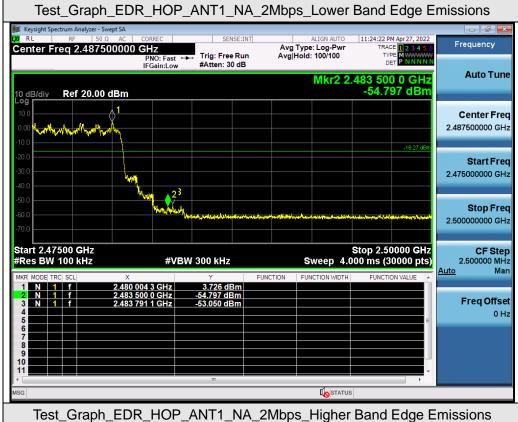
Test_Graph_EDR_ANT1_2480_2Mbps_Higher Band Edge Emissions

Start 2.47500 GHz

#Res BW 100 kHz

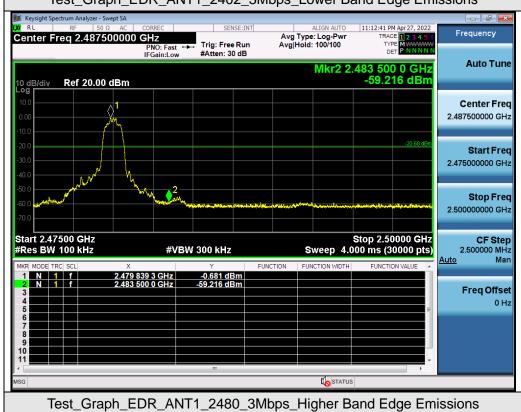




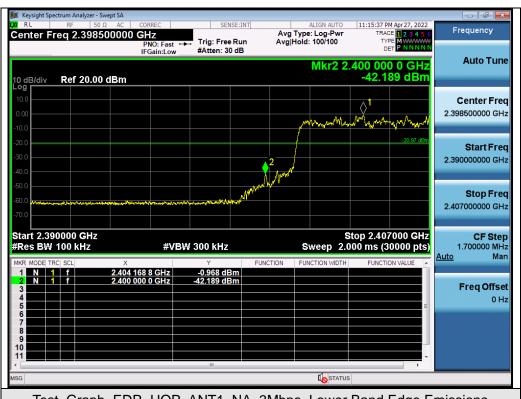


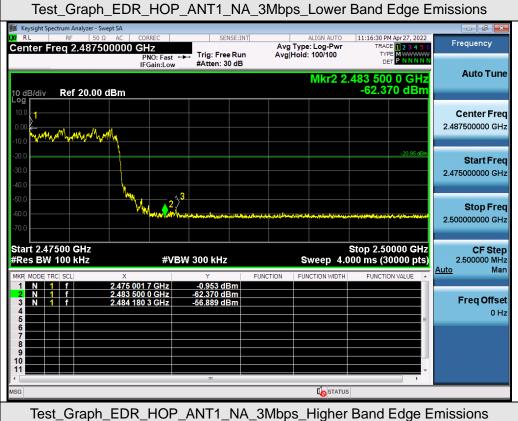














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10. RADIATED EMISSION

10.1. 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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The following table is the setting of spectrum analyzer and receiver.

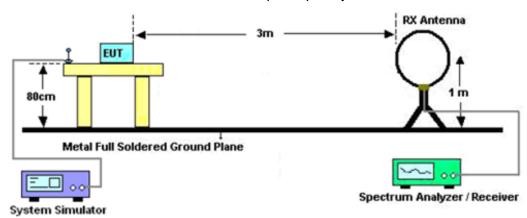
Spectrum Parameter	Setting		
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP		
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP		
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP		
Start Stan Fraguency	1GHz~26.5GHz		
Start ~Stop Frequency	1MHz/3MHz for Peak, 1MHz/3MHz for Average		

Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

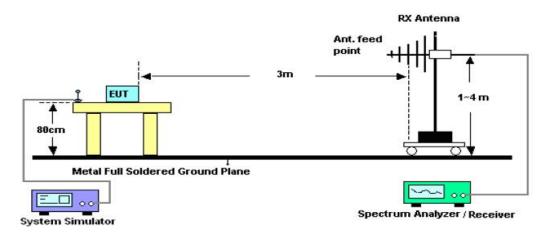


10.2. TEST SETUP

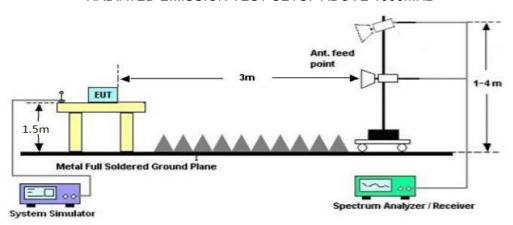
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz





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10.3. 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.

10.4. TEST RESULT

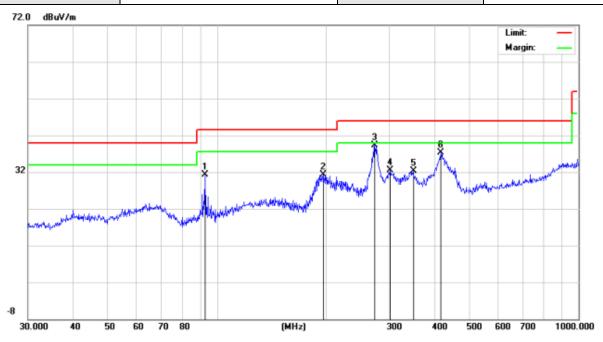
Radiated emission below 30MHz

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	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

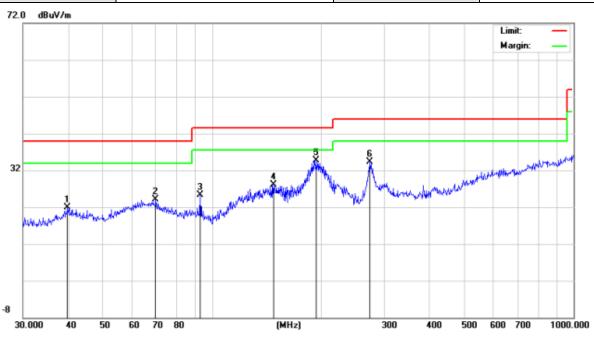


Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
	92.7871	15.37	15.89	31.26	43.50	-12.24	peak
1	197.2000	16.27	15.05	31.32	43.50	-12.18	peak
* 2	273.2341	20.30	19.05	39.35	46.00	-6.65	peak
3	301.4223	8.08	24.43	32.51	46.00	-13.49	peak
3	349.2500	8.24	24.07	32.31	46.00	-13.69	peak
4	116.1791	13.88	23.41	37.29	46.00	-8.71	peak
	1 2 3	MHz	Mk. Freq. Level MHz dBuV 92.7871 15.37 197.2000 16.27 * 273.2341 20.30 301.4223 8.08 349.2500 8.24	Mk. Freq. Level Factor MHz dBuV dB 92.7871 15.37 15.89 197.2000 16.27 15.05 * 273.2341 20.30 19.05 301.4223 8.08 24.43 349.2500 8.24 24.07	Mk. Freq. Level Factor ment MHz dBuV dB dBuV/m 92.7871 15.37 15.89 31.26 197.2000 16.27 15.05 31.32 * 273.2341 20.30 19.05 39.35 301.4223 8.08 24.43 32.51 349.2500 8.24 24.07 32.31	Mk. Freq. Level Factor ment Limit MHz dBuV dB dBuV/m dBuV/m 92.7871 15.37 15.89 31.26 43.50 197.2000 16.27 15.05 31.32 43.50 * 273.2341 20.30 19.05 39.35 46.00 301.4223 8.08 24.43 32.51 46.00 349.2500 8.24 24.07 32.31 46.00	Mk. Freq. Level Factor ment Limit Over MHz dBuV dB dBuV/m dBuV/m dB 92.7871 15.37 15.89 31.26 43.50 -12.24 197.2000 16.27 15.05 31.32 43.50 -12.18 * 273.2341 20.30 19.05 39.35 46.00 -6.65 301.4223 8.08 24.43 32.51 46.00 -13.49 349.2500 8.24 24.07 32.31 46.00 -13.69

RESULT: PASS



EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

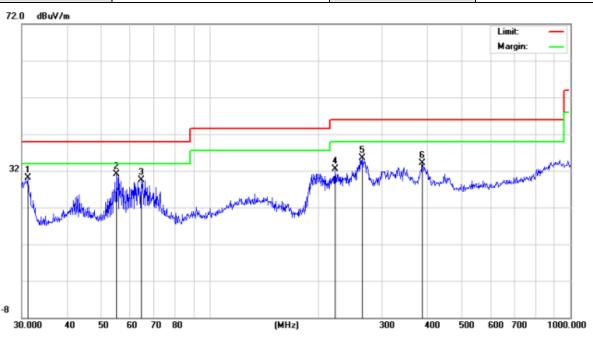


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		39.8542	5.88	16.01	21.89	40.00	-18.11	peak
2		69.8450	5.93	18.11	24.04	40.00	-15.96	peak
3		92.7871	9.87	15.43	25.30	43.50	-18.20	peak
4		147.9214	9.62	18.42	28.04	43.50	-15.46	peak
5	*	193.7728	19.44	15.33	34.77	43.50	-8.73	peak
6		273.2341	13.93	20.39	34.32	46.00	-11.68	peak

Note: 1. Factor=Antenna Factor + Cable loss, Over=Measurement-Limit.



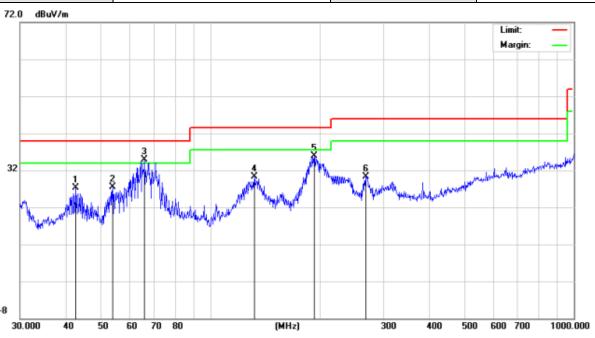
EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		31.1798	16.95	13.21	30.16	40.00	-9.84	peak
2	*	55.0274	15.01	16.11	31.12	40.00	-8.88	peak
3		64.4331	11.76	17.76	29.52	40.00	-10.48	peak
4		222.1698	14.25	18.18	32.43	46.00	-13.57	peak
5		264.7457	17.58	17.93	35.51	46.00	-10.49	peak
6		387.9920	10.42	23.77	34.19	46.00	-11.81	peak



EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

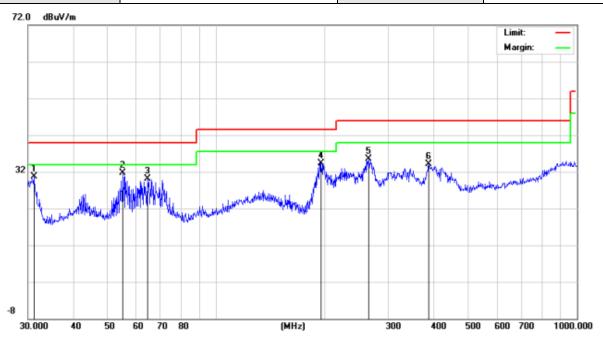


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		42.7496	11.59	15.62	27.21	40.00	-12.79	peak
2		53.8817	11.77	15.73	27.50	40.00	-12.50	peak
3	*	66.0341	16.95	18.01	34.96	40.00	-5.04	peak
4		132.2205	11.21	19.13	30.34	43.50	-13.16	peak
5		193.0945	20.47	15.47	35.94	43.50	-7.56	peak
6		267.5455	10.42	19.92	30.34	46.00	-15.66	peak

Note: 1. Factor=Antenna Factor + Cable loss, Over=Measurement-Limit.



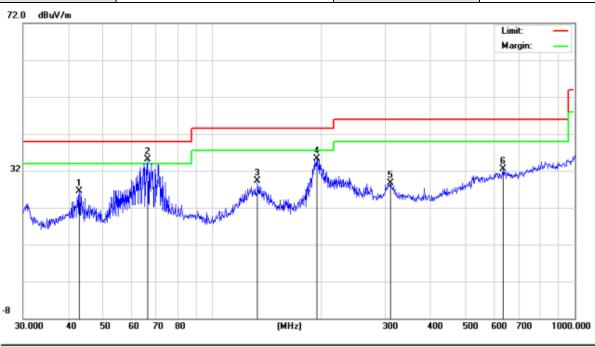
EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		31.1798	17.45	13.21	30.66	40.00	-9.34	peak
2	*	55.0274	15.51	16.11	31.62	40.00	-8.38	peak
3		64.4330	12.26	17.76	30.02	40.00	-9.98	peak
4		195.1365	19.31	15.05	34.36	43.50	-9.14	peak
5		264.7456	17.58	17.93	35.51	46.00	-10.49	peak
6	;	387.9920	10.42	23.77	34.19	46.00	-11.81	peak



EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	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		42.8998	10.91	15.59	26.50	40.00	-13.50	peak
2	*	66.2662	17.01	18.02	35.03	40.00	-4.97	peak
3		133.1511	10.26	19.14	29.40	43.50	-14.10	peak
4		193.7728	20.05	15.33	35.38	43.50	-8.12	peak
5		309.9977	8.23	20.42	28.65	46.00	-17.35	peak
6	(633.9073	6.52	26.02	32.54	46.00	-13.46	peak

Note: 1. Factor=Antenna Factor + Cable loss, Over=Measurement-Limit.

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



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Radiated emission above 1GHz

EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

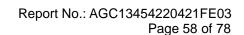
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Time
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4804.000	47.24	0.08	47.32	74	-26.68	peak
4804.000	35.16	0.08	35.24	54	-18.76	AVG
7206.000	42.75	2.21	44.96	74	-29.04	peak
7206.000	31.35	2.21	33.56	54	-20.44	AVG
Remark:						

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

EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

(15.10		Emission Level	Limits	Margin	\/alua Tima
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
46.75	0.08	46.83	74	-27.17	peak
35.19	0.08	35.27	54	-18.73	AVG
41.52	2.21	43.73	74	-30.27	peak
30.86	2.21	33.07	54	-20.93	AVG
_	35.19 41.52	35.19 0.08 41.52 2.21	35.19 0.08 35.27 41.52 2.21 43.73	35.19 0.08 35.27 54 41.52 2.21 43.73 74	35.19 0.08 35.27 54 -18.73 41.52 2.21 43.73 74 -30.27

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





EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	\/alva Tres
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4882.000	45.67	0.14	45.81	74	-28.19	peak
4882.000	34.23	0.14	34.37	54	-19.63	AVG
7323.000	40.49	2.36	42.85	74	-31.15	peak
7323.000	30.27	2.36	32.63	54	-21.37	AVG
Remark:					1	1
Factor = Antenna Factor + Cable Loss - Pre-amplifier.						

EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	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
4882.000	45.93	0.14	46.07	74	-27.93	peak
4882.000	35.19	0.14	35.33	54	-18.67	AVG
7323.000	42.62	2.36	44.98	74	-29.02	peak
7323.000	31.96	2.36	34.32	54	-19.68	AVG
Remark:						

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



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EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	\/alua Tima
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4960.000	46.75	0.22	46.97	74	-27.03	peak
4960.000	34.67	0.22	34.89	54	-19.11	AVG
7440.000	43.22	2.64	45.86	74	-28.14	peak
7440.000	30.34	2.64	32.98	54	-21.02	AVG
Remark:					•	•
Factor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			

EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	\/alua Tima
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4960.000	45.36	0.22	45.58	74	-28.42	peak
4960.000	34.71	0.22	34.93	54	-19.07	AVG
7440.000	41.45	2.64	44.09	74	-29.91	peak
7440.000	30.62	2.64	33.26	54	-20.74	AVG
Remark:						
actor = Anter	nna Factor + Cable	e 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, Margin=Emission Level-Limit.

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

All test modes had been tested. The GFSK modulation is the worst case and recorded in the report.



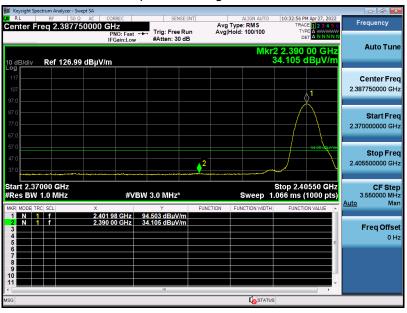
Test result for band edge emission at restricted bands

EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement

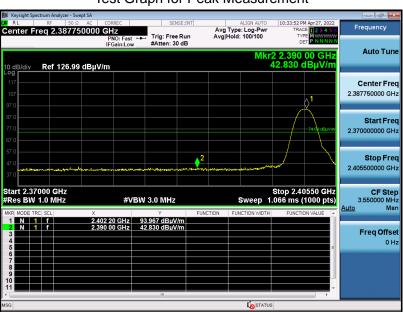


RESULT: PASS



EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Test Graph for Peak Measurement



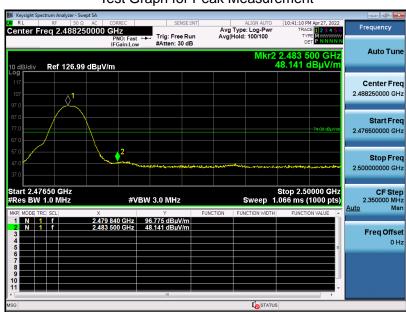
Test Graph for Average Measurement





EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Test Graph for Peak Measurement



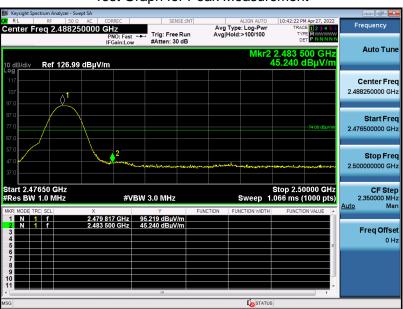
Test Graph for Average Measurement





EUT	Wireless 2-in-1 Adapter	Model Name	ET-BA007
Temperature	25°C	Relative Humidity	55%
Pressure	985hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

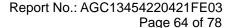
Test Graph for Peak Measurement



Test Graph for Average Measurement



Note: The factor had been edited in the "Input Correction" of the Spectrum Analyzer. The GFSK modulation is the worst case and recorded in the report.





11. NUMBER OF HOPPING FREQUENCY

11.1. MEASUREMENT PROCEDURE

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- 1. Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
- 2. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- 3. VBW RBW. Sweep: Auto. Detector function: Peak. Trace: Max hold.
- 4. Allow the trace to stabilize.

11.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 8.2

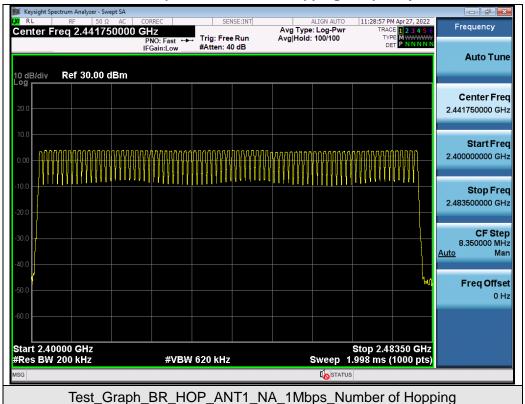
11.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6

11.4. LIMITS AND MEASUREMENT RESULT

Test Data of Number of Hopping Frequency					
Test Mode Number of Hopping Frequency Limits Pass or Fail					
GFSK Hopping	79	>=15	Pass		

Test Graphs of Number of Hopping Frequency



Note: The GFSK modulation is the worst case and recorded in the report.

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12. TIME OF OCCUPANCY (DWELL TIME)

12.1. MEASUREMENT PROCEDURE

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- 1. Span: Zero span, centered on a hopping channel.
- 2. RBW shall be ≤channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel.
- 3. Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
- 4. Detector function: Peak. Trace: Max hold.
- 5. Use the marker-delta function to determine the transmit time per hop.
- 6. Repeat the measurement using a longer sweep time to determine the number of hops over the period specified in the requirements. The sweep time shall be equal to, or less than, the period specified in the requirements. Determine the number of hops over the sweep time and calculate the total number of hops in the period specified in the requirements, using the following equation:

(Number of hops in the period specified in the requirements) = (number of hops on spectrum analyzer) \times (period specified in the requirements / analyzer sweep time).

7. The average time of occupancy is calculated from the transmit time per hop multiplied by the number of hops in the period specified in the requirements.

12.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 8.2

12.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6

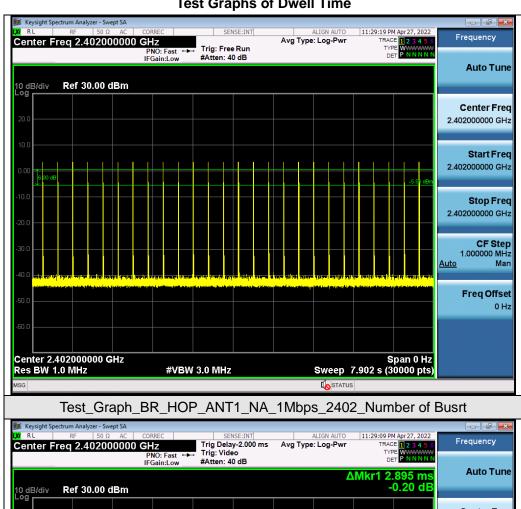
12.4. LIMITS AND MEASUREMENT RESULT

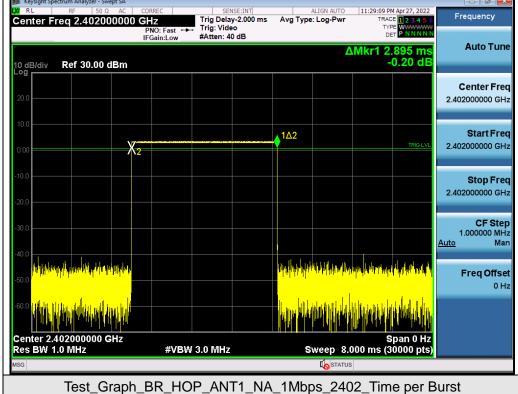
Test Data of Dwell Time						
Channel	Time of Pulse for DH5 (ms)	Number of hops in the period specified in the requirements	Sweep Time (ms)	Limit (ms)	Pass or Fail	
2402	2.895	26.0*4	301.080	400	Pass	
2441	2.895	26.0*4	301.080	400	Pass	
2480	2.895	26.0*4	301.080	400	Pass	

Note: The GFSK modulation is the worst case and recorded in the report.



Test Graphs of Dwell Time

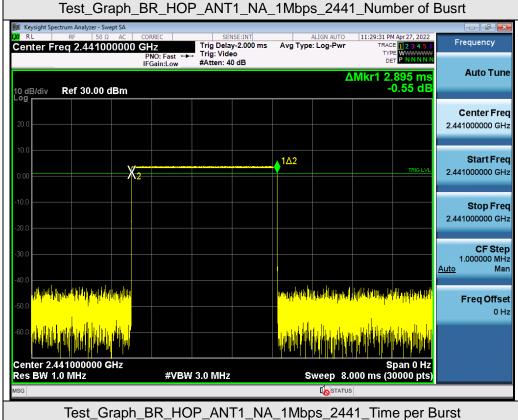




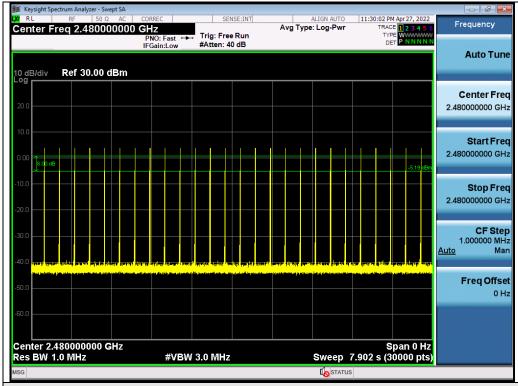
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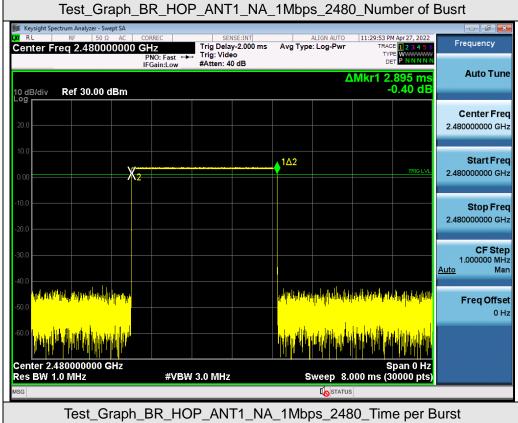


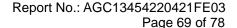














13. FREQUENCY SEPARATION

13.1. MEASUREMENT PROCEDURE

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- 1. Span: Wide enough to capture the peaks of two adjacent channels.
- 2. RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
- 3. Video (or average) bandwidth (VBW) ≥ RBW.
- 4. Sweep: Auto. e) Detector function: Peak. f) Trace: Max hold. g) Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

13.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

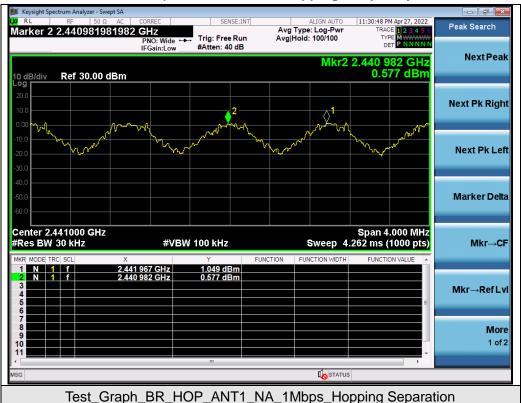
13.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.3

13.4. LIMITS AND MEASUREMENT RESULT

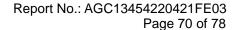
Test Data of Frequency Separation					
Test Mode Channel Separation (MHz) Limits Pass or Fa					
GFSK Hopping	0.985	>= 2/3 -20dB BW	Pass		

Test Graphs of Number of Hopping Frequency



Note: The GFSK modulation is the worst case and recorded in the report.

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14. LINE CONDUCTED EMISSION TEST

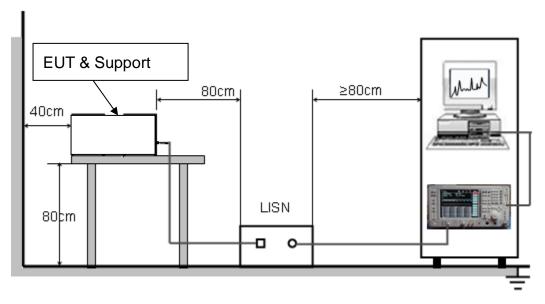
14.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Fraguency	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.

14.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST





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14.3. 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.

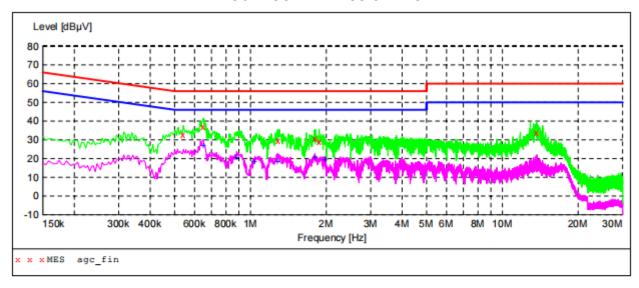
14.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 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.



14.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Mode 1 LINE CONDUCTED EMISSION TEST-L1



MEASUREMENT RESULT: "agc fin"

2022/5/5 11:02 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.542000	32.60	5.4	56	23.4	QP	L1	GND
0.650000	37.10	5.4	56	18.9	QP	L1	GND
1.290000	29.40	5.8	56	26.6	OP	L1	GND
1.818000	30.90	6.3	56	235.1	QP	L1	GND
1.874000	29.00	6.4	56	27.0	QP	L1	GND
13.658000	34.10	8.0	60	25.9	QP	L1	GND

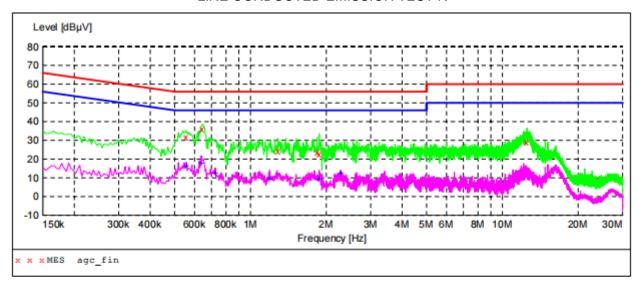
MEASUREMENT RESULT: "agc fin2"

2022/5/5 11:01 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.650000	27.10	5.4	46	18.9	AV	L1	GND
0.882000	20.50	5.4	46	25.5	AV	L1	GND
1.042000	18.40	5.5	46	27.6	AV	L1	GND
1.282000	18.10	5.8	46	27.9	AV	L1	GND
1.802000	20.40	6.3	46	25.6	AV	L1	GND
1.974000	19.40	6.5	46	26.6	AV	L1	GND

RESULT: PASS



LINE CONDUCTED EMISSION TEST-N



MEASUREMENT RESULT: "agc fin"

2022/5/5 10:53 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.554000 0.646000 1.286000 1.838000 1.874000 12.534000	31.80 36.00 24.00 23.50 22.80 29.20	5.4 5.4 5.8 6.4 6.4 7.7	56 56 56 56 56	24.2 20.0 32.0 32.5 33.2 30.8	QP QP QP QP QP QP	N N N N	GND GND GND GND GND GND

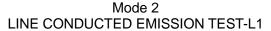
MEASUREMENT RESULT: "agc_fin2"

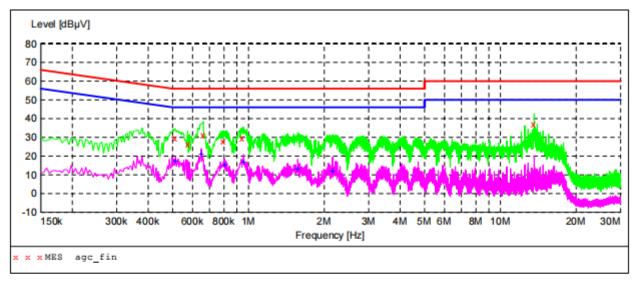
2022/5/ Free	/5 10:53 quency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.5	558000	16.00	5.4	46	30.0	AV	N	GND
0.6	538000	17.90	5.4	46	28.1	AV	N	GND
0.7	726000	12.40	5.4	46	33.6	AV	N	GND
1.1	194000	9.50	5.7	46	36.5	AV	N	GND
1.8	374000	9.50	6.4	46	36.5	AV	N	GND
2.2	278000	12.40	6.5	46	33.6	AV	N	GND

RESULT: PASS

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MEASUREMENT RESULT: "agc_fin"

Frequen	11:10 cy Level Hz dBµV		Limit dBµV	Margin dB	Detector	Line	PE
0.5100	00 29.30	5.4	56	26.7	QP	L1	GND
0.5740	00 26.10	5.4	56	29.9	QP	L1	GND
0.6620	00 31.20	5.4	56	24.8	QP	L1	GND
0.7980	00 28.00	5.4	56	28.0	QP	L1	GND
0.9500	00 29.80	5.4	56	26.2	QP	L1	GND
13.6260	00 36.80	8.0	60	23.2	QP	L1	GND

MEASUREMENT RESULT: "agc fin2"

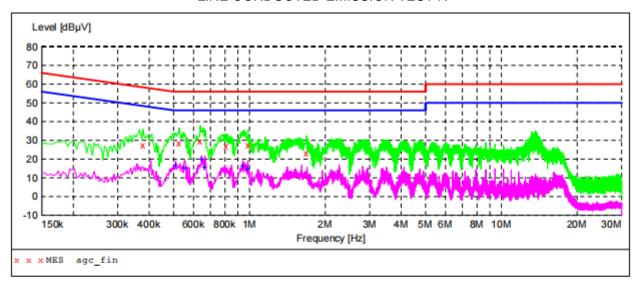
2022/5/5 11:0 Frequency MHz	9 Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.514000	17.40	5.4	46	28.6	AV	L1	GND
0.650000	21.00	5.4	46	25.0	AV	L1	GND
0.802000	15.20	5.4	46	30.8	AV	L1	GND
0.958000	16.90	5.4	46	29.1	AV	L1	GND
1.570000	13.10	6.1	46	32.9	AV	L1	GND
2.158000	12.00	6.5	46	34.0	AV	L1	GND

RESULT: PASS

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LINE CONDUCTED EMISSION TEST-N



MEASUREMENT RESULT: "agc fin"

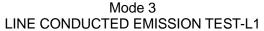
Frequen	10:40 cy Level Hz dBμV		Limit dBµV	Margin dB	Detector	Line	PE
0.3780 0.5260 0.6380 0.8060 0.9860	00 28.50 00 29.30 00 27.00	5.4 5.4 5.4	58 56 56 56	30.9 27.5 26.7 29.0 28.8	QP QP QP QP QP	N N N N	GND GND GND GND GND
1.6860	00 23.20	6.2	56	32.8	QP	N	GND

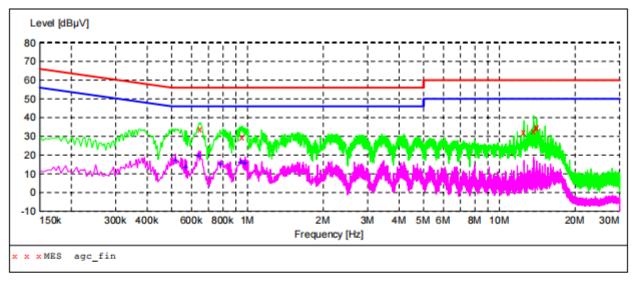
MEASUREMENT RESULT: "agc_fin2"

2022/5/5 Freque		Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.510	000	16.50	5.4	46	29.5	AV	N	GND
0.554	000	15.00	5.4	46	31.0	AV	N	GND
0.646	000	19.70	5.4	46	26.3	AV	N	GND
0.666	000	15.80	5.4	46	30.2	AV	N	GND
0.942	000	16.10	5.4	46	29.9	AV	N	GND
0.986	000	14.40	5.4	46	31.6	AV	N	GND

RESULT: PASS







MEASUREMENT RESULT: "agc fin"

2022/5/5 11:13 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.650000 0.958000 12.534000 13.662000 14.054000 14.062000	33.60 29.80 32.00 33.00 34.30 34.80	5.4 5.4 7.7 8.0 8.1 8.1	56 56 60 60 60	22.4 26.2 28.0 27.0 25.7 25.2	QP QP QP QP QP QP	L1 L1 L1 L1 L1	GND GND GND GND GND GND

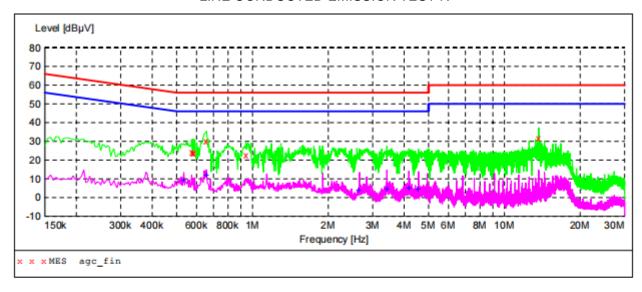
MEASUREMENT RESULT: "agc_fin2"

2022/5/5 11:12 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.518000	17.40	5.4	46	28.6	AV	L1	GND
0.566000	13.50	5.4	46	32.5	AV	L1	GND
0.642000	19.20	5.4	46	26.8	AV	L1	GND
0.786000	15.00	5.4	46	31.0	AV	L1	GND
0.938000	16.30	5.4	46	29.7	AV	L1	GND
0.978000	15.90	5.4	46	30.1	AV	L1	GND

RESULT: PASS



LINE CONDUCTED EMISSION TEST-N



MEASUREMENT RESULT: "agc_fin"

2022/5/5 11:16 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.574000	24.30	5.4	56	31.7	QP	N	GND
0.582000	23.80	5.4	56	32.2	QP	N	GND
0.590000	23.60	5.4	56	32.4	QP	N	GND
0.658000	29.90	5.4	56	26.1	QP	N	GND
0.942000	22.40	5.4	56	33.6	QP	N	GND
13.682000	31.50	8.0	60	28.5	QP	N	GND

MEASUREMENT RESULT: "agc_fin2"

2022/5/5 11:1 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.534000	9.00	5.4	46	37.0	AV	N	GND
0.658000	11.70	5.4	46	34.3	AV	N	GND
2.658000	3.80	6.5	46	42.2	AV	N	GND
3.418000	4.70	6.5	46	41.3	AV	N	GND
4.178000	5.00	6.5	46	41.0	AV	N	GND
4.562000	4.30	6.6	46	41.7	AV	N	GND

RESULT: PASS

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



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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC13454220421AP01

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC13454220421AP02

----END OF REPORT----



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- 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.
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