

Stop Freq 2.500000000 GHz

2.500000 MHz

Freq Offset

Man

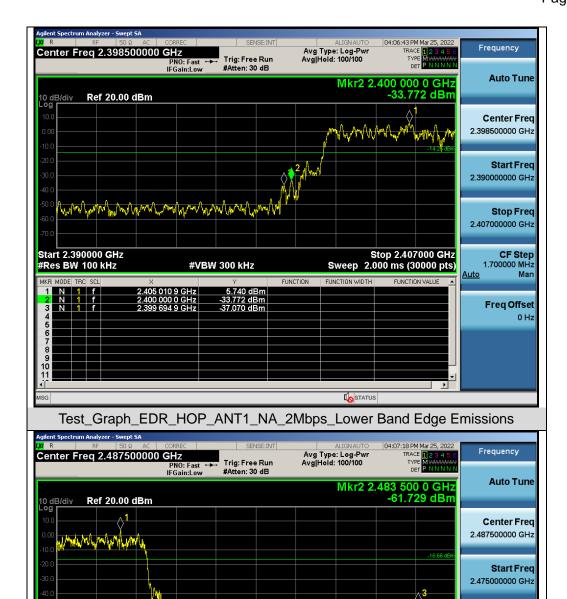
Auto

Stop 2.50000 GHz

Sweep 4.000 ms (30000 pts)

FUNCTION WIDTH





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

FUNCTION

Test_Graph_EDR_HOP_ANT1_NA_2Mbps_Higher Band Edge Emissions

Start 2.47500 GHz

#Res BW 100 kHz



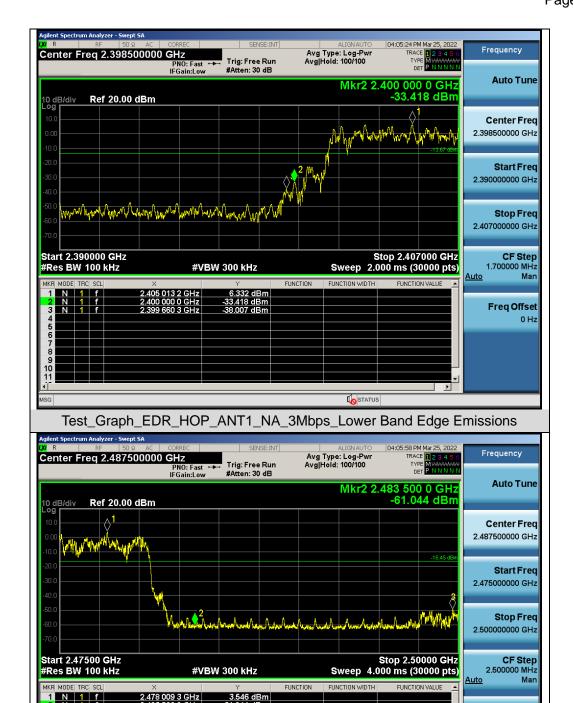


Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the 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.

Test_Graph_EDR_ANT1_2480_3Mbps_Higher Band Edge Emissions

Freq Offset





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.

Test_Graph_EDR_HOP_ANT1_NA_3Mbps_Higher Band Edge Emissions



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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.

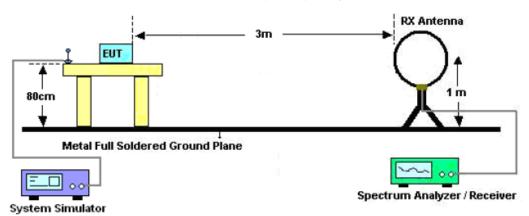
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start Stan Fraguency	1GHz~26.5GHz
Start ~Stop Frequency	1MHz/3MHz for Peak, 1MHz/3MHz for Average

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

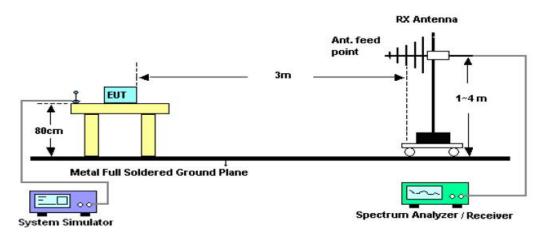


10.2. TEST SETUP

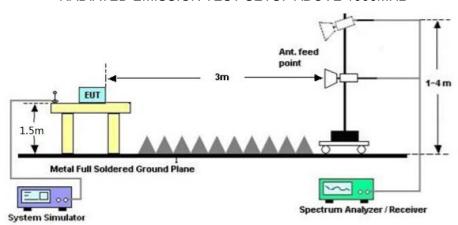
Radiated Emission Test-Setup Frequency Below 30MHz



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

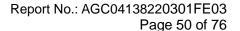
Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

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.

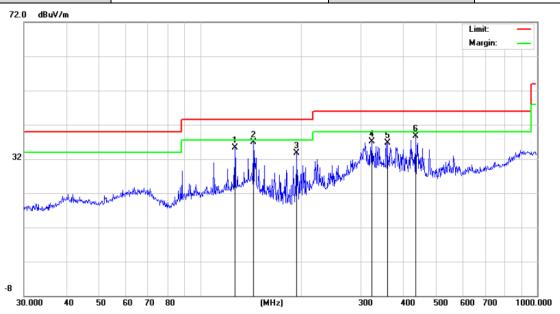




The model name of adapter: TGB12-090100-03

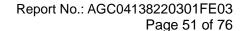
Radiated emission from 30MHz to 1000MHz

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal



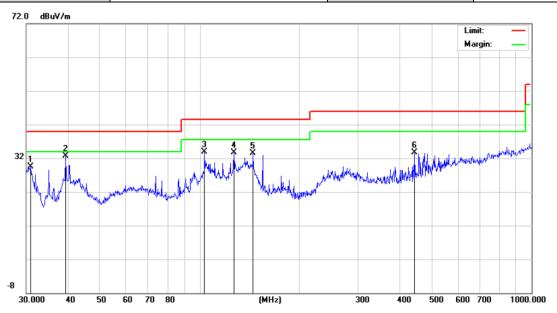
-	No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
-			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
-	1		126.7723	16.44	18.86	35.30	43.50	-8.20	peak
-	2	*	143.8295	18.46	18.36	36.82	43.50	-6.68	peak
-	3		193.0945	18.76	15.04	33.80	43.50	-9.70	peak
-	4		323.3204	12.80	24.26	37.06	46.00	-8.94	peak
-	5		359.1860	12.77	23.99	36.76	46.00	-9.24	peak
-	6		435.5898	15.68	23.09	38.77	46.00	-7.23	peak
_									

RESULT: PASS





EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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		30.9618	16.25	13.20	29.45	40.00	-10.55	peak
2	*	39.4371	17.01	15.78	32.79	40.00	-7.21	peak
3		103.4419	19.05	14.86	33.91	43.50	-9.59	peak
4		126.7723	14.67	19.06	33.73	43.50	-9.77	peak
5		144.8418	14.69	18.74	33.43	43.50	-10.07	peak
6		444.8514	12.36	21.33	33.69	46.00	-12.31	peak

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

2. All test modes had been pre-tested. The mode 3 is the worst case and recorded in the report.



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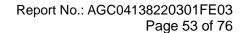
Radiated emission above 1GHz

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type	
4804.000	45.63	0.08	45.71	74.00	-28.29	peak	
4804.000	41.30	0.08	41.38	54.00	-12.62	AVG	
7206.000	42.35	2.21	44.56	74.00	-29.44	peak	
7206.000	33.58	2.21	35.79	54.00	-18.21	AVG	
Remark:							
Factor = Anter	na Factor + Cabl	e Loss – Pre-a	mplifier.				

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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	45.58	0.08	45.66	74.00	-28.34	peak		
4804.000	38.12	0.08	38.20	54.00	-15.80	AVG		
7206.000	43.23	2.21	45.44	74.00	-28.56	peak		
7206.000	33.21	2.21	35.42	54.00	-18.58	AVG		
Remark:								
actor = Anter	factor = Antenna Factor + Cable Loss – Pre-amplifier.							





EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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 Tune			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type			
4882.000	51.28	0.14	51.42	74.00	-22.58	peak			
4882.000	40.12	0.14	40.26	54.00	-13.74	AVG			
7323.000	51.34	2.36	53.70	74.00	-20.30	peak			
7323.000	38.25	2.36	40.61	54.00	-13.39	AVG			
Remark:									
Factor = Anter	Factor = Antenna Factor + Cable Loss – Pre-amplifier.								

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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			
4882.000	52.25	0.14	52.39	74.00	-21.61	peak			
4882.000	41.35	0.14	41.49	54.00	-12.51	AVG			
7323.000	52.33	2.36	54.69	74.00	-19.31	peak			
7323.000	39.15	2.36	41.51	54.00	-12.49	AVG			
Remark:									
Factor = Antenna Factor + Cable Loss – Pre-amplifier.									



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EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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	52.36	0.22	52.58	74.00	-21.42	peak	
4960.000	40.02	0.22	40.24	54.00	-13.76	AVG	
7440.000	48.13	2.64	50.77	74.00	-23.23	peak	
7440.000	39.25	2.64	41.89	54.00	-12.11	AVG	
Remark:							
Factor = Anter	nna Factor + Cabl	e Loss – Pre-a	mplifier.				

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type		
4960.000	53.02	0.22	53.24	74.00	-20.76	peak		
4960.000	41.11	0.22	41.33	54.00	-12.67	AVG		
7440.000	47.25	2.64	49.89	74.00	-24.11	peak		
7440.000	38.52	2.64	41.16	54.00	-12.84	AVG		
Remark:								
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.

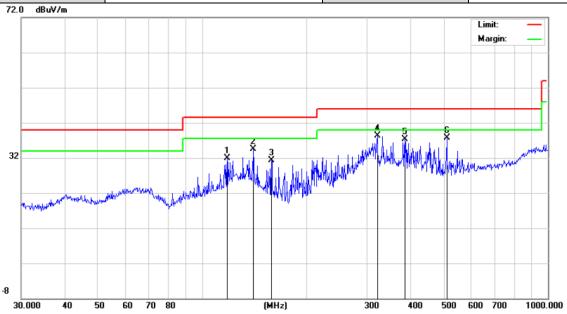
All test modes had been tested. The GFSK modulation is the worst case and recorded in the report.



The model name of adapter: JF012WR-0900100UH

Radiated emission from 30MHz to 1000MHz

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

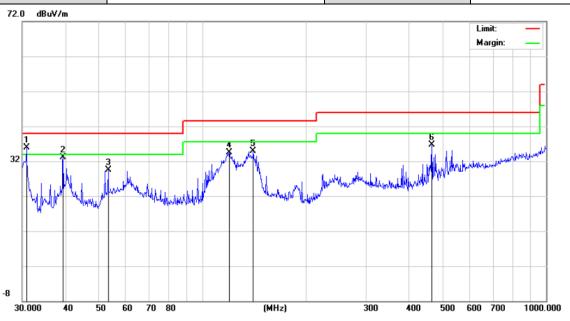


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	,
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		118.1862	13.32	18.67	31.99	43.50	-11.51	peak
2		140.8351	15.87	18.58	34.45	43.50	-9.05	peak
3		158.6677	14.08	17.29	31.37	43.50	-12.13	peak
4	*	321.0608	14.05	24.28	38.33	46.00	-7.67	peak
5		385.2805	13.44	23.79	37.23	46.00	-8.77	peak
6		510.0436	15.59	22.10	37.69	46.00	-8.31	peak

RESULT: PASS



EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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	*	30.8535	22.64	13.20	35.84	40.00	-4.16	peak
2		39.4371	17.32	15.78	33.10	40.00	-6.90	peak
3		53.3179	14.04	15.53	29.57	40.00	-10.43	peak
4		119.8555	15.63	18.93	34.56	43.50	-8.94	peak
5		140.8351	15.85	19.14	34.99	43.50	-8.51	peak
6		465.5994	14.69	21.95	36.64	46.00	-9.36	peak

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

2. All test modes had been pre-tested. The mode 3 is the worst case and recorded in the report.



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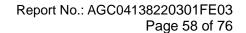
Radiated emission above 1GHz

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4804.000	46.12	0.08	46.20	74.00	-27.80	peak
4804.000	42.02	0.08	42.10	54.00	-11.90	AVG
7206.000	41.37	2.21	43.58	74.00	-30.42	peak
7206.000	34.16	2.21	36.37	54.00	-17.63	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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	46.35	0.08	46.43	74.00	-27.57	peak
4804.000	39.15	0.08	39.23	54.00	-14.77	AVG
7206.000	44.85	2.21	47.06	74.00	-26.94	peak
7206.000	34.08	2.21	36.29	54.00	-17.71	AVG
Remark:						
-actor = Anter	na Factor + Cabl	e Loss – Pre-	amplifier.			





EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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
4882.000	52.36	0.14	52.50	74.00	-21.50	peak
4882.000	41.36	0.14	41.50	54.00	-12.50	AVG
7323.000	50.08	2.36	52.44	74.00	-21.56	peak
7323.000	39.52	2.36	41.88	54.00	-12.12	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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
4882.000	51.08	0.14	51.22	74.00	-22.78	peak
4882.000	42.36	0.14	42.50	54.00	-11.50	AVG
7323.000	51.93	2.36	54.29	74.00	-19.71	peak
7323.000	40.34	2.36	42.70	54.00	-11.30	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						



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EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
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	49.36	0.22	49.58	74.00	-24.42	peak
4960.000	39.43	0.22	39.65	54.00	-14.35	AVG
7440.000	51.03	2.64	53.67	74.00	-20.33	peak
7440.000	40.35	2.64	42.99	54.00	-11.01	AVG
Remark:	1 1					1
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	- Value Type
4960.000	52.17	0.22	52.39	74.00	-21.61	peak
4960.000	39.78	0.22	40.00	54.00	-14.00	AVG
7440.000	46.39	2.64	49.03	74.00	-24.97	peak
7440.000	37.96	2.64	40.60	54.00	-13.40	AVG
Remark:						
actor = Anter	na Factor + Cabl	e Loss – Pre-a	mplifier.			

RESULT: PASS

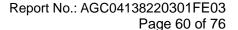
Note:

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.

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





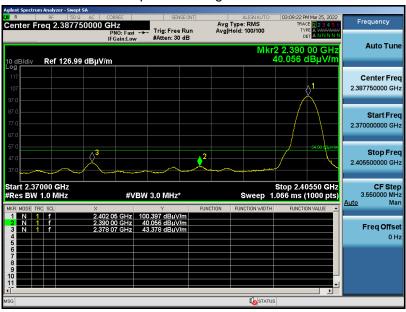
Test result for band edge emission at restricted bands

EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

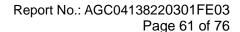
Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: PASS



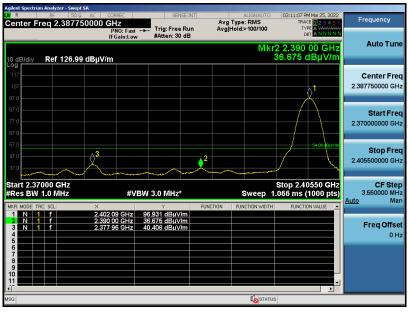


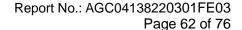
EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement





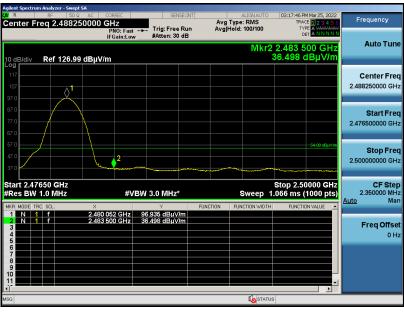


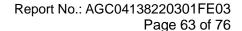
EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement





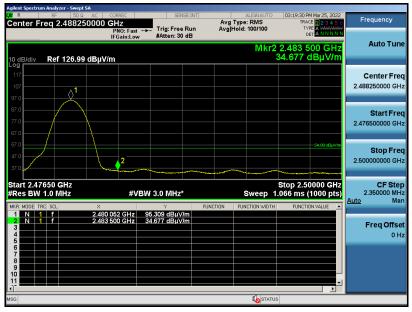


EUT	SINGCAST MAX MIC STAND KARAOKE MACHINE	Model Name	SMC2040
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical

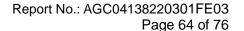
Test Graph for Peak Measurement



Test Graph for Average Measurement



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 \geq 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

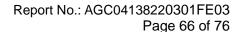
The same as described in section 6

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	2.890	23.0*4	265.880	400	Pass		
2441	2.890	29.0*4	335.240	400	Pass		
2480 2.890		28.0*4	323.680	400	Pass		

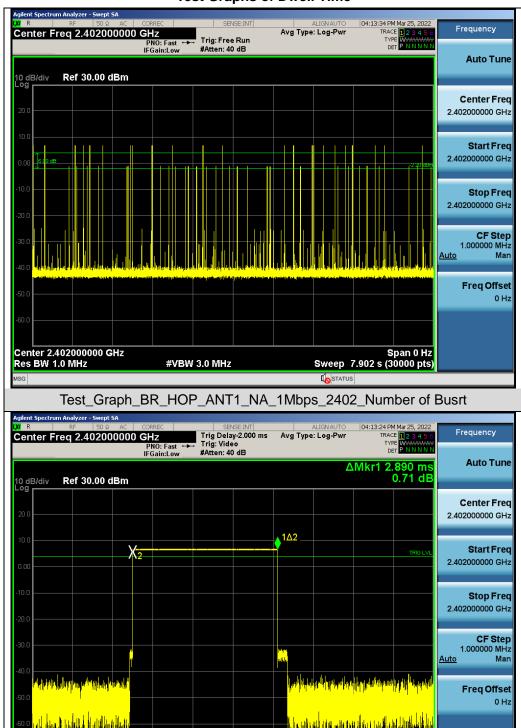
Note: The GFSK modulation is the worst case and recorded in the report.

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.





Test Graphs of Dwell Time



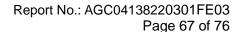
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Test_Graph_BR_HOP_ANT1_NA_1Mbps_2402_Time per Burst

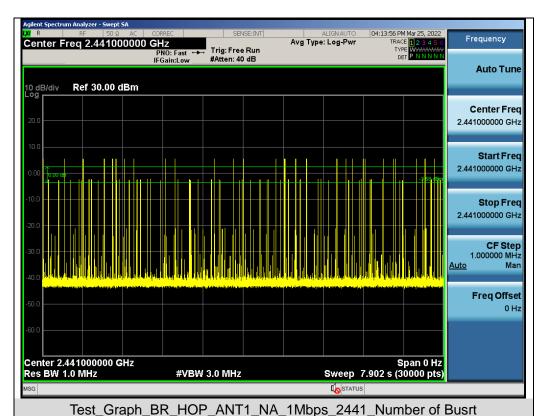
#VBW 3.0 MHz

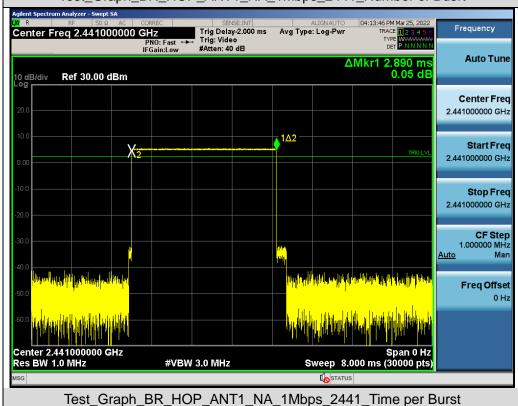
Sweep 8.000 ms (30000 pts)

Center 2.402000000 GHz Res BW 1.0 MHz



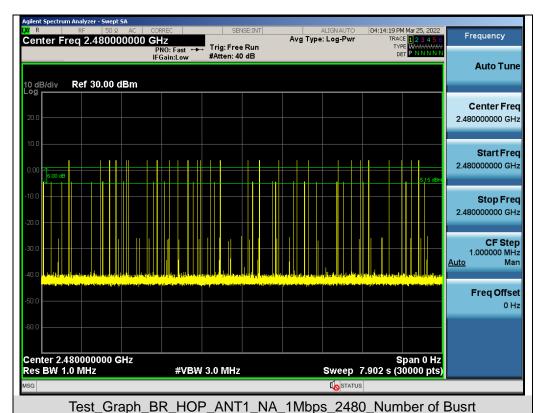


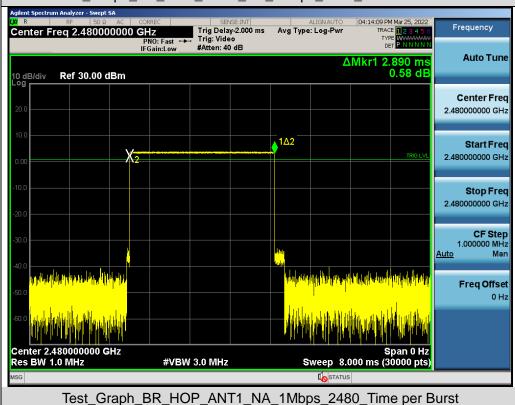




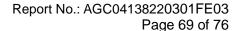
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13. FREQUENCY SEPARATION

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

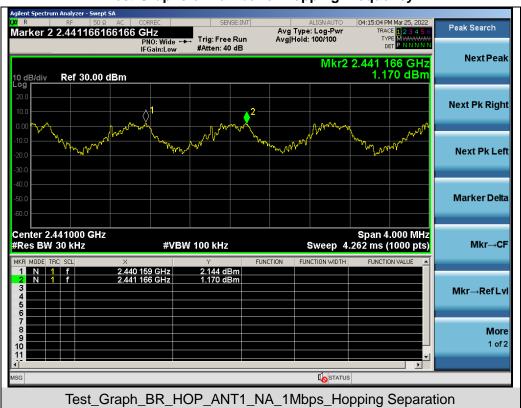
13.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.3

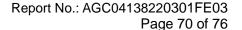
13.4. LIMITS AND MEASUREMENT RESULT

Test Data of Frequency Separation						
Test Mode Channel Separation (MHz) Limits Pass or Fa						
GFSK Hopping	1.007	>= 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.





14. LINE CONDUCTED EMISSION TEST

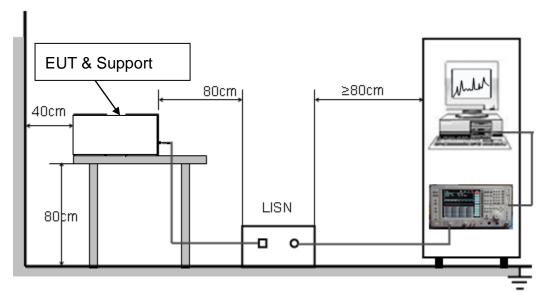
14.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Francisco	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

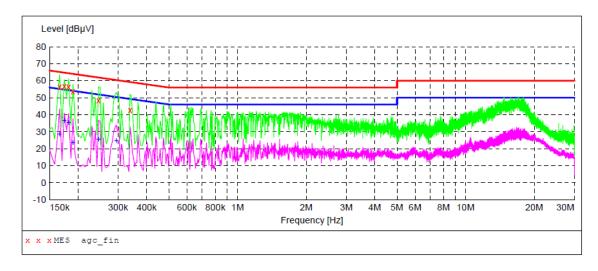
- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were 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



The model name of adapter: TGB12-090100-03

Line Conducted Emission Test Line 1-L



MEASUREMENT RESULT: "agc fin"

2022/4/27 21:37

2022/4/2/ 21:	3 /					
Frequency	Level	Transd	Limit	Margin	Detector	Line
MHz	dΒμV	dB	dΒμV	dB		
0 166000	E 6 40	6.0	6.5	0 0	0.0	T 1
0.166000	56.40	6.8	65	8.8	QP	L1
0.174000	56.90	6.7	65	7.9	QP	L1
0.182000	56.50	6.7	64	7.9	QP	L1
0.190000	53.80	6.6	64	10.2	QP	L1
0.246000	48.50	6.3	62	13.4	QP	L1
0.338000	42.60	5.9	59	16.7	QP	L1

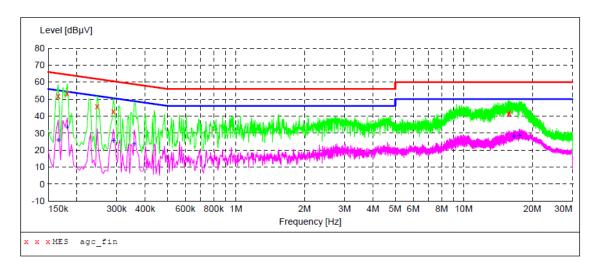
MEASUREMENT RESULT: "agc fin2"

2022/4/27 21:37

.022/4/2/ 21	. 3 /					
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.166000	28.60	6.8	55	26.6	AV	L1
0.174000	36.70	6.7	55	18.1	AV	L1
0.182000	35.50	6.7	54	18.9	AV	L1
0.190000	23.90	6.6	54	30.1	AV	L1
0.246000	25.60	6.3	52	26.3	AV	L1
0.294000	24.90	6.1	50	25.5	AV	L1



Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "agc fin"

2022/4/27 21:40

2022/4/2/ 21:	40					
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.166000	52.00	6.8	65	13.2	QP	N
0.182000	53.40	6.7	64	11.0	QP	N
0.246000	45.90	6.3	62	16.0	QP	N
0.290000	42.90	6.1	61	17.6	QP	N
15.746000	41.40	8.4	60	18.6	QP	N
15.854000	42.00	8.4	60	18.0	QP	N

MEASUREMENT RESULT: "agc_fin2"

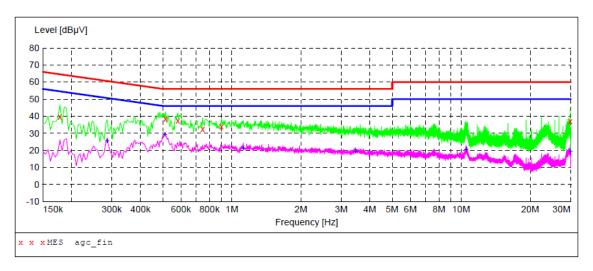
2022/4/27 21:40

_	,, ,, _,						
	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
	0.166000	26.10	6.8	55	29.1	AV	N
	0.182000	33.60	6.7	54	20.8	AV	N
	0.290000	25.70	6.1	51	24.8	AV	N
	0.358000	23.90	5.8	49	24.9	AV	N
	16.562000	28.20	8.5	50	21.8	AV	N
	17.522000	28.70	8.6	50	21.3	AV	N



The model name of adapter: JF012WR-0900100UH

Line Conducted Emission Test Line 1-L



MEASUREMENT RESULT: "agc fin"

2022/	A /	27	0.1	-2.4
2022/	4/	21	- 41:	: 34

2022/4/2/ 21:	34					
Frequency	Level	Transd	Limit	Margin	Detector	Line
MHz	dΒμV	dB	dΒμV	dB		
0.178000	39.80	6.7	65	24.8	QP	L1
0.514000	38.70	5.4	56	17.3	QP	L1
0.582000	37.30	5.4	56	18.7	QP	L1
0.746000	32.50	5.4	56	23.5	QP	L1
0.902000	34.00	5.4	56	22.0	QP	L1
29.866000	37.20	9.6	60	22.8	QP	L1

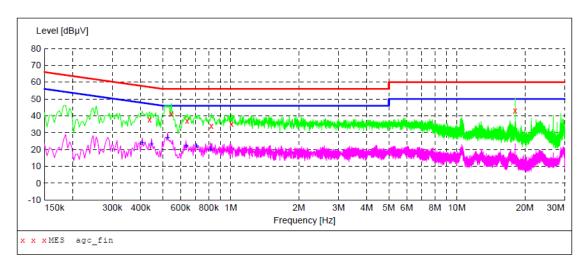
MEASUREMENT RESULT: "agc fin2"

2022/4/27 21:34

.022/4/2/ 21.	34					
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.286000 0.510000 1.122000	25.80 29.50 21.50	6.1 5.4 5.6	51 46 46	24.8 16.5 24.5	AV AV	L1 L1 L1
3.458000 10.502000 29.866000	19.50 20.60 19.70	6.5 7.0 9.6	46 50 50	26.5 29.4 30.3	AV AV AV	L1 L1 L1



Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "agc fin"

2022/4/27 21:32

2022/4/2/ 21.	52					
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.438000	37.90	5.6	57	19.2	QP	N
0.546000	41.40	5.4	56	14.6	QP	N
0.642000	37.10	5.4	56	18.9	QP	N
0.822000	34.10	5.4	56	21.9	QP	N
1.010000	35.10	5.4	56	20.9	QP	N
18.130000	43.10	8.6	60	16.9	QP	N

MEASUREMENT RESULT: "agc fin2"

2022/4/27 21:32

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.406000	24.10	5.7	48	23.6	AV	N
0.446000	23.60	5.5	47	23.3	AV	N
0.526000	27.30	5.4	46	18.7	AV	N
0.634000	22.20	5.4	46	23.8	AV	N
0.706000	22.10	5.4	46	23.9	AV	N
0.814000	20.50	5.4	46	25.5	AV	N



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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC04138220301AP01

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC04138220301AP02

----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.
- 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.