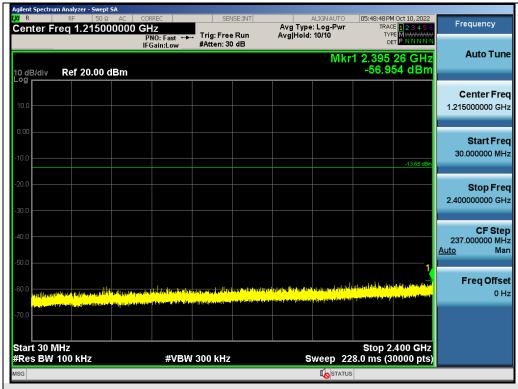


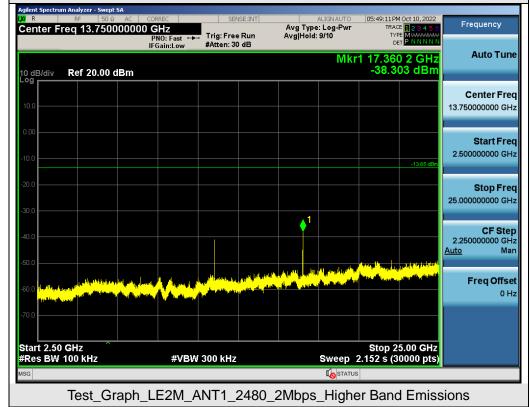
05:48:32 PM Oct 10, 2022 Avg Type: Log-Pwi Avg|Hold: 10/10 Frequency Center Freq 2.480000000 GHz Trig: Free Run #Atten: 30 dB PNO: Wide ↔ IFGain:Low **Auto Tune** 944 25 GHz 6.352 dBm Mkr1 2.479 10 dB/div Ref 20.00 dBm Center Freq 2.480000000 GHz Start Freq 2.477500000 GHz Stop Frea 2.482500000 GHz **CF Step** 500,000 kHz Auto Man Freq Offset 0 Hz Center 2.480000 GHz #Res BW 100 kHz Span 5.000 MHz Sweep 2.000 ms (30000 pts) #VBW 300 kHz Test_Graph_LE2M_ANT1_2480_2Mbps_Reference Level







Test_Graph_LE2M_ANT1_2480_2Mbps_Lower Band Emissions





Frequency





Agilent Spectrum Analyzer - Swept SA

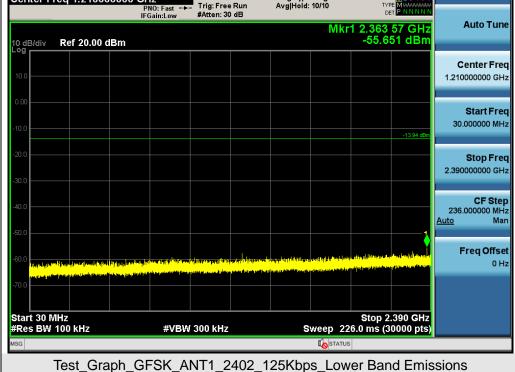
OF R RF SO Ω AC CORREC SENSE:INT ALIGN AUTO 05:54:40 PM Oct 10, 2022

Center Freq 1.210000000 GHZ

PN0: Fast → PN0: Fast → IFG air:1.0 w #Atten: 30 dB

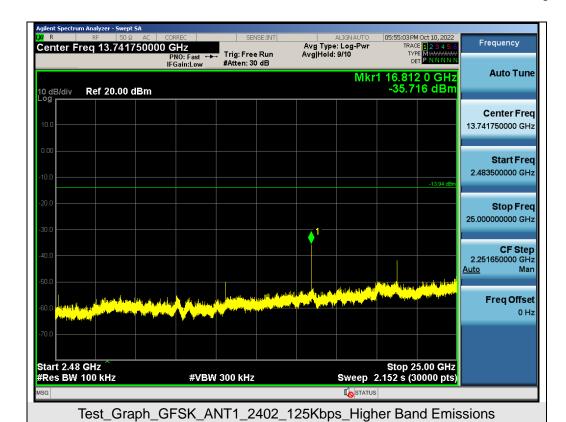
PN NNNNN

DET PNNNNNN









05:59:37 PM Oct 10, 2022 Avg Type: Log-Pwr Avg|Hold: 10/10 Frequency Center Freq 2.440000000 GHz Trig: Free Run #Atten: 30 dB PNO: Wide →→ IFGain:Low **Auto Tune** Mkr1 2.440 011 1 GHz 6.216 dBm Ref 20.00 dBm Center Freq 2.440000000 GHz Start Freq 2.438500000 GHz Stop Frea 2.441500000 GHz **CF Step** 300,000 kHz Auto Man Freq Offset 0 Hz

Test_Graph_GFSK_ANT1_2440_125Kbps_Reference Level

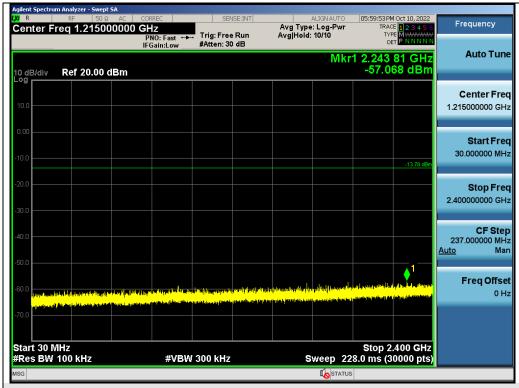
#VBW 300 kHz

Span 3.000 MHz Sweep 2.000 ms (30000 pts)

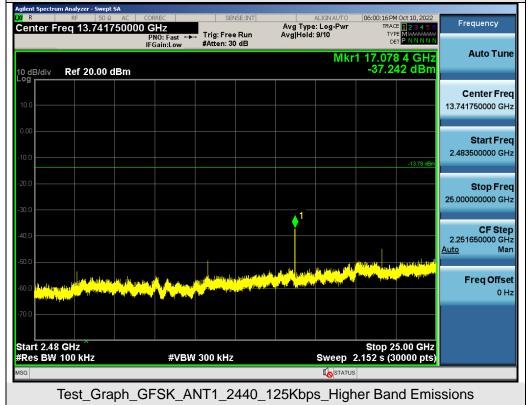
Center 2.440000 GHz #Res BW 100 kHz







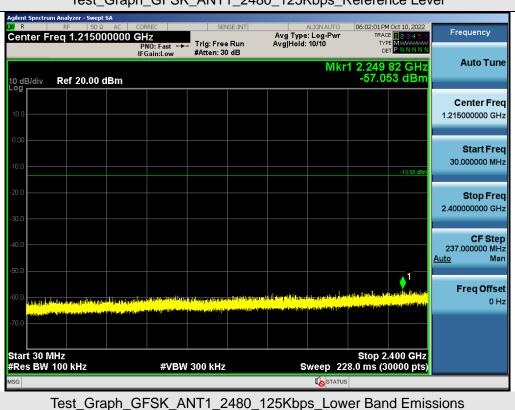
Test_Graph_GFSK_ANT1_2440_125Kbps_Lower Band Emissions





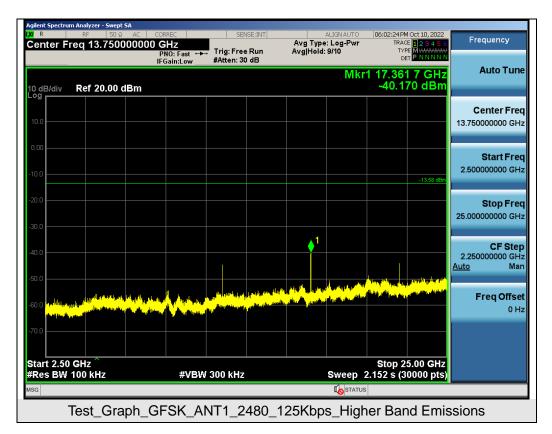








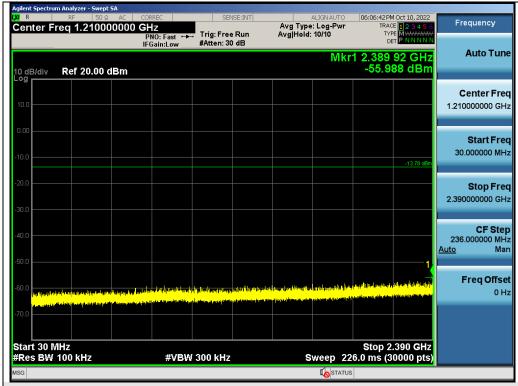




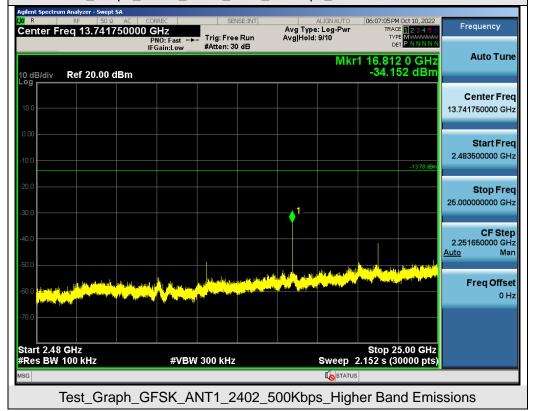








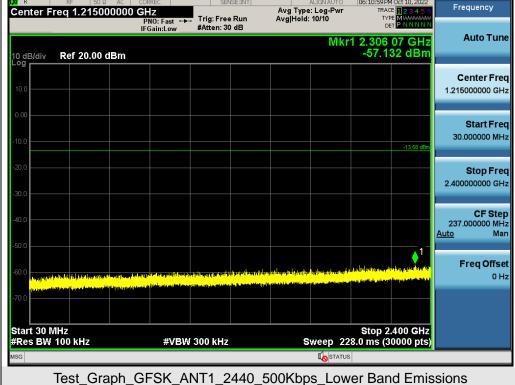
Test_Graph_GFSK_ANT1_2402_500Kbps_Lower Band Emissions













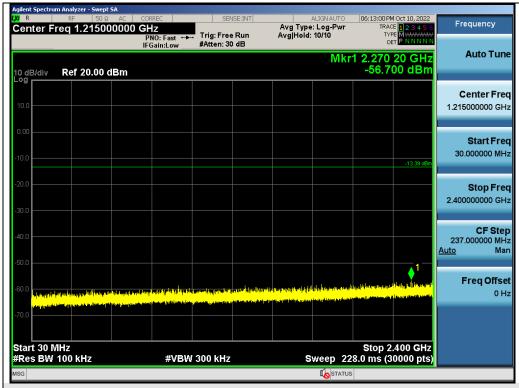




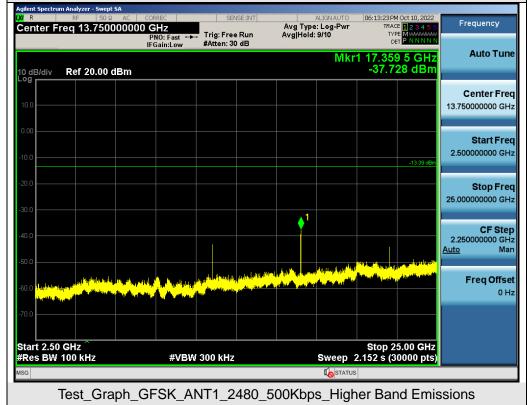
Test_Graph_GFSK_ANT1_2440_500Kbps_Higher Band Emissions 06:12:45 PM Oct 10, 2022 Avg Type: Log-Pwr Avg|Hold: 10/10 Frequency Center Freq 2.480000000 GHz Trig: Free Run #Atten: 30 dB PNO: Wide →→ IFGain:Low **Auto Tune** Mkr1 2.479 733 2 GHz 6.615 dBm Ref 20.00 dBm Center Freq 2.480000000 GHz Start Freq 2.478500000 GHz Stop Frea 2.481500000 GHz **CF Step** 300,000 kHz Auto Man Freq Offset 0 Hz Center 2.480000 GHz #Res BW 100 kHz Span 3.000 MHz Sweep 2.000 ms (30000 pts) #VBW 300 kHz Test_Graph_GFSK_ANT1_2480_500Kbps_Reference Level





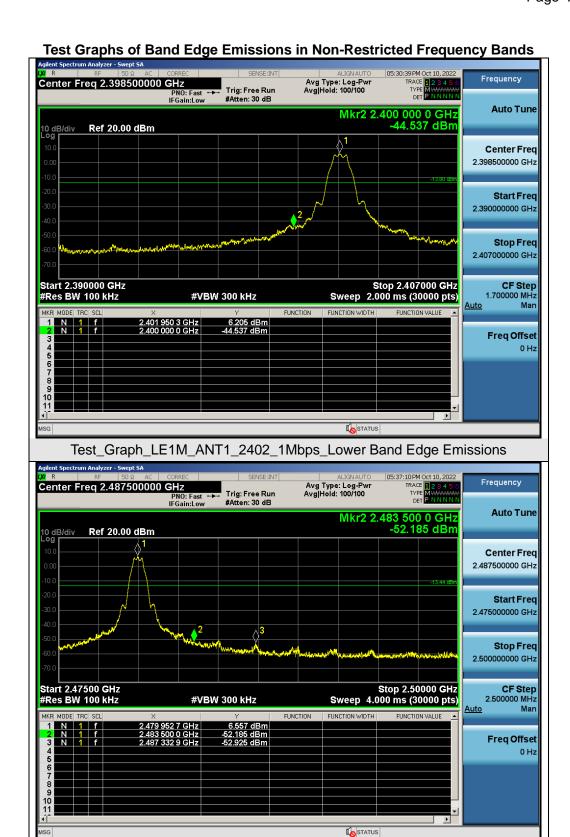


Test_Graph_GFSK_ANT1_2480_500Kbps_Lower Band Emissions

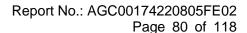






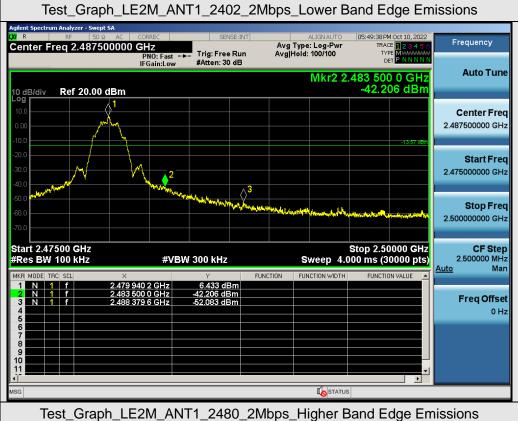


Test_Graph_LE1M_ANT1_2480_1Mbps_Higher Band Edge Emissions



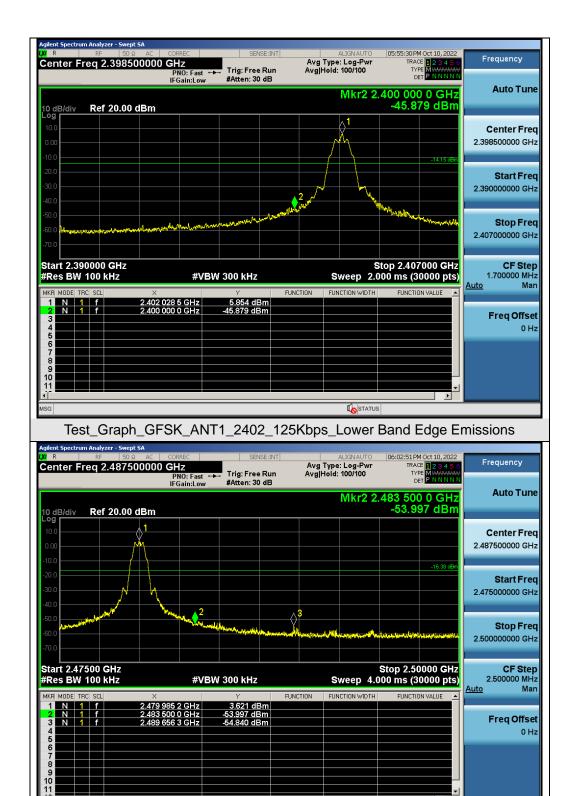










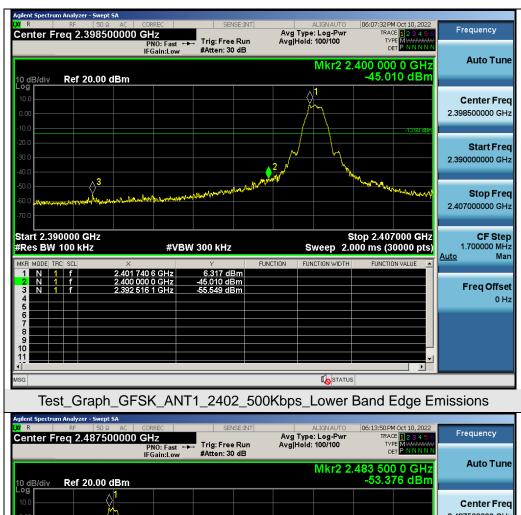


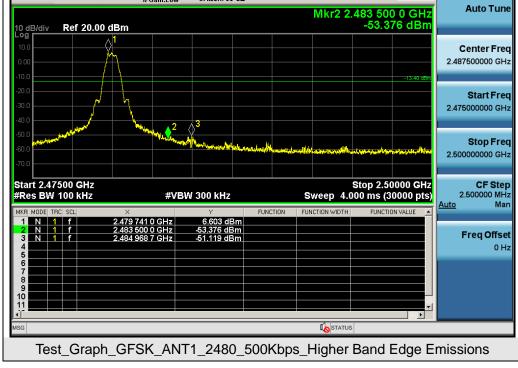
Test_Graph_GFSK_ANT1_2480_125Kbps_Higher Band Edge Emissions

STATUS











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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	-8.258	≤8	Pass				
GFSK 1Mbps	2440	-8.117	≪8	Pass				
	2480	-7.912	≪8	Pass				
	2402	-11.077	≪8	Pass				
GFSK 2Mbps	2440	-10.939	≪8	Pass				
	2480	-10.724	≪8	Pass				
	2402	0.068	≤8	Pass				
GFSK 125Kbps	2440	0.183	≪8	Pass				
	2480	0.364	≪8	Pass				
	2402	-0.004	≤8	Pass				
GFSK 500Kbps	2440	0.119	≪8	Pass				
	2480	0.315	≪8	Pass				





Test Graphs of Conducted Output Power Spectral Density 05:29:24 PM Oct 10, 2022 Frequency Center Freq 2.402000000 GHz Trig: Free Run #Atten: 30 dB PNO: Wide ↔ IFGain:Low Auto Tune Mkr1 2.401 963 2 GHz -8.258 dBm Ref 20.00 dBm Center Freq 2.402000000 GHz Start Fred 2.401510250 GHz West Madara an hyperary of for market of bar the flowing Stop Freq 2.402489750 GHz CF Step 97.950 kHz Mar Freq Offset 0 Hz Center 2.4020000 GHz #Res BW 3.0 kHz Span 979.5 kHz Sweep 103.3 ms (1000 pts) #VBW 10 kHz Test_Graph_LE1M_ANT1_2402_1Mbps_PSD 36 PM Oct 10, 2022 Frequency Avg Type: Log-Pwr Avg|Hold: 100/100 Center Freg 2.440000000 GHz Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr1 2.439 962 4 GHz -8.117 dBm 10 dB/div Ref 20.00 dBm Center Freq 2.440000000 GHz Start Freq 2.439511750 GHz Mend Mender had a granger of the second of the Albert of the second of t Stop Freq 2.440488250 GHz CF Step 97.650 kHz Man 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_LE1M_ANT1_2440_1Mbps_PSD

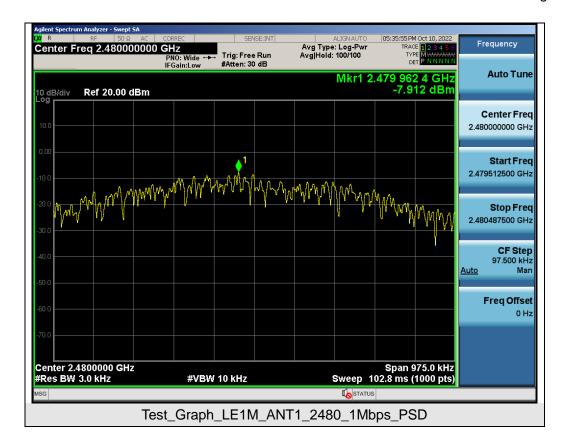
#VBW 10 kHz

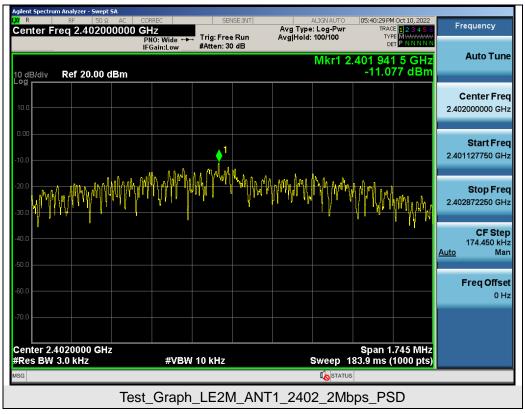
Span 976.5 kHz Sweep 103.0 ms (1000 pts)

Center 2.4400000 GHz #Res BW 3.0 kHz



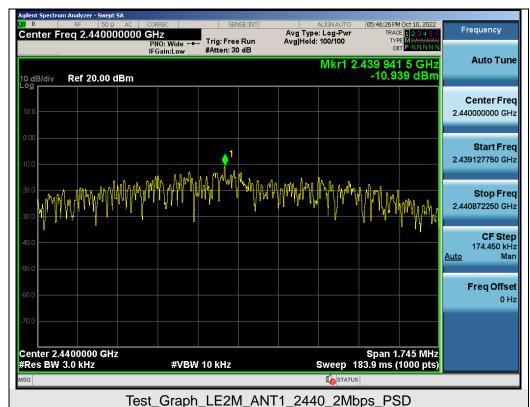


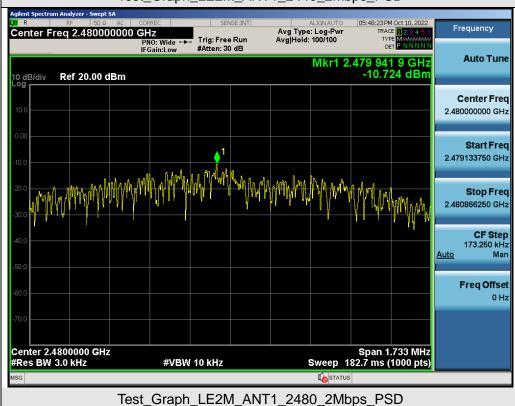












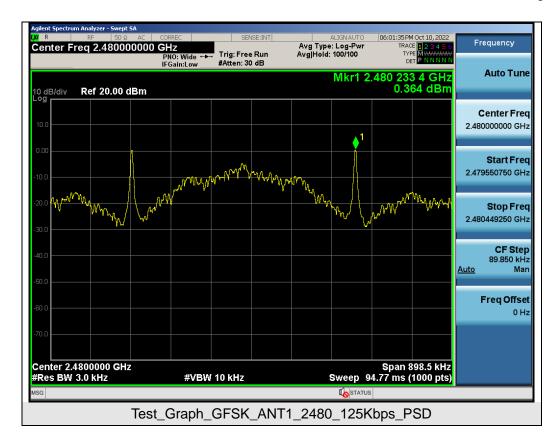


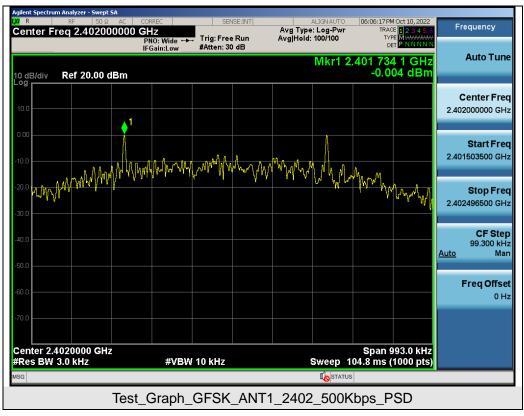






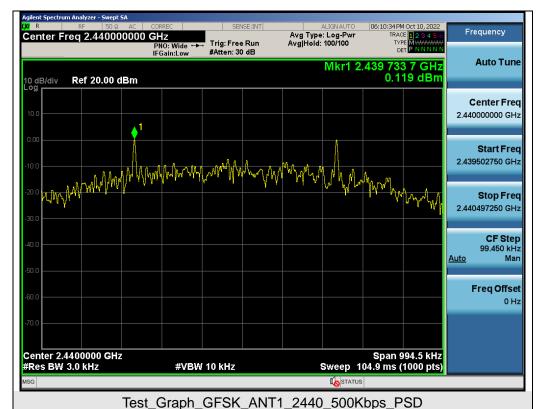
















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11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

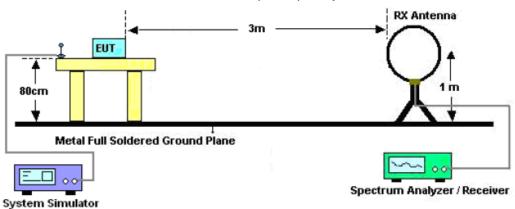
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated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



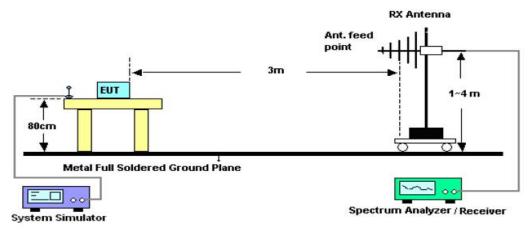


11.2. TEST SETUP

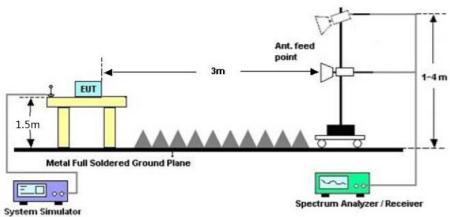
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz





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11.3. LIMITS AND MEASUREMENT RESULT

15.209 Limit in the below table has to be followed

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

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

11.4. TEST RESULT

Radiated emission below 30MHz

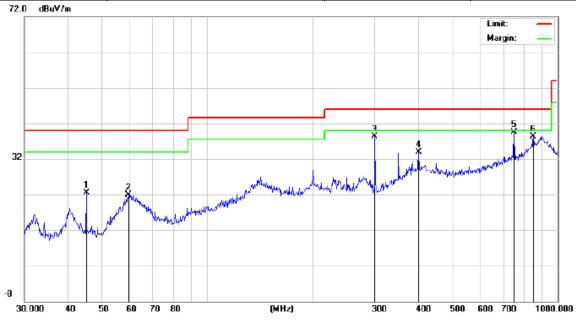
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.



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Radiated emission from 30MHz to 1000MHz

EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal



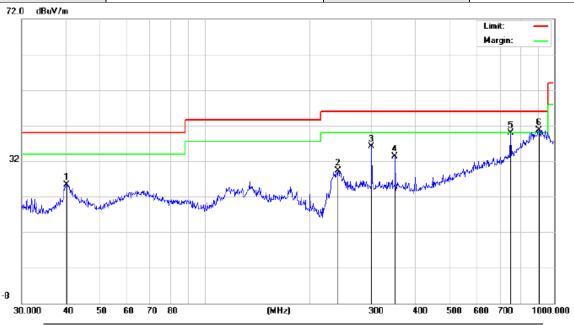
No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB	dBuV/m	dBuV/m	dB	Detector
1		45.0583	16.12	6.40	22.52	40.00	-17.48	peak
2		59.4405	5.99	15.88	21.87	40.00	-18.13	peak
3		300.3672	20.87	17.46	38.33	46.00	-7.67	peak
4		400.4319	10.25	23.67	33.92	46.00	-12.08	peak
5	*	750.1083	13.19	26.28	39.47	46.00	-6.53	peak
6		851.0353	8.60	29.69	38.29	46.00	-7.71	peak

RESULT: PASS



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EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical



	No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
•			MHz	dBu∀	dB	dBuV/m	dBuV/m	dB	Detector
	1		40.4172	9.38	16.02	25.40	40.00	-14.60	peak
	2		240.8303	9.67	19.65	29.32	46.00	-16.68	peak
Ī	3		300.3672	15.71	20.46	36.17	46.00	-9.83	peak
	4		350.4768	13.51	19.72	33.23	46.00	-12.77	peak
•	5		750.1082	11.57	28.28	39.85	46.00	-6.15	peak
	6	*	903.3093	6.16	34.54	40.70	46.00	-5.30	peak

RESULT: PASS Note:

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



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Radiated emission above 1GHz

EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
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	43.43	0.08	43.51	74	-30.49	peak	
4804.000	35.36	0.08	35.44	54	-18.56	AVG	
7206.000	38.68	2.21	40.89	74	-33.11	peak	
7206.000	31.24	2.21	33.45	54	-20.55	AVG	

Remark:

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

EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tve	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type	
4804.000	44.34	0.08	44.42	74	-29.58	peak	
4804.000	34.89	0.08	34.97	54	-19.03	AVG	
7206.000	38.26	2.21	40.47	74	-33.53	peak	
7206.000	30.65	2.21	32.86	54	-21.14	AVG	

Remark

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



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EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
44.67	0.14	44.81	74	-29.19	peak
35.73	0.14	35.87	54	-18.13	AVG
39.75	2.36	42.11	74	-31.89	peak
31.56	2.36	33.92	54	-20.08	AVG
	(dBµV) 44.67 35.73 39.75	(dBµV) (dB) 44.67 0.14 35.73 0.14 39.75 2.36	(dBμV) (dB) (dBμV/m) 44.67 0.14 44.81 35.73 0.14 35.87 39.75 2.36 42.11	(dBμV) (dB) (dBμV/m) (dBμV/m) 44.67 0.14 44.81 74 35.73 0.14 35.87 54 39.75 2.36 42.11 74	(dBμV) (dB) (dBμV/m) (dBμV/m) (dBμV/m) 44.67 0.14 44.81 74 -29.19 35.73 0.14 35.87 54 -18.13 39.75 2.36 42.11 74 -31.89

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

EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.000	45.15	0.14	45.29	74	-28.71	peak
4880.000	38.08	0.14	38.22	54	-15.78	AVG
7320.000	40.46	2.36	42.82	74	-31.18	peak
7320.000	32.47	2.36	34.83	54	-19.17	AVG

Remark:

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



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EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
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)	
4960.000	44.66	0.22	44.88	74	-29.12	peak
4960.000	35.43	0.22	35.65	54	-18.35	AVG
7440.000	38.78	2.64	41.42	74	-32.58	peak
7440.000	29.45	2.64	32.09	54	-21.91	AVG
Remark:						

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

EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
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	42.97	0.22	43.19	74	-30.81	peak
4960.000	34.06	0.22	34.28	54	-19.72	AVG
7440.000	38.69	2.64	41.33	74	-32.67	peak
7440.000	29.73	2.64	32.37	54	-21.63	AVG
Remark:	1		I		<u> </u>	ı

RESULT: PASS

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

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

The BLE 1Mbps is the worst case and recorded in the report

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

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

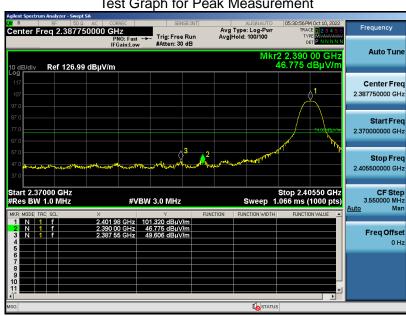




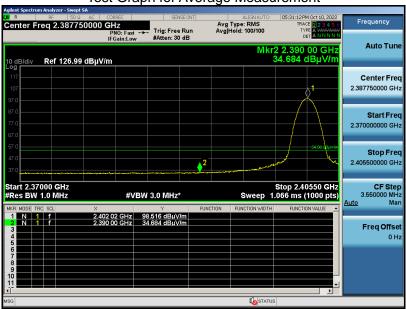
Test result for band edge emission at restricted bands (GFSK 1Mbps)

EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Test Graph for Peak Measurement







RESULT: PASS



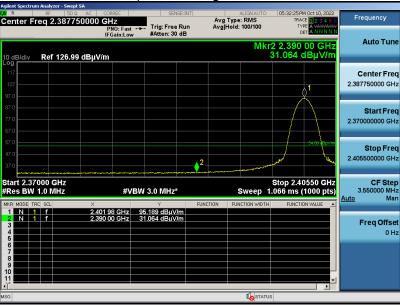


EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 1 **Antenna** Vertical

Test Graph for Peak Measurement







RESULT: PASS



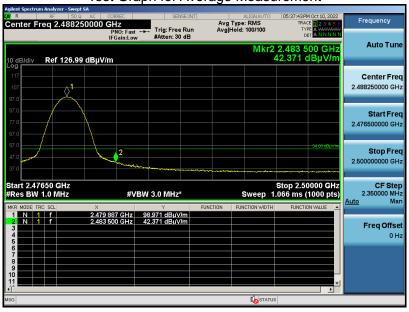


EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 3 **Antenna** Horizontal

Test Graph for Peak Measurement







RESULT: PASS



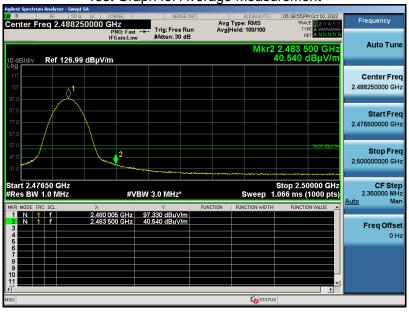


EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 3 **Antenna** Vertical

Test Graph for Peak Measurement







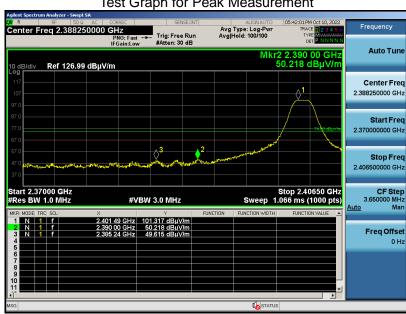




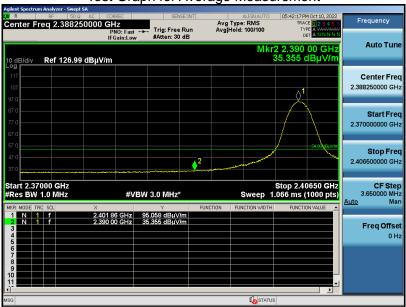
Test result for band edge emission at restricted bands (GFSK 2Mbps)

EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Horizontal

Test Graph for Peak Measurement







RESULT: PASS

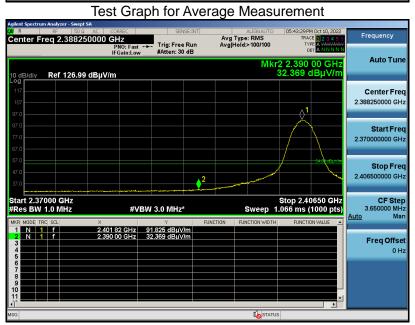




EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 4 **Antenna** Vertical

Test Graph for Peak Measurement





RESULT: PASS



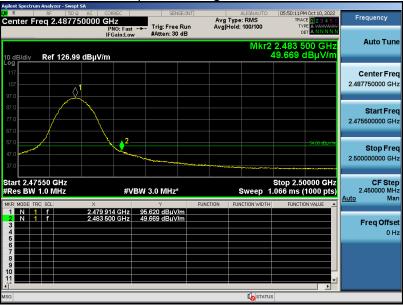


EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 6 **Antenna** Horizontal

Test Graph for Peak Measurement







RESULT: PASS



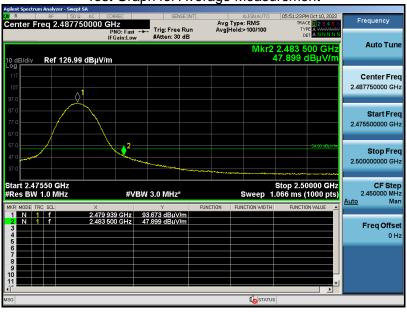


EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 6 **Antenna** Vertical

Test Graph for Peak Measurement











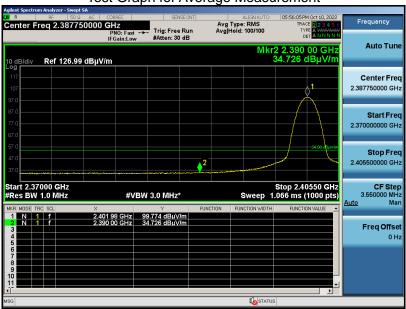
Test result for band edge emission at restricted bands (GFSK 125Kbps)

EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 7	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: PASS



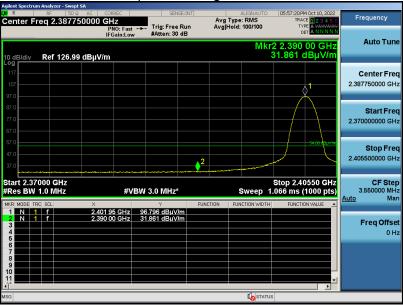


EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 7 **Antenna** Vertical

Test Graph for Peak Measurement







RESULT: PASS



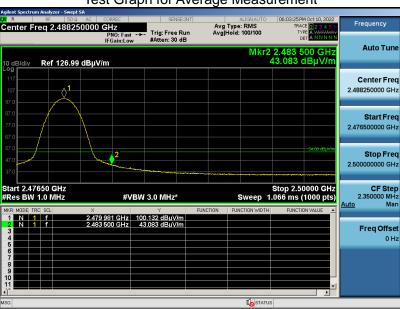


EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 9 **Antenna** Horizontal

Test Graph for Peak Measurement







RESULT: PASS



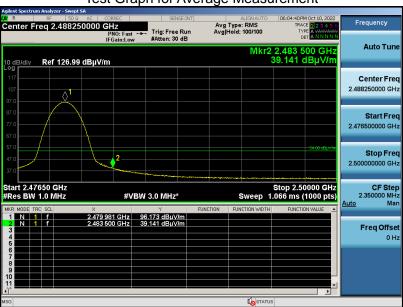


EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 9 **Antenna** Vertical

Test Graph for Peak Measurement







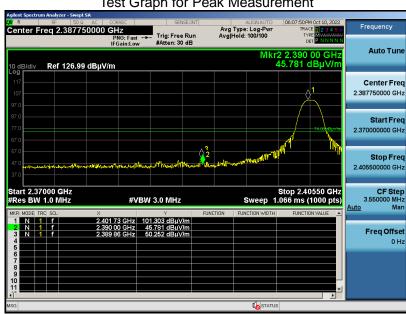




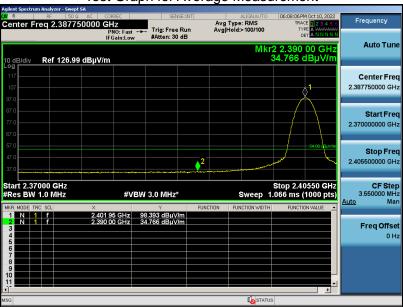
Test result for band edge emission at restricted bands (GFSK 500Kbps)

EUT	RADEBEACON GATEWAY	Model Name	RBG-1000C
Temperature	20° C	Relative Humidity	52%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 10	Antenna	Horizontal

Test Graph for Peak Measurement







RESULT: PASS

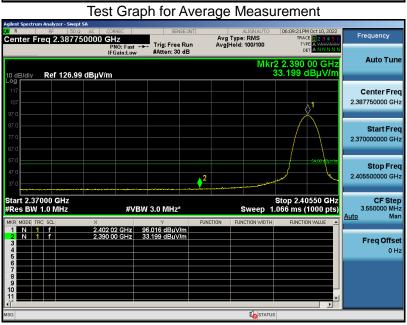




EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 10 **Antenna** Vertical

Test Graph for Peak Measurement





RESULT: PASS



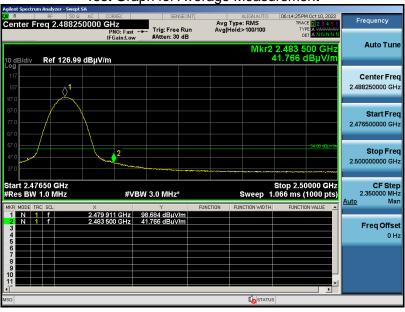


EUT RADEBEACON GATEWAY Model Name RBG-1000C 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 12 **Antenna** Horizontal

Test Graph for Peak Measurement







RESULT: PASS



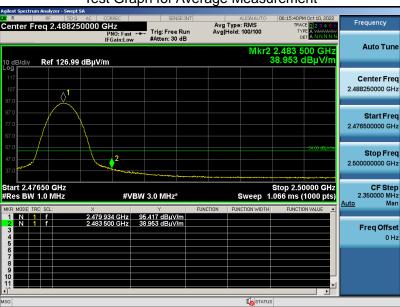


EUT RADEBEACON GATEWAY RBG-1000C Model Name 20° C **Temperature Relative Humidity** 52% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 12 **Antenna** Vertical

Test Graph for Peak 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

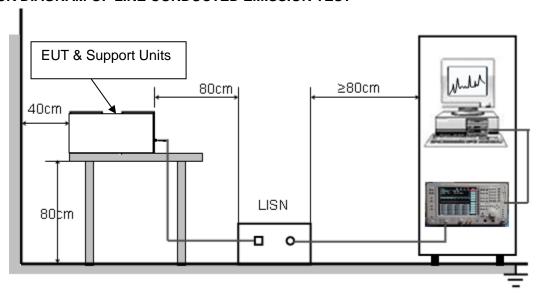
12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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

Note:

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

12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST





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12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

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

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

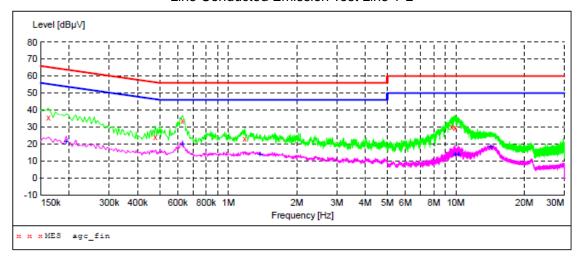
12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

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



12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Line Conducted Emission Test Line 1-L



MEASUREMENT RESULT: "agc_fin"

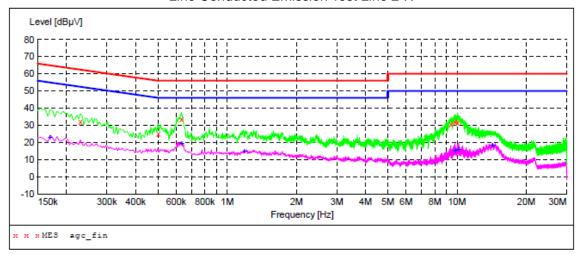
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.162000 0.478000 0.630000	35.70 24.10 33.70	6.8 5.5 5.4	65 56 56	29.7 32.3 22.3	QP	L1 L1 L1
1.182000 9.598000	22.80	5.7	56 60	33.2 30.1	QP QP	L1 L1
9.934000	29.60	6.9	60	30.4	QP	ьı

MEASUREMENT RESULT: "agc fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.194000 0.630000 1.378000	21.50 19.90 14.00	6.6 5.4 5.9	54 46 46			L1 L1 L1
9.934000 10.278000 14.242000	13.80 14.20 18.70	6.9 7.0 8.1	50 50 50	36.2 35.8 31.3		L1 L1 L1



Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "agc_fin"

Line	Detector	Margin dB	Limit dBµV	Transd dB	Level dBµV	Frequency MHz
N	QP	30.5	62	6.4	31.90	0.230000
N	QP	31.1	56	5.4	24.90	0.502000
N	QP	22.7	56	5.4	33.30	0.634000
N	QP	29.6	60	6.8	30.40	9.414000
N	QP	27.8	60	6.9	32.20	9.806000
N	QP	28.6	60	6.9	31.40	10.058000

MEASUREMENT RESULT: "agc_fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.170000 0.634000 1.190000 9.806000 10.150000 14.250000	22.80 19.70 14.80 15.30 15.90 18.70	6.8 5.4 5.7 6.9 8.1	55 46 46 50 50	32.2 26.3 31.2 34.7 34.1 31.3	AV AV AV	N N N N N

RESULT: PASS

All test modes had been tested. The BLE 1Mbps mode 3 is the worst case and recorded in the report.



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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC00174220805AP02

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC00174220805AP03

----END OF REPORT----



Conditions of Issuance of Test Reports

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