

# **FCC Test Report**

Report No.: AGC15798230774FE02

FCC ID : 2AANZTGT

**APPLICATION PURPOSE**: Original Equipment

**PRODUCT DESIGNATION**: BLUETOOTH TRACKER

**BRAND NAME** : HYPE

**MODEL NAME** : HY-TGT-3PK, HY-TGT, HY-TGT-XXX (X is just a letter)

**APPLICANT** : DGL Group LTD.

**DATE OF ISSUE** : Aug. 24, 2023

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

**REPORT VERSION**: V1.0

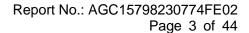
Attestation of Global Compliance (Shenzhen) Co., Ltd



Page 2 of 44

# REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Aug. 24, 2023	Valid	Initial Release





# **TABLE OF CONTENTS**

1. VERIFICATION OF COMPLIANCE	5
2. GENERAL INFORMATION	6
2.1. PRODUCT DESCRIPTION  2.2. TABLE OF CARRIER FREQUENCYS  2.3. RELATED SUBMITTAL(S)/GRANT(S)  2.4. TEST METHODOLOGY	7 7
2.5. SPECIAL ACCESSORIES  2.6. EQUIPMENT MODIFICATIONS  2.7. ANTENNA REQUIREMENT  2.8. DUTY CYCLE	7 7
3. MEASUREMENT UNCERTAINTY	10
4. DESCRIPTION OF TEST MODES	11
5. SYSTEM TEST CONFIGURATION	12
5.1. CONFIGURATION OF TESTED SYSTEM	12
6. TEST FACILITY	13
7. PEAK OUTPUT POWER	14
7.1. MEASUREMENT PROCEDURE	14
8. BANDWIDTH	
8.1. MEASUREMENT PROCEDURE	17
9. CONDUCTED SPURIOUS EMISSION	21
9.1. MEASUREMENT PROCEDURE	21 21
10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY	28
10.1. MEASUREMENT PROCEDURE  10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)  10.3. MEASUREMENT EQUIPMENT USED  10.4. LIMITS AND MEASUREMENT RESULT	28 28
11. RADIATED EMISSION	30
11.1. MEASUREMENT PROCEDURE	30

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Page 4 of 44

11.3. LIMITS AND MEASUREMENT RESULT	32
11.4. TEST RESULT	32
12. LINE CONDUCTED EMISSION TEST	42
12.1. LIMITS OF LINE CONDUCTED EMISSION TEST	42
12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST	42
12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST	43
12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST	43
12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST	43
APPENDIX A: PHOTOGRAPHS OF TEST SETUP	44
APPENDIX B: PHOTOGRAPHS OF EUT	44



Page 5 of 44

#### 1. VERIFICATION OF COMPLIANCE

Applicant	DGL Group LTD.	
Address	2045 Lincoln Highway, 3rd Floor, Edison, NJ 08817, United States	
Manufacturer	DGL Group LTD.	
Address	2045 Lincoln Highway, 3rd Floor, Edison, NJ 08817, United States	
Factory	N/A	
Address	N/A	
Product Designation	BLUETOOTH TRACKER	
Brand Name	HYPE	
Test Model	HY-TGT-3PK	
Series Model	HY-TGT, HY-TGT-XXX (X is just a letter)	
Declaration of Difference	All the same except for the appearance color.	
Date of receipt of test item	Jul. 19, 2023	
Date of test	Jul. 19, 2023 to Aug. 24, 2023	
Deviation	No any deviation from the test method	
Condition of Test Sample	Normal	
Test Result	Pass	
Report Template	AGCRT-US-BLE/RF	

We hereby certify that:

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

Reviewed By

Calvin Liu
(Reviewer)

Aug. 24, 2023



Page 6 of 44

#### 2. GENERAL INFORMATION

# 2.1. PRODUCT DESCRIPTION

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

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz
RF Output Power	-1.148dBm (Max)
Bluetooth Version	V5.0
Modulation	BR □GFSK, EDR □π /4-DQPSK, □8DPSK BLE □GFSK 1Mbps □GFSK 2Mbps
Number of channels	40 Channel
Antenna Designation	PCB Antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	2.3dBi
Hardware Version	XFY-FD01-V3.0
Software Version	V1.0
Power Supply	DC 3V by battery

# 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	0	2402 MHz
2400~2483.5MHz	1	2404 MHz
	:	:
	38	2478 MHz
	39	2480 MHz



Page 7 of 44

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

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

#### 2.4. TEST METHODOLOGY

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

#### 2.5. SPECIAL ACCESSORIES

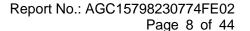
Refer to section 5.2.

#### 2.6. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

#### 2.7. ANTENNA REQUIREMENT

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

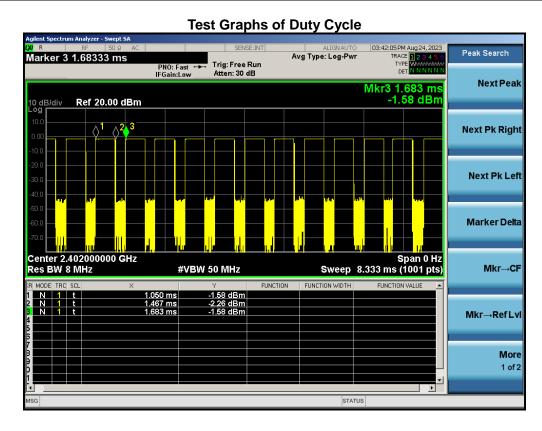




#### 2.8. DUTY CYCLE

The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW=8MHz, VBW=50MHz. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Test Mode	Frequency	Duty Cycle
GFSK 1M	2402MHz	66%





Page 9 of 44



Page 10 of 44

#### 3. MEASUREMENT UNCERTAINTY

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

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



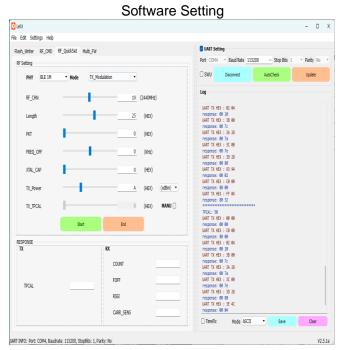
Page 11 of 44

#### 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX_2402MHz_GFSK_1Mbps
2	Middle channel TX_2440MHz_GFSK_1Mbps
3	High channel TX_2480MHz_GFSK_1Mbps

#### Note:

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



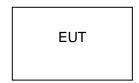


Page 12 of 44

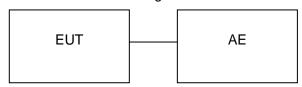
# 5. SYSTEM TEST CONFIGURATION

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

Radiated Emission Configure:



Conducted Emission Configure:



# 5.2. EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	BLUETOOTH TRACKER	HY-TGT-3PK	2AANZTGT	EUT
2	Control Box	USB-TTL	N/A	AE

#### 5.3. SUMMARY OF TEST RESULTS

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

Note: The EUT is battery operated without AC mains.



Page 13 of 44

# **6. TEST FACILITY**

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

# **TEST EQUIPMENT OF RADIATED EMISSION TEST**

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	TEST RECEIVER R&S		10096	Feb. 18, 2023	Feb. 17, 2024
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Aug. 04, 2022	Aug. 03, 2023
2.4GHz Filter	EM Electronics	2400-2500MHz	N/A	Mar. 22, 2022	Mar. 21, 2024
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Mar. 23, 2023	Mar. 22, 2024
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Aug. 03, 2022	Aug. 02, 2024
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 05, 2023	Jan. 04, 2025
Test software	FARA	EZ-EMC	Ver RA-03A	N/A	N/A



Page 14 of 44

#### 7. PEAK OUTPUT POWER

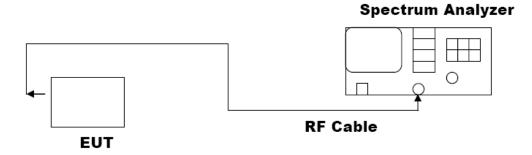
#### 7.1. MEASUREMENT PROCEDURE

For peak power test:

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

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

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





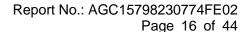
Page 15 of 44

#### 7.3. LIMITS AND MEASUREMENT RESULT

	110. 211111 10 71112 1112 70 07121112111 7120021						
	Test Data of Conducted Output Power						
Test Mode	Test Channel (MHz)	Peak Power (dBm)	Limits (dBm)	Pass or Fail			
	2402	-1.148	≤30	Pass			
GFSK 1M	2440	-1.223	≤30	Pass			
	2480	-1.693	≤30	Pass			

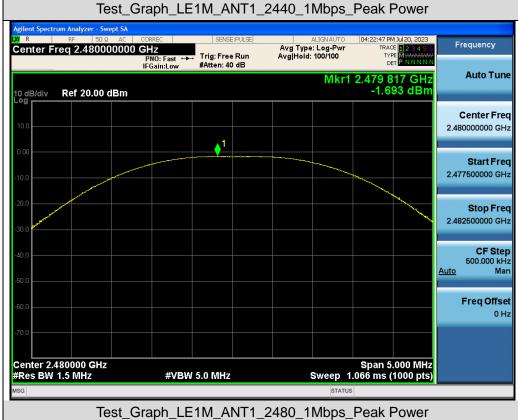
**Test Graphs of Conducted Output Power** 













Page 17 of 44

#### 8. BANDWIDTH

#### **8.1. MEASUREMENT PROCEDURE**

#### 6dB bandwidth:

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

#### Occupied bandwidth:

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

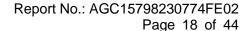
Note: The EUT was tested according to ANSI C63.10 for compliance to FCC PART 15.247 requirements.

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

The same as described in section 7.2.

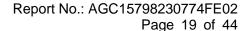
#### 8.3. LIMITS AND MEASUREMENT RESULTS

Test Data of Occupied Bandwidth and DTS Bandwidth							
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-6dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail		
	2402	1.053	0.739	≥0.5	Pass		
GFSK 1M	2440	1.058	0.751	≥0.5	Pass		
	2480	1.064	0.757	≥0.5	Pass		

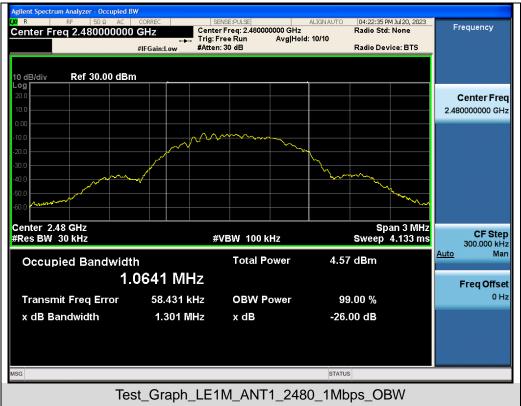






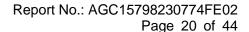




















Page 21 of 44

#### 9. CONDUCTED SPURIOUS EMISSION

#### 9.1. MEASUREMENT PROCEDURE

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

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

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

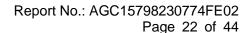
The same as described in section 7.2.

#### 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

#### 9.4. LIMITS AND MEASUREMENT RESULT

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



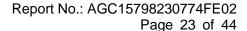


Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands



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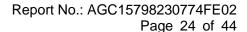
Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Lower Band Emissions



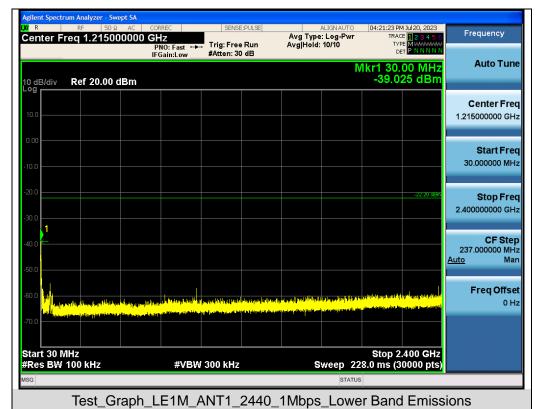




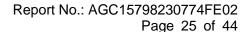






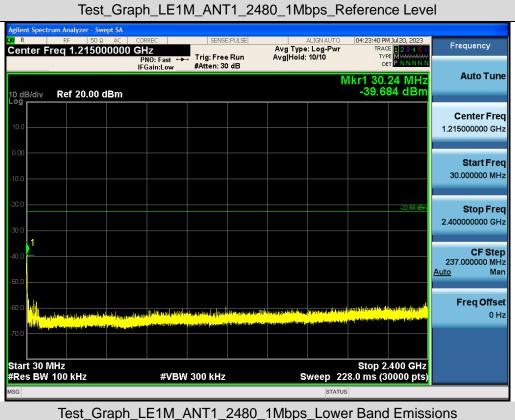


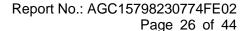
ent Spectrum Analyzer - Swept SA Frequency Avg Type: Log-Pwr Avg|Hold: 9/10 Center Freq 13.741750000 GHz Trig: Free Run #Atten: 30 dB IFGain:Low **Auto Tune** Mkr1 7.319 5 GHz -47.324 dBm 10 dB/div Ref 20.00 dBm Center Freq 13.741750000 GHz Start Freq 2.483500000 GHz Stop Freq 25.000000000 GHz CF Step 2.251650000 GHz Man <u>Auto</u> Freq Offset 0 Hz Start 2.48 GHz #Res BW 100 kHz Stop 25.00 GHz Sweep 2.152 s (30000 pts) #VBW 300 kHz Test\_Graph\_LE1M\_ANT1\_2440\_1Mbps\_Higher Band Emissions



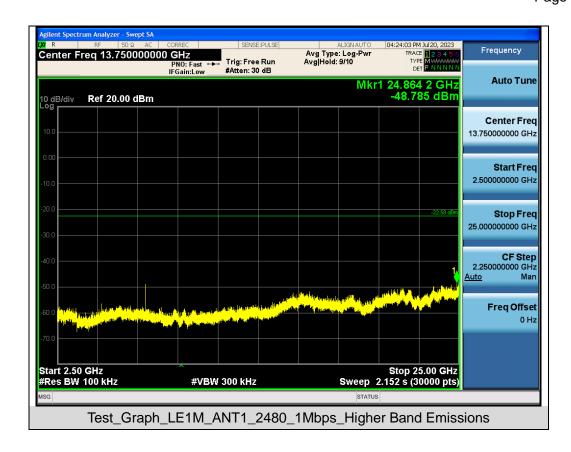


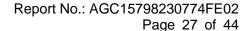






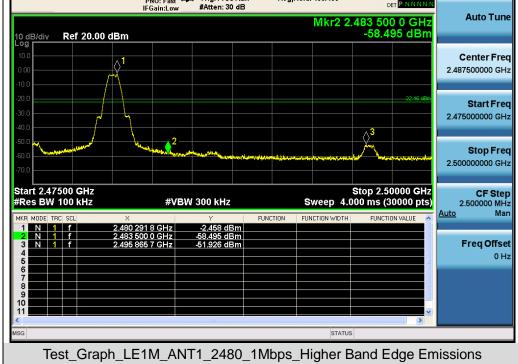








Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands Frequency Center Freq 2.398500000 GHz Avg Type: Log-Pwr Avg|Hold: 100/100 Trig: Free Run #Atten: 30 dB **Auto Tune** Mkr2 2.400 000 0 GHz -54.426 dBm Ref 20.00 dBm 2.398500000 GHz Start Freq 2.390000000 GHz Stop Freq 2.407000000 GHz Start 2.390000 GHz #Res BW 100 kHz Stop 2.407000 GHz Sweep 2.000 ms (30000 pts) CF Step 1.700000 MHz #VBW 300 kHz <u>Auto</u> Man -1.947 dBm -54.426 dBm -51.213 dBm 2.397 140 2 GHz Freq Offset 0 Hz Test\_Graph\_LE1M\_ANT1\_2402\_1Mbps\_Lower Band Edge Emissions Frequency Center Freq 2.487500000 GHz Avg Type: Log-Pwr Avg|Hold: 100/100 Trig: Free Run IFGain:Low **Auto Tune** Mkr2 2.483 500 0 GHz -58.495 dBm Ref 20.00 dBm Center Freq 2.487500000 GHz





Page 28 of 44

#### 10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

# 10.1. MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer
- (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

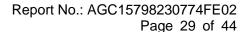
Refer to Section 6.

#### 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	-17.150	<b>≤8</b>	Pass		
GFSK 1M	2440	-17.226	<b>≤8</b>	Pass		
	2480	-17.042	<b>≤8</b>	Pass		

Test Graphs of Conducted Output Power Spectral Density











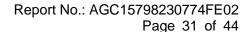


Page 30 of 44

#### 11. RADIATED EMISSION

#### 11.1. MEASUREMENT PROCEDURE

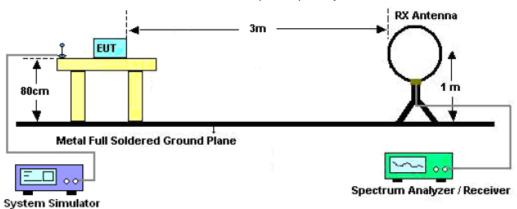
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated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



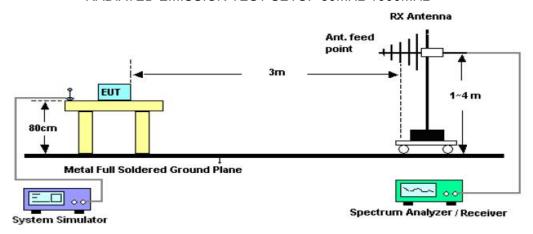


#### 11.2. TEST SETUP

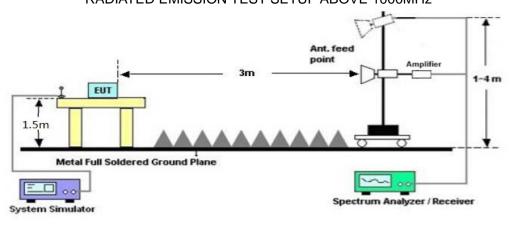
# Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



# RADIATED EMISSION TEST SETUP ABOVE 1000MHz





Page 32 of 44

# 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

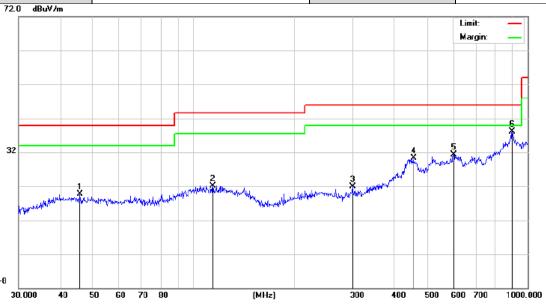
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.



Page 33 of 44

# Radiated emission from 30MHz to 1000MHz

EUT	BLUETOOTH TRACKER	Model Name	HY-TGT-3PK
Temperature	22.1° C	Relative Humidity	60.2%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal



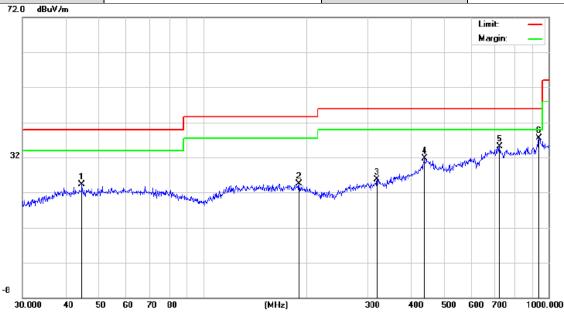
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		45.8553	6.26	13.49	19.75	40.00	-20.25	peak
2		114.5146	5.81	16.35	22.16	43.50	-21.34	peak
3		299.3158	6.43	15.45	21.88	46.00	-24.12	peak
4		455.9058	5.81	24.54	30.35	46.00	-15.65	peak
5		601.4265	6.16	25.11	31.27	46.00	-14.73	peak
6	*	900.1474	6.23	31.78	38.01	46.00	-7.99	peak

**RESULT: PASS** 



Page 34 of 44

EUT	BLUETOOTH TRACKER	Model Name	HY-TGT-3PK
Temperature	22.1° C	Relative Humidity	60.2%
Pressure	960hPa	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	dB/m	dB	Detector
1		44.5868	7.30	16.95	24.25	40.00	-15.75	peak
2		189.7385	6.24	18.21	24.45	43.50	-19.05	peak
3		318.8170	5.50	20.22	25.72	46.00	-20.28	peak
4		437.1199	6.04	25.64	31.68	46.00	-14.32	peak
5		721.7259	6.55	28.64	35.19	46.00	-10.81	peak
6	*	938.8326	6.70	30.84	37.54	46.00	-8.46	peak

# **RESULT: PASS**

# Note:

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



Page 35 of 44

# Radiated emission above 1GHz

EUT	BLUETOOTH TRACKER	Model Name	HY-TGT-3PK
Temperature	22.1° C	Relative Humidity	60.2%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
43.45	0.08	43.53	74	-30.47	peak	
35.36	0.08	35.44	54	-18.56	AVG	
38.68	2.21	40.89	74	-33.11	peak	
31.27	2.21	33.48	54	-20.52	AVG	
	(dBµV) 43.45 35.36 38.68	(dBµV) (dB) 43.45 0.08 35.36 0.08 38.68 2.21	(dBμV)     (dB)     (dBμV/m)       43.45     0.08     43.53       35.36     0.08     35.44       38.68     2.21     40.89	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)       43.45     0.08     43.53     74       35.36     0.08     35.44     54       38.68     2.21     40.89     74	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)     (dBμV/m)       43.45     0.08     43.53     74     -30.47       35.36     0.08     35.44     54     -18.56       38.68     2.21     40.89     74     -33.11	

Remark:

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

EUT	BLUETOOTH TRACKER	Model Name	HY-TGT-3PK
Temperature	22.1° C	Relative Humidity	60.2%
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	44.38	0.08	44.46	74	-29.54	peak
4804.000	34.89	0.08	34.97	54	-19.03	AVG
7206.000	38.25	2.21	40.46	74	-33.54	peak
7206.000	30.62	2.21	32.83	54	-21.17	AVG

#### Remark:

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



Page 36 of 44

EUT	BLUETOOTH TRACKER	Model Name	HY-TGT-3PK
Temperature	22.1° C	Relative Humidity	60.2%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.000	44.61	0.14	44.75	74	-29.25	peak
4880.000	35.74	0.14	35.88	54	-18.12	AVG
7320.000	39.73	2.36	42.09	74	-31.91	peak
7320.000	31.55	2.36	33.91	54	-20.09	AVG
Remark:						
actor - Antor	na Factor + Cahl	aloce Dro	mplifior			

Factor = Antenna Factor + Cable Loss – Pre-amplif	ier.
---	------

EUT	BLUETOOTH TRACKER	Model Name	HY-TGT-3PK
Temperature	22.1° C	Relative Humidity	60.2%
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	45.19	0.14	45.33	74	-28.67	peak
4880.000	38.07	0.14	38.21	54	-15.79	AVG
7320.000	40.46	2.36	42.82	74	-31.18	peak
7320.000	32.42	2.36	34.78	54	-19.22	AVG

# Remark:

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



Page 37 of 44

EUT	BLUETOOTH TRACKER	Model Name	HY-TGT-3PK
Temperature	22.1° C	Relative Humidity	60.2%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.000	44.69	0.22	44.91	74	-29.09	peak
4960.000	35.41	0.22	35.63	54	-18.37	AVG
7440.000	38.77	2.64	41.41	74	-32.59	peak
7440.000	29.42	2.64	32.06	54	-21.94	AVG
emark:						

EUT	BLUETOOTH TRACKER	Model Name	HY-TGT-3PK
Temperature	22.1° C	Relative Humidity	60.2%
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	42.94	0.22	43.16	74	-30.84	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:			ļ			
Factor = Anter	ina Factor + Cabl	e Loss – Pre-a	mplifier.			

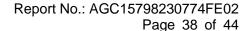
#### **RESULT: PASS**

#### 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, Margin=Level-Limit.

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

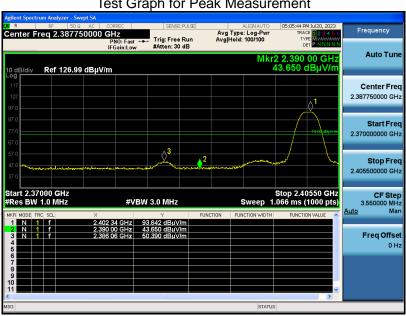




Test result for band edge emission at restricted bands

EUT	BLUETOOTH TRACKER	Model Name	HY-TGT-3PK
Temperature	22.1° C	Relative Humidity	60.2%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal

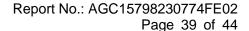
Test Graph for Peak Measurement



Test Graph for Average Measurement



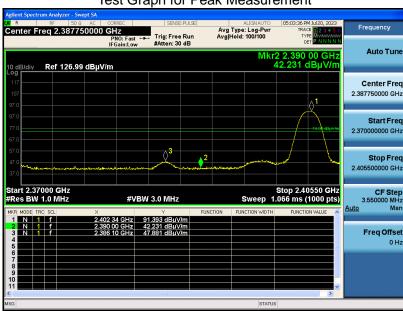
**RESULT: PASS** 





**EUT BLUETOOTH TRACKER Model Name** HY-TGT-3PK 22.1° C **Temperature Relative Humidity** 60.2% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 1 **Antenna** Vertical

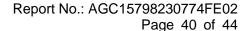
Test Graph for Peak Measurement



Test Graph for Average Measurement



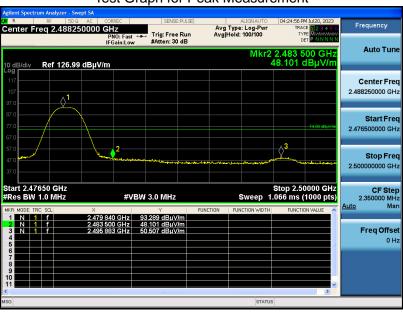
**RESULT: PASS** 





**EUT BLUETOOTH TRACKER Model Name** HY-TGT-3PK 22.1° C **Temperature Relative Humidity** 60.2% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 3 **Antenna** Horizontal

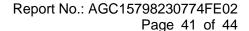
Test Graph for Peak Measurement







**RESULT: PASS** 



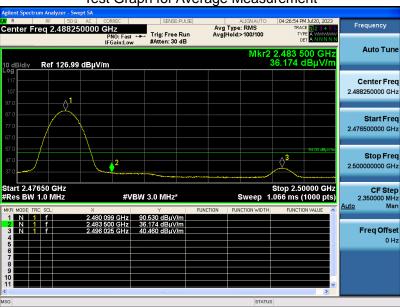


**EUT BLUETOOTH TRACKER Model Name** HY-TGT-3PK 22.1° C **Temperature Relative Humidity** 60.2% 960hPa **Test Voltage** Normal Voltage **Pressure Test Mode** Mode 3 **Antenna** Vertical

Test Graph for Peak Measurement







#### **RESULT: PASS**

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



Page 42 of 44

#### 12. LINE CONDUCTED EMISSION TEST

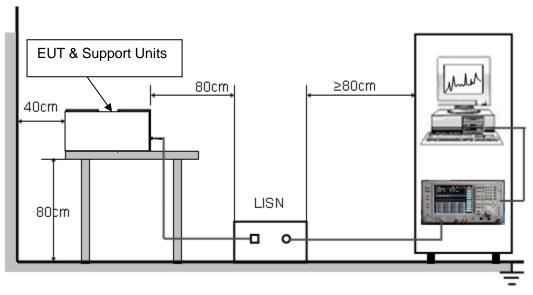
# 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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

#### Note:

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

#### 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST





Page 43 of 44

#### 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

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

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

#### 12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

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

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

N/A

Note: The conducted emission tests at AC port are not required for devices which only employ battery power for operation.



Page 44 of 44

#### APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC15798230774AP01

**APPENDIX B: PHOTOGRAPHS OF EUT** 

Refer to the Report No.: AGC15798230774AP02

----END OF REPORT----



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