FCC Test Report

Report No.: AGC00008220502FE03

FCC ID	:	TW5GD8217B
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	2.4GHz Digital Wireless Baby Monitor
BRAND NAME	:	N/A
MODEL NAME	:	GD8217B
APPLICANT	:	Shenzhen Gospell Smarthome Electronic Co., Ltd.
DATE OF ISSUE	:	Jun. 28, 2022
STANDARD(S) **TEST PROCEDURE(S)**	:	FCC Part 15 Rules
REPORT VERSION	:	V1.0

Attestation of ***G***lobal ***C***ompliance (Shenzhen) Co., Ltd

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jun. 28, 2022	Valid	Initial Release

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1. VERIFICATION OF CONFORMITY

Applicant	Shenzhen Gospell Smarthome Electronic Co., Ltd.
Address	Room 101, 201, 311, Building No. 28, Block B, Tantou Industrial Park, Songgang, Baoan, Shenzhen City, Guangdong Province, China
Manufacturer	Shenzhen Gospell Smarthome Electronic Co., Ltd.
Address	Room 101, 201, 311, Building No. 28, Block B, Tantou Industrial Park, Songgang, Baoan, Shenzhen City, Guangdong Province, China
Factory	Shenzhen Gospell Smarthome Electronic Co., Ltd.
Address	Room 101, 201, 311, Building No. 28, Block B, Tantou Industrial Park, Songgang, Baoan, Shenzhen City, Guangdong Province, China
Product Designation	2.4GHz Digital Wireless Baby Monitor
Brand Name	N/A
Test Model	GD8217B
Date of test	May 25, 2022 to Jun. 28, 2022
Deviation	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-BR/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 Rules Part 15.249.

Prepared By	Alan Duan (Project Engineer)	Jun. 28, 2022
Reviewed By	Calvin Liu (Reviewer)	Jun. 28, 2022
Approved By	Max Zhang (Authorized Officer)	Jun. 28, 2022

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	2410 MHz to 2477 MHz
Maximum field strength	87.85dBuV/m(average)@3m
Modulation	GFSK
Number of channels	20
Antenna Gain	3dBi
Antenna Designation	Integral Antenna (Met 15.203 Antenna requirement)
Hardware Version	GD8207-M03
Software Version	V1.0
Power Supply	DC 5V by adapter

2.2. TABLE OF CARRIER FREQUENCY

Channel Number	Frequency (MHz)
1	2410
2	2413.5
3	2417
4	2420.5
5	2424
6	2427.5
7	2431
8	2434.5
9	2438
10	2441.5
11	2445
12	2448.5
13	2452
14	2455.5
15	2459
16	2462.5
17	2466
18	2469.5
19	2473
20	2477

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%.

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB
- Uncertainty of Occupied Channel Bandwidth: Uc = ±2 %

4. DESCRIPTION OF TEST MODES

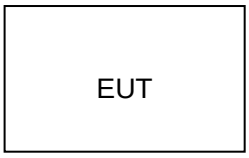
NO.	TEST MODE DESCRIPTION
1	Low channel GFSK
2	Middle channel GFSK
3	High channel GFSK

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.

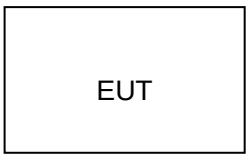
5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure:



Conducted Emission Configure:



5.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	2.4GHz Digital Wireless Baby Monitor	GD8217B	TW5GD8217B	EUT
2	ADAPTER	TPA-46B050100UU	Input: 100-240V~,50/60Hz,0.2A Output: DC 5.0V,1000mA	EUT

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249&15.209	Radiated Emission	Compliant
§15.249	Band Edges	Compliant
§15.215	20dB bandwidth	Compliant
§15.207	Conducted Emission	Compliant

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 CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Mar.28, 2022	Mar.27, 2023
LISN	R&S	ESH2-Z5	100086	Jun. 09, 2022	Jun. 08, 2023
Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Sep. 06, 2021	Sep. 05, 2022
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Nov. 17, 2021	Nov. 16, 2022
2.4GHz Fliter	EM Electronics	2400-2500MHz	N/A	Mar. 22, 2022	Mar. 21, 2024
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
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	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2020	Jan. 07, 2023

7. RADIATED EMISSION

7.1TEST LIMIT

Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

Standard FCC 15.209

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark： (1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

7.2. 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 emissions, 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 minimum resolution bandwidth of 1 MHz. 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.

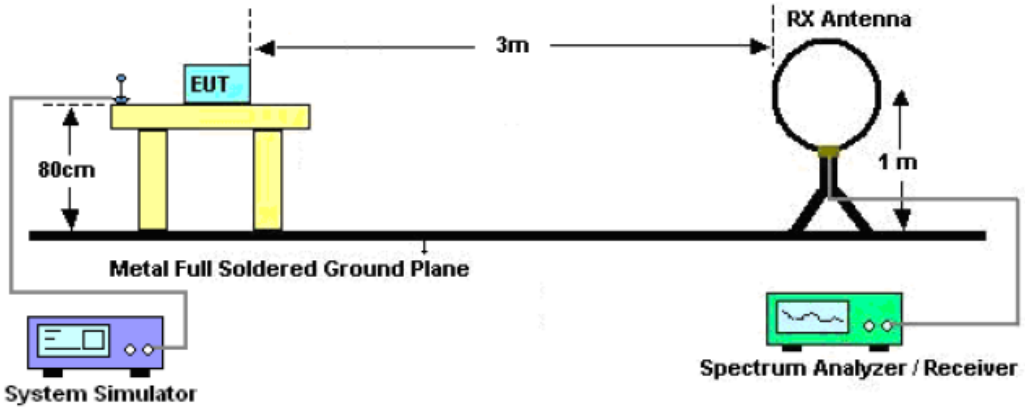
The following table is the setting of spectrum analyzer and receiver.

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 ~Stop Frequency	1GHz~26.5GHz RBW 2.4MHz/ VBW 8MHz for Peak, RBW 2.4MHz/10Hz for Average

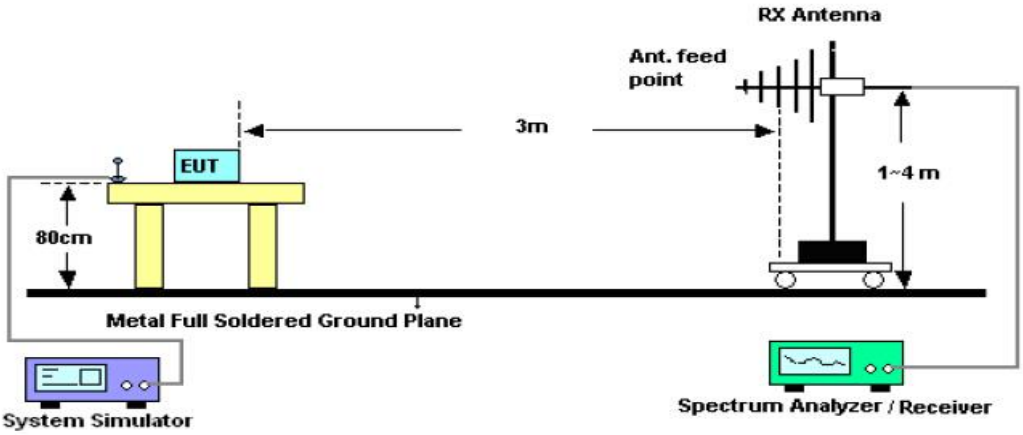
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

7.3. TEST SETUP

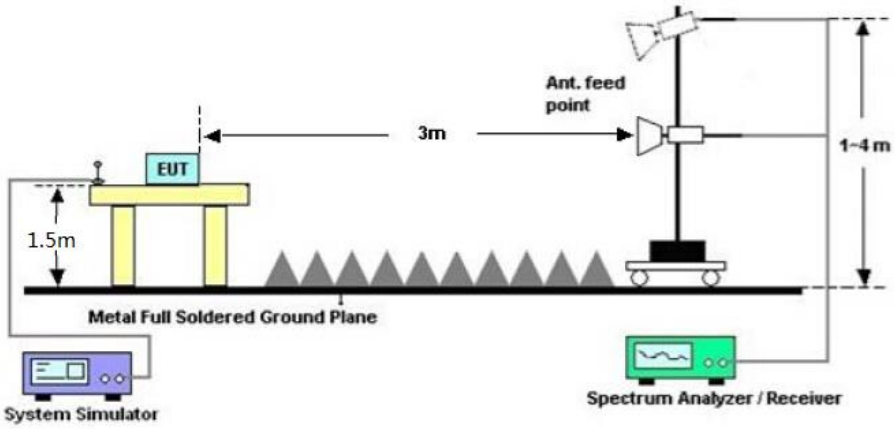
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



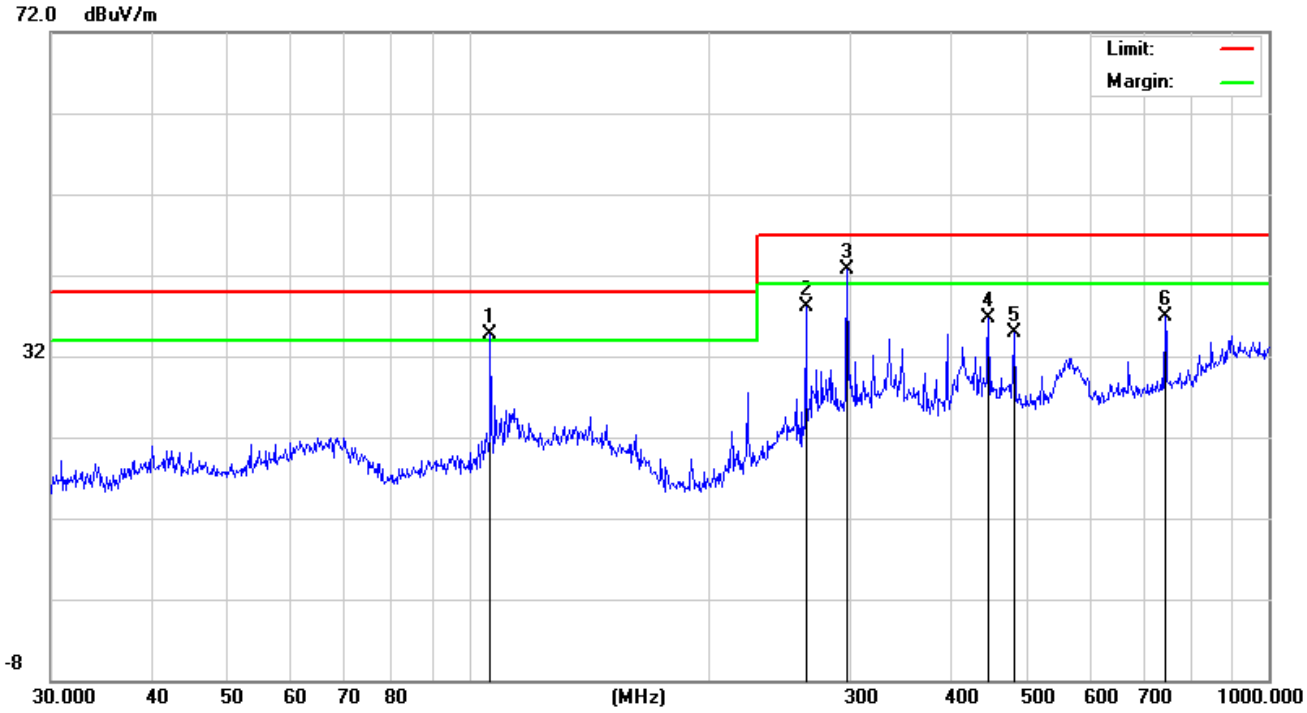
7.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

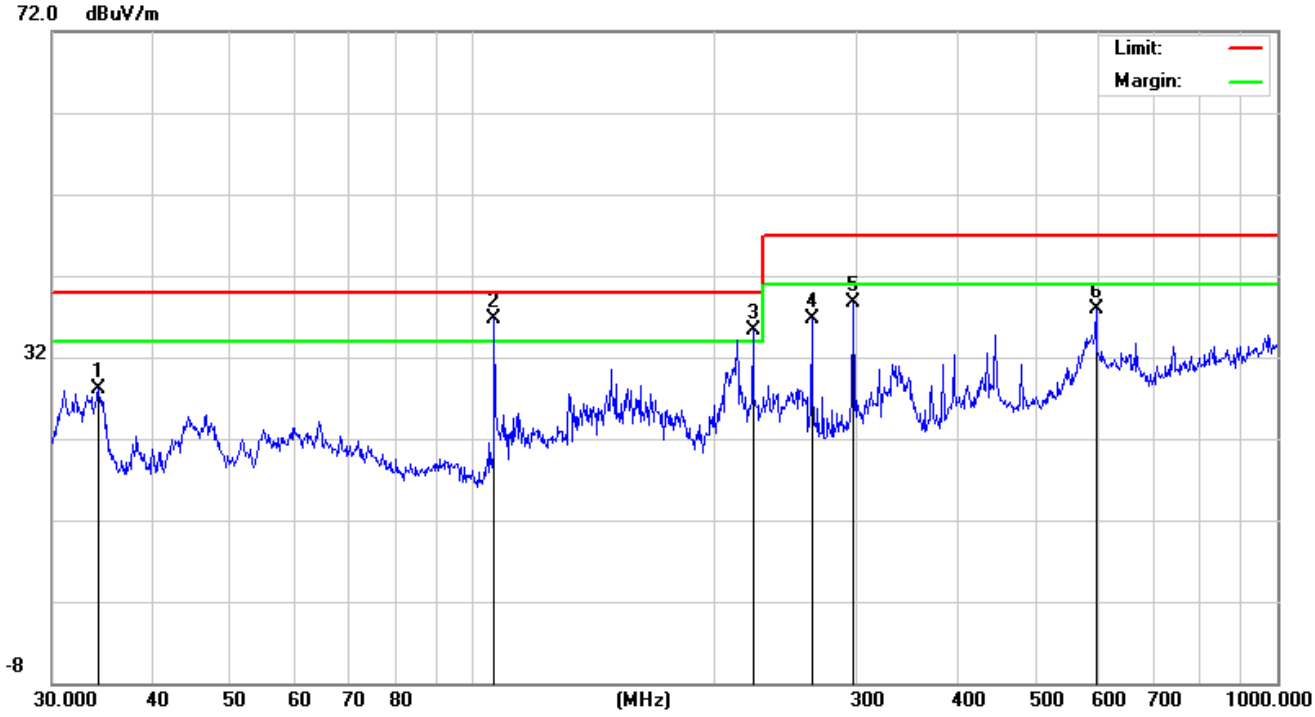
RADIATED EMISSION 30MHz- 1GHZ

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25 ℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 1	Polarization：	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	!	106.3850	19.03	15.72	34.75	40.00	-5.25	peak
2		263.8190	21.23	16.81	38.04	47.00	-8.96	peak
3	*	297.2241	22.50	20.23	42.73	47.00	-4.27	peak
4		446.4141	15.96	20.83	36.79	47.00	-10.21	peak
5		480.5276	13.94	20.95	34.89	47.00	-12.11	peak
6		742.2587	13.14	23.68	36.82	47.00	-10.18	peak

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25 ℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 1	Polarization：	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		34.2760	15.90	12.30	28.20	40.00	-11.80	peak
2	*	106.3850	22.06	14.59	36.65	40.00	-3.35	peak
3	!	222.9502	19.57	15.74	35.31	40.00	-4.69	peak
4		263.8190	18.13	18.62	36.75	47.00	-10.25	peak
5		297.2241	19.24	19.54	38.78	47.00	-8.22	peak
6		595.1329	13.17	24.81	37.98	47.00	-9.02	peak

RESULT: PASS

Note:

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

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

FIELD STRENGTH OF FUNDAMENTAL

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Modulation ：	GFSK	Polarization：	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2410	102.25	-9.61	92.64	114.00	-21.36	peak
2410	97.46	-9.61	87.85	94.00	-6.15	AVG
2441.5	91.24	-9.61	81.63	114.00	-32.37	peak
2441.5	89.59	-9.61	79.98	94.00	-14.02	AVG
2477	98.19	-9.61	88.58	114.00	-25.42	peak
2477	93.30	-9.61	83.69	94.00	-10.31	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Modulation ：	GFSK	Polarization：	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2410	100.69	-9.61	91.08	114.00	-22.92	peak
2410	95.66	-9.61	86.05	94.00	-7.95	AVG
2441.5	89.27	-9.61	79.66	114.00	-34.34	peak
2441.5	87.14	-9.61	77.53	94.00	-16.47	AVG
2477	97.04	-9.61	87.43	114.00	-26.57	peak
2477	91.97	-9.61	82.36	94.00	-11.64	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RADIATED EMISSION ABOVE 1GHZ

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 1	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4820	48.68	3.76	52.44	74.00	-21.56	peak
4820	43.56	3.76	47.32	54.00	-6.68	AVG
7230	42.54	8.17	50.71	74.00	-23.29	peak
7230	38.67	8.17	46.84	54.00	-7.16	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 1	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4820	47.96	3.76	51.72	74.00	-22.28	peak
4820	43.84	3.76	47.60	54.00	-6.40	AVG
7230	42.13	8.17	50.30	74.00	-23.70	peak
7230	37.57	8.17	45.74	54.00	-8.26	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 2	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4883	47.14	3.78	50.92	74.00	-23.08	peak
4883	43.55	3.78	47.33	54.00	-6.67	AVG
7324.5	43.81	8.23	52.04	74.00	-21.96	peak
7324.5	39.69	8.23	47.92	54.00	-6.08	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 2	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4883	48.94	3.78	52.72	74.00	-21.28	peak
4883	42.65	3.78	46.43	54.00	-7.57	AVG
7324.5	44.19	8.23	52.42	74.00	-21.58	peak
7324.5	39.96	8.23	48.19	54.00	-5.81	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 3	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4954	47.87	3.81	51.68	74.00	-22.32	peak
4954	44.22	3.81	48.03	54.00	-5.97	AVG
7431	42.19	8.27	50.46	74.00	-23.54	peak
7431	38.64	8.27	46.91	54.00	-7.09	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 3	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4954	48.66	3.81	52.47	74.00	-21.53	peak
4954	43.12	3.81	46.93	54.00	-7.07	AVG
7431	44.54	8.27	52.81	74.00	-21.19	peak
7431	40.27	8.27	48.54	54.00	-5.46	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Note: Other emissions from 8G to 25 GHz are considered as ambient noise. No recording in the test report.
Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Level-Limit.
The “Factor” value can be calculated automatically by software of measurement system.

8. BAND EDGE EMISSION

8.1TEST LIMIT

Frequency Band	Limit of the Field Strength (dBμV/m)	
	Peak	Average
f≤2390MHz	74	54
f≥2483.5MHz	74	54

8.2. MEASUREMENT PROCEDURE

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

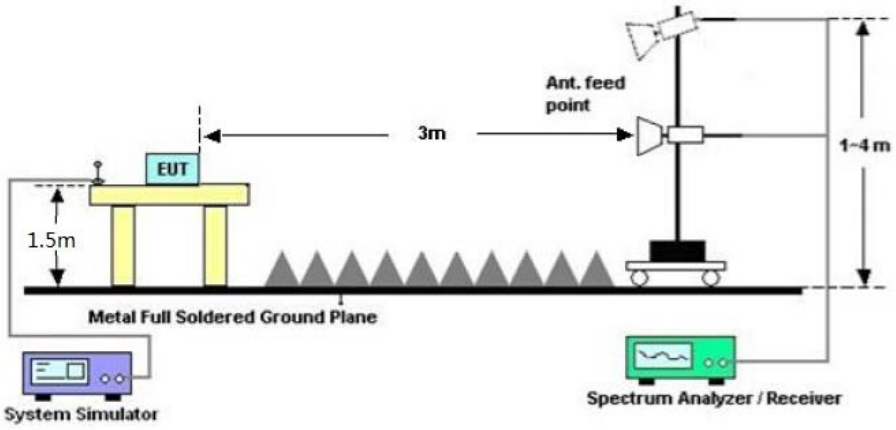
2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO

3. Other procedures refer to clause 7.2.

8.3 TEST SETUP

RADIATED EMISSION TEST SETUP



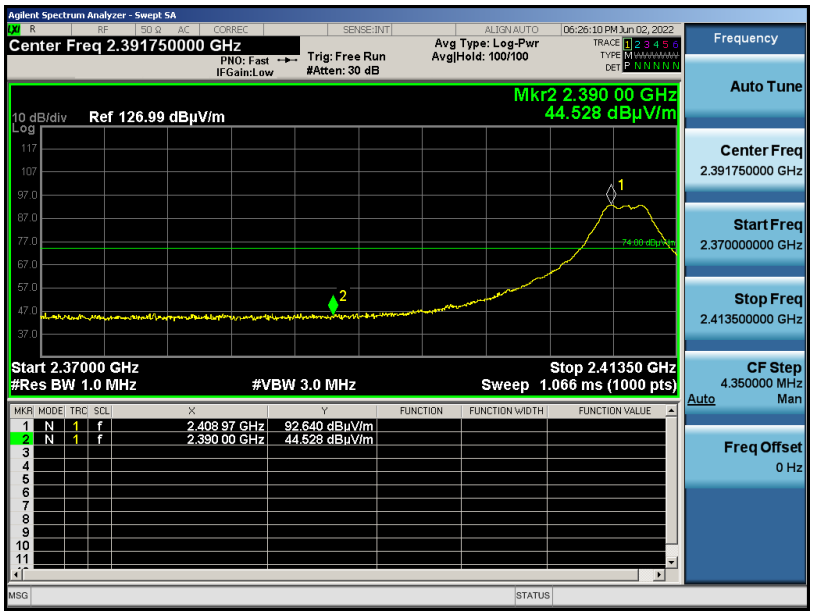
8.4 TEST RESULT

Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
2. The factor had been edited in the “Input Correction” of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μV) to represent the Amplitude. Use the F dB(μV/m) to represent the Field Strength. So A=F.

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 1	Polarization：	Horizontal

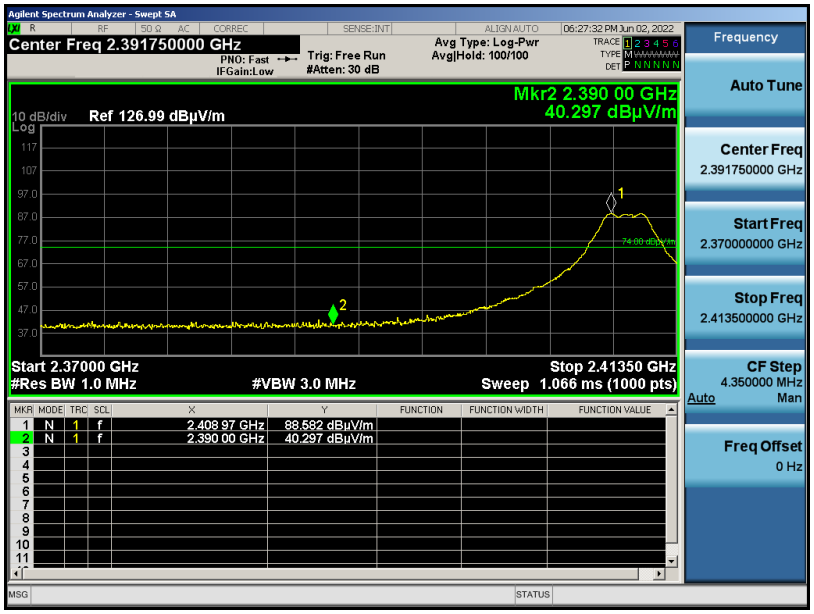
Peak Value



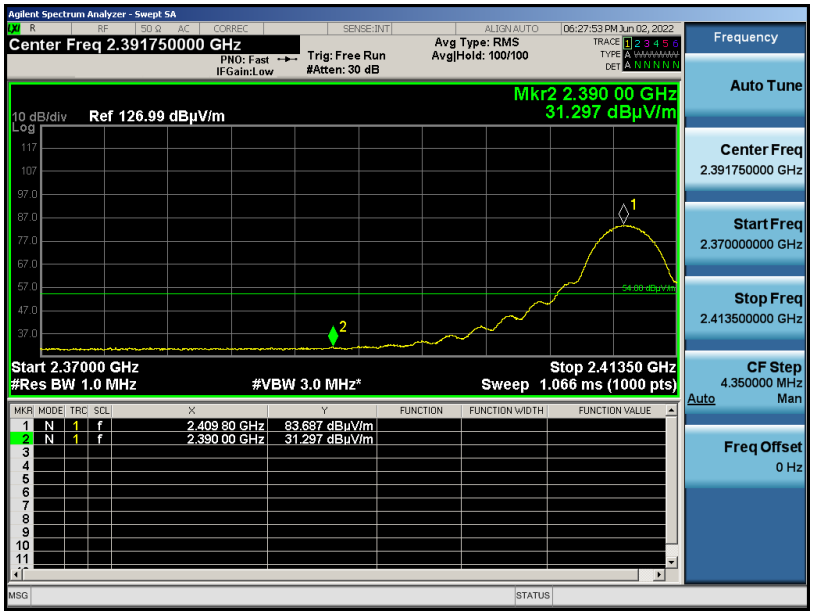
Average Value

EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 1	Polarization：	Vertical

Peak Value

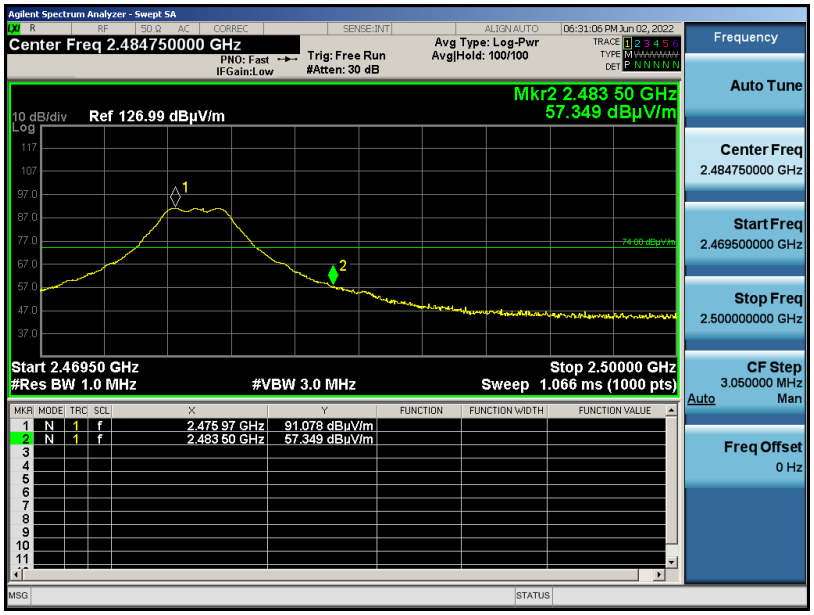


Average Value

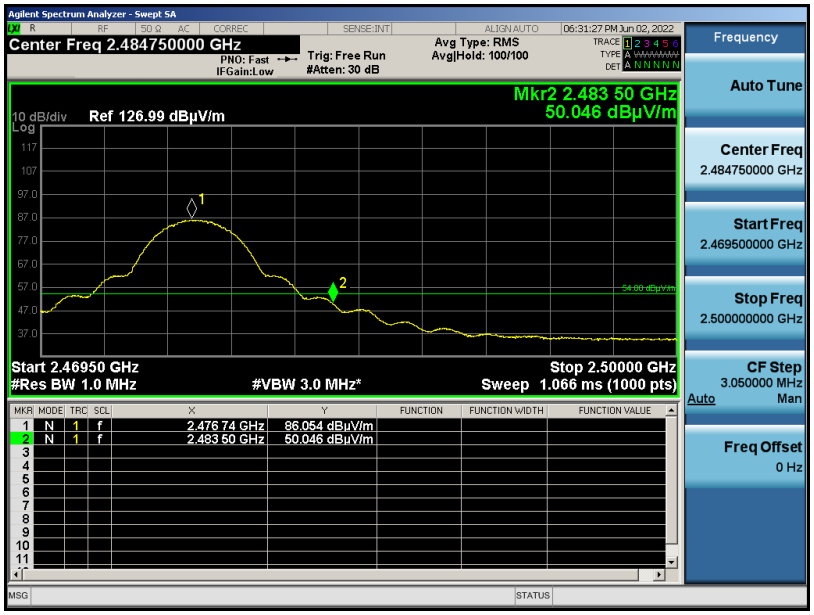


EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 3	Polarization：	Horizontal

Peak Value

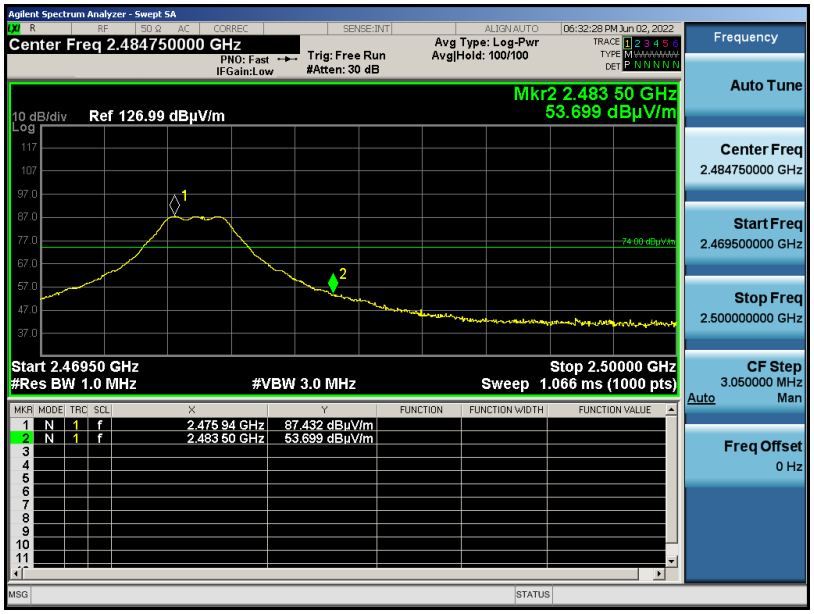


Average Value

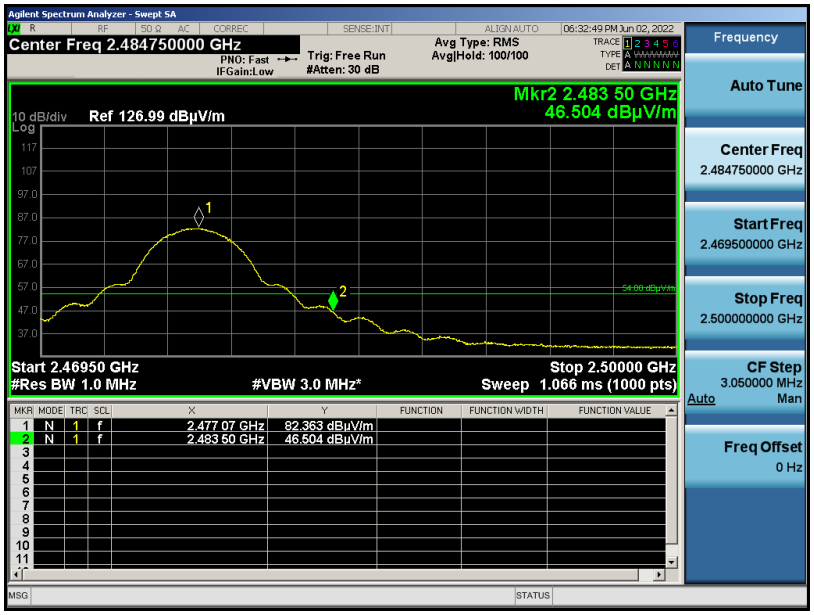


EUT：	2.4GHz Digital Wireless Baby Monitor	Model Name. ：	GD8217B
Temperature：	25℃	Relative Humidity：	55%
Pressure：	1010 hPa	Test Voltage ：	DC 5V
Test Mode ：	Mode 3	Polarization：	Vertical

Peak Value



Average Value

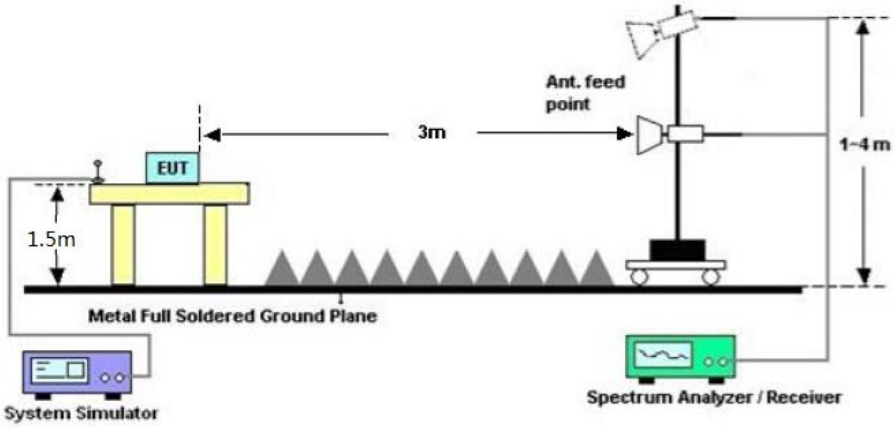


9. 20DB BANDWIDTH

9.1. MEASUREMENT PROCEDURE

1. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
2. Set SPA Centre Frequency = Operation Frequency, RBW= 30 KHz, VBW≥ 3×RBW.
3. Set SPA Trace 1 Max hold, then View.

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

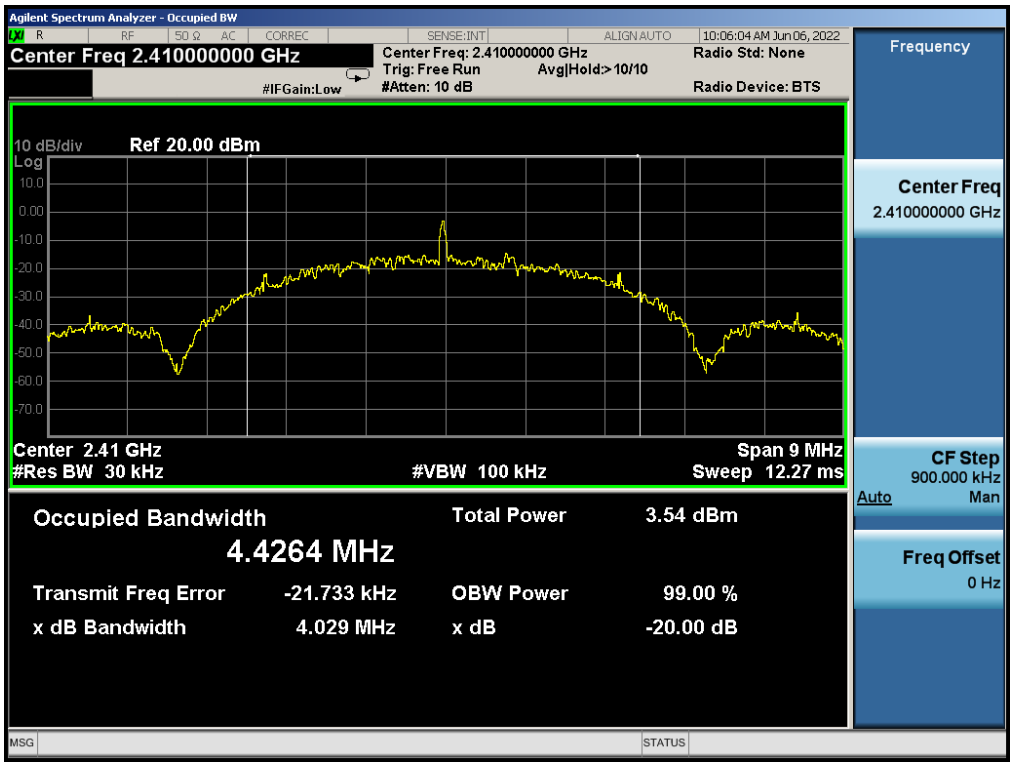


9.3. MEASUREMENT RESULTS

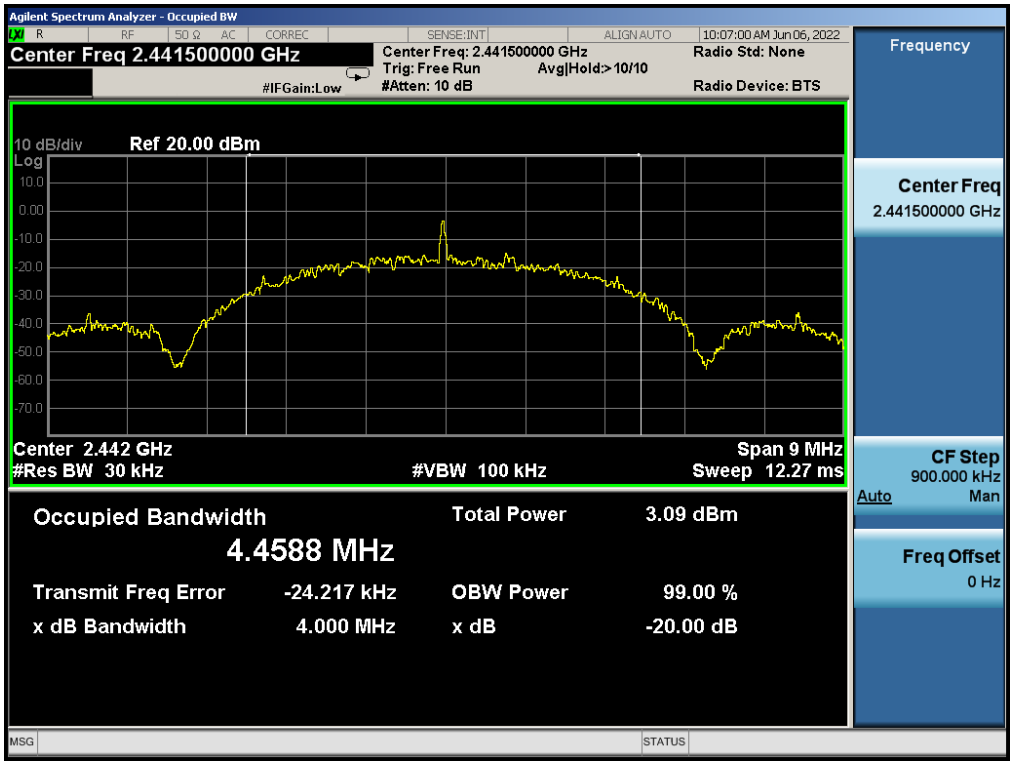
TEST ITEM	20DB BANDWIDTH
TEST MODULATION	GFSK

Test Data (MHz)		Criteria
Low Channel	4.029	PASS
Middle Channel	4.000	PASS
High Channel	4.197	PASS

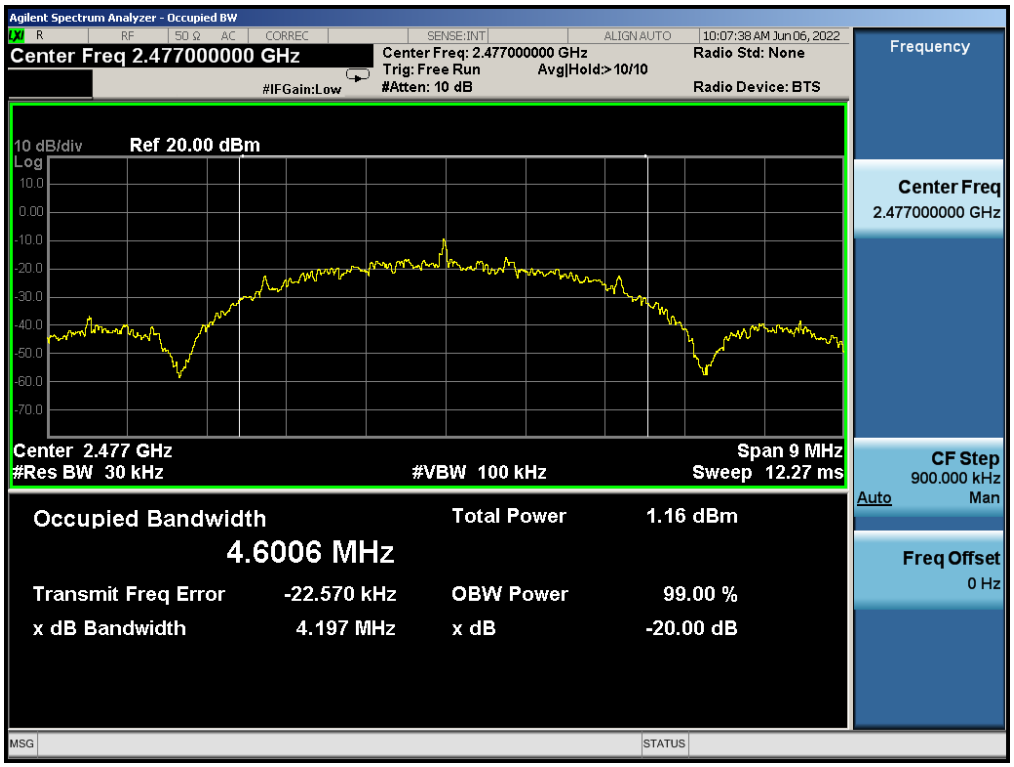
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



10. FCC LINE CONDUCTED EMISSION TEST

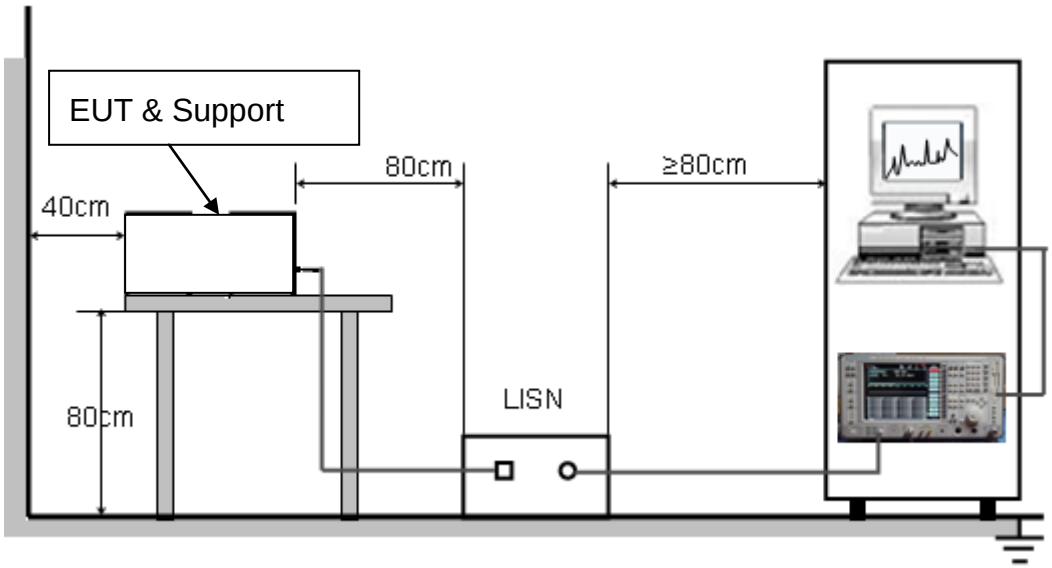
10.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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 0.50MHz.

10.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



10.3. 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 equipments received AC120VV/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hzpower by 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.

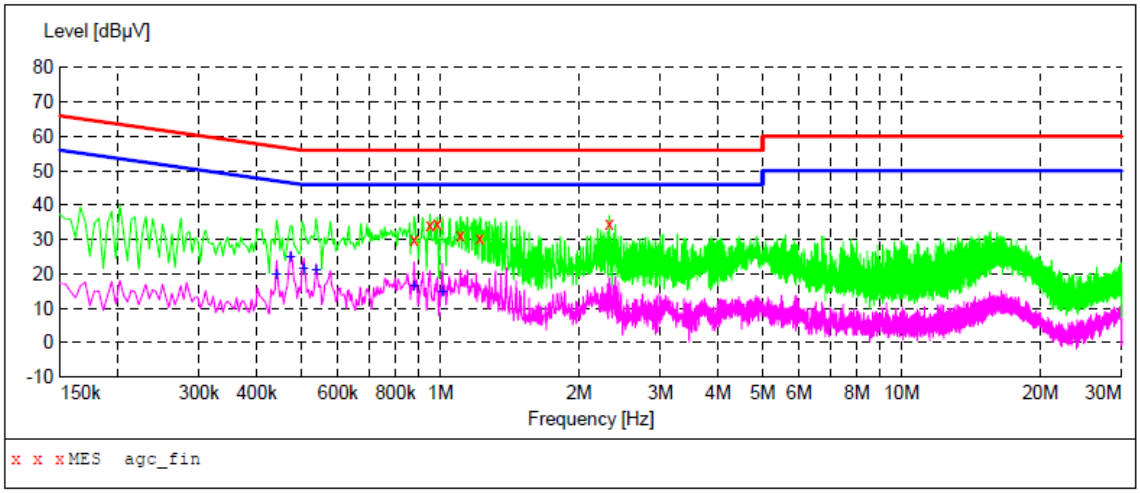
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

10.4. 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.

10.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Line Conducted Emission Test Line 1-L



MEASUREMENT RESULT: "agc_fin"

2022/5/27 9:48

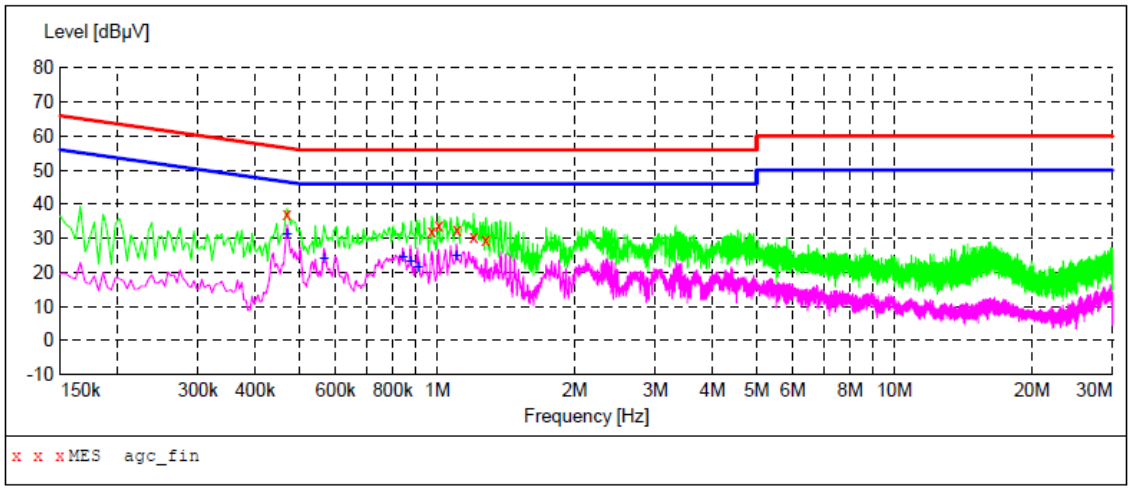
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.878000	29.80	5.4	56	26.2	QP	L1
0.950000	34.40	5.4	56	21.6	QP	L1
0.986000	34.50	5.4	56	21.5	QP	L1
1.106000	31.20	5.6	56	24.8	QP	L1
1.218000	30.40	5.7	56	25.6	QP	L1
2.326000	34.50	6.5	56	21.5	QP	L1

MEASUREMENT RESULT: "agc_fin2"

2022/5/27 9:48

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.442000	20.00	5.6	47	27.0	AV	L1
0.474000	24.80	5.5	46	21.6	AV	L1
0.506000	21.80	5.4	46	24.2	AV	L1
0.538000	21.30	5.4	46	24.7	AV	L1
0.878000	16.40	5.4	46	29.6	AV	L1
1.010000	14.90	5.4	46	31.1	AV	L1

Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "agc_fin"

2022/5/27 9:45

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.470000	37.30	5.5	57	19.2	QP	N
0.974000	32.00	5.4	56	24.0	QP	N
1.010000	33.70	5.4	56	22.3	QP	N
1.106000	32.60	5.6	56	23.4	QP	N
1.202000	30.30	5.7	56	25.7	QP	N
1.278000	29.60	5.8	56	26.4	QP	N

MEASUREMENT RESULT: "agc_fin2"

2022/5/27 9:45

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.470000	31.10	5.5	47	15.4	AV	N
0.566000	24.20	5.4	46	21.8	AV	N
0.842000	24.50	5.4	46	21.5	AV	N
0.874000	23.30	5.4	46	22.7	AV	N
0.906000	21.80	5.4	46	24.2	AV	N
1.102000	24.90	5.6	46	21.1	AV	N

RESULT: PASS

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

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC00008220502AP01

APPENDIX B: PHOTOGRAPHS OF THE EUT

Refer to the Report No.: AGC00008220502AP02

----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.