

TEST REPORT

Product Name : TUBULAR MOTOR
Model Number : GM25TE-1.1Nm/28rpm, GM25TE-1.5Nm/28rpm,
GM25TE-2Nm/25rpm, GM25CE-1.1Nm/28rpm,
GM25CE-1.5Nm/28rpm, GM25CE-2Nm/25rpm,
GM25LE/U-1.1Nm/28rpm, GM25LE/U-1.5Nm/28rpm,
GM25LE/U-2Nm/25rpm, GM25LE/J-1.1Nm/28rpm,
GM25LE/J-1.5Nm/28rpm, GM25LE/J-2Nm/25rpm
FCC ID : 2BLA7-GM25

Prepared for : NINGBO GERWIN MECHANIC&ELECTRONICS
TECHNOLOGY CO., LTD
Address : Tianhu Road, Luotuo Street, Ningbo, Zhejiang, China
Prepared by : EMTEK (NINGBO) CO., LTD.
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Report Number : ENB2407090145W00101R
Date(s) of Tests : July 09, 2024 to September 20, 2024
Date of Issue : October 26, 2024

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1 TEST RESULT CERTIFICATION

Applicant : NINGBO GERWIN MECHANIC&ELECTRONICS TECHNOLOGY CO., LTD
Address : Tianhu Road, Luotuo Street, Ningbo, Zhejiang, China
Manufacturer : NINGBO GERWIN MECHANIC&ELECTRONICS TECHNOLOGY CO., LTD
Address : Tianhu Road, Luotuo Street, Ningbo, Zhejiang, China
EUT : TUBULAR MOTOR
Model Name : GM25TE-1.1Nm/28rpm, GM25TE-1.5Nm/28rpm, GM25TE-2Nm/25rpm,
GM25CE-1.1Nm/28rpm, GM25CE-1.5Nm/28rpm, GM25CE-2Nm/25rpm,
GM25LE/U-1.1Nm/28rpm, GM25LE/U-1.5Nm/28rpm, GM25LE/U-2Nm/25rpm,
GM25LE/J-1.1Nm/28rpm, GM25LE/J-1.5Nm/28rpm, GM25LE/J-2Nm/25rpm
Trademark : N/A

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart C	PASS

The above equipment was tested by EMTEK(NINGBO) 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 the requirements of FCC Rules Part 2 and Part 15.249

The test results of this report relate only to the tested sample identified in this report.

Date of Test : July 09, 2024 to September 20, 2024

Prepared by : 
June Gao/Engineer

Reviewer : 
Lucas Xu/Supervisor

Approved & Authorized Signer : 
Tony Wei/Manager

Modified History

Version	Report No.	Revision Date	Summary
Ver.1.0	ENB2407090145W00101R	/	Original Report



2 EUT TECHNICAL DESCRIPTION

Product:	TUBULAR MOTOR
Model Number:	GM25TE-1.1Nm/28rpm, GM25TE-1.5Nm/28rpm, GM25TE-2Nm/25rpm, GM25CE-1.1Nm/28rpm, GM25CE-1.5Nm/28rpm, GM25CE-2Nm/25rpm, GM25LE/U-1.1Nm/28rpm, GM25LE/U-1.5Nm/28rpm, GM25LE/U-2Nm/25rpm, GM25LE/J-1.1Nm/28rpm, GM25LE/J-1.5Nm/28rpm, GM25LE/J-2Nm/25rpm (Note: The letters TE,CE,LE/U,LE/J for all models represent power plugs of different national specifications. TE is powered by AC 100-240V, CE is DC 12V regulated DC power supply, LE is 8.4V lithium battery power supply (where the end of U is USB charging, the end of J is TYPE C charging). The numbers behind the bars represent motors of different torques. In addition, the function of the product, schematic design, PCB Layout and so on are the same. We selected GM25TE-1.1Nm/28rpm for RF testing. Moreover, GM25TE-1.1Nm/28rpm, GM25CE-1.1Nm/28rpm, GM25LE/U-1.1Nm/28rpm were selected for 30-1000MHz radiation difference test and GM25TE-1.1Nm/28rpm. GM25LE/U-1.1Nm/28rpm 150k-30MHz conduction difference test.)
Sample Number:	ENB2407090145W001-3-3
Test Voltage:	AC 120V/60Hz for Power source, DC 12V for Adapter, DC 8.4V for Battery
Modulation:	GFSK
Frequency Range:	2405-2480MHz
Max Transmit Power:	96.04 dBuV/m
Antenna:	WIRE antenna
Antenna Gain:	3.26 dBi
Temperature Range:	-10°C ~ 50°C
Date of Received:	July 09, 2024

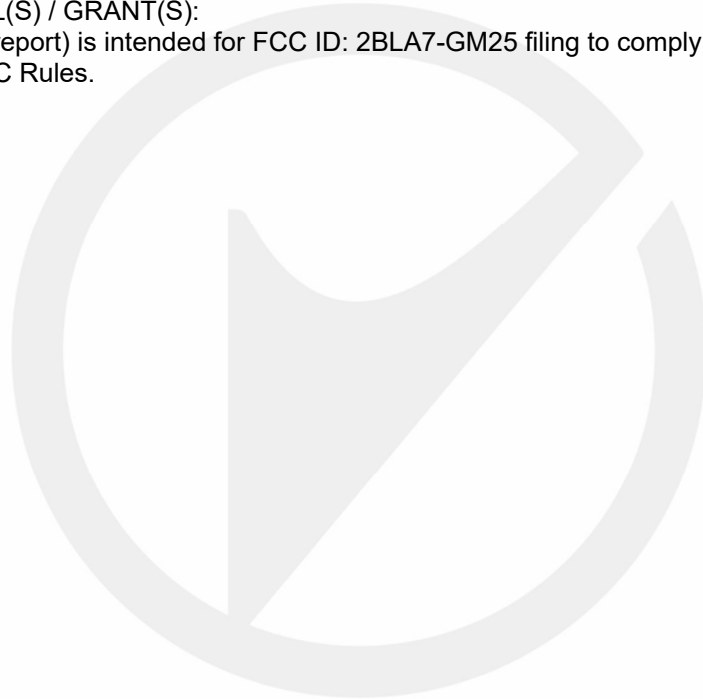
Note: for more details, please refer to the user's manual of the EUT.

3 SUMMARY OF TEST RESULT

FCC Part Clause	Test Parameter	Verdict	Remark
15.207	Conducted Emission	PASS	
15.209	Radiated Emission	PASS	
15.249	Radiated Spurious Emission	PASS	
15.249	Band edge test	PASS	
15.249	20dB Bandwidth	PASS	
15.203	Antenna Requirement	PASS	
NOTE1: N/A is an abbreviation for not applicable NOTE2: The report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.			

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for FCC ID: 2BLA7-GM25 filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.



4 TEST METHODOLOGY

4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:
FCC 47 CFR Part 2, Subpart J
FCC 47 CFR Part 15, Subpart C

4.2 MEASUREMENT EQUIPMENT USED

4.2.1 Conducted Emission Test Equipment

Equ.No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-001	EMI Test Receiver	R & S	ESCI	101108	Dec 14, 2023	1 Year
ENE-158	L.I.S.N	Schwarzbeck	NNLK 8129	0373	Nov 17, 2023	1 Year
ENE-004	L.I.S.N	Schwarzbeck	NSLK 8126	8126-462	July 06, 2023	1 Year
ENE-006	Pulse Limiter	MTS-systemtechnik	IMP-136	2611115-001-0033	July 06, 2023	1 Year
ENE-278	RF Switching Unit	HTEC	HRSU	222101	July 06, 2023	1 Year
ENE-083	RF Cable	Hubber Suhner/Swiss	CBL-RE-3	/	May 30, 2024	1 Year
ENE-162-2	RF Cable	TIMES	2M(N-N)	605236-0002	May 30, 2024	1 Year
ENE-149	Conduction Test Room 1#	SKET	11.5*5*4m	/	Dec 17, 2021	3 Year

4.2.2 Radiated Emission Test Equipment

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-185	EMI Test Receiver	R&S	ESR7	102480	Apr 25, 2024	ENE-185
ENE-190	Antenna Multiple	Schwarzbeck	VULB 9163	01499	May 18, 2024	ENE-190
ENE-195	Pre-Amplifier	JS Denki	PA09K03-40	JSPA21019	Apr 25, 2024	ENE-195
ENE-204	Low Frequency Notch Filter RF Switching	JS Denki	JSDSW-F	JSDSW2211D02	Apr 25, 2024	ENE-204
ENE-251	6dB Attenuator	Mini-Circuits	UNAT-6+	11542	July 02, 2024	ENE-251
ENE-279-1	RF Cable	Rosenberger	L17-C001-7000	/	May 30, 2024	ENE-279-1
ENE-279-2	RF Cable	Rosenberger	L17-C001-3500	/	May 30, 2024	ENE-279-2
ENE-279-3	RF Cable	Rosenberger	L17-C001-1500	/	May 30, 2024	ENE-279-3
ENE-279-4	RF Cable	Rosenberger	/	/	May 30, 2024	ENE-279-4
ENE-279-5	RF Cable	Rosenberger	/	/	May 30, 2024	ENE-279-5

ENE-279-6	RF Cable	Rosenberger	L08-C446-1500	/	May 30, 2024	ENE-279-6
ENE-171	EXA Signal Analyzer	KEYSIGHT	N9010B	MY60242467	Dec 14, 2023	1 Year
ENE-191	Horn Antenna	Schwarzbeck	BBHA 9120 D	02588	May 18, 2024	2 Year
ENE-198	Pre-Amplifier	JS Denki	PA0118-50	JSPA21022	Apr 25, 2024	1 Year
ENE-281-1	RF Cable	Rosenberger	LA2-C125-3500	/	May 30, 2024	1 Year
ENE-281-2	RF Cable	Rosenberger	LA2-C125-1500	/	May 30, 2024	1 Year
ENE-281-3	RF Cable	Rosenberger	LU7-C1511-1200	/	May 30, 2024	1 Year
ENE-285-1	RF Cable	Rosenberger	LA2-C199-6500	/	May 30, 2024	1 Year
ENE-206	High Frequency Notch FilterRf Switching	JS Denki	JSDSW-F	202083582	Apr 25, 2024	1 Year
ENE-144	3-Meter Anechoic Chamber 2#	SKET	9*6*6m	/	June 19, 2022	3 Year

4.2.3 Radio Frequency Test Equipment

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-256	EXA Signal Anaalyzer	Keysight	N9010B	MY62060219	July 02, 2024	1 Year
ENE-172	RF Control Unit	Tonscend	JS0806-2(V.6E)	21L8060521	Feb. 27, 2024	1 Year

4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

The EUT has been tested under its typical operating condition so those modulation and channel were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Frequency and Channel list:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2405	7	2435	13	2465
2	2410	8	2440	14	2470
3	2415	9	2445	15	2475
4	2420	10	2450	16	2480
5	2425	11	2455		
6	2430	12	2460		

Note: N/A

Test Frequency and Channel list:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2405	8	2440	16	2480
Note: N/A					

4.4 TEST SOFTWARE

Item	Software
Conducted Emission:	JSDEMC-CE(V 3.3)
Radiated Emission:	JSDEMC-RE(V 3.3)



5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No. 8, Building 8, Lane 216, Qingyi Road, Ningbo Hi-Tech Zone, Ningbo, Zhejiang, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 32.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

EMC Lab.

: **Accredited by CNAS**

The Certificate Registration Number is L6666.

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2018 (identical to ISO/IEC 17025:2017)

Designation by FCC

Designation Number: CN1354

Test Firm Registration Number: 427606

Accredited by A2LA

The Certificate Number is 4321.03.

The certificate is valid until May 31, 2025

Designation by Industry Canada

The Conformity Assessment Body Identifier is CN0114

Name of Firm

: EMTEK (NINGBO) CO., LTD.

Site Location

: No. 8, Building 8, Lane 216, Qingyi Road, Hi-Tech Zone, Ningbo, Zhejiang, China

6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Conducted Emissions Test	$\pm 2.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$
All emission, radiated	$\pm 3\text{dB}$
Antenna Port Emission	$\pm 3\text{dB}$
Temperature	$\pm 0.5^{\circ}\text{C}$
Humidity	$\pm 3\%$

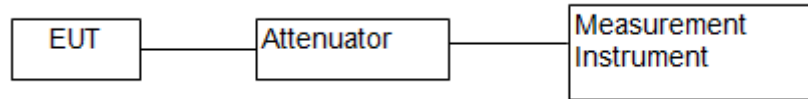
Measurement Uncertainty for a level of Confidence of 95%



7 SETUP OF EQUIPMENT UNDER TEST

7.1 RADIO FREQUENCY TEST SETUP 1

The EUT wireless component's antenna port(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



7.2 RADIO FREQUENCY TEST SETUP 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

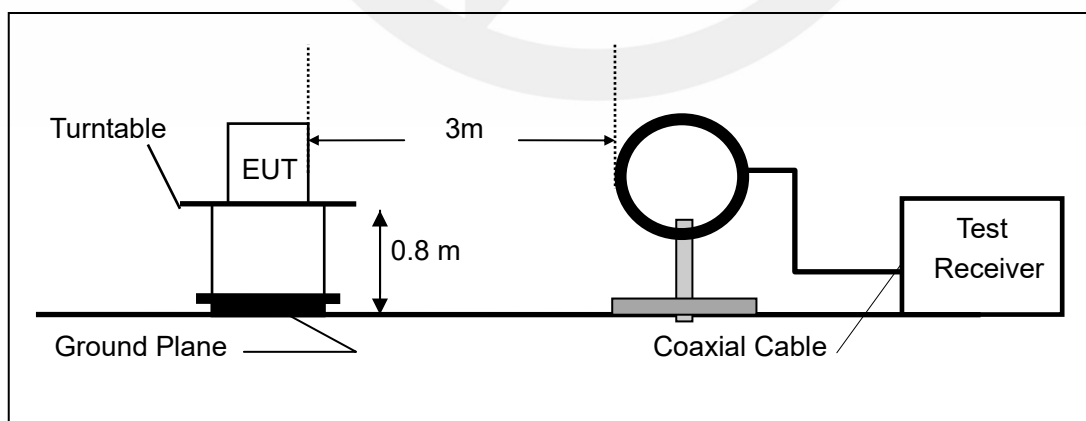
30MHz-1GHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

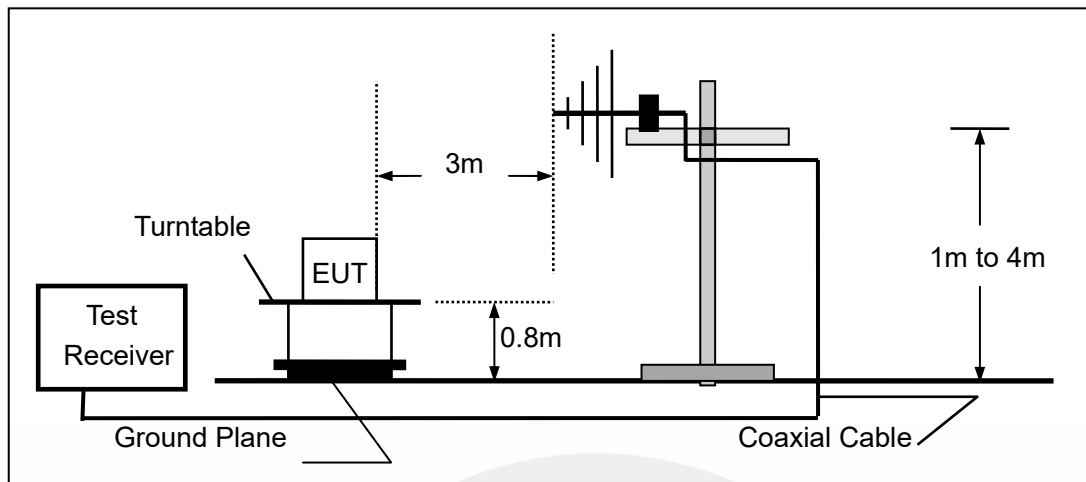
Above 1GHz:

The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

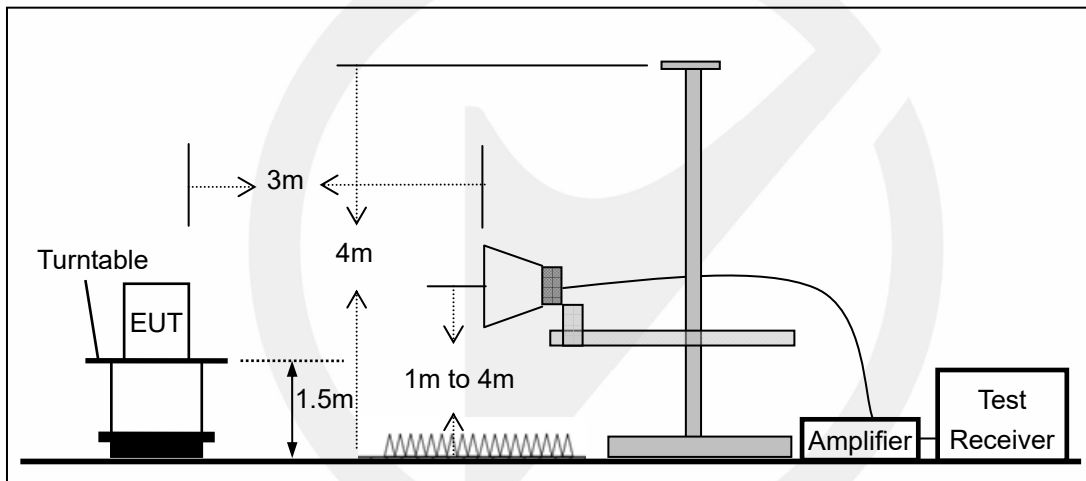
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz

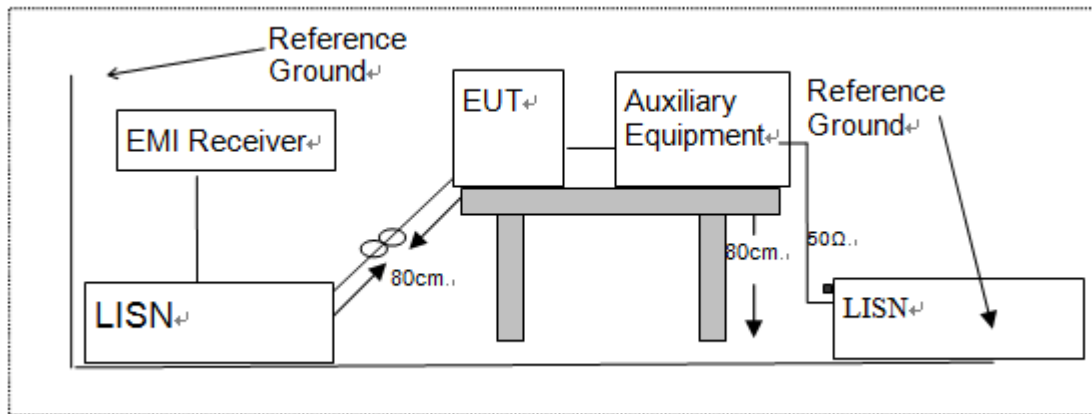


7.3 CONDUCTED EMISSION TEST SETUP

The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



7.4 SUPPORT EQUIPMENT

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

8 TEST REQUIREMENTS

8.1 BANDWIDTH TEST

8.1.1 Applicable Standard

According to FCC Part 15.249

8.1.2 Conformance Limit

N/A

8.1.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

8.1.4 Test Procedure

The EUT was operating in controlled its channel. Printed out the test result from the spectrum by hard copy function.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously

Set RBW $\geq 1\%$ of the 20 dB bandwidth (100KHz)

Set the video bandwidth (VBW) $\geq$ RBW (300KHz).

Set Span= approximately 2 to 3 times the 20 dB bandwidth

Set Detector = Peak.

Set Trace mode = max hold.

Set Sweep = auto couple.

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

Measure and record the results in the test report.

Test Results

Temperature:	26° C
Relative Humidity:	61%
ATM Pressure:	1011 mbar

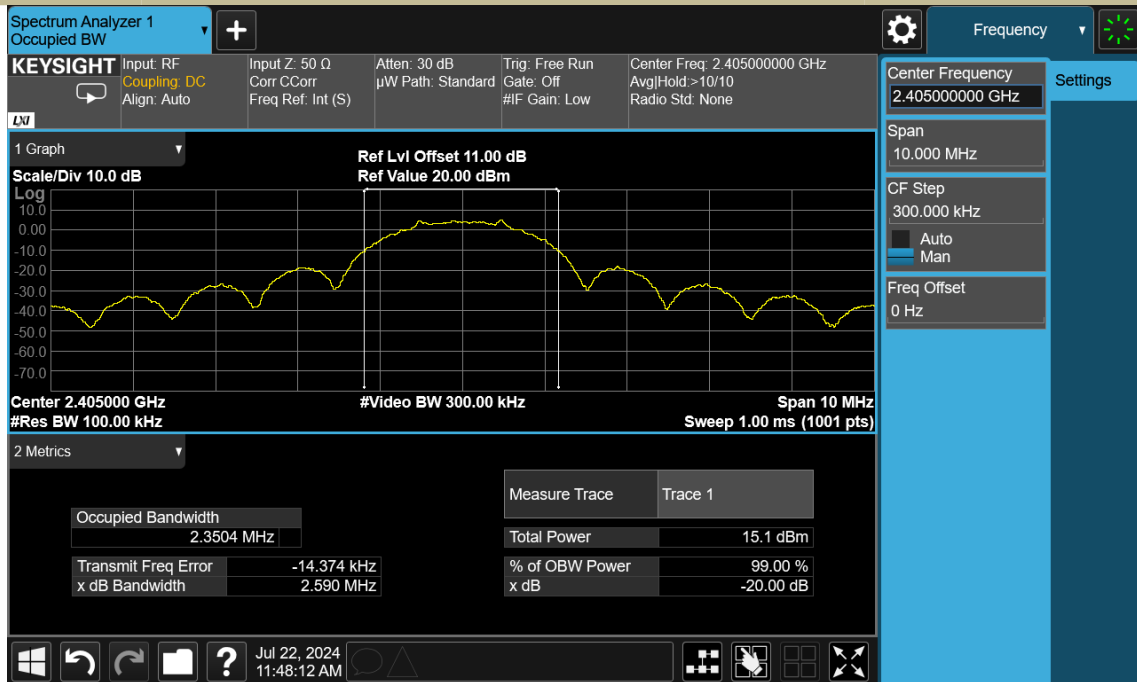
Operation Mode	Channel Frequency (MHz)	20db Measurement Bandwidth (MHz)	99% Measurement Bandwidth (MHz)	Limit (kHz)	Verdict
GFSK	2405	2.590	2.350	N/A	PASS
	2440	2.590	2.330	N/A	PASS
	2480	2.400	2.042	N/A	PASS

Note: N/A (Not Applicable).

Test Model

Channel : 2405MHz

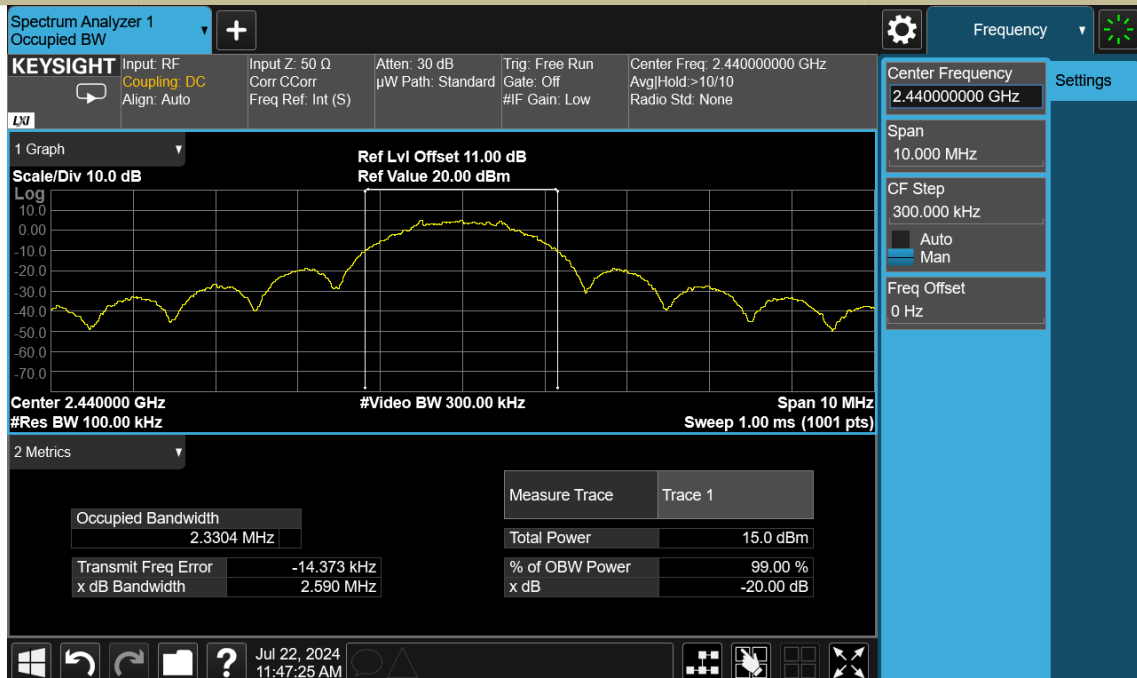
Occupied Bandwidth



Test Model

Channel : 2440MHz

Occupied Bandwidth



8.2 RADIATED SPURIOUS EMISSION

8.2.1 Applicable Standard

According to FCC Part 15.249 and 15.209

8.2.2 Conformance Limit

According to FCC Part 15.249: radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

According to FCC Part 15.205, the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300
0.490-1.705	24000/F(KHz)	20 log (uV/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Remark :1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

3. Distance extrapolation factor =40log(Specific distance/ test distance)(dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor.

for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where RBWCF [dB] =10*lg(100 [kHz]/narrower RBW [kHz]). , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

Field strength of fundamental and Field strength of harmonics Limit:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50(94 dBV/m)	500(54 dBV/m)
2400-2483.5 MHz	50(94 dBV/m)	500(54 dBV/m)
5725-5875 MHz	50(94 dBV/m)	500(54 dBV/m)
24.0-24.25 GHz	250(108 dBV/m)	2500(68 dBV/m)

As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation

For this report

Fundamental Frequency	Field Strength Of Fundamental	Field Strength of Spurious Emissions
2400-2483.5 MHz	AV:94 dBuV/m at 3m distance	AV:54 dBuV/m at 3m distance
	PK:114 dBuV/m at 3m distance	PK:74 dBuV/m at 3m distance

8.2.3 Test Configuration

Test according to clause 7.2 radio frequency test setup 2

8.2.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz(1GHz to 25GHz), 100 kHz for $f < 1$ GHz(30MHz to 1GHz)

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Repeat above procedures until all frequency measured was complete.

8.2.5 Test Results

Temperature:	20° C
Relative Humidity:	65%
ATM Pressure:	1011 mbar

■ Spurious Emission below 30MHz (9KHz to 30MHz)

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40 \log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line = Specific limits(dBuV) + distance extrapolation factor

■ Field Strength of the fundamental signal

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
2405	V	90.72	75.14	114	94	-23.28	-18.86
2405	H	96.04	81.23	114	94	-17.96	-12.77
2440	V	95.83	80.37	114	94	-18.17	-13.63
2440	H	90.54	76.24	114	94	-23.46	-17.76
2480	V	89.24	74.21	114	94	-24.76	-19.79
2480	H	91.84	76.32	114	94	-22.16	-17.68

Note: (1) Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain

(2) Emission Level = Reading Level + Probe Factor + Cable Loss

■ Out of Band Emissions

Test mode: GFSK Frequency: Channel : 2405MHz

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2376.000	H	57.96	74	43.25	54
2363.440	V	57.28	74	42.64	54

Test mode: GFSK Frequency: Channel : 2480MHz

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2483.525	H	58.81	74	43.91	54
2486.115	V	58.41	74	44.74	54

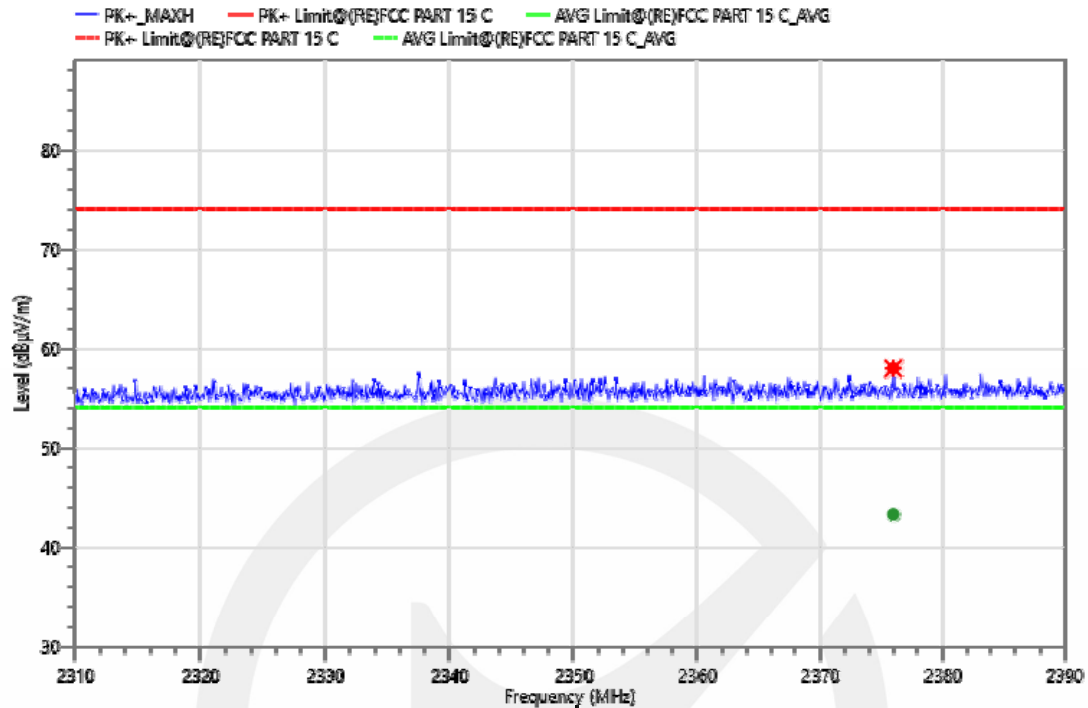
Note: (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).

(2) Emission Level = Reading Level + Correct Factor + Cable Loss.

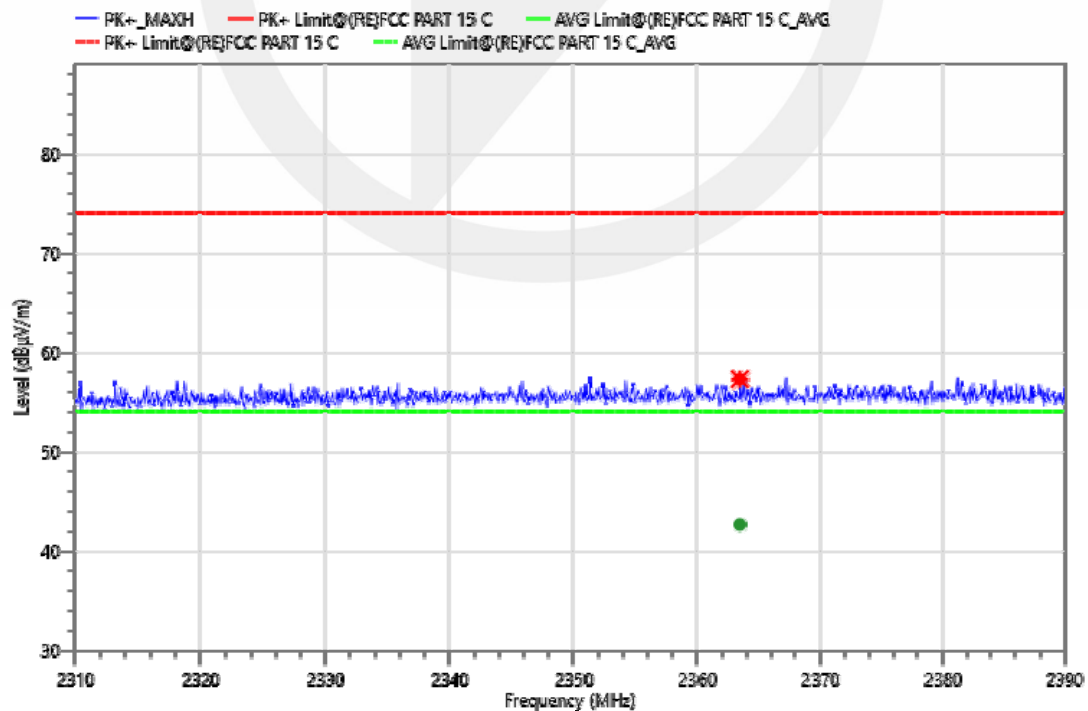
(3) Correct Factor = Ant_F + Cab_L - Preamp

(4) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

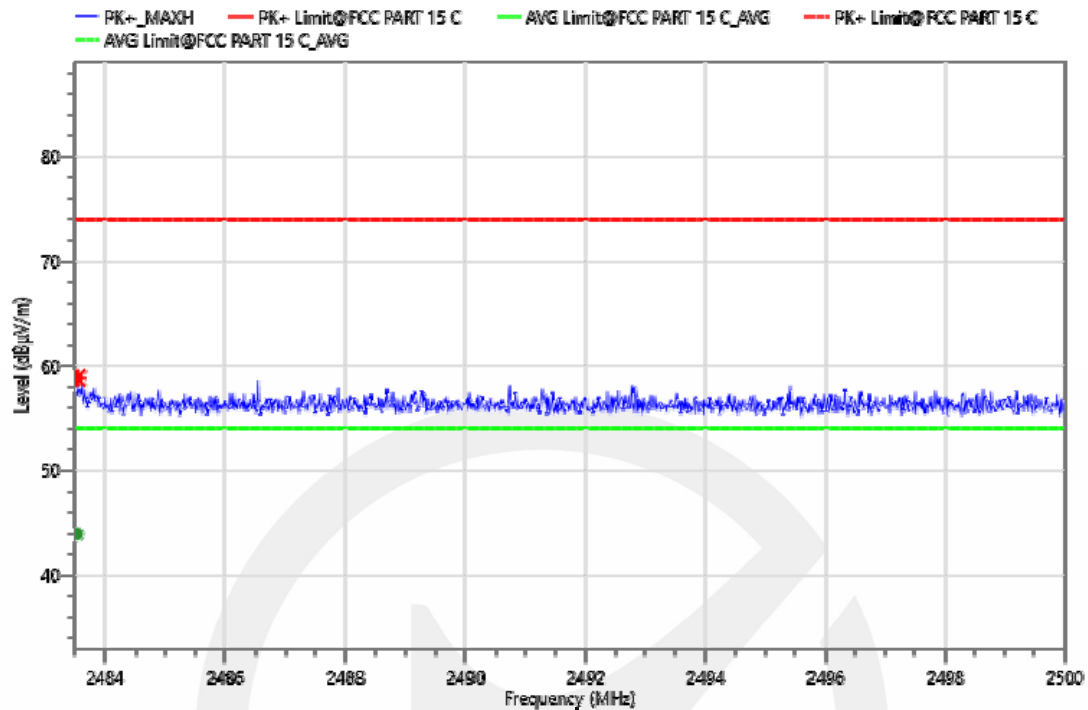
Spurious Emission in Restricted Band 2310-2390MHz		
Test Model	Zigbee	
Channel: 2402MHz		H



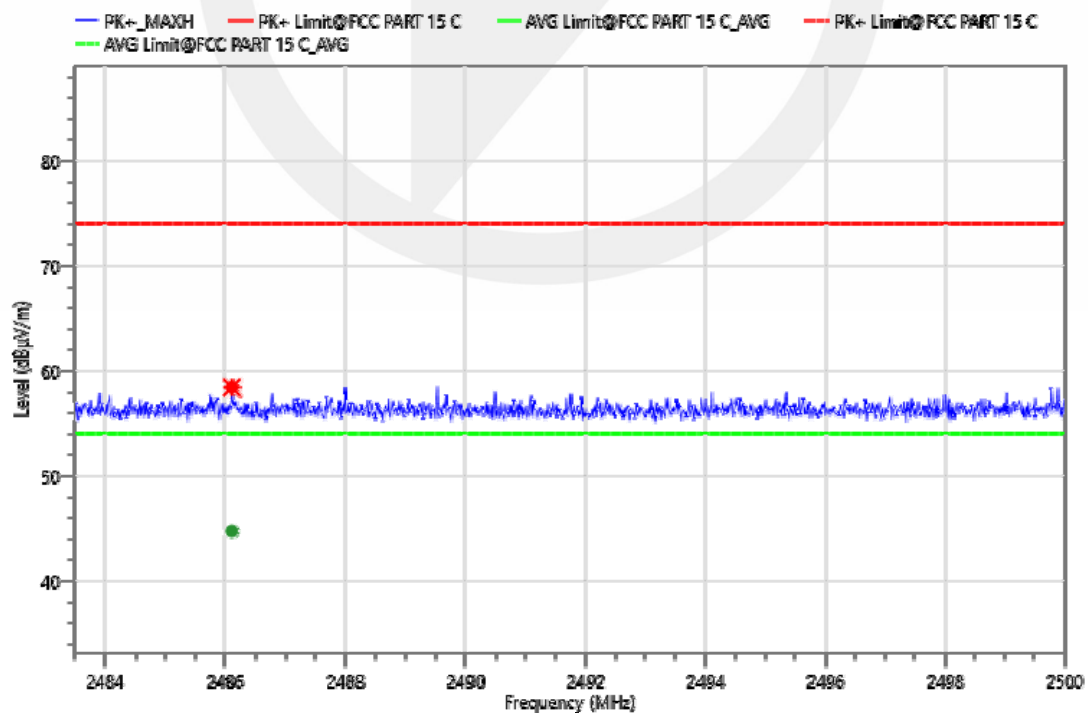
Spurious Emission in Restricted Band 2310-2390MHz		
Test Model	Zigbee	
Channel: 2402MHz		V



Spurious Emission in Restricted Band 2483.5-2500MHz			
Test Model		Zigbee	
	Channel: 2480MHz		H



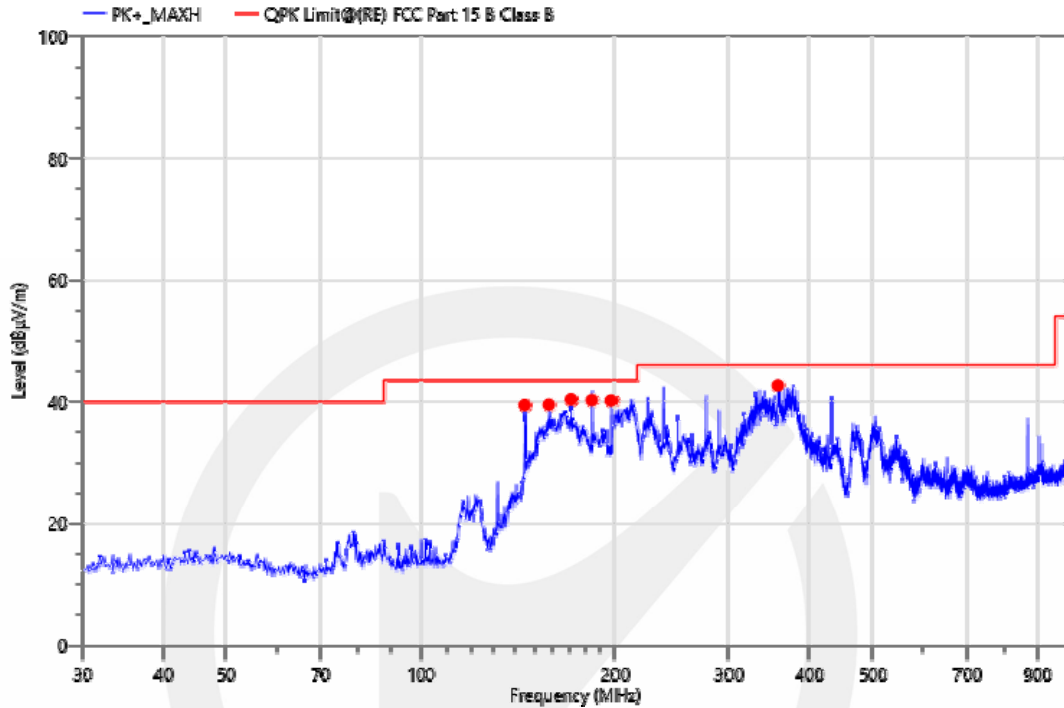
Spurious Emission in Restricted Band 2483.5-2500MHz			
Test Model		Zigbee	
	Channel: 2480MHz		V



■ Spurious Emission below 1GHz (30MHz to 1GHz)

GM25CE-TYZ-1.1Nm/28rpm

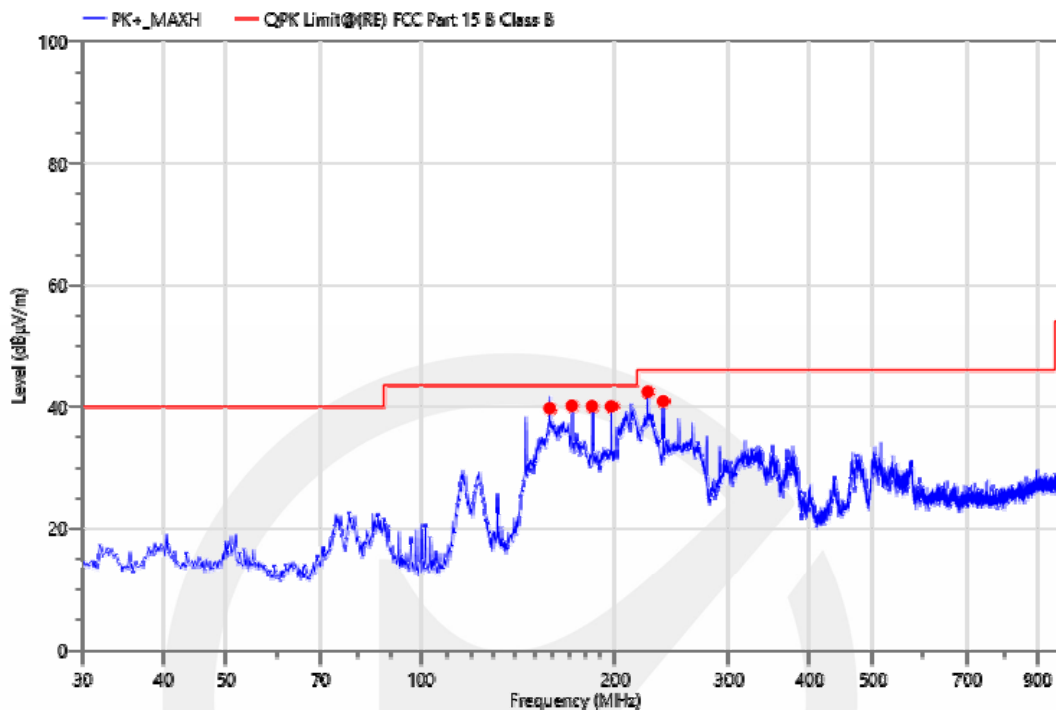
Project Information			
Mode:	TX2405	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	144.751	66.93	-27.53	39.40	43.50	4.10	QPK	200	H	266.9	PASS
2	157.943	66.44	-26.97	39.47	43.50	4.03	QPK	200	H	81.4	PASS
3	171.135	66.92	-26.58	40.34	43.50	3.16	QPK	200	H	256.4	PASS
4	184.424	65.91	-25.7	40.21	43.50	3.29	QPK	100	H	252.6	PASS
5	197.616	65.01	-24.86	40.15	43.50	3.35	QPK	100	H	251.6	PASS
6	357.084	63.18	-20.57	42.61	46.00	3.39	QPK	100	H	94.6	PASS

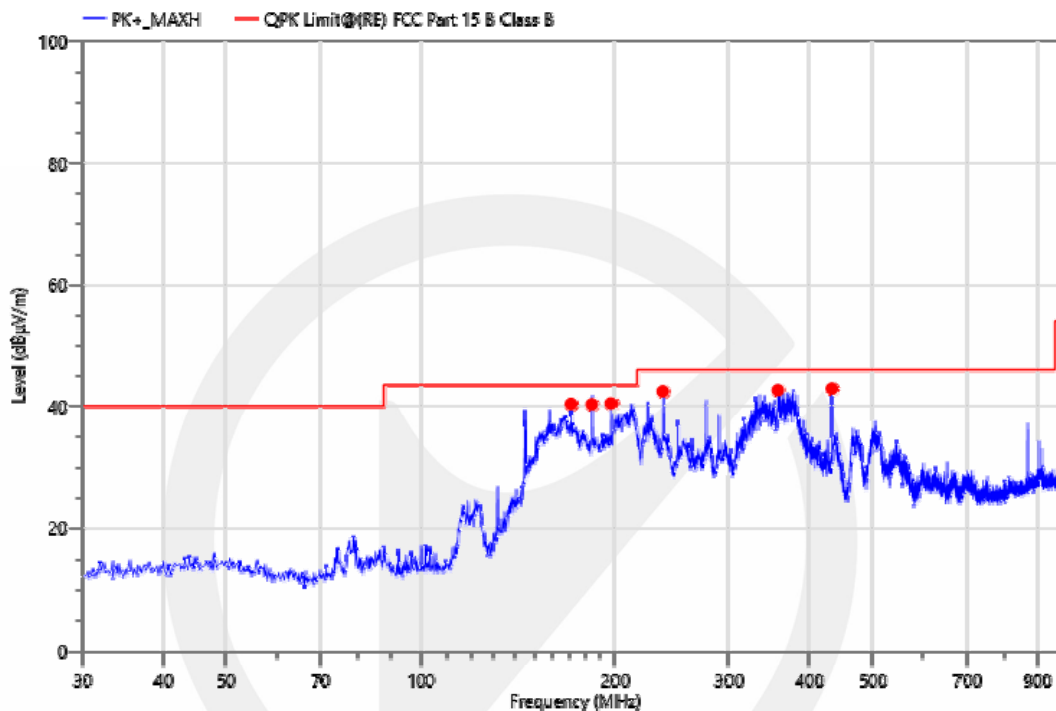
Project Information

Mode:	TX2405	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



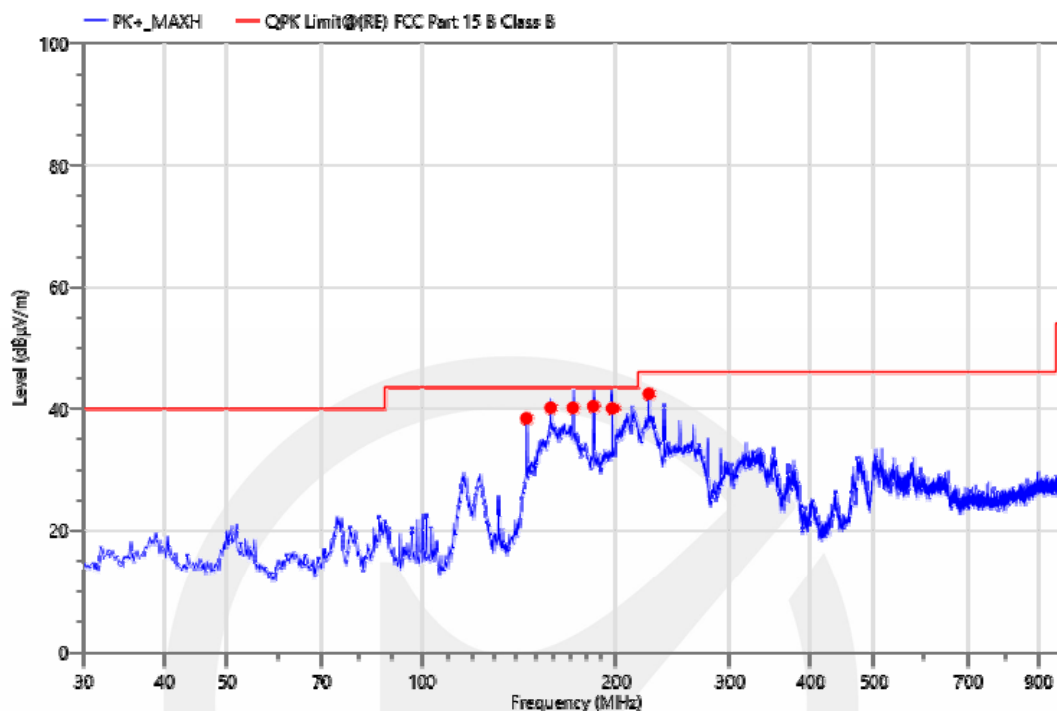
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	158.428	66.68	-26.98	39.70	43.50	3.80	QPK	100	V	13.4	PASS
2	171.620	66.65	-26.54	40.11	43.50	3.39	QPK	200	V	10.9	PASS
3	184.521	65.73	-25.69	40.04	43.50	3.46	QPK	100	V	342.4	PASS
4	197.713	64.86	-24.85	40.01	43.50	3.49	QPK	100	V	346.9	PASS
5	224.485	66.39	-23.98	42.41	46.00	3.59	QPK	100	V	0.6	PASS
6	237.289	64.25	-23.4	40.85	46.00	5.15	QPK	100	V	317.9	PASS

Project Information			
Mode:	TX2440	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



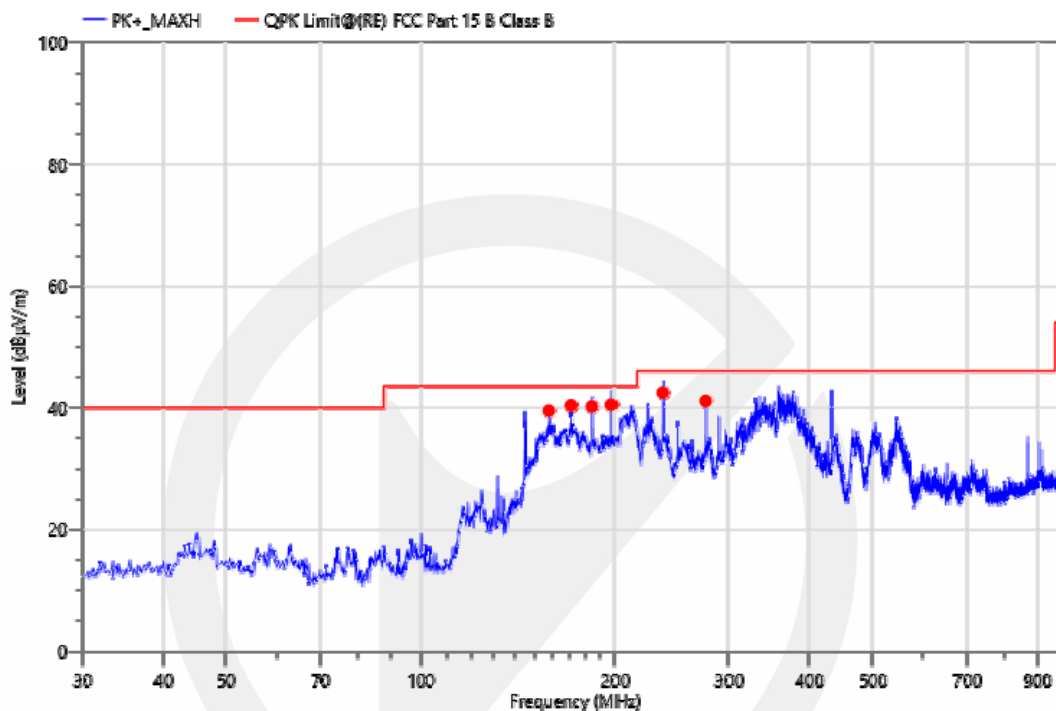
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	171.135	66.92	-26.58	40.34	43.50	3.16	QPK	200	H	241.4	PASS
2	184.424	65.97	-25.7	40.27	43.50	3.23	QPK	100	H	254.7	PASS
3	197.519	65.30	-24.87	40.43	43.50	3.07	QPK	100	H	255.1	PASS
4	236.998	65.83	-23.41	42.42	46.00	3.58	QPK	100	H	103.1	PASS
5	357.084	63.19	-20.57	42.62	46.00	3.38	QPK	100	H	294.1	PASS
6	433.908	61.93	-19.05	42.88	46.00	3.12	QPK	200	H	235.8	PASS

Project Information			
Mode:	TX2440	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	145.139	65.86	-27.48	38.38	43.50	5.12	QPK	100	V	151.4	PASS
2	158.428	67.10	-26.98	40.12	43.50	3.38	QPK	100	V	113.4	PASS
3	171.620	66.65	-26.54	40.11	43.50	3.39	QPK	100	V	210.9	PASS
4	184.715	66.05	-25.69	40.36	43.50	3.14	QPK	100	V	281.4	PASS
5	197.713	64.86	-24.85	40.01	43.50	3.49	QPK	100	V	326.9	PASS
6	224.485	66.39	-23.98	42.41	46.00	3.59	QPK	100	V	30.6	PASS

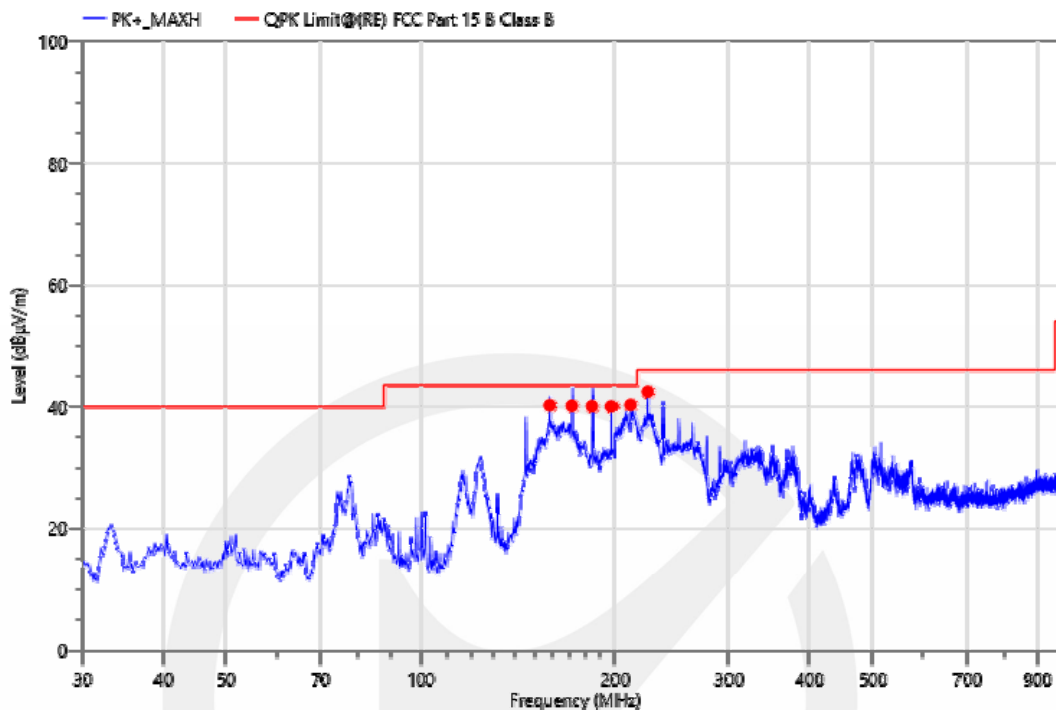
Project Information			
Mode:	TX2480	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	157.943	66.44	-26.97	39.47	43.50	4.03	QPK	200	H	181.4	PASS
2	171.135	66.92	-26.58	40.34	43.50	3.16	QPK	200	H	254.4	PASS
3	184.424	65.87	-25.7	40.17	43.50	3.33	QPK	100	H	252.6	PASS
4	197.616	65.31	-24.86	40.45	43.50	3.05	QPK	100	H	251.6	PASS
5	236.998	65.83	-23.41	42.42	46.00	3.58	QPK	100	H	85.6	PASS
6	276.574	63.87	-22.81	41.06	46.00	4.94	QPK	100	H	125.1	PASS

Project Information

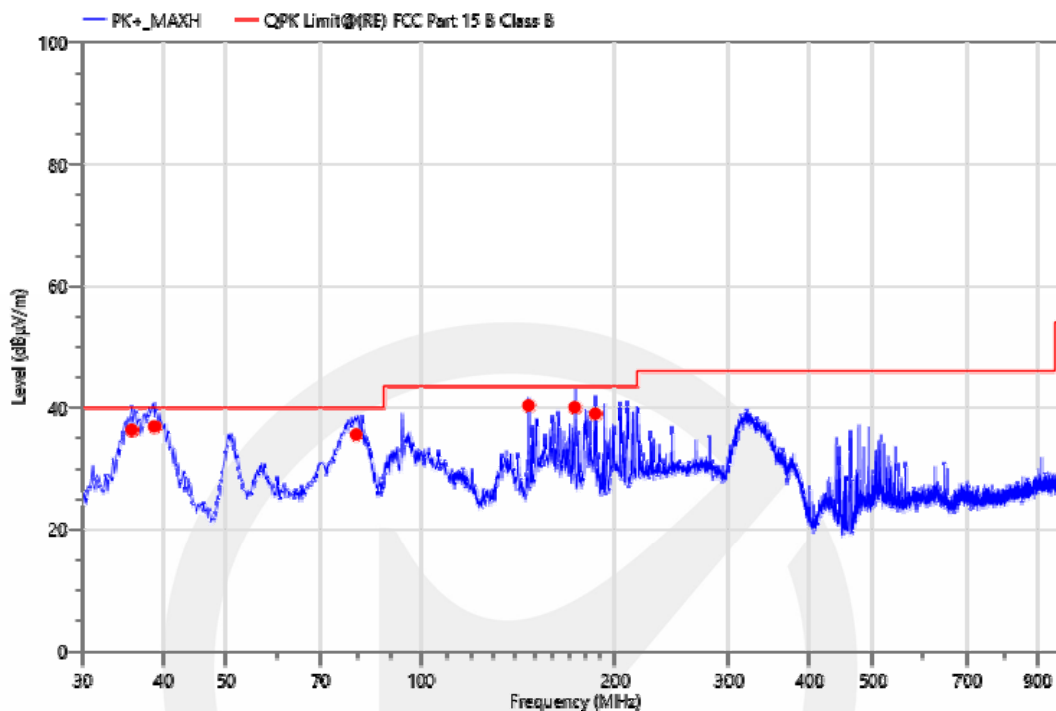
Mode:	TX2480	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	158.428	67.18	-26.98	40.20	43.50	3.30	QPK	100	V	313.7	PASS
2	171.620	66.65	-26.54	40.11	43.50	3.39	QPK	100	V	310.8	PASS
3	184.521	65.73	-25.69	40.04	43.50	3.46	QPK	100	V	43.6	PASS
4	197.713	64.86	-24.85	40.01	43.50	3.49	QPK	100	V	12.1	PASS
5	211.002	64.64	-24.38	40.26	43.50	3.24	QPK	100	V	316.4	PASS
6	224.485	66.39	-23.98	42.41	46.00	3.59	QPK	100	V	1.2	PASS

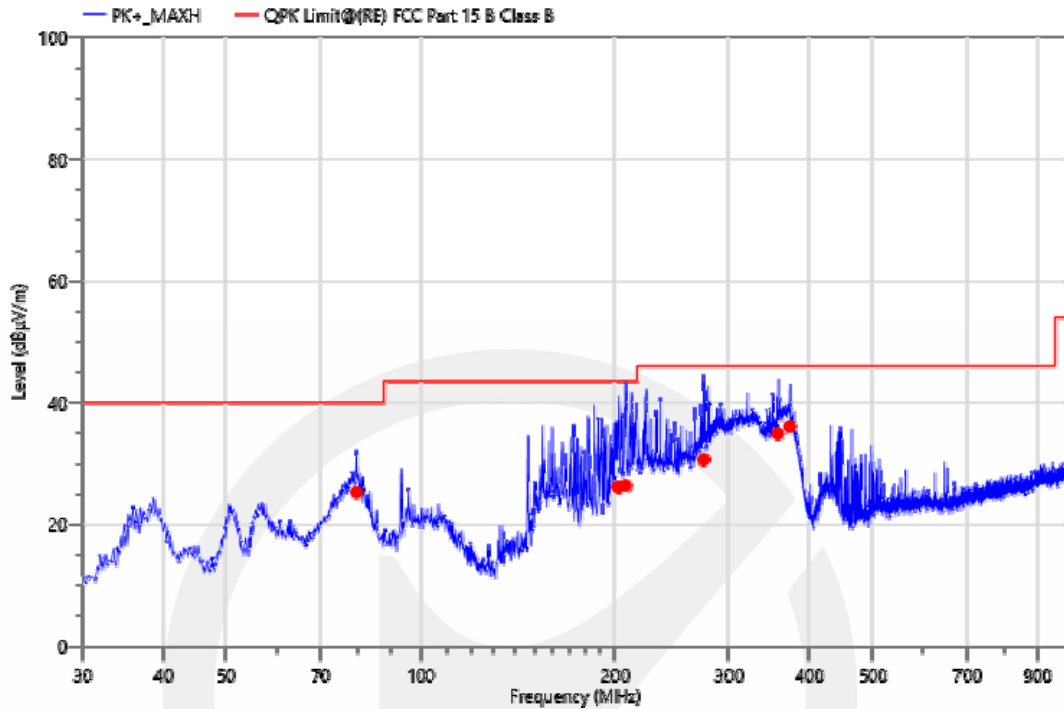
GM25LE/U-TYZ-1.1Nm/28rpm

Project Information			
Mode:	TX2405	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



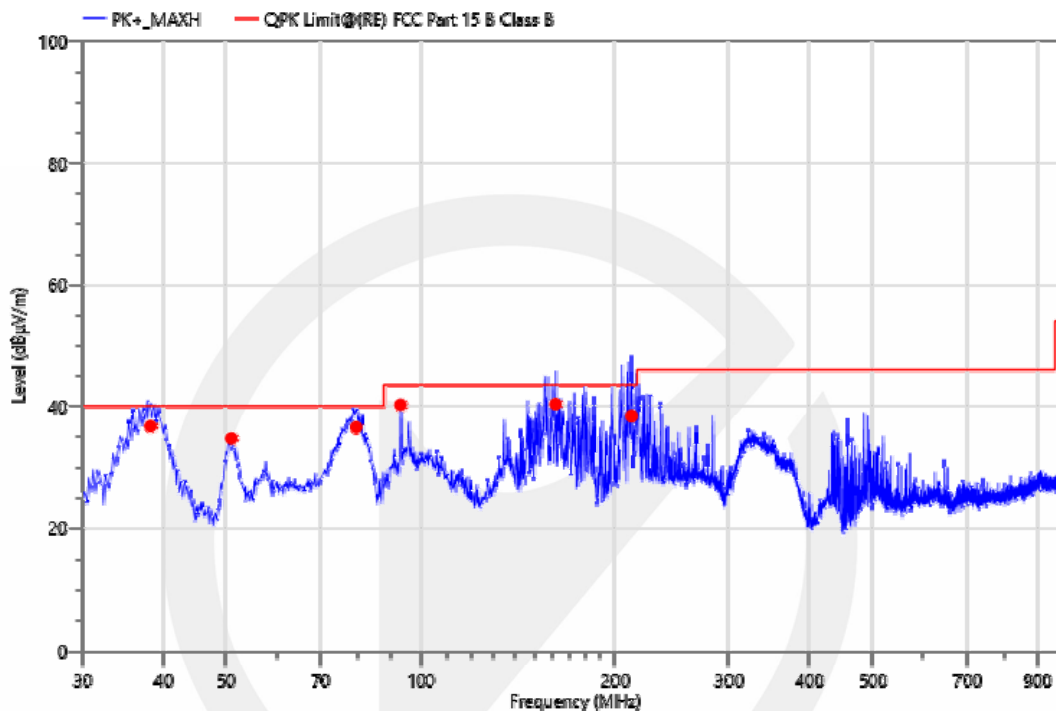
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	35.820	61.23	-24.9	36.33	40.00	3.67	QPK	100	V	84.5	PASS
2	38.827	61.54	-24.65	36.89	40.00	3.11	QPK	100	V	184.0	PASS
3	79.664	62.49	-26.93	35.56	40.00	4.44	QPK	100	V	230.5	PASS
4	146.788	67.61	-27.29	40.32	43.50	3.18	QPK	100	V	346.0	PASS
5	173.366	66.43	-26.4	40.03	43.50	3.47	QPK	200	V	242.0	PASS
6	186.752	64.59	-25.62	38.97	43.50	4.53	QPK	100	V	254.5	PASS

Project Information			
Mode:	TX2405	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



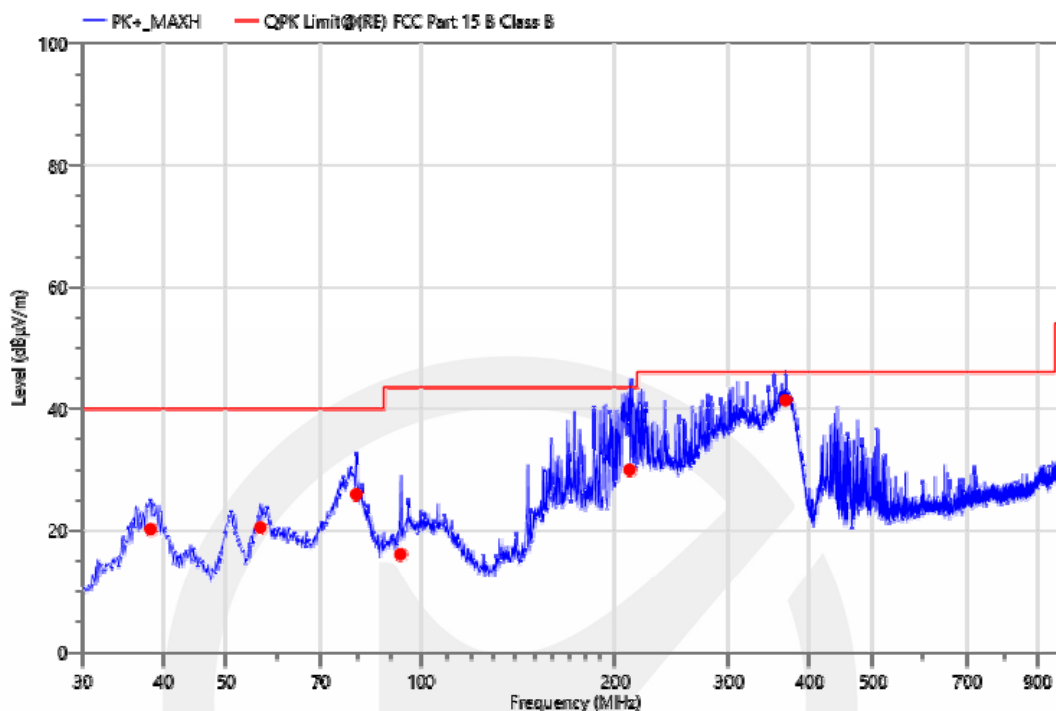
No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	79.761	52.19	-26.93	25.26	40.00	14.74	QPK	100	H	184.4	PASS
2	202.272	50.74	-24.61	26.13	43.50	17.37	QPK	100	H	356.4	PASS
3	207.099	50.84	-24.49	26.35	43.50	17.15	QPK	100	H	337.4	PASS
4	274.537	53.45	-22.82	30.63	46.00	15.37	QPK	100	H	360	PASS
5	356.987	55.46	-20.57	34.89	46.00	11.11	QPK	100	H	360.0	PASS
6	372.507	56.30	-20.25	36.05	46.00	9.95	QPK	100	H	357.4	PASS

Project Information			
Mode:	TX2440	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



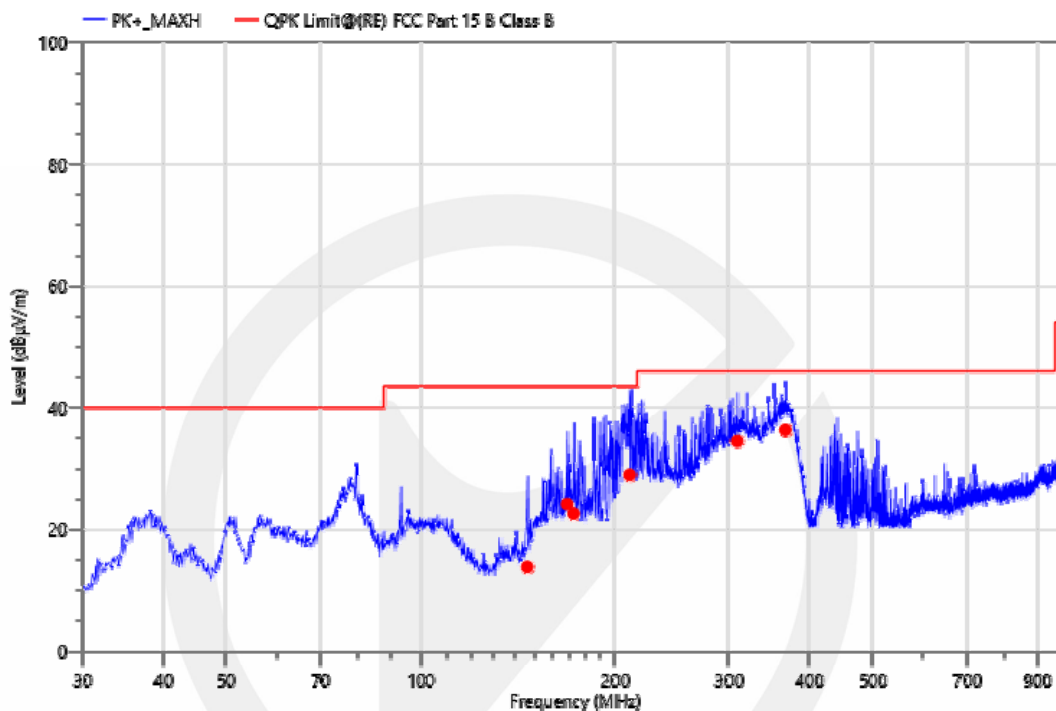
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	38.342	61.44	-24.69	36.75	40.00	3.25	QPK	100	V	59.8	PASS
2	51.049	59.05	-24.34	34.71	40.00	5.29	QPK	200	V	124.3	PASS
3	79.664	63.50	-26.93	36.57	40.00	3.43	QPK	200	V	330.3	PASS
4	92.953	66.04	-25.84	40.20	43.50	3.30	QPK	100	V	185.8	PASS
5	161.823	67.24	-26.93	40.31	43.50	3.19	QPK	100	V	71.8	PASS
6	211.778	62.75	-24.36	38.39	43.50	5.11	QPK	100	V	41.8	PASS

Project Information			
Mode:	TX2440	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



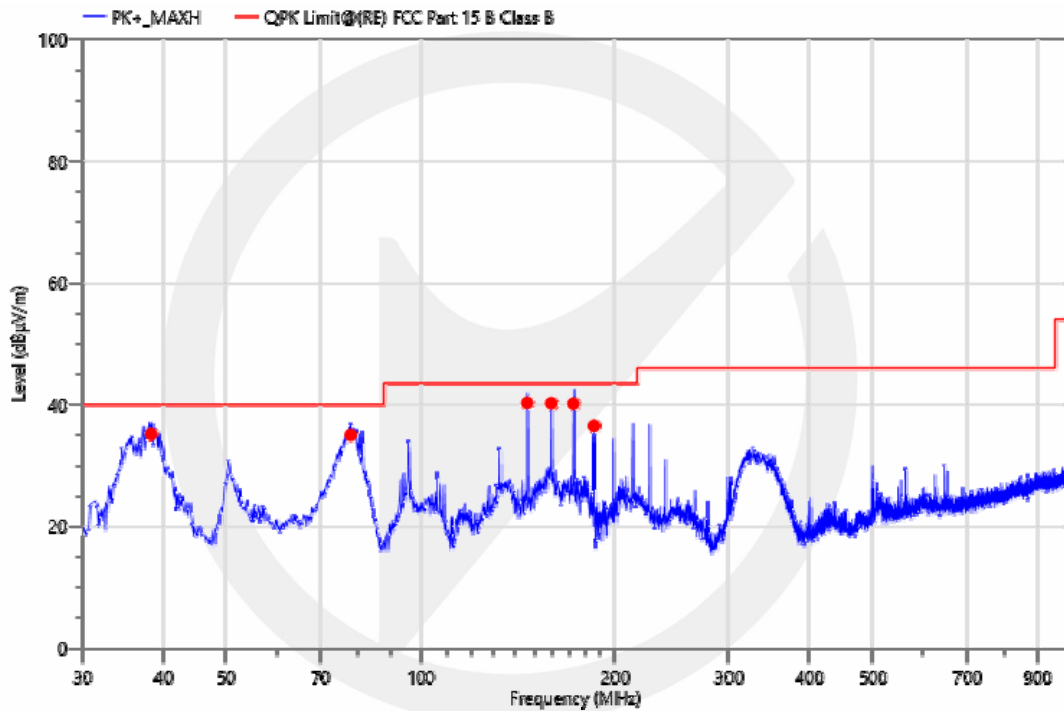
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	38.342	44.85	-24.69	20.16	40.00	19.84	QPK	100	H	240.9	PASS
2	56.675	45.75	-25.3	20.45	40.00	19.55	QPK	100	H	153.4	PASS
3	79.664	52.83	-26.93	25.90	40.00	14.10	QPK	100	H	207.4	PASS
4	92.953	41.89	-25.84	16.05	43.50	27.45	QPK	100	H	352.4	PASS
5	210.226	54.34	-24.41	29.93	43.50	13.57	QPK	100	H	0.0	PASS
6	366.881	61.69	-20.36	41.33	46.00	4.67	QPK	100	H	144.9	PASS

Project Information			
Mode:	TX2480	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	146.109	41.18	-27.37	13.81	43.50	29.69	QPK	100	H	42.4	PASS
2	168.710	50.84	-26.72	24.12	43.50	19.38	QPK	100	H	17.4	PASS
3	172.687	49.02	-26.45	22.57	43.50	20.93	QPK	100	H	29.9	PASS
4	210.226	53.34	-24.41	28.93	43.50	14.57	QPK	100	H	0.0	PASS
5	308.390	56.39	-21.9	34.49	46.00	11.51	QPK	100	H	166.4	PASS
6	366.881	56.69	-20.36	36.33	46.00	9.67	QPK	100	H	144.9	PASS

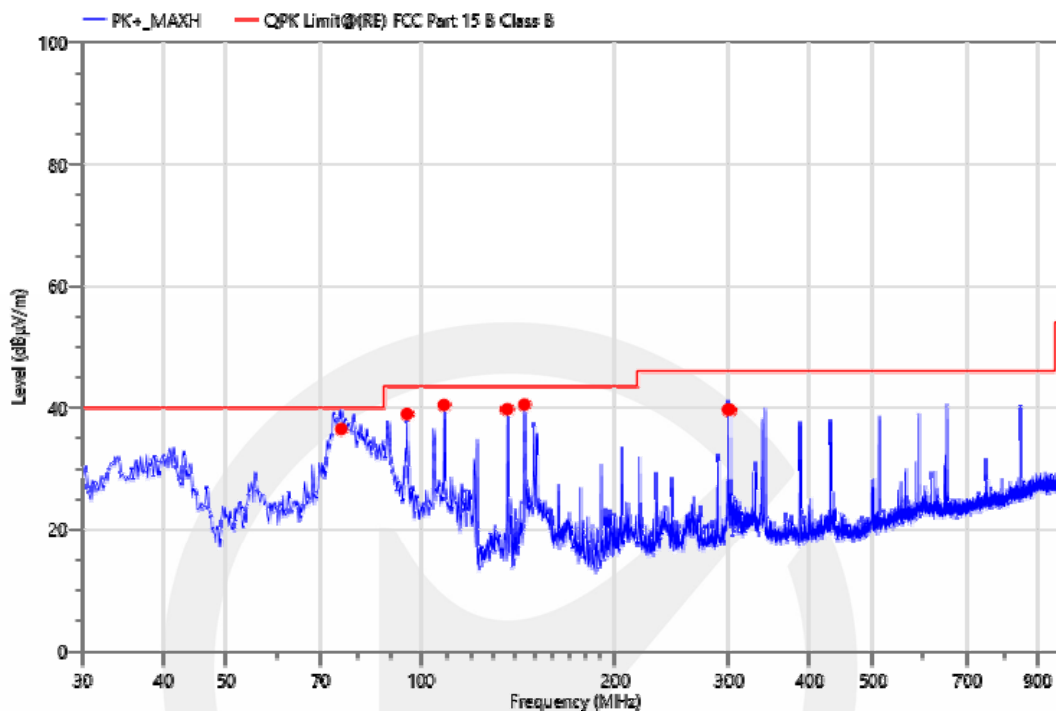
Project Information			
Mode:	TX2480	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	38.439	59.84	-24.69	35.15	40.00	4.85	QPK	100	V	0.0	PASS
2	78.112	61.95	-26.95	35.00	40.00	5.00	QPK	100	V	0.0	PASS
3	146.089	67.62	-27.37	40.25	43.50	3.25	QPK	100	V	0.0	PASS
4	159.301	67.17	-26.98	40.19	43.50	3.31	QPK	100	V	56.3	PASS
5	172.590	66.58	-26.46	40.12	43.50	3.38	QPK	100	V	133.3	PASS
6	185.879	62.13	-25.65	36.48	43.50	7.02	QPK	100	V	317.8	PASS

GM25TEQ-TYZ-1.1Nm/28rpm

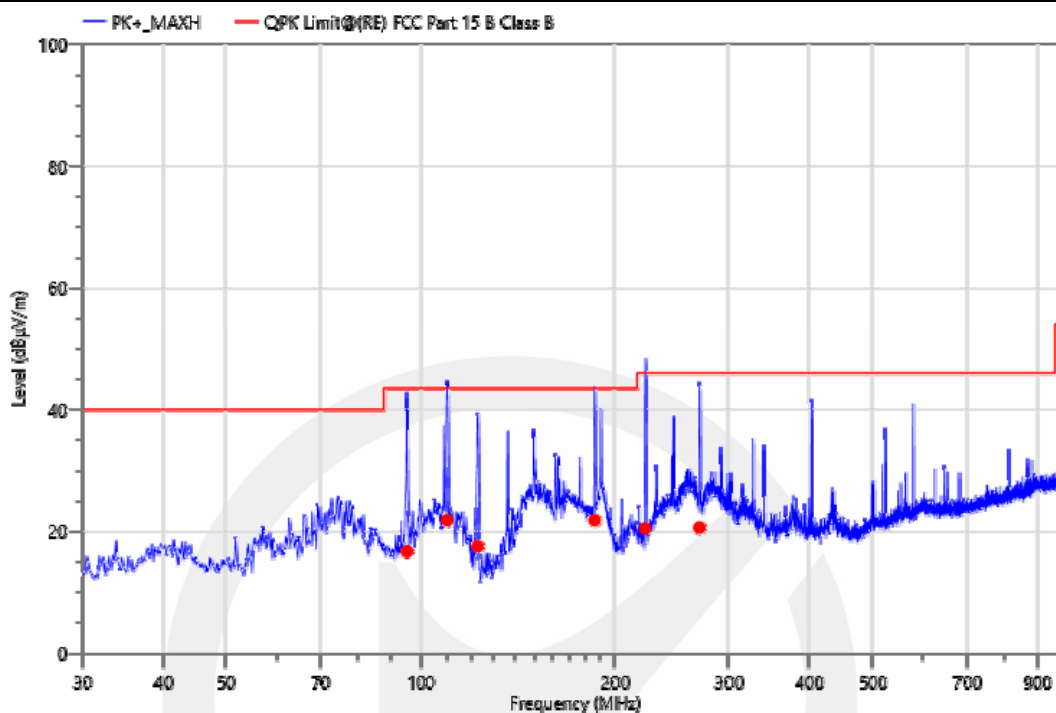
Project Information			
Mode:	TX2405	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	75.493	63.44	-26.98	36.46	40.00	3.54	QPK	100	V	119.0	PASS
2	95.184	64.60	-25.67	38.93	43.50	4.57	QPK	100	V	23.5	PASS
3	108.764	66.34	-25.94	40.40	43.50	3.10	QPK	100	V	309.0	PASS
4	135.924	67.62	-27.91	39.71	43.50	3.79	QPK	100	V	310.5	PASS
5	144.557	68.01	-27.55	40.46	43.50	3.04	QPK	100	V	55.0	PASS
6	299.951	61.95	-22.3	39.65	46.00	6.35	QPK	100	V	55.0	PASS

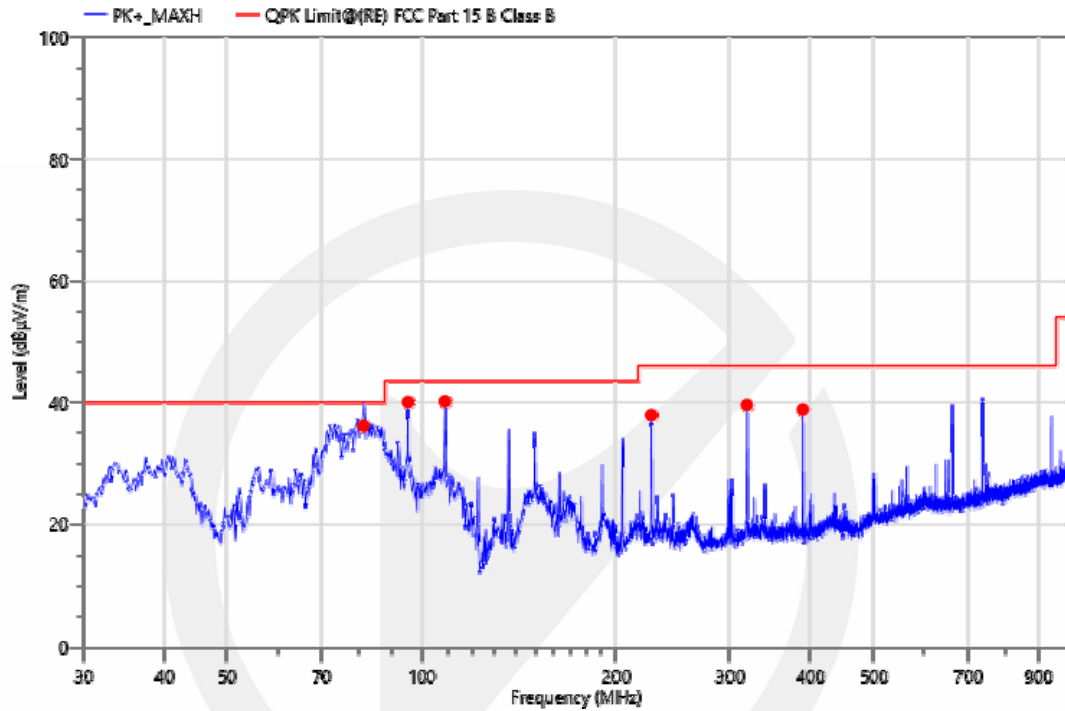
Project Information

Mode:	TX2405	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	95.183	42.38	-25.67	16.71	43.50	26.79	QPK	200	H	155.2	PASS
2	110.025	47.87	-26.04	21.83	43.50	21.67	QPK	200	H	140.2	PASS
3	122.829	44.79	-27.26	17.53	43.50	25.97	QPK	200	H	138.7	PASS
4	186.267	47.46	-25.64	21.82	43.50	21.68	QPK	200	H	137.2	PASS
5	222.448	44.48	-24.03	20.45	46.00	25.55	QPK	200	H	140.7	PASS
6	270.463	43.38	-22.78	20.60	46.00	25.40	QPK	200	H	140.2	PASS

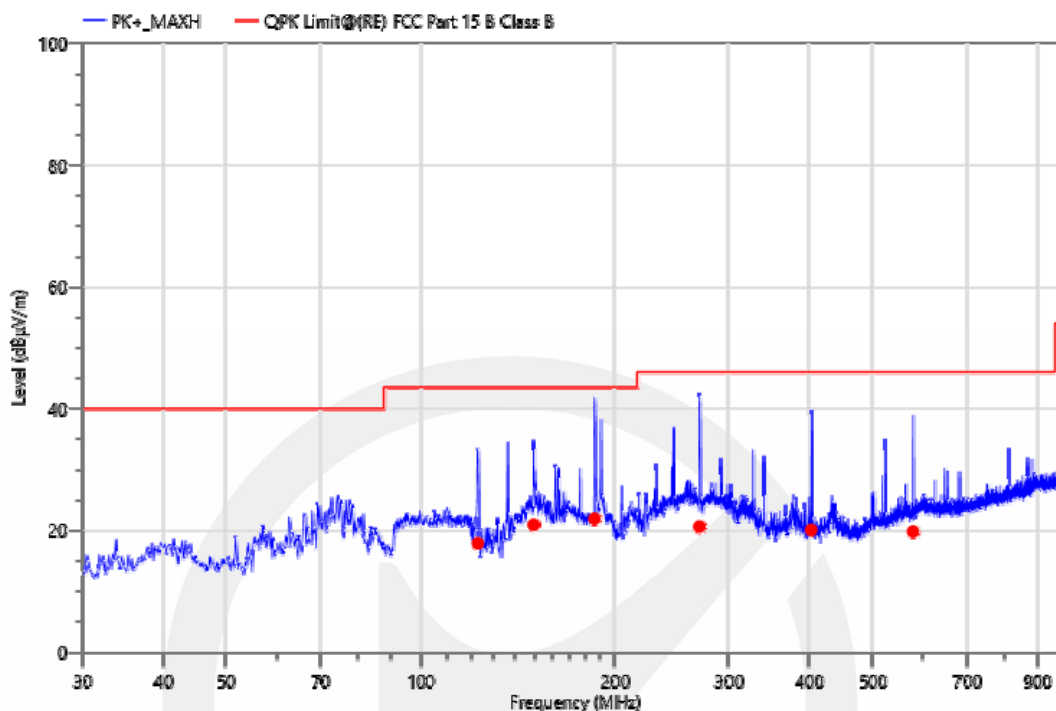
Project Information			
Mode:	TX2440	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	81.507	62.93	-26.8	36.13	40.00	3.87	QPK	100	V	110.2	PASS
2	95.184	65.68	-25.67	40.01	43.50	3.49	QPK	200	V	1.4	PASS
3	108.764	66.07	-25.94	40.13	43.50	3.37	QPK	200	V	219.2	PASS
4	226.522	61.77	-23.9	37.87	46.00	8.13	QPK	100	V	9.2	PASS
5	318.090	60.85	-21.31	39.54	46.00	6.46	QPK	100	V	8.7	PASS
6	389.385	59.25	-20.46	38.79	46.00	7.21	QPK	100	V	10.2	PASS

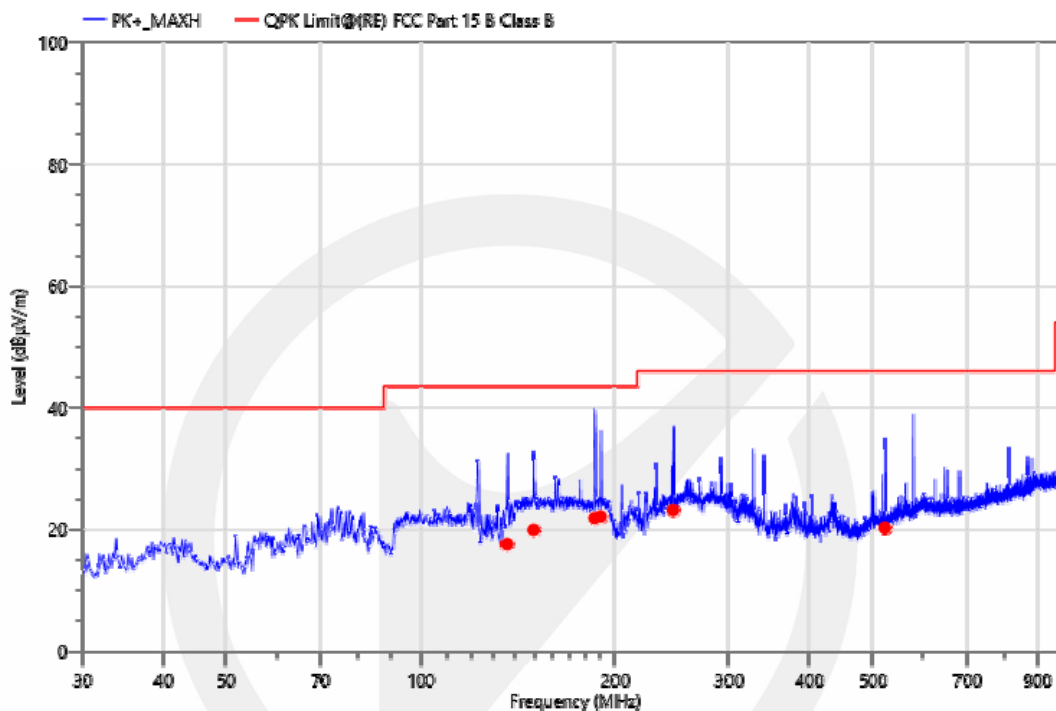
Project Information

Mode:	TX2440	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



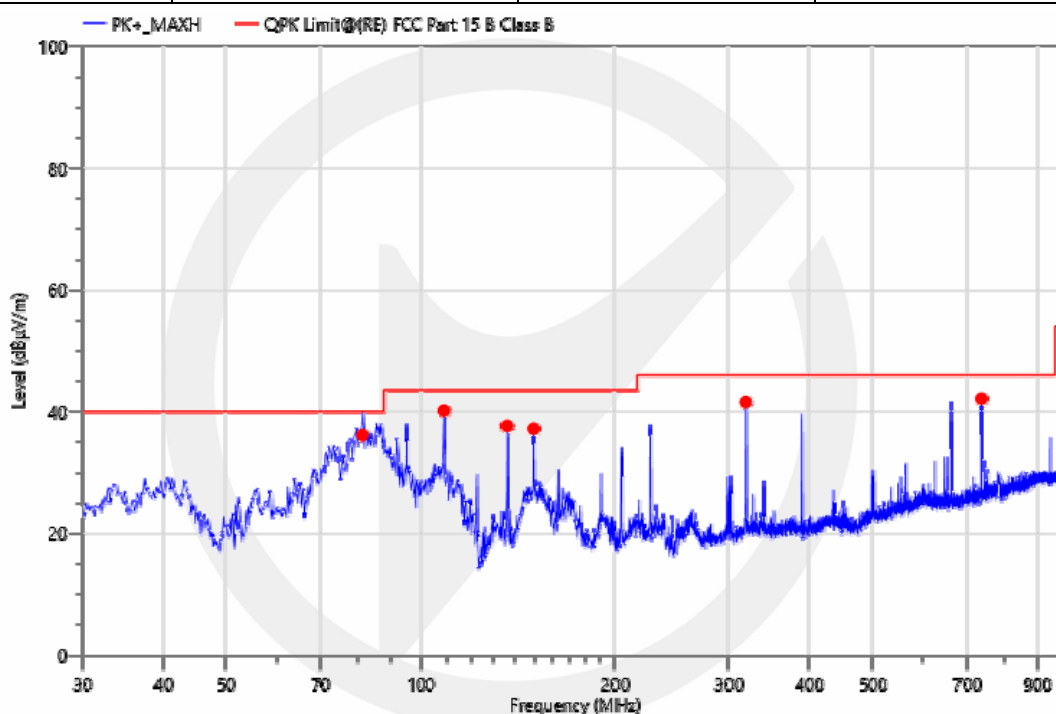
No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	122.926	45.12	-27.27	17.85	43.50	25.65	QPK	200	H	138.7	PASS
2	149.504	47.86	-26.97	20.89	43.50	22.61	QPK	200	H	116.2	PASS
3	186.170	47.54	-25.64	21.90	43.50	21.60	QPK	200	H	137.2	PASS
4	270.463	43.38	-22.78	20.60	46.00	25.40	QPK	200	H	140.2	PASS
5	402.674	40.34	-20.31	20.03	46.00	25.97	QPK	200	H	135.7	PASS
6	578.244	35.46	-15.67	19.79	46.00	26.21	QPK	200	H	140.7	PASS

Project Information			
Mode:	TX2480	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	135.924	45.46	-27.91	17.55	43.50	25.95	QPK	200	H	137.2	PASS
2	149.504	46.86	-26.97	19.89	43.50	23.61	QPK	200	H	116.2	PASS
3	186.267	47.46	-25.64	21.82	43.50	21.68	QPK	200	H	137.2	PASS
4	190.341	47.55	-25.48	22.07	43.50	21.43	QPK	100	H	185.8	PASS
5	245.922	46.07	-22.93	23.14	46.00	22.86	QPK	200	H	140.2	PASS
6	522.372	37.46	-17.24	20.22	46.00	25.78	QPK	200	H	136.2	PASS

Project Information			
Mode:	TX2480	Voltage:	AC 120V/60Hz
Environment:	Temp: 20 °C; Humi:64%	Engineer:	matteus zhang



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	81.507	62.93	-26.8	36.13	40.00	3.87	QPK	100	V	110.2	PASS
2	108.764	66.07	-25.94	40.13	43.50	3.37	QPK	100	V	219.2	PASS
3	135.924	65.54	-27.91	37.63	43.50	5.87	QPK	100	V	157.2	PASS
4	149.504	64.13	-26.97	37.16	43.50	6.34	QPK	100	V	139.2	PASS
5	318.090	62.85	-21.31	41.54	46.00	4.46	QPK	200	V	8.7	PASS
6	736.451	56.56	-14.47	42.09	46.00	3.91	QPK	100	V	0.1	PASS

Spurious Emission Above 1GHz (1GHz to 25GHz)

Test mode: GFSK Frequency: Channel : 2405MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
4810.000	V	42.92	28.69	74	54	-31.08	-25.31
7215.500	V	49.15	34.61	74	54	-24.85	-19.39
17917.50	V	53.76	38.74	74	54	-20.24	-15.26
4809.000	H	50.74	36.78	74	54	-23.26	-17.22
7214.500	H	51.29	35.46	74	54	-22.71	-18.54
17984.00	H	54.28	40.33	74	54	-19.72	-13.67

Test mode: GFSK Frequency: Channel : 2440MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
4879.000	V	45.32	30.24	74	54	-28.68	-23.76
7320.000	V	47.75	33.71	74	54	-26.25	-20.29
9760.000	V	50.04	35.67	74	54	-23.96	-18.33
4880.000	H	46.03	31.36	74	54	-27.97	-22.64
7320.500	H	49.11	34.85	74	54	-24.89	-19.15
9759.500	H	50.12	36.47	74	54	-23.88	-17.53

Test mode: GFSK Frequency: Channel : 2480MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
4960.500	V	46.06	31.52	74	54	-27.94	-22.48
7440.500	V	47.97	32.47	74	54	-26.03	-21.53
9920.500	V	52.23	37.68	74	54	-21.77	-16.32
4960.000	H	48.93	33.64	74	54	-25.07	-20.36
7440.500	H	48.85	35.78	74	54	-25.15	-18.22
9920.000	H	51.41	37.41	74	54	-22.59	-16.59

- Note:** (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.
(3) Correct Factor= Ant_F + Cab_L - Preamp
(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

8.3 CONDUCTED EMISSIONS TEST

8.3.1 Applicable Standard

According to FCC Part 15.207(a)

8.3.2 Conformance Limit

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

8.3.3 Test Configuration

Test according to clause 7.3 conducted emission test setup

8.3.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

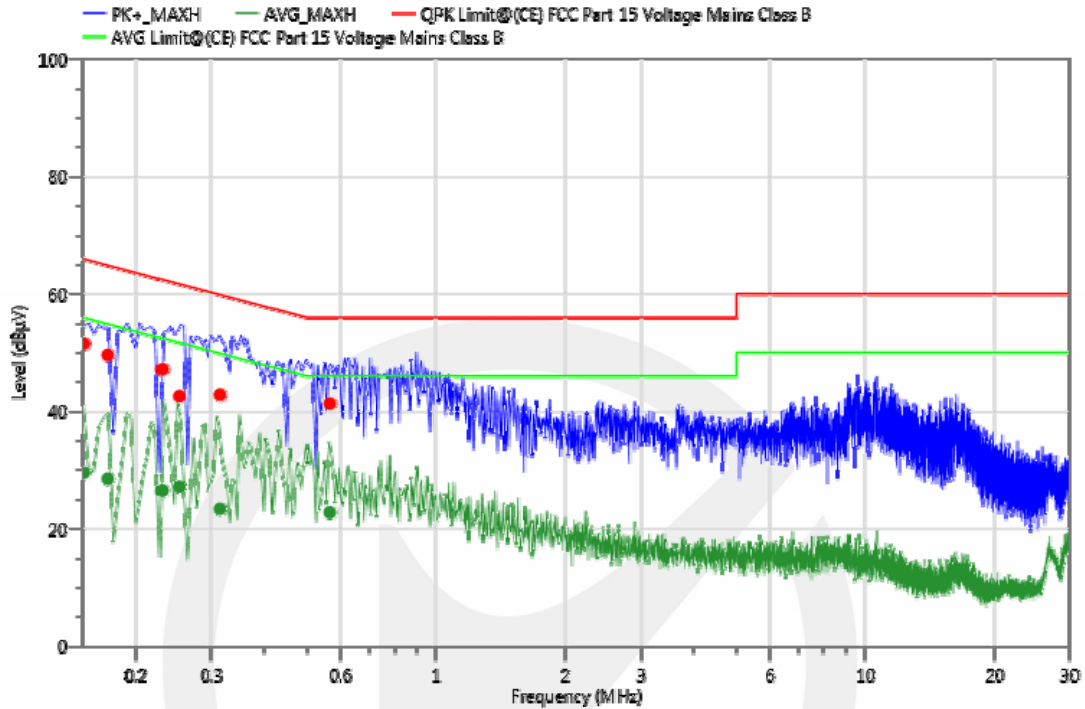
8.3.5 Test Results

Pass.

All of the modes have been tested, and the worst result recorded was report as below:

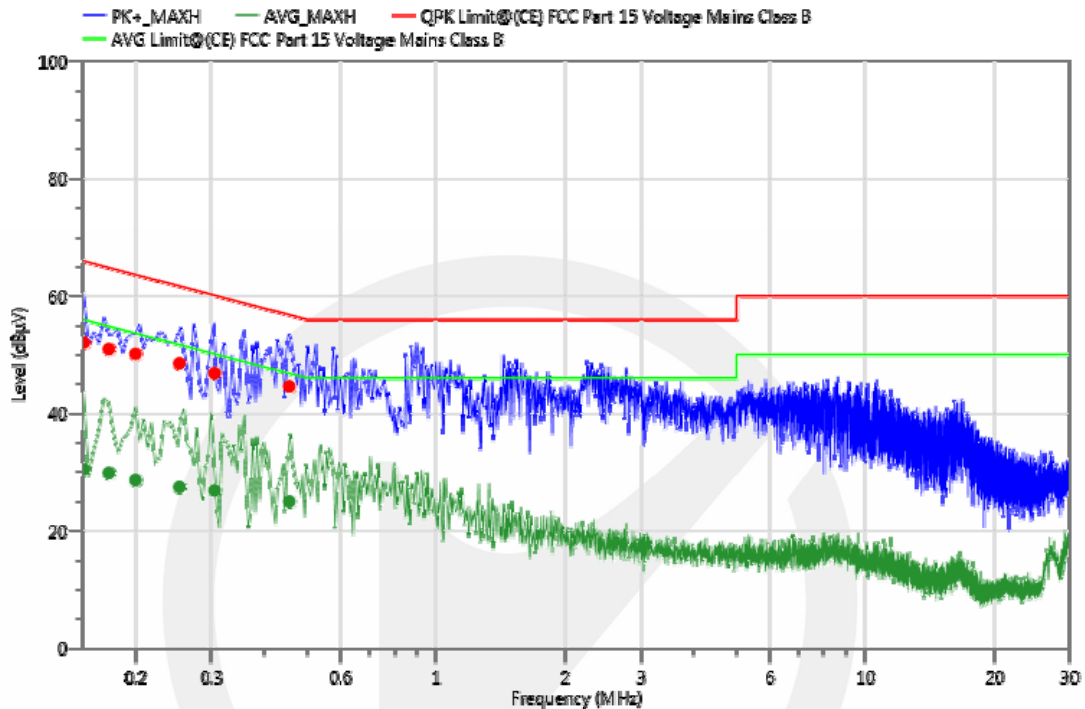
GM25LE/U-TYZ-1.1Nm/28rpm

Project Information			
Mode:	TX2405	Voltage:	AC 120V/60Hz
Environment:	Temp: 23 °C; Humi:67%	Engineer:	WK Luo



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV)	Limit (dBμV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.151	41.23	10.28	51.51	65.94	14.43	QPK	L1	GND	PASS
2	0.151	19.22	10.28	29.50	55.94	26.44	AVG	L1	GND	PASS
3	0.172	39.27	10.32	49.59	64.86	15.27	QPK	L1	GND	PASS
4	0.172	18.18	10.32	28.50	54.86	26.36	AVG	L1	GND	PASS
5	0.230	36.74	10.4	47.14	62.45	15.31	QPK	L1	GND	PASS
6	0.230	16.08	10.4	26.48	52.45	25.97	AVG	L1	GND	PASS
7	0.252	32.15	10.42	42.57	61.69	19.12	QPK	L1	GND	PASS
8	0.252	16.70	10.42	27.12	51.69	24.57	AVG	L1	GND	PASS
9	0.314	32.37	10.45	42.82	59.86	17.04	QPK	L1	GND	PASS
10	0.314	12.92	10.45	23.37	49.86	26.49	AVG	L1	GND	PASS
11	0.566	30.89	10.41	41.30	56.00	14.70	QPK	L1	GND	PASS
12	0.566	12.36	10.41	22.77	46.00	23.23	AVG	L1	GND	PASS

Project Information			
Mode:	TX2405	Voltage:	AC 120V/60Hz
Environment:	Temp: 23 °C; Humi:67%	Engineer:	WK Luo



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.151	41.71	10.33	52.04	65.94	13.90	QPK	N	GND	PASS
2	0.151	20.09	10.33	30.42	55.94	25.52	AVG	N	GND	PASS
3	0.173	40.58	10.35	50.93	64.82	13.89	QPK	N	GND	PASS
4	0.173	19.48	10.35	29.83	54.82	24.99	AVG	N	GND	PASS
5	0.200	39.74	10.38	50.12	63.61	13.49	QPK	N	GND	PASS
6	0.200	18.23	10.38	28.61	53.61	25.00	AVG	N	GND	PASS
7	0.252	38.11	10.39	48.50	61.69	13.19	QPK	N	GND	PASS
8	0.252	17.04	10.39	27.43	51.69	24.26	AVG	N	GND	PASS
9	0.305	36.42	10.39	46.81	60.11	13.30	QPK	N	GND	PASS
10	0.305	16.45	10.39	26.84	50.11	23.27	AVG	N	GND	PASS
11	0.454	34.16	10.4	44.56	56.80	12.24	QPK	N	GND	PASS
12	0.454	14.56	10.4	24.96	46.80	21.84	AVG	N	GND	PASS

8.4 ANTENNA APPLICATION

8.4.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.4.2 Result

PASS.

Note: The EUT has 1 antenna: The PCB antenna gain is 3.26 dBi.

- Note:
- ☒ Antenna use a permanently attached antenna which is not replaceable.
 - ☐ Not using a standard antenna jack or electrical connector for antenna replacement
 - ☐ The antenna has to be professionally installed (please provide method of installation)

which in accordance to section 15.203, please refer to the internal photos.

*** End of Report ***

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