TEST REPORT

APPLICANT	:	Nortek Security & Control LLC
PRODUCT NAME	:	Edge Panel
MODEL NAME	:	2GIG-EDG-NA-A
BRAND NAME	:	2GIG
FCC ID	:	EF400216
STANDARD(S)	:	47 CFR Part 15 Subpart C
RECEIPT DATE	:	2022-09-05
TEST DATE	:	2022-09-06 to 2022-09-12
ISSUE DATE	:	2022-09-29

Edited by: Peng Mi (Rapporteur)

Approved by: Shen Junsheng (Supervisor)

NOTE: This document is issued by Shenzhen Morlab Communications Technology Co., Ltd., the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.

MORLAB

Shenzhen Morlab Communications Technology Co., Ltd.
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555 Fax: 86-755-36698525
Http://www.morlab.cn E-mail: service@morlab.cn

DIRECTORY

1. Technical Information ····· 3
1.1. Applicant and Manufacturer Information ····· 3
1.2. Equipment Under Test (EUT) Description ····· 3
1.3. The Channel Number and Frequency ····· 4
1.4. Test Standards and Results ····· 5
1.5. EUT Setup and Environmental Conditions ····· 6
2. 47 CFR Part 15C Requirements ····· 7
2.1. Antenna Requirement ····· 7
2.2. Duty Cycle of Test Signal ····· 8
2.3. Maximum Peak Conducted Output Power ····· 9
2.4. Maximum Average Conducted Output Power ····· 12
2.5. 6dB Bandwidth ····· 13
2.6. Conducted Spurious Emissions and Band Edge ····· 16
2.7. Power Spectral Density (PSD) ····· 20
2.8. Conducted Emission ····· 23
2.9. Radiated Emission ····· 27
Annex A Test Uncertainty ····· 33
Annex B Testing Laboratory Information ····· 34

Change History		
Version	Date	Reason for change
1.0	2022-09-29	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Nortek Security & Control LLC
Applicant Address:	5919 Sea Otter Place, Carlsbad, CA 92010, United States
Manufacturer:	Flextronics Electronics Technology (Shenzhen) Co., Ltd
Manufacturer Address:	89 Yong Fu Road, Tong Fu Yu Industrial Park, Fu Yong Town, Bao An District, Shenzhen, Guangdong, 518103, China

1.2. Equipment Under Test (EUT) Description

Product Name:	Edge Panel	
Sample No.:	1#	
Hardware Version:	A	
Software Version:	0-LR	
Modulation Type:	DSSS, OQPSK	
Operating Frequency Range:	912 MH; 920MHz	
Antenna Type:	FPC Antenna	
Antenna Gain:	1.35dBi	
Accessory Information:	Battery	
	Brand Name:	Highpower
	Model No.:	115150
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	4020mAh
	Rated Voltage:	3.80V
	Charge Limit:	4.40V

Accessory Information:	Adaptor	
	Brand Name:	ZBPOWER
	Model No.:	ZB-H140017
	Serial No.:	(N/A, marked #1 by test site)
	Rated Output:	14.00V⎓1.70A
	Rated Input:	100-240V～50/60Hz, Max 0.6A

Note 1: This test report is updated from report (Report No.: SZ22090038W16, FCC ID: EF400168), based on the similarity between before, the Z-wave module is the same as the original model, we only tested the radiated test item and recorded the results in this report.

Note 2: We use the dedicated software to control the EUT continuous transmission.

Note 3: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3. The Channel Number and Frequency

Channel	Frequency (MHz)
1	912
2	920

1.4. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result	Method determination /Remark
1	15.203	Antenna Requirement	N/A	N/A	PASS$_{Note1}$	No deviation
2	N/A	Duty Cycle of Test Signal	Sep 06, 2022	Su Xiaoxian	PASS$_{Note1}$	No deviation
3	15.247(b)	Maximum Peak Conducted Output Power	Sep 06, 2022	Su Xiaoxian	PASS$_{Note1}$	No deviation
4	15.247(b)	Maximum Average Conducted Output Power	Sep 06, 2022	Su Xiaoxian	PASS$_{Note1}$	No deviation
5	15.247(a)	Bandwidth	Sep 06, 2022	Su Xiaoxian	PASS$_{Note1}$	No deviation
6	15.247(d)	Conducted Spurious Emission and Band Edge	Sep 06, 2022	Su Xiaoxian	PASS$_{Note1}$	No deviation
7	15.247(e)	Power spectral density (PSD)	Sep 06, 2022	Su Xiaoxian	PASS$_{Note1}$	No deviation
8	15.207	Conducted Emission	Sep 06, 2022	Wu Zhaoling	PASS	No deviation
9	15.209, 15.247(d)	Radiated Emission	Sep 07, 2022	Su Zhan	PASS	No deviation

Note 1: The test results of these test items in this report refer to the test report (Report No.: SZ22090038W16).
Note 2: The path loss during the RF test is calibrated to correct the results by the offset setting

in the test equipments. The Ref offset 11dB means the cable loss is 11dB.
Note 3: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.
Note 4: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

1.5. EUT Setup and Environmental Conditions

During the measurement, the Power level setting of the EUT and environmental conditions were within the listed ranges:

Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106

2. 47 CFR Part 15C Requirements

2.1. Antenna Requirement

2.1.1. Applicable Standard

According to FCC 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.

2.1.2. Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

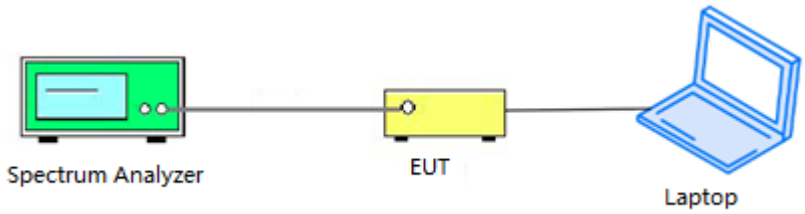
2.2. Duty Cycle of Test Signal

2.2.1. Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%).When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration(T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e.,no transmitter OFF-time is to be considered).
When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this subclause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than ±2%; otherwise, the duty cycle is considered to be nonconstant.

2.2.2. Test Description

Test Setup:



ANSI C63.10 2013 Clause 11.6 was used in order to prove compliance.

2.2.3. Test Result

Test Mode	Duty Cycle(%) (D)	Duty Factor (10*lg[1/D])
OQPSK	1.96	17.08

2.3. Maximum Peak Conducted Output Power

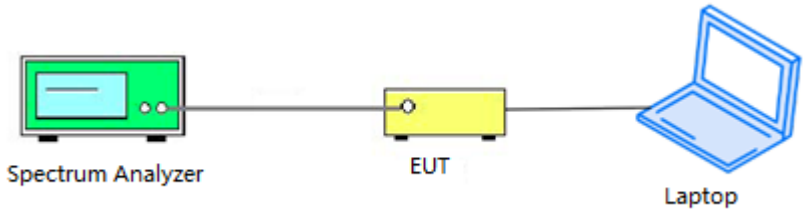
2.3.1. Requirement

According to FCC section 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

2.3.2. Test Description

The measured output power was calculated by the reading of the spectrum analyzer and calibration.

Test Setup:



The EUT (Equipment under the test) is coupled to the Spectrum analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in Spectrum analyzer.

2.3.3. Test Procedure

The measured output power was calculated by the reading of the spectrum analyzer and calibration. Following is the test procedure for Peak Output Power test on the spectrum analyzer：a) Set analyzer center frequency to channel center frequency
b) Set RBW to1MHz
c) Set VBW to 3MHz
d) Set span to 3MHz
e) Sweep time = auto couple
f) Detector = peak
g) Trace mode = max hold
h) Allow trace to fully stabilize
i) Use peak marker function to determine the peak amplitude level

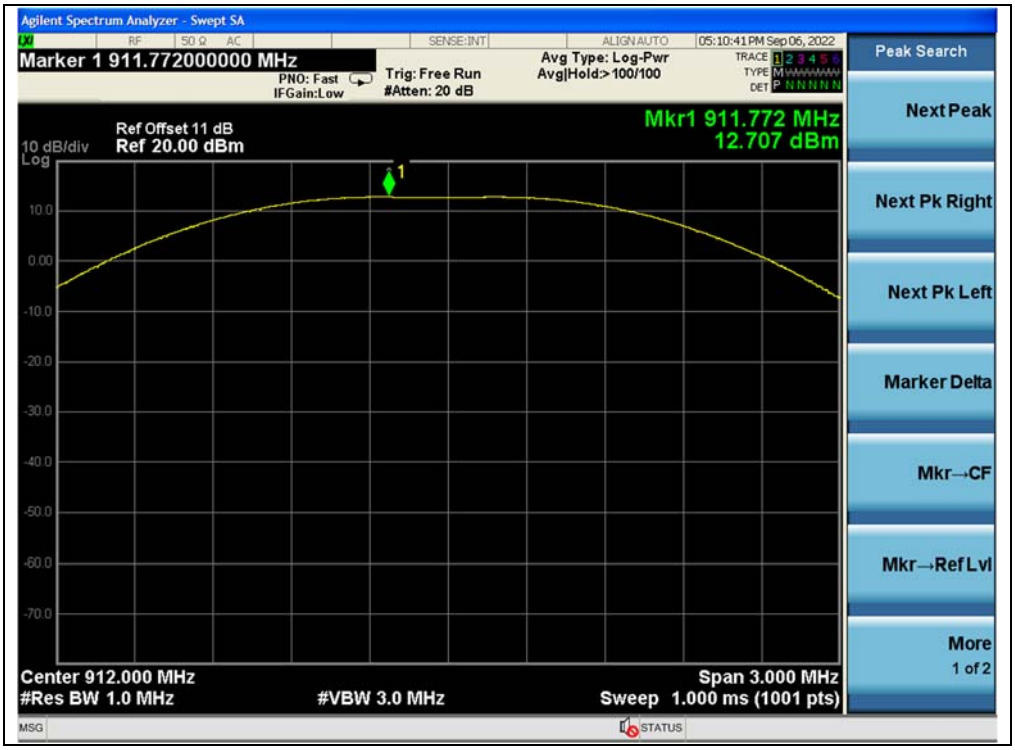
2.3.4. Test Result

The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

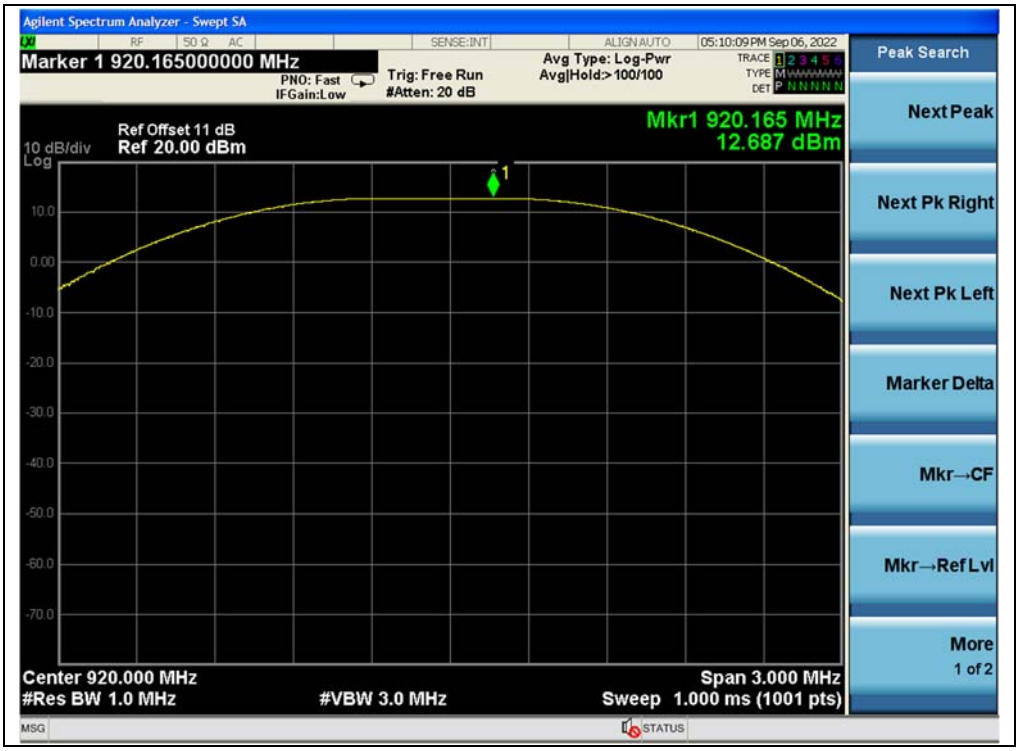
A. Test Verdict:

Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
	dBm	W	dBm	W	
912	**12.71**	**0.0187**	30	1	PASS
920	12.69	0.0186			

B. Test Plots:



(912MHz)


Agilent Spectrum Analyzer - Swept SA
Marker 1 920.165000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
05:10:09 PM Sep 06, 2022
Ref Offset 11 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 920.165 MHz
12.687 dBm
Center 920.000 MHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 3.000 MHz
Sweep 1.000 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

(920MHz)

2.4. Maximum Average Conducted Output Power

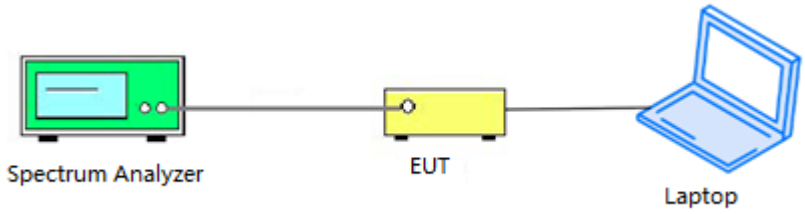
2.4.1. Requirement

According to FCC section 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum average conducted output power of the intentional radiator shall not exceed 1 Watt.

2.4.2. Test Description

The measured output power was calculated by the reading of the spectrum analyzer and calibration.

Test Setup:



The EUT (Equipment under the test) is coupled to the Spectrum analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in Spectrum analyzer.

2.4.3. Test Procedure

KDB 558074 Section 8.3.2 was used in order to prove compliance.

2.4.4. Test Result

Frequency (MHz)	Average Power				Limit		Verdict
	Measured	Duty Factor	Duty factor Calculated				
	dBm		dBm	W	dBm	W	
912	-4.85	17.08	**12.23**	**0.0167**	30	1	PASS
920	-5.53		11.55	0.0143			

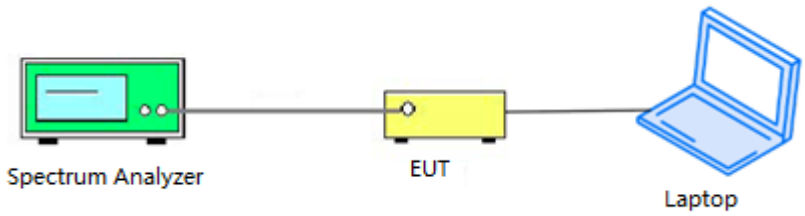
2.5. 6dB Bandwidth

2.5.1. Requirement

According to FCC section 15.247(a) (2), Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

2.5.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.
Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

2.5.3. Test Procedure

The steps for the first option are as follows:
a) Set analyzer center frequency to channel center frequency
b) Set RBW to100kHz
c) Set VBW to 300kHz
d) Detector = peak.
e) Trace mode = max hold
f) Sweep time = auto couple
g) Allow the trace to fully stabilize
h) 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 by6 dB relative to the maximum level measured in the fundamental emission

The automatic bandwidth measurement capability of an instrument may be employed using the X bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW ≥ 3 ×RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥6 dB.

2.5.4. Test Result

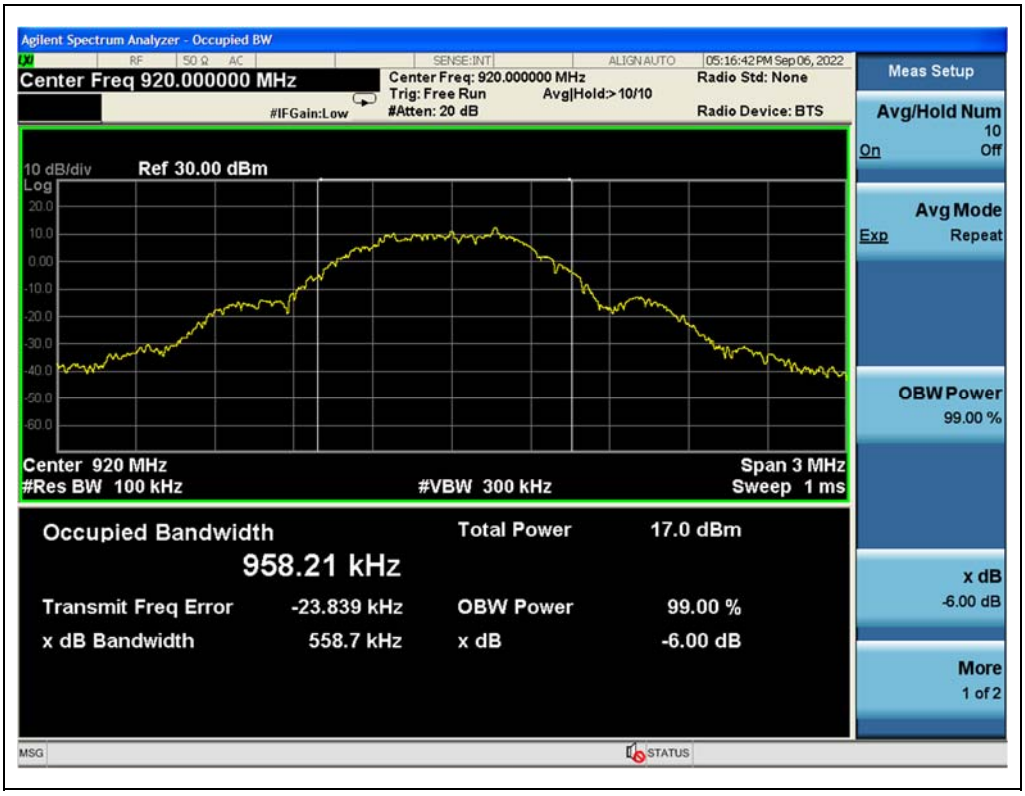
The lowest, middle and highest channels are selected to perform testing to record the 6 dB bandwidth of the module.

A. Test Verdict:

Frequency (MHz)	6 dB Bandwidth (MHz)	Limits(kHz)	Result
912	0.605	≥500	PASS
920	0.559		

B. Test Plots:

(912MHz)


Agilent Spectrum Analyzer - Occupied BW
Center Freq 920.000000 MHz
Center Freq: 920.000000 MHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 20 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
05:16:42 PM Sep 06, 2022
Meas Setup
Avg/Hold Num
10
On
Off
Avg Mode
Exp
Repeat
OBW Power
99.00 %
x dB
-6.00 dB
More
1 of 2
10 dB/div
Ref 30.00 dBm
Log
Center 920 MHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 1 ms
Occupied Bandwidth
958.21 kHz
Total Power 17.0 dBm
Transmit Freq Error -23.839 kHz
OBW Power 99.00 %
x dB Bandwidth 558.7 kHz
x dB -6.00 dB
MSG
STATUS

(920MHz)

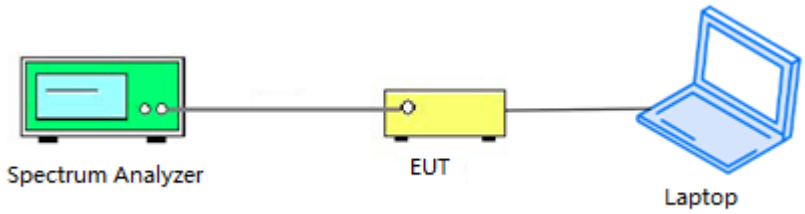
2.6. Conducted Spurious Emissions and Band Edge

2.6.1. Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

2.6.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.
Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

2.6.3. Test Procedure

KDB 558074 Section 8.5 and 8.7 was used in order to prove compliance.

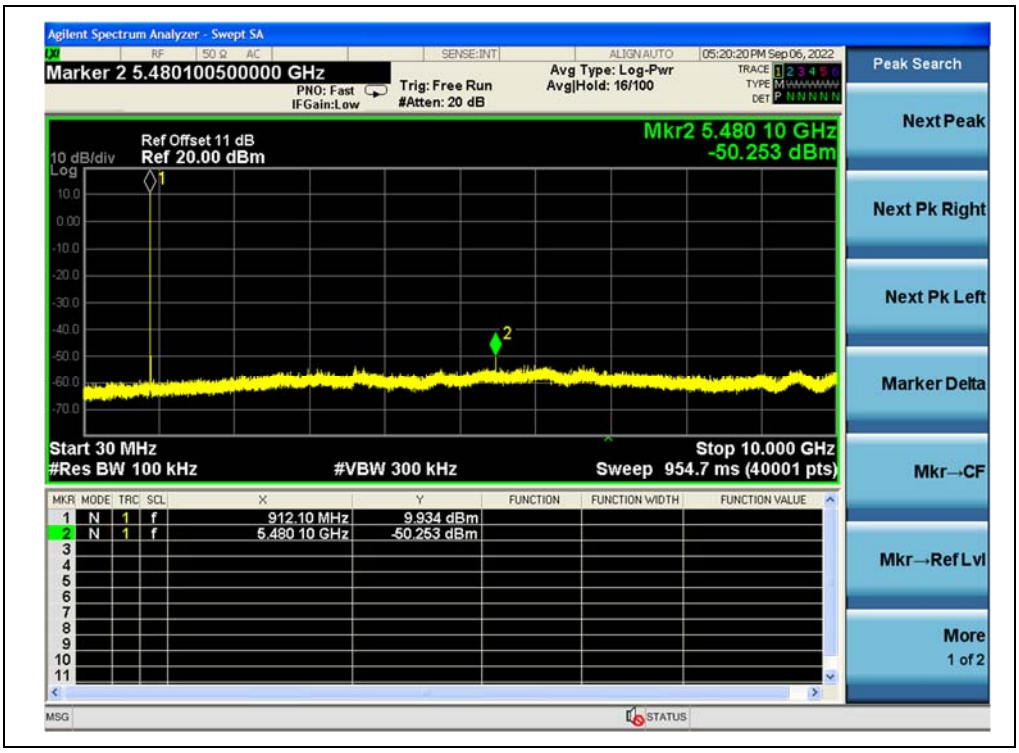
2.6.4. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions.

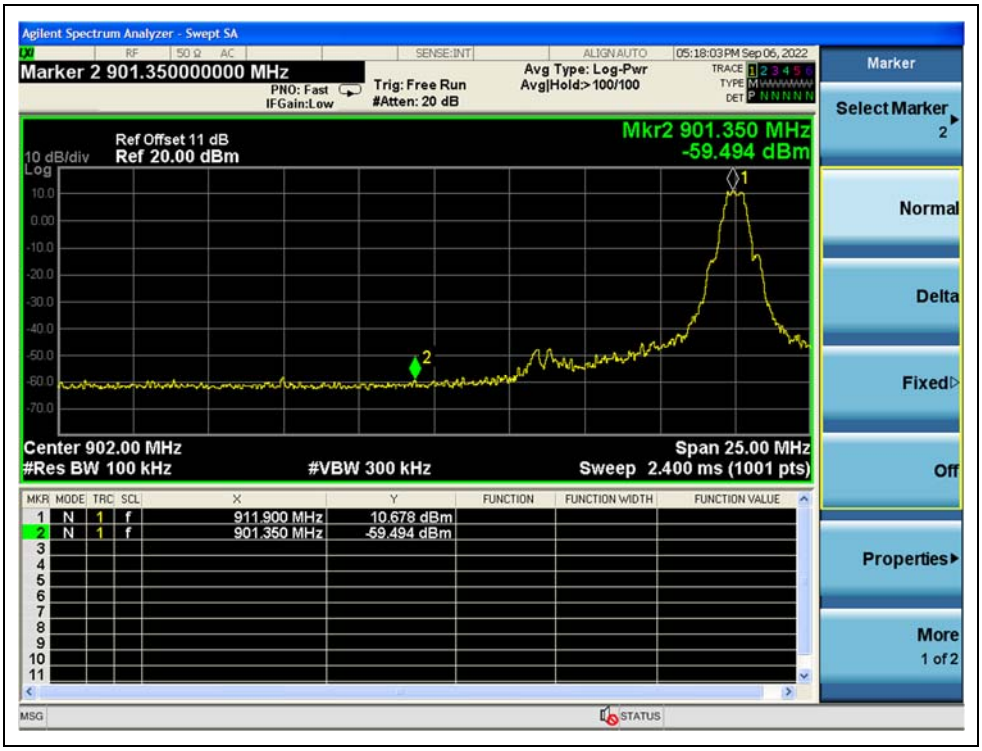
A. Test Verdict:

Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated - 20dBc Limit	
912	-50.25	9.93	-10.07	PASS
920	-49.42	9.84	-10.16	

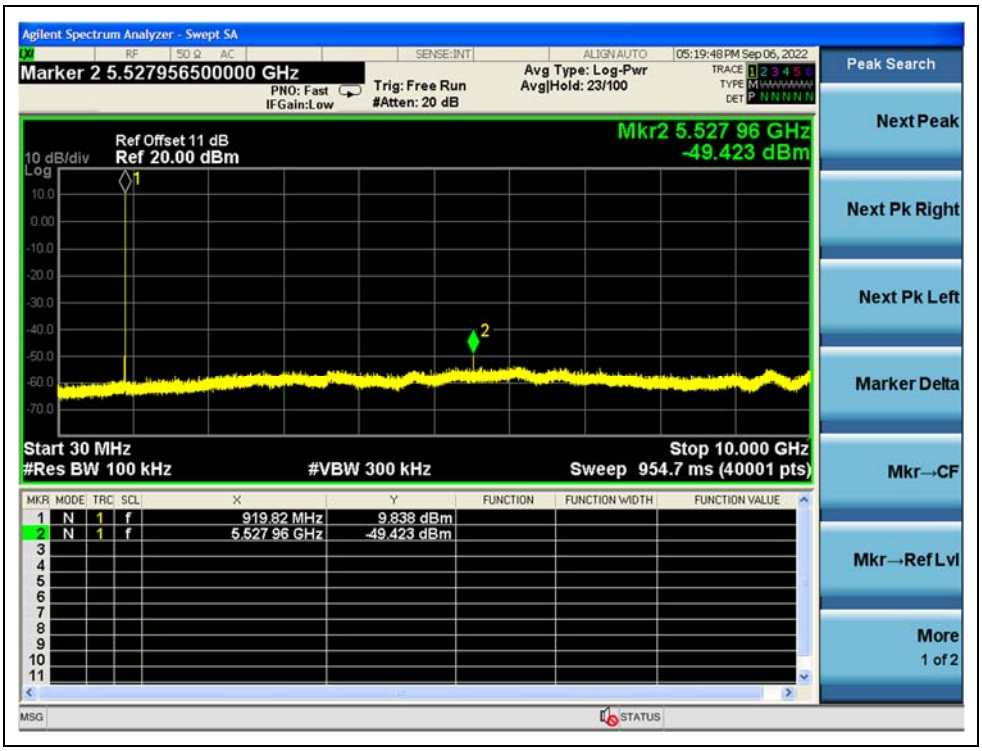
B. Test Plots:



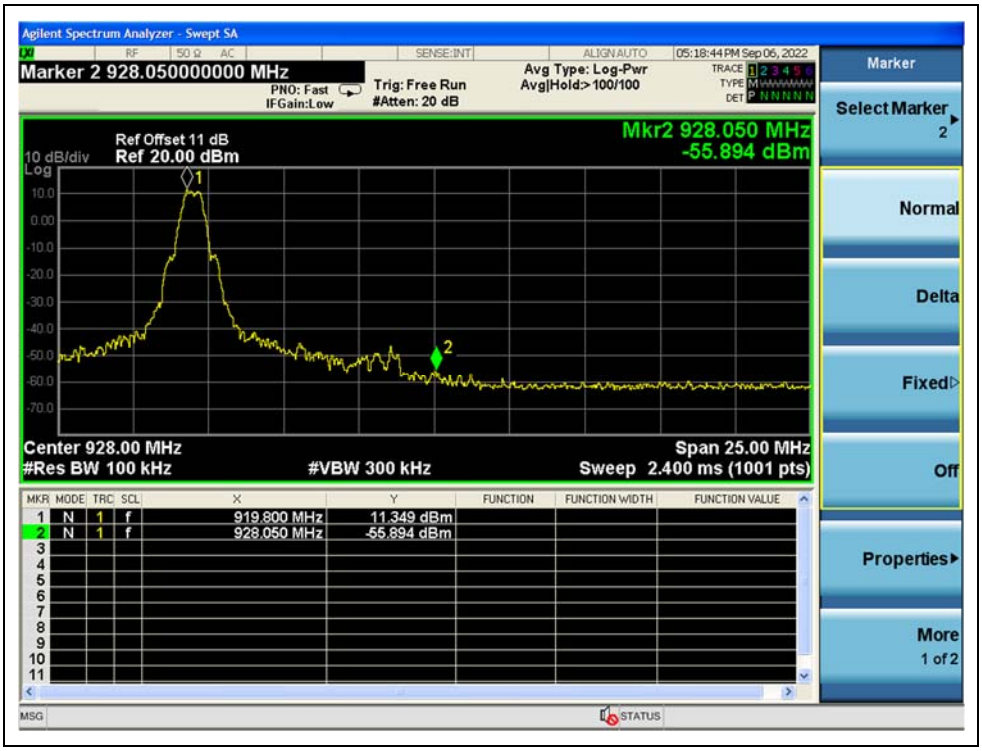
(912MHz, 30MHz to 25GHz)



(Band Edge, 912MHz)



(920MHz,30MHz to 25GHz)



(Band Edge, 920MHz)

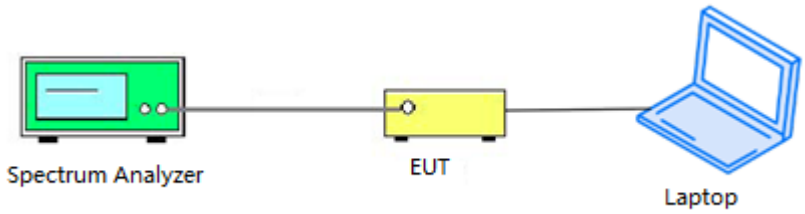
2.7. Power Spectral Density (PSD)

2.7.1. Requirement

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

2.7.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

2.7.3. Test Procedure

The measured power spectral density was calculated by the reading of the spectrum analyzer and calibration. Following is the test procedure for PSD test:

a) Set analyzer center frequency to channel center frequency
b) Set span to1.5 times DTS
c) Set RBW to 3 kHz
d) Set VBW to 10 kHz
e) Detector = peak
f) Sweep time = auto couple
g) Trace mode = max hold
h) Allow trace to fully stabilize
i) Use the peak marker function to determine the maximum amplitude level within the RBW

2.7.4. Test Result

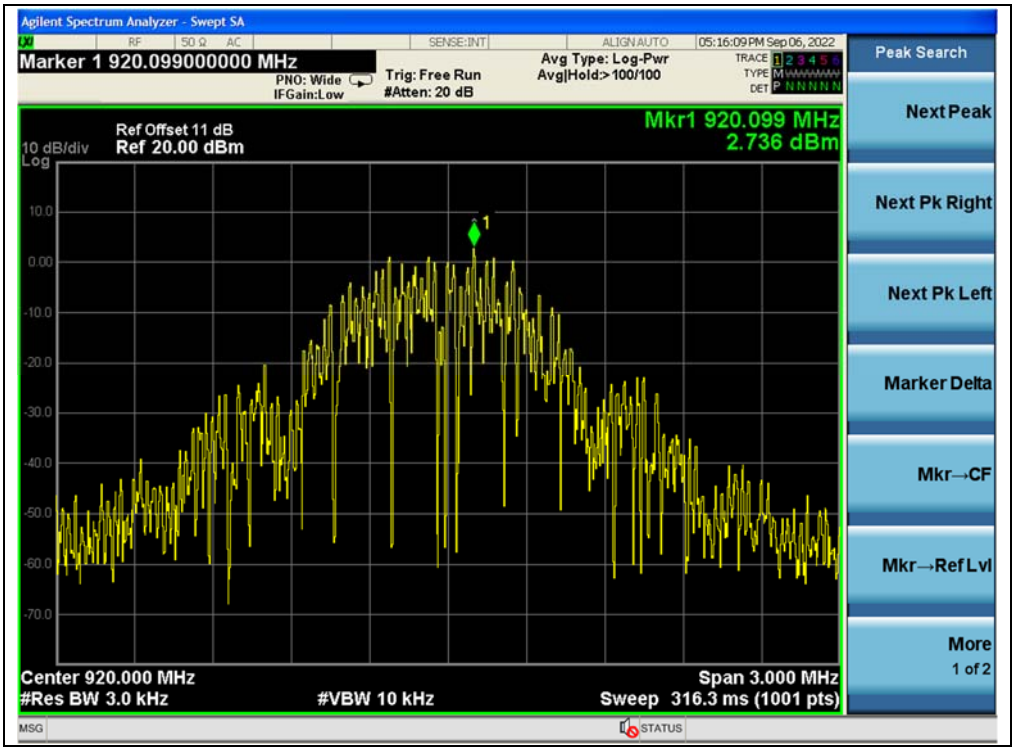
The lowest, middle and highest channels are tested.

A. Test Verdict:

Spectral Power Density (dBm/3kHz)			
Frequency (MHz)	Measured PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
912	2.73	8	PASS
920	2.74	8	

B. Test Plots:

(912MHz)


Agilent Spectrum Analyzer - Swept SA
Marker 1 920.099000000 MHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
05:16:09 PM Sep 06, 2022
Ref Offset 11 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 920.099 MHz
2.736 dBm
Center 920.000 MHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 3.000 MHz
Sweep 316.3 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

(920MHz)

2.8. Conducted Emission

2.8.1. Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

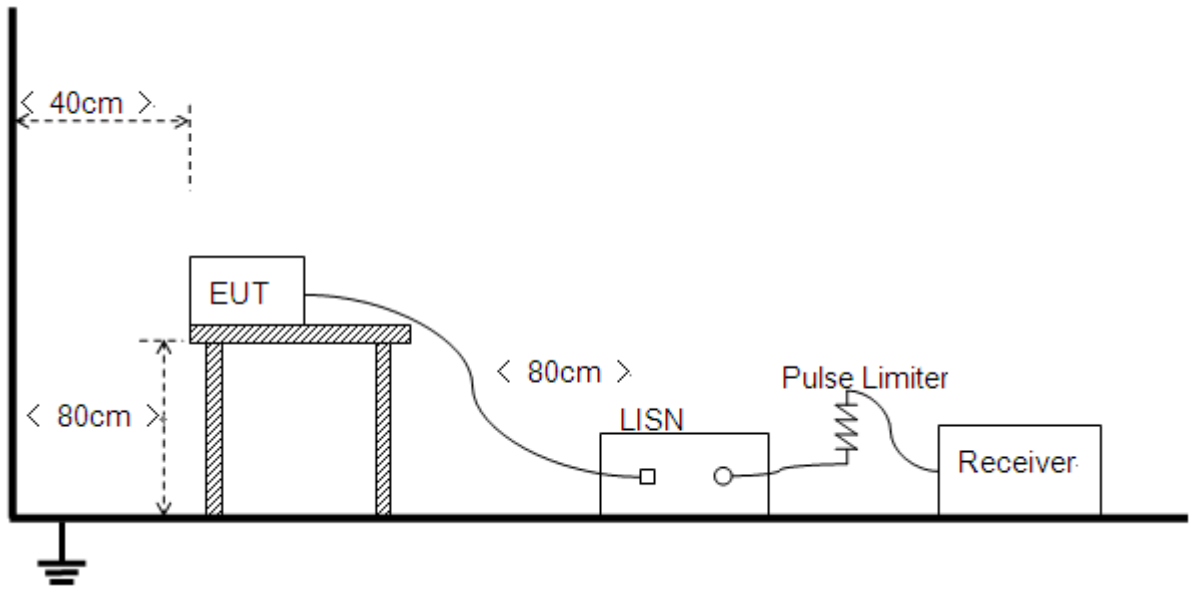
NOTE:

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.8.2. Test Description

Test Setup:



The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.

2.8.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hzwere considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode1: EUT+ADAPTER+Z-wave TX

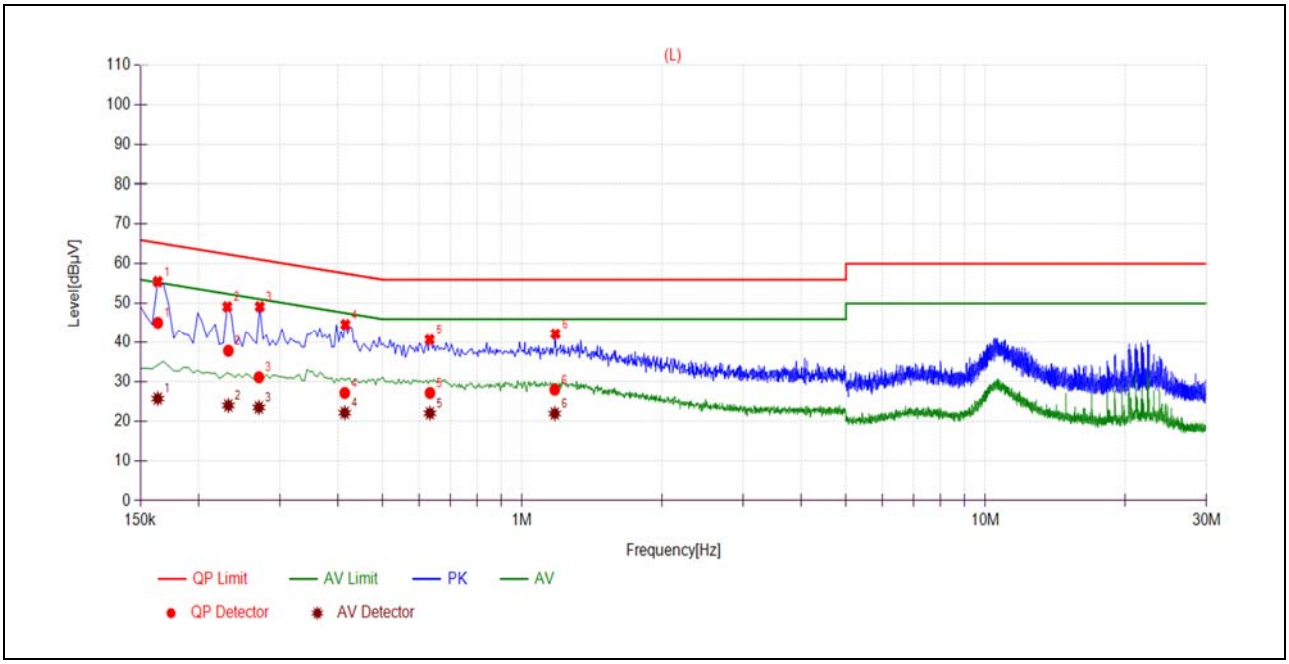
Test Voltage: AC 120V/60Hz

The measurement results are obtained as below:

E [dBμV] $=U_R + L_{Cable\ loss}$ [dB] + A_{Factor}

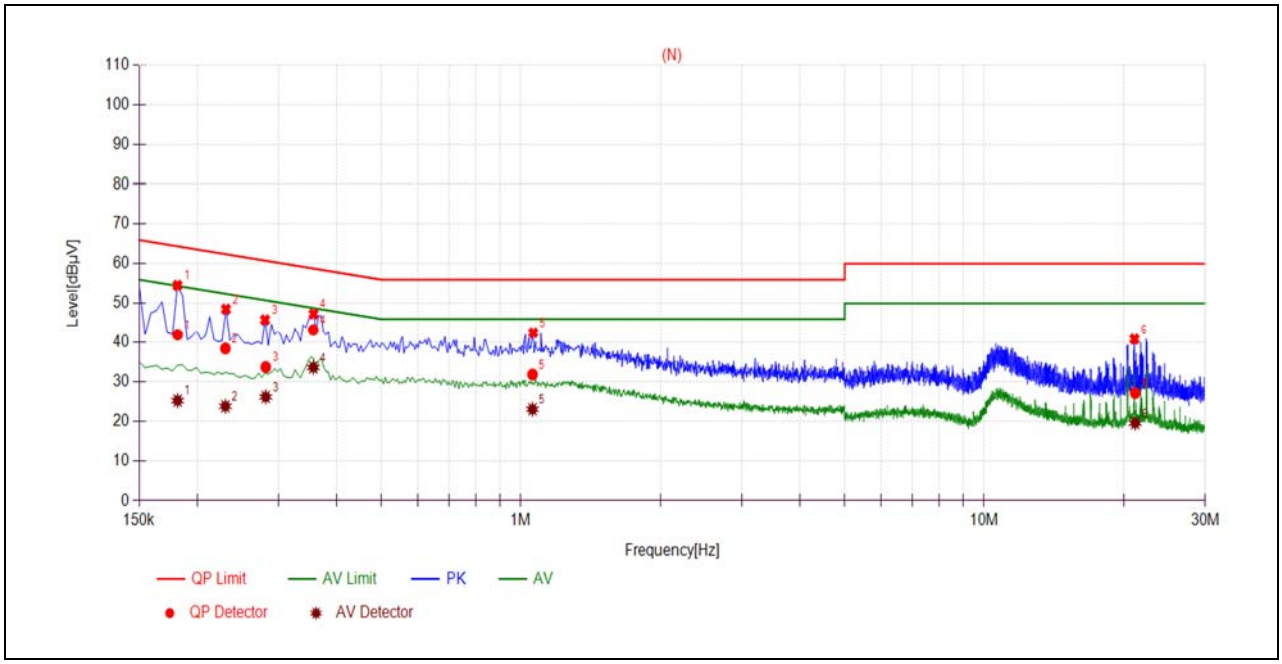
U_R: Receiver Reading

A_{Factor}: Voltage division factor of LISN



(L Phase)

NO.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1635	45.09	25.70	65.28	55.28	Line	PASS
2	0.2322	37.82	23.96	62.37	52.37		PASS
3	0.2703	31.09	23.45	61.11	51.11		PASS
4	0.4141	27.12	22.09	57.57	47.57		PASS
5	0.6324	27.12	21.99	56.00	46.00		PASS
6	1.1759	27.95	21.90	56.00	46.00		PASS



(N Phase)

NO.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1816	41.98	25.19	64.41	54.41	Neutral	PASS
2	0.2303	38.41	23.75	62.44	52.44		PASS
3	0.2814	33.67	26.13	60.77	50.77		PASS
4	0.3564	43.20	33.59	58.81	48.81		PASS
5	1.0595	31.80	22.99	56.00	46.00		PASS
6	21.1743	27.11	19.49	60.00	50.00		PASS

2.9. Radiated Emission

2.9.1. Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
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

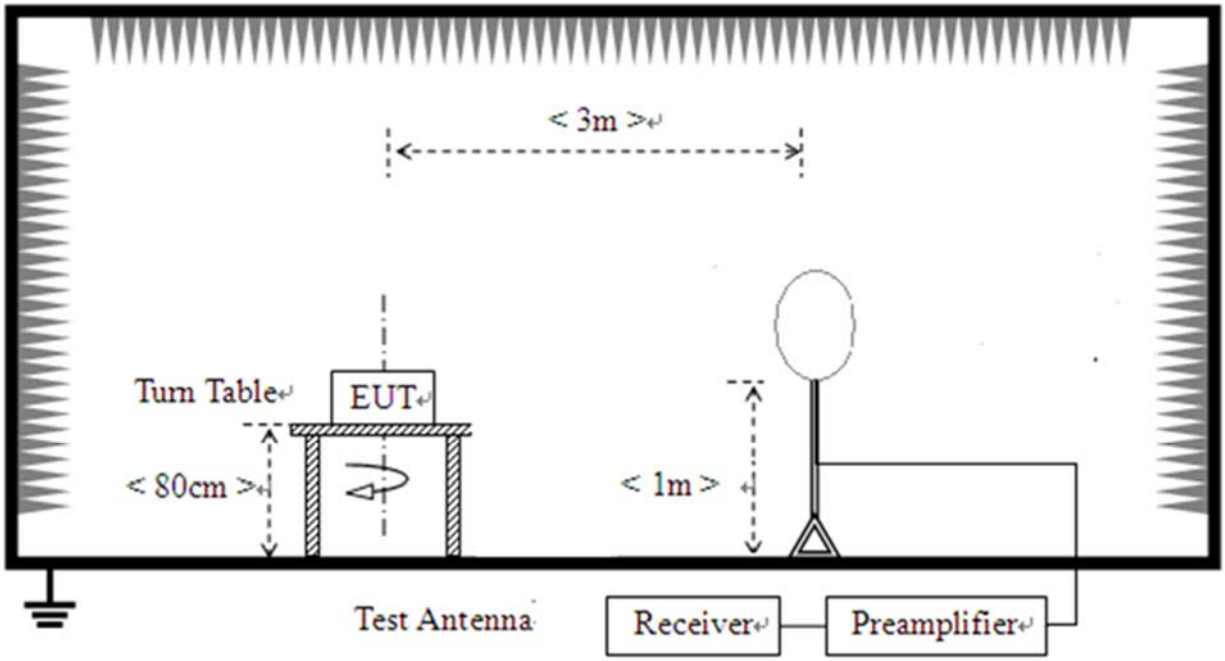
Note1: For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

Note2: For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

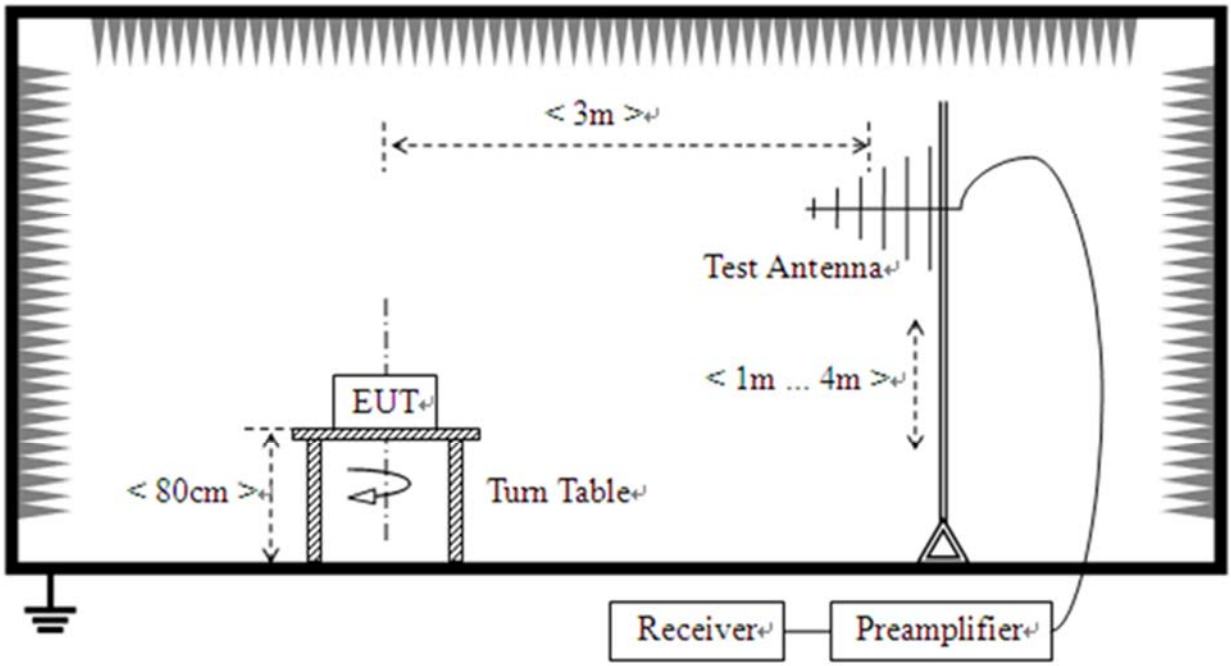
2.9.2. Test Description

Test Setup:

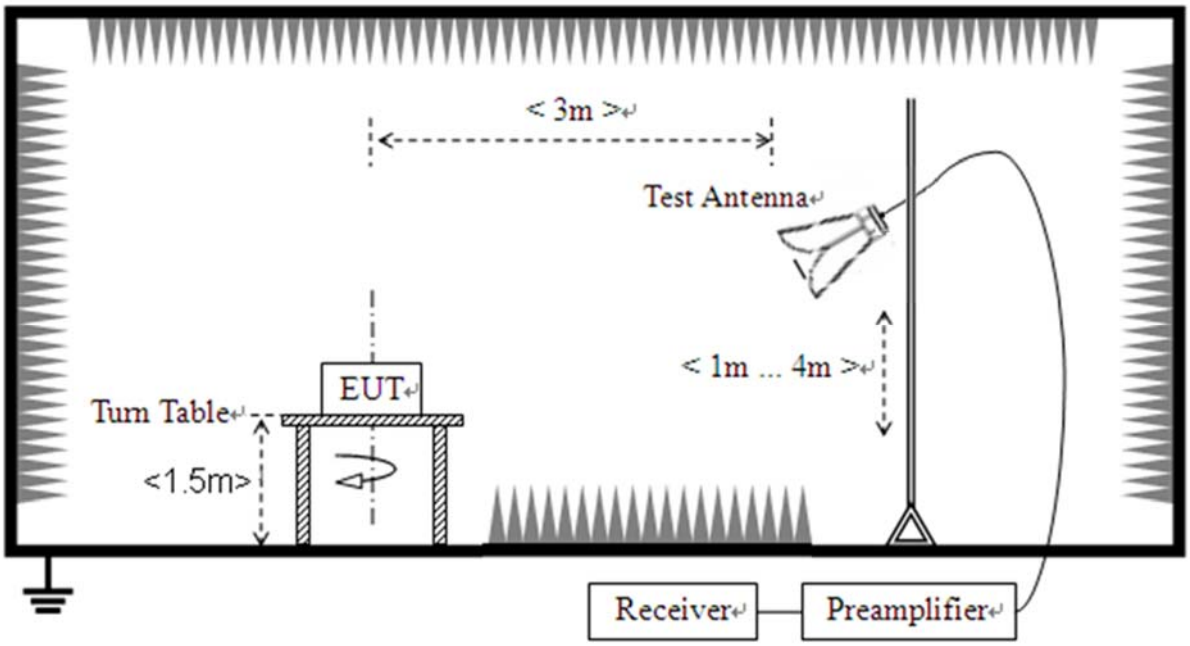
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz.The antenna to EUT distance is 3meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

2.9.3. Test Result

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

E [dBμV/m] $=U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]$-G_{preamp}$ [dB]

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

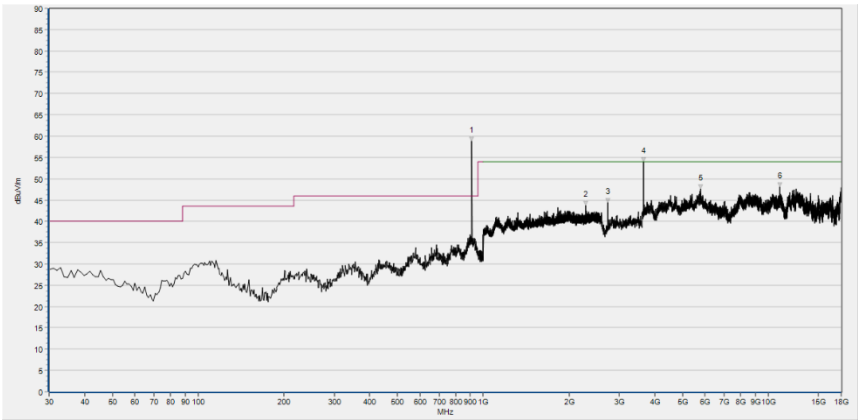
During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

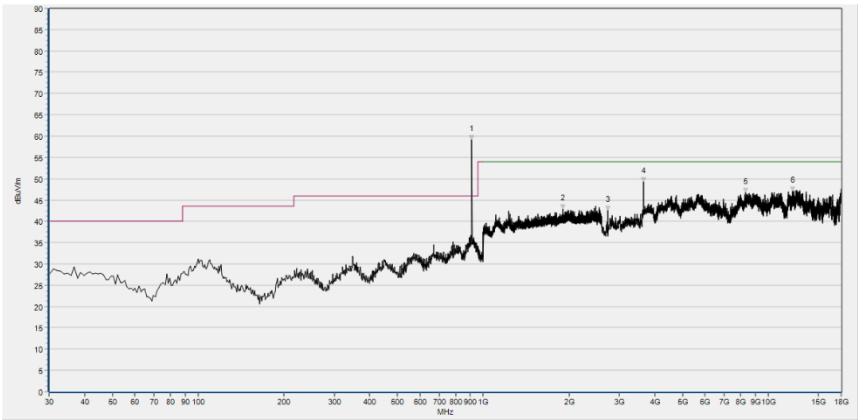
Note3: For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

_Plot for 912MHz



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
911.730	58.84	N/A	N/A	N/A	46.00	N/A	Horizontal	N/A
2284.267	43.67	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2735.520	44.42	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3648.000	53.96	N/A	53.07	74.00	N/A	54.00	Horizontal	PASS
5781.640	47.67	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10956.040	48.03	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

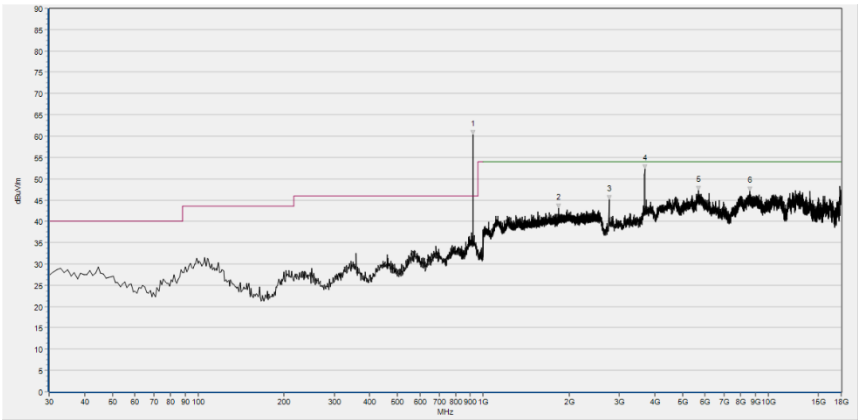
(Antenna Horizontal, 30MHz to 10GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
911.730	59.17	N/A	N/A	N/A	46.00	N/A	Vertical	N/A
1905.067	42.97	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2735.520	42.57	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3647.200	49.31	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8298.000	46.74	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12138.760	47.04	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

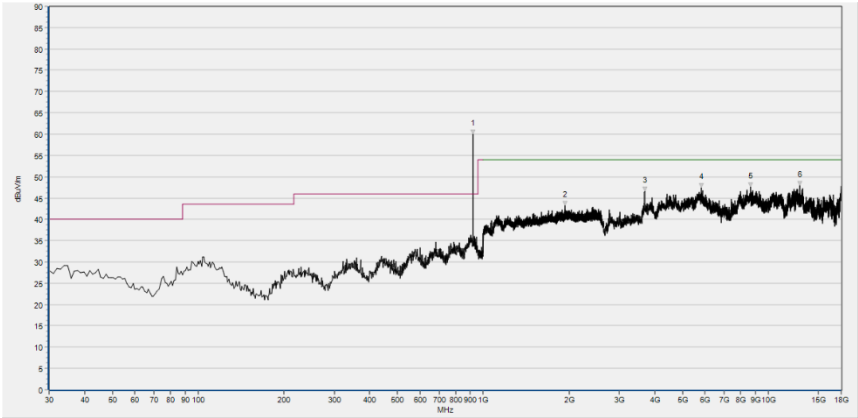
(Antenna Vertical, 30MHz to 10GHz)

Plot for 920MHz



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
919.490	60.31	N/A	N/A	N/A	46.00	N/A	Horizontal	N/A
1840.000	43.10	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2760.160	45.06	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
3680.000	52.25	N/A	51.21	74.00	N/A	54.00	Horizontal	PASS
5680.000	47.26	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8596.760	47.02	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 10GHz)



Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
919.490	60.05	N/A	N/A	N/A	46.00	N/A	Vertical	N/A
1935.467	43.28	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
3681.080	46.62	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5809.360	47.36	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8655.280	47.61	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12893.360	47.95	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 10GHz)

Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test items	Uncertainty
Peak Output Power	±2.22dB
Power spectral density (PSD)	±2.22dB
Bandwidth	±5%
Conducted Spurious Emission	±2.77dB
Radiated Emission	±2.95dB
Conducted Emission	±2.44dB

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013and CISPR Publication 22; the FCC designation number is CN1192,the test firm registration number is 226174.

4. Test Equipments Utilized

4.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
EXA Signal Analzyer	MY53470836	N9010A	Agilent	2022.03.01	2023.02.28
RF cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial cable	CB02	RF02	Morlab	N/A	N/A
SMA connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Computer	T430i	Think Pad	Lenovo	N/A	N/A

4.2 Conducted Emission Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2022.03.03	2023.03.02
LISN	8127449	NSLK 8127	Schwarzbeck	2022.03.03	2023.03.02
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2022.07.06	2023.07.05
Coaxial cable(BNC) (30MHz-26GHz)	CB01	EMC01	Morlab	N/A	N/A

4.3 List of Software Used

Description	Manufacturer	Software Version
Test System	Tonscend	V2.5.77.0418
Morlab EMCR V1.2	Morlab	V1.0
TS+ -[JS32-CE]	Tonscend	V2.5.0.0

4.4 Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY54130016	N9038A	Agilent	2022.07.06	2023.07.05
Test Antenna - Bi-Log	9163-520	VULB 9163	Schwarzbeck	2022.05.25	2025.05.24
Test Antenna - Loop	1520-022	FMZB1520	Schwarzbeck	2022.02.11	2025.02.10
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2022.07.13	2025.07.12
Test Antenna – Horn	BBHA9170#773	BBHA 9170	Schwarzbeck	2022.07.14	2025.07.13
Coaxial cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial cable(N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L3203	Tonscend	2022.07.08	2023.07.07
18-26.5GHz pre-Amplifier	46732	S10M100L3802	Tonscend	2022.07.08	2023.07.07
Notch Filter	N/A	WRCG-2400-2483.5-60SS	Wainwright	2022.07.08	2023.07.07
Anechoic Chamber	N/A	9m*6m*6m	CRT	2020.01.06	2023.01.05

END OF REPORT