TEST REPORT
FCC ID:ZHZLPS8N

Report Number. .....:	ZKT-220901L6391E-2
Date of Test	Aug. 20, 2022to Aug. 24, 2022
Date of issue.....:	Aug. 24, 2022
Total number of pages	37
Test Result .....:	PASS
Testing Laboratory. .....:	**Shenzhen ZKT Technology Co., Ltd.**
Address .....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name ..... :	**Dragino Technology Co., Limited**
Address .....:	Room 202, Block B, BCT Incubation Bases, No.8 CaiYunRoad LongCheng Street, LongGang District ; Shenzhen 518116,China
Manufacturer's name ..... :	**Dragino Technology Co., Limited.**
Address .....:	Room 202, Block B, BCT Incubation Bases, No.8 CaiYunRoad LongCheng Street, LongGang District ; Shenzhen 518116,China
Test specification:	
Standard .....:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Test procedure .....:	/
Non-standard test method .....:	N/A
Test Report Form No..... :	TRF-EL-110_V0
Test Report Form(s) Originator.... :	ZKT Testing
Master TRF ..... :	Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC and IC requirements. And it is applicable only to the tested sample identified in the report.
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Product name..... :	**LoRaWAN IOT Gateway**
Trademark .....:	DRAGINO
Model/Type reference .....:	LPS8N
Ratings .....:	SWITCHING ADAPTER MODEL:HP-050200A1-VDE INPUT:AC100-240V~50/60Hz 0.3A OUTPUT:DC5V/2000mA

Testing procedure and testing location:

Testing Laboratory.....:	**Shenzhen ZKT Technology Co., Ltd.**
Address.....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Tested by (name + signature).....:	Alen He
Reviewer (name + signature).....:	Joe Liu
Approved (name + signature).....:	Lake Xie

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1.Version

Report No.	Version	Description	Approved
ZKT-220901L6391E-2	Rev.01	Initial issue of report	Aug. 24, 2022

2. Test Summary

FCC Part 15.247,Subpart C		
Test Item	**Standard**	**Result**
Antenna Requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(1)	Pass
20dB Occupied Bandwidth	15.247 (a)(1)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	15.247 (a)(i)	Pass
Dwell Time	15.247 (a)(1)	Pass
Emissions in non-restricted frequency bands	15.247(b)(4)	Pass
Radiated Emission	15.205/15.209	Pass
Band Edge	15.247(d)	Pass

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.

Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225

Designation Number: CN1299

IC Registered No.: 27033

CAB identifier: CN0110

2.2 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 %。

N .	Item	Uncer ainty
1	3m camber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8dB
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59℃

3. General Information

3.1 General Description of EUT

Product Name:	LoRaWAN IOT Gateway
Model No.:	LPS8N
Sample(s) Status:	Engineer sample
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	125KHz:902.3MHz~914.9MHz 500KHz:923.3MHz~927.5MHz
Channel numbers:	64 for 125KHz bandwidth
Channel separation:	200KHz for 125KHz bandwidth
Modulation type:	Lora
Antenna Type:	External antenna
Antenna gain:	5dBi
Power supply:	SWITCHING ADAPTER MODEL:HP-050200A1-VDE INPUT:AC100-240V~50/60Hz 0.3A OUTPUT:DC5V/2000mA

125KHz for FHSS:

Operation Frequency each of channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	902.3	21	906.3	41	910.3	61	914.3
2	902.5	22	906.5	42	910.5	62	914.5
3	902.7	23	906.7	43	910.7	63	914.7
4	902.9	24	906.9	44	910.9	64	914.9
.	.	.	.	.	.	.	.
.	.	32	908.5	.	.	.	
.	.	.	.	.	.	.	.
17	905.5	37	909.5	57	913.5	.	.
18	905.7	38	909.7	58	913.7		
19	905.9	39	909.9	59	913.9		
20	906.1	40	910.1	60	914.1		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

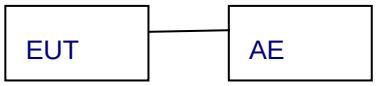
Channel	Frequency(125KHz)
The lowest channel	902.30MHz
The middle channel	908.50MHz
The Highest channel	914.90MHz

3.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

3.3 Test Setup Configuration

Radiated Emission



Conducted Spurious

3.4 Support Equipment

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	LoRaWAN IOT Gateway	DRAGINO	LPS8N	N/A	EUT
E-2	SWITCHING ADAPTER	/	HP-050200A1-VDE	N/A	AE
E-3	PC	HP	TPN-C129	N/A	AE

Note:
(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

3.5 Test Instruments list

Radiation Test equipment

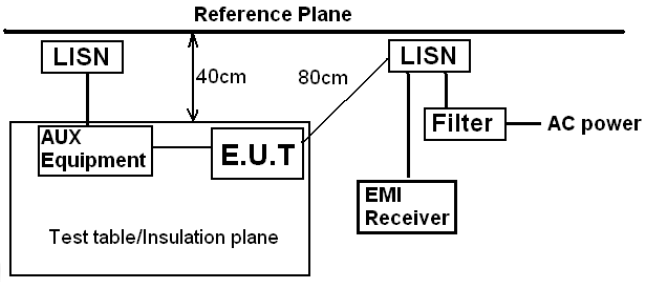
Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY45109572	Sep. 22, 2021	Sep. 21, 2022
2	Spectrum Analyzer (1GHz-40GHz)	Agilent	E4446A	100363	Sep. 22, 2021	Sep. 21, 2022
3	Test Receiver (9kHz-7GHz)	R&S	ESCI7	101169	Sep. 22, 2021	Sep. 21, 2022
4	Bilog Antenna (30MHz-1400MHz)	Schwarzbeck	VULB9168	00877	Sep. 22, 2021	Sep. 21, 2022
5	Horn Antenna (1GHz-18GHz)	SCHWARZBECK	BBHA9120D	1541	Sep. 22, 2021	Sep. 21, 2022
6	Horn Antenna (18GHz-40GHz)	A.H. System	SAS-574	588	Sep. 22, 2021	Sep. 21, 2022
7	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	N/A	Sep. 22, 2021	Sep. 21, 2022
8	Amplifier (1GHz-40GHz)	全聚达	DLE-161	097	Sep. 22, 2021	Sep. 21, 2022
9	Loop Antenna (9KHz-30MHz)	SCHWARZBECK	FMZB1519B	014	Sep. 22, 2021	Sep. 21, 2022
10	RF cables1 (9kHz-30MHz)	N/A	9kHz-30MHz	N/A	Sep. 22, 2021	Sep. 21, 2022
11	RF cables2 (30MHz-1GHz)	N/A	30MHz-1GHz	N/A	Sep. 22, 2021	Sep. 21, 2022
12	RF cables3 (1GHz-40GHz)	N/A	1GHz-40GHz	N/A	Sep. 22, 2021	Sep. 21, 2022
13	CMW500 Test	R&S	CMW500	106504	Sep. 22, 2021	Sep. 21, 2022
14	ESG Signal Generator	Agilent	E4421B	GB40051203	Sep. 22, 2021	Sep. 21, 2022
15	Signal Generator	Agilent	N5182A	MY47420215	Sep. 22, 2021	Sep. 21, 2022
16	D.C. Power Supply	LongWei	TPR-6405D	\	\	\
17	Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	Sep. 22, 2021	Sep. 21, 2022
2	LISN	CYBERTEK	EM5040A	E1850400149	Sep. 22, 2021	Sep. 21, 2022
3	Test Cable	N/A	C01	N/A	Sep. 22, 2021	Sep. 21, 2022
4	Test Cable	N/A	C02	N/A	Sep. 22, 2021	Sep. 21, 2022
5	EMI Test Receiver	R&S	ESRP3	101946	Sep. 22, 2021	Sep. 21, 2022
6	Absorbing Clamp	DZ	ZN23201	N/A	Sep. 22, 2021	Sep. 21, 2022

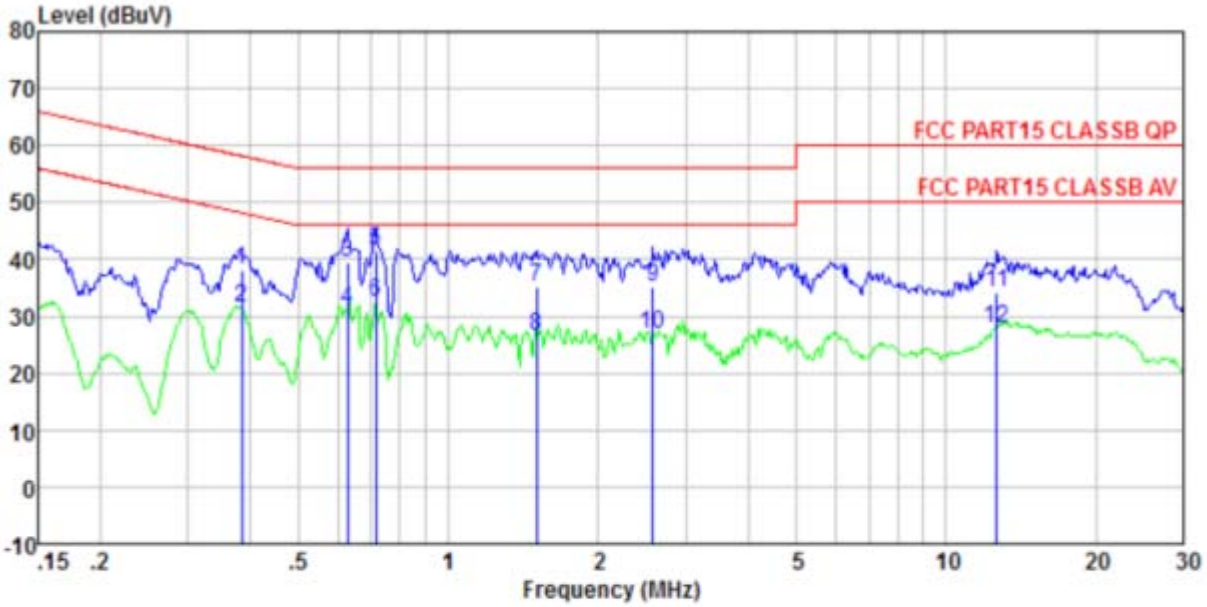
4. EMC EMISSION TEST

4.1 Conducted Emissions

<table>
<tr><td>Test Requirement:</td><td colspan="6">FCC Part15 C Section 15.207</td></tr>
<tr><td>Test Method:</td><td colspan="6">ANSI C63.10:2013</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="6">150KHz to 30MHz</td></tr>
<tr><td>Class / Severity:</td><td colspan="6">Class B</td></tr>
<tr><td>Receiver setup:</td><td colspan="6">RBW=9KHz, VBW=30KHz, Sweep time=auto</td></tr>
<tr><td>Limit:</td><td colspan="6">
<table>
<tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr>
<tr><th>Quasi-peak</th><th>Average</th></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* Decreases with the logarithm of the frequency.
</td></tr>
<tr><td>Test setup:</td><td colspan="6"> 

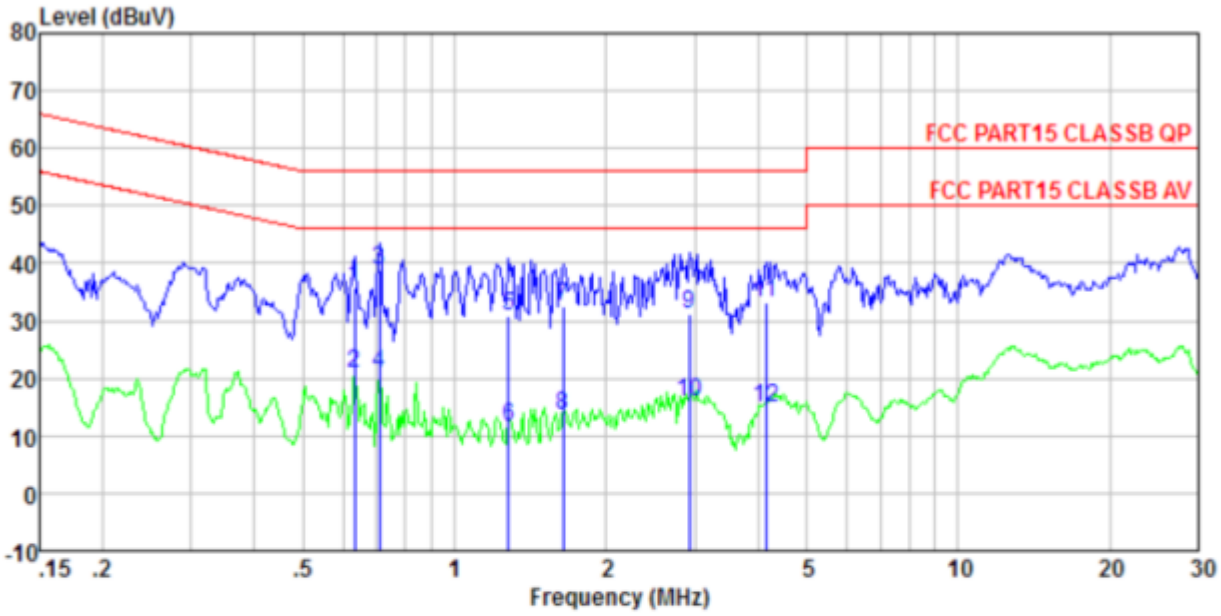
Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m</td></tr>
<tr><td>Test procedure:</td><td colspan="6">1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.</td></tr>
<tr><td>Test Instruments:</td><td colspan="6">Refer to section 6.0 for details</td></tr>
<tr><td>Test mode:</td><td colspan="6">Refer to section 5.2 for details</td></tr>
<tr><td>Test environment:</td><td>Temp.:</td><td>25 °C</td><td>Humid.:</td><td>52%</td><td>Press.:</td><td>1012mbar</td></tr>
<tr><td>Test voltage:</td><td colspan="6">DC 5V</td></tr>
<tr><td>Test results:</td><td colspan="6">Pass</td></tr>
</table>

Line:



Freq MHz	Reading level dBuV	lISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.385	37.71	0.36	0.10	38.17	58.17	-20.00	QP
0.385	30.96	0.36	0.10	31.42	48.17	-16.75	Average
0.627	39.15	0.28	0.12	39.55	56.00	-16.45	QP
0.627	30.74	0.28	0.12	31.14	46.00	-14.86	Average
0.716	41.05	0.26	0.13	41.44	56.00	-14.56	QP
0.716	32.21	0.26	0.13	32.60	46.00	-13.40	Average
1.503	34.91	0.20	0.16	35.27	56.00	-20.73	QP
1.503	26.29	0.20	0.16	26.65	46.00	-19.35	Average
2.581	34.83	0.20	0.18	35.21	56.00	-20.79	QP
2.581	26.41	0.20	0.18	26.79	46.00	-19.21	Average
12.649	33.73	0.20	0.21	34.14	60.00	-25.86	QP
12.649	27.34	0.20	0.21	27.75	50.00	-22.25	Average

Neutral:



Freq MHz	Reading level dBuV	lISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.634	35.29	0.28	0.12	35.69	56.00	-20.31	QP
0.634	20.61	0.28	0.12	21.01	46.00	-24.99	Average
0.708	38.45	0.26	0.13	38.84	56.00	-17.16	QP
0.708	20.63	0.26	0.13	21.02	46.00	-24.98	Average
1.282	30.61	0.20	0.16	30.97	56.00	-25.03	QP
1.282	11.39	0.20	0.16	11.75	46.00	-34.25	Average
1.645	32.13	0.20	0.17	32.50	56.00	-23.50	QP
1.645	13.24	0.20	0.17	13.61	46.00	-32.39	Average
2.931	30.86	0.20	0.19	31.25	56.00	-24.75	QP
2.931	15.54	0.20	0.19	15.93	46.00	-30.07	Average
4.158	32.80	0.20	0.18	33.18	56.00	-22.82	QP
4.158	14.66	0.20	0.18	15.04	46.00	-30.96	Average

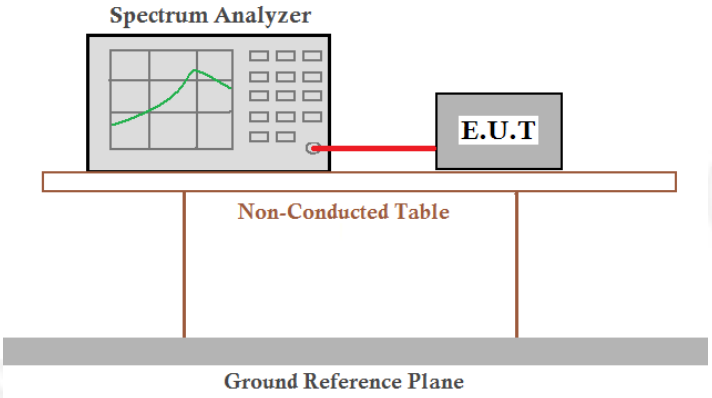
Remark:Level=Reading + Factor+Cable loss , Margin=Level– Limit.

4.2 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013
Limit:	FCC Part 15.247,Subpart C RSS-247 Issue 2

Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3) RSS 247 Issue 2	Output Power	1 watt or 30dBm	902-928	PASS
RSS-247	EIRP	4W	902-928	PASS

Test setup:



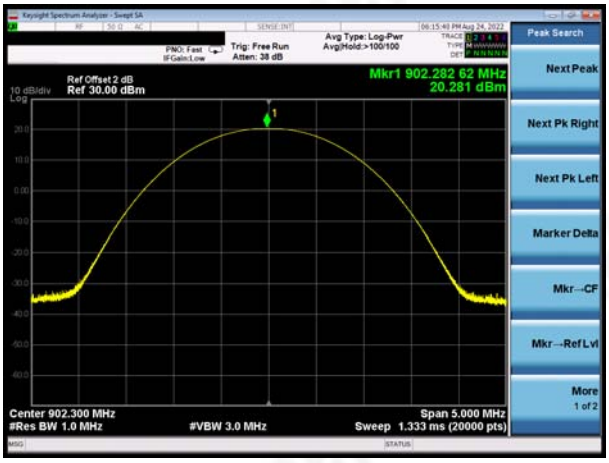
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Mode	Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
125KHz Bandwidth	Lowest	20.281	30.00	Pass
	Middle	19.485		
	Highest	21.763		

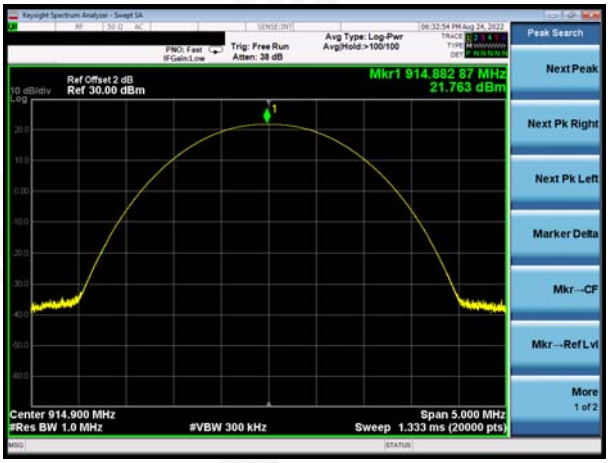
Test plot as follows:

Test mode:	125KHz Bandwidth



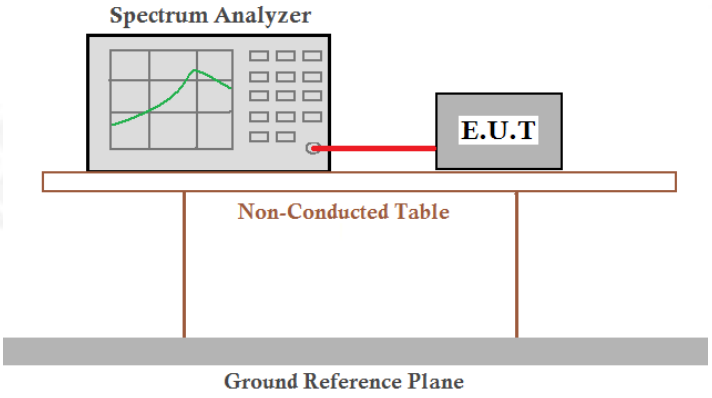
Lowest channel

Middle channel



Highest channel

4.3 20dB Emission Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.10:2013
Limit:	N/A
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

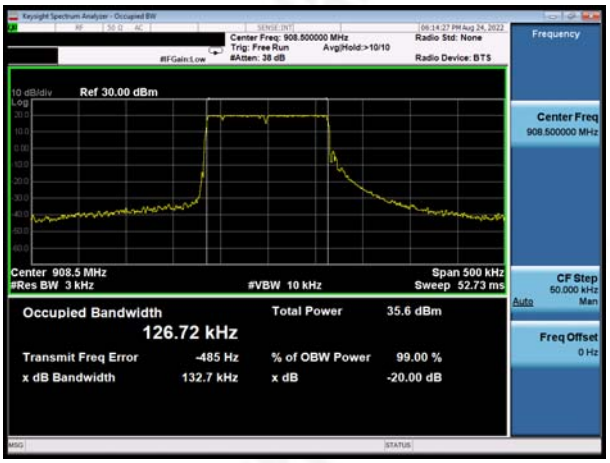
Measurement Data

Mode	Test channel	20dB Bandwidth (kHz)	Result
125KHz Bandwidth	Lowest	133.5	Pass
	Meddle	132.7	
	Highest	135.5	

Test plot as follows:

Test mode:	125KHz Bandwidth

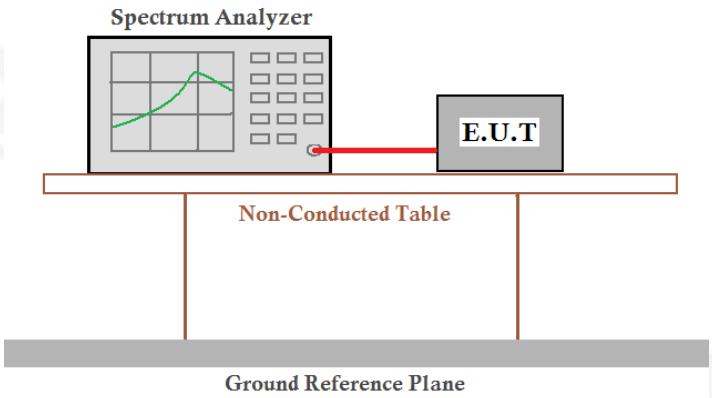
Lowest channel



Middle channel

Highest channel

4.4 Carrier Frequencies Separation

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100KHz, VBW=300KHz, detector=Peak
Limit:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

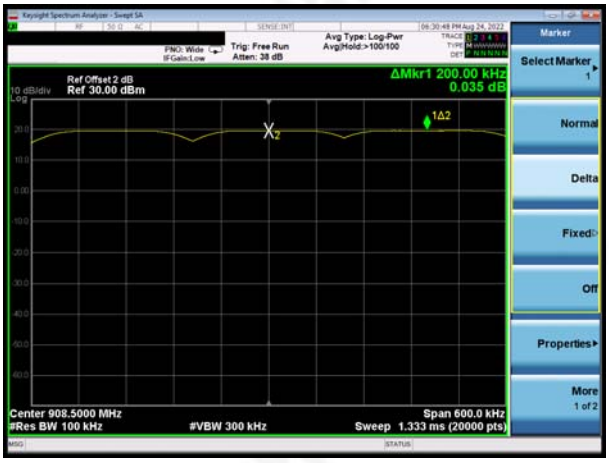
Measurement Data

Mode	Test channel	Carrier Frequencies Separation (kHz)	Limit (kHz)	Result
125KHz Bandwidth	Lowest	200.00	>=25 KHz or 2/3 20 dB BW	Pass
	Middle	200.00		Pass
	Highest	200.00		Pass

Test plot as follows:

Modulation mode:	125KHz Bandwidth

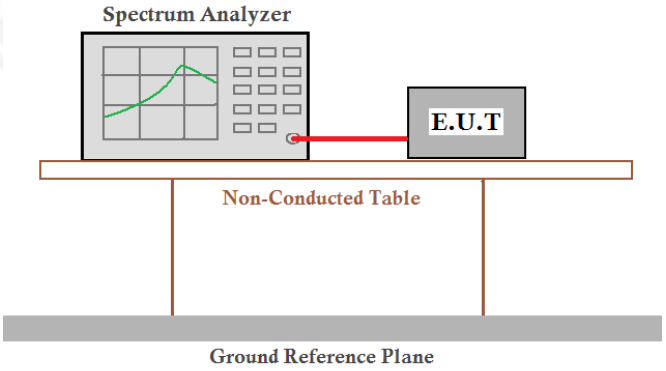
Lowest channel



Middle channel

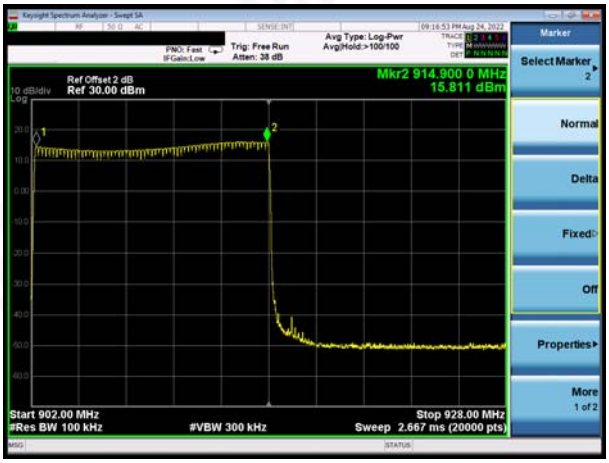
Highest channel

4.5 Hopping Channel Number

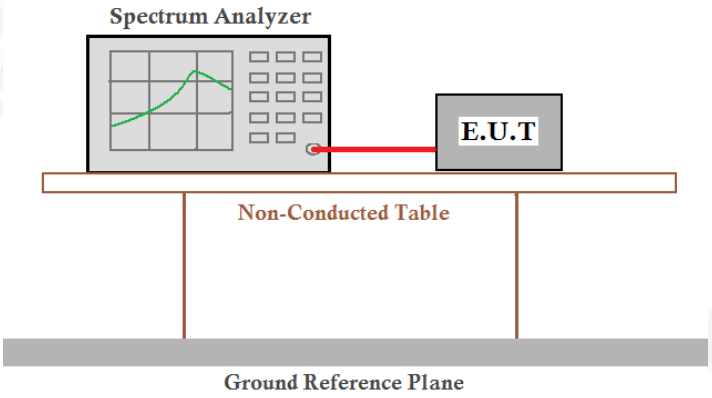
Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100kHz, VBW=300kHz, Frequency range=902-916MHz, Detector=Peak
Limit:	If the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies. If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data:

Mode	Hopping channel numbers	Limit	Result
125KHz Bandwidth	64	50	Pass



4.6 Dwell Time

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=10kHz, VBW=30KHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

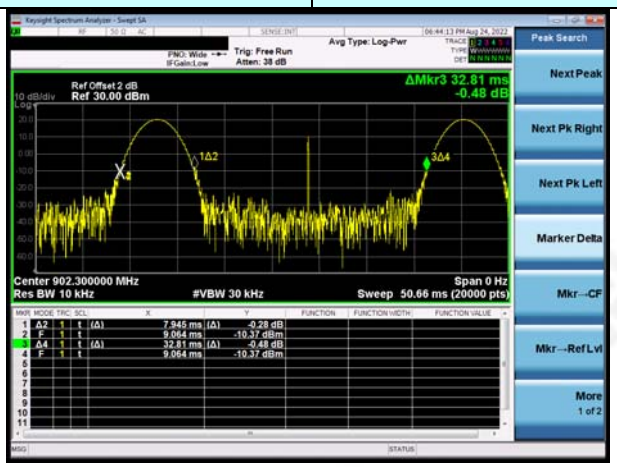
Measurement Data

Mode	Ton(ms)	Tcycle(ms)	Dwell time(ms)	Limit(ms)	Result
125KHz Bandwidth	7.945	32.81	95.407	400	Pass

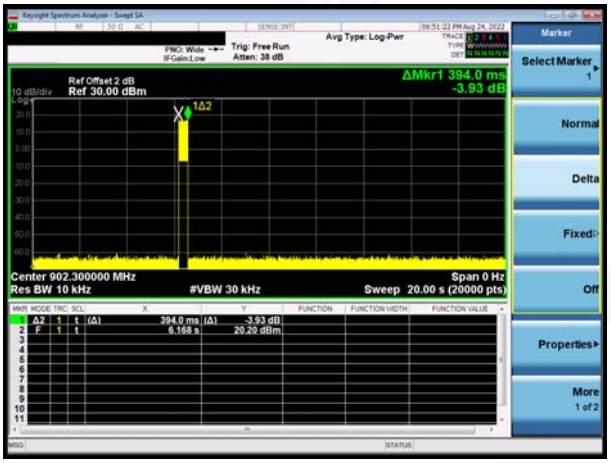
Note: Transmit numbers= Continue TX Time/Tcycle
Dwell time=Transmit numbers*Ton

Test plot as follows:

Test Mode:	125KHz Bandwidth

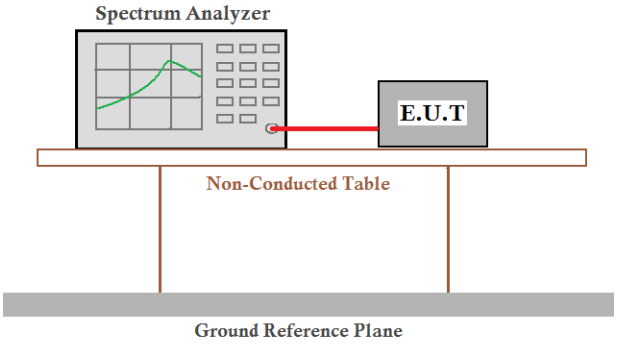


Ton&Tcycle



Continue TX Time

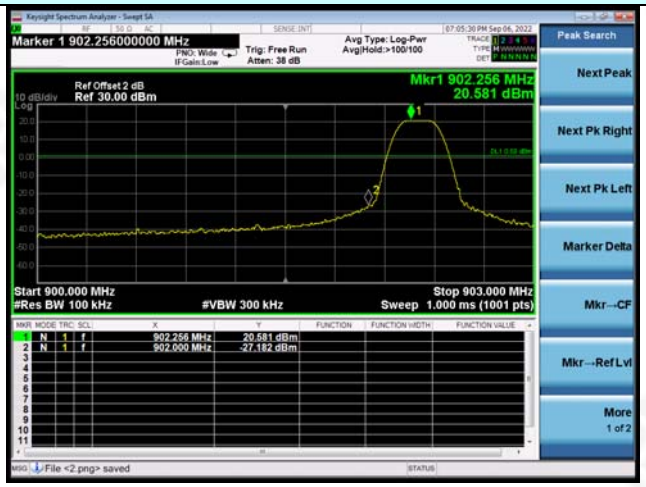
4.7 Band Edge

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100kHz, VBW=300kHz, Detector=Peak
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

125KHz Bandwidth:

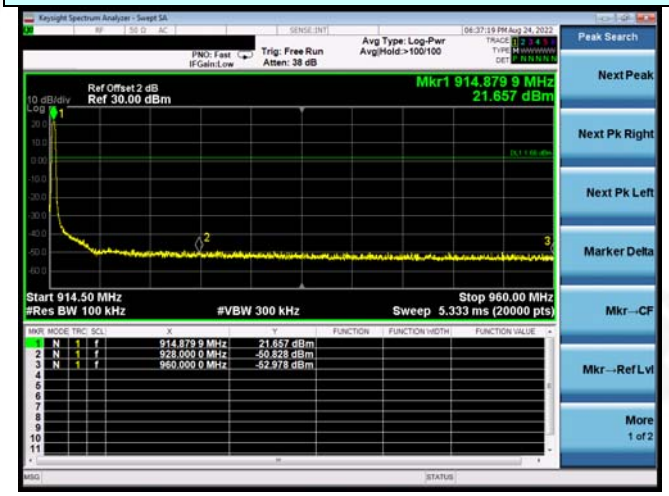
Test channel:	Lowest channel



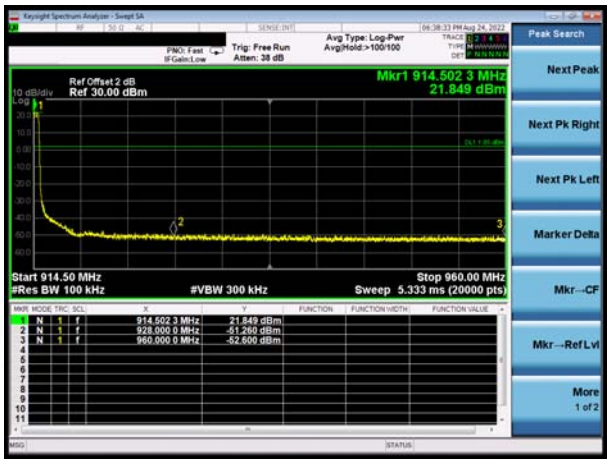
No-hopping mode

Hopping mode

Test channel:	Highest channel



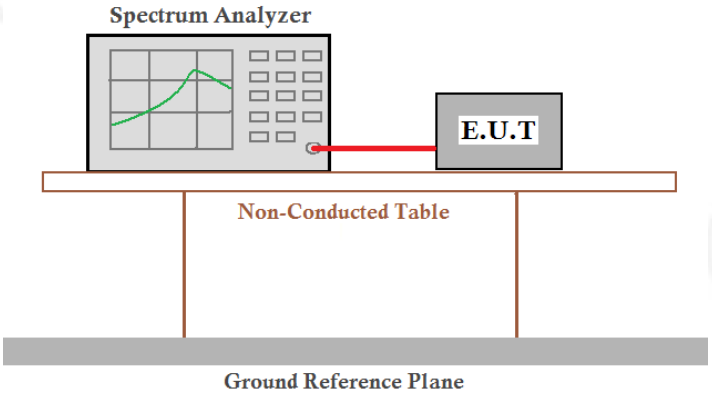
No-hopping mode



Hopping mode

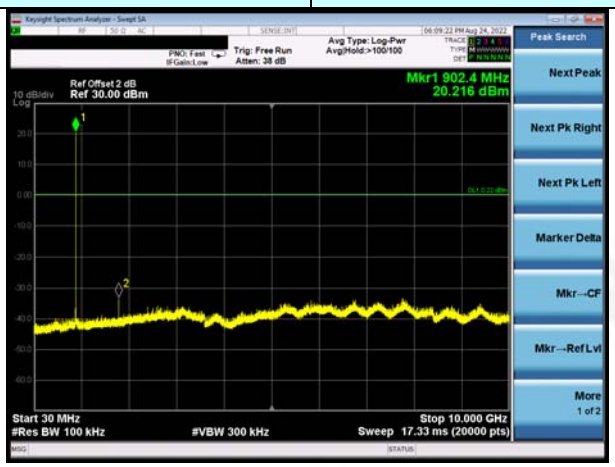
4.8 Spurious Emission

Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

125KHz Bandwidth:

Test channel:	Lowest channel

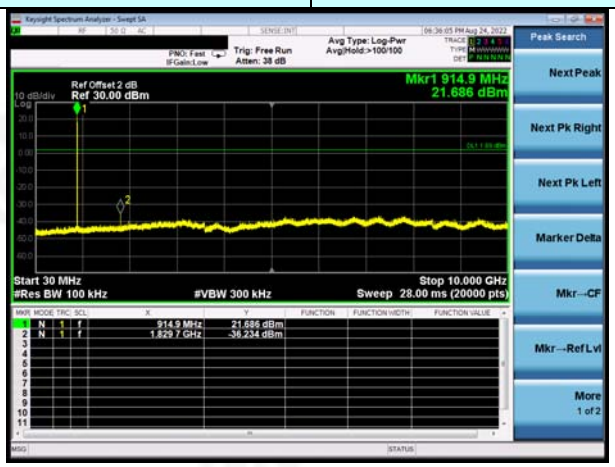


30MHz~10GHz

Test channel:	Middle channel

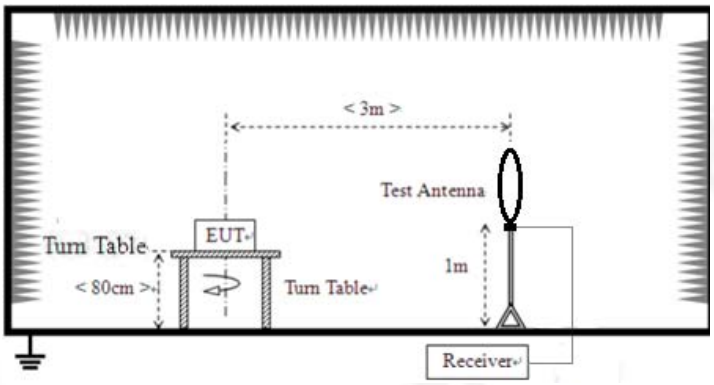
30MHz~10GHz

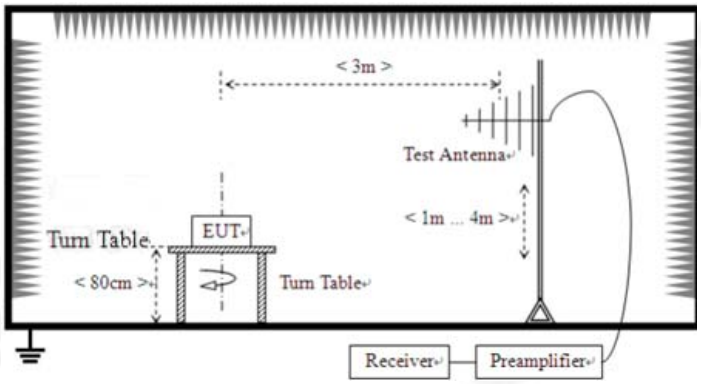
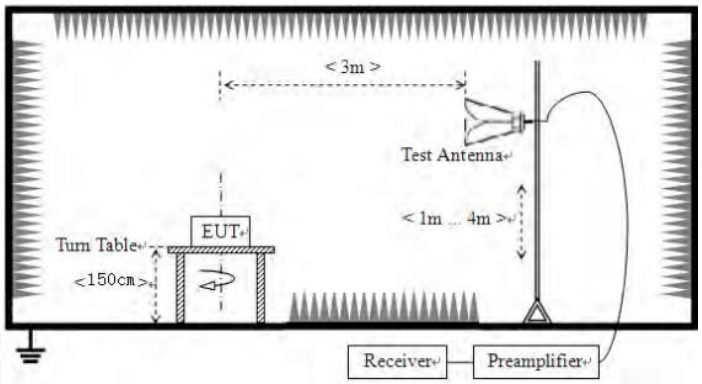
Test channel:	Highest channel



30MHz~10GHz

Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Test Frequency Range:</td><td>9kHz to 25GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Value</th></tr>
<tr><td>9KHz-150KHz</td><td>Quasi-peak</td><td>200Hz</td><td>600Hz</td><td>Quasi-peak</td></tr>
<tr><td>150KHz-30MHz</td><td>Quasi-peak</td><td>9KHz</td><td>30KHz</td><td>Quasi-peak</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Limit (uV/m)</th><th>Value</th><th>Measurement Distance</th></tr>
<tr><td>0.009MHz-0.490MHz</td><td>2400/F(KHz)</td><td>QP</td><td>300m</td></tr>
<tr><td>0.490MHz-1.705MHz</td><td>24000/F(KHz)</td><td>QP</td><td>30m</td></tr>
<tr><td>1.705MHz-30MHz</td><td>30</td><td>QP</td><td>30m</td></tr>
<tr><td>30MHz-88MHz</td><td>100</td><td>QP</td><td rowspan="7">3m</td></tr>
<tr><td>88MHz-216MHz</td><td>150</td><td>QP</td></tr>
<tr><td>216MHz-960MHz</td><td>200</td><td>QP</td></tr>
<tr><td>960MHz-1GHz</td><td>500</td><td>QP</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>500</td><td>Average</td></tr>
<tr><td>5000</td><td>Peak</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>For radiated emissions from 9kHz to 30MHz
 
</td></tr>
</table>

	For radiated emissions from 30MHz to1GHz  For radiated emissions above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details

Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	DC 5V					
Test results:	Pass					

Measurement data:

Remarks:

1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

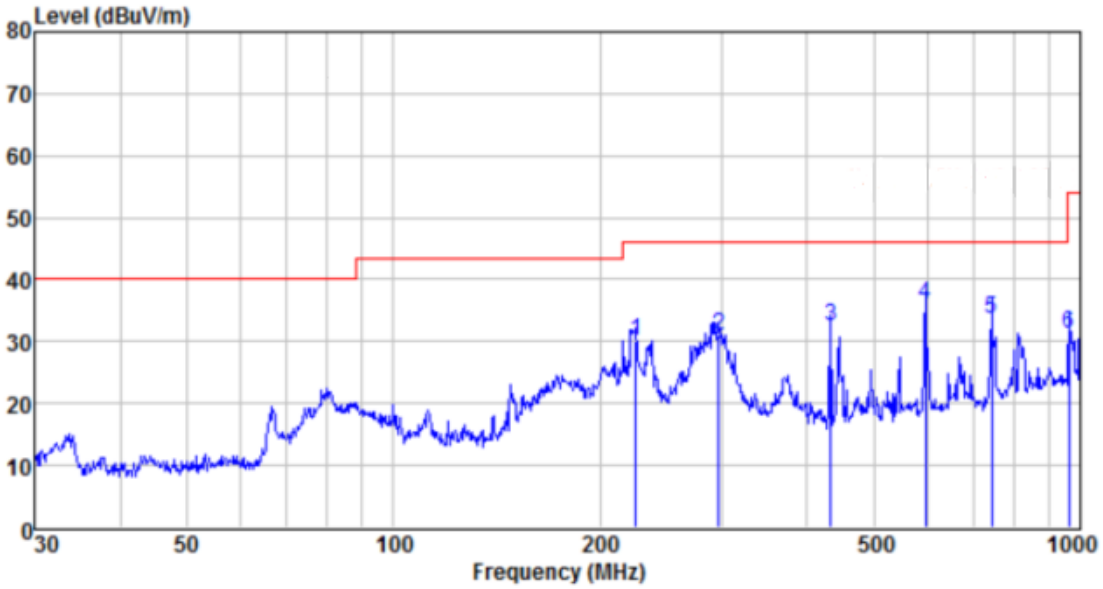
■ **9kHz~30MHz**

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

■ Below 1GHz

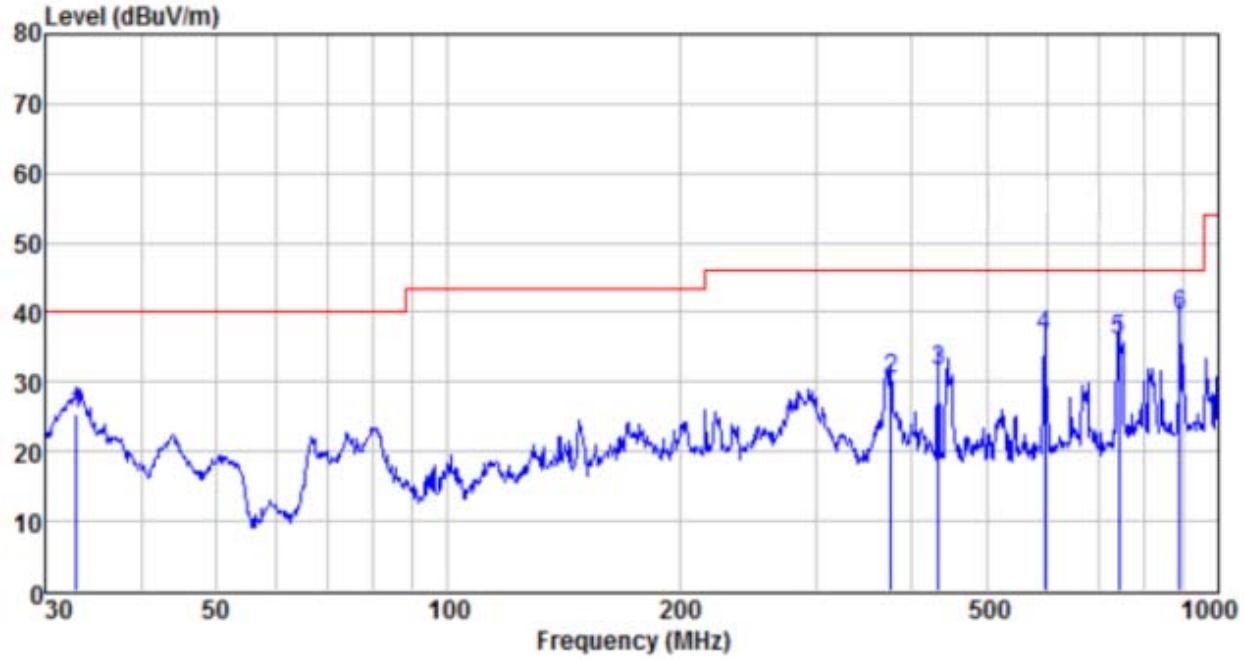
Pre-scan all test modes, found worst case at lowest channel of 125KHz bandwidth, so only show the worst case in the report.

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
225.308	46.52	11.07	1.99	29.44	30.14	46.00	-15.86	QP
297.224	45.38	13.40	2.35	29.99	31.14	46.00	-14.86	QP
432.546	42.62	16.17	3.01	29.43	32.37	46.00	-13.63	QP
595.133	42.35	19.19	3.70	29.30	35.94	46.00	-10.06	QP
742.259	38.28	20.44	4.24	29.20	33.76	46.00	-12.24	QP
962.162	32.86	22.57	5.09	29.10	31.42	54.00	-22.58	QP

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
32.979	43.52	11.25	0.59	30.08	25.28	40.00	-14.72	QP
375.939	42.43	14.97	2.75	29.61	30.54	46.00	-15.46	QP
432.546	41.84	16.17	3.01	29.43	31.59	46.00	-14.41	QP
595.133	42.92	19.19	3.70	29.30	36.51	46.00	-9.49	QP
742.259	40.48	20.44	4.24	29.20	35.96	46.00	-10.04	QP
890.728	41.81	22.12	4.82	29.11	39.64	46.00	-6.36	QP

■ **Above 1GHz**

Test channel:	Lowest channel

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1820.95	39.65	26.46	4.67	34.04	37.74	74.00	-36.26	Vertical
2724.69	35.87	29.34	5.43	33.25	37.14	74.00	-36.86	Vertical
3624.98	35.16	27.24	7.11	37.34	31.13	74.00	-42.87	Vertical
4527.59	*					74.00		Vertical
5428.65	*					74.00		Vertical
6333.19	*					74.00		Vertical
1820.95	42.58	25.64	4.75	34.67	38.30	74.00	-35.70	Horizontal
2724.69	33.94	28.46	5.87	33.83	34.44	74.00	-39.56	Horizontal
3624.98	34.08	29.75	7.59	37.76	33.66	74.00	-40.34	Horizontal
4527.59	*					74.00		Horizontal
5428.65	*					74.00		Horizontal
6333.19	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1821.25	32.15	26.46	4.67	34.04	27.48	54.00	-26.52	Vertical
2726.15	25.61	29.34	5.43	33.25	22.84	54.00	-31.16	Vertical
3624.29	22.47	27.24	7.11	37.34	20.06	54.00	-33.94	Vertical
4525.47	*					54.00		Vertical
5447.85	*					54.00		Vertical
6330.58	*					54.00		Vertical
1821.25	20.58	25.35	4.67	34.04	28.1	54.00	-25.90	Horizontal
2726.15	22.14	28.26	5.43	33.25	25.65	54.00	-28.35	Horizontal
3624.29	21.58	29.18	7.11	37.34	20.18	54.00	-33.82	Horizontal
4525.47	*					54.00		Horizontal
5447.85	*					54.00		Horizontal
6330.58	*					54.00		Horizontal

Test channel:	Middle channel

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1837.56	41.56	25.43	4.89	34.12	37.76	74.00	-36.24	Vertical
2754.63	38.64	28.34	5.68	33.57	39.09	74.00	-34.91	Vertical
3660.25	39.47	29.42	7.29	37.66	38.52	74.00	-35.48	Vertical
4563.31	*					74.00		Vertical
5486.27	*					74.00		Vertical
6412.58	*					74.00		Vertical
1837.56	40.28	25.43	4.89	34.12	36.48	74.00	-37.52	Horizontal
2754.63	34.71	28.34	5.68	33.57	35.16	74.00	-38.84	Horizontal
3660.25	39.84	29.42	7.29	37.66	38.89	74.00	-35.11	Horizontal
4563.31	*					74.00		Horizontal
5486.27	*					74.00		Horizontal
6412.58	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1819.54	30.95	26.46	4.67	34.04	28.04	54.00	-25.96	Vertical
2725.84	33.57	29.34	5.43	33.25	35.09	54.00	-18.91	Vertical
3624.87	21.45	27.24	7.11	37.34	18.46	54.00	-35.54	Vertical
4527.69	*					54.00		Vertical
5448.47	*					54.00		Vertical
6329.81	*					54.00		Vertical
1819.54	32.58	25.43	4.89	34.12	28.78	54.00	-25.22	Horizontal
2725.84	24.71	28.34	5.68	33.57	25.16	54.00	-28.84	Horizontal
3624.87	26.58	29.42	7.29	37.66	25.63	54.00	-28.37	Horizontal
4527.69	*					54.00		Horizontal
5448.47	*					54.00		Horizontal
6329.81	*					54.00		Horizontal

Test channel:	Highest channel

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1854.75	42.59	25.64	4.75	34.67	38.31	74.00	-35.69	Vertical
2781.54	37.52	28.46	5.87	33.83	38.02	74.00	-35.98	Vertical
3721.65	36.94	29.75	7.59	37.76	36.52	74.00	-37.48	Vertical
4648.02	*					74.00		Vertical
5554.32	*					74.00		Vertical
6487.51	*					74.00		Vertical
1854.75	43.58	25.43	4.89	34.12	39.78	74.00	-34.22	Horizontal
2781.54	39.54	28.34	5.68	33.57	39.99	74.00	-34.01	Horizontal
3721.65	35.47	29.42	7.29	37.66	34.52	74.00	-39.48	Horizontal
4648.02	*					74.00		Horizontal
5554.32	*					74.00		Horizontal
6487.51	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1845.94	40.25	25.64	4.75	34.67	28.19	54.00	-25.81	Vertical
2789.52	36.47	28.46	5.87	33.83	21.67	54.00	-32.33	Vertical
3706.48	30.58	29.75	7.59	37.76	21.08	54.00	-32.92	Vertical
4645.69	*					54.00		Vertical
5566.98	*					54.00		Vertical
6497.12	*					54.00		Vertical
1845.94	40.24	25.35	4.67	34.04	28.1	54.00	-25.9	Horizontal
2789.52	36.51	28.26	5.43	33.25	25.65	54.00	-28.35	Horizontal
3706.48	34.87	29.18	7.11	37.34	20.18	54.00	-33.82	Horizontal
4645.69	*					54.00		Horizontal
5566.98	*					54.00		Horizontal
6497.12	*					54.00		Horizontal

Remarks:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *The test data shows only the worst case 125KHz bandwidth mode.*

5. Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: 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, 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. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
The antenna is Internal antenna, the antennas is 5dBi, reference to the appendix II for details	

6. Test Setup Photo

Reference to the appendix I for details.

7. EUT Constructional Details

Reference to the appendix II for details.

※※※※※ END OF REPORT ※※※※※