

FCC Test Report

Product Name : NB-IOT Module Supporting 2, 4, 5, 12, 13, 66

Trade Name : Sequans Communications

Model No. : NB01Q-1

FCC ID. : SDoC

Applicant : Sequans Communications S.A.

Address : 15-55 Boulevard Charles de Gaulle, Colombes, 92700, France

Date of Receipt : May 06, 2019

Issued Date : Jun. 05, 2019

Report No. : 1950052R-RFUSP01V00

Report Version : V1.0



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Test Report Certification

Issued Date : Jun. 05, 2019

Report No. : 1950052R-RFUSP01V00



Product Name : NB-IOT Module Supporting 2, 4, 5, 12, 13, 66

Applicant : Sequans Communications S.A.

Address : 15-55 Boulevard Charles de Gaulle, Colombes, 92700, France

Manufacturer : Sequans Communications S.A.

Model No. : NB01Q-1

FCC ID. : SDoC

EUT Test Voltage : DC 3.8V

Testing Voltage : DC 3.8V

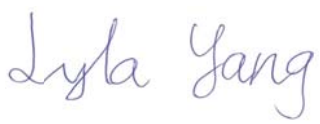
Trade Name : Sequans Communications

Applicable Standard : FCC CFR Title 47 Part 15 Subpart B: 2018 Class B,
CISPR 22: 2008, ICES-003 Issue 6: 2016 Class B,
ANSI C63.4: 2014


Laboratory Name : Hsin Chu Laboratory

Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu
County 31061, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958


Test Result : Complied

Documented By : 

 (Lyla Yang / Engineering Adm. Specialist)

Tested By : 

 (Rueyyan Lin / Engineer)

Approved By : 

 (Louis Hsu / Deputy Manager)

Revision History

Report No.	Version	Description	Issued Date
1950052R-RFUSP01V00	V1.0	Initial issue of report	Jun. 05, 2019

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1. General Information

1.1. EUT Description

Product Name	NB-IOT Module Supporting 2, 4, 5, 12, 13, 66
Trade Name	Sequans Communications
Model No.	NB01Q-1
Uplink Frequency Range	Band 2: 1850~1910MHz Band 4: 1710~1755MHz Band 5: 824~849MHz Band 12: 699~716MHz Band 13: 777~787MHz Band 66: 1710~1780MHz
Downlink Frequency Range	Band 2: 1930~1990MHz Band 4: 2110~2115MHz Band 5: 869~894MHz Band 12: 729~746MHz Band 13: 746~756MHz Band 66: 2110~2200MHz
Modulation	BPSK / QPSK
IMEI No.	TAC 35973809
HW Version	NB01Q
SW Version	UE6.0.0.0

Antenna Information	
MFR. / Model	Taoglas / TG.08.0113
Antenna Type	Monopole Passive Antenna
Antenna Gain	Band 2: 0.94 dBi Band 4: 0.06 dBi Band 5: -4.93 dBi Band 12/13: -6.46 dBi Band 66: 0.06 dBi

Accessories Information	
USB Cable	Shielded, 1.8m

Note:

1. This NB-IOT Module Supporting 2, 4, 5, 12, 13, 66 supports LTE Band 2/4/5/12/13/66.
2. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

1.2. Test Mode

DERKA has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

RX	Mode 1: LTE NB-IOT Band 2 Mode 2: LTE NB-IOT Band 4 Mode 3: LTE NB-IOT Band 5 Mode 4: LTE NB-IOT Band 12 Mode 5: LTE NB-IOT Band 13 Mode 6: LTE NB-IOT Band 66
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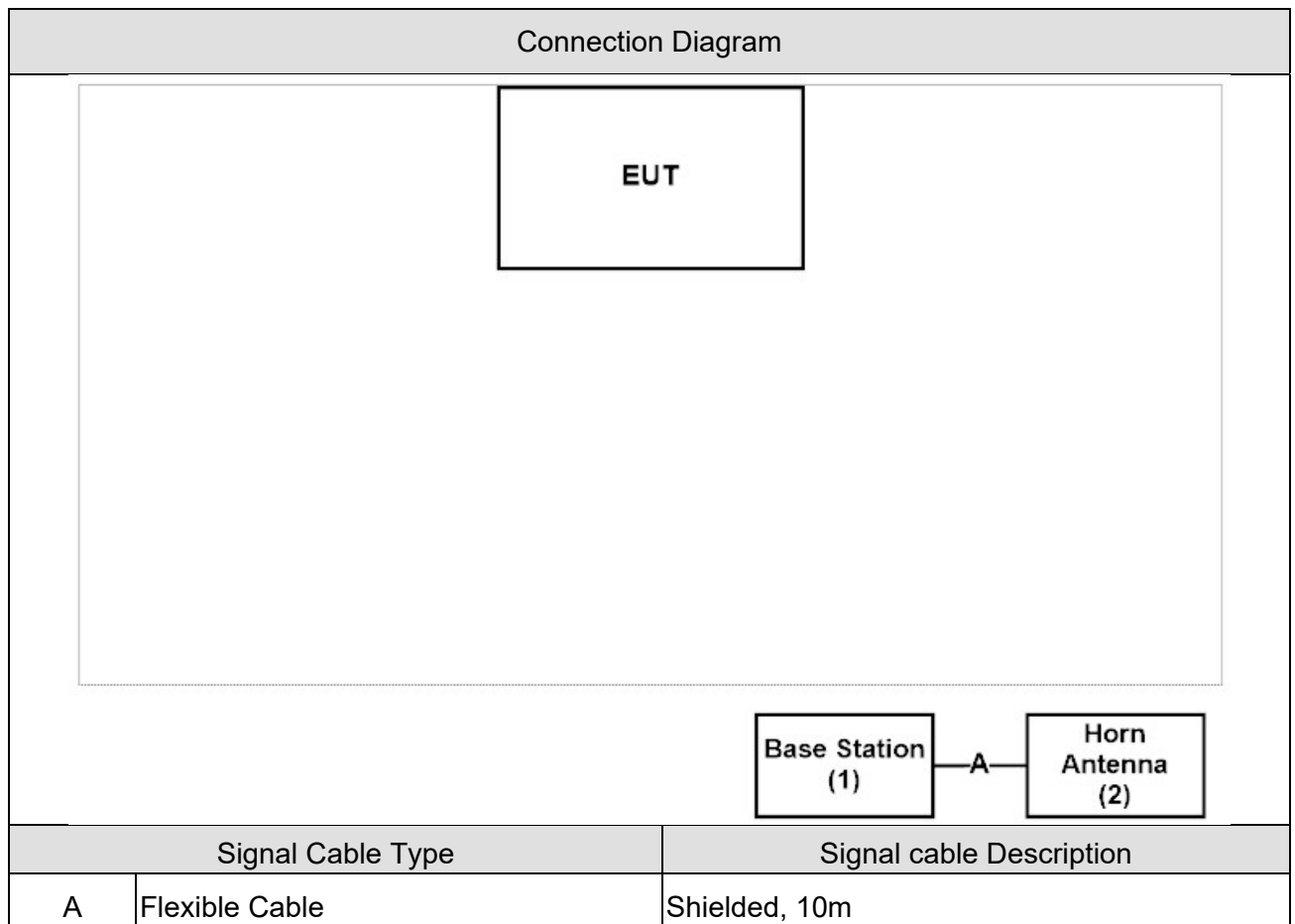
Test Items	Result
Conducted Emission	N/A
Radiated Emission	Complies

1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord	
1	Base Station	R&S	CMW500	157118	DoC	Non-Shielded, 2m.
2	Horn Antenna	ELECTRO METRICS	EM-6961	103326	DoC	--

1.4. Configuration of tested System



1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment. Horn link with base station.
3	The EUT link with base station and it will continue receive the signal.
4	Repeat the above procedure.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual	Test Site
Temperature (°C)	FCC PART 15 B 15.107 Conducted Emission	15 - 35	25	--
Humidity (%RH)		25 - 75	50	
Barometric pressure mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 B 15.109 Radiated Emission	15 - 35	25	2
Humidity (%RH)		25 - 75	65	
Barometric pressure mbar)		860 - 1060	950-1000	

Note: Test site information refers to Laboratory Information.

Laboratory Information

USA : **FCC Registration Number: TW3024**
Canada **IC Registration Number: 22397-1 / 22397-2 / 22397-3**

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our test sites as below:

- No. 75-2, 3rd Lin, WangYe Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan (R.O.C.)
TEL: +886-3-592-8858 / FAX: +886-3-592-8859 E-Mail : info.tw@dekra.com
- No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958 E-Mail : info.tw@dekra.com
- No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958 E-Mail : info.tw@dekra.com

1.7. List of Test Equipment

Radiated Emission / CB4-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2018/06/01	2019/05/31
Bilog Antenna	Teseq	CBL6112D	23191	2018/06/26	2019/06/25
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/12/21	2019/12/20
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2019/03/15	2020/03/14
Signal Analyzer	R&S	FSVA40	101455	2018/11/05	2019/11/04
Horn Antenna	Schwarzbeck	BBHA 9170	202	2019/01/16	2020/01/15
Pre-Amplifier	DEKRA	AP-400C	201801231	2018/12/05	2019/12/04
Pre-Amplifier	EMCI	EMC11830I	980366	2018/12/21	2019/12/20
Horn Antenna	Schwarzbeck	BBHA 9120D	01656	2018/10/17	2019/10/16
Pre-Amplifier	DEKRA	AP-025C	201801236	2019/02/18	2020/02/17
Signal Analyzer	R&S	FSV40	101435	2018/07/19	2019/07/18
Wideband Radio Communication Tester	R&S	CMW500	106071	2019/01/16	2020/01/15
Wireless Conn. Tseter	R&S	CMW500	157118	2018/08/16	2019/08/15
Coaxial Cable(23.5m)	Suhner	SF102_SF104 _SF106	CB4_1	2018/08/21	2019/08/20

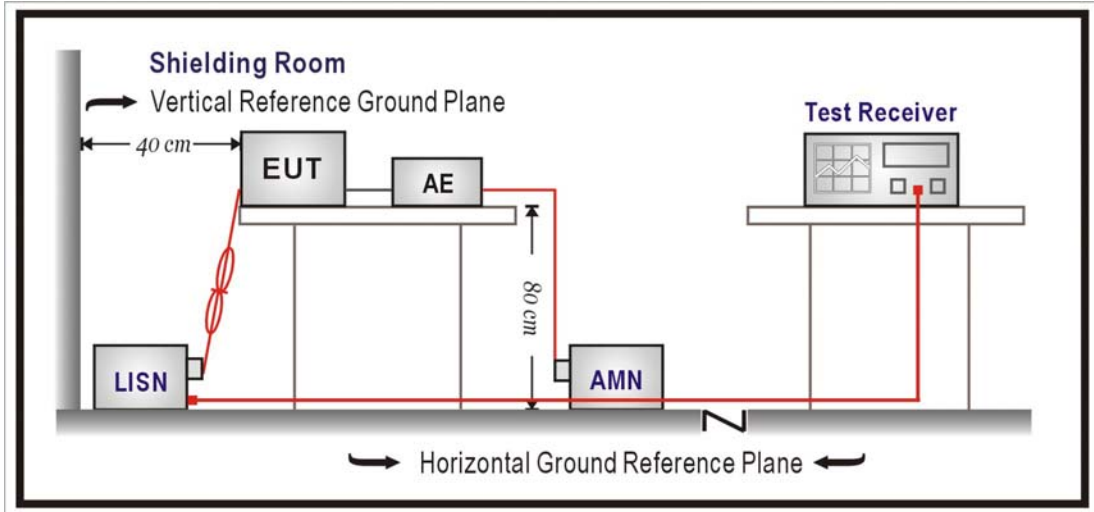
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

1.8. Uncertainty

Test item	Uncertainty
Conducted Emission	$\pm 2.26\text{dB}$
Radiated Emission	Below 1G is defined as $\pm 3.8\text{ dB}$ Above 1G is defined as $\pm 3.9\text{ dB}$

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart B Paragraph 15.107 Limits (dBuV)				
Frequency MHz	Class A		Class B	
	QP	AV	QP	AV
0.15 - 0.50	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30	73	60	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

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 C63.4: 2014 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9KHz.

2.4. Test Specification

According to FCC Part 15 Subpart B: 2018

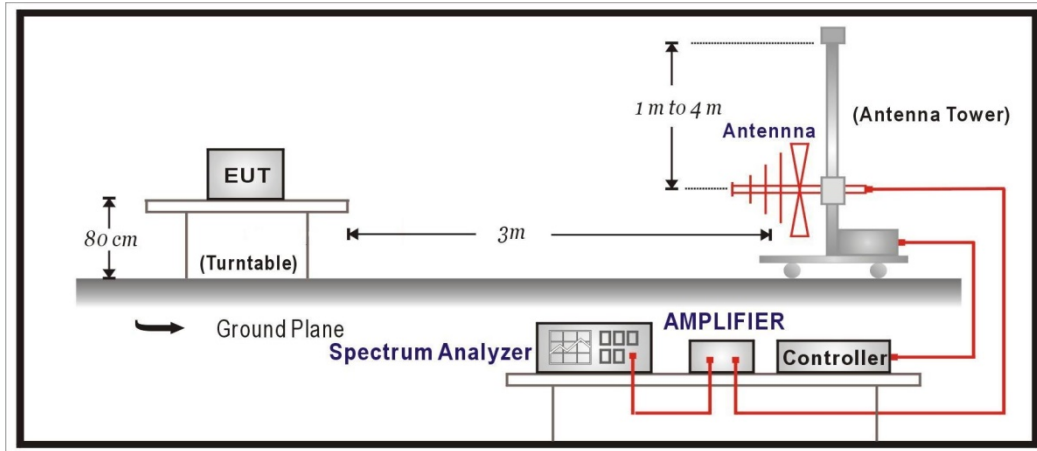
2.5. Test Result

Owing to the DC operation of EUT, this test item is not performed.

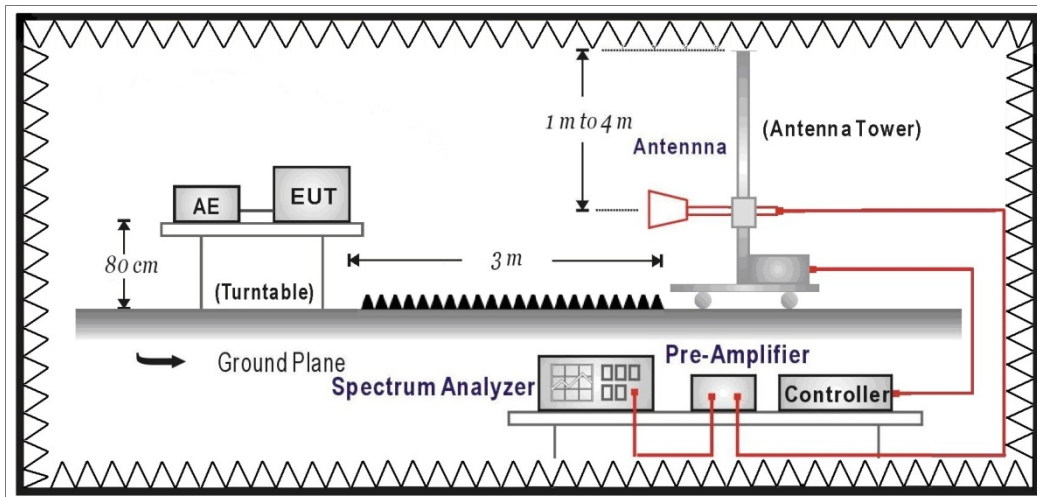
3. Radiated Emission

3.1. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



3.2. Limits

CISPR 22 Limits (dBuV/m)				
Frequency MHz	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30 – 230	10	40	10	30
230 – 1000	10	47	10	37

Remark: 1. The tighter limit shall apply at the edge between two frequency bands.

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

FCC Part 15 Subpart B Paragraph 15.109 Limits				
Frequency MHz	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30 – 88	10	39	3	40
88 – 216	10	43.5	3	43.5
216 – 960	10	46.4	3	46
Above 960	10	49.5	3	54

Remark: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Carrier current systems used as unintentional radiators or other unintentional radiators that are designed to conduct their radio frequency emissions via connecting wires or cables and that operate in the frequency range of 9 KHz to 30 MHz, including devices that deliver the radio frequency energy to transducers, such as ultrasonic devices not covered under part 18 of this chapter, shall comply with the radiated emission limits for intentional radiators provided in §15.209 for the frequency range of 9 KHz to 30 MHz. As an alternative, carrier current systems used as unintentional radiators and operating in the frequency range of 525 KHz to 1705 KHz may comply with the radiated emission limits provided in §15.221(a).

3.3. Test Procedure

Under 30MHz Test:

The EUT and its simulators are placed on a turn table which is 1.0 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum electric field strength. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna which is 1.0 meter above ground. All X-axis, Y-axis and Z-axis polarization of the antenna are set on measurement.

The bandwidth below 30MHz setting on the field strength meter (R&S Test Receiver ESCS 30) is 200Hz and above 30MHz is 9 KHz.

The emission limit shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz. Radiated emission limit in these three bands are based on measurements employing an average detector.

Above 30MHz Test:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

For class A, the EUT was positioned such that the distance from antenna to the EUT was 10 meters for under 1GHz and above 1GHz.

For class B, the EUT was positioned such that the distance from antenna to the EUT was 3 or 10 meters for under 1GHz and 3 meters for above 1GHz.

The bandwidth below 1GHz setting on the field strength meter is 120 KHz and above 1GHz is 1MHz.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission.

All of the interface cables must be manipulated according to ANSI C63.4: 2013 on radiated measurement.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

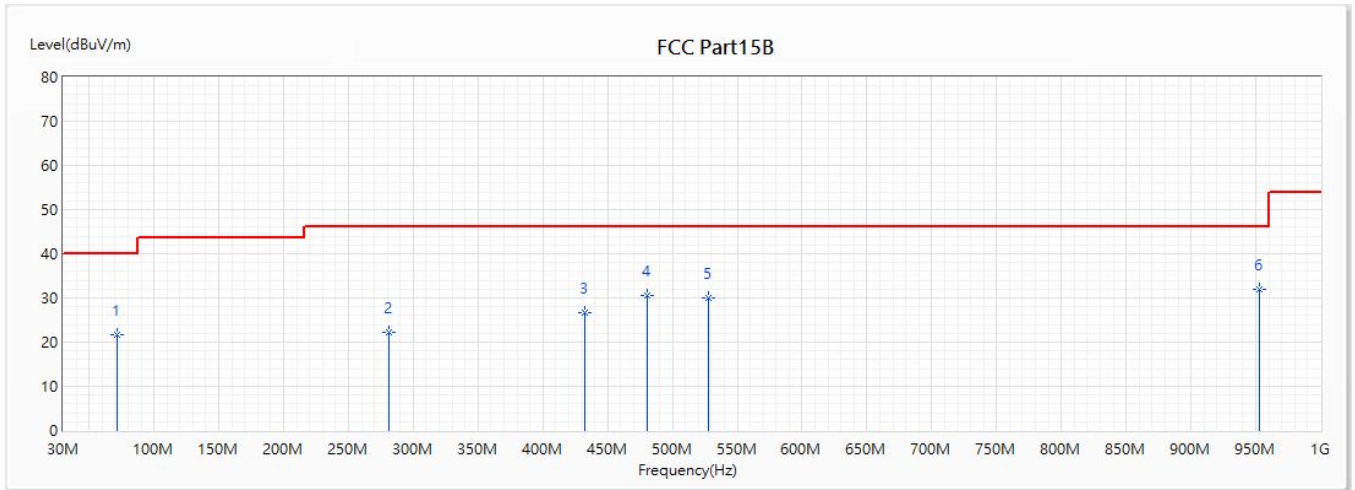
3.4. Test Specification

According to FCC Part 15 Subpart B: 2018

3.5. Test Result

30MHz-1GHz Spurious:

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 1: LTE NB-IOT Band 2		
Note :			

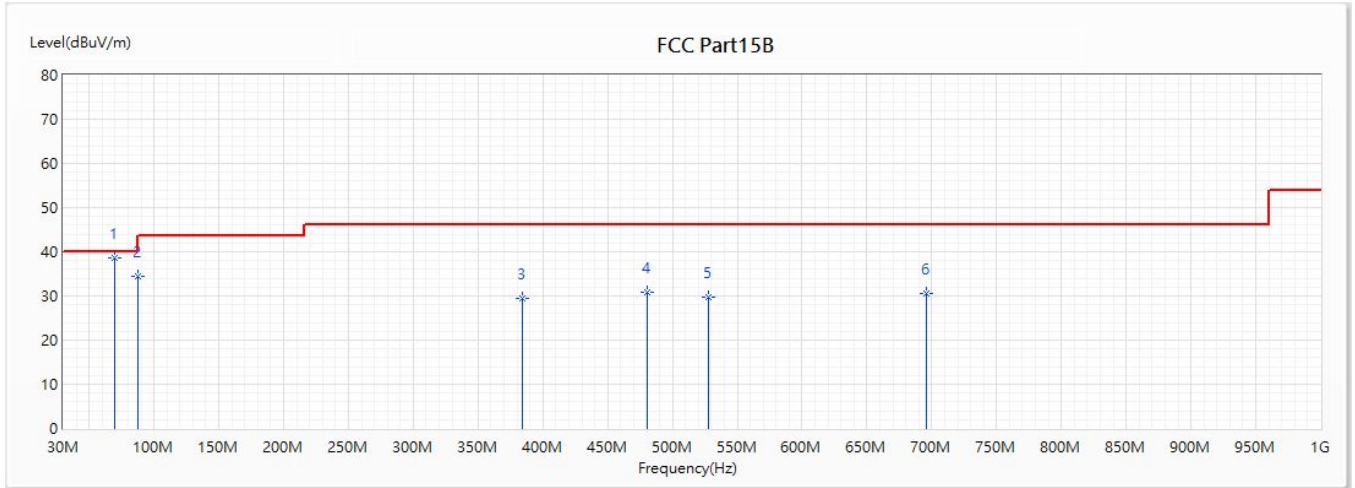


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	72.001	21.59	40.00	-18.41	48.55	-26.96	QP
2	280.842	22.27	46.00	-23.73	41.47	-19.20	QP
3	431.968	26.80	46.00	-19.20	41.69	-14.89	QP
4	480.08	30.56	46.00	-15.44	44.55	-13.99	QP
5	527.998	29.87	46.00	-16.13	43.16	-13.29	QP
* 6	952.664	31.87	46.00	-14.13	40.20	-8.33	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 1: LTE NB-IOT Band 2		
Note :			

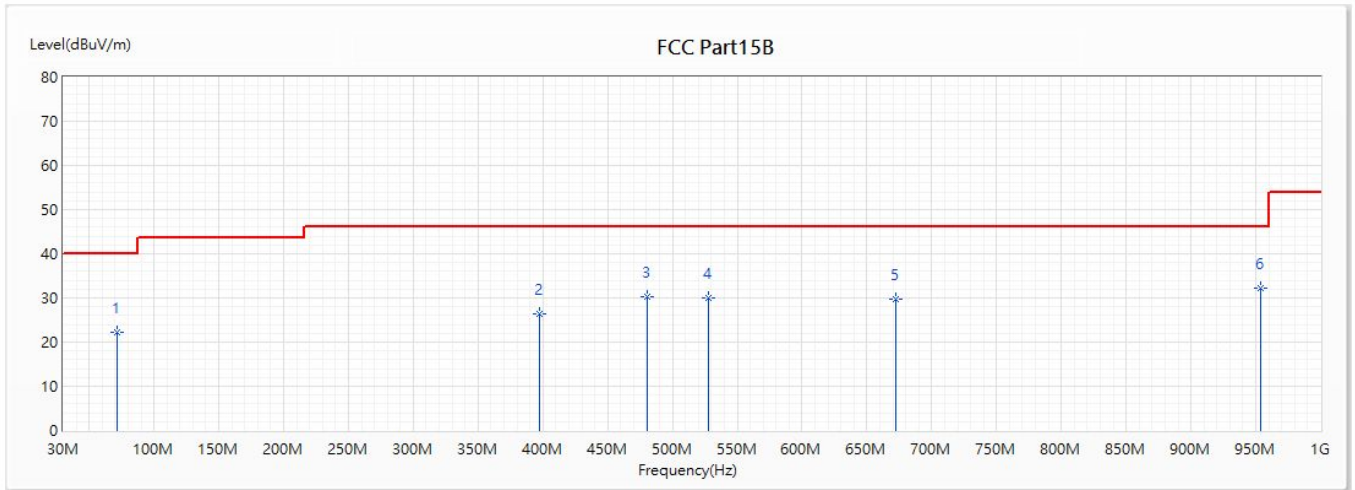


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	69.285	38.51	40.00	-1.49	65.61	-27.10	QP
2	88.006	34.43	43.50	-9.07	59.49	-25.06	QP
3	383.953	29.49	46.00	-16.51	45.53	-16.04	QP
4	480.08	30.83	46.00	-15.17	44.82	-13.99	QP
5	527.998	29.77	46.00	-16.23	43.06	-13.29	QP
6	696.002	30.57	46.00	-15.43	42.25	-11.68	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 2: LTE NB-IOT Band 4		
Note :			

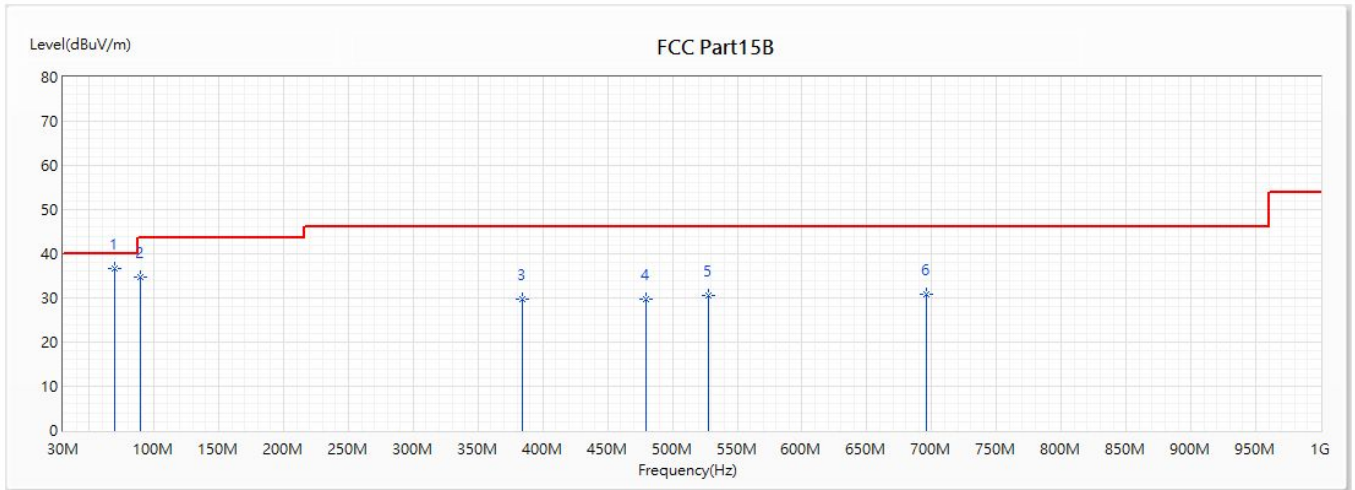


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	71.322	22.12	40.00	-17.88	49.15	-27.03	QP
2	397.824	26.31	46.00	-19.69	41.89	-15.58	QP
3	480.08	30.32	46.00	-15.68	44.31	-13.99	QP
4	527.998	30.13	46.00	-15.87	43.42	-13.29	QP
5	672.14	29.86	46.00	-16.14	41.72	-11.86	QP
* 6	953.828	32.24	46.00	-13.76	40.54	-8.30	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 2: LTE NB-IOT Band 4		
Note :			

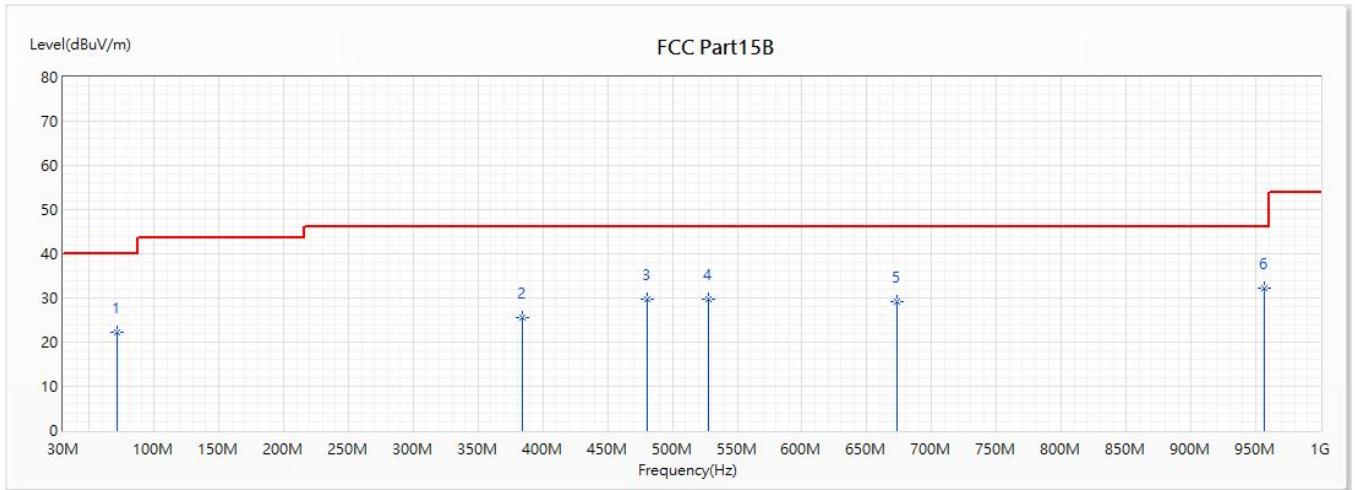


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	69.285	36.58	40.00	-3.42	63.68	-27.10	QP
2	89.17	34.84	43.50	-8.66	59.74	-24.90	QP
3	384.05	29.63	46.00	-16.37	45.67	-16.04	QP
4	479.983	29.73	46.00	-16.27	43.72	-13.99	QP
5	527.998	30.62	46.00	-15.38	43.91	-13.29	QP
6	696.099	30.92	46.00	-15.08	42.60	-11.68	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 3: LTE NB-IOT Band 5		
Note :			

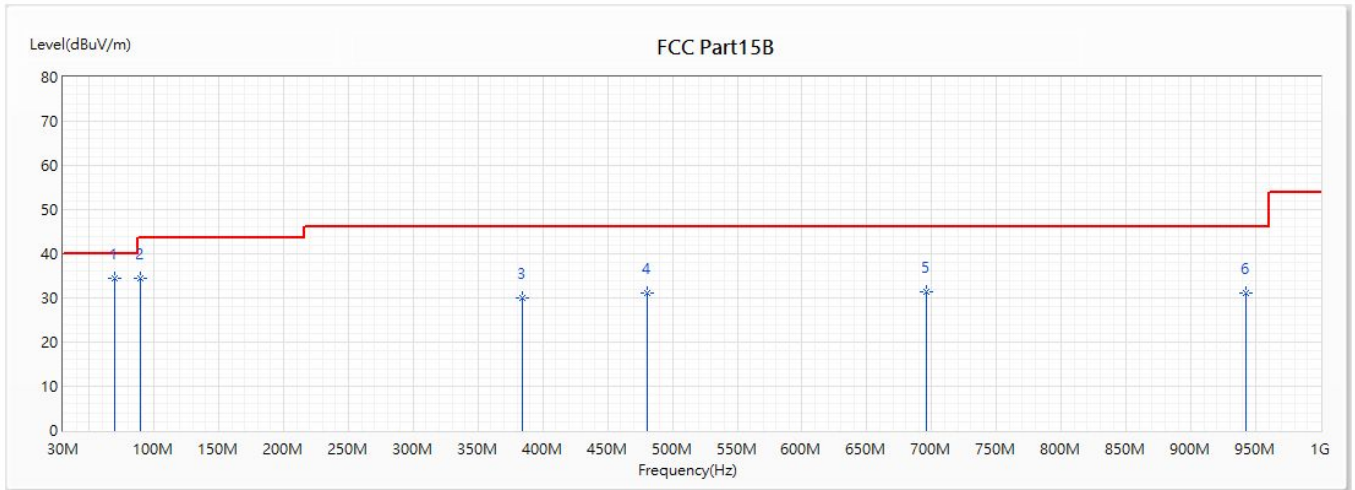


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	72.001	22.25	40.00	-17.75	49.21	-26.96	QP
2	384.05	25.63	46.00	-20.37	41.67	-16.04	QP
3	480.08	29.86	46.00	-16.14	43.85	-13.99	QP
4	527.998	29.82	46.00	-16.18	43.11	-13.29	QP
5	673.498	29.21	46.00	-16.79	41.04	-11.83	QP
* 6	956.156	32.14	46.00	-13.86	40.41	-8.27	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 3: LTE NB-IOT Band 5		
Note :			

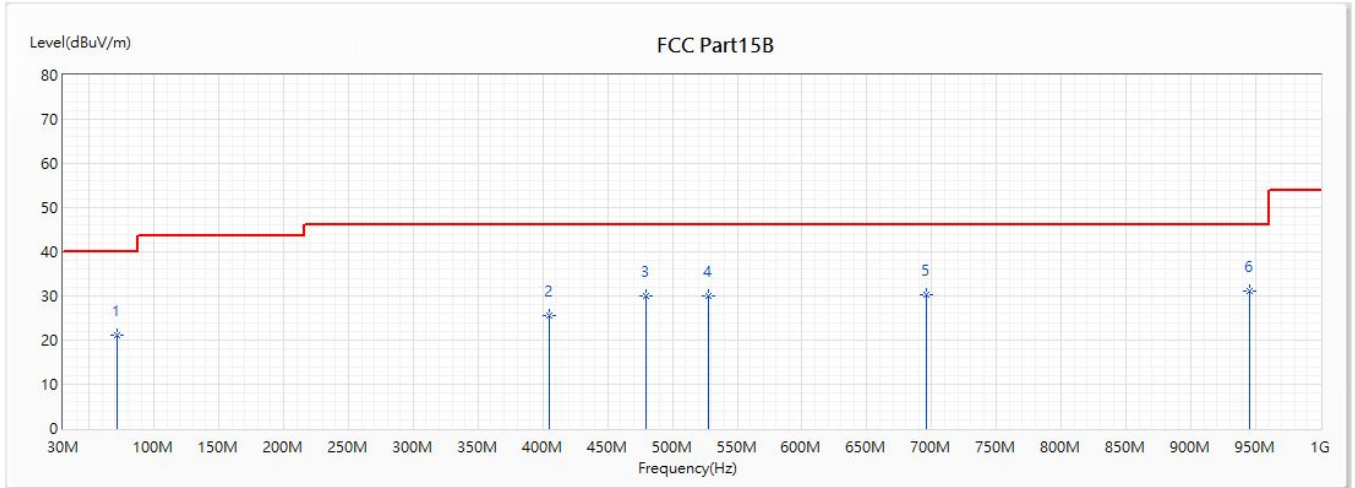


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	69.285	34.37	40.00	-5.63	61.47	-27.10	QP
2	89.17	34.54	43.50	-8.96	59.44	-24.90	QP
3	384.05	30.06	46.00	-15.94	46.10	-16.04	QP
4	480.08	31.02	46.00	-14.98	45.01	-13.99	QP
5	696.002	31.34	46.00	-14.66	43.02	-11.68	QP
6	942.479	31.17	46.00	-14.83	39.65	-8.48	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 4: LTE NB-IOT Band 12		
Note :			

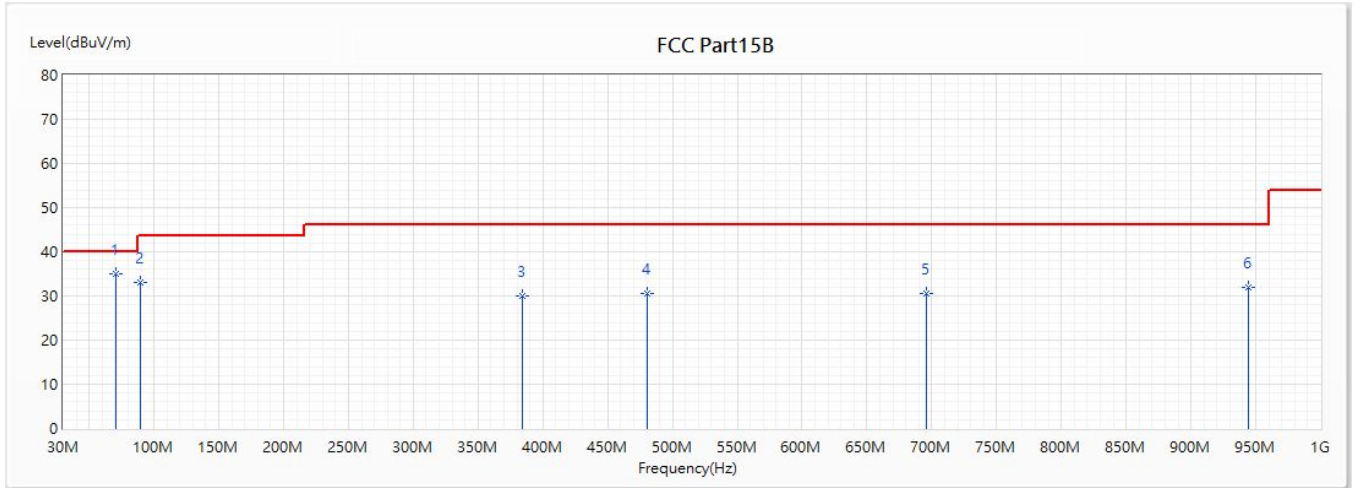


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	71.128	21.02	40.00	-18.98	48.07	-27.05	QP
2	405.099	25.68	46.00	-20.32	41.08	-15.40	QP
3	479.983	30.07	46.00	-15.93	44.06	-13.99	QP
4	527.998	29.98	46.00	-16.02	43.27	-13.29	QP
5	696.002	30.39	46.00	-15.61	42.07	-11.68	QP
* 6	945.68	31.18	46.00	-14.82	39.61	-8.43	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 4: LTE NB-IOT Band 12		
Note :			

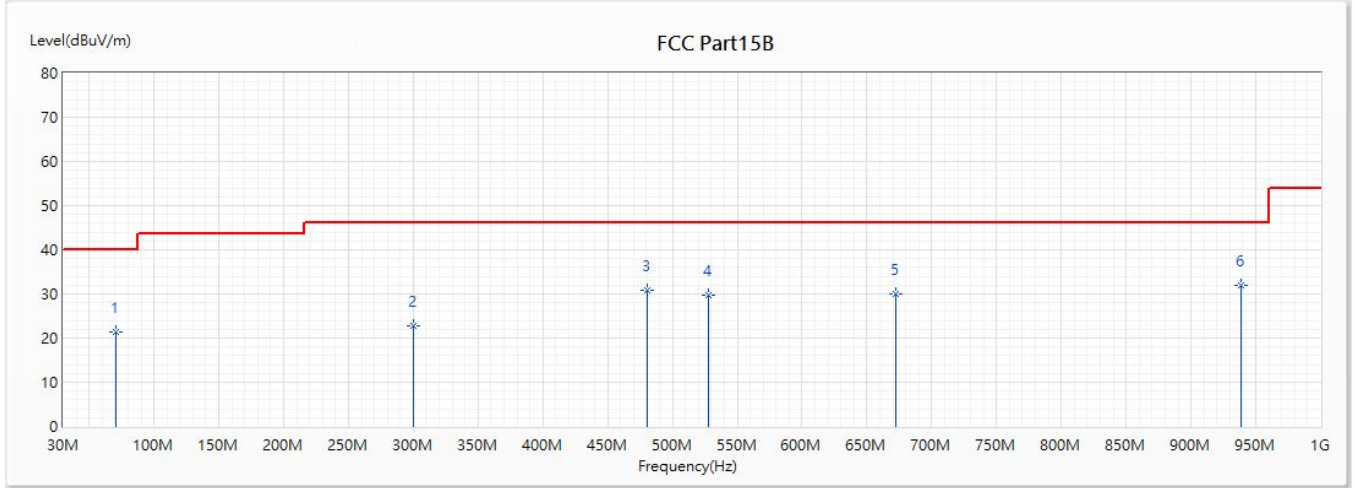


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	70.255	34.99	40.00	-5.01	62.08	-27.09	QP
2	89.073	33.09	43.50	-10.41	58.00	-24.91	QP
3	384.05	30.03	46.00	-15.97	46.07	-16.04	QP
4	480.08	30.57	46.00	-15.43	44.56	-13.99	QP
5	696.099	30.67	46.00	-15.33	42.35	-11.68	QP
6	944.516	32.05	46.00	-13.95	40.51	-8.46	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 5: LTE NB-IOT Band 13		
Note :			

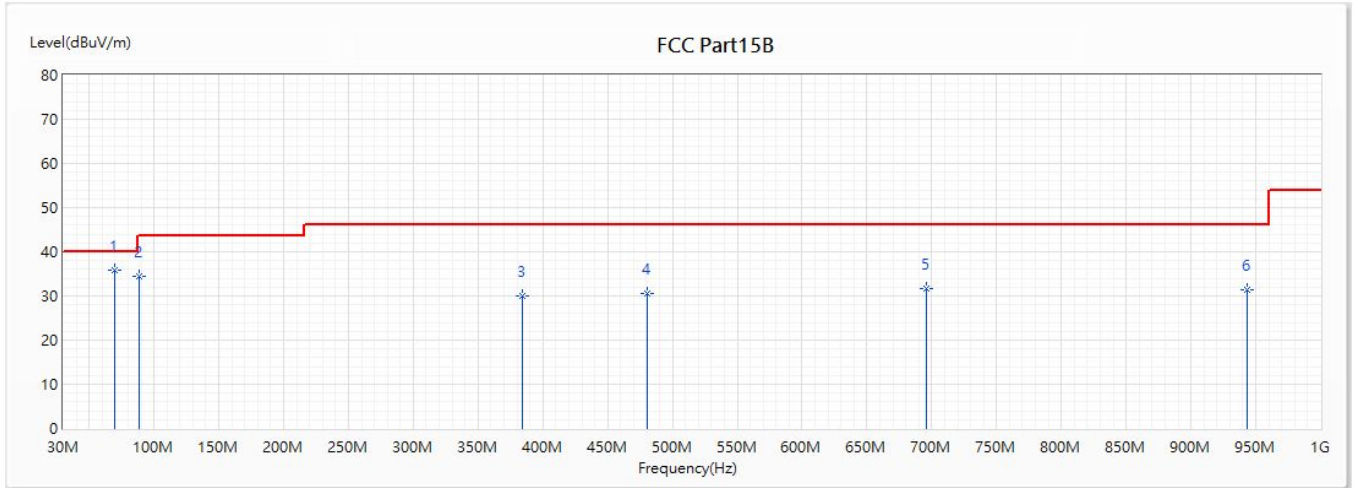


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	70.449	21.30	40.00	-18.70	48.38	-27.08	QP
2	300.048	22.70	46.00	-23.30	41.52	-18.82	QP
3	480.08	30.70	46.00	-15.30	44.69	-13.99	QP
4	527.998	29.64	46.00	-16.36	42.93	-13.29	QP
5	672.043	29.97	46.00	-16.03	41.83	-11.86	QP
* 6	938.696	31.85	46.00	-14.15	40.39	-8.54	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 5: LTE NB-IOT Band 13		
Note :			

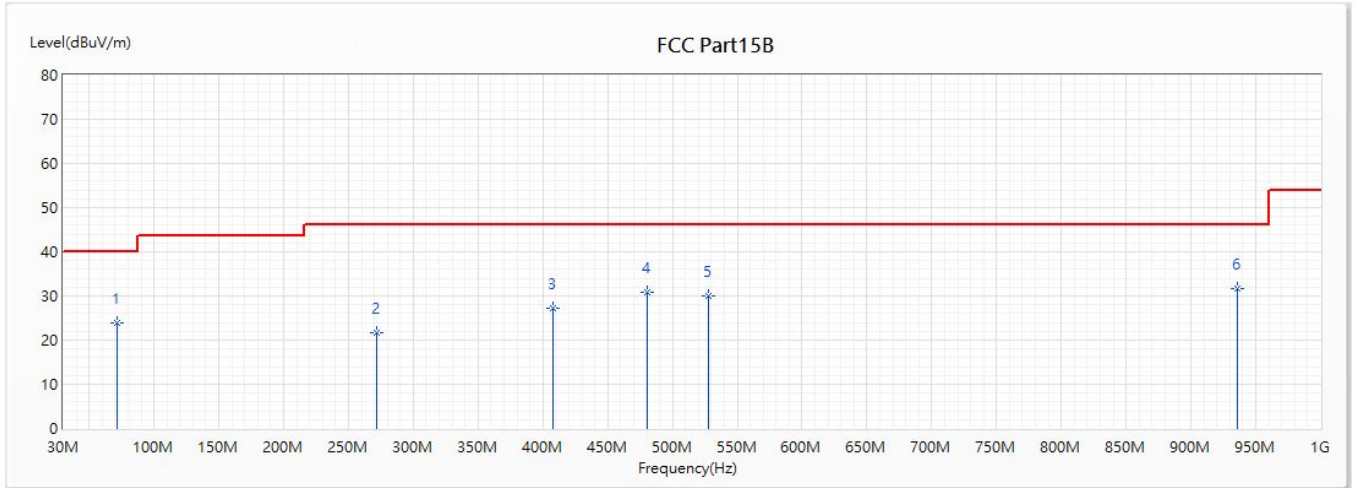


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	69.382	35.75	40.00	-4.25	62.85	-27.10	QP
2	88.103	34.44	43.50	-9.06	59.49	-25.05	QP
3	384.05	30.11	46.00	-15.89	46.15	-16.04	QP
4	480.08	30.59	46.00	-15.41	44.58	-13.99	QP
5	696.002	31.62	46.00	-14.38	43.30	-11.68	QP
6	943.449	31.37	46.00	-14.63	39.84	-8.47	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 6: LTE NB-IOT Band 66		
Note :			

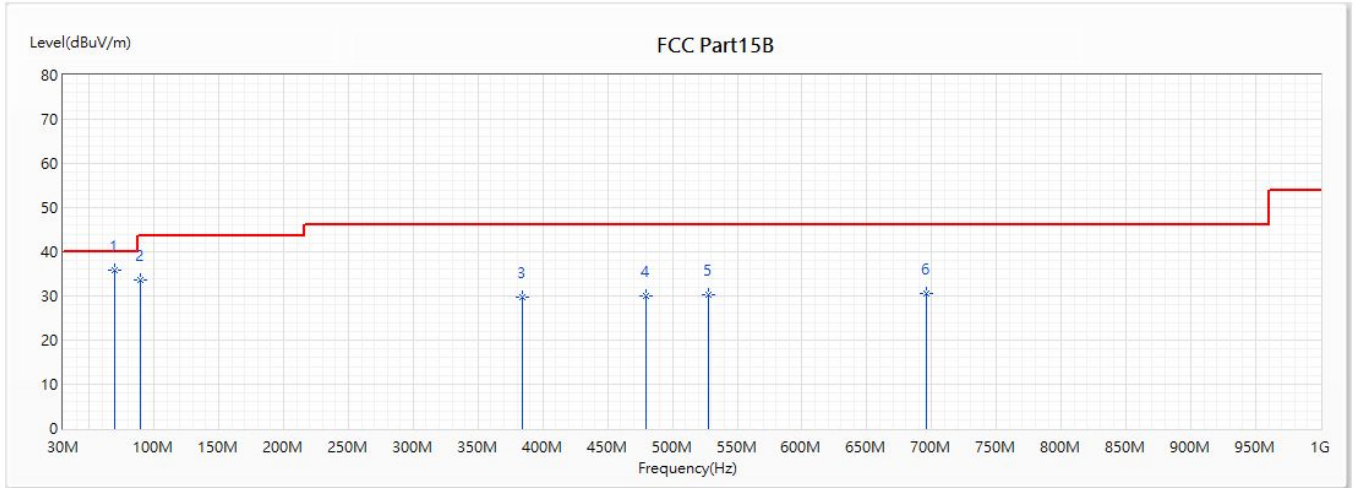


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	71.904	23.84	40.00	-16.16	50.81	-26.97	QP
2	271.724	21.79	46.00	-24.21	41.17	-19.38	QP
3	408.106	27.15	46.00	-18.85	42.50	-15.35	QP
4	480.08	30.79	46.00	-15.21	44.78	-13.99	QP
5	527.998	30.04	46.00	-15.96	43.33	-13.29	QP
* 6	936.077	31.65	46.00	-14.35	40.23	-8.58	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 6: LTE NB-IOT Band 66		
Note :			



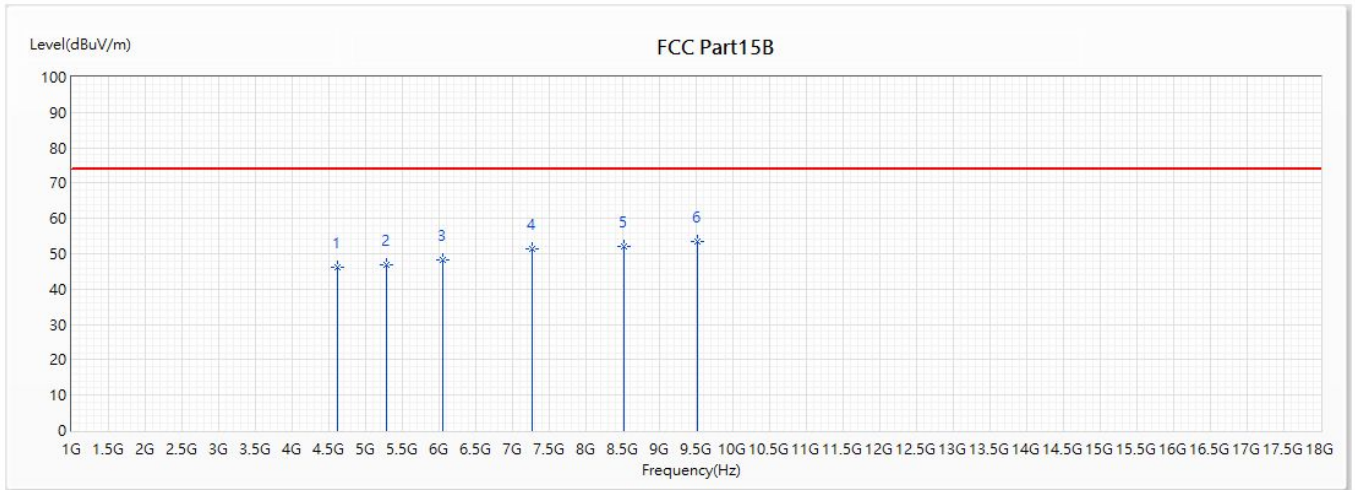
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	69.285	35.77	40.00	-4.23	62.87	-27.10	QP
2	89.073	33.50	43.50	-10.00	58.41	-24.91	QP
3	384.05	29.70	46.00	-16.30	45.74	-16.04	QP
4	479.983	30.12	46.00	-15.88	44.11	-13.99	QP
5	527.998	30.25	46.00	-15.75	43.54	-13.29	QP
6	696.196	30.53	46.00	-15.47	42.21	-11.68	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Above 1GHz Spurious:

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 1: LTE NB-IOT Band 2		
Note :			

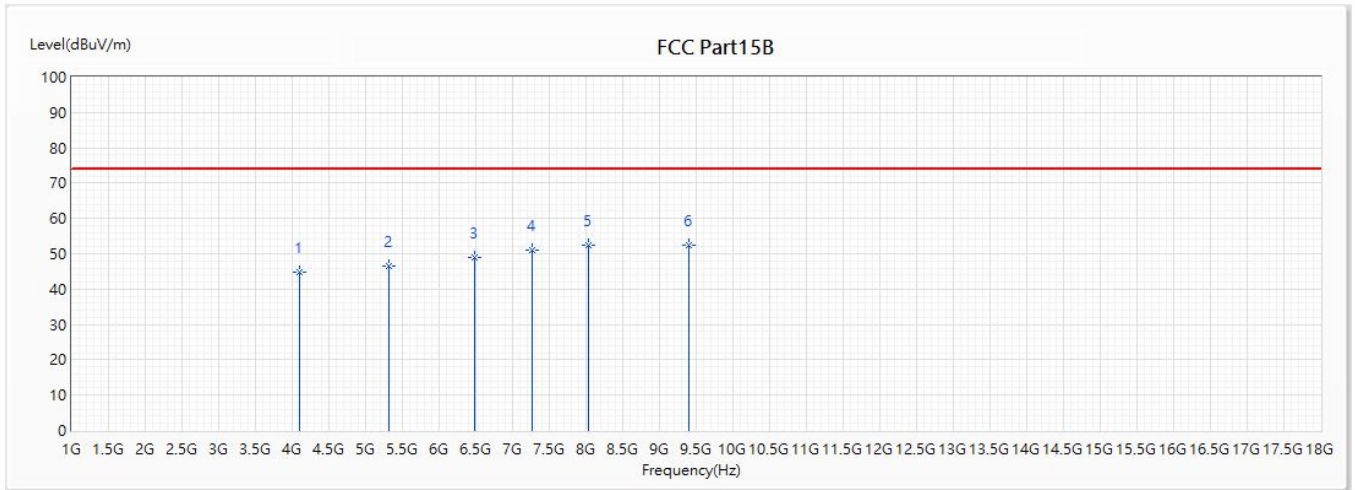


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4609.1	46.03	74.00	-27.97	36.70	9.33	PK
2	5278.9	46.89	74.00	-27.11	35.92	10.97	PK
3	6043.9	48.41	74.00	-25.59	35.72	12.69	PK
4	7264.5	51.32	74.00	-22.68	34.77	16.55	PK
5	8519.1	52.03	74.00	-21.97	33.86	18.17	PK
* 6	9517	53.34	74.00	-20.66	32.97	20.37	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 1: LTE NB-IOT Band 2		
Note :			

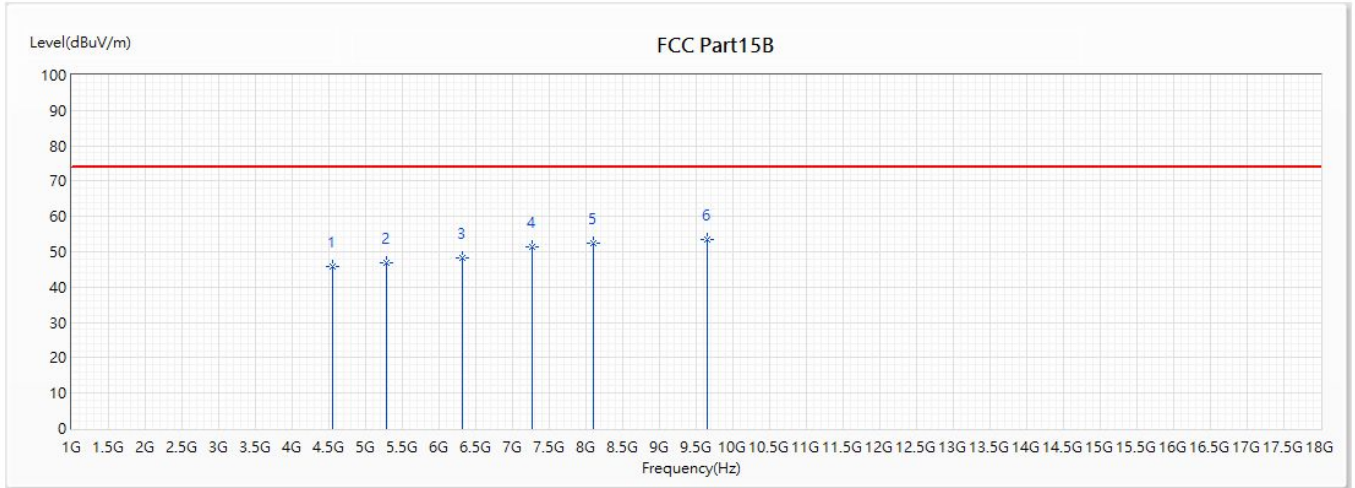


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4104.2	44.81	74.00	-29.19	36.91	7.90	PK
2	5312.9	46.68	74.00	-27.32	35.63	11.05	PK
3	6479.1	48.95	74.00	-25.05	35.10	13.85	PK
4	7264.5	51.00	74.00	-23.00	34.45	16.55	PK
5	8029.5	52.30	74.00	-21.70	34.05	18.25	PK
* 6	9392.9	52.57	74.00	-21.43	32.47	20.10	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 2: LTE NB-IOT Band 4		
Note :			

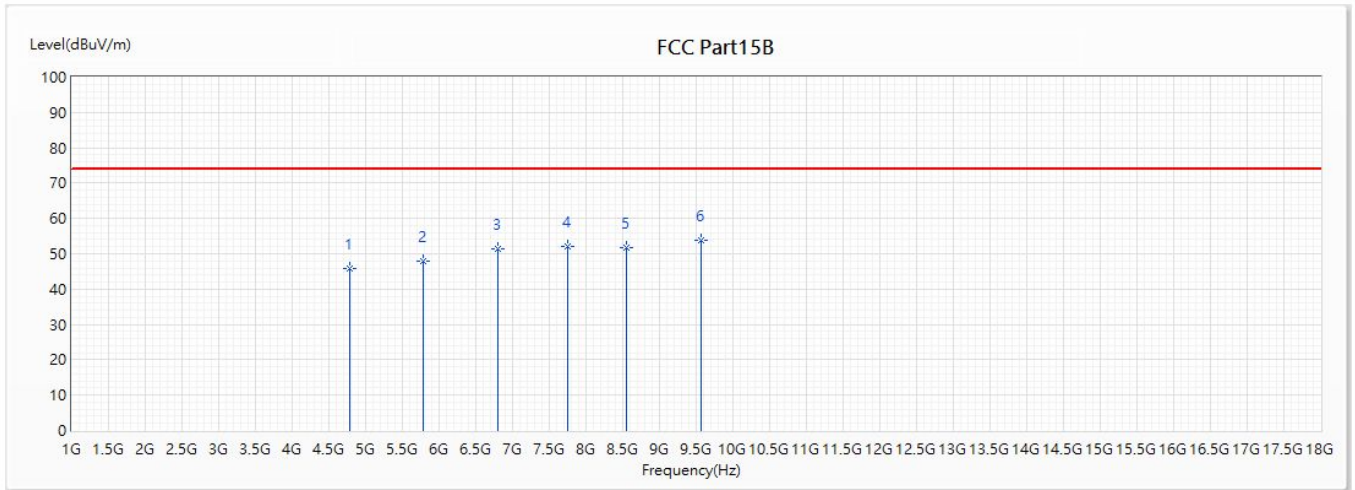


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4542.8	45.99	74.00	-28.01	36.96	9.03	PK
2	5282.3	46.97	74.00	-27.03	35.99	10.98	PK
3	6314.2	48.28	74.00	-25.72	35.07	13.21	PK
4	7259.4	51.54	74.00	-22.46	34.99	16.55	PK
5	8107.7	52.43	74.00	-21.57	34.27	18.16	PK
* 6	9653	53.61	74.00	-20.39	32.88	20.73	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 2: LTE NB-IOT Band 4		
Note :			

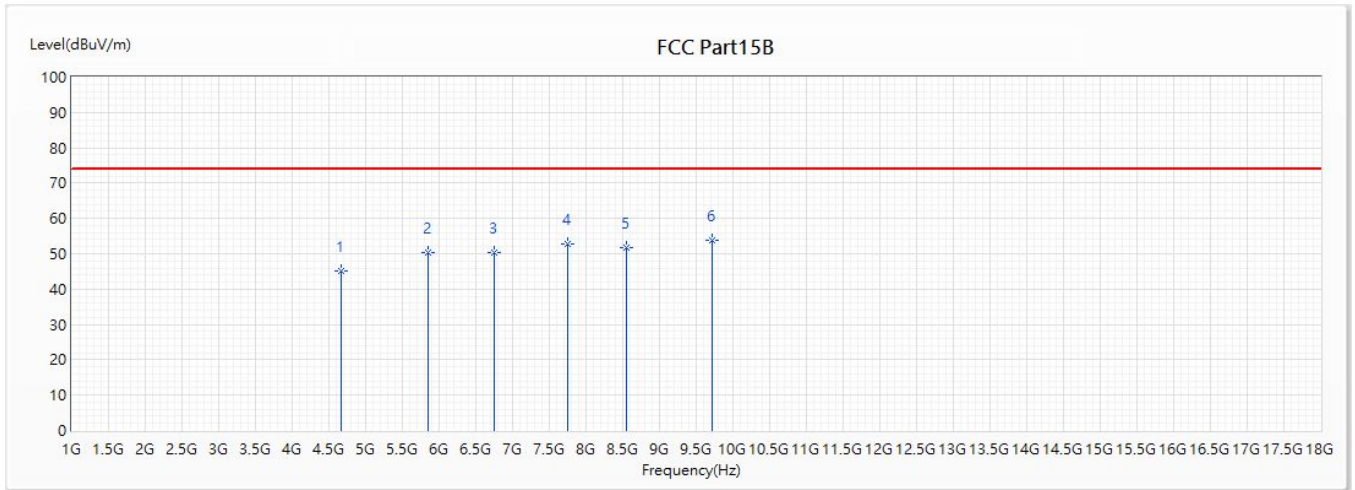


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4782.5	45.80	74.00	-28.20	36.05	9.75	PK
2	5787.2	47.78	74.00	-26.22	35.84	11.94	PK
3	6798.7	51.37	74.00	-22.63	36.18	15.19	PK
4	7752.4	52.20	74.00	-21.80	34.48	17.72	PK
5	8548	51.73	74.00	-22.27	33.47	18.26	PK
* 6	9571.4	53.81	74.00	-20.19	33.14	20.67	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 3: LTE NB-IOT Band 5		
Note :			

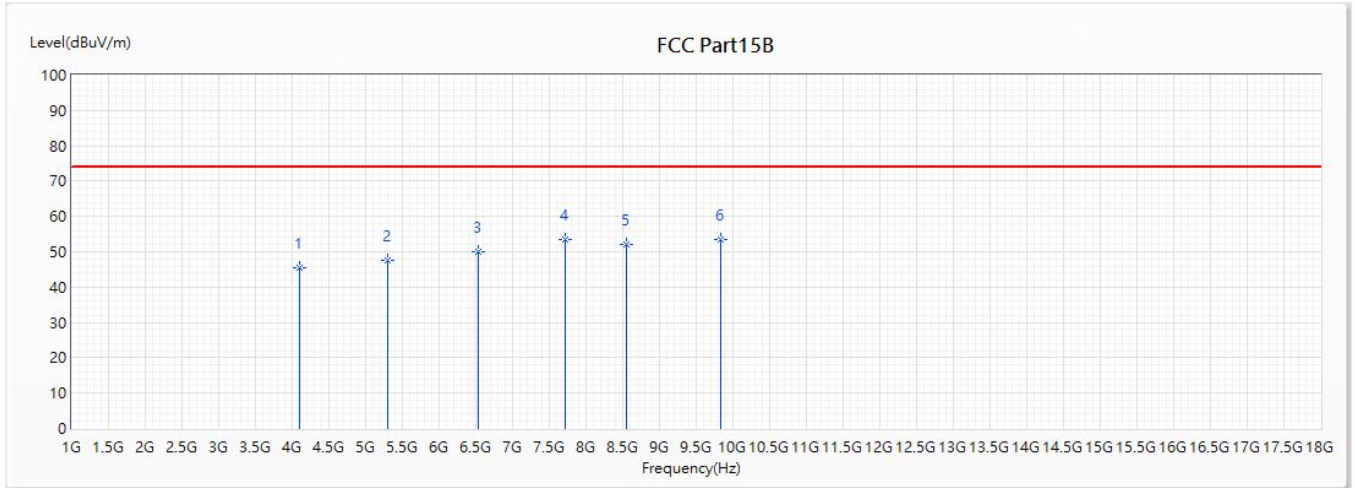


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4673.7	45.16	74.00	-28.84	35.66	9.50	PK
2	5848.4	50.40	74.00	-23.60	38.28	12.12	PK
3	6754.5	50.45	74.00	-23.55	35.44	15.01	PK
4	7754.1	52.94	74.00	-21.06	35.21	17.73	PK
5	8544.6	51.63	74.00	-22.37	33.39	18.24	PK
* 6	9721	53.66	74.00	-20.34	33.08	20.58	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 3: LTE NB-IOT Band 5		
Note :			

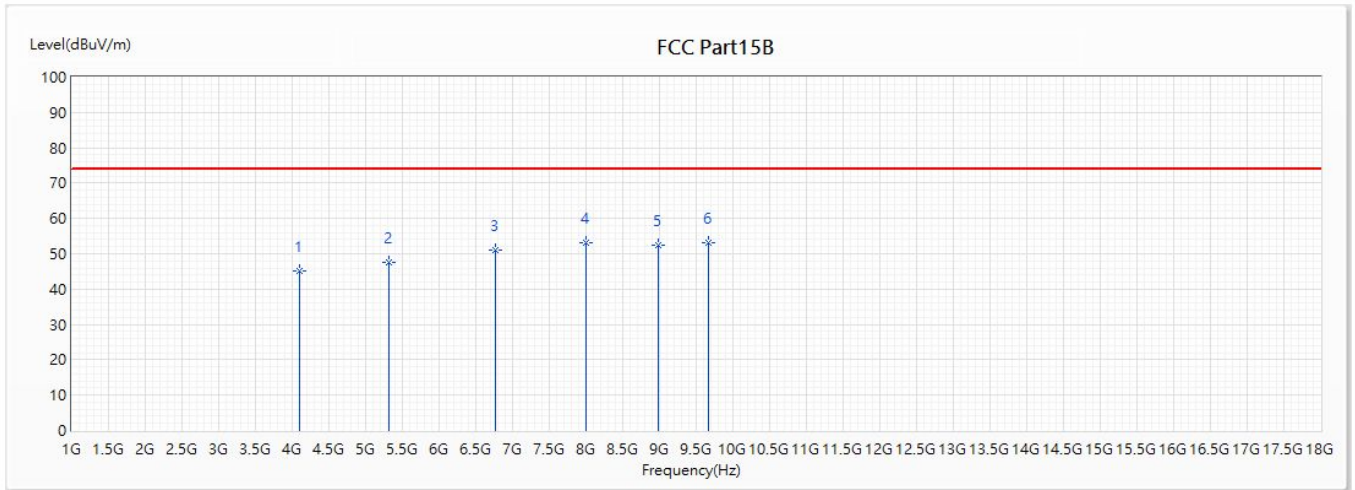


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4099.1	45.46	74.00	-28.54	37.56	7.90	PK
2	5294.2	47.67	74.00	-26.33	36.67	11.00	PK
3	6531.8	49.99	74.00	-24.01	35.81	14.18	PK
4	7723.5	53.58	74.00	-20.42	35.96	17.62	PK
5	8553.1	51.99	74.00	-22.01	33.72	18.27	PK
* 6	9833.2	53.63	74.00	-20.37	32.93	20.70	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 4: LTE NB-IOT Band 12		
Note :			

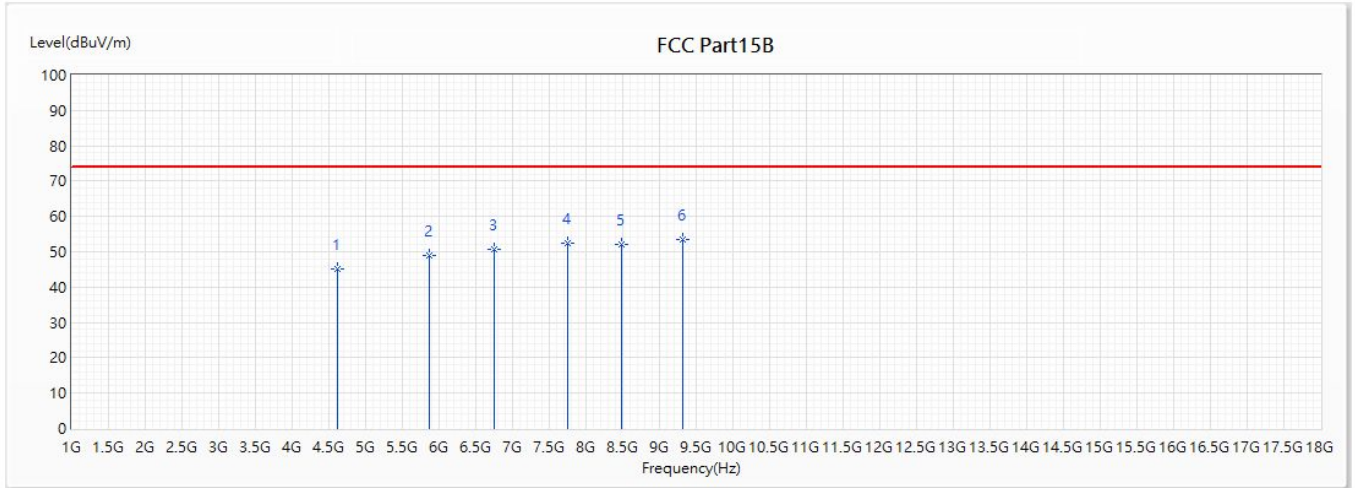


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4100.8	45.16	74.00	-28.84	37.26	7.90	PK
2	5324.8	47.53	74.00	-26.47	36.46	11.07	PK
3	6773.2	50.97	74.00	-23.03	35.84	15.13	PK
4	7998.9	53.15	74.00	-20.85	34.91	18.24	PK
5	8986.6	52.43	74.00	-21.57	33.50	18.93	PK
* 6	9659.8	53.18	74.00	-20.82	32.45	20.73	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 4: LTE NB-IOT Band 12		
Note :			

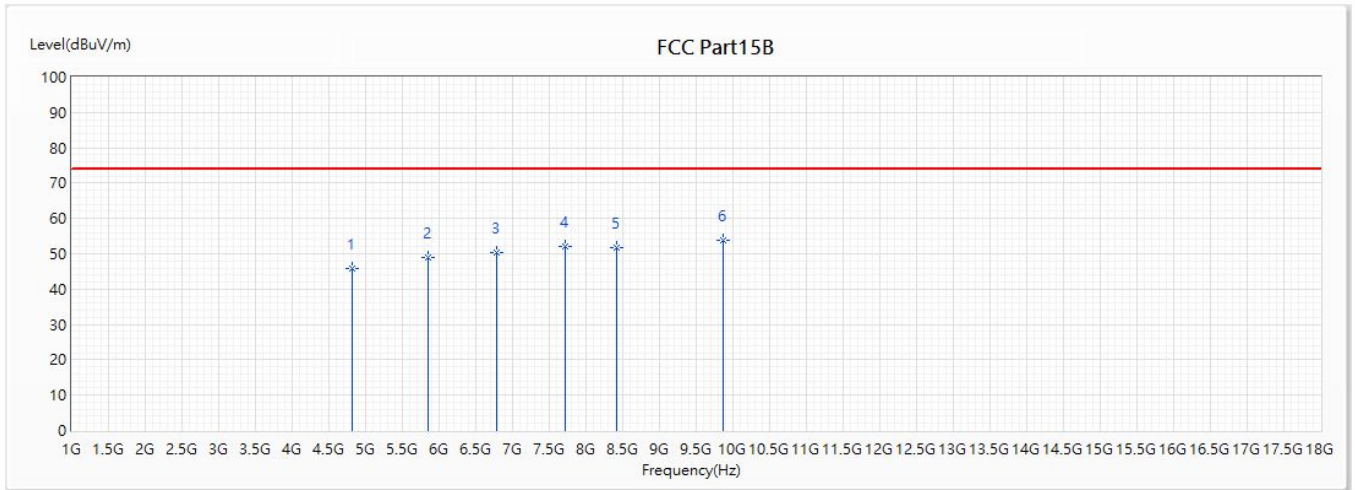


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4621	45.09	74.00	-28.91	35.72	9.37	PK
2	5865.4	48.90	74.00	-25.10	36.71	12.19	PK
3	6756.2	50.75	74.00	-23.25	35.73	15.02	PK
4	7754.1	52.31	74.00	-21.69	34.58	17.73	PK
5	8490.2	52.19	74.00	-21.81	34.09	18.10	PK
* 6	9309.6	53.51	74.00	-20.49	33.37	20.14	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 5: LTE NB-IOT Band 13		
Note :			

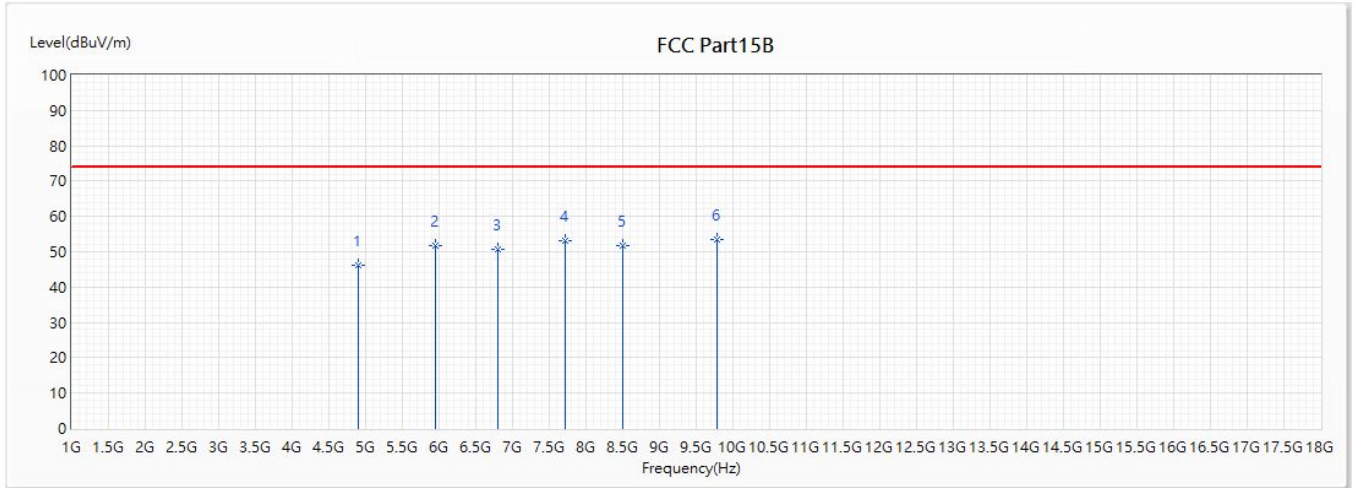


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4811.4	45.88	74.00	-28.12	36.01	9.87	PK
2	5845	48.81	74.00	-25.19	36.71	12.10	PK
3	6778.3	50.32	74.00	-23.68	35.15	15.17	PK
4	7720.1	51.95	74.00	-22.05	34.35	17.60	PK
5	8420.5	51.69	74.00	-22.31	33.29	18.40	PK
* 6	9870.6	53.77	74.00	-20.23	33.12	20.65	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 5: LTE NB-IOT Band 13		
Note :			

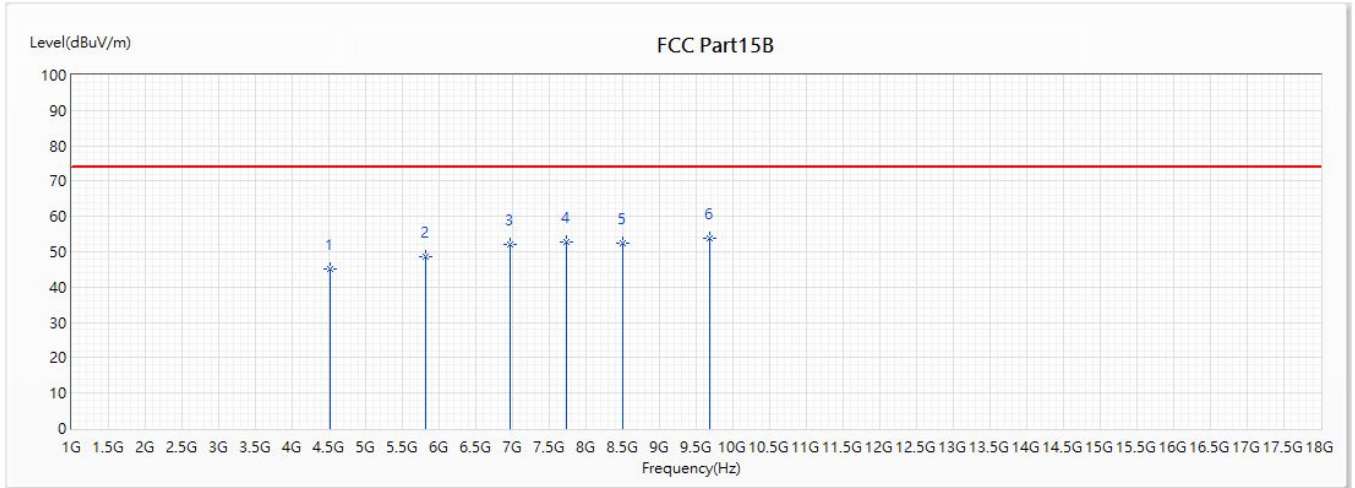


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4904.9	46.22	74.00	-27.78	35.73	10.49	PK
2	5948.7	51.78	74.00	-22.22	39.25	12.53	PK
3	6802.1	50.82	74.00	-23.18	35.63	15.19	PK
4	7720.1	52.97	74.00	-21.03	35.37	17.60	PK
5	8495.3	51.83	74.00	-22.17	33.73	18.10	PK
* 6	9775.4	53.46	74.00	-20.54	32.92	20.54	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Horizontal
Test Mode :	Mode 6: LTE NB-IOT Band 66		
Note :			

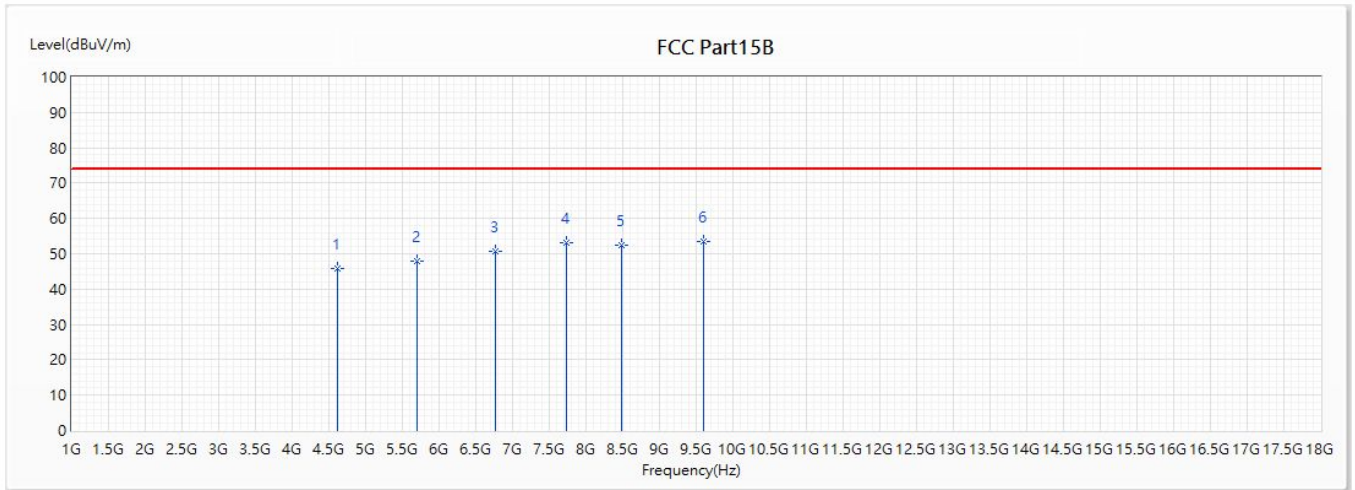


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4522.4	45.03	74.00	-28.97	36.13	8.90	PK
2	5819.5	48.52	74.00	-25.48	36.49	12.03	PK
3	6965.3	51.94	74.00	-22.06	36.29	15.65	PK
4	7728.6	52.71	74.00	-21.29	35.07	17.64	PK
5	8502.1	52.47	74.00	-21.53	34.35	18.12	PK
* 6	9685.3	53.79	74.00	-20.21	33.11	20.68	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Site :	CB4-H	Engineer :	Lion
Model No :	NB01Q-1	Test Date :	2019/5/21
Test Voltage :	DC 3.8V	Polarity :	Vertical
Test Mode :	Mode 6: LTE NB-IOT Band 66		
Note :			



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	4614.2	45.69	74.00	-28.31	36.34	9.35	PK
2	5702.2	47.77	74.00	-26.23	36.12	11.65	PK
3	6773.2	50.84	74.00	-23.16	35.71	15.13	PK
4	7728.6	53.02	74.00	-20.98	35.38	17.64	PK
5	8476.6	52.28	74.00	-21.72	34.16	18.12	PK
* 6	9595.2	53.37	74.00	-20.63	32.62	20.75	PK

Note:

1. All reading levels is PEAK value.
2. “ * ”, means this data is the worst value.
3. Emission Level= Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.