

# TEST REPORT

**REPORT NUMBER: B18W50650-WWAN\_Rev2**

**ON**

**Type of Equipment:** LTE CAT-M1(eMTC) and NB-IoT Module

**Model Name:** SIM7000A

**Manufacturer:** Shanghai SIMCom Wireless Solutions Limited.

## ACCORDING TO

**FCC CFR Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS;**

**PART 24, PERSONAL COMMUNICATIONS SERVICES;**

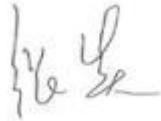
**PART 27, MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES.**

**Chongqing Academy of Information and Communications Technology**

**Month date, year**

**Jan, 02, 2019**

Signature



**Zhang Yan**

**Director**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.

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## **Revision Version**

<b>Report Number</b>	<b>Revision</b>	<b>Date</b>	<b>Memo</b>
<b>B18W50650-WWAN</b>	<b>V1.0</b>	<b>2018-12-27</b>	--
<b>B18W50650-WWAN_Rev1</b>	<b>V2.0</b>	<b>2018-12-30</b>	<b>Revision of test report</b>
<b>B18W50650-WWAN_Rev2</b>	<b>V3.0</b>	<b>2019-01-02</b>	<b>Revision of test report</b>

# **Chongqing Academy of Information and Communications Technology**

**Report No.:B18W50650-WWAN\_Rev2**

**FCC ID:** 2AJYU-SIM7000A

**Report Date:** 2019-01-02

**Test Firm Name:** Chongqing Academy of Information and Communications Technology

**FCC Registration Number:** CN1239

## **Statement**

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Parts 2, 24, 27, The sample tested was found to comply with the requirements defined in the applied rules.

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## **1 General Information**

### **1.1 Notes**

All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Parts 2, 24, 27.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviation from, additions to, or exclusions from the test specifications have been made. See Annex B.

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## 1.2 Testers

Name: Bao Cheng  
Position: Engineer  
Department: Department of RF test  
Date: 2018-12-17 to 2019-01-02

Signature:



Editor of this test report:

Name: Chen Wen  
Position: Engineer  
Department: Department of RF test  
Date: 2019-01-02

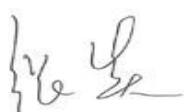
Signature:



Technical responsibility for area of testing:

Name: Zhang Yan  
Position: Manager  
Department: Director of the laboratory  
Date: 2019-01-02

Signature:



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## **1.3 Testing Laboratory information**

### **1.3.1 Location**

Name: Chongqing Academy of Information and Communications  
Technology

Address: Building B, Technology Innovation Center, No.8, Yuma  
Road, Chayuan New Area, Nan'an District, Chongqing,  
People's Republic of China, 401336

Tel: +86-23-88069965

Fax: +86-23-88608777

Email: liqiao@caict.ac.cn

### **1.3.2 Test location, where different from section 1.3.1**

Name: -----

Street: -----

City: -----

Country: -----

Telephone: -----

Fax: -----

Postcode: -----

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## **1.4 Details of applicant or manufacturer**

### **1.4.1 Applicant**

Name: Shanghai SIMCom Wireless Solutions Limited.

Address: Bldg. B, SIM Technology Bldg.,No.633, Jinzhong Rd,  
Changning Dist., Shanghai, P.R.China,

Country: China

Telephone: --

Fax: --

Contact: Haisheng Zeng

Telephone: --

Email: --

### **1.4.2 Manufacturer (if different from applicant in section 1.4.1)**

Name: --

Address: --

Country: --

Telephone: --

Fax: --

Contact: --

Telephone: --

Email: --

# Chongqing Academy of Information and Communications Technology

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## 2 Test Item

### 2.1 General Information

Manufacturer:	Shanghai SIMCom Wireless Solutions Limited.
Type of Equipment:	LTE CAT-M1(eMTC) and NB-IoT Module
Model Name:	SIM7000A
Production Status:	Product
Hardware Version:	SIM7000A_V1.02
Software Version:	SIM7000A R1529
Normal Voltages	3.80 V
High Voltages	4.30 V
Low Voltages	3.00 V
Receipt date of test item:	2018-12-17

### 2.2 Outline of Equipment under Test

The SIM7000A, referred to as “EUT” hereafter, is a multi-Band wireless module operating on the LTE networks. The table below shows the supported Bands for the EUT.

Technology	Band	UL Freq.(MHz)	DL Freq.(MHz)	Note
LTE	B2	1850 – 1910	1930 – 1990	--
	B4	1710 – 1755	2110 – 2155	--
	B12	699 – 716	729 – 746	--
	B13	777 - 787	746 - 756	--

### 2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

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## **2.4 Equipment Configuration**

Equipment configuration list:

<b>Item</b>	<b>Generic Description</b>	<b>Manufacturer</b>	<b>Type</b>	<b>Serial No.</b>	<b>Remarks</b>
A	Modules	Shanghai SIMCom Wireless Solutions Limited.	SIM7000A	865235030045922	None
B	Modules	Shanghai SIMCom Wireless Solutions Limited.	SIM7000A	865235030049031	None

## **2.5 Other Information**

--

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## **3 Summary of Test Results**

A brief summary of the tests carried out is shown as following.

<b>FCC Rules</b>	<b>Name of Test</b>	<b>Result</b>
2.1046 24.232(c), 27.50	Conducted RF Power Output	Pass
2.1049, 24.238(b)	Occupied Bandwidth	Pass
2.1051, 2.1053 24.238, 27.53	Conducted spurious emissions	Pass
2.1051, 2.1053 24.238, 27.53	Radiated Spurious Emission	Pass
2.1051, 2.1053 24.238, 27.53	Band Edge	Pass
2.1055, 24.235 27.54	Frequency Stability over Temperature Variation	Pass
2.1055, 24.235 27.54	Frequency Stability over Voltage Variation	Pass
24.232, 27.50	Peak to Average Ratio	Pass
24.232(b)	ERP and EIRP	Pass
Note:--		

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## **4 Test Equipments and Ancillaries Used For Tests**

The test equipments and ancillaries used are as follows.

No.	Equipment	Model	SN	Manufacture	Cal. Due Date
1	EMI Test Receiver	ESU26	100367	R&S	2019-03-02
2	Trilog super broad band test antenna	VULB 9163	9163-544	R&S	2019-11-24
3	Double-Ridged Horn Antenna	HF907	100356	R&S	2019-06-22
4	Fully-Anechoic Chamber	11.8m×6.5 m×6.3m	--	ETS	2019-10-23
5	Universal Radio Communication Tester	SP8315	SP8315-1249	StarPoint	2019-03-02
6	Signal Generator	SMU200A	104517	R&S	2019-03-02
7	Spectrum analyzer	FSQ 26	201137/026	R&S	2019-03-02
8	DC Power Supply	N6705B	MY50000919	Agilent	2019-12-05
9	Climate chamber	SH-241	92010759	ESPEC	2019-03-01

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## 5 Test Results

### 5.1 Conducted RF Power Output

<b>Specifications:</b>	FCC Part 2.1046, 24.232(c), 27.50
<b>DUT Serial Number:</b>	865235030045922
<b>Test conditions:</b>	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
<b>Test Results:</b>	Pass

#### Limit Level Construction:

**According to Part 24.232(c)**, mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

**According to Part 27.50(c)**, portable stations (hand-held devices) in the 600 MHz uplink Band and the 698-746 MHz Band, and fixed and mobile stations in the 600 MHz uplink Band are limited to 3 watts ERP.

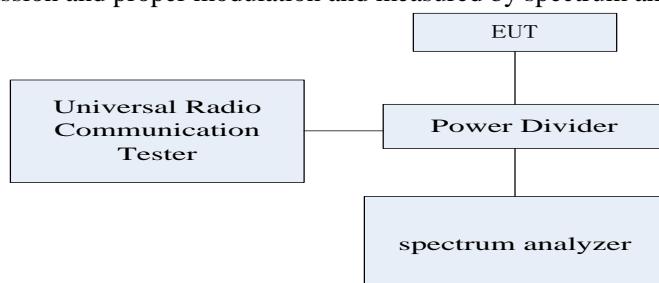
**According to Part 27.50(d)**, fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz Band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz Bands are limited to 1 watt EIRP.

#### Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	0.52 dB (k=2)

#### Test Setup:

During the test, the EUT was controlled via the Wireless Telecommunications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



#### Test Method:

- 1) The EUT was coupled to the spectrum analyzer and the Wireless Telecommunications Test Set through a power divider. The loss of the RF cables of the test system is calibrated to correct the readings.

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- 2) For RMS power test, the spectrum analyzer was set to RMS Detector function and Maximum hold mode.
- 3) For Peak power test, the spectrum analyzer was set to Maxpeak Detector function and Maximum hold mode.
- 4) The resolution Bandwidth of the spectrum analyzer was comparable to the emission Bandwidth.

**Note:** Only worst case mode of in-band result is given below.

### 5.1.1 NB-IoT Band 2

Maximum Average Conducted Power (dBm)					
Sub-carrier Spacing [kHz]	Modulation	N <sub>tones</sub>	Channel		
			Low	Mid	High
3.75	BPSK	1@0	22.95	23.23	23.10
		1@47	23.08	23.25	23.18
	QPSK	1@0	23.20	23.14	23.15
		1@47	23.10	23.25	23.11
15	BPSK	1@0	23.48	23.36	23.57
		1@11	23.63	23.35	23.52
	QPSK	1@0	23.53	23.41	23.48
		1@11	23.52	23.54	23.58
		12@0	21.96	21.82	21.94

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## 5.1.2 NB-IoT Band 4

Sub-carrier Spacing [kHz]	Modulation	N <sub>tones</sub>	Maximum Average Conducted Power (dBm)		
			Channel		
			Low	Mid	High
3.75	BPSK	1@0	23.26	23.43	23.57
		1@47	23.30	23.50	23.62
	QPSK	1@0	23.37	23.51	23.61
		1@47	23.35	23.50	23.60
15	BPSK	1@0	23.53	23.70	23.77
		1@11	23.60	23.72	23.83
	QPSK	1@0	23.50	23.62	23.75
		1@11	23.60	23.77	23.79
		12@0	21.70	21.80	21.91

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## 5.1.3 NB-IoT Band 12

Sub-carrier Spacing [kHz]	Modulation	N <sub>tones</sub>	Maximum Average Conducted Power (dBm)		
			Channel		
			Low	Mid	High
3.75	BPSK	1@0	23.50	23.26	23.27
		1@47	23.57	23.31	23.21
	QPSK	1@0	23.60	23.25	23.27
		1@47	23.55	23.26	23.19
15	BPSK	1@0	23.80	23.15	23.60
		1@11	24.02	23.17	23.68
	QPSK	1@0	23.68	23.10	23.77
		1@11	23.80	23.20	23.68
		12@0	22.27	21.67	22.12

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## 5.1.4 NB-IoT Band 13

Maximum Average Conducted Power (dBm)					
Sub-carrier Spacing [kHz]	Modulation	N <sub>tones</sub>	Channel		
			Low	Mid	High
3.75	BPSK	1@0	23.58	23.55	22.62
		1@47	23.56	23.57	22.67
	QPSK	1@0	23.47	23.63	22.60
		1@47	23.49	23.61	22.60
15	BPSK	1@0	23.81	23.84	23.95
		1@11	23.96	23.87	23.93
	QPSK	1@0	23.90	23.78	23.80
		1@11	23.96	23.81	23.87
		12@0	22.30	22.19	22.35

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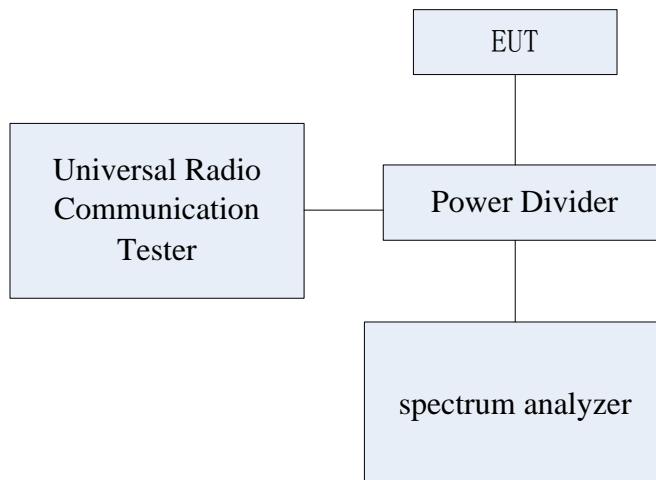
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## 5.2 Occupied Bandwidth

<b>Specifications:</b>	FCC Part 2.1049, 24.238(b)
<b>DUT Serial Number:</b>	865235030045922
<b>Test conditions:</b>	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
<b>Test Results:</b>	--

### Test Setup

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



### Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	69 kHz (k=2)

### Test Method

The 99% occupied Bandwidth was calculated from the spectrum analyzer. Markers in the spectrum analyzer were then placed between the calculated frequencies to show the calculated 99% power Band. The 26dB Bandwidth was also measured and recorded.

**Note:** For Occupied Bandwidth test, the EUT working in Sub-carrier Spacing 15 kHz, full tones mode is the worst case mode.

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### 5.1.1 NB-IoT Band 2

#### NB-IoT standalone Test frequencies for operating band 2

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	18601	12@0	15	187.5	190.7	243.6	245.2
Mid Range	18900			187.5	190.7	242.0	245.2
High Range	19199			187.5	190.7	246.8	245.2

#### NB-IoT in-band Test frequencies for operating band 2

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	18601	12@0	15	187.5	189.1	240.4	245.2
Mid Range	18900			187.5	193.9	245.2	243.6
High Range	19199			187.5	189.1	243.6	243.6

#### NB-IoT guard-band Test frequencies for operating band 2

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	18601	12@0	15	187.5	195.5	246.8	243.6
Mid Range	18900			187.5	185.9	251.6	245.2
High Range	19199			185.9	190.7	245.2	245.2

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## 5.1.2 NB-IoT Band 4

### NB-IoT standalone Test frequencies for operating band 4

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	19951	12@0	15	185.9	192.3	243.3	254.8
Mid Range	20175			185.9	189.1	250.0	242.0
High Range	20399			184.30	192.3	243.6	248.4

### NB-IoT in-band Test frequencies for operating band 4

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	19951	12@0	15	187.5	189.1	246.8	245.2
Mid Range	20175			184.3	193.9	240.4	243.6
High Range	20399			187.5	190.7	253.2	242.0

### NB-IoT guard-band Test frequencies for operating band 4

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	19951	12@0	15	185.9	197.1	246.8	254.8
Mid Range	20175			185.9	193.9	248.4	246.8
High Range	20399			187.5	187.5	248.4	246.8

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## 5.1.3 NB-IoT Band 12

### NB-IoT standalone Test frequencies for operating band 12

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	23011	12@0	15	187.5	193.9	242.0	246.8
Mid Range	23095			189.1	187.5	248.4	243.6
High Range	23179			185.9	189.1	240.4	246.8

### NB-IoT in-band Test frequencies for operating band 12

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	23011	12@0	15	187.5	189.1	245.2	243.6
Mid Range	23095			187.5	195.5	243.6	246.8
High Range	23179			187.5	192.3	245.2	245.2

### NB-IoT guard-band Test frequencies for operating band 12

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	23011	12@0	15	187.5	190.7	245.2	246.8
Mid Range	23095			187.5	192.3	242.0	246.8
High Range	23179			187.5	192.3	253.2	246.8

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## 5.1.4 NB-IoT Band 13

### NB-IoT standalone Test frequencies for operating band 13

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	23181	12@0	15	185.9	193.9	243.6	248.4
Mid Range	23230			187.5	189.1	242.0	256.4
High Range	23279			189.1	190.7	248.4	243.6

### NB-IoT in-band Test frequencies for operating band 13

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	23181	12@0	15	187.5	192.3	253.2	243.6
Mid Range	23230			187.5	189.1	243.6	248.4
High Range	23279			187.5	192.3	250.0	246.8

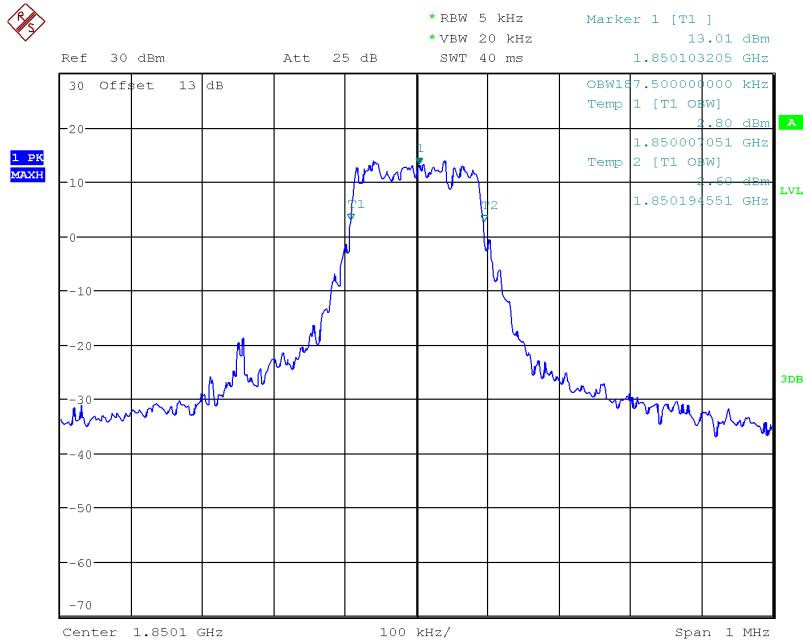
### NB-IoT guard-band Test frequencies for operating band 13

Frequency ID	N <sub>UL</sub>	N <sub>tones</sub>	Sub-carrier Spacing [kHz]	Occupied Bandwidth (99%) (kHz)		Occupied Bandwidth(26dB) (kHz)	
				QPSK	BPSK	QPSK	BPSK
Low Range	23181	12@0	15	185.9	189.1	243.6	256.4
Mid Range	23230			184.3	189.1	250.0	246.8
High Range	23279			185.9	190.7	243.6	246.8

# Chongqing Academy of Information and Communications Technology

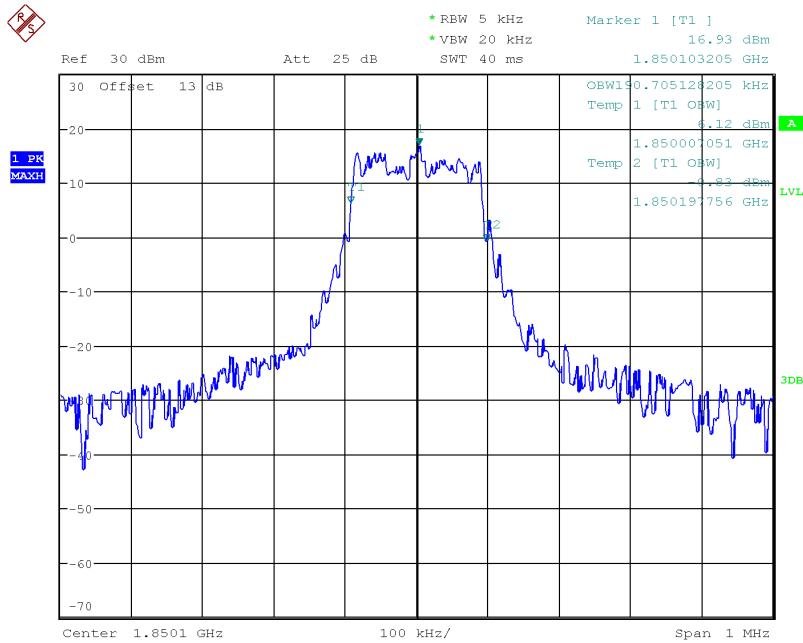
Report No.:B18W50650-WWAN\_Rev2

## Graphical results for Band2:



Date: 26.DEC.2018 20:44:10

### NB-IoT standalone band 2 18601 QPSK(99%)



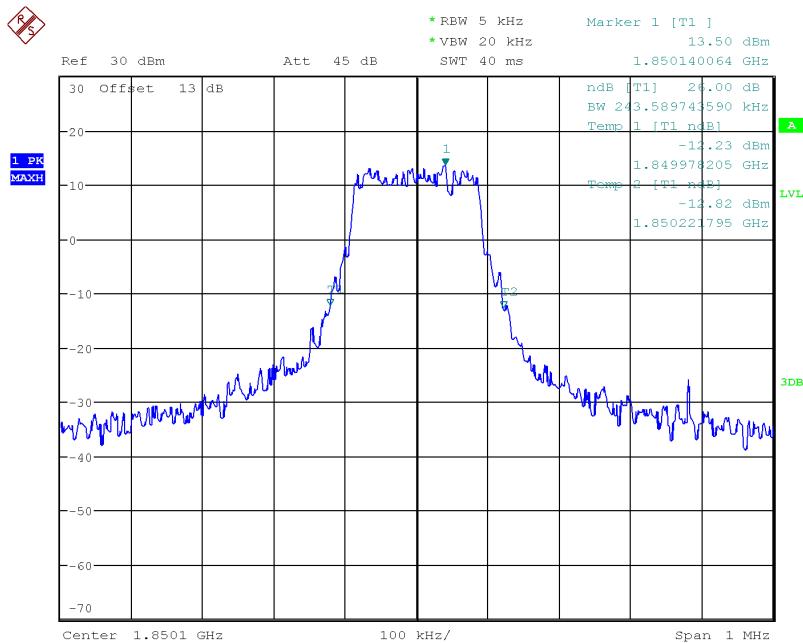
Date: 26.DEC.2018 20:45:46

### NB-IoT standalone band 2 18601 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

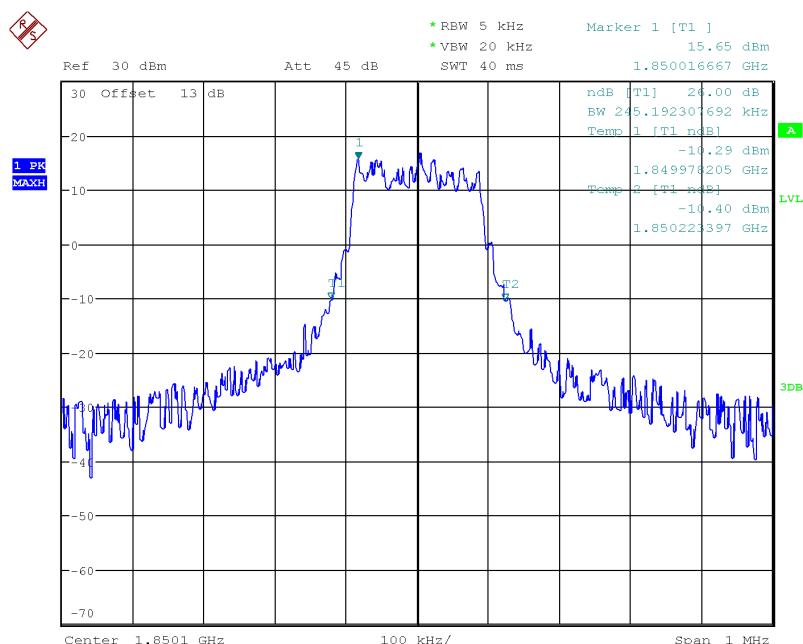
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 20:44:41

NB-IoT standalone band 2 18601 QPSK(26dB)

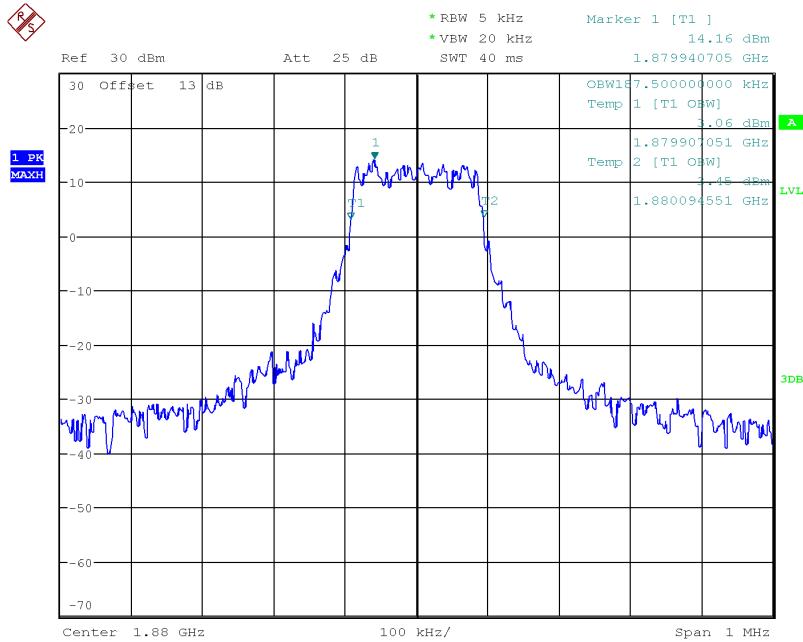


Date: 26.DEC.2018 20:45:16

NB-IoT standalone band 2 18601 BPSK(26dB)

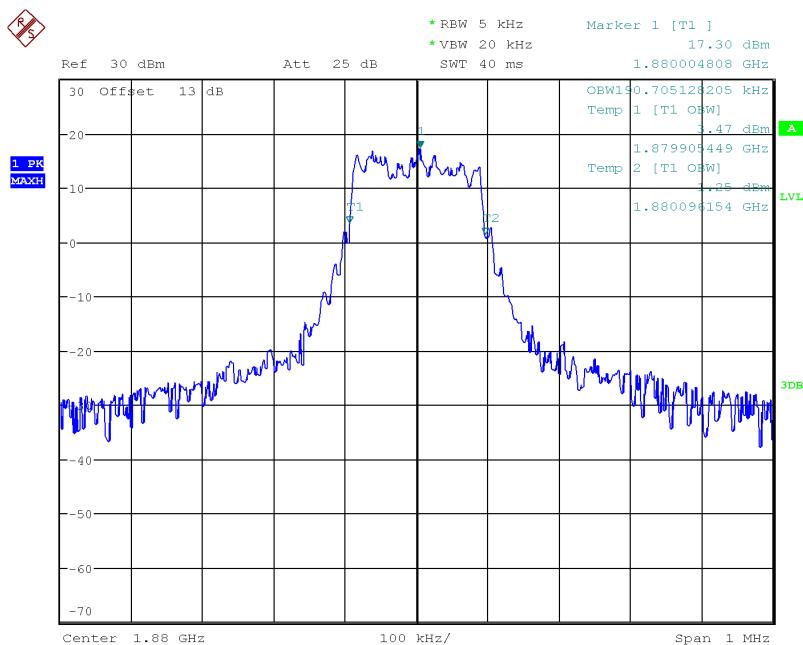
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 20:49:18

### NB-IoT standalone band 2 18900 QPSK(99%)



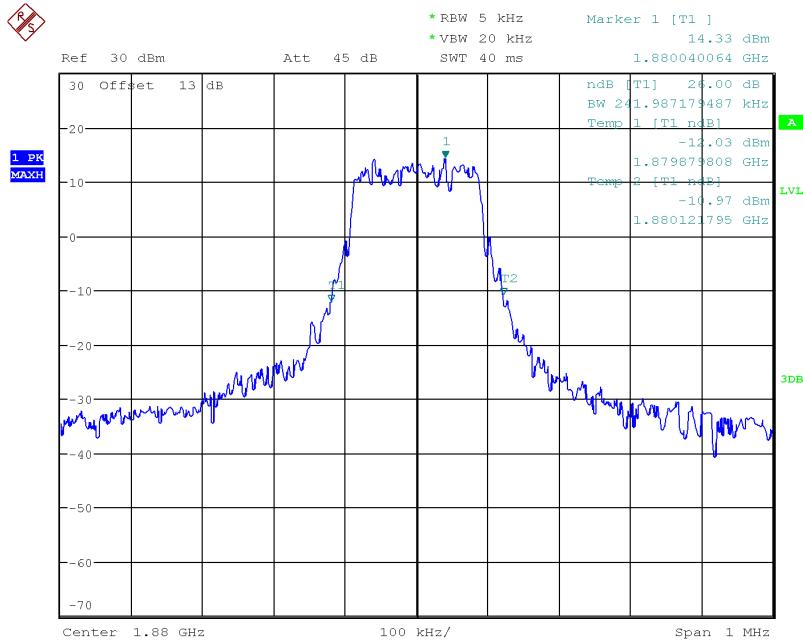
Date: 26.DEC.2018 20:47:39

### NB-IoT standalone band 2 18900 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

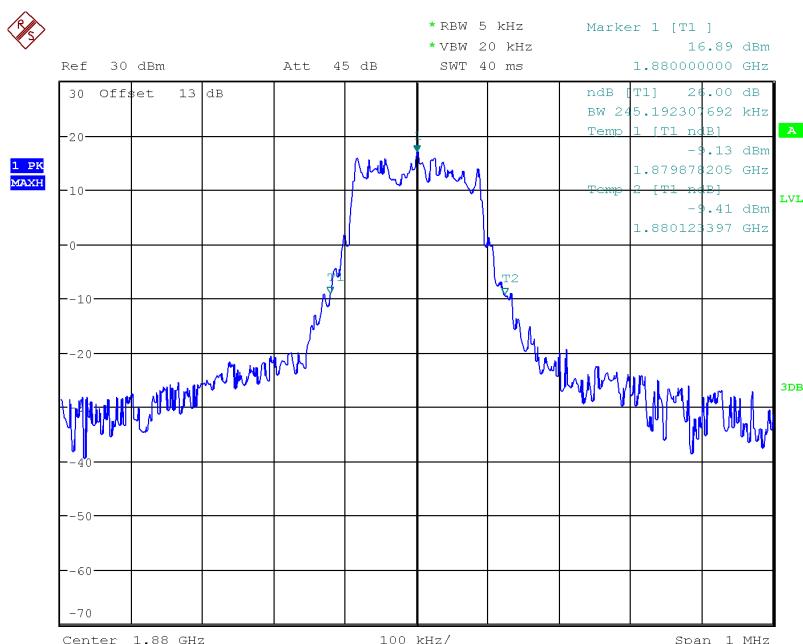
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 20:48:49

NB-IoT standalone band 2 18900 QPSK(26dB)

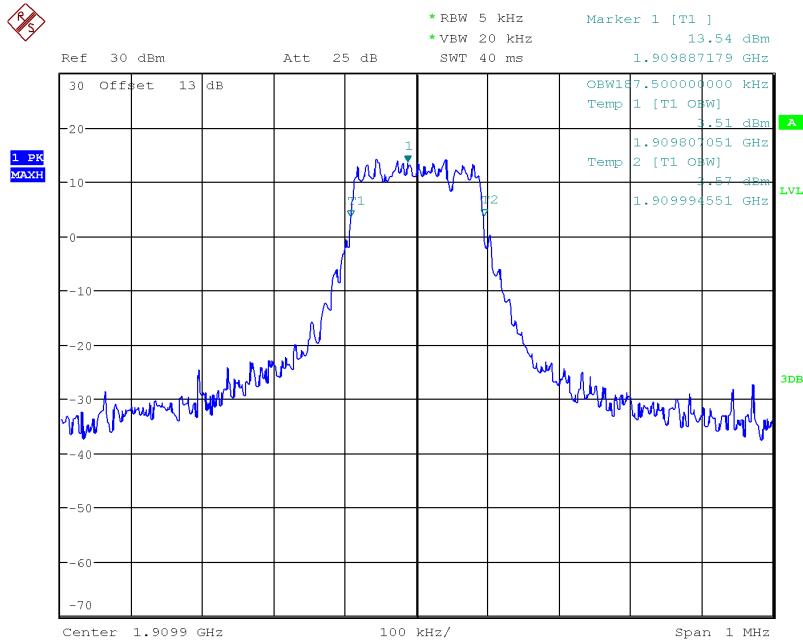


Date: 26.DEC.2018 20:48:09

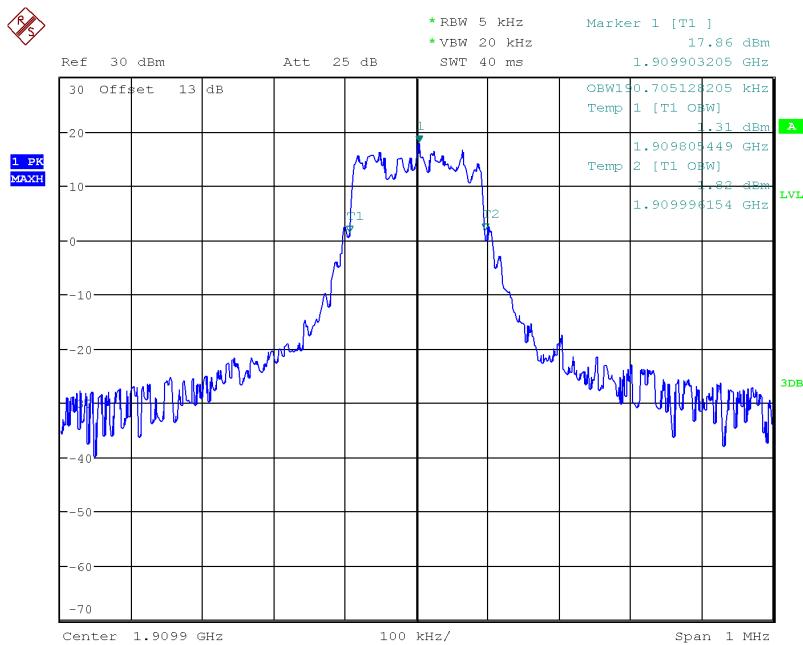
NB-IoT standalone band 2 18900 BPSK(26dB)

# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



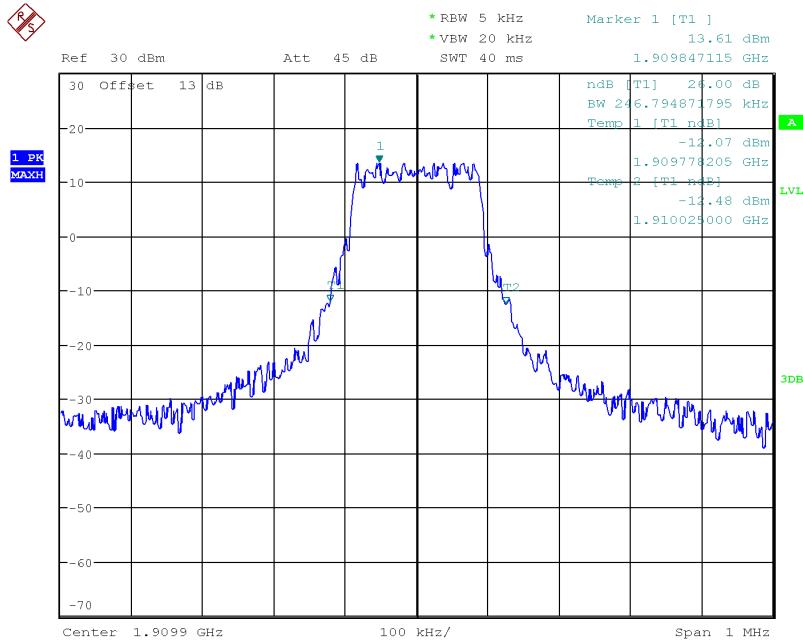
NB-IoT standalone band 2 19199 QPSK(99%)



NB-IoT standalone band 2 19199 BPSK(99%)

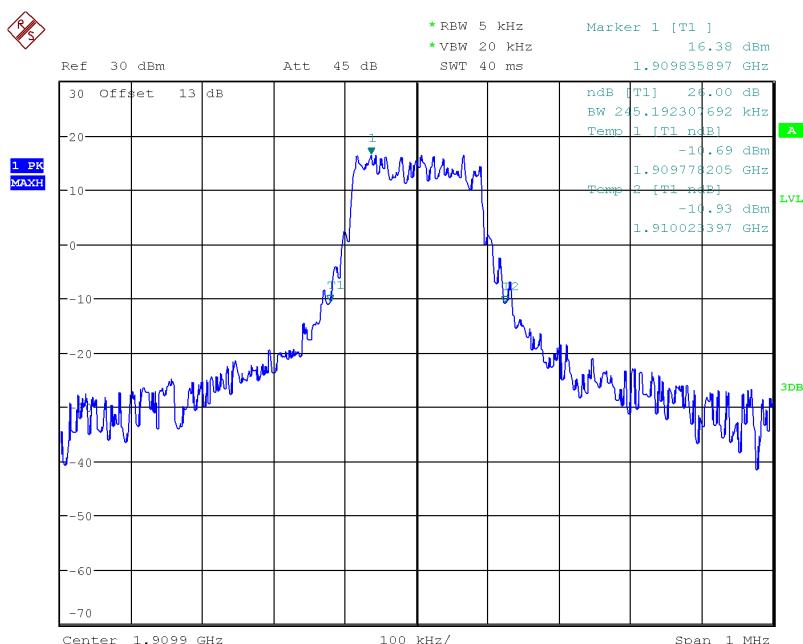
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 20:50:51

NB-IoT standalone band 2 19199 QPSK(26dB)



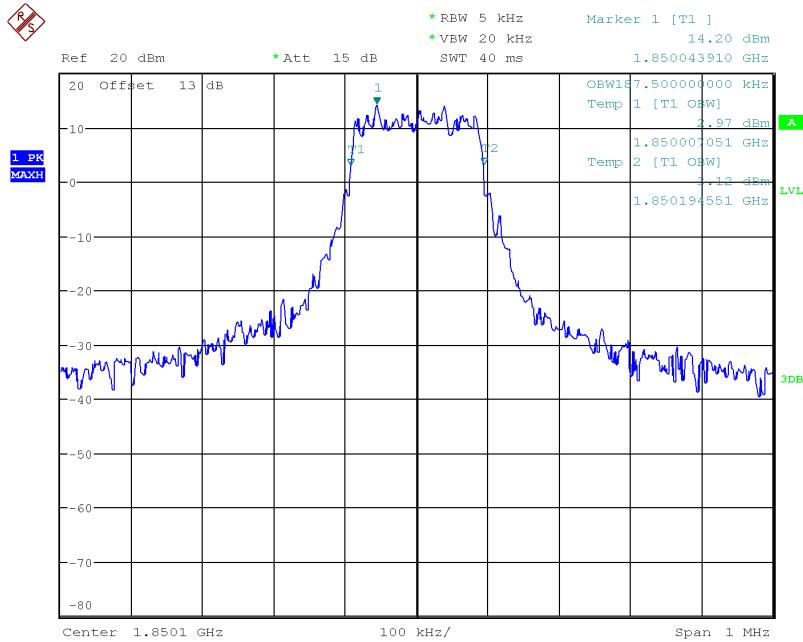
Date: 26.DEC.2018 20:51:22

NB-IoT standalone band 2 19199 BPSK(26dB)

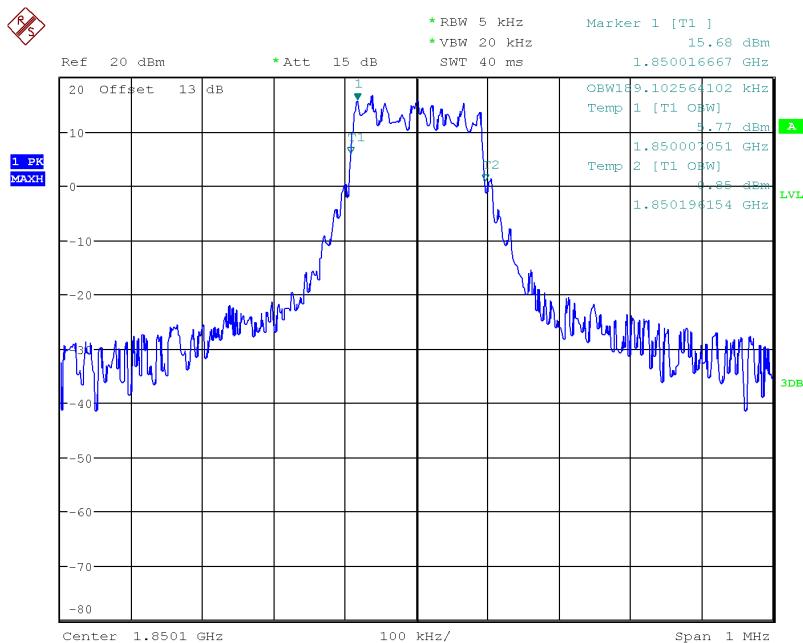
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



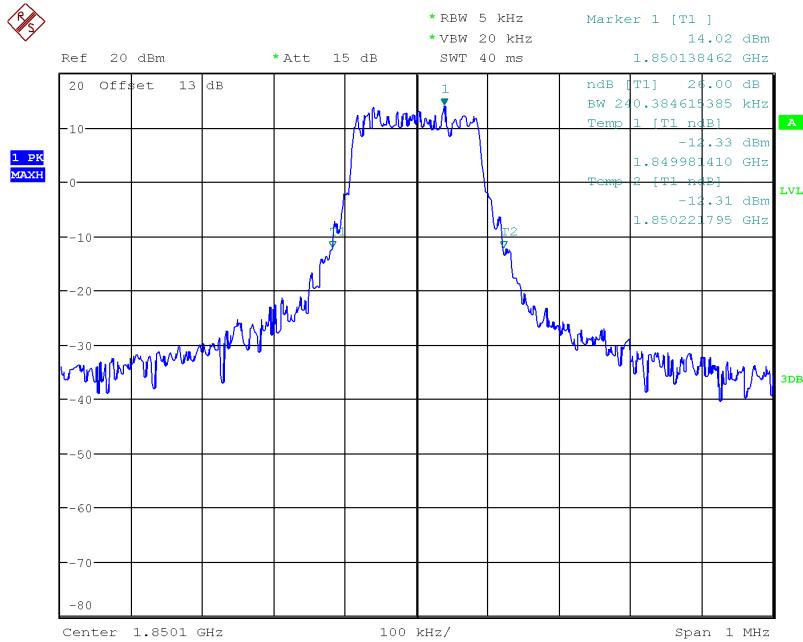
NB-IoT In-band band 2 18601 QPSK(99%)



NB-IoT In-band band 2 18601 BPSK(99%)

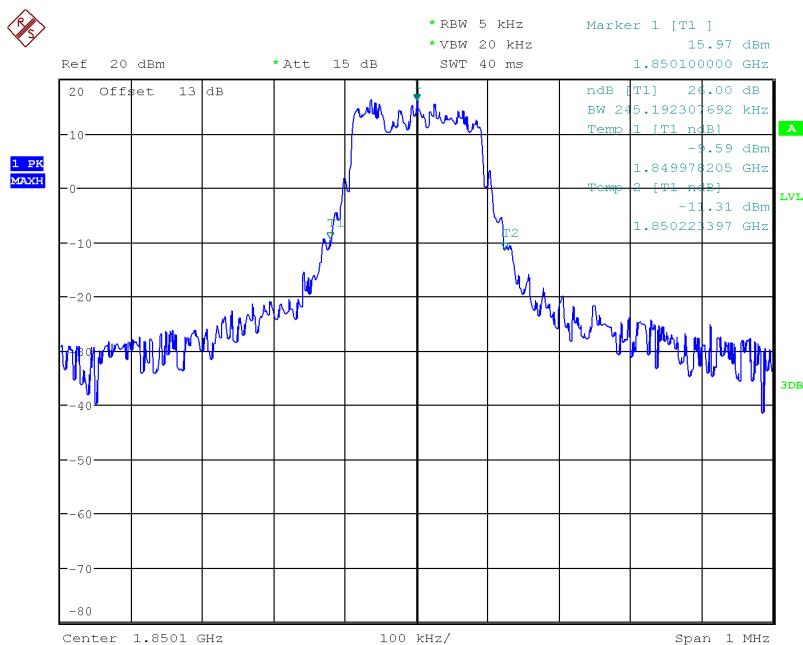
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:01:19

NB-IoT In-band band 2 18601 QPSK(26dB)

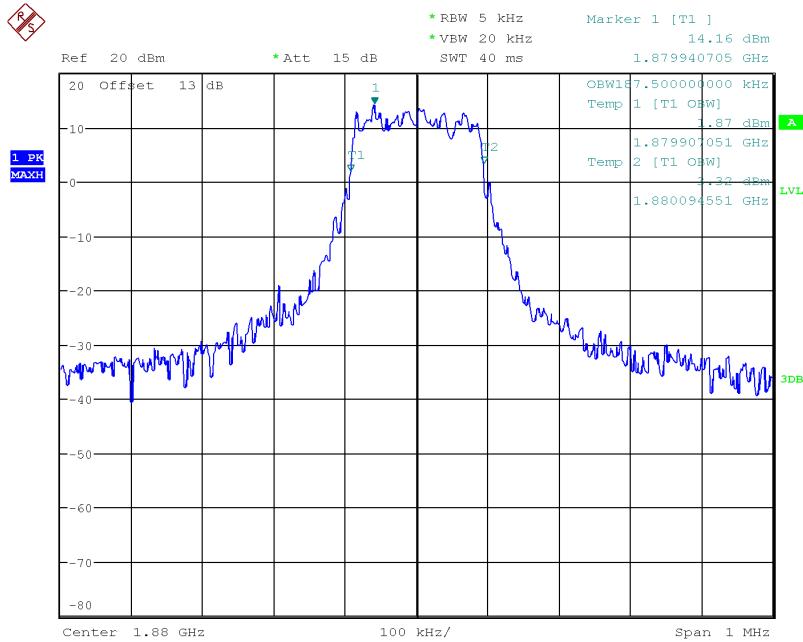


Date: 26.DEC.2018 21:00:49

NB-IoT In-band band 2 18601 BPSK(26dB)

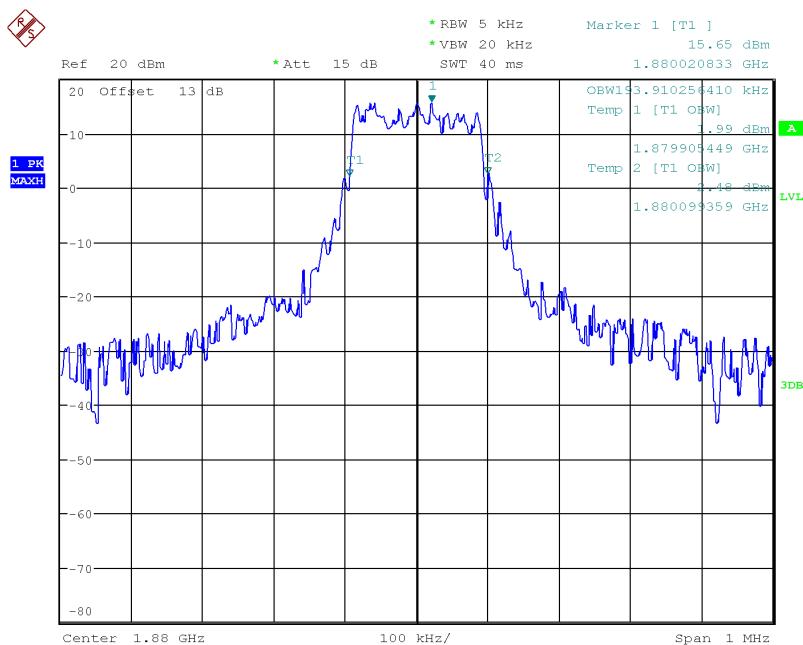
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 20:57:35

NB-IoT In-band band 2 18900 QPSK(99%)

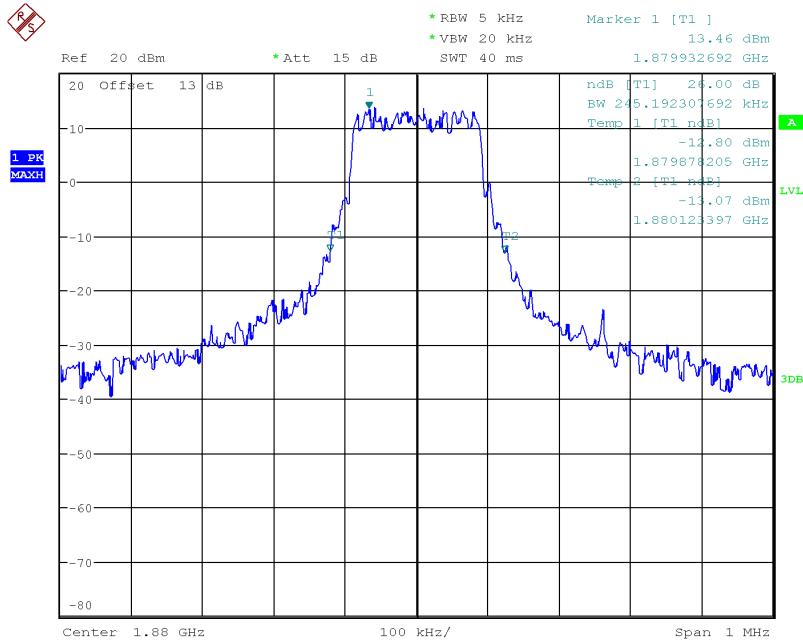


Date: 26.DEC.2018 20:59:09

NB-IoT In-band band 2 18900 BPSK(99%)

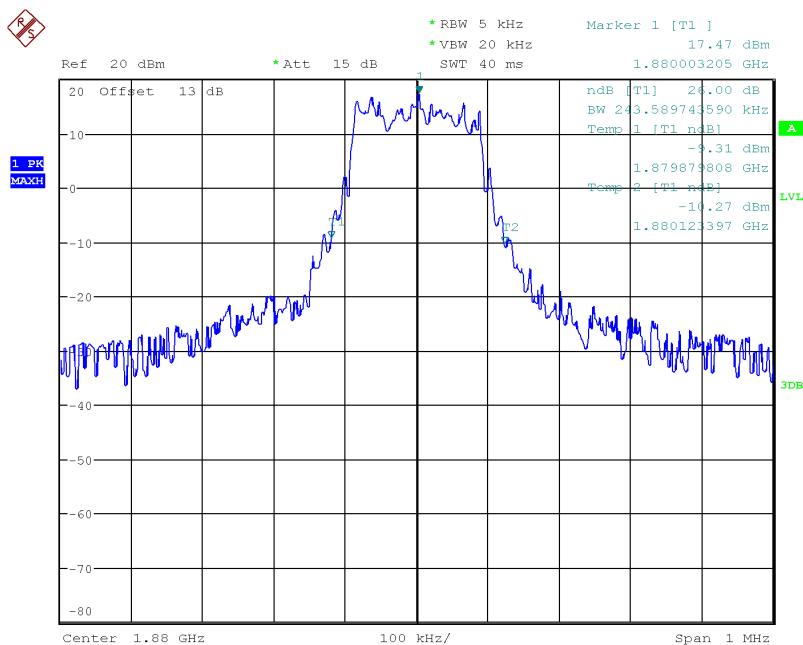
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 20:58:07

NB-IoT In-band band 2 18900 QPSK(26dB)



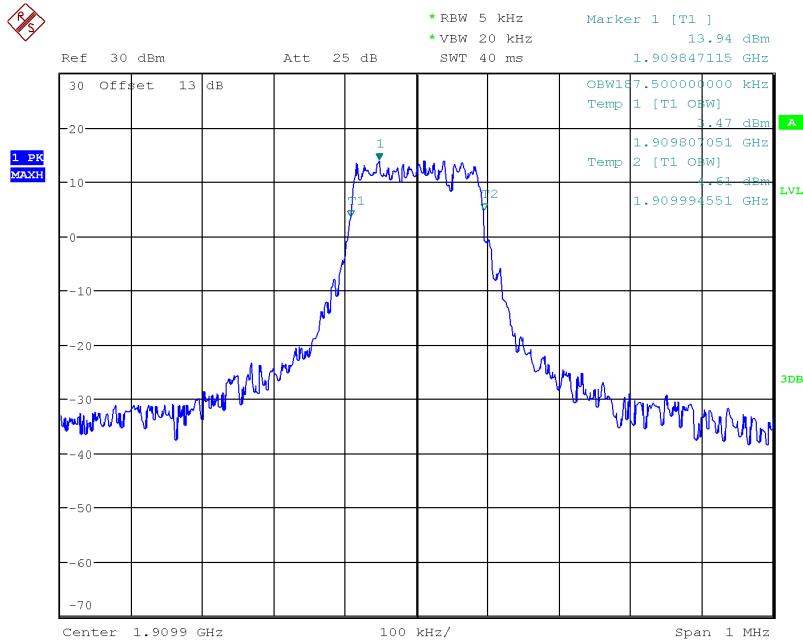
Date: 26.DEC.2018 20:58:45

NB-IoT In-band band 2 18900 BPSK(26dB)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

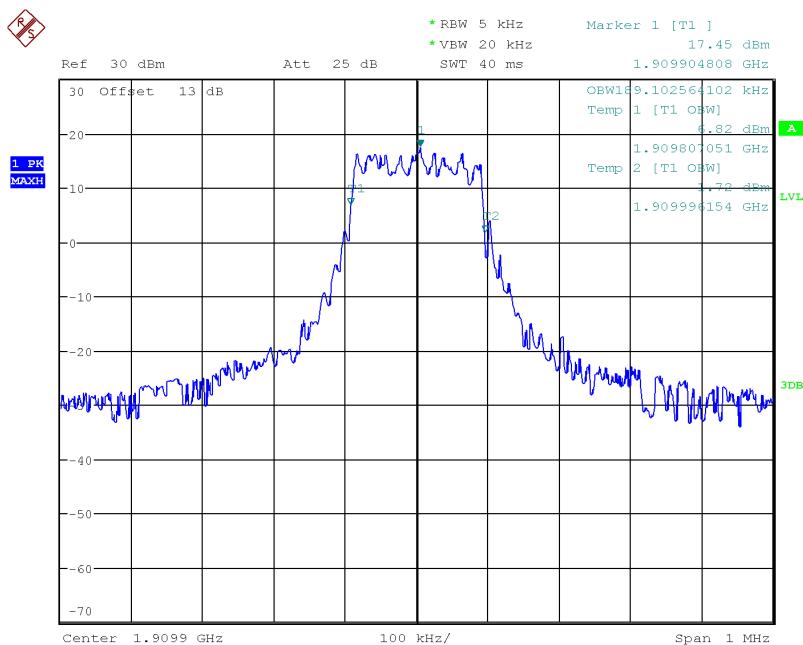
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 20:54:49

## NB-IoT In-band band 2 19199 QPSK(99%)



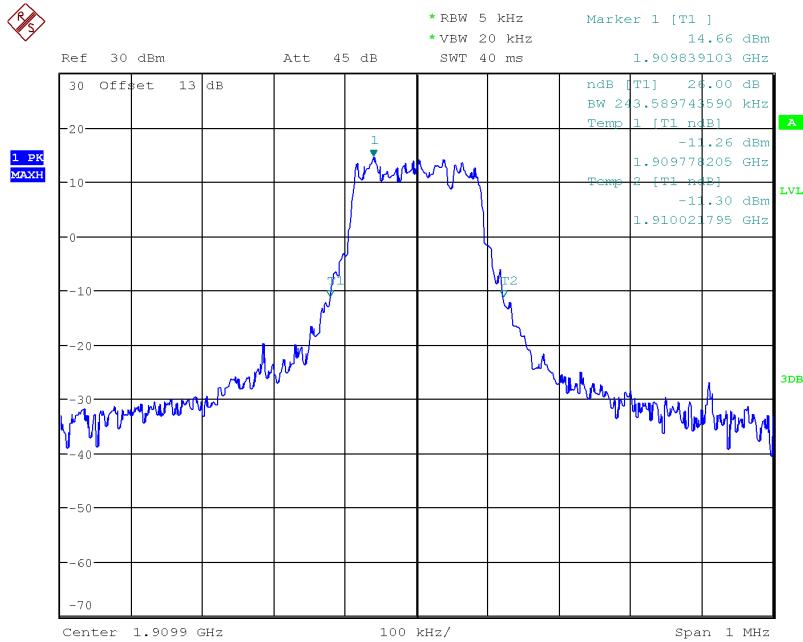
Date: 26.DEC.2018 20:53:25

## NB-IoT In-band band 2 19199 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

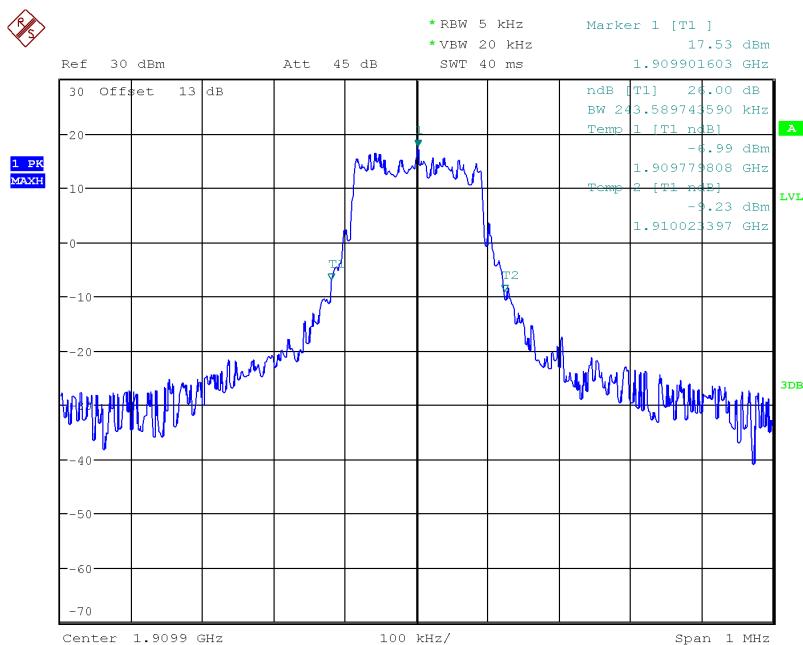
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 20:54:27

### NB-IoT In-band band 2 19199 QPSK(26dB)

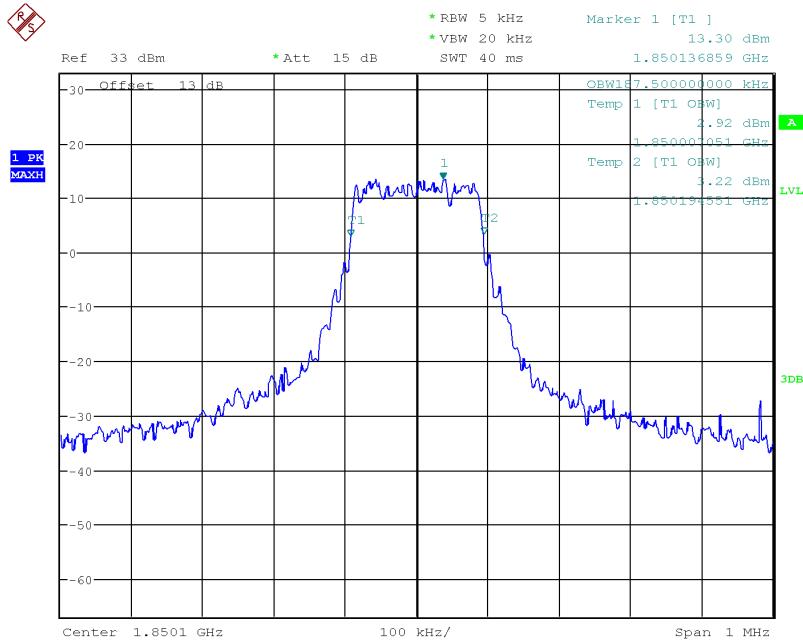


Date: 26.DEC.2018 20:53:53

### NB-IoT In-band band 2 19199 BPSK(26dB)

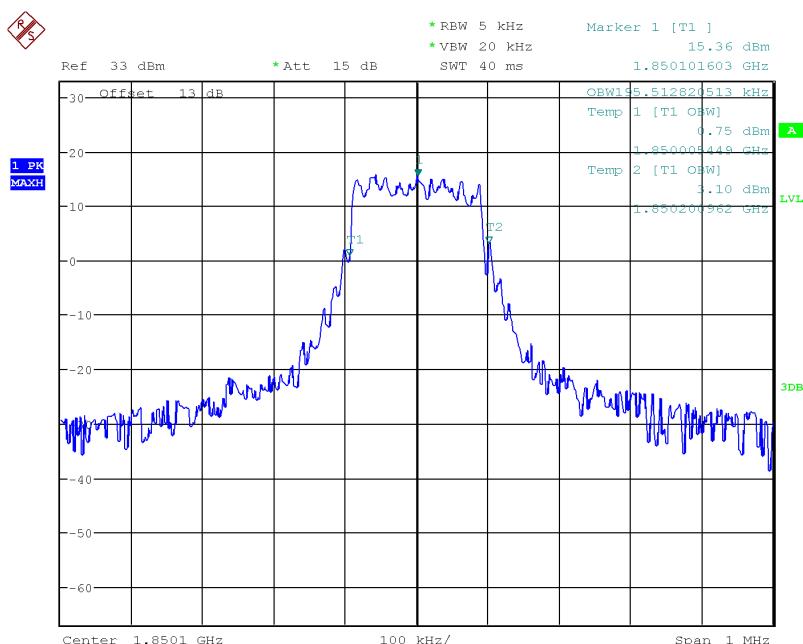
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:03:21

NB-IoT Guard-band band 2 18601 QPSK(99%)

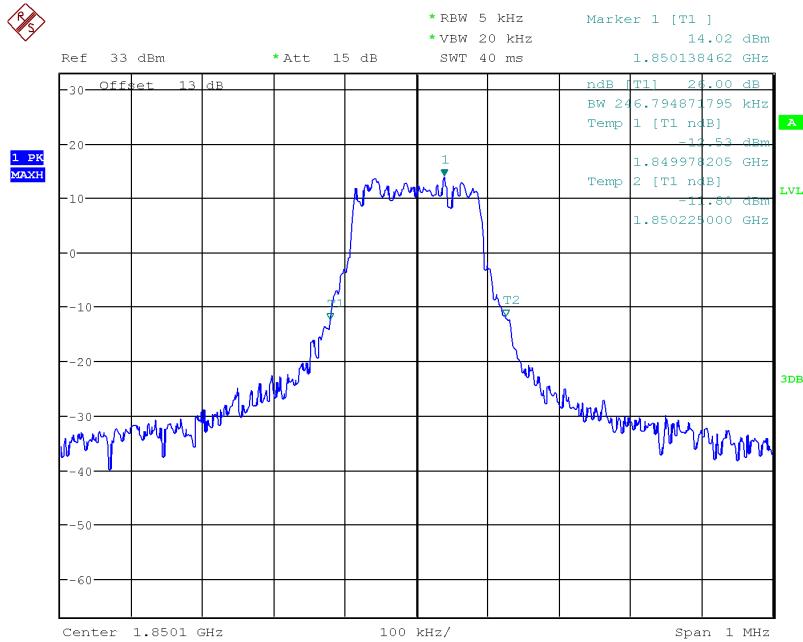


Date: 26.DEC.2018 21:04:56

NB-IoT Guard-band band 2 18601 BPSK(99%)

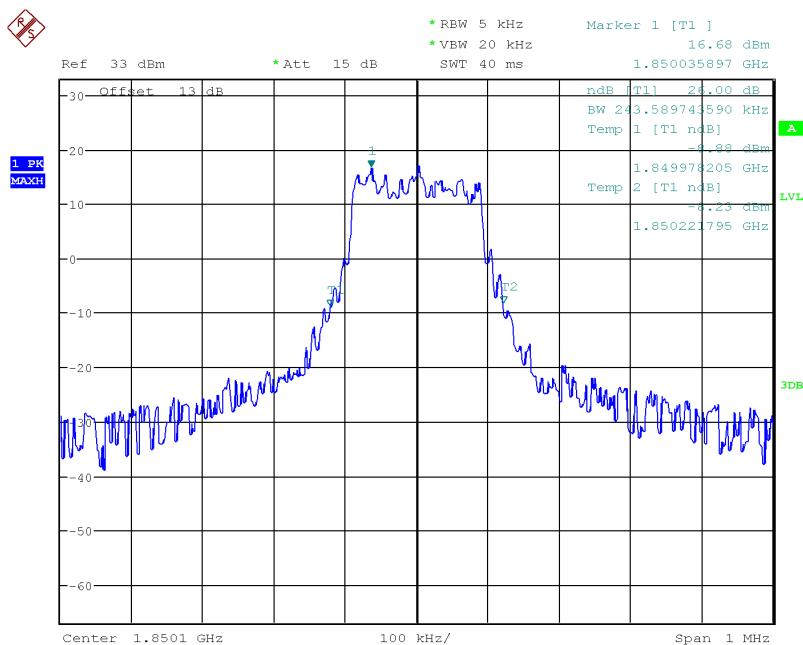
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:03:49

NB-IoT Guard-band band 2 18601 QPSK(26dB)

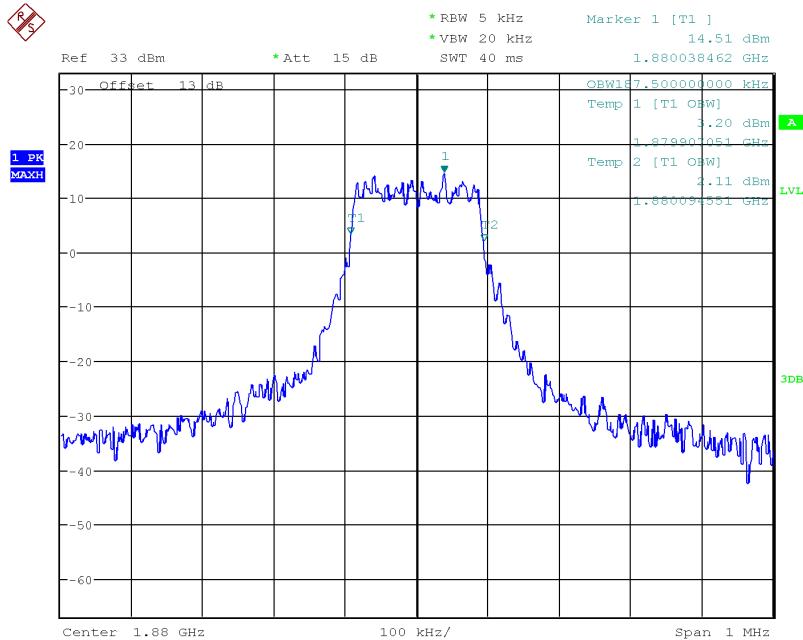


Date: 26.DEC.2018 21:04:20

NB-IoT Guard-band band 2 18601 BPSK(26dB)

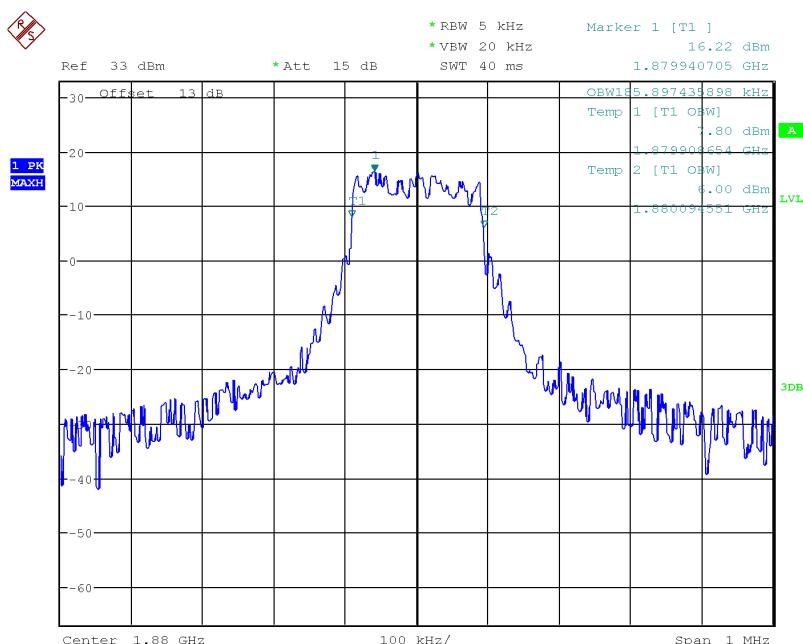
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:08:39

NB-IoT Guard-band band 2 18900 QPSK(99%)

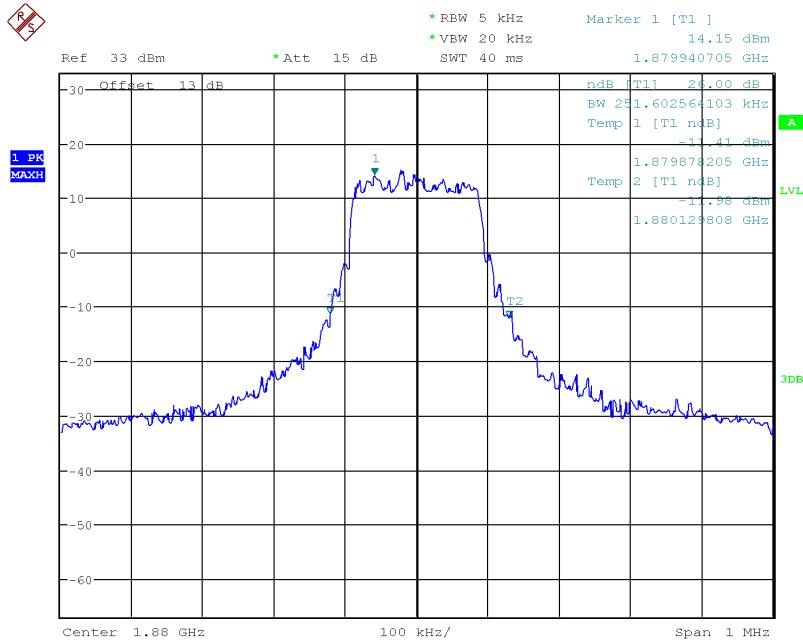


Date: 26.DEC.2018 21:06:18

NB-IoT Guard-band band 2 18900 BPSK(99%)

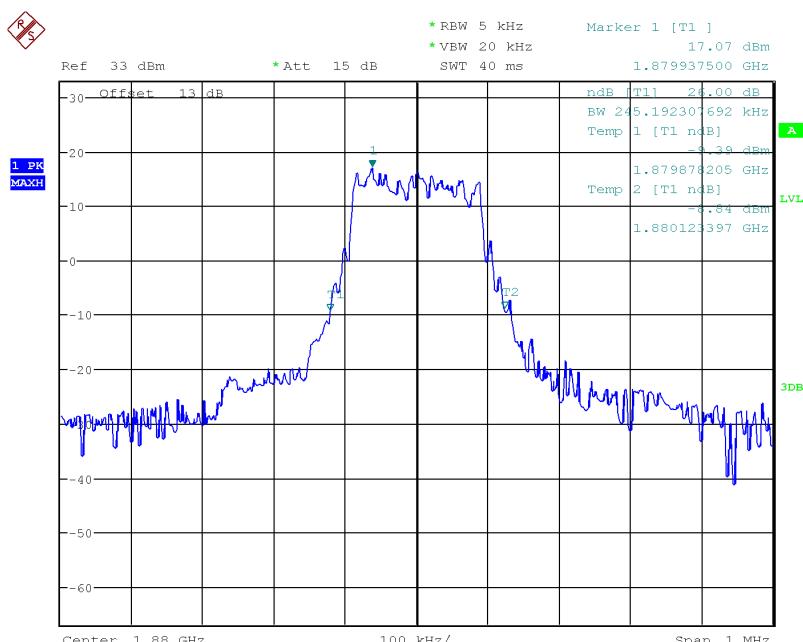
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:08:14

NB-IoT Guard-band band 2 18900 QPSK(26dB)

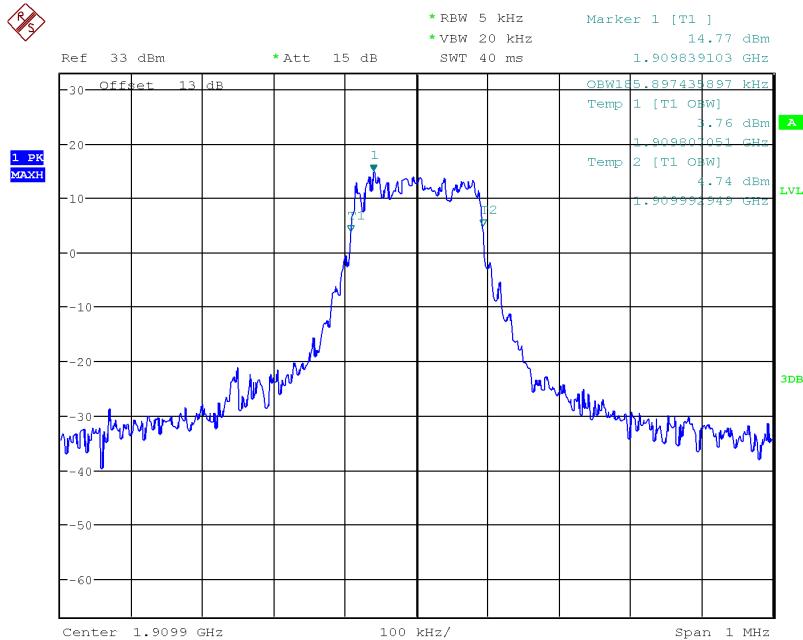


Date: 26.DEC.2018 21:07:02

NB-IoT Guard-band band 2 18900 BPSK(26dB)

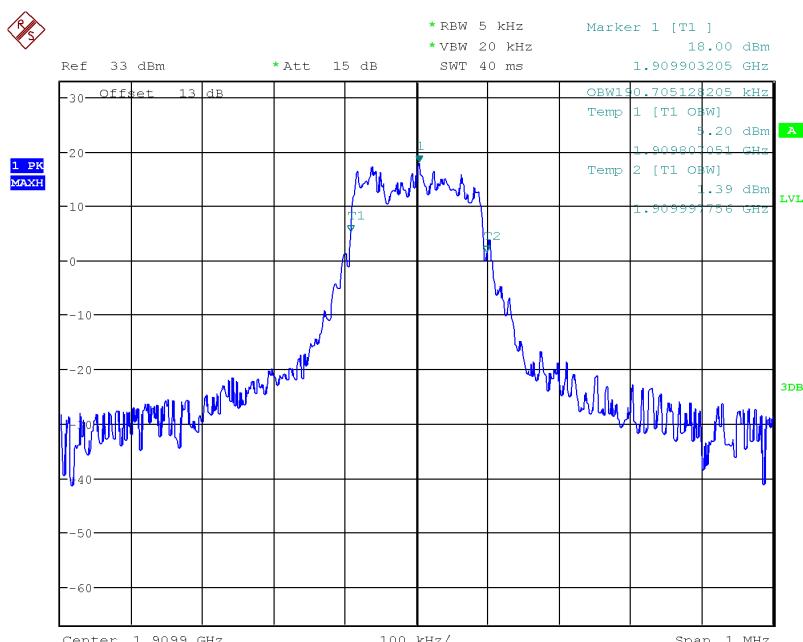
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:09:49

NB-IoT Guard-band band 2 19199 QPSK(99%)

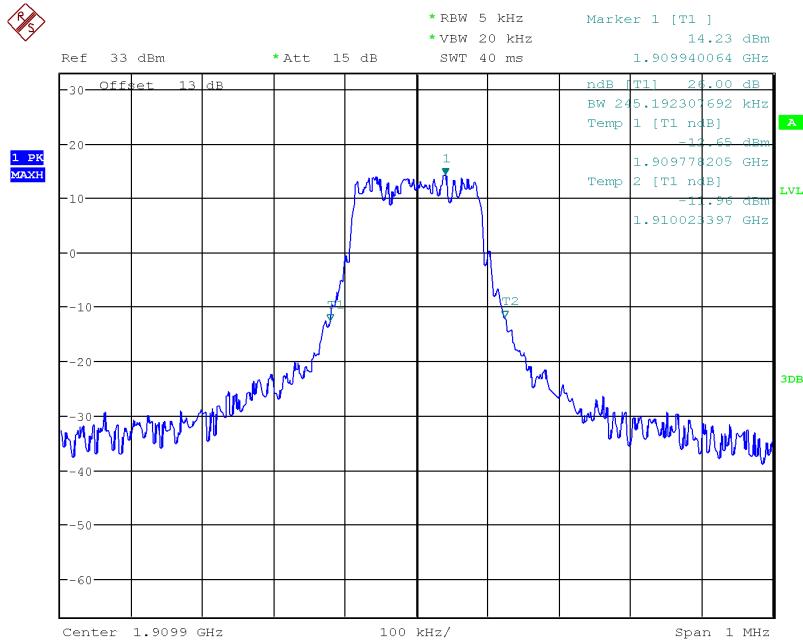


Date: 26.DEC.2018 21:11:12

NB-IoT Guard-band band 2 19199 BPSK(99%)

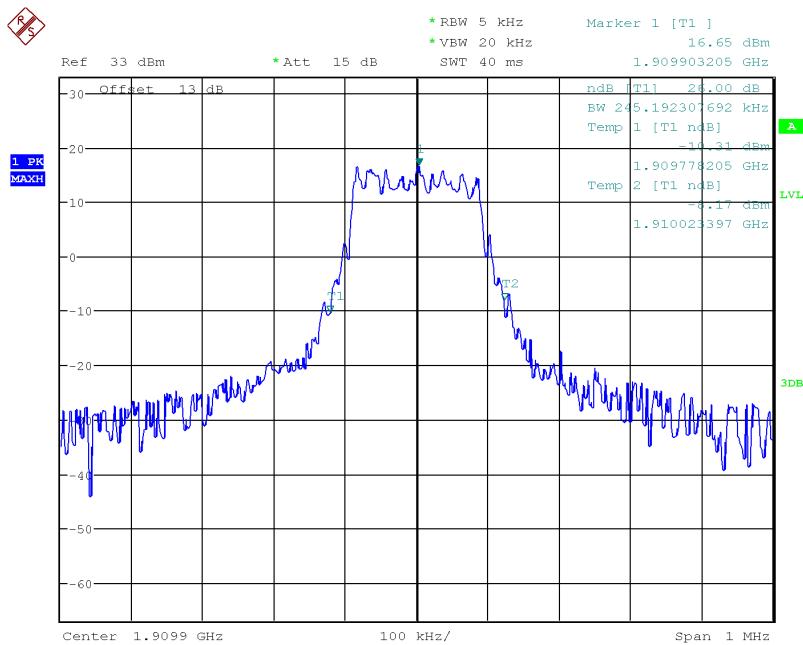
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:10:14

NB-IoT Guard-band band 2 19199 QPSK(26dB)



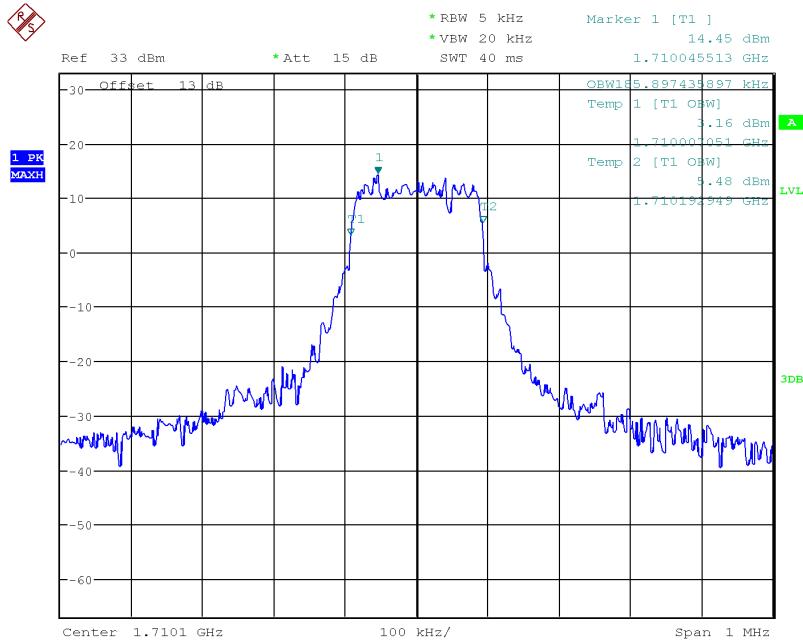
Date: 26.DEC.2018 21:10:49

NB-IoT Guard-band band 2 19199 BPSK(26dB)

# Chongqing Academy of Information and Communications Technology

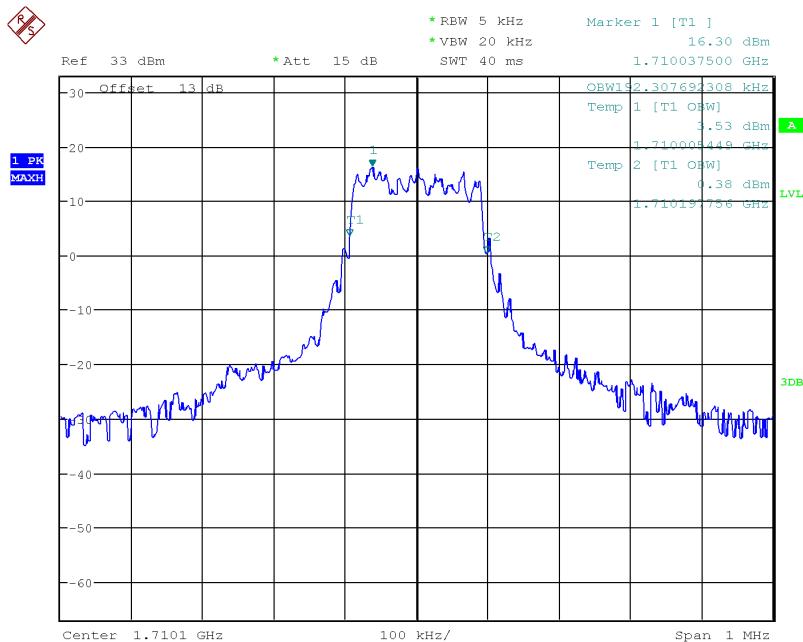
Report No.:B18W50650-WWAN\_Rev2

## Graphical results for Band4:



Date: 26.DEC.2018 21:17:45

### NB-IoT standalone band 4 19951 QPSK(99%)



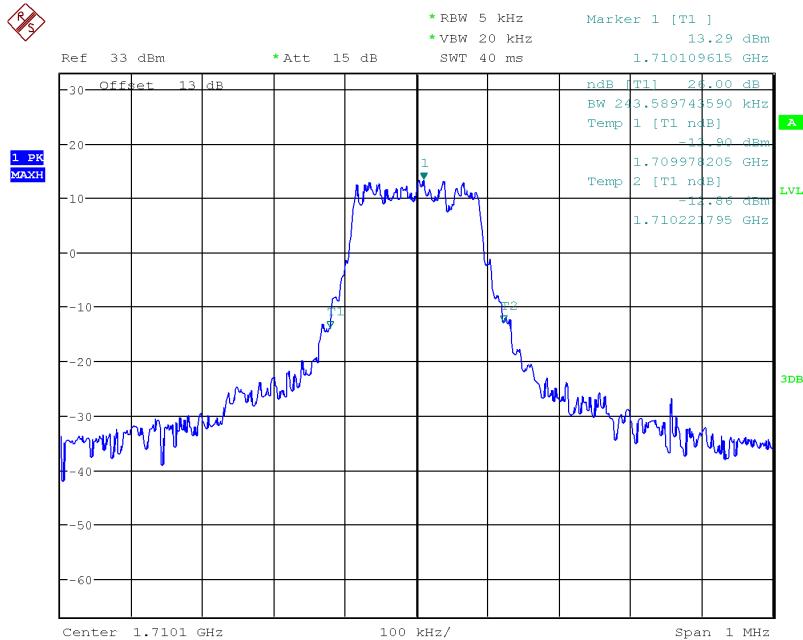
Date: 26.DEC.2018 21:15:55

### NB-IoT standalone band 4 19951 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

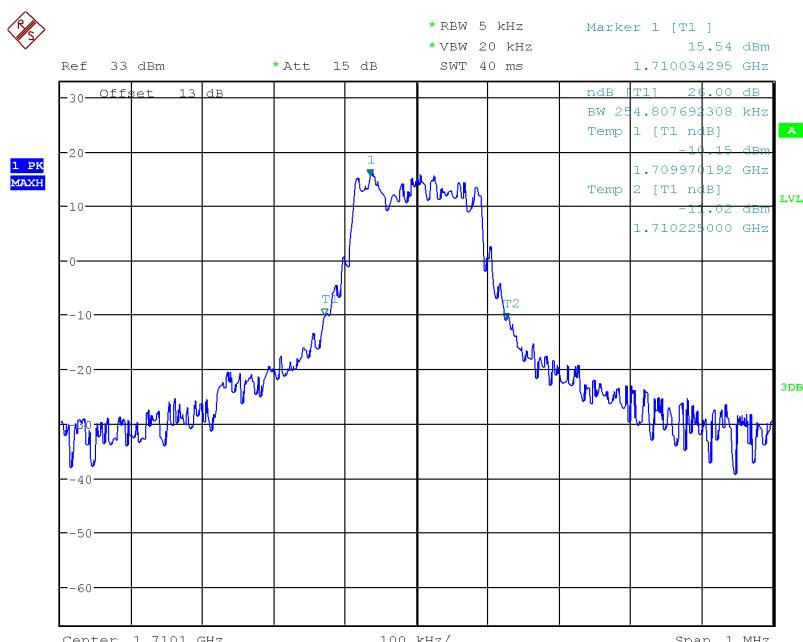
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:17:10

NB-IoT standalone band 4 19951 QPSK(26dB)

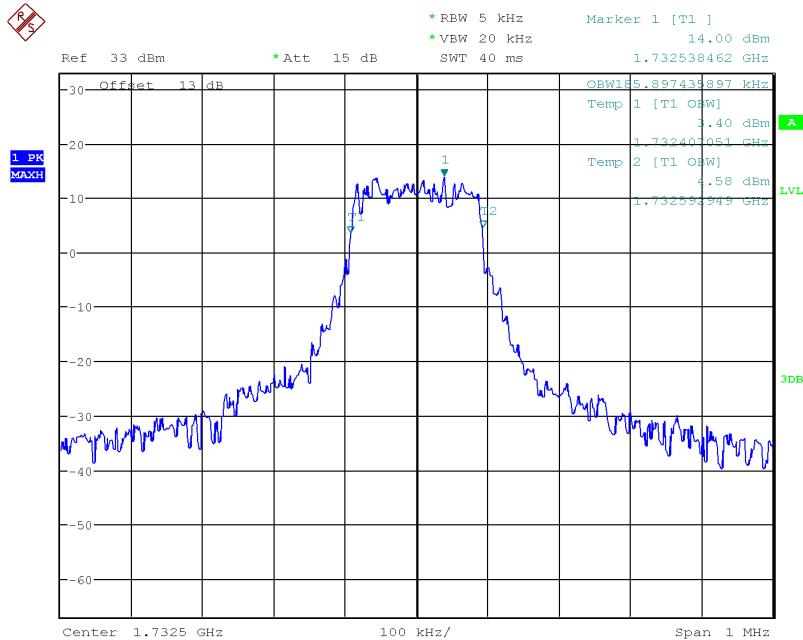


Date: 26.DEC.2018 21:16:30

NB-IoT standalone band 4 19951 BPSK(26dB)

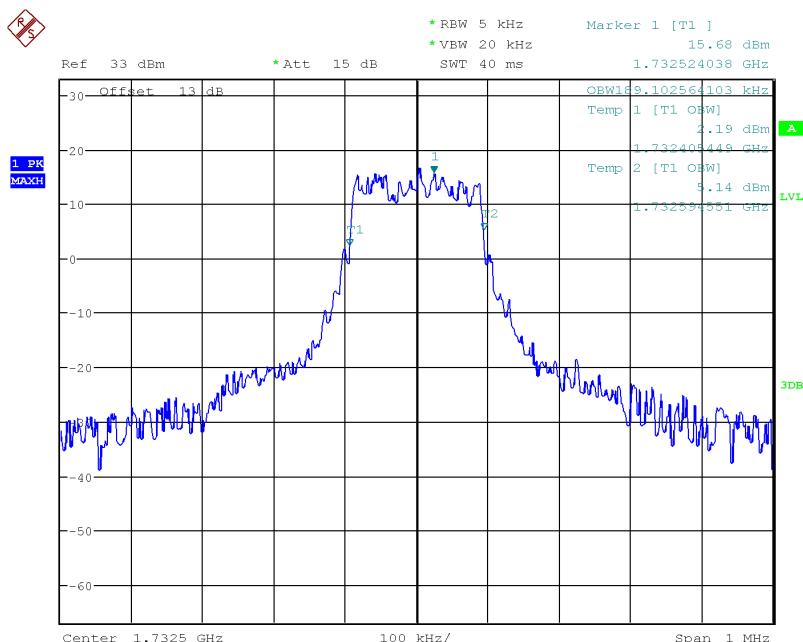
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:18:48

NB-IoT standalone band 4 20175 QPSK(99%)

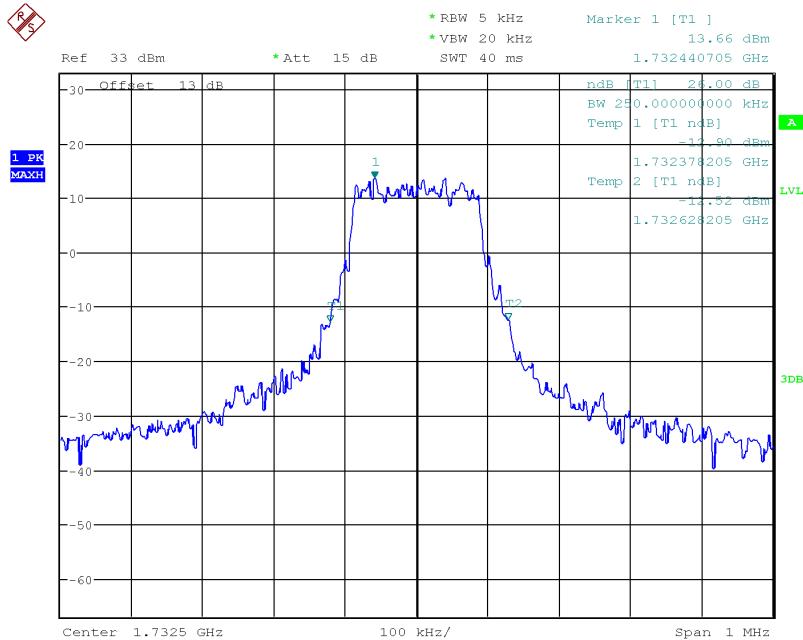


Date: 26.DEC.2018 21:20:27

NB-IoT standalone band 4 20175 BPSK(99%)

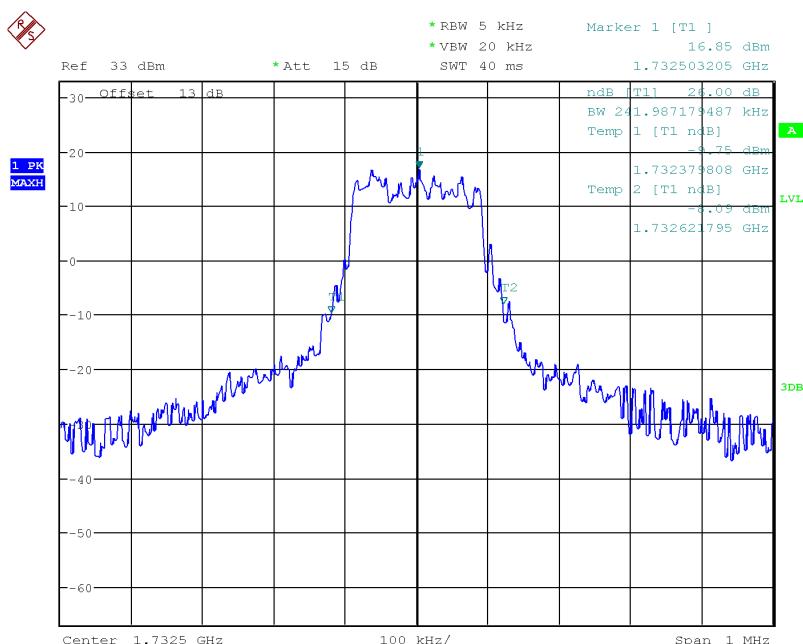
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:19:23

### NB-IoT standalone band 4 20175 QPSK(26dB)

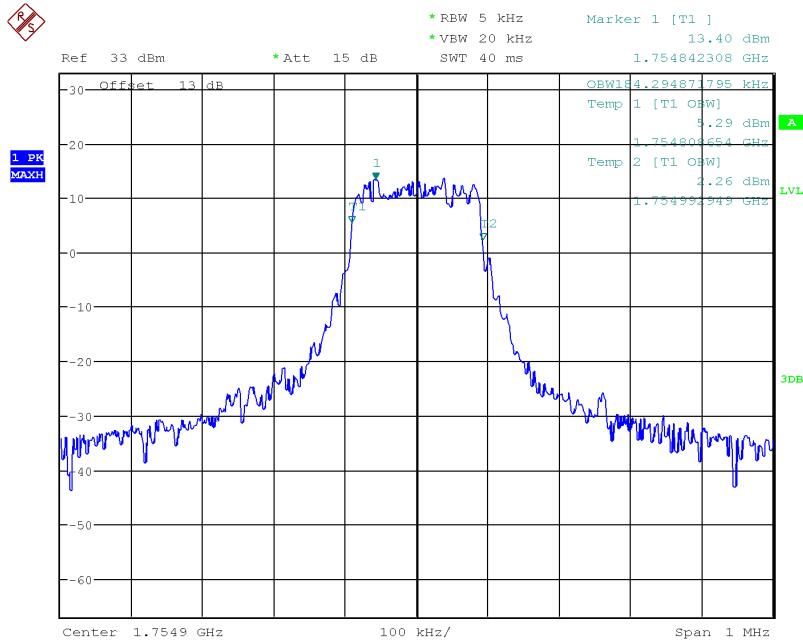


Date: 26.DEC.2018 21:20:00

### NB-IoT standalone band 4 20175 BPSK(26dB)

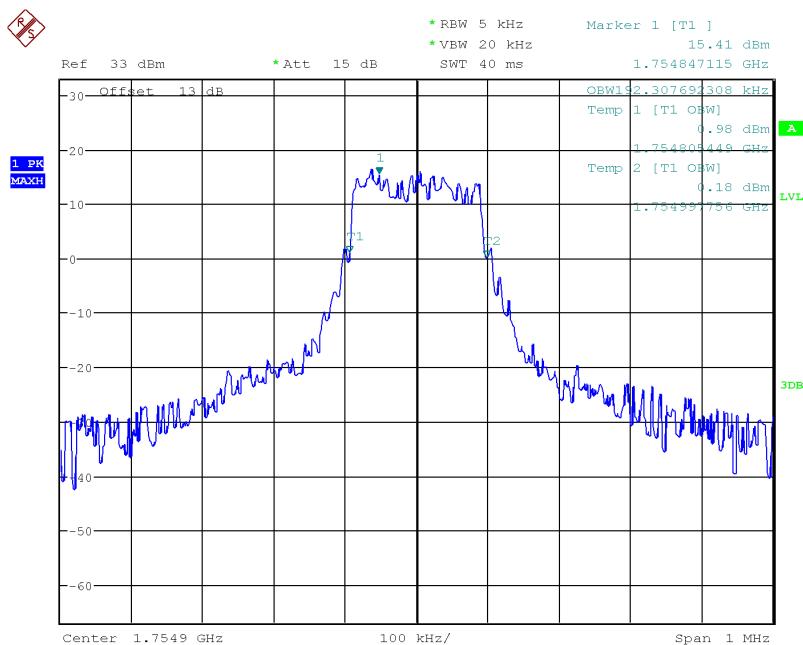
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:22:52

NB-IoT standalone band 4 20399 QPSK(99%)

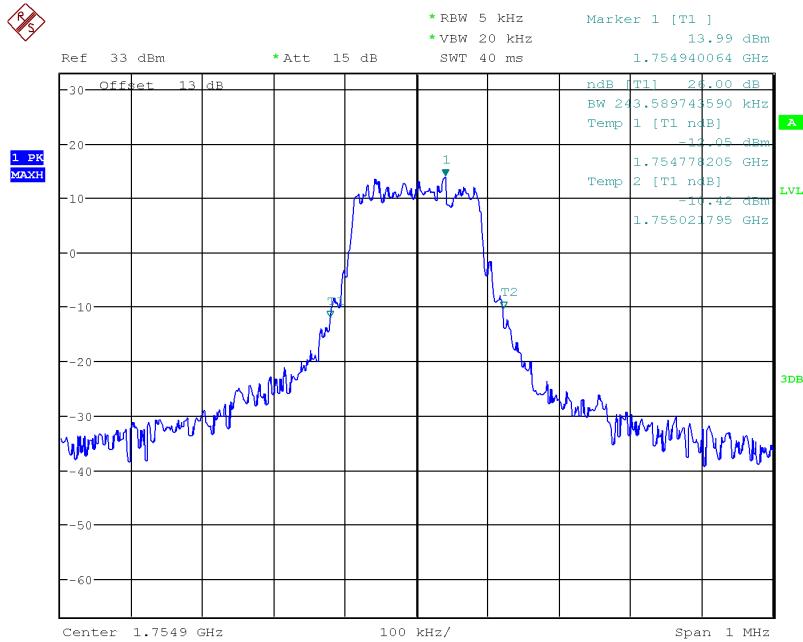


Date: 26.DEC.2018 21:21:19

NB-IoT standalone band 4 20399 BPSK(99%)

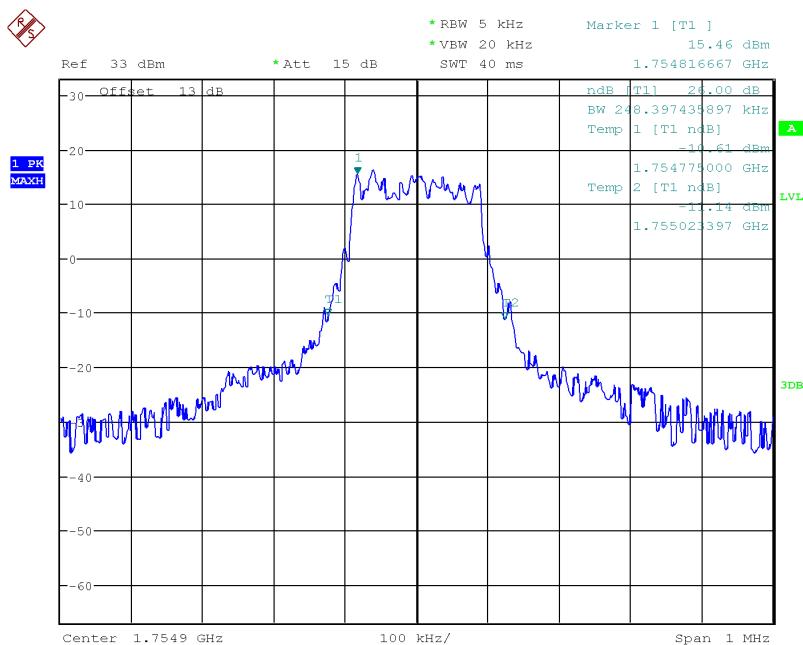
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:22:26

### NB-IoT standalone band 4 20399 QPSK(26dB)

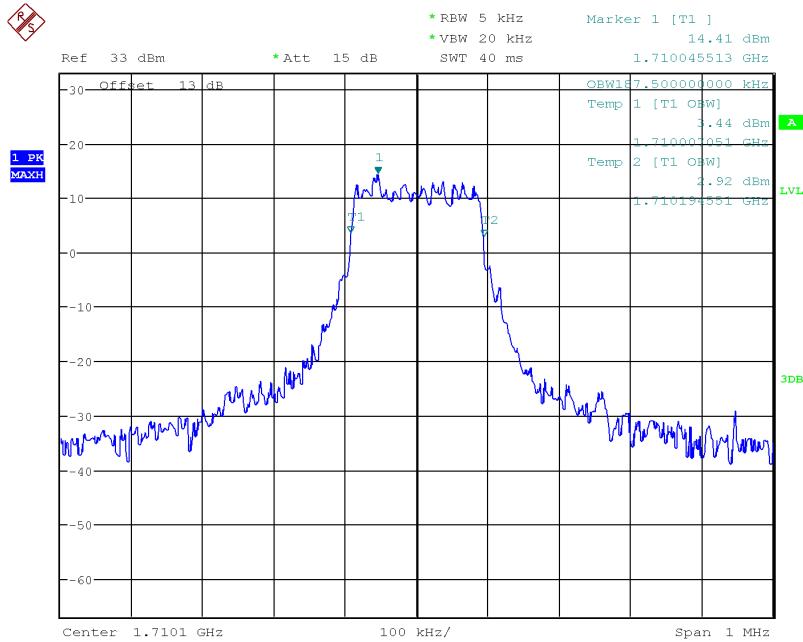


Date: 26.DEC.2018 21:21:56

### NB-IoT standalone band 4 20399 BPSK(26dB)

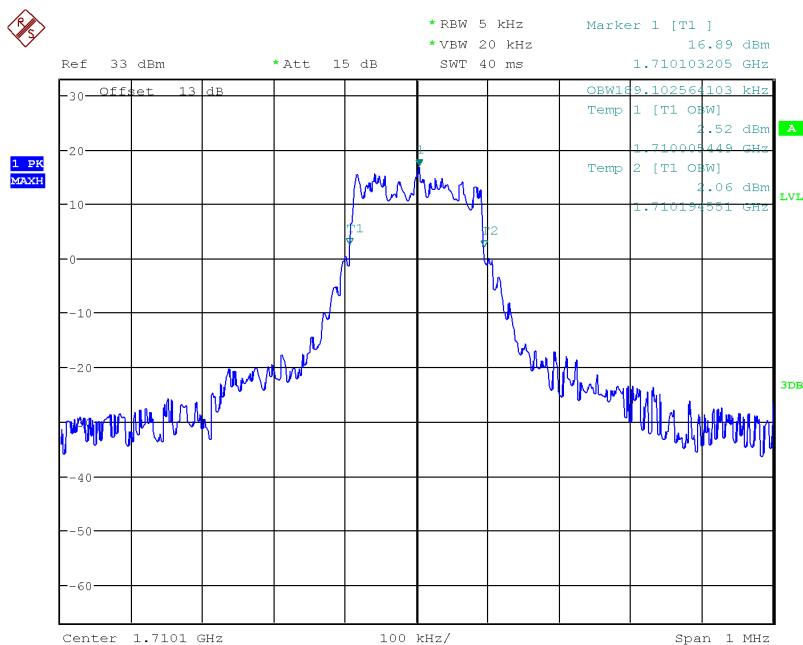
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:30:35

### NB-IoT In-band band 4 19951 QPSK(99%)



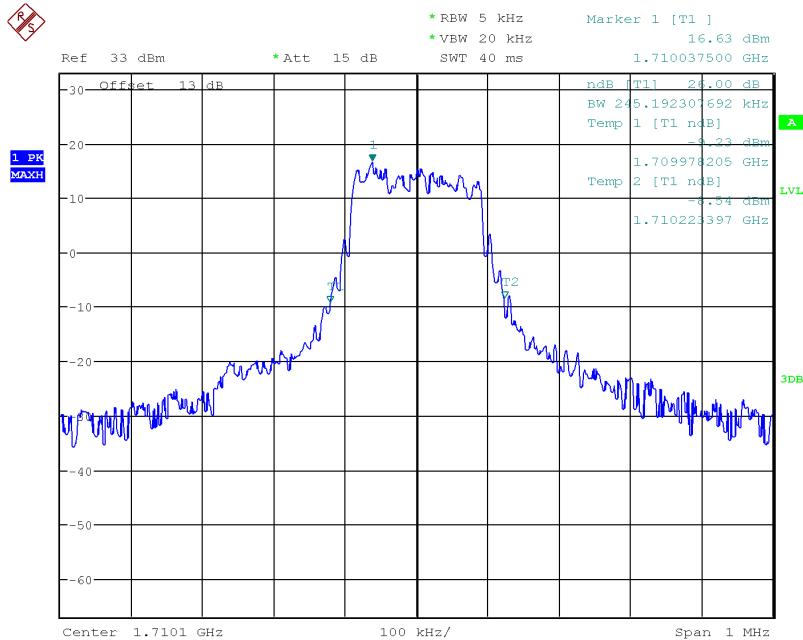
Date: 26.DEC.2018 21:32:41

### NB-IoT In-band band 4 19951 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

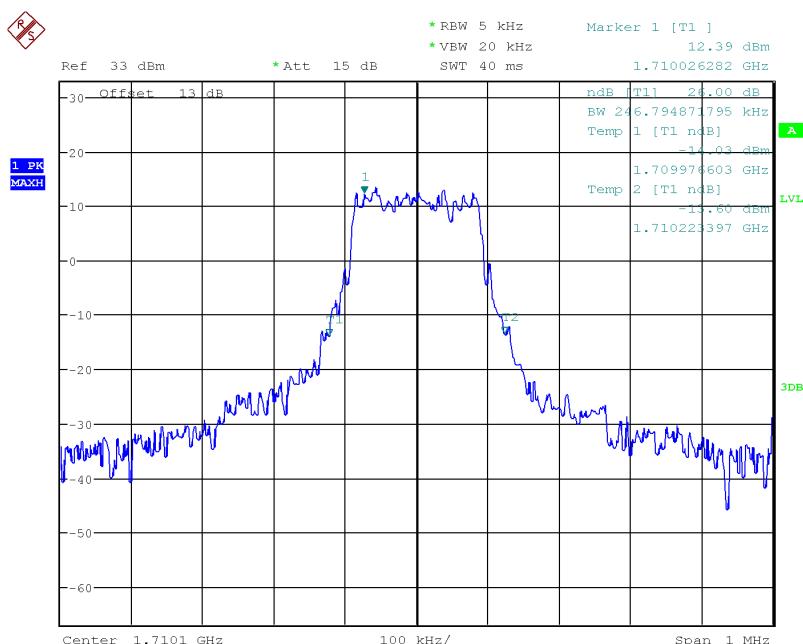
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:32:09

NB-IoT In-band band 4 19951 QPSK(26dB)

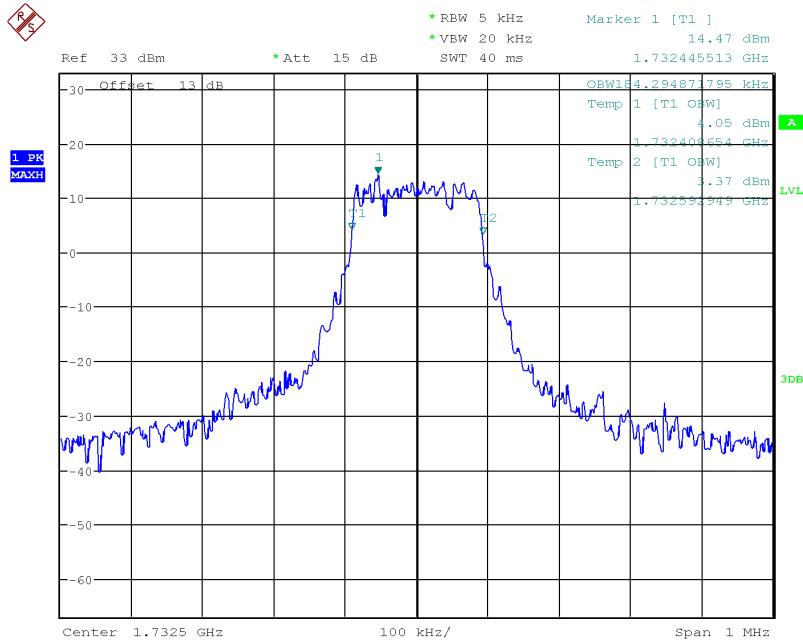


Date: 26.DEC.2018 21:31:03

NB-IoT In-band band 4 19951 BPSK(26dB)

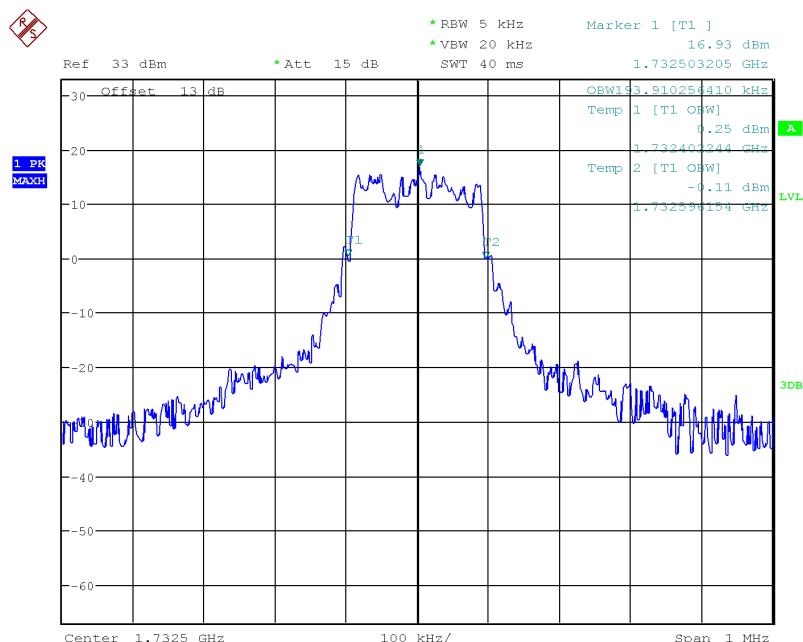
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:29:24

NB-IoT In-band band 4 20175 QPSK(99%)



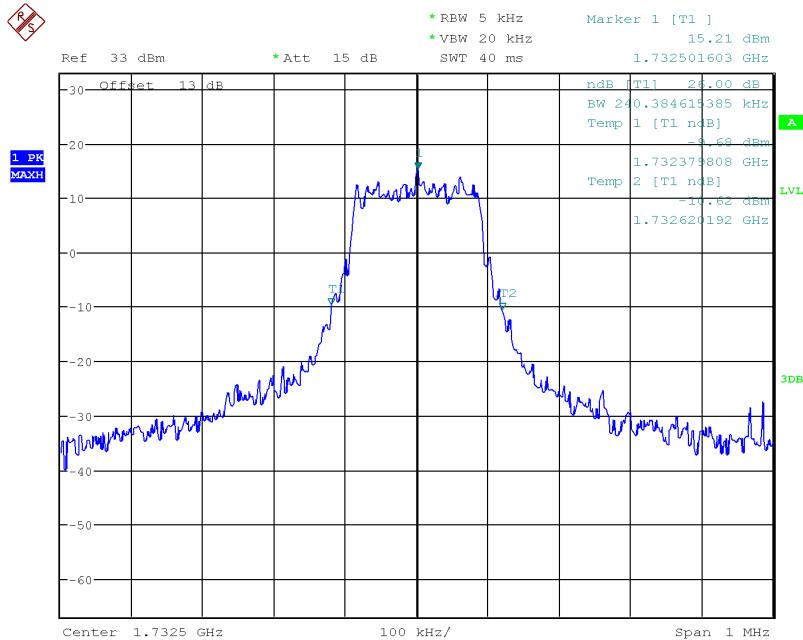
Date: 26.DEC.2018 21:27:54

NB-IoT In-band band 4 20175 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

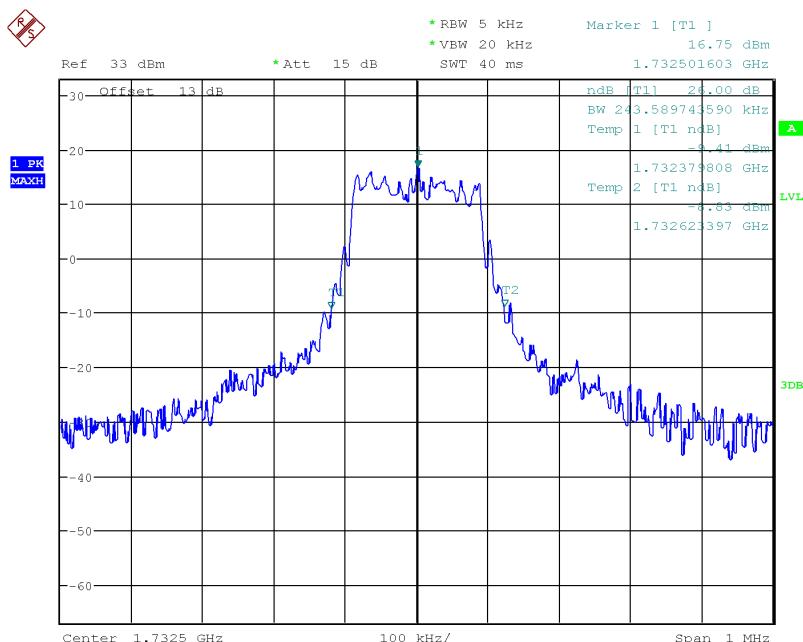
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:28:56

NB-IoT In-band band 4 20175 QPSK(26dB)

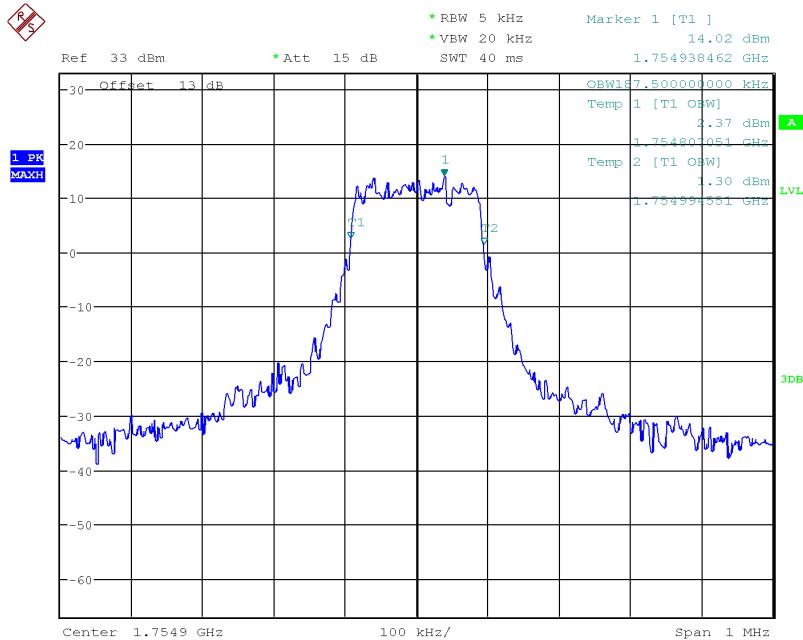


Date: 26.DEC.2018 21:28:22

NB-IoT In-band band 4 20175 BPSK(26dB)

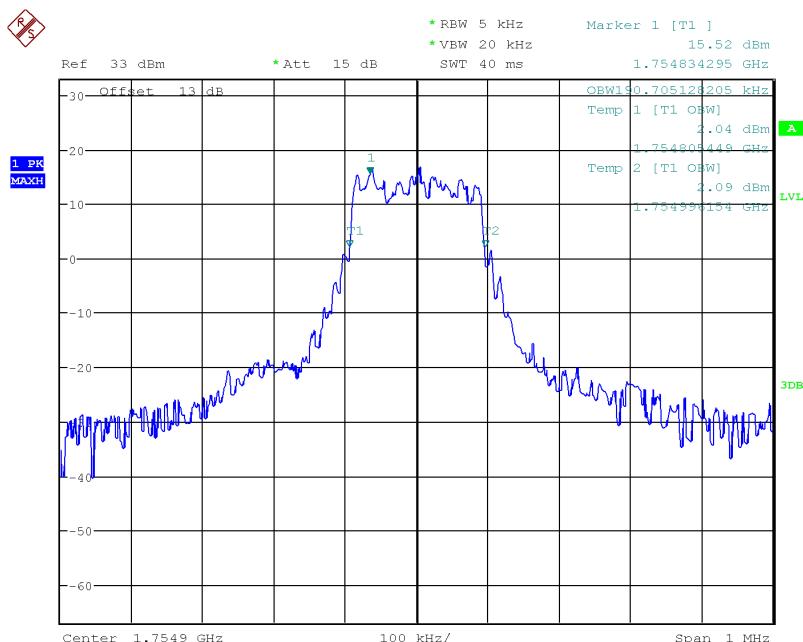
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:23:53

## NB-IoT In-band band 4 20399 QPSK(99%)



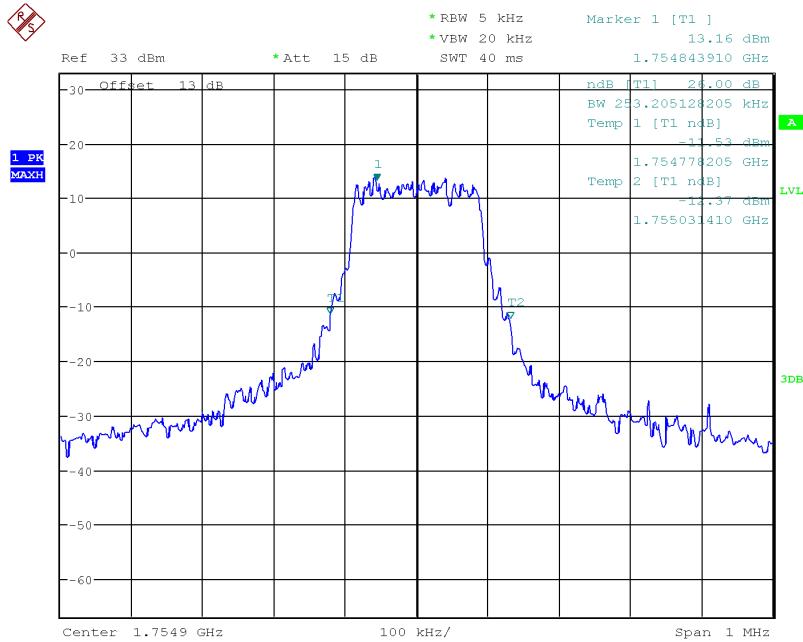
Date: 26.DEC.2018 21:25:57

## NB-IoT In-band band 4 20399 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

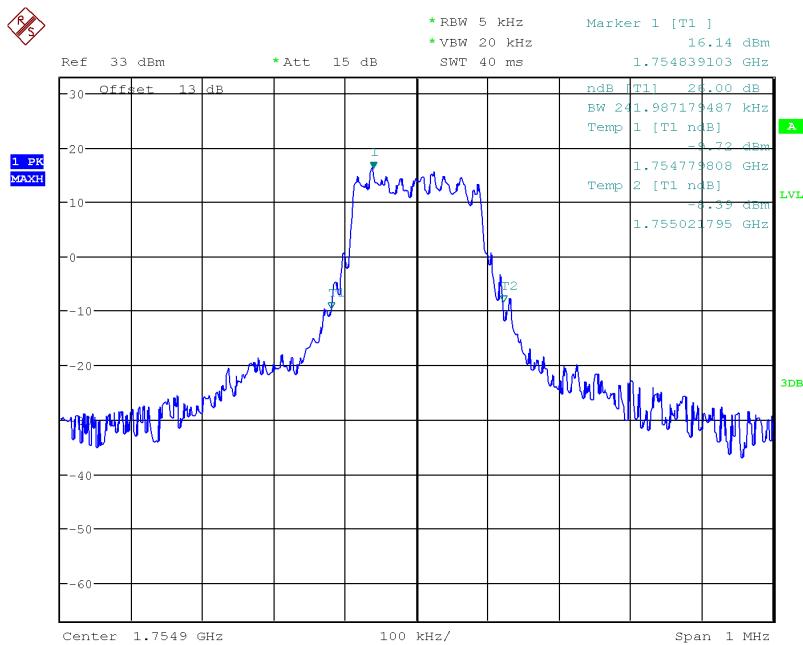
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:24:41

NB-IoT In-band band 4 20399 QPSK(26dB)

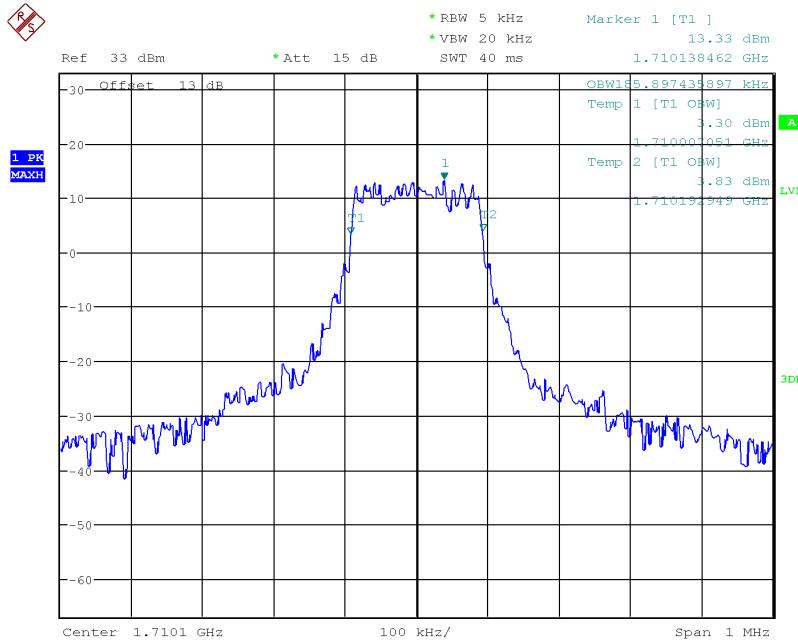


Date: 26.DEC.2018 21:25:20

NB-IoT In-band band 4 20399 BPSK(26dB)

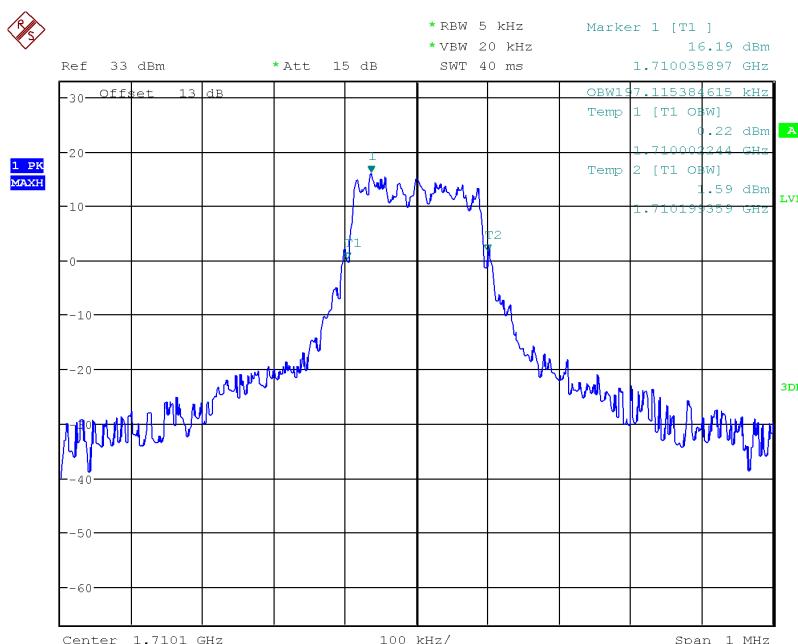
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:36:20

NB-IoT Guard-band band 4 19951 QPSK(99%)



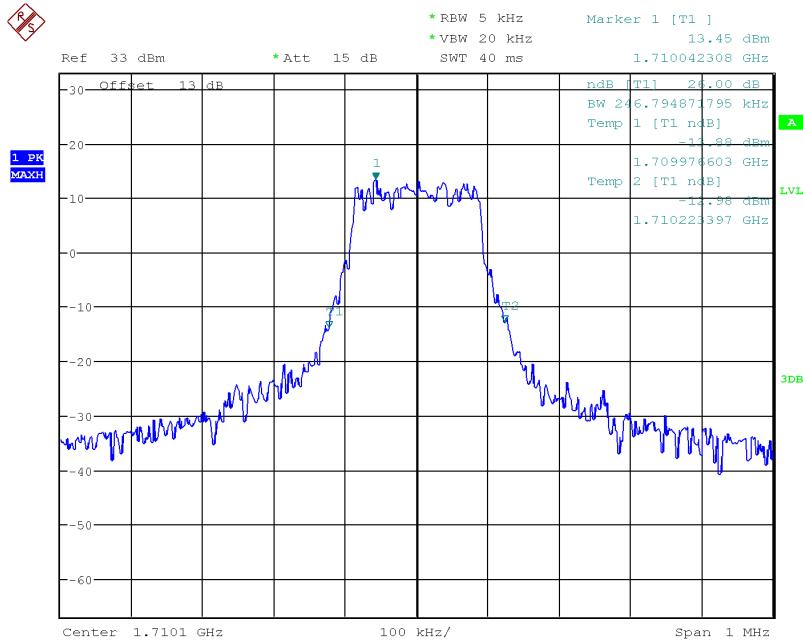
Date: 26.DEC.2018 21:34:42

NB-IoT Guard-band band 4 19951 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

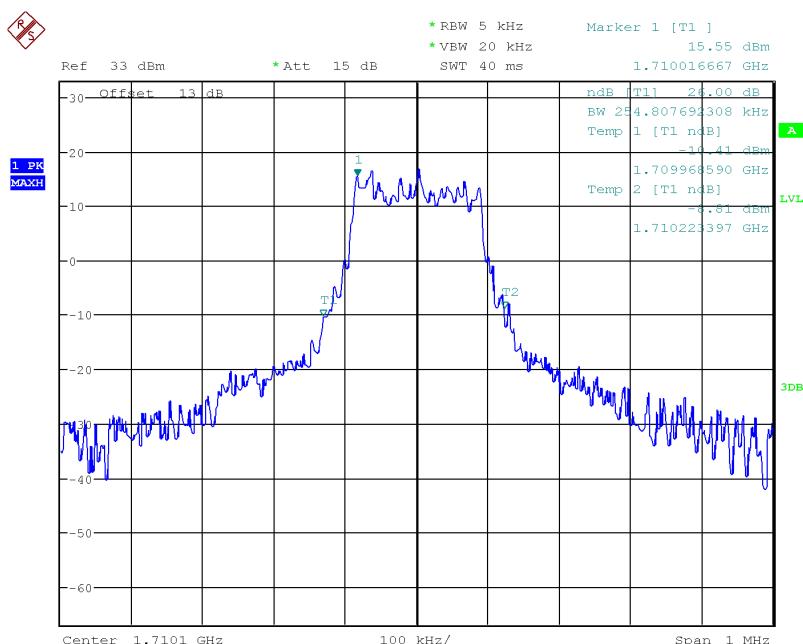
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:35:42

NB-IoT Guard-band band 4 19951 QPSK(26dB)

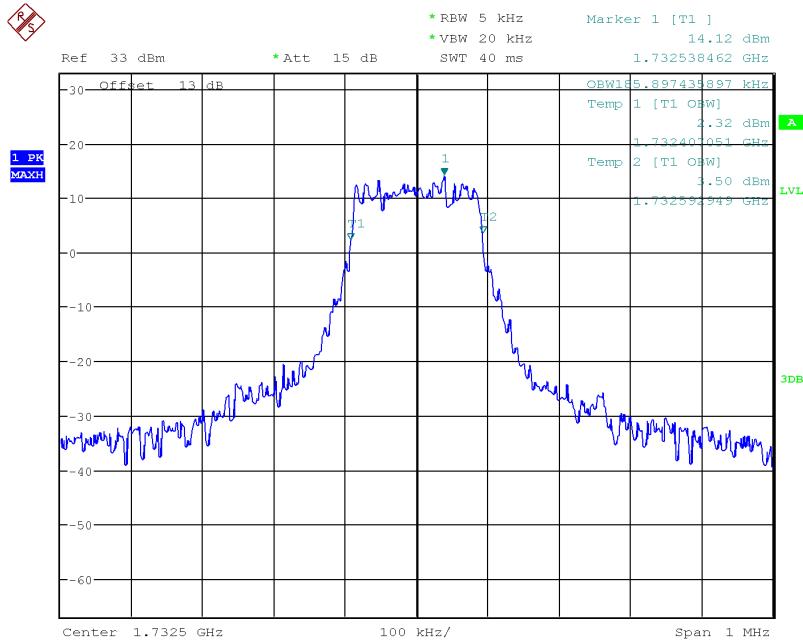


Date: 26.DEC.2018 21:35:06

NB-IoT Guard-band band 4 19951 BPSK(26dB)

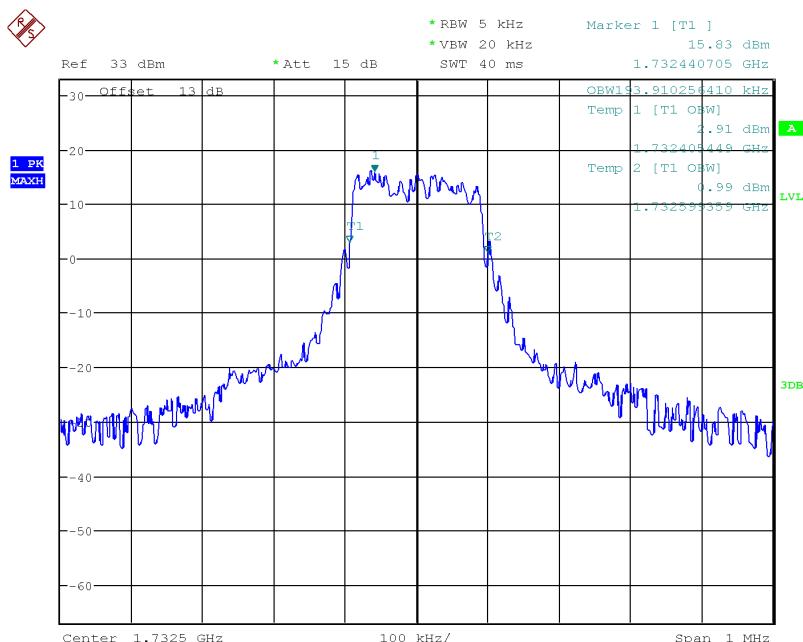
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:37:07

NB-IoT Guard-band band 4 20175 QPSK(99%)



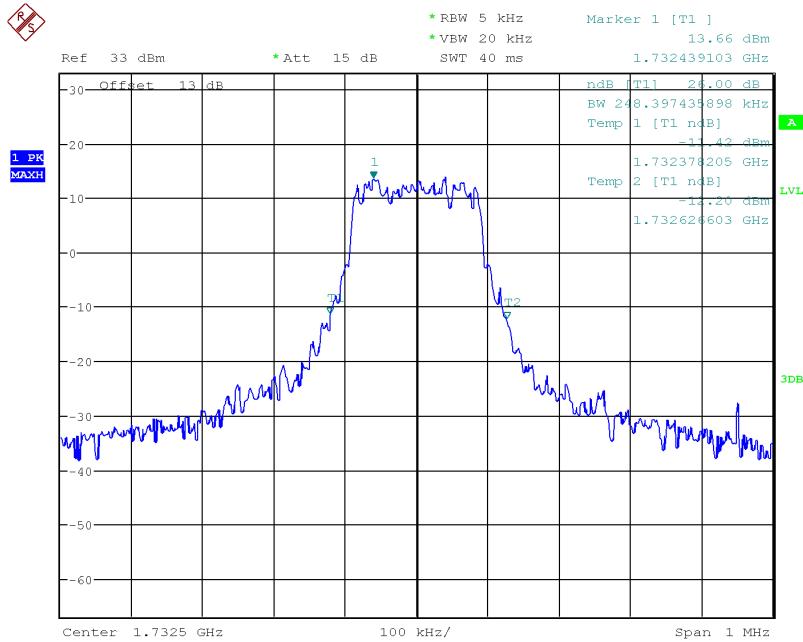
Date: 26.DEC.2018 21:38:45

NB-IoT Guard-band band 4 20175 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

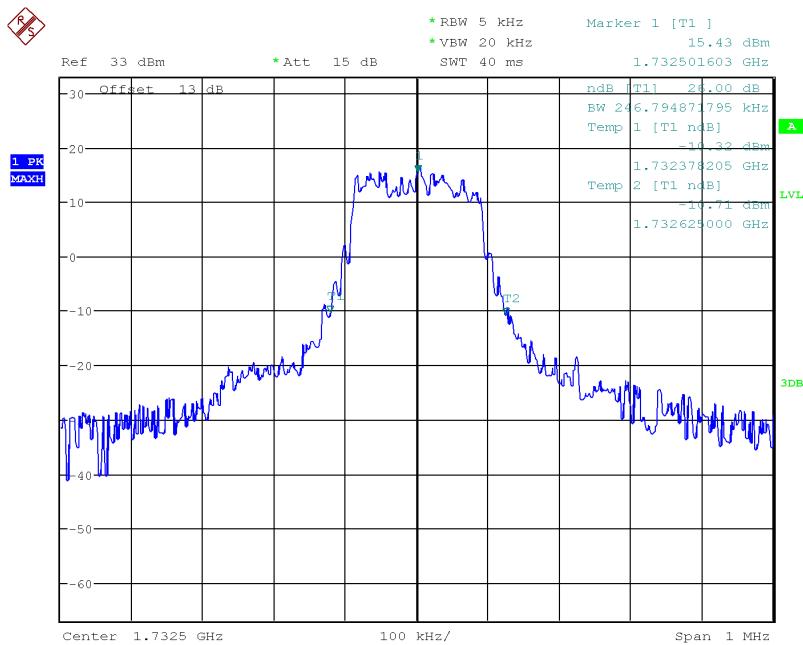
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:37:37

NB-IoT Guard-band band 4 20175 QPSK(26dB)

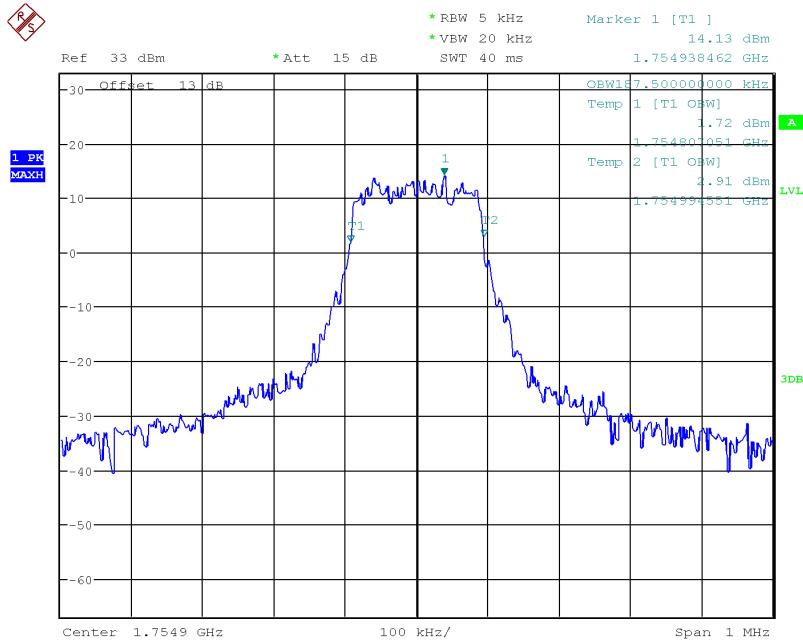


Date: 26.DEC.2018 21:38:08

NB-IoT Guard-band band 4 20175 BPSK(26dB)

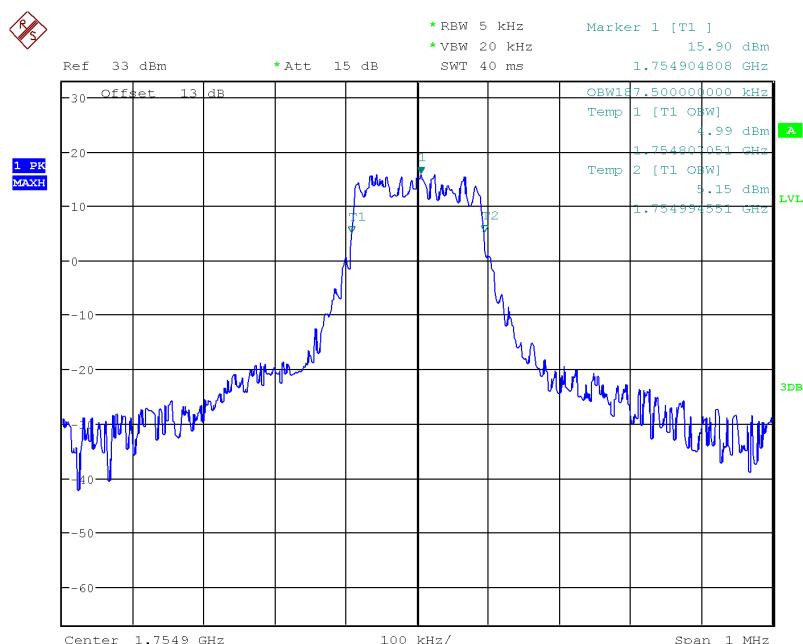
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:42:10

NB-IoT Guard-band band 4 20399 QPSK(99%)

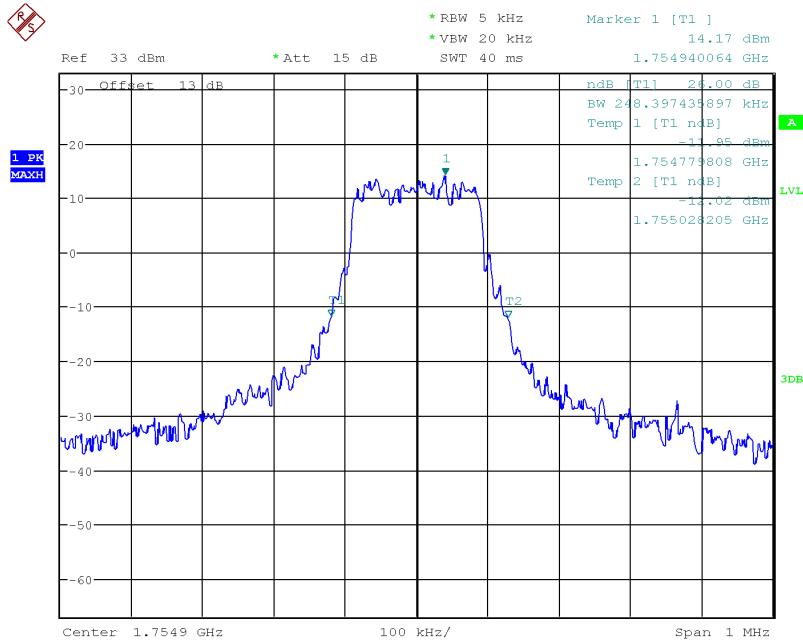


Date: 26.DEC.2018 21:40:33

NB-IoT Guard-band band 4 20399 BPSK(99%)

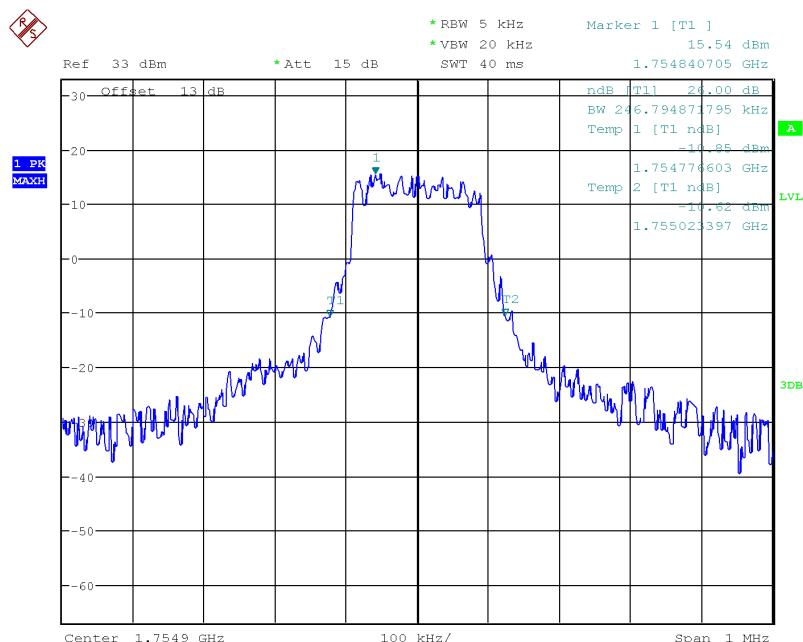
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:41:41

NB-IoT Guard-band band 4 20399 QPSK(26dB)



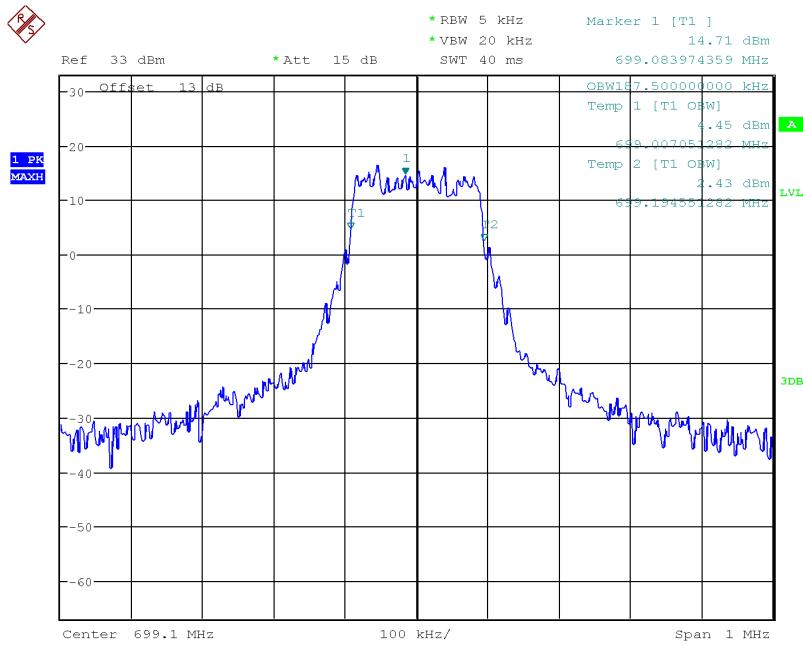
Date: 26.DEC.2018 21:40:59

NB-IoT Guard-band band 4 20399 BPSK(26dB)

# Chongqing Academy of Information and Communications Technology

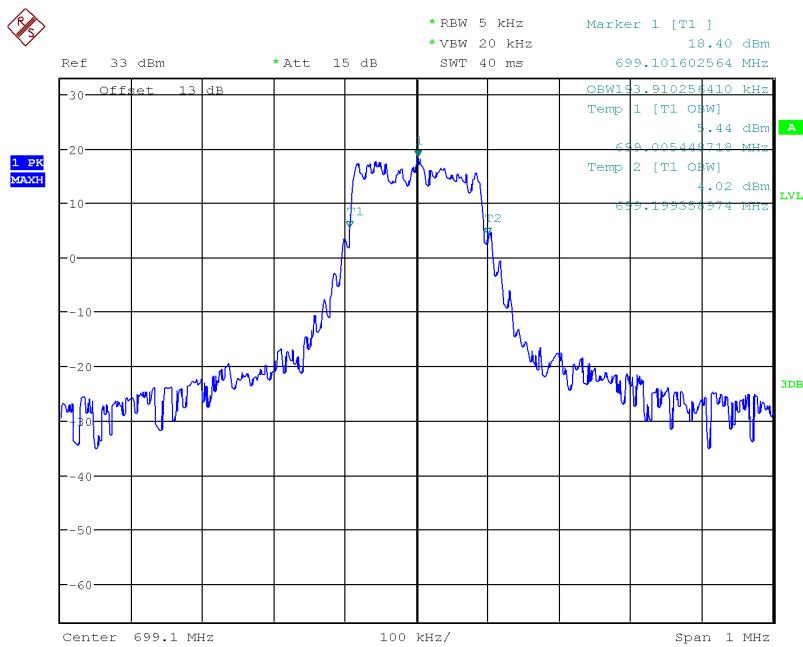
Report No.:B18W50650-WWAN\_Rev2

## Graphical results for Band12:



Date: 26.DEC.2018 21:46:56

NB-IoT standalone band 12 23011 QPSK(99%)



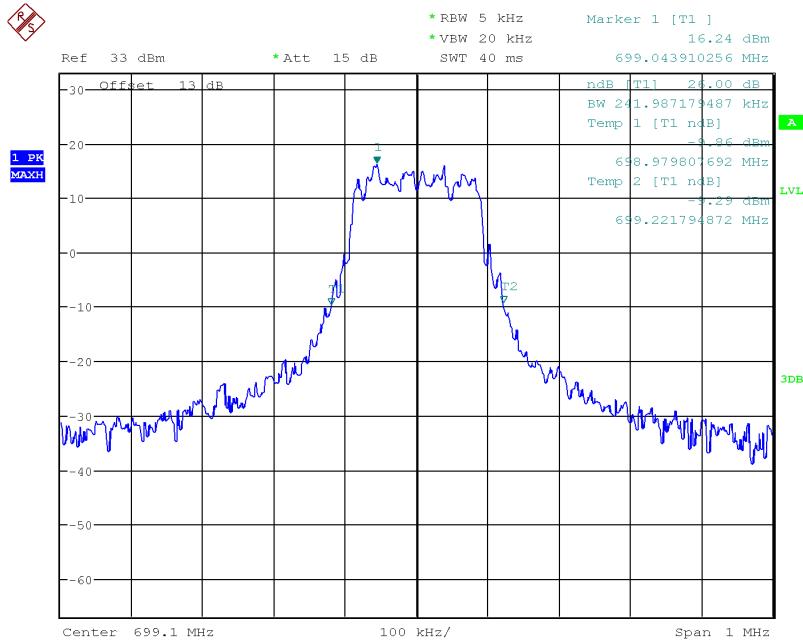
Date: 26.DEC.2018 21:45:34

NB-IoT standalone band 12 23011 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

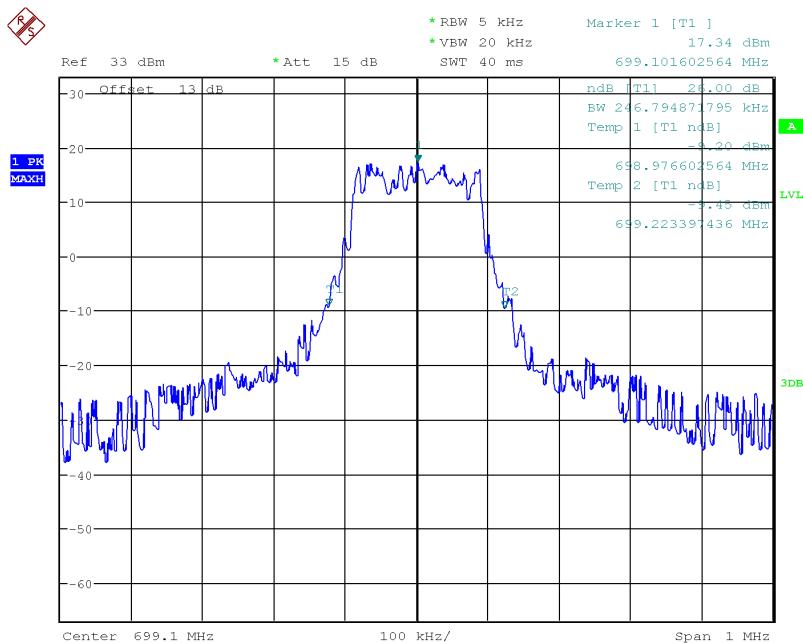
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:46:24

### NB-IoT standalone band 12 23011 QPSK(26dB)



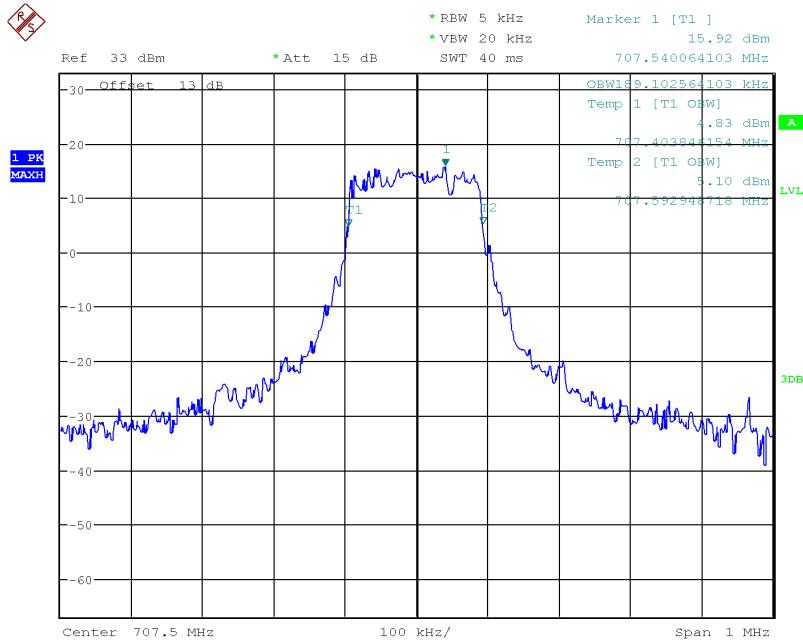
Date: 26.DEC.2018 21:45:54

### NB-IoT standalone band 12 23011 BPSK(26dB)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

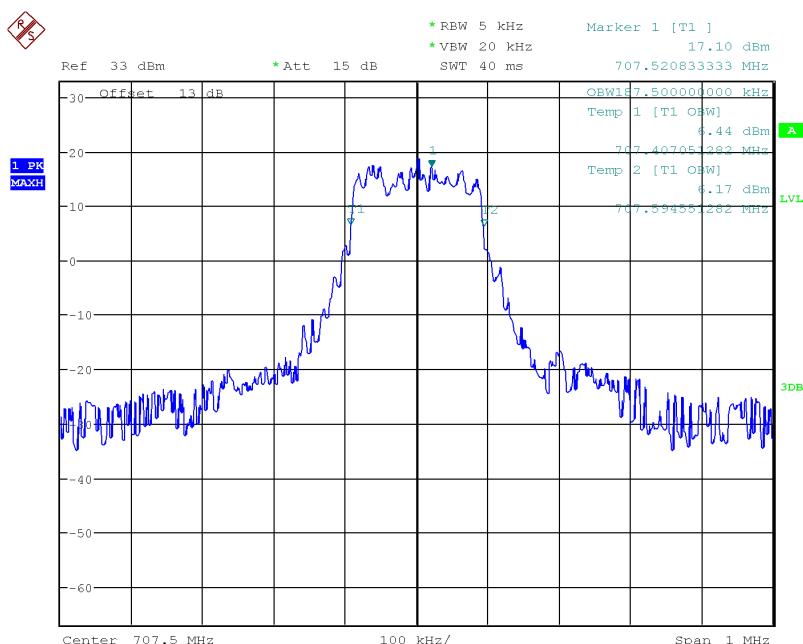
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:48:51

NB-IoT standalone band 12 23095 QPSK(99%)

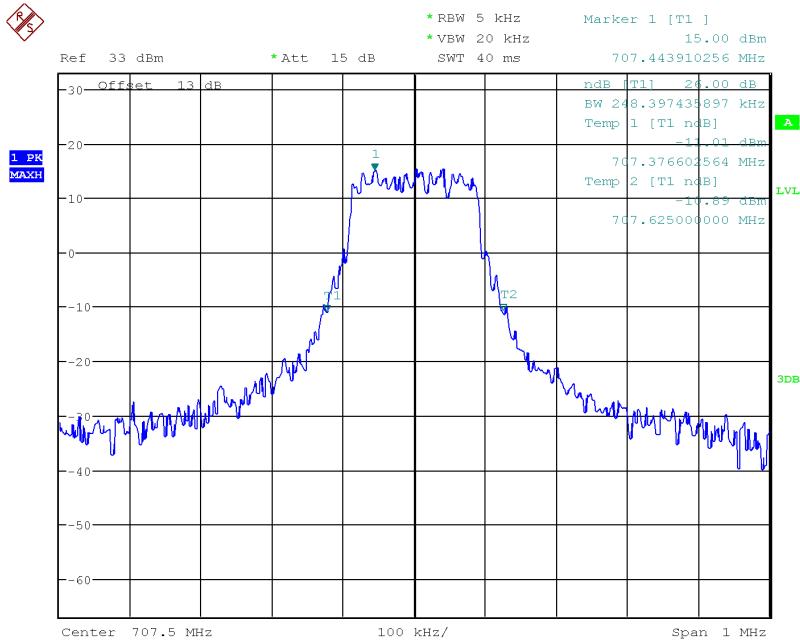


Date: 26.DEC.2018 21:50:20

NB-IoT standalone band 12 23095 BPSK(99%)

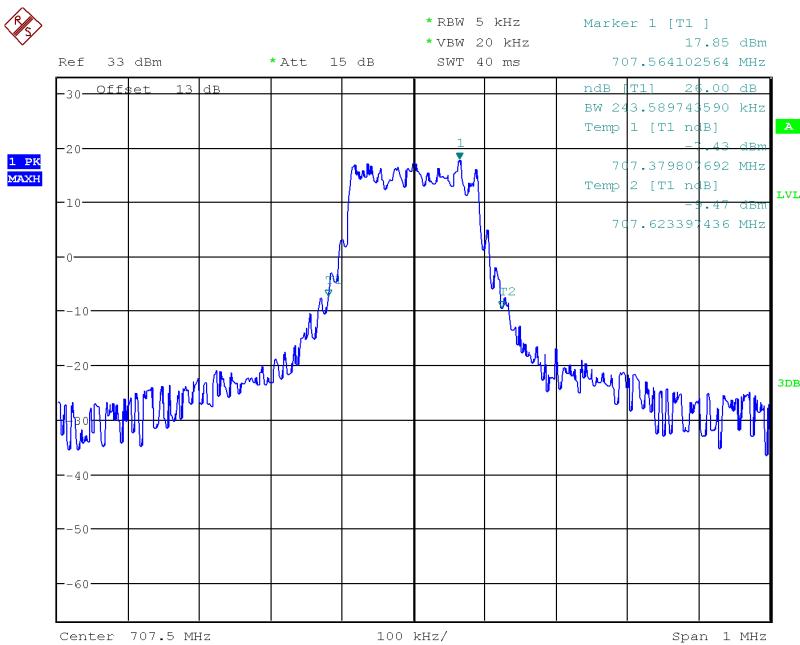
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:49:21

### NB-IoT standalone band 12 23095 QPSK(26dB)



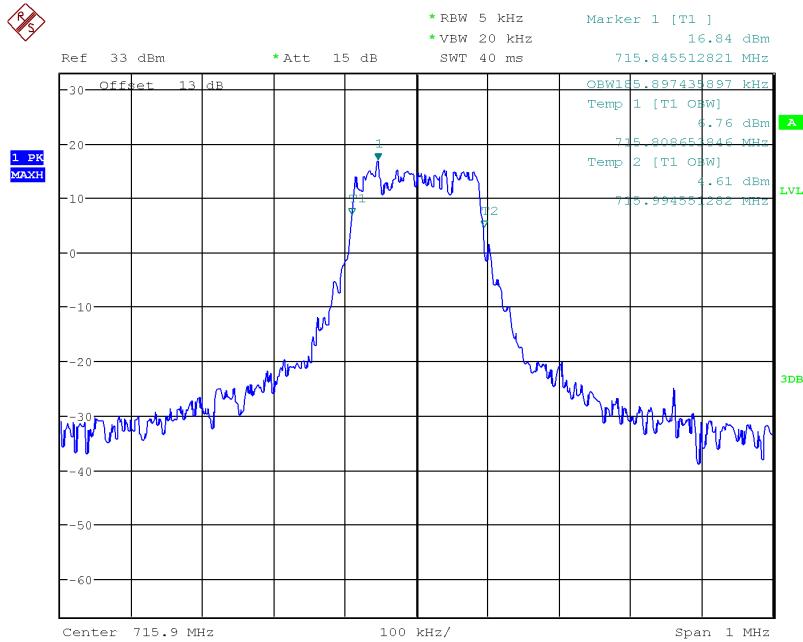
Date: 26.DEC.2018 21:49:52

### NB-IoT standalone band 12 23095 BPSK(26dB)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

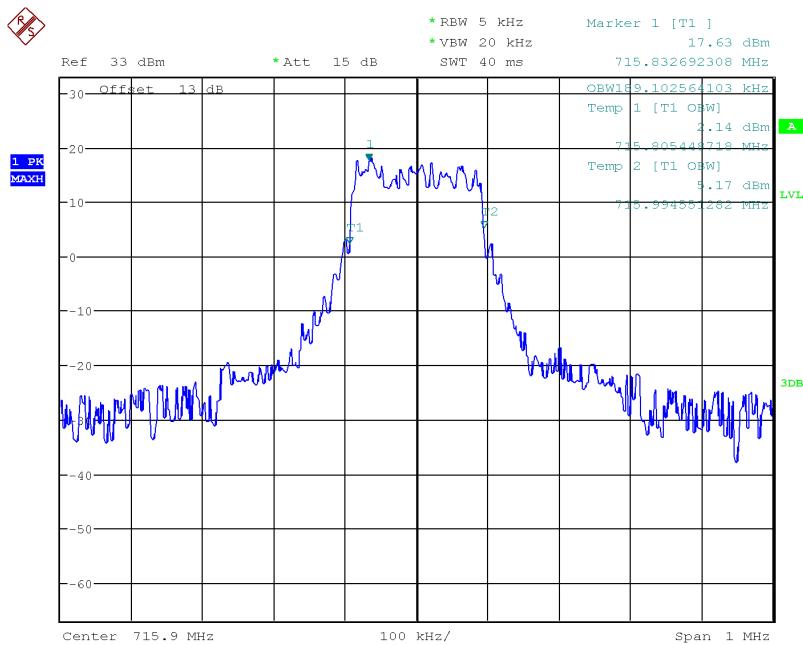
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:52:42

### NB-IoT standalone band 12 23179 QPSK(99%)



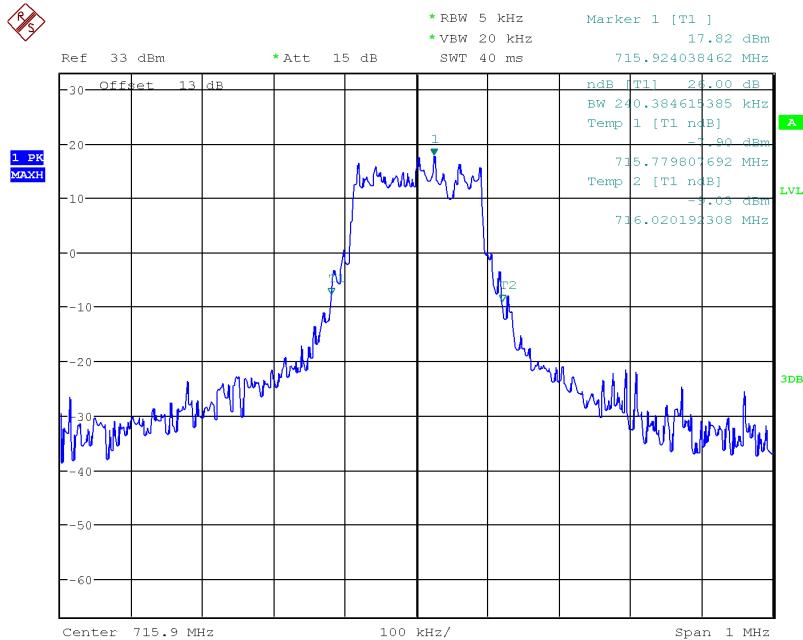
Date: 26.DEC.2018 21:51:08

### NB-IoT standalone band 12 23179 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

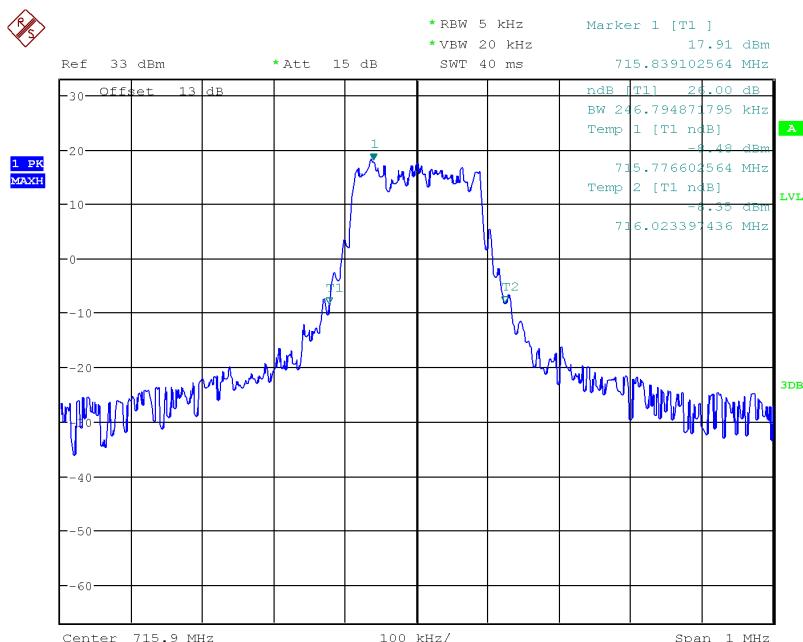
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:52:14

### NB-IoT standalone band 12 23179 QPSK(26dB)

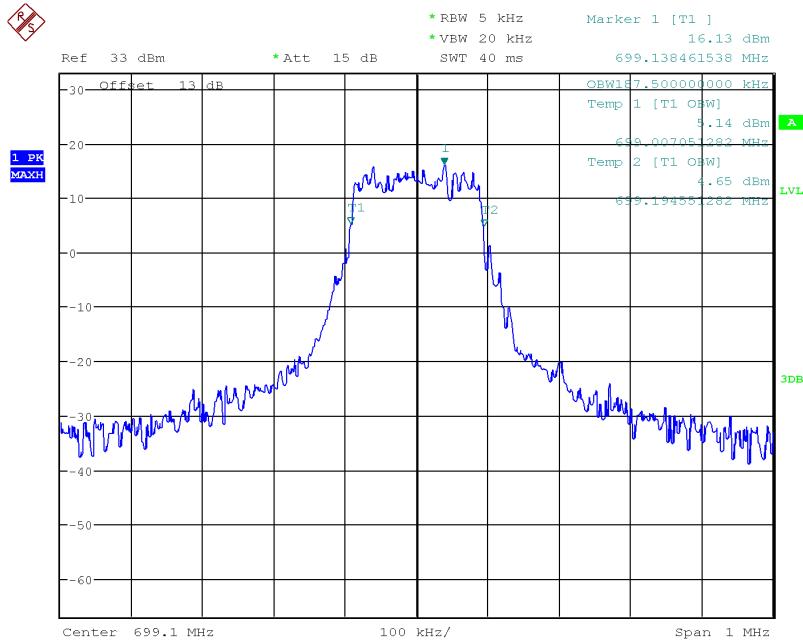


Date: 26.DEC.2018 21:51:48

### NB-IoT standalone band 12 23179 BPSK(26dB)

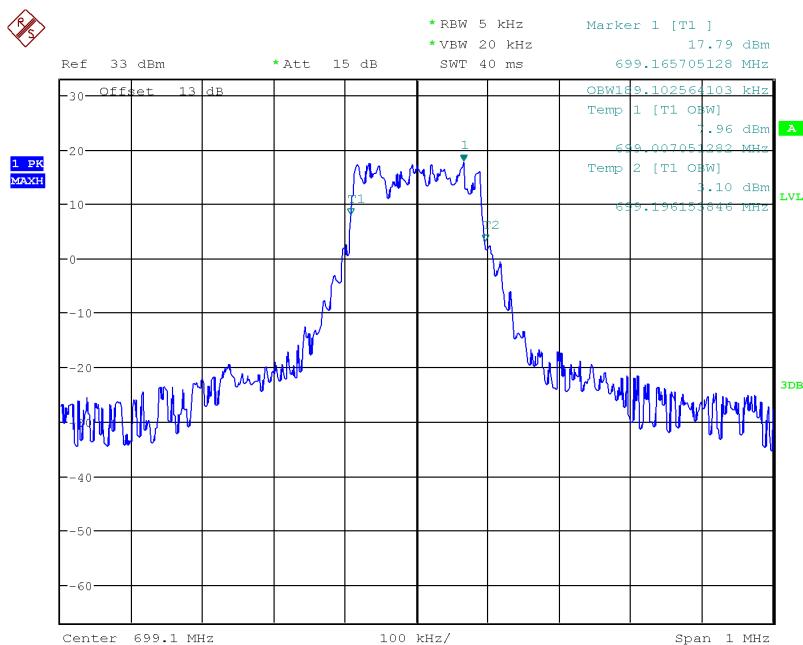
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:58:54

NB-IoT In-band band 12 23011 QPSK(99%)

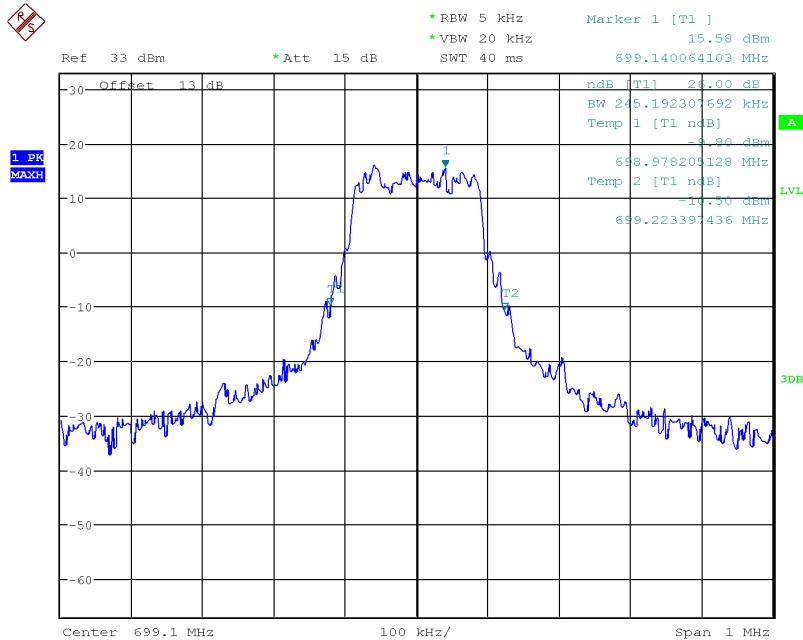


Date: 26.DEC.2018 22:00:29

NB-IoT In-band band 12 23011 BPSK(99%)

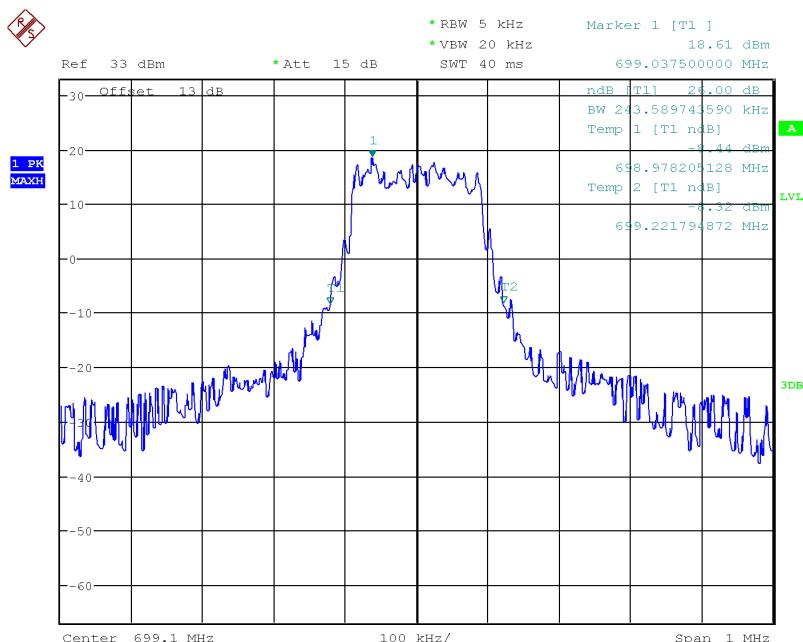
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:59:32

### NB-IoT In-band band 12 23011 QPSK(26dB)

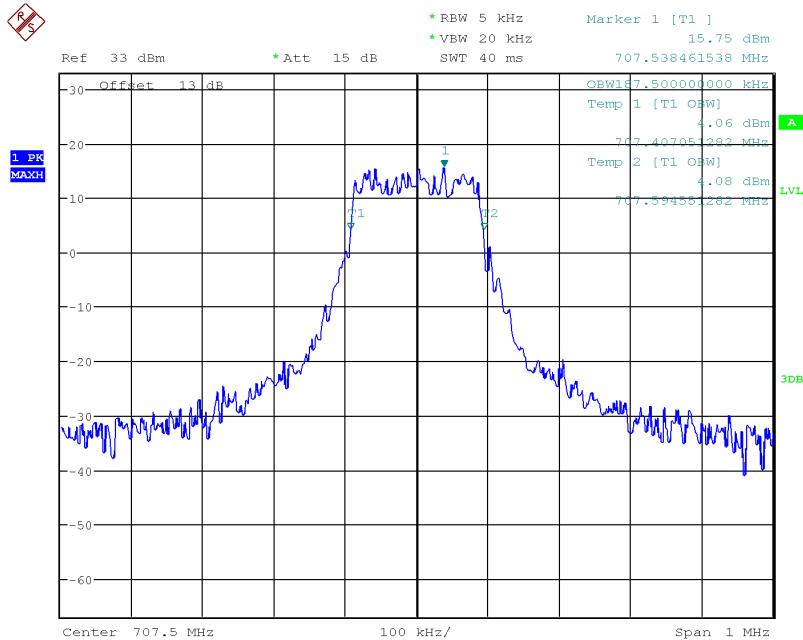


Date: 26.DEC.2018 21:59:59

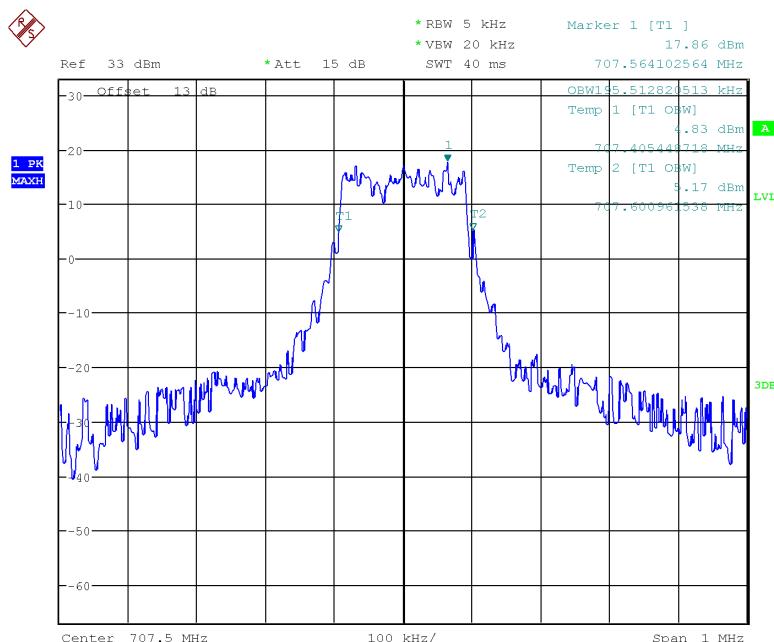
### NB-IoT In-band band 12 23011 BPSK(26dB)

# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



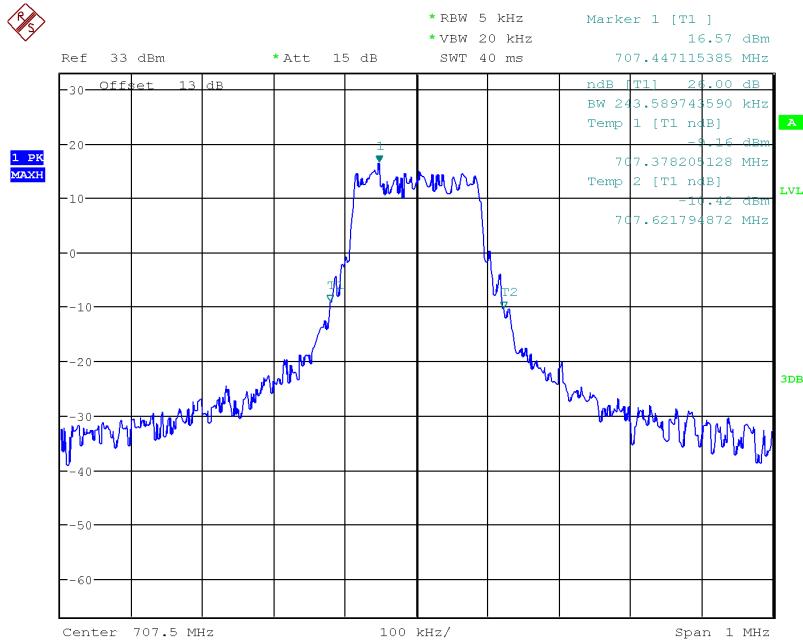
NB-IoT In-band band 12 23095 QPSK(99%)



NB-IoT In-band band 12 23095 BPSK(99%)

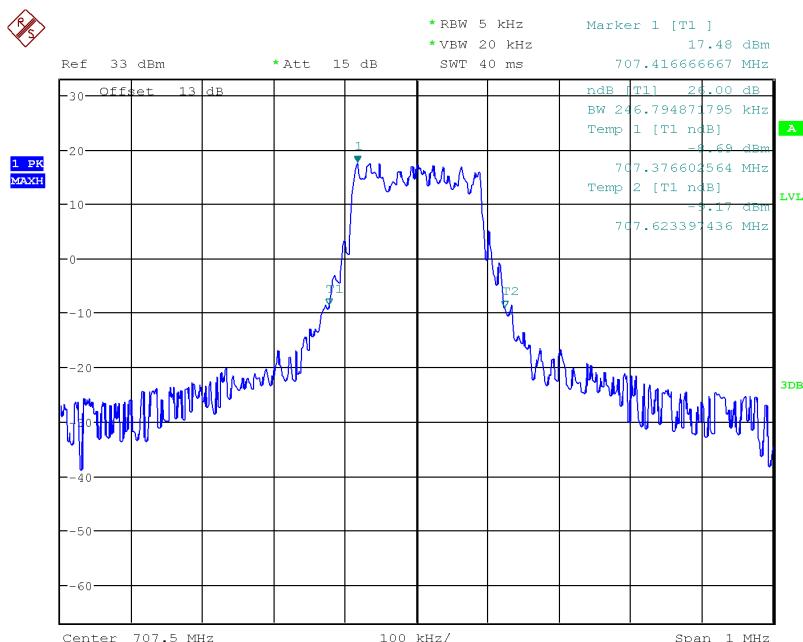
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:57:43

### NB-IoT In-band band 12 23095 QPSK(26dB)

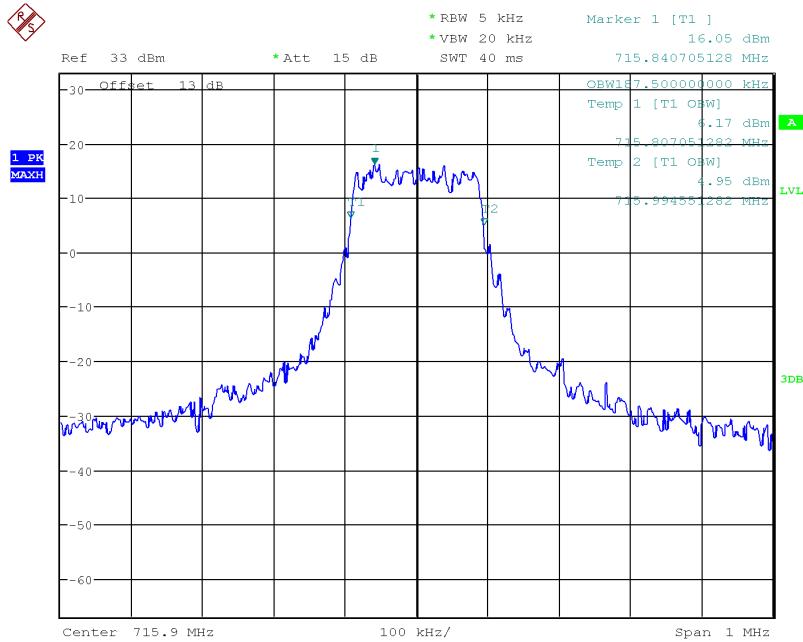


Date: 26.DEC.2018 21:57:12

### NB-IoT In-band band 12 23095 BPSK(26dB)

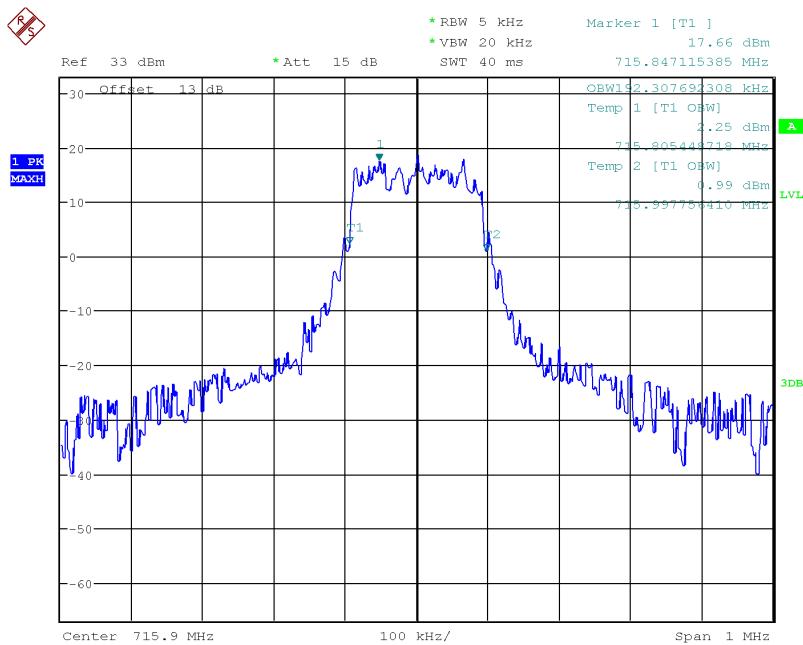
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:54:10

NB-IoT In-band band 12 23179 QPSK(99%)

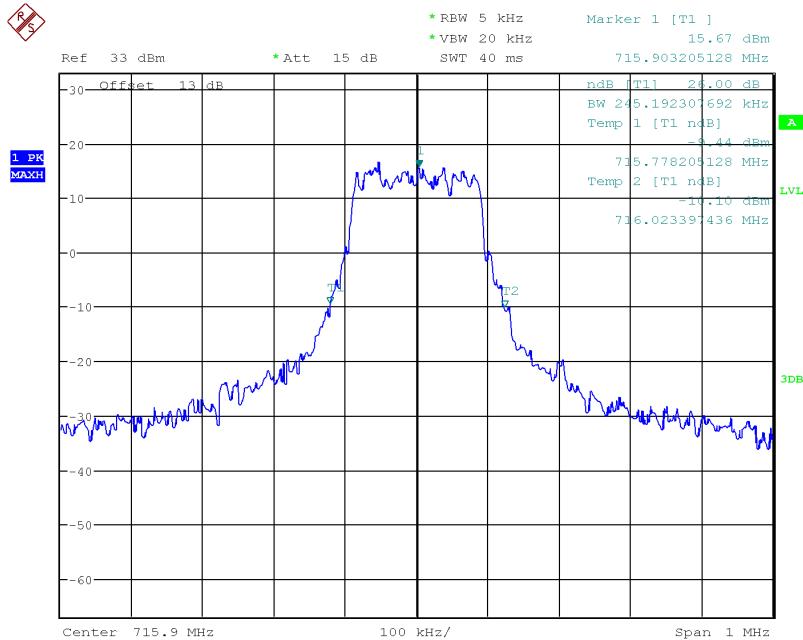


Date: 26.DEC.2018 21:55:56

NB-IoT In-band band 12 23179 BPSK(99%)

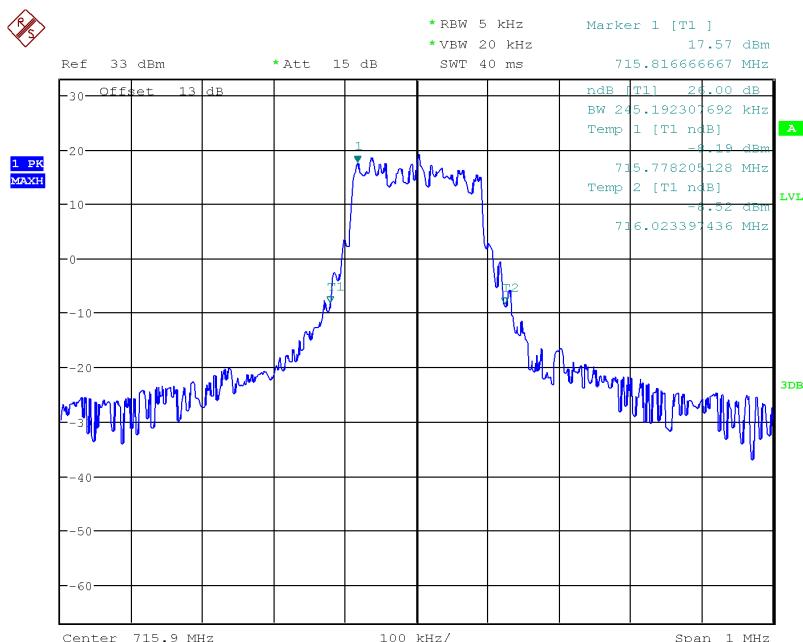
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 21:54:51

### NB-IoT In-band band 12 23179 QPSK(26dB)

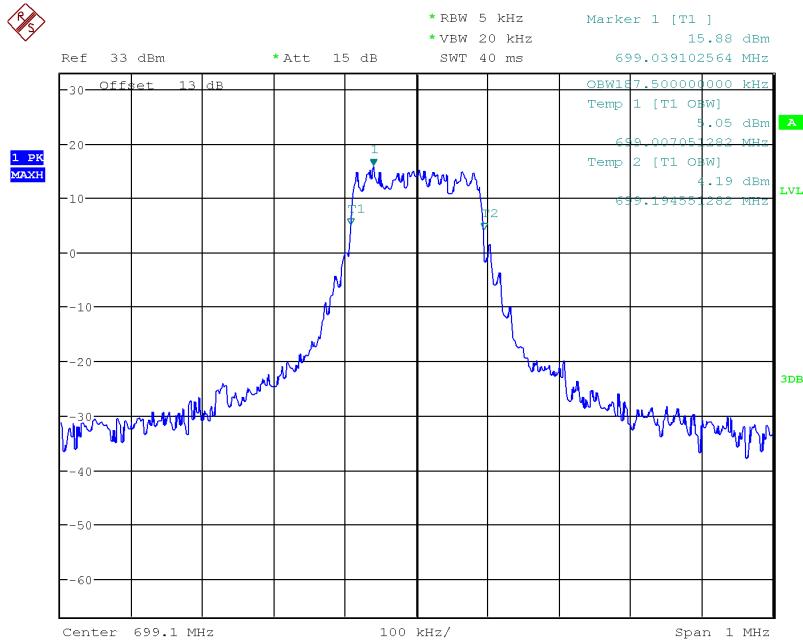


Date: 26.DEC.2018 21:55:32

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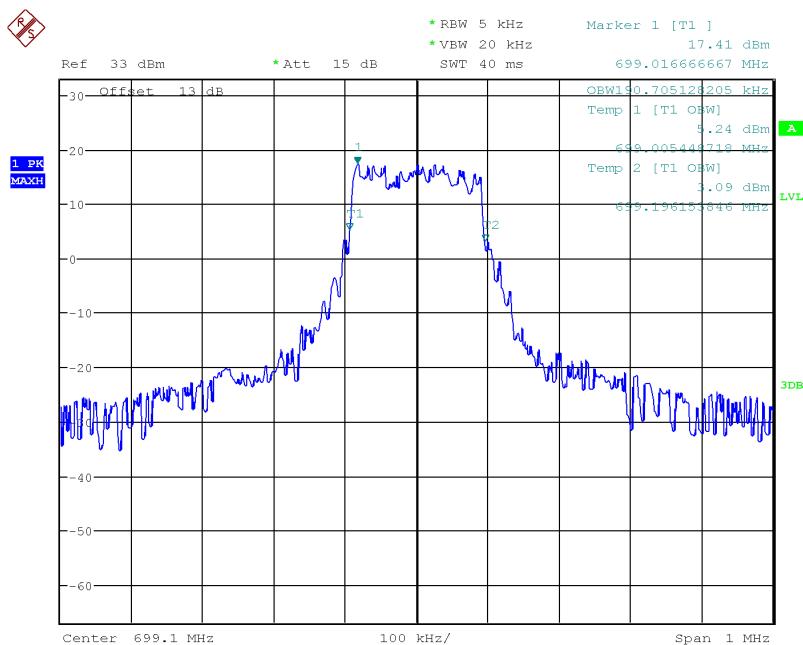
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:03:19

NB-IoT Guard-band band 12 23011 QPSK(99%)

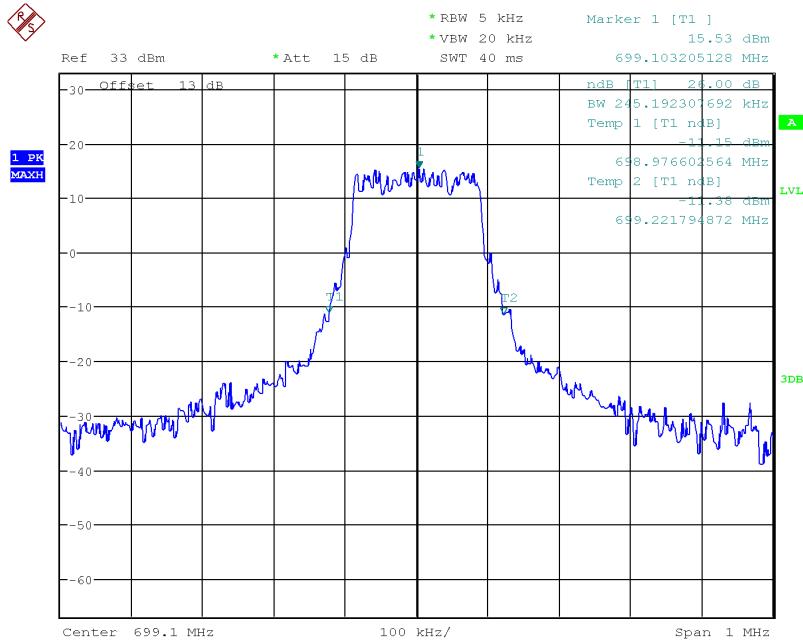


Date: 26.DEC.2018 22:01:44

NB-IoT Guard-band band 12 23011 BPSK(99%)

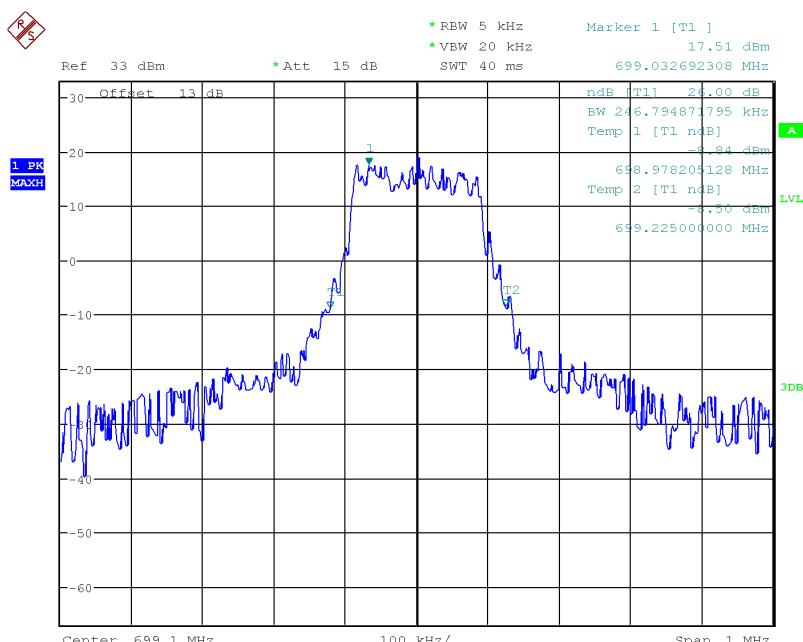
Chongqing Academy of Information and Communications Technology

**Report No.:B18W50650-WWAN\_Rev2**



Date: 26.DEC.2018 22:02:43

NB-IoT Guard-band band 12 23011 QPSK(26dB)



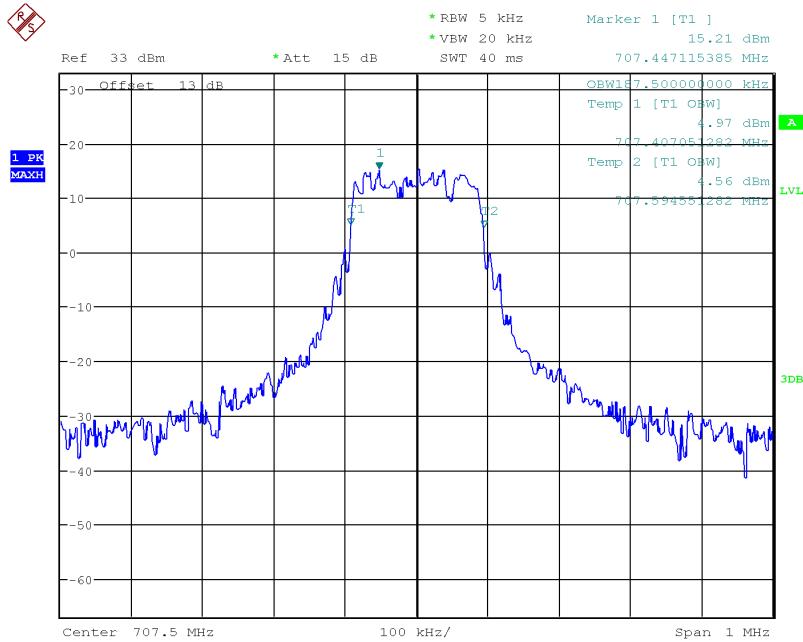
Date: 26.DEC.2018 22:02:12

## NB-IoT Guard-band band 12 23011 BPSK(26dB)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

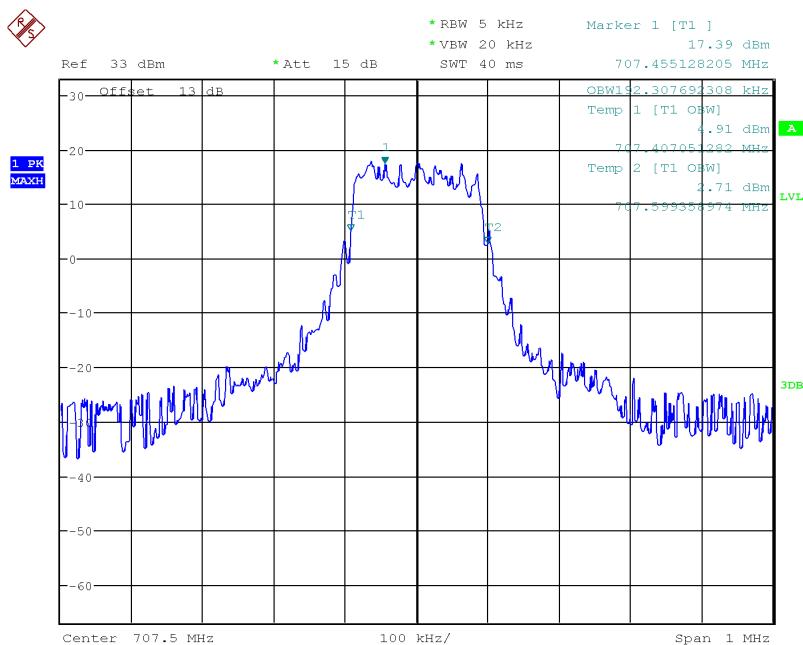
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:04:00

NB-IoT Guard-band band 12 23095 QPSK(99%)

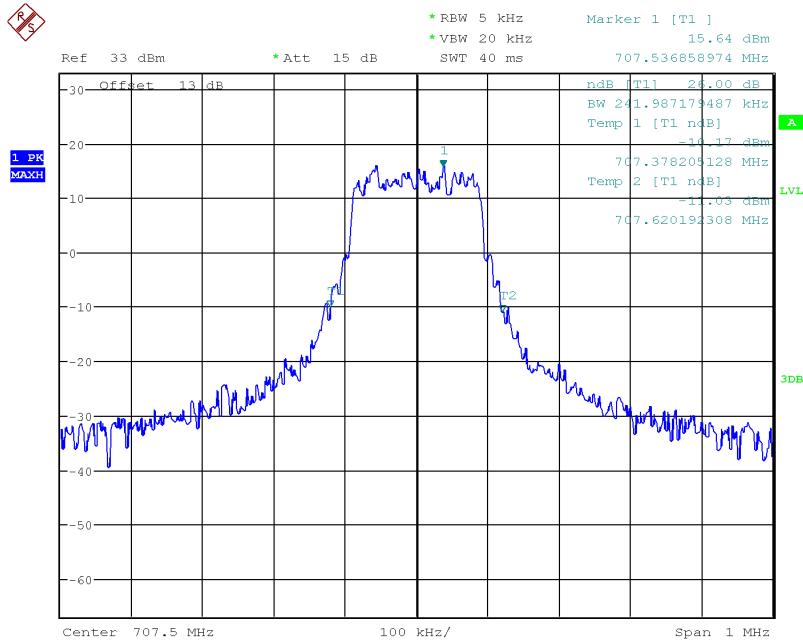


Date: 26.DEC.2018 22:05:33

NB-IoT Guard-band band 12 23095 BPSK(99%)

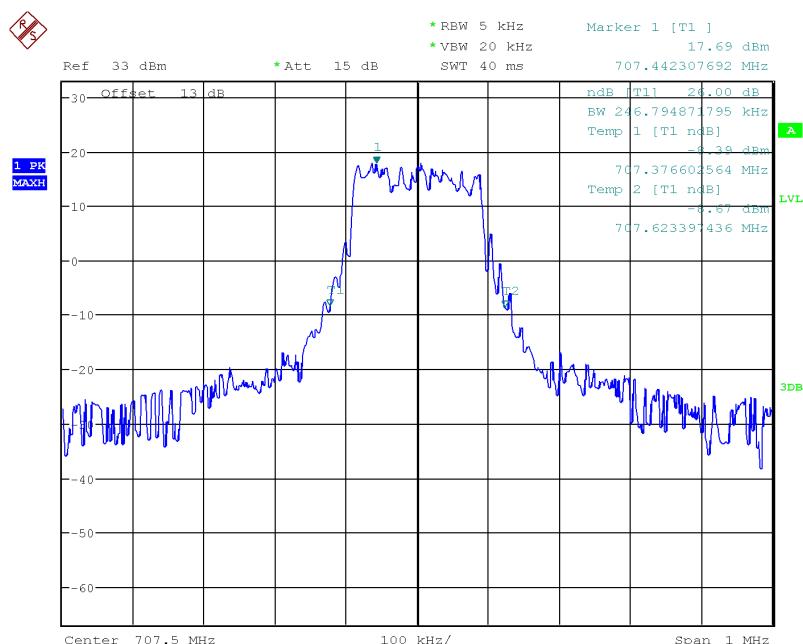
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:04:28

### NB-IoT Guard-band band 12 23095 QPSK(26dB)

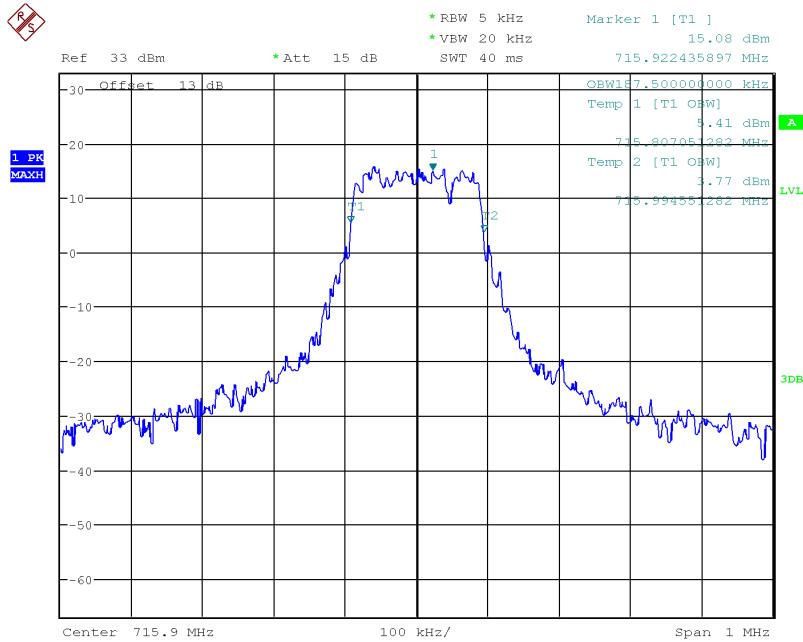


Date: 26.DEC.2018 22:05:05

### NB-IoT Guard-band band 12 23095 BPSK(26dB)

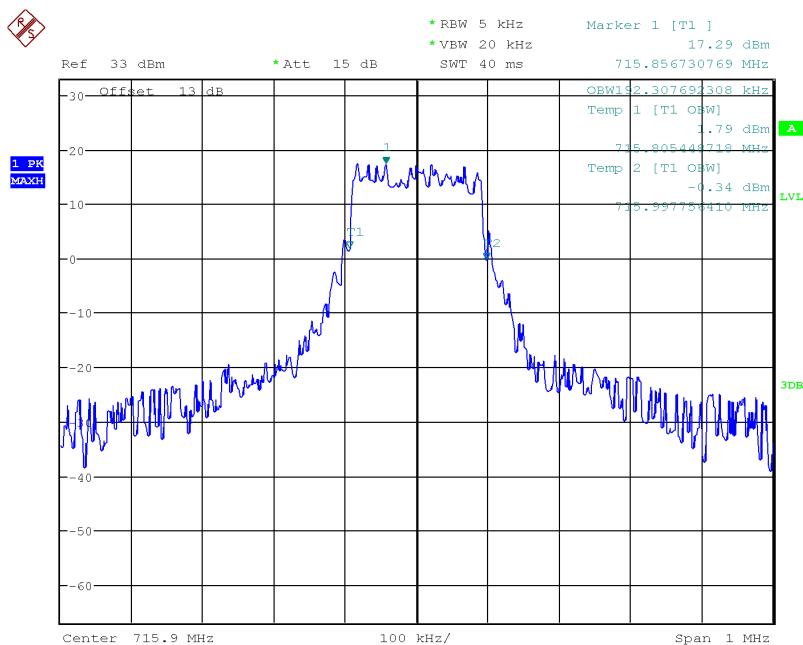
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:07:57

NB-IoT Guard-band band 12 23179 QPSK(99%)

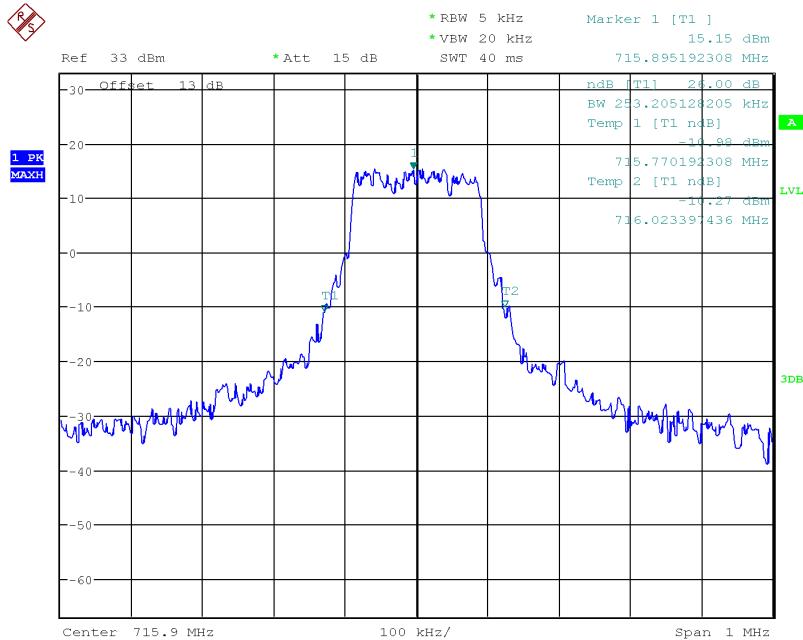


Date: 26.DEC.2018 22:06:15

NB-IoT Guard-band band 12 23179 BPSK(99%)

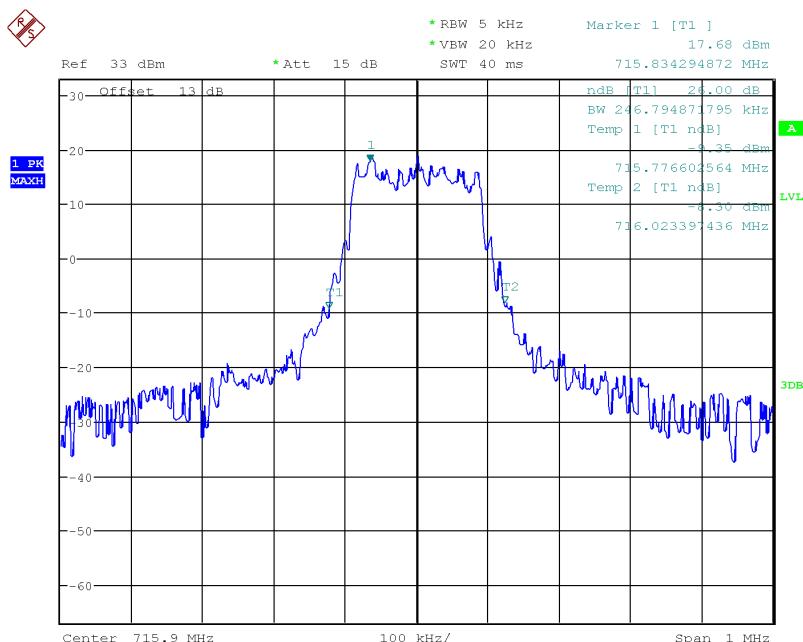
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:07:17

### NB-IoT Guard-band band 12 23179 QPSK(26dB)



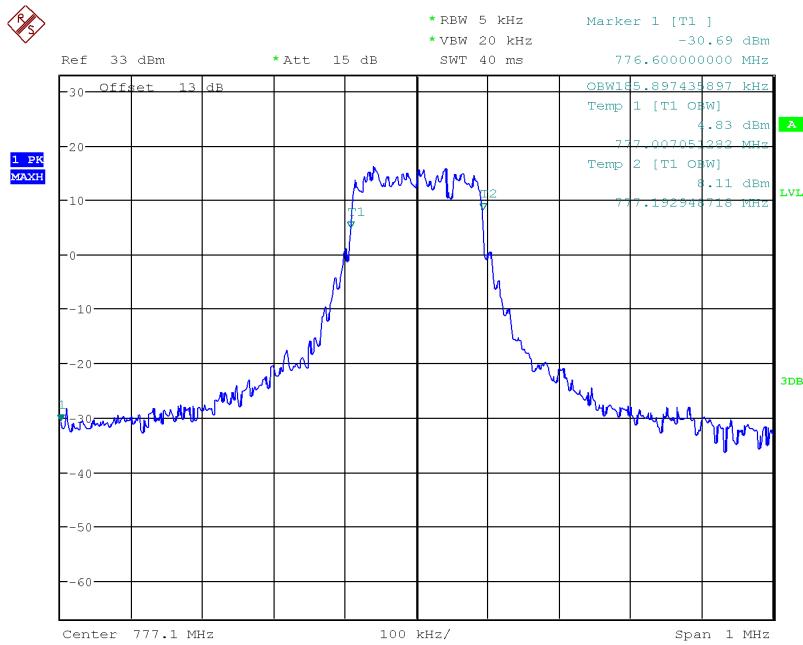
Date: 26.DEC.2018 22:06:42

### NB-IoT Guard-band band 12 23179 BPSK(26dB)

# Chongqing Academy of Information and Communications Technology

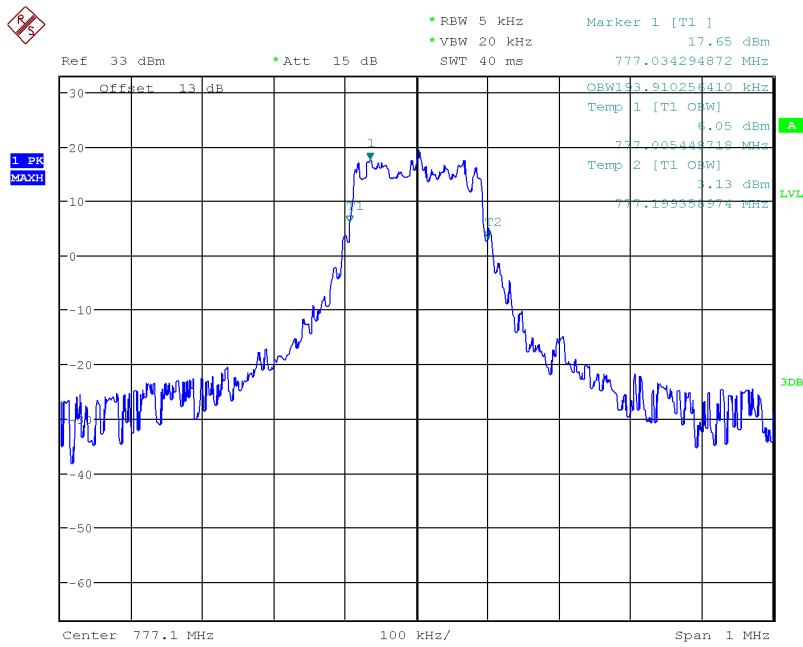
Report No.:B18W50650-WWAN\_Rev2

## Graphical results for Band13:



Date: 26.DEC.2018 22:11:01

NB-IoT standalone band 13 23181 QPSK(99%)



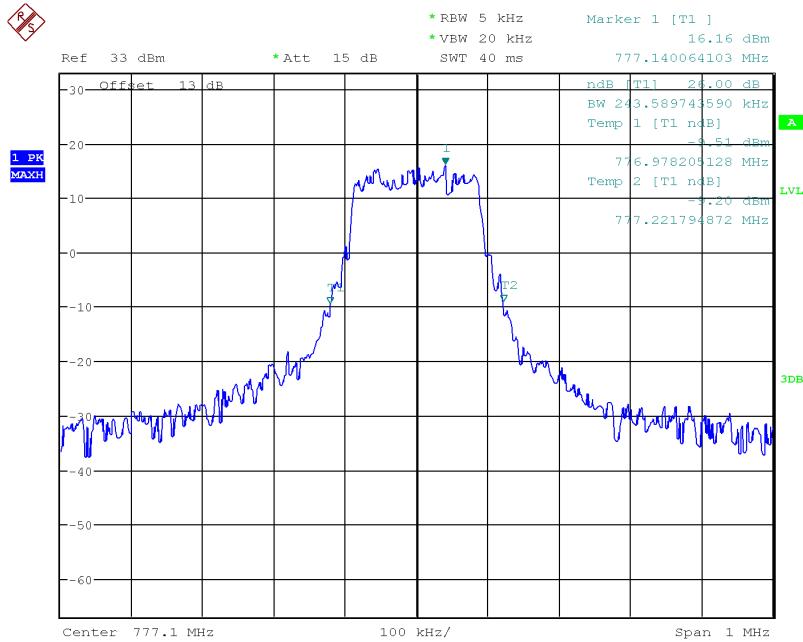
Date: 26.DEC.2018 22:12:27

NB-IoT standalone band 13 23181 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

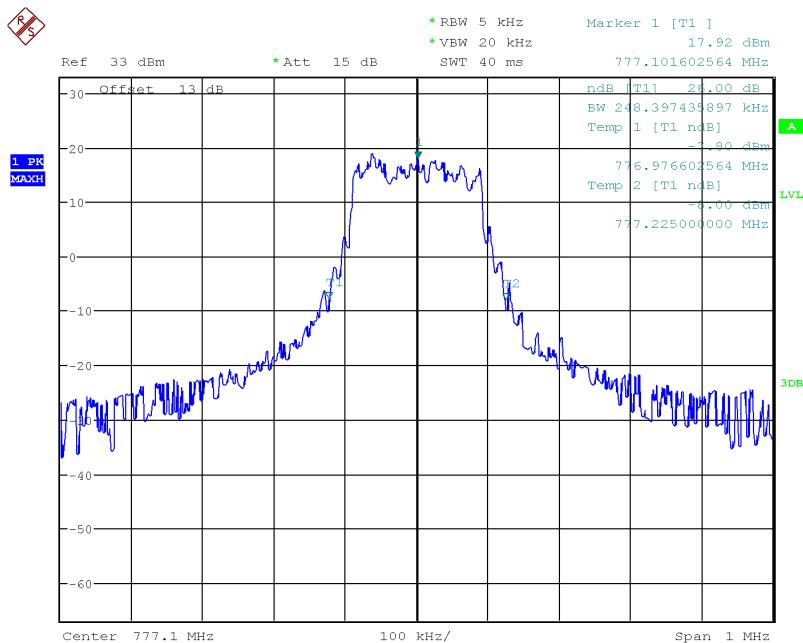
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:11:28

### NB-IoT standalone band 13 23181 QPSK(26dB)



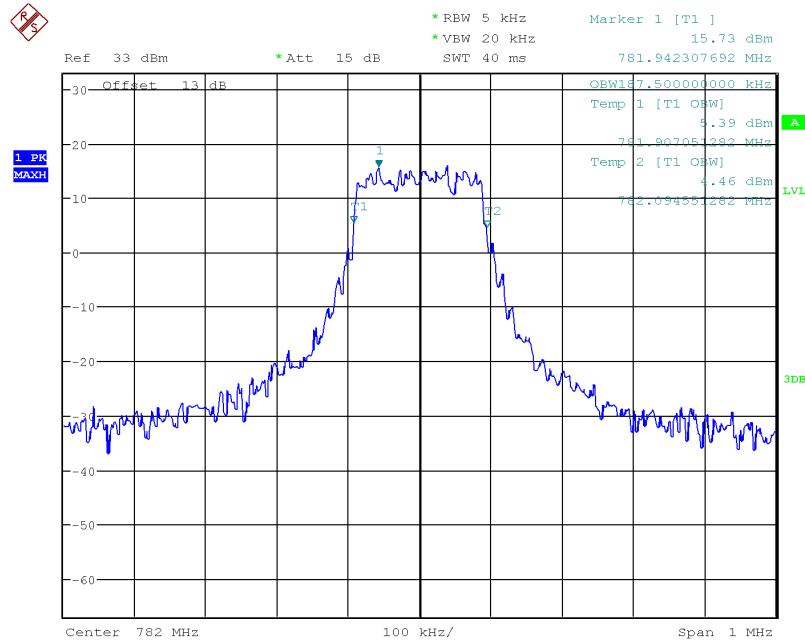
Date: 26.DEC.2018 22:11:58

### NB-IoT standalone band 13 23181 BPSK(26dB)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

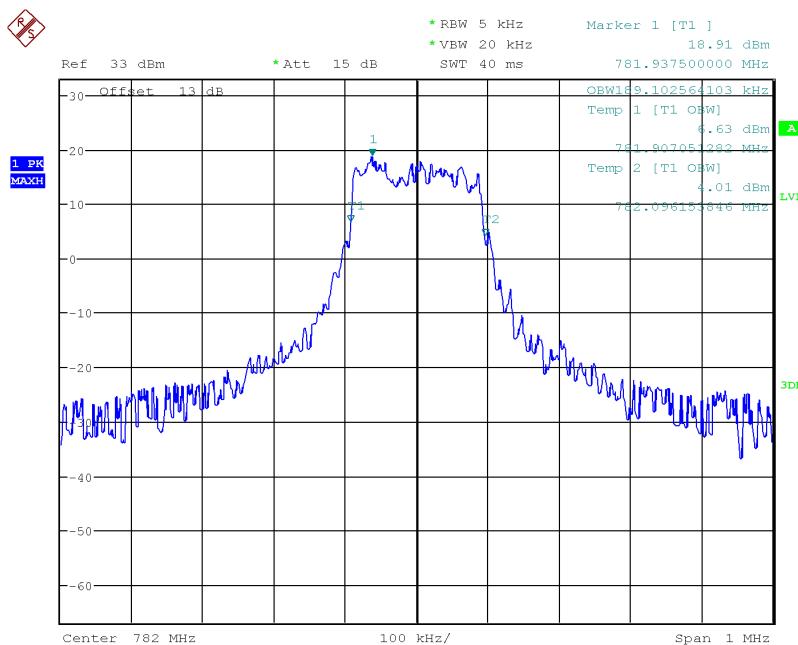
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:14:56

### NB-IoT standalone band 13 23230 QPSK(99%)



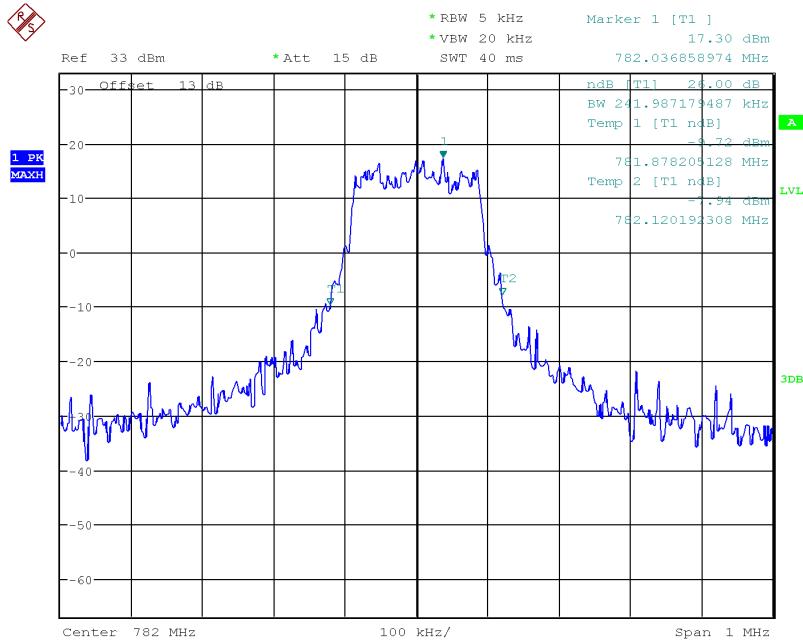
Date: 26.DEC.2018 22:13:22

### NB-IoT standalone band 13 23230 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

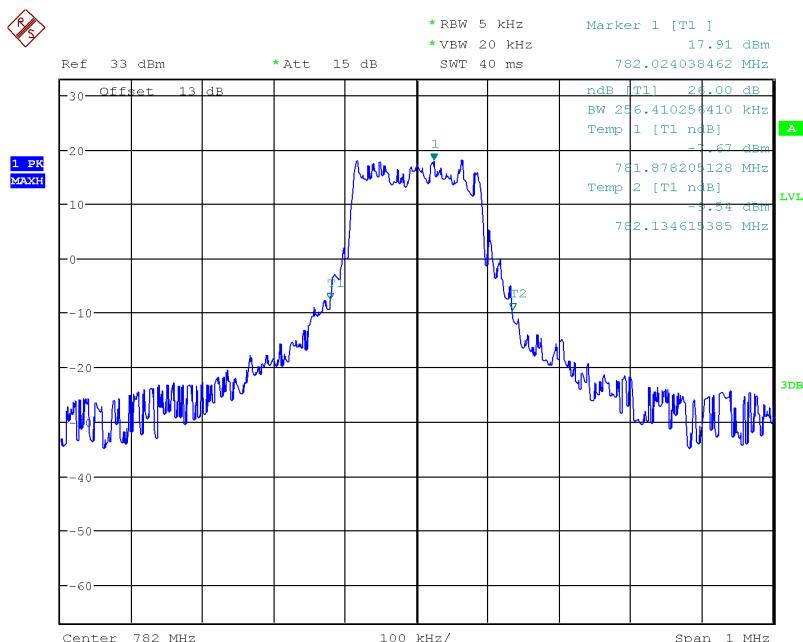
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:14:23

### NB-IoT standalone band 13 23230 QPSK(26dB)

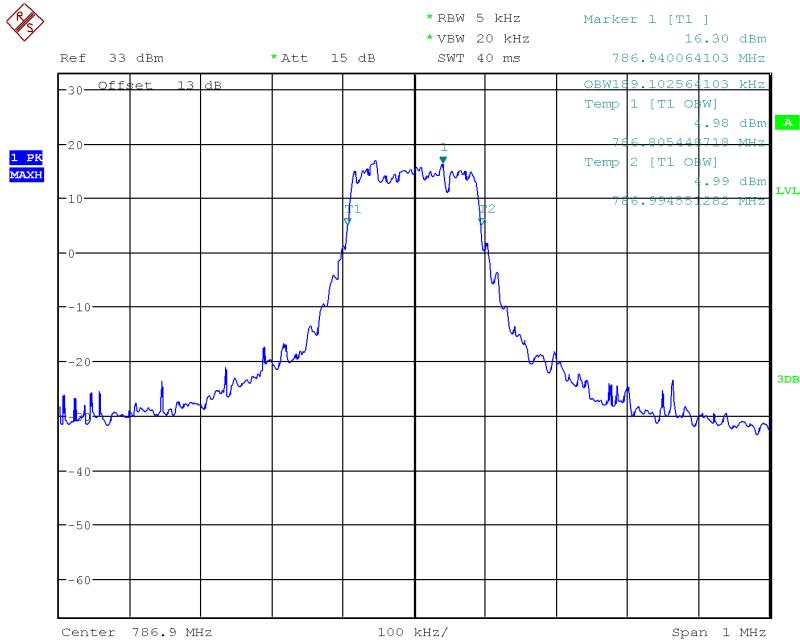


Date: 26.DEC.2018 22:13:47

### NB-IoT standalone band 13 23230 BPSK(26dB)

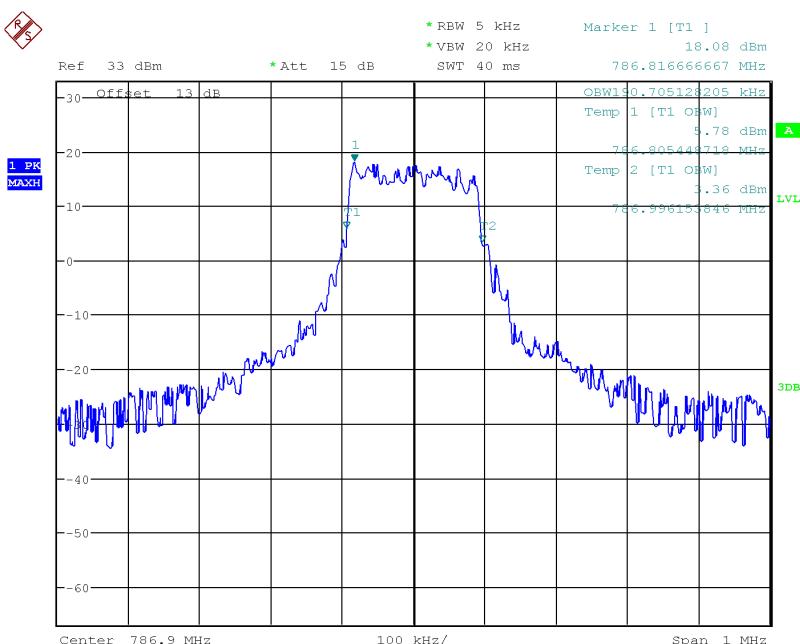
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:21:11

NB-IoT standalone band 13 23279 QPSK(99%)

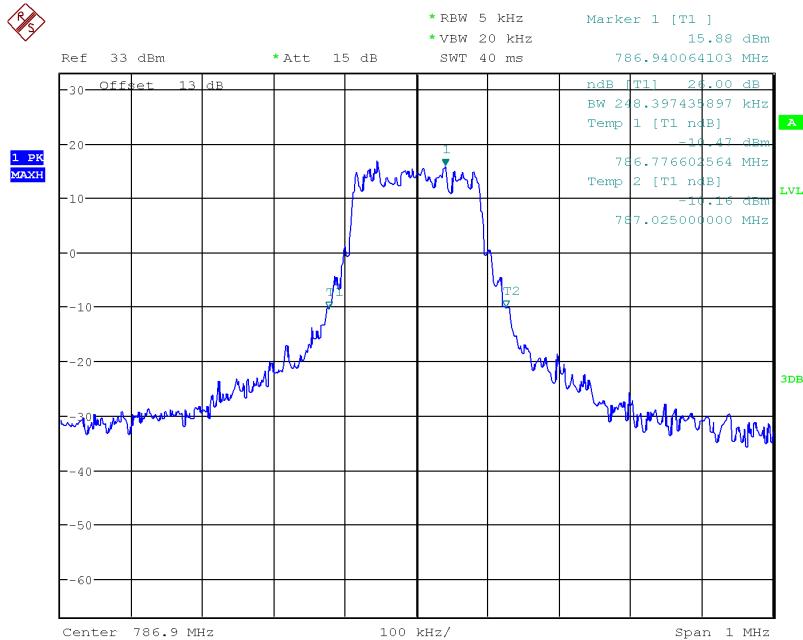


Date: 26.DEC.2018 22:23:16

NB-IoT standalone band 13 23279 BPSK(99%)

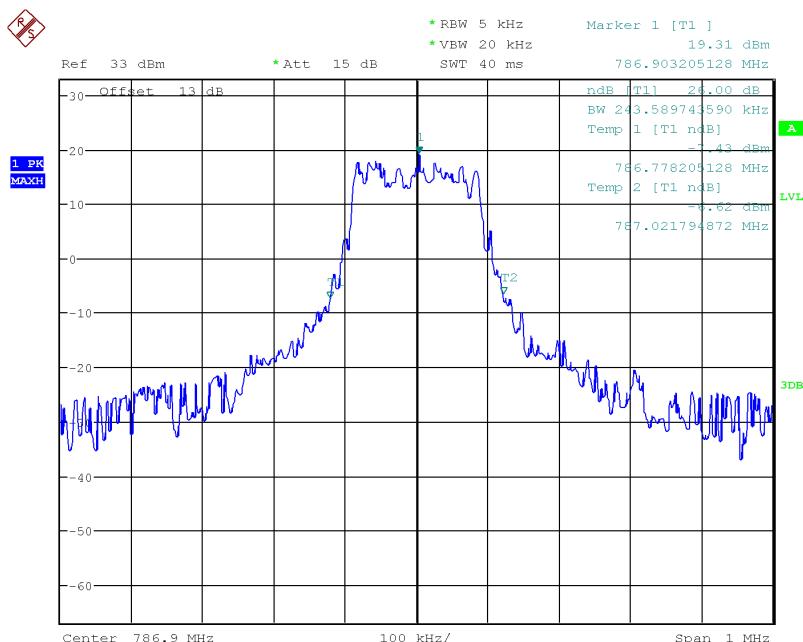
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:21:51

### NB-IoT standalone band 13 23279 QPSK(26dB)

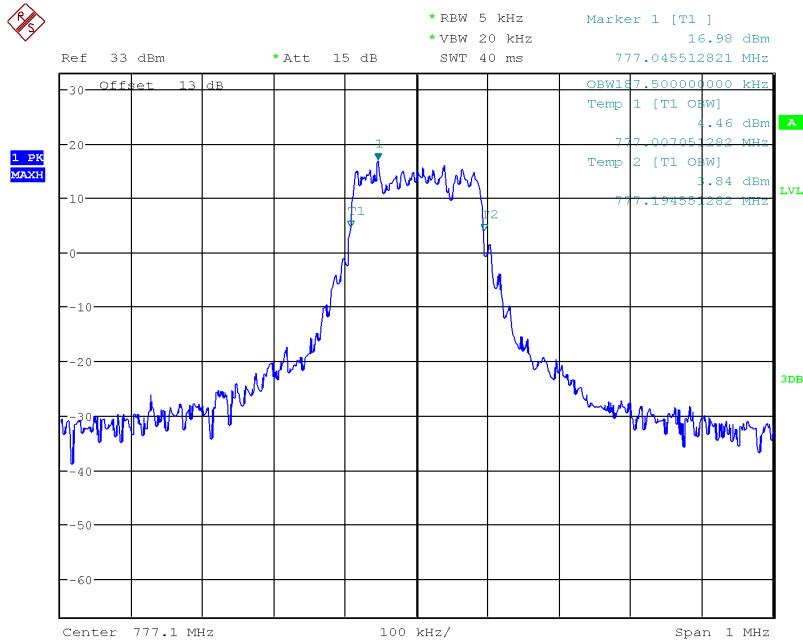


Date: 26.DEC.2018 22:22:45

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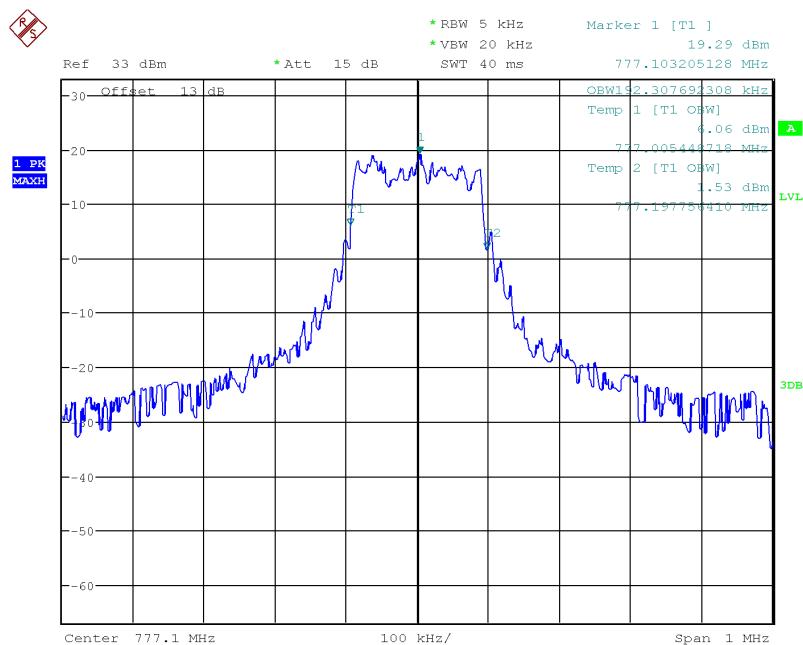
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:31:24

NB-IoT In-band band 13 23181 QPSK(99%)

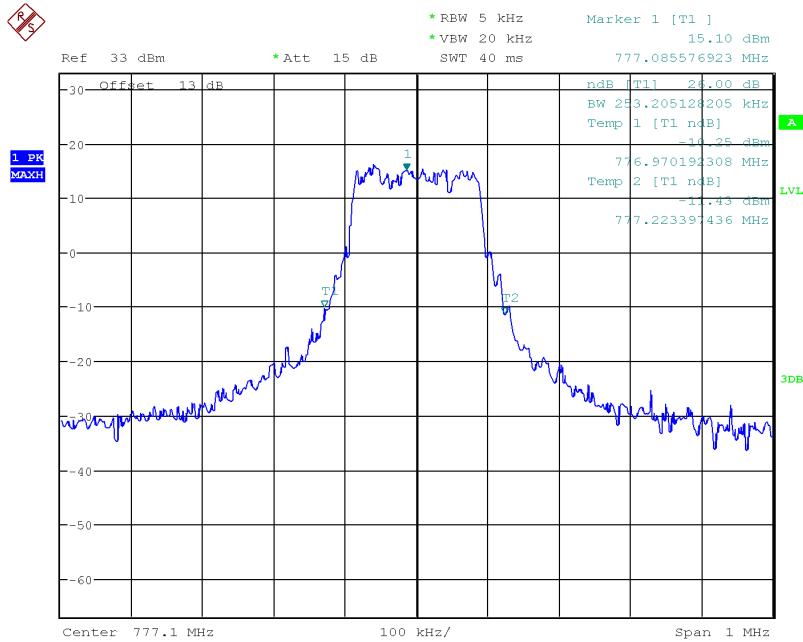


Date: 26.DEC.2018 22:29:43

NB-IoT In-band band 13 23181 BPSK(99%)

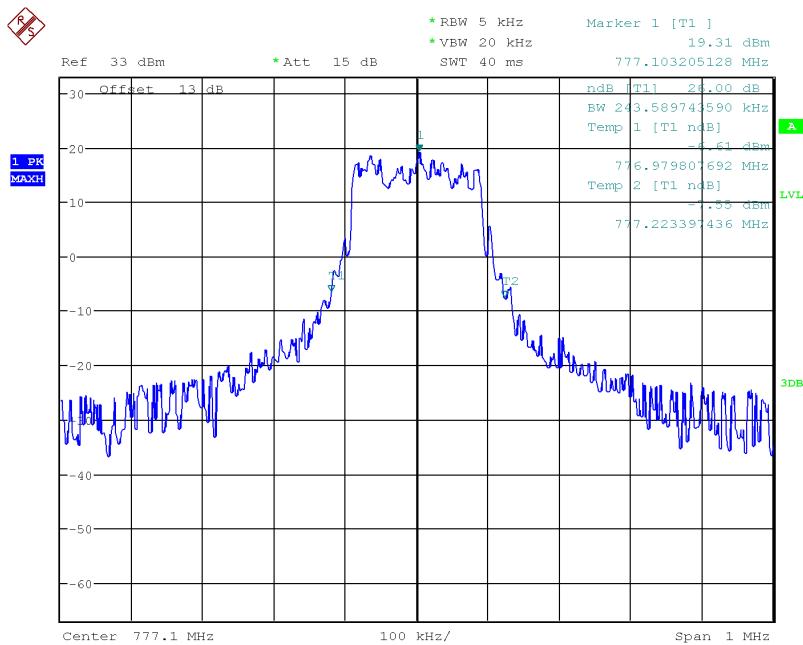
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:30:53

NB-IoT In-band band 13 23181 QPSK(26dB)

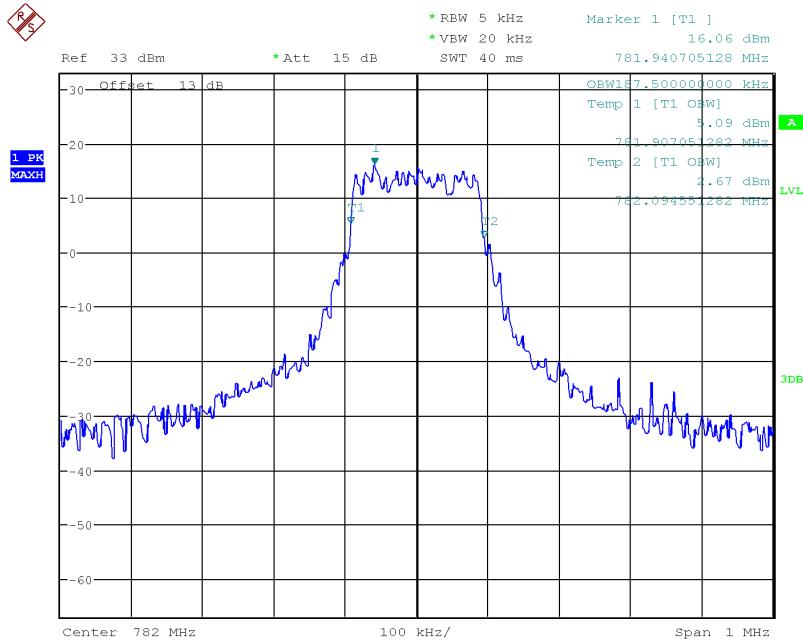


Date: 26.DEC.2018 22:30:06

NB-IoT In-band band 13 23181 BPSK(26dB)

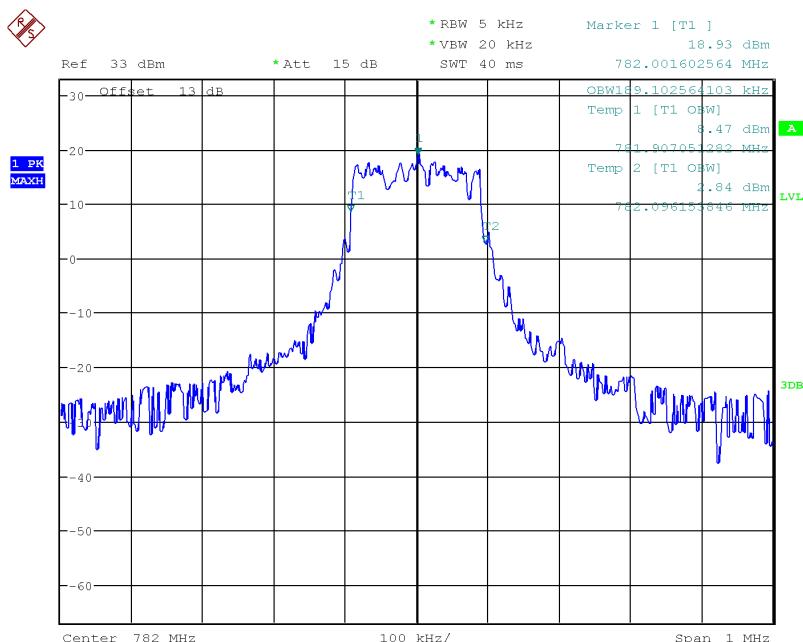
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:26:51

NB-IoT In-band band 13 23230 QPSK(99%)



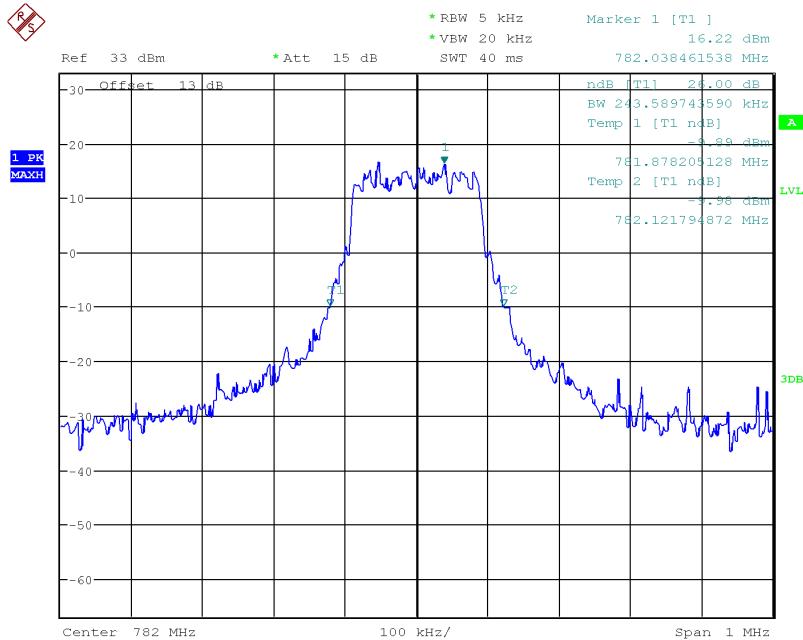
Date: 26.DEC.2018 22:28:28

NB-IoT In-band band 13 23230 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

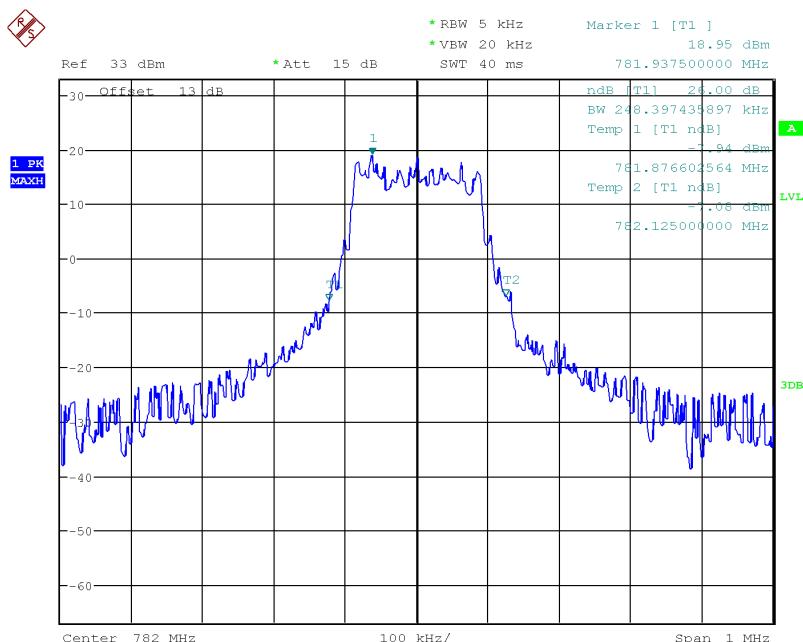
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:27:29

### NB-IoT In-band band 13 23230 QPSK(26dB)

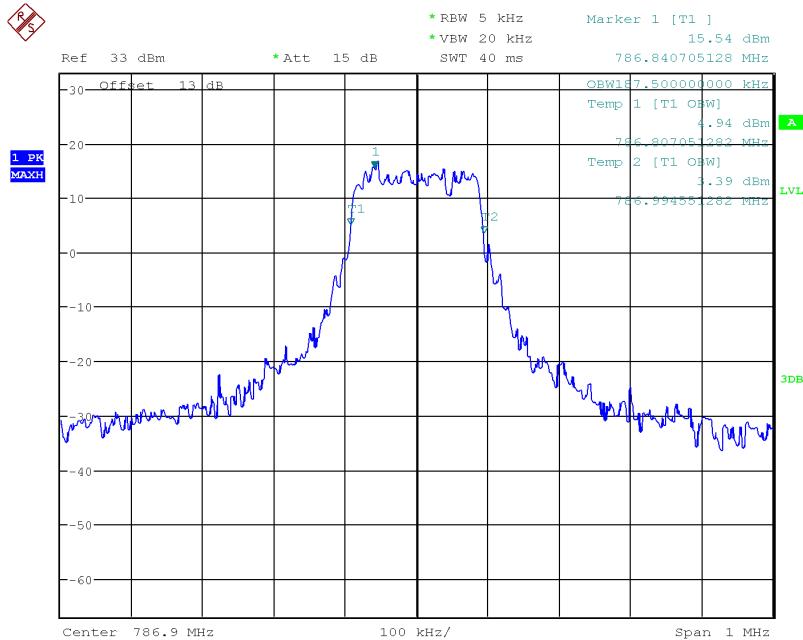


Date: 26.DEC.2018 22:27:55

### NB-IoT In-band band 13 23230 BPSK(26dB)

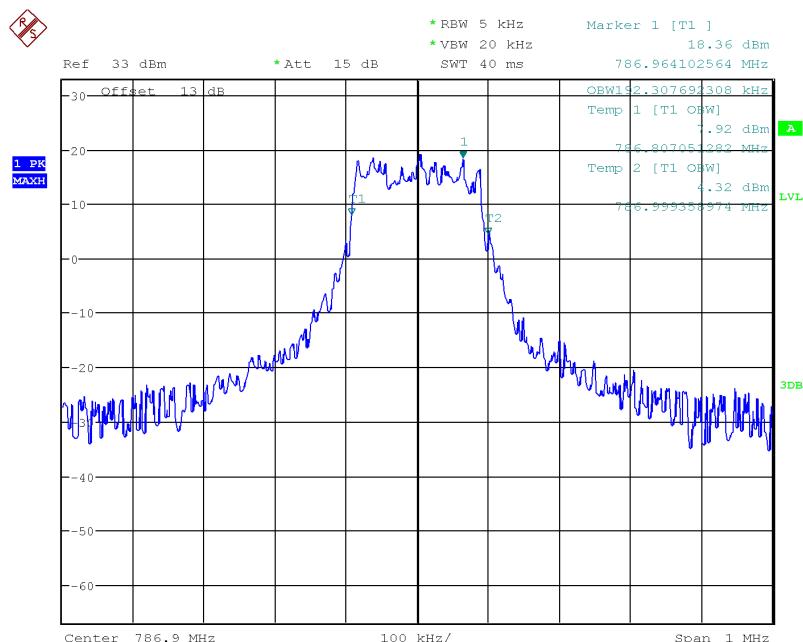
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:25:38

### NB-IoT In-band band 13 23279 QPSK(99%)



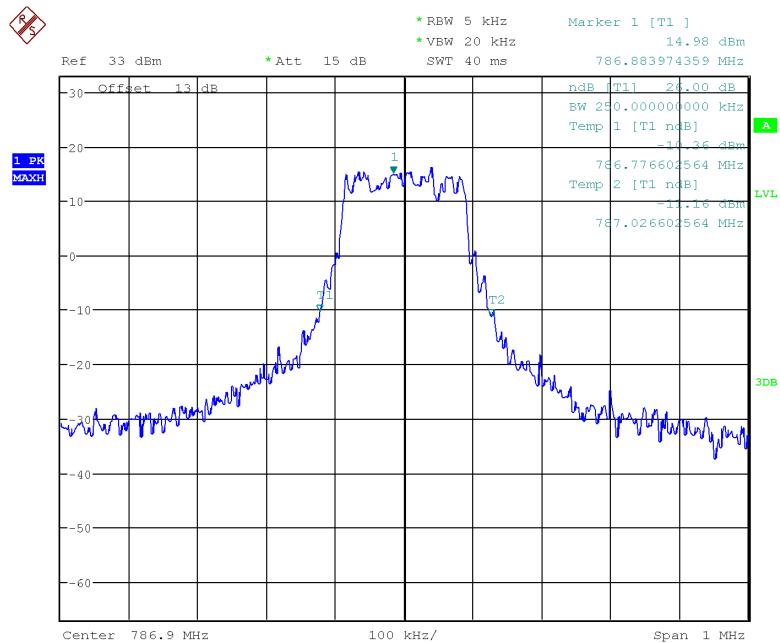
Date: 26.DEC.2018 22:24:01

### NB-IoT In-band band 13 23279 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

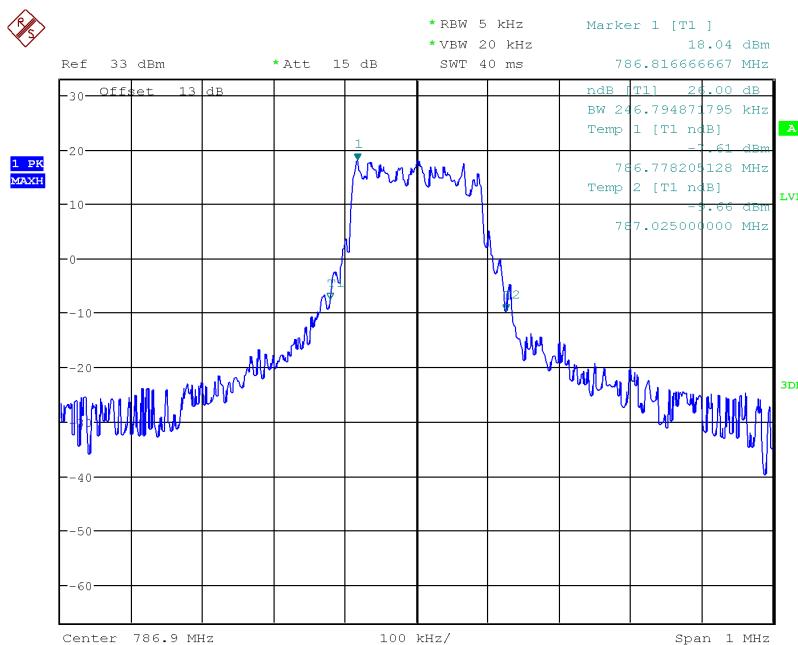
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:25:01

### NB-IoT In-band band 13 23279 QPSK(26dB)

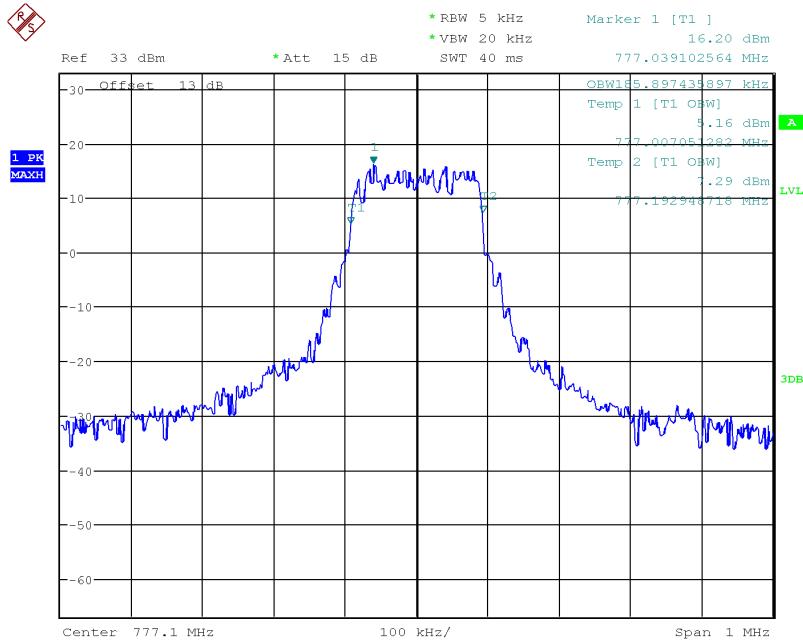


Date: 26.DEC.2018 22:24:25

### NB-IoT In-band band 13 23279 BPSK(26dB)

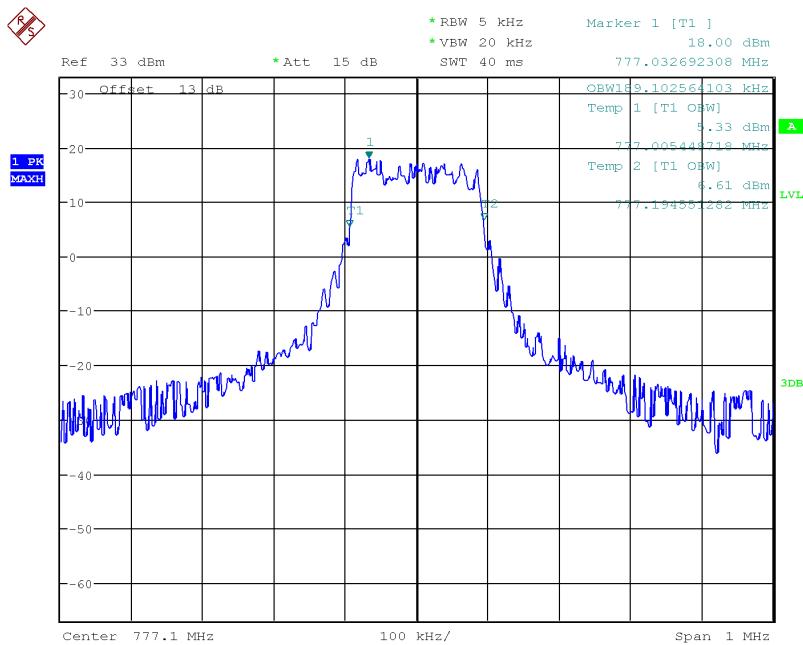
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:32:30

### NB-IoT Guard-band band 13 23181 QPSK(99%)

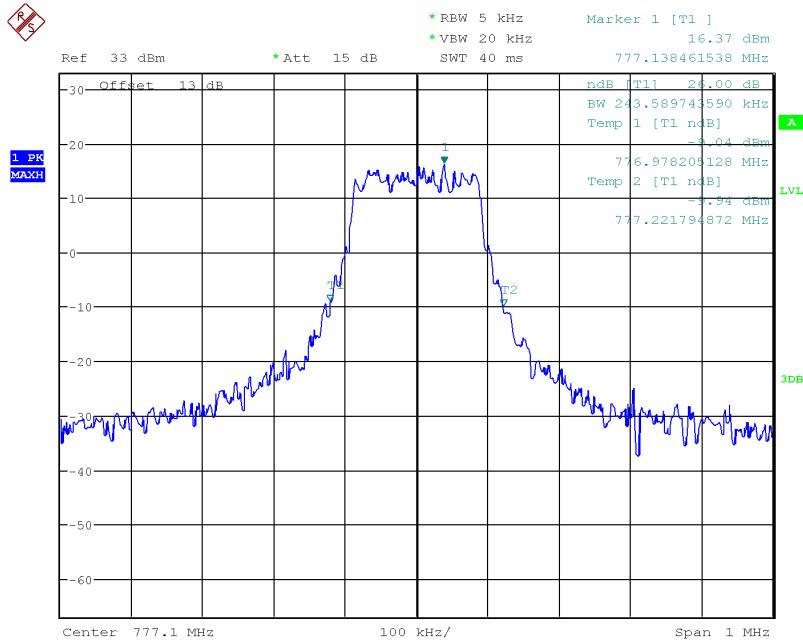


Date: 26.DEC.2018 22:34:01

### NB-IoT Guard-band band 13 23181 BPSK(99%)

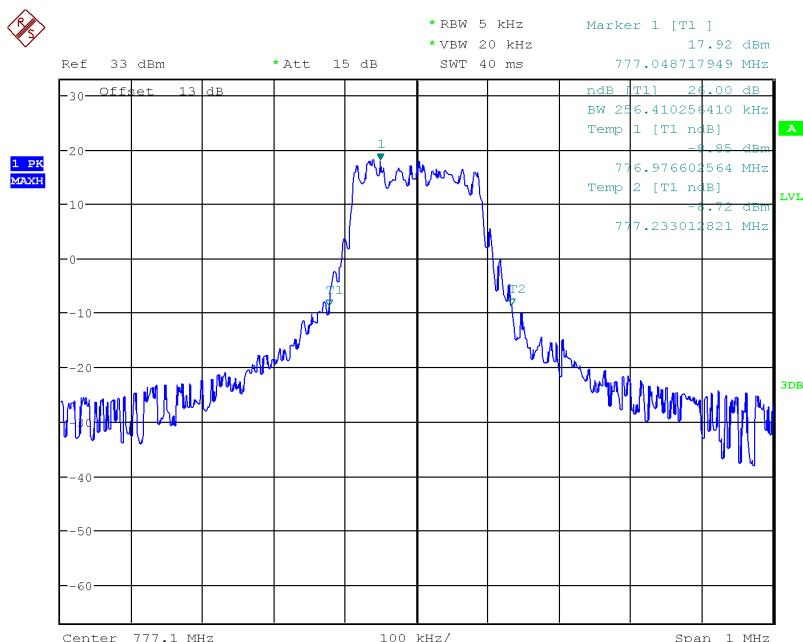
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:32:59

### NB-IoT Guard-band band 13 23181 QPSK(26dB)

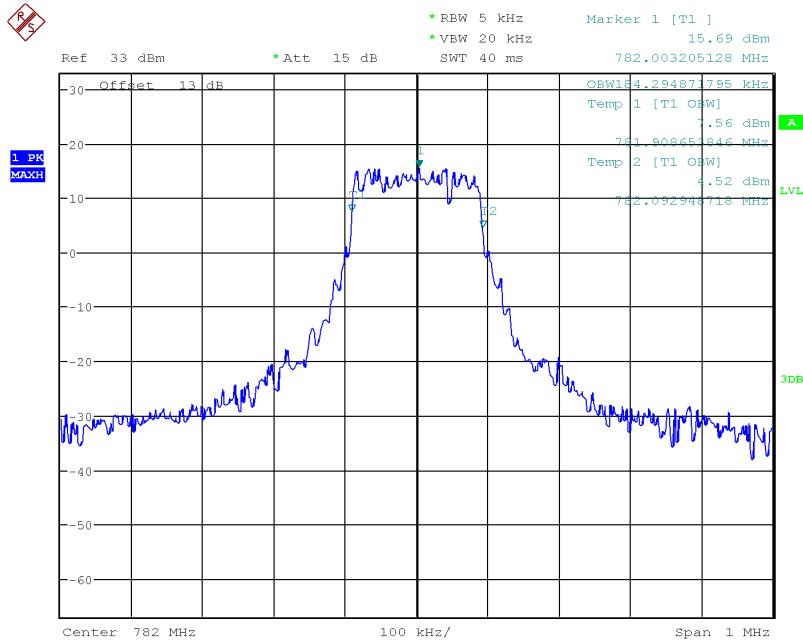


Date: 26.DEC.2018 22:33:34

### NB-IoT Guard-band band 13 23181 BPSK(26dB)

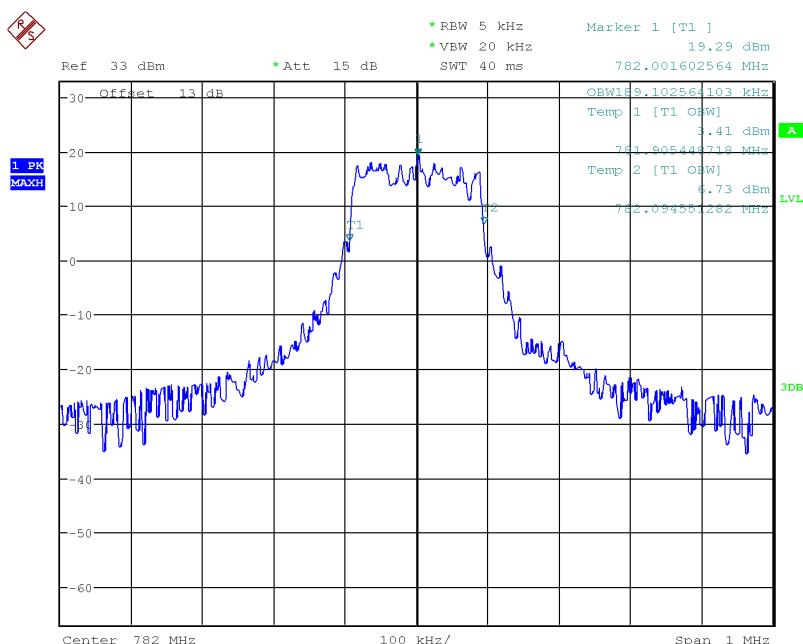
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:36:29

### NB-IoT Guard-band band 13 23230 QPSK(99%)



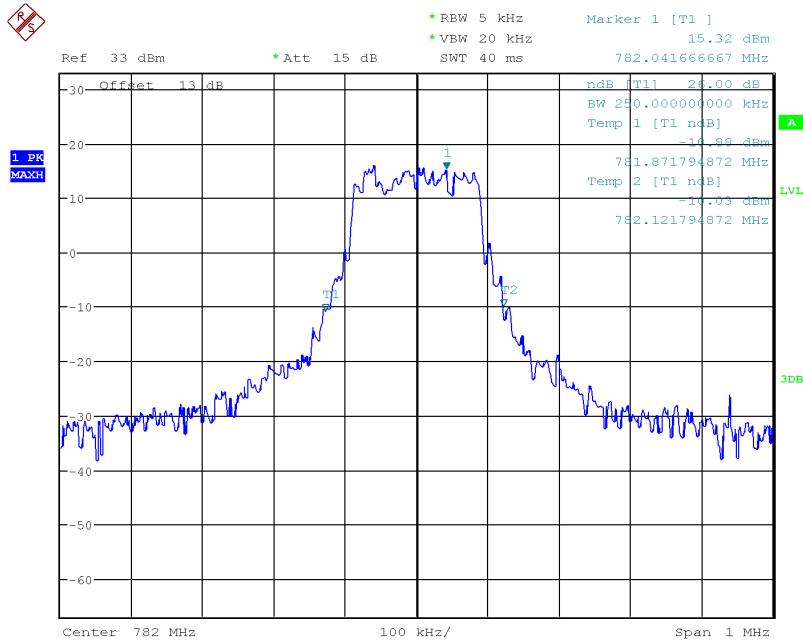
Date: 26.DEC.2018 22:34:55

### NB-IoT Guard-band band 13 23230 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

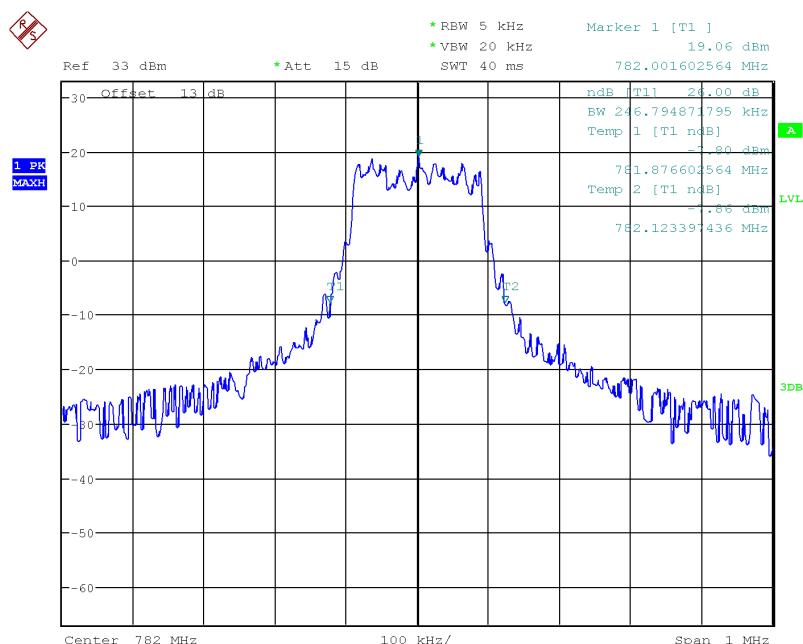
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:36:02

### NB-IoT Guard-band band 13 23230 QPSK(26dB)

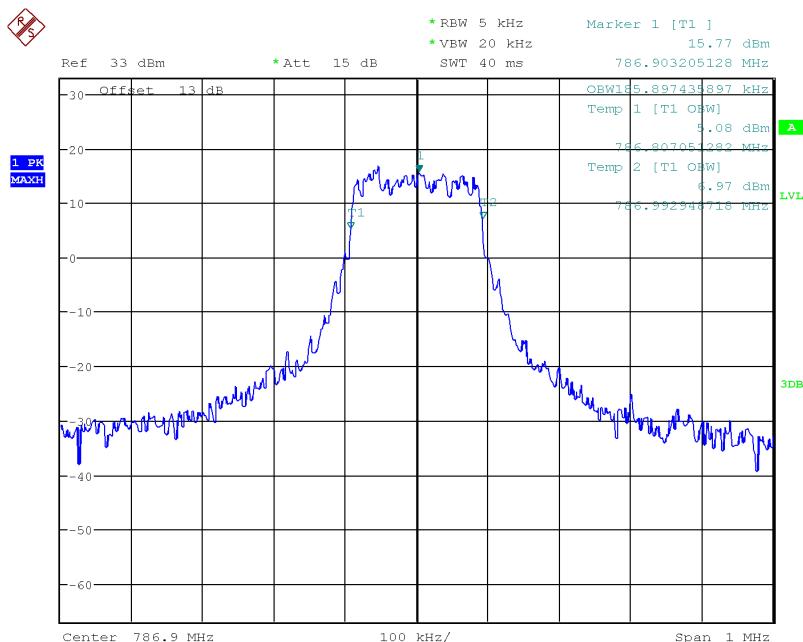


Date: 26.DEC.2018 22:35:31

### NB-IoT Guard-band band 13 23230 BPSK(26dB)

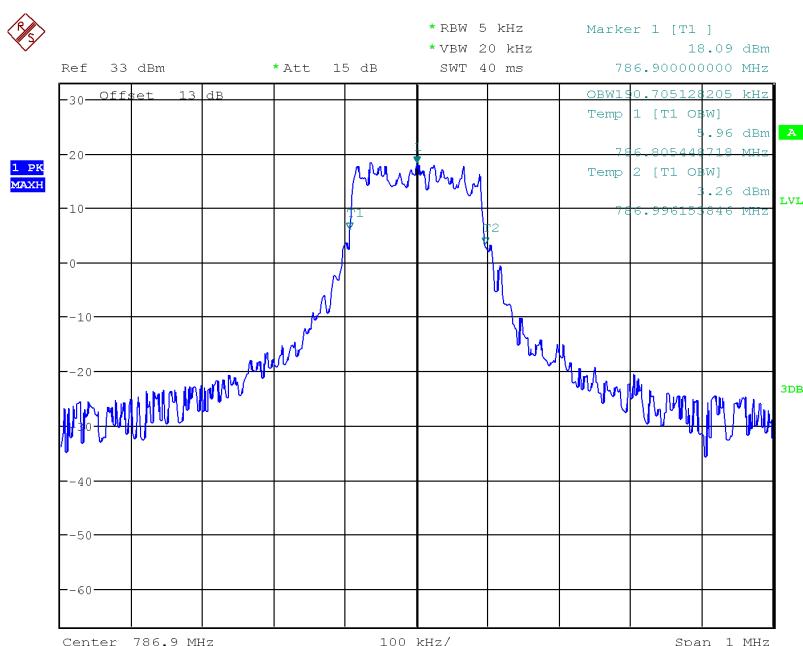
# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:37:25

NB-IoT Guard-band band 13 23279 QPSK(99%)



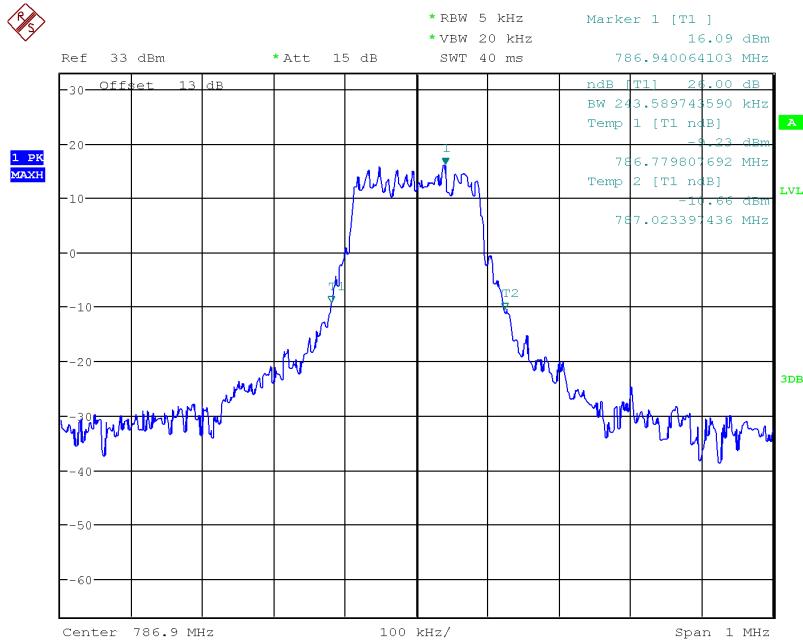
Date: 26.DEC.2018 22:38:59

NB-IoT Guard-band band 13 23279 BPSK(99%)

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

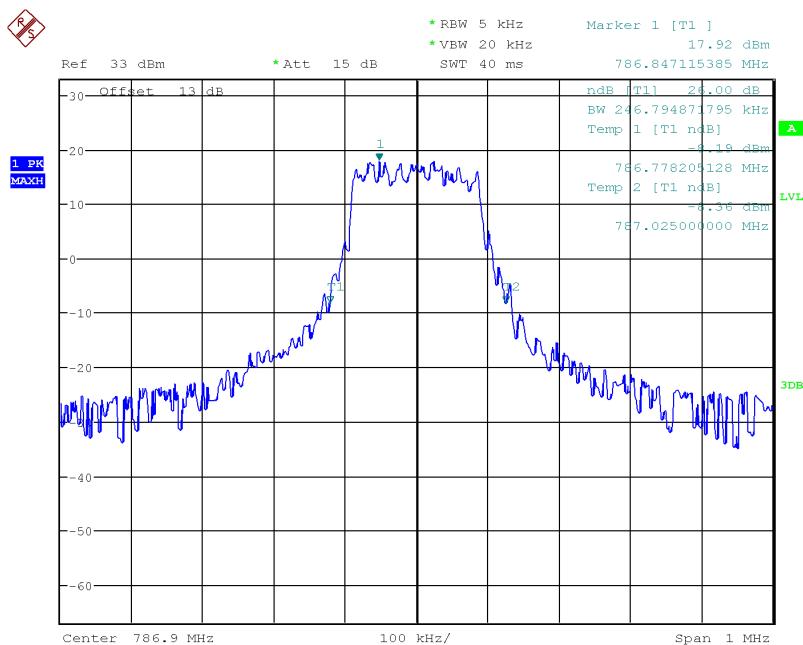
# Chongqing Academy of Information and Communications Technology

## Report No.:B18W50650-WWAN\_Rev2



Date: 26.DEC.2018 22:37:48

### NB-IoT Guard-band band 13 23279 QPSK(26dB)



Date: 26.DEC.2018 22:38:28

### NB-IoT Guard-band band 13 23279 BPSK(26dB)

# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2

## 5.3 Conducted Spurious Emission

<b>Specifications:</b>	FCC Part 2.1051, 24.238, 2.1053, 27.53
<b>DUT Serial Number:</b>	865235030045922
<b>Test conditions:</b>	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
<b>Test Results:</b>	--

### Limit Level Construction:

**According to Part 24.238 (a),** i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB, so the limit level is:  $P(\text{dBm}) - (43 + 10 \log(P)) \text{ dB} = -13 \text{ dBm}$ .

### According to Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 Bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

### According to Part 27.53(g):

For operations in the 600 MHz Band and the 698-746 MHz Band, the power of any emission outside a licensee's frequency Band(s) of operation shall be attenuated below the transmitter power (P) within the licensed Band(s) of operation, measured in watts, by at least  $43 + 10 \log(P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution Bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz Bands immediately outside and adjacent to a licensee's frequency block, a resolution Bandwidth of at least 30 kHz may be employed.

### Measurement Uncertainty:

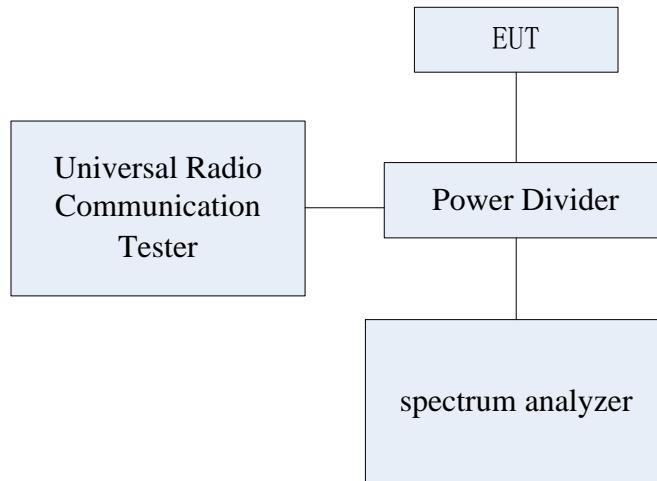
Item	Uncertainty	
Expanded Uncertainty	9kHz < f ≤ 4GHz	0.71 dB (k=2)
	4GHz ≤ f < 12.75GHz	0.74 dB (k=2)
	12.75GHz ≤ f < 26GHz	2.70 dB (k=2)

# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2

## Test Setup:

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



## Test Method:

The measurement was performed accordance with section 2.2.13 of ANSI/TIA-603-E-2016: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

The measurement was performed accordance with section 2.2.13 of ANSI/TIA-603-E-2016: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

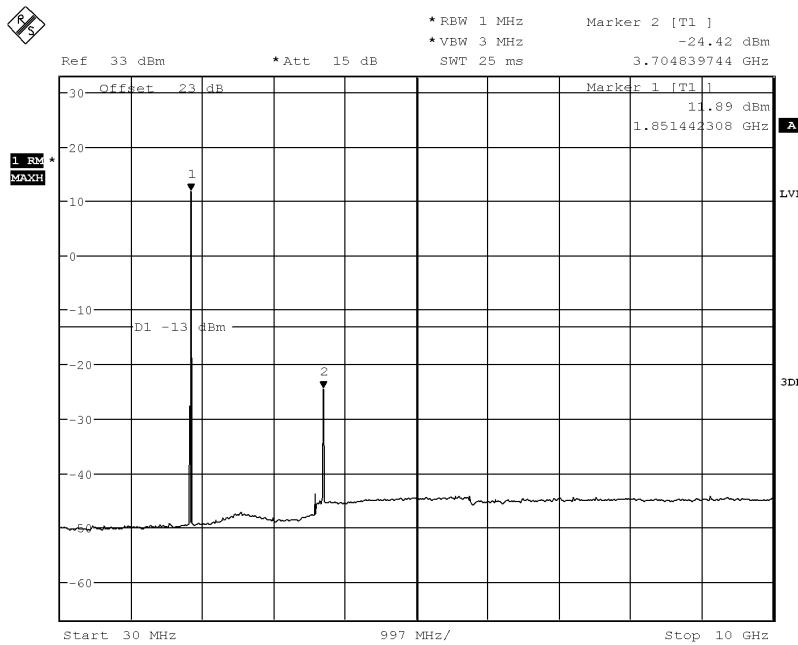
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-Band emissions, if any, up to 10th harmonic. The EUT was scanned for spurious emissions from 30MHz to 20GHz with sufficient Bandwidth and video resolution. The spectrum analyzer was set to Maximum hold mode to ensure that the worst-case emissions were captured.

**Note:** Only worst case mode of in-band result is given below.

# Chongqing Academy of Information and Communications Technology

Report No.:B18W50650-WWAN\_Rev2

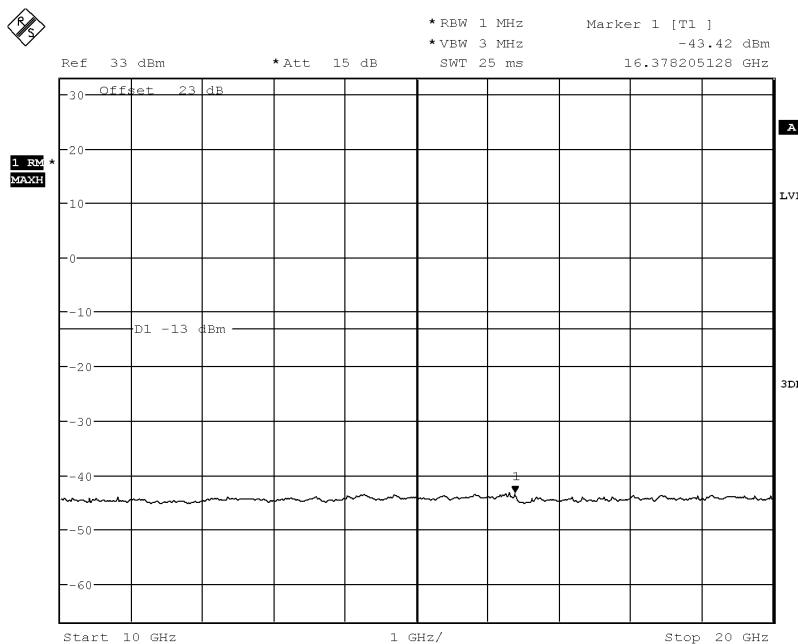
## 5.3.1 NB-IoT Band 2



Date: 28.DEC.2018 22:11:10

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



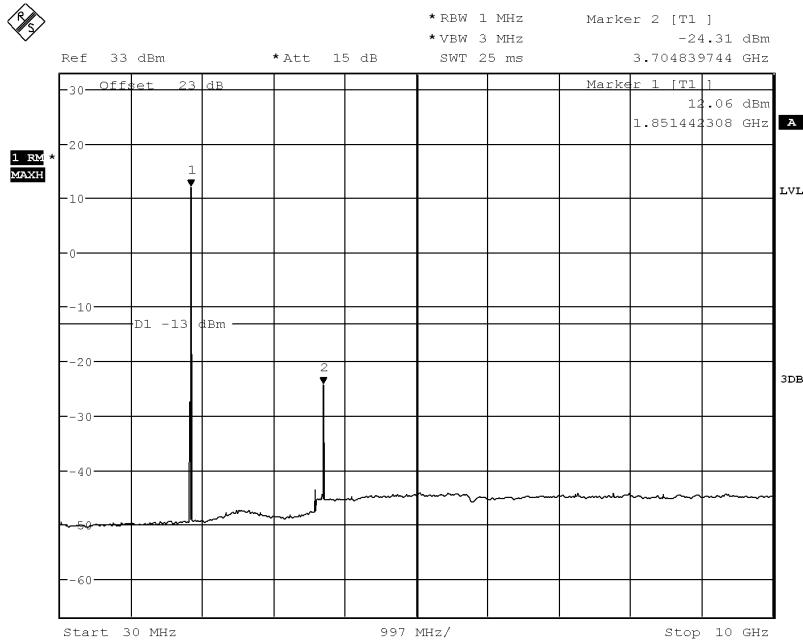
Date: 28.DEC.2018 22:11:44

10GHz to 20GHz, Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

# Chongqing Academy of Information and Communications Technology

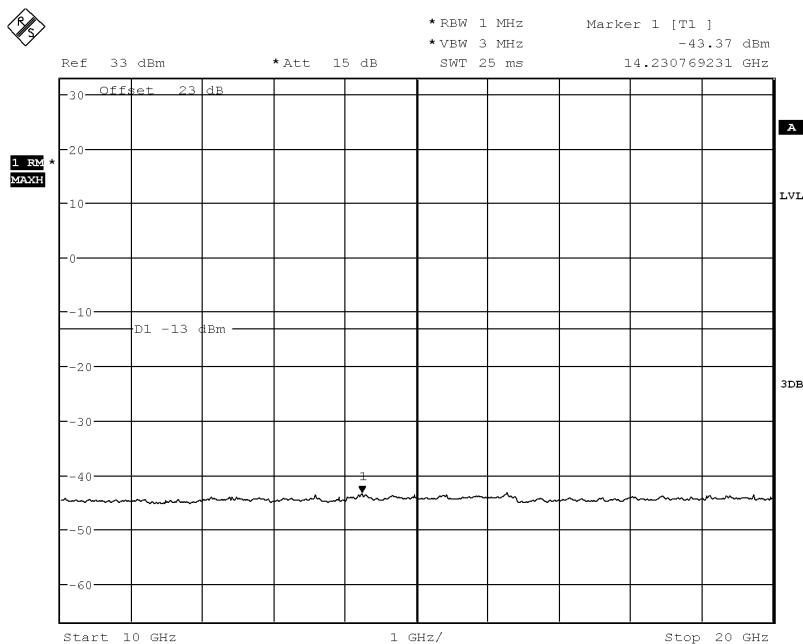
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:10:49

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



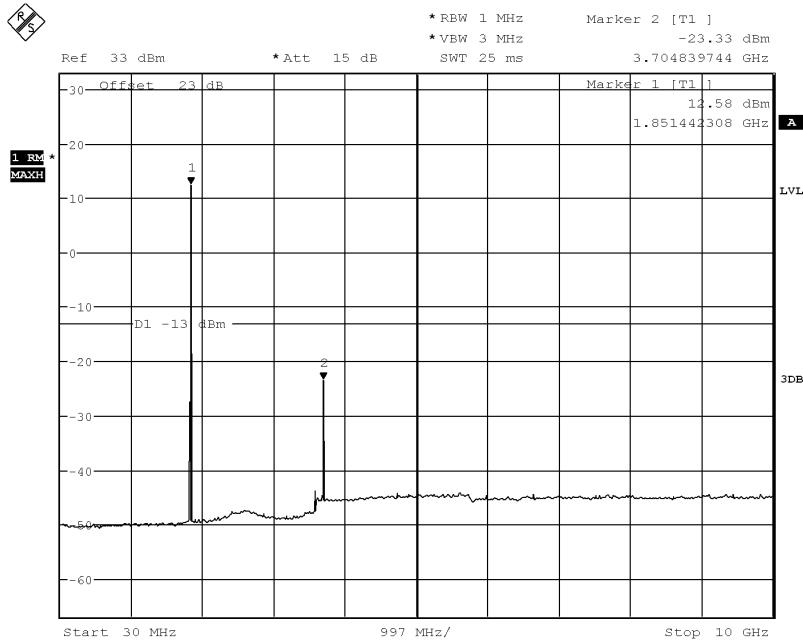
Date: 28.DEC.2018 22:12:04

10GHz to 20GHz, Low Channel, Subcarrier (3.75kHz), BPSK, 1@0

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

# Chongqing Academy of Information and Communications Technology

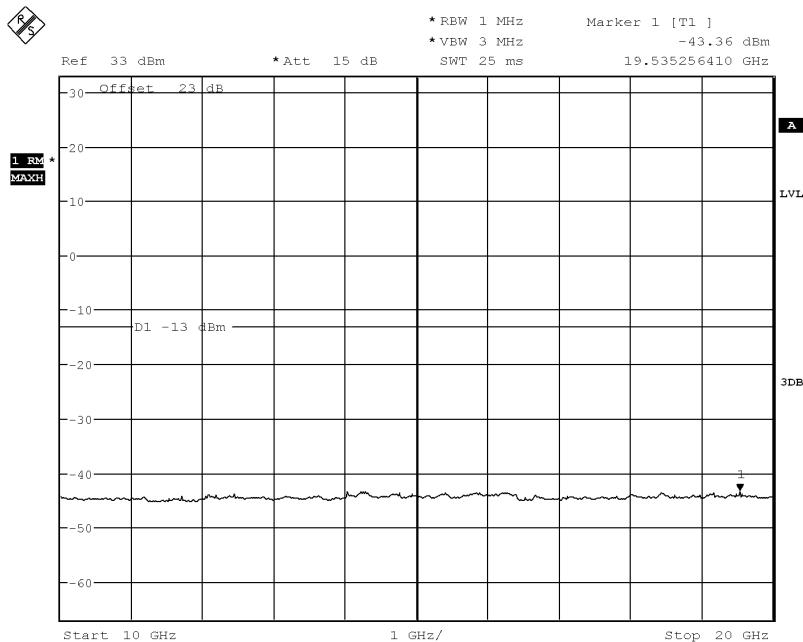
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:15:27

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



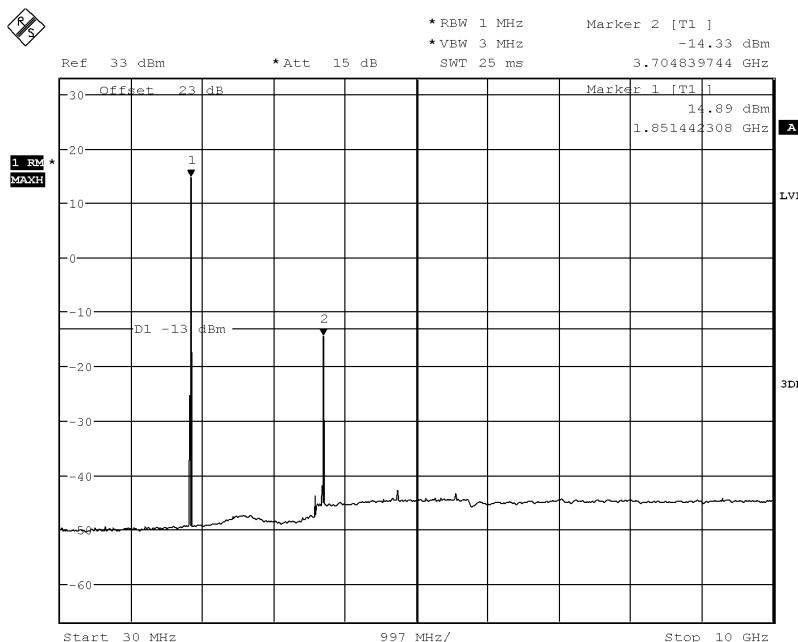
Date: 28.DEC.2018 22:13:14

10GHz to 20GHz, Low Channel, Subcarrier (15kHz), QPSK, 1@0

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

# Chongqing Academy of Information and Communications Technology

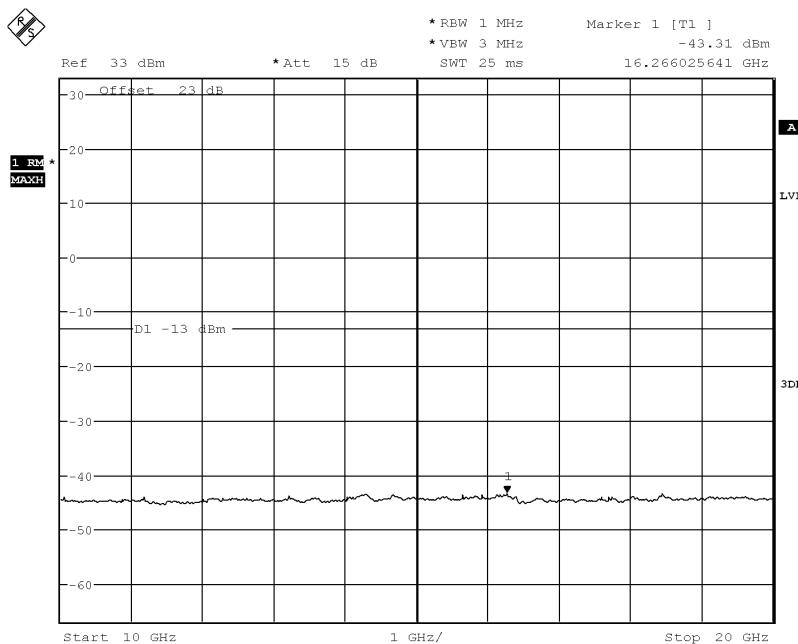
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:15:10

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



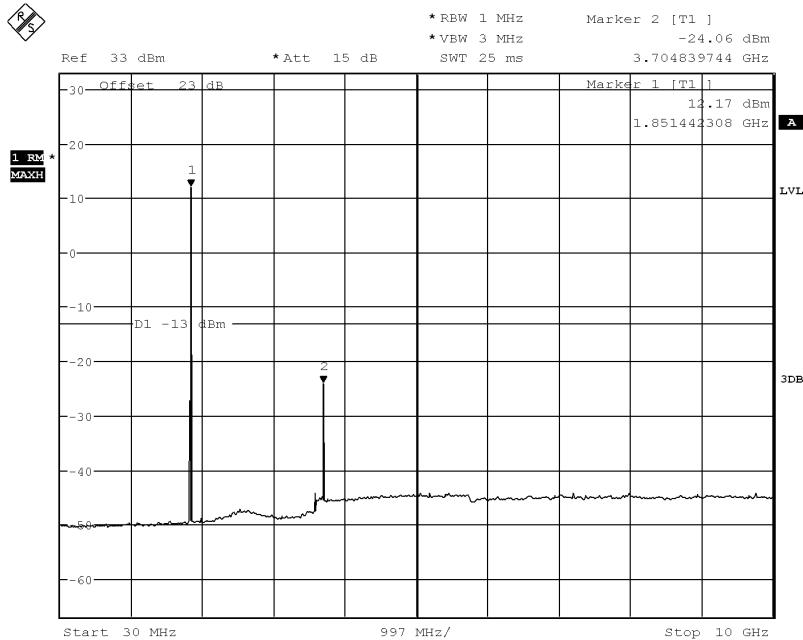
Date: 28.DEC.2018 22:13:38

10GHz to 20GHz, Low Channel, Subcarrier (15kHz), QPSK, 12@0

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

# Chongqing Academy of Information and Communications Technology

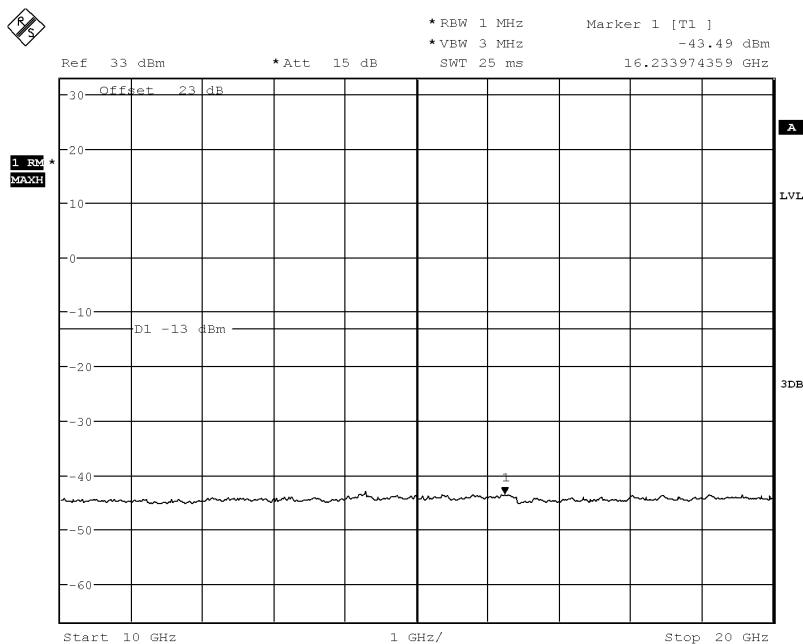
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:15:40

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



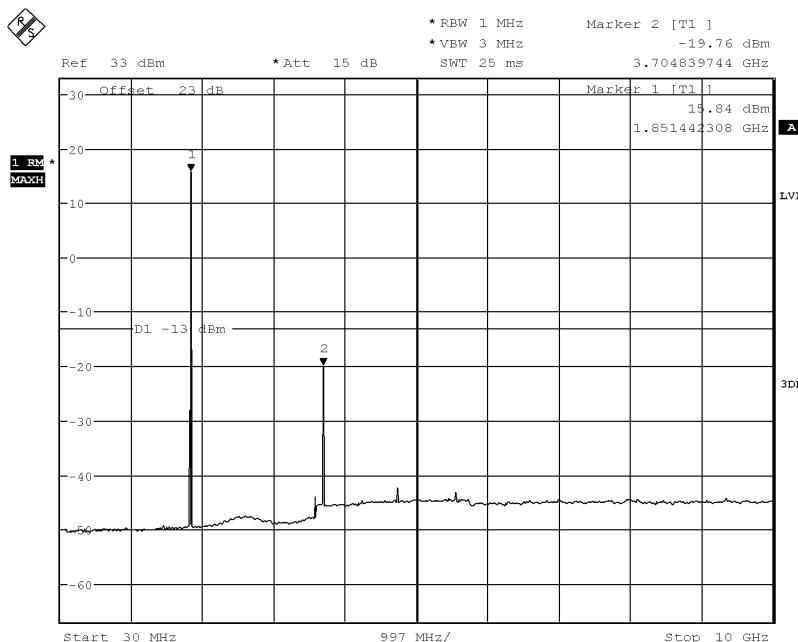
Date: 28.DEC.2018 22:12:56

10GHz to 20GHz, Low Channel, Subcarrier (15kHz), BPSK, 1@0

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

# Chongqing Academy of Information and Communications Technology

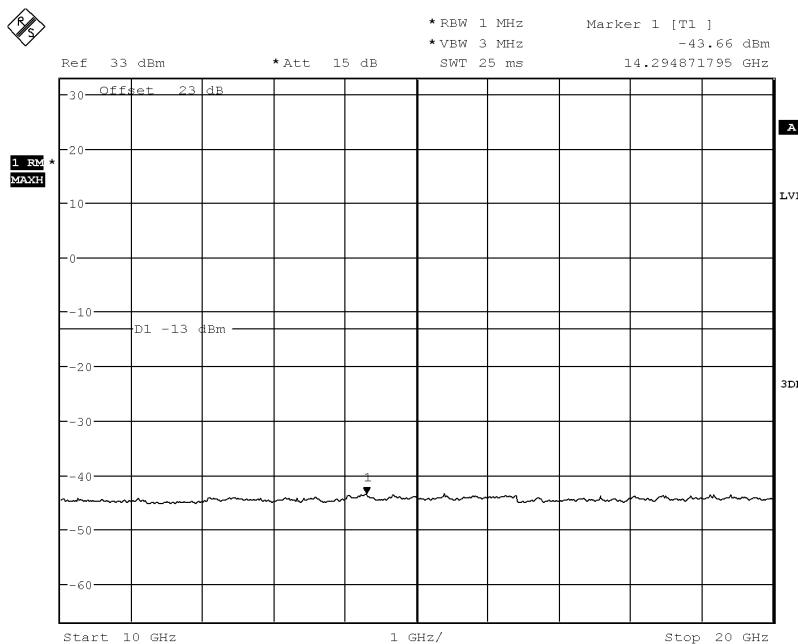
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:14:21

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



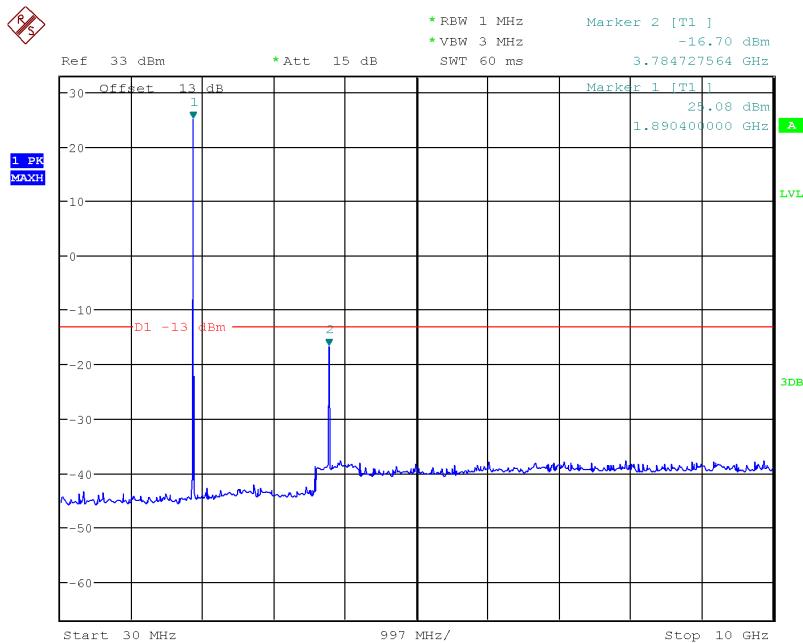
Date: 28.DEC.2018 22:13:55

10GHz to 20GHz, Low Channel, Subcarrier (15kHz), BPSK, 12@0

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

# Chongqing Academy of Information and Communications Technology

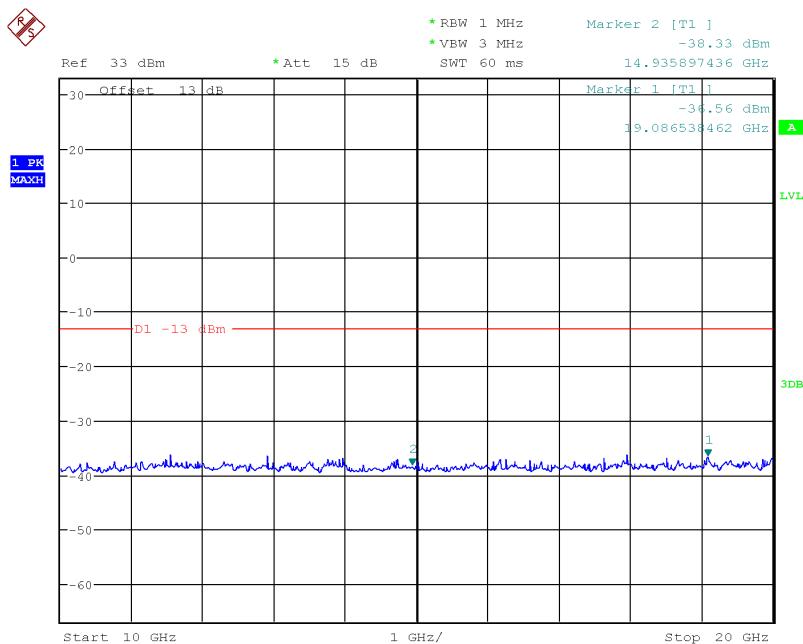
Report No.:B18W50650-WWAN\_Rev2



Date: 24.DEC.2018 21:12:00

30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



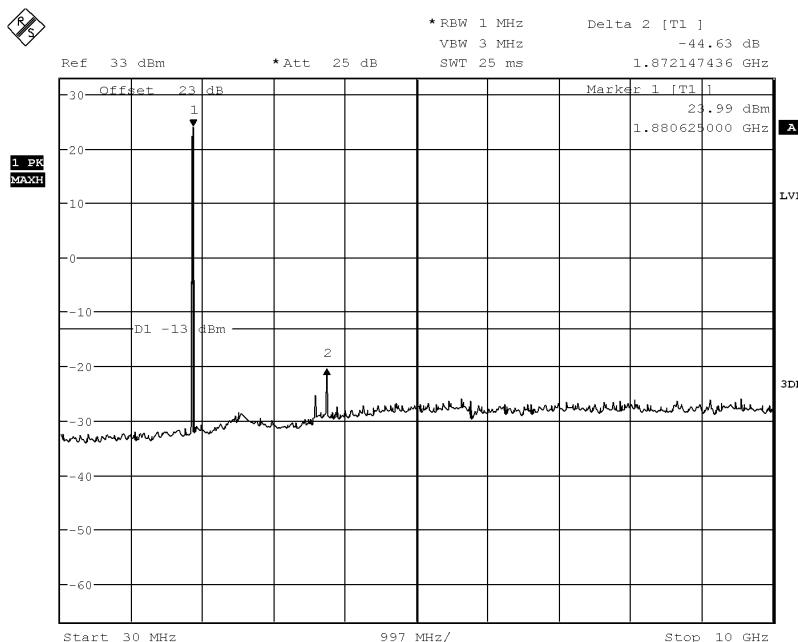
Date: 24.DEC.2018 21:13:04

10GHz to 20GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

# Chongqing Academy of Information and Communications Technology

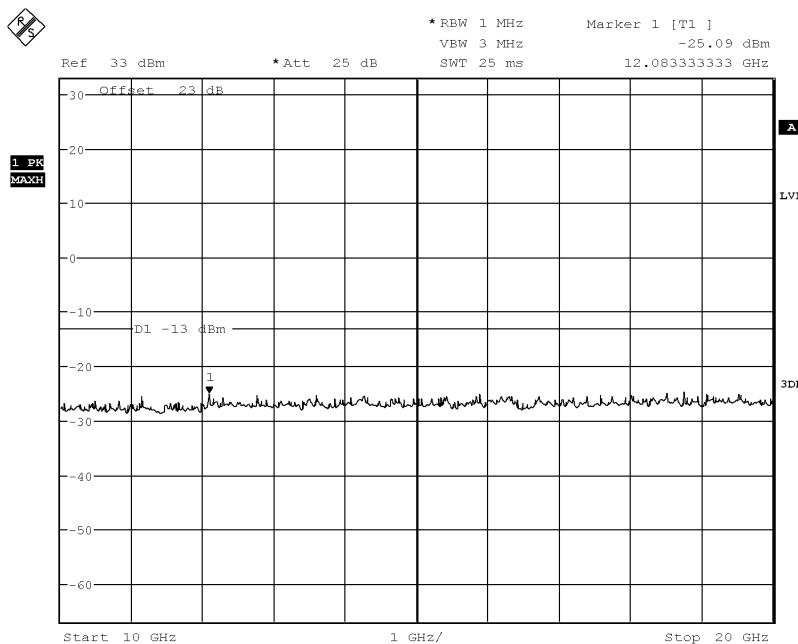
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 18:29:15

30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



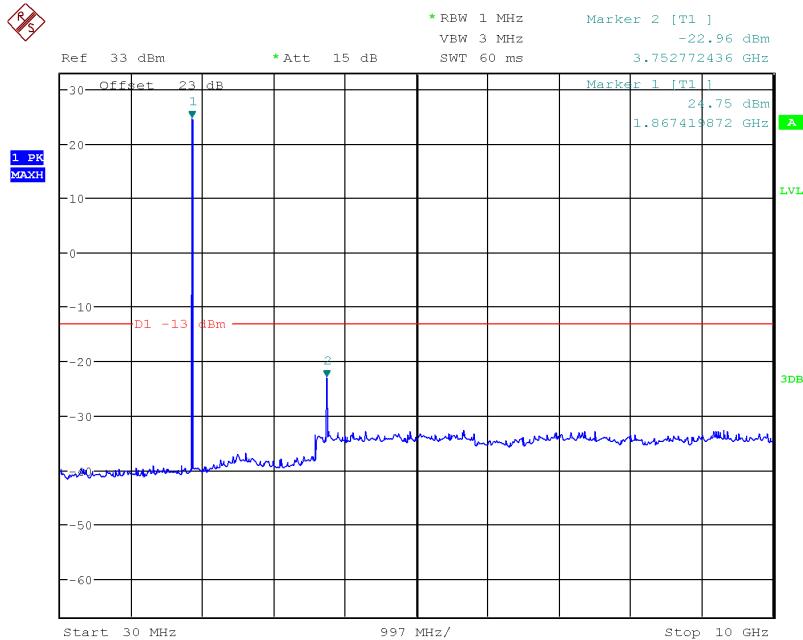
Date: 28.DEC.2018 18:29:45

10GHz to 20GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336  
Tel: 0086-23-88069965 FAX: 0086-23-88608777

# Chongqing Academy of Information and Communications Technology

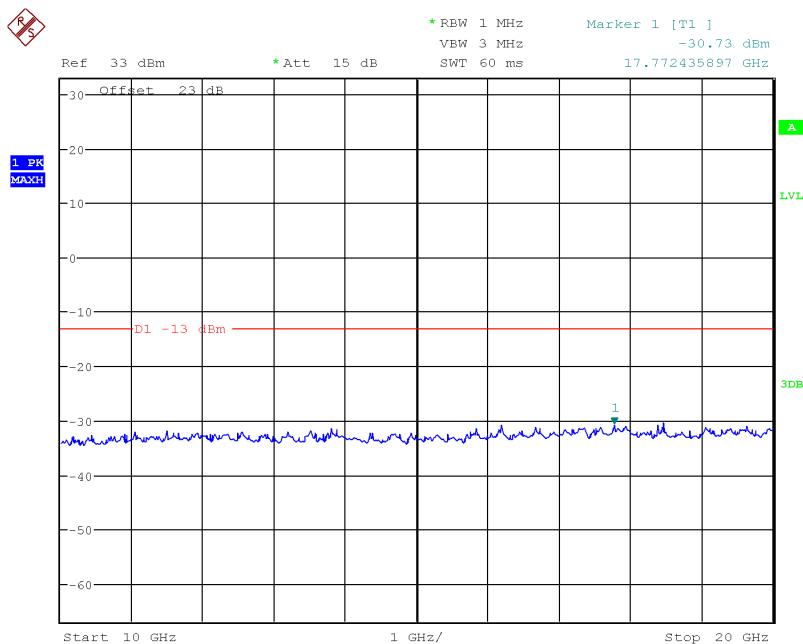
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 18:20:10

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



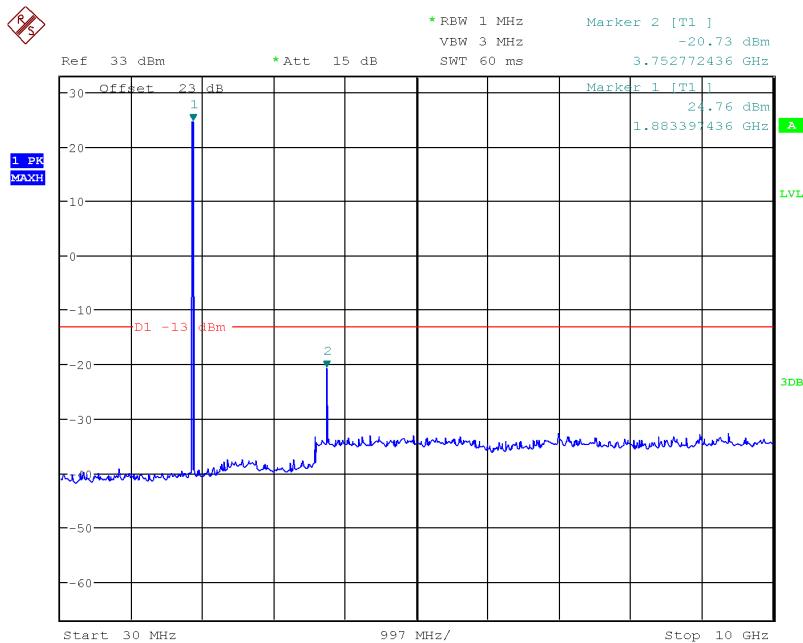
Date: 28.DEC.2018 18:19:20

10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0

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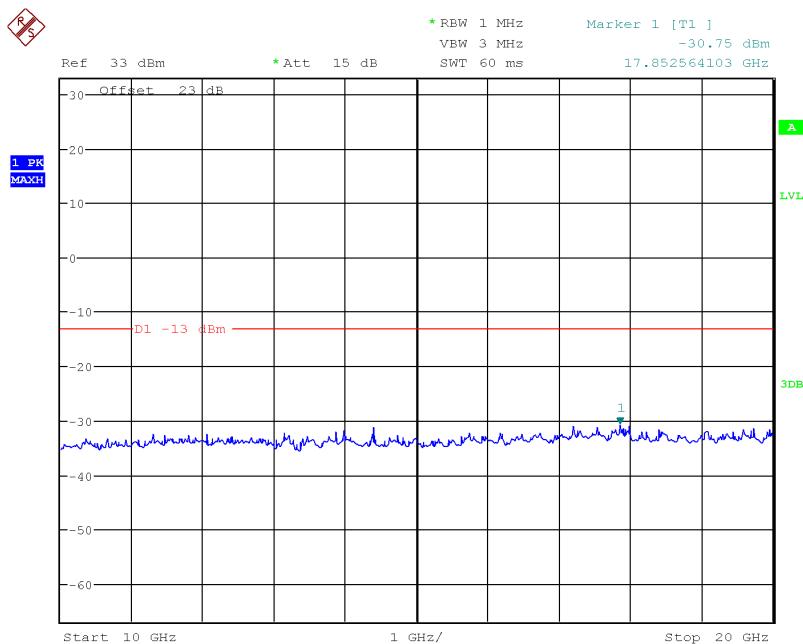
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 18:15:47

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



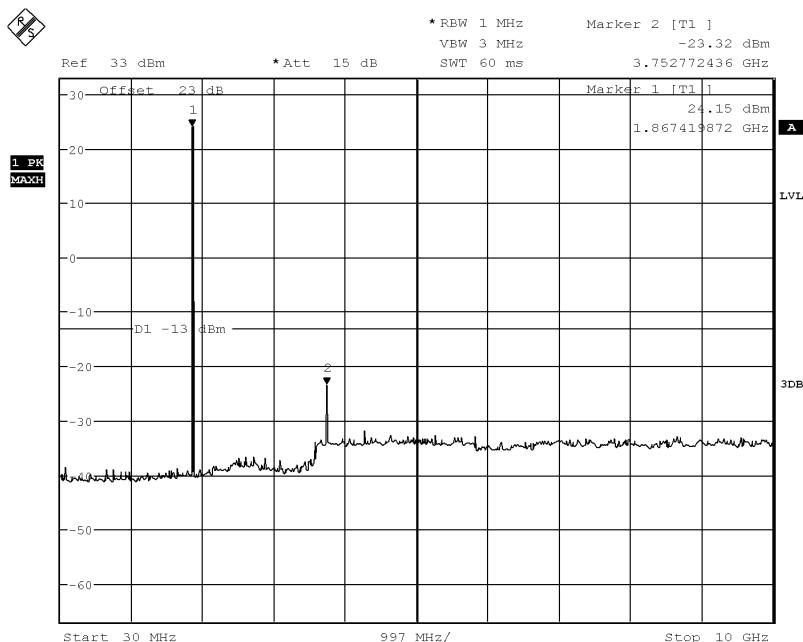
Date: 28.DEC.2018 18:16:14

10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0

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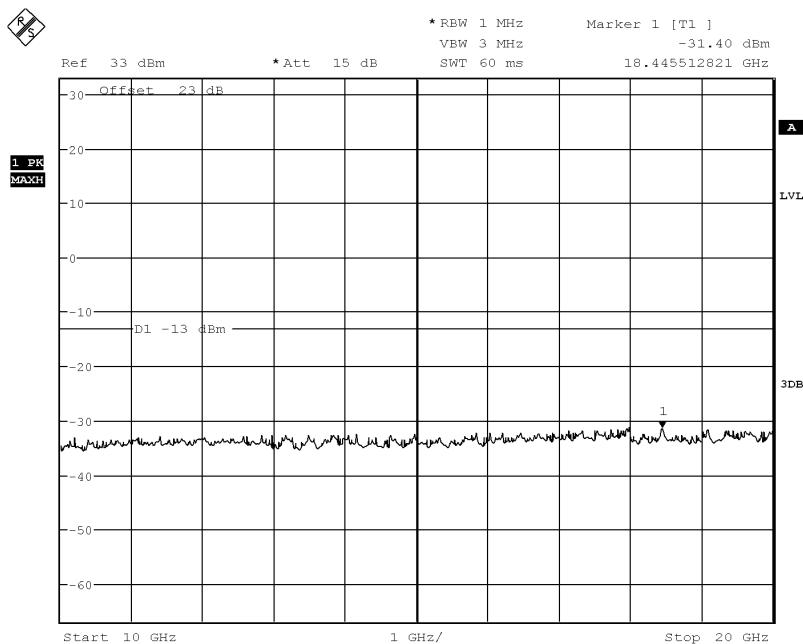
## Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 18:22:42

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



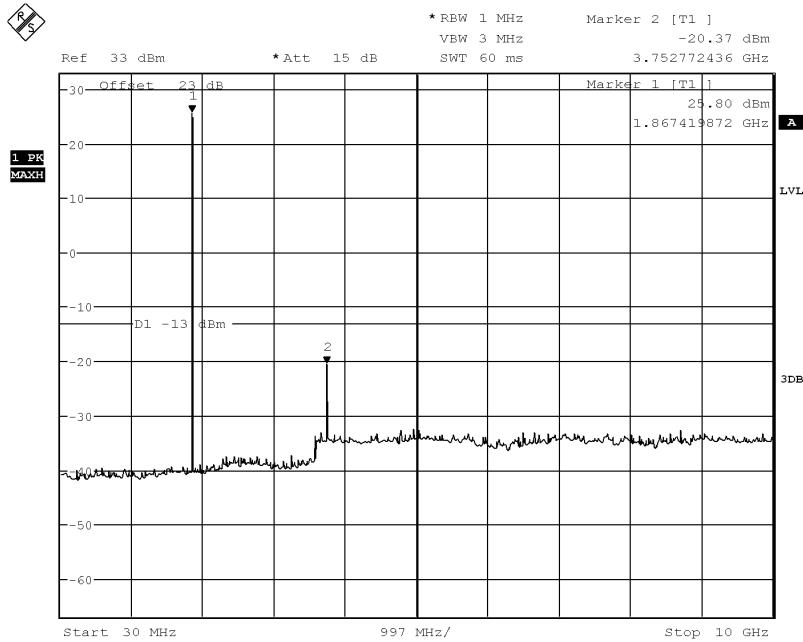
Date: 28.DEC.2018 18:23:07

10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0

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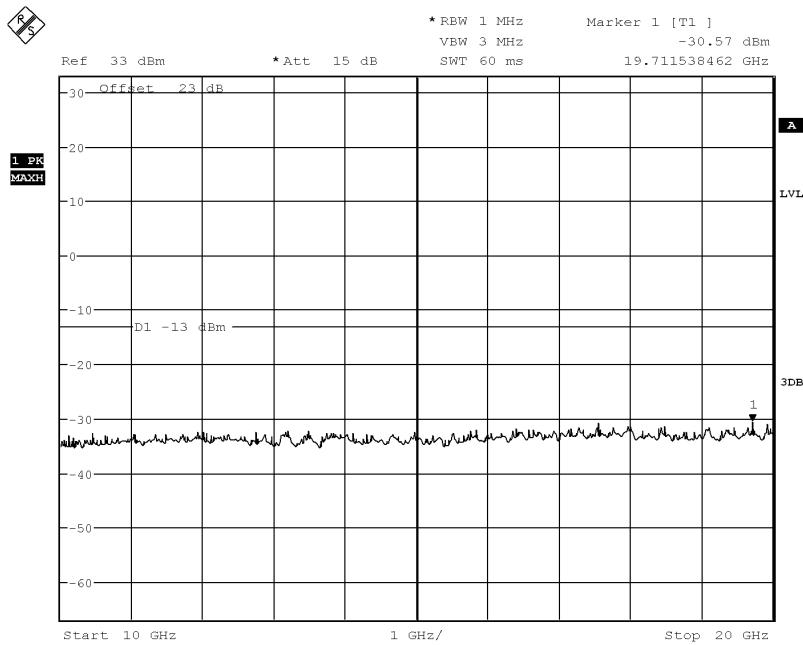
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 18:25:51

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



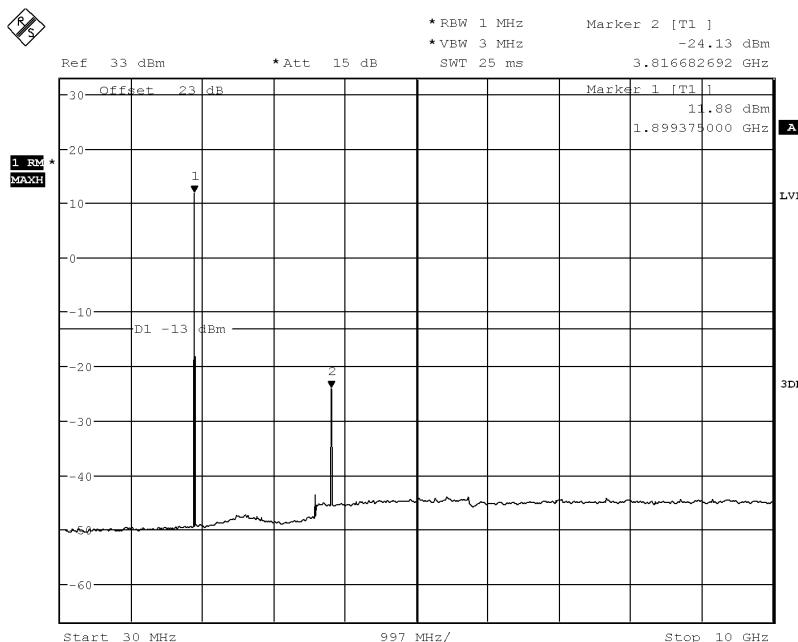
Date: 28.DEC.2018 18:25:09

10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0

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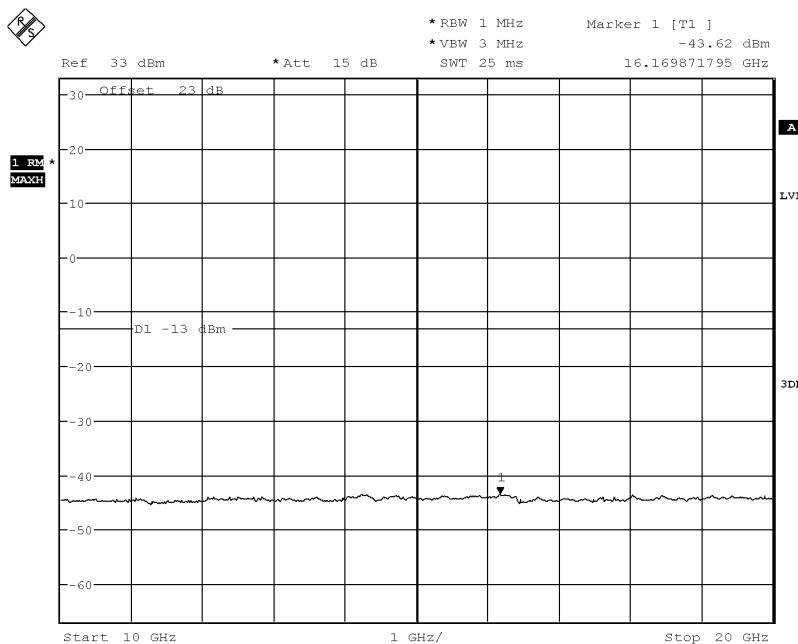
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:09:10

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



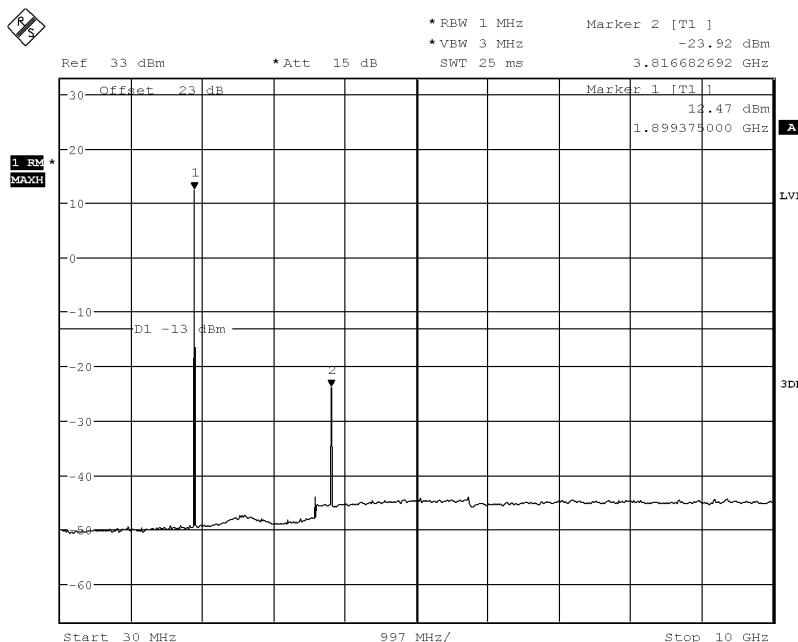
Date: 28.DEC.2018 22:08:45

10GHz to 20GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0

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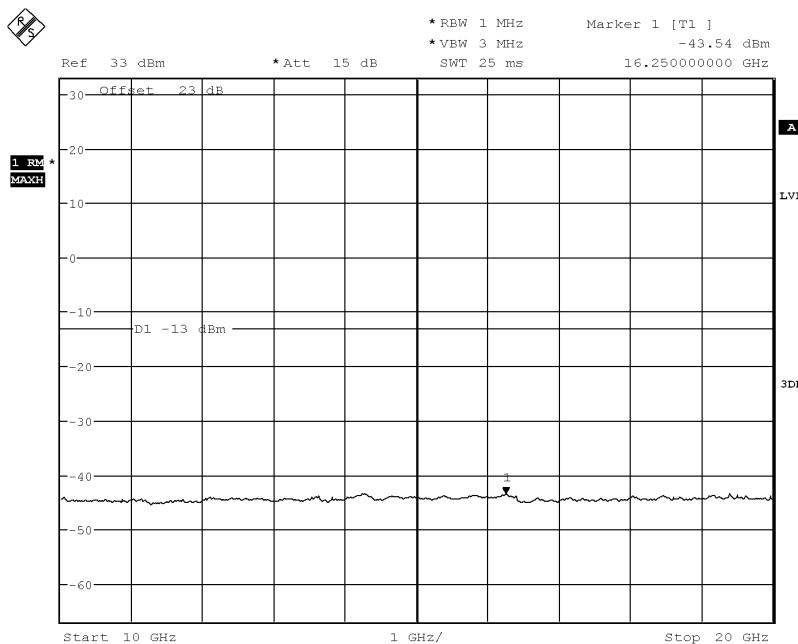
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:09:22

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



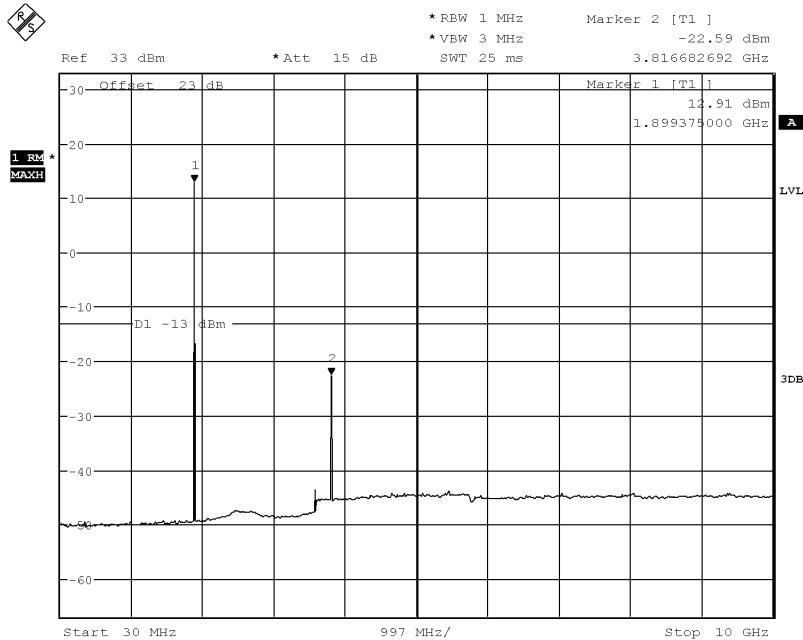
Date: 28.DEC.2018 22:08:24

10GHz to 20GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0

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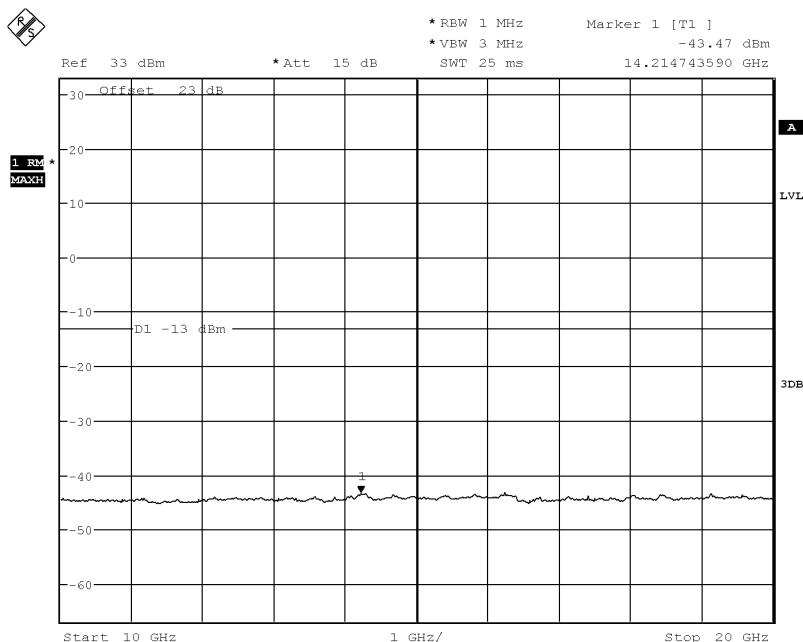
## Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:03:39

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



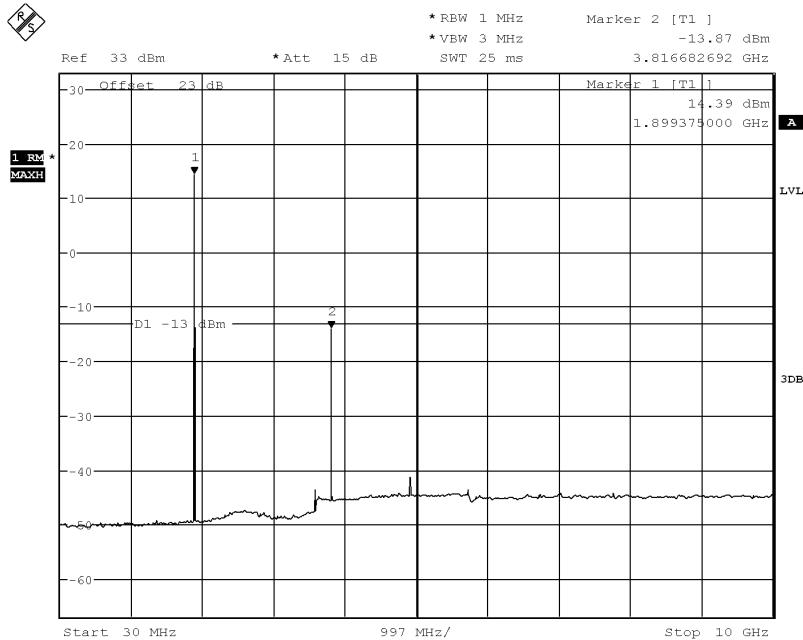
Date: 28.DEC.2018 22:06:59

10GHz to 20GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0

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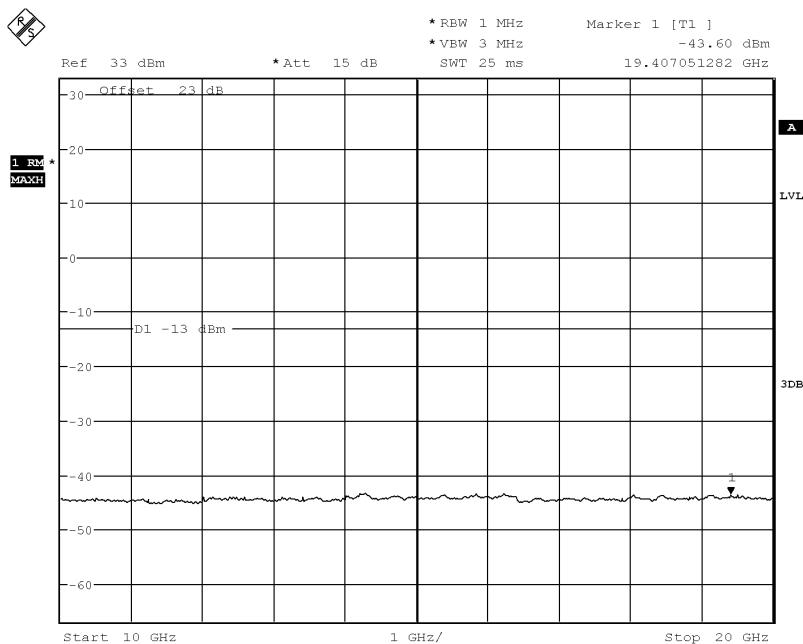
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:02:39

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



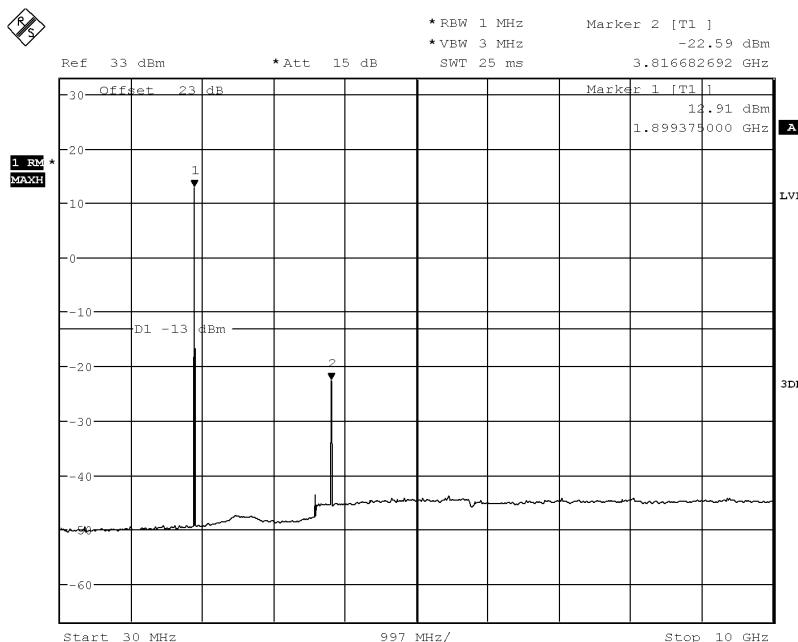
Date: 28.DEC.2018 22:01:17

10GHz to 20GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0

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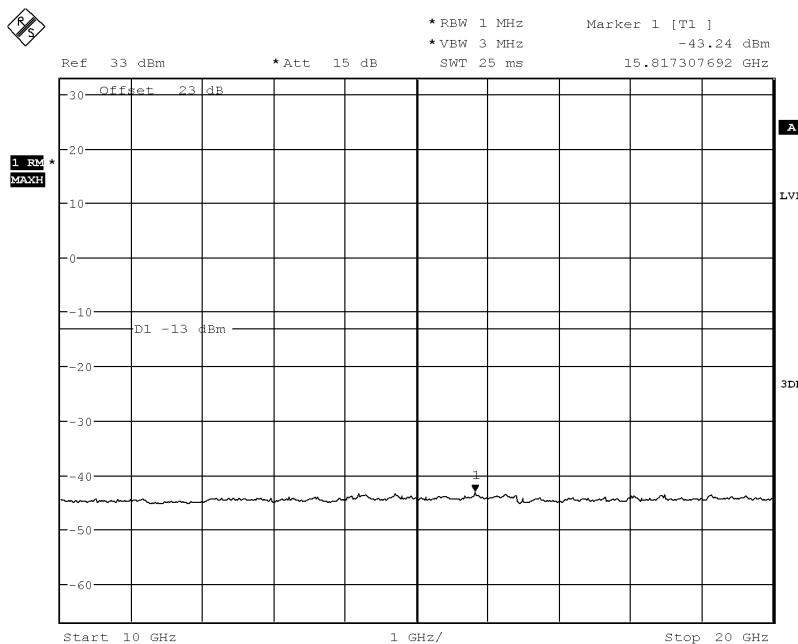
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:03:39

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



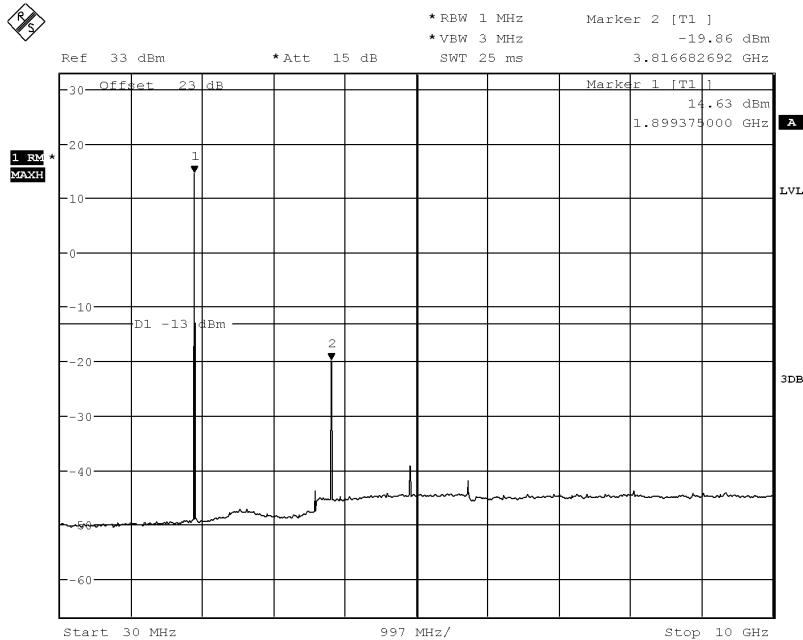
Date: 28.DEC.2018 22:07:15

10GHz to 20GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0

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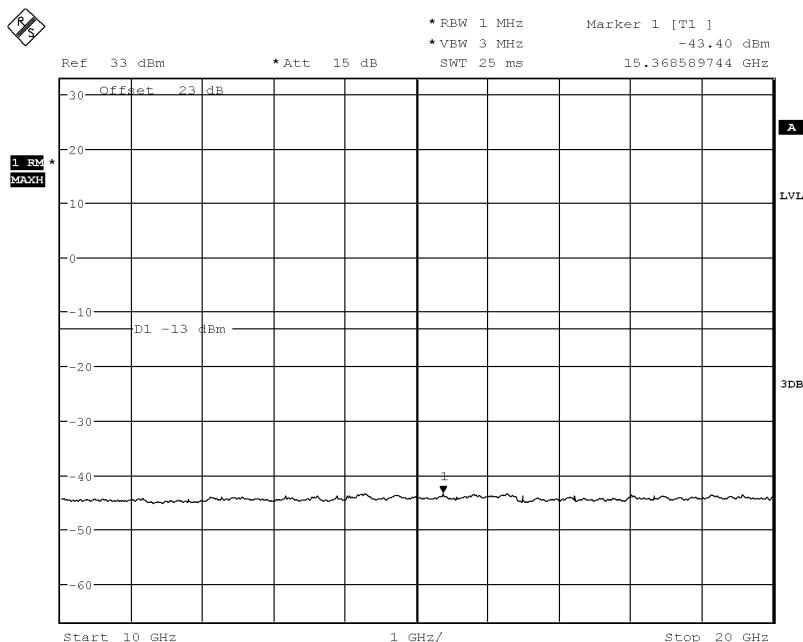
Report No.:B18W50650-WWAN\_Rev2



Date: 28.DEC.2018 22:02:18

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



Date: 28.DEC.2018 22:01:50

10GHz to 20GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

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