



# SIM7020 Series\_MQTT(S) \_Application Note

LPWA Module

## **SIMCom Wireless Solutions Limited**

Building B, SIM Technology Building, No.633, Jinzhong Road

Changning District, Shanghai P.R. China

Tel: 86-21-31575100

[support@simcom.com](mailto:support@simcom.com)

[www.simcom.com](http://www.simcom.com)

<b>Document Title:</b>	SIM7020 Series_MQTT(S)_Application Note
<b>Version:</b>	1.05
<b>Date:</b>	2020.6.10
<b>Status:</b>	Release

## GENERAL NOTES

SIMCOM OFFERS THIS INFORMATION AS A SERVICE TO ITS CUSTOMERS, TO SUPPORT APPLICATION AND ENGINEERING EFFORTS THAT USE THE PRODUCTS DESIGNED BY SIMCOM. THE INFORMATION PROVIDED IS BASED UPON REQUIREMENTS SPECIFICALLY PROVIDED TO SIMCOM BY THE CUSTOMERS. SIMCOM HAS NOT UNDERTAKEN ANY INDEPENDENT SEARCH FOR ADDITIONAL RELEVANT INFORMATION, INCLUDING ANY INFORMATION THAT MAY BE IN THE CUSTOMER'S POSSESSION. FURTHERMORE, SYSTEM VALIDATION OF THIS PRODUCT DESIGNED BY SIMCOM WITHIN A LARGER ELECTRONIC SYSTEM REMAINS THE RESPONSIBILITY OF THE CUSTOMER OR THE CUSTOMER'S SYSTEM INTEGRATOR. ALL SPECIFICATIONS SUPPLIED HEREIN ARE SUBJECT TO CHANGE.

## COPYRIGHT

THIS DOCUMENT CONTAINS PROPRIETARY TECHNICAL INFORMATION WHICH IS THE PROPERTY OF SIMCOM WIRELESS SOLUTIONS LIMITED. COPYING, TO OTHERS AND USING THIS DOCUMENT, ARE FORBIDDEN WITHOUT EXPRESS AUTHORITY BY SIMCOM. OFFENDERS ARE LIABLE TO THE PAYMENT OF INDEMNIFICATIONS. ALL RIGHTS RESERVED BY SIMCOM IN THE PROPRIETARY TECHNICAL INFORMATION, INCLUDING BUT NOT LIMITED TO REGISTRATION GRANTING OF A PATENT, A UTILITY MODEL OR DESIGN. ALL SPECIFICATION SUPPLIED HEREIN ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.

### **SIMCom Wireless Solutions Limited**

Building B, SIM Technology Building, No.633 Jinzhong Road, Changning District, Shanghai P.R. China

Tel: +86 21 31575100

Email: [simcom@simcom.com](mailto:simcom@simcom.com)

**For more information, please visit:**

<https://www.simcom.com/download/list-863-en.html>

**For technical support, or to report documentation errors, please visit:**

<https://www.simcom.com/ask/> or email to: [support@simcom.com](mailto:support@simcom.com)

**Copyright © 2020 SIMCom Wireless Solutions Limited All Rights Reserved.**

# About Document

## Version History

Version	Date	Owner	What is new
V1.00	2018.04.10	Xiaohui.Xu	First Release.
V1.01	2018.06.07	Albert Meng	Revised
V1.03	2019.05.10	Xiaohui.Xu/Wenjie.lai	Add MQTT introduction and SSL sample
V1.04	2019.09.09	Xiaohui.Xu	Add MQTTS connect to Azure IoT
V1.05	2020.06.10	Xiaohui.Xu	All

## Scope

This document applies to the following products

Name	Type	Size(mm)	Comments
SIM7020C	NB1	17.6*15.7	Band 1/3/5/8
SIM7020E	NB1	17.6*15.7	Band 1/3/5/8/20/28
SIM7030	NB1	16*18	Band 1/3/5/8
SIM7060	NB1+GNSS	24*24	Band 5/8
SIM7020G	NB2	17.6*15.7	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85
SIM7060G	NB2+GNSS	24*24	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85

# Contents

<b>About Document</b> .....	<b>3</b>
Version History .....	3
Scope .....	3
<b>Contents</b> .....	<b>4</b>
<b>1 Introduction</b> .....	<b>5</b>
1.1 Purpose of the document.....	5
1.2 Related documents .....	5
1.3 Conventions and abbreviations.....	5
<b>2 MQTT Introduction</b> .....	<b>6</b>
<b>3 AT Commands for MQTT</b> .....	<b>7</b>
<b>4 Bearer Configuration</b> .....	<b>8</b>
4.1 PDN Auto-activation.....	8
4.2 APN Manual configuration .....	9
<b>5 MQTT Synchronization Mode</b> .....	<b>10</b>
<b>6 MQTT Examples</b> .....	<b>11</b>
6.1 MQTT Connect to a general MQTT server.....	11
6.2 MQTT Connect to Alibaba Cloud .....	11
<b>7 MQTTS Examples</b> .....	<b>13</b>
7.1 MQTTS Connect with AT+CSETCA .....	13
7.2 MQTTS Connect to Azure IoT.....	16

# 1 Introduction

## 1.1 Purpose of the document

Based on module AT command manual, this document will introduce MQTT(S) application process.

Developers could understand and develop application quickly and efficiently based on this document.

## 1.2 Related documents

[1] SIM7020 Series\_AT Command Manual

## 1.3 Conventions and abbreviations

In this document, the GSM engines are referred to as following term:

ME (Mobile Equipment);

MS (Mobile Station);

TA (Terminal Adapter);

DCE (Data Communication Equipment) or facsimile DCE (FAX modem, FAX board);

In application, controlling device controls the GSM engine by sending AT Command via its serial interface.

The controlling device at the other end of the serial line is referred to as following term:

TE (Terminal Equipment);

DTE (Data Terminal Equipment) or plainly "the application" which is running on an embedded system;

## 2 MQTT Introduction

MQTT (Message Queue Telemetry Transport) is a messaging protocol based on the publish/subscribe paradigm under the ISO standard (ISO/IEC PRF 20922). It works on the TCP/IP protocol suite and is a publish/subscribe messaging protocol designed for remote devices with poor hardware performance and poor network conditions.

The MQTT protocol is a protocol designed for the communication of remote sensors and control devices with limited computing power and working on low-bandwidth, unreliable networks. It has the following main features:

- 1) Use the publish/subscribe message mode to provide one-to-many message publishing and uncouple the application;
- 2) Message transmission for shielding the payload content;
- 3) Provide network connection using TCP/IP;
- 4) There are three types of message publishing service quality:
  - "At most once," message publishing relies entirely on the underlying TCP/IP network. Message loss or duplication can occur. This level can be used in the following situations, environmental sensor data, loss of a read record does not matter, because there will be a second transmission in the near future.
  - "At least once" to ensure that the message arrives, but message duplication may occur.
  - "Only once" to ensure that the message arrives once. This level can be used in situations where repeated or missing messages can result in incorrect results.
- 5) Small transmission, low overhead (fixed length of the head is 2 bytes), protocol exchange is minimized to reduce network traffic;
- 6) Use the Last Will and Testament features to notify the parties about the mechanism of client abort.

## 3 AT Commands for MQTT

Command	Description
<b>AT+CMQNEW</b>	New MQTT
<b>AT+CMQCON</b>	Send MQTT Connection Packet
<b>AT+CMQDISCON</b>	Disconnect MQTT
<b>AT+CMQSUB</b>	Send MQTT Subscribe Packet
<b>AT+CMQUNSUB</b>	Send MQTT Unsubscribe Packet
<b>AT+CMQPUB</b>	Send MQTT Publish Packet
<b>+CMQDISCON</b>	MQTT Disconnect Indication
<b>AT+CMQALICFG</b>	Configure Alibaba Cloud Parameters
<b>AT+CMQALICON</b>	Send MQTT Connection Packet to Alibaba Cloud
<b>AT+CMQTTSNEW</b>	New MQTTS
<b>AT+CMQTTSNEWEXT</b>	New a MQTTS Instance by Multi Packages for a Long Size Command
<b>AT+CMQAZURECFG</b>	Configure Microsoft Azure IoT Parameters
<b>AT+CMQAZURECON</b>	Send MQTT Connection Packet to Azure IoT
<b>AT+CMQTSYNC</b>	Configure MQTT Synchronization Mode

For detail information, please refer to "SIM7020 Series\_AT Command Manual".

## 4 Bearer Configuration

Usually module will register PS service automatically.

### 4.1 PDN Auto-activation

//Example of PDN Auto-activation.

```
AT+CPIN? //Check SIM card status
+CPIN: READY

OK
AT+CSQ //Check RF signal
+CSQ: 20,0

OK
AT+CGREG? //Check PS service
+CGREG: 0,1

OK
AT+CGACT? //Activated automatically.
+CGACT: 1,1

OK
AT+COPS? //Query Network information, operator and network
+COPS: 0,2,"46000",9 mode 9, NB-IOT network

OK
AT+CGCONTRDP //Attached PS domain and got IP address
+CGCONTRDP: automatically.
1,5,"cmnbiot","100.80.73.123.255.255.255.0"

OK
```



## 4.2 APN Manual configuration

If not attached automatically, could configure correct APN setting.

//Example of APN Manual configuration.

```
AT+CFUN=0 //Disable RF
+CPIN: NOT READY

OK
AT*MCGDEFCONT="IP","cmnbiot" // Set the APN manually
OK
AT+CFUN=1 //Enable RF
OK

+CPIN: READY
AT+CGREG? //Inquiry PS service .1 indicates PS has attached.
+CGREG: 0,1

OK
AT+CGCONTRDP //Attached PS domain and got IP address
+CGCONTRDP: automatically
1,5,"cmnbiot","100.80.73.123.255.255.255.0"

OK
```

## 5 MQTT Synchronization Mode

To set the MQTT synchronization mode, you can refer to the following instruction. This step is optional , default is disable.

//Example of Enable or Disable Synchronization mode.

```
AT+CMQTSYNC=1 //Enable MQTT synchronization mode.
OK
AT+CMQTSYNC=0 //Disable MQTT synchronization mode.
OK
```

### NOTE

- After MQTT Synchronization enabled, when the command (AT+CMQCON, AT+CMQSUB, AT+CMQPUB, AT+CMQUNSUB) returns OK, you can execute the next MQTT command immediately.
- After MQTT Synchronization disabled, When the command (AT+ CMQCON, AT+CMQSUB, AT+CMQPUB, AT+CMQUNSUB) returns OK, it only means the message is sent successfully, whether the next MQTT command can be executed depends on when the module receives the confirmation message from the server.

## 6 MQTT Examples

### 6.1 MQTT Connect to a general MQTT server

//Example of MQTT Connect to a general MQTT server.

```
AT+CMQNEW=""test.mosquitto.org","1883", //Create MQTT connection
12000,1024 //If succeed, MQTT id will return.
+CMQNEW: 0

OK
AT+CMQCON=0,3,"myclient",600,1,0 //Send MQTT request.
OK
AT+CMQSUB=0,"mytopic",1 //Send subscribe topic.
OK
AT+CMQPUB=0,"mytopic",1,0,0,8,"31323334" //Publish a MQTT message.
OK

+CMQPUB: 0,"mytopic",1,0,0,8,"31323334" //Got subscribed topic and message
down from server
AT+CMQUNSUB=0,"mytopic" //Unsubscribe the topic
OK
AT+CMQDISCON=0 //Disconnect MQTT connection with id
OK
```

### 6.2 MQTT Connect to Alibaba Cloud

//Example of MQTT connect to Alibaba Cloud.

```
AT+CMQNEW="productKey.iot-as-mqtt.cn-sha //Create TCP connection
nghai.aliyuncs.com","1883",12000,1024
+CMQNEW: 0 //If succeed, MQTT id will return

OK
```

```
AT+CMQALICFG=0,"productKey","deviceName", //Set the Alibaba Cloud device parameters
e",
"deviceSecret"
OK
AT+CMQALICON=0,600,1 //Send MQTT request to connect Alibaba Cloud.
OK
AT+CMQSUB=0,"/productKey/deviceName/TE //Subscribe to a topic.
ST1 ",1
OK
AT+CMQPUB=0,"/productKey/deviceName/TE //Public message
ST1",
1,0,0,16,"3132333435363738"1
OK
+CMQPUB:0,"/productKey/deviceName/TEST1 //Got subscribed topic and message down from
", server
1,0,0,16,"3132333435363738"
AT+CMQUNSUB=0,"/productKey/deviceName/ //Unsubscribe topic .
TEST1"
OK
AT+CMQDISCON=0 //Disconnect MQTT connection with id
OK
```

#### NOTE

- “productkey”, “deviceName”, and “deviceSecret”. These three parameters can be obtained from the Alibaba Cloud website.
- To subscribe to a topic, you need to subscribe to create this topic in the TOPIC list on the Alibaba Cloud device and give the device permissions for publishing and subscribing.

## 7 MQTTS Examples

### 7.1 MQTTS Connect with AT+CSETCA

//Example of MQTTS with AT+CSETCA.

```
AT+CSETCA=0,1312,1,0,"-----BEGIN
CERTIFICATE-----\r\nMIIDqjCCApKgAwIBAgIJAIImRX1
D4JhMMA0GCSqGSIb3DQEBDQUAMGoxFzAVBgNVB
AMMDkFuIE1RVFQgYnJva2VyMRYwFAYDVQQKDA1Pd
25UcmFja3Mub3JnMRQwEgYDVQQLDAtnZW5lcmF0Z
S1DQTEhMB8GCSqGSIb3DQEJARYSbm9ib2R5QG54Y
W1wbGUubmV0MB4XDTE4MDgwMTA5NTIzMIoXDTEy
MDcyODA5NTIzMIowajEXMBUGA1UEAwwOQW4gTVF
UVCBicm9rZXIxZjAUBgNVBAoMDU93bIRyYWNrcy5vc
mcxFDASBgNVBAAsMC2dlbmVyYXRILUNBMSEwHwYJ
KoZlhvcNAQkBFhJub2JvZHIAZXhhbXBsZS5uZXQwgg
EiMA0GCSqGSIb3DQEBAQUAA4IBDwAwggEKAoIBA
QDBdvA5HF8hcvvZKCQjCezZQPpPzHUcqSQQCTcpJn
C2kb5DvA2EVnZ6bLKBtcfkv+40AZK3VXWoof0dmZwh
Y1XTgxVMLxFeQwp9eW5h2UnDS278qcQsT93z9RzfVi
7jyCc0eS6DQaMOLuKMefYM8dYYN73PWVTZejtRmBp
8PrDik/6xXqGFIIzGKRMboNjNc1HXD/7Cv0I27WYagoRs
ArHC2rdoS+soxa+i9Cvdbp0dpjYnIY6sNDV5mST2NnK/
tNtMiFQRKv1XWSRosGlyJxaHK6sEuFqspoC71IJzq7lz
nOgxbe8v8Zyaa2zXczCR4h05Kjf4vpLift3oWgxaD10ZA
gMBAAGjUzBRMB0GA1UdDgQWBBSHCqK2sT9GrZ0n
59I8b7Btm9IaPTAfBgNVHSMEGDAWgBShCqK2sT9GrZ
0n59I8b7Btm9IaPTAPBgNVHRMBAf8EBTADAQH/MA0
GCSqGSIb3DQEBDQUAA4IBAQA8tYQuZ9rr3T7Qc+jjIK
7yVtT5dStyOOWYNjNBMD4I8DXadWpSeuj36"
```

OK

```
AT+CSETCA=0,1312,0,0,"qfwTpSdAtMoJcUv2oAxAWN
9dSVkHxgfsdv1j/O6nstC4cErYft6/pd603V+Fr+b+idk/0L
dxzhJfYII3uYVnKZrRarcPu0n1WAF0xDIpxAmXrDozCD
4mHpOIIP/F8TFbDIMigyZ+QOPC+32KJZLq+MRnz0DxG
PsQ+z0NL/IRFmhwYkirncwhRdomeC+SePmL15TCQ1Y
Szf/iSaYWWMG55N0KqJdfY43xNuDL+kFT3PUQXb41Q4
E/0+ChnAgs681lc+TVDceD6RPnHjIGnyFikjXLwW5eNt
```

//Use the "AT+CSETCA" command to set the server certificate. It's the First Server Certificate package

// Use the "AT+CSETCA" command to set the server certificate. It's the Second Server Certificate package.

H9-----END CERTIFICATE-----"

OK

```
AT+CSETCA=1,1520,1,0,"-----BEGIN
CERTIFICATE-----\r\nMIERjCCAy6gAwIBAgIJAJUEubE
oKmu2MA0GCSqGSIb3DQEBDQUAMGoxFzAVBgNVB
AMMDkFulE1RVFQgYnJva2VyMRYwFAYDVQQKDA1Pd
25UcmFja3Mub3JnMRQwEgYDVQLDAtnZW5lcmF0Z
S1DQTEhMB8GCSqGSIb3DQEJARYSbm9ib2R5QGv4Y
W1wbGUubmV0MB4XDTE4MDgwMTA5NTc0NloXDTEy
MDcyODA5NTc0NlowEzERMA8GA1UEAwwlbXljbGllbn
QwggEiMA0GCSqGSIb3DQEBAQUAA4IBDwAwggEKA
oIBAQCvEKXoe2dkjuc1LMKQmwLELr175K+sKsdJ3Ny
ld/mwPr+Ls8esJPgtEwS7zcPKczl0P5oVhепGNmkp4TI
+9Xy5UcbU3lpjCnzFdvDUwg64fsByrRyE0T8NP0Kw+0
g0XBwX/3s/yg8k3SmXcp54+uoujRnTdtBbgiNbdTKyT3
94d9nxVBRHeo5YmHi3GN8KRL7lujC6LB6sNokepmW
DRt5orc3shJ0Hk6pNEdQpo4vt4A/ISiMB89JPpq8x3f4c+
bvNWIUGujcWJBdgvYfXxnoM5odQU+wbmEEZI4+16B
N0obFxiYrOHs+Xk6+CWi3/4/bXb9FtQE1LQMyPwDjF
q7AgMBAAGjggFEMiIBQDAMBgNVHRMBAf8EAjAAMA
kGA1UdEQQCMAAwEQYJYIZIAyb4QgEBBAQDAgWg
MB0GA1UdJQQWMBQGCCsGAQUFBwMCAggrBgEFB
QcDBDALBgNVHQ8EBAMCA6gwKAYJYIZIAyb4QgEN
BBsWGUNsaWVudCBCcm9rZXIlgQ2VydGlmaWNhdGU
wHQYDVR0OBBYEFgleiFUHsSWR25+eXsStFlgYt4OM
MIGcBgNVHSMEgZQwgZGAFKEKoraxP0atnSfn2Xxvs
G2b0ho9oW6kbDBqMRcwFQYDVQQDDA5BbiBNUVRU
IGJyb"
```

OK

```
AT+CSETCA=1,1520,0,0,"2tlcjEWMBQGA1UECgwNT3d
uVHJhY2tzLm9yZzEUMBIGA1UECwwLZ2VuZXJhdGUt
Q0ExITAfBgkqhkiG9w0BCQEWEm5vYm9keUBleGFtcG
xlM5ldllJAlImRX1D4JhMMA0GCSqGSIb3DQEBDQUA
A4IBAQA5a1nn4JxCF7TsSPSYDlxvYGj3MlucfjGQFWjz
sNvhrAotBfuS2KPCxmo/350otqTHqISfy3upTAgMJireA
zVigZaVneMxS8GHAMzezlaittuxZRAO6jYUfn03OkX/3M
gssJxa81/5M6+OpQdDNKK2iFmUjwf+iGjGVE9KpsKLi
mW0TD9WBLfPCO7d20WQmg4+UM9l+xxp3CAmkdD+
FGQnBz7Zd2Js2MJ/QWD7ZEeOu++oT4/xq+rVzGyxYuq
nJbQWP/oayfEJn3rtm5jniAA2xEykqPnk3rm9KNVzvlbH
mDQxTcA774mlcvc4VILgjW2k9LnyCjYsAEp3blb3D5Lp
-----END CERTIFICATE-----"
```

OK

```
AT+CSETCA=2,1656,1,0,"-----BEGIN RSA PRIVATE
KEY-----\r\nMIIEpAIBAACAQEArci6HtnZI7nNSzCkJs
CxC69e+SvrCrHSdzciHf5sD6/i7PHrCT4LRMEu83DynM
```

//Use the "AT+CSETCA" command to set the client certificate. It's the First Client Certificate package.

//Use the "AT+CSETCA" command to set the client certificate. It's the Second Client Certificate package.

//Use the "AT+CSETCA" command to set the client Key. It's the First Client Key package.

```
5dD+aFYXqRjZpKeEyPvV8uVHG1NyKYwp8xXbw1MIO
uH7Acq0chNE/DT9CsPtINFwcF/97P8oPJN0pl3KeePrqL
o0Z03bQW4IjW3Uysk9/eHfZ8VQUR3qOWJh4txjfCkS+5
bowuiwerDaJHqZlG0beaK3N7ISdB5OqTRHUKaOL7eA
PyEojAfPST6avMd3+HPm7zViFBro3FiQXYL2BcV56DO
aHUFPSG5hBGZePtegTdKGxcYmLazh7PI5Ovglot/+P21
2/RbUBNS0DMj8HQyX6uwIDAQABAoIBAQCUALeIwO
GCZEYX8IV1F3fZP+K2EXprRadCTNStEzEmzYXGp/ER
GhgukzuXQrhaOdvC6dpsg9CyF2IFl/wEuin9yqMcZm8g
mEcv8gRc+srTM2WkDbJknzp9CpRpZ6d9jLm7mCQso
7j143w8K4zKnubJAEVrP7GbC4S013pKwWb1AohnFKk
XyVpNLExk2Dh8WkqGAPSp7WDFD8rybRAEpDUhKolf
RmV71q+Y4JGqkwRrRAn3S/2JhvX29/xqi95oTPkLOUL
MQIj0vP2tGtTY7Djr1bb3FeY4a/dfz93nNUgutX11du2MP
YJRyrFb97gNac8XMMqO+i5lXrGGmPw8EYIxAoGBANY
MBUBcR92ZVlhNqvNe/WUzn0edBtKPdjdr16FTA7iagIR
uRltwLVyq9dRlbe0YnywEPSDhaUGauo5W98f3MpzD/M
Pn3DmGgl6+ZHIB/hthkPb+tcuGNt0fhKZxgdKHaz9JDIF
F7vQHqngqgVMWSg798Rbl68ZBx4NKAryYmAUAoG
BANFgrY4jiZ5yoMZjZsfNdQYja02as4d5QjMZ1YwPkSk
Dy9HdUkwmVjLyll+d5MR152xP5KimY"
```

OK

```
AT+CSETCA=2,1656,0,0,"kJHnL4o+V9oRM82hGVJeH4
KVIW2r0JBglm7QzeHXiykMVRI03SWP+gj65D7NzFBw0
Fyw3MXY+GGwQZAm3k9av7HbIMWdnRecECHAoGAI
GmJkglnSIMjbdB1Bo1nyZ9biziYA+J9gD7wVBmCAr5C
5g4cixDdjZ7FwvfpAXItCDIMGGKJ0clgXpWEx98C5wI2k
GPX0U4wwWzLQiFgHT1U+IHvrXYRcMKJD7s4cWzYlK
kfH6Q7XvCaPB+DptVFOafyjs2zzq+v37RE+d3fbECgY
EAghK3f1gghKjdrKHQFkxTaQ7T+JAK/AKe17Qy8Clzof
FTy/rcx6YBYwFF3fzvRAWjUayldyV2YYqvm4tE8LqMFN
bfhTURf+vW+oK1eknLGSWVSof0P3N5md7wcLtu1D6M
d7M5ZIZgUOaE+ZkMWe0nOUUI0ToQoFsv1Hg9+qk4vz
0CgYAOaPbpuTXbPViDo1uL11Mt4UdlnfdgzL4jpnVFus
3SAJue9wrrKFcIRU5vb3irDRZ0d9Tewf+fT2g5x5xFAeSI
VJeEWIjk0ddDz9yOhnr6M7jneuzvuVBUQ/E5Q+S45XXk
BTwUdCOpfbuMjPKYijWseh0VGvpOyuPyV9tcnNVZ5Q
==-----END RSA PRIVATE KEY-----"
```

OK

```
AT+CMQTTSNEW="117.131.85.139","6001",60000,1024
+CMQTTSNEW: 0
```

OK

```
AT+CMQCON=0,3,"myclient",600,1,0
```

OK

//Use the "AT+CSETCA" command to set the client Key. It's the Second Client Key package.

//Create MQTT connection.  
//If succeed, MQTT id will return

//Send MQTT request.

<code>AT+CMQSUB=0,"mytopic",1</code>	//Send subscribe topic.
<code>OK</code>	
<code>AT+CMQPUB=0,"mytopic",1,0,0,10,"3132333439"</code>	//Publish a MQTT message.
<code>OK</code>	
<code>+CMQPUB: 0,"mytopic",1,0,0,10,"3132333439"</code>	//Got subscribed topic and message down from server
<code>AT+CMQUNSUB=0,"mytopic"</code>	//Unsubscribe the topic
<code>OK</code>	
<code>AT+CMQDISCON=0</code>	//Disconnect MQTT connection with id
<code>OK</code>	

**NOTE**

- The usage of the command "AT+CSETCA" is referred to ATC document.

## 7.2 MQTTS Connect to Azure IoT

//Example of MQTTS Connect to Azure IoT.

<code>AT+CSETCA=0,1320,1,0,"-----BEGINCERTIFICATE-----\r\nMIIDrzCCApegAwIBAgIQCDvgVpBCRRrGhdWrJWZHHSjANBgkqhkiG9w0BAQUFADBhMQswCQYDVQQGEwJVUzEVMBMGA1UEChMMRGlnaUNlcnQgSW5jMRkwFwYDVQQLExB3d3cuZGlnaWNlcnQuY29tMSAwHgYDVQQAExdEaWdpQ2VydCBHbG9iYWwgUm9vdCBBDQTAeFw0wNjExMTAwMDAwMDBaFw0zMTEwMTAwMDAwMDBaMGExCzAJBgNVBAYTAIVTMRUwEwYDVQQKEwxEaWdpQ2VydCBjb20xIDAeBgNVBAMTF0R0pZ2IDZXJ0IEEdsb2JhbCBSb290IENBMIIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEA4jvhEXLeqKTT01eqUKKPC3eQy aKI7hL0llsBCSDMAZOnTjC3U/dDxGkAV53ijSLdhwZA AIEJzs4bg7/fzTtxRuLWZscFs3YnFo97nh6Vfe63SKMI2t avegw5BmV/SI0fvBf4q77uKNd0f3p4mVmFaG5clzJLv0 7A6Fpt43C/dxC//AH2hdmoRBBYMqI1GNXRor5H4idq9J oz+EkiYIvUX7Q6hL+hqkpMfT7PT19sdl6gSzeRntwi5m3 OFBqOasv+zbMUZBfHWyMeMr/y7vrTC0LUq7dBMtoM1 O/4gdW7jVg/tRvoSSiicNoxBN33shbyTApOB6jtSj1etX+j kMOvJwIDAQABo2MwYTAOBgNVHQ8BAf8EBAMCAY YwDwYDVR0TAQH/BAUwAwEB/zAdBgNVHQ4EFgQUA</code>	//Use the "AT+CSETCA" command to set the Azure IoT server certificate. It's the First Server Certificate package
---	--





OK

```
AT+CSETCA=2,1652,1,0,"-----BEGIN RSA PRIVATE
KEY-----r\nMIIEowIBAAKCAQEASxqRb5WAqq61SAoIh
g+ZZLYGLc0ZYfzKn3DQzB6EeEi4sRSCKkgOL+58ffgQ
YYxh2WDACSwabzpcZIVoPEh05pnnHvnJEWczN38Ix6
yBzTjmiZ0rIFsj0nud8v4ANy4UCxu7SRe0ephDIJBaknZ
HmEI5+U5nD1h+4W1SmOIHGfs80YbCKhpNLNqBUpIul
2GCo9NI5cFE7wZNT0z5kZUknWUg106hKwYIalxVDoE
ahYXXtN2ytwrsojC63kJFgXf99qtPQG1xgzpIRoNIOXG3
Z1PITQLUOVE4Xnus0OPzf54rtaE7tBBrxOUdPslfwxAL
62DoY8bNcf29CaXwzaP89QIDAQABAoIBAAXMGNHfwj
aF425HMieKxKJOHqGPf4+Bs+OEBPjZ2yDZUii/BvTgkd
qJ9P2D94U67EIzr92LCA64nBDFG7RHbQdL3Qxd37IcC
WdfAu1fWnl3dzEEjE9QafmhuDicPo0jzsTokS4oNhLNN
wTHCj6aUPI0z9d9LACqi6REBcpoAR2Zr5ymGv2AmcG
NqKtFGI+9UaT1wfSNzKxdNMmNJVyd9N5lvSnrv9snek
8/Y5m5XzKf02oPuCxfVc/Z5ZD05S0glgRwEActQzXhKis
2anJ/1u0vHC1v6pj263mH8ewaxdPJMa5E11BG1xOPJg
m+UI8X9Mg7CSJq4Zo6suOBEt7OGYECgYEA9gUBOo
V/JTUGDyK4itJnNo/F9NAABXI4PgREQNoylXWL0q2IY
DC/MVttOfGV6ret4M9qG+4wm5uhoOntAVm3/XGOLvB
e16FyQ/dtevRR8L13+4u/7bX4uEz3PIoQEI3+MJFMXy8C
E4qTn69zS6TgTtyc6f3vcAqzyKE8A8tBEfkCgYEA8Hqo
d4JpcSGnWtXpA2fgi0GdYW2eLRZchJO5tVPU76nHU/p
LRYlqsjm0JsYwLo8V7yDCWHuxf"
```

//Use the "AT+CSETCA" command to set the client Key. It's the First Client Key package.

OK

```
AT+CSETCA=2,1652,0,0,"WBMO8SckHQWttydXXj3LuG
5D3Y8Rk/6zfqD4FOfFHfI0tcOy0Ok3s7Ilg6JrQ8nXDbbh
OU1jiMW18/iTUax/U7zM5kA6enxgd0CgYEA7M62dwIG8
J6QXYNTVTTf6rILnvGUA6oFHxTmSfJ93EWQOFOXQN
fLQYw6oBq97netZAbioU3t9eqhco2Y98LPiQKcdQYkIL
Svk2KYPFDuiqcl1biYHw0ZAvX6y0bPzc+PzFofxEMwYX
TzUjME7NwgmWhblhQ7JIL4uPcSGKjN0qkCgYB6Tmc0
0Fwzrvvf1H5GvyORbvNNQ2R4ZbDzs/V0ZlgcwumeqeJ
yHTr9nR8jwRNr+IUbYju0qGOh8cGTe/Br/r42jYhyqzx62
U02sdkBoVdaPhenJ+l11lImxrpASpuNKbBBW9fkePgn/
2QXsmX2fyaER10U4nd27MQALZYQCQU+QKBgE6TGe
I2DPFN5lLemng1DN+eNEx07QiE4Q4OGL7P2MKEQsT
nJKKHakvmt0oghCqA2HzOzOI8hXSkeokgTw+OPys69
UHqHQ4rhPxfLTyYwkCzD2AQukwqK8CSgDAMmMMjO
FfqnQtcX9Ptyl4DqkcQ/gJm4wNvlxJZm3A4v4tgkIR9-----
END RSA PRIVATE KEY-----"
```

//Use the "AT+CSETCA" command to set the client Key. It's the Second Client Key package.

OK

```
AT+CMQTTSNEW="9AMIoTHub-HW.azure-devices.cn",
"8883",60000,1132
```

//Create MQTT connection.

```
+CMQTTSNEW: 0 //If succeed, MQTT id will return

OK
AT+CMQAZURECFG=0,"9AMIoTHub-HW.azure-devices //Set parameters for Azure IoT.
.cn","simcomdevice","n1AOqKmG6ltXWtNX1HL4zPAih
/ug50D7P4rCv6pc/3c=",86400
OK
AT+CMQAZURECON=0,600,0 //Send MQTTS connection request to
OK //Azure IoT.
AT+CMQSUB=0,"devices/simcomdevice/messages/dev //Send subscribe topic.
icebound/#",1
OK

+CMQPUB: //Receive a message from the Azure IoT
0,"devices/simcomdevice/messages/devicebound/%24
.mid=ded0dda5-42df-42f3-a530-d5842e152d18&%24.to
=%2Fdevices%2Fsimcomdevice%2Fmessag",1,0,0,14,"
32333332333233"
AT+CMQPUB=0,"devices/simcomdevice/messages/eve //Publish a MQTT message.
nts/",1,0,0,12,"313233343938"
OK
AT+CMQDISCON=0 //Disconnect MQTT connection with id
OK
```

**NOTE**

- The parameter of the AT+CMQAZURECFG can be obtained from Azure IoT.
- The format of the topic of AT+CMQSUB is as below, "devices/deviceID/messages/devicebound/#"
- The format of the topic of AT+CMQPUB is as below, "devices/deviceID/messages/events/"