

# FCC Test Report

## FCC Part 27M

Product Name : Module  
Model No. : AR7584  
FCC ID : N7NAR7584

Applicant : SIERRA WIRELESS, INC  
Address : C/O 13811 WIRELESS WAY RICHMOND BC V6V 3A4,  
RICHMOND BRITISH COLUMBIA

Date of Receipt : Oct. 16, 2017  
Test Date : Oct. 16, 2017~ Nov. 09, 2017  
Issued Date : Dec. 01, 2017  
Report No. : 17A2112R-HP-US-P07V01  
Report Version : V1.1

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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# Test Report Certification

Issued Date : Dec. 01, 2017

Report No. :17A2112R-HP-US-P07V01



Product Name : Module  
 Applicant : SIERRA WIRELESS, INC  
 Address : C/O 13811 WIRELESS WAY RICHMOND BC V6V 3A4,  
 RICHMOND BRITISH COLUMBIA  
 Manufacturer : SIERRA WIRELESS, INC  
 Address : C/O 13811 WIRELESS WAY RICHMOND BC V6V 3A4,  
 RICHMOND BRITISH COLUMBIA  
 Model No. : AR7584  
 FCC ID : N7NAR7584  
 EUT Voltage : Low: 3.4V, High: 4.2V, Normal: 3.7V  
 Applicable Standard : FCC CFR Title 47 Part 2,  
 FCC CFR Title 47 Part 27 Subpart M  
 TIA/EIA 603-D  
 KDB971168  
 ANSI 63.26: 2015  
 Test Result : Complied  
 Performed Location : DEKRA Testing and Certification (Suzhou) Co., Ltd.  
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 FCC Registration Number: CN1199

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### History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
17A2112R-HP-US-P07V01	V1.0	Initial Issued Report	Nov. 20, 2017
17A2112R-HP-US-P07V01	V1.1	Page 38-45, add description of the test details.	Dec. 01, 2017

## 1. General Information

### 1.1. EUT Description

Product Name	Module
Model No.	AR7584
EUT Voltage	Low: 3.4V, High: 4.2V, Normal: 3.7V
HW	1.0
SW	SWI9X28A_00.10.01.00
<b>4G</b>	
Support Band	LTE Band 7
Uplink	Band 7: 2500~2570MHz
Downlink	Band 7:2620~2690mMHz
Type of modulation	QPSK, 16QAM
Antenna Type	Dipole
Antenna Gain	Band 7: 1.3dBi

### 1.2. Antenna Information

Antenna manufacturer	N/A		
Antenna Delivery	<input checked="" type="checkbox"/> 1*TX+1*RX	<input type="checkbox"/> 2*TX+2*RX	<input type="checkbox"/> 3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/> SISO		
	<input type="checkbox"/> MIMO	<input type="checkbox"/> Basic	
		<input type="checkbox"/> Sectorized antenna systems	
		<input type="checkbox"/> Cross-polarized antennas	
		<input type="checkbox"/> Unequal antenna gains, with equal transmit powers	
		<input type="checkbox"/> Spatial Multiplexing	
		<input type="checkbox"/> CDD	
		<input type="checkbox"/> Beam-forming	
Antenna Type	<input checked="" type="checkbox"/> External	<input checked="" type="checkbox"/> Dipole	
	<input type="checkbox"/> Internal	<input type="checkbox"/> PIFA	
		<input type="checkbox"/> PCB	
		<input type="checkbox"/> Ceramic Chip Antenna	
		<input type="checkbox"/> Metal plate type F antenna	
		<input type="checkbox"/> Cross-polarize Antenna	
Antenna Gain #1	1.3dBi		

### 1.3. Mode of Operation

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

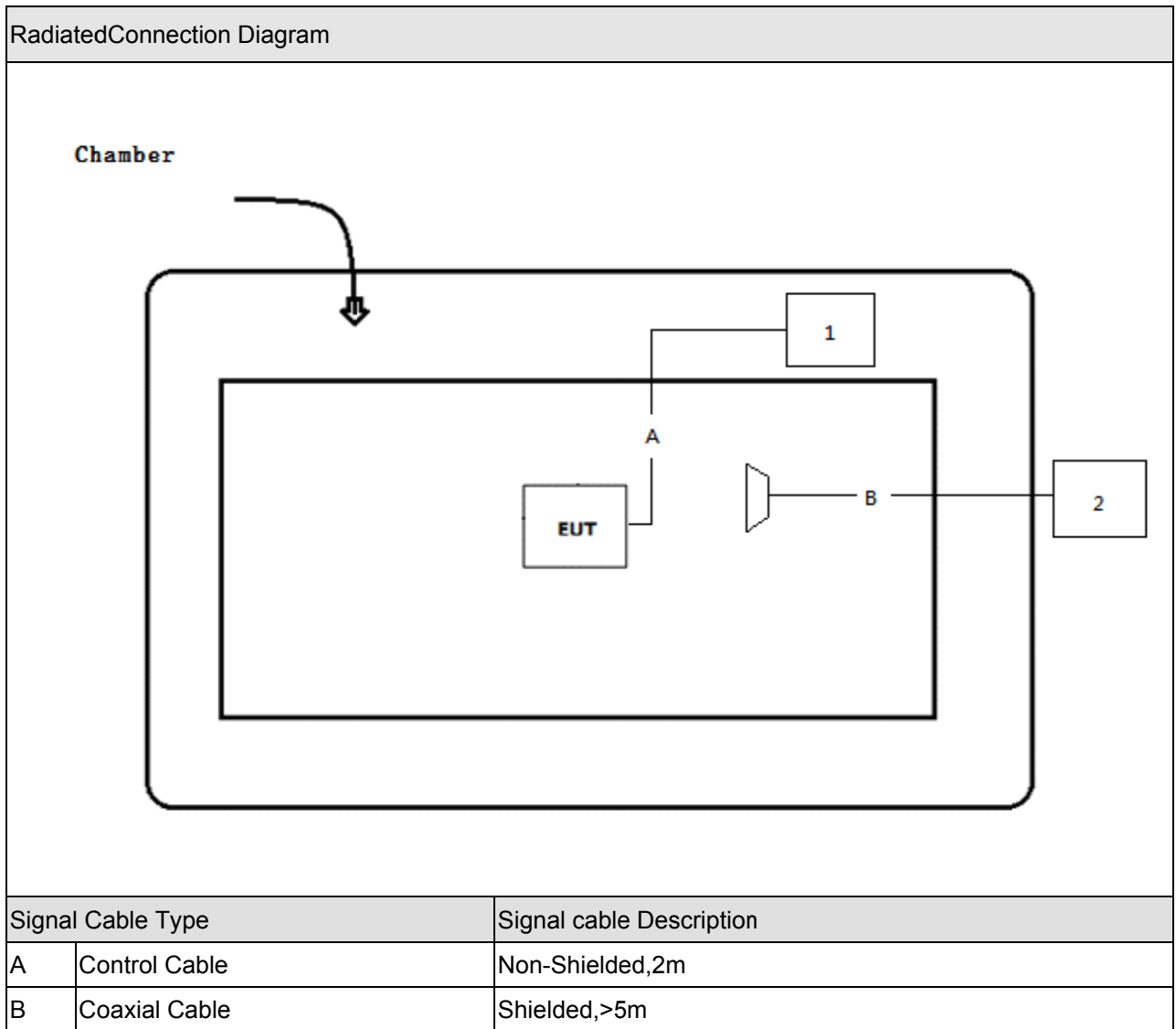
Test Mode
Mode 1 :LTE Band 7 Link
Note 1: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report. For the LTE band, we also evaluate the each channel of bandwidth, RB offset and modulation, we will choose the worst case shown on this report.

### 1.4. Tested System Details

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

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 DC Power Supply	IDRC	CD-035-020PR	977272	N/A
2 Radio Communication Tester	Anritsu	MT8820C	6201181503	N/A

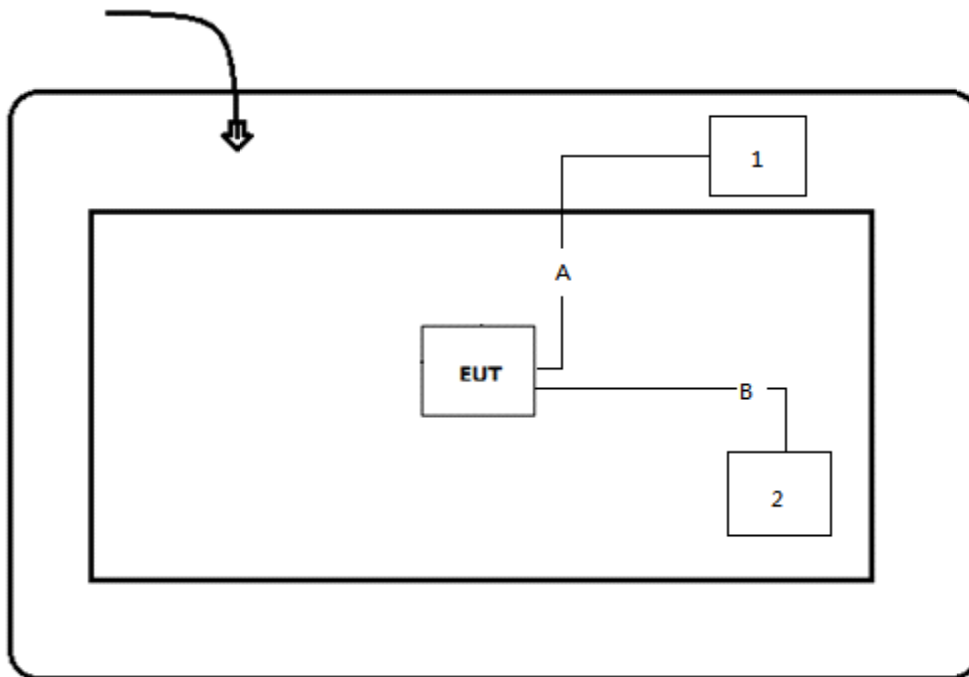
### 1.5. Configuration of Tested System





Conducted Connection Diagram

Chamber



Signal Cable Type	Signal cable Description	
A	Control Cable	Non-Shielded,2m
B	Coaxial Cable	Shielded,>5m

1.6. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	EUT Communicate with MT8820C, then select channel to test.

## 2. Summary Technical Test

### 2.1. Limit and Test Result

LTE Band 7			
FCC Part 27 SubpartM			
Test Item	FCC Reference section	Limit	Result
Maximum Output Power	§2.1033	Output Power < 2 Watts	Pass
	§2.1046		
	§27.50		
Equivalent Isotropic Radiated Power	§27.50	< 33 dBW + 10 log(X/Y)dBW + 10 log(360/beamwidth) dBW	Pass
Occupied Bandwidth	§2.1049	N/A	Pass
Conducted Band EdgeEmissions	§27.53	< 5MHz: -10dBm 5MHz-X MHz:-13dBm >X MHz:-25dBm	Pass
Spurious Radiation	§2.1053	-25 dBm	Pass
	§27.53		
Frequency Stability Under Temperature & Voltage Variations	§2.1055 §27.54	2.5 ppm	Pass

## 2.2. Worst Data

Test Item	LTE Band	Bandwidth	Channel	Frequency	RB Size	RB Offset	Value
Maximum Output Power	7	20M	20850	2510	1	0	22.91
		15M	20825	2507.5	1	0	22.96
		10M	20800	2505	1	0	22.86
		5M	20775	2502.5	1	0	22.89

Note: The modulation of the worst data is QPSK

Test Item	LTE Band	Bandwidth	Channel	Frequency	RB Size	RB Offset	Value
Equivalent Isotropic Radiated Power	7	20M	21350	2560	1	0	23.79
		15M	21375	2562.5	1	0	23.84
		10M	20800	2505	1	0	24.03
		5M	20775	2502.5	1	0	23.76

Note: The modulation of the worst data is QPSK

Test Item	LTE Band	Bandwidth	Channel	Frequency	RB Size	RB Offset	Value
Occupied Bandwidth	7	20M	20850	2510	100	0	17873
		15M	21400	2562.5	75	0	13418
		10M	21400	2565	50	0	8952.1
		5M	21425	2567.5	15	0	4534.4

Note: The modulation of the worst data is QPSK

Test Item	LTE Band	Bandwidth	Channel	Frequency	RB Size	RB Offset	Value
Conducted Band Edge Emissions	7	20M	20850	2510	1	0	-45.744
		15M	20825	2507.5	1	0	-43.625
		10M	20800	2505	1	0	-15.030
		5M	20775	2502.5	1	0	-14.135

Note: The modulation of the worst data is QPSK

Test Item	LTE Band	Bandwidth	Channel	Frequency	RB Size	RB Offset	Value
Field Strength of Spurious Radiation	7	20M	21100	2535	1	0	-66.664
		15M	20825	2507.5	1	0	-66.997
		10M	20800	2505	1	0	-66.787
		5M	21100	2535	1	0	-65.739

Note: The modulation of the worst data is QPSK

Test Item	LTE Band	Bandwidth	Channel	Frequency	RB Size	RB Offset	Value
Frequency Stability Under Temperature & Voltage Variations	7	15M	21100	2535	1	0	-982

Note: The modulation of the worst data is QPSK

### 2.3. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	23
Humidity (%RH)	25-75	52
Barometric pressure (mbar)	860-1060	950-1000

### 2.4. Measurement Uncertainty

Items	Uncertainty
Maximum Output Power	±1.2 dB
Equivalent Isotropic Radiated Power	±3.2 dB
Occupied Bandwidth	±10 Hz
Conducted Band Edge Emissions	±1.2 dB
Field Strength of Spurious Radiation	±3.2 dB
Frequency Stability Under Temperature & Voltage Variations	±10 Hz

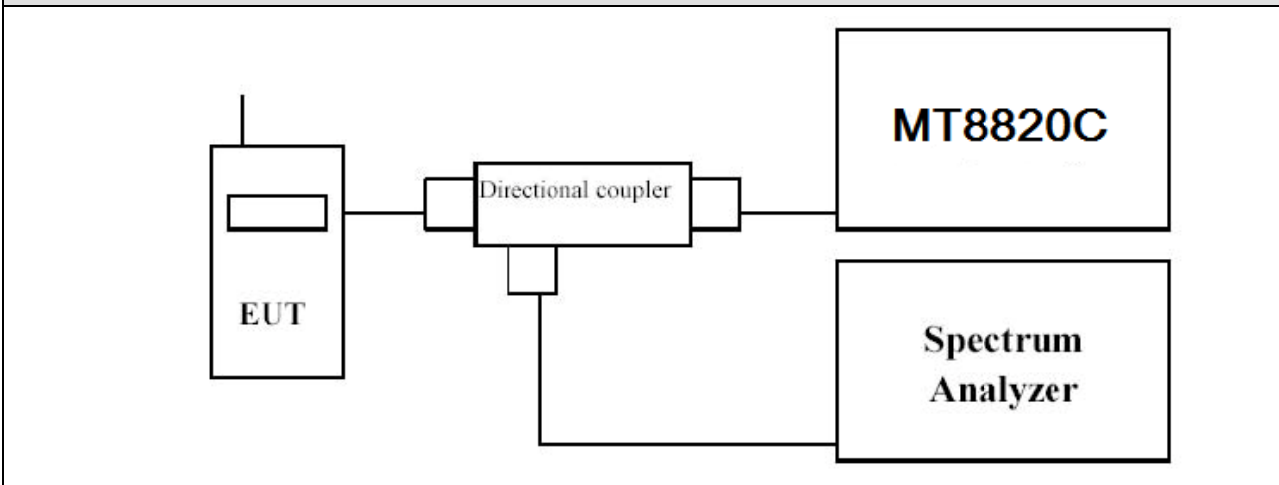
### 3. Maximum Output Power and Effective Isotropic Radiated Power Measurement

#### 3.1. Test Equipment

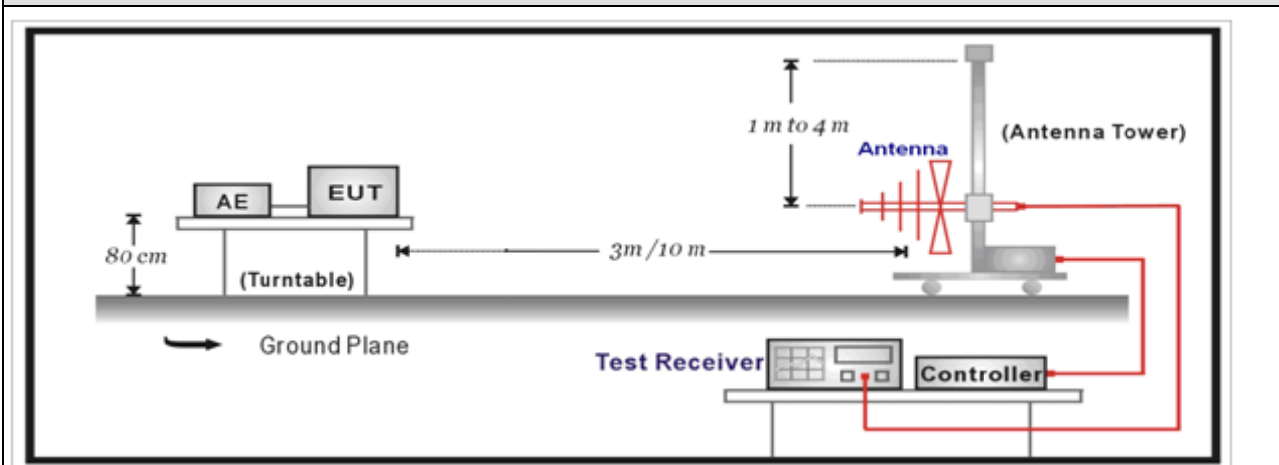
Maximum Output Power and Effective Isotropic Radiated Power Measurement / AC-5				
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2018.02.04
Radio Communication Tester	Anritsu	MT8820C	6201181503	2018.09.16
Dual Directional Coupler	Agilent	778D	20160	2018.02.04
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2018.03.28
PSG Analog Signal Generator	Agilent	E8257D	MY44321116	2018.02.04
Preamplifier	QuieTek	AP-025C	CHM-0503006	2018.04.11
Preamplifier	Miteq	NSP1800-25	1364185	2018.05.03
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2018.01.23
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2018.02.26
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	737	2018.03.06
DRG Horn	ETS-Lindgren	3117	00167055	2018.07.23
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2018.01.05

### 3.2. Test Setup

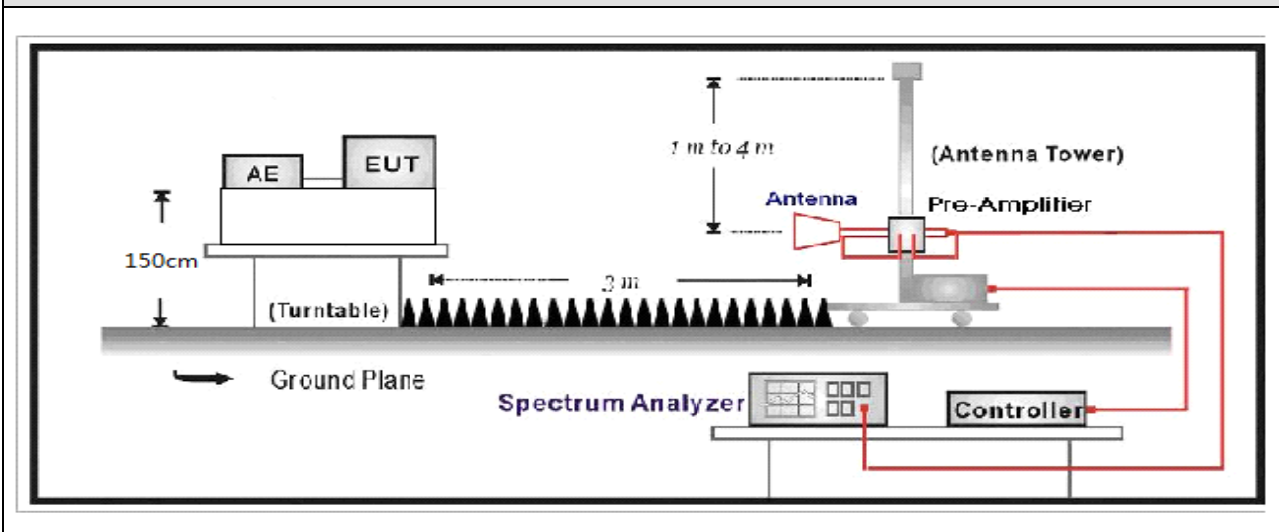
**Conducted Power Measurement:**



**Radiated Power Measurement (Below 1G):**



**Radiated Power Measurement (Above 1G):**



### 3.3. Test Procedure

#### Test Method for conducted power

- a) The RF output of the transmitter was connected to base station simulator.
- b) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.  
The path loss was compensated to the results for each measurement.
- c) Set EUT at maximum average power by base station simulator.
- d) Measure lowest, middle, and highest channels for each bandwidth and different modulation.

#### Test For Effective Isotropic Radiated Power Measurement:

- a) The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
- b) The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower
- c) LTE operating modes: use channel power function to test
- d) The table was rotated 360 degrees to determine the position of the highest radiated power.
- e) The height of the receiving antenna is adjusted to look for the maximum EIRP.
- f) The maximum EIRP shall be record.
- g) A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
- h) The conducted power at the terminal of the dipole antenna is measured.
- i) Repeat step c) to step h) to get the maximum EIRP of the substitution antenna.
- j)  $EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$ .
- k)  $P_s$  (dBm) : Input power to substitution antenna
- l)  $G_s$  (dBi or dBd) : Substitution antenna Gain.
- m)  $E_t = R_t + AF$
- n)  $E_s = R_s + AF$
- o)  $AF$  (dB/m) : Receive antenna factor
- p)  $R_t$  : The highest received signal in spectrum analyzer for EUT.
- q)  $R_s$  : The highest received signal in spectrum analyzer for substitution antenna.



### 3.4. Test Result

Product	Module	Test Site	AC-5
Test Item	Maximum Output Power	Date of Test	2017/10/29
Test Mode	Mode 1: LTE Band 7 Link	Test engineer	Demon

BW [MHz]	RB Size	RB Offset	Mod	Maximum Average Power [dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
<b>Channel</b>				<b>20850</b>	<b>21100</b>	<b>21350</b>
<b>Frequency</b>				<b>2510</b>	<b>2535</b>	<b>2560</b>
20	1	0	QPSK	22.91	22.88	22.84
20	1	49		22.82	22.78	22.77
20	1	99		22.73	22.70	22.69
20	50	0		22.25	22.22	22.19
20	50	24		22.16	22.14	22.11
20	50	49		22.08	22.05	22.08
20	100	0		22.21	22.13	22.16
20	1	0	16-QAM	22.24	22.21	22.16
20	1	49		22.15	22.13	22.12
20	1	99		22.07	22.03	20.04
20	50	0		21.11	21.09	21.06
20	50	24		21.05	21.03	20.98
20	50	49		20.97	20.95	20.92
20	100	0		21.04	21.00	21.01
<b>Channel</b>				<b>20825</b>	<b>21100</b>	<b>21375</b>
<b>Frequency</b>				<b>2507.5</b>	<b>2535</b>	<b>2562.5</b>
15	1	0	QPSK	22.96	22.89	22.92
15	1	37		22.85	22.79	22.83
15	1	74		22.77	22.71	22.74
15	36	0		22.16	22.12	22.10
15	36	18		22.09	22.06	22.05
15	36	37		22.03	22.01	21.97
15	75	0		22.06	22.01	22.04
15	1	0	16-QAM	22.10	22.09	22.08
15	1	37		21.96	21.92	21.95
15	1	74		21.87	21.86	21.83

15	36	0		20.91	20.87	20.86
15	36	18		20.83	20.80	20.77
15	36	37		20.71	20.74	20.70
15	75	0		20.84	20.85	20.81
<b>Channel</b>				<b>20800</b>	<b>21100</b>	<b>21400</b>
<b>Frequency</b>				<b>2505</b>	<b>2535</b>	<b>2565</b>
10	1	0	QPSK	22.86	22.84	22.81
10	1	24		22.78	22.75	22.74
10	1	49		22.64	22.69	22.65
10	25	0		22.15	22.12	22.13
10	25	12		22.07	22.04	22.02
10	25	24		22.01	22.00	21.98
10	50	0		22.09	22.08	21.99
10	1	0		16-QAM	22.12	22.14
10	1	24	22.08		22.07	22.05
10	1	49	21.97		22.01	21.96
10	25	0	21.03		21.06	21.01
10	25	12	20.99		21.00	20.95
10	25	24	20.92		20.94	20.87
10	50	0	21.03		21.04	20.97
<b>Channel</b>					<b>20775</b>	<b>21100</b>
<b>Frequency</b>				<b>2502.5</b>	<b>2535</b>	<b>2567.5</b>
5	1	0	QPSK	22.89	22.85	22.81
5	1	12		22.80	22.78	22.76
5	1	24		22.72	22.69	22.65
5	12	0		22.03	22.00	22.01
5	12	6		21.97	21.94	21.92
5	12	11		21.88	21.84	21.85
5	25	0		21.99	21.98	21.89
5	1	0	16-QAM	22.05	22.01	22.02
5	1	12		21.97	21.94	21.95
5	1	24		21.89	21.87	21.88
5	12	0		20.96	20.97	20.91
5	12	6		20.90	20.91	20.84
5	12	11		20.84	20.83	20.79
5	25	0		20.95	20.92	20.83

Note: All conducted measurements are based on a RMS detector.

Product	Module	Test Site	AC-5
Test Item	Effective Isotropic Radiated Power	Date of Test	2017/10/29
Test Mode	Mode 1: LTE Band 7 Link	Test engineer	Demon

LTE Band 7 Radiated Power EIRP							
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V
			RB Size	RB Offset			
7	5	QPSK	1	0	2502.5	23.73	H
7	5	QPSK	1	0	2535.0	23.63	H
7	5	QPSK	1	0	2567.5	23.79	H
7	5	16QAM	1	0	2502.5	23.02	H
7	5	16QAM	1	0	2535.0	23.14	H
7	5	16QAM	1	0	2567.5	23.18	H
7	10	QPSK	1	0	2505.0	24.12	H
7	10	QPSK	1	0	2535.0	23.83	H
7	10	QPSK	1	0	2565.0	23.95	H
7	10	16QAM	1	0	2505.0	23.14	H
7	10	16QAM	1	0	2535.0	23.02	H
7	10	16QAM	1	0	2565.0	23.13	H
7	15	QPSK	1	0	2507.5	23.70	H
7	15	QPSK	1	0	2535.0	23.83	H
7	15	QPSK	1	0	2562.5	23.91	H
7	15	16QAM	1	0	2507.5	23.13	H
7	15	16QAM	1	0	2535.0	23.11	H
7	15	16QAM	1	0	2562.5	23.16	H
7	20	QPSK	1	0	2507.5	23.38	H
7	20	QPSK	1	0	2535.0	23.52	H
7	20	QPSK	1	0	2560.0	23.71	H
7	20	16QAM	1	0	2507.5	23.32	H
7	20	16QAM	1	0	2535.0	23.11	H

7	20	16QAM	1	0	2560.0	23.10	H
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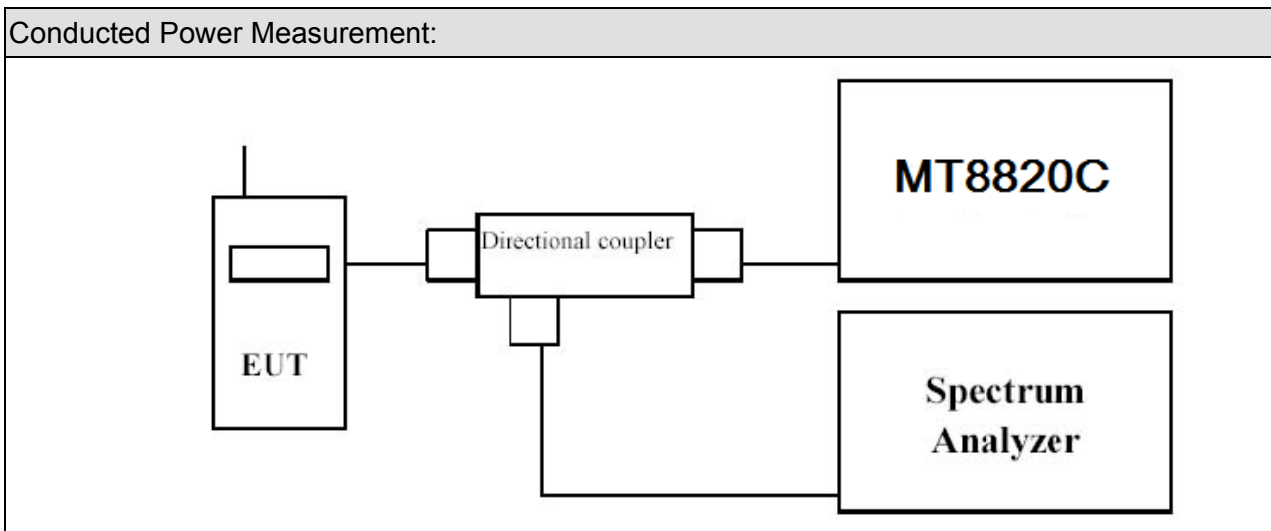
Note: For EIRP test, we have evaluated all the and RB size and Offset in each channel, we choose the worst data shown in the report.

#### 4. Peak-to-average power ratio

##### 4.1. Test Equipment

Peak-to-average power ratio / AC-5				
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2018.02.04
Radio Communication Tester	Anritsu	MT8820C	6201181503	2018.09.16
Dual Directional Coupler	Agilent	778D	20160	2018.02.04
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2018.03.28
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC6-TH	2018.01.05

## 4.2. Test Setup



## 4.3. Test Procedure

<input checked="" type="checkbox"/>	<b>CCDF procedure for PAPR</b>
	<p>The inherent randomness of the power peaks in a noise-like digital signal makes it difficult to quantify the peak power using traditional measurement techniques for determining the peak power of an analog signal.</p> <p>The peak power of a digitally-modulated signal is predictable only on a statistical basis. Thus, for these types of signals, a statistical measurement of the peak power is necessary.</p> <p>The power complementary cumulative distribution function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. The following guidelines are offered for performing a CCDF measurement.</p> <ol style="list-style-type: none"> <li>a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;</li> <li>b) Set resolution/measurement bandwidth <math>\geq</math> signal's occupied bandwidth;</li> <li>c) Set the number of counts to a value that stabilizes the measured CCDF curve;</li> <li>d) Set the measurement interval as follows:               <ol style="list-style-type: none"> <li>1) for continuous transmissions, set to 1 ms,</li> <li>2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.</li> </ol> </li> </ol>

e) Record the maximum PAPR level associated with a probability of 0.1%.

**Alternate procedure for PAPR**

Use one of the procedures presented in 4.1 to measure the total peak power and record as PPk. Use one of the applicable procedures presented 4.2 to measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

$$\text{PAPR (dB)} = \text{PPk (dBm)} - \text{PAvg (dBm)}.$$

#### **4.4. Test Result**

The LTE Band 7 is not application.

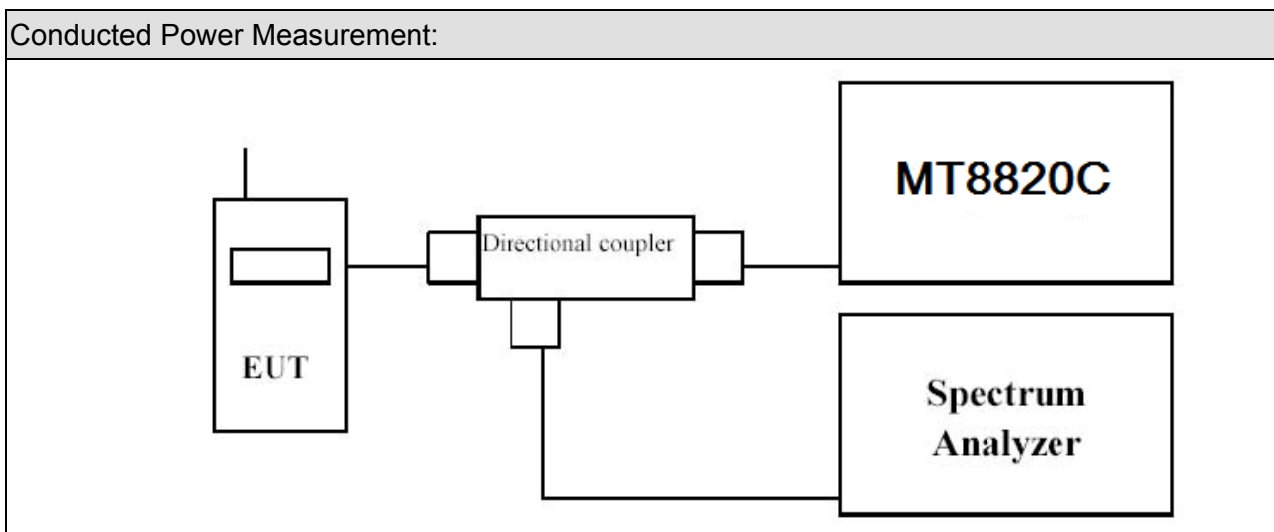


## 5. Occupied Bandwidth

### 5.1. Test Equipment

Occupied Bandwidth / TR-8				
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2018.02.04
Radio Communication Tester	Anritsu	MT8820C	6201181503	2018.09.16
Dual Directional Coupler	Agilent	778D	20160	2018.02.04
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2018.03.28
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC6-TH	2018.01.05

### 5.2. Test Setup



### 5.3. Test Procedure

Test Method for conducted test
<ol style="list-style-type: none"> <li>1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.</li> <li>2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>3. The 99% occupied bandwidth and 26 dB bandwidth of the middle channel for the highest RF powers were measured.</li> </ol>

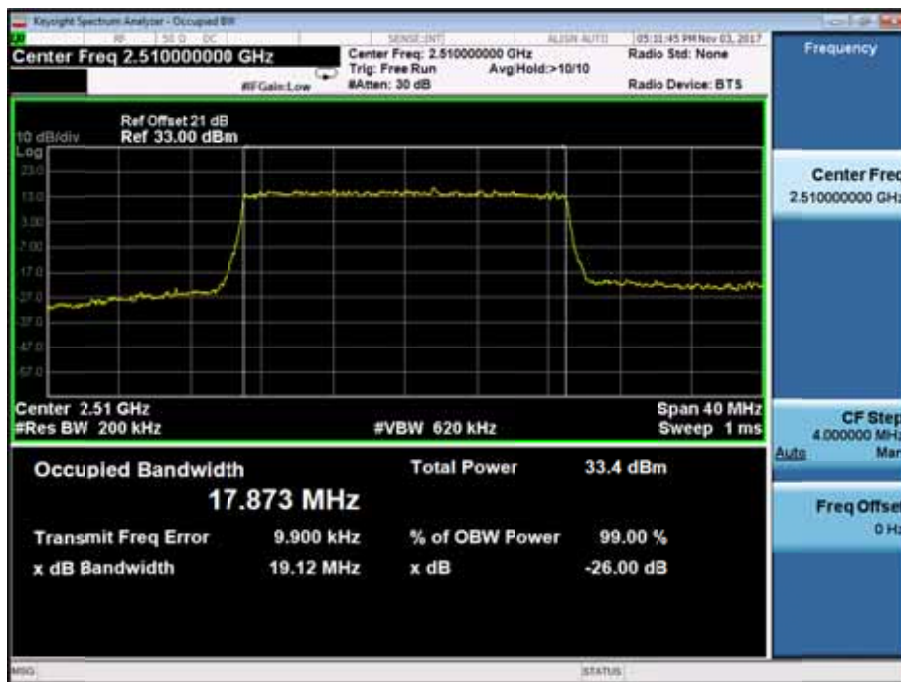
### 5.4. Test Result

Product	Module	Test Site	AC-5
Test Item	Occupied Bandwidth	Date of Test	2017/10/29
Test Mode	Mode 1(QPSK)	Test engineer	Demon

Mode	Bandwidth (MHz)	Channel No.	Frequency (MHz)	99% Occupied Bandwidth (kHz)	-26dB Occupied Bandwidth (kHz)
LTE Band 7	20	20850	2510	17873	19120
		21100	2535	17846	19140
		21350	2560	17850	19130
	15	20825	2507.5	13412	14420
		21100	2535	13377	14400
		21400	2562.5	13397	14550
	10	20800	2505	8937.6	9681
		21100	2535	8939.1	9696
		21400	2565	8952.1	9747
	5	20775	2502.5	4512.8	5021
		21100	2535	4515.0	5.016
		21425	2567.5	4526.6	5024

Note1: The worst case as below:

LTE Band 7 BW20M Channel 20850 100RB0

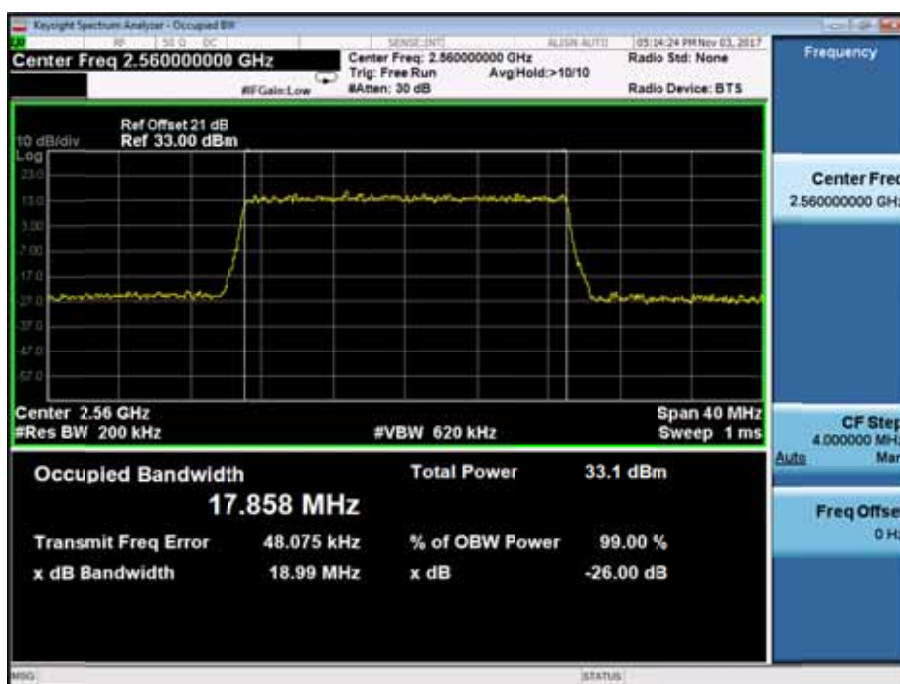


Product	Module	Test Site	AC-5
Test Item	Occupied Bandwidth	Date of Test	2017/10/29
Test Mode	Mode 1(16QAM)	Test engineer	Demon

Mode	Bandwidth (MHz)	Channel No.	Frequency (MHz)	99% Occupied Bandwidth (kHz)	-26dB Occupied Bandwidth (kHz)
LTE Band 7	20	20850	2510	17844	19000
		21100	2535	17824	19280
		21350	2560	17858	18990
	15	20825	2507.5	13415	14530
		21100	2535	13372	14370
		21400	2562.5	13418	14510
	10	20800	2505	8927.0	9754
		21100	2535	8935.4	9664
		21400	2565	8944.1	9737
	5	20775	2502.5	4507.5	4996
		21100	2535	4516.5	5000
		21425	2567.5	4534.4	5022

Note1: The worst case as below:

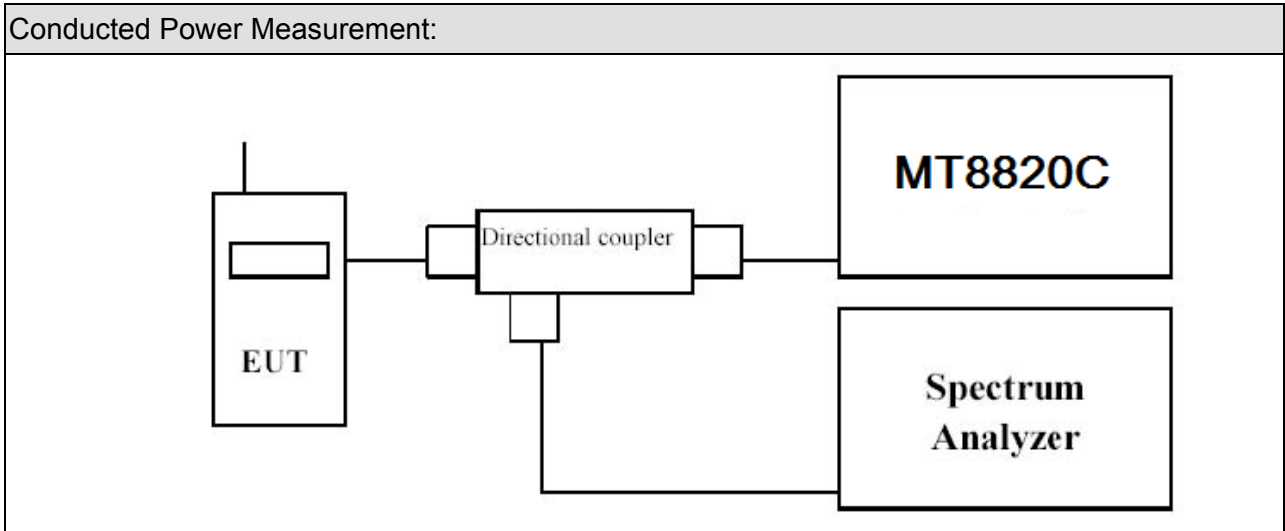
LTE Band 7 BW20M Channel 21350 100RB0



## 6. Conducted Band Edge

### 6.1. Test Equipment

Conducted Band Edge / TR-8				
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2018.02.04
Radio Communication Tester	Anritsu	MT8820C	6201181503	2018.09.16
Dual Directional Coupler	Agilent	778D	20160	2018.02.04
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2018.03.28
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC6-TH	2018.01.05



### 6.2. Test Procedure

Test Method for conducted test
<ol style="list-style-type: none"> <li>1. The EUT was connected to spectrum analyzer and System Simulator via power divider.</li> <li>2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>3. The conducted spurious emission for the whole frequency range was taken.</li> </ol>

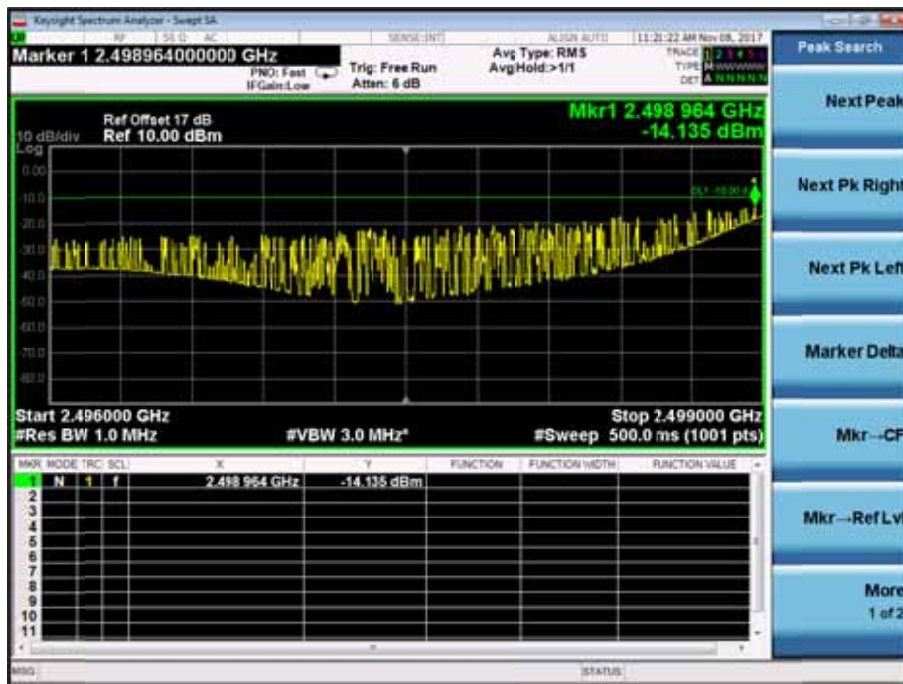
### 6.3. Test Result

Product	Module	Test Site	AC-5
Test Item	Conducted Band Edge	Date of Test	2017/10/29
Test Mode	Mode 1(QPSK)	Test engineer	Demon

Mode	Bandwidth (MHz)	Channel	Test Frequency (MHz)	RB	Measure Level (dBm)	Limit (dBm)	Result
LTE Band 7	20	20850	2510	1RB0	-45.828	< -10	Pass
				100RB0	-50.920	< -10	Pass
		21350	2560	1RB99	-50.451	< -10	Pass
				100RB0	-49.675	< -10	Pass
	15	20825	2507.5	1RB0	-43.625	< -10	Pass
				75RB0	-48.140	< -10	Pass
		21400	2562.5	1RB74	-46.337	< -10	Pass
				75RB0	-47.533	< -10	Pass
	10	20800	2505	1RB0	-15.030	< -10	Pass
				50RB0	-35.930	< -10	Pass
		21400	2565	1RB49	-49.707	< -10	Pass
				50RB0	-52.338	< -10	Pass
	5	20775	2502.5	1RB0	-14.135	< -10	Pass
				25RB0	-26.290	< -10	Pass
		21425	2567.5	1RB24	-18.326	< -10	Pass
				25RB0	-28.031	< -10	Pass

**Note: The worst case as below:**

LTE Band 7 BW5M Channel 20775 1RB0



Product	Module	Test Site	AC-5
Test Item	Conducted Band Edge	Date of Test	2017/10/29
Test Mode	Mode 1(16QAM)	Test engineer	Demon

Mode	Bandwidth (MHz)	Channel	Test Frequency (MHz)	RB	Measure Level (dBm)	Limit (dBm)	Result
LTE Band 7	20	20850	2510	1RB0	-45.744	< -10	Pass
				100RB0	-50.329	< -10	Pass
		21350	2560	1RB99	-49.718	< -10	Pass
				100RB0	-48.257	< -10	Pass
	15	20825	2507.5	1RB0	-46.373	< -10	Pass
				75RB0	-48.642	< -10	Pass
		21400	2562.5	1RB74	-46.547	< -10	Pass
				75RB0	-47.139	< -10	Pass
	10	20800	2505	1RB0	-33.090	< -10	Pass
				50RB0	-45.250	< -10	Pass
		21400	2565	1RB49	-33.275	< -10	Pass
				50RB0	-44.968	< -10	Pass
	5	20775	2502.5	1RB0	-17.027	< -10	Pass
				25RB0	-27.889	< -10	Pass
		21425	2567.5	1RB24	-17.839	< -10	Pass
				25RB0	-28.260	< -10	Pass

**Note: The worst case as below:**

LTE Band 7 BW5M Channel 20775 1RB0





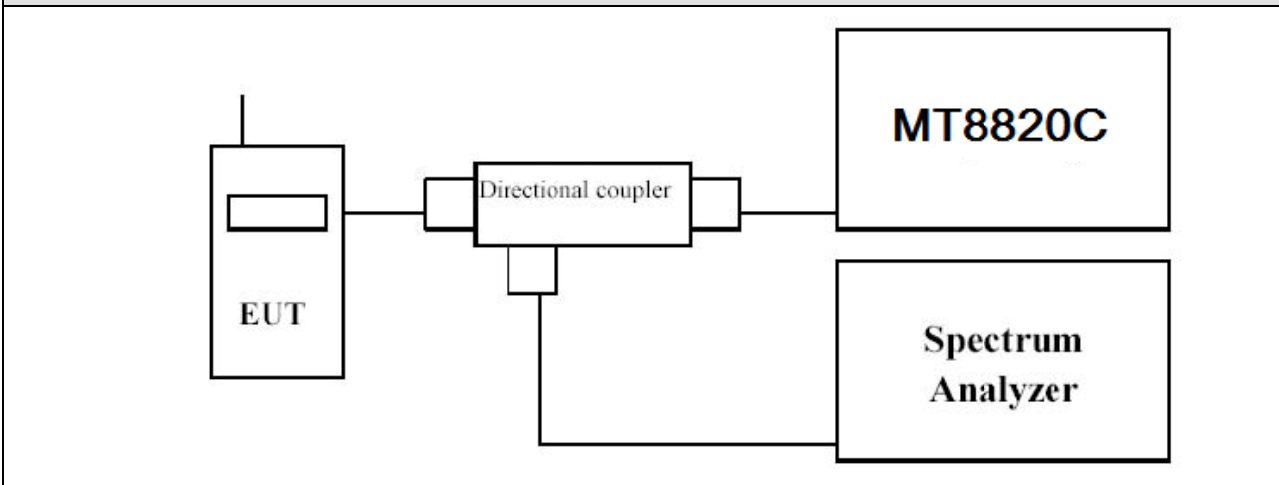
## 7. Spurious Emission

### 7.1. Test Equipment

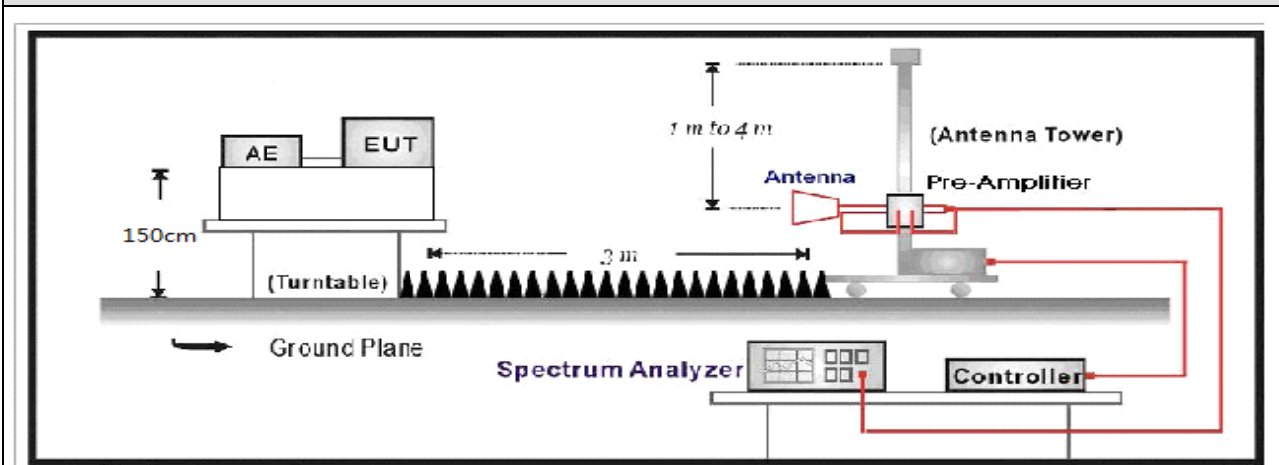
Spurious Emission / AC-5				
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2018.02.04
Radio Communication Tester	Anritsu	MT8820C	6201181503	2018.09.16
Dual Directional Coupler	Agilent	778D	20160	2018.02.04
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2018.03.28
PSG Analog Signal Generator	Agilent	E8257D	MY44321116	2018.02.04
Preamplifier	QuieTek	AP-025C	CHM-0503006	2018.04.11
Preamplifier	Miteq	NSP1800-25	1364185	2018.05.03
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2018.01.23
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2018.02.26
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	737	2018.03.06
DRG Horn	ETS-Lindgren	3117	00167055	2018.07.23
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2018.01.05

## 7.2. Test Setup

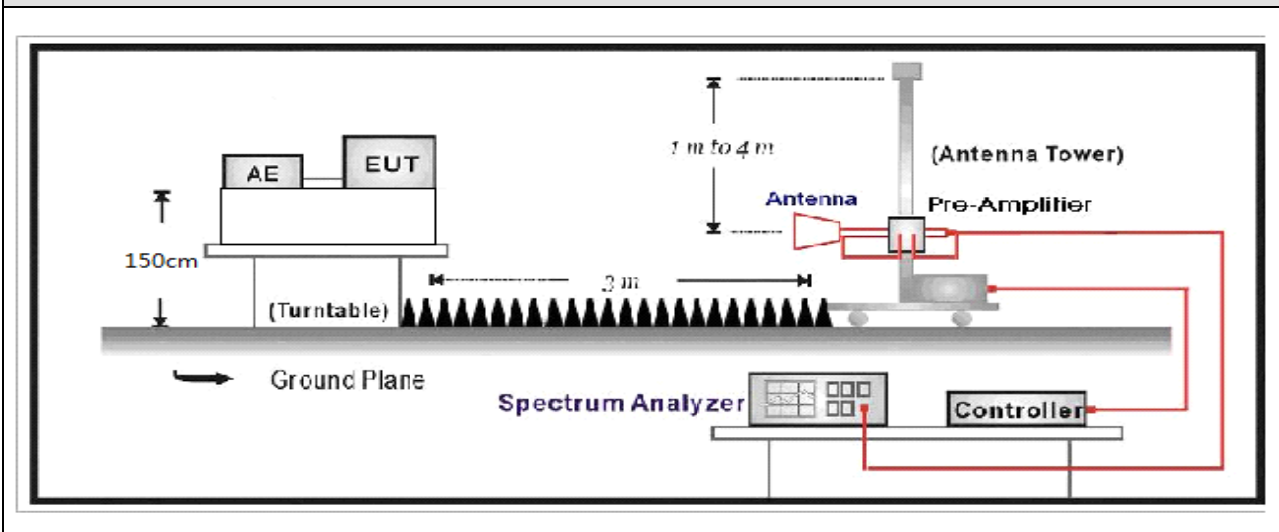
### Conducted Power Measurement:



### Radiated Power Measurement (Below 1G):



### Radiated Power Measurement (Above 1G):



### 7.3. Test Procedure

#### Test Method for conducted power

- a) The RF output of the transmitter was connected to base station simulator.
- b) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.  
The path loss was compensated to the results for each measurement.
- c) Set EUT at maximum average power by base station simulator.
- d) Measure lowest, middle, and highest channels for each bandwidth and different modulation.

#### Test For Effective Isotropic Radiated Power Measurement:

- a) The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
- b) The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower
- c) LTE operating modes: use channel power function to test
- d) The table was rotated 360 degrees to determine the position of the highest radiated power.
- e) The height of the receiving antenna is adjusted to look for the maximum EIRP and ERP.
- f) The maximum EIRP and ERP shall be record.
- g) A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
- h) The conducted power at the terminal of the dipole antenna is measured.
- i) Repeat step c) to step h) to get the maximum EIRP of the substitution antenna.
- j)  $EIRP(ERP) = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$ .
- k)  $P_s$  (dBm) : Input power to substitution antenna
- l)  $G_s$  (dBi or dBd) : Substitution antenna Gain.
- m)  $E_t = R_t + AF$
- n)  $E_s = R_s + AF$
- o)  $AF$  (dB/m) : Receive antenna factor
- p)  $R_t$  : The highest received signal in spectrum analyzer for EUT.
- q)  $R_s$  : The highest received signal in spectrum analyzer for substitution antenna.

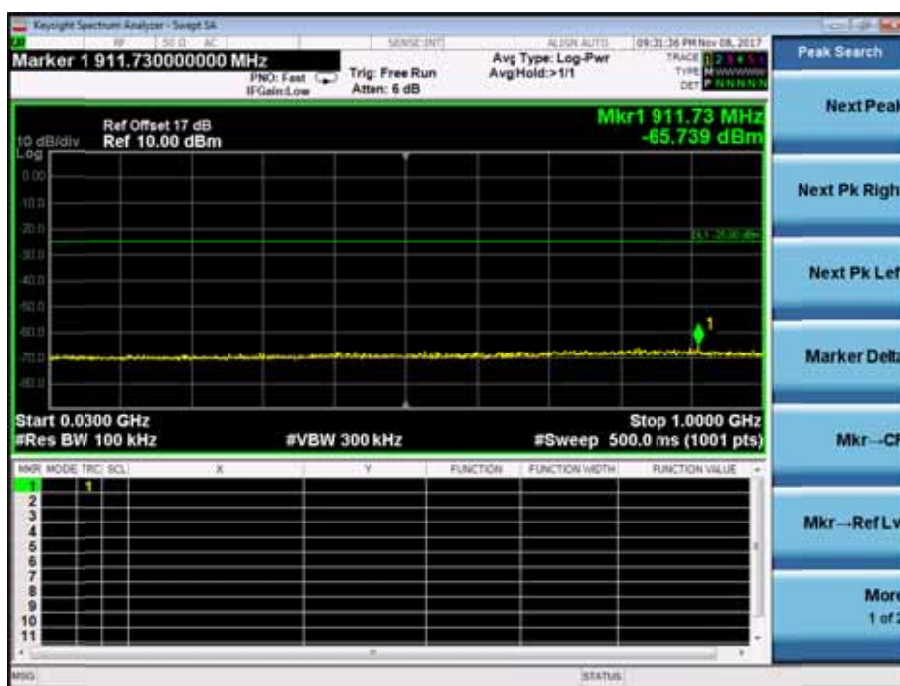
### 7.4. Test Result

Product	Module	Test Site	AC-5
Test Item	Conducted Spurious Emission	Date of Test	2017/10/30
Test Mode	Mode 1(QPSK)	Test engineer	Demon

Mode	Bandwidth (MHz)	Channel	Test Frequency (MHz)	RB	Measure Level (dBm)	Limit (dBm)	Result
LTE Band 7	20	20850	2510	1RB0	-66.790	< -25	Pass
		21100	2535	1RB0	-66.664	< -25	Pass
		21350	2560	1RB0	-68.279	< -25	Pass
	15	20825	2507.5	1RB0	-67.014	< -25	Pass
		21100	2535	1RB0	-68.063	< -25	Pass
		21375	2562.5	1RB0	-67.050	< -25	Pass
	10	20800	2505	1RB0	-67.980	< -25	Pass
		21100	2535	1RB0	-67.482	< -25	Pass
		21400	2565	1RB0	-68.421	< -25	Pass
	5	20775	2502.5	1RB0	-67.137	< -25	Pass
		21100	2535	1RB0	-65.739	< -25	Pass
		21425	2567.5	1RB0	-66.590	< -25	Pass

Note: The worst case as below:

LTE Band 7 BW5M Channel 21100 1RB0



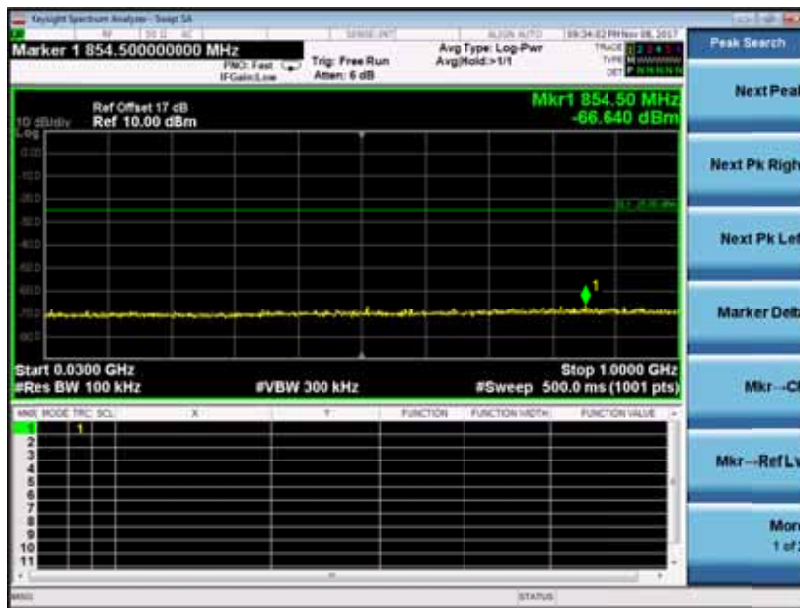
Product	Module	Test Site	AC-5
Test Item	Conducted Spurious Emission	Date of Test	2017/10/30
Test Mode	Mode 1(16QAM)	Test engineer	Demon

Mode	Bandwidth (MHz)	Channel	Test Frequency (MHz)	RB	Measure Level (dBm)	Limit (dBm)	Result
LTE Band 7	20	20850	2510	1RB0	-67.067	< -25	Pass
		21100	2535	1RB0	-67.695	< -25	Pass
		21350	2560	1RB0	-67.504	< -25	Pass
	15	20825	2507.5	1RB0	-66.997	< -25	Pass
		21100	2535	1RB0	-67.656	< -25	Pass
		21375	2562.5	1RB0	-67.084	< -25	Pass
	10	20800	2505	1RB0	-66.787	< -25	Pass
		21100	2535	1RB0	-68.447	< -25	Pass
		21400	2565	1RB0	-67.435	< -25	Pass
	5	20775	2502.5	1RB0	-66.640	< -25	Pass
		21100	2535	1RB0	-67.487	< -25	Pass
		21425	2567.5	1RB0	-68.561	< -25	Pass

Note: The worst case as below:

LTE Band 7 BW5M Channel 20775 1RB0

9



Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: LTE Band VII (5M/QPSK)		
Date of Test	2017/10/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
<b>Low Channel 20775 (2502.50MHz) 1RB24</b>								
5005	-57.756	V	-68.301	1.24	12.65	-56.891	-25	-31.891
7507.5	-57.927	V	-63.577	1.48	11.25	-53.807	-25	-28.807
5005	-56.636	H	-66.901	1.24	12.65	-55.491	-25	-30.491
7507.5	-57.149	H	-61.622	1.48	11.25	-52.137	-25	-27.137
<b>Middle Channel 21100 (2535.00MHz) 1RB12</b>								
5070	-57.391	V	-67.804	1.24	12.65	-56.394	-25	-31.394
7605	-58.434	V	-63.922	1.48	11.25	-54.152	-25	-29.152
5070	-56.372	H	-66.547	1.24	12.65	-55.137	-25	-30.137
7605	-55.257	H	-61.622	1.48	11.25	-50.132	-25	-25.132
<b>High Channel 21425 (2567.50MHz) 1RB0</b>								
5135	-56.254	V	-66.617	1.24	12.65	-55.207	-25	-30.207
7702.5	-57.088	V	-62.45	1.48	11.25	-52.68	-25	-27.68
5135	-57.746	H	-67.842	1.24	12.65	-56.432	-25	-31.432
7702.5	-57.814	H	-61.622	1.48	11.25	-52.532	-25	-27.532
Note: We also evaluate frequency range 30MHz-1GHz, but the test trace is same as the ambient noise, therefor no data appear in the report.								

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: LTE Band VII (5M/16QAM)		
Date of Test	2017/10/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
<b>Low Channel 20775 (2502.50MHz) 1RB24(EIRP-Gain+Cable loss)</b>								
5005	-58.041	V	-68.586	1.24	12.65	-57.176	-25	-32.176
7507.5	-57.938	V	-63.588	1.48	11.25	-53.818	-25	-28.818
5005	-56.704	H	-66.969	1.24	12.65	-55.559	-25	-30.559
7507.5	-56.856	H	-61.622	1.48	11.25	-51.844	-25	-26.844
<b>Middle Channel 21100 (2535.00MHz) 1RB24</b>								
5070	-57.454	V	-67.867	1.24	12.65	-56.457	-25	-31.457
7605	-57.578	V	-63.066	1.48	11.25	-53.296	-25	-28.296
5070	-56.329	H	-66.504	1.24	12.65	-55.094	-25	-30.094
7605	-57.48	H	-61.622	1.48	11.25	-52.355	-25	-27.355
<b>High Channel 21425 (2567.50MHz) 1RB0</b>								
5135	-56.746	V	-67.109	1.24	12.65	-55.699	-25	-30.699
7702.5	-58.788	V	-64.15	1.48	11.25	-54.38	-25	-29.38
5135	-56.078	H	-66.174	1.24	12.65	-54.764	-25	-29.764
7702.5	-57.121	H	-61.622	1.48	11.25	-51.839	-25	-26.839
Note: We also evaluate frequency range 30MHz-1GHz, but the test trace is same as the ambient noise, therefor no data appear in the report.								

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: LTE Band VII (10M/QPSK)		
Date of Test	2017/10/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
<b>Low Channel 20800 (2505.00MHz) 1RB49</b>								
5010	-57.653	V	-68.196	1.24	12.65	-56.786	-25	-31.786
7515	-58.641	V	-64.265	1.48	11.25	-54.495	-25	-29.495
5010	-55.177	H	-65.44	1.24	12.65	-54.03	-25	-29.03
7515	-57.293	H	-61.622	1.48	11.25	-52.268	-25	-27.268
<b>Middle Channel 21100 (2535.00MHz) 1RB49</b>								
5070	-57.547	V	-67.96	1.24	12.65	-56.55	-25	-31.55
7605	-58.279	V	-63.767	1.48	11.25	-53.997	-25	-28.997
5070	-56.669	H	-66.844	1.24	12.65	-55.434	-25	-30.434
7605	-56.428	H	-61.622	1.48	11.25	-51.303	-25	-26.303
<b>High Channel 21400 (2565.00MHz) 1RB24</b>								
5130	-56.311	V	-66.681	1.24	12.65	-55.271	-25	-30.271
7695	-58.592	V	-63.963	1.48	11.25	-54.193	-25	-29.193
5130	-56.397	H	-66.513	1.24	12.65	-55.103	-25	-30.103
7695	-58.13	H	-61.622	1.48	11.25	-52.856	-25	-27.856
Note: We also evaluate frequency range 30MHz-1GHz, but the test trace is same as the ambient noise, therefor no data(ERP) appear in the report.								



Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: LTE Band VII (10M/16QAM)		
Date of Test	2017/10/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
<b>Low Channel 20800 (2505.00MHz) 1RB49</b>								
5010	-57.266	V	-67.809	1.24	12.65	-56.399	-25	-31.399
7515	-57.834	V	-63.458	1.48	11.25	-53.688	-25	-28.688
5010	-55.703	H	-65.966	1.24	12.65	-54.556	-25	-29.556
7515	-57.162	H	-61.622	1.48	11.25	-52.137	-25	-27.137
<b>Middle Channel 21100 (2535.00MHz) 1RB49</b>								
5070	-58.824	V	-69.237	1.24	12.65	-57.827	-25	-32.827
7605	-58.164	V	-63.652	1.48	11.25	-53.882	-25	-28.882
5070	-56.473	H	-66.648	1.24	12.65	-55.238	-25	-30.238
7605	-56.63	H	-61.622	1.48	11.25	-51.505	-25	-26.505
<b>High Channel 21400 (2565.00MHz) 1RB24</b>								
5130	-55.598	V	-65.968	1.24	12.65	-54.558	-25	-29.558
7695	-57.639	V	-63.01	1.48	11.25	-53.24	-25	-28.24
5130	-56.444	H	-66.56	1.24	12.65	-55.15	-25	-30.15
7695	-56.86	H	-61.622	1.48	11.25	-51.586	-25	-26.586
Note: We also evaluate frequency range 30MHz-1GHz, but the test trace is same as the ambient noise, therefor no data(ERP) appear in the report.								

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: LTE Band VII (15M/QPSK)		
Date of Test	2017/10/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
<b>Low Channel 20825 (2507.50MHz) 1RB74</b>								
5015	-56.106	V	-66.647	1.24	12.65	-55.237	-25	-30.237
7522.5	-58.883	V	-64.458	1.48	11.25	-54.688	-25	-29.688
5015	-55.72	H	-65.972	1.24	12.65	-54.562	-25	-29.562
7522.5	-56.379	H	-61.622	1.48	11.25	-51.348	-25	-26.348
<b>Middle Channel 21100 (2535.00MHz) 1RB74</b>								
5070	-57.34	V	-67.753	1.24	12.65	-56.343	-25	-31.343
7605	-57.407	V	-62.895	1.48	11.25	-53.125	-25	-28.125
5070	-56.546	H	-66.721	1.24	12.65	-55.311	-25	-30.311
7605	-56.034	H	-61.622	1.48	11.25	-50.909	-25	-25.909
<b>High Channel 21375 (2562.50MHz) 1RB0</b>								
5125	-56.341	V	-66.716	1.24	12.65	-55.306	-25	-30.306
7687.5	-58.684	V	-64.074	1.48	11.25	-54.304	-25	-29.304
5125	-57.439	H	-67.565	1.24	12.65	-56.155	-25	-31.155
7687.5	-58.772	H	-61.622	1.48	11.25	-53.509	-25	-28.509
Note: We also evaluate frequency range 30MHz-1GHz, but the test trace is same as the ambient noise, therefor no data(ERP) appear in the report.								

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: LTE Band VII (15M/16QAM)		
Date of Test	2017/10/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
<b>Low Channel 20825 (2507.50MHz) 1RB74</b>								
5015	-56.85	V	-67.391	1.24	12.65	-55.981	-25	-30.981
7522.5	-57.992	V	-63.567	1.48	11.25	-53.797	-25	-28.797
5015	-55.409	H	-65.661	1.24	12.65	-54.251	-25	-29.251
7522.5	-57.474	H	-61.622	1.48	11.25	-52.443	-25	-27.443
<b>Middle Channel 21100 (2535.00MHz) 1RB74</b>								
5070	-57.795	V	-68.208	1.24	12.65	-56.798	-25	-31.798
7605	-58.048	V	-63.536	1.48	11.25	-53.766	-25	-28.766
5070	-56.349	H	-66.524	1.24	12.65	-55.114	-25	-30.114
7605	-56.844	H	-61.622	1.48	11.25	-51.719	-25	-26.719
<b>High Channel 21375 (2562.50MHz) 1RB0</b>								
5125	-55.979	V	-66.354	1.24	12.65	-54.944	-25	-29.944
7687.5	-58.891	V	-64.281	1.48	11.25	-54.511	-25	-29.511
5125	-55.944	H	-66.07	1.24	12.65	-54.66	-25	-29.66
7687.5	-57.806	H	-61.622	1.48	11.25	-52.543	-25	-27.543
Note: We also evaluate frequency range 30MHz-1GHz, but the test trace is same as the ambient noise, therefor no data(ERP) appear in the report.								

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: LTE Band VII (20M/QPSK)		
Date of Test	2017/10/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
<b>Low Channel 20850 (2510.00MHz) 1RB99</b>								
5020	-56.86	V	-67.4	1.24	12.65	-55.99	-25	-30.99
7530	-59.058	V	-64.596	1.48	11.25	-54.826	-25	-29.826
5020	-55.683	H	-65.918	1.24	12.65	-54.508	-25	-29.508
7530	-57.363	H	-61.622	1.48	11.25	-52.327	-25	-27.327
<b>Middle Channel 21100 (2535.00MHz) 1RB99</b>								
5070	-56.565	V	-66.978	1.24	12.65	-55.568	-25	-30.568
7605	-57.998	V	-63.486	1.48	11.25	-53.716	-25	-28.716
5070	-56.538	H	-66.713	1.24	12.65	-55.303	-25	-30.303
7605	-57.453	H	-61.622	1.48	11.25	-52.328	-25	-27.328
<b>High Channel 21350 (2560.00MHz) 1RB0</b>								
5120	-57.461	V	-67.842	1.24	12.65	-56.432	-25	-31.432
7680	-58.897	V	-64.305	1.48	11.25	-54.535	-25	-29.535
5120	-57.646	H	-67.782	1.24	12.65	-56.372	-25	-31.372
7680	-58.946	H	-61.622	1.48	11.25	-53.693	-25	-28.693
Note: We also evaluate frequency range 30MHz-1GHz, but the test trace is same as the ambient noise, therefor no data(ERP) appear in the report.								

Product	Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 1: LTE Band VII (20M/16QAM)		
Date of Test	2017/10/23	Test Site	AC-5

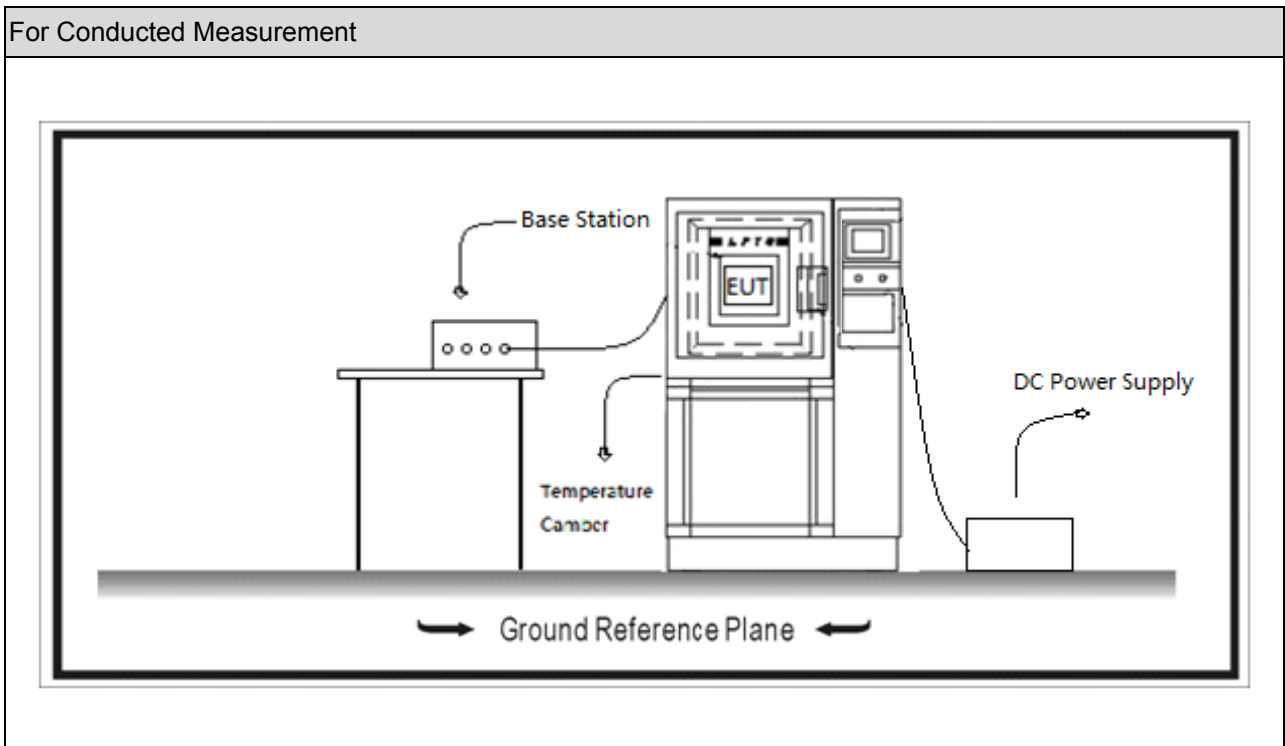
Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
<b>Low Channel 20850 (2510.00MHz) 1RB99</b>								
5020	-57.076	V	-67.616	1.24	12.65	-56.206	-25	-31.206
7530	-58.539	V	-64.077	1.48	11.25	-54.307	-25	-29.307
5020	-55.571	H	-65.806	1.24	12.65	-54.396	-25	-29.396
7530	-56.732	H	-61.622	1.48	11.25	-51.696	-25	-26.696
<b>Middle Channel 21100 (2535.00MHz) 1RB99</b>								
5070	-57.926	V	-68.339	1.24	12.65	-56.929	-25	-31.929
7605	-58.109	V	-63.597	1.48	11.25	-53.827	-25	-28.827
5070	-57.845	H	-68.02	1.24	12.65	-56.61	-25	-31.61
7605	-57.954	H	-61.622	1.48	11.25	-52.829	-25	-27.829
<b>High Channel 21350 (2560.00MHz) 1RB0</b>								
5120	-57.02	V	-67.401	1.24	12.65	-55.991	-25	-30.991
7680	-58.16	V	-63.568	1.48	11.25	-53.798	-25	-28.798
5120	-56.223	H	-66.359	1.24	12.65	-54.949	-25	-29.949
7680	-58.082	H	-61.622	1.48	11.25	-52.829	-25	-27.829
Note: We also evaluate frequency range 30MHz-1GHz, but the test trace is same as the ambient noise, therefor no data(ERP) appear in the report.								

## 8. Frequency Stability Under Temperature & Voltage Variations

### 8.1. Test Equipment

Frequency Stability Under Temperature & Voltage Variations/TR-7				
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2018.02.04
Radio Communication Tester	Anritsu	MT8820C	6201181503	2018.09.16
Dual Directional Coupler	Agilent	778D	20160	2018.02.04
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2018.03.28
DC Power Supply	IDRC	CD-035-020PR	977272	2018.09.16
Temperature & Humidity Chamber	Gaoyu	TH-1P-B	WIT-05121302	2018.01.04
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC6-TH	2018.01.05

### 8.2. Test Setup



### 8.3. Test Procedure

<p><b>Frequency Stability Under Temperature Variations:</b></p> <p>The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20 operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30 . After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10 increased per stage until the highest temperature of +50 reached.</p>
<p><b>Frequency Stability Under Voltage Variations:</b></p> <p>Set chamber temperature to 20 . Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.</p> <p>Reduce the input voltage to specify extreme voltage variation (<math>\pm 15\%</math>) and endpoint, record the maximum frequency change.</p>

#### 8.4. Test Result

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: LTE Band VII (5M/QPSK)		
Date of Test	2017/11/08	Test Site	TR-7

##### Frequency Stability under Temperature

Temperature Interval ( )	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	2535.00	-272	± 6337.5
-20	2535.00	587	± 6337.5
-10	2535.00	498	± 6337.5
0	2535.00	-379	± 6337.5
10	2535.00	553	± 6337.5
20	2535.00	376	± 6337.5
30	2535.00	447	± 6337.5
40	2535.00	-781	± 6337.5
50	2535.00	439	± 6337.5

##### Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.3	2535.00	659	± 6337.5
3.7	2535.00	-474	± 6337.5
4.2	2535.00	532	± 6337.5



Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: LTE Band VII (5M/16QAM)		
Date of Test	2017/11/08	Test Site	TR-7

## Frequency Stability under Temperature

Temperature Interval ( )	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	2535.00	467	± 6337.5
-20	2535.00	559	± 6337.5
-10	2535.00	-616	± 6337.5
0	2535.00	467	± 6337.5
10	2535.00	-698	± 6337.5
20	2535.00	554	± 6337.5
30	2535.00	-289	± 6337.5
40	2535.00	338	± 6337.5
50	2535.00	549	± 6337.5

## Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.3	2535.00	651	± 6337.5
3.7	2535.00	-893	± 6337.5
4.2	2535.00	561	± 6337.5

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: LTE Band VII (10M/QPSK)		
Date of Test	2017/11/08	Test Site	TR-7

## Frequency Stability under Temperature

Temperature Interval ( )	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	2535.00	546	± 6337.5
-20	2535.00	864	± 6337.5
-10	2535.00	565	± 6337.5
0	2535.00	244	± 6337.5
10	2535.00	-163	± 6337.5
20	2535.00	-358	± 6337.5
30	2535.00	-239	± 6337.5
40	2535.00	479	± 6337.5
50	2535.00	463	± 6337.5

## Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.3	2535.00	464	± 6337.5
3.7	2535.00	-873	± 6337.5
4.2	2535.00	509	± 6337.5

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: LTE Band VII (10M/16QAM)		
Date of Test	2017/11/08	Test Site	TR-7

## Frequency Stability under Temperature

Temperature Interval ( )	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	2535.00	752	± 6337.5
-20	2535.00	-439	± 6337.5
-10	2535.00	753	± 6337.5
0	2535.00	-852	± 6337.5
10	2535.00	-704	± 6337.5
20	2535.00	365	± 6337.5
30	2535.00	-432	± 6337.5
40	2535.00	275	± 6337.5
50	2535.00	541	± 6337.5

## Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.3	2535.00	329	± 6337.5
3.7	2535.00	-590	± 6337.5
4.2	2535.00	-461	± 6337.5

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: LTE Band VII (15M/QPSK)		
Date of Test	2017/11/8	Test Site	TR-7

## Frequency Stability under Temperature

Temperature Interval ( )	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	2535.00	894	± 6337.5
-20	2535.00	542	± 6337.5
-10	2535.00	-713	± 6337.5
0	2535.00	387	± 6337.5
10	2535.00	-524	± 6337.5
20	2535.00	-562	± 6337.5
30	2535.00	724	± 6337.5
40	2535.00	-893	± 6337.5
50	2535.00	-328	± 6337.5

## Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.3	2535.00	653	± 6337.5
3.7	2535.00	-534	± 6337.5
4.2	2535.00	751	± 6337.5

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: LTE Band VII (15M/16QAM)		
Date of Test	2017/11/08	Test Site	TR7

## Frequency Stability under Temperature

Temperature Interval ( )	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	2535.00	-326	± 6337.5
-20	2535.00	-765	± 6337.5
-10	2535.00	531	± 6337.5
0	2535.00	-325	± 6337.5
10	2535.00	457	± 6337.5
20	2535.00	-982	± 6337.5
30	2535.00	124	± 6337.5
40	2535.00	-462	± 6337.5
50	2535.00	564	± 6337.5

## Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.3	2535.00	-684	± 6337.5
3.7	2535.00	382	± 6337.5
4.2	2535.00	753	± 6337.5

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: LTE Band VII (20M/QPSK)		
Date of Test	2017/11/08	Test Site	TR-7

## Frequency Stability under Temperature

Temperature Interval ( )	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	2535.00	367	± 6337.5
-20	2535.00	437	± 6337.5
-10	2535.00	547	± 6337.5
0	2535.00	233	± 6337.5
10	2535.00	547	± 6337.5
20	2535.00	-973	± 6337.5
30	2535.00	-562	± 6337.5
40	2535.00	651	± 6337.5
50	2535.00	693	± 6337.5

## Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.3	2535.00	367	± 6337.5
3.7	2535.00	508	± 6337.5
4.2	2535.00	255	± 6337.5

Product	Module		
Test Item	Frequency Stability Under Temperature & Voltage Variations		
Test Mode	Mode 1: LTE Band VII (20M/16QAM)		
Date of Test	2017/11/08	Test Site	TR-7

## Frequency Stability under Temperature

Temperature Interval ( )	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
-30	2535.00	366	± 6337.5
-20	2535.00	876	± 6337.5
-10	2535.00	422	± 6337.5
0	2535.00	-575	± 6337.5
10	2535.00	-658	± 6337.5
20	2535.00	432	± 6337.5
30	2535.00	554	± 6337.5
40	2535.00	873	± 6337.5
50	2535.00	243	± 6337.5

## Frequency Stability under Voltage

DC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (Hz)
3.3	2535.00	455	± 6337.5
3.7	2535.00	754	± 6337.5
4.2	2535.00	327	± 6337.5

————— The End —————