



FCC RF Test Report

APPLICANT : Copeland Cold Chain LP.
EQUIPMENT : GO Nano Gateway
BRAND NAME : Copeland
MODEL NAME : NS-BCWE-00
FCC ID : AMHBCWE
STANDARD : 47 CFR Part 90(S)
CLASSIFICATION : PCS Licensed Transmitter (PCB)
TEST DATE(S) : Mar. 31, 2025 ~ Apr. 28, 2025

This product installed a RF module (Brand Name: Quectel, Model Name: BG95-M5, FCC ID: XMR202005BG95M5) during the test, only Conducted Power and RSE test items are tested in this report, and partial bands verified the worst RSE cases, all the other test results are leveraged from module RF report.

We, Sporton International Inc. (ShenZhen), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (ShenZhen), the test report shall not be reproduced except in full.

Fly Liang

Approved by: Fly Liang



Sporton International Inc. (ShenZhen)

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055

People's Republic of China



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FW512102	Rev. 01	Initial issue of report	Sep. 16, 2025

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	—	Report only	-
-	§2.1049 §90.209	Occupied Bandwidth and 26dB Bandwidth	—	Report only	1
-	§2.1051 §90.691	Emission masks – In-band emissions	$< 50+10\log_{10}(P[\text{Watts}])$	PASS	1
-	§2.1051 §90.691	Emission masks – Out of band emissions	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	1
3.2	§2.1053 §90.691	Field Strength of Spurious Radiation	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	Under limit 8.33 dB at 2442.75 MHz
-	§2.1055 §90.213	Frequency Stability for Temperature & Voltage	$< 2.5 \text{ ppm}$	PASS	1

Remark 1: All conducted test items except for power were leveraged from module RF reports which can refer to Report No. R2108A0767-R3V1.

Conformity Assessment Condition:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
- The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.



1 General Description

1.1 Applicant

Copeland Cold Chain LP.

6223 N Discovery Way, Park Pointe Center 1 , Suite 120 Boise ID 83713 United States

1.2 Manufacturer

ATR Manufacturing Ltd.

3/F, 28 Hung To Road Kwun Tong, Kowloon Hong Kong

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	GO Nano Gateway
Brand Name	Copeland
Model Name	NS-BCWE-00
FCC ID	AMHBCWE
IMEI Code	862044066560835
HW Version	0059 5563 Rev. 001
SW Version	32.0.0.0
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx Frequency	LTE Category M1: LTE Band 26: 814 ~ 824 MHz
Rx Frequency	LTE Category M1: LTE Band 26: 859 ~ 869 MHz
Bandwidth	1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz
Maximum Output Power to Antenna	21.88 dBm
Antenna Gain	0.9 dBi
Type of Modulation	QPSK / 16QAM

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Maximum Conducted Power and Emission Designator

LTE Band 26		QPSK	16QAM
BW (MHz)	Frequency Range (MHz)	Maximum Conducted power (W)	Maximum Conducted power (W)
1.4	814.7 ~ 823.3	0.1503	0.1531
3	815.5 ~ 822.5	0.1507	0.1521
5	816.5 ~ 821.5	0.1510	0.1538
10	819.0	0.1510	0.1528
15	824	0.1500	0.1542

Note: All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report.

1.7 Testing Site

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	TH01-SZ 03CH02-SZ	CN1256	421272

1.8 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH02-SZ	AUDIX	E3	6.2009-8-24a



1.9 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR 90(S)
- ♦ ANSI C63.26-2015
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 971168 D02 Misc Rev Approv License Devices v02r02

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

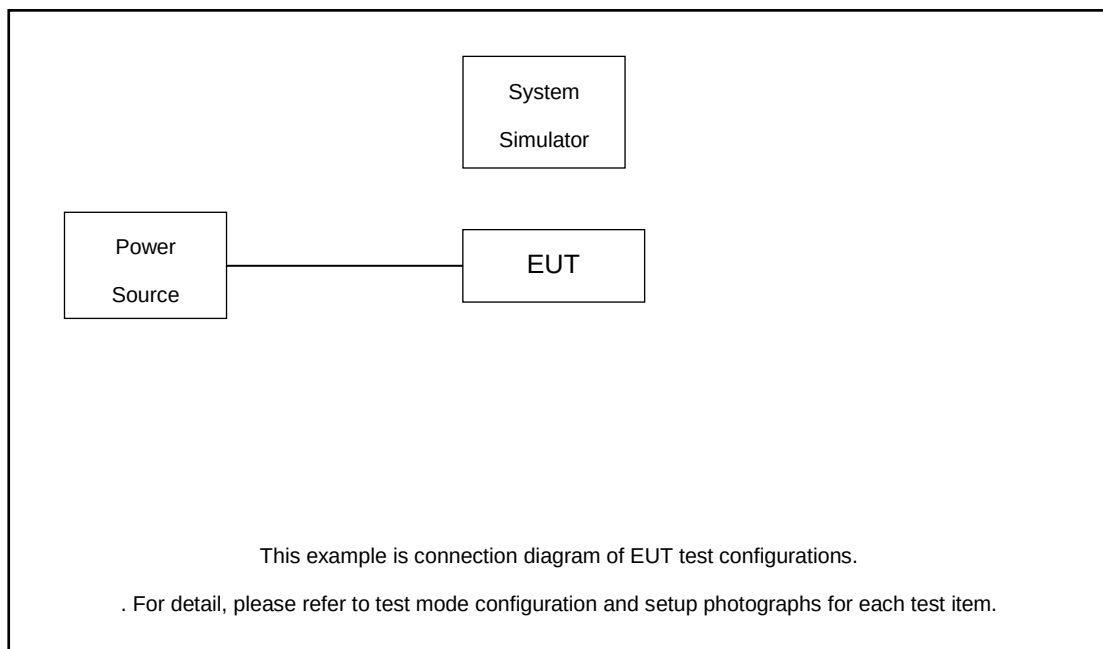
2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, pre-scanned antenna at two angles in X plane: 90 and 180 degrees, with or without accessory. The worst cases (antenna angle 180 degrees with accessory) were recorded in this report.

Frequency range investigated for radiated emission is 30 MHz to 9000 MHz.

Test Items	Band	Bandwidth (MHz)						Modulation				RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16 QAM	64 QAM	256 QAM	1	Half	Full	L	M	H
Max. Output Power	26	v	v	v	v	v	-	v	v	-	-	v	v	v	v	v	v
Radiated Spurious Emission	26			v	v	v	-	v		-	-	v			v	v	v
Note	1. The mark "v" means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. LTE Band26 transmit frequency for part22 rule is 824MHz-849MHz, for part90 rule is 814MHz-824MHz. ERP over 15MHz bandwidth complies the ERP limit line of part22 rule, therefore ERP of the partial frequency spectrum which falls within part 22 also complies.																

2.2 Connection Diagram of Test System





2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

2.4 Frequency List of Low/Middle/High Channels

LTE Band 26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	26740	-
	Frequency	-	819	-
5	Channel	26715	26740	26765
	Frequency	816.5	819	821.5
3	Channel	26705	26740	26775
	Frequency	815.5	819	822.5
1.4	Channel	26697	26740	26783
	Frequency	814.7	819	823.3

LTE Band 26 Cross-rule Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	-	Middle	-
15	Channel	-	26790	-
	Frequency	-	824	-
10	Channel	-	26790	-
	Frequency	-	824	-
5	Channel	-	26790	-
	Frequency	-	824	-
3	Channel	-	26790	-
	Frequency	-	824	-
1.4	Channel	-	26790	-
	Frequency	-	824	-

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

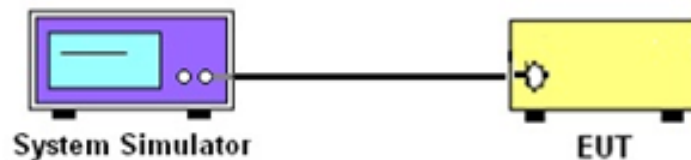
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Please refer to Appendix A.

3.2 Field Strength of Spurious Radiation Measurement

3.2.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI C63.26. The power of any emission FCC Part 90.691 on any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log_{10}(P[\text{Watts}])$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.2.2 Measuring Instruments

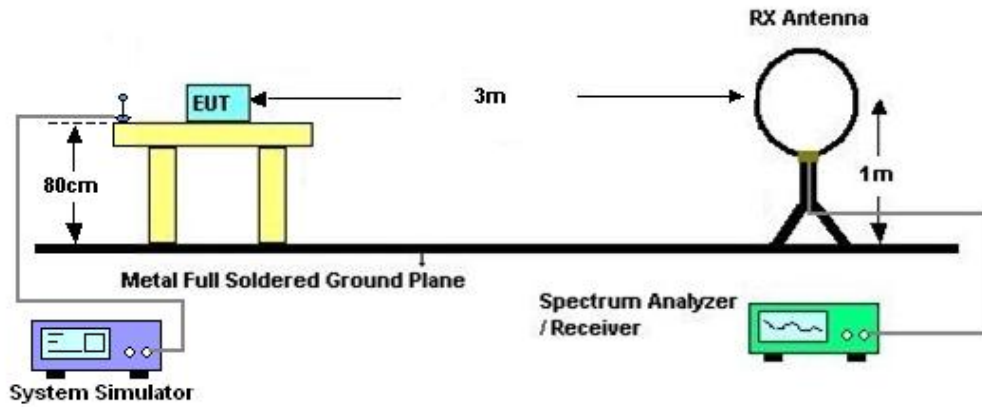
The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

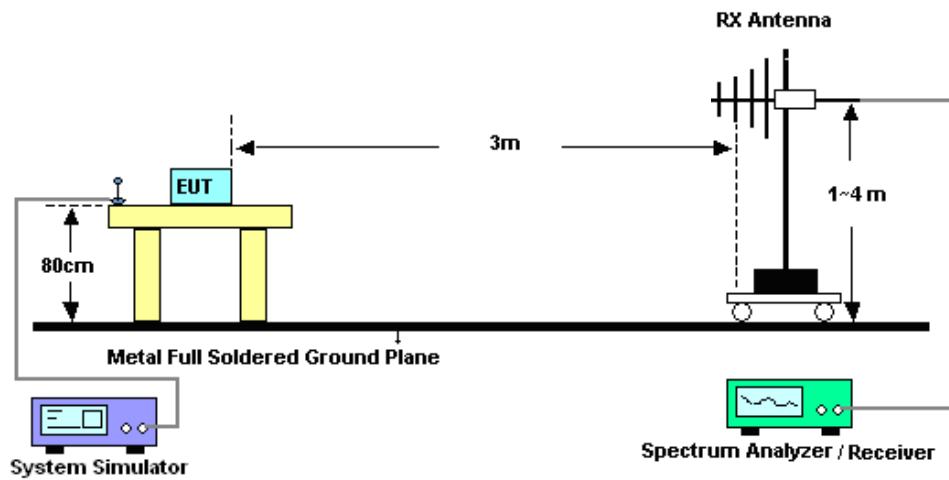
1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. $\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$
11. $\text{ERP (dBm)} = \text{EIRP} - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from $43 + 10 \log(P)$ dB below the transmitter power P(Watts)

3.2.4 Test Setup

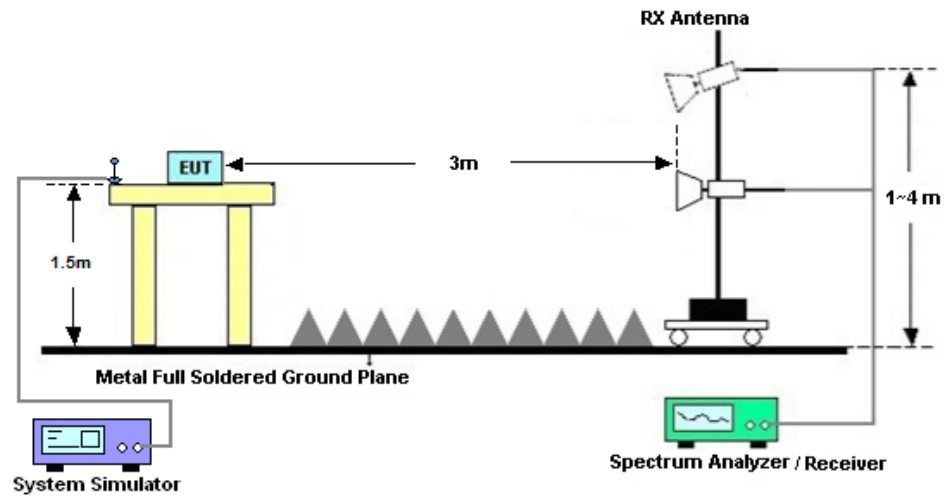
For radiated test from 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



3.2.5 Test Result of Field Strength of Spurious Radiated

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

Please refer to Appendix B.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 02, 2025	Apr. 28, 2025	Apr. 01, 2026	Conducted (TH01-SZ)
Power Divider	Titan	P02N005180	923402	0.4GHz~26.5GHz	Nov. 08, 2024	Apr. 28, 2025	Nov. 07, 2025	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 03, 2024	Apr. 28, 2025	Jul. 02, 2025	Conducted (TH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 03, 2024	Mar. 31, 2025	Jul. 02, 2025	Radiation (03CH02-SZ)
Loop Antenna	R&S	HFH2-Z2E	101141	9kHz~30MHz	Dec. 28, 2024	Mar. 31, 2025	Dec. 27, 2025	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Oct. 24, 2023	Mar. 31, 2025	Oct. 23, 2025	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 04, 2024	Mar. 31, 2025	Jul. 04, 2025	Radiation (03CH02-SZ)
LF Amplifier	EM Electronics	EM330	060788	20MHz-3GHz	Dec. 25, 2024	Mar. 31, 2025	Dec. 24, 2025	Radiation (03CH02-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 14, 2024	Mar. 31, 2025	Oct. 13, 2025	Radiation (03CH02-SZ)
AC Power Source	Chroma	61601	616010003043	N/A	Oct. 18, 2024	Mar. 31, 2025	Oct. 17, 2025	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Mar. 31, 2025	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Mar. 31, 2025	NCR	Radiation (03CH02-SZ)

NCR: No Calibration Required

5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage $K=2$ to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Power	± 1.34 dB

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.47 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.31 dB
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----- THE END -----



Appendix A. Test Results of Conducted Test

Test Engineer :	Khan Zhen	Temperature :	22~23°C
		Relative Humidity :	40~42%

Conducted Output Power (Average power)

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel					26790	
Frequency (MHz)					824	
15	QPSK	1	0		21.76	
15	QPSK	1	5		21.53	
15	QPSK	3	0		21.66	
15	QPSK	3	3		21.66	
15	QPSK	6	0		21.67	
15	16QAM	1	0		21.88	
15	16QAM	1	5		21.73	
15	16QAM	3	0		21.70	
15	16QAM	3	3		21.65	
15	16QAM	6	0		21.84	
Channel					26740	
Frequency (MHz)					819	
10	QPSK	1	0		21.79	
10	QPSK	1	5		21.61	
10	QPSK	3	0		21.64	
10	QPSK	3	3		21.67	
10	QPSK	6	0		21.69	
10	16QAM	1	0		21.83	
10	16QAM	1	5		21.67	
10	16QAM	3	0		21.62	
10	16QAM	3	3		21.61	
10	16QAM	6	0		21.84	
Channel				26715	26740	26765
Frequency (MHz)				816.5	819	821.5
5	QPSK	1	0	21.78	21.79	21.62
5	QPSK	1	5	21.63	21.53	21.44
5	QPSK	3	0	21.57	21.59	21.48
5	QPSK	3	3	21.57	21.63	21.57
5	QPSK	6	0	21.73	21.61	21.60
5	16QAM	1	0	21.84	21.77	21.76
5	16QAM	1	5	21.64	21.65	21.61
5	16QAM	3	0	21.74	21.75	21.69
5	16QAM	3	3	21.55	21.59	21.45
5	16QAM	6	0	21.81	21.87	21.56
Channel				26705	26740	26775



Frequency (MHz)				815.5	819	822.5
3	QPSK	1	0	21.62	21.76	21.64
3	QPSK	1	5	21.46	21.45	21.46
3	QPSK	3	0	21.64	21.54	21.51
3	QPSK	3	3	21.54	21.76	21.54
3	QPSK	6	0	21.78	21.61	21.63
3	16QAM	1	0	21.80	21.82	21.78
3	16QAM	1	5	21.64	21.71	21.64
3	16QAM	3	0	21.68	21.69	21.67
3	16QAM	3	3	21.61	21.71	21.41
3	16QAM	6	0	21.81	21.73	21.67
Channel				26697	26740	26783
Frequency (MHz)				814.7	819	823.3
1.4	QPSK	1	0	21.69	21.77	21.71
1.4	QPSK	1	5	21.54	21.52	21.48
1.4	QPSK	3	0	21.66	21.63	21.47
1.4	QPSK	3	3	21.52	21.73	21.50
1.4	QPSK	6	0	21.74	21.71	21.62
1.4	16QAM	1	0	21.75	21.82	21.74
1.4	16QAM	1	5	21.66	21.75	21.64
1.4	16QAM	3	0	21.78	21.67	21.60
1.4	16QAM	3	3	21.55	21.65	21.44
1.4	16QAM	6	0	21.85	21.69	21.75



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

Test Engineer :	LiangPingZhou	Temperature :	22~25°C
		Relative Humidity :	48~52%

LTE Band 26 / 5MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1628.5	-34.68	-13	-21.68	-44.56	-37.91	3.98	9.36	H
	2442.75	-21.33	-13	-8.33	-35.87	-24.88	4.85	10.55	H
	3257	-46.60	-13	-33.60	-63.44	-51.53	5.50	12.58	H
	1628.5	-40.67	-13	-27.67	-50.45	-43.90	3.98	9.36	V
	2442.75	-29.02	-13	-16.02	-43.54	-32.57	4.85	10.55	V
	3257	-51.67	-13	-38.67	-68.37	-56.60	5.50	12.58	V
Middle	1633.5	-37.69	-13	-24.69	-47.58	-40.94	4.00	9.40	H
	2450.25	-28.23	-13	-15.23	-42.78	-31.80	4.88	10.60	H
	3267	-46.24	-13	-33.24	-63.08	-51.17	5.52	12.60	H
	1633.5	-39.25	-13	-26.25	-49.04	-42.50	4.00	9.40	V
	2450.25	-28.26	-13	-15.26	-42.79	-31.83	4.88	10.60	V
	3267	-50.72	-13	-37.72	-67.42	-55.65	5.52	12.60	V
Highest	1638.5	-37.27	-13	-24.27	-47.18	-40.44	4.10	9.42	H
	2457.75	-28.67	-13	-15.67	-43.18	-32.25	4.90	10.63	H
	3277	-46.32	-13	-33.32	-62.99	-51.24	5.55	12.62	H
	1638.5	-41.86	-13	-28.86	-51.51	-45.03	4.10	9.42	V
	2457.75	-29.95	-13	-16.95	-44.43	-33.53	4.90	10.63	V
	3277	-53.69	-13	-40.69	-70.19	-58.61	5.55	12.62	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 26 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1629	-30.44	-13	-17.44	-40.32	-33.69	4.00	9.40	H
	2443.5	-31.19	-13	-18.19	-45.73	-34.76	4.88	10.60	H
	3258	-47.71	-13	-34.71	-64.55	-52.64	5.52	12.60	H
	1629	-38.51	-13	-25.51	-48.29	-41.76	4.00	9.40	V
	2443.5	-21.98	-13	-8.98	-36.50	-25.55	4.88	10.60	V
	3258	-54.24	-13	-41.24	-70.94	-59.17	5.52	12.60	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 26 / 15MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Highest	1634.5	-32.86	-13	-19.86	-42.75	-36.03	4.10	9.42	H
	2451.75	-28.31	-13	-15.31	-42.86	-31.89	4.90	10.63	H
	3269	-51.90	-13	-38.90	-68.74	-56.82	5.55	12.62	H
	1634.5	-41.10	-13	-28.10	-50.89	-44.27	4.10	9.42	V
	2451.75	-28.47	-13	-15.47	-43.00	-32.05	4.90	10.63	V
	3269	-51.72	-13	-38.72	-68.42	-56.64	5.55	12.62	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.