



# RF TEST REPORT

**Report No.:** SET2020-11748

**Product:** HARMAN VISION

**FCC ID:** 2AHPN-HSV-10NA-AA

**Model No.:** HSV-10NA-AA

**Applicant:** Harman International Industries Incorporated

**Address:** 30001, Cabot Drive, Novi, MI 48377, USA.

**Issued by:** CCIC Southern Testing Co., Ltd

**Lab Location:** Electronic Testing Building, No. 43 Shahe Road Xili Street,  
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## Test Report

**Product.....:** HARMAN VISION

**Brand Name..... :** HARMAN VISION

**Trade Name..... :** HARMAN VISION

**Applicant.....:** Harman International Industries Incorporated

**Applicant Address.....:** 30001, Cabot Drive, Novi, MI 48377, USA.

**Manufacturer.....:** Harman International Industries Incorporated

**Manufacturer Address.....:** 30001, Cabot Drive, Novi, MI 48377, USA.

**Test Standards..... :** 47 CFR Part 2/22/24/27/90

**Test Result.....:** PASS

**Tested by .....**

*Vincent*

2020.09.30

Vincent, Test Engineer

**Reviewed by.....:**

*Chris You*

2020.09.30

Chris You, Senior Engineer

**Approved by.....:**

*Shuangwen Zhang*

2020.09.30

Shuangwen Zhang, Manager



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Change History		
Issue	Date	Reason for change
1.0	2020.09.30	First edition



## 1. GENERAL INFORMATION

### 1.1 EUT Description

EUT Type	HARMAN VISION
EUT supports Radios application	LTE Band 2/4/5/7/12/13/25/26/66/71
Frequency Range(TX)	LTE Band 2: 1850.7MHz~1909.3MHz LTE Band 4: 1710.7MHz~1754.3MHz LTE Band 5: 824.7MHz~848.3MHz LTE Band 7: 2502.5MHz~2567.5MHz LTE Band 12: 699.7MHz~715.3MHz LTE Band 13: 779.5MHz~784.5MHz LTE Band 25: 1850.7MHz~1914.3MHz LTE Band 26: 814.7MHz~823.3MHz(Part 90) LTE Band 26: 824.7MHz~848.3MHz(Part 22) LTE Band 66: 2110.7MHz~2179.3MHz LTE Band 71: 619.5MHz~649.5MHz
Maximum Output Power to Antenna	LTE Band 2: 22.63dBm LTE Band 4: 22.61dBm LTE Band 5: 22.39dBm LTE Band 7: 22.44dBm LTE Band 12: 22.40dBm LTE Band 13: 22.18dBm LTE Band 25: 22.59 dBm LTE Band 26: 22.77 dBm LTE Band 66: 21.74dBm LTE Band 71: 22.88 dBm
Bandwidth	LTE Band 2: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 4: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 5: 1.4MHz/3MHz/5MHz/10MHz LTE Band 7: 5MHz/10MHz/15MHz/20MHz LTE Band 12: 1.4MHz/3MHz/5MHz/10MHz LTE Band 13: 5MHz/10MHz LTE Band 25: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz LTE Band 26: 1.4MHz/3MHz/5MHz/10MHz/15MHz LTE Band 66: 1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz



	LTE Band 71: 5MHz/10MHz/15MHz/20MHz
Modulation Type	QPSK/16QAM
Antenna Type	Internal Antenna

## 1.2 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

LTE Band 2		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1850.7 ~ 1909.3	1M10G7D	-	0.130	1M10W7D	-	0.092
3	1851.5 ~ 1908.5	3M02G7D	-	0.129	3M04W7D	-	0.095
5	1852.5 ~ 1907.5	4M50G7D	-	0.129	4M50W7D	-	0.093
10	1855.0 ~ 1905.0	9M05G7D	0.0026	0.115	8M99W7D	-	0.103
15	1857.5 ~ 1902.5	13M4G7D	-	0.144	13M4W7D	-	0.089
20	1860.0 ~ 1900.0	18M3G7D	-	0.134	18M2W7D	-	0.111
LTE Band 25		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1850.7 ~ 1914.3	1M10G7D	-	0.153	1M10W7D	-	0.129
3	1851.5 ~ 1913.5	3M02G7D	-	0.156	3M04W7D	-	0.138
5	1852.5 ~ 1912.5	4M50G7D	-	0.167	4M50W7D	-	0.134
10	1855.0 ~ 1910.0	9M05G7D	0.0026	0.151	8M99W7D	-	0.152
15	1857.5 ~ 1907.5	13M4G7D	-	0.153	13M4W7D	-	0.123
20	1860.0 ~ 1905.0	18M3G7D	-	0.196	18M2W7D	-	0.157

LTE Band 4		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1710.7 ~ 1754.3	1M10G7D	-	0.124	1M09W7D	-	0.081
3	1711.5 ~ 1753.5	2M72G7D	-	0.121	2M71W7D	-	0.081
5	1712.5 ~ 1752.5	4M49G7D	-	0.123	4M51W7D	-	0.096
10	1715.0 ~ 1750.0	9M01G7D	0.0029	0.129	9M03W7D	-	0.075
15	1717.5 ~ 1747.5	13M4G7D	-	0.118	13M5W7D	-	0.077
20	1720.0 ~ 1745.0	18M3G7D	-	0.131	18M3W7D	-	0.076
LTE Band 5		QPSK			16QAM		
BW (MHz)	Frequency Range	Emission Designator	Frequency Tolerance	Maximum ERP(W)	Emission Designator	Frequency Tolerance	Maximum ERP(W)
1.4	824.7 ~ 848.3	1M09G7D	-	0.191	1M09W7D	-	0.129
3	825.5 ~ 847.5	2M73G7D	-	0.186	2M72W7D	-	0.127
5	826.5 ~ 846.5	4M52G7D	-	0.191	4M51W7D	-	0.125
10	829.0 ~ 844.0	9M07G7D	0.0028	0.138	9M03W7D	-	0.093
LTE Band 7		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
5	2502.5 ~ 2567.5	4M50G7D	-	0.126	4M50W7D	-	0.081
10	2505.0 ~ 2565.0	9M05G7D	0.0028	0.125	9M01W7D	-	0.085
15	2507.5 ~ 2562.5	13M5G7D	-	0.129	13M4W7D	-	0.085
20	2510.0 ~ 2560.0	18M3G7D	-	0.120	18M4W7D	-	0.153
LTE Band 12		QPSK			16QAM		
BW (MHz)	Frequency Range	Emission Designator	Frequency Tolerance	Maximum ERP(W)	Emission Designator	Frequency Tolerance	Maximum ERP(W)
1.4	699.7 ~ 715.3	1M09G7D	-	0.144	1M09W7D	-	0.111
3	700.5 ~ 714.5	2M73G7D	-	0.141	2M75W7D	-	0.126
5	701.5 ~ 713.5	4M50G7D	-	0.142	4M49W7D	-	0.112
10	704.0 ~ 711.0	9M05G7D	0.0028	0.166	9M03W7D	-	0.127



LTE Band 13		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
5	779.5 ~ 784.5	4M50G7D	-	0.135	4M52W7D	-	0.111
10	782.0	9M01G7D	0.0042	0.143	8M95W7D	-	0.117
LTE Band 26(Part90)		QPSK			16QAM		
BW (MHz)	Frequency Range	Emission Designator	Frequency Tolerance	Maximum ERP(W)	Emission Designator	Frequency Tolerance	Maximum ERP(W)
1.4	814.7 ~ 823.3	1M10G7D	-	0.151	1M10W7D	-	0.143
3	815.5 ~ 822.5	2M76G7D	-	0.145	2M73W7D	-	0.145
5	816.5 ~ 821.5	4M50G7D	-	0.147	4M50W7D	-	0.149
10	819	9M05G7D	0.0028	0.139	8M93W7D	-	0.140

LTE Band 26(Part22)		QPSK			16QAM		
BW (MHz)	Frequency Range	Emission Designator	Frequency Tolerance	Maximum ERP(W)	Emission Designator	Frequency Tolerance	Maximum ERP(W)
10	831.5~844	9M05G7D	0.0028	0.137	8M93W7D	-	0.137
15	831.5~841.5	13M3G7D	-	0.141	13M4W7D	-	0.140

LTE Band 66		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1710.7 ~ 1779.3	1M10G7D	-	0.123	1M09W7D	-	0.095
3	1711.5 ~ 1778.5	2M72G7D	-	0.127	2M71W7D	-	0.102
5	1712.5 ~ 1777.5	4M49G7D	-	0.126	4M51W7D	-	0.104
10	1715.0 ~ 1775.0	9M01G7D	0.0029	0.126	9M03W7D	-	0.086
15	1717.5 ~ 1772.5	13M4G7D	-	0.124	13M5W7D	-	0.100
20	1720.0 ~ 1770.0	18M3G7D	-	0.129	18M3W7D	-	0.103



LTE Band 71		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
5	665.5 ~ 695.5	4M50G7D	-	0.112	4M50W7D	-	0.143
10	668.0 ~ 693.0	9M01G7D	0.0050	0.145	8M99W7D	-	0.145
15	670.5 ~ 690.5	13M5G7D	-	0.147	13M5W7D	-	0.117
20	673.0 ~ 688.0	18M3G7D	-	0.110	18M3W7D	-	0.111



### 1.3 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part24, Part27, Part90, for the EUT FCC ID Certification:

1.47 CFR Part 2, 22/24/27/90

2. ANSI/TIA/EIA-603-D-2010

3. FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01

Test detailed items/section required by FCC rules and results are as below:

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(5)	Effective Radiated Power (Band 5) (Band 26)	ERP < 7 Watt	PASS	-
	§27.50(b)(10) §27.50(c)(10)	Effective Radiated Power	ERP < 3 Watt	PASS	-
	§24.232(c) §27.50(h)(2)	Equivalent Isotropic Radiated Power	EIRP < 2Watt	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power	EIRP < 1Watt	PASS	-
	§90.635 (b)	Effective Radiated Power	ERP < 100 Watt	PASS	-
3.5	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-



3.7	§2.1051 §22.917(a) §24.238(a) §27.53(c)(2)(4) §27.53(g) §27.53(h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 25) (Band 26) (Band 66) (Band 71)	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	-
	§27.53(m)(4)	Conducted Band Edge Measurement (Band 7)	Refer to §27.53(m)(4)		
	§90.691 (a)	Conducted Band Edge Measurement(Band 26)	Refer to §90.691 (a)		
3.8	§2.1051 §22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h) §90.691(a)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 25) (Band 26) (Band 66) (Band 71)	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	-
	§2.1051 §27.53(m)(4)	Conducted Spurious Emission	$< 55+10\log_{10}(P[\text{Watts}])$		
3.9	§2.1055 §22.355 §90.213 (a)	Frequency Stability Temperature & Voltage	$< 2.5 \text{ ppm for Part}$ 22H&Part90S	PASS	-
	§2.1055 §24.235 §27.54		Within Authorized Band		

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.
3. The test data except ERP/EIRP and radiated spurious emissions of this report refers to FCC ID:PJ7-N75-NA



## 1.4 Test Configuration of Equipment Under Test

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power. Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth(MHz)						Modulation		RB#			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	5	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
	7			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	12	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
	13			✓	✓			✓	✓	✓	✓	✓		✓	
	25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	26	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
	71			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Peak-to-Average Ratio	7						✓		✓	✓		✓	✓	✓	✓
	12				✓				✓	✓		✓	✓	✓	✓
	13				✓				✓	✓		✓		✓	
	25						✓		✓	✓		✓	✓	✓	✓
	26				✓				✓	✓		✓	✓	✓	✓
	66						✓		✓	✓		✓	✓	✓	✓
	71						✓		✓	✓		✓	✓	✓	✓
26dB and 99% Bandwidth	2	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	5	✓	✓	✓	✓			✓	✓			✓	✓	✓	✓
	7			✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	12	✓	✓	✓	✓			✓	✓			✓	✓	✓	✓
	13			✓	✓			✓	✓			✓		✓	
	25	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	26	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓
	66			✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
	71	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Conducted Band Edge	2	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
	5	✓	✓	✓	✓			✓	✓	✓		✓	✓		✓
	7			✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
	12	✓	✓	✓	✓			✓	✓	✓		✓	✓		✓
	13			✓	✓			✓	✓	✓		✓		✓	
	25	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓



	26	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓		✓
	66			✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
	71	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
Conducted Spurious Emission	2	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	5	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓
	7			✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	12	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓
	13			✓	✓			✓	✓	✓				✓	
	25	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	26	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓	✓
	66			✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	71	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
Frequency Stability	2				✓			✓				✓		✓	
	4				✓			✓				✓		✓	
	5				✓			✓				✓		✓	
	7				✓			✓				✓		✓	
	12				✓			✓				✓		✓	
	13				✓			✓				✓		✓	
	25				✓			✓				✓		✓	
	26				✓			✓				✓		✓	
	66				✓			✓				✓		✓	
	71				✓			✓				✓		✓	
ERP/EIRP	2	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	5	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓
	7			✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	12	✓	✓	✓	✓			✓	✓	✓			✓	✓	✓
	13			✓	✓			✓	✓	✓				✓	
	25	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	26	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓	✓
	66			✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	71	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
Radiated Spurious Emission	2	Worst case													
	4	Worst case													
	5	Worst case													
	7	Worst case													
	12	Worst case													
	13	Worst case													

	25	Worst case
	26	Worst case
	66	Worst case
	71	Worst case
Note	The test data except ERP/EIRP and radiated spurious emissions of this report refers to FCC ID:PJ7-N75-NA	

## 1.5 Measurement Results Explanation Example

### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 7dB and 10dB attenuator.

Example:

$$\begin{aligned}\text{Offset (dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 7 + 10 = 17 \text{ (dB)}\end{aligned}$$



## 1.6 Facilities and Accreditations

### 1.6.1 Test Facilities

#### **CNAS-Lab Code: L1659**

CCIC-SET is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

#### **FCC-Registration No.: CN5031**

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN5031, valid time is until December 31, 2020.

#### **ISED Registration: 11185A-1**

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Dec. 31, 2020.

#### **NVLAP Lab Code: 201008-0**

CCIC-SET is a third party testing organization accredited by NVLAP according to ISO/IEC 17025. The accreditation certificate number is 201008-0.

### 1.6.2 Test Environment Condition

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15°C - 35°C
Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa



## 2. 47 CFR PART 2 REQUIREMENTS

### 2.1 Conducted RF Output Power

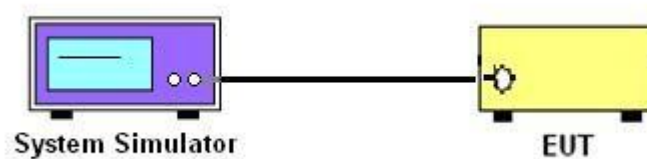
#### 2.1.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

#### 2.1.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

#### 2.1.3 Test Setup



#### 2.1.4 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through 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.



### **2.1.5 Test Results**

Please refer to FCC ID:PJ7-N75-NA for detail test data.

## 2.2 Peak to Average Ratio

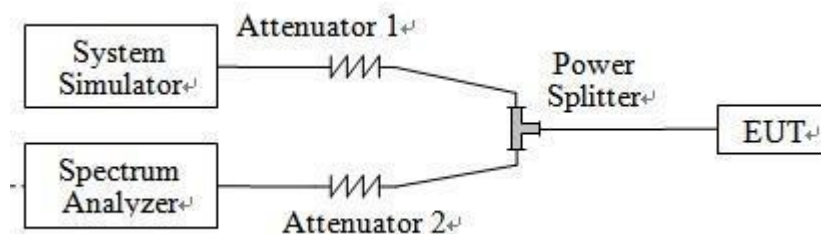
### 2.2.1 Definition

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. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

### 2.2.2 Measuring Instruments

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

### 2.2.3 Test Description



### 2.2.4 Test Procedures

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.



### **2.2.5 Test Results of Peak-to-Average Ratio**

Please refer to FCC ID:PJ7-N75-NA for detail test data.

## 2.3 99% Occupied Bandwidth and 26dB Bandwidth

### 2.3.1 Definition

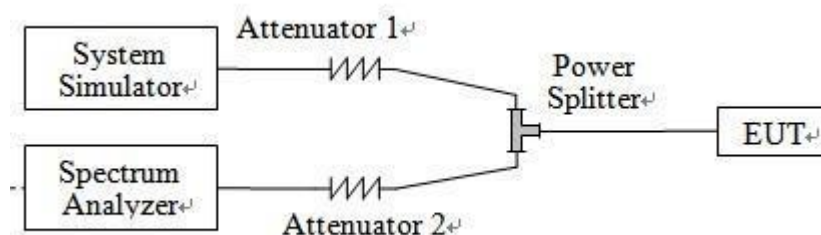
According to FCC section 2.1049, the occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

### 2.3.2 Measuring Instruments

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

### 2.3.3 Test Setup



### 2.3.4 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The 26dB and 99% occupied bandwidth (BW) of the middle channel for the highest RF power with full RB sizes were measured.



### **2.3.5 Test Result of 99% Occupied Bandwidth and 26dB Bandwidth**

Please refer to FCC ID:PJ7-N75-NA for detail test data.

## 2.4 Frequency Stability

### 2.4.1 Requirement

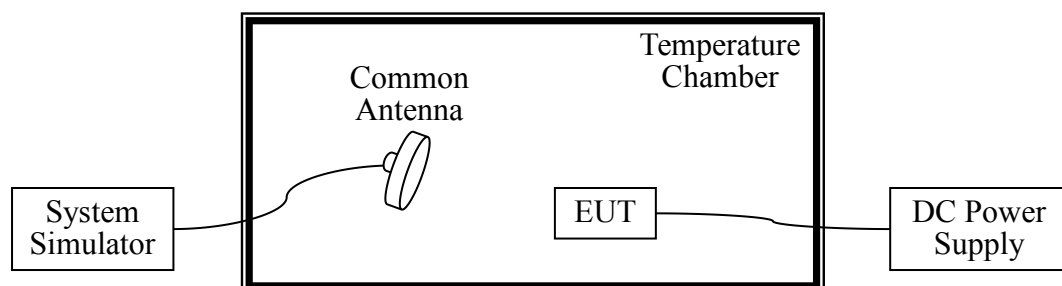
According to FCC requirement, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5\text{ppm}$ ) of the center frequency. According to FCC section 2.1055, the test conditions are:

- (a) The temperature is varied from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  at intervals of not more than  $10^{\circ}\text{C}$ .
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

### 2.4.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

### 2.4.3 Test Setup



### 2.4.4 Test Procedures

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to  $-30^{\circ}\text{C}$  and the EUT was stabilized



before testing. Power was applied and the maximum change in frequency was recorded within one minute.

3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. The nominal, highest and lowest extreme voltages were tested, which are specified by the applicant; the normal temperature here used is 25°C.
5. The variation in frequency was measured for the worst case.





#### **2.4.5 Test Result of Frequency Stability**

Please refer to FCC ID:PJ7-N75-NA for detail test data.

## 2.5 Conducted Out of Band Emissions

### 2.5.1 Requirement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

For Band 7:

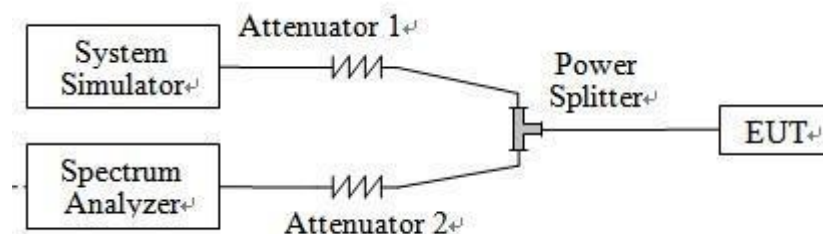
The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least  $55 + 10 \log (P)$  dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

### 2.5.2 Measuring Instruments

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

### 2.5.3 Test Setup



### 2.5.4 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
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.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.

5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)  
$$= P(W) - [43 + 10\log(P)] \text{ (dB)}$$
$$= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$$
$$= -13\text{dBm}.$$
8. For Band 7  
The limit line is derived from  $55 + 10\log(P)$  dB below the transmitter power P(Watts)  
$$= P(W) - [55 + 10\log(P)] \text{ (dB)}$$
$$= [30 + 10\log(P)] \text{ (dBm)} - [55 + 10\log(P)] \text{ (dB)}$$
$$= -25\text{dBm}.$$
9. For 9KHz to 30MHz: the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



### **2.5.5 Test Result of Conducted Spurious Emission**

Please refer to FCC ID:PJ7-N75-NA for detail test data.

## 2.6 Conducted Band Edge

### 2.6.1 Description of Conducted Band Edge Measurement

22.917(a)

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.

24.238(a)

For operations in the 1850 -1910 MHz band, the FCC limit is  $43 + 10 \log_{10}(P [\text{Watts}])$  dB below the transmitter power P(Watts) in a 1MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53(h)

For operations in the 1710 – 1755 MHz band, the FCC limit is  $43 + 10 \log_{10}(P[\text{Watts}])$  dB below the transmitter power P(Watts) in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53 (c)

For operations in the 776-788 MHz band, the FCC limit is  $43 + 10 \log_{10}(P[\text{Watts}])$  dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed. In addition, the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least  $65 + 10 \log_{10} p(\text{watts})$ , dB, for mobile and portable equipment.

27.53 (g)

For operations in the 600MHz band and 698 -746 MHz band, the FCC limit is  $43 + 10 \log_{10}(P[\text{Watts}])$  dB below the transmitter power P(Watts) in a 100 kHz bandwidth. 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.

27.53m(4)

For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition,

the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

90.691 (a)

Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

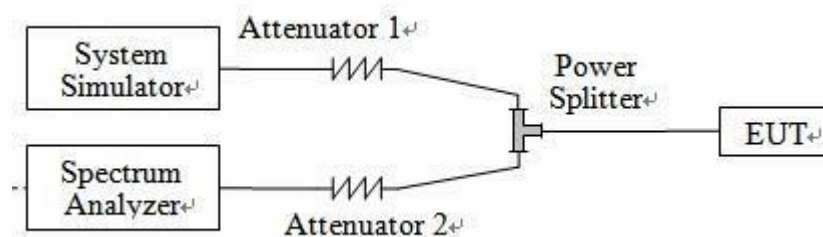
(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \log_{10}(f/6.1)$  decibels or  $50 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

## 2.6.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

## 2.6.3 Test Setup



#### **2.6.4 Test Procedures**

1. The testing follows FCC KDB 971168 v03r01 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.  
The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power P(Watts)
9. For LTE Band 7 the other 40 dB, and 55 dB have additionally applied same calculation above.

#### **2.6.5 Test Result of Conducted Band Edge**

Please refer to FCC ID:PJ7-N75-NA for detail test data.

## 2.7 Transmitter Radiated Power (EIRP/ERP)

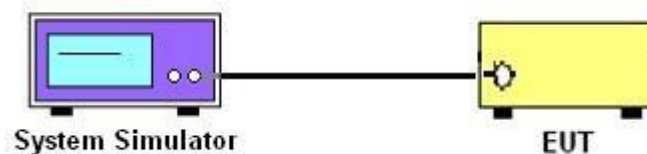
### 2.7.1 Requirement

The ERP of mobile transmitters must not exceed 7 Watts for LTE Band 5 and Band 26(Part22).The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 12, Band 13 and Band 71. The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2 and Band 25 and Band 7. The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4 and Band 66.The EIRP of mobile transmitters must not exceed 100 Watts for LTE Band 26(Part90).

### 2.7.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

### 2.7.3 Test Setup



### 2.7.4 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle and highest channels for each band and different modulation
5. Measure and record the power level from system simulator.



## 2.7.5 Test Result of ERP/EIRP

### 1.LTE Band 2 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	Verdict
			RB Size	RB Offset			
2	1.4	QPSK	1	3	1850.7	21.14	PASS
2	1.4	QPSK	1	3	1880	21.12	PASS
2	1.4	QPSK	1	3	1909.3	21.15	PASS
2	1.4	16QAM	1	0	1850.7	19.55	PASS
2	1.4	16QAM	1	0	1880	19.56	PASS
2	1.4	16QAM	1	0	1909.3	19.64	PASS
2	3	QPSK	1	8	1851.5	21.10	PASS
2	3	QPSK	1	8	1880	21.08	PASS
2	3	QPSK	1	8	1908.5	21.11	PASS
2	3	16QAM	1	0	1851.5	19.70	PASS
2	3	16QAM	1	0	1880	19.74	PASS
2	3	16QAM	1	0	1908.5	19.77	PASS
2	5	QPSK	1	0	1852.5	21.09	PASS
2	5	QPSK	1	0	1880	21.03	PASS
2	5	QPSK	1	0	1907.5	21.10	PASS
2	5	16QAM	1	24	1852.5	19.68	PASS
2	5	16QAM	1	24	1880	19.61	PASS
2	5	16QAM	1	24	1907.5	19.69	PASS
2	10	QPSK	1	49	1855	20.62	PASS
2	10	QPSK	1	49	1880	20.51	PASS
2	10	QPSK	1	49	1905	20.60	PASS
2	10	16QAM	1	0	1855	20.11	PASS
2	10	16QAM	1	0	1880	20.09	PASS
2	10	16QAM	1	0	1905	20.12	PASS
2	15	QPSK	1	74	1857.5	21.48	PASS
2	15	QPSK	1	74	1880	21.58	PASS
2	15	QPSK	1	74	1902.5	21.52	PASS
2	15	16QAM	1	0	1857.5	19.36	PASS
2	15	16QAM	1	0	1880	19.39	PASS
2	15	16QAM	1	0	1902.5	19.47	PASS
2	20	QPSK	1	0	1860	21.27	PASS
2	20	QPSK	1	0	1880	21.21	PASS
2	20	QPSK	1	0	1900	21.20	PASS
2	20	16QAM	1	0	1860	20.45	PASS
2	20	16QAM	1	0	1880	20.40	PASS
2	20	16QAM	1	0	1900	20.47	PASS



## 2. LTE Band 4 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	Verdict
			RB Size	RB Offset			
4	1.4	QPSK	1	0	1710.7	20.84	PASS
4	1.4	QPSK	1	0	1732.5	20.92	PASS
4	1.4	QPSK	1	0	1754.3	20.85	PASS
4	1.4	16QAM	1	3	1710.7	19.05	PASS
4	1.4	16QAM	1	3	1732.5	18.96	PASS
4	1.4	16QAM	1	3	1754.3	19.10	PASS
4	3	QPSK	1	0	1711.5	20.83	PASS
4	3	QPSK	1	0	1732.5	20.72	PASS
4	3	QPSK	1	0	1753.5	20.84	PASS
4	3	16QAM	1	14	1711.5	19.05	PASS
4	3	16QAM	1	14	1732.5	19.10	PASS
4	3	16QAM	1	14	1753.5	19.03	PASS
4	5	QPSK	1	0	1712.5	20.89	PASS
4	5	QPSK	1	0	1732.5	20.78	PASS
4	5	QPSK	1	0	1752.5	20.84	PASS
4	5	16QAM	1	0	1712.5	19.83	PASS
4	5	16QAM	1	0	1732.5	19.76	PASS
4	5	16QAM	1	0	1752.5	19.84	PASS
4	10	QPSK	1	0	1715	21.09	PASS
4	10	QPSK	1	0	1732.5	21.07	PASS
4	10	QPSK	1	0	1750	21.12	PASS
4	10	16QAM	1	24	1715	18.76	PASS
4	10	16QAM	1	24	1732.5	18.69	PASS
4	10	16QAM	1	24	1750	18.77	PASS
4	15	QPSK	1	74	1717.5	20.67	PASS
4	15	QPSK	1	74	1732.5	20.59	PASS
4	15	QPSK	1	74	1747.5	20.73	PASS
4	15	16QAM	1	74	1717.5	18.80	PASS
4	15	16QAM	1	74	1732.5	18.85	PASS
4	15	16QAM	1	74	1747.5	18.73	PASS
4	20	QPSK	1	0	1720	21.07	PASS
4	20	QPSK	1	0	1732.5	21.14	PASS
4	20	QPSK	1	0	1745	21.16	PASS
4	20	16QAM	1	0	1720	18.77	PASS
4	20	16QAM	1	0	1732.5	18.70	PASS
4	20	16QAM	1	0	1745	18.78	PASS

### 3. LTE Band 5 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
5	1.4	QPSK	1	3	824.7	22.78	PASS
5	1.4	QPSK	1	3	836.5	22.82	PASS
5	1.4	QPSK	1	3	848.3	22.81	PASS
5	1.4	16QAM	1	3	824.7	21.04	PASS
5	1.4	16QAM	1	3	836.5	20.97	PASS
5	1.4	16QAM	1	3	848.3	21.11	PASS
5	3	QPSK	1	0	825.5	22.69	PASS
5	3	QPSK	1	0	836.5	22.60	PASS
5	3	QPSK	1	0	847.5	22.65	PASS
5	3	16QAM	1	0	825.5	21.04	PASS
5	3	16QAM	1	0	836.5	20.97	PASS
5	3	16QAM	1	0	847.5	21.05	PASS
5	5	QPSK	1	0	826.5	22.78	PASS
5	5	QPSK	1	0	836.5	22.82	PASS
5	5	QPSK	1	0	846.5	22.77	PASS
5	5	16QAM	1	0	826.5	20.84	PASS
5	5	16QAM	1	0	836.5	20.97	PASS
5	5	16QAM	1	0	846.5	20.91	PASS
5	10	QPSK	1	49	829.0	21.41	PASS
5	10	QPSK	1	49	836.5	21.36	PASS
5	10	QPSK	1	49	844.0	21.27	PASS
5	10	16QAM	1	0	829.0	19.56	PASS
5	10	16QAM	1	0	836.5	19.69	PASS
5	10	16QAM	1	0	844.0	19.67	PASS

#### 4. LTE Band 7 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	Verdict
			RB Size	RB Offset			
7	5	QPSK	1	12	2502.5	20.91	PASS
7	5	QPSK	1	0	2535	20.95	PASS
7	5	QPSK	1	24	2567.5	21.01	PASS
7	5	16QAM	1	24	2502.5	19.07	PASS
7	5	16QAM	1	24	2535	19.00	PASS
7	5	16QAM	1	0	2567.5	19.05	PASS
7	10	QPSK	1	24	2505	20.98	PASS
7	10	QPSK	1	49	2535	20.93	PASS
7	10	QPSK	1	24	2565	20.88	PASS
7	10	16QAM	1	24	2505	19.29	PASS
7	10	16QAM	1	49	2535	19.22	PASS
7	10	16QAM	1	24	2565	19.20	PASS
7	15	QPSK	1	37	2507.5	21.10	PASS
7	15	QPSK	1	74	2535	21.12	PASS
7	15	QPSK	1	0	2562.5	21.06	PASS
7	15	16QAM	1	37	2507.5	19.23	PASS
7	15	16QAM	1	18	2535	19.28	PASS
7	15	16QAM	1	0	2562.5	19.26	PASS
7	20	QPSK	1	0	2510	20.70	PASS
7	20	QPSK	1	0	2535	20.78	PASS
7	20	QPSK	1	0	2560	20.76	PASS
7	20	16QAM	1	0	2510	21.81	PASS
7	20	16QAM	1	0	2535	21.75	PASS
7	20	16QAM	1	0	2560	21.84	PASS

### 5.LTE Band 12 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
12	1.4	QPSK	1	0	699.7	21.50	PASS
12	1.4	QPSK	1	0	707.5	21.58	PASS
12	1.4	QPSK	1	0	715.3	21.51	PASS
12	1.4	16QAM	1	0	699.7	20.41	PASS
12	1.4	16QAM	1	0	707.5	20.45	PASS
12	1.4	16QAM	1	0	715.3	20.46	PASS
12	3	QPSK	1	0	700.5	21.44	PASS
12	3	QPSK	1	0	707.5	21.48	PASS
12	3	QPSK	1	0	714.5	21.45	PASS
12	3	16QAM	1	8	700.5	20.96	PASS
12	3	16QAM	1	8	707.5	20.88	PASS
12	3	16QAM	1	8	714.5	20.99	PASS
12	5	QPSK	1	24	701.5	21.50	PASS
12	5	QPSK	1	24	707.5	21.44	PASS
12	5	QPSK	1	24	713.5	21.52	PASS
12	5	16QAM	1	0	701.5	20.36	PASS
12	5	16QAM	1	0	707.5	20.49	PASS
12	5	16QAM	1	0	713.5	20.42	PASS
12	10	QPSK	1	49	704	22.11	PASS
12	10	QPSK	1	49	707.5	22.19	PASS
12	10	QPSK	1	49	711	22.08	PASS
12	10	16QAM	1	0	704	21.02	PASS
12	10	16QAM	1	0	707.5	21.05	PASS
12	10	16QAM	1	0	711	21.01	PASS



## 6.LTE Band 13 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
13	5	QPSK	1	0	779.5	21.28	PASS
13	5	QPSK	1	0	782	21.31	PASS
13	5	QPSK	1	0	784.5	21.24	PASS
13	5	16QAM	1	24	779.5	20.47	PASS
13	5	16QAM	1	24	782	20.46	PASS
13	5	16QAM	1	24	784.5	20.39	PASS
13	10	QPSK	1	49	782	21.54	PASS
13	10	QPSK	1	49	782	21.27	PASS
13	10	QPSK	1	49	782	21.48	PASS
13	10	16QAM	1	0	782	20.67	PASS
13	10	16QAM	1	0	782	20.49	PASS
13	10	16QAM	1	0	782	20.28	PASS



## 7.LTE Band 25 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	Verdict
			RB Size	RB Offset			
25	1.4	QPSK	1	0	1850.7	21.83	PASS
25	1.4	QPSK	1	0	1882.5	21.86	PASS
25	1.4	QPSK	1	0	1914.3	21.85	PASS
25	1.4	16QAM	1	3	1850.7	21.1	PASS
25	1.4	16QAM	1	3	1882.5	21.08	PASS
25	1.4	16QAM	1	3	1914.3	21.07	PASS
25	3	QPSK	1	0	1851.5	21.9	PASS
25	3	QPSK	1	0	1882.5	21.94	PASS
25	3	QPSK	1	0	1913.5	21.92	PASS
25	3	16QAM	1	0	1851.5	21.4	PASS
25	3	16QAM	1	0	1882.5	21.37	PASS
25	3	16QAM	1	0	1913.5	21.38	PASS
25	5	QPSK	1	0	1852.5	22.24	PASS
25	5	QPSK	1	0	1882.5	22.21	PASS
25	5	QPSK	1	0	1912.5	22.23	PASS
25	5	16QAM	1	24	1852.5	21.27	PASS
25	5	16QAM	1	24	1882.5	21.26	PASS
25	5	16QAM	1	24	1912.5	21.24	PASS
25	10	QPSK	1	0	1855.0	21.77	PASS
25	10	QPSK	1	0	1882.5	21.79	PASS
25	10	QPSK	1	0	1910.0	21.76	PASS
25	10	16QAM	1	0	1855.0	21.8	PASS
25	10	16QAM	1	0	1882.5	21.78	PASS
25	10	16QAM	1	0	1910.0	21.81	PASS
25	15	QPSK	1	74	1857.5	21.84	PASS
25	15	QPSK	1	74	1882.5	21.81	PASS
25	15	QPSK	1	74	1907.5	21.86	PASS
25	15	16QAM	1	0	1857.5	20.88	PASS
25	15	16QAM	1	0	1882.5	20.86	PASS
25	15	16QAM	1	0	1907.5	20.89	PASS
25	20	QPSK	1	0	1860.0	22.91	PASS
25	20	QPSK	1	0	1882.5	22.93	PASS
25	20	QPSK	1	0	1905.0	22.92	PASS
25	20	16QAM	1	0	1860.0	21.96	PASS
25	20	16QAM	1	0	1882.5	21.93	PASS
25	20	16QAM	1	0	1905.0	21.94	PASS

## 8.LTE Band 26 Test Verdict:

LTE Band (For part 90)	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
26	1.4	QPSK	1	0	814.7	21.65	PASS
26	1.4	QPSK	1	0	819.0	21.58	PASS
26	1.4	QPSK	1	0	823.3	21.79	PASS
26	1.4	16QAM	1	0	814.7	21.54	PASS
26	1.4	16QAM	1	0	819.0	21.53	PASS
26	1.4	16QAM	1	0	823.3	21.51	PASS
26	3	QPSK	1	8	815.5	21.58	PASS
26	3	QPSK	1	8	819.0	21.60	PASS
26	3	QPSK	1	8	822.5	21.57	PASS
26	3	16QAM	1	0	815.5	21.61	PASS
26	3	16QAM	1	0	819.0	21.59	PASS
26	3	16QAM	1	0	822.5	21.62	PASS
26	5	QPSK	1	24	816.5	21.65	PASS
26	5	QPSK	1	24	819.0	21.62	PASS
26	5	QPSK	1	24	821.5	21.67	PASS
26	5	16QAM	1	0	816.5	21.67	PASS
26	5	16QAM	1	0	819.0	21.73	PASS
26	5	16QAM	1	0	821.5	21.48	PASS
26	10	QPSK	1	0	819.0	21.42	PASS
26	10	16QAM	1	49	819.0	21.41	PASS
LTE Band (For part 22)	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
26	10	QPSK	1	0	831.5	21.29	PASS
26	10	QPSK	1	0	844.0	21.37	PASS
26	10	16QAM	1	49	831.5	21.27	PASS
26	10	16QAM	1	49	844.0	21.48	PASS
26	15	QPSK	1	74	831.5	21.29	PASS
26	15	QPSK	1	74	841.5	21.37	PASS
26	15	16QAM	1	0	831.5	21.33	PASS
26	15	16QAM	1	0	841.5	21.45	PASS



### 9. LTE Band 66 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	Verdict
			RB Size	RB Offset			
66	1.4	QPSK	1	0	1710.7	20.91	PASS
66	1.4	QPSK	1	0	1732.5	20.71	PASS
66	1.4	QPSK	1	0	1754.3	20.66	PASS
66	1.4	16QAM	1	3	1710.7	19.73	PASS
66	1.4	16QAM	1	3	1732.5	19.76	PASS
66	1.4	16QAM	1	3	1754.3	19.73	PASS
66	3	QPSK	1	0	1711.5	21.04	PASS
66	3	QPSK	1	0	1732.5	21.05	PASS
66	3	QPSK	1	0	1753.5	20.73	PASS
66	3	16QAM	1	14	1711.5	20.09	PASS
66	3	16QAM	1	14	1732.5	20.07	PASS
66	3	16QAM	1	14	1753.5	20.05	PASS
66	5	QPSK	1	0	1712.5	20.98	PASS
66	5	QPSK	1	0	1732.5	20.97	PASS
66	5	QPSK	1	0	1752.5	21.00	PASS
66	5	16QAM	1	0	1712.5	20.16	PASS
66	5	16QAM	1	0	1732.5	20.02	PASS
66	5	16QAM	1	0	1752.5	20.04	PASS
66	10	QPSK	1	0	1715	20.99	PASS
66	10	QPSK	1	0	1732.5	20.97	PASS
66	10	QPSK	1	0	1750	20.96	PASS
66	10	16QAM	1	24	1715	19.33	PASS
66	10	16QAM	1	24	1732.5	19.35	PASS
66	10	16QAM	1	24	1750	19.32	PASS
66	15	QPSK	1	74	1717.5	20.89	PASS
66	15	QPSK	1	74	1732.5	20.92	PASS
66	15	QPSK	1	74	1747.5	20.90	PASS
66	15	16QAM	1	74	1717.5	19.93	PASS
66	15	16QAM	1	74	1732.5	19.98	PASS
66	15	16QAM	1	74	1747.5	20.00	PASS
66	20	QPSK	1	0	1720	21.06	PASS
66	20	QPSK	1	0	1732.5	21.09	PASS
66	20	QPSK	1	0	1745	21.01	PASS
66	20	16QAM	1	0	1720	20.00	PASS
66	20	16QAM	1	0	1732.5	20.13	PASS
66	20	16QAM	1	0	1745	20.12	PASS

### 10. LTE Band 71 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	Verdict
			RB Size	RB Offset			
71	5	QPSK	1	0	673.0	20.51	PASS
71	5	QPSK	1	0	680.5	20.48	PASS
71	5	QPSK	1	0	688.0	20.50	PASS
71	5	16QAM	1	0	673.0	21.54	PASS
71	5	16QAM	1	0	680.5	21.53	PASS
71	5	16QAM	1	0	688.0	21.51	PASS
71	10	QPSK	1	0	670.5	21.58	PASS
71	10	QPSK	1	0	680.5	21.60	PASS
71	10	QPSK	1	0	690.5	21.57	PASS
71	10	16QAM	1	24	670.5	21.61	PASS
71	10	16QAM	1	24	680.5	21.59	PASS
71	10	16QAM	1	24	690.5	21.62	PASS
71	15	QPSK	1	74	668.0	21.65	PASS
71	15	QPSK	1	74	680.5	21.62	PASS
71	15	QPSK	1	74	693.0	21.67	PASS
71	15	16QAM	1	74	668.0	20.69	PASS
71	15	16QAM	1	74	680.5	20.67	PASS
71	15	16QAM	1	74	693.0	20.70	PASS
71	20	QPSK	1	0	665.5	20.40	PASS
71	20	QPSK	1	0	680.5	20.42	PASS
71	20	QPSK	1	0	695.5	20.41	PASS
71	20	16QAM	1	0	665.5	20.45	PASS
71	20	16QAM	1	0	680.5	20.42	PASS
71	20	16QAM	1	0	695.5	20.43	PASS

## 2.8 Radiated Out of Band Emissions

### 2.8.1 Requirement

The radiated spurious emission was measured by substitution method according to ANSI / TIA /EIA-603-C-2004. 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  $43 + 10 \log (P)$  dB.

For Band 7

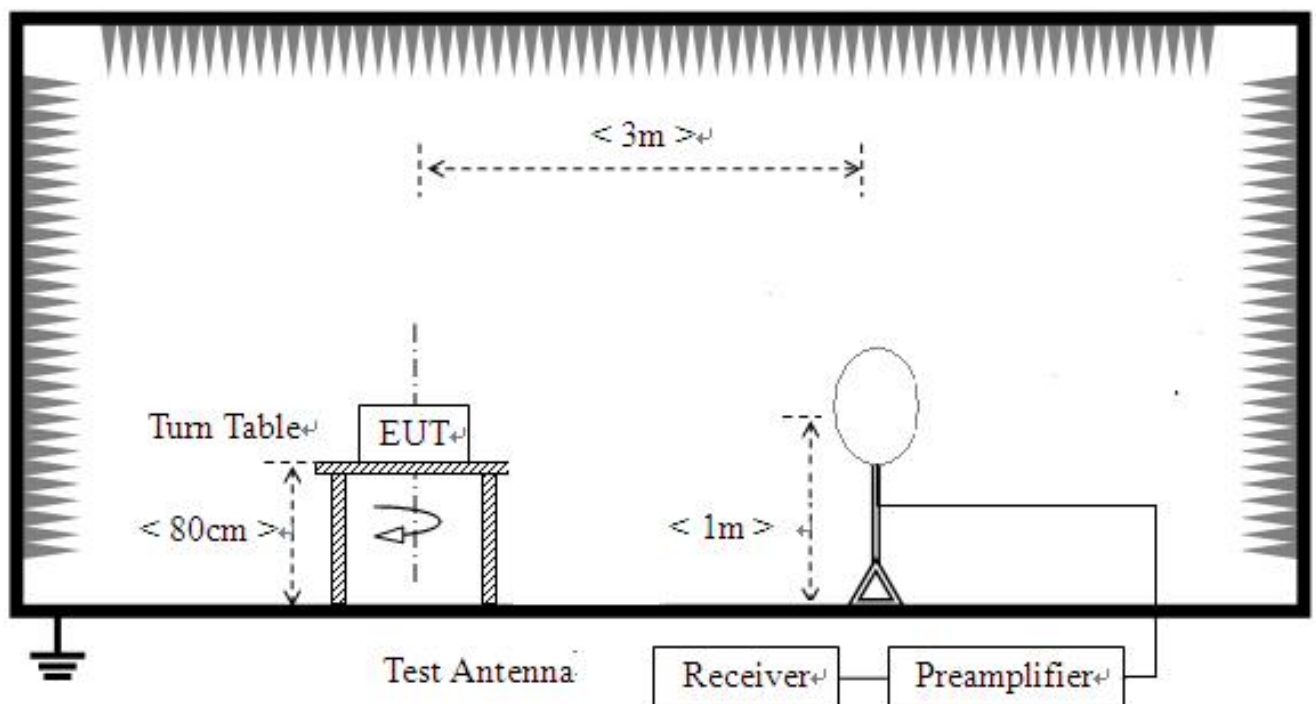
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $55 + 10 \log (P)$  dB.

### 2.8.2 Measuring Instruments

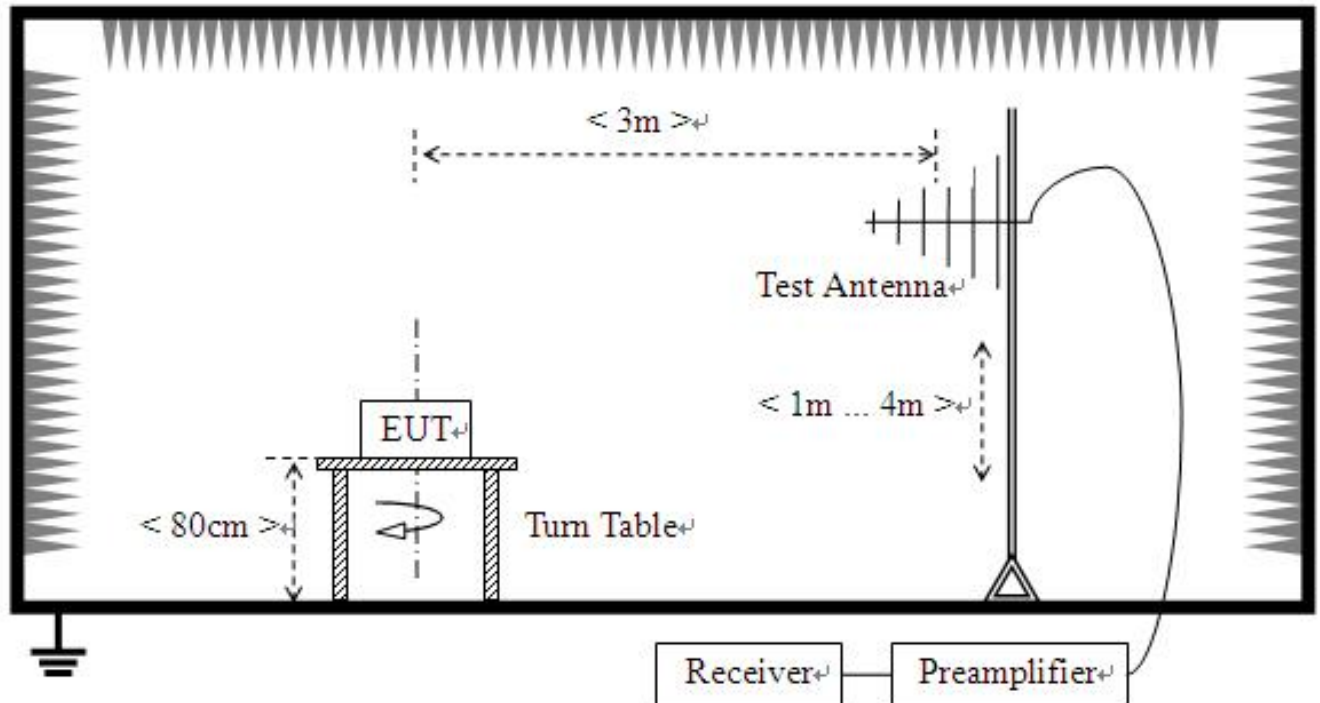
The measuring equipment is listed in the section 3 of this test report.

### 2.8.3 Test Setup

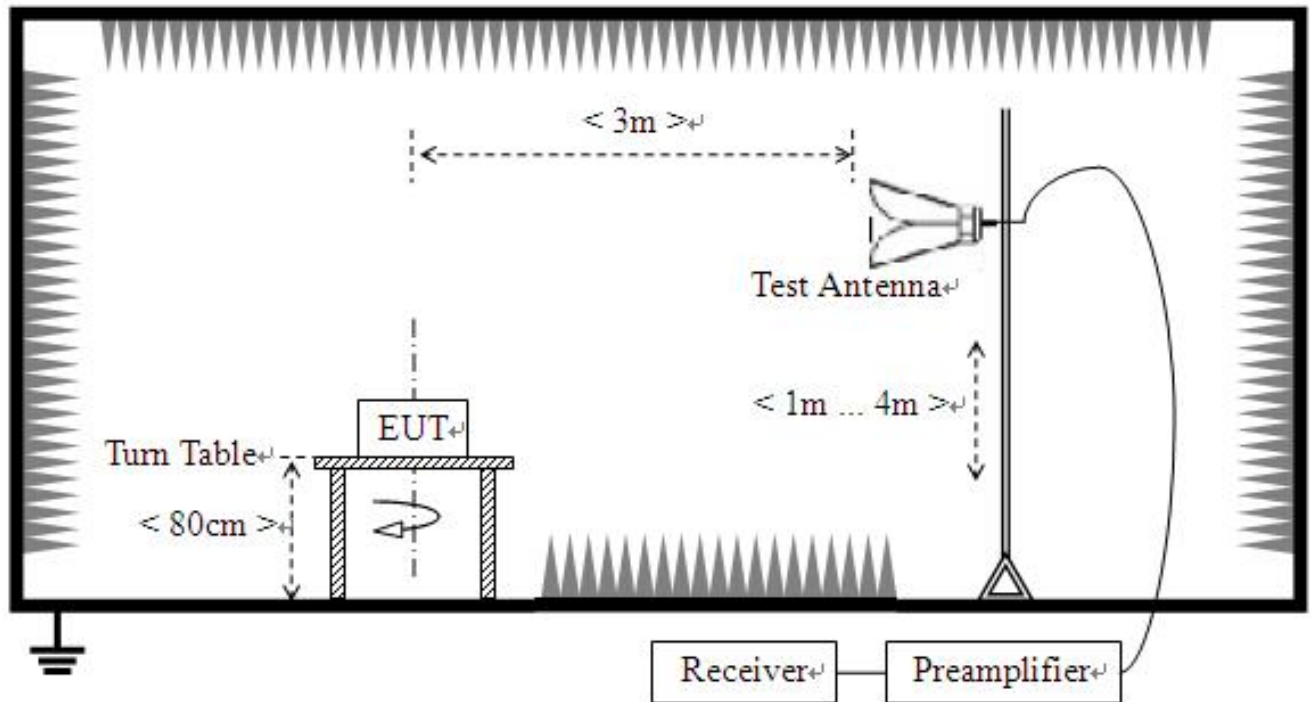
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



#### 2.8.4 Test Procedures

1. The EUT was placed on a rotatable wooden table with 0.8 meter 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, 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. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)  
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$   
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$   
 $= -13\text{dBm}.$

<For Band 7>

The limit line is derived from  $55 + 10\log(P)$  dB below the transmitter power P(Watts)  
 $= P(W) - [55 + 10\log(P)] \text{ (dB)}$   
 $= [30 + 10\log(P)] \text{ (dBm)} - [55 + 10\log(P)] \text{ (dB)}$   
 $= -25\text{dBm}.$

11. All Spurious Emission tests were performed in X, Y, Z axis direction and low, middle, high channel. And only the worst axis test condition was recorded in this test report.
12. The spectrum is measured from 9 KHz to the 10<sup>th</sup> harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. The worst case emissions are reported however emissions whose levels were not within 20dB of the



respective limits were not reported.

13. The maximum RB configurations of the Radiated Spurious Emissions as RB Size 1,  
RB Offset 0

### 2.8.5 Test Result (Plots) of Radiated Spurious Emission

Note: 1. within 30MHz-1GHz were found more than 20dB below limit line

Note: 2. Absolute Level=Reading Level + Factor

#### LTE Band 2 QPSK 20MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-80.34	-57.99	-13.00	44.99	22.35	Horizontal
2	52.3323	-81.30	-62.05	-13.00	49.05	19.25	Horizontal
3	62.0420	-87.72	-68.38	-13.00	55.38	19.34	Horizontal
4	2764.88	-56.69	-50.97	-13.00	37.97	5.72	Horizontal
5	3775.51	-59.04	-48.54	-13.00	35.54	10.50	Horizontal
6	5745.99	-59.78	-43.94	-13.00	30.94	15.84	Horizontal

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-80.17	-59.58	-13.00	46.58	20.59	Vertical
2	52.3323	-79.68	-60.56	-13.00	47.56	19.12	Vertical
3	62.0420	-86.41	-66.12	-13.00	53.12	20.29	Vertical
4	2526.76	-56.99	-51.87	-13.00	38.87	5.12	Vertical
5	3268.25	-58.17	-49.06	-13.00	36.06	9.11	Vertical
6	6199.59	-58.85	-41.35	-13.00	28.35	17.50	Vertical

Note: other spurious emissions are 20dB below limit line and no need to report

### LTE Band 4 QPSK 20MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-79.63	-57.28	-13.00	44.28	22.35	Horizontal
2	52.3323	-81.03	-61.78	-13.00	48.78	19.25	Horizontal
3	63.9840	-86.11	-66.77	-13.00	53.77	19.34	Horizontal
4	3219.48	-57.56	-48.20	-13.00	35.20	9.36	Horizontal
5	4624.18	-59.28	-48.54	-13.00	35.54	10.74	Horizontal
6	5185.09	-59.71	-46.21	-13.00	33.21	13.50	Horizontal

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-79.57	-58.98	-13.00	45.98	20.59	Vertical
2	54.2743	-80.04	-60.69	-13.00	47.69	19.35	Vertical
3	62.0420	-88.99	-68.70	-13.00	55.70	20.29	Vertical
4	2516.75	-56.64	-51.63	-13.00	38.63	5.01	Vertical
5	3863.30	-58.84	-48.75	-13.00	35.75	10.09	Vertical
6	5736.24	-59.47	-43.26	-13.00	30.26	16.21	Vertical

Note: other spurious emissions are 20dB below limit line and no need to report

### LTE Band 5 QPSK 10MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-83.35	-60.85	-13.00	47.85	22.50	Horizontal
2	52.3323	-78.99	-59.48	-13.00	46.48	19.51	Horizontal
3	62.0420	-86.22	-66.69	-13.00	53.69	19.53	Horizontal
4	1293.89	-58.70	-60.85	-13.00	47.85	-2.15	Horizontal
5	2310.78	-57.37	-54.42	-13.00	41.42	2.95	Horizontal
6	3080.79	-57.93	-50.45	-13.00	37.45	7.48	Horizontal



Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-83.08	-62.34	-13.00	49.34	20.74	Vertical
2	53.3033	-79.35	-59.86	-13.00	46.86	19.49	Vertical
3	62.0420	-86.47	-65.98	-13.00	52.98	20.49	Vertical
4	1223.36	-57.76	-59.51	-13.00	46.51	-1.75	Vertical
5	2440.09	-56.84	-53.43	-13.00	40.43	3.41	Vertical
6	3668.58	-58.49	-49.70	-13.00	36.70	8.79	Vertical

Note: other spurious emissions are 20dB below limit line and no need to report

#### LTE Band 7 QPSK 20MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7914	-82.90	-60.55	-25.00	35.55	22.35	Horizontal
2	53.4787	-79.00	-59.74	-25.00	34.74	19.26	Horizontal
3	62.0164	-89.67	-70.33	-25.00	45.33	19.34	Horizontal
4	3707.99	-58.42	-48.06	-25.00	23.06	10.36	Horizontal
5	4989.39	-59.63	-48.01	-25.00	23.01	11.62	Horizontal
6	5601.82	-60.57	-45.13	-25.00	20.13	15.44	Horizontal

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7914	-81.30	-60.71	-25.00	35.71	20.59	Vertical
2	52.8966	-79.92	-60.73	-25.00	35.73	19.19	Vertical
3	62.0164	-86.74	-66.45	-25.00	41.45	20.29	Vertical
4	3596.81	-58.43	-49.33	-25.00	24.33	9.10	Vertical
5	5051.81	-59.03	-44.93	-25.00	19.93	14.10	Vertical
6	5820.26	-60.52	-44.14	-25.00	19.14	16.38	Vertical
1	36.7914	-81.30	-60.71	-25.00	35.71	20.59	Vertical

Note: other spurious emissions are 20dB below limit line and no need to report

### LTE Band 12 QPSK 10MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-82.30	-59.95	-13.00	46.95	22.35	Horizontal
2	53.3033	-79.37	-60.11	-13.00	47.11	19.26	Horizontal
3	61.0711	-88.94	-69.61	-13.00	56.61	19.33	Horizontal
4	1476.23	-57.30	-58.96	-13.00	45.96	-1.66	Horizontal
5	2080.54	-57.34	-53.18	-13.00	40.18	4.16	Horizontal
6	3029.26	-58.37	-49.15	-13.00	36.15	9.22	Horizontal

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-84.11	-63.52	-13.00	50.52	20.59	Vertical
2	53.3033	-80.10	-60.87	-13.00	47.87	19.23	Vertical
3	62.0420	-88.13	-67.84	-13.00	54.84	20.29	Vertical
4	1213.10	-57.92	-59.52	-13.00	46.52	-1.60	Vertical
5	1728.36	-57.62	-57.92	-13.00	44.92	-0.30	Vertical
6	2371.68	-56.81	-52.37	-13.00	39.37	4.44	Vertical

### LTE Band 13 QPSK 10MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-83.78	-61.43	-13.00	48.43	22.35	Horizontal
2	53.3033	-79.03	-59.77	-13.00	46.77	19.26	Horizontal
3	62.0420	-87.44	-68.10	-13.00	55.10	19.34	Horizontal
4	1170.08	-58.23	-61.03	-13.00	48.03	-2.80	Horizontal
5	1493.24	-57.05	-58.67	-13.00	45.67	-1.62	Horizontal
6	2706.85	-57.87	-51.91	-13.00	38.91	5.96	Horizontal

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-82.14	-61.55	-13.00	48.55	20.59	Vertical
2	52.3323	-79.51	-60.39	-13.00	47.39	19.12	Vertical
3	62.0420	-87.48	-67.19	-13.00	54.19	20.29	Vertical
4	1297.14	-56.31	-58.85	-13.00	45.85	-2.54	Vertical
5	1911.45	-58.30	-57.14	-13.00	44.14	1.16	Vertical
6	2582.79	-57.86	-52.10	-13.00	39.10	5.76	Vertical

### LTE Band 25 QPSK 20MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-80.32	-57.97	-13.00	44.97	22.35	Horizontal
2	52.3323	-79.06	-59.81	-13.00	46.81	19.25	Horizontal
3	156.226	-93.54	-72.24	-13.00	59.24	21.30	Horizontal
4	3302.40	-57.73	-49.02	-13.00	36.02	8.71	Horizontal
5	3824.28	-58.42	-48.14	-13.00	35.14	10.28	Horizontal
6	5297.27	-59.42	-44.55	-13.00	31.55	14.87	Horizontal

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7968	-80.08	-59.49	-13.00	46.49	20.59	Vertical
2	53.3033	-79.96	-60.73	-13.00	47.73	19.23	Vertical
3	63.9840	-89.32	-68.80	-13.00	55.80	20.52	Vertical
4	2681.84	-57.42	-50.98	-13.00	37.98	6.44	Vertical
5	3692.59	-59.13	-48.85	-13.00	35.85	10.28	Vertical
6	4994.87	-59.85	-45.60	-13.00	32.60	14.25	Vertical

### LTE Band 26 QPSK 15MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-81.63	-59.98	-13.00	46.98	21.65	Horizontal
2	76.5833	-89.97	-71.61	-13.00	58.61	18.36	Horizontal
3	198.864	-93.08	-71.12	-13.00	58.12	21.96	Horizontal
4	497.288	-94.30	-64.36	-13.00	51.36	29.94	Horizontal
5	3225.11	-58.95	-50.19	-13.00	37.19	8.76	Horizontal
6	5641.32	-58.47	-46.39	-13.00	33.39	12.08	Horizontal

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-82.16	-57.80	-13.00	44.80	24.36	Horizontal
2	74.1571	-75.36	-54.10	-13.00	41.10	21.26	Horizontal
3	150.340	-92.04	-69.10	-13.00	56.10	22.94	Horizontal
4	492.436	-94.88	-61.48	-13.00	48.48	33.40	Horizontal
5	1785.39	-57.50	-56.06	-13.00	43.06	1.44	Horizontal
6	2867.93	-57.53	-50.20	-13.00	37.20	7.33	Horizontal

## LTE Band 66 QPSK 20MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-80.65	-59.00	-13.00	46.00	21.65	Horizontal
2	62.0260	-86.90	-68.50	-13.00	55.50	18.40	Horizontal
3	158.104	-93.01	-72.97	-13.00	59.97	20.04	Horizontal
4	495.347	-99.36	-69.56	-13.00	56.56	29.80	Horizontal
5	2709.85	-57.45	-49.63	-13.00	36.63	7.82	Horizontal
6	7989.99	-61.63	-42.87	-13.00	29.87	18.76	Horizontal

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-80.25	-57.65	-13.00	44.65	22.60	Vertical
2	63.4817	-88.43	-66.01	-13.00	53.01	22.42	Vertical
3	158.589	-93.17	-71.36	-13.00	58.36	21.81	Vertical
4	498.744	-98.33	-66.58	-13.00	53.58	31.75	Vertical
5	2677.83	-57.46	-51.13	-13.00	38.13	6.33	Vertical
6	5123.56	-60.41	-46.69	-13.00	33.69	13.72	Vertical

## LTE Band 71 QPSK 20MHz BW Middle Channel

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-83.04	-60.44	-13.00	47.44	22.60	Vertical
2	63.4817	-88.16	-65.74	-13.00	52.74	22.42	Vertical
3	388.594	-95.15	-66.05	-13.00	53.05	29.10	Vertical
4	1673.33	-45.73	-47.35	-13.00	34.35	-1.62	Vertical
5	3870.43	-59.41	-49.66	-13.00	36.66	9.75	Vertical
6	7344.67	-60.49	-44.01	-13.00	31.01	16.48	Vertical

Suspected List							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	36.7934	-80.25	-57.65	-13.00	44.65	22.60	Horizontal
2	63.4817	-88.43	-66.01	-13.00	53.01	22.42	Horizontal
3	158.589	-93.17	-71.36	-13.00	58.36	21.81	Horizontal
4	498.744	-98.33	-66.58	-13.00	53.58	31.75	Horizontal
5	2677.83	-57.46	-51.13	-13.00	38.13	6.33	Horizontal
6	5123.56	-60.41	-46.69	-13.00	33.69	13.72	Horizontal



### 3. LIST OF MEASURING EQUIPMENT

Description	Manufacturer	Model	Serial No.	Cal. Date	Due Date	Remark
EMI Test Receiver	R&S	ESU8	A0805559	2020.04.03	2021.04.02	Radiation
Loop Antenna	Schwarz beck	HFH2-Z2	100047	2019.04.26	2022.04.25	Radiation
Broadband antenna (30MHz~1GHz)	Schwarbeck	BBHA 9120 J	A190503537	2019.01.07	2021.01.06	Radiation
Broadband antenna (30MHz~1GHz)	R&S	HK116	A130701424	2018.01.19	2021.01.18	Radiation
Double ridge horn antenna (1GHz~18GHz)	R&S	HF906	100150	2019.04.27	2022.04.26	Radiation
Double ridge horn antenna (1GHz~18GHz)	R&S	HF906	100149	2019.04.17	2022.04.16	Radiation
Horn antenna (18GHz~26.5GHz)	AR	AT4002A	305753	2017.11.10	2020.11.09	Radiation
Horn antenna (18GHz~26.5GHz)	AR	AT4003A	0329293	2020.09.17	2021.09.16	Radiation
Amplifier 1GHz-18GHz	AR	25S1G4AM1	22018	2020.09.17	2021.09.16	Radiation
Ampilier 20M~3GHz	MILMEGA	80RF1000-250	1064573	2017.10.09	2020.10.08	Radiation
Spectrum Analyzer	KEYSIGHT	N9030A	A160702554	2020.05.18	2021.05.17	Conducted
Test Receiver	R&S	ESIB26	A0304218	2020.04.29	2021.04.28	Conducted
Temperature chamber	Tomilo	TOD-B165FXS-4 K	A181003256	2019.11.21	2020.11.20	Conducted
Wideband Radio Communication tester	R&S	CMW500	A130101034	2019.07.30	2021.07.29	Conducted
Power Supply	R&S	WYJ-60100	A141102031	2020.01.16	2023.01.15	Conducted

#### 4. UNCERTAINTY OF EVALUATION

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. 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 Emission Measurement (150KHz~30MHz)

Measuring Uncertainty for a level of confidence of 95%( $U=2U_c(y)$ )	2.6dB
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Uncertainty of Radiated Emission Measurement (30MHz~1GHz)

Measuring Uncertainty for a level of confidence of 95%( $U=2U_c(y)$ )	2.4dB
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Uncertainty of Radiated Emission Measurement (1GHz~40GHz)

Measuring Uncertainty for a level of confidence of 95%( $U=2U_c(y)$ )	2.8dB
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**\*\*END OF REPORT \*\***