



KSIGN (Guangdong) Testing Co., Ltd.

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TEST REPORT

Report No.: KS2102S00365E08

FCC ID.....: 2AM8GCHAMELEONH

Applicant.....: GUANGZHOU LIE DUN ELECTRONICS TECHNOLOGY CO. LIMITED

Address.....: No.4 plant of No.43 South International Trade Avenue,Hualong
Town,Panyu District,Guangzhou,Guangdong,China

Manufacturer.....: GUANGZHOU LIE DUN ELECTRONICS TECHNOLOGY CO. LIMITED

Address.....: No.4 plant of No.43 South International Trade Avenue,Hualong
Town,Panyu District,Guangzhou,Guangdong,China

Product Name.....: Chameleon-H

Trade Mark.....: CHAMELEON

Model/Type reference.....: E9XG-A05-M

Listed Model(s): /

Standard.....: FCC CFR Title 47 Part 2,FCC CFR Title 47 Part 22
FCC CFR Title 47 Part 24,FCC CFR Title 47 Part 27

Date of receipt of test sample..: Mar. 01, 2021

Date of testing.....: Mar. 01, 2021~May. 16, 2021

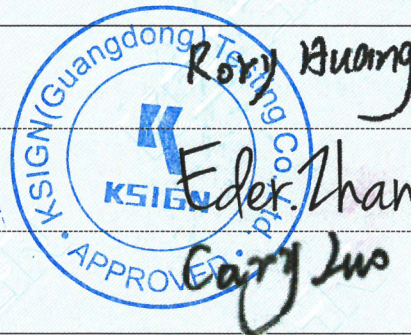
Date of issue.....: May. 16, 2021

Test Result.....: PASS

Compiled by:
(Printed name+signature) Rory Huang

Supervised by:
(Printed name+signature) Eder Zhan

Approved by:
(Printed name+signature) Cary Luo



Testing Laboratory Name.....: KSIGN(Guangdong) Testing Co., Ltd.

Address.....: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu
Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen,
Guangdong, People's Republic of China

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1. SUMMARY

1.1. Test Standards

[FCC Rules Part 2:](#) FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

[FCC Rules Part 22:](#) PRIVATE LAND MOBILE RADIO SERVICES.

[FCC Rules Part 24:](#) PUBLIC MOBILE SERVICES

[FCC Rules Part 27:](#) MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

[ANSI C63.26: 2015:](#) American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[KDB 971168 D01 Power Meas License Digital Systems v03:](#) MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

1.2. Report version

Revised No.	Date of issue	Description
01	May. 16, 2021	Original

1.3. Test Description

Test Item	Section in CFR 47	Result	Test Engineer
Conducted Output Power	Part 2.1046 Part 22.913(a) Part 24.232(c) Part 27.50	Pass	Rory Huang
Peak-to-Average Ratio	Part 24.232 Part 27.50	Pass	Rory Huang
99% Occupied Bandwidth & 26 dB Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238(b) Part 27.53	Pass	Rory Huang
Band Edge	Part 2.1051 Part 22.917 Part 24.238 Part 27.53	Pass	Rory Huang
Conducted Spurious Emissions	Part 2.1051 Part 22.917 Part 24.238 Part 27.53	Pass	Rory Huang
Frequency stability VS Temperature	Part 2.1055(a)(1)(b) Part 22.355 Part 24.235 Part 27.54	Pass	Rory Huang
Frequency stability VS Voltage	Part 2.1055(d)(1)(2) Part 22.355 Part 24.235 Part 27.54	Pass	Rory Huang
ERP and EIRP	Part 22.913(a) Part 24.232(b) Part 27.50	Pass	Rory Huang
Radiated Spurious Emissions	Part 2.1053 Part 22.917 Part 24.238 Part 27.53	Pass	Rory Huang

Note:

- 1.The measurement uncertainty is not included in the test result.
- 2.There are dual-SIM cards(SIM1 ,SIM2),Only the worst test data SIM1 recorded in the report.

1.4. Test Facility

Address of the test laboratory

KSIGN(Guangdong) Testing Co., Ltd.

West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L13261

KSIGN(Guangdong) Testing Co., Ltd. has been assessed and proved to be in Compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 5457.01

KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

IC Registration No.: CN0096

The 3m alternate test site of KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: CN0096

FCC-Registration No.: CN1272

KSIGN(Guangdong) 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.

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements and is documented in the Shenzhen General Testing & Inspection Technology Co., Ltd quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for General Testing & Inspection laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Frequency stability	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-12.75 GHz	1.60 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emission 1~18GHz	5.16 dB	(1)
Radiated Emission 18-40GHz	5.54 dB	(1)

Occupied Bandwidth	-----	(1)
Emission Mask	-----	(1)
Modulation Characteristic	-----	(1)
Transmitter Frequency Behavior	-----	(1)

101 This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

1.6. Environmental conditions

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

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2. GENERAL INFORMATION

2.1. Client Information

Applicant:	GUANGZHOU LIE DUN ELECTRONICS TECHNOLOGY CO. LIMITED
Address:	No.4 plant of No.43 South International Trade Avenue, Hualong Town, Panyu District,Guangzhou,China
Manufacturer:	GUANGZHOU LIE DUN ELECTRONICS TECHNOLOGY CO. LIMITED
Address:	No.4 plant of No.43 South International Trade Avenue, Hualong Town, Panyu District,Guangzhou,China

2.2. General Description of EUT

Test Sample Number:	1-1-1(Normal Sample),1-1-2(Engineering Sample)
Product Name:	Chameleon-H
Model/Type reference:	E9XG-A05-M
Trademark:	CHAMELEON
Listed Model(s):	/
Power supply(Battery):	DC 3.7V 10000mAh 37Wh
Power Supply(Adapter):	AC/DC ADAPTER MODEL:AD018A120150UV INPUT:100-240V~ 50/60Hz 0.5A Max OUTPUT:DC 12V1.5A
Hardware version:	V1.0
Software version:	V1.0
LTE	
Operation Band:	Band 2: UL: 1850.7MHz~1909.3MHz, DL: 1930.7MHz~1989.3MHz Band 4: UL: 1710.7MHz~1754.3MHz, DL: 2110.7MHz~2154.3MHz Band 5: UL: 824.7MHz~848.3MHz, DL: 869.7MHz~893.3MHz Band 7: UL: 2502.5MHz~2567.5MHz, DL: 2622.5MHz~2687.5MHz
Modulation Type:	QPSK, 16QAM
Antenna type:	FPC antenna
Antenna Gain:	FDD Band 2: 1.1dBi FDD Band 4: 0.80dBi FDD Band 5: 1.0dBi FDD Band 7: 1.20dBi

2.3. Description of Test Modes and Test Frequency

The EUT has been tested under typical operating condition. The CMW500 used to control the EUT staying in continuous transmitting and receiving mode for testing.

Test Frequency:

Band 2			
Test channel	Bandwidth(MHz)	N _{UL}	Frequency of Uplink (MHz)
Low Range	1.4	18607	1850.70
	3	18615	1851.50
	5	18625	1852.50
	10	18650	1855.00
	15	18675	1857.50
	20	18700	1860.00
Mid Range	1.4/3/5/10/15/20	18900	1880.00
High Range	1.4	19193	1909.30
	3	19185	1908.50
	5	19175	1907.50
	10	19150	1905.00
	15	19125	1902.50
	20	19100	1900.00

Band 4			
Test channel	Bandwidth(MHz)	N _{UL}	Frequency of Uplink (MHz)
Low Range	1.4	19957	1710.70
	3	19965	1711.50
	5	19975	1712.50
	10	20000	1715.00
	15	20025	1717.50
	20	20050	1720.00
Mid Range	1.4/3/5/10/15/20	20175	1732.50
High Range	1.4	20393	1754.30
	3	20385	1753.50
	5	20375	1752.50
	10	20350	1750.00
	15	20325	1747.50
	20	20300	1745.00

Band 5			
Test channel	Bandwidth(MHz)	N _{UL}	Frequency of Uplink (MHz)
Low Range	1.4	20407	824.70
	3	20415	825.50
	5	20425	826.50
	10	20450	829.00
Mid Range	1.4/3/5/10	20525	836.50
High Range	1.4	20643	848.30
	3	20635	847.50
	5	20625	846.50
	10	20600	844.00

Band 7			
Test channel	Bandwidth(MHz)	N _{UL}	Frequency of Uplink (MHz)
Low Range	5	20775	2502.50
	10	20800	2505.00
	15	20825	2507.50
	20	20850	2510.00
Mid Range	5/10/15/20	21100	2535.00
High Range	5	21425	2567.50
	10	21400	2565.00
	15	21375	2562.50
	20	21350	2560.00

2.4. Measurement Instruments List

Test system					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
1	Spectrum Analyzer	R&S	FSV40-N	101798	03/22/2022
2	Vector Signal Generator	Agilent	N5182A	MY50142520	03/18/2022
3	Analog Signal Generator	HP	83752A	3344A00337	03/18/2022
4	Power Sensor	Agilent	E9304A	MY50390009	03/18/2022
5	Power Sensor	Agilent	E9300A	MY41498315	03/18/2022
6	Wideband Radio Communication Tester	R&S	CMW500	157282	03/18/2022
7	Climate Chamber	Angul	AGNH80L	1903042120	03/18/2022
8	Dual Output DC Power Supply	Agilent	E3646A	MY40009992	03/18/2022
9	RF Control Unit	Tonscend	JS0806-2	/	03/18/2022

Transmitter spurious emissions & Receiver spurious emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
1	EMI Test Receiver	R&S	ESR	102525	03/18/2022
2	High Pass Filter	Chengdu E-Microwave	OHF-3-18-S	0E01901038	03/22/2022
3	High Pass Filter	Chengdu E-Microwave	OHF-6.5-18-S	0E01901039	03/22/2022
4	Spectrum Analyzer	HP	8593E	3831U02087	03/22/2022
5	Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	01230	03/29/2023
6	Loop Antenna	Beijin ZHINAN	ZN30900C	18050	03/27/2022
7	Spectrum Analyzer	R&S	FSV40-N	101798	03/22/2022
8	Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	03/29/2023
9	Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	03/22/2022
10	Pre-Amplifier	EMCI	EMC051835SE	980662	03/22/2022
11	Wideband Radio Communication Tester	R&S	CMW500	157282	04/06/2022
12	Horn Antenna	Schwarzbeck	BBHA 9170	00943	25/11/2021
13	Pre-Amplifier	Schwarzbeck	BBV 9721	9721-57	25/11/2021

Note:

1)The Cal. Interval was one year.

2)The cable loss has calculated in test result which connection between each test instruments.

2.5. Test Software

Software name	Model	Version
Test System	JS1120-3	2.5.77.0418
Test System	TST	V1.0.5
Radiated emission Measurement Software	EZ-EMC	FA-03A.2.RE

3. TEST ITEM AND RESULTS

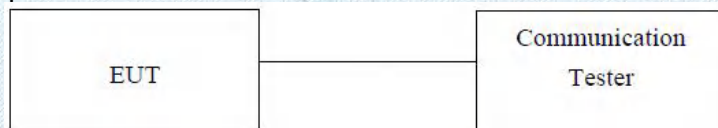
3.1. Conducted Output Power

LIMIT

Conducted Output Power: N/A

TEST CONFIGURATION

- For Conducted output Power



Note: Measurement setup for testing on Antenna connector

TEST PROCEDURE

- For Conducted output Power
 1. The transmitter output port was connected to base station.
 2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
 3. Set EUT at maximum power through base station.
 4. Select lowest, middle, and highest channels for each band and different modulation.
 5. Measure the maximum PK burst power and maximum Avg. burst power.

TEST RESULTS

Please see the Appendix for every tested Band .

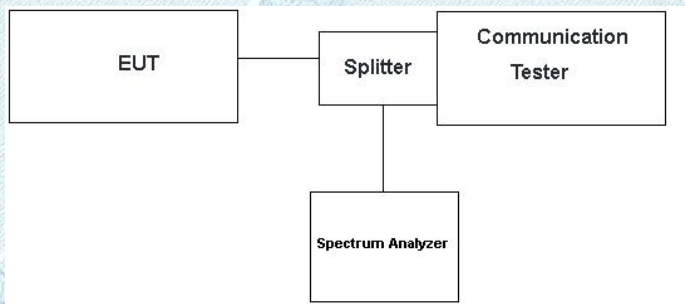
3.2. Peak-to-Average Ratio

LIMIT:

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13dB.

TEST CONFIGURATION

- For Peak-to-Average Ratio



TEST PROCEDURE

- For Peak-to-Average Ratio
1. The testing follows FCC KDB 971168 v02r02 Section 5.7.1.
 2. The EUT was connected to spectrum and communication tester via a splitter
 3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
 4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
 6. Record the deviation as Peak to Average Ratio.

TEST RESULTS

LTE Band 2

Test Band: 2 _ 1.4MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	6	0	4.87	5.36	8.46	13	PASS
16QAM	6	0	8.46	6.26	6.26	13	PASS
Test Band: 2 _ 3MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	15	0	4.96	5.13	5.25	13	PASS
16QAM	15	0	5.88	6.14	6.14	13	PASS
Test Band: 2 _ 5MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	25	0	4.58	4.61	4.67	13	PASS
16QAM	25	0	5.91	5.91	5.83	13	PASS
Test Band: 2 _ 10MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	50	0	4.52	4.64	4.70	13	PASS
16QAM	50	0	6.35	6.29	6.43	13	PASS
Test Band: 2 _ 15MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	75	0	6.00	6.12	6.26	13	PASS
16QAM	75	0	6.96	7.01	6.96	13	PASS
Test Band: 2 _ 20MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	100	0	6.72	6.90	7.01	13	PASS
16QAM	100	0	7.28	7.39	7.33	13	PASS

LTE Band 4

Test Band: 4 _ 1.4MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	6	0	5.30	5.51	5.45	13	PASS
16QAM	6	0	6.17	6.35	6.23	13	PASS
Test Band: 4 _ 3MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	15	0	5.22	5.22	5.28	13	PASS
16QAM	15	0	6.17	6.26	6.26	13	PASS
Test Band: 4 _ 5MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	25	0	4.70	4.70	4.70	13	PASS
16QAM	25	0	6.06	6.00	6.06	13	PASS
Test Band: 4 _ 10MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	50	0	4.58	4.64	4.61	13	PASS
16QAM	50	0	6.46	6.41	6.58	13	PASS
Test Band: 4 _ 15MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	75	0	6.03	6.12	6.12	13	PASS
16QAM	75	0	7.13	7.07	7.04	13	PASS
Test Band: 4 _ 20MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	100	0	6.75	6.87	6.90	13	PASS
16QAM	100	0	7.39	7.39	7.39	13	PASS

LTE Band 5

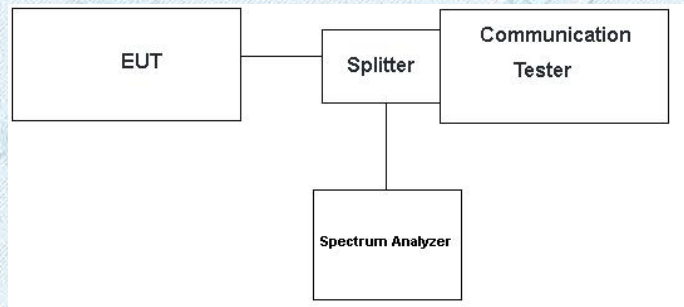
Test Band: 5 _ 1.4MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	6	0	5.30	5.16	5.22	13	PASS
16QAM	6	0	6.06	6.00	6.14	13	PASS
Test Band: 5 _ 3MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	15	0	5.28	4.93	5.22	13	PASS
16QAM	15	0	6.20	6.00	6.23	13	PASS
Test Band: 5 _ 5MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	25	0	4.87	4.43	4.72	13	PASS
16QAM	25	0	6.14	5.83	6.03	13	PASS
Test Band: 5 _ 10MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	50	0	4.52	4.75	4.67	13	PASS
16QAM	50	0	6.46	6.41	6.52	13	PASS

LTE Band 7

Test Band: 7 _ 5MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	25	0	4.20	4.32	4.29	13	PASS
16QAM	25	0	5.51	5.59	5.59	13	PASS
Test Band: 7 _ 10MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	50	0	4.67	4.64	4.67	13	PASS
16QAM	50	0	6.20	6.20	6.38	13	PASS
Test Band: 7 _ 15MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	75	0	6.14	6.17	6.17	13	PASS
16QAM	75	0	6.93	6.96	6.90	13	PASS
Test Band: 7 _ 20MHz Bandwidth							
Test Mode	RB Allocation		Test result (dB)			Limit (dB)	Verdict
	Size	Offset	LCH	MCH	HCH		
QPSK	100	0	6.84	6.93	6.96	13	PASS
16QAM	100	0	7.30	7.30	7.30	13	PASS

3.3. Occupy Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer
2. RBW was set to about 1% of emission BW, $VBW \geq 3$ times RBW.
3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

TEST RESULTS

Please see the Appendix for every tested Band.

3.4. Out of band emission at antenna terminals

LIMIT

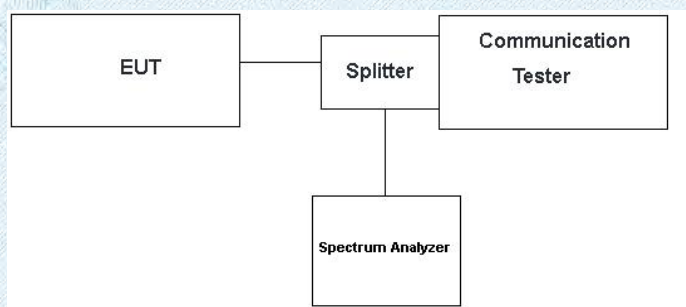
FDD Band 2: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

FDD Band 4: The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

FDD Band 5: 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.

FDD Band 7: 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.

TEST CONFIGURATION



TEST PROCEDURE

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. The resolution bandwidth of the spectrum analyzer was set at 1MHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.
3. For the out of band: Set the RBW = 1MHz VBW \geq 3 times RBW, Start=30MHz, Stop= 10th harmonic.

TEST RESULTS

Please see the Appendix for every tested Band.

3.5. Band Edge compliance

LIMIT

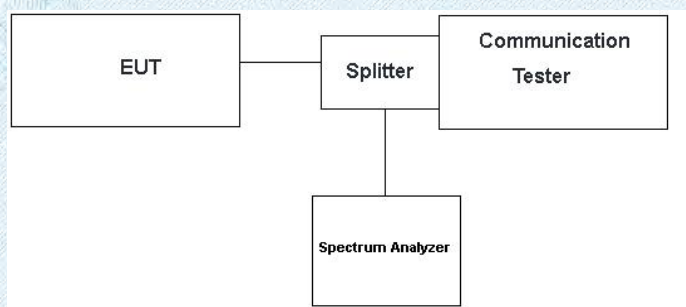
FDD Band 2: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

FDD Band 4: The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

FDD Band 5: 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.

FDD Band 7: 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.

TEST CONFIGURATION



TEST PROCEDURE

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
2. RBW was set to about 1% of emission BW, $VBW \geq 3$ times RBW.

TEST RESULTS

Please see the Appendix for every tested Band.

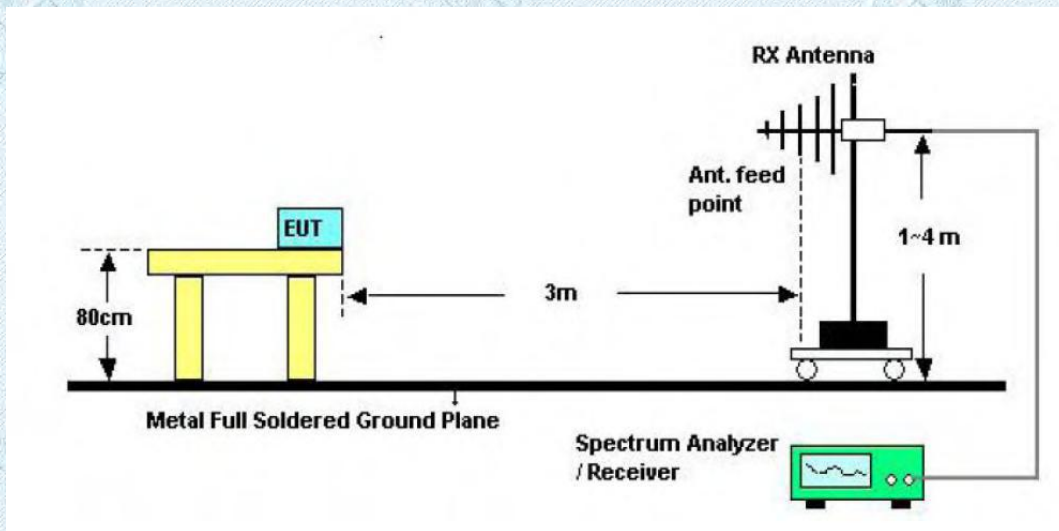
3.6. Radiated Power Measurement

LIMIT

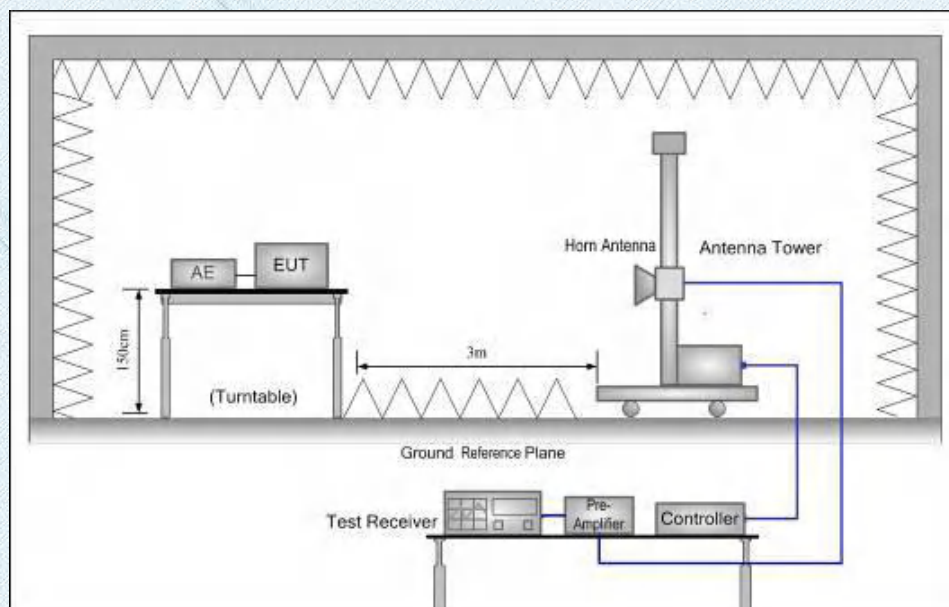
- LTE FDD Band 2: 2W(33dBm) EIRP
- LTE FDD Band 4: 1W(30dBm) EIRP
- LTE FDD Band 5: 7W(38.45dBm) ERP
- LTE FDD Band 7: 2W(33dBm) EIRP

TEST CONFIGURATION

For the actual test configuration, please refer to the related Item – EUT Test Photos.



Below 1GHz



Above 1GHz

TEST PROCEDURE

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, and the maximum value of the receiver should be recorded as (Pr).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. An amplifier should be connected to the Signal Source output port. And the cable should be connecting between the Amplifier and the Substitution Antenna. The cable loss (Pcl), the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + Ga
We used N5182A microwave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substitution test; The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST RESULTS

Remark:

1. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "Z axis" position was the worst, and test data recorded in this report.

LTE Band 2 - 1.4MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	25.75	19.53	≤33	PASS
	Mid	25.47	19.06		
	High	24.97	19.21		
16QAM	Low	25.12	19.61		
	Mid	25.14	18.99		
	High	25.45	19.14		

LTE Band 2 - 3MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	25.53	19.32	≤33	PASS
	Mid	25.77	19.42		
	High	24.32	19.51		
16QAM	Low	25.21	19.25		
	Mid	25.29	19.3		
	High	24.35	19.52		

LTE Band 2 - 5MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	25.83	19.55	≤33	PASS
	Mid	25.52	19.65		
	High	24.51	19.28		
16QAM	Low	25.41	19.55		
	Mid	25.09	19.65		
	High	24.85	19.35		

LTE Band 2 - 10MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	25.21	19.55	≤33	PASS
	Mid	25.7	19.54		
	High	25.65	19.13		
16QAM	Low	25.17	19.21		
	Mid	25.83	19.61		
	High	25.54	19		

LTE Band 2 - 15MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	25.4	19.21	≤33	PASS
	Mid	25.1	19.19		
	High	25.88	19.6		
16QAM	Low	24.9	19.21		
	Mid	25.1	19.19		
	High	25.75	19.6		

LTE Band 2 - 20MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	25.45	19.56	≤33	PASS
	Mid	25.7	19.59		
	High	25.33	19.14		
16QAM	Low	24.98	19.46		
	Mid	25	19.41		
	High	25.4	19.16		

LTE Band 4 - 1.4MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	22.95	18.62	≤30	PASS
	Mid	25.78	19.75		
	High	22.95	17.96		
16QAM	Low	22.85	17.74		
	Mid	25.97	19.56		
	High	21.63	17.95		

LTE Band 4 - 3MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	23.62	18.21	≤30	PASS
	Mid	25.86	18.86		
	High	22.75	17.74		
16QAM	Low	22.45	17.84		
	Mid	25.55	19.45		
	High	22.63	17.65		

LTE Band 4 - 5MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	22.86	17.65	≤30	PASS
	Mid	25.75	19.75		
	High	22.42	17.56		
16QAM	Low	22.42	17.85		
	Mid	25.63	19.95		
	High	22.74	17.45		

LTE Band 4 - 10MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	22.84	17.23	≤30	PASS
	Mid	24.96	19.42		
	High	22.74	17.63		
16QAM	Low	22.41	16.35		
	Mid	24.53	19.41		
	High	22.45	17.26		

LTE Band 4 - 15MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	22.74	18.12	≤30	PASS
	Mid	22.63	17.63		
	High	22.75	17.85		
16QAM	Low	22.84	17.74		
	Mid	22.56	17.51		
	High	22.88	17.65		

LTE Band 4 - 20MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	22.47	18.54	≤30	PASS
	Mid	22.96	17.84		
	High	22.84	17.45		
16QAM	Low	22.26	17.56		
	Mid	22.41	17.41		
	High	22.96	17.52		

LTE Band 5 - 1.4MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	23.68	19.42	≤38.45	PASS
	Mid	23.61	20.02		
	High	25.49	21.88		
16QAM	Low	23.6	19.49		
	Mid	22.67	19.95		
	High	25.2	21.94		

LTE Band 5 - 3MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	23.75	20.03	≤38.45	PASS
	Mid	23.68	19.68		
	High	25.66	21.53		
16QAM	Low	22.47	19.97		
	Mid	23.26	19.57		
	High	25.68	21.54		

LTE Band 5 - 5MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	26.86	19.88	≤38.45	PASS
	Mid	25.9	19.97		
	High	25.92	19.6		
16QAM	Low	26.15	20.03		
	Mid	26.46	19.84		
	High	26.45	19.72		

LTE Band 5 - 10MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	23.55	19.28	≤38.45	PASS
	Mid	23.59	19.57		
	High	23.63	20.01		
16QAM	Low	23.34	20.21		
	Mid	23.15	19.72		
	High	23.46	19.83		

LTE Band 7 - 5MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	23.33	20.74	≤33	PASS
	Mid	23.79	20.87		
	High	23.87	20.42		
16QAM	Low	23.19	20.86		
	Mid	23.89	20.76		
	High	23.38	20.52		

LTE Band 7 - 10MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	23.76	20.61	≤33	PASS
	Mid	23.33	20.29		
	High	23.48	20.11		
16QAM	Low	23.28	20.51		
	Mid	22.61	20.11		
	High	23.55	20.12		

LTE Band 7 - 15MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	23.54	21.0	≤33	PASS
	Mid	23.15	20.44		
	High	23.34	20.61		
16QAM	Low	23.73	20.96		
	Mid	23.01	20.47		
	High	23.2	20.58		

LTE Band 7 - 20MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	23.72	20.09	≤33	PASS
	Mid	23.82	20.5		
	High	23.42	20.53		
16QAM	Low	23.52	20.91		
	Mid	23.67	20.51		
	High	23.21	20.55		

3.7. Radiated Spurious Emission

LIMIT

FDD Band 2: 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.

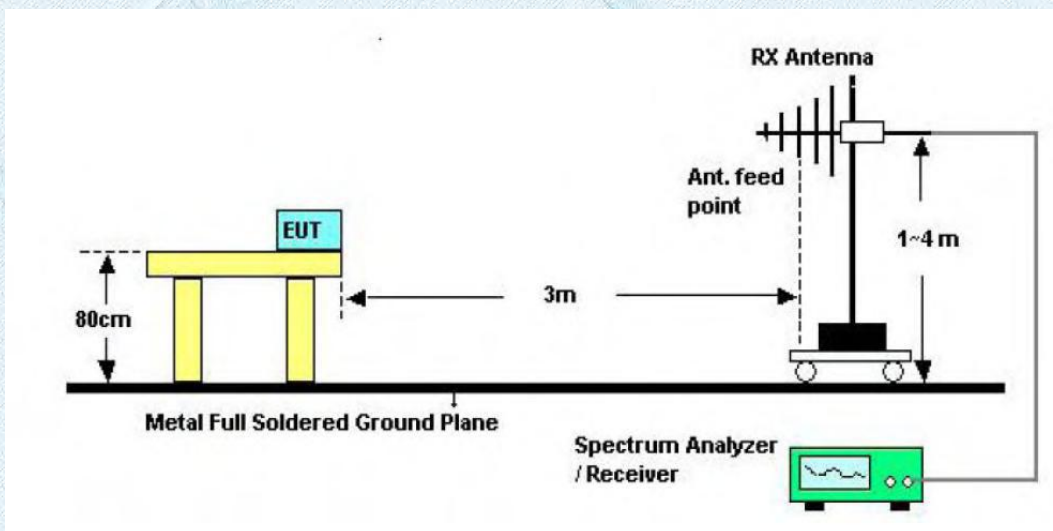
FDD Band 4: The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

FDD Band 5: 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.

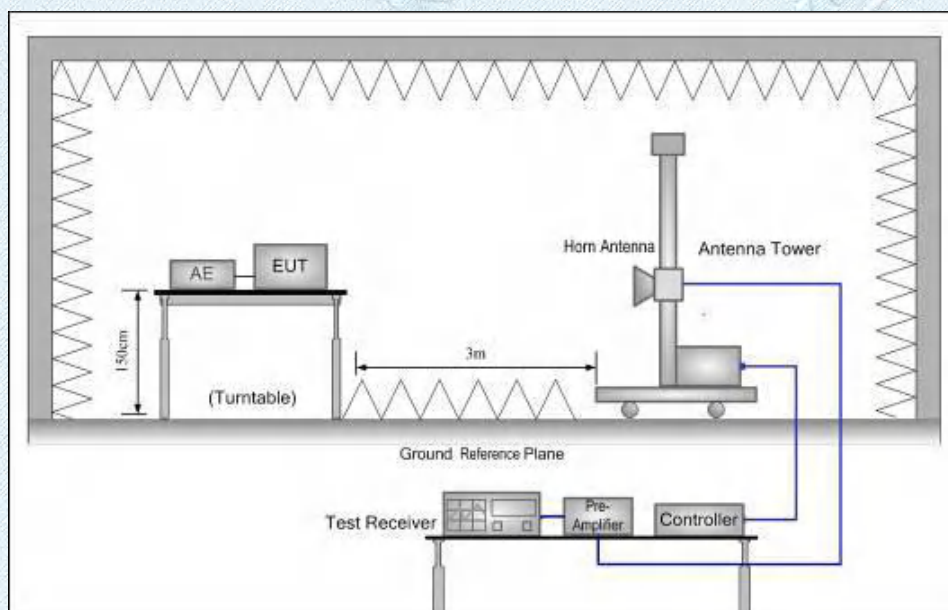
FDD Band 7: For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ 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.

TEST CONFIGURATION

For the actual test configuration, please refer to the related Item – EUT Test Photos.



Below 1GHz



Above 1GHz

TEST PROCEDURE

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, and the maximum value of the receiver should be recorded as (Pr).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. An amplifier should be connected to the Signal Source output port. And the cable should be connecting between the Amplifier and the Substitution Antenna. The cable loss (Pcl), the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + Ga
We used SMF100A microwave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substitution test; The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.
8. Test frequency range should extend to 10th harmonic of highest fundamental frequency.

TEST RESULTS

Remark:

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "Z axis" position was the worst, and test data recorded in this report.

Measured data (worst case):

Band 2 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
1.4MHz	QPSK	L	3701.40	-43.69	Vertical	-13.00	Pass
			5552.10	-41.27	Vertical		
			3701.40	-43.82	Horizontal		
			5552.10	-43.03	Horizontal		
1.4MHz	QPSK	M	3760.00	-43.44	Vertical	-13.00	Pass
			5640.00	-41.32	Vertical		
			3760.00	-43.77	Horizontal		
			5640.00	-42.98	Horizontal		
1.4MHz	QPSK	H	3818.60	-43.53	Vertical	-13.00	Pass
			5727.90	-41.41	Vertical		
			3818.60	-43.77	Horizontal		
			5727.90	-42.97	Horizontal		
3MHz	QPSK	L	3703.00	-42.76	Vertical	-13.00	Pass
			5554.50	-41.53	Vertical		
			3703.00	-40.91	Horizontal		
			5554.50	-41.60	Horizontal		
3MHz	QPSK	M	3760.00	-40.86	Vertical	-13.00	Pass
			5640.00	-41.39	Vertical		
			3760.00	-40.69	Horizontal		
			5640.00	-40.77	Horizontal		
3MHz	QPSK	H	3817.00	-41.75	Vertical	-13.00	Pass
			5725.50	-40.98	Vertical		
			3817.00	-41.33	Horizontal		
			5725.50	-40.89	Horizontal		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

Band 2 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
5MHz	QPSK	L	3705.00	-41.81	Vertical	-13.00	Pass
			5557.50	-49.96	Vertical		
			3705.00	-45.78	Horizontal		
			5557.50	-53.21	Horizontal		
5MHz	QPSK	M	3760.00	-41.03	Vertical	-13.00	Pass
			5640.00	-47.65	Vertical		
			3760.00	-40.11	Horizontal		
			5640.00	-54.32	Horizontal		
5MHz	QPSK	H	3815.00	-41.99	Vertical	-13.00	Pass
			5722.50	-47.64	Vertical		
			3815.00	-40.73	Horizontal		
			5722.50	-53.50	Horizontal		
10MHz	QPSK	L	3710.00	-41.74	Vertical	-13.00	Pass
			5565.00	-48.90	Vertical		
			3710.00	-42.67	Horizontal		
			5565.00	-53.77	Horizontal		
10MHz	QPSK	M	3760.00	-42.57	Vertical	-13.00	Pass
			5640.00	-48.54	Vertical		
			3760.00	-41.53	Horizontal		
			5640.00	-52.35	Horizontal		
10MHz	QPSK	H	3810.00	-40.93	Vertical	-13.00	Pass
			5715.00	-47.70	Vertical		
			3810.00	-40.07	Horizontal		
			5715.00	-52.21	Horizontal		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

Band 2 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
15MHz	QPSK	L	3715.00	-42.67	Vertical	-13.00	Pass
			5572.50	-49.49	Vertical		
			3715.00	-45.46	Horizontal		
			5572.50	-52.83	Horizontal		
15MHz	QPSK	M	3760.00	-42.43	Vertical	-13.00	Pass
			5640.00	-49.95	Vertical		
			3760.00	-42.28	Horizontal		
			5640.00	-52.70	Horizontal		
15MHz	QPSK	H	3805.00	-42.92	Vertical	-13.00	Pass
			5707.50	-48.36	Vertical		
			3805.00	-40.02	Horizontal		
			5707.50	-54.68	Horizontal		
20MHz	QPSK	L	3720.00	-40.12	Vertical	-13.00	Pass
			5580.00	-49.69	Vertical		
			3720.00	-40.21	Horizontal		
			5580.00	-53.78	Horizontal		
20MHz	QPSK	M	3760.00	-41.23	Vertical	-13.00	Pass
			5640.00	-49.16	Vertical		
			3760.00	-41.74	Horizontal		
			5640.00	-54.93	Horizontal		
20MHz	QPSK	H	3800.00	-42.69	Vertical	-13.00	Pass
			5700.00	-47.03	Vertical		
			3800.00	-42.46	Horizontal		
			5700.00	-52.60	Horizontal		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

Band 4 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
1.4MHz	QPSK	L	3421.40	-41.05	Vertical	-13.00	Pass
			5132.10	-48.03	Vertical		
			3421.40	-47.21	Horizontal		
			5132.10	-52.76	Horizontal		
1.4MHz	QPSK	M	3465.00	-40.08	Vertical	-13.00	Pass
			5197.50	-49.60	Vertical		
			3465.00	-40.31	Horizontal		
			5197.50	-54.22	Horizontal		
1.4MHz	QPSK	H	3508.60	-40.44	Vertical	-13.00	Pass
			5262.90	-47.03	Vertical		
			3508.60	-42.29	Horizontal		
			5262.90	-52.55	Horizontal		
3MHz	QPSK	L	3423.00	-42.23	Vertical	-13.00	Pass
			5134.50	-49.65	Vertical		
			3423.00	-41.11	Horizontal		
			5134.50	-54.11	Horizontal		
3MHz	QPSK	M	3465.00	-42.62	Vertical	-13.00	Pass
			5197.50	-47.23	Vertical		
			3465.00	-41.43	Horizontal		
			5197.50	-52.28	Horizontal		
3MHz	QPSK	H	3507.00	-42.76	Vertical	-13.00	Pass
			5260.50	-48.14	Vertical		
			3507.00	-41.68	Horizontal		
			5260.50	-53.41	Horizontal		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

Band 4 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
5MHz	QPSK	L	3425.00	-42.15	Vertical	-13.00	Pass
			5137.50	-49.39	Vertical		
			3425.00	-47.88	Horizontal		
			5137.50	-54.68	Horizontal		
5MHz	QPSK	M	3465.00	-42.35	Vertical	-13.00	Pass
			5197.50	-49.81	Vertical		
			3465.00	-42.48	Horizontal		
			5197.50	-53.36	Horizontal		
5MHz	QPSK	H	3505.00	-40.51	Vertical	-13.00	Pass
			5257.50	-47.80	Vertical		
			3505.00	-42.37	Horizontal		
			5257.50	-52.68	Horizontal		
10MHz	QPSK	L	3430.00	-40.04	Vertical	-13.00	Pass
			5145.00	-48.35	Vertical		
			3430.00	-41.11	Horizontal		
			5145.00	-53.06	Horizontal		
10MHz	QPSK	M	3465.00	-40.22	Vertical	-13.00	Pass
			5197.50	-48.82	Vertical		
			3465.00	-42.05	Horizontal		
			5197.50	-52.63	Horizontal		
10MHz	QPSK	H	3500.00	-40.75	Vertical	-13.00	Pass
			5250.00	-49.82	Vertical		
			3500.00	-41.08	Horizontal		
			5250.00	-54.25	Horizontal		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

Band 4 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
15MHz	QPSK	L	3435.00	-41.05	Vertical	-13.00	Pass
			5152.50	-47.94	Vertical		
			3435.00	-47.16	Horizontal		
			5152.50	-52.70	Horizontal		
15MHz	QPSK	M	3465.00	-40.08	Vertical	-13.00	Pass
			5197.50	-49.51	Vertical		
			3465.00	-40.17	Horizontal		
			5197.50	-54.11	Horizontal		
15MHz	QPSK	H	3495.00	-40.27	Vertical	-13.00	Pass
			5242.50	-46.94	Vertical		
			3495.00	-42.27	Horizontal		
			5242.50	-52.38	Horizontal		
20MHz	QPSK	L	3440.00	-42.04	Vertical	-13.00	Pass
			5160.00	-49.60	Vertical		
			3440.00	-41.09	Horizontal		
			5160.00	-54.09	Horizontal		
20MHz	QPSK	M	3465.00	-42.51	Vertical	-13.00	Pass
			5197.50	-47.16	Vertical		
			3465.00	-41.34	Horizontal		
			5197.50	-52.10	Horizontal		
20MHz	QPSK	H	3490.00	-42.69	Vertical	-13.00	Pass
			5235.00	-48.01	Vertical		
			3490.00	-41.63	Horizontal		
			5235.00	-53.34	Horizontal		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

Band 5 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
1.4MHz	QPSK	L	3421.40	-42.10	Vertical	-13.00	Pass
			5132.10	-49.34	Vertical		
			3421.40	-47.84	Horizontal		
			5132.10	-54.54	Horizontal		
1.4MHz	QPSK	M	3465.00	-42.25	Vertical	-13.00	Pass
			5197.50	-49.78	Vertical		
			3465.00	-42.37	Horizontal		
			5197.50	-53.31	Horizontal		
1.4MHz	QPSK	H	3508.60	-40.47	Vertical	-13.00	Pass
			5262.90	-47.65	Vertical		
			3508.60	-42.29	Horizontal		
			5262.90	-52.63	Horizontal		
3MHz	QPSK	L	3423.00	-40.04	Vertical	-13.00	Pass
			5134.50	-48.34	Vertical		
			3423.00	-41.06	Horizontal		
			5134.50	-52.89	Horizontal		
3MHz	QPSK	M	3465.00	-40.20	Vertical	-13.00	Pass
			5197.50	-48.72	Vertical		
			3465.00	-42.04	Horizontal		
			5197.50	-52.53	Horizontal		
3MHz	QPSK	H	3507.00	-40.57	Vertical	-13.00	Pass
			5260.50	-49.78	Vertical		
			3507.00	-41.05	Horizontal		
			5260.50	-54.15	Horizontal		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

Band 5 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
5MHz	QPSK	L	3425.00	-42.05	Vertical	-13.00	Pass
			5137.50	-49.21	Vertical		
			3425.00	-47.83	Horizontal		
			5137.50	-54.58	Horizontal		
5MHz	QPSK	M	3465.00	-42.21	Vertical	-13.00	Pass
			5197.50	-49.63	Vertical		
			3465.00	-42.36	Horizontal		
			5197.50	-53.16	Horizontal		
5MHz	QPSK	H	3505.00	-40.44	Vertical	-13.00	Pass
			5257.50	-47.61	Vertical		
			3505.00	-42.27	Horizontal		
			5257.50	-52.55	Horizontal		
10MHz	QPSK	L	3430.00	-39.92	Vertical	-13.00	Pass
			5145.00	-48.16	Vertical		
			3430.00	-40.98	Horizontal		
			5145.00	-52.89	Horizontal		
10MHz	QPSK	M	3465.00	-40.09	Vertical	-13.00	Pass
			5197.50	-48.75	Vertical		
			3465.00	-41.91	Horizontal		
			5197.50	-52.46	Horizontal		
10MHz	QPSK	H	3500.00	-40.60	Vertical	-13.00	Pass
			5250.00	-49.68	Vertical		
			3500.00	-41.04	Horizontal		
			5250.00	-54.23	Horizontal		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

Band 7 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
5MHz	QPSK	L	5005.00	-41.68	Vertical	-25.00	Pass
			7507.50	-49.01	Vertical		
			5005.00	-47.08	Horizontal		
			7507.50	-54.18	Horizontal		
5MHz	QPSK	M	5070.00	-41.85	Vertical	-25.00	Pass
			7605.00	-49.71	Vertical		
			5070.00	-41.99	Horizontal		
			7605.00	-52.59	Horizontal		
5MHz	QPSK	H	5135.00	-40.34	Vertical	-25.00	Pass
			7702.50	-47.76	Vertical		
			5135.00	-41.89	Horizontal		
			7702.50	-52.49	Horizontal		
10MHz	QPSK	L	5010.00	-33.37	Vertical	-25.00	Pass
			7515.00	-48.18	Vertical		
			5010.00	-40.89	Horizontal		
			7515.00	-52.93	Horizontal		
10MHz	QPSK	M	5070.00	-39.85	Vertical	-25.00	Pass
			7605.00	-48.34	Vertical		
			5070.00	-41.79	Horizontal		
			7605.00	-52.58	Horizontal		
10MHz	QPSK	H	5130.00	-40.40	Vertical	-25.00	Pass
			7695.00	-49.58	Vertical		
			5130.00	-40.98	Horizontal		
			7695.00	-53.95	Horizontal		

Remark:

1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

Band 7 Radiated Spurious Emissions							
Bandwidth	Modulation	Test Channel	Spurious Emission			Limit (dBm)	Result
			Frequency	Level (dBm)	Polarization		
15MHz	QPSK	L	5015.00	-42.30	Vertical	-25.00	Pass
			7522.50	-49.56	Vertical		
			5015.00	-46.63	Horizontal		
			7522.50	-52.78	Horizontal		
15MHz	QPSK	M	5070.00	-42.30	Vertical	-25.00	Pass
			7605.00	-48.33	Vertical		
			5070.00	-40.69	Horizontal		
			7605.00	-52.82	Horizontal		
15MHz	QPSK	H	5125.00	-41.62	Vertical	-25.00	Pass
			7687.50	-48.84	Vertical		
			5125.00	-41.81	Horizontal		
			7687.50	-53.09	Horizontal		
20MHz	QPSK	L	5020.00	-41.99	Vertical	-25.00	Pass
			7530.00	-49.44	Vertical		
			5020.00	-41.31	Horizontal		
			7530.00	-54.43	Horizontal		
20MHz	QPSK	M	5070.00	-42.25	Vertical	-25.00	Pass
			7605.00	-48.84	Vertical		
			5070.00	-41.31	Horizontal		
			7605.00	-52.20	Horizontal		
20MHz	QPSK	H	5120.00	-42.09	Vertical	-25.00	Pass
			7680.00	-49.23	Vertical		
			5120.00	-40.51	Horizontal		
			7680.00	-54.29	Horizontal		

Remark:

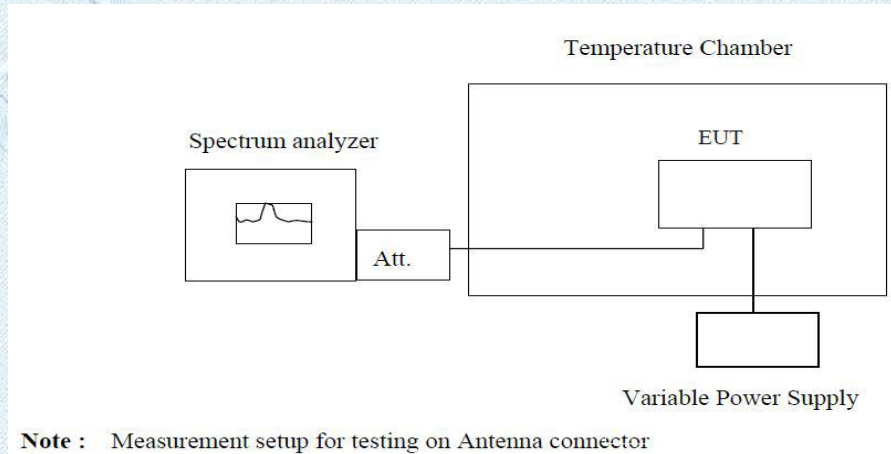
1. The emission behavior belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit above 10dB and not show in test report.

3.8. Frequency stability

LIMIT

Cellular Band: $\pm 2.5\text{ppm}$ PCS Band: Within the authorized frequency block

TEST CONFIGURATION



Note : Measurement setup for testing on Antenna connector

TEST PROCEDURE

1. The equipment under test was connected to an external DC power supply and input rated voltage.
2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
3. The EUT was placed inside the temperature chamber.
4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.
5. Turn EUT off and set the chamber temperature to -30°C . After the temperature stabilized for approximately 30 minutes recorded the frequency.
6. Repeat step measure with 10°C increased per stage until the highest temperature of $+55^{\circ}\text{C}$ reached.
7. Reduce the input voltage to specified extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

TEST RESULTS

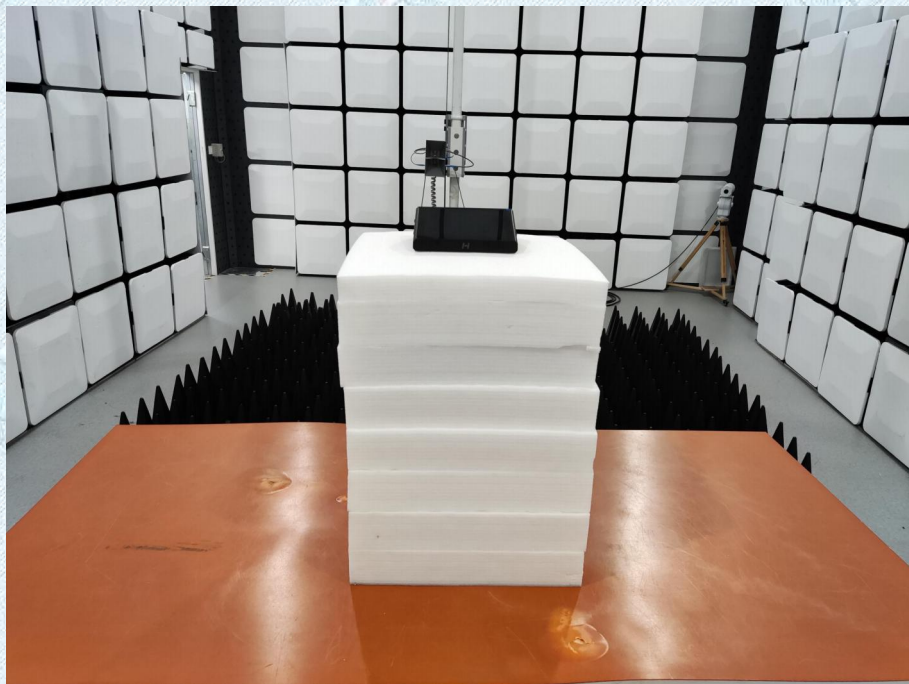
Please see the Appendix for every tested Band.

4. EUT TEST PHOTOS

Radiated Spurious Emission Measurement (Below 1GHz)



Radiated Spurious Emission Measurement (Above 1GHz)



RF Conducted



5. PHOTOGRAPHS OF EUT CONSTRUCTIONAL

Please Refer to the External attachment for internal photos and external photos.

*****THE END*****