

FCC TEST REPORT (PART 24)



Applicant:	Gosuncn Technology Group Co., Ltd.
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Manufacturer or Supplier:	Gosuncn Technology Group Co., Ltd.
Address:	6F, 2819 KaiChuang Blvd., Science Town, Huangpu District, Guangzhou City, Guangdong, China.
Product:	Wearable
Brand Name:	GOSUNCN
Model Name:	GT105
FCC ID:	2APNR-GT105
Date of tests:	Dec. 28, 2019 ~ Jan. 07, 2020

The tests have been carried out according to the requirements of the following standard:

- FCC PART 24, Subpart E** **ANSI C63.26-2015**
 ANSI/TIA/EIA-603-D **ANSI/TIA/EIA-603-E**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Alex Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Jan. 08, 2020	 Date: Jan. 08, 2020

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BUREAU
VERITAS

Test Report No.: RF191217W002-2

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF190123W002-3	Original release	Mar. 26, 2019
RF191217W002-2	Based on the original product changing product name, SW version, changing LTE B12 to LTE B13, delete LTE B5 and remove 3G feature by software. In this report verified Conducted power and RSE worst case, other test data is refer to the original test report RF190123W002-3 (FCC ID: 2APNR-GT105)	Jan. 08, 2020



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2		
STANDARD SECTION	TEST TYPE	RESULT
2.1046 24.232	Equivalent Isotropic Radiated Power	PASS
2.1055 24.235	Frequency Stability	PASS
2.1049 24.238(b)	Occupied Bandwidth	PASS
24.232(d)	Peak to average ratio	PASS
24.238(b)	Band Edge Measurements	PASS
2.1051 24.238	Conducted Spurious Emissions	PASS
2.1053 24.238	Radiated Spurious Emissions	PASS

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
Effective Radiated Power	±4.48dB
Frequency Stability	± 39.27Hz
Radiated emissions	±4.48dB
Conducted emissions	±2 dB
Occupied Channel Bandwidth	±21.7KHz
Band Edge Measurements	±4.48dB
Peak to average ratio	±0.76dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 26,19	Feb. 25,20
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 26,19	Feb. 25,20
Bilog Antenna 1	ETS-LINDGREN	3143B	00161964	Feb. 26,19	Feb. 25,20
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Feb. 26,19	Feb. 25,20
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Feb. 26,19	Feb. 25,20
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Nov. 24, 19	Nov. 23, 20
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Nov. 24, 19	Nov. 23, 20
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 26,19	Feb. 25,20
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jun. 24,19	Jun. 23,20
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Feb. 26,19	Feb. 25,20
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SM A	1505	Jun. 24,19	Jun. 23,20
Power Meter	Anritsu	ML2495A	1506002	Feb. 26,19	Feb. 25,20
Power Sensor	Anritsu	MA2411B	1339352	Feb. 26,19	Feb. 25,20
Humid & Temp Programmable Tester	Juyi	ITH-120-45-CP-AR	IAA1504-001	Jun. 24,19	Jun. 23,20
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 26,19	Feb. 25,20

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
 3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wearable	
BRAND NAME	GOSUNCN	
MODEL NAME	GT105	
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.8Vdc (Li-ion, battery)	
MODULATION TYPE	LTE Band 2: QPSK, 16QAM	
FREQUENCY RANGE	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1909.3MHz
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz
MAX. EIRP POWER	LTE Band 2 Channel Bandwidth: 1.4MHz	195mW
	LTE Band 2 Channel Bandwidth: 3MHz	196mW
	LTE Band 2 Channel Bandwidth: 5MHz	197mW
	LTE Band 2 Channel Bandwidth: 10MHz	198mW
	LTE Band 2 Channel Bandwidth: 15MHz	200mW
	LTE Band 2 Channel Bandwidth: 20MHz	202mW
EMISSION DESIGNATOR	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D 16QAM: 1M08W7D
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 2M69G7D 16QAM: 2M68W7D
	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 4M48G7D 16QAM: 4M47W7D
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 8M93G7D



	LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 13M4G7D
	LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
ANTENNA TYPE	Fixed Internal antenna with 2.4 gain	
HW VERSION	SD2000.H02	
SW VERSION	EN_K2000VLV1.0.0B01	
ACCESSORY DEVICE	Refer to note as below	
DATA CABLE	USB cable: non-shielded, detachable, 1.0m	

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT was powered by the following adapter:

ADAPTER	
BRAND:	GOSUNCN
MODEL:	RD0501000-USBA-18MG
INPUT:	AC 100-240V, 250mA
OUTPUT:	DC 5V, 1000mA

- The EUT matched the following USB cable:

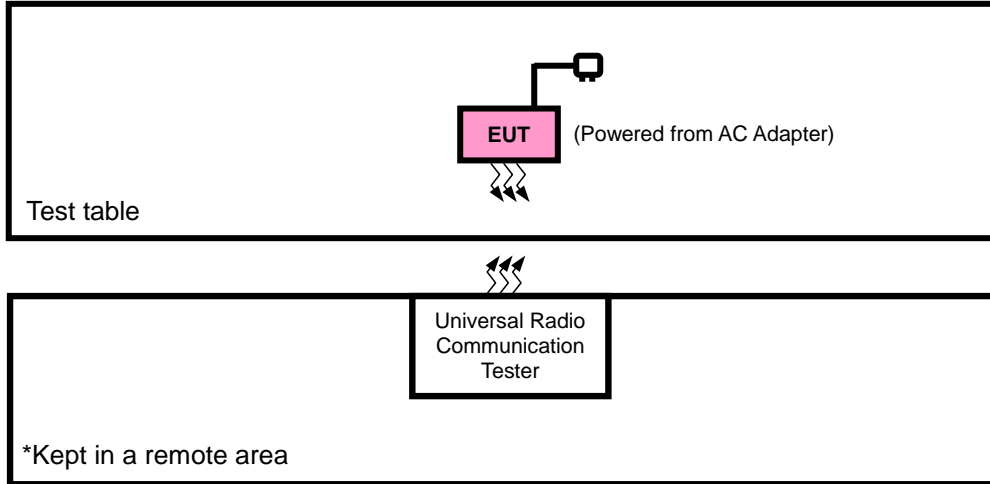
USB CABLE	
BRAND:	Zhanxin Technology Company Ltd.
MODEL:	C-ZX-10104
SIGNAL LINE:	1.0 METER

- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

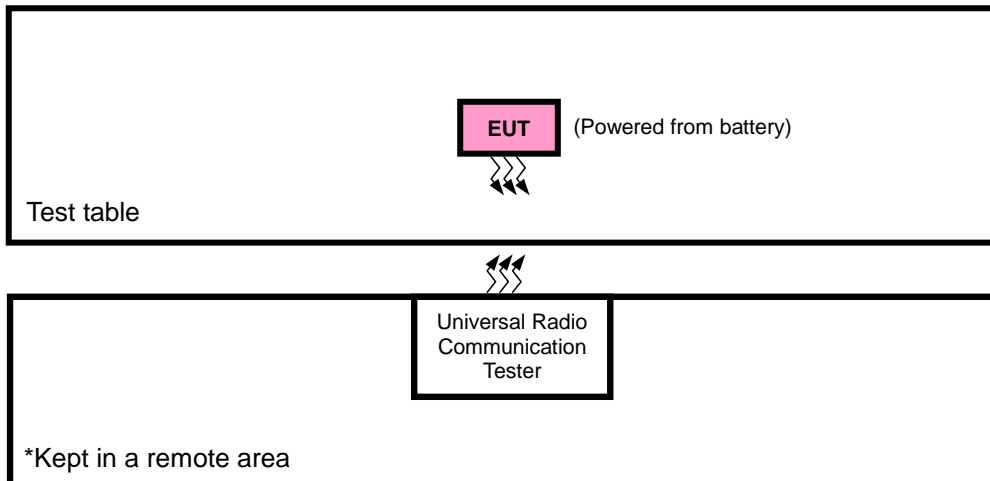


2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR CONDUCTED & E.I.R.P. TEST





2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m
2	AC Line: Unshielded, Detachable 1.5m

NOTE:

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case in EIRP and radiated emission was found when positioned on X-plane for WCDMA/ LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + USB Cable with WCDMA or LTE link
B	EUT + Battery with WCDMA or LTE link



LTE BAND 2

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK	1 RB / 0 RB Offset



Test Report No.: RF191217W002-2

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 57%RH	3.8Vdc from Battery	Tony Xiong
RADIATED EMISSION	23deg. C, 70%RH	5Vdc from adapter	Tony Xiong



2.5 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.



3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile and portable stations are limited to 2 watts EIRP.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$ERP \text{ or } EIRP = P_{Meas} + G_T - L_C$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

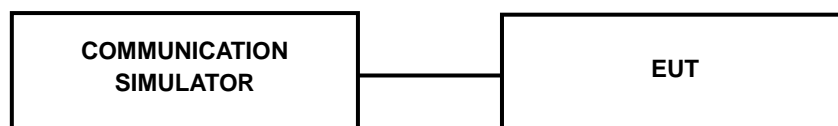
L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with WCDMA link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

CONDUCTED POWER MEASUREMENT:





3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

The test results verified worst case, more detail please refer to Reports No.:
RF190123W002-3 (FCC ID: 2APNR-GT105)



LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193	3GPP MPR (dB)
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz	
1.4MHz	QPSK	1	0	20.42	20.32	20.49	0
		1	2	20.37	20.29	20.48	0
		1	5	20.33	20.25	20.42	0
		3	0	20.41	20.31	20.48	0
		3	1	20.36	20.28	20.47	0
		3	3	20.32	20.24	20.41	0
		6	0	20.18	20.10	20.25	1
	16QAM	1	0	20.20	20.12	20.27	1
		1	2	20.09	20.01	20.16	1
		1	5	19.99	19.91	20.06	1
		3	0	19.56	19.48	19.63	1
		3	1	19.49	19.41	19.56	1
		3	3	19.45	19.37	19.52	1
		6	0	19.41	19.33	19.48	2
BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185	3GPP MPR (dB)
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz	
3 MHz	QPSK	1	0	20.45	20.35	20.52	0
		1	7	20.40	20.32	20.51	0
		1	14	20.36	20.28	20.45	0
		8	0	20.32	20.24	20.39	1
		8	3	20.25	20.17	20.32	1
		8	7	20.24	20.16	20.31	1
		15	0	20.21	20.13	20.28	1
	16QAM	1	0	20.23	20.15	20.30	1
		1	7	20.12	20.04	20.19	1
		1	14	20.02	19.94	20.09	1
		8	0	19.59	19.51	19.66	2
		8	3	19.52	19.44	19.59	2
		8	7	19.48	19.40	19.55	2
		15	0	19.44	19.36	19.51	2



LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175	3GPP MPR (dB)
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz	
5 MHz	QPSK	1	0	20.48	20.38	20.55	0
		1	12	20.43	20.35	20.54	0
		1	24	20.39	20.31	20.48	0
		12	0	20.35	20.27	20.42	1
		12	6	20.28	20.20	20.35	1
		12	13	20.27	20.19	20.34	1
		25	0	20.24	20.16	20.31	1
	16QAM	1	0	20.26	20.18	20.33	1
		1	12	20.15	20.07	20.22	1
		1	24	20.05	19.97	20.12	1
		12	0	19.62	19.54	19.69	2
		12	6	19.55	19.47	19.62	2
		12	13	19.51	19.43	19.58	2
		25	0	19.47	19.39	19.54	2
BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150	3GPP MPR (dB)
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz	
10 MHz	QPSK	1	0	20.50	20.40	20.57	0
		1	24	20.45	20.37	20.56	0
		1	49	20.41	20.33	20.50	0
		25	0	20.37	20.29	20.44	1
		25	12	20.30	20.22	20.37	1
		25	25	20.29	20.21	20.36	1
		50	0	20.26	20.18	20.33	1
	16QAM	1	0	20.28	20.20	20.35	1
		1	24	20.17	20.09	20.24	1
		1	49	20.07	19.99	20.14	1



LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125	3GPP MPR (dB)
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz	
15 MHz	QPSK	1	0	20.53	20.43	20.60	0
		1	37	20.48	20.40	20.59	0
		1	74	20.44	20.36	20.53	0
		36	0	20.40	20.32	20.47	1
		36	19	20.33	20.25	20.40	1
		36	39	20.32	20.24	20.39	1
	75	0	20.29	20.21	20.36	1	
	16QAM	1	0	20.31	20.23	20.38	1
		1	37	20.20	20.12	20.27	1
1		74	20.10	20.02	20.17	1	
BW	Modulation	RB Size	RB Offset	Low CH 18700	Mid CH 18900	High CH 19100	3GPP MPR (dB)
				Frequency 1860 MHz	Frequency 1880 MHz	Frequency 1900 MHz	
20MHz	QPSK	1	0	20.58	20.48	20.65	0
		1	50	20.53	20.45	20.64	0
		1	99	20.49	20.41	20.58	0
		50	0	20.45	20.37	20.52	1
		50	25	20.38	20.30	20.45	1
		50	50	20.37	20.29	20.44	1
	100	0	20.34	20.26	20.41	1	
	16QAM	1	0	20.36	20.28	20.43	1
		1	50	20.25	20.17	20.32	1
1		99	20.15	20.07	20.22	1	



EIRP POWER (dBm)

The test results verified worst case, more detail please refer to Reports No.: RF190123W002-3 (FCC ID: 2APNR-GT105)

LTE BAND 2

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	20.42	2.40	22.82	191.43	2
18900	1880.0	20.32	2.40	22.72	187.07	2
19193	1908.3	20.49	2.40	22.89	194.54	2

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	20.20	2.40	22.60	181.97	2
18900	1880.0	20.12	2.40	22.52	178.65	2
19193	1908.3	20.27	2.40	22.67	184.93	2

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	20.45	2.40	22.85	192.75	2
18900	1880.0	20.35	2.40	22.75	188.36	2
19185	1908.5	20.52	2.40	22.92	195.88	2

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	20.23	2.40	22.63	183.23	2
18900	1880.0	20.15	2.40	22.55	179.89	2
19185	1908.5	20.30	2.40	22.70	186.21	2



CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	20.48	2.40	22.88	194.09	2
18900	1880.0	20.38	2.40	22.78	189.67	2
19175	1907.5	20.55	2.40	22.95	197.24	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	20.26	2.40	22.66	184.50	2
18900	1880.0	20.18	2.40	22.58	181.13	2
19175	1907.5	20.33	2.40	22.73	187.50	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	20.50	2.40	22.90	194.98	2
18900	1880.0	20.40	2.40	22.80	190.55	2
19150	1905.0	20.57	2.40	22.97	198.15	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	20.28	2.40	22.68	185.35	2
18900	1880.0	20.20	2.40	22.60	181.97	2
19150	1905.0	20.35	2.40	22.75	188.36	2



CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	20.53	2.40	22.93	196.34	2
18900	1880.0	20.43	2.40	22.83	191.87	2
19125	1902.5	20.60	2.40	23.00	199.53	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	20.31	2.40	22.71	186.64	2
18900	1880.0	20.23	2.40	22.63	183.23	2
19125	1902.5	20.38	2.40	22.78	189.67	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860.0	20.58	2.40	22.98	198.61	2
18900	1880.0	20.48	2.40	22.88	194.09	2
19100	1900.0	20.65	2.40	23.05	201.84	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860.0	20.36	2.40	22.76	188.8	2
18900	1880.0	20.28	2.40	22.68	185.35	2
19100	1900.0	20.43	2.40	22.83	191.87	2



3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

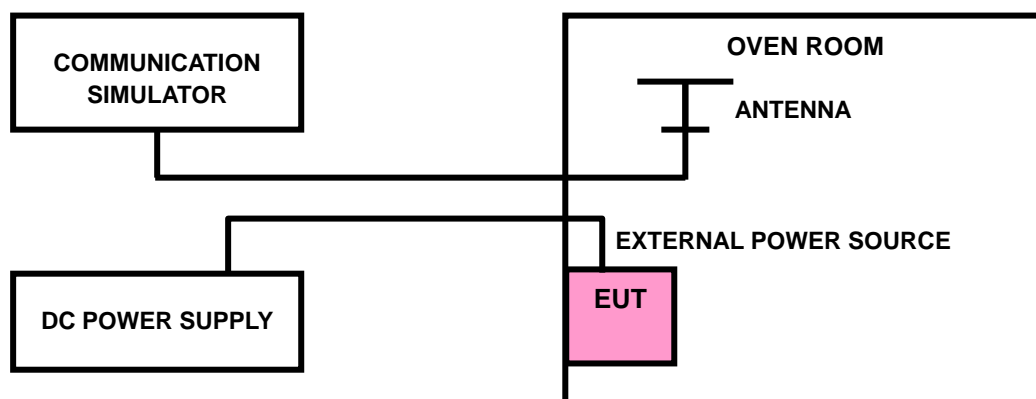
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.2.2 TEST PROCEDURE

- a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

3.2.3 TEST SETUP





BUREAU VERITAS Test Report No.: RF191217W002-2

3.2.4 TEST RESULTS

The test results please refer to Reports No.: RF190123W002-3 (FCC ID: 2APNR-GT105)

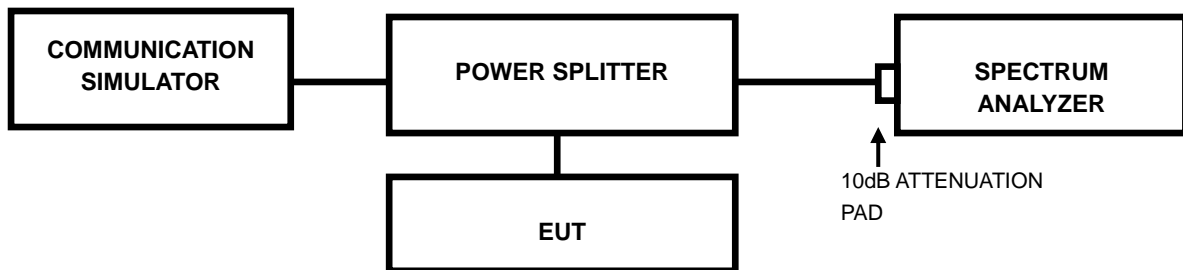


3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 TEST PROCEDURES

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.2 TEST SETUP



3.3.3 TEST RESULTS

The test results please refer to Reports No.: RF190123W002-3 (FCC ID: 2APNR-GT105)

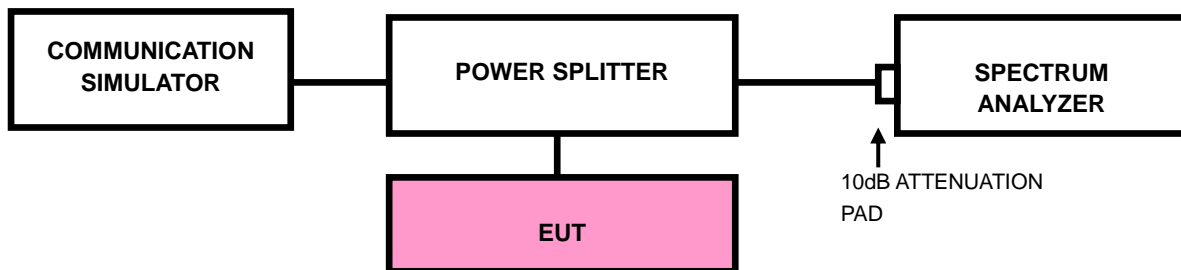


.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

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. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.4.2 TEST SETUP





3.4.3 TEST PROCEDURES

- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 10MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (WCDMA).
- c. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 20kHz and VBW of the spectrum is 100 kHz. (LTE bandwidth 1.4MHz)
- d. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 30kHz and VBW of the spectrum is 100kHz. (LTE bandwidth 3MHz)
- e. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 50kHz and VBW of the spectrum is 200kHz. (LTE bandwidth 5MHz)
- f. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz. (LTE bandwidth 10MHz)
- g. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 15MHz)
- h. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 20MHz)
- i. Record the max trace plot into the test report.

3.4.4. TEST RESULTS

The test results please refer to Reports No.: RF190123W002-3 (FCC ID: 2APNR-GT105)



3.5 CONDUCTED SPURIOUS EMISSIONS

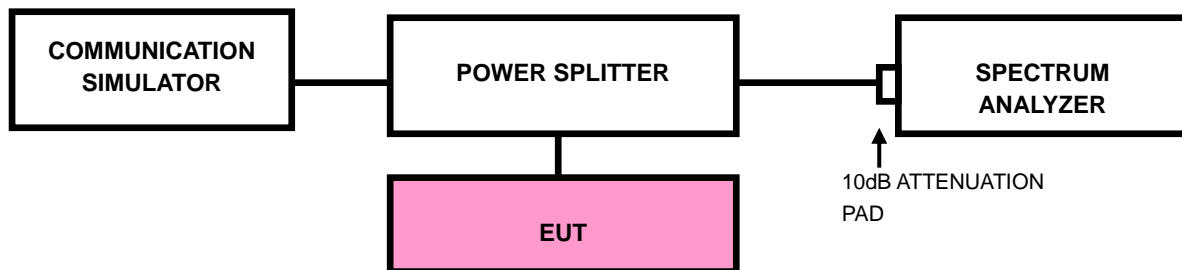
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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. The emission limit equal to -13dBm .

3.5.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 9 kHz to 19.1GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP



5.4 TEST RESULTS

The test results please refer to Reports No.: RF190123W002-3 (FCC ID: 2APNR-GT105)



.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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. The emission limit equal to -13dBm .

3.6.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G
- c. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$.

NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

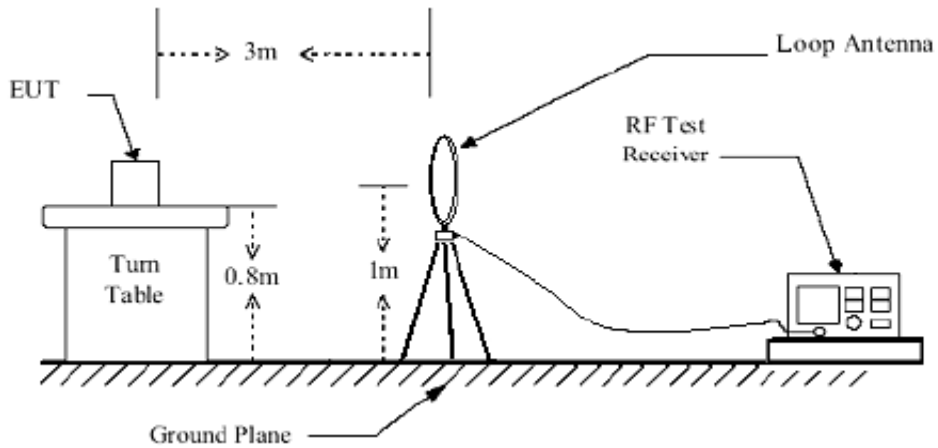
3.6.3 DEVIATION FROM TEST STANDARD

No deviation

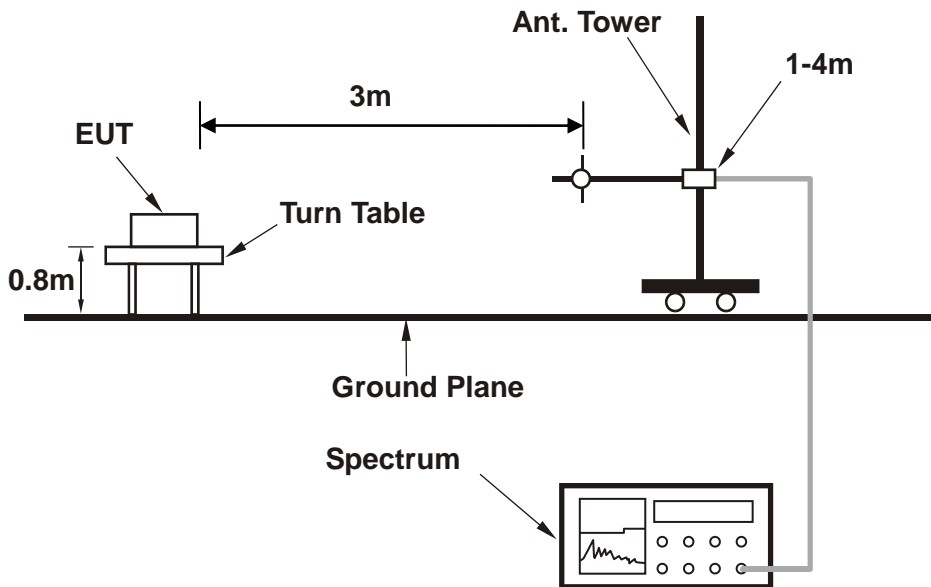


3.6.4 TEST SETUP

<Below 30MHz>

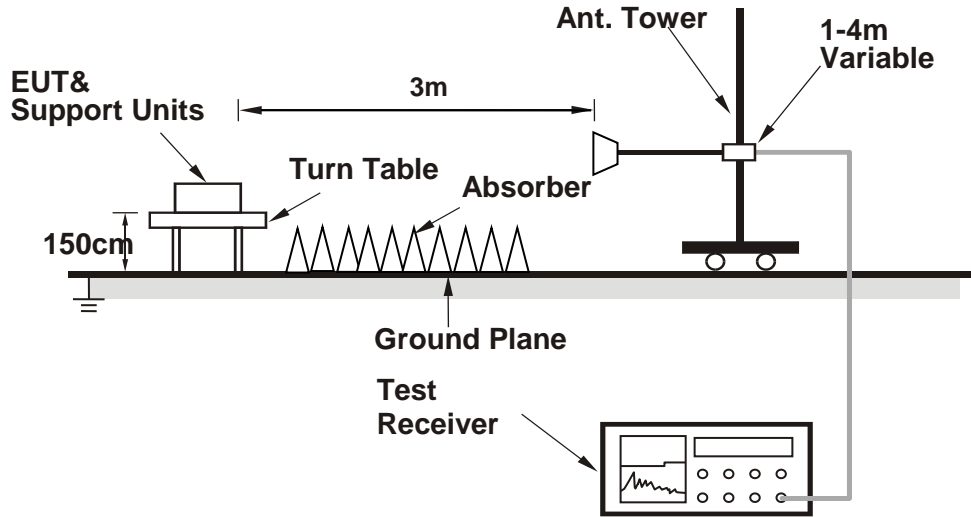


< Frequency Range 30MHz~1GHz >





< Frequency Range above 1GHz >



For the actual test configuration, please refer to the attached file (Test Setup Photo).



3.6.5 TEST RESULTS

The test results verified worst case, more detail please refer to Reports No.: RF190123W002-3 (FCC ID: 2APNR-GT105)

ABOVE 1GHz DATA

Note: For higher frequency, the emission is too low to be detected.

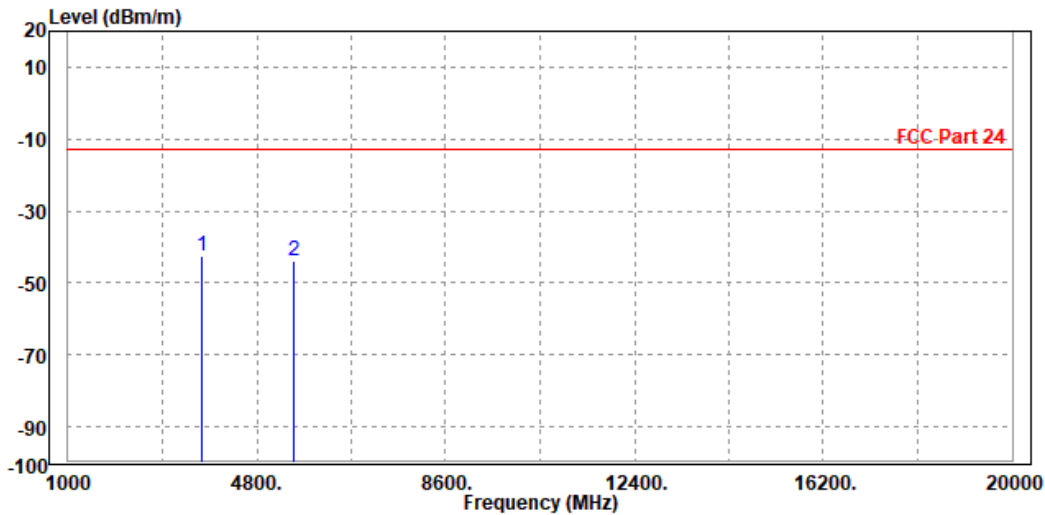
LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH 18607

MODE	TX channel 18607	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3698.000	-42.50	-51.28	-13.00	-29.50	8.78	Peak	Horizontal
2	5552.100	-43.81	-54.00	-13.00	-30.81	10.19	Peak	Horizontal



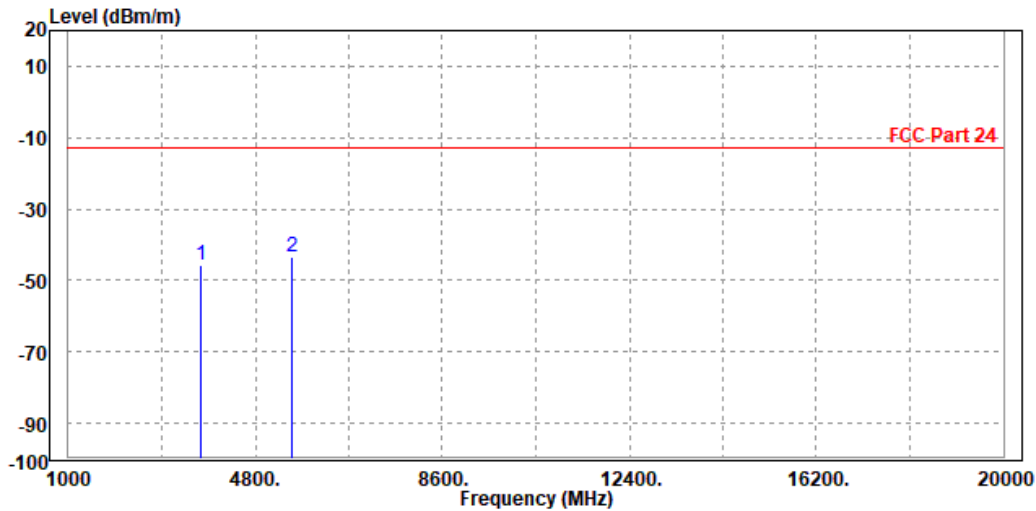


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Test Report No.: RF191217W002-2

MODE	TX channel 18607	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3698.000	-45.48	-54.73	-13.00	-32.48	9.25	Peak	Vertical
2 PP	5552.100	-43.47	-53.38	-13.00	-30.47	9.91	Peak	Vertical





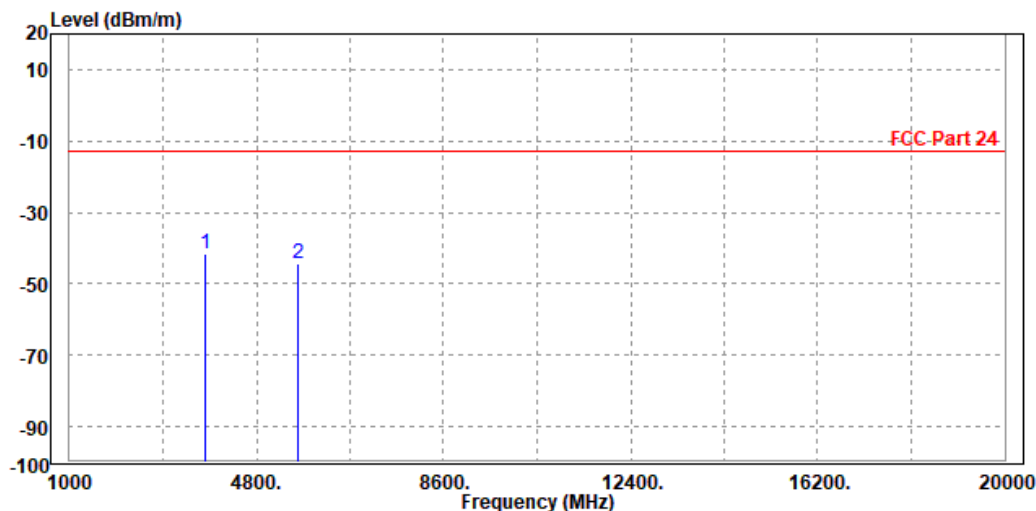
BUREAU VERITAS

Test Report No.: RF191217W002-2

CH 18900

MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Rose Ma		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

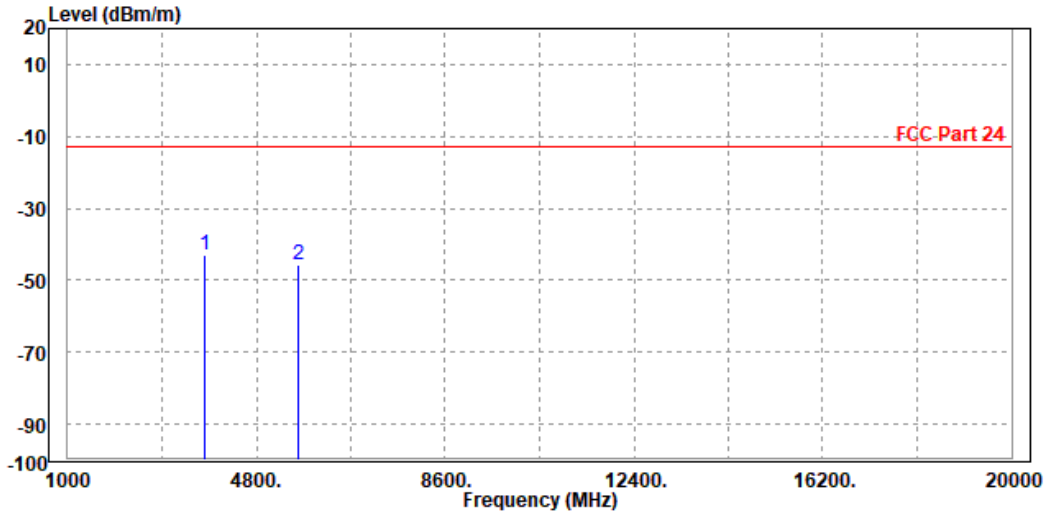
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3755.000	-41.59	-50.44	-13.00	-28.59	8.85	Peak	Horizontal
2	5640.000	-44.42	-54.90	-13.00	-31.42	10.48	Peak	Horizontal





MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3755.000	-42.76	-52.03	-13.00	-29.76	9.27	Peak	Vertical
2	5640.000	-45.78	-56.03	-13.00	-32.78	10.25	Peak	Vertical

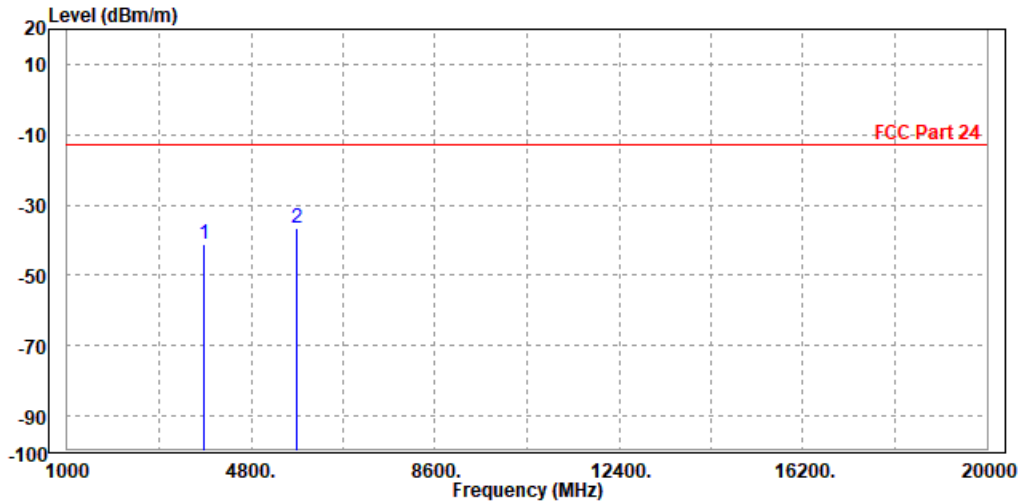




CH 19193

MODE	TX channel 19193	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

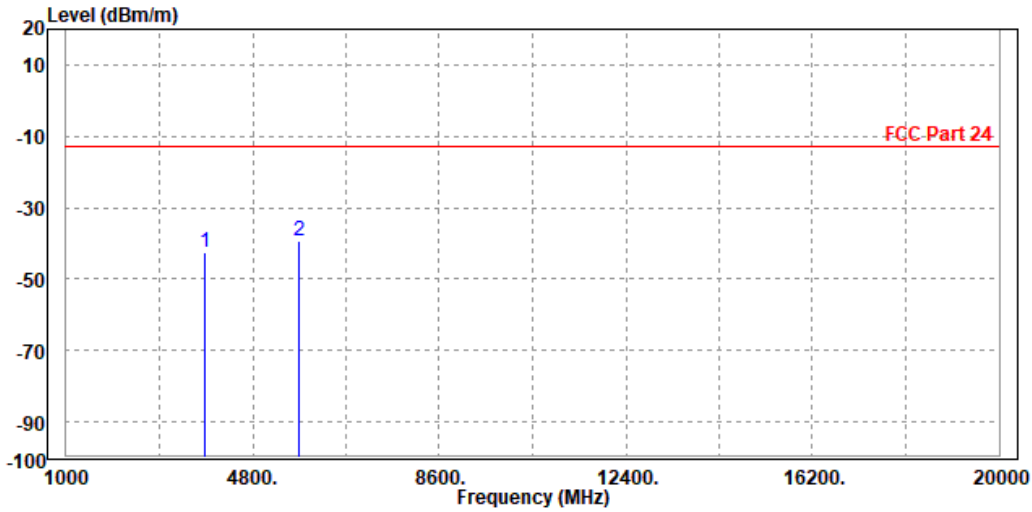
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3812.000	-41.10	-50.01	-13.00	-28.10	8.91	Peak	Horizontal
2 PP	5727.900	-36.68	-47.45	-13.00	-23.68	10.77	Peak	Horizontal





MODE	TX channel 19193	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3812.000	-42.57	-51.86	-13.00	-29.57	9.29	Peak	Vertical
2 PP	5727.900	-39.20	-49.79	-13.00	-26.20	10.59	Peak	Vertical



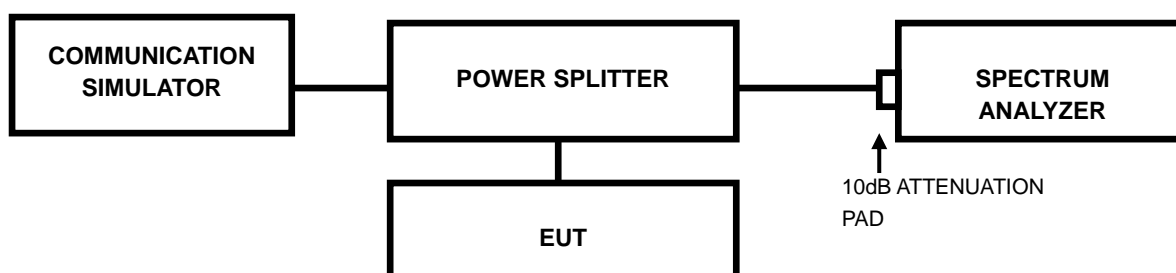


3.7 PEAK TO AVERAGE RATIO

3.7.1 LIMITS OF peak to average ratio MEASUREMENT

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

3.7.2 TEST SETUP



3.7.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.7.4 TEST RESULTS

The test results please refer to Reports No.: RF190123W002-3 (FCC ID: 2APNR-GT105)



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4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Tel: +86-755-88696566

Fax: +86-755-88696577

Email: customerservice.dg@cn.bureauveritas.com

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.



BUREAU VERITAS Test Report No.: RF191217W002-2

5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---