VARIANT FCC TEST REPORT

(PART 24)

Applicant:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Product:	Multi-band GSM/WCDMA/LTE phone with Bluetooth&WLAN
Brand Name:	NOKIA
Model Name:	TA-1412
FCC ID:	2AJOTTA-1412
Date of tests:	Nov. 25, 2021 ~ Oct. 10, 2022

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

☒ **FCC PART 24, Subpart E** ☒ **FCC PART 2**
☒ **ANSI/TIA/EIA-603-D** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

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

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Simon Wang Date: Oct. 10, 2022	Luke Lu Date: Oct. 10, 2022

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/ and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21100018-1RF05	Original release	Dec. 13, 2021
W7L-P21100018-2RF05	The model name is revised based on the W7L-P21100018-1RF05 report. The two models are only the difference between single SIM and double SIM, and the data reflects the original report data.	Dec. 25, 2021
W7L-P22090015-5RF05	Based on the original product changing the packaging factory of the chip and software version, removed Aohai_A829US adapter ,BRL_ CB - 36A USB cable, Saibao_ CB - 12A USB cable, LEADER_ HS-34 earphone, added Saibao_AC-2A USB cable. The new sample verify Power and RSE worst case (LTE B2), other test data is copied from the original test report W7L-P21100018-2RF05.	Oct. 10, 2022

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	Compliance
2.1055 24.235	Frequency Stability	Compliance
2.1049 24.238(b)	Occupied Bandwidth	Compliance
24.232(d)	Peak to average ratio	Compliance
24.238(b)	Band Edge Measurements	Compliance
2.1051 24.238	Conducted Spurious Emissions	Compliance
2.1053 24.238	Radiated Spurious Emissions	Compliance

NOTE: The power table are not updated,Because the same as for original case power in Verified power.

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
Frequency Stability	±76.97Hz
Radiated emissions & Radiated Power (30MHz~1GMHz)	±4.98dB
Radiated emissions & Radiated Power (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Band Edge Measurements	±4.70dB
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	Apr. 22,21	Apr. 21,22
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 21,22	Apr. 20,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 02,22	Jun. 01,23
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Bilog Antenna 2	ETS-LINDGREN	3143B	00161965	Mar. 04,22	Mar. 03,23
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Aug. 19,21	Aug. 18,22
Horn Antenna 1	ETS-LINDGREN	3117	00168728	Aug. 18,22	Aug. 17,23
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Apr. 02,21	Apr. 01,22
Horn Antenna 2	ETS-LINDGREN	3117	00168692	Apr. 01,22	Mar. 31,23
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 24, 22	Aug. 23, 23
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 25,21	Feb. 24,22
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 24,22	Feb. 23,23
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 01,22	May. 31,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 02,22	Jun. 01,23
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 21,22	Apr. 20,23
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V 7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 02,22	Jun. 01,23
Power Meter	Anritsu	ML2495A	1506002	Apr. 07,21	Apr. 06,22
Power Meter	Anritsu	ML2495A	1506002	Apr. 06,22	Apr. 05,23
Power Sensor	Anritsu	MA2411B	1339352	May. 07,21	May. 06,22
Power Sensor	Anritsu	MA2411B	1339352	May. 06,22	May. 05,23
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 02,21	Jun. 01,22
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 01,22	May. 31,23
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 05,21	Mar. 04,22
MXG Analog Microvave	KEYSIGHT	N5183A	MY50143024	Mar. 04,22	Mar. 03,23

Signal Generator					
Power Divider	MCLI/USA	PS2-15	24880	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months or 36 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	Multi-band GSM/WCDMA/LTE phone with Bluetooth&WLAN	
BRAND NAME	NOKIA	
MODEL NAME	TA-1412	
NOMINAL VOLTAGE	5.0Vdc(adapter or host equipment) 3.85Vdc (Li-ion, battery)	
MODULATION TYPE	**GSM/GPRS:** GMSK **EDGE:** 8PSK **WCDMA:** QPSK **LTE Band 2:** QPSK, 16QAM, 64QAM	
FREQUENCY RANGE	**GSM/GPRS, EDGE**	1850.2MHz ~ 1909.8MHz
	WCDMA	1852.4MHz ~ 1907.6MHz
	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	**GSM/GPRS**	1158.78mW
	EDGE	636.80mW
	WCDMA	285.76mW
	LTE Band 2 Channel Bandwidth: 1.4MHz	301.30mW
	LTE Band 2 Channel Bandwidth: 3MHz	300.61mW
	LTE Band 2 Channel Bandwidth: 5MHz	298.54mW
	LTE Band 2 Channel Bandwidth: 10MHz	301.30mW
	LTE Band 2 Channel Bandwidth: 15MHz	300.61mW

	LTE Band 2 Channel Bandwidth: 20MHz	302.69mW
EMISSION DESIGNATOR	**GSM/GPRS**	249KGXW
	EDGE	258KG7W
	WCDMA	4M18F9W
	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M12G7D
		16QAM: 1M12W7D
		64QAM: 1M12W7D
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 2M76G7D
		16QAM: 2M77W7D
		64QAM: 2M77W7D
	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 4M56G7D
		16QAM: 4M55W7D
		64QAM: 4M56W7D
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 9M09G7D
		16QAM: 9M08W7D
		64QAM: 9M06W7D
	LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 13M6G7D
		16QAM: 13M7W7D
		64QAM: 13M7W7D
	LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 18M2G7D
		16QAM: 18M2W7D
		64QAM: 18M2W7D
ANTENNA TYPE	Fixed Internal Antenna with 0.9dBi gain for GSM1900/ WCDMA II/LTE B2	
HW VERSION	19655-1-11M12	
SW VERSION	00WW_1_520	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	USB1 cable: unshielded without ferrite, 1.0meter USB2 cable: unshielded without ferrite, 1.0meter Earphone1: non-shielded cable, with w/o ferrite core, 1.2 meter	
EXTREME TEMPERATURE	0-40 ℃	
EXTREME VOLTAGE	3.5V - 4.4V	

NOTE:
1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
GSM/GPRS/EDGE	1TX/1RX
WCDMA	1TX/1RX
LTE	1TX/1RX

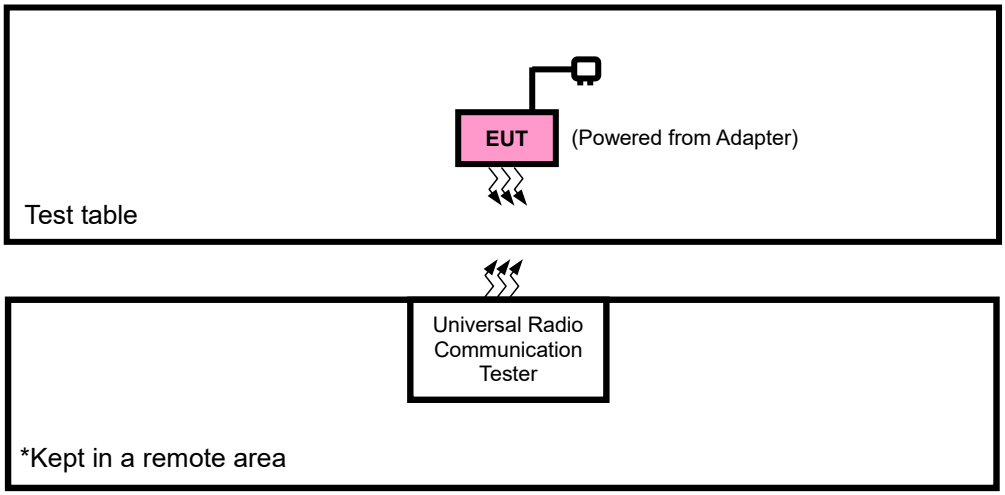
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery	Nokia	Hunan Gaoyuan Battery Co., Ltd.	WT341	Capacity：3.85 Vdc, 4900mAh
AC Adapter 1	Nokia	ShenZhenBaiJunDa ElectronicCO.,LTD.	AD-010U	I/P: 100-240Vac, 0.35A, O/P: 5.0Vdc, 2.0A
AC Adapter 2	Nokia	SHENZHEN TIANYIN ELECTRONICS CO., LTD.	CH-21U	I/P: 100-240Vac, 0.3A, O/P: 5.0Vdc, 2.0A
AC Adapter 3	Nokia	YuTong Electronics(HuiZhou) Co.,Ltd	PA-US5V2A-03 6	I/P: 100-240Vac, 0.5A, O/P: 5.0Vdc, 2.0A
Earphone 1	Nokia	Guangdong Wivtak Technology Co., Ltd.	HS-34	Signal Line, 1.2meter
USB Cable 1	Nokia	HUIZHOU WASHIN ELECTRONICS CO.,LTD	CB-36A	Signal Line, 1.0meter
USB Cable 2	Nokia	Saibao(Jiangi) Communication Industial Co.,Ltd	AC-2A	Signal Line, 1.0meter

2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION 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	Kikusui/JP	PMX18-5A	0000001	N/A

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

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 GSM/EDGE/WCDMA/ LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter with GSM or WCDMA or LTE link

GSM MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	EIRP	512 to 810	512, 661, 810	GSM, EDGE
A	FREQUENCY STABILITY	512 to 810	512, 661, 810	GSM, EDGE
A	OCCUPIED BANDWIDTH	512 to 810	512, 661, 810	GSM, EDGE
A	PEAK TO AVERAGE RATIO	512 to 810	512, 661, 810	GSM, EDGE
A	BAND EDGE	512 to 810	512, 810	GSM, EDGE
A	CONDCUDETED EMISSION	512 to 810	512, 661, 810	GSM, EDGE
A	RADIATED EMISSION	512 to 810	512, 661, 810	GSM, EDGE

WCDMA

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	EIRP	9262 to 9538	9262, 9400, 9538	WCDMA
A	FREQUENCY STABILITY	9262 to 9538	9262, 9538	WCDMA
A	OCCUPIED BANDWIDTH	9262 to 9538	9262, 9400, 9538	WCDMA
A	PEAK TO AVERAGE RATIO	9262 to 9538	9262, 9400, 9538	WCDMA
A	BAND EDGE	9262 to 9538	9262, 9538	WCDMA
A	CONDCUDETED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA
A	RADIATED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA

LTE BAND 2 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	18607 to 19193	18607, 19193	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615, 19185	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 19175	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650, 19150	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675, 19125	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 19100	20MHz	QPSK	1 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset

A	BAND EDGE	18607 to 19193	18607	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			19193	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		18615 to 19185	18615	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		18625 to 19175	18625	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		18650 to 19150	18650	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		18675 to 19125	18675	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		18700 to 19100	18700	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			19100	20MHz	QPSK,16QAM, 64QAM	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
A	CONDCUDETED EMISSION	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	18607 to 19193	18900	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18900	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18900	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18607, 18900, 19193	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18900	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18900	20MHz	QPSK	1 RB / 0 RB Offset

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 57%RH	DC 5V By Adapter	Jace Hu
FREQUENCY STABILITY	23deg. C, 61%RH	DC5V By Adapter	James Fu
OCCUPIED BANDWIDTH	23deg. C, 61%RH	DC5V By Adapter	James Fu
PEAK TO AVERAGE RATIO	23deg. C, 61%RH	DC 5V By Adapter	James Fu
BAND EDGE	23deg. C, 61%RH	DC5V By Adapter	James Fu
CONDCUDETED EMISSION	23deg. C, 61%RH	DC5V By Adapter	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC 3.85V By Battery	Jace Hu

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 determing the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

ERP 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.

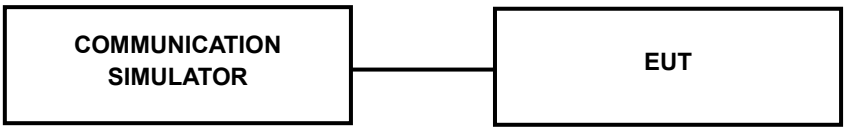
CONDUCTED POWER MEASUREMENT:

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

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM1900		
Channel	512	661	810
Frequency	1850.2	1880	1909.8
GSM (GMSK, 1Tx-slot)	29.43	29.43	29.69
GPRS (GMSK, 1Tx-slot)	29.51	29.38	29.74
GPRS (GMSK, 2Tx-slot)	27.32	27.09	27.05
GPRS (GMSK, 3Tx-slot)	25.88	25.69	25.59
GPRS (GMSK, 4Tx-slot)	23.79	23.71	23.47
EDGE (8PSK, 1Tx-slot)	27.14	27.03	27.04
EDGE (8PSK, 2Tx-slot)	25.90	25.66	25.36
EDGE (8PSK, 3Tx-slot)	23.23	23.31	23.20
EDGE (8PSK, 4Tx-slot)	21.06	21.08	21.14

Band	WCDMA II		
Channel	9262	9400	9538
Frequency	1852.4	1880	1907.6
RMC 12.2K	23.63	23.66	23.62
HSDPA Subtest-1	22.58	22.54	22.66
HSDPA Subtest-2	22.51	22.53	22.57
HSDPA Subtest-3	22.02	22.05	22.10
HSDPA Subtest-4	21.99	21.96	22.06
DC-HSDPA Subtest-1	22.51	22.52	22.60
DC-HSDPA Subtest-2	22.47	22.51	22.52
DC-HSDPA Subtest-3	21.94	22.03	22.05
DC-HSDPA Subtest-4	22.05	21.98	22.06
HSUPA Subtest-1	22.51	22.62	22.55
HSUPA Subtest-2	20.52	20.63	20.60
HSUPA Subtest-3	21.43	21.58	21.59
HSUPA Subtest-4	20.48	20.55	20.58
HSUPA Subtest-5	22.43	22.61	22.53
HSPA+ Subtest-1	20.05	20.13	20.07

LTE BAND 2

Band/BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz
2/ 1.4	QPSK	1	0	23.73	23.74	23.64
		1	2	23.87	23.70	23.68
		1	5	23.89	23.83	23.73
		3	0	23.06	23.00	22.99
		3	1	23.06	22.91	22.74
		3	3	22.92	22.83	22.80
		6	0	22.53	22.33	22.28
	16QAM	1	0	22.62	22.55	22.48
		1	2	22.66	22.43	22.50
		1	5	22.57	22.45	22.43
		3	0	22.15	22.01	22.01
		3	1	22.14	22.01	22.01
		3	3	22.04	22.03	21.95
		6	0	21.72	21.56	21.57
	64QAM	1	0	21.73	21.72	21.68
		1	2	21.79	21.73	21.61
		1	5	21.63	21.45	21.48
		3	0	21.20	21.09	21.04
		3	1	21.13	21.10	20.93
		3	3	21.18	21.03	21.07
		6	0	20.77	20.58	20.54

Band/BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz
2/ 3	QPSK	1	0	23.72	23.73	23.67
		1	7	23.88	23.68	23.68
		1	14	23.86	23.82	23.77
		8	0	22.58	22.53	22.46
		8	3	22.49	22.42	22.27
		8	7	22.43	22.36	22.35
		15	0	22.48	22.37	22.25
	16QAM	1	0	22.60	22.57	22.51
		1	7	22.60	22.49	22.47
		1	14	22.60	22.45	22.42
		8	0	21.61	21.50	21.48
		8	3	21.66	21.50	21.50
		8	7	21.51	21.53	21.44
		15	0	21.72	21.51	21.57
	64QAM	1	0	21.73	21.72	21.68
		1	7	21.79	21.73	21.60
		1	14	21.57	21.52	21.48
		8	0	20.74	20.60	20.54
		8	3	20.61	20.61	20.47
		8	7	20.69	20.56	20.50
		15	0	20.75	20.61	20.56

Band/BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz
2/ 5	QPSK	1	0	23.72	23.79	23.63
		1	12	23.83	23.71	23.68
		1	24	23.85	23.83	23.73
		12	0	22.55	22.53	22.49
		12	6	22.49	22.41	22.26
		12	13	22.39	22.40	22.34
		25	0	22.50	22.34	22.22
	16QAM	1	0	22.59	22.61	22.51
		1	12	22.63	22.46	22.48
		1	24	22.60	22.45	22.43
		12	0	21.61	21.52	21.51
		12	6	21.69	21.46	21.54
		12	13	21.56	21.51	21.41
		25	0	21.72	21.50	21.60
	64QAM	1	0	21.79	21.75	21.62
		1	12	21.82	21.67	21.60
		1	24	21.64	21.47	21.48
		12	0	20.73	20.63	20.55
		12	6	20.67	20.54	20.48
		12	13	20.65	20.57	20.53
		25	0	20.79	20.55	20.58

Band/BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz
2/ 10	QPSK	1	0	23.77	23.77	23.61
		1	24	23.86	23.73	23.64
		1	49	23.89	23.89	23.74
		25	0	22.56	22.53	22.50
		25	12	22.56	22.41	22.27
		25	25	22.39	22.34	22.34
		50	0	22.53	22.35	22.27
	16QAM	1	0	22.64	22.61	22.47
		1	24	22.64	22.46	22.50
		1	49	22.56	22.51	22.41
		25	0	21.67	21.48	21.55
		25	12	21.64	21.48	21.51
		25	25	21.55	21.52	21.44
		50	0	21.77	21.53	21.54
	64QAM	1	0	21.74	21.74	21.66
		1	24	21.85	21.68	21.61
		1	49	21.59	21.45	21.48
		25	0	20.77	20.63	20.54
		25	12	20.62	20.54	20.43
		25	25	20.71	20.60	20.54
		50	0	20.79	20.55	20.58

Band/BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz
2/ 15	QPSK	1	0	23.70	23.77	23.64
		1	37	23.88	23.68	23.69
		1	74	23.83	23.86	23.73
		36	0	22.59	22.52	22.49
		36	19	22.55	22.36	22.27
		36	39	22.41	22.33	22.34
		75	0	22.53	22.37	22.22
	16QAM	1	0	22.60	22.54	22.47
		1	37	22.65	22.45	22.50
		1	74	22.60	22.46	22.39
		36	0	21.63	21.48	21.54
		36	19	21.70	21.44	21.55
		36	39	21.50	21.54	21.41
		75	0	21.76	21.50	21.61
	64QAM	1	0	21.74	21.72	21.69
		1	37	21.86	21.73	21.61
		1	74	21.57	21.46	21.48
		36	0	20.77	20.61	20.59
		36	19	20.66	20.61	20.43
		36	39	20.69	20.56	20.56
		75	0	20.80	20.57	20.57

Band/BW	Modulation	RB Size	RB Offset	Low CH 18700	Mid CH 18900	High CH 19100
				Frequency 1860 MHz	Frequency 1880 MHz	Frequency 1900 MHz
2/ 20	QPSK	1	0	23.78	23.81	23.69
		1	50	23.90	23.76	23.70
		1	99	**23.91**	23.90	23.78
		50	0	22.62	22.58	22.51
		50	25	22.57	22.43	22.32
		50	50	22.47	22.41	22.36
		100	0	22.54	22.39	22.30
	16QAM	1	0	22.67	22.62	22.53
		1	50	22.68	22.51	22.52
		1	99	22.62	22.53	22.44
		50	0	21.69	21.56	21.56
		50	25	21.72	21.52	21.56
		50	50	21.58	21.58	21.46
		100	0	21.78	21.58	21.62
	64QAM	1	0	21.80	21.77	21.70
		1	50	21.87	21.75	21.66
		1	99	21.65	21.53	21.50
		50	0	20.78	20.65	20.62
		50	25	20.69	20.62	20.49
		50	50	20.73	20.61	20.58
		100	0	20.81	20.63	20.59

EIRP POWER (dBm)

GSM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	29.51	0.9	30.41	1099.01	2
661	1880.0	29.43	0.9	30.33	1078.95	2
810	1909.8	29.74	0.9	30.64	1158.78	2

EDGE

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	27.14	0.9	28.04	636.80	2
661	1880.0	27.03	0.9	27.93	620.87	2
810	1909.8	27.04	0.9	27.94	622.3	2

WCDMA

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
9262	1852.4	23.63	0.9	24.53	283.79	2
9400	1880	23.66	0.9	24.56	285.76	2
9538	1907.6	23.62	0.9	24.52	283.14	2

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	23.89	0.9	24.79	301.30	2
18900	1880.0	23.83	0.9	24.73	297.17	2
19193	1909.3	23.73	0.9	24.63	290.4	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	22.66	0.9	23.56	226.99	2
18900	1880.0	22.55	0.9	23.45	221.31	2
19193	1909.3	22.5	0.9	23.4	218.78	2

CHANNEL BANDWIDTH: 1.4MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	21.79	0.9	22.69	185.78	2
18900	1880.0	21.73	0.9	22.63	183.23	2
19193	1909.3	21.68	0.9	22.58	181.13	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	23.88	0.9	24.78	300.61	2
18900	1880.0	23.82	0.9	24.72	296.48	2
19185	1908.5	23.77	0.9	24.67	293.09	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	22.6	0.9	23.5	223.87	2
18900	1880.0	22.57	0.9	23.47	222.33	2
19185	1908.5	22.51	0.9	23.41	219.28	2

CHANNEL BANDWIDTH: 3MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	21.79	0.9	22.69	185.78	2
18900	1880.0	21.73	0.9	22.63	183.23	2
19185	1908.5	21.68	0.9	22.58	181.13	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	23.85	0.9	24.75	298.54	2
18900	1880.0	23.83	0.9	24.73	297.17	2
19175	1907.5	23.73	0.9	24.63	290.4	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	22.63	0.9	23.53	225.42	2
18900	1880.0	22.61	0.9	23.51	224.39	2
19175	1907.5	22.51	0.9	23.41	219.28	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	21.82	0.9	22.72	187.07	2
18900	1880.0	21.75	0.9	22.65	184.08	2
19175	1907.5	21.62	0.9	22.52	178.65	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	23.89	0.9	24.79	301.30	2
18900	1880.0	23.89	0.9	24.79	301.30	2
19150	1905.0	23.74	0.9	24.64	291.07	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	22.64	0.9	23.54	225.94	2
18900	1880.0	22.61	0.9	23.51	224.39	2
19150	1905.0	22.5	0.9	23.4	218.78	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	21.85	0.9	22.75	188.36	2
18900	1880.0	21.74	0.9	22.64	183.65	2
19150	1905.0	21.66	0.9	22.56	180.3	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	23.88	0.9	24.78	300.61	2
18900	1880.0	23.86	0.9	24.76	299.23	2
19125	1902.5	23.73	0.9	24.63	290.4	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	22.65	0.9	23.55	226.46	2
18900	1880.0	22.54	0.9	23.44	220.8	2
19125	1902.5	22.5	0.9	23.4	218.78	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	21.86	0.9	22.76	188.8	2
18900	1880.0	21.73	0.9	22.63	183.23	2
19125	1902.5	21.69	0.9	22.59	181.55	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	23.91	0.9	24.81	302.69	2
18900	1880	23.9	0.9	24.8	302	2
19100	1900	23.78	0.9	24.68	293.76	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	22.68	0.9	23.58	228.03	2
18900	1880	22.62	0.9	23.52	224.91	2
19100	1900	22.53	0.9	23.43	220.29	2

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G_T-L_C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	21.87	0.9	22.77	189.23	2
18900	1880	21.77	0.9	22.67	184.93	2
19100	1900	21.7	0.9	22.6	181.97	2

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

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

3.2.2 TEST PROCEDURE

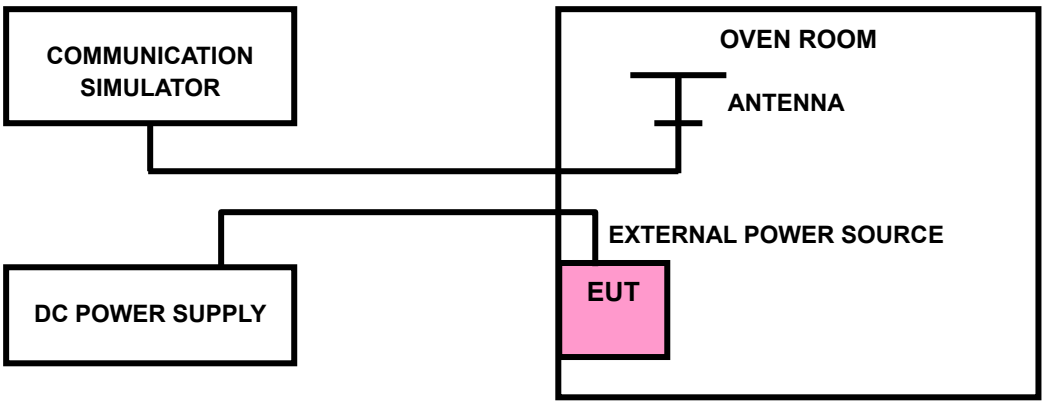
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

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 ±0.5℃ 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



3.2.4 TEST RESULTS

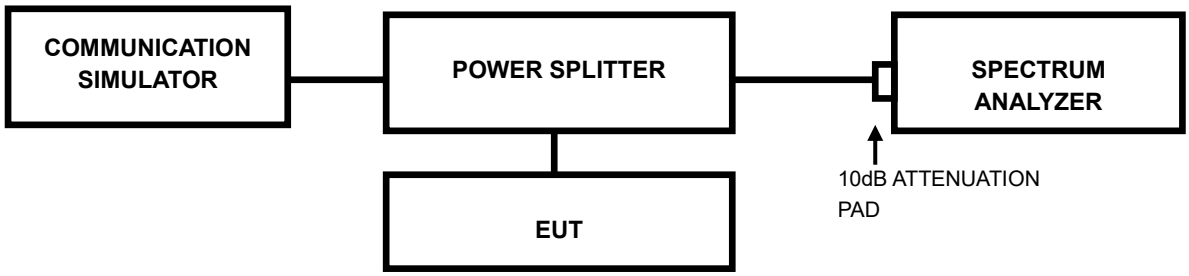
Please Refer to Appendix Of this test report.

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 PROCEDURES

a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.4 TEST RESULTS

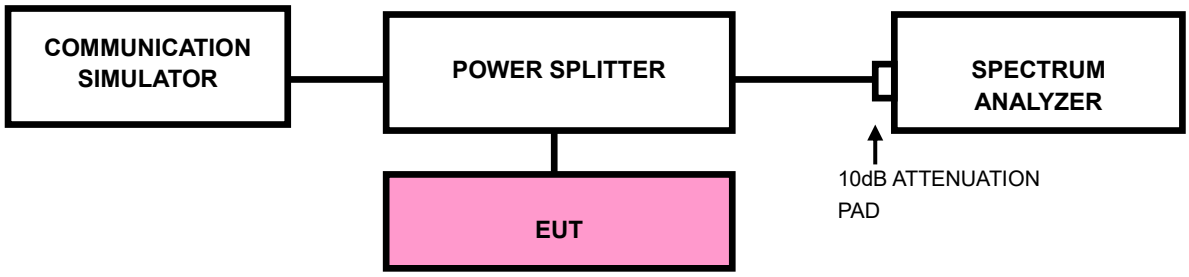
Please Refer to Appendix Of this test report.

3.4 BAND EDGE MEASUREMENTC

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 1~5 MHz. RBW of the spectrum is 10kHz and VBW of the spectrum is 30kHz (GSM/GPRS/ EDGE/LTE bandwidth for (1.4M/3M/5M/10M/15M/20M)1RB/0RB&1RB/MAXRB).

c. 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).

d. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is ≥1%*EBW kHz and VBW of the spectrum is 3*RBW kHz. (LTE bandwidth 1.4M/3M/5M/10M/15M/20MHz).

e. Record the max trace plot into the test report.

3.4.4. TEST RESULTS

Please Refer to Appendix Of this test report.

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

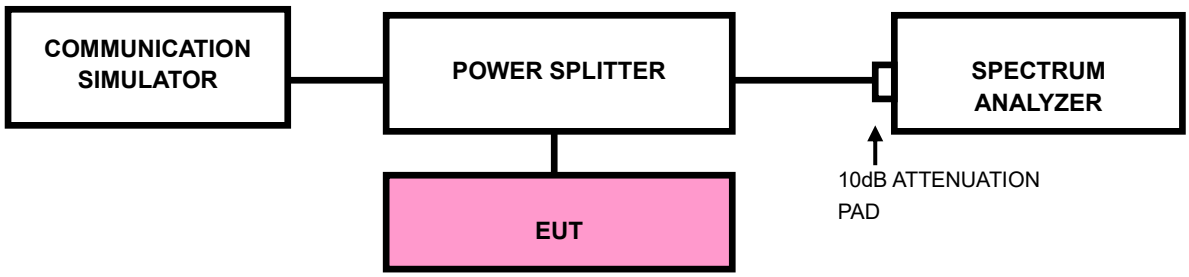
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

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 30 MHz 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



3.5.4 TEST RESULTS

Please Refer to Appendix Of this test report.

3.6 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. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

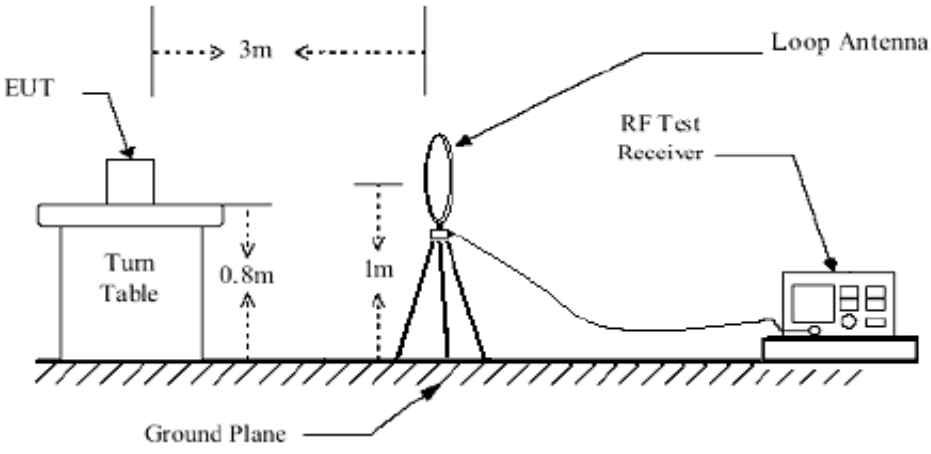
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.6.3 DEVIATION FROM TEST STANDARD

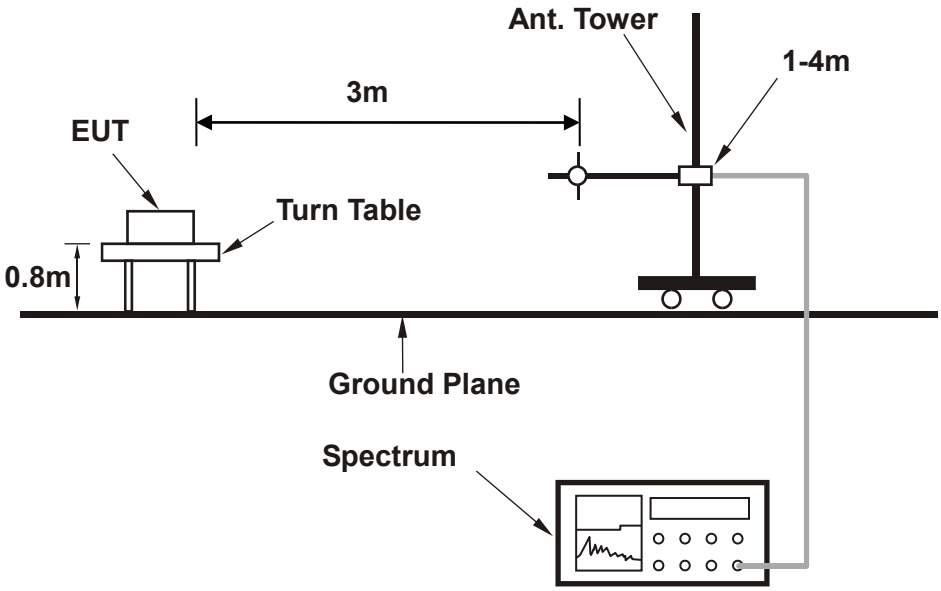
No deviation

3.6.4 TEST SETUP

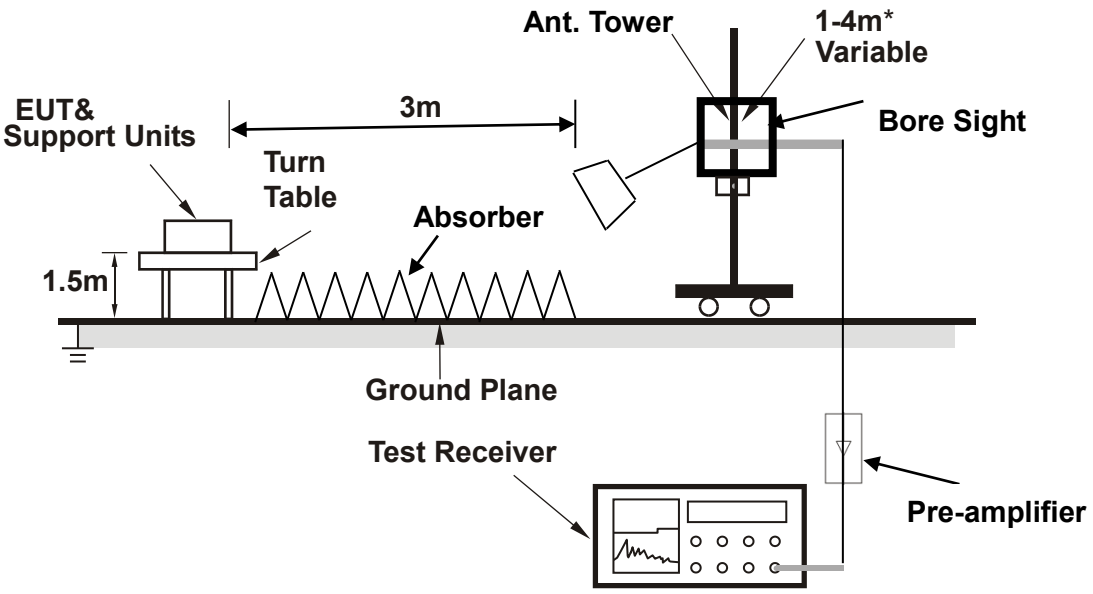
< Frequency Range below 30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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

3.6.5 TEST RESULTS

NOTE ：The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

BELOW 1GHz WORST-CASE DATA

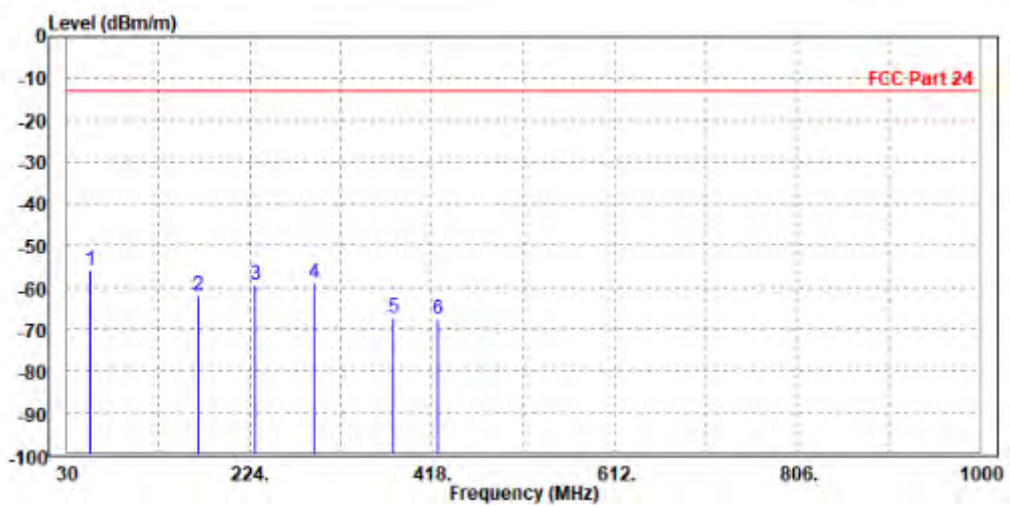
30 MHz – 1GHz data:

LTE Band 2

CHANNEL BANDWIDTH: 10MHz / QPSK

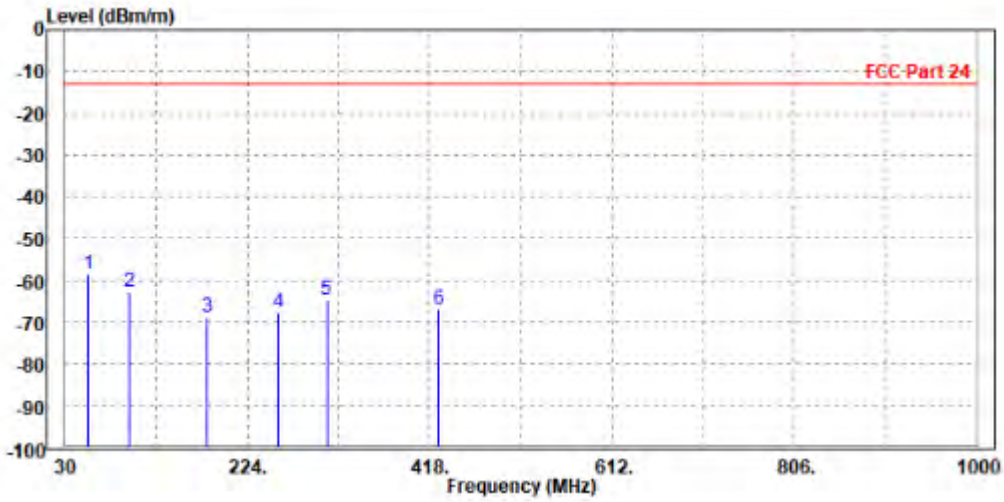
MODE	TX channel 18607	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	55.220	-55.98	-38.08	-13.00	-42.98	-17.90	Peak	Horizontal
2	169.680	-62.01	-45.61	-13.00	-49.01	-16.40	Peak	Horizontal
3	229.820	-59.44	-45.58	-13.00	-46.44	-13.86	Peak	Horizontal
4	292.870	-58.90	-46.58	-13.00	-45.90	-12.32	Peak	Horizontal
5	376.290	-67.23	-56.63	-13.00	-54.23	-10.60	Peak	Horizontal
6	423.820	-67.82	-58.22	-13.00	-54.82	-9.60	Peak	Horizontal



MODE	TX channel 18607	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
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	55.220	-58.41	-34.08	-13.00	-45.41	-24.33	Peak	Vertical
2	98.870	-62.62	-55.20	-13.00	-49.62	-7.42	Peak	Vertical
3	180.350	-68.80	-50.05	-13.00	-55.80	-18.75	Peak	Vertical
4	256.980	-67.74	-54.53	-13.00	-54.74	-13.21	Peak	Vertical
5	308.390	-64.57	-53.91	-13.00	-51.57	-10.66	Peak	Vertical
6	426.730	-67.08	-58.33	-13.00	-54.08	-8.75	Peak	Vertical



ABOVE 1GHz DATA

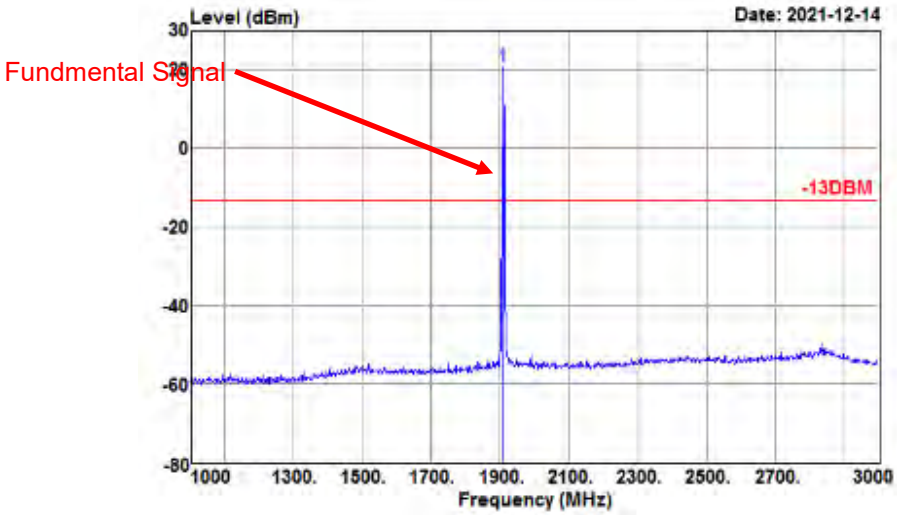
Note: For higher frequency, the emission is too low to be detected.

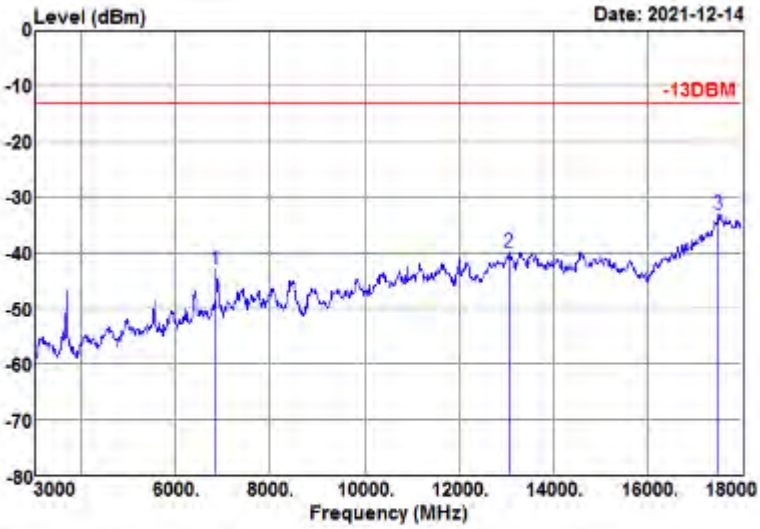
WORST-CASE DATA

GSM 1900

CH 512

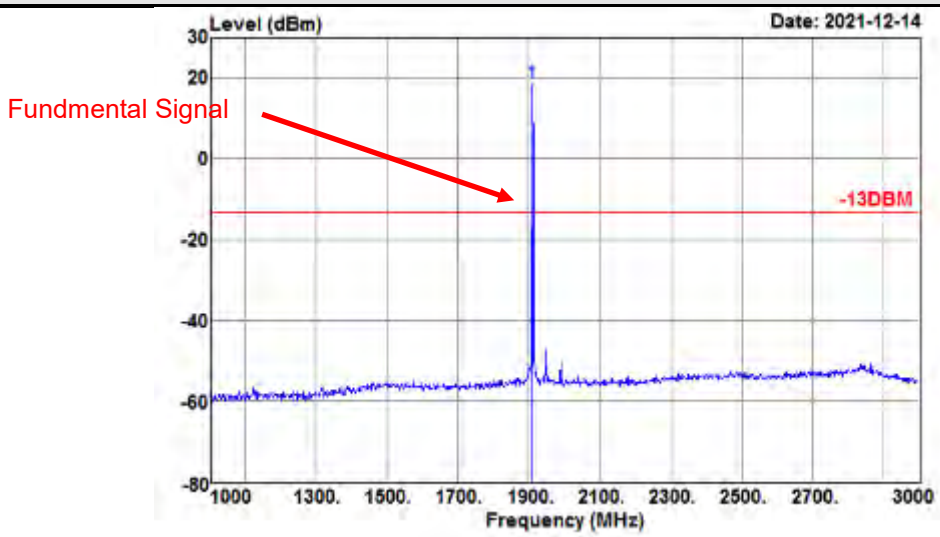
MODE	TX channel 512	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

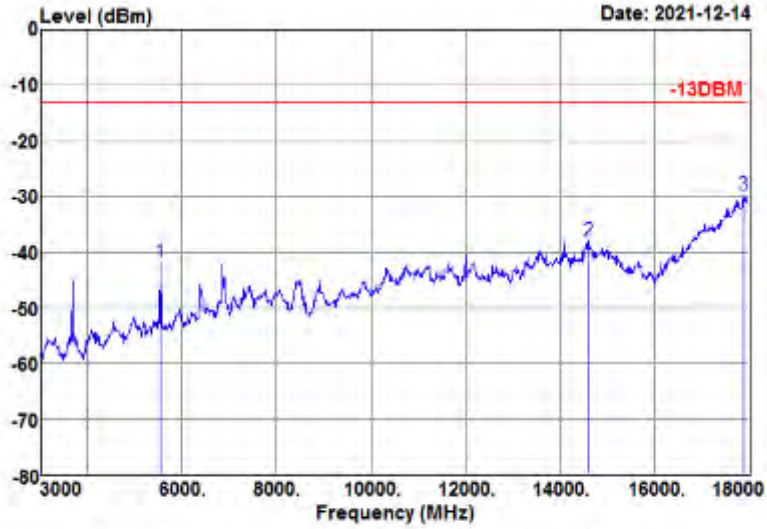




Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6855.000	-60.95	17.91	-43.04	-13.00	-30.04	Peak
13050.000	-68.43	28.66	-39.77	-13.00	-26.77	Peak
17505.000	-68.86	35.81	-33.05	-13.00	-20.05	Peak

MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

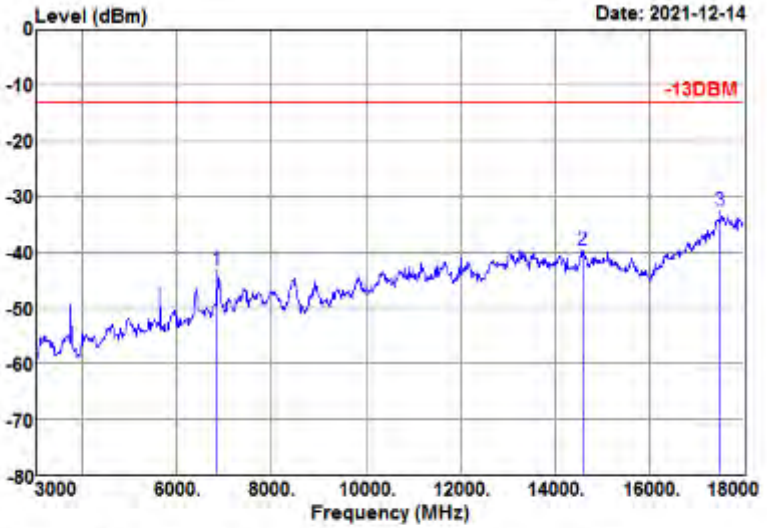




Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
5550.000	-55.10	13.23	-41.87	-13.00	-28.87	Peak
14610.000	-66.39	28.30	-38.09	-13.00	-25.09	Peak
17895.000	-69.35	39.55	-29.80	-13.00	-16.80	Peak

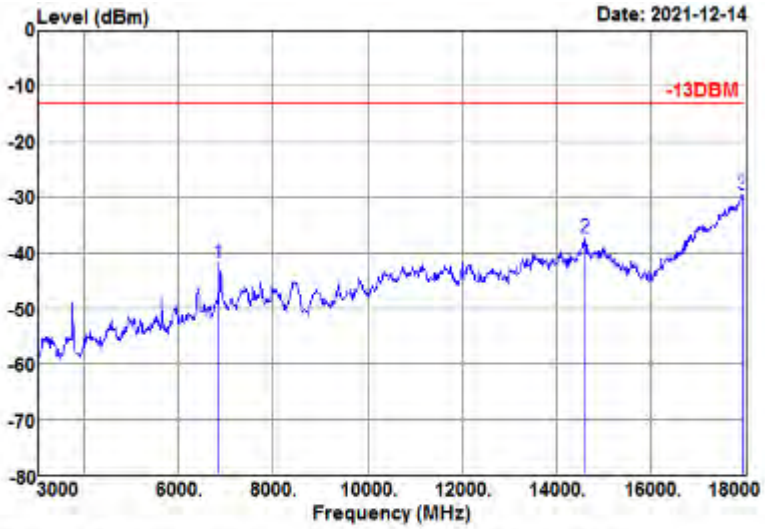
CH 661

MODE	TX channel 661	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6855.000	-61.14	17.91	-43.23	-13.00	-30.23	Peak
14580.000	-66.21	26.50	-39.71	-13.00	-26.71	Peak
17505.000	-68.45	35.81	-32.64	-13.00	-19.64	Peak

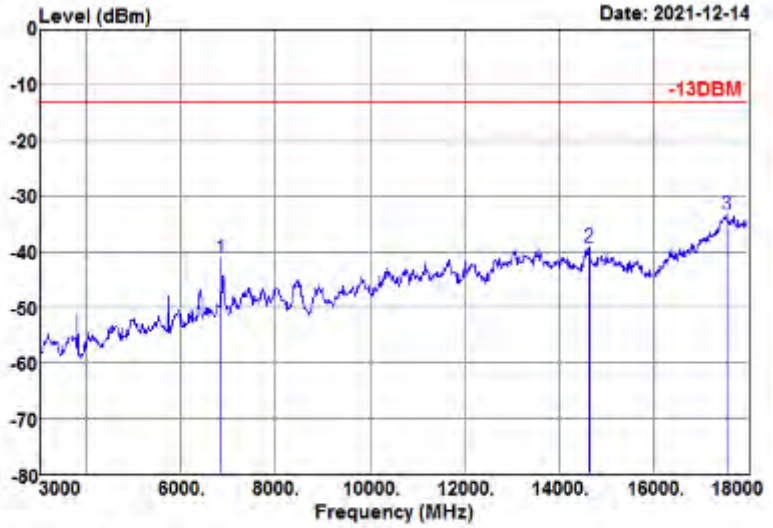
MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6855.000	-60.11	18.25	-41.86	-13.00	-28.86	Peak
14610.000	-65.65	28.30	-37.35	-13.00	-24.35	Peak
17955.000	-69.53	40.04	-29.49	-13.00	-16.49	Peak

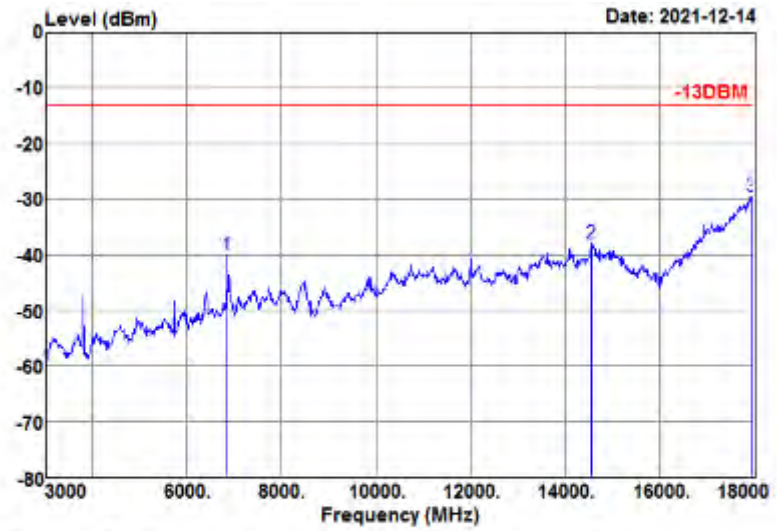
CH 810

MODE	TX channel 810	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6855.000	-58.97	17.91	-41.06	-13.00	-28.06	Peak
14640.000	-65.82	26.63	-39.19	-13.00	-26.19	Peak
17550.000	-69.03	35.75	-33.28	-13.00	-20.28	Peak

MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

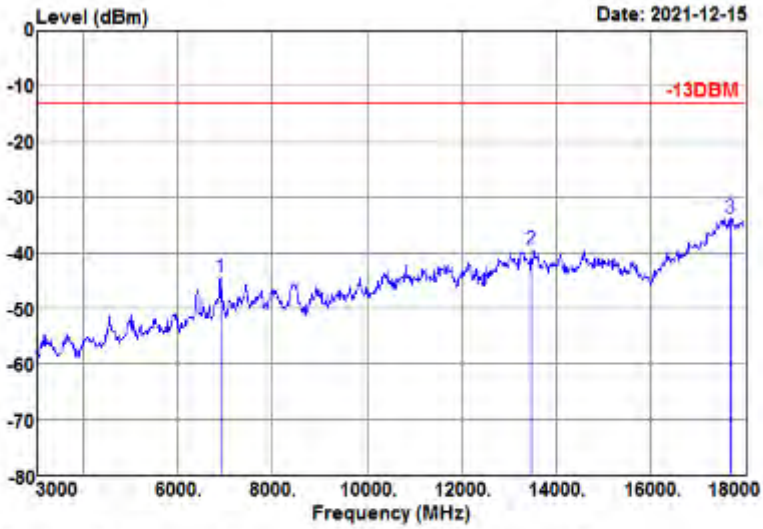


Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6855.000	-58.33	18.25	-40.08	-13.00	-27.08	Peak
14565.000	-66.18	28.24	-37.94	-13.00	-24.94	Peak
17955.000	-69.45	40.04	-29.41	-13.00	-16.41	Peak

EDGE 1900

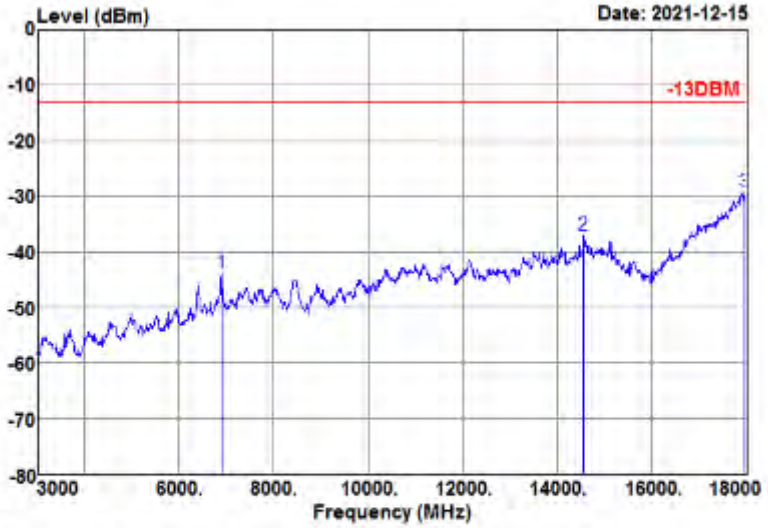
CH 512

MODE	TX channel 512	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6900.000	-62.44	18.08	-44.36	-13.00	-31.36	Peak
13470.000	-67.84	28.47	-39.37	-13.00	-26.37	Peak
17700.000	-69.17	35.53	-33.64	-13.00	-20.64	Peak

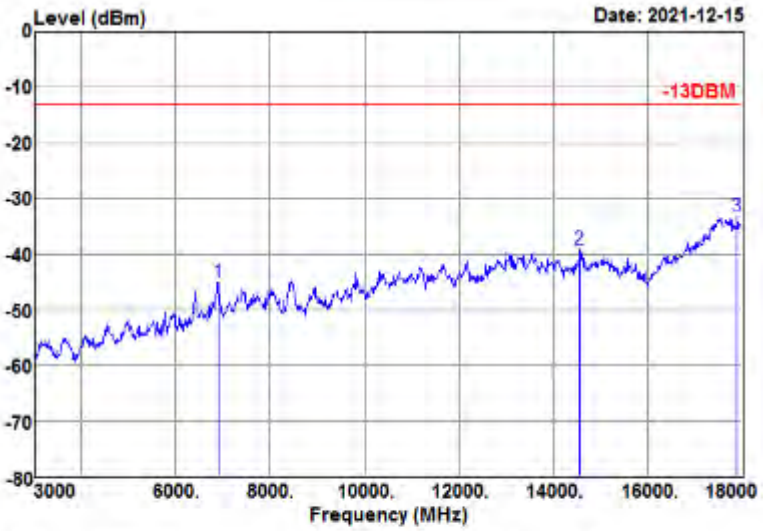
MODE	TX channel 512	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6900.000	-62.38	18.41	-43.97	-13.00	-30.97	Peak
14565.000	-65.16	28.24	-36.92	-13.00	-23.92	Peak
17970.000	-69.47	40.16	-29.31	-13.00	-16.31	Peak

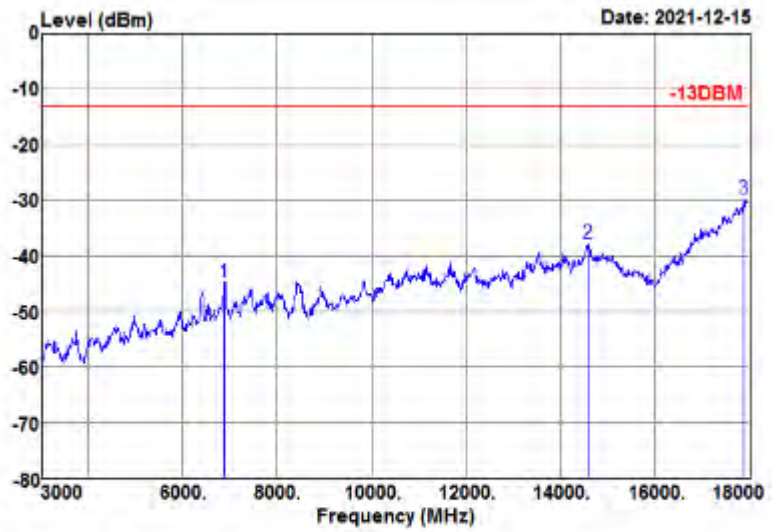
CH 661

MODE	TX channel 661	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6900.000	-63.06	18.08	-44.98	-13.00	-31.98	Peak
14565.000	-65.55	26.46	-39.09	-13.00	-26.09	Peak
17895.000	-68.55	35.25	-33.30	-13.00	-20.30	Peak

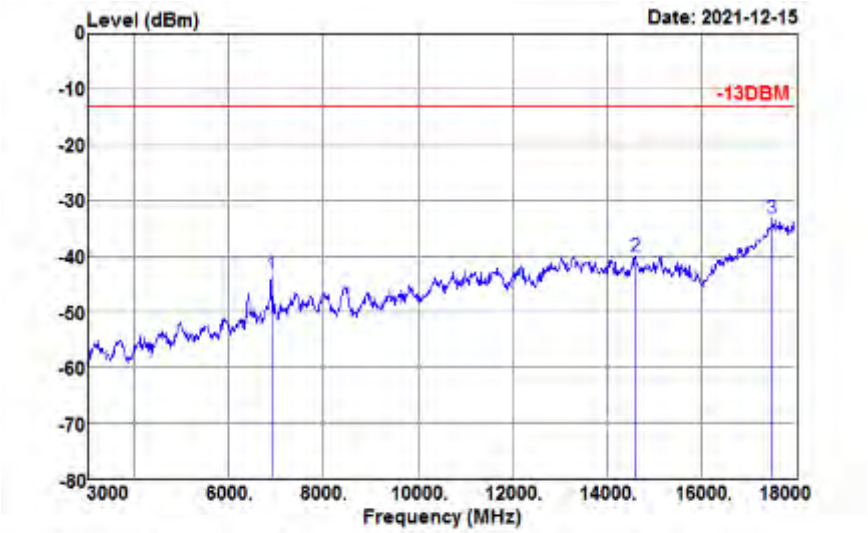
MODE	TX channel 661	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6885.000	-63.09	18.36	-44.73	-13.00	-31.73	Peak
14580.000	-66.01	28.26	-37.75	-13.00	-24.75	Peak
17895.000	-69.35	39.55	-29.80	-13.00	-16.80	Peak

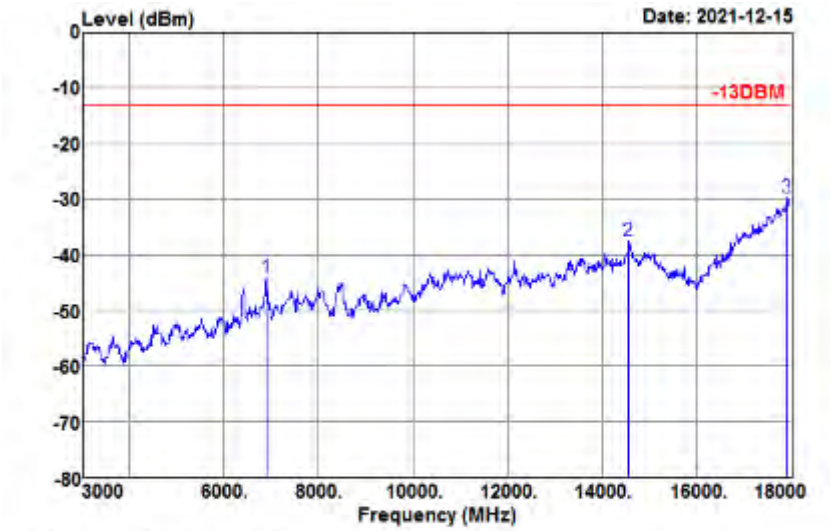
CH 810

MODE	TX channel 810	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6900.000	-61.39	18.08	-43.31	-13.00	-30.31	Peak
14610.000	-66.58	26.56	-40.02	-13.00	-27.02	Peak
17505.000	-69.16	35.81	-33.35	-13.00	-20.35	Peak

MODE	TX channel 810	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

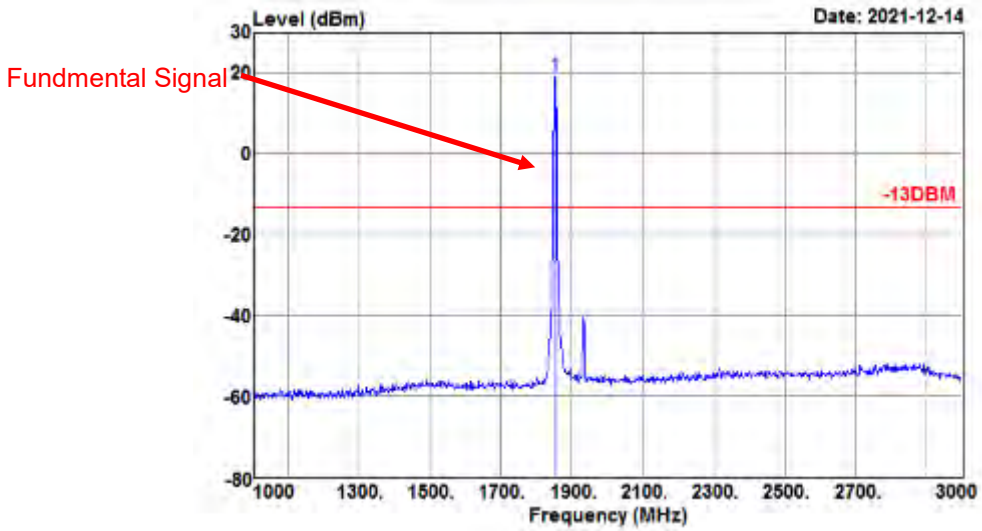


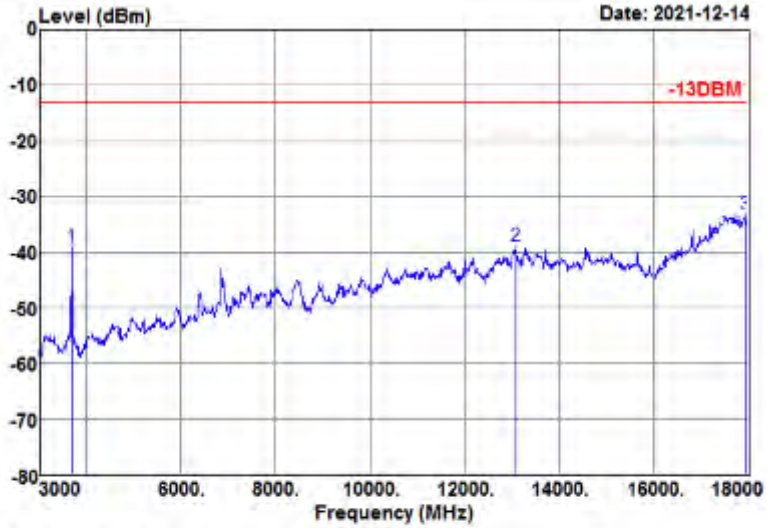
Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
6900.000	-62.42	18.41	-44.01	-13.00	-31.01	Peak
14565.000	-65.80	28.24	-37.56	-13.00	-24.56	Peak
17925.000	-69.50	39.79	-29.71	-13.00	-16.71	Peak

WCDMA Band II

CH 9262

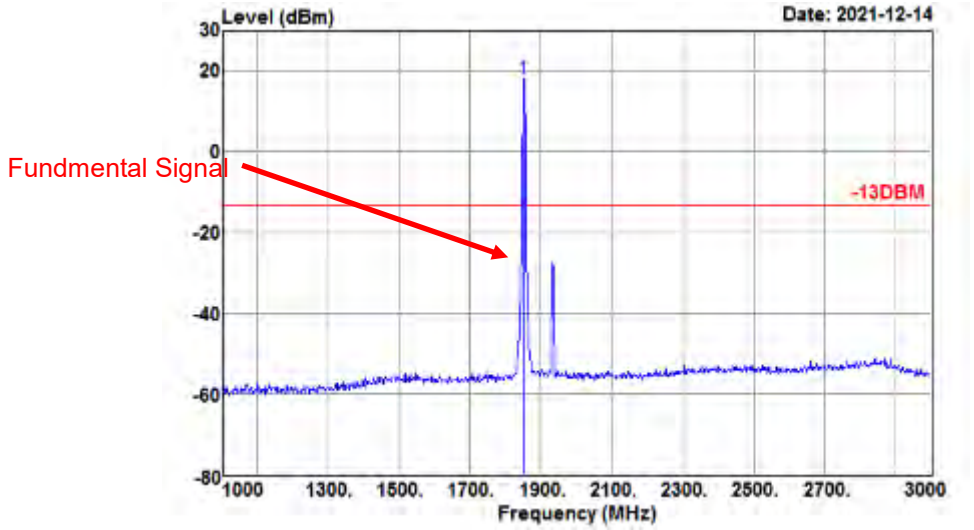
MODE	TX channel 9262	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

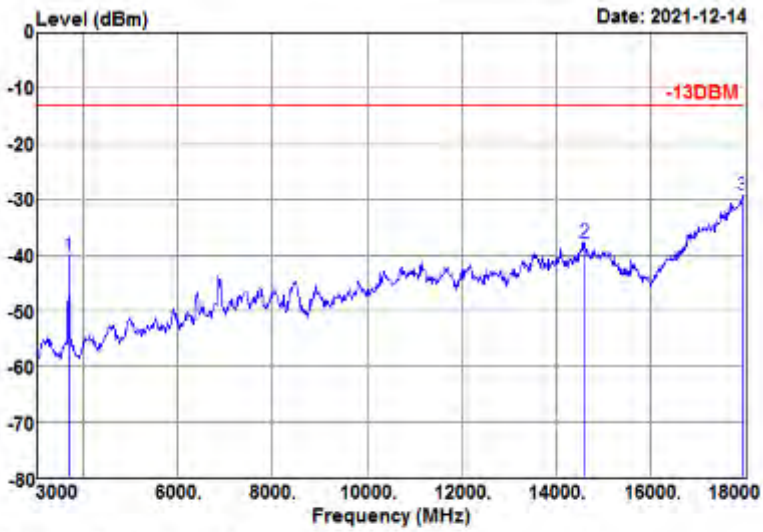




Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
3705.000	-47.91	8.63	-39.28	-13.00	-26.28	Peak
13080.000	-67.68	28.64	-39.04	-13.00	-26.04	Peak
17955.000	-68.48	35.16	-33.32	-13.00	-20.32	Peak

MODE	TX channel 9262	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

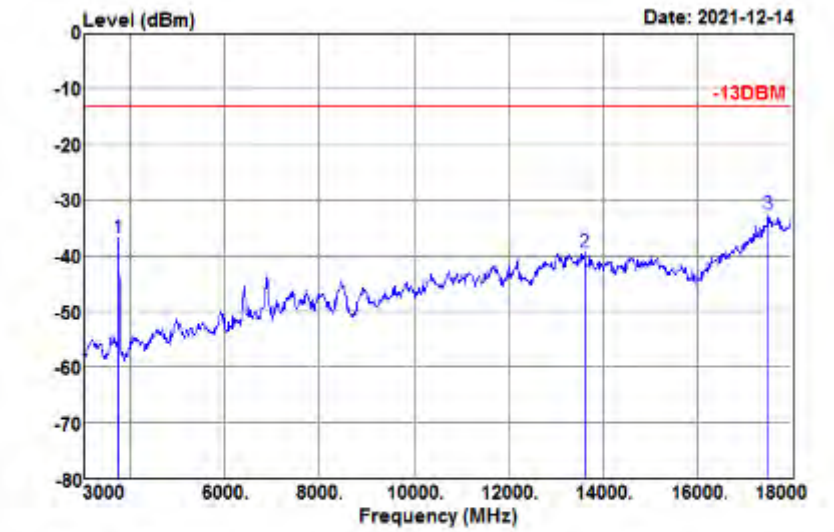




Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
3705.000	-48.72	8.64	-40.08	-13.00	-27.08	Peak
14610.000	-65.96	28.30	-37.66	-13.00	-24.66	Peak
17955.000	-69.22	40.04	-29.18	-13.00	-16.18	Peak

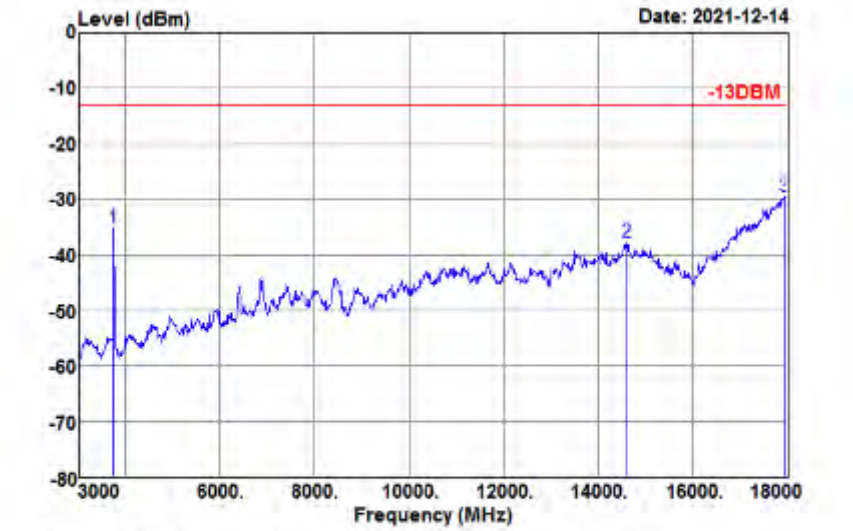
CH 9400

MODE	TX channel 9400	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
3750.000	-45.31	8.59	-36.72	-13.00	-23.72	Peak
13605.000	-67.51	28.11	-39.40	-13.00	-26.40	Peak
17505.000	-68.26	35.81	-32.45	-13.00	-19.45	Peak

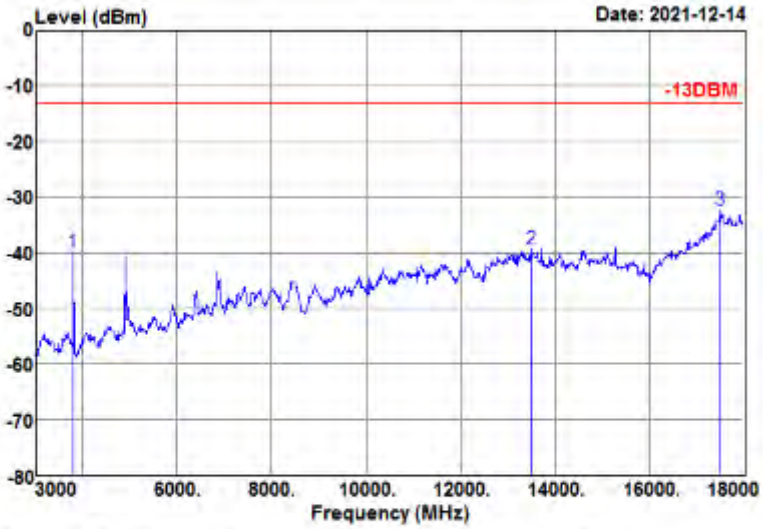
MODE	TX channel 9400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
3750.000	-43.74	8.66	-35.08	-13.00	-22.08	Peak
14625.000	-65.98	28.32	-37.66	-13.00	-24.66	Peak
17955.000	-69.57	40.04	-29.53	-13.00	-16.53	Peak

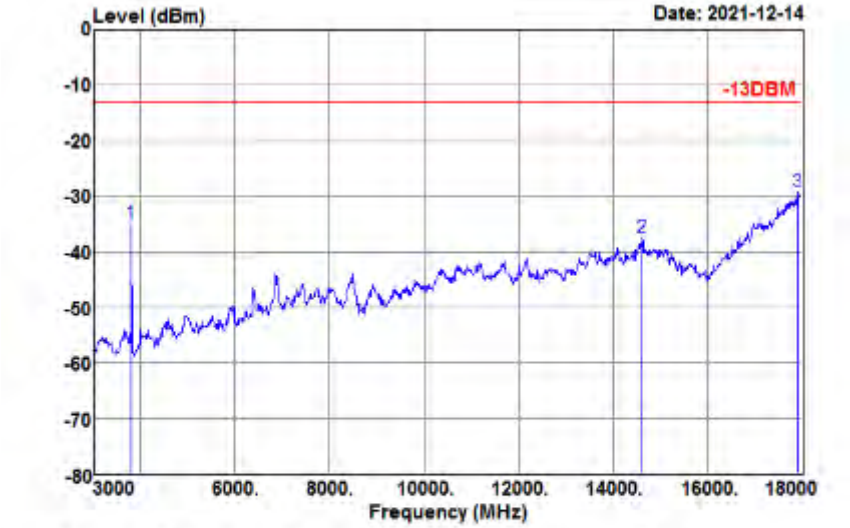
CH 9538

MODE	TX channel 9538	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
3810.000	-48.37	8.60	-39.77	-13.00	-26.77	Peak
13500.000	-67.84	28.46	-39.38	-13.00	-26.38	Peak
17505.000	-68.23	35.81	-32.42	-13.00	-19.42	Peak

MODE	TX channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



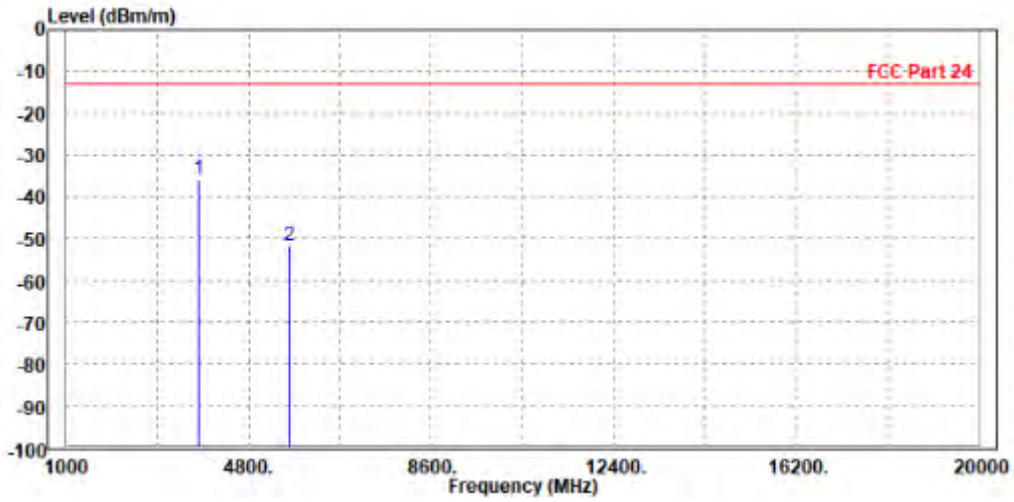
Freq MHz	Reading level dBm	Aux factor dB	level dBm	Limit level dBm	Over limit dB	Remark
3810.000	-43.50	8.70	-34.80	-13.00	-21.80	Peak
14625.000	-65.93	28.32	-37.61	-13.00	-24.61	Peak
17925.000	-69.14	39.79	-29.35	-13.00	-16.35	Peak

LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK

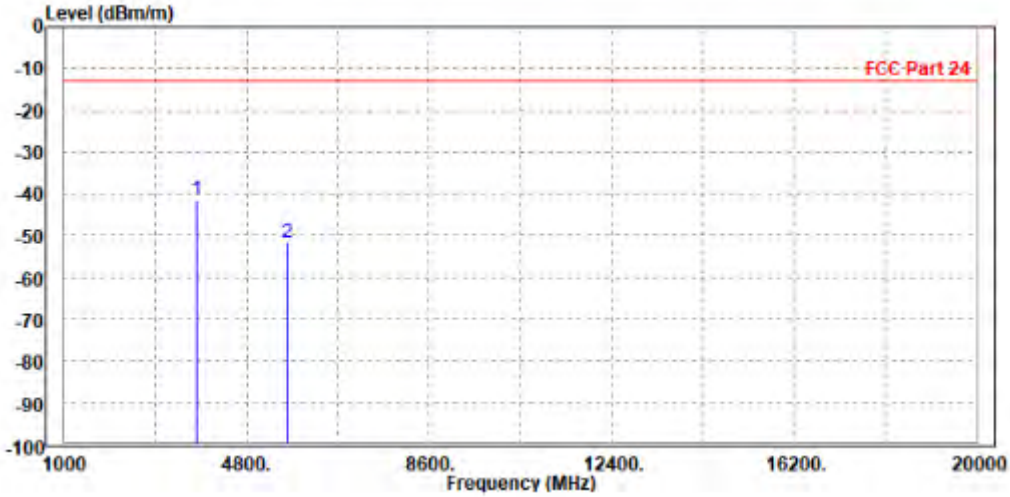
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	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	-35.63	-43.61	-13.00	-22.63	7.98	Peak	Horizontal
2	5640.000	-51.78	-62.52	-13.00	-38.78	10.74	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

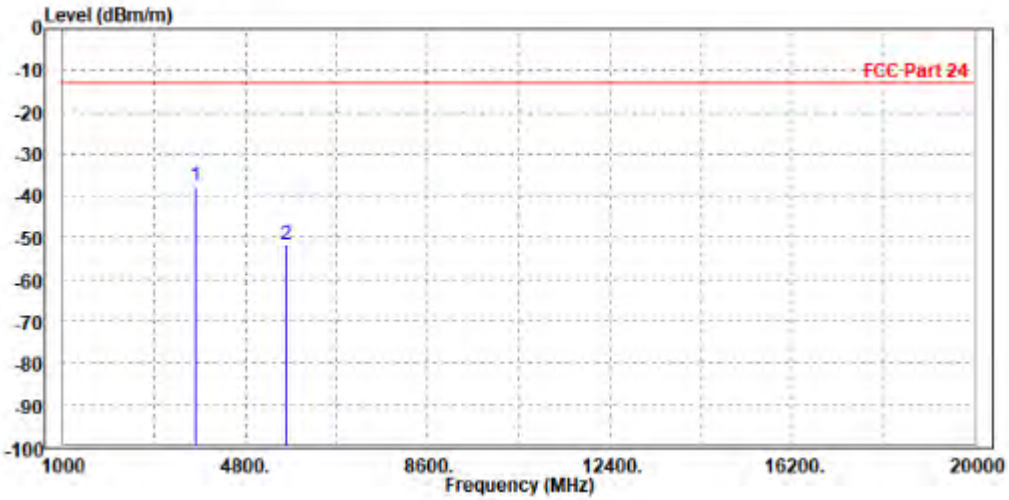
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3760.000	-41.59	-49.29	-13.00	-28.59	7.70	Peak	Vertical
2	5636.000	-51.79	-62.91	-13.00	-38.79	11.12	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

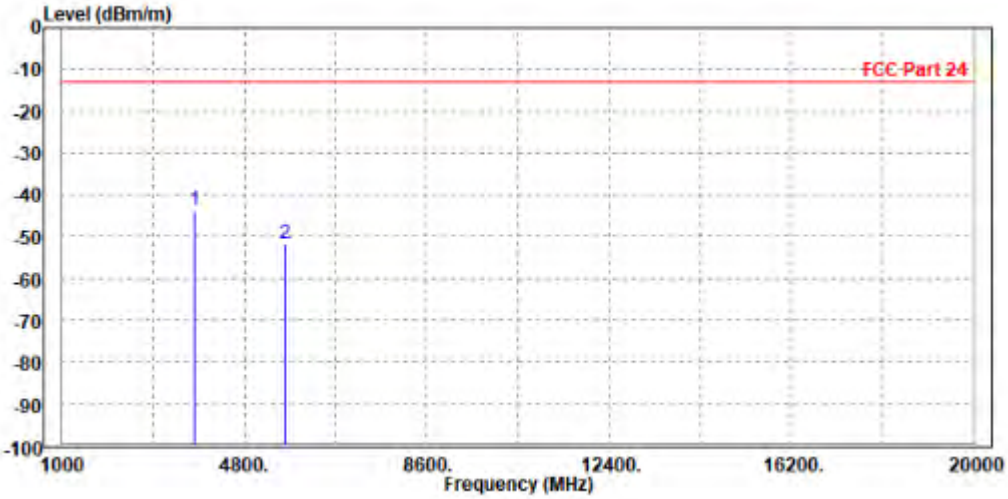
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3760.000	-37.57	-45.56	-13.00	-24.57	7.99	Peak	Horizontal
2	5636.000	-51.84	-62.57	-13.00	-38.84	10.73	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

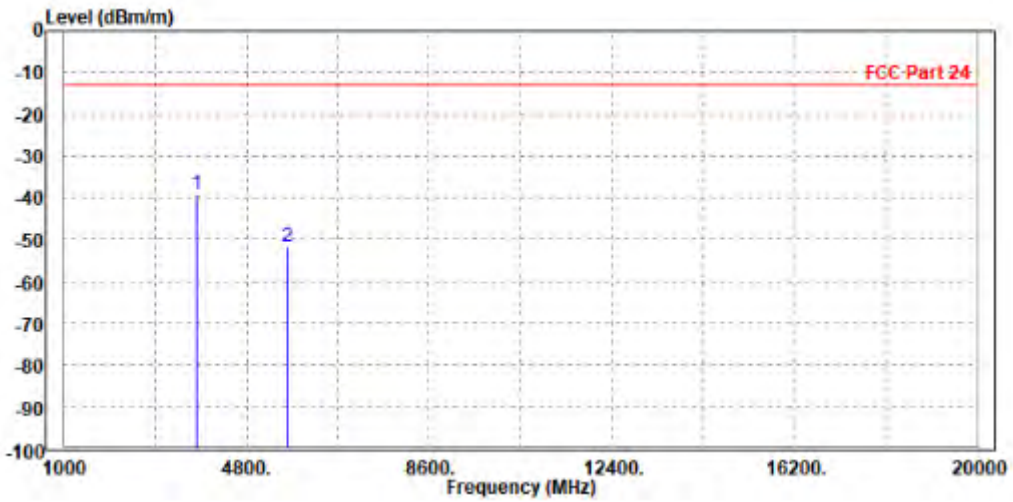
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3755.000	-43.69	-51.38	-13.00	-30.69	7.69	Peak	Vertical
2	5640.000	-51.78	-62.91	-13.00	-38.78	11.13	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

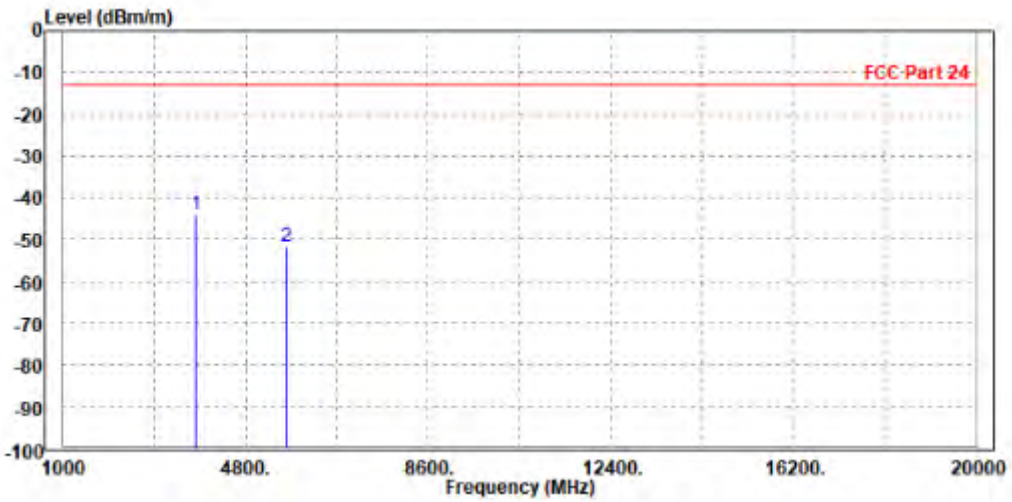
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		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	-39.07	-47.05	-13.00	-26.07	7.98	Peak	Horizontal
2		5640.000	-51.68	-62.42	-13.00	-38.68	10.74	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
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	3760.000	-44.10	-51.80	-13.00	-31.10	7.70	Peak	Vertical
2	5636.000	-51.69	-62.81	-13.00	-38.69	11.12	Peak	Vertical

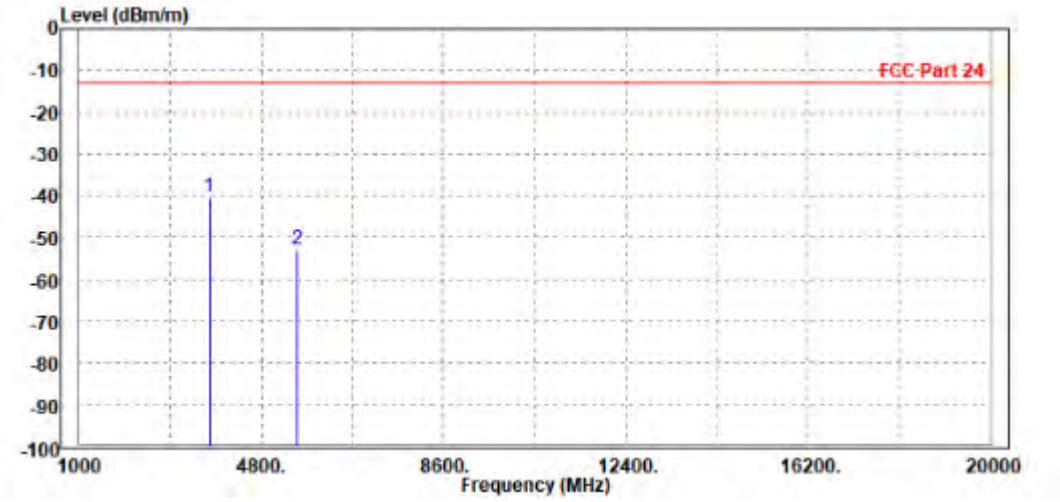


CHANNEL BANDWIDTH: 10MHz / QPSK

CH18607

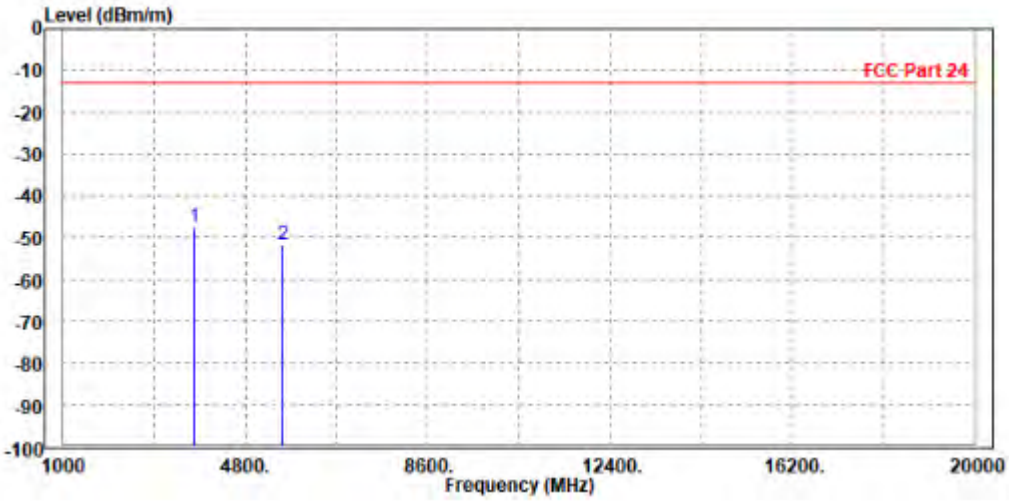
MODE	TX channel 18607	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3710.000	-40.19	-48.05	-13.00	-27.19	7.86	Peak	Horizontal
2	5560.000	-52.83	-63.42	-13.00	-39.83	10.59	Peak	Horizontal



MODE	TX channel 18607	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

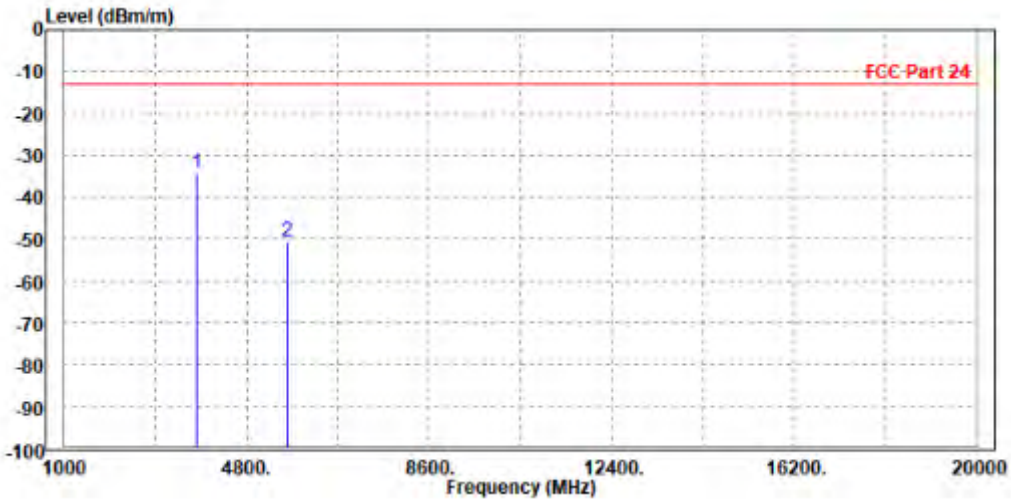
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3717.000	-47.49	-55.12	-13.00	-34.49	7.63	Peak	Vertical
2	5565.000	-51.55	-62.46	-13.00	-38.55	10.91	Peak	Vertical



CH18900

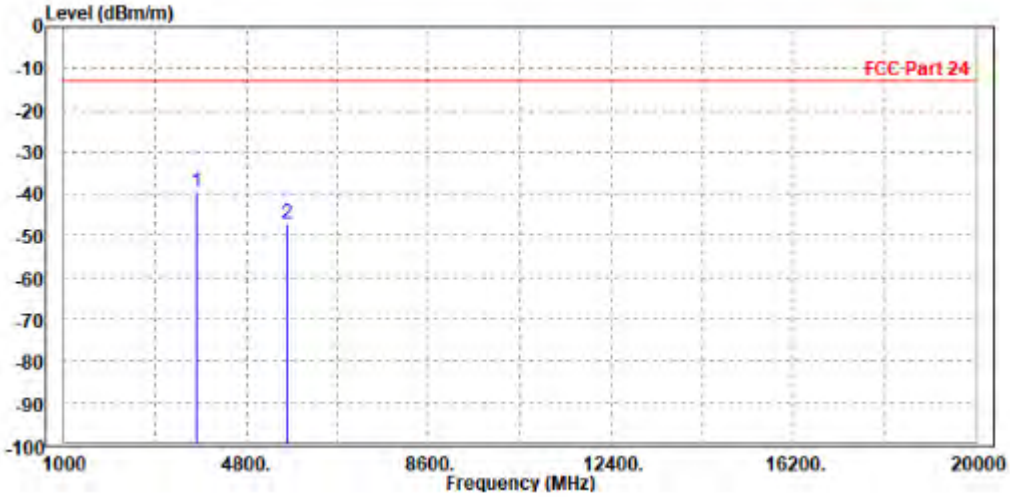
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3760.000	-34.32	-42.31	-13.00	-21.32	7.99	Peak	Horizontal
2	5636.000	-50.53	-61.26	-13.00	-37.53	10.73	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

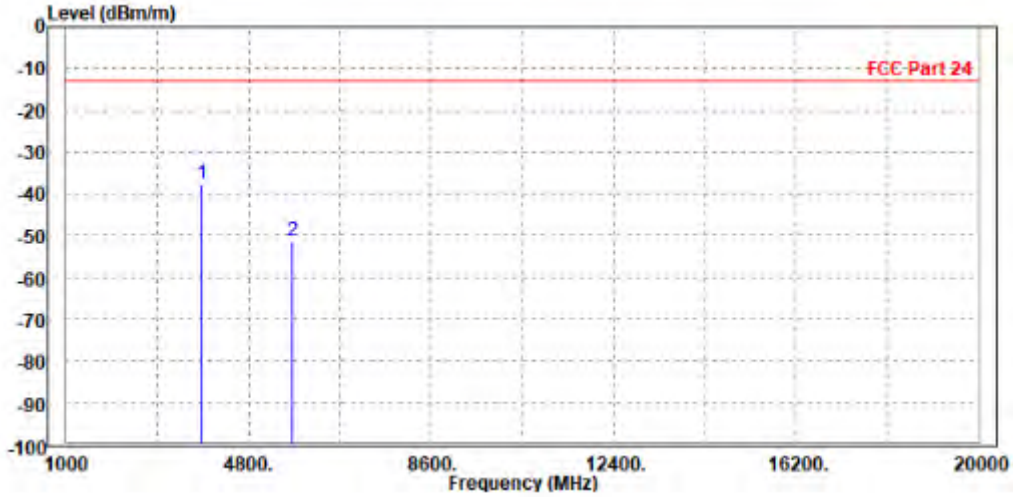
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3755.000	-39.42	-47.11	-13.00	-26.42	7.69	Peak	Vertical
2	5640.000	-47.15	-58.28	-13.00	-34.15	11.13	Peak	Vertical



CH19193

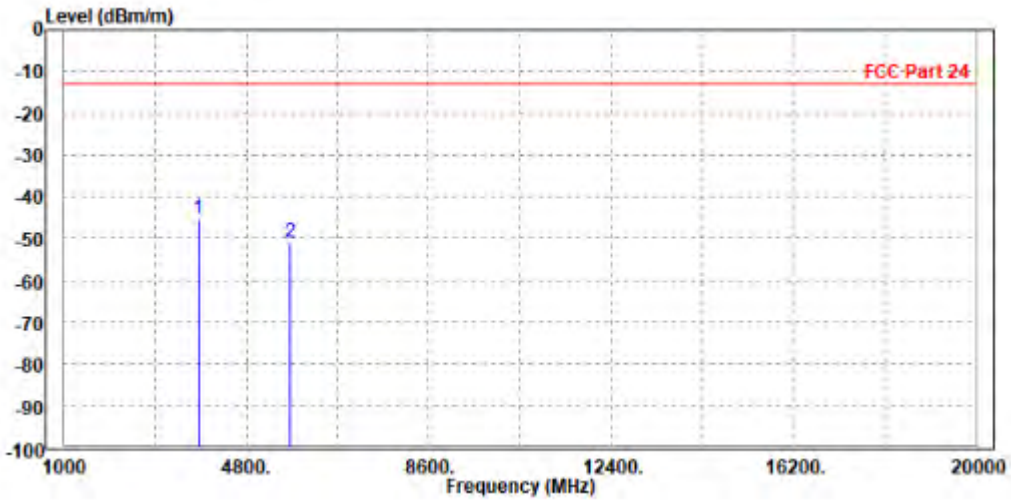
MODE	TX channel 19193	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3812.000	-37.48	-45.60	-13.00	-24.48	8.12	Peak	Horizontal
2		5715.000	-51.18	-62.06	-13.00	-38.18	10.88	Peak	Horizontal



MODE	TX channel 19193	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

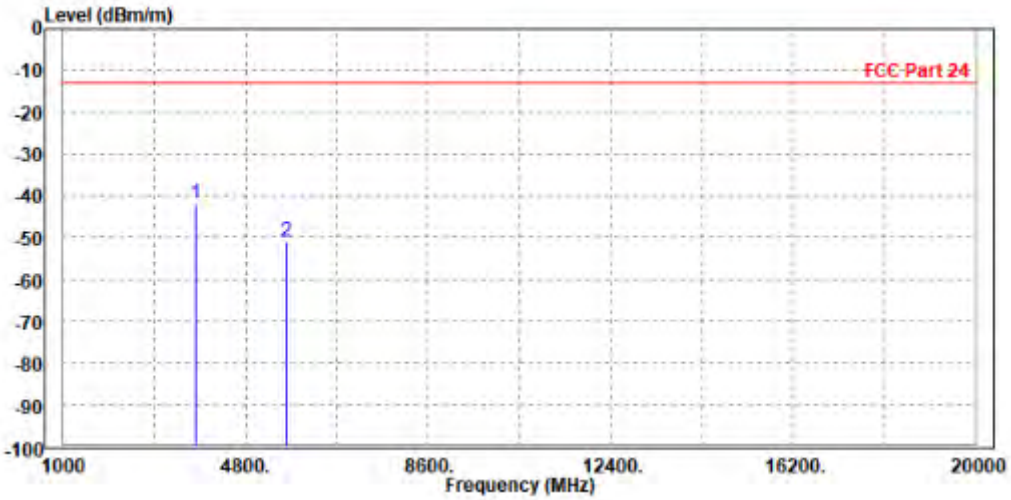
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3810.000	-45.36	-53.13	-13.00	-32.36	7.77	Peak	Vertical
2	5712.000	-50.86	-62.19	-13.00	-37.86	11.33	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

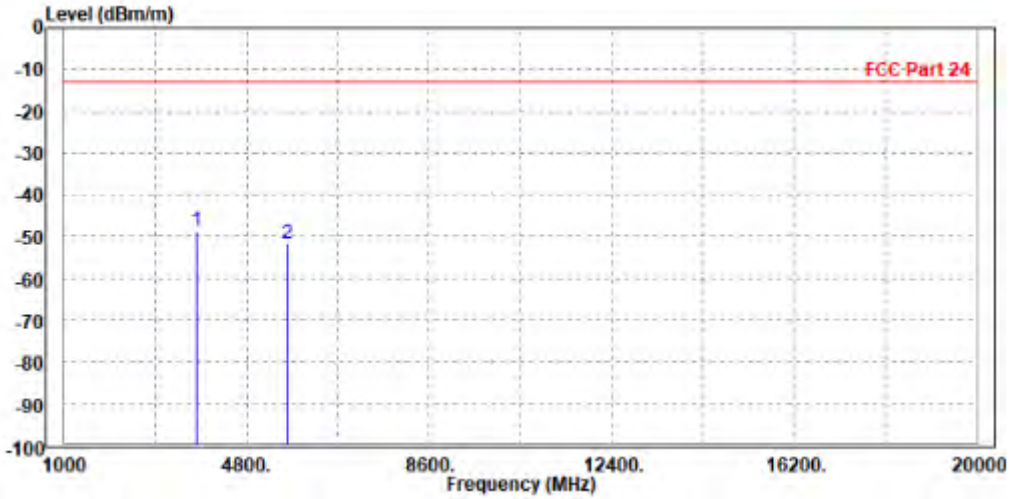
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3760.000	-41.64	-49.63	-13.00	-28.64	7.99	Peak	Horizontal
2	5636.000	-51.01	-61.74	-13.00	-38.01	10.73	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

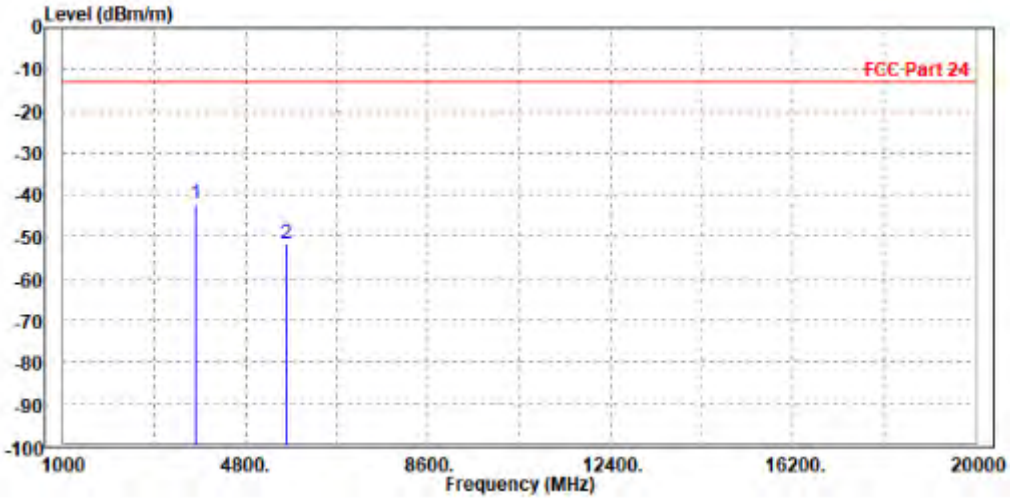
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3755.000	-48.50	-56.19	-13.00	-35.50	7.69	Peak	Vertical
2		5640.000	-51.67	-62.80	-13.00	-38.67	11.13	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

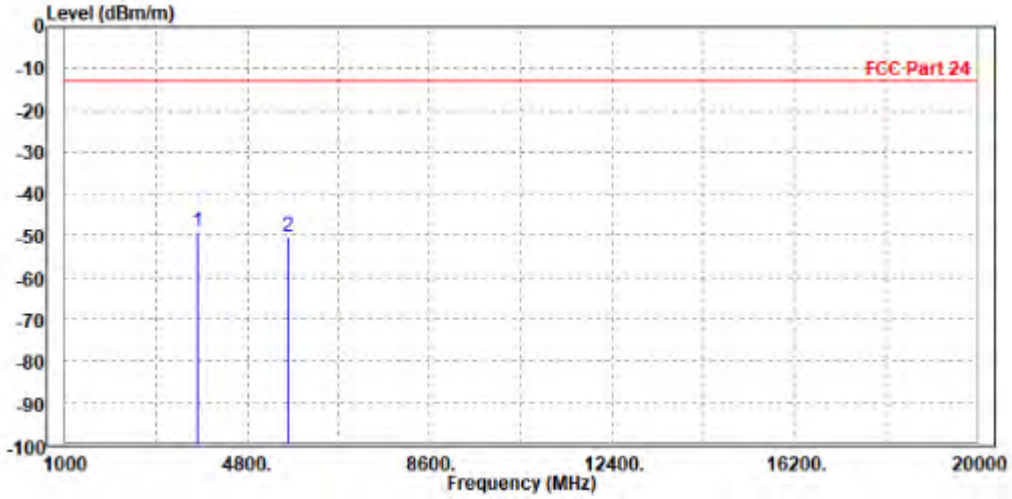
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		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	-42.36	-50.34	-13.00	-29.36	7.98	Peak	Horizontal
2		5640.000	-51.56	-62.30	-13.00	-38.56	10.74	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
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	3760.000	-49.09	-56.79	-13.00	-36.09	7.70	Peak	Vertical
2		5636.000	-50.32	-61.44	-13.00	-37.32	11.12	Peak	Vertical

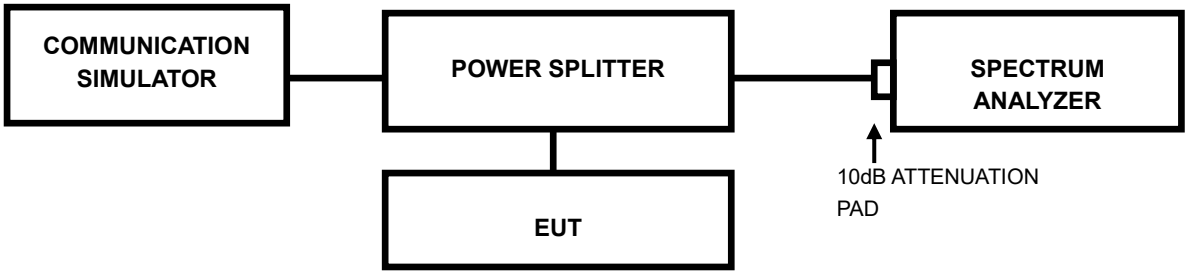


3.7 PEAK TO AVERAGE RATIO

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 ≥ 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

Please Refer to Appendix Of this test report.

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:

Shenzhen EMC/RF Lab:
Tel: +86-755-88696566
Fax: +86-755-88696577

Email: customerservice.sw@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.

5 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.

6 Appendix

PCS 1900

FREQUENCY STABILITY PCS1900 TEST RESULT

Band: PCS1900							
Network	Frequency (MHz)	Temp. (°C)	Voltage (VDC)	Freq. Error (Hz)	Freq. vs. Rated (ppm)		Verdict
					Result	Limit	
GSM	1850.2	20	3.27	28.93	0.02	-2.5 to 2.5	Pass
			3.85	1.03	0.00	-2.5 to 2.5	Pass
			4.43	2.03	0.00	-2.5 to 2.5	Pass
		-30	3.85	13.21	0.01	-2.5 to 2.5	Pass
		-20	3.85	13.49	0.01	-2.5 to 2.5	Pass
		-10	3.85	13.72	0.01	-2.5 to 2.5	Pass
		0	3.85	19.02	0.01	-2.5 to 2.5	Pass
		10	3.85	17.92	0.01	-2.5 to 2.5	Pass
		30	3.85	22.47	0.01	-2.5 to 2.5	Pass
		40	3.85	21.37	0.01	-2.5 to 2.5	Pass
		50	3.85	20.44	0.01	-2.5 to 2.5	Pass
	1880	20	3.27	12.43	0.01	-2.5 to 2.5	Pass
			3.85	9.65	0.01	-2.5 to 2.5	Pass
			4.43	8.88	0.00	-2.5 to 2.5	Pass
		-30	3.85	19.37	0.01	-2.5 to 2.5	Pass
		-20	3.85	27.28	0.01	-2.5 to 2.5	Pass
		-10	3.85	26.09	0.01	-2.5 to 2.5	Pass
		0	3.85	16.50	0.01	-2.5 to 2.5	Pass
		10	3.85	13.08	0.01	-2.5 to 2.5	Pass
		30	3.85	13.27	0.01	-2.5 to 2.5	Pass
		40	3.85	19.60	0.01	-2.5 to 2.5	Pass
		50	3.85	7.52	0.00	-2.5 to 2.5	Pass
	1909.8	20	3.27	4.78	0.00	-2.5 to 2.5	Pass
			3.85	9.36	0.00	-2.5 to 2.5	Pass
			4.43	16.40	0.01	-2.5 to 2.5	Pass
		-30	3.85	9.69	0.01	-2.5 to 2.5	Pass
		-20	3.85	11.91	0.01	-2.5 to 2.5	Pass
		-10	3.85	9.85	0.01	-2.5 to 2.5	Pass
		0	3.85	4.26	0.00	-2.5 to 2.5	Pass
		10	3.85	20.37	0.01	-2.5 to 2.5	Pass
		30	3.85	9.72	0.01	-2.5 to 2.5	Pass
		40	3.85	15.66	0.01	-2.5 to 2.5	Pass
		50	3.85	9.78	0.01	-2.5 to 2.5	Pass
EGSM	1850.2	20	3.27	-2.94	-0.00	-2.5 to 2.5	Pass
			3.85	12.43	0.01	-2.5 to 2.5	Pass
			4.43	12.72	0.01	-2.5 to 2.5	Pass
		-30	3.85	3.49	0.00	-2.5 to 2.5	Pass
		-20	3.85	-11.95	-0.01	-2.5 to 2.5	Pass
		-10	3.85	-3.94	-0.00	-2.5 to 2.5	Pass
		0	3.85	-1.00	-0.00	-2.5 to 2.5	Pass
		10	3.85	9.88	0.01	-2.5 to 2.5	Pass
		30	3.85	10.17	0.01	-2.5 to 2.5	Pass
		40	3.85	-7.13	-0.00	-2.5 to 2.5	Pass
		50	3.85	-9.98	-0.01	-2.5 to 2.5	Pass
	1880	20	3.27	14.21	0.01	-2.5 to 2.5	Pass
			3.85	11.33	0.01	-2.5 to 2.5	Pass
			4.43	12.01	0.01	-2.5 to 2.5	Pass

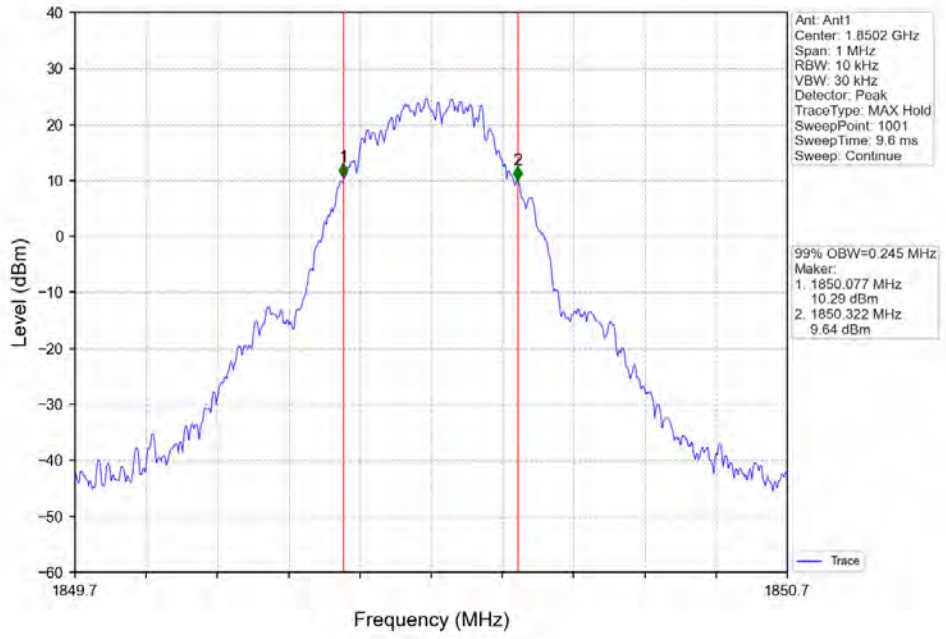
		-30	3.85	7.78	0.00	-2.5 to 2.5	Pass
		-20	3.85	12.59	0.01	-2.5 to 2.5	Pass
		-10	3.85	3.65	0.00	-2.5 to 2.5	Pass
		0	3.85	12.17	0.01	-2.5 to 2.5	Pass
		10	3.85	13.08	0.01	-2.5 to 2.5	Pass
		30	3.85	23.25	0.01	-2.5 to 2.5	Pass
		40	3.85	-5.36	-0.00	-2.5 to 2.5	Pass
		50	3.85	13.62	0.01	-2.5 to 2.5	Pass
	1909.8	20	3.27	-0.90	-0.00	-2.5 to 2.5	Pass
			3.85	5.94	0.00	-2.5 to 2.5	Pass
			4.43	-7.30	-0.00	-2.5 to 2.5	Pass
		-30	3.85	3.78	0.00	-2.5 to 2.5	Pass
		-20	3.85	13.37	0.01	-2.5 to 2.5	Pass
		-10	3.85	10.36	0.01	-2.5 to 2.5	Pass
		0	3.85	20.31	0.01	-2.5 to 2.5	Pass
		10	3.85	7.72	0.00	-2.5 to 2.5	Pass
		30	3.85	-7.72	-0.00	-2.5 to 2.5	Pass
		40	3.85	12.40	0.01	-2.5 to 2.5	Pass
		50	3.85	11.30	0.01	-2.5 to 2.5	Pass

99% & 26DB BANDWIDTH 99%_OBW TEST RESULT

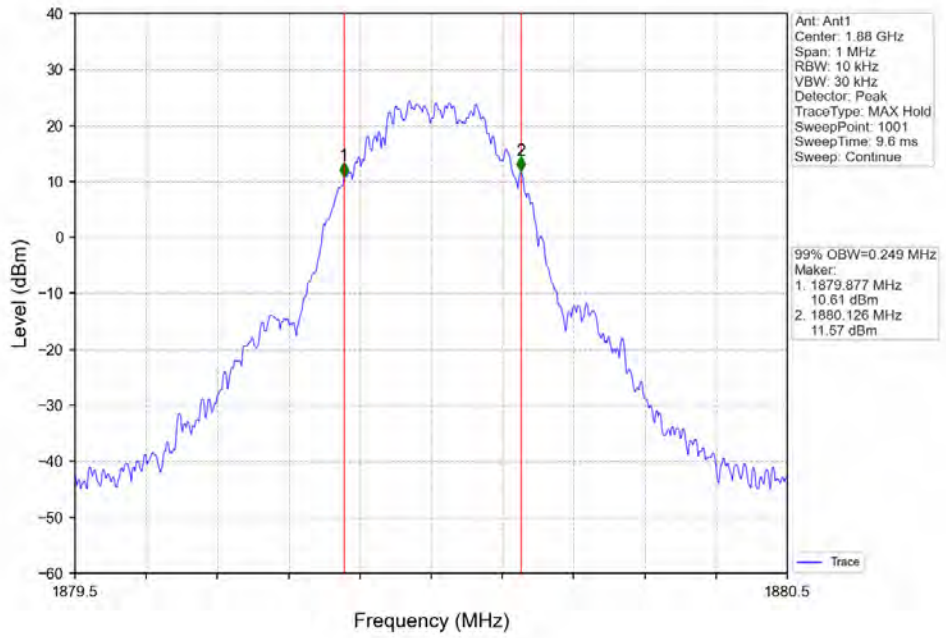
Band: PCS1900					
ENV	Mode		Frequency (MHz)	99% Occupied Bandwidth (MHz)	Verdict
	Network	Subset		Result	
NTNV	GSM	1 TX Slot	1850.2	0.245	Pass
			1880	0.249	Pass
			1909.8	0.244	Pass
	EGSM	1 TX Slot	1850.2	0.246	Pass
			1880	0.258	Pass
			1909.8	0.248	Pass

TEST GRAPH

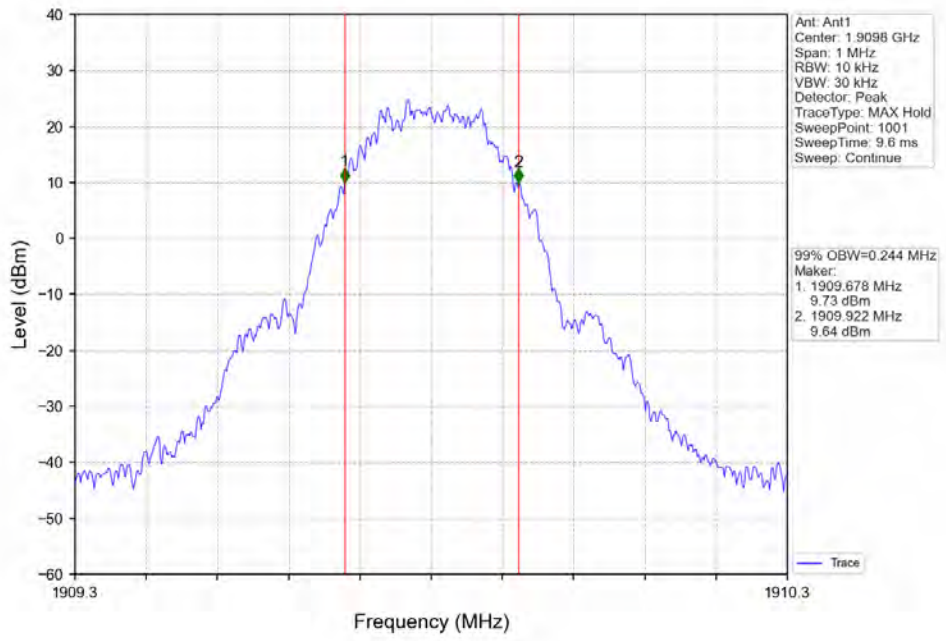
PCS1900_GSM_LCH_1850.2MHz_1 TX Slot_NTNV



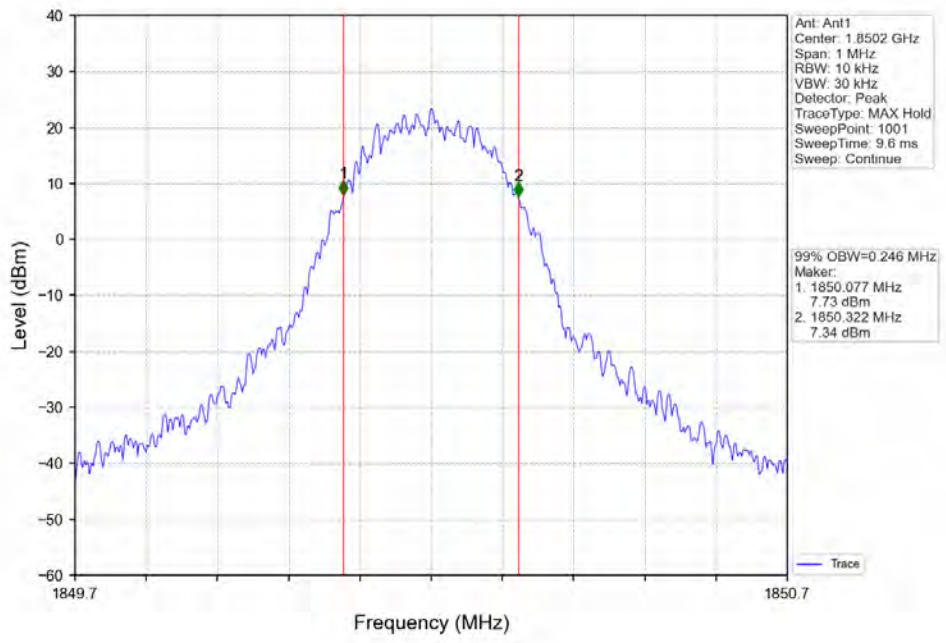
PCS1900_GSM_MCH_1880MHz_1 TX Slot_NTNV



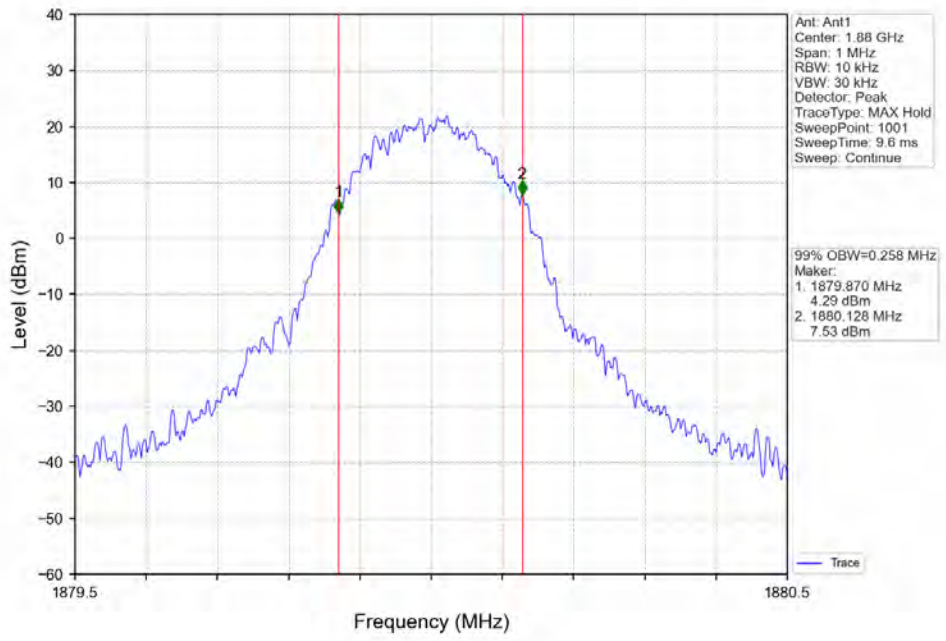
PCS1900_GSM_HCH_1909.8MHz_1 TX Slot_NTNV



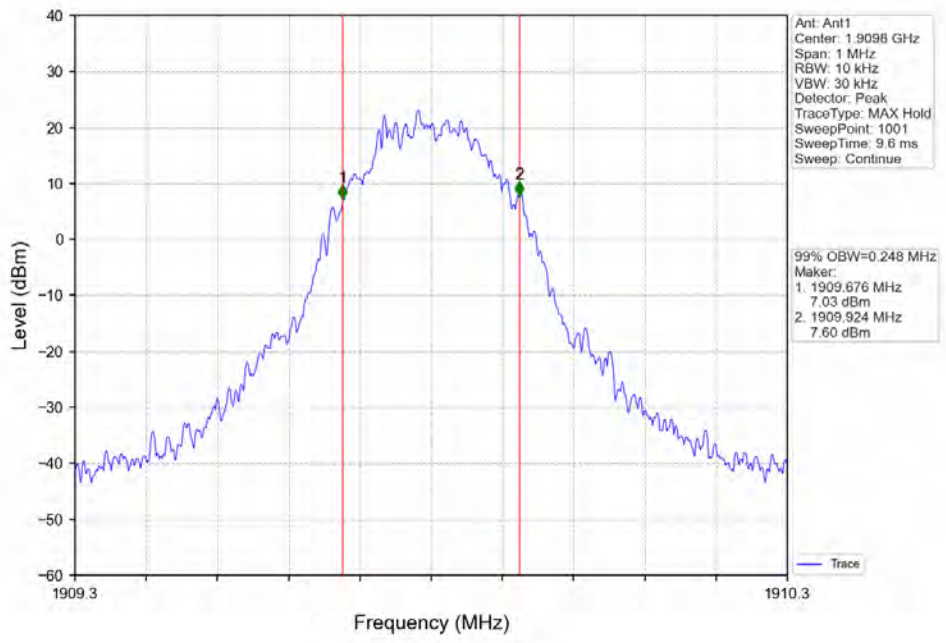
PCS1900_EGSM_LCH_1850.2MHz_1 TX Slot_NTNV



PCS1900_EGSM_MCH_1880MHz_1 TX Slot_NTNV



PCS1900_EGSM_HCH_1909.8MHz_1 TX Slot_NTNV

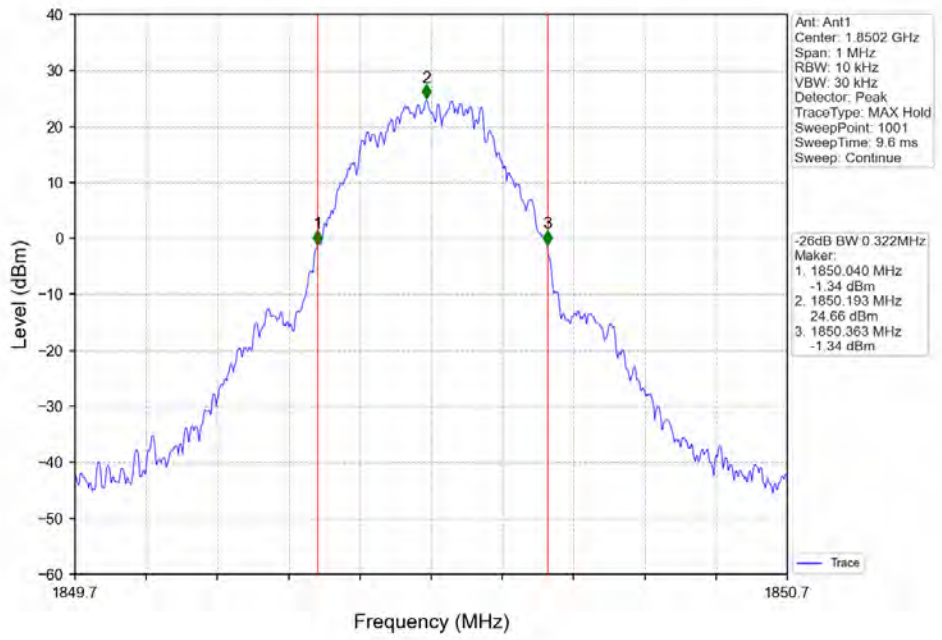


26DB_OBW TEST RESULT

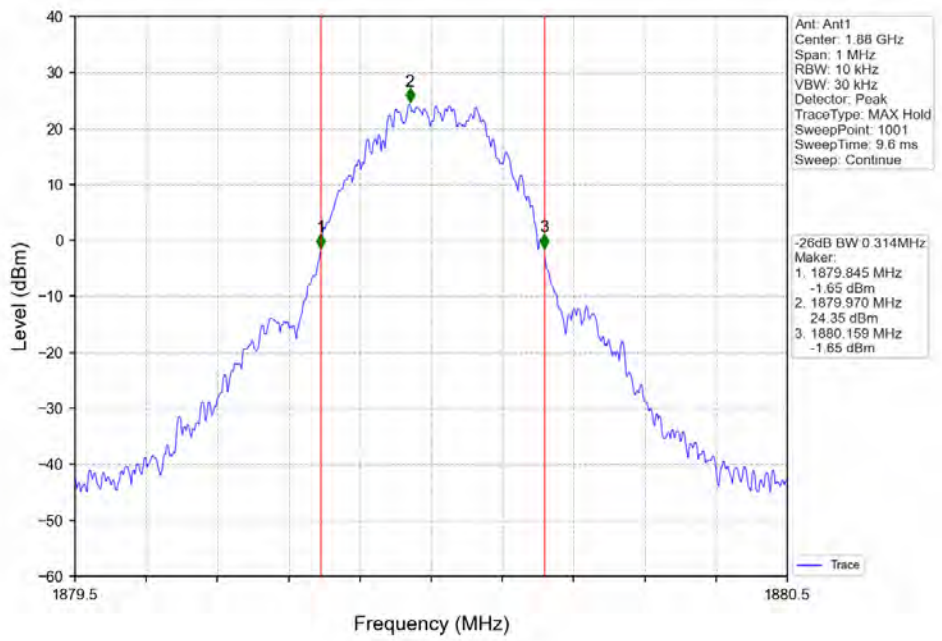
Band: PCS1900					
ENV	Mode		Frequency (MHz)	26dB Bandwidth (MHz)	Verdict
	Network	Subset		Result	
NTNV	GSM	1 TX Slot	1850.2	0.322	Pass
			1880	0.314	Pass
			1909.8	0.320	Pass
	EGSM	1 TX Slot	1850.2	0.318	Pass
			1880	0.323	Pass
			1909.8	0.311	Pass

TEST GRAPH

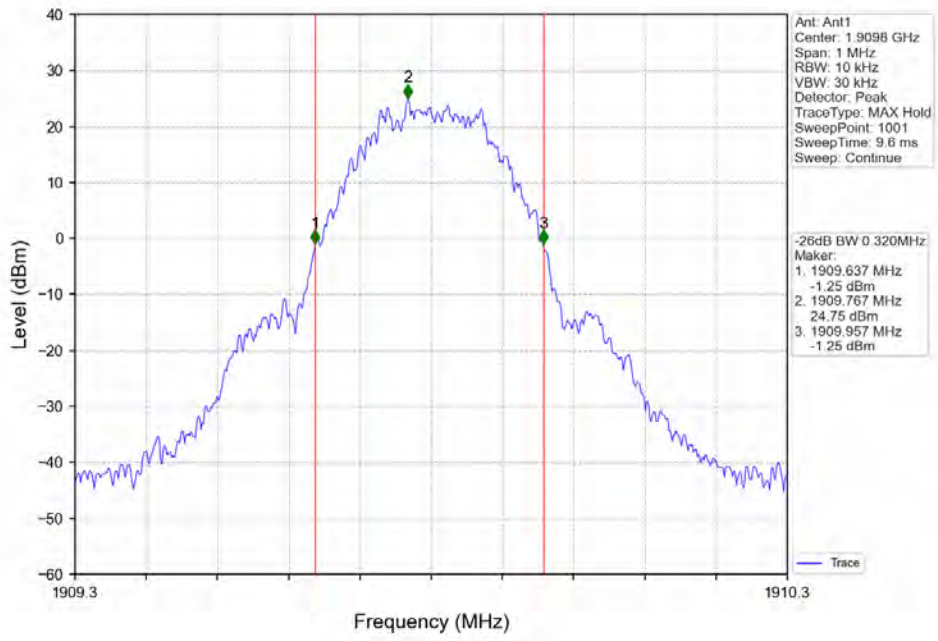
PCS1900_GSM_LCH_1850.2MHz_1 TX Slot_NTNV



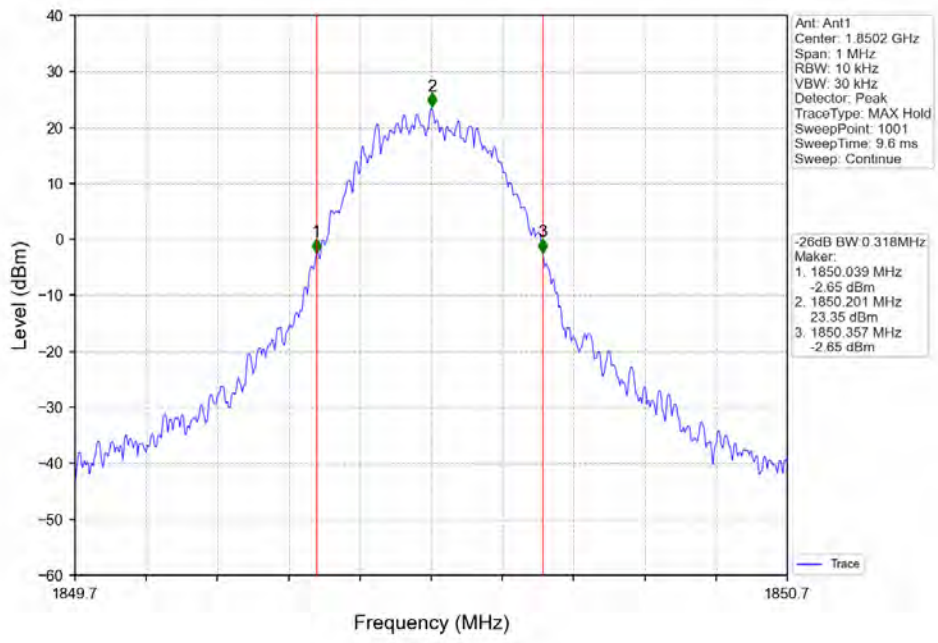
PCS1900_GSM_MCH_1880MHz_1 TX Slot_NTNV



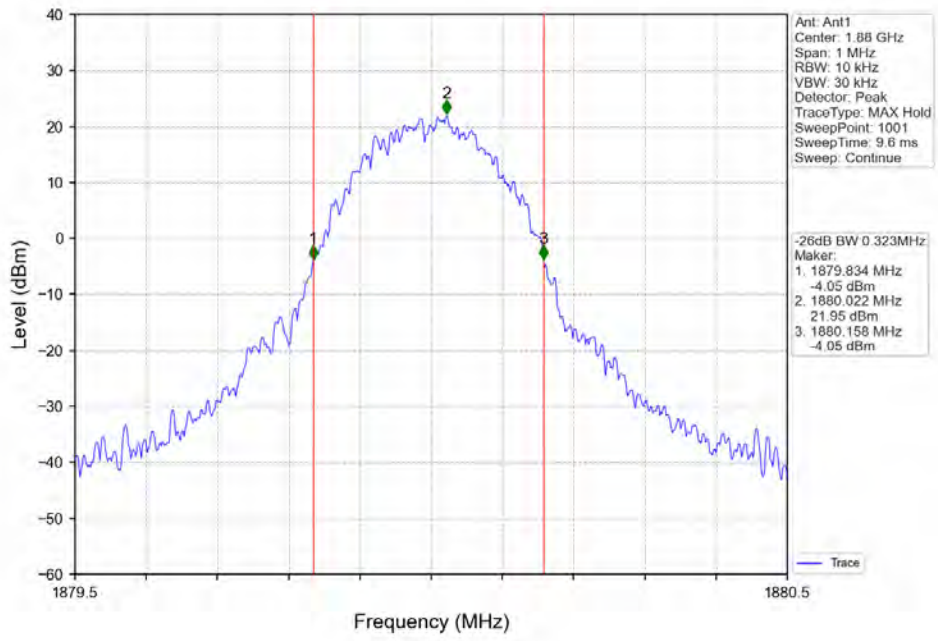
PCS1900_GSM_HCH_1909.8MHz_1 TX Slot_NTNV



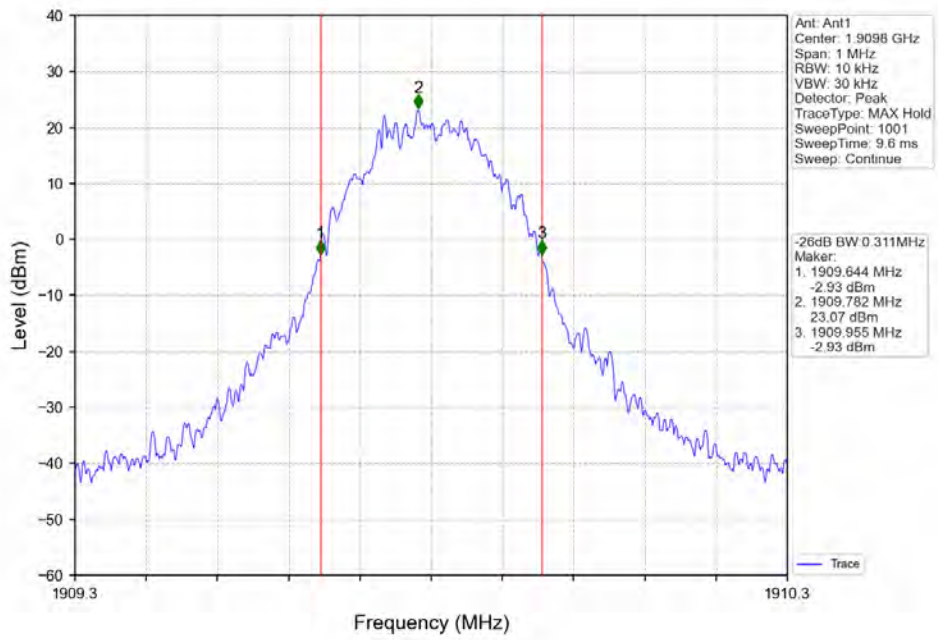
PCS1900_EGSM_LCH_1850.2MHz_1 TX Slot_NTNV



PCS1900_EGSM_MCH_1880MHz_1 TX Slot_NTNV



PCS1900_EGSM_HCH_1909.8MHz_1 TX Slot_NTNV

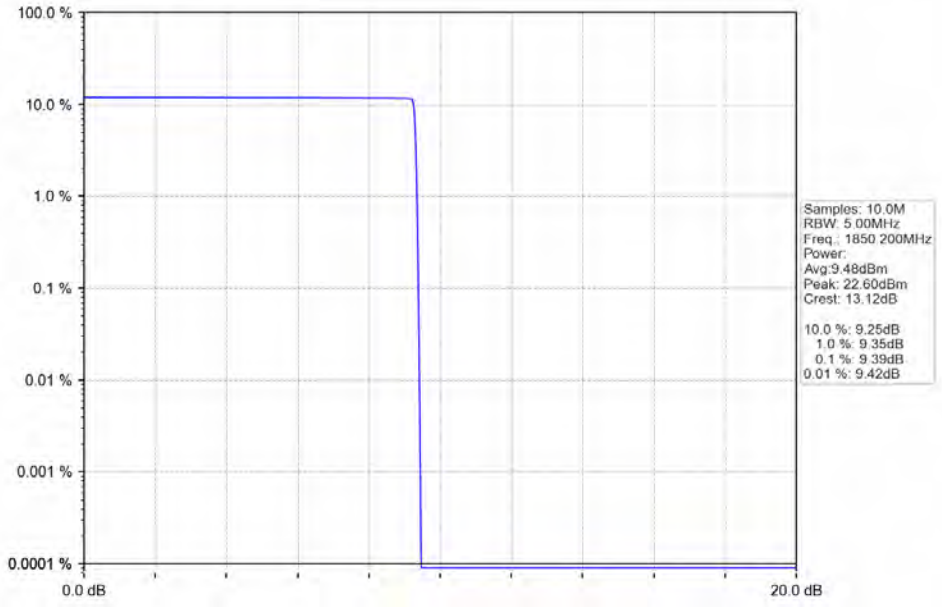


PEAK-AVERAGE RATIO TEST RESULT

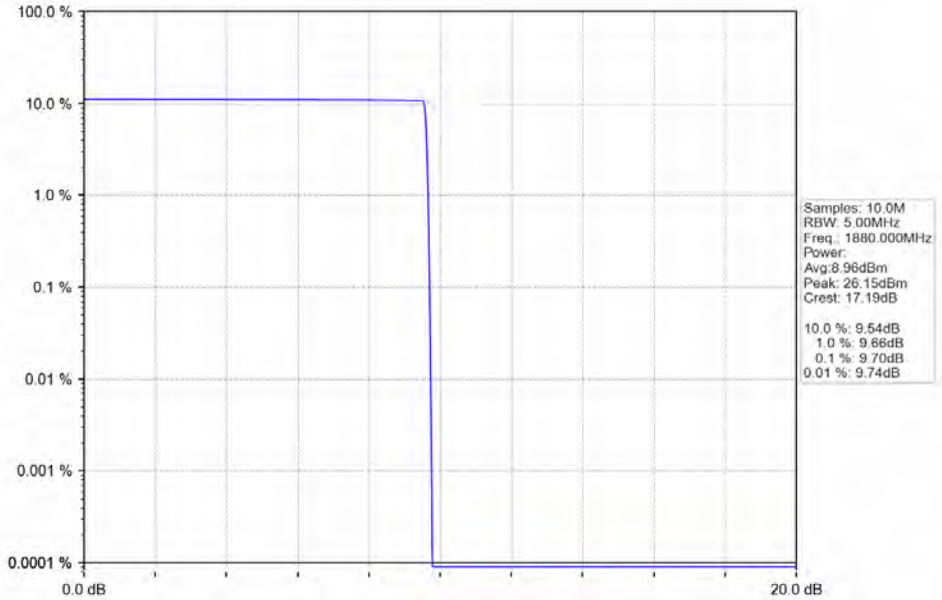
Band: PCS1900						
ENV	Mode		Frequency (MHz)	Peak-Average Ratio (dB)		Verdict
	Network	Subset		Result	Limit	
NTNV	GSM	4 TX Slots	1850.2	9.39	<=13	Pass
			1880	9.70	<=13	Pass
			1909.8	3.60	<=13	Pass
	EGSM	4 TX Slots	1850.2	11.82	<=13	Pass
			1880	6.63	<=13	Pass
			1909.8	7.29	<=13	Pass

TEST GRAPH

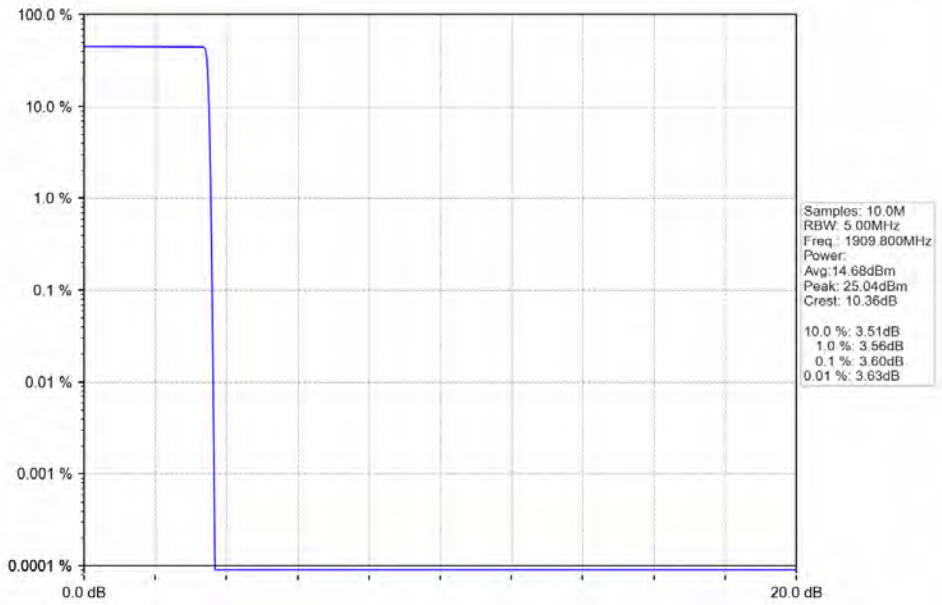
PCS1900_GSM_LCH_1850.2MHz_4 TX Slots_NTNV



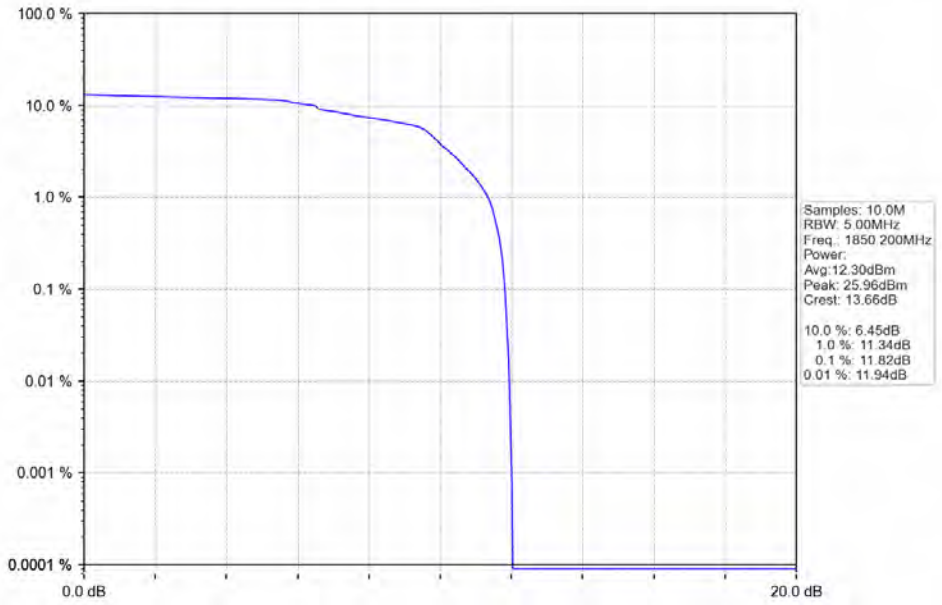
PCS1900_GSM_MCH_1880MHz_4 TX Slots_NTNV



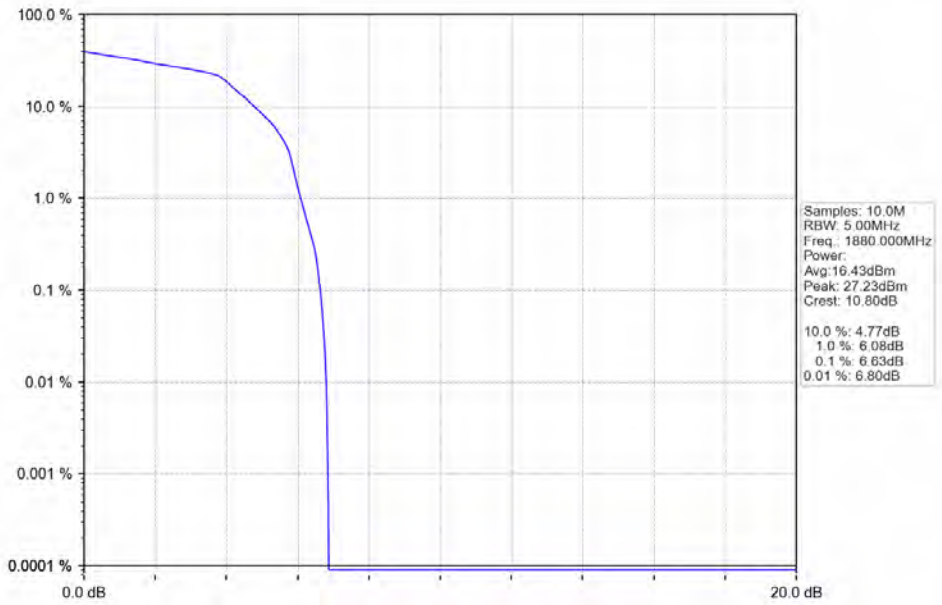
PCS1900_GSM_HCH_1909.8MHz_4 TX Slots_NTNV



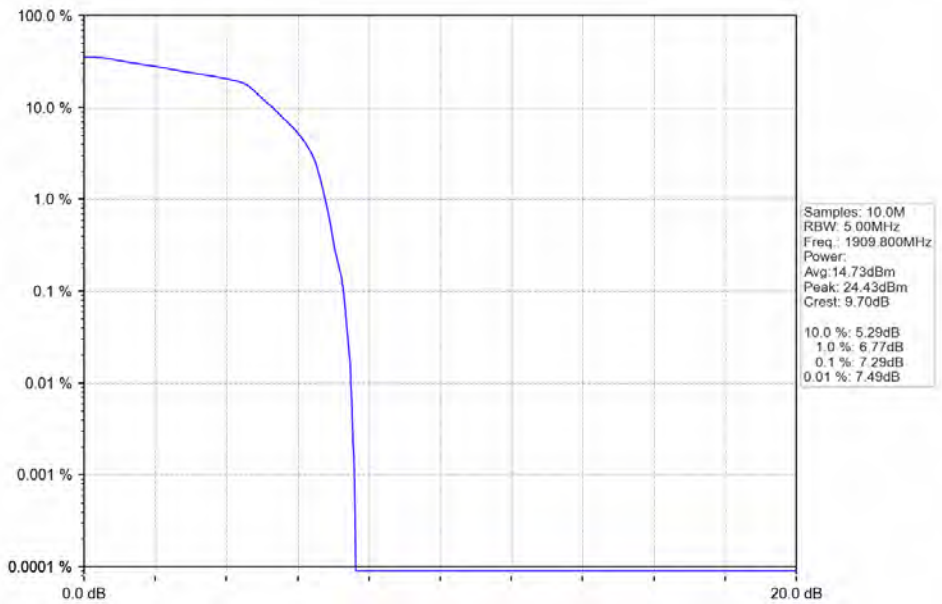
PCS1900_EGSM_LCH_1850.2MHz_4 TX Slots_NTNV



PCS1900_EGSM_MCH_1880MHz_4 TX Slots_NTNV



PCS1900_EGSM_HCH_1909.8MHz_4 TX Slots_NTNV



SPURIOUS EMISSION TEST RESULT

Band: PCS1900						
ENV	Mode		Frequency (MHz)	Spurious Emission		Verdict
	Network	Subset		Result	Limit	
NTNV	GSM	1 TX Slot	1850.2	Refer To Test Graph		Pass
			1880	Refer To Test Graph		Pass
			1909.8	Refer To Test Graph		Pass
	EGSM	1 TX Slot	1850.2	Refer To Test Graph		Pass
			1880	Refer To Test Graph		Pass
			1909.8	Refer To Test Graph		Pass