FCC TEST REPORT

(PART 24)

Applicant:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA

Manufacturer or Supplier:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA
Product:	Module
Brand Name:	Continental
Model Name:	FE5NAR110, FE5NAR111
FCC ID:	LHJ-FE5NAR110
Date of tests:	May. 01, 2024 ~ Jun. 17, 2024

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: Jun. 17, 2024	Luke Lu Date: Jun. 17, 2024

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-240430W002RF03	Original release	Jun. 17, 2024

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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	Conducted Output Power	Compliance
§24.232(c)	Equivalent Isotropic Radiated Power	Compliance
§2.1055 §24.235	Frequency Stability	Compliance
§2.1049	Occupied Bandwidth	Compliance
§24.232(d)	Peak to average ratio	Compliance
§24.238(a)(b)	Band Edge Measurements	Compliance
§2.1051 §24.238(a)(b)	Conducted Spurious Emissions	Compliance
§2.1053 §24.238(a)(b)	Radiated Spurious Emissions	Compliance

NOTE:
The worst-case scenario for all measurements is based on an engineering evaluation made on different modulations. Then, QPSK and 16QAM were observed as the worst mode to LTE bands respectively and set for all conducted and radiated. Output power measurements were measured on QPSK, 16QAM, 64QAM modulations, and tests other than output power are performed only in worse-case QPSK and 16QAM modulations.

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
Frequency Stability	±76.97Hz
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions & Radiated Power (30MHz~1GHz)	±4.98dB
Radiated emissions & Radiated Power (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±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	Mar. 28,24	Mar. 27,25
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.10,23	May.09,24
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.09,24	May.08,25
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.03,23	Sep.02,24
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 18,24	Feb. 17,25
Horn Antenna	ETS-LINDGREN	3117	00168692	Feb. 18,24	Feb. 17,25
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Sep.04, 23	Sep.03, 24
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 14,24	Feb. 13,25
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 06,23	May. 05,24
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 05,24	May. 04,25
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.10,23	May.09,24
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.09,24	May.08,25
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,24	Feb.16,25
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Nov. 14,23	Nov. 13,26
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	50HF-010-SMA	May. 06,23	May. 05,24
10dB Attenuator	JFW/USA	50HF-010-SMA	50HF-010-SMA	May. 05,24	May. 04,25
Power Meter	Anritsu	ML2495A	1506002	Feb. 14,24	Feb. 13,25
Power Sensor	Anritsu	MA2411B	1339352	Feb. 14,24	Feb. 13,25
Temperature Chamber	ESPEC	SH-242	93000855	May. 06,23	May. 05,24
Temperature Chamber	ESPEC	SH-242	93000855	May. 05,24	May. 04,25
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 14,24	Feb. 13,25
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.10,23	May.09,24
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.09,24	May.08,25
DC Source	Kikusui/JP	PMX18-5A	N/A	Aug. 11,23	Aug. 10,24

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	Module	
BRAND NAME	Continental	
MODEL NAME	FE5NAR110, FE5NAR111	
NOMINAL VOLTAGE	DC4.0V	
MODULATION TYPE	**WCDMA:** BPSK, QPSK **LTE:** QPSK, 16QAM, 64QAM	
FREQUENCY RANGE	**WCDMA II**	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	**WCDMA**	332.66mW
	LTE Band 2 Channel Bandwidth: 1.4MHz	331.13mW
	LTE Band 2 Channel Bandwidth: 3MHz	334.97mW
	LTE Band 2 Channel Bandwidth: 5MHz	328.1mW
	LTE Band 2 Channel Bandwidth: 10MHz	326.59mW
	LTE Band 2 Channel Bandwidth: 15MHz	334.97mW
	LTE Band 2 Channel Bandwidth: 20MHz	336.51mW
EMISSION DESIGNATOR	**WCDMA**	4M14F9W
	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D 16QAM: 1M10W7D

	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 2M69G7D 16QAM: 2M70W7D
	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 4M51G7D 16QAM: 4M51W7D
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 9M00G7D 16QAM: 8M97W7D
	LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 13M5G7D 16QAM: 13M5W7D
	LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 18M0G7D 16QAM: 17M9W7D
ANTENNA TYPE	Monopole Antenna with 1.93dBi gain for WCDMA II/LTE B2	
HW VERSION	P2.0	
SW VERSION	MODEM_GM_C3_3.0.2.24	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	N/A	
EXTREME TEMPERATURE	-40-85 ℃	
EXTREME VOLTAGE	3.8V - 4.2V	

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

MODULATION MODE	TX FUNCTION
WCDMA	1TX
LTE	1TX

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

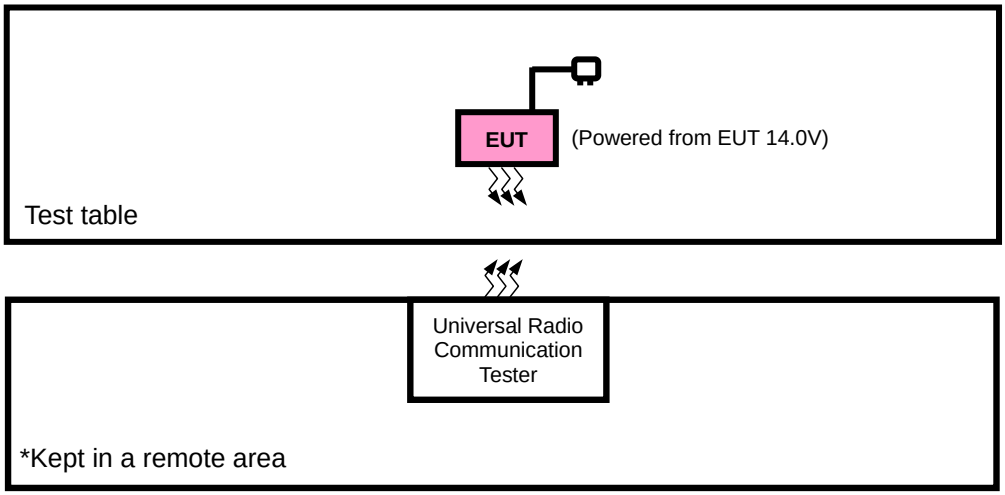
4. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.

5. According to the information provided by the manufacturer, The difference between FE5NAR110, FE5NAR111 is as follows:

Sample	HVIN/PMN	5G Bands NSA	5G Bands SA	SA UL MIMO	LTE Bands	UMTS	GNSS
1	FE5NAR110	n2, n5, n66, n77	n25, n41, n66, n71, n77	n41, n77	2, 4, 5, 7, 12, 13, 14, 28A, 28B, 29Rx, 30Rx, 66, 71	2, 4, 5	L1, L5
2	FE5NAR111	n2, n5, n66, n77	n25, n41, n66, n71, n77	n41, n77	2, 4, 5, 7, 12, 13, 14, 28A, 28B, 29Rx, 30Rx, 66, 71	2, 4, 5	L1

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	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB cable: 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 WCDMA/ LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	**EUT + DC Source with WCDMA or LTE link**

WCDMA MODE

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

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	18650 to 19150	18650, 19150	10MHz	QPSK	1 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM	15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM	75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	18700 to 19100	18700, 18900, 19100	20MHz	QPSK	1 RB / 0 RB Offset

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

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 57%RH	DC 14.0V	Jace Hu
FREQUENCY STABILITY	23deg. C, 61%RH	DC 3.8V/4V/4.2V	James Fu
OCCUPIED BANDWIDTH	23deg. C, 61%RH	DC 4.0V	James Fu
PEAK TO AVERAGE RATIO	23deg. C, 61%RH	DC 4.0V	James Fu
BAND EDGE	23deg. C, 61%RH	DC 4.0V	James Fu
CONDUCTED EMISSION	23deg. C, 61%RH	DC 4.0V	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC 14.0V	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 determining 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 isotopically 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.

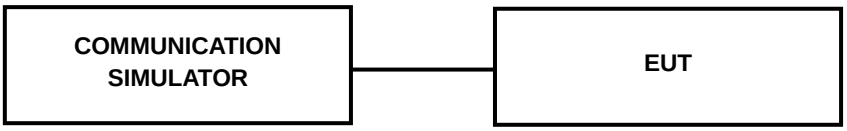
CONDUCTED POWER MEASUREMENT:

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	WCDMA II		
TX Channel	9262	9400	9538
Rx Channel	9662	9800	9938
Frequency (MHz)	1852.4	1880	1907.6
RMC 12.2K	23.29	23.27	23.15
HSDPA Subtest-1	22.19	22.07	21.99
HSDPA Subtest-2	22.00	22.06	21.98
HSDPA Subtest-3	21.64	21.65	21.49
HSDPA Subtest-4	21.54	21.63	21.44
DC-HSDPA Subtest-1	22.00	21.98	21.95
DC-HSDPA Subtest-2	21.97	21.96	21.91
DC-HSDPA Subtest-3	21.48	21.59	21.46
DC-HSDPA Subtest-4	21.41	21.53	21.45
HSUPA Subtest-1	22.05	22.07	21.95
HSUPA Subtest-2	19.94	20.06	19.95
HSUPA Subtest-3	21.13	21.04	20.98
HSUPA Subtest-4	20.00	19.97	19.96
HSUPA Subtest-5	21.94	22.02	21.92

LTE Band 2

LTE Band 2						
BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		18700	18900	19100
		Frequency (MHz)		1860	1880	1900
20M	QPSK	1	0	**23.34**	23.16	23.14
		1	50	23.13	23.11	22.94
		1	99	23.04	22.98	22.94
		50	0	22.13	22.10	22.02
		50	25	22.28	22.14	22.09
		50	50	22.26	22.17	21.98
		100	0	22.20	22.20	22.10
	16QAM	1	0	22.56	22.43	22.28
		1	50	22.33	22.25	22.23
		1	99	22.37	22.24	22.08
		50	0	21.29	21.07	21.01
		50	25	21.32	21.11	21.05
		50	50	21.19	21.19	21.02
		100	0	21.24	21.19	21.05
	64QAM	1	0	21.50	21.43	21.46
		1	50	21.34	21.27	21.24
		1	99	21.40	21.26	21.16
		50	0	20.29	20.10	20.11
		50	25	20.33	20.15	20.14
		50	50	20.31	20.16	20.13
		100	0	20.26	20.11	20.06

BW	Modulation	Channel		18675	18900	19125
		Frequency (MHz)		1857.5	1880	1902.5
15M	QPSK	1	0	23.32	23.03	23.12
		1	37	23.02	22.98	22.89
		1	74	22.98	22.86	22.84
		36	0	22.04	22.07	21.91
		36	19	22.18	22.03	22.08
		36	39	22.23	22.03	21.96
		75	0	22.11	22.19	22.08
	16QAM	1	0	22.49	22.29	22.13
		1	37	22.28	22.16	22.08
		1	74	22.25	22.17	22.07
		36	0	21.21	21.02	20.95
		36	19	21.27	20.96	21.02
		36	39	21.12	21.05	20.87
		75	0	21.14	21.07	21.02
	64QAM	1	0	21.49	21.39	21.37
		1	37	21.27	21.19	21.10
		1	74	21.29	21.18	21.03
		36	0	20.25	20.01	20.04
		36	19	20.21	20.01	20.03
		36	39	20.18	20.08	20.11
		75	0	20.12	20.02	20.05

BW	Modulation	Channel		18650	18900	19150
		Frequency (MHz)		1855	1880	1905
10M	QPSK	1	0	23.21	23.08	23.10
		1	24	23.02	22.96	22.80
		1	49	22.94	22.94	22.83
		25	0	22.03	22.06	21.92
		25	12	22.13	22.11	22.02
		25	25	22.18	22.13	21.87
		50	0	22.09	22.09	21.95
	16QAM	1	0	22.51	22.30	22.13
		1	24	22.19	22.11	22.20
		1	49	22.34	22.14	22.06
		25	0	21.23	21.00	20.97
		25	12	21.29	21.01	20.99
		25	25	21.07	21.14	20.96
		50	0	21.22	21.05	20.99
	64QAM	1	0	21.35	21.28	21.43
		1	24	21.20	21.23	21.15
		1	49	21.28	21.20	21.01
		25	0	20.15	19.99	20.02
		25	12	20.26	20.02	20.05
		25	25	20.28	20.04	20.11
		50	0	20.25	20.03	20.05

BW	Modulation	Channel		18625	18900	19175
		Frequency (MHz)		1852.5	1880	1907.5
5M	QPSK	1	0	23.23	23.08	23.08
		1	12	23.02	23.04	22.89
		1	24	22.94	22.95	22.81
		12	0	22.05	22.02	21.99
		12	6	22.13	22.08	21.98
		12	13	22.14	22.11	21.87
		25	0	22.18	22.15	22.03
	16QAM	1	0	22.55	22.35	22.22
		1	12	22.32	22.15	22.16
		1	24	22.30	22.22	22.02
		12	0	21.28	20.98	20.91
		12	6	21.19	20.98	21.01
		12	13	21.15	21.08	20.90
		25	0	21.16	21.13	20.92
	64QAM	1	0	21.43	21.37	21.31
		1	12	21.24	21.26	21.19
		1	24	21.33	21.18	21.14
		12	0	20.24	20.02	20.00
		12	6	20.25	20.08	20.11
		12	13	20.28	20.12	19.99
		25	0	20.17	20.03	19.92

BW	Modulation	Channel		18615	18900	19185
		Frequency (MHz)		1851.5	1880	1908.5
3M	QPSK	1	0	23.32	23.05	23.04
		1	7	23.06	22.97	22.81
		1	14	23.00	22.96	22.89
		8	0	22.11	22.00	21.92
		8	3	22.23	22.00	22.05
		8	7	22.19	22.05	21.83
		15	0	22.13	22.10	21.99
	16QAM	1	0	22.47	22.31	22.20
		1	7	22.26	22.11	22.15
		1	14	22.29	22.09	22.01
		8	0	21.14	20.92	21.00
		8	3	21.20	21.07	20.91
		8	7	21.07	21.18	21.01
		15	0	21.20	21.07	20.97
	64QAM	1	0	21.49	21.37	21.41
		1	7	21.26	21.16	21.20
		1	14	21.25	21.14	21.02
		8	0	20.26	20.03	20.04
		8	3	20.28	20.00	20.09
		8	7	20.23	20.08	20.06
		15	0	20.22	20.02	19.97

BW	Modulation	Channel		18607	18900	19193
		Frequency (MHz)		1850.7	1880	1909.3
1.4M	QPSK	1	0	23.24	23.03	23.13
		1	2	23.09	23.05	22.88
		1	5	23.01	22.90	22.93
		3	0	23.02	22.95	22.99
		3	1	23.27	23.09	23.08
		3	3	23.23	23.09	22.83
		6	0	22.15	22.14	21.97
	16QAM	1	0	22.43	22.29	22.16
		1	2	22.25	22.23	22.12
		1	5	22.29	22.15	22.06
		3	0	22.14	22.03	21.91
		3	1	22.26	22.01	21.99
		3	3	22.10	22.15	21.95
		6	0	21.12	21.18	20.92
	64QAM	1	0	21.36	21.38	21.32
		1	2	21.19	21.14	21.09
		1	5	21.31	21.25	21.07
		3	0	21.15	20.98	21.08
		3	1	21.30	21.00	21.11
		3	3	21.23	21.11	20.99
		6	0	20.13	20.09	20.04

EIRP

WCDMA II

WCDMA II						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
9262	1852.4	23.29	1.93	25.22	332.66	2
9400	1880	23.27	1.93	25.2	331.13	2
9538	1907.6	23.15	1.93	25.08	322.11	2

LTE BAND 2

LTE B2 1.4M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	23.27	1.93	25.2	331.13	2
18900	1880	23.09	1.93	25.02	317.69	2
19193	1909.3	23.13	1.93	25.06	320.63	2

LTE B2 1.4M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	22.43	1.93	24.36	272.9	2
18900	1880	22.29	1.93	24.22	264.24	2
19193	1909.3	22.16	1.93	24.09	256.45	2

LTE B2 1.4M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	21.36	1.93	23.29	213.3	2
18900	1880	21.38	1.93	23.31	214.29	2
19193	1909.3	21.32	1.93	23.25	211.35	2

LTE B2 3M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	23.32	1.93	25.25	334.97	2
18900	1880	23.05	1.93	24.98	314.77	2
19185	1908.5	23.04	1.93	24.97	314.05	2

LTE B2 3M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	22.47	1.93	24.4	275.42	2
18900	1880	22.31	1.93	24.24	265.46	2
19185	1908.5	22.2	1.93	24.13	258.82	2

LTE B2 3M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	21.49	1.93	23.42	219.79	2
18900	1880	21.37	1.93	23.3	213.8	2
19185	1908.5	21.41	1.93	23.34	215.77	2

LTE B2 5M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	23.23	1.93	25.16	328.1	2
18900	1880	23.08	1.93	25.01	316.96	2
19175	1907.5	23.08	1.93	25.01	316.96	2

LTE B2 5M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	22.55	1.93	24.48	280.54	2
18900	1880	22.35	1.93	24.28	267.92	2
19175	1907.5	22.22	1.93	24.15	260.02	2

LTE B2 5M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	21.43	1.93	23.36	216.77	2
18900	1880	21.37	1.93	23.3	213.8	2
19175	1907.5	21.31	1.93	23.24	210.86	2

LTE B2 10M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855	23.21	1.93	25.14	326.59	2
18900	1880	23.08	1.93	25.01	316.96	2
19150	1905	23.1	1.93	25.03	318.42	2

LTE B2 10M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855	22.51	1.93	24.44	277.97	2
18900	1880	22.3	1.93	24.23	264.85	2
19150	1905	22.2	1.93	24.13	258.82	2

LTE B2 10M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855	21.35	1.93	23.28	212.81	2
18900	1880	21.28	1.93	23.21	209.41	2
19150	1905	21.43	1.93	23.36	216.77	2

LTE B2 15M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	23.32	1.93	25.25	334.97	2
18900	1880	23.03	1.93	24.96	313.33	2
19125	1902.5	23.12	1.93	25.05	319.89	2

LTE B2 15M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	22.49	1.93	24.42	276.69	2
18900	1880	22.29	1.93	24.22	264.24	2
19125	1902.5	22.13	1.93	24.06	254.68	2

LTE B2 15M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	21.49	1.93	23.42	219.79	2
18900	1880	21.39	1.93	23.32	214.78	2
19125	1902.5	21.37	1.93	23.3	213.8	2

LTE B2 20M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	23.34	1.93	25.27	336.51	2
18900	1880	23.16	1.93	25.09	322.85	2
19100	1900	23.14	1.93	25.07	321.37	2

LTE B2 20M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	22.56	1.93	24.49	281.19	2
18900	1880	22.43	1.93	24.36	272.9	2
19100	1900	22.28	1.93	24.21	263.63	2

LTE B2 20M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	21.5	1.93	23.43	220.29	2
18900	1880	21.43	1.93	23.36	216.77	2
19100	1900	21.46	1.93	23.39	218.27	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

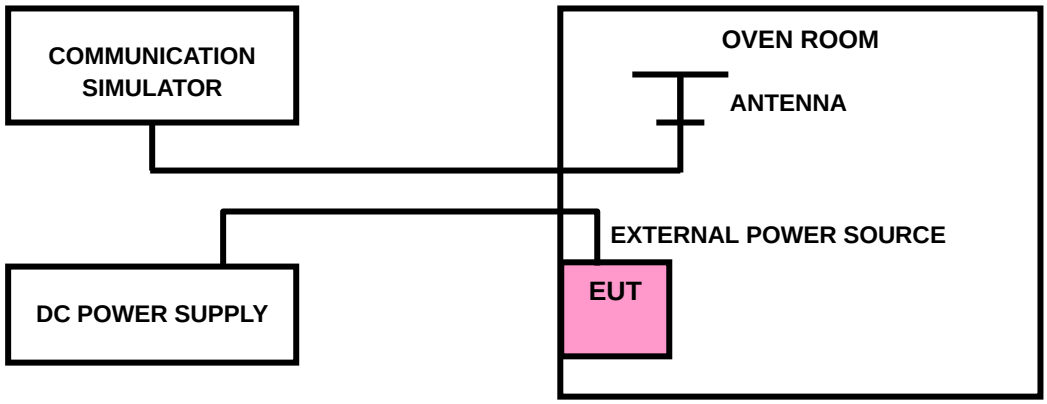
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected to 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 C Of this test report.

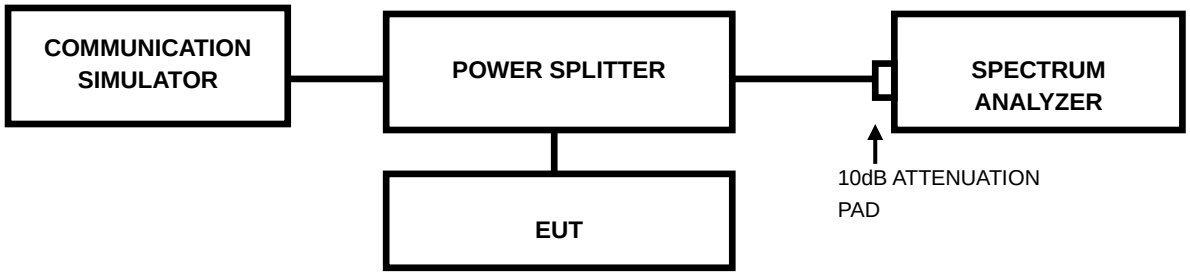
Note: VL = Low voltage(3.8V); VN/NV = Normal voltage(4V); VH = High voltage(4.2V);
NT = Normal temperature (25℃)

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage
0.5 %of the total mean power of a given emission.

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

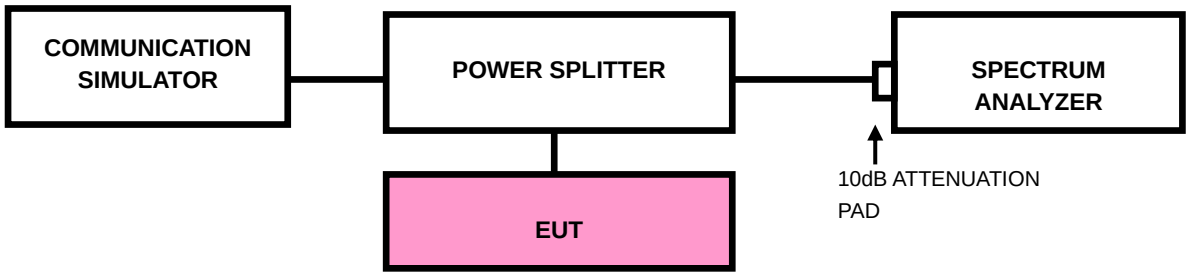
Please Refer to Appendix C Of this test report.

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) Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.

c) Tune the analyzer to the nominal center frequency of the emission bandwidth (EBW)

d) .Set the resolution bandwidth (RBW) ≧ 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.

e) Beyond the 1MHz band from the band edge, RBW=1MHz was used.

f) Set the video bandwidth (VBW) to ≧3 x RBW.

g) Select the average power (RMS) display detector.

h) Set the number of measurement points to ≧ 1001.

i) Use auto-coupled sweep time.

j) Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.

k) The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.

l) Record the max trace plot into the test report.

3.4.4. TEST RESULTS

Please Refer to Appendix C Of this test report.

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

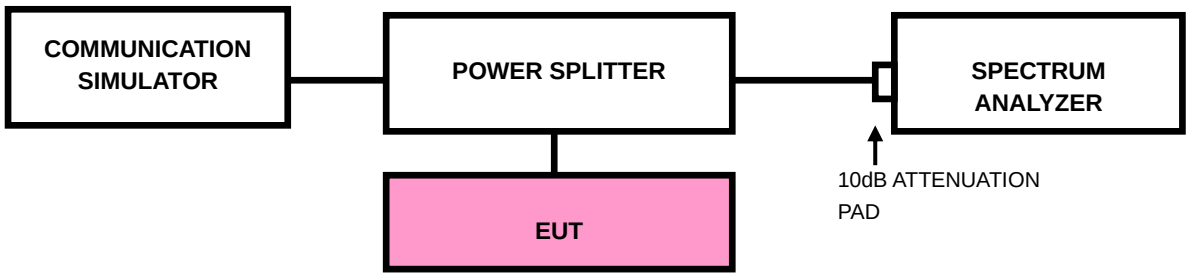
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

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 30MHz up to a frequency including its 10^{th} harmonic. 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

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

Please Refer to Appendix C 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.

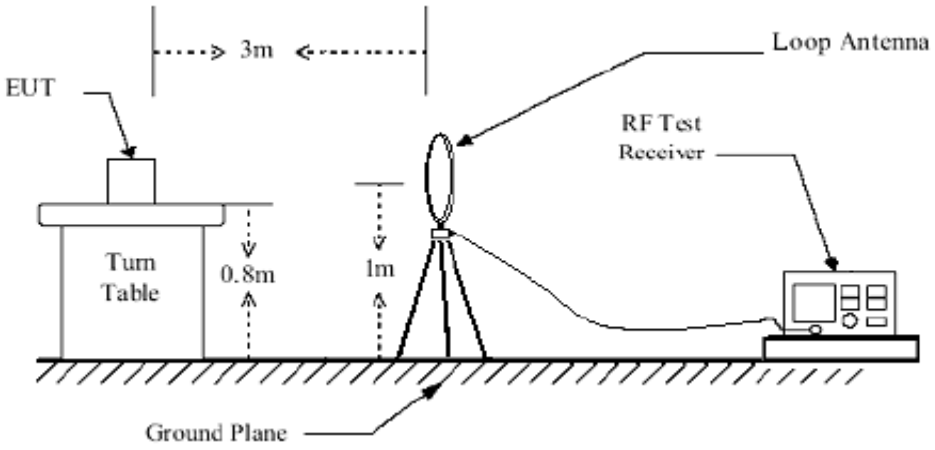
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.6.3 DEVIATION FROM TEST STANDARD

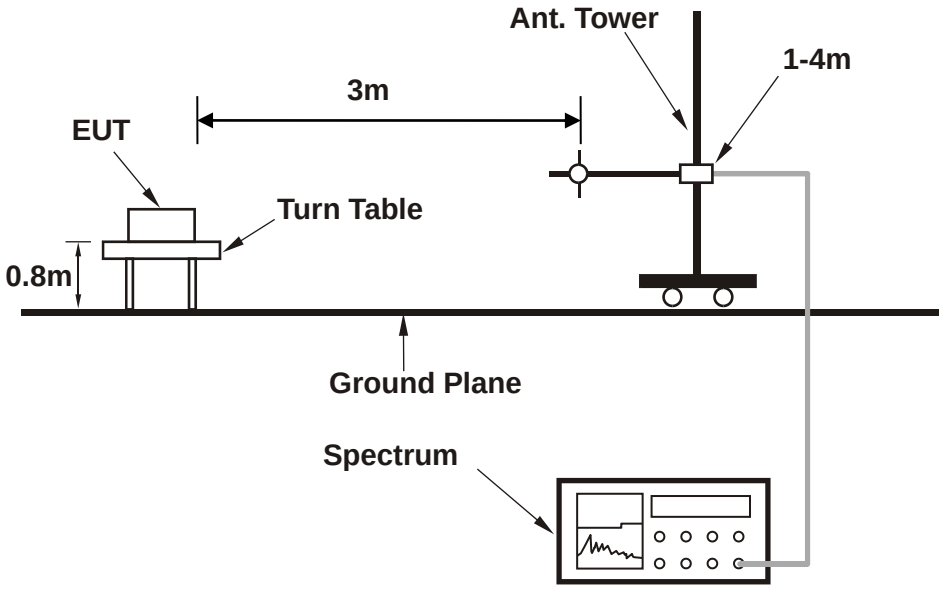
No deviation

3.6.4 TEST SETUP

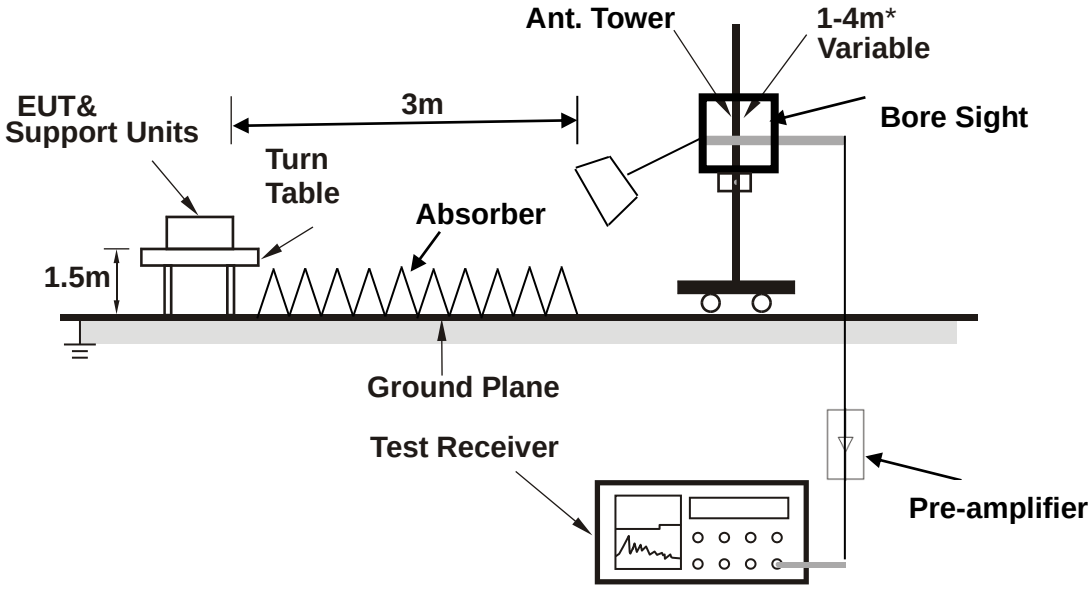
< Frequency Range below 30MHz >



< 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 ：

1. The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.
2. For CA band, stricter limit is used for the results' evaluation.

BELOW 1GHz WORST-CASE DATA

30 MHz – 1GHz data:

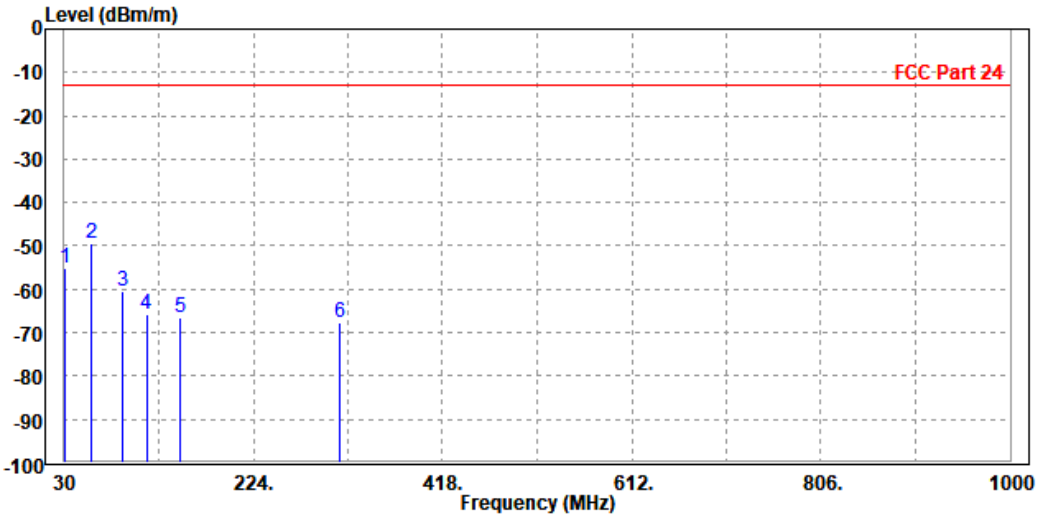
WCDMA II

CHANNEL BANDWIDTH: 9262~9538 / QPSK

CH 9400

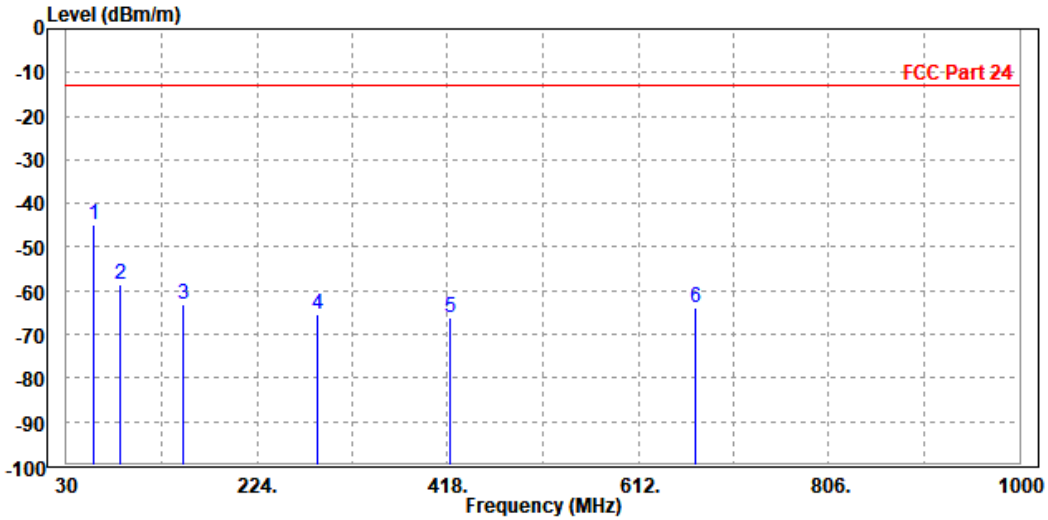
MODE	TX channel 9400	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	30.970	-55.27	-52.76	-13.00	-42.27	-2.51	Peak	Horizontal
2 PP	57.160	-49.48	-37.38	-13.00	-36.48	-12.10	Peak	Horizontal
3	89.170	-60.56	-47.83	-13.00	-47.56	-12.73	Peak	Horizontal
4	114.390	-65.94	-50.99	-13.00	-52.94	-14.95	Peak	Horizontal
5	148.340	-66.49	-52.07	-13.00	-53.49	-14.42	Peak	Horizontal
6	313.240	-67.79	-59.24	-13.00	-54.79	-8.55	Peak	Horizontal



MODE	TX channel 9400	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	57.160	-44.95	-26.05	-13.00	-31.95	-18.90	Peak	Vertical
2		84.320	-58.72	-40.44	-13.00	-45.72	-18.28	Peak	Vertical
3		148.340	-63.20	-49.67	-13.00	-50.20	-13.53	Peak	Vertical
4		286.080	-65.46	-61.96	-13.00	-52.46	-3.50	Peak	Vertical
5		419.940	-66.21	-61.84	-13.00	-53.21	-4.37	Peak	Vertical
6		670.200	-63.90	-63.65	-13.00	-50.90	-0.25	Peak	Vertical



ABOVE 1GHz DATA

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

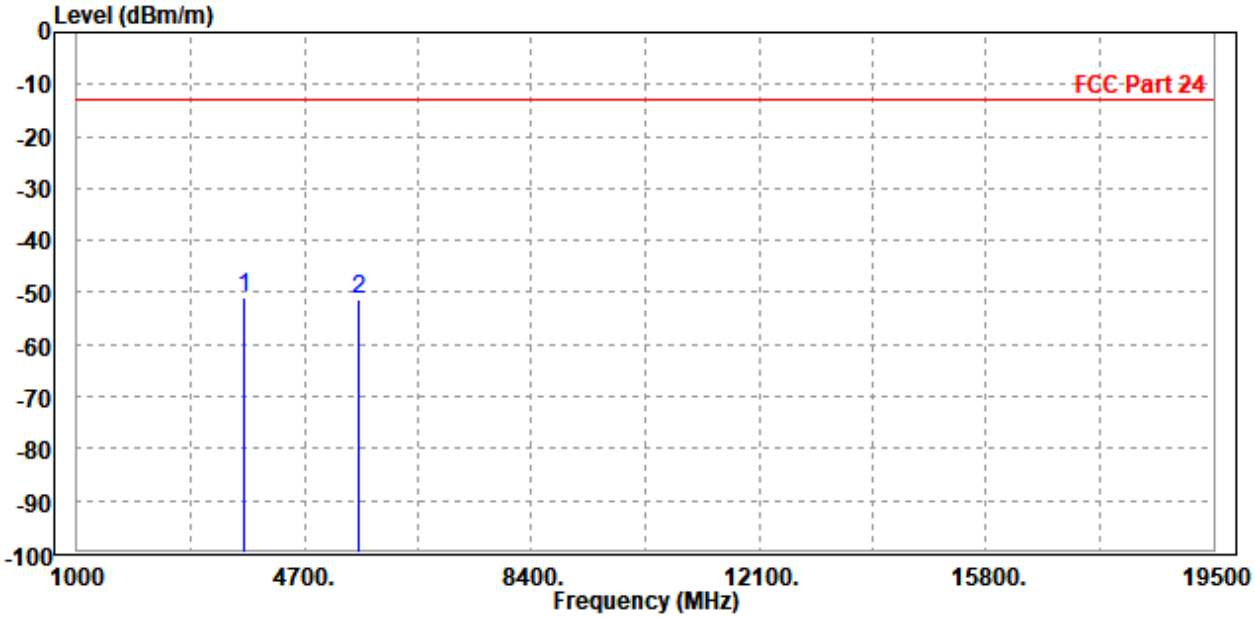
WORST-CASE DATA

WCDMA Band II

CH 9262

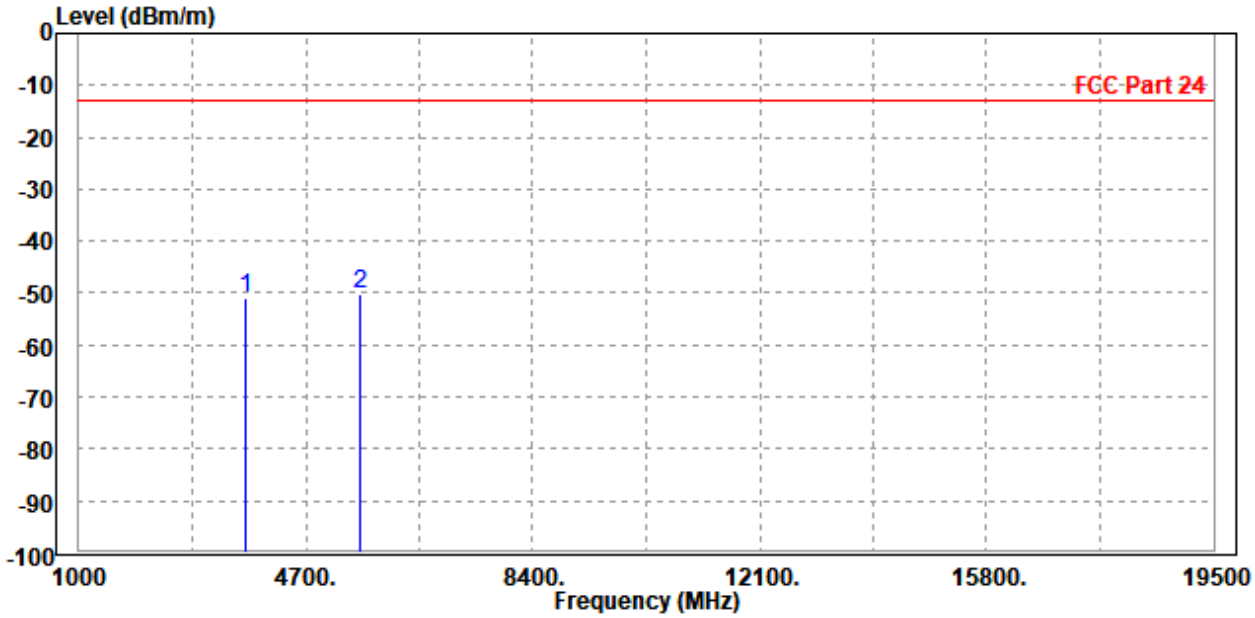
MODE	TX channel 9262	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3719.500	-50.89	-59.27	-13.00	-37.89	8.38	Peak	Horizontal
2	5580.000	-51.43	-63.24	-13.00	-38.43	11.81	Peak	Horizontal



MODE	TX channel 9262	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

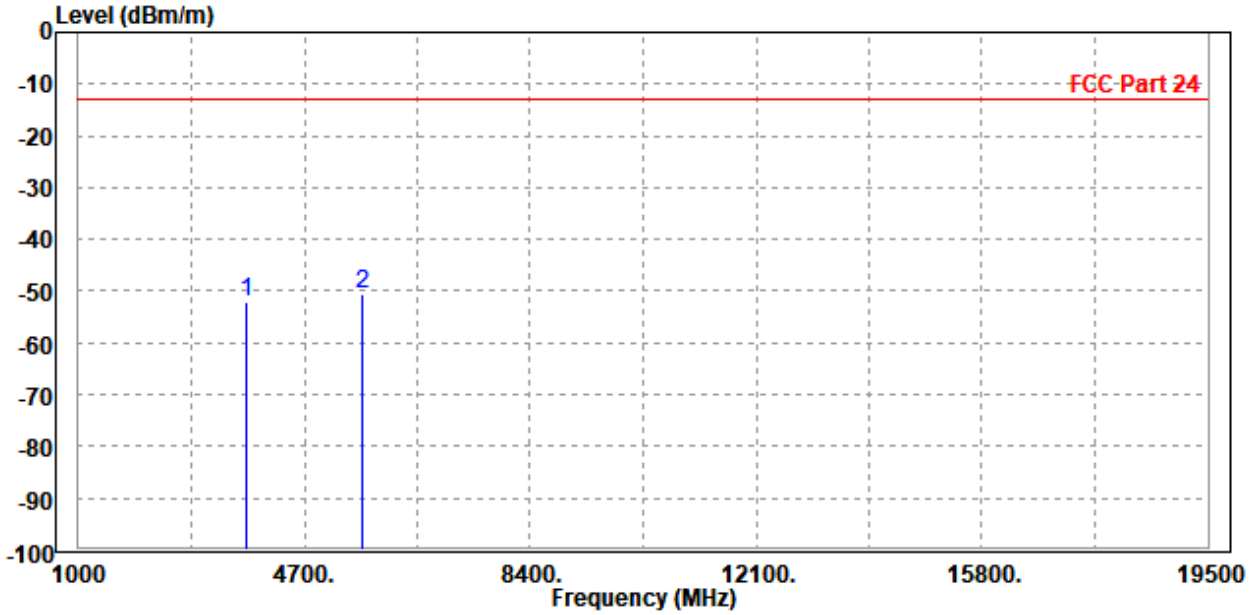
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3720.000	-50.92	-59.55	-13.00	-37.92	8.63	Peak	Vertical
2 PP	5588.000	-50.24	-62.57	-13.00	-37.24	12.33	Peak	Vertical



CH 9400

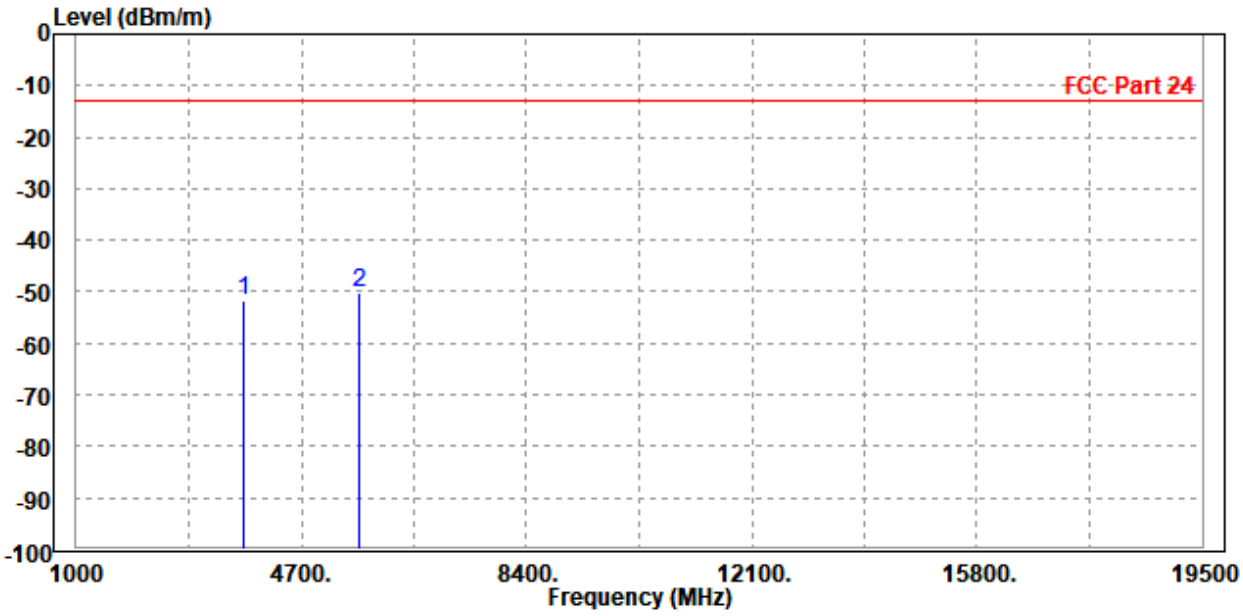
MODE	TX channel 9400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3760.000	-52.20	-60.55	-13.00	-39.20	8.35	Peak	Horizontal
2 PP	5643.500	-50.45	-62.26	-13.00	-37.45	11.81	Peak	Horizontal



MODE	TX channel 9400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

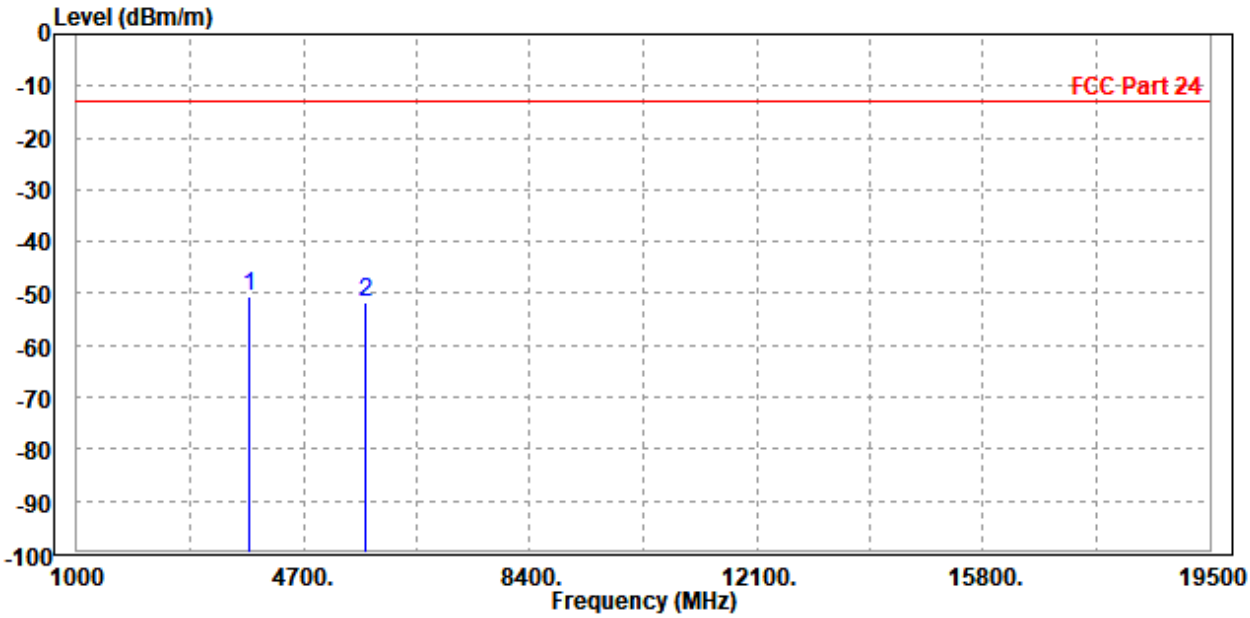
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-51.58	-60.21	-13.00	-38.58	8.63	Peak	Vertical
2 PP	5640.000	-50.25	-62.57	-13.00	-37.25	12.32	Peak	Vertical



CH 9538

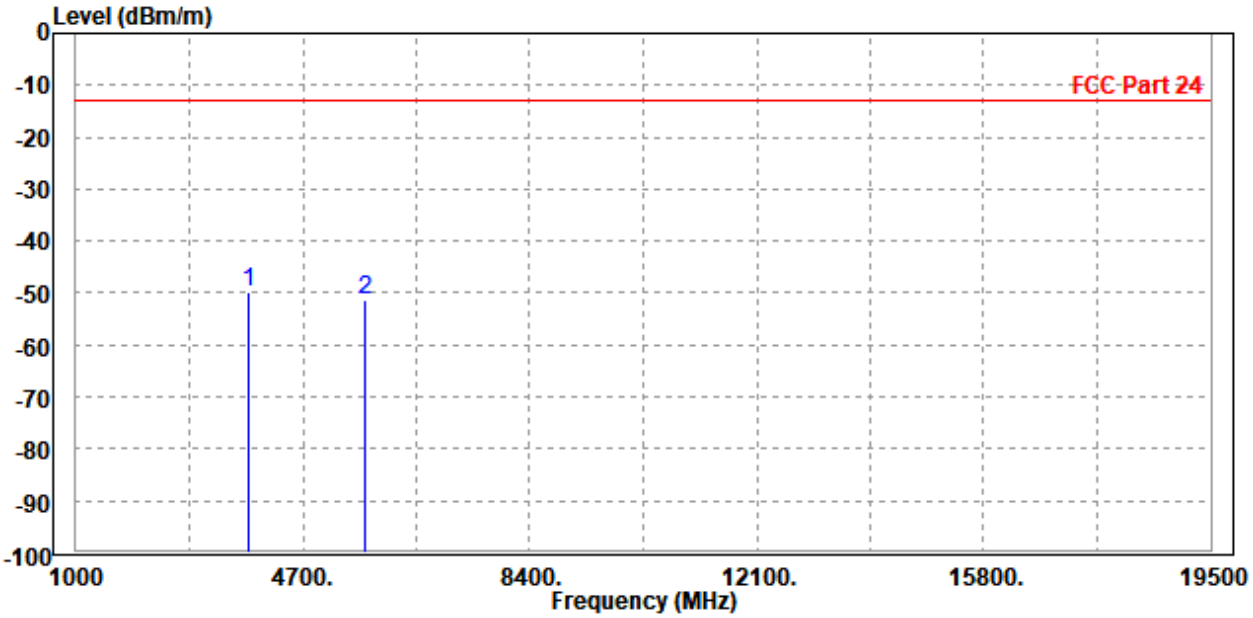
MODE	TX channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3814.000	-50.64	-58.95	-13.00	-37.64	8.31	Peak	Horizontal
2	5717.500	-51.59	-63.41	-13.00	-38.59	11.82	Peak	Horizontal



MODE	TX channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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 3812.000	-49.79	-58.42	-13.00	-36.79	8.63	Peak	Vertical
2	5721.000	-51.27	-63.58	-13.00	-38.27	12.31	Peak	Vertical

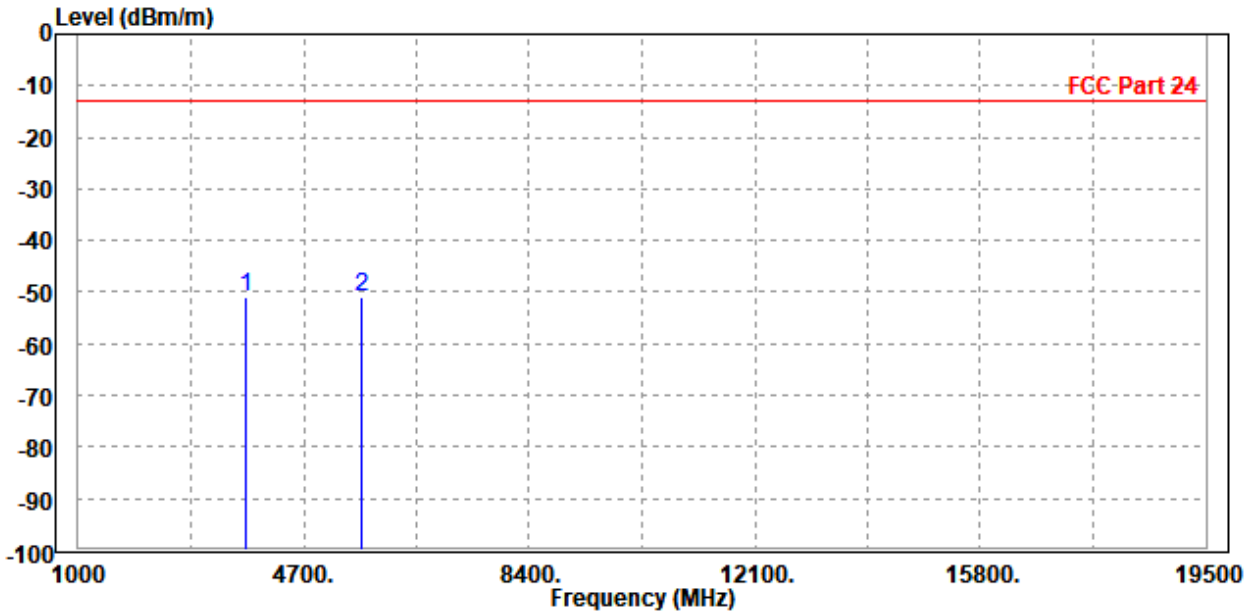


LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK

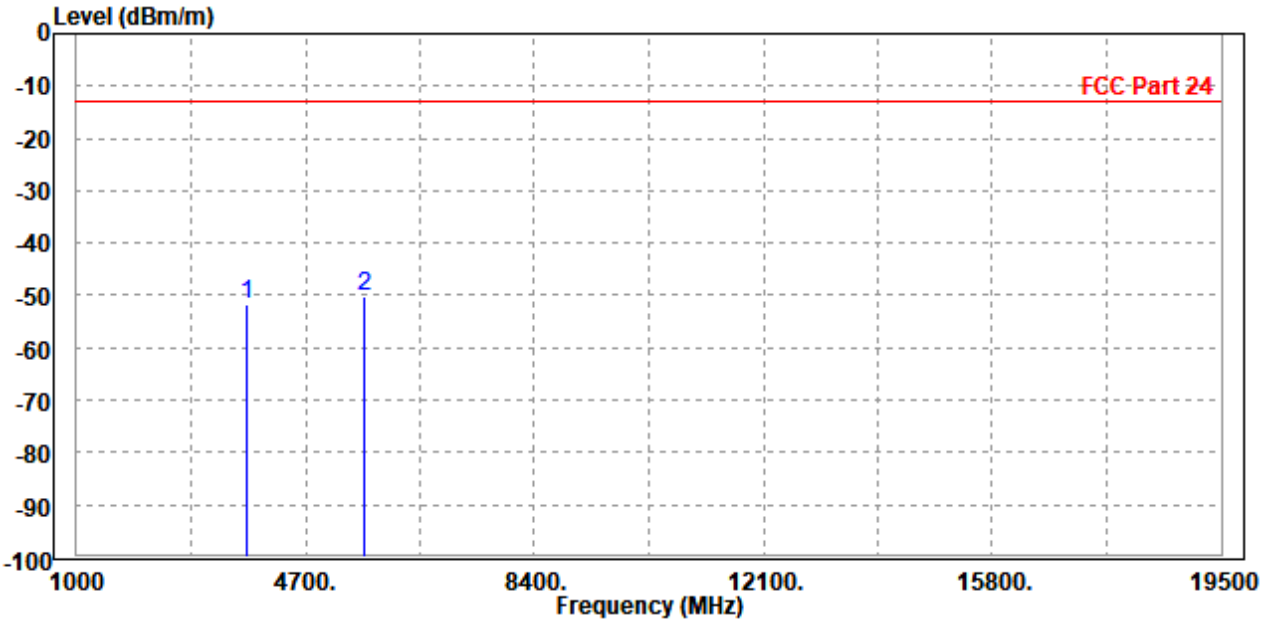
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-51.11	-59.46	-13.00	-38.11	8.35	Peak	Horizontal
2 PP	5640.000	-50.99	-62.80	-13.00	-37.99	11.81	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

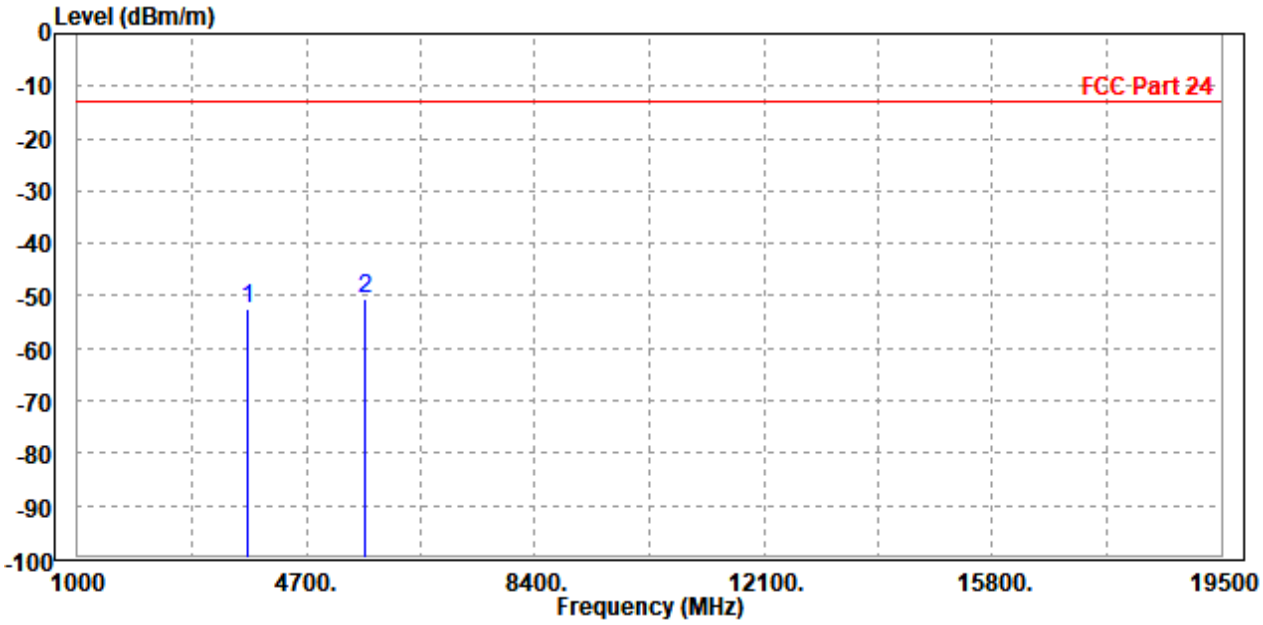
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3760.000	-51.62	-60.25	-13.00	-38.62	8.63	Peak	Vertical
2 PP	5643.500	-50.01	-62.33	-13.00	-37.01	12.32	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

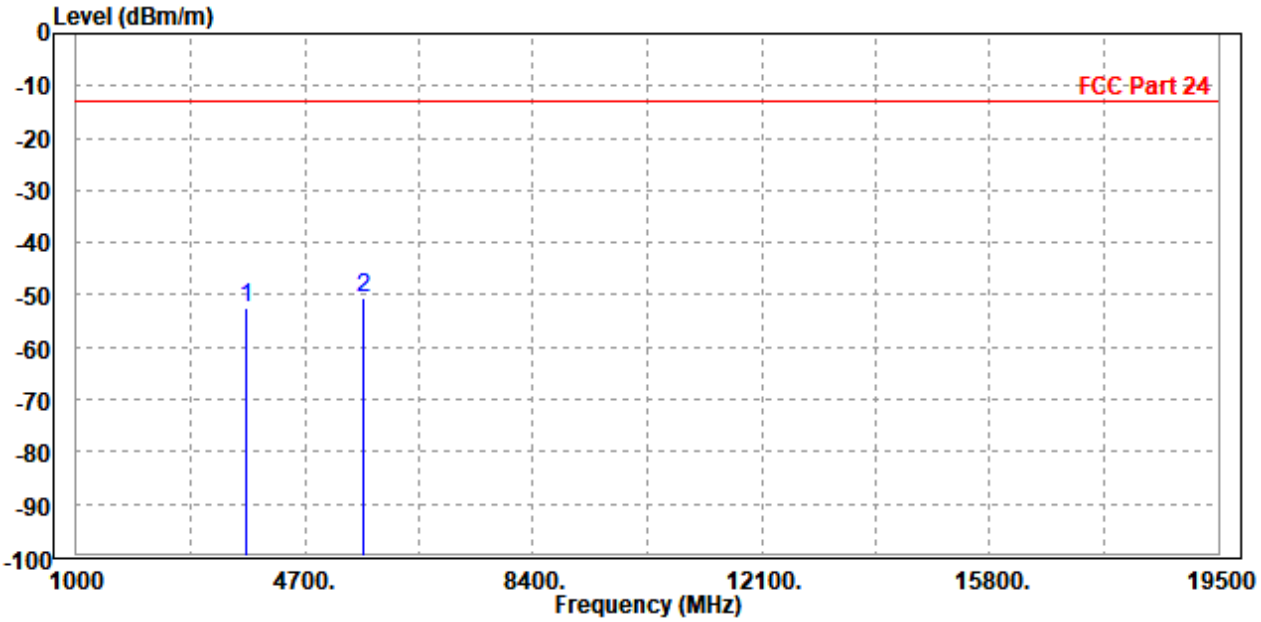
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-52.29	-60.64	-13.00	-39.29	8.35	Peak	Horizontal
2 PP	5662.000	-50.64	-62.45	-13.00	-37.64	11.81	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

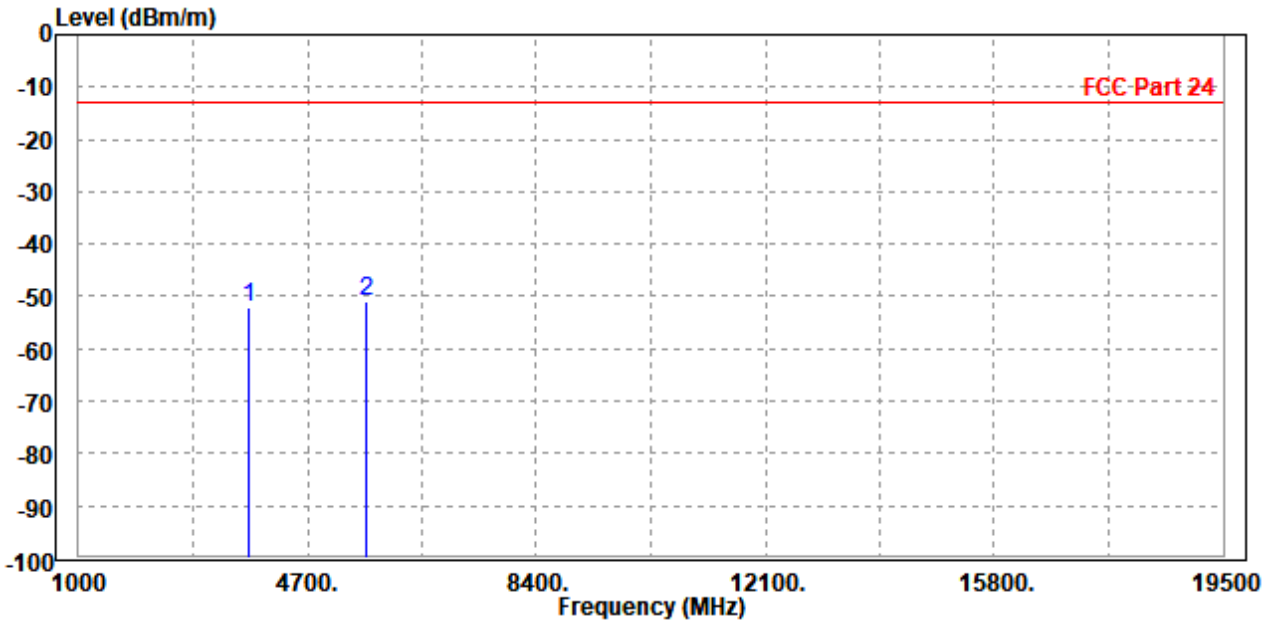
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-52.29	-60.64	-13.00	-39.29	8.35	Peak	Horizontal
2 PP	5662.000	-50.64	-62.45	-13.00	-37.64	11.81	Peak	Horizontal



CHANNEL BANDWIDTH: 5MHz / QPSK

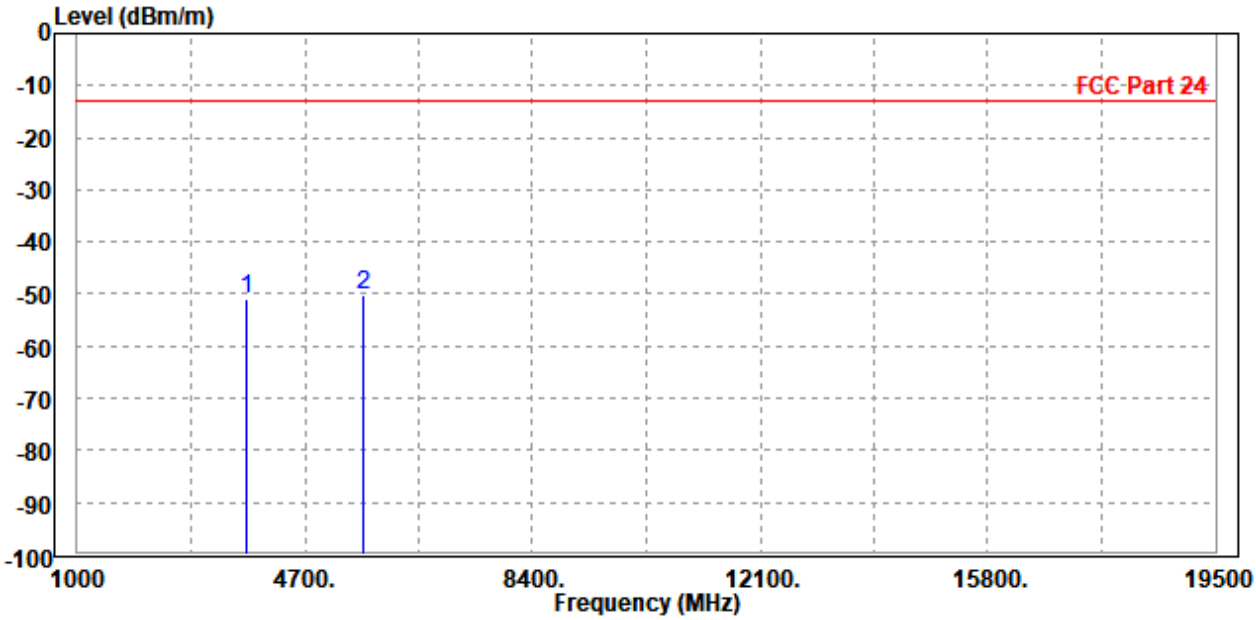
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-52.12	-60.47	-13.00	-39.12	8.35	Peak	Horizontal
2 PP	5640.000	-50.99	-62.80	-13.00	-37.99	11.81	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

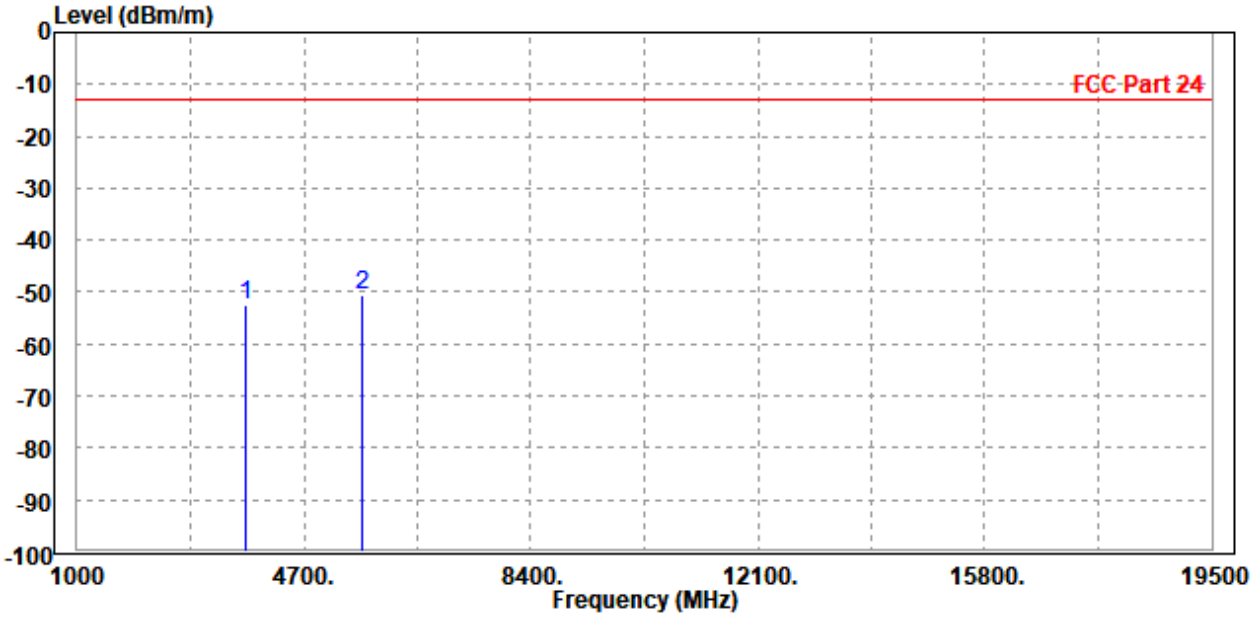
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3760.000	-50.79	-59.42	-13.00	-37.79	8.63	Peak	Vertical
2 PP	5643.500	-50.13	-62.45	-13.00	-37.13	12.32	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

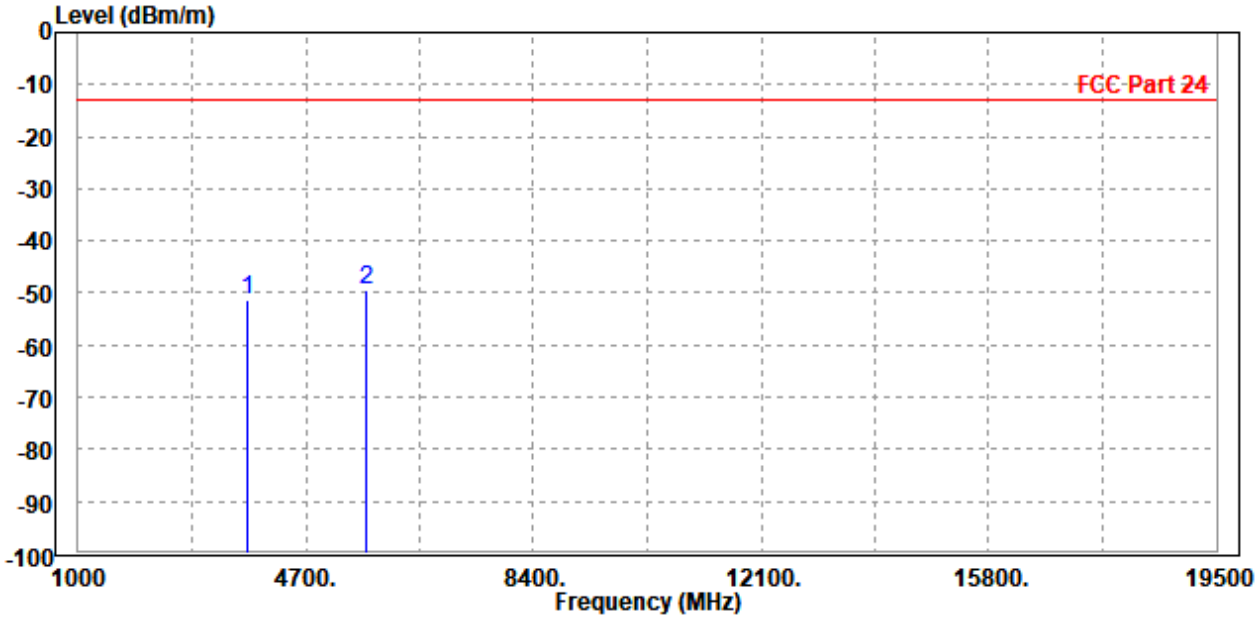
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3760.000	-52.51	-60.86	-13.00	-39.51	8.35	Peak	Horizontal
2 PP	5662.000	-50.68	-62.49	-13.00	-37.68	11.81	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

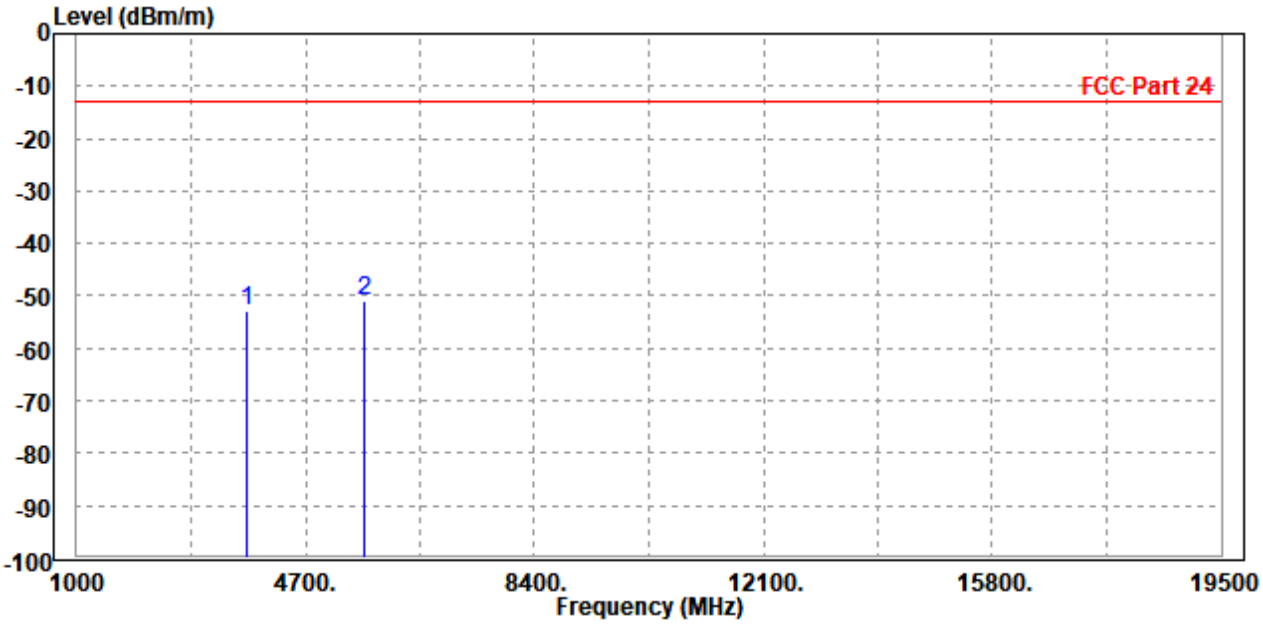
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-51.35	-59.98	-13.00	-38.35	8.63	Peak	Vertical
2 PP	5670.000	-49.53	-61.85	-13.00	-36.53	12.32	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

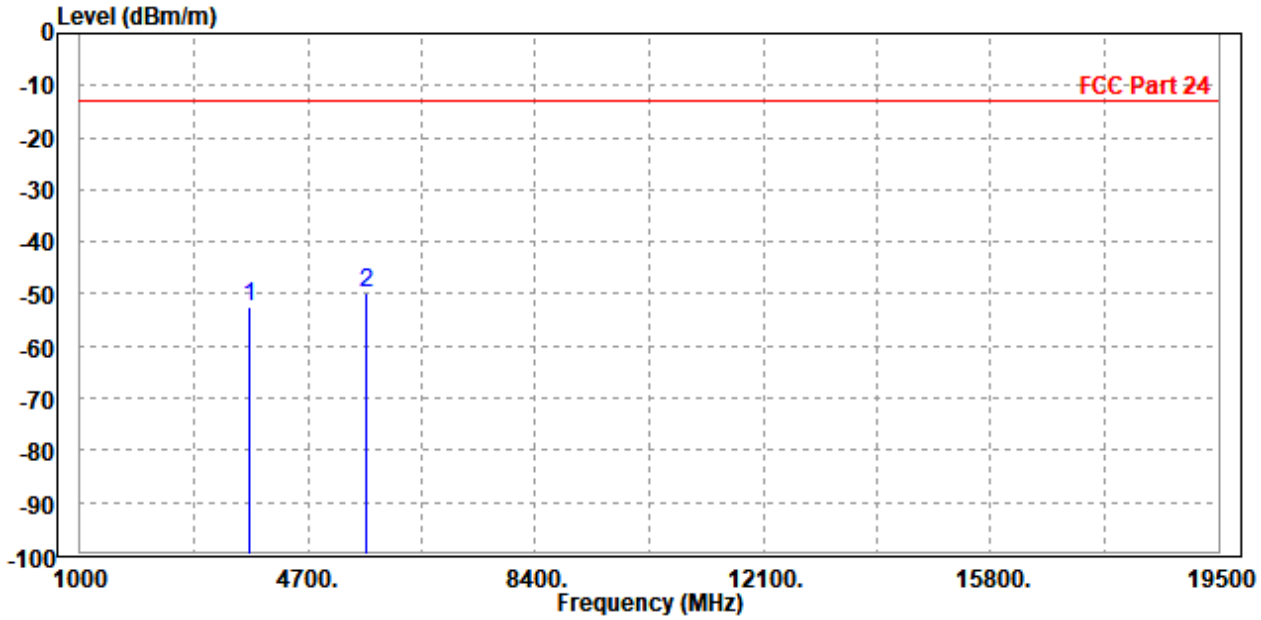
MODE	TX channel 18900	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-52.74	-61.09	-13.00	-39.74	8.35	Peak	Horizontal
2 PP	5640.000	-50.78	-62.59	-13.00	-37.78	11.81	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	3760.000	-52.50	-61.13	-13.00	-39.50	8.63	Peak	Vertical
2 PP	5643.500	-49.83	-62.15	-13.00	-36.83	12.32	Peak	Vertical

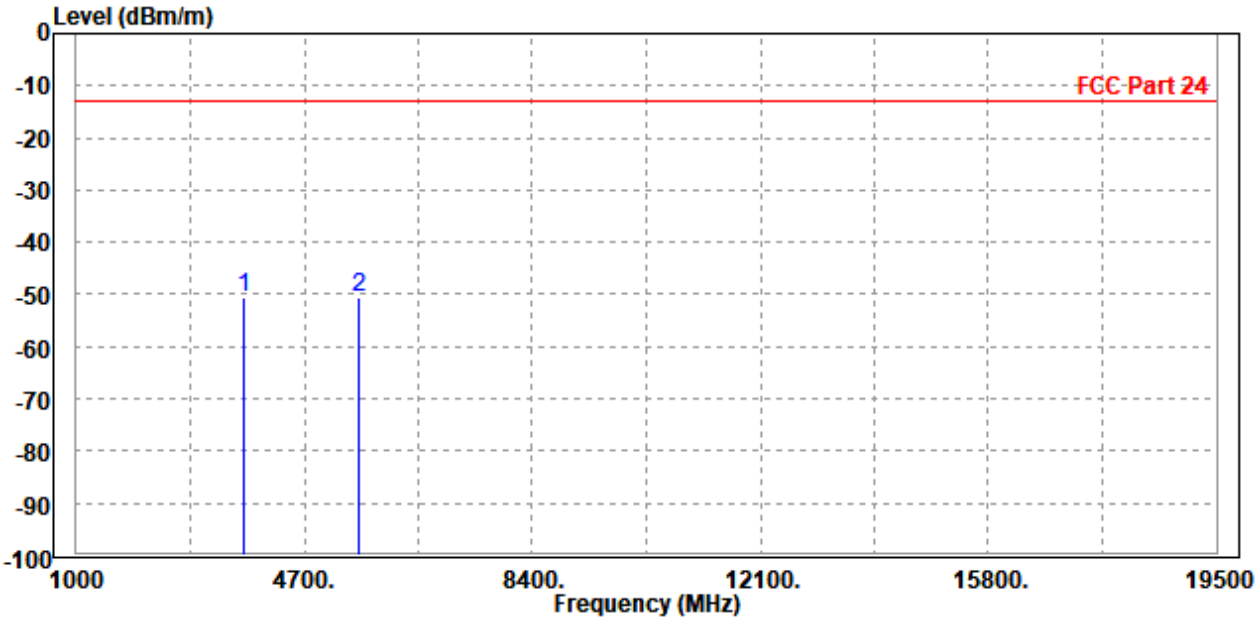


CHANNEL BANDWIDTH: 20MHz / QPSK

CH18700

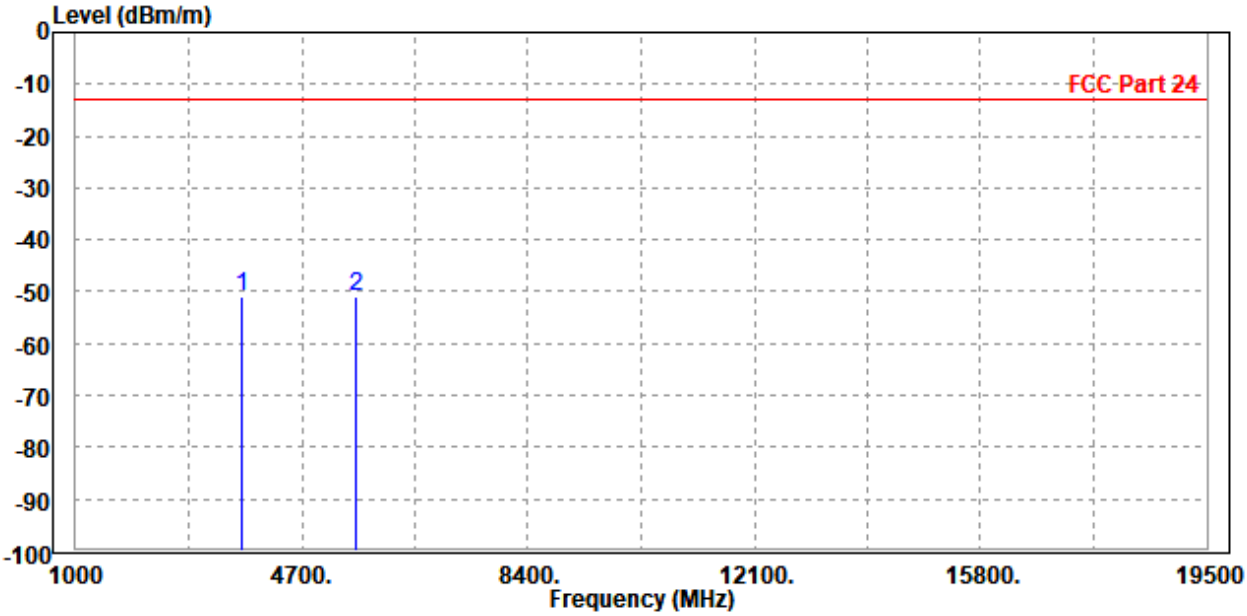
MODE	TX channel 18700	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3720.000	-50.54	-58.92	-13.00	-37.54	8.38	Peak	Horizontal
2	5588.000	-50.55	-62.36	-13.00	-37.55	11.81	Peak	Horizontal



MODE	TX channel 18700	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

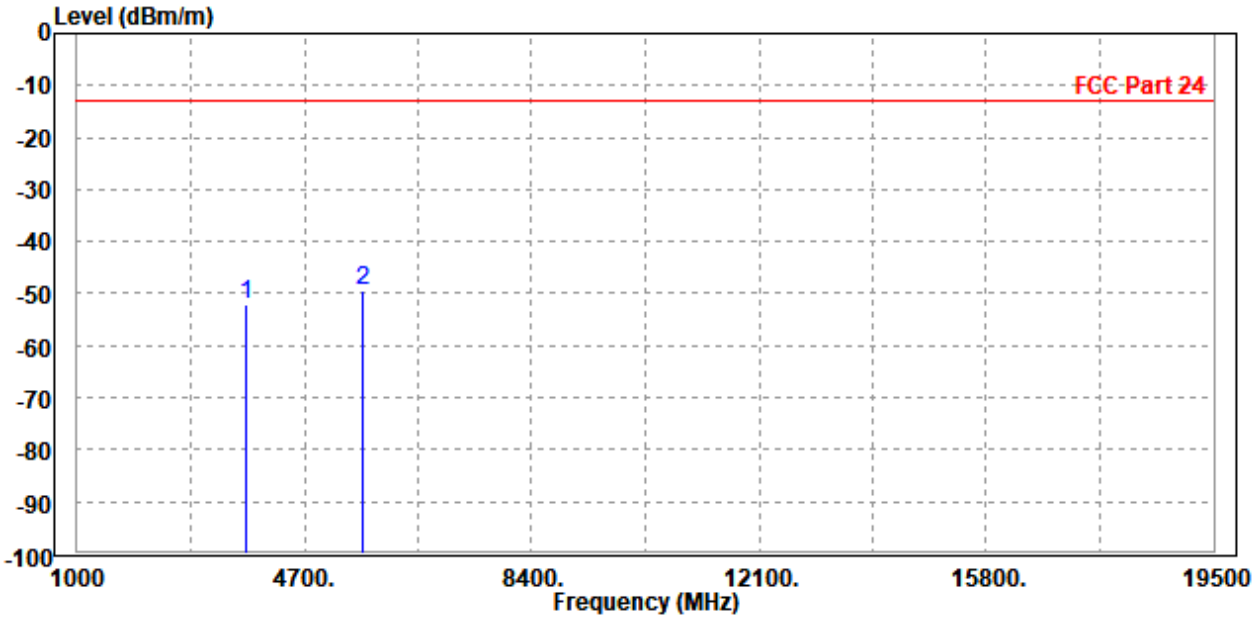
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3719.500	-50.88	-59.51	-13.00	-37.88	8.63	Peak	Vertical
2 PP	5580.000	-50.80	-63.13	-13.00	-37.80	12.33	Peak	Vertical



CH18900

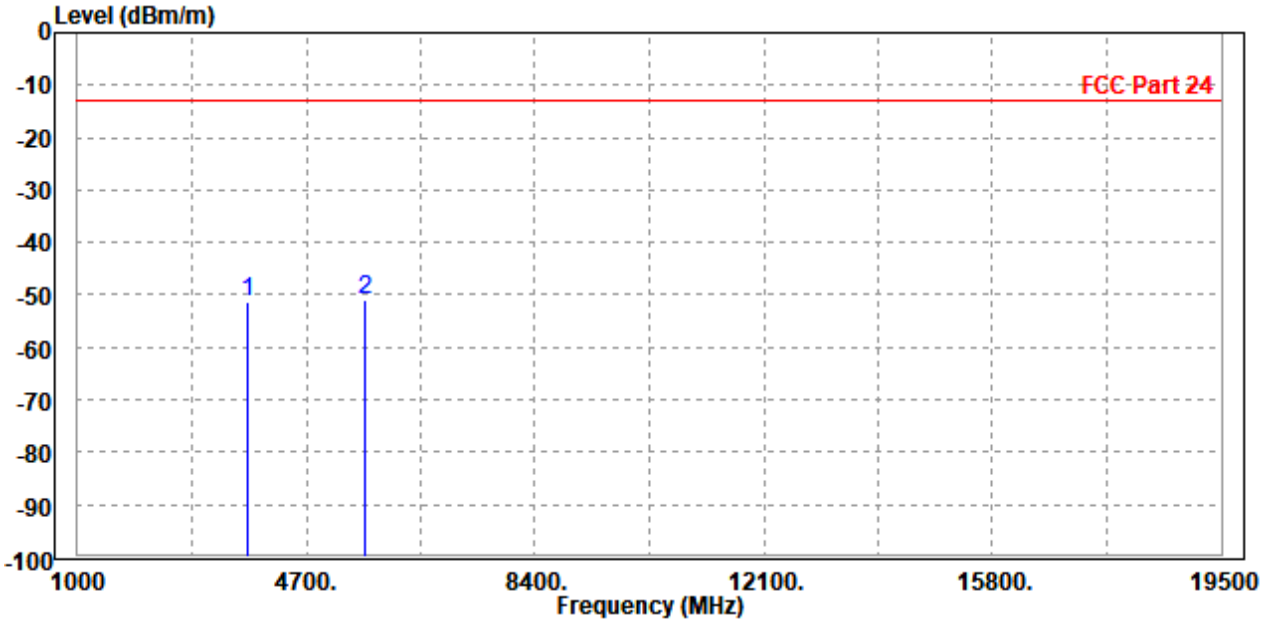
MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-52.10	-60.45	-13.00	-39.10	8.35	Peak	Horizontal
2 PP	5640.000	-49.37	-61.18	-13.00	-36.37	11.81	Peak	Horizontal



MODE	TX channel 18900	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

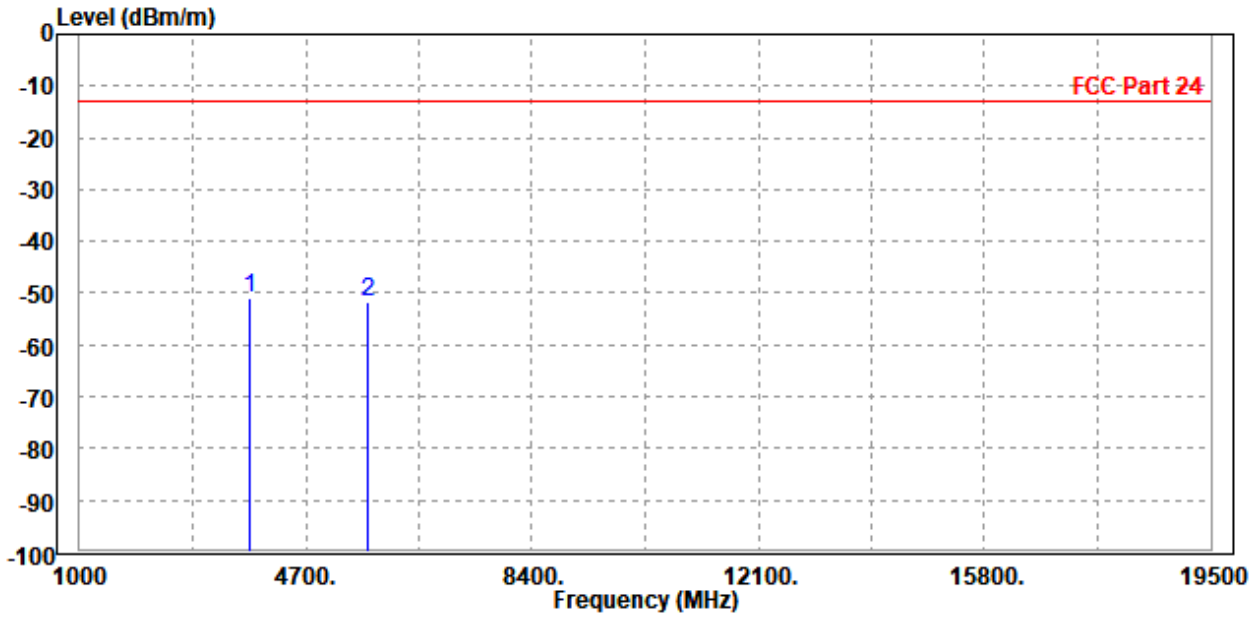
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-51.25	-59.88	-13.00	-38.25	8.63	Peak	Vertical
2 PP	5640.000	-50.83	-63.15	-13.00	-37.83	12.32	Peak	Vertical



CH19100

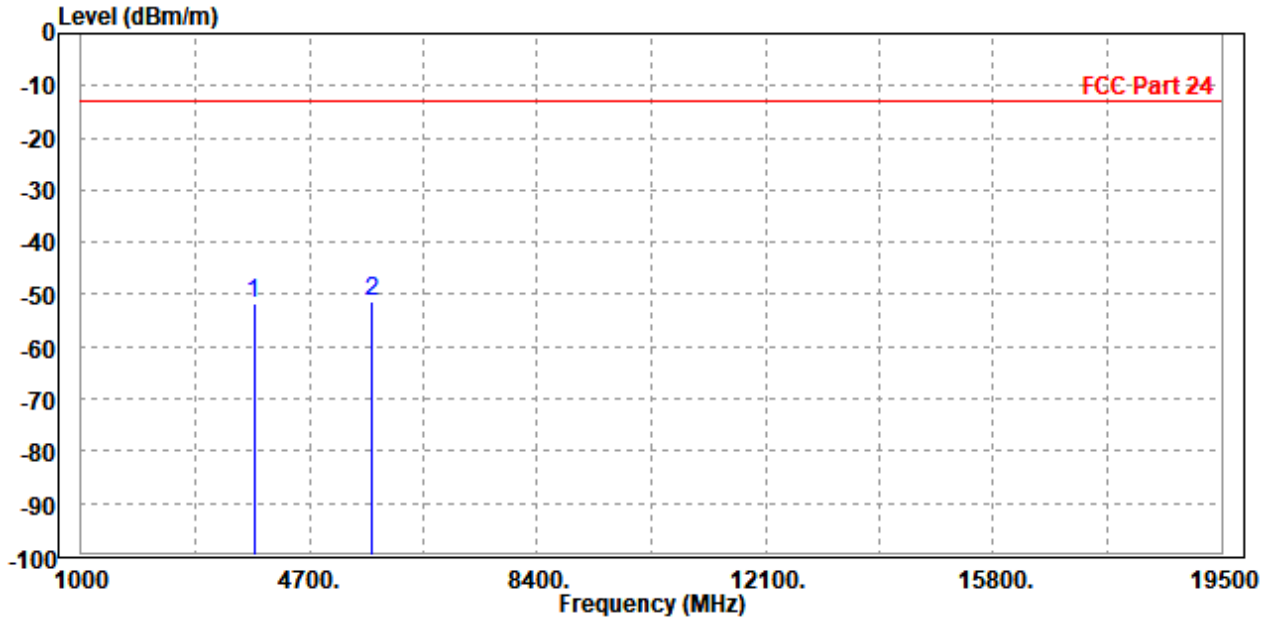
MODE	TX channel 19100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
TESTED BY	Jace hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3793.500	-50.90	-59.23	-13.00	-37.90	8.33	Peak	Horizontal
2	5700.000	-51.54	-63.36	-13.00	-38.54	11.82	Peak	Horizontal



MODE	TX channel 19100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	3800.000	-51.69	-60.32	-13.00	-38.69	8.63	Peak	Vertical
2 PP	5699.000	-51.35	-63.67	-13.00	-38.35	12.32	Peak	Vertical

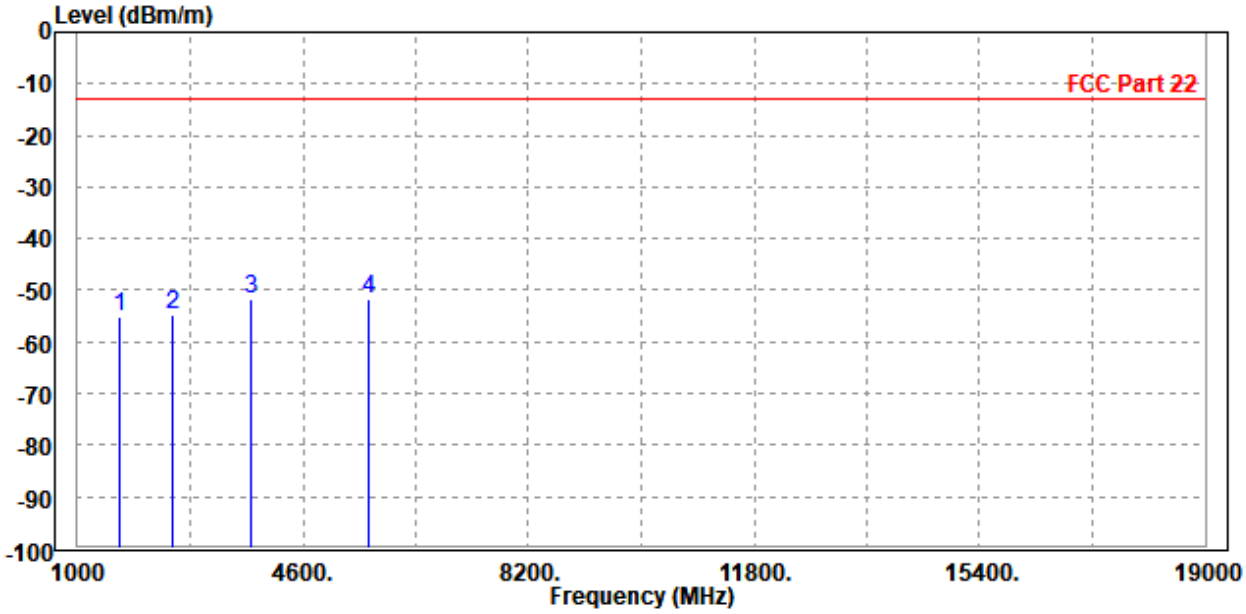


LTE 2A-5A

CHANNEL BANDWIDTH: (20+10) MHz / QPSK

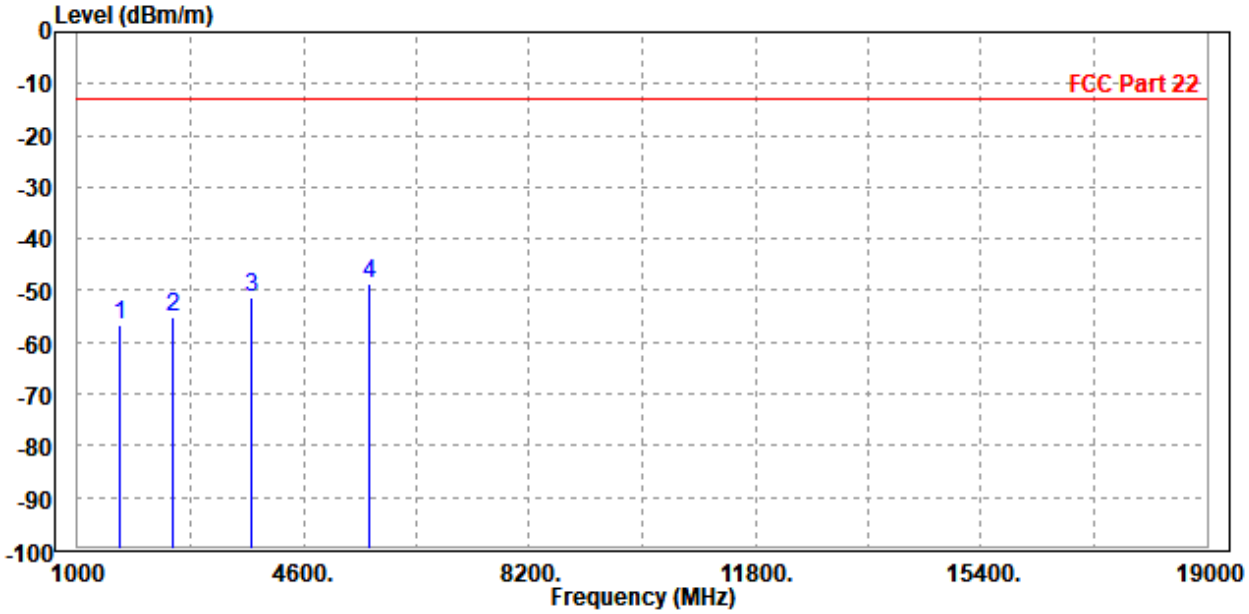
MODE	TX channel PCC 18900 TX channel SCC 20525	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		1673.000	-55.25	-58.99	-13.00	-42.25	3.74	Peak	Horizontal
2		2509.500	-54.75	-60.89	-13.00	-41.75	6.14	Peak	Horizontal
3		3760.000	-51.87	-60.22	-13.00	-38.87	8.35	Peak	Horizontal
4	PP	5640.000	-51.60	-63.41	-13.00	-38.60	11.81	Peak	Horizontal



MODE	TX channel PCC 18900 TX channel SCC 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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		1673.000	-56.52	-59.95	-13.00	-43.52	3.43	Peak	Vertical
2		2509.500	-55.03	-60.87	-13.00	-42.03	5.84	Peak	Vertical
3		3760.000	-51.26	-59.89	-13.00	-38.26	8.63	Peak	Vertical
4	PP	5644.000	-48.79	-61.11	-13.00	-35.79	12.32	Peak	Vertical

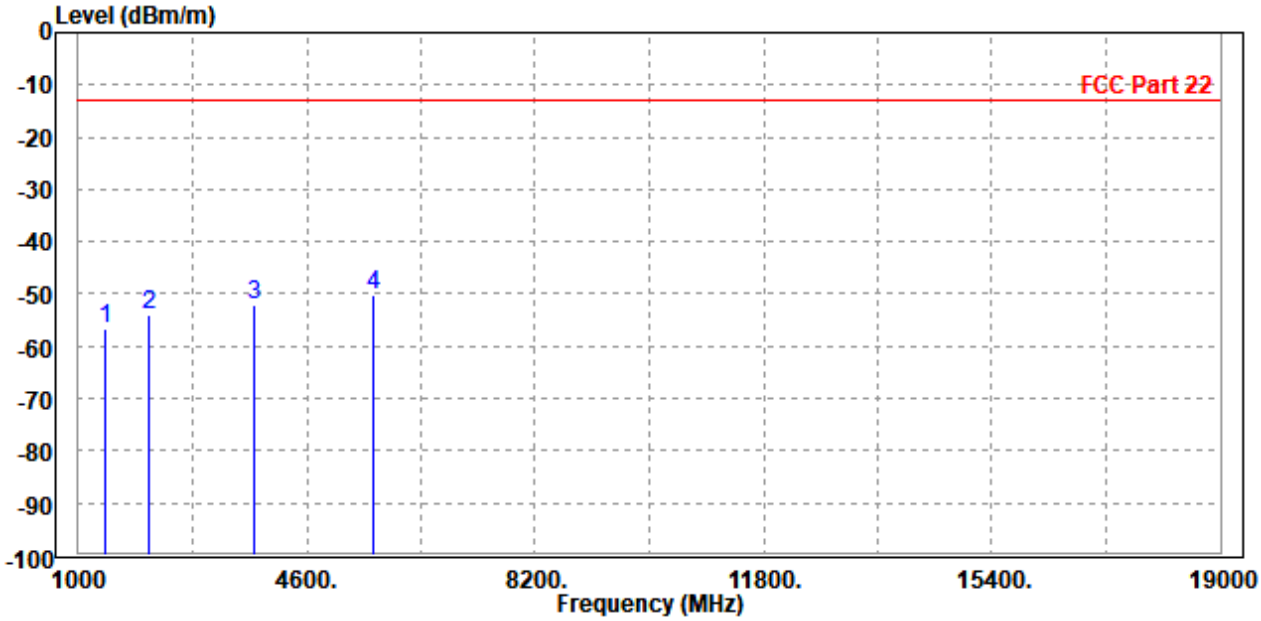


LTE 2A-12A

CHANNEL BANDWIDTH: (20+10) MHz / QPSK

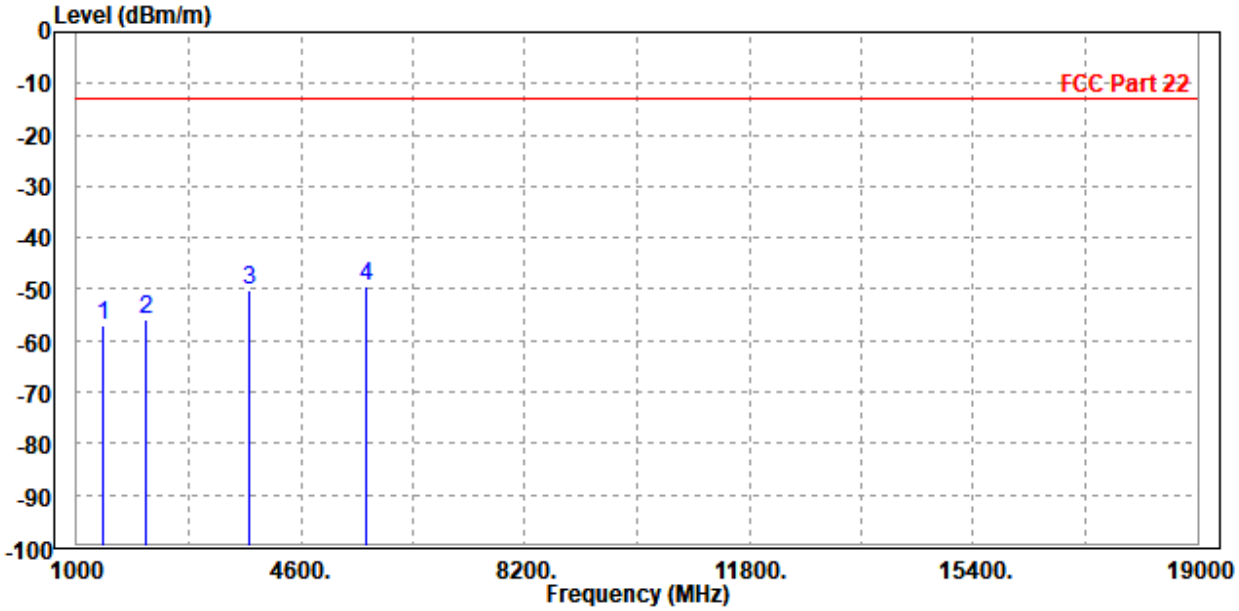
MODE	TX channel PCC 18900 TX channel SCC 23095	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		1414.000	-56.51	-59.45	-13.00	-43.51	2.94	Peak	Horizontal
2		2121.000	-53.95	-59.03	-13.00	-40.95	5.08	Peak	Horizontal
3		3760.000	-51.92	-60.27	-13.00	-38.92	8.35	Peak	Horizontal
4	PP	5644.000	-50.23	-62.04	-13.00	-37.23	11.81	Peak	Horizontal



MODE	TX channel PCC 18900 TX channel SCC 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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		1414.000	-57.12	-60.04	-13.00	-44.12	2.92	Peak	Vertical
2		2121.000	-56.08	-60.51	-13.00	-43.08	4.43	Peak	Vertical
3		3760.000	-50.13	-58.76	-13.00	-37.13	8.63	Peak	Vertical
4	PP	5640.000	-49.45	-61.77	-13.00	-36.45	12.32	Peak	Vertical

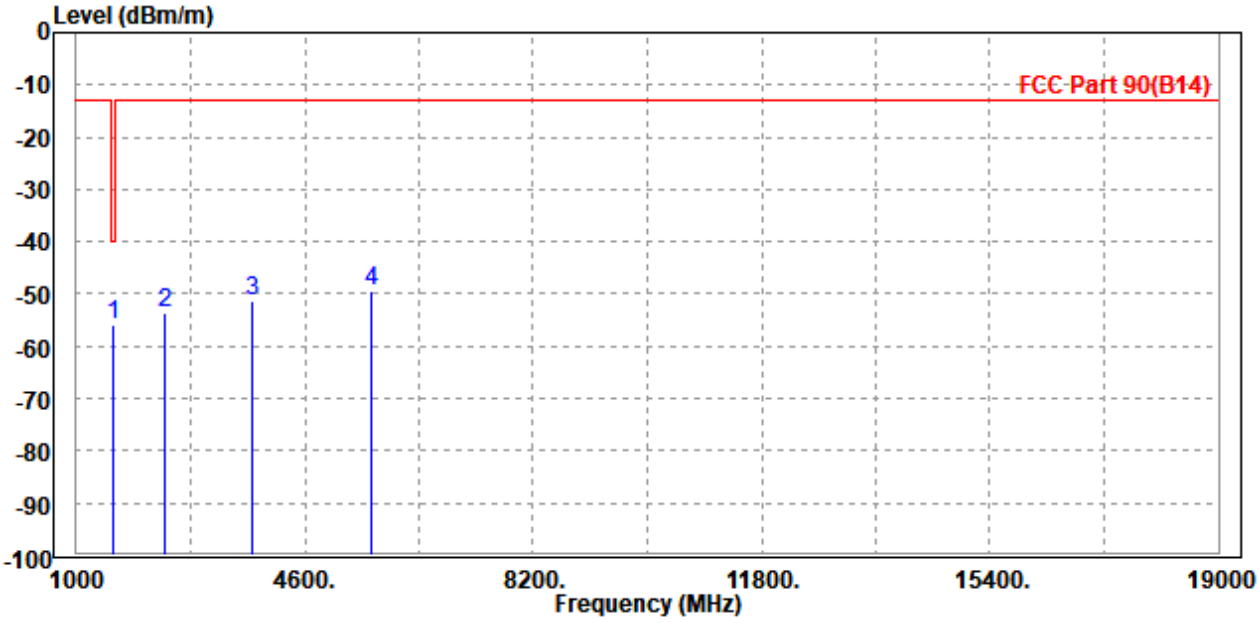


LTE 2A-14A

CHANNEL BANDWIDTH: (20+10) MHz / QPSK

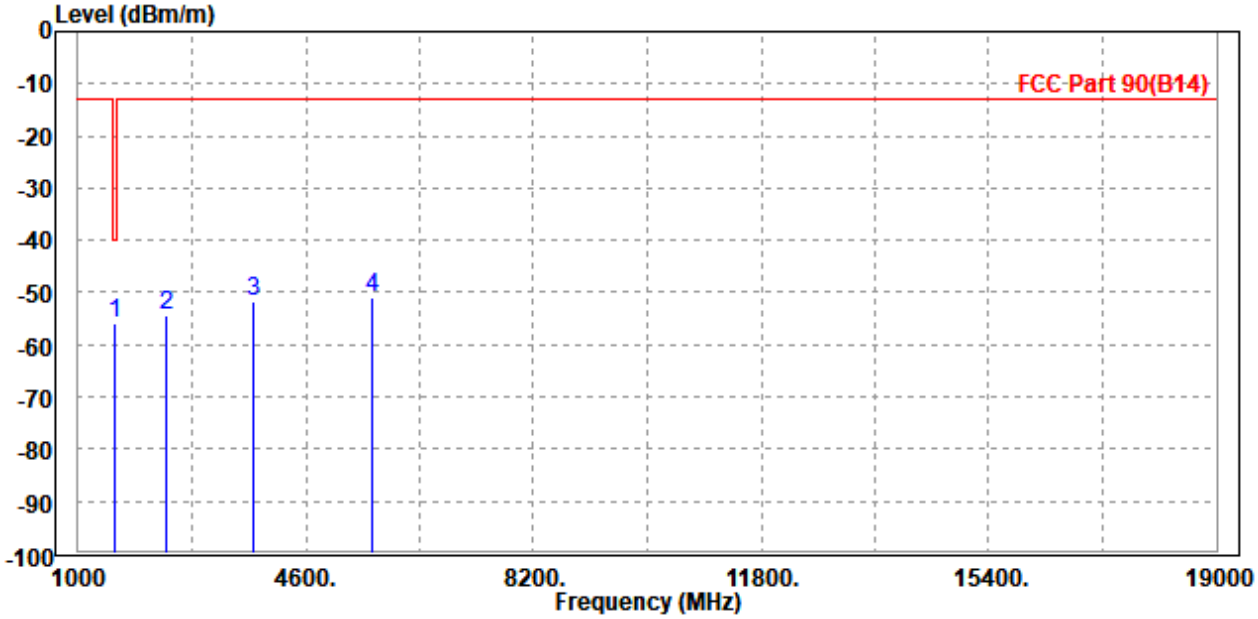
MODE	TX channel PCC 18900 TX channel SCC 23330	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC 14V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1594.000	-55.74	-59.23	-40.00	-15.74	3.49	Peak	Horizontal
2	2379.000	-53.43	-59.20	-13.00	-40.43	5.77	Peak	Horizontal
3	3760.000	-51.44	-59.79	-13.00	-38.44	8.35	Peak	Horizontal
4	5640.000	-49.48	-61.29	-13.00	-36.48	11.81	Peak	Horizontal



MODE	TX channel PCC 18900	FREQUENCY RANGE	Above 1000MHz
	TX channel SCC 23330		
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 14V
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	1586.000	-55.97	-59.25	-40.00	-15.97	3.28	Peak	Vertical
2	2379.000	-54.51	-59.86	-13.00	-41.51	5.35	Peak	Vertical
3	3760.000	-51.54	-60.17	-13.00	-38.54	8.63	Peak	Vertical
4	5644.000	-51.03	-63.35	-13.00	-38.03	12.32	Peak	Vertical

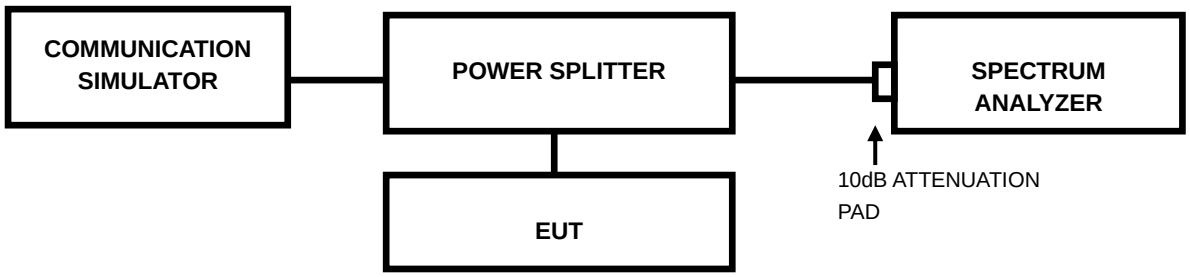


3.7 PEAK TO AVERAGE RATIO

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 C 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:

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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.

---END---