

VARIANT FCC TEST REPORT

(PART 27)

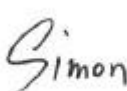
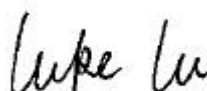
Applicant:	MUNIC
Address:	100 Avenue de Stalingrad 94800 Villejuif – France

Manufacturer or Supplier:	MUNIC
Address:	100 Avenue de Stalingrad 94800 Villejuif – France
Product:	Telematic embedded system
Brand Name:	MUNIC
Model Name:	C4D-4MUSAB_V8
FCC ID:	A6GC4D-4MUSABV8
Date of tests:	Apr. 24, 2022 ~ May. 06, 2022

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

☒ **FCC Part 27, Subpart C, M** ☒ **ANSI/TIA/EIA-603-D**
☒ **FCC Part 2** ☒ **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
	
Date: May. 06, 2022	Date: May. 06, 2022

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21090017RF02	Original release	Oct. 11, 2021
W7L-P22040025RF02	Based on the original report W7L-P21090017RF02 Update components, In this report verify RSE worst case and conducted power; other test data is copied from the original test report W7L-P21090017RF02.	May. 06, 2022

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 27 & Part 2		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
2.1046 27.50(d)(4) 27.50(c)(10)	Equivalent Isotropically Radiated Power	See Note
2.1055 27.54	Frequency Stability	See Note
2.1049 27.53(h)	Occupied Bandwidth	See Note
2.1051 27.53(g) 27.53(h)	Band Edge Measurements	See Note
2.1051 27.53(h) 27.53(g)	Conducted Spurious Emissions	See Note
2.1053 27.54(h) 27.53(g)	Radiated Spurious Emissions	Compliance
27.50(d)(5)	Peak to average ratio	See Note

Note: Per the change notice provide by manufactory, the difference is changing components, all the change no effect any RF parameter. Therefore only verify the radiated emission worse case and show the verify test data on this report. More test details please refer from the original report W7L-P21090017RF02.

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	$\pm 76.97\text{Hz}$
Radiated emissions & Radiated Power (30MHz~1GMHz)	$\pm 4.98\text{dB}$
Radiated emissions & Radiated Power (1GMHz ~6GMHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GMHz ~18GMHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GMHz ~40GMHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Band Edge Measurements	$\pm 4.70\text{dB}$

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. 22,22	Apr. 21,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.05,21	Sep.04,22
Bilog Antenna	ETS-LINDGREN	3143B	00161964	Feb. 24,22	Feb. 23,23
Horn Antenna	ETS-LINDGREN	3117	00168692	Mar. 06,22	Mar. 05,23
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 22
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 15,22	Feb. 14,23
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
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
Power Meter	Anritsu	N1914A	MY52180044	Feb.19,22	Feb.18,23



BUREAU
VERITAS

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Power Sensor	Agilent	E9304A H18	MY52050011	Feb.20,22	Feb.19,23
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 02,21	Jun. 01,22
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 04,22	Mar. 05,23
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	Telematics Embedded System	
BRAND NAME	MUNIC	
MODEL NAME	C4D-4MUSAB_V8	
NOMINAL VOLTAGE	DC 13.7V	
MODULATION TECHNOLOGY	LTE	QPSK, 16QAM
FREQUENCY RANGE	LTE Band 4 Channel Bandwidth: 1.4MHz	1710.7MHz ~ 1754.3MHz
	LTE Band 4 Channel Bandwidth: 3MHz	1711.5MHz ~ 1753.5MHz
	LTE Band 4 Channel Bandwidth: 5MHz	1712.5MHz ~ 1752.5MHz
	LTE Band 4 Channel Bandwidth: 10MHz	1715MHz ~ 1750MHz
	LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~ 1747.5 MHz
	LTE Band 4 Channel Bandwidth: 20MHz	1720MHz ~ 1745MHz
	LTE Band 12 Channel Bandwidth: 1.4MHz	699.7MHz ~ 715.3MHz
	LTE Band 12 Channel Bandwidth: 3MHz	700.5MHz ~ 714.5MHz
	LTE Band 12 Channel Bandwidth: 5MHz	701.5MHz ~ 713.5MHz
	LTE Band 12 Channel Bandwidth: 10MHz	704MHz ~ 711MHz
	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D 16QAM: 1M11W7D
EMISSION DESIGNATOR	LTE Band 4 Channel Bandwidth: 3MHz	QPSK: 1M27G7D 16QAM: 1M28W7D
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK: 1M08G7D 16QAM: 1M09W7D
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 1M11G7D 16QAM: 1M11W7D
	LTE Band 4 Channel Bandwidth: 15MHz	QPSK: 1M10G7D 16QAM: 1M11W7D
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 1M10G7D 16QAM: 1M10W7D

	LTE Band 12 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D 16QAM: 1M10W7D
	LTE Band 12 Channel Bandwidth: 3MHz	QPSK: 1M27G7D 16QAM: 1M27W7D
	LTE Band 12 Channel Bandwidth: 5MHz	QPSK: 1M09G7D 16QAM: 1M09W7D
	LTE Band 12 Channel Bandwidth: 10MHz	QPSK: 1M11G7D 16QAM: 1M51W7D
MAX. EIRP(ERP) POWER	LTE Band 4 Channel Bandwidth: 1.4MHz	221.31mW
	LTE Band 4 Channel Bandwidth: 3MHz	221.31mW
	LTE Band 4 Channel Bandwidth: 5MHz	220.29mW
	LTE Band 4 Channel Bandwidth: 10MHz	222.33mW
	LTE Band 4 Channel Bandwidth: 15MHz	221.82mW
	LTE Band 4 Channel Bandwidth: 20MHz	222.84mW
	LTE Band 12 Channel Bandwidth: 1.4MHz	116.41mW
	LTE Band 12 Channel Bandwidth: 3MHz	116.41mW
	LTE Band 12 Channel Bandwidth: 5MHz	115.61mW
	LTE Band 12 Channel Bandwidth: 10MHz	117.49mW
ANTENNA TYPE	Fixed Internal Antenna with 0.8dBi gain for LTE B4 Fixed Internal Antenna with 0.5dBi gain for LTE B12	
HW VERSION	HC4D-4MUSAB_V8.02	
SW VERSION	SC4D-4MUSAB_V8.02	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	N/A	
EXTREME TEMPERATURE	-30 - 50°C	
EXTREME VOLTAGE	8V-18V	

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



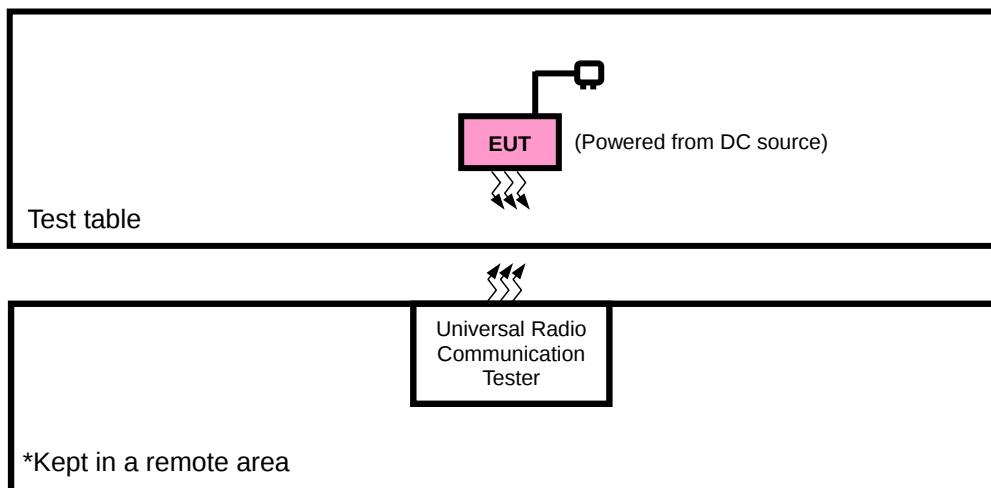
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List of Accessory:

ACCESSORIES	BRAND	MODEL	SPECIFICATION
Battery	Howell	Li-polymer 552535H	Capacity : Li-ion, 450mAh

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	LONG WEI	PS-6403D	010934269	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 was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + DC Source with LTE link

LTE BAND 4

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	19957 to 20393	19957, 20393	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965, 20385	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975, 20375	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000, 20350	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025, 20325	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050, 20300	20MHz	QPSK	1 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	6 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	BAND EDGE	19957 to 20393	19957	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20393	1.4MHz	QPSK, 16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		19965 to 20385	19965	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20385	3MHz	QPSK, 16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		19975 to 20375	19975	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20375	5MHz	QPSK, 16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		20000 to 20350	20000	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20350	10MHz	QPSK, 16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset

A	BAND EDGE	20025 to 20325	20025	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
		20050 to 20300	20325	15MHz	QPSK, 16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
			20050	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20300	20MHz	QPSK, 16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
A	CONDCUDED EMISSION	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	20175	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	20175	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20175	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20175	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20175	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.

LTE BAND 12

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	23017 to 23173	23017, 23173	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025, 23165	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035, 23155	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060, 23130	10MHz	QPSK	1 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM	6 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
A	BAND EDGE	23017 to 23173	23017	1.4MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23173	1.4MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23025 to 23165	23025	3MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23165	3MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23035 to 23155	23035	5MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23155	5MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23060 to 23130	23060	10MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23130	10MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
A	CONDCUETED EMISSION	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23095	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23095	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	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.



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TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP/EIRP	23deg. C, 70%RH	DC 13.7V	Jace Hu
RADIATED EMISSION	23deg. C, 70%RH	DC 13.7V	Jace Hu



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2.5 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 27

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

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that “User stations are limited to 2 watts” and 27.50(i) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP, and 27.50(c)(10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

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:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

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 LTE link data modulation and link up with simulator.
- Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

CONDUCTED POWER MEASUREMENT:



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

3.1.4 TEST RESULTS

AVERAGE CONDUCTED OUTPUT POWER (dBm)

LTE Band 4

Band/BW	Modulation	RB Size	RB Offset	Low CH 19957	Mid CH 20175	High CH 20393	MPR
				Frequency 1710.7 MHz	Frequency 1732.5 MHz	Frequency 1754.3 MHz	
4/ 1.4	QPSK	1	0	22.36	22.34	22.63	0
		1	5	22.35	22.40	22.59	0
		3	0	22.35	22.35	22.59	0
		3	3	22.34	22.37	22.62	0
		6	0	22.40	22.36	22.65	1
	16QAM	1	0	22.44	22.31	22.58	1
		1	5	22.42	22.29	22.59	1
		3	0	22.40	22.22	22.57	1
		3	3	22.46	22.35	22.51	1
		6	0	22.42	22.29	22.61	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 19965	Mid CH 20175	High CH 20385	MPR
				Frequency 1711.5 MHz	Frequency 1732.5 MHz	Frequency 1753.5 MHz	
4/ 3	QPSK	1	0	22.38	22.32	22.63	0
		1	5	22.37	22.33	22.62	0
		3	0	22.38	22.38	22.52	1
		3	3	22.35	22.31	22.61	1
		6	0	22.46	22.35	22.65	1
	16QAM	1	0	22.47	22.31	22.56	1
		1	5	22.42	22.29	22.60	1
		3	0	22.40	22.24	22.60	2
		3	3	22.50	22.29	22.56	2
		6	0	22.39	22.33	22.57	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 19975	Mid CH 20175	High CH 20375	MPR
				Frequency 1712.5 MHz	Frequency 1732.5 MHz	Frequency 1752.5 MHz	
4/ 5	QPSK	1	0	22.35	22.32	22.63	0
		1	5	22.41	22.33	22.62	0
		3	0	22.35	22.35	22.55	1
		3	3	22.32	22.38	22.62	1
		6	0	22.41	22.39	22.62	1
	16QAM	1	0	22.45	22.28	22.61	1
		1	5	22.36	22.35	22.56	1
		3	0	22.40	22.22	22.57	2
		3	3	22.46	22.35	22.51	2
		6	0	22.41	22.30	22.57	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 20000	Mid CH 20175	High CH 20350	MPR
				Frequency 1715 MHz	Frequency 1732.5 MHz	Frequency 1750 MHz	
4/ 10	QPSK	1	0	22.38	22.31	22.67	0
		1	5	22.35	22.37	22.59	0
		3	0	22.36	22.34	22.58	1
		3	3	22.38	22.32	22.62	1
		6	0	22.41	22.33	22.65	1
	16QAM	1	0	22.51	22.31	22.55	1
		1	5	22.39	22.29	22.55	1
		3	0	22.47	22.22	22.63	2
		3	3	22.47	22.29	22.51	2
		6	0	22.46	22.31	22.60	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 20025	Mid CH 20175	High CH 20325	MPR
				Frequency 1717.5 MHz	Frequency 1732.5 MHz	Frequency 1747.5 MHz	
4/ 15	QPSK	1	0	22.32	22.32	22.66	0
		1	5	22.42	22.37	22.61	0
		3	0	22.36	22.39	22.54	1
		3	3	22.36	22.34	22.65	1
		6	0	22.41	22.39	22.64	1
	16QAM	1	0	22.50	22.25	22.62	1
		1	5	22.36	22.33	22.56	1
		3	0	22.45	22.22	22.63	2
		3	3	22.51	22.32	22.49	2
		6	0	22.41	22.34	22.58	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 20050	Mid CH 20175	High CH 20300	MPR
				Frequency 1720 MHz	Frequency 1732.5 MHz	Frequency 1745 MHz	
4/ 20	QPSK	1	0	22.40	22.39	22.68	0
		1	5	22.43	22.41	22.64	0
		3	0	22.39	22.40	22.60	1
		3	3	22.40	22.39	22.67	1
		6	0	22.47	22.41	22.67	1
	16QAM	1	0	22.52	22.33	22.63	1
		1	5	22.44	22.37	22.61	1
		3	0	22.48	22.28	22.65	2
		3	3	22.52	22.37	22.57	2
		6	0	22.47	22.37	22.62	2



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LTE Band 12

Band/BW	Modulation	RB Size	RB Offset	Low CH 23017	Mid CH 23095	High CH 23173	MPR
				Frequency 699.7 MHz	Frequency 707.5 MHz	Frequency 715.3 MHz	
12/ 1.4	QPSK	1	0	22.25	22.05	22.02	0
		1	5	22.31	22.08	22.05	0
		3	0	22.24	22.08	22.12	0
		3	3	22.26	22.10	22.13	0
		6	0	22.22	22.10	22.07	1
	16QAM	1	0	22.26	22.09	22.15	1
		1	5	22.23	22.14	22.10	1
		3	0	22.20	22.18	22.11	1
		3	3	22.24	22.11	22.18	1
		6	0	22.26	22.12	22.14	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 23025	Mid CH 23095	High CH 23165	MPR
				Frequency 700.5 MHz	Frequency 707.5 MHz	Frequency 714.5 MHz	
12/ 3	QPSK	1	0	22.31	21.98	22.05	0
		1	5	22.30	22.05	22.05	0
		3	0	22.26	22.05	22.12	1
		3	3	22.25	22.14	22.10	1
		6	0	22.26	22.07	22.11	1
	16QAM	1	0	22.22	22.15	22.12	1
		1	5	22.24	22.15	22.16	1
		3	0	22.18	22.18	22.12	2
		3	3	22.27	22.11	22.17	2
		6	0	22.22	22.11	22.11	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 23035	Mid CH 23095	High CH 23155	MPR
				Frequency 701.5 MHz	Frequency 707.5 MHz	Frequency 713.5 MHz	
12/ 5	QPSK	1	0	22.27	22.04	22.01	0
		1	5	22.28	22.08	22.04	0
		3	0	22.24	22.03	22.12	1
		3	3	22.26	22.10	22.13	1
		6	0	22.22	22.10	22.06	1
	16QAM	1	0	22.20	22.16	22.15	1
		1	5	22.27	22.15	22.10	1
		3	0	22.18	22.19	22.15	2
		3	3	22.25	22.14	22.11	2
		6	0	22.24	22.15	22.16	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 23060	Mid CH 23095	High CH 23130	MPR
				Frequency 704 MHz	Frequency 707.5 MHz	Frequency 711 MHz	
12/ 10	QPSK	1	0	22.33	22.06	22.07	0
		1	5	22.35	22.13	22.06	0
		3	0	22.30	22.10	22.17	1
		3	3	22.33	22.15	22.15	1
		6	0	22.30	22.12	22.12	1
	16QAM	1	0	22.28	22.17	22.17	1
		1	5	22.31	22.20	22.18	1
		3	0	22.26	22.20	22.17	2
		3	3	22.29	22.19	22.19	2
		6	0	22.30	22.17	22.19	2

EIRP

LTE BAND 4

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	22.4	0.8	23.2	208.93	1
20175	1732.5	22.4	0.8	23.2	208.93	1
20393	1754.3	22.65	0.8	23.45	221.31	1

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	22.46	0.8	23.26	211.84	1
20175	1732.5	22.35	0.8	23.15	206.54	1
20393	1754.3	22.61	0.8	23.41	219.28	1

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	22.46	0.8	23.26	211.84	1
20175	1732.5	22.38	0.8	23.18	207.97	1
20385	1753.5	22.65	0.8	23.45	221.31	1

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	22.5	0.8	23.3	213.80	1
20175	1732.5	22.33	0.8	23.13	205.59	1
20385	1753.5	22.6	0.8	23.4	218.78	1

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	22.41	0.8	23.21	209.41	1
20175	1732.5	22.39	0.8	23.19	208.45	1
20375	1752.5	22.63	0.8	23.43	220.29	1

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	22.46	0.8	23.26	211.84	1
20175	1732.5	22.35	0.8	23.15	206.54	1
20375	1752.5	22.61	0.8	23.41	219.28	1

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	22.41	0.8	23.21	209.41	1
20175	1732.5	22.37	0.8	23.17	207.49	1
20350	1750	22.67	0.8	23.47	222.33	1

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	22.51	0.8	23.31	214.29	1
20175	1732.5	22.31	0.8	23.11	204.64	1
20350	1750	22.63	0.8	23.43	220.29	1

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	22.42	0.8	23.22	209.89	1
20175	1732.5	22.39	0.8	23.19	208.45	1
20325	1747.5	22.66	0.8	23.46	221.82	1

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	22.51	0.8	23.31	214.29	1
20175	1732.5	22.34	0.8	23.14	206.06	1
20325	1747.5	22.63	0.8	23.43	220.29	1

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	22.47	0.8	23.27	212.32	1
20175	1732.5	22.41	0.8	23.21	209.41	1
20300	1745	22.68	0.8	23.48	222.84	1

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	22.52	0.8	23.32	214.78	1
20175	1732.5	22.37	0.8	23.17	207.49	1
20300	1745	22.65	0.8	23.45	221.31	1

ERP

LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	22.31	0.5	20.66	116.41	3
23095	707.5	22.1	0.5	20.45	110.92	3
23173	715.3	22.13	0.5	20.48	111.69	3

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	22.26	0.5	20.61	115.08	3
23095	707.5	22.18	0.5	20.53	112.98	3
23173	715.3	22.18	0.5	20.53	112.98	3

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	22.31	0.5	20.66	116.41	3
23095	707.5	22.14	0.5	20.49	111.94	3
23165	714.5	22.12	0.5	20.47	111.43	3

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	22.27	0.5	20.62	115.35	3
23095	707.5	22.18	0.5	20.53	112.98	3
23165	714.5	22.17	0.5	20.52	112.72	3

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	22.28	0.5	20.63	115.61	3
23095	707.5	22.1	0.5	20.45	110.92	3
23155	713.5	22.13	0.5	20.48	111.69	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	22.27	0.5	20.62	115.35	3
23095	707.5	22.19	0.5	20.54	113.24	3
23155	713.5	22.16	0.5	20.51	112.46	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	22.35	0.5	20.7	117.49	3
23095	707.5	22.15	0.5	20.5	112.20	3
23130	711	22.17	0.5	20.52	112.72	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	22.31	0.5	20.66	116.41	3
23095	707.5	22.2	0.5	20.55	113.50	3
23130	711	22.19	0.5	20.54	113.24	3

REMARKS: ERP Output Power (dBm) = ERP (dBm) -2.15(dB).

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

27.53(h) For operations in the 1710-1755MHz band, the FCC limit is $43 + 10 \log(P)$ dB. Below the transmitter power (P) in a 1MHz bandwidth. However, in the 1MHz kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.2.2 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
 $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15\text{dBi}.$

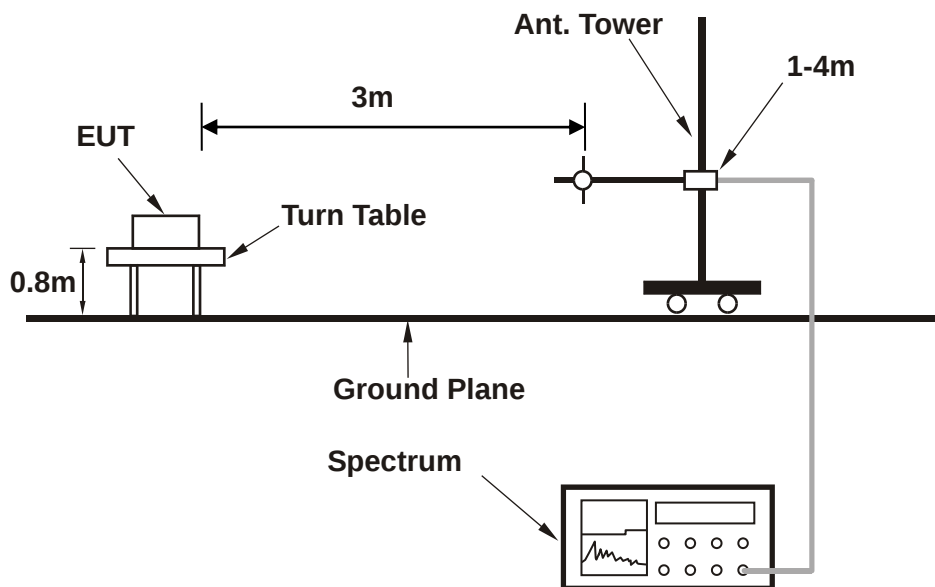
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.2.3 DEVIATION FROM TEST STANDARD

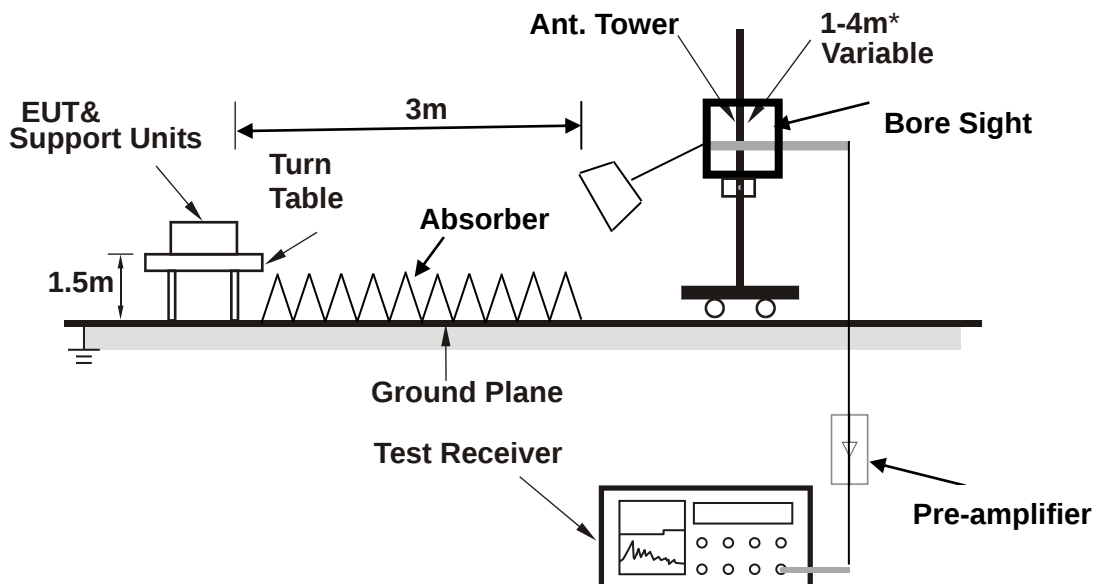
No deviation

3.2.4 TEST SETUP

< 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).

3.2.5 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

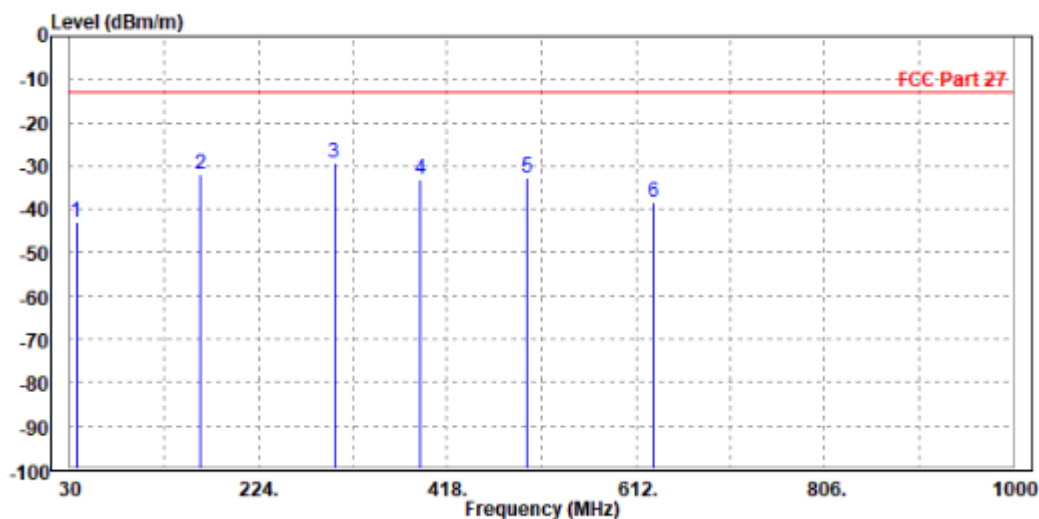
30 MHz – 1GHz data:

LTE Band 4

CHANNEL BANDWIDTH: 3MHz / QPSK

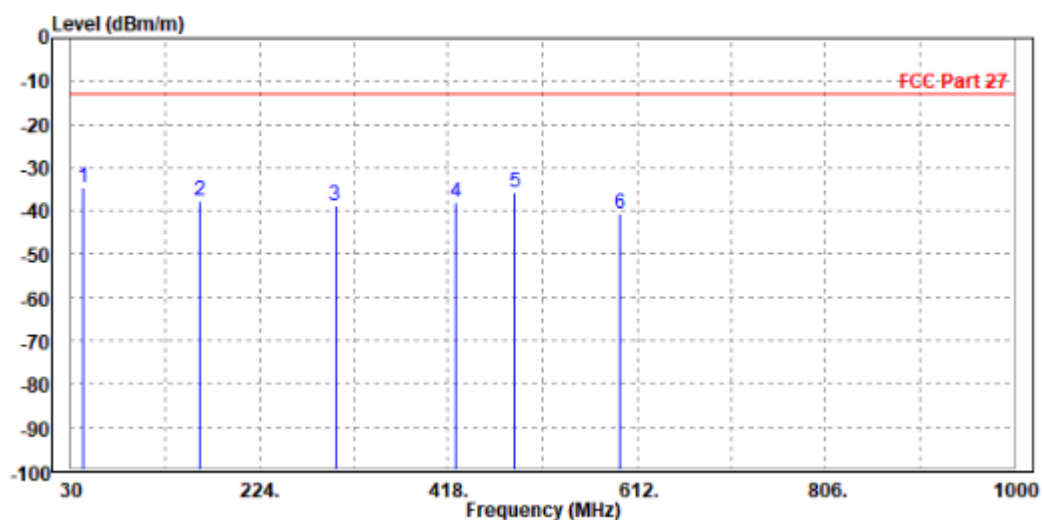
MODE	TX channel 19965	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	36.790	-42.98	-59.81	-13.00	-29.98	16.83	Peak	Horizontal
2	163.860	-31.89	-42.65	-13.00	-18.89	10.76	Peak	Horizontal
3 PP	301.600	-29.18	-43.23	-13.00	-16.18	14.05	Peak	Horizontal
4	389.870	-33.06	-49.67	-13.00	-20.06	16.61	Peak	Horizontal
5	500.450	-32.63	-51.34	-13.00	-19.63	18.71	Peak	Horizontal
6	629.460	-38.31	-59.60	-13.00	-25.31	21.29	Peak	Horizontal



MODE	TX channel 19965	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	42.610	-34.72	-46.08	-13.00	-21.72	11.36	Peak	Vertical
2	162.890	-37.54	-48.87	-13.00	-24.54	11.33	Peak	Vertical
3	301.600	-38.88	-53.92	-13.00	-25.88	15.04	Peak	Vertical
4	425.760	-38.01	-55.70	-13.00	-25.01	17.69	Peak	Vertical
5	485.900	-35.89	-54.72	-13.00	-22.89	18.83	Peak	Vertical
6	594.540	-40.87	-61.67	-13.00	-27.87	20.80	Peak	Vertical





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ABOVE 1GHz

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

WORST-CASE DATA

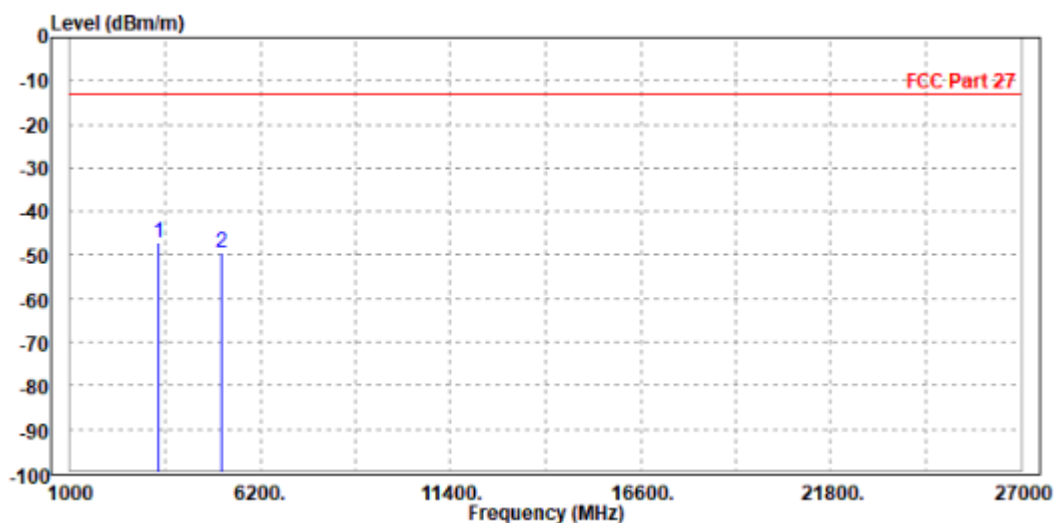
LTE Band 4

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH 19957

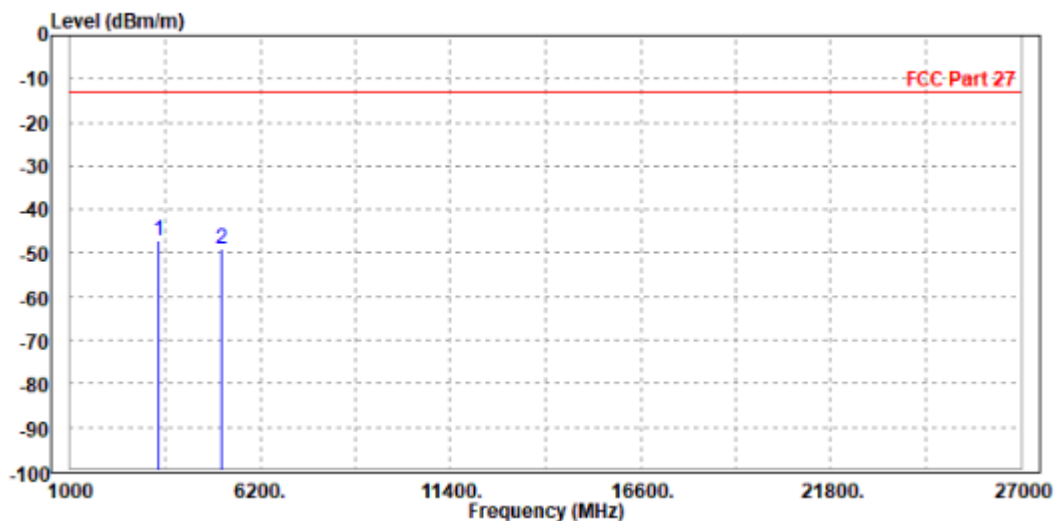
MODE	TX channel 19957	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

			Read	Limit	Over			
	Freq	Level	Level	Line	Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 3418.000	-47.06	-55.65	-13.00	-34.06	8.59	Peak	Horizontal
2	5132.100	-49.57	-58.49	-13.00	-36.57	8.92	Peak	Horizontal



MODE	TX channel 19957	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	3418.000	-47.18	-56.29	-13.00	-34.18	9.11	Peak	Vertical
2	5132.100	-48.99	-58.84	-13.00	-35.99	9.85	Peak	Vertical





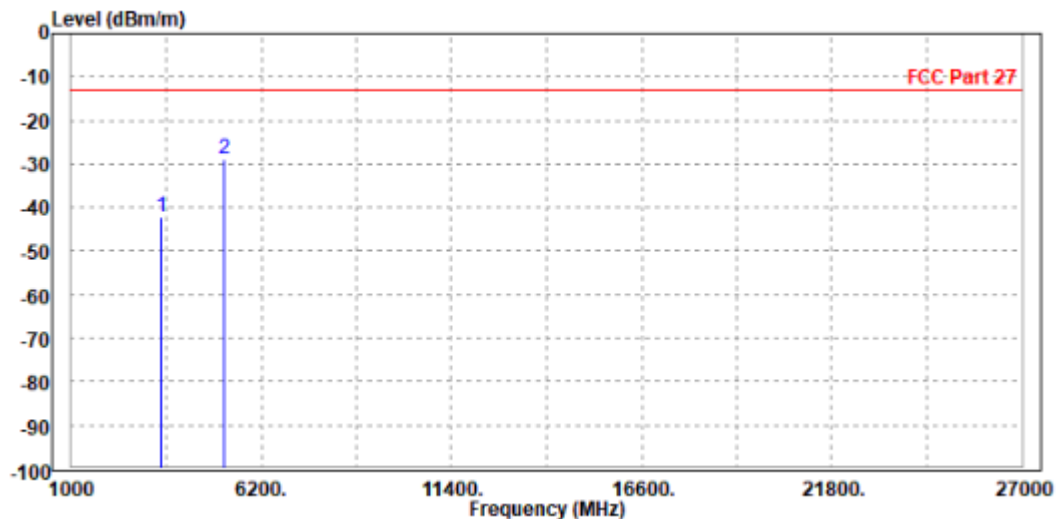
**BUREAU
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CH 20175

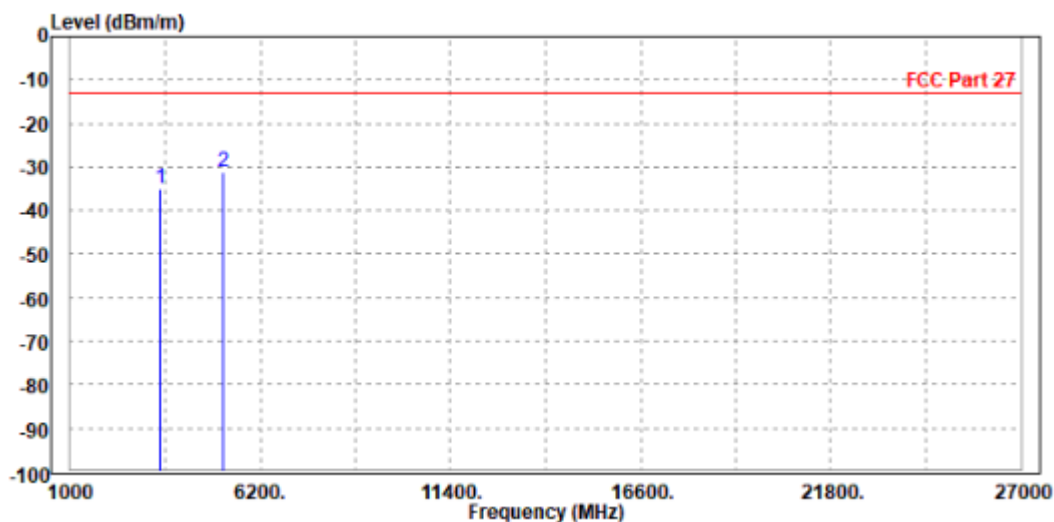
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-42.32	-50.90	-13.00	-29.32	8.58	Peak	Horizontal
2 PP	5197.500	-28.99	-38.11	-13.00	-15.99	9.12	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

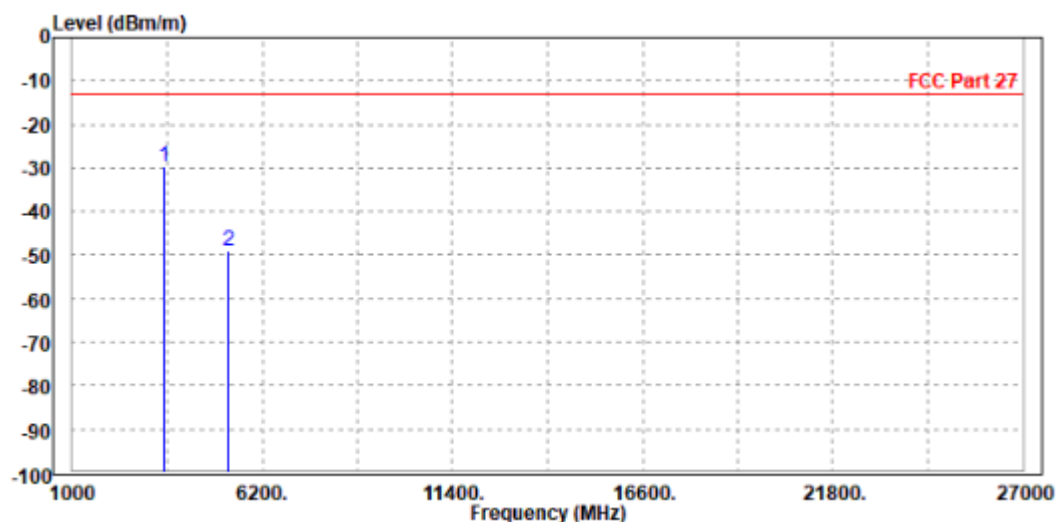
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-35.03	-44.19	-13.00	-22.03	9.16	Peak	Vertical
2 PP	5197.500	-31.16	-40.98	-13.00	-18.16	9.82	Peak	Vertical



CH 20393

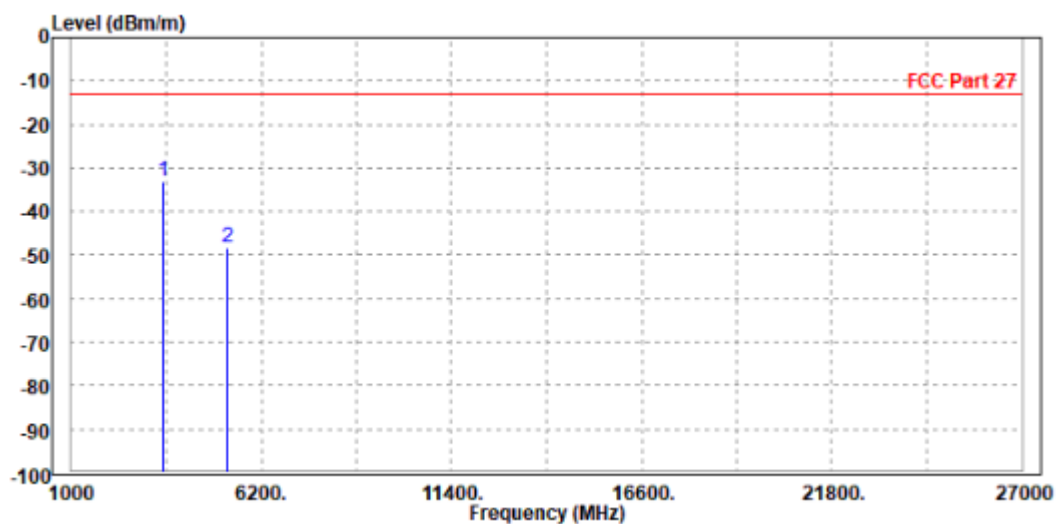
MODE	TX channel 20393	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	3496.000	-29.77	-38.34	-13.00	-16.77	8.57	Peak	Horizontal
2	5262.900	-48.91	-58.22	-13.00	-35.91	9.31	Peak	Horizontal



MODE	TX channel 20393	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

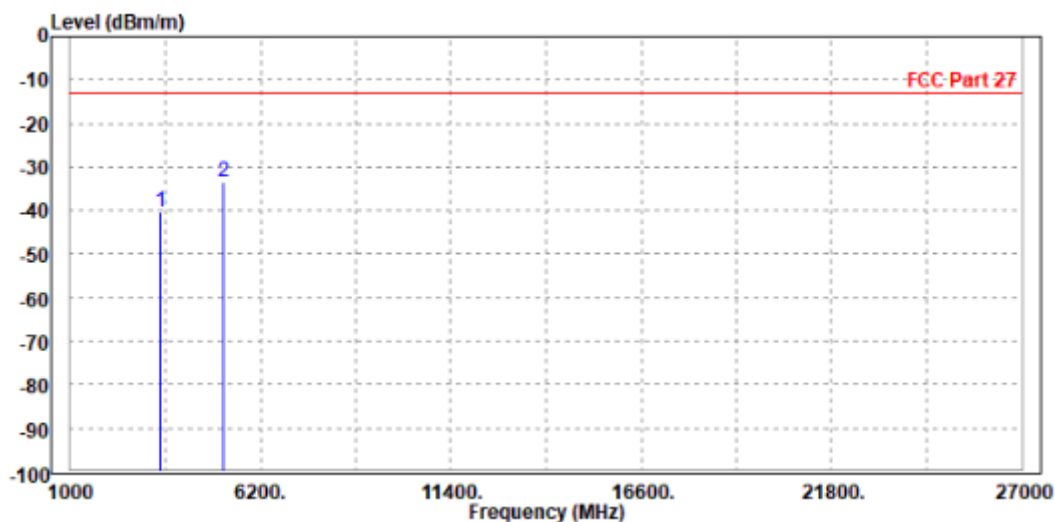
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	3496.000	-32.93	-42.12	-13.00	-19.93	9.19	Peak	Vertical
2		5262.900	-48.22	-58.02	-13.00	-35.22	9.80	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK
CH 19965

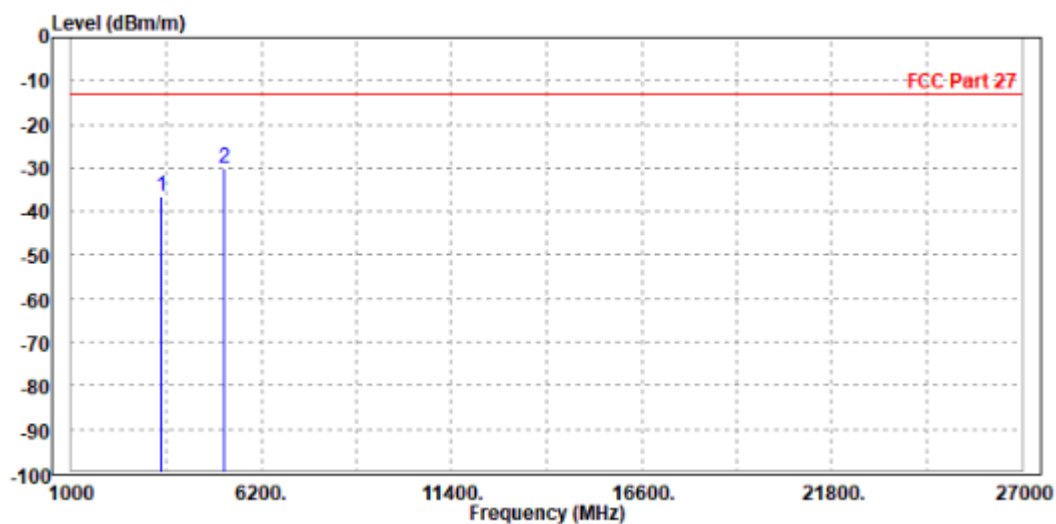
MODE	TX channel 19965	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-40.35	-48.93	-13.00	-27.35	8.58	Peak	Horizontal
2 PP	5197.500	-33.39	-42.51	-13.00	-20.39	9.12	Peak	Horizontal



MODE	TX channel 19965	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	3470.000	-36.36	-45.52	-13.00	-23.36	9.16	Peak	Vertical
2 PP	5197.500	-30.07	-39.89	-13.00	-17.07	9.82	Peak	Vertical

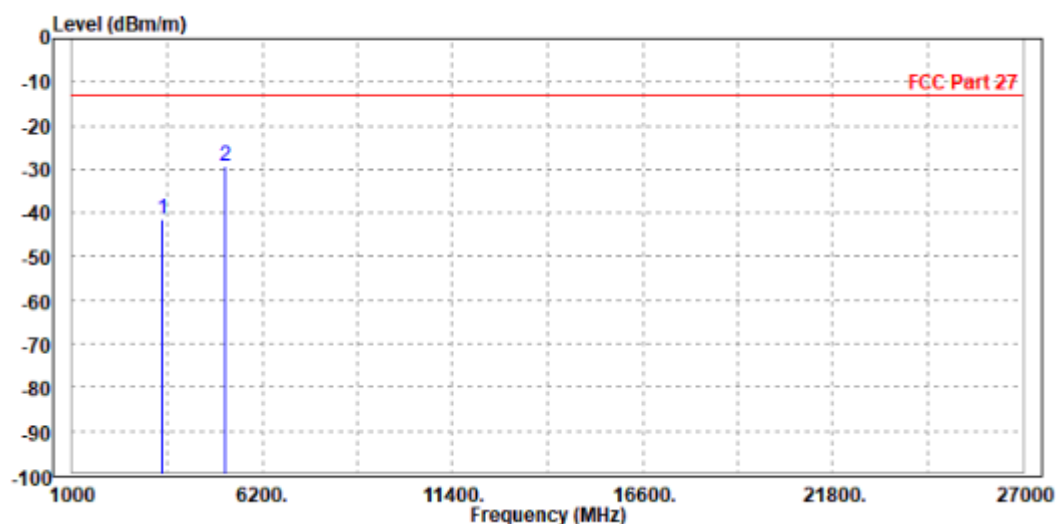


CHANNEL BANDWIDTH: 5MHz / QPSK

CH 20175

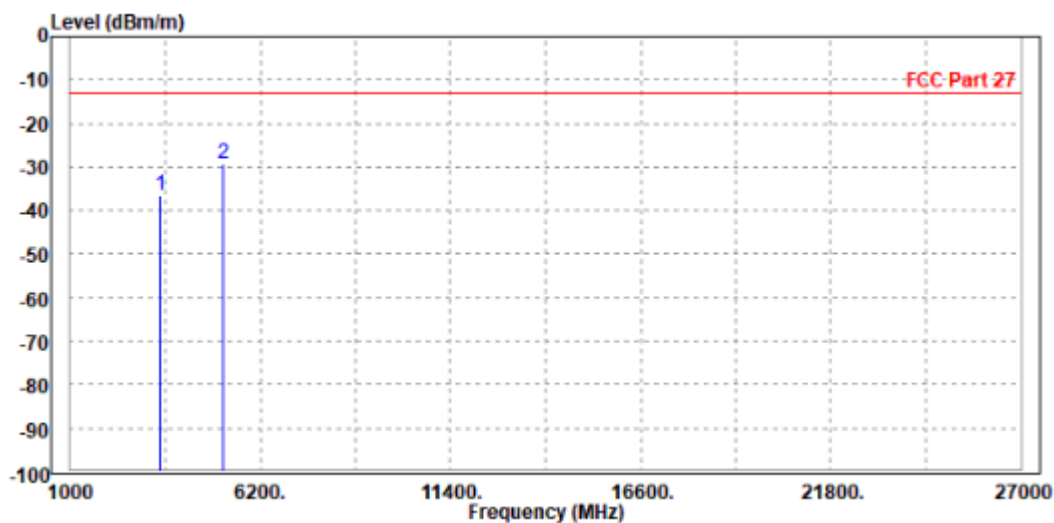
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-41.62	-50.20	-13.00	-28.62	8.58	Peak	Horizontal
2 PP	5197.500	-29.22	-38.34	-13.00	-16.22	9.12	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	3470.000	-36.46	-45.62	-13.00	-23.46	9.16	Peak	Vertical
2 PP	5197.500	-29.47	-39.29	-13.00	-16.47	9.82	Peak	Vertical





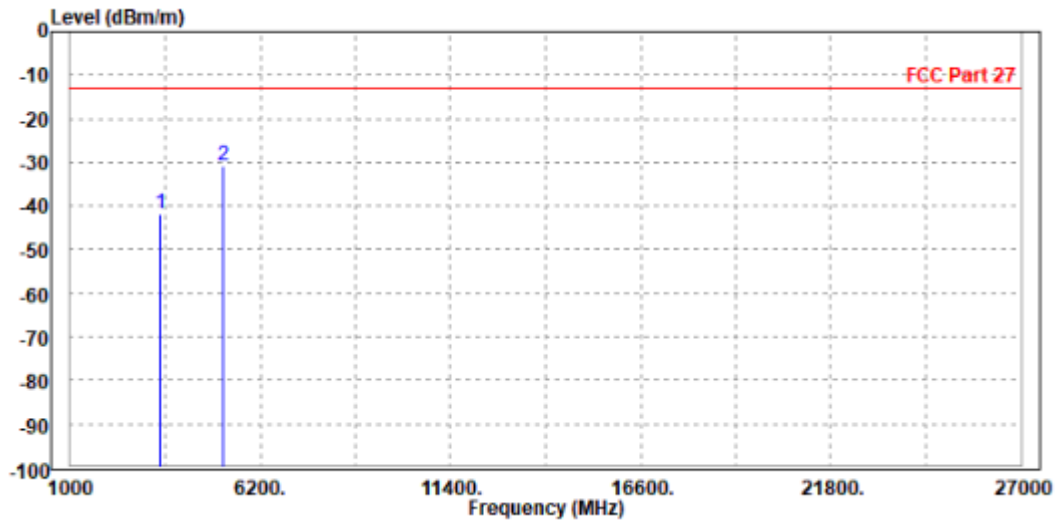
**BUREAU
VERITAS**

Test Report No.: W7L-P22040025RF02

CHANNEL BANDWIDTH: 10MHz / QPSK

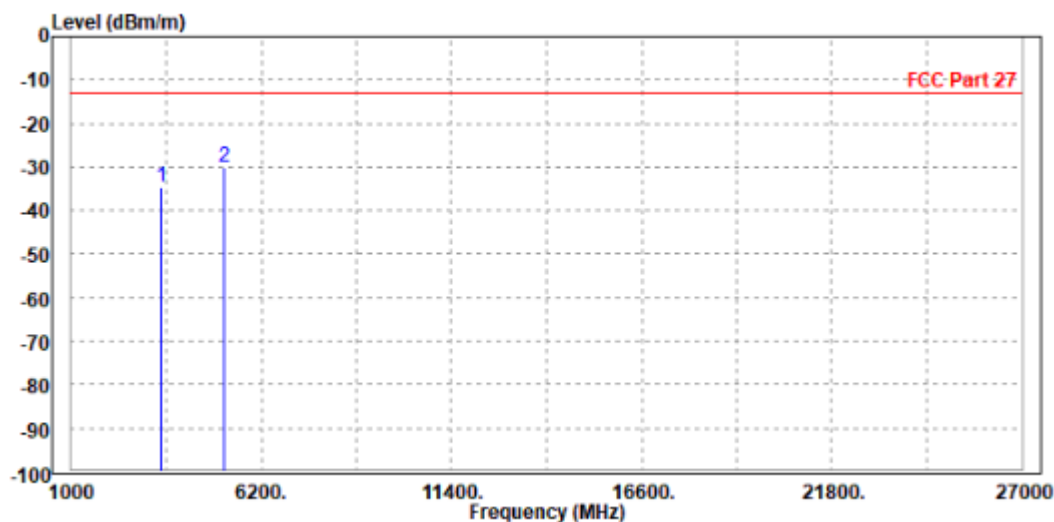
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-41.85	-50.43	-13.00	-28.85	8.58	Peak	Horizontal
2 PP	5197.500	-30.94	-40.06	-13.00	-17.94	9.12	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	3470.000	-34.44	-43.60	-13.00	-21.44	9.16	Peak	Vertical
2 PP	5197.500	-30.20	-40.02	-13.00	-17.20	9.82	Peak	Vertical





BUREAU
VERITAS

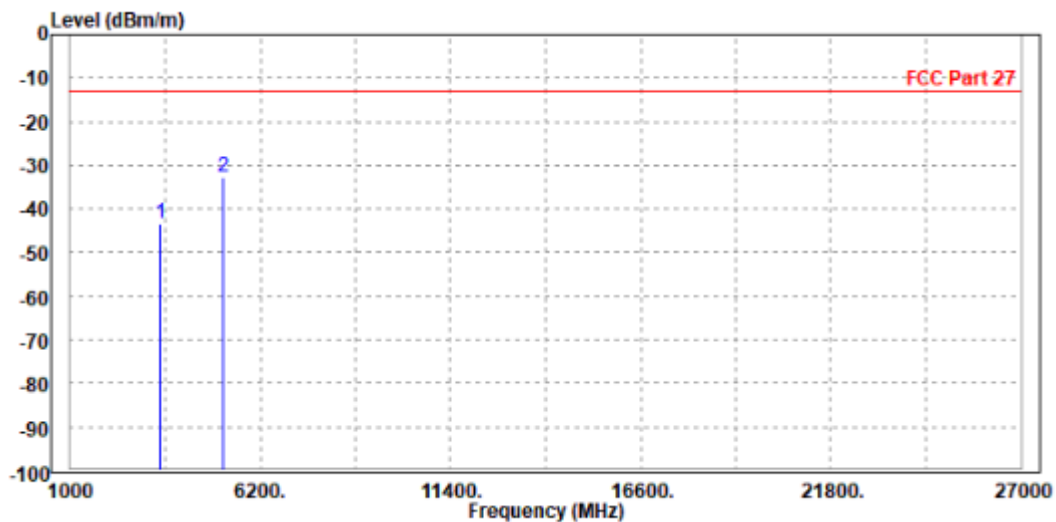
Test Report No.: W7L-P22040025RF02

CHANNEL BANDWIDTH: 15MHz / QPSK

CH20175

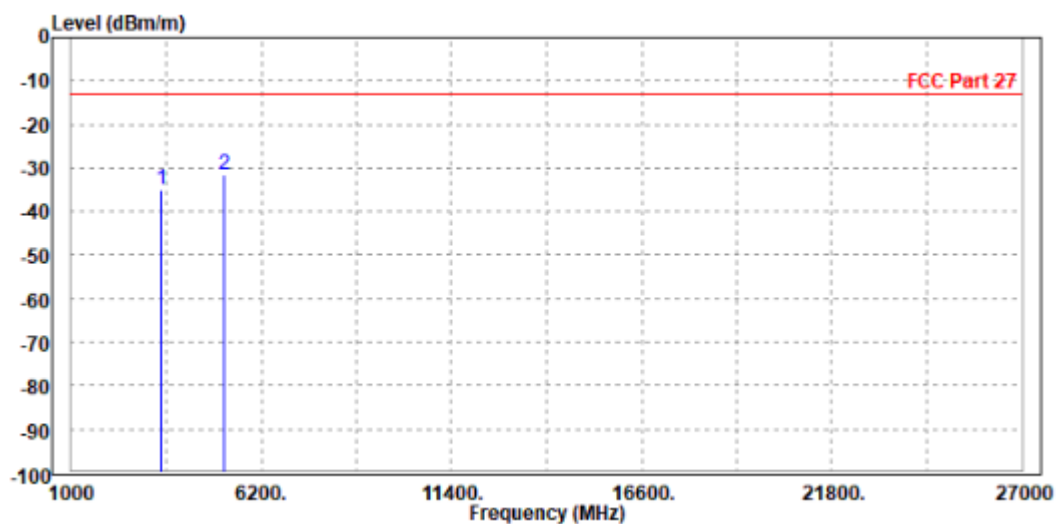
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-43.32	-51.90	-13.00	-30.32	8.58	Peak	Horizontal
2 PP	5197.500	-32.75	-41.87	-13.00	-19.75	9.12	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	3470.000	-35.00	-44.16	-13.00	-22.00	9.16	Peak	Vertical
2 PP	5197.500	-31.44	-41.26	-13.00	-18.44	9.82	Peak	Vertical





BUREAU
VERITAS

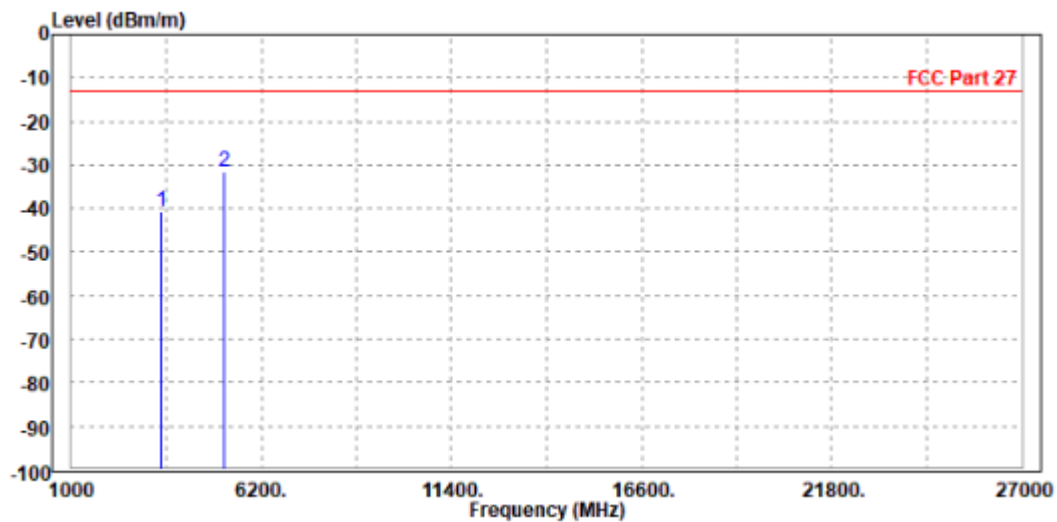
Test Report No.: W7L-P22040025RF02

CHANNEL BANDWIDTH: 20MHz / QPSK

CH 20175

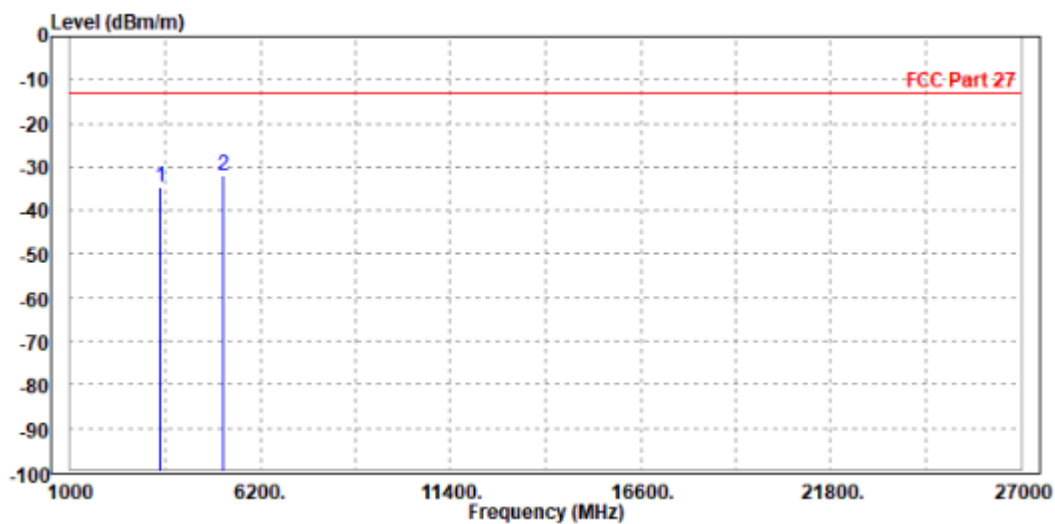
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-40.83	-49.41	-13.00	-27.83	8.58	Peak	Horizontal
2 PP	5197.500	-31.61	-40.73	-13.00	-18.61	9.12	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	3470.000	-34.49	-43.65	-13.00	-21.49	9.16	Peak	Vertical
2 PP	5197.500	-31.95	-41.77	-13.00	-18.95	9.82	Peak	Vertical

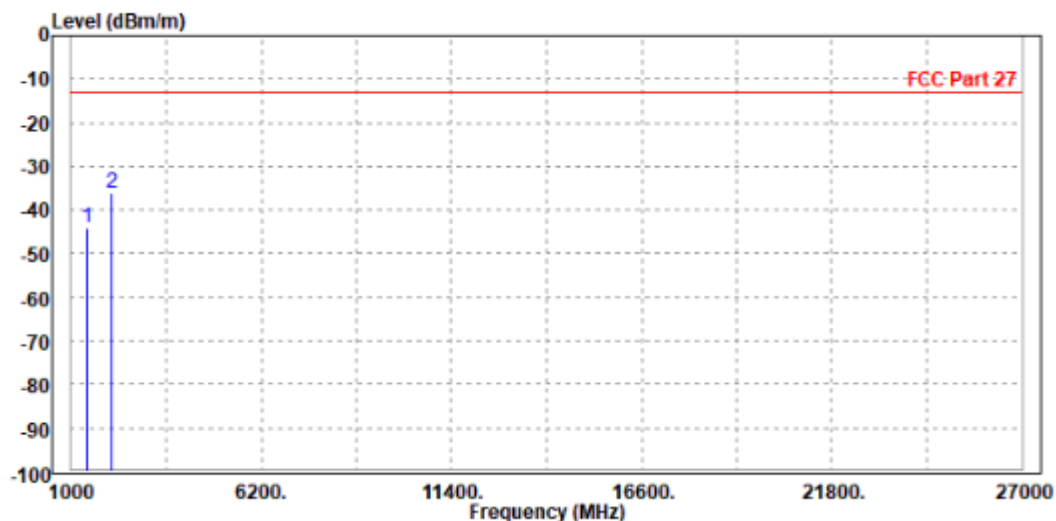


LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz / QPSK

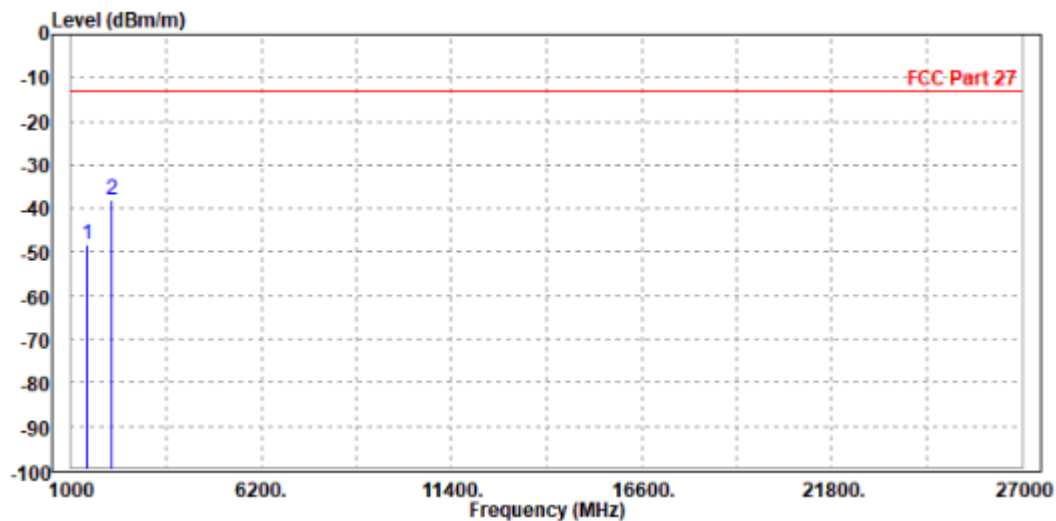
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1415.000	-44.28	-45.35	-13.00	-31.28	1.07	Peak	Horizontal
2 PP	2118.000	-36.28	-43.95	-13.00	-23.28	7.67	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	1416.000	-48.15	-49.84	-13.00	-35.15	1.69	Peak	Vertical
2 PP	2122.500	-38.13	-44.82	-13.00	-25.13	6.69	Peak	Vertical

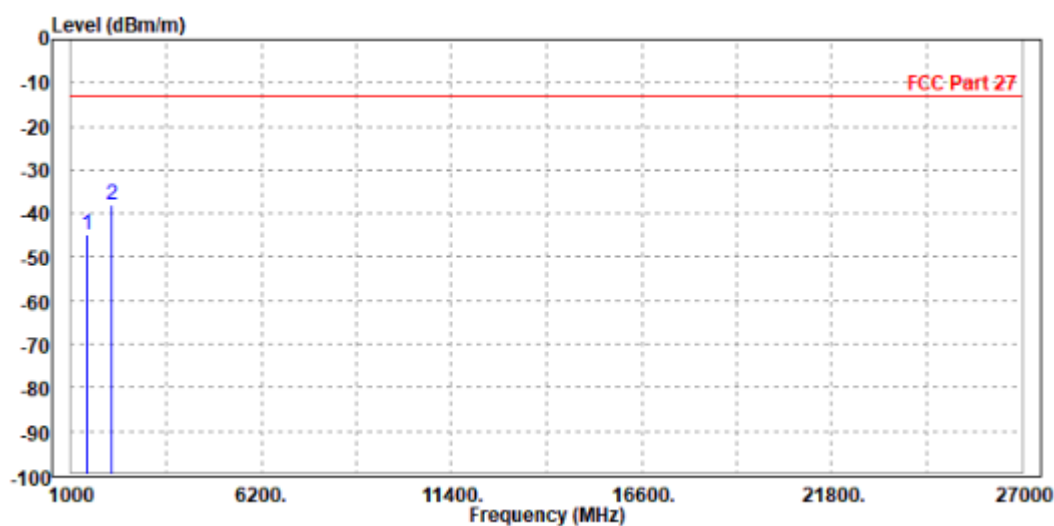


CHANNEL BANDWIDTH: 3MHz / QPSK

CH23095

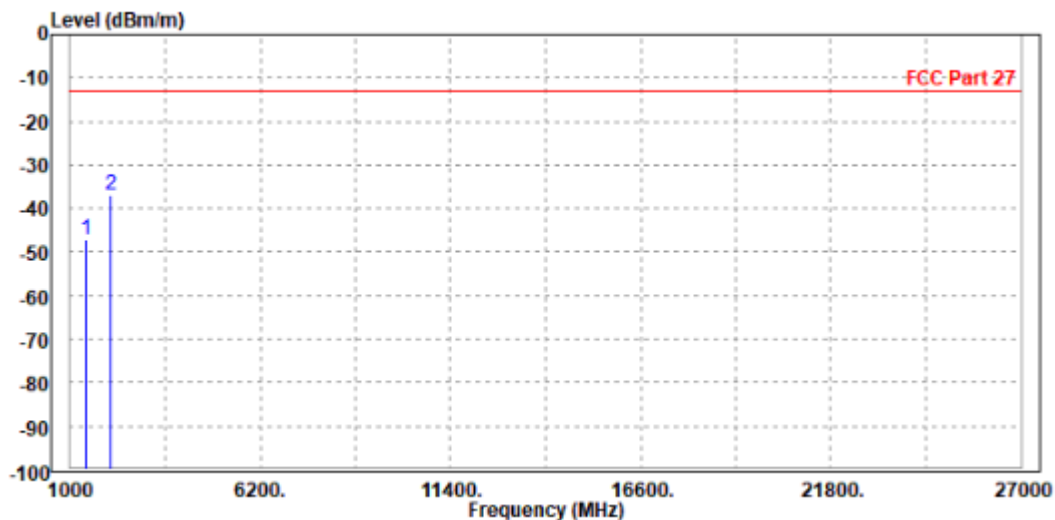
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-45.01	-46.09	-13.00	-32.01	1.08	Peak	Horizontal
2 PP	2122.500	-38.01	-45.68	-13.00	-25.01	7.67	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	1416.000	-47.27	-48.96	-13.00	-34.27	1.69	Peak	Vertical
2 PP	2122.500	-36.80	-43.49	-13.00	-23.80	6.69	Peak	Vertical

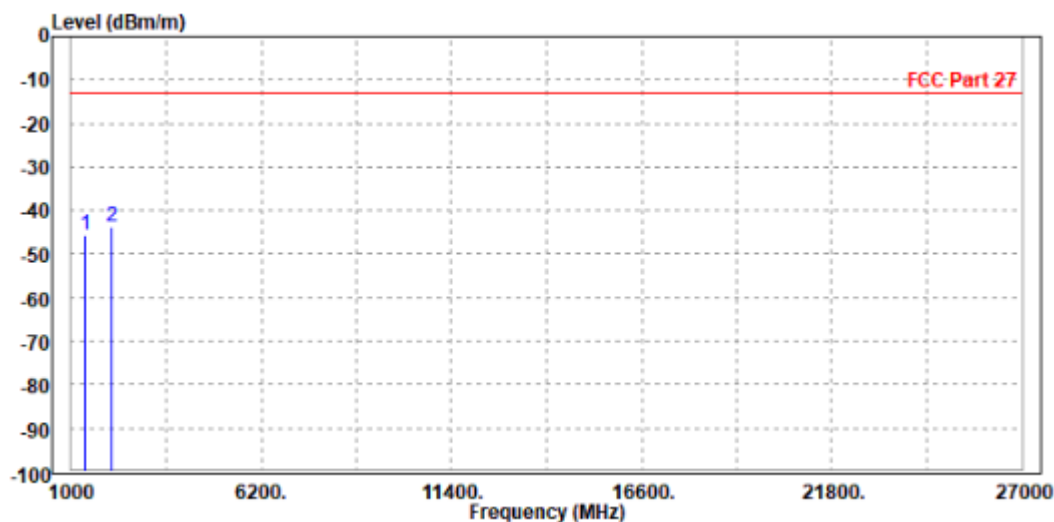


CHANNEL BANDWIDTH: 5MHz / QPSK

CH23035

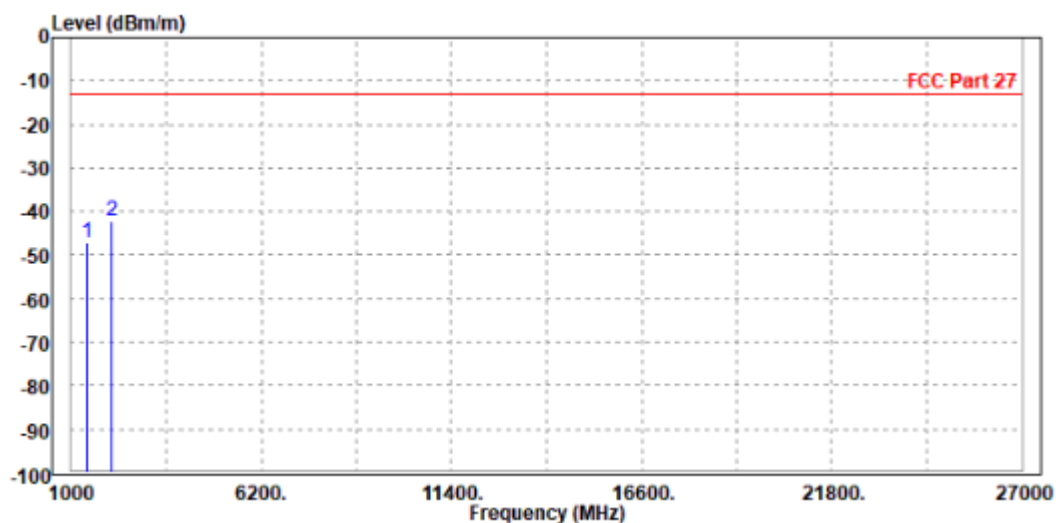
MODE	TX channel 23035	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1403.000	-45.58	-46.60	-13.00	-32.58	1.02	Peak	Horizontal
2 PP	2092.000	-43.69	-51.33	-13.00	-30.69	7.64	Peak	Horizontal



MODE	TX channel 23035	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

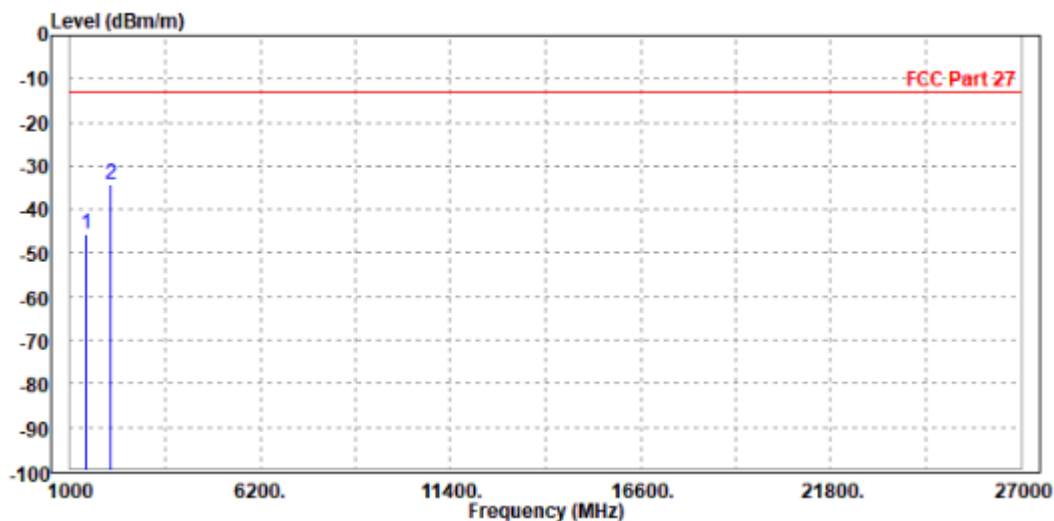
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-47.18	-48.87	-13.00	-34.18	1.69	Peak	Vertical
2 PP	2104.500	-42.33	-49.00	-13.00	-29.33	6.67	Peak	Vertical



CH23095

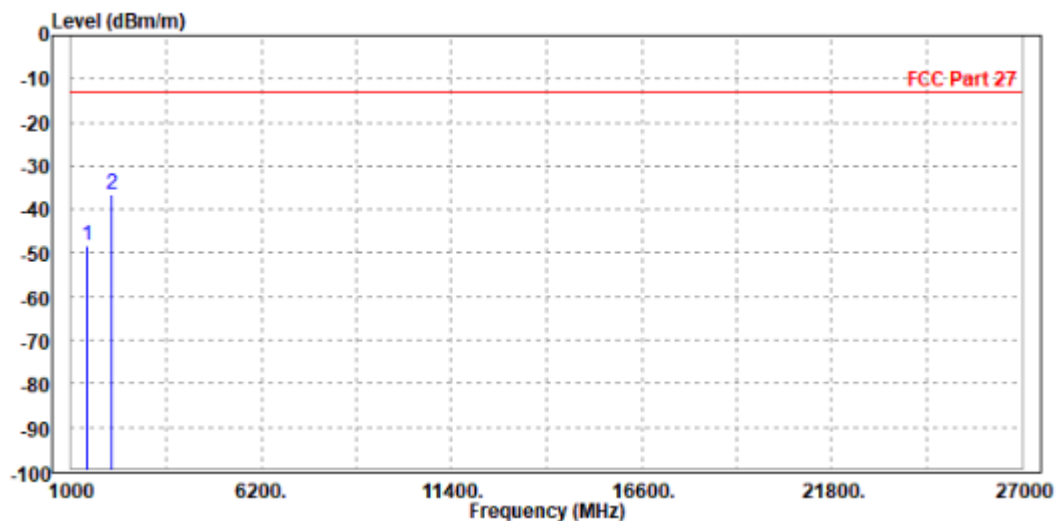
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-45.44	-46.52	-13.00	-32.44	1.08	Peak	Horizontal
2 PP	2122.500	-34.25	-41.92	-13.00	-21.25	7.67	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

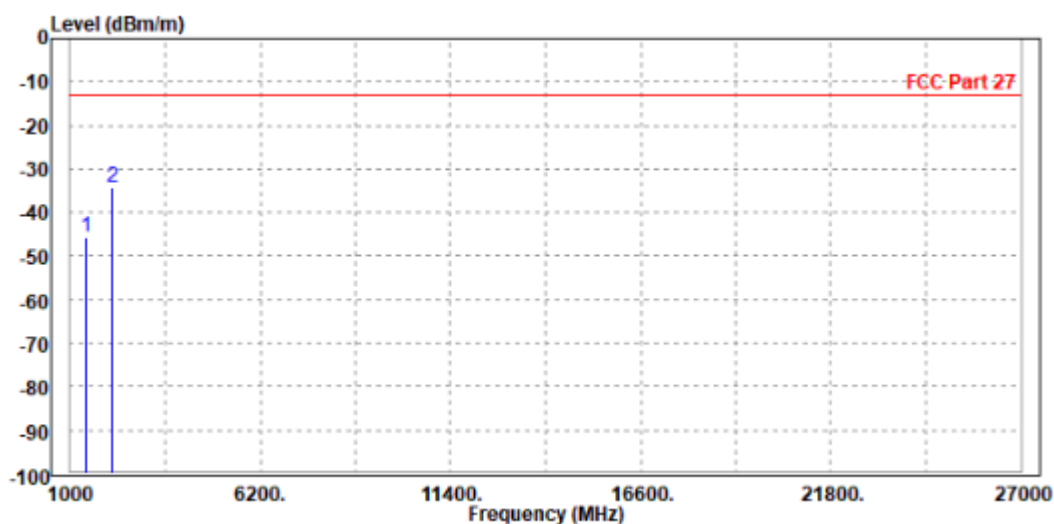
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-48.17	-49.86	-13.00	-35.17	1.69	Peak	Vertical
2 PP	2122.500	-36.43	-43.12	-13.00	-23.43	6.69	Peak	Vertical



CH23155

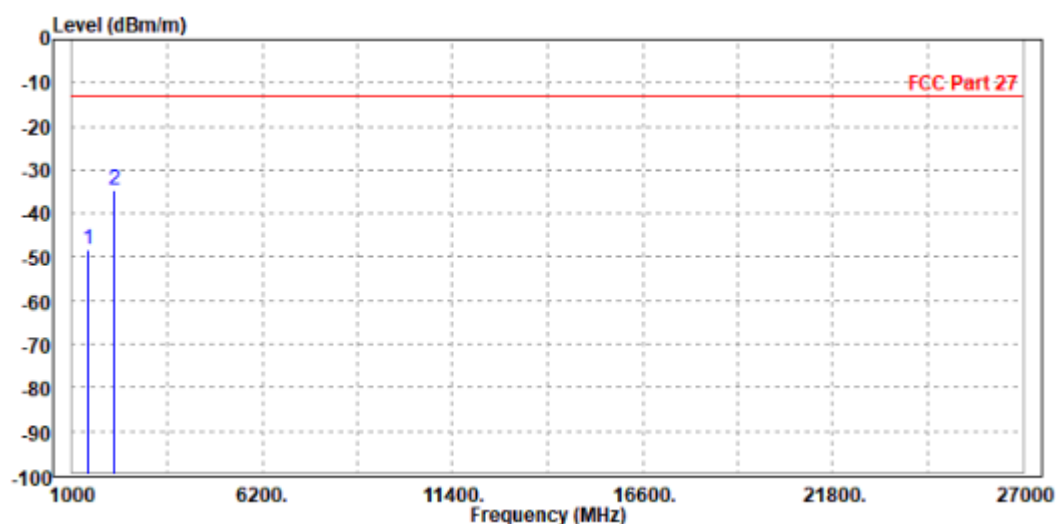
MODE	TX channel 23155	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-45.73	-46.81	-13.00	-32.73	1.08	Peak	Horizontal
2 PP	2140.500	-34.04	-41.73	-13.00	-21.04	7.69	Peak	Horizontal



MODE	TX channel 23155	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	1427.000	-48.28	-50.02	-13.00	-35.28	1.74	Peak	Vertical
2 PP	2144.000	-34.65	-41.36	-13.00	-21.65	6.71	Peak	Vertical

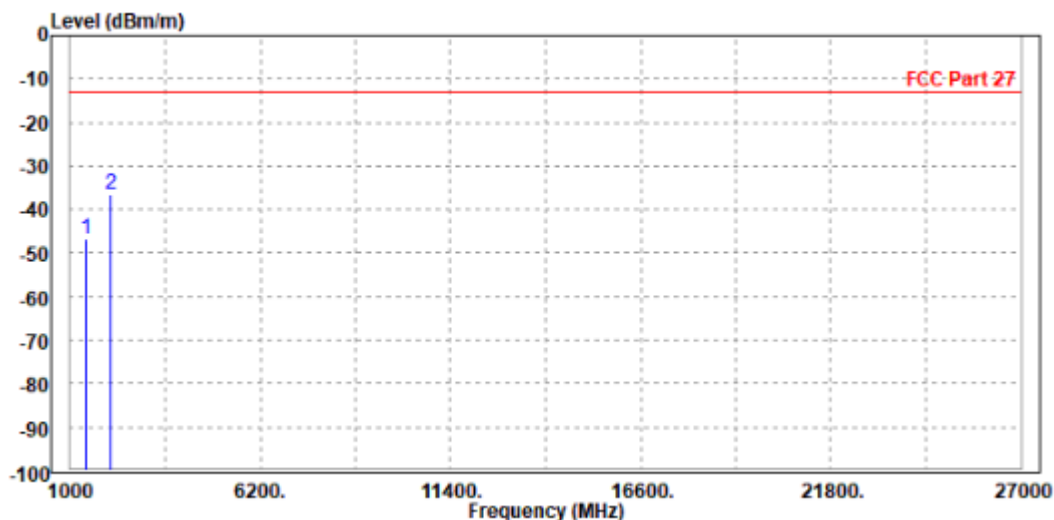


CHANNEL BANDWIDTH: 10MHz / QPSK

CH23060

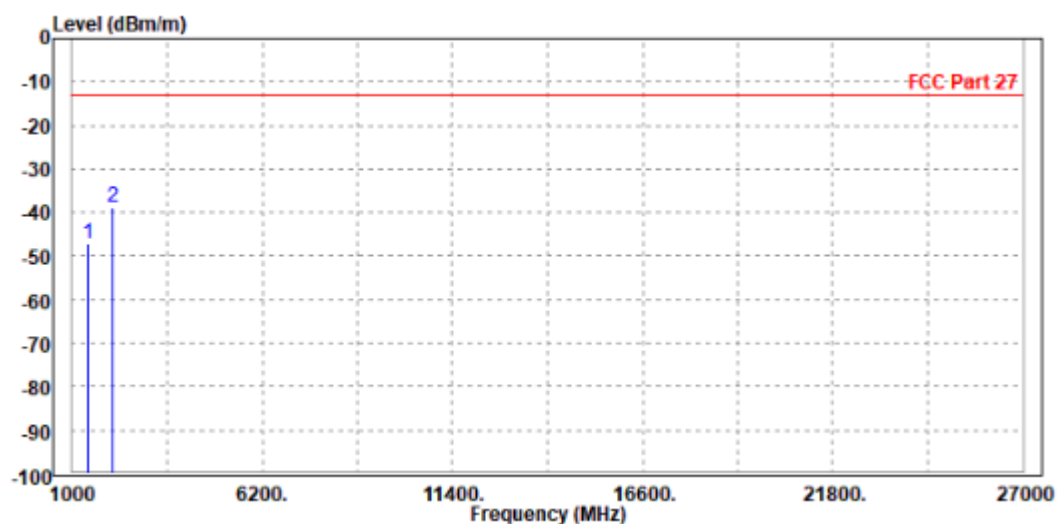
MODE	TX channel 23060	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-46.95	-48.03	-13.00	-33.95	1.08	Peak	Horizontal
2 PP	2122.500	-36.43	-44.10	-13.00	-23.43	7.67	Peak	Horizontal



MODE	TX channel 23060	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 13.7V
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	1416.000	-47.05	-48.74	-13.00	-34.05	1.69	Peak	Vertical
2 PP	2122.500	-38.79	-45.48	-13.00	-25.79	6.69	Peak	Vertical





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4 INFORMATION ON THE TESTING LABORATORIES

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

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

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.



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

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

---END---