

VARIANT FCC TEST REPORT

(PART 22)

Applicant:	Fibocom Wireless Inc.
Address:	1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China.

Manufacturer or Supplier:	Fibocom Wireless Inc.
Address:	1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China.
Product:	LTE module
Brand Name:	Fibocom
Model Name:	L850-GL
FCC ID:	ZMOL850GLD-D1
Date of tests:	Jan. 17, 2022 ~ Jan. 19, 2022

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

- | | |
|---|---|
| ☒ FCC PART 22, Subpart H | ☒ FCC Part 2 |
| ☒ ANSI/TIA/EIA-603-D | ☒ ANSI C63.26-2015 |
| ☒ ANSI/TIA/EIA-603-E | |

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: Jan. 19, 2022	Date: Jan. 19, 2022

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Test Report No.: W7L-220113W003RF01

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF180704C01	Original release	Jul. 19, 2018
W7L-181207W001RF01	Based on the original report RF180704C01 Changing FCC ID	Dec. 14, 2018
W7L-220113W003RF01	Based on the original report W7L-181207W001RF01 Changing components	Jan. 19, 2022

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 22 & Part 2		
STANDARD SECTION	TEST TYPE	RESULT
2.1046 22.913 (a)	Effective Radiated Power	Compliance (See Note 1)
2.1055 22.355	Frequency Stability	(See Note 2)
2.1049 22.917 (b)	Occupied Bandwidth	(See Note 2)
22.913 (d)	Peak to average ratio*	(See Note 2)
22.917	Band Edge Measurements	(See Note 2)
2.1051 22.917	Conducted Spurious Emissions	(See Note 2)
2.1053 22.917	Radiated Spurious Emissions	Compliance (See Note 1)

* Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.

NOTE:

1. Per the change notice provide by manufactory, the difference is changing components, all the change no effect any RF parameter, Therefore only verify the power and radiated emission worse case. The report only show the verify test data.
2. Please refer to original report W7L-181207W001RF01

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	LTE module	
BRAND NAME	Fibocom	
MODEL NAME	L850-GL	
NOMINAL VOLTAGE	3.3Vdc (Form Host Equipment)	
MODULATION TYPE	WCDMA	QPSK
	LTE	QPSK, 16QAM
FREQUENCY RANGE	WCDMA	826.4MHz ~ 846.6MHz
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE Band 5 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE Band 5 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE Band 5 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE Band 26 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE Band 26 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE Band 26 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE Band 26 (Channel Bandwidth: 15MHz)	831.5MHz ~ 841.5MHz
MAX. ERP POWER	WCDMA	261.22mW
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	226.99mW
	LTE Band 5 (Channel Bandwidth: 3MHz)	222.84mW
	LTE Band 5 (Channel Bandwidth: 5MHz)	224.91mW
	LTE Band 5 (Channel Bandwidth: 10MHz)	225.42mW
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	214.78mW
	LTE Band 26 (Channel Bandwidth: 3MHz)	215.77mW
	LTE Band 26 (Channel Bandwidth: 5MHz)	213.30mW



EMISSION DESIGNATOR GOGN	LTE Band 26 (Channel Bandwidth: 10MHz)	214.78mW
	LTE Band 26 (Channel Bandwidth: 15MHz)	218.27mW
	WCDMA	4M09F9W
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	1M09G7D
	LTE Band 5 (Channel Bandwidth: 3MHz)	2M70G7D
	LTE Band 5 (Channel Bandwidth: 5MHz)	4M50G7D
	LTE Band 5 (Channel Bandwidth: 10MHz)	9M01G7D
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	1M09G7D
	LTE Band 26 (Channel Bandwidth: 3MHz)	2M71G7D
	LTE Band 26 (Channel Bandwidth: 5MHz)	4M50W7D
	LTE Band 26 (Channel Bandwidth: 10MHz)	9M01G7D
	LTE Band 26 (Channel Bandwidth: 15MHz)	13M52W7D
	ANTENNA TYPE	External Antenna with 3.0 dBi gain
	HW VERSION	V1.0.4
	SW VERSION	18500.5001.00.05.27.12
	I/O PORTS	Refer to user's manual
	CABLE SUPPLIED	N/A
	EXTREME TEMPERATURE	-10-55 °C
	EXTREME VOLTAGE	3.4V- 4.4V

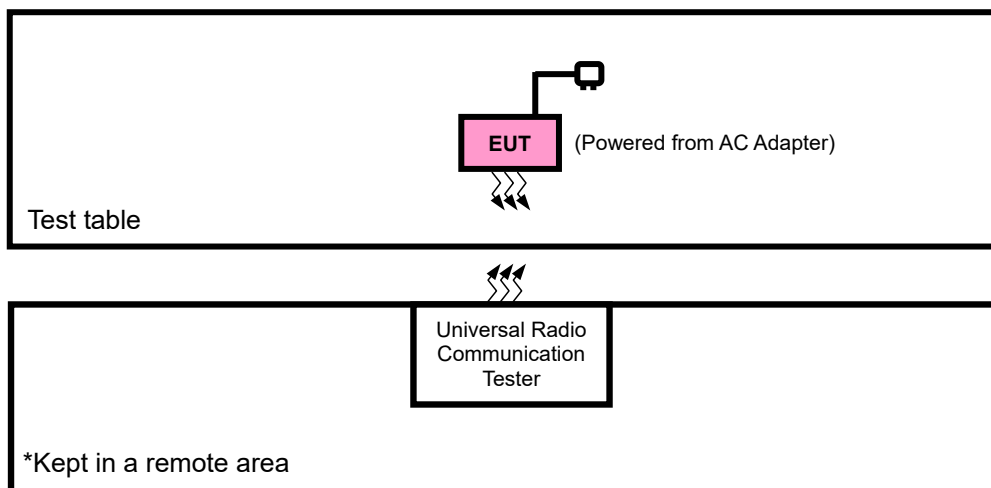


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NOTE:

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

2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION



2.3 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	Kikusui/JP	PMX18-5A	0000001	N/A

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

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case in ERP and radiated emission was found when positioned on Z-plane for WCDMA/LTE. Following channel(s) was (were) selected for the final test as listed below:

DESCRIPTION
EUT +AC Adapter with WCDMA & LTE link

WCDMA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	4132 to 4233	4132, 4182, 4233	WCDMA

LTE BAND 5 MODE

TEST ITEM	Available Channel	Tested Channel	Channel bandwidth	modulation	mode
ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
Radiated Spurious Emissions	20407 to 20643	20525	1.4MHz	QPSK	1 RB / 0 RB Offset
	20415 to 20635	20525	3MHz	QPSK	1 RB / 0 RB Offset
	20425 to 20625	20525	5MHz	QPSK	1 RB / 0 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK	1 RB / 0 RB Offset

LTE BAND 26 MODE

TEST ITEM	Available Channel	Tested Channel	Channel bandwidth	modulation	mode
ERP	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK,16QAM	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
ERP	23deg. C, 70%RH	DC 3.3V	Jace Hu
RADIATED EMISSION	23deg. C, 70%RH	DC 3.3V	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 22

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 / Portable station are limited to 7 watts e.r.p.

3.1.2 TEST PROCEDURES

EIRP / ERP 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:

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

Where:

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

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

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

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

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

CONDUCTED POWER MEASUREMENT:

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

3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	WCDMA V			Max. Tune-up Power
Channel	4132	4182	4233	
Frequency	826.4	836.4	846.6	
RMC 12.2K	22.99	23.32	23.19	24.5
HSDPA Subtest-1	22.07	22.27	22.26	23.5
HSDPA Subtest-2	21.99	22.27	22.16	23.5
HSDPA Subtest-3	21.55	21.79	21.77	23.0
HSDPA Subtest-4	21.58	21.81	21.65	23.0
HSUPA Subtest-1	22.01	22.27	22.23	23.5
HSUPA Subtest-2	20.12	20.37	20.23	21.5
HSUPA Subtest-3	21.04	21.27	21.19	22.5
HSUPA Subtest-4	20.11	20.35	20.33	21.5
HSUPA Subtest-5	22.12	22.30	22.27	23.5



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LTE Band 5

Band/BW	Modulation	RB Size	RB Offset	Low CH 20407	Mid CH 20525	High CH 20643	MPR
				Frequency 824.7 MHz	Frequency 836.5 MHz	Frequency 848.3 MHz	
5/ 1.4	QPSK	1	0	22.42	22.29	22.48	0
		1	2	22.55	22.23	22.59	0
		1	5	22.51	22.26	22.63	0
		3	0	22.47	22.31	22.51	0
		3	1	22.46	22.55	22.51	0
		3	3	22.60	22.43	22.71	0
		6	0	21.60	21.56	21.65	1
	16QAM	1	0	21.51	21.44	21.69	1
		1	2	21.48	21.49	21.60	1
		1	5	21.70	21.38	21.77	1
		3	0	21.55	21.49	21.57	1
		3	1	21.56	21.64	21.69	1
		3	3	21.60	21.54	21.78	1
		6	0	20.61	20.51	20.68	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 20415	Mid CH 20525	High CH 20635	MPR
				Frequency 825.5 MHz	Frequency 836.5 MHz	Frequency 847.5 MHz	
5/ 3	QPSK	1	0	22.44	22.31	22.47	0
		1	7	22.51	22.24	22.59	0
		1	14	22.47	22.26	22.63	0
		8	0	21.46	21.34	21.51	1
		8	3	21.39	21.55	21.53	1
		8	7	21.57	21.50	21.75	1
		15	0	21.57	21.57	21.59	1
	16QAM	1	0	21.48	21.50	21.72	1
		1	7	21.45	21.52	21.58	1
		1	14	21.73	21.38	21.77	1
		8	0	20.51	20.50	20.57	2
		8	3	20.61	20.59	20.72	2
		8	7	20.62	20.52	20.74	2
		15	0	20.61	20.45	20.71	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 20425	Mid CH 20525	High CH 20625	MPR
				Frequency 826.5 MHz	Frequency 836.5 MHz	Frequency 846.5 MHz	
5/ 5	QPSK	1	0	22.45	22.26	22.48	0
		1	12	22.56	22.21	22.59	0
		1	24	22.48	22.25	22.67	0
		12	0	21.49	21.34	21.48	1
		12	6	21.39	21.56	21.54	1
		12	13	21.61	21.46	21.76	1
		25	0	21.55	21.60	21.62	1
	16QAM	1	0	21.49	21.46	21.72	1
		1	12	21.42	21.55	21.57	1
		1	24	21.73	21.38	21.76	1
		12	0	20.51	20.48	20.54	2
		12	6	20.58	20.63	20.68	2
		12	13	20.57	20.54	20.77	2
		25	0	20.61	20.46	20.68	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 20450	Mid CH 20525	High CH 20600	MPR
				Frequency 829 MHz	Frequency 836.5 MHz	Frequency 844 MHz	
5/ 10	QPSK	1	0	22.50	22.33	22.53	0
		1	24	22.58	22.29	22.61	0
		1	49	22.53	22.33	22.68	0
		25	0	21.53	21.39	21.53	1
		25	12	21.47	21.57	21.59	1
		25	25	21.65	21.51	21.77	1
		50	0	21.61	21.62	21.67	1
	16QAM	1	0	21.56	21.51	21.74	1
		1	24	21.50	21.57	21.62	1
		1	49	21.75	21.46	21.78	1
		25	0	20.59	20.54	20.62	2
		25	12	20.64	20.65	20.74	2
		25	25	20.64	20.59	20.79	2
		50	0	20.67	20.53	20.73	2



LTE Band 26

Band/BW	Modulation	RB Size	RB Offset	Low CH 26797	Mid CH 26915	High CH 27033	MPR
				Frequency 824.7 MHz	Frequency 836.5 MHz	Frequency 848.3 MHz	
26/ 1.4	QPSK	1	0	22.32	22.47	22.37	0
		1	2	22.33	22.21	22.32	0
		1	5	22.31	22.37	22.30	0
		3	0	22.40	22.35	22.42	0
		3	1	22.36	22.28	22.19	0
		3	3	22.30	22.26	22.33	0
		6	0	21.51	21.47	21.32	1
	16QAM	1	0	21.55	21.54	21.53	1
		1	2	21.57	21.48	21.55	1
		1	5	21.67	21.57	21.61	1
		3	0	21.48	21.46	21.51	1
		3	1	21.45	21.43	21.46	1
		3	3	21.42	21.52	21.47	1
		6	0	20.51	20.46	20.50	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 26805	Mid CH 26915	High CH 27025	MPR
				Frequency 825.5 MHz	Frequency 836.5 MHz	Frequency 847.5 MHz	
26/ 3	QPSK	1	0	22.34	22.49	22.36	0
		1	7	22.29	22.22	22.32	0
		1	14	22.27	22.37	22.30	0
		8	0	21.39	21.38	21.42	1
		8	3	21.29	21.28	21.21	1
		8	7	21.27	21.33	21.37	1
		15	0	21.48	21.48	21.26	1
	16QAM	1	0	21.52	21.60	21.56	1
		1	7	21.54	21.51	21.53	1
		1	14	21.70	21.57	21.61	1
		8	0	20.44	20.47	20.51	2
		8	3	20.50	20.38	20.49	2
		8	7	20.44	20.50	20.43	2
		15	0	20.51	20.40	20.53	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 26815	Mid CH 26915	High CH 27015	MPR
				Frequency 826.5 MHz	Frequency 836.5 MHz	Frequency 846.5 MHz	
26/ 5	QPSK	1	0	22.35	22.44	22.37	0
		1	12	22.34	22.19	22.32	0
		1	24	22.28	22.36	22.34	0
		12	0	21.42	21.38	21.39	1
		12	6	21.29	21.29	21.22	1
		12	13	21.31	21.29	21.38	1
		25	0	21.46	21.51	21.29	1
	16QAM	1	0	21.53	21.56	21.56	1
		1	12	21.51	21.54	21.52	1
		1	24	21.70	21.57	21.60	1
		12	0	20.44	20.45	20.48	2
		12	6	20.47	20.42	20.45	2
		12	13	20.39	20.52	20.46	2
		25	0	20.51	20.41	20.50	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 26840	Mid CH 26915	High CH 26990	MPR
				Frequency 829 MHz	Frequency 836.5 MHz	Frequency 844 MHz	
26/ 10	QPSK	1	0	22.32	22.47	22.37	0
		1	24	22.34	22.19	22.33	0
		1	49	22.25	22.40	22.30	0
		25	0	21.43	21.37	21.42	1
		25	12	21.35	21.23	21.22	1
		25	25	21.29	21.26	21.37	1
		50	0	21.51	21.51	21.26	1
	16QAM	1	0	21.53	21.53	21.52	1
		1	24	21.56	21.50	21.55	1
		1	49	21.70	21.58	21.57	1
		25	0	20.46	20.43	20.54	2
		25	12	20.51	20.36	20.50	2
		25	25	20.38	20.53	20.43	2
		50	0	20.55	20.40	20.54	2

Band/BW	Modulation	RB Size	RB Offset	Low CH 26865	Mid CH 26915	High CH 26965	MPR
				Frequency 831.5 MHz	Frequency 836.5 MHz	Frequency 841.5 MHz	
26/ 15	QPSK	1	0	22.54	22.51	22.45	0
		1	37	22.30	22.27	22.37	0
		1	74	22.47	22.44	22.38	0
		36	0	21.46	21.43	21.47	1
		36	19	21.33	21.30	21.30	1
		36	39	21.37	21.34	21.42	1
		75	0	21.56	21.53	21.37	1
	16QAM	1	0	21.64	21.61	21.61	1
		1	37	21.59	21.56	21.60	1
		1	74	21.68	21.65	21.65	1
		36	0	20.54	20.51	20.59	2
		36	19	20.47	20.44	20.54	2
		36	39	20.60	20.57	20.51	2
		75	0	20.51	20.48	20.58	2



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ERP

WCDMA

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
4132	826.4	22.99	3	23.84	242.1	7
4182	836.4	23.32	3	24.17	261.22	7
4233	846.6	23.19	3	24.04	253.51	7

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

LTE BAND 5

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20407	824.7	22.6	3	23.45	221.31	7
20525	836.5	22.55	3	23.4	218.78	7
20643	848.3	22.71	3	23.56	226.99	7

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20407	824.7	21.7	3	22.55	179.89	7
20525	836.5	21.64	3	22.49	177.42	7
20643	848.3	21.78	3	22.63	183.23	7

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20415	825.5	22.51	3	23.36	216.77	7
20525	836.5	22.31	3	23.16	207.01	7
20635	847.5	22.63	3	23.48	222.84	7

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20415	825.5	21.73	3	22.58	181.13	7
20525	836.5	21.52	3	22.37	172.58	7
20635	847.5	21.77	3	22.62	182.81	7

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20425	826.5	22.56	3	23.41	219.28	7
20525	836.5	22.26	3	23.11	204.64	7
20625	846.5	22.67	3	23.52	224.91	7

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20425	826.5	21.73	3	22.58	181.13	7
20525	836.5	21.55	3	22.4	173.78	7
20625	846.5	21.76	3	22.61	182.39	7

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20450	829.0	22.58	3	23.43	220.29	7
20525	836.5	22.33	3	23.18	207.97	7
20600	844.0	22.68	3	23.53	225.42	7

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
20450	829.0	21.75	3	22.6	181.97	7
20525	836.5	21.57	3	22.42	174.58	7
20600	844.0	21.78	3	22.63	183.23	7

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

**LTE BAND 26****CHANNEL BANDWIDTH: 1.4MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26697	824.7	22.4	3	23.25	211.35	7
26865	836.5	22.47	3	23.32	214.78	7
27033	848.3	22.42	3	23.27	212.32	7

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26697	824.7	21.67	3	22.52	178.65	7
26865	836.5	21.57	3	22.42	174.58	7
27033	848.3	21.61	3	22.46	176.20	7

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26705	825.5	22.34	3	23.19	208.45	7
26865	836.5	22.49	3	23.34	215.77	7
27025	847.5	22.36	3	23.21	209.41	7

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26705	825.5	21.7	3	22.55	179.89	7
26865	836.5	21.6	3	22.45	175.79	7
27025	847.5	21.61	3	22.46	176.20	7

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26715	826.5	22.35	3	23.2	208.93	7
26865	836.5	22.44	3	23.29	213.30	7
27015	846.5	22.37	3	23.22	209.89	7

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26715	826.5	21.7	3	22.55	179.89	7
26865	836.5	21.57	3	22.42	174.58	7
27015	846.5	21.6	3	22.45	175.79	7

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26740	829	22.34	3	23.19	208.45	7
26865	836.5	22.47	3	23.32	214.78	7
26990	844	22.37	3	23.22	209.89	7

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26740	829	21.7	3	22.55	179.89	7
26865	836.5	21.58	3	22.43	174.98	7
26990	844	21.57	3	22.42	174.58	7

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26765	831.5	22.54	3	23.39	218.27	7
26865	836.5	22.51	3	23.36	216.77	7
26965	841.5	22.45	3	23.3	213.80	7

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
26765	831.5	21.68	3	22.53	179.06	7
26865	836.5	21.65	3	22.5	177.83	7
26965	841.5	21.65	3	22.5	177.83	7

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

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 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 .

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

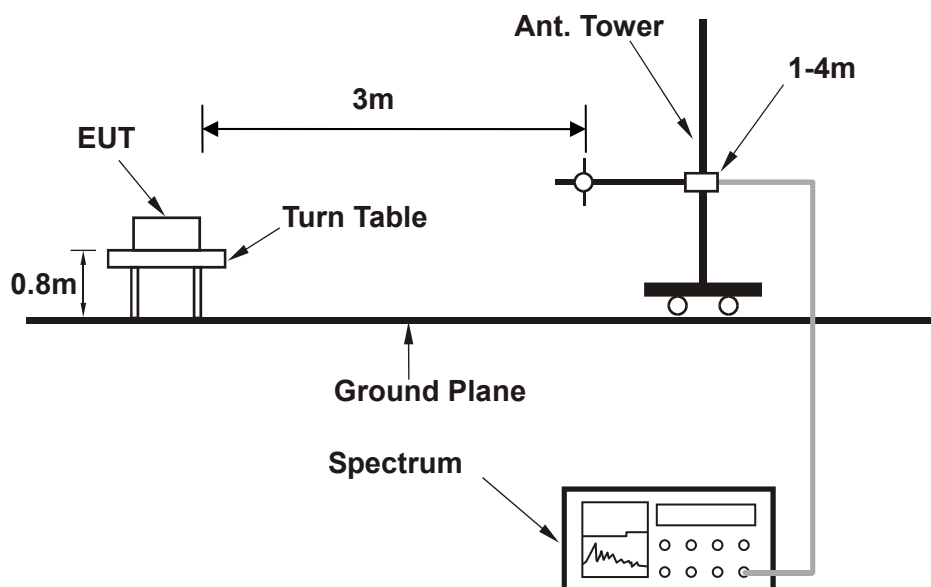
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.2.3 DEVIATION FROM TEST STANDARD

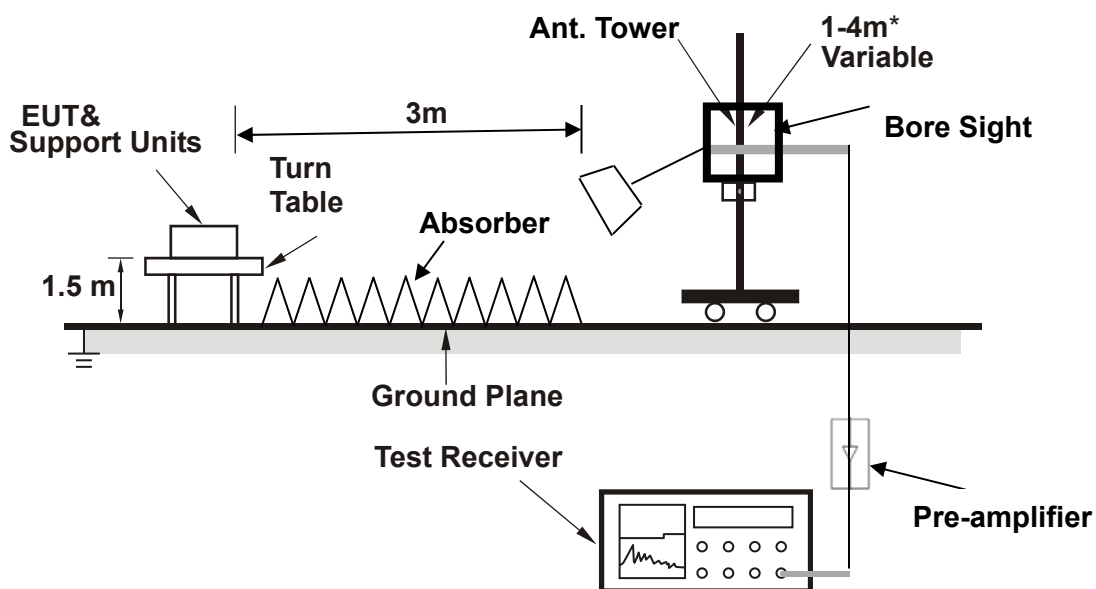
No deviation

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

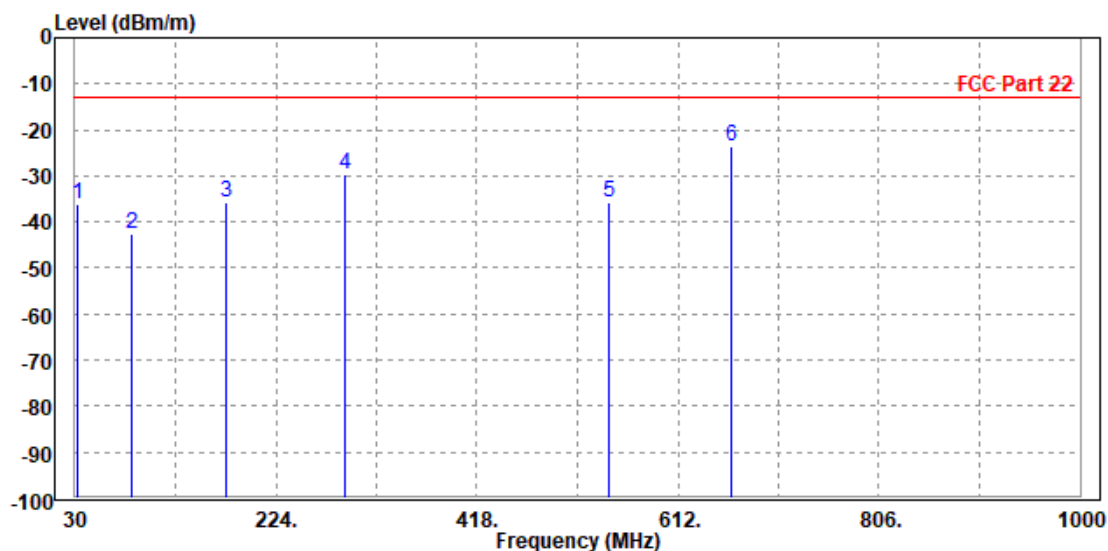
30 MHz – 1GHz data:

LTE Band 5

CHANNEL BANDWIDTH: 10MHz / QPSK

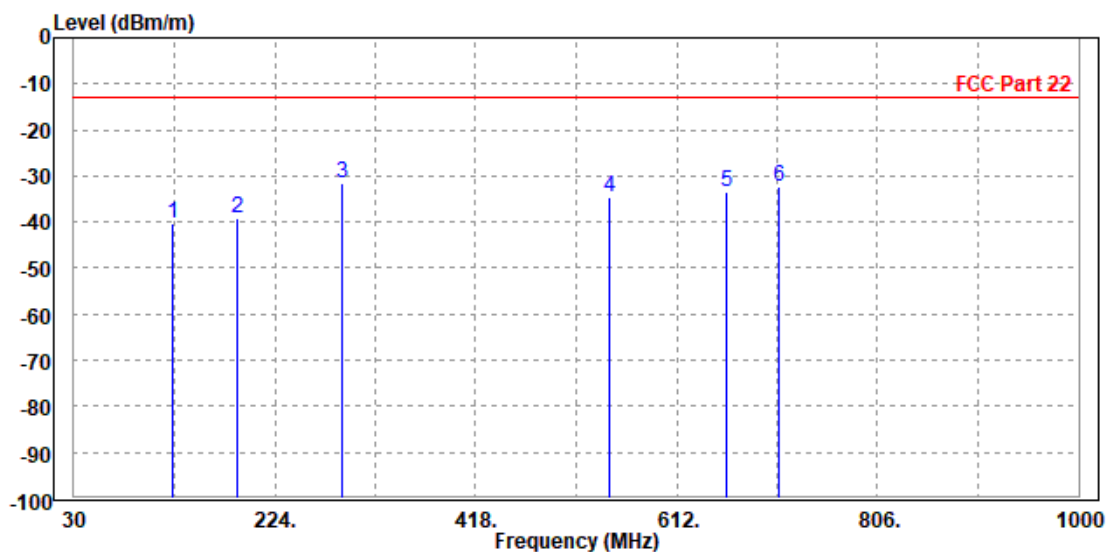
MODE	TX channel 20525	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	31.940	-36.19	-56.12	-13.00	-23.19	19.93	Peak	Horizontal
2	84.320	-42.54	-50.39	-13.00	-29.54	7.85	Peak	Horizontal
3	176.470	-35.83	-45.87	-13.00	-22.83	10.04	Peak	Horizontal
4	290.930	-29.52	-43.10	-13.00	-16.52	13.58	Peak	Horizontal
5	545.070	-35.87	-55.39	-13.00	-22.87	19.52	Peak	Horizontal
6 PP	663.410	-23.39	-45.13	-13.00	-10.39	21.74	Peak	Horizontal



MODE	TX channel 20525	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	125.060	-40.19	-47.59	-13.00	-27.19	7.40	Peak	Vertical
2	188.110	-39.33	-49.27	-13.00	-26.33	9.94	Peak	Vertical
3 PP	288.990	-31.61	-45.19	-13.00	-18.61	13.58	Peak	Vertical
4	547.010	-34.75	-54.28	-13.00	-21.75	19.53	Peak	Vertical
5	660.500	-33.38	-55.03	-13.00	-20.38	21.65	Peak	Vertical
6	709.970	-32.27	-55.14	-13.00	-19.27	22.87	Peak	Vertical





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ABOVE 1GHz DATA

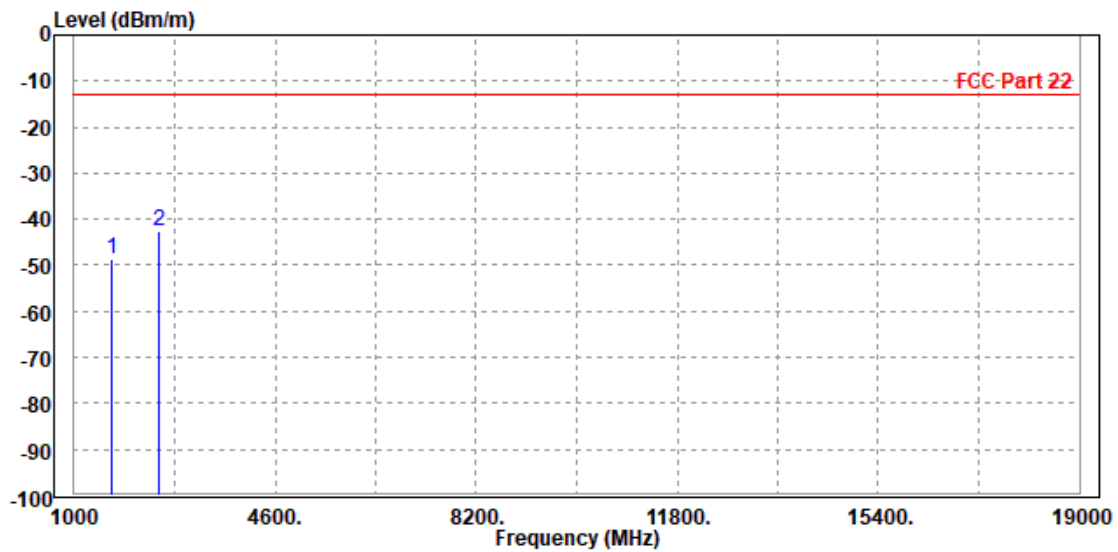
Note: For higher frequency, the emission is too low to be detected.

LTE Band 5

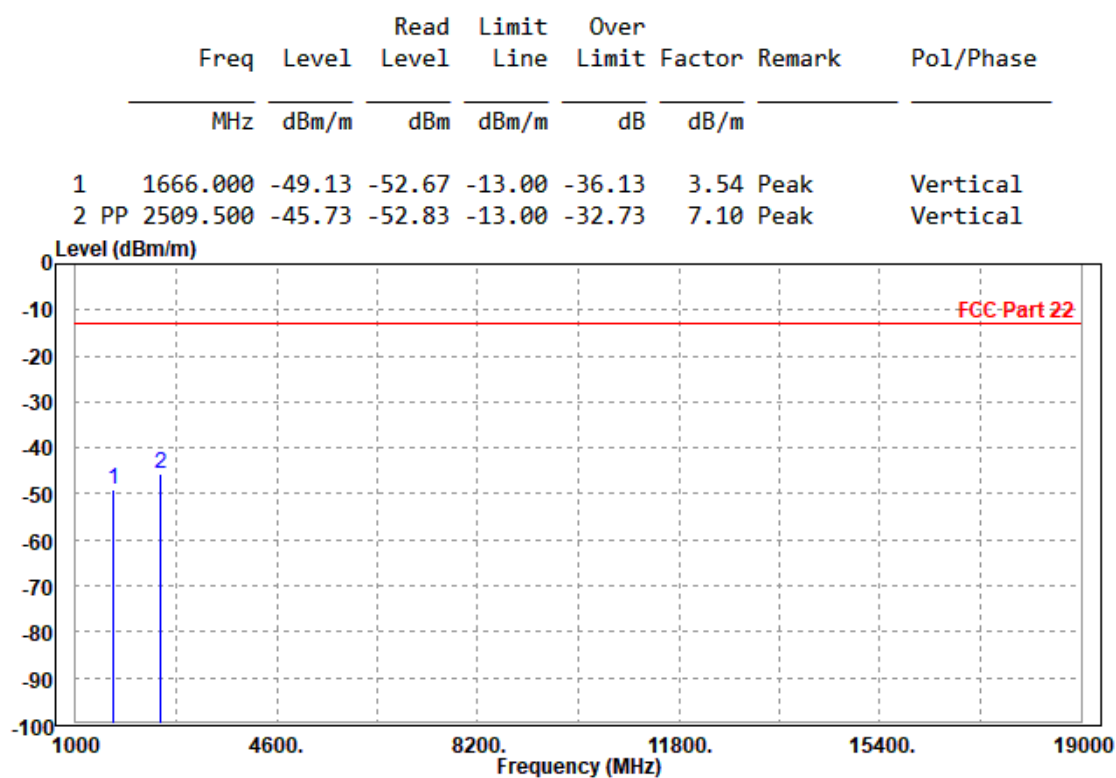
CHANNEL BANDWIDTH: 1.4MHz / QPSK

MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-48.63	-52.10	-13.00	-35.63	3.47	Peak	Horizontal
2 PP	2509.500	-42.48	-50.54	-13.00	-29.48	8.06	Peak	Horizontal



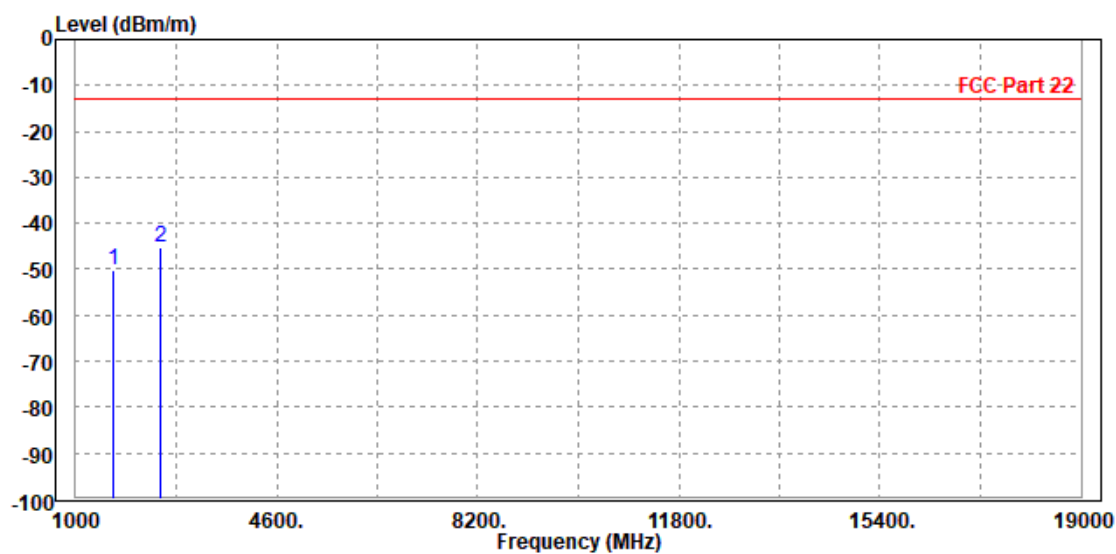
MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



CHANNEL BANDWIDTH: 3MHz / QPSK

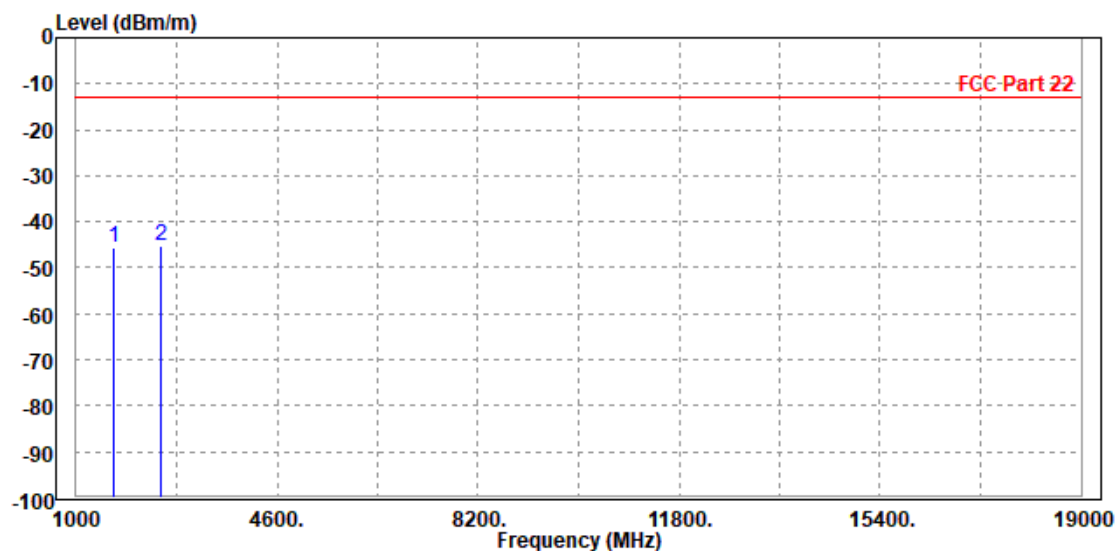
MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-50.33	-53.80	-13.00	-37.33	3.47	Peak	Horizontal
2 PP	2509.500	-45.10	-53.16	-13.00	-32.10	8.06	Peak	Horizontal



MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

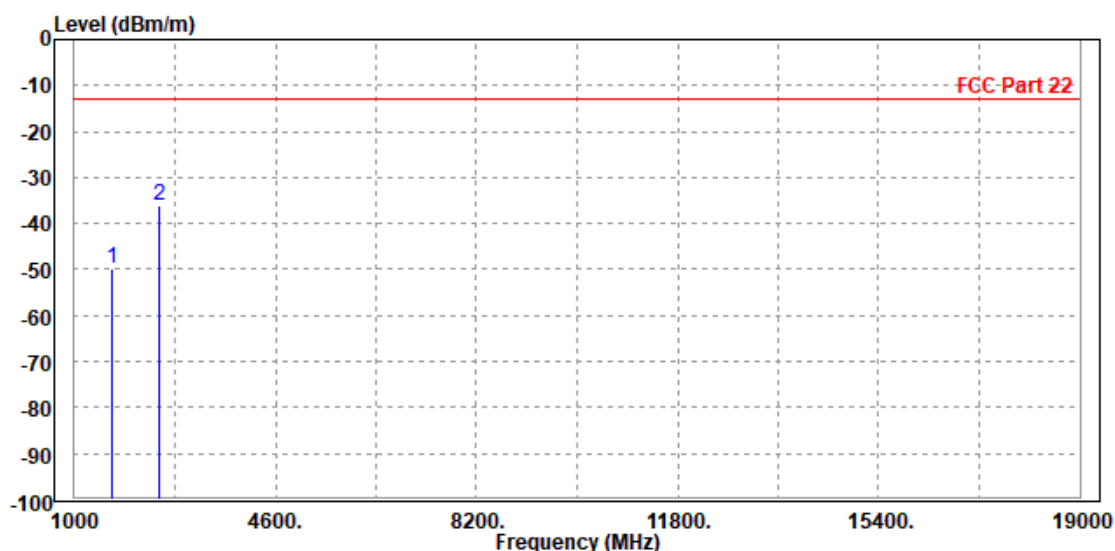
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-45.76	-49.30	-13.00	-32.76	3.54	Peak	Vertical
2 PP	2509.500	-45.24	-52.34	-13.00	-32.24	7.10	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

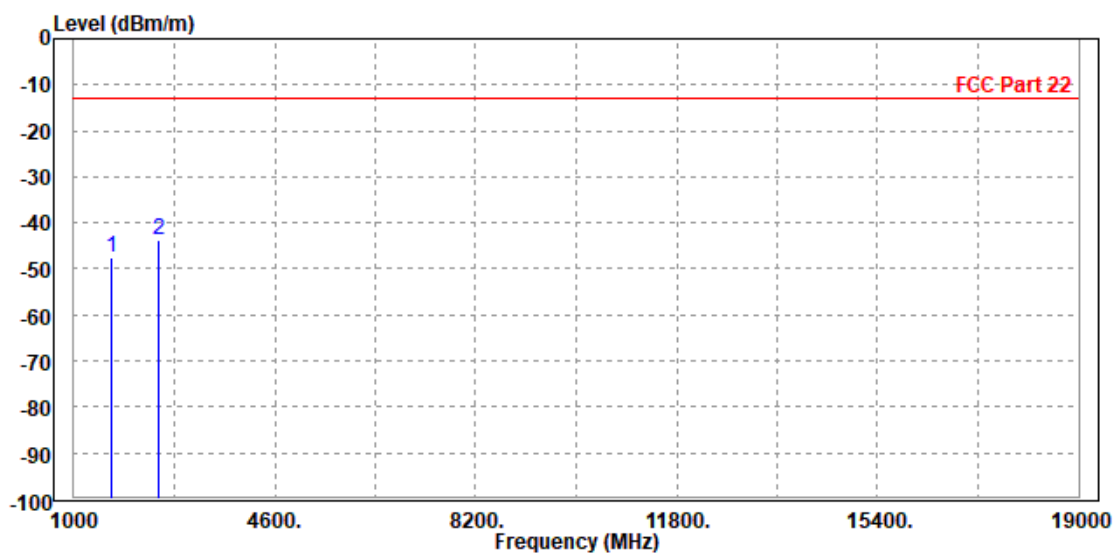
MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-49.64	-53.11	-13.00	-36.64	3.47	Peak	Horizontal
2 PP	2509.500	-36.23	-44.29	-13.00	-23.23	8.06	Peak	Horizontal



MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-47.40	-50.94	-13.00	-34.40	3.54	Peak	Vertical
2 PP	2509.500	-43.90	-51.00	-13.00	-30.90	7.10	Peak	Vertical





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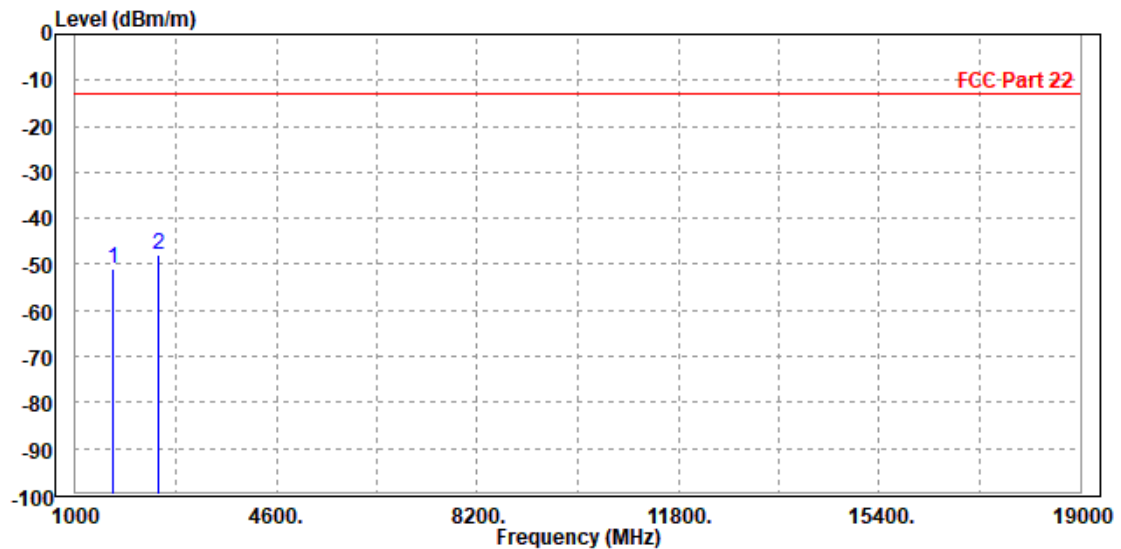
Test Report No.: W7L-220113W003RF01

CHANNEL BANDWIDTH: 10MHz / QPSK

CH20450:

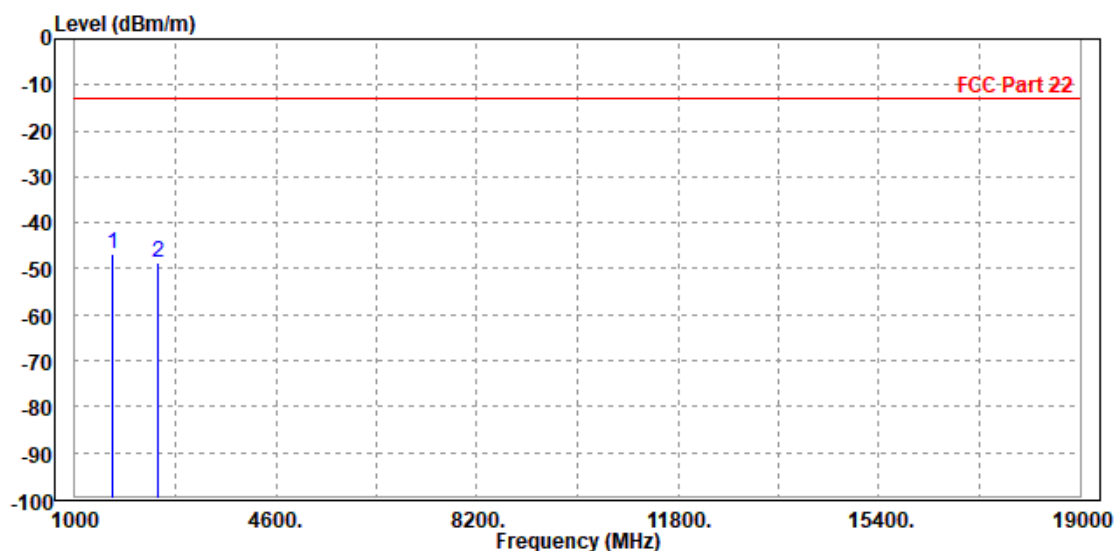
MODE	TX channel 20450	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-50.93	-54.40	-13.00	-37.93	3.47	Peak	Horizontal
2 PP	2487.000	-47.84	-55.88	-13.00	-34.84	8.04	Peak	Horizontal



MODE	TX channel 20450	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

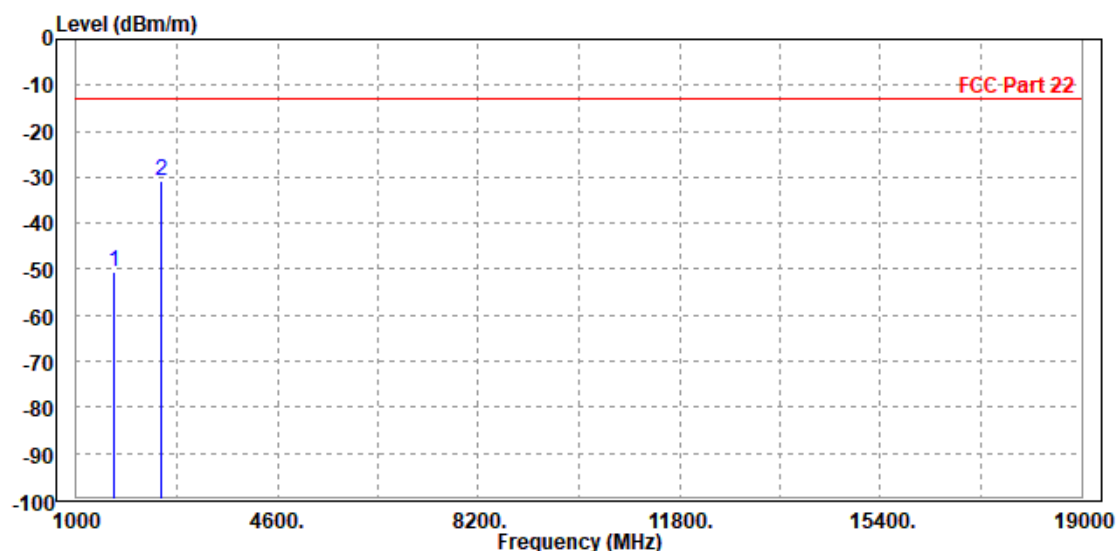
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1666.000	-46.68	-50.22	-13.00	-33.68	3.54	Peak	Vertical
2	2487.000	-48.72	-55.77	-13.00	-35.72	7.05	Peak	Vertical



CH20525:

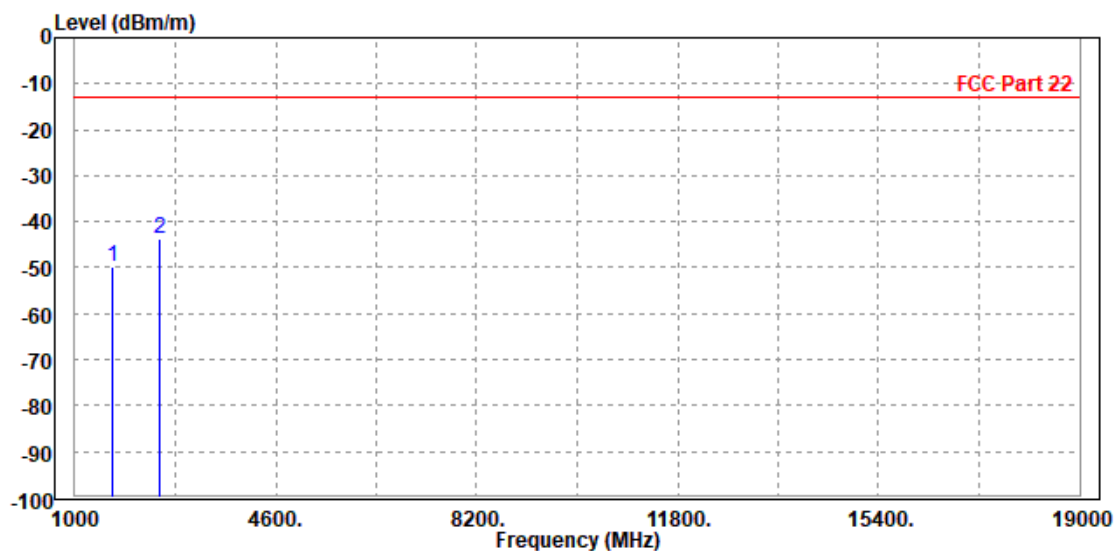
MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-50.50	-53.97	-13.00	-37.50	3.47	Peak	Horizontal
2 PP	2509.500	-30.65	-38.71	-13.00	-17.65	8.06	Peak	Horizontal



MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-49.81	-53.35	-13.00	-36.81	3.54	Peak	Vertical
2 PP	2509.500	-43.91	-51.01	-13.00	-30.91	7.10	Peak	Vertical





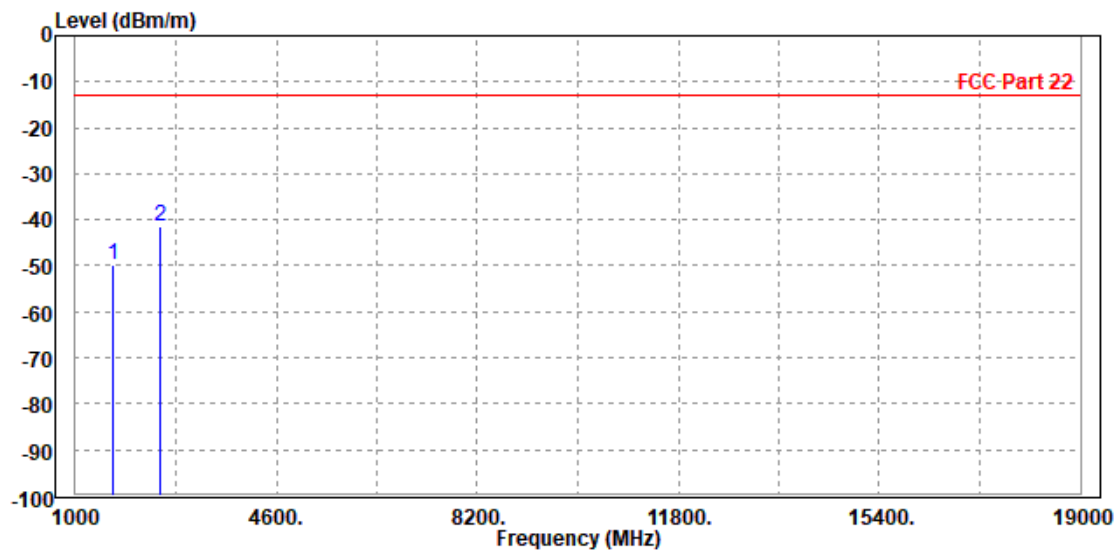
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Test Report No.: W7L-220113W003RF01

CH20600:

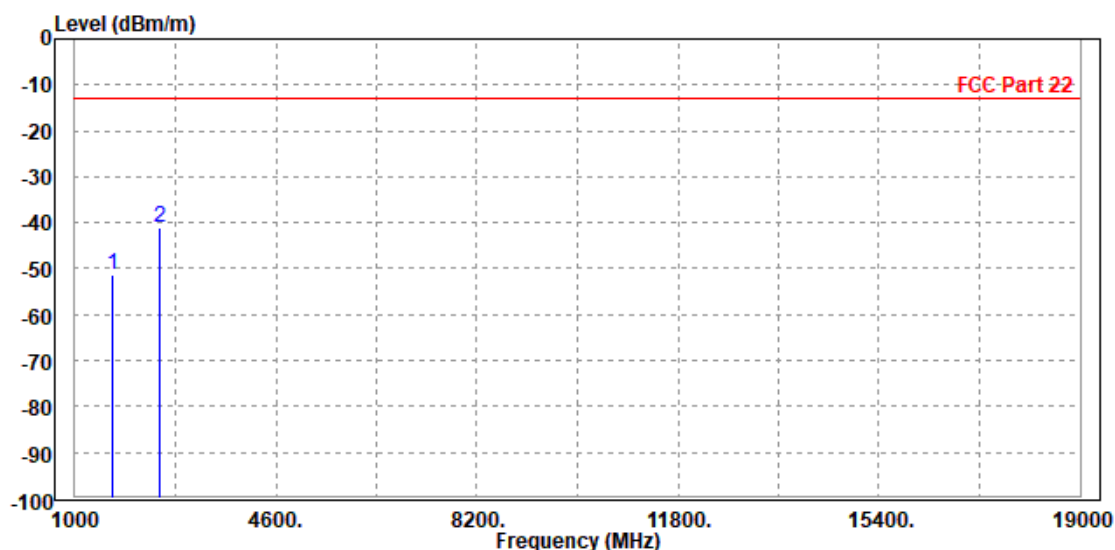
MODE	TX channel 20600	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1684.000	-49.97	-53.66	-13.00	-36.97	3.69	Peak	Horizontal
2 PP	2532.000	-41.57	-49.66	-13.00	-28.57	8.09	Peak	Horizontal



MODE	TX channel 20600	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1684.000	-51.39	-55.10	-13.00	-38.39	3.71	Peak	Vertical
2 PP	2532.000	-41.17	-48.34	-13.00	-28.17	7.17	Peak	Vertical





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4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



Test Report No.: W7L-220113W003RF01

5 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.



Test Report No.: W7L-220113W003RF01

6 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---