TEST REPORT

Applicant:	Trackunit Aps
Address of Applicant:	Gasvaerksvej 24, 4 sal, Aalborg DK-9000, Denmark
Manufacturer:	Positioning Universal
Address of Manufacturer:	4660 La Jolla Village Dr., Suite 1100, SAN DIEGO, CA 92122, United States Of America
Equipment Under Test (EUT)	
Product Name:	M7 4G LTE Vehicle Telematics Unit
Model No.:	M7LW
FCC ID:	ZMF-M7LW
Applicable standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part 22 FCC CFR Title 47 Part 24 FCC CFR Title 47 Part 27 FCC CFR Title 47 Part 90
Date of sample receipt:	September 9, 2022
Date of Test:	September 9-20, 2022
Date of report issued:	September 20, 2022
Test Result :	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Luo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*September 20, 2022*	*Original*

Prepared By: *Tiger Chen* ***Date:*** *September 20, 2022*

Project Engineer

Check By: ***Date:*** *September 20, 2022*

Reviewer

3 Contents

Page

4 Test Summary

Test Item	Section in CFR 47	Result
RF Output Power	Part 2.1046 Part 22.913 Part 24.232 Part 27.50 Part 90.635(b) Part 90.542 (a)	Pass*
E.R.P. & E.I.R.P	Part 2.1046 Part 22.913 Part 24.232 Part 27.50 Part 90.635(b) Part 90.542 (a)	Pass
Peak-to-Average Ratio	Part 2.1046 Part 22.913(d) Part24.232(d) Part 27.50(d)	Pass*
Modulation Characteristics	Part 2.1047	N/A
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238 Part 27.53 Part 90.209	Pass*
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 Part 24.238 Part 27.53 Part 90.691 Part 90.543	Pass*
Spurious Radiation Emissions	Part 2.1053 Part 22.917 Part 24.238 Part 27.53 Part 90.691 Part 90.543	Pass
Out of band emission, Band Edge	Part 2.1051 Part 22.917 Part 24.238 Part 27.53 Part 90.691 Part 90.543	Pass*

Frequency stability	Part 2.1055 Part 22.355 Part 24.235 Part 27.54 Part 90.213	Pass*

Remarks:

1. Pass*: This device has installed a certified modular which FCC ID: RI7LE910CXWWX, so these conducted test data directly reference the modular's data..
2. N/A: Not applicable.

5 General Information

5.1 General Description of EUT

Product Name:	M7 4G LTE Vehicle Telematics Unit
Model No.:	M7LW
Serial No.:	7970000001, 7970000002
Hardware Version:	P7
Software Version:	2.1.1.0
Tested Sample(s) ID:	GTS202209000128-1
Sample(s) Status:	Engineer sample
Support Networks:	LTE
Support Bands:	LTE Band 2/4/5/7/12/13/14/26
Channel Bandwidth:	LTE Band 2: 1.4MHz; 3MHz; 5MHz; 10MHz; 15MHz; 20MHz LTE Band 4: 1.4MHz; 3MHz; 5MHz; 10MHz; 15MHz; 20MHz LTE Band 5: 1.4MHz; 3MHz; 5MHz; 10MHz LTE Band 7: 5MHz; 10MHz; 15MHz; 20MHz LTE Band 12: 1.4MHz; 3MHz; 5MHz; 10MHz LTE Band 13: 5MHz; 10MHz LTE Band 14: 5MHz; 10MHz LTE Band 26(part 90): 1.4MHz, 3MHz, 5MHz; 10MHz LTE Band 26(part 22): 1.4MHz, 3MHz, 5MHz; 10MHz; 15MHz
TX Frequency:	LTE band 2: 1850~1910MHz LTE band 4: 1710.7~1754.3MHz LTE band 5: 824.7~848.3MHz LTE band 7: 2502.5~2567.5MHz LTE band 12: 699.7~715.3MHz LTE band 13: 779.5~784.5MHz LTE band 14: 790.5~795.5MHz LTE band 26(part 90): 814.7~823.3MHz LTE band 26(part 22): 824.7~848.3MHz
Modulation type:	QPSK, 16QAM
Antenna type:	PIFA Antenna
Antenna gain:	1.5dBi
Power supply:	DC 12V or DC 3.7V 1900mAh battery

Test Frequency

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 2	1.4M	1850.7	1880.0	1909.3
	3M	1851.5	1880.0	1908.5
	5M	1852.5	1880.0	1907.5
	10M	1855.0	1880.0	1905.0
	15M	1857.5	1880.0	1902.5
	20M	1860.0	1880.0	1900.0

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 4	1.4M	1710.7	1732.5	1754.3
	3M	1711.5	1732.5	1753.5
	5M	1712.5	1732.5	1752.5
	10M	1715.0	1732.5	1750.0
	15M	1717.5	1732.5	1747.5
	20M	1720.0	1732.5	1745.0

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 5	1.4M	824.7	736.5	848.3
	3M	825.5	836.5	847.5
	5M	826.5	836.5	846.5
	10M	829.0	836.5	844.0

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 7	5M	2502.5	2535.0	2567.5
	10M	2505.0	2535.0	2565.0
	15M	2507.5	2535.0	2562.5
	20M	2510.0	2535.0	2560.0

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 12	1.4M	699.7	707.5	715.3
	3M	700.5	707.5	714.5
	5M	701.5	707.5	713.5
	10M	704.0	707.5	711.0

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 13	5M	779.5	782.0	784.5
	10M	/	782.0	/

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 14	5M	790.5	793.0	795.5
	10M	/	793.0	/

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 26 (part 90)	1.4M	814.7	/	823.3
	3M	815.5	/	822.5
	5M	816.5	/	821.5
	10M	/	819.0	/

Test Mode	Channel Bandwidth	Frequency [MHz]		
		Lowest channel	Middle channel	Highest channel
LTE Band 26 (part 22)	1.4M	824.7	836.5	848.3
	3M	825.5	836.5	847.5
	5M	826.5	836.5	846.5
	10M	829.0	836.5	844.0
	15M	831.5	836.5	841.5

5.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22/24/27/90 of the FCC CFR 47 Rules.

5.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on ANSI C63.26:2015 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

● **IC —Registration No.: 9079A**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A.

● **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 02, 2020	July 01, 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 22, 2022	April 21, 2023
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 21, 2022	March 20, 2023
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June 12, 2022	June 11, 2023
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 23, 2022	June 22, 2023
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	April 22, 2022	April 21, 2023
9	Coaxial Cable	GTS	N/A	GTS211	April 22, 2022	April 21, 2023
10	Coaxial cable	GTS	N/A	GTS210	April 22, 2022	April 21, 2023
11	Coaxial Cable	GTS	N/A	GTS212	April 22, 2022	April 21, 2023
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	April 22, 2022	April 21, 2023
13	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 23, 2022	June 22, 2023
14	Band filter	Amindeon	82346	GTS219	June 23, 2022	June 22, 2023
15	Power Meter	Anritsu	ML2495A	GTS540	June 23, 2022	June 22, 2023
16	Power Sensor	Anritsu	MA2411B	GTS541	June 23, 2022	June 22, 2023
17	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 22, 2022	April 21, 2023
18	Splitter	Agilent	11636B	GTS237	June 23, 2022	June 22, 2023
19	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 30, 2021	Nov. 29, 2022
20	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 22, 2022	April 21, 2023
21	Breitband hornantenna	SCHWARZBECK	BBHA 9170	GTS579	Oct. 17, 2021	Oct. 16, 2022
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 17, 2021	Oct. 16, 2022
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 17, 2021	Oct. 16, 2022
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June 23, 2022	June 22, 2023
25	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 22, 2022	April 21, 2023

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	April 25, 2022	April 24, 2023
2	Barometer	KUMAO	SF132	GTS647	July 26, 2022	July 25, 2023

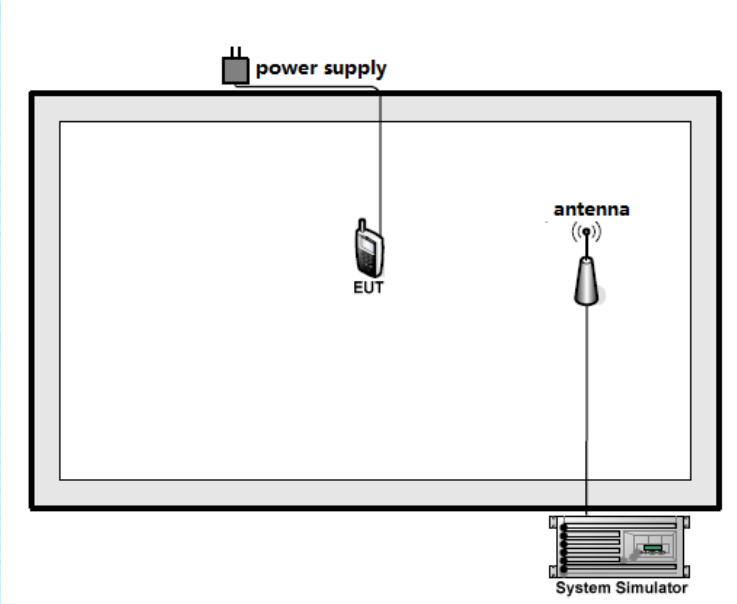
7 System test configuration

7.1 Test mode

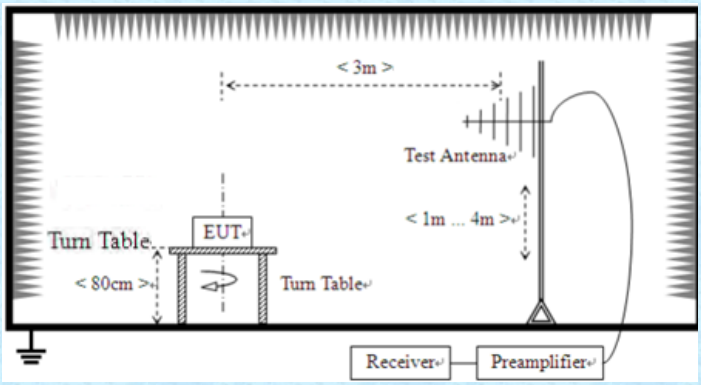
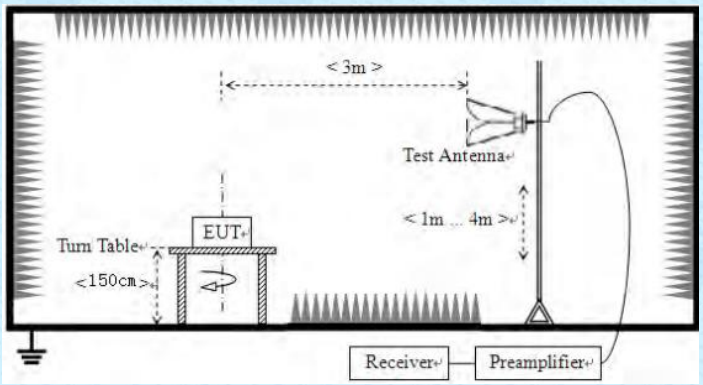
During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Band	Test Mode
LTE Band 2	QPSK @20M, Middle channel
LTE Band 4	QPSK @20M, Middle channel
LTE Band 5	QPSK @10M, Middle channel
LTE Band 7	QPSK @20M, Middle channel
LTE Band 12	QPSK @10M, Middle channel
LTE Band 13	QPSK @10M, Middle channel
LTE Band 14	QPSK @10M, Middle channel
LTE Band 26(part 90)	QPSK @15M, Middle channel
LTE Band 26(part 22)	QPSK @15M, Middle channel

7.2 Configuration of Tested System



7.3 E.R.P. & E.I.R.P.

Test Requirement:	FCC part 22.913; Part 24.232; Part 27.50; Part 90.635; Part 90.542
Test Method:	FCC part2.1046
Limit:	LTE Band 2: 2W LTE Band 4: 1W LTE Band 5: 7W LTE Band 7: 2W LTE Band 12: 3W LTE Band 13: 3W LTE Band 14: 3W LTE Band 26(part 90): 100W LTE Band 26(part 22): 7W
Test setup:	For radiated emissions from 30MHz to1GHz  For radiated emissions above 1GHz 
Test Procedure:	**Below 1GHz test procedure as below:** 1.The EUT was powered ON and placed on a 0.8m high table in the chamber. The antenna of the transmitter was extended to its maximum length. 2.The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made. 3.Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization. 4.The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the

	center of the transmitter. 5.A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions. 6.The output power into the substitution antenna was then measured. 7.Steps 5) and 6) were repeated with both antennas polarized. 8.Calculate power in dBm by the following formula: ERP (dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd) Where: Pg is the generator output power into the substitution antenna. **Above 1GHz test procedure as below:** 1.Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber 2.Calculate power in dBm by the following formula: EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) EIRP=ERP+2.15dB Where: Pg is the generator output power into the substitution antenna. 3.Test the EUT in the lowest channel, the middle channel the Highest channel 4.The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report. 5.Repeat above procedures until all frequencies measured was complete.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

Only show the worst case

Band 2					
Bandwidth	Channel	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	18607	Horizontal	23.38	33.00	Pass
	18900	Horizontal	23.45	33.00	Pass
	19193	Horizontal	23.16	33.00	Pass
3 MHz (QPSK)	18615	Horizontal	23.23	33.00	Pass
	18900	Horizontal	22.82	33.00	Pass
	19185	Horizontal	23.43	33.00	Pass
5 MHz (QPSK)	18625	Horizontal	23.06	33.00	Pass
	18625	Horizontal	23.32	33.00	Pass
	18900	Horizontal	22.97	33.00	Pass
10 MHz (QPSK)	19175	Horizontal	23.23	33.00	Pass
	18650	Horizontal	23.59	33.00	Pass
	18900	Horizontal	23.31	33.00	Pass
15 MHz (QPSK)	19150	Horizontal	23.10	33.00	Pass
	18675	Horizontal	22.78	33.00	Pass
	18900	Horizontal	23.35	33.00	Pass
20 MHz (QPSK)	19125	Horizontal	22.90	33.00	Pass
	18700	Horizontal	23.21	33.00	Pass
	18900	Horizontal	23.18	33.00	Pass
1.4 MHz (16QAM)	18607	Horizontal	22.29	33.00	Pass
	18900	Horizontal	22.32	33.00	Pass
	19193	Horizontal	21.91	33.00	Pass
3 MHz (16QAM)	18615	Horizontal	21.88	33.00	Pass
	18900	Horizontal	21.34	33.00	Pass
	19185	Horizontal	22.26	33.00	Pass
5 MHz (16QAM)	18625	Horizontal	21.85	33.00	Pass
	18900	Horizontal	21.98	33.00	Pass
	19175	Horizontal	21.82	33.00	Pass
10 MHz (16QAM)	18650	Horizontal	22.09	33.00	Pass
	18900	Horizontal	22.55	33.00	Pass
	19150	Horizontal	21.94	33.00	Pass
15 MHz (16QAM)	18675	Horizontal	21.88	33.00	Pass
	18900	Horizontal	21.96	33.00	Pass
	19125	Horizontal	22.16	33.00	Pass
20 MHz (16QAM)	18700	Horizontal	21.94	33.00	Pass
	18900	Horizontal	21.98	33.00	Pass
	19100	Horizontal	21.94	33.00	Pass

Band 4					
Bandwidth	Channel	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4MHz(QPSK)	19957	Horizontal	22.10	30.00	Pass
	20175	Horizontal	22.39	30.00	Pass
	20393	Horizontal	21.77	30.00	Pass
3MHz(QPSK)	19965	Horizontal	21.79	30.00	Pass
	20175	Horizontal	21.19	30.00	Pass
	20385	Horizontal	22.25	30.00	Pass
5MHz(QPSK)	19975	Horizontal	21.63	30.00	Pass
	20175	Horizontal	21.93	30.00	Pass
	20375	Horizontal	21.49	30.00	Pass
10MHz(QPSK)	20000	Horizontal	21.95	30.00	Pass
	20175	Horizontal	22.53	30.00	Pass
	20350	Horizontal	21.92	30.00	Pass
15MHz(QPSK)	20025	Horizontal	21.66	30.00	Pass
	20175	Horizontal	21.15	30.00	Pass
	20325	Horizontal	22.17	30.00	Pass
20MHz(QPSK)	20050	Horizontal	21.47	30.00	Pass
	20175	Horizontal	21.82	30.00	Pass
	20300	Horizontal	21.70	30.00	Pass
1.4MHz(16QAM)	19957	Horizontal	21.01	30.00	Pass
	20175	Horizontal	21.26	30.00	Pass
	20393	Horizontal	20.52	30.00	Pass
3MHz(16QAM)	19965	Horizontal	20.44	30.00	Pass
	20175	Horizontal	19.71	30.00	Pass
	20385	Horizontal	21.08	30.00	Pass
5MHz(16QAM)	19975	Horizontal	20.42	30.00	Pass
	20175	Horizontal	20.59	30.00	Pass
	20375	Horizontal	20.34	30.00	Pass
10MHz(16QAM)	20000	Horizontal	20.81	30.00	Pass
	20175	Horizontal	21.49	30.00	Pass
	20350	Horizontal	20.55	30.00	Pass
15MHz (16QAM)	20025	Horizontal	20.44	30.00	Pass
	20175	Horizontal	20.33	30.00	Pass
	20325	Horizontal	20.98	30.00	Pass
20MHz (16QAM)	20050	Horizontal	20.51	30.00	Pass
	20175	Horizontal	20.59	30.00	Pass
	20300	Horizontal	20.46	30.00	Pass

Band 5					
Bandwidth	Channel	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	20407	Horizontal	21.97	38.45	Pass
	20525	Horizontal	22.41	38.45	Pass
	20643	Horizontal	22.01	38.45	Pass
3 MHz (QPSK)	20415	Horizontal	22.07	38.45	Pass
	20525	Horizontal	21.90	38.45	Pass
	20635	Horizontal	22.38	38.45	Pass
5 MHz (QPSK)	20425	Horizontal	22.13	38.45	Pass
	20525	Horizontal	21.96	38.45	Pass
	20625	Horizontal	21.87	38.45	Pass
10 MHz (QPSK)	20450	Horizontal	22.34	38.45	Pass
	20525	Horizontal	22.20	38.45	Pass
	20600	Horizontal	22.04	38.45	Pass
1.4 MHz (16QAM)	20407	Horizontal	20.64	38.45	Pass
	20525	Horizontal	20.63	38.45	Pass
	20643	Horizontal	21.08	38.45	Pass
3 MHz (16QAM)	20415	Horizontal	20.88	38.45	Pass
	20525	Horizontal	20.89	38.45	Pass
	20635	Horizontal	20.70	38.45	Pass
5 MHz (16QAM)	20425	Horizontal	20.72	38.45	Pass
	20525	Horizontal	20.88	38.45	Pass
	20625	Horizontal	20.71	38.45	Pass
10 MHz (16QAM)	20450	Horizontal	20.92	38.45	Pass
	20525	Horizontal	20.65	38.45	Pass
	20600	Horizontal	21.10	38.45	Pass

Band 7					
Bandwidth	Channel	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
5MHz(QPSK)	20775	Horizontal	24.49	33.00	Pass
	21100	Horizontal	24.73	33.00	Pass
	21425	Horizontal	24.49	33.00	Pass
10MHz(QPSK)	20800	Horizontal	24.42	33.00	Pass
	20800	Horizontal	23.55	33.00	Pass
	21100	Horizontal	24.99	33.00	Pass
15MHz(QPSK)	21400	Horizontal	24.69	33.00	Pass
	20825	Horizontal	24.60	33.00	Pass
	21100	Horizontal	24.46	33.00	Pass
20MHz(QPSK)	21375	Horizontal	24.76	33.00	Pass
	20850	Horizontal	24.77	33.00	Pass
	21100	Horizontal	24.67	33.00	Pass
5MHz(16QAM)	20775	Horizontal	23.28	33.00	Pass
	21100	Horizontal	23.16	33.00	Pass
	21425	Horizontal	23.39	33.00	Pass
10MHz(16QAM)	20800	Horizontal	23.09	33.00	Pass
	21100	Horizontal	23.46	33.00	Pass
	21400	Horizontal	23.24	33.00	Pass
15MHz (16QAM)	20825	Horizontal	23.50	33.00	Pass
	21100	Horizontal	23.76	33.00	Pass
	21375	Horizontal	23.59	33.00	Pass
20MHz (16QAM)	20850	Horizontal	23.26	33.00	Pass
	21100	Horizontal	23.14	33.00	Pass
	21350	Horizontal	23.66	33.00	Pass

Band 12					
Bandwidth	Channel	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4MHz(QPSK)	23017	Horizontal	22.95	34.77	Pass
	23095	Horizontal	23.46	34.77	Pass
	23173	Horizontal	22.89	34.77	Pass
3MHz(QPSK)	23025	Horizontal	23.25	34.77	Pass
	23095	Horizontal	23.05	34.77	Pass
	23165	Horizontal	23.39	34.77	Pass
5MHz(QPSK)	23035	Horizontal	23.02	34.77	Pass
	23095	Horizontal	22.86	34.77	Pass
	23155	Horizontal	22.94	34.77	Pass
10MHz(QPSK)	23060	Horizontal	22.97	34.77	Pass
	23095	Horizontal	23.31	34.77	Pass
	23130	Horizontal	23.18	34.77	Pass
1.4MHz(16QAM)	23017	Horizontal	21.95	34.77	Pass
	23095	Horizontal	21.41	34.77	Pass
	23173	Horizontal	21.90	34.77	Pass
3MHz(16QAM)	23025	Horizontal	21.74	34.77	Pass
	23095	Horizontal	21.73	34.77	Pass
	23165	Horizontal	21.52	34.77	Pass
5MHz(16QAM)	23035	Horizontal	21.95	34.77	Pass
	23095	Horizontal	22.13	34.77	Pass
	23155	Horizontal	21.74	34.77	Pass
10MHz(16QAM)	23060	Horizontal	21.61	34.77	Pass
	23095	Horizontal	21.53	34.77	Pass
	23130	Horizontal	22.11	34.77	Pass

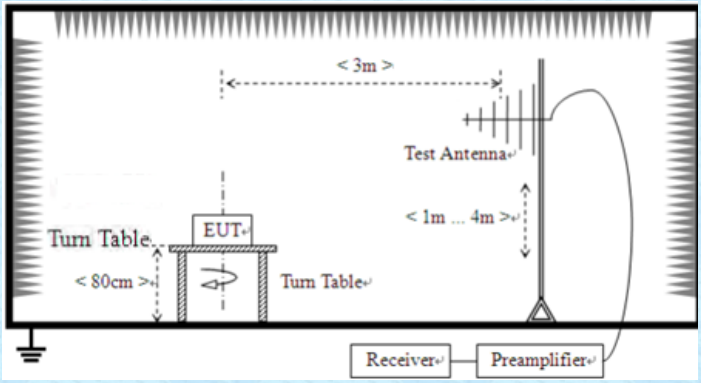
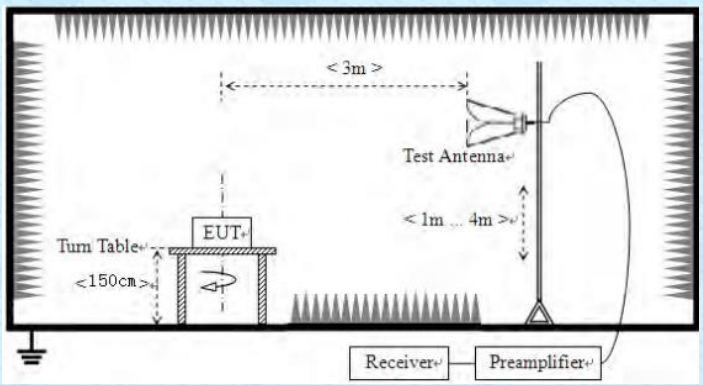
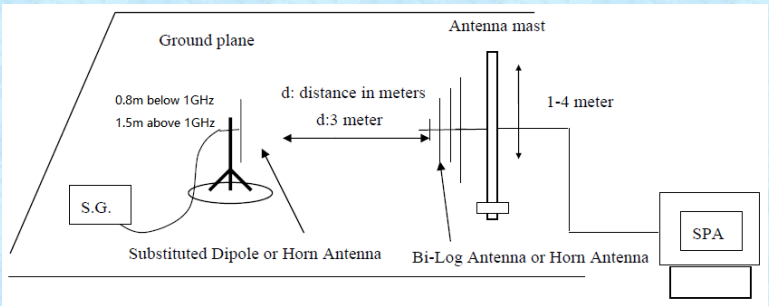
Band 13					
Bandwidth	Channel	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz(QPSK)	23205	Horizontal	24.80	34.77	Pass
	23230	Horizontal	24.99	34.77	Pass
	23255	Horizontal	24.50	34.77	Pass
10MHz (QPSK)	23230	Horizontal	22.95	34.77	Pass
5MHz(16QAM)	23205	Horizontal	22.77	34.77	Pass
	23230	Horizontal	23.30	34.77	Pass
	23255	Horizontal	24.48	34.77	Pass
10MHz (16QAM)	23230	Horizontal	23.31	34.77	Pass

Band 14					
Bandwidth	Channel	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5MHz(QPSK)	23205	Horizontal	24.65	34.77	Pass
	23230	Horizontal	24.92	34.77	Pass
	23255	Horizontal	24.63	34.77	Pass
10MHz (QPSK)	23230	Horizontal	23.13	34.77	Pass
5MHz(16QAM)	23205	Horizontal	22.75	34.77	Pass
	23230	Horizontal	23.25	34.77	Pass
	23255	Horizontal	24.46	34.77	Pass
10MHz (16QAM)	23230	Horizontal	23.16	34.77	Pass

Band 26(814-824)					
Bandwidth	Channel	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	26697	Horizontal	22.11	50.00	Pass
	26740	Horizontal	22.46	50.00	Pass
	26783	Horizontal	22.06	50.00	Pass
3 MHz (QPSK)	26705	Horizontal	22.20	50.00	Pass
	26740	Horizontal	22.03	50.00	Pass
	26775	Horizontal	22.41	50.00	Pass
5 MHz (QPSK)	26715	Horizontal	21.90	50.00	Pass
	26740	Horizontal	22.02	50.00	Pass
	26765	Horizontal	21.77	50.00	Pass
10 MHz (QPSK)	26740	Horizontal	22.15	50.00	Pass
1.4 MHz (16QAM)	20407	Horizontal	21.23	50.00	Pass
	20525	Horizontal	20.90	50.00	Pass
	20643	Horizontal	20.81	50.00	Pass
3 MHz (16QAM)	20415	Horizontal	20.45	50.00	Pass
	20525	Horizontal	21.17	50.00	Pass
	20635	Horizontal	20.62	50.00	Pass
5 MHz (16QAM)	20425	Horizontal	20.73	50.00	Pass
	20525	Horizontal	20.87	50.00	Pass
	20625	Horizontal	20.93	50.00	Pass
10 MHz (16QAM)	20450	Horizontal	21.25	50.00	Pass

Band 26 (824-849)					
Bandwidth	Channel	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4MHz(QPSK)	26797	Horizontal	22.20	38.45	Pass
	26915	Horizontal	22.70	38.45	Pass
	27033	Horizontal	22.18	38.45	Pass
3MHz(QPSK)	26805	Horizontal	22.36	38.45	Pass
	26915	Horizontal	22.18	38.45	Pass
	27025	Horizontal	22.59	38.45	Pass
5MHz(QPSK)	26815	Horizontal	21.99	38.45	Pass
	26915	Horizontal	22.23	38.45	Pass
	27015	Horizontal	22.12	38.45	Pass
10MHz(QPSK)	26840	Horizontal	22.37	38.45	Pass
	26915	Horizontal	22.59	38.45	Pass
	26990	Horizontal	22.36	38.45	Pass
15MHz(QPSK)	26865	Horizontal	22.30	38.45	Pass
	26915	Horizontal	21.85	38.45	Pass
	26965	Horizontal	22.45	38.45	Pass
1.4MHz(16QAM)	26797	Horizontal	20.98	38.45	Pass
	26915	Horizontal	21.22	38.45	Pass
	27033	Horizontal	21.08	38.45	Pass
3MHz(16QAM)	26805	Horizontal	21.22	38.45	Pass
	26915	Horizontal	21.33	38.45	Pass
	27025	Horizontal	20.92	38.45	Pass
5MHz(16QAM)	26815	Horizontal	20.96	38.45	Pass
	26915	Horizontal	20.56	38.45	Pass
	27015	Horizontal	21.23	38.45	Pass
10MHz(16QAM)	26840	Horizontal	21.09	38.45	Pass
	26915	Horizontal	21.39	38.45	Pass
	26990	Horizontal	21.02	38.45	Pass
15MHz (16QAM)	26865	Horizontal	20.95	38.45	Pass
	26915	Horizontal	21.48	38.45	Pass
	26965	Horizontal	21.01	38.45	Pass

7.4 Spurious Radiation Emissions

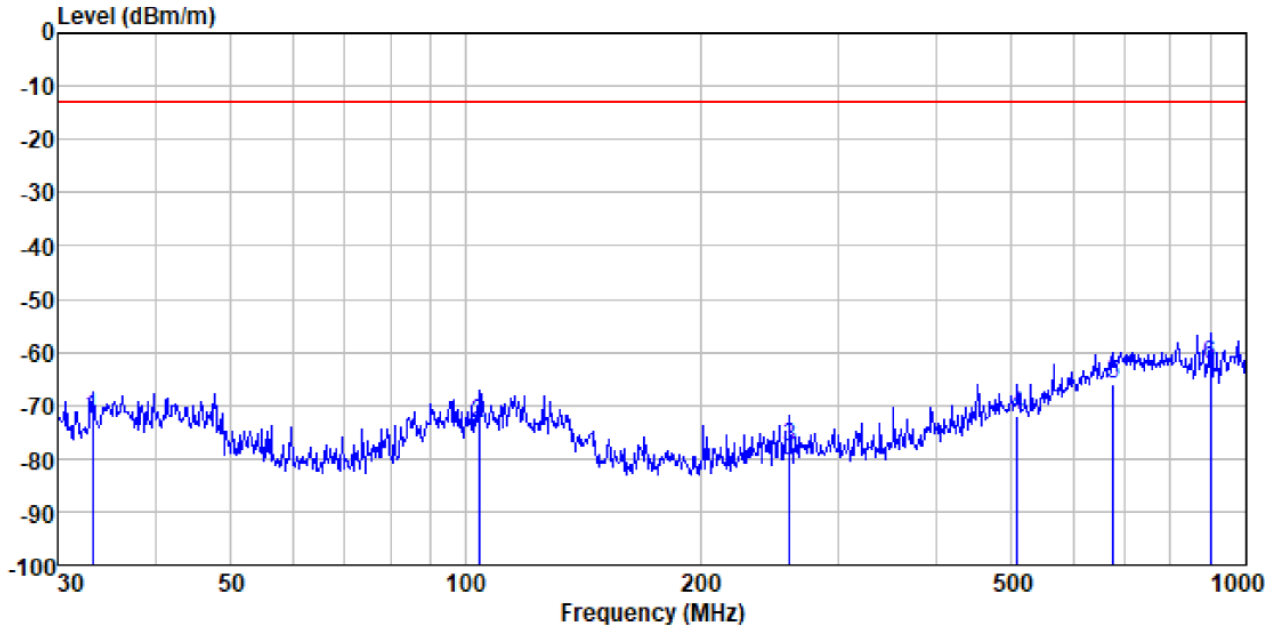
Test Requirement:	Part 22.917; Part 24.238; Part 27.53; Part 90.691; Part 90.543
Test Method:	FCC part 2.1053 and ANSI C63.26:2015
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data:

Below 1GHz

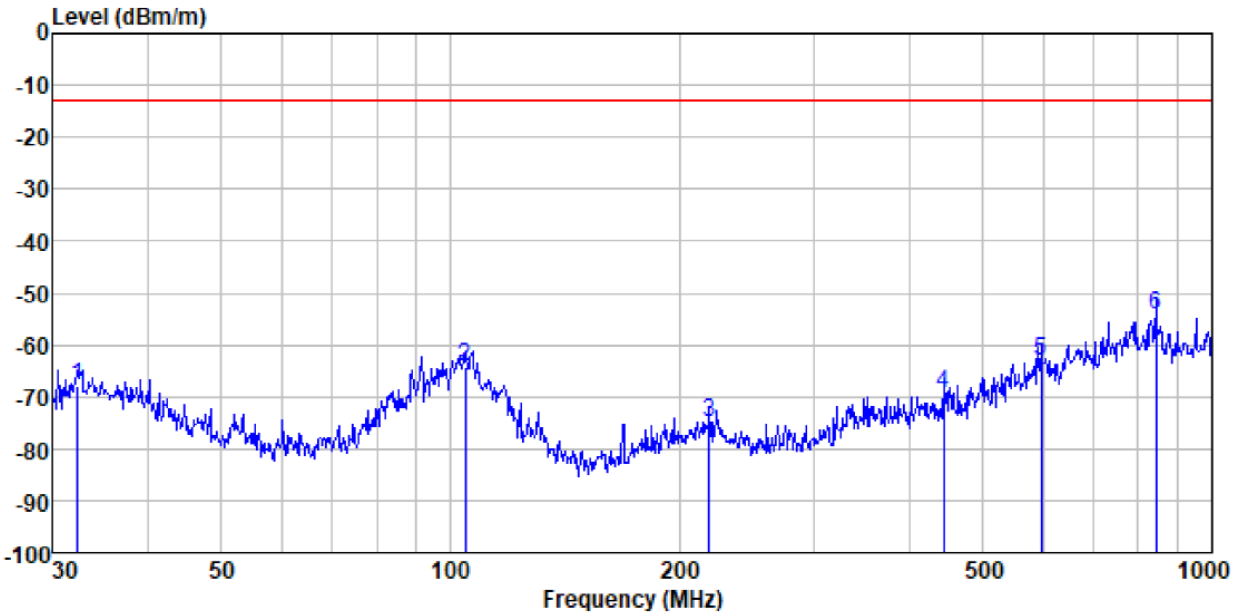
Pre-scan all test modes, found worst case at Band 2, and so only show the test result of it

Horizontal:



	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	33.212	-63.60	25.89	35.23	0.59	-72.35	-13.00	-59.35	QP
2	103.833	-62.85	25.13	36.75	1.22	-73.25	-13.00	-60.25	QP
3	260.165	-67.88	25.13	37.39	2.18	-77.96	-13.00	-64.96	QP
4	509.123	-67.70	29.89	37.51	3.34	-71.98	-13.00	-58.98	QP
5	676.366	-64.39	31.91	37.61	4.00	-66.09	-13.00	-53.09	QP
6	898.546	-63.81	34.26	37.60	4.85	-62.30	-13.00	-49.30	QP

Vertical:



	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	32.366	-59.12	25.89	35.18	0.58	-67.83	-13.00	-54.83	QP
2	104.602	-53.84	25.13	36.76	1.23	-64.24	-13.00	-51.24	QP
3	218.752	-64.19	24.55	37.35	1.95	-75.04	-13.00	-62.04	QP
4	444.168	-63.94	28.93	37.52	3.07	-69.46	-13.00	-56.46	QP
5	596.639	-60.95	31.51	37.54	3.71	-63.27	-13.00	-50.27	QP
6	843.928	-55.07	33.83	37.61	4.63	-54.22	-13.00	-41.22	QP

Above 1GHz

LTE Band 2 @20MHz, QPSK									
Channel	**Frequency (MHz)**	**Ant. Pol.**	**Result (dBm)**	**Factor (dB)**	**Limit (dBm)**	**Margin (dB)**	**Ant. Height[cm]**	**Turntable deg.**	**verdict**
Middle	2326	H	-50.13	-8.67	-13.00	-45.80	150	150.42	Pass
	7137	H	-55.24	4.57	-13.00	-37.67	150	69.88	Pass
	13886	H	-59.25	11.74	-13.00	-34.51	150	110.01	Pass
	2054	V	-49.75	-9.16	-13.00	-45.91	150	74.05	Pass
	7035	V	-54.44	4.18	-13.00	-37.26	150	198.58	Pass
	13614	V	-59.81	10.85	-13.00	-35.96	150	147.19	Pass

LTE Band 4 @20MHz, QPSK									
Channel	**Frequency (MHz)**	**Ant. Pol.**	**Result (dBm)**	**Factor (dB)**	**Limit (dBm)**	**Margin (dB)**	**Ant. Height[cm]**	**Turntable deg.**	**verdict**
Middle	2122	H	-50.34	-9.04	-13.00	-46.38	150	313.63	Pass
	7239	H	-54.61	4.97	-13.00	-36.64	150	335.48	Pass
	13716	H	-59.90	11.22	-13.00	-35.68	150	336.58	Pass
	2292	V	-49.77	-8.73	-13.00	-45.50	150	190.48	Pass
	7477	V	-53.87	5.85	-13.00	-35.02	150	147.53	Pass
	13988	V	-58.71	12.1	-13.00	-33.61	150	132.24	Pass

LTE Band 5 @10MHz, QPSK									
Channel	**Frequency (MHz)**	**Ant. Pol.**	**Result (dBm)**	**Factor (dB)**	**Limit (dBm)**	**Margin (dB)**	**Ant. Height[cm]**	**Turntable deg.**	**verdict**
Middle	2258	H	-49.43	-8.8	-13.00	-45.23	150	177.21	Pass
	7375	H	-53.91	5.47	-13.00	-35.44	150	186.44	Pass
	13835	H	-59.77	11.6	-13.00	-35.17	150	359.06	Pass
	1561	V	-49.23	-11.32	-13.00	-47.55	150	314.61	Pass
	9211	V	-54.15	7.51	-13.00	-33.64	150	150.33	Pass
	14702	V	-59.21	13.26	-13.00	-32.95	150	323.04	Pass

LTE Band 7 @20MHz, QPSK									
Channel	**Frequency (MHz)**	**Ant. Pol.**	**Result (dBm)**	**Factor (dB)**	**Limit (dBm)**	**Margin (dB)**	**Ant. Height[cm]**	**Turntable deg.**	**verdict**
Middle	3703	H	-51.75	-5.14	-25.00	-31.89	150	33.38	Pass
	10707	H	-55.47	10.36	-25.00	-20.11	150	39.49	Pass
	16300	H	-60.48	14.6	-25.00	-20.88	150	122.40	Pass
	5029	V	-52.35	-1.14	-25.00	-28.49	150	90.01	Pass
	11047	V	-55.95	10.76	-25.00	-20.19	150	240.39	Pass
	17184	V	-61.90	16.64	-25.00	-20.26	150	256.25	Pass

LTE Band 12 @10MHz, QPSK									
Channel	**Frequency (MHz)**	**Ant. Pol.**	**Result (dBm)**	**Factor (dB)**	**Limit (dBm)**	**Margin (dB)**	**Ant. Height[cm]**	**Turntable deg.**	**verdict**
Middle	3788	H	-52.65	-4.76	-13.00	-44.41	150	346.07	Pass
	9942	H	-53.93	8.44	-13.00	-32.49	150	147.40	Pass
	15756	H	-59.58	13.19	-13.00	-33.39	150	136.06	Pass
	4893	V	-53.43	-1.57	-13.00	-42.00	150	87.40	Pass
	9619	V	-54.15	7.99	-13.00	-33.16	150	40.30	Pass
	15263	V	-57.17	13.06	-13.00	-31.11	150	323.64	Pass

LTE Band 13 @10MHz, QPSK									
Channel	**Frequency (MHz)**	**Ant. Pol.**	**Result (dBm)**	**Factor (dB)**	**Limit (dBm)**	**Margin (dB)**	**Ant. Height[cm]**	**Turntable deg.**	**verdict**
Middle	4366	H	-52.11	-3.12	-13.00	-42.23	150	25.04	Pass
	8990	H	-54.63	7.26	-13.00	-34.37	150	150.37	Pass
	14855	H	-57.59	13.2	-13.00	-31.39	150	157.82	Pass
	5522	V	-54.28	-0.73	-13.00	-42.01	150	359.71	Pass
	11455	V	-55.63	10.15	-13.00	-32.48	150	122.74	Pass
	17286	V	-61.88	17.2	-13.00	-31.68	150	126.91	Pass

Remark: the emission level shall be attenuated at least 43+10 log10 (P[Watts])for all out-of-band emissions except emissions in the 1559-1610MHz band are subject to a limit of-40dBm/MHz for wideband signals

LTE Band 14 @10MHz, QPSK									
Channel	**Frequency (MHz)**	**Ant. Pol.**	**Result (dBm)**	**Factor (dB)**	**Limit (dBm)**	**Margin (dB)**	**Ant. Height[cm]**	**Turntable deg.**	**verdict**
Middle	6253	H	-53.63	1.38	-13.00	-39.25	150	316.93	Pass
	12458	H	-57.92	8.43	-13.00	-36.49	150	97.89	Pass
	14430	H	-58.71	13.16	-13.00	-32.55	150	178.56	Pass
	1867	V	-49.76	-9.84	-13.00	-46.60	150	107.19	Pass
	5879	V	-53.34	0.13	-13.00	-40.21	150	55.43	Pass
	13155	V	-59.92	9.11	-13.00	-37.81	150	123.72	Pass

Remark: the emission level shall be attenuated at least 43+10 log10 (P[Watts])for all out-of-band emissions except emissions in the 1559-1610MHz band are subject to a limit of-40dBm/MHz for wideband signals

LTE Band 26(part 90) @10MHz, QPSK									
Channel	**Frequency (MHz)**	**Ant. Pol.**	**Result (dBm)**	**Factor (dB)**	**Limit (dBm)**	**Margin (dB)**	**Ant. Height[cm]**	**Turntable deg.**	**verdict**
Middle	4111	H	-52.79	-3.72	-13.00	-43.51	150	100.64	Pass
	10078	H	-54.23	8.72	-13.00	-32.51	150	248.50	Pass
	15841	H	-59.65	13.25	-13.00	-33.40	150	156.63	Pass
	2496	V	-50.76	-8.4	-13.00	-46.16	150	266.53	Pass
	8225	V	-53.20	6.68	-13.00	-33.52	150	73.67	Pass
	17609	V	-62.41	19.19	-13.00	-30.22	150	356.84	Pass

LTE Band 26(part 22) @15MHz, QPSK									
Channel	**Frequency (MHz)**	**Ant. Pol.**	**Result (dBm)**	**Factor (dB)**	**Limit (dBm)**	**Margin (dB)**	**Ant. Height[cm]**	**Turntable deg.**	**verdict**
Middle	3176	H	-50.51	-6.63	-13.00	-44.14	150	334.41	Pass
	9211	H	-54.15	7.51	-13.00	-33.64	150	133.21	Pass
	16725	H	-61.73	15.38	-13.00	-33.35	150	332.12	Pass
	3176	V	-50.51	-6.63	-13.00	-44.14	150	221.84	Pass
	7630	V	-54.68	6.11	-13.00	-35.57	150	49.84	Pass
	15484	V	-57.87	12.94	-13.00	-31.93	150	105.66	Pass

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

------End------