RF Test Report

FCC ID: 2AVE6TG4XL

Change II

Report No.	:	TBR-C-202406-0055-123
Applicant	:	Tractive GmbH
Equipment Under Test (EUT)		
EUT Name	:	Tractive DOG XL
Model No.	:	TG4XL
Series Model No.	:	----
Brand Name	:	Tractive
Sample ID	:	HC-C-202406-0055-01-01-1#&HC-C-202406-0055-01-01-2#
Receipt Date	:	2024-07-08
Test Date	:	2024-07-08 to 2024-07-19
Issue Date	:	2024-07-25
Standards	:	47 CFR Part 2, 22(H), 24(E), 27
Test Method	:	ANSI C63.26 2015
Conclusions	:	**PASS**
		In the configuration tested, the EUT complied with the standards specified above.

Test By	:	Mike Yan	Mike Yan
Reviewed By	:	Wade. LV	Wade. Lv
Approved By	:	IVAN SU	Ivan Su

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Contents

Revision History

Report No.	Version	Description	Issued Date
TBR-C-202406-0055-123	Rev.01	Initial issue of report	2024-07-25

1. General Information about EUT

1.1 Client Information

Applicant	:	Tractive GmbH
Address	:	Poststrasse 4, 4061 Pasching, AUSTRIA
Manufacturer	:	Tractive GmbH
Address	:	Poststrasse 4, 4061 Pasching, AUSTRIA

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Tractive DOG XL	
Model	:	TG4XL	
Model Different	:	----	
Product Description	:	Frequency Bands: LTE Band 2: TX: 1850MHz-1910MHz, RX: 1930MHz-1990MHz LTE Band 4: TX: 1710MHz-1755MHz, RX: 2110MHz-2155MHz LTE Band 5: TX: 824MHz-849MHz, RX: 869MHz-894MHz LTE Band 12: TX: 699MHz -716MHz, RX: 729MHz-746MHz LTE Band 13: TX: 777MHz -787MHz, RX: 746MHz-756MHz	
		Antenna Gain:	FPC Antenna: LTE Band 2: -0.66dBi LTE Band 4: -0.66dBi LTE Band 5: -0.35dBi LTE Band 12: -0.35dBi LTE Band 13: -0.35dBi
		Modulation Type:	QPSK, 16QAM
		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 12: 1.4MHz/3MHz/5MHz/10MHz LTE Band 13: 5MHz/10MHz
		Category:	Cat 1
Power Rating	:	USB Input: DC 5V/1A DC 3.7V 3000mAh 11.1Wh Rechargeable Li-ion battery	
Software Version	:	v4	
Hardware Version	:	v4	

Remark:
(1) The antenna gain provided by the applicant, the adapter and verified for the RF conduction test provided by TOBY test lab.
(2) The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(3) Channel List

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE Band 2	1.4	1850.7	1880.0	1909.3
	3	1851.5	1880.0	1908.5
	5	1852.5	1880.0	1907.5
	10	1855.0	1880.0	1905.0
	15	1857.5	1880.0	1902.5
	20	1860.0	1880.0	1900.0

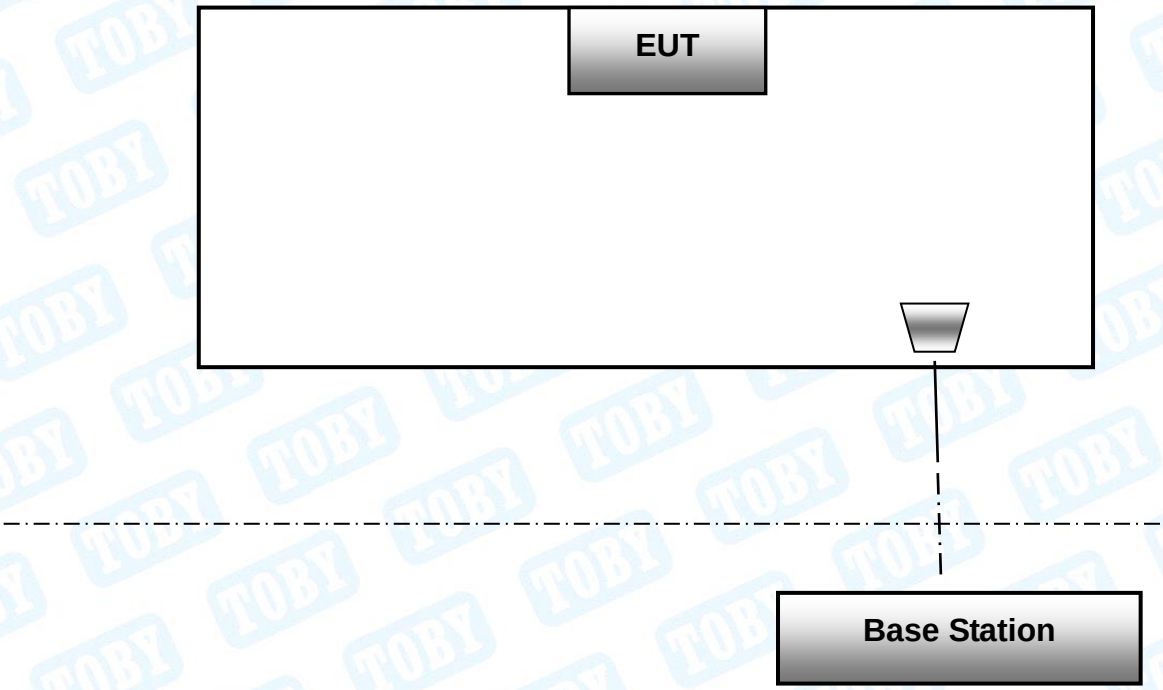
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE Band 4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715.0	1732.5	1750.0
	15	1715.5	1732.5	1747.5
	20	1720.0	1732.5	1745.0

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE Band 5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829.0	836.5	844.0

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE Band 12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704.0	707.5	711.0

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE Band 13	5	779.5	782.0	784.5
	10	---	782.0	---

1.3 Block Diagram Showing the Configuration of System Tested



The above block diagram of setup is the normal mode. And more detail please refer to the test setup of each test item of bellow.

1.4 Description of Support Units

The EUT has been tested as an independent unit.

1.5 Measurement Uncertainty

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
RF Power, conducted	/	±0.82 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB

1.6 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)
The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01
The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025：2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)
The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.

2. Test Summary

Test Item	Section in CFR 47	Result
Out of band emission, Band Edge	Part 24.238(a) Part 22.917(a) Part 27.53 (h) Part 27.53(m)	**PASS**
Pass: The EUT complies with the essential requirements in the standard. Change appearance and Remove buzzer and two buzzer contact plates, add new buzzer FPC and add new magnetic buzzer on FPC.		

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Radiation Emission	EZ-EMC	EZ	FA-03A2RE+
RF Test System	JS1120	Tonscend	V3.1.46

4. Test Equipment and Test Site

Test Site				
No.	**Test Site**	**Manufacturer**	**Specification**	**Used**
TB-EMCSR001	Shielding Chamber #1	YIHENG	7.5*4.0*3.0 (m)	X
TB-EMCSR002	Shielding Chamber #2	YIHENG	8.0*4.0*3.0 (m)	√
TB-EMCCA001	3m Anechoic Chamber #A	ETS	9.0*6.0*6.0 (m)	X
TB-EMCCB002	3m Anechoic Chamber #B	YIHENG	9.0*6.0*6.0 (m)	√

Radiation Emission Test (B Site)					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 30, 2023	Aug. 29, 2024
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 17, 2024	Jun. 16, 2025
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472/008	Feb. 23, 2024	Feb. 22, 2025
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Nov. 13, 2023	Nov. 12, 2025
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	Jun. 14, 2024	Jun. 13, 2026
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Feb. 27, 2024	Feb. 26, 2026
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jun. 14, 2024	Jun. 13, 2026
HF Amplifier	Tonscend	TAP9E6343	AP21C806117	Aug. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP051845	AP21C806141	Aug. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Aug. 30, 2023	Aug. 29, 2024
Highpass Filter	CD	HPM-6.4/18G	---	N/A	N/A
Highpass Filter	CD	HPM-2.8/18G	---	N/A	N/A
Highpass Filter	XINBO	XBLBQ-HTA67(8-25G)	22052702-1	N/A	N/A

5. Radiated Out Band of Emissions

5.1 Test Standard and Limit

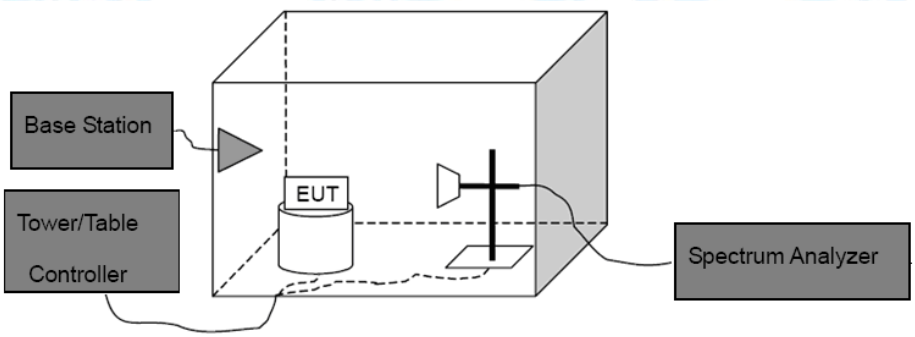
5.1.1 Test Standard

FCC Part 2: 2.1053, FCC Part 22.917(a), FCC part 24.238(a)
FCC Part 27.53 (h),FCC Part 27.53(m)

5.1.2 Test Limit

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+10log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

5.2 Test Setup



5.3 Test Procedure

(1) The test system setup as show in the block diagram above.
(2) The EUT was placed on an non-conductive rotating platform in an anechoic chamber. The radiated spurious emissions from 30MHz to 10th harmonious of fundamental frequency were measured at 3 m with a test antenna and a spectrum analyzer with RBW=1 MHz, VBW=1 MHz, peak detector settings.
(3) During the measurement, the EUT was enforced in maximum power and linked with a base station. All the spurious emissions at 3m were measured by rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
(4) When found the maximum level of emissions from the EUT. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB=10 log(TX power in Watts/0.001)-the absolute level
Spurious attenuation limit in dB=43+10 log(power out in Watts)

5.4 Deviation From Test Standard

No deviation

5.5 EUT Operating Mode

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

5.6 Test Data

Please refer to the Attachment A.

Measurement Data (worst case)

ATTACHMENT A--RADIATED OUT BAND OF EMISSIONS

Measurement Data (worst case)

Test mode:	LTE BAND 2 20MHz (RB size 1 & RB offset 0) for QPSK
Channel:	Middle

Horizontal

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	66.0342	-68.86	-10.94	-79.80	-13.00	-66.80	peak	P
2	112.1305	-68.78	-10.15	-78.93	-13.00	-65.93	peak	P
3	123.2655	-66.14	-9.52	-75.66	-13.00	-62.66	peak	P
4	263.8190	-68.99	-8.78	-77.77	-13.00	-64.77	peak	P
5	627.2738	-68.00	0.62	-67.38	-13.00	-54.38	peak	P
6 *	782.3453	-64.58	2.67	-61.91	-13.00	-48.91	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	8140.000	-57.89	14.91	-42.98	-13.00	-29.98	peak	P
2 *	9440.500	-60.35	20.16	-40.19	-13.00	-27.19	peak	P

Vertical

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	42.3022	-66.53	-9.83	-76.36	-13.00	-63.36	peak	P
2	66.4989	-67.93	-11.44	-79.37	-13.00	-66.37	peak	P
3	121.1231	-67.25	-9.88	-77.13	-13.00	-64.13	peak	P
4	171.9946	-68.36	-8.87	-77.23	-13.00	-64.23	peak	P
5	269.4284	-67.66	-8.14	-75.80	-13.00	-62.80	peak	P
6 *	452.7197	-67.17	-3.17	-70.34	-13.00	-57.34	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	6661.000	-56.19	10.96	-45.23	-13.00	-32.23	peak	P
2 *	9466.000	-60.31	20.35	-39.96	-13.00	-26.96	peak	P

Remark: 1, The testing has been conformed to 10*1880MHz=18800MHz.

2, All other emissions more than 30 dB below the limit.

3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss

Test mode:	LTE BAND 4 20MHz (RB size 1 & RB offset 0) for QPSK
Channel:	Middle

Horizontal

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	40.2757	-67.22	-9.55	-76.77	-13.00	-63.77	peak	P
2	65.3432	-68.00	-10.93	-78.93	-13.00	-65.93	peak	P
3	113.7143	-69.26	-10.18	-79.44	-13.00	-66.44	peak	P
4	123.2655	-65.89	-9.52	-75.41	-13.00	-62.41	peak	P
5	438.6554	-67.80	-3.79	-71.59	-13.00	-58.59	peak	P
6 *	584.7895	-68.68	-0.32	-69.00	-13.00	-56.00	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	7196.500	-55.92	12.45	-43.47	-13.00	-30.47	peak	P
2 *	11353.000	-60.92	19.92	-41.00	-13.00	-28.00	peak	P

Vertical

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	42.6000	-65.11	-9.93	-75.04	-13.00	-62.04	peak	P
2	92.1388	-67.56	-12.89	-80.45	-13.00	-67.45	peak	P
3	163.7550	-68.14	-7.67	-75.81	-13.00	-62.81	peak	P
4	230.0985	-67.81	-10.42	-78.23	-13.00	-65.23	peak	P
5	422.0577	-66.98	-4.43	-71.41	-13.00	-58.41	peak	P
6 *	633.9073	-68.89	0.92	-67.97	-13.00	-54.97	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	6686.500	-55.68	10.97	-44.71	-13.00	-31.71	peak	P
2 *	10358.500	-60.92	18.53	-42.39	-13.00	-29.39	peak	P

Remark: 1, The testing has been conformed to 10*1732.5MHz=17325MHz.

2, All other emissions more than 30 dB below the limit.

3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss

Test mode:	LTE BAND 5 10MHz (RB size 1 & RB offset 0) for QPSK
Channel:	Middle

Horizontal

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	44.7433	-66.57	-9.77	-76.34	-13.00	-63.34	peak	P
2	73.8756	-67.38	-12.55	-79.93	-13.00	-66.93	peak	P
3	119.0180	-65.05	-9.48	-74.53	-13.00	-61.53	peak	P
4	169.5990	-68.70	-8.21	-76.91	-13.00	-63.91	peak	P
5	435.5898	-68.20	-3.38	-71.58	-13.00	-58.58	peak	P
6 *	549.0195	-67.51	-0.76	-68.27	-13.00	-55.27	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	7069.000	-57.25	11.77	-45.48	-13.00	-32.48	peak	P
2 *	9517.000	-60.25	20.35	-39.90	-13.00	-26.90	peak	P

Vertical

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	39.2991	-64.98	-9.49	-74.47	-13.00	-61.47	peak	P
2	73.1025	-67.92	-12.11	-80.03	-13.00	-67.03	peak	P
3	120.6991	-66.60	-9.91	-76.51	-13.00	-63.51	peak	P
4	246.8149	-67.07	-10.05	-77.12	-13.00	-64.12	peak	P
5	410.3825	-67.74	-4.80	-72.54	-13.00	-59.54	peak	P
6 *	605.6592	-68.45	0.45	-68.00	-13.00	-55.00	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	6304.000	-55.06	10.28	-44.78	-13.00	-31.78	peak	P
2 *	9364.000	-59.43	19.41	-40.02	-13.00	-27.02	peak	P

Remark: 1, The testing has been conformed to 10*836.5MHz=8365MHz.

2, All other emissions more than 30 dB below the limit.

3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss

Test mode:	LTE BAND 12 10MHz (RB size 1 & RB offset 0) for QPSK
Channel:	Middle

Horizontal

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	52.7600	-67.63	-10.41	-78.04	-13.00	-65.04	peak	P
2	123.2655	-65.31	-9.52	-74.83	-13.00	-61.83	peak	P
3	171.3926	-68.27	-8.63	-76.90	-13.00	-63.90	peak	P
4	350.4768	-67.35	-5.87	-73.22	-13.00	-60.22	peak	P
5	452.7197	-67.31	-3.17	-70.48	-13.00	-57.48	peak	P
6 *	605.6592	-68.84	0.45	-68.39	-13.00	-55.39	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	6686.500	-55.74	10.97	-44.77	-13.00	-31.77	peak	P
2 *	9466.000	-60.47	20.35	-40.12	-13.00	-27.12	peak	P

Vertical

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	38.7518	-67.07	-9.65	-76.72	-13.00	-63.72	peak	P
2	88.3421	-66.79	-12.50	-79.29	-13.00	-66.29	peak	P
3	123.2655	-65.31	-9.52	-74.83	-13.00	-61.83	peak	P
4	159.2251	-67.18	-7.68	-74.86	-13.00	-61.86	peak	P
5	268.4853	-67.78	-8.24	-76.02	-13.00	-63.02	peak	P
6 *	452.7197	-67.31	-3.17	-70.48	-13.00	-57.48	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	6584.500	-55.89	11.23	-44.66	-13.00	-31.66	peak	P
2 *	9466.000	-61.32	20.35	-40.97	-13.00	-27.97	peak	P

Remark: 1, The testing has been conformed to 10*707.5MHz=7075MHz.

2, All other emissions more than 30 dB below the limit.

3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss

Test mode:	LTE BAND 13 10MHz (RB size 1 & RB offset 0) for QPSK
Channel:	Middle

Horizontal

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	32.6340	-66.78	-9.78	-76.56	-13.00	-63.56	peak	P
2	123.6985	-66.11	-9.60	-75.71	-13.00	-62.71	peak	P
3	159.2251	-67.92	-7.68	-75.60	-13.00	-62.60	peak	P
4	293.0842	-67.64	-7.55	-75.19	-13.00	-62.19	peak	P
5	455.9058	-68.43	-3.26	-71.69	-13.00	-58.69	peak	P
6 *	593.0497	-67.60	-0.20	-67.80	-13.00	-54.80	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1 *	9440.500	-59.79	20.16	-39.63	-13.00	-26.63	peak	P
2	10486.000	-61.36	18.42	-42.94	-13.00	-29.94	peak	P

Vertical

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	41.8596	-68.11	-9.77	-77.88	-13.00	-64.88	peak	P
2	72.3376	-67.28	-12.14	-79.42	-13.00	-66.42	peak	P
3	129.9226	-67.62	-8.99	-76.61	-13.00	-63.61	peak	P
4	159.7844	-68.55	-7.40	-75.95	-13.00	-62.95	peak	P
5	252.0627	-67.71	-9.64	-77.35	-13.00	-64.35	peak	P
6 *	460.7271	-66.25	-3.11	-69.36	-13.00	-56.36	peak	P

No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	P/F
1	6329.500	-56.28	10.85	-45.43	-13.00	-32.43	peak	P
2 *	9619.000	-58.80	19.85	-38.95	-13.00	-25.95	peak	P

Remark: 1, The testing has been conformed to 10*782.0MHz=7820MHz.

2, All other emissions more than 30 dB below the limit.

3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss

------End of the Report------