RADIO TEST REPORT

(EN 301 908-1)

Applicant:	Particle Industries,Inc
Address:	126 Post St,4th floor, San Francisco,CA 94108 USA

Manufacturer or Supplier	Particle Industries,Inc
Address	126 Post St,4th floor, San Francisco,CA 94108 USA
Product	Tracker SoM LTE CAT1/3G/2G
Brand Name	Particle
Model Name	T523M/T524M
Date of tests	May. 21, 2020 ~ Jun. 08, 2020
The tests have been carried out according to the requirements of the following standard:	
☒ **ETSI EN 301 908-1 V13.1.1(2019-11)**	
CONCLUSION: The submitted sample was found to COMPLY with the test requirement	

Prepared by Alex Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Alex Date: Jun. 09, 2020	Luke Lu Date: Jun. 09, 2020

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RE200520W002-2	Original release	Jun. 09, 2020

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: EN 301 908-1 V13.1.1			
STANDARD SUBCLAUSE	**TEST TYPE AND LIMIT**	**REMARKS**	**PASS/FAIL**
CROSS REFERENCES FOR USER EQUIPMENT (UE)			
4.2.2	Radiated emissions	Applicable	Pass
4.2.4	Control and monitoring functions	Applicable	Pass
CROSS REFERENCES FOR BASE STATIONS (BS) AND REPEATERS			
4.2.3	Radiated emissions	Not Applicable	NA
APPLIED STANDARD: EN 301 908-2 V11.1.2			
The detail information of the data please refer to the FTA report：R1906A0310-R2			
APPLIED STANDARD: EN 301 908-13 V13.1.1			
The detail information of the data please refer to the FTA report：R1906A0310-R3			

1.1 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Signal Pre-Amplifier	EMSI	EMC 02325	980224	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 012645B	980258	Jun. 24,19	Jun. 23,20
3m Fully-anechoic Chamber	ETS-LINDGREN	10m*5m*5m	Euroshieldpn-CT0001143-1217	Feb. 26,20	Feb. 25,21
RS Antenna_LF	Rohde&Schwarz	R&S® HL046E	HL064E	NA	NA
Horn Antenna	ETS-LINDGREN	3117	00168692	Nov. 24,19	Nov. 23,20
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 24,19	Jun. 23,20
Radio Communication Analyzer	ANRITSU	MT8820C	6201465425	Mar. 10,20	Mar. 09,21

NOTE:

1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in 3m Fully-anechoic Chamber.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

1.2 MEASUREMENT UNCERTAINTY

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated and shall correspond to an expansion factor (coverage factor) k = 1,96 (which provides a confidence level of 95 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). Principles for the calculation of measurement uncertainty are contained in ETSI TR 100 028 [i.3], in particular in annex D of the ETSI TR 100 028-2 [i.3].

Tables 5.2-1 and 5.2-2 are based on such expansion factors.

Table 5.2-1: Maximum measurement uncertainty (UE)

Parameter	Uncertainty
Effective radiated RF power between 30 MHz and 180 MHz	±6 dB
Effective radiated RF power between 180 MHz and 12,75 GHz	±3 dB
Conducted RF power	±1 dB

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Tracker SoM LTE CAT1/3G/2G
BRAND NAME	Particle
MODEL NAME	T523M/T524M
NOMINAL VOLTAGE	Li+ PIN: DC +3.3V--4.3V or Vusb PIN: DC +4.35V--5.5V or Vin PIN: DC +3.9V--17V
MODULATION TYPE	WCDMA:BPSK,QPSK,16QAM LTE CAT.1: QPSK,16QAM
RADIO TECHNOLOGY	WCDMA / HSDPA / HSUPA/ LTE FDD/ LTE TDD
OPERATING FREQUENCY	WCDMA Band I Tx: 1922.6 ~ 1977.4MHz Rx: 2112.6 ~ 2167.4MHz WCDMA Band VIII Tx: 882.4 ~ 912.6MHz Rx: 927.4MHz ~ 957.6MHz LTE Band 1 Tx: 1922.5 ~ 1977.5MHz Rx: 2112.5 ~ 2167.5MHz LTE Band 3 Tx: 1710.7 ~ 1784.3MHz Rx: 1805.7 ~ 1879.3MHz LTE Band 7 Tx: 2502.5 ~ 2567.5MHz Rx: 2622.5 ~ 2687.5MHz LTE Band 8 Tx: 880.7 ~ 914.3MHz Rx: 925.7 ~ 959.3MHz LTE Band 20 Tx : 834.5 ~ 859.5MHz Rx : 793.5 ~ 818.5MHz LTE Band 28 : Tx: 704.5 ~ 746.5MHz Rx : 759.5~801.5MHz
ANTENNA TYPE	PIFA Antenna
MAX. ANTENNA GAIN	WCDMA Band I : 3.77dBi WCDMA Band VIII : 1.42dBi LTE Band 1 : 3.77dBi LTE Band 3 : 3.77dBi LTE Band 7 : 4.66dBi LTE Band 8 :1.42dBi LTE Band 20 :1.42dBi LTE Band 28 :1.42dBi
HW VERSION	V1.0
SW VERSION	V1.5.4
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTE:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the user's manual.
2. The schematic and PCB of the two models T523M and T524M used by our company for the Certification is completely the same ,and the HW&SW used is the same. Because the product is sold in different market using different models eSIM, different models are named. the differences are as follows:T523M uses eSIM of Kore.T524M uses eSIM of Twilio.

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

2.1 CONDUCTED POWER

WCDMA Band I & WCDMA Band VIII

Band	WCDMA I			WCDMA VIII		
Channel	9613	9750	9887	2712	2788	2863
Rx Channel	10563	10700	10837	2937	3013	3088
Frequency	1922.6	1950	1977.4	882.4	897.6	912.6
AMR	-	-	-	-	-	-
RMC 12.2K	23.08	22.96	**23.09**	**23.21**	23.11	23.17
HSDPA Subtest-1	22.07	21.97	22.08	22.22	22.14	22.20
HSDPA Subtest-2	22.10	21.98	22.02	22.19	22.10	22.15
HSDPA Subtest-3	21.56	21.47	21.53	21.75	21.66	21.71
HSDPA Subtest-4	21.51	21.45	21.49	21.70	21.64	21.68
DC-HSDPA Subtest-1	22.04	21.94	22.06	22.18	22.08	22.16
DC-HSDPA Subtest-2	22.00	21.92	22.01	22.15	22.04	22.12
DC-HSDPA Subtest-3	21.50	21.46	22.51	21.69	21.60	21.67
DC-HSDPA Subtest-4	21.48	21.43	22.47	21.66	21.59	21.64
HSUPA Subtest-1	22.05	21.95	22.07	22.20	22.12	22.17
HSUPA Subtest-2	20.08	20.00	20.10	20.22	20.15	20.19
HSUPA Subtest-3	21.01	20.98	21.03	21.18	21.13	21.15
HSUPA Subtest-4	20.02	19.98	20.06	20.21	20.10	20.18
HSUPA Subtest-5	22.00	21.92	22.05	22.15	22.11	22.16
HSPA+ Subtest-1	19.56	19.51	19.59	19.71	19.64	19.68

LTE Band 1

Band/BW	Modulation	RB Size	RB Offset	Low CH 18025 Frequency 1922.5 MHz	Mid CH 18300 Frequency 1950 MHz	High CH 18575 Frequency 1977.5 MHz	Tune Up
1/ 5	QPSK	1	0	23.24	23.36	23.21	24.0
		1	24	23.11	23.19	23.08	
		8	0	23.33	23.44	23.34	
		8	17	22.99	23.12	22.95	24.0
	16QAM	1	0	21.88	22.04	21.90	23.0
		1	24	21.60	21.80	21.60	
		8	0	22.29	22.37	22.26	
		8	17	22.01	22.13	21.98	23.0
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 18050 Frequency 1925 MHz**	**Mid CH 18300 Frequency 1950 MHz**	**High CH 18550 Frequency 1975 MHz**	**Tune Up**
1/ 10	QPSK	1	0	23.21	23.39	23.21	24.0
		1	49	23.11	23.19	23.09	
		12	0	23.30	23.48	23.30	
		12	38	23.00	23.11	22.98	24.0
	16QAM	1	0	21.88	22.01	21.86	23.0
		1	49	21.65	21.76	21.63	
		12	0	22.29	22.38	22.23	
		12	38	22.00	22.14	21.94	23.0

Band/BW	Modulation	RB Size	RB Offset	Low CH 18075 Frequency 1927.5 MHz	Mid CH 18300 Frequency 1950 MHz	High CH 18525 Frequency 1972.5 MHz	Tune Up
1/ 15	QPSK	1	0	23.28	23.39	23.18	24.0
		1	74	23.09	23.24	23.04	
		16	0	23.36	23.51	23.31	
		16	59	22.97	23.12	22.99	24.0
	16QAM	1	0	21.92	22.08	21.86	23.0
		1	74	21.64	21.77	21.63	
		16	0	22.25	22.43	22.25	
		16	59	22.01	22.17	21.96	23.0
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 18100 Frequency 1930 MHz**	**Mid CH 18300 Frequency 1950 MHz**	**High CH 18500 Frequency 1970 MHz**	**Tune Up**
1/ 20	QPSK	1	0	23.29	23.43	23.26	24.0
		1	99	23.13	23.27	23.10	
		18	0	23.38	**23.52**	23.35	
		18	82	23.03	23.17	23.00	24.0
	16QAM	1	0	21.95	22.09	21.92	23.0
		1	99	21.68	21.82	21.65	
		18	0	22.31	22.45	22.28	
		18	82	22.00	22.14	21.97	23.0

LTE Band 3

Band/BW	Modulation	RB Size	RB Offset	Low CH 19207 Frequency 1710.7 MHz	Mid CH 19575 Frequency 1747.5 MHz	High CH 19943 Frequency 1784.3 MHz	Tune Up
3/ 1.4	QPSK	1	0	22.90	23.21	23.02	23.5
		1	5	23.07	23.31	23.17	
		5	0	22.94	23.16	23.00	
		5	1	22.97	23.22	23.10	23.5
	16QAM	1	0	21.66	21.91	21.75	22.5
		1	5	21.79	22.00	21.88	
		5	0	21.92	22.16	22.05	
		5	1	21.91	22.19	22.08	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 19215 Frequency 1711.5 MHz**	**Mid CH 19575 Frequency 1747.5 MHz**	**High CH 19935 Frequency 1783.5 MHz**	**Tune Up**
3/ 3	QPSK	1	0	22.92	23.23	23.01	23.5
		1	14	23.03	23.32	23.17	
		4	0	22.90	23.16	23.00	
		4	11	22.96	23.25	23.10	23.5
	16QAM	1	0	21.63	21.97	21.78	22.5
		1	14	21.76	22.03	21.86	
		4	0	21.95	22.16	22.05	
		4	11	21.87	22.17	22.05	22.5

Band/BW	Modulation	RB Size	RB Offset	Low CH 19225 Frequency 1712.5 MHz	Mid CH 19575 Frequency 1747.5 MHz	High CH 19925 Frequency 1782.5 MHz	Tune Up
3/ 5	QPSK	1	0	22.93	23.18	23.02	23.5
		1	24	23.08	23.29	23.17	
		8	0	22.91	23.15	23.04	
		8	17	22.99	23.25	23.07	23.5
	16QAM	1	0	21.64	21.93	21.78	22.5
		1	24	21.73	22.06	21.85	
		8	0	21.95	22.16	22.04	
		8	17	21.92	22.18	22.02	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 19250 Frequency 1715 MHz**	**Mid CH 19575 Frequency 1747.5 MHz**	**High CH 19900 Frequency 1780 MHz**	**Tune Up**
3/ 10	QPSK	1	0	22.90	23.21	23.02	23.5
		1	49	23.08	23.29	23.18	
		12	0	22.88	23.19	23.00	
		12	38	23.00	23.24	23.10	23.5
	16QAM	1	0	21.64	21.90	21.74	22.5
		1	49	21.78	22.02	21.88	
		12	0	21.95	22.17	22.01	
		12	38	21.90	22.19	22.01	22.5

Band/BW	Modulation	RB Size	RB Offset	Low CH 19275 Frequency 1717.5 MHz	Mid CH 19575 Frequency 1747.5 MHz	High CH 19875 Frequency 1777.5 MHz	Tune Up
3/ 15	QPSK	1	0	22.97	23.21	22.99	23.5
		1	74	23.06	23.34	23.13	
		16	0	22.94	23.22	23.01	
		16	59	22.97	23.25	23.11	23.5
	16QAM	1	0	21.68	21.97	21.74	22.5
		1	74	21.77	22.03	21.88	
		16	0	21.91	22.22	22.03	
		16	59	21.94	22.24	22.07	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 19300 Frequency 1720 MHz**	**Mid CH 19575 Frequency 1747.5 MHz**	**High CH 19850 Frequency 1775 MHz**	**Tune Up**
3/ 20	QPSK	1	0	22.98	23.25	23.07	23.5
		1	99	23.10	**23.37**	23.19	
		18	0	22.96	23.23	23.05	
		18	82	23.03	23.30	23.12	23.5
	16QAM	1	0	21.71	21.98	21.80	22.5
		1	99	21.81	22.08	21.90	
		18	0	21.97	22.24	22.06	
		18	82	22.00	22.27	22.09	22.5

LTE band 7

Band/BW	Modulation	RB Size	RB Offset	Low CH 20775 Frequency 2502.5 MHz	Mid CH 21100 Frequency 2535 MHz	High CH 21425 Frequency 2567.5 MHz	Tune Up
7/ 5	QPSK	1	0	22.96	23.09	22.91	23.5
		1	24	22.73	22.82	22.68	
		8	0	22.88	23.00	22.87	
		8	17	22.75	22.89	22.69	23.5
	16QAM	1	0	21.62	21.79	21.62	22.5
		1	24	21.40	21.61	21.38	
		8	0	21.96	22.05	21.91	
		8	17	21.57	21.77	21.56	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 20800 Frequency 2505 MHz**	**Mid CH 21100 Frequency 2535 MHz**	**High CH 21400 Frequency 2565 MHz**	**Tune Up**
7/ 10	QPSK	1	0	22.93	23.12	22.91	23.5
		1	49	22.73	22.82	22.69	
		12	0	22.85	23.04	22.83	
		12	38	22.76	22.88	22.72	23.5
	16QAM	1	0	21.62	21.76	21.58	22.5
		1	49	21.45	21.57	21.41	
		12	0	21.96	22.06	21.88	
		12	38	21.62	21.84	21.48	22.5

Band/BW	Modulation	RB Size	RB Offset	Low CH 20825 Frequency 2507.5 MHz	Mid CH 21100 Frequency 2535 MHz	High CH 21375 Frequency 2562.5 MHz	Tune Up
7/ 15	QPSK	1	0	23.00	23.12	22.88	23.5
		1	74	22.71	22.87	22.64	
		16	0	22.91	23.07	22.84	
		16	59	22.73	22.89	22.73	23.5
	16QAM	1	0	21.66	21.83	21.58	22.5
		1	74	21.44	21.58	21.41	
		16	0	21.92	22.11	21.90	
		16	59	21.64	21.91	21.64	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 20850 Frequency 2510 MHz**	**Mid CH 21100 Frequency 2535 MHz**	**High CH 21350 Frequency 2560 MHz**	**Tune Up**
7/ 20	QPSK	1	0	23.01	**23.16**	22.96	23.5
		1	99	22.75	22.90	22.70	
		18	0	22.93	23.08	22.88	
		18	82	22.79	22.94	22.74	23.5
	16QAM	1	0	21.69	21.84	21.64	22.5
		1	99	21.48	21.63	21.43	
		18	0	21.98	22.13	21.93	
		18	82	21.59	21.74	21.54	22.5

LTE band 8

Band/BW	Modulation	RB Size	RB Offset	Low CH 21457 Frequency 880.7 MHz	Mid CH 21625 Frequency 897.5 MHz	High CH 21793 Frequency 914.3 MHz	Tune Up
8/ 1.4	QPSK	1	0	23.24	23.22	23.29	24.0
		1	5	23.57	23.48	23.60	
		5	0	23.30	23.19	23.29	
		5	1	22.19	22.11	22.25	24.0
	16QAM	1	0	21.86	21.78	21.88	22.5
		1	5	22.19	22.07	22.21	
		5	0	21.85	21.76	21.91	
		5	1	22.22	22.15	22.23	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 21465 Frequency 881.5 MHz**	**Mid CH 21625 Frequency 897.5 MHz**	**High CH 21785 Frequency 913.5 MHz**	**Tune Up**
8/ 3	QPSK	1	0	23.26	23.24	23.28	24.0
		1	14	23.53	23.49	23.60	
		4	0	23.26	23.19	23.29	
		4	11	22.18	22.14	22.25	24.0
	16QAM	1	0	21.83	21.84	21.91	22.5
		1	14	22.16	22.10	22.19	
		4	0	21.88	21.76	21.91	
		4	11	21.18	21.16	21.23	22.5

Band/BW	Modulation	RB Size	RB Offset	Low CH 21475 Frequency 882.5 MHz	Mid CH 21625 Frequency 897.5 MHz	High CH 21775 Frequency 912.5 MHz	Tune Up
8/ 5	QPSK	1	0	23.27	23.19	23.29	24.0
		1	24	23.58	23.46	23.60	
		8	0	23.27	23.18	23.33	
		8	17	22.21	22.14	22.22	24.0
	16QAM	1	0	21.84	21.80	21.91	22.5
		1	24	22.13	22.13	22.18	
		8	0	21.88	21.76	21.90	
		8	17	21.18	21.14	21.20	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 21500 Frequency 885 MHz**	**Mid CH 21625 Frequency 897.5 MHz**	**High CH 21750 Frequency 910 MHz**	**Tune Up**
8/ 10	QPSK	1	0	23.32	23.26	23.34	24.0
		1	49	23.60	23.54	23.62	
		12	0	23.32	23.26	23.34	
		12	38	22.25	22.19	22.27	24.0
	16QAM	1	0	21.91	21.85	21.93	22.5
		1	49	22.21	22.15	22.23	
		12	0	21.90	21.84	21.92	
		12	38	21.26	21.20	21.28	22.5

LTE band 20

Band/BW	Modulation	RB Size	RB Offset	Low CH 24175 Frequency 834.5 MHz	Mid CH 24300 Frequency 847 MHz	High CH 24425 Frequency 859.5 MHz	Tune Up
20/ 5	QPSK	1	0	22.77	22.81	22.76	23.5
		1	24	22.92	22.92	22.91	
		8	0	22.82	22.85	22.85	
		8	17	22.59	22.64	22.57	23.5
	16QAM	1	0	21.29	21.37	21.33	22.5
		1	24	21.34	21.46	21.36	
		8	0	21.72	21.72	21.71	
		8	17	21.75	21.83	21.78	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 24200 Frequency 837 MHz**	**Mid CH 24300 Frequency 847 MHz**	**High CH 24400 Frequency 857 MHz**	**Tune Up**
20/ 10	QPSK	1	0	22.74	22.84	22.76	23.5
		1	49	22.92	22.92	22.92	
		12	0	22.79	22.89	22.81	
		12	38	22.60	22.63	22.60	23.5
	16QAM	1	0	21.29	21.34	21.29	22.5
		1	49	21.39	21.42	21.39	
		12	0	21.72	21.73	21.68	
		12	38	21.76	21.81	21.75	22.5

Band/BW	Modulation	RB Size	RB Offset	Low CH 24225 Frequency 839.5 MHz	Mid CH 24300 Frequency 847 MHz	High CH 24375 Frequency 854.5 MHz	Tune Up
20/ 15	QPSK	1	0	22.81	22.84	22.73	23.5
		1	74	22.90	22.97	22.87	
		16	0	22.85	22.92	22.82	
		16	59	22.57	22.64	22.61	23.5
	16QAM	1	0	21.33	21.41	21.29	22.5
		1	74	21.38	21.43	21.39	
		16	0	21.68	21.78	21.70	
		16	59	21.74	21.83	21.77	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH 24250 Frequency 842 MHz**	**Mid CH 24300 Frequency 847 MHz**	**High CH 24350 Frequency 852 MHz**	**Tune Up**
20/ 20	QPSK	1	0	22.82	22.88	22.81	23.5
		1	99	22.94	**23.00**	22.93	
		18	0	22.87	22.93	22.86	
		18	82	22.63	22.69	22.62	23.5
	16QAM	1	0	21.36	21.42	21.35	22.5
		1	99	21.42	21.48	21.41	
		18	0	21.74	21.80	21.73	
		18	82	21.79	21.85	21.78	22.5

LTE band 28

Band/BW	Modulation	RB Size	RB Offset	Low CH (27225) Frequency (704.5)MHz	Mid CH (27375) Frequency (719.5)MHz	High CH (27645) Frequency (746.5)MHz	Tune Up
28/ 3	QPSK	1	0	23.06	23.06	22.97	23.5
		1	14	22.97	22.95	22.93	
		4	0	22.95	22.90	22.87	
		4	11	22.91	22.89	22.87	23.5
	16QAM	1	0	21.69	21.72	21.66	22.5
		1	14	21.58	21.54	21.50	
		4	0	22.03	21.93	21.95	
		4	11	22.07	21.94	21.97	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH (27235) Frequency (705.5)MHz**	**Mid CH (27385) Frequency (720.5)MHz**	**High CH (27635) Frequency (745.5)MHz**	**Tune Up**
28/ 5	QPSK	1	0	23.07	23.01	22.98	23.5
		1	24	23.02	22.92	22.93	
		8	0	22.96	22.89	22.91	
		8	17	22.94	22.89	22.84	23.5
	16QAM	1	0	21.70	21.68	21.66	22.5
		1	24	21.55	21.57	21.49	
		8	0	22.03	21.93	21.94	
		8	17	22.05	21.98	21.93	22.5

Band/BW	Modulation	RB Size	RB Offset	Low CH (27260) Frequency (708)MHz	Mid CH (27410) Frequency (723)MHz	High CH (27610) Frequency (743)MHz	Tune Up
28/ 10	QPSK	1	0	23.04	23.04	22.98	23.5
		1	49	23.02	22.92	22.94	
		12	0	22.93	22.93	22.87	
		12	38	22.95	22.88	22.87	23.5
	16QAM	1	0	21.70	21.65	21.62	22.5
		1	49	21.60	21.53	21.52	
		12	0	22.03	21.94	21.91	
		12	38	22.08	21.94	21.95	22.5
Band/BW	**Modulation**	**RB Size**	**RB Offset**	**Low CH (27285) Frequency (710.5)MHz**	**Mid CH (27435) Frequency (725.5)MHz**	**High CH (27585) Frequency (740.5)MHz**	**Tune Up**
28/ 15	QPSK	1	0	23.11	23.04	22.95	23.5
		1	74	23.00	22.97	22.89	
		16	0	22.99	22.96	22.88	
		16	59	22.92	22.89	22.88	23.5
	16QAM	1	0	21.74	21.72	21.62	22.5
		1	74	21.59	21.54	21.52	
		16	0	21.99	21.99	21.93	
		16	59	22.05	21.97	21.96	22.5

Band/BW	Modulation	RB Size	RB Offset	Low CH 27310 Frequency (713)MHz	Mid CH 27460 Frequency (728)MHz	High CH (27560) Frequency (738)MHz	Tune Up
28/ 20	QPSK	1	0	**23.12**	23.08	23.03	23.5
		1	99	23.04	23.00	22.95	
		18	0	23.01	22.97	22.92	
		18	82	22.98	22.94	22.89	23.5
	16QAM	1	0	21.77	21.73	21.68	22.5
		1	99	21.63	21.59	21.54	
		18	0	22.05	22.01	21.96	
		18	82	22.03	21.99	21.94	22.5

2.2 DESCRIPTION OF TEST MODES

✧ The EUT was tested under following conditions:

BAND	OPERATING CONDITIONS	AXIS
WCDMA Band I	Linking / Idle mode at middle channel (CH 9750)	X-Plane
WCDMA Band VIII	Linking / Idle mode at middle channel (CH 2788)	X-Plane
LTE Band 1	Linking / Idle mode at middle channel (CH 18300)	X-Plane
LTE Band 3	Linking / Idle mode at middle channel (CH 19575)	X-Plane
LTE Band 7	Linking / Idle mode at middle channel (CH 21100)	X-Plane
LTE Band 8	Linking / Idle mode at middle channel (CH 21625)	X-Plane
LTE Band 20	Linking / Idle mode at middle channel (CH 24300)	X-Plane
LTE Band 28	Linking / Idle mode at middle channel (CH 27435)	X-Plane

NOTE:

1. Since the EUT is considered a portable unit, it was pre-tested on the positioned of each 3 axis. Only the worst case was present in this report positioned. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture), although the BT&WIFI can simultaneously transmit, but has no effect on the RF signal level in spurious emissions test.
2. The RSE Measurement for LTE was based on the worst BW conducted power for each LTE Band.

2.3 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 standard:

EN 301 908-1 V13.1.1(2019-11)

All tests have been performed and recorded as per the above standard.

2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together without any other necessary accessories or support units.

For test

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

NO.	DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

2.5 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photograph of the test configuration for reference.

3 TEST TYPES AND RESULTS

3.1 RADIATED SPURIOUS EMISSIONS – IN LINK MODE

3.1.1 LIMIT OF RADIATED SPURIOUS EMISSIONS – IN LINK MODE

FREQUENCY RANGE	FREQUENCIES BELOW 1GHz	FREQUENCIES ABOVE 1GHz
Limit value	250nW (–36dBm/100KHz)	1μW (–30dBm/1MHz)

3.1.2 TEST PROCEDURES

Whenever possible the test site should be a fully anechoic chamber simulating the free-space conditions. EUT shall be placed on a non-conducting support. Mean power of any spurious components shall be detected by the test antenna and measuring receiver (e.g. a spectrum analyser).

Measurements are made with a tuned dipole antenna or a reference antenna with a known gain referenced to an isotropic antenna. Unless otherwise stated, all measurements are done as mean power (RMS).

3.1.3 TEST SETUP

For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration).

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST RESULTS

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

LINKING MODE AT MIDDLE CHANNEL WCDMA B1

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Linking mode at middle channel (CH 9750)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
35.82	H	-72.9	-36.00	-36.9
159.01	H	-81.15	-36.00	-45.15
423.82	H	-87.43	-36.00	-51.43
625.58	H	-85.09	-36.00	-49.09
846.74	H	-83.6	-36.00	-47.6
919.49	H	-82.06	-36.00	-46.06
3898.62	H	-51.88	-30.00	-21.88
5859.38	H	-59.68	-30.00	-29.68
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
35.82	V	-71.92	-36.00	-35.92
128.94	V	-83.8	-36.00	-47.8
480.08	V	-86.68	-36.00	-50.68
680.87	V	-84.73	-36.00	-48.73
843.83	V	-83.47	-36.00	-47.47
986.42	V	-82.23	-36.00	-46.23
3901.48	V	-54.26	-30.00	-24.26
5844.82	V	-59.26	-30.00	-29.26

LINKING MODE AT MIDDLE CHANNEL WCDMA B8

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Linking mode at middle channel (CH 2788)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
35.82	H	-72.55	-36.00	-36.55
134.76	H	-85.92	-36.00	-49.92
386.96	H	-88.39	-36.00	-52.39
625.58	H	-84.34	-36.00	-48.34
824.43	H	-84.45	-36.00	-48.45
918.52	H	-82.27	-36.00	-46.27
1793.64	H	-42.37	-30.00	-12.37
2690.52	H	-52.25	-30.00	-22.25
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
47.46	V	-70.88	-36.00	-34.88
154.16	V	-81.93	-36.00	-45.93
385.02	V	-88.44	-36.00	-52.44
541.19	V	-85.49	-36.00	-49.49
657.59	V	-84.48	-36.00	-48.48
884.57	V	-82.08	-36.00	-46.08
1793.84	V	-43.49	-30.00	-13.49
2690.62	V	-55.5	-30.00	-25.5

LINKING MODE AT MIDDLE CHANNEL (LTE B1)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Linking mode at middle channel (CH18300 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
42.61	H	-75.35	-36.00	-39.35
68.8	H	-80.22	-36.00	-44.22
182.29	H	-87.04	-36.00	-51.04
287.05	H	-85.86	-36.00	-49.86
551.86	H	-86.09	-36.00	-50.09
783.69	H	-84.83	-36.00	-48.83
3908.84	H	-44.97	-30.00	-14.97
5857.34	H	-59.62	-30.00	-29.62
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
49.4	V	-72.61	-36.00	-36.61
70.74	V	-76.8	-36.00	-40.8
203.63	V	-87.16	-36.00	-51.16
303.54	V	-87.23	-36.00	-51.23
594.54	V	-85.3	-36.00	-49.3
749.74	V	-85.21	-36.00	-49.21
3908.6	V	-48.92	-30.00	-18.92
5847.56	V	-57.96	-30.00	-27.96

LINKING MODE AT MIDDLE CHANNEL (LTE B3)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Linking mode at middle channel (CH19575 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
35.82	H	-74.33	-36.00	-38.33
71.71	H	-76.06	-36.00	-40.06
208.48	H	-86.91	-36.00	-50.91
285.11	H	-85	-36.00	-49
461.65	H	-86.3	-36.00	-50.3
689.6	H	-85.11	-36.00	-49.11
3503.84	H	-49.59	-30.00	-19.59
5234.9	H	-60.02	-30.00	-30.02
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
33.88	V	-73.14	-36.00	-37.14
72.68	V	-81.85	-36.00	-45.85
191.02	V	-88.7	-36.00	-52.7
405.39	V	-87.52	-36.00	-51.52
655.65	V	-85.19	-36.00	-49.19
887.48	V	-81.71	-36.00	-45.71
3503.9	V	-49.72	-30.00	-19.72
5238.48	V	-58.99	-30.00	-28.99

LINKING MODE AT MIDDLE CHANNEL (LTE B7)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Linking mode at middle channel (CH21100 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
35.82	H	-72.87	-36.00	-36.87
129.91	H	-89.02	-36.00	-53.02
385.99	H	-88.6	-36.00	-52.6
594.54	H	-85.4	-36.00	-49.4
703.18	H	-85.78	-36.00	-49.78
919.49	H	-82.38	-36.00	-46.38
5061.34	H	-49.79	-30.00	-19.79
7589.2	H	-61.27	-30.00	-31.27
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
47.46	V	-71.55	-36.00	-35.55
168.71	V	-82.17	-36.00	-46.17
363.68	V	-90.21	-36.00	-54.21
538.28	V	-86.66	-36.00	-50.66
624.61	V	-84.75	-36.00	-48.75
892.33	V	-82.22	-36.00	-46.22
5061.18	V	-51.08	-30.00	-21.08
7580.1	V	-58.38	-30.00	-28.38

LINKING MODE AT MIDDLE CHANNEL (LTE B8)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Linking mode at middle channel (CH21625 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
35.82	H	-74.33	-36.00	-38.33
70.74	H	-77.28	-36.00	-41.28
208.48	H	-86.91	-36.00	-50.91
404.42	H	-88.31	-36.00	-52.31
625.58	H	-84.9	-36.00	-48.9
791.45	H	-84.16	-36.00	-48.16
1803.84	H	-46.93	-30.00	-16.93
2694.85	H	-60.99	-30.00	-30.99
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
49.4	V	-72.93	-36.00	-36.93
73.65	V	-78.76	-36.00	-42.76
185.2	V	-88.71	-36.00	-52.71
294.81	V	-87.74	-36.00	-51.74
502.39	V	-86.89	-36.00	-50.89
703.18	V	-84.97	-36.00	-48.97
1803.6	V	-54.1	-30.00	-24.1
2716	V	-60.36	-30.00	-30.36

LINKING MODE AT MIDDLE CHANNEL (LTE B20)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Linking mode at middle channel (CH24300 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
34.85	H	-74.53	-36.00	-38.53
69.77	H	-79.72	-36.00	-43.72
182.29	H	-88.38	-36.00	-52.38
302.57	H	-89.2	-36.00	-53.2
538.28	H	-86.56	-36.00	-50.56
687.66	H	-85.59	-36.00	-49.59
1702.96	H	-43.34	-30.00	-13.34
2549.7	H	-60.23	-30.00	-30.23
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
49.4	V	-72.96	-36.00	-36.96
206.54	V	-87.83	-36.00	-51.83
463.59	V	-86.73	-36.00	-50.73
594.54	V	-85.07	-36.00	-49.07
716.76	V	-85.24	-36.00	-49.24
835.1	V	-83.48	-36.00	-47.48
1703.08	V	-49.66	-30.00	-19.66
2539.36	V	-60.56	-30.00	-30.56

LINKING MODE AT MIDDLE CHANNEL (LTE B28)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Linking mode at middle channel (CH27435 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
34.85	H	-74.58	-36.00	-38.58
157.07	H	-80.58	-36.00	-44.58
463.59	H	-87.25	-36.00	-51.25
655.65	H	-85.98	-36.00	-49.98
842.86	H	-83.55	-36.00	-47.55
901.06	H	-81.89	-36.00	-45.89
1450	H	-47.07	-30.00	-17.07
2175	H	-56.63	-30.00	-26.63
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
48.43	V	-71.26	-36.00	-35.26
127.97	V	-83.89	-36.00	-47.89
362.71	V	-88.8	-36.00	-52.8
625.58	V	-85.04	-36.00	-49.04
767.2	V	-85.09	-36.00	-49.09
875.84	V	-82.84	-36.00	-46.84
1450	V	-49.37	-30.00	-19.37
2175	V	-55.89	-30.00	-25.89

3.2 CONTROL AND MONITORING FUNCTIONS (UE)

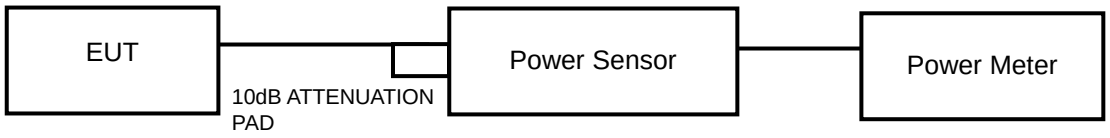
3.2.1 LIMIT OF CONTROL AND MONITORING FUNCTIONS (UE)

The maximum measured power during the duration of the test shall not exceed -30 dBm.

3.2.2 TEST PROCEDURES

At the start of the test, the UE shall be switched off. The UE antenna connector shall be connected to a power. The UE shall be switched on for a period of approximately fifteen minutes, and then switched off. The EUT shall remain switched off for a period of at least thirty seconds, and shall then be switched on for a period of approximately one minute. The maximum power emitted from the UE throughout the duration of the test shall be recorded.

3.2.3 TEST SETUP



3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST RESULTS

TEST VOLTAGE	230Vac, 50Hz	**ENVIRONMENTAL CONDITIONS**	23deg.C,60%RH
OPERATING CONDITIONS	Switch on/Switch off	**TESTED BY**	Star Le

THE MAXIMUM MEASURED POWER DURING THE DURATION OF THE TEST LEVEL			
TEST TIMES	**MEASUREMENT POWER LEVEL (dBm)**	**LIMIT (dBm)**	**RESULT**
1	-62.20	-30.0	PASS
2	-62.35	-30.0	PASS
3	-62.79	-30.0	PASS
4	-62.22	-30.0	PASS
5	-62.66	-30.0	PASS

3.3 RADIATED SPURIOUS EMISSIONS – IN IDLE MODE

3.3.1 LIMIT OF RADIATED SPURIOUS EMISSIONS – IN IDLE MODE

FREQUENCY RANGE	FREQUENCIES BELOW 1GHz	OTHER FREQUENCIES ABOVE 1GHz
Limit value	-57dBm/100KHz	-47dBm/1MHz

3.3.2 TEST PROCEDURES

Whenever possible the test site should be a fully anechoic chamber simulating the free-space conditions. EUT shall be placed on a non-conducting support. Mean power of any spurious components shall be detected by the test antenna and measuring receiver (e.g. a spectrum analyser).

Measurements are made with a tuned dipole antenna or a reference antenna with a known gain referenced to an isotropic antenna. Unless otherwise stated, all measurements are done as mean power (RMS).

3.3.3 TEST SETUP

For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration).

3.3.4 DEVIATION FROM TEST STANDARD

No deviation

3.3.5 TEST RESULTS

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

IDLE MODE AT MIDDLE CHANNEL WCDMA B1

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Idle mode at middle channel (CH 9750)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
47.46	H	-73.06	-57.00	-16.06
93.05	H	-81.12	-57.00	-24.12
270.56	H	-86.1	-57.00	-29.1
506.27	H	-86.45	-57.00	-29.45
719.67	H	-85.61	-57.00	-28.61
867.11	H	-82.29	-57.00	-25.29
5309.59	H	-65.11	-47.00	-18.11
8329.34	H	-63.91	-47.00	-16.91
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
48.43	V	-72.06	-57.00	-15.06
159.98	V	-80.51	-57.00	-23.51
421.88	V	-88.06	-57.00	-31.06
625.58	V	-85.19	-57.00	-28.19
746.83	V	-85.04	-57.00	-28.04
918.52	V	-81.87	-57.00	-24.87
4451.84	V	-66.21	-47.00	-19.21
9598.34	V	-63.28	-47.00	-16.28

IDLE MODE AT MIDDLE CHANNEL WCDMA B8

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Idle mode at middle channel (CH 2788)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
35.82	H	-75.33	-57.00	-18.33
158.04	H	-81.16	-57.00	-24.16
438.37	H	-87.4	-57.00	-30.4
673.11	H	-85.7	-57.00	-28.7
869.05	H	-83.11	-57.00	-26.11
950.53	H	-82.57	-57.00	-25.57
4722.09	H	-66.35	-47.00	-19.35
9351.59	H	-63.72	-47.00	-16.72
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
34.85	V	-71.2	-57.00	-14.2
134.76	V	-84.1	-57.00	-27.1
531.49	V	-85.93	-57.00	-28.93
736.16	V	-85.13	-57.00	-28.13
890.39	V	-82.07	-57.00	-25.07
967.99	V	-82.42	-57.00	-25.42
6508.09	V	-64.75	-47.00	-17.75
9821.59	V	-62.31	-47.00	-15.31

IDLE MODE AT MIDDLE CHANNEL (LTE B1)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Idle mode at middle channel (CH18300 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
30.97	H	-74.75	-57.00	-17.75
70.74	H	-79.33	-57.00	-22.33
159.98	H	-86.91	-57.00	-29.91
286.08	H	-85.58	-57.00	-28.58
422.85	H	-87.43	-57.00	-30.43
815.7	H	-84.12	-57.00	-27.12
5206.5	H	-65.35	-47.00	-18.35
9777.25	H	-62.06	-47.00	-15.06
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
48.43	V	-73.44	-57.00	-16.44
202.66	V	-90.29	-57.00	-33.29
287.05	V	-86.32	-57.00	-29.32
463.59	V	-86.88	-57.00	-29.88
699.3	V	-84.79	-57.00	-27.79
825.4	V	-83.39	-57.00	-26.39
6005.5	V	-65.1	-47.00	-18.1
9413	V	-62.35	-47.00	-15.35

IDLE MODE AT MIDDLE CHANNEL (LTE B3)

FREQUENCY RANGE	30 ~ 12750 MHz	TEST VOLTAGE	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	TESTED BY	Star Le
OPERATING CONDITIONS	Idle mode at middle channel (CH 19575 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin (dB)
33.88	H	-75.17	-57.00	-18.17
71.71	H	-75.79	-57.00	-18.79
174.53	H	-86.86	-57.00	-29.86
287.05	H	-88.43	-57.00	-31.43
543.13	H	-86.2	-57.00	-29.2
794.36	H	-84.23	-57.00	-27.23
3914	H	-69.12	-47.00	-22.12
8061.75	H	-64.26	-47.00	-17.26
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin (dB)
47.46	V	-72.85	-57.00	-15.85
70.74	V	-78.82	-57.00	-21.82
202.66	V	-86.49	-57.00	-29.49
287.05	V	-86.32	-57.00	-29.32
507.24	V	-85.43	-57.00	-28.43
663.41	V	-84.78	-57.00	-27.78
5183	V	-66.61	-47.00	-19.61
8426	V	-64.51	-47.00	-17.51

IDLE MODE AT MIDDLE CHANNEL (LTE B7)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Idle mode at middle channel (CH 21100 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
30.97	H	-75.21	-57.00	-18.21
156.1	H	-81.25	-57.00	-24.25
441.28	H	-87.62	-57.00	-30.62
638.19	H	-85.58	-57.00	-28.58
791.45	H	-84.94	-57.00	-27.94
917.55	H	-82.09	-57.00	-25.09
4181.59	H	-68.41	-47.00	-21.41
7718.34	H	-65.21	-47.00	-18.21
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
33.88	V	-71.82	-57.00	-14.82
134.76	V	-83.82	-57.00	-26.82
370.47	V	-88.2	-57.00	-31.2
573.2	V	-85.98	-57.00	-28.98
656.62	V	-84.99	-57.00	-27.99
893.3	V	-82.35	-57.00	-25.35
4134.59	V	-67.45	-47.00	-20.45
8352.84	V	-63.66	-47.00	-16.66

IDLE MODE AT MIDDLE CHANNEL (LTE B8)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Idle mode at middle channel (CH 21625 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
34.85	H	-73.58	-57.00	-16.58
69.77	H	-75.6	-57.00	-18.6
185.2	H	-87.22	-57.00	-30.22
371.44	H	-88.91	-57.00	-31.91
563.5	H	-85.21	-57.00	-28.21
740.04	H	-84.66	-57.00	-27.66
5053.75	H	-66.38	-47.00	-19.38
8437.75	H	-64.29	-47.00	-17.29
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
49.4	V	-73.09	-57.00	-16.09
71.71	V	-78.14	-57.00	-21.14
180.35	V	-85.67	-57.00	-28.67
404.42	V	-88.54	-57.00	-31.54
607.15	V	-84.5	-57.00	-27.5
868.08	V	-83.01	-57.00	-26.01
5312.25	V	-65.41	-47.00	-18.41
8155.75	V	-64.04	-47.00	-17.04

IDLE MODE AT MIDDLE CHANNEL (LTE B20)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Idle mode at middle channel (CH 24300 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
70.74	H	-77.38	-57.00	-20.38
183.26	H	-85.12	-57.00	-28.12
294.81	H	-87.39	-57.00	-30.39
481.05	H	-86.95	-57.00	-29.95
625.58	H	-83.73	-57.00	-26.73
857.41	H	-83.47	-57.00	-26.47
6005.5	H	-65.14	-47.00	-18.14
9095.75	H	-63.9	-47.00	-16.9
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
30	V	-75.49	-57.00	-18.49
73.65	V	-82.58	-57.00	-25.58
194.9	V	-87.77	-57.00	-30.77
422.85	V	-87.52	-57.00	-30.52
578.05	V	-86.39	-57.00	-29.39
715.79	V	-85.55	-57.00	-28.55
4854	V	-66.83	-47.00	-19.83
8696.25	V	-64.27	-47.00	-17.27

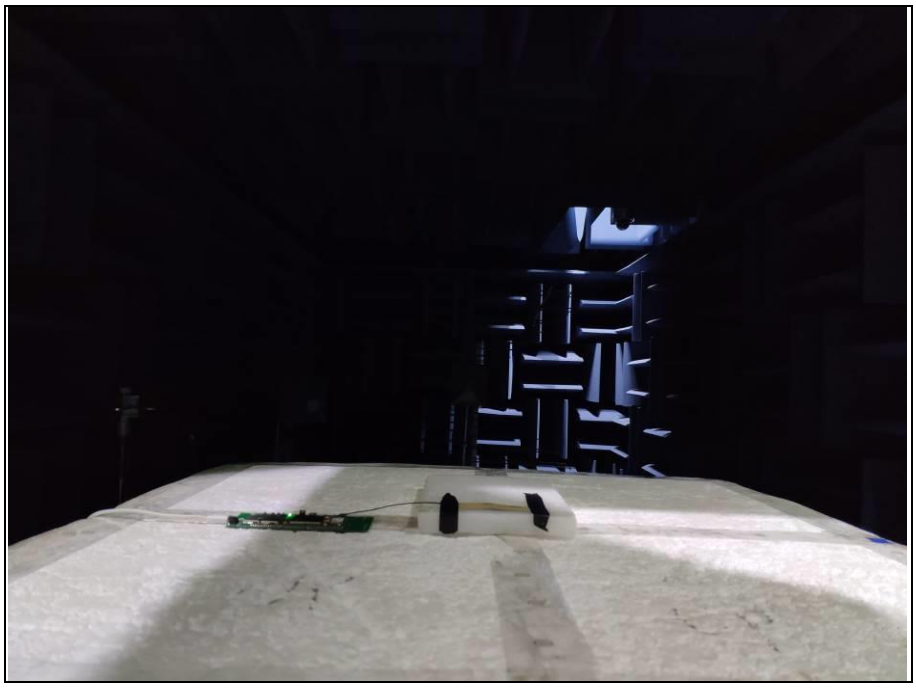
IDLE MODE AT MIDDLE CHANNEL (LTE B28)

FREQUENCY RANGE	30 ~ 12750 MHz	**TEST VOLTAGE**	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	23deg.C,60%RH	**TESTED BY**	Star Le
OPERATING CONDITIONS	Idle mode at middle channel (CH 27435 RB=1 Offset=0)		

SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
34.85	H	-73.91	-57.00	-16.91
134.76	H	-83.84	-57.00	-26.84
386.96	H	-88.45	-57.00	-31.45
625.58	H	-85.32	-57.00	-28.32
749.74	H	-84.73	-57.00	-27.73
890.39	H	-82.16	-57.00	-25.16
4698.59	H	-65.63	-47.00	-18.63
8634.84	H	-64.34	-47.00	-17.34
SPURIOUS EMISSION LEVEL				
Frequency (MHz)	**Antenna Polarization**	**Level (dBm)**	**Limit (dBm)**	**Margin (dB)**
35.82	V	-71.63	-57.00	-14.63
69.77	V	-80.41	-57.00	-23.41
155.13	V	-81.11	-57.00	-24.11
287.05	V	-91.23	-57.00	-34.23
422.85	V	-87.21	-57.00	-30.21
625.58	V	-84.81	-57.00	-27.81
4181.59	V	-67.42	-47.00	-20.42
7941.59	V	-64.89	-47.00	-17.89

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

LINK AND IDLE SPURIOUS EMISSION (BELOW 1GHz)



LINK AND IDLE SPURIOUS EMISSION (ABOVE 1GHZ)

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

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

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