



FCC Radio Test Report

FCC ID: ZMONL668LA05

This report concerns: Class II permissive Change

Project No. : 2111C171A
Equipment : LTE Module
Brand Name : Fibocom
Test Model : NL668-LA
Series Model : NL668-LA-05, NL668-LA-10, NL668-LA-30
Applicant : Fibocom Wireless Inc.
Address : 1101,Tower A, Building 6, Shenzhen International Innovation Valley, Dashi
1st Rd, Nanshan,Shenzhen,China
Manufacturer : Fibocom Wireless Inc.
Address : 1101,Tower A, Building 6, Shenzhen International Innovation Valley, Dashi
1st Rd, Nanshan,Shenzhen,China
Factory : Huizhou HYE Technology Co., Ltd.
Address : No. 237, Sanhe group, Sanhe village, Tonghu Town, Zhongkai hi tech Zone,
Huizhou
Date of Receipt : Jan. 22, 2025
Date of Test : Jan. 23, 2025 ~ Feb. 21, 2025
Issued Date : Mar. 11, 2025
Report Version : R02
Test Sample : Engineering Sample No.: SSL2025012230
Standard(s) : 47 CFR FCC Part 24 Subpart E
47 CFR FCC Part 2

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. BTL assumes no responsibility for the data provided by the customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by BTL.

The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the ISO/IEC 17025: 2017 requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-2-2111C171A	R00	This is a supplementary report to the original test report (BTL-FCCP-2-2111C171). Added the antenna (ant.2~7) which maximum antenna gain are larger than the original so radiated spurious emissions had been retested and recorded in the report, the original test results please refer to original report.	Mar. 04, 2025	Invalid
BTL-FCCP-2-2111C171A	R01	Modified the comments of TCB.	Mar. 07, 2025	Invalid
BTL-FCCP-2-2111C171A	R02	Modified the comments of TCB.	Mar. 11, 2025	Valid

1. APPLICABLE STANDARDS

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

ANSI C63.26-2015

The following reference test guidance is not within the scope of accreditation of A2LA:

FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 24 Subpart E & Part 2			
Standard(s) Section	Test Item	Judgment	Remark
2.1046 24.232(c)	Equivalent Isotropic Radiated Power	PASS	-----
2.1049	Occupied Bandwidth	PASS	-----
2.1051 24.238(a)	Conducted Spurious Emissions	PASS	-----
2.1053 24.238(a)	Radiated Spurious Emissions	PASS	-----
24.238(a)	Band Edge Measurements	PASS	-----
24.232(d)	Peak To Average Ratio	PASS	-----
2.1055 24.235	Frequency Stability	PASS	-----

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of Room 108-116, 309-310, Building 2, No.1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong, People's Republic of China

BTL's Registration Number for FCC: 747969

BTL's Designation Number for FCC: CN1377

2.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

The BTL measurement uncertainty as below table:

A. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	U,(dB)
SSL-CB01	CISPR	9kHz ~ 30MHz	2.74

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
SSL-CB01 (3m)	CISPR	30MHz ~ 200MHz	V	4.70
		30MHz ~ 200MHz	H	3.56
		200MHz ~ 1,000MHz	V	4.92
		200MHz ~ 1,000MHz	H	4.54
		1GHz ~ 6GHz	-	4.56
		6GHz ~ 18GHz	-	5.14

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

2.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By	Test Date
Radiated Spurious Emissions (9 kHz to 30 MHz)	22°C	50%	AC 120V/60Hz	Young Zou	Feb. 17, 2025
Radiated Spurious Emissions (30 MHz to 1000 MHz)	23°C	45-50%	AC 120V/60Hz	Young Zou	Feb. 18, 2025- Feb. 19, 2025
Radiated Spurious Emissions (Above 1000 MHz)	23°C	45-50%	AC 120V/60Hz	Young Zou	Feb. 20, 2025

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	LTE Module			
Brand Name	Fibocom			
Test Model	NL668-LA			
Series Model	NL668-LA-05, NL668-LA-10, NL668-LA-30			
Model Difference(s)	Only differ in memory.			
Hardware Version	V1.0.0			
Software Version	19005.1000.15.02.00.05			
Power Source	DC voltage supplied from external power supply.			
Power Rating	DC 3.3V~4.3V			
IMEI No.	Radiated	860333050409543		
Modulation Type	GSM		GMSK	
	EDGE/GPRS		GMSK, 8PSK	
	WCDMA/HSDPA/HSUPA		UL: QPSK DL: QPSK, 16QAM	
	LTE		UL: QPSK, 16QAM DL: QPSK, 16QAM, 64QAM	
Max. Output Power Note (2)	GSM 1900 / GPRS 1900		GMSK	28.35 dBm
	EDGE 1900		8PSK	24.12 dBm
	WCDMA Band II		QPSK	23.73 dBm
	HSDPA Band II		QPSK	22.46 dBm
	HSUPA Band II		QPSK	22.76 dBm
	LTE	Channel Bandwidth (MHz)	QPSK (dBm)	16QAM (dBm)
	Band 2	1.4	22.43	21.95
		3	22.53	22.43
		5	22.46	21.15
		10	23.02	22.18
		15	22.90	22.63
		20	22.53	21.30

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The Output Power test results refer to Report No.: BTL-FCCP-2-2111C171.

3. Channel List:

PCS 1900				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	512	1850.2	528	1930.2
Mid Range	661	1880	677	1960
High Range	810	1909.8	826	1989.8

WCDMA Band II				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	9262	1852.4	9662	1932.4
Mid Range	9400	1880.0	9800	1960.0
High Range	9538	1907.6	9938	1987.6

LTE Band 2					
Test Frequency ID	Bandwidth (MHz)	N _{UL}	Frequency of Uplink (MHz)	N _{DL}	Frequency of Downlink (MHz)
Low Range	1.4	18607	1850.7	607	1930.7
	3	18615	1851.5	615	1931.5
	5	18625	1852.5	625	1932.5
	10	18650	1855	650	1935
	15	18675	1857.5	675	1937.5
	20	18700	1860	700	1940
Mid Range	1.4/3/5/10/15/20	18900	1880	900	1960
High Range	1.4	19193	1909.3	1193	1989.3
	3	19185	1908.5	1185	1988.5
	5	19175	1907.5	1175	1987.5
	10	19150	1905	1150	1985
	15	19125	1902.5	1125	1982.5
	20	19100	1900	1100	1980

4. Table for Filed Antenna:

Ant.	Brand	Model Name or P/N	Antenna Type	Connector	Gain (dBi)	Note
1	N/A	N/A	Dipole	SMA	0.9	PCS 1900
					0.9	WCDMA Band II
					0.9	LTE Band 2
2		F-0Y-31-0116-001 -K0	Dipole	N/A	2.85	PCS 1900
					2.85	WCDMA Band II
					2.85	LTE Band 2
3		F-0Y-31-0116-002 -K0	Dipole	N/A	1.48	PCS 1900
					1.48	WCDMA Band II
					1.48	LTE Band 2
4		TQX-071427HK2 2	Dipole	IPEX	5.41	PCS 1900
					5.41	WCDMA Band II
					5.41	LTE Band 2
5	Kenbotong	KIT-HK23-PT24-4 G	Dipole	IPEX	4.57	PCS 1900
					4.57	WCDMA Band II
					4.57	LTE Band 2
6		F-0Y-31-0166-001 -K0	Dipole	N/A	3.75	PCS 1900
					3.75	WCDMA Band II
					3.75	LTE Band 2
7	Kenbotong	TQX-071427HK2 2-L	Dipole	IPEX	3.48	PCS 1900
					3.48	WCDMA Band II
					3.48	LTE Band 2

Note: The antenna gain is provided by the manufacturer.

3.2 DESCRIPTION OF TEST MODES

Following mode(s) is (were) found to be the worst case(s) and selected for the final test.

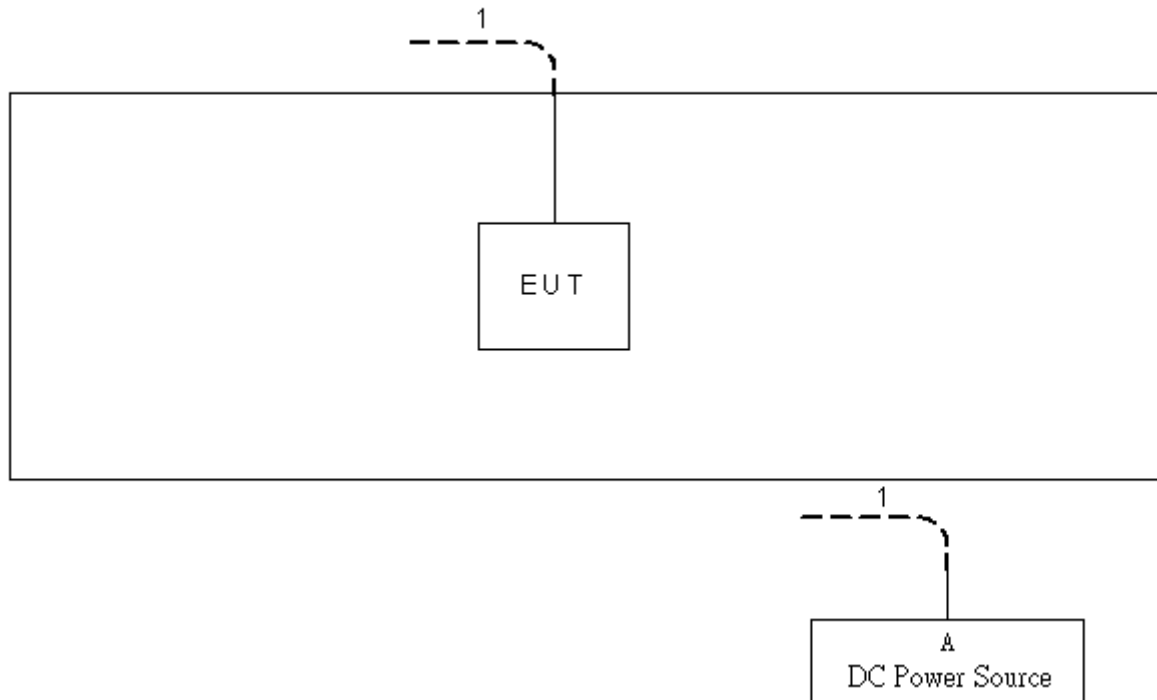
GSM MODE			
Test Item	Available Channel	Tested Channel	Mode
Radiated Spurious Emissions	512 to 810	661	GSM

WCDMA BAND II MODE			
Test Item	Available Channel	Tested Channel	Mode
Radiated Spurious Emissions	9262 to 9538	9400	WCDMA

LTE BAND 2 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Radiated Spurious Emissions	18607 to 19193	18900	1.4 MHz	QPSK	1RB
	18625 to 19175	18900	5MHz	QPSK	1RB
	18700 to 19100	18900	20MHz	QPSK	1RB

Note: All antenna had been pre-tested and in this report only recorded the maximum gain antenna test result.

3.3 BLOCKDIGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED



3.4 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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.
A	DC power supply	UNI-T	UDP6721	AWP7224050018

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	10m

4. TEST RESULT

4.1 RADIATED SPURIOUS EMISSIONS MEASUREMENT

4.1.1 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 $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm.

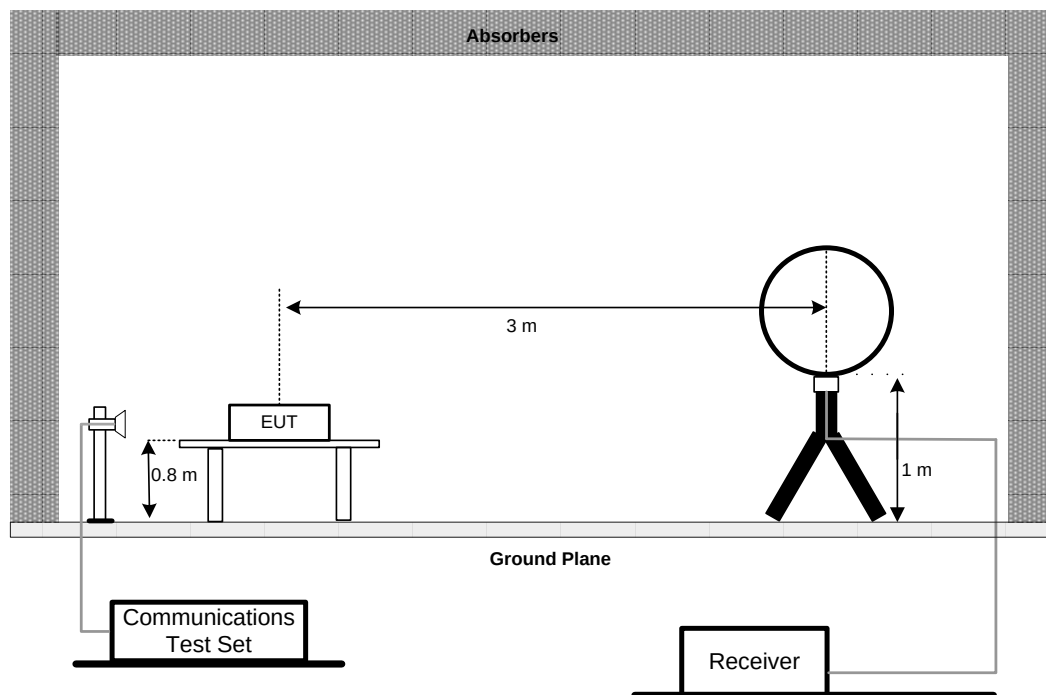
4.1.2 TEST PROCEDURES

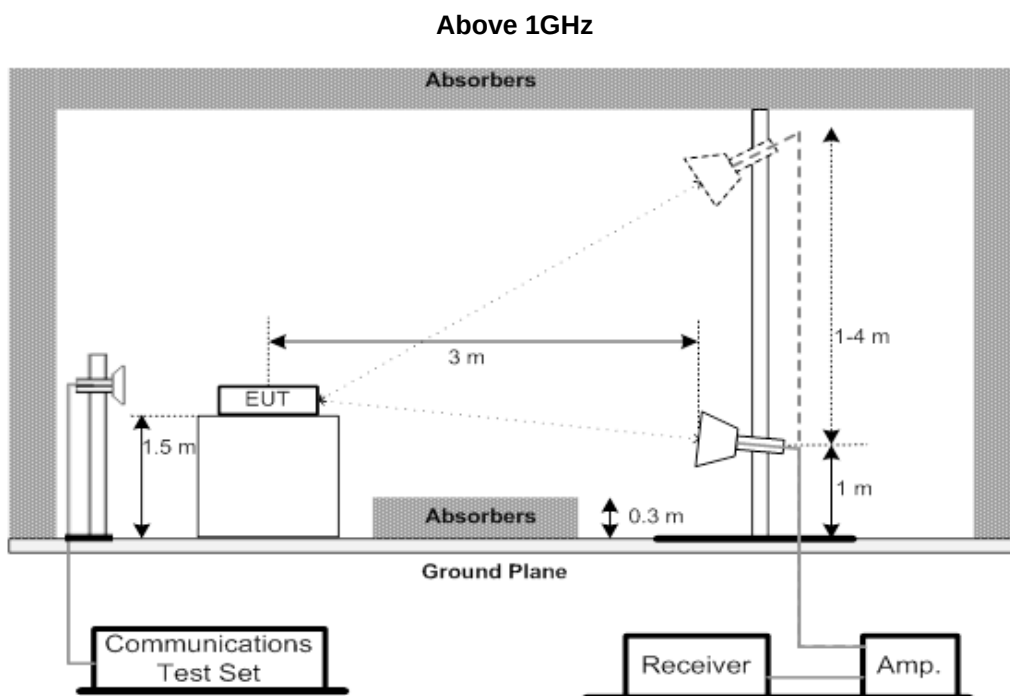
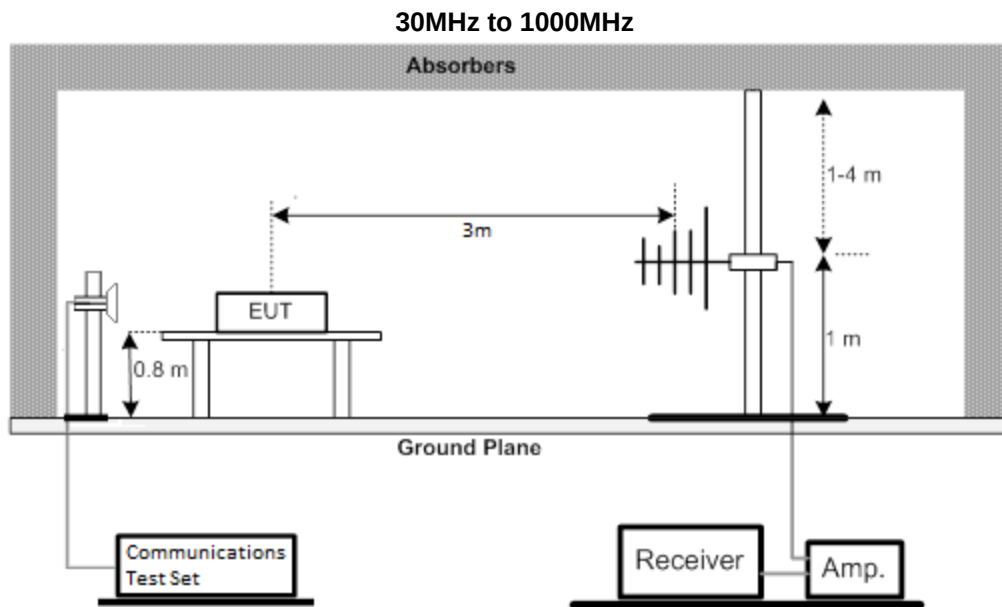
The testing follows FCC KDB 971168 v03r01 Section 6.2 or ANSI C63.26-2015 Section 5.5.

1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
4. Start the test, rotate the table 360° to find the worst Angle, maintain the worst Angle, raise the antenna to 1-4m to find the worst height, maintain the worst height, then rotate the table to determine the final worst Angle, grab the spectrum diagram.
5. EUT shall be placed in accordance with X,Y,Z as required by Figure 5 in ANSI C63.26.
Repeat Step 5 above to find the worst placement. Test all bands according to the worst placement.
6. Then EIRP is then converted to field strength as follows in Equation
7. $E \text{ (dBuV/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8$; where D is the measurement distance (in the far field region) in m. The emission limit equal to 82.26dBuV/m.

4.1.3 TEST SETUP LAYOUT

Below 30MHz





4.1.4 TEST DEVIATION

No deviation.

4.1.5 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the APPENDIX A.

4.1.6 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the APPENDIX B.

4.1.7 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the APPENDIX C.

4. LIST OF MEASUREMENT EQUIPMENTS

Radiated Emissions - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Active Loop Antenna	Schwarzbeck	FMZB 1513-60	00025	Mar. 29,2025
2	MXE EMI Receiver	Keysight	N9038A	MY59050118	Jun. 28, 2025
3	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-3000	N/A	Jun. 06, 2025
4	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-7000	N/A	Jun. 06, 2025
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	966 Chamber room	Tai He	9*6*6 (NSA&VSWR)	N/A	Jun. 06, 2025
7	Wideband Radio Communication Tester	R&S	CWM 500	104462	Jun. 28, 2025
8	DC power supply	UNI-T	UDP6721	AWP7224050018	Mar. 20, 2025

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	01269	May 18, 2025
2	Attenuator	EMCI	EMCI-N-6-06	AN-N0697	May 18, 2025
3	MXE EMI Receiver	Keysight	N9038A	MY59050118	Jun. 28, 2025
4	Preamplifier	EMC INSTRUMENT	EMC001330	980825	Jan. 10, 2026
5	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-2500	N/A	Jun. 06, 2025
6	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-7000	N/A	Jun. 06, 2025
7	Cable	EMC INSTRUMENT	EMCCFD400-NM-N M-3000	N/A	Jun. 06, 2025
8	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
9	966 Chamber room	Tai He	9*6*6 (NSA&VSWR)	N/A	Jun. 06, 2025
10	Wideband Radio Communication Tester	R&S	CWM 500	104462	Jun. 28, 2025
11	DC power supply	UNI-T	UDP6721	AWP7224050018	Mar. 20, 2025

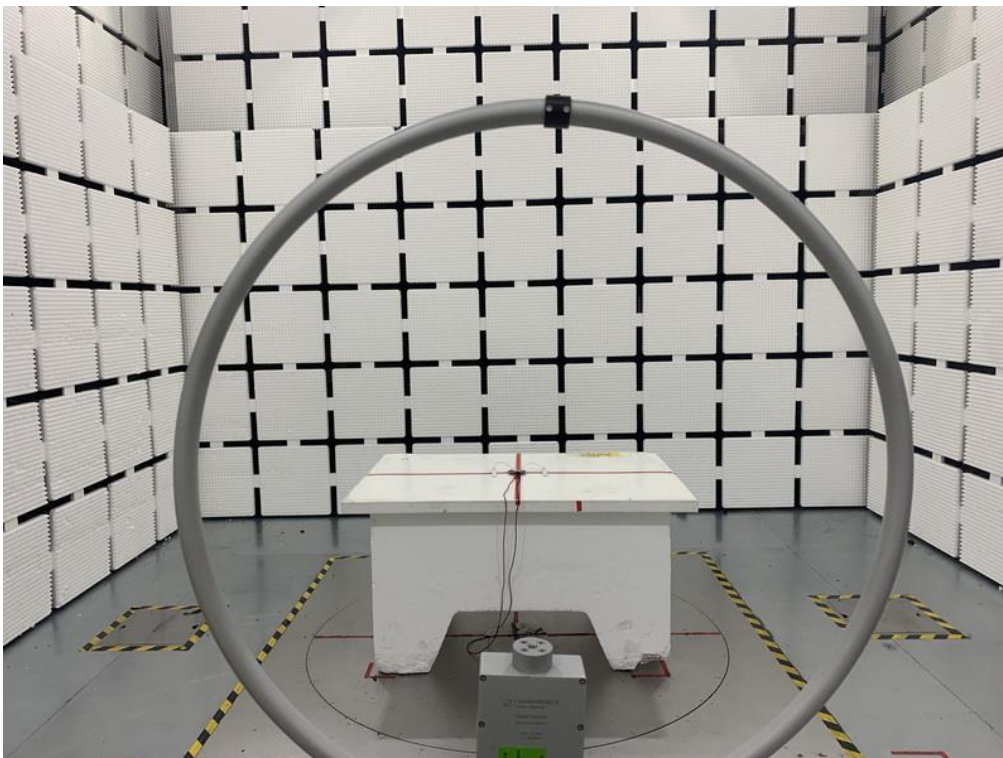
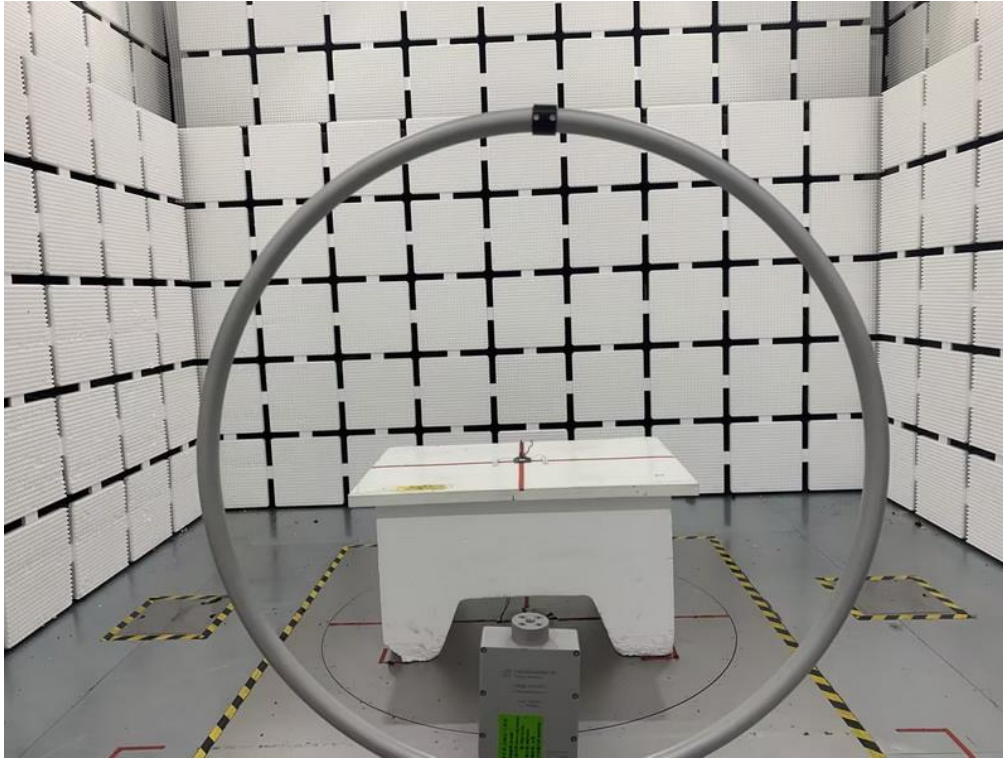
Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	MXE EMI Receiver	Keysight	N9038A	MY59050118	Jun. 28, 2025
2	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
3	Preamplifier	EMC INSTRUMENT	EMC118A45SE	980739	Jan. 11, 2026
4	Cable	EMC INSTRUMENT	EMC104-SM-SM-1 0000	N/A	Dec. 09, 2025
5	Cable	EMC INSTRUMENT	EMC104-SM-SM-3 000	N/A	Dec. 09, 2025
6	Cable	EMC INSTRUMENT	EMC104-SM-SM-1 000	N/A	Dec. 09, 2025
7	Double Ridged Broadband Horn Antenna	RF SPIN	DRH18-E	210106A18E	Jul. 17, 2025
8	Band Reject Filter	COM-MW	ZHPF6-C3000-180 00-174	7213126	Jun. 28, 2025
9	Band Reject Filter	COM-MW	ZHPF6-M1000-150 00-533	7213127	Jun. 28, 2025
10	Attenuator	Talent Microwave	ATT-18G2W-10	N/A	N/A
11	966 Chamber room	Tai He	9*6*6 (NSA&VSWR)	N/A	Jun. 06, 2025
12	Wideband Radio Communication Tester	R&S	CWM 500	104462	Jun. 28, 2025
13	DC power supply	UNI-T	UDP6721	AWP7224050018	Mar. 20, 2025

Remark: "N/A" denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

5. EUT TEST PHOTO

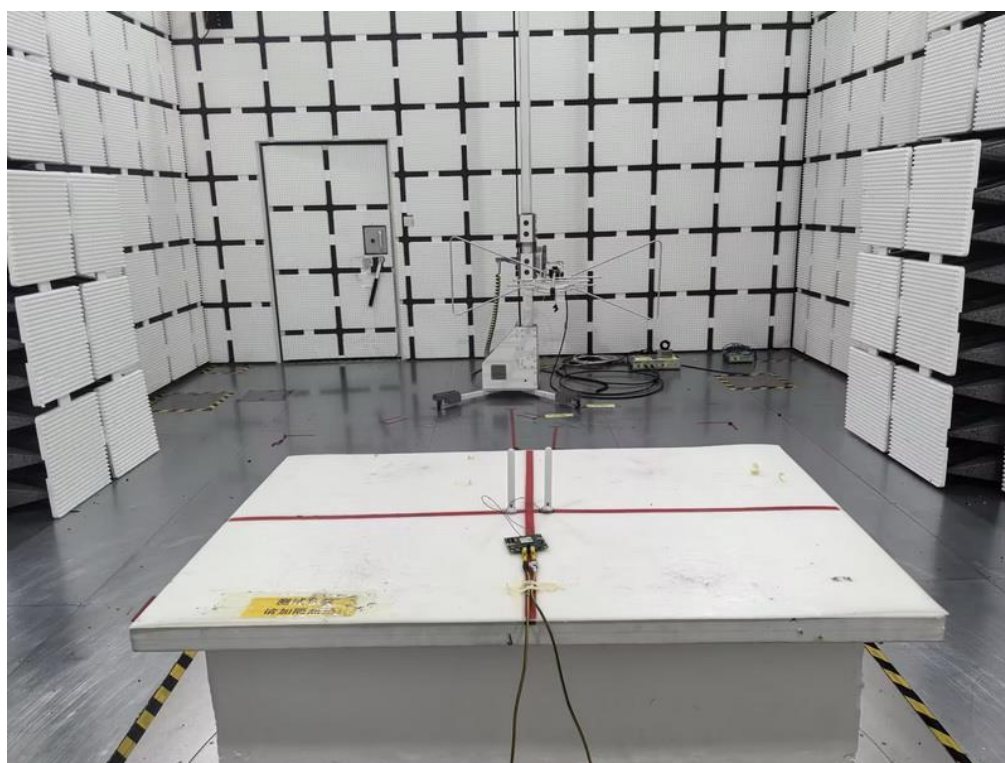
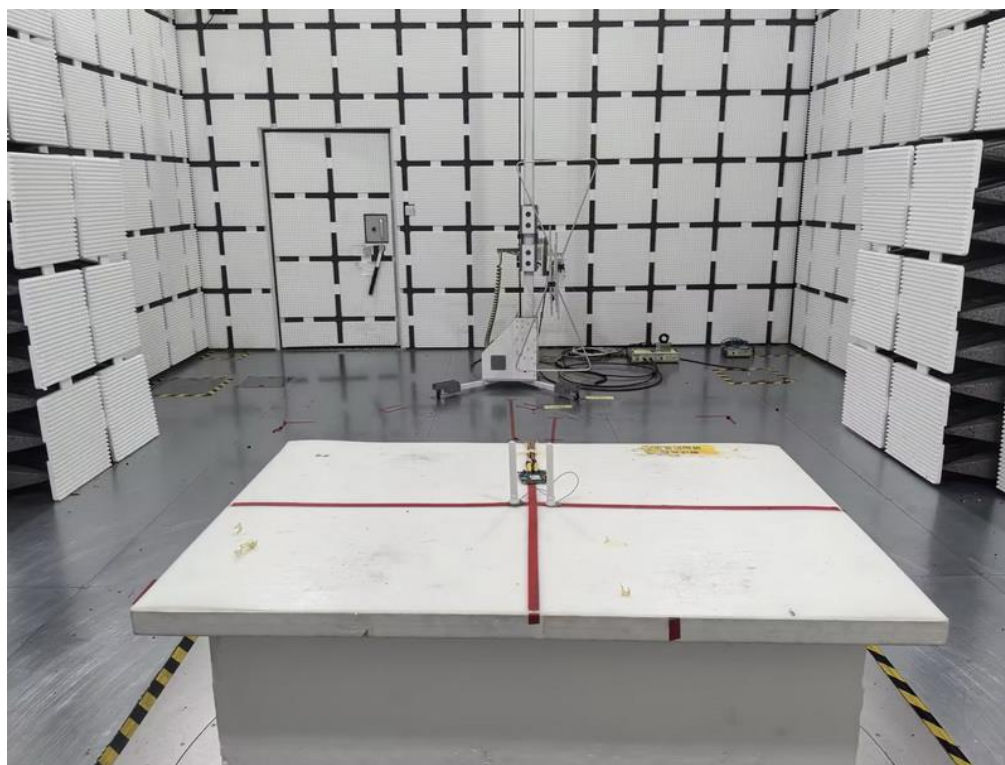
Radiated Emissions Test Photos

9 kHz to 30 MHz



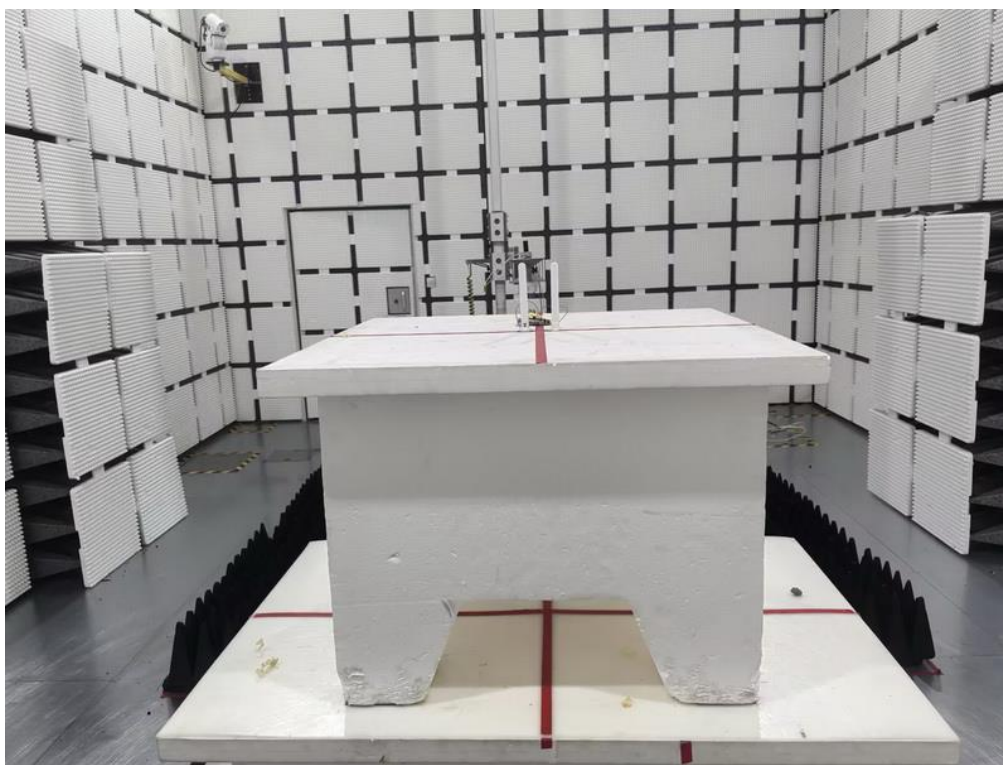
Radiated Emissions Test Photos

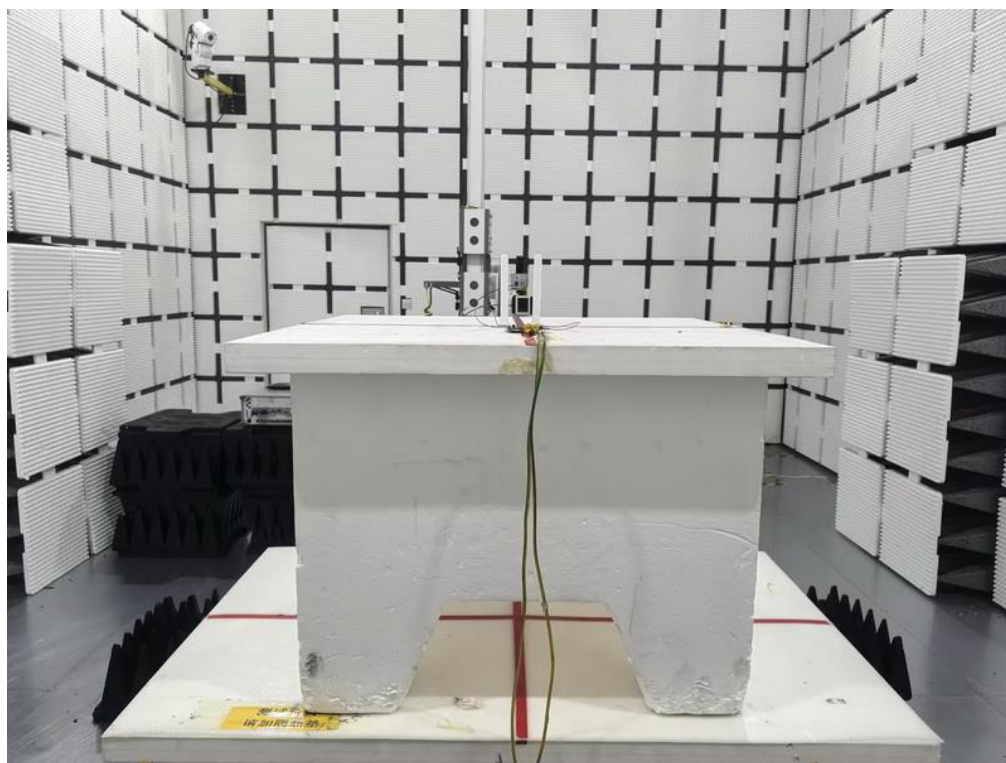
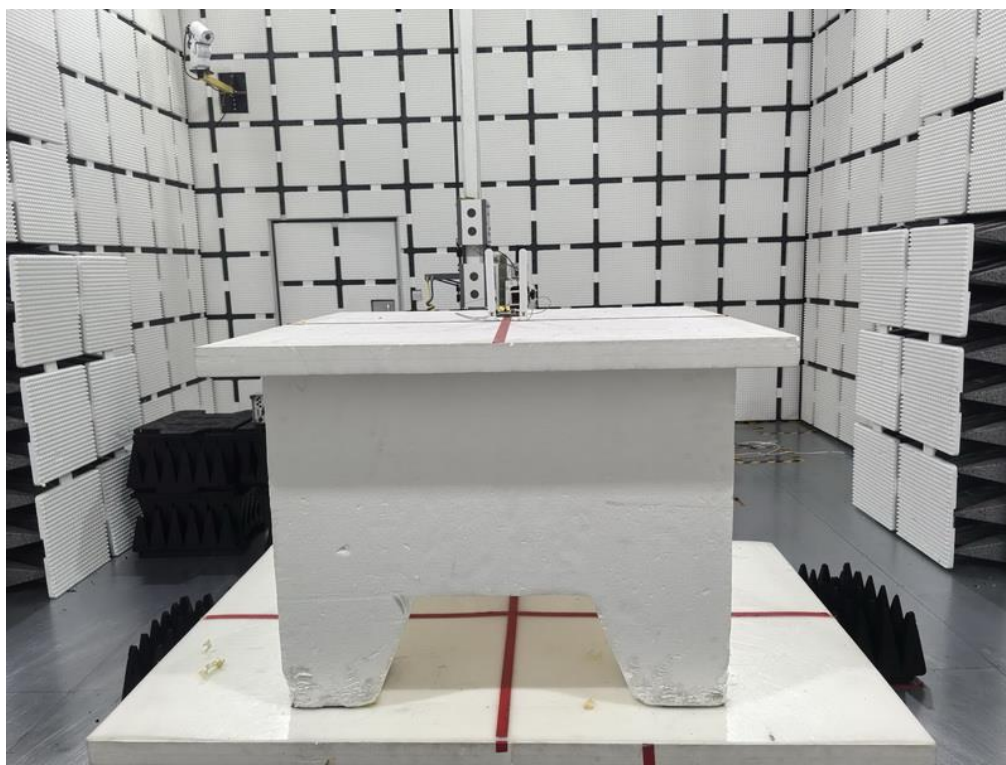
30 MHz to 1 GHz



Radiated Emissions Test Photos

1 GHz to 18 GHz

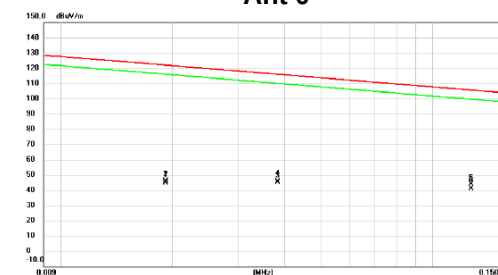


Radiated Emissions Test Photos**Above 18 GHz**

APPENDIX A - RADIATED SPURIOUS EMISSIONS (9KHZ TO 30MHZ)

Test Mode : TX Mode

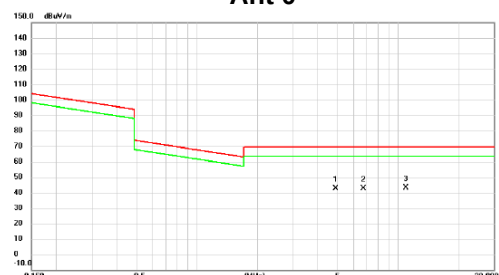
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1		0.0192	24.93	21.07	46.00	121.94	-75.94	peak	
2		0.0192	23.41	21.07	44.48	121.94	-77.46	AVG	
3		0.0384	24.08	21.27	45.35	115.92	-70.57	peak	
4		0.0384	23.77	21.27	45.04	115.92	-70.88	AVG	
5	*	0.1270	22.53	21.29	43.82	105.53	-61.71	peak	
6		0.1270	19.83	21.29	41.12	105.53	-64.41	AVG	

Test Mode : TX Mode

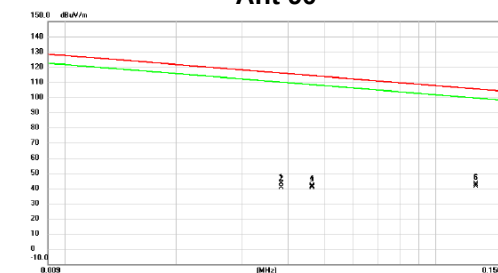
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1		4.8961	21.31	21.40	42.71	69.54	-26.83	QP	
2		6.7470	21.12	21.56	42.68	69.54	-26.86	QP	
3	*	10.9557	21.38	21.60	42.98	69.54	-26.56	QP	

Test Mode : TX Mode

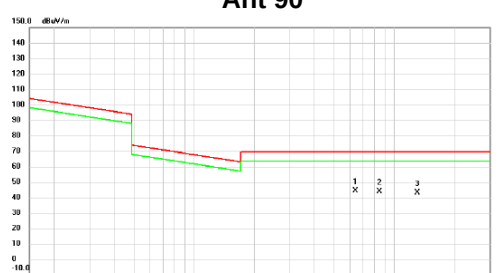
Ant 90°



No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1		0.0384	21.54	21.27	42.81	115.92	-73.11	peak	
2		0.0384	19.28	21.27	40.55	115.92	-75.37	AVG	
3		0.0464	20.20	21.31	41.51	114.27	-72.76	peak	
4		0.0464	19.13	21.31	40.44	114.27	-73.83	AVG	
5	*	0.1284	21.30	21.29	42.59	105.44	-62.85	peak	
6		0.1284	20.22	21.29	41.51	105.44	-63.93	AVG	

Test Mode : TX Mode

Ant 90°

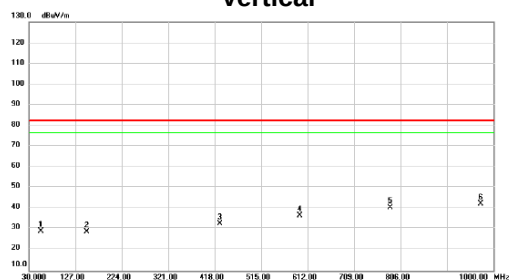


No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1	*	6.3887	22.86	21.52	44.38	69.54	-25.16	QP	
2		8.4483	22.34	21.62	43.96	69.54	-25.58	QP	
3		13.0750	21.29	21.67	42.96	69.54	-26.58	QP	

APPENDIX B - RADIATED SPURIOUS EMISSIONS (30MHZ TO 1000MHZ)

Test Mode : PCS1900_TX CH661_GSM

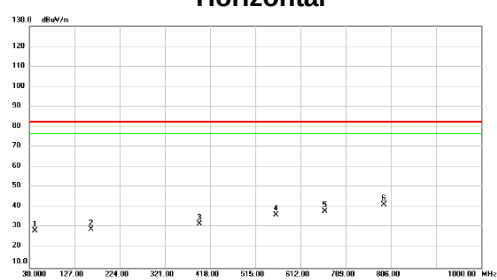
Vertical



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	54.7350	30.86	-1.68	29.18	82.30	-53.12	peak	
2	150.2800	30.09	-1.28	28.81	82.30	-53.49	peak	
3	428.6700	29.84	2.87	32.71	82.30	-49.59	peak	
4	595.5100	29.72	6.93	36.65	82.30	-45.65	peak	
5	784.6600	30.13	10.30	40.43	82.30	-41.87	peak	
6 *	973.8100	29.92	12.22	42.14	82.30	-40.16	peak	

Test Mode : PCS1900_TX CH661_GSM

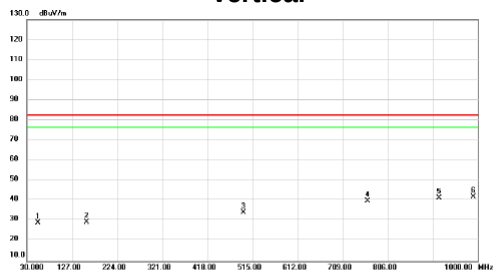
Horizontal



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	42.1250	30.35	-1.92	28.43	82.30	-53.87	peak	
2	162.8900	30.35	-1.30	29.05	82.30	-53.25	peak	
3	395.6900	29.97	1.81	31.78	82.30	-50.52	peak	
4	560.1050	30.49	5.82	36.31	82.30	-45.99	peak	
5	664.3800	29.83	8.17	38.00	82.30	-44.30	peak	
6 *	790.9650	31.07	10.38	41.45	82.30	-40.85	peak	

Test Mode : WCDMA Band II_TX CH9800

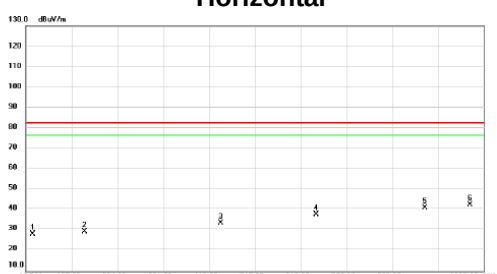
Vertical



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	53.7850	30.84	-1.65	29.19	82.30	-53.11	peak	
2	158.0400	30.49	-1.21	29.28	82.30	-53.02	peak	
3	495.6000	29.84	4.37	34.21	82.30	-48.09	peak	
4	762.3500	29.88	9.97	39.85	82.30	-42.45	peak	
5	916.5800	29.90	11.52	41.42	82.30	-40.88	peak	
6 *	960.7850	29.81	12.27	42.08	82.30	-40.22	peak	

Test Mode : WCDMA Band II_TX CH9800

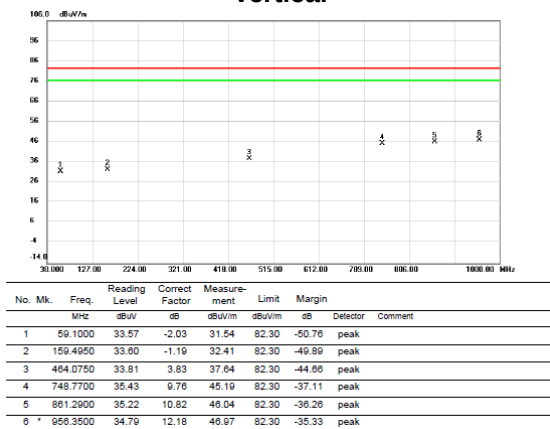
Horizontal



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	45.0350	29.81	-1.66	28.15	82.30	-54.15	peak	
2	154.1800	30.55	-1.24	29.31	82.30	-52.99	peak	
3	443.2200	30.31	3.36	33.67	82.30	-48.63	peak	
4	644.4950	29.60	7.88	37.68	82.30	-44.62	peak	
5	875.3550	30.01	10.96	40.97	82.30	-41.33	peak	
6 *	970.9000	30.31	12.21	42.52	82.30	-39.78	peak	

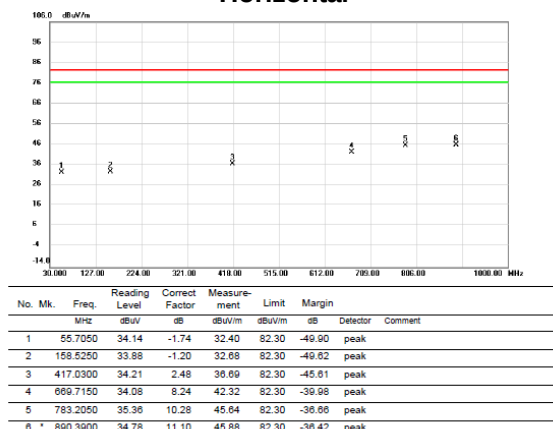
Test Mode : LTE Band 2_TX CH18900_1.4MHz

Vertical



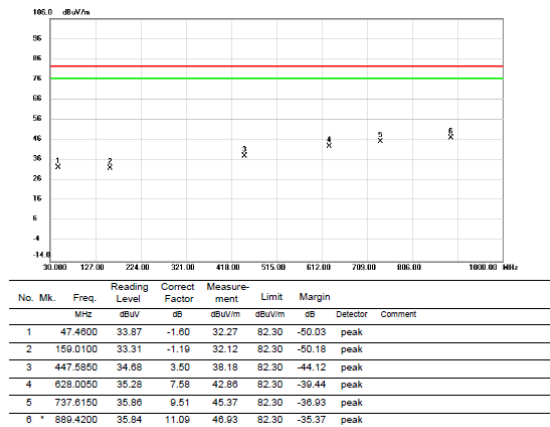
Test Mode : LTE Band 2_TX CH18900_1.4MHz

Horizontal



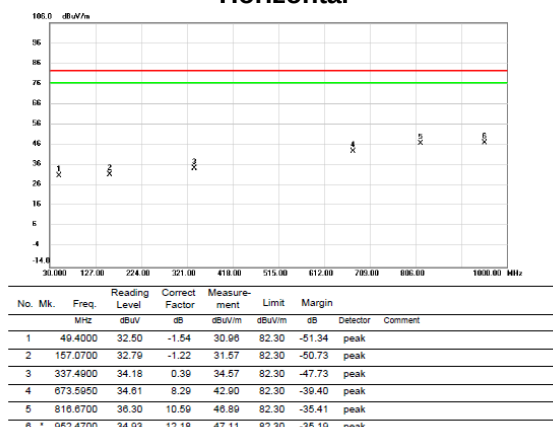
Test Mode : LTE Band 2_TX CH18900_5MHz

Vertical



Test Mode : LTE Band 2_TX CH18900_5MHz

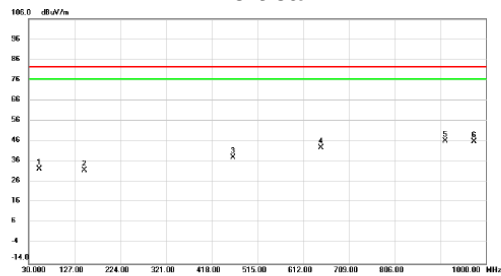
Horizontal



Test Mode : LTE Band 2_TX CH18900_20MHz

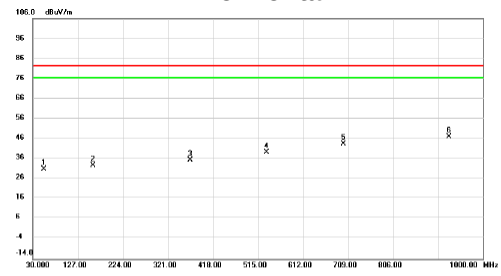
Test Mode : LTE Band 2_TX CH18900_20MHz

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		52.3100	33.94	-1.60	32.34	82.30	-49.96	peak	
2		148.8250	33.00	-1.37	31.63	82.30	-50.67	peak	
3		463.5600	34.18	3.81	37.99	82.30	-44.31	peak	
4		650.3150	35.00	7.98	42.98	82.30	-39.32	peak	
5	*	913.8700	34.79	11.46	46.25	82.30	-36.05	peak	
6		975.2850	33.65	12.23	45.88	82.30	-36.42	peak	

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		54.2500	32.83	-1.67	30.98	82.30	-51.34	peak	
2		159.4950	33.98	-1.19	32.77	82.30	-49.53	peak	
3		369.8850	34.21	1.09	35.30	82.30	-47.00	peak	
4		533.9150	34.20	5.16	39.36	82.30	-42.94	peak	
5		699.3000	34.84	8.62	43.46	82.30	-38.84	peak	
6	*	927.2500	35.24	11.72	46.98	82.30	-35.34	peak	

APPENDIX C - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)

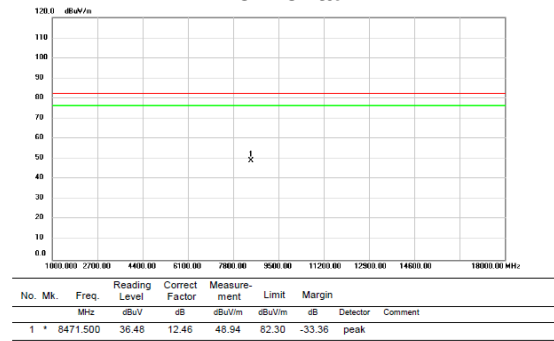
Test Mode : PCS1900_TX CH661_GSM

Vertical



Test Mode : PCS1900_TX CH661_GSM

Horizontal



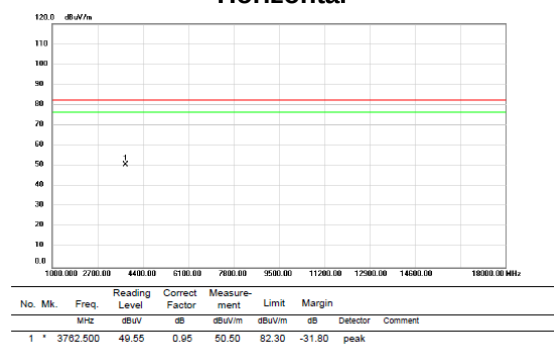
Test Mode : WCDMA Band II_TX CH9800

Vertical



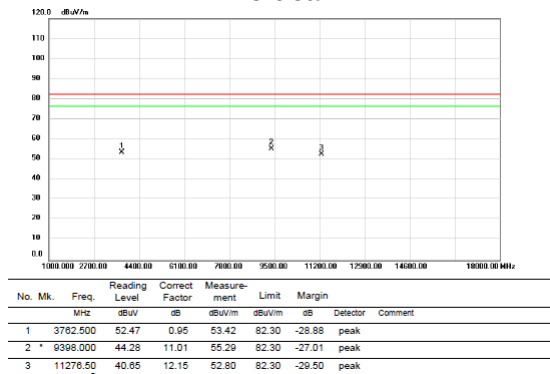
Test Mode : WCDMA Band II_TX CH9800

Horizontal



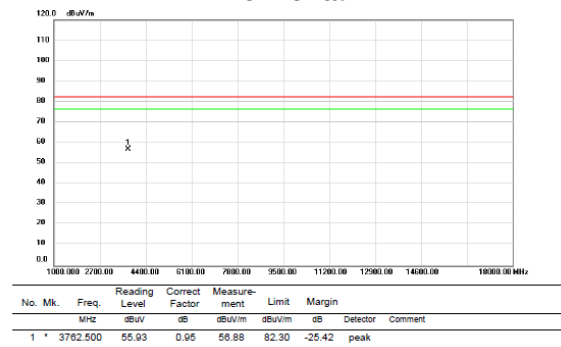
Test Mode : LTE Band 2_TX CH18900_1.4MHz

Vertical



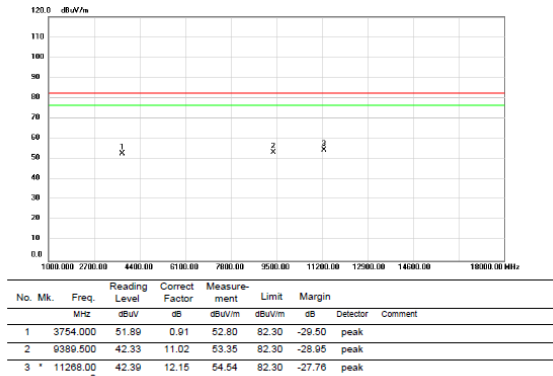
Test Mode : LTE Band 2_TX CH18900_1.4MHz

Horizontal



Test Mode : LTE Band 2_TX CH18900_5MHz

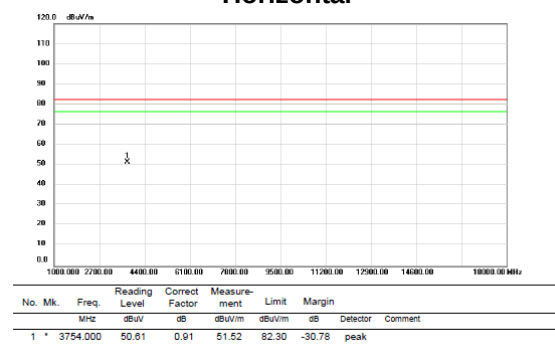
Vertic



al

Test Mode : LTE Band 2_TX CH18900_5MHz

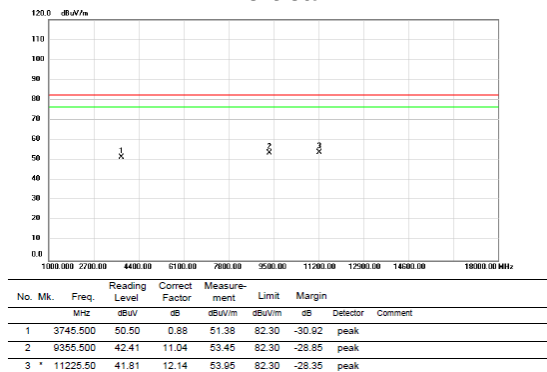
Horizontal



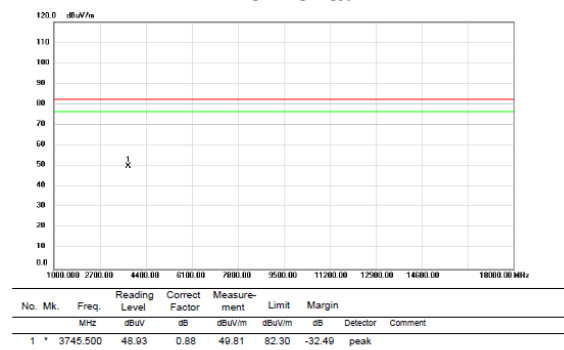
Test Mode : LTE Band 2_TX CH18900_20MHz

Test Mode : LTE Band 2_TX CH18900_20MHz

Vertical

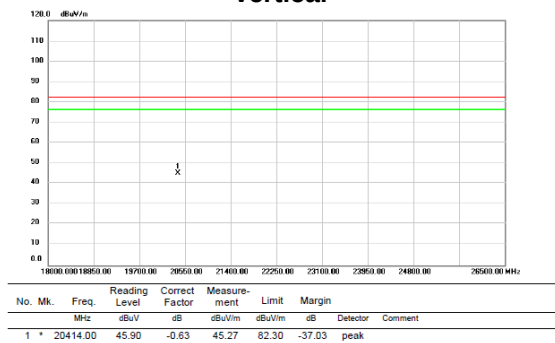


Horizontal



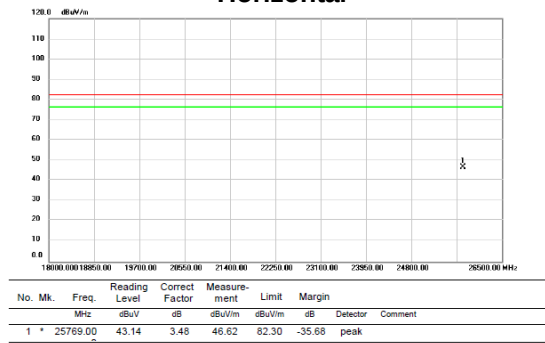
Test Mode : PCS1900_TX CH661_GSM

Vertical



Test Mode : PCS1900_TX CH661_GSM

Horizontal



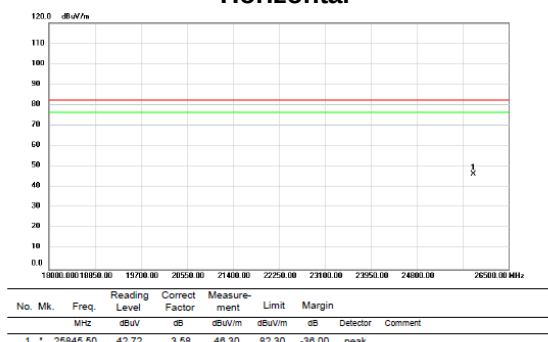
Test Mode : WCDMA Band II_TX CH9800

Vertical



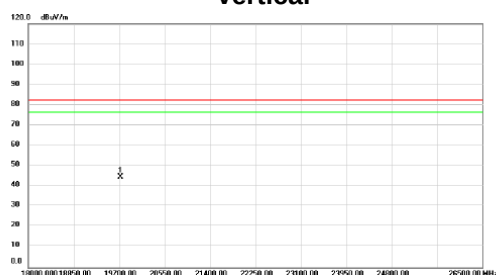
Test Mode : WCDMA Band II_TX CH9800

Horizontal



Test Mode : LTE Band 2_TX CH18900_1.4MHz

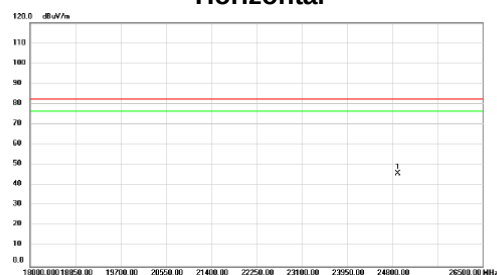
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBμV	dB	dBμV/m	dBμV/m	dB	Detector	Comment
1	*	19725.50	45.82	-1.34	44.48	82.30	-37.82	peak	

Test Mode : LTE Band 2_TX CH18900_1.4MHz

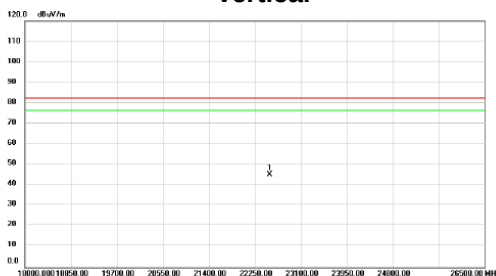
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBμV	dB	dBμV/m	dBμV/m	dB	Detector	Comment
1	*	24910.50	42.73	3.07	45.80	82.30	-36.50	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBμV	dB	dBμV/m	dBμV/m	dB	Detector	Comment
1	*	22530.50	43.27	1.92	45.19	82.30	-37.11	peak	

Test Mode : LTE Band 2_TX CH18900_5MHz

Horizontal

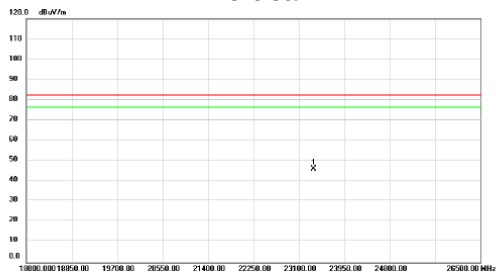


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBμV	dB	dBμV/m	dBμV/m	dB	Detector	Comment
1	*	21859.00	44.52	0.94	45.46	82.30	-36.84	peak	

Test Mode : LTE Band 2_TX CH18900_20MHz

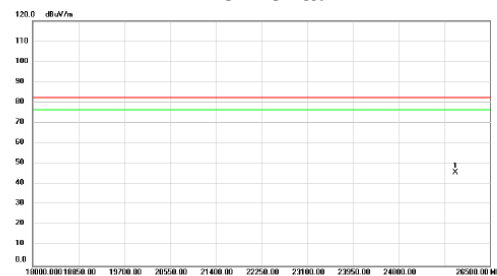
Test Mode : LTE Band 2_TX CH18900_20MHz

Vertical



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	23380.50	43.24	2.88	46.12	82.30	-36.18	peak	

Horizontal



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	25854.00	42.31	3.59	45.90	82.30	-36.40	peak	

APPENDIX D - OUTPUT POWER

Output Power (dBm):

PCS1900		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
GSM (CS)		28.35	28.20	28.25
GPRS/EDGE (GMSK)	1 Tx Slot	27.95	27.89	27.94
	2 Tx Slot	25.42	25.46	25.48
	3 Tx Slot	24.33	24.32	24.38
	4 Tx Slot	22.66	22.67	22.82
EDGE (8PSK)	1 Tx Slot	23.70	23.98	24.12
	2 Tx Slot	21.70	21.66	21.42
	3 Tx Slot	20.40	20.45	20.62
	4 Tx Slot	18.51	18.46	18.15

Note:

- The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:
Frame-averaged power=10 x log (Burst-averaged power mW x Slot used/8)
- Max. Output Power = Max Frame Average Power

Frame Average Power(dBm):

PCS1900		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
GSM (CS)		19.32	19.17	19.22
GPRS/EDGE (GMSK)	1 Tx Slot	18.92	18.86	18.91
	2 Tx Slot	19.40	19.44	19.46
	3 Tx Slot	20.07	20.06	20.12
	4 Tx Slot	19.65	19.66	19.81
EDGE (8PSK)	1 Tx Slot	14.67	14.95	15.09
	2 Tx Slot	15.68	15.64	15.40
	3 Tx Slot	16.14	16.19	16.36
	4 Tx Slot	15.50	15.45	15.14

Modulation	Band	WCDMA Band II		
	Tx Channel	9262CH	9400CH	9538CH
	Frequency	1852.4MHz	1880MHz	1907.6MHz
QPSK	RMC 12.2K	23.45	23.58	23.57
	RMC 64K	23.44	23.55	23.54
	RMC 144K	23.44	23.59	23.57
	RMC 384K	23.43	23.55	23.73
	HSDPA Subtest-1	22.34	22.46	22.4
	HSDPA Subtest-2	22.29	22.44	22.35
	HSDPA Subtest-3	21.87	21.94	21.87
	HSDPA Subtest-4	21.85	21.93	21.85
	HSUPA Subtest-1	22.58	22.53	22.42
	HSUPA Subtest-2	21.52	21.25	21.6
	HSUPA Subtest-3	21.42	20.94	21.6
	HSUPA Subtest-4	21.47	21.38	21.66
	HSUPA Subtest-5	22.5	22.57	22.76

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18607CH	18900CH	19193CH
				1850.7MHz	1880MHz	1909.3MHz
2 / 1.4MHz	QPSK	1	0	22.39	21.96	22.19
		1	2	22.35	22.22	22.14
		1	5	22.43	22.13	22.11
		3	0	22.41	22.03	22.20
		3	1	22.39	22.14	22.17
		3	2	22.35	22.08	22.17
		6	0	21.34	21.09	21.17
	16QAM	1	0	21.36	21.23	20.75
		1	2	21.95	21.42	20.99
		1	5	21.43	21.18	21.00
		3	0	21.72	21.23	20.88
		3	1	21.64	21.28	20.86
		3	2	21.63	21.24	20.94
		6	0	20.65	20.25	20.09

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18615CH	18900CH	19185CH
				1851.5MHz	1880MHz	1908.5MHz
2 / 3MHz	QPSK	1	0	22.50	22.21	22.43
		1	7	22.53	21.82	22.08
		1	14	22.52	21.89	22.07
		8	0	21.29	21.14	21.18
		8	4	21.50	21.13	21.24
		8	7	21.39	21.06	21.22
		15	0	21.37	21.22	21.20
	16QAM	1	0	21.63	20.99	21.46
		1	7	21.94	21.06	21.26
		1	14	22.43	20.94	20.80
		8	0	20.48	20.21	20.03
		8	4	20.53	20.18	20.04
		8	7	20.66	20.16	20.01
		15	0	20.37	20.21	19.96

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18625CH	18900CH	19175CH
				1852.5MHz	1880MHz	1907.5MHz
2 / 5MHz	QPSK	1	0	22.33	21.92	22.17
		1	13	22.28	21.99	21.97
		1	24	22.46	21.90	22.16
		12	0	21.45	21.28	21.04
		12	6	21.46	21.11	21.22
		12	11	21.39	21.13	21.24
		25	0	21.36	21.21	21.13
	16QAM	1	0	20.74	21.09	21.15
		1	13	21.13	20.65	20.86
		1	24	20.95	20.65	20.75
		12	0	20.29	20.11	20.00
		12	6	20.18	20.09	19.98
		12	11	20.12	20.11	20.08
		25	0	20.44	20.33	20.07

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18650CH	18900CH	19150CH
				1855MHz	1880MHz	1905MHz
2 / 10MHz	QPSK	1	0	22.42	22.52	22.37
		1	25	22.57	22.02	22.13
		1	49	23.02	22.04	22.33
		25	0	21.29	21.25	20.99
		25	13	21.36	21.11	21.07
		25	25	21.39	21.14	21.05
		50	0	21.36	21.14	20.96
	16QAM	1	0	21.73	21.30	21.64
		1	25	22.00	20.46	21.47
		1	49	22.18	20.56	21.03
		25	0	20.22	20.48	19.93
		25	13	20.33	20.31	19.92
		25	25	20.54	20.25	19.86
		50	0	20.48	20.35	19.97

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18675CH	18900CH	19125CH
				1857.5MHz	1880MHz	1902.5MHz
2 / 15MHz	QPSK	1	0	22.90	22.10	21.92
		1	38	22.83	21.95	21.88
		1	74	22.74	22.01	22.11
		36	0	21.23	21.08	20.98
		36	18	21.41	21.08	21.06
		36	39	21.49	21.07	20.93
		75	0	21.36	21.19	20.95
	16QAM	1	0	22.06	21.19	21.45
		1	38	22.36	21.02	21.46
		1	74	22.63	20.89	21.14
		36	0	20.23	20.29	19.78
		36	18	20.36	20.11	19.89
		36	39	20.41	20.03	19.96
		75	0	20.36	20.15	19.92

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18700CH	18900CH	19100CH
				1860MHz	1880MHz	1900MHz
2 / 20MHz	QPSK	1	0	22.24	22.41	21.76
		1	50	22.53	21.96	22.33
		1	99	22.01	22.03	22.22
		50	0	21.45	21.15	21.05
		50	25	21.52	21.15	21.05
		50	50	21.52	20.95	21.03
		100	0	21.43	21.10	21.05
	16QAM	1	0	21.01	21.14	20.58
		1	50	21.30	20.89	20.98
		1	99	20.81	20.76	20.89
		50	0	20.25	20.13	19.90
		50	25	20.48	20.13	19.94
		50	50	20.40	19.96	19.95
		100	0	20.34	20.19	19.92

Note: The Output Power test results refer to Report No.: BTL-FCCP-2-2111C171.

EIRP (dBm):

PCS1900		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
GSM (CS)		22.58	22.43	22.48
GPRS/EDGE (GMSK)	1 Tx Slot	22.18	22.12	22.17
	2 Tx Slot	22.66	22.70	22.72
	3 Tx Slot	23.33	23.32	23.38
	4 Tx Slot	22.91	22.92	23.07
EDGE (8PSK)	1 Tx Slot	17.93	18.21	18.35
	2 Tx Slot	18.94	18.90	18.66
	3 Tx Slot	19.40	19.45	19.62
	4 Tx Slot	18.76	18.71	18.40

Modulation	Band	WCDMA Band II		
	Tx Channel	9262CH	9400CH	9538CH
	Frequency	1852.4MHz	1880MHz	1907.6MHz
QPSK	RMC 12.2K	28.86	28.99	28.98
	RMC 64K	28.85	28.96	28.95
	RMC 144K	28.85	29.00	28.98
	RMC 384K	28.84	28.96	29.14
	HSDPA Subtest-1	27.75	27.87	27.81
	HSDPA Subtest-2	27.70	27.85	27.76
	HSDPA Subtest-3	27.28	27.35	27.28
	HSDPA Subtest-4	27.26	27.34	27.26
	HSUPA Subtest-1	27.99	27.94	27.83
	HSUPA Subtest-2	26.93	26.66	27.01
	HSUPA Subtest-3	26.83	26.35	27.01
	HSUPA Subtest-4	26.88	26.79	27.07
	HSUPA Subtest-5	27.91	27.98	28.17

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18607CH	18900CH	19193CH
				1850.7MHz	1880MHz	1909.3MHz
2 / 1.4MHz	QPSK	1	0	27.80	27.37	27.60
		1	2	27.76	27.63	27.55
		1	5	27.84	27.54	27.52
		3	0	27.82	27.44	27.61
		3	1	27.80	27.55	27.58
		3	2	27.76	27.49	27.58
		6	0	26.75	26.50	26.58
	16QAM	1	0	26.77	26.64	26.16
		1	2	27.36	26.83	26.40
		1	5	26.84	26.59	26.41
		3	0	27.13	26.64	26.29
		3	1	27.05	26.69	26.27
		3	2	27.04	26.65	26.35
		6	0	26.06	25.66	25.50

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18615CH	18900CH	19185CH
				1851.5MHz	1880MHz	1908.5MHz
2 / 3MHz	QPSK	1	0	27.91	27.62	27.84
		1	7	27.94	27.23	27.49
		1	14	27.93	27.30	27.48
		8	0	26.70	26.55	26.59
		8	4	26.91	26.54	26.65
		8	7	26.80	26.47	26.63
		15	0	26.78	26.63	26.61
	16QAM	1	0	27.04	26.40	26.87
		1	7	27.35	26.47	26.67
		1	14	27.84	26.35	26.21
		8	0	25.89	25.62	25.44
		8	4	25.94	25.59	25.45
		8	7	26.07	25.57	25.42
		15	0	25.78	25.62	25.37

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18625CH	18900CH	19175CH
				1852.5MHz	1880MHz	1907.5MHz
2 / 5MHz	QPSK	1	0	27.74	27.33	27.58
		1	13	27.69	27.40	27.38
		1	24	27.87	27.31	27.57
		12	0	26.86	26.69	26.45
		12	6	26.87	26.52	26.63
		12	11	26.80	26.54	26.65
		25	0	26.77	26.62	26.54
	16QAM	1	0	26.15	26.50	26.56
		1	13	26.54	26.06	26.27
		1	24	26.36	26.06	26.16
		12	0	25.70	25.52	25.41
		12	6	25.59	25.50	25.39
		12	11	25.53	25.52	25.49
		25	0	25.85	25.74	25.48

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18650CH	18900CH	19150CH
				1855MHz	1880MHz	1905MHz
2 / 10MHz	QPSK	1	0	27.83	27.93	27.78
		1	25	27.98	27.43	27.54
		1	49	28.43	27.45	27.74
		25	0	26.70	26.66	26.40
		25	13	26.77	26.52	26.48
		25	25	26.80	26.55	26.46
		50	0	26.77	26.55	26.37
	16QAM	1	0	27.14	26.71	27.05
		1	25	27.41	25.87	26.88
		1	49	27.59	25.97	26.44
		25	0	25.63	25.89	25.34
		25	13	25.74	25.72	25.33
		25	25	25.95	25.66	25.27
		50	0	25.89	25.76	25.38

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18675CH	18900CH	19125CH
				1857.5MHz	1880MHz	1902.5MHz
2 / 15MHz	QPSK	1	0	28.31	27.51	27.33
		1	38	28.24	27.36	27.29
		1	74	28.15	27.42	27.52
		36	0	26.64	26.49	26.39
		36	18	26.82	26.49	26.47
		36	39	26.90	26.48	26.34
		75	0	26.77	26.60	26.36
	16QAM	1	0	27.47	26.60	26.86
		1	38	27.77	26.43	26.87
		1	74	28.04	26.30	26.55
		36	0	25.64	25.70	25.19
		36	18	25.77	25.52	25.30
		36	39	25.82	25.44	25.37
		75	0	25.77	25.56	25.33

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				18700CH	18900CH	19100CH
				1860MHz	1880MHz	1900MHz
2 / 20MHz	QPSK	1	0	27.65	27.82	27.17
		1	50	27.94	27.37	27.74
		1	99	27.42	27.44	27.63
		50	0	26.86	26.56	26.46
		50	25	26.93	26.56	26.46
		50	50	26.93	26.36	26.44
		100	0	26.84	26.51	26.46
	16QAM	1	0	26.42	26.55	25.99
		1	50	26.71	26.30	26.39
		1	99	26.22	26.17	26.30
		50	0	25.66	25.54	25.31
		50	25	25.89	25.54	25.35
		50	50	25.81	25.37	25.36
		100	0	25.75	25.60	25.33

End of Test Report