



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 22 Subpart H
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-1-2111C171A	R00	This is a supplementary report to the original test report (BTL-FCCP-1-2111C171). 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-1-2111C171A	R01	Modified the comments of TCB.	Mar. 07, 2025	Invalid
BTL-FCCP-1-2111C171A	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 22 Subpart H & Part 2			
Standard(s) Section	Test Item	Judgment	Remark
2.1046	Output Power	PASS	-----
22.913(a)(5)	Effective Radiated Power	PASS	-----
2.1049	Occupied Bandwidth	PASS	-----
2.1051 22.917(a)	Conducted Spurious Emissions	PASS	-----
2.1053 22.917(a)	Radiated Spurious Emissions	PASS	-----
22.917(a)	Band Edge Measurements	PASS	-----
22.913(d)	Peak To Average Ratio	PASS	-----
2.1055 22.355	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%	AC 120V/60Hz	Young Zou	Feb. 18, 2025
Radiated Spurious Emissions (Above 1000 MHz)	23°C	50%	AC 120V/60Hz	Young Zou	Feb. 19, 2025- 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/GPRS		GMSK	
	EDGE		GMSK, 8PSK	
	WCDMA/HSDPA/HSUPA		UL: QPSK DL: QPSK, 16QAM	
	LTE		UL: QPSK, 16QAM DL: QPSK, 16QAM, 64QAM	
Max. Output Power Note (2)	GSM 850 / GPRS 850		GMSK	31.72 dBm
	EDGE 850		8PSK	26.71 dBm
	WCDMA Band V		QPSK	23.78 dBm
	HSDPA Band V		QPSK	22.81 dBm
	HSUPA Band V		QPSK	22.77 dBm
	LTE	Channel Bandwidth (MHz)	QPSK (dBm)	16QAM (dBm)
	Band 5	1.4	22.77	22.09
		3	22.90	22.26
		5	22.75	22.00
		10	22.81	22.05

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-1-2111C171.

3. Channel List:

GSM 850				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	128	824.2	137	869.2
Mid Range	190	836.6	199	881.6
High Range	251	848.8	260	893.8

WCDMA Band V				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	4132	826.4	4357	871.4
Mid Range	4182	836.4	4407	881.4
High Range	4233	846.6	4458	891.6

LTE Band 5					
Test Frequency ID	Bandwidth (MHz)	N _{UL}	Frequency of Uplink (MHz)	N _{DL}	Frequency of Downlink (MHz)
Low Range	1.4	20407	824.7	2407	869.7
	3	20415	825.5	2415	870.5
	5	20425	826.5	2425	871.5
	10	20450	829	2450	874
Mid Range	1.4/3/5/10	20525	836.5	2525	881.5
High Range	1.4	20643	848.3	2643	893.3
	3	20635	847.5	2635	892.5
	5	20625	846.5	2625	891.5
	10	20600	844	2600	889

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	-1.4	GSM 850
					-1.4	WCDMA Band V
					-1.4	LTE Band 5
2		F-0Y-31-0116-001 -K0	Dipole	N/A	-2.46	GSM 850
					-2.46	WCDMA Band V
					-2.46	LTE Band 5
3		F-0Y-31-0116-002 -K0	Dipole	N/A	-0.39	GSM 850
					-0.39	WCDMA Band V
					-0.39	LTE Band 5
4		TQX-071427HK2 2	Dipole	IPEX	1.97	GSM 850
					1.97	WCDMA Band V
					1.97	LTE Band 5
5	Kenbotong	KIT-HK23-PT24-4 G	Dipole	IPEX	2.76	GSM 850
					2.76	WCDMA Band V
					2.76	LTE Band 5
6		F-0Y-31-0166-001 -K0	Dipole	N/A	1.55	GSM 850
					1.55	WCDMA Band V
					1.55	LTE Band 5
7	Kenbotong	TQX-071427HK2 2-L	Dipole	IPEX	1.99	GSM 850
					1.99	WCDMA Band V
					1.99	LTE Band 5

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.

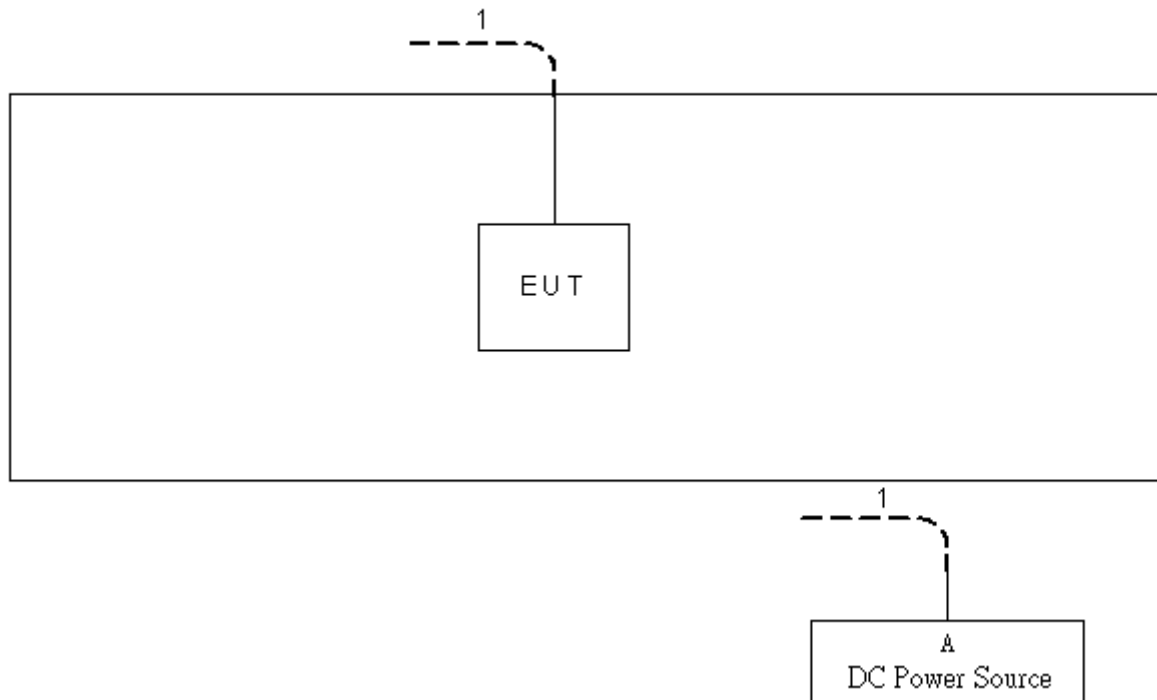
GSM MODE			
Test Item	Available Channel	Tested Channel	Mode
Radiated Spurious Emissions	128 to 251	190	GPRS

WCDMA BAND V MODE			
Test Item	Available Channel	Tested Channel	Mode
Radiated Spurious Emissions	4132 to 4233	4182	WCDMA

LTE BAND 5 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Radiated Spurious Emissions	20407 to 20643	20525	1.4MHz	QPSK	1RB
	20425 to 20625	20525	5MHz	QPSK	1RB
	20450 to 20600	20525	10MHz	QPSK	1RB

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

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATIONOFSYSTEMTESTED



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.

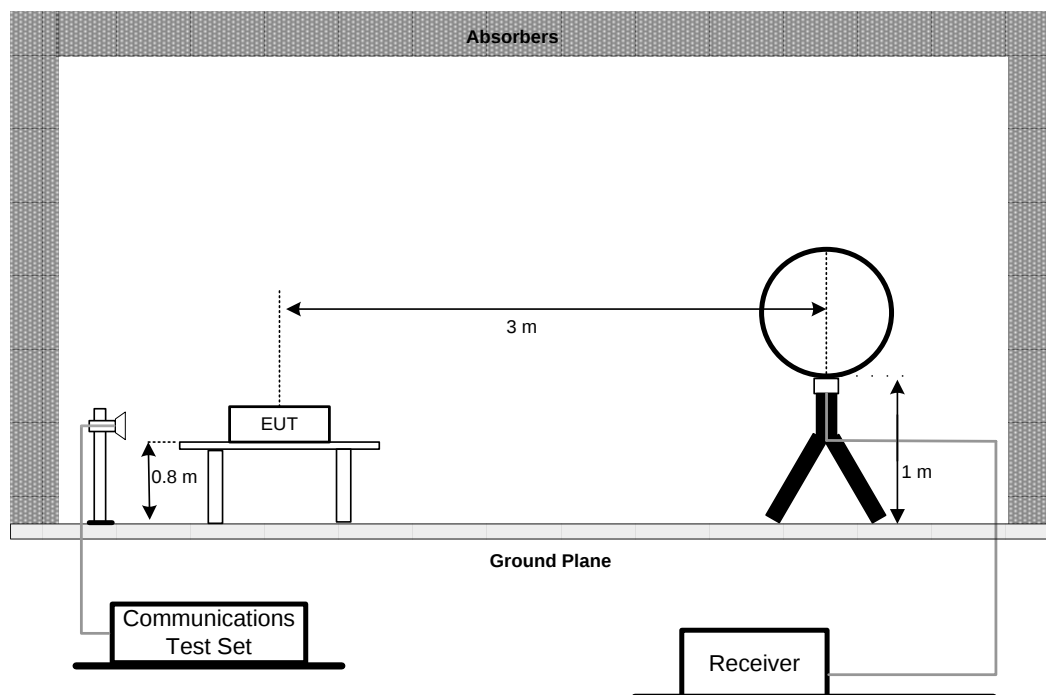
4.1.2 TEST PROCEDURES

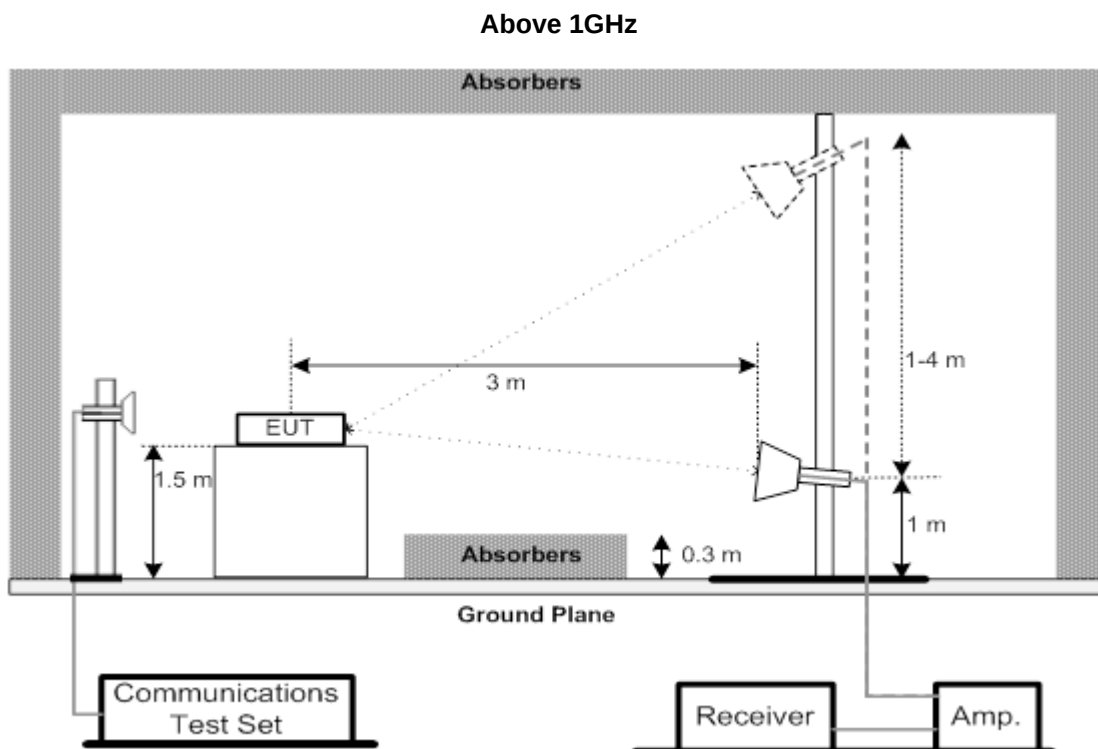
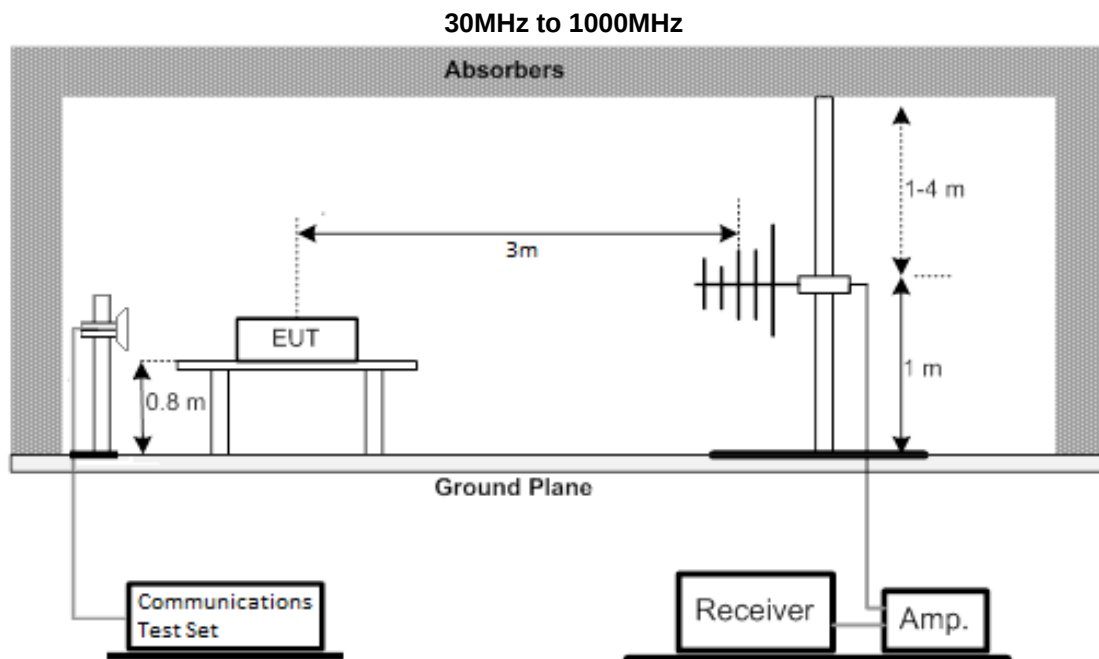
The testing follows FCC KDB 971168 v03r01 Section 6.2 or ANSI C63.26-2015 Section 5.5.

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

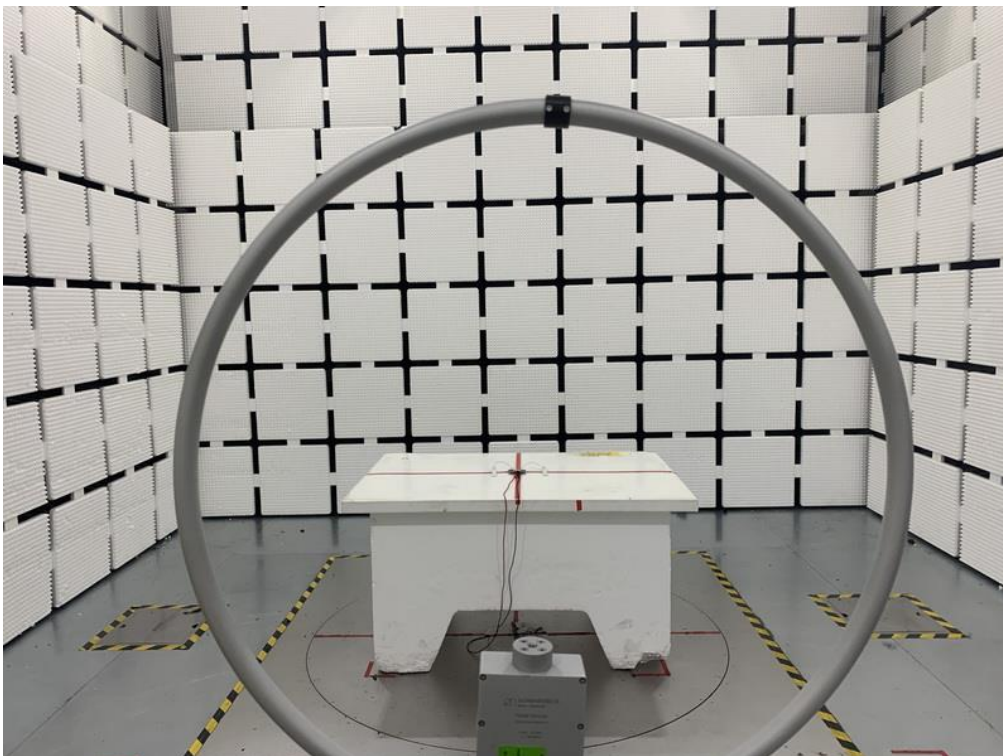
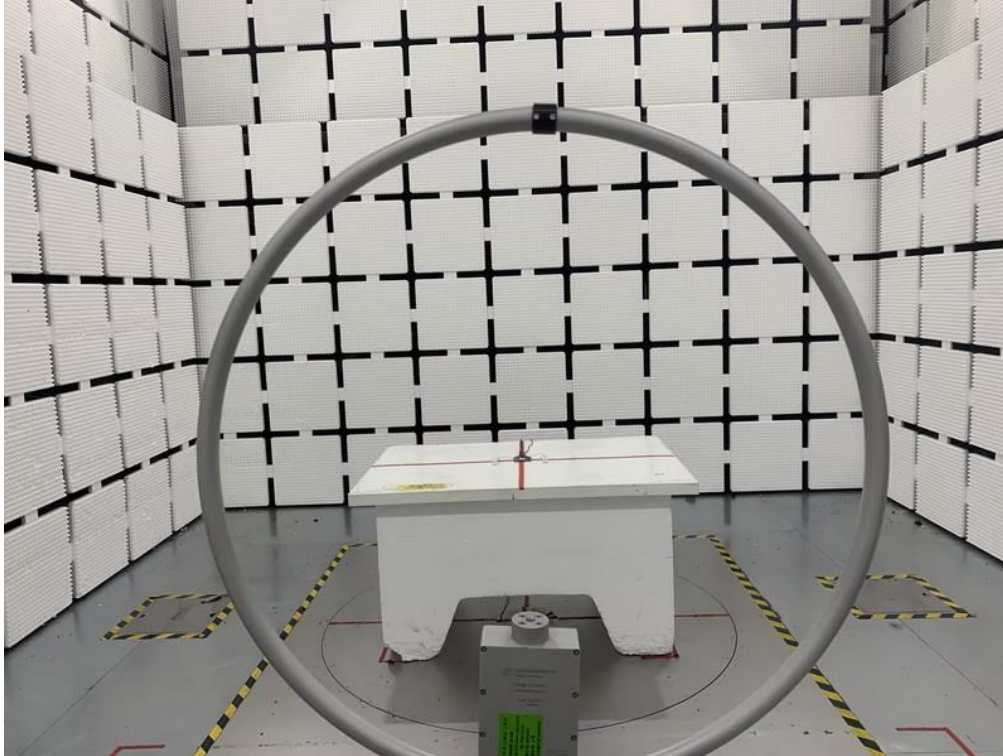
Radiated Emissions - Above 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	MXE EMI Receiver	Keysight	N9038A	MY59050118	Jun. 28, 2025
2	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
3	Preamplifier	EMC INSTRUMENT	EMC118A45SE	980739	Jan. 11, 2026
4	Cable	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

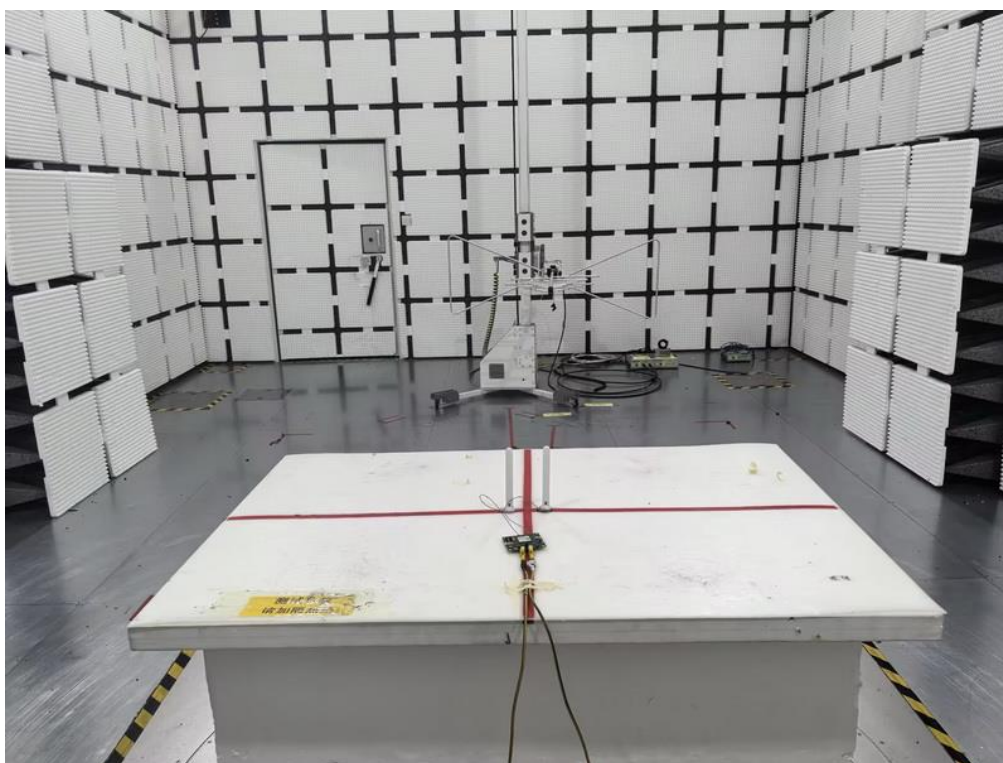
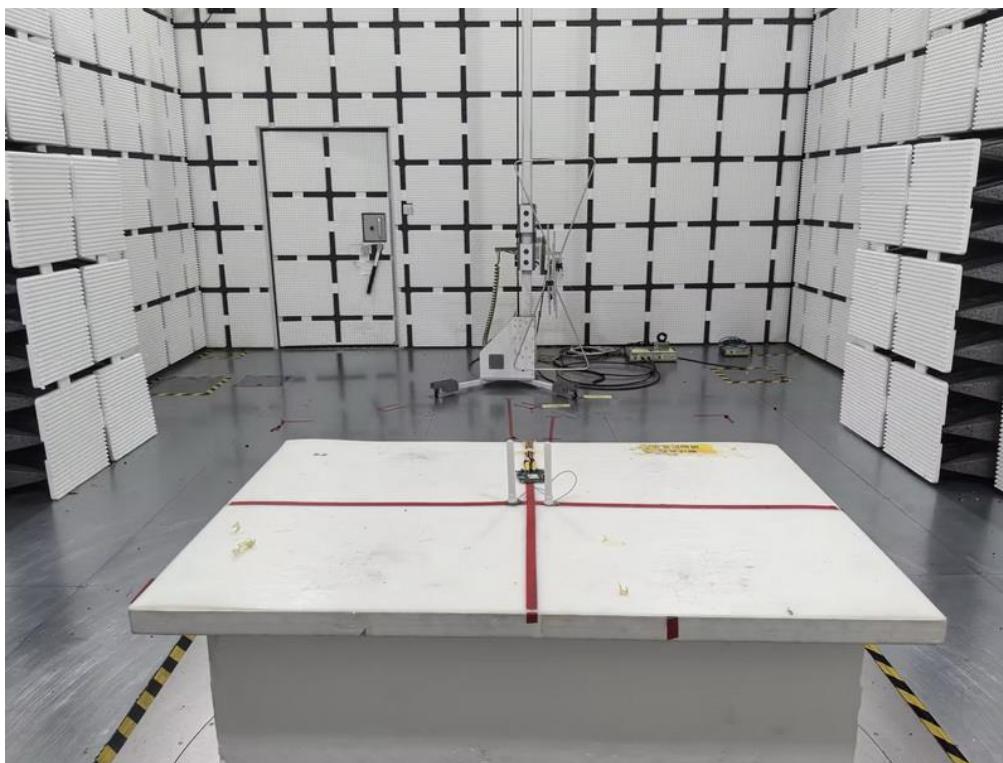
Remark: "N/A" denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

5. EUT TEST PHOTO

Radiated Emissions Test Photos

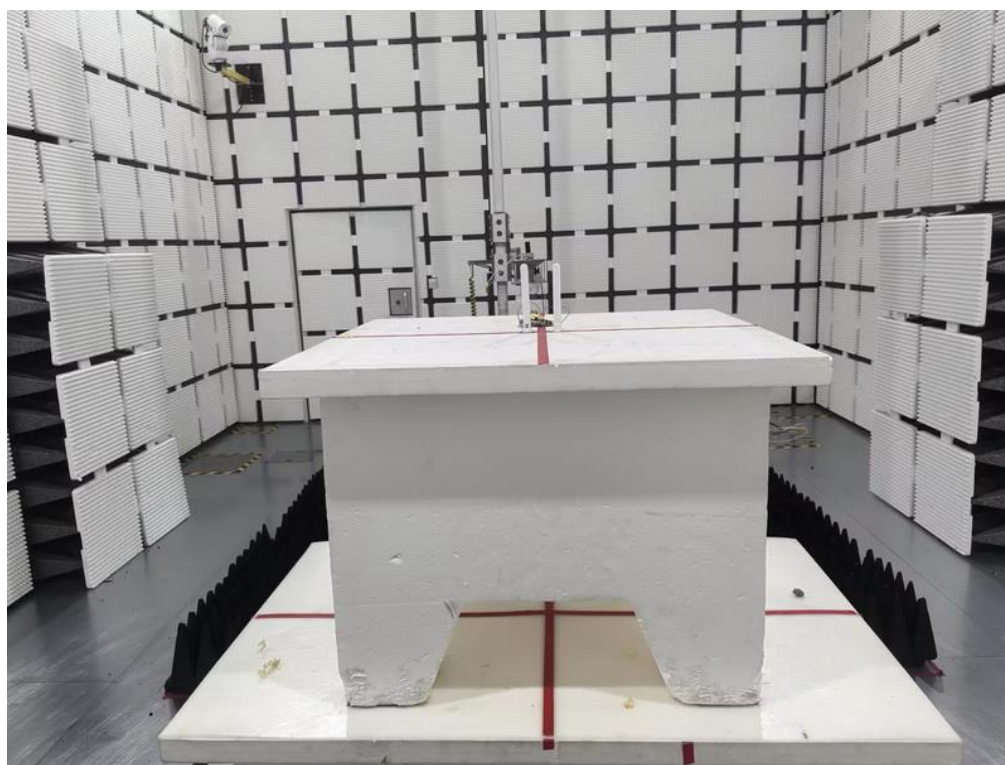
9 kHz to 30 MHz

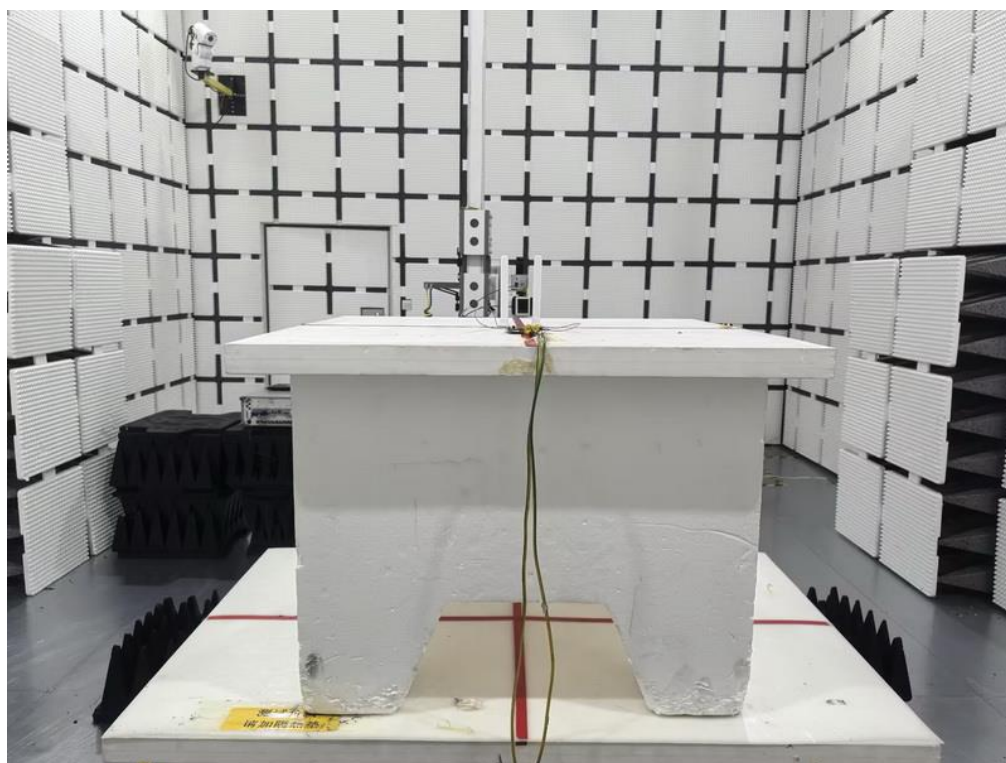
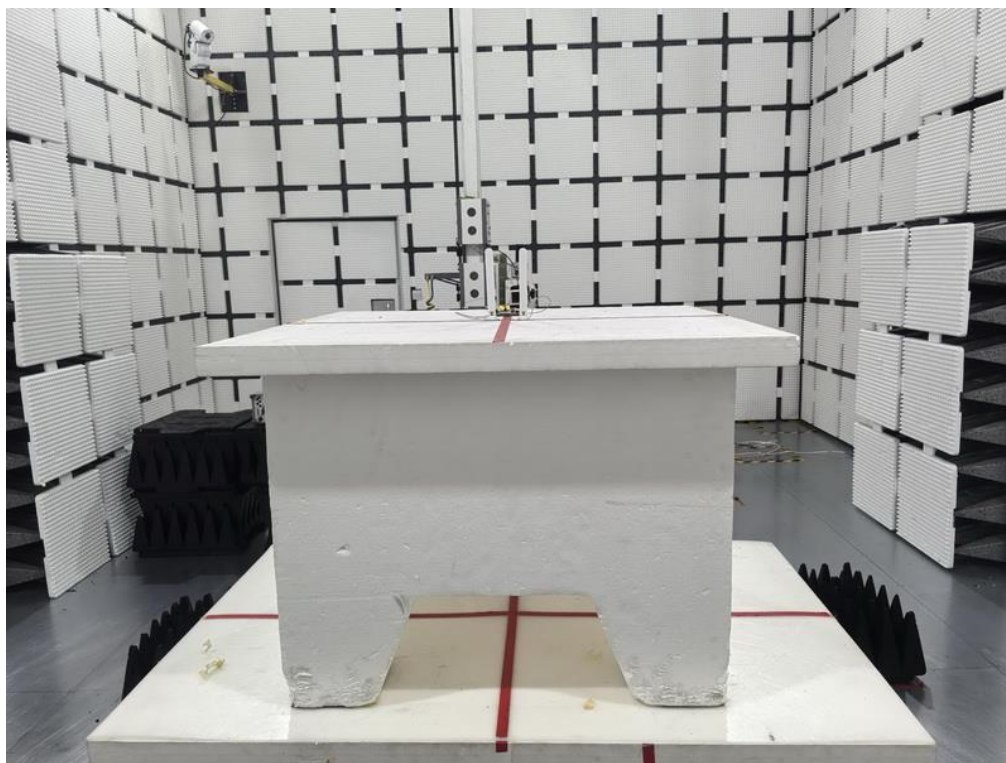


Radiated Emissions Test Photos**30 MHz to 1 GHz**

Radiated Emissions Test Photos

1 GHz to 18 GHz

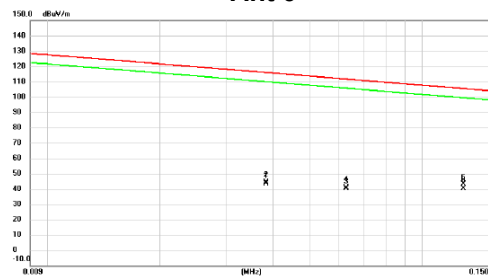


Radiated Emissions Test Photos**Above 18 GHz**

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

Test Mode : TX Mode

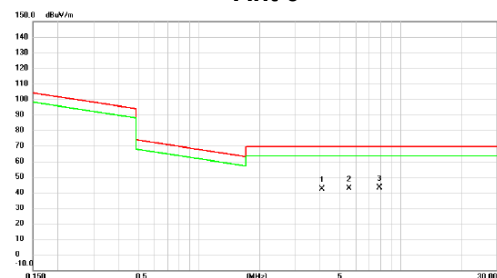
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.0383	23.02	21.27	44.29	115.94	-71.65	peak	
2		0.0383	22.14	21.27	43.41	115.94	-72.53	AVG	
3		0.0626	19.21	21.33	40.54	111.67	-71.13	peak	
4		0.0626	18.71	21.33	40.04	111.67	-71.63	AVG	
5	*	0.1287	21.67	21.29	42.96	105.42	-62.46	peak	
6		0.1287	19.06	21.29	40.35	105.42	-65.07	AVG	

Test Mode : TX Mode

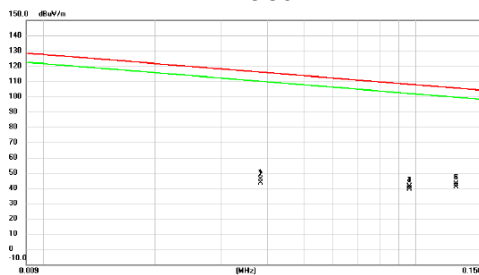
Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		4.0901	20.80	21.35	42.15	69.54	-27.39	QP	
2		5.5530	21.14	21.45	42.59	69.54	-26.95	QP	
3	*	7.8911	21.35	21.61	42.96	69.54	-26.58	QP	

Test Mode : TX Mode

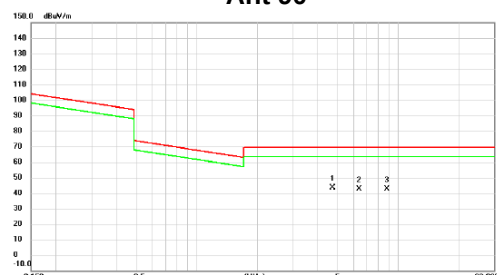
Ant 90°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.0383	24.54	21.27	45.81	115.94	-70.13	peak	
2		0.0383	22.16	21.27	43.43	115.94	-72.51	AVG	
3		0.0961	19.60	21.33	40.93	107.95	-67.02	peak	
4		0.0961	18.14	21.33	39.47	107.95	-68.48	AVG	
5	*	0.1283	21.15	21.29	42.44	105.44	-63.00	peak	
6		0.1283	19.88	21.29	41.17	105.44	-64.27	AVG	

Test Mode : TX Mode

Ant 90°

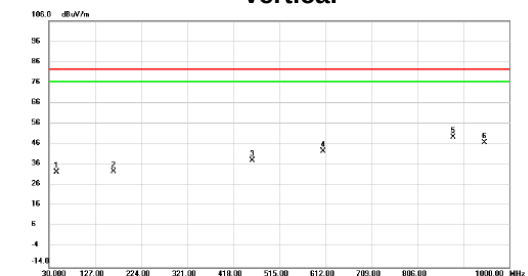


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	4.7171	22.09	21.40	43.49	69.54	-26.05	QP	
2		6.4185	21.09	21.52	42.61	69.54	-26.93	QP	
3		8.7767	20.98	21.63	42.61	69.54	-26.93	QP	

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

Test Mode : GSM850_TX CH190_GSM

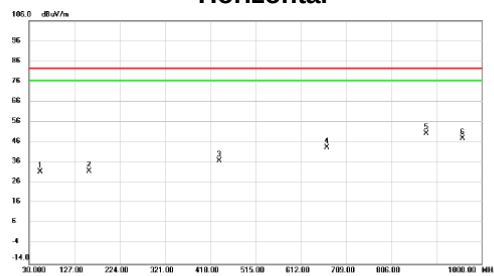
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		Mhz	dBμV	dB	dBμV/m	dBμV/m	dB	Detector	Comment
1		46.0050	34.08	-1.04	32.44	82.30	-49.86	peak	
2		166.2850	34.00	-1.42	32.58	82.30	-49.72	peak	
3		458.7400	34.44	3.73	38.17	82.30	-44.13	peak	
4		607.6350	35.21	7.22	42.43	82.30	-39.87	peak	
5 *		881.6600	38.57	11.02	49.59	82.30	-32.71	peak	
6		947.1350	34.49	12.12	46.61	82.30	-35.69	peak	

Test Mode : GSM850_TX CH190_GSM

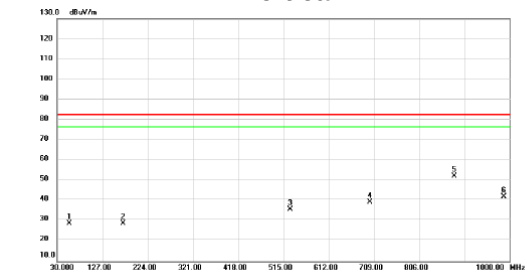
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		Mhz	dBμV	dB	dBμV/m	dBμV/m	dB	Detector	Comment
1		54.2500	33.15	-1.67	31.48	82.30	-50.82	peak	
2		158.0400	33.11	-1.21	31.90	82.30	-50.40	peak	
3		437.8850	33.61	3.16	36.77	82.30	-45.53	peak	
4		668.2000	35.10	8.22	43.32	82.30	-38.98	peak	
5 *		881.6600	39.22	11.02	50.24	82.30	-32.06	peak	
6		958.7750	35.79	12.18	47.97	82.30	-34.33	peak	

Test Mode : WCDMA Band V_TX CH4182

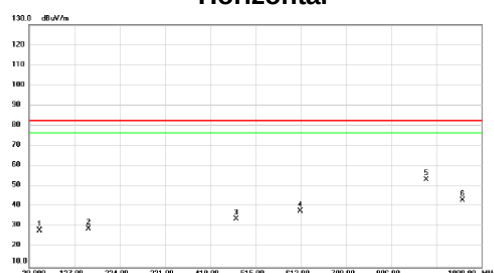
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		Mhz	dBμV	dB	dBμV/m	dBμV/m	dB	Detector	Comment
1		56.1900	30.50	-1.79	28.71	82.30	-53.59	peak	
2		171.1350	30.39	-1.67	28.72	82.30	-53.58	peak	
3		530.0350	30.51	5.08	35.59	82.30	-46.71	peak	
4		700.7550	30.61	8.65	39.26	82.30	-43.04	peak	
5 *		881.6600	41.21	11.02	52.23	82.30	-30.07	peak	
6		987.3900	29.67	12.26	41.93	82.30	-40.37	peak	

Test Mode : WCDMA Band V_TX CH4182

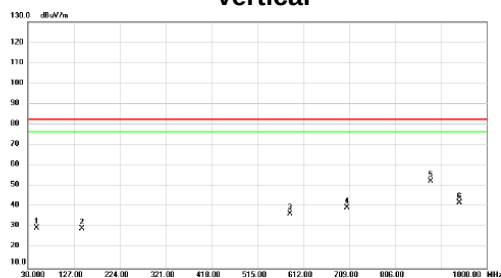
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		Mhz	dBμV	dB	dBμV/m	dBμV/m	dB	Detector	Comment
1		52.7950	29.73	-1.62	28.11	82.30	-54.19	peak	
2		157.5550	30.39	-1.21	29.18	82.30	-53.12	peak	
3		473.7750	29.85	3.99	33.84	82.30	-48.46	peak	
4		611.5150	30.44	7.28	37.72	82.30	-44.58	peak	
5 *		881.1750	42.34	11.01	53.35	82.30	-28.95	peak	
6		959.7450	30.89	12.19	43.08	82.30	-39.22	peak	

Test Mode : LTE Band 5_TX CH20525_1.4MHz

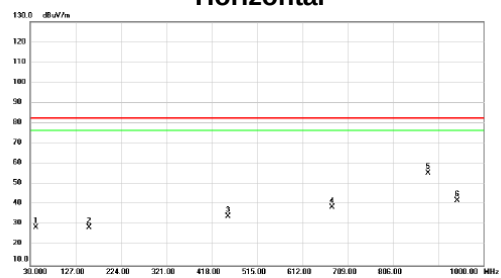
Vertical



No. Msk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measurement dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1	48.4300	31.23	-1.58	29.65	82.30	-52.65	peak	
2	144.4600	31.14	-1.67	29.47	82.30	-52.83	peak	
3	584.3550	30.09	6.59	36.68	82.30	-45.62	peak	
4	704.1500	30.73	8.72	39.45	82.30	-42.85	peak	
5 *	881.1750	41.39	11.01	52.40	82.30	-29.90	peak	
6	941.8000	29.80	12.01	41.81	82.30	-40.49	peak	

Test Mode : LTE Band 5_TX CH20525_1.4MHz

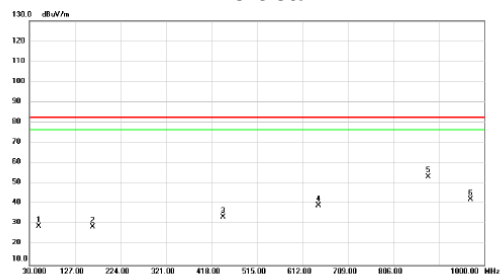
Horizontal



No. Msk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measurement dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1	42.1250	30.85	-1.92	28.93	82.30	-53.37	peak	
2	156.1000	30.03	-1.23	28.80	82.30	-53.50	peak	
3	453.8900	30.46	3.65	34.11	82.30	-48.19	peak	
4	675.5350	30.38	8.32	38.70	82.30	-43.60	peak	
5 *	881.6600	44.36	11.02	55.38	82.30	-26.92	peak	
6	944.2250	29.89	12.05	41.94	82.30	-40.36	peak	

Test Mode : LTE Band 5_TX CH20525_5MHz

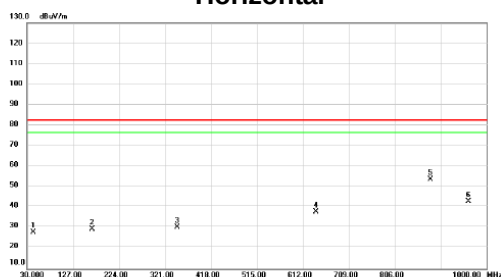
Vertical



No. Msk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measurement dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1	50.3700	30.46	-1.55	28.91	82.30	-53.39	peak	
2	164.8300	30.17	-1.36	28.81	82.30	-53.49	peak	
3	443.2200	30.30	3.36	33.66	82.30	-48.64	peak	
4	646.9200	31.29	7.93	39.22	82.30	-43.08	peak	
5 *	880.6900	42.30	11.00	53.30	82.30	-29.00	peak	
6	970.4150	29.92	12.21	42.13	82.30	-40.17	peak	

Test Mode : LTE Band 5_TX CH20525_5MHz

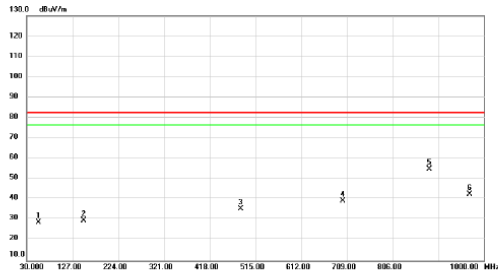
Horizontal



No. Msk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measurement dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1	44.0650	29.73	-1.74	27.99	82.30	-54.31	peak	
2	168.2250	30.72	-1.49	29.23	82.30	-53.07	peak	
3	347.6750	29.83	0.55	30.38	82.30	-51.92	peak	
4	639.6450	29.94	7.76	37.73	82.30	-44.57	peak	
5 *	881.6600	42.63	11.02	53.65	82.30	-28.65	peak	
6	961.2000	30.75	12.19	42.94	82.30	-39.36	peak	

Test Mode : LTE Band 5_TX CH20525_10MHz

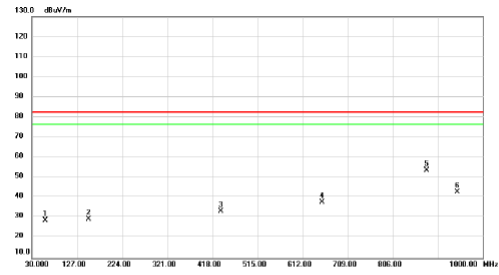
Vertical



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	55.2200	30.40	-1.71	28.69	82.30	-53.61	peak	
2	150.2800	31.00	-1.28	29.72	82.30	-52.58	peak	
3	484.4450	31.16	4.17	35.33	82.30	-46.97	peak	
4	700.2700	30.72	8.64	39.36	82.30	-42.94	peak	
5 *	883.6000	43.82	11.04	54.86	82.30	-27.44	peak	
6	968.9600	30.45	12.21	42.66	82.30	-39.64	peak	

Test Mode : LTE Band 5_TX CH20525_10MHz

Horizontal

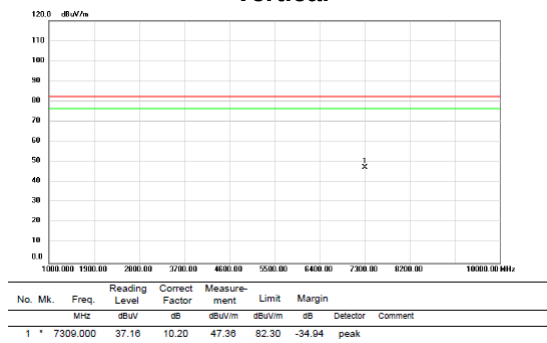


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	58.6150	30.63	-2.00	28.63	82.30	-53.67	peak	
2	151.7350	30.63	-1.28	29.37	82.30	-52.93	peak	
3	436.9150	29.96	3.14	33.10	82.30	-49.20	peak	
4	654.1650	29.84	8.03	37.87	82.30	-44.43	peak	
5 *	870.2350	42.60	10.69	53.29	82.30	-28.71	peak	
6	944.7100	30.89	12.06	42.95	82.30	-39.35	peak	

APPENDIX C - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)

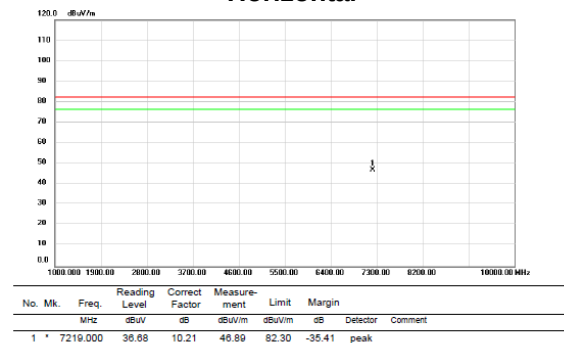
Test Mode : GSM850_TX CH190_GSM

Vertical



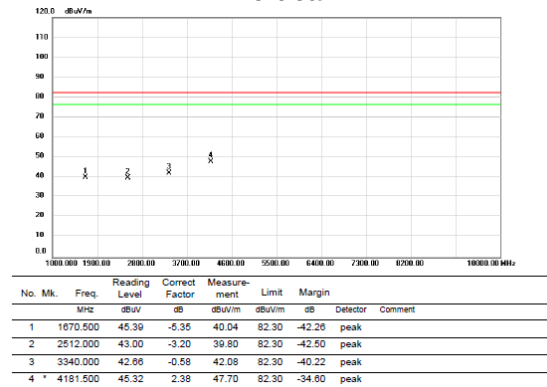
Test Mode : GSM850_TX CH190_GSM

Horizontal



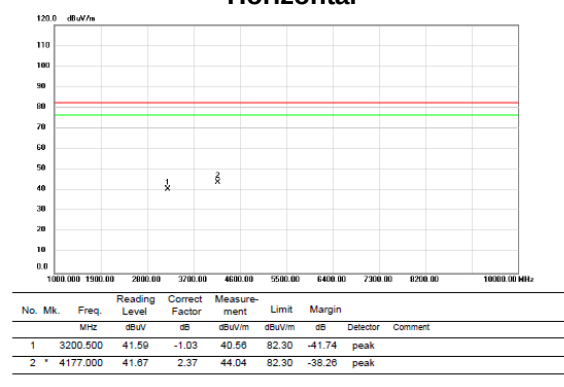
Test Mode : WCDMA Band V_TX CH4182

Vertical



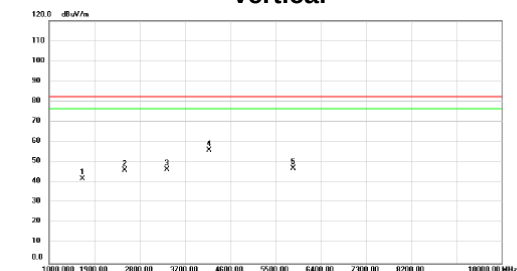
Test Mode : WCDMA Band V_TX CH4182

Horizontal



Test Mode : LTE Band 5_TX CH20525_1.4MHz

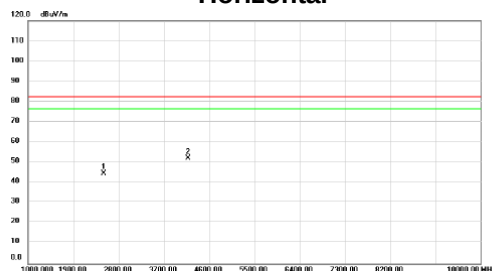
Vertical



No. Msk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	1670.500	47.24	-5.35	41.89	82.30	-40.41	peak	
2	2507.500	46.34	-3.20	46.14	82.30	-36.16	peak	
3	3344.500	47.04	-0.57	46.47	82.30	-35.83	peak	
4 *	4181.500	53.55	2.38	55.93	82.30	-26.37	peak	
5	5651.000	40.66	6.36	47.02	82.30	-35.28	peak	

Test Mode : LTE Band 5_TX CH20525_1.4MHz

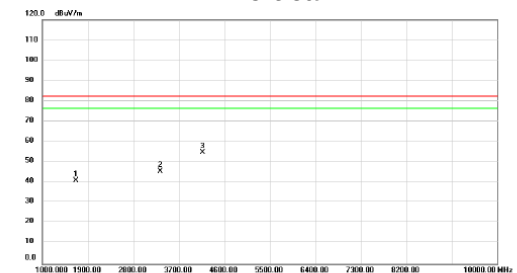
Horizontal



No. Msk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2507.500	47.76	-3.20	44.56	82.30	-37.74	peak	
2 *	4181.500	49.65	2.38	52.03	82.30	-30.27	peak	

Test Mode : LTE Band 5_TX CH20525_5MHz

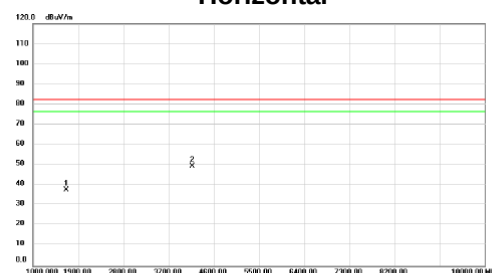
Vertical



No. Msk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	1670.500	46.38	-5.35	41.03	82.30	-41.27	peak	
2	3335.500	46.10	-0.60	45.50	82.30	-36.80	peak	
3 *	4172.500	52.32	2.35	54.67	82.30	-27.63	peak	

Test Mode : LTE Band 5_TX CH20525_5MHz

Horizontal

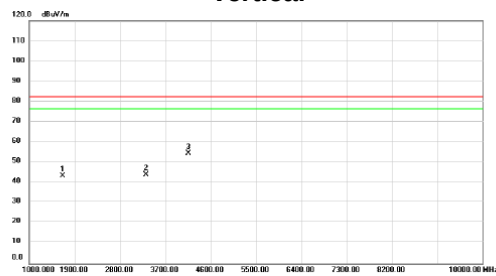


No. Msk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	1670.500	43.15	-5.35	37.80	82.30	-44.50	peak	
2 *	4172.500	47.03	2.35	49.38	82.30	-32.92	peak	

Test Mode : LTE Band 5_TX CH20525_10MHz

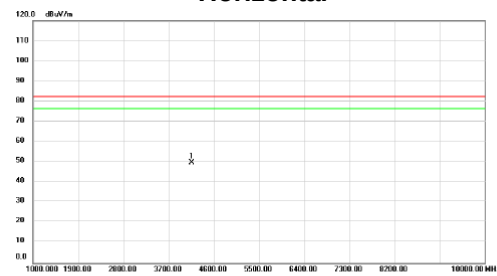
Test Mode : LTE Band 5_TX CH20525_10MHz

Vertical



No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1		1666.000	48.61	-5.38	43.23	82.30	-39.07	peak	
2		3326.500	44.67	-0.63	44.04	82.30	-38.26	peak	
3	*	4156.000	52.24	2.32	54.56	82.30	-27.74	peak	

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV/m	Limit dBμV/m	Margin dB	Detector	Comment
1	*	4156.000	47.28	2.32	49.60	82.30	-32.70	peak	

APPENDIX D - OUTPUT POWER

Output Power (dBm):

GSM850		128CH	190CH	251CH
		824.2MHz	836.6MHz	848.8MHz
GSM (CS)		31.70	31.70	31.72
GPRS/EDGE (GMSK)	1 Tx Slot	31.69	31.54	31.52
	2 Tx Slot	29.17	29.05	28.81
	3 Tx Slot	27.90	27.79	27.70
	4 Tx Slot	26.63	26.69	26.60
EDGE (8PSK)	1 Tx Slot	26.37	26.00	25.66
	2 Tx Slot	26.71	26.06	26.07
	3 Tx Slot	26.38	25.69	25.73
	4 Tx Slot	25.87	25.34	25.60

Note:

1. 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)

2. Max. Output Power = Max Frame Average Power

Frame Average Power(dBm):

GSM850		128CH	190CH	251CH
		824.2MHz	836.6MHz	848.8MHz
GSM (CS)		22.67	22.67	22.69
GPRS/EDGE (GMSK)	1 Tx Slot	22.66	22.51	22.49
	2 Tx Slot	23.15	23.03	22.79
	3 Tx Slot	23.64	23.53	23.44
	4 Tx Slot	23.62	23.68	23.59
EDGE (8PSK)	1 Tx Slot	17.34	16.97	16.63
	2 Tx Slot	20.69	20.04	20.05
	3 Tx Slot	22.12	21.43	21.47
	4 Tx Slot	22.86	22.33	22.59

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	23.52	23.57	23.78
	RMC 64K	23.52	23.58	23.75
	RMC 144K	23.53	23.59	23.78
	RMC 384K	23.49	23.58	23.75
	HSDPA Subtest-1	22.54	22.58	22.81
	HSDPA Subtest-2	22.54	22.63	22.81
	HSDPA Subtest-3	22.04	22.15	22.34
	HSDPA Subtest-4	22.12	22.15	22.32
	HSUPA Subtest-1	22.59	22.45	22.77
	HSUPA Subtest-2	21.12	21.1	21.68
	HSUPA Subtest-3	20.72	21.56	21.32
	HSUPA Subtest-4	21.65	21.63	22.13
	HSUPA Subtest-5	22.53	22.5	22.71

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4MHz	QPSK	1	0	22.34	22.32	22.38
		1	2	22.72	22.62	22.35
		1	5	22.56	22.42	22.41
		3	0	22.60	22.54	22.48
		3	1	22.77	22.56	22.53
		3	2	22.47	22.49	22.62
		6	0	21.54	21.45	21.59
	16QAM	1	0	21.51	21.71	21.35
		1	2	21.37	21.78	22.09
		1	5	21.21	21.28	21.76
		3	0	21.51	21.26	21.83
		3	1	21.84	21.32	21.80
		3	2	21.68	21.51	21.68
		6	0	20.56	20.60	20.83

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3MHz	QPSK	1	0	22.90	22.52	22.56
		1	7	22.73	22.26	22.49
		1	14	22.72	22.51	22.43
		8	0	21.72	21.60	21.73
		8	4	21.59	21.67	21.60
		8	7	21.69	21.59	21.63
		15	0	21.74	21.61	21.66
	16QAM	1	0	22.26	21.74	21.95
		1	7	22.19	21.69	21.96
		1	14	21.99	21.54	21.92
		8	0	20.97	20.59	20.54
		8	4	21.03	20.61	20.60
		8	7	21.04	20.40	20.40
		15	0	20.83	20.76	20.74

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5MHz	QPSK	1	0	22.68	22.24	22.44
		1	13	22.75	22.31	22.59
		1	24	22.52	22.35	22.57
		12	0	21.78	21.68	21.76
		12	6	21.74	21.69	21.67
		12	11	21.77	21.63	21.66
		25	0	21.74	21.63	21.72
	16QAM	1	0	21.77	21.77	22.00
		1	13	21.77	21.47	21.51
		1	24	21.61	21.57	21.93
		12	0	20.80	20.53	20.63
		12	6	20.94	20.71	20.67
		12	11	20.77	20.41	20.61
		25	0	20.95	20.71	20.64

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10MHz	QPSK	1	0	22.43	22.52	22.59
		1	25	22.65	22.71	22.63
		1	49	22.81	22.70	22.43
		25	0	21.69	21.67	21.75
		25	13	21.60	21.76	21.69
		25	25	21.60	21.76	21.69
		50	0	21.63	21.65	21.71
	16QAM	1	0	22.05	21.40	21.75
		1	25	22.02	20.95	21.79
		1	49	21.86	21.55	21.85
		25	0	20.78	20.66	20.71
		25	13	20.70	20.75	20.67
		25	25	20.66	20.79	20.60
		50	0	20.69	20.59	20.67

Note: The Output Power test results refer to Report No.: BTL-FCCP-1-2111C171.

ERP (dBm):

GSM850		128CH	190CH	251CH
		824.2MHz	836.6MHz	848.8MHz
GSM (CS)		25.43	25.43	25.45
GPRS/EDGE (GMSK)	1 Tx Slot	25.42	25.27	25.25
	2 Tx Slot	25.91	25.79	25.55
	3 Tx Slot	26.40	26.29	26.20
	4 Tx Slot	26.38	26.44	26.35
EDGE (8PSK)	1 Tx Slot	20.10	19.73	19.39
	2 Tx Slot	23.45	22.80	22.81
	3 Tx Slot	24.88	24.19	24.23
	4 Tx Slot	25.62	25.09	25.35

Modulation	Band	WCDMA Band V		
	Tx Channel	4132CH	4182CH	4233CH
	Frequency	826.4MHz	836.4MHz	846.6MHz
QPSK	RMC 12.2K	24.13	24.18	24.39
	RMC 64K	24.13	24.19	24.36
	RMC 144K	24.14	24.20	24.39
	RMC 384K	24.10	24.19	24.36
	HSDPA Subtest-1	23.15	23.19	23.42
	HSDPA Subtest-2	23.15	23.24	23.42
	HSDPA Subtest-3	22.65	22.76	22.95
	HSDPA Subtest-4	22.73	22.76	22.93
	HSUPA Subtest-1	23.20	23.06	23.38
	HSUPA Subtest-2	21.73	21.71	22.29
	HSUPA Subtest-3	21.33	22.17	21.93
	HSUPA Subtest-4	22.26	22.24	22.74
	HSUPA Subtest-5	23.14	23.11	23.32

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4MHz	QPSK	1	0	22.95	22.93	22.99
		1	2	23.33	23.23	22.96
		1	5	23.17	23.03	23.02
		3	0	23.21	23.15	23.09
		3	1	23.38	23.17	23.14
		3	2	23.08	23.10	23.23
	16QAM	6	0	22.15	22.06	22.20
		1	0	22.12	22.32	21.96
		1	2	21.98	22.39	22.70
		1	5	21.82	21.89	22.37
		3	0	22.12	21.87	22.44
		3	1	22.45	21.93	22.41
		3	2	22.29	22.12	22.29
		6	0	21.17	21.21	21.44

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3MHz	QPSK	1	0	23.51	23.13	23.17
		1	7	23.34	22.87	23.10
		1	14	23.33	23.12	23.04
		8	0	22.33	22.21	22.34
		8	4	22.20	22.28	22.21
		8	7	22.30	22.20	22.24
		15	0	22.35	22.22	22.27
	16QAM	1	0	22.87	22.35	22.56
		1	7	22.80	22.30	22.57
		1	14	22.60	22.15	22.53
		8	0	21.58	21.20	21.15
		8	4	21.64	21.22	21.21
		8	7	21.65	21.01	21.01
		15	0	21.44	21.37	21.35

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5MHz	QPSK	1	0	23.29	22.85	23.05
		1	13	23.36	22.92	23.20
		1	24	23.13	22.96	23.18
		12	0	22.39	22.29	22.37
		12	6	22.35	22.30	22.28
		12	11	22.38	22.24	22.27
		25	0	22.35	22.24	22.33
	16QAM	1	0	22.38	22.38	22.61
		1	13	22.38	22.08	22.12
		1	24	22.22	22.18	22.54
		12	0	21.41	21.14	21.24
		12	6	21.55	21.32	21.28
		12	11	21.38	21.02	21.22
		25	0	21.56	21.32	21.25

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10MHz	QPSK	1	0	23.04	23.13	23.20
		1	25	23.26	23.32	23.24
		1	49	23.42	23.31	23.04
		25	0	22.30	22.28	22.36
		25	13	22.21	22.37	22.30
		25	25	22.21	22.37	22.30
		50	0	22.24	22.26	22.32
	16QAM	1	0	22.66	22.01	22.36
		1	25	22.63	21.56	22.40
		1	49	22.47	22.16	22.46
		25	0	21.39	21.27	21.32
		25	13	21.31	21.36	21.28
		25	25	21.27	21.40	21.21
		50	0	21.30	21.20	21.28

End of Test Report