

TEST REPORT

Applicant: TECNO MOBILE LIMITED
Address: FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL
CENTRE 19-25 SHAN MEI STREET FOTAN NT
HONGKONG
Equipment Type: Mobile Phone
Model Name: LK7k
Brand Name: TECNO
FCC ID: 2ADYY-LK7K
Test Standard: 47 CFR Part 2
(Others refer to chapter 3.1)
Sample Arrival Date: Nov.17.2025
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ISSUED BY:

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Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Jan.16, 2026</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Address	1-2/F., Building 1, No.222, Xuanlan Road, Xuanqiao, Pudong New District, Shanghai, China

1.2 Test Location

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Location	1-2/F., Building 1, No.222, Xuanlan Road, Xuanqiao, Pudong New District, Shanghai, China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1352

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	TECNO MOBILE LIMITED
Address	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG

2.2 Manufacturer Information

Manufacturer	TECNO MOBILE LIMITED
Address	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	Mobile Phone
Model Name Under Test	LK7k
Series Model Name	N/A
Description of Model name differentiation	N/A
Sample No	SC-SH25B0073-S05
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Technical Information

Network and Wireless connectivity for EUT	2G Network GSM/GPRS/EDGE 850/1900 MHz 3G Network WCDMA/HSDPA/HSUPA Band 2/4/5 4G Network LTE FDD Band 2/4/5/7/12/13/17/66 LTE TDD Band 38/41/42 UL CA:CA_5B,CA_7C,CA_38C,CA_41C,CA_66C 5G Network SA :n5/n7/n12/n38/n41/n66/n77/n78 ENDC:DC_2A_n7A,DC_2A_n66A,DC_2A_n78A,DC_4A_n7A,DC_4A_n38A,DC_4A_n41A,DC_4A_n78A,DC_5A_n38A,DC_5A_n41A,DC_5A_n7A,DC_5A_n66A,DC_5A_n77A,DC_5A_n78A,DC_7A_n66A,DC_7A_n77A,DC_7A_n78A,DC_38A_n78A,DC_41A_n77A,DC_41A_n78A,DC_66A_n7A,DC_66A_n38A,DC_66A_n41A,DC_66A_n77A,DC_66A_n78A Bluetooth (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n HT20, 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) , GPS, GLONASS, BDS, Galileo, SBAS,FM receiver,NFC
About the Product	The equipment is Mobile Phone, intended for used with information technology equipment.

The requirement for the following technical information of the EUT was tested in this report:

Operating Bands	2G Network GSM/GPRS/EDGE 850/1900 MHz 3G Network WCDMA/HSDPA/HSUPA Band 2/4/5 4G Network LTE FDD Band 2/4/5/7/12/13/17/66 LTE TDD Band 38/41/42 UL CA:CA_5B,CA_7C,CA_38C,CA_41C,CA_66C 5G Network SA :n5/n7/n12/n38/n41/n66/n77/n78 ENDC:DC_2A_n7A,DC_2A_n66A,DC_2A_n78A,DC_4A_n7A,DC_4A_n38A,DC_4A_n41A,DC_4A_n78A,DC_5A_n38A,DC_5A_n41A,DC_5A_n7A,DC_5A_n66A,DC_5A_n77A,DC_5A_n78A,DC_7A_n66A,DC_7A_n77A,DC_7A_n78A,DC_38A_n78A,DC_41A_n77A,DC_41A_n78A,DC_66A_n7A,DC_66A_n38A,DC_66A_n41A,DC_66A_n77A,DC_66A_n78A	
Modulation Type	LTE	UL: QPSK/16QAM/64QAM/256QAM DL: QPSK/16QAM/64QAM/256QAM
	NR	CP-OFDM: QPSK/16QAM/64QAM/256QAM

	DFT-s-OFDM:PI/2BPSK/QPSK/16QAM/64QAM/256QAM
Antenna Type	PIFA Antenna
Antenna Gain	GSM/GPRS/EGPRS 850: -3.7 dBi(ANT4) GSM/GPRS/EGPRS 1900: -3.5 dBi(ANT6) WCDMA/HSDPA/HSUPA Band 2: -3.3 dBi(ANT6) WCDMA/HSDPA/HSUPA Band 4: -3.3 dBi(ANT6) WCDMA/HSDPA/HSUPA Band 5: -3.7 dBi(ANT4) FDD LTE Band 2: -3.3 dBi(ANT6) FDD LTE Band 4: -3.3 dBi(ANT6) FDD LTE Band 5: -3.7 dBi(ANT4) FDD LTE Band 7: -2.4 dBi(ANT6) FDD LTE Band 12: -3.7 dBi(ANT4) FDD LTE Band 13: -3.7 dBi(ANT4) FDD LTE Band 17: -3.7 dBi(ANT4) TDD LTE Band 38: -2.4 dBi(ANT6) TDD LTE Band 41: -2.4 dBi(ANT6) TDD LTE Band 42: -3.0 dBi(ANT7) FDD LTE Band 66: -3.3 dBi(ANT6) FDD NR Band n5: -3.7 dBi(ANT4) FDD NR Band n7: -2.4 dBi(ANT6) FDD NR Band n12: -3.7 dBi(ANT4) TDD NR Band n38: -2.4 dBi(ANT6) TDD NR Band n41:

	-2.4 dBi(ANT6) FDD NR Band n66: -3.3 dBi(ANT6) TDD NR Band n77(3450-3550MHz): -3.0 dBi(ANT7) TDD NR Band n77(3700-3980MHz): -3.0 dBi(ANT7) TDD NR Band n78(3450-3550MHz): -3.0 dBi(ANT7) TDD NR Band n78(3700-3800MHz): -3.0 dBi(ANT7)
The Max RF Output Power (EIRP/ERP)	GSM/GPRS/EGPRS 850: 26.39 dBm GSMGPRS/EGPRS 1900: 26.55 dBm WCDMA/HSDPA/HSUPA Band 2: 13.56 dBm WCDMA/HSDPA/HSUPA Band 4: 13.54 dBm WCDMA/HSDPA/HSUPA Band 5: 17.64 dBm FDD LTE Band 2: 21.09 dBm FDD LTE Band 4: 20.15 dBm FDD LTE Band 5: 19.29 dBm FDD LTE Band 7: 8.68 dBm FDD LTE Band 12: 18.57 dBm FDD LTE Band 13: 18.45 dBm FDD LTE Band 17: 18.27 dBm TDD LTE Band 38: 13.12 dBm TDD LTE Band 41: 13.38 dBm TDD LTE Band 42: 10.63 dBm FDD LTE Band 66: 12.15 dBm CA_5B: 21.95 dBm CA_7C: 10.34 dBm CA_38C: 13.46 dBm CA_41C: 15.68 dBm CA_66C: 14.72 dBm FDD NR Band n5: 18.70 dBm FDD NR Band n7: 11.83 dBm FDD NR Band n12: 17.26 dBm TDD NR Band n38: 6.52 dBm TDD NR Band n41: 7.69 dBm FDD NR Band n66: 9.73 dBm TDD NR Band n77(3450-3550MHz)(PC2): 17.17 dBm TDD NR Band n77(3700-3980MHz)(PC2): 15.69 dBm TDD NR Band n78(3450-3550MHz)(PC2): 14.30 dBm TDD NR Band n78(3700-3800MHz)(PC2): 13.61 dBm DC_2A_n7A: 17.69 dBm DC_2A_n66A: 17.48 dBm

	DC_2A_n78A(3450-3500): 18.57 dBm DC_2A_n78A(3700-3800): 20.78 dBm DC_4A_n7A: 17.87 dBm DC_4A_n38A: 17.27 dBm DC_4A_n41A: 17.44 dBm DC_4A_n78A(3450-3500): 18.57 dBm DC_4A_n78A(3700-3800): 18.72 dBm DC_5A_n7A : 16.54 dBm DC_5A_n38A: 15.64 dBm DC_5A_n41A: 15.78 dBm DC_5A_n66A: 16.29 dBm DC_5A_n77A(3450-3500): 18.72 dBm DC_5A_n77A(3700-3980): 18.37 dBm DC_5A_n78A(3450-3500): 18.42 dBm DC_5A_n78A(3700-3800): 17.68 dBm DC_7A_n66A: 20.58 dBm DC_7A_n77A(3450-3500): 19.94 dBm DC_7A_n77A(3700-3980): 19.82 dBm DC_7A_n78A(3450-3500): 19.93 dBm DC_7A_n78A(3700-3800): 19.27 dBm DC_38A_n78A(3450-3500): 19.79 dBm DC_38A_n78A(3700-3800): 18.99 dBm DC_41A_n77A(3450-3500): 19.87 dBm DC_41A_n77A(3700-3980): 19.67 dBm DC_41A_n78A(3450-3500): 19.73 dBm DC_41A_n78A(3700-3800): 19.01 dBm DC_66A_n7A: 20.88 dBm DC_66A_n38A: 20.48 dBm DC_66A_n41A: 20.84 dBm DC_66A_n77A(3450-3500): 22.42 dBm DC_66A_n77A(3700-3980): 22.50 dBm DC_66A_n78A(3450-3500): 22.57 dBm DC_66A_n78A(3700-3800): 21.69 dBm
SCS and Channel Bandwidths	n5_SCS 15kHz: 5 MHz, 10 MHz, 15 MHz, 20 MHz n7_SCS 15kHz: 5 MHz, 10 MHz, 15 MHz, 20 MHz,25 MHz,30 MHz, 40MHz,50MHz n12_SCS 15kHz: 5 MHz, 10 MHz, 15 MHz n38_SCS 30kHz: 10 MHz,15 MHz,20 MHz, 25 MHz, 30 MHz, 40 MHz n41_SCS 30kHz: 10 MHz,15 MHz,20 MHz,25 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 80 MHz, 90 MHz, 100 MHz n66_SCS 15kHz: 5 MHz, 10 MHz, 15 MHz, 20 MHz,25 MHz,30 MHz, 40 MHz n77_SCS 30kHz: 10 MHz, 15 MHz, 20 MHz,25 MHz, 30 MHz, 40 MHz, 50 MHz,60 MHz,70 MHz, 80 MHz,90 MHz,100 MHz

			n78_SCS 30kHz: 10 MHz, 15 MHz, 20 MHz, 25 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 70 MHz, 80 MHz, 90 MHz, 100 MHz	
Band	Power Class		Tx Frequency Range	Rx Frequency Range
	GMSK	8PSK		
GSM850	4	E2	824 MHz ~ 849 MHz	869 MHz ~ 894 MHz
GSM1900	1	E2	1850 MHz ~ 1910 MHz	1930 MHz ~ 1990 MHz
WCDMA B2	3		1850 MHz ~ 1910 MHz	1930 MHz ~ 1990 MHz
WCDMA B4	3		1710 MHz ~ 1755 MHz	2110 MHz ~ 2155 MHz
WCDMA B5	3		824 MHz ~ 849 MHz	869 MHz ~ 894 MHz
LTE B2	3		1850 MHz ~ 1910 MHz	1930 MHz ~ 1990 MHz
LTE B4	3		1710 MHz ~ 1755 MHz	2110 MHz ~ 2155 MHz
LTE B5	3		824 MHz ~ 849 MHz	869 MHz ~ 894 MHz
LTE B7	3		2500 MHz ~ 2570 MHz	2620 MHz ~ 2690 MHz
LTE B12	3		699 MHz ~ 716 MHz	729 MHz ~ 746 MHz
LTE B13	3		777 MHz ~ 787 MHz	746 MHz ~ 756 MHz
LTE B17	3		704 MHz ~ 716 MHz	734 MHz ~ 746 MHz
LTE B38	3		2570 MHz ~ 2620 MHz	2570 MHz ~ 2620 MHz
LTE B41	3		2496 MHz ~ 2690 MHz	2496 MHz ~ 2690 MHz
LTE B42	3		3450 MHz ~ 3550 MHz	3450 MHz ~ 3550 MHz
LTE B66	3		1710 MHz ~ 1780 MHz	2110 MHz ~ 2180 MHz
NR n5	3		824 MHz ~ 849 MHz	869 MHz ~ 894 MHz
NR n7	3		2500 MHz ~ 2570 MHz	2620 MHz ~ 2690 MHz
NR n12	3		699 MHz ~ 716 MHz	729 MHz ~ 746 MHz
NR n38	3		2570 MHz ~ 2620 MHz	2570 MHz ~ 2620 MHz
NR n41	3		2496 MHz ~ 2690 MHz	2496 MHz ~ 2690 MHz
NR n66	3		1710 MHz ~ 1780 MHz	2110 MHz ~ 2180 MHz
NR n77	2&3		3450 MHz ~ 3550 MHz	3450 MHz ~ 3550 MHz
			3700 MHz ~ 3980 MHz	3700 MHz ~ 3980 MHz
NR n78	2&3		3450 MHz ~ 3550 MHz	3450 MHz ~ 3550 MHz
			3700 MHz ~ 3800 MHz	3700 MHz ~ 3800 MHz

Note1: The EUT information provided by the applicant, except for The Max RF Conducted Power. For more detailed band specifications and features description, please refer to the manufacturer's specifications or user's manual.

Note2: All ENDC bands support Power Class 3 only.

Note3: These frequency ranges are only applicable in the United States.

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 Subpart H	Cellular Radiotelephone Service
3	47 CFR Part 24 Subpart E	Broadband PCS
4	47 CFR Part 27	Miscellaneous Wireless Communications Services
5	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
6	KDB 971168 D01 v03	Measurement Guidance for Certification of Licensed Digital Transmitters

3.2 Test Verdict

No.	Test Description	FCC Part No.	Test Verdict
1	Conducted RF Output Power	2.1046	Pass
2	Effective (Isotropic) Radiated Power	2.1046 22.913 24.232 27.50	Pass
3	Peak to Average Ratio	2.1046 22.913(d) 24.232(d) 27.50(d)	Pass
4	Occupied Bandwidth	2.1049 22.917 24.238 27.53	Pass
5	Frequency Stability	2.1055 22.355 24.235 27.54	Pass
6	Spurious Emission at Antenna Terminals	2.1051 22.917 24.238 27.53	Pass
7	Band Edge	2.1051 22.917 24.238	Pass

No.	Test Description	FCC Part No.	Test Verdict
		27.53	
8	Field Strength of Spurious Radiation	2.1053 22.917 24.238 27.53	Pass

3.3 Measurement Uncertainty

Test Case	Uncertainty
Conducted RF Output Power	0.68dB
Effective (Isotropic) Radiated Power	2.50dB
Peak to Average Ratio	0.015%
Occupied Bandwidth	1.4/3MHz: 30kHz Occupied Bandwidth 5/10MHZ: 100KHZ 15/20MHZ: 300kHz
Frequency Stability	12Hz
Spurious Emission at Antenna Terminals	2.56dB
Band Edge	1.48dB
Field Strength of Spurious Radiation	4.55dB

3.4 Decision Rule

☐ No Need

☒ Use General conformity decision rule (Consider uncertainty or not ☒ No ☐ Yes)

☐ Use Special Conformity Decision Rule (Consider uncertainty or not ☐ No ☐ Yes)

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the environmental conditions were within the listed ranges:

Relative Humidity		25% to 75%
Test Voltage of the EUT	NV (Normal Voltage)	3.92V
	LV (Low Voltage)	3.45V
	HV (High Voltage)	4.53V
Test Temperature of the EUT	NT (Normal Temperature)	15 °C to 35 °C
	LT (Low Temperature)	-20 °C
	HT (High Temperature)	+50 °C

4.2 Test Equipment List

Description	Manufacturer	Model	Equipment No.	Software /Firmware Version	Cal. Date	Cal. Due
BL410 2G/3G/4G/5G RF Test System						
Wideband Radio Communication Tester	R&S	CMW 500	BH-EMC-L064	V3.7.60	2025/2/12	2026/2/12
PSA Spectrum Analyzer	Agilent	E4440A	TJEMC013	A.11.07	2025/4/6	2026/4/6
Signal Generator	Keysight	N5173B	BH-EMC-L074	B.01.90	2025/2/12	2026/2/12
DC Power Supply	ITECH	IT6863A	BH-EMC-L113	N/A	2025/2/12	2026/2/12
Filter unit	BALUN	SU319F	BH-EMC-L077	N/A	N/A	N/A
Filter unit	BALUN	SU319F	BH-EMC-L078	N/A	N/A	N/A
Filter unit	BALUN	SU319F	BH-EMC-L122	N/A	N/A	N/A
Switch unit	BALUN	SU319	BH-EMC-L076	N/A	N/A	N/A
Wireless Communication Comprehensive Tester	Starpoint	SP9500-CTS	BH-EMC-L093	NA	2025/2/12	2026/2/12
Test Software	BALUN	BL410R	NA	V3.0.1.539	N/A	N/A
Radiated Test System						
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9163	BH-EMC-L008	NA	2024/3/11	2027/3/10
Test Antenna-Horn	Schwarzbeck	BBHA 9120D	BH-EMC-L044	NA	2024/3/11	2027/3/10
Anechoic Chamber	YIHENG	9m*6m*6m	BH-EMC-L001	NA	2024/4/14	2027/4/13
EMI Receiver	KEYSIGHT	N9038A	BH-EMC-L127	NA	2025/2/12	2026/2/11
Wideband Radio Communication Tester	R&S	CMW 500	BH-EMC-L094	V3.7.172	2025/2/12	2026/2/11
Radio Communication Analyzer	Anritsu	MT8000A	TJOTA080	N/A	2025/4/23	2026/4/23
Test Software	BALUN	BL410-E	NA	V21.919	N/A	N/A

4.3 Test Configurations

Test Items	Test Mode	Test Channel		
		LCH	MCH	HCH
Effective (Isotropic) Radiated Power	GSM 850	v	v	v
	GSM 1900	v	v	v
	GPRS 850	v	v	v
	GPRS 1900	v	v	v
	EGPRS 850	v	v	v
	EGPRS 1900	v	v	v
	WCDMA Band 2	v	v	v
	WCDMA Band 4	v	v	v
	WCDMA Band 5	v	v	v
	HSDPA Band 2	v	v	v
	HSDPA Band 4	v	v	v
	HSDPA Band 5	v	v	v
	HSUPA Band 2	v	v	v
	HSUPA Band 4	v	v	v
	HSUPA Band 5	v	v	v
Peak to Average Ratio	WCDMA Band 2	v	v	v
	WCDMA Band 4	v	v	v
	WCDMA Band 5	v	v	v
Occupied Bandwidth	GSM 850	v	v	v
	GSM 1900	v	v	v
	GPRS 850	v	v	v
	GPRS 1900	v	v	v
	EGPRS 850	v	v	v
	EGPRS 1900	v	v	v
	WCDMA Band 2	v	v	v
	WCDMA Band 4	v	v	v
	WCDMA Band 5	v	v	v
Frequency Stability	GSM 850	v	v	v
	GSM 1900	v	v	v
	GPRS 850	v	v	v
	GPRS 1900	v	v	v
	EGPRS 850	v	v	v
	EGPRS 1900	v	v	v
	WCDMA Band 2	v	v	v
	WCDMA Band 4	v	v	v
	WCDMA Band 5	v	v	v
Spurious Emission at Antenna Terminals	GSM 850	v	v	v
	GSM 1900	v	v	v
	GPRS 850	v	v	v

Test Items	Test Mode	Test Channel		
		LCH	MCH	HCH
	GPRS 1900	v	v	v
	EGPRS 850	v	v	v
	EGPRS 1900	v	v	v
	WCDMA Band 2	v	v	v
	WCDMA Band 4	v	v	v
	WCDMA Band 5	v	v	v
Band Edge	GSM 850	v	--	v
	GSM 1900	v	--	v
	GPRS 850	v	--	v
	GPRS 1900	v	--	v
	EGPRS 850	v	--	v
	EGPRS 1900	v	--	v
	WCDMA Band 2	v	--	v
	WCDMA Band 4	v	--	v
	WCDMA Band 5	v	--	v
Field Strength of Spurious Radiation	GSM 850	v	v	v
	GSM 1900	v	v	v
	WCDMA Band 2	v	v	v
	WCDMA Band 4	v	v	v
	WCDMA Band 5	v	v	v

Note 1: The mark “v” means that this configuration is chosen for testing.

Test Mode	UL Channel	UL Channel No.	UL Frequency (MHz)
GSM/GPRS/EGPRS 850	Low Channel	128	824.2
	Middle Channel	190	836.6
	High Channel	251	848.8
GSM/GPRS/EGPRS 1900	Low Channel	512	1850.2
	Middle Channel	661	1880.0
	High Channel	810	1909.8
WCDMA Band 2	Low Channel	9262	1852.4
	Middle Channel	9400	1880.0
	High Channel	9538	1907.6
WCDMA Band 4	Low Channel	1312	1712.4
	Middle Channel	1412	1732.4
	High Channel	1513	1752.6
WCDMA Band 5	Low Channel	4132	826.4
	Middle Channel	4182	836.4
	High Channel	4233	846.6

LTE Band	Bandwidth (MHz)						Modulation Type				RB#			Test Channel		
	1.4	3	5	10	15	20	QP SK	16-QAM	64-QAM	256-QAM	1	Half	Full	LC H	MC H	HC H
Effective (Isotropic) Radiated Power																
2	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
5	v	v	v	v	n	n	v	v	v	v	v	v	v	v	v	v
7	n	n	v	v	v	v	v	v	v	v	v	v	v	v	v	v
12	v	v	v	v	n	n	v	v	v	v	v	v	v	v	v	v
13	n	n	v	v	n	n	v	v	v	v	v	v	v	v	v	v
17	n	n	v	v	n	n	v	v	v	v	v	v	v	v	v	v
38	n	n	v	v	v	v	v	v	v	v	v	v	v	v	v	v
41	n	n	v	v	v	v	v	v	v	v	v	v	v	v	v	v
42	n	n	v	v	v	v	v	v	v	v	v	v	v	v	v	v
66	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Peak to Average Ratio																
2	--	--	--	--	--	v	v	v	--	--	v	--	v	v	v	v
4	--	--	--	--	--	v	v	v	--	--	v	--	v	v	v	v
5	--	--	--	v	n	n	v	v	--	--	v	--	v	v	v	v
7	n	n	--	--	--	v	v	v	--	--	v	--	v	v	v	v
12	--	--	--	v	n	n	v	v	--	--	v	--	v	v	v	v
13	n	n	--	v	n	n	v	v	--	--	v	--	v	--	v	--
17	n	n	--	v	n	n	v	v	--	--	v	--	v	v	v	v
38	n	n	--	--	--	v	v	v	--	--	v	--	v	v	v	v
41	n	n	--	--	--	v	v	v	--	--	v	--	v	v	v	v
42	n	n	--	--	--	v	v	v	--	--	v	--	v	v	v	v
66	--	--	--	--	--	v	v	v	--	--	v	--	v	v	v	v
Occupied Bandwidth																
2	v	v	v	v	v	v	v	v	v	v	--	--	v	v	v	v
4	v	v	v	v	v	v	v	v	v	v	--	--	v	v	v	v
5	v	v	v	v	n	n	v	v	v	v	--	--	v	v	v	v
7	n	n	v	v	v	v	v	v	v	v	--	--	v	v	v	v
12	v	v	v	v	n	n	v	v	v	v	--	--	v	v	v	v
13	n	n	v	v	n	n	v	v	v	v	--	--	v	v	v	v
17	n	n	v	v	n	n	v	v	v	v	--	--	v	v	v	v
38	n	n	v	v	v	v	v	v	v	v	--	--	v	v	v	v
41	n	n	v	v	v	v	v	v	v	v	--	--	v	v	v	v
42	n	n	v	v	v	v	v	v	v	v	--	--	v	v	v	v
66	v	v	v	v	v	v	v	v	v	v	--	--	v	v	v	v
Frequency Stability																
2	--	--	--	v	--	--	v	v	--	--	--	--	v	--	v	--
4	--	--	--	v	--	--	v	v	--	--	--	--	v	--	v	--
5	--	--	--	v	n	n	v	v	--	--	--	--	v	--	v	--

LTE Band	Bandwidth (MHz)						Modulation Type				RB#			Test Channel		
	1.4	3	5	10	15	20	QP SK	16-QAM	64-QAM	256-QAM	1	Half	Full	LC H	MC H	HC H
7	n	n	--	v	--	--	v	v	--	--	--	--	v	--	v	--
12	--	--	--	v	n	n	v	v	--	--	--	--	v	--	v	--
13	n	n	--	v	n	n	v	v	--	--	--	--	v	--	v	--
17	n	n	--	v	n	n	v	v	--	--	--	--	v	--	v	--
38	n	n	--	v	--	--	v	v	--	--	--	--	v	--	v	--
41	n	n	--	v	--	--	v	v	--	--	--	--	v	--	v	--
42	n	n	--	v	--	--	v	v	--	--	--	--	v	--	v	--
66	--	--	--	v	--	--	v	v	--	--	--	--	v	--	v	--
Spurious Emission at Antenna Terminals																
2	v	v	v	v	v	v	v	v	--	--	v	--	--	v	v	v
4	v	v	v	v	v	v	v	v	--	--	v	--	--	v	v	v
5	v	v	v	v	n	n	v	v	--	--	v	--	--	v	v	v
7	n	n	v	v	v	v	v	v	--	--	v	--	--	v	v	v
12	v	v	v	v	n	n	v	v	--	--	v	--	--	v	v	v
13	n	n	v	v	n	n	v	v	--	--	v	--	--	v	v	v
17	n	n	v	v	n	n	v	v	--	--	v	--	--	v	v	v
38	n	n	v	v	v	v	v	v	--	--	v	--	--	v	v	v
41	n	n	v	v	v	v	v	v	--	--	v	--	--	v	v	v
42	n	n	v	v	v	v	v	v	--	--	v	--	--	v	v	v
66	v	v	v	v	v	v	v	v	--	--	v	--	--	v	v	v
Band Edge																
2	v	v	v	v	v	v	v	v	--	--	v	--	v	v	--	v
4	v	v	v	v	v	v	v	v	--	--	v	--	v	v	--	v
5	v	v	v	v	n	n	v	v	--	--	v	--	v	v	--	v
7	n	n	v	v	v	v	v	v	--	--	v	--	v	v	--	v
12	v	v	v	v	n	n	v	v	--	--	v	--	v	v	--	v
13	n	n	v	v	n	n	v	v	--	--	v	--	v	v	--	v
17	n	n	v	v	n	n	v	v	--	--	v	--	v	v	--	v
38	n	n	v	v	v	v	v	v	--	--	v	--	v	v	--	v
41	n	n	v	v	v	v	v	v	--	--	v	--	v	v	--	v
42	n	n	v	v	v	v	v	v	--	--	v	--	v	v	--	v
66	v	v	v	v	v	v	v	v	--	--	v	--	v	v	--	v
Field Strength of Spurious Radiation																
2	Worst case															
4	Worst case															
5	Worst case															
7	Worst case															
12	Worst case															
13	Worst case															
17	Worst case															

LTE Band	Bandwidth (MHz)						Modulation Type				RB#			Test Channel		
	1.4	3	5	10	15	20	QP SK	16-QAM	64-QAM	256-QAM	1	Half	Full	LC H	MC H	HC H
38	Worst case															
41	Worst case															
42	Worst case															
66	Worst case															
Note 1: The mark “v” means that this configuration is chosen for testing.																
Note 2: The mark “n” means that this bandwidth is not supported.																

Test Mode	UL Channel	Channel Bandwidth (MHz)	UL Channel No.	UL Frequency (MHz)
LTE Band 2	Low Range	1.4	18607	1850.7
		3	18615	1851.5
		5	18625	1852.5
		10	18650	1855
		15	18675	1857.5
		20	18700	1860
	Middle Range	1.4/3/5/10/15/20	18900	1880
	High Range	1.4	19193	1909.3
		3	19185	1908.5
		5	19175	1907.5
		10	19150	1905
		15	19125	1902.5
		20	19100	1900
LTE Band 4	Low Range	1.4	19957	1710.7
		3	19965	1711.5
		5	19975	1712.5
		10	20000	1715
		15	20025	1717.5
		20	20050	1720
	Middle Range	1.4/3/5/10/15/20	20175	1732.5
	High Range	1.4	20393	1754.3
		3	20385	1753.5
		5	20375	1752.5
		10	20350	1750
		15	20325	1747.5
		20	20300	1745
LTE Band 5	Low Range	1.4	20407	824.7
		3	20415	825.5
		5	20425	826.5
		10	20450	829

Test Mode	UL Channel	Channel Bandwidth (MHz)	UL Channel No.	UL Frequency (MHz)
	Middle Range	1.4/3/5/10	20525	836.5
	High Range	1.4	20643	848.3
		3	20635	847.5
		5	20625	846.5
		10	20600	844
LTE Band 7	Low Range	5	20775	2502.5
		10	20800	2505
		15	20825	2507.5
		20	20850	2510
	Middle Range	5/10/15/20	21100	2535
	High Range	5	21425	2567.5
		10	21400	2565
		15	21375	2562.5
		20	21350	2560
LTE Band 12	Low Range	1.4	23017	699.7
		3	23025	700.5
		5	23035	701.5
		10	23060	704
	Middle Range	1.4/3/5/10	23095	707.5
	High Range	1.4	23173	715.3
		3	23165	714.5
		5	23155	713.5
		10	23130	711
LTE Band 13	Low Range	5	23205	779.5
		10	23230	782
	Middle Range	5/10	23230	782
	High Range	5	23255	784.5
		10	23230	782
LTE Band 17	Low Range	5	23755	706.5
		10	23780	709
	Middle Range	5/10	23790	710
	High Range	5	23825	713.5
		10	23800	711
LTE-Band 66	Low Range	1.4	131979	1710.7
		3	131987	1711.5
		5	131997	1712.5
		10	132022	1715
		15	132047	1717.5
		20	132072	1720
	Middle Range	1.4/3/5/10/15/20	132322	1745
	High Range	1.4	132665	1779.3

Test Mode	UL Channel	Channel Bandwidth (MHz)	UL Channel No.	UL Frequency (MHz)
		3	132657	1778.5
		5	132647	1777.5
		10	132622	1775
		15	132597	1772.5
		20	132572	1770
LTE Band 38	Low Range	5	37775	2572.5
		10	37800	2575
		15	37825	2577.5
		20	37850	2580
	Middle Range	5/10/15/20	38000	2595
	High Range	5	38225	2617.5
		10	38200	2615
		15	38175	2612.5
		20	38150	2610
	LTE Band 41	Low Range	5	39675
10			39700	2501
15			39725	2503.5
20			39750	2506
Middle Range		5/10/15/20	40620	2593
High Range		5	41565	2687.5
		10	41540	2685
		15	41515	2682.5
		20	41490	2680
LTE Band 42		Low Range	5	42115
	10		42140	3455
	15		42165	3457.5
	20		42190	3460
	Middle Range	5/10/15/20	42590	3500
	High Range	5	43065	3547.5
		10	43040	3545
		15	43015	3542.5
		20	42990	3540

Test frequencies for CA_5B											
Range	CC-Combo / NRB_agg [RB]	CC1					CC2				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	25+50	25	20428	826.8	2428	871.8	50	20500	834	2500	879
		50	20450	829	2450	874	25	20522	836.2	2522	881.2
	50+50	50	20450	829	2450	874	50	20549	838.9	2549	883.9
Mid	25+50	25	20478	831.8	2478	876.8	50	20550	839	2550	884
		50	20500	834	2500	879	25	20572	841.2	2572	886.2
	50+50	50	20476	831.6	2476	876.6	50	20575	841.5	2575	886.5
High	25+50	25	20528	836.8	2528	881.8	50	20600	844	2600	889
		50	20550	839	2550	884	25	20622	846.2	2622	891.2
	50+50	50	20501	834.1	2501	879.1	50	20600	844	2600	889

Test frequencies for CA_7C											
Range	CC- Combo / NRB_agg [RB]	CC1					CC2				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	50+100	50	20805	2505.5	2805	2625.5	100	20949	2519.9	2949	2639.9
		100	20850	2510	2850	2630	50	20994	2524.4	2994	2644.4
	75+75	75	20825	2507.5	2825	2627.5	75	20975	2522.5	2975	2642.5
	75+100	75	20828	2507.8	2828	2627.8	100	20999	2524.9	2999	2644.9
		100	20850	2510	2850	2630	75	21021	2527.1	3021	2647.1
	100+100	100	20850	2510	2850	2630	100	21048	2529.8	3048	2649.8
Mid	50+100	50	21006	2525.6	3006	2645.6	100	21150	2540	3150	2660
		100	21051	2530.1	3051	2650.1	50	21195	2544.5	3195	2664.5
	75+75	75	21025	2527.5	3025	2647.5	75	21175	2542.5	3175	2662.5
	75+100	75	21003	2525.3	3003	2645.3	100	21174	2542.4	3174	2662.4
		100	21026	2527.6	3026	2647.6	75	21197	2544.7	3197	2664.7
	100+100	100	21001	2525.1	3001	2645.1	100	21199	2544.9	3199	2664.9
High	50+100	50	21206	2545.6	3206	2665.6	100	21350	2560	3350	2680
		100	21251	2550.1	3251	2670.1	50	21395	2564.5	3395	2684.5
	75+75	75	21225	2547.5	3225	2667.5	75	21375	2562.5	3375	2682.5
	75+100	75	21179	2542.9	3179	2662.9	100	21350	2560	3350	2680
		100	21201	2545.1	3201	2665.1	75	21372	2562.2	3372	2682.2
	100+100	100	21152	2540.2	3152	2660.2	100	21350	2560	3350	2680

Test frequencies for CA_38C							
Range	CC-Combo / NRB_agg [RB]	CC1			CC2		
		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]	BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]
Low	75+75	75	37825	2577.5	75	37975	2592.5
	100+100	100	37850	2580	100	38048	2599.8
Mid	75+75	75	37925	2587.5	75	38075	2602.5
	100+100	100	37901	2585.1	100	38099	2604.9
High	75+75	75	38025	2597.5	75	38175	2612.5
	100+100	100	37952	2590.2	100	38150	2610

Test frequencies for CA_41C							
Range	CC-Combo / NRB_agg [RB]	CC1			CC2		
		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]	BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]
Low	25+100	25	39683	2499.3	100	39800	2511
		100	39750	2506	25	39867	2517.7
	50+75	50	39703	2501.3	75	39823	2513.3
		75	39725	2503.5	50	39845	2515.5
	50+100	50	39705	2501.5	100	39849	2515.9
		100	39750	2506	50	39894	2520.4
	75+75	75	39725	2503.5	75	39875	2518.5
	75+100	75	39728	2503.8	100	39899	2520.9
		100	39750	2506	75	39921	2523.1
	100+100	100	39750	2506	100	39948	2525.8
Mid	25+100	25	40528	2583.8	100	40645	2595.5
		100	40595	2590.5	25	40712	2602.2
	50+75	50	40549	2585.9	75	40669	2597.9
		75	40571	2588.1	50	40691	2600.1
	50+100	50	40526	2583.6	100	40670	2598.0
		100	40571	2588.1	50	40715	2602.5
	75+75	75	40545	2585.5	75	40695	2600.5
	75+100	75	40523	2583.3	100	40694	2600.4
		100	40546	2585.6	75	40717	2602.7
	100+100	100	40521	2583.1	100	40719	2602.9
High	25+100	25	41373	2668.3	100	41490	2680
		100	41440	2675	25	41557	2686.7
	50+75	50	41395	2670.5	75	41515	2682.5
		75	41417	2672.7	50	41537	2684.7
	50+100	50	41346	2665.6	100	41490	2680
		100	41391	2670.1	50	41535	2684.5
	75+75	75	41365	2667.5	75	41515	2682.5
	75+100	75	41319	2662.9	100	41490	2680

		100	41341	2665.1	75	41512	2682.2
	100+100	100	41292	2660.2	100	41490	2680

Test frequencies for CA_66C											
Range	CC-Combo / NRB_agg [RB]	CC1					CC2				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	50+75	50	132025	1715.3	66489	2115.3	75	132145	1727.3	66609	2127.3
		75	132047	1717.5	66511	2117.5	50	132167	1729.5	66631	2129.5
	50+100	50	132027	1715.5	66491	2115.5	100	132171	1729.9	66635	2129.9
		100	132072	1720	66536	2120	50	132216	1734.4	66680	2134.4
	75+75	75	132047	1717.5	66511	2117.5	75	132197	1732.5	66661	2132.5
		75	132050	1717.8	66514	2117.8	100	132221	1734.9	66685	2134.9
	75+100	100	132072	1720	66536	2120	75	132243	1737.1	66707	2137.1
		100	132072	1720	66536	2120	25	132189	1731.7	66653	2131.7
	100+25	25	132005	1713.3	66469	2113.3	100	132122	1725	66586	2125
Mid	50+75	50	132351	1747.9	66815	2147.9	75	132471	1759.9	66935	2159.9
		75	132373	1750.1	66837	2150.1	50	132493	1762.1	66957	2162.1
	50+100	50	132328	1745.6	66792	2145.6	100	132472	1760	66936	2160
		100	132373	1750.1	66837	2150.1	50	132517	1764.5	66981	2164.5
	75+75	75	132347	1747.5	66811	2147.5	75	132497	1762.5	66961	2162.5
		75	132325	1745.3	66789	2145.3	100	132496	1762.4	66960	2162.4
	75+100	100	132348	1747.6	66812	2147.6	75	132519	1764.7	66983	2164.7
		100	132397	1752.5	66861	2152.5	25	132514	1764.2	66978	2164.2
	100+25	25	132330	1745.8	66794	2145.8	100	132447	1757.5	66911	2157.5
High	50+75	50	132477	1760.5	66941	2160.5	75	132597	1772.5	67061	2172.5
		75	132499	1762.7	66963	2162.7	50	132619	1774.7	67083	2174.7
	50+100	50	132428	1755.6	66892	2155.6	100	132572	1770	67036	2170
		100	132473	1760.1	66937	2160.1	50	132617	1774.5	67081	2174.5
	75+75	75	132447	1757.5	66911	2157.5	75	132597	1772.5	67061	2172.5
		75	132401	1752.9	66885	2152.9	100	132572	1770	67036	2170
	75+100	100	132423	1755.1	66887	2155.1	75	132594	1772.2	67058	2172.2
		100	132522	1765	66986	2165	25	132639	1776.7	67103	2176.7
	100+25	25	132455	1758.3	66919	2158.3	100	132572	1770	67036	2170
100+100	100+100	100	132374	1750.2	66838	2150.2	100	132572	1770	67036	2170

Note 1: Carriers in increasing frequency order.

Note 2: Applicable for intra-band contiguous CA without UL CA.

Note 3: Applicable for intra-band contiguous CA with UL CA.

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
NR Band n5 (SCS 15kHz)	5	Low Range	165300	826.5
		Middle Range	167300	836.5
		High Range	169300	846.5
	10	Low Range	165800	829
		Middle Range	167300	836.5
		High Range	168300	844
	15	Low Range	166300	831.5
		Middle Range	167300	836.5
		High Range	168300	841.5
	20	Low Range	166800	834
		Middle Range	167300	836.5
		High Range	167800	839

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
NR Band n7 (SCS 15kHz)	5	Low Range	500500	2502.5
		Middle Range	507000	2535
		High Range	513500	2567.5
	10	Low Range	501000	2505
		Middle Range	507000	2535
		High Range	513000	2565
	15	Low Range	501500	2507.5
		Middle Range	507000	2535
		High Range	512500	2562.5
	20	Low Range	502000	2510
		Middle Range	507000	2535
		High Range	512000	2560
	25	Low Range	502500	2512.5
		Middle Range	507000	2535
		High Range	511500	2557.5
	30	Low Range	503000	2515
		Middle Range	507000	2535
		High Range	511000	2555
	40	Low Range	504000	2520
		Middle Range	507000	2535
		High Range	510000	2550
	50	Low Range	505000	2525
		Middle Range	507000	2535
		High Range	509000	2545

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
NR Band n12 (SCS 15kHz)	5	Low Range	140300	701.5
		Middle Range	141500	707.5
		High Range	142700	713.5
	10	Low Range	140800	704
		Middle Range	141500	707.5
		High Range	142200	711
	15	Low Range	141300	706.5
		Middle Range	141500	707.5
		High Range	141700	708.5

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
NR Band n38 (SCS 30kHz)	10	Low Range	515000	2575
		Middle Range	519000	2595
		High Range	523000	2615
	15	Low Range	515500	2577.5
		Middle Range	519000	2595
		High Range	522500	2612.5
	20	Low Range	516000	2580
		Middle Range	519000	2595
		High Range	522000	2610
	25	Low Range	516500	2582.5
		Middle Range	519000	2595
		High Range	521500	2607.5
	30	Low Range	517000	2585
		Middle Range	519000	2595
		High Range	521000	2605
	40	Low Range	518000	2590
		Middle Range	519000	2595
		High Range	520000	2600

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
NR Band n41 (SCS 30kHz)	10	Low Range	500202	2501.01
		Middle Range	518598	2592.99
		High Range	537000	2685
	15	Low Range	500700	2503.5
		Middle Range	518598	2592.99
		High Range	536496	2682.48

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
	20	Low Range	501204	2506.02
		Middle Range	518598	2592.99
		High Range	535998	2679.99
	30	Low Range	502200	2511
		Middle Range	518598	2592.99
		High Range	534996	2674.98
	40	Low Range	503202	2516.01
		Middle Range	518598	2592.99
		High Range	534000	2670
	50	Low Range	504204	2521.02
		Middle Range	518598	2592.99
		High Range	532998	2664.99
	60	Low Range	505200	2526
		Middle Range	518598	2592.99
		High Range	531996	2659.98
	70	Low Range	506202	2531.01
		Middle Range	518598	2592.99
		High Range	531000	2655
	80	Low Range	507204	2536.02
		Middle Range	518598	2592.99
		High Range	529998	2649.99
	90	Low Range	508200	2541
		Middle Range	518598	2592.99
		High Range	528996	2644.98
	100	Low Range	509202	2546.01
		Middle Range	518598	2592.99
		High Range	528000	2640

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
NR Band n66(SCS 15kHz)	5	Low Range	342500	1712.5
		Middle Range	349000	1745
		High Range	355500	1777.5
	10	Low Range	343000	1715
		Middle Range	349000	1745
		High Range	355000	1775
	15	Low Range	343500	1717.5
		Middle Range	349000	1745
		High Range	354500	1772.5
	20	Low Range	344000	1720
		Middle Range	349000	1745

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
		High Range	354000	1770

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
NR Band n77 (3450-3550 MHz) (SCS 30kHz)	10	Low Range	630334	3455.01
		Middle Range	633332	3499.98
		High Range	636333	3544.995
	15	Low Range	630500	3457.5
		Middle Range	633332	3499.98
		High Range	636166	3542.49
	20	Low Range	630668	3460.02
		Middle Range	633332	3499.98
		High Range	636000	3540
	25	Low Range	630834	3462.51
		Middle Range	633332	3499.98
		High Range	635833	3537.495
	30	Low Range	631000	3465
		Middle Range	633332	3499.98
		High Range	635666	3534.99
	40	Low Range	631334	3470.01
		Middle Range	633332	3499.98
		High Range	635332	3529.98
	50	Low Range	631667	3475.005
		Middle Range	633332	3499.98
		High Range	635000	3525
	60	Low Range	632000	3480
		Middle Range	633332	3499.98
		High Range	634666	3519.99
	70	Low Range	632334	3485.01
		Middle Range	633332	3499.98
		High Range	634333	3514.995
	80	Low Range	632667	3490.005
		Middle Range	633332	3499.98
		High Range	634000	3510
	90	Low Range	633000	3495
		Middle Range	633332	3499.98
		High Range	633666	3504.99
	100	Low Range	633332	3499.98
		Middle Range	633332	3499.98
		High Range	633332	3499.98
NR Band n77	10	Low Range	647000	3705

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
(3700-3980 MHz) (SCS 30kHz)		Middle Range	656000	3840
		High Range	665000	3975
		Low Range	647167	3707.505
	15	Middle Range	656000	3840
		High Range	664833	3972.495
		Low Range	647334	3710.01
	20	Middle Range	656000	3840
		High Range	664666	3969.99
		Low Range	647500	3712.5
	25	Middle Range	656000	3840
		High Range	664500	3967.5
		Low Range	647667	3715.005
	30	Middle Range	656000	3840
		High Range	664333	3964.995
		Low Range	648000	3720
	40	Middle Range	656000	3840
		High Range	664000	3960
		Low Range	648334	3725.01
	50	Middle Range	656000	3840
		High Range	663666	3954.99
		Low Range	648667	3730.005
	60	Middle Range	656000	3840
		High Range	663333	3949.995
		Low Range	649000	3735
	70	Middle Range	656000	3840
		High Range	663000	3945
		Low Range	649334	3740.01
	80	Middle Range	656000	3840
		High Range	662666	3939.99
		Low Range	649667	3745.005
	90	Middle Range	656000	3840
		High Range	662333	3934.995
		Low Range	650000	3750
	100	Middle Range	656000	3840
		High Range	662000	3930

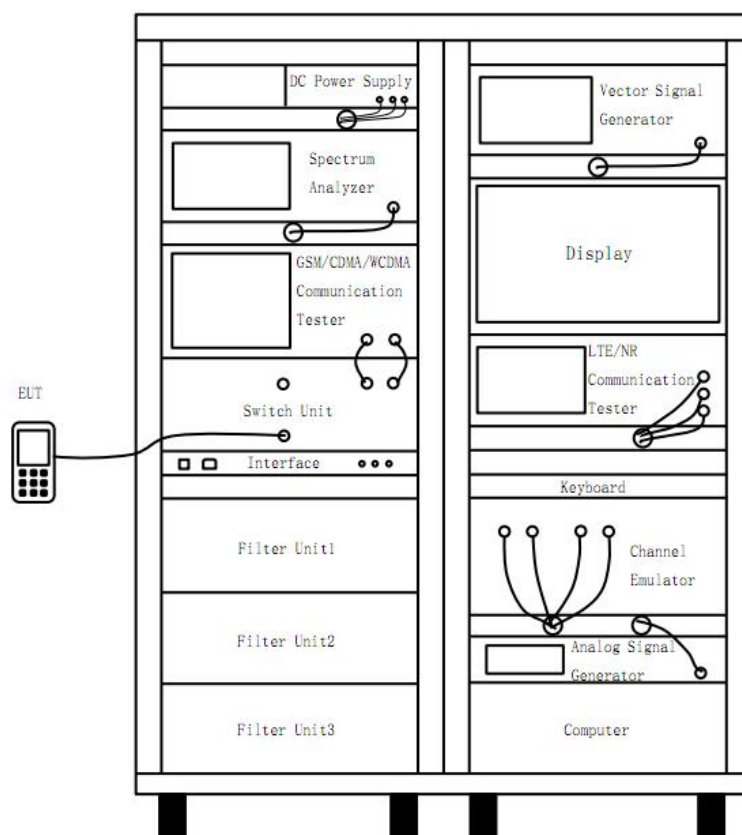
Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
NR Band n78 (3450-3550 MHz)	10	Low Range	630334	3455.01
		Middle Range	633332	3499.98
		High Range	636333	3544.995

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
(SCS 30kHz)	15	Low Range	630500	3457.5
		Middle Range	633332	3499.98
		High Range	636166	3542.49
	20	Low Range	630668	3460.02
		Middle Range	633332	3499.98
		High Range	636000	3540
	25	Low Range	630834	3462.51
		Middle Range	633332	3499.98
		High Range	635833	3537.495
	30	Low Range	631000	3465
		Middle Range	633332	3499.98
		High Range	635666	3534.99
	40	Low Range	631334	3470.01
		Middle Range	633332	3499.98
		High Range	635332	3529.98
	50	Low Range	631668	3475.02
		Middle Range	633332	3499.98
		High Range	635000	3525
	60	Low Range	632000	3480
		Middle Range	633332	3499.98
		High Range	634666	3519.99
	70	Low Range	632334	3485.01
		Middle Range	633332	3499.98
		High Range	634332	3514.98
	80	Low Range	632668	3490.02
		Middle Range	633332	3499.98
		High Range	634000	3510
	90	Low Range	633000	3495
		Middle Range	633332	3499.98
		High Range	633666	3504.99
	100	Low Range	633332	3499.98
		Middle Range	633332	3499.98
		High Range	633332	3499.98
NR Band n78 (3700-3800 MHz) (SCS 30kHz)	10	Low Range	647000	3705
		Middle Range	650000	3750
		High Range	653000	3795
	15	Low Range	647167	3707.505
		Middle Range	650000	3750
		High Range	652833	3792.495
	20	Low Range	647334	3710.01
		Middle Range	650000	3750

Test Mode	Channel Bandwidth (MHz)	UL Channel	UL Channel No.	UL Frequency (MHz)
	25	High Range	652666	3789.99
		Low Range	647500	3712.5
		Middle Range	650000	3750
	30	High Range	652500	3787.5
		Low Range	647668	3715.02
		Middle Range	650000	3750
	40	High Range	652332	3784.98
		Low Range	648000	3720
		Middle Range	650000	3750
	50	High Range	652000	3780
		Low Range	648334	3725.01
		Middle Range	650000	3750
	60	High Range	651666	3774.99
		Low Range	648668	3730.02
		Middle Range	650000	3750
	70	High Range	651332	3769.98
		Low Range	649000	3735
		Middle Range	650000	3750
	80	High Range	651000	3765
		Low Range	649332	3739.98
		Middle Range	650000	3750
	90	High Range	650666	3759.99
		Low Range	649668	3745.02
		Middle Range	650000	3750
	100	High Range	650332	3754.98
		Low Range	649668	3745.02
		Middle Range	650000	3750
	100	High Range	650332	3754.98
		Low Range	649668	3745.02
		Middle Range	650000	3750

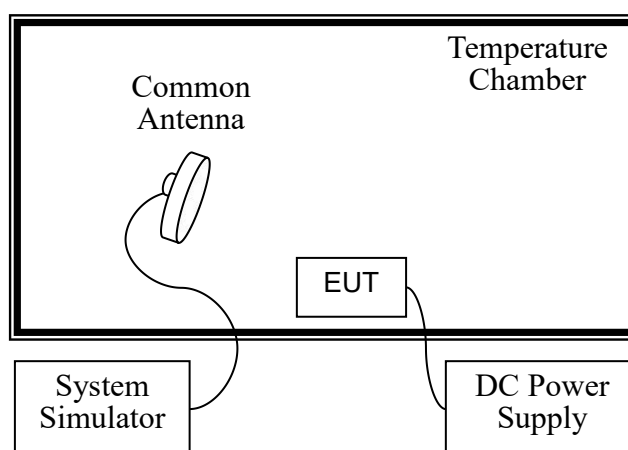
4.4 Test Setup

4.4.1 For Antenna Port Test



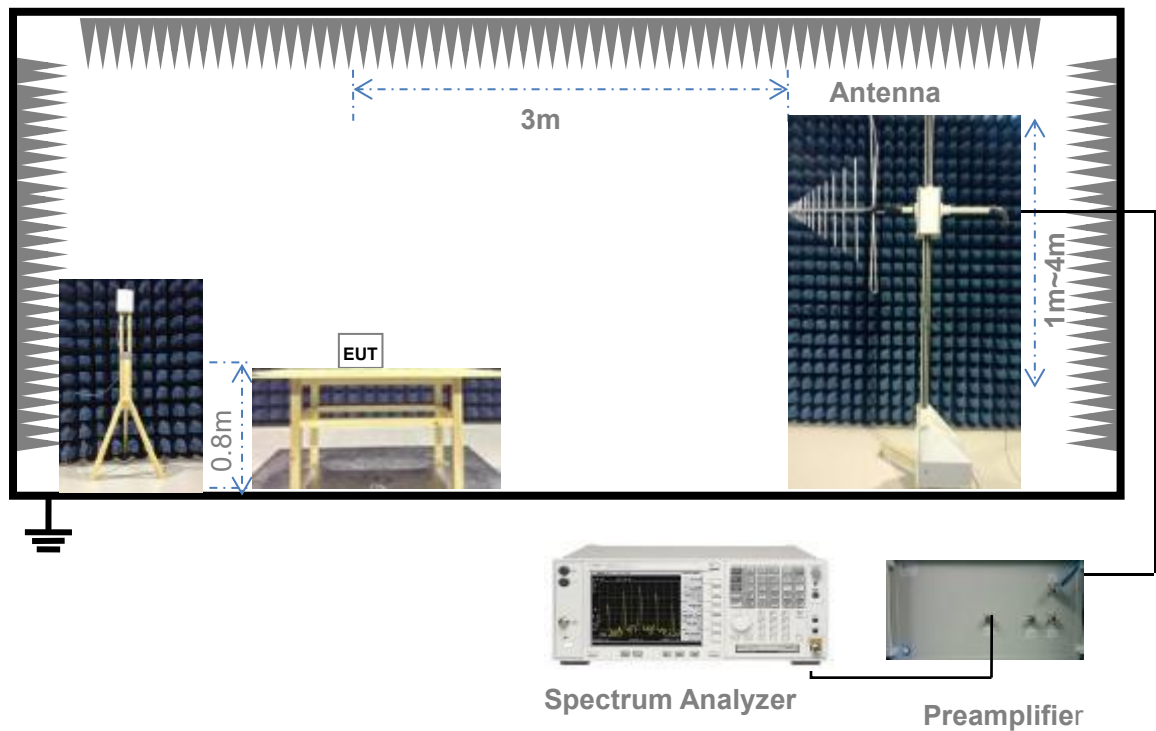
(Diagram 1)

4.4.2 For Frequency Stability Test



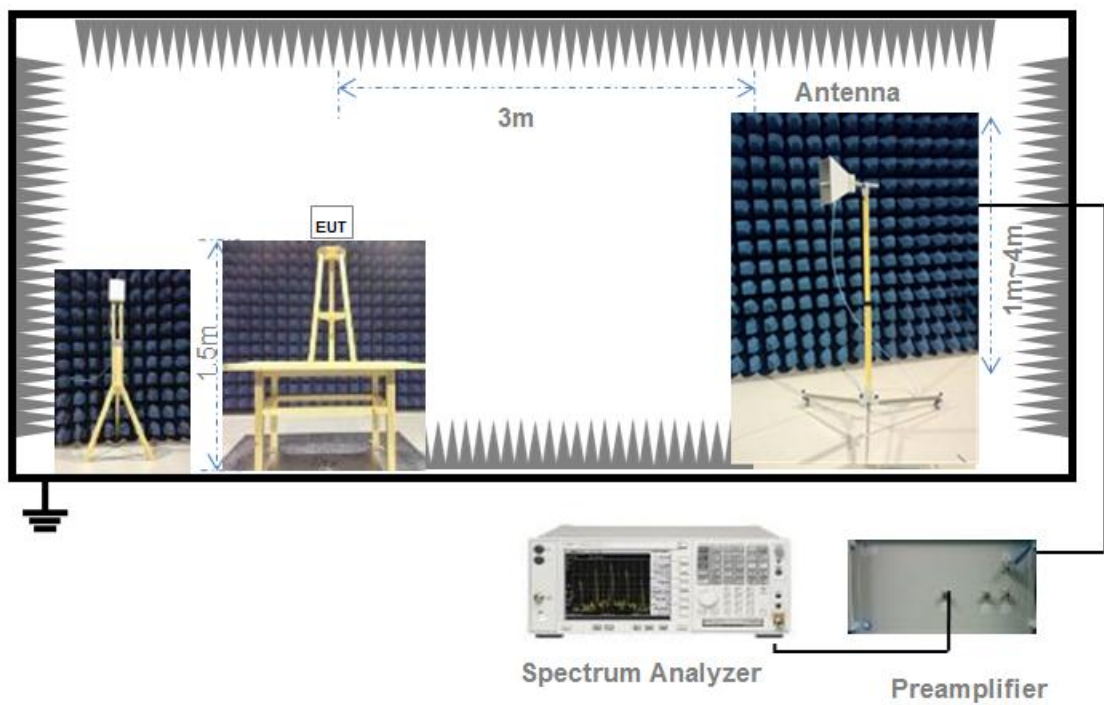
(Diagram 2)

4.4.3 For Radiated Test (30 MHz ~ 1 GHz)



(Diagram 3)

4.4.4 For Radiated Test (Above 1 GHz)



(Diagram 4)

5 TEST ITEMS

5.1 Transmitter Radiated Power (EIRP/ERP)

5.1.1 Limit

FCC § 2.1046 & 22.913(a) & 24.232(c) & 27.50(a) & 27.50(b) & 27.50(c) & 27.50(d) & 27.50(h) & 27.50(j) & 27.50(k)

According to FCC section 22.913(a) (5), the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC section 24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to FCC section 27.50(a) (3), for mobile and portable stations transmitting in the 2305-2315MHz band or the 2350-2360MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards.

FCC section 27.50(b) (10), portable stations (hand-held devices) transmitting in the 746-757MHz, 776-788MHz, and 805-806MHz bands are limited to 3 watts ERP.

FCC section 27.50(c) (10), portable stations (hand-held devices) in the 600MHz uplink band and the 698-746MHz band, and fixed and mobile stations in the 600MHz uplink band are limited to 3 watts ERP.

FCC section 27.50(d) (4), fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(7) Fixed, mobile, and portable (hand-held) stations operating in the 2000-2020 MHz band are limited to 2 watts EIRP.

And FCC section 27.50(h) (2), for mobile and other user stations, mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

FCC section 27.50(j) (3), for mobile, and portable (hand-held) stations operating in the 3700-3980 MHz band are limited to 1 watt EIRP.

FCC section 27.50(k) (3), Mobile devices are limited to 1Watt (30 dBm) EIRP in the 3450-3550 MHz band.

According to FCC section 90.635(b), the maximum output power of the transmitter for mobile stations is 100 watts (20dBW).

5.1.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description is used for conducted test, and the section 4.4.3 and 4.4.4 (Diagram 3, 4) test setup description is used for radiated test. The photo of test setup please refer to ANNEX B.

5.1.3 Test Procedure

Description of the Conducted Output Power Measurement

The EUT is coupled to the SS with attenuator through power splitter; the RF load attached to EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. A system simulator is used to establish communication with the EUT, and its parameters are set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The relevant equation for determining the conducted measured value is:

$$\text{Conducted Output Power Value (dBm)} = \text{Measured Value (dBm)} + \text{Path Loss (dB)}$$

where:

Conducted Output Power Value = final conducted measured value in the conducted power test, in dBm;

Measured Value = measured conducted power received by spectrum analyzer or power meter, in dBm;

Path Loss = signal attenuation in the connecting cable between the transmitter and spectrum analyzer or power meter, including external cable loss, in dB;

During the test, the data of Path Loss (dB) is added in the spectrum analyzer or power meter, so Measured Value (dBm) is the final values which contains the data of Path Loss (dB).

For example:

In the conducted output power test, when measured value for GSM850 is 24.7 dBm, and path loss is 8.5 dB, then final conducted output power value is:

$$\text{Conducted Output Power Value (dBm)} = 24.7 \text{ dBm} + 8.5 \text{ dB} = 33.2 \text{ dBm}$$

Description of the Transmitter Radiated Power Measurement

In many cases, the RF output power limits for licensed digital transmission devices is specified in terms of effective radiated power (ERP) or equivalent isotropic radiated power (EIRP). Typically, ERP is specified when the operating frequency is less than or equal to 1 GHz and EIRP is specified when the operating frequency is greater than 1 GHz. Both are determined by adding the transmit antenna gain to the conducted RF output power with the primary difference between the two being that when determining the

ERP, the transmit antenna gain is referenced to a dipole antenna (i.e., dBd) whereas when determining the EIRP, the transmit antenna gain is referenced to an isotropic antenna (dBi).

Final measurement calculation as below:

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP/EIRP} = P_{\text{Meas}} + \text{GT} - \text{LC}$$

where:

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

dBd (ERP)=dBi (EIRP) -2.15 dB

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

For example:

In the EIRP test, when P_{Meas} value for GSM1900 is 30.2 dBm, LC is 0.6 dB, and GT is -3.4 dB, then final EIRP value is:

$$\text{EIRP for GSM1900} = 30.2 \text{ dBm} - 3.4 \text{ dBi} - 0.6 \text{ dB} = 26.2 \text{ dBm}$$

The relevant equation for determining the ERP/EIRP from the radiated RF output power is:

$$\text{ERP/EIRP (dBm)} = \text{SA Read Value (dBm)} + \text{Correction Factor (dB)}$$

where:

ERP/EIRP = effective or equivalent radiated power, in dBm;

SA Read Value = measured transmitter power received by EMI receiver or spectrum analyzer, in dBm;

Correction Factor = total correction factor including cable loss, in dB;

During the test, the data of Correction Factor (dB) is added in the EMI receiver or spectrum analyzer, so SA Read Value (dBm) is the final values which contains the data of Correction Factor (dB).

For example:

In the ERP test, when SA read value for GSM850 is 21dBm, and correction factor is 8dB, then final ERP value for GSM850 is:

$$\text{ERP (dBm)} = 21\text{dBm} + 8\text{dB} = 29\text{dBm}$$

5.1.4 Test Result

Please refer to the document “BL-SH25B1277-501 Data Part 1.pdf”.

5.2 Peak to Average Ratio

5.2.1 Limit

FCC § 2.1046 & 22.913(d) & 24.232(d) & 27.50(d) & 27.50(j) & 27.50(k)

In addition, when the transmitter power is measured in terms of average value, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

According to 22.913(d), Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

According to FCC section 24.232(d), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with 24.232 (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of § 24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

FCC section 24.232(e), peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

According to FCC section 27.50(d) (5) & 27.50(j) & 27.50(k), in measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

5.2.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description is used for this test. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Here the lowest, middle and highest channels are selected to perform testing to verify the peak-to-average ratio.

According to KDB 971168 D01, there is CCDF procedure for PAPR:

- a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
- b) Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
- c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval as follows:

1) for continuous transmissions, set to 1 ms,

2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.

e) Record the maximum PAPR level associated with a probability of 0.1%.

Alternate procedure for PAPR:

Use one of the procedures presented in 4.1 to measure the total peak power and record as P_{Pk} . Use one of the applicable procedures presented 4.2 to measure the total average power and record as P_{Avg} . Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

$$PAPR (dB) = P_{Pk} (dBm) - P_{Avg} (dBm).$$

5.2.4 Test Result

Please refer to the document “BL-SH25B1277-501 Data Part 2.pdf”.

5.3 Occupied Bandwidth

5.3.1 Limit

FCC § 2.1049

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Many of the individual rule parts specify a relative OBW in lieu of the 99% OBW. In such cases, the OBW is defined as the width of the signal between two points, one below the carrier center frequency and on above the carrier center frequency, outside of which all emissions are attenuated by at least X dB below the transmitter power, where the value of X is typically specified as 26.

5.3.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description is used for this test. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

The following procedure shall be used for measuring power bandwidth.

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the anticipated OBW).
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.
- d) NOTE—Steps a) through c) may require iteration to adjust within the specified tolerances.
- e) For -26 dB OBW, the dynamic range of the spectrum analyzer at the selected RBW shall be at least 10dB below the target “-X dB down” requirement, e.g. -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be 36dB below the reference value.
- f) Set the detection mode to peak, and the trace mode to max hold.
- g) For 99% OBW, use the 99 % power bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.

If the instrument does not have a 99 % power bandwidth function, the trace data points are to be recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is

recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99 % power bandwidth is the difference between these two frequencies.

h) For -26 dB OBW, determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

Determine the “-X dB down amplitude” as equal to (reference value -X). Alternatively, this calculation can be performed by the analyzer by using the marker-delta function.

Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below “-X dB down amplitude” determined in step g). If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.

i) The OBW shall be reported by providing plot(s) of the measuring instrument display. The frequency and amplitude axes and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

j) Change variable modulations, coding, or channel bandwidth settings, then repeat above test procedures.

5.3.4 Test Result

Please refer to the document “BL-SH25B1277-501 Data Part 3.pdf”.

5.4 Frequency Stability

5.4.1 Limit

FCC § 2.1055 & 22.355 & 24.235 & 27.54

FCC § 2.1055

The frequency stability shall be measured with variation of ambient temperature as follows:

- (1) The temperature is varied from -30°C to +50°C.
- (2) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10°C through the range.

The frequency stability shall be measured with variation of primary supply voltage as follows:

- (1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than carried battery equipment.
- (2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating and point which shall be specified by the manufacture.
- (3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

FCC § 22.355

Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Table C-1—Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency range (MHz)	Base, fixed (ppm)	Mobile > 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

FCC § 24.235

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

FCC § 27.54

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

5.4.2 Test Setup

The section 4.4.2 (Diagram 2) test setup description is used for this test. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

1. The EUT is placed in a temperature chamber.
2. The temperature is set to 25°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured.
3. The temperature is increased by not more than 10 degrees, allowed to stabilize and soak, and then repeat the frequency error measurement.
4. Repeat procedure 3 until +50°C and -30°C is reached.
5. Change supply voltage, and repeat measurement until extreme voltage is reached.

5.4.4 Test Result

Please refer to the document “BL-SH25B1277-501 Data Part 4.pdf”.

5.5 Spurious Emission at Antenna Terminals

5.5.1 Limit

FCC § 2.1051 & 22.917(a) & 24.238(a) & 27.53(a) & 27.53(c) & 27.53(f) & 27.53(g) & 27.53(h) & 27.53(l) & 27.53(m) & 27.53(n)

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

FCC § 22.917(a) & 24.238(a)

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. This is calculated to be -13 dBm.

FCC § 27.53(a) (4)

For mobile and portable stations operating in the 2305-2315MHz and 2350-2360MHz bands:

(1) By a factor of not less than: $43 + 10 \log(P)$ dB on all frequencies between 2305 and 2320MHz and on all frequencies between 2345 and 2360MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log(P)$ dB on all frequencies between 2320 and 2324MHz and on all frequencies between 2341 and 2345MHz, not less than $61 + 10 \log(P)$ dB on all frequencies between 2324 and 2328MHz and on all frequencies between 2337 and 2341MHz, and not less than $67 + 10 \log(P)$ dB on all frequencies between 2328 and 2337MHz.

(2) By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2300 and 2305MHz, $55 + 10 \log(P)$ dB on all frequencies between 2296 and 2300MHz, $61 + 10 \log(P)$ dB on all frequencies between 2292 and 2296MHz, $67 + 10 \log(P)$ dB on all frequencies between 2288 and 2292MHz, and $70 + 10 \log(P)$ dB below 2288MHz.

(3) By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2360 and 2365MHz, and not less than $70 + 10 \log(P)$ dB above 2365MHz.

FCC § 27.53(c)

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the

band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;

(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the

band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater.

However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth

of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC § 27.53(f)

For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to - 70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC § 27.53(g)

For operations in the 600MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43+10*\log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC § 27.53(h) (1)

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

FCC § 27.53(l) (2)

For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

FCC § 27.53(m) (4)

For mobile digital stations (BRS and EBS stations), the attenuation factor shall be not less than:

- $40 + 10 \log P$ dB (-10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.
- $43 + 10 \log P$ dB (-13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,
- $55 + 10 \log P$ dB (-25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC § 27.53(n) (2)

For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

5.5.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency blocks a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

1. The EUT is coupled to the system simulator and spectrum analyzer; the RF load attached to EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading.
2. CMW500 is used to establish communication with the EUT, and its parameters are set to force the EUT

transmitting at maximum output power.

3. The RF output of the transmitter is connected to the input of the spectrum analyzer through sufficient attenuation.
4. Spurious emissions are tested with 0.001MHz RBW for frequency less than 150kHz, 0.01MHz RBW for frequency less than 30MHz, 0.1MHz RBW for frequency less than 1GHz, and 1MHz RBW for frequency above 1GHz. And sweep point number are at least 401, referring to following formula.

Sweep point number = Span/RBW

VBW=3*RBW

Detector Mode=mean or average power

5. Record the frequencies and levels of spurious emissions.

5.5.4 Test Result

Please refer to the document “BL-SH25B1277-501 Data Part 5.pdf”.

5.6 Band Edge

5.6.1 Limit

FCC § 2.1051 & 22.917(a) & 24.238(a) & 27.53(a) & 27.53(c) & 27.53(g) & 27.53(h) & 27.53(l) & 27.53(m) & 27.53(n)

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

FCC § 22.917(a) & 24.238(a)

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. This is calculated to be -13 dBm.

FCC § 27.53(a) (4)

For mobile and portable stations operating in the 2305-2315MHz and 2350-2360MHz bands:

(1) By a factor of not less than: $43 + 10 \log(P)$ dB on all frequencies between 2305 and 2320MHz and on all frequencies between 2345 and 2360MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log(P)$ dB on all frequencies between 2320 and 2324MHz and on all frequencies between 2341 and 2345MHz, not less than $61 + 10 \log(P)$ dB on all frequencies between 2324 and 2328MHz and on all frequencies between 2337 and 2341MHz, and not less than $67 + 10 \log(P)$ dB on all frequencies between 2328 and 2337MHz.

(2) By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2300 and 2305MHz, $55 + 10 \log(P)$ dB on all frequencies between 2296 and 2300MHz, $61 + 10 \log(P)$ dB on all frequencies between 2292 and 2296MHz, $67 + 10 \log(P)$ dB on all frequencies between 2288 and 2292MHz, and $70 + 10 \log(P)$ dB below 2288MHz.

(3) By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2360 and 2365MHz, and not less than $70 + 10 \log(P)$ dB above 2365MHz.

FCC § 27.53(c)

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the

band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;

(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the

band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater.

However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth

of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC § 27.53(g)

For operations in the 600MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43+10*\log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC § 27.53(h) (1)

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

FCC § 27.53(l) (2)

For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

FCC § 27.53(m) (4)

For mobile digital stations (BRS and EBS stations), the attenuation factor shall be not less than:

- $40+10\log P$ dB (-10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.
- $43+10\log P$ dB (-13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,

- $55 + 10 \log P$ dB (-25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC § 27.53(n) (2)

For mobile operations in the 3450 - 3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

5.6.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading.

1. The EUT is coupled to the system simulator and spectrum analyzer; the RF load attached to EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading.

2. CMW500 is used to establish communication with the EUT, and its parameters are set to force the EUT transmitting at maximum output power.

3. The RF output of the transmitter is connected to the input of the spectrum analyzer through sufficient attenuation.

4. The center of the spectrum analyzer was set to block edge frequency.

5. Band edge are tested with $1\% \text{cBW}$ (RBW), and sweep point number referred to following formula.

$$\text{Sweep point number} = 2 \times \text{Span} / \text{RBW}$$

$$\text{VBW} = 3 \text{RBW}$$

6. Record the frequencies and levels of spurious emissions.

For mobile and portable stations, on all frequencies between 763 – 775 MHz and 793 – 805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment. Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment, a bandwidth of 10 kHz was used instead to show compliance. By using a 10 kHz bandwidth on the spectrum analyzer.

$$10 \cdot \log(10 \text{ kHz} / 6.25 \text{ kHz}) = 2.04 \text{ dB}$$

$$\text{Limit Line} = -35 \text{ dBm} + 2.04 \text{ dB} = -32.96 \text{ dBm}$$

5.6.4 Test Result

Please refer to the document “BL-SH25B1277-501 Data Part 6.pdf”.

5.7 Field Strength of Spurious Radiation

5.7.1 Limit

FCC § 2.1053 & 22.917(a) & 24.238(a) & 27.53(a) & 27.53(c) & 27.53(f) & 27.53(g) & 27.53(h) & 27.53(l) & 27.53(m) & 27.53(n)

FCC § 22.917(a) & 24.238(a)

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. This is calculated to be -13 dBm.

FCC § 27.53(a) (4)

For mobile and portable stations operating in the 2305-2315MHz and 2350-2360MHz bands:

(1) By a factor of not less than: $43 + 10 \log(P)$ dB on all frequencies between 2305 and 2320MHz and on all frequencies between 2345 and 2360MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log(P)$ dB on all frequencies between 2320 and 2324MHz and on all frequencies between 2341 and 2345MHz, not less than $61 + 10 \log(P)$ dB on all frequencies between 2324 and 2328MHz and on all frequencies between 2337 and 2341MHz, and not less than $67 + 10 \log(P)$ dB on all frequencies between 2328 and 2337MHz.

(2) By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2300 and 2305MHz, $55 + 10 \log(P)$ dB on all frequencies between 2296 and 2300MHz, $61 + 10 \log(P)$ dB on all frequencies between 2292 and 2296MHz, $67 + 10 \log(P)$ dB on all frequencies between 2288 and 2292MHz, and $70 + 10 \log(P)$ dB below 2288MHz.

(3) By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2360 and 2365MHz, and not less than $70 + 10 \log(P)$ dB above 2365MHz.

FCC § 27.53(c)

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the

band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;

(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the

band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;

(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of

measurement instrumentation employing a resolution bandwidth of 100 kHz or greater.

However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth

of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC § 27.53(f)

For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to - 70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC § 27.53(g)

For operations in the 600MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43+10\log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC § 27.53(h) (1)

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

FCC § 27.53(i) (2)

For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

FCC § 27.53(m) (4)

For mobile digital stations (BRS and EBS stations), the attenuation factor shall be not less than:

- $40+10\log P$ dB (-10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.
- $43+10\log P$ dB (-13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,
- $55+10\log P$ dB (-25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service

licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC § 27.53(n) (2)

For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

5.7.2 Test Setup

The section 4.4.3 and 4.4.4 (Diagram 3, 4) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

1. On a test site, the EUT shall be placed at 80cm height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. During the measurement of the EUT, the resolution bandwidth was to 1 MHz and the average bandwidth was set to 1 MHz.
5. The transmitter shall be switched on; the measuring receiver shall be tuned to the frequency of the transmitter under test.
6. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
8. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
9. The maximum signal level detected by the measuring receiver shall be noted.
10. The EUT was replaced by half-wave dipole (824 ~ 849 MHz) or horn antenna (1 850 ~ 1 910 MHz) connected to a signal generator.
11. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to

increase

the sensitivity of the measuring receiver.

12. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.

13. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.

14. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

15. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

Final measurement calculation as below:

The relevant equation for determining the ERP/EIRP from the radiated RF output power is:

$$\text{ERP/EIRP (dBm)} = \text{SA Read Value (dBm)} + \text{Correction Factor (dB)}$$

where:

ERP/EIRP = effective or equivalent radiated power, in dBm;

SA Read Value = measured transmitter power received by EMI receiver or spectrum analyzer, in dBm;

Correction Factor = total correction factor including cable loss, in dB;

During the test, the data of Correction Factor (dB) is added in the EMI receiver or spectrum analyzer, so SA Read Value (dBm) is the final values which contains the data of Correction Factor (dB).

For example:

In the ERP test, when SA read value for GSM850 is 21dBm, and correction factor is 8dB, then final ERP value for GSM850 is:

$$\text{ERP (dBm)} = 21\text{dBm} + 8\text{dB} = 29\text{dBm}$$

5.7.4 Test Result

Please refer to the document “BL-SH25B1277-501 Data Part 7.pdf”.

ANNEX B TEST SETUP PHOTOS

Please refer to the document “BL-SH25B1277-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer to the document “BL-SH25B1277-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer to the document “BL-SH25B1277-AI.PDF”.

Statement

1. The Testing Center guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
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--END OF REPORT--