

# TEST REPORT

**Application No.:** SZCR2504001359MO  
**Applicant:** Shenzhen Favalon Technology Co., Ltd  
**Address of Applicant:** 8th Floor, Building 2, Huaqiaocheng Chuangxiang Building, Beizhan Community, Minzhi Street, Longhua District, Shenzhen, China  
**Manufacturer:** Shenzhen Favalon Technology Co., Ltd  
**Address of Manufacturer:** 8th Floor, Building 2, Huaqiaocheng Chuangxiang Building, Beizhan Community, Minzhi Street, Longhua District, Shenzhen, China  
**EUT Description:** 5G Module  
**Model No.:** AN762S-GL  
**Trade Mark:** Favalon  
**FCC ID:** 2A8RBAN762SGL  
**Standards:** 47 CFR Part 2  
 47 CFR Part 22  
 47 CFR Part 24  
 47 CFR Part 27  
 47 CFR Part 90  
 47 CFR Part 96  
**Date of Receipt:** 2025/04/08  
**Date of Test:** 2025/04/16 to 2025/05/20  
**Date of Issue:** 2025/05/27

<b>Test Result :</b>	<b>PASS *</b>
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\* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

*Keny Xu*

Keny Xu  
EMC Laboratory Manager



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 2 of 54

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2025/05/27		Original

Authorized for issue by:				
		Donjon . Huang		
		Donjon Huang/Project Engineer		
		Eric Fu		
		Eric Fu/Reviewer		



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## 2 Test Summary

### 2.1 GSM850/UMTS Band 5/LTE Band 5/26(824~849 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913(a)(5)	ERP ≤ 7 W	Refer to the Appendixs	Pass
Peak-Average Ratio	§22.913(d)	Limit≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §22.917(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.		Pass
Spurious Emission at Antenna Terminals	§2.1051, §22.917(a)	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.		Pass
Field Strength of Spurious Radiation	§2.1053, §22.917(a)	FCC: ≤ -13 dBm/100 kHz.		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §22.355	±2.5ppm.		Pass



## 2.2 GSM 1900/UMTS Band 2 /LTE Band 2 /25

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232(c)	EIRP ≤ 2 W	Refer to the Appendixs	Pass
Peak-Average Ratio	§24.232(d)	Limit≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §24.238(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.		Pass
Spurious Emission at Antenna Terminals	§2.1051, §24.238(a)	≤ -13 dBm/1 MHz, from 9 kHz to 10 <sup>th</sup> harmonics but outside authorized operating frequency ranges.		Pass
Field Strength of Spurious Radiation	§2.1053, §24.238(a)	≤ -13 dBm/1 MHz.		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §24.235	Within authorized bands of operation/frequency block.		Pass



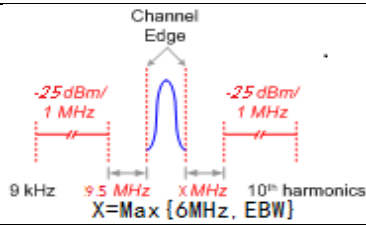
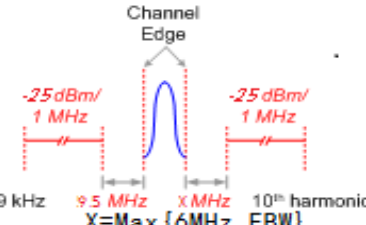
## 2.3 UMTS Band 4 /LTE Band 4 /66 /CA\_66C

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(d)(4)	EIRP ≤ 1 W	Refer to the Appendixs	Pass
Peak-Average Ratio	§27.50(d)(5)	Limit≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §27.53(h)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.		Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(h)	≤ -13 dBm/1 MHz, from 9 kHz to 10 <sup>th</sup> harmonics but outside authorized operating frequency ranges.		Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(h)	≤ -13 dBm/1 MHz.		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.		Pass





### 2.4 LTE Band 7/38/41/ CA\_38C

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(h)(2)	EIRP ≤ 2W	Refer to the Appendixs	Pass
Peak-Average Ratio	---	≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §27.53(m)(4)	For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. 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.		Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)			Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(m)			Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.		Pass



## 2.5 LTE Band 12/17

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(c)(10)	ERP ≤ 3 W.	Refer to the Appendixs	Pass
Peak-Average Ratio	---	Limit≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])		Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])		Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	FCC: ≤ -13 dBm/100 kHz.		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.		Pass



## 2.6 LTE Band 13

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(b)(10)	ERP ≤ 3 W.	Refer to the Appendixs	Pass
Peak-Average Ratio	---	Limit≤13 dB		Pass
Bandwidth	§2.1049,	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §27.53(c)	≤ 43+10log10(P[Watts])		Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(c) §27.53(f)	≤ -13 dBm/100 kHz, from 9 kHz to 10 <sup>th</sup> harmonics but outside authorized operating frequency ranges. 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. 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.		Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(c) §27.53(f)	FCC: ≤ -13 dBm/100 kHz. 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.		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.		Pass





## 2.7 LTE Band 14

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §90.542(a)	ERP ≤ 3 W.	Refer to the Appendixs	Pass
Peak-Average Ratio	---	Limits≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Emission Mask	§2.1051 §90.210(b)	Transmitters designed for operation under this part on frequencies other than listed in this section must meet the emission mask requirements of Emission Mask B. Equipment operating under this part on frequencies allocated to but shared with the Federal Government, must meet the applicable Federal Government technical standards (b) Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows: (1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB..(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.		Pass
Band Edges Compliance	§2.1051 §90.543(e)(2)(3)	(1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.(2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not		Pass



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 10 of 54

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
		less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.		
Spurious Emission at Antenna Terminals	§2.1051, §90.543(c) §90.543(f)	FCC: $\leq -13$ dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges. For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics 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.		Pass
Field Strength of Spurious Radiation	§2.1053, §90.543(c) §90.543(f)	FCC: $\leq -13$ dBm/100 kHz. For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics 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.		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §90.213	Within authorized bands of operation/frequency block.		Pass



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## 2.8 LTE Band 26(814~824 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Transmitter Conducted Power Output	§2.1046, §90.635(b)	< 100 W.	Refer to the Appendixs	Pass
Peak-Average Ratio	---	Limit≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Emission Mask	§2.1051 § 90.691(a)	For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50+10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.		Pass
Spurious Emission at Antenna Terminals	§2.1051, §90.691	< 43 + 10Log10(P[Watts]) for all out-of-band emissions		Pass
Field Strength of Spurious Radiation	§2.1053, §90.691	< 43 + 10Log10(P[Watts]) for all out-of-band emissions		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §90.213	Within authorized bands of operation/frequency block.		Pass



## 2.9 LTE Band 42 /CA\_42C

### 3450-3550MHz:

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(k)(3)	EIRP ≤ 30dBm	Refer to the Appendixs	Pass
Peak-Average Ratio	§27.50(k)(4)	Limit≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §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.		Pass
Spurious Emission at Antenna Terminals	§2.1051, §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.		Pass
Field Strength of Spurious Radiation	§2.1053, §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.		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/ frequency block.		Pass





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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 13 of 54

## 2.10 LTE Band 71

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(c)(10)	ERP ≤ 3 W	Refer to the Appendixs	Pass
Peak-Average Ratio	---	Limit≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])		Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])		Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	≤ -13 dBm/1 MHz.		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	within the authorized bands of operation.		Pass



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### 2.11 LTE Band 42/ LTE Band 48/ LTE CA\_42C/ LTE CA\_48C

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §96.41	EIRP ≤ 23dBm/10MHz	Refer to the Appendixs	Pass
Peak-Average Ratio	§96.41	FCC: Limit≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Adjacent Channel Leakage Ratio	§96.41	the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.		Pass
Band Edges Compliance	§2.1051, §96.41	for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge.		Pass
Spurious Emission at Antenna Terminals	§2.1051, §96.41	for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. (2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the		Pass



## SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 15 of 54

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
		conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.		
Field Strength of Spurious Radiation	§2.1053, §96.41	for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. (2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.		Pass
Frequency Stability	§2.1055, §96.41	Within authorized bands of operation/ frequency block.		Pass



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## 3 Contents

1	Cover Page .....	1
2	Test Summary.....	3
2.1	GSM850/UMTS Band 5/LTE Band 5/26(824~849 MHz) .....	3
2.2	GSM 1900/UMTS Band 2 /LTE Band 2 /25 .....	4
2.3	UMTS Band 4 /LTE Band 4 /66 /CA_66C.....	5
2.4	LTE Band 7/41/ CA_38C.....	6
2.5	LTE Band 12/17 .....	7
2.6	LTE Band 13.....	8
2.7	LTE Band 14.....	9
2.8	LTE Band 26(814~824 MHz).....	11
2.9	LTE Band 42 /CA_42C.....	12
2.10	LTE Band 71 .....	13
2.11	LTE Band 42/ LTE Band 48/ LTE CA_42C/ LTE CA_48C .....	14
3	Contents .....	16
4	General Information.....	18
4.1	General Description of EUT.....	18
4.2	Test Mode.....	19
4.3	Test Environment.....	19
4.4	Description of Support Units.....	19
4.5	Measurement Uncertainty.....	20
4.6	Test Location .....	21
4.7	Test Facility .....	21
4.8	Technical Specification .....	22
4.9	Equipment List.....	25
4.10	Test Frequencies .....	27
5	Description of Tests .....	42
5.1	Conducted Output Power .....	42
5.2	Effective (Isotropic) Radiated Power of Transmitter .....	43
5.3	Occupied Bandwidth .....	44
5.4	Band Edge at Antenna Terminals.....	45
5.5	Spurious And Harmonic Emissions at Antenna Terminal.....	46



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# SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 17 of 54

5.6	Peak-Average Ratio .....	47
5.7	Field Strength of Spurious Radiation.....	48
5.8	Frequency Stability / Temperature Variation .....	49
5.9	Test Setups .....	50
5.9.1	Test Setup 1 .....	50
5.9.2	Test Setup 2 .....	50
5.9.3	Test Setup 3 .....	51
5.10	Test Conditions .....	52
6	Appendixes.....	54



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## 4 General Information

### 4.1 General Description of EUT

EUT Description:	5G Module			
Model No.:	AN762S-GL			
Trade Mark:	Favalon			
Hardware Version:	V1.0			
Software Version:	84100.2000.00.01.05.01			
Power Supply:	DC4V			
IMEI:	RF Conducted	864911070062479		
	RSE	864911070062859		
Antenna Type:	<input checked="" type="checkbox"/> External, <input type="checkbox"/> Integrated			
Antenna Gain:	GSM850:	1.6dBi;	GSM1900:	1.9dBi;
	WCDMA Band II:	1.9dBi;	WCDMA Band IV:	1.1dBi;
	WCDMA Band V:	1.6dBi;		
	LTE Band 2:	0.7dBi;	LTE Band 4:	2.3dBi;
	LTE Band 5:	1.3dBi;	LTE Band 7:	1dBi;
	LTE Band 12:	1.4dBi;	LTE Band 13:	1.4dBi;
	LTE Band 14:	1.4dBi;	LTE Band 17:	1.4dBi;
	LTE Band 25:	1.9dBi;	LTE Band 26:	1dBi;
	LTE Band 38:	0.6dBi;	LTE Band 41:	1.2dBi;
	LTE Band 42:	-2.69dBi;	LTE Band 48:	-2.69dBi;
	LTE Band 66:	1.9dBi;	LTE Band 71:	0.9dBi;
	LTE CA_38C:	0.6dBi;	LTE CA_42C:	-2.69dBi;
	LTE CA_48C:	-2.69dBi;	LTE CA_66C:	1.9dBi;
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.			
	RF Cable:	9kHz ~ 30MHz (0.3dB)	30MHz ~ 1000MHz (0.6dB)	1000MHz ~ 2000MHz (0.8dB)
2000MHz ~ 4000MHz (1.1dB)		4000MHz ~ 6000MHz (1.8dB)	6000MHz ~ 12750MHz (2.6dB)	
Above 12750MHz(3.5dB)				
Remark:As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy,				



suitability, reliability or/and integrity of the information.

## 4.2 Test Mode

Test Mode	Test Modes Description
GSM/TM1	GSM system, GSM/GPRS, GMSK modulation
GSM/TM2	GSM system, EGPRS, 8PSK modulation
UMTS/TM1	UMTS system, WCDMA, QPSK modulation
LTE/TM1	LTE system, QPSK modulation
LTE/TM2	LTE system, 16QAM modulation
LTE/TM3	LTE system, 64QAM modulation
LTE/TM4	LTE system, 256QAM modulation
Remark: The test mode(s) are selected according to relevant radio technology specifications.	

## 4.3 Test Environment

Environment Parameter	101.0 kPa Selected Values During Tests	
Relative Humidity	45-56 % RH Ambient	
Value	Temperature(°C)	Voltage(V)
NTNV	22~25	4
LTLV	-30	3.8
LTHV	-30	4.2
HTLV	50	3.8
HTHV	50	4.2
Remark:		
NV: Normal Voltage	LV: Low Extreme Test Voltage	HV: High Extreme Test Voltage
NT: Normal Temperature	LT: Low Extreme Test Temperature	HT: High Extreme Test Temperature

## 4.4 Description of Support Units

Description	Manufacturer	Model No.
Motherboard	FAVALON	ADP-AN762S/AN782S-CN-HG-70-V1.2
Remark: all above the information of table are provided by client.		



## 4.5 Measurement Uncertainty

For a 95% confidence level ( $k = 2$ ), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	$\pm 0.41\text{dB}$
2	RF power density, conducted	$\pm 1.96\text{dB}$
3	Spurious emissions, conducted	$\pm 0.41\text{dB}$
4	Radio Frequency	$\pm 7.10 \times 10^{-8}$
5	Duty Cycle	$\pm 0.49\%$
6	Occupied Bandwidth	$\pm 0.2\%$
7	Radiated Spurious emission test(UE)	$\pm 4.8\text{dB}$ (30MHz-1GHz)
		$\pm 4.68\text{dB}$ (1GHz-6GHz)
		$\pm 4.52\text{dB}$ (6GHz-18GHz)
		$\pm 5.26\text{dB}$ (18GHz-40GHz)

### Remark:

The  $U_{\text{lab}}$  (lab Uncertainty) is less than  $U_{\text{CISPR/ETSI}}$  (CISPR/ETSI Uncertainty), so the test results  
 – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;  
 – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.





## 4.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

*No tests were sub-contracted.*

## 4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

### • A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

### • VCCI (Member No. 1937)

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

### • FCC –Designation Number: CN1336

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

### • Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.



### 4.8 Technical Specification

Characteristics	Description		
Radio System Type	<input checked="" type="checkbox"/> GSM	<input checked="" type="checkbox"/> UMTS	<input checked="" type="checkbox"/> LTE
Supported Frequency Range	Band	TX	RX
	GSM850	824 to 849 MHz	869 to 894 MHz
	GSM1900	1850 to 1910 MHz	1930 to 1990 MHz
	UMTS Band II	1850 to 1910 MHz	1930 to 1990 MHz
	UMTS Band IV	1710 to 1755 MHz	2110 to 2155 MHz
	UMTS Band V	824 to 849 MHz	869 to 894 MHz
	LTE Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	LTE Band 4	1710 to 1755 MHz	2110 to 2155 MHz
	LTE Band 5	824 to 849 MHz	869 to 894 MHz
	LTE Band 7	2500 to 2570 MHz	2620 to 2690 MHz
	LTE Band 12	699 to 716 MHz	729 to 746 MHz
	LTE Band 13	777 to 787 MHz	746 to 756 MHz
	LTE Band 14	788 to 798 MHz	758 to 768 MHz
	LTE Band 17	704 to 716 MHz	734 to 746 MHz
	LTE Band 25	1850 to 1915MHz	1930 to 1995 MHz
	LTE Band 26 (814 to 824 MHz )	814 to 824MHz	859 to 869 MHz
	LTE Band 26 (824 to 849 MHz )	824 to 849 MHz	869 to 894 MHz
	LTE Band 38	2570 to 2620 MHz	2570 to 2620 MHz
	LTE Band 41	2496 to 2690MHz	2496 to 2690MHz
	LTE Band 42	3450 to 3550 MHz	3450 to 3550 MHz
	LTE Band 42_ Part96	3550 to 3600 MHz	3550 to 3600 MHz
	LTE Band 48	3550 to 3700 MHz	3550 to 3700 MHz
	LTE Band 66	1710 to 1780 MHz	2110 to 2200 MHz
	LTE Band 71	663 to 698 MHz	617 to 652 MHz
	LTE CA_38C	2570 to 2620 MHz	2570 to 2620 MHz
	LTE CA_42C	3450 to 3550 MHz	3450 to 3550 MHz
	LTE CA_42C_ Part96	3550 to 3600 MHz	3550 to 3600 MHz



## SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 23 of 54

	LTE CA_48C	3550 to 3700 MHz		3550 to 3700 MHz		
	LTE CA_66C	1710 to 1780 MHz		2110 to 2200 MHz		
Supported Channel Bandwidth	GSM system:	<input checked="" type="checkbox"/> 0.2 MHz				
	UMTS system:	<input checked="" type="checkbox"/> 5 MHz				
	LTE Band 2	<input checked="" type="checkbox"/> 1.4 MHz	<input checked="" type="checkbox"/> 3 MHz	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	
		<input checked="" type="checkbox"/> 15 MHz	<input checked="" type="checkbox"/> 20 MHz			
	LTE Band 4	<input checked="" type="checkbox"/> 1.4 MHz	<input checked="" type="checkbox"/> 3 MHz	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	
		<input checked="" type="checkbox"/> 15 MHz	<input checked="" type="checkbox"/> 20 MHz			
	LTE Band 5	<input checked="" type="checkbox"/> 1.4 MHz	<input checked="" type="checkbox"/> 3 MHz	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	
	LTE Band 7	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	<input checked="" type="checkbox"/> 15 MHz	<input checked="" type="checkbox"/> 20 MHz	
	LTE Band 12	<input checked="" type="checkbox"/> 1.4 MHz	<input checked="" type="checkbox"/> 3 MHz	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	
	LTE Band 13	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz			
	LTE Band 14	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz			
	LTE Band 17	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz			
	LTE Band 25	<input checked="" type="checkbox"/> 1.4 MHz	<input checked="" type="checkbox"/> 3 MHz	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	
		<input checked="" type="checkbox"/> 15 MHz	<input checked="" type="checkbox"/> 20 MHz			
	LTE Band 26(814-824)	<input checked="" type="checkbox"/> 1.4 MHz	<input checked="" type="checkbox"/> 3 MHz	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	
	LTE Band 26(824-849)	<input checked="" type="checkbox"/> 1.4 MHz	<input checked="" type="checkbox"/> 3 MHz	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	
		<input checked="" type="checkbox"/> 15 MHz				
	LTE Band38	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	<input checked="" type="checkbox"/> 15 MHz	<input checked="" type="checkbox"/> 20 MHz	
	LTE Band41	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	<input checked="" type="checkbox"/> 15 MHz	<input checked="" type="checkbox"/> 20 MHz	
	LTE Band42	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	<input checked="" type="checkbox"/> 15 MHz	<input checked="" type="checkbox"/> 20 MHz	
	LTE Band48	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	<input checked="" type="checkbox"/> 15 MHz	<input checked="" type="checkbox"/> 20 MHz	
	LTE Band66	<input checked="" type="checkbox"/> 1.4 MHz	<input checked="" type="checkbox"/> 3 MHz	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	
		<input checked="" type="checkbox"/> 15MHz	<input checked="" type="checkbox"/> 20MHz			
	LTE Band71	<input checked="" type="checkbox"/> 5MHz	<input checked="" type="checkbox"/> 10MHz	<input checked="" type="checkbox"/> 15MHz	<input checked="" type="checkbox"/> 20MHz	
	LTE Band CA_38C	<input checked="" type="checkbox"/> 15MHz+15MHz			<input checked="" type="checkbox"/> 20MHz+20MHz	
	LTE Band CA_42C& LTE Band CA_42C_Part96	<input checked="" type="checkbox"/> 5MHz+20MHz			<input checked="" type="checkbox"/> 10MHz+20MHz	
		<input checked="" type="checkbox"/> 15MHz+20MHz			<input checked="" type="checkbox"/> 20MHz+5MHz	
		<input checked="" type="checkbox"/> 20MHz+10MHz			<input checked="" type="checkbox"/> 20MHz+15MHz	
		<input checked="" type="checkbox"/> 20MHz+20MHz				
	LTE Band CA_48C	<input checked="" type="checkbox"/> 5MHz+20MHz			<input checked="" type="checkbox"/> 10MHz+20MHz	
		<input checked="" type="checkbox"/> 15MHz+20MHz			<input checked="" type="checkbox"/> 20MHz+5MHz	



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 24 of 54

		<input checked="" type="checkbox"/> 20MHz+10MHz	<input checked="" type="checkbox"/> 20MHz+15MHz
		<input checked="" type="checkbox"/> 20MHz+20MHz	
	LTE Band CA_66C	<input checked="" type="checkbox"/> 5MHz+20MHz	<input checked="" type="checkbox"/> 10MHz+15MHz
		<input checked="" type="checkbox"/> 10MHz+20MHz	<input checked="" type="checkbox"/> 15MHz+10MHz
		<input checked="" type="checkbox"/> 15MHz+15MHz	<input checked="" type="checkbox"/> 15MHz+20MHz
		<input checked="" type="checkbox"/> 20MHz+5MHz	<input checked="" type="checkbox"/> 20MHz+10MHz
		<input checked="" type="checkbox"/> 20MHz+15MHz	<input checked="" type="checkbox"/> 20MHz+20MHz
	Note: WCDMA supports HSUPA, HSDPA, DC-HSDPA, HSPA+, but only the worst case was tested and the data displayed in this report.		



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## 4.9 Equipment List

RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)
Humidity/ Temperature Indicator	Deli	8838	SEM002-40	2024/07/24	2025/07/23
Spectrum Analyzer	Keysight	N9030B	SEM004-30	2024/09/04	2025/09/03
Spectrum Analyzer	Agilent	N9020A	SZ-WRG-M-018	2024/05/24	2025/05/23
DC power supply	HYELEC	HY3005B	SZ-WRG-M-044	2024/08/21	2025/08/20
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	SZ-WRG-M-033	2025/01/07	2026/01/06
Wideband Radio Communication Tester	Anristu	MT8821C	SZ-WRG-M-042	2024/06/21	2025/06/20
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024/07/30	2025/07/29
Signal Generator	KEYSIGHT	N5182A	SZ-WRG-M-041	2025/01/07	2026/01/06
Test Software	TST PASS	TST PASS V2.0	N/A	NCR	NCR



# SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 26 of 54

Radiated spurious emissions					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)
MXE EMI receiver(3Hz-3.6GHz)	KEYSIGHT	N9038B	SEM004-29	2024/08/14	2025/08/13
Signal & Spectrum Analyzer	Rohde & Schwarz	FSV	SZ-WRG-M-048	2025/01/07	2026/01/06
Pre-amplifier(30MHz-1GHz)	SGS	AMP30M1G30	SEM005-33	2025/03/04	2026/03/03
Low Noise Amplifier 30M-8GHz	Tonscend	TAP30M8G30	SZ-WRG-M-050	2025/01/07	2026/01/06
Low Noise Amplifier 1G-18GHz	Tonscend	TAP01018050	SZ-WRG-M-051	2025/01/07	2026/01/06
Low Noise Amplifier 18G-40GHz	Tonscend	TAP18040048	SZ-WRG-M-052	2025/01/08	2026/01/07
Active Loop Antenna 9kHz-30MHz	SCHWARZBECK	FMZB 1519B	SZ-WRG-M-053	2023/12/25	2025/12/24
TRILOG Breitband Antenne 30MHz-1GHz	SCHWARZBECK	VULB 9168	SZ-WRG-M-054	2023/12/25	2025/12/24
Double Ridge Horn Antenna 1GHz-18GHz	SCHWARZBECK	BBHA 9120 D	SZ-WRG-M-055	2023/12/21	2025/12/20
SHF-EHF Horn 15GHz-40GHz	SCHWARZBECK	BBHA 9170	SZ-WRG-M-056	2023/12/25	2025/12/24
RSE Test Software	Tonscend	JS32-RSE V4.0.0	SZ-WRG-M-058	NCR	NCR
RE Test Software	Tonscend	JS32-RE V4.0.0	SZ-WRG-M-059	NCR	NCR
Measurement Software	AUDIX	e3 V8.2014-6-27	NCR	NCR	NCR
Chamber	CRTSGSSAC966	N/A	SZ-WRG-C-063	2025/01/06	2028/01/05
Humidity/Temperature Indicator	Deli	8838	SEM002-46	2024/07/24	2025/07/23
Spectrum Analyzer	Keysight	N9020A	SZ-WRG-M-002	2024/08/17	2025/08/16
Radio Communication Tester	Anritsu	MT8821C	SZ-WRG-M-014	2024/08/19	2025/08/18

Remark: NCR=No Calibration Requirement.



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## 4.10 Test Frequencies

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
GSM850	TX	Channel 128	Channel 190	Channel 251
		824.2MHz	836.6 MHz	848.8 MHz
	RX	Channel 128	Channel 190	Channel 251
		869.2 MHz	881.6 MHz	893.8 MHz

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
GSM1900	TX	Channel 512	Channel 661	Channel 810
		1850.2MHz	1880.0 MHz	1909.8 MHz
	RX	Channel 512	Channel 661	Channel 810
		1930.2 MHz	1960.0 MHz	1989.8 MHz

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA Band II	TX	Channel 9262	Channel 9400	Channel 9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz
	RX	Channel 9662	Channel 9800	Channel 9938
		1932.4 MHz	1960.0 MHz	1987.6 MHz

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA Band IV	TX	Channel 1312	Channel 1413	Channel 1513
		1712.4MHz	1732.6 MHz	1752.6 MHz
	RX	Channel 1537	Channel 1638	Channel 1738
		2112.4 MHz	2132.6 MHz	2152.6 MHz

Test Mode	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA Band V	TX	Channel 4132	Channel 4182	Channel 4233
		826.4MHz	836.4 MHz	846.6 MHz
	RX	Channel 4357	Channel 4407	Channel 4458
		871.4 MHz	881.4 MHz	891.6 MHz



## SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 28 of 54

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 2	1.4MHz	TX	Channel 18607	Channel 18900	Channel 19193
			1850.7 MHz	1880 MHz	1909.3 MHz
		RX	Channel 607	Channel 900	Channel 1193
			1930.7 MHz	1960 MHz	1989.3 MHz
	3MHz	TX	Channel 18615	Channel 18900	Channel 19185
			1851.5 MHz	1880 MHz	1908.5 MHz
		RX	Channel 615	Channel 900	Channel 1185
			1931.5 MHz	1960 MHz	1988.5 MHz
	5MHz	TX	Channel 18625	Channel 18900	Channel 19175
			1852.5 MHz	1880 MHz	1907.5 MHz
		RX	Channel 625	Channel 900	Channel 1175
			1932.5 MHz	1960 MHz	1987.5 MHz
	10MHz	TX	Channel 18650	Channel 18900	Channel 19150
			1855 MHz	1880 MHz	1905 MHz
		RX	Channel 650	Channel 900	Channel 1150
			1935 MHz	1960 MHz	1985 MHz
	15MHz	TX	Channel 18675	Channel 18900	Channel 19125
			1857.5 MHz	1880 MHz	1902.5 MHz
		RX	Channel 675	Channel 900	Channel 1125
			1937.5 MHz	1960 MHz	1982.5 MHz
	20MHz	TX	Channel 18700	Channel 18900	Channel 19100
			1860 MHz	1880 MHz	1900 MHz
		RX	Channel 700	Channel 900	Channel 1100
			1940 MHz	1960 MHz	1980 MHz



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Report No.: SZCR250400135901

Page: 29 of 54

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 4	1.4MHz	TX	Channel 19957 1710.7 MHz	Channel 20175 1732.5 MHz	Channel 20393 1754.3 MHz
		RX	Channel 1957 2110.7 MHz	Channel 2175 2132.5MHz	Channel 2393 2154.3 MHz
	3MHz	TX	Channel 19965 1711.5 MHz	Channel 20175 1732.5 MHz	Channel 20385 1753.5 MHz
		RX	Channel 1965 2111.5 MHz	Channel 2175 2132.5MHz	Channel 2385 2153.5 MHz
	5MHz	TX	Channel 19975 1712.5 MHz	Channel 20175 1732.5 MHz	Channel 20375 1752.5 MHz
		RX	Channel 1975 2112.5 MHz	Channel 2175 2132.5MHz	Channel 2425 2157.5 MHz
	10MHz	TX	Channel 20000 1715 MHz	Channel 20175 1732.5 MHz	Channel 20350 1750 MHz
		RX	Channel 2000 2115 MHz	Channel 2175 2132.5MHz	Channel 2350 2150 MHz
	15MHz	TX	Channel 20025 1717.5 MHz	Channel 20175 1732.5 MHz	Channel 20325 1747.5 MHz
		RX	Channel 2025 2117.5 MHz	Channel 2175 2132.5MHz	Channel 2325 2147.5 MHz
	20MHz	TX	Channel 20050 1720 MHz	Channel 20175 1732.5 MHz	Channel 20300 1745 MHz
		RX	Channel 2050 2120 MHz	Channel 2175 2132.5MHz	Channel 2300 2145 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 5	1.4MHz	TX	Channel 20407 824.7 MHz	Channel 20525 836.5 MHz	Channel 20643 848.3 MHz
		RX	Channel 2407 869.7 MHz	Channel 2525 881.5 MHz	Channel 2643 893.3 MHz
	3MHz	TX	Channel 20415 825.5 MHz	Channel 20525 836.5 MHz	Channel 20635 847.5 MHz
		RX	Channel 2415 870.5 MHz	Channel 2525 881.5 MHz	Channel 2635 892.5 MHz
	5MHz	TX	Channel 20425 826.5 MHz	Channel 20525 836.5 MHz	Channel 20625 846.5 MHz
		RX	Channel 2425 871.5 MHz	Channel 2525 881.5 MHz	Channel 2625 891.5 MHz
	10MHz	TX	Channel 20450 829 MHz	Channel 20525 836.5 MHz	Channel 20600 844 MHz
		RX	Channel 2450 874 MHz	Channel 2525 881.5 MHz	Channel 2600 889 MHz



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Report No.: SZCR250400135901

Page: 30 of 54

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 7	5MHz	TX	Channel 20775 2502.5 MHz	Channel 21100 2535 MHz	Channel 21425 2567.5 MHz
		RX	Channel 2775 2622.5 MHz	Channel 3100 2655 MHz	Channel 5825 2687.5 MHz
	10MHz	TX	Channel 20800 2505 MHz	Channel 21100 2535 MHz	Channel 21400 2565 MHz
		RX	Channel 2800 2625 MHz	Channel 3100 2655 MHz	Channel 3400 2685 MHz
	15MHz	TX	Channel 20825 2507.5 MHz	Channel 21100 2535 MHz	Channel 21375 2562.5 MHz
		RX	Channel 2825 2627.5 MHz	Channel 3100 2655 MHz	Channel 3375 2682.5 MHz
	20MHz	TX	Channel 20850 2510 MHz	Channel 21100 2535 MHz	Channel 21350 2560 MHz
		RX	Channel 2850 2630 MHz	Channel 3100 2655 MHz	Channel 3350 2680 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 12	1.4MHz	TX	Channel 23017 699.7 MHz	Channel 23095 707.5 MHz	Channel 23173 715.3 MHz
		RX	Channel 5017 729.7 MHz	Channel 5095 737.5 MHz	Channel 5173 745.3 MHz
	3MHz	TX	Channel 23025 700.5 MHz	Channel 23095 707.5 MHz	Channel 23165 714.5 MHz
		RX	Channel 5025 730.5 MHz	Channel 5095 737.5 MHz	Channel 5165 744.5 MHz
	5MHz	TX	Channel 23035 701.5 MHz	Channel 23095 707.5 MHz	Channel 23155 713.5 MHz
		RX	Channel 5035 731.5 MHz	Channel 5095 737.5 MHz	Channel 5155 743.5 MHz
	10MHz	TX	Channel 23060 704 MHz	Channel 23095 707.5 MHz	Channel 23130 711 MHz
		RX	Channel 5060 734 MHz	Channel 5095 737.5 MHz	Channel 5130 741 MHz



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Report No.: SZCR250400135901

Page: 31 of 54

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 13	5MHz	TX	Channel 23205 779.5 MHz	Channel 23230 782 MHz	Channel 23255 784.5 MHz
		RX	Channel 5205 748.5 MHz	Channel 5230 751 MHz	Channel 5255 753.5 MHz
	10MHz	TX	Channel 23230 782 MHz	Channel 23230 782 MHz	Channel 23230 782 MHz
		RX	Channel 5230 751 MHz	Channel 5230 751 MHz	Channel 5230 751 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 14	5MHz	TX	Channel 23305 790.5 MHz	Channel 23330 793 MHz	Channel 23355 795.5 MHz
		RX	Channel 5305 760.5 MHz	Channel 5330 763 MHz	Channel 5355 765.5 MHz
	10MHz	TX	Channel 23330 793MHz	Channel 23330 793 MHz	Channel 23330 793 MHz
		RX	Channel 5330 763MHz	Channel 5330 763 MHz	Channel 5330 763 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 17	5MHz	TX	Channel 23755 706.5 MHz	Channel 23790 710 MHz	Channel 23825 713.5 MHz
		RX	Channel 5755 736.5 MHz	Channel 5790 740 MHz	Channel 5825 743.5 MHz
	10MHz	TX	Channel 23780 709 MHz	Channel 23790 710 MHz	Channel 23800 711 MHz
		RX	Channel 5780 739 MHz	Channel 5790 740 MHz	Channel 5800 741 MHz



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 32 of 54

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 25	1.4MHz	TX	Channel 26047	Channel 26365	Channel 26683
			1850.7 MHz	1882.5 MHz	1914.3 MHz
		RX	Channel 8047	Channel 8365	Channel 8683
			1930.7 MHz	1962.5 MHz	1994.3 MHz
	3MHz	TX	Channel 26055	Channel 26365	Channel 26675
			1851.5 MHz	1882.5 MHz	1913.5 MHz
		RX	Channel 8055	Channel 8365	Channel 8675
			1931.5 MHz	1962.5 MHz	1993.5 MHz
	5MHz	TX	Channel 26065	Channel 26365	Channel 26665
			1852.5 MHz	1882.5 MHz	1912.5 MHz
		RX	Channel 8065	Channel 8365	Channel 8665
			1932.5 MHz	1962.5 MHz	1992.5 MHz
	10MHz	TX	Channel 26090	Channel 26365	Channel 26640
			1855 MHz	1882.5 MHz	1910 MHz
		RX	Channel 8090	Channel 8365	Channel 8640
			1935 MHz	1962.5 MHz	1990 MHz
	15MHz	TX	Channel 26115	Channel 26365	Channel 26615
			1857.5 MHz	1882.5 MHz	1907.5 MHz
		RX	Channel 8115	Channel 8365	Channel 8615
			1937.5 MHz	1962.5 MHz	1987.5 MHz
	20MHz	TX	Channel 26140	Channel 26365	Channel 26590
			1860 MHz	1882.5 MHz	1905 MHz
		RX	Channel 8140	Channel 8365	Channel 8590
			1940 MHz	1962.5 MHz	1985 MHz



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 33 of 54

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 26 (814-824)	1.4MHz	TX	Channel 26697 814.7 MHz	Channel 26740 819 MHz	Channel 26783 823.3 MHz
		RX	Channel 8697 859.7 MHz	Channel 8740 864MHz	Channel 8783 868.3 MHz
	3MHz	TX	Channel 26705 815.5 MHz	Channel 26740 819 MHz	Channel 26775 822.5 MHz
		RX	Channel 8705 860.5 MHz	Channel 8740 864MHz	Channel 8775 867.5 MHz
	5MHz	TX	Channel 26715 816.5 MHz	Channel 26740 819 MHz	Channel 26765 821.5 MHz
		RX	Channel 8715 861.5 MHz	Channel 8740 864MHz	Channel 8765 866.5 MHz
	10MHz	TX	Channel 26740 819 MHz	Channel 26740 819 MHz	Channel 26740 819 MHz
		RX	Channel 8740 864MHz	Channel 8740 864MHz	Channel 8740 864MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band26 (824-849)	1.4MHz	TX	Channel 26797 824.7 MHz	Channel 26915 836.5 MHz	Channel 27033 848.3 MHz
		RX	Channel 8797 869.7 MHz	Channel 8915 881.5 MHz	Channel 9033 893.3 MHz
	3MHz	TX	Channel 26805 825.5 MHz	Channel 26915 836.5 MHz	Channel 27025 847.5 MHz
		RX	Channel 8805 860.5 MHz	Channel 8915 881.5 MHz	Channel 9025 892.5 MHz
	5MHz	TX	Channel 26815 826.5 MHz	Channel 26915 836.5 MHz	Channel 27015 846.5 MHz
		RX	Channel 8815 871.5 MHz	Channel 8915 881.5 MHz	Channel 9015 891.5 MHz
	10MHz	TX	Channel 26840 829 MHz	Channel 26915 836.5 MHz	Channel 26990 844 MHz
		RX	Channel 8840 874 MHz	Channel 8915 881.5 MHz	Channel 8990 889 MHz
	15MHz	TX	Channel 26865 831.5 MHz	Channel 26915 836.5 MHz	Channel 26965 841.5 MHz
		RX	Channel 8865 876.5 MHz	Channel 8915 881.5 MHz	Channel 8965 886.5 MHz



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Report No.: SZCR250400135901

Page: 34 of 54

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 38	5MHz	TX/RX	Channel 37775	Channel38000	Channel 38225
			2572.5 MHz	2595 MHz	2617.5 MHz
	10MHz	TX/RX	Channel 37800	Channel38000	Channel 38200
			2575 MHz	2595 MHz	2615 MHz
	15MHz	TX/RX	Channel 37825	Channel38000	Channel 38175
			2577.5 MHz	2595 MHz	2612.5 MHz
	20MHz	TX/RX	Channel 37850	Channel38000	Channel 38150
			2580 MHz	2595 MHz	2610 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 41 (2496-2690)	5MHz	TX / RX	Channel 39675	Channel40620	Channel 41565
			2498.5 MHz	2593 MHz	2687.5 MHz
	10MHz	TX / RX	Channel 39700	Channel40620	Channel 41540
			2501 MHz	2593 MHz	2685 MHz
	15MHz	TX / RX	Channel 39725	Channel40620	Channel 41515
			2503.5 MHz	2593 MHz	2682.5 MHz
	20MHz	TX / RX	Channel 39750	Channel40620	Channel 41490
			2506 MHz	2593 MHz	2680 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 42 (3550-3600)	5MHz	TX	Channel 40115	Channel 43340	Channel 43565
			3552.5 MHz	3575 MHz	3597.5 MHz
		RX	Channel 40115	Channel 43340	Channel 43565
			3552.5 MHz	3575 MHz	3597.5 MHz
	10MHz	TX	Channel 43140	Channel 43340	Channel 43540
			3555 MHz	3575 MHz	3595 MHz
		RX	Channel 43140	Channel 43340	Channel 43540
			3555 MHz	3575 MHz	3595 MHz
	15MHz	TX	Channel 43165	Channel 43340	Channel 43515
			3557.5 MHz	3575 MHz	3592.5 MHz
		RX	Channel 43165	Channel 43340	Channel 43515
			3557.5 MHz	3575 MHz	3592.5 MHz
	20MHz	TX	Channel 43190	Channel 43340	Channel 43490
			3560 MHz	3575 MHz	3590 MHz
		RX	Channel 43190	Channel 43340	Channel 43490
			3560 MHz	3575 MHz	3590 MHz



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 35 of 54

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 42 (3450-3550)	5MHz	TX	Channel 42115	Channel 42590	Channel 43065
			3452.5 MHz	3500 MHz	3547.5 MHz
		RX	Channel 42115	Channel 42590	Channel 43065
			3452.5 MHz	3500 MHz	3547.5 MHz
	10MHz	TX	Channel 42140	Channel 42590	Channel 43040
			3455 MHz	3500 MHz	3545 MHz
		RX	Channel 42140	Channel 42590	Channel 43040
			3455 MHz	3500 MHz	3545 MHz
	15MHz	TX	Channel 42165	Channel 42590	Channel 43015
			3457.5 MHz	3500 MHz	3542.5 MHz
		RX	Channel 42165	Channel 42590	Channel 43015
			3457.5 MHz	3500 MHz	3542.5 MHz
	20MHz	TX	Channel 42190	Channel 42590	Channel 42990
			3460 MHz	3500 MHz	3540 MHz
		RX	Channel 42190	Channel 42590	Channel 42990
			3460 MHz	3500 MHz	3540 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 48	5MHz	TX/RX	Channel 55265	Channel 55990	Channel 56715
			3552.5 MHz	3625.0 MHz	3697.5 MHz
	10MHz	TX/RX	Channel 55290	Channel 55990	Channel 56690
			3555.0 MHz	3625.0 MHz	3695.0 MHz
	15MHz	TX/RX	Channel 55315	Channel 55990	Channel 56665
			3557.5 MHz	3625.0 MHz	3692.5 MHz
	20MHz	TX/RX	Channel 55340	Channel 55990	Channel 56640
			3560.0 MHz	3625.0 MHz	3690.0 MHz



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 36 of 54

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band66	1.4MHz	TX	Channel 131979 1710.7 MHz	Channel 132322 1745 MHz	Channel 132665 1779.3 MHz
			Channel 66443 2110.7 MHz	Channel 66786 2145MHz	Channel 67329 2199.3 MHz
		RX	Channel 131987 1711.5 MHz	Channel 132322 1745 MHz	Channel 132657 1778.5MHz
			Channel 66451 2111.5 MHz	Channel 66786 2145MHz	Channel 67321 2198.5MHz
	3MHz	TX	Channel 131997 1712.5 MHz	Channel 132322 1745 MHz	Channel 132647 1777.5 MHz
			Channel 66461 2112.5 MHz	Channel 66786 2145MHz	Channel 67311 2197.5 MHz
		RX	Channel 132022 1715 MHz	Channel 132322 1745 MHz	Channel 132622 1775 MHz
			Channel 66486 2115 MHz	Channel 66786 2145MHz	Channel 67286 2195 MHz
	5MHz	TX	Channel 132047 1717.5 MHz	Channel 132322 1745 MHz	Channel 132597 1772.5 MHz
			Channel 66511 2117.5 MHz	Channel 66786 2145MHz	Channel 67261 2192.5 MHz
		RX	Channel 132072 1720 MHz	Channel 132322 1745 MHz	Channel 132572 1770 MHz
			Channel 66536 2120 MHz	Channel 66786 2145MHz	Channel 67236 2190 MHz
	10MHz	TX	Channel 133147 665.5 MHz	Channel 133297 680.5 MHz	Channel 133447 695.5 MHz
			Channel 68611 619.5 MHz	Channel 68761 634.5 MHz	Channel 68911 649.5 MHz
		RX	Channel 133172 668 MHz	Channel 133297 680.5 MHz	Channel 133422 693 MHz
			Channel 68636 622 MHz	Channel 68761 634.5 MHz	Channel 68886 647 MHz
	15MHz	TX	Channel 133197 670.5 MHz	Channel 133297 680.5 MHz	Channel 133397 690.5 MHz
			Channel 68661 624.5 MHz	Channel 68761 634.5 MHz	Channel 68861 644.5 MHz
		RX	Channel 133222 673 MHz	Channel 133297 680.5 MHz	Channel 133372 688 MHz
			Channel 68686 627 MHz	Channel 68761 634.5 MHz	Channel 68836 642 MHz
	20MHz	TX	Channel 133147 665.5 MHz	Channel 133297 680.5 MHz	Channel 133447 695.5 MHz
			Channel 68611 619.5 MHz	Channel 68761 634.5 MHz	Channel 68911 649.5 MHz
		RX	Channel 133172 668 MHz	Channel 133297 680.5 MHz	Channel 133422 693 MHz
			Channel 68636 622 MHz	Channel 68761 634.5 MHz	Channel 68886 647 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band71	5MHz	TX	Channel 133147 665.5 MHz	Channel 133297 680.5 MHz	Channel 133447 695.5 MHz
			Channel 68611 619.5 MHz	Channel 68761 634.5 MHz	Channel 68911 649.5 MHz
		RX	Channel 133172 668 MHz	Channel 133297 680.5 MHz	Channel 133422 693 MHz
			Channel 68636 622 MHz	Channel 68761 634.5 MHz	Channel 68886 647 MHz
	10MHz	TX	Channel 133197 670.5 MHz	Channel 133297 680.5 MHz	Channel 133397 690.5 MHz
			Channel 68661 624.5 MHz	Channel 68761 634.5 MHz	Channel 68861 644.5 MHz
		RX	Channel 133222 673 MHz	Channel 133297 680.5 MHz	Channel 133372 688 MHz
			Channel 68686 627 MHz	Channel 68761 634.5 MHz	Channel 68836 642 MHz
	15MHz	TX	Channel 133147 665.5 MHz	Channel 133297 680.5 MHz	Channel 133447 695.5 MHz
			Channel 68611 619.5 MHz	Channel 68761 634.5 MHz	Channel 68911 649.5 MHz
		RX	Channel 133172 668 MHz	Channel 133297 680.5 MHz	Channel 133422 693 MHz
			Channel 68636 622 MHz	Channel 68761 634.5 MHz	Channel 68886 647 MHz
	20MHz	TX	Channel 133197 670.5 MHz	Channel 133297 680.5 MHz	Channel 133397 690.5 MHz
			Channel 68661 624.5 MHz	Channel 68761 634.5 MHz	Channel 68861 644.5 MHz
		RX	Channel 133222 673 MHz	Channel 133297 680.5 MHz	Channel 133372 688 MHz
			Channel 68686 627 MHz	Channel 68761 634.5 MHz	Channel 68836 642 MHz



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 37 of 54

**Table 4.3.1.2.6A-1: Test frequencies for CA\_38C**

Range	CC-Combo / N <sub>RB_agg</sub> [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	N <sub>UL/DL</sub>	f <sub>UL/DL</sub> [MHz]	BW [RB]	N <sub>UL/DL</sub>	f <sub>UL/DL</sub> [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
Note 1: Carriers in increasing frequency order.							



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### LTE CA\_42C(3450-3550):

Range	CC- Combo / NRB_agg [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	N <sub>UL/DL</sub>	f <sub>UL/DL</sub> [MHz]	BW [RB]	N <sub>UL/DL</sub>	f <sub>UL/DL</sub> [MHz]
Low	25+100	25	42123	3453.3	100	42240	3465
		100	42190	3460	25	42307	3471.7
	50+100	50	42145	3455.5	100	42289	3469.9
		100	42190	3460	50	42334	3474.4
	75+100	75	42168	3457.8	100	42339	3474.9
		100	42190	3460	75	42361	3477.1
Mid	25+100	25	42498	3490.8	100	42615	3502.5
		100	42565	3497.5	25	42682	3509.2
	50+100	50	42496	3490.6	100	42640	3505
		100	42541	3495.1	50	42685	3509.5
	75+100	75	42493	3490.3	100	42664	3507.4
		100	42516	3492.6	75	42687	3509.7
High	25+100	25	42873	3528.3	100	42990	3540
		100	42940	3535	25	43057	3546.7
	50+100	50	42846	3525.6	100	42990	3540
		100	42891	3530.1	50	43035	3544.5
	75+100	75	42819	3522.9	100	42990	3540
		100	42841	3525.1	75	43012	3542.2
High	100+100	100	42792	3520.2	100	42990	3540

Note 1: Carriers in increasing frequency order.



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 39 of 54

### LTE CA\_42C(3550-3600):

Range	CC-Combo / NRB_agg [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	NUL/DL	fUL/DL [MHz]	BW [RB]	NUL/DL	fUL/DL [MHz]
Low	25+100	25	43123	3553.3	100	43240	3565
		100	43190	3560	25	43307	3571.7
	50+100	50	43145	3555.5	100	43289	3569.9
		100	43190	3560	50	43334	3574.4
	75+100	75	43168	3557.8	100	43339	3574.9
		100	43190	3560	75	43361	3577.1
	100+100	100	43190	3560	100	43388	3579.8
Mid	25+100	25	43248	3565.8	100	43365	3577.5
		100	43315	3572.5	25	43432	3584.2
	50+100	50	43246	3565.6	100	43390	3580
		100	43291	3570.1	50	43435	3584.5
	75+100	75	43243	3565.3	100	43414	3582.4
		100	43266	3567.6	75	43437	3584.7
	100+100	100	43241	3565.1	100	43439	3584.9
High	25+100	25	43373	3578.3	100	43490	3590
		100	43440	3585	25	43557	3596.7
	50+100	50	43346	3575.6	100	43490	3590
		100	43391	3580.1	50	43535	3594.5
	75+100	75	43319	3572.9	100	43490	3590
		100	43341	3575.1	75	43512	3592.2
	100+100	100	43292	3570.2	100	43490	3590



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### LTE CA\_48C(3550-3700):

Range	CC-Combo / NRB_agg [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	NUL/DL	fUL/DL [MHz]	BW [RB]	NUL/DL	fUL/DL [MHz]
Low	25+100	25	55273	3553.3	100	55390	3565
		100	55340	3560	25	55457	3571.7
	50+100	50	55295	3555.5	100	55439	3569.9
		100	55340	3560	50	55484	3574.4
	75+100	75	55318	3557.8	100	55489	3574.9
		100	55340	3560	75	55511	3577.1
	100+100	100	55340	3560	100	55538	3579.8
Mid	25+100	25	55898	3615.8	100	56015	3627.5
		100	55965	3622.5	25	56082	3634.2
	50+100	50	55896	3615.6	100	56040	3630
		100	55941	3620.1	50	56085	3634.5
	75+100	75	55893	3615.3	100	56064	3632.4
		100	55916	3617.6	75	56087	3634.7
	100+100	100	55891	3615.1	100	56089	3634.9
High	25+100	25	56523	3678.3	100	56640	3690
		100	56590	3685	25	56707	3696.7
	50+100	50	56496	3675.6	100	56640	3690
		100	56541	3680.1	50	56685	3694.5
	75+100	75	56469	3672.9	100	56640	3690
		100	56491	3675.1	75	56662	3692.2
	100+100	100	56442	3670.2	100	56640	3690
Note 1: Carriers in increasing frequency order.							

Note 1: Carriers in increasing frequency order.





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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 41 of 54

### LTE CA\_66C:

Range	CC-Combo / N <sub>RB_agg</sub> [RB]	CC1 Note1					CC2 Note1				
		BW [RB]	N <sub>UL</sub>	f <sub>UL</sub> [MHz]	N <sub>DL</sub>	f <sub>DL</sub> [MHz]	BW [RB]	N <sub>UL</sub>	f <sub>UL</sub> [MHz]	N <sub>DL</sub>	f <sub>DL</sub> [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	1725.0	66586	2125.0
		100	132072	1720	66536	2120	100	132270	1739.8	66734	2139.8
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
		100	132323	1745.1	66787	2145.1	100	132521	1764.9	66985	2164.9
High <sup>2</sup>	50+75	50	132622	1775	67086	2175	75	NA	NA	67206	2187
		75	132597	1772.5	67061	2172.5	50	NA	NA	67181	2184.5
	50+100	50	132622	1775	67086	2175	100	NA	NA	67230	2189.4
		100	132572	1770	67036	2170	50	NA	NA	67180	2184.4
	75+75	75	132597	1772.5	67061	2172.5	75	NA	NA	67211	2187.5
		75	132597	1772.5	67061	2172.5	100	NA	NA	67232	2189.6
	75+100	100	132572	1770	67036	2170	75	NA	NA	67207	2187.1
		100	132572	1770	67036	2170	25	NA	NA	67153	2181.7
	100+25	25	132647	1777.5	67111	2177.5	100	NA	NA	67228	2189.2
		100	132572	1770	67036	2170	100	NA	NA	67234	2189.8
High <sup>3</sup>	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	1770.0	67036	2170.0
		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.



## 5 Description of Tests

### 5.1 Conducted Output Power

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.2.1

The transmitter output was connected to a calibrated coaxial cable, attenuator and power meter, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The power output at the transmitter antenna port was determined by adding the value of the cable insertion loss to the power reading. The tests were performed at three frequencies (low channel, middle channel and high channel) and on the highest power levels, which can be setup on the transmitters.

**Remark: Reference test setup 1**



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## 5.2 Effective (Isotropic) Radiated Power of Transmitter

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.8.4

Calculate power in dBm by the following formula:

ERP (dBm) = Conducted Power (dBm) + antenna gain (dBd)

EIRP(dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB



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### 5.3 Occupied Bandwidth

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 4.2 & 4.3

The occupied bandwidth, that 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 shall be measured. The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel, middle channel and high channel). The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

**Remark: Reference test setup 1**

#### Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW  $\geq$  3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7





## 5.4 Band Edge at Antenna Terminals

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6.0

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at two frequencies (low channel and high channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to rms.

### Remark: Reference test setup 1

#### Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW  $\geq$  1% of the emission bandwidth
4. VBW  $\geq$  3 x RBW
5. Detector = RMS
6. Number of sweep points  $\geq$  2 x Span/RBW
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize



## 5.5 Spurious And Harmonic Emissions at Antenna Terminal

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6.0

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyzer, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel). 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 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 emission are attenuated at least 26 dB below the transmitter power.

### Remark: Reference test setup 1

#### Test Settings

1. Start frequency was set to 9kHz and stop frequency was set to at least 10\* the fundamental frequency (Separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings



## 5.6 Peak-Average Ratio

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.7.2

A peak to average ratio measurement is performed at the conducted port of the EUT. For WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. The traces are generated with the spectrum analyzer set to zero span mode.

**Remark: Reference test setup 1**

### Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power



## 5.7 Field Strength of Spurious Radiation

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.8

### Below 1GHz test procedure as below:

- 1). The EUT was powered ON and placed on a 80cm high table in the chamber. The antenna of the transmitter was extended to its maximum length.
- 2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
- 4). Test the EUT in the lowest channel, the middle channel ,the Highest channel.
- 5). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.
- 6). Repeat above procedures until all frequencies measured was complete.

$$E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + (\text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)} - \text{AMP(dB)})$$

$$\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20 \log D - 104.8; \text{ where D is the measurement distance in meters}$$

### Above 1GHz test procedure as below:

- 1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber
- 2) Calculate power in dBm by the following formula:  

$$E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + (\text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)} - \text{AMP(dB)})$$

$$\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20 \log D - 104.8; \text{ where D is the measurement distance in meters}$$
- 3). Test the EUT in the lowest channel, the middle channel the Highest channel
- 4). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.
- 5). Repeat above procedures until all frequencies measured was complete

Remark1: Reference test setup 2

Remark2: The emission below 18G were measured at a 3m test distance, while emissions above 18GHz were measured at a 1m test distance. At a measurement distance of 1 meter the limit line was increased by  $20 \cdot \log(3/1) = 9.54 \text{ dB}$ .

### Remark: Reference test setup 2

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & AMP. The basic equation with a sample calculation is as follows:

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier (dB)

Level = Reading Level + AF + Factor -95.26

Margin = Limit – Level

2) Scan from 9kHz to 40GHz, The disturbance between 9KHz to 30MHz and 18GHz to 40GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3) All modes have been tested, but only the worst case data displayed in this report.



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## 5.8 Frequency Stability / Temperature Variation

### Measurement Procedure:

Frequency stability testing is performed in accordance with the guidelines of FCC KDB 971168 D01 V03r01; Section 9

. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency.

### Time Period and Procedure:

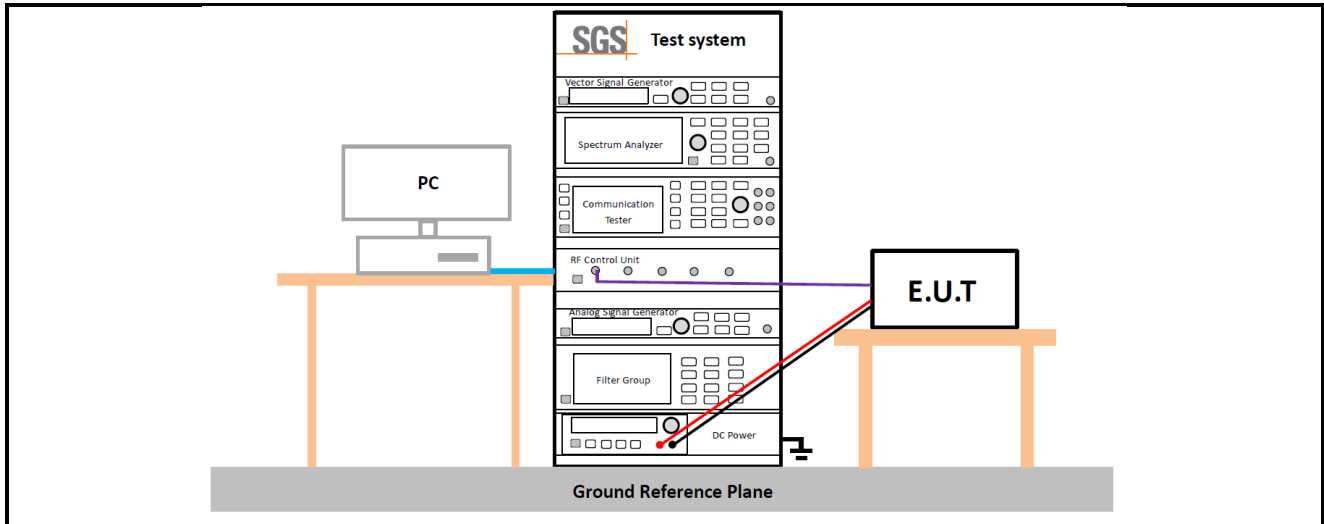
1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

### Remark: Reference test setup 3



### 5.9 Test Setups

#### 5.9.1 Test Setup 1



#### 5.9.2 Test Setup 2

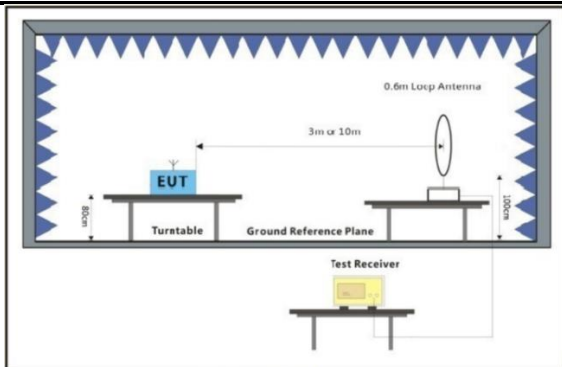


Figure 1. Below 30MHz

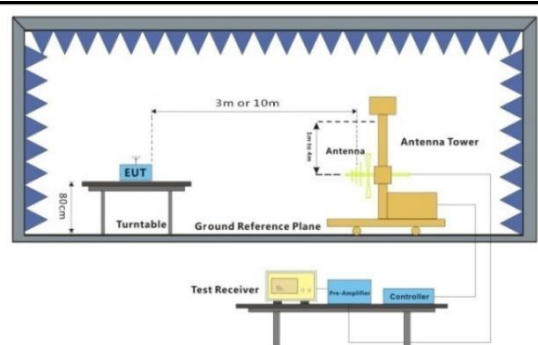


Figure 2. 30MHz to 1GHz

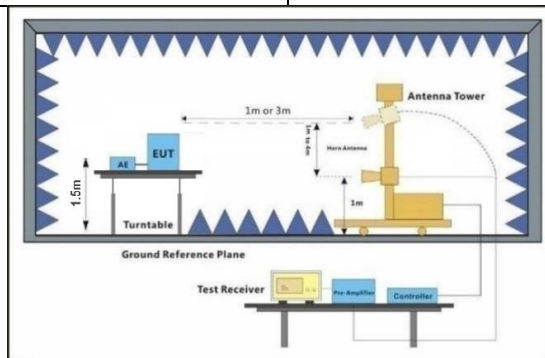
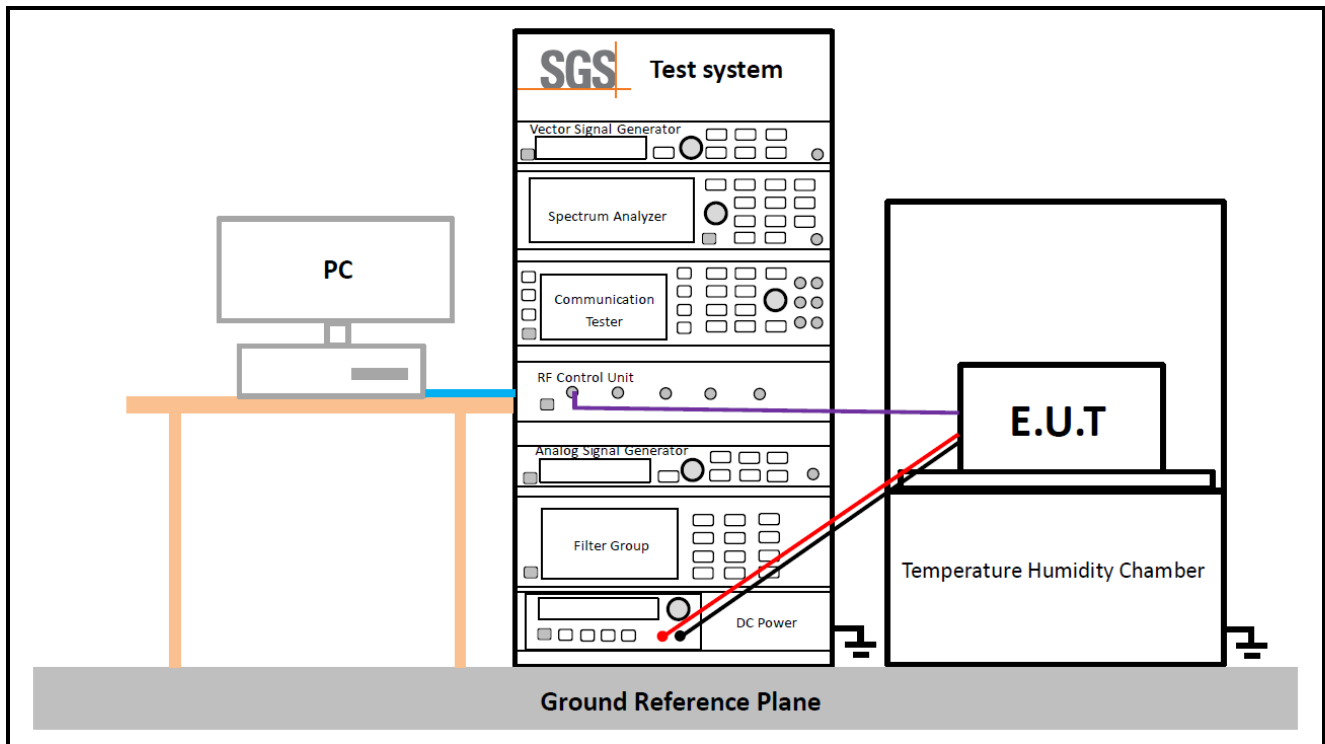


Figure 3. above 1GHz



### 5.9.3 Test Setup 3



## 5.10 Test Conditions

Transmit Output Power Data - Average Power, Total	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;UMTS/TM1; LTE/TM1;LTE/TM2; LTE/TM3; LTE/TM4
Peak-to-Average Ratio	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;UMTS/TM1; LTE/TM1;LTE/TM2; LTE/TM3; LTE/TM4
Bandwidth - Occupied Bandwidth	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel )
Test Mode	GSM/TM1;GSM/TM2;UMTS/TM1; LTE/TM1;LTE/TM2;
Bandwidth - Emission Bandwidth	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel )
Test Mode	GSM/TM1;GSM/TM2;UMTS/TM1; LTE/TM1;LTE/TM2;
Adjacent Channel Leakage Ratio	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel )





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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400135901

Page: 53 of 54

Test Mode	LTE/TM1;LTE/TM2; LTE/TM3; LTE/TM4
<b>Band Edges Compliance</b>	
<b>Test Case</b>	<b>Test Conditions</b>
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, H (L= low channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;UMTS/TM1; LTE/TM1;
<b>Spurious Emission at Antenna Terminals</b>	
<b>Test Case</b>	<b>Test Conditions</b>
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1;GSM/TM2;UMTS/TM1; LTE/TM1;
<b>Field Strength of Spurious Radiation</b>	
<b>Test Case</b>	<b>Test Conditions</b>
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 2
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	GSM/TM1; UMTS/TM1; LTE/TM1; Remark: All bandwidth and modulation of GSM/ UMTS/LTE have been pre tested, and only the worst results are reflected in the report.
<b>Frequency Stability</b>	
<b>Test Case</b>	<b>Test Conditions</b>
Test Environment	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage (2) VL, VN and VH of Rated Voltage at Ambient Climate.
Test Setup	Test Setup 3
RF Channels (TX)	M (M= middle channel)
Test Mode	GSM/TM1;UMTS/TM1; LTE/TM1 The report only show the bandwidth with the worst case.



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## 6 Appendixes

SZCR2504001359 Appendix	Setup Photo
Appendix B.1	GSM 850
Appendix B.2	GSM 1900
Appendix B.3	WCDMA Band II
Appendix B.4	WCDMA Band IV
Appendix B.5	WCDMA Band V
Appendix B.6	LTE Band 2
Appendix B.7	LTE Band 4
Appendix B.8	LTE Band 5
Appendix B.9	LTE Band 7
Appendix B.10	LTE Band 12
Appendix B.11	LTE Band 13
Appendix B.12	LTE Band 14
Appendix B.13	LTE Band 17
Appendix B.14	LTE Band 25
Appendix B.15	LTE Band 26(814-824)
Appendix B.16	LTE Band 26(824-849)
Appendix B.17	LTE Band 41
Appendix B.18	LTE Band 42
Appendix B.19	LTE Band 42_ Part96
Appendix B.20	LTE Band 48
Appendix B.21	LTE Band 66
Appendix B.22	LTE Band 71
Appendix B.23	LTE CA_38C
Appendix B.24	LTE CA_42C
Appendix B.25	LTE CA_42C_ Part96
Appendix B.26	LTE CA_48C
Appendix B.27	LTE CA_66C
Appendix B.43	LTE Band 38

---End of Report---

