FCC CFR47 PART 22H, 24E, 27
CERTIFICATION TEST REPORT
FCC ID:2A8EM-HIBREAKPRO

Product:	Smartphone
Trade Mark:	Bigme
Model Number:	HiBreak pro
Family Model:	HiBreak pro plus, HiBreak pro se, HiBreak pro color, HiBreak pro color plus, HiBreak pro color se, B651, B651 Lite, B651 Pro, B651 Plus, B651C, B651C Lite, B651C Pro, B651C+, B651 Color, B651 Color Lite, B651 Color Pro, B651 Color Plus
Report No.:	S25021100607007
Issue Date:	Apr. 07, 2025

Prepared for

Bigme Cloud Literacy Technology Co., Ltd.

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name	Bigme Cloud Literacy Technology Co., Ltd.
Address	01 18F, COFCO Property Tower, Baomin No.1Rd, Bao an 3rd District, Shenzhen, China
Manufacturer's Name	Bigme Cloud Literacy Technology Co., Ltd.
Address	01 18F, COFCO Property Tower, Baomin No.1Rd, Bao an 3rd District, Shenzhen, China
Product name	Smartphone
Trade Mark	Bigme
Model and/or type reference .:	HiBreak pro
Family Model	HiBreak pro plus, HiBreak pro se, HiBreak pro color, HiBreak pro color plus, HiBreak pro color se, B651, B651 Lite, B651 Pro, B651 Plus, B651C, B651C Lite, B651C Pro, B651C+, B651 Color, B651 Color Lite, B651 Color Pro, B651 Color Plus
Test Sample number.....	S250211006008
Date of Test.....	Feb. 12, 2025 ~ Apr. 07, 2025
Standards	FCC CFR 47 Part 22H, Part 24E, Part 27
Test procedure	ANSI C63.26:2015
	ANSI/TIA-603-E-2016

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Prepared By :	Reviewed By :	Approved By :
Allen Liu	Aaron Cheng	Alex Li
(Project Engineer)	(Supervisor)	(Manager)

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Equipment	Smartphone
Trade Mark	Bigme
Model Name	HiBreak pro
Family Model	HiBreak pro plus, HiBreak pro se, HiBreak pro color, HiBreak pro color plus, HiBreak pro color se, B651, B651 Lite, B651 Pro, B651 Plus, B651C, B651C Lite, B651C Pro, B651C+, B651 Color, B651 Color Lite, B651 Color Pro, B651 Color Plus
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2A8EM-HIBREAKPRO
Frequency Bands:	U.S. Bands: ☒NR FDD Band 2, 5, 7 ☒NR TDD 78 ☒EN-DC: DC_2A_n78A, DC_5A_n78A, DC_7A_n78A
Frequency Range:	NR FDD Band 2 Uplink: 1850 MHz - 1910 MHz Downlink: 1930MHz-1990MHz NR FDD Band 5 Uplink: 824 MHz - 849 MHz Downlink: 869MHz-894MHz NR FDD Band 7 Uplink: 2500 MHz - 2570 MHz Downlink: 2620MHz-2690MHz NR TDD Band 78 Uplink/Downlink: 3450 MHz - 3550 MHz
Type of Modulation:	DFT-s-OFDM:PI/2 BPSK/QPSK/16-QAM/64QAM/256QAM CP-OFDM: QPSK/16-QAM/64QAM/256QAM
Subcarrier spacing	☒15KHz, ☒30KHz, ☐60KHz
NR architecture	☒SA , ☒NSA
Antenna:	FPC Antenna
Antenna gain:	Band2:0.66 dBi; Band5: -5.88 dBi; Band7: 0.97 dBi; Band78: 3.53 dBi
Adapter	N/A
Battery	DC 3.85V, 4500mAh, 17.325Wh
Power supply	DC 3.85V from battery or DC 5V from adapter
Extreme Vol. Limits:	DC 3.27V to DC 4.43V (Nominal DC 3.85V)（Note 1）
HW Version	V1

SW Version	N/A
** Note1: The High Voltage 4.43V and Low Voltage 3.27V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2A8EM-HIBREAKPRO** filing to comply with the FCC Part 22H , Part 24E, Part 27.

1.3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, Part 22, Part 24,Part 27, ANSI C63.26:2015.

1.4 TEST FACILITY

The test site used to collect the radiated data is located at:

ShenZhen NTEK Testing Technology Co., Ltd.

No. 24 Xinfa East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of China.

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.26:2015& ANSI C63.4: 2014.

FCC Registration No.:463705

IC Registration No.:9270A

CNAS Registration No.:L5516

1.5 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.5dB

1.6 SPECIAL ACCESSORIES

The battery and the charger, earphone supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

1.7 WORST-CASE CONFIGURATION AND MODE

The worst-case scenario for all measurements is based on the investigation results.

The device has NR Bands of: Band 2/5/7/78.

The RB Size was selected to measure for peak or average ERP and EIRP, which was based on the conducted power verification baseline data.

For the fundamental investigation of radiated emissions, the EUT is investigated for vertical and horizontal antenna orientations and X Y and Z orientations of the EUT alone. After the investigations the worst case was determined to be at X orientation for all LTE bands.

1.8 SUMMARY OF TEST RESULTS

FCC Part 22H Part 24E Part27, Subpart L, KDB 971168 D01 Power Meas License Digital Systems v03			
FCC Rule	**Test Item**	**Verdict**	**Remark**
2.1046	Conducted Output Power	PASS	
27.50(d)(5) 22.913 KDB 971168 D01 Clause 5.7	Peak-to-Average Ratio	PASS	
2.1049,22.917 KDB 971168 D01 Clause 4.2	Occupied Bandwidth	PASS	
2.1051,22.917 24.238 27.53(c), (g), (h) KDB 971168 D01 Clause 6	Band Edge	PASS	
22.913,27.50(b)(10), (c)(10) KDB 971168 D01 Clause 5.6	Effective Radiated Power	PASS	
27.50(h)(2), (d)(4) KDB 971168 D01 Clause 5.6	Equivalent Isotropic Radiated Power	PASS	
2.1053 22.917 24.238 27.53(c)(g)(h)(m) KDB 971168 D01 Clause 7	Field Strength of Spurious Radiation	PASS	
2.1055,22.355 24.235 27.54 KDB 971168 D01 Clause 9	Frequency Stability for Temperature & Voltage	PASS	
2.1051,22.917 24.238 27.53(c)(g)(h)(m) KDB 971168 D01 Clause 6	Conducted Emission	PASS	

Remark:

1. “N/A” denotes test is not applicable in this Test Report.
2. All test items were verified and recorded according to the standards and without any deviation during the test.
3. No modifications are made to the EUT during all test items.

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

2.3 CONFIGURATION OF EUT SYSTEM

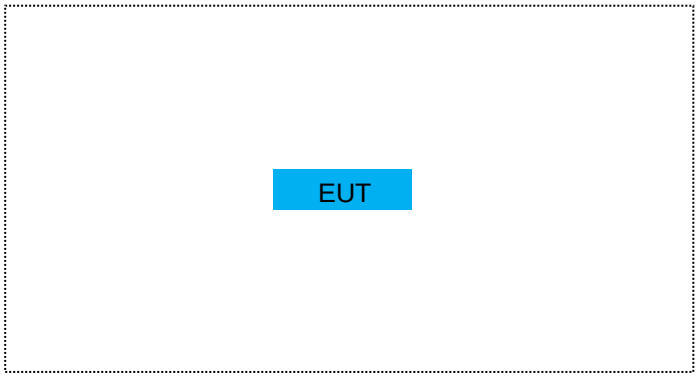
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Smartphone	HiBreak pro	FCC ID: 2A8EM-HIBREAKPRO	EUT

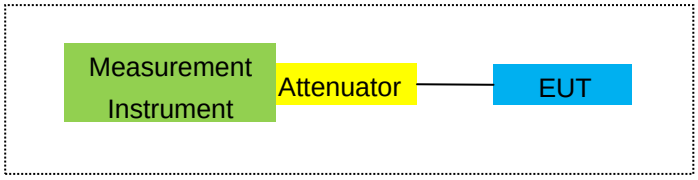
Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.

2.4 TEST SETUP

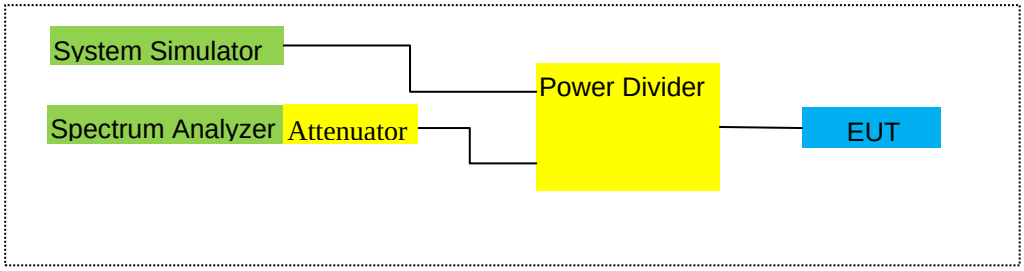
For Radiated Test Cases



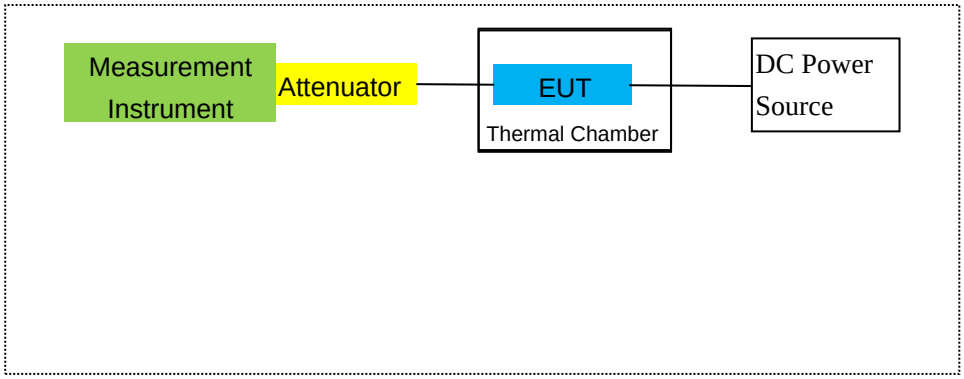
For Conducted Output Power



For Peak-to Average Ratio, Occupied Bandwidth, Conducted Band edge and Conducted Spurious Emission



For Frequency Stability



Note: EUT built-in battery-powered, the battery is fully-charged.

3.TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2024.04.25	2025.04.24	1 year
2	Test Receiver	R&S	ESPI	101318	2024.04.26	2025.04.25	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2024.05.12	2025.05.11	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2024.05.12	2027.05.11	3 year
7	Amplifier	EM	EM-30180	060538	2024.04.26	2025.04.25	1 year
8	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2024.05.17	2027.05.16	3 year
9	Power Meter	R&S	NRVS	100696	2024.04.26	2025.04.25	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2024.04.26	2025.04.25	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2024.04.26	2025.04.25	1 year
15	LISN	R&S	ENV216	101313	2024.04.25	2025.04.24	1 year
16	LISN	EMCO	3816/2	00042990	2024.04.25	2025.04.24	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
18	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
19	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
21	Attenuator	MCE	24-20-34	BP4485	2024.04.25	2027.4.24	3 year
22	Spectrum Analyzer	Agilent	E4440A	MY41000130	2024.04.26	2025.04.25	1 year
23	EMI Test Receiver	R&S	ESCI	101160	2024.04.26	2025.04.25	1 year
24	Communication Tester	R&S	CMU200	A0304247	2023.05.06	2026.05.05	3 year
25	DC Power Source	N/A	PS-6005D	20170402923	2023.05.06	2026.05.05	3 year
26	MXG Vector	Agilent	N5182A	MY47070317	2024.04.25	2025.04.24	1 year

	Signal Generator						
27	Communication Tester	R&S	CMW500	148500	2024.04.26	2025.04.25	1 year
28	Radio Communication Analyzer	Anritsu	MT8821C	6262192315	2024.04.25	2025.04.24	1 year
29	Radio Communication Test Station	Anritsu	MT8000A	6262186364	2024.04.25	2025.04.24	1 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& DC Power Source which is scheduled for calibration every 3 years.

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

NR Measurement Procedure:

All NR bands conducted power peak and average are obtained from the MT8821C telecommunication test set. The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS 38.521-1 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table Table 6.2.2.3-1: of the 3GPP TS 38.521-1 (V15.3.0) (07-2019).

Table 6.2.2.3-1: UE Power Class

EUTRA band	Class 1 (dBm)	Tolerance (dB)	Class 2 (dBm)	Tolerance (dB)	Class 3 (dBm)	Tolerance (dB)	Class 4 (dBm)	Tolerance (dB)
1					23	±2		
2					23	±2[2]		
3					23	±2[2]		
4					23	±2		
5					23	±2		
40					23	±2		
41					23	±2[2]		
42					23	+2/-3		
43					23	+2/-3		
44					23	+2/[-3]		
45					23	±2		
47			26	±2	23	±2		

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS 38.521-1 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of “NS_01”.3

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

MODES TESTED

- NR Band 2/5/7/78

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238,§27.53(c)(g)(h)(m)

FCC: §2.1046,

LIMITS

The minimum permissible attenuation level of any spurious emission is 43 + log10(P[Watts]), where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is 65 + 10log10(P) = -35dBm in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, 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.

TEST PROCEDURE

The transmitter output was connected to a CMW500Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

Set a marker to point the corresponding band edge frequency in each test case.

Set display line

Set resolution bandwidth to at least 1% of emission bandwidth.

MODES TESTED

□

NR Band 2/5/7/78

RESULTS

Test data reference attachment.

Note: Both DFT-s-OFDM:PI/2 BPSK/QPSK/16-QAM/64QAM/256QAM

CP-OFDM: QPSK/16-QAM/64QAM/256QAM has been tested, the worst case is CP_QPSK mode, the report just reported the worst case.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238,§27.53(c)(g)(h)(m)

LIMITS

The minimum permissible attenuation level of any spurious emission is 43 + log10(P[Watts]), where P is the transmitter power in Watts.
The minimum permissible attenuation level for Band 7 is as following.
Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.
Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.
For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is 65 + 10log10(P) = -35dBm in a 6.25kHz bandwidth.
Per 27.53(m) for operations in the BRS/EBS bands, 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.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.
For each out of band emissions measurement:

- Set display line
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

- NR Band 2/5/7/78

MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

Test data reference attachment.

Note: Both DFT-s-OFDM:PI/2 BPSK/QPSK/16-QAM/64QAM/256QAM

CP-OFDM: QPSK/16-QAM/64QAM/256QAM has been tested, the worst case is CP_QPSK mode, the report just reported the worst case.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913(a)(2), §24.232,§27.50 (h)(2), (b)(10), (c)(10), (d)(4)

LIMITS:

22.913(a) (2)- The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.
27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.
27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.
27.50 (h)(2)Mobile and other user stations in the 2500–2570 MHz and 2620–2690 MHz bands. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17
KDB 971168 v02r01 RF power output using broadband peak and average power meter method.
KDB 971168 D01 Power Meas License Digital Systems v02r01, “Measurement Guidance for Certification of Licensed Digital Transmitters”

MODES TESTED

□

NR Band 2/5/7/78
EN-DC: DC_2A_n78A/DC_5A_n78A/ DC_7A_n78A

RESULTS

Pass

8.2 NR BAND 2

Radiated Power (EIRP) for N2 /SCS (30kHz)									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP (dBm)	Max. EIRP (mW)	Polarization Of Max. ERP	
5.0MHz DFT_QPSK	1@1	1852.5	17.20	5.12	8.90	20.98	125.387	Horizontal	Pass
		1880	17.71	5.18	8.90	21.43	138.983	Horizontal	Pass
		1907.5	18.71	5.23	8.90	22.38	172.874	Horizontal	Pass
10.0MHz DFT_QPSK	1@1	1855	18.03	5.12	8.90	21.81	151.566	Horizontal	Pass
		1880	17.88	5.18	8.90	21.60	144.482	Horizontal	Pass
		1905	16.87	5.22	8.90	20.55	113.415	Horizontal	Pass
15.0MHz DFT_QPSK	1@1	1857.5	17.89	5.13	8.90	21.66	146.635	Horizontal	Pass
		1880	18.45	5.18	8.90	22.17	164.836	Horizontal	Pass
		1902.5	18.31	5.21	8.90	22.00	158.439	Horizontal	Pass
20.0MHz DFT_QPSK	1@1	1860	18.14	5.13	8.90	21.91	155.231	Horizontal	Pass
		1880	18.67	5.18	8.90	22.39	***173.380***	Horizontal	Pass
		1900	16.95	5.21	8.90	20.64	115.911	Horizontal	Pass

Radiated Power (EIRP) for N2 /SCS (30kHz)									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP (dBm)	Max. EIRP (mW)	Polarization Of Max. ERP	
5.0MHz DFT_16QAM	1@1	1852.5	17.48	5.12	8.90	21.26	133.541	Vertical	Pass
		1880	16.76	5.18	8.90	20.48	111.631	Vertical	Pass
		1907.5	16.58	5.23	8.90	20.25	105.871	Vertical	Pass
10.0MHz DFT_16QAM	1@1	1855	17.27	5.12	8.90	21.05	127.496	Vertical	Pass
		1880	16.67	5.18	8.90	20.39	109.281	Vertical	Pass
		1905	17.48	5.22	8.90	21.16	130.480	Vertical	Pass
15.0MHz DFT_16QAM	1@1	1857.5	17.12	5.13	8.90	20.89	122.877	Vertical	Pass
		1880	16.79	5.18	8.90	20.51	112.516	Vertical	Pass
		1902.5	17.32	5.21	8.90	21.01	126.298	Vertical	Pass
20.0MHz DFT_16QAM	1@1	1860	16.99	5.13	8.90	20.76	119.085	Vertical	Pass
		1880	17.59	5.18	8.90	21.31	***135.207***	Vertical	Pass
		1900	16.83	5.21	8.90	20.52	112.625	Vertical	Pass

8.3 NR BAND 5

Radiated Power (EIRP) for N5 /SCS (30kHz)										
Mode	RB/ RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP (dBm)	Max. ERP (mW)	Polarization Of Max. ERP	
5.0MHz DFT_QPSK	1@1	826.5	23.40	5.12	5.30	2.15	21.43	138.836	Horizontal	Pass
		836.5	22.55	5.18	5.30	2.15	20.52	112.644	Horizontal	Pass
		846.5	23.05	5.23	5.70	2.15	21.37	137.158	Horizontal	Pass
10.0MHz DFT_QPSK	1@1	829	24.40	5.12	5.30	2.15	22.43	175.089	Horizontal	Pass
		836.5	24.37	5.18	5.30	2.15	22.34	171.505	Horizontal	Pass
		844	23.47	5.22	5.70	2.15	21.80	151.295	Horizontal	Pass
15.0MHz DFT_QPSK	1@1	831.5	22.85	5.13	5.30	2.15	20.87	122.179	Horizontal	Pass
		836.5	24.18	5.18	5.30	2.15	22.15	163.890	Horizontal	Pass
		841.5	23.19	5.21	5.70	2.15	21.53	142.198	Horizontal	Pass
20.0MHz DFT_QPSK	1@1	834	23.15	5.13	5.30	2.15	21.17	130.988	Horizontal	Pass
		836.5	24.48	5.18	5.30	2.15	22.45	***175.792***	Horizontal	Pass
		839	22.78	5.21	5.70	2.15	21.12	129.429	Horizontal	Pass

Radiated Power (EIRP) for N5 /SCS (30kHz)										
Mode	RB/ RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Correction (dB)	Max. ERP (dBm)	Max. ERP (mW)	Polarization Of Max. ERP	
5.0MHz DFT_16QAM	1@1	826.5	23.54	5.12	5.30	2.15	21.57	143.699	Vertical	Pass
		836.5	23.19	5.18	5.30	2.15	21.16	130.673	Vertical	Pass
		846.5	22.52	5.23	5.70	2.15	20.84	121.280	Vertical	Pass
10.0MHz DFT_16QAM	1@1	829	23.19	5.12	5.30	2.15	21.22	132.359	Vertical	Pass
		836.5	23.57	5.18	5.30	2.15	21.54	142.583	Vertical	Pass
		844	23.38	5.22	5.70	2.15	21.71	148.082	Vertical	Pass
15.0MHz DFT_16QAM	1@1	831.5	23.65	5.13	5.30	2.15	21.67	146.942	Vertical	Pass
		836.5	23.35	5.18	5.30	2.15	21.32	135.398	Vertical	Pass
		841.5	23.71	5.21	5.70	2.15	22.05	160.298	Vertical	Pass
20.0MHz DFT_16QAM	1@1	834	23.51	5.13	5.30	2.15	21.53	142.237	Vertical	Pass
		836.5	24.11	5.18	5.30	2.15	22.08	***161.533***	Vertical	Pass
		839	22.62	5.21	5.70	2.15	20.96	124.801	Vertical	Pass

8.4 NR BAND 7

Radiated Power (EIRP) for N7 /SCS (30kHz)									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP (dBm)	Max. EIRP (mW)	Polarization Of Max. ERP	
5.0MHz DFT_QPSK	1@1	2502.5	17.08	5.12	9.00	20.96	124.650	Horizontal	Pass
		2535	18.05	5.18	9.00	21.87	153.719	Horizontal	Pass
		2567.5	17.16	5.23	9.00	20.93	123.981	Horizontal	Pass
10.0MHz DFT_QPSK	1@1	2505	17.59	5.12	9.00	21.47	140.436	Horizontal	Pass
		2535	17.25	5.18	9.00	21.07	127.865	Horizontal	Pass
		2695	18.48	5.22	9.00	22.26	168.222	Horizontal	Pass
15.0MHz DFT_QPSK	1@1	2507.5	17.44	5.13	9.00	21.31	135.109	Horizontal	Pass
		2535	17.85	5.18	9.00	21.67	146.761	Horizontal	Pass
		2692.5	17.01	5.21	9.00	20.80	120.270	Horizontal	Pass
20.0MHz DFT_QPSK	1@1	2510	17.26	5.13	9.00	21.13	129.788	Horizontal	Pass
		2535	17.09	5.18	9.00	20.91	123.179	Horizontal	Pass
		2690	19.14	5.21	9.00	22.93	***196.497***	Horizontal	Pass

Radiated Power (EIRP) for N7 /SCS (30kHz)									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP (dBm)	Max. EIRP (mW)	Polarization Of Max. ERP	
5.0MHz DFT_16QAM	1@1	2502.5	16.07	5.12	9.00	19.95	98.958	Vertical	Pass
		2535	16.42	5.18	9.00	20.24	105.718	Vertical	Pass
		2567.5	16.60	5.23	9.00	20.37	108.924	Vertical	Pass
10.0MHz DFT_16QAM	1@1	2505	16.08	5.12	9.00	19.96	99.164	Vertical	Pass
		2535	16.24	5.18	9.00	20.06	101.322	Vertical	Pass
		2565	15.68	5.22	9.00	19.46	88.283	Vertical	Pass
15.0MHz DFT_16QAM	1@1	2507.5	16.16	5.13	9.00	20.03	100.608	Vertical	Pass
		2535	15.77	5.18	9.00	19.59	90.949	Vertical	Pass
		2562.5	15.76	5.21	9.00	19.55	90.171	Vertical	Pass
20.0MHz DFT_16QAM	1@1	2510	17.06	5.13	9.00	20.93	***123.951***	Vertical	Pass
		2535	16.91	5.18	9.00	20.73	118.245	Vertical	Pass
		2560	16.23	5.21	9.00	20.02	100.489	Vertical	Pass

8.5 NR BAND 78

Radiated Power (EIRP) for N78 /SCS (30kHz)									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP (dBm)	Max. EIRP (mW)	Polarization Of Max. ERP	
10.0MHz DFT_QPSK	1@1	3455	18.30	5.12	11	24.18	261.715	Horizontal	Pass
		3500	18.49	5.18	11	24.31	270.018	Horizontal	Pass
		3545	18.22	5.23	11	23.99	250.486	Horizontal	Pass
15.0MHz DFT_QPSK	1@1	3457.5	17.95	5.12	11	23.83	241.535	Horizontal	Pass
		3500	18.52	5.18	11	24.34	271.490	Horizontal	Pass
		3542.5	18.58	5.22	11	24.36	272.634	Horizontal	Pass
20.0MHz DFT_QPSK	1@1	3460	17.87	5.13	11	23.74	236.832	Horizontal	Pass
		3500	18.17	5.18	11	23.99	250.324	Horizontal	Pass
		3540	17.56	5.21	11	23.35	216.430	Horizontal	Pass
40.0MHz DFT_QPSK	1@1	3470	17.48	5.13	11	23.35	216.439	Horizontal	Pass
		3500	17.46	5.18	11	23.28	212.783	Horizontal	Pass
		3530	17.91	5.21	11	23.70	234.189	Horizontal	Pass
50.0MHz DFT_QPSK	1@1	3475	17.95	5.14	11	23.81	240.457	Horizontal	Pass
		3500	17.49	5.18	11	23.31	214.298	Horizontal	Pass
		3525	17.36	5.2	11	23.16	206.882	Horizontal	Pass
60.0MHz DFT_QPSK	1@1	3480	17.23	5.14	11	23.09	203.833	Horizontal	Pass
		3500	18.06	5.18	11	23.88	244.426	Horizontal	Pass
		3520	17.67	5.19	11	23.48	223.023	Horizontal	Pass
70.0MHz DFT_QPSK	1@1	3485	17.11	5.14	11	22.97	197.946	Horizontal	Pass
		3500	17.93	5.18	11	23.75	237.109	Horizontal	Pass
		3515	17.63	5.19	11	23.44	220.918	Horizontal	Pass
80.0MHz DFT_QPSK	1@1	3490	18.03	5.14	11	23.89	244.697	Horizontal	Pass
		3500	17.85	5.18	11	23.67	232.630	Horizontal	Pass
		3510	16.96	5.19	11	22.77	189.325	Horizontal	Pass
90.0MHz DFT_QPSK	1@1	3495	17.36	5.14	11	23.22	209.666	Horizontal	Pass
		3500	18.12	5.18	11	23.94	247.557	Horizontal	Pass
		3505	18.06	5.19	11	23.87	243.801	Horizontal	Pass
100.0MHz DFT_QPSK	1@1	3500	18.53	5.14	11	24.39	***274.789***	Horizontal	Pass

Radiated Power (EIRP) for N78/SCS (30kHz)									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dBi)	Max. EIRP (dBm)	Max. EIRP (mW)	Polarization Of Max. ERP	
10.0MHz DFT_16QAM	1@1	3455	15.01	5.12	11	20.89	122.678	Vertical	Pass
		3500	15.92	5.18	11	21.74	149.260	Vertical	Pass
		3545	15.65	5.23	11	21.42	138.587	Vertical	Pass
15.0MHz DFT_16QAM	1@1	3457.5	15.37	5.12	11	21.25	133.494	Vertical	Pass
		3500	15.28	5.18	11	21.10	128.766	Vertical	Pass
		3542.5	14.87	5.22	11	20.65	116.203	Vertical	Pass
20.0MHz DFT_16QAM	1@1	3460	15.14	5.13	11	21.01	126.184	Vertical	Pass
		3500	16.31	5.18	11	22.13	163.475	Vertical	Pass
		3540	16.35	5.21	11	22.14	163.614	Vertical	Pass
40.0MHz DFT_16QAM	1@1	3470	15.06	5.13	11	20.93	123.902	Vertical	Pass
		3500	16.13	5.18	11	21.95	156.632	Vertical	Pass
		3530	15.57	5.21	11	21.36	136.676	Vertical	Pass
50.0MHz DFT_16QAM	1@1	3475	15.03	5.14	11	20.89	122.834	Vertical	Pass
		3500	16.17	5.18	11	21.99	158.177	Vertical	Pass
		3525	15.36	5.2	11	21.16	130.630	Vertical	Pass
60.0MHz DFT_16QAM	1@1	3480	15.60	5.14	11	21.46	139.907	Vertical	Pass
		3500	16.26	5.18	11	22.08	161.465	Vertical	Pass
		3520	15.92	5.19	11	21.73	149.064	Vertical	Pass
70.0MHz DFT_16QAM	1@1	3485	14.96	5.14	11	20.82	120.785	Vertical	Pass
		3500	15.82	5.18	11	21.64	145.794	Vertical	Pass
		3515	15.10	5.19	11	20.91	123.209	Vertical	Pass
80.0MHz DFT_16QAM	1@1	3490	15.29	5.14	11	21.15	130.339	Vertical	Pass
		3500	16.13	5.18	11	21.95	156.770	Vertical	Pass
		3510	15.96	5.19	11	21.77	150.247	Vertical	Pass
90.0MHz DFT_16QAM	1@1	3495	17.11	5.14	11	22.97	198.238	Vertical	Pass
		3500	17.37	5.18	11	23.19	208.259	Vertical	Pass
		3505	17.40	5.19	11	23.21	209.641	Vertical	Pass
100.0MHz DFT_16QAM	1@1	3500	17.39	5.14	11	23.25	***211.349***	Vertical	Pass

8.6 NSA(DC_2A_n78A)

Radiated Power (EIRP) for EN-DC: DC_2A_n78A									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5+20.0MHz DFT_QPSK	1@LOW	1852.5	15.19	3.77	8.9	20.7	117.490	Horizontal	Pass
	1@1	3460	17.65	5.12	8.9	21.43	138.995	Horizontal	Pass
						24.09	256.485	Horizontal	Pass
40.0MHz DFT_QPSK	1@LOW	1880	-3.8	5.13	28.98	20.43	110.408	Horizontal	Pass
	1@1	3500	-2.56	5.18	28.92	21.56	143.219	Horizontal	Pass
						24.04	253.627	Horizontal	Pass
50.0MHz DFT_QPSK	1@LOW	1907.5	-3.95	5.14	28.98	20.27	106.414	Horizontal	Pass
	1@1	3540	-3.19	5.18	28.93	20.94	124.165	Horizontal	Pass
						23.63	230.580	Horizontal	Pass
60.0MHz DFT_QPSK	1@LOW	1860	-3.27	5.14	28.99	20.96	124.738	Horizontal	Pass
	1@1	3500	-3.49	5.18	28.92	20.63	115.611	Horizontal	Pass
						23.81	240.350	Horizontal	Pass
80.0MHz DFT_QPSK	1@LOW	1880	-2.36	5.14	28.95	21.83	152.405	Horizontal	Pass
	1@1	3500	-3.06	5.18	28.93	21.07	127.938	Horizontal	Pass
						24.48	280.343	Horizontal	Pass
90.0MHz DFT_QPSK	1@LOW	1900	-2.47	5.14	28.96	21.73	148.936	Horizontal	Pass
	1@1	3500	-3.17	5.18	28.93	20.96	124.738	Horizontal	Pass
						24.37	273.674	Horizontal	Pass

Radiated Power (EIRP) for EN-DC: DC_2A_n78A									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5+20.0MHz DFT_QPSK	1@LOW	1852.5	14.75	3.77	8.9	20.26	106.170	Vertical	Pass
	1@1	3460	15.6	3.91	8.9	20.97	125.026	Vertical	Pass
						23.64	231.195	Vertical	
40.0MHz DFT_QPSK	1@LOW	1880	-2.5	5.13	28.98	21.73	148.936	Vertical	Pass
	1@1	3500	-3.27	5.18	28.92	20.85	121.619	Vertical	Pass
						24.32	270.555	Vertical	
50.0MHz DFT_QPSK	1@LOW	1907.5	-2.39	5.14	28.98	21.83	152.405	Vertical	Pass
	1@1	3540	-1.45	5.18	28.93	22.68	185.353	Vertical	Pass
						25.29	337.758	Vertical	
60.0MHz DFT_QPSK	1@LOW	1860	-2.27	5.14	28.99	21.96	157.036	Vertical	Pass
	1@1	3500	-1.27	5.18	28.92	22.85	192.752	Vertical	Pass
						25.44	349.789	Vertical	
80.0MHz DFT_QPSK	1@LOW	1880	-3.23	5.14	28.95	20.96	124.738	Vertical	Pass
	1@1	3500	-2.06	5.18	28.93	22.07	161.065	Vertical	Pass
						24.56	285.803	Vertical	
90.0MHz DFT_QPSK	1@LOW	1900	-2.46	5.14	28.96	21.74	149.279	Vertical	Pass
	1@1	3500	-1.28	5.18	28.93	22.85	192.752	Vertical	Pass
						25.34	342.032	Vertical	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor Gain (dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.7 NSA(DC_5A_n78A)

Radiated Power (EIRP) for EN-DC: DC_5A_n78A									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5+20.0MHz DFT_QPSK	1@LOW	1852.5	15.19	3.77	8.9	20.51	112.460	Horizontal	Pass
	1@1	3460	17.46	5.12	8.9	21.24	133.045	Horizontal	Pass
						23.90	245.506	Horizontal	Pass
40.0MHz DFT_QPSK	1@LOW	1880	-3.8	5.13	28.98	20.24	105.682	Horizontal	Pass
	1@1	3500	-2.56	5.18	28.92	21.37	137.088	Horizontal	Pass
						23.85	242.770	Horizontal	Pass
50.0MHz DFT_QPSK	1@LOW	1907.5	-3.95	5.14	28.98	20.08	101.859	Horizontal	Pass
	1@1	3540	-3.19	5.18	28.93	20.75	118.850	Horizontal	Pass
						23.44	220.709	Horizontal	Pass
60.0MHz DFT_QPSK	1@LOW	1860	-3.27	5.14	28.99	20.77	119.399	Horizontal	Pass
	1@1	3500	-3.49	5.18	28.92	20.44	110.662	Horizontal	Pass
						23.62	230.061	Horizontal	Pass
80.0MHz DFT_QPSK	1@LOW	1880	-2.36	5.14	28.95	21.64	145.881	Horizontal	Pass
	1@1	3500	-3.06	5.18	28.93	20.88	122.462	Horizontal	Pass
						24.29	268.343	Horizontal	Pass
90.0MHz DFT_QPSK	1@LOW	1900	-2.47	5.14	28.96	21.54	142.561	Horizontal	Pass
	1@1	3500	-3.17	5.18	28.93	20.77	119.399	Horizontal	Pass
						24.18	261.960	Horizontal	Pass

Radiated Power (EIRP) for EN-DC: DC_5A_n78A									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5+20.0MHz DFT_QPSK	1@LOW	1852.5	14.75	3.77	8.9	20.07	101.625	Vertical	Pass
	1@1	3460	15.6	3.91	8.9	20.78	119.674	Vertical	Pass
						23.45	221.299	Vertical	
40.0MHz DFT_QPSK	1@LOW	1880	-2.5	5.13	28.98	21.54	142.561	Vertical	Pass
	1@1	3500	-3.27	5.18	28.92	20.66	116.413	Vertical	Pass
						24.13	258.973	Vertical	
50.0MHz DFT_QPSK	1@LOW	1907.5	-2.39	5.14	28.98	21.64	145.881	Vertical	Pass
	1@1	3540	-1.45	5.18	28.93	22.49	177.419	Vertical	Pass
						25.10	323.300	Vertical	
60.0MHz DFT_QPSK	1@LOW	1860	-2.27	5.14	28.99	21.77	150.314	Vertical	Pass
	1@1	3500	-1.27	5.18	28.92	22.66	184.502	Vertical	Pass
						25.25	334.816	Vertical	
80.0MHz DFT_QPSK	1@LOW	1880	-3.23	5.14	28.95	20.77	119.399	Vertical	Pass
	1@1	3500	-2.06	5.18	28.93	21.88	154.170	Vertical	Pass
						24.37	273.569	Vertical	
90.0MHz DFT_QPSK	1@LOW	1900	-2.46	5.14	28.96	21.55	142.889	Vertical	Pass
	1@1	3500	-1.28	5.18	28.93	22.66	184.502	Vertical	Pass
						25.15	327.391	Vertical	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor Gain (dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.8 NSA(DC_7A_n78A)

Radiated Power (EIRP) for EN-DC: DC_7A_n78A									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5+20.0MHz DFT_QPSK	1@LOW	1852.5	15.19	3.77	8.9	20.51	112.460	Horizontal	Pass
	1@1	3460	17.46	5.12	8.9	21.24	133.045	Horizontal	Pass
						23.90	245.506	Horizontal	Pass
40.0MHz DFT_QPSK	1@LOW	1880	-3.8	5.13	28.98	20.24	105.682	Horizontal	Pass
	1@1	3500	-2.56	5.18	28.92	21.37	137.088	Horizontal	Pass
						23.85	242.770	Horizontal	Pass
50.0MHz DFT_QPSK	1@LOW	1907.5	-3.95	5.14	28.98	20.08	101.859	Horizontal	Pass
	1@1	3540	-3.19	5.18	28.93	20.75	118.850	Horizontal	Pass
						23.44	220.709	Horizontal	Pass
60.0MHz DFT_QPSK	1@LOW	1860	-3.27	5.14	28.99	20.77	119.399	Horizontal	Pass
	1@1	3500	-3.49	5.18	28.92	20.44	110.662	Horizontal	Pass
						23.62	230.061	Horizontal	Pass
80.0MHz DFT_QPSK	1@LOW	1880	-2.36	5.14	28.95	21.64	145.881	Horizontal	Pass
	1@1	3500	-3.06	5.18	28.93	20.88	122.462	Horizontal	Pass
						24.29	268.343	Horizontal	Pass
90.0MHz DFT_QPSK	1@LOW	1900	-2.47	5.14	28.96	21.54	142.561	Horizontal	Pass
	1@1	3500	-3.17	5.18	28.93	20.77	119.399	Horizontal	Pass
						24.18	261.960	Horizontal	Pass

Radiated Power (EIRP) for EN-DC: DC_7A_n78A									
Mode	RB/ RB Position	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5+20.0MHz DFT_QPSK	1@LOW	1852.5	14.75	3.77	8.9	21.1	128.825	Vertical	Pass
	1@1	3460	15.6	3.91	8.9	21.81	151.705	Vertical	Pass
						24.48	280.530	Vertical	
40.0MHz DFT_QPSK	1@LOW	1880	-2.5	5.13	28.98	22.57	180.717	Vertical	Pass
	1@1	3500	-3.27	5.18	28.92	21.69	147.571	Vertical	Pass
						25.16	328.288	Vertical	
50.0MHz DFT_QPSK	1@LOW	1907.5	-2.39	5.14	28.98	22.67	184.927	Vertical	Pass
	1@1	3540	-1.45	5.18	28.93	23.52	224.905	Vertical	Pass
						26.13	409.832	Vertical	
60.0MHz DFT_QPSK	1@LOW	1860	-2.27	5.14	28.99	22.8	190.546	Vertical	Pass
	1@1	3500	-1.27	5.18	28.92	23.69	233.884	Vertical	Pass
						26.28	424.430	Vertical	
80.0MHz DFT_QPSK	1@LOW	1880	-3.23	5.14	28.95	21.8	151.356	Vertical	Pass
	1@1	3500	-2.06	5.18	28.93	22.91	195.434	Vertical	Pass
						25.40	346.790	Vertical	
90.0MHz DFT_QPSK	1@LOW	1900	-2.46	5.14	28.96	22.58	181.134	Vertical	Pass
	1@1	3500	-1.28	5.18	28.93	23.69	233.884	Vertical	Pass
						26.18	415.018	Vertical	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor Gain (dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238,§27.53(c)(g)(h)(m)

LIMIT

For Band 7, the minimum permissible attenuation level of any spurious emission is 55 + log10 (P [Watts]).
The minimum permissible attenuation level of any spurious emission is 43 + log10 (P [Watts]), where P is the transmitter power in Watts.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). 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.
For PCS equipment - Compliance with these rules 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). 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.

The unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth in the 1 MHz band immediately outside and adjacent to the channel edge of the equipment. Beyond the 1 MHz band immediately outside the channel edge of the equipment, a resolution bandwidth of 1 MHz shall be employed. A narrower resolution bandwidth is allowed to be used provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1% of the occupied bandwidth as applicable.

The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power, P (dBW), as follows:
a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than 43 + 10 Log10 (p), dB; and
b. for mobile subscriber equipment, the attenuation shall not be less than 43 + 10 Log10 (p), dB at the channel edges and 55 + 10 Log10 (p) at 5.5 MHz away and beyond the channel edges where p in (a) and (b) is the transmitter power measured in watts.

MODES TESTED

NR Band 2/5/7/78

RESULTS

PASS

9.1 NR BAND 2

QPSK NR N2 10MHZ SCS 30kHz

Test Results for Low Channel 1855MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3710	-47.44	4.04	33.51	-17.97	-13	-4.97	Horizontal
3710	-50.42	4.04	33.51	-20.95	-13	-7.95	Vertical
5565	-57.83	5.24	35.84	-27.23	-13	-14.23	Vertical
5565	-56.85	5.24	35.84	-26.25	-13	-13.25	Horizontal
Test Results for Mid Channel 1880MHz							
3760	-47.96	4.04	33.56	-18.44	-13	-5.44	Horizontal
3760	-47.08	4.04	33.56	-17.56	-13	-4.56	Vertical
5640	-55.94	5.24	35.91	-25.27	-13	-12.27	Vertical
5640	-57.31	5.24	35.91	-26.64	-13	-13.64	Horizontal
Test Results for High Channel 1905MHz							
3810	-50.60	4.04	34.00	-20.64	-13	-7.64	Horizontal
3810	-51.17	4.04	34.00	-21.21	-13	-8.21	Vertical
5715	-49.48	5.24	36.04	-18.68	-13	-5.68	Vertical
5715	-50.63	5.24	36.04	-19.83	-13	-6.83	Horizontal

QPSK NR N2 20MHZ SCS 30kHz

Test Results for Low Channel 1860MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
3720	-53.26	4.07	33.54	-23.79	-13	-10.79	Horizontal
3720	-54.48	4.07	33.54	-25.01	-13	-12.01	Vertical
5580	-53.26	5.28	35.86	-22.68	-13	-9.68	Vertical
5580	-55.72	5.28	35.86	-25.14	-13	-12.14	Horizontal
Test Results for Mid Channel 1880MHz							
3760	-49.97	4.04	33.56	-20.45	-13	-7.45	Horizontal
3760	-48.32	4.04	33.56	-18.80	-13	-5.80	Vertical
5640	-53.59	5.24	35.91	-22.92	-13	-9.92	Vertical
5640	-52.65	5.24	35.91	-21.98	-13	-8.98	Horizontal
Test Results for High Channel 1900MHz							
3800	-54.45	4.04	34.00	-24.49	-13	-11.49	Horizontal
3800	-49.46	4.04	34.00	-19.50	-13	-6.50	Vertical
5700	-56.46	5.24	36.04	-25.66	-13	-12.66	Vertical
5700	-53.62	5.24	36.04	-22.82	-13	-9.82	Horizontal

9.2 NR BAND 5

QPSK NR N5 10MHZ SCS 15kHz

Test Results for Low Channel 826.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1653	-48.42	2.78	27.50	-23.70	-13	-10.70	Horizontal
1653	-54.59	2.78	27.50	-29.87	-13	-16.87	Vertical
2479.5	-56.21	2.90	27.80	-31.31	-13	-18.31	Vertical
2479.5	-49.63	2.90	27.80	-24.73	-13	-11.73	Horizontal
Test Results for Mid Channel 836.5MHz							
1673	-50.77	2.78	27.48	-26.07	-13	-13.07	Horizontal
1673	-49.10	2.78	27.48	-24.40	-13	-11.40	Vertical
2509.5	-57.31	2.91	27.70	-32.52	-13	-19.52	Vertical
2509.5	-50.18	2.91	27.70	-25.39	-13	-12.39	Horizontal
Test Results for High Channel 846.5MHz							
1693	-47.38	2.78	27.43	-22.73	-13	-9.73	Horizontal
1693	-49.99	2.78	27.43	-25.34	-13	-12.34	Vertical
2539.5	-54.59	2.92	27.74	-29.77	-13	-16.77	Vertical
2539.5	-53.82	2.92	27.74	-29.00	-13	-16.00	Horizontal

QPSK NR N5 20MHZ SCS 15kHz

Test Results for Low Channel 834MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1668	-49.03	2.78	27.50	-24.31	-13	-11.31	Horizontal
1668	-50.62	2.78	27.50	-25.90	-13	-12.90	Vertical
2502	-52.35	2.90	27.80	-27.45	-13	-14.45	Vertical
2502	-49.91	2.90	27.80	-25.01	-13	-12.01	Horizontal
Test Results for Mid Channel 836.5MHz							
1673	-48.86	2.78	27.48	-24.16	-13	-11.16	Horizontal
1673	-48.89	2.78	27.48	-24.19	-13	-11.19	Vertical
2509.5	-49.25	2.91	27.70	-24.46	-13	-11.46	Vertical
2509.5	-56.94	2.91	27.70	-32.15	-13	-19.15	Horizontal
Test Results for High Channel 839MHz							
1678	-51.27	2.78	27.43	-26.62	-13	-13.62	Horizontal
1678	-48.86	2.78	27.43	-24.21	-13	-11.21	Vertical
2517	-52.39	2.92	27.74	-27.57	-13	-14.57	Vertical
2517	-51.57	2.92	27.74	-26.75	-13	-13.75	Horizontal

9.3 NR BAND 7

QPSK NR N7 10MHZ SCS 15kHz

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
5005	-60.34	5.23	35.81	-29.76	-25	-4.76	Horizontal
5005	-61.15	5.23	35.81	-30.57	-25	-5.57	Vertical
7507.5	-60.31	5.67	36.85	-29.13	-25	-4.13	Vertical
7507.5	-65.35	5.67	36.85	-34.17	-25	-9.17	Horizontal
Test Results for Mid Channel 2535MHz							
5185.98	-49.53	6.15	27.32	-28.36	-25	-3.36	Horizontal
5185.98	-50.75	6.15	27.32	-29.58	-25	-4.58	Vertical
7778.97	-52.6	6.61	28.51	-30.70	-25	-5.70	Vertical
7778.97	-52.93	6.61	28.51	-31.03	-25	-6.03	Horizontal
Test Results for High Channel 2657.5MHz							
5135	-61.23	5.24	35.83	-30.64	-25	-5.64	Horizontal
5135	-58.82	5.24	35.83	-28.23	-25	-3.23	Vertical
7702.5	-60.35	5.68	36.87	-29.16	-25	-4.16	Vertical
7702.5	-64.28	5.68	36.87	-33.09	-25	-8.09	Horizontal

QPSK NR N7 20MHZ SCS 15kHz

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
5020	-59.89	5.23	35.82	-29.30	-25	-4.30	Horizontal
5020	-57.97	5.23	35.82	-27.38	-25	-2.38	Vertical
7530	-65.23	5.67	36.86	-34.04	-25	-9.04	Vertical
7530	-63.59	5.67	36.86	-32.40	-25	-7.40	Horizontal
Test Results for Mid Channel 2535MHz							
5070	-58.74	5.23	35.82	-28.15	-25	-3.15	Horizontal
5070	-58.87	5.23	35.82	-28.28	-25	-3.28	Vertical
7605	-62.58	5.67	36.85	-31.40	-25	-6.40	Vertical
7605	-61.25	5.67	36.85	-30.07	-25	-5.07	Horizontal
Test Results for High Channel 2690MHz							
5120	-62.38	5.24	35.83	-31.79	-25	-6.79	Horizontal
5120	-59.48	5.24	35.83	-28.89	-25	-3.89	Vertical
7680	-64.64	5.7	36.88	-33.46	-25	-8.46	Vertical
7680	-61.21	5.7	36.88	-30.03	-25	-5.03	Horizontal

9.4 NR BAND 78

QPSK NR N78 10MHZ SCS 30kHz

Test Results for Low Channel 3455MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
6910	-54.03	2.63	28.33	-28.33	-13	-15.33	Horizontal
6910	-49.96	2.63	28.33	-24.26	-13	-11.26	Vertical
10365	-56.27	3.38	28.26	-31.39	-13	-18.39	Vertical
10365	-56.63	3.38	28.26	-31.75	-13	-18.75	Horizontal
Test Results for Mid Channel 3500MHz							
7000	-49.54	2.63	28.33	-23.84	-13	-10.84	Horizontal
7000	-52.78	2.63	28.33	-27.08	-13	-14.08	Vertical
10500	-50.79	3.38	28.26	-25.91	-13	-12.91	Vertical
10500	-54.67	3.38	28.26	-29.79	-13	-16.79	Horizontal
Test Results for High Channel 3545MHz							
7090	-51.41	2.63	28.33	-25.71	-13	-12.71	Horizontal
7090	-50.03	2.63	28.33	-24.33	-13	-11.33	Vertical
10635	-50.46	3.38	28.26	-25.58	-13	-12.58	Vertical
10635	-53.62	3.38	28.26	-28.74	-13	-15.74	Horizontal

QPSK NR N78 100MHZ SCS 30kHz

Test Results for Mid Channel 3500MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
7000	-49.85	2.63	28.33	-24.15	-13	-11.15	Horizontal
7000	-51.91	2.63	28.33	-26.21	-13	-13.21	Vertical
10500	-50.63	3.38	28.26	-25.75	-13	-12.75	Vertical
10500	-57.35	3.38	28.26	-32.47	-13	-19.47	Horizontal

Note: PMea(dBm)= Power(dBm)+ ARpl (dBm)

. Over Limit= : PMea(dBm)-Limit(dBm)

. We test both H direction and V direction, recorded worst case direction.

Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

10. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235,§27.54

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30° to +50°C
- Voltage =low voltage, DC3.29V, Normal, DC 3.87V and High voltage, DC 4.45V.

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to -30ºC and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50ºC is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

MODES TESTED

- NR Band 2/5/7/78

RESULTS

See the following pages.

10.1 NR BAND 2

N2 QPSK, (20MHz CH 376000 RB Allocation 1@104)

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1880	12	0.006383	2.5
3.85	1880	9	0.004787	2.5
4.37	1880	11	0.005851	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	9	0.004787	2.5
Extreme (50C)	1880	15	0.007979	2.5
Extreme (40C)	1880	20	0.010638	2.5
Extreme (30C)	1880	13	0.006915	2.5
Extreme (10C)	1880	22	0.011702	2.5
Extreme (0C)	1880	15	0.007979	2.5
Extreme (-10C)	1880	11	0.005851	2.5
Extreme (-20C)	1880	9	0.004787	2.5
Extreme (-30C)	1880	4	0.002128	2.5

N2 16QAM, (20MHz CH 376000 RB Allocation 1@104)

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1880	15	0.007979	2.5
3.85	1880	13	0.006915	2.5
4.37	1880	12	0.006383	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1880	11	0.005851	2.5
Extreme (50C)	1880	6	0.003191	2.5
Extreme (40C)	1880	5	0.002660	2.5
Extreme (30C)	1880	9	0.004787	2.5
Extreme (10C)	1880	12	0.006383	2.5
Extreme (0C)	1880	22	0.011702	2.5
Extreme (-10C)	1880	19	0.010106	2.5
Extreme (-20C)	1880	21	0.011170	2.5
Extreme (-30C)	1880	17	0.009043	2.5

10.2 NR BAND 5

N5 QPSK, (20MHz CH 167300 RB Allocation 1@104)

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	836.5	12	0.014345	2.5
3.85	836.5	13	0.015541	2.5
4.37	836.5	22	0.026300	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	15	0.017932	2.5
Extreme (50C)	836.5	13	0.015541	2.5
Extreme (40C)	836.5	9	0.010759	2.5
Extreme (30C)	836.5	21	0.025105	2.5
Extreme (10C)	836.5	24	0.028691	2.5
Extreme (0C)	836.5	13	0.015541	2.5
Extreme (-10C)	836.5	1	0.001195	2.5
Extreme (-20C)	836.5	6	0.007173	2.5
Extreme (-30C)	836.5	8	0.009564	2.5

N5 16QAM, (20MHz CH 167300 RB Allocation 1@104)

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	836.5	5	0.005977	2.5
3.85	836.5	11	0.013150	2.5
4.37	836.5	3	0.003586	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6	0.007173	2.5
Extreme (50C)	836.5	11	0.013150	2.5
Extreme (40C)	836.5	16	0.019127	2.5
Extreme (30C)	836.5	22	0.026300	2.5
Extreme (10C)	836.5	19	0.022714	2.5
Extreme (0C)	836.5	10	0.011955	2.5
Extreme (-10C)	836.5	13	0.015541	2.5
Extreme (-20C)	836.5	6	0.007173	2.5
Extreme (-30C)	836.5	16	0.019127	2.5

10.3 NR BAND 7

N7 QPSK, (20MHz CH 507000 RB Allocation 1@104)

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	2535	12	0.004734	2.5
3.85	2535	10	0.003945	2.5
4.37	2535	16	0.006312	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	11	0.004339	2.5
Extreme (50C)	2535	13	0.005128	2.5
Extreme (40C)	2535	15	0.005917	2.5
Extreme (30C)	2535	10	0.003945	2.5
Extreme (10C)	2535	9	0.003550	2.5
Extreme (0C)	2535	6	0.002367	2.5
Extreme (-10C)	2535	3	0.001183	2.5
Extreme (-20C)	2535	11	0.004339	2.5
Extreme (-30C)	2535	17	0.006706	2.5

N7 16QAM, (20MHz CH 507000 RB Allocation 1@104)

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	2535	13	0.005128	2.5
3.85	2535	12	0.004734	2.5
4.37	2535	10	0.003945	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6	0.002367	2.5
Extreme (50C)	2535	3	0.001183	2.5
Extreme (40C)	2535	9	0.003550	2.5
Extreme (30C)	2535	8	0.003156	2.5
Extreme (10C)	2535	14	0.005523	2.5
Extreme (0C)	2535	21	0.008284	2.5
Extreme (-10C)	2535	11	0.004339	2.5
Extreme (-20C)	2535	10	0.003945	2.5
Extreme (-30C)	2535	3	0.001183	2.5

10.4 NR BAND 78

N78 QPSK, (100MHz CH 633334 RB Allocation 135@67)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	3500	15	0.004286	2.5
3.85	3500	16	0.004571	2.5
4.37	3500	13	0.003714	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	3500	12	0.003429	2.5
Extreme (50C)	3500	15	0.004286	2.5
Extreme (40C)	3500	14	0.004000	2.5
Extreme (30C)	3500	3	0.000857	2.5
Extreme (10C)	3500	11	0.003143	2.5
Extreme (0C)	3500	17	0.004857	2.5
Extreme (-10C)	3500	16	0.004571	2.5
Extreme (-20C)	3500	13	0.003714	2.5
Extreme (-30C)	3500	12	0.003429	2.5

N78 16QAM, (100MHz CH 633334 RB Allocation 135@67)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	3500	7	0.002000	2.5
3.85	3500	6	0.001714	2.5
4.37	3500	3	0.000857	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	3500	9	0.002571	2.5
Extreme (50C)	3500	5	0.001429	2.5
Extreme (40C)	3500	4	0.001143	2.5
Extreme (30C)	3500	8	0.002286	2.5
Extreme (10C)	3500	11	0.003143	2.5
Extreme (0C)	3500	15	0.004286	2.5
Extreme (-10C)	3500	19	0.005429	2.5
Extreme (-20C)	3500	23	0.006571	2.5
Extreme (-30C)	3500	27	0.007714	2.5

***Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

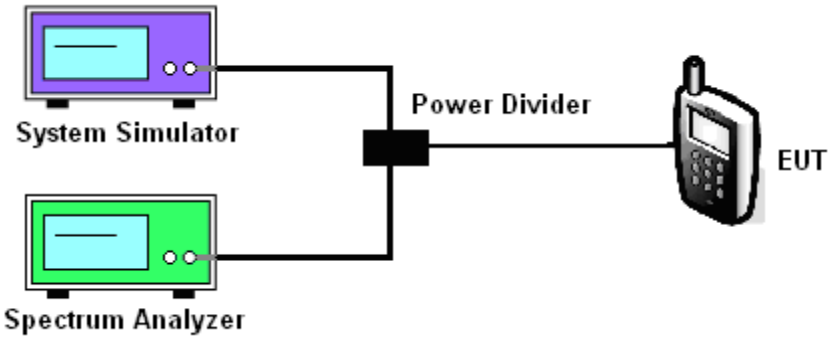
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. For GSM/EGPRS operating modes:
   a. Set the RBW = 1MHz, VBW = 1MHz, Peak detector in spectrum analyzer.
   b. Set EUT in maximum power output, and triggered the burst signal.
   c. Measured respectively the Peak level and Mean level, and the deviation was recorded as Peak to Average Ratio.
4. For UMTS operating modes:
   a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
   b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

11.4 Test Setup



11.5 MODES TESTED

□ NR Band2/5/7/78

□

Test data reference attachment.

----END OF REPORT----