



FCC RF Test Report

APPLICANT : Acer Incorporated
EQUIPMENT : 5G USB Dongle
BRAND NAME : acer
MODEL NAME : D5
FCC ID : HLZPCONNECTD5
STANDARD : 47 CFR Part 2, 27
CLASSIFICATION : PCS Licensed Transmitter (PCB)
TEST DATE(S) : May 13, 2021 ~ Aug. 24, 2021

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

This product installed a RF module (Brand Name: Fibocom, Model Name: FM350-GL, FCC ID: ZMOFM350GL) during the test, only Conducted Power/EIRP and RSE test items are tested in this report, all the other test results are leveraged from the module RF report.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Reviewed by: Jason Jia / Supervisor

Approved by: Alex Wang / Manager



Sporton International (Kunshan) Inc.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG150602B	Rev. 01	Initial issue of report	Oct. 21, 2021



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§27.50(j)(3)	Equivalent Isotropic Radiated Power (5G NR n77, n78)	EIRP < 1Watt		
-	§27.50(j)(4)	Peak-to-Average Ratio	<13 dB	PASS	1
-	§2.1049	Occupied Bandwidth	Reporting Only	PASS	1
-	§2.1051 §27.53(l)(2)	Conducted Band Edge Measurement (5G NR n77, n78)	< 43+10log10(P[Watts])	PASS	1
-	§2.1051 §27.53(l)(2)	Conducted Spurious Emission (5G NR n77, n78)	< 43+10log10(P[Watts])	PASS	1
-	§27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	1
4.4	§2.1053 §27.53(l)(2)	Radiated Spurious Emission (5G NR n77, n78)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 39.29 dB at 7584.000 MHz

Remark 1: All test results were leveraged from module RF report which can refer to Report No. FG051802I.

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



1 General Description

1.1 Applicant

Acer Incorporated

8F ,88, Sec.1 Xintai 5th Rd. Xizhi, New Taipei City 221, Taiwan, R.O.C

1.2 Manufacturer

Acer Incorporated

8F ,88, Sec.1 Xintai 5th Rd. Xizhi, New Taipei City 221, Taiwan, R.O.C

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	5G USB Dongle
Brand Name	acer
Model Name	D5
FCC ID	HLZPCONNECTD5
EUT supports Radios application	LTE/5G NR
IMEI Code	Radiation : 862146050082088
HW Version	v1.2
SW Version	81601.70000.00.;01.01.06
EUT Stage	Identical Prototype

Remark:

Only 5G NR bands are tested in this report, all the other RF bands are tested in the other reports separately.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Rx Frequency	5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Bandwidth	SCS 15kHz: n77/n78: 10MHz / 15MHz / 20MHz SCS 30kHz: n77/n78: 10MHz / 15MHz / 20MHz / 40MHz / 50MHz / 60MHz / 80MHz / 100MHz
NR Mode	SA: n77/n78
Antenna Gain	n77: -0.78 dBi n78: -0.81 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Note: 5G NR n78 supports HPUE mode.



1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Maximum EIRP

For SCS 15kHz:

5G NR n77		PI/2 BPSK / QPSK	16QAM / 64QAM / 256QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
20	3710.01 ~ 3969.99	0.1734	0.1291

5G NR n78 - HPUE		PI/2 BPSK / QPSK	16QAM / 64QAM / 256QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
20	3710.01 ~ 3789.99	0.2553	0.1687

For SCS 30kHz:

5G NR n77		PI/2 BPSK / QPSK	16QAM / 64QAM / 256QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
100	3750.00 ~ 3930.00	0.1738	0.1330

5G NR n78 - HPUE		PI/2 BPSK / QPSK	16QAM / 64QAM / 256QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
100	3750	0.2600	0.1718

Note:

1. All modulations have been tested, only the worst test results of PSK & QAM are shown in the report .
2. Based on engineering evaluation, only the maximum bandwidth and the worst modulation test results are shown in the report.



1.7 Testing Location

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH04-KS	CN1257	314309

1.8 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-KS	AUDIX	E3	6.2009-8-24a

1.9 Applicable Standards

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

- 47 CFR Part 2, 27
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.




2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

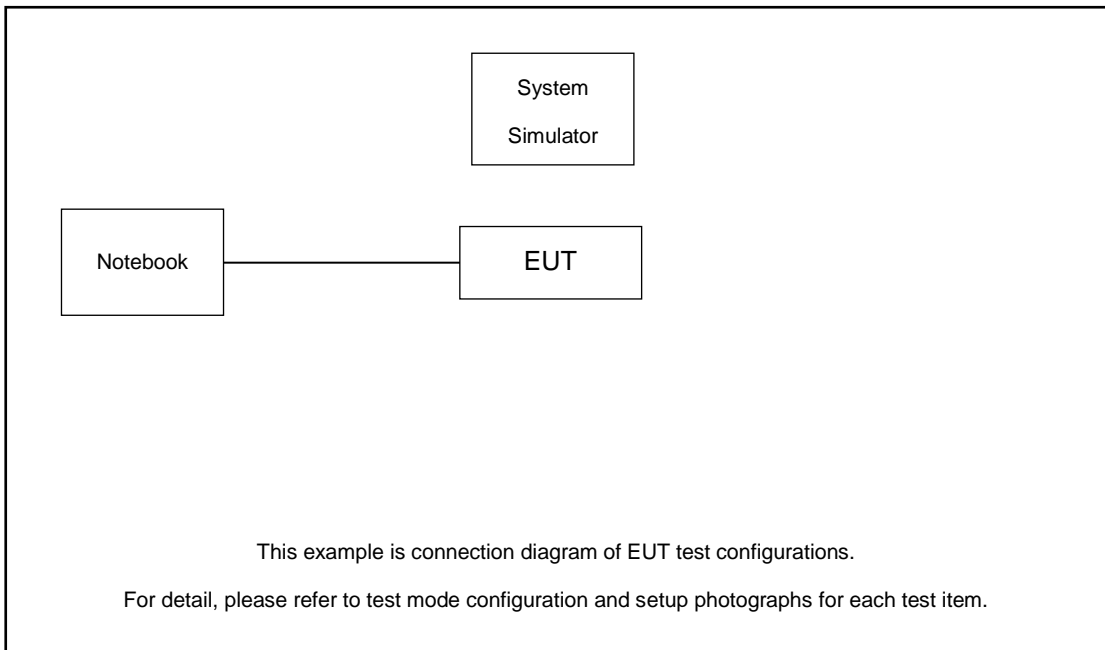
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.

Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			

Test Items	5G NR	Bandwidth (MHz)						Modulation				RB #		Test Channel			
		5	10	15	20	40-80	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Full	L	M	H
Max. Output Power	n77	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n78	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
E.I.R.P	n77	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n78	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	N77	Worst Case													v		
	N78	Worst Case													v		
Note	1. The mark “v” means that this configuration is chosen for testing 2. The mark “-“ means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.																

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Notebook	Lenovo	V130-14IKB001	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
2.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m



2.4 Frequency List of Low/Middle/High Channels

For SCS 15kHz:

5G NR n77 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	647334	656000	664666
	Frequency	3710.01	3840	3969.99
15	Channel	647167	656000	664833
	Frequency	3707.505	3840	3972.495
10	Channel	647000	656000	665000
	Frequency	3705	3840	3975

5G NR n78 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	647334	650000	652666
	Frequency	3710.01	3750	3789.99
15	Channel	647167	650000	652833
	Frequency	3707.505	3750	3792.48
10	Channel	647000	650000	653000
	Frequency	3705	3750	3795



For SCS 30kHz:

5G NR n77 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	650000	656000	662000
	Frequency	3750	3840	3930
80	Channel	649334	656000	662666
	Frequency	3740.01	3840	3939.99
60	Channel	648668	656000	663332
	Frequency	3730.02	3840	3949.98
50	Channel	648334	656000	663666
	Frequency	3725.01	3840	3954.99
40	Channel	648000	656000	664000
	Frequency	3720	3840	3960
20	Channel	647334	656000	664666
	Frequency	3710.01	3840	3969.99
15	Channel	647168	656000	664832
	Frequency	3707.52	3840	3972.48
10	Channel	647000	656000	665000
	Frequency	3705	3840	3975



5G NR n78 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	650000		
	Frequency	3750		
80	Channel	649334	650000	650666
	Frequency	3740.01	3750	3759.99
60	Channel	648668	650000	651332
	Frequency	3730.02	3750	3769.98
50	Channel	648334	650000	651666
	Frequency	3725.01	3750	3774.99
40	Channel	648000	650000	652000
	Frequency	3720	3750	3780
20	Channel	647334	650000	652666
	Frequency	3710.01	3750	3789.99
15	Channel	647168	650000	652833
	Frequency	3707.52	3750	3792.495
10	Channel	647000	650000	653000
	Frequency	3705	3750	3795

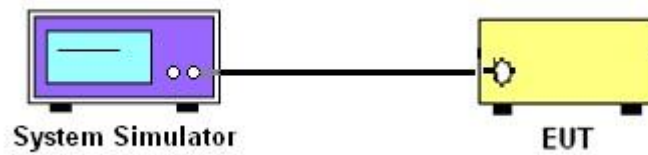
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 Conducted Output Power



3.3 Test Result of Conducted Test

Please refer to Appendix A.



3.4 Conducted Output Power and EIRP

3.4.1 Description of the Conducted Output Power Measurement and EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The EIRP of mobile transmitters must not exceed 1 Watts for 5G NR n77, n78.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the system simulator.

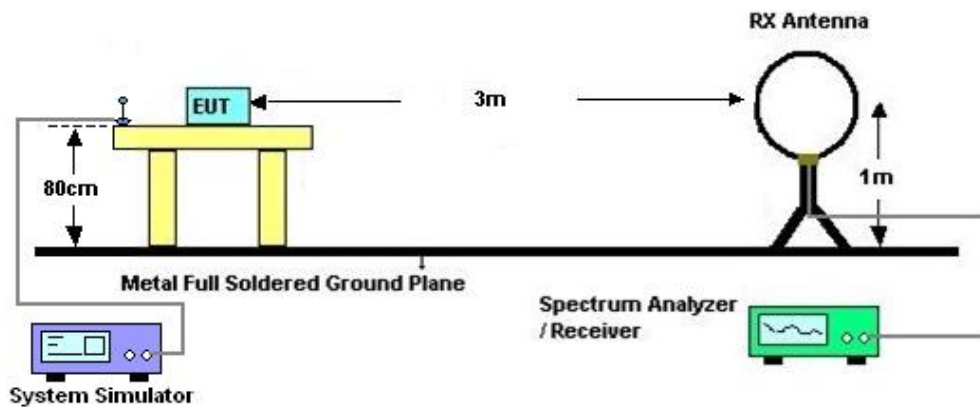
4 Radiated Test Items

4.1 Measuring Instruments

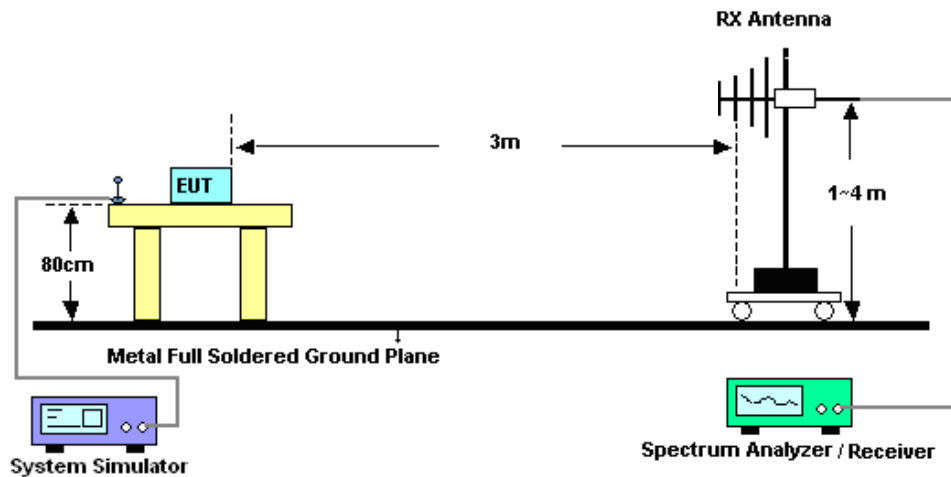
See list of measuring instruments of this test report.

4.2 Test Setup

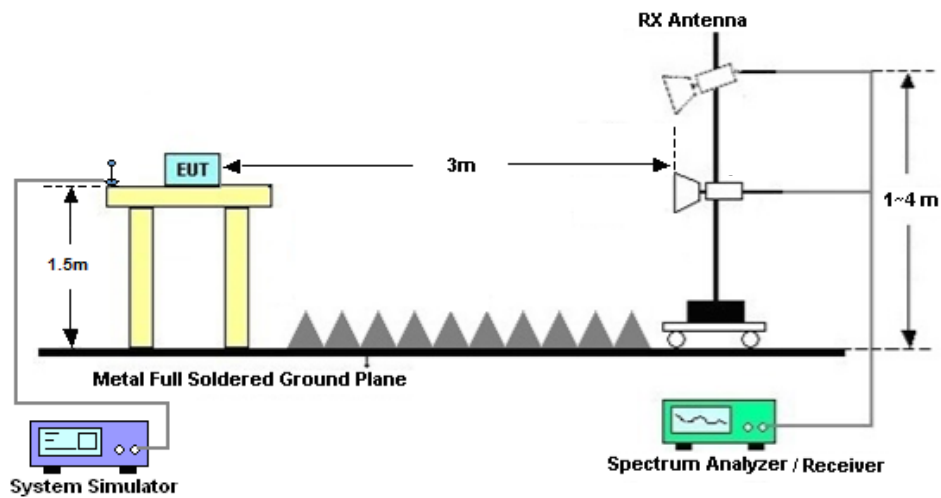
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

Please refer to Appendix B.



4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
= $P(W) - [43 + 10\log(P)] \text{ (dB)}$
= $[30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
= -13dBm.



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr. 13, 2021	May 13, 2021 [~] Aug. 24, 2021	Apr. 12, 2022	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 01, 2020	May 13, 2021 [~] Aug. 24, 2021	Oct. 31, 2021	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	May 31, 2020	May 13, 2021 [~] Aug. 24, 2021	May 30, 2021	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	May 30, 2021		May 29, 2022	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1356	1GHz~18GHz	Apr. 18, 2021	May 13, 2021 [~] Aug. 24, 2021	Apr. 17, 2022	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Jan. 06, 2021	May 13, 2021 [~] Aug. 24, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 06, 2021	May 13, 2021 [~] Aug. 24, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 07, 2021	May 13, 2021 [~] Aug. 24, 2021	Jan. 06, 2022	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	1Ghz-18Ghz	Jan. 06, 2021	May 13, 2021 [~] Aug. 24, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 14, 2020	May 13, 2021 [~] Aug. 24, 2021	Oct. 13, 2021	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 13, 2021 [~] Aug. 24, 2021	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 13, 2021 [~] Aug. 24, 2021	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 13, 2021 [~] Aug. 24, 2021	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required



6 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.3dB
---------------------------------------------------------------------	-------

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.8dB
---------------------------------------------------------------------	-------

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.8dB
---------------------------------------------------------------------	-------

----- THE END -----



Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) and EIRP

5G NR n77

SCS 15KHz

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Channel				647334	656000	664666						
Frequency (MHz)				3710.01	3840	3969.99						
20	PI/2 BPSK	1	1	22.14	22.29	22.15	21.36	21.51	21.37	0.1368	0.1416	0.1371
20	PI/2 BPSK	1	53	22.82	23.09	22.79	22.04	22.31	22.01	0.1600	0.1702	0.1589
20	PI/2 BPSK	1	104	22.70	22.65	22.59	21.92	21.87	21.81	0.1556	0.1538	0.1517
20	PI/2 BPSK	50	0	22.18	22.36	22.25	21.40	21.58	21.47	0.1380	0.1439	0.1403
20	PI/2 BPSK	50	28	22.18	22.26	22.03	21.40	21.48	21.25	0.1380	0.1406	0.1334
20	PI/2 BPSK	50	56	22.92	23.06	22.83	22.14	22.28	22.05	0.1637	0.1690	0.1603
20	PI/2 BPSK	100	0	22.70	22.96	22.76	21.92	22.18	21.98	0.1556	0.1652	0.1578
20	QPSK	1	1	22.86	23.17	22.98	22.08	22.39	22.20	0.1614	0.1734	0.1660
20	QPSK	1	53	22.92	23.02	22.85	22.14	22.24	22.07	0.1637	0.1675	0.1611
20	QPSK	1	104	22.56	22.79	22.55	21.78	22.01	21.77	0.1507	0.1589	0.1503
20	QPSK	50	0	22.11	21.94	21.89	21.33	21.16	21.11	0.1358	0.1306	0.1291
20	QPSK	50	28	22.87	22.92	22.85	22.09	22.14	22.07	0.1618	0.1637	0.1611
20	QPSK	50	56	22.75	22.70	22.95	21.97	21.92	22.17	0.1574	0.1556	0.1648
20	QPSK	100	0	22.59	22.69	22.64	21.81	21.91	21.86	0.1517	0.1552	0.1535
20	16QAM	1	1	21.75	21.89	21.82	20.97	21.11	21.04	0.1250	0.1291	0.1271
20	64QAM	1	1	21.80	21.86	21.85	21.02	21.08	21.07	0.1265	0.1282	0.1279
20	256QAM	1	1	20.80	20.90	21.10	20.02	20.12	20.32	0.1005	0.1028	0.1076
Channel				647167	656000	664833	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3707.505	3840	3972.495						
15	QPSK	1	1	22.85	23.03	22.81	22.07	22.25	22.03	0.1611	0.1679	0.1596
Channel				647000	656000	665000	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3705	3840	3975						
10	QPSK	1	1	22.70	23.08	22.81	21.92	22.30	22.03	0.1556	0.1698	0.1596



SCS 30KHz

Table with 13 columns: BW [MHz], Modulation, RB Size, RB Offset, Power Low Ch. / Freq., Power Middle Ch. / Freq., Power High Ch. / Freq., EIRP (dbm), EIRP (dbm), EIRP (dbm), EIRP (w), EIRP (w), EIRP (w). Rows include various modulation schemes like PI/2 BPSK, QPSK, 16QAM, and 64QAM across different bandwidths and offsets.



5G NR n78 HPUE

SCS 15KHz

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Channel				647334	650000	652666	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3710.01	3750	3789.99						
20	PI/2 BPSK	1	1	23.77	23.79	23.80	22.96	22.98	22.99	0.1977	0.1986	0.1991
20	PI/2 BPSK	1	53	24.26	24.28	24.25	23.45	23.47	23.44	0.2213	0.2223	0.2208
20	PI/2 BPSK	1	104	24.31	24.21	24.25	23.50	23.40	23.44	0.2239	0.2188	0.2208
20	PI/2 BPSK	50	0	24.30	24.29	24.30	23.49	23.48	23.49	0.2234	0.2228	0.2234
20	PI/2 BPSK	50	28	24.27	24.26	24.24	23.46	23.45	23.43	0.2218	0.2213	0.2203
20	PI/2 BPSK	50	56	24.55	24.45	24.38	23.74	23.64	23.57	0.2366	0.2312	0.2275
20	PI/2 BPSK	100	0	24.41	24.41	24.40	23.60	23.60	23.59	0.2291	0.2291	0.2286
20	QPSK	1	1	24.87	24.85	24.83	24.06	24.04	24.02	0.2547	0.2535	0.2523
20	QPSK	1	53	24.54	24.68	24.67	23.73	23.87	23.86	0.2360	0.2438	0.2432
20	QPSK	1	104	24.24	24.12	24.18	23.43	23.31	23.37	0.2203	0.2143	0.2173
20	QPSK	50	0	23.87	23.89	23.84	23.06	23.08	23.03	0.2023	0.2032	0.2009
20	QPSK	50	28	24.83	24.88	24.79	24.02	24.07	23.98	0.2523	0.2553	0.2500
20	QPSK	50	56	23.98	23.89	23.97	23.17	23.08	23.16	0.2075	0.2032	0.2070
20	QPSK	100	0	24.03	24.09	24.02	23.22	23.28	23.21	0.2099	0.2128	0.2094
20	16QAM	1	1	23.08	23.05	23.06	22.27	22.24	22.25	0.1687	0.1675	0.1679
20	64QAM	1	1	21.71	21.76	21.67	20.90	20.95	20.86	0.1230	0.1245	0.1219
20	256QAM	1	1	20.28	20.22	20.11	19.47	19.41	19.30	0.0885	0.0873	0.0851
Channel				647167	650000	652833	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3707.505	3750	3792.48						
15	QPSK	1	1	24.75	24.72	24.73	23.94	23.91	23.92	0.2477	0.2460	0.2466
Channel				647000	650000	653000	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3705	3750	3795						
10	QPSK	1	1	24.76	24.70	24.71	23.95	23.89	23.90	0.2483	0.2449	0.2455



SCS 30KHz

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Channel					650000							
Frequency (MHz)					3750							
100	PI/2 BPSK	1	1		23.97			23.16			0.2070	
100	PI/2 BPSK	1	137		24.31			23.50			0.2239	
100	PI/2 BPSK	1	271		24.31			23.50			0.2239	
100	PI/2 BPSK	135	0		24.45			23.64			0.2312	
100	PI/2 BPSK	135	69		24.37			23.56			0.2270	
100	PI/2 BPSK	135	138		24.59			23.78			0.2388	
100	PI/2 BPSK	270	0		24.49			23.68			0.2333	
100	QPSK	1	1		24.96			24.15			0.2600	
100	QPSK	1	137		24.69			23.88			0.2443	
100	QPSK	1	271		24.29			23.48			0.2228	
100	QPSK	135	0		23.91			23.10			0.2042	
100	QPSK	135	69		24.94			24.13			0.2588	
100	QPSK	135	138		24.03			23.22			0.2099	
100	QPSK	270	0		24.13			23.32			0.2148	
100	16QAM	1	1		23.16			22.35			0.1718	
100	64QAM	1	1		21.82			21.01			0.1262	
100	256QAM	1	1		20.30			19.49			0.0889	
Channel				649334	650000	650666	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3740.01	3750	3759.99						
80	QPSK	1	1	24.41	24.28	24.35	23.60	23.47	23.54	0.2291	0.2223	0.2259
Channel				648668	650000	651332	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3730.02	3750	3769.98						
60	QPSK	1	1	24.34	24.36	24.37	23.53	23.55	23.56	0.2254	0.2265	0.2270
Channel				648334	650000	651666	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3725.01	3750	3774.99						
50	QPSK	1	1	24.29	24.29	24.20	23.48	23.48	23.39	0.2228	0.2228	0.2183
Channel				648000	650000	652000	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3720	3750	3780						
40	QPSK	1	1	24.38	24.27	24.37	23.57	23.46	23.56	0.2275	0.2218	0.2270
Channel				647334	650000	652666	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3710.01	3750	3789.99						
20	QPSK	1	1	24.37	24.27	24.33	23.56	23.46	23.52	0.2270	0.2218	0.2249
Channel				647168	650000	652833	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3707.52	3750	3792.495						
15	QPSK	1	1	24.37	24.19	24.29	23.56	23.38	23.48	0.2270	0.2178	0.2228
Channel				647000	650000	653000	EIRP (dbm)	EIRP (dbm)	EIRP (dbm)	EIRP (w)	EIRP (w)	EIRP (w)
Frequency (MHz)				3705	3750	3795						
10	QPSK	1	1	24.42	24.33	24.23	23.61	23.52	23.42	0.2296	0.2249	0.2198



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

5G NR n77 / NR 100MHz / QPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	7584	-55.85	-13	-42.85	-66.33	2.76	13.24	H
	11376	-57.71	-13	-44.71	-67.30	3.42	13.01	H
	15180	-58.28	-13	-45.28	-67.89	3.83	13.44	H
	7584	-52.29	-13	-39.29	-62.73	2.80	13.24	V
	11376	-56.36	-13	-43.36	-65.91	3.46	13.01	V
	15180	-58.31	-13	-45.31	-67.87	3.88	13.44	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

5G NR n78 / NR 100MHz / QPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	7404	-56.53	-13	-43.53	-67.01	2.76	13.24	H
	11118	-57.89	-13	-44.89	-67.48	3.42	13.01	H
	14820	-57.28	-13	-44.28	-66.89	3.83	13.44	H
	7404	-58.87	-13	-45.87	-69.31	2.80	13.24	V
	11118	-58.16	-13	-45.16	-67.71	3.46	13.01	V
	14820	-57.24	-13	-44.24	-66.80	3.88	13.44	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.