

TEST REPORT

of

FCC Part 2 Subpart J, Part 22 Subpart C/H, Part 24 Subpart E,
IC RSS-132 Issue 4, RSS-133 Issue 6, and RSS-Gen Issue 5

FCC ID: BEJTM05NNNABM0
IC Certification: 2703H-TM05NNNABM0

Equipment Under Test : Module
Model Name : TM05NNNABM0
Variant Model Name(s) : -
FCC Applicant : LG Electronics USA, Inc.
IC Applicant : LG ELECTRONICS INC.
Manufacturer : LG Electronics Inc.
Date of Receipt : 2024.06.25
Date of Test(s) : 2024.08.07 ~ 2024.09.10
Date of Issue : 2024.09.10

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

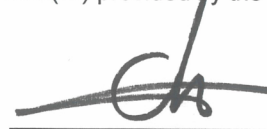
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Tested by:



Dave Kim

Technical
Manager:



Jinhyoung Cho

SGS Korea Co., Ltd. Gunpo Laboratory

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

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1.2. Details of Applicant

FCC Applicant : LG Electronics USA, Inc.

FCC Address : 111 Sylvan Avenue, North Building, Englewood Cliffs, New Jersey, United States, 07632

IC Applicant : LG ELECTRONICS INC.

IC Address : 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, Korea (Rep.), 451-713

Contact Person : Kim, David

Phone No. : +1 201 470 2696

1.3. Details of Manufacturer

Company : LG Electronics Inc.

Address : 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea, 07336

1.4. Description of EUT

Kind of Product		Module
Model Name		TM05NNNABM0
Serial Number		Conducted: 354287760018015, Radiated: 354287760018023
Power Supply		DC 12.5 V
Rated Power		NR Band 2, 5, 25, 41, 66, 71: 23 dBm
Frequency Range	SIM 1	NR Band 2: 1 850 MHz ~ 1 910 MHz NR Band 5: 824 MHz ~ 849 MHz NR Band 25: 1 850 MHz ~ 1 915 MHz NR Band 41(FCC): 2 496 MHz ~ 2 690 MHz NR Band 41(IC): 2 500 MHz ~ 2 690 MHz NR Band 66: 1 710 MHz ~ 1 780 MHz NR Band 71: 663 MHz ~ 698 MHz
	SIM 2	NR Band 2: 1 850 MHz ~ 1 910 MHz NR Band 5: 824 MHz ~ 849 MHz NR Band 25: 1 850 MHz ~ 1 915 MHz NR Band 41(FCC): 2 496 MHz ~ 2 690 MHz NR Band 41(IC): 2 500 MHz ~ 2 690 MHz NR Band 66: 1 710 MHz ~ 1 780 MHz NR Band 71: 663 MHz ~ 698 MHz
Modulation Technique		BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna Type		External Antenna (Refer to the clause 1.13)
Antenna Gain*		Refer to the clause 1.13
H/W Version		Rev.E
S/W Version		v013.142.025
FVIN		N/A

1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Spectrum Analyzer	R&S	FSV30	100955	Mar. 08, 2024	Annual	Mar. 08, 2025
Spectrum Analyzer	Agilent	N9020A	MY53421758	Sep. 10, 2024	Annual	Sep. 10, 2025
Signal Generator	R&S	SMA100B	106887	Oct. 06, 2023	Annual	Oct. 06, 2024
DC Power Supply	R&S	HMP2020	102133	Apr. 23, 2024	Annual	Apr. 23, 2025
Communication test station	Anritsu	MT8000A	6261867312	Apr. 08, 2024	Annual	Apr. 08, 2025
BRIDGE COUPLER	MARKI MICROWAVE INC	CBR16-0012	1542	May 13, 2024	Annual	May 13, 2025
Directional Coupler	KRYTAR	152613	122661	Feb. 27, 2024	Annual	Feb. 27, 2025
Power Sensor	Anritsu	MA2411B	1207272	May 29, 2024	Annual	May 29, 2025
Power Sensor	Anritsu	ML2495A	1223004	May 29, 2024	Annual	May 29, 2025
Low Pass Filter	Mini-Circuits	NLP-1200+	V 8979400903-1	May 17, 2024	Annual	May 17, 2025
High Pass Filter	Wainwright Instrument GmbH	WHKX10-900-1000-18000-40SS	7	Feb. 27, 2024	Annual	Feb. 27, 2025
High Pass Filter	Wainwright Instrument GmbH	WHKX3.0/18G-10SS	21	Jun. 07, 2024	Annual	Jun. 07, 2025
Preamplifier	H.P.	8447F	2944A03909	Aug. 09, 2024	Annual	Aug. 09, 2025
Preamplifier	R&S	SCU 18F	101058	Dec. 07, 2023	Annual	Dec. 07, 2024
Preamplifier	MITEQ Inc.	JS44-18004000-35-8P	1546891	Oct. 06, 2023	Annual	Oct. 06, 2024
Test Receiver	R&S	ESU26	100109	Jan. 16, 2024	Annual	Jan. 16, 2025
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 21, 2023	Biennial	Aug. 21, 2025
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB 9163	9163-396	Apr. 02, 2024	Biennial	Apr. 02, 2026
Horn Antenna	R&S	HF906	100326	Feb. 19, 2024	Annual	Feb. 19, 2025
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9170	9170-540	Dec. 05, 2023	Annual	Dec. 05, 2024
Antenna Master	Innco systems GmbH	MA4640-XP-ET	MA4640/536/383 30516/L	N.C.R.	N/A	N.C.R.
Turn Table	Innco systems GmbH	DS 1200S	N/A	N.C.R.	N/A	N.C.R.
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/383 30516/L	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L x W x H (9.6 m x 6.4 m x 6.6 m)	N/A	N.C.R.	N/A	N.C.R.
Coaxial Cable	RADIALL	TESTPRO 3	182284	Apr. 12, 2024	Semi-Annual	Oct. 12, 2024
Coaxial Cable	RADIALL	TESTPRO 3	182290	Apr. 12, 2024	Semi-Annual	Oct. 12, 2024
Coaxial Cable	RADIALL	TESTPRO 3	182292	Apr. 12, 2024	Semi-Annual	Oct. 12, 2024
Coaxial Cable	SENSORVIEW	NMST-13A26-NMST-5 m	TPC2402190004	Apr. 03, 2024	Semi-Annual	Oct. 03, 2024
Coaxial Cable	SENSORVIEW	NMST-13A26-NMST-10 m	TPC2402190001	Apr. 03, 2024	Semi-Annual	Oct. 03, 2024

Note;

- For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

1.6. Summary of Test Results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 2, 22 and 24 IC RSS-Gen Issue 5, RSS-132 Issue 4 and RSS-133 Issue 6			
Section(s) in FCC	Section(s) in IC	Test Item	Result
§2.1046 §22.913(a)(5) §24.232(c)	RSS-132 Issue 4 5.4 RSS-133 Issue 6 6.4	E.R.P. / E.I.R.P.	Pass
§22.917(a) §24.238(a)	RSS-132 Issue 4 5.5 RSS-133 Issue 6 6.5	Radiated Spurious Emission	Pass
§2.1046	RSS-Gen Issue 5 6.12	Conducted Output Power	Pass
§2.1049	RSS-Gen Issue 5 6.7	Occupied Bandwidth	Pass ²⁾
§22.913(d) §24.232(d)	RSS-132 Issue 4 5.4 RSS-133 Issue 6 6.4	Peak-Average Ratio	Pass
§22.917(a) §24.238(a)	RSS-132 Issue 4 5.5 RSS-133 Issue 6 6.5	Spurious Emission at Antenna Terminal	Pass
§22.917(a) §24.238(a)	RSS-132 Issue 4 5.5 RSS-133 Issue 6 6.5	Band Edge and Emission Mask	Pass
§2.1055 §22.355 §24.235	RSS-Gen Issue 5 6.11 RSS-132 Issue 4 5.3 RSS-133 Issue 6 6.3	Frequency Stability	Pass ²⁾

Note;

- 1) This product is C2PC case due to the addition of 256QAM modulation for 5G NR SA mode of SIM2 band 2 and 5
- 2) This test items were used the results from original test report.

1.7. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

1.7.1. Conducted Test

Offset value (dB) = Directional Coupler (dB) + Cable loss (dB)

1.7.2. Radiation test

- E.I.R.P. (dB m) = Measured level (dB μ V) + Antenna factor (dB/m) + Cable loss (dB) + 20 Log D - 104.8;
where D is the measurement distance in meters.
- E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB)

1.8. Radiated Spurious Emission Test

NR Band	SCS (kHz)	Bandwidth (MHz)	Modulation	Resource Block Allocation	
				RBs allocated	RB Start
n2	15	20	DFT-S OFDM – 256QAM	1	1
n5	15	20	DFT-S OFDM – 256QAM	1	1

1.9. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty	
Conducted Output Power	0.33 dB	
Occupied Bandwidth	0.05 MHz	
Conducted Spurious Emissions	0.99 dB	
Peak to Average Ratio	0.66 dB	
Frequency Stability	116 Hz	
Radiated Emission, 9 kHz to 30 MHz	H	3.60 dB
	V	3.60 dB
7Radiated Emission, below 1 GHz	H	4.60 dB
	V	4.90 dB
Radiated Emission, above 1 GHz	H	3.90 dB
	V	3.80 dB

All measurement uncertainty values are shown with a coverage factor of $k=2$ to indicate a 95 % level of confidence.

1.10. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL005427	2024.09.10	Initial

1.11. Antenna Information

SIM2

Antenna Type	Antenna No.	Antenna Name	Antenna Part Number
Trunk	1	Antenna Box	8705921
	2	FSA WAVE 5G (left/right)	8705919/8705920
	3	HKL Mobilradioantenna (basic)	5A2D602
	4	ZB Spoilerantenna	5A0C5B0
	5	F66 Roof-top Antenna	920-747-018

Operating Frequency (MHz)		Antenna Peak Gain (dB i)			
		Ant. No	Ant. Gain	Cable Loss	Final Gain
NR Band 2	1 850 ~ 1 910	Ant. 1	5.00	0.89	4.11
		Ant. 2	4.00	0.89	3.11
		Ant. 3	5.00	0.89	4.11
		Ant. 4	4.00	0.89	3.11
		Ant. 5	6.00	4.70	1.30
NR Band 5	824 ~ 849	Ant. 1	3.00	0.57	2.43
		Ant. 2	4.00	0.57	3.43
		Ant. 3	5.00	0.57	4.43
		Ant. 4	3.00	0.57	2.43
		Ant. 5	1.90	3.06	-1.16

Test Case

Operating Frequency (MHz)		Ant. 1	Ant. 2	Ant. 3 (basic)	Ant. 4	Ant. 5
NR Band 2	1 850 ~ 1 910	-	-	V	-	-
NR Band 5	824 ~ 849	-	-	V	-	-

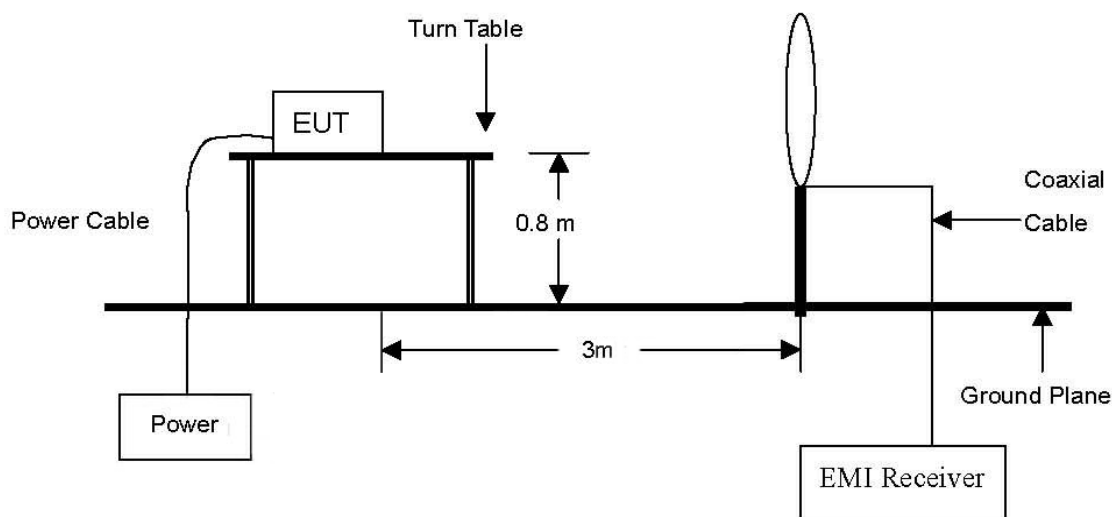
Note;

- The EUT has basic antenna (HKL Mobilradioantenna) and all antennas support all NR bands.
- According to manufacturer's antenna specification, only the highest antenna gain of each antenna is reported.

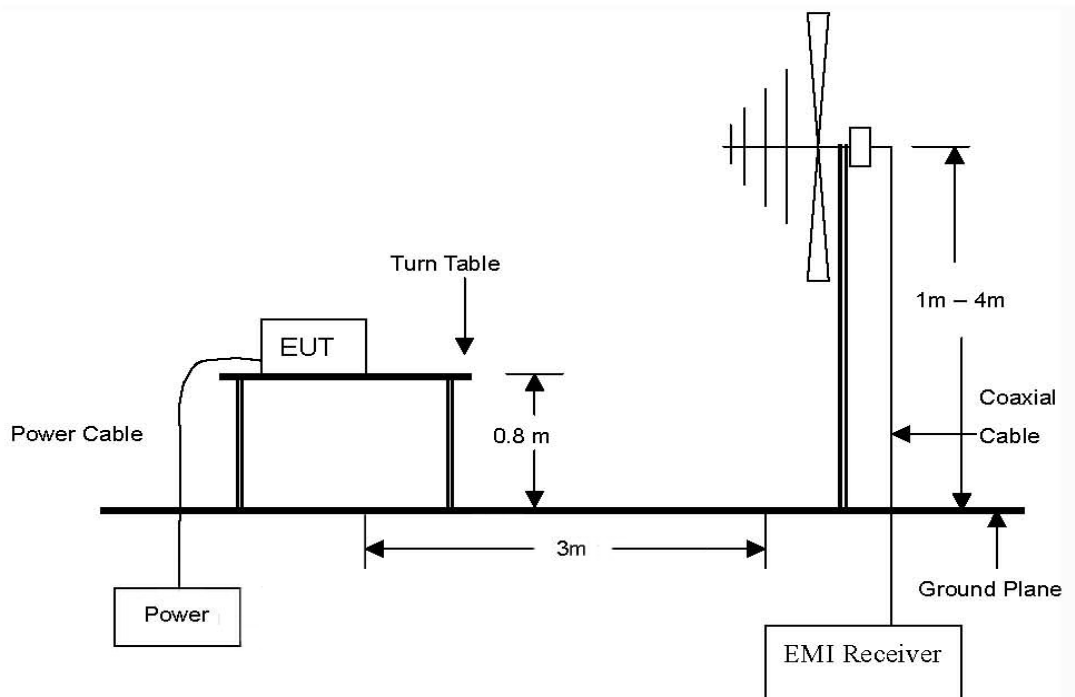
2. E.R.P. / E.I.R.P. & Radiated Spurious Emissions

2.1. Test setup

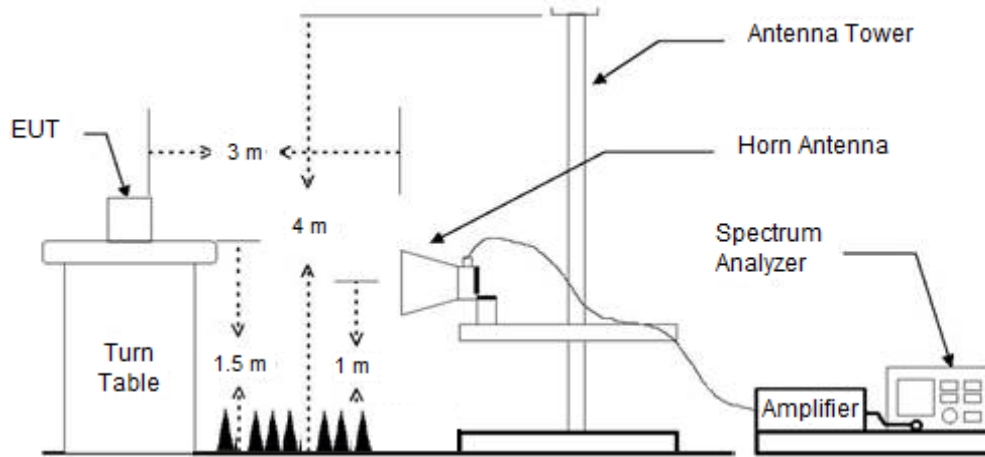
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 20 GHz Emissions.



2.2. Limit

2.2.1. Limit of E.R.P. / E.I.R.P.

FCC

- §22.913(a)(5), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

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

IC

- RSS-132 Issue 4

5.4, the transmitter output power shall be measured in terms of average power. The equivalent radiated power (e.r.p.) shall not exceed 7 watts for mobile equipment and 3 watts for portable equipment.

The effective isotropic radiated power (e.i.r.p.) shall not exceed the limits specified in SRSP-503 for base station equipment.

- RSS-133 Issue 6

6.4, the equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.

2.2.2. Limit of Radiated Spurious Emissions

FCC

- §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

- §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

IC

- RSS-132 Issue 4

5.5, Equipment shall meet the unwanted emission limits specified below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1 % of the occupied bandwidth shall be attenuated below the transmitter output power P (dB W) by at least $43 + 10\log(p)$ dB.

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated below the transmitter output power P (dB W) by at least $43 + 10\log(p)$ dB. If the measurement is performed using 1 % of the occupied bandwidth, power integration over 100 kHz is required.

- RSS-133 Issue 6

6.5, Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1 % of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10\log_{10} p(\text{watts})$.

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10\log_{10} p(\text{watts})$. If the measurement is performed using 1 % of the emission bandwidth, power integration over 1.0 MHz is required.

2.3. Test Procedure

2.3.1. E.R.P. or E.I.R.P. from conducted RF output power

According to subclause 5.2.5.5 of ANSI C63.26-2015 E.R.P. and E.I.R.P. are defined as the product of the power supplied to the antenna and its gain.

The relevant equation for determining the E.R.P. or E.I.R.P. from the conducted RF output power measured using the guidance provided above is:

$$\text{E.R.P. or E.I.R.P.} = P_{\text{Meas}} + G_T$$

where:

E.R.P. or E.I.R.P. = effective radiated power or equivalent isotropically radiated power, respectively
(expressed in the same units as P_{Meas} , typically dBW or dBm);

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

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

2.3.2. Radiated Spurious Emissions

The test based on ANSI/TIA 603E: 2016 and ANSI C63.26-2015 and KDB 971168 D01 Power Meas License Digital Systems v03r01.

1. On a test site, the EUT shall be placed at 0.8 m or 1.5 m height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. Radiated spurious emissions measurement method was set as follows:
RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz, VBW ≥ 3 x RBW,
Detector = RMS, trace mode = max hold, per the guidelines of KDB 971168 D01 Power Meas License Digital Systems v03r01.
5. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
6. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
8. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
9. The maximum signal level detected by the measuring receiver shall be noted.
10. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
11. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
12. The measurement shall be repeated with the test antenna orientated for horizontal polarization.

2.4. Test Results

Ambient temperature : $(23 \pm 1) ^\circ\text{C}$
Relative humidity : 47 % R.H.

2.4.1. E.R.P. / E.I.R.P.

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Worst Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Output Power Limit
n2	1 850 ~ 1 910	17.87	0.061	4.11	21.98	0.158			2 W E.I.R.P.
n5	824 ~ 849	18.63	0.073	4.43	23.06	0.202	20.91	0.123	7 W E.R.P.

Remark;

1. E.I.R.P. (dB m) = Maximum Conducted Power (dB m) + Antenna Gain (dB i)
2. E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.

2.4.2. Radiated Spurious Emissions

NR Band 2 (20 MHz – DFT-S-OFDM 256QAM)

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 860.0 MHz)									
3 704.73	35.49	H	32.12	-32.85	34.76	-95.26	-60.50	-13	47.50
3 697.23	35.75	V	32.08	-32.85	34.98	-95.26	-60.28	-13	47.28
Above 3 800.00	Not detected	–	–	–	–	–	–	–	–
Middle Channel (1 880.0 MHz)									
3 738.41	35.98	H	32.25	-32.83	35.40	-95.26	-59.86	-13	46.86
3 742.01	36.28	V	32.27	-32.83	35.72	-95.26	-59.54	-13	46.54
Above 3 800.00	Not detected	–	–	–	–	–	–	–	–
High Channel (1 900.0 MHz)									
3 777.85	35.90	H	32.30	-32.79	35.41	-95.26	-59.85	-13	46.85
3 782.21	36.21	V	32.30	-32.79	35.72	-95.26	-59.54	-13	46.54
Above 3 800.00	Not detected	–	–	–	–	–	–	–	–

NR Band 5 (20 MHz - DFT-S-OFDM 256QAM)

Frequency (MHz)	Measured Level (dBμV)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dBμV/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (834.0 MHz)									
1 624.87	45.96	H	25.60	-36.97	34.59	-97.41	-62.82	-13	49.82
1 624.90	45.80	V	25.60	-36.97	34.43	-97.41	-62.98	-13	49.98
1 649.32	46.43	H	25.79	-36.87	35.35	-97.41	-62.06	-13	49.06
1 649.11	45.29	V	25.79	-36.87	34.21	-97.41	-63.20	-13	50.20
Above 1 700.00	Not detected	—	—	—	—	—	—	—	—
Middle Channel (836.5 MHz)									
1 624.90	46.15	H	25.60	-36.97	34.78	-97.41	-62.63	-13	49.63
1 624.93	46.07	V	25.60	-36.97	34.70	-97.41	-62.71	-13	49.71
1 659.54	47.21	H	25.97	-36.84	36.34	-97.41	-61.07	-13	48.07
1 659.33	46.19	V	25.97	-36.84	35.32	-97.41	-62.09	-13	49.09
Above 1 700.00	Not detected	—	—	—	—	—	—	—	—
High Channel (839.0 MHz)									
1 624.82	46.31	H	25.60	-36.97	34.94	-97.41	-62.47	-13	49.47
1 624.92	45.84	V	25.60	-36.97	34.47	-97.41	-62.94	-13	49.94
1 669.17	44.14	H	26.15	-36.81	33.48	-97.41	-63.93	-13	50.93
1 669.19	44.69	V	26.15	-36.81	34.03	-97.41	-63.38	-13	50.38
Above 1 700.00	Not detected	—	—	—	—	—	—	—	—

Remark;

1. AF = Antenna Factor, CL = Cable Loss, CF = Conversion Factor.
2. $E \text{ (dB}\mu\text{V/m)} = \text{Measured Level (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{AMP (dB)} + \text{Cable Loss (dB)}$.
3. $E.I.R.P. \text{ (dB m)} = E \text{ (dB}\mu\text{V/m)} + CF \text{ (dB)}$.
4. $E.R.P. \text{ (dB m)} = E \text{ (dB}\mu\text{V/m)} + CF \text{ (dB)} - 2.15 \text{ (dB)}$; where E.R.P. and E.I.R.P. are expressed in consistent units.
5. $CF \text{ (dB)} = 20 \log D - 104.8$; where D is the measurement distance in meters, According to KDB 971168 D01 v03r01 5.8.4.
6. The frequency spectrum is examined from 9 kHz to the 10th harmonic of the fundamental frequency of the transmitter. No other spurious and harmonic emissions were reported greater than listed emissions above table.

3. Conducted Output Power

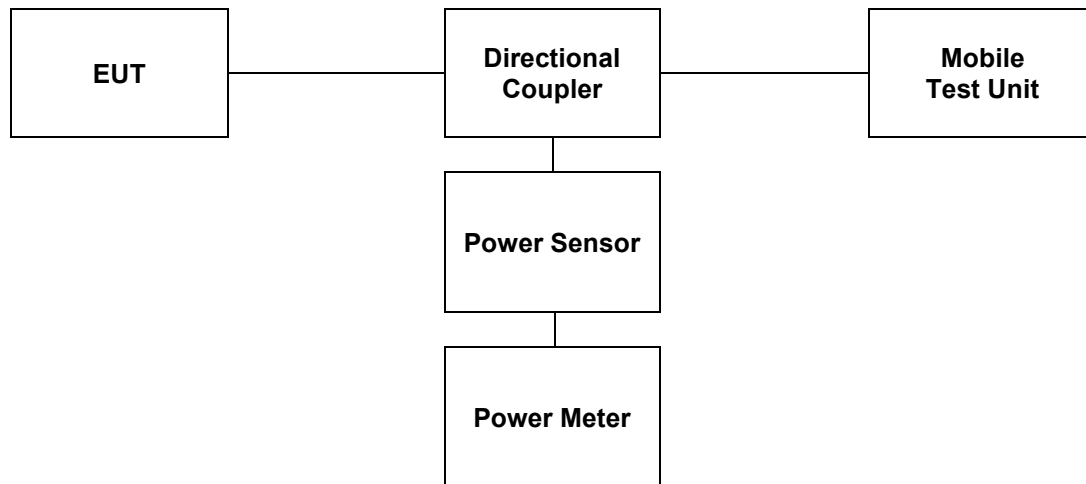
3.1. Limit

CFR 47, Section FCC §2.1046 and IC RSS-Gen Issue 5 6.12.

3.2. Test Procedure

Output power shall be measured at the RF output terminals for all configurations.

1. The RF output of the transmitter was connected to the input of the mobile test unit in order to establish communication with the EUT.
2. The EUT was set up for the max. output power with pseudo random data modulation by using mobile test unit parameters.
3. The measurement performed using a wideband RF power meter.
4. This EUT was tested under all configurations and the highest power was investigated and reported.



3.3. Test Result

Ambient temperature : (23 ± 1) °C
Relative humidity : 47 % R.H.

NR Band 2												
BW (MHz)	SCS (kHz)	Modulation		RB allocation	RB Size	RB Offset	Conducted Output Power					
							370500 (1 852.5 MHz)		376000 (1 880.0 MHz)		381500 (1 907.5 MHz)	
							(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
5	15	DFT-S OFDM	256QAM	Inner_1RB Left	1	1	17.63	0.058	17.58	0.057	17.82	0.061
				Inner_1RB Right	1	23	17.48	0.056	17.67	0.058	17.85	0.061
				Inner_Full	12	6	17.58	0.057	17.64	0.058	17.72	0.059
				Outer_Full	25	0	17.63	0.058	17.59	0.057	17.72	0.059
				Edge_1RB Left	1	0	17.67	0.058	17.59	0.057	17.64	0.058
				Edge_Full Left	2	0	17.52	0.056	17.63	0.058	17.67	0.058
				Edge_1RB Right	1	24	17.62	0.058	17.69	0.059	17.72	0.059
				Edge_Full Right	2	23	17.69	0.059	17.80	0.060	17.74	0.059
		CP OFDM	256QAM	Inner_1RB Left	1	1	15.56	0.036	15.67	0.037	15.76	0.038
NR Band 2												
BW (MHz)	SCS (kHz)	Modulation		RB allocation	RB Size	RB Offset	Conducted Output Power					
							371000 (1 855.0 MHz)		376000 (1 880.0 MHz)		381000 (1 905.0 MHz)	
							(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
10	15	DFT-S OFDM	256QAM	Inner_1RB Left	1	1	17.79	0.060	17.62	0.058	17.69	0.059
				Inner_1RB Right	1	23	17.61	0.058	17.61	0.058	17.74	0.059
				Inner_Full	12	6	17.61	0.058	17.65	0.058	17.66	0.058
				Outer_Full	25	0	17.62	0.058	17.61	0.058	17.65	0.058
				Edge_1RB Left	1	0	17.72	0.059	17.55	0.057	17.64	0.058
				Edge_Full Left	2	0	17.67	0.058	17.62	0.058	17.76	0.060
				Edge_1RB Right	1	24	17.53	0.057	17.57	0.057	17.70	0.059
				Edge_Full Right	2	23	17.50	0.056	17.63	0.058	17.70	0.059
		CP OFDM	256QAM	Inner_1RB Left	1	1	15.81	0.038	15.49	0.035	15.93	0.039

NR Band 2												
BW (MHz)	SCS (kHz)	Modulation		RB allocation	RB Size	RB Offset	Conducted Output Power					
							371500 (1 857.5 MHz)		376000 (1 880.0 MHz)		380500 (1 902.5 MHz)	
							(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
15	15	DFT-S OFDM	256QAM	Inner_1RB Left	1	1	17.75	0.060	17.69	0.059	17.67	0.058
				Inner_1RB Right	1	23	17.65	0.058	17.66	0.058	17.77	0.060
				Inner_Full	12	6	17.70	0.059	17.63	0.058	17.65	0.058
				Outer_Full	25	0	17.75	0.060	17.69	0.059	17.64	0.058
				Edge_1RB Left	1	0	17.56	0.057	17.62	0.058	17.72	0.059
				Edge_Full Left	2	0	17.76	0.060	17.63	0.058	17.69	0.059
				Edge_1RB Right	1	24	17.77	0.060	17.68	0.059	17.61	0.058
				Edge_Full Right	2	23	17.71	0.059	17.67	0.058	17.72	0.059
	CP OFDM	256QAM	Inner_1RB Left	1	1	15.91	0.039	15.70	0.037	15.71	0.037	
NR Band 2												
BW (MHz)	SCS (kHz)	Modulation		RB allocation	RB Size	RB Offset	Conducted Output Power					
							372000 (1 860.0 MHz)		376000 (1 880.0 MHz)		380000 (1 900.0 MHz)	
							(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
20	15	DFT-S OFDM	256QAM	Inner_1RB Left	1	1	17.67	0.058	17.87	0.061	17.62	0.058
				Inner_1RB Right	1	23	17.57	0.057	17.85	0.061	17.63	0.058
				Inner_Full	12	6	17.63	0.058	17.64	0.058	17.73	0.059
				Outer_Full	25	0	17.67	0.058	17.62	0.058	17.73	0.059
				Edge_1RB Left	1	0	17.53	0.057	17.56	0.057	17.80	0.060
				Edge_Full Left	2	0	17.63	0.058	17.59	0.057	17.74	0.059
				Edge_1RB Right	1	24	17.58	0.057	17.86	0.061	17.68	0.059
				Edge_Full Right	2	23	17.69	0.059	17.81	0.060	17.84	0.061
	CP OFDM	256QAM	Inner_1RB Left	1	1	15.82	0.038	15.65	0.037	15.78	0.038	

NR Band 5												
BW (MHz)	SCS (kHz)	Modulation		RB allocation	RB Size	RB Offset	Conducted Output Power					
							165300 (826.5 MHz)		167300 (836.5 MHz)		169300 (846.5 MHz)	
							(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
5	15	DFT-S OFDM	256QAM	Inner_1RB Left	1	1	18.20	0.066	18.61	0.073	18.36	0.069
				Inner_1RB Right	1	23	18.30	0.068	18.45	0.070	18.19	0.066
				Inner_Full	12	6	18.28	0.067	18.47	0.070	18.32	0.068
				Outer_Full	25	0	18.24	0.067	18.37	0.069	18.33	0.068
				Edge_1RB Left	1	0	18.31	0.068	18.52	0.071	18.35	0.068
				Edge_Full Left	2	0	18.17	0.066	18.45	0.070	18.35	0.068
				Edge_1RB Right	1	24	18.28	0.067	18.37	0.069	18.10	0.065
				Edge_Full Right	2	23	18.16	0.065	18.36	0.069	18.15	0.065
		CP OFDM	256QAM	Inner_1RB Left	1	1	16.24	0.042	16.69	0.047	16.52	0.045
NR Band 5												
BW (MHz)	SCS (kHz)	Modulation		RB allocation	RB Size	RB Offset	Conducted Output Power					
							165800 (829.0 MHz)		167300 (836.5 MHz)		168800 (844.0 MHz)	
							(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
10	15	DFT-S OFDM	256QAM	Inner_1RB Left	1	1	18.15	0.065	18.23	0.067	18.27	0.067
				Inner_1RB Right	1	23	18.42	0.070	18.42	0.070	18.25	0.067
				Inner_Full	12	6	18.22	0.066	18.54	0.071	18.30	0.068
				Outer_Full	25	0	18.28	0.067	18.44	0.070	18.32	0.068
				Edge_1RB Left	1	0	18.23	0.067	18.31	0.068	18.33	0.068
				Edge_Full Left	2	0	18.12	0.065	18.36	0.069	18.29	0.067
				Edge_1RB Right	1	24	18.52	0.071	18.41	0.069	18.03	0.064
				Edge_Full Right	2	23	18.48	0.070	18.42	0.070	18.10	0.065
		CP OFDM	256QAM	Inner_1RB Left	1	1	16.10	0.041	16.52	0.045	16.50	0.045

NR Band 5												
BW (MHz)	SCS (kHz)	Modulation		RB allocation	RB Size	RB Offset	Conducted Output Power					
							166300 (831.5 MHz)		167300 (836.5 MHz)		168300 (841.5 MHz)	
							(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
15	15	DFT-S OFDM	256QAM	Inner_1RB Left	1	1	18.15	0.065	18.37	0.069	18.41	0.069
				Inner_1RB Right	1	23	18.46	0.070	18.40	0.069	18.30	0.068
				Inner_Full	12	6	18.48	0.070	18.55	0.072	18.36	0.069
				Outer_Full	25	0	18.46	0.070	18.43	0.070	18.40	0.069
				Edge_1RB Left	1	0	18.13	0.065	18.42	0.070	18.32	0.068
				Edge_Full Left	2	0	18.30	0.068	18.43	0.070	18.47	0.070
				Edge_1RB Right	1	24	18.46	0.070	18.45	0.070	18.23	0.067
				Edge_Full Right	2	23	18.46	0.070	18.48	0.070	18.34	0.068
		CP OFDM	256QAM	Inner_1RB Left	1	1	16.42	0.044	16.62	0.046	16.50	0.045
NR Band 5												
BW (MHz)	SCS (kHz)	Modulation		RB allocation	RB Size	RB Offset	Conducted Output Power					
							166800 (834.0 MHz)		167300 (836.5 MHz)		167800 (839.0 MHz)	
							(dB m)	(W)	(dB m)	(W)	(dB m)	(W)
20	15	DFT-S OFDM	256QAM	Inner_1RB Left	1	1	18.24	0.067	18.63	0.073	18.59	0.072
				Inner_1RB Right	1	23	18.41	0.069	18.34	0.068	18.28	0.067
				Inner_Full	12	6	18.52	0.071	18.53	0.071	18.44	0.070
				Outer_Full	25	0	18.37	0.069	18.45	0.070	18.48	0.070
				Edge_1RB Left	1	0	18.09	0.064	18.29	0.067	18.29	0.067
				Edge_Full Left	2	0	18.13	0.065	18.36	0.069	18.34	0.068
				Edge_1RB Right	1	24	18.29	0.067	18.37	0.069	18.24	0.067
				Edge_Full Right	2	23	18.40	0.069	18.39	0.069	18.29	0.067
		CP OFDM	256QAM	Inner_1RB Left	1	1	16.28	0.042	16.42	0.044	16.60	0.046

4. Peak-Average Ratio

4.1. Limit

FCC

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

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

IC

- RSS-132 Issue 4

5.4, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1 % of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

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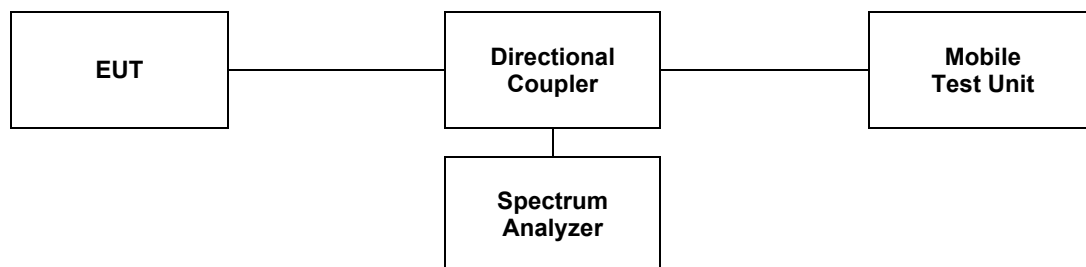
6.4, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1 % of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

4.2. Test Procedure

The test follows section 5.2.3.4 of ANSI C63.26-2015.

See instrumentation-specific application literature for further guidance regarding use of the CCDF capability. The following guidelines are offered for performing a CCDF measurement.

- a. Set resolution/measurement bandwidth $\geq$ OBW or specified reference bandwidth.
- b. Set the number of counts to a value that stabilizes the measured CCDF curve.
- c. Set the measurement interval as follows:
 - 1) For continuous transmissions, set to greater of $[10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})]$ or 1 ms.
 - 2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.
 - 3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.
- d. Record the maximum PAPR level associated with a probability of 0.1 %.
- e. The peak power level is calculated from the sum of the PAPR value from step d) to the measured average power.



4.3 Test Results

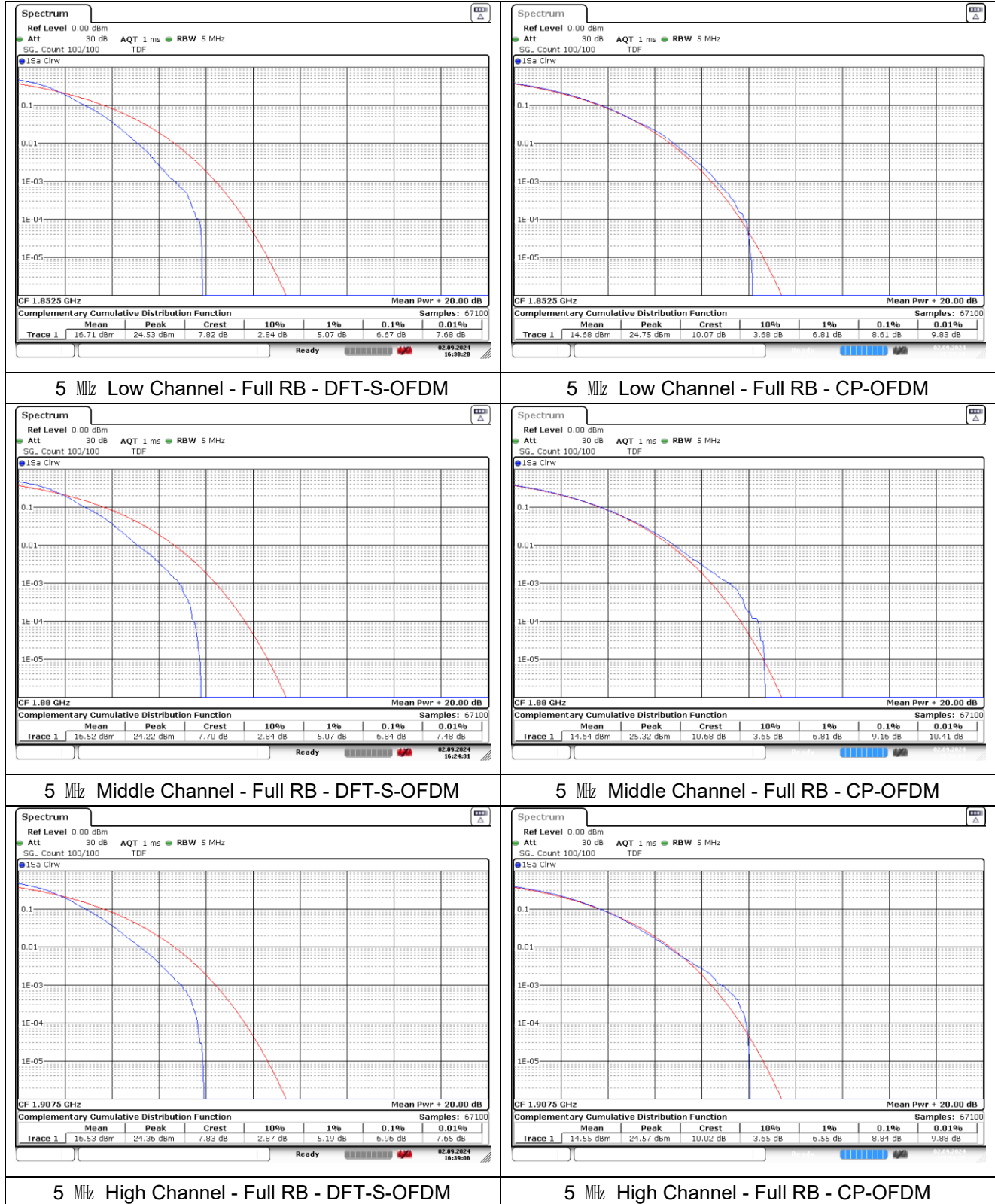
Ambient temperature : (23 ± 1) °C

Relative humidity : 47 % R.H.

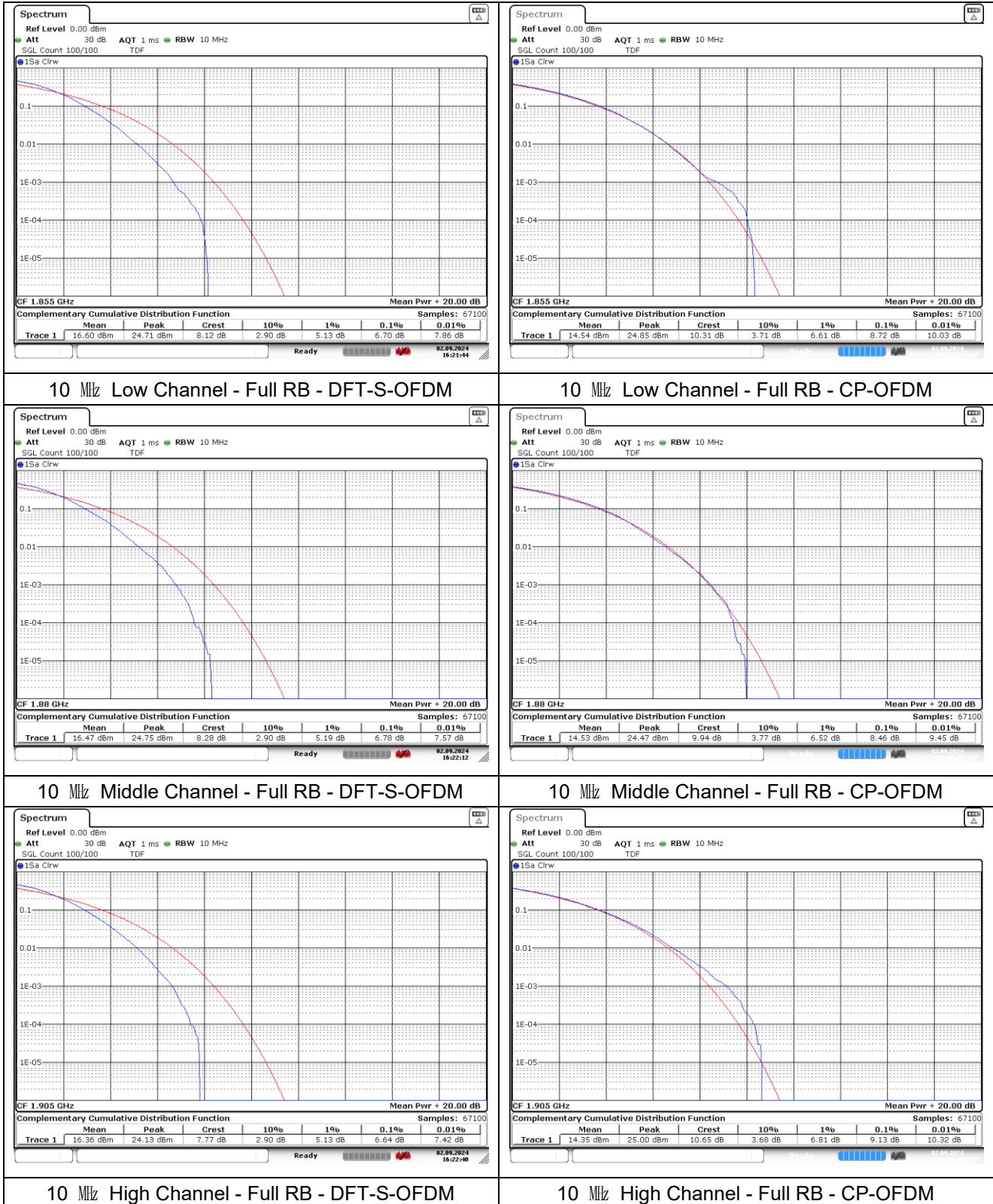
Band	SCS (kHz)	BW (MHz)	Mode	Frequency (MHz)	PAR (dB)	
					DFT-S-OFDM	CP-OFDM
2	15	5	256QAM	1 852.5	6.67	8.61
				1 880.0	6.84	9.16
				1 907.5	6.96	8.84
		10	256QAM	1 855.0	6.70	8.72
				1 880.0	6.78	8.46
				1 905.0	6.64	9.13
		15	256QAM	1 857.5	6.58	8.78
				1 880.0	6.70	8.96
				1 902.5	6.67	8.75
		20	256QAM	1 860.0	6.35	8.84
				1 880.0	6.46	8.17
				1 900.0	6.67	8.78
Band	SCS (kHz)	BW (MHz)	Mode	Frequency (MHz)	PAR (dB)	
					DFT-S-OFDM	CP-OFDM
5	15	5	256QAM	826.5	6.49	8.23
				836.5	6.87	8.46
				846.5	6.75	8.61
		10	256QAM	829.0	6.64	8.64
				836.5	6.64	8.46
				844.0	6.46	8.70
		15	256QAM	831.5	6.55	8.41
				836.5	6.64	8.64
				841.5	6.75	8.49
		20	256QAM	834.0	6.43	8.58
				836.5	6.49	8.41
				839.0	6.55	8.23

- Test plots

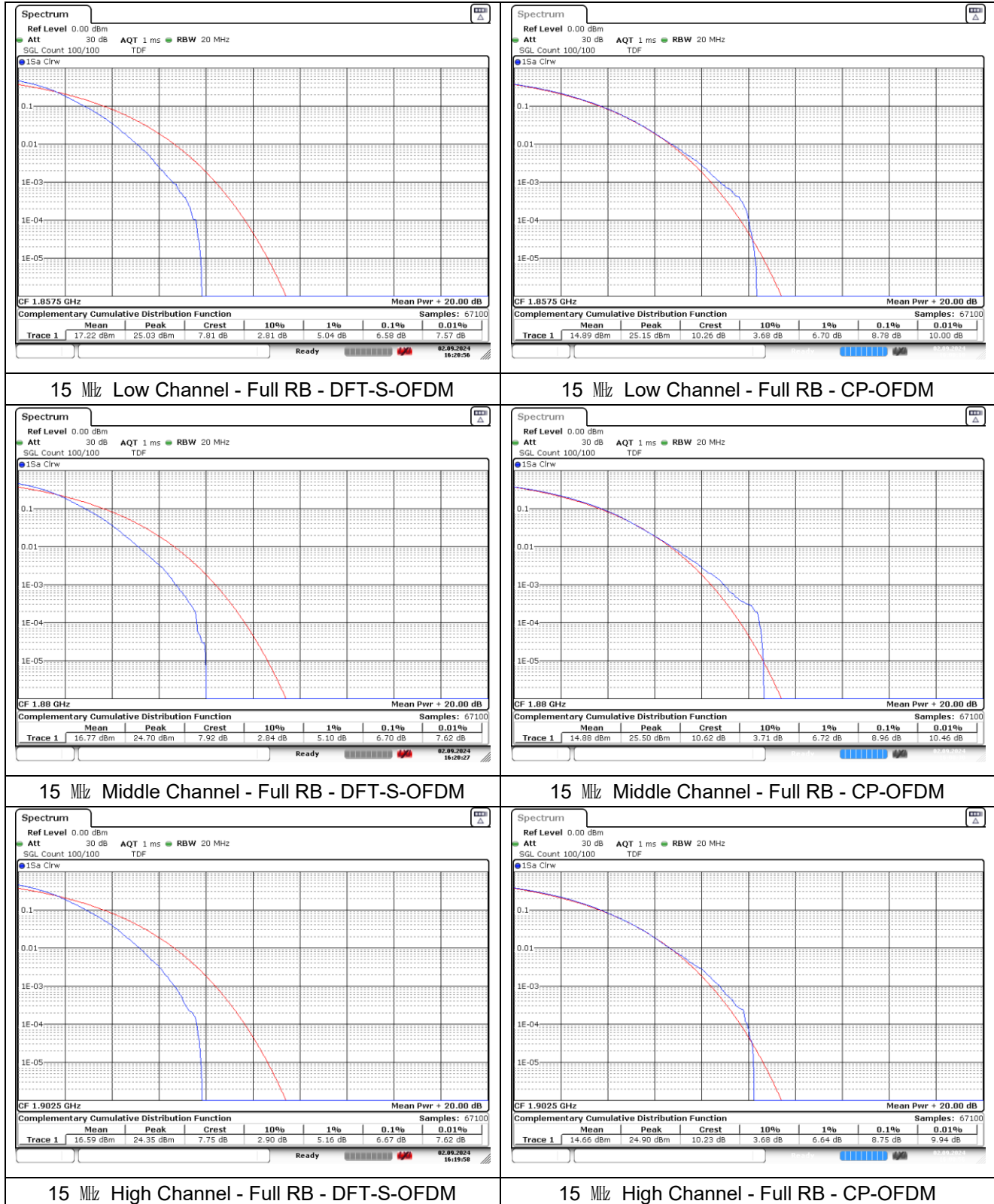
NR band 2



NR band 2



NR band 2



NR band 2

