FCC RF Test Report

APPLICANT	: Nokia Shanghai Bell Co., Ltd.
EQUIPMENT	: NOK 5G21 GATEWAY GRY KIT
BRAND NAME	: T-Mobile
MODEL NAME	: 5G21-12W-A
FCC ID	: 2ADZR5G2112WA
STANDARD	: 47 CFR Part 2, 24, 27
CLASSIFICATION	: PCS Licensed Transmitter (PCB)

The product was received on Mar. 11, 2020 and completely tested on Jun. 06, 2020. 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.

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.

Jason Jia

Reviewed by: Jason Jia / Supervisor

James Huang

Approved by: James Huang / Manager

ACCREDITED Cert #5145.02

Sporton International (Kunshan) Inc.
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG9D2703C	Rev. 01	Initial issue of report	Jul. 29, 2020

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§27.50(c)(10)	Effective Radiated Power (5G NR n71)	ERP < 3 Watt		
	§24.232(c)	Equivalent Isotropic Radiated Power (5G NR n2) (5G NR n25)	EIRP < 2Watt		
	§27.50(h)(2)	Output power (5G NR n41)	Output power < 2Watt		
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (5G NR n66)	EIRP < 1Watt		
3.5	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §24.238(a) §27.53(g)	Conducted Band Edge Measurement (5G NR n2) (5G NR n25) (5G NR n66) (5G NR n71)	< 43+10log10(P[Watts])	PASS	-
	§27.53(m)(2)	Conducted Band Edge Measurement (5G NR n41)	< 43+10log10(P[Watts])		
3.8	§2.1051 §24.238(a) §27.53(g)	Conducted Spurious Emission (5G NR n2) (5G NR n25) (5G NR n66) (5G NR n71)	< 43+10log10(P[Watts])	PASS	-
	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (5G NR n41)	< 55+10log$_{10}$(P[Watts])		
3.9	§2.1055 §24.235 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §24.238(a) §27.53(g)	Radiated Spurious Emission (5G NR n2) (5G NR n25) (5G NR n66) (5G NR n71)	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 27.04 dB at 9648.00 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (5G NR n41)	< 55+10log$_{10}$(P[Watts])		

1 General Description

1.1 Applicant

Nokia Shanghai Bell Co., Ltd.
388#, Ningqiao Road, China (Shanghai) Pilot Free Trade Zone, Shanghai 201206, China

1.2 Manufacturer

Nokia Solutions and Networks Oy
Karakaari 7, 02610 Espoo, Finland

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	NOK 5G21 GATEWAY GRY KIT
Brand Name	T-Mobile
Model Name	5G21-12W-A
FCC ID	2ADZR5G2112WA
EUT supports Radios application	LTE/5G NR/GNSS WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ax HE20/HE40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac/ax VHT20/VHT40/VHT80/HE20/HE40/HE80 Bluetooth LE
HW Version	3TG00739A
SW Version	HB5GGW_D010000B42T0101E0379.tar
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.

Specification of Accessory				
AC Adapter 1	**Brand Name**	DELTA	**Model Name**	UPD-480WNAB B
	Power Rating	I/P: 100-240Vac, 1600mA, O/P:12Vdc, 4000mA		
AC Adapter 2	**Brand Name**	FSP	**Model Name**	FSP048-A12U01
	Power Rating	I/P: 100-240Vac, 1300mA, O/P:12Vdc, 4000mA		

Remark：Use adapter 1 for all tests.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n2: 1852.5 MHz ~ 1907.5 MHz 5G NR n25: 1852.5 MHz ~ 1912.5 MHz 5G NR n41: 2506.02 MHz ~ 2679.99 MHz 5G NR n66: 1712.5 MHz ~ 1777.5 MHz 5G NR n71: 665.5 MHz ~ 695.5MHz
Rx Frequency	5G NR n2: 1932.5 MHz ~ 1987.5 MHz 5G NR n25: 1932.5 MHz ~ 1992.5 MHz 5G NR n41: 2506.02 MHz ~ 2679.99 MHz 5G NR n66: 2112.5 MHz~ 2197.5 MHz 5G NR n71: 619.5 MHz ~ 649.5MHz
Bandwidth	n2, n25, n66, n71: 5MHz / 10MHz / 15MHz / 20MHz n41 : 20MHz / 40MHz / 50MHz / 60MHz / 80MHz / 90MHz / 100MHz
SCS	FDD: 15kHz TDD: 30kHz
Maximum Output Power to Antenna	n2 : 24.32 dBm n25 : 24.33 dBm n41 : 23.02 dBm n66 : 24.52 dBm n71 : 23.39 dBm
Antenna Gain	n2 / n25: 3.28 dBi n66: 3.28 dBi n41 : 4.27 dBi n71 : 0.85 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. All the modulation of DFT-s-OFDM and CP-OFDM are tested, only the worst case of DFT-s-OFDM BPSK & 16QAM modulation are reported.
2. All the supported Bandwidth are tested, only the low / Middle / High BW are reported.
3. The 5G NR support SA & NSA (EN-DC) mode, the output power of SA mode is higher than NSA mode for 5G NR bands, thus the conducted test items and ERP/EIRP only test SA mode, the RSE test SA & NSA mode.

1.5 Modification of EUT

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

1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

5G NR n2		PI/2 BPSK, QPSK		16QAM, 64QAM, 256QAM	
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)
5	1852.5 ~ 1907.5	4M50G7D	0.5754	4M49W7D	0.4498
10	1855.0 ~ 1905.0	9M05G7D	0.5495	9M05W7D	0.4083
20	1860.0 ~ 1900.0	17M9G7D	0.4797	17M9W7D	0.4295
Frequency Tolerance (ppm)		0.0021			

5G NR n25		PI/2 BPSK, QPSK		16QAM, 64QAM, 256QAM	
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)
5	1852.5 ~ 1912.5	4M50G7D	0.5309	4M52W7D	0.5035
10	1855.0 ~ 1910.0	9M03G7D	0.5636	9M06W7D	0.4831
20	1860.0 ~ 1905.0	18M5G7D	0.4786	18M5W7D	0.4571
Frequency Tolerance (ppm)		0.0021			

5G NR n41		PI/2 BPSK, QPSK		16QAM, 64QAM, 256QAM	
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Maximum Conducted Power(W)	Emission Designator (99%OBW)	Maximum Conducted Power(W)
20	2506.02 ~ 2679.99	18M3G7D	0.1828	18M5W7D	0.1371
60	2526.00 ~ 2659.98	58M5G7D	0.1845	58M7W7D	0.1393
100	2546.01 ~ 2640.00	97M1G7D	0.1963	97M1W7D	0.1892
Frequency Tolerance (ppm)		0.0023			

5G NR n66		PI/2 BPSK, QPSK		16QAM, 64QAM, 256QAM	
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)
5	1712.5 ~ 1777.5	4M54G7D	0.6026	4M52W7D	0.4977
10	1715.0 ~ 1775.0	8M99G7D	0.5236	9M01W7D	0.4130
20	1720.0 ~ 1770.0	18M5G7D	0.5483	18M5W7D	0.5623
Frequency Tolerance (ppm)		0.0023			

5G NR n71		PI/2 BPSK, QPSK		16QAM, 64QAM, 256QAM	
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)
5	665.5 ~ 695.5	4M49G7D	0.1995	4M53W7D	0.1959
10	668.0 ~ 693.0	9M03G7D	0.2495	9M03W7D	0.2128
20	673.0 ~ 688.0	18M4G7D	0.2655	18M2W7D	0.2275
Frequency Tolerance (ppm)		0.0021			

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 TH01-KS	CN1257	314309

1.8 Test Software

Item	Site	Manufacture	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, 24, 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 (Y plane) were recorded in this report.

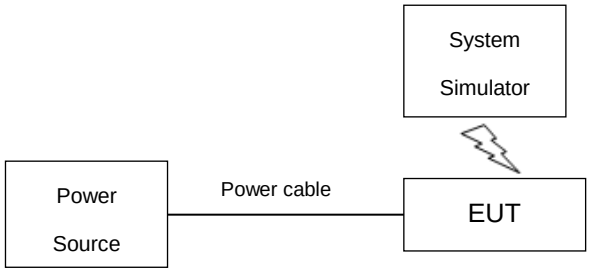
The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.

	X Plane	Y Plane	Z Plane
Orthogonal Planes of EUT			

Test Items	5G NR	Bandwidth (MHz)						Modulation					RB #			Test Channel		
		5	10	15	20	60	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Max. Output Power	n2	v	v		v	-	-	v	v	v	v	v	v	v	v	v	v	v
	n25	v	v		v	-	-	v	v	v	v	v	v	v	v	v	v	v
	n41	-	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n66	v	v		v	-	-	v	v	v	v	v	v	v	v	v	v	v
	n71	v	v		v	-	-	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	n2				v	-	-	v		v			v		v	v	v	v
	n25				v	-	-	v		v			v		v	v	v	v
	n41	-	-	-			v	v		v			v		v	v	v	v
	n66				v	-	-	v		v			v		v	v	v	v
	n71				v	-	-	v		v			v		v	v	v	v
26dB and 99% Bandwidth	n2	v	v		v	-	-	v		v					v	v	v	v
	n25	v	v		v	-	-	v		v					v	v	v	v
	n41	-	-	-	v	v	v	v		v					v	v	v	v
	n66	v	v		v	-	-	v		v					v	v	v	v
	n71	v	v		v	-	-	v		v					v	v	v	v

Test Items	Band	Bandwidth (MHz)						Modulation					RB #			Test Channel		
		5	10	15	20	60	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Conducted Band Edge	n2	v	v		v	-	-	v		v			v		v	v		v
	n25	v	v		v	-	-	v		v			v		v	v		v
	n41	-	-	-	v	v	v	v		v			v		v	v		v
	n66	v	v		v	-	-	v		v			v		v	v		v
	n71	v	v		v	-	-	v		v			v		v	v		v
Conducted Spurious Emission	n2	v	v		v	-	-	v		v			v			v	v	v
	n25	v	v		v	-	-	v		v			v			v	v	v
	n41	-	-	-	v	v	v	v		v			v			v	v	v
	n66	v	v		v	-	-	v		v			v			v	v	v
	n71	v	v		v	-	-	v		v			v			v	v	v
Frequency Stability	n2				v	-	-	v							v		v	
	n25				v	-	-	v							v		v	
	n41	-	-	-	v			v							v		v	
	n66				v	-	-	v							v		v	
	n71				v	-	-	v							v		v	
E.R.P / E.I.R.P	n2	v	v		v	-	-	v	v	v	v	v	v	v	v	v	v	v
	n25	v	v		v	-	-	v	v	v	v	v	v	v	v	v	v	v
	n41	-	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n66	v	v		v	-	-	v	v	v	v	v	v	v	v	v	v	v
	n71	v	v		v	-	-	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n2	Worst Case															v	
	n25	Worst Case															v	
	n41	Worst Case															v	
	n66	Worst Case															v	
	n71	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



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 5.0 dB.

Example :

Offset(dB) = RF cable loss(dB).

= 5.0 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n2 Channel and Frequency List		
NR Bandwidth (MHz)	**Channel**	**NR Frequncy (MHz)**
20	Low	1860
	Mid.	1880
	High	1900
10	Low	1855
	Mid.	1880
	High	1905
5	Low	1852.5
	Mid.	1880
	High	1907.5

5G NR n25 Channel and Frequency List		
NR Bandwidth (MHz)	**Channel**	**NR Frequncy (MHz)**
20	Low	1860
	Mid.	1882.5
	High	1905
10	Low	1855
	Mid.	1882.5
	High	1910
5	Low	1852.5
	Mid.	1882.5
	High	1912.5

5G NR n41 Channel and Frequency List		
NR Bandwidth (MHz)	Channel	NR Frequncy (MHz)
100	Low	2546.01
	Mid.	2592.99
	High	2640
60	Low	2526
	Mid.	2592.99
	High	2659.98
20	Low	2506.02
	Mid.	2592.99
	High	2679.99

5G NR n66 Channel and Frequency List		
NR Bandwidth (MHz)	Channel	NR Frequncy (MHz)
20	Low	1720
	Mid.	1745
	High	1770
10	Low	1715
	Mid.	1745
	High	1775
5	Low	1712.5
	Mid.	1745
	High	1777.5

5G NR n71 Channel and Frequency List		
NR Bandwidth (MHz)	Channel	NR Frequncy (MHz)
20	Low	673
	Mid.	680.5
	High	688
10	Low	668
	Mid.	680.5
	High	693
5	Low	665.5
	Mid.	680.5
	High	695.5

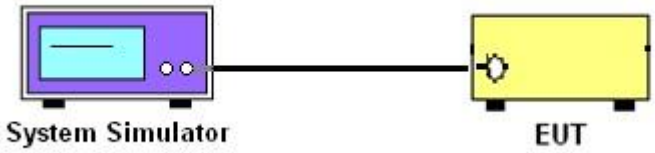
3 Conducted Test Items

3.1 Measuring Instruments

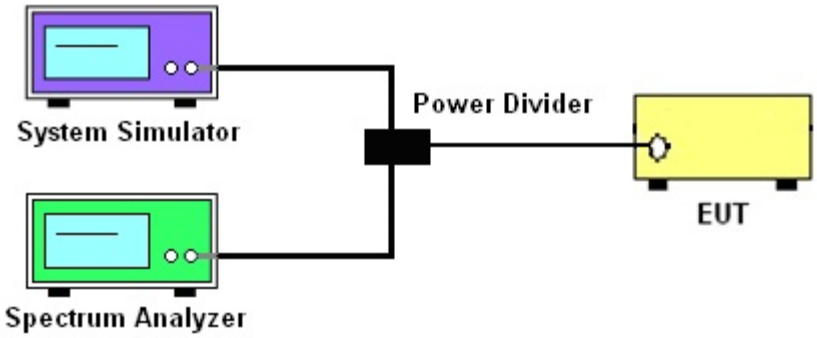
See list of measuring instruments of this test report.

3.2 Test Setup

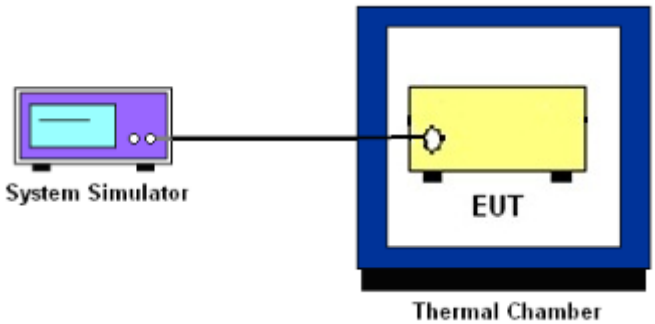
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge and Conducted Spurious Emission



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and ERP/EIRP

3.4.1 Description of the Conducted Output Power Measurement and ERP/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 ERP of fixed transmitters must not exceed 3 Watts for 5G NR n71.

The EIRP of fixed transmitters must not exceed 2 Watts for 5G NR n2, n25

The Output power of fixed transmitters must not exceed 2 Watts for n41.

The EIRP of fixed transmitters must not exceed 1 Watts for 5G NR n66.

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.

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. 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.

3.5.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2.3.4 (CCDF).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.6.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.4
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 1MHz bandwidth. 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.

27.53 (c)

For operations in the 776-788 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed. In addition, the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least 65 + 10 log10 p(watts), dB, for mobile and portable equipment.

27.53 (g)

For operations in the 600MHz band and 698 -746 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

27.53(m)(2)(V)

For all fixed digital user stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge.

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.

   Example:

   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

   = P(W)- [43 + 10log(P)] (dB)

   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10^{th} harmonic.

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. 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.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.9.2 Test Procedures for Temperature Variation

1. The testing follows ANSI C63.26 section 5.6.4
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.9.3 Test Procedures for Voltage Variation

1. The testing follows ANSI C63.26 section 5.6.5
2. The EUT was placed in a temperature chamber at 20±5°C and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5. The variation in frequency was measured for the worst case.

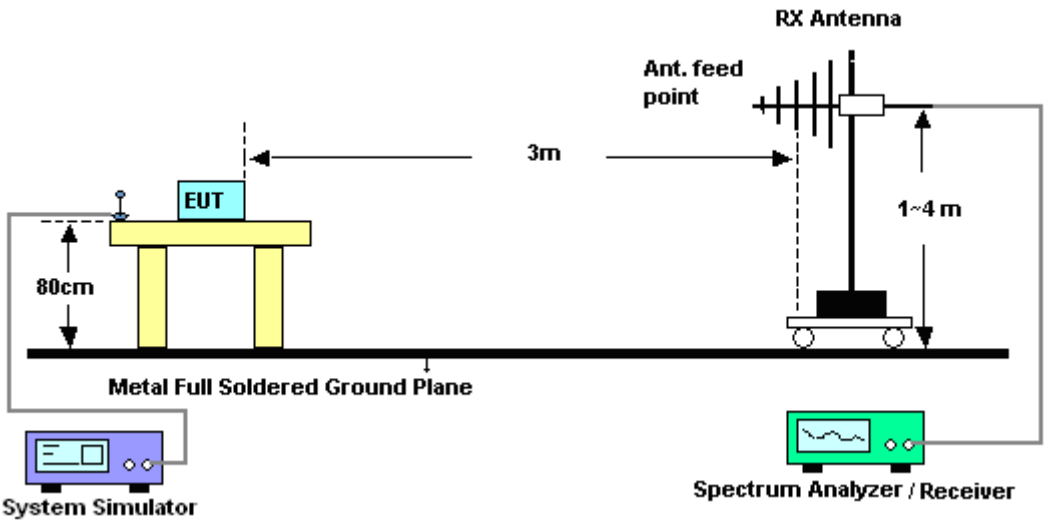
4 Radiated Test Items

4.1 Measuring Instruments

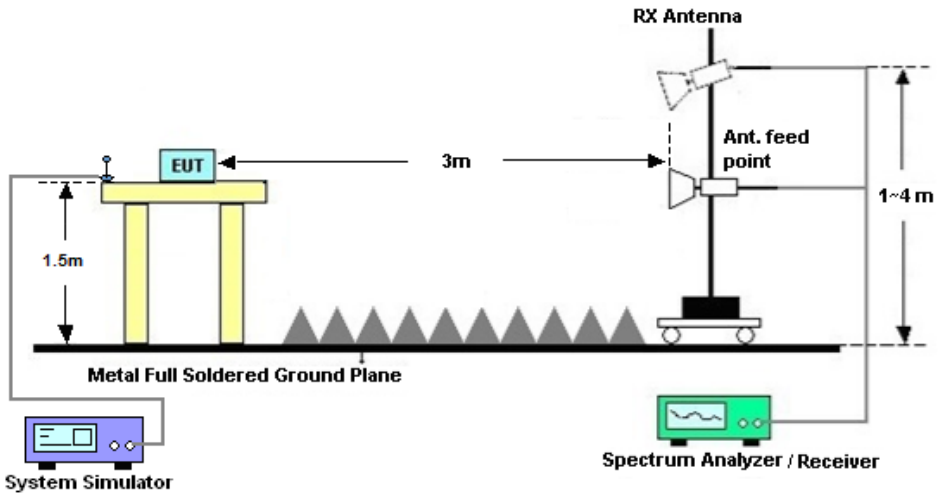
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

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 (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (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 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Nov. 02, 2019	May 15, 2020~ Jun. 06, 2020	Nov. 01, 2020	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 04, 2019	May 15, 2020~ Jun. 06, 2020	Jul. 03, 2020	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr. 15, 2020	May 31, 2020	Apr. 14, 2021	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	May 29, 2020	May 31, 2020	May 30, 2021	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1356	1GHz~18GHz	Apr. 20, 2020	May 31, 2020	Apr. 19, 2021	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 10, 2019	May 31, 2020	Nov. 09, 2020	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Aug. 06, 2019	May 31, 2020	Aug. 05, 2020	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 08, 2020	May 31, 2020	Jan. 07, 2021	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	1Ghz-18Ghz	Aug. 16, 2019	May 31, 2020	Aug. 15, 2020	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 15, 2019	May 31, 2020	Oct. 14, 2020	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 31, 2020	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 31, 2020	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 31, 2020	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**

Appendix A. Test Results of Conducted Test

A1. Output Power (Average power and EIRP)

SA n2 (Antenna gain=3.28dBi)							
20MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP Power (dBm)	
372000	1860	PI/2 BPSK DFT-s-OFDM	1	1	22.22	25.5	0.3548
			1	104	23.36	26.64	0.4613
			50	25	23.41	26.69	0.4667
		QPSK DFT-s-OFDM	1	1	22.65	25.93	0.3917
			1	104	22.32	25.6	0.3631
			50	25	23.33	26.61	0.4581
		16QAM DFT-s-OFDM	1	1	21.88	25.16	0.3281
			1	104	23.03	26.31	0.4276
			50	25	23.05	26.33	0.4295
		64QAM DFT-s-OFDM	1	1	20.85	24.13	0.2588
			1	104	21.83	25.11	0.3243
			50	25	21.63	24.91	0.3097
		256QAM DFT-s-OFDM	1	1	19.83	23.11	0.2046
			1	104	19.92	23.2	0.2089
			50	25	20.03	23.31	0.2143
376000	1880	PI/2 BPSK DFT-s-OFDM	1	1	22.85	26.13	0.4102
			1	104	23.37	26.65	0.4624
			50	25	23.33	26.61	0.4581
		QPSK DFT-s-OFDM	1	1	22.89	26.17	0.4140
			1	104	23.45	26.73	0.4710
			50	25	23.26	26.54	0.4508
		16QAM DFT-s-OFDM	1	1	21.77	25.05	0.3199
			1	104	22.86	26.14	0.4111
			50	25	23.03	26.31	0.4276
		64QAM	1	1	21.33	24.61	0.2891
			1	104	21.76	25.04	0.3192

		DFT-s-OFDM	50	25	21.63	24.91	0.3097
		256QAM	1	1	19.96	23.24	0.2109
			1	104	20.12	23.4	0.2188
		DFT-s-OFDM	50	25	19.76	23.04	0.2014
380000	1900	PI/2 BPSK	1	1	23.53	26.81	0.4797
			1	104	22.56	25.84	0.3837
		DFT-s-OFDM	50	25	23.39	26.67	0.4645
		QPSK	1	1	23.36	26.64	0.4613
			1	104	22.59	25.87	0.3864
		DFT-s-OFDM	50	25	23.32	26.6	0.4571
		16QAM	1	1	22.64	25.92	0.3908
			1	104	21.44	24.72	0.2965
		DFT-s-OFDM	50	25	22.65	25.93	0.3917
		64QAM	1	1	21.82	25.1	0.3236
			1	104	21.03	24.31	0.2698
		DFT-s-OFDM	50	25	21.26	24.54	0.2844
		256QAM	1	1	20.23	23.51	0.2244
			1	104	19.85	23.13	0.2056
		DFT-s-OFDM	50	25	19.77	23.05	0.2018

SA n2 (Antenna gain=3.28dBi)							
10MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR	NR	EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP Power (dBm)	
371000	1855	PI/2 BPSK DFT-s-OFDM	1	1	23.23	26.51	0.4477
			1	50	23.38	26.66	0.4634
			25	12	23.76	27.04	0.5058
		QPSK DFT-s-OFDM	1	1	23.33	26.61	0.4581
			1	50	23.21	26.49	0.4457
			25	12	23.56	26.84	0.4831
		16QAM DFT-s-OFDM	1	1	22.52	25.8	0.3802
			1	50	22.26	25.54	0.3581
			25	12	22.69	25.97	0.3954
		64QAM DFT-s-OFDM	1	1	22.63	25.91	0.3899
			1	50	21.62	24.9	0.3090
			25	12	21.52	24.8	0.3020
		256QAM DFT-s-OFDM	1	1	20.68	23.96	0.2489
			1	50	20.11	23.39	0.2183
			25	12	20.63	23.91	0.2460
376000	1880	PI/2 BPSK DFT-s-OFDM	1	1	23.11	26.39	0.4355
			1	50	23.15	26.43	0.4395
			25	12	24.12	27.4	0.5495
		QPSK DFT-s-OFDM	1	1	23.32	26.6	0.4571
			1	50	22.03	25.31	0.3396
			25	12	19.31	22.59	0.1816
		16QAM DFT-s-OFDM	1	1	22.35	25.63	0.3656
			1	50	22.83	26.11	0.4083
			25	12	22.12	25.4	0.3467
		64QAM DFT-s-OFDM	1	1	21.91	25.19	0.3304
			1	50	21.89	25.17	0.3289
			25	12	21.77	25.05	0.3199
		256QAM DFT-s-OFDM	1	1	20.12	23.4	0.2188
			1	50	20.36	23.64	0.2312
			25	12	19.63	22.91	0.1954

381000	1905	PI/2 BPSK DFT-s-OFDM	1	1	23.66	26.94	0.4943
			1	50	23.31	26.59	0.4560
			25	12	23.36	26.64	0.4613
		QPSK DFT-s-OFDM	1	1	24.12	27.4	0.5495
			1	50	23.55	26.83	0.4819
			25	12	23.42	26.7	0.4677
		16QAM DFT-s-OFDM	1	1	22.23	25.51	0.3556
			1	50	22.63	25.91	0.3899
			25	12	22.46	25.74	0.3750
		64QAM DFT-s-OFDM	1	1	21.83	25.11	0.3243
			1	50	21.26	24.54	0.2844
			25	12	21.13	24.41	0.2761
		256QAM DFT-s-OFDM	1	1	19.96	23.24	0.2109
			1	50	19.65	22.93	0.1963
			25	12	19.63	22.91	0.1954

SA n2 (Antenna gain=3.28dBi)							
5MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP Power (dBm)	
370500	1852.5	PI/2 BPSK DFT-s-OFDM	1	1	23.66	26.94	0.4943
			1	23	23.82	27.1	0.5129
			12	6	24.32	27.6	0.5754
		QPSK DFT-s-OFDM	1	1	23.55	26.83	0.4819
			1	23	23.77	27.05	0.5070
			12	6	23.88	27.16	0.5200
		16QAM DFT-s-OFDM	1	1	22.96	26.24	0.4207
			1	23	23.25	26.53	0.4498
			12	6	23.23	26.51	0.4477
		64QAM DFT-s-OFDM	1	1	21.44	24.72	0.2965
			1	23	21.25	24.53	0.2838
			12	6	21.13	24.41	0.2761
		256QAM DFT-s-OFDM	1	1	19.92	23.2	0.2089
			1	23	20.12	23.4	0.2188
			12	6	19.86	23.14	0.2061
376000	1880	PI/2 BPSK DFT-s-OFDM	1	1	23.44	26.72	0.4699
			1	23	23.17	26.45	0.4416
			12	6	22.83	26.11	0.4083
		QPSK DFT-s-OFDM	1	1	23.36	26.64	0.4613
			1	23	23.89	27.17	0.5212
			12	6	23.36	26.64	0.4613
		16QAM DFT-s-OFDM	1	1	22.65	25.93	0.3917
			1	23	23.21	26.49	0.4457
			12	6	22.79	26.07	0.4046
		64QAM DFT-s-OFDM	1	1	21.44	24.72	0.2965
			1	23	21.79	25.07	0.3214
			12	6	21.55	24.83	0.3041
		256QAM DFT-s-OFDM	1	1	19.81	23.09	0.2037
			1	23	20.14	23.42	0.2198
			12	6	19.93	23.21	0.2094

381500	1907.5	PI/2 BPSK DFT-s-OFDM	1	1	23.06	26.34	0.4305
			1	23	22.76	26.04	0.4018
			12	6	23.32	26.6	0.4571
		QPSK DFT-s-OFDM	1	1	22.02	25.3	0.3388
			1	23	21.76	25.04	0.3192
			12	6	22.63	25.91	0.3899
		16QAM DFT-s-OFDM	1	1	22.03	25.31	0.3396
			1	23	21.78	25.06	0.3206
			12	6	22.33	25.61	0.3639
		64QAM DFT-s-OFDM	1	1	20.63	23.91	0.2460
			1	23	20.44	23.72	0.2355
			12	6	21.06	24.34	0.2716
		256QAM DFT-s-OFDM	1	1	19.06	22.34	0.1714
			1	23	18.96	22.24	0.1675
			12	6	19.69	22.97	0.1982

SA n25 (Antenna gain=3.28dBi)							
20MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP Power (dBm)	
372000	1860	PI/2 BPSK DFT-s-OFDM	1	1	23.44	26.72	0.4699
			1	104	23.15	26.43	0.4395
			50	25	23.38	26.66	0.4634
		QPSK DFT-s-OFDM	1	1	23.52	26.8	0.4786
			1	104	23.05	26.33	0.4295
			50	25	23.32	26.6	0.4571
		16QAM DFT-s-OFDM	1	1	22.95	26.23	0.4198
			1	104	22.05	25.33	0.3412
			50	25	22.97	26.25	0.4217
		64QAM DFT-s-OFDM	1	1	21.86	25.14	0.3266
			1	104	21.69	24.97	0.3141
			50	25	21.59	24.87	0.3069
		256QAM DFT-s-OFDM	1	1	20.12	23.4	0.2188
			1	104	19.96	23.24	0.2109
			50	25	20.12	23.4	0.2188
376500	1882.5	PI/2 BPSK DFT-s-OFDM	1	1	23.37	26.65	0.4624
			1	104	23.36	26.64	0.4613
			50	25	23.36	26.64	0.4613
		QPSK DFT-s-OFDM	1	1	23.36	26.64	0.4613
			1	104	23.53	26.81	0.4797
			50	25	23.32	26.6	0.4571
		16QAM DFT-s-OFDM	1	1	22.36	25.64	0.3664
			1	104	23.32	26.6	0.4571
			50	25	23.32	26.6	0.4571
		64QAM DFT-s-OFDM	1	1	21.87	25.15	0.3273
			1	104	22.03	25.31	0.3396
			50	25	21.73	25.01	0.3170
		256QAM DFT-s-OFDM	1	1	20.16	23.44	0.2208
			1	104	20.03	23.31	0.2143
			50	25	20.02	23.3	0.2138
381000	1905	PI/2 BPSK	1	1	23.52	26.8	0.4786
			1	104	21.32	24.6	0.2884

		DFT-s-OFDM	50	25	23.52	26.8	0.4786
		QPSK	1	1	23.59	26.87	0.4864
			1	104	21.26	24.54	0.2844
		DFT-s-OFDM	50	25	23.41	26.69	0.4667
		16QAM	1	1	22.75	26.03	0.4009
			1	104	20.26	23.54	0.2259
		DFT-s-OFDM	50	25	22.56	25.84	0.3837
		64QAM	1	1	22.01	25.29	0.3381
			1	104	19.96	23.24	0.2109
		DFT-s-OFDM	50	25	21.12	24.4	0.2754
		256QAM	1	1	20.25	23.53	0.2254
			1	104	18.56	21.84	0.1528
		DFT-s-OFDM	50	25	19.76	23.04	0.2014

SA n25 (Antenna gain=3.28dBi)							
10MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
371000	1855	PI/2 BPSK DFT-s-OFDM	1	1	23.36	26.64	0.4613
			1	50	22.63	25.91	0.3899
			25	12	23.31	26.59	0.4560
		QPSK DFT-s-OFDM	1	1	23.63	26.91	0.4909
			1	50	23.51	26.79	0.4775
			25	12	23.32	26.6	0.4571
		16QAM DFT-s-OFDM	1	1	23.56	26.84	0.4831
			1	50	23.23	26.51	0.4477
			25	12	23.2	26.48	0.4446
		64QAM DFT-s-OFDM	1	1	21.36	24.64	0.2911
			1	50	23.16	26.44	0.4406
			25	12	21.96	25.24	0.3342
		256QAM DFT-s-OFDM	1	1	19.85	23.13	0.2056
			1	50	19.36	22.64	0.1837
			25	12	20.12	23.4	0.2188
376500	1882.5	PI/2 BPSK DFT-s-OFDM	1	1	23.13	26.41	0.4375
			1	50	23.22	26.5	0.4467
			25	12	24.23	27.51	0.5636
		QPSK DFT-s-OFDM	1	1	23.51	26.79	0.4775
			1	50	23.56	26.84	0.4831
			25	12	24.33	27.61	0.5768
		16QAM DFT-s-OFDM	1	1	22.85	26.13	0.4102
			1	50	22.62	25.9	0.3890
			25	12	23.03	26.31	0.4276
		64QAM DFT-s-OFDM	1	1	21.65	24.93	0.3112
			1	50	21.41	24.69	0.2944
			25	12	21.73	25.01	0.3170
		256QAM DFT-s-OFDM	1	1	19.86	23.14	0.2061
			1	50	19.68	22.96	0.1977
			25	12	19.93	23.21	0.2094
382000	1910	PI/2 BPSK	1	1	23.29	26.57	0.4539
			1	50	21.36	24.64	0.2911

		DFT-s-OFDM	25	12	23.26	26.54	0.4508
		QPSK	1	1	23.26	26.54	0.4508
			1	50	21.32	24.6	0.2884
		DFT-s-OFDM	25	12	23.12	26.4	0.4365
		16QAM	1	1	22.41	25.69	0.3707
			1	50	20.53	23.81	0.2404
		DFT-s-OFDM	25	12	22.12	25.4	0.3467
		64QAM	1	1	22.02	25.3	0.3388
			1	50	20.02	23.3	0.2138
		DFT-s-OFDM	25	12	20.61	23.89	0.2449
		256QAM	1	1	20.06	23.34	0.2158
			1	50	18.39	21.67	0.1469
		DFT-s-OFDM	25	12	19.41	22.69	0.1858

SA n25 (Antenna gain=3.28dBi)							
5MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
370500	1852.5	PI/2 BPSK DFT-s-OFDM	1	1	23.41	26.69	0.4667
			1	23	23.54	26.82	0.4808
			12	6	23.56	26.84	0.4831
		QPSK DFT-s-OFDM	1	1	23.39	26.67	0.4645
			1	23	24.18	27.46	0.5572
			12	6	21.28	24.56	0.2858
		16QAM DFT-s-OFDM	1	1	23.19	26.47	0.4436
			1	23	23.61	26.89	0.4887
			12	6	23.31	26.59	0.4560
		64QAM DFT-s-OFDM	1	1	21.54	24.82	0.3034
			1	23	23.23	26.51	0.4477
			12	6	22.13	25.41	0.3475
		256QAM DFT-s-OFDM	1	1	19.93	23.21	0.2094
			1	23	19.86	23.14	0.2061
			12	6	20.95	24.23	0.2649
376500	1882.5	PI/2 BPSK DFT-s-OFDM	1	1	23.47	26.75	0.4732
			1	23	23.97	27.25	0.5309
			12	6	23.87	27.15	0.5188
		QPSK DFT-s-OFDM	1	1	24.11	27.39	0.5483
			1	23	23.55	26.83	0.4819
			12	6	23.61	26.89	0.4887
		16QAM DFT-s-OFDM	1	1	23.57	26.85	0.4842
			1	23	23.74	27.02	0.5035
			12	6	23.33	26.61	0.4581
		64QAM DFT-s-OFDM	1	1	21.85	25.13	0.3258
			1	23	21.26	24.54	0.2844
			12	6	21.92	25.2	0.3311
		256QAM DFT-s-OFDM	1	1	20.28	23.56	0.2270
			1	23	20.34	23.62	0.2301
			12	6	19.91	23.19	0.2084
382500	1912.5	PI/2 BPSK	1	1	23.92	27.2	0.5248
			1	23	23.6	26.88	0.4875

		DFT-s-OFDM	12	6	23.38	26.66	0.4634
		QPSK	1	1	23.74	27.02	0.5035
			1	23	23.52	26.8	0.4786
		DFT-s-OFDM	12	6	23.33	26.61	0.4581
		16QAM	1	1	22.98	26.26	0.4227
			1	23	21.58	24.86	0.3062
		DFT-s-OFDM	12	6	21.92	25.2	0.3311
		64QAM	1	1	20.16	23.44	0.2208
			1	23	20.04	23.32	0.2148
		DFT-s-OFDM	12	6	21.03	24.31	0.2698
		256QAM	1	1	20.41	23.69	0.2339
			1	23	19.24	22.52	0.1786
		DFT-s-OFDM	12	6	19.62	22.9	0.1950

SA n41 (Antenna gain=4.27dBi)							
100MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
509202	2546.01	PI/2 BPSK DFT-s-OFDM	1	1	22.91	27.18	0.5224
			1	271	21.74	26.01	0.3990
			135	67	22.78	27.05	0.5070
		QPSK DFT-s-OFDM	1	1	22.87	27.14	0.5176
			1	271	21.68	25.95	0.3936
			135	67	22.56	26.83	0.4819
		16QAM DFT-s-OFDM	1	1	21.97	26.24	0.4207
			1	271	20.83	25.1	0.3236
			135	67	21.69	25.96	0.3945
		64QAM DFT-s-OFDM	1	1	21.14	25.41	0.3475
			1	271	20.01	24.28	0.2679
			135	67	20.71	24.98	0.3148
		256QAM DFT-s-OFDM	1	1	19.82	24.09	0.2564
			1	271	18.89	23.16	0.2070
			135	67	19.31	23.58	0.2280
518598	2592.99	PI/2 BPSK DFT-s-OFDM	1	1	22.93	27.2	0.5248
			1	271	22.41	26.68	0.4656
			135	67	22.47	26.74	0.4721
		QPSK DFT-s-OFDM	1	1	22.87	27.14	0.5176
			1	271	22.45	26.72	0.4699
			135	67	22.41	26.68	0.4656
		16QAM DFT-s-OFDM	1	1	22.77	27.04	0.5058
			1	271	21.98	26.25	0.4217
			135	67	22.15	26.42	0.4385
		64QAM DFT-s-OFDM	1	1	21.19	25.46	0.3516
			1	271	21.02	25.29	0.3381
			135	67	20.66	24.93	0.3112
		256QAM DFT-s-OFDM	1	1	19.61	23.88	0.2443
			1	271	19.61	23.88	0.2443
			135	67	18.88	23.15	0.2065
528000	2640	PI/2 BPSK	1	1	22.48	26.75	0.4732
			1	271	21.78	26.05	0.4027

		DFT-s-OFDM	135	67	22.59	26.86	0.4853
		QPSK	1	1	22.59	26.86	0.4853
			1	271	21.7	25.97	0.3954
		DFT-s-OFDM	135	67	22.47	26.74	0.4721
		16QAM	1	1	22.13	26.4	0.4365
			1	271	20.92	25.19	0.3304
		DFT-s-OFDM	135	67	22.19	26.46	0.4426
		64QAM	1	1	20.85	25.12	0.3251
			1	271	20.28	24.55	0.2851
		DFT-s-OFDM	135	67	20.89	25.16	0.3281
		256QAM	1	1	19.24	23.51	0.2244
			1	271	19.32	23.59	0.2286
		DFT-s-OFDM	135	67	19.02	23.29	0.2133

SA n41 (Antenna gain=4.27dBi)							
60MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
505200	2526	PI/2 BPSK DFT-s-OFDM	1	1	22.64	26.91	0.4909
			1	160	21.33	25.6	0.3631
			81	40	22.66	26.93	0.4932
		QPSK DFT-s-OFDM	1	1	22.11	26.38	0.4345
			1	160	21.15	25.42	0.3483
			81	40	22.26	26.53	0.4498
		16QAM DFT-s-OFDM	1	1	21.44	25.71	0.3724
			1	160	20.51	24.78	0.3006
			81	40	21.38	25.65	0.3673
		64QAM DFT-s-OFDM	1	1	20.35	24.62	0.2897
			1	160	19.48	23.75	0.2371
			81	40	20.31	24.58	0.2871
		256QAM DFT-s-OFDM	1	1	19.18	23.45	0.2213
			1	160	18.18	22.45	0.1758
			81	40	19.09	23.36	0.2168
518598	2592.99	PI/2 BPSK DFT-s-OFDM	1	1	22.13	26.4	0.4365
			1	160	21.44	25.71	0.3724
			81	40	21.61	25.88	0.3873
		QPSK DFT-s-OFDM	1	1	21.57	25.84	0.3837
			1	160	21.19	25.46	0.3516
			81	40	21.22	25.49	0.3540
		16QAM DFT-s-OFDM	1	1	20.86	25.13	0.3258
			1	160	20.48	24.75	0.2985
			81	40	20.26	24.53	0.2838
		64QAM DFT-s-OFDM	1	1	19.74	24.01	0.2518
			1	160	19.42	23.69	0.2339
			81	40	19.12	23.39	0.2183
		256QAM DFT-s-OFDM	1	1	18.44	22.71	0.1866
			1	160	18.12	22.39	0.1734
			81	40	17.77	22.04	0.1600
531996	2659.98	PI/2 BPSK	1	1	21.53	25.8	0.3802
			1	160	20.02	24.29	0.2685

		DFT-s-OFDM	81	40	20.82	25.09	0.3228
		QPSK	1	1	21.27	25.54	0.3581
			1	160	19.72	23.99	0.2506
		DFT-s-OFDM	81	40	20.55	24.82	0.3034
		16QAM	1	1	20.54	24.81	0.3027
			1	160	19.07	23.34	0.2158
		DFT-s-OFDM	81	40	19.66	23.93	0.2472
		64QAM	1	1	19.45	23.72	0.2355
			1	160	17.94	22.21	0.1663
		DFT-s-OFDM	81	40	18.44	22.71	0.1866
		256QAM	1	1	18.12	22.39	0.1734
			1	160	16.57	20.84	0.1213
		DFT-s-OFDM	81	40	17.03	21.3	0.1349

SA n41 (Antenna gain=4.27dBi)							
20MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP(dBm)	
501204	2506.02	PI/2 BPSK DFT-s-OFDM	1	1	22.62	26.89	0.4887
			1	49	22.38	26.65	0.4624
			25	12	22.49	26.76	0.4742
		QPSK DFT-s-OFDM	1	1	22.22	26.49	0.4457
			1	49	22.21	26.48	0.4446
			25	12	22.13	26.4	0.4365
		16QAM DFT-s-OFDM	1	1	21.19	25.46	0.3516
			1	49	21.29	25.56	0.3597
			25	12	21.37	25.64	0.3664
		64QAM DFT-s-OFDM	1	1	20.95	25.22	0.3327
			1	49	21.13	25.4	0.3467
			25	12	20.16	24.43	0.2773
		256QAM DFT-s-OFDM	1	1	19.56	23.83	0.2415
			1	49	19.55	23.82	0.2410
			25	12	18.92	23.19	0.2084
518598	2592.99	PI/2 BPSK DFT-s-OFDM	1	1	21.52	25.79	0.3793
			1	49	21.12	25.39	0.3459
			25	12	21.46	25.73	0.3741
		QPSK DFT-s-OFDM	1	1	21.33	25.6	0.3631
			1	49	20.97	25.24	0.3342
			25	12	21.13	25.4	0.3467
		16QAM DFT-s-OFDM	1	1	20.29	24.56	0.2858
			1	49	19.98	24.25	0.2661
			25	12	20.34	24.61	0.2891
		64QAM DFT-s-OFDM	1	1	20.08	24.35	0.2723
			1	49	19.76	24.03	0.2529
			25	12	19.08	23.35	0.2163
		256QAM DFT-s-OFDM	1	1	18.67	22.94	0.1968
			1	49	18.41	22.68	0.1854
			25	12	17.76	22.03	0.1596
535998	2679.99	PI/2 BPSK	1	1	20.59	24.86	0.3062
			1	49	19.99	24.26	0.2667

		DFT-s-OFDM	25	12	20.57	24.84	0.3048
		QPSK DFT-s-OFDM	1	1	20.45	24.72	0.2965
			1	49	19.87	24.14	0.2594
			25	12	20.27	24.54	0.2844
		16QAM DFT-s-OFDM	1	1	19.43	23.7	0.2344
			1	49	18.87	23.14	0.2061
			25	12	19.45	23.72	0.2355
		64QAM DFT-s-OFDM	1	1	19.21	23.48	0.2228
			1	49	18.68	22.95	0.1972
			25	12	18.12	22.39	0.1734
		256QAM DFT-s-OFDM	1	1	17.74	22.01	0.1589
			1	49	17.24	21.51	0.1416
			25	12	16.73	21	0.1259

SA n66 (Antenna gain=3.28dBi)							
20MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
344000	1720	PI/2 BPSK DFT-s-OFDM	1	1	24.11	27.39	0.5483
			1	104	23.96	27.24	0.5297
			50	25	24.09	27.37	0.5458
		QPSK DFT-s-OFDM	1	1	24.08	27.36	0.5445
			1	104	24.21	27.49	0.5610
			50	25	24.17	27.45	0.5559
		16QAM DFT-s-OFDM	1	1	23.89	27.17	0.5212
			1	104	24.22	27.5	0.5623
			50	25	23.86	27.14	0.5176
		64QAM DFT-s-OFDM	1	1	22.84	26.12	0.4093
			1	104	22.65	25.93	0.3917
			50	25	22.78	26.06	0.4036
		256QAM DFT-s-OFDM	1	1	20.79	24.07	0.2553
			1	104	20.69	23.97	0.2495
			50	25	20.51	23.79	0.2393
349000	1745	PI/2 BPSK DFT-s-OFDM	1	1	23.71	26.99	0.5000
			1	104	23.88	27.16	0.5200
			50	25	23.62	26.9	0.4898
		QPSK DFT-s-OFDM	1	1	23.66	26.94	0.4943
			1	104	23.79	27.07	0.5093
			50	25	23.63	26.91	0.4909
		16QAM DFT-s-OFDM	1	1	23.44	26.72	0.4699
			1	104	23.56	26.84	0.4831
			50	25	23.44	26.72	0.4699
		64QAM DFT-s-OFDM	1	1	22.11	25.39	0.3459
			1	104	22.17	25.45	0.3508
			50	25	22.02	25.3	0.3388
		256QAM DFT-s-OFDM	1	1	20.52	23.8	0.2399
			1	104	20.46	23.74	0.2366
			50	25	20.11	23.39	0.2183
354000	1770	PI/2 BPSK	1	1	23.73	27.01	0.5023
			1	104	23.86	27.14	0.5176

		DFT-s-OFDM	50	25	23.65	26.93	0.4932
		QPSK	1	1	23.67	26.95	0.4955
			1	104	23.78	27.06	0.5082
		DFT-s-OFDM	50	25	23.71	26.99	0.5000
		16QAM	1	1	23.54	26.82	0.4808
			1	104	23.48	26.76	0.4742
		DFT-s-OFDM	50	25	23.51	26.79	0.4775
		64QAM	1	1	22.29	25.57	0.3606
			1	104	22.33	25.61	0.3639
		DFT-s-OFDM	50	25	22.06	25.34	0.3420
		256QAM	1	1	20.25	23.53	0.2254
			1	104	20.39	23.67	0.2328
		DFT-s-OFDM	50	25	20.14	23.42	0.2198

SA n66 (Antenna gain=3.28dBi)							
10MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
343000	1715	PI/2 BPSK DFT-s-OFDM	1	1	23.45	26.73	0.4710
			1	50	23.36	26.64	0.4613
			25	12	23.89	27.17	0.5212
		QPSK DFT-s-OFDM	1	1	23.28	26.56	0.4529
			1	50	23.28	26.56	0.4529
			25	12	23.76	27.04	0.5058
		16QAM DFT-s-OFDM	1	1	22.12	25.4	0.3467
			1	50	22.54	25.82	0.3819
			25	12	22.88	26.16	0.4130
		64QAM DFT-s-OFDM	1	1	22.04	25.32	0.3404
			1	50	22.09	25.37	0.3443
			25	12	21.92	25.2	0.3311
		256QAM DFT-s-OFDM	1	1	20.66	23.94	0.2477
			1	50	20.68	23.96	0.2489
			25	12	20.91	24.19	0.2624
349000	1745	PI/2 BPSK DFT-s-OFDM	1	1	23.09	26.37	0.4335
			1	50	23.08	26.36	0.4325
			25	12	23.91	27.19	0.5236
		QPSK DFT-s-OFDM	1	1	22.94	26.22	0.4188
			1	50	22.99	26.27	0.4236
			25	12	23.64	26.92	0.4920
		16QAM DFT-s-OFDM	1	1	21.80	25.08	0.3221
			1	50	22.31	25.59	0.3622
			25	12	22.65	25.93	0.3917
		64QAM DFT-s-OFDM	1	1	21.46	24.74	0.2979
			1	50	21.78	25.06	0.3206
			25	12	21.73	25.01	0.3170
		256QAM DFT-s-OFDM	1	1	20.36	23.64	0.2312
			1	50	20.46	23.74	0.2366
			25	12	20.75	24.03	0.2529
355000	1775	PI/2 BPSK	1	1	23.33	26.61	0.4581
			1	50	23.33	26.61	0.4581

		DFT-s-OFDM	25	12	23.82	27.1	0.5129
		QPSK	1	1	23.18	26.46	0.4426
			1	50	23.20	26.48	0.4446
		DFT-s-OFDM	25	12	23.67	26.95	0.4955
		16QAM	1	1	22.46	25.74	0.3750
			1	50	22.08	25.36	0.3436
		DFT-s-OFDM	25	12	22.81	26.09	0.4064
		64QAM	1	1	21.66	24.94	0.3119
			1	50	21.63	24.91	0.3097
		DFT-s-OFDM	25	12	21.86	25.14	0.3266
		256QAM	1	1	20.25	23.53	0.2254
			1	50	20.14	23.42	0.2198
		DFT-s-OFDM	25	12	20.88	24.16	0.2606

SA n66 (Antenna gain=3.28dBi)							
5MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
342500	1712.5	PI/2 BPSK DFT-s-OFDM	1	1	23.67	26.95	0.4955
			1	23	23.68	26.96	0.4966
			12	6	23.91	27.19	0.5236
		QPSK DFT-s-OFDM	1	1	23.51	26.79	0.4775
			1	23	23.55	26.83	0.4819
			12	6	24.18	27.46	0.5572
		16QAM DFT-s-OFDM	1	1	22.36	25.64	0.3664
			1	23	22.45	25.73	0.3741
			12	6	23.03	26.31	0.4276
		64QAM DFT-s-OFDM	1	1	21.95	25.23	0.3334
			1	23	22.09	25.37	0.3443
			12	6	22.03	25.31	0.3396
		256QAM DFT-s-OFDM	1	1	21.32	24.6	0.2884
			1	23	21.28	24.56	0.2858
			12	6	21.19	24.47	0.2799
349000	1745	PI/2 BPSK DFT-s-OFDM	1	1	23.53	26.81	0.4797
			1	23	23.63	26.91	0.4909
			12	6	23.96	27.24	0.5297
		QPSK DFT-s-OFDM	1	1	23.40	26.68	0.4656
			1	23	23.52	26.8	0.4786
			12	6	23.56	26.84	0.4831
		16QAM DFT-s-OFDM	1	1	22.66	25.94	0.3926
			1	23	22.77	26.05	0.4027
			12	6	22.63	25.91	0.3899
		64QAM DFT-s-OFDM	1	1	22.14	25.42	0.3483
			1	23	22.01	25.29	0.3381
			12	6	21.64	24.92	0.3105
		256QAM DFT-s-OFDM	1	1	21.26	24.54	0.2844
			1	23	21.28	24.56	0.2858
			12	6	20.83	24.11	0.2576
355500	1777.5	PI/2 BPSK	1	1	23.98	27.26	0.5321
			1	23	24.06	27.34	0.5420

		DFT-s-OFDM	12	6	24.52	27.8	0.6026
		QPSK	1	1	23.73	27.01	0.5023
			1	23	23.95	27.23	0.5284
		DFT-s-OFDM	12	6	23.74	27.02	0.5035
		16QAM	1	1	22.91	26.19	0.4159
			1	23	22.83	26.11	0.4083
		DFT-s-OFDM	12	6	23.69	26.97	0.4977
		64QAM	1	1	22.46	25.74	0.3750
			1	23	22.36	25.64	0.3664
		DFT-s-OFDM	12	6	22.63	25.91	0.3899
		256QAM	1	1	21.22	24.5	0.2818
			1	23	21.35	24.63	0.2904
		DFT-s-OFDM	12	6	21.57	24.85	0.3055

SA n71 (Antenna gain=0.85dBi)							
20MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
134600	673	PI/2 BPSK DFT-s-OFDM	1	1	22.73	23.58	0.2280
			1	104	22.22	23.07	0.2028
			50	25	22.41	23.26	0.2118
		QPSK DFT-s-OFDM	1	1	22.63	23.48	0.2228
			1	104	22.19	23.04	0.2014
			50	25	22.36	23.21	0.2094
		16QAM DFT-s-OFDM	1	1	22.72	23.57	0.2275
			1	104	22.31	23.16	0.2070
			50	25	22.26	23.11	0.2046
		64QAM DFT-s-OFDM	1	1	21.26	22.11	0.1626
			1	104	20.69	21.54	0.1426
			50	25	20.77	21.62	0.1452
		256QAM DFT-s-OFDM	1	1	19.36	20.21	0.1050
			1	104	19.06	19.91	0.0979
			50	25	18.87	19.72	0.0938
136100	680.5	PI/2 BPSK DFT-s-OFDM	1	1	22.53	23.38	0.2178
			1	104	22.22	23.07	0.2028
			50	25	22.36	23.21	0.2094
		QPSK DFT-s-OFDM	1	1	22.36	23.21	0.2094
			1	104	22.13	22.98	0.1986
			50	25	22.32	23.17	0.2075
		16QAM DFT-s-OFDM	1	1	22.33	23.18	0.2080
			1	104	22.18	23.03	0.2009
			50	25	22.16	23.01	0.2000
		64QAM DFT-s-OFDM	1	1	20.86	21.71	0.1483
			1	104	20.59	21.44	0.1393
			50	25	20.79	21.64	0.1459
		256QAM DFT-s-OFDM	1	1	19.06	19.91	0.0979
			1	104	18.76	19.61	0.0914
			50	25	18.86	19.71	0.0935
137600	688	PI/2 BPSK	1	1	23.39	24.24	0.2655
			1	104	22.03	22.88	0.1941

		DFT-s-OFDM	50	25	22.21	23.06	0.2023
		QPSK	1	1	22.44	23.29	0.2133
			1	104	21.96	22.81	0.1910
		DFT-s-OFDM	50	25	22.12	22.97	0.1982
		16QAM	1	1	22.36	23.21	0.2094
			1	104	22.03	22.88	0.1941
		DFT-s-OFDM	50	25	22.03	22.88	0.1941
		64QAM	1	1	20.82	21.67	0.1469
			1	104	20.36	21.21	0.1321
		DFT-s-OFDM	50	25	20.52	21.37	0.1371
		256QAM	1	1	19.06	19.91	0.0979
			1	104	18.63	19.48	0.0887
		DFT-s-OFDM	50	25	18.59	19.44	0.0879

SA n71 (Antenna gain=0.85dBi)							
10MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
133600	668	PI/2 BPSK DFT-s-OFDM	1	1	22.22	23.07	0.2028
			1	50	21.33	22.18	0.1652
			25	12	22.83	23.68	0.2333
		QPSK DFT-s-OFDM	1	1	22.13	22.98	0.1986
			1	50	22.23	23.08	0.2032
			25	12	22.12	22.97	0.1982
		16QAM DFT-s-OFDM	1	1	22.03	22.88	0.1941
			1	50	21.85	22.7	0.1862
			25	12	21.63	22.48	0.1770
		64QAM DFT-s-OFDM	1	1	21.56	22.41	0.1742
			1	50	20.59	21.44	0.1393
			25	12	20.23	21.08	0.1282
		256QAM DFT-s-OFDM	1	1	19.26	20.11	0.1026
			1	50	18.65	19.5	0.0891
			25	12	19.12	19.97	0.0993
136100	680.5	PI/2 BPSK DFT-s-OFDM	1	1	21.96	22.81	0.1910
			1	50	21.32	22.17	0.1648
			25	12	21.63	22.48	0.1770
		QPSK DFT-s-OFDM	1	1	21.93	22.78	0.1897
			1	50	21.32	22.17	0.1648
			25	12	21.52	22.37	0.1726
		16QAM DFT-s-OFDM	1	1	21.85	22.7	0.1862
			1	50	21.23	22.08	0.1614
			25	12	21.46	22.31	0.1702
		64QAM DFT-s-OFDM	1	1	20.12	20.97	0.1250
			1	50	19.63	20.48	0.1117
			25	12	20.14	20.99	0.1256
		256QAM DFT-s-OFDM	1	1	18.36	19.21	0.0834
			1	50	17.89	18.74	0.0748
			25	12	18.32	19.17	0.0826
138600	693	PI/2 BPSK	1	1	21.63	22.48	0.1770
			1	50	23.12	23.97	0.2495

		DFT-s-OFDM	25	12	22.63	23.48	0.2228
		QPSK	1	1	21.36	22.21	0.1663
			1	50	22.23	23.08	0.2032
		DFT-s-OFDM	25	12	20.31	21.16	0.1306
		16QAM	1	1	21.52	22.37	0.1726
			1	50	22.06	22.91	0.1954
		DFT-s-OFDM	25	12	22.43	23.28	0.2128
		64QAM	1	1	20.68	21.53	0.1422
			1	50	20.53	21.38	0.1374
		DFT-s-OFDM	25	12	20.86	21.71	0.1483
		256QAM	1	1	18.96	19.81	0.0957
			1	50	19.06	19.91	0.0979
		DFT-s-OFDM	25	12	19.23	20.08	0.1019

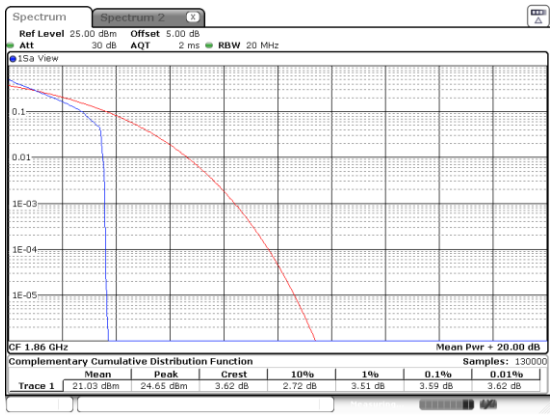
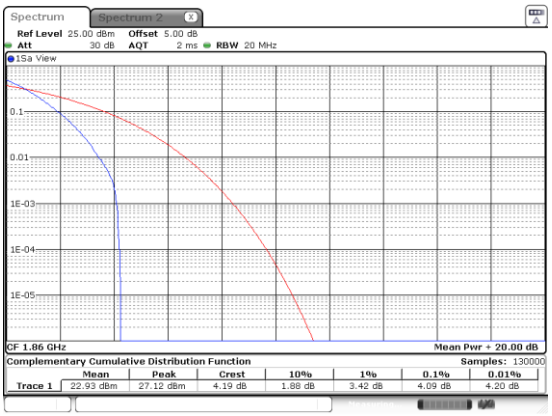
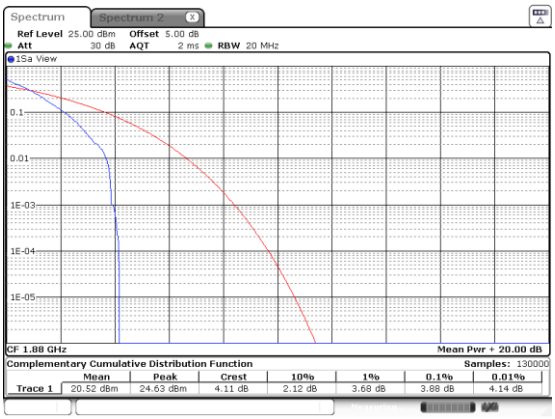
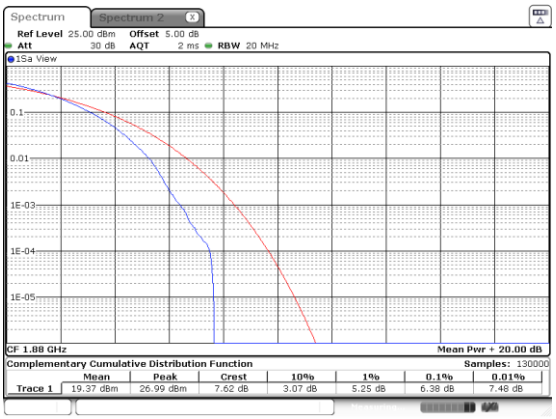
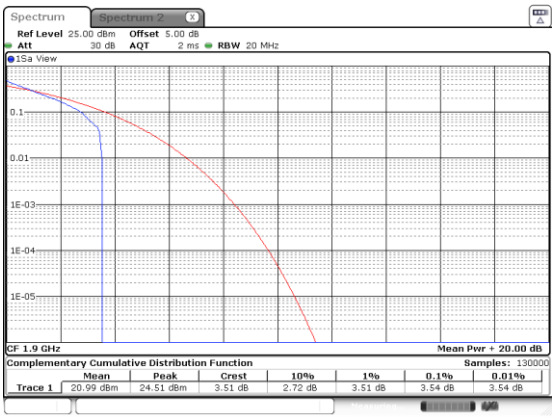
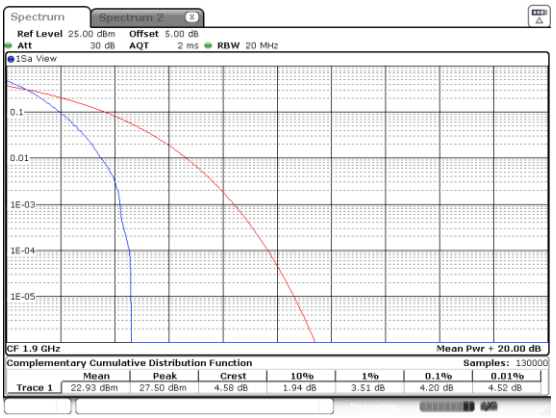
SA n71 (Antenna gain=0.85dBi)							
5MHz / DFT-s-OFDM							
NR Channel	NR Frequncey	Modulation	NR		NR		EIRP Power (W)
			RB Size	RB offset	Measured Power (dBm)	EIRP (dBm)	
133100	665.5	PI/2 BPSK DFT-s-OFDM	1	1	22.11	22.96	0.1977
			1	23	21.69	22.54	0.1795
			12	6	21.91	22.76	0.1888
		QPSK DFT-s-OFDM	1	1	22.22	23.07	0.2028
			1	23	21.88	22.73	0.1875
			12	6	22.13	22.98	0.1986
		16QAM DFT-s-OFDM	1	1	22.07	22.92	0.1959
			1	23	21.65	22.5	0.1778
			12	6	21.84	22.69	0.1858
		64QAM DFT-s-OFDM	1	1	20.74	21.59	0.1442
			1	23	20.41	21.26	0.1337
			12	6	20.72	21.57	0.1435
		256QAM DFT-s-OFDM	1	1	19.32	20.17	0.1040
			1	23	18.73	19.58	0.0908
			12	6	18.39	19.24	0.0839
136100	680.5	PI/2 BPSK DFT-s-OFDM	1	1	22.15	23	0.1995
			1	23	21.68	22.53	0.1791
			12	6	21.74	22.59	0.1816
		QPSK DFT-s-OFDM	1	1	22.05	22.9	0.1950
			1	23	21.76	22.61	0.1824
			12	6	21.86	22.71	0.1866
		16QAM DFT-s-OFDM	1	1	22.04	22.89	0.1945
			1	23	21.63	22.48	0.1770
			12	6	21.89	22.74	0.1879
		64QAM DFT-s-OFDM	1	1	19.82	20.67	0.1167
			1	23	19.96	20.81	0.1205
			12	6	20.11	20.96	0.1247
		256QAM DFT-s-OFDM	1	1	18.92	19.77	0.0948
			1	23	18.37	19.22	0.0836
			12	6	18.66	19.51	0.0893
139100	695.5	PI/2 BPSK	1	1	21.85	22.7	0.1862
			1	23	21.46	22.31	0.1702

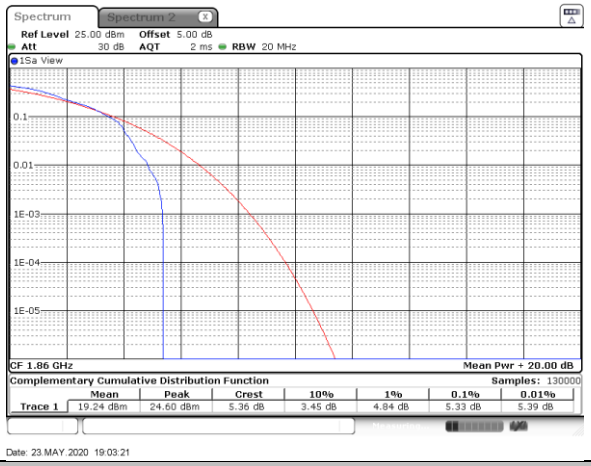
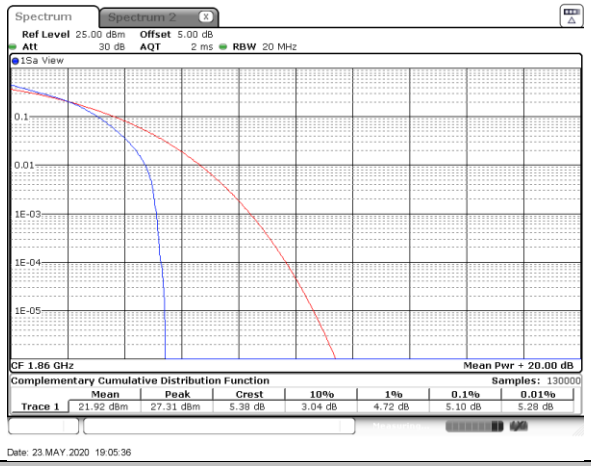
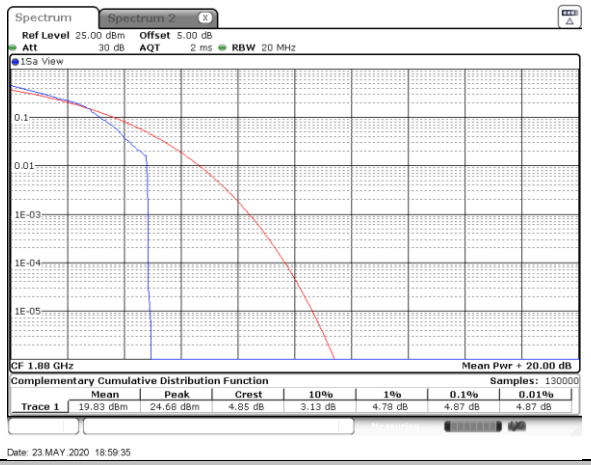
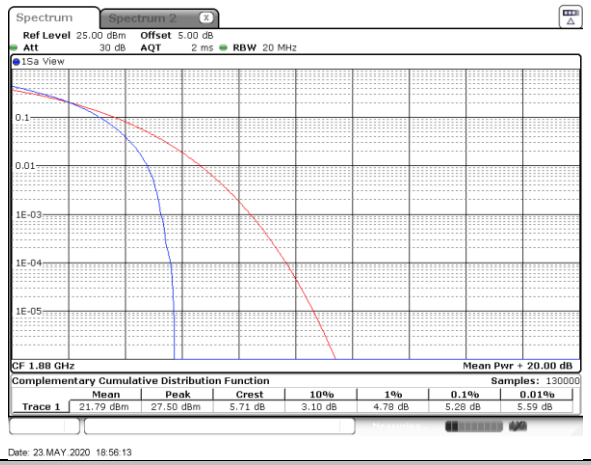
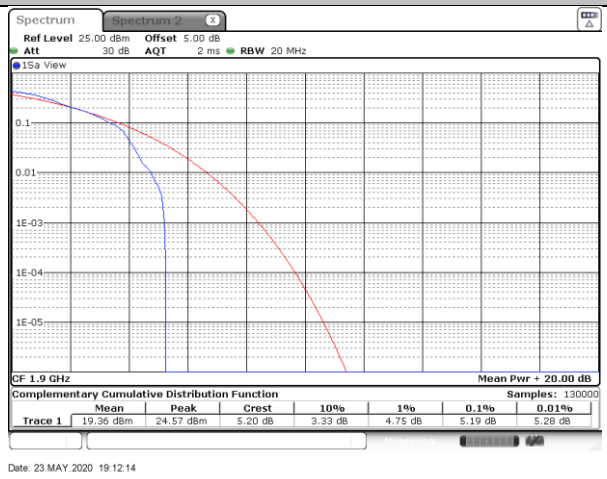
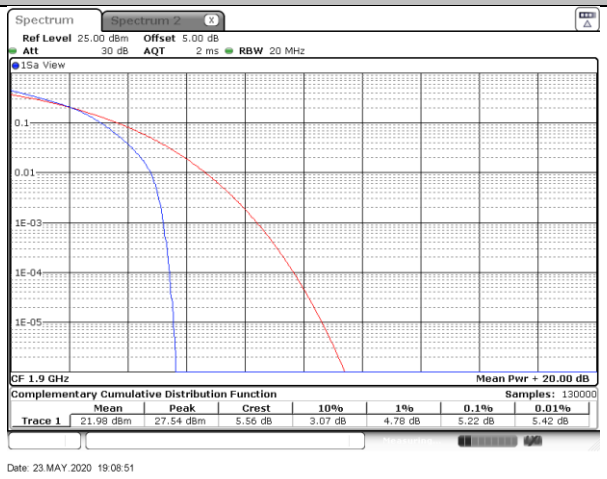
		DFT-s-OFDM	12	6	21.71	22.56	0.1803
		QPSK DFT-s-OFDM	1	1	21.76	22.61	0.1824
			1	23	21.71	22.56	0.1803
			12	6	21.83	22.68	0.1854
		16QAM DFT-s-OFDM	1	1	21.54	22.39	0.1734
			1	23	21.39	22.24	0.1675
			12	6	21.67	22.52	0.1786
		64QAM DFT-s-OFDM	1	1	20.01	20.86	0.1219
			1	23	19.94	20.79	0.1199
			12	6	19.79	20.64	0.1159
		256QAM DFT-s-OFDM	1	1	18.96	19.81	0.0957
			1	23	18.54	19.39	0.0869
			12	6	18.77	19.62	0.916

A2. 5G NR n2

A2.1. Peak-to-Average Ratio

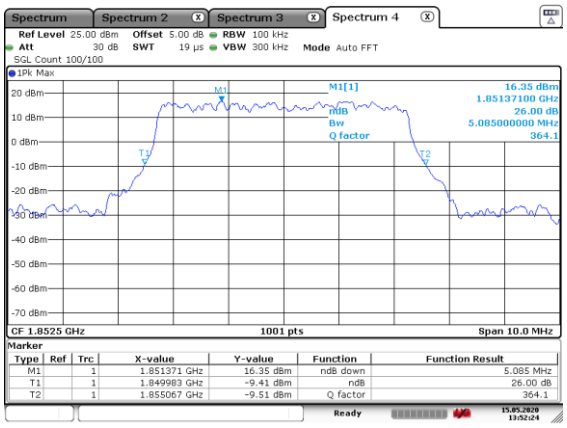
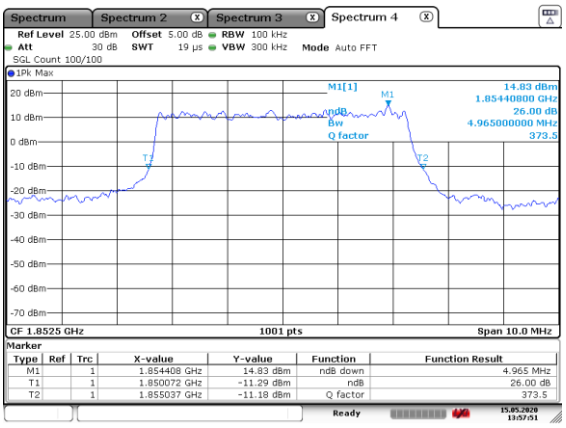
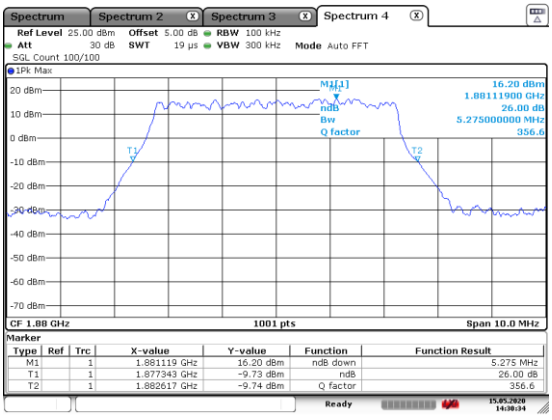
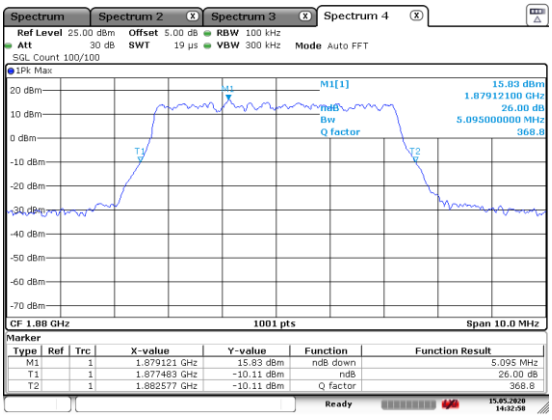
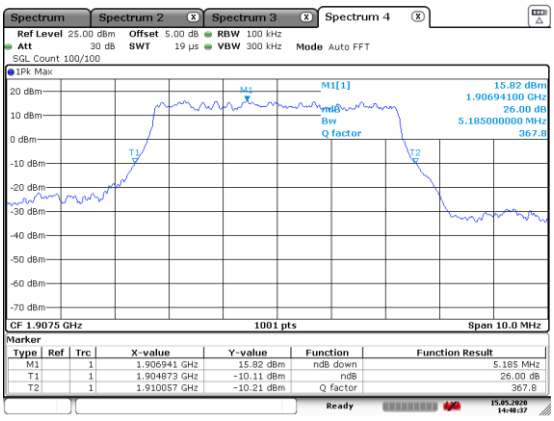
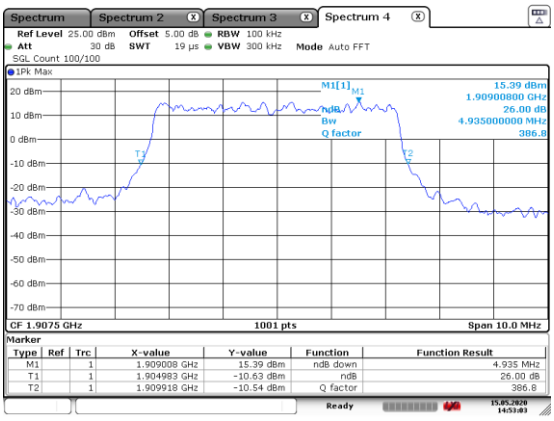
Mode	n2 / 20MHz				
Mod.	BPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	3.59	4.09	5.33	5.10	PASS
Middle CH	3.88	6.38	4.87	5.28	
Highest CH	3.54	4.20	5.19	5.22	

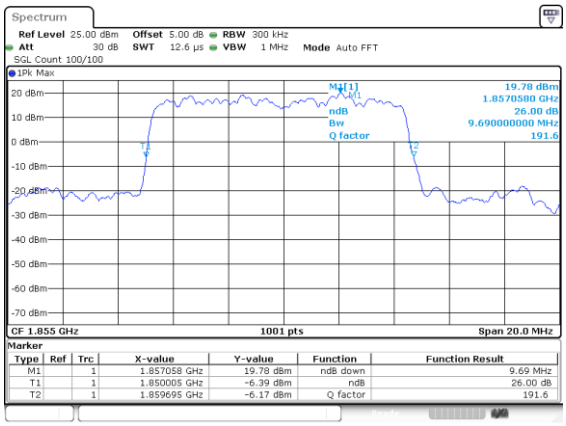
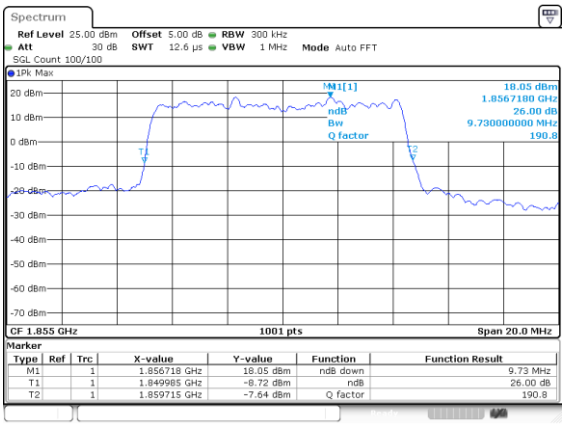
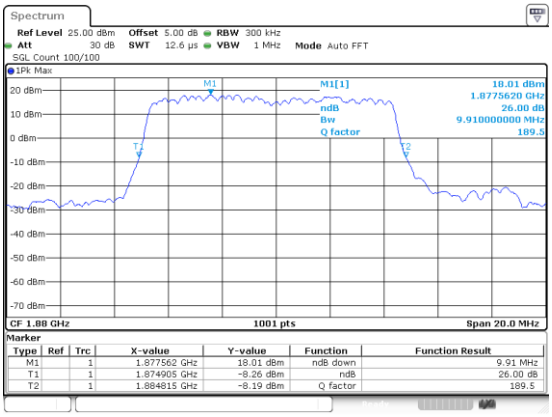
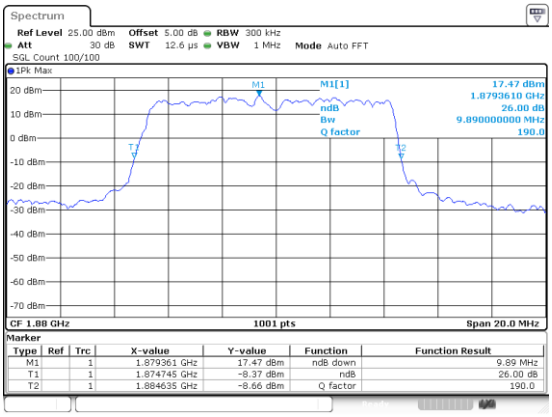
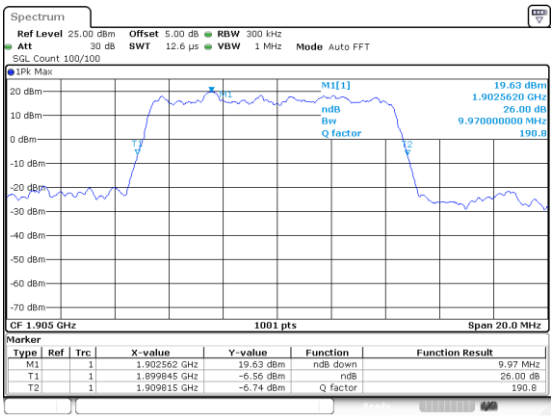
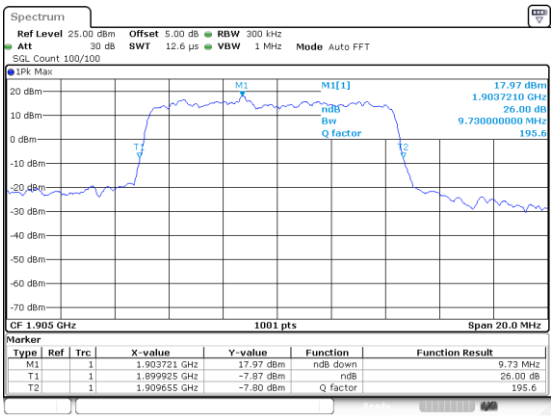
20MHz / BPSK	
Lowest Channel / 1RB0	**Lowest Channel / 100RB0**
	
Middle Channel / 1RB0	**Middle Channel / 100RB0**
	
Highest Channel / 1RB0	**Highest Channel / 100RB0**
	

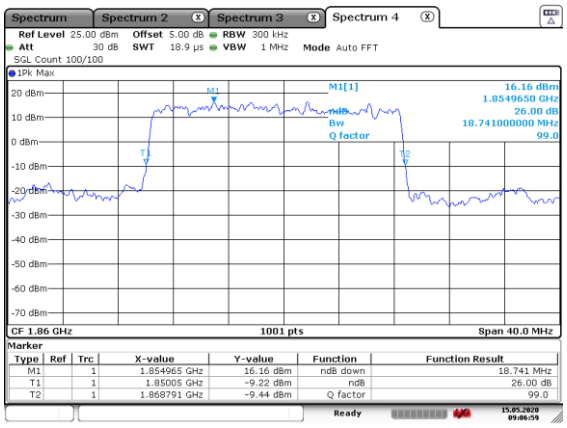
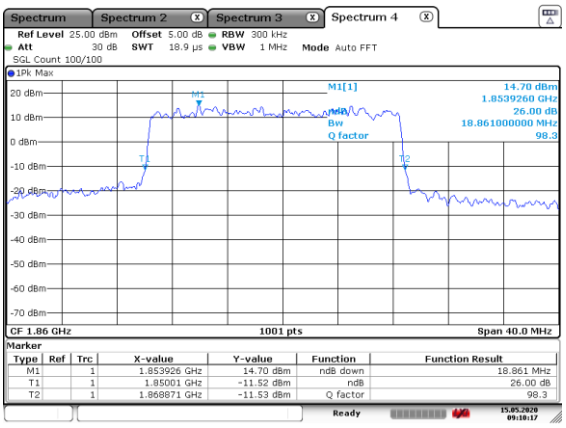
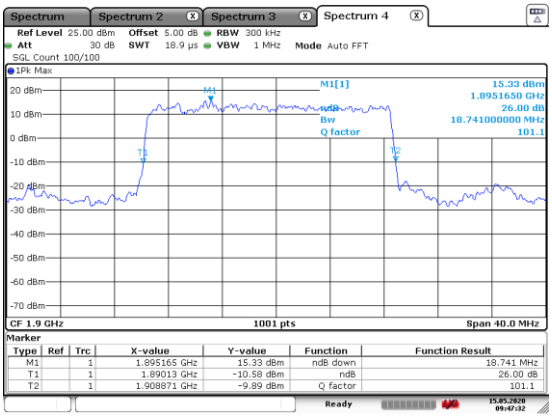
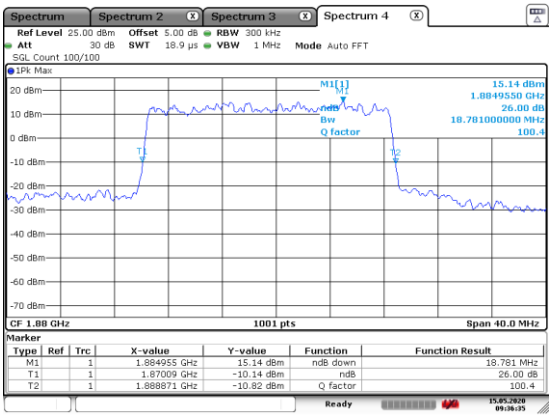
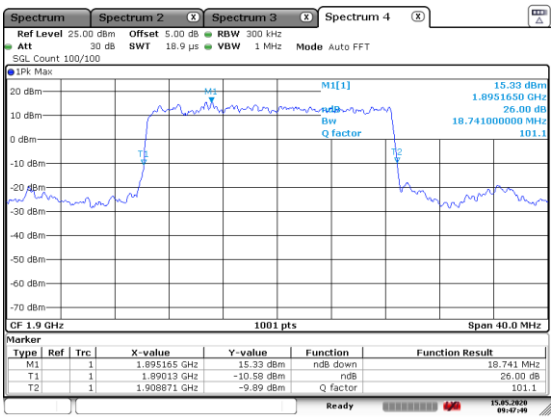
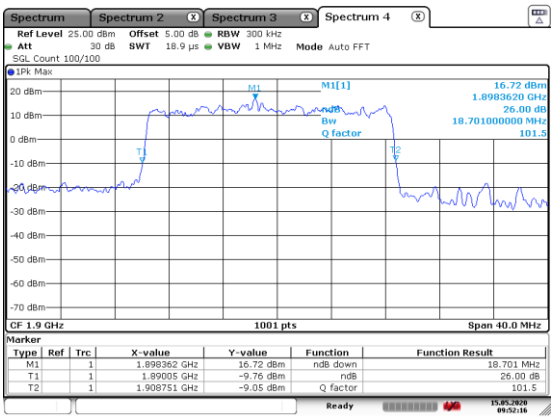
20MHz / 16QAM	
Lowest Channel / 1RB0	**Lowest Channel / 100RB0**
	
Middle Channel / 1RB0	**Middle Channel / 100RB0**
	
Highest Channel / 1RB0	**Highest Channel / 100RB0**
	

A2.2. 26dB Bandwidth

Mode	n2 : 26dB BW(MHz)					
BW	5MHz		10MHz		20MHz	
Mod.	BPSK	16QAM	BPSK	16QAM	BPSK	16QAM
Lowest CH	5.09	4.97	9.69	9.73	18.74	18.86
Middle CH	5.28	5.10	9.91	9.89	18.74	18.78
Highest CH	5.19	4.94	9.97	9.73	18.74	18.70

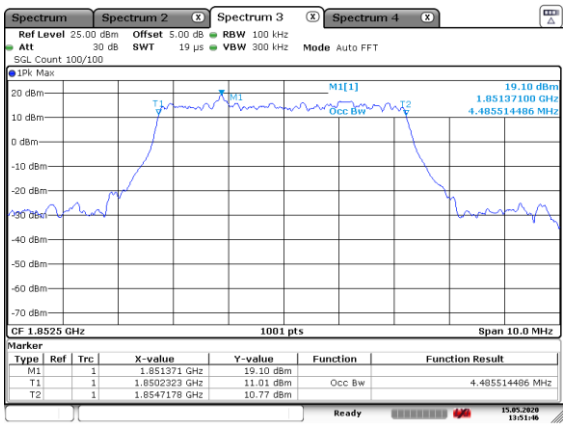
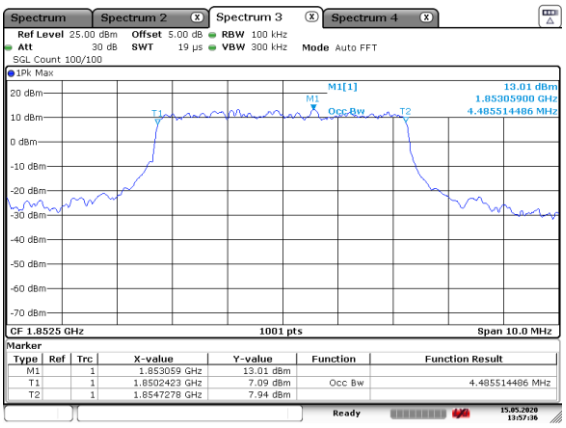
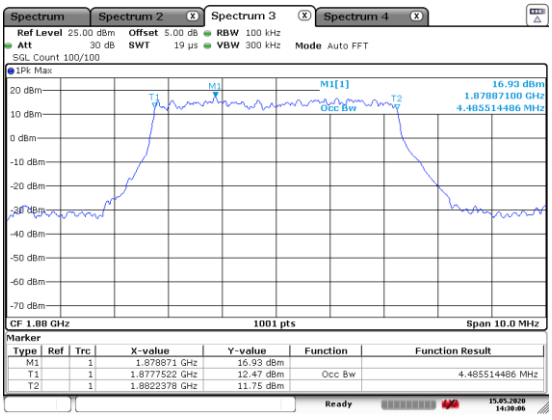
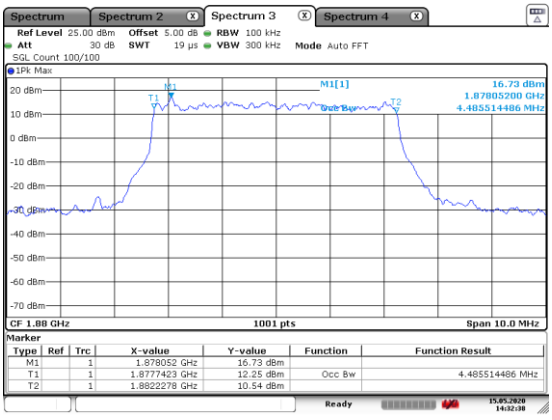
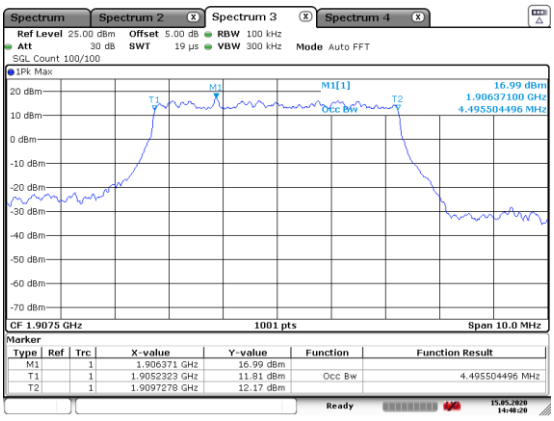
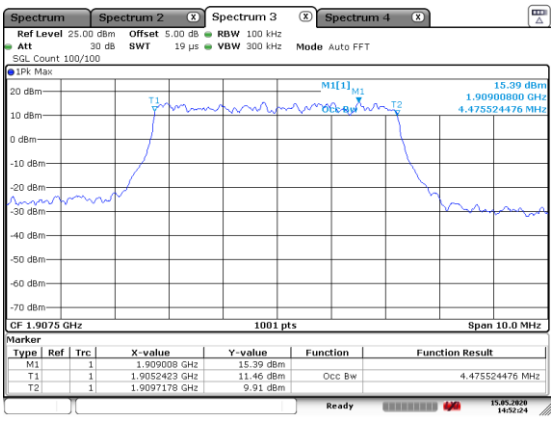
n2	
5MHz	
Lowest Channel / BPSK	Lowest Channel / 16QAM
	
Middle Channel / BPSK	Middle Channel / 16QAM
	
Highest Channel / BPSK	Highest Channel / 16QAM
	

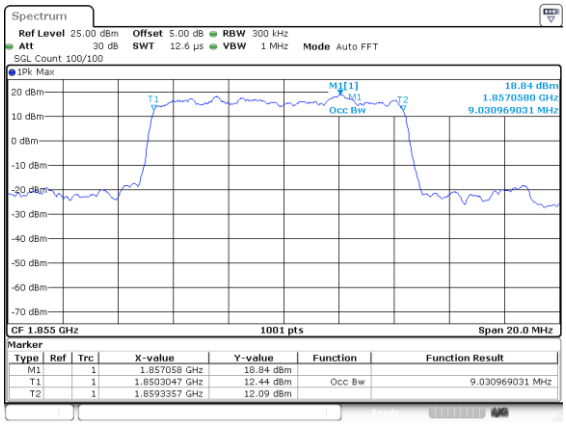
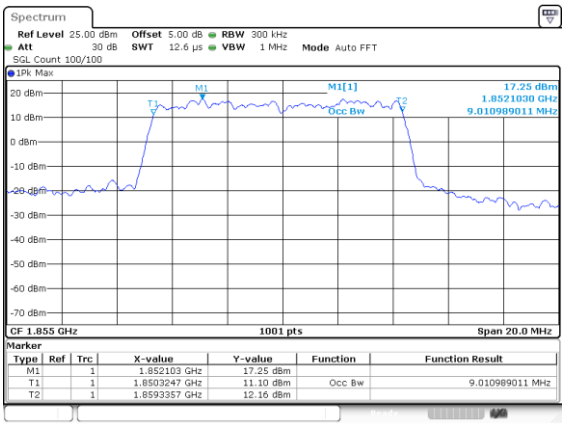
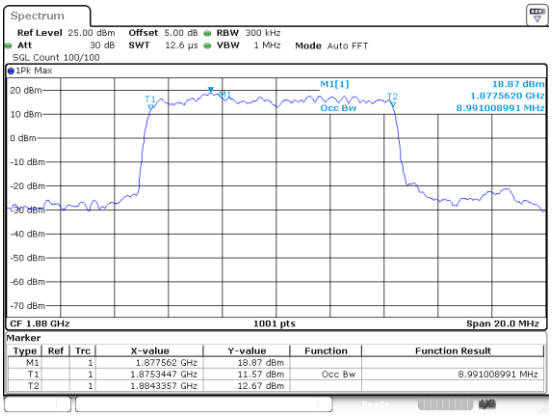
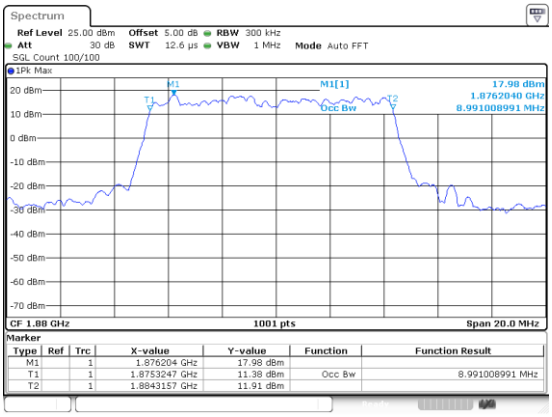
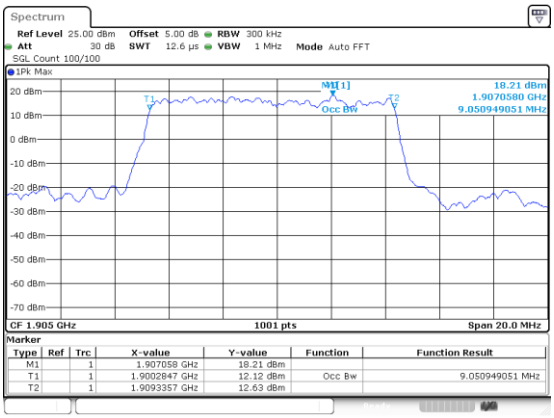
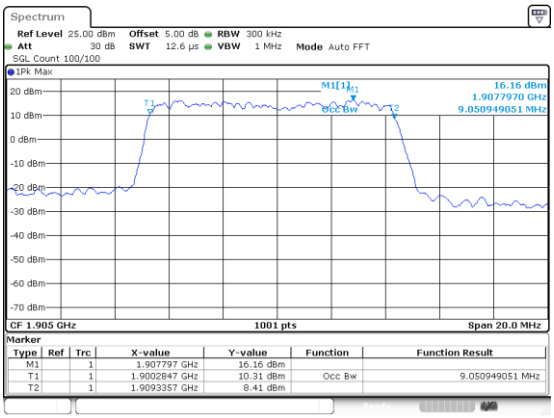
n2	
10MHz	
Lowest Channel / BPSK	Lowest Channel / 16QAM
	
Middle Channel / BPSK	Middle Channel / 16QAM
	
Highest Channel / BPSK	Highest Channel / 16QAM
	

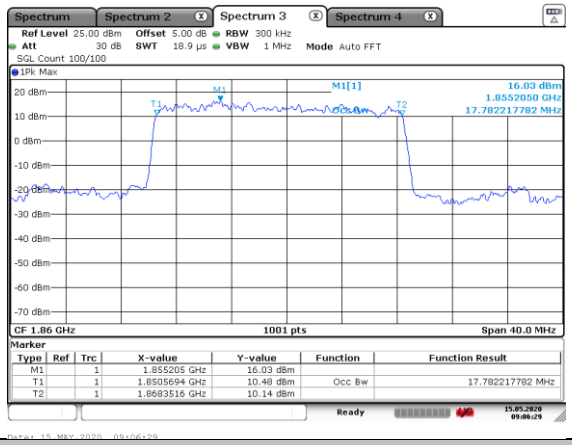
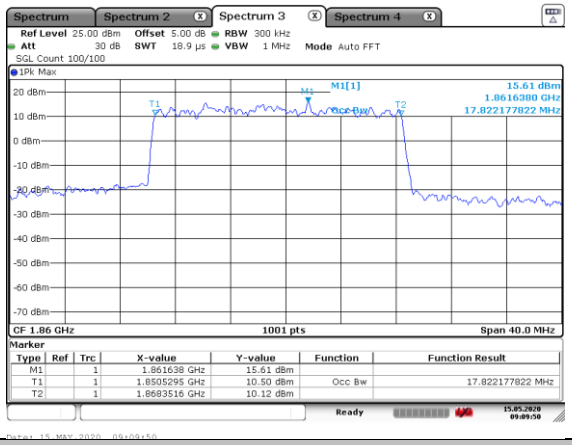
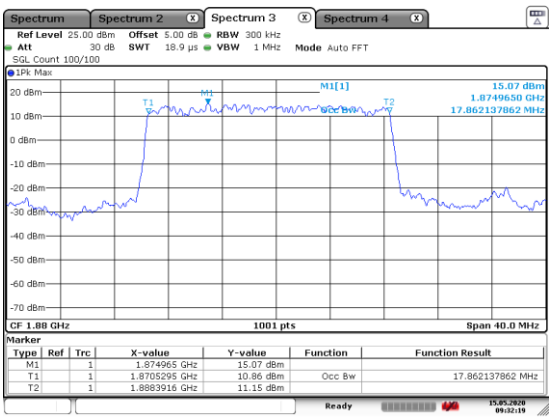
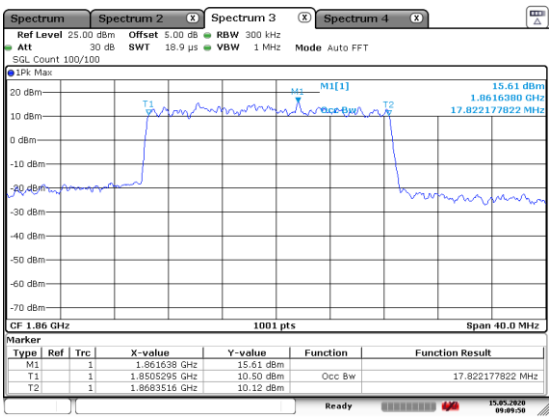
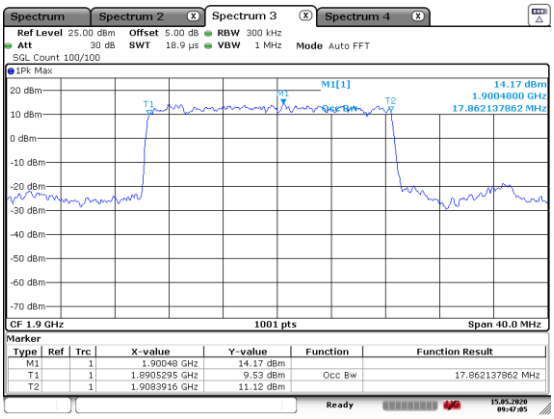
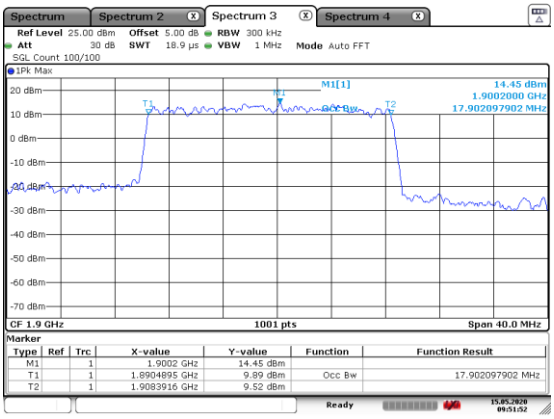
n2	
20MHz	
Lowest Channel / BPSK	Lowest Channel / 16QAM
	
Middle Channel / BPSK	Middle Channel / 16QAM
	
Highest Channel / BPSK	Highest Channel / 16QAM
	

A2.3. Occupied Bandwidth

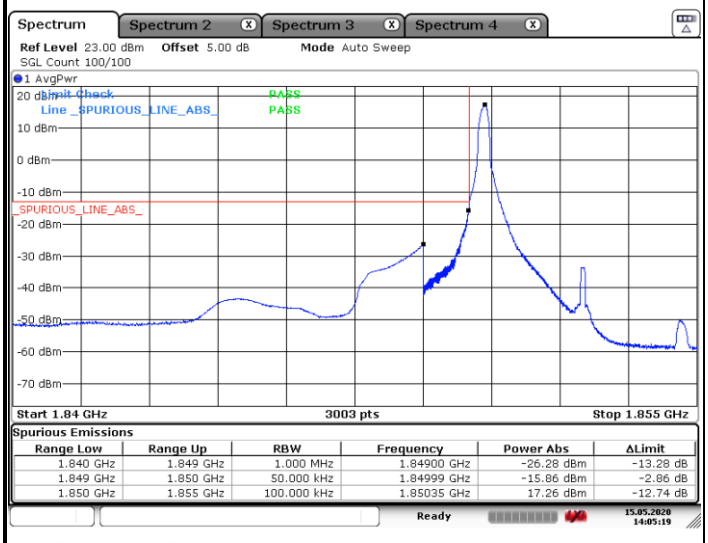
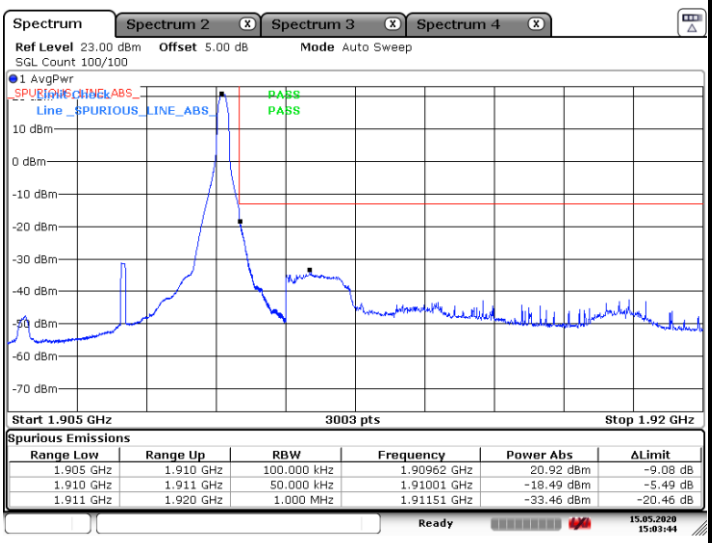
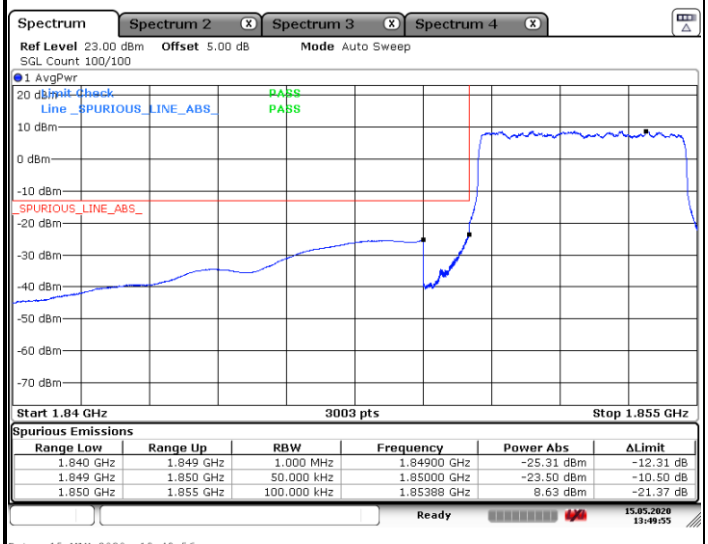
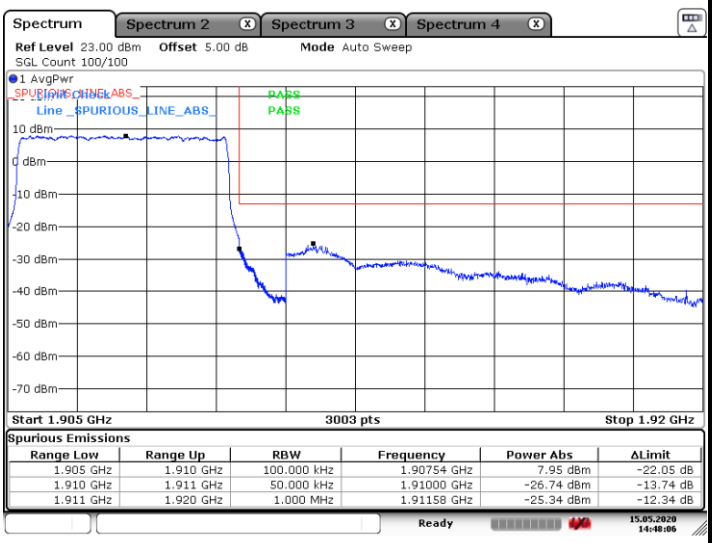
Mode	n2 : OB BW(MHz)					
BW	5MHz		10MHz		20MHz	
Mod.	BPSK	16QAM	BPSK	16QAM	BPSK	16QAM
Lowest CH	4.49	4.49	9.03	9.01	17.78	17.82
Middle CH	4.49	4.49	8.99	8.99	17.86	17.82
Highest CH	4.50	4.48	9.05	9.05	17.86	17.90

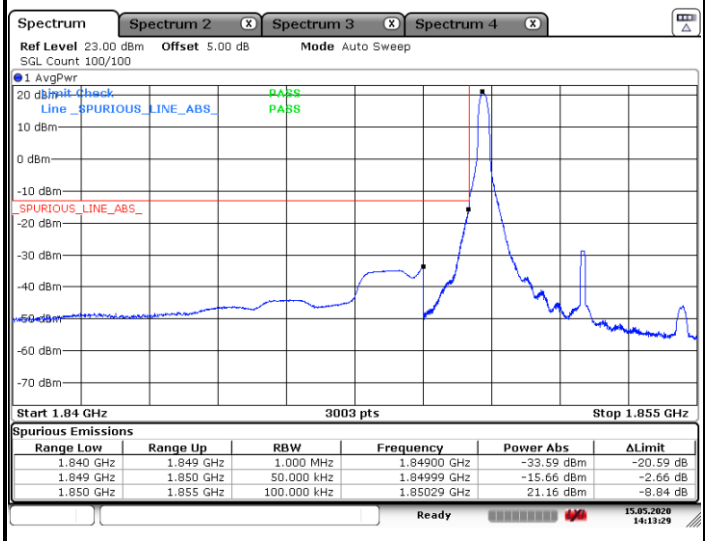
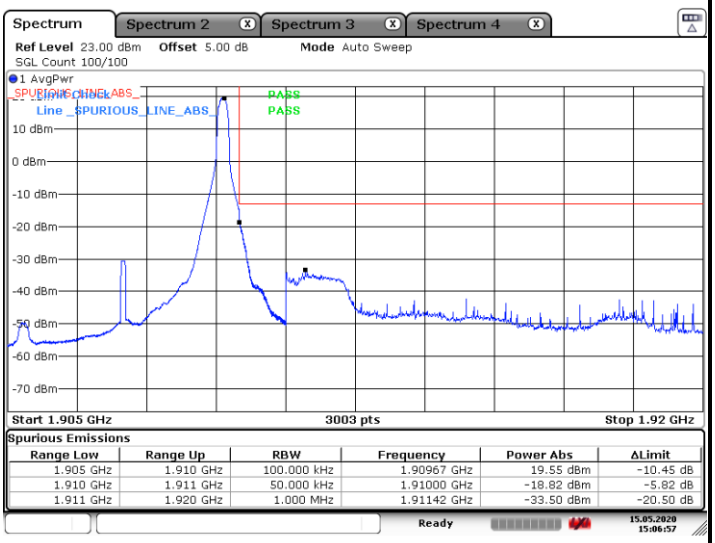
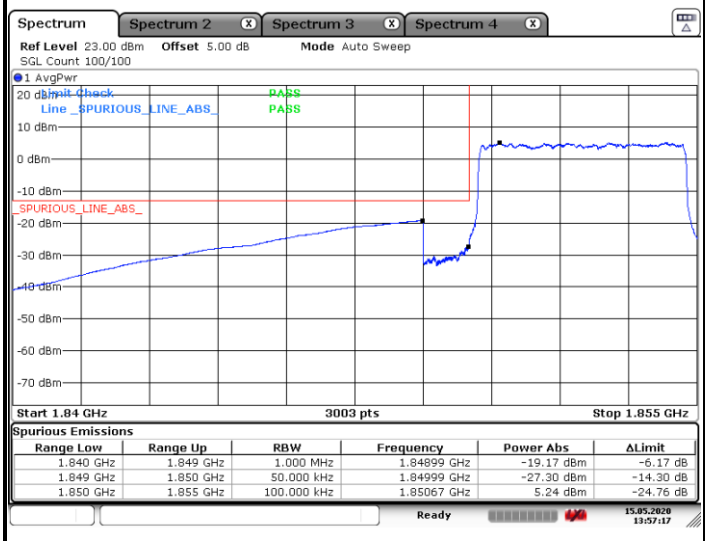
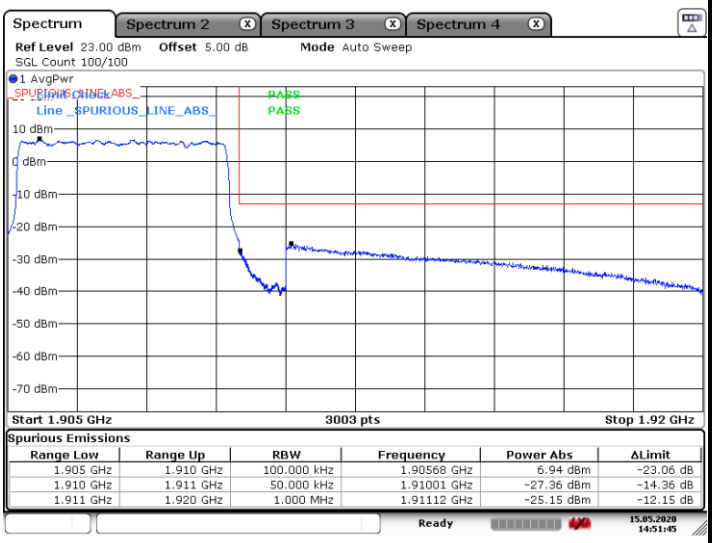
n2	
5MHz	
Lowest Channel / BPSK	Lowest Channel / 16QAM
	
Middle Channel / BPSK	Middle Channel / 16QAM
	
Highest Channel / BPSK	Highest Channel / 16QAM
	

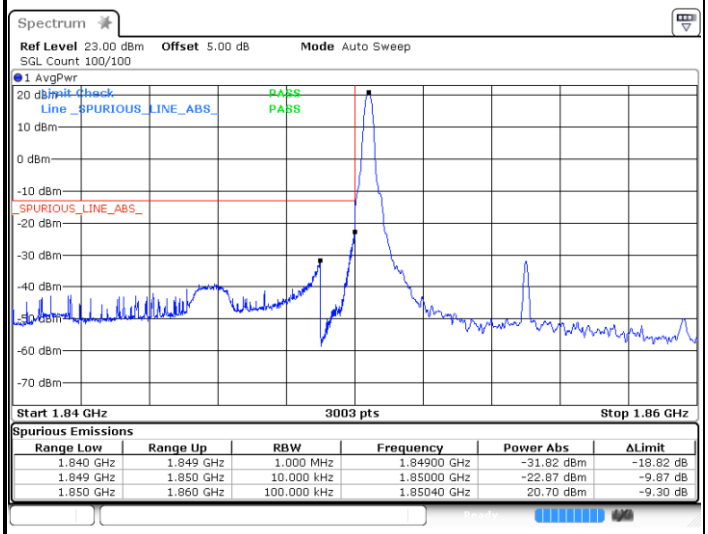
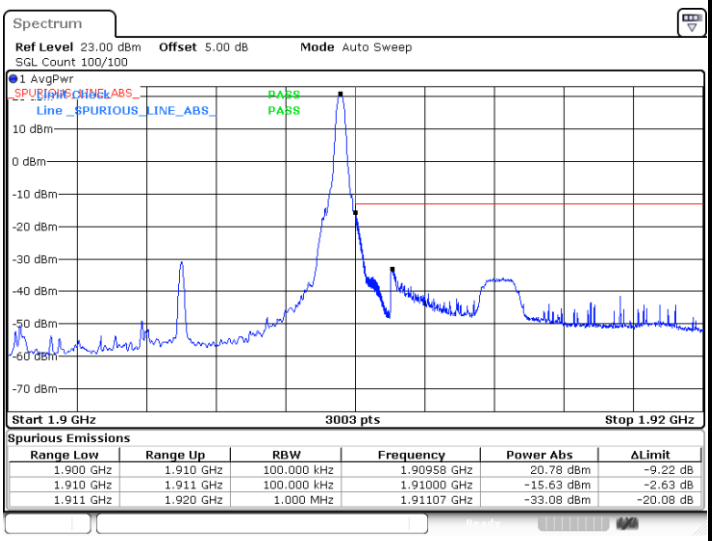
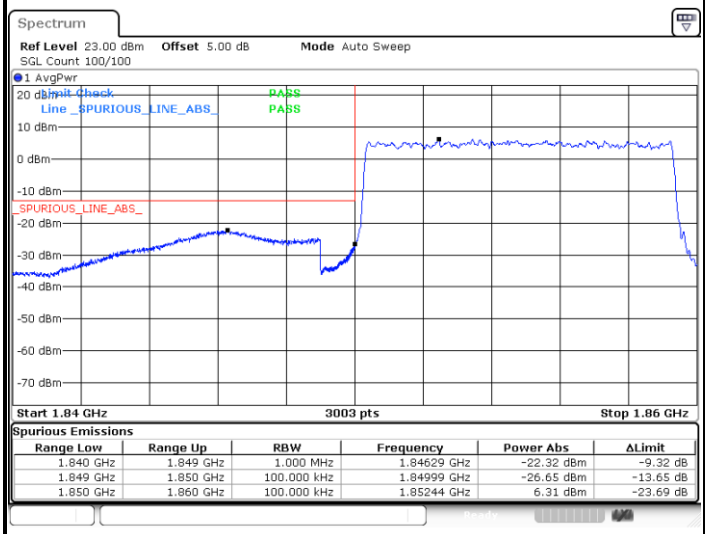
n2	
10MHz	
Lowest Channel / BPSK	Lowest Channel / 16QAM
	
Middle Channel / BPSK	Middle Channel / 16QAM
	
Highest Channel / BPSK	Highest Channel / 16QAM
	

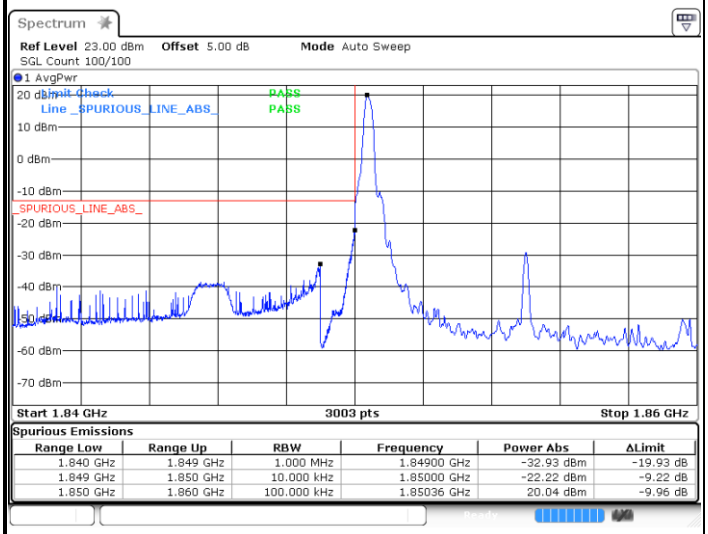
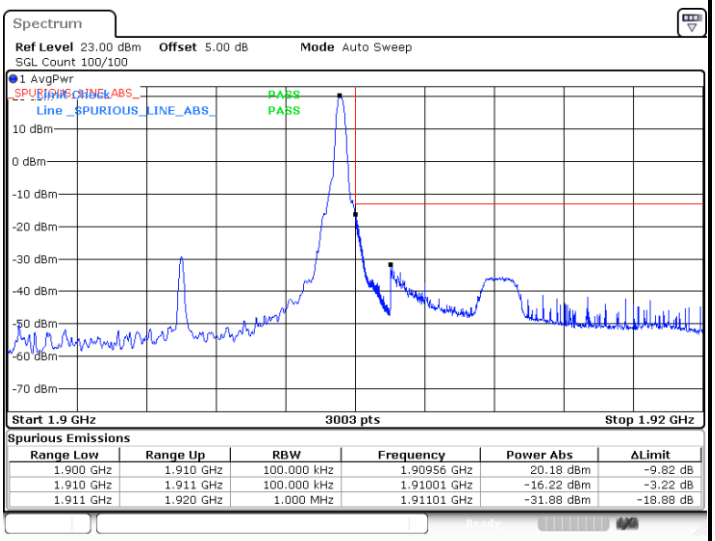
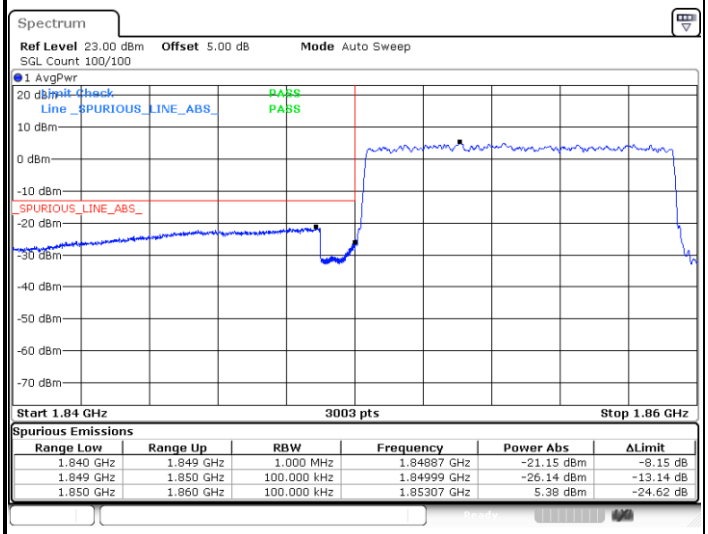
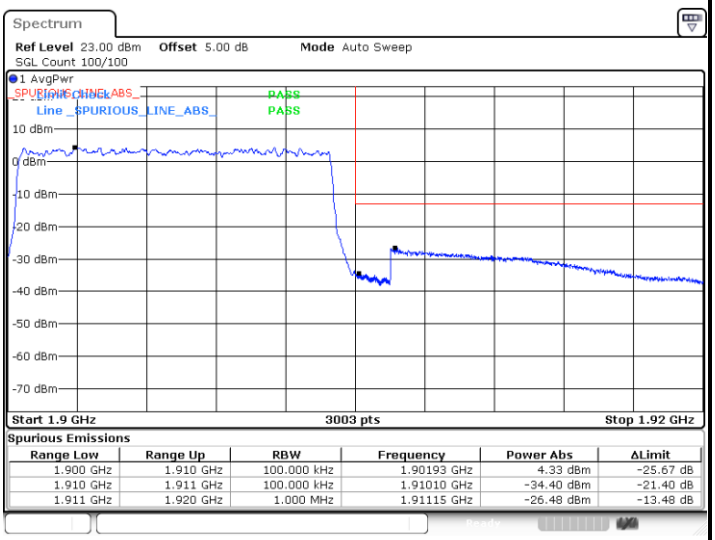
n2	
20MHz	
Lowest Channel / BPSK	Lowest Channel / 16QAM
	
Middle Channel / BPSK	Middle Channel / 16QAM
	
Highest Channel / BPSK	Highest Channel / 16QAM
	

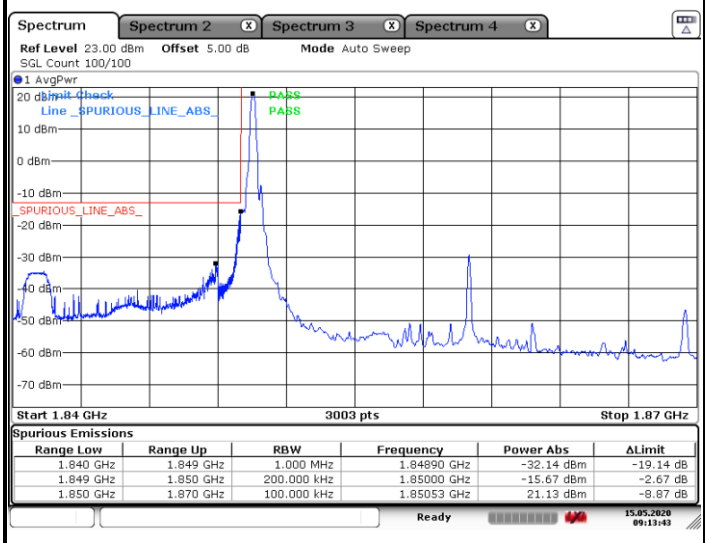
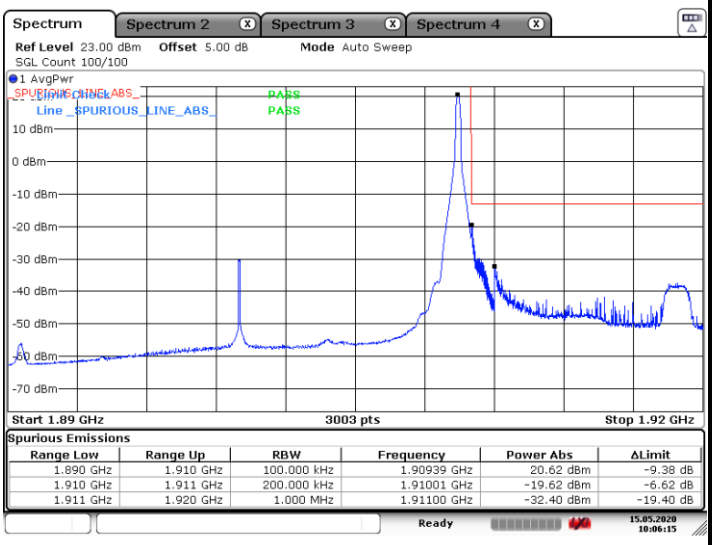
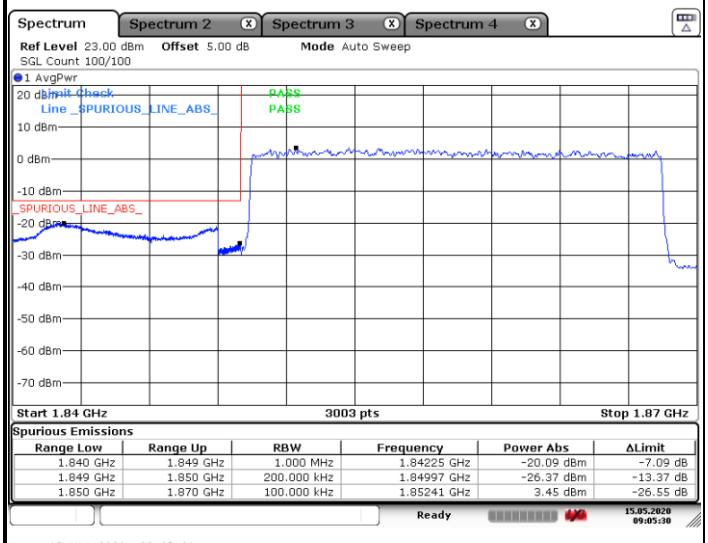
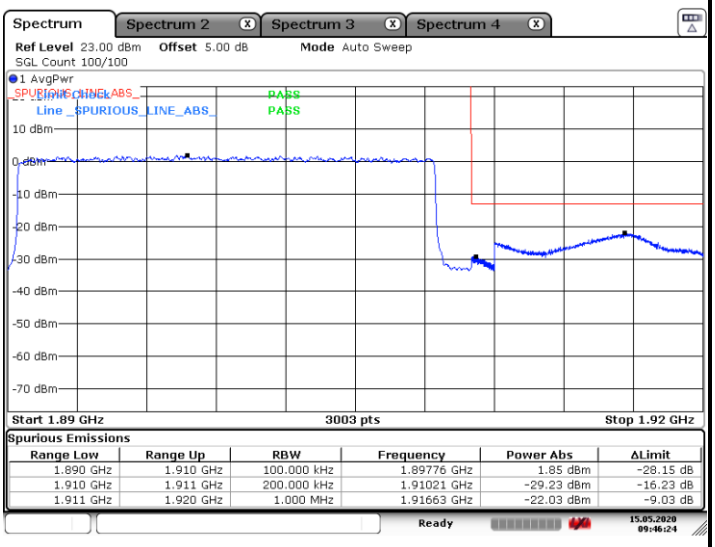
A2.4. Conducted Band Edge

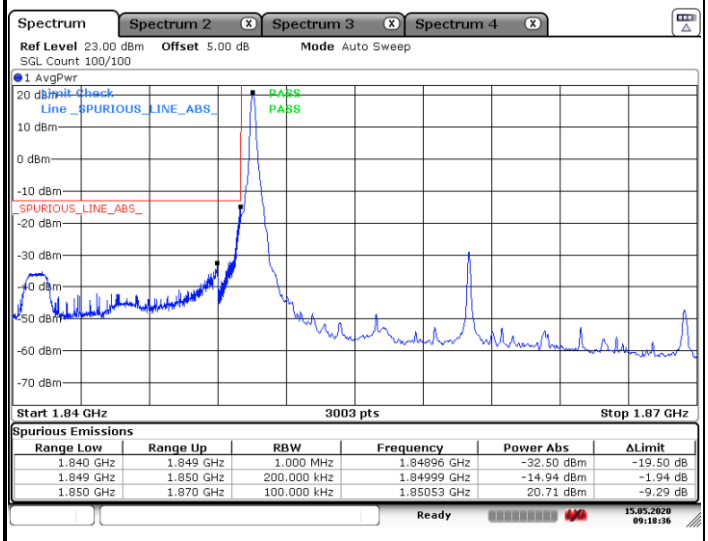
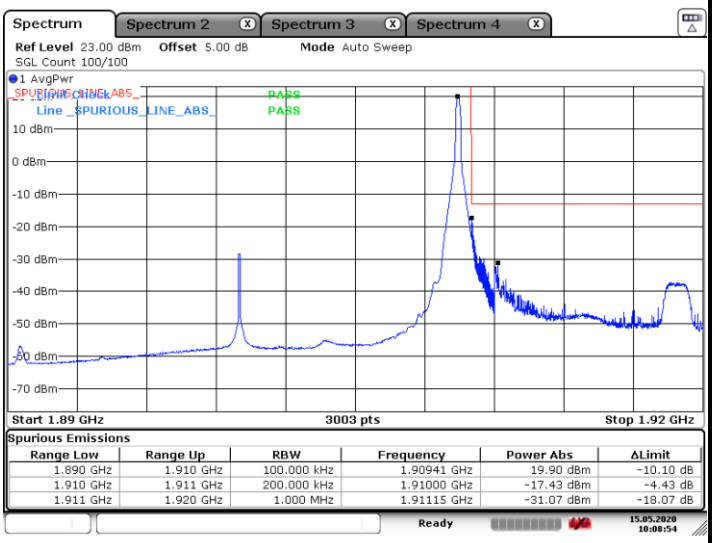
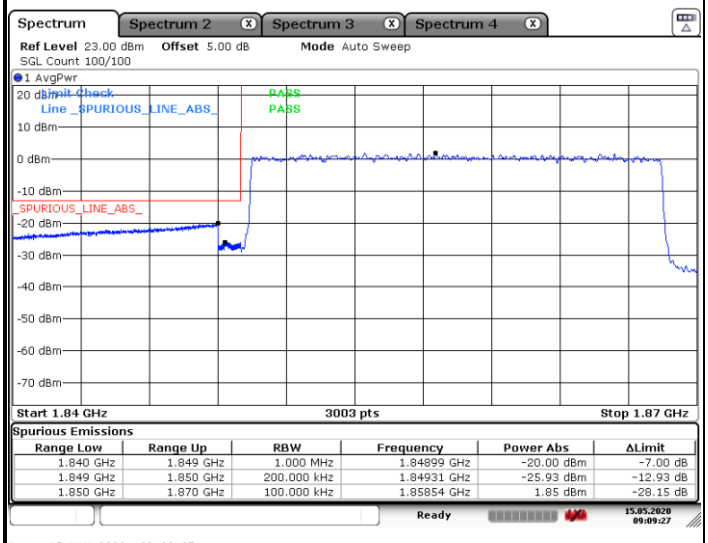
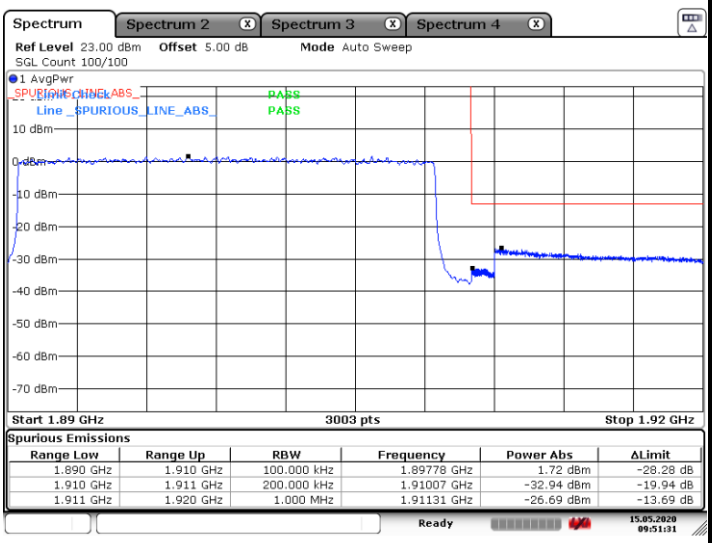
n2 / 5MHz / BPSK	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RB24**
	
Lowest Band Edge / 25RB0	**Highest Band Edge / 25RB0**
	

n2 / 5MHz / 16QAM	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RB24**
	
Lowest Band Edge / 25RB0	**Highest Band Edge / 25RB0**
	

n2 / 10MHz / BPSK	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RB51**
	
Lowest Band Edge / 50RB0	**Highest Band Edge / 50RB0**
	

n2 / 10MHz / 16QAM	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RB51**
	
Lowest Band Edge / 50RB0	**Highest Band Edge / 50RB0**
	

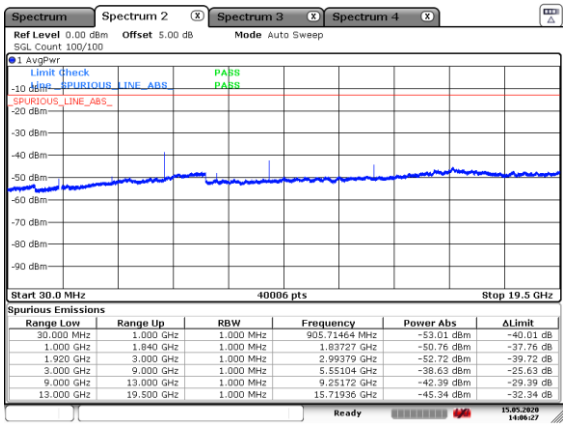
n2 / 20MHz / BPSK	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RB105**
	
Lowest Band Edge / 100RB0	**Highest Band Edge / 100RB0**
	

n2 / 20MHz / 16QAM	
Lowest Band Edge / 1RB0	**Highest Band Edge / 1RB105**
	
Lowest Band Edge / 100RB0	**Highest Band Edge / 100RB0**
	

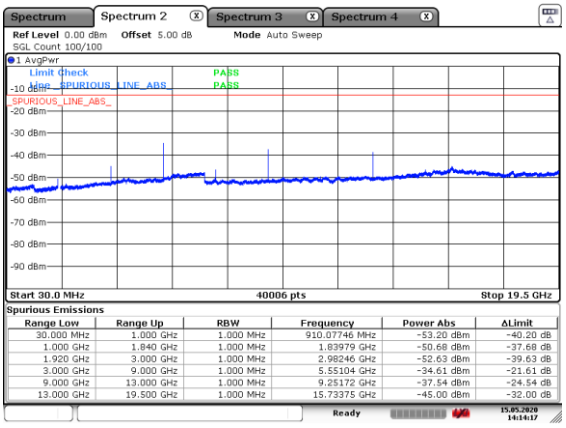
A2.5. Conducted Spurious Emission

n2 / 5MHz

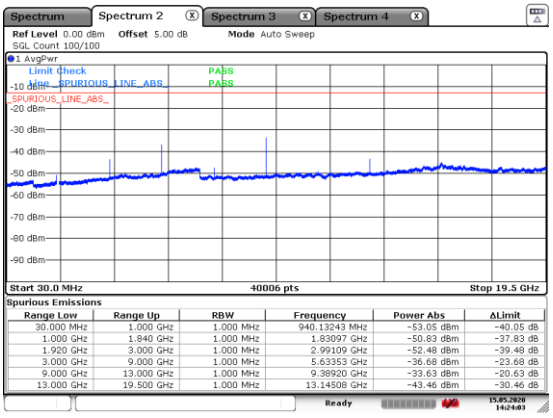
Lowest Channel / BPSK



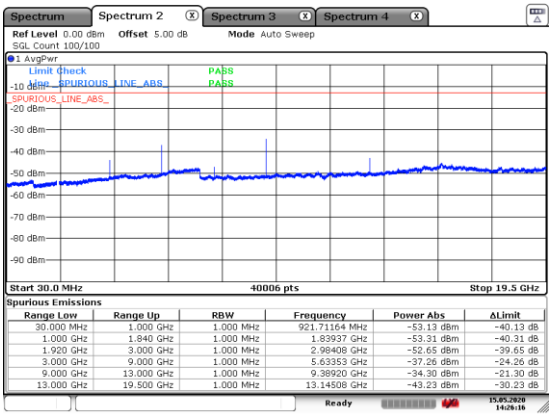
Lowest Channel / 16QAM



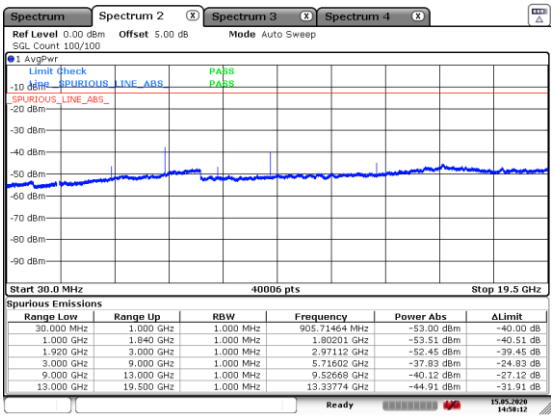
Middle Channel / BPSK



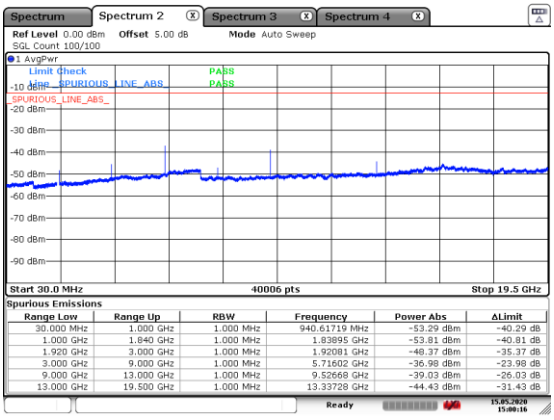
Middle Channel / 16QAM



Highest Channel / BPSK

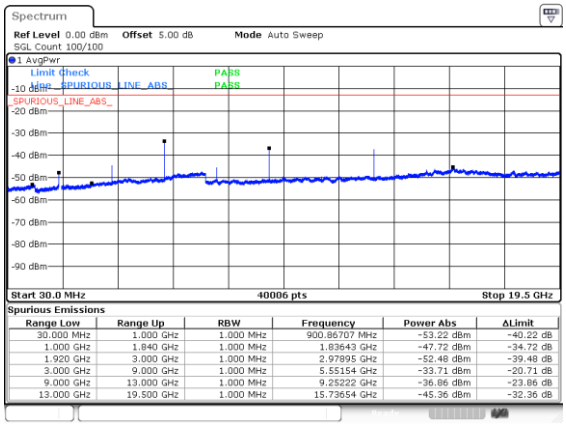


Highest Channel / 16QAM



n2 / 10MHz

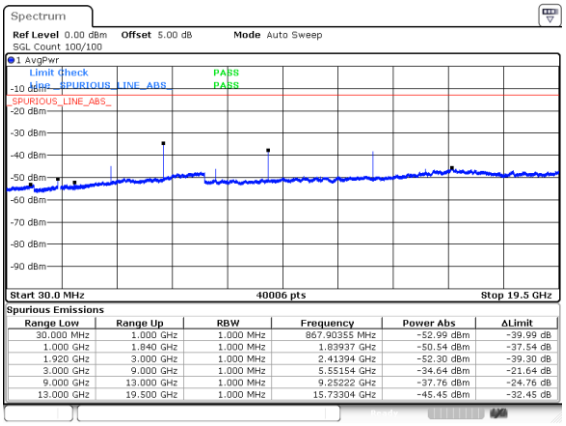
Lowest Channel / BPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	900.86707 MHz	-53.22 dBm	-40.22 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.83643 GHz	-47.72 dBm	-34.72 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.97895 GHz	-52.48 dBm	-39.48 dB
3.000 GHz	9.000 GHz	1.000 MHz	5.55154 GHz	-33.71 dBm	-20.71 dB
9.000 GHz	13.000 GHz	1.000 MHz	9.25222 GHz	-36.86 dBm	-23.86 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.73654 GHz	-45.36 dBm	-32.36 dB

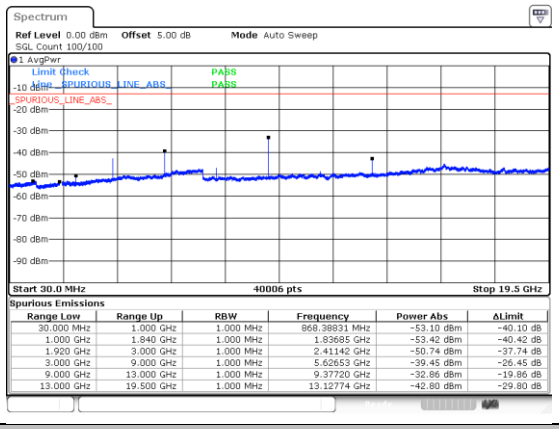
Lowest Channel / 16QAM



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	867.90355 MHz	-52.99 dBm	-39.99 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.83937 GHz	-50.54 dBm	-37.54 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.41394 GHz	-52.30 dBm	-39.30 dB
3.000 GHz	9.000 GHz	1.000 MHz	5.55154 GHz	-34.64 dBm	-21.64 dB
9.000 GHz	13.000 GHz	1.000 MHz	9.25222 GHz	-37.76 dBm	-24.76 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.73304 GHz	-45.45 dBm	-32.45 dB

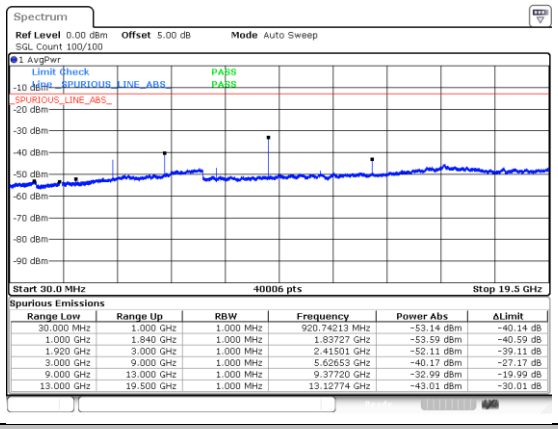
Middle Channel / BPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	868.38831 MHz	-53.10 dBm	-40.10 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.83685 GHz	-53.42 dBm	-40.42 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.41142 GHz	-50.74 dBm	-37.74 dB
3.000 GHz	9.000 GHz	1.000 MHz	5.62653 GHz	-39.45 dBm	-26.45 dB
9.000 GHz	13.000 GHz	1.000 MHz	9.37720 GHz	-32.86 dBm	-19.86 dB
13.000 GHz	19.500 GHz	1.000 MHz	13.12774 GHz	-42.80 dBm	-29.80 dB

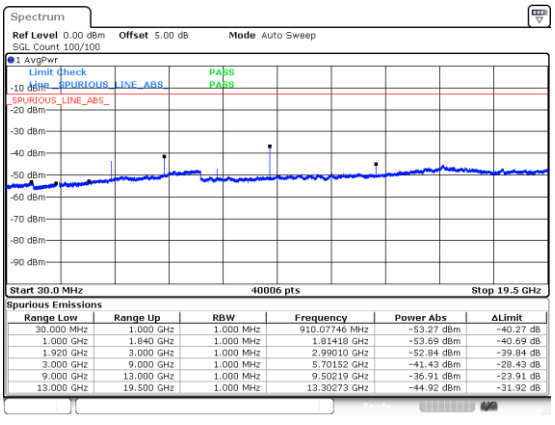
Middle Channel / 16QAM



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	920.74213 MHz	-53.14 dBm	-40.14 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.83727 GHz	-53.59 dBm	-40.59 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.41501 GHz	-52.11 dBm	-39.11 dB
3.000 GHz	9.000 GHz	1.000 MHz	5.62653 GHz	-40.17 dBm	-27.17 dB
9.000 GHz	13.000 GHz	1.000 MHz	9.37720 GHz	-32.99 dBm	-19.99 dB
13.000 GHz	19.500 GHz	1.000 MHz	13.12774 GHz	-43.01 dBm	-30.01 dB

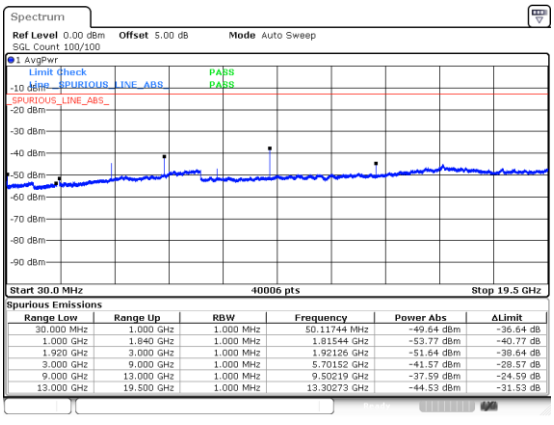
Highest Channel / BPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	910.07746 MHz	-53.27 dBm	-40.27 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.81418 GHz	-53.69 dBm	-40.69 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.99010 GHz	-52.84 dBm	-39.84 dB
3.000 GHz	9.000 GHz	1.000 MHz	5.70152 GHz	-41.43 dBm	-28.43 dB
9.000 GHz	13.000 GHz	1.000 MHz	9.50219 GHz	-36.91 dBm	-23.91 dB
13.000 GHz	19.500 GHz	1.000 MHz	13.30273 GHz	-44.92 dBm	-31.92 dB

Highest Channel / 16QAM

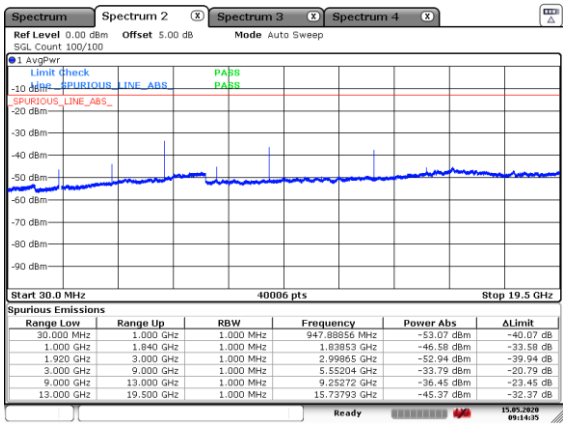


Spurious Emissions

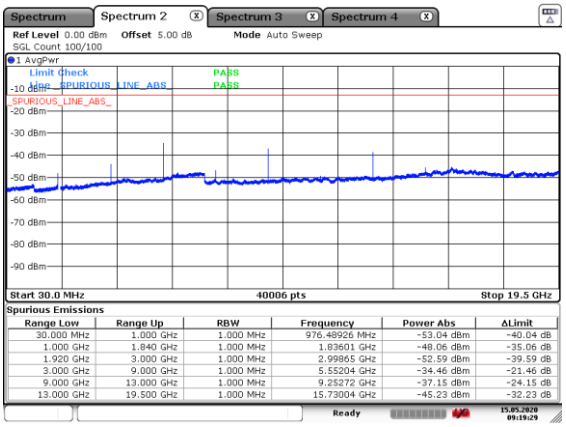
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	50.11744 MHz	-49.64 dBm	-36.64 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.81544 GHz	-53.77 dBm	-40.77 dB
1.920 GHz	3.000 GHz	1.000 MHz	1.92126 GHz	-51.64 dBm	-38.64 dB
3.000 GHz	9.000 GHz	1.000 MHz	5.70152 GHz	-41.57 dBm	-28.57 dB
9.000 GHz	13.000 GHz	1.000 MHz	9.50219 GHz	-37.59 dBm	-24.59 dB
13.000 GHz	19.500 GHz	1.000 MHz	13.30273 GHz	-44.53 dBm	-31.53 dB

n2 / 20MHz

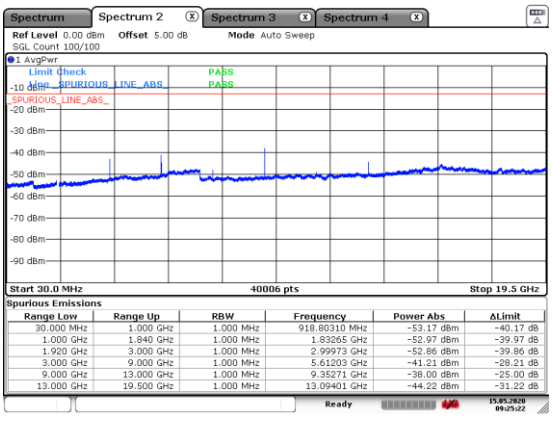
Lowest Channel / BPSK



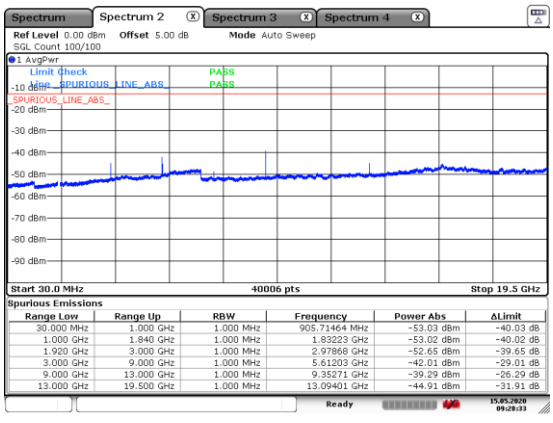
Lowest Channel / 16QAM



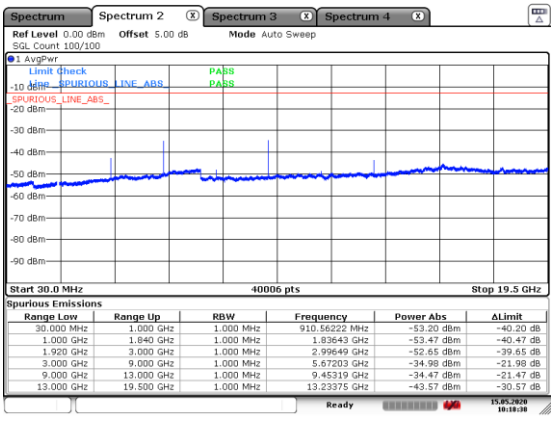
Middle Channel / BPSK



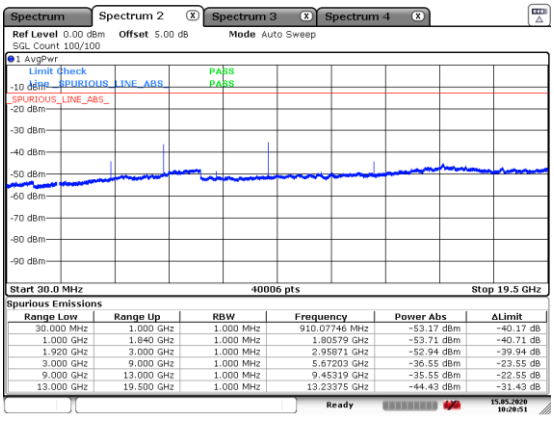
Middle Channel / 16QAM



Highest Channel / BPSK



Highest Channel / 16QAM



A2.6. Frequency Stability

Test Conditions		n2 (BPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	NR 20MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0017	PASS
40	Normal Voltage	0.0011	
30	Normal Voltage	0.0018	
20(Ref.)	Normal Voltage	0.0013	
10	Normal Voltage	0.0015	
0	Normal Voltage	0.0021	
-10	Normal Voltage	0.0005	
-20	Normal Voltage	0.0007	
-30	Normal Voltage	0.0005	
20	Maximum Voltage	0.0021	
20	Normal Voltage	0.0013	
20	Battery End Point	0.0004	

Note:

1. Normal Voltage =110 V. ; Battery End Point (BEP) =100 V. ; Maximum Voltage =120 V.

2. Note: The frequency fundamental emissions stay within the authorized frequency block.

A3. 5G NR n25

A3.1. Peak-to-Average Ratio

Mode	n25 / 20MHz				
Mod.	BPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	4.00	3.54	4.52	5.36	PASS
Middle CH	4.14	3.42	4.64	5.33	
Highest CH	4.12	3.48	4.64	5.42	