MEASUREMENT REPORT

FCC PART 24 Subpart E & PART 27 Subpart C

FCC ID:	2AD8UAHFID01
Application:	Nokia Solutions and Networks, OY

Application Type:	Certification
Product:	AirScale Indoor Radio ASiR-pRRH
Model No.:	AHFID
Brand Name:	Nokia
FCC Rule Part(s):	Part 24 Subpart E & Part 27 Subpart C
Test Procedure(s):	ANSI C63.26-2015, KDB 971168 D01v03r01
Test Date:	January 24 ~ May 20 , 2019

Reviewed: Paddy Chen

(Paddy Chen)

Approved By:

(Chenz Ker)

Testing Laboratory
3261

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.26-2015. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
1905TW0105-U2	Rev. 01	Initial Report	06-24-2019	Valid

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Description Page

§2.1033 General Information

Applicant:	Nokia Solutions and Networks, OY
Applicant Address:	2000 W. Lucent Lane, Naperville, Illinois, United States, 60563
Manufacturer:	Nokia Solutions and Networks, OY
Manufacturer Address:	2000 W. Lucent Lane, Naperville, Illinois, United States, 60563
Test Site:	MRT Technology (Taiwan) Co., Ltd
Test Site Address:	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Fuxing Rd., Taoyuan, Taiwan (R.O.C)

- **MRT facility is a FCC registered (Reg. No. 153292) test facility with the site description report on file and is designated by the FCC as an Accredited Test Film.**
- **MRT facility is an IC registered (MRT Reg. No. 21723-1) test laboratory with the site description on file at Industry Canada.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (TAF) under the American Association for Laboratory Accreditation Program (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC, Industry Taiwan, EU and TELEC Rules.**

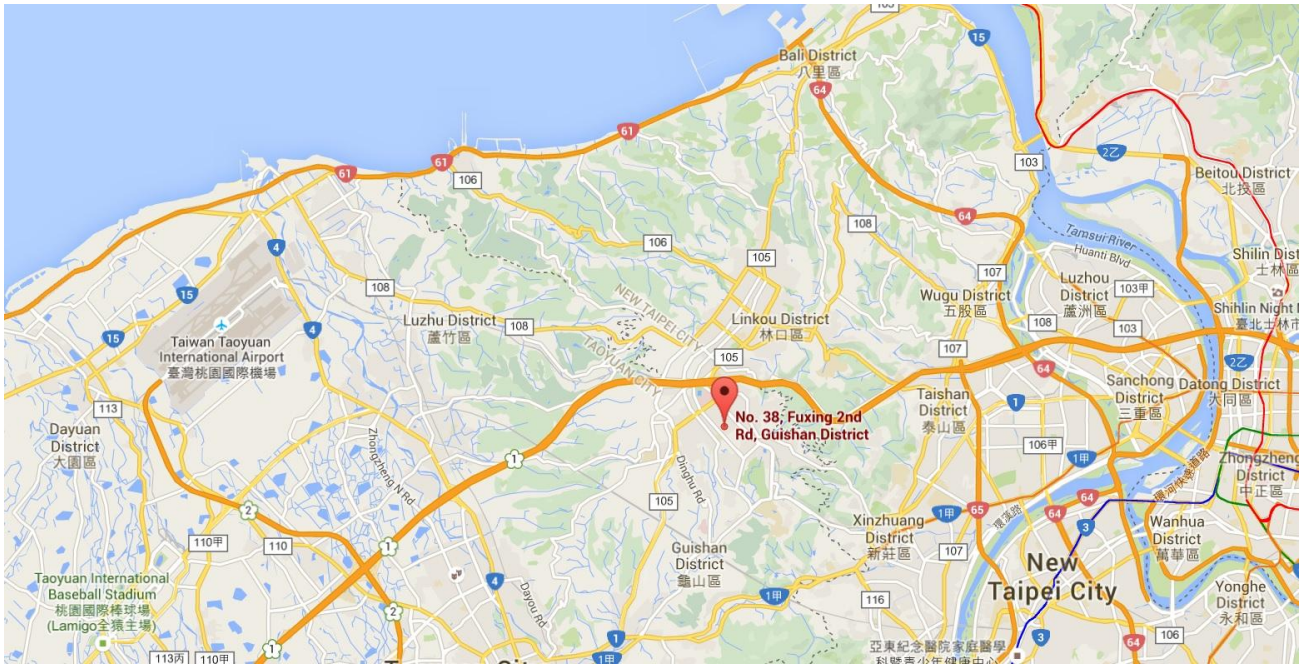
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name:	AirScale Indoor Radio ASiR-pRRH	
Model No.:	AHFID	
Brand Name:	Nokia	
Test Device Serial No.:	NH184600325	
Hardware Version:	X12	
Software Version:	FL18A	
Voltage Range:	PoE: 52Vdc ~ 57Vdc	
LTE Operating Band (s):	FDD Band 2 / 66	
Modulation Type:	QPSK, 16QAM, 64QAM, 256QAM	
T_X Frequency Range:	Band 2: 1930 ~ 1990 MHz; Band 66: 2110 ~ 2200 MHz	
R_X Frequency Range:	Band 2: 1850 ~ 1910 MHz; Band 66: 1710 ~ 1780 MHz	
Max EIRP Power:	Band 2	Channel Bandwidth 5MHz: 32.92dBm
		Channel Bandwidth 10MHz: 32.96dBm
		Channel Bandwidth 15MHz: 32.70dBm
		Channel Bandwidth 20MHz: 32.48dBm
		Channel Bandwidth 5 + 5MHz: 31.87dBm
		Channel Bandwidth 10 + 10MHz: 31.77dBm
		Channel Bandwidth 15 + 15MHz: 31.71dBm
		Channel Bandwidth 20 + 20MHz: 31.15dBm
	Band 66	Channel Bandwidth 5MHz: 32.54dBm
		Channel Bandwidth 10MHz: 32.56dBm
		Channel Bandwidth 15MHz: 31.61dBm
		Channel Bandwidth 20MHz: 31.44dBm
		Channel Bandwidth 5 + 5MHz: 32.74dBm
		Channel Bandwidth 10 + 10MHz: 33.05dBm
		Channel Bandwidth 15 + 15MHz: 31.94dBm
		Channel Bandwidth 20 + 20MHz: 31.89dBm
Emission Designator:	Refer to Section 2.2	
Antenna Specification:	Refer to Section 2.3	

2.2. Emission Designator

Bandwidth (MHz)	Modulation	Emission Designator	Bandwidth (MHz)	Modulation	Emission Designator
LTE Band 2					
5	QPSK	4M51G7D	5 + 5	QPSK	9M45G7D
	16QAM	4M50W7D		16QAM	9M44W7D
	64QAM	4M50W7D		64QAM	9M44W7D
	256QAM	4M49W7D		256QAM	9M45W7D
10	QPSK	9M02G7D	10 + 10	QPSK	18M89G7D
	16QAM	9M00W7D		16QAM	18M94W7D
	64QAM	9M01W7D		64QAM	18M94W7D
	256QAM	9M02W7D		256QAM	18M91W7D
15	QPSK	13M51G7D	15 + 15	QPSK	28M51G7D
	16QAM	13M50W7D		16QAM	28M45W7D
	64QAM	13M50W7D		64QAM	28M44W7D
	256QAM	13M52W7D		256QAM	28M46W7D
20	QPSK	18M10G7D	20 + 20	QPSK	37M81G7D
	16QAM	18M12W7D		16QAM	37M92W7D
	64QAM	18M04W7D		64QAM	37M79W7D
	256QAM	18M07W7D		256QAM	37M85W7D
LTE Band 66					
5	QPSK	4M51G7D	5 + 5	QPSK	9M44G7D
	16QAM	4M50W7D		16QAM	9M44W7D
	64QAM	4M52W7D		64QAM	9M44W7D
	256QAM	4M51W7D		256QAM	9M45W7D
10	QPSK	9M01G7D	10 + 10	QPSK	18M89G7D
	16QAM	9M04W7D		16QAM	18M91W7D
	64QAM	8M98W7D		64QAM	18M91W7D
	256QAM	8M99W7D		256QAM	18M89W7D
15	QPSK	13M49G7D	15 + 15	QPSK	28M54G7D
	16QAM	13M51W7D		16QAM	28M52W7D
	64QAM	13M48W7D		64QAM	28M41W7D
	256QAM	13M49W7D		256QAM	28M46W7D
20	QPSK	18M06G7D	20 + 20	QPSK	37M83G7D
	16QAM	18M08W7D		16QAM	37M92W7D
	64QAM	18M01W7D		64QAM	37M88W7D
	256QAM	18M05W7D		256QAM	37M93W7D

2.3. Description of Available Antennas

Band Support	Antenna Type	Model	Antenna Gain
LTE Band 2	Omni Internal Antenna	6744	ANT 0: 4.4dBi ANT 1: 4.9dBi
LTE Band 66			ANT 0: 5.5dBi ANT 1: 4.8dBi

2.4. Test Mode and Channel Detail

Test Item	Channel Bandwidth	Modulation
Equivalent Isotropically Radiated Power	5MHz, 10MHz, 15MHz, 20MHz, 5 + 5MHz, 10 + 10MHz, 15 + 15MHz, 20 + 20MHz	QPSK, 16QAM, 64QAM, 256QAM
Emission Bandwidth		QPSK, 16QAM, 64QAM, 256QAM
Band Edge Measurements		QPSK
Conducted Spurious Emissions		QPSK
Radiated Spurious Emissions		QPSK
Peak to Average Ratio	20MHz	QPSK, 16QAM, 64QAM, 256QAM
Frequency Stability	20MHz	QPSK

2.5. Device Capabilities

This device contains the following capabilities:
LTE Band 2 & Band 66 Base Station.

2.6. Test Configuration

The device was tested per the guidance of KDB 971168 D01v03r01. ANSI C63.26-2015 was used to reference the appropriate EUT setup for radiated spurious emissions testing.

2.7. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.8. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

3. DESCRIPTION of TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services (ANSI C63.26-2015), and the guidance provided in KDB 971168 D01v03r01 were used in the measurement.

Deviation from measurement procedure…….....None

3.2. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable

containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, which produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

4. TEST EQUIPMENT CALIBRATION DATE

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Acitve Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2020/04/23
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2020/05/21
Broadband Hornantenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2020/04/23
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2020/04/22
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2020/04/23
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2020/04/22
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2020/03/19
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2020/03/18
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2019/07/30
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2020/05/18
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00032	1 year	2019/05/21

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2020/04/23
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2020/03/19
Wideband Radio Communication Taster	R&S	CMW 500	MRTTWA00041	1 year	2019/12/12
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2019/07/30
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTSUE06457	1 year	2019/07/19
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2020/03/19
DC Power Supply	GWINSTEK	SPS-606	MRTTWA00034	Check by TRUE RMS MULTIMETER	
TRUE RMS MULTIMETER	FLUKE	117	MRTTWA00022	1 year	2020/05/22
Temperature & Humidity Chamber	TEN BILLION	TTH-B3UP	MRTTWA00036	1 year	2019/06/06
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2019/05/21

Software	Version	Function
EMI Software	V3	EMI Test Software

5. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Conducted Measurement
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 2.65dB
Radiated Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz ~ 30MHz: 3.92dB 30MHz ~ 1GHz: 4.25dB 1GHz ~ 18GHz: 4.40dB

6. TEST RESULT

6.1. Summary

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1046; 24.232(a)(2); 27.50(d)(2)	Equivalent Isotropically Radiated Power	Refer to Section 6.2	Conducted; Radiated	Pass	Section 6.2
2.1055; 24.235; 27.54	Frequency Stability	Refer to Section 6.3	Conducted	Pass	Section 6.3
2.1049; 24.238(b); 27.53(h)	Emission Bandwidth	Refer to Section 6.4		Pass	Section 6.4
24.238(a); 27.53(h)	Band Edge Measurements	Refer to Section 6.5		Pass	Section 6.5
2.1046; 24.232(d); 27.50(d)(5)	Peak to Average Ratio	Refer to Section 6.6		Pass	Section 6.6
2.1051; 24.238(a); 27.53(h)	Conducted Spurious Emissions	Refer to Section 6.7		Pass	Section 6.7
2.1053; 24.238(a); 27.53(h)	Radiated Spurious Emissions	Refer to Section 6.8	Radiated	Pass	Section 6.8

Notes:

1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2) Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports the worst case was found. Following model(s) was (were) selected for the final test as listed at section 2.4.
3) All supported modulation types were evaluated. The worst case emission of modulation was selected. Therefore, the EIRP power, Frequency Stability, Channel Edge, Conducted Emission and Radiated Emission were presented in the test report.

6.2. Equivalent Isotropically Radiated Power Measurement

6.2.1.Test Limit

The Radiated Equivalent Isotropically Power shall be according to the specific rule Part 24.232(a)(2) & 27.50(d)(2)(ii) that are limited to EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

6.2.2.Test Procedures Used

KDB 971168 D01v03r01 - Section 5.2.4 & 5.8

ANSI C63.26-2015 - Section 5.2.4.2 & 5.2.7

6.2.3.Test Setting

Average Power Measurement

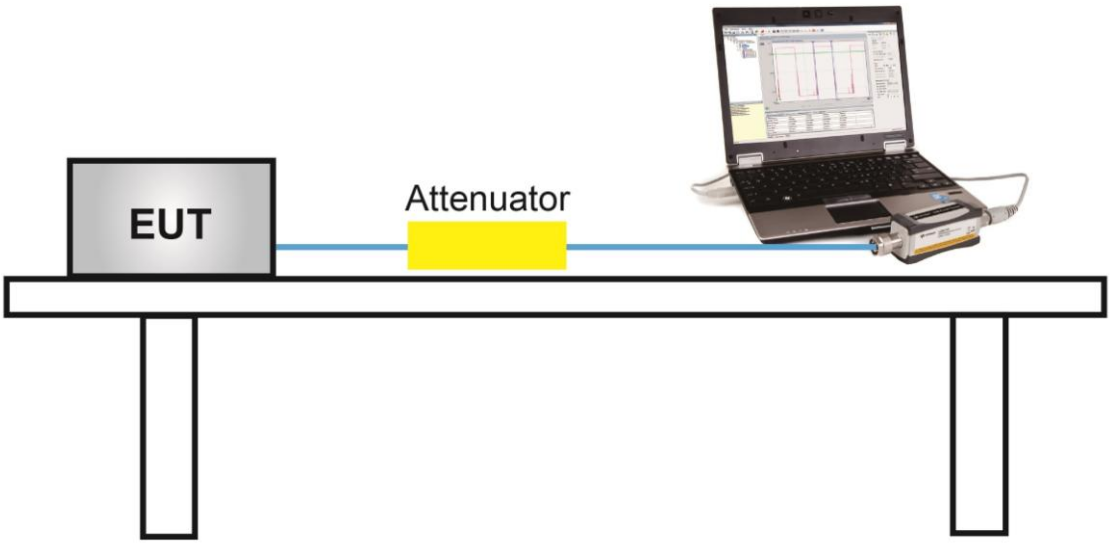
Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

Radiated Equivalent Isotropically Power Measurement

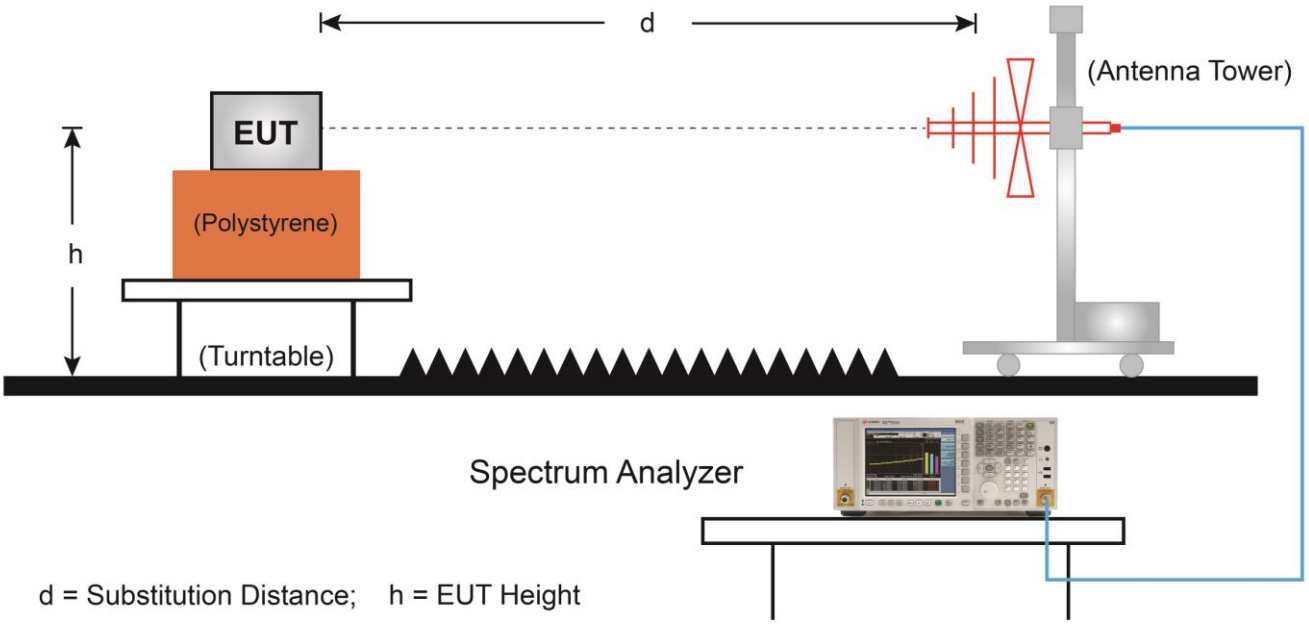
1. RBW ≥ OBW
2. VBW ≥ 3*RBW
3. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period)
4. Detector = power averaging (rms)
5. Set sweep trigger to “free run”
6. If the EUT can be configured to transmit continuously, then set the trigger to free run
7. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time
8. The trace was allowed to stabilize
9. Use the peak marker function to determine the peak amplitude level.
10. EIRP = Output Power Level of S.G – T_X Cable Loss + Antenna Gain of Substitution Antenna.

6.2.4.Test Setup

Conducted Measurment of Output Power



Radiated Measurement of Equivalent Isotropically Radiated Power



6.2.5.Test Result

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/02/01
Test Item	Conduted Power - LTE Band 2 (Single Carrier)		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Ant 0 Power (dBm)	Ant 1 Power (dBm)	Total Power (dBm)
QPSK					
615	1932.5	5	24.42	23.76	27.11
900	1960.0	5	24.07	23.92	27.01
1175	1987.5	5	23.78	24.24	27.03
650	1935.0	10	24.74	24.06	27.42
900	1960.0	10	24.09	23.87	26.99
1150	1985.0	10	24.08	24.56	27.34
675	1937.5	15	25.06	24.28	27.70
900	1960.0	15	24.23	23.91	27.08
1125	1982.5	15	24.56	24.89	27.74
700	1940.0	20	24.43	24.04	27.25
900	1960.0	20	24.29	23.92	27.12
1100	1980.0	20	23.88	24.27	27.09
16QAM					
615	1932.5	5	24.42	23.76	27.11
900	1960.0	5	24.08	23.93	27.02
1175	1987.5	5	23.78	24.32	27.07
650	1935.0	10	24.72	24.12	27.44
900	1960.0	10	24.14	23.92	27.04
1150	1985.0	10	24.11	24.55	27.35
675	1937.5	15	25.08	24.19	27.67
900	1960.0	15	24.22	23.89	27.07
1125	1982.5	15	24.46	24.74	27.61
700	1940.0	20	24.58	24.22	27.41
900	1960.0	20	24.41	24.12	27.28
1100	1980.0	20	24.02	24.44	27.25

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Ant 0 Power (dBm)	Ant 1 Power (dBm)	Total Power (dBm)
64QAM					
615	1932.5	5	24.41	23.77	27.11
900	1960.0	5	24.07	23.85	26.97
1175	1987.5	5	23.82	24.26	27.06
650	1935.0	10	24.73	24.08	27.43
900	1960.0	10	24.09	23.92	27.02
1150	1985.0	10	24.11	24.53	27.34
675	1937.5	15	24.89	24.15	27.55
900	1960.0	15	24.11	23.81	26.97
1125	1982.5	15	24.36	24.71	27.55
700	1940.0	20	24.43	24.07	27.26
900	1960.0	20	24.23	23.96	27.11
1100	1980.0	20	23.96	24.36	27.17
256QAM					
615	1932.5	5	24.43	23.81	27.14
900	1960.0	5	24.03	23.91	26.98
1175	1987.5	5	23.85	24.28	27.08
650	1935.0	10	24.83	24.14	27.51
900	1960.0	10	24.16	23.93	27.06
1150	1985.0	10	24.17	24.53	27.36
675	1937.5	15	25.09	24.33	27.74
900	1960.0	15	24.28	23.98	27.14
1125	1982.5	15	24.56	24.79	27.69
700	1940.0	20	24.28	23.94	27.12
900	1960.0	20	24.16	23.87	27.03
1100	1980.0	20	23.55	24.12	26.85

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/02/01
Test Item	Conduted Power - LTE Band 2 (Multi Carrier)		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Ant 0 Power (dBm)	Ant 1 Power (dBm)	Total Power (dBm)
QPSK					
625 + 675	1932.5 + 1937.5	5 + 5	23.06	23.73	26.42
850 + 900	1955.0 + 1960.0	5 + 5	23.16	23.70	26.45
1125 + 1175	1982.5 + 1987.5	5 + 5	23.85	23.32	26.60
650 + 750	1935.0 + 1945.0	10 + 10	23.39	23.67	26.54
800 + 900	1950.0 + 1960.0	10 + 10	23.40	24.03	26.74
1050 + 1150	1975.0 + 1985.0	10 + 10	23.66	23.35	26.52
675 + 825	1937.5 + 1952.5	15 + 15	22.48	23.07	25.80
750 + 900	1945.0 + 1960.0	15 + 15	23.33	24.09	26.74
975 + 1125	1967.5 + 1982.5	15 + 15	23.28	22.98	26.14
700 + 900	1940.0 + 1960.0	20 + 20	22.99	23.52	26.27
900 + 1100	1960.0 + 1980.0	20 + 20	22.81	22.53	25.68
16QAM					
625 + 675	1932.5 + 1937.5	5 + 5	23.07	23.76	26.44
850 + 900	1955.0 + 1960.0	5 + 5	23.15	23.64	26.41
1125 + 1175	1982.5 + 1987.5	5 + 5	23.82	23.35	26.60
650 + 750	1935.0 + 1945.0	10 + 10	23.36	23.68	26.53
800 + 900	1950.0 + 1960.0	10 + 10	23.41	24.02	26.74
1050 + 1150	1975.0 + 1985.0	10 + 10	23.65	23.36	26.52
675 + 825	1937.5 + 1952.5	15 + 15	22.49	22.99	25.76
750 + 900	1945.0 + 1960.0	15 + 15	23.34	24.16	26.78
975 + 1125	1967.5 + 1982.5	15 + 15	23.27	22.90	26.10
700 + 900	1940.0 + 1960.0	20 + 20	23.02	23.52	26.29
900 + 1100	1960.0 + 1980.0	20 + 20	22.83	22.60	25.73

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Ant 0 Power (dBm)	Ant 1 Power (dBm)	Total Power (dBm)
64QAM					
625 + 675	1932.5 + 1937.5	5 + 5	23.10	23.75	26.45
850 + 900	1955.0 + 1960.0	5 + 5	23.18	23.67	26.44
1125 + 1175	1982.5 + 1987.5	5 + 5	23.83	23.35	26.61
650 + 750	1935.0 + 1945.0	10 + 10	23.31	23.62	26.48
800 + 900	1950.0 + 1960.0	10 + 10	23.40	24.04	26.74
1050 + 1150	1975.0 + 1985.0	10 + 10	23.65	23.34	26.51
675 + 825	1937.5 + 1952.5	15 + 15	22.41	23.02	25.74
750 + 900	1945.0 + 1960.0	15 + 15	23.34	24.13	26.76
975 + 1125	1967.5 + 1982.5	15 + 15	23.30	22.95	26.14
700 + 900	1940.0 + 1960.0	20 + 20	23.00	23.54	26.29
900 + 1100	1960.0 + 1980.0	20 + 20	22.82	22.54	25.69
256QAM					
625 + 675	1932.5 + 1937.5	5 + 5	23.02	23.71	26.39
850 + 900	1955.0 + 1960.0	5 + 5	23.19	23.64	26.43
1125 + 1175	1982.5 + 1987.5	5 + 5	23.88	23.37	26.64
650 + 750	1935.0 + 1945.0	10 + 10	23.28	23.64	26.47
800 + 900	1950.0 + 1960.0	10 + 10	23.43	24.01	26.74
1050 + 1150	1975.0 + 1985.0	10 + 10	23.62	23.33	26.49
675 + 825	1937.5 + 1952.5	15 + 15	22.41	22.97	25.71
750 + 900	1945.0 + 1960.0	15 + 15	23.37	24.16	26.79
975 + 1125	1967.5 + 1982.5	15 + 15	23.32	22.93	26.14
700 + 900	1940.0 + 1960.0	20 + 20	23.01	23.50	26.27
900 + 1100	1960.0 + 1980.0	20 + 20	22.83	22.55	25.70

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/02/01
Test Item	Conduted Power - LTE Band 66 (Single Carrier)		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Ant 0 Power (dBm)	Ant 1 Power (dBm)	Total Power (dBm)
QPSK					
66461	2112.5	5	23.45	22.86	26.18
66786	2145.0	5	23.32	22.83	26.09
67111	2177.5	5	24.03	23.78	26.92
66486	2115.0	10	23.12	23.28	26.21
66786	2145.0	10	23.38	23.03	26.22
67086	2175.0	10	23.90	23.84	26.88
66511	2117.5	15	23.04	23.18	26.12
66786	2145.0	15	23.53	22.89	26.23
67061	2172.5	15	24.03	23.61	26.84
66536	2120.0	20	23.08	23.35	26.23
66786	2145.0	20	23.70	22.98	26.37
67036	2170.0	20	23.88	23.50	26.70
16QAM					
66461	2112.5	5	23.09	23.19	26.15
66786	2145.0	5	23.27	22.90	26.10
67111	2177.5	5	23.72	23.67	26.71
66486	2115.0	10	23.16	23.28	26.23
66786	2145.0	10	23.36	23.00	26.19
67086	2175.0	10	24.08	23.83	26.97
66511	2117.5	15	23.10	23.18	26.15
66786	2145.0	15	23.59	22.88	26.26
67061	2172.5	15	24.10	23.80	26.96
66536	2120.0	20	23.51	23.38	26.46
66786	2145.0	20	23.58	22.98	26.30
67036	2170.0	20	24.06	23.41	26.76

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Ant 0 Power (dBm)	Ant 1 Power (dBm)	Total Power (dBm)
64QAM					
66461	2112.5	5	23.09	23.08	26.10
66786	2145.0	5	23.27	22.89	26.09
67111	2177.5	5	23.72	23.70	26.72
66486	2115.0	10	23.15	23.27	26.22
66786	2145.0	10	23.40	23.02	26.22
67086	2175.0	10	23.81	23.82	26.83
66511	2117.5	15	23.01	23.17	26.10
66786	2145.0	15	23.55	22.90	26.25
67061	2172.5	15	24.00	23.83	26.93
66536	2120.0	20	23.12	23.44	26.29
66786	2145.0	20	23.62	22.90	26.29
67036	2170.0	20	23.73	23.40	26.58
256QAM					
66461	2112.5	5	23.01	22.99	26.01
66786	2145.0	5	23.15	22.75	25.96
67111	2177.5	5	23.74	23.73	26.75
66486	2115.0	10	23.09	23.29	26.20
66786	2145.0	10	23.39	23.04	26.23
67086	2175.0	10	24.07	23.80	26.95
66511	2117.5	15	23.00	23.21	26.12
66786	2145.0	15	23.53	22.87	26.22
67061	2172.5	15	24.10	23.87	27.00
66536	2120.0	20	23.38	23.33	26.37
66786	2145.0	20	23.45	22.96	26.22
67036	2170.0	20	23.78	23.32	26.57

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/02/01
Test Item	Conduted Power - LTE Band 66 (Multi Carrier)		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Ant 0 Power (dBm)	Ant 1 Power (dBm)	Total Power (dBm)
QPSK					
66461 + 66511	2112.5 + 2117.5	5 + 5	23.32	23.54	26.44
66736 + 66786	2140.0 + 2145.0	5 + 5	23.52	23.85	26.70
67061 + 67111	2172.5 + 2177.5	5 + 5	23.92	24.17	27.06
66486 + 66586	2115.0 + 2125.0	10 + 10	24.19	24.46	27.34
66686 + 66786	2135.0 + 2145.0	10 + 10	24.55	24.82	27.70
66986 + 67086	2165.0 + 2175.0	10 + 10	23.85	23.9	26.89
66511 + 66661	2117.5 + 2132.5	15 + 15	24.68	24.15	27.43
66636 + 66786	2130.0 + 2145.0	15 + 15	24.91	24.45	27.70
66911 + 67061	2157.5 + 2172.5	15 + 15	24.86	24.35	27.62
66536 + 66736	2120.0 + 2140.0	20 + 20	24.82	24.25	27.55
66586 + 66786	2125.0 + 2145.0	20 + 20	24.32	24.83	27.59
66836 + 67036	2150.0 + 2170.0	20 + 20	24.72	25.13	27.94
16QAM					
66461 + 66511	2112.5 + 2117.5	5 + 5	23.26	23.75	26.52
66736 + 66786	2140.0 + 2145.0	5 + 5	23.57	23.93	26.76
67061 + 67111	2172.5 + 2177.5	5 + 5	23.86	24.28	27.09
66486 + 66586	2115.0 + 2125.0	10 + 10	24.21	24.61	27.42
66686 + 66786	2135.0 + 2145.0	10 + 10	24.52	24.86	27.70
66986 + 67086	2165.0 + 2175.0	10 + 10	23.88	23.97	26.94
66511 + 66661	2117.5 + 2132.5	15 + 15	24.66	24.12	27.41
66636 + 66786	2130.0 + 2145.0	15 + 15	24.43	24.95	27.71
66911 + 67061	2157.5 + 2172.5	15 + 15	24.83	24.38	27.62
66536 + 66736	2120.0 + 2140.0	20 + 20	24.19	24.76	27.49
66586 + 66786	2125.0 + 2145.0	20 + 20	24.58	24.99	27.80
66836 + 67036	2150.0 + 2170.0	20 + 20	25.02	24.67	27.86

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Ant 0 Power (dBm)	Ant 1 Power (dBm)	Total Power (dBm)
64QAM					
66461 + 66511	2112.5 + 2117.5	5 + 5	23.28	23.49	26.40
66736 + 66786	2140.0 + 2145.0	5 + 5	23.37	24.02	26.72
67061 + 67111	2172.5 + 2177.5	5 + 5	23.91	24.18	27.06
66486 + 66586	2115.0 + 2125.0	10 + 10	24.16	24.47	27.33
66686 + 66786	2135.0 + 2145.0	10 + 10	24.53	24.85	27.70
66986 + 67086	2165.0 + 2175.0	10 + 10	23.86	24.03	26.96
66511 + 66661	2117.5 + 2132.5	15 + 15	24.61	24.22	27.43
66636 + 66786	2130.0 + 2145.0	15 + 15	24.35	24.93	27.66
66911 + 67061	2157.5 + 2172.5	15 + 15	24.85	24.31	27.60
66536 + 66736	2120.0 + 2140.0	20 + 20	24.40	24.65	27.54
66586 + 66786	2125.0 + 2145.0	20 + 20	24.42	24.81	27.63
66836 + 67036	2150.0 + 2170.0	20 + 20	24.99	24.69	27.85
256QAM					
66461 + 66511	2112.5 + 2117.5	5 + 5	23.24	23.68	26.48
66736 + 66786	2140.0 + 2145.0	5 + 5	23.46	23.97	26.73
67061 + 67111	2172.5 + 2177.5	5 + 5	23.87	24.21	27.05
66486 + 66586	2115.0 + 2125.0	10 + 10	24.18	24.51	27.36
66686 + 66786	2135.0 + 2145.0	10 + 10	24.56	24.88	27.73
66986 + 67086	2165.0 + 2175.0	10 + 10	23.67	23.92	26.81
66511 + 66661	2117.5 + 2132.5	15 + 15	24.59	24.22	27.42
66636 + 66786	2130.0 + 2145.0	15 + 15	24.89	24.25	27.59
66911 + 67061	2157.5 + 2172.5	15 + 15	24.80	24.30	27.57
66536 + 66736	2120.0 + 2140.0	20 + 20	24.10	24.77	27.46
66586 + 66786	2125.0 + 2145.0	20 + 20	24.32	24.95	27.66
66836 + 67036	2150.0 + 2170.0	20 + 20	24.75	25.03	27.90

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	AC1	Test Date	2019/02/01
Test Item	EIRP - LTE Band 2 (Single Carrier)		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Reading Level (dBm)	Factor (dB)	EIRP (dBm)	Limit (dBm)
QPSK						
615	1932.5	5	27.61	4.97	32.58	< 62.15
900	1960.0	5	27.82	4.80	32.62	< 62.15
1175	1987.5	5	26.32	5.81	32.13	< 62.15
650	1935.0	10	27.92	4.90	32.82	< 62.15
900	1960.0	10	27.90	4.80	32.70	< 62.15
1150	1985.0	10	26.37	5.73	32.10	< 62.15
675	1937.5	15	27.50	4.84	32.34	< 62.15
900	1960.0	15	26.61	4.80	31.41	< 62.15
1125	1982.5	15	26.84	5.63	32.47	< 62.15
700	1940.0	20	27.70	4.78	32.48	< 62.15
900	1960.0	20	26.43	4.80	31.23	< 62.15
1100	1980.0	20	25.92	5.54	31.46	< 62.15
16QAM						
615	1932.5	5	27.07	4.97	32.04	< 62.15
900	1960.0	5	27.94	4.80	32.74	< 62.15
1175	1987.5	5	27.11	5.81	32.92	< 62.15
650	1935.0	10	27.18	4.90	32.08	< 62.15
900	1960.0	10	27.54	4.80	32.34	< 62.15
1150	1985.0	10	26.84	5.73	32.57	< 62.15
675	1937.5	15	27.86	4.84	32.70	< 62.15
900	1960.0	15	27.76	4.80	32.56	< 62.15
1125	1982.5	15	26.45	5.63	32.08	< 62.15
700	1940.0	20	27.12	4.78	31.90	< 62.15
900	1960.0	20	26.91	4.80	31.71	< 62.15
1100	1980.0	20	26.43	5.54	31.97	< 62.15

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Reading Level (dBm)	Factor (dB)	EIRP (dBm)	Limit (dBm)
64QAM						
615	1932.5	5	27.45	4.97	32.42	< 62.15
900	1960.0	5	27.18	4.80	31.98	< 62.15
1175	1987.5	5	26.74	5.81	32.55	< 62.15
650	1935.0	10	27.68	4.90	32.58	< 62.15
900	1960.0	10	27.54	4.80	32.34	< 62.15
1150	1985.0	10	27.23	5.73	32.96	< 62.15
675	1937.5	15	26.33	4.84	31.17	< 62.15
900	1960.0	15	26.73	4.80	31.53	< 62.15
1125	1982.5	15	26.72	5.63	32.35	< 62.15
700	1940.0	20	26.62	4.78	31.40	< 62.15
900	1960.0	20	26.24	4.80	31.04	< 62.15
1100	1980.0	20	25.73	5.54	31.27	< 62.15
256QAM						
615	1932.5	5	27.48	4.97	32.45	< 62.15
900	1960.0	5	27.45	4.80	32.25	< 62.15
1175	1987.5	5	26.69	5.81	32.50	< 62.15
650	1935.0	10	27.76	4.90	32.66	< 62.15
900	1960.0	10	27.30	4.80	32.10	< 62.15
1150	1985.0	10	26.70	5.73	32.43	< 62.15
675	1937.5	15	26.52	4.84	31.36	< 62.15
900	1960.0	15	26.73	4.80	31.53	< 62.15
1125	1982.5	15	26.86	5.63	32.49	< 62.15
700	1940.0	20	25.61	4.78	30.39	< 62.15
900	1960.0	20	25.79	4.80	30.59	< 62.15
1100	1980.0	20	24.94	5.54	30.48	< 62.15

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	AC1	Test Date	2019/02/01
Test Item	EIRP - LTE Band 2 (Multi Carrier)		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Reading Level (dBm)	Factor (dB)	EIRP (dBm)	Limit (dBm)
QPSK						
625 + 675	1932.5 + 1937.5	5 + 5	26.94	4.90	31.84	< 62.15
850 + 900	1955.0 + 1960.0	5 + 5	26.92	4.70	31.62	< 62.15
1125 + 1175	1982.5 + 1987.5	5 + 5	25.49	5.73	31.22	< 62.15
650 + 750	1935.0 + 1945.0	10 + 10	26.40	4.78	31.18	< 62.15
800 + 900	1950.0 + 1960.0	10 + 10	26.57	4.61	31.18	< 62.15
1050 + 1150	1975.0 + 1985.0	10 + 10	25.94	5.54	31.48	< 62.15
675 + 825	1937.5 + 1952.5	15 + 15	25.78	4.66	30.44	< 62.15
750 + 900	1945.0 + 1960.0	15 + 15	26.11	4.52	30.63	< 62.15
975 + 1125	1967.5 + 1982.5	15 + 15	25.30	5.36	30.66	< 62.15
700 + 900	1940.0 + 1960.0	20 + 20	26.09	4.55	30.64	< 62.15
900 + 1100	1960.0 + 1980.0	20 + 20	25.01	5.17	30.18	< 62.15
16QAM						
625 + 675	1932.5 + 1937.5	5 + 5	26.52	4.90	31.42	< 62.15
850 + 900	1955.0 + 1960.0	5 + 5	26.92	4.70	31.62	< 62.15
1125 + 1175	1982.5 + 1987.5	5 + 5	25.32	5.73	31.05	< 62.15
650 + 750	1935.0 + 1945.0	10 + 10	26.57	4.78	31.35	< 62.15
800 + 900	1950.0 + 1960.0	10 + 10	27.16	4.61	31.77	< 62.15
1050 + 1150	1975.0 + 1985.0	10 + 10	25.94	5.54	31.48	< 62.15
675 + 825	1937.5 + 1952.5	15 + 15	26.05	4.66	30.71	< 62.15
750 + 900	1945.0 + 1960.0	15 + 15	27.19	4.52	31.71	< 62.15
975 + 1125	1967.5 + 1982.5	15 + 15	26.15	5.36	31.51	< 62.15
700 + 900	1940.0 + 1960.0	20 + 20	26.60	4.55	31.15	< 62.15
900 + 1100	1960.0 + 1980.0	20 + 20	25.58	5.17	30.75	< 62.15

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Reading Level (dBm)	Factor (dB)	EIRP (dBm)	Limit (dBm)
64QAM						
625 + 675	1932.5 + 1937.5	5 + 5	26.39	4.90	31.29	< 62.15
850 + 900	1955.0 + 1960.0	5 + 5	27.05	4.70	31.75	< 62.15
1125 + 1175	1982.5 + 1987.5	5 + 5	26.14	5.73	31.87	< 62.15
650 + 750	1935.0 + 1945.0	10 + 10	26.22	4.78	31.00	< 62.15
800 + 900	1950.0 + 1960.0	10 + 10	26.50	4.61	31.11	< 62.15
1050 + 1150	1975.0 + 1985.0	10 + 10	25.84	5.54	31.38	< 62.15
675 + 825	1937.5 + 1952.5	15 + 15	26.97	4.66	31.63	< 62.15
750 + 900	1945.0 + 1960.0	15 + 15	26.49	4.52	31.01	< 62.15
975 + 1125	1967.5 + 1982.5	15 + 15	25.14	5.36	30.50	< 62.15
700 + 900	1940.0 + 1960.0	20 + 20	26.33	4.55	30.88	< 62.15
900 + 1100	1960.0 + 1980.0	20 + 20	25.05	5.17	30.22	< 62.15
256QAM						
625 + 675	1932.5 + 1937.5	5 + 5	26.95	4.90	31.85	< 62.15
850 + 900	1955.0 + 1960.0	5 + 5	26.86	4.70	31.56	< 62.15
1125 + 1175	1982.5 + 1987.5	5 + 5	25.63	5.73	31.36	< 62.15
650 + 750	1935.0 + 1945.0	10 + 10	26.22	4.78	31.00	< 62.15
800 + 900	1950.0 + 1960.0	10 + 10	26.82	4.61	31.43	< 62.15
1050 + 1150	1975.0 + 1985.0	10 + 10	26.06	5.54	31.60	< 62.15
675 + 825	1937.5 + 1952.5	15 + 15	26.12	4.66	30.78	< 62.15
750 + 900	1945.0 + 1960.0	15 + 15	26.46	4.52	30.98	< 62.15
975 + 1125	1967.5 + 1982.5	15 + 15	25.16	5.36	30.52	< 62.15
700 + 900	1940.0 + 1960.0	20 + 20	26.31	4.55	30.86	< 62.15
900 + 1100	1960.0 + 1980.0	20 + 20	25.22	5.17	30.39	< 62.15

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	AC1	Test Date	2019/02/01
Test Item	EIRP Power - LTE Band 66 (Single Carrier)		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Reading Level (dBm)	Factor (dB)	EIRP (dBm)	Limit (dBm)
QPSK						
66461	2112.5	5	26.05	6.01	32.06	< 62.15
66786	2145.0	5	24.87	6.39	31.26	< 62.15
67111	2177.5	5	26.26	6.28	32.54	< 62.15
66486	2115.0	10	25.36	6.04	31.40	< 62.15
66786	2145.0	10	25.41	6.39	31.80	< 62.15
67086	2175.0	10	25.63	6.30	31.93	< 62.15
66511	2117.5	15	24.45	6.07	30.52	< 62.15
66786	2145.0	15	24.43	6.39	30.82	< 62.15
67061	2172.5	15	23.85	6.32	30.17	< 62.15
66536	2120.0	20	24.27	6.10	30.37	< 62.15
66786	2145.0	20	23.71	6.39	30.10	< 62.15
67036	2170.0	20	23.70	6.34	30.04	< 62.15
16QAM						
66461	2112.5	5	25.27	6.01	31.28	< 62.15
66786	2145.0	5	24.97	6.39	31.36	< 62.15
67111	2177.5	5	25.76	6.28	32.04	< 62.15
66486	2115.0	10	25.43	6.04	31.47	< 62.15
66786	2145.0	10	26.17	6.39	32.56	< 62.15
67086	2175.0	10	24.46	6.30	30.76	< 62.15
66511	2117.5	15	25.54	6.07	31.61	< 62.15
66786	2145.0	15	24.58	6.39	30.97	< 62.15
67061	2172.5	15	24.48	6.32	30.80	< 62.15
66536	2120.0	20	25.34	6.10	31.44	< 62.15
66786	2145.0	20	24.38	6.39	30.77	< 62.15
67036	2170.0	20	24.53	6.34	30.87	< 62.15

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Reading Level (dBm)	Factor (dB)	EIRP (dBm)	Limit (dBm)
64QAM						
66461	2112.5	5	25.33	6.01	31.34	< 62.15
66786	2145.0	5	25.35	6.39	31.74	< 62.15
67111	2177.5	5	25.53	6.28	31.81	< 62.15
66486	2115.0	10	24.91	6.04	30.95	< 62.15
66786	2145.0	10	25.14	6.39	31.53	< 62.15
67086	2175.0	10	24.56	6.30	30.86	< 62.15
66511	2117.5	15	25.22	6.07	31.29	< 62.15
66786	2145.0	15	24.37	6.39	30.76	< 62.15
67061	2172.5	15	23.70	6.32	30.02	< 62.15
66536	2120.0	20	24.51	6.10	30.61	< 62.15
66786	2145.0	20	24.42	6.39	30.81	< 62.15
67036	2170.0	20	23.95	6.34	30.29	< 62.15
256QAM						
66461	2112.5	5	25.40	6.01	31.41	< 62.15
66786	2145.0	5	24.99	6.39	31.38	< 62.15
67111	2177.5	5	25.82	6.28	32.10	< 62.15
66486	2115.0	10	25.60	6.04	31.64	< 62.15
66786	2145.0	10	25.27	6.39	31.66	< 62.15
67086	2175.0	10	25.43	6.30	31.73	< 62.15
66511	2117.5	15	24.60	6.07	30.67	< 62.15
66786	2145.0	15	24.38	6.39	30.77	< 62.15
67061	2172.5	15	25.07	6.32	31.39	< 62.15
66536	2120.0	20	24.54	6.10	30.64	< 62.15
66786	2145.0	20	24.43	6.39	30.82	< 62.15
67036	2170.0	20	23.95	6.34	30.29	< 62.15

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	AC1	Test Date	2019/02/01
Test Item	EIRP Power - LTE Band 66 (Multi Carrier)		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Reading Level (dBm)	Factor (dB)	EIRP (dBm)	Limit (dBm)
QPSK						
66461 + 66511	2112.5 + 2117.5	5 + 5	26.11	6.04	32.15	< 62.15
66736 + 66786	2140.0 + 2145.0	5 + 5	25.97	6.37	32.34	< 62.15
67061 + 67111	2172.5 + 2177.5	5 + 5	26.44	6.30	32.74	< 62.15
66486 + 66586	2115.0 + 2125.0	10 + 10	25.51	6.10	31.61	< 62.15
66686 + 66786	2135.0 + 2145.0	10 + 10	25.68	6.36	32.04	< 62.15
66986 + 67086	2165.0 + 2175.0	10 + 10	25.25	6.34	31.59	< 62.15
66511 + 66661	2117.5 + 2132.5	15 + 15	24.92	6.17	31.09	< 62.15
66636 + 66786	2130.0 + 2145.0	15 + 15	24.44	6.33	30.77	< 62.15
66911 + 67061	2157.5 + 2172.5	15 + 15	24.28	6.38	30.66	< 62.15
66536 + 66736	2120.0 + 2140.0	20 + 20	24.77	6.23	31.00	< 62.15
66586 + 66786	2125.0 + 2145.0	20 + 20	24.66	6.30	30.96	< 62.15
66836 + 67036	2150.0 + 2170.0	20 + 20	24.60	6.42	31.02	< 62.15
16QAM						
66461 + 66511	2112.5 + 2117.5	5 + 5	25.62	6.04	31.66	< 62.15
66736 + 66786	2140.0 + 2145.0	5 + 5	26.33	6.37	32.70	< 62.15
67061 + 67111	2172.5 + 2177.5	5 + 5	26.20	6.30	32.50	< 62.15
66486 + 66586	2115.0 + 2125.0	10 + 10	26.74	6.10	32.84	< 62.15
66686 + 66786	2135.0 + 2145.0	10 + 10	26.69	6.36	33.05	< 62.15
66986 + 67086	2165.0 + 2175.0	10 + 10	24.90	6.34	31.24	< 62.15
66511 + 66661	2117.5 + 2132.5	15 + 15	25.63	6.17	31.80	< 62.15
66636 + 66786	2130.0 + 2145.0	15 + 15	25.12	6.33	31.45	< 62.15
66911 + 67061	2157.5 + 2172.5	15 + 15	24.68	6.38	31.06	< 62.15
66536 + 66736	2120.0 + 2140.0	20 + 20	24.54	6.23	30.77	< 62.15
66586 + 66786	2125.0 + 2145.0	20 + 20	25.15	6.30	31.45	< 62.15
66836 + 67036	2150.0 + 2170.0	20 + 20	25.30	6.42	31.72	< 62.15

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Reading Level (dBm)	Factor (dB)	EIRP (dBm)	Limit (dBm)
64QAM						
66461 + 66511	2112.5 + 2117.5	5 + 5	25.77	6.04	31.81	< 62.15
66736 + 66786	2140.0 + 2145.0	5 + 5	25.53	6.37	31.90	< 62.15
67061 + 67111	2172.5 + 2177.5	5 + 5	25.55	6.30	31.85	< 62.15
66486 + 66586	2115.0 + 2125.0	10 + 10	24.82	6.10	30.92	< 62.15
66686 + 66786	2135.0 + 2145.0	10 + 10	25.06	6.36	31.42	< 62.15
66986 + 67086	2165.0 + 2175.0	10 + 10	25.31	6.34	31.65	< 62.15
66511 + 66661	2117.5 + 2132.5	15 + 15	24.17	6.17	30.34	< 62.15
66636 + 66786	2130.0 + 2145.0	15 + 15	24.13	6.33	30.46	< 62.15
66911 + 67061	2157.5 + 2172.5	15 + 15	25.19	6.38	31.57	< 62.15
66536 + 66736	2120.0 + 2140.0	20 + 20	24.74	6.23	30.97	< 62.15
66586 + 66786	2125.0 + 2145.0	20 + 20	23.83	6.30	30.13	< 62.15
66836 + 67036	2150.0 + 2170.0	20 + 20	24.29	6.42	30.71	< 62.15
256QAM						
66461 + 66511	2112.5 + 2117.5	5 + 5	26.14	6.04	32.18	< 62.15
66736 + 66786	2140.0 + 2145.0	5 + 5	26.01	6.37	32.38	< 62.15
67061 + 67111	2172.5 + 2177.5	5 + 5	25.78	6.30	32.08	< 62.15
66486 + 66586	2115.0 + 2125.0	10 + 10	24.64	6.10	30.74	< 62.15
66686 + 66786	2135.0 + 2145.0	10 + 10	24.71	6.36	31.07	< 62.15
66986 + 67086	2165.0 + 2175.0	10 + 10	25.56	6.34	31.90	< 62.15
66511 + 66661	2117.5 + 2132.5	15 + 15	25.61	6.17	31.78	< 62.15
66636 + 66786	2130.0 + 2145.0	15 + 15	25.13	6.33	31.46	< 62.15
66911 + 67061	2157.5 + 2172.5	15 + 15	25.56	6.38	31.94	< 62.15
66536 + 66736	2120.0 + 2140.0	20 + 20	24.68	6.23	30.91	< 62.15
66586 + 66786	2125.0 + 2145.0	20 + 20	24.60	6.30	30.90	< 62.15
66836 + 67036	2150.0 + 2170.0	20 + 20	25.47	6.42	31.89	< 62.15

6.3. Frequency Stability Measurement

6.3.1.Test Limit

N/A

6.3.2.Test Procedures Used

KDB 971168 D01v03r01 - Section 9

ANSI C63.26-2015 - Section 5.6

6.3.3.Test Setting

Frequency Stability Under Temperature Variations:

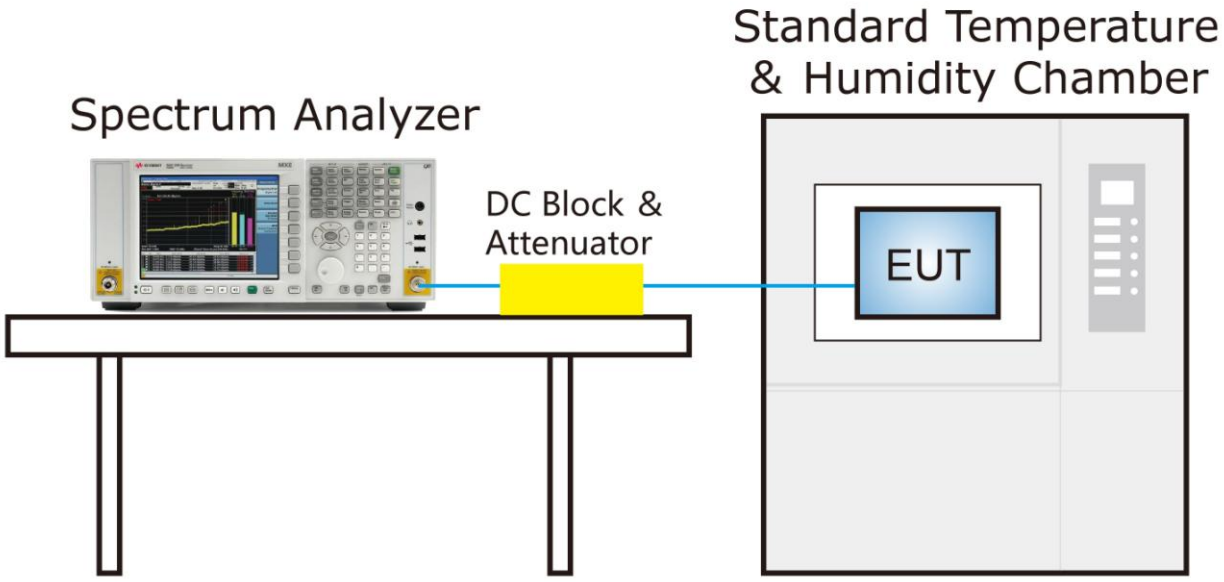
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint (If a product is specified to operate over a range of input voltage then the −15% variation is applied to the lowermost voltage and the +15%is applied to the uppermost voltage), recordthe maximum frequency change.

6.3.4.Test Setup



6.3.5.Test Result

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/02/10
Test Item	Frequency Stability - LTE Band 2, Single Carrier, BW = 20MHz, QPSK, Channel 1960MHz		

Voltage (DC)	Temp (°C)	Frequency Tolerance (ppm)			
		0 minutes	2 minutes	5 minutes	10 minutes
54V	- 30	-0.14	-0.43	-0.31	-0.35
	- 20	-0.14	-0.44	-0.06	-0.25
	- 10	-0.12	0.14	-0.15	-0.28
	0	-0.17	-0.37	-0.16	-0.06
	+ 10	-0.32	-0.03	0.15	-0.43
	+ 20 (Ref)	-0.08	-0.43	0.16	-0.31
	+ 30	-0.23	-0.07	-0.18	-0.33
	+ 40	0.15	0.11	-0.19	-0.46
	+ 50	0.17	0.08	0.11	-0.19
57V	+ 20	0.14	0.01	0.18	0.07
52V	+ 20	0.17	-0.05	-0.10	-0.45

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/04/10
Test Item	Frequency Stability - LTE Band 66, Single Carrier, BW = 20MHz, QPSK, Channel 2145MHz		

Voltage (DC)	Temp (°C)	Frequency Tolerance (ppm)			
		0 minutes	2 minutes	5 minutes	10 minutes
54V	- 30	-0.14	-0.40	-0.43	-0.41
	- 20	-0.15	-0.03	0.04	0.04
	- 10	-0.13	-0.23	-0.30	-0.30
	0	-0.18	-0.41	-0.19	-0.24
	+ 10	0.23	0.02	-0.01	-0.28
	+ 20 (Ref)	-0.20	0.05	-0.21	0.12
	+ 30	0.27	-0.43	-0.22	-0.05
	+ 40	-0.47	-0.01	-0.09	-0.34
	+ 50	-0.12	0.18	-0.46	-0.27
57V	+ 20	-0.22	0.09	-0.18	-0.14
52V	+ 20	-0.34	-0.12	-0.05	-0.33

6.4. Emission Bandwidth

6.4.1.Test Limit

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

6.4.2.Test Procedure

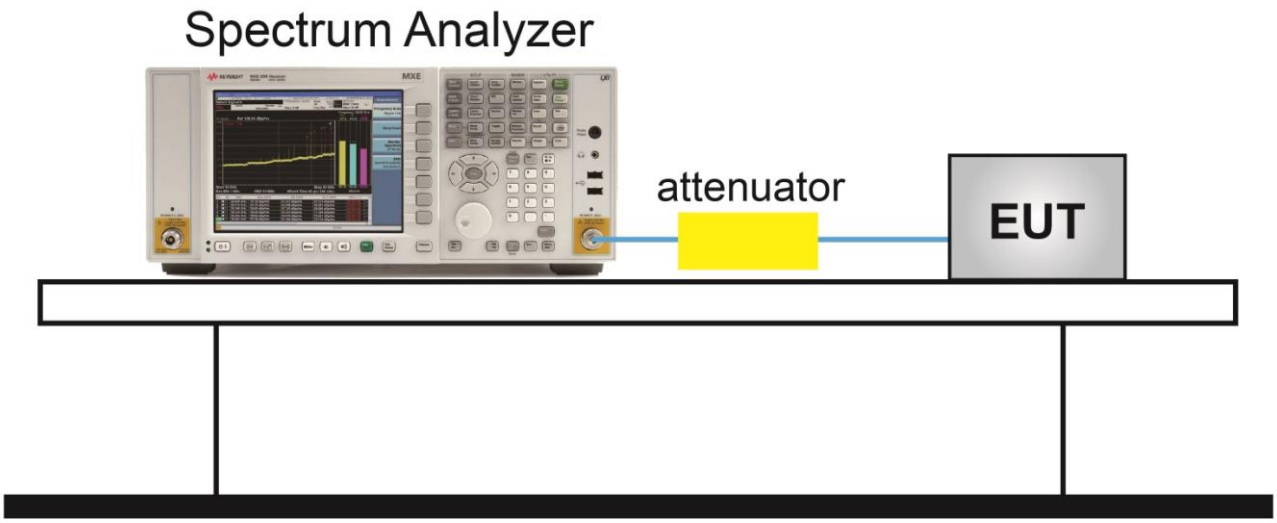
KDB 971168 D01v03r01 - Section 4.1 & 4.2

ANSI C63.26-2015 - Section 5.4.3 & 5.4.4

6.4.3.Test Setting

1. Set center frequency to the nominal EUT channel center frequency;
2. RBW = The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW;
3. VBW ≥ 3 × RBW;
4. Detector = Peak;
5. Trace mode = max hold;
6. Sweep = auto couple;
7. Allow the trace to stabilize;
8. The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “−X dB” requirement, i.e., if the requirement calls for measuring the −26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 26 dB below the reference level

6.4.4.Test Setup



6.4.5.Test Result

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/01/30 ~ 2019/05/20
Test Item	Emission Bandwidth - LTE Band 2 (Single Carrier)		

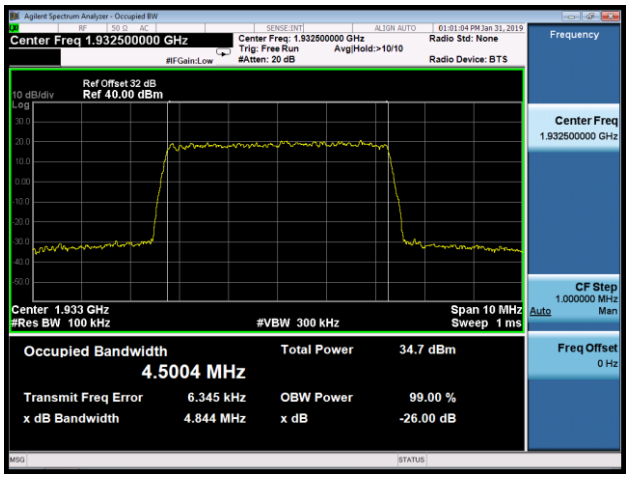
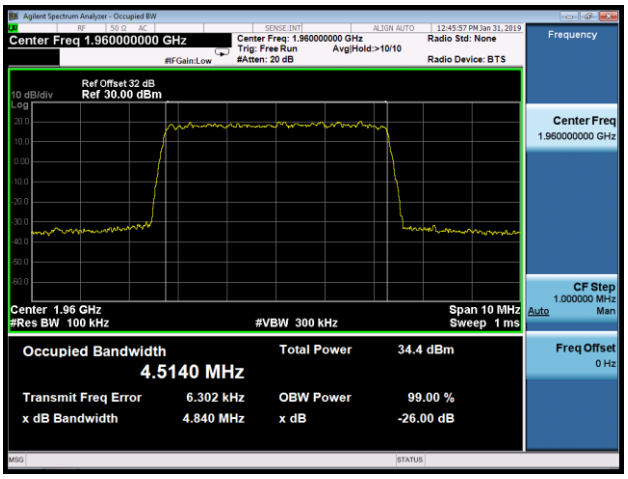
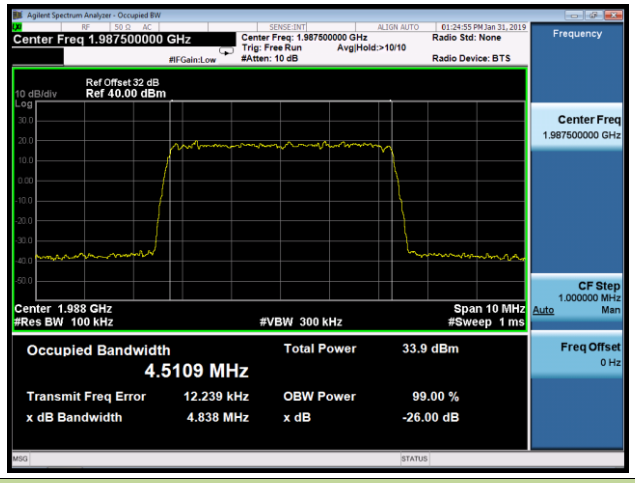
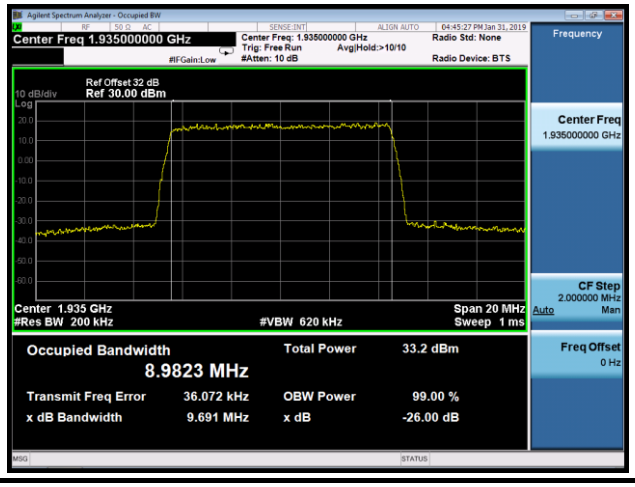
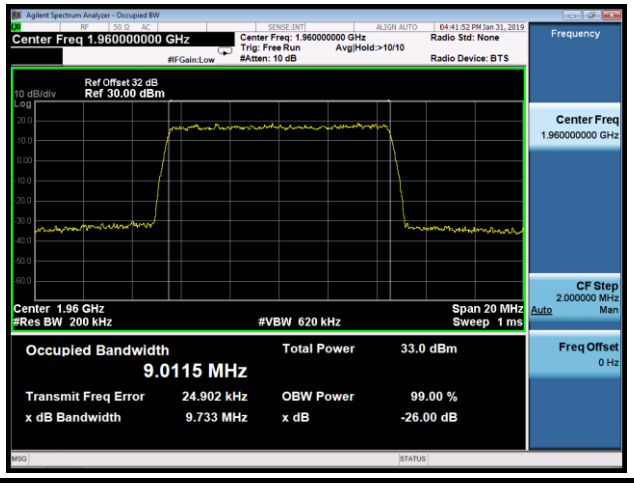
Channel	Frequency (MHz)	Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK				
625	1932.5	5	4.84	4.50
900	1960.0	5	4.84	4.51
1175	1987.5	5	4.84	4.51
650	1935.0	10	9.69	8.98
900	1960.0	10	9.73	9.01
1150	1985.0	10	9.76	9.02
675	1937.5	15	14.52	13.46
900	1960.0	15	14.56	13.48
1125	1982.5	15	14.54	13.51
700	1940.0	20	19.41	18.07
900	1960.0	20	19.53	18.10
1100	1980.0	20	19.60	18.10
16QAM				
625	1932.5	5	4.88	4.50
900	1960.0	5	4.87	4.50
1175	1987.5	5	4.87	4.49
650	1935.0	10	9.71	9.00
900	1960.0	10	9.75	9.00
1150	1985.0	10	9.69	8.99
675	1937.5	15	14.54	13.45
900	1960.0	15	14.54	13.50
1125	1982.5	15	14.54	13.50
700	1940.0	20	19.42	18.00
900	1960.0	20	19.53	18.12
1100	1980.0	20	19.24	18.07

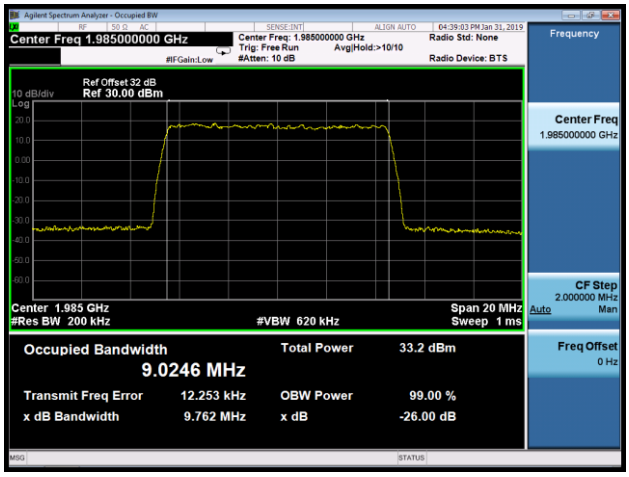
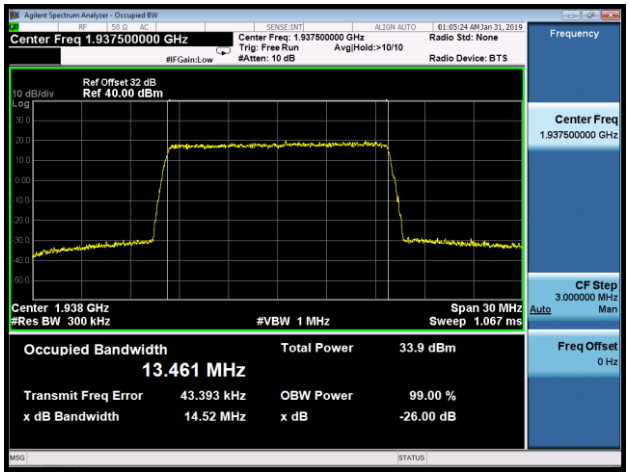
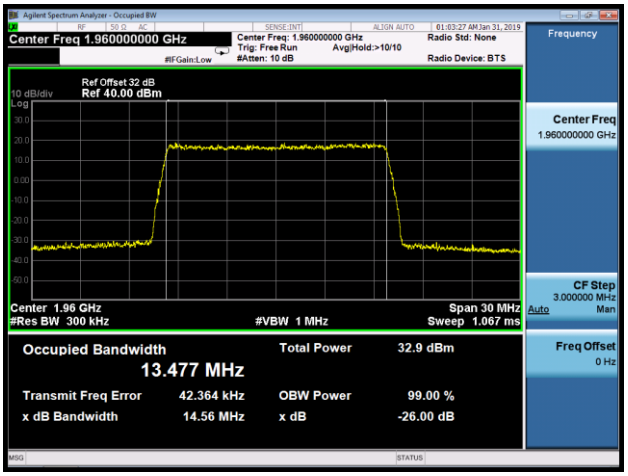
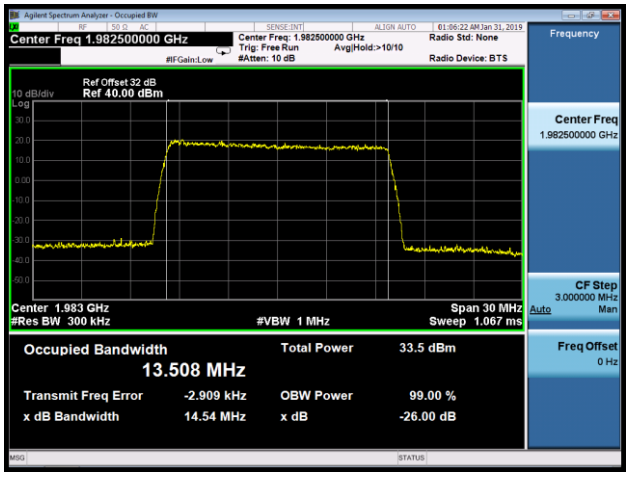
Channel	Frequency (MHz)	Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
64QAM				
625	1932.5	5	4.88	4.49
900	1960.0	5	4.88	4.50
1175	1987.5	5	4.88	4.50
650	1935.0	10	9.72	9.00
900	1960.0	10	9.72	9.00
1150	1985.0	10	9.75	9.01
675	1937.5	15	14.53	13.46
900	1960.0	15	14.56	13.50
1125	1982.5	15	14.53	13.50
700	1940.0	20	19.44	17.96
900	1960.0	20	19.53	18.04
1100	1980.0	20	19.38	18.03
256QAM				
625	1932.5	5	4.87	4.49
900	1960.0	5	4.86	4.49
1175	1987.5	5	4.88	4.49
650	1935.0	10	9.71	9.00
900	1960.0	10	9.73	9.02
1150	1985.0	10	9.72	9.02
675	1937.5	15	14.54	13.47
900	1960.0	15	14.57	13.52
1125	1982.5	15	14.57	13.51
700	1940.0	20	19.57	17.99
900	1960.0	20	19.63	18.05
1100	1980.0	20	19.54	18.07

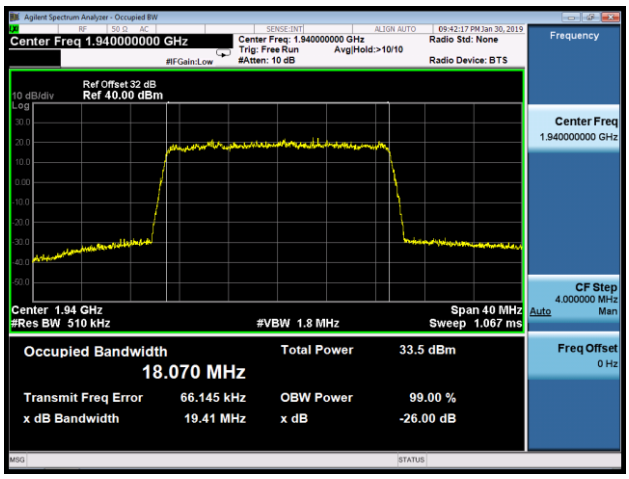
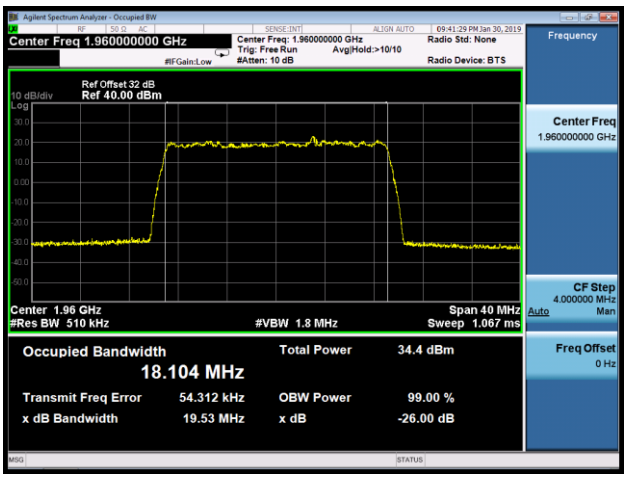
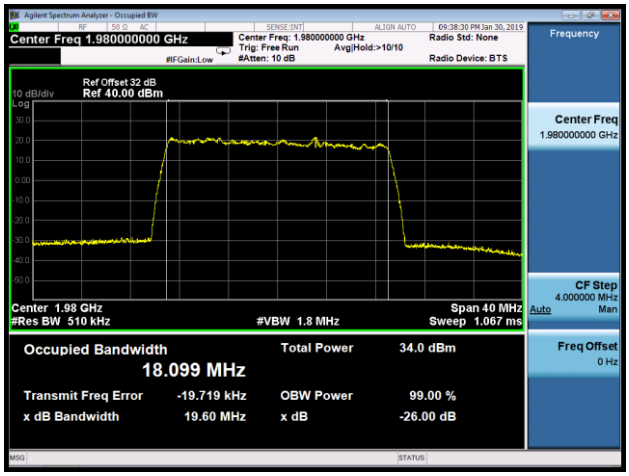
Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/01/30 ~ 2019/04/22
Test Item	Emission Bandwidth - LTE Band 2 (Multi Carrier)		

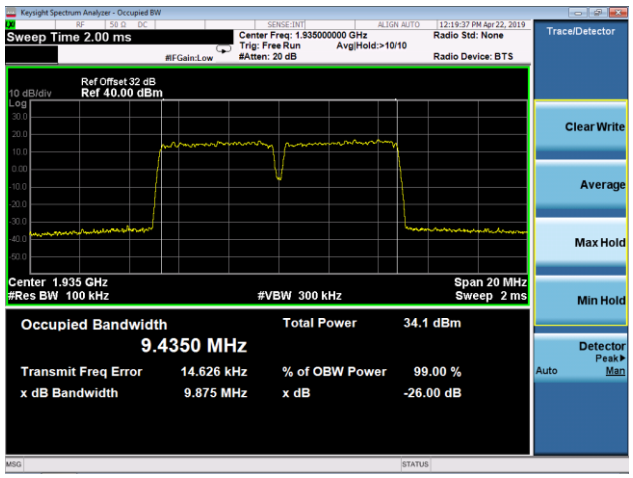
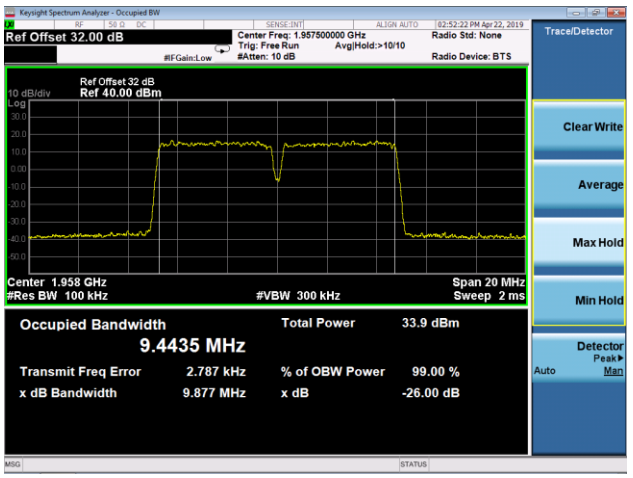
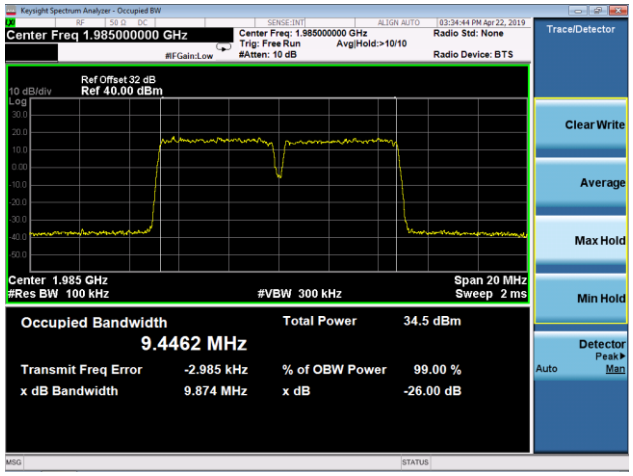
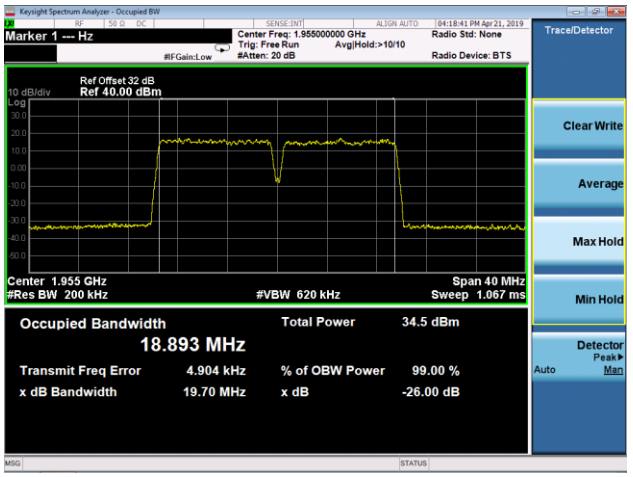
Channel	Frequency (MHz)	Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK				
625 + 675	1932.5 + 1937.5	5 + 5	9.88	9.44
850 + 900	1955.0 + 1960.0	5 + 5	9.88	9.44
1125 + 1175	1982.5 + 1987.5	5 + 5	9.87	9.45
650 + 750	1935.0 + 1945.0	10 + 10	19.67	18.83
800 + 900	1950.0 + 1960.0	10 + 10	19.70	18.89
1050 + 1150	1975.0 + 1985.0	10 + 10	19.72	18.88
675 + 825	1937.5 + 1952.5	15 + 15	30.09	28.45
750 + 900	1945.0 + 1960.0	15 + 15	30.08	28.51
975 + 1125	1967.5 + 1982.5	15 + 15	30.00	28.44
700 + 900	1940.0 + 1960.0	20 + 20	39.83	37.81
900 + 1100	1960.0 + 1980.0	20 + 20	39.89	37.73
16QAM				
625 + 675	1932.5 + 1937.5	5 + 5	9.86	9.43
850 + 900	1955.0 + 1960.0	5 + 5	9.87	9.44
1125 + 1175	1982.5 + 1987.5	5 + 5	9.88	9.44
650 + 750	1935.0 + 1945.0	10 + 10	19.68	18.84
800 + 900	1950.0 + 1960.0	10 + 10	19.69	18.94
1050 + 1150	1975.0 + 1985.0	10 + 10	19.71	18.89
675 + 825	1937.5 + 1952.5	15 + 15	29.99	28.43
750 + 900	1945.0 + 1960.0	15 + 15	30.17	28.45
975 + 1125	1967.5 + 1982.5	15 + 15	29.96	28.39
700 + 900	1940.0 + 1960.0	20 + 20	39.87	37.92
900 + 1100	1960.0 + 1980.0	20 + 20	39.97	37.92

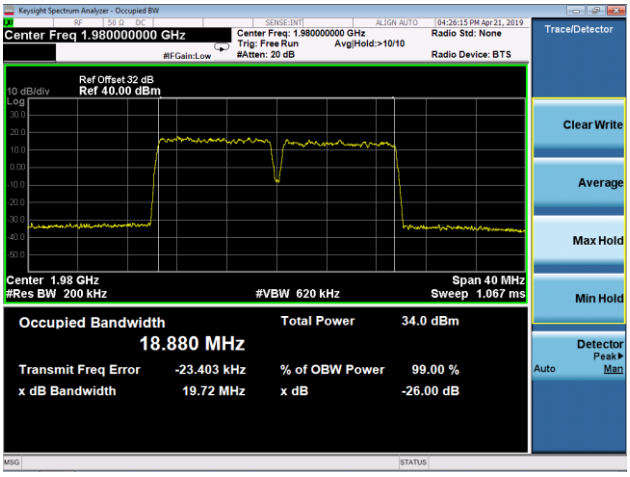
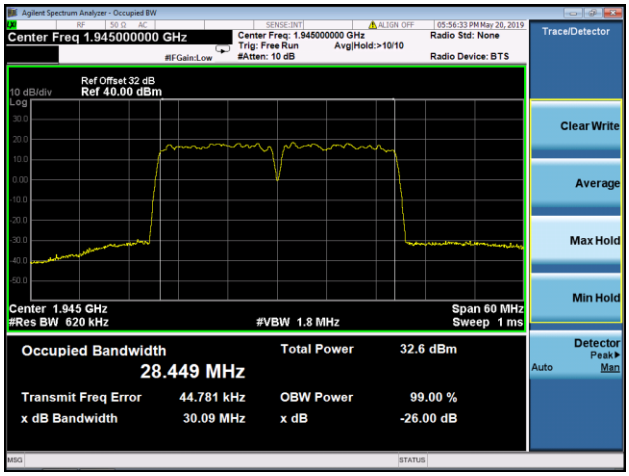
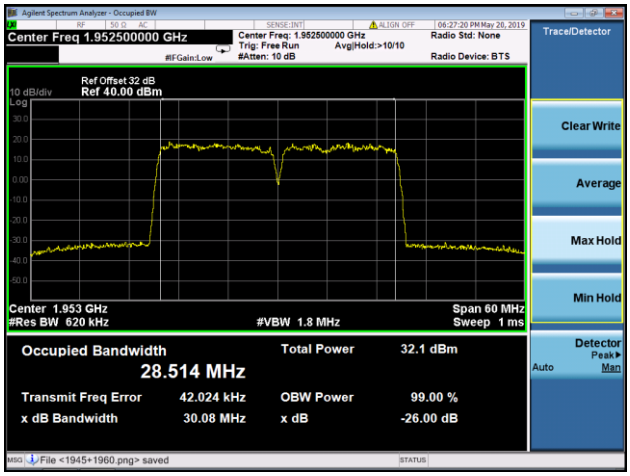
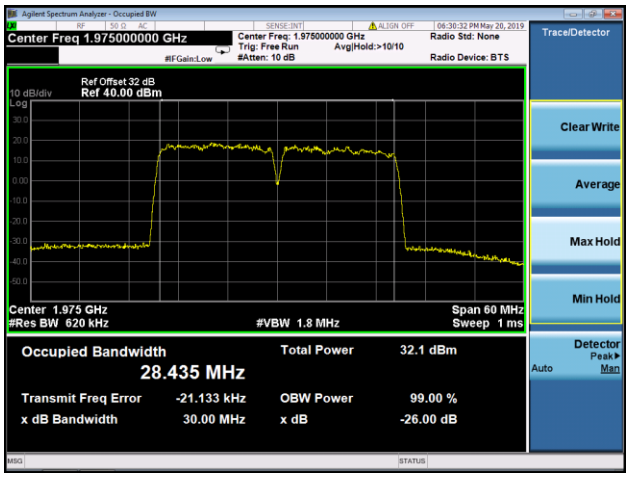
Channel	Frequency (MHz)	Bandwidth (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
64QAM				
625 + 675	1932.5 + 1937.5	5 + 5	9.91	9.43
850 + 900	1955.0 + 1960.0	5 + 5	9.91	9.43
1125 + 1175	1982.5 + 1987.5	5 + 5	9.91	9.44
650 + 750	1935.0 + 1945.0	10 + 10	19.78	18.84
800 + 900	1950.0 + 1960.0	10 + 10	19.73	18.94
1050 + 1150	1975.0 + 1985.0	10 + 10	19.73	18.89
675 + 825	1937.5 + 1952.5	15 + 15	30.13	28.32
750 + 900	1945.0 + 1960.0	15 + 15	30.14	28.44
975 + 1125	1967.5 + 1982.5	15 + 15	30.11	28.35
700 + 900	1940.0 + 1960.0	20 + 20	39.97	37.79
900 + 1100	1960.0 + 1980.0	20 + 20	39.92	37.71
256QAM				
625 + 675	1932.5 + 1937.5	5 + 5	9.88	9.44
850 + 900	1955.0 + 1960.0	5 + 5	9.90	9.45
1125 + 1175	1982.5 + 1987.5	5 + 5	9.89	9.45
650 + 750	1935.0 + 1945.0	10 + 10	19.70	18.83
800 + 900	1950.0 + 1960.0	10 + 10	19.73	18.90
1050 + 1150	1975.0 + 1985.0	10 + 10	19.69	18.91
675 + 825	1937.5 + 1952.5	15 + 15	30.17	28.36
750 + 900	1945.0 + 1960.0	15 + 15	30.14	28.46
975 + 1125	1967.5 + 1982.5	15 + 15	30.12	28.35
700 + 900	1940.0 + 1960.0	20 + 20	40.07	37.85
900 + 1100	1960.0 + 1980.0	20 + 20	40.01	37.76

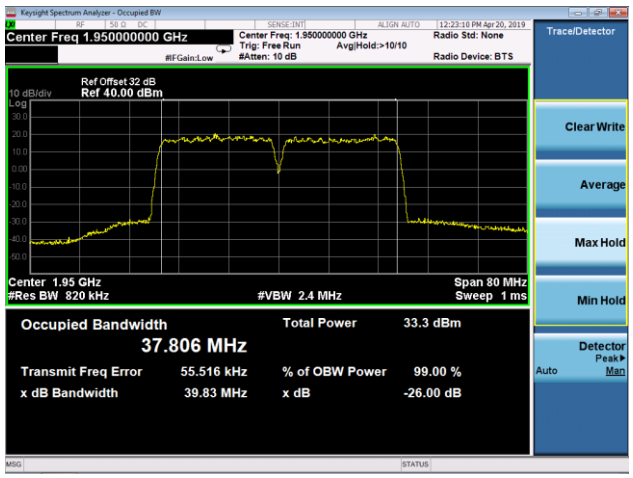
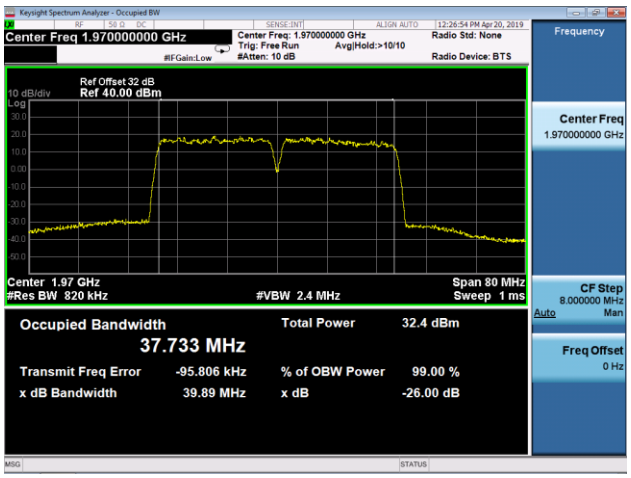
26dB Bandwidth - QPSK	
5MHz Channel Bandwidth	
1932.5MHz	1960.0MHz
	
1987.5MHz	
	
10MHz Channel Bandwidth	
1935.0MHz	1960.0MHz
	

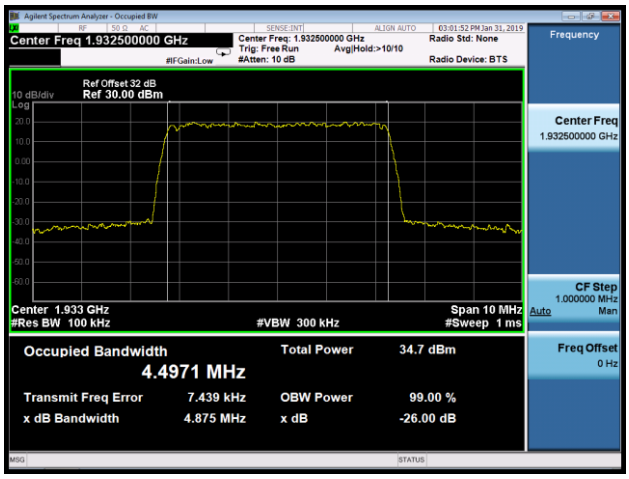
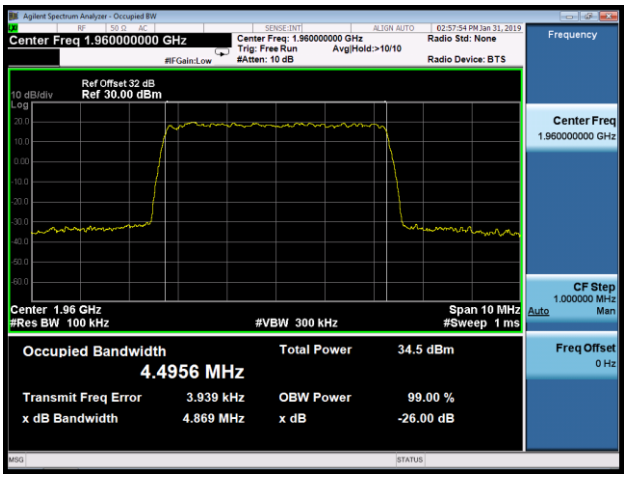
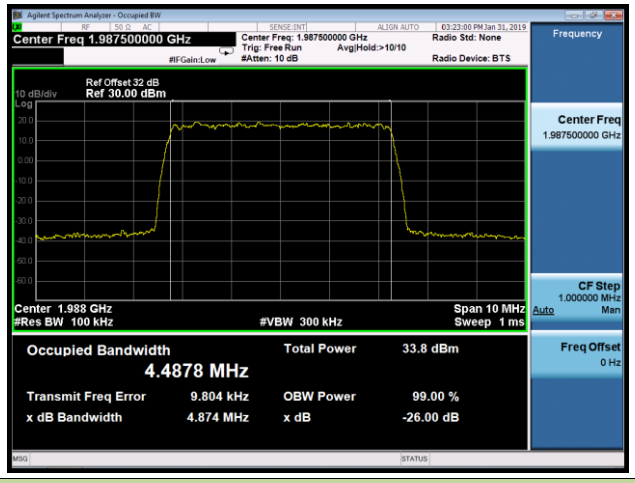
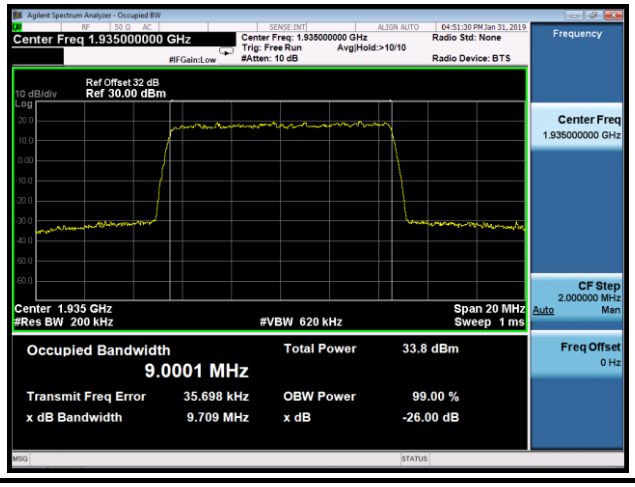
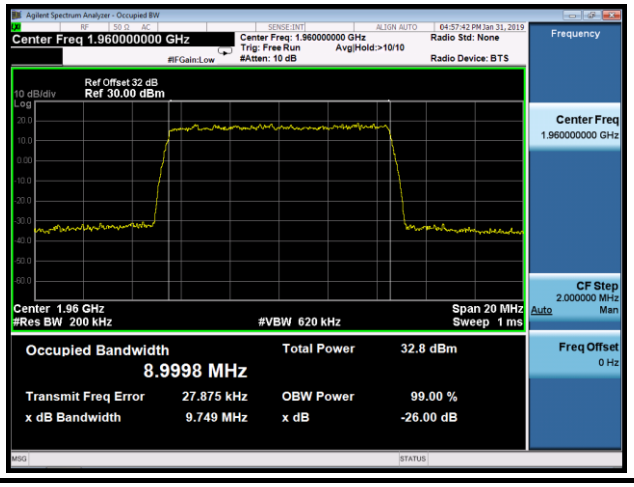
1985.0MHz	
	
15MHz Channel Bandwidth	
1937.5MHz	1960.0MHz
	
1982.5MHz	
	

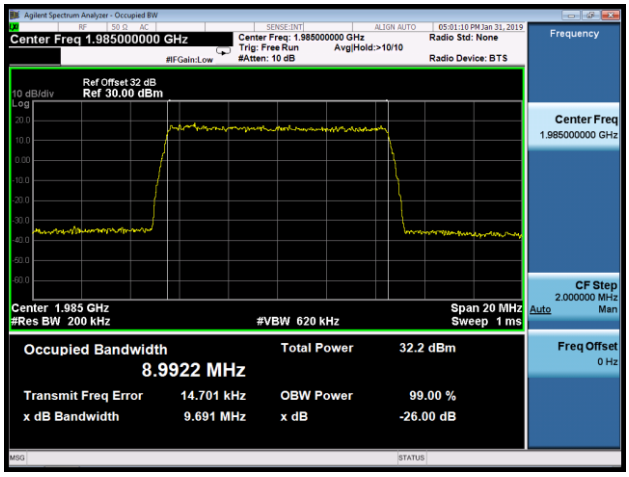
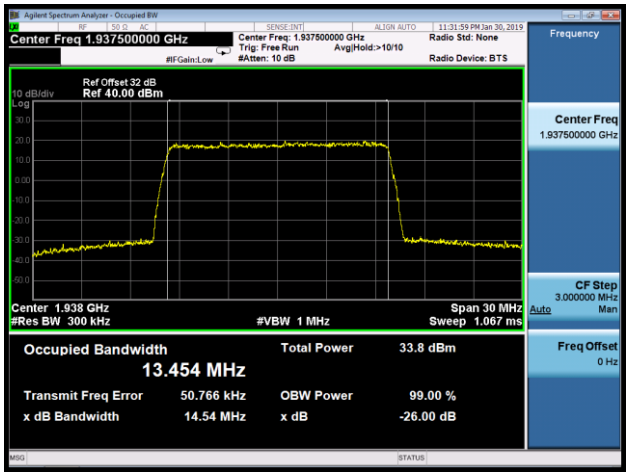
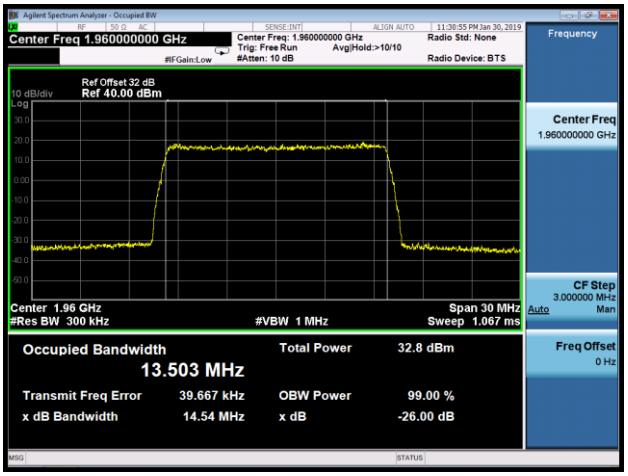
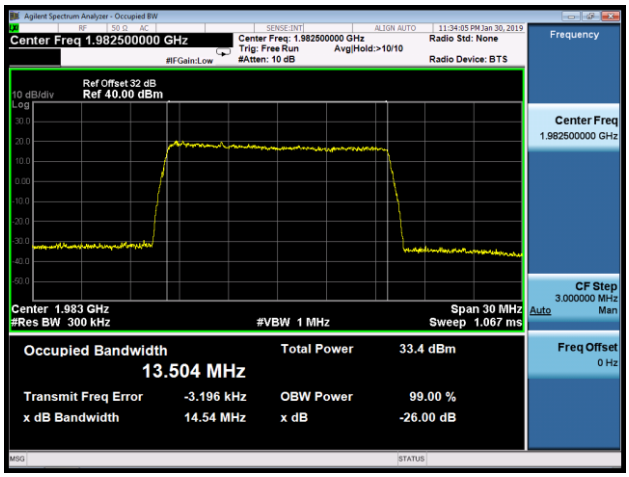
20MHz Channel Bandwidth	
1940.0MHz	1960.0MHz
	
1980.0MHz	
	

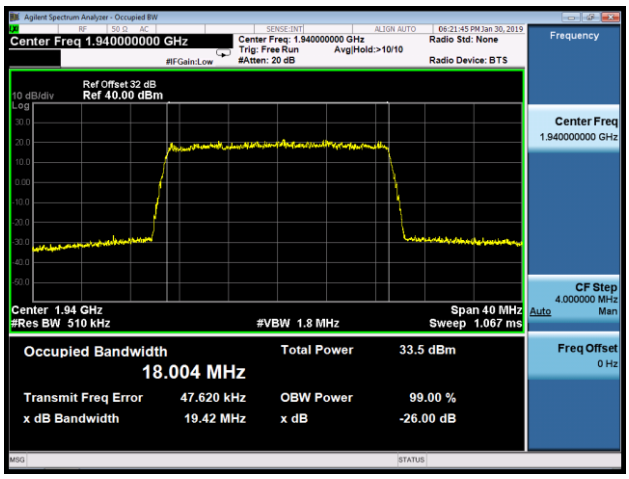
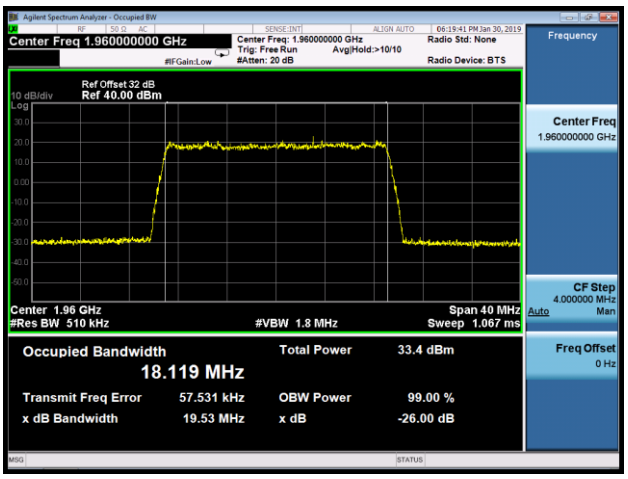
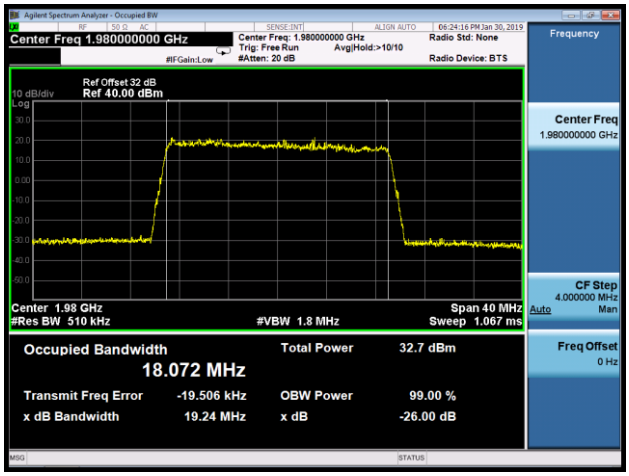
5 + 5MHz Channel Bandwidth	
1932.5MHz + 1937.5MHz	1955.0MHz + 1960.0MHz
	
1982.5MHz + 1987.5MHz	
	
10 + 10MHz Channel Bandwidth	
1935.0MHz + 1945.0MHz	1950.0MHz + 1960.0MHz
	

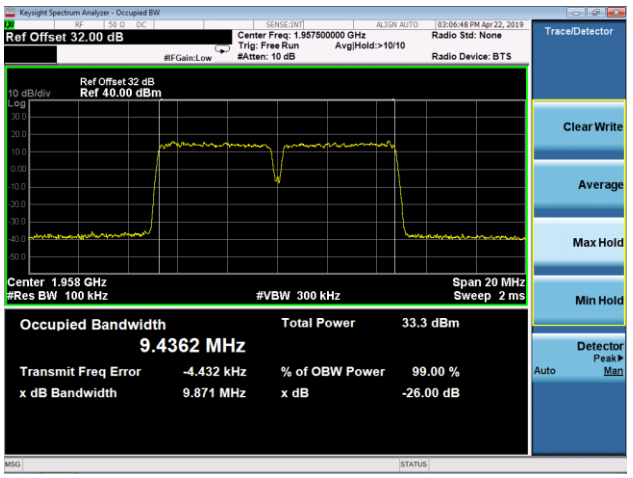
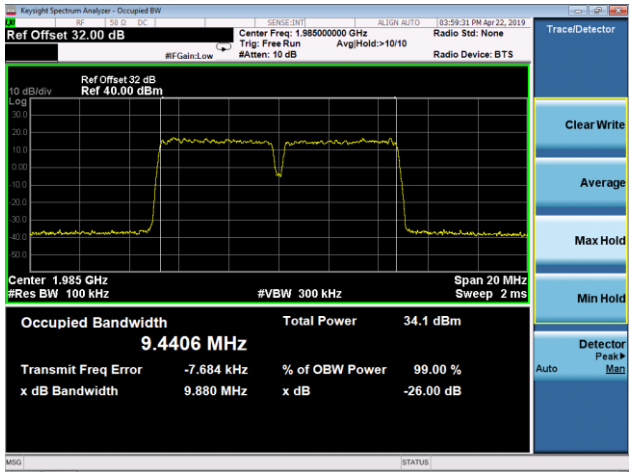
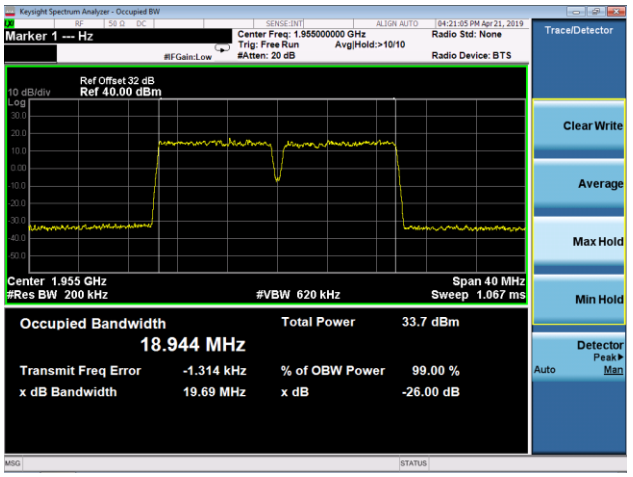
1975.0MHz + 1985.0MHz	
	
15 + 15MHz Channel Bandwidth	
1937.5MHz + 1952.5MHz	1945.0MHz + 1960.0MHz
	
1967.5MHz + 1982.5MHz	
	

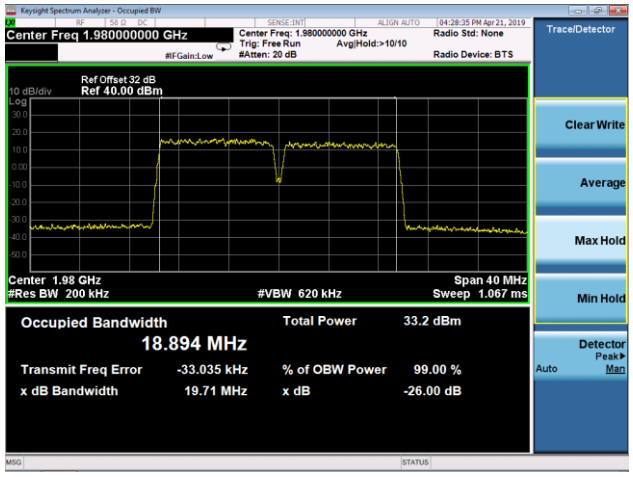
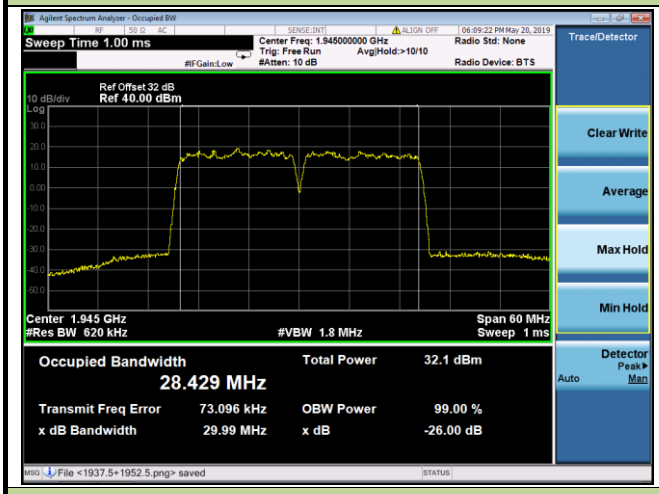
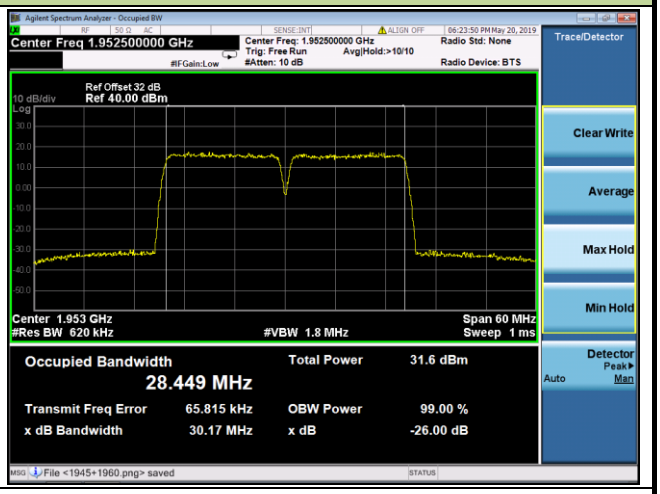
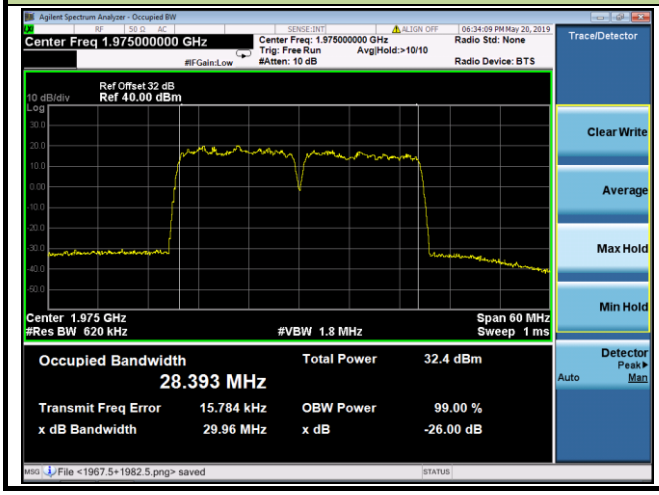
20 + 20MHz Channel Bandwidth	
1940.0MHz + 1960.0MHz	1960.0MHz + 1980.0MHz
	

26dB Bandwidth - 16QAM	
5MHz Channel Bandwidth	
1932.5MHz	1960.0MHz
	
1987.5MHz	
	
10MHz Channel Bandwidth	
1935.0MHz	1960.0MHz
	

1985.0MHz	
	
15MHz Channel Bandwidth	
1937.5MHz	1960.0MHz
	
1982.5MHz	
	

20MHz Channel Bandwidth	
1940.0MHz	1960.0MHz
	
1980.0MHz	
	

5 + 5MHz Channel Bandwidth	
1932.5MHz + 1937.5MHz	1955.0MHz + 1960.0MHz
	
1982.5MHz + 1987.5MHz	
	
10 + 10MHz Channel Bandwidth	
1935.0MHz + 1945.0MHz	1950.0MHz + 1960.0MHz
	

1975.0MHz + 1985.0MHz	
	
15 + 15MHz Channel Bandwidth	
1937.5MHz + 1952.5MHz	1945.0MHz + 1960.0MHz
	
1967.5MHz + 1982.5MHz	
	

20 + 20MHz Channel Bandwidth	
1940.0MHz + 1960.0MHz	1960.0MHz + 1980.0MHz