

# Ericsson AB

# RF TEST REPORT

**Report Type:**

FCC Part 96 RF report

**PRODUCT NAME:**

AIR 6488 B48

**REPORT NUMBER:**

190900699SHA-001

**ISSUE DATE:**

September 6, 2019

**DOCUMENT CONTROL NUMBER:**

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## TEST REPORT

**Applicant:** Ericsson AB  
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**Manufacturer:** Ericsson AB  
Isafjordsgatan 10 SE-164 80 Stockholm 16480 Sweden

**FCC ID:** TA8AKRD901160

### SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

**FCC CFR 47 Part 96:** CITIZENS BROADBAND RADIO SERVICE

### PREPARED BY:



Project Engineer  
Nemo Li

### REVIEWED BY:



Reviewer  
Daniel Zhao

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**TEST REPORT**

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## Revision History

Report No.	Version	Description	Issued Date
190900699SHA-001	Rev. 01	Initial issue of report	September 6, 2019

## Measurement result summary

TEST ITEM	FCC REFERANCE	RESULT
Power, PSD and Peak to Average Power Ratio	96.41(b)(c)(g) 2.1046	Pass
Occupied Bandwidth	96.41(e)(3) 2.1049	Pass
Unwanted Emissions at Band Edge	96.41(e)(1) 2.1051	Pass
Conducted Unwanted Emission	96.41(e)(2) 2.1051	Pass
Radiated Unwanted Emissions	96.41(e)(1)(2) 2.1053	Pass
Frequency Stability	- 2.1055	Pass

## 1 GENERAL INFORMATION

### 1.1 Description of Equipment Under Test (EUT)

Description:	Remote Radio Unit
Product name:	AIR 6488 B48
Product number:	KRD 901 160/1, KRD 901 160/11, KRD 901 160/2, KRD 901 160/21
Serial Number(s)	D829143558
Rating:	-48V DC
Software Version:	PIS: CXP2030020/5_R15A34, UP: CXP2010053/1_R46A110
Hardware Version:	R1A
Sample received date:	August 19, 2019
Date of test:	August 19, 2019 ~ August 30, 2019

Note: The differences between the 4 variants are as below, and others are same.  
 KRD 901 160/2 (with un-security software and RDNB board for testing purpose).  
 KRD 901 160/21 (with security software and RDNB board for testing purpose).  
 KRD 901 160/1 (with un-security software and antenna).  
 KRD 901 160/11 (with security software and antenna).

## 1.2 Technical Specification

Frequency Range:	3550MHz - 3700MHz
Number of Antenna ports:	64 TX/RX
Supported RAT:	TDD LTE
Max RF bandwidth (IBW):	100MHz
Supported Number of Carriers:	Maximum 3 carriers
Supported modulation:	QPSK, 16QAM, 64QAM, 256QAM
Supported Channel Bandwidth:	10MHz, 20MHz
ITU Designation of Emission:	10M0F9W, 20M0F9W
Output Power:	Maximum 12.73dBm (18.75mW) per port for 20MHz channel bandwidth, Maximum 9.72dBm (9.37mW) per port for 10MHz channel bandwidth.
Antenna Gain:	22.5dBi

### 1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address 1:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Address 2:	No. 5 Lize East Street, Ericsson Tower, Chaoyang District, Beijing 100102 P.R.C.
Telephone:	+86 21 61278200
Telefax:	+86 21 54262353
The test facility is recognized, certified, or accredited by these organizations:	FCC Accredited Lab Designation Number: CN1175, CN1258
	IC Registration Lab CAB identifier.: CN0051
	A2LA Accreditation Lab Certificate Number: 3309.02, 3309.04



## 2 TEST SPECIFICATIONS

### 2.1 Related documents

FCC Part 96 (2018)

FCC Part 2 (2018)

ANSI C63.26:2015

KDB 971168 D01 v03r01

KDB 662911 D01 v02r01

KDB 940660 D01 v02

### 2.2 Product Information

The Equipment Under Test (EUT) AIR 6488 B48 is an Ericsson Radio Unit working in the public mobile services 3550-3700MHz band which provides communication connections to 3550-3700MHz network. The Radio AIR 6488 B48 operates from a -48V DC power supply.

The EUT includes 64 TX/RX ports. It can be configured to transmit in MIMO mode, and the MIMO mode was used for measurements as the worst configuration. The complete testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

A full technical description can be found in the Manufacturer's documentation.

### 2.3 Configuration Description

This testing was performed in accordance with Part 96 PAG, as submitted to the FCC Tracking Number 986539.

Initial pre-testing was carried out to determine the worst modulation scheme by measuring the output power from QPSK, 16QAM, 64QAM and 256QAM on the middle channel of one antenna port. From these tests, it was determined that 64QAM was the worst modulation scheme and was used for all testing.

Initial pre-testing was carried out to determine the worst bandwidth on the middle channel of one antenna port. From these tests, it was determined that 20MHz was the worst case.

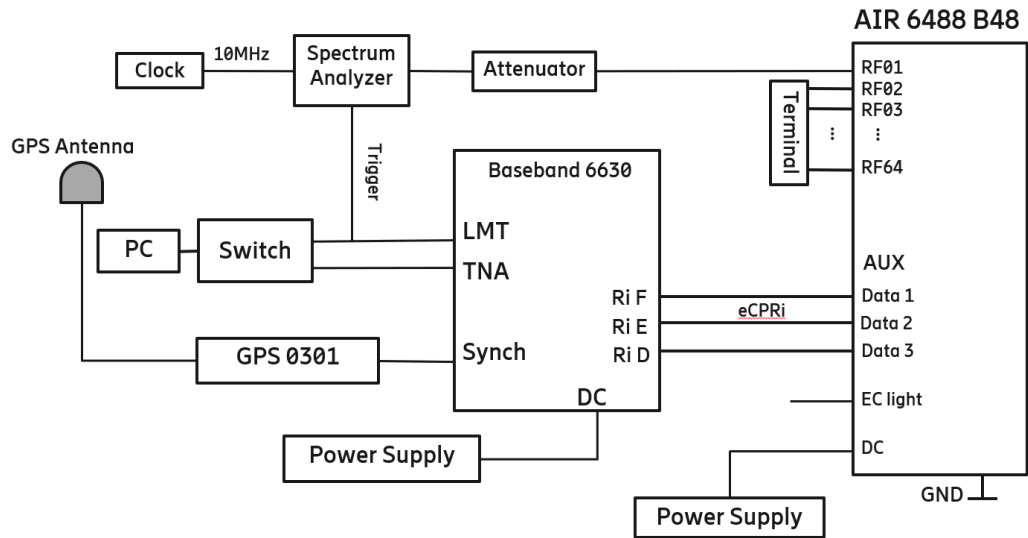
Complete testing was carried out on the worst antenna port which was determined by the highest output power from the 64 measured ports on worst case modulation scheme and worst bandwidth. The worst antenna port was antenna port 21.

The settings below were used for all measurements unless otherwise noted:

Configuration	Carrier	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE-MIMO-1C-10	1C	10MHz	3555	3625	3695
LTE-MIMO-1C-20	1C	20MHz	3560	3625	3690
LTE-MIMO-2C-10-1	2C	10MHz	3685 + 3695		
LTE-MIMO-2C-10-2	2C	10MHz	3605 + 3695		
LTE-MIMO-2C-20-1	2C	20MHz	3670 + 3690		
LTE-MIMO-2C-20-2	2C	20MHz	3610 + 3690		
LTE-MIMO-3C-10-1	3C	10MHz	3675 + 3685 + 3695		
LTE-MIMO-3C-10-2	3C	10MHz	3605 + 3615 + 3695		
LTE-MIMO-3C-20-1	3C	20MHz	3650 + 3670 + 3690		
LTE-MIMO-3C-20-2	3C	20MHz	3610 + 3630 + 3690		

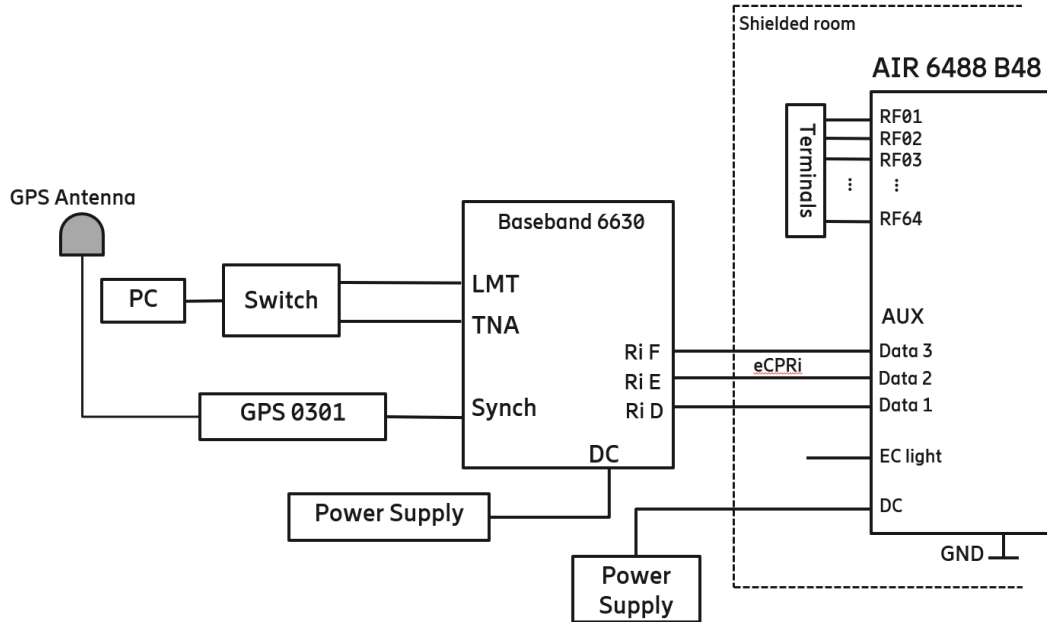
## 2.4 Test Setup

Conducted Measurement:



No.	Auxiliary Equipment	Product Number / Model Type	Version
1	Test computer	HP Probook 430 G3	-
2	Baseband 6630	KDU 137 848/1	R2F
3	Power supply	N8737A	-
4	Power supply	N8737A	-
5	Terminator	AETFZ-10W-SMAM	-

Radiated Measurement:



No.	Auxiliary Equipment	Product Number / Model Type	Version
1	Test computer	HP Probook 430 G3	-
2	Baseband 6630	KDU 137 848/1	R2F
3	Power supply	N8737A	-
4	Power supply	N8737A	-
6	Terminator	AETFZ-10W-SMAM	-

**2.5 Test environment condition:**

Test items	Temperature	Humidity
Power, PSD and Peak to Average Power Ratio	24°C	56% RH
Occupied Bandwidth		
Unwanted Emissions at Band Edge		
Conducted Unwanted Emission		
Radiated Unwanted Emissions	24°C	56% RH
Frequency Stability	Please refer to clause 8	

## 2.6 Instrument list

Intertek Testing Services Shanghai					
<b>Conducted Emission</b>					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input type="checkbox"/>	Test Receiver	R&S	ESCS 30	EC 2107	2020-07-14
<input type="checkbox"/>	A.M.N.	R&S	ESH2-Z5	EC 3119	2019-11-30
<input type="checkbox"/>	A.M.N.	R&S	ENV 216	EC 3393	2020-07-14
<input type="checkbox"/>	A.M.N.	R&S	ENV4200	EC 3558	2020-06-10
<b>Radiated Emission</b>					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Test Receiver	R&S	ESIB 26	EC 3045	2019-09-12
<input checked="" type="checkbox"/>	Bilog Antenna	TESEQ	CBL 6112D	EC 4206	2020-06-10
<input checked="" type="checkbox"/>	Pre-amplifier	R&S	AFS42-00101800-25-S-42	EC 5262	2020-06-10
<input checked="" type="checkbox"/>	Horn antenna	R&S	HF 906	EC 3049	2019-11-17
<input type="checkbox"/>	Horn antenna	ETS	3117	EC 4792-1	2020-01-09
<input type="checkbox"/>	Horn antenna	TOYO	HAP18-26W	EC 4792-3	2020-07-09
<input checked="" type="checkbox"/>	Horn antenna	ETS-LINDGREN	3116C-PA	EC 5955	2020-01-28
<input type="checkbox"/>	Active loop antenna	Schwarzbeck	FMZB1519	EC 5345	2020-03-07
<b>RF test</b>					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input type="checkbox"/>	PXA Signal Analyzer	Keysight	N9030A	EC 5338	2020-03-05
<input type="checkbox"/>	PXA Signal Analyzer	Keysight	N9030A	EC 1046	2019-11-15
<input checked="" type="checkbox"/>	PXA Signal Analyzer	Keysight	N9030B	EC 6078	2020-06-11
<input type="checkbox"/>	Power sensor	Agilent	U2021XA	EC 5338-1	2020-03-05
<input type="checkbox"/>	Vector Signal Generator	Agilent	N5182B	EC 5175	2020-03-05
<input type="checkbox"/>	Spectrum analyzer	R&S	CMW500	EC5944	2019-12-22
<input type="checkbox"/>	MXG Analog Signal Generator	Agilent	N5181A	EC 5338-2	2020-03-05
<input type="checkbox"/>	Mobile Test System	Litepoint	lqxel	EC 5176	2020-01-08
<input type="checkbox"/>	Test Receiver	R&S	ESCI 7	EC 4501	2019-09-12
<b>Tet Site</b>					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input type="checkbox"/>	Shielded room	Zhongyu	-	EC 2838	2020-01-14
<input type="checkbox"/>	Shielded room	Zhongyu	-	EC 2839	2020-01-14
<input checked="" type="checkbox"/>	Semi-anechoic chamber	Albatross project	-	EC 3048	2020-07-31
<input type="checkbox"/>	Fully-anechoic chamber	Albatross project	-	EC 3047	2020-07-31

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<input type="checkbox"/>	Climatic chamber	-	CEEC-WR16H-50W	EC 1052	2020-01-18
<b>Additional instrument</b>					
<b>Used</b>	<b>Equipment</b>	<b>Manufacturer</b>	<b>Type</b>	<b>Internal no.</b>	<b>Due date</b>
<input type="checkbox"/>	Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 3783	2020-02-28
<input type="checkbox"/>	Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 2122	2020-03-11
<input checked="" type="checkbox"/>	Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 5198	2020-01-18
<input type="checkbox"/>	Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 3326	2020-03-28
<input type="checkbox"/>	Humiture meter	-	TPJ-20	EC 1053	2020-01-14
<input type="checkbox"/>	Pressure meter	YM3	Shanghai Mengde	EC 3320	2020-07-01

## 2.7 Measurement uncertainty

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Measurement uncertainty
Maximum output power	0.73dB
Occupied Bandwidth	0.88%
Unwanted Emissions at Band Edge	3.03dB
Conducted Unwanted Emission	3.03dB
Radiated Unwanted Emissions below 1GHz	4.90dB
Radiated Unwanted Emissions above 1GHz	5.02dB
Frequency stability	0.77 x 10 <sup>-7</sup>



### 3 Power, PSD and Peak to Average Power Ratio

Test result: Pass

#### 3.1 Limit

Power limits:

Maximum effective isotropic radiated power (EIRP): 47dBm/10MHz

Maximum Power Spectral Density (PSD): 37dBm/MHz

Peak to Average Ratio:  $\leq 13$  dB

#### 3.2 Measurement Procedure

The EUT was configured to transmit on maximum power and proper modulation. Measurements were performed with a Spectrum Analyzer using the Band Power measurement function. The detector was set to RMS with an RBW of at least 1% of the carrier bandwidth and a VBW of at least 3 times the RBW. The integration bandwidth was configured to be 10MHz as defined in 96.41(b). Where the carrier width was greater than 10MHz, the integration bandwidth was moved to the region with the highest PSD to find the maximum band power.

For PSD measurements in a 1MHz bandwidth, an RMS detector was used with a single sweep. The highest PSD was established over the entire emission bandwidth and the result recorded.

Two polarizations are generated for the beam, 32 ports are used to create each polarization. The antenna gain for each polarization is declared as 22.5 dBi, therefore the EIRP for each polarization is calculated as the sum of the power over 32 ports plus the antenna gain. This calculation is applied for each polarization and then each polarization EIRP is summed to calculate the overall EIRP.

CCDF measurements were carried out in accordance with ANSI C63.26 Clause 5.2.3.4.

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**3.3 Measurement result**

LTE-MIMO-1C-10:

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position B			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	10	3.90	3.90	-5.296	8.31
1	64QAM	10	3.91	3.91	-5.283	8.25
2	64QAM	10	3.70	3.70	-5.454	8.31
3	64QAM	10	3.90	3.90	-5.267	8.27
4	64QAM	10	3.78	3.78	-5.394	8.27
5	64QAM	10	3.79	3.79	-5.252	8.26
6	64QAM	10	3.63	3.63	-5.438	8.23
7	64QAM	10	3.66	3.66	-5.435	8.28
8	64QAM	10	3.83	3.83	-5.252	8.68
9	64QAM	10	3.76	3.76	-5.387	8.62
10	64QAM	10	3.88	3.88	-5.193	8.75
11	64QAM	10	3.89	3.89	-5.246	8.64
12	64QAM	10	3.93	3.93	-5.209	8.61
13	64QAM	10	3.85	3.85	-5.292	8.62
14	64QAM	10	4.01	4.01	-5.161	8.66
15	64QAM	10	4.04	4.04	-5.097	8.62
16	64QAM	10	4.60	4.60	-4.525	8.65
17	64QAM	10	4.60	4.60	-4.563	8.25
18	64QAM	10	4.59	4.59	-4.558	8.30
19	64QAM	10	4.61	4.61	-4.518	8.26
20	64QAM	10	4.31	4.31	-4.822	8.29
21	64QAM	10	4.59	4.59	-4.492	8.28
22	64QAM	10	4.29	4.29	-4.828	8.30
23	64QAM	10	4.28	4.28	-4.812	8.24
24	64QAM	10	4.26	4.26	-4.795	8.22
25	64QAM	10	4.30	4.30	-4.813	8.61
26	64QAM	10	4.41	4.41	-4.657	8.62
27	64QAM	10	4.36	4.36	-4.739	8.76
28	64QAM	10	4.54	4.54	-4.547	8.75
29	64QAM	10	4.41	4.41	-4.675	8.66
30	64QAM	10	4.49	4.49	-4.625	8.60
31	64QAM	10	4.49	4.49	-4.635	8.63
Total power 0-31			19.21	19.21	10.09	-
Total power 0-31 + 22.5dBi			41.71	41.71	32.59	-
32	64QAM	10	4.22	4.22	-4.901	8.62
33	64QAM	10	4.46	4.46	-4.688	8.28
34	64QAM	10	4.22	4.22	-4.899	8.27
35	64QAM	10	4.41	4.41	-4.744	8.24

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36	64QAM	10	4.33	4.33	-4.832	8.27
37	64QAM	10	4.34	4.34	-4.759	8.30
38	64QAM	10	4.16	4.16	-5.050	8.29
39	64QAM	10	4.18	4.18	-4.970	8.29
40	64QAM	10	4.36	4.36	-4.757	8.28
41	64QAM	10	4.53	4.53	-4.511	8.63
42	64QAM	10	4.45	4.45	-4.628	8.64
43	64QAM	10	4.40	4.40	-4.775	8.65
44	64QAM	10	4.28	4.28	-4.874	8.60
45	64QAM	10	4.32	4.32	-4.737	8.65
46	64QAM	10	4.35	4.35	-4.792	8.64
47	64QAM	10	4.33	4.33	-4.797	8.71
48	64QAM	10	3.78	3.78	-5.367	8.73
49	64QAM	10	3.73	3.73	-5.414	8.27
50	64QAM	10	3.41	3.41	-5.698	8.31
51	64QAM	10	3.56	3.56	-5.582	8.29
52	64QAM	10	3.47	3.47	-5.679	8.30
53	64QAM	10	3.57	3.57	-5.534	8.27
54	64QAM	10	3.45	3.45	-5.659	8.32
55	64QAM	10	3.53	3.53	-5.585	8.27
56	64QAM	10	3.54	3.54	-5.530	8.61
57	64QAM	10	3.64	3.64	-5.450	8.74
58	64QAM	10	3.57	3.57	-5.495	8.72
59	64QAM	10	3.70	3.70	-5.431	8.65
60	64QAM	10	3.44	3.44	-5.708	8.69
61	64QAM	10	3.30	3.30	-5.841	8.62
62	64QAM	10	3.39	3.39	-5.763	8.64
63	64QAM	10	3.45	3.45	-5.673	8.64
Total power 32-63			19.00	19.00	9.88	-
Total power 32-63 + 22.5dBi			41.50	41.50	32.38	-
EIRP			44.62	44.62	35.50	-

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position M			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	10	3.98	3.98	-5.258	8.34
1	64QAM	10	3.94	3.94	-5.264	8.35
2	64QAM	10	3.68	3.68	-5.522	8.31
3	64QAM	10	3.88	3.88	-5.340	8.31
4	64QAM	10	3.77	3.77	-5.438	8.30
5	64QAM	10	3.81	3.81	-5.421	8.27
6	64QAM	10	3.66	3.66	-5.596	8.25
7	64QAM	10	3.72	3.72	-5.507	8.27
8	64QAM	10	3.86	3.86	-5.361	8.81
9	64QAM	10	3.75	3.75	-5.470	8.76

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10	64QAM	10	3.90	3.90	-5.336	8.77
11	64QAM	10	3.83	3.83	-5.386	8.69
12	64QAM	10	4.03	4.03	-5.189	8.77
13	64QAM	10	3.91	3.91	-5.301	8.71
14	64QAM	10	4.12	4.12	-5.120	8.71
15	64QAM	10	4.09	4.09	-5.136	8.73
16	64QAM	10	4.08	4.08	-5.139	8.71
17	64QAM	10	4.34	4.34	-4.891	8.32
18	64QAM	10	4.52	4.52	-4.685	8.27
19	64QAM	10	4.35	4.35	-4.884	8.29
20	64QAM	10	4.51	4.51	-4.708	8.28
21	64QAM	10	4.35	4.35	-4.893	8.30
22	64QAM	10	4.52	4.52	-4.728	8.27
23	64QAM	10	4.20	4.20	-5.030	8.35
24	64QAM	10	4.20	4.20	-5.030	8.33
25	64QAM	10	4.28	4.28	-4.946	8.70
26	64QAM	10	4.35	4.35	-4.869	8.79
27	64QAM	10	4.39	4.39	-4.826	8.72
28	64QAM	10	4.52	4.52	-4.677	8.73
29	64QAM	10	4.34	4.34	-4.890	8.73
30	64QAM	10	4.45	4.45	-4.768	8.68
31	64QAM	10	4.39	4.39	-4.812	8.69
Total power 0-31			19.18	19.18	9.95	-
Total power 0-31 + 22.5dBi			41.68	41.68	32.45	-
32	64QAM	10	4.25	4.25	-4.980	8.32
33	64QAM	10	4.26	4.26	-4.997	8.28
34	64QAM	10	4.15	4.15	-5.091	8.27
35	64QAM	10	4.28	4.28	-4.939	8.33
36	64QAM	10	4.27	4.27	-4.955	8.24
37	64QAM	10	4.35	4.35	-4.866	8.25
38	64QAM	10	4.05	4.05	-5.179	8.27
39	64QAM	10	4.11	4.11	-5.115	8.31
40	64QAM	10	4.26	4.26	-4.963	8.70
41	64QAM	10	4.45	4.45	-4.813	8.80
42	64QAM	10	4.51	4.51	-4.745	8.77
43	64QAM	10	4.54	4.54	-4.695	8.74
44	64QAM	10	4.47	4.47	-4.772	8.78
45	64QAM	10	4.43	4.43	-4.822	8.70
46	64QAM	10	4.52	4.52	-4.707	8.77
47	64QAM	10	4.46	4.46	-4.774	8.73
48	64QAM	10	3.64	3.64	-5.614	8.32
49	64QAM	10	3.86	3.86	-5.358	8.30
50	64QAM	10	3.54	3.54	-5.644	8.28
51	64QAM	10	3.67	3.67	-5.552	8.33
52	64QAM	10	3.67	3.67	-5.583	8.29
53	64QAM	10	3.71	3.71	-5.508	8.22
54	64QAM	10	3.60	3.60	-5.654	8.28

**TEST REPORT**

55	64QAM	10	3.70	3.70	-5.538	8.33
56	64QAM	10	3.65	3.65	-5.592	8.74
57	64QAM	10	3.68	3.68	-5.560	8.75
58	64QAM	10	3.74	3.74	-5.502	8.73
59	64QAM	10	3.81	3.81	-5.423	8.79
60	64QAM	10	3.66	3.66	-5.590	8.71
61	64QAM	10	3.56	3.56	-5.643	8.76
62	64QAM	10	3.58	3.58	-5.657	8.74
63	64QAM	10	3.63	3.63	-5.642	8.78
Total power 32-63			19.07	19.07	9.83	-
Total power 32-63 + 22.5dBi			41.57	41.57	32.33	-
EIRP			44.63	44.63	35.40	-

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position T			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	10	4.21	4.21	-4.894	8.25
1	64QAM	10	4.22	4.22	-4.819	8.25
2	64QAM	10	4.13	4.13	-4.902	8.26
3	64QAM	10	4.25	4.25	-4.809	8.24
4	64QAM	10	4.25	4.25	-4.835	8.23
5	64QAM	10	4.19	4.19	-4.853	8.27
6	64QAM	10	4.16	4.16	-4.838	8.27
7	64QAM	10	4.06	4.06	-4.942	8.28
8	64QAM	10	4.01	4.01	-4.961	8.83
9	64QAM	10	4.07	4.07	-4.965	8.75
10	64QAM	10	4.17	4.17	-4.818	8.75
11	64QAM	10	4.04	4.04	-4.997	8.74
12	64QAM	10	4.32	4.32	-4.704	8.84
13	64QAM	10	4.33	4.33	-4.708	8.83
14	64QAM	10	4.42	4.42	-4.580	8.70
15	64QAM	10	4.33	4.33	-4.701	8.74
16	64QAM	10	4.67	4.67	-4.385	8.26
17	64QAM	10	4.81	4.81	-4.252	8.28
18	64QAM	10	4.72	4.72	-4.334	8.27
19	64QAM	10	4.66	4.66	-4.376	8.29
20	64QAM	10	4.64	4.64	-4.412	8.23
21	64QAM	10	4.93	4.93	-4.130	8.24
22	64QAM	10	4.61	4.61	-4.477	8.26
23	64QAM	10	4.63	4.63	-4.469	8.25
24	64QAM	10	4.61	4.61	-4.420	8.29
25	64QAM	10	4.50	4.50	-4.503	8.80
26	64QAM	10	4.66	4.66	-4.385	8.74
27	64QAM	10	4.71	4.71	-4.330	8.74
28	64QAM	10	4.73	4.73	-4.316	8.76

**TEST REPORT**

29	64QAM	10	4.73	4.73	-4.324	8.74
30	64QAM	10	4.75	4.75	-4.239	8.84
31	64QAM	10	4.76	4.76	-4.289	8.80
Total power 0-31			19.51	19.51	10.47	-
Total power 0-31 + 22.5dBi			42.01	42.01	32.97	-
32	64QAM	10	4.44	4.44	-4.577	8.26
33	64QAM	10	4.60	4.60	-4.470	8.30
34	64QAM	10	4.60	4.60	-4.498	8.30
35	64QAM	10	4.64	4.64	-4.450	8.23
36	64QAM	10	4.76	4.76	-4.316	8.26
37	64QAM	10	4.89	4.89	-4.179	8.25
38	64QAM	10	4.67	4.67	-4.337	8.23
39	64QAM	10	4.67	4.67	-4.368	8.25
40	64QAM	10	4.71	4.71	-4.304	8.77
41	64QAM	10	4.74	4.74	-4.264	8.74
42	64QAM	10	4.78	4.78	-4.238	8.77
43	64QAM	10	4.74	4.74	-4.332	8.75
44	64QAM	10	4.65	4.65	-4.383	8.73
45	64QAM	10	4.65	4.65	-4.364	8.70
46	64QAM	10	4.68	4.68	-4.360	8.79
47	64QAM	10	4.60	4.60	-4.442	8.82
48	64QAM	10	3.65	3.65	-5.401	8.29
49	64QAM	10	3.94	3.94	-5.102	8.23
50	64QAM	10	3.77	3.77	-5.338	8.27
51	64QAM	10	3.71	3.71	-5.340	8.28
52	64QAM	10	3.75	3.75	-5.283	8.27
53	64QAM	10	3.75	3.75	-5.283	8.27
54	64QAM	10	3.95	3.95	-5.090	8.27
55	64QAM	10	3.95	3.95	-5.096	8.26
56	64QAM	10	3.91	3.91	-5.158	8.26
57	64QAM	10	3.76	3.76	-5.271	8.78
58	64QAM	10	3.87	3.87	-5.179	8.78
59	64QAM	10	3.88	3.88	-5.158	8.75
60	64QAM	10	3.83	3.83	-5.242	8.77
61	64QAM	10	3.87	3.87	-5.164	8.76
62	64QAM	10	3.82	3.82	-5.198	8.81
63	64QAM	10	3.84	3.84	-5.230	8.77
Total power 32-63			19.33	19.33	10.28	-
Total power 32-63 + 22.5dBi			41.83	41.83	32.78	-
EIRP			44.93	44.93	35.88	-

**TEST REPORT**

LTE-MIMO-1C-20:

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position B			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	20	7.14	4.73	-4.799	8.49
1	64QAM	20	7.37	4.96	-4.610	8.46
2	64QAM	20	7.18	4.83	-4.721	8.44
3	64QAM	20	7.28	4.89	-4.658	8.31
4	64QAM	20	7.16	4.77	-4.799	8.49
5	64QAM	20	7.25	4.92	-4.753	8.29
6	64QAM	20	7.09	4.75	-4.878	8.32
7	64QAM	20	7.04	4.69	-4.885	8.41
8	64QAM	20	7.30	4.92	-4.665	8.54
9	64QAM	20	7.21	4.79	-4.810	8.52
10	64QAM	20	7.40	5.04	-4.560	8.47
11	64QAM	20	7.28	4.86	-4.710	8.54
12	64QAM	20	7.42	5.01	-4.569	8.48
13	64QAM	20	7.34	4.92	-4.679	8.55
14	64QAM	20	7.40	4.95	-4.661	8.59
15	64QAM	20	7.36	4.93	-4.656	8.47
16	64QAM	20	7.79	5.38	-4.259	8.52
17	64QAM	20	7.96	5.53	-4.011	8.26
18	64QAM	20	7.92	5.55	-4.059	8.35
19	64QAM	20	7.93	5.54	-4.095	8.43
20	64QAM	20	7.65	5.25	-4.370	8.25
21	64QAM	20	7.95	5.57	-4.124	8.28
22	64QAM	20	7.60	5.22	-4.399	8.45
23	64QAM	20	7.64	5.27	-4.330	8.28
24	64QAM	20	7.54	5.16	-4.445	8.58
25	64QAM	20	7.64	5.22	-4.391	8.56
26	64QAM	20	7.76	5.36	-4.288	8.46
27	64QAM	20	7.62	5.20	-4.436	8.68
28	64QAM	20	7.85	5.44	-4.196	8.48
29	64QAM	20	7.79	5.37	-4.249	8.54
30	64QAM	20	7.84	5.41	-4.228	8.54
31	64QAM	20	7.78	5.35	-4.244	8.45
Total power 0-31			22.58	20.18	10.57	-
Total power 0-31 + 22.5dBi			45.08	42.68	33.07	-
32	64QAM	20	7.58	5.20	-4.372	8.48
33	64QAM	20	7.73	5.33	-4.256	8.29
34	64QAM	20	7.63	5.27	-4.352	8.44
35	64QAM	20	7.66	5.27	-4.310	8.42
36	64QAM	20	7.63	5.24	-4.355	8.45
37	64QAM	20	7.68	5.33	-4.242	8.41

**TEST REPORT**

38	64QAM	20	7.45	5.07	-4.509	8.33
39	64QAM	20	7.48	5.11	-4.449	8.26
40	64QAM	20	7.76	5.36	-4.225	8.68
41	64QAM	20	7.88	5.44	-4.157	8.67
42	64QAM	20	7.85	5.46	-4.170	8.62
43	64QAM	20	7.69	5.25	-4.306	8.53
44	64QAM	20	7.67	5.24	-4.324	8.47
45	64QAM	20	7.75	5.36	-4.288	8.48
46	64QAM	20	7.75	5.33	-4.275	8.61
47	64QAM	20	7.64	5.22	-4.383	8.53
48	64QAM	20	6.88	4.50	-5.122	8.42
49	64QAM	20	7.05	4.66	-4.926	8.32
50	64QAM	20	6.76	4.39	-5.192	8.31
51	64QAM	20	6.85	4.46	-5.149	8.29
52	64QAM	20	6.75	4.37	-5.262	8.38
53	64QAM	20	6.98	4.62	-5.017	8.30
54	64QAM	20	6.76	4.39	-5.247	8.26
55	64QAM	20	6.86	4.49	-5.137	8.47
56	64QAM	20	6.95	4.57	-5.507	8.47
57	64QAM	20	7.01	4.60	-5.048	8.47
58	64QAM	20	6.99	4.61	-5.014	8.45
59	64QAM	20	7.04	4.61	-5.036	8.63
60	64QAM	20	7.02	4.59	-5.056	8.60
61	64QAM	20	6.78	4.37	-5.248	8.49
62	64QAM	20	6.74	4.34	-5.278	8.67
63	64QAM	20	6.79	4.38	-5.241	8.47
Total power 32-63			22.35	19.96	10.34	-
Total power 32-63 + 22.5dBi			44.85	42.46	32.84	-
EIRP			47.98	45.58	35.97	-

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position M			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	20	7.50	4.96	-4.717	8.42
1	64QAM	20	7.49	4.95	-4.702	8.41
2	64QAM	20	7.24	4.71	-4.924	8.45
3	64QAM	20	7.47	4.94	-4.729	8.40
4	64QAM	20	7.35	4.85	-4.843	8.42
5	64QAM	20	7.41	4.87	-4.830	8.43
6	64QAM	20	7.21	4.68	-4.985	8.41
7	64QAM	20	7.30	4.75	-4.923	8.45
8	64QAM	20	7.46	4.89	-4.768	8.40
9	64QAM	20	7.37	4.83	-4.830	8.39
10	64QAM	20	7.50	4.93	-4.719	8.43
11	64QAM	20	7.44	4.88	-4.787	8.42



**TEST REPORT**

12	64QAM	20	7.68	5.12	-4.552	8.68
13	64QAM	20	7.56	5.00	-4.665	8.65
14	64QAM	20	7.77	5.21	-4.439	8.52
15	64QAM	20	7.78	5.23	-4.421	8.68
16	64QAM	20	7.94	5.40	-4.268	8.34
17	64QAM	20	8.10	5.57	-4.088	8.32
18	64QAM	20	7.94	5.40	-4.249	8.40
19	64QAM	20	8.06	5.53	-4.131	8.32
20	64QAM	20	8.07	5.52	-4.133	8.42
21	64QAM	20	7.89	5.35	-4.305	8.34
22	64QAM	20	8.08	5.53	-4.132	8.38
23	64QAM	20	7.76	5.22	-4.427	8.34
24	64QAM	20	7.79	5.24	-4.423	8.56
25	64QAM	20	7.86	5.31	-4.336	8.63
26	64QAM	20	7.92	5.38	-4.275	8.57
27	64QAM	20	7.92	5.36	-4.285	8.62
28	64QAM	20	8.10	5.54	-4.102	8.58
29	64QAM	20	7.95	5.40	-4.258	8.69
30	64QAM	20	8.04	5.50	-4.150	8.70
31	64QAM	20	8.00	5.44	-4.200	8.57
Total power 0-31			22.78	20.23	10.57	-
Total power 0-31 + 22.5dBi			45.28	42.73	33.07	-
32	64QAM	20	7.79	5.26	-4.405	8.38
33	64QAM	20	7.88	5.35	-4.327	8.42
34	64QAM	20	7.78	5.26	-4.444	8.37
35	64QAM	20	7.89	5.35	-4.320	8.31
36	64QAM	20	7.87	5.32	-4.342	8.39
37	64QAM	20	7.97	5.43	-4.243	8.40
38	64QAM	20	7.72	5.19	-4.521	8.33
39	64QAM	20	7.78	5.24	-4.399	8.36
40	64QAM	20	7.99	5.43	-4.241	8.54
41	64QAM	20	7.92	5.36	-4.329	8.62
42	64QAM	20	7.97	5.40	-4.238	8.69
43	64QAM	20	7.99	5.43	-4.240	8.67
44	64QAM	20	7.88	5.34	-4.338	8.57
45	64QAM	20	7.85	5.28	-4.374	8.45
46	64QAM	20	7.96	5.41	-4.250	8.65
47	64QAM	20	7.90	5.34	-4.316	8.56
48	64QAM	20	7.05	4.53	-5.170	8.37
49	64QAM	20	7.26	4.71	-4.944	8.39
50	64QAM	20	6.98	4.43	-5.230	8.35
51	64QAM	20	7.09	4.56	-5.109	8.33
52	64QAM	20	7.02	4.48	-5.178	8.33
53	64QAM	20	7.10	4.56	-5.154	8.32
54	64QAM	20	6.87	4.33	-5.337	8.33
55	64QAM	20	6.98	4.43	-5.233	8.31
56	64QAM	20	6.95	4.39	-5.276	8.53

**TEST REPORT**

57	64QAM	20	6.96	4.41	-5.264	8.71
58	64QAM	20	7.09	4.54	-5.136	8.70
59	64QAM	20	7.15	4.61	-5.506	8.46
60	64QAM	20	7.17	4.64	-5.037	8.67
61	64QAM	20	7.08	4.51	-5.113	8.56
62	64QAM	20	7.07	4.56	-5.131	8.62
63	64QAM	20	7.13	4.62	-5.127	8.57
Total power 32-63			22.54	20.00	10.32	-
Total power 32-63 + 22.5dBi			45.04	42.50	32.82	-
EIRP			48.17	45.63	35.96	-

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position T			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	20	7.55	5.12	-4.468	8.32
1	64QAM	20	7.58	5.15	-4.504	8.37
2	64QAM	20	7.49	5.08	-4.572	8.33
3	64QAM	20	7.65	5.23	-4.434	8.44
4	64QAM	20	7.62	5.13	-4.397	8.36
5	64QAM	20	7.57	5.17	-4.466	8.33
6	64QAM	20	7.50	5.10	-4.556	8.31
7	64QAM	20	7.47	5.09	-4.522	8.44
8	64QAM	20	7.50	5.16	-4.449	8.52
9	64QAM	20	7.55	5.11	-4.518	8.78
10	64QAM	20	7.50	5.09	-4.567	8.63
11	64QAM	20	7.42	5.01	-4.589	8.60
12	64QAM	20	7.69	5.29	-4.277	8.83
13	64QAM	20	7.65	5.20	-4.436	8.61
14	64QAM	20	7.57	5.15	-4.509	8.58
15	64QAM	20	7.48	5.07	-4.473	8.82
16	64QAM	20	7.70	5.36	-4.187	8.38
17	64QAM	20	7.87	5.49	-4.118	8.32
18	64QAM	20	7.86	5.46	-4.174	8.33
19	64QAM	20	7.83	5.47	-4.117	8.32
20	64QAM	20	7.98	5.61	-3.938	8.28
21	64QAM	20	8.20	5.75	-3.893	8.36
22	64QAM	20	7.75	5.34	-4.282	8.31
23	64QAM	20	7.68	5.25	-4.390	8.41
24	64QAM	20	7.82	5.44	-4.197	8.68
25	64QAM	20	7.88	5.46	-4.131	8.69
26	64QAM	20	7.96	5.54	-4.092	8.53
27	64QAM	20	7.92	5.53	-4.078	8.46
28	64QAM	20	7.99	5.62	-3.977	8.82
29	64QAM	20	7.95	5.52	-4.102	8.54
30	64QAM	20	7.98	5.57	-4.038	8.47

**TEST REPORT**

31	64QAM	20	7.91	5.51	-4.107	8.50
Total power 0-31			22.78	20.37	10.76	-
Total power 0-31 + 22.5dBi			45.28	42.87	33.26	-
32	64QAM	20	7.67	5.29	-4.308	8.38
33	64QAM	20	7.81	5.41	-4.209	8.44
34	64QAM	20	7.83	5.40	-4.212	8.33
35	64QAM	20	7.89	5.48	-4.128	8.37
36	64QAM	20	7.99	5.60	-4.010	8.37
37	64QAM	20	8.12	5.69	-3.938	8.38
38	64QAM	20	7.91	5.53	-4.114	8.43
39	64QAM	20	7.88	5.49	-4.120	8.33
40	64QAM	20	7.99	5.61	-3.990	8.76
41	64QAM	20	8.07	5.65	-3.975	8.65
42	64QAM	20	8.04	5.65	-3.972	8.75
43	64QAM	20	8.01	5.60	-3.986	8.60
44	64QAM	20	7.91	5.52	-4.091	8.52
45	64QAM	20	7.97	5.58	-4.036	8.83
46	64QAM	20	7.97	5.54	-4.089	8.53
47	64QAM	20	7.94	5.55	-4.042	8.57
48	64QAM	20	7.00	4.62	-4.973	8.39
49	64QAM	20	7.29	4.88	-4.699	8.35
50	64QAM	20	7.12	4.70	-4.923	8.36
51	64QAM	20	7.06	4.65	-4.938	8.38
52	64QAM	20	7.19	4.82	-4.796	8.41
53	64QAM	20	7.35	4.95	-4.671	8.37
54	64QAM	20	7.31	4.91	-4.715	8.34
55	64QAM	20	7.29	4.90	-4.705	8.41
56	64QAM	20	7.19	4.80	-4.803	8.55
57	64QAM	20	7.27	4.87	-4.751	8.77
58	64QAM	20	7.26	4.87	-4.740	8.53
59	64QAM	20	7.27	4.87	-4.722	8.55
60	64QAM	20	7.20	4.81	-4.797	8.44
61	64QAM	20	7.18	4.79	-4.836	8.65
62	64QAM	20	7.14	4.75	-4.873	8.78
63	64QAM	20	7.20	4.81	-4.782	8.47
Total power 32-63			22.64	20.24	10.63	-
Total power 32-63 + 22.5dBi			45.14	42.74	33.13	-
EIRP			48.22	45.82	36.21	-

**TEST REPORT**

LTE-MIMO-2C-10-1:

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position T			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	10	7.67	5.29	-4.308	-
1	64QAM	10	7.81	5.41	-4.209	-
2	64QAM	10	7.83	5.40	-4.212	-
3	64QAM	10	7.89	5.48	-4.128	-
4	64QAM	10	7.99	5.60	-4.010	-
5	64QAM	10	8.12	5.69	-3.938	-
6	64QAM	10	7.91	5.53	-4.114	-
7	64QAM	10	7.88	5.49	-4.120	-
8	64QAM	10	7.99	5.61	-3.990	-
9	64QAM	10	8.07	5.65	-3.975	-
10	64QAM	10	8.04	5.65	-3.972	-
11	64QAM	10	8.01	5.60	-3.986	-
12	64QAM	10	7.91	5.52	-4.091	-
13	64QAM	10	7.97	5.58	-4.036	-
14	64QAM	10	7.97	5.54	-4.089	-
15	64QAM	10	7.94	5.55	-4.042	-
16	64QAM	10	7.00	4.62	-4.973	-
17	64QAM	10	7.29	4.88	-4.699	-
18	64QAM	10	7.12	4.70	-4.923	-
19	64QAM	10	7.06	4.65	-4.938	-
20	64QAM	10	7.19	4.82	-4.796	-
21	64QAM	10	7.35	4.95	-4.671	-
22	64QAM	10	7.31	4.91	-4.715	-
23	64QAM	10	7.29	4.90	-4.705	-
24	64QAM	10	7.19	4.80	-4.803	-
25	64QAM	10	7.27	4.87	-4.751	-
26	64QAM	10	7.26	4.87	-4.740	-
27	64QAM	10	7.27	4.87	-4.722	-
28	64QAM	10	7.20	4.81	-4.797	-
29	64QAM	10	7.18	4.79	-4.836	-
30	64QAM	10	7.14	4.75	-4.873	-
31	64QAM	10	7.20	4.81	-4.782	-
Total power 0-31			23.06	20.29	11.16	-
Total power 0-31 + 22.5dBi			45.56	42.79	33.66	-
32	64QAM	10	7.90	5.15	-3.971	-
33	64QAM	10	8.06	5.28	-3.843	-
34	64QAM	10	8.02	5.22	-3.895	-
35	64QAM	10	8.10	5.32	-3.800	-
36	64QAM	10	8.21	5.43	-3.687	-
37	64QAM	10	8.32	5.52	-3.623	-

**TEST REPORT**

38	64QAM	10	8.12	5.35	-3.803	-
39	64QAM	10	8.09	5.32	-3.807	-
40	64QAM	10	8.22	5.47	-3.664	-
41	64QAM	10	8.25	5.47	-3.663	-
42	64QAM	10	8.25	5.50	-3.651	-
43	64QAM	10	8.23	5.48	-3.636	-
44	64QAM	10	8.08	5.34	-3.780	-
45	64QAM	10	8.15	5.39	-3.773	-
46	64QAM	10	8.16	5.38	-3.772	-
47	64QAM	10	8.15	5.39	-3.725	-
48	64QAM	10	7.21	4.46	-4.654	-
49	64QAM	10	7.41	4.64	-4.478	-
50	64QAM	10	7.23	4.41	-4.740	-
51	64QAM	10	7.15	4.37	-4.769	-
52	64QAM	10	7.28	4.52	-4.617	-
53	64QAM	10	7.42	4.63	-4.527	-
54	64QAM	10	7.40	4.61	-4.531	-
55	64QAM	10	7.38	4.61	-4.530	-
56	64QAM	10	7.27	4.52	-4.586	-
57	64QAM	10	7.37	4.60	-4.515	-
58	64QAM	10	7.34	4.58	-4.559	-
59	64QAM	10	7.37	4.62	-4.490	-
60	64QAM	10	7.28	4.52	-4.590	-
61	64QAM	10	7.25	4.50	-4.646	-
62	64QAM	10	7.23	4.47	-4.671	-
63	64QAM	10	7.31	4.57	-4.523	-
Total power 32-63			22.80	20.03	10.90	-
Total power 32-63 + 22.5dBi			45.30	42.53	33.40	-
EIRP			48.44	45.67	36.54	-

**TEST REPORT**

LTE-MIMO-2C-20-1:

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position T			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	20	10.28	5.03	-4.649	-
1	64QAM	20	10.33	5.08	-4.598	-
2	64QAM	20	10.20	4.92	-4.768	-
3	64QAM	20	10.46	5.18	-4.514	-
4	64QAM	20	10.43	5.18	-4.509	-
5	64QAM	20	10.40	5.06	-4.636	-
6	64QAM	20	10.30	4.99	-4.701	-
7	64QAM	20	10.30	5.03	-4.659	-
8	64QAM	20	10.27	4.97	-4.770	-
9	64QAM	20	10.35	5.09	-4.633	-
10	64QAM	20	10.40	5.14	-4.598	-
11	64QAM	20	10.32	5.06	-4.672	-
12	64QAM	20	10.58	5.29	-4.436	-
13	64QAM	20	10.53	5.24	-4.491	-
14	64QAM	20	10.63	5.41	-4.320	-
15	64QAM	20	10.58	5.37	-4.368	-
16	64QAM	20	10.86	5.59	-4.122	-
17	64QAM	20	10.94	5.70	-3.998	-
18	64QAM	20	10.88	5.61	-4.081	-
19	64QAM	20	10.88	5.58	-4.117	-
20	64QAM	20	10.98	5.66	-4.020	-
21	64QAM	20	11.16	5.85	-3.846	-
22	64QAM	20	10.90	5.62	-4.080	-
23	64QAM	20	10.88	5.56	-4.115	-
24	64QAM	20	10.72	5.49	-4.227	-
25	64QAM	20	10.85	5.59	-4.090	-
26	64QAM	20	10.92	5.64	-4.080	-
27	64QAM	20	10.89	5.67	-4.054	-
28	64QAM	20	11.01	5.78	-3.949	-
29	64QAM	20	10.93	5.69	-4.049	-
30	64QAM	20	10.99	5.75	-3.965	-
31	64QAM	20	10.92	5.64	-4.021	-
Total power 0-31			25.72	20.45	10.74	-
Total power 0-31 + 22.5dBi			48.22	42.95	33.24	-
32	64QAM	20	10.68	5.38	-4.321	-
33	64QAM	20	10.79	5.49	-4.220	-
34	64QAM	20	10.74	5.44	-4.258	-
35	64QAM	20	10.85	5.58	-4.111	-
36	64QAM	20	10.95	5.67	-4.022	-
37	64QAM	20	11.07	5.74	-3.950	-

**TEST REPORT**

38	64QAM	20	10.86	5.58	-4.113	-
39	64QAM	20	10.85	5.58	-4.123	-
40	64QAM	20	10.93	5.68	-4.037	-
41	64QAM	20	10.96	5.70	-4.032	-
42	64QAM	20	10.98	5.71	-4.020	-
43	64QAM	20	10.98	5.78	-3.958	-
44	64QAM	20	10.87	5.63	-4.101	-
45	64QAM	20	10.93	5.65	-4.080	-
46	64QAM	20	10.95	5.73	-4.000	-
47	64QAM	20	10.90	5.62	-4.074	-
48	64QAM	20	9.95	4.67	-5.507	-
49	64QAM	20	10.18	4.90	-4.805	-
50	64QAM	20	9.99	4.68	-5.014	-
51	64QAM	20	9.97	4.66	-5.022	-
52	64QAM	20	10.06	4.75	-4.935	-
53	64QAM	20	10.18	4.86	-4.831	-
54	64QAM	20	10.15	4.85	-4.858	-
55	64QAM	20	10.12	4.81	-4.878	-
56	64QAM	20	10.05	4.84	-4.884	-
57	64QAM	20	10.14	4.93	-4.793	-
58	64QAM	20	10.12	4.86	-4.856	-
59	64QAM	20	10.13	4.92	-4.803	-
60	64QAM	20	9.92	4.66	-5.064	-
61	64QAM	20	9.88	4.61	-5.070	-
62	64QAM	20	9.88	4.66	-5.052	-
63	64QAM	20	9.94	4.72	-5.014	-
Total power 32-63			25.54	20.27	10.55	-
Total power 32-63 + 22.5dBi			48.04	42.77	33.05	-
EIRP			51.14	45.87	36.16	-

**TEST REPORT**

LTE-MIMO-3C-10-1:

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position T			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	10	9.43	4.97	-4.176	-
1	64QAM	10	9.45	4.95	-4.177	-
2	64QAM	10	9.33	4.81	-4.337	-
3	64QAM	10	9.53	5.03	-4.107	-
4	64QAM	10	9.46	4.89	-4.294	-
5	64QAM	10	9.36	4.80	-4.349	-
6	64QAM	10	9.36	4.88	-4.310	-
7	64QAM	10	9.40	4.90	-4.330	-
8	64QAM	10	9.43	4.94	-4.217	-
9	64QAM	10	9.50	4.99	-4.194	-
10	64QAM	10	9.47	4.96	-4.221	-
11	64QAM	10	9.39	4.92	-4.268	-
12	64QAM	10	9.66	5.16	-4.047	-
13	64QAM	10	9.61	5.10	-4.088	-
14	64QAM	10	9.69	5.22	-3.936	-
15	64QAM	10	9.65	5.25	-3.920	-
16	64QAM	10	9.87	5.42	-3.780	-
17	64QAM	10	9.93	5.46	-3.668	-
18	64QAM	10	9.91	5.44	-3.705	-
19	64QAM	10	9.84	5.32	-3.838	-
20	64QAM	10	9.94	5.44	-3.759	-
21	64QAM	10	10.12	5.57	-3.592	-
22	64QAM	10	9.82	5.33	-3.837	-
23	64QAM	10	9.80	5.26	-3.918	-
24	64QAM	10	9.73	5.26	-3.908	-
25	64QAM	10	9.84	5.39	-3.785	-
26	64QAM	10	9.93	5.40	-3.778	-
27	64QAM	10	9.92	5.45	-3.718	-
28	64QAM	10	10.01	5.55	-3.620	-
29	64QAM	10	9.94	5.43	-3.788	-
30	64QAM	10	9.98	5.49	-3.686	-
31	64QAM	10	9.92	5.47	-3.698	-
Total power 0-31			24.75	20.26	11.09	-
Total power 0-31 + 22.5dBi			47.25	42.76	33.59	-
32	64QAM	10	9.63	5.14	-4.044	-
33	64QAM	10	9.75	5.25	-3.926	-
34	64QAM	10	9.71	5.20	-3.976	-
35	64QAM	10	9.82	5.33	-3.835	-
36	64QAM	10	9.78	5.26	-3.940	-
37	64QAM	10	9.84	5.36	-3.836	-



**TEST REPORT**

38	64QAM	10	9.75	5.24	-3.965	-
39	64QAM	10	9.82	5.33	-3.873	-
40	64QAM	10	9.87	5.39	-3.794	-
41	64QAM	10	9.84	5.33	-3.860	-
42	64QAM	10	9.88	5.38	-3.381	-
43	64QAM	10	9.85	5.42	-3.780	-
44	64QAM	10	9.72	5.27	-3.961	-
45	64QAM	10	9.81	5.32	-3.883	-
46	64QAM	10	9.82	5.35	-3.805	-
47	64QAM	10	9.79	5.34	-3.865	-
48	64QAM	10	8.83	4.31	-4.875	-
49	64QAM	10	9.04	4.53	-4.639	-
50	64QAM	10	8.82	4.28	-4.902	-
51	64QAM	10	8.80	4.30	-4.887	-
52	64QAM	10	8.92	4.41	-4.773	-
53	64QAM	10	9.05	4.52	-4.672	-
54	64QAM	10	9.00	4.49	-4.704	-
55	64QAM	10	9.01	4.50	-4.733	-
56	64QAM	10	8.96	4.51	-4.661	-
57	64QAM	10	9.02	4.58	-4.602	-
58	64QAM	10	9.00	4.51	-4.673	-
59	64QAM	10	9.03	4.60	-4.587	-
60	64QAM	10	8.91	4.43	-4.767	-
61	64QAM	10	8.88	4.41	-4.785	-
62	64QAM	10	8.84	4.38	-4.789	-
63	64QAM	10	8.92	4.47	-4.726	-
Total power 32-63			24.44	19.95	10.78	-
Total power 32-63 + 22.5dBi			46.94	42.45	33.28	-
EIRP			50.11	45.62	36.45	-

**TEST REPORT**

LTE-MIMO-3C-20-1:

Antenna Port	Modulation	Carrier Bandwidth (MHz)	Power / PSD / Peak-to-Average Ratio (PAR)			
			Channel position T			
			Power (dBm)	Power (dBm/10MHz)	PSD (dBm/MHz)	PAR (dB)
0	64QAM	20	12.70	5.10	-4.632	-
1	64QAM	20	12.10	4.99	-4.711	-
2	64QAM	20	11.95	4.84	-4.835	-
3	64QAM	20	12.18	5.14	-4.543	-
4	64QAM	20	12.12	5.05	-4.654	-
5	64QAM	20	12.12	5.04	-4.635	-
6	64QAM	20	12.01	4.97	-4.748	-
7	64QAM	20	12.04	5.01	-4.700	-
8	64QAM	20	12.10	5.09	-4.577	-
9	64QAM	20	12.08	4.93	-4.781	-
10	64QAM	20	12.14	5.04	-4.665	-
11	64QAM	20	12.05	5.00	-4.712	-
12	64QAM	20	12.34	5.30	-4.404	-
13	64QAM	20	12.22	5.11	-4.605	-
14	64QAM	20	12.32	5.26	-4.475	-
15	64QAM	20	12.31	5.27	-4.445	-
16	64QAM	20	12.63	5.58	-4.118	-
17	64QAM	20	12.73	5.68	-4.013	-
18	64QAM	20	12.61	5.58	-4.172	-
19	64QAM	20	12.64	5.59	-4.120	-
20	64QAM	20	12.68	5.64	-4.088	-
21	64QAM	20	12.87	5.82	-3.919	-
22	64QAM	20	12.58	5.51	-4.197	-
23	64QAM	20	12.60	5.58	-4.149	-
24	64QAM	20	12.50	5.48	-4.207	-
25	64QAM	20	12.54	5.48	-4.225	-
26	64QAM	20	12.66	5.55	-4.146	-
27	64QAM	20	12.58	5.52	-4.163	-
28	64QAM	20	12.72	5.67	-4.023	-
29	64QAM	20	12.65	5.56	-4.121	-
30	64QAM	20	12.70	5.59	-4.094	-
31	64QAM	20	12.64	5.61	-4.810	-
Total power 0-31			27.47	20.39	10.66	-
Total power 0-31 + 22.5dBi			49.97	42.89	33.16	-
32	64QAM	20	12.37	5.40	-4.306	-
33	64QAM	20	12.44	5.33	-4.409	-
34	64QAM	20	12.44	5.41	-4.308	-
35	64QAM	20	12.51	5.53	-4.199	-
36	64QAM	20	12.61	5.62	-4.084	-
37	64QAM	20	12.74	5.67	-4.079	-

**TEST REPORT**

38	64QAM	20	12.51	5.51	-4.217	-
39	64QAM	20	12.48	5.48	-4.255	-
40	64QAM	20	12.62	5.58	-4.120	-
41	64QAM	20	12.61	5.54	-4.144	-
42	64QAM	20	12.66	5.53	-4.138	-
43	64QAM	20	12.68	5.64	-4.069	-
44	64QAM	20	12.53	5.49	-4.209	-
45	64QAM	20	12.61	5.54	-4.173	-
46	64QAM	20	12.62	5.50	-4.203	-
47	64QAM	20	12.58	5.55	-4.150	-
48	64QAM	20	11.61	4.58	-5.153	-
49	64QAM	20	11.83	4.78	-4.955	-
50	64QAM	20	12.03	5.06	-4.707	-
51	64QAM	20	11.89	4.86	-4.935	-
52	64QAM	20	11.85	4.87	-4.921	-
53	64QAM	20	11.90	4.91	-4.884	-
54	64QAM	20	12.03	5.04	-4.754	-
55	64QAM	20	11.92	4.93	-4.841	-
56	64QAM	20	11.94	4.99	-4.768	-
57	64QAM	20	11.85	4.88	-4.856	-
58	64QAM	20	12.18	5.20	-4.568	-
59	64QAM	20	12.16	5.24	-4.522	-
60	64QAM	20	12.04	5.08	-4.678	-
61	64QAM	20	12.03	5.05	-4.698	-
62	64QAM	20	11.94	4.95	-4.816	-
63	64QAM	20	12.04	5.11	-4.662	-
Total power 32-63			27.32	20.31	10.57	-
Total power 32-63 + 22.5dBi			49.82	42.81	33.07	-
EIRP			52.91	45.86	36.13	-

**TEST REPORT**

**EIRP Compliance**

The radio unit has an integrated antenna, it doesn't support external antennas. The EIRP is calculated as the table below, it can comply with the EIRP requirements in Part 96.41.

LTE Carrier Bandwidth (MHz)	Maximum Total output power (dBm/MHz)	Maximum Total output power (dBm/10MHz)	Antenna gain (dBi)	PSD (dBm /MHz)	EIRP (dBm /10MHz)	EIRP per Bandwidth (dBm)	EIRP per Bandwidth (W)
10	14.04	23.17	22.5	36.54	45.67	45.67	36.90
20	13.71	23.37	22.5	36.21	45.87	48.22	66.37

## 4 Occupied Bandwidth

Test result: Pass

### 4.1 Measurement Procedure

The EUT was set to transmit at maximum power and testing was carried out on bottom, middle and top channels. Using the Occupied Bandwidth measurement function in the spectrum analyzer, the 99% and 26dB bandwidth was measured in accordance with FCC KDB 971168 D01 Clause 4.2.

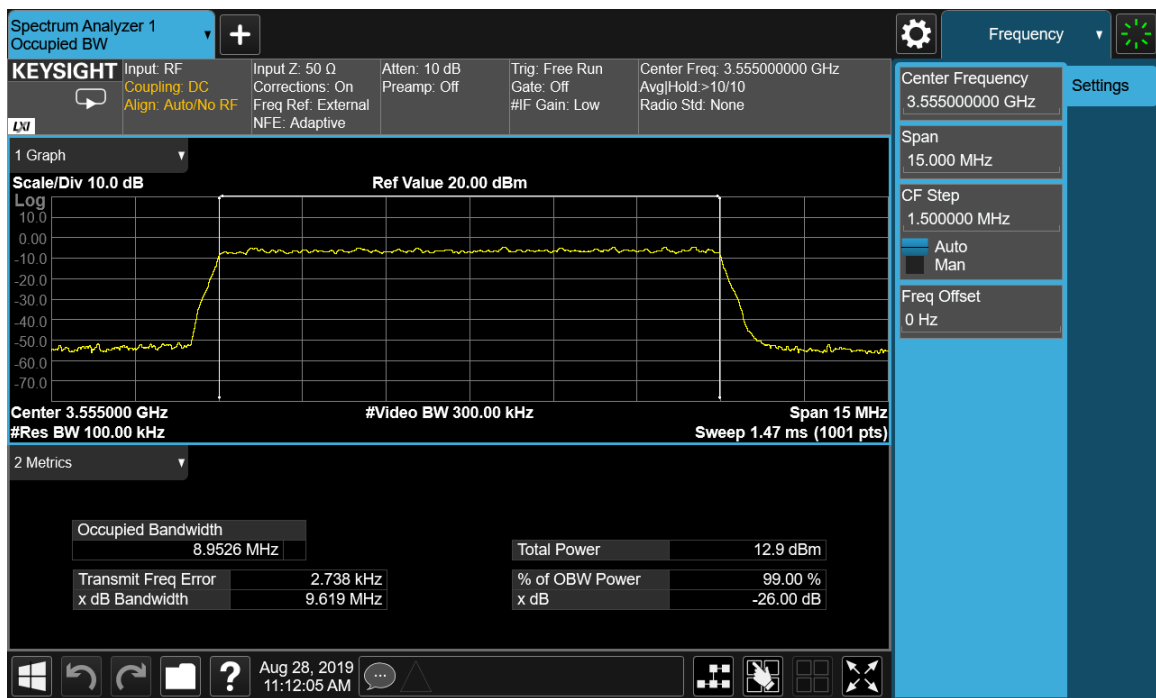
## TEST REPORT

### 4.2 Measurement result

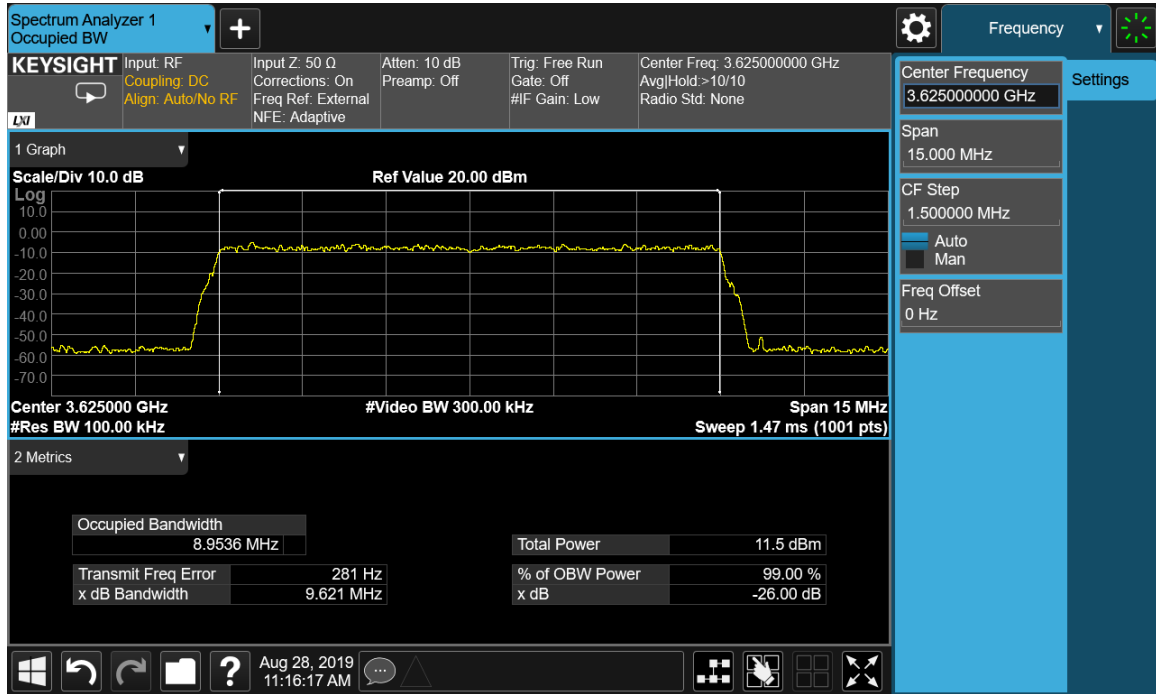
LTE-MIMO-1C-10:

Antenna Port	Modulation	Bandwidth	Channel Position B	Channel Position M	Channel Position T
21	64QAM	10MHz	99% Occupied Bandwidth (MHz)		
			8.9526	8.9536	8.9459
			26dB Occupied Bandwidth (MHz)		
			9.619	9.621	9.588

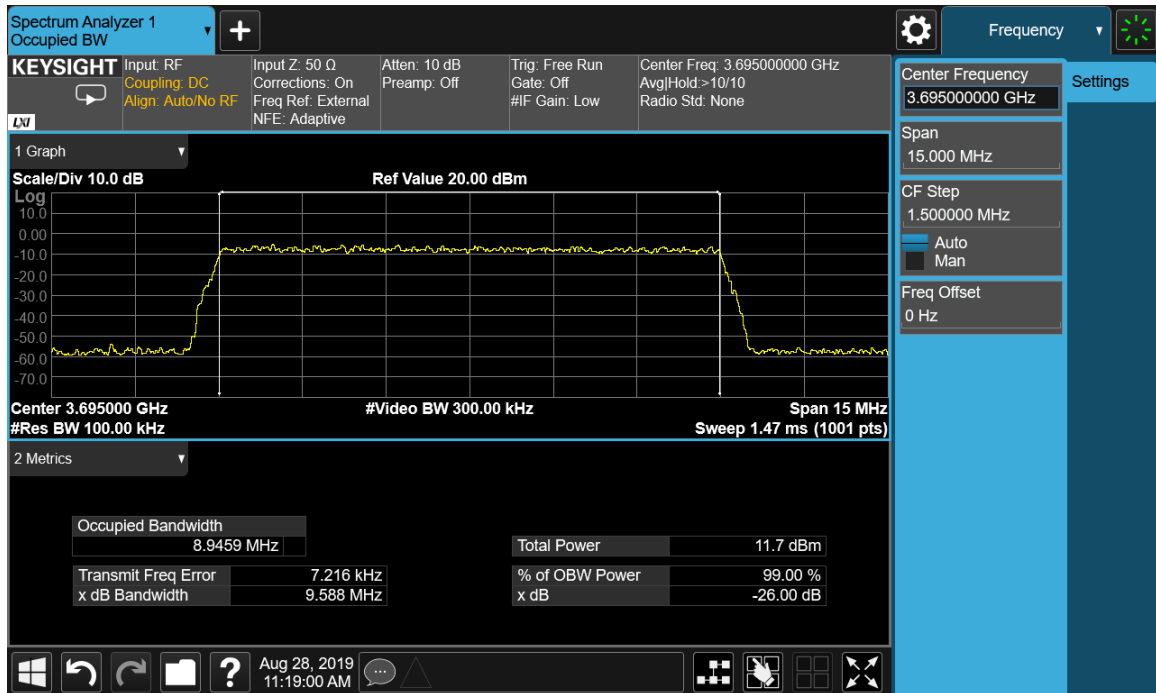
Channel Position B



## Channel Position M



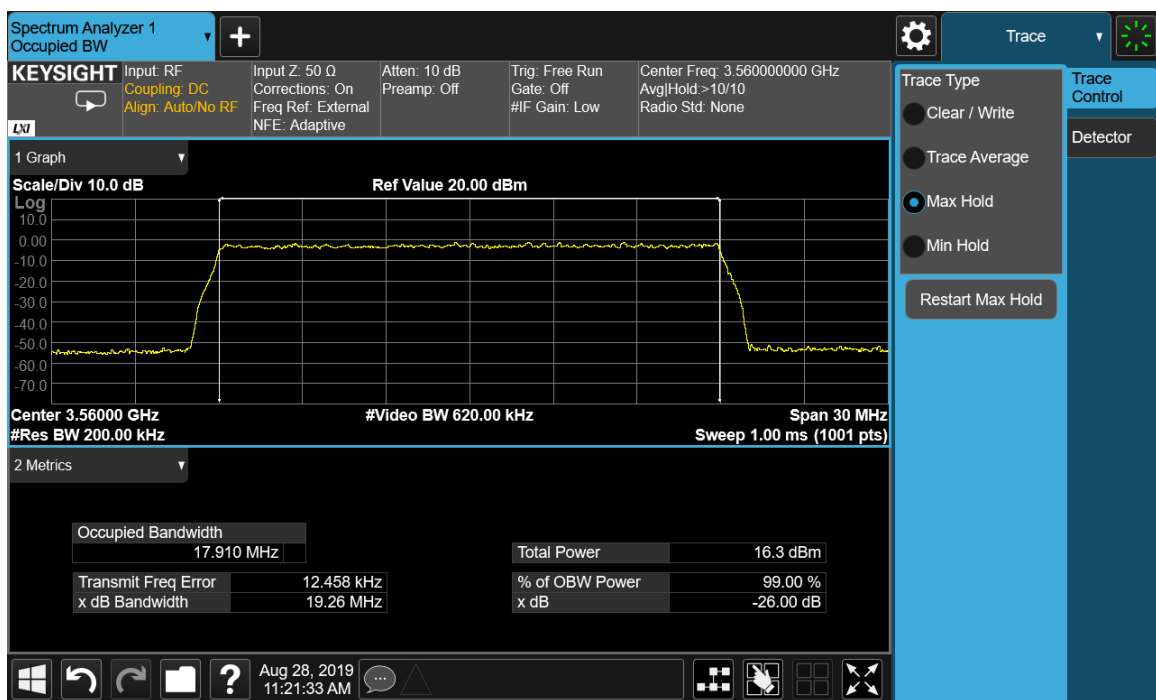
## Channel Position T



LTE-MIMO-1C-20:

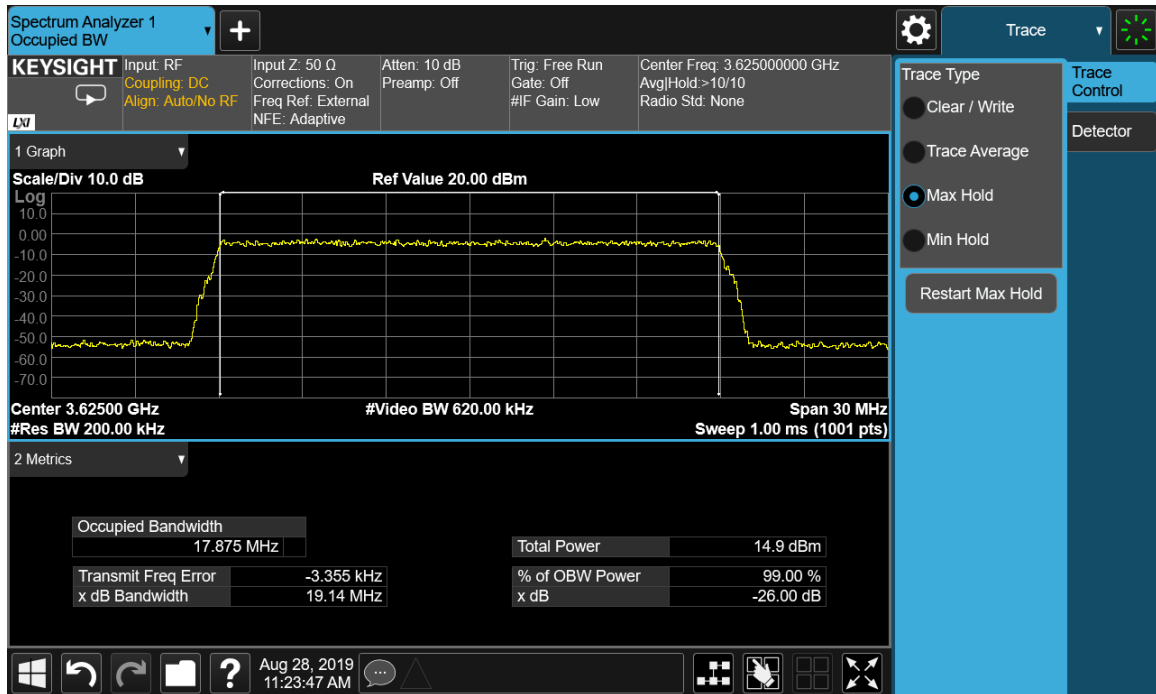
Antenna Port	Modulation	Bandwidth	Channel Position B	Channel Position M	Channel Position T
21	64QAM	20MHz	99% Occupied Bandwidth (MHz)		
			17.910	17.875	17.914
			26dB Occupied Bandwidth (MHz)		
			19.26	19.14	19.29

### Channel Position B

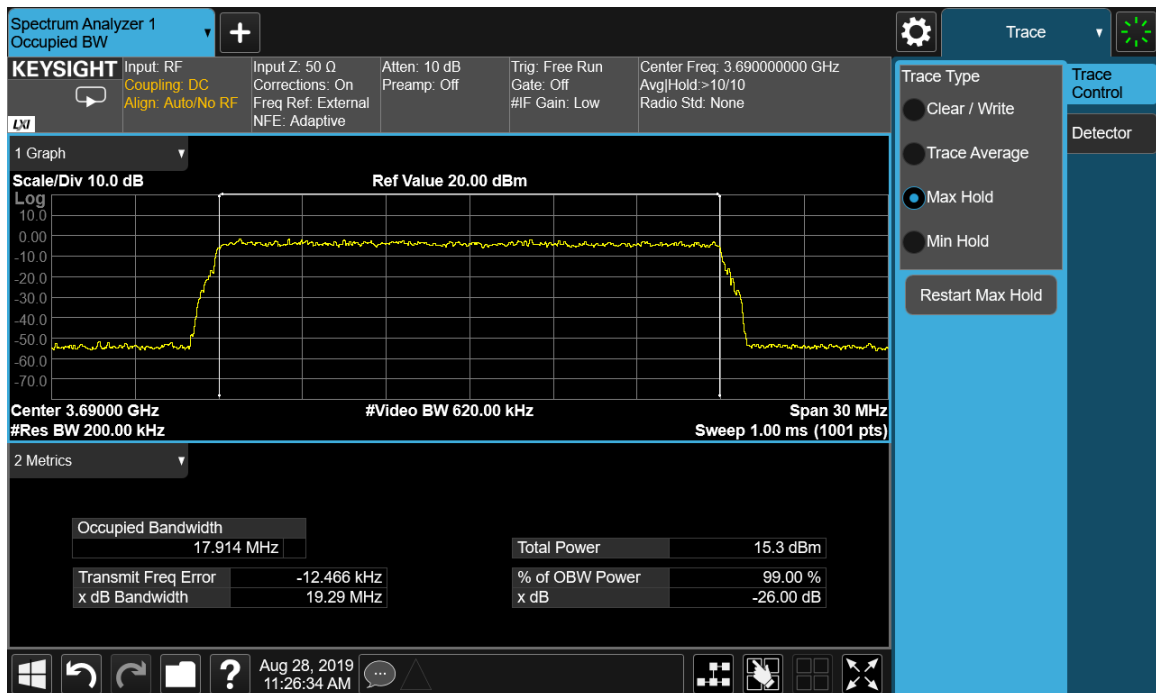




## Channel Position M



## Channel Position T



## 5 Unwanted Emissions at Band Edge

Test result: Pass

### 5.1 Limit

Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed  $-13$  dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed  $-25$  dBm/MHz.

### 5.2 Measurement Procedure

All measurements were made according with KDB 971168 D01.

For MIMO mode configurations, the limit was adjusted with a correction of  $-18.06$  dB  $[10\text{Log}(1/64)]$  by using the Measure and Add  $10\text{Log}(N)$  dB technique according to KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports .

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 and a RBW of 1MHz for measurements of emissions  $> 1$ MHz away from the band edges.

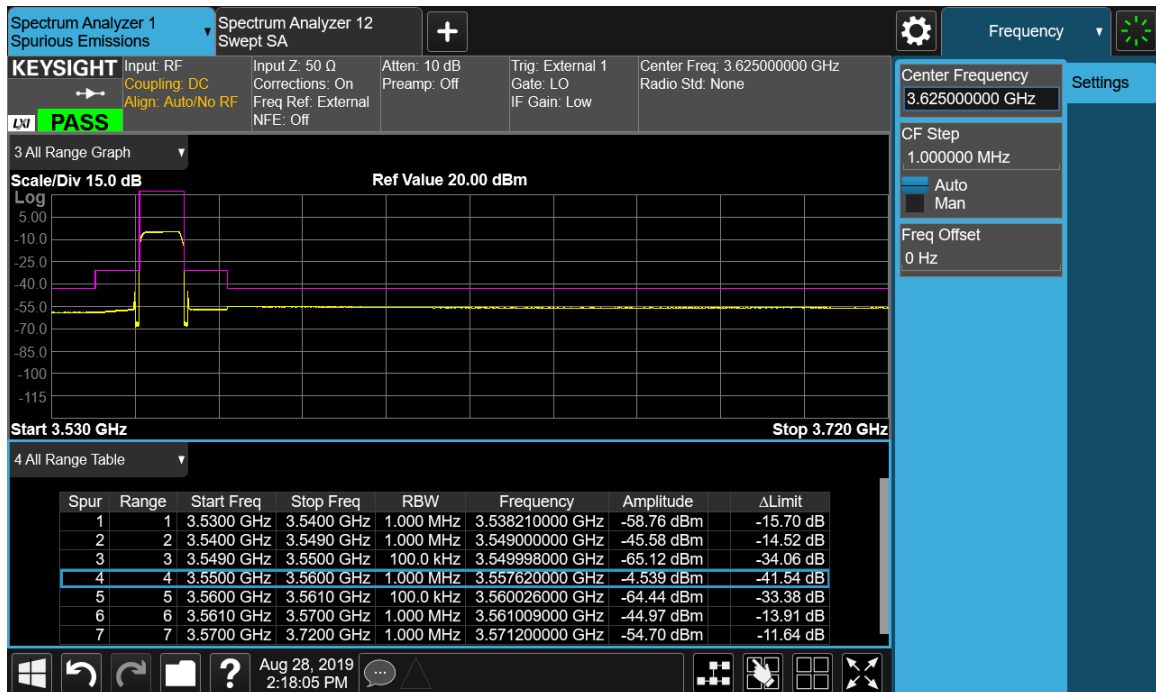
Spectrum analyzer detector was set as RMS.

## 5.3 Measurement result

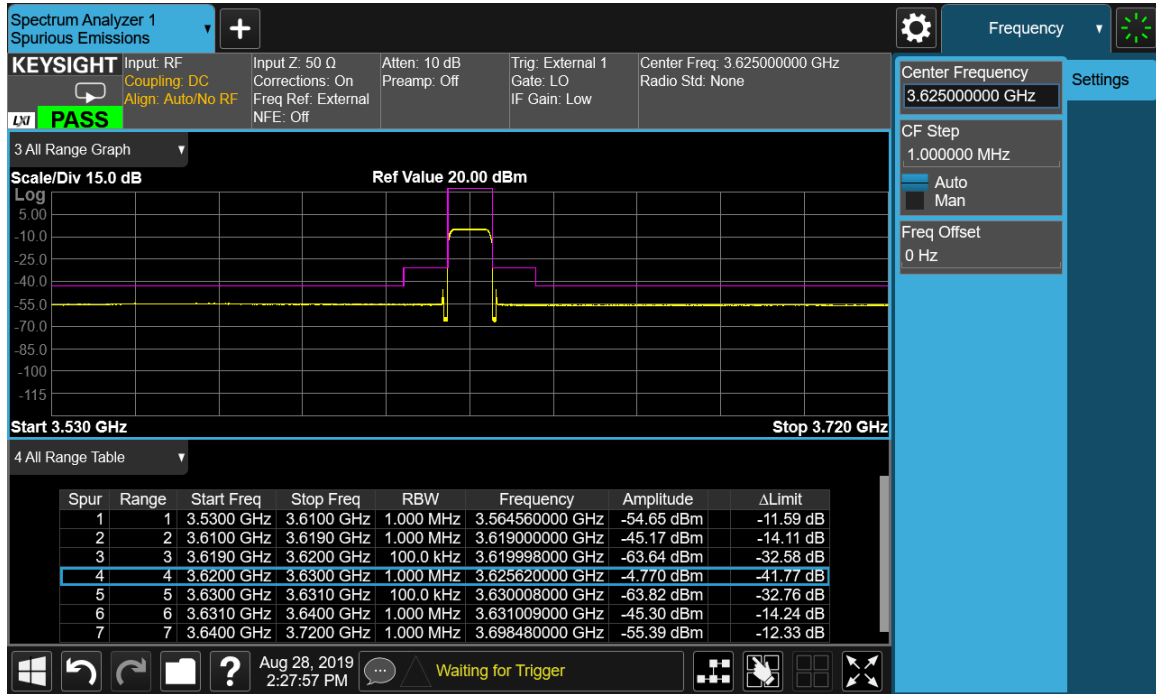
LTE-MIMO-1C-10:

Antenna Port	Channel Position	Modulation	Channel Bandwidth (MHz)
21	B	64QAM	10
21	M	64QAM	10
21	T	64QAM	10

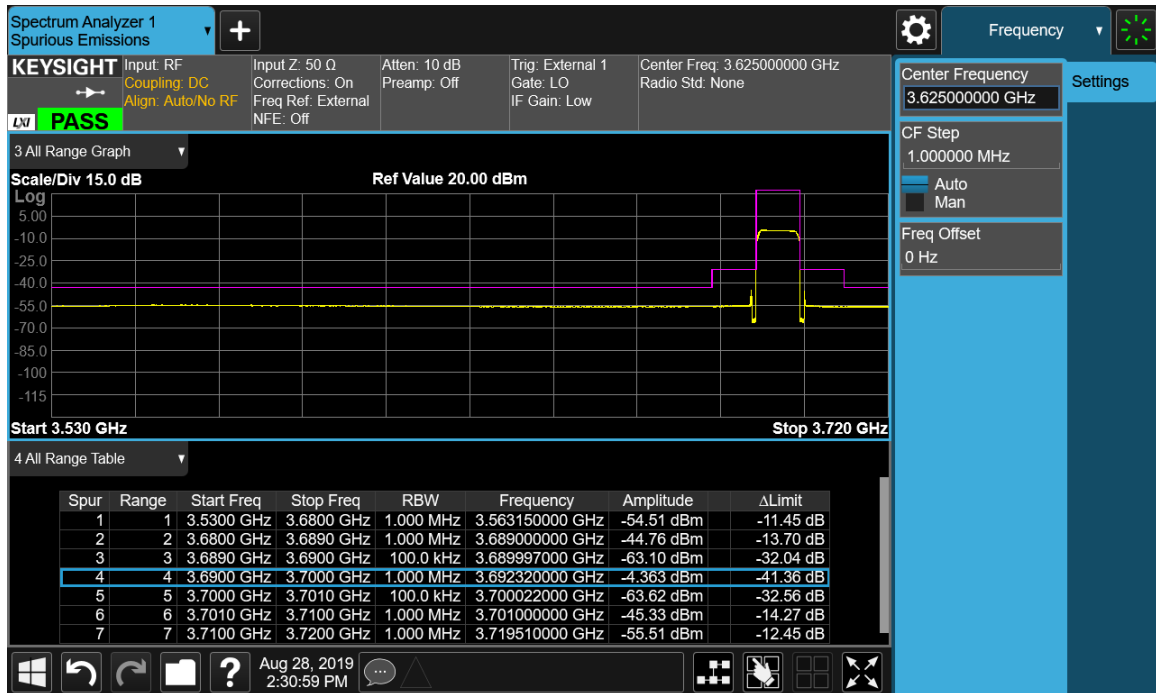
Channel Position B



## Channel Position M



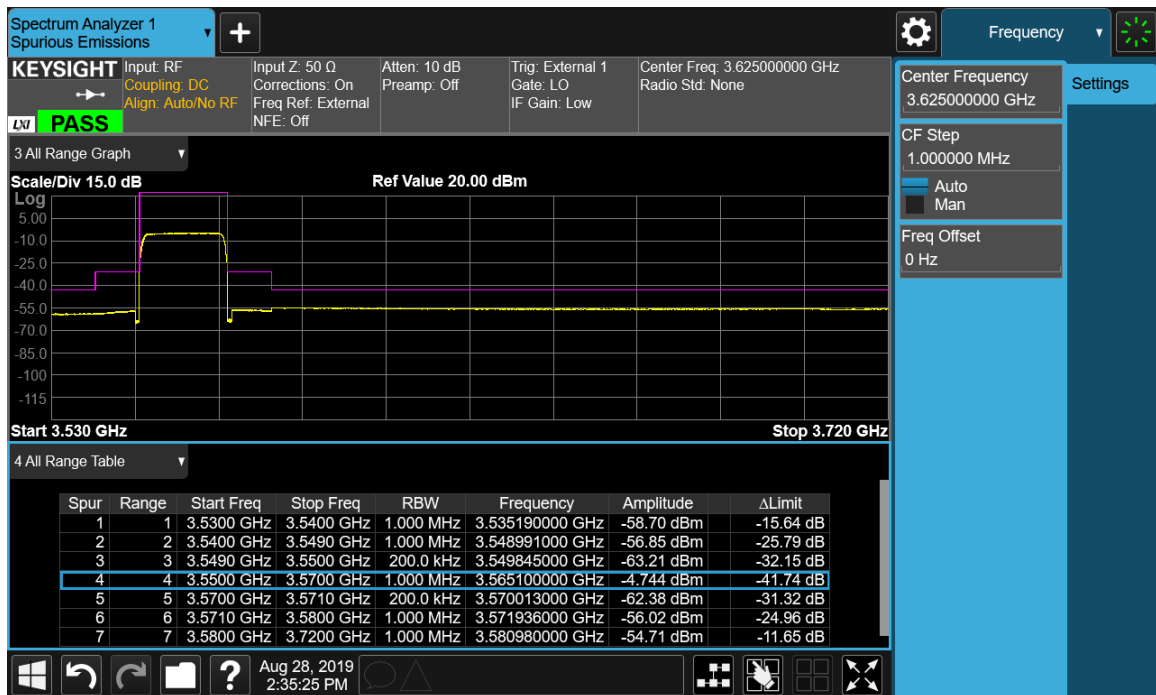
## Channel Position T



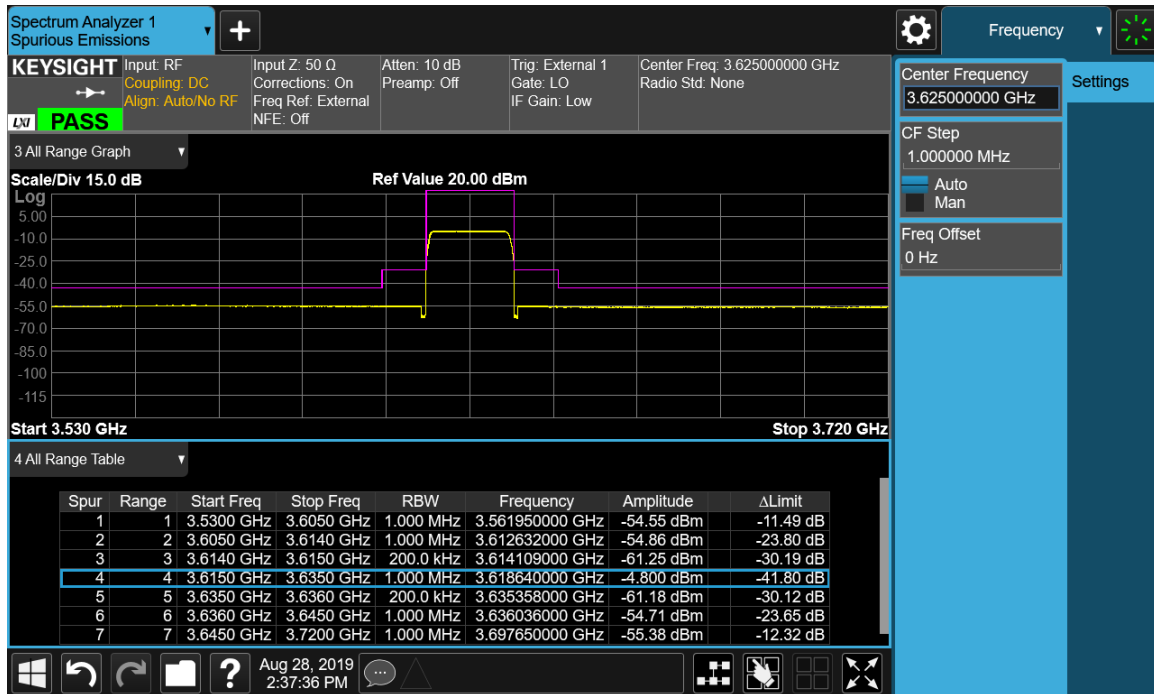
### LTE-MIMO-1C-20:

Antenna Port	Channel Position	Modulation	Channel Bandwidth (MHz)
21	B	64QAM	20
21	M	64QAM	20
21	T	64QAM	20

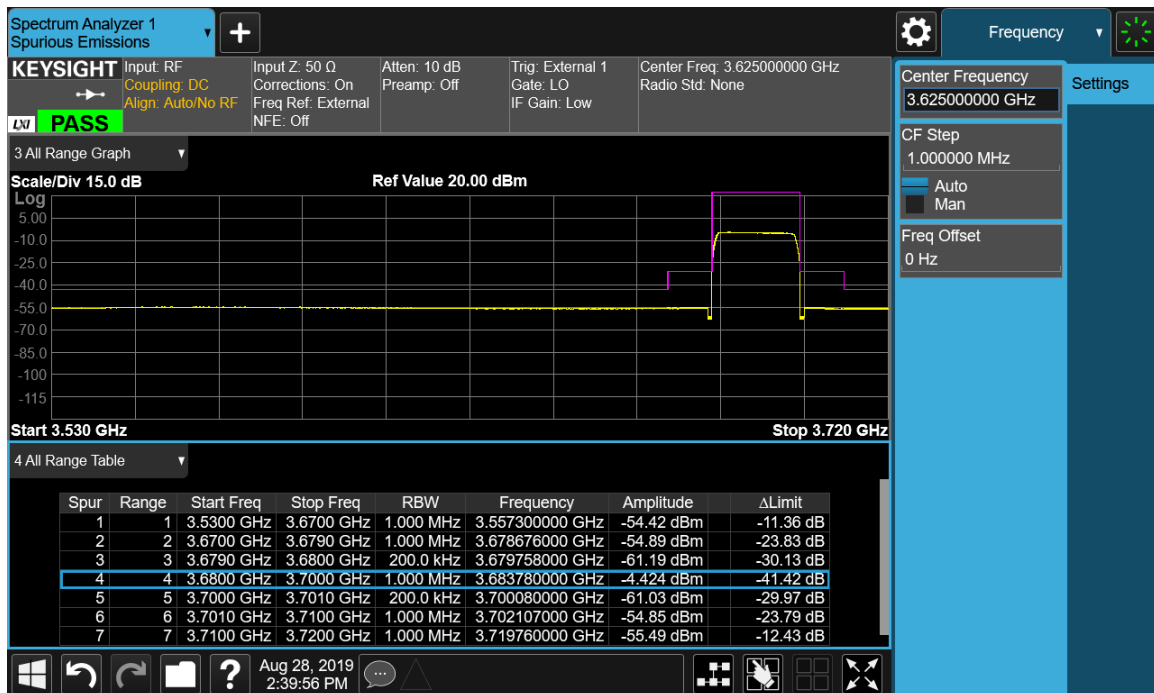
### Channel Position B



### Channel Position M



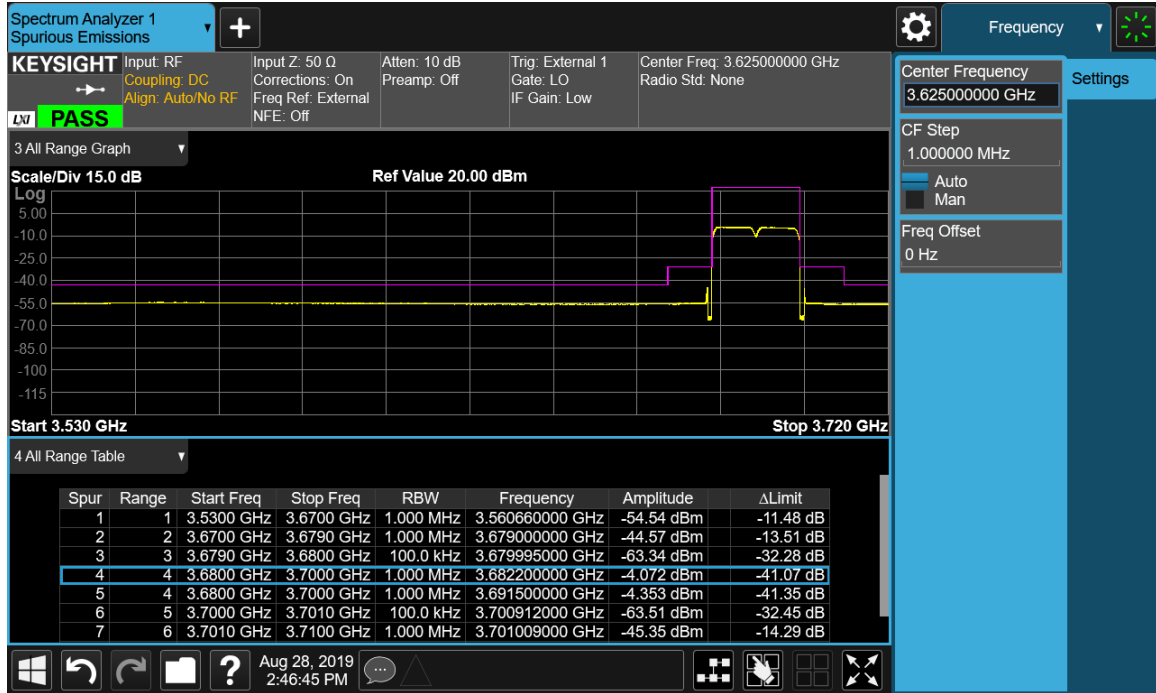
### Channel Position T



LTE-MIMO-2C-10-1:

Antenna Port	Channel Position	Modulation	Channel Bandwidth (MHz)
21	T	64QAM	10

### Channel Position T

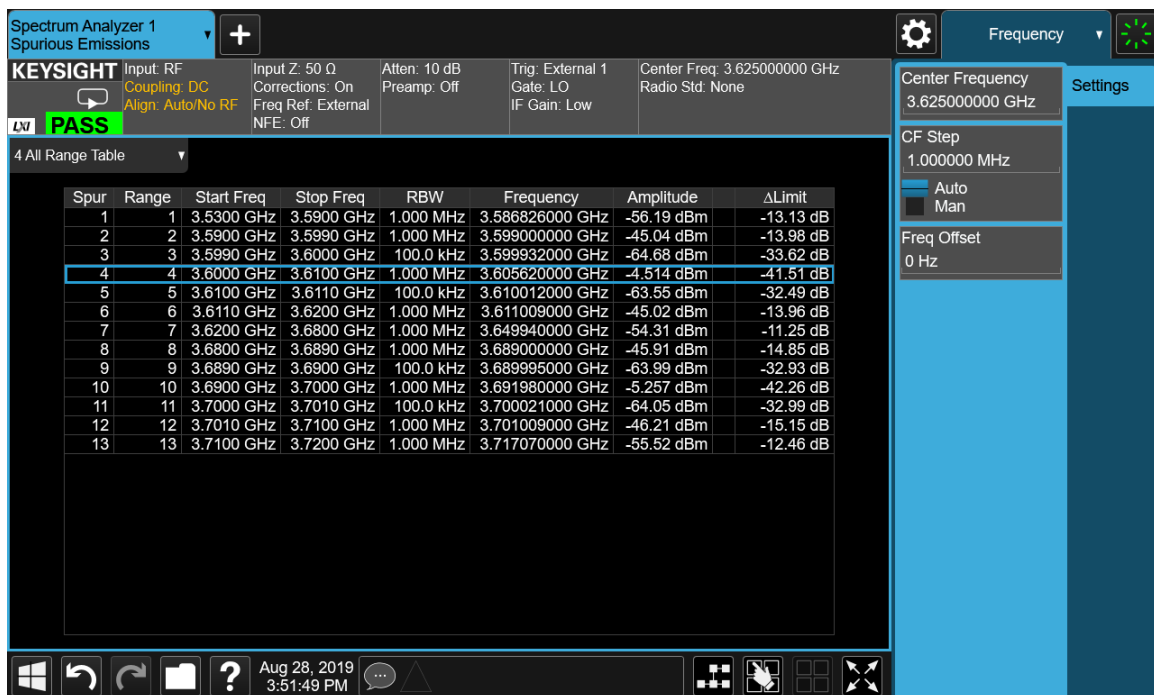
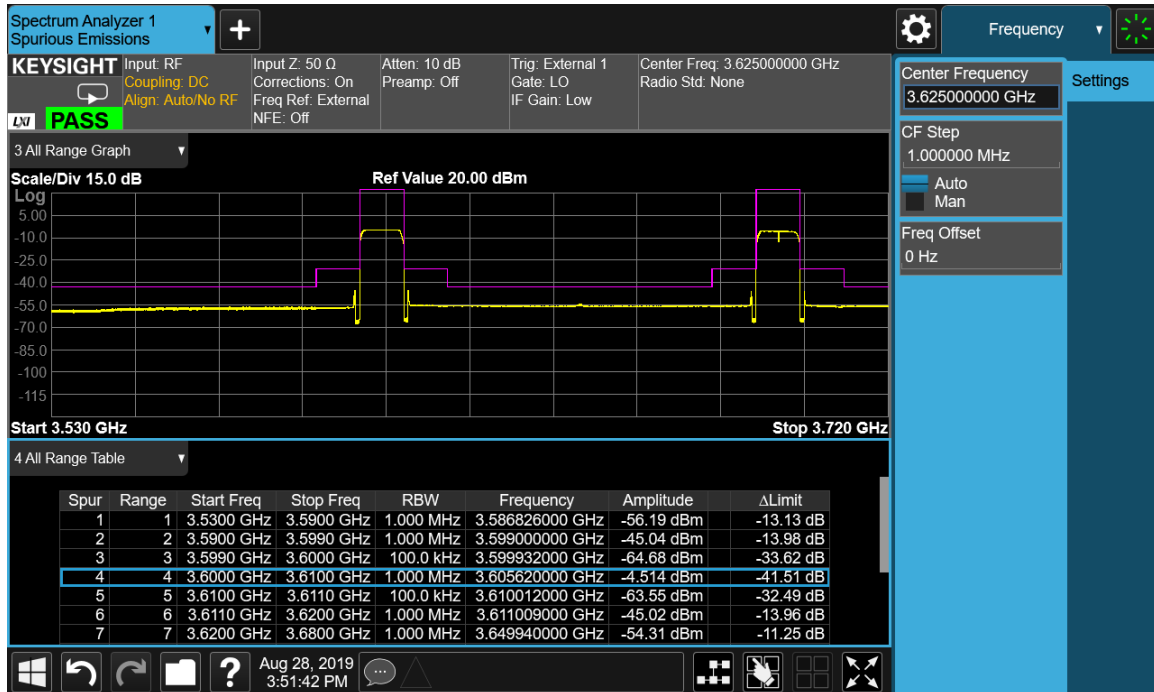


## TEST REPORT

LTE-MIMO-2C-10-2:

Antenna Port	Channel Position	Modulation	Channel Bandwidth (MHz)
21	T	64QAM	10

### Channel Position T

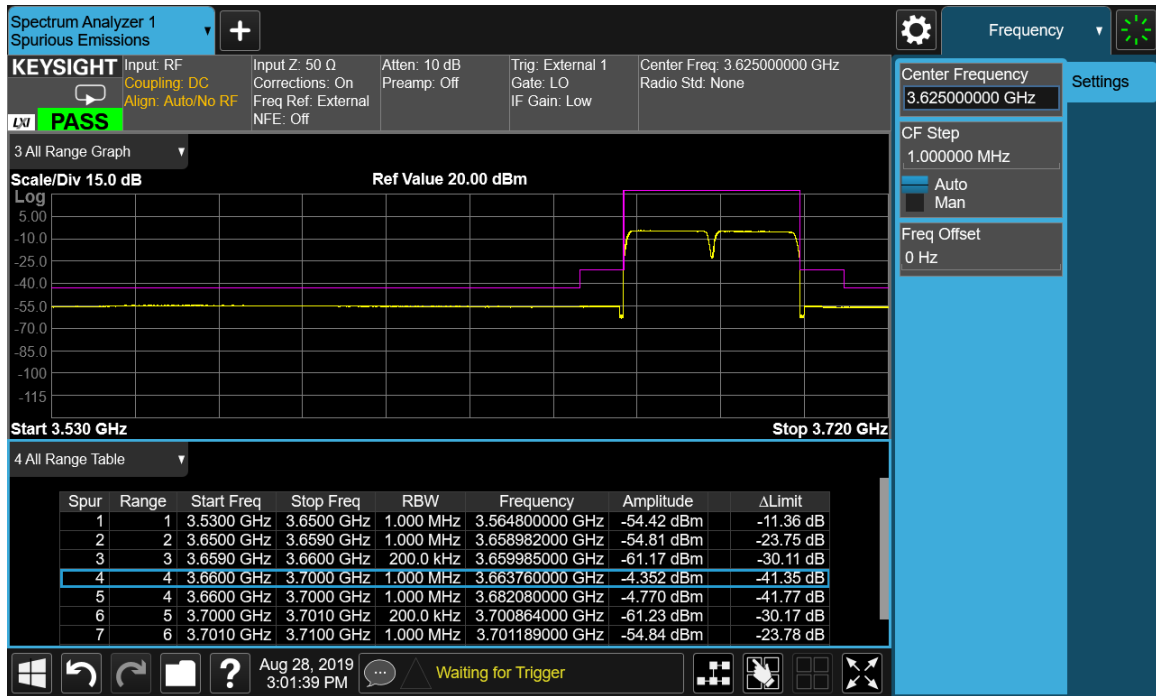




LTE-MIMO-2C-20-1:

Antenna Port	Channel Position	Modulation	Channel Bandwidth (MHz)
21	T	64QAM	20

### Channel Position T

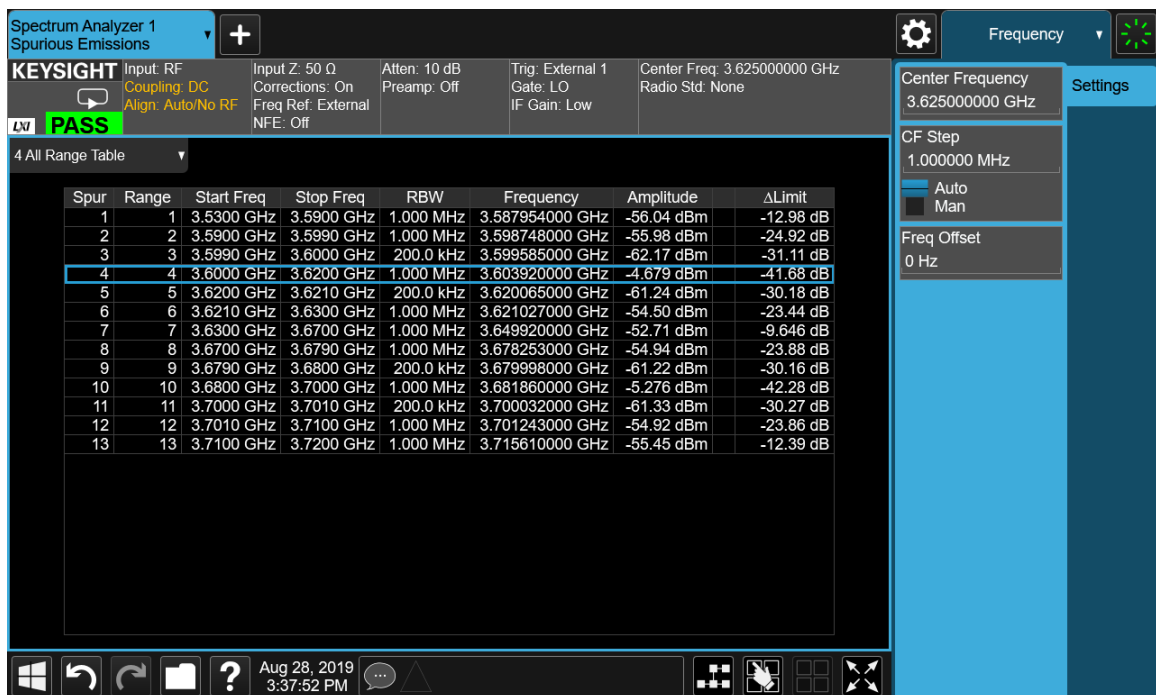
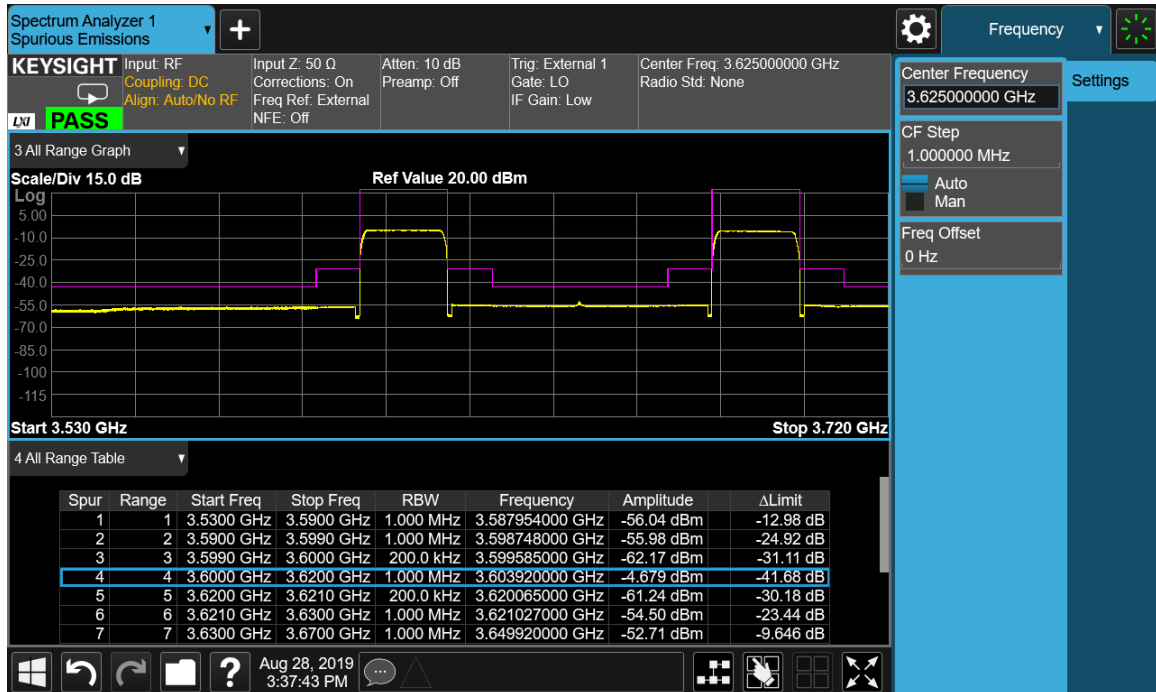


## TEST REPORT

LTE-MIMO-2C-20-2:

Antenna Port	Channel Position	Modulation	Channel Bandwidth (MHz)
21	T	64QAM	20

### Channel Position T

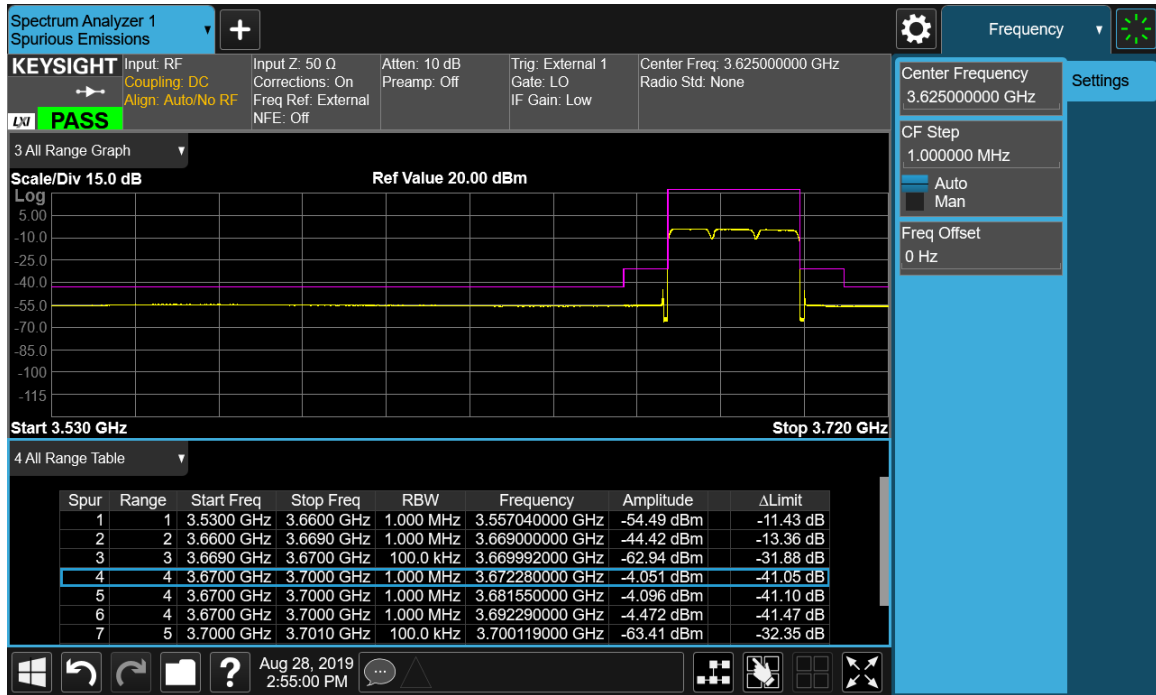


## TEST REPORT

LTE-MIMO-3C-10-1:

Antenna Port	Channel Position	Modulation	Channel Bandwidth (MHz)
21	T	64QAM	10

### Channel Position T

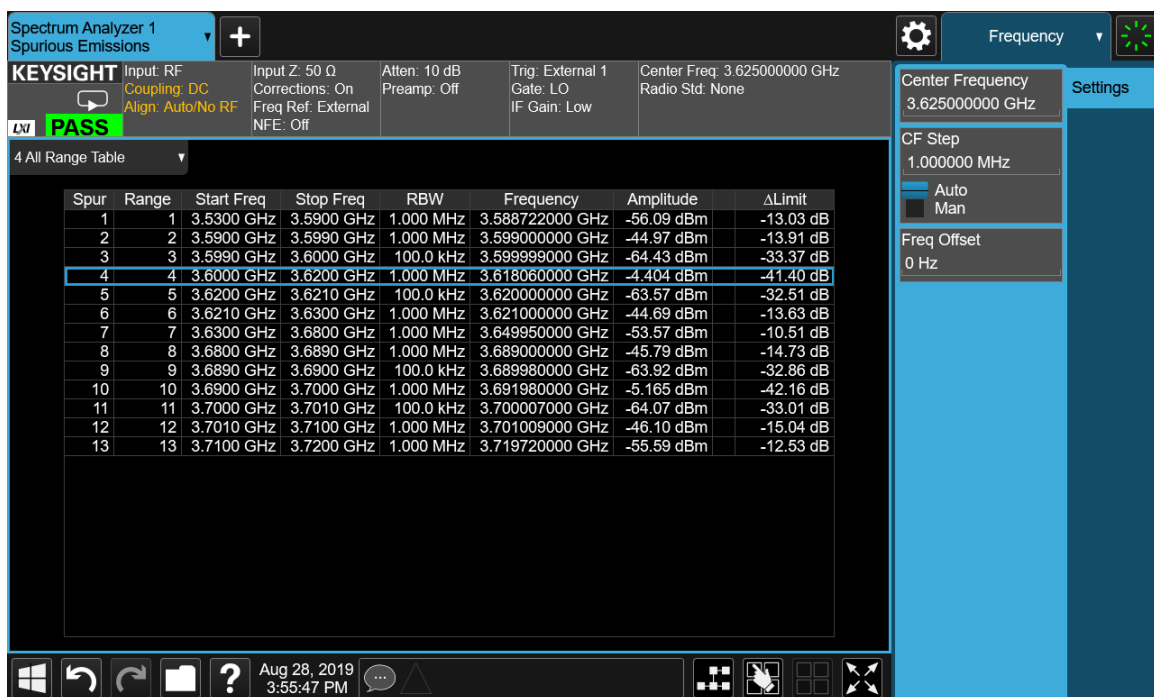
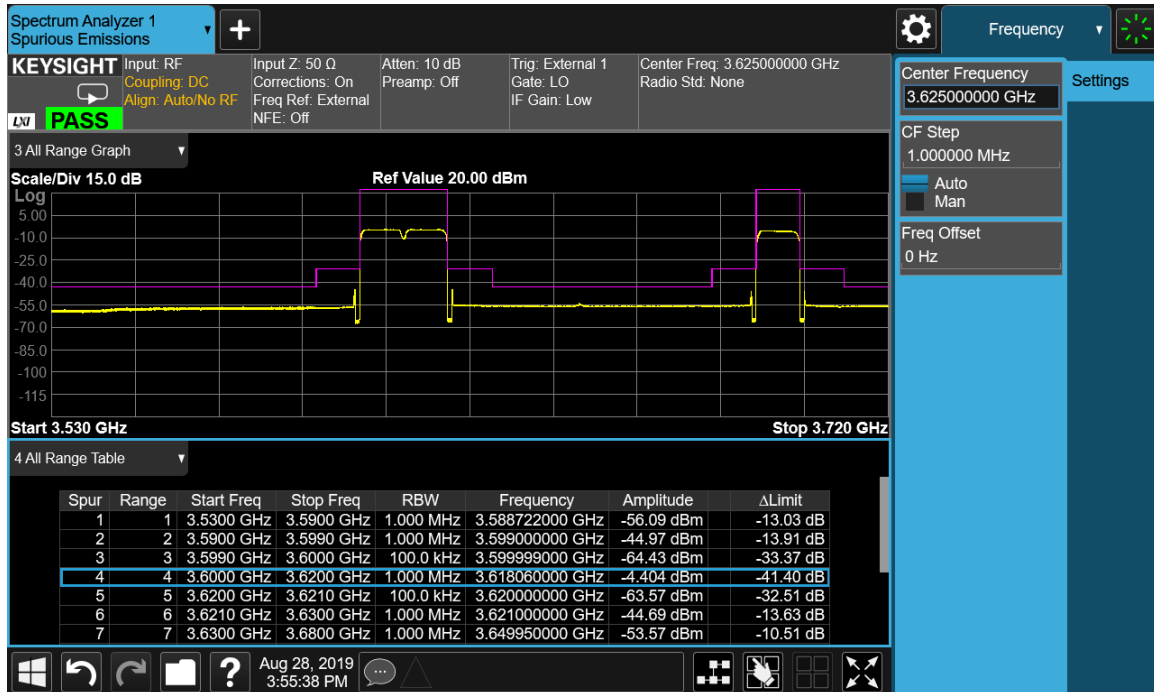


## TEST REPORT

LTE-MIMO-3C-10-2:

Antenna Port	Channel Position	Modulation	Channel Bandwidth (MHz)
21	T	64QAM	10

Channel Position T



## TEST REPORT

LTE-MIMO-3C-20-1:

Antenna Port	Channel Position	Modulation	Channel Bandwidth (MHz)
21	T	64QAM	20

Channel Position T

