8 Occupied Bandwidth – 5G

8.1 Test Specification

FCC Part 2, Section 1049

8.2 Test Procedure

(Temperature (20°C)/ Humidity (48%RH))
The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (loss=41.6 dB). The spectrum analyzer was set to proper RBW.
OBW function (99%) was employed for this evaluation.
Occupied bandwidth measured was repeated in the input terminal of the E.U.T.

8.3 Test Limit

N/A

8.4 Test Results

JUDGEMENT: Passed

See additional information in Table 21 to Table 28 and Figure 177 to Figure 320.

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
16QAM	5	15	2112.5	4.5371
		30		4.0647
		15	2155.0	4.5323
		30		4.0636
		15	2197.5	4.5335
		30		4.0660
	10	15	2115.0	9.2499
		30		8.6076
		15	2155.0	9.2516
		30		8.5910
		15	2195.0	9.2475
		30		8.5970
	15	15	2117.5	14.176
		30		13.546
		15	2155.0	14.177
		30		13.553
		15	2192.5	14.179
		30		13.552

Table 21 Occupied Bandwidth 16 QAM Input - 5G

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
64QAM	5	15	2112.5	4.4939
		30		4.0012
		15	2155.0	4.4934
		30		4.0014
		15	2197.5	4.4934
		30		4.0011
	10	15	2115.0	9.3372
		30		8.6338
		15	2155.0	9.3397
		30		8.6353
		15	2195.0	9.3339
		30		8.6387
	15	15	2117.5	14.146
		30		13.653
		15	2155.0	14.142
		30		13.657
		15	2192.5	14.151
		30		13.655

Table 22 Occupied Bandwidth 64QAM Input - 5G

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
256QAM	5	15	2112.5	4.4935
		30		4.0244
		15	2155.0	4.4928
		30		4.0204
		15	2197.5	4.4910
		30		4.0242
	10	15	2115.0	9.3263
		30		8.6341
		15	2155.0	9.3239
		30		8.6512
		15	2195.0	9.3104
		30		8.6408
	15	15	2117.5	14.121
		30		13.606
		15	2155.0	14.149
		30		13.615
		15	2192.5	14.147
		30		13.601

Table 23 Occupied Bandwidth 256QAM Input - 5G

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
QPSK	5	15	2112.5	4.5245
		30		4.1198
		15	2155.0	4.5209
		30		4.1097
		15	2197.5	4.5242
		30		4.1089
	10	15	2115.0	9.1592
		30		8.5231
		15	2155.0	9.1651
		30		8.5294
		15	2195.0	9.1696
		30		8.5337
	15	15	2117.5	14.187
		30		13.399
		15	2155.0	14.186
		30		13.394
		15	2192.5	14.182
		30		13.396

Table 24 Occupied Bandwidth QPSK Input - 5G

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
16QAM	5	15	2112.5	4.4766
		30		3.9500
		15	2155.0	4.5276
		30		4.0625
		15	2197.5	4.5317
		30		4.0612
	10	15	2115.0	9.2354
		30		8.5240
		15	2155.0	9.2366
		30		8.5959
		15	2195.0	9.2238
		30		8.6060
	15	15	2117.5	14.184
		30		13.536
		15	2155.0	14.180
		30		13.541
		15	2192.5	14.180
		30		13.520

Table 25 Occupied Bandwidth 16QAM Output - 5G

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
64QAM	5	15	2112.5	4.4622
		30		3.9299
		15	2155.0	4.4907
		30		4.0007
		15	2197.5	4.4898
		30		3.9977
	10	15	2115.0	9.2907
		30		8.5563
		15	2155.0	9.3286
		30		8.6340
		15	2195.0	9.3293
		30		8.6315
	15	15	2117.5	14.146
		30		13.559
		15	2155.0	14.128
		30		13.646
		15	2192.5	14.134
		30		13.636

Table 26 Occupied Bandwidth 64QAM Output - 5G

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
256QAM	5	15	2112.5	4.4569
		30		3.9401
		15	2155.0	4.4861
		30		4.0208
		15	2197.5	4.4818
		30		4.0242
	10	15	2115.0	9.2728
		30		8.5641
		15	2155.0	9.3067
		30		8.6442
		15	2195.0	9.3020
		30		8.6239
	15	15	2117.5	14.070
		30		13.538
		15	2155.0	14.107
		30		13.585
		15	2192.5	14.111
		30		13.596

Table 27 Occupied Bandwidth 256QAM Output - 5G

Modulation	Bandwidth	Sub Carrier	Operation Frequency	Reading
	(MHz)	(kHz)	(MHz)	(MHz)
QPSK	5	15	2112.5	4.4772
		30		3.9856
		15	2155.0	4.5150
		30		4.1163
		15	2197.5	4.5190
		30		4.1202
	10	15	2115.0	9.1121
		30		8.4325
		15	2155.0	9.1581
		30		8.5135
		15	2195.0	9.1359
		30		8.5190
	15	15	2117.5	14.188
		30		13.388
		15	2155.0	14.182
		30		13.377
		15	2192.5	14.177
		30		13.348

Table 28 Occupied Bandwidth QPSK Output - 5G

Figure 177: 16QAM 5MHz B.W; 2112.5MHz, 15kHz INPUT

Figure 178: 16QAM 5MHz B.W; 2112.5MHz, 30kHz INPUT

Figure 179: 16QAM 5MHz B.W; 2155.0MHz, 15kHz INPUT

Figure 180: 16QAM 5MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 181: 16QAM 5MHz B.W; 2197.0MHz, 15kHz INPUT

Figure 182: 16QAM 5MHz B.W; 2197.5MHz, 30kHz INPUT

Figure 183: 16QAM 10MHz B.W; 2115.0MHz, 15kHz INPUT

Figure 184: 16QAM 10MHz B.W; 2115.0MHz, 30kHz INPUT

Figure 185: 16QAM 10MHz B.W; 2155.0MHz, 15kHz INPUT

Figure 186: 16QAM 10MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 187: 16QAM 10MHz B.W; 2195.0MHz, 15kHz INPUT

Figure 188: 16QAM 10MHz B.W; 2195.0MHz, 30kHz INPUT

Figure 189: 16QAM 15MHz B.W; 2117.5MHz,15kHz INPUT

Figure 190: 16QAM 15MHz B.W; 2117.5MHz, 30kHz INPUT

Figure 191: 16QAM 15MHz B.W; 2155.0MHz, 15kHz INPUT

Figure 192: 16QAM 15MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 193: 16QAM 15MHz B.W; 2192.5MHz, 15kHz INPUT

Figure 194: 16QAM 15MHz B.W; 2192.5MHz, 30kHz INPUT

Figure 195: 64QAM 5MHz B.W; 2112.5MHz, 15kHz INPUT

Figure 196: 64QAM 5MHz B.W; 2112.5MHz, 30kHz INPUT

Figure 197: 64QAM 5MHz B.W; 2155.0MHz, 15kHz INPUT

Figure 198: 64QAM 5MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 199: 64QAM 5MHz B.W; 878.0MHz, 15kHz INPUT

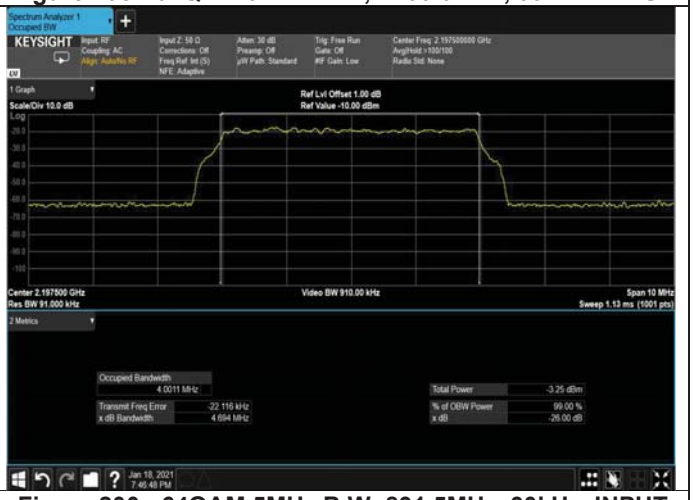

Figure 200: 64QAM 5MHz B.W; 891.5MHz, 30kHz INPUT

Figure 201: 64QAM 10MHz B.W; 2115.0MHz, 15kHz INPUT

Figure 202: 64QAM 10MHz B.W; 2115.0MHz, 30kHz INPUT

Figure 203: 64QAM 10MHz B.W; 2155.0MHz, 15kHz INPUT

Figure 204: 64QAM 10MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 205: 64QAM 10MHz B.W; 2195.0MHz, 15kHz INPUT

Figure 206: 64QAM 10MHz B.W; 2195.0MHz, 30kHz INPUT

Figure 207: 64QAM 15MHz B.W; 2117.5MHz, 15kHz INPUT

Figure 208: 64QAM 15MHz B.W; 2117.0MHz, 30kHz INPUT

Figure 209: 64QAM 15MHz B.W; 2155.0MHz, 15kHz INPUT

Figure 210: 64QAM 15MHz B.W; 2155.0MHz, 30kHz INPUT

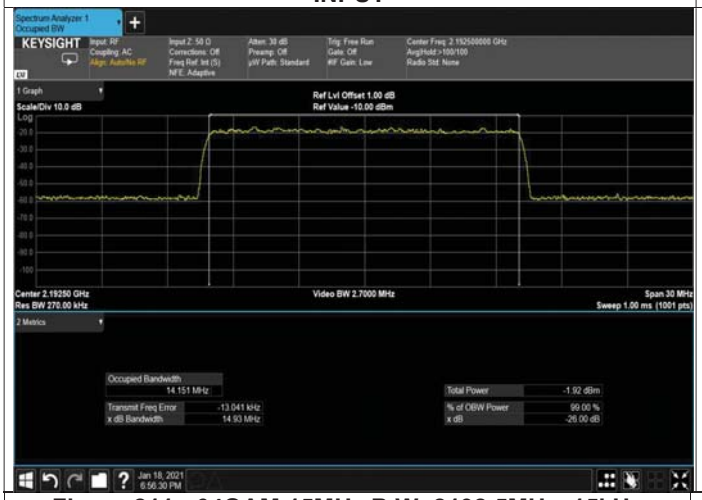

Figure 211: 64QAM 15MHz B.W; 2192.5MHz, 15kHz INPUT

Figure 212: 64QAM 15MHz B.W; 2192.5MHz, 30kHz INPUT

Figure 213: 256QAM 5MHz B.W; 2112.5.5MHz, 15kHz INPUT

Figure 214: 256QAM 5MHz B.W; 2112.5MHz, 30kHz INPUT

Figure 215: 256QAM 5MHz; 2155.0MHz B.W, 15kHz INPUT

Figure 216: 256QAM 5MHz; 2155.0MHz B.W, 30kHz INPUT

Figure 217: 256QAM 5MHz B.W; 2197.5.0MHz, 15kHz INPUT

Figure 218: 256QAM 5MHz B.W; 2197.5MHz, 30kHz INPUT

Figure 219: 256QAM 10MHz B.W; 2115.0MHz, 15kHz INPUT

Figure 220: 256QAM 10MHz B.W; 2115.0MHz, 30kHz INPUT

Figure 221: 256QAM 10MHz B.W; 2155.0MHz, 15kHz INPUT

Figure 222: 256QAM 10MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 223: 256QAM 10MHz B.W; 2195.0MHz, 15kHz INPUT

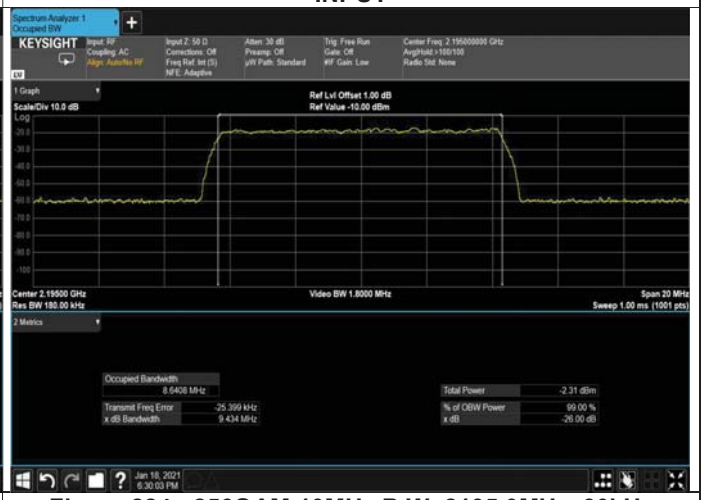

Figure 224: 256QAM 10MHz B.W; 2195.0MHz, 30kHz INPUT

Figure 225: 256QAM 15MHz B.W; 2117.5MHz, 15kHz INPUT

Figure 226: 256QAM 15MHz B.W; 2117.5MHz, 30kHz INPUT

Figure 227: 256QAM 15MHz B.W; 2155.0MHz, 15kHz INPUT

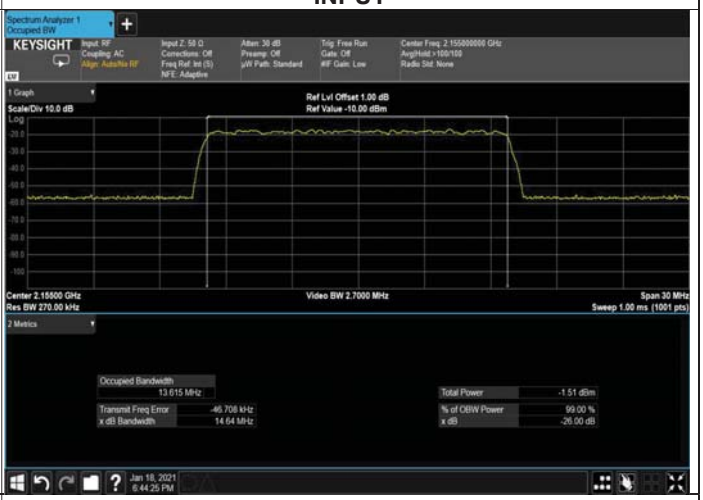

Figure 228: 256QAM 15MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 229: 256QAM 15MHz B.W; 2192.5MHz, 15kHz INPUT

Figure 230: 256QAM 15MHz B.W; 2192.5MHz, 30kHz INPUT

Figure 231: QPSK 5MHz B.W; 2112.5MHz, 15kHz INPUT

Figure 232: QPSK 5MHz B.W; 2112.5MHz, 30kHz INPUT

Figure 233: QPSK 5MHz B.W; 2155.0MHz, 15kHz INPUT

Figure 234: QPSK 5MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 235: QPSK 5MHz B.W; 2197.5MHz, 15kHz INPUT

Figure 236: QPSK 5MHz B.W; 2197.5MHz, 30kHz INPUT

Figure 237: QPSK 10MHz B.W; 2115.0MHz, 15kHz INPUT

Figure 238: QPSK 10MHz B.W; 2115.0MHz, 30kHz INPUT

Figure 239: QPSK 10MHz B.W; 2155.0MHz, 15kHz INPUT

Figure 240: QPSK 10MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 241: QPSK 10MHz B.W; 2192.5.0MHz, 15kHz INPUT

Figure 242: QPSK 10MHz B.W; 2192.5MHz, 30kHz INPUT

Figure 243: QPSK 15MHz B.W; 2117.5MHz, 15kHz INPUT

Figure 244: QPSK 15MHz B.W; 2117.5MHz, 30kHz INPUT

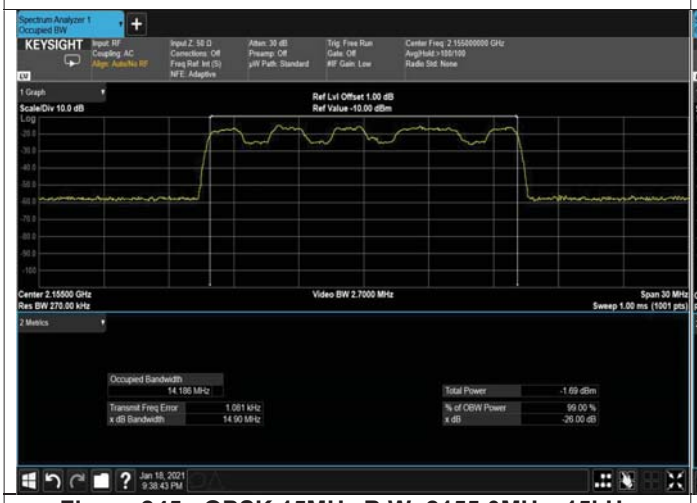

Figure 245: QPSK 15MHz B.W; 2155.0MHz, 15kHz INPUT

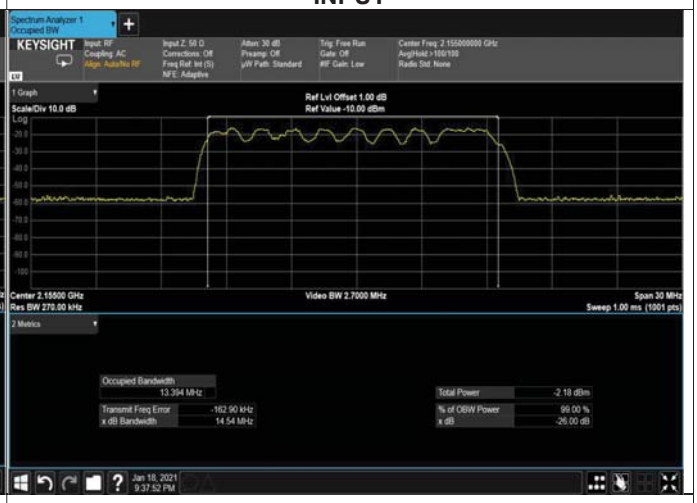

Figure 246: QPSK 15MHz B.W; 2155.0MHz, 30kHz INPUT

Figure 247: QPSK 15MHz B.W; 2192.5MHz, 15kHz INPUT

Figure 248: QPSK 15MHz B.W; 2192.5MHz, 30kHz INPUT

Figure 249: 16QAM 5MHz B.W; 2112.5MHz, 15kHz OUTPUT

Figure 250: 16QAM 5MHz B.W; 2112.5MHz, 30kHz OUTPUT

Figure 251: 16QAM 5MHz B.W; 2155.0MHz, 15kHz OUTPUT

Figure 252: 16QAM 5MHz B.W; 2155.0MHz, 30kHz OUTPUT

Figure 253: 16QAM 5MHz B.W; 2197.5MHz, 15kHz OUTPUT

Figure 254: 16QAM 5MHz B.W; 2197.5MHz, 30kHz OUTPUT

Figure 255: 16QAM 10MHz B.W; 2115.0MHz, 15kHz OUTPUT

Figure 256: 16QAM 10MHz B.W; 2115.0MHz, 30kHz OUTPUT

Figure 257: 16QAM 10MHz B.W; 2155.0MHz, 15kHz OUTPUT

Figure 258: 16QAM 10MHz B.W; 2155.0MHz, 30kHz OUTPUT

Figure 259: 16QAM 10MHz B.W; 2195.0MHz, 15kHz OUTPUT

Figure 260: 16QAM 10MHz B.W; 2195.0MHz, 30kHz OUTPUT

Figure 261: 16QAM 15MHz B.W; 2117.5MHz, 15kHz OUTPUT

Figure 262: 16QAM 15MHz B.W; 2117.5MHz, 30kHz OUTPUT

Figure 263: 16QAM 15MHz B.W; 2155.0MHz, 15kHz OUTPUT

Figure 264: 16QAM 15MHz B.W; 2155.0MHz, 30kHz OUTPUT

Figure 265: 16QAM 15MHz B.W;2192.5 MHz, 15kHz OUTPUT

Figure 266: 16QAM 15MHz B.W; 2192.5 MHz, 30kHz OUTPUT

Figure 267: 64QAM 5MHz B.W; 2112.5MHz, 15kHz OUTPUT

Figure 268: 64QAM 5MHz B.W; 2112.5MHz, 30kHz OUTPUT

Figure 269: 64QAM 5MHz B.W; 2155.0MHz, 15kHz OUTPUT

Figure 270: 64QAM 5MHz B.W; 2155.0MHz, 30kHz OUTPUT

Figure 271: 64QAM 5MHz B.W; 2197.5MHz, 15kHz OUTPUT

Figure 272: 64QAM 5MHz B.W; 2197.5MHz, 30kHz OUTPUT

Figure 273: 64QAM 10MHz B.W; 2115.0MHz, 15kHz OUTPUT

Figure 274: 64QAM 10MHz B.W; 2115.0MHz, 30kHz OUTPUT

Figure 275: 64QAM 10MHz B.W; 2155.0MHz, 15kHz OUTPUT

Figure 276: 64QAM 10MHz B.W; 2155.0MHz, 30kHz OUTPUT

Figure 277: 64QAM 10MHz B.W; 2195.0MHz, 15kHz OUTPUT

Figure 278: 64QAM 10MHz B.W; 2195.0MHz, 30kHz OUTPUT

Figure 279: 64QAM 15MHz B.W; 2117.5MHz, 15kHz OUTPUT

Figure 280: 64QAM 15MHz B.W; 2117.5MHz, 30kHz OUTPUT

Figure 281: 64QAM 15MHz B.W; 2155.0MHz, 15kHz OUTPUT

Figure 282: 64QAM 15MHz B.W; 2155.0MHz, 30kHz OUTPUT

Figure 283: 64QAM 15MHz B.W;2192.5MHz, 15kHz OUTPUT

Figure 284: 64QAM 15MHz B.W; 2192.5MHz, 30kHz OUTPUT

Figure 285: 256QAM 5MHz B.W; 2112.5MHz, 15kHz OUTPUT

Figure 286: 256QAM 5MHz B.W; 2112.5MHz, 30kHz OUTPUT

Figure 287: 256QAM 5MHz; 2155.0MHz B.W, 15kHz OUTPUT

Figure 288: 256QAM 5MHz; 2155.0MHz B.W, 30kHz OUTPUT

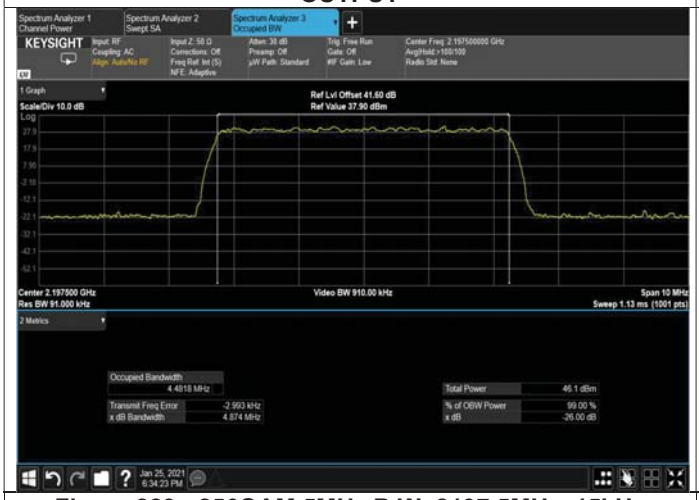

Figure 289: 256QAM 5MHz B.W; 2197.5MHz, 15kHz OUTPUT

Figure 290: 256QAM 5MHz B.W; 2197.5MHz, 30kHz OUTPUT

Figure 291: 256QAM 10MHz B.W; 2115MHz, 15kHz OUTPUT

Figure 292: 256QAM 10MHz B.W; 2115MHz, 30kHz OUTPUT

Figure 293: 256QAM 10MHz B.W; 2155MHz, 15kHz OUTPUT

Figure 294: 256QAM 10MHz B.W; 2155MHz, 30kHz OUTPUT

Figure 295: 256QAM 10MHz B.W; 2195MHz, 15kHz OUTPUT

Figure 296: 256QAM 10MHz B.W; 2195MHz, 30kHz OUTPUT

Figure 297: 256QAM 15MHz B.W; 2117.5MHz, 15kHz OUTPUT

Figure 298: 256QAM 15MHz B.W; 2117.5MHz, 30kHz OUTPUT

Figure 299: 256QAM 15MHz B.W; 2155MHz, 15kHz OUTPUT

Figure 300: 256QAM 15MHz B.W; 2155MHz, 30kHz OUTPUT

Figure 301: 256QAM 15MHz B.W; 2192.5MHz, 15kHz OUTPUT

Figure 302: 256QAM 15MHz B.W; 2192.5MHz, 30kHz OUTPUT

Figure 303: QPSK 5MHz B.W; 2112.5MHz, 15kHz OUTPUT

Figure 304: QPSK 5MHz B.W; 2112.5MHz, 30kHz OUTPUT

Figure 305: QPSK 5MHz B.W; 2155MHz, 15kHz OUTPUT

Figure 306: QPSK 5MHz B.W; 2155MHz, 30kHz OUTPUT

Figure 307: QPSK 5MHz B.W; 2197.5MHz, 15kHz OUTPUT

Figure 308: QPSK 5MHz B.W; 2197.5MHz, 30kHz OUTPUT

Figure 309: QPSK 10MHz B.W; 2115MHz, 15kHz OUTPUT

Figure 310: QPSK 10MHz B.W; 2115MHz, 30kHz OUTPUT

Figure 311: QPSK 10MHz B.W; 2155MHz, 15kHz OUTPUT

Figure 312: QPSK 10MHz B.W; 2155MHz, 30kHz OUTPUT

Figure 313: QPSK 10MHz B.W; 2195MHz, 15kHz OUTPUT

Figure 314: QPSK 10MHz B.W; 2195MHz, 30kHz OUTPUT

Figure 315: QPSK 15MHz B.W; 2117.5MHz, 15kHz OUTPUT

Figure 316: QPSK 15MHz B.W; 2117.5MHz, 30kHz OUTPUT

Figure 317: QPSK 15MHz B.W; 2155MHz, 15kHz OUTPUT

Figure 318: QPSK 15MHz B.W; 2155Hz, 30kHz OUTPUT

Figure 319: QPSK 15MHz B.W; 2192.5MHz, 15kHz OUTPUT

Figure 320: QPSK 15MHz B.W; 2192.5MHz, 30kHz OUTPUT

8.5 Test Equipment Used; Occupied Bandwidth

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EXA signal Analyzer	Keysight	UXA N9040B	MY56080119	January 31, 2020	January 31, 2022
EXG Vector Signal Generator	Agilent Technologies	N5172B	MY53051952	January 17, 2019	January 17, 2022
40 dB Attenuator	Weinschel Associates	WA 39-40-33	-	November 1, 2020	November 1, 2021
RF Coaxial Cable	Huber-Suner	SLLS210B	-	November 1, 2020	November 1, 2021

Table 29 Test Equipment Used

9 Occupied Bandwidth – 3G and 4G

9.1 Test Specification

FCC Part 2, Section 1049

9.2 Test Procedure

(Temperature (22°C)/ Humidity (35%RH))
The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (loss=41.6 dB). The spectrum analyzer was set to proper RBW.
OBW function (99%) was employed for this evaluation.
Occupied bandwidth measured was repeated in the input terminal of the E.U.T.

9.3 Test Limit

N/A

9.4 Test Results

JUDGEMENT: Passed

See additional information in Table 30 to Table 37 and Figure 321 to Figure 380.

Modulation	Bandwidth	Operation Frequency	Reading
	(MHz)	(MHz)	(MHz)
WCDMA	5	2112.5	4.1640
		2155.0	4.1609
		2197.5	4.1640

Table 30 Occupied Bandwidth WCDMA Input – 3G

Modulation	Bandwidth	Operation Frequency	Reading
	(MHz)	(MHz)	(MHz)
WCDMA	5	2112.5	4.1623
		2155.0	4.1627
		2197.5	4.2294

Table 31 Occupied Bandwidth WCDMA Output – 3G

Modulation	Bandwidth	Operation Frequency	Reading
	(MHz)	(MHz)	(MHz)
16QAM	5	2112.5	4.4724
		2155.0	4.4704
		2197.5	4.4736
	10	2115.0	8.9392
		2155.0	8.9400
		2195.0	8.9444
	15	2117.5	13.399
		2155.0	13.395
		2192.5	13.398

Table 32 Occupied Bandwidth 16QAM Input - 4G

Modulation	Bandwidth	Operation Frequency	Reading
	(MHz)	(MHz)	(MHz)
16QAM	5	2112.5	4.4693
		2155.0	4.4708
		2197.5	4.4742
	10	2115.0	8.9467
		2155.0	8.9409
		2195.0	8.9495
	15	2117.5	13.394
		2155.0	13.396
		2192.5	13.409

Table 33 Occupied Bandwidth 16QAM Output – 4G

Modulation	Bandwidth	Operation Frequency	Reading
	(MHz)	(MHz)	(MHz)
64QAM	5	2112.5	4.4828
		2155.0	4.4818
		2197.5	4.4852
	10	2115.0	8.9378
		2155.0	8.9477
		2195.0	8.9448
	15	2117.5	13.391
		2155.0	13.393
		2192.5	13.396

Table 34 Occupied Bandwidth 64QAM Input – 4G

Modulation	Bandwidth	Operation Frequency	Reading
	(MHz)	(MHz)	(MHz)
64QAM	5	2112.5	4.4793
		2155.0	4.4806
		2197.5	4.4910
	10	2115.0	8.9453
		2155.0	8.9450
		2195.0	8.9615
	15	2117.5	13.390
		2155.0	13.392
		2192.5	13.406

Table 35 Occupied Bandwidth 64QAM Output – 4G

Modulation	Bandwidth	Operation Frequency	Reading
	(MHz)	(MHz)	(MHz)
QPSK	5	2112.5	4.4776
		2155.0	4.4780
		2197.5	4.4766
	10	2115.0	8.9349
		2155.0	8.9356
		2195.0	8.9335
	15	2117.5	13.378
		2155.0	13.380
		2192.5	13.385

Table 36 Occupied Bandwidth QPSK Input – 4G

Modulation	Bandwidth	Operation Frequency	Reading
	(MHz)	(MHz)	(MHz)
QPSK	5	2112.5	4.4841
		2155.0	4.4812
		2197.5	4.4888
	10	2115.0	8.9331
		2155.0	8.9342
		2195.0	8.9638
	15	2117.5	13.385
		2155.0	13.388
		2192.5	13.402

Table 37 Occupied Bandwidth QPSK Output - 4G

Figure 321: WCDMA 5MHz B.W; 2112.5MHz – 3G INPUT

Figure 322: WCDMA 5MHz B.W; 2155.0MHz – 3G INPUT

Figure 323: WCDMA 5MHz B.W; 2197.5MHz – 3G INPUT

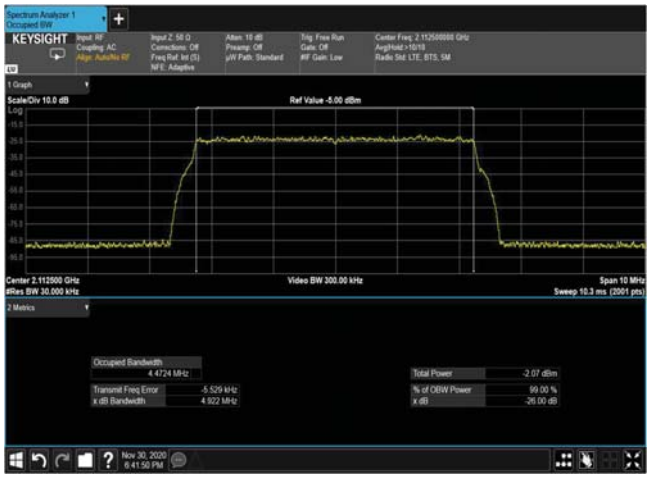

Figure 324: 16QAM 5MHz B.W; 2112.5MHz – 4G INPUT

Figure 325: 16QAM 5MHz B.W; 2155MHz – 4G INPUT

Figure 326: 16QAM 5MHz B.W; 2197.5MHz – 4G INPUT

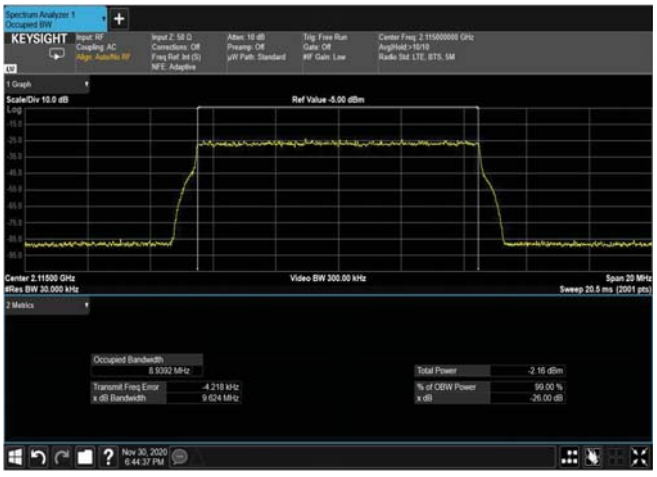

Figure 327: 16QAM 10MHz B.W; 2115MHz – 4G INPUT

Figure 328: 16QAM 10MHz; 2155MHz – 4G INPUT

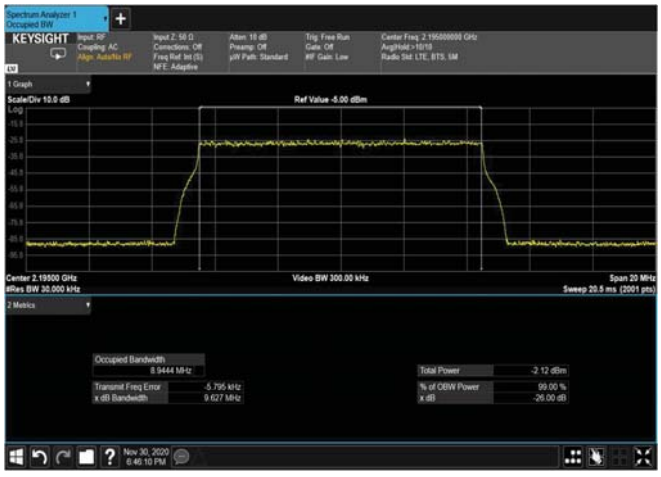

Figure 329: 16QAM 10MHz ; 2195MHz – 4G INPUT

Figure 330: 16QAM 15MHz B.W; 2117.5MHz – 4G INPUT

Figure 331: 16QAM 15MHz B.W; 2155MHz – 4G INPUT

Figure 332: 16QAM 15MHz B.W; 2192.5MHz – 4G INPUT

Figure 333: 64QAM 5MHz B.W; 2112.5MHz – 4G INPUT

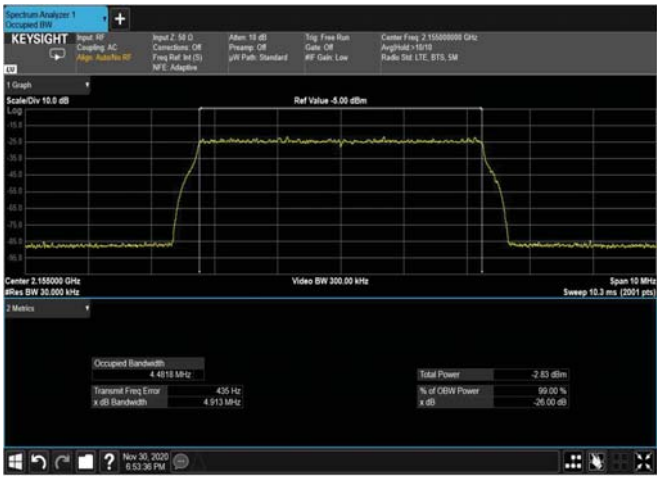

Figure 334: 64QAM 5MHz B.W; 2155MHz – 4G INPUT

Figure 335: 64QAM 5MHz B.W; 891.5MHz – 4G INPUT

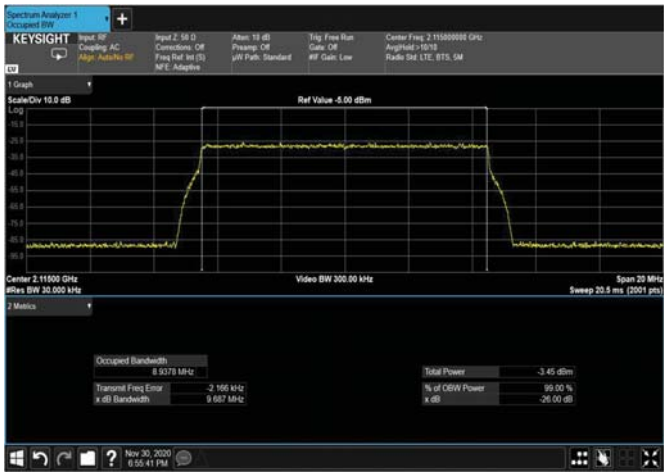

Figure 336: 64QAM 10MHz B.W; 2115MHz – 4G INPUT

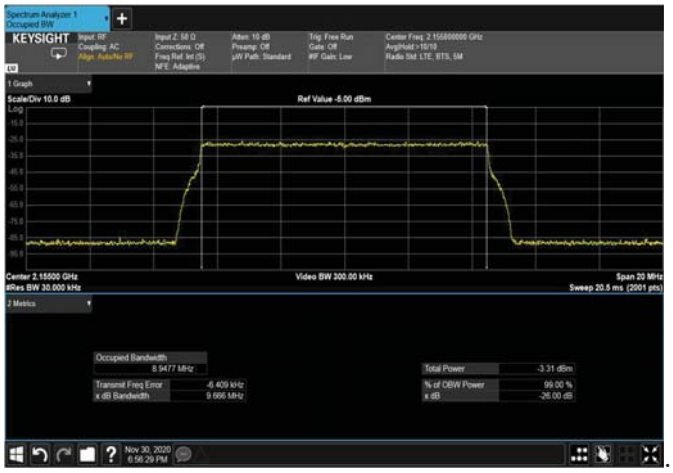

Figure 337: 64QAM 10MHz; 2155MHz – 4G INPUT

Figure 338: 64QAM 10MHz; 2195MHz – 4G INPUT

Figure 339: 64QAM 15MHz B.W; 2117.5MHz – 4G INPUT

Figure 340: 64QAM 15MHz B.W; 2155MHz – 4G INPUT

Figure 341: 64QAM 64MHz B.W; 2192.5MHz – 4G INPUT

Figure 342: QPSK 5MHz B.W; 2112.5MHz – 4G INPUT

Figure 343: QPSK 5MHz B.W; 2155MHz – 4G INPUT

Figure 344: QPSK 5MHz B.W; 2197.5MHz – 4G INPUT

Figure 345: QPSK 10MHz B.W; 2115MHz – 4G INPUT

Figure 346: QPSK 10MHz; 2155MHz – 4G INPUT

Figure 347: QPSK 10MHz; 2195MHz – 4G INPUT

Figure 348: QPSK 15MHz B.W; 2117.5MHz – 4G INPUT

Figure 349: QPSK 15MHz B.W; 2155MHz – 4G INPUT

Figure 350: QPSK 15MHz B.W; 2192.5MHz – 4G INPUT

Figure 351: WCDMA 5MHz B.W; 2112.5MHz – 3G OUTPUT

Figure 352: WCDMA 5MHz B.W; 2155.0MHz – 3G OUTPUT

Figure 353: WCDMA 5MHz B.W; 2197.5MHz – 3G OUTPUT

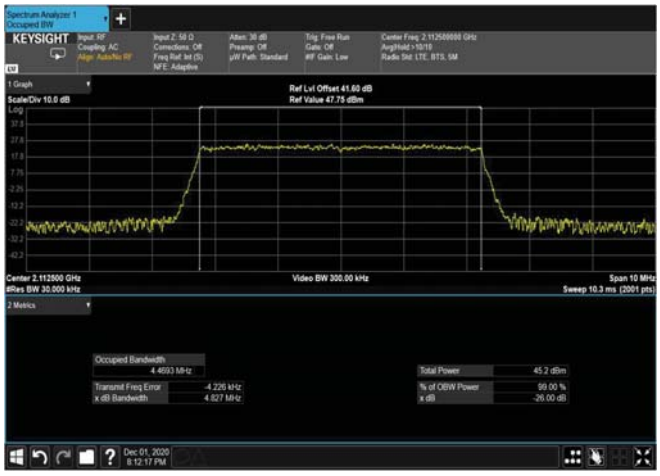

Figure 354: 16QAM 5MHz B.W; 2112.5MHz – 4G OUTPUT

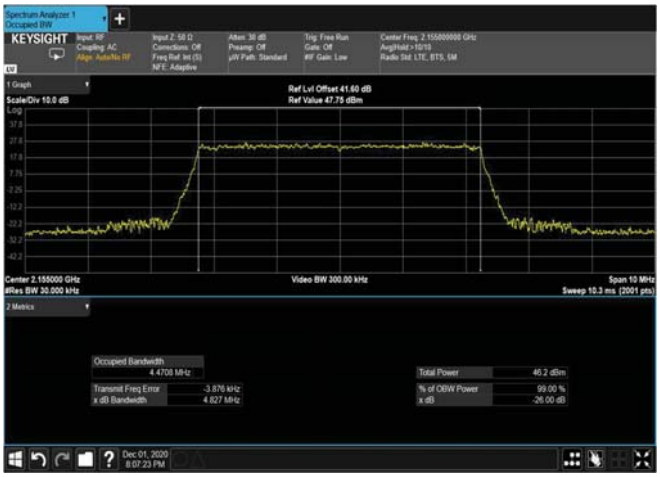

Figure 355: 16QAM 5MHz B.W; 2155MHz – 4G OUTPUT

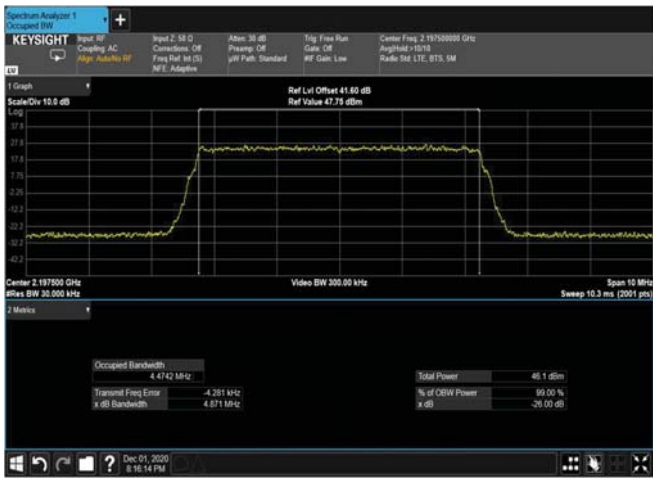

Figure 356: 16QAM 5MHz B.W; 2197.5MHz – 4G OUTPUT

Figure 357: 16QAM 10MHz B.W; 2115MHz – 4G OUTPUT

Figure 358: 16QAM 10MHz; 2155MHz – 4G OUTPUT

Figure 359: 16QAM 10MHz ; 2195MHz – 4G OUTPUT

Figure 360: 16QAM 15MHz B.W; 2117.5MHz – 4G OUTPUT

Figure 361: 16QAM 15MHz B.W; 2155MHz – 4G OUTPUT

Figure 362: 16QAM 15MHz B.W; 2192.5MHz – 4G OUTPUT

Figure 363: 64QAM 5MHz B.W; 2112.5MHz – 4G OUTPUT

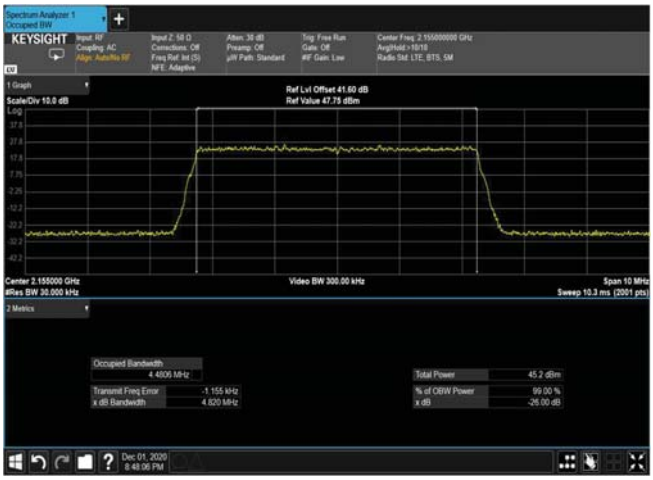

Figure 364: 64QAM 5MHz B.W; 2155MHz – 4G OUTPUT

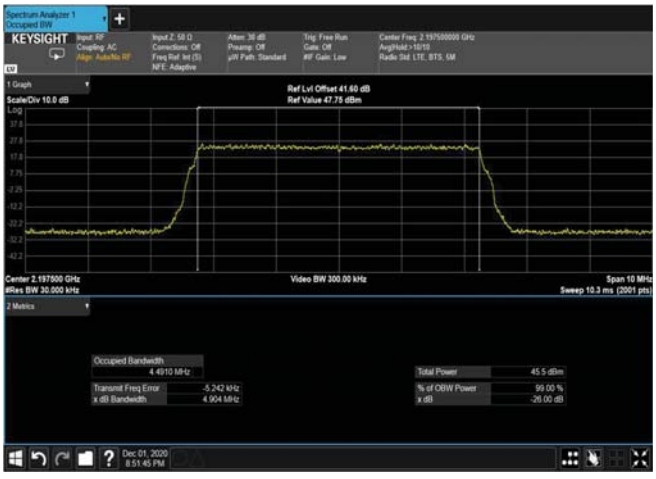

Figure 365: 64QAM 5MHz B.W; 891.5MHz – 4G OUTPUT

Figure 366: 64QAM 10MHz B.W; 2115MHz – 4G OUTPUT

Figure 367: 64QAM 10MHz; 2155MHz – 4G OUTPUT

Figure 368: 64QAM 10MHz; 2195MHz – 4G OUTPUT

Figure 369: 64QAM 15MHz B.W; 2117.5MHz – 4G OUTPUT

Figure 370: 64QAM 15MHz B.W; 2155MHz – 4G OUTPUT

Figure 371: 64QAM 64MHz B.W; 2192.5MHz – 4G OUTPUT

Figure 372: QPSK 5MHz B.W; 2112.5MHz – 4G OUTPUT

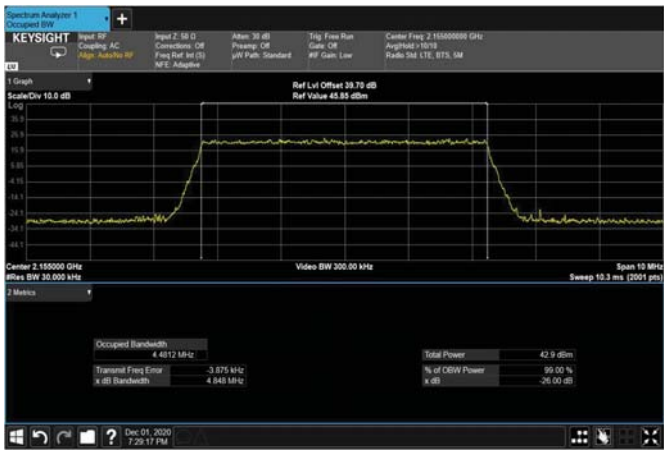

Figure 373: QPSK 5MHz B.W; 2155MHz – 4G OUTPUT

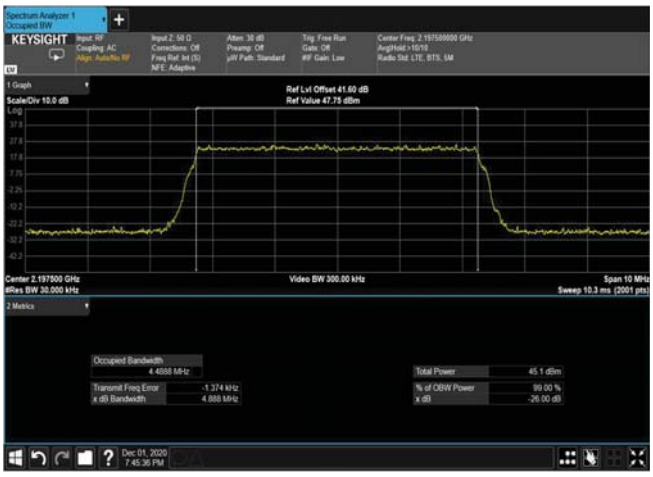

Figure 374: QPSK 5MHz B.W; 2197.5MHz – 4G OUTPUT

Figure 375: QPSK 10MHz B.W; 2115MHz – 4G OUTPUT

Figure 376: QPSK 10MHz; 2155MHz – 4G OUTPUT

Figure 377: QPSK 10MHz; 2195MHz – 4G OUTPUT

Figure 378: QPSK 15MHz B.W; 2117.5MHz – 4G OUTPUT

Figure 379: QPSK 15MHz B.W; 2155MHz – 4G OUTPUT

Figure 380: QPSK 15MHz B.W; 2192.5MHz – 4G OUTPUT

9.5 Test Equipment Used; Occupied Bandwidth

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EXA signal Analyzer	Keysight	UXA N9040B	MY56080119	January 31, 2020	January 31, 2022
EXG Vector Signal Generator	Agilent Technologies	N5172B	MY53051952	January 17, 2019	January 17, 2022
40 dB Attenuator	Weinschel Associates	WA 39-40-33	-	November 1, 2020	November 1, 2021
RF Coaxial Cable	Huber-Suner	SLLS210B	-	November 1, 2020	November 1, 2021

Table 38 Test Equipment Used