



Figure 354: QPSK 20MHz B.W; 627.0MHz, 15kHz Input



Figure 355: QPSK 20MHz B.W; 627.0MHz, 30kHz Input



Figure 356: QPSK 20MHz B.W; 634.5MHz, 15kHz Input



Figure 357: QPSK 20MHz B.W; 634.5MHz, 30kHz Input



Figure 358: QPSK 20MHz B.W; 642.0MHz, 15kHz Input



Figure 359: QPSK 20MHz B.W; 642.0MHz, 30kHz Input



Figure 360: 16QAM 5MHz B.W; 619.5MHz, 15kHz Output



Figure 361: 16QAM 5MHz B.W; 619.5MHz, 30kHz Output



Figure 362: 16QAM 5MHz B.W; 634.5MHz, 15kHz Output



Figure 363: 16QAM 5MHz B.W; 634.5MHz, 30kHz Output



Figure 364: 16QAM 5MHz B.W; 649.5MHz, 15kHz Output



Figure 365: 16QAM 5MHz B.W; 649.5MHz, 30kHz Output



Figure 366: 16QAM 10MHz B.W; 622.0MHz, 15kHz Output



Figure 367: 16QAM 10MHz B.W; 622.0MHz, 30kHz Output



Figure 368: 16QAM 10MHz B.W; 634.5MHz, 15kHz Output

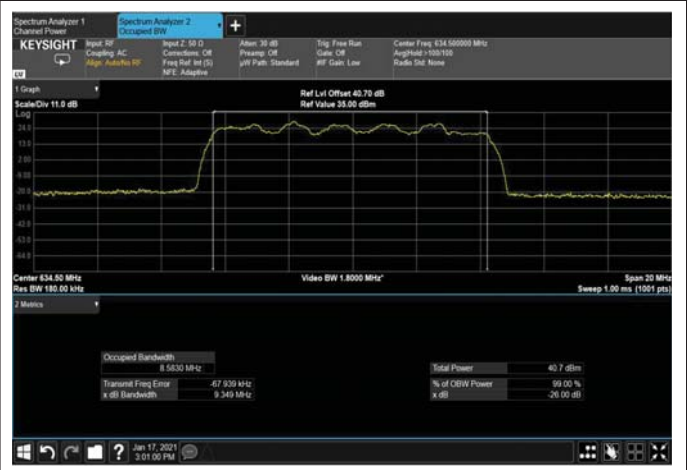


Figure 369: 16QAM 10MHz B.W; 634.5MHz, 30kHz Output



Figure 370: 16QAM 10MHz B.W; 647MHz, 15kHz Output



Figure 371: 16QAM 10MHz B.W; 647MHz, 30kHz Output



Figure 372: 16QAM 15MHz B.W; 624.5MHz, 15kHz Output



Figure 373: 16QAM 15MHz B.W; 624.5MHz, 30kHz Output



Figure 374: 16QAM 15MHz B.W; 634.5MHz, 15kHz Output



Figure 375: 16QAM 15MHz B.W; 634.5MHz, 30 kHz Output



Figure 376: 16QAM 15MHz B.W; 644.5MHz, 15kHz Output



Figure 377: 16QAM 15MHz B.W; 644.5MHz, 30kHz Output



Figure 378: 16QAM 20MHz B.W; 627.0MHz, 15kHz Output



Figure 379: 16QAM 20MHz B.W; 627.0MHz, 30kHz Output



Figure 380: 16QAM 20MHz B.W; 634.5MHz, 15kHz Output



Figure 381: 16QAM 20MHz B.W; 634.5MHz, 15kHz Output



Figure 382: 16QAM 20MHz B.W; 642.0MHz, 15kHz Output



Figure 383: 16QAM 20MHz B.W; 642.0MHz, 30kHz Output



Figure 384: 64QAM 5MHz B.W; 619.5MHz, 15kHz Output



Figure 385: 64QAM 5MHz B.W; 619.5MHz, 30kHz Output



Figure 386: 64QAM 5MHz B.W; 634.5MHz, 15kHz Output

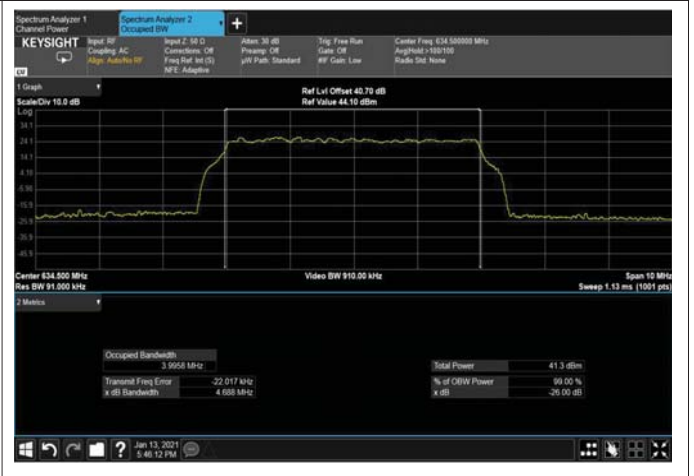


Figure 387: 64QAM 5MHz B.W; 634.5MHz, 30kHz Output



Figure 388: 64QAM 5MHz B.W; 649.5MHz, 15kHz Output



Figure 389: 64QAM 5MHz B.W; 649.5MHz, 30kHz Output



Figure 390: 64QAM 10MHz B.W; 622MHz, 15kHz Output



Figure 391: 64QAM 10MHz B.W; 622.0MHz, 30kHz Output



Figure 392: 64QAM 10MHz B.W; 634.5MHz, 15kHz Output



Figure 393: 64QAM 10MHz B.W; 634.5MHz, 30kHz Output



Figure 394: 64QAM 10MHz B.W; 647.0MHz, 15kHz Output

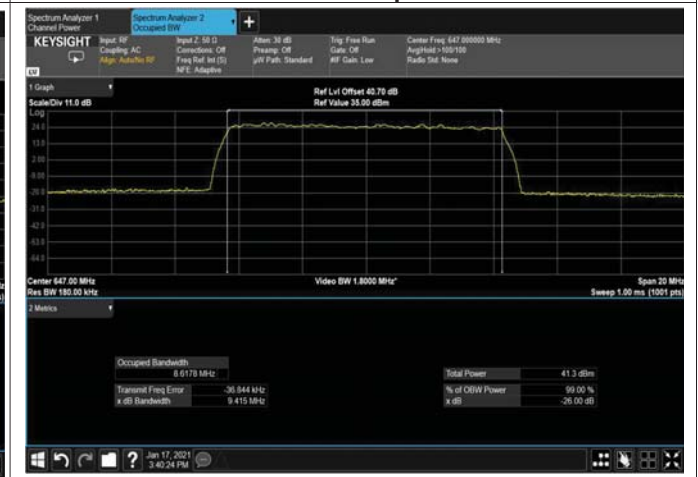


Figure 395: 64QAM 10MHz B.W; 647.0MHz, 30kHz Output

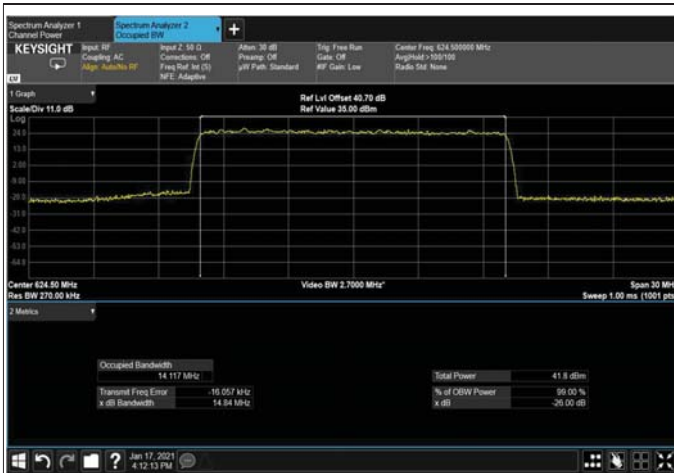


Figure 396: 64QAM 15MHz B.W; 624.5MHz, 15kHz Output



Figure 397: 64QAM 15MHz B.W; 624.5MHz, 30kHz Output



Figure 398: 64QAM 15MHz B.W; 634.5MHz, 15kHz Output



Figure 399: 64QAM 15MHz B.W; 634.5MHz, 30kHz Output



Figure 400: 64QAM 15MHz B.W; 644.5MHz, 30kHz Output



Figure 401: 64QAM 15MHz B.W; 644.5MHz, 60kHz Output



Figure 402: 64QAM 20MHz B.W; 627.0MHz, 15kHz Output



Figure 403: 64QAM 20MHz B.W; 627.0MHz, 30kHz Output



Figure 404: 64QAM 20MHz B.W; 634.5MHz, 15kHz Output



Figure 405: 64QAM 20MHz B.W; 634.5MHz, 30kHz Output



Figure 406: 64QAM 20MHz B.W; 642.5MHz, 15kHz Output

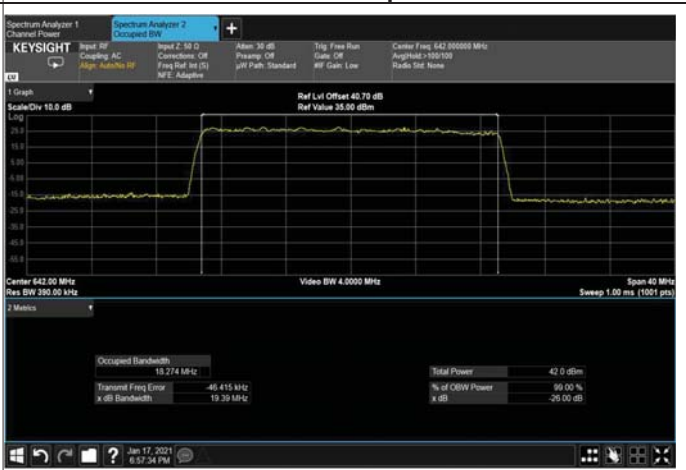


Figure 407: 64QAM 20MHz B.W; 642.0MHz, 30kHz Output



Figure 408: 256QAM 5MHz B.W; 619.5MHz, 15kHz Output



Figure 409: 256QAM 5MHz B.W; 619.5MHz, 30kHz Output



Figure 410: 256QAM 5MHz B.W; 634.5MHz, 15kHz Output



Figure 411: 256QAM 5MHz B.W; 634.5MHz, 30kHz Output



Figure 412: 256QAM 5MHz B.W; 649.5MHz, 15kHz Output



Figure 413: 256QAM 5MHz B.W; 649.5MHz, 30kHz Output



Figure 414: 256QAM 10MHz B.W; 622.0MHz, 15kHz Output



Figure 415: 256QAM 10MHz B.W; 622.0MHz, 30kHz Output



Figure 416: 256QAM 10MHz B.W; 634.5MHz, 15kHz Output



Figure 417: 256QAM 10MHz B.W; 634.5MHz, 30kHz Output



Figure 418: 256QAM 10MHz B.W; 647.0MHz, 15kHz Output



Figure 419: 256QAM 10MHz B.W; 647.0MHz, 30kHz Output



Figure 420: 256QAM 15MHz B.W; 624.5MHz, 15kHz Output



Figure 421: 256QAM 15MHz B.W; 624.5MHz, 30kHz Output



Figure 422: 256QAM 15MHz B.W; 634.5MHz, 15kHz Output



Figure 423: 256QAM 15MHz B.W; 634.5MHz, 30kHz Output



Figure 424: 256QAM 15MHz B.W; 644.5MHz, 15kHz Output



Figure 425: 256QAM 15MHz B.W; 644.5MHz, 30kHz Output



Figure 426: 256QAM 20MHz B.W; 627.0MHz, 15kHz Output



Figure 427: 256QAM 20MHz B.W; 627.0MHz, 30kHz Output



Figure 428: 256QAM 20MHz B.W; 634.5MHz, 15kHz Output



Figure 429: 256QAM 20MHz B.W; 634.5MHz, 30kHz Output



Figure 430: 256QAM 20MHz B.W; 642.0MHz, 15kHz Output



Figure 431: 256QAM 20MHz B.W; 642.0MHz, 30kHz Output



Figure 432: QPSK 5MHz B.W; 619.5MHz, 15kHz Output



Figure 433: QPSK 5MHz B.W; 619.5MHz, 30kHz Output



Figure 434: QPSK 5MHz B.W; 634.5MHz, 15kHz Output



Figure 435: QPSK 5MHz B.W; 634.5MHz, 30kHz Output



Figure 436: QPSK 5MHz B.W; 649.5MHz, 15kHz Output



Figure 437: QPSK 5MHz B.W; 649.5MHz, 30kHz Output



Figure 438: QPSK 10MHz B.W; 622.0MHz, 15kHz Output



Figure 439: QPSK 10MHz B.W; 622.0MHz, 30kHz Output



Figure 440: QPSK 10MHz B.W; 634.5MHz, 15kHz Output



Figure 441: QPSK 10MHz B.W; 634.5MHz, 30kHz Output



Figure 442: QPSK 10MHz B.W; 647.0MHz, 15kHz Output



Figure 443: QPSK 10MHz B.W; 647.0MHz, 30kHz Output



Figure 444: QPSK 15MHz B.W; 624.5MHz, 15kHz Output



Figure 445: QPSK 15MHz B.W; 624.5MHz, 30kHz Output



Figure 446: QPSK 15MHz B.W; 634.5MHz, 15kHz Output



Figure 447: QPSK 15MHz B.W; 634.5MHz, 30kHz Output



Figure 448: QPSK 15MHz B.W; 644.5MHz, 15kHz Output



Figure 449: QPSK 15MHz B.W; 644.5MHz, 30kHz Output



Figure 450: QPSK 20MHz B.W; 627.0MHz, 15kHz Output

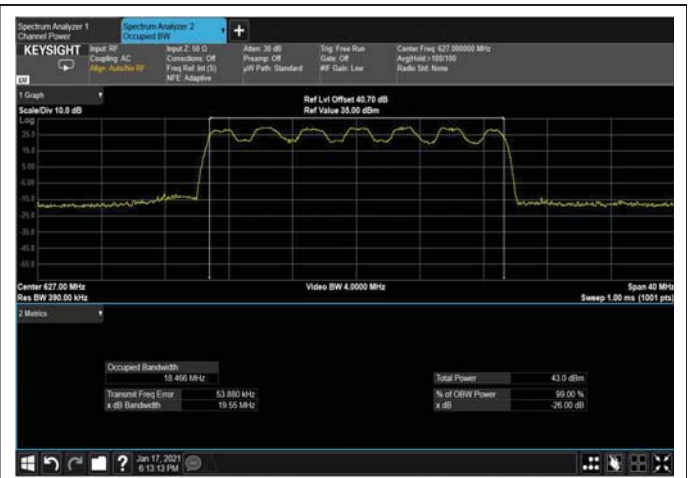


Figure 451: QPSK 20MHz B.W; 627.0MHz, 30kHz Output



Figure 452: QPSK 20MHz B.W; 634.5MHz, 15kHz Output



Figure 453: QPSK 20MHz B.W; 634.5MHz, 30kHz Output



Figure 454: QPSK 20MHz B.W; 642.0MHz, 15kHz Output



Figure 455: QPSK 20MHz B.W; 642.0MHz, 30kHz Output



7.5 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 24 Test Equipment Used



8 Spurious Emissions at Antenna Terminals

8.1 Test Specification

FCC Part 27, Subpart C, Sections 53(g)

8.2 Test Procedure

(Temperature (20°C)/ Humidity (46%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (max loss=42.0dB).

8.3 Test Limit

The power of any emission outside of the authorized operating frequency ranges (617 -652 MHz) must be attenuated below the transmitting power (P) by a factor of $43 + 10 \log (P)$ dB.

8.4 Test Results

JUDGEMENT: Passed

See additional information in Figure 456 to Figure 551.

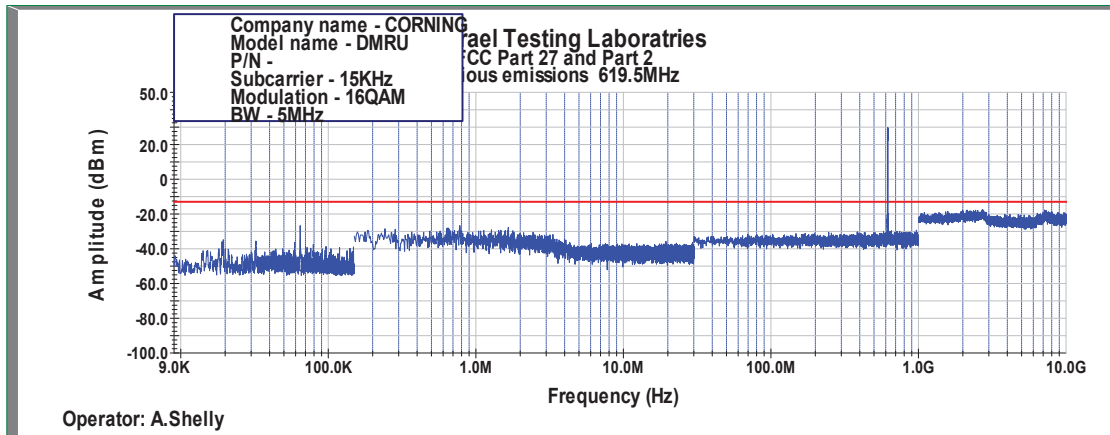


Figure 456: Spurious Emissions at Antenna Terminal 16QAM, 619.5MHz, B.W. 5MHz, Sub Carrier 15kHz

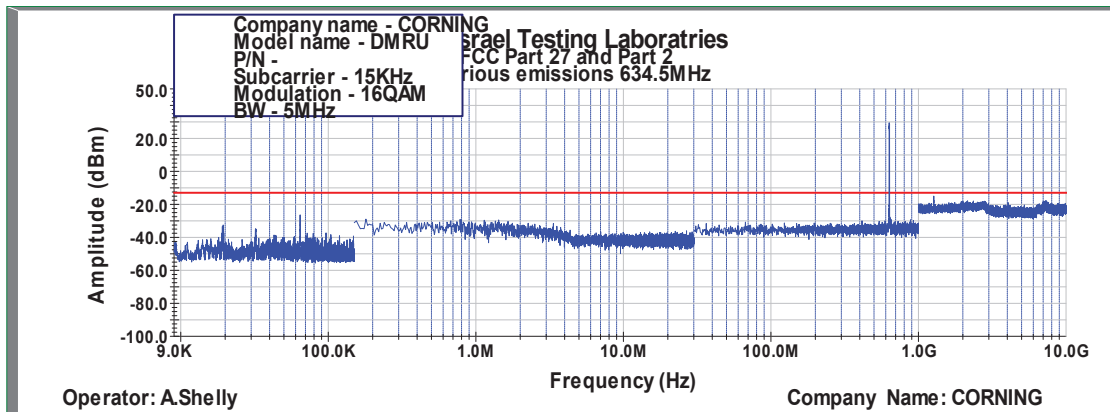


Figure 457: Spurious Emissions at Antenna Terminal 16QAM, 634.5MHz, B.W. 5MHz, Sub Carrier 15kHz

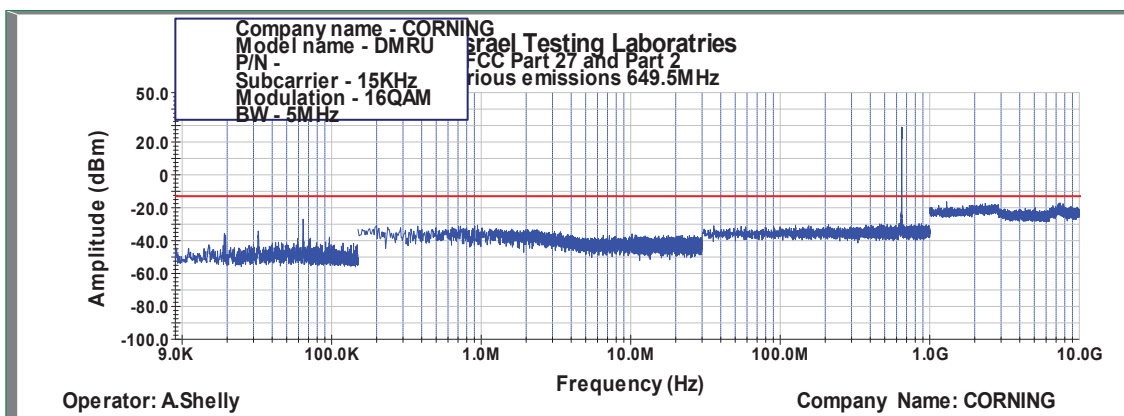


Figure 458: Spurious Emissions at Antenna Terminal 16QAM, 649.5MHz, B.W. 5MHz, Sub Carrier 15kHz

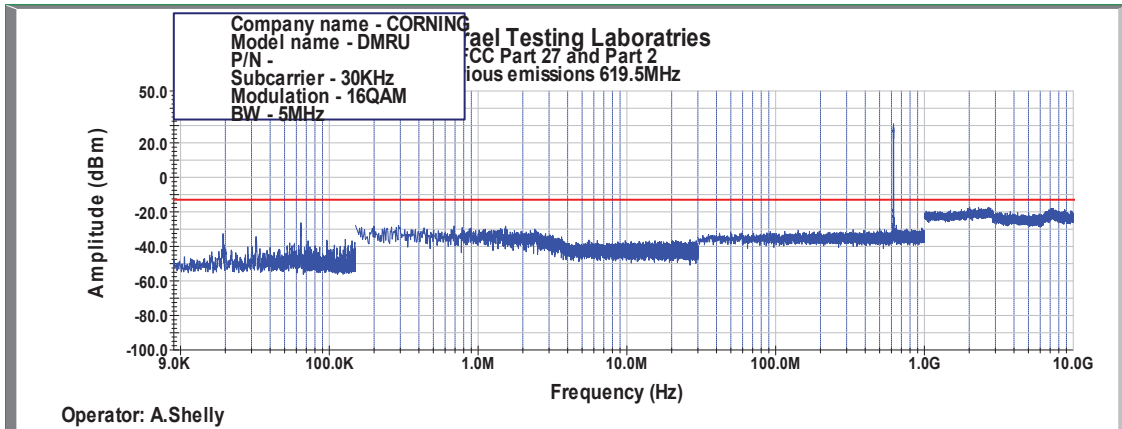


Figure 459: Spurious Emissions at Antenna Terminal 16QAM, 619.5MHz, B.W. 5MHz, Sub Carrier 30kHz

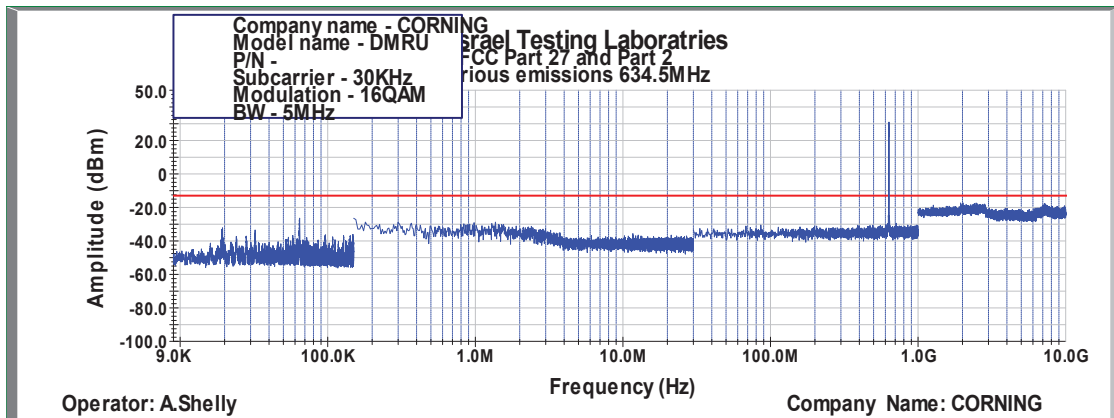


Figure 460: Spurious Emissions at Antenna Terminal 16QAM, 634.5MHz, B.W. 5MHz, Sub Carrier 30kHz

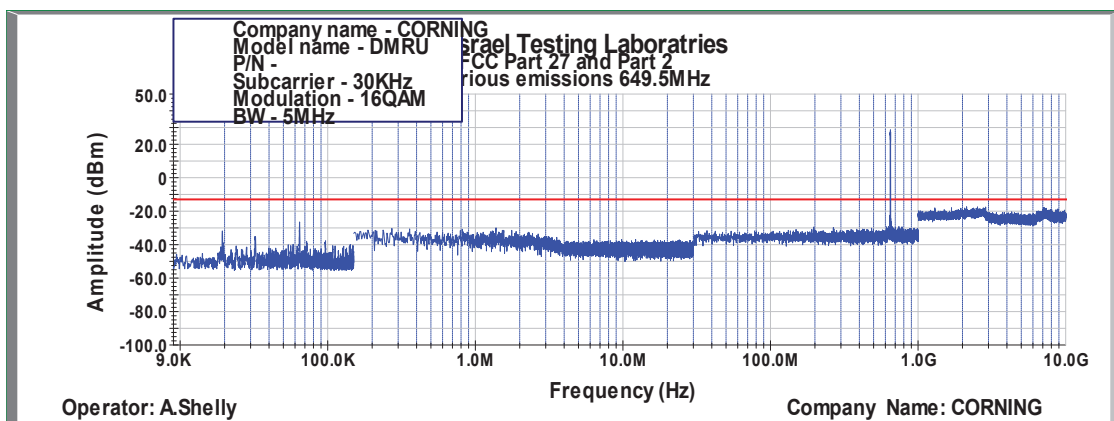


Figure 461: Spurious Emissions at Antenna Terminal 16QAM, 649.5MHz, B.W. 5MHz, Sub Carrier 30kHz

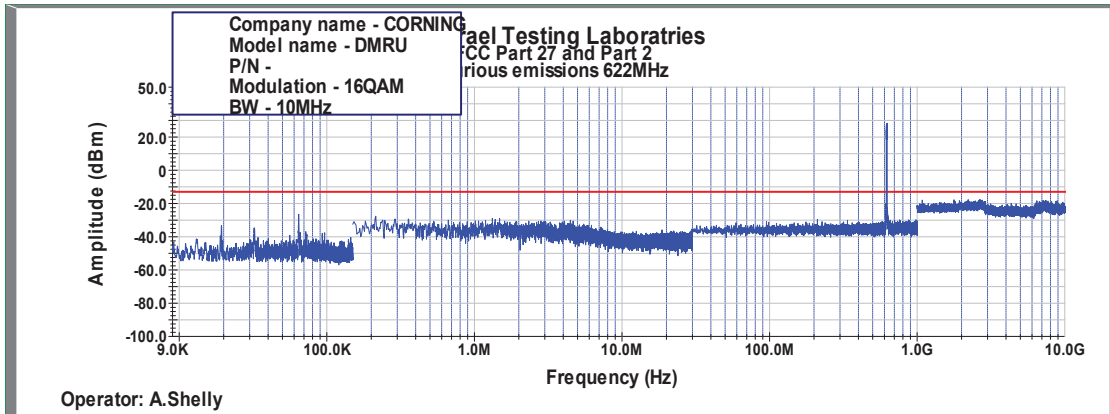


Figure 462: Spurious Emissions at Antenna Terminal 16QAM, 622.0MHz, B.W. 10MHz, Sub Carrier 15kHz

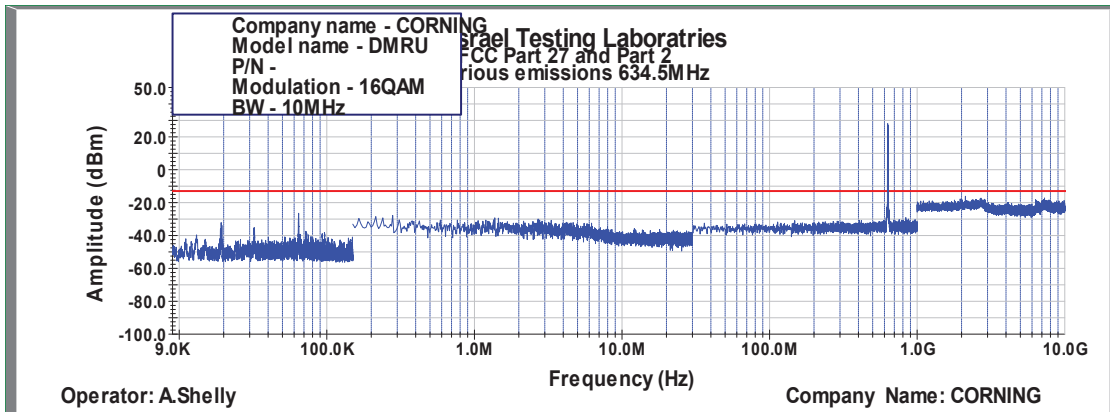


Figure 463: Spurious Emissions at Antenna Terminal 16QAM, 634.5MHz, B.W. 10MHz, Sub Carrier 15kHz

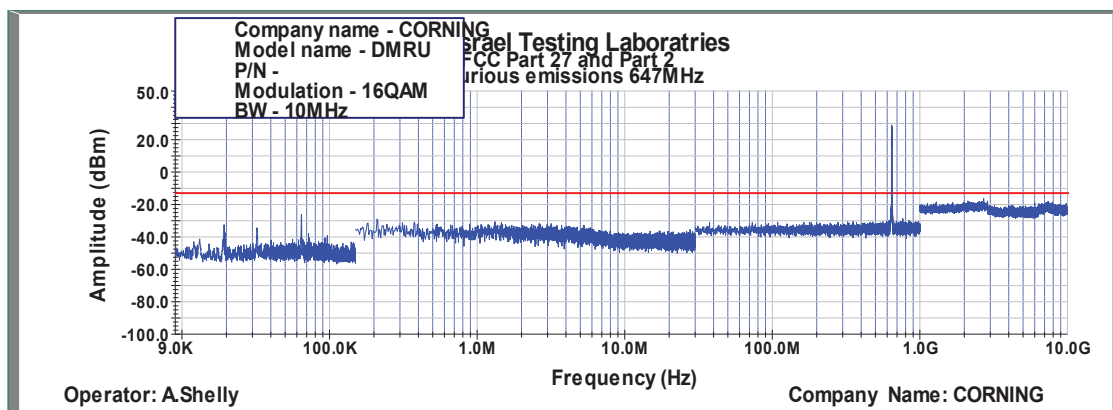


Figure 464: Spurious Emissions at Antenna Terminal 16QAM, 647.0MHz, B.W. 10MHz, Sub Carrier 15kHz

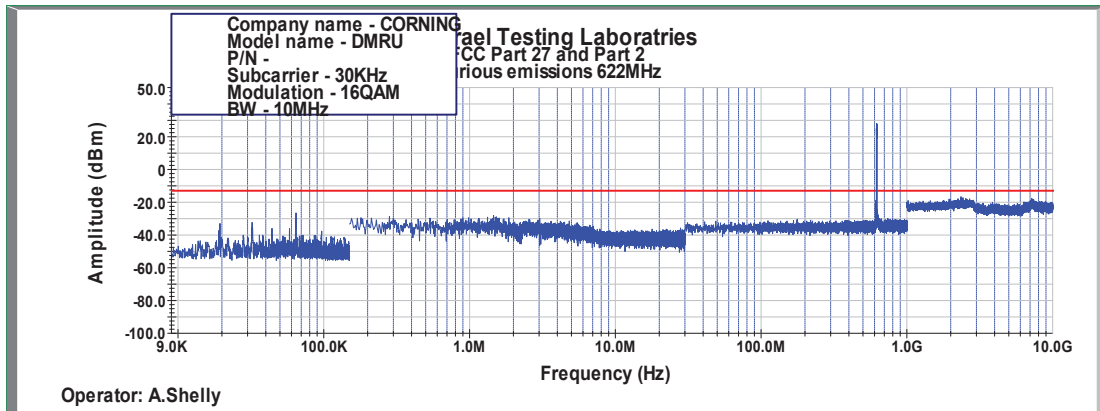


Figure 465: Spurious Emissions at Antenna Terminal 16QAM, 622.0MHz, B.W. 10MHz, Sub Carrier 30kHz

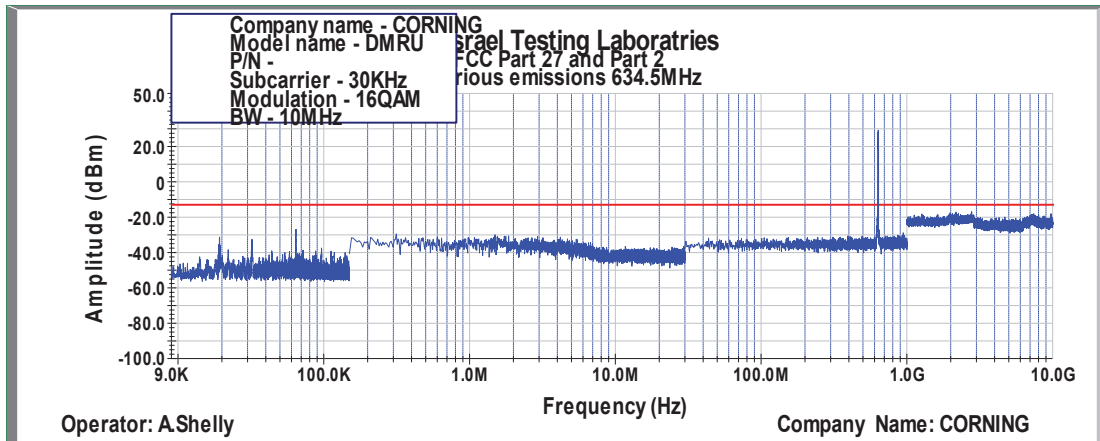


Figure 466: Spurious Emissions at Antenna Terminal 16QAM, 634.5MHz, B.W. 10MHz, Sub Carrier 30kHz

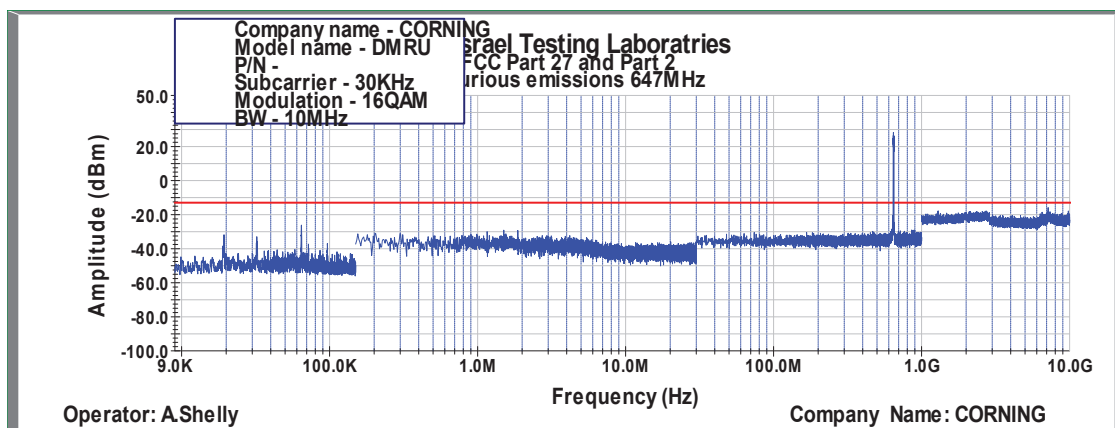


Figure 467: Spurious Emissions at Antenna Terminal 16QAM, 647.0MHz, B.W. 10MHz, Sub Carrier 30kHz

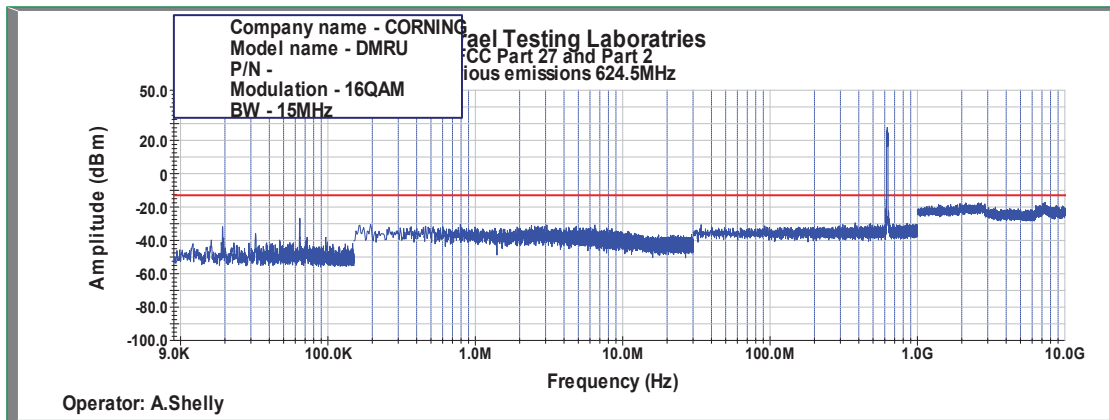


Figure 468: Spurious Emissions at Antenna Terminal 16QAM, 624.5MHz, B.W. 15MHz, Sub Carrier 15kHz

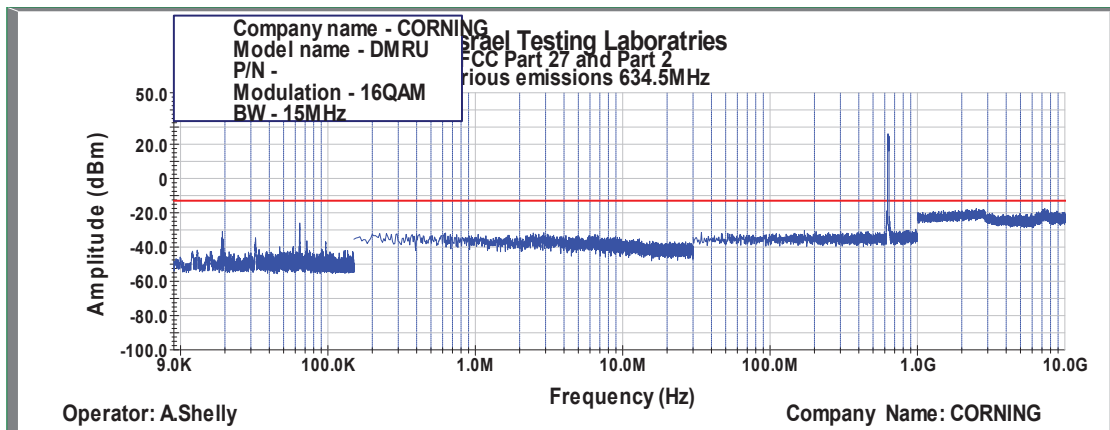


Figure 469: Spurious Emissions at Antenna Terminal 16QAM, 634.5MHz, B.W. 15MHz, Sub Carrier 15kHz

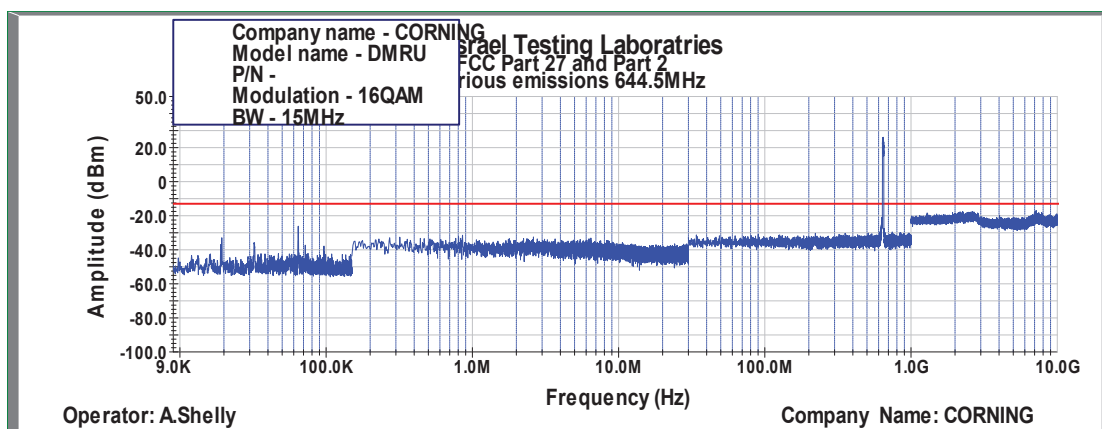


Figure 470: Spurious Emissions at Antenna Terminal 16QAM, 644.5MHz, B.W. 15MHz, Sub Carrier 15kHz

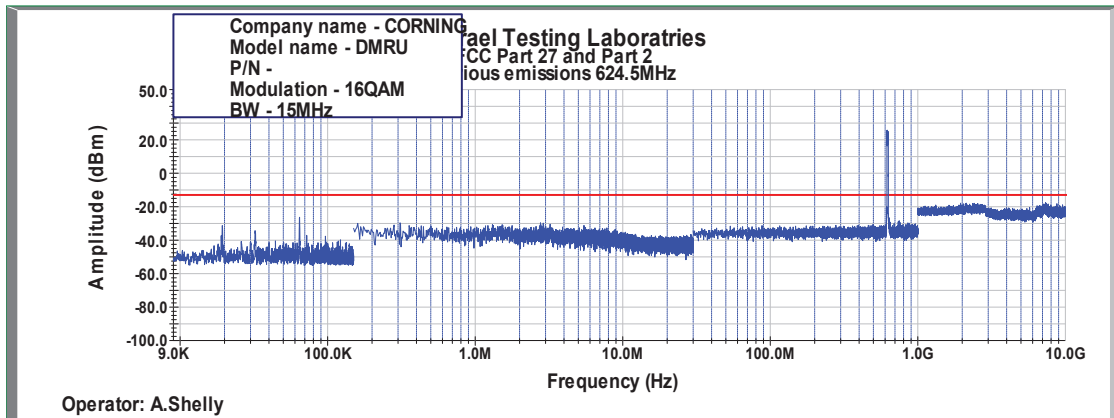


Figure 471: Spurious Emissions at Antenna Terminal 16QAM, 624.5MHz, B.W. 15MHz, Sub Carrier 30kHz

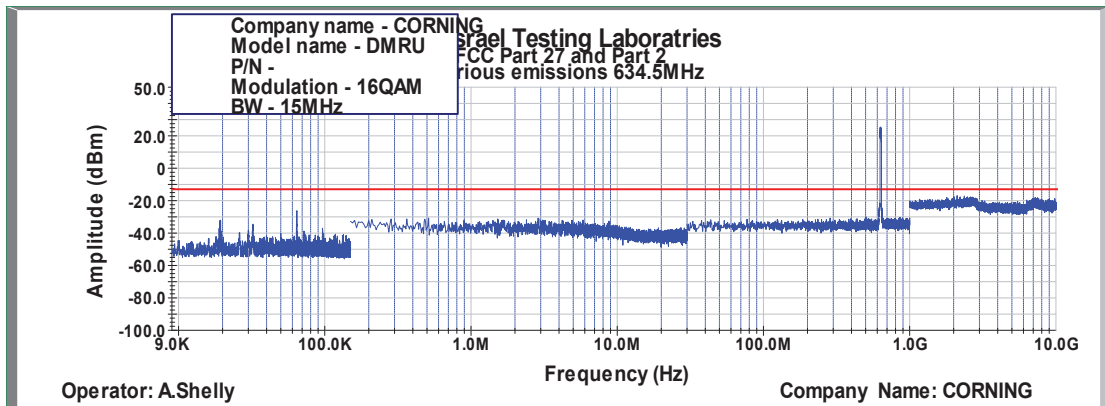


Figure 472: Spurious Emissions at Antenna Terminal 16QAM, 634.5MHz, B.W. 15MHz, Sub Carrier 30kHz

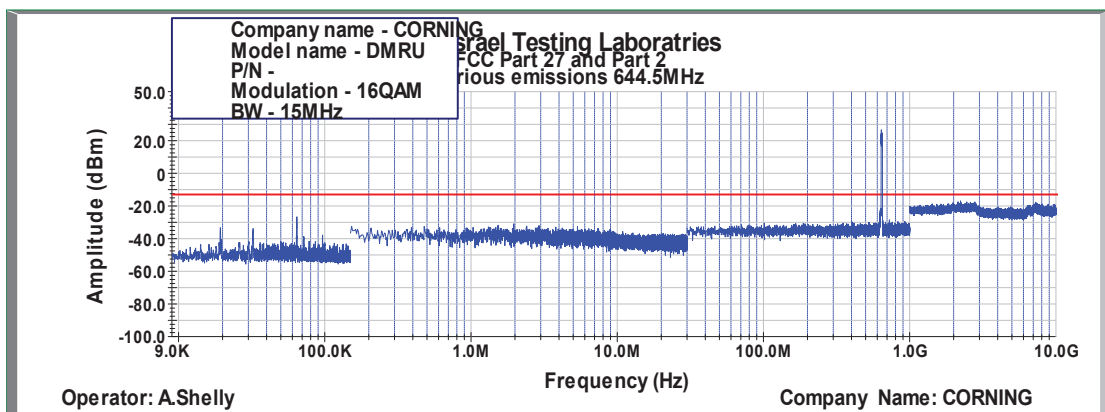


Figure 473: Spurious Emissions at Antenna Terminal 16QAM, 644.5MHz, B.W. 15MHz, Sub Carrier 30kHz

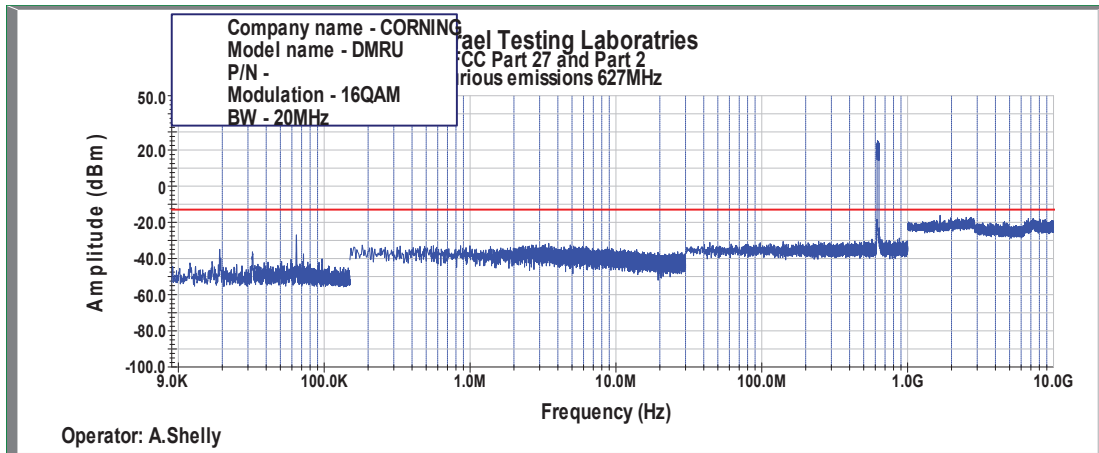


Figure 474: Spurious Emissions at Antenna Terminal 16QAM, 627.0MHz, B.W. 20MHz, Sub Carrier 15kHz

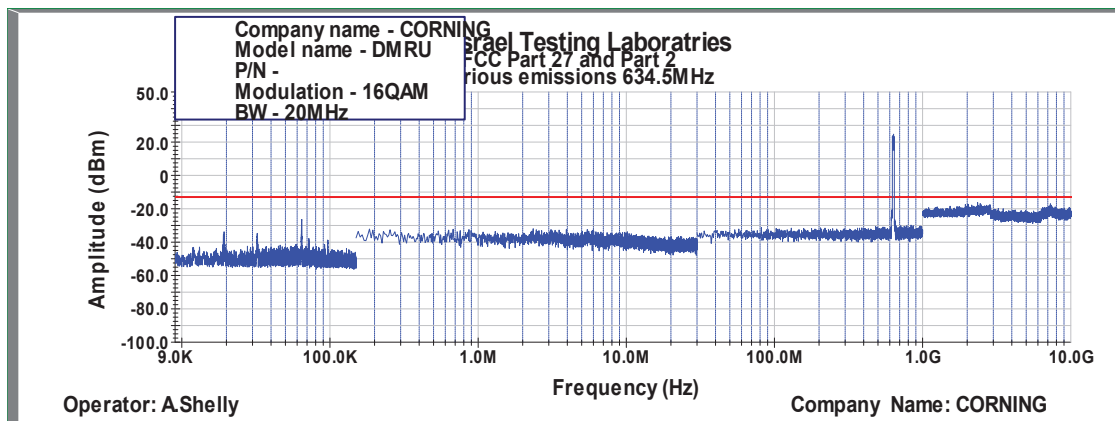


Figure 475: Spurious Emissions at Antenna Terminal 16QAM, 634.5MHz, B.W. 20MHz, Sub Carrier 15kHz

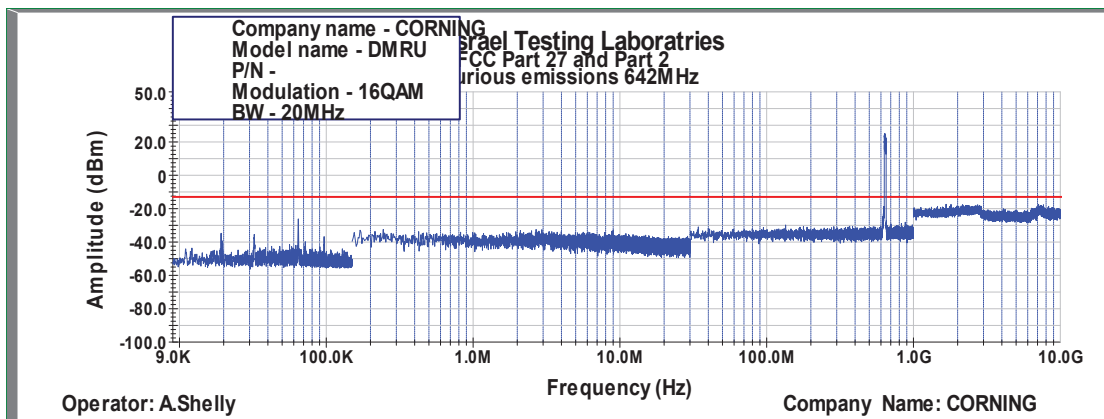


Figure 476: Spurious Emissions at Antenna Terminal 16QAM, 642.0MHz, B.W. 20MHz, Sub Carrier 15kHz

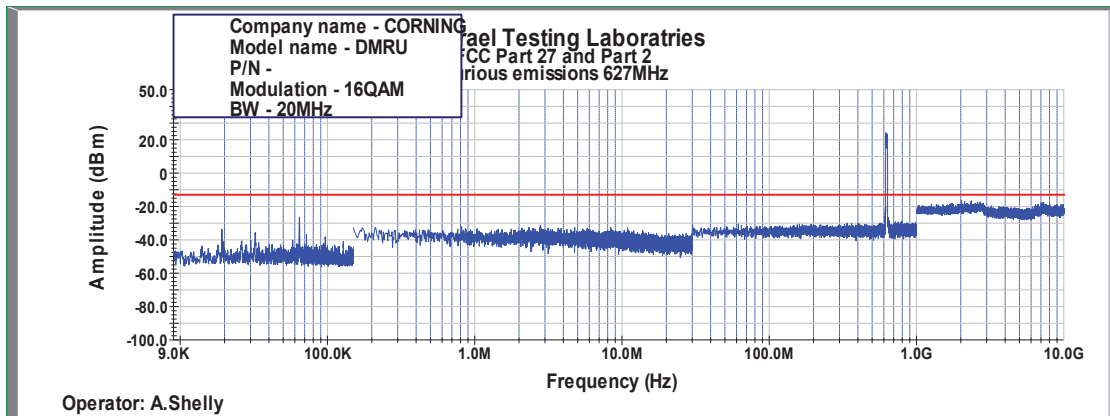


Figure 477: Spurious Emissions at Antenna Terminal 16QAM, 627.0MHz, B.W. 20MHz, Sub Carrier 30kHz

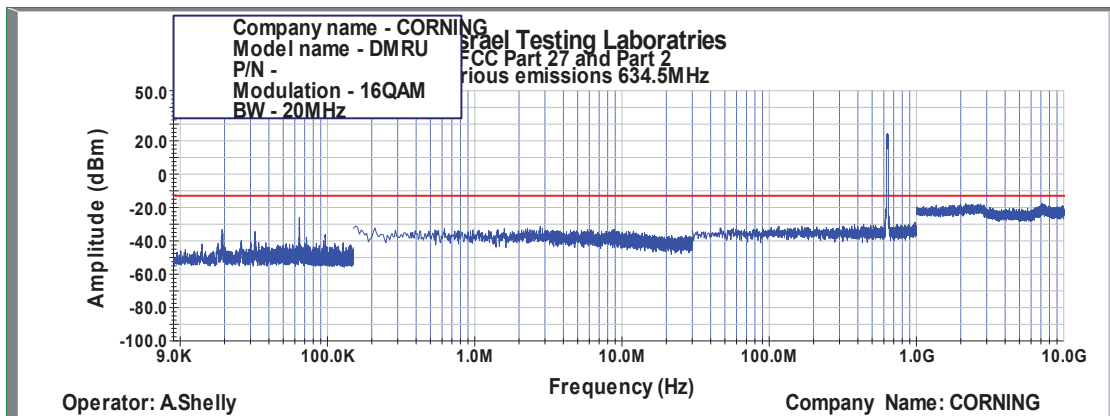


Figure 478: Spurious Emissions at Antenna Terminal 16QAM, 634.5MHz, B.W. 20MHz, Sub Carrier 30kHz

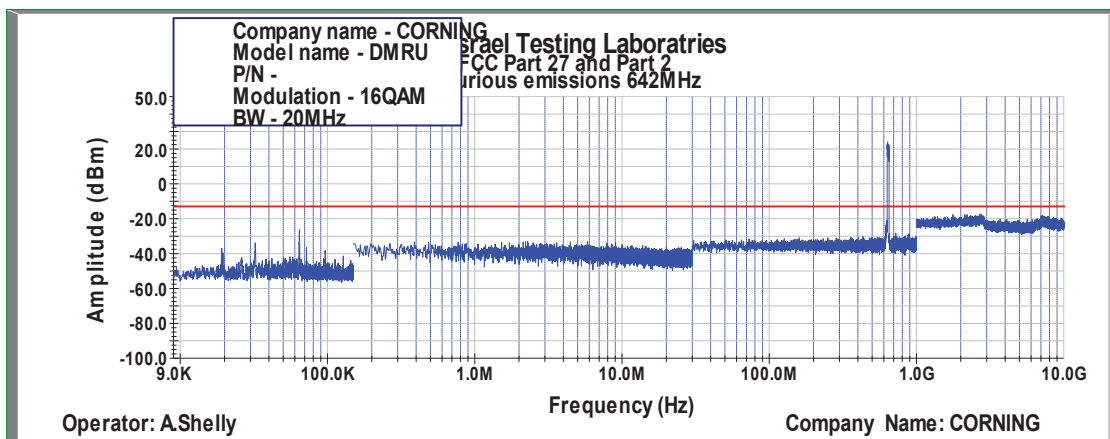


Figure 479: Spurious Emissions at Antenna Terminal 16QAM, 642.0MHz, B.W. 20MHz, Sub Carrier 30kHz

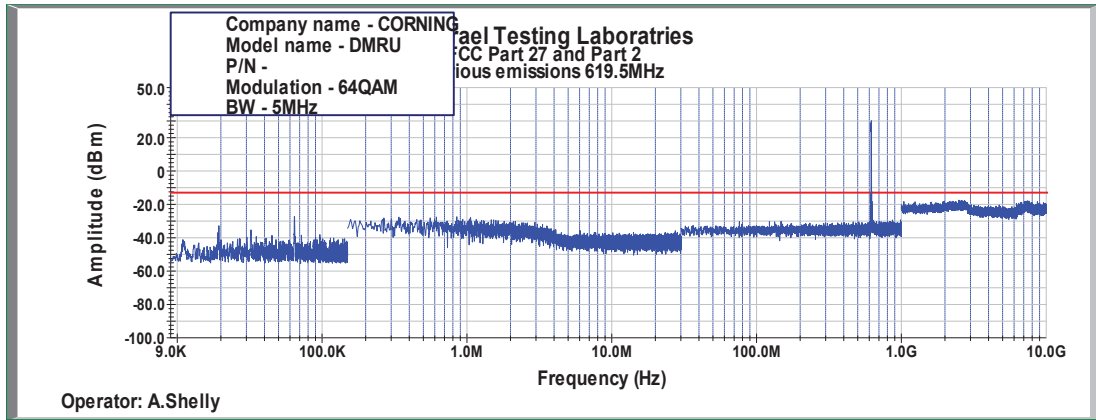


Figure 480: Spurious Emissions at Antenna Terminal 64QAM, 619.5MHz, B.W. 5MHz, Sub Carrier 15kHz

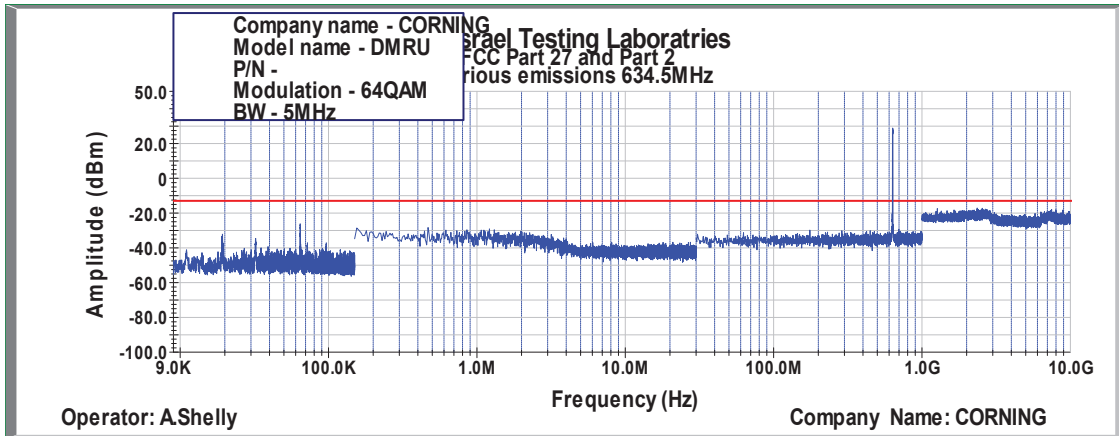


Figure 481: Spurious Emissions at Antenna Terminal 64QAM, 634.5MHz, B.W. 5MHz, Sub Carrier 15kHz

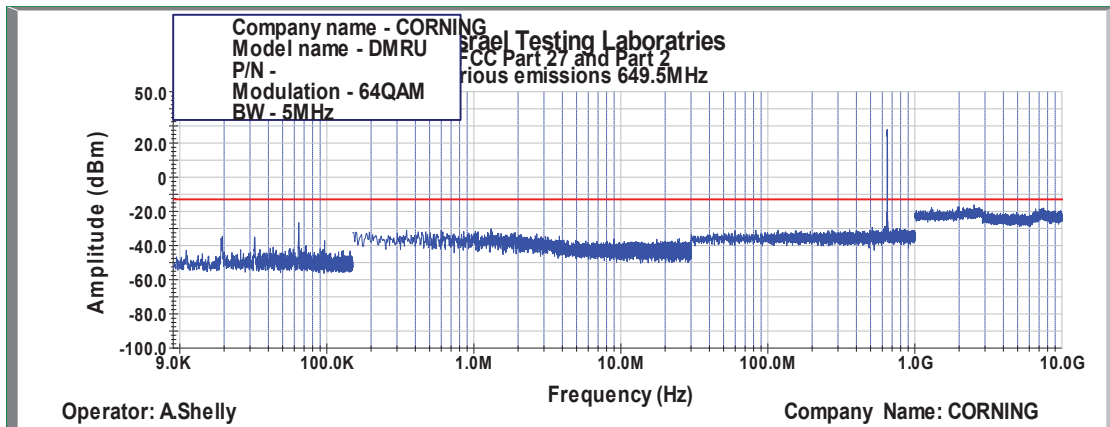


Figure 482: Spurious Emissions at Antenna Terminal 64QAM, 649.5MHz, B.W. 5MHz, Sub Carrier 15kHz

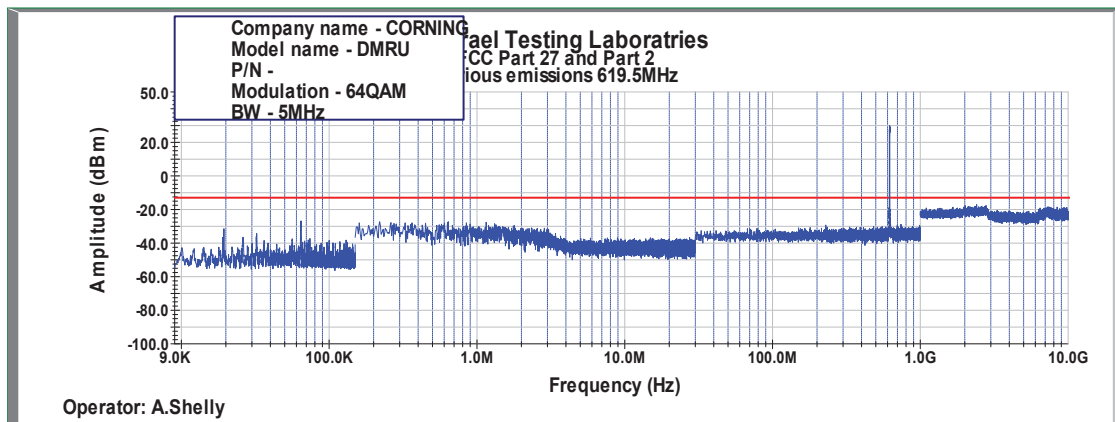


Figure 483: Spurious Emissions at Antenna Terminal 64QAM, 619.5MHz, B.W. 5MHz, Sub Carrier 30kHz

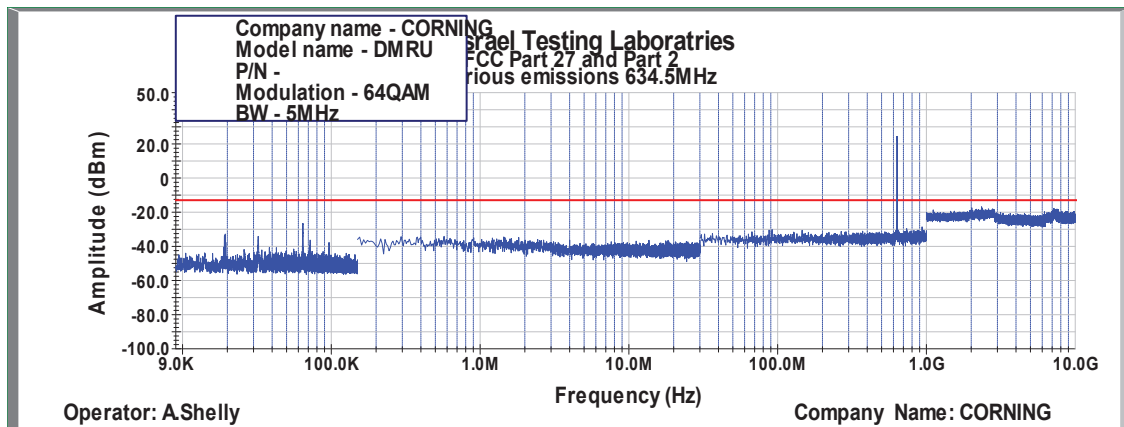


Figure 484: Spurious Emissions at Antenna Terminal 64QAM, 634.5MHz, B.W. 5MHz, Sub Carrier 30kHz

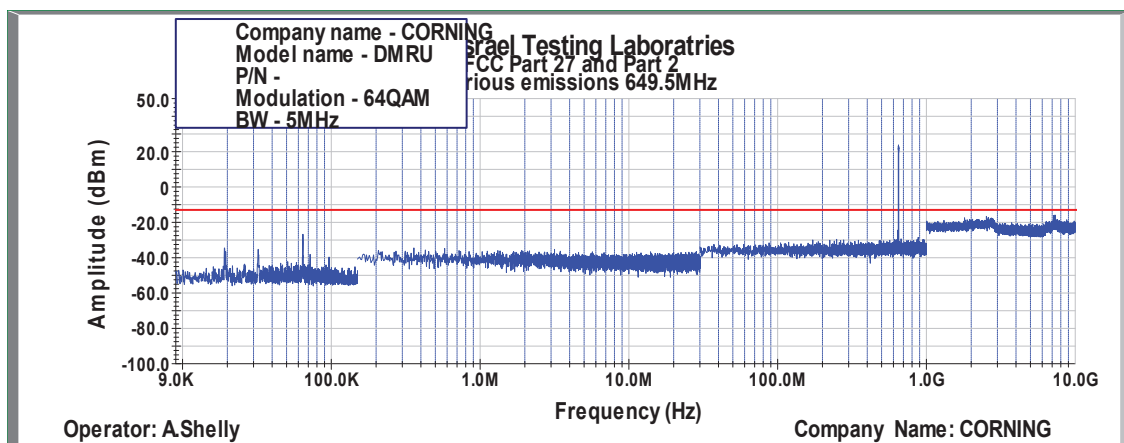


Figure 485: Spurious Emissions at Antenna Terminal 64QAM, 649.5MHz, B.W 5MHz, Sub Carrier 30kHz

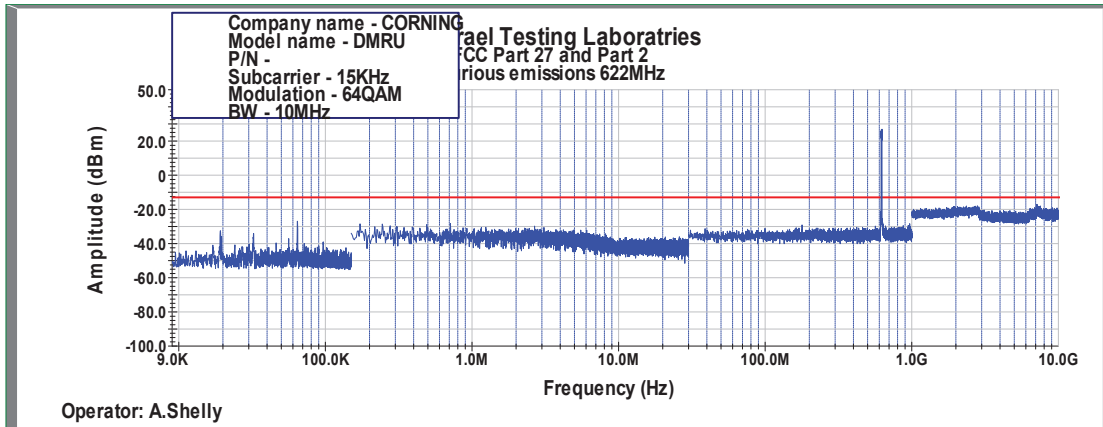


Figure 486: Spurious Emissions at Antenna Terminal 64QAM, 622.0MHz, B.W. 10MHz, Sub Carrier 15kHz

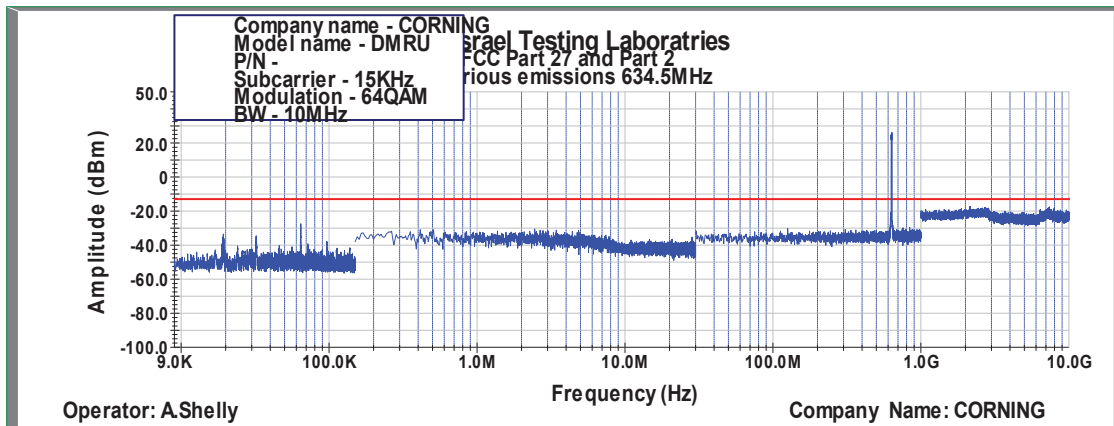


Figure 487: Spurious Emissions at Antenna Terminal 64QAM, 634.5MHz, B.W. 10MHz, Sub Carrier 15kHz

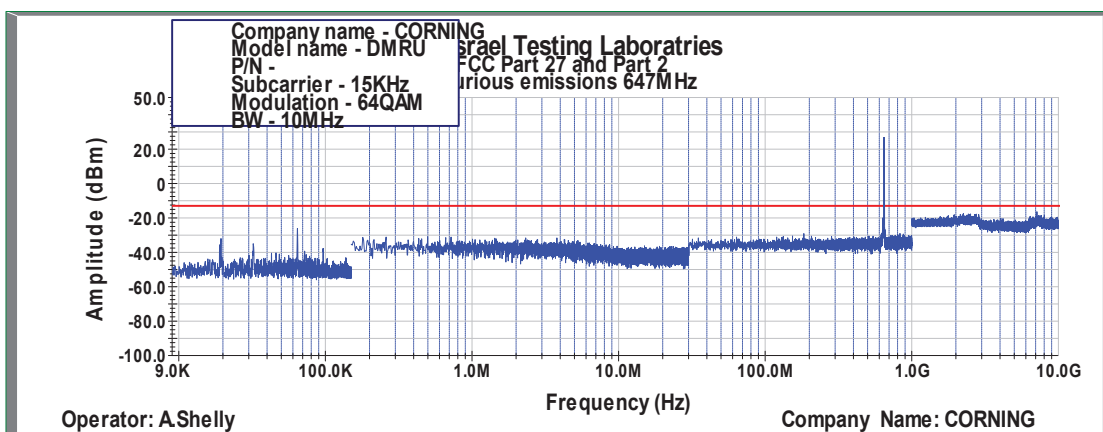


Figure 488: Spurious Emissions at Antenna Terminal 64QAM, 647.0MHz, B.W. 10MHz, Sub Carrier 15kHz