

7 Spurious Emissions at Antenna Terminals

7.1 Test Specification

FCC Part 90, Subpart R, Sections 91.534(e); 90.219(e)(3)

7.2 Test Procedure

(Temperature (22°C)/ Humidity (36%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (max loss=20.8dB).

7.3 Test Limit

For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations
- (2) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

7.4 Test Results

JUDGEMENT: Passed

See additional information in Figure 217 to Figure 328.

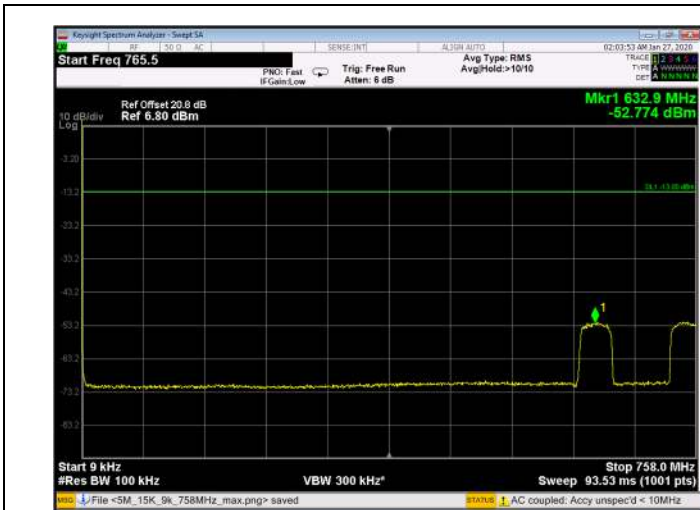


Figure 217: 16QAM 5MHz B.W.; 9kHz-758MHz, 15kHz

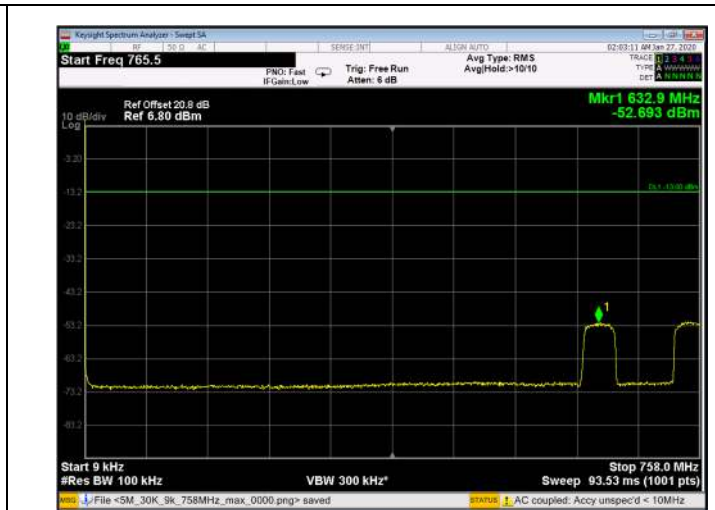


Figure 218: 16QAM 5MHz B.W.; 9kHz-758MHz, 15kHz



Figure 219: 16QAM 5MHz B.W.; 758-805MHz, 15kHz

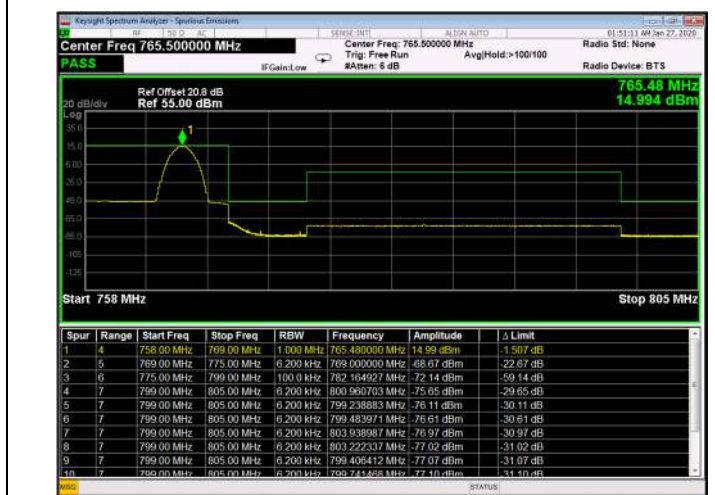


Figure 220: 16QAM 5MHz B.W.; 758-805MHz, 15kHz

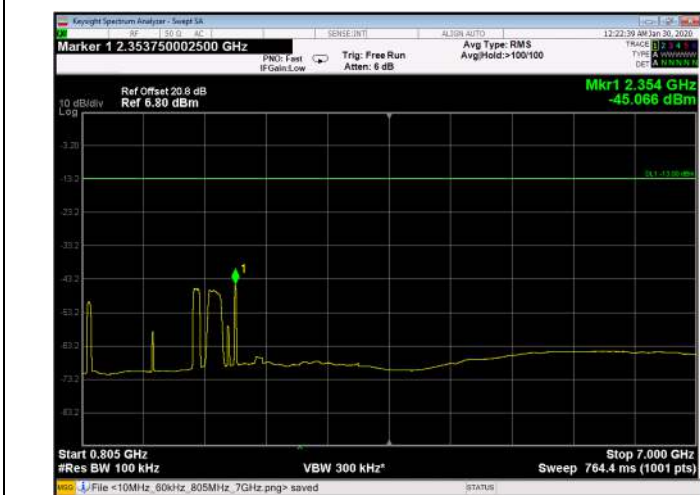


Figure 221: 16QAM 5MHz B.W.; 805MHz-7.0GHz, 15kHz

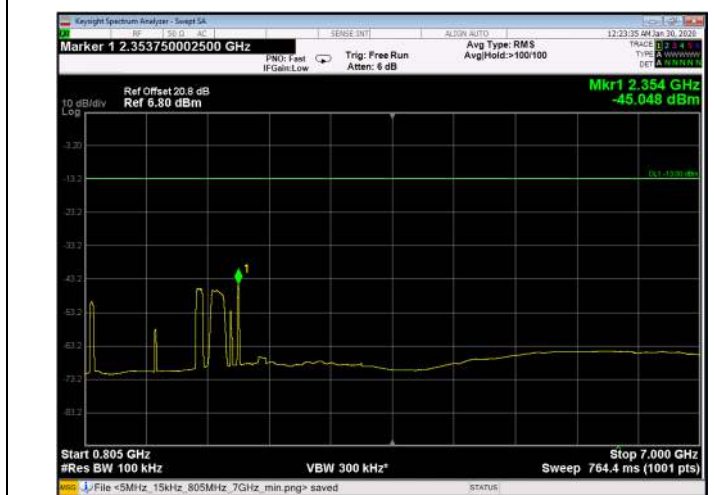


Figure 222: 16QAM 5MHz B.W.; 805MHz-7.0GHz, 15kHz

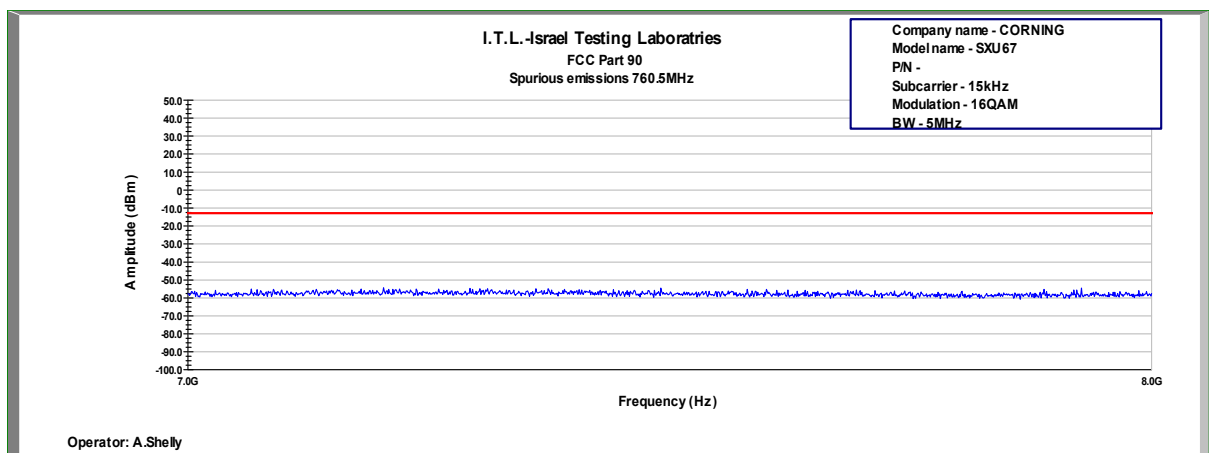


Figure 223: Spurious Emissions at Antenna Terminal 16QAM, 760.5MHz, B.W. 5MHz, Sub Carrier 15kHz

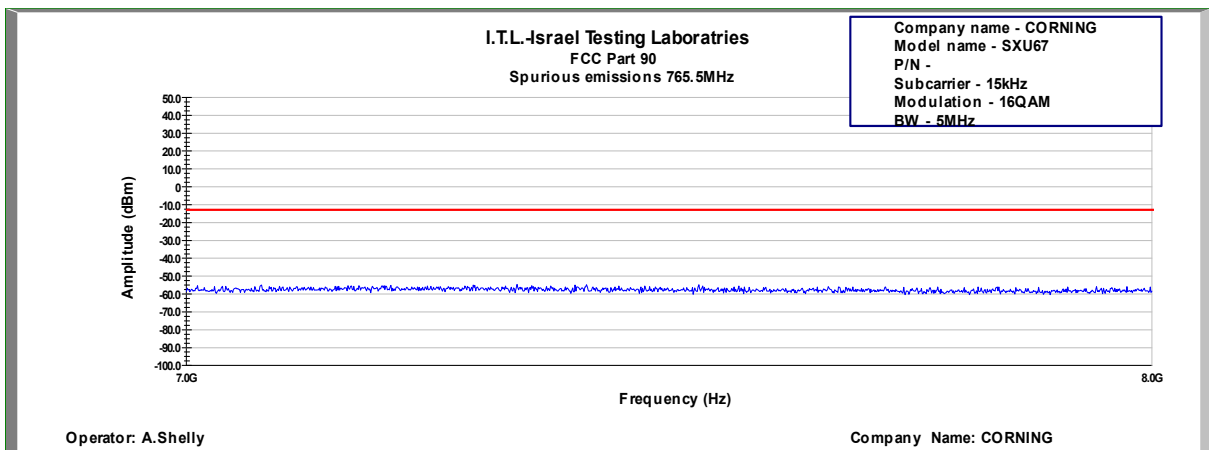


Figure 224: Spurious Emissions at Antenna Terminal 16QAM, 765.5MHz, B.W. 5MHz, Sub Carrier 15kHz

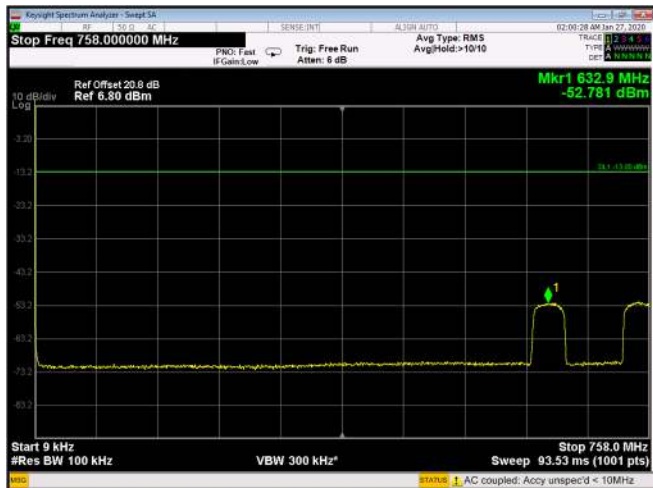


Figure 225: 16QAM 5MHz B.W.; 9kHz-758MHz, 30kHz

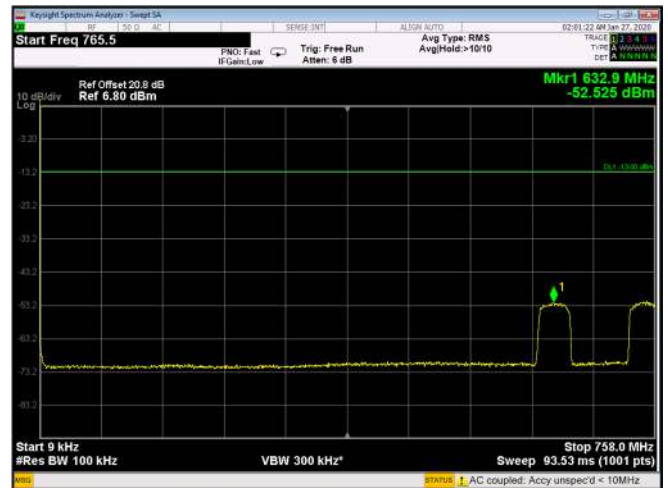


Figure 226: 16QAM 5MHz B.W.; 9kHz-758MHz, 30kHz

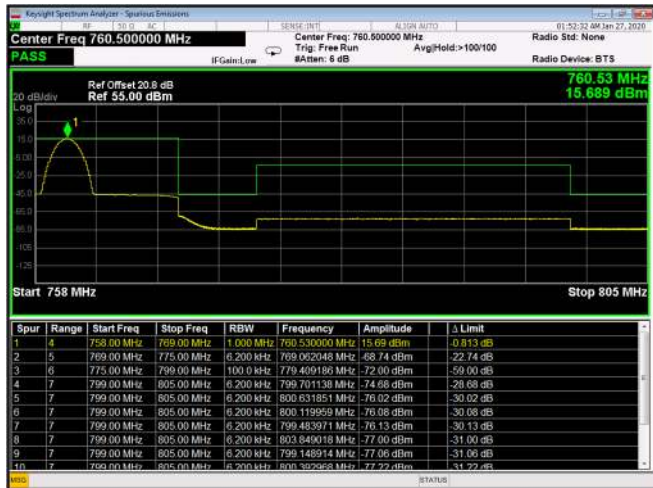


Figure 227: 16QAM 5MHz B.W.; 758-805MHz, 30kHz



Figure 228: 16QAM 5MHz B.W.; 758-805MHz, 30kHz

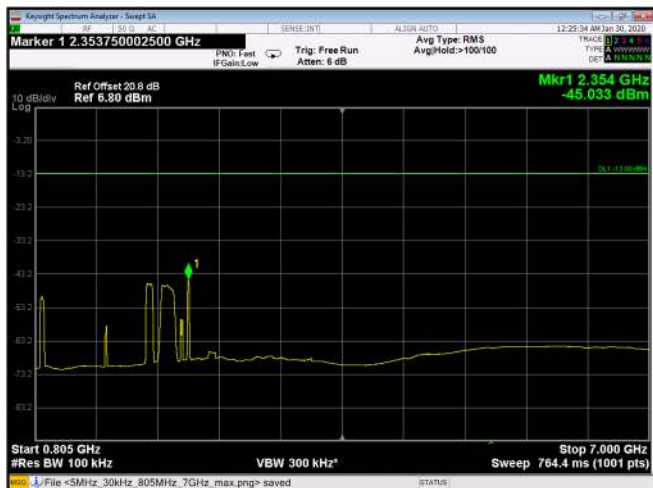


Figure 229: 16QAM 5MHz B.W.; 805MHz-7.0GHz, 30kHz

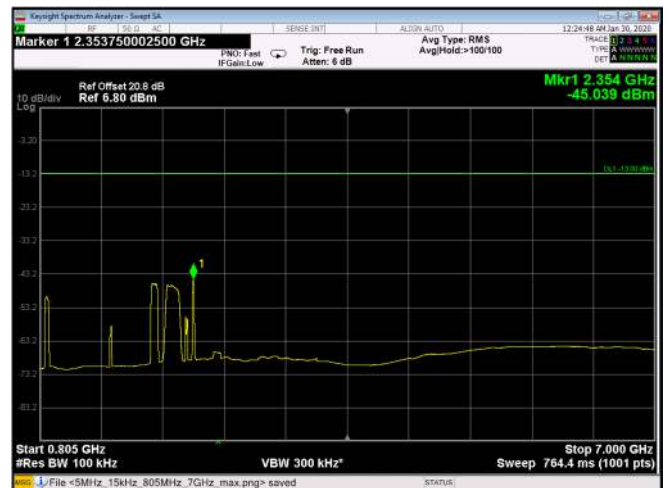


Figure 230: 16QAM 5MHz B.W.; 805MHz-7.0GHz, 30kHz

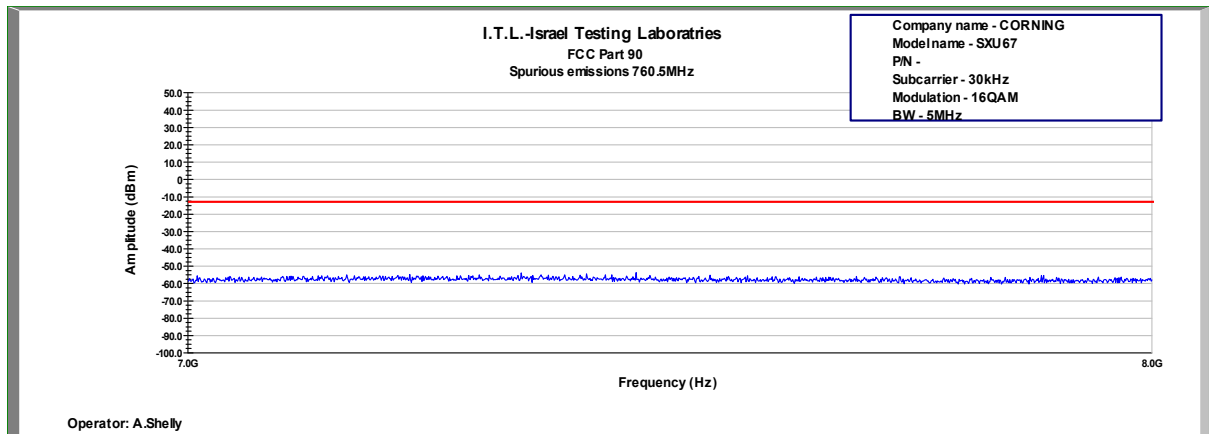


Figure 231: Spurious Emissions at Antenna Terminal 16QAM, 760.5MHz, B.W. 5MHz, Sub Carrier 30kHz

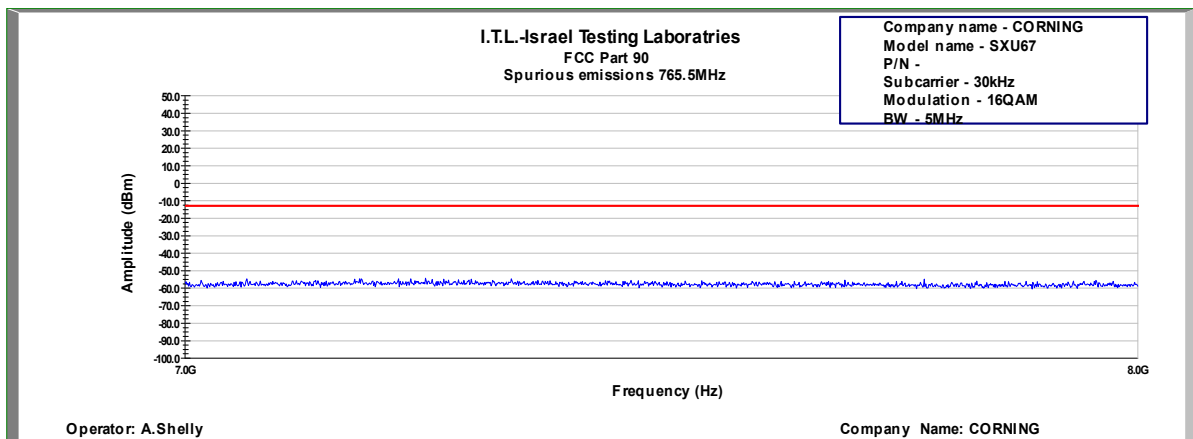


Figure 232: Spurious Emissions at Antenna Terminal 16QAM, 765.5MHz, B.W. 5MHz, Sub Carrier 30kHz

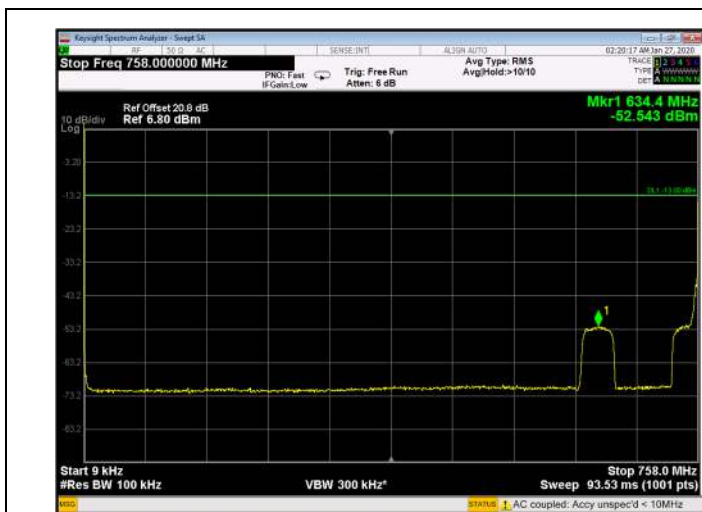


Figure 233: 16QAM 10MHz B.W.; 9kHz-758MHz, 15kHz



Figure 234: 16QAM 10MHz B.W.; 758-805MHz, 15kHz

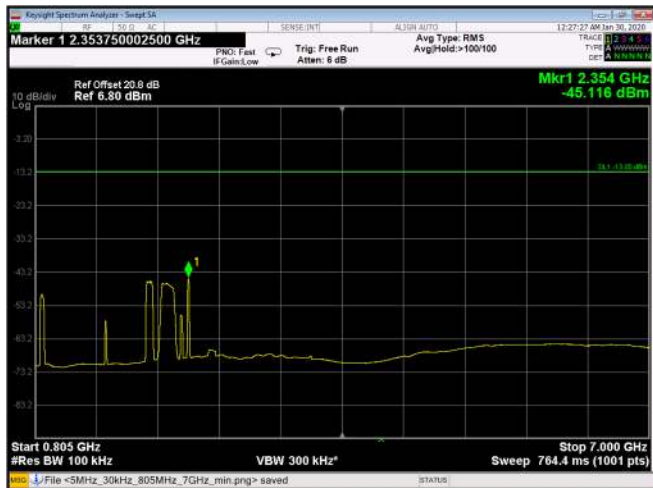


Figure 235: 16QAM 10MHz B.W.; 805MHz-7.0GHz, 15kHz

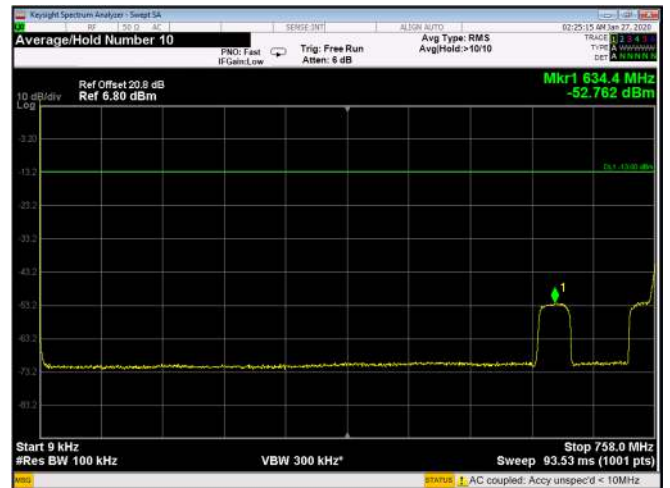


Figure 236: 16QAM 10MHz B.W.; 9kHz-758MHz, 30kHz



Figure 237: 16QAM 10MHz B.W.; 758-805MHz, 30kHz

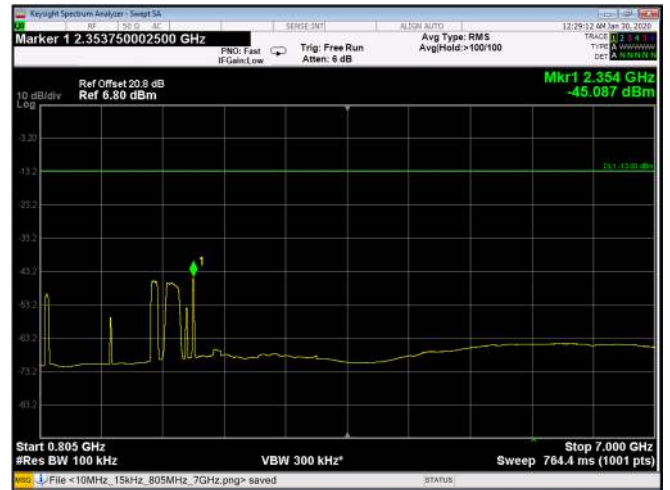


Figure 238: 16QAM 10MHz B.W.; 805MHz-7.0GHz, 30kHz

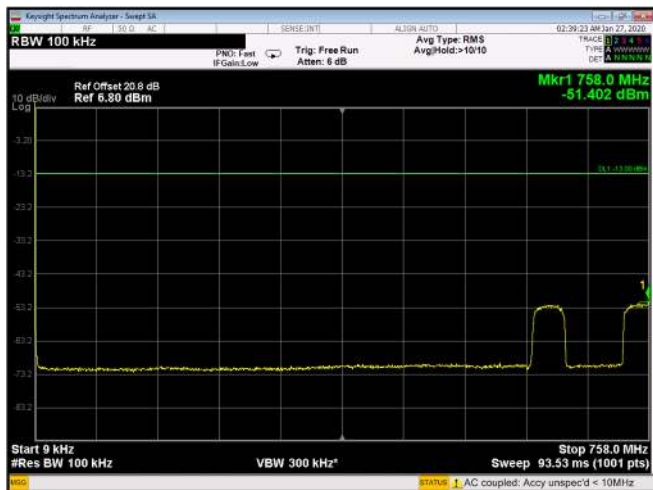


Figure 239: 16QAM 10MHz B.W.; 9kHz-758MHz, 60kHz

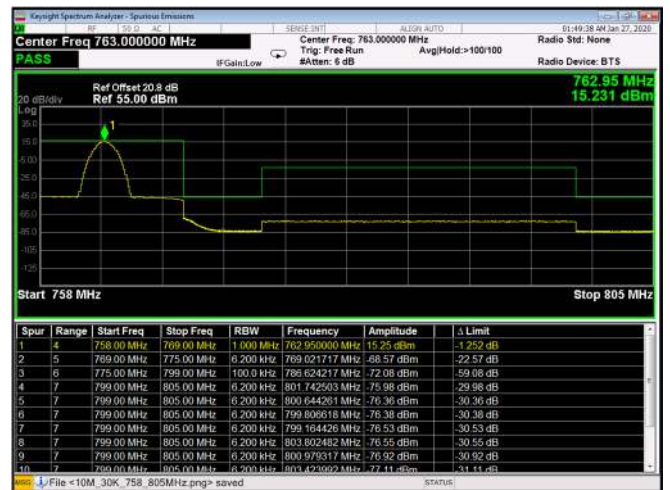
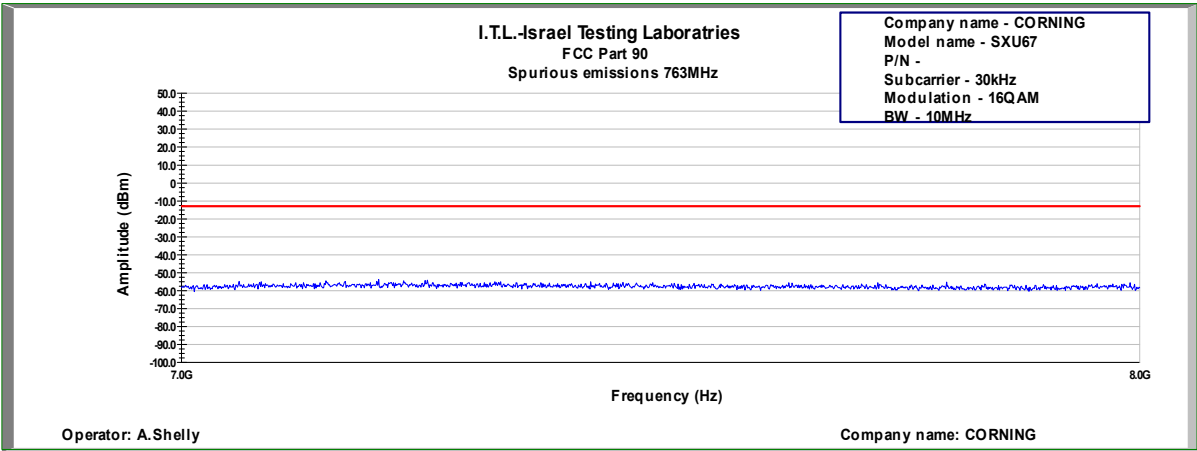
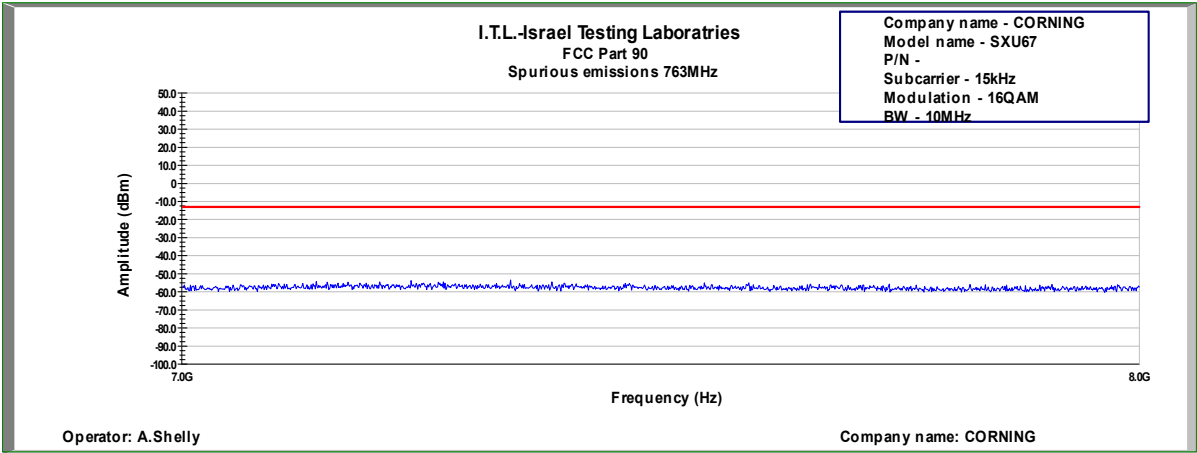
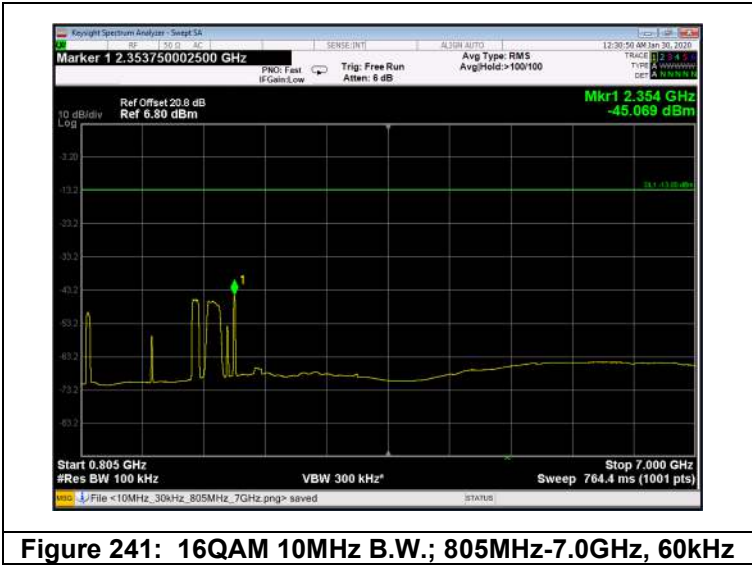


Figure 240: 16QAM 10MHz B.W.; 758-805MHz, 60kHz



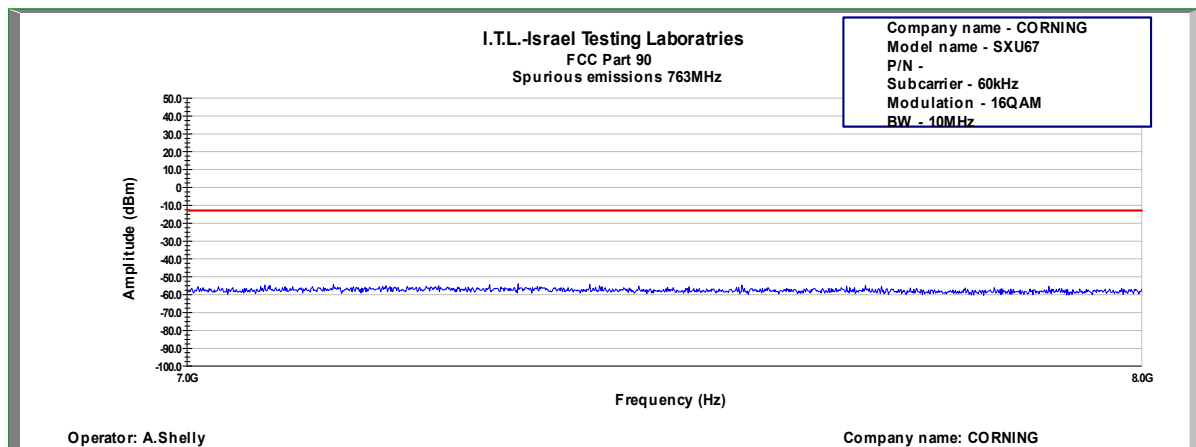


Figure 244: Spurious Emissions at Antenna Terminal 16QAM, 763.0MHz, B.W. 10MHz, Sub Carrier 60kHz

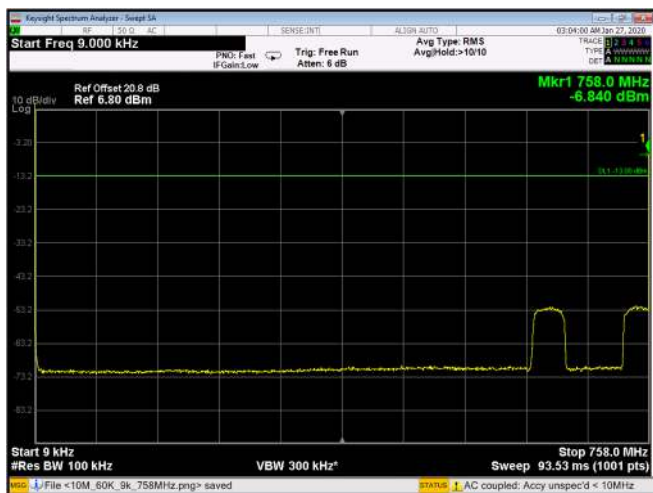


Figure 245: 64QAM 5MHz B.W.; 9kHz-758MHz, 15kHz

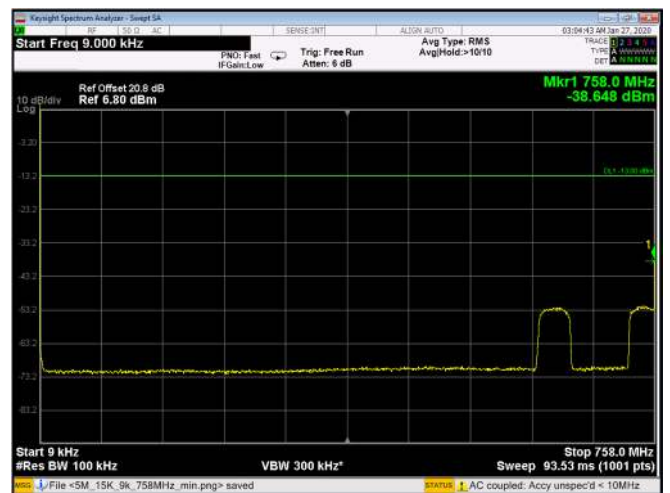


Figure 246: 64QAM 5MHz B.W.; 9kHz-758MHz, 15kHz



Figure 247: 64QAM 5MHz B.W.; 758-805MHz, 15kHz



Figure 248: 64QAM 5MHz B.W.; 758-805MHz, 15kHz

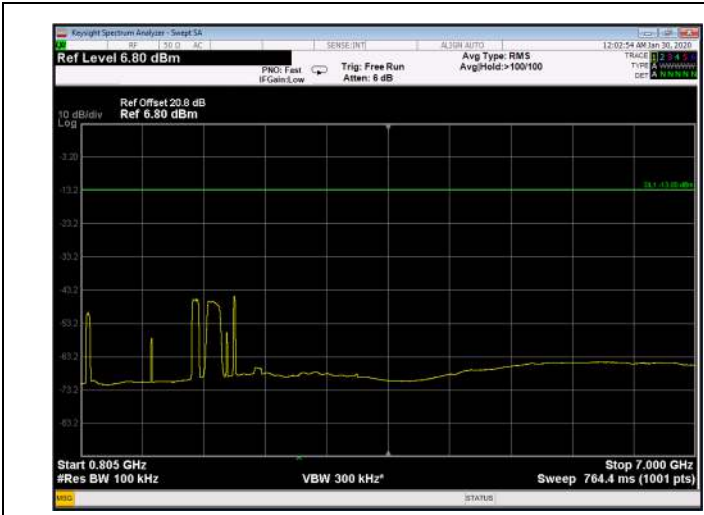


Figure 249: 64QAM 5MHz B.W.; 805MHz-7.0GHz, 15kHz

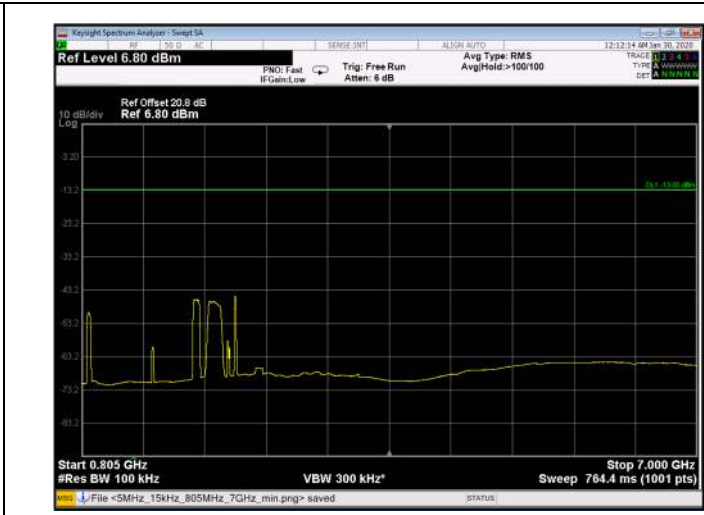


Figure 250: 64QAM 5MHz B.W.; 805MHz-7.0GHz, 15kHz

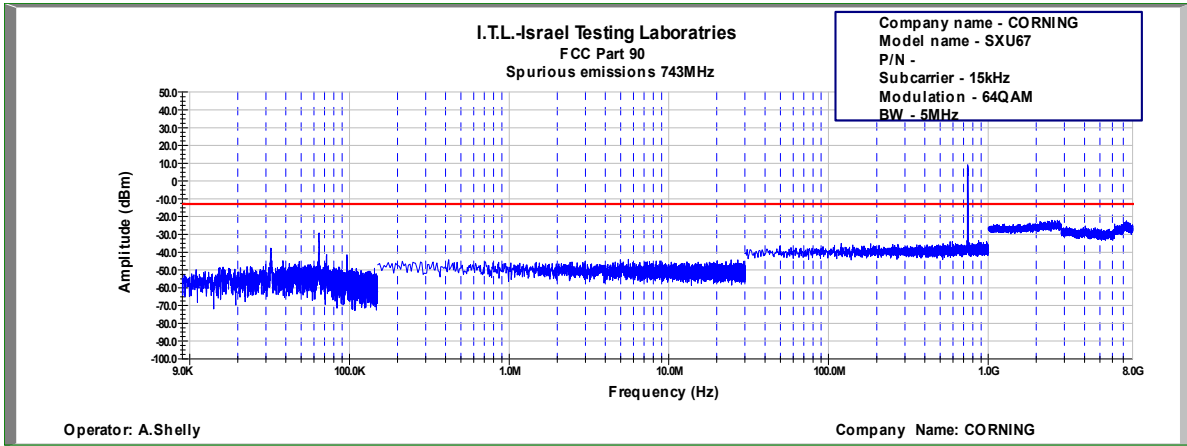


Figure 251: Spurious Emissions at Antenna Terminal 64QAM, 760.5MHz, B.W. 5MHz, Sub Carrier 15kHz

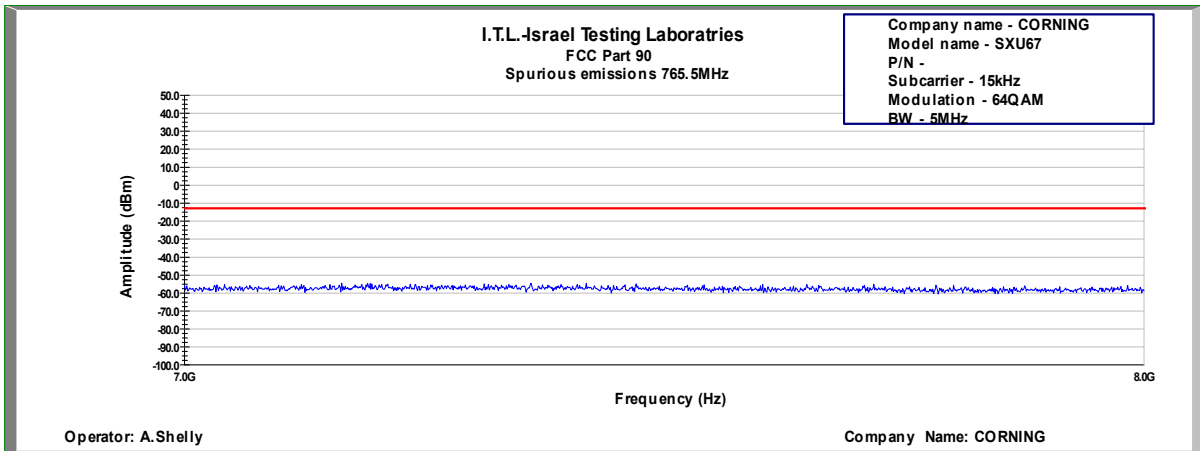


Figure 252: Spurious Emissions at Antenna Terminal 64QAM, 765.5MHz, B.W. 5MHz, Sub Carrier 15kHz

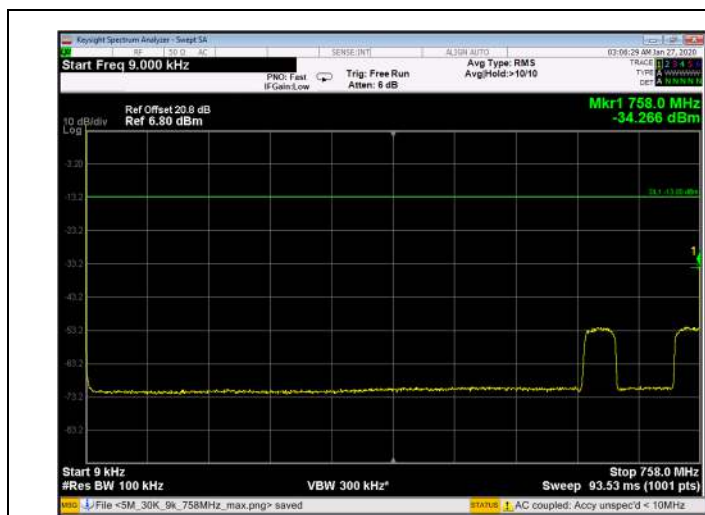


Figure 253: 64QAM 5MHz B.W.; 9kHz-758MHz, 30kHz

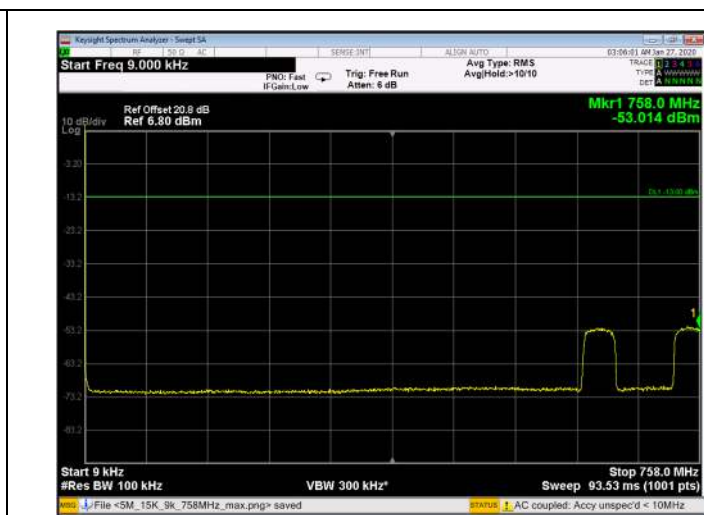


Figure 254: 64QAM 5MHz B.W.; 9kHz-758MHz, 30kHz

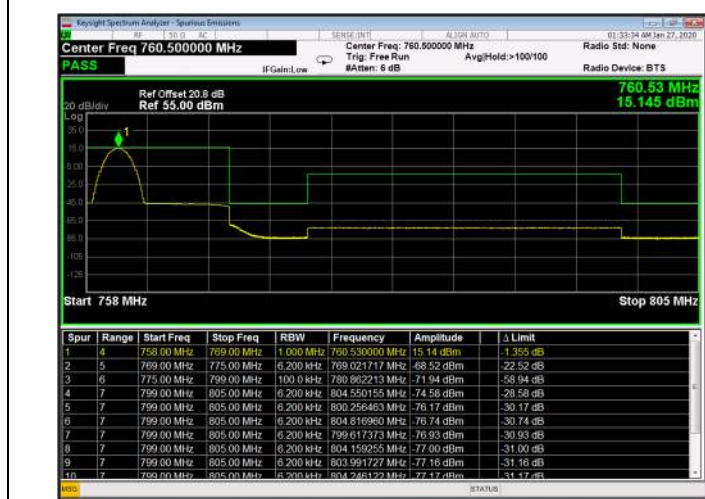


Figure 255: 64QAM 5MHz B.W.; 758-805MHz, 30kHz

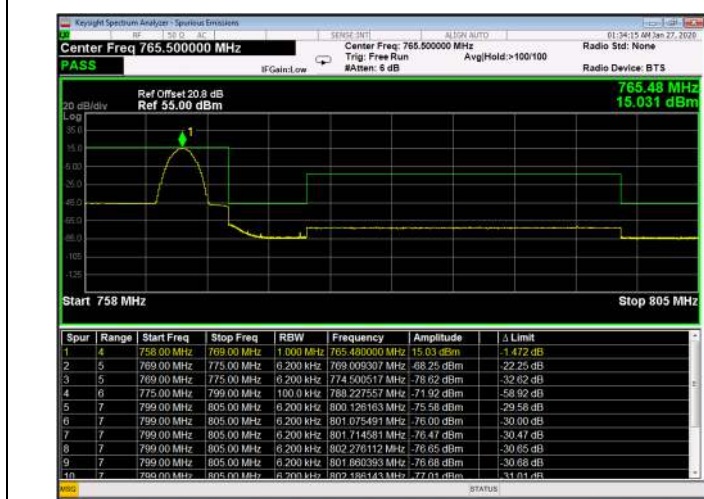


Figure 256: 64QAM 5MHz B.W.; 758-805MHz, 30kHz

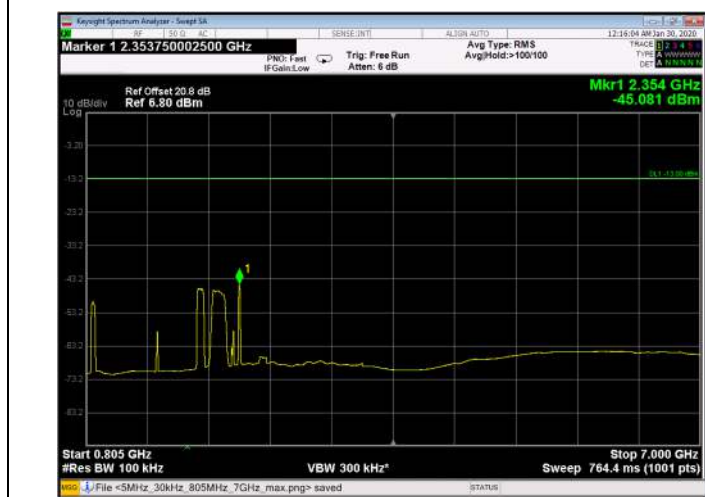


Figure 257: 64QAM 5MHz B.W.; 805MHz-7.0GHz, 30kHz

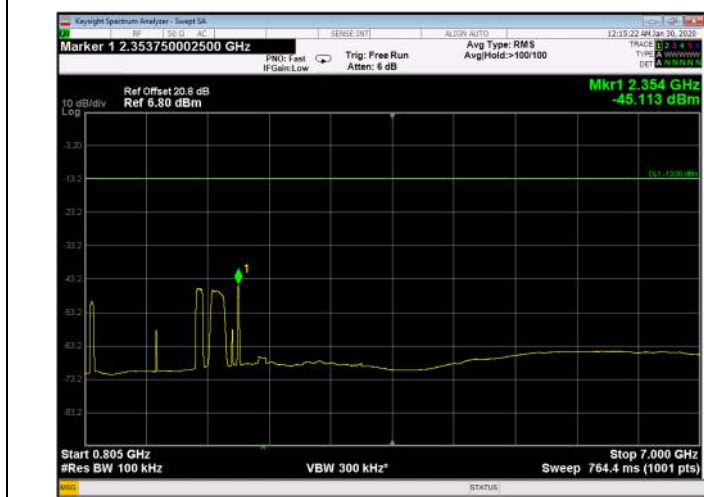


Figure 258: 64QAM 5MHz B.W.; 805MHz-7.0GHz, 30kHz

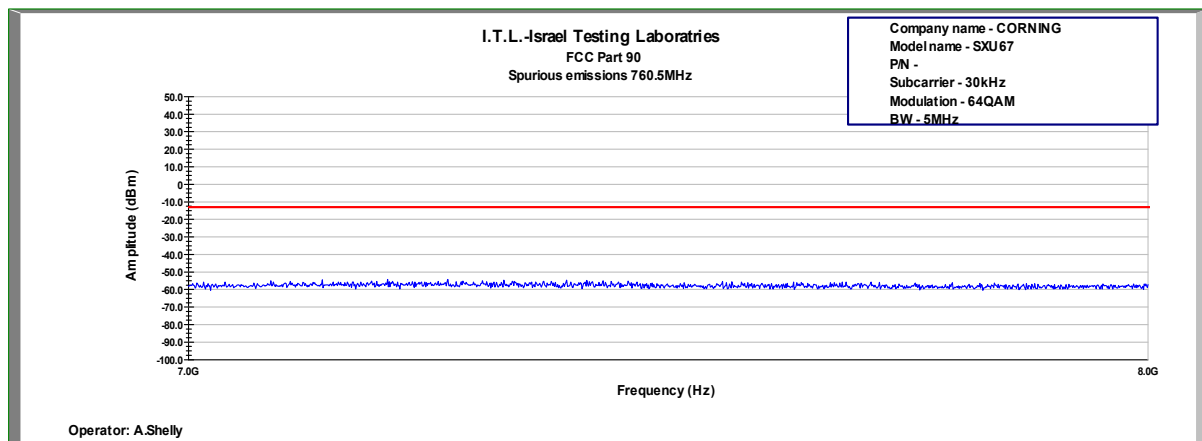


Figure 259: Spurious Emissions at Antenna Terminal 64QAM, 760.5MHz, B.W. 5MHz, Sub Carrier 30kHz

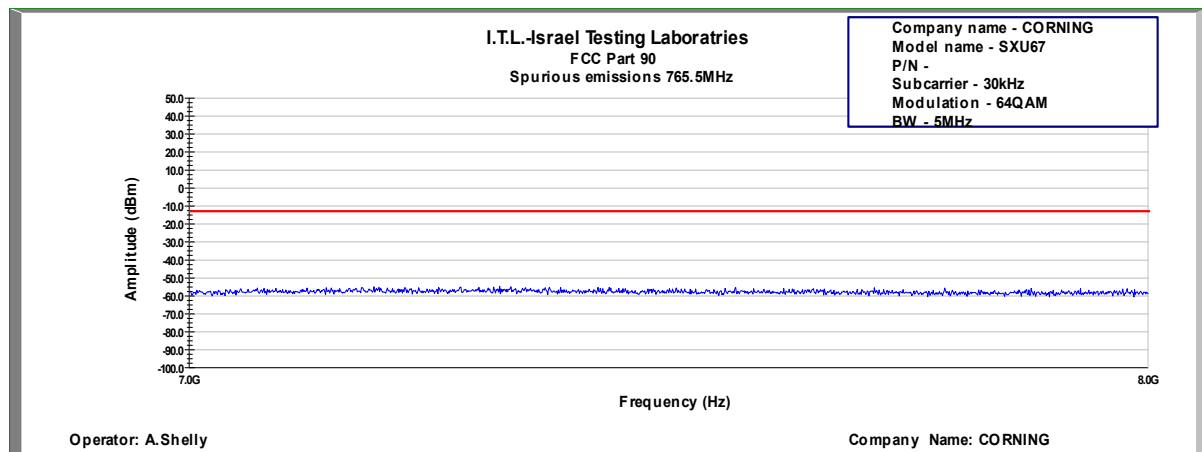


Figure 260: Spurious Emissions at Antenna Terminal 64QAM, 765.5MHz, B.W. 5MHz, Sub Carrier 30kHz

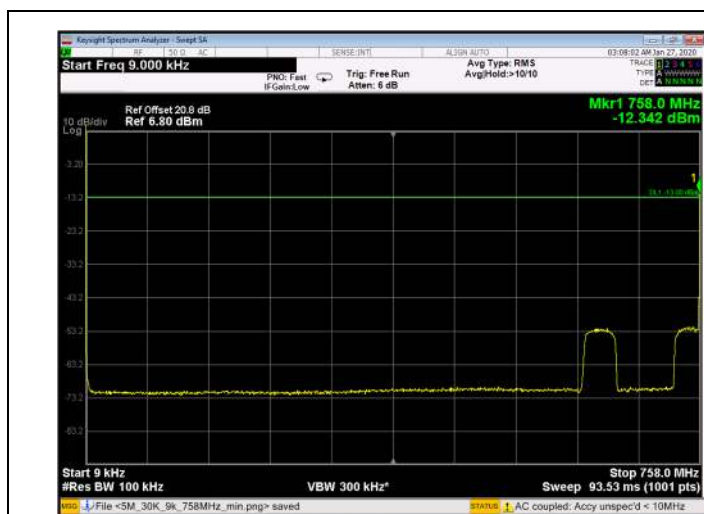


Figure 261: 64QAM 10MHz B.W.; 9kHz-758MHz, 15kHz



Figure 262: 64QAM 10MHz B.W.; 758-805MHz, 15kHz

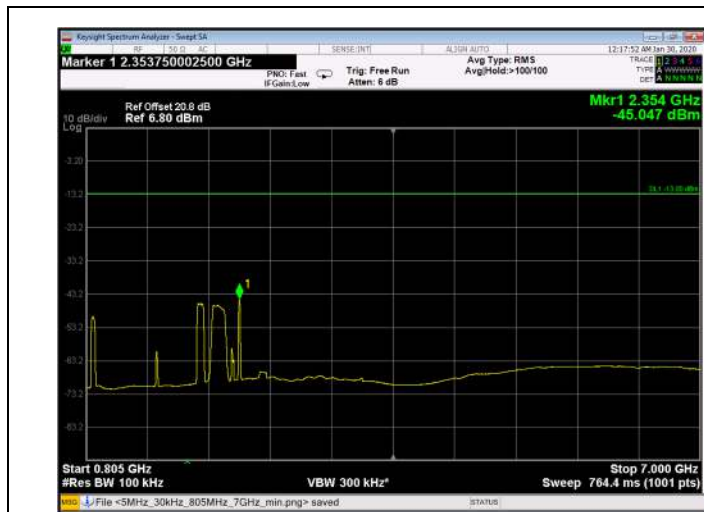


Figure 263: 64QAM 10MHz B.W.; 805MHz-7.0GHz, 15kHz

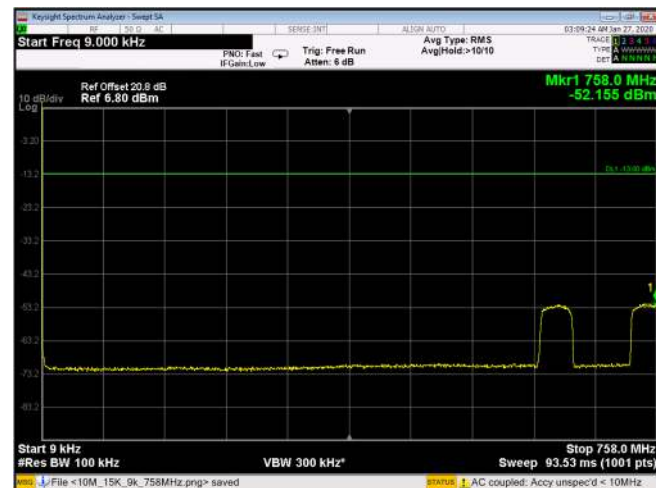


Figure 264: 64QAM 10MHz B.W.; 9kHz-758MHz, 30kHz

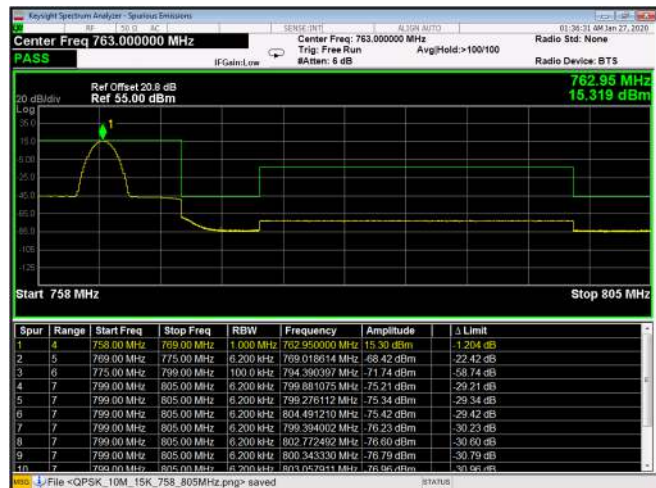


Figure 265: 64QAM 10MHz B.W.; 758-805MHz, 30kHz

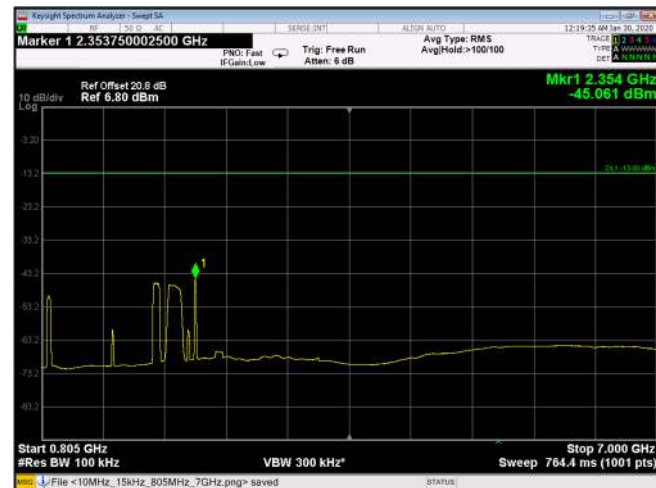


Figure 266: 64QAM 10MHz B.W.; 805MHz-7.0GHz, 30kHz

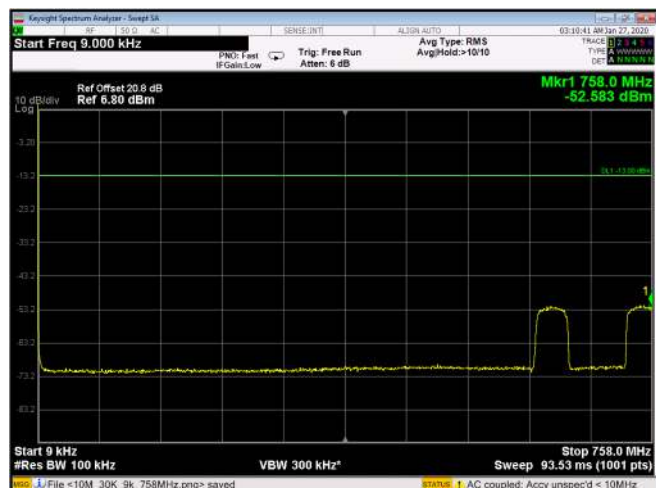


Figure 267: 64QAM 10MHz B.W.; 9kHz-758MHz, 60kHz

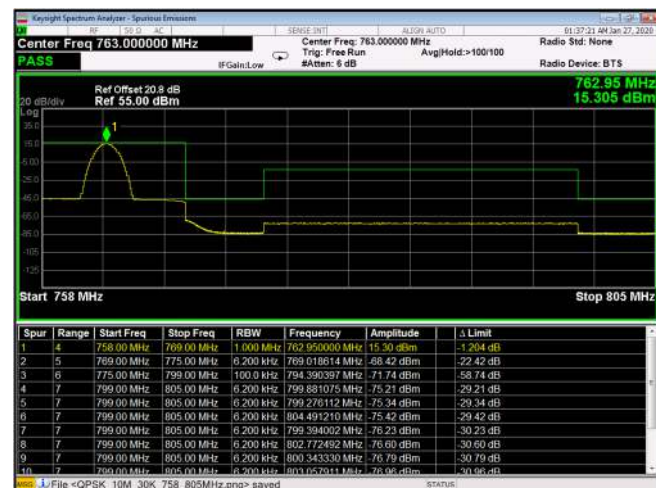


Figure 268: 64QAM 10MHz B.W.; 758-805MHz, 60kHz

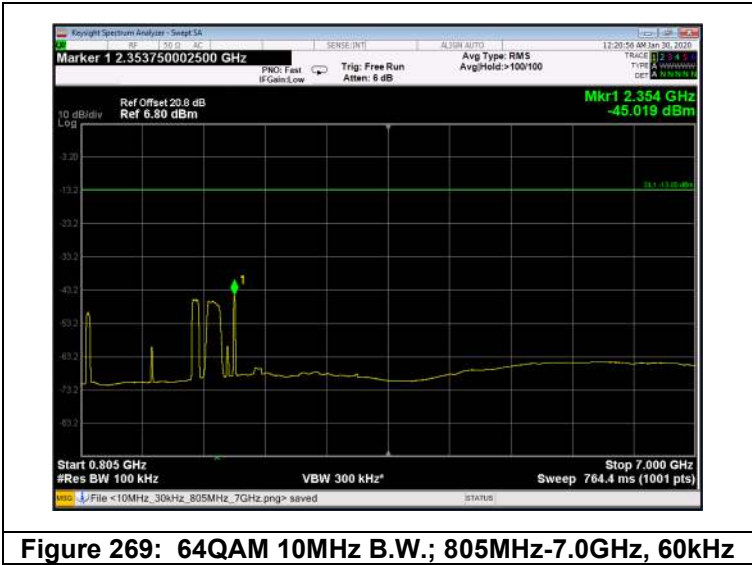


Figure 269: 64QAM 10MHz B.W.; 805MHz-7.0GHz, 60kHz

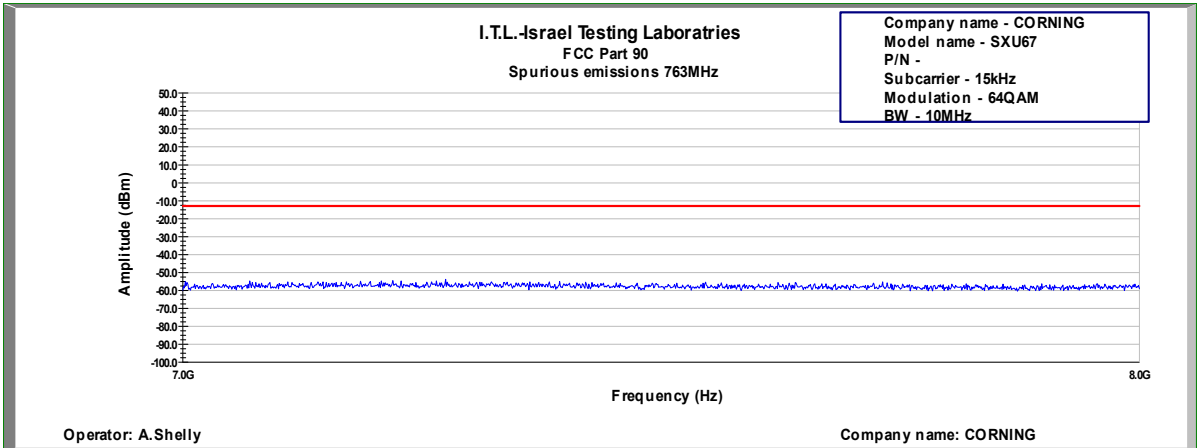


Figure 270: Spurious Emissions at Antenna Terminal 64QAM, 763.0MHz, B.W. 10MHz, Sub Carrier 15kHz

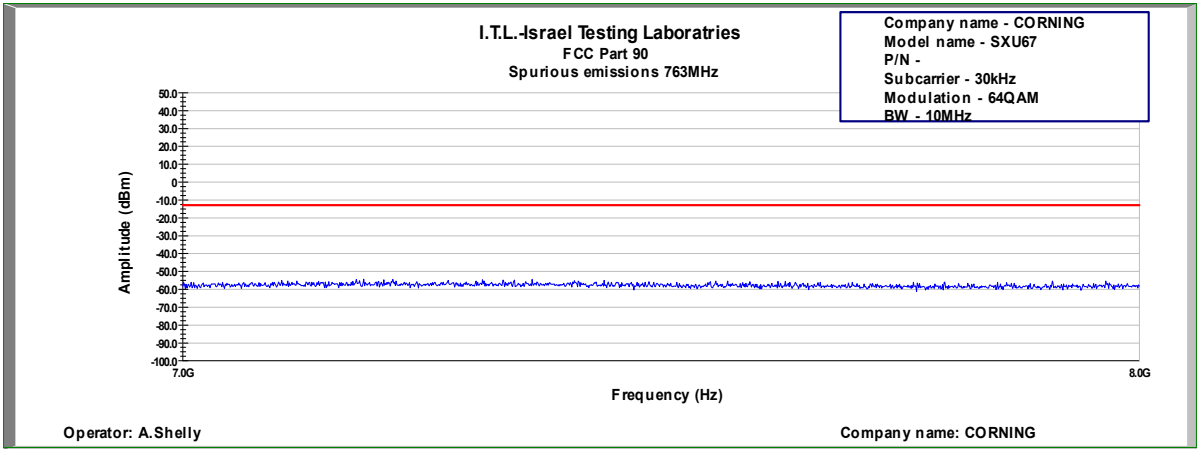


Figure 271: Spurious Emissions at Antenna Terminal 64QAM, 763.0MHz, B.W. 10MHz, Sub Carrier 30kHz

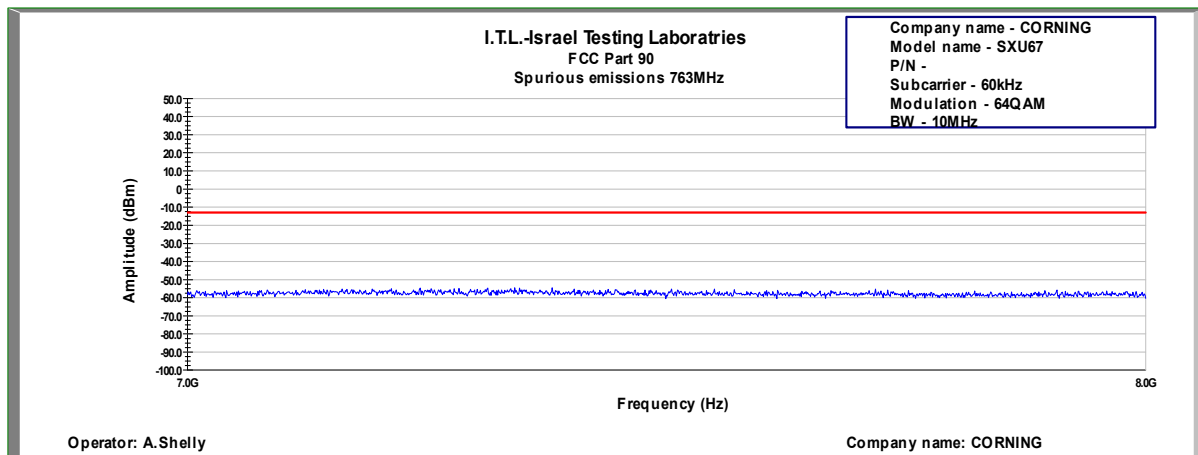


Figure 272: Spurious Emissions at Antenna Terminal 64QAM, 763.0MHz, B.W. 10MHz, Sub Carrier 60kHz

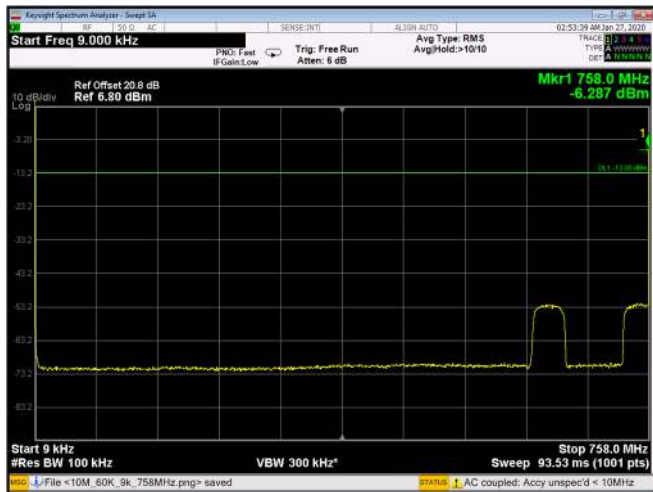


Figure 273: 256QAM 5MHz B.W.; 9kHz-758MHz, 15kHz

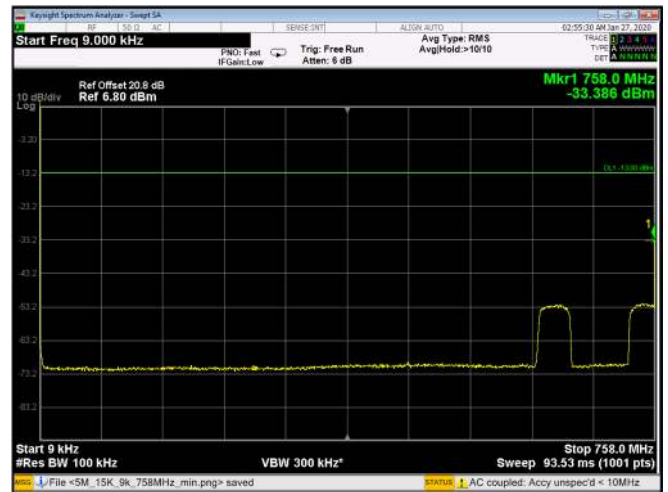


Figure 274: 256QAM 5MHz B.W.; 9kHz-758MHz, 15kHz

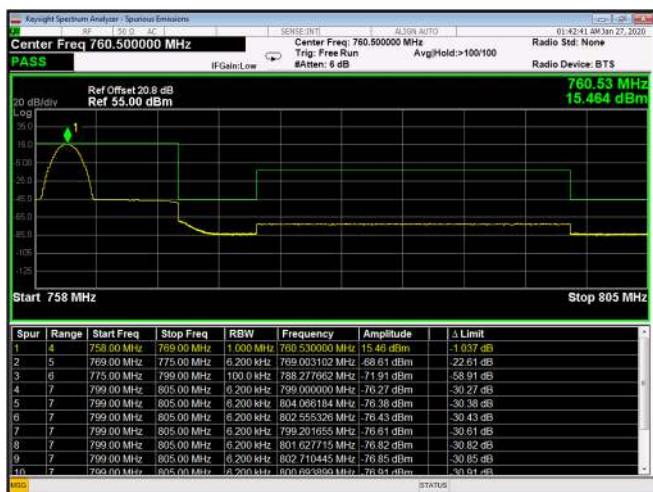


Figure 275: 256QAM 5MHz B.W.; 758-805MHz, 15kHz



Figure 276: 256QAM 5MHz B.W.; 758-805MHz, 15kHz

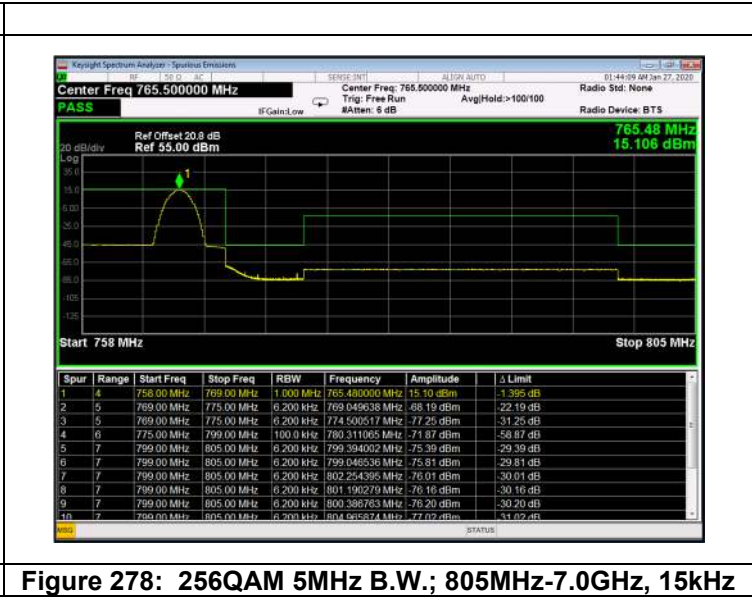
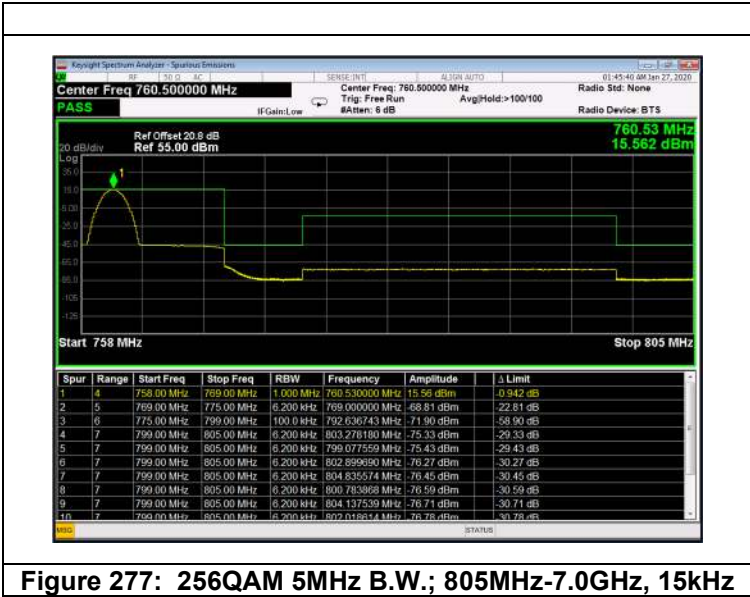


Figure 277: 256QAM 5MHz B.W.; 805MHz-7.0GHz, 15kHz

Figure 278: 256QAM 5MHz B.W.; 805MHz-7.0GHz, 15kHz

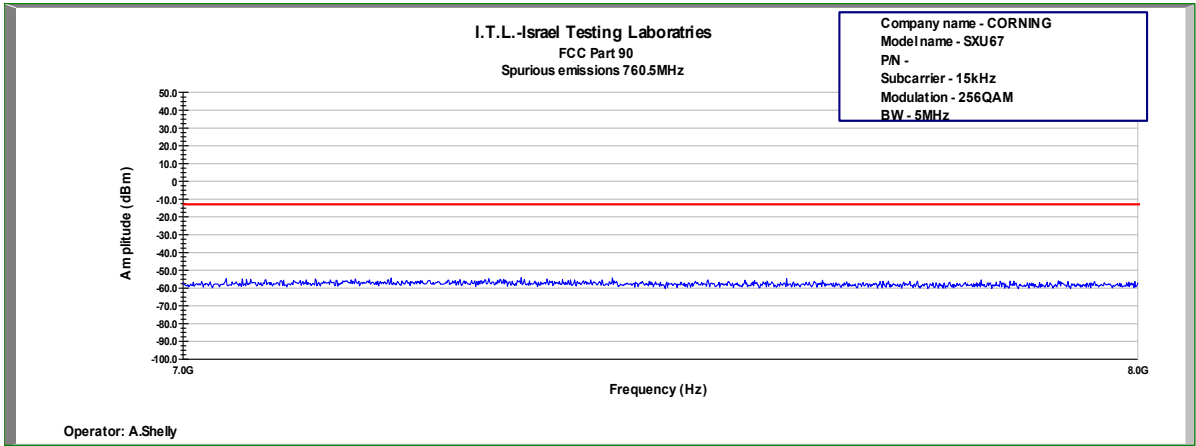


Figure 279: Spurious Emissions at Antenna Terminal 256QAM, 760.5MHz, B.W. 5MHz, Sub Carrier 15kHz

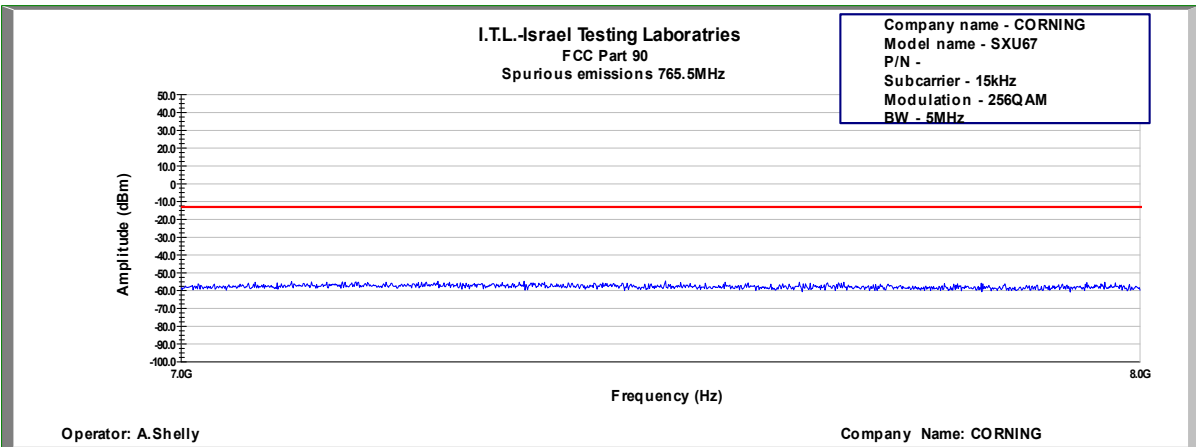
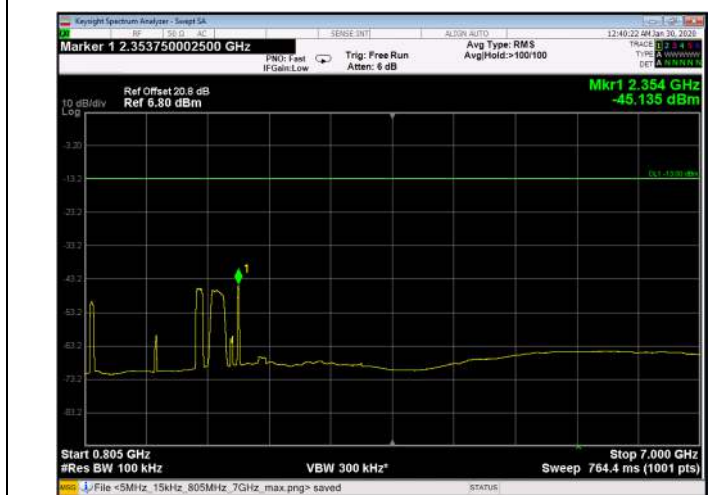
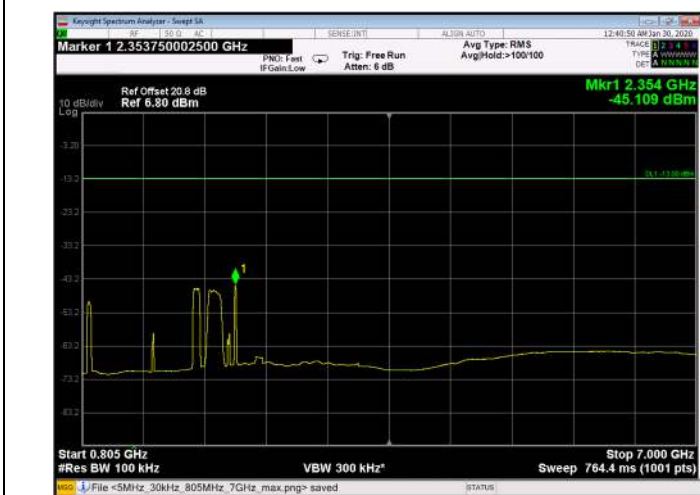
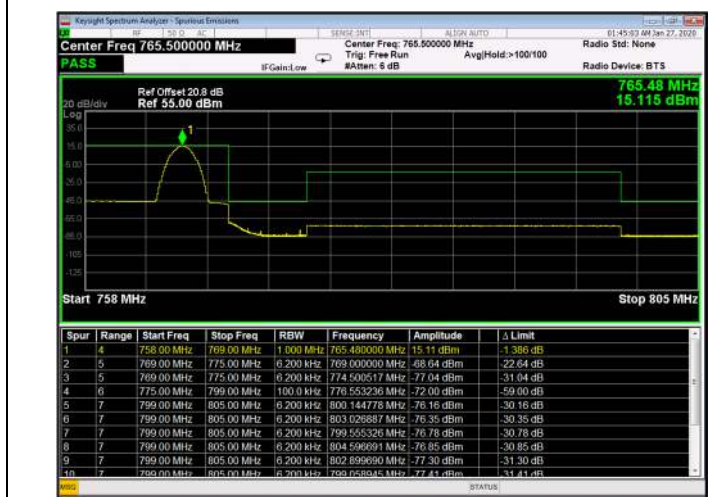
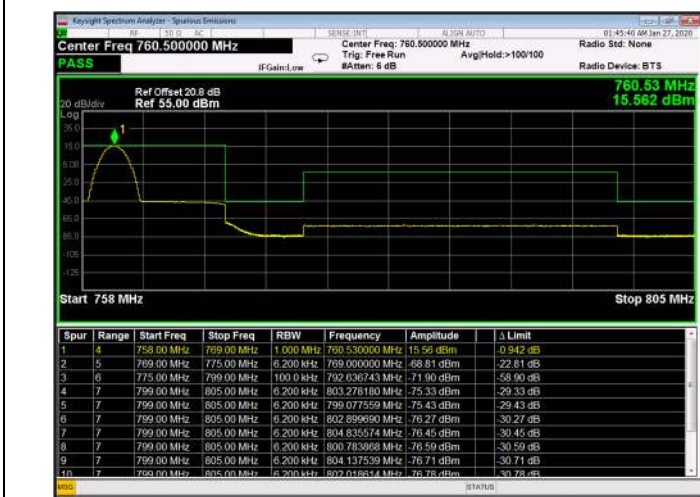
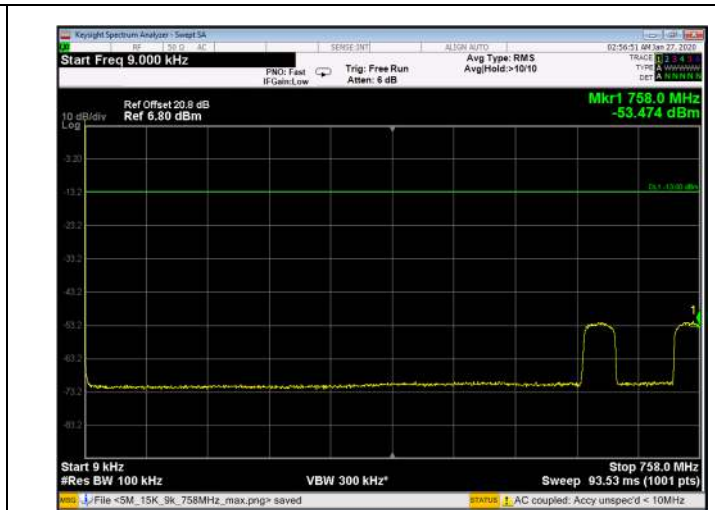
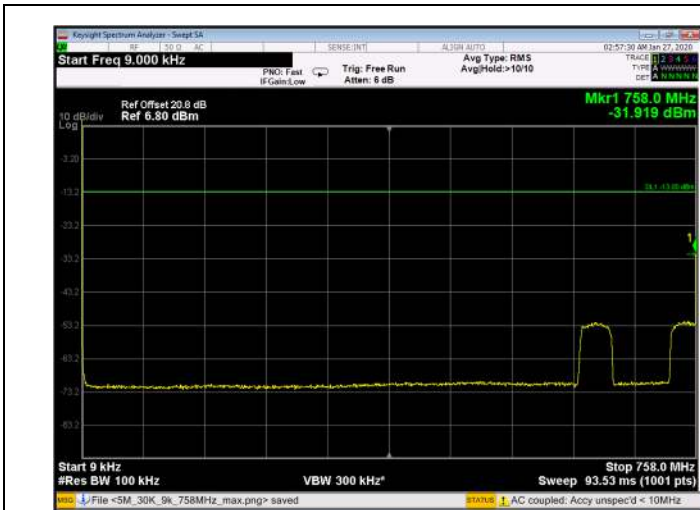


Figure 280: Spurious Emissions at Antenna Terminal 256QAM, 765.5MHz, B.W. 5MHz, Sub Carrier 15kHz



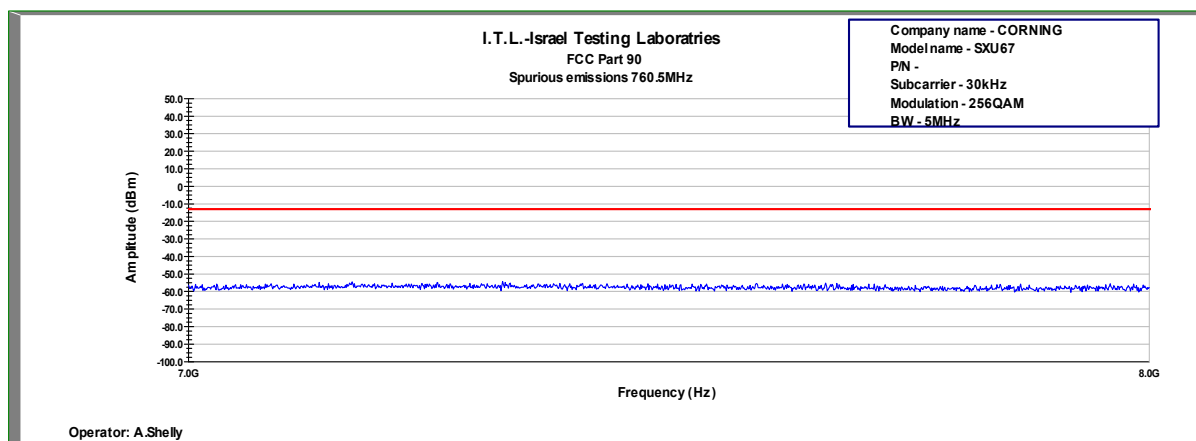


Figure 287: Spurious Emissions at Antenna Terminal 256QAM, 760.5MHz, B.W. 5MHz, Sub Carrier 30kHz

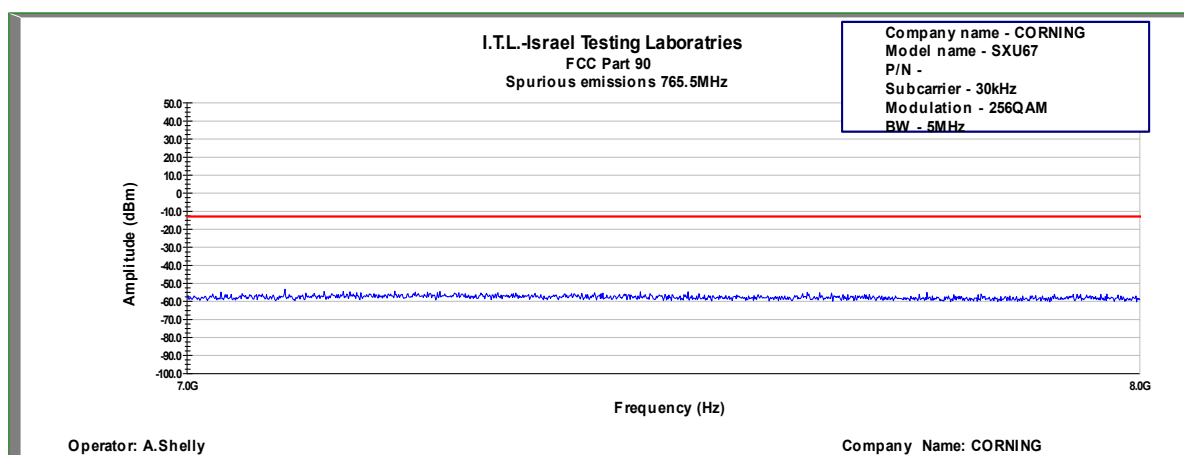


Figure 288: Spurious Emissions at Antenna Terminal 256QAM, 765.5MHz, B.W. 5MHz, Sub Carrier 30kHz



Figure 289: 256QAM 10MHz B.W.; 9kHz-758MHz, 15kHz

Figure 290: 256QAM 10MHz B.W.; 758-805MHz, 15kHz

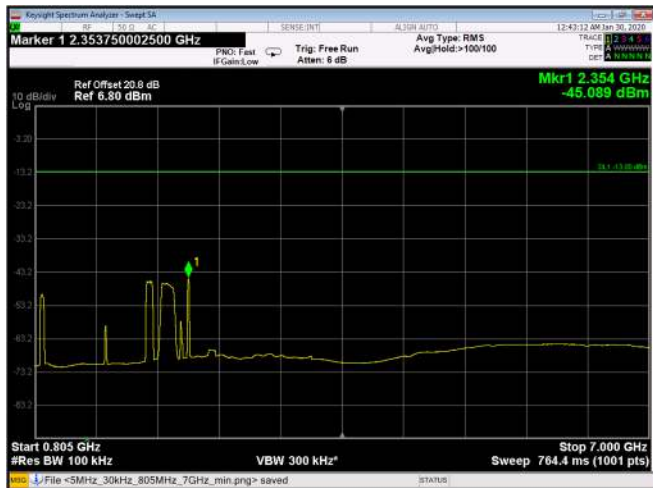


Figure 291: 256QAM 10MHz B.W.;
805MHz-7.0GHz, 15kHz

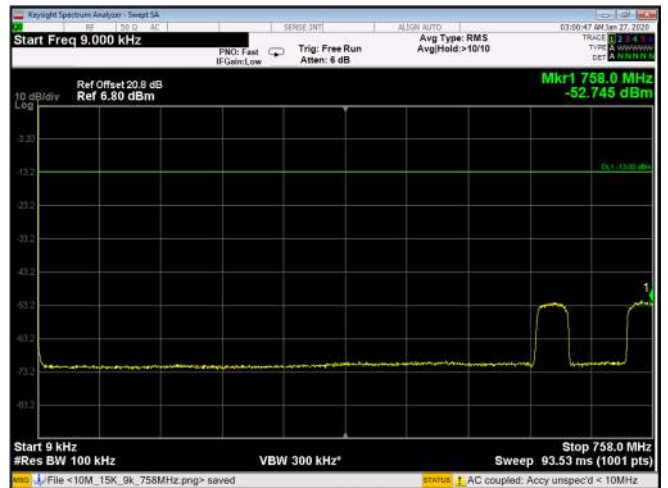


Figure 292: 256QAM 10MHz B.W.; 9kHz-758MHz, 30kHz



Figure 293: 256QAM 10MHz B.W.; 758-805MHz, 30kHz

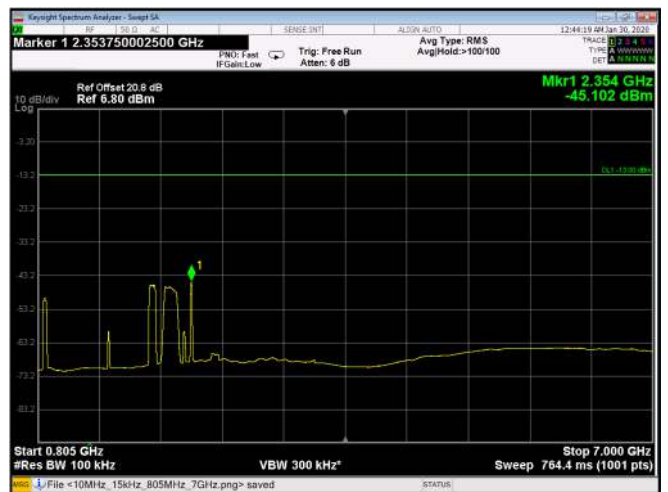


Figure 294: 256QAM 10MHz B.W.;
805MHz-7.0GHz, 30kHz

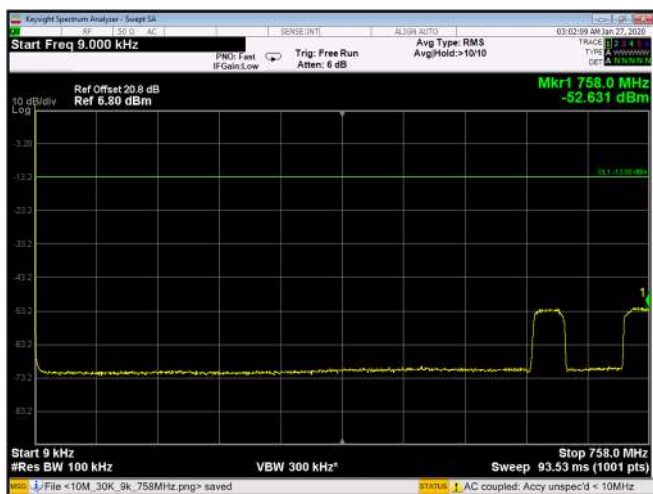


Figure 295: 256QAM 10MHz B.W.; 9kHz-758MHz, 60kHz



Figure 296: 256QAM 10MHz B.W.; 758-805MHz, 60kHz

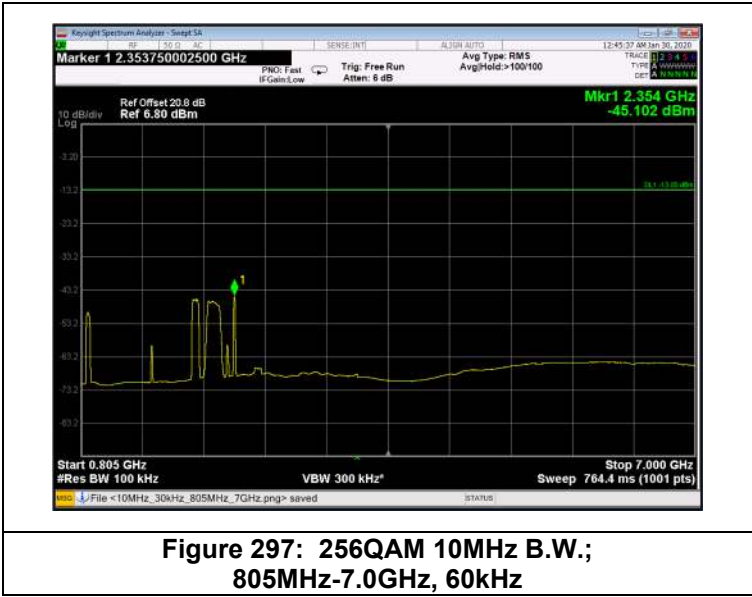


Figure 297: 256QAM 10MHz B.W.;
805MHz-7.0GHz, 60kHz

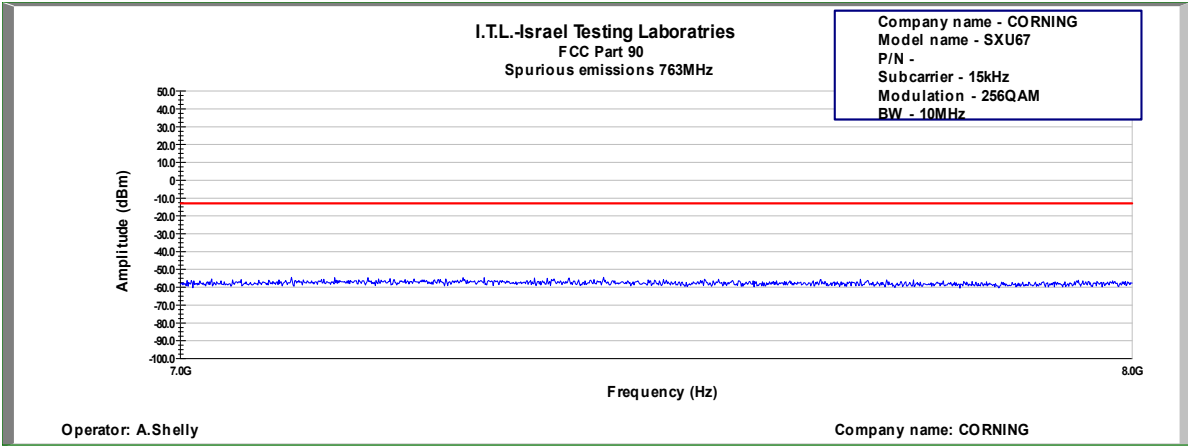


Figure 298: Spurious Emissions at Antenna Terminal 256QAM, 763.0MHz,
B.W. 10MHz, Sub Carrier 15kHz

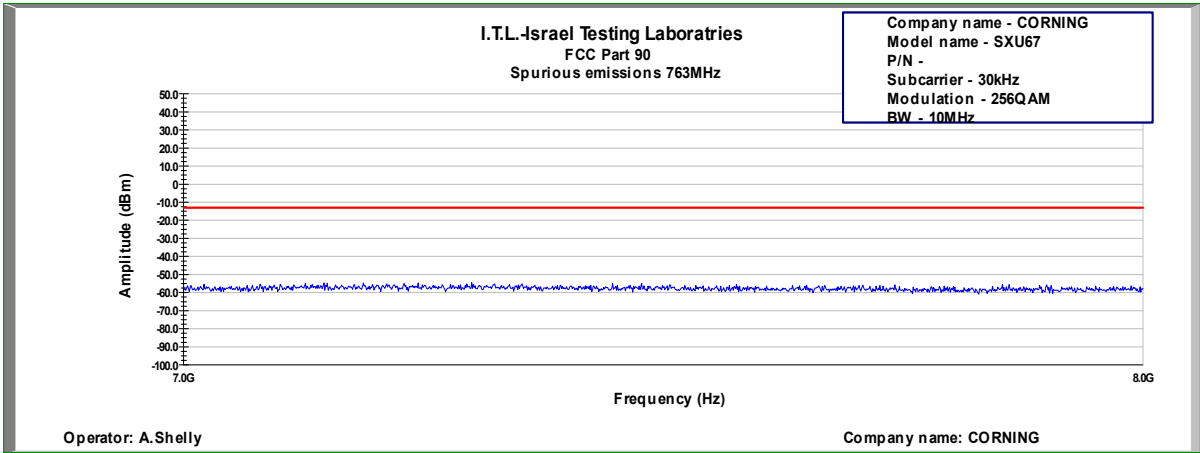


Figure 299: Spurious Emissions at Antenna Terminal 256QAM, 763.0MHz,
B.W. 10MHz, Sub Carrier 30kHz

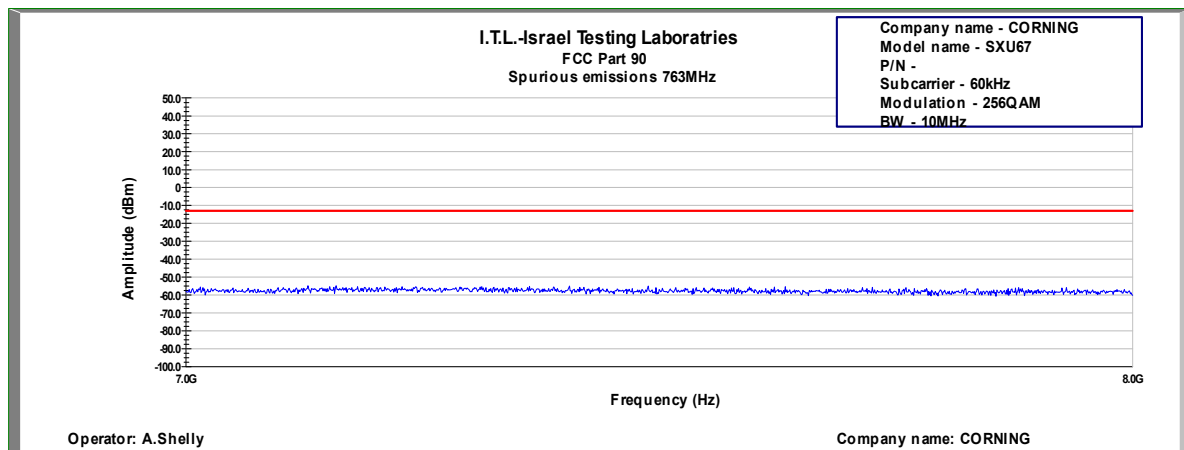


Figure 300: Spurious Emissions at Antenna Terminal 256QAM, 763.0MHz, B.W. 10MHz, Sub Carrier 60kHz

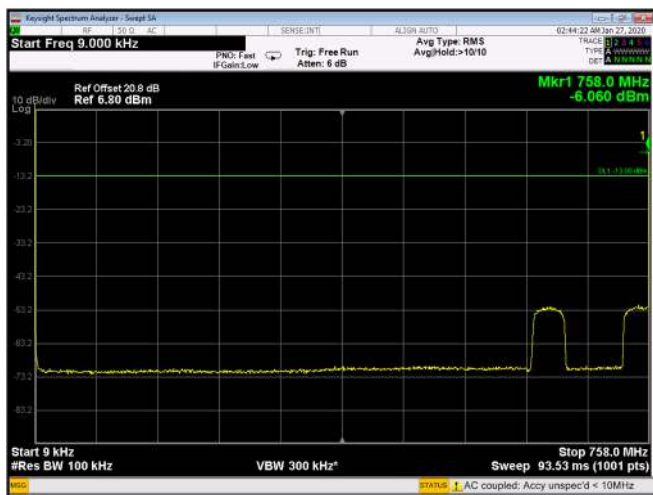


Figure 301: QPSK 5MHz B.W.; 9kHz-758MHz, 15kHz

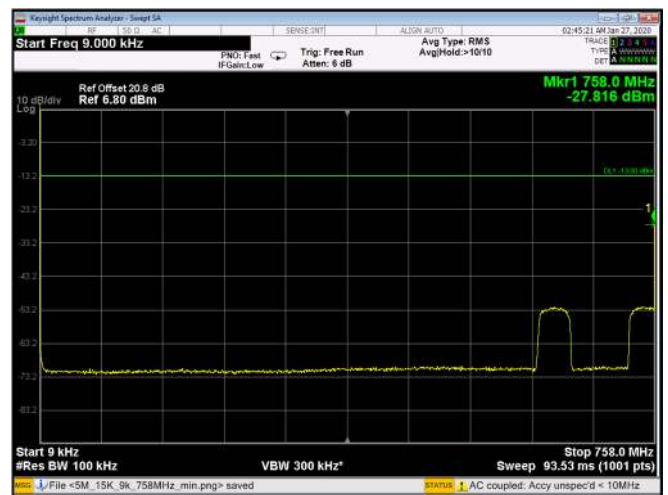


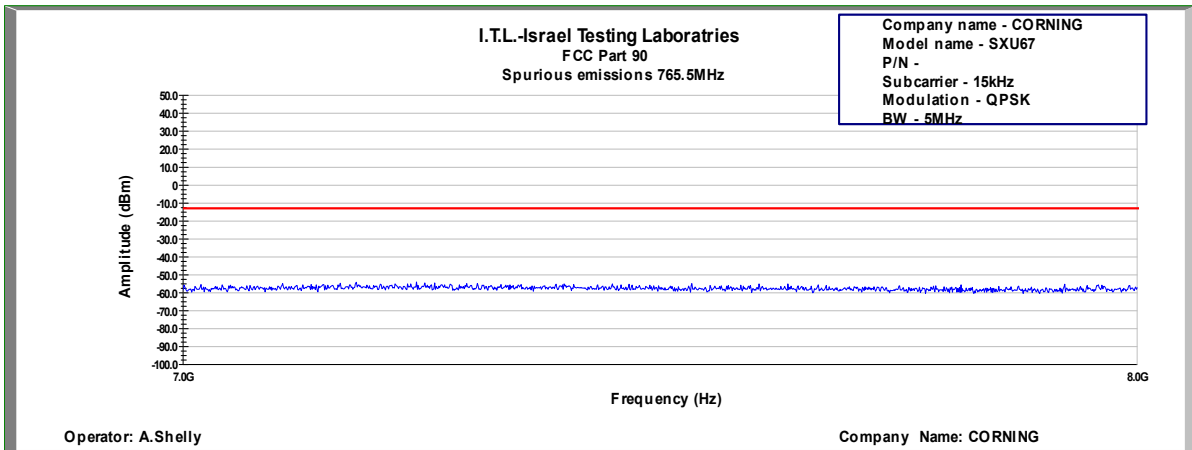
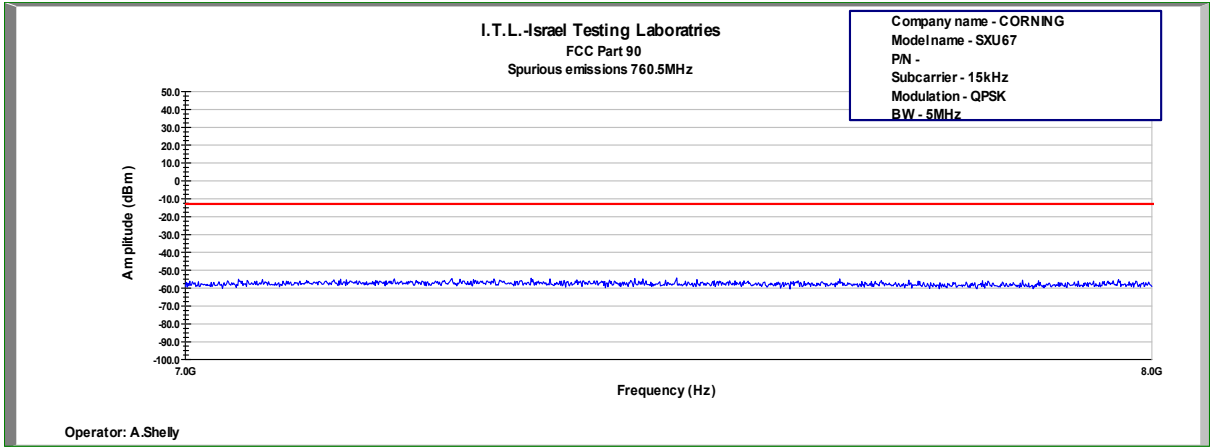
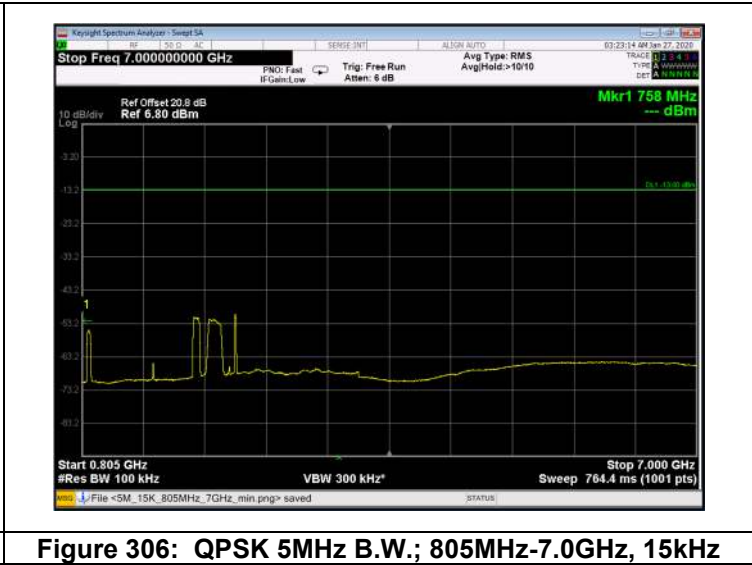
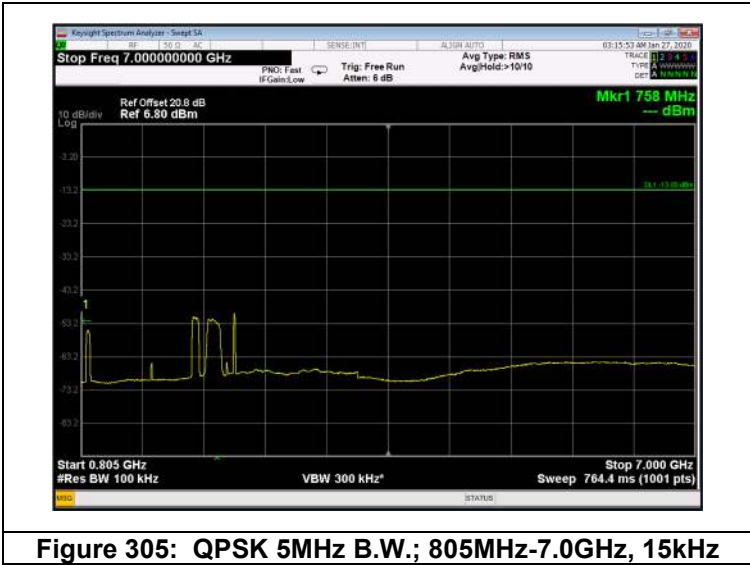
Figure 302: QPSK 5MHz B.W.; 9kHz-758MHz, 15kHz



Figure 303: QPSK 5MHz B.W.; 758-805MHz, 15kHz



Figure 304: QPSK 5MHz B.W.; 758-805MHz, 15kHz



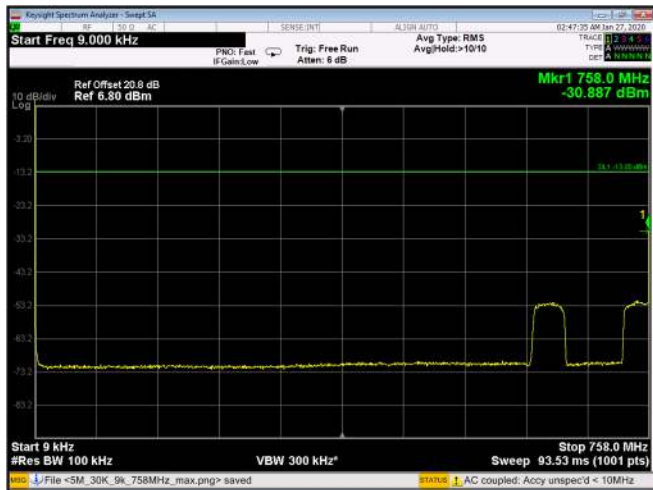


Figure 309: QPSK 5MHz B.W.; 9kHz-758MHz, 30kHz

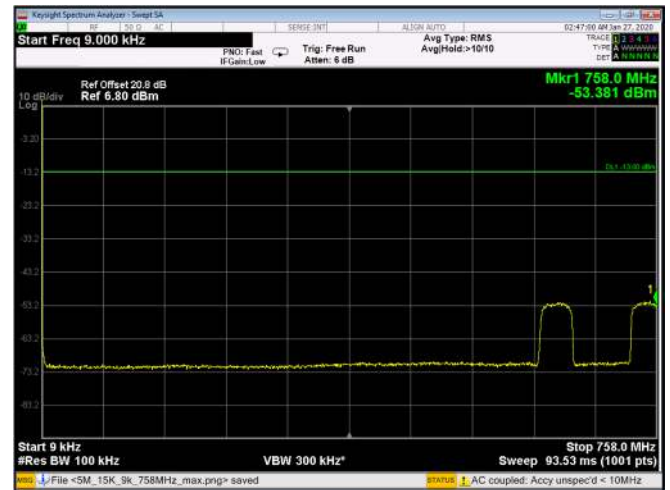


Figure 310: QPSK 5MHz B.W.; 9kHz-758MHz, 30kHz

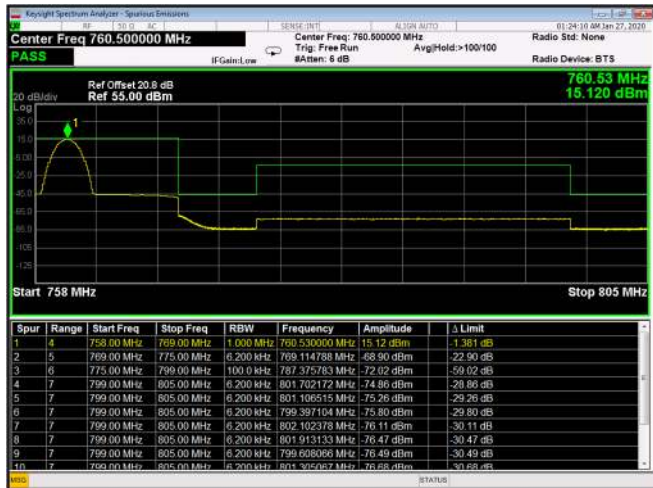


Figure 311: QPSK 5MHz B.W.; 758-805MHz, 30kHz



Figure 312: QPSK 5MHz B.W.; 758-805MHz, 30kHz

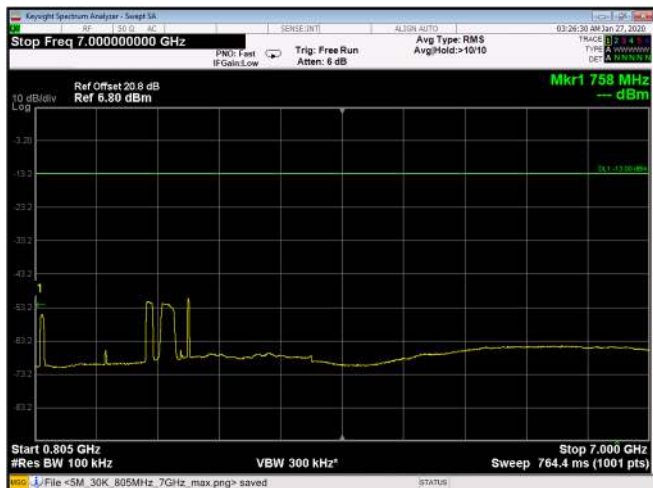


Figure 313: QPSK 5MHz B.W.; 805MHz-7.0GHz, 30kHz

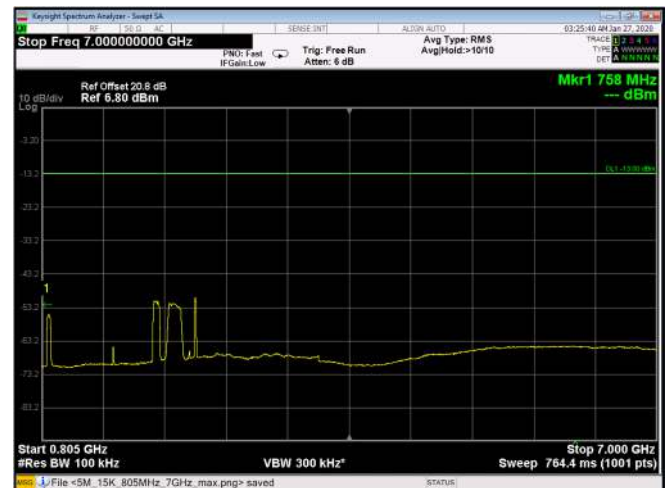


Figure 314: QPSK 5MHz B.W.; 805MHz-7.0GHz, 30kHz

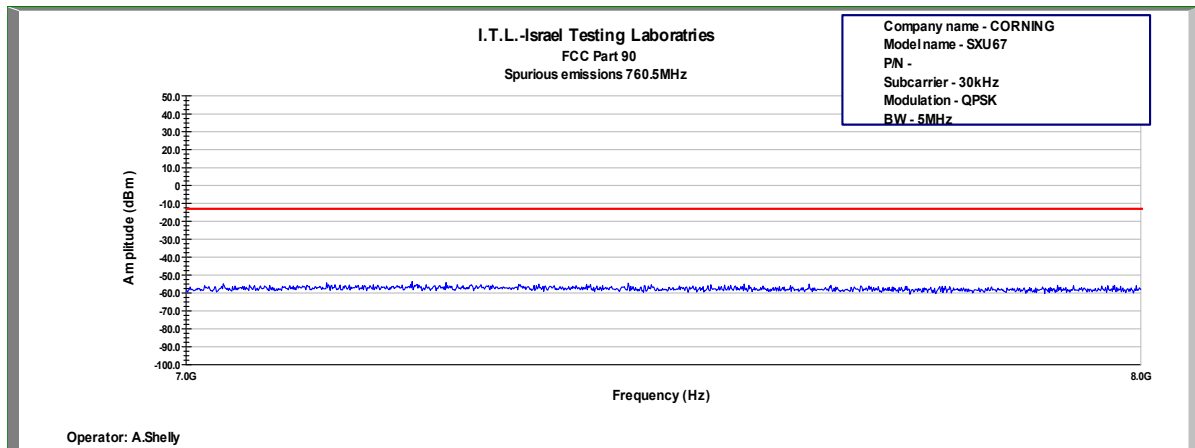


Figure 315: Spurious Emissions at Antenna Terminal QPSK, 760.5MHz, B.W. 5MHz, Sub Carrier 30kHz

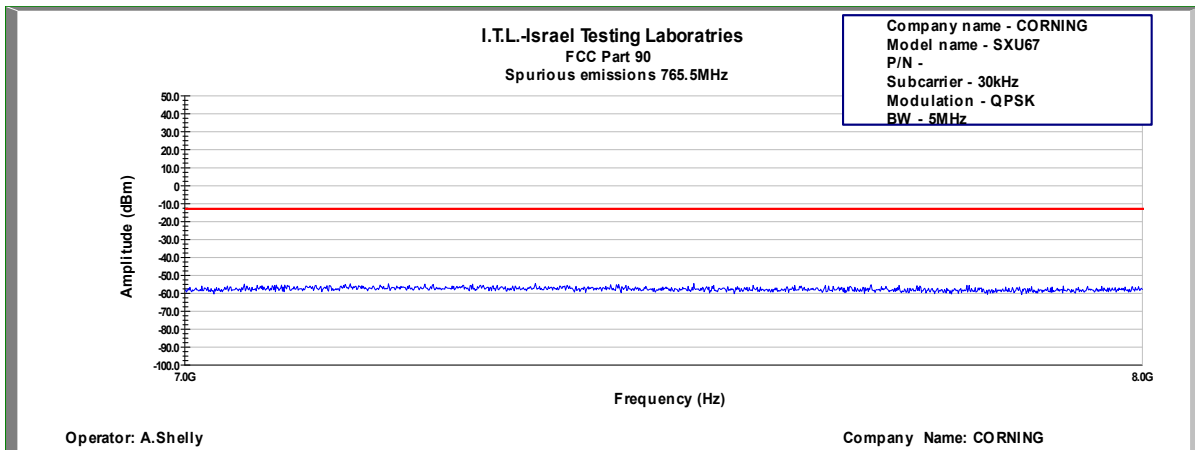


Figure 316: Spurious Emissions at Antenna Terminal QPSK, 765.5MHz, B.W. 5MHz, Sub Carrier 30kHz

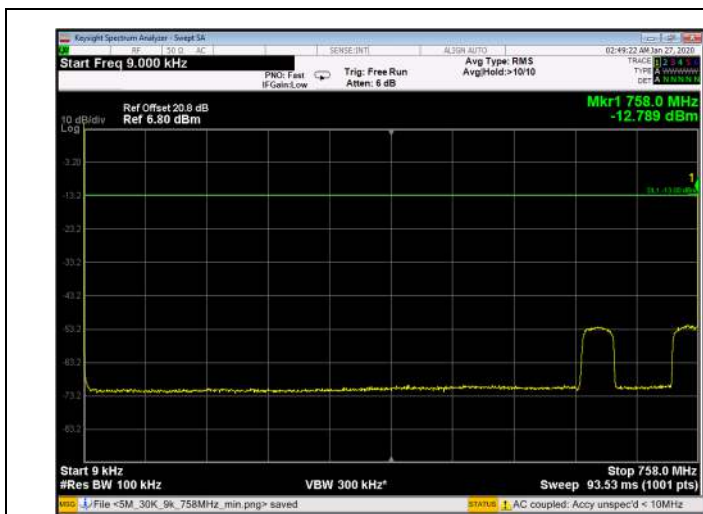


Figure 317: QPSK 10MHz B.W.; 9kHz-758MHz, 15kHz



Figure 318: QPSK 10MHz B.W.; 758-805MHz, 15kHz

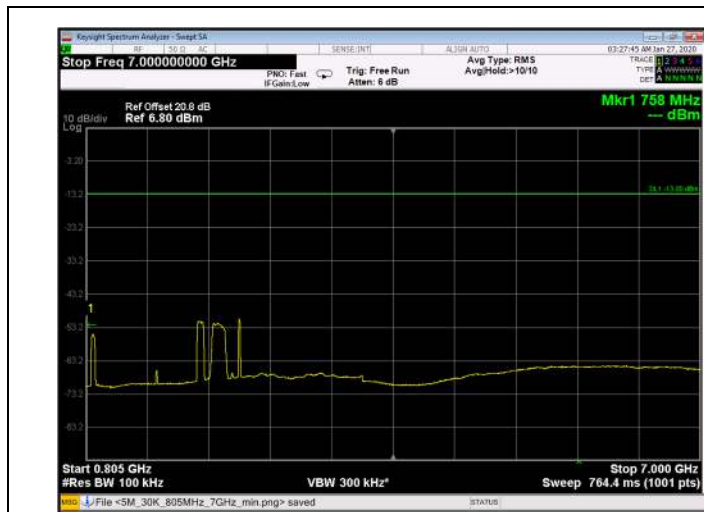


Figure 319: QPSK 10MHz B.W.; 805MHz-7.0GHz, 15kHz

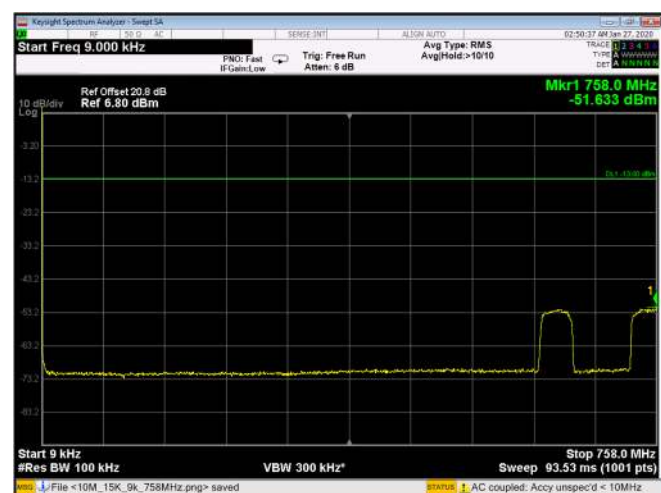


Figure 320: QPSK 10MHz B.W.; 9kHz-758MHz, 30kHz



Figure 321: QPSK 10MHz B.W.; 758-805MHz, 30kHz

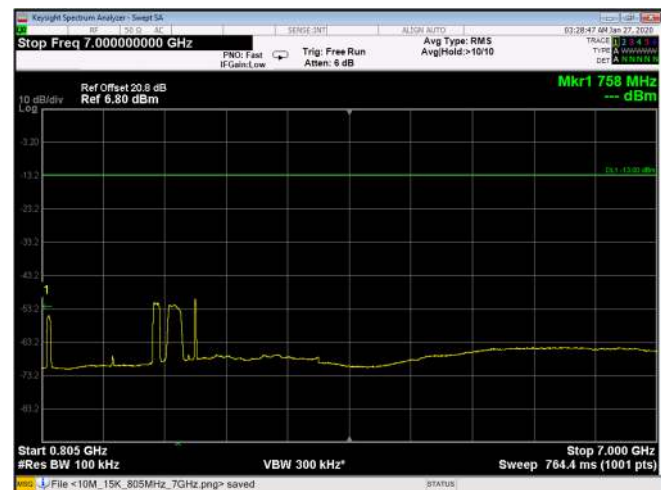


Figure 322: QPSK 10MHz B.W.; 805MHz-7.0GHz, 30kHz

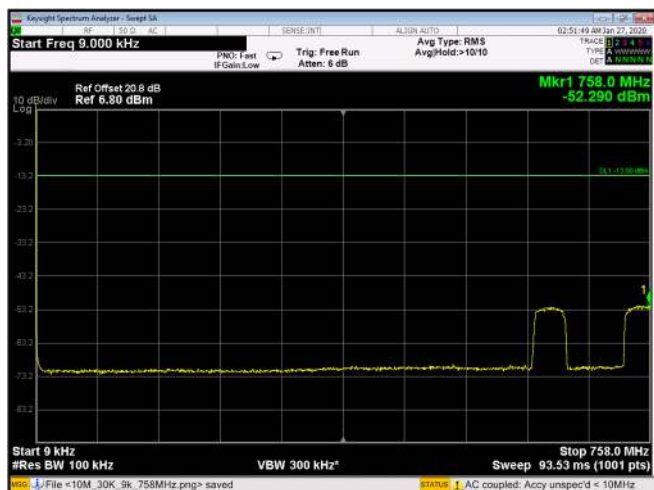


Figure 323: QPSK 10MHz B.W.; 9kHz-758MHz, 60kHz

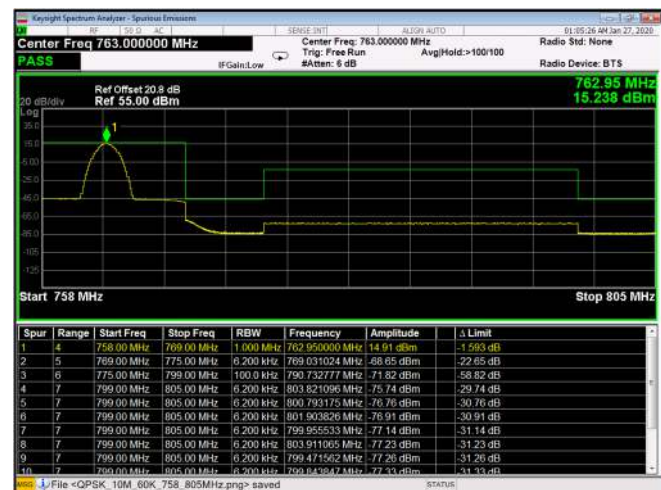


Figure 324: QPSK 10MHz B.W.; 758-805MHz, 60kHz

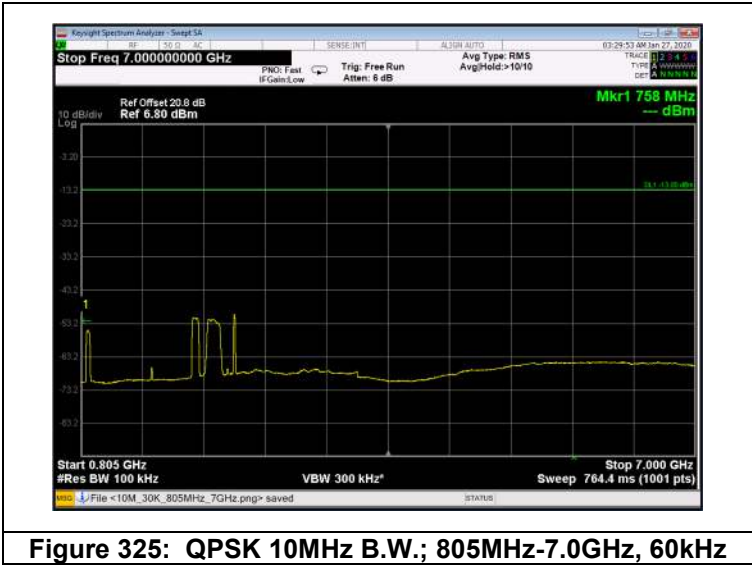


Figure 325: QPSK 10MHz B.W.; 805MHz-7.0GHz, 60kHz

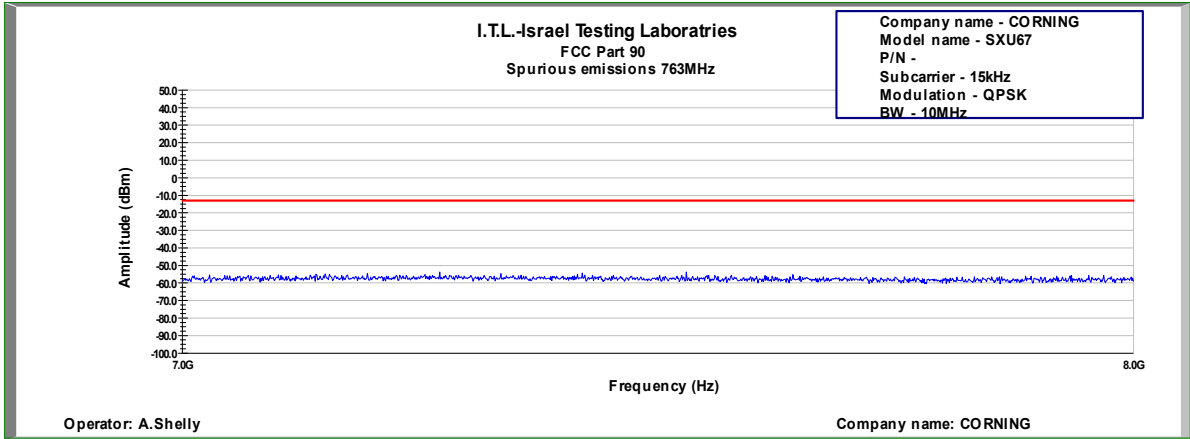


Figure 326: Spurious Emissions at Antenna Terminal QPSK, 763.0MHz, B.W. 10MHz, Sub Carrier 15kHz

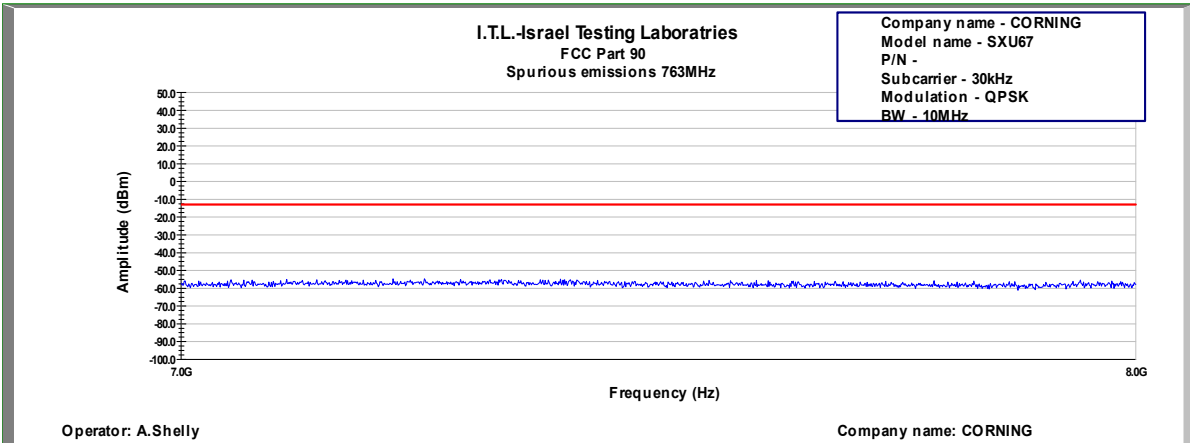


Figure 327: Spurious Emissions at Antenna Terminal QPSK, 763.0MHz, B.W. 10MHz, Sub Carrier 30kHz

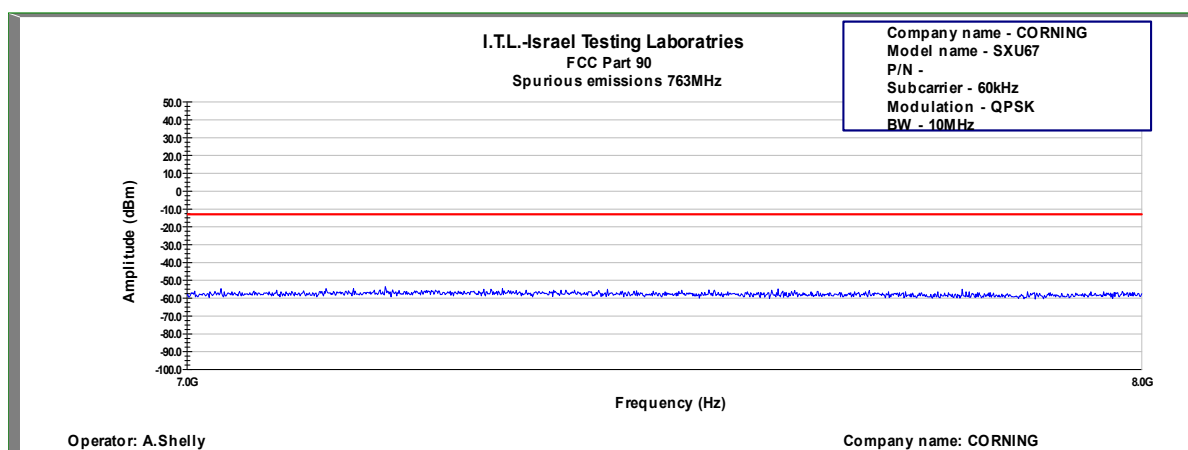


Figure 328: Spurious Emissions at Antenna Terminal QPSK, 763.0MHz, B.W. 10MHz, Sub Carrier 60kHz

7.5 Test Equipment Used; Spurious Emissions at Antenna Terminals

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EXA signal Analyzer	Agilent Technologies	N9010A	MY52220686	28 November 2018	28 November 2020
EXG Vector Signal Generator	Agilent Technologies	N5172B	MY51350437	03 December 2018	03 December 2020
20 dB Attenuator	Bird	8304-N20DB	-	24 December 2019	24 December 2020

Table 20 Test Equipment Used

8 Spurious Radiated Emission

8.1 Test Specification

FCC, Part 27, Subpart C, Section 27.53 (g)

8.2 Test Procedure

(Temperature (23°C)/ Humidity (47%RH))

The test method was based on ANSI/TIA-603-D: 2010, Section 2.2.12 Unwanted Emissions: Radiated Spurious.

For measurements between 0.009MHz-30MHz:

The E.U.T was tested inside the shielded room at a distance of 3 meters and the E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The frequency range 0.009MHz-30MHz was scanned. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The emissions were measured at a distance of 3 meters.

For measurements between 30.0MHz-1.0GHz:

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The frequency range 30.0MHz -1.0GHz was scanned and the list of the highest emissions was verified and updated accordingly.

The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization.

The emissions were measured at a distance of 3 meters.

For measurements between 1.0GHz-8.0GHz:

The E.U.T was tested inside the shielded room at a distance of 3 meters and the E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The frequency range 1.0GHz -8.0GHz was scanned. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The emissions were measured at a distance of 3 meters.

The E.U.T. was replaced by a substitution antenna (dipole 30MHz-1GHz, Horn Antenna above 1GHz) driven by a signal generator.

The height was readjusted for maximum reading. The signal generator level was adjusted to obtain the same reading on the EMI receiver as in step (a).

The signals observed in step (a) were converted to radiated power using:

$$P_d(\text{dBm}) = P_g(\text{dBm}) - \text{Cable Loss (dB)} + \text{Substitution Antenna Gain (dBd)}$$

P_d = Dipole equivalent power (result).

P_g = Signal generator output level.

A Peak detector was used for this test.

Testing was performed when the RF port was connected to 50 Ω termination.

Evaluation was performed for all possible modulations, bandwidths, and sub carriers.

8.3 Test Limit

For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (3) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations
- (4) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

8.4 Test Results

No emissions were detected above the EMI receiver noise level which is at least 6 dB below the limit.

Judgement: Passed

8.5 Test Instrumentation Used; Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EMI Receiver	HP	8542E	3906A00276	February 28, 2019	February 28, 2020
RF Filter Section	HP	85420E	3705A00248	February 28, 2019	February 28, 2020
EMI Receiver	R&S	ESCI7	100724	February 27, 2019	February 28, 2020
Spectrum Analyzer	HP	8593EM	3536A00120ADI	February 26, 2019	February 28, 2020
Active Loop Antenna	EMCO	6502	9506-2950	February 5, 2019	February 28, 2021
Antenna Biconical	EMCO	3110B	9912-3337	May 21, 2019	May 31, 2020
Antenna Log Periodic	EMCO	3146	9505-4081	May 31, 2018	May 31, 2020
Horn Antenna 1G-18G	ETS	3115	29845	May 31, 2018	May 31, 2021
Low Noise Amplifier	Narda	LNA-DBS-0411N313	013	December 24, 2019	December 31, 2020
Low Noise Amplifier	Sophia Wireless	LNA 28-B	232	December 24, 2019	December 31, 2020
Vector Signal Generator	VIAVI	MTS 5800	WMNK0071690263	July 1, 2018	July 1, 2021
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR
Antenna Mast	ETS	2070-2	-	NCR	NCR
Turntable	ETS	2087	-	NCR	NCR
Mast & Table Controller	ETS/EMCO	2090	9608-1456	NCR	NCR

Table 21 Test Equipment Used

9 Spurious Radiated Emission for 1559-1610 MHz band

9.1 Test Specification

FCC, Part 90, Subpart C, Section 27.53 (g)

9.2 Test Procedure

(Temperature (23°C)/ Humidity (47%RH))

The test method was based on ANSI/TIA-603-D: 2010, Section 2.2.12 Unwanted Emissions: Radiated Spurious.

The E.U.T was tested inside the shielded room at a distance of 3 meters and the E.U.T was placed on a non-metallic table, 1.5 meters above the ground. The frequency range 1559-1610 MHz was scanned. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The emissions were measured at a distance of 3 meters.

The E.U.T. was replaced by a substitution antenna (dipole 30MHz-1GHz, Horn Antenna above 1GHz) driven by a signal generator. The height was readjusted for maximum reading. The signal generator level was adjusted to obtain the same reading on the EMI receiver as in step (a).

The signals observed in step (a) were converted to radiated power using:

$$P_d(\text{dBm}) = P_g(\text{dBm}) - \text{Cable Loss (dB)} + \text{Substitution Antenna Gain (dBd)}$$

P_d = Dipole equivalent power (result).

P_g = Signal generator output level.

A Peak detector was used for this test.

The test was performed in 2 operation frequencies: low, high and for all modulation bandwidths.

Testing was performed when the RF port was connected to a typical antenna provided by the customer.

The plots below describe only results with the highest radiation.

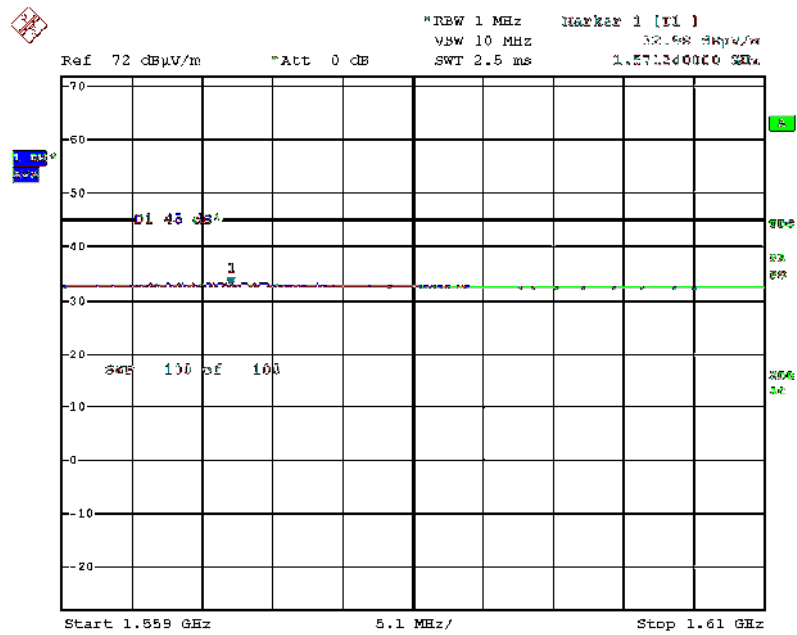
9.3 Test Limit

All emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz(-40dBm/MHz) equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW (-50dBm/MHz EIRP for discrete emissions of less than 700 Hz bandwidth

9.4 Test Results

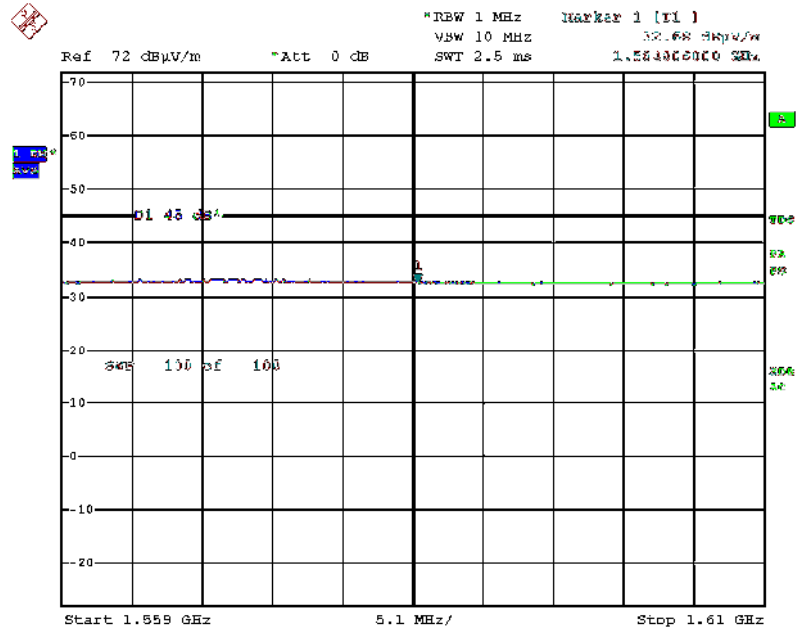
No emissions were detected above the EMI receiver noise level which is at least 6 dB below the limit.

Judgement: Passed



Date: 11.FEB.2020 08:38:42

Figure 329: Spurious Emissions for 1559-1610 MHz band, Vertical



Date: 11.FEB.2020 08:40:05

Figure 330: Spurious Emissions for 1559-1610 MHz band, Horizontal

9.5 Test Instrumentation Used; Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EMI Receiver	R&S	ESCI7	100724	February 27, 2019	February 28, 2020
Horn Antenna 1G-18G	ETS	3115	29845	May 31, 2018	May 31, 2021
Vector Signal Generator	VIAVI	MTS 5800	WMNK0071690263	July 1, 2018	July 1, 2021
Semi Anechoic Civil Chamber	ETS	S81	SL 11643	NCR	NCR

Table 22 Test Equipment Used

10 Out-of-Band Rejection

1.1 Test Specification

KDB 935210 D05 v01r01, Section 3.3

1.2 Test Procedure

(Temperature (21°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 (max Loss= 31.0 dB).

The signal and spectrum analyzer frequency range was set to $\pm 250\%$ of the passband, Dwell time set to approximately 10msec.

RBW was set between 1% to 5% of the E.U.T passband and VBW set to $\geq 3 \times \text{RBW}$.

1.3 Test Limit

N/A

1.4 Test Results

JUDGEMENT: Passed

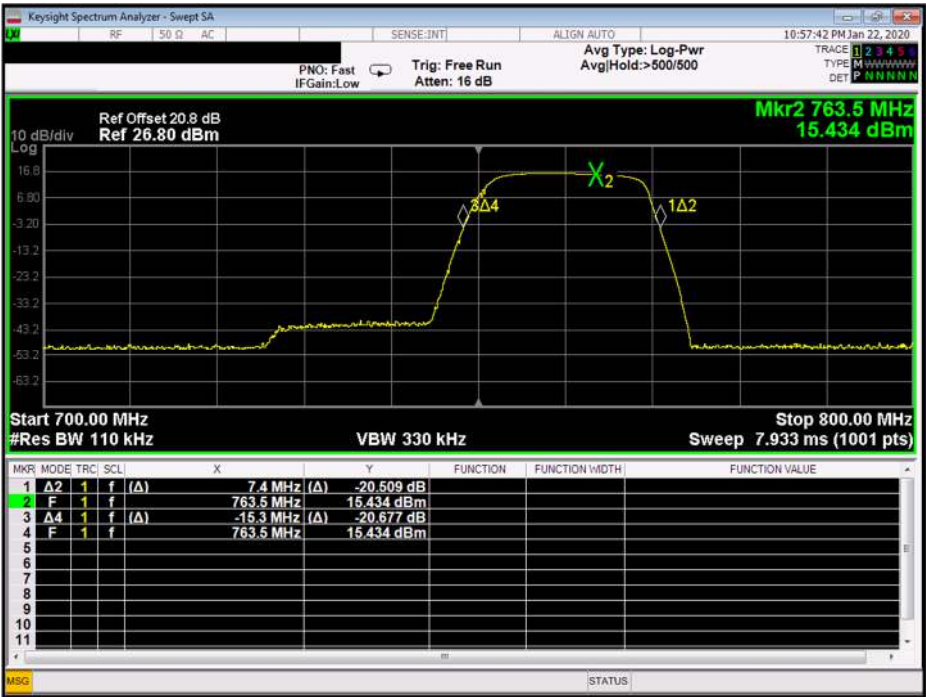


Figure 331. — Out-of-Band Rejection Plot

10.1 Test Equipment Used; Out-of-Band Rejection

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EXA signal Analyzer	Agilent Technologies	N9010A	MY52220686	28 November 2018	28 November 2020
EXG Vector Signal Generator	Agilent Technologies	N5172B	MY51350437	03 December 2018	03 December 2020
20 dB Attenuator	Bird	8304-N20DB	-	24 December 2019	24 December 2020

Table 23 Test Equipment Used

11 APPENDIX A - CORRECTION FACTORS

11.1 Correction factors for RF OATS Cable 35m

ITL #1784

Frequency (MHz)	Cable loss (dB)
10.0	0.3
20.0	0.2
50.0	-0.1
100.0	-0.6
200.0	-1.2
500.0	-2.3
1000.0	-3.6

11.2 Correction factors for RF OATS Cable 10m
ITL #1794

Frequency(MHz)	Cable loss(dB)
10.0	-0.3
20.0	-0.3
50.0	-0.5
100.0	-0.7
200.0	-1.1
500.0	-1.8
1000.0	-2.7

11.3 Correction factors for

Horn Antenna

**Model: SWH-28
at 1 meter range.**

FREQUENCY (GHz)	AFE (dB /m)	Gain (dB1)
18.0	40.3	16.1
19.0	40.3	16.3
20.0	40.3	16.1
21.0	40.3	16.3
22.0	40.4	16.8
23.0	40.5	16.4
24.0	40.5	16.6
25.0	40.5	16.7
26.0	40.6	16.4

11.4 Correction factors for Horn Antenna

Model: 3115

Antenna serial number: 29845

3 meter range

f(GHz)	AF(dB/m)	GA(dB)
0.75	25	3
1G	23.5	7
1.5G	26	8
2G	29	7
2.5G	27.5	10
3G	30	10
3.5G	31.5	10
4G	32.5	9.5
4.5G	32.5	10.5
5G	33	10.5
5.5G	35	10.5
6G	36.5	9.5
6.5G	36.5	10
7G	37.5	10
7.5G	37.5	10
8G	37.5	11
8.5G	38	11
9G	37.5	11.5
9.5G	38	11.5
10G	38.5	11.5
10.5G	38.5	12
11G	38.5	12.5
11.5G	38.5	13
12G	38	13.5
12.5G	38.5	13
13G	40	12
13.5G	41	12
14G	40	13
14.5G	39	14
15G	38	15.5
15.5G	37.5	16
16G	37.5	16
16.5G	39	15
17G	40	15
17.5G	42	13.5
18G	42.5	13

11.5 Correction factors for Log Periodic Antenna
EMCO, Model 3146,
Serial #9505-4081

Frequency [MHz]	AF [dB/m]
200.0	11.47
250.0	12.06
300.0	14.77
400.0	15.77
500.0	18.01
600.0	18.84
700.0	20.93
800.0	21.27
900.0	22.44
1000.0	24.10

11.6 Correction factors for Biconical Antenna
EMCO, Model 3110B,
Serial #9912-3337

Frequency [MHz]	AF [dB/m]
30.0	14.18
35.0	13.95
40.0	12.84
45.0	11.23
50.0	11.10
60.0	10.39
70.0	9.34
80.0	9.02
90.0	9.31
100.0	8.95
120.0	11.53
140.0	12.20
160.0	12.56
180.0	13.49
200.0	15.27

11.7 Correction factors for ACTIVE LOOP ANTENNA
Model 6502
S/N 9506-2950

f(MHz)	MAF(dBs/m)	AF(dB/m)
0.01	-33.1	18.4
0.02	-37.2	14.3
0.03	-38.2	13.3
0.05	-39.8	11.7
0.1	-40.1	11.4
0.2	-40.3	11.2
0.3	-40.3	11.2
0.5	-40.3	11.2
0.7	-40.3	11.2
1	-40.1	11.4
2	-40	11.5
3	-40	11.5
4	-40.1	11.4
5	-40.2	11.3
6	-40.4	11.1
7	-40.4	11.1
8	-40.4	11.1
9	-40.5	11
10	-40.5	11
20	-41.5	10
30	-43.5	8