



## 9. Spurious Emissions at Antenna Terminals - 4G and 5G

### 9.1 Test Specification

FCC Part 27, Section: 53(a)(1)

### 9.2 Test Procedure

(Temperature (20°C)/ Humidity (53%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (max loss 40.6 dB).

Testing was performed in the 9K-24GHz frequency band without band edges tests, and for each modulation separately.

### 9.3 Test Limit

The power of any emission outside of the authorized operating frequency ranges (2345-2360 MHz) must be attenuated below the transmitting power (P) by a factor of at least as specified in this section.

Frequency Band (MHz)	Calculated Factor (dBc)
$f < 2285.0$	$75 + 10 * \log(6.31) = 83.0$
$2285.0 \text{ MHz} < f < 2287.5 \text{ MHz}$	$72 + 10 * \log(6.31) = 80.0$
$2287.5 \text{ MHz} < f < 2300.0 \text{ MHz}$	$70 + 10 * \log(6.31) = 78.0$
$2300.0 \text{ MHz} < f < 2305.0 \text{ MHz}$	$43 + 10 * \log(6.31) = 51.0$
$2305.0 \text{ MHz} < f < 2320.0 \text{ MHz}$	$43 + 10 * \log(6.31) = 51.0$
$2320.0 \text{ MHz} < f < 2345.0 \text{ MHz}$	$75 + 10 * \log(6.31) = 83.0$
$2345.0 \text{ MHz} < f < 2360.0 \text{ MHz}$	$43 + 10 * \log(6.31) = 51.0$
$2360.0 \text{ MHz} < f < 2362.50 \text{ MHz}$	$43 + 10 * \log(6.31) = 51.0$
$2362.5 \text{ MHz} < f < 2365.0 \text{ MHz}$	$55 + 10 * \log(6.31) = 63.0$
$2365.0 \text{ MHz} < f < 2367.5 \text{ MHz}$	$70 + 10 * \log(6.31) = 78.0$
$2367.5 \text{ MHz} < f < 2370.0 \text{ MHz}$	$72 + 10 * \log(6.31) = 80.0$
$2370.0 < f$	$75 + 10 * \log(6.31) = 83.0$

Figure 86 Mask Limit Table

### 9.4 Test Results

JUDGEMENT: Passed

See additional information in *Figure 87* to *Figure 150*.

Notes:

1. The EUT provides the following services: CELL/ESMR; PCS; AWS; LTE 600MHz; LTE 700MHz; WCS. This report applies to WCS only
2. Any emissions exceeding the limit are spurious emissions from the other bands.



Figure 87. — 0.009 MHz-1000.0MHz –16QAM,15KHz-5G



Figure 88. — 1000.0 MHz-2345.0MHz –16QAM,15KHz-5G



Figure 89. — 2345.0 MHz-2348.0MHz –16QAM,15KHz-5G



Figure 90. — 2348.0 MHz-2349.0MHz –16QAM,15KHz-5G



Figure 91. — 2361.0 MHz-2362.0MHz –16QAM,15KHz-5G

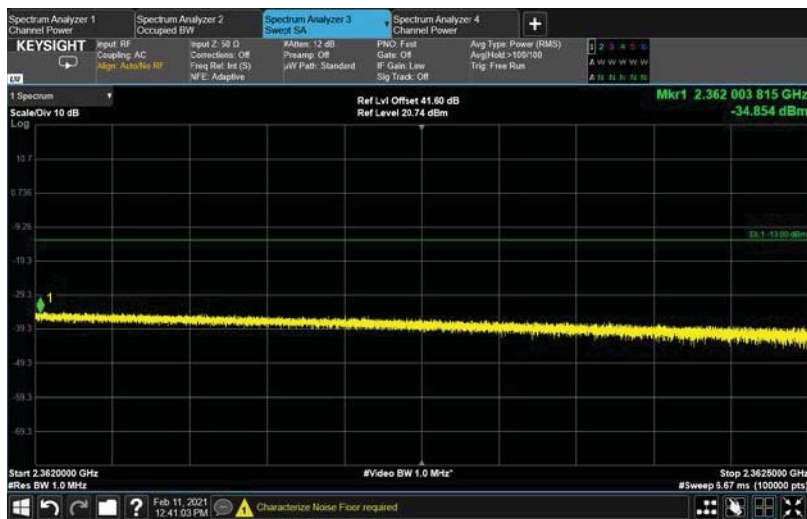


Figure 92. — 2362.0MHz-2362.5MHz –16QAM,15KHz-5G

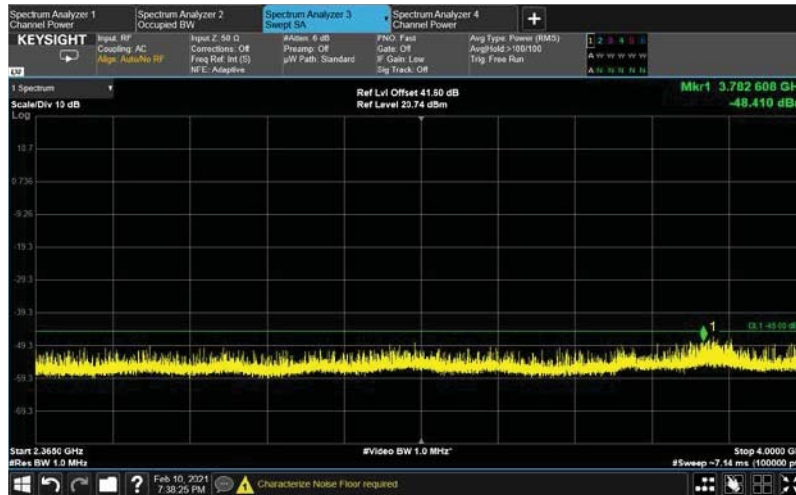
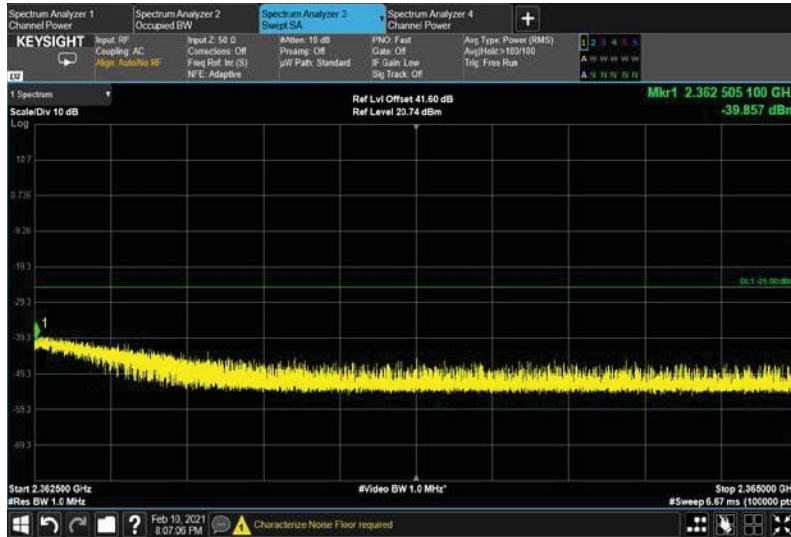




Figure 96. — 0009.0MHz-1000.0MHz -16QAM,30KHz-5G



Figure 97. — 1000.0MHz-2345.0MHz -16QAM,30KHz-5G

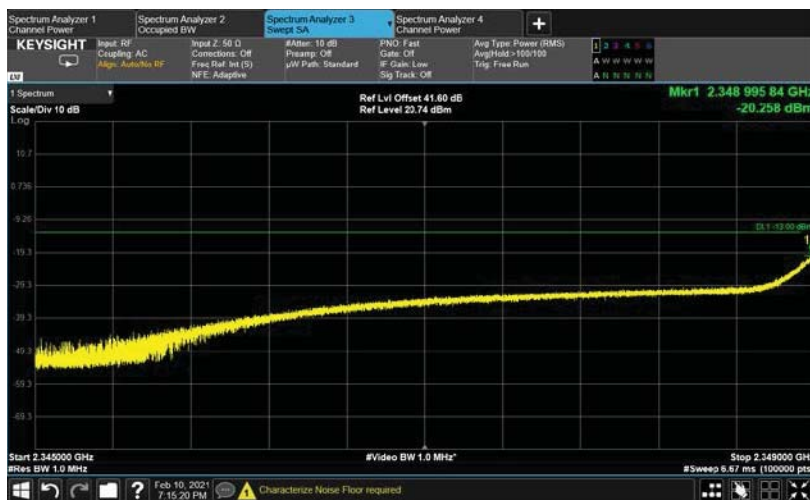


Figure 98. — 2345.0MHz-2349.0MHz -16QAM,30KHz-5G





Figure 99. — 2361.0MHz-2362.5MHz -16QAM,30KHz-5G



Figure 100. — 2362.5MHz-2365.0MHz -16QAM,30KHz-5G



Figure 101. — 2365.0MHz-4000.0MHz -16QAM,30KHz-5G

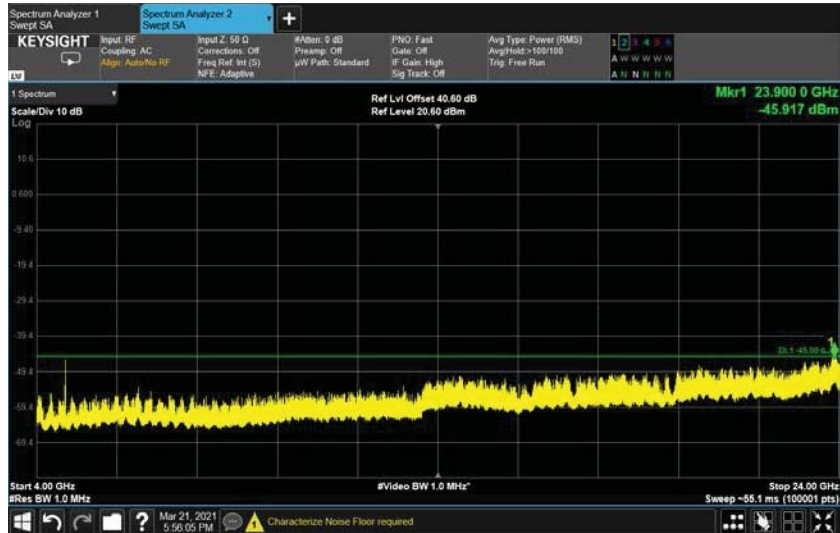


Figure 102. — 4000.0MHz-24000.0MHz –16QAM,30KHz-5G

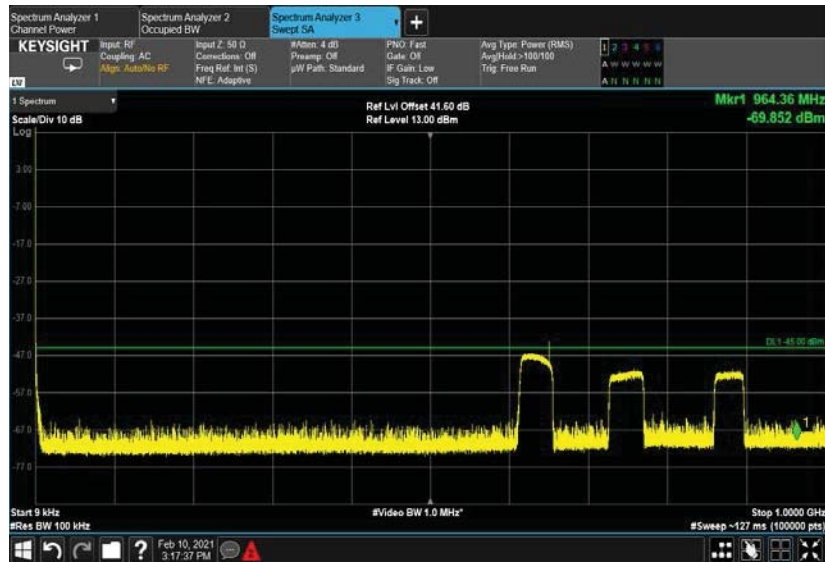


Figure 103. — 0.009 MHz-1000.0MHz –64QAM,15KHz-5G



Figure 104. — 1000.0 MHz-2345.0MHz –64QAM,15KHz-5G

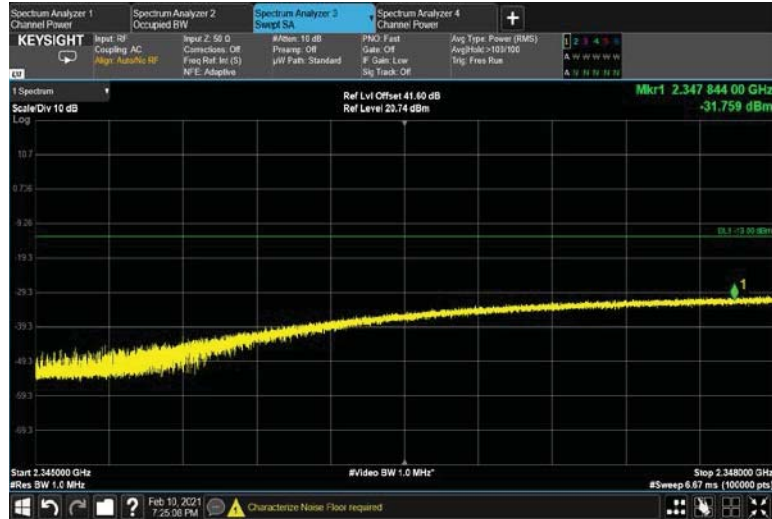


Figure 105. — 2345.0 MHz-2348.0MHz –64QAM,15KHz-5G



Figure 106. — 2348.0 MHz-2349.0MHz –64QAM,15KHz-5G



Figure 107. — 2361.0 MHz-2362.0MHz –64QAM,15KHz-5G



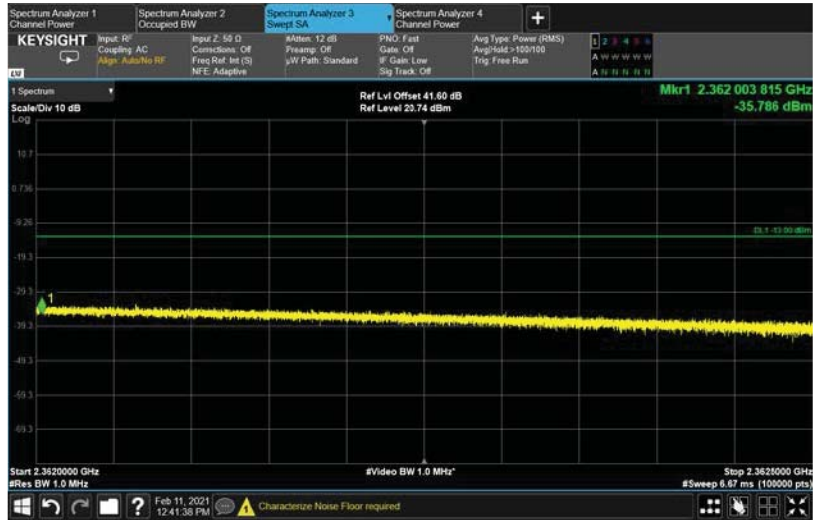


Figure 108. — 2362.0MHz-2362.5MHz -64QAM,15KHz-5G



Figure 109. — 2362.5MHz-2365.0MHz -64QAM,15KHz-5G



Figure 110. — 2365.0MHz-4000.0MHz -64QAM,15KHz-5G

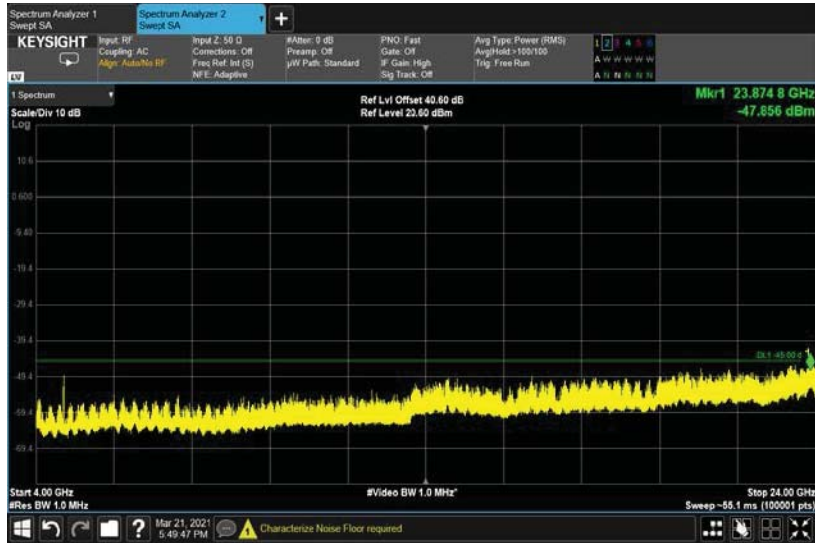


Figure 111. — 4000.0MHz-24000.0MHz -64QAM,15KHz-5G



Figure 112. — 0009.0MHz-1000.0MHz -64QAM,30KHz-5G



Figure 113. — 1000.0MHz-2345.0MHz -64QAM,30KHz-5G



Figure 114. — 2345.0MHz-2349.0MHz -64QAM,30KHz-5G



Figure 115. — 2361.0MHz-2362.5MHz -64QAM,30KHz-5G



Figure 116. — 2362.5MHz-2365.0MHz -64QAM,30KHz-5G

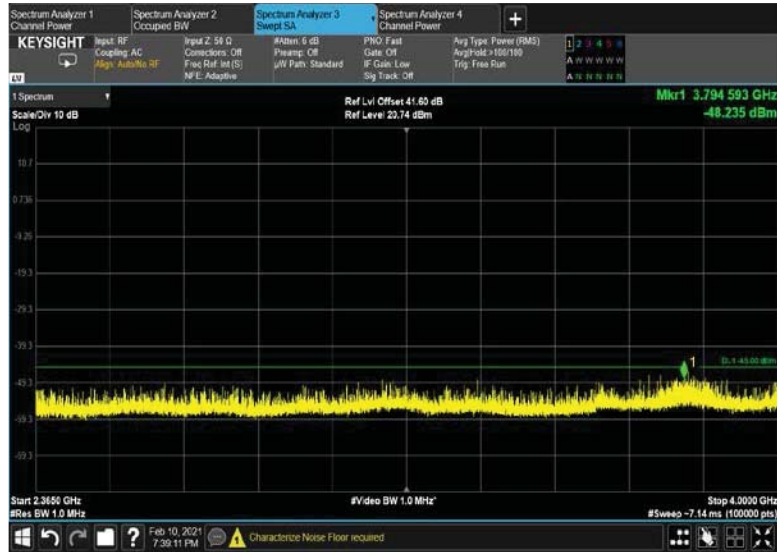


Figure 117. — 2365.0MHz-4000.0MHz -64QAM,30KHz-5G



Figure 118. — 4000.0MHz-24000.0MHz -64QAM,30KHz-5G



Figure 119. — 0.009 MHz-1000.0MHz -256QAM,15KHz-5G



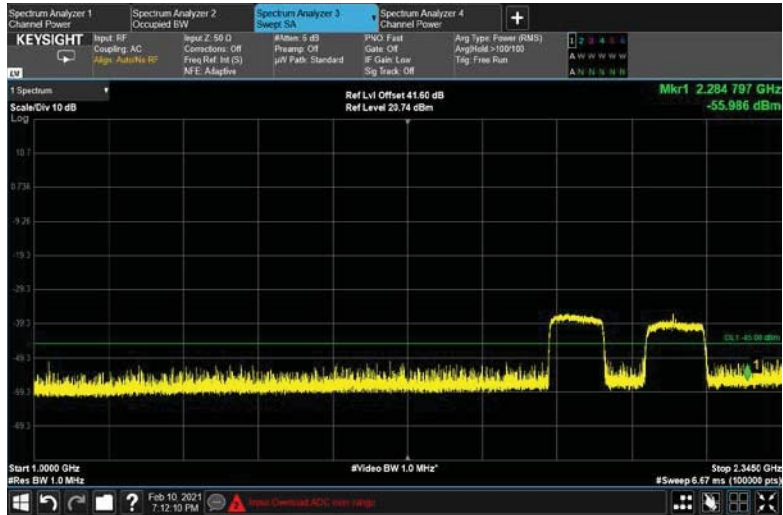


Figure 120. — 1000.0 MHz-2345.0MHz –256QAM,15KHz-5G

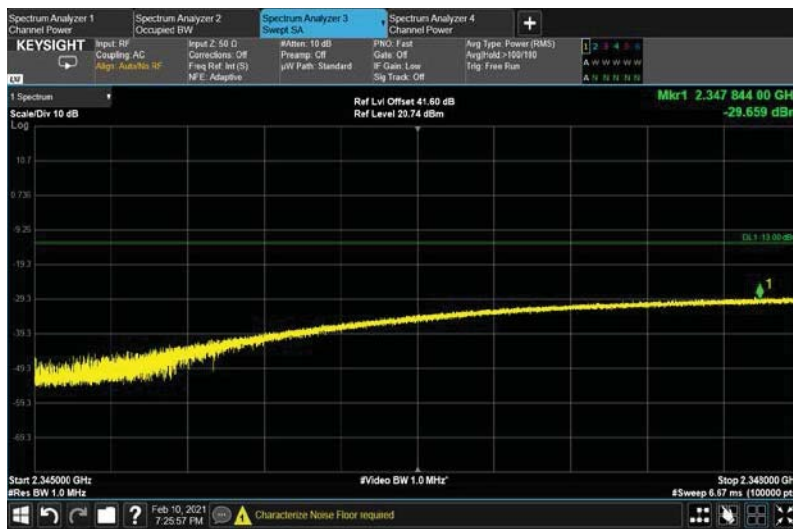


Figure 121. — 2345.0 MHz-2348.0MHz –256QAM,15KHz-5G



Figure 122. — 2348.0 MHz-2349.0MHz –256QAM,15KHz-5G



Figure 123. — 2361.0 MHz-2362.0MHz –256QAM,15KHz-5G

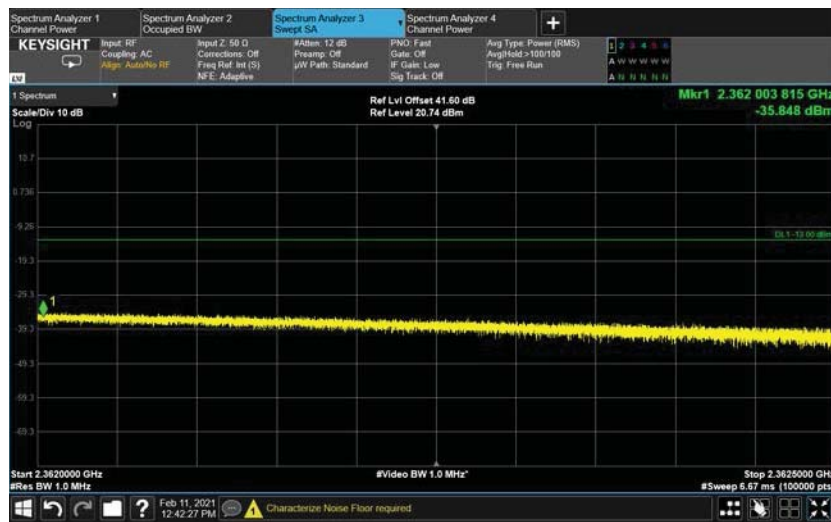


Figure 124. — 2362.0MHz-2362.5MHz –256QAM,15KHz-5G

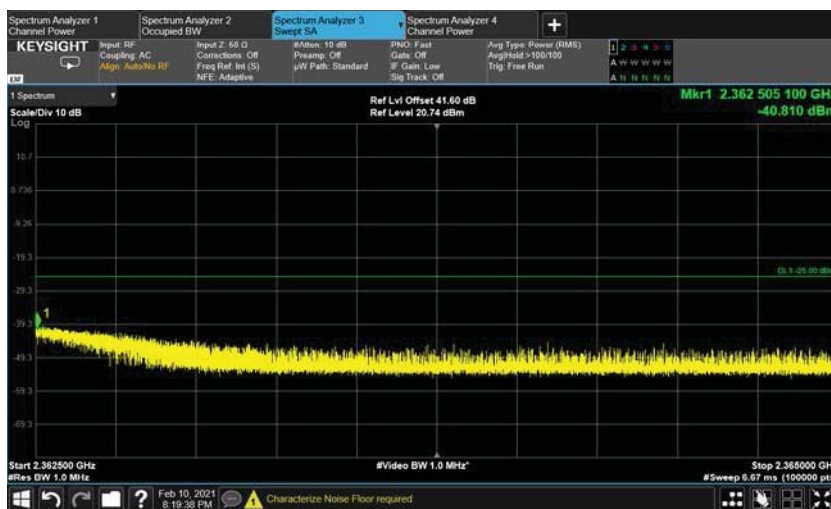


Figure 125. — 2362.5MHz-2365.0MHz –256QAM,15KHz-5G



Figure 126. — 2365.0MHz-4000.0MHz –256QAM,15KHz-5G



Figure 127. — 4000.0MHz-24000.0MHz –256QAM,15KHz-5G

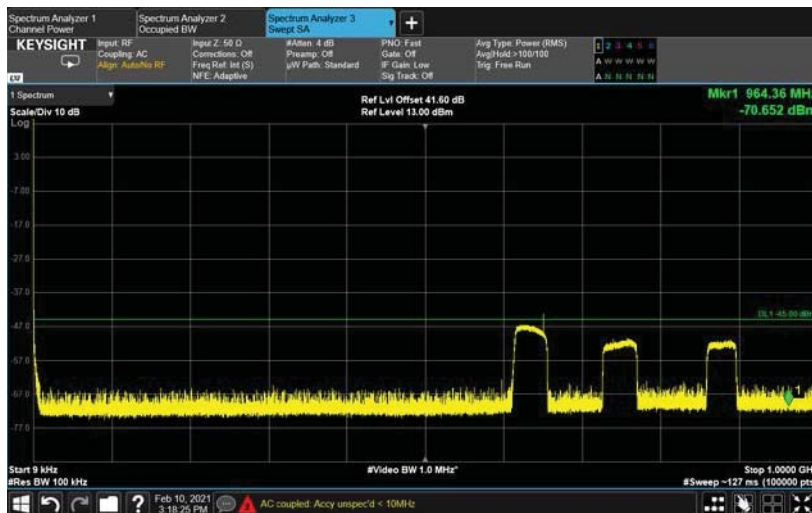


Figure 128. — 0009.0MHz-1000.0MHz –256QAM,30KHz-5G



Figure 129. — 1000.0MHz-2345.0MHz –256QAM,30KHz-5G



Figure 130. — 2345.0MHz-2349.0MHz –256QAM,30KHz-5G



Figure 131. — 2361.0MHz-2362.5MHz –256QAM,30KHz-5G





Figure 132. — 2362.5MHz-2365.0MHz –256QAM,30KHz-5G



Figure 133. — 2365.0MHz-4000.0MHz –256QAM,30KHz-5G



Figure 134. — 4000.0MHz-24000.0MHz –256QAM,30KHz-5G

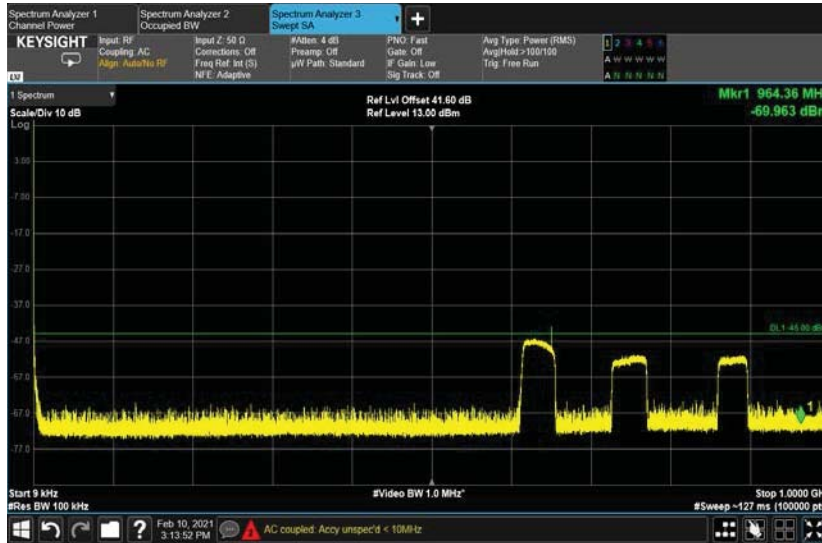


Figure 135. — 0.009 MHz-1000.0MHz –QPSK,15KHz-5G

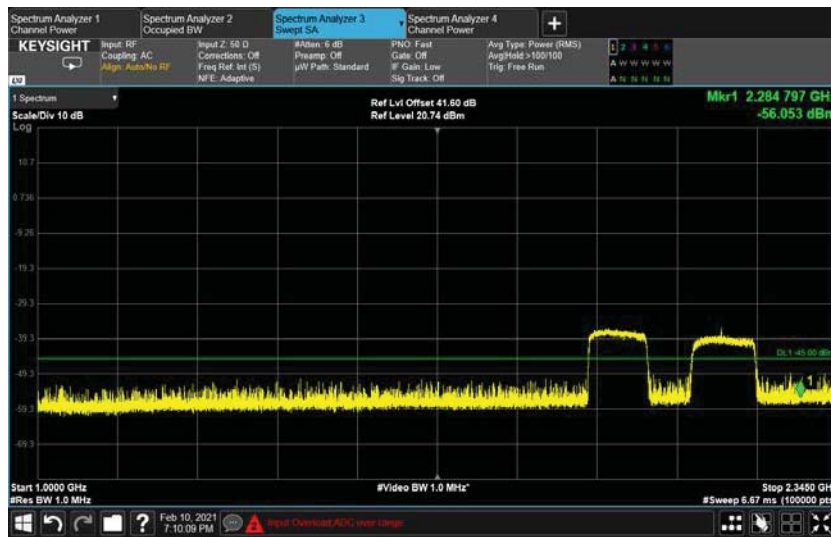


Figure 136. — 1000.0 MHz-2345.0MHz –QPSK,15KHz-5G

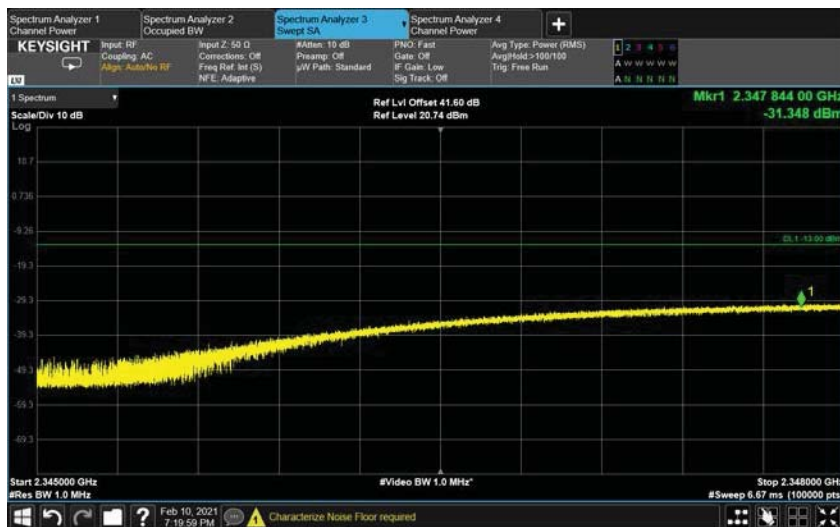


Figure 137. — 2345.0 MHz-2348.0MHz –QPSK,15KHz-5G



Figure 138. — 2348.0 MHz-2349.0MHz –QPSK,15KHz-5G



Figure 139. — 2361.0 MHz-2362.0MHz –QPSK,15KHz-5G

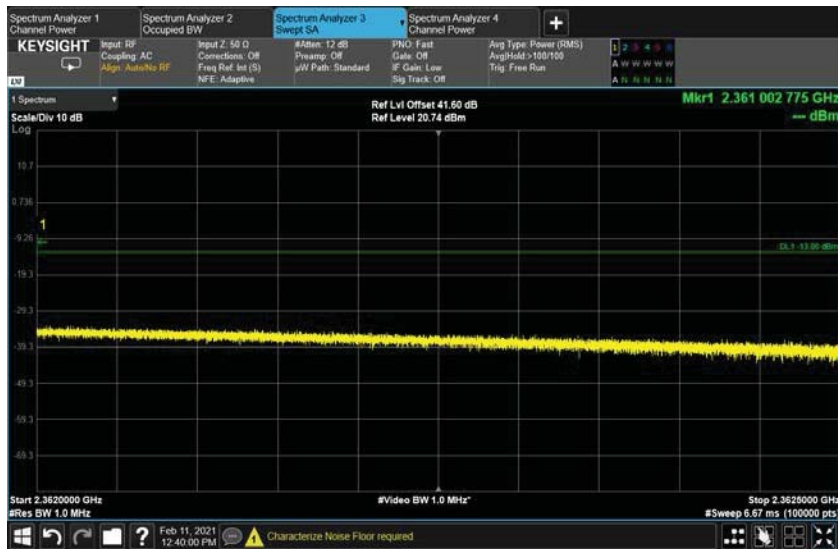


Figure 140. — 2362.0MHz-2362.5MHz –QPSK,15KHz-5G

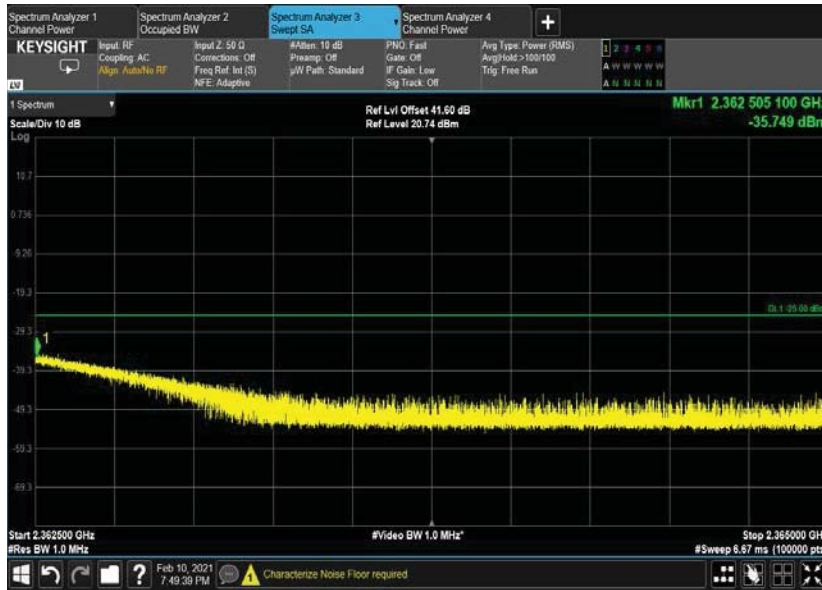


Figure 141. — 2362.5MHz-2365.0MHz –QPSK,15KHz-5G

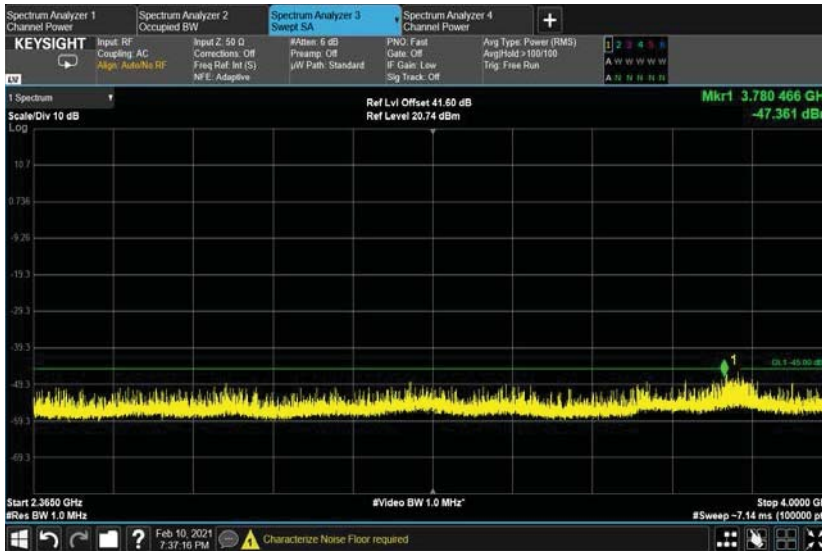


Figure 142. — 2365.0MHz-4000.0MHz –QPSK,15KHz-5G



Figure 143. — 4000.0MHz-24000.0MHz –QPSK,15KHz-5G



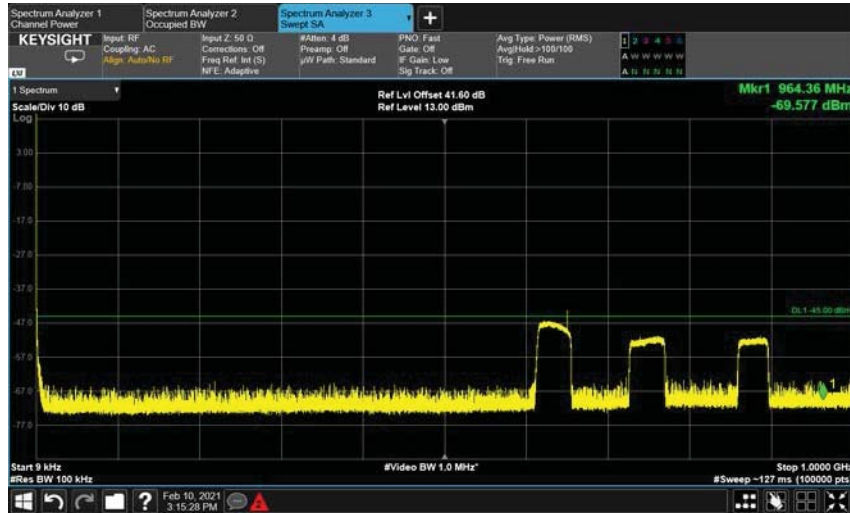


Figure 144. — 0009.0MHz-1000.0MHz –QPSK,30KHz-5G



Figure 145. — 1000.0MHz-2345.0MHz –QPSK,30KHz-5G



Figure 146. — 2345.0MHz-2349.0MHz –QPSK,30KHz-5G



Figure 147. — 2361.0MHz-2362.5MHz –QPSK,30KHz-5G



Figure 148. — 2362.5MHz-2365.0MHz –QPSK,30KHz-5G



Figure 149. — 2365.0MHz-4000.0MHz –QPSK,30KHz-5G



Figure 150. — 4000.0MHz-24000.0MHz –QPSK,30KHz-5G

### 9.5 Test Equipment Used; Spurious Emissions at Antenna Terminals

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 48 Test Equipment Used



## 10. Spurious Emissions at Antenna Terminals - 4G and 5G

### 10.1 Test Specification

FCC Part 27, Section: 53(a)(1)

### 10.2 Test Procedure

(Temperature (22°C)/ Humidity (40%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (max loss 37.0 dB).

Testing was performed in the 9K-24GHz frequency band without band edges tests, and for each modulation separately.

### 10.3 Test Limit

The power of any emission outside of the authorized operating frequency ranges (2345-2360 MHz) must be attenuated below the transmitting power (P) by a factor of at least as specified in this section.

Frequency Band (MHz)	Calculated Factor (dBc)
$f < 2285.0$	$75 + 10 * \log(6.31) = 83.0$
$2285.0 \text{ MHz} < f < 2287.5 \text{ MHz}$	$72 + 10 * \log(6.31) = 80.0$
$2287.5 \text{ MHz} < f < 2300.0 \text{ MHz}$	$70 + 10 * \log(6.31) = 78.0$
$2300.0 \text{ MHz} < f < 2305.0 \text{ MHz}$	$43 + 10 * \log(6.31) = 51.0$
$2305.0 \text{ MHz} < f < 2320.0 \text{ MHz}$	$43 + 10 * \log(6.31) = 51.0$
$2320.0 \text{ MHz} < f < 2345.0 \text{ MHz}$	$75 + 10 * \log(6.31) = 83.0$
$2345.0 \text{ MHz} < f < 2360.0 \text{ MHz}$	$43 + 10 * \log(6.31) = 51.0$
$2360.0 \text{ MHz} < f < 2362.50 \text{ MHz}$	$43 + 10 * \log(6.31) = 51.0$
$2362.5 \text{ MHz} < f < 2365.0 \text{ MHz}$	$55 + 10 * \log(6.31) = 63.0$
$2365.0 \text{ MHz} < f < 2367.5 \text{ MHz}$	$70 + 10 * \log(6.31) = 78.0$
$2367.5 \text{ MHz} < f < 2370.0 \text{ MHz}$	$72 + 10 * \log(6.31) = 80.0$
$2370.0 < f$	$75 + 10 * \log(6.31) = 83.0$

Figure 151 Mask Limit Table

### 10.4 Test Results

JUDGEMENT: Passed

See additional information in *Figure 152* to *Figure 173*.





Figure 152. —9KHz-1000.0MHz —16QAM-4G



Figure 153. —9KHz-1000.0MHz —64QAM-4G

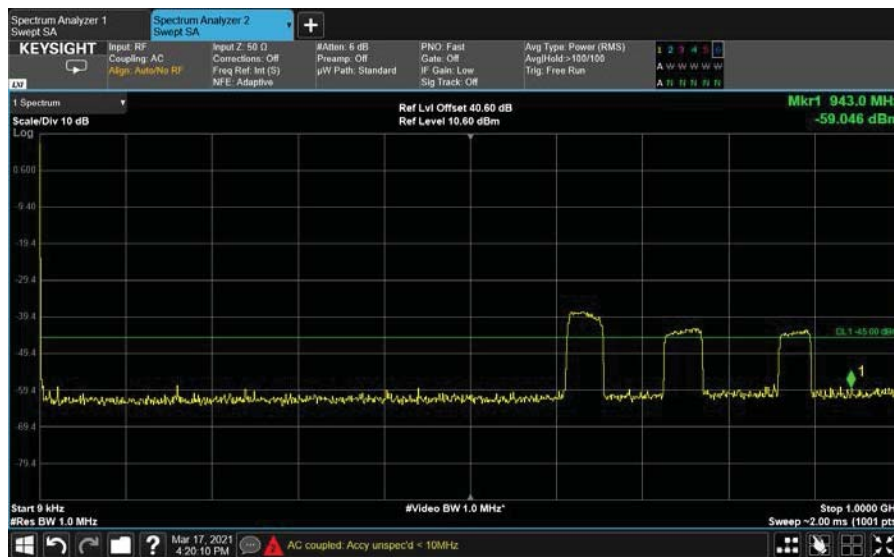


Figure 154. —9KHz-1000.0MHz —QPSK-4G



Figure 155. —1000.0MHz -2345.0MHz -16QAM-4G



Figure 156. —1000.0MHz -2345.0MHz -64QAM-4G



Figure 157. —1000.0MHz -2345.0MHz -QPSK-4G

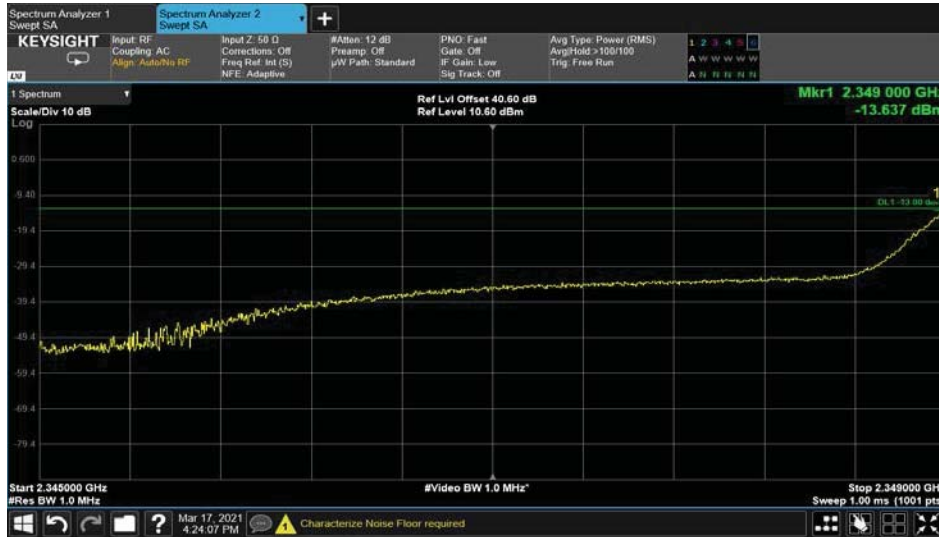


Figure 158. —2345.0MHz -2349.0MHz -16QAM-4G



Figure 159. —2345.0MHz -2349.0MHz -64QAM-4G



Figure 160. —2345.0MHz -2349.0MHz -QPSK-4G



Figure 161. —2361.0MHz -2362.5MHz -16QAM-4G



Figure 162. —2361.0MHz -2362.5MHz -64QAM-4G

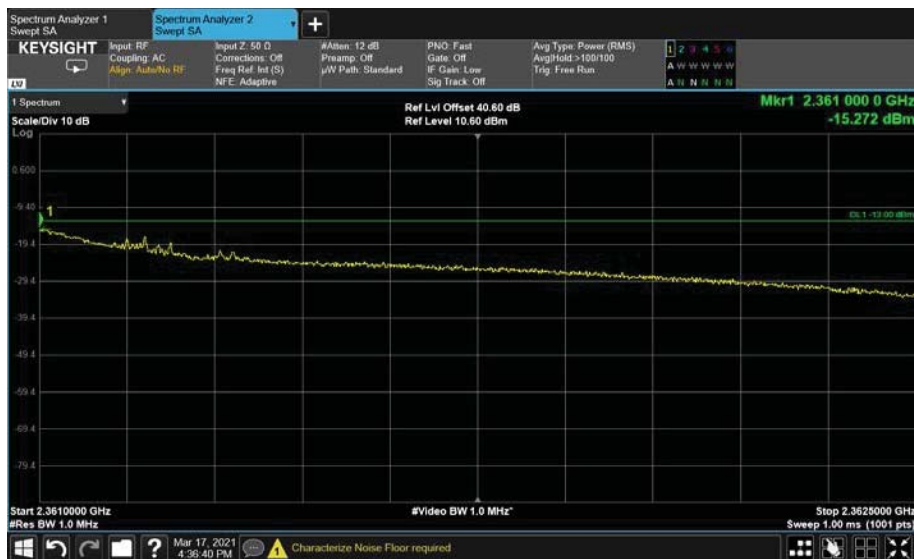


Figure 163. —2361.0MHz -2362.5MHz -QPSK-4G



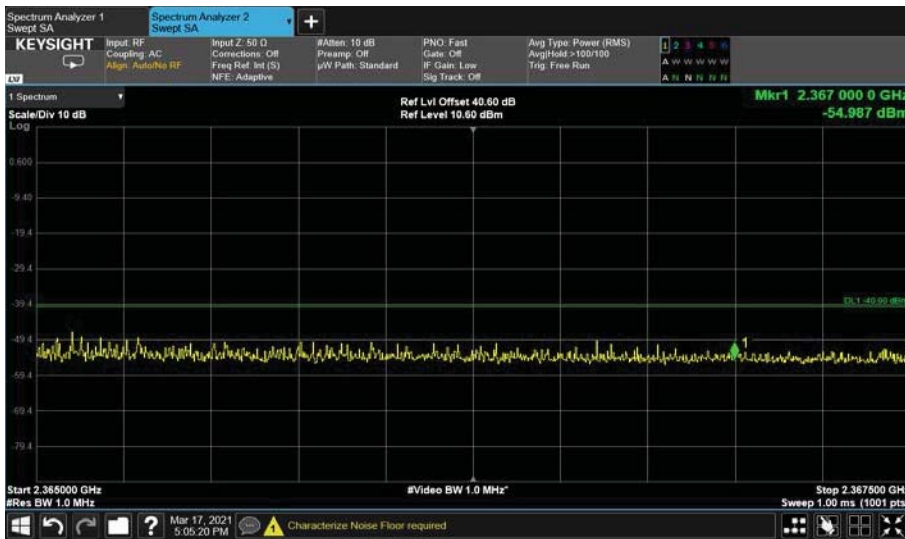
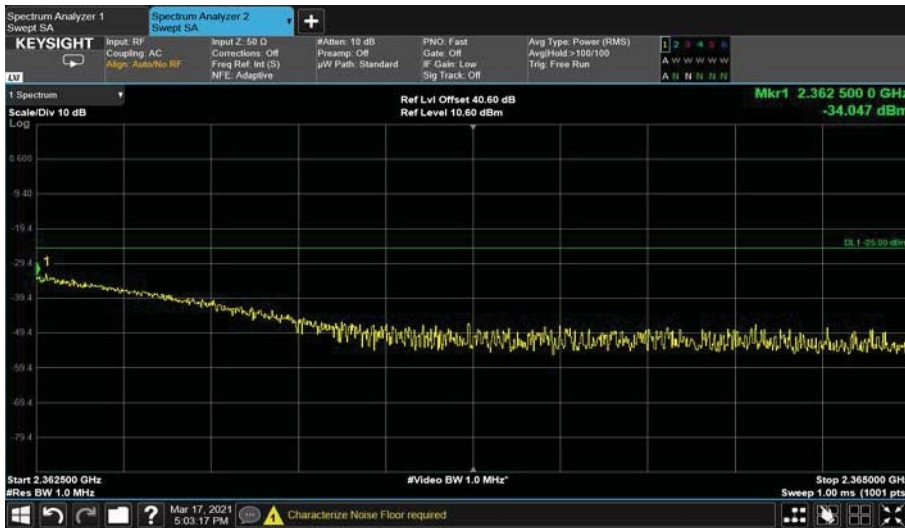




Figure 167. —2362.5MHz -2367.5MHz –QPSK-4G



Figure 168. —2367.5MHz -4000MHz –16QAM-4G



Figure 169. —2367.5MHz -4000MHz –64QAM-4G



Figure 170. —2367.5MHz -4000MHz –QPSK-4G



Figure 171. —4000MHz -24000MHz –16QAM-4G



Figure 172. —4000MHz -24000MHz –64QAM-4G



Figure 173. —4000MHz -24000MHz –QPSK-4G

### 10.5 Test Equipment Used; Spurious Emissions at Antenna Terminals

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 49 Test Equipment Used





## 11. Spurious Radiated Emission 4G and 5G

### 11.1 Test Specification

FCC, Part 27, Subpart C, Section 27.53 (a)(1)

### 11.2 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( substitution method)

#### **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, 1.5 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-25.0GHz:**

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 -25.0GHz 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.

RMS 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.

### 11.3 Test Limit

The power of any emission outside of the authorized operating frequency ranges (2345-2360 MHz) must be attenuated below the transmitting power (P) by a factor of at least as specified in this section.

Frequency Band (MHz)	Calculated Factor (dBc)
f<2285.0	$75+10*\log(6.31)=83.0$
2285.0MHz<f<2287.5MHz	$72+10*\log(6.31)=80.0$
2287.5MHz<f<2300.0MHz	$70+10*\log(6.31)=78.0$
2300.0MHz<f<2305.0MHz	$43+10*\log(6.31)=51.0$
2305.0MHz<f<2320.0MHz	$43+10*\log(6.31)=51.0$
2320.0MHz<f<2345.0MHz	$75+10*\log(6.31)=83.0$
2345.0MHz<f<2360.0MHz	$43+10*\log(6.31)=51.0$
2360.0MHz<f<2362.50MHz	$43+10*\log(6.31)=51.0$
2362.5MHz<f<2365.0MHz	$55+10*\log(6.31)=63.0$
2365.0MHz<f<2367.5MHz	$70+10*\log(6.31)=78.0$
2367.5MHz<f<2370.0MHz	$72+10*\log(6.31)=80.0$
2370.0<f	$75+10*\log(6.31)=83.0$

Figure 174 Mask Limit Table

### 11.4 Test Results

JUDGEMENT: Passed

For additional information see Figure 175 and Figure 176.



Carrier Channel	Freq.	Antenna Pol.	Maximum Peak Level	Signal Generator RF Output	Cable Loss	Antenna Gain	Effective Radiated Power Level	Limit	Margin
(MHz)	(MHz)	(V/H)	(dB $\mu$ V/m)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)
2355.0 (QPSK/5M)	4710.0	V	41.0	-64.0	1.0	10.5	-54.5	-45.0	-9.5
	4710.0	H	40.6	-64.0	1.0	10.5	-54.5	-45.0	-9.5
2355.0 (64QAM/5M)	4710.0	V	41.5	-63.0	1.0	10.5	-53.5	-45.0	-8.5
	4710.0	H	40.0	-64.5	1.0	10.5	-55.0	-45.0	-10.0
2355.0 (16QAM/5M)	4710.0	V	41.1	-64.0	1.0	10.5	-54.5	-45.0	-9.5
	4710.0	H	40.3	-64.0	1.0	10.5	-54.5	-45.0	-9.5

**Figure 175 Spurious Emission Tabular, 4G Mode**

Carrier Channel	Freq.	Antenna Pol.	Maximum Peak Level	Signal Generator RF Output	Cable Loss	Antenna Gain	Effective Radiated Power Level	Limit	Margin
(MHz)	(MHz)	(V/H)	(dB $\mu$ V/m)	(dBm)	(dB)	(dBd)	(dBm)	(dBm)	(dB)
2355.0 (QPSK/5M)	4710.0	V	40.2	-65.0	1.0	10.5	-55.5	-45.0	-10.5
	4710.0	H	39.7	-64.5	1.0	10.5	-55.0	-45.0	-10.0
2355.0 (64QAM/5M)	4710.0	V	40.9	-64.0	1.0	10.5	-54.5	-45.0	-9.5
	4710.0	H	40.3	-64.5	1.0	10.5	-55.0	-45.0	-10.0
2355.0 (16QAM/5M)	4710.0	V	40.5	-65.0	1.0	10.5	-55.5	-45.0	-10.5
	4710.0	H	40.0	-64.5	1.0	10.5	-55.0	-45.0	-10.0

**Figure 176 Spurious Emission Tabular, 5G Mode**

*Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*

*“Peak Amp” includes correction factor.*

\* “Correction Factor” = Antenna Factor + Cable Loss- Low Noise Amplifier



### 11.5 Test Instrumentation Used; Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
EMI Receiver	HP	8542E	3906A00276	March 11, 2020	March 31, 2021
RF Filter Section	HP	85420E	3705A00248	March 11, 2020	March 31, 2021
EMI Receiver	R&S	ESCI7	100724	March 9, 2020	March 31, 2021
Spectrum Analyzer	HP	8593EM	3826A00265	March 9, 2020	March 31, 2021
Active Loop Antenna	EMCO	6502	9506-2950	February 5, 2019	February 28, 2021
Antenna Biconical	EMCO	3110B	9912-3337	May 21, 2019	May 31, 2021
Antenna Log Periodic	EMCO	3146	9505-4081	May 31, 2018	May 31, 2021
Horn Antenna 1G-18G	ETS	3115	29845	May 31, 2018	May 31, 2021
Low Noise Amplifier	Narda	LNA-DBS-0411N313	013	August 23, 2020	August 31, 2021
Low Noise Amplifier	Sophia Wireless	LNA 28-B	232	August 24, 2020	August 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
Antenna Mast	ETS	2070-2	-	NCR	NCR
Turntable	ETS	2087	-	NCR	NCR
Mast & Table Controller	ETS/EMCO	2090	9608-1456	NCR	NCR

**Table 50 Test Equipment Used**



## 12. Out-of-Band Rejection

### 12.1 Test Specification

KDB 935210 D05 v01r01, Section 3.3

### 12.2 Test Procedure

(Temperature (21°C)/ Humidity (50%RH))

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (max Loss= 41.6 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  $\geq 3 \times \text{RBW}$ .

### 12.3 Test Limit

N/A

### 12.4 Test Results

JUDGEMENT: Passed

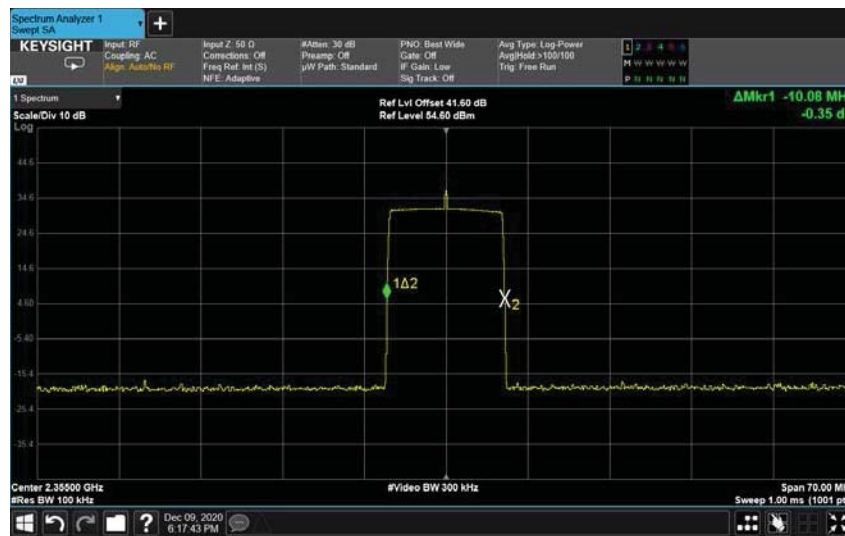


Figure 177. — Out-of-Band Rejection Plot



### 12.5 Test Equipment Used; Out-of-Band Rejection

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 51 Test Equipment Used



## 13. APPENDIX A - CORRECTION FACTORS

### 13.1 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



**13.2 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





**13.3 Correction factors for**

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

<b>FREQUENCY (GHz)</b>	<b>AFE (dB /m)</b>	<b>Gain (dB1)</b>
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



**13.4 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



**13.5 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



**13.6 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



**13.7 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