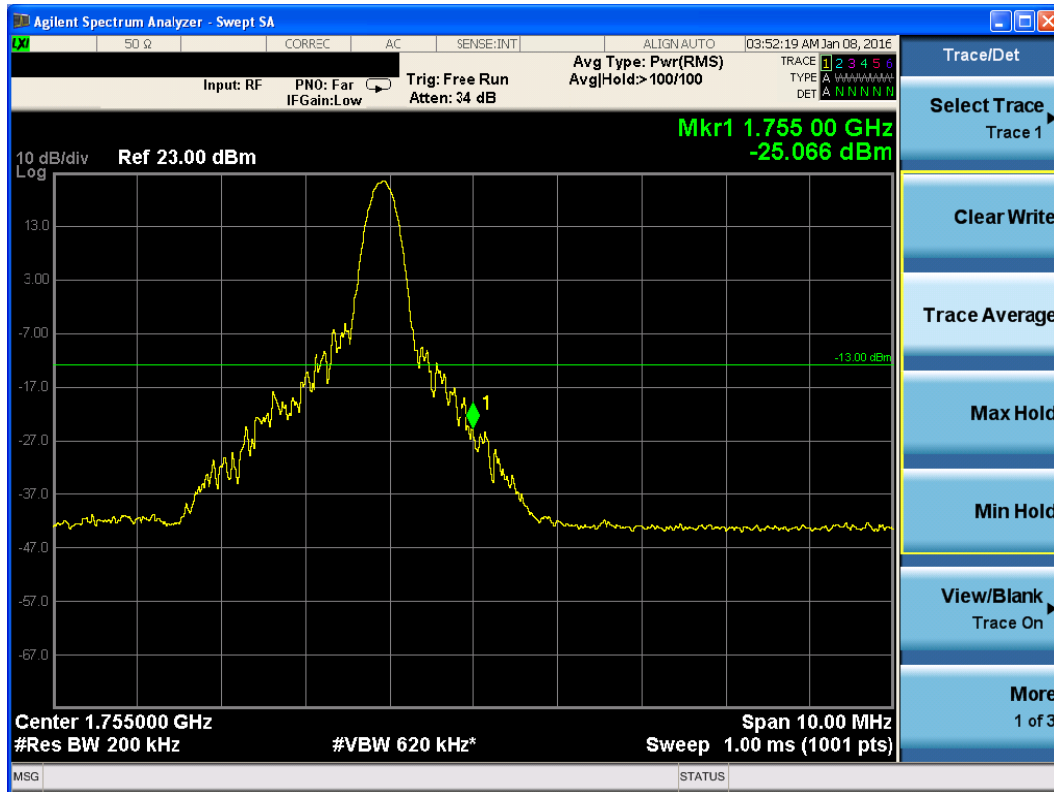
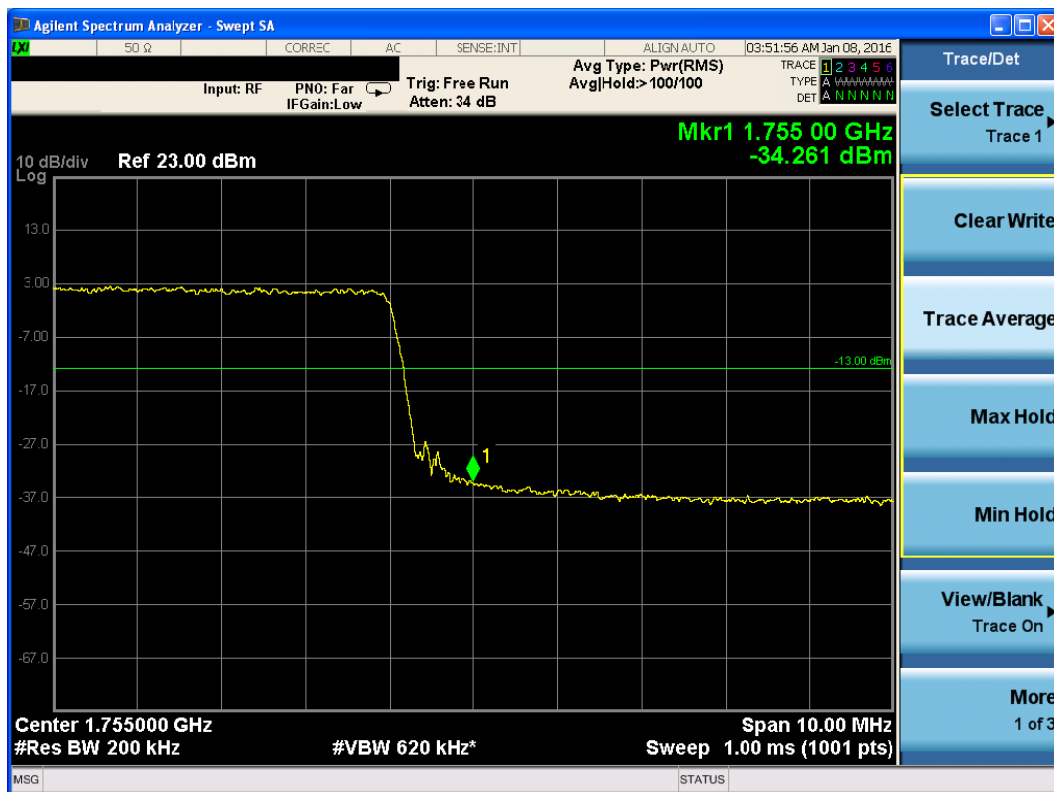
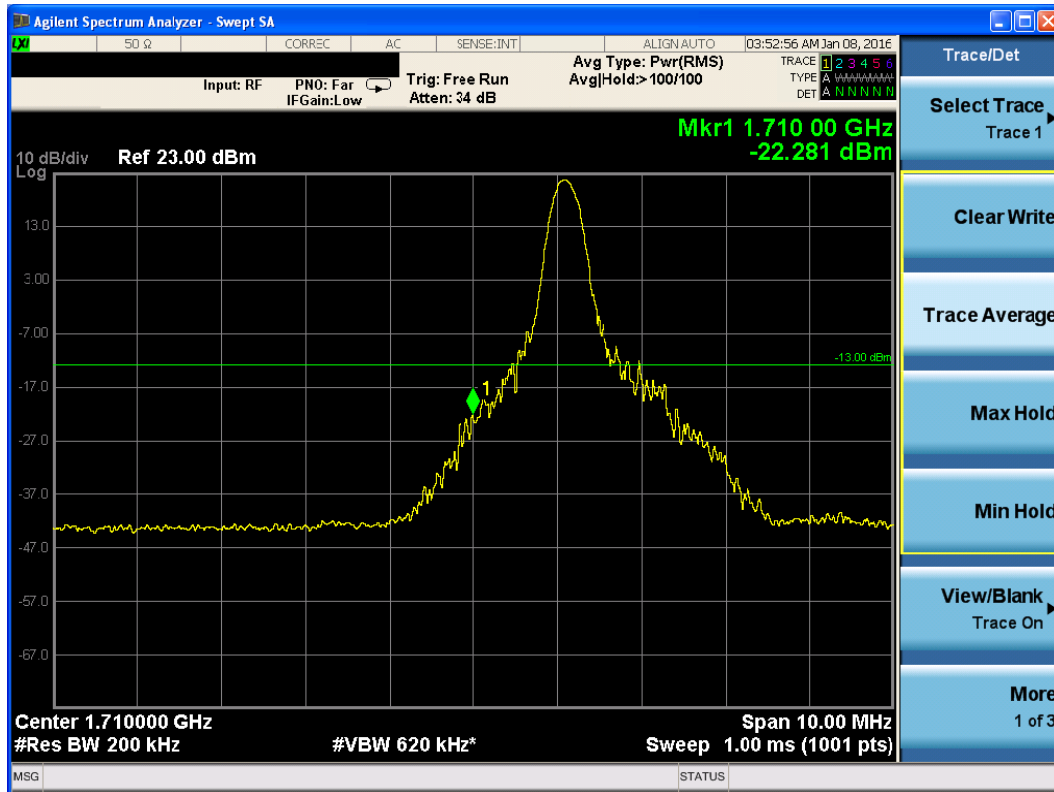




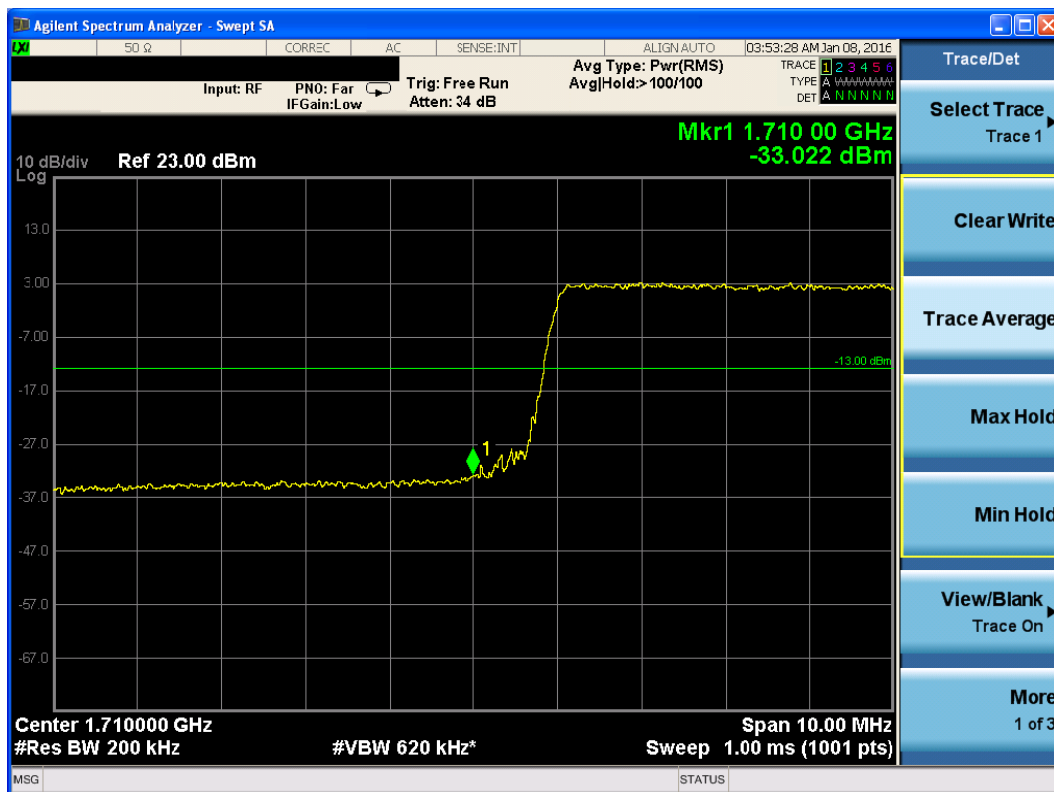
LTE Band 4 QPSK Bandwidth = 20MHz CH20300, RB 1



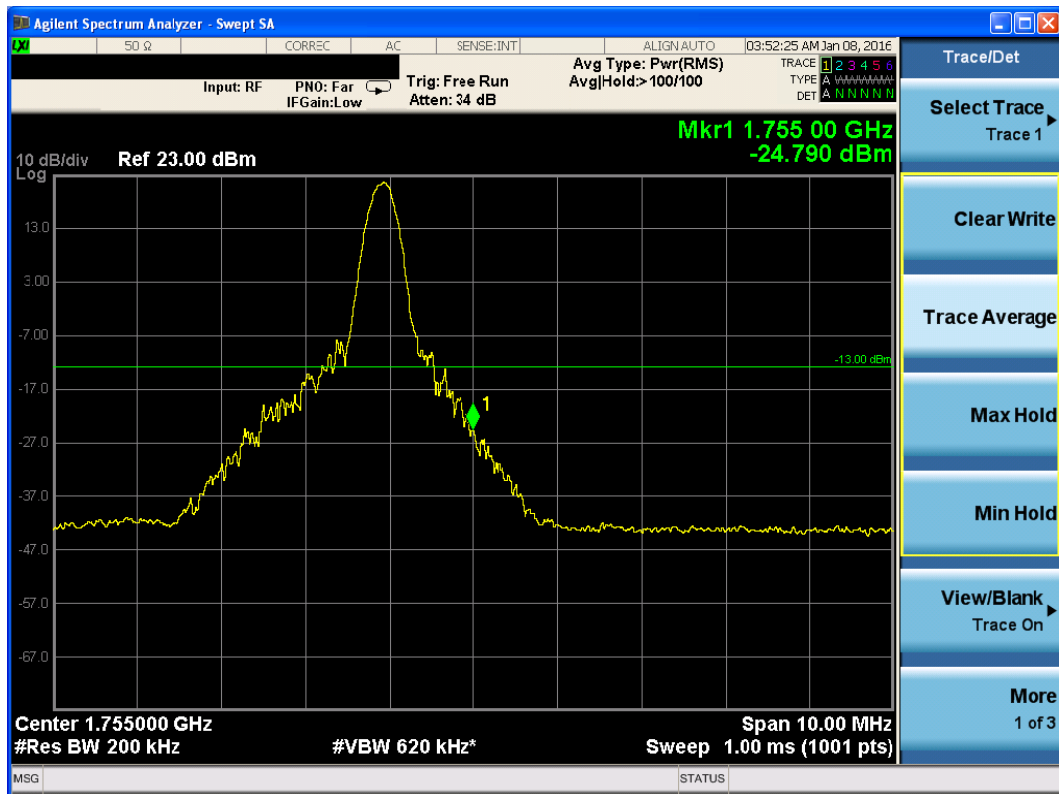
LTE Band 4 QPSK Bandwidth = 20MHz CH20300, RB 100



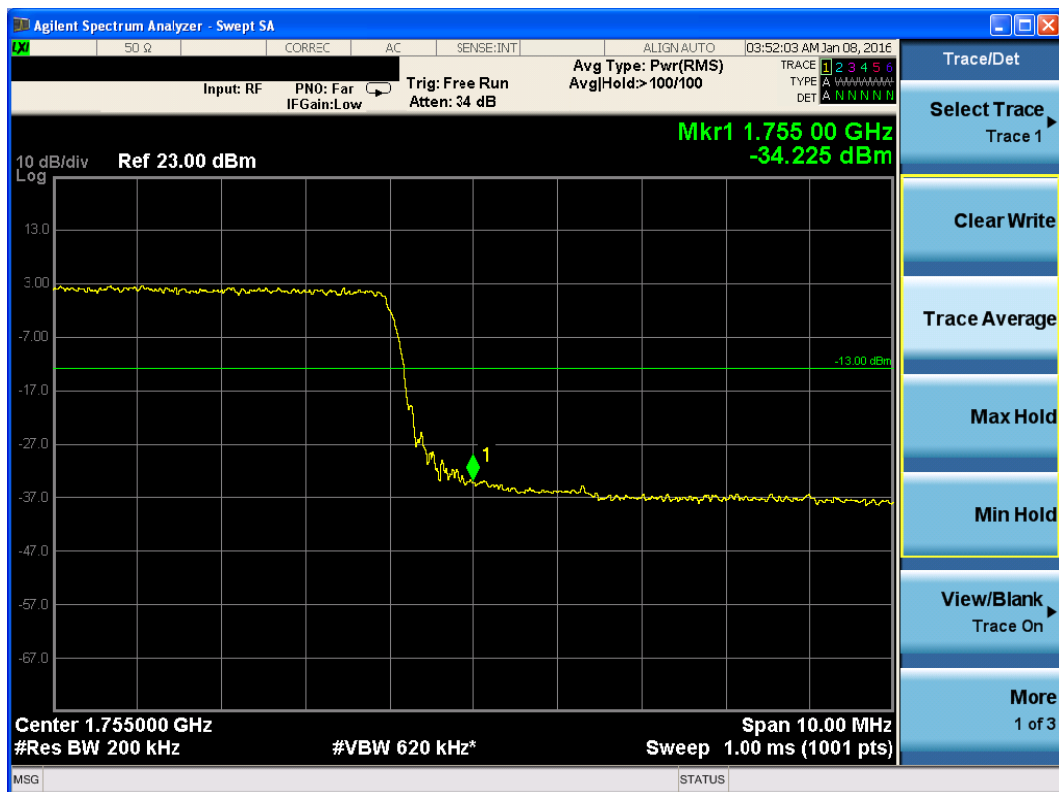
LTE Band 4 16QAM Bandwidth = 20MHz CH20050, RB 1



LTE Band 4 16QAM Bandwidth = 20MHz CH20050, RB 100

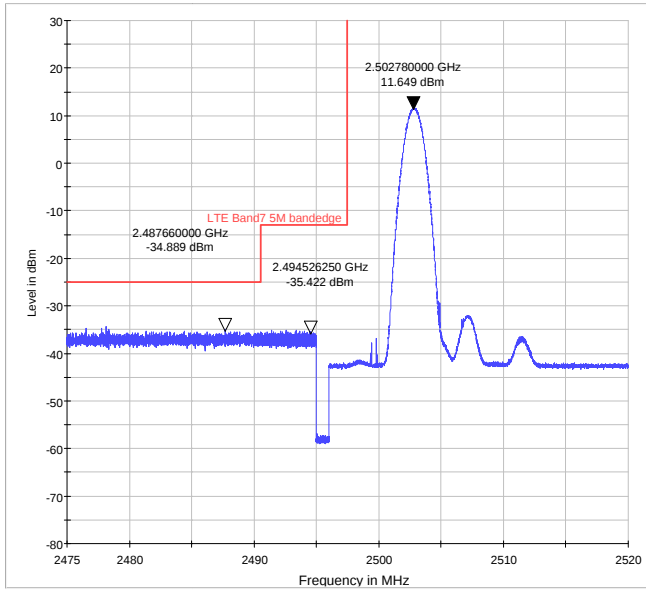


LTE Band 4 16QAM Bandwidth = 20MHz CH20300, RB 1

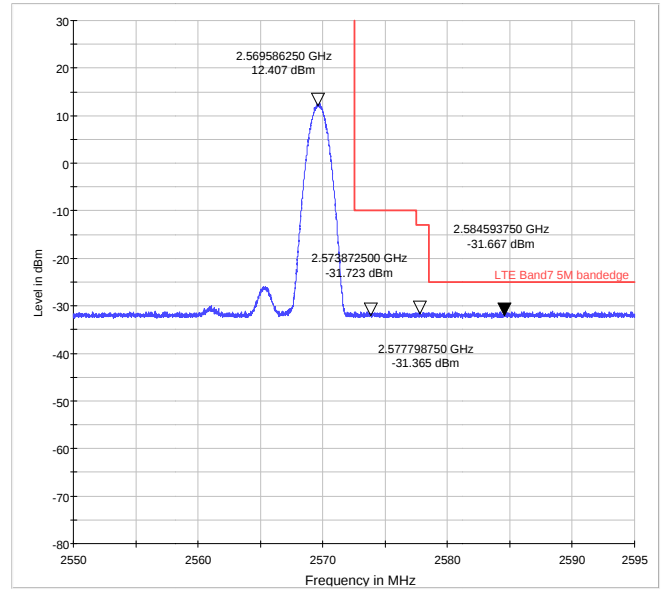


LTE Band 4 16QAM Bandwidth = 20MHz CH20300, RB 100

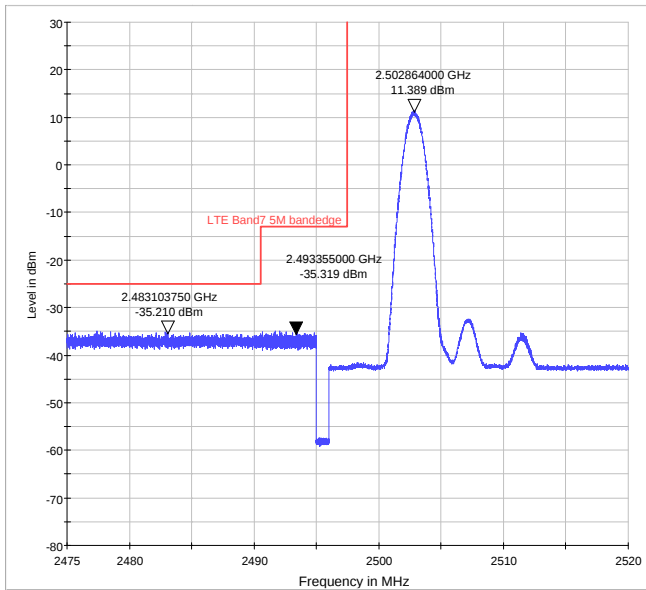
LTE Band 7 QPSK Bandwidth = 5MHz CH LOW, RB 1



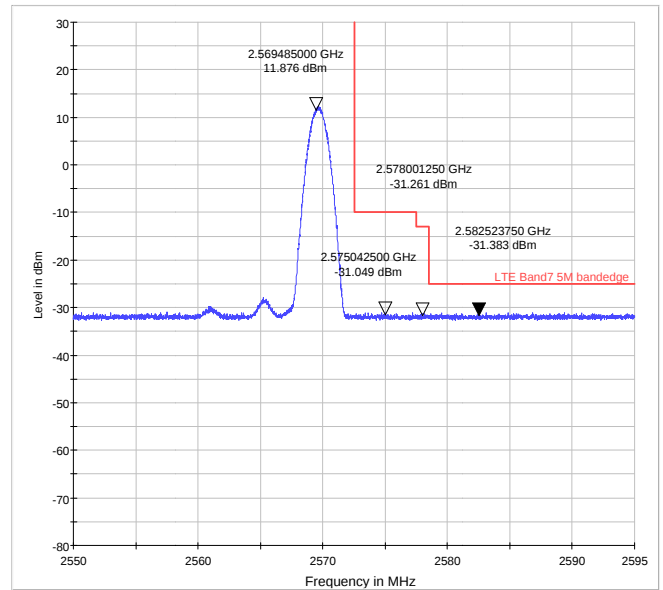
LTE Band 7 QPSK Bandwidth = 5MHz CH HIGH, RB 1



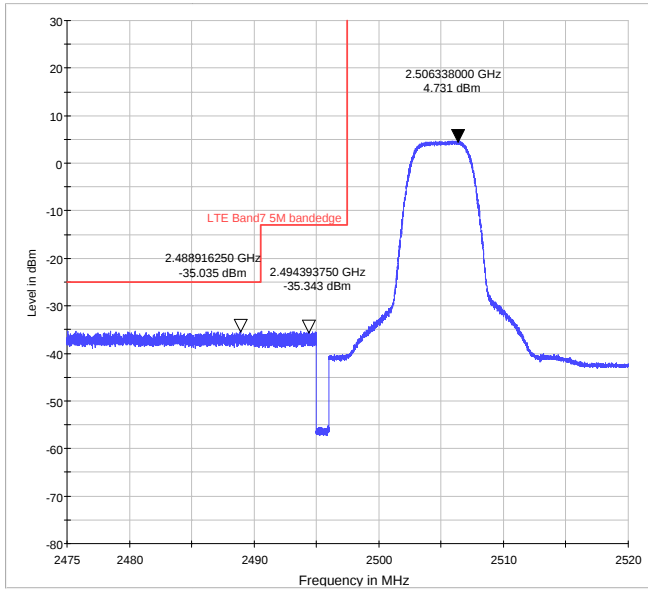
LTE Band 7 16QAM Bandwidth = 5MHz CH LOW, RB 1



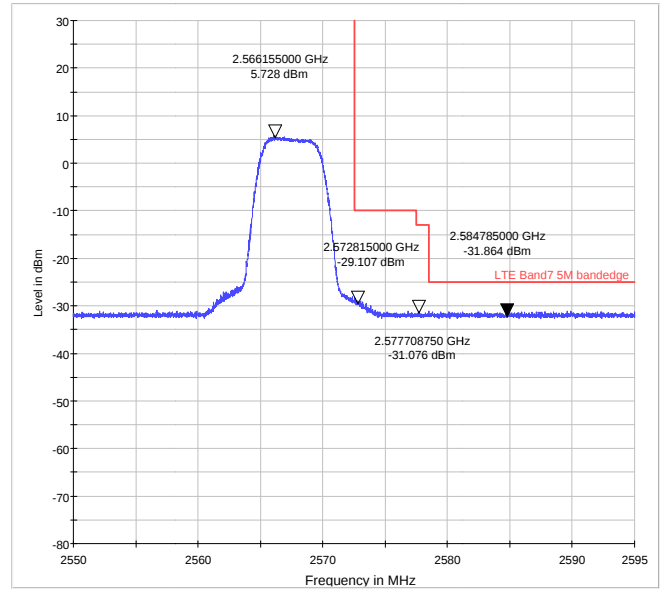
LTE Band 7 16QAM Bandwidth = 5MHz CH HIGH, RB 1



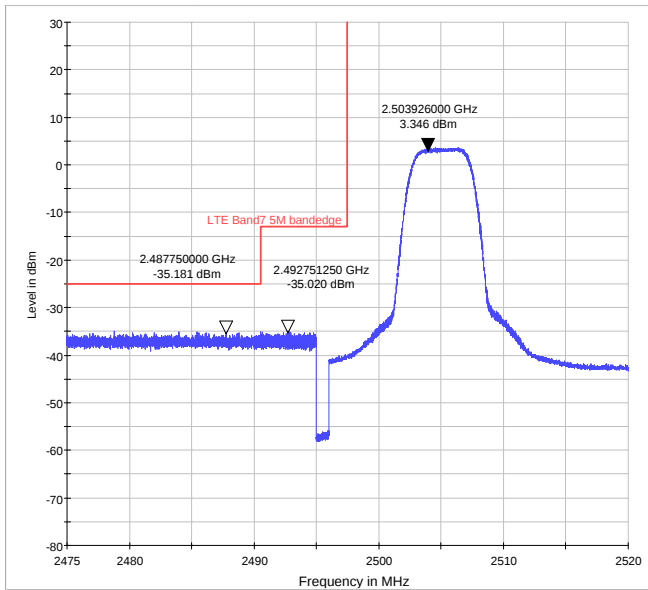
LTE Band 7 QPSK Bandwidth = 5MHz CH LOW, RB 25



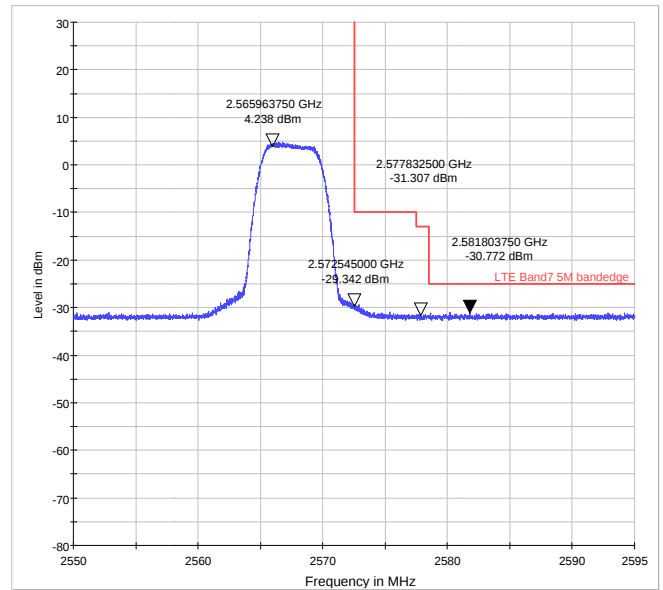
LTE Band 7 QPSK Bandwidth = 5MHz CH HIGH, RB 25



LTE Band 7 16QAM Bandwidth = 5MHz CH LOW, RB 25

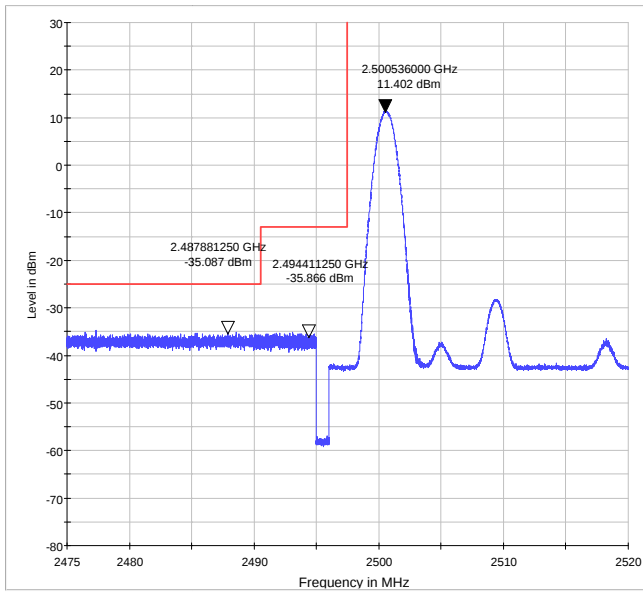


LTE Band 7 16QAM Bandwidth = 5MHz CH HIGH, RB 25

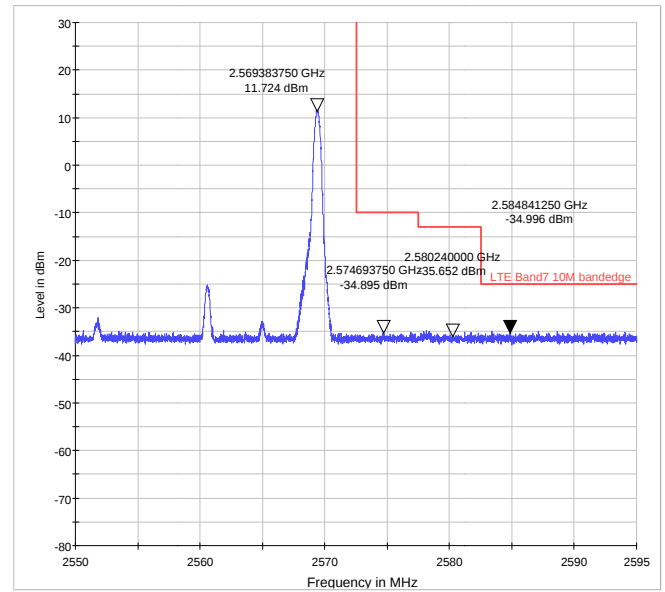




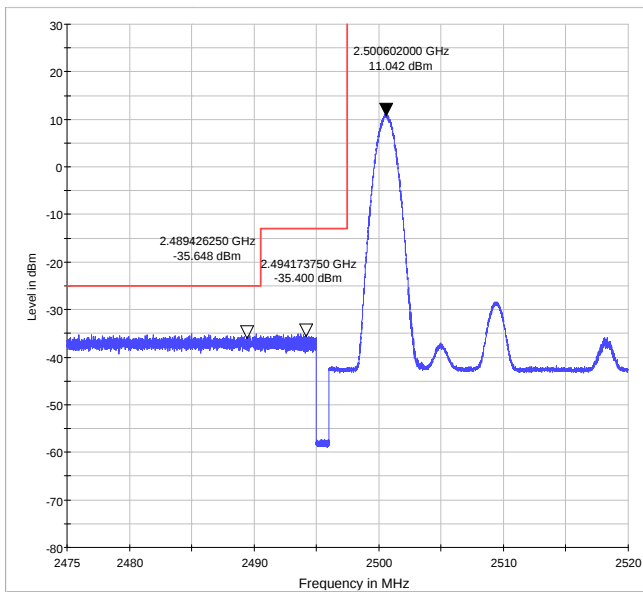
LTE Band 7 QPSK Bandwidth = 10MHz CH LOW, RB 1



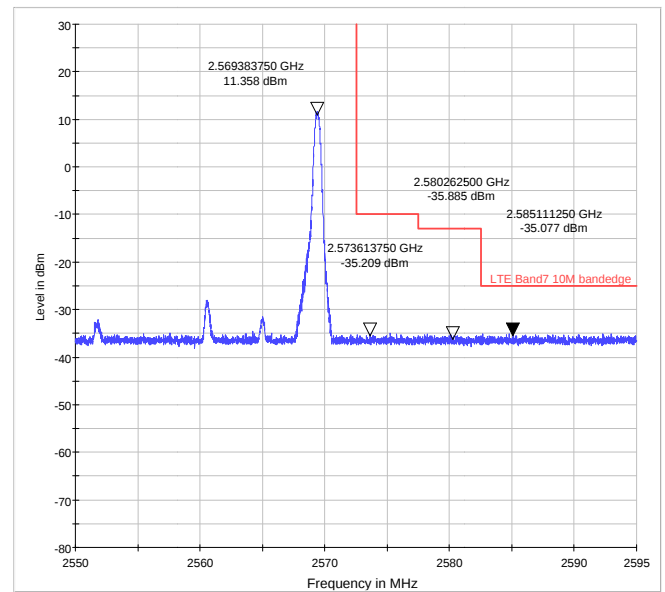
LTE Band 7 QPSK Bandwidth = 10MHz CH HIGH, RB 1



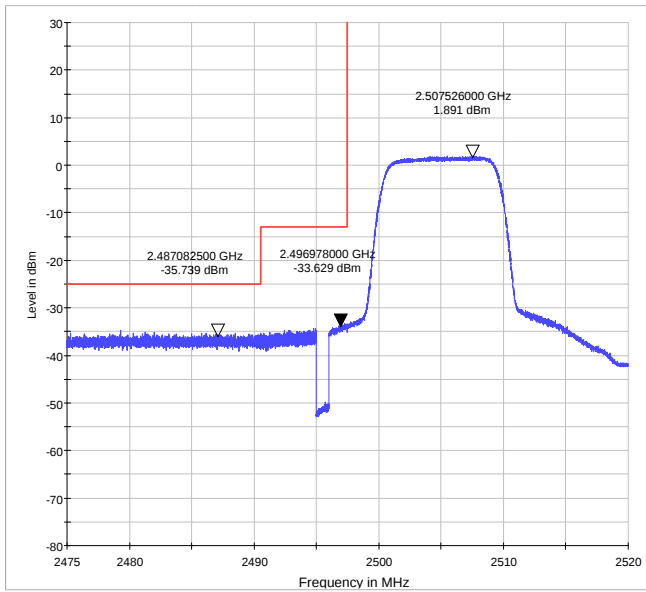
LTE Band 7 16QAM Bandwidth=10MHz CH LOW, RB 1



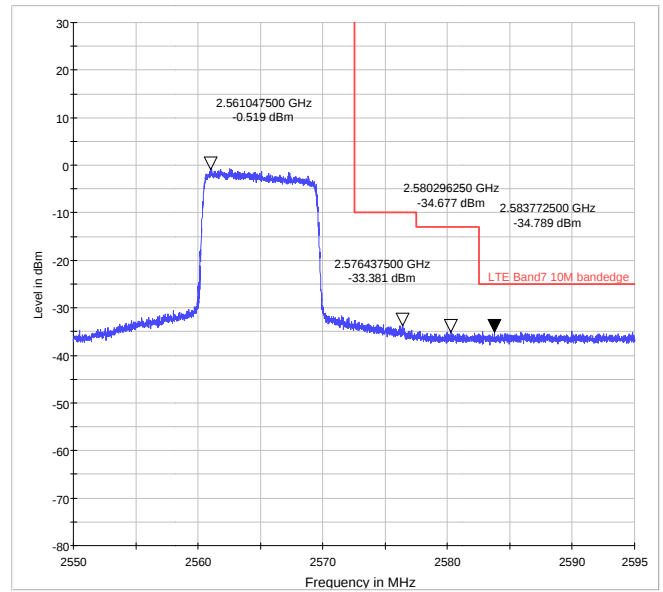
LTE Band 7 16QAM Bandwidth = 10MHz CH HIGH, RB 1



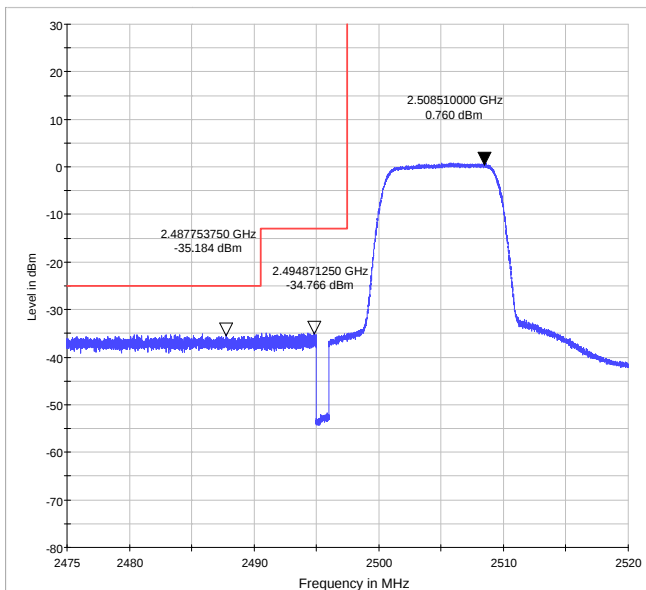
LTE Band 7 QPSK Bandwidth = 10MHz CH LOW, RB 50



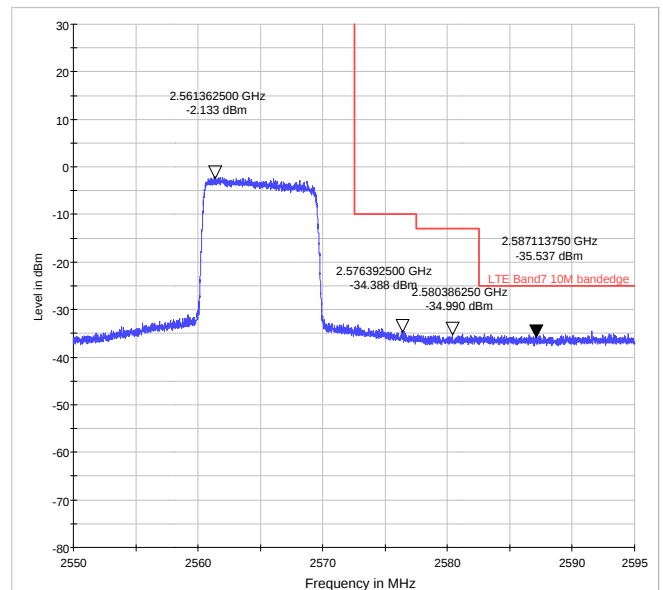
LTE Band 7 QPSK Bandwidth = 10MHz CH HIGH, RB 50



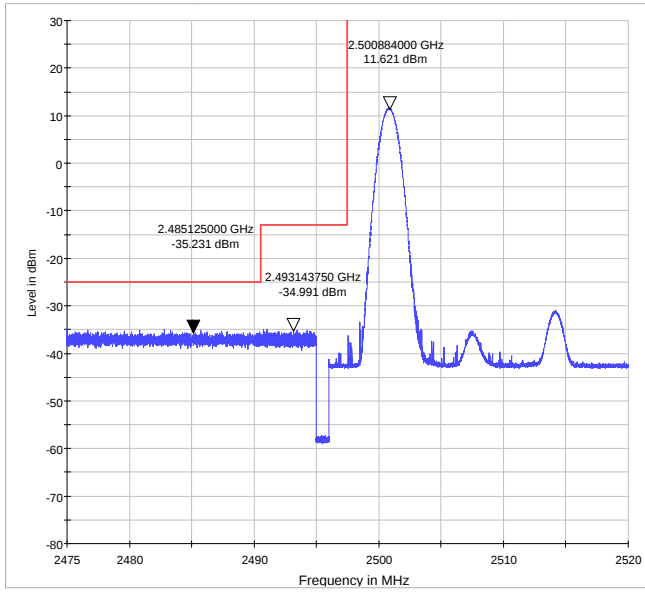
LTE Band 7 16QAM Bandwidth = 10MHz CH LOW, RB 50



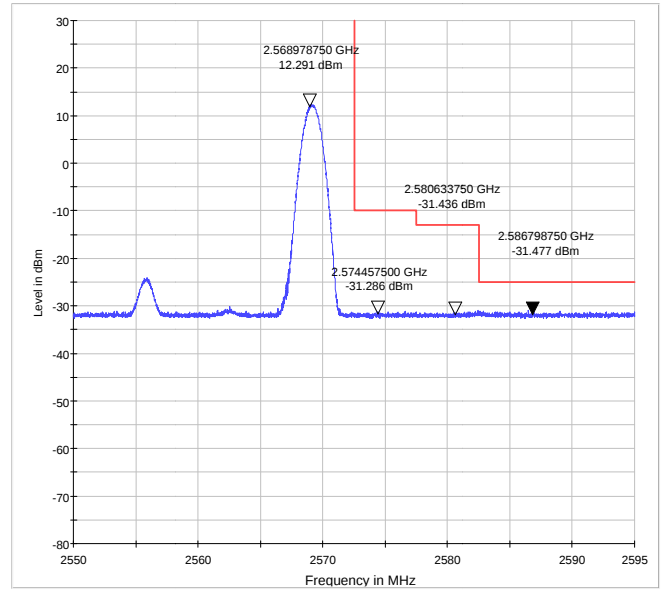
LTE Band 7 16QAM Bandwidth = 10MHz CH HIGH, RB 50



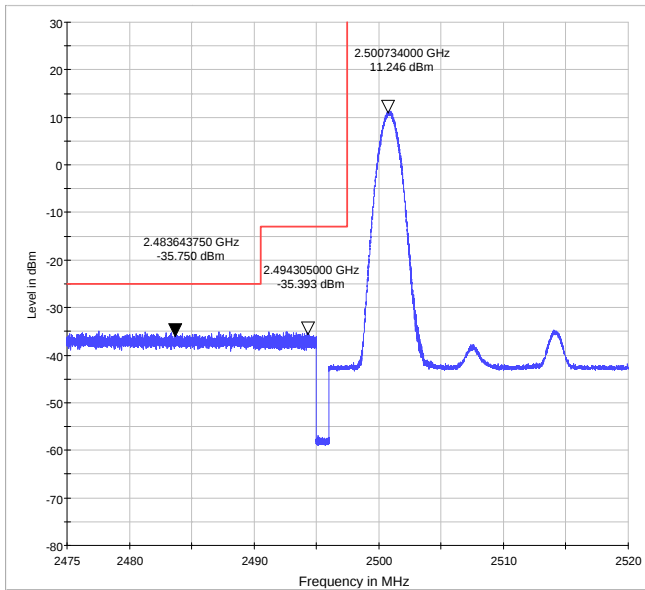
LTE Band 7 QPSK Bandwidth = 15MHz CH LOW, RB 1



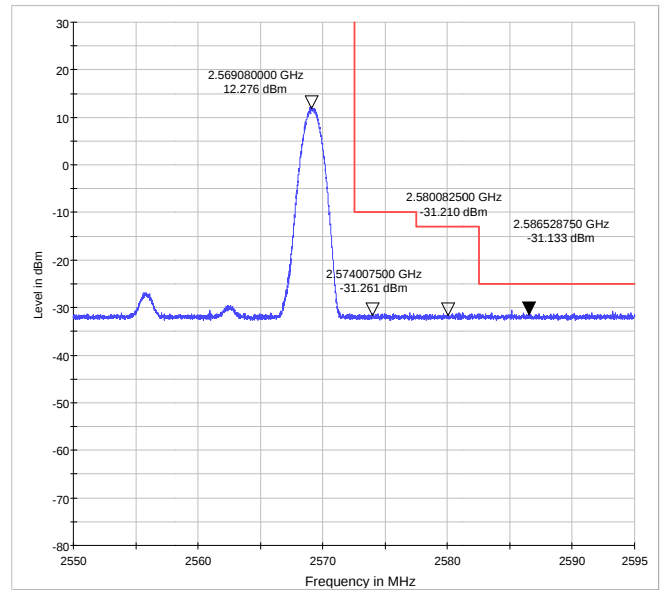
LTE Band 7 QPSK Bandwidth = 15MHz CH HIGH, RB 1



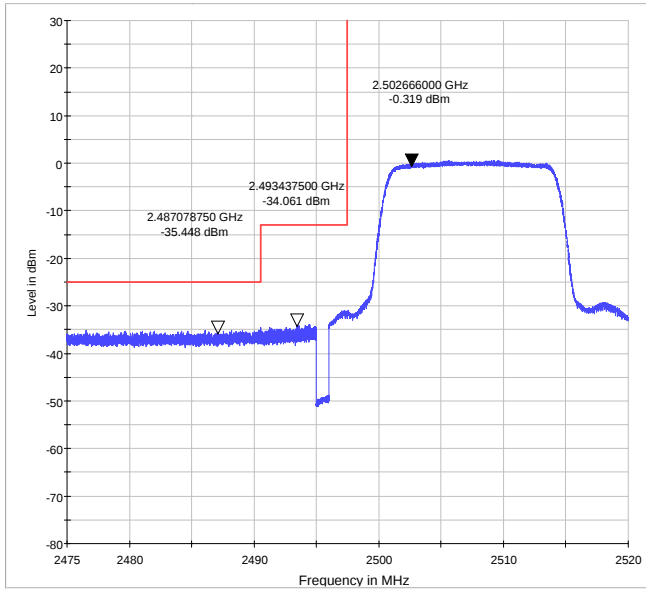
LTE Band 7 16QAM Bandwidth = 15MHz CH LOW, RB 1



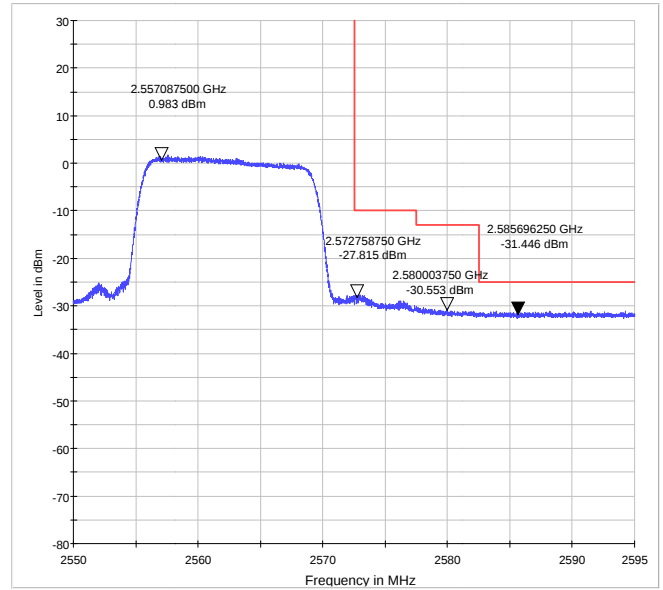
LTE Band 7 16QAM Bandwidth = 15MHz CH HIGH, RB 1



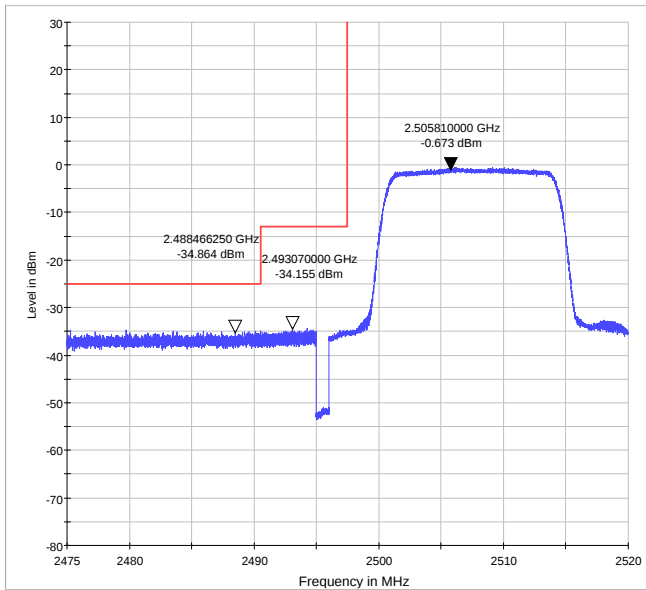
LTE Band 7 QPSK Bandwidth = 15MHz CH LOW, RB 75



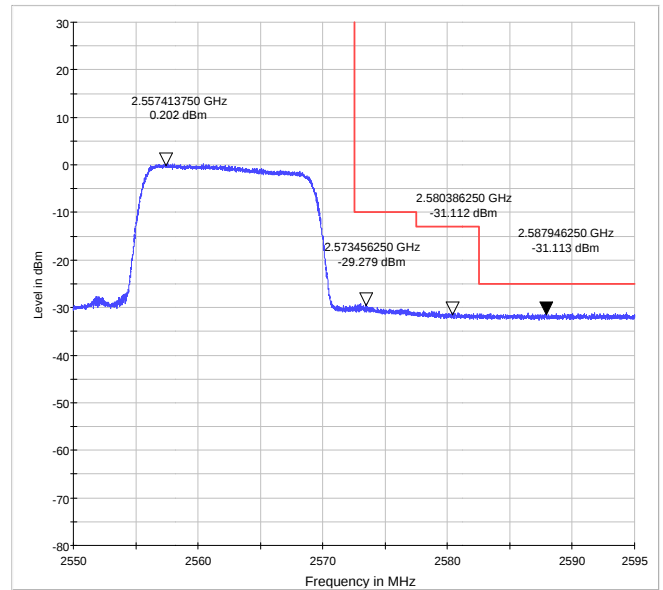
LTE Band 7 QPSK Bandwidth = 15MHz CH HIGH, RB 75



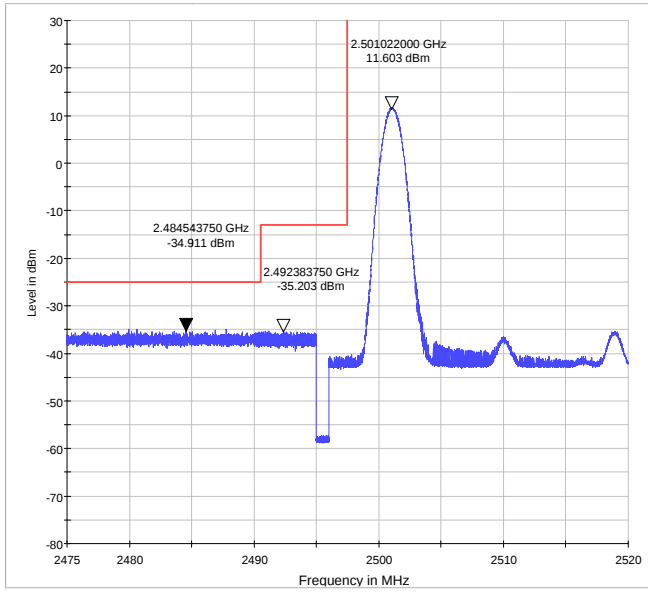
LTE Band 7 16QAM Bandwidth = 15MHz CH LOW, RB 75



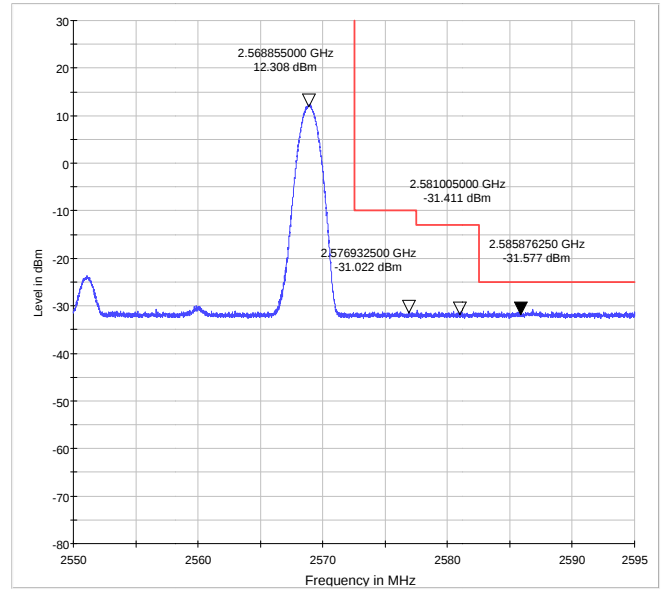
LTE Band 7 16QAM Bandwidth = 15MHz CH HIGH, RB 75



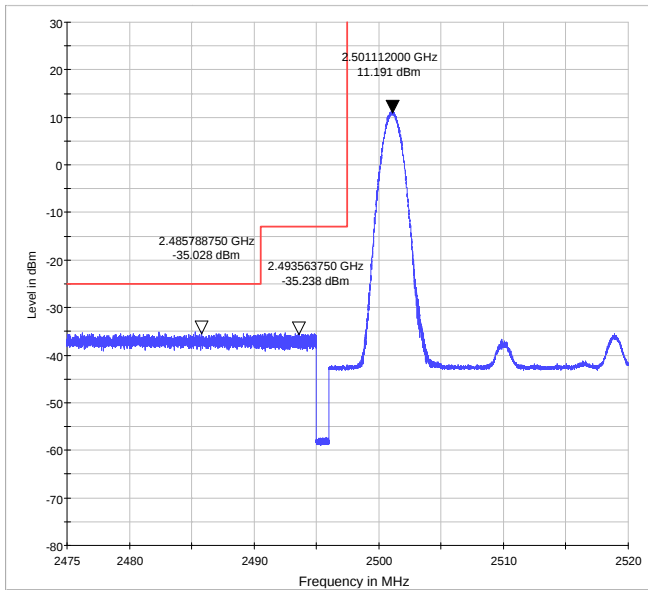
LTE Band 7 QPSK Bandwidth = 20MHz CH LOW, RB 1



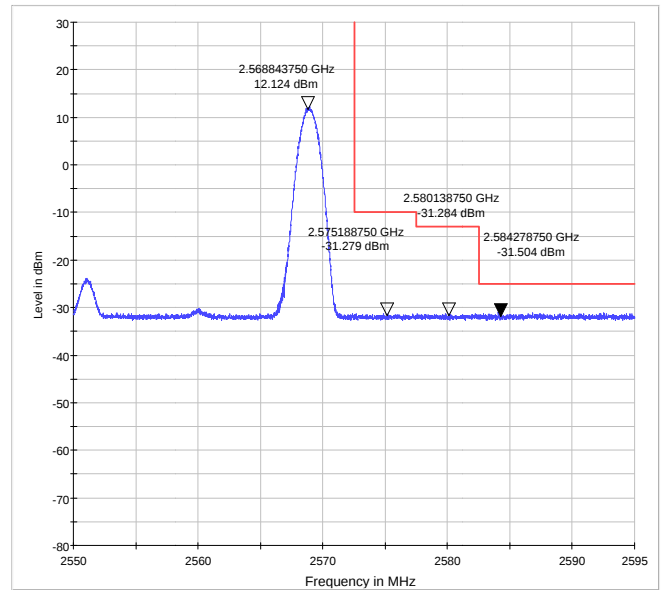
LTE Band 7 QPSK Bandwidth = 20MHz CH HIGH, RB 1



LTE Band 7 16QAM Bandwidth = 20MHz CH LOW, RB 1

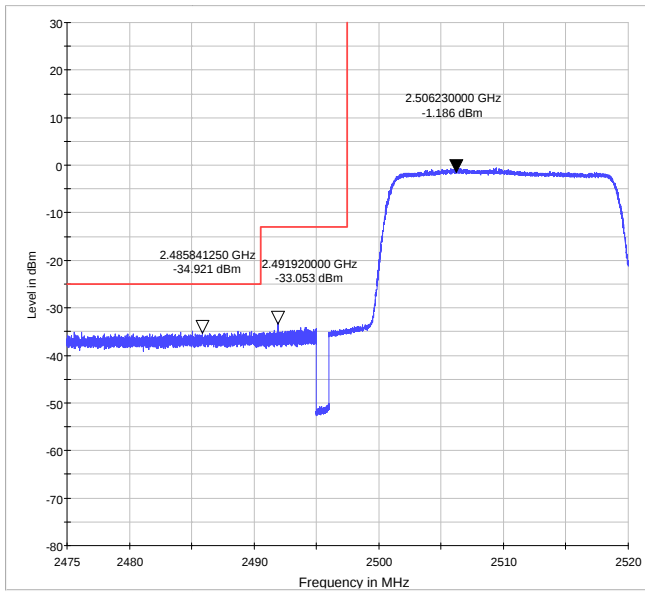


LTE Band 7 16QAM Bandwidth = 20MHz CH HIGH, RB 1

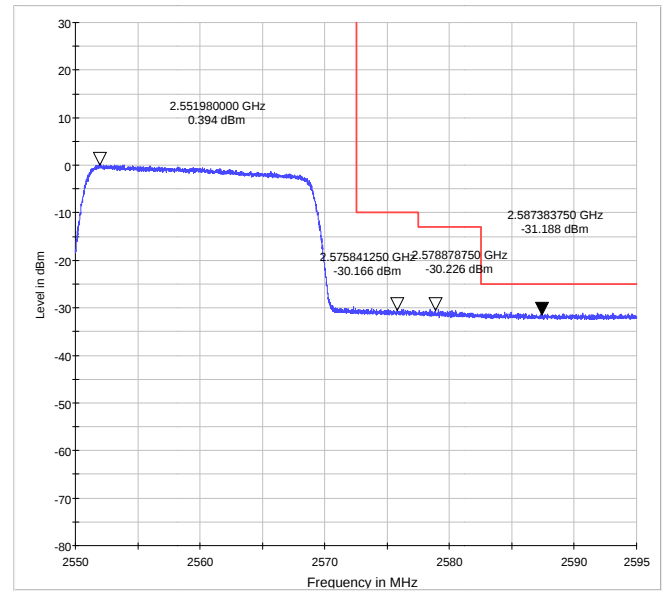




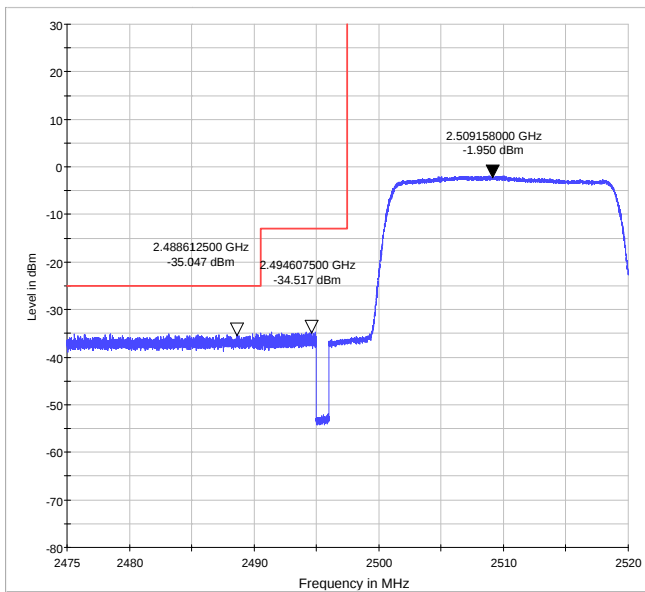
LTE Band 7 QPSK Bandwidth = 20MHz CH LOW, RB 100



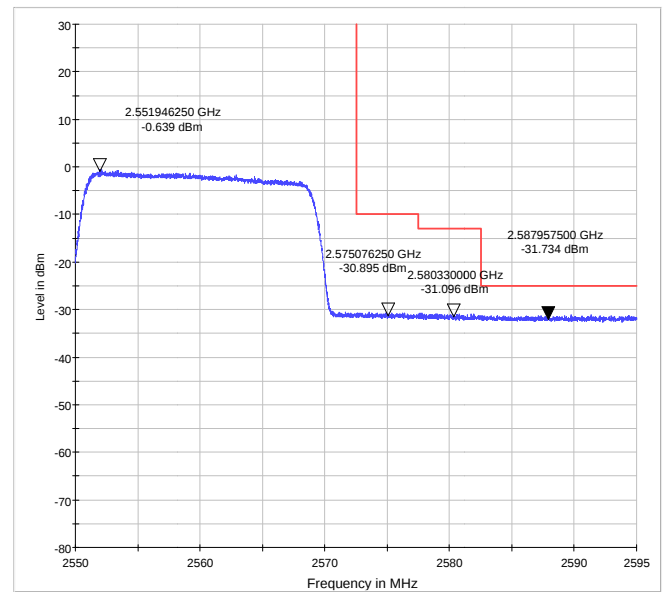
LTE Band 7 QPSK Bandwidth = 20MHz CH HIGH, RB 100



LTE Band 7 16QAM Bandwidth = 20MHz CH LOW, RB 100



LTE Band 7 16QAM Bandwidth = 20MHz CH HIGH, RB 100



4.5 Peak-to-Average Power Ratio (PAPR)

Ambient condition

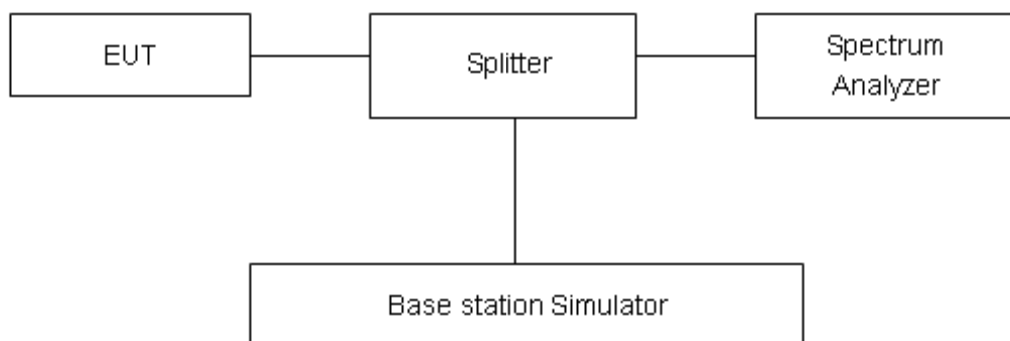
Temperature	Relative humidity
21°C ~25°C	40%~60%

Methods of Measurement

Measure the total peak power and record as PPk. And measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

$$\text{PAPR (dB)} = \text{PPk (dBm)} - \text{PAvg (dBm)}.$$

Test Setup



Limits

The peak-to-average ratio (PAR) of the transmission output power must not exceed 13 dB.in Part27.50 (a).

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for thenormal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.



Test Results

WCDMA Band IV	Channel	Frequency (MHz)	Peak(dBm)	Avg(dBm)	PAPR(dB)	Conclusion
RMC	1312	1712.4	24.27	21.56	2.71	PASS
	1413	1732.6	24.44	21.53	2.91	PASS
	1513	1752.6	24.11	21.32	2.79	PASS

LTE Band 4							
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Conclusion
QPSK	1.4	19957	1710.7	21.34	20.45	0.89	PASS
		20175	1732.5	20.78	20.33	0.45	PASS
		20393	1754.3	21.17	20.23	0.94	PASS
	3	19965	1711.5	21.30	20.36	0.94	PASS
		20175	1732.5	20.91	20.23	0.68	PASS
		20385	1753.5	21.05	20.14	0.91	PASS
	5	19975	1712.5	21.14	20.37	0.77	PASS
		20175	1732.5	20.74	20.25	0.49	PASS
		20375	1752.5	21.21	20.15	1.06	PASS
	10	20000	1715	21.46	20.40	1.06	PASS
		20175	1732.5	21.38	20.28	1.10	PASS
		20350	1750	20.31	20.18	0.13	PASS
	15	20025	1717.5	21.77	20.42	1.35	PASS
		20175	1732.5	21.45	20.29	1.16	PASS
		20325	1747.5	21.48	20.19	1.29	PASS
	20	20050	1720	21.61	20.44	1.17	PASS
		20175	1732.5	21.62	20.31	1.31	PASS
		20300	1745	21.53	20.21	1.32	PASS
16QAM	1.4	19957	1710.7	21.12	20.32	0.80	PASS
		20175	1732.5	20.25	19.37	0.88	PASS
		20393	1754.3	20.13	19.29	0.84	PASS
	3	19965	1711.5	21.03	20.23	0.80	PASS
		20175	1732.5	20.17	19.28	0.89	PASS
		20385	1753.5	20.02	19.20	0.82	PASS
	5	19975	1712.5	21.01	20.24	0.77	PASS
		20175	1732.5	20.42	19.29	1.13	PASS
		20375	1752.5	19.88	19.21	0.67	PASS
	10	20000	1715	21.41	20.27	1.14	PASS
		20175	1732.5	20.46	19.32	1.14	PASS
		20350	1750	20.41	19.24	1.17	PASS



	15	20025	1717.5	21.64	20.29	1.35	PASS
		20175	1732.5	20.59	19.34	1.25	PASS
		20325	1747.5	20.50	19.26	1.24	PASS
	20	20050	1720	21.48	20.31	1.17	PASS
		20175	1732.5	20.71	19.36	1.35	PASS
		20300	1745	20.50	19.28	1.22	PASS

LTE Band 7							
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Conclusion
QPSK	5	20775	2502.5	20.69	20.21	0.48	PASS
		21100	2535	20.75	20.02	0.73	PASS
		21425	2567.5	20.74	19.93	0.81	PASS
	10	20800	2505	21.31	20.24	1.07	PASS
		21100	2535	21.33	20.06	1.27	PASS
		21400	2565	21.21	19.96	1.25	PASS
	15	20825	2507.5	21.43	20.26	1.17	PASS
		21100	2535	21.43	20.08	1.35	PASS
		21375	2562.5	21.10	19.98	1.12	PASS
	20	20850	2510	21.55	20.27	1.28	PASS
		21100	2535	21.48	20.09	1.39	PASS
		21350	2560	21.21	20.00	1.21	PASS
16QAM	5	20775	2502.5	21.13	20.12	1.02	PASS
		21100	2535	20.91	20.14	0.77	PASS
		21425	2567.5	20.87	19.96	0.91	PASS
	10	20800	2505	21.37	20.15	1.22	PASS
		21100	2535	21.38	20.17	1.21	PASS
		21400	2565	20.98	19.99	0.99	PASS
	15	20825	2507.5	21.34	20.17	1.17	PASS
		21100	2535	21.55	20.19	1.36	PASS
		21375	2562.5	21.35	20.01	1.34	PASS
	20	20850	2510	21.42	20.18	1.24	PASS
		21100	2535	21.54	20.21	1.33	PASS
		21350	2560	21.22	20.03	1.19	PASS

4.6 Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from 0°C to +50°C in 10°C step size.

(1)With all power removed, the temperature was decreased to 0°C and permitted to stabilize for three hours.

(2)Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from 0°C to +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

2. Frequency Stability (Voltage Variation)

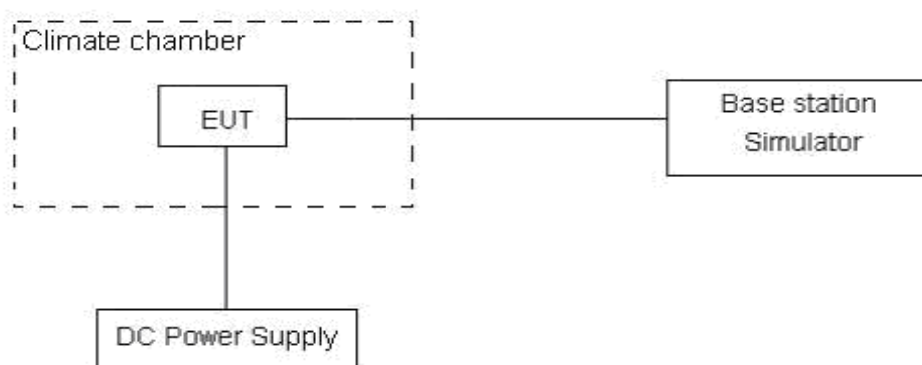
The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 3.6 V and 4.35 V, with a nominal voltage of 3.8V.

Test setup



Limits

No specific frequency stability requirements in part 27.54

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 3, U=0.01\text{ppm}$.

**Test Result**

WCDMA Band IV

Test status	WCDMA Band IV Channel 1413 RMC	
	Test Results (ppm)	Conclusion
0°C/3.8 V	-0.002186	PASS
10°C/3.8 V	-0.001828	PASS
20°C/3.8 V	-0.002727	PASS
30°C/3.8 V	-0.002496	PASS
40°C/3.8 V	-0.001997	PASS
50°C/3.8 V	-0.002563	PASS
20°C/3.6 V	-0.002357	PASS
20°C/4.35 V	-0.001653	PASS

Bandwidth	Test status	LTE Band 4 Channel 20175 Test Results (ppm)		
		QPSK	16QAM	Conclusion
1.4MHz	0°C/3.8 V	-0.00476	0.00520	PASS
	10°C/3.8 V	-0.00234	0.00249	PASS
	20°C/3.8 V	-0.00026	0.00029	PASS
	30°C/3.8 V	-0.00222	0.00237	PASS
	40°C/3.8 V	-0.00517	0.00318	PASS
	50°C/3.8 V	-0.00418	0.00468	PASS
	20°C/3.6 V	0.00615	-0.00236	PASS
	20°C/4.35 V	-0.00199	0.00745	PASS
3MHz	0°C/3.8 V	0.00216	-0.00386	PASS
	10°C/3.8 V	0.00297	-0.00421	PASS
	20°C/3.8 V	0.00326	-0.00346	PASS
	30°C/3.8 V	0.00476	-0.00138	PASS
	40°C/3.8 V	0.00696	-0.00219	PASS
	50°C/3.8 V	0.00332	-0.00253	PASS
	20°C/3.6 V	0.00459	-0.00161	PASS
	20°C/4.35 V	0.00522	-0.00600	PASS
5MHz	0°C/3.8 V	0.00424	0.00491	PASS
	10°C/3.8 V	0.00188	-0.00346	PASS



	20°C/3.8 V	0.00084	-0.00023	PASS
	30°C/3.8 V	0.00211	-0.00334	PASS
	40°C/3.8 V	0.00280	-0.00080	PASS
	50°C/3.8 V	0.00251	-0.00161	PASS
	20°C/3.6 V	0.00113	0.00185	PASS
	20°C/4.35 V	0.00124	0.00255	PASS
10MHz	0°C/3.8 V	0.00418	0.00670	PASS
	10°C/3.8 V	0.00222	0.00526	PASS
	20°C/3.8 V	0.00216	0.00445	PASS
	30°C/3.8 V	0.00038	0.00324	PASS
	40°C/3.8 V	-0.00014	0.00283	PASS
	50°C/3.8 V	0.00274	0.00457	PASS
	20°C/3.6 V	0.00349	0.00503	PASS
	20°C/4.35 V	0.00476	0.00843	PASS
15MHz	0°C/3.8 V	-0.00170	0.00370	PASS
	10°C/3.8 V	-0.00361	0.00341	PASS
	20°C/3.8 V	-0.00124	0.00687	PASS
	30°C/3.8 V	0.00211	0.00433	PASS
	40°C/3.8 V	0.00101	0.00335	PASS
	50°C/3.8 V	0.00159	0.00393	PASS
	20°C/3.6 V	-0.00488	0.00584	PASS
	20°C/4.35 V	-0.00580	0.00185	PASS
20MHz	0°C/3.8 V	-0.00297	0.00387	PASS
	10°C/3.8 V	-0.00499	0.00399	PASS
	20°C/3.8 V	-0.00690	0.00278	PASS
	30°C/3.8 V	-0.00413	0.00312	PASS
	40°C/3.8 V	-0.00551	0.00203	PASS
	50°C/3.8 V	-0.00320	0.00376	PASS
	20°C/3.6 V	-0.00268	0.00260	PASS
	20°C/4.35 V	-0.00165	0.00151	PASS

Bandwidth	Test status	LTE Band 7 Channel 21100 Test Results (ppm)		
		QPSK	16QAM	Conclusion
5MHz	0°C/3.8 V	0.00075	0.00273	PASS
	10°C/3.8 V	-0.00198	0.00471	PASS
	20°C/3.8 V	-0.00071	0.00427	PASS
	30°C/3.8 V	-0.00091	0.00684	PASS
	40°C/3.8 V	0.00146	0.00396	PASS
	50°C/3.8 V	-0.00170	0.00356	PASS
	20°C/3.6 V	-0.00111	0.00447	PASS
	20°C/4.35 V	-0.00186	0.00289	PASS
10MHz	0°C/3.8 V	-0.00146	0.00392	PASS
	10°C/3.8 V	-0.00221	0.00297	PASS
	20°C/3.8 V	-0.00060	0.00431	PASS
	30°C/3.8 V	-0.00052	0.00459	PASS
	40°C/3.8 V	-0.00135	0.00621	PASS
	50°C/3.8 V	-0.00213	0.00380	PASS
	20°C/3.6 V	0.00402	-0.00492	PASS
	20°C/4.35 V	0.00228	-0.00303	PASS
15MHz	0°C/3.8 V	0.00173	0.00455	PASS
	10°C/3.8 V	0.00173	-0.00204	PASS
	20°C/3.8 V	0.00079	-0.00133	PASS
	30°C/3.8 V	0.00213	-0.00224	PASS
	40°C/3.8 V	0.00240	-0.00362	PASS
	50°C/3.8 V	0.00236	-0.00224	PASS
	20°C/3.6 V	0.00106	0.00360	PASS
	20°C/4.35 V	0.00102	0.00510	PASS
20MHz	0°C/3.8 V	-0.00249	0.00538	PASS
	10°C/3.8 V	-0.00028	0.00163	PASS
	20°C/3.8 V	-0.00079	0.00092	PASS
	30°C/3.8 V	-0.00107	0.00238	PASS
	40°C/3.8 V	0.00004	0.00258	PASS
	50°C/3.8 V	-0.00221	0.00183	PASS
	20°C/3.6 V	0.00098	0.00179	PASS
	20°C/4.35 V	-0.00419	0.00400	PASS

4.7 Spurious Emissions at Antenna Terminals

Ambient condition

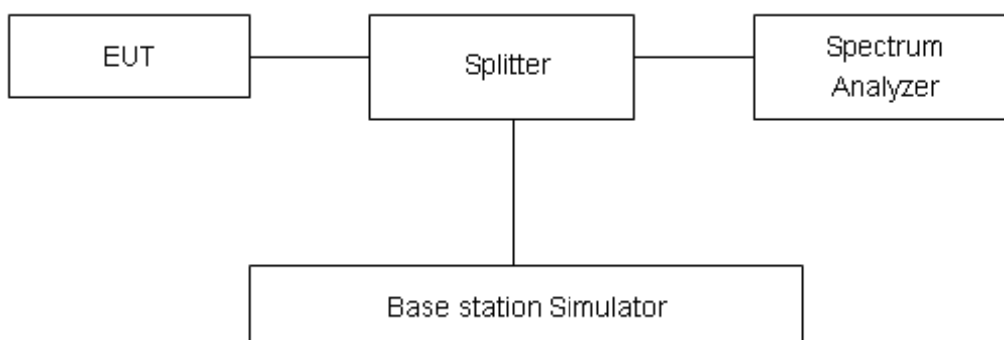
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. RBW and VBW are set to 100 kHz for the carrier frequency, or RBW and VBW are set to 1MHz (other frequency), Sweep is set to ATUO.

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

Test setup



Limits

Rule Part 27.53(h) specifies that “the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.”

LTE -41 Rule Part 27.53(m) $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

WCDMA 4/LTE 4/12 Limit	-13 dBm
LTE 7 Limit	-25 dBm

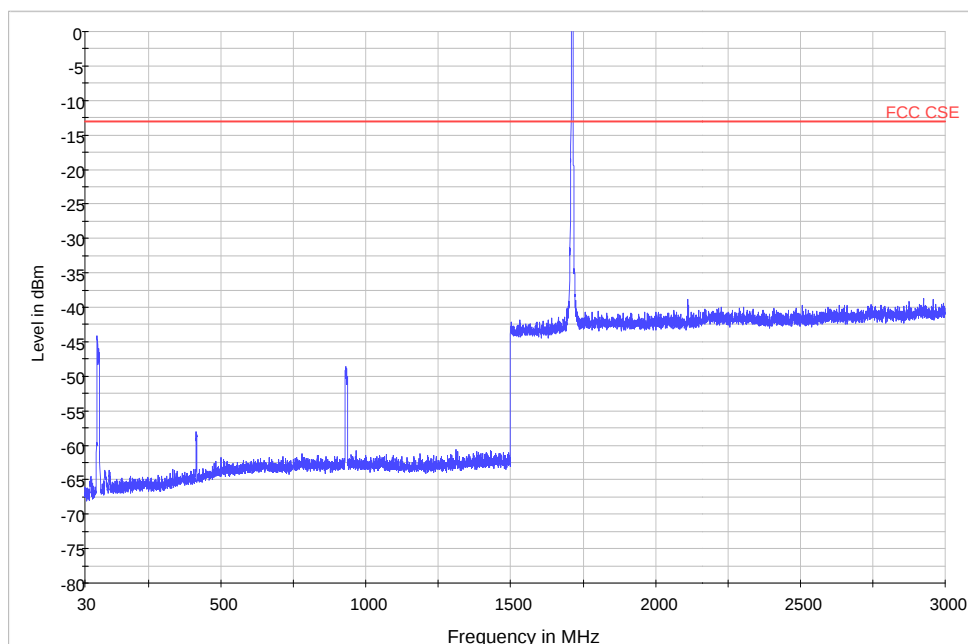
**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

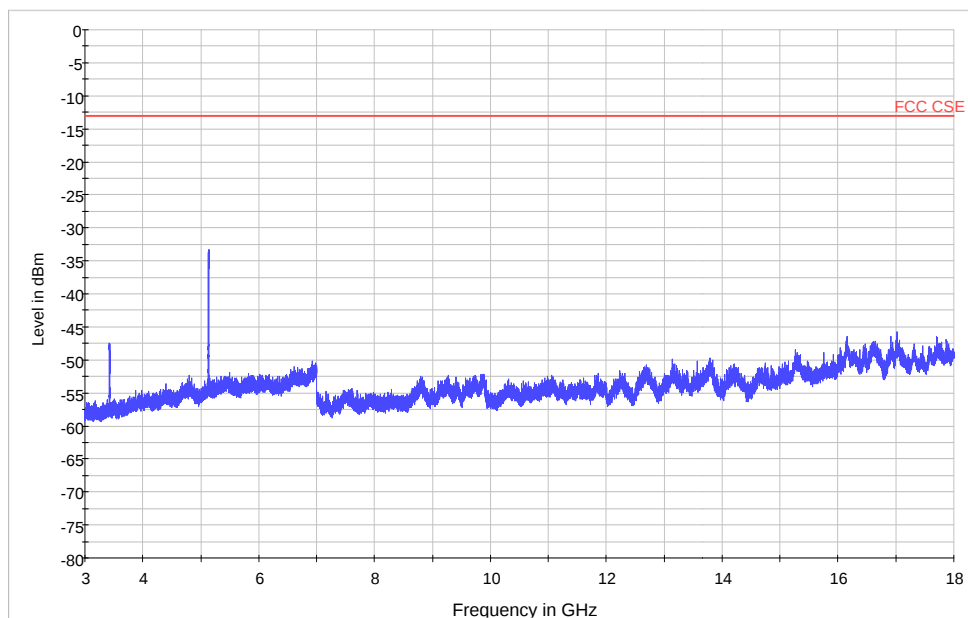
Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-12.75GHz	1.407 dB

Test Result: PASS

If disturbances were found more than 20dB below limit line, the mark is not required for the EUT.
WCDMA Band IV CH1312



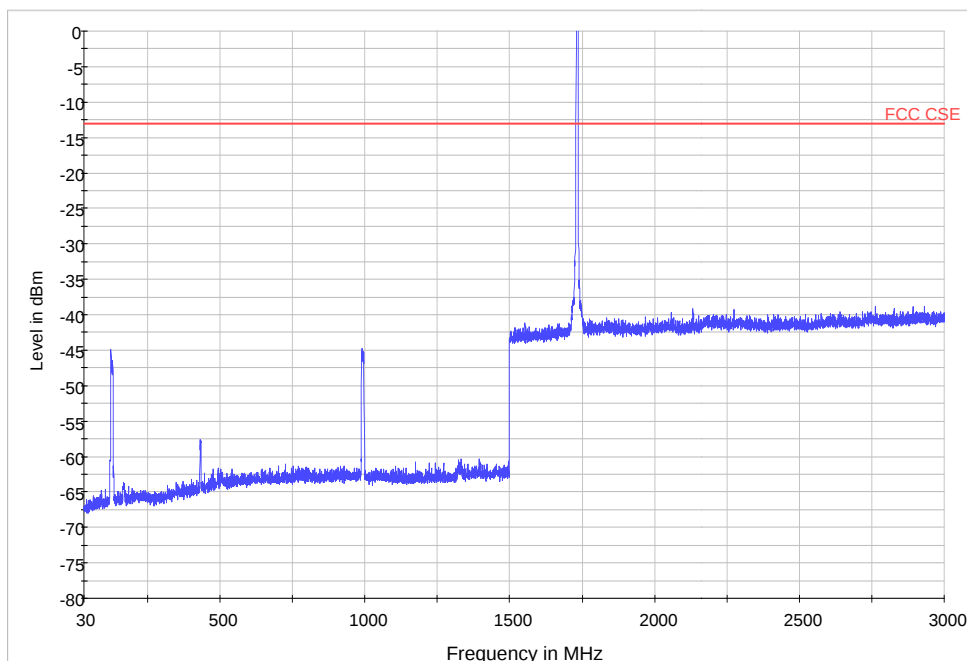
Note: The signal beyond the limit is carrier.
WCDMA Band IV Channel1312 30MHz~3GHz



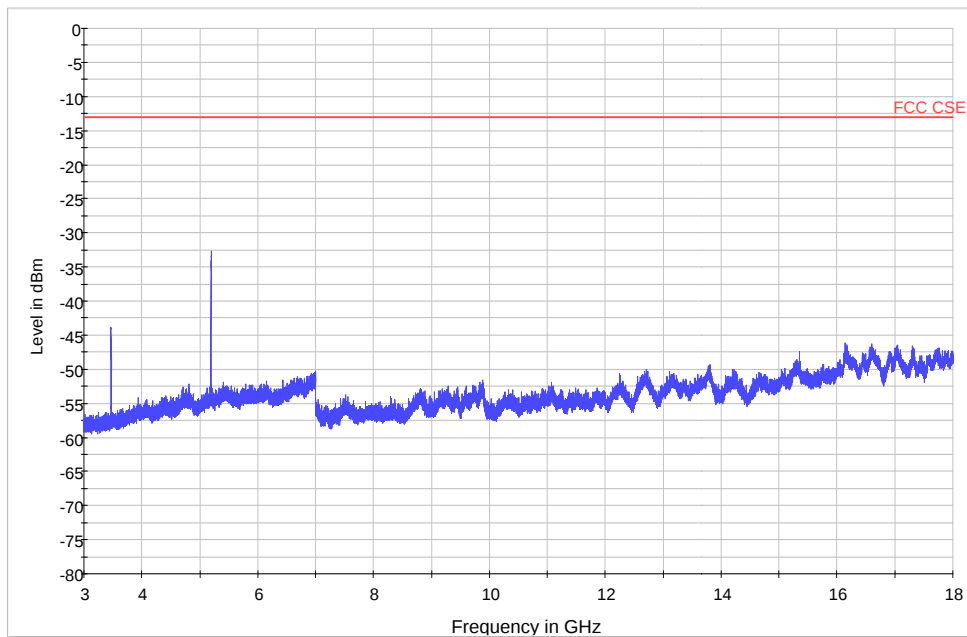
WCDMA Band IV Channel1312 3GHz ~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5133.4	-33.26	-13.00	20.26

WCDMA Band IV CH1413



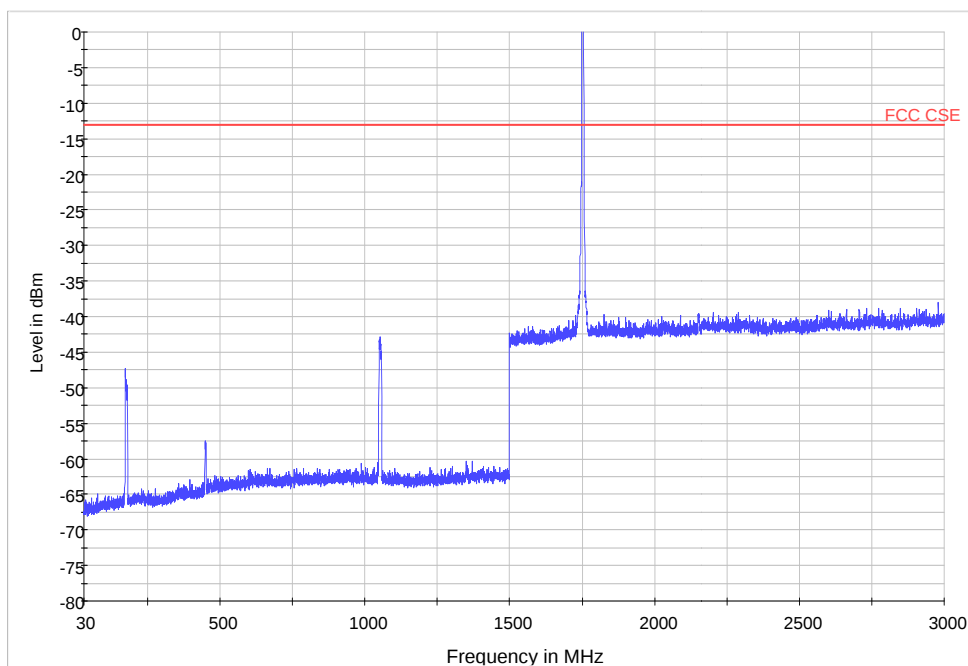
Note: The signal beyond the limit is carrier.
WCDMA Band IV Channel1413 30MHz~3GHz



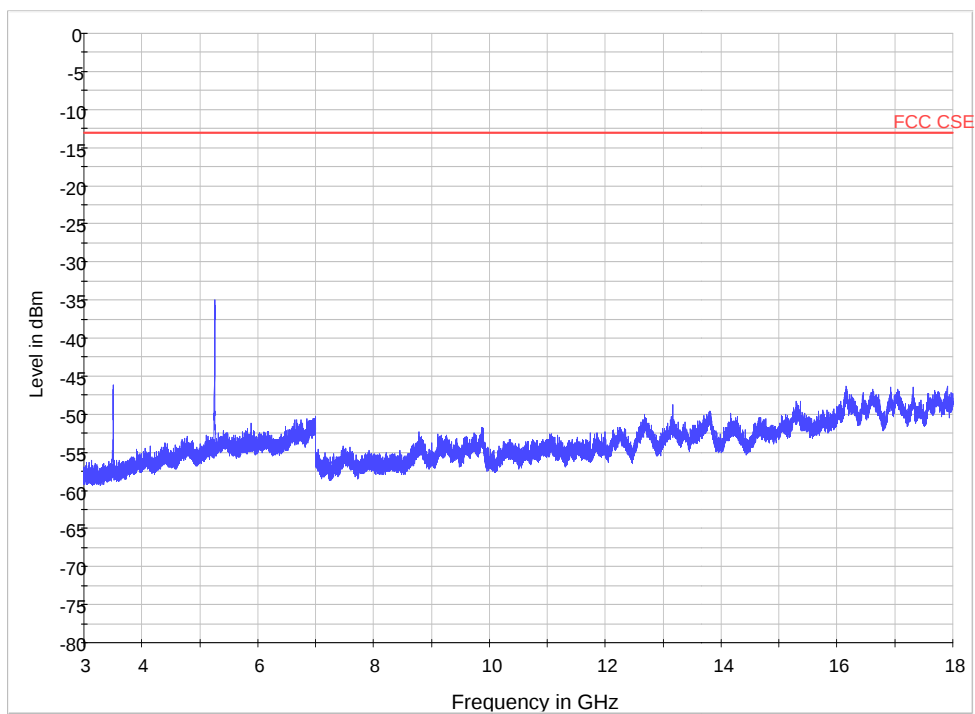
WCDMA Band IV Channel1413 3GHz ~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5191.1	-32.72	-13.00	19.72

WCDMA Band IV CH1513

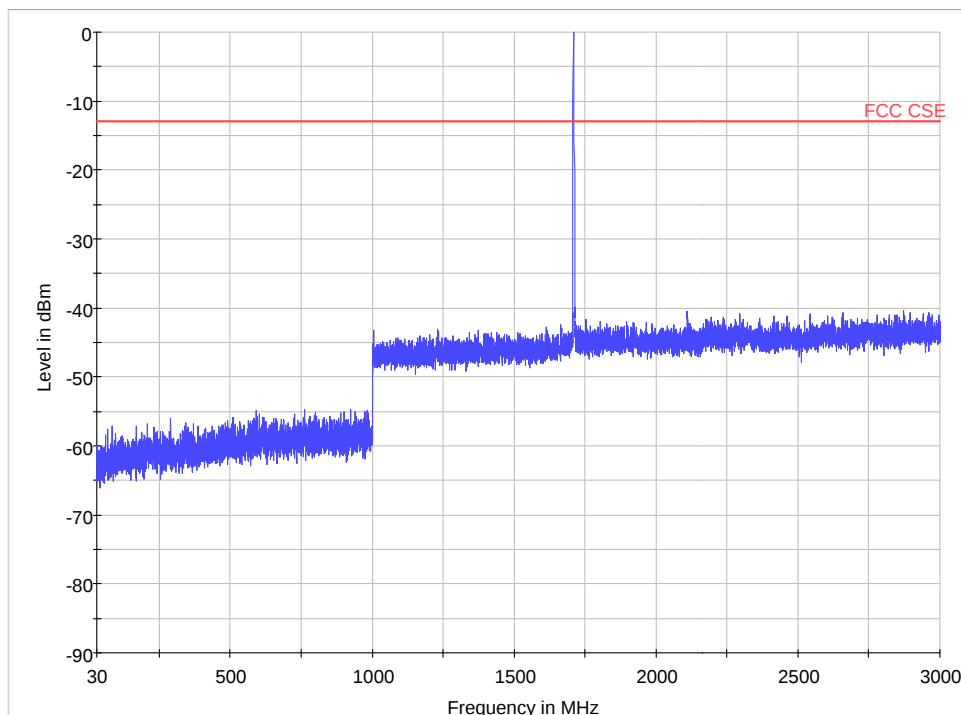


Note: The signal beyond the limit is carrier.
WCDMA Band IV Channel1513 30MHz~3GHz

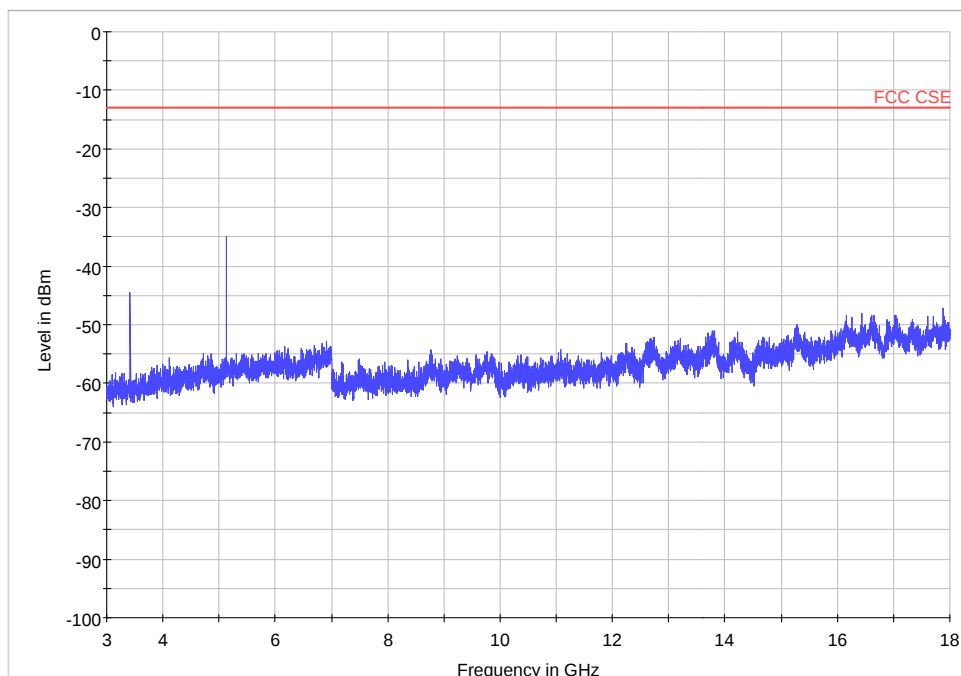


WCDMA Band IV Channel1513 3GHz ~18GHz

LTE Band 4 QPSK Bandwidth = 1.4MHz CH19957, RB 1

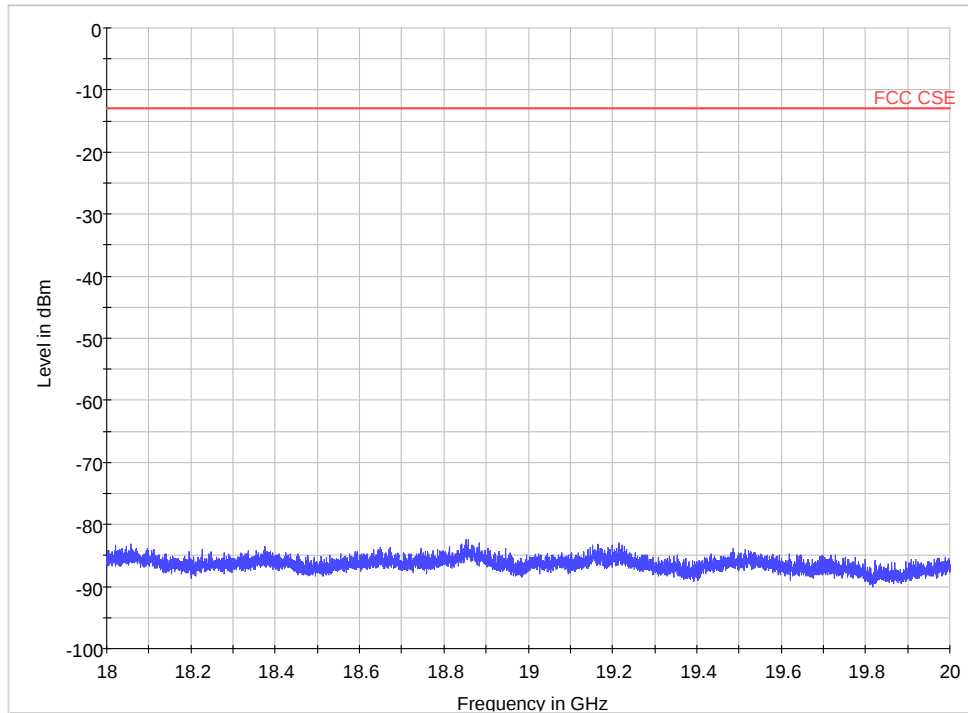


Note: The signal beyond the limit is carrier
LTE Band 4 CH19957 30MHz~3GHz



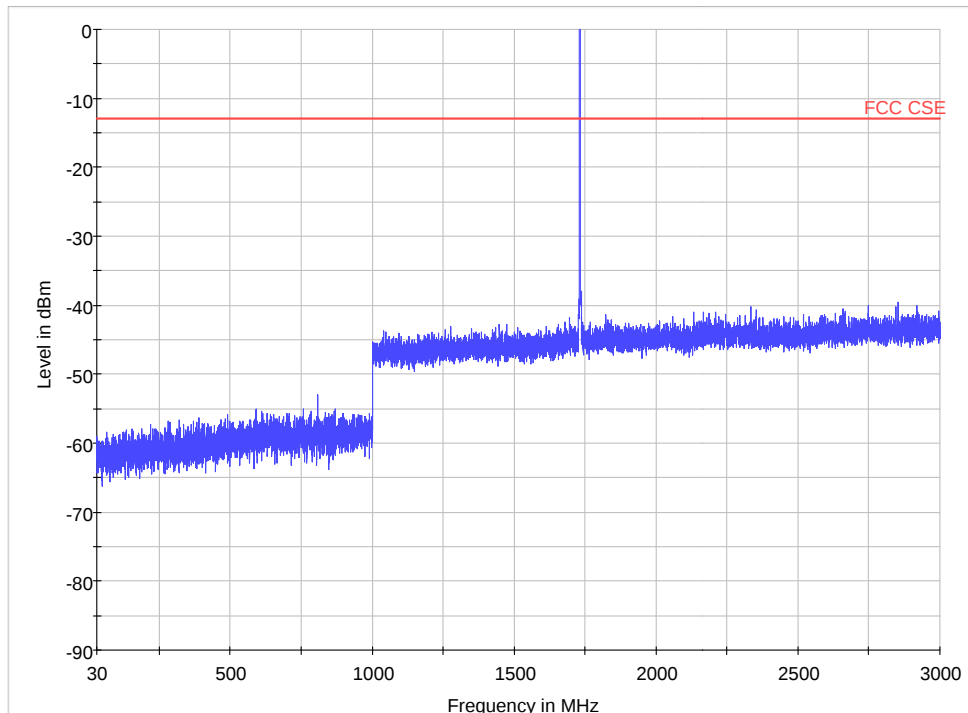
LTE Band 4 CH19957 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5130.0	-34.95	-13.00	21.95



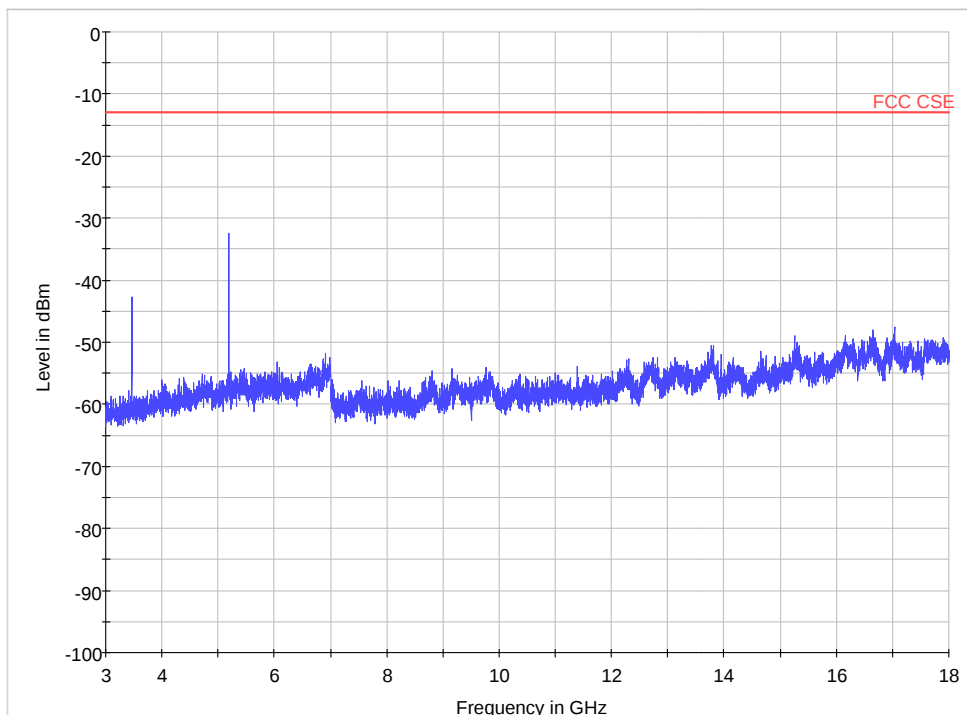
LTE Band 4 CH19957 18GHz~20GHz

LTE Band 4 QPSK Bandwidth = 1.4MHz CH20175, RB 1

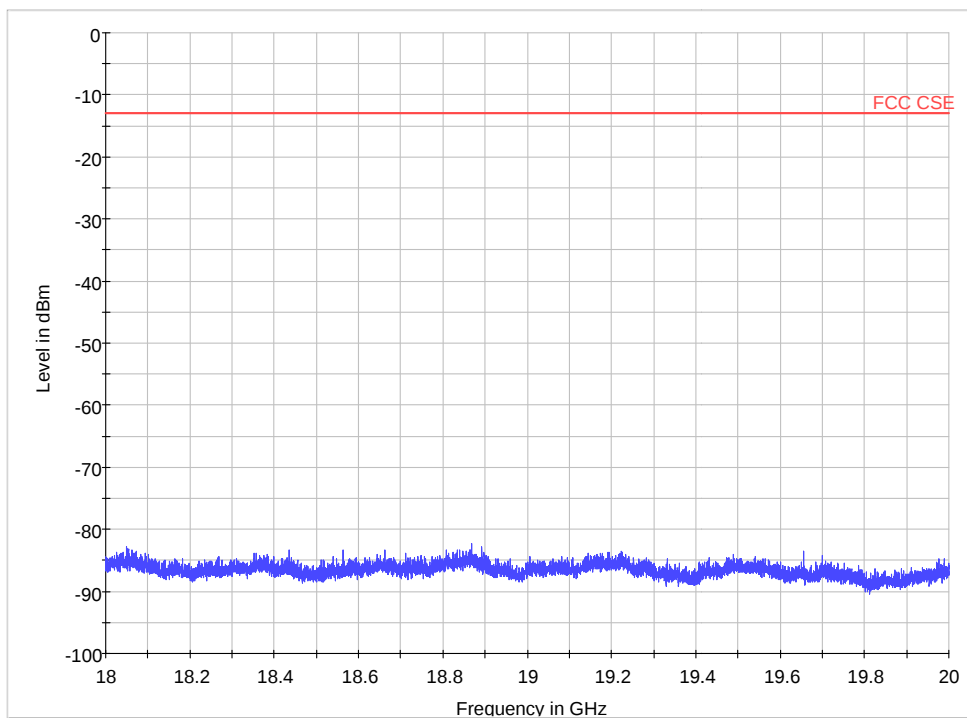


Note: The signal beyond the limit is carrier

LTE Band 4 CH20175 30MHz~3GHz



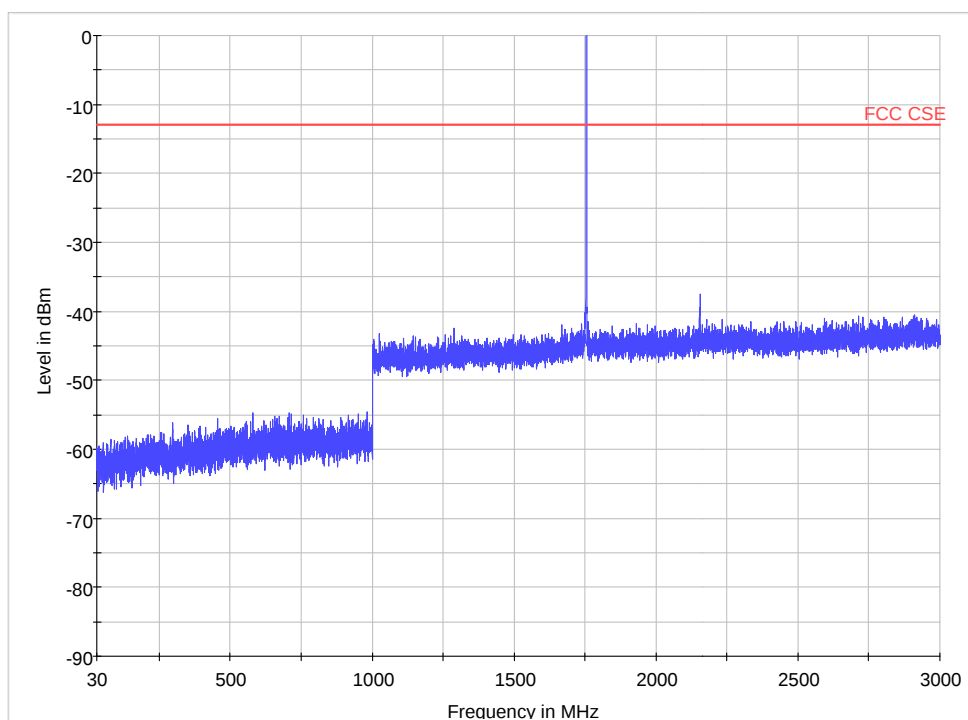
LTE Band 4 CH20175 3GHz~18GHz



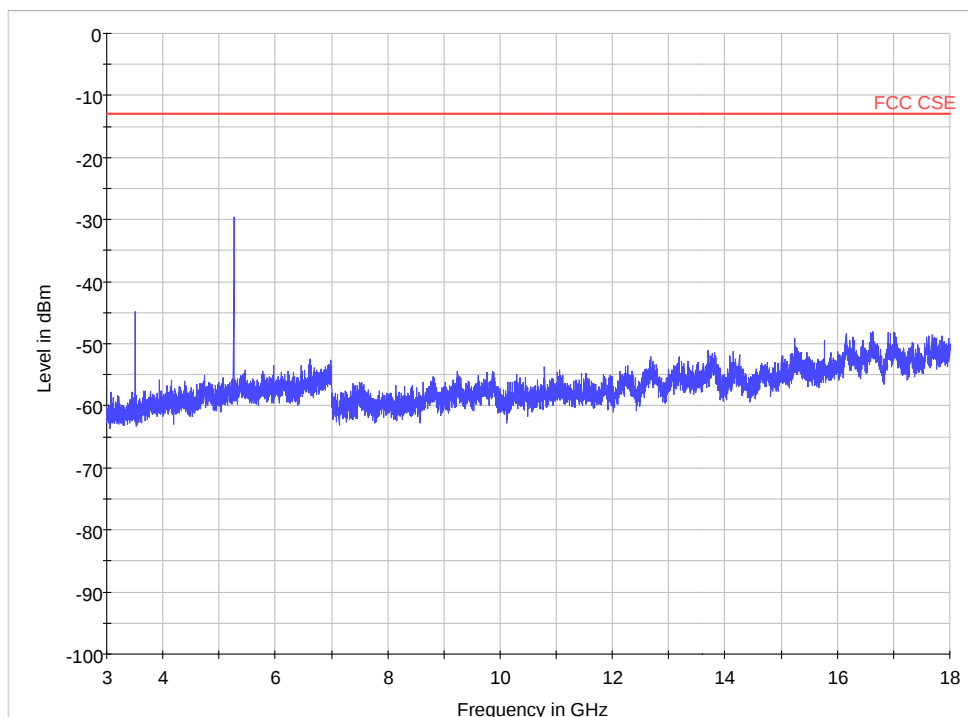
LTE Band 4 CH20175 18GHz~20GHz



LTE Band 4 QPSK Bandwidth = 1.4MHz CH20393, RB 1

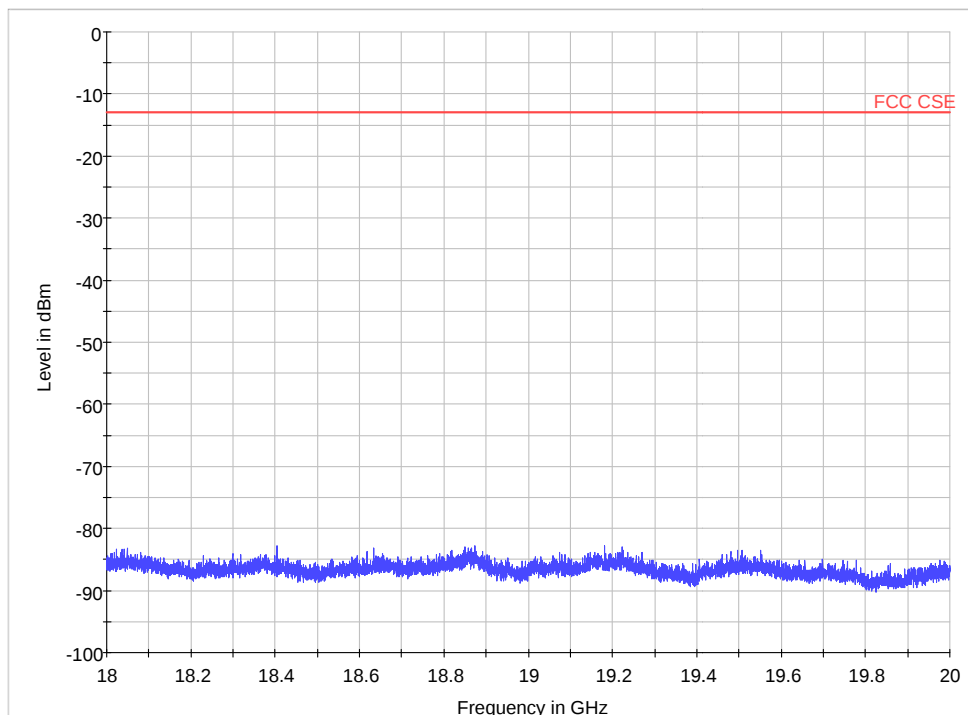


Note: The signal beyond the limit is carrier
LTE Band 4 CH20393 30MHz~3GHz



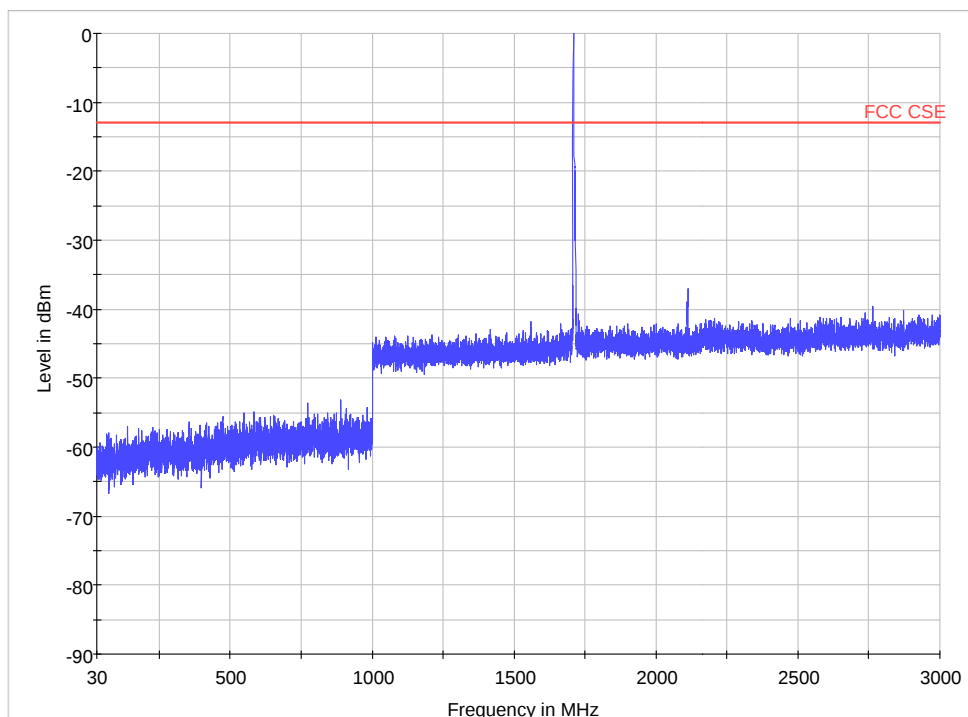
LTE Band 4 CH20393 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5261.3	-29.63	-13.00	16.63

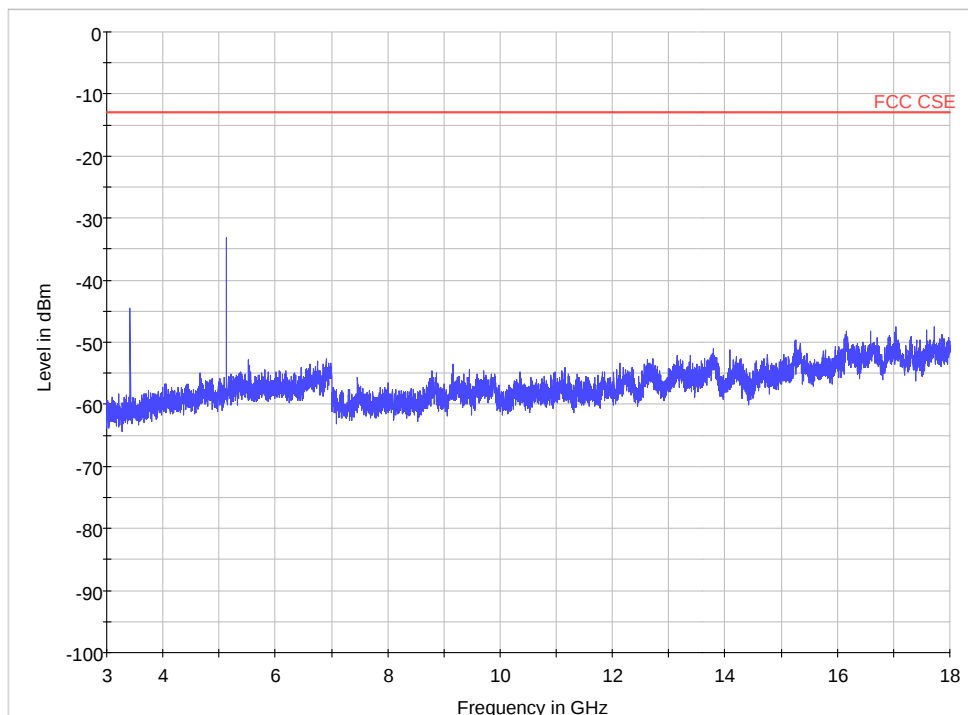


LTE Band 4 CH20393 18GHz~20GHz

LTE Band 4 QPSK Bandwidth = 3MHz CH19965, RB 1

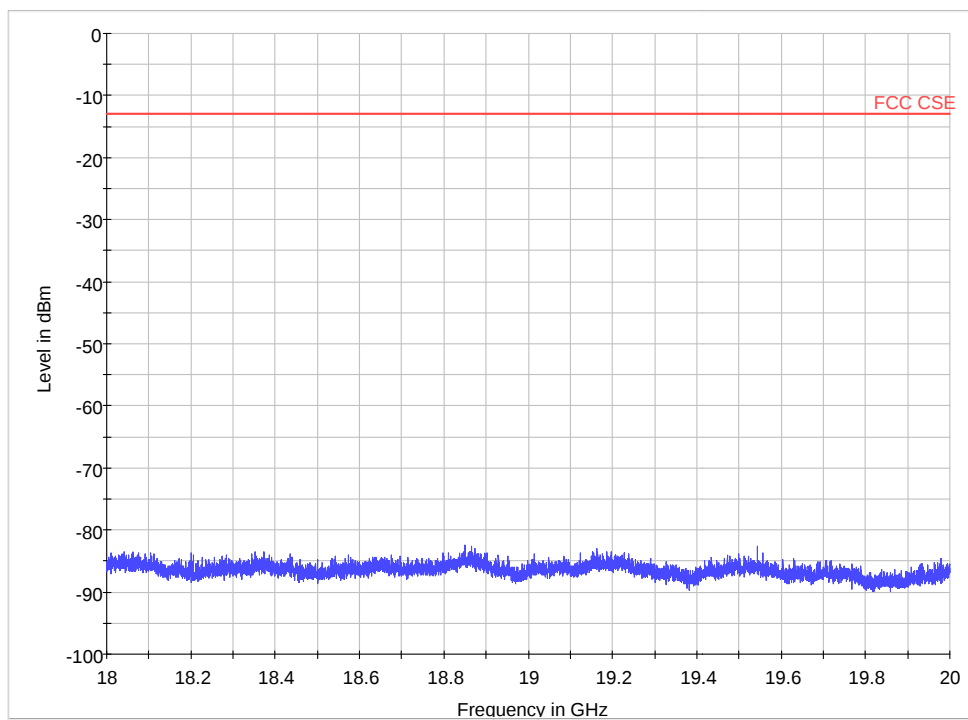


Note: The signal beyond the limit is carrier
LTE Band 4 CH19965 30MHz~3GHz



LTE Band 4 CH19965 3GHz~18GHz

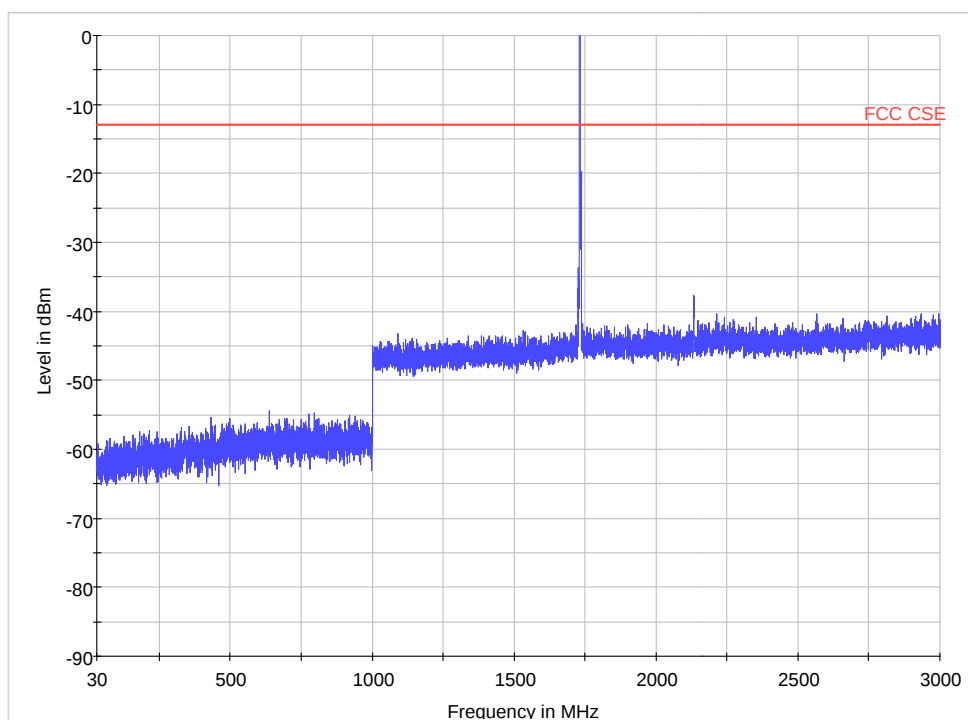
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5130.0	-33.19	-13.00	20.19



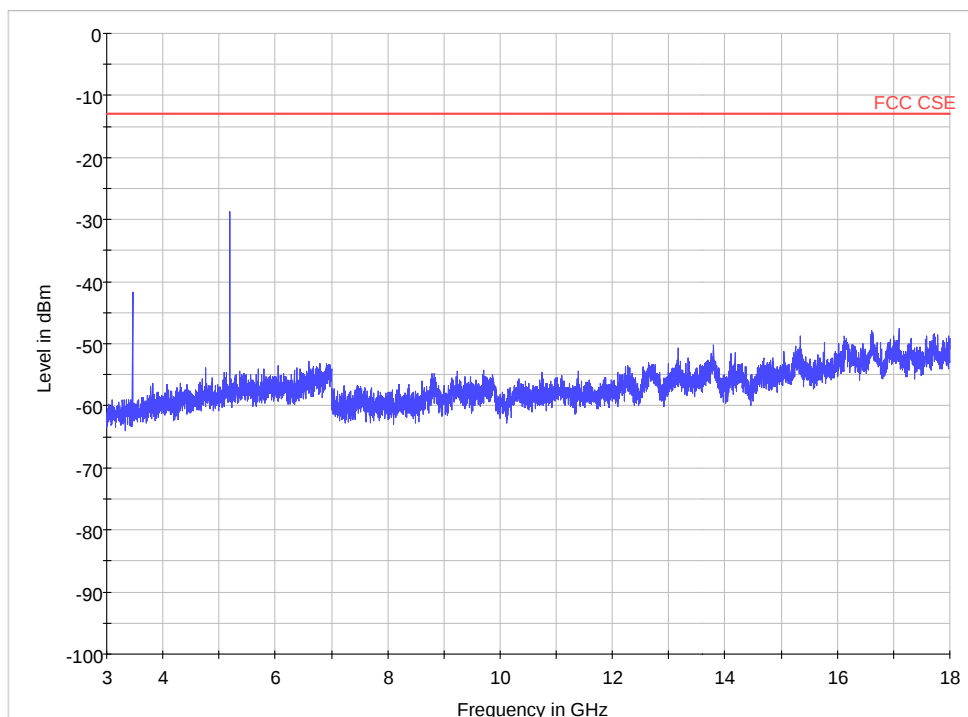
LTE Band 4 CH19965 18GHz~20GHz



LTE Band 4 QPSK Bandwidth = 3MHz CH20175, RB 1

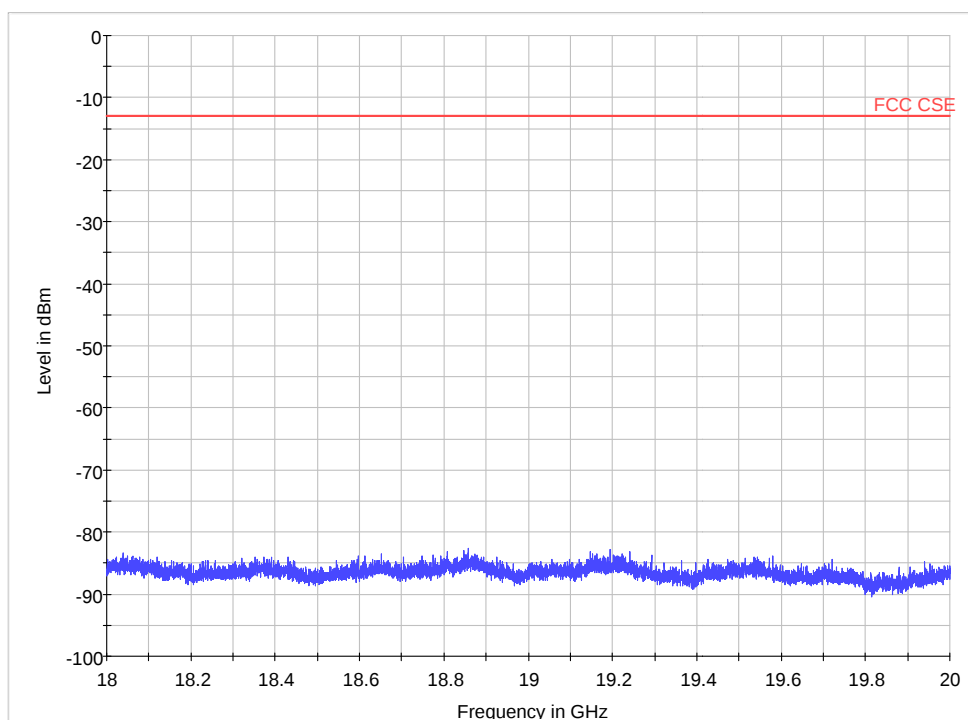


Note: The signal beyond the limit is carrier
LTE Band 4 CH20175 30MHz~3GHz



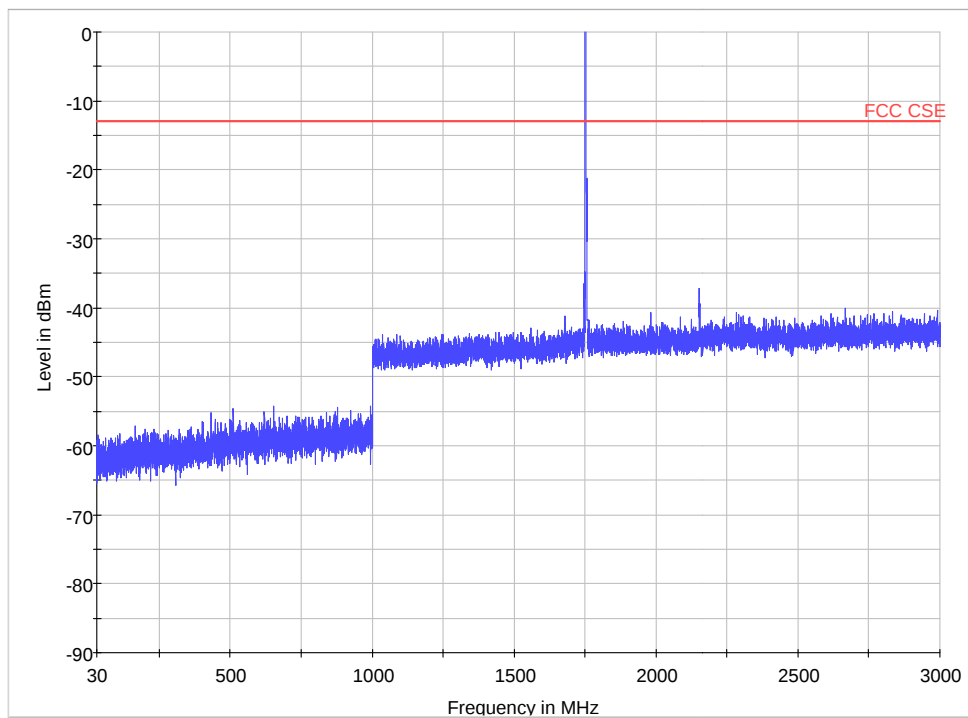
LTE Band 4 CH20175 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5193.8	-28.70	-13.00	15.70



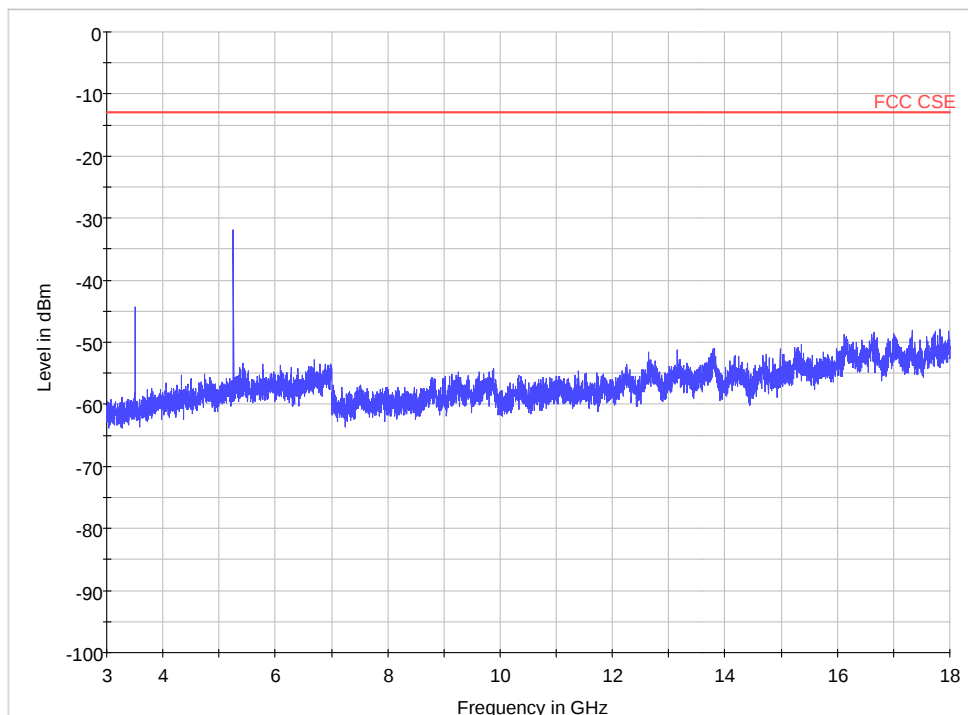
LTE Band 4 CH20175 18GHz~20GHz

LTE Band 4 QPSK Bandwidth = 3MHz CH20385, RB 1



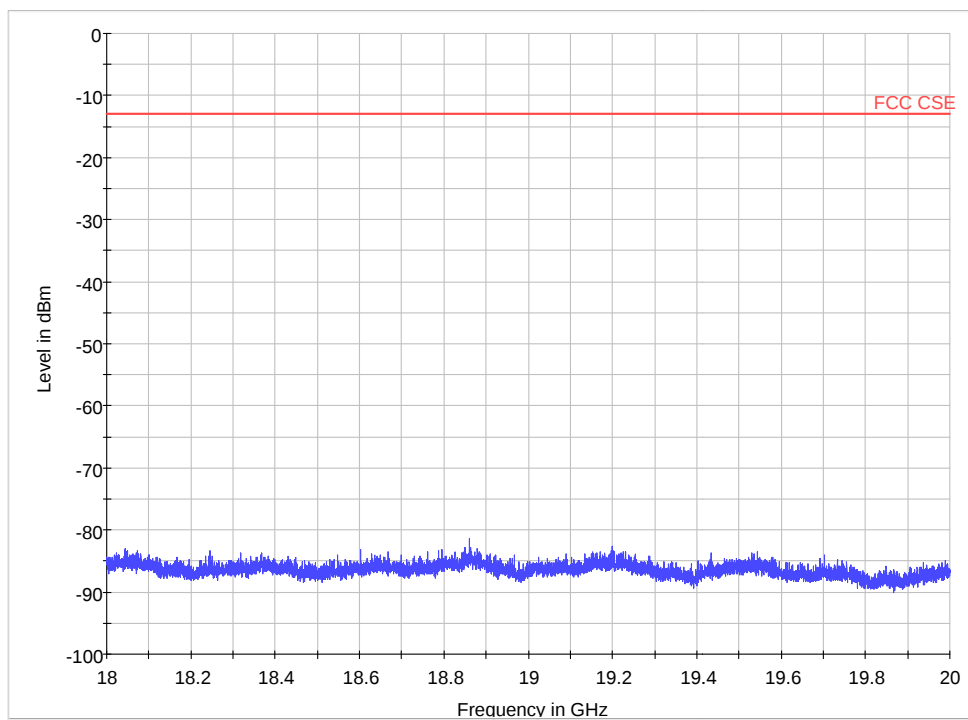
Note: The signal beyond the limit is carrier

LTE Band 4 CH20385 30MHz~3GHz



LTE Band 4 CH20385 3GHz~18GHz

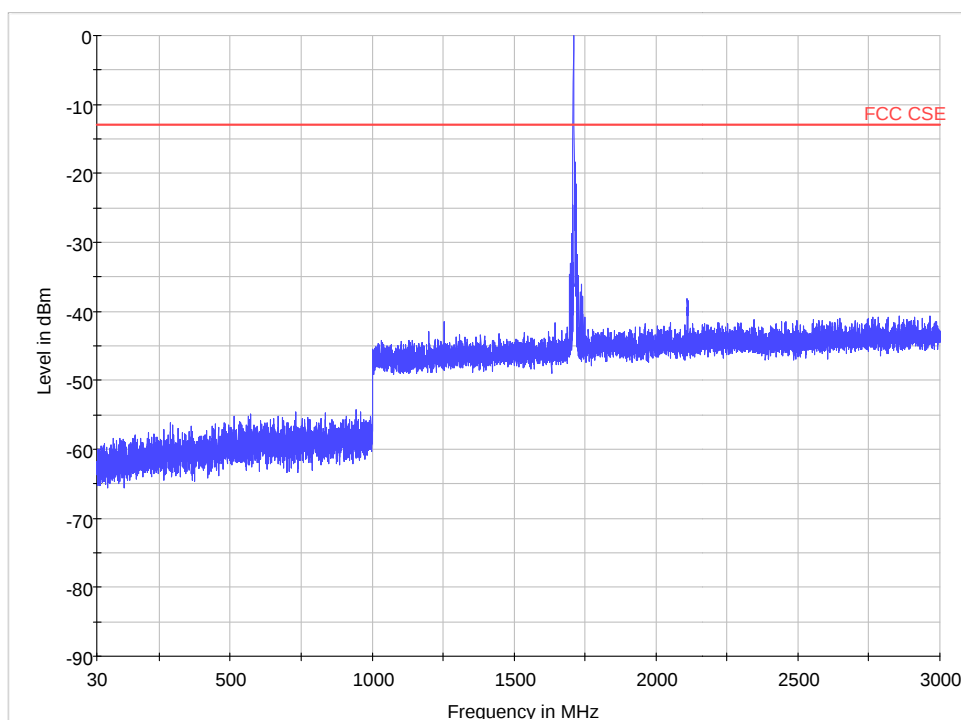
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5255.6	-31.96	-13.00	18.96



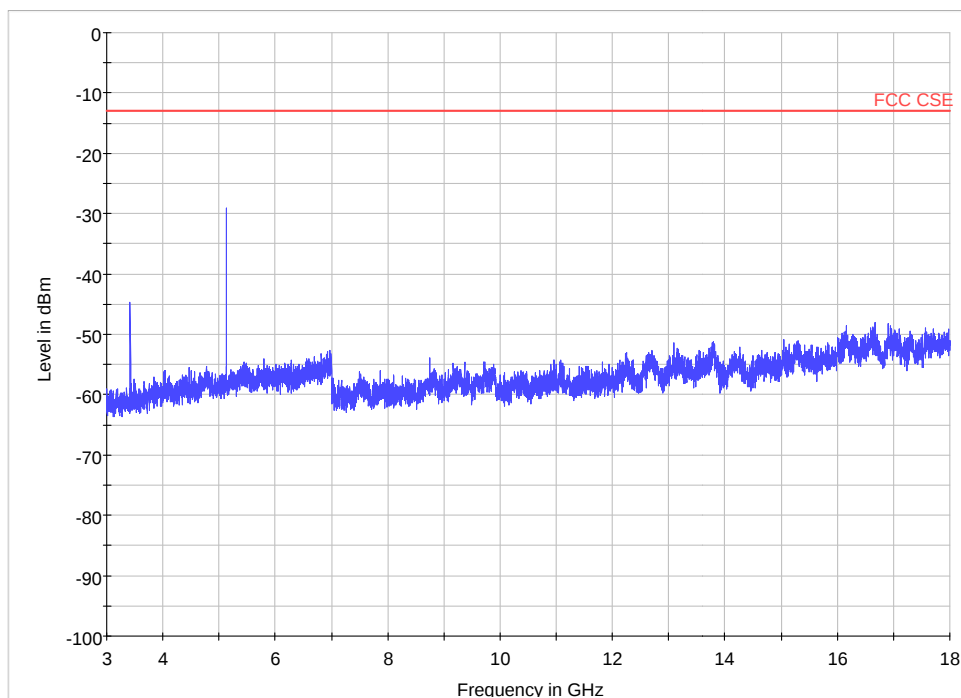
LTE Band 4 CH20385 18GHz~20GHz



LTE Band 4 QPSK Bandwidth = 5MHz CH19975, RB 1

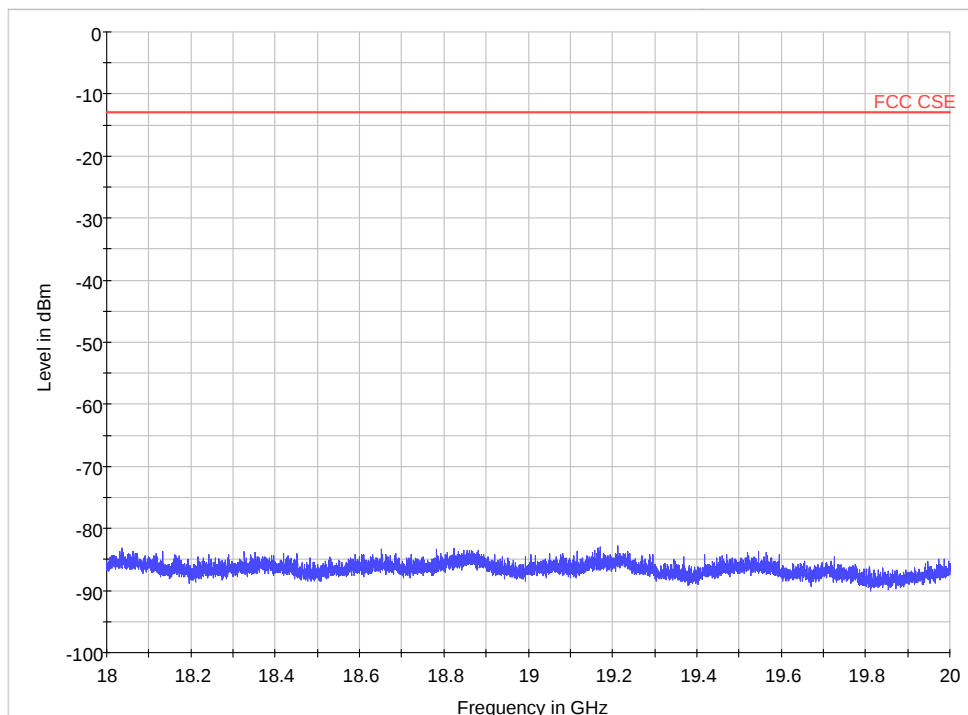


Note: The signal beyond the limit is carrier
LTE Band 4 CH19975 30MHz~3GHz



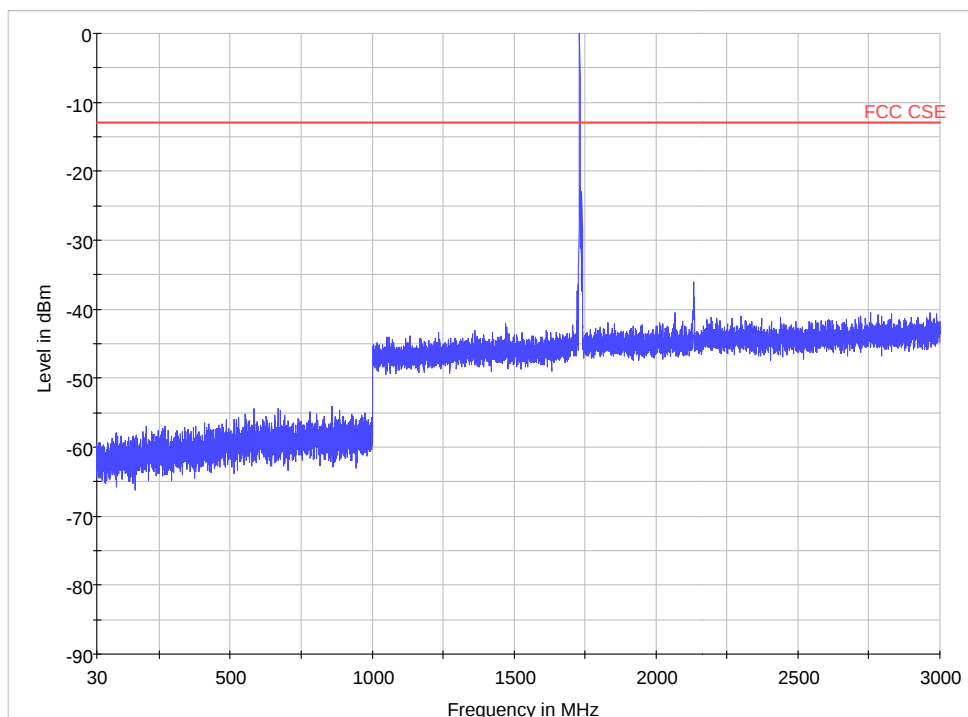
LTE Band 4 CH19975 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5130.0	-29.17	-13.00	16.17

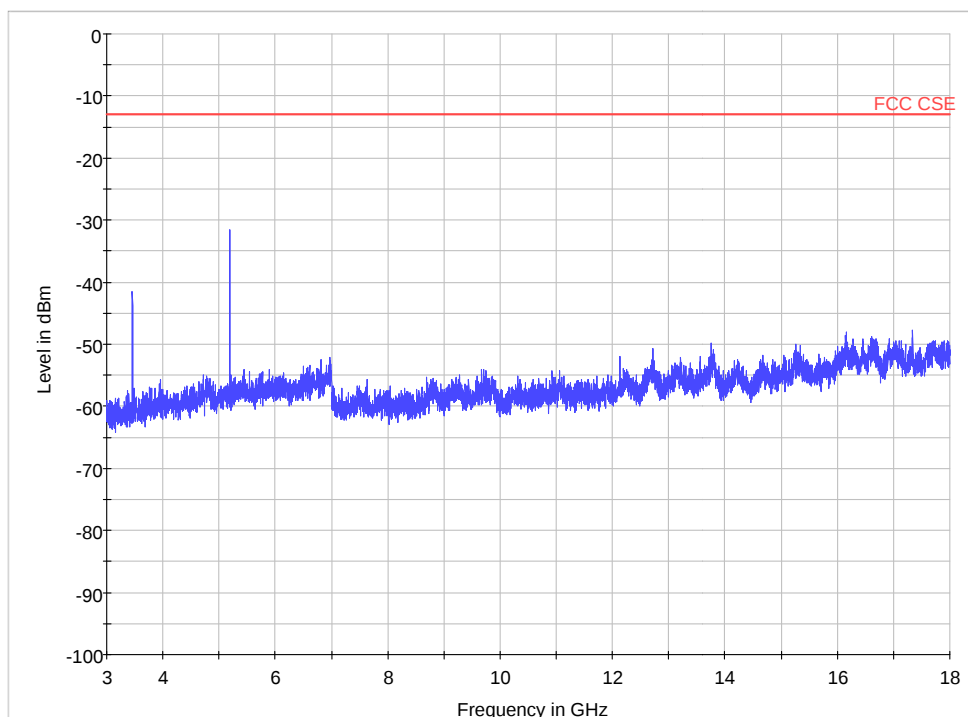


LTE Band 4 CH19975 18GHz~20GHz

LTE Band 4 QPSK Bandwidth = 5MHz CH20175, RB 1

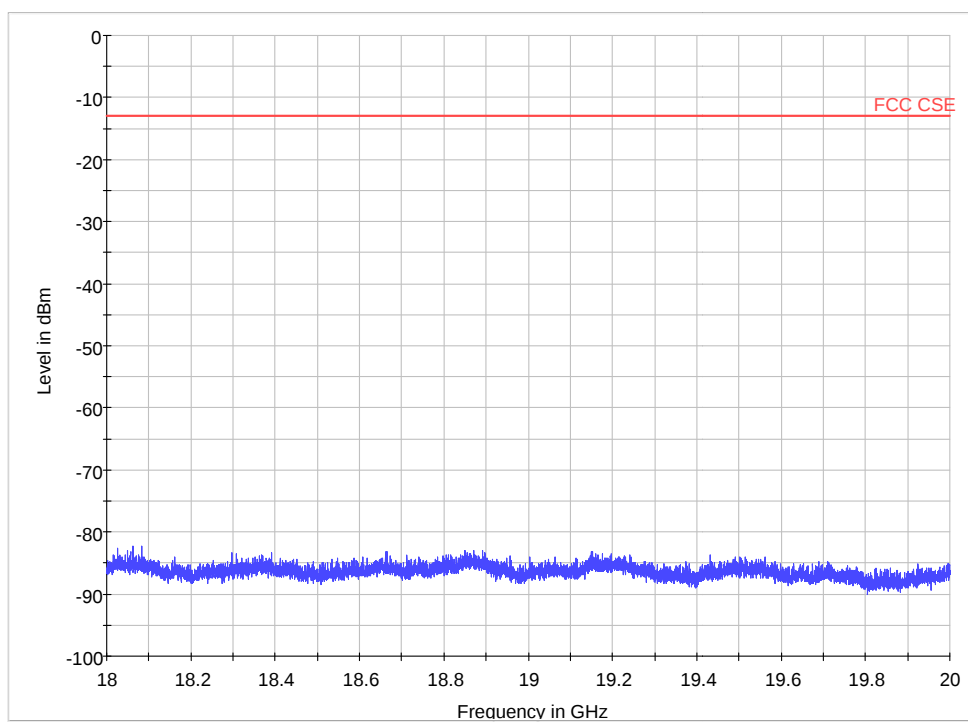


Note: The signal beyond the limit is carrier
LTE Band 4 CH20175 30MHz~3GHz



LTE Band 4 CH20175 3GHz~18GHz

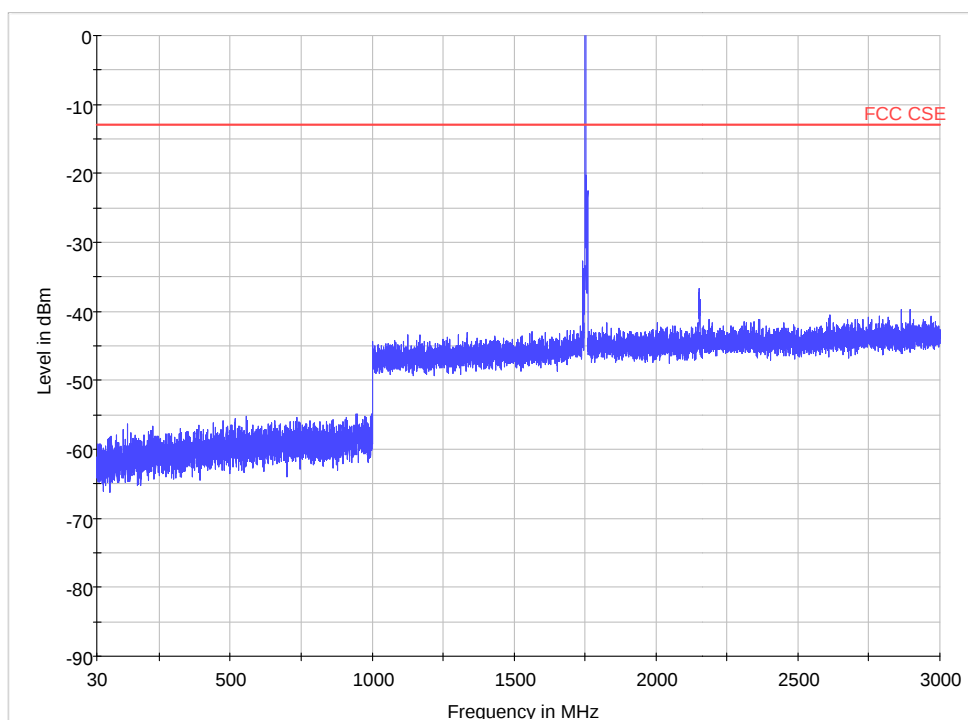
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5190.0	-31.49	-13.00	18.49



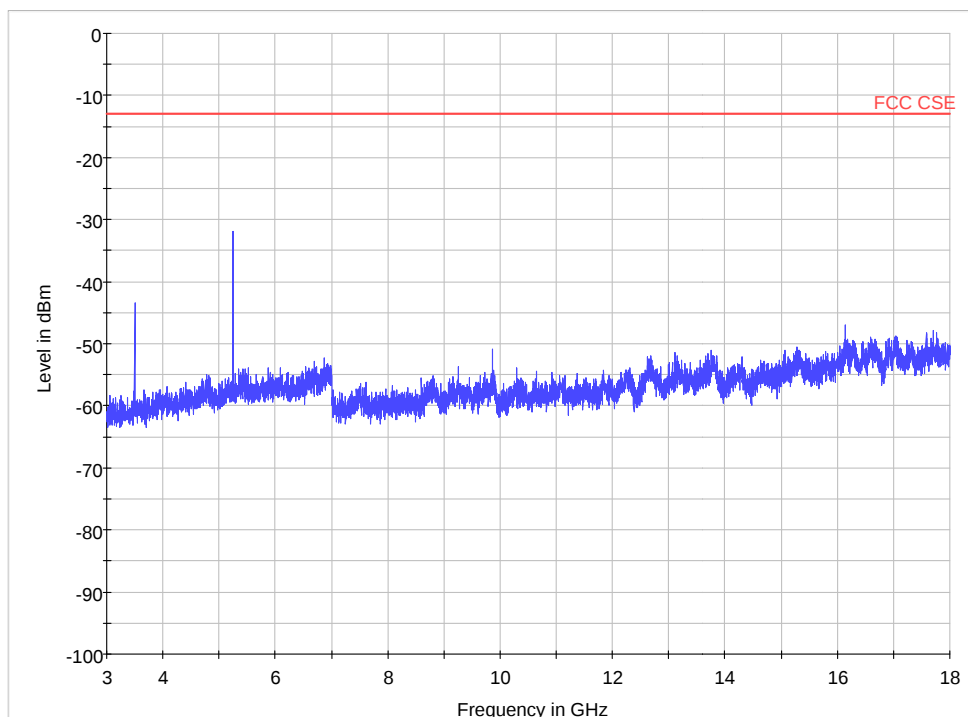
LTE Band 4 CH20175 18GHz~20GHz



LTE Band 4 QPSK Bandwidth = 5MHz CH20375, RB 1

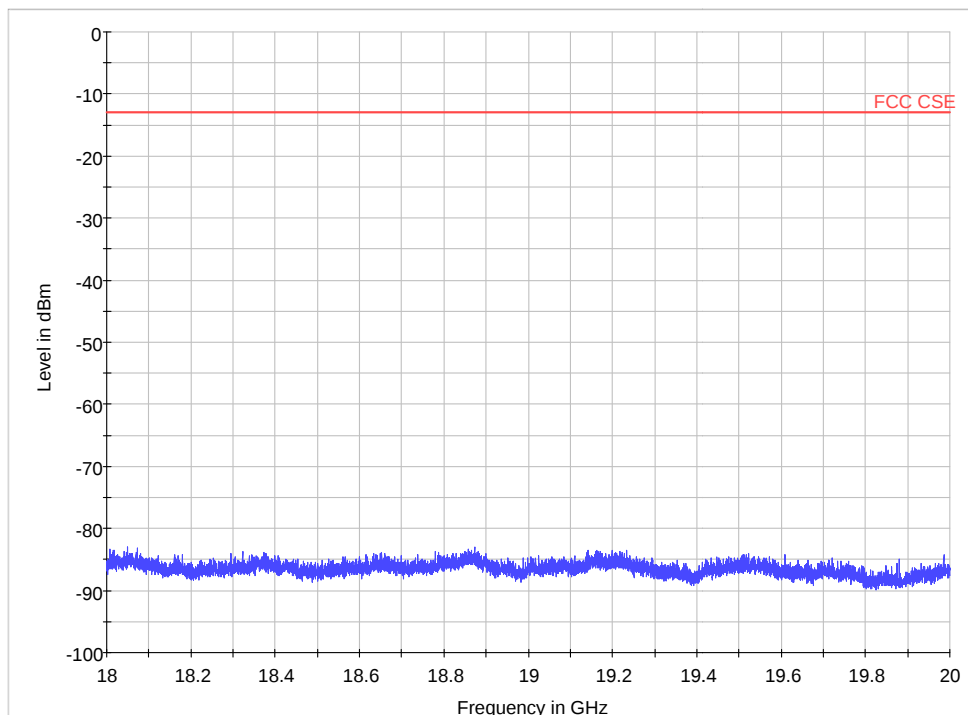


Note: The signal beyond the limit is carrier
LTE Band 4 CH20375 30MHz~3GHz



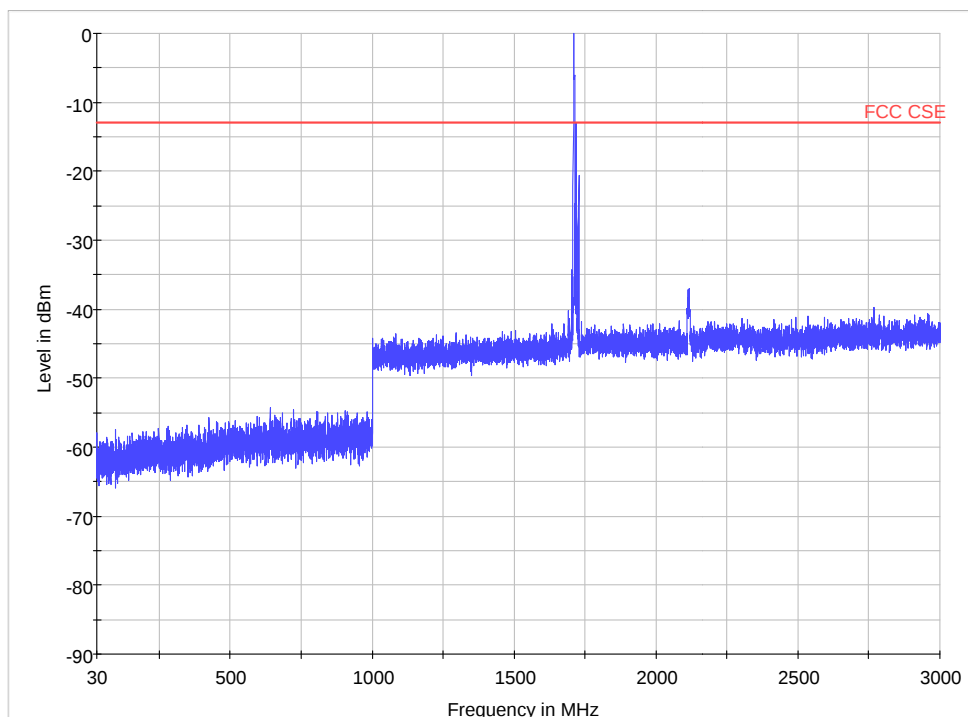
LTE Band 4 CH20375 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5250.0	-31.91	-13.00	18.91

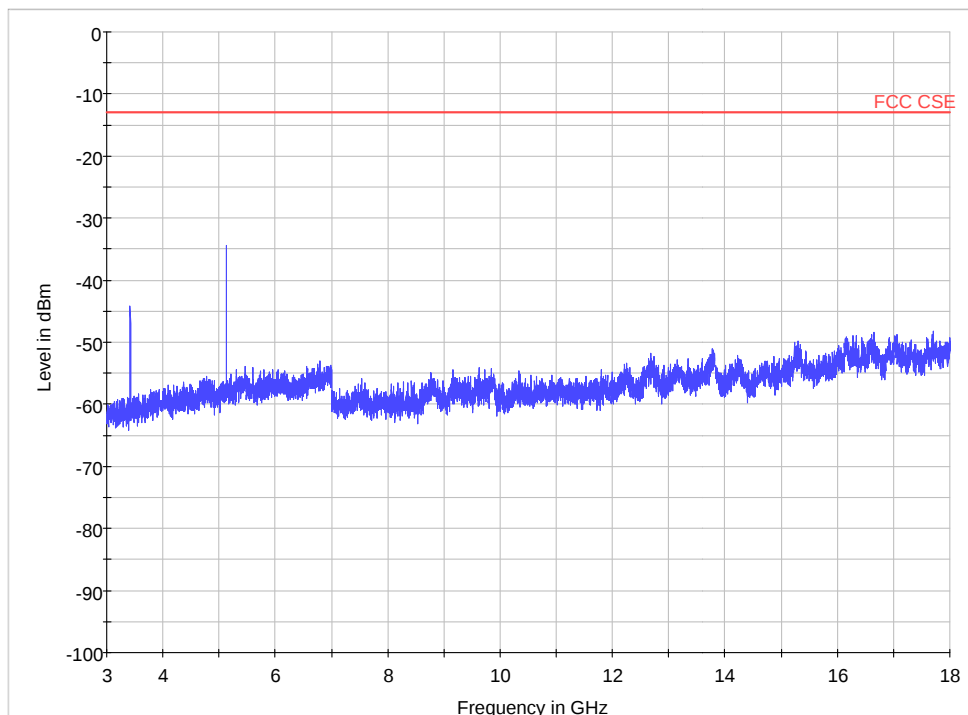


LTE Band 4 CH20375 18GHz~20GHz

LTE Band 4 QPSK Bandwidth = 10MHz CH20000, RB 1

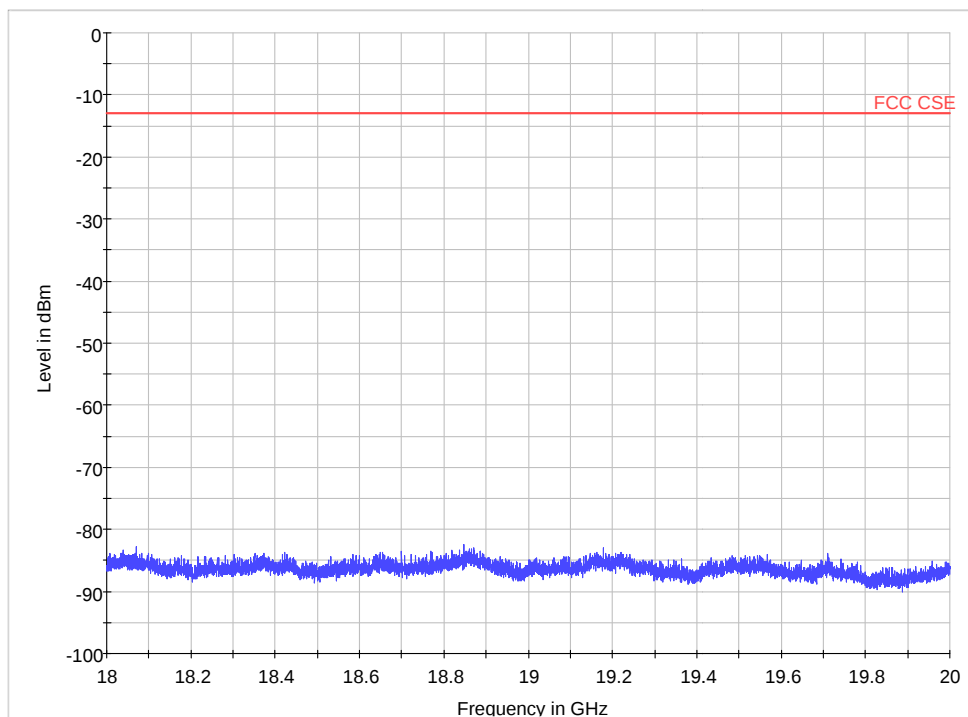


Note: The signal beyond the limit is carrier
LTE Band 4 CH20000 30MHz~3GHz



LTE Band 4 CH20000 3GHz~18GHz

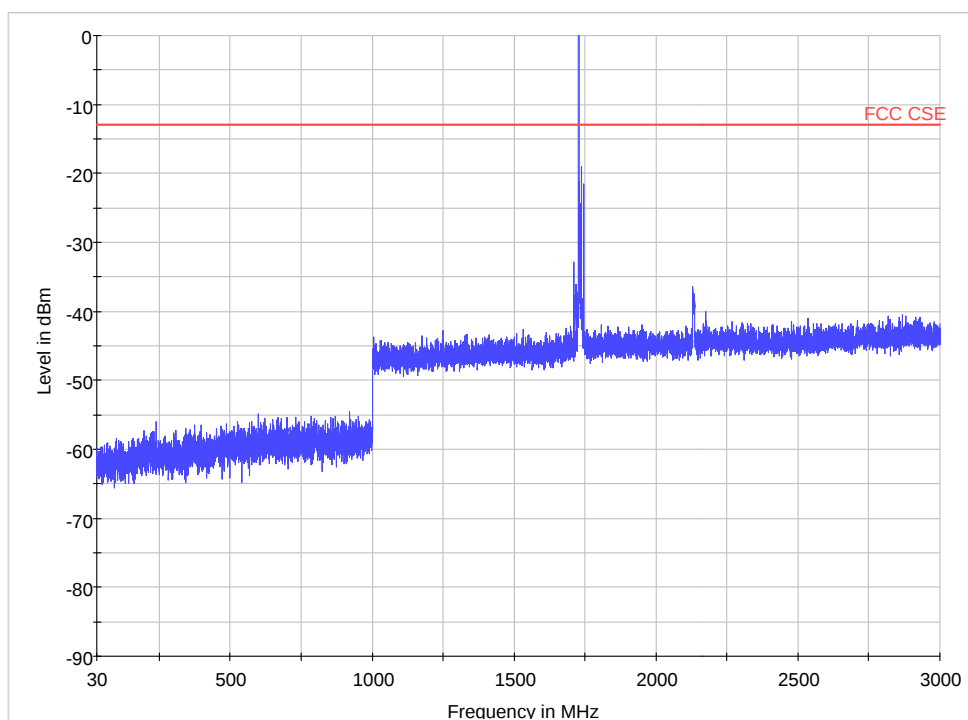
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5130.0	-34.37	-13.00	21.37



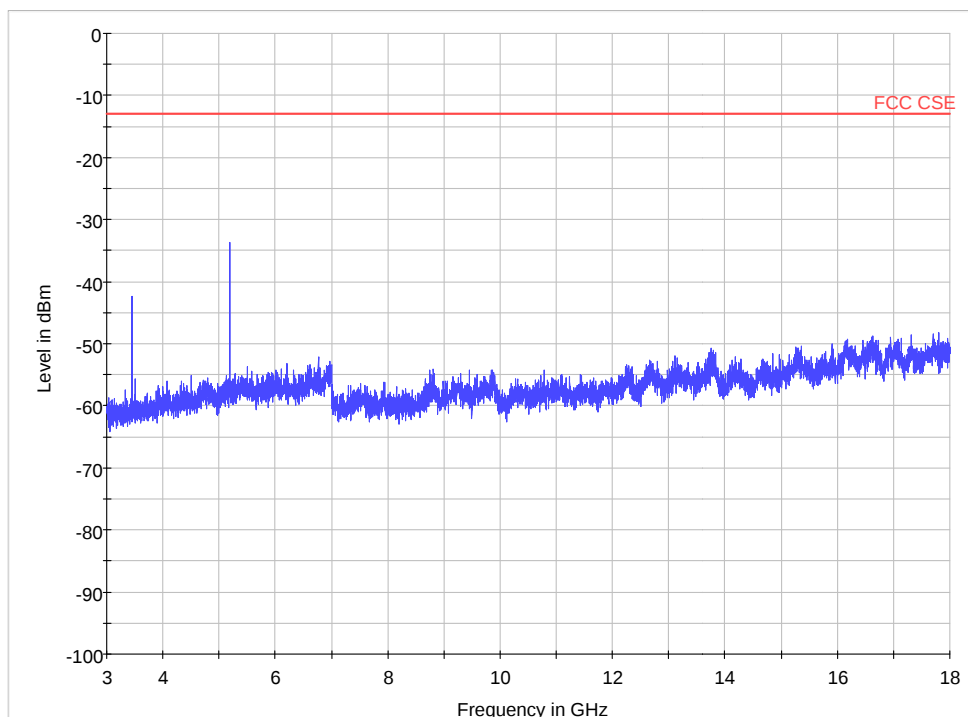
LTE Band 4 CH20000 18GHz~20GHz



LTE Band 4 QPSK Bandwidth = 10MHz CH20175, RB 1

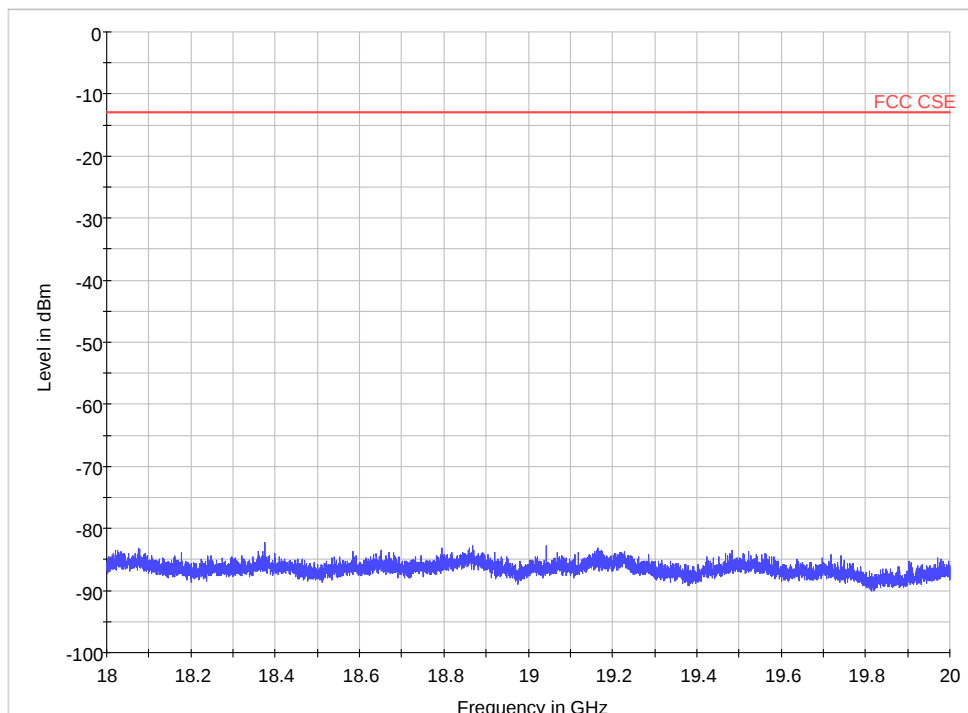


Note: The signal beyond the limit is carrier
LTE Band 4 CH20175 30MHz~3GHz



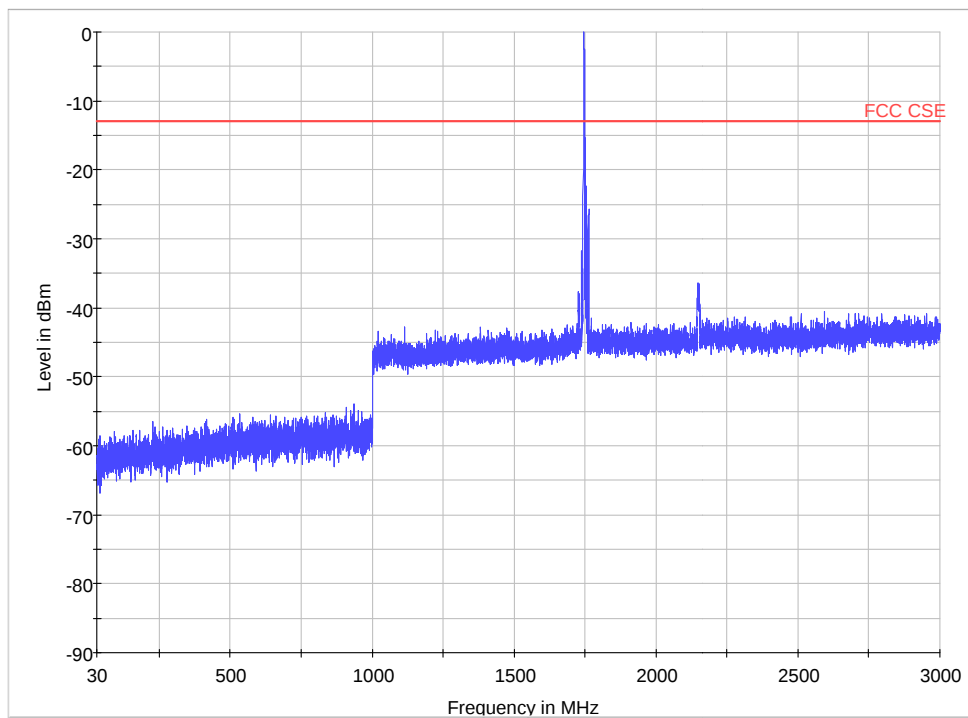
LTE Band 4 CH20175 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5182.5	-33.75	-13.00	20.75



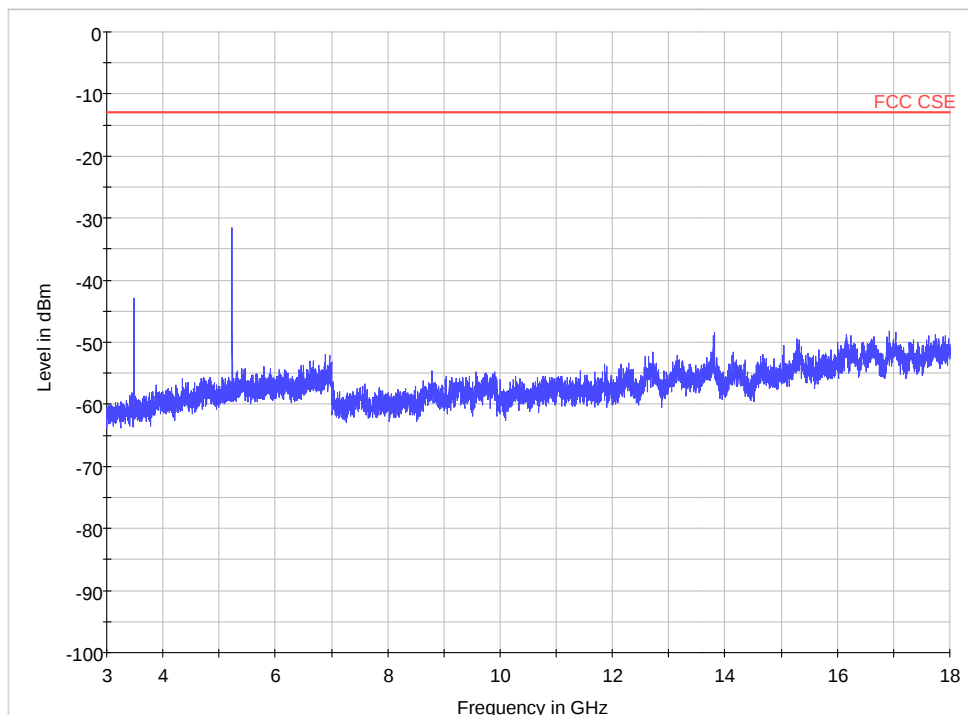
LTE Band 4 CH20175 18GHz~20GHz

LTE Band 4 QPSK Bandwidth = 10MHz CH20350, RB 1



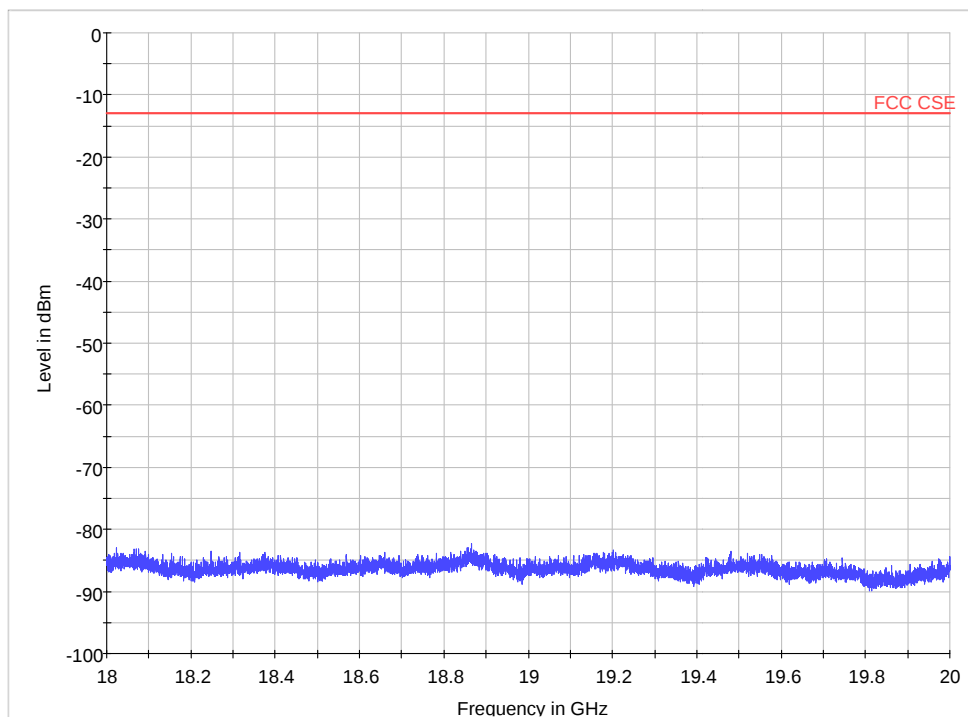
Note: The signal beyond the limit is carrier

LTE Band 4 CH20350 30MHz~3GHz



LTE Band 4 CH20350 3GHz~18GHz

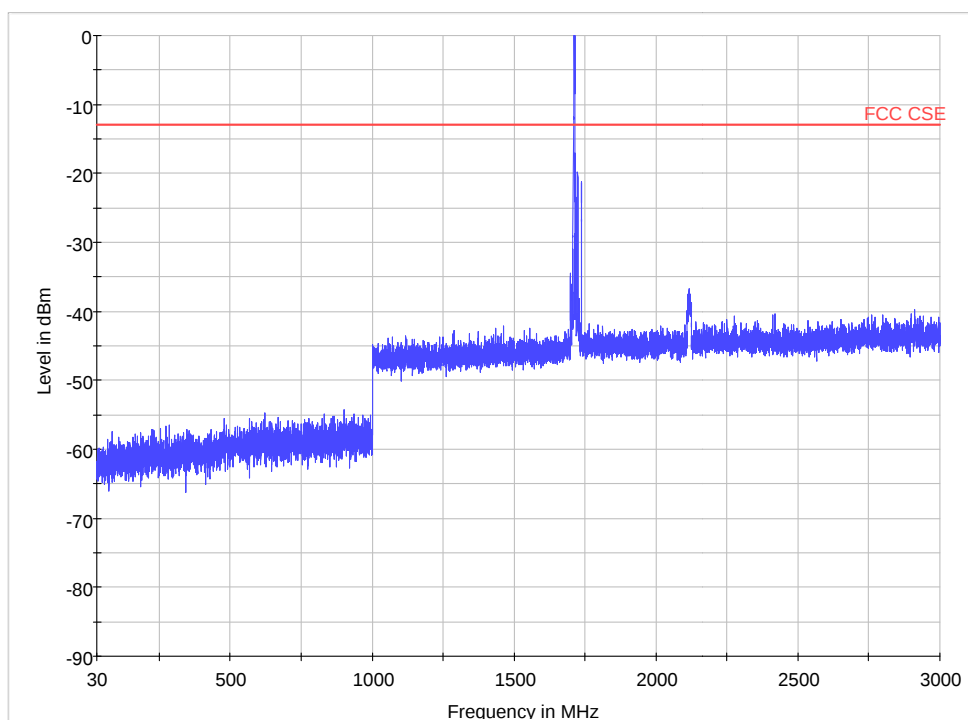
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5235.0	-31.64	-13.00	18.64



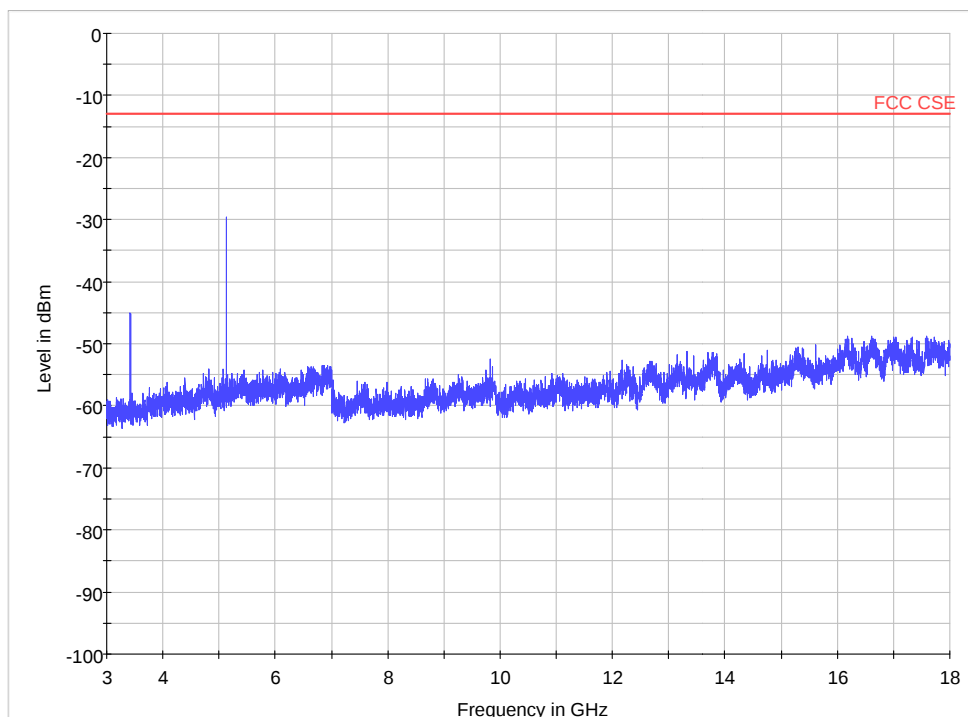
LTE Band 4 CH20350 18GHz~20GHz



LTE Band 4 QPSK Bandwidth = 15MHz CH20025, RB 1

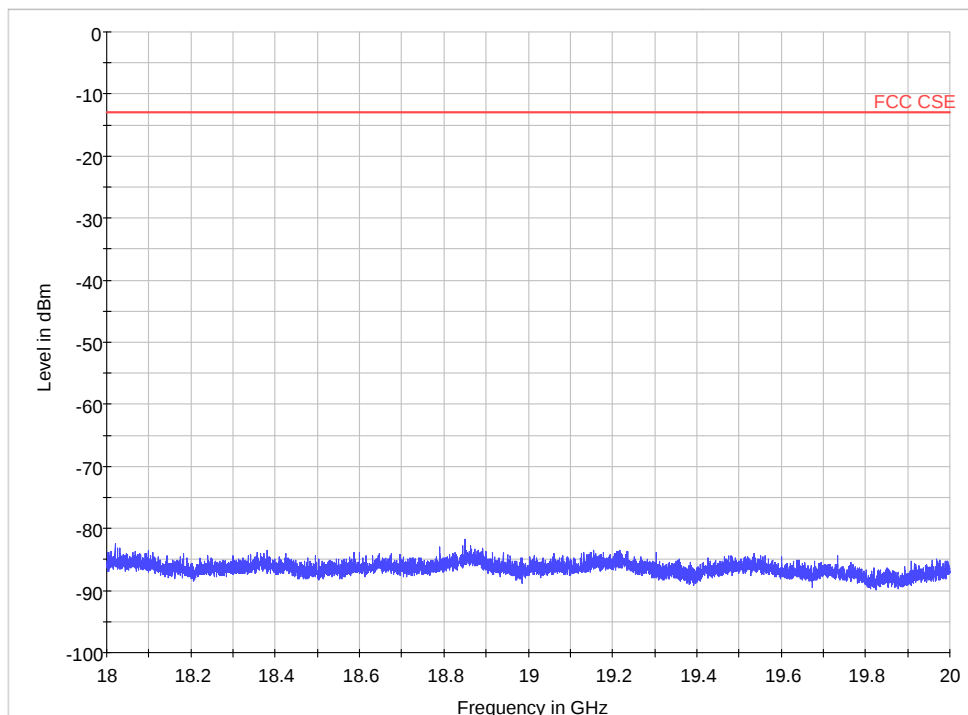


Note: The signal beyond the limit is carrier
LTE Band 4 CH20025 30MHz~3GHz



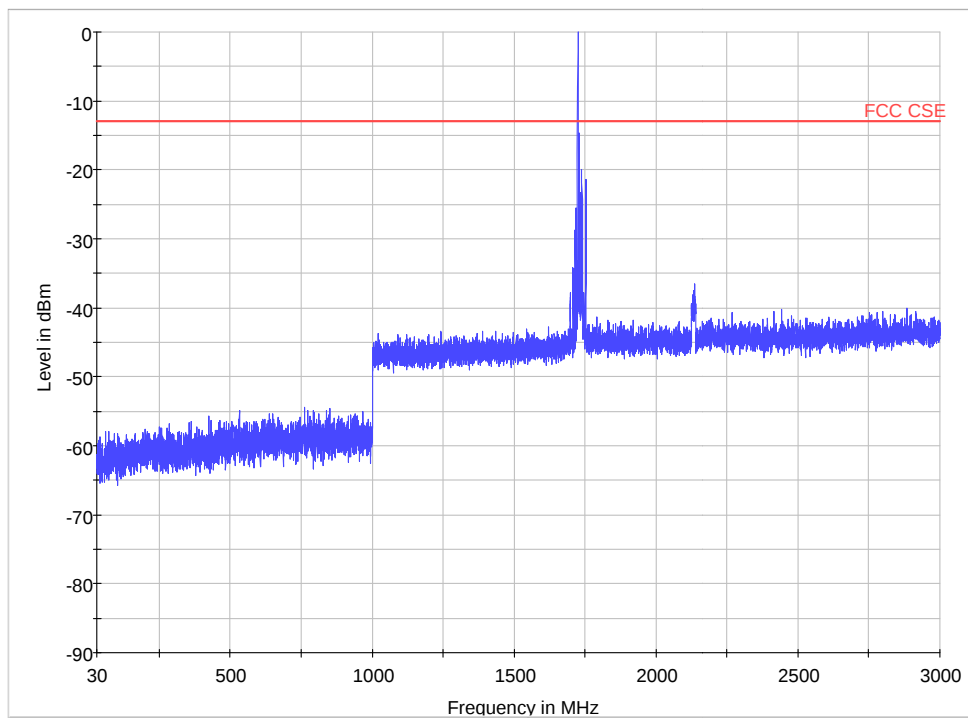
LTE Band 4 CH20025 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5131.9	-29.63	-13.00	16.63



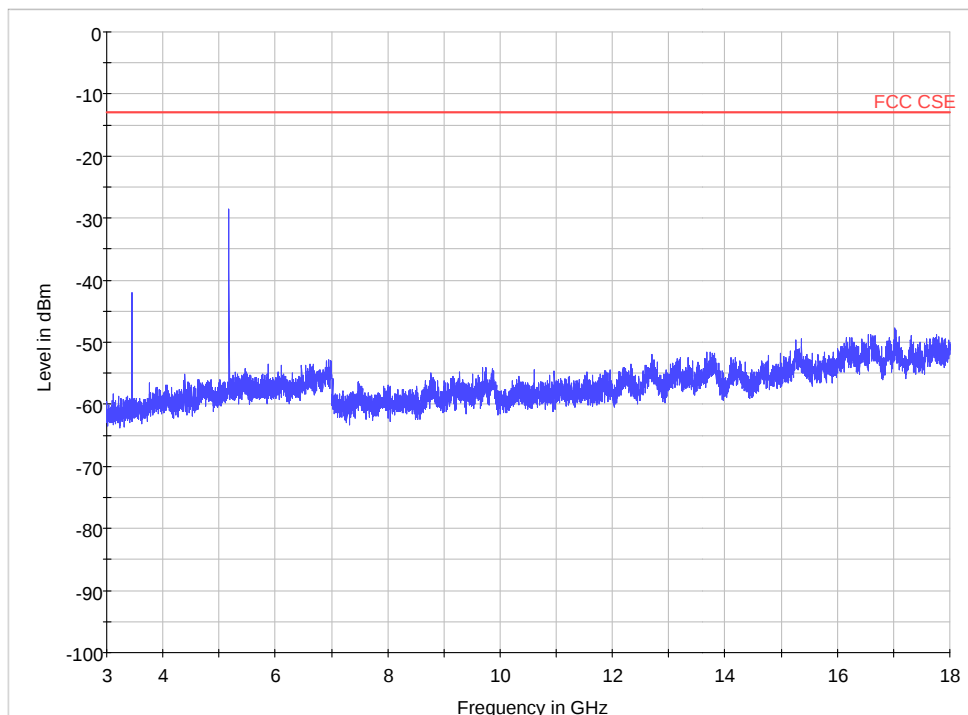
LTE Band 4 CH20025 18GHz~20GHz

LTE Band 4 QPSK Bandwidth = 15MHz CH20175, RB 1



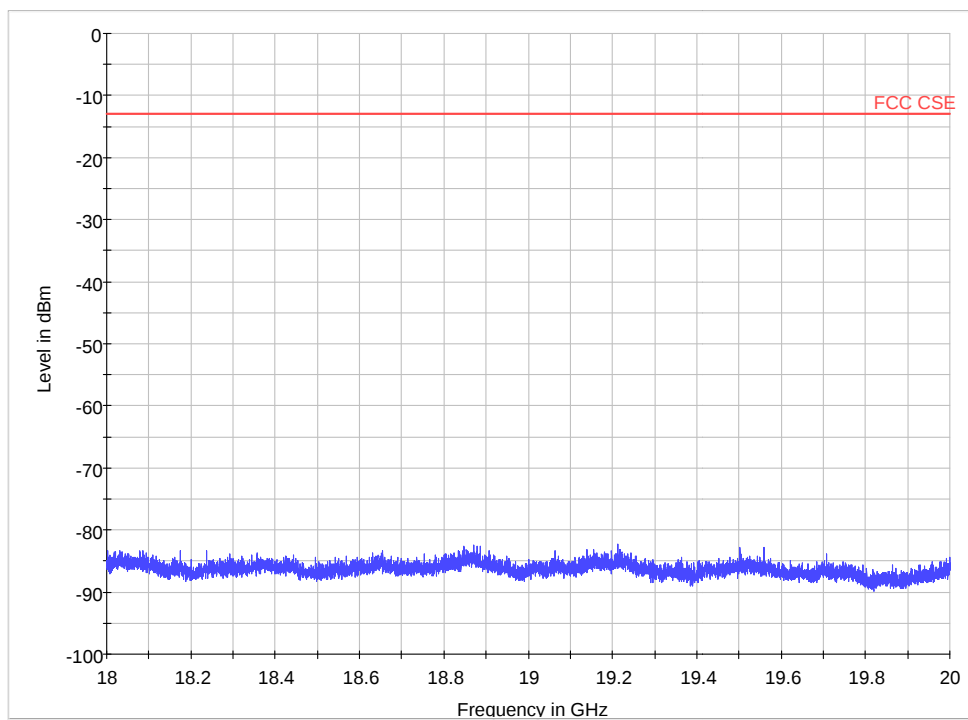
Note: The signal beyond the limit is carrier

LTE Band 4 CH20175 30MHz~3GHz



LTE Band 4 CH20175 3GHz~18GHz

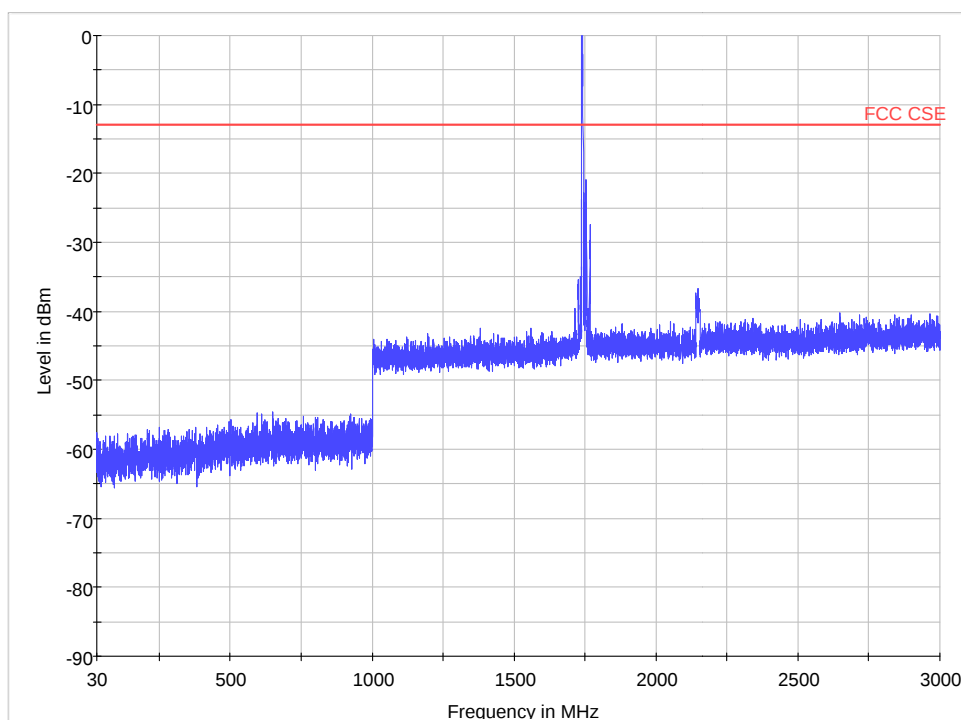
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5176.9	-28.55	-13.00	15.55



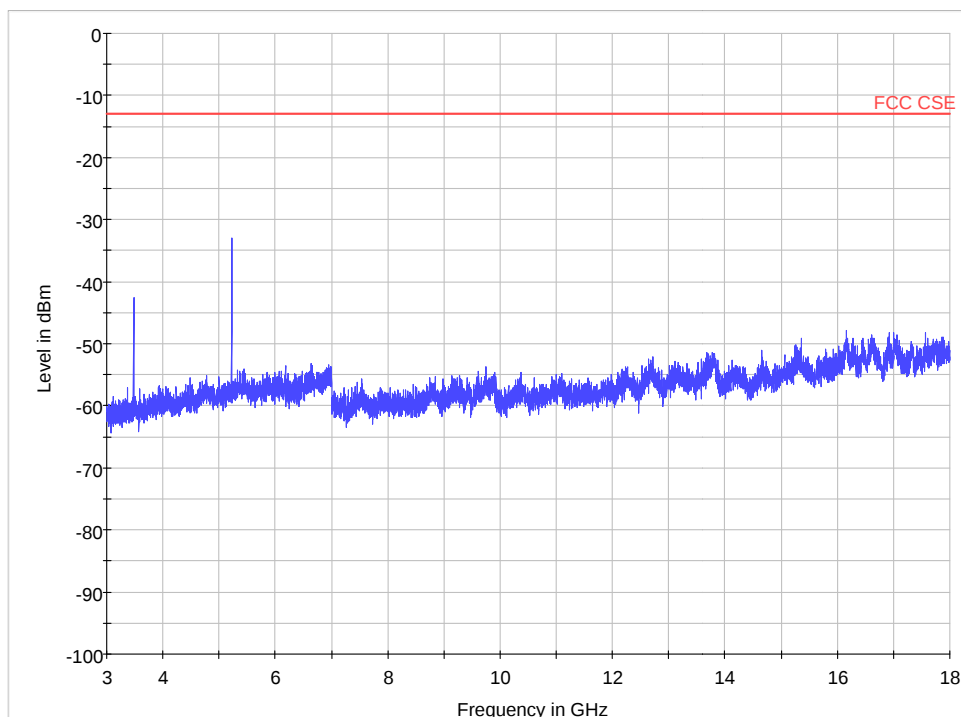
LTE Band 4 CH20175 18GHz~20GHz



LTE Band 4 QPSK Bandwidth = 15MHz CH20325, RB 1

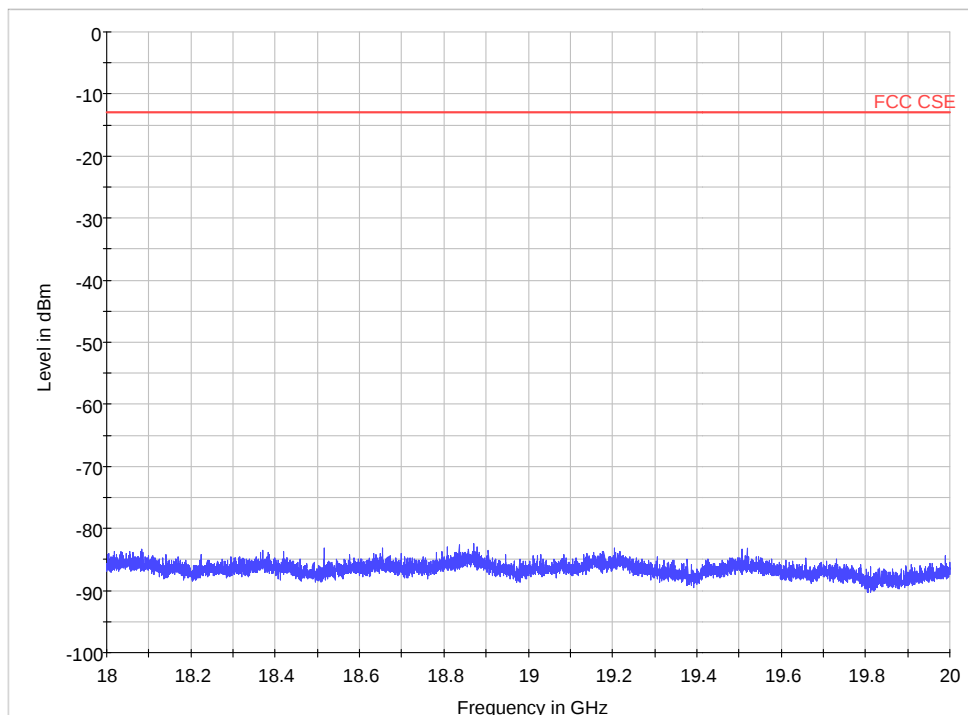


Note: The signal beyond the limit is carrier
LTE Band 4 CH20325 30MHz~3GHz



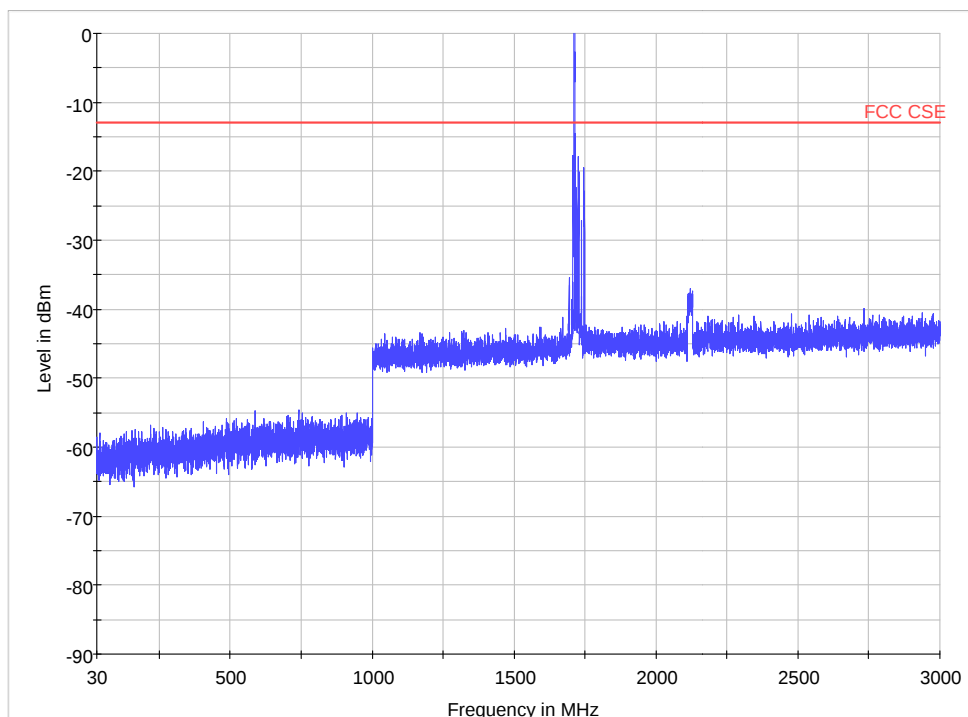
LTE Band 4 CH20325 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5221.9	-32.97	-13.00	19.97

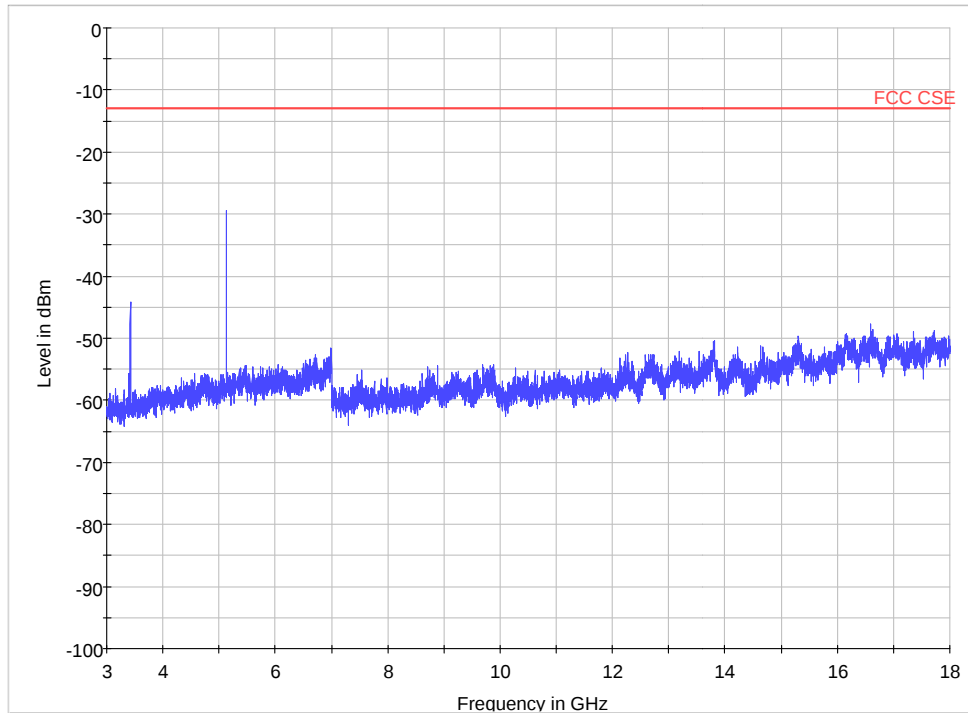


LTE Band 4 CH20325 18GHz~20GHz

LTE Band 4 QPSK Bandwidth = 20MHz CH20050, RB 1

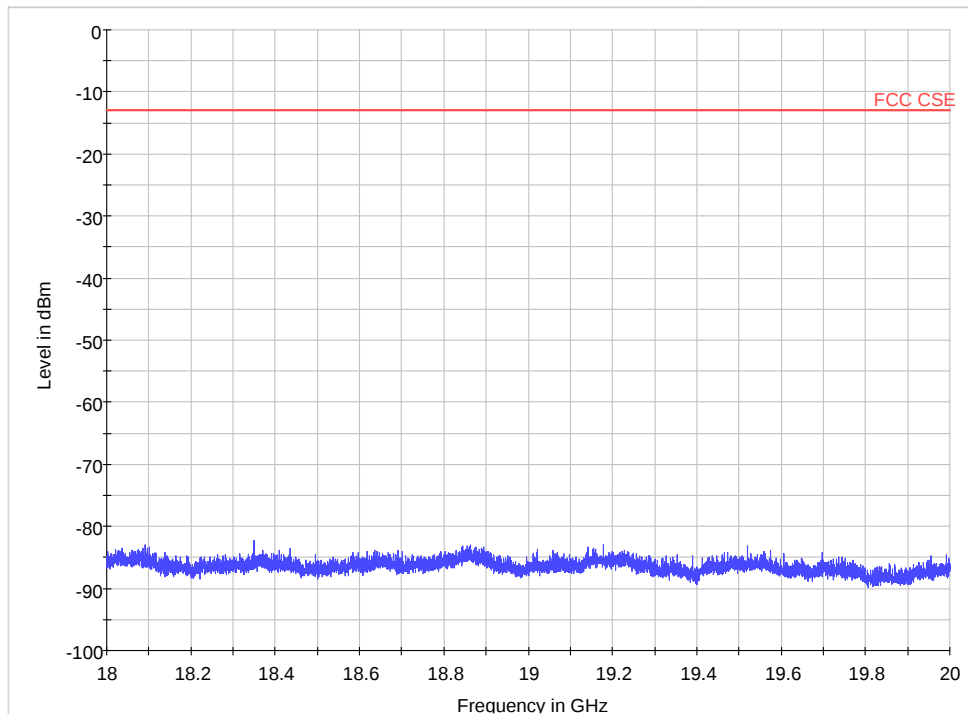


Note: The signal beyond the limit is carrier
LTE Band 4 CH20050 30MHz~3GHz



LTE Band 4 CH20050 3GHz~18GHz

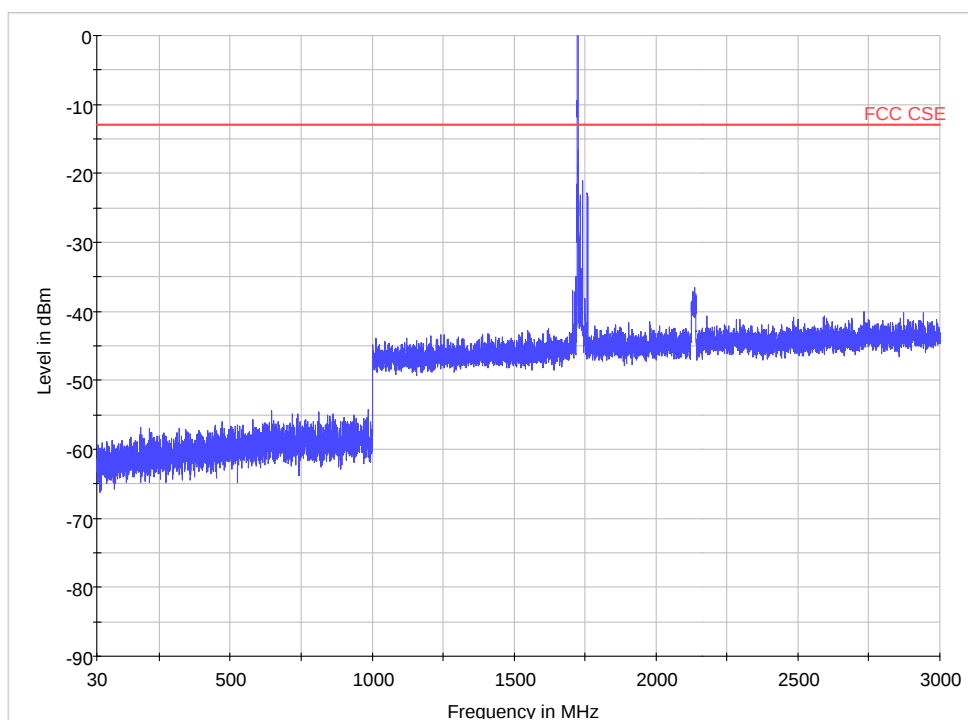
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5133.8	-29.50	-13.00	16.50



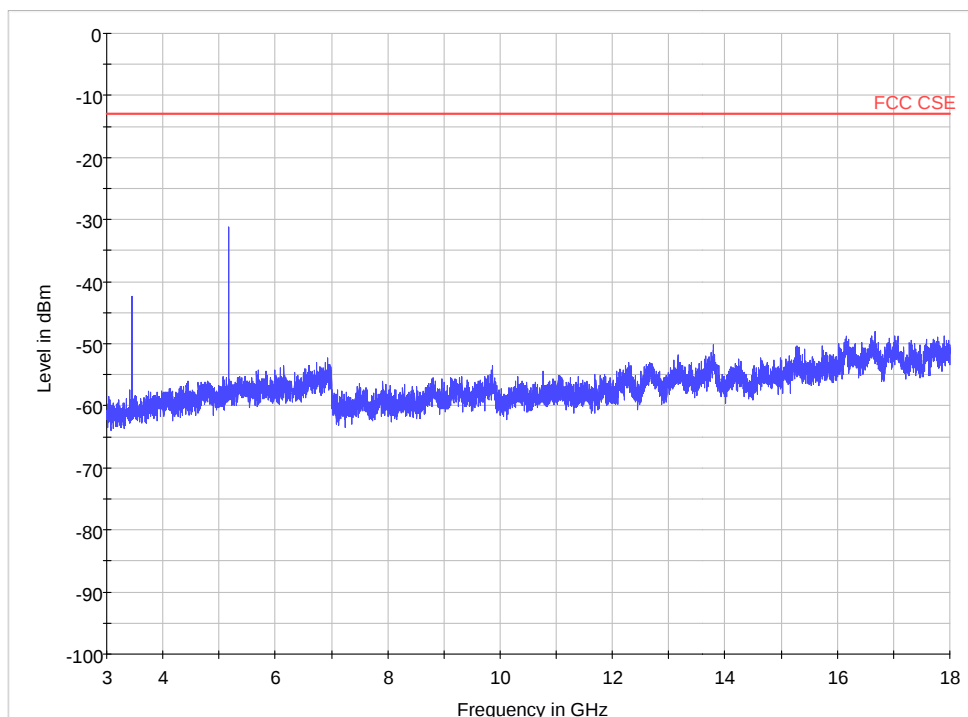
LTE Band 4 CH20050 18GHz~20GHz



LTE Band 4 QPSK Bandwidth = 20MHz CH20175, RB 1

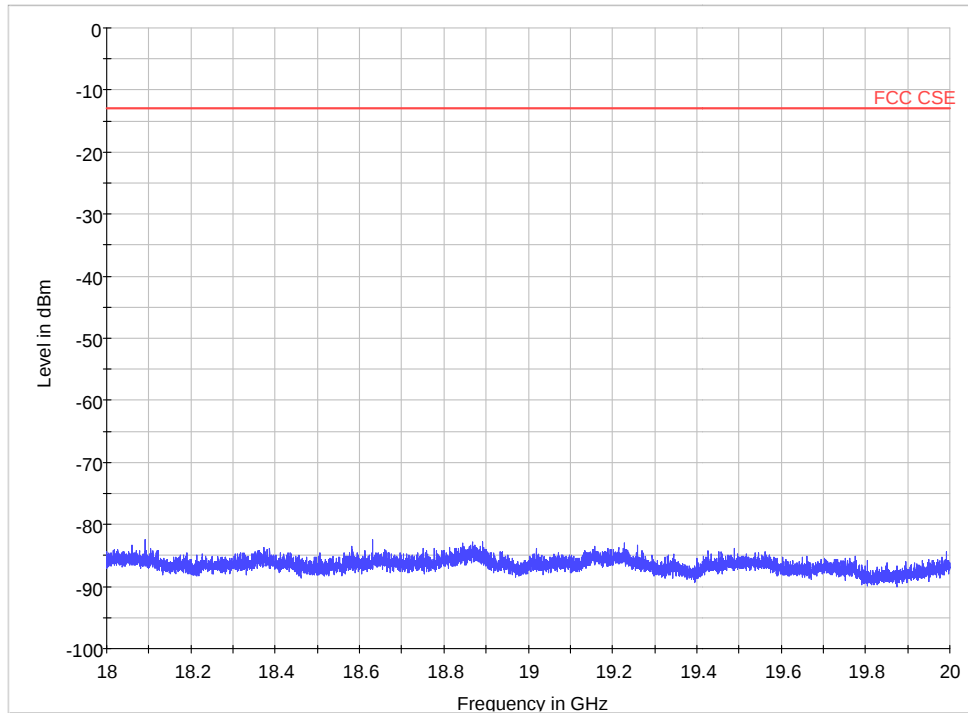


Note: The signal beyond the limit is carrier
LTE Band 4 CH20175 30MHz~3GHz



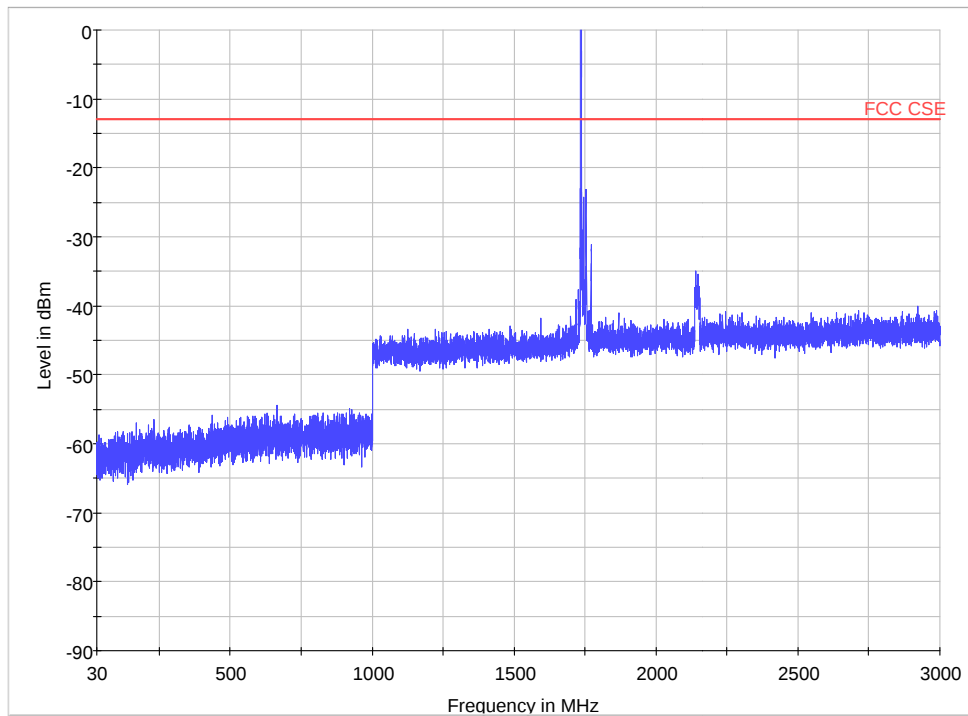
LTE Band 4 CH20175 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5171.3	-31.27	-13.00	18.27



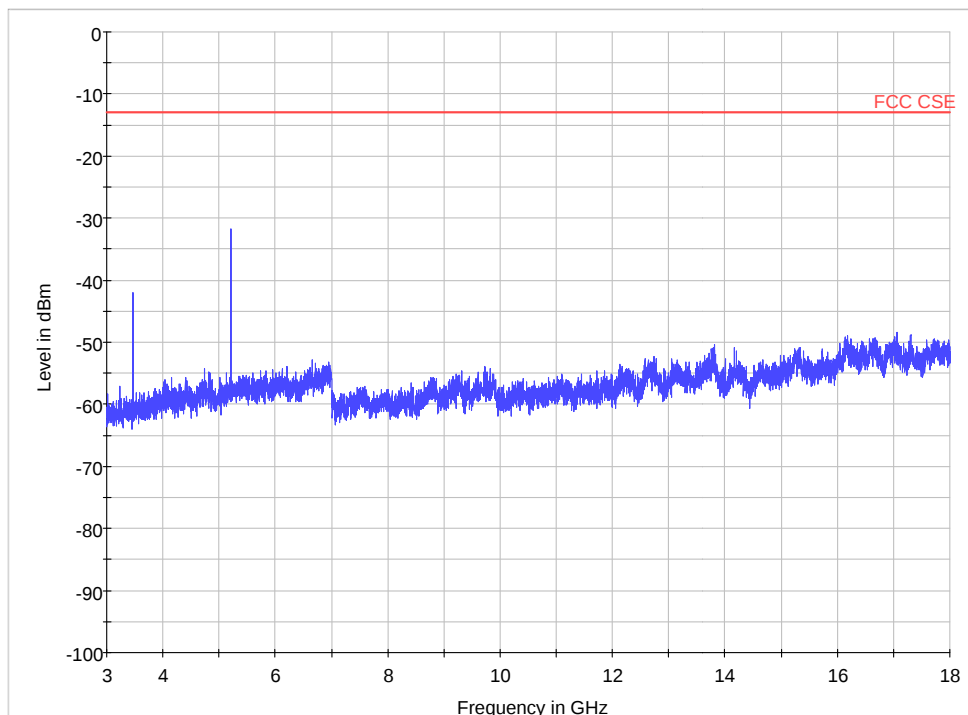
LTE Band 4 CH20175 18GHz~20GHz

LTE Band 4 QPSK Bandwidth = 20MHz CH20300, RB 1



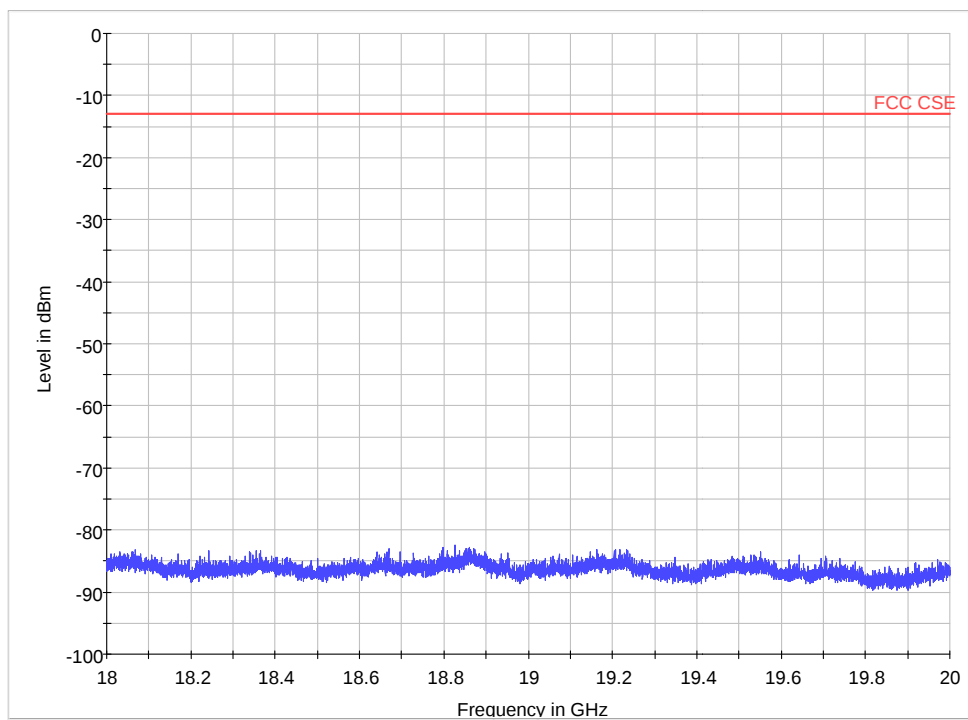
Note: The signal beyond the limit is carrier

LTE Band 4 CH20300 30MHz~3GHz



LTE Band 4 CH20300 3GHz~18GHz

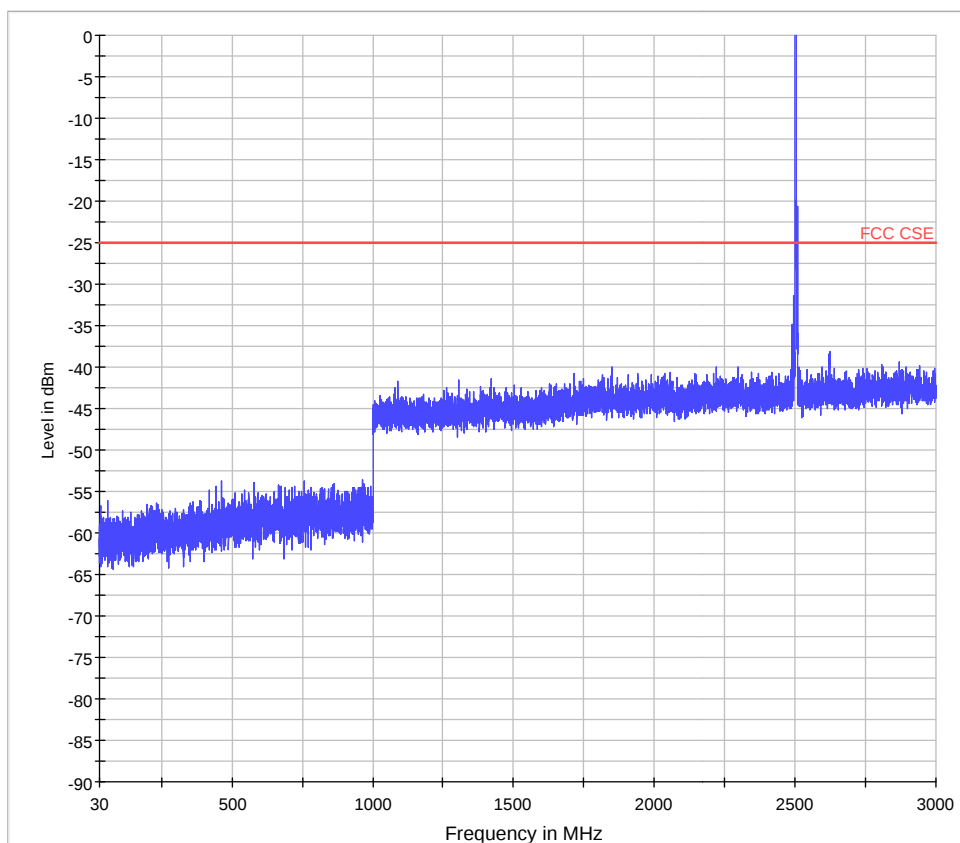
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5208.8	-31.80	-13.00	18.80



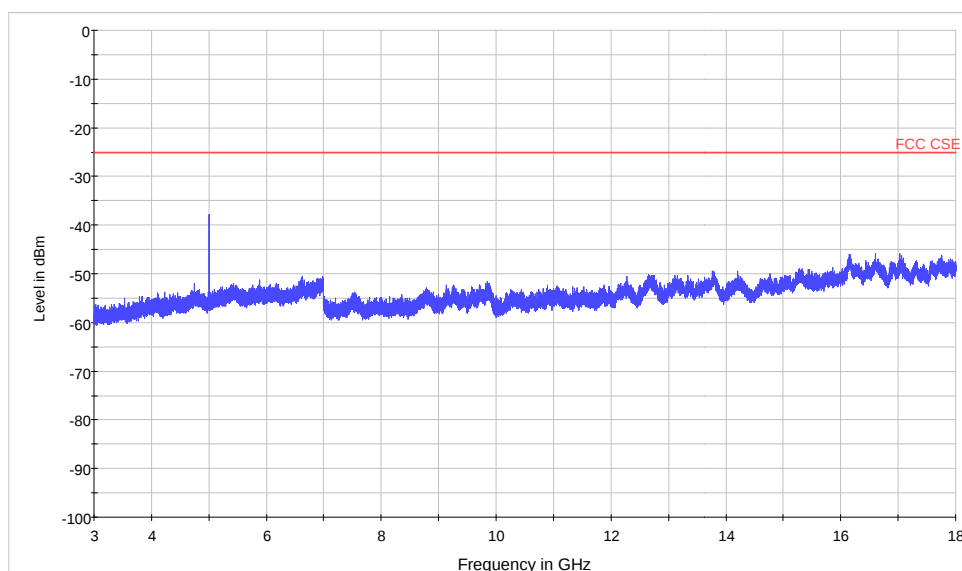
LTE Band 4 CH20300 18GHz~20GHz



LTE Band 7 QPSK Bandwidth = 5MHz CH20775, RB 1

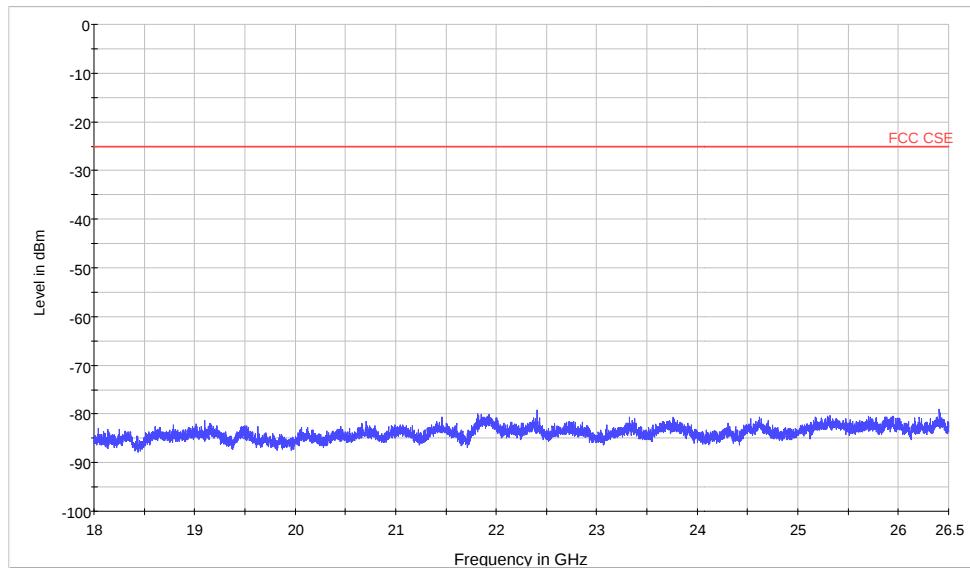


Note: The signal beyond the limit is carrier
LTE Band 7 CH20775 30MHz~3GHz



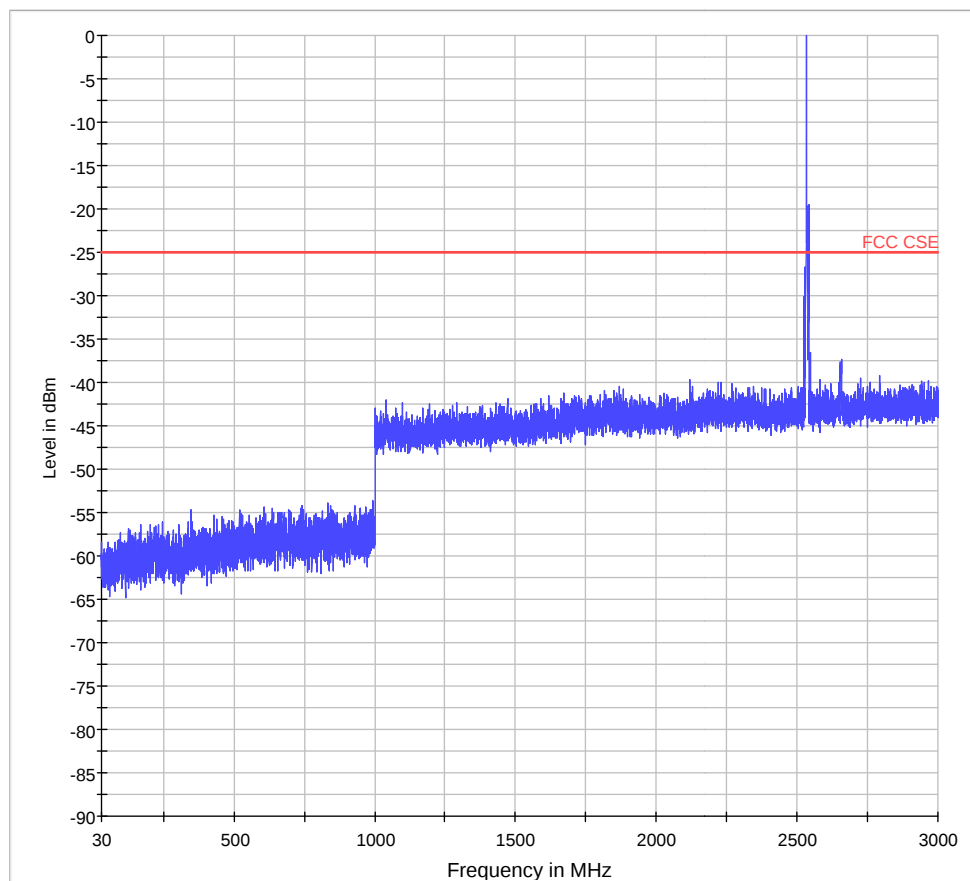
LTE Band 7 CH20775 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5001.0	-37.77	-25	12.77



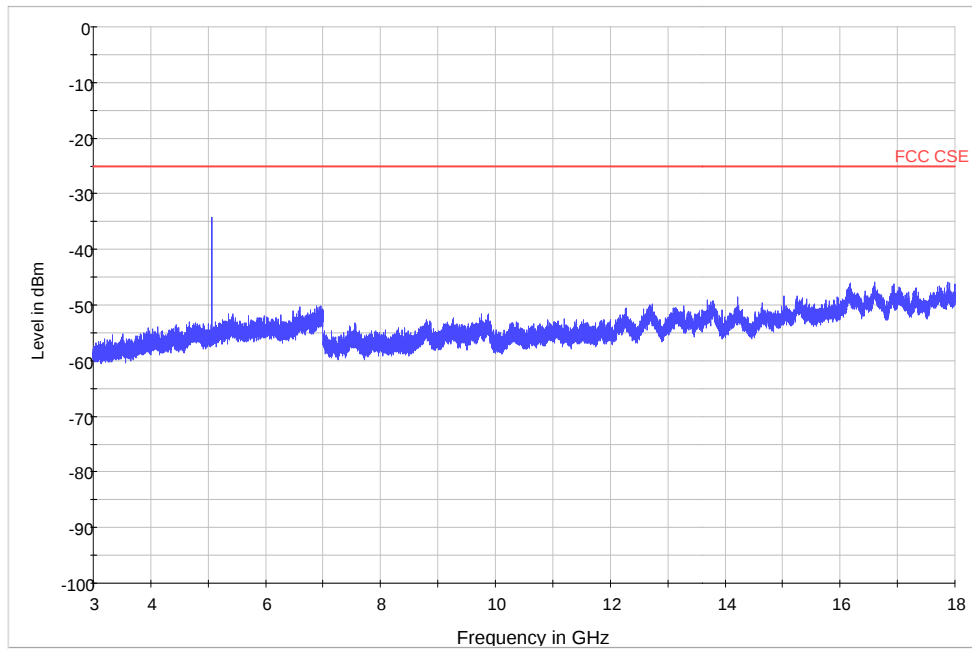
LTE Band 7 CH20775 18GHz~26.5GHz

LTE Band 7 QPSK Bandwidth = 5MHz CH21100, RB 1



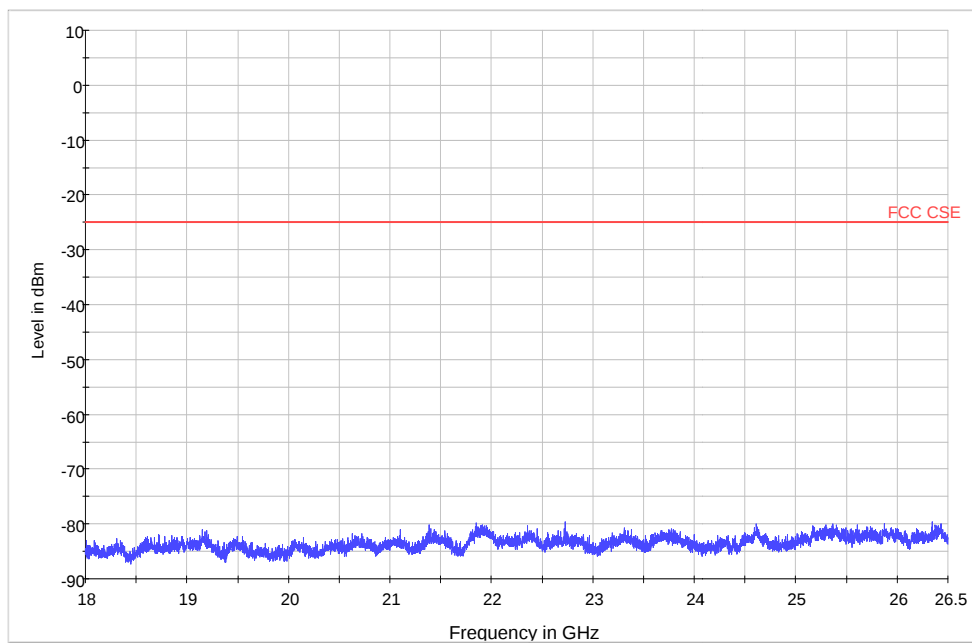
Note: The signal beyond the limit is carrier

LTE Band 7 CH21100 30MHz~3GHz



LTE Band 7 CH21100 3GHz~18GHz

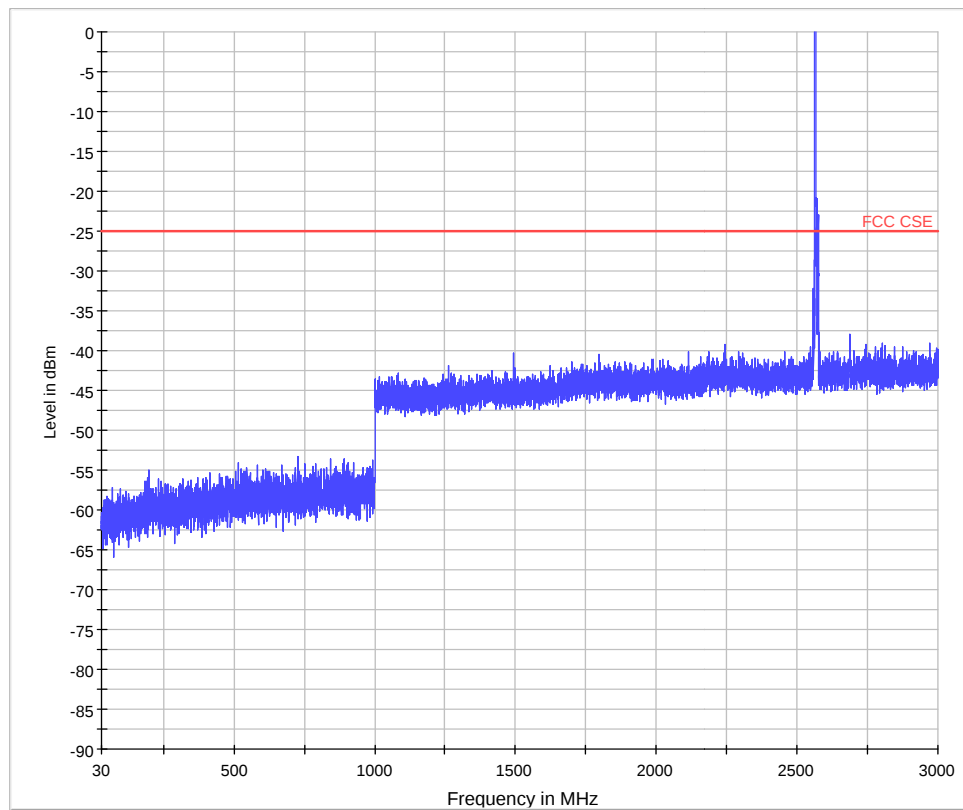
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5065.5	-34.27	-25	9.27



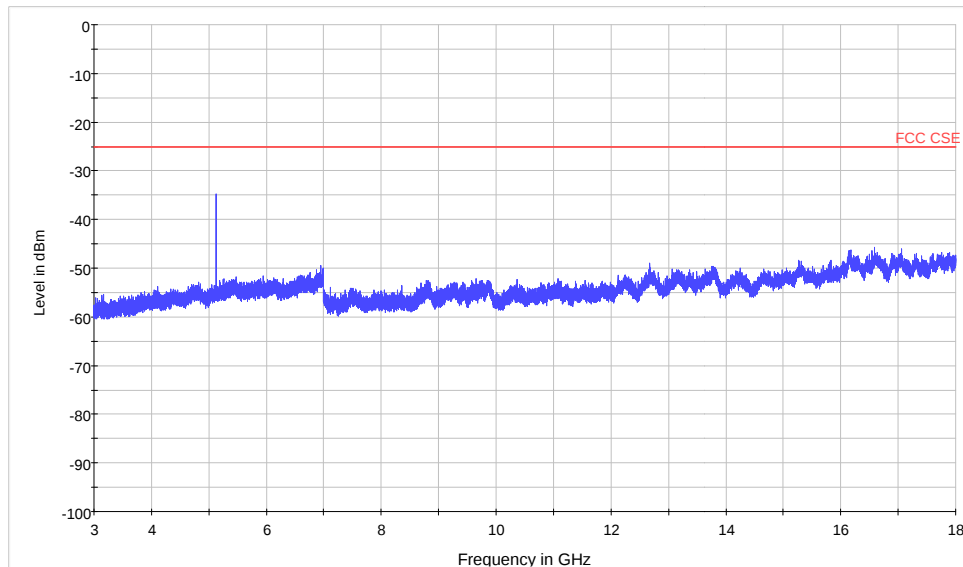
LTE Band 7 CH21100 18GHz~26.5GHz



LTE Band 7 QPSK Bandwidth = 5MHz CH21425, RB 1

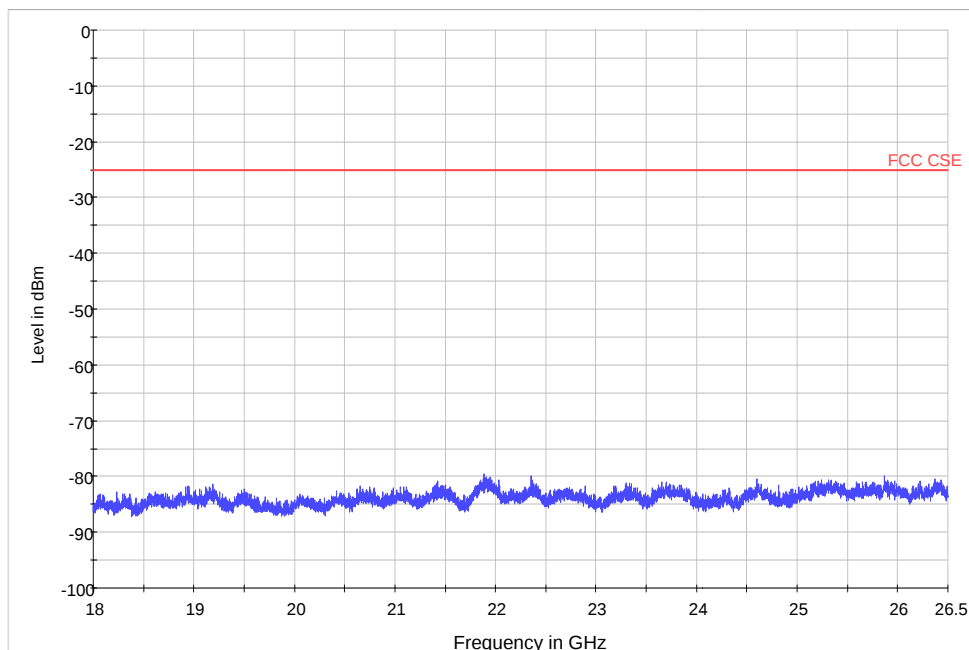


Note: The signal beyond the limit is carrier
LTE Band 7 CH21425 30MHz~3GHz



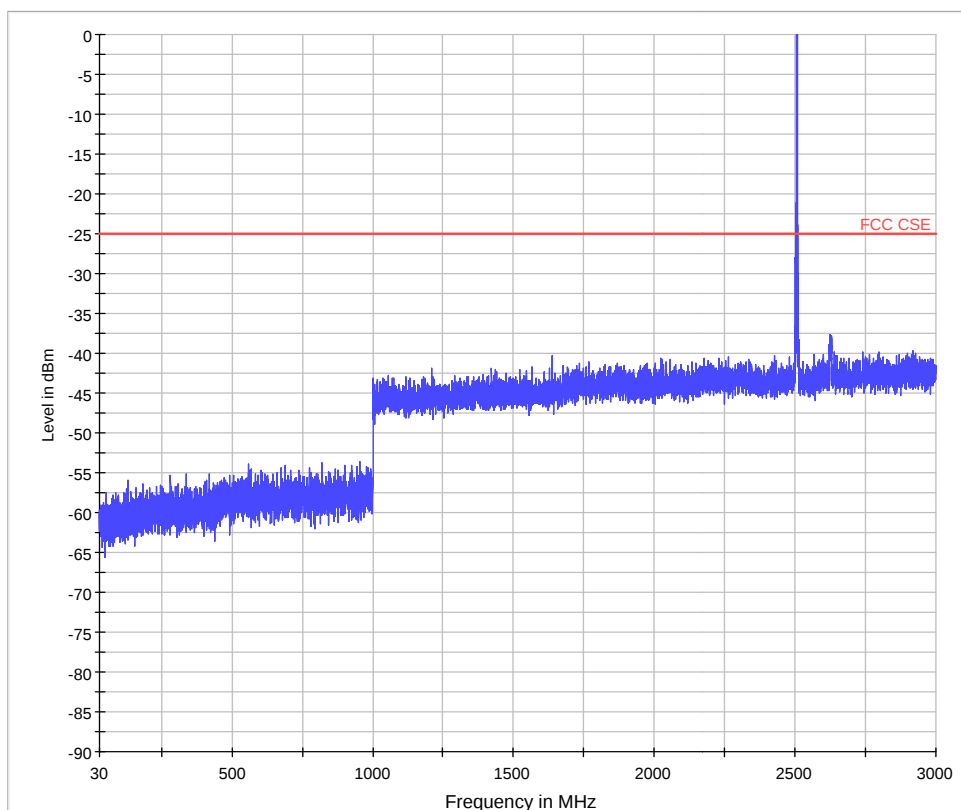
LTE Band 7 CH21425 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5130.8	-34.69	-25	9.69



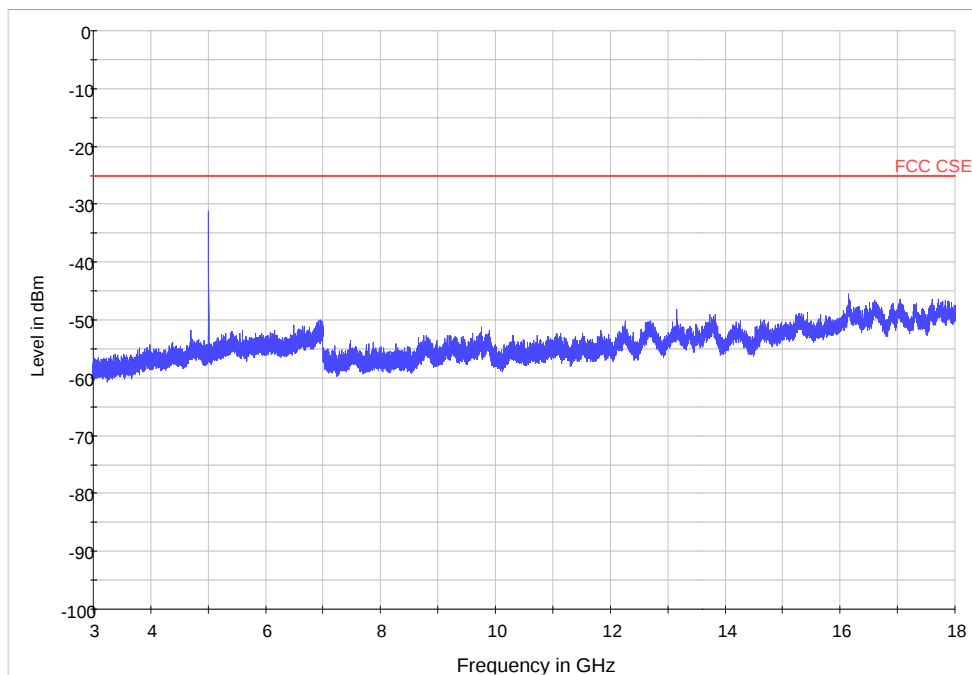
LTE Band 7 CH21425 18GHz~26.5GHz

LTE Band 7 QPSK Bandwidth = 10MHz CH20800, RB 1



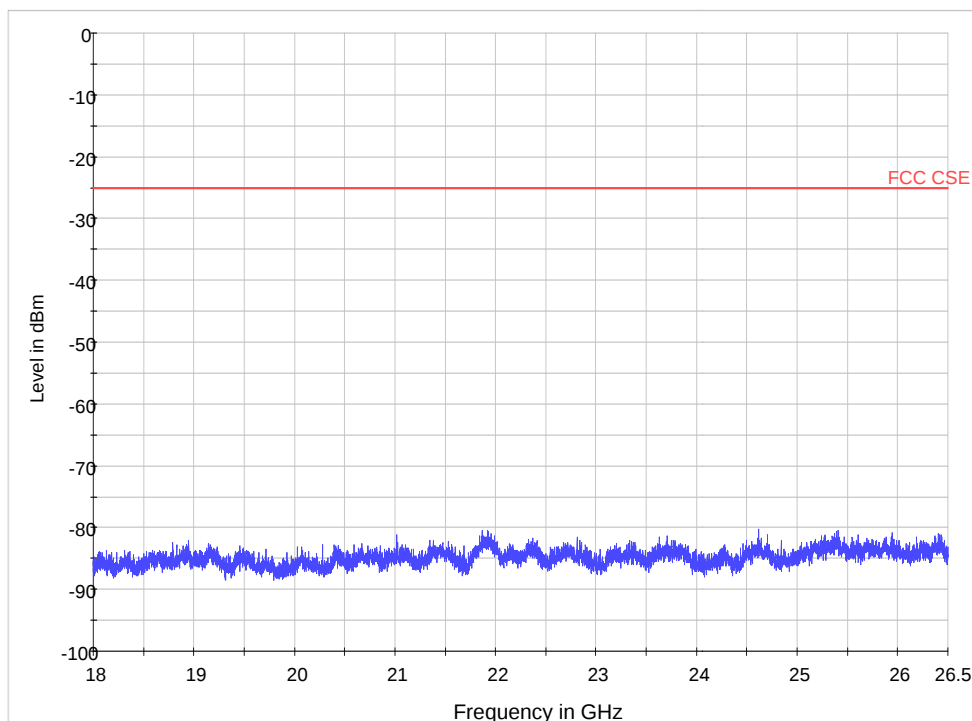
Note: The signal beyond the limit is carrier

LTE Band 7 CH20800 30MHz~3GHz



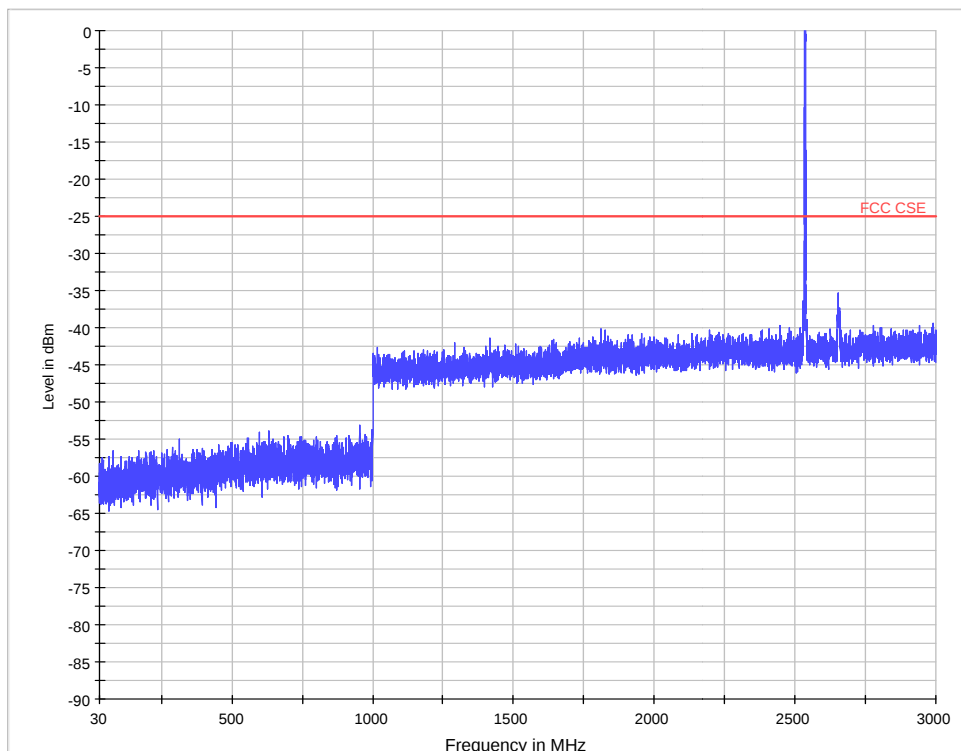
LTE Band 7 CH20800 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5010.0	-31.18	-25	6.18

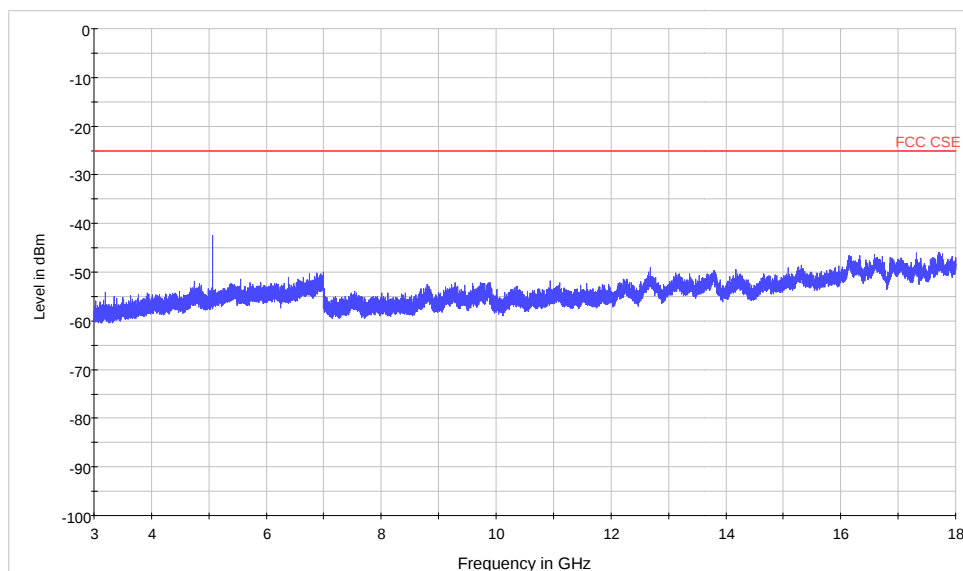


LTE Band 7 CH20800 18GHz~26.5GHz

LTE Band 7 QPSK Bandwidth = 10MHz CH21100, RB 1

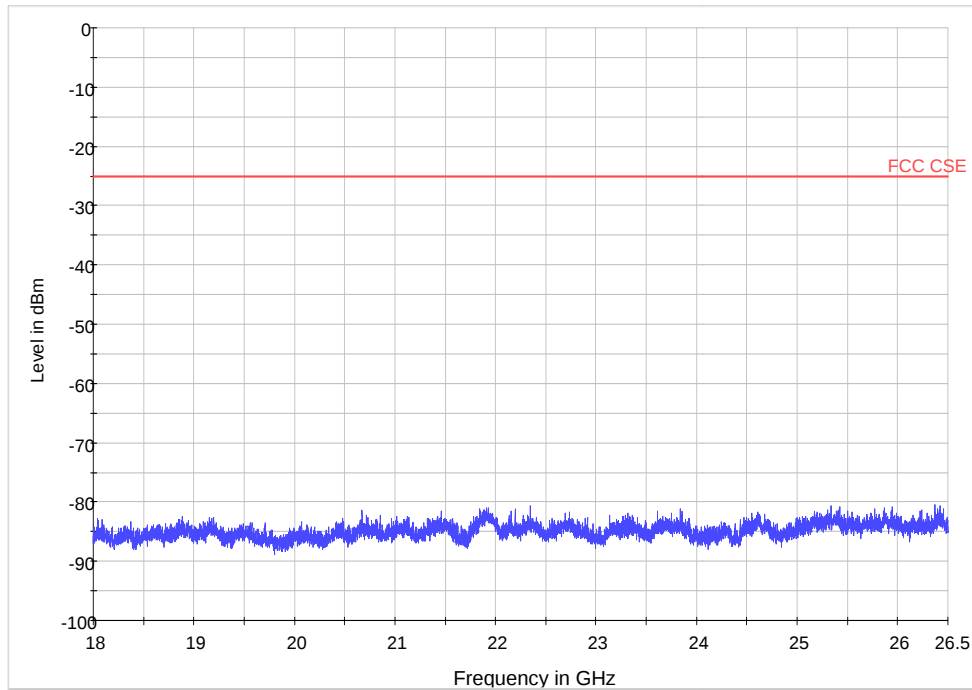


Note: The signal beyond the limit is carrier
LTE Band 7 CH21100 30MHz~3GHz



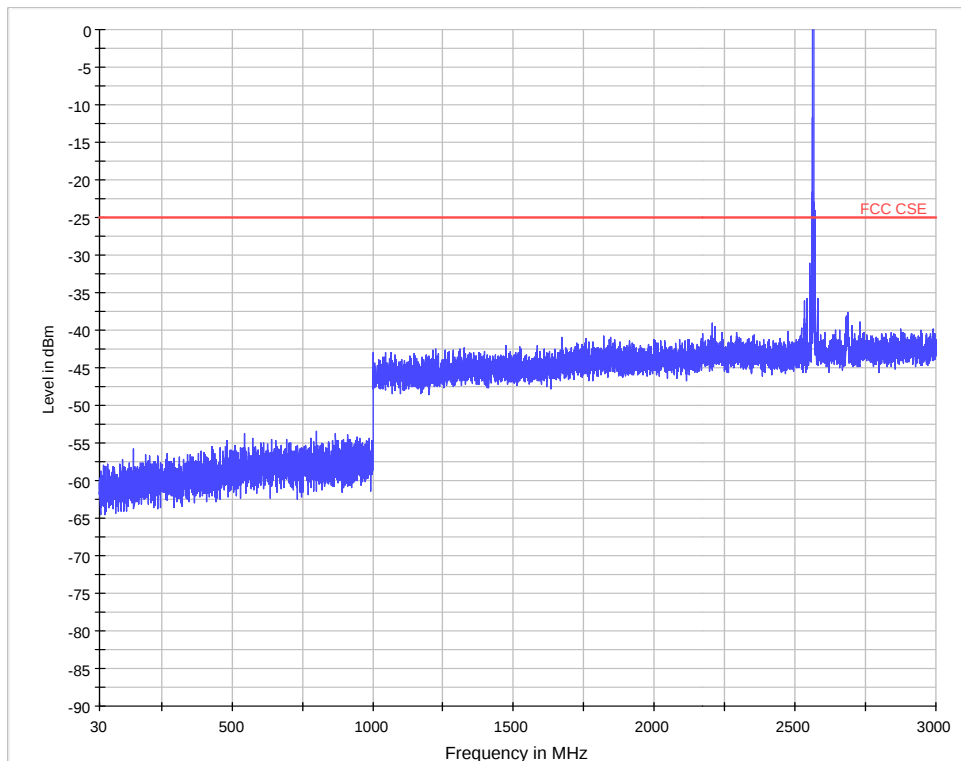
LTE Band 7 CH21100 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5070.4	-42.51	-25	17.51

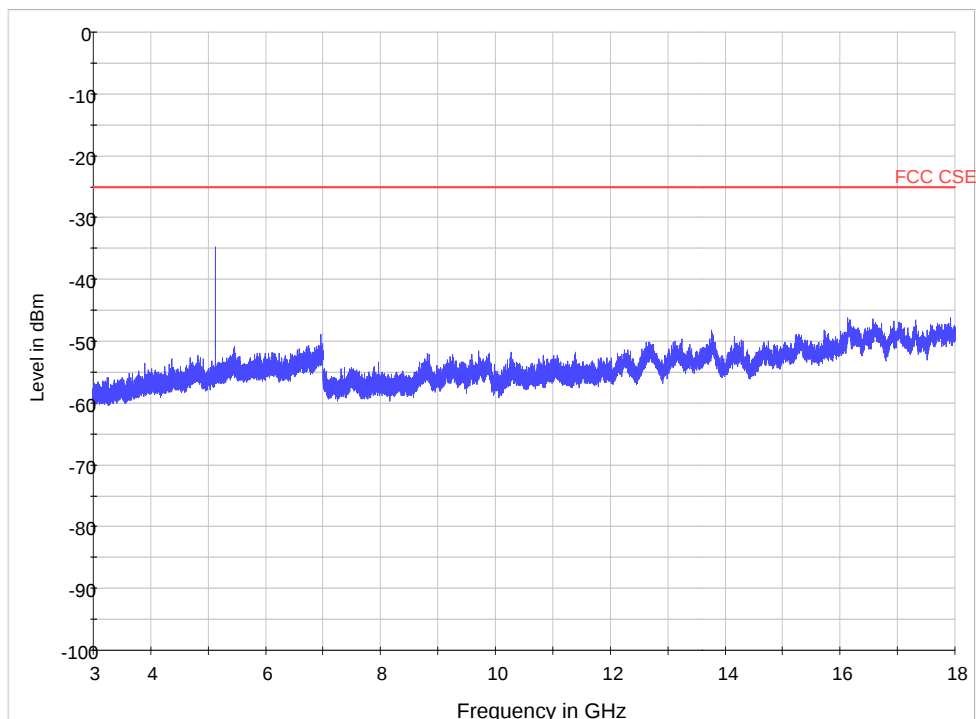


LTE Band 7 CH21100 18GHz~26.5GHz

LTE Band 7 QPSK Bandwidth = 10MHz CH21400, RB 1

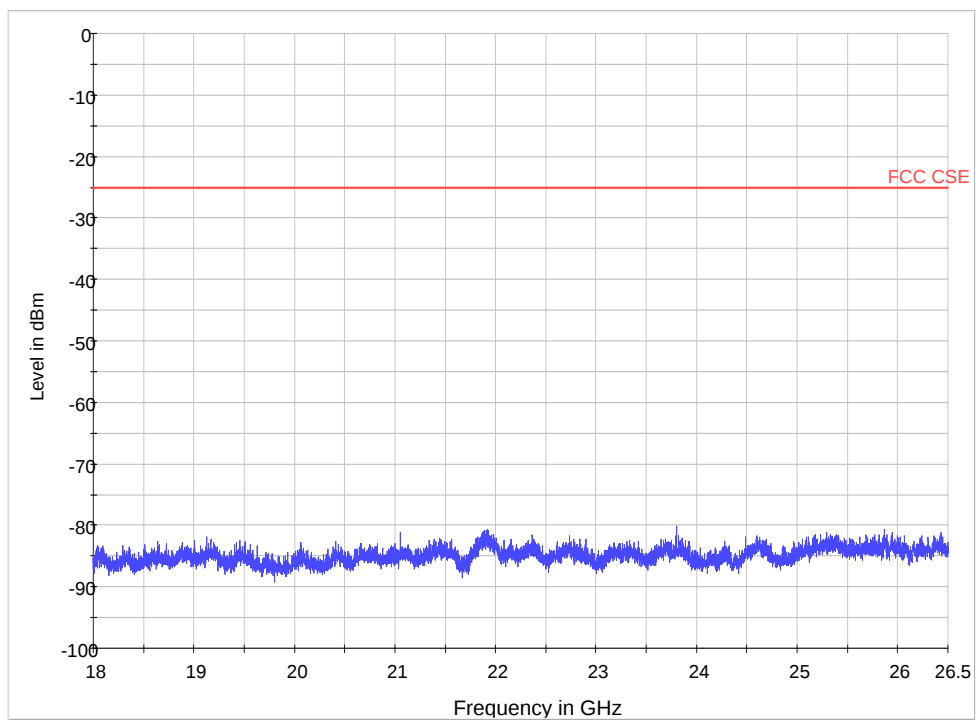


Note: The signal beyond the limit is carrier
LTE Band 7 CH21400 30MHz~3GHz



LTE Band 7 CH21400 3GHz~18GHz

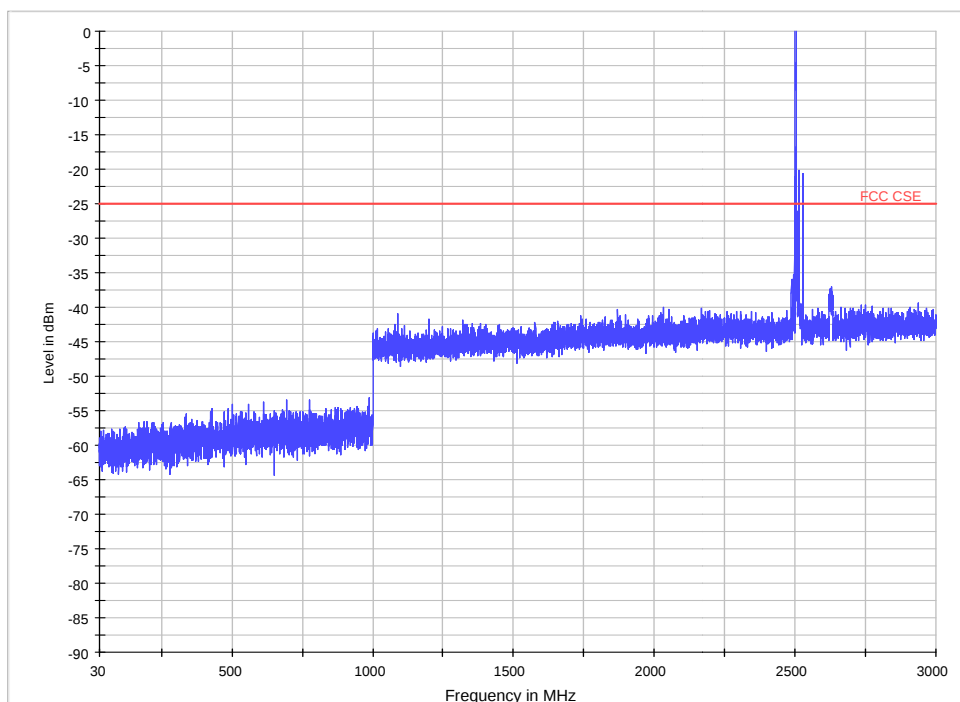
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5130.4	-34.84	-25	9.84



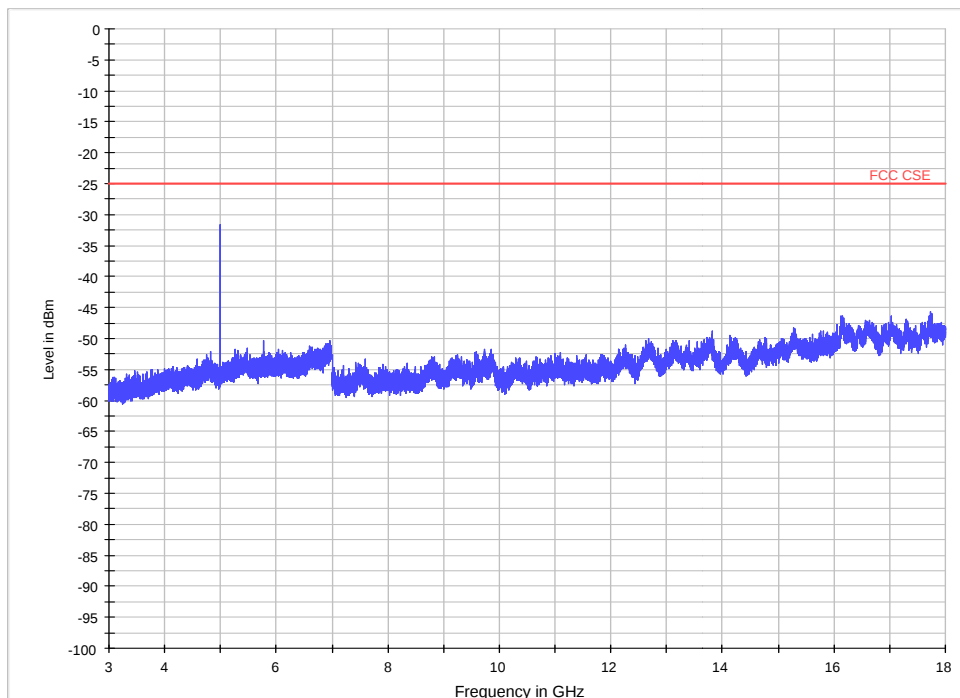
LTE Band 7 CH21400 18GHz~26.5GHz



LTE Band 7 QPSK Bandwidth = 15MHz CH20825, RB 1

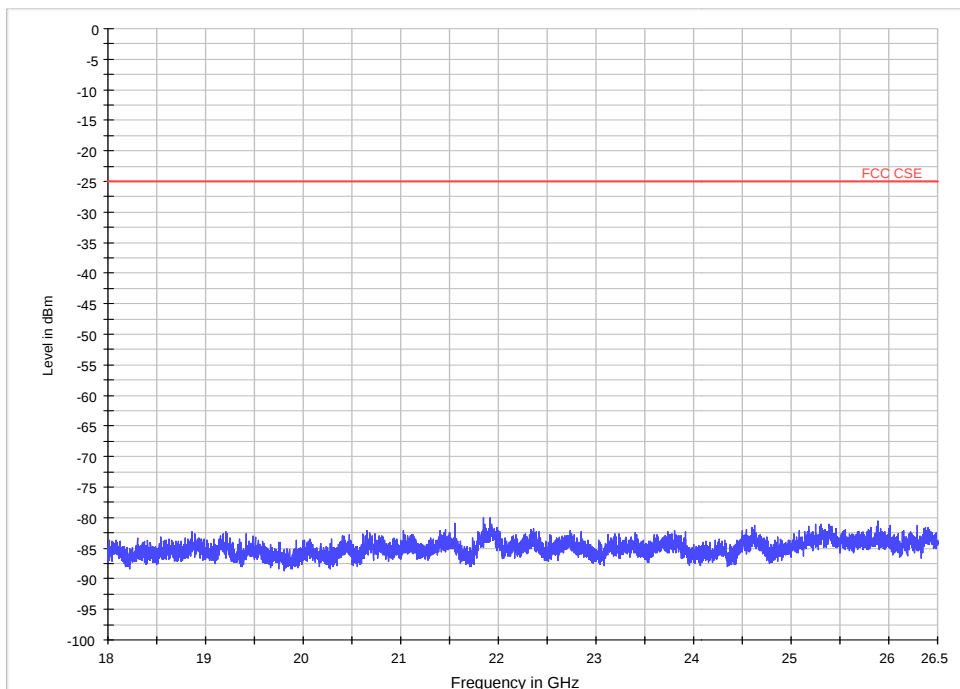


Note: The signal beyond the limit is carrier
LTE Band 7 CH20825 30MHz~3GHz



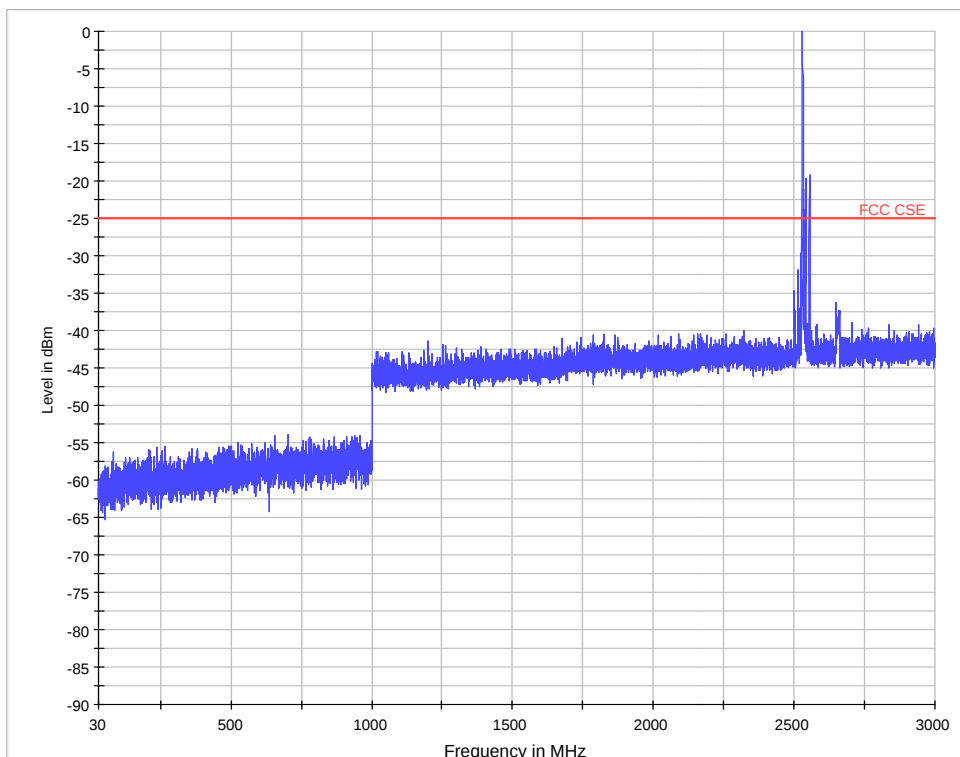
LTE Band 7 CH20825 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5001.8	-31.53	-25	6.53

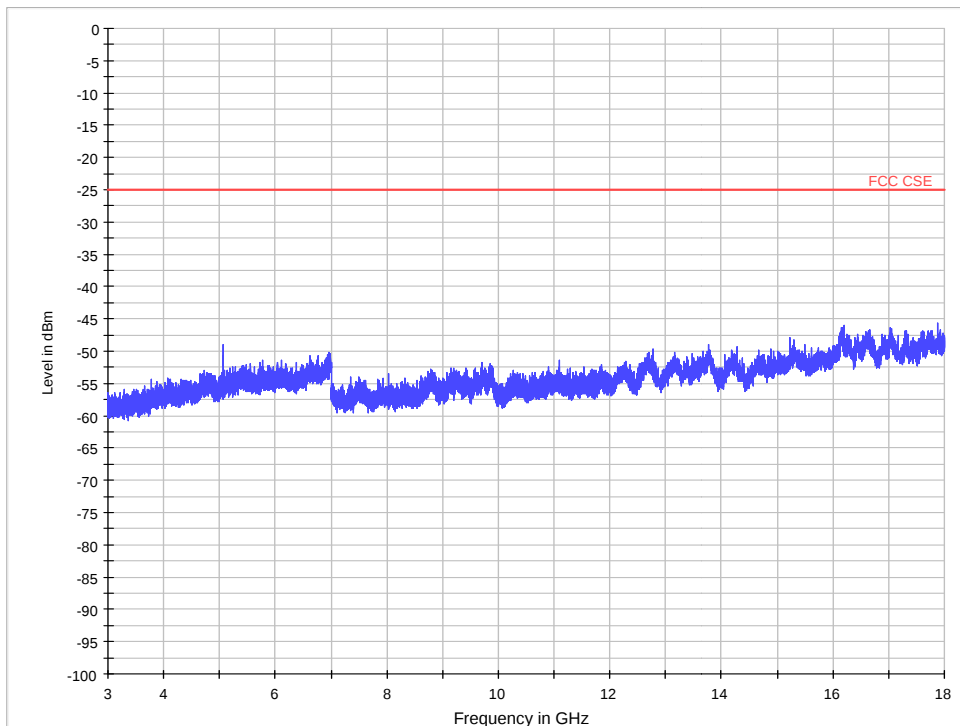


LTE Band 7 CH20825 18GHz~26.5GHz

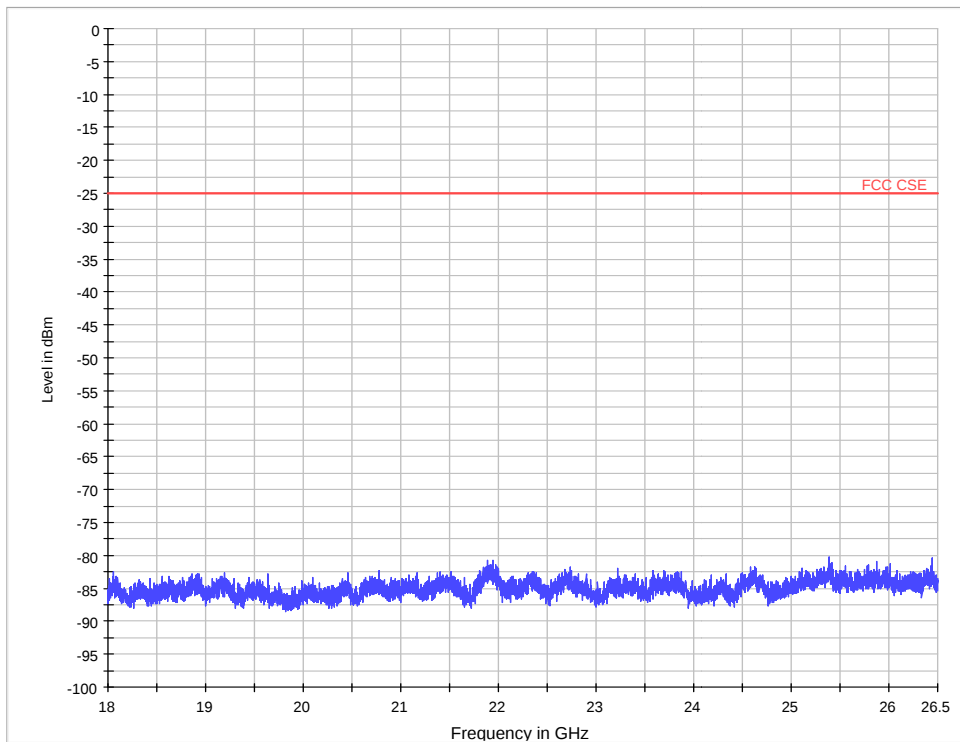
LTE Band 7 QPSK Bandwidth = 15MHz CH21100, RB 1



Note: The signal beyond the limit is carrier
LTE Band 7 CH21100 30MHz~3GHz



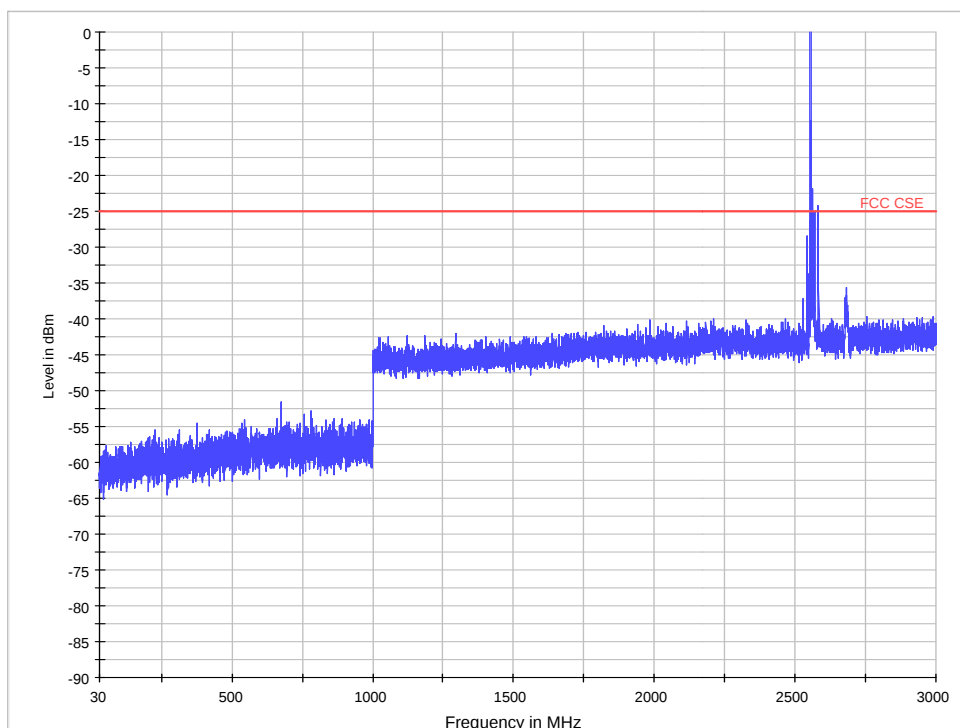
LTE Band 7 CH21100 3GHz~18GHz



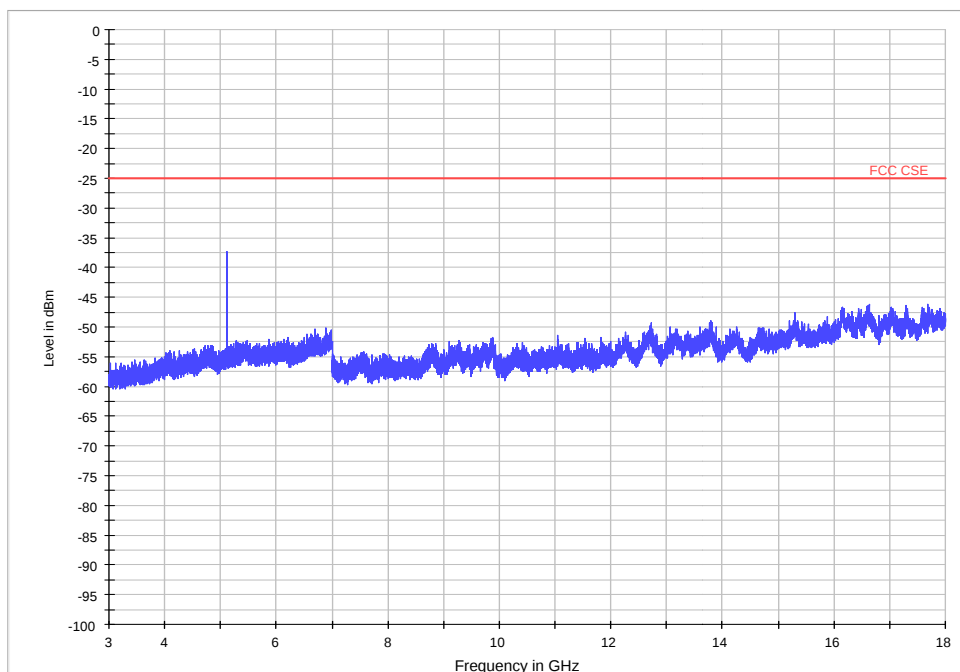
LTE Band 7 CH21100 18GHz~26.5GHz



LTE Band 7 QPSK Bandwidth = 15MHz CH21375, RB 1

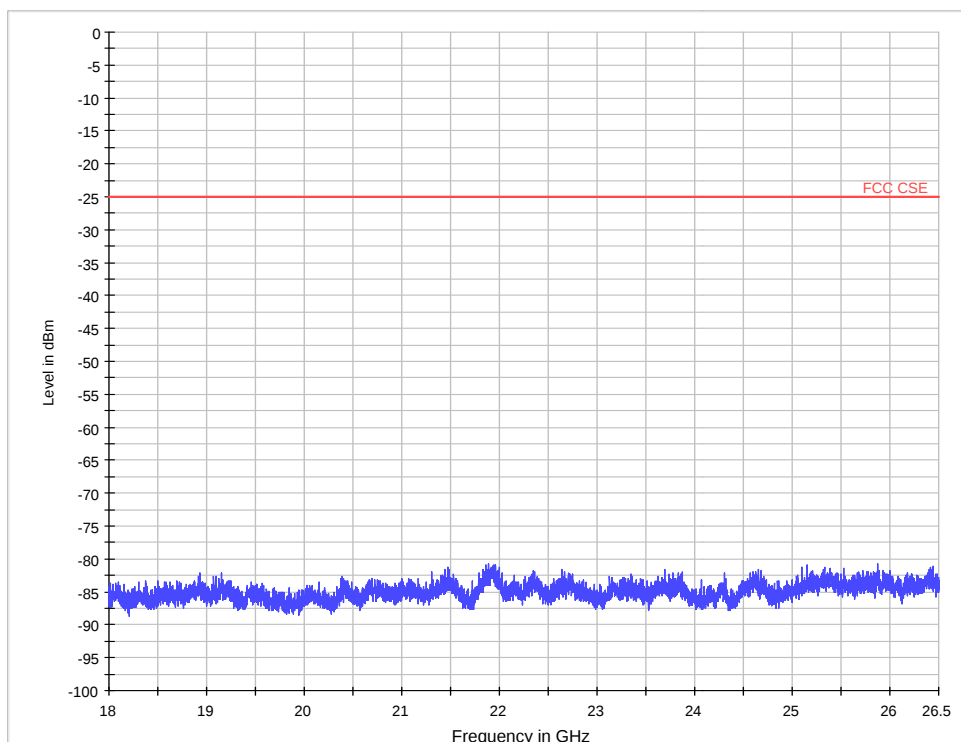


Note: The signal beyond the limit is carrier
LTE Band 7 CH21375 30MHz~3GHz



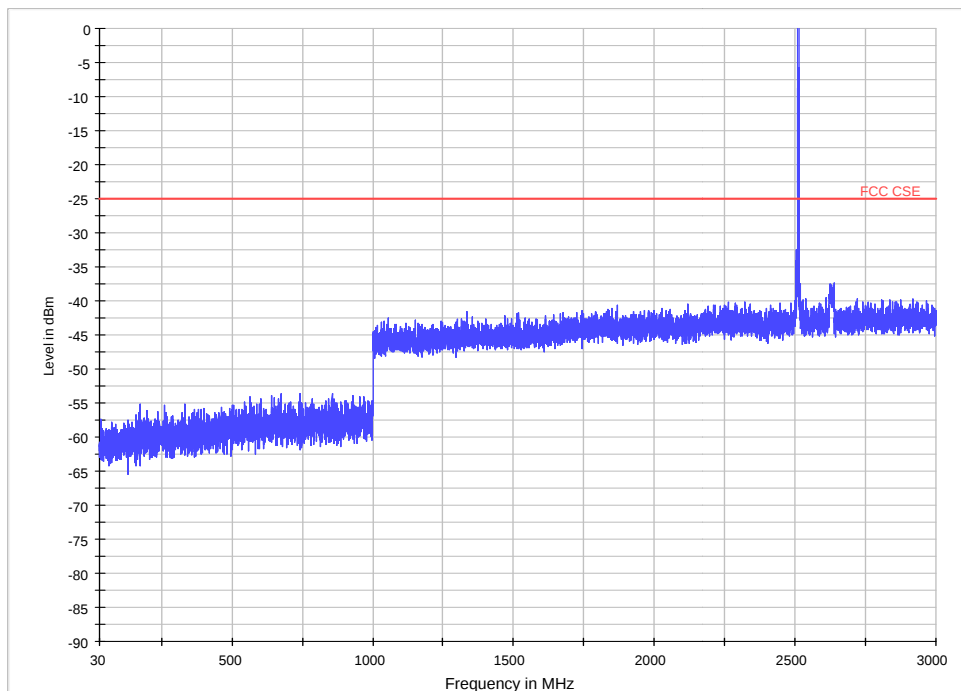
LTE Band 7 CH21375 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5111.6	-37.35	-25	12.35



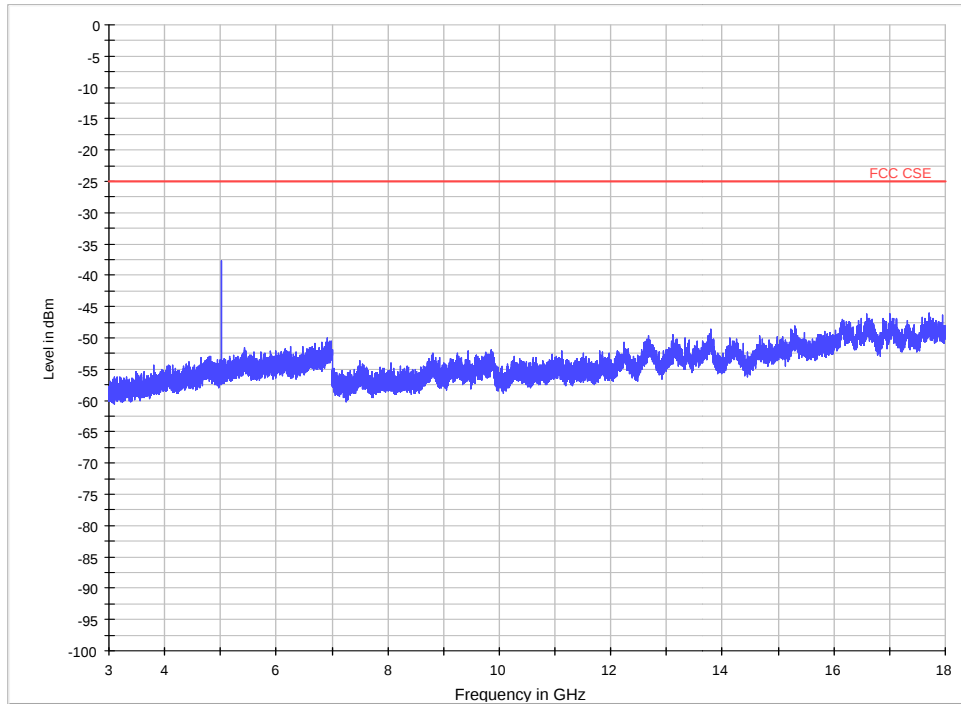
LTE Band 7 CH21375 18GHz~26.5GHz

LTE Band 7 QPSK Bandwidth = 20MHz CH20850, RB 1



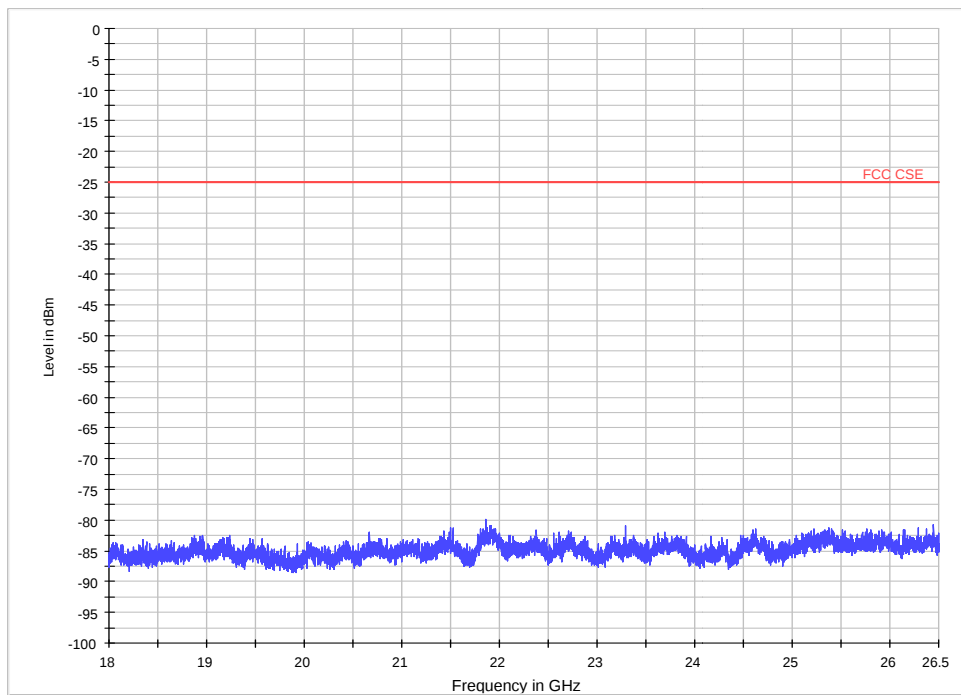
Note: The signal beyond the limit is carrier

LTE Band 7 CH20850 30MHz~3GHz



LTE Band 7 CH20850 3GHz~18GHz

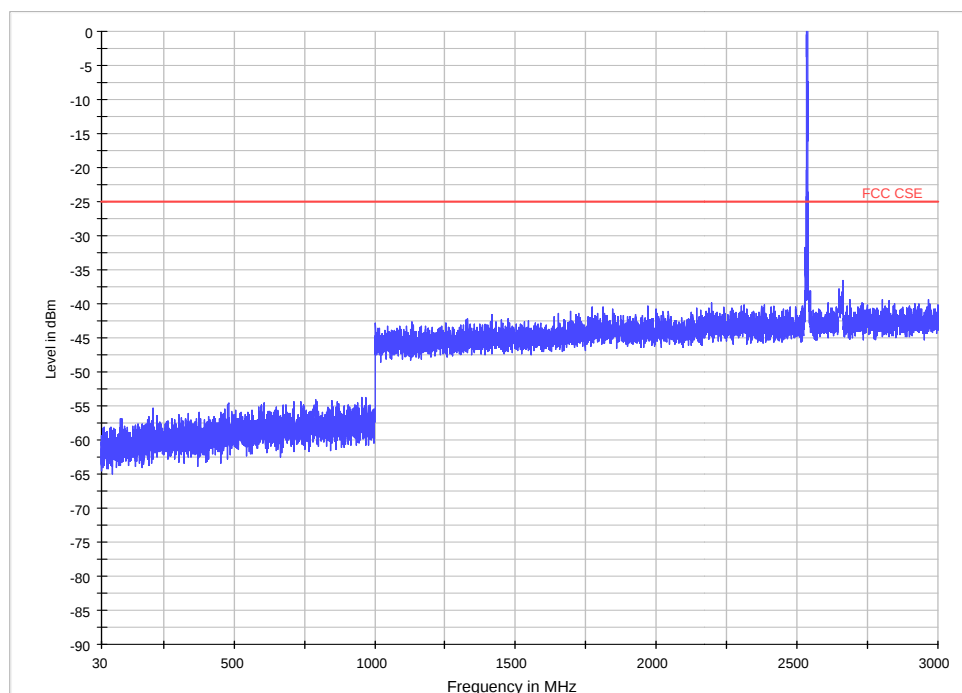
Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5020.1	-37.60	-25	12.60



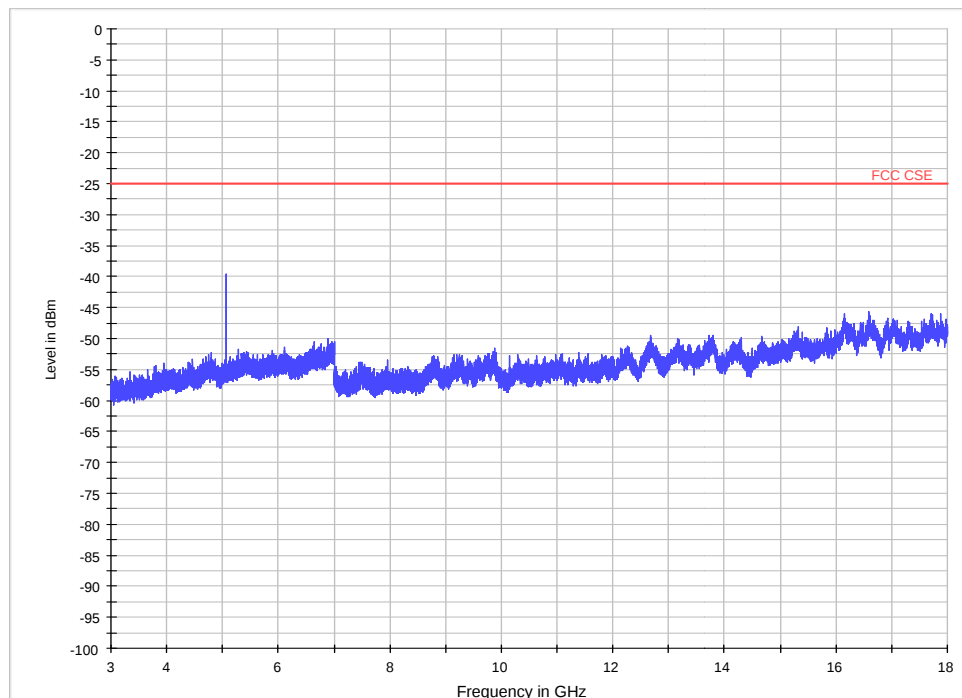
LTE Band 7 CH20850 18GHz~26.5GHz



LTE Band 7 QPSK Bandwidth = 20MHz CH21100, RB 1

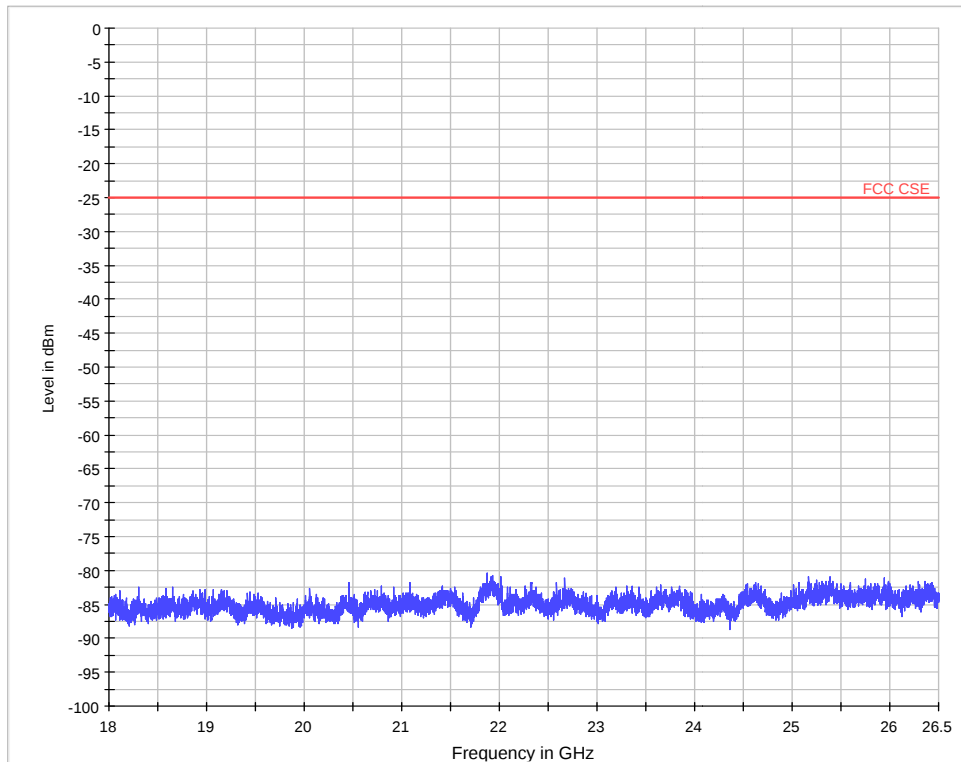


Note: The signal beyond the limit is carrier
LTE Band 7 CH21100 30MHz~3GHz



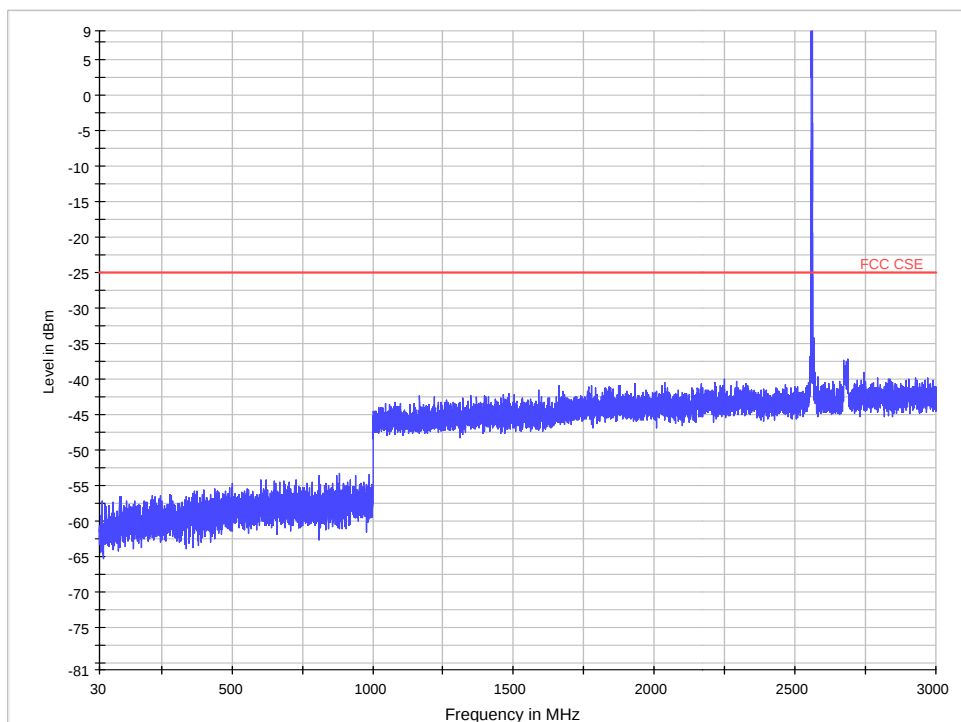
LTE Band 7 CH21100 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5070.4	-39.52	-25	14.52



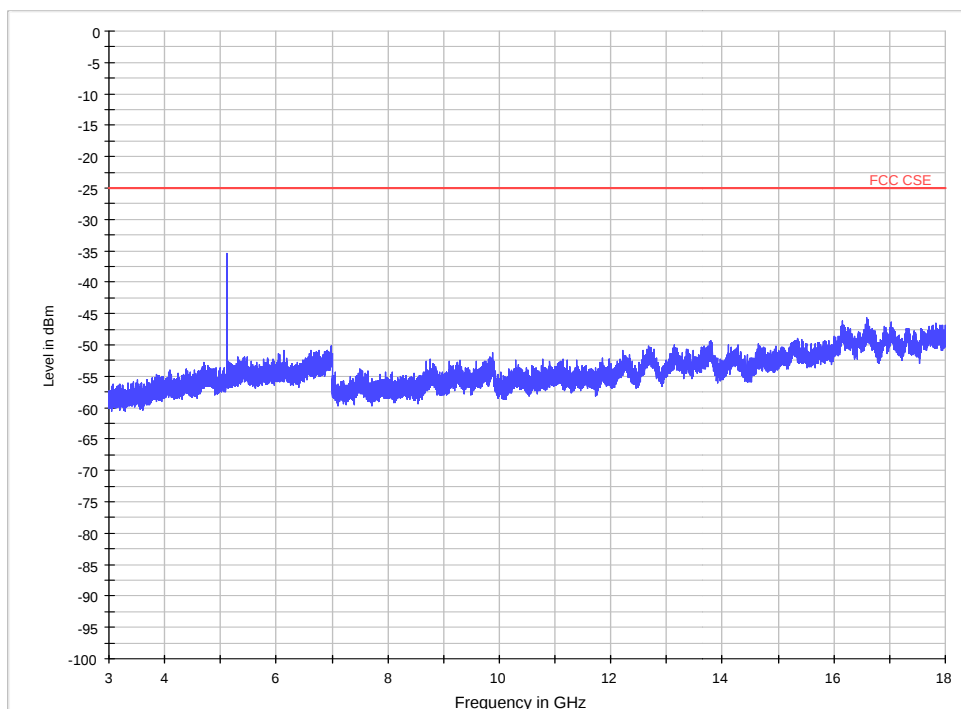
LTE Band 7 CH21100 18GHz~26.5GHz

LTE Band 7 QPSK Bandwidth = 20MHz CH21350, RB 1



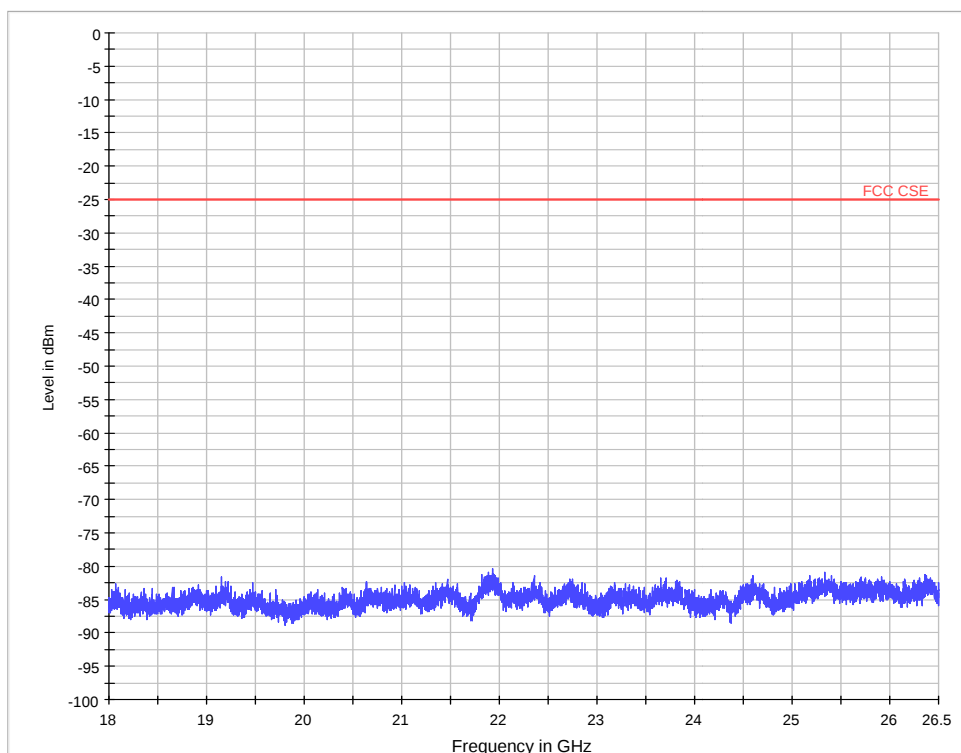
Note: The signal beyond the limit is carrier

LTE Band 7 CH21350 30MHz~3GHz



LTE Band 7 CH21350 3GHz~18GHz

Harmonic	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	5120.3	-35.37	-25	10.37



LTE Band 7 CH21350 18GHz~26.5GHz

4.8 Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The measurements procedures in ANSI/TIA-603-D are used.

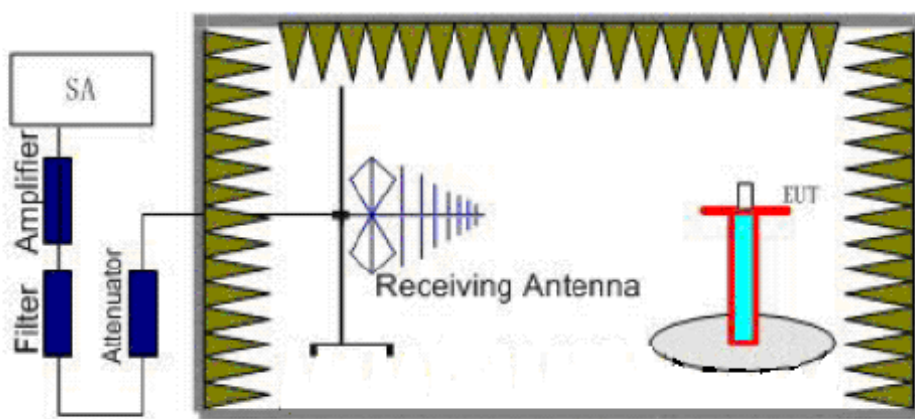
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

The emissions less than 20 dB below the permissible value are reported.

The procedure of Radiates Spurious Emission is as follows:

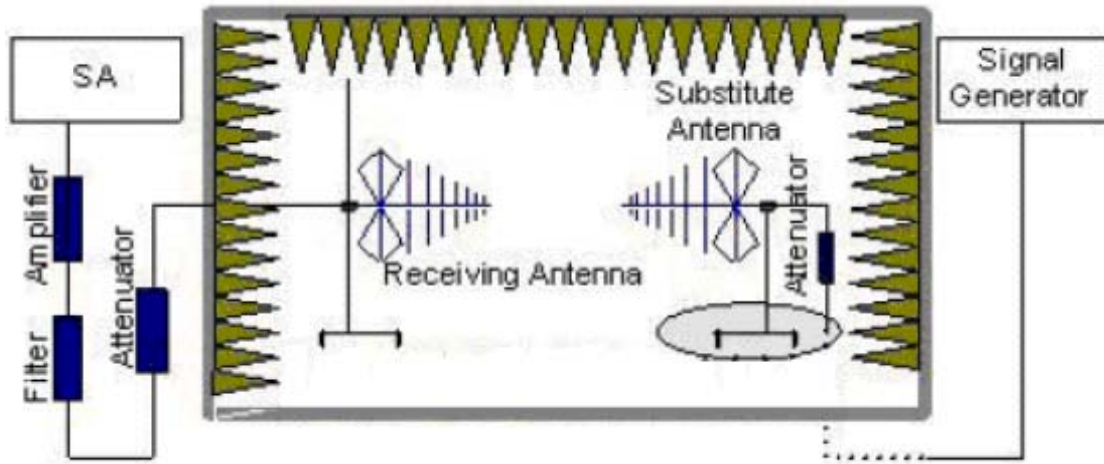
Step 1:

The measurement is carried out in the semi-anechoic chamber. EUT was placed on a 1.5 meters high non-conductive table at a 3 meters test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. A peak detector is used while RBW and VBW are both set to 3MHz. During the measurement, the highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna moved up and down over a range from 1 to 4 meters in both horizontally and vertically polarized orientations. The test setup refers to figure below.



Step 2:

A dipole antenna shall be substituted in place of the EUT. The antenna will be driven by a signal generator with a adjustable S.G. applied through a Tx cable. Adjust the level of the signal generator output until the value of the receiver reach the previously recorded analyzer power level (LVL). Then The E.R.P. /E.I.R.P. of the EUT can be calculated through the level of the signal generator, Tx cable loss and the gain of the substitution antenna. The test setup refers to figure below.



E.R.P (peak power) =S.G. - Tx Cable loss + Substitution antenna gain – 2.15.

EIRP= E.R.P+2.15

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization(horizontal and vertical), The worst emission was found in position (Z axis, vertical polarization) and the worst case was recorded.

Limits

Rule Part 27.53(h) specifies that “the power of any emission outside a licensee’s frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.”

Rule Part 27.53(m) $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

WCDMA 4/LTE 4 Limit	-13 dBm
LTE 7 Limit	-25 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = \pm 1.96$, $U = \pm 3.55$ dB.

Test Result

WCDMA Band IV CH1312

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3424.8	-56.41	2.6	10.15	Vertical	-51.01	-13	38.01	135
3	5137.2	-60.04	2.4	11.35	Vertical	-53.24	-13	40.24	0
4	6849.6	-57.17	4.5	10.85	Vertical	-52.97	-13	39.97	45
5	8562.0	-57.53	5.1	11.35	Vertical	-53.43	-13	40.43	180
6	10274.4	-54.04	5.3	11.95	Vertical	-49.54	-13	36.54	90
7	11986.8	-51.88	5.5	13.55	Vertical	-45.98	-13	32.98	180
8	13699.2	-49.60	6.3	13.75	Vertical	-44.30	-13	31.30	270
9	15411.6	-48.98	6.7	13.85	Vertical	-43.98	-13	30.98	135
10	17124.0	-46.42	6.8	14.25	Vertical	-41.12	-13	28.12	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

WCDMA Band IV CH1413

Harmonic	TX ch.1413 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.2	-58.10	2.6	10.75	Vertical	-52.10	-13	39.10	0
3	5197.8	-57.85	2.4	11.05	Vertical	-51.35	-13	38.35	270
4	6930.4	-58.24	4.5	11.15	Vertical	-53.74	-13	40.74	315
5	8663.0	-58.03	5.1	11.35	Vertical	-53.93	-13	40.93	225
6	10395.6	-50.60	5.3	11.95	Vertical	-46.10	-13	33.10	135
7	12128.2	-51.58	5.5	13.55	Vertical	-45.68	-13	32.68	270
8	13860.8	-47.40	6.3	13.75	Vertical	-42.10	-13	29.10	0
9	15593.4	-49.54	6.7	13.85	Vertical	-44.54	-13	31.54	135
10	17326.0	-48.97	6.8	14.25	Vertical	-43.67	-13	30.67	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

WCDMA Band IV CH1513

Harmonic	TX ch.1513 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3505.2	-60.90	2.6	10.15	Vertical	-53.35	-13	40.35	45
3	5261.3	-56.74	2.4	11.05	Vertical	-48.09	-13	35.09	270
4	7010.4	-56.71	4.5	11.15	Vertical	-50.06	-13	37.06	90
5	8763.0	-58.84	5.1	11.35	Vertical	-52.59	-13	39.59	225
6	10515.6	-55.32	5.3	11.95	Vertical	-48.67	-13	35.67	270
7	12268.2	-52.30	5.5	13.55	Vertical	-44.25	-13	31.25	180
8	14020.8	-52.55	6.3	13.75	Vertical	-45.10	-13	32.10	135
9	15773.4	-48.25	6.7	13.85	Vertical	-41.10	-13	28.10	270
10	17526.0	-49.80	6.8	14.25	Vertical	-42.35	-13	29.35	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2.The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 1.4MHz CH19957, RB 1

Harmonic	CH19957 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3420.0	-62.12	2.6	10.15	Vertical	-54.57	-13	41.57	180
3	5130.8	-49.87	2.4	11.35	Vertical	-40.92	-13	27.92	180
4	6842.8	-67.93	4.5	10.85	Vertical	-61.58	-13	48.58	90
5	8553.5	-68.77	5.1	11.35	Vertical	-62.52	-13	49.52	315
6	10264.2	-69.27	5.3	11.95	Vertical	-62.62	-13	49.62	180
7	11974.9	-69.28	5.5	13.55	Vertical	-61.23	-13	48.23	45
8	13685.6	-65.70	6.3	13.75	Vertical	-58.25	-13	45.25	90
9	15396.3	-62.57	6.7	13.85	Vertical	-55.42	-13	42.42	225
10	17107.0	-62.93	6.8	14.25	Vertical	-55.48	-13	42.48	270

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 1.4MHz CH20175, RB 1

Harmonic	CH20175 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3463.9	-61.46	2.6	10.75	Vertical	-53.31	-13	40.31	180
3	5196.4	-50.83	2.4	11.05	Vertical	-42.18	-13	29.18	180
4	6930.0	-67.48	4.5	11.15	Vertical	-60.83	-13	47.83	270
5	8662.5	-67.17	5.1	11.35	Vertical	-60.92	-13	47.92	0
6	10395.0	-68.62	5.3	11.95	Vertical	-61.97	-13	48.97	90
7	12127.5	-69.73	5.5	13.55	Vertical	-61.68	-13	48.68	315
8	13860.0	-65.61	6.3	13.75	Vertical	-58.16	-13	45.16	180
9	15592.5	-63.62	6.7	13.85	Vertical	-56.47	-13	43.47	45
10	17325.0	-61.23	6.8	14.25	Vertical	-53.78	-13	40.78	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 1.4MHz CH20393, RB 1

Harmonic	CH20393 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3507.4	-60.50	2.6	10.15	Vertical	-52.95	-13	39.95	180
3	5262.0	-52.85	2.4	11.05	Vertical	-44.20	-13	31.20	180
4	7017.2	-69.10	4.5	11.15	Vertical	-62.45	-13	49.45	45
5	8771.5	-66.51	5.1	11.35	Vertical	-60.26	-13	47.26	90
6	10525.8	-69.30	5.3	11.95	Vertical	-62.65	-13	49.65	225
7	12280.1	-69.44	5.5	13.55	Vertical	-61.39	-13	48.39	270
8	14034.4	-66.13	6.3	13.75	Vertical	-58.68	-13	45.68	180
9	15788.7	-62.59	6.7	13.85	Vertical	-55.44	-13	42.44	135
10	17543.0	-61.04	6.8	14.25	Vertical	-53.59	-13	40.59	270

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 3MHz CH19965, RB 1

Harmonic	CH19965 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3420.4	-62.06	2.6	10.15	Vertical	-54.51	-13	41.51	180
3	5130.8	-48.77	2.4	11.35	Vertical	-39.82	-13	26.82	180
4	6846.0	-68.33	4.5	10.85	Vertical	-61.98	-13	48.98	315
5	8557.5	-68.91	5.1	11.35	Vertical	-62.66	-13	49.66	180
6	10269.0	-69.37	5.3	11.95	Vertical	-62.72	-13	49.72	45
7	11980.5	-69.39	5.5	13.55	Vertical	-61.34	-13	48.34	90
8	13692.0	-65.98	6.3	13.75	Vertical	-58.53	-13	45.53	225
9	15403.5	-63.77	6.7	13.85	Vertical	-56.62	-13	43.62	270
10	17115.0	-62.29	6.8	14.25	Vertical	-54.84	-13	41.84	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 3MHz CH20175, RB 1

Harmonic	CH20175 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3462.4	-60.83	2.6	10.75	Vertical	-52.68	-13	39.68	180
3	5193.8	-50.91	2.4	11.05	Vertical	-42.26	-13	29.26	180
4	6930.0	-67.84	4.5	11.15	Vertical	-61.19	-13	48.19	0
5	8662.5	-65.94	5.1	11.35	Vertical	-59.69	-13	46.69	90
6	10395.0	-68.46	5.3	11.95	Vertical	-61.81	-13	48.81	315
7	12127.5	-69.53	5.5	13.55	Vertical	-61.48	-13	48.48	225
8	13860.0	-65.03	6.3	13.75	Vertical	-57.58	-13	44.58	180
9	15592.5	-63.27	6.7	13.85	Vertical	-56.12	-13	43.12	45
10	17325.0	-61.12	6.8	14.25	Vertical	-53.67	-13	40.67	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 3MHz CH20385, RB 1

Harmonic	CH20385 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3504.0	-61.62	2.6	10.15	Vertical	-54.07	-13	41.07	180
3	5256.8	-52.10	2.4	11.05	Vertical	-43.45	-13	30.45	180
4	7014.0	-69.36	4.5	11.15	Vertical	-62.71	-13	49.71	45
5	8767.5	-67.13	5.1	11.35	Vertical	-60.88	-13	47.88	90
6	10521.0	-69.06	5.3	11.95	Vertical	-62.41	-13	49.41	225
7	12274.5	-68.66	5.5	13.55	Vertical	-60.61	-13	47.61	270
8	14028.0	-65.74	6.3	13.75	Vertical	-58.29	-13	45.29	180
9	15781.5	-63.05	6.7	13.85	Vertical	-55.90	-13	42.90	135
10	17535.0	-61.20	6.8	14.25	Vertical	-53.75	-13	40.75	270

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 5MHz CH19975, RB 1

Harmonic	CH19975 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3420.4	-61.53	2.6	10.15	Vertical	-53.98	-13	40.98	180
3	5121.1	-48.99	2.4	11.35	Vertical	-40.04	-13	27.04	180
4	6850.0	-68.30	4.5	10.85	Vertical	-61.95	-13	48.95	45
5	8562.5	-69.59	5.1	11.35	Vertical	-63.34	-13	50.34	90
6	10275.0	-69.52	5.3	11.95	Vertical	-62.87	-13	49.87	225
7	11987.5	-69.98	5.5	13.55	Vertical	-61.93	-13	48.93	270
8	13700.0	-65.89	6.3	13.75	Vertical	-58.44	-13	45.44	180
9	15412.5	-63.86	6.7	13.85	Vertical	-56.71	-13	43.71	135
10	17125.0	-65.30	6.8	14.25	Vertical	-57.85	-13	44.85	270

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 5MHz CH20175, RB 1

Harmonic	CH20175 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3460.1	-60.99	2.6	10.75	Vertical	-52.84	-13	39.84	180
3	5191.1	-50.26	2.4	11.05	Vertical	-41.61	-13	28.61	180
4	6930.0	-68.14	4.5	11.15	Vertical	-61.49	-13	48.49	315
5	8662.5	-66.74	5.1	11.35	Vertical	-60.49	-13	47.49	225
6	10395.0	-69.02	5.3	11.95	Vertical	-62.37	-13	49.37	180
7	12127.5	-69.86	5.5	13.55	Vertical	-61.81	-13	48.81	45
8	13860.0	-65.45	6.3	13.75	Vertical	-58.00	-13	45.00	90
9	15592.5	-63.58	6.7	13.85	Vertical	-56.43	-13	43.43	135
10	17325.0	-60.53	6.8	14.25	Vertical	-53.08	-13	40.08	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 5MHz CH20375, RB 1

Harmonic	CH20375 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3500.6	-61.98	2.6	10.15	Vertical	-54.43	-13	41.43	180
3	5254.4	-52.19	2.4	11.05	Vertical	-43.54	-13	30.54	180
4	7010.0	-69.33	4.5	11.15	Vertical	-62.68	-13	49.68	45
5	8762.5	-67.73	5.1	11.35	Vertical	-61.48	-13	48.48	45
6	10515.0	-69.06	5.3	11.95	Vertical	-62.41	-13	49.41	90
7	12267.5	-69.04	5.5	13.55	Vertical	-60.99	-13	47.99	225
8	14020.0	-65.69	6.3	13.75	Vertical	-58.24	-13	45.24	90
9	15772.5	-63.44	6.7	13.85	Vertical	-56.29	-13	43.29	270
10	17525.0	-60.68	6.8	14.25	Vertical	-53.23	-13	40.23	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 10MHz CH20000, RB 1

Harmonic	CH20000 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3421.1	-59.83	2.6	10.15	Vertical	-52.28	-13	39.28	180
3	5131.5	-50.56	2.4	11.35	Vertical	-41.61	-13	28.61	180
4	6860.0	-67.91	4.5	10.85	Vertical	-61.56	-13	48.56	270
5	8553.0	-54.58	5.1	11.35	Vertical	-48.33	-13	35.33	180
6	10290.0	-69.40	5.3	11.95	Vertical	-62.75	-13	49.75	270
7	12005.0	-70.52	5.5	13.55	Vertical	-62.47	-13	49.47	180
8	13720.0	-65.65	6.3	13.75	Vertical	-58.20	-13	45.20	135
9	15435.0	-64.30	6.7	13.85	Vertical	-57.15	-13	44.15	45
10	17150.0	-62.00	6.8	14.25	Vertical	-54.55	-13	41.55	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 10MHz CH20175, RB 1

Harmonic	CH20175 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5184.4	-50.09	2.6	10.75	Vertical	-41.94	-13	28.94	180
3	9182.3	-57.86	2.4	11.05	Vertical	-49.21	-13	36.21	180
4	6930.0	-67.11	4.5	11.15	Vertical	-60.46	-13	47.46	180
5	8662.5	-65.46	5.1	11.35	Vertical	-59.21	-13	46.21	45
6	10395.0	-68.52	5.3	11.95	Vertical	-61.87	-13	48.87	90
7	12127.5	-69.35	5.5	13.55	Vertical	-61.30	-13	48.30	135
8	13860.0	-65.60	6.3	13.75	Vertical	-58.15	-13	45.15	0
9	15592.5	-63.68	6.7	13.85	Vertical	-56.53	-13	43.53	45
10	17325.0	-61.18	6.8	14.25	Vertical	-53.73	-13	40.73	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 10MHz CH20350, RB 1

Harmonic	CH20350 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3451.3	-59.53	2.6	10.15	Vertical	-51.98	-13	38.98	180
3	5236.5	-52.75	2.4	11.05	Vertical	-44.10	-13	31.10	180
4	7000.0	-68.27	4.5	11.15	Vertical	-61.62	-13	48.62	90
5	8750.0	-66.62	5.1	11.35	Vertical	-60.37	-13	47.37	225
6	10500.0	-69.20	5.3	11.95	Vertical	-62.55	-13	49.55	90
7	12250.0	-68.87	5.5	13.55	Vertical	-60.82	-13	47.82	270
8	14000.0	-65.73	6.3	13.75	Vertical	-58.28	-13	45.28	315
9	15750.0	-63.19	6.7	13.85	Vertical	-56.04	-13	43.04	270
10	17500.0	-61.38	6.8	14.25	Vertical	-53.93	-13	40.93	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 15MHz CH20025, RB 1

Harmonic	CH20025 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3421.1	-59.17	2.6	10.15	Vertical	-51.62	-13	38.62	180
3	5132.3	-50.62	2.4	11.35	Vertical	-41.67	-13	28.67	180
4	6870.0	-68.22	4.5	10.85	Vertical	-61.87	-13	48.87	270
5	8587.5	-69.01	5.1	11.35	Vertical	-62.76	-13	49.76	270
6	10305.0	-70.18	5.3	11.95	Vertical	-63.53	-13	50.53	0
7	12022.5	-70.49	5.5	13.55	Vertical	-62.44	-13	49.44	270
8	13740.0	-65.57	6.3	13.75	Vertical	-58.12	-13	45.12	180
9	15457.5	-63.89	6.7	13.85	Vertical	-56.74	-13	43.74	135
10	17175.0	-61.71	6.8	14.25	Vertical	-54.26	-13	41.26	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 15MHz CH20175, RB 1

Harmonic	CH20175 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3451.5	-58.02	2.6	10.75	Vertical	-49.87	-13	36.87	180
3	5177.6	-51.38	2.4	11.05	Vertical	-42.73	-13	29.73	180
4	6930.0	-66.98	4.5	11.15	Vertical	-60.33	-13	47.33	225
5	8662.5	-66.04	5.1	11.35	Vertical	-59.79	-13	46.79	180
6	10395.0	-68.13	5.3	11.95	Vertical	-61.48	-13	48.48	45
7	12127.5	-69.91	5.5	13.55	Vertical	-61.86	-13	48.86	90
8	13860.0	-65.53	6.3	13.75	Vertical	-58.08	-13	45.08	135
9	15592.5	-63.70	6.7	13.85	Vertical	-56.55	-13	43.55	0
10	17325.0	-60.67	6.8	14.25	Vertical	-53.22	-13	40.22	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 15MHz CH20325, RB 1

Harmonic	CH20325 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3481.5	-57.59	2.6	10.15	Vertical	-50.04	-13	37.04	180
3	5222.6	-56.96	2.4	11.05	Vertical	-48.31	-13	35.31	180
4	6990.0	-67.53	4.5	11.15	Vertical	-60.88	-13	47.88	270
5	8737.5	-66.75	5.1	11.35	Vertical	-60.50	-13	47.50	90
6	10485.0	-69.67	5.3	11.95	Vertical	-63.02	-13	50.02	270
7	12232.5	-69.07	5.5	13.55	Vertical	-61.02	-13	48.02	0
8	13980.0	-65.74	6.3	13.75	Vertical	-58.29	-13	45.29	270
9	15727.5	-62.98	6.7	13.85	Vertical	-55.83	-13	42.83	45
10	17475.0	-61.90	6.8	14.25	Vertical	-54.45	-13	41.45	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.



LTE Band 4 QPSK Bandwidth = 20MHz CH20050, RB 1

Harmonic	CH20050 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3422.3	-59.24	2.6	10.15	Vertical	-51.69	-13	38.69	180
3	5133.4	-50.82	2.4	11.35	Vertical	-41.87	-13	28.87	180
4	6880.0	-70.21	4.5	10.85	Vertical	-63.86	-13	50.86	90
5	8600.0	-69.93	5.1	11.35	Vertical	-63.68	-13	50.68	270
6	10320.0	-69.61	5.3	11.95	Vertical	-62.96	-13	49.96	315
7	12040.0	-70.40	5.5	13.55	Vertical	-62.35	-13	49.35	270
8	13760.0	-65.45	6.3	13.75	Vertical	-58.00	-13	45.00	45
9	15480.0	-63.72	6.7	13.85	Vertical	-56.57	-13	43.57	270
10	17200.0	-61.69	6.8	14.25	Vertical	-54.24	-13	41.24	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 20MHz CH20175, RB 1

Harmonic	CH20175 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3447.0	-58.33	2.6	10.75	Vertical	-50.18	-13	37.18	180
3	5170.9	-49.78	2.4	11.05	Vertical	-41.13	-13	28.13	180
4	6930.0	-69.84	4.5	11.15	Vertical	-63.19	-13	50.19	135
5	8662.5	-70.09	5.1	11.35	Vertical	-63.84	-13	50.84	45
6	10395.0	-68.91	5.3	11.95	Vertical	-62.26	-13	49.26	90
7	12127.5	-70.08	5.5	13.55	Vertical	-62.03	-13	49.03	225
8	13860.0	-65.41	6.3	13.75	Vertical	-57.96	-13	44.96	270
9	15592.5	-63.97	6.7	13.85	Vertical	-56.82	-13	43.82	180
10	17325.0	-60.75	6.8	14.25	Vertical	-53.30	-13	40.30	135

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK Bandwidth = 20MHz CH20300, RB 1

Harmonic	CH20300 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3472.1	-56.81	2.6	10.15	Vertical	-49.26	-13	36.26	180
3	5208.4	-51.98	2.4	11.05	Vertical	-43.33	-13	30.33	180
4	6980.0	-69.56	4.5	11.15	Vertical	-62.91	-13	49.91	90
5	8725.0	-69.58	5.1	11.35	Vertical	-63.33	-13	50.33	180
6	10470.0	-69.56	5.3	11.95	Vertical	-62.91	-13	49.91	90
7	12215.0	-68.97	5.5	13.55	Vertical	-60.92	-13	47.92	225
8	13960.0	-65.78	6.3	13.75	Vertical	-58.33	-13	45.33	270
9	15705.0	-63.07	6.7	13.85	Vertical	-55.92	-13	42.92	135
10	17450.0	-61.96	6.8	14.25	Vertical	-54.51	-13	41.51	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 7 QPSK Bandwidth = 5MHz CH20775, RB 1

Harmonic	CH20775 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5001.0	-41.53	2.6	10.15	Vertical	-33.98	-25	8.98	180
3	7500.8	-51.10	2.4	11.05	Vertical	-42.45	-25	17.45	180
4	10001.3	-47.61	4.5	11.15	Vertical	-40.96	-25	15.96	180
5	12512.5	-66.59	5.1	11.35	Vertical	-60.34	-25	35.34	0
6	15001.9	-40.72	5.3	11.95	Vertical	-34.07	-25	9.07	180
7	17517.5	-62.22	5.5	13.55	Vertical	-54.17	-25	29.17	0
8	20020.0	-86.77	6.3	13.75	Vertical	-79.32	-25	54.32	45
9	22522.5	-87.66	6.7	13.85	Vertical	-80.51	-25	55.51	90
10	25025.0	-85.89	6.8	14.25	Vertical	-78.44	-25	53.44	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.



LTE Band 7 QPSK Bandwidth = 5MHz CH21100, RB 1

Harmonic	CH21100 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5065.5	-45.41	2.6	10.15	Vertical	-37.86	-25	12.86	180
3	7598.6	-50.96	2.4	11.05	Vertical	-42.31	-25	17.31	180
4	10131.8	-50.31	4.5	11.15	Vertical	-43.66	-25	18.66	180
5	12664.1	-49.57	5.1	11.35	Vertical	-43.32	-25	18.32	180
6	15197.6	-44.75	5.3	11.95	Vertical	-38.10	-25	13.1	180
7	17745.0	-60.65	5.5	13.55	Vertical	-52.60	-25	27.6	270
8	20280.0	-85.77	6.3	13.75	Vertical	-78.32	-25	53.32	315
9	22815.0	-86.67	6.7	13.85	Vertical	-79.52	-25	54.52	270
10	25350.0	-85.09	6.8	14.25	Vertical	-77.64	-25	52.64	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 7 QPSK Bandwidth = 5MHz CH21425, RB 1

Harmonic	CH21425 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5130.8	-42.19	2.6	10.15	Vertical	-34.64	-25	9.64	180
3	7695.8	-51.23	2.4	11.05	Vertical	-42.58	-25	17.58	180
4	10261.1	-54.95	4.5	11.15	Vertical	-48.30	-25	23.3	180
5	12825.0	-66.55	5.1	11.35	Vertical	-60.30	-25	35.3	270
6	15390.0	-62.64	5.3	11.95	Vertical	-55.99	-25	30.99	0
7	17955.0	-63.50	5.5	13.55	Vertical	-55.45	-25	30.45	270
8	20520.0	-84.93	6.3	13.75	Vertical	-77.48	-25	52.48	180
9	23085.0	-82.42	6.7	13.85	Vertical	-75.27	-25	50.27	135
10	25650.0	-89.04	6.8	14.25	Vertical	-81.59	-25	56.59	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 7 QPSK Bandwidth = 10MHz CH20800, RB 1

Harmonic	CH20800 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5001.4	-41.75	2.6	10.15	Vertical	-34.20	-25	9.2	180
3	7501.5	-51.48	2.4	11.05	Vertical	-42.83	-25	17.83	180
4	10002.4	-47.83	4.5	11.15	Vertical	-41.18	-25	16.18	180
5	12525.0	-67.10	5.1	11.35	Vertical	-60.85	-25	35.85	270
6	15004.1	-40.46	5.3	11.95	Vertical	-33.81	-25	8.81	180
7	17535.0	-61.56	5.5	13.55	Vertical	-53.51	-25	28.51	270
8	20040.0	-88.11	6.3	13.75	Vertical	-80.66	-25	55.66	0
9	22545.0	-88.17	6.7	13.85	Vertical	-81.02	-25	56.02	270
10	25050.0	-89.46	6.8	14.25	Vertical	-82.01	-25	57.01	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 7 QPSK Bandwidth = 10MHz CH21100, RB 1

Harmonic	CH21100 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5061.0	-45.32	2.6	10.15	Vertical	-37.77	-25	12.77	180
3	7591.9	-50.63	2.4	11.05	Vertical	-41.98	-25	16.98	180
4	10122.8	-51.17	4.5	11.15	Vertical	-44.52	-25	19.52	180
5	12652.9	-52.16	5.1	11.35	Vertical	-45.91	-25	20.91	180
6	15184.1	-42.68	5.3	11.95	Vertical	-36.03	-25	11.03	180
7	17745.0	-61.84	5.5	13.55	Vertical	-53.79	-25	28.79	180
8	20280.0	-85.32	6.3	13.75	Vertical	-77.87	-25	52.87	135
9	22815.0	-88.93	6.7	13.85	Vertical	-81.78	-25	56.78	270
10	25350.0	-86.83	6.8	14.25	Vertical	-79.38	-25	54.38	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 7 QPSK Bandwidth = 10MHz CH21400, RB 1

Harmonic	CH21400 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5121.4	-43.00	2.6	10.15	Vertical	-35.45	-25	10.45	180
3	7681.5	-53.23	2.4	11.05	Vertical	-44.58	-25	19.58	180
4	10242.0	-51.65	4.5	11.15	Vertical	-45.00	-25	20	180
5	12825.0	-66.87	5.1	11.35	Vertical	-60.62	-25	35.62	0
6	15390.0	-63.30	5.3	11.95	Vertical	-56.65	-25	31.65	45
7	17955.0	-61.92	5.5	13.55	Vertical	-53.87	-25	28.87	90
8	20520.0	-82.72	6.3	13.75	Vertical	-75.27	-25	50.27	180
9	23085.0	-84.03	6.7	13.85	Vertical	-76.88	-25	51.88	45
10	25650.0	-88.25	6.8	14.25	Vertical	-80.80	-25	55.8	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 7 QPSK Bandwidth = 15MHz CH20825, RB 1

Harmonic	CH20825 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5002.1	-41.88	2.6	10.15	Vertical	-34.33	-25	9.33	180
3	7502.6	-55.07	2.4	11.05	Vertical	-46.42	-25	21.42	180
4	10002.4	-48.58	4.5	11.15	Vertical	-41.93	-25	16.93	180
5	12537.5	-66.96	5.1	11.35	Vertical	-60.71	-25	35.71	270
6	15005.3	-40.01	5.3	11.95	Vertical	-33.36	-25	8.36	180
7	17552.5	-61.61	5.5	13.55	Vertical	-53.56	-25	28.56	270
8	20060.0	-86.90	6.3	13.75	Vertical	-79.45	-25	54.45	45
9	22567.5	-89.09	6.7	13.85	Vertical	-81.94	-25	56.94	270
10	25075.0	-88.46	6.8	14.25	Vertical	-81.01	-25	56.01	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 7 QPSK Bandwidth = 15MHz CH21100, RB 1

Harmonic	CH21100 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5056.9	-44.92	2.6	10.15	Vertical	-37.37	-25	12.37	180
3	7585.1	-51.33	2.4	11.05	Vertical	-42.68	-25	17.68	180
4	10113.8	-51.51	4.5	11.15	Vertical	-44.86	-25	19.86	180
5	12641.6	-52.61	5.1	11.35	Vertical	-46.36	-25	21.36	180
6	15170.6	-43.49	5.3	11.95	Vertical	-36.84	-25	11.84	180
7	17745.0	-62.15	5.5	13.55	Vertical	-54.10	-25	29.10	135
8	20280.0	-86.68	6.3	13.75	Vertical	-79.23	-25	54.23	45
9	22815.0	-82.41	6.7	13.85	Vertical	-75.26	-25	50.26	315
10	25350.0	-84.41	6.8	14.25	Vertical	-76.96	-25	51.96	270

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 7 QPSK Bandwidth = 15MHz CH21375, RB 1

Harmonic	CH21375 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5111.6	-42.13	2.6	10.15	Vertical	-34.58	-25	9.58	180
3	7667.6	-51.88	2.4	11.05	Vertical	-43.23	-25	18.23	180
4	10222.9	-53.80	4.5	11.15	Vertical	-47.15	-25	22.15	180
5	12812.5	-66.35	5.1	11.35	Vertical	-60.10	-25	35.10	270
6	15375.0	-63.39	5.3	11.95	Vertical	-56.74	-25	31.74	0
7	17937.5	-62.34	5.5	13.55	Vertical	-54.29	-25	29.29	270
8	20500.0	-89.29	6.3	13.75	Vertical	-81.84	-25	56.84	180
9	23062.5	-85.44	6.7	13.85	Vertical	-78.29	-25	53.29	135
10	25625.0	-84.30	6.8	14.25	Vertical	-76.85	-25	51.85	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.



LTE Band 7 QPSK Bandwidth = 20MHz CH20850, RB 1

Harmonic	CH20850 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5002.5	-44.42	2.6	10.15	Vertical	-36.87	-25	11.87	180
3	7503.0	-50.24	2.4	11.05	Vertical	-41.59	-25	16.59	180
4	10003.5	-50.70	4.5	11.15	Vertical	-44.05	-25	19.05	180
5	12550.0	-66.96	5.1	11.35	Vertical	-60.71	-25	35.71	0
6	15060.0	-63.27	5.3	11.95	Vertical	-56.62	-25	31.62	90
7	17570.0	-61.50	5.5	13.55	Vertical	-53.45	-25	28.45	315
8	20080.0	-89.73	6.3	13.75	Vertical	-82.28	-25	57.28	180
9	22590.0	-84.75	6.7	13.85	Vertical	-77.60	-25	52.60	45
10	25100.0	-87.27	6.8	14.25	Vertical	-79.82	-25	54.82	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 7 QPSK Bandwidth = 20MHz CH21100, RB 1

Harmonic	CH21100 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5052.0	-43.56	2.6	10.15	Vertical	-36.01	-25	11.01	180
3	7578.4	-48.78	2.4	11.05	Vertical	-40.13	-25	15.13	180
4	10103.6	-54.61	4.5	11.15	Vertical	-47.96	-25	22.96	180
5	12675.0	-66.91	5.1	11.35	Vertical	-60.66	-25	35.66	135
6	14157.1	-47.20	5.3	11.95	Vertical	-40.55	-25	15.55	180
7	17745.0	-62.08	5.5	13.55	Vertical	-54.03	-25	29.03	0
8	20280.0	-88.04	6.3	13.75	Vertical	-80.59	-25	55.59	90
9	22815.0	-84.02	6.7	13.85	Vertical	-76.87	-25	51.87	315
10	25350.0	-87.78	6.8	14.25	Vertical	-80.33	-25	55.33	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.



LTE Band 7 QPSK Bandwidth = 20MHz CH21350, RB 1

Harmonic	CH21350 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5102.3	-41.94	2.6	10.15	Vertical	-34.39	-25	9.39	180
3	7653.4	-53.09	2.4	11.05	Vertical	-44.44	-25	19.44	180
4	10203.8	-53.01	4.5	11.15	Vertical	-46.36	-25	21.36	180
5	12800.0	-66.57	5.1	11.35	Vertical	-60.32	-25	35.32	0
6	15360.0	-63.11	5.3	11.95	Vertical	-56.46	-25	31.46	270
7	17920.0	45.09	5.5	13.55	Vertical	53.14	-25	-78.14	180
8	20480.0	-86.17	6.3	13.75	Vertical	-78.72	-25	53.72	135
9	23040.0	-86.96	6.7	13.85	Vertical	-79.81	-25	54.81	45
10	25600.0	-89.51	6.8	14.25	Vertical	-82.06	-25	57.06	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

5 Main Test Equipment

Name of Equipment	Type/ Model	Manufacturer	Serial Number	Last Cal.	Cal. Due Date
Base Station Simulator	CMU200	R&S	118133	2015-05-22	2016-05-21
Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA
Spectrum Analyzer	E4445A	Agilent	MY46181146	2015-05-22	2016-05-21
Universal Radio Communication Tester	E5515C	Agilent	MY48367192	2015-12-17	2016-12-16
Spectrum Analyzer	N9010A	Agilent	MY47191109	2015-05-22	2016-05-21
Signal Analyzer	FSV30	R&S	100815	2015-12-17	2016-12-16
Signal generator	SMB 100A	R&S	102594	2015-05-06	2016-05-05
Signal generator	SMR27	R&S	100365	2015-05-22	2016-05-21
EMI Test Receiver	ESCI	R&S	100948	2015-05-25	2016-05-24
Trilog Antenna	VUBL 9163	SCHWARZBECK	9163-201	2014-12-06	2017-12-05
Trilog Antenna	VUBL 9163	SCHWARZBECK	9163-391	2014-12-06	2017-12-05
Horn Antenna	HF907	R&S	100126	2015-07-01	2018-06-30
Horn Antenna	HF907	R&S	100125	2014-12-06	2017-12-05
Horn Antenna	3160-09	ETS-Lindgren	00102643	2014-12-06	2017-12-05
Horn Antenna	3160-09	ETS-Lindgren	00102644	2014-12-06	2017-12-05
Climatic Chamber	PT-30B	Re Ce	20101891	2015-07-18	2018-07-17
RF Cable	SMA 15cm	Agilent	0001	2016-01-02	2016-03-01

ANNEX A: The EUT Appearance and Test Configuration

A.1 EUT Appearance



Front Side



Back Side

a: EUT



b: Battery

Picture 1 Constituents of EUT

A.2 Test Setup



Picture 2 Radiated Spurious Emissions Test Setup