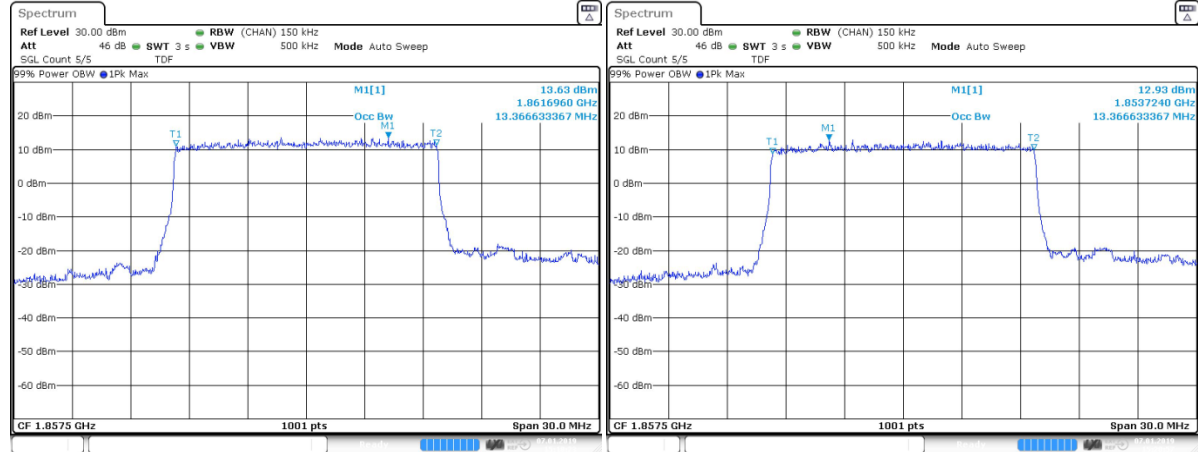


LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/15MHz/75/0	Low CH 18675	1857.5 MHz	13.367	13.367
	Mid CH 18900	1880 MHz	13.367	13.367
	High CH 19125	1902.5 MHz	13.367	13.367

Spectrum Plot of Worst Value	
-99 dBC Bandwidth	
QPSK	16QAM

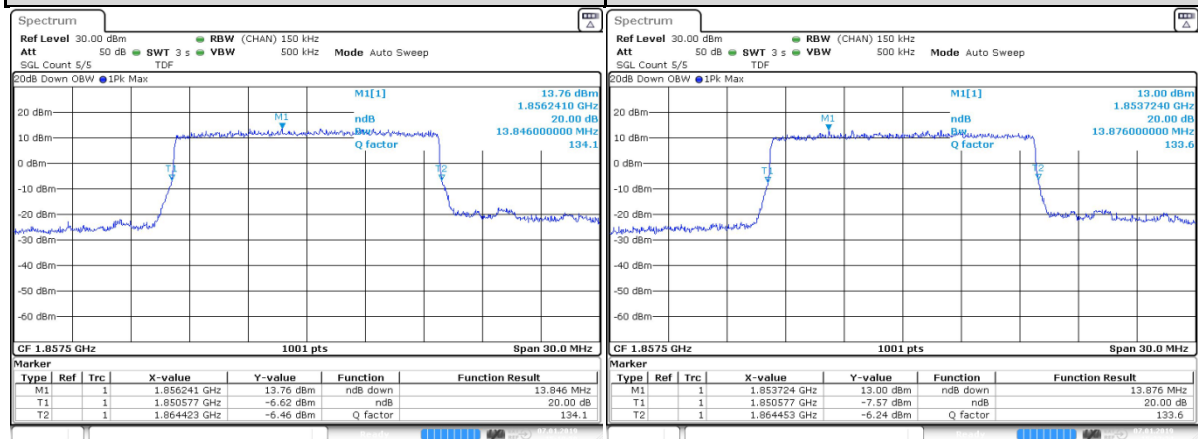


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LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-20 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/15MHz/75/0	Low CH 18675	1857.5 MHz	13.846	13.876
	Mid CH 18900	1880 MHz	13.816	13.786
	High CH 19125	1902.5 MHz	13.846	13.876

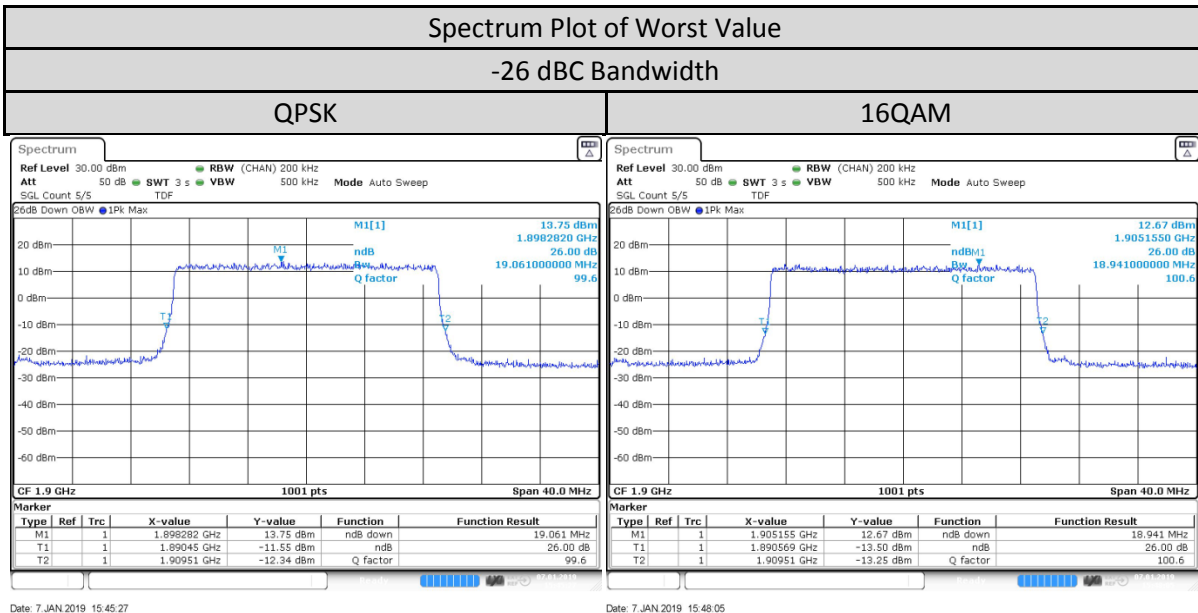
Spectrum Plot of Worst Value	
-20 dBC Bandwidth	
QPSK	16QAM



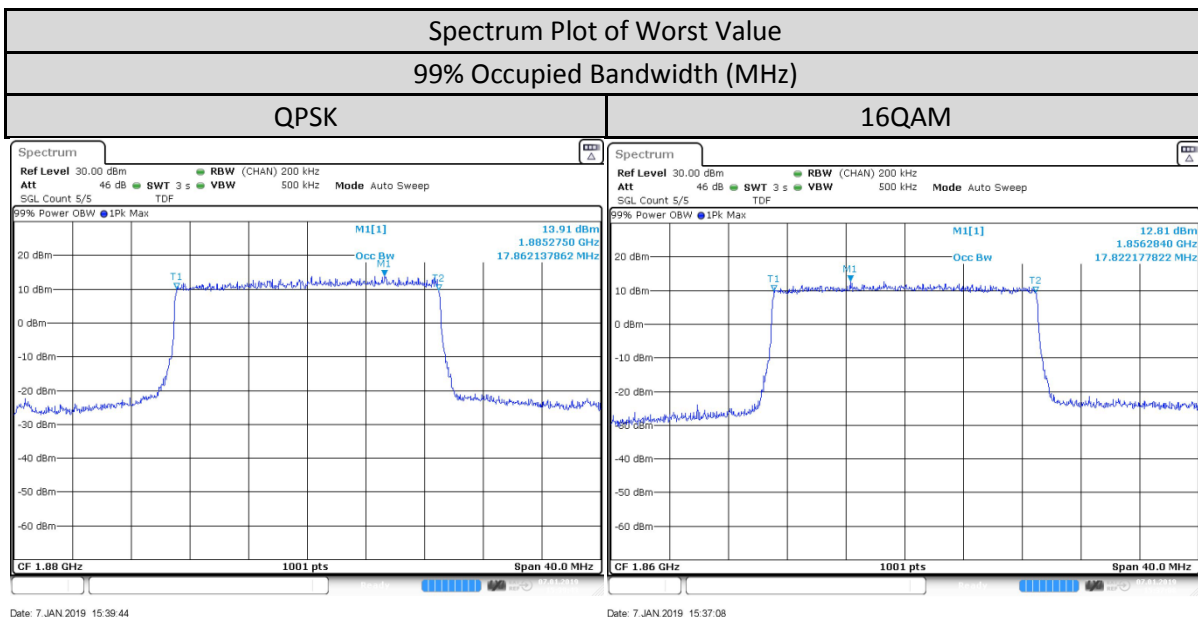
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LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-26 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/20MHz/100/0	Low CH 18700	1860 MHz	18.821	18.861
	Mid CH 18900	1880 MHz	18.981	18.781
	High CH 19100	1900 MHz	19.061	18.941

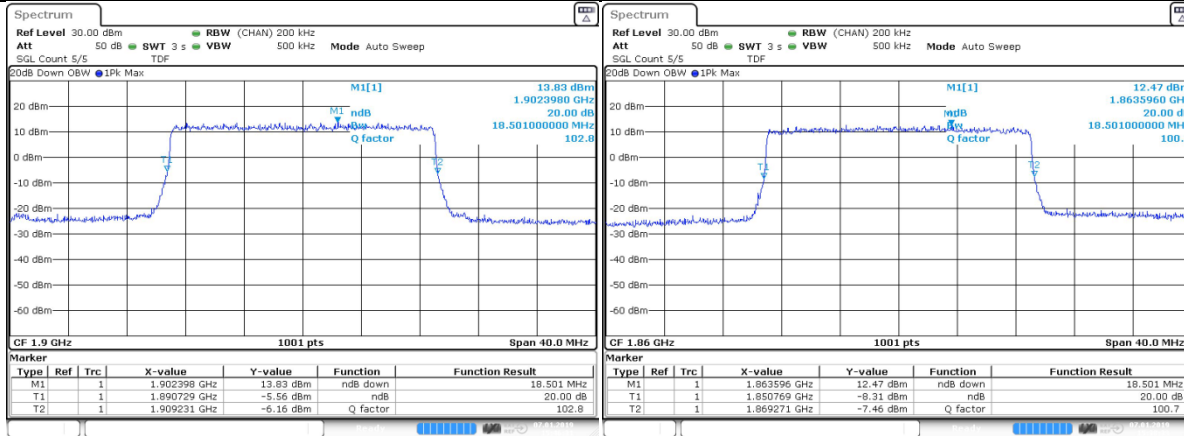


LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	99% Occupied Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/20MHz/100/0	Low CH 18700	1860 MHz	17.822	17.822
	Mid CH 18900	1880 MHz	17.862	17.822
	High CH 19100	1900 MHz	17.862	17.822



LTE Band/BW/RB Size/RB Offset	Channel Number	Tx Frequency	-20 dBc Bandwidth (MHz)	
			QPSK Modulation	16QAM Modulation
Band 2/20MHz/100/0	Low CH 18700	1860 MHz	18.462	18.501
	Mid CH 18900	1880 MHz	18.462	18.422
	High CH 19100	1900 MHz	18.501	18.501

Spectrum Plot of Worst Value	
-20 dBc Bandwidth	
QPSK	16QAM

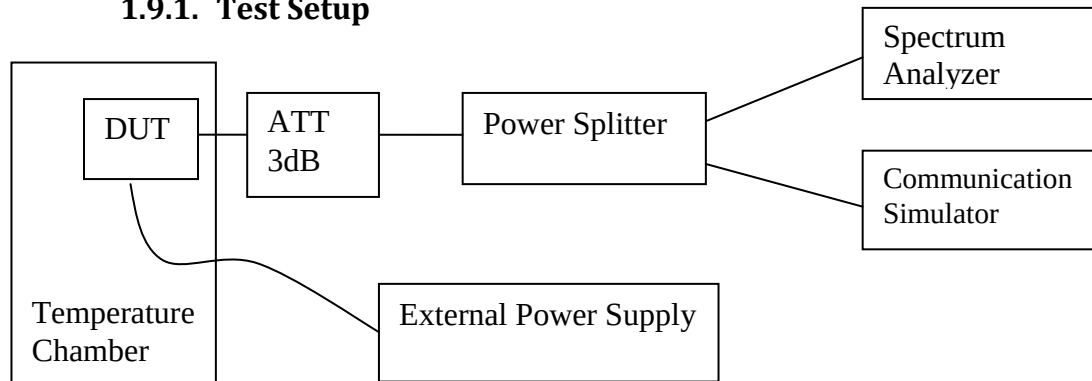


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1.9. Frequency Stability

1.9.1. Test Setup



- 1) The DUT is placed in the temperature chamber and DUT is power up by external power supply to control the DC input voltage.
- 2) The temperature chamber could control the temperature and humidity and external power supply could control the test voltage range from minimum to maximum operating voltage.
- 3) Measured frequency error from the communication simulator by vary below step :
 - i. Vary temperature of the temperature chamber from -30 ~ 50 deg C (10 deg C / Step) and set external supply voltage constant at nominal voltage.
 - ii. Vary external supply voltage from minimum to maximum operation voltage support by DUT and set temperature chamber constant at room temp.
- 4) All the measurement was done at mid channel for each band.

1.9.2. Test Limit

FCC: The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

ISED: The carrier frequency shall not depart from the reference frequency, in excess of ± 2.5 ppm for mobile stations and ± 1.0 ppm for base stations.

1.9.3. Frequency Stability – LTE Band 2 (1850 -1910 MHz)

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 1.4 MHz			
		Low Channel		High Channel	
		1850.7MHz		1909.3MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	50	1850.699959	-0.022107	1909.299982	-0.009231
	40	1850.700022	0.011857	1909.299985	-0.008039
	30	1850.699976	-0.013102	1909.299987	-0.006781
	20	1850.700012	0.006423	1909.299986	-0.00717
	10	1850.700015	0.008356	1909.299987	-0.007035
	0	1850.699989	-0.005882	1909.300022	0.011433
	-10	1850.699968	-0.017361	1909.300015	0.007672
	-20	1850.699985	-0.008255	1909.299981	-0.00971
	-30	1850.699963	-0.020097	1909.299982	-0.009523

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 1.4 MHz			
		Low Channel		High Channel	
		1850.7MHz		1909.3MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	1850.699984	-0.008425	1909.299985	-0.007732
	7.5	1850.699974	-0.014122	1909.29998	-0.010287
	6	1850.699984	-0.008858	1909.299985	-0.008002

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 3 MHz			
		Low Channel		High Channel	
		1851.5MHz		1908.5MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	50	1851.50002	0.010608	1908.500017	0.009144
	40	1851.500018	0.009658	1908.500019	0.009707
	30	1851.500019	0.010152	1908.500021	0.010801
	20	1851.500019	0.010438	1908.50002	0.010464
	10	1851.50002	0.010794	1908.50002	0.010261
	0	1851.500019	0.010369	1908.50002	0.010464
	-10	1851.500015	0.008004	1908.500029	0.015006
	-20	1851.500021	0.011358	1908.500018	0.009624
	-30	1851.500014	0.007379	1908.500006	0.003096

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 3 MHz			
		Low Channel		High Channel	
		1851.5MHz		1908.5MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	1851.500019	0.01026	1908.50002	0.010419
	7.5	1851.50002	0.010539	1908.500018	0.009354
	6	1851.500018	0.009835	1908.500017	0.008912

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 5 MHz			
		Low Channel		High Channel	
		1852.5MHz		1907.5MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	50	1852.499984	-0.008595	1907.500014	0.007342
	40	1852.499983	-0.009367	1907.500012	0.006112
	30	1852.499981	-0.010224	1907.500013	0.006982
	20	1852.499986	-0.007614	1907.500013	0.006839
	10	1852.499984	-0.008602	1907.500015	0.007709
	0	1852.499985	-0.008178	1907.500015	0.008084
	-10	1852.499987	-0.006803	1907.499999	-0.00507
	-20	1852.499986	-0.007768	1907.500015	0.007732
	-30	1852.499987	-0.007236	1907.500014	0.007109

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 5 MHz			
		Low Channel		High Channel	
		1852.5MHz		1907.5MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	1852.499985	-0.0079	1907.500011	0.00579
	7.5	1852.499984	-0.00888	1907.499987	-0.006779
	6	1852.499986	-0.007707	1907.50001	0.00546

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 10 MHz			
		Low Channel		High Channel	
		1855MHz		1905MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	50	1855.000013	0.007018	1904.999982	-0.009251
	40	1854.999988	-0.00647	1904.999977	-0.011962
	30	1855.000013	0.007041	1904.999983	-0.008771
	20	1855.000013	0.006848	1904.999982	-0.009387
	10	1855.000012	0.006516	1904.999984	-0.00838
	0	1855.000013	0.007087	1904.999983	-0.008959
	-10	1855.00001	0.005352	1904.999986	-0.007194
	-20	1855.000012	0.006439	1904.999984	-0.008591
	-30	1855.000013	0.007272	1904.999979	-0.011069

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 10 MHz			
		Low Channel		High Channel	
		1855MHz		1905MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	1855.000012	0.006725	1904.999982	-0.009229
	7.5	1854.999988	-0.00664	1904.999984	-0.008328
	6	1854.999988	-0.00637	1904.999982	-0.009679

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 15 MHz			
		Low Channel		High Channel	
		1857.5MHz		1902.5MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	50	1857.500017	0.008918	1902.500019	0.009888
	40	1857.500018	0.009611	1902.500019	0.009775
	30	1857.500018	0.009842	1902.500018	0.009271
	20	1857.500019	0.010235	1902.500019	0.01003
	10	1857.500018	0.009835	1902.50002	0.010309
	0	1857.500018	0.00965	1902.500019	0.00985
	-10	1857.500018	0.009958	1902.500018	0.009414
	-20	1857.500018	0.009896	1902.500019	0.010241
	-30	1857.500018	0.009935	1902.500019	0.009752

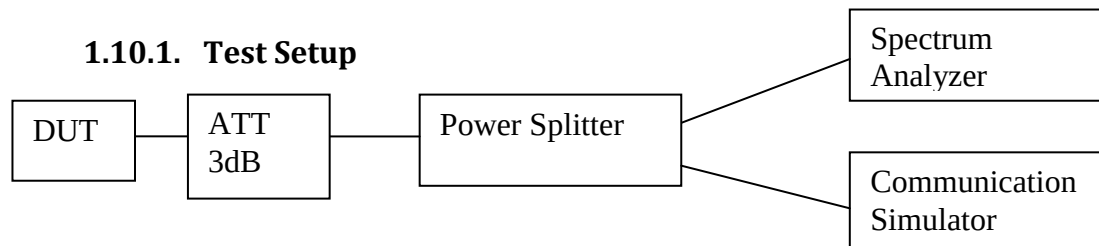
Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 15 MHz			
		Low Channel		High Channel	
		1857.5MHz		1902.5MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	1857.500017	0.009357	1902.500017	0.009038
	7.5	1857.500016	0.008849	1902.500018	0.009241
	6	1857.500017	0.009034	1902.500018	0.009624

Band	Temp (Deg C)	Frequency Error VS Temperature			
		Channel Bandwidth: 20 MHz			
		Low Channel		High Channel	
		1860MHz		1900MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	50	1859.999982	-0.00956	1900.000012	0.00655
	40	1859.999982	-0.009498	1899.999987	-0.006814
	30	1859.999982	-0.009883	1900.000013	0.006618
	20	1859.999984	-0.008391	1900.000013	0.006994
	10	1859.999981	-0.010044	1899.999988	-0.006114
	0	1859.999985	-0.008322	1900.000014	0.007213
	-10	1859.999983	-0.009114	1900.000012	0.00652
	-20	1859.999984	-0.00886	1899.999987	-0.006731
	-30	1859.999983	-0.009329	1900.000013	0.006754

Band	Voltage (V)	Frequency Error VS Voltage			
		Channel Bandwidth: 20 MHz			
		Low Channel		High Channel	
		1860MHz		1900MHz	
LTE Band 2		Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
	9	1859.999983	-0.009252	1900.000015	0.007823
	7.5	1859.999983	-0.009214	1899.999987	-0.006708
	6	1859.999982	-0.009421	1899.999986	-0.007446

1.10. Band Edge Conducted Spurious Emission

1.10.1. Test Setup



- 1) The DUT transmitter output port was connected to communication simulator with above setup.
- 2) Path loss for the measurement included.
- 3) Set DUT to transmit maximum power through communication simulator.
- 4) The band edges of lowest and highest channels with the highest RF powers were measured.
- 5) The center frequency of spectrum is the band edge frequency, span is 3MHz, RBW is 1~3% of EBW and VBW is at least 3 times of RBW.
- 6) Record the maximum trace plot into the test report.

1.10.2. Test Limit

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB. In the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

1.10.3. Band Edge Conducted Spurious Emission – LTE Band 2 (1850 -1910 MHz)

