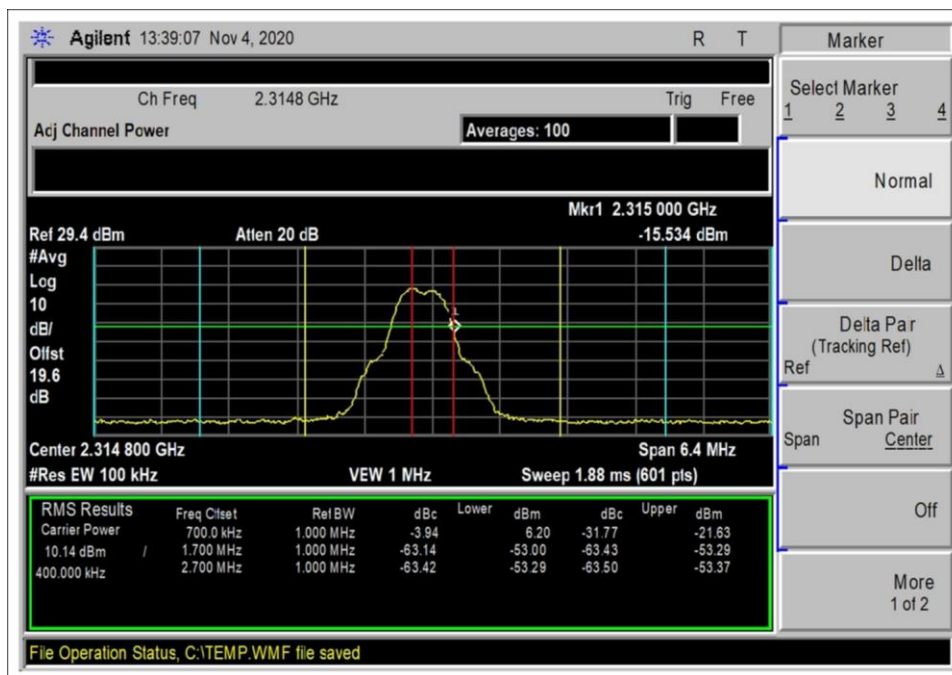
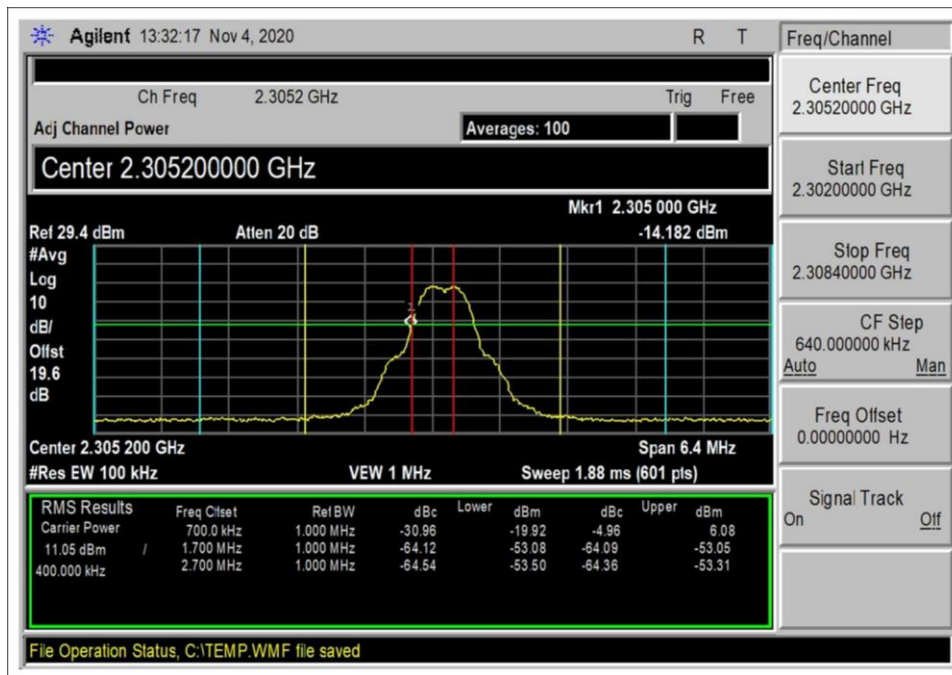




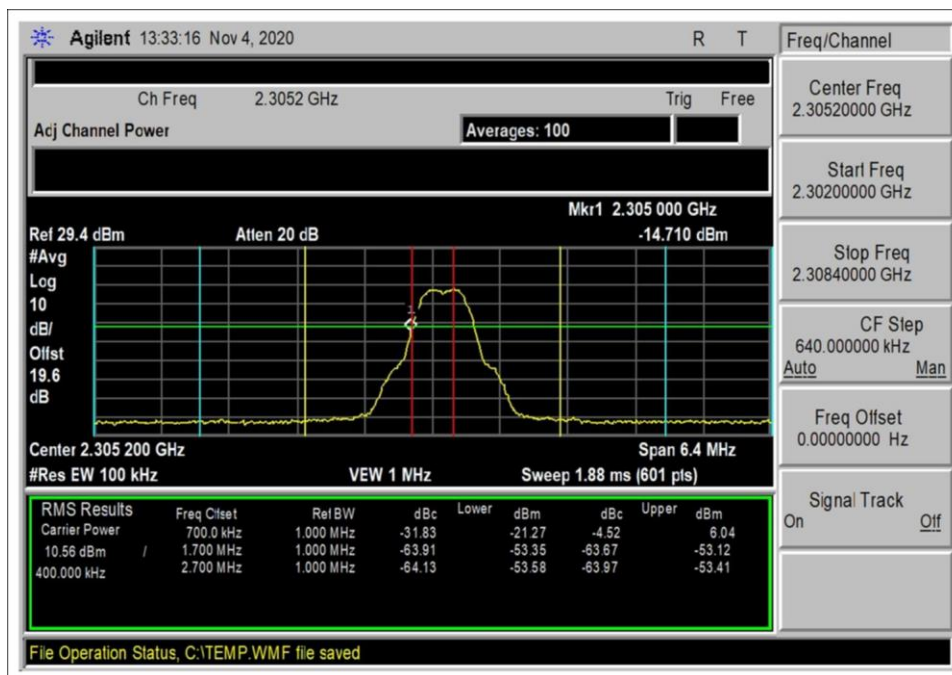
UL 2305-2315 High band AGC+3dB



UL 2305-2315 High band preAGC



UL 2305-2315 Low band AGC+3dB



UL 2305-2315 Low band preAGC

3.6.3 Conducted Spurious Emissions

Test Setup/Conditions			
Test Location:	Brea Lab A	Test Engineer:	Don Nguyen
Test Method:	KDB 935210 D05 Indus Booster Basic Meas v01r04, 04/03/2020	Test Date(s):	11/4/2020
Configuration:	1		
Test Setup:	The EUTs (Antenna and Equipment units) are placed on test bench and connected to 12Vdc and 48Vdc external power supplies. Input port (BDA) is connected to a signal generator. Output port (Antenna) is connected a spectrum analyzer. Uplink (Equipment) unit and Downlink (Antenna) Unit are connected via an unshielded optical cable. The manufacturer declares that the Equipment Unit output port is only intended for BDA unit and is not connected to an antenna. All tests are performed only on the Antenna Unit output port. Frequency range of measurement: 9kHz-24GHz RBW=100kHz, 200kHz, 300kHz, 1MHz, 2MHz VBW=300kHz, 600kHz, 910kHz, 3MHz, 6MHz 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.		

Environmental Conditions			
Temperature (°C)	25.9	Relative Humidity (%):	43

Test Equipment					
Asset#	Description	Manufacturer	Model	Cal Date	Cal Due
03643	Spectrum Analyzer	Agilent	E4440A	5/20/2020	5/20/2022
P06660	Cable	Gore	PHASEFLEX FJR01N01036.0	3/27/2020	3/27/2022
P07243	Cable	H&S	32022-29094K- 29094K-24TC	5/29/2020	5/29/2022
P06664	Cable	Gore	PHASEFLEX FJR01N01036.0	3/27/2020	3/27/2022
03431	Attenuator	Aeroflex/Weinschel	89-20-21	12/20/2019	12/20/2021
P07037	Signal Generator	Agilent	E4432B	2/7/2019	2/7/2021
00786	Preamp	HP	83017A	5/20/2020	5/20/2022

Limit Line For Spurious Conducted Emission

Per section 27.53 (f), the 1559-1610 band was also investigated and found emission within limits using applied correction.

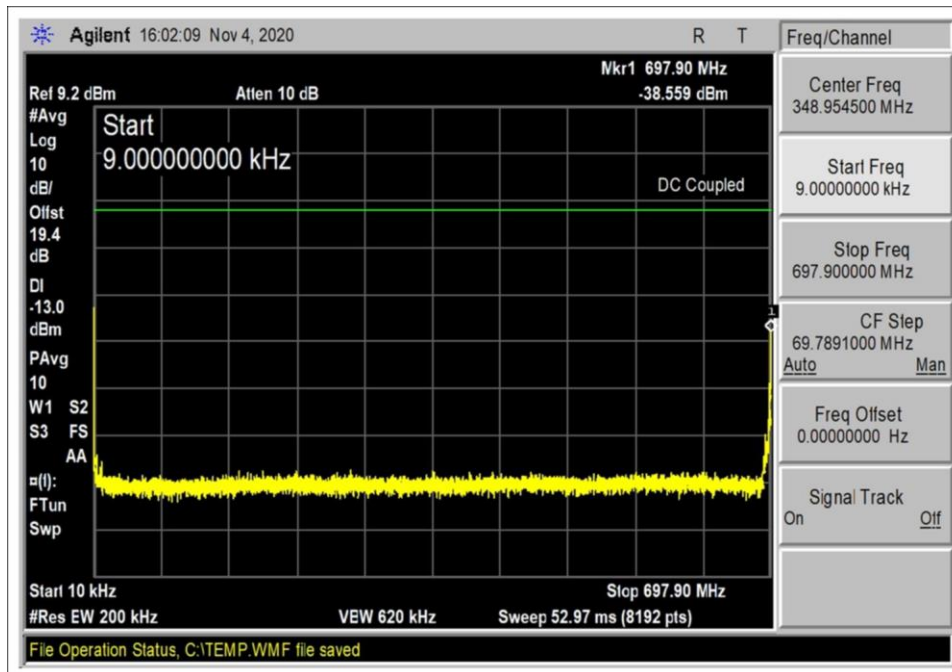
Limit Line Calculation				
Frequency (MHz)	Max Antenna Gain (dBi)	Limit Line EIRP (dBW/MHz)	Limit Line EIRP (dBm)	Limit line EIRP corrected (dBm)
UL 776-787	16	-70	-40	-56

$$\text{REQUIRED ATTENUATION} = 43 + 10 \log P \text{ DB}$$

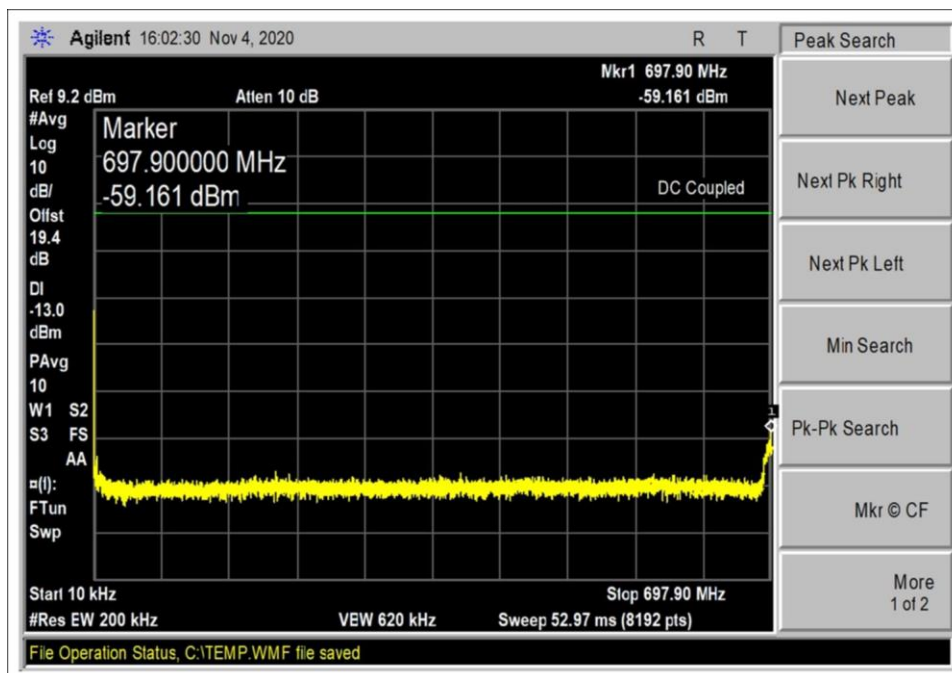
$$\begin{aligned}
 \text{Limit} &= \text{Power} - \text{Required Attenuation} \\
 &= 10 \log P - (43 + 10 \log P) \\
 &= 10 \log P - 43 - 10 \log P \\
 &= -43 \text{ dBW} \\
 &= 0.00005 \text{ W (0.05 mW)} \\
 &= 10 \log 0.00005 / 0.001 \\
 &= -13 \text{ dBm (94 dBuV) at any power level.}
 \end{aligned}$$

Plots

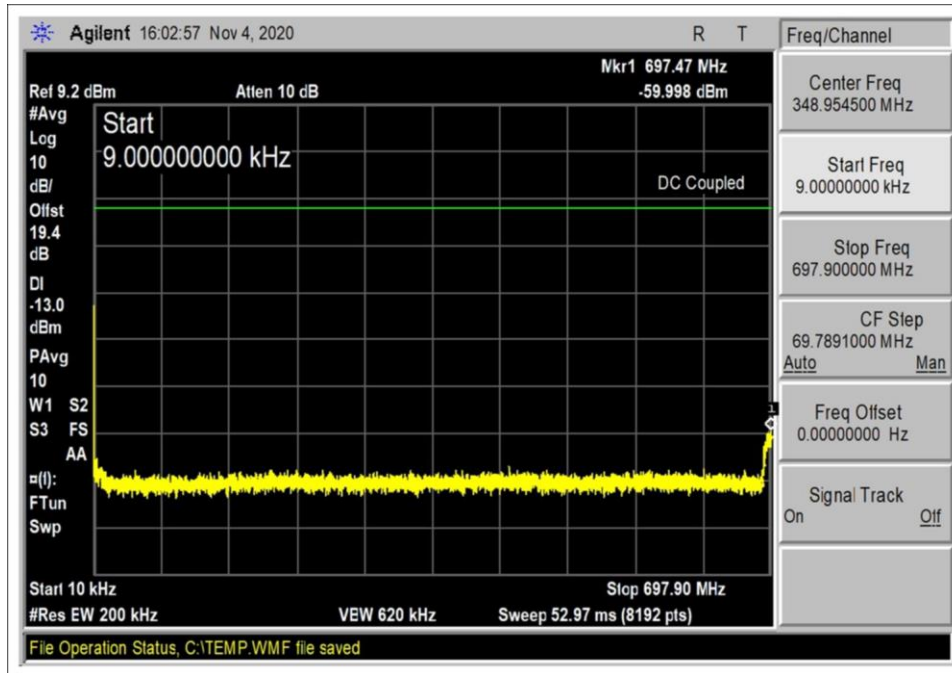
AWGN



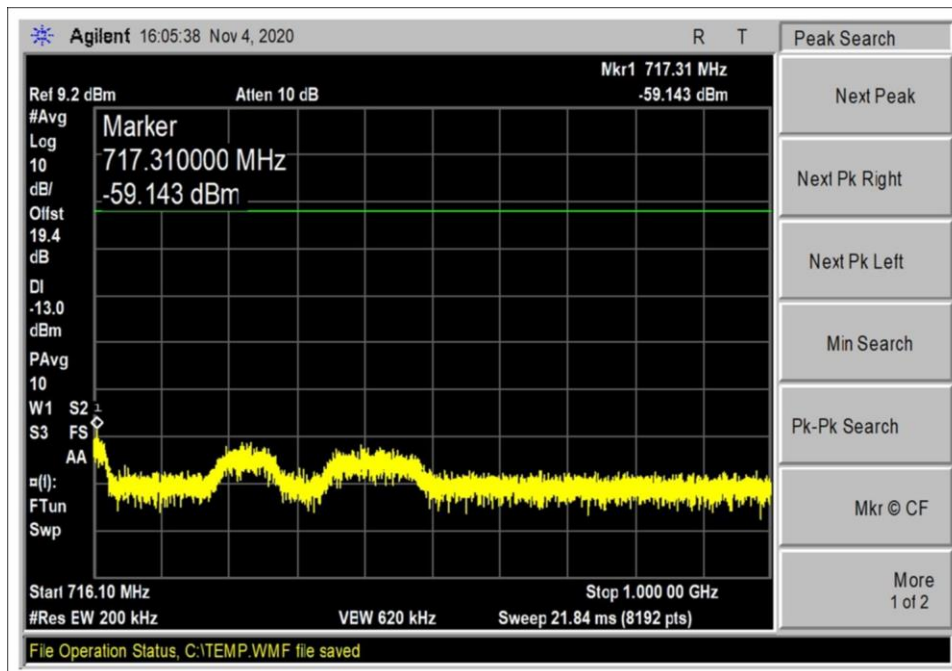
UL 698-716_Low CH_9k-697.9M



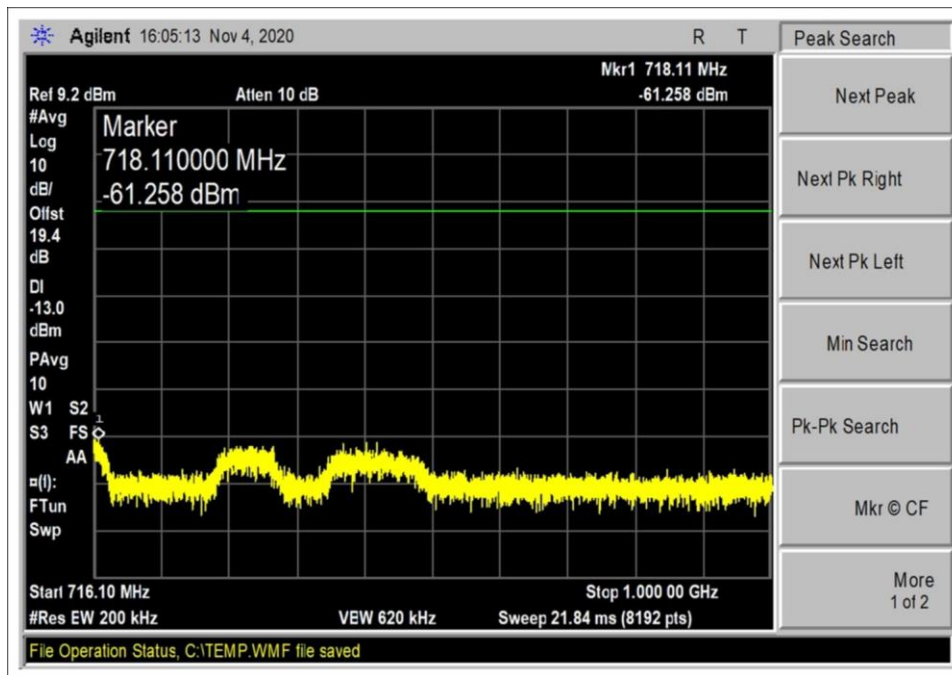
UL 698-716_Middle CH_9k-697.9M



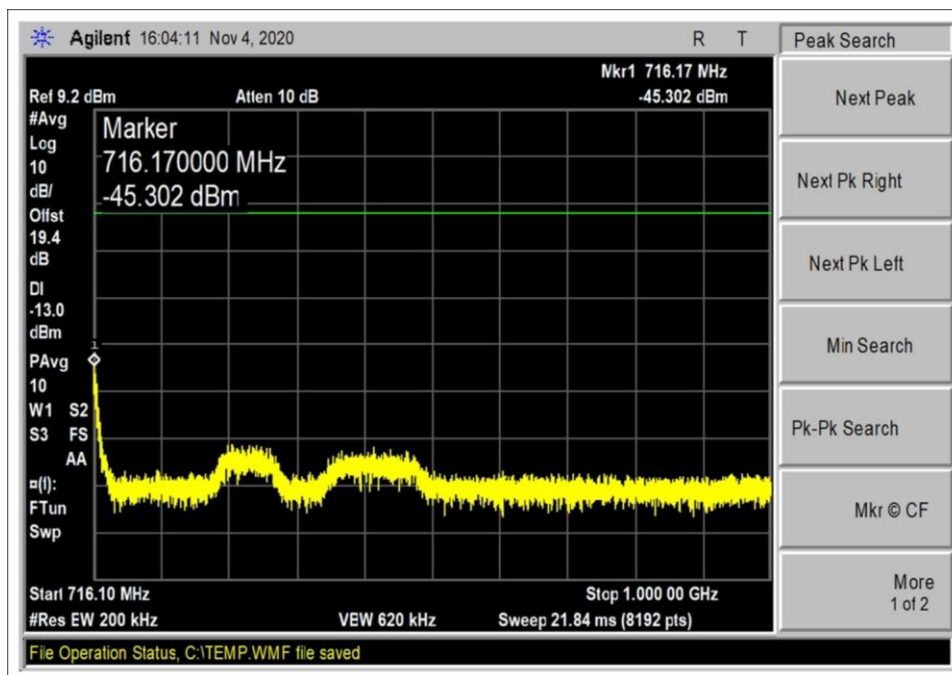
UL 698-716_High CH_9k-697.9M



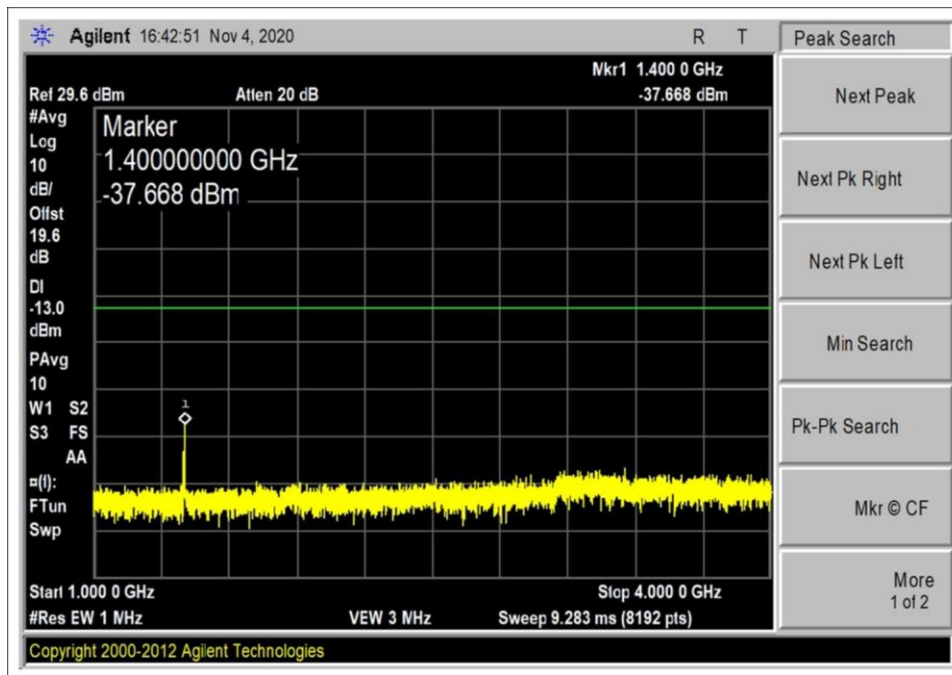
UL 698-716_Low CH_716.1M-1G



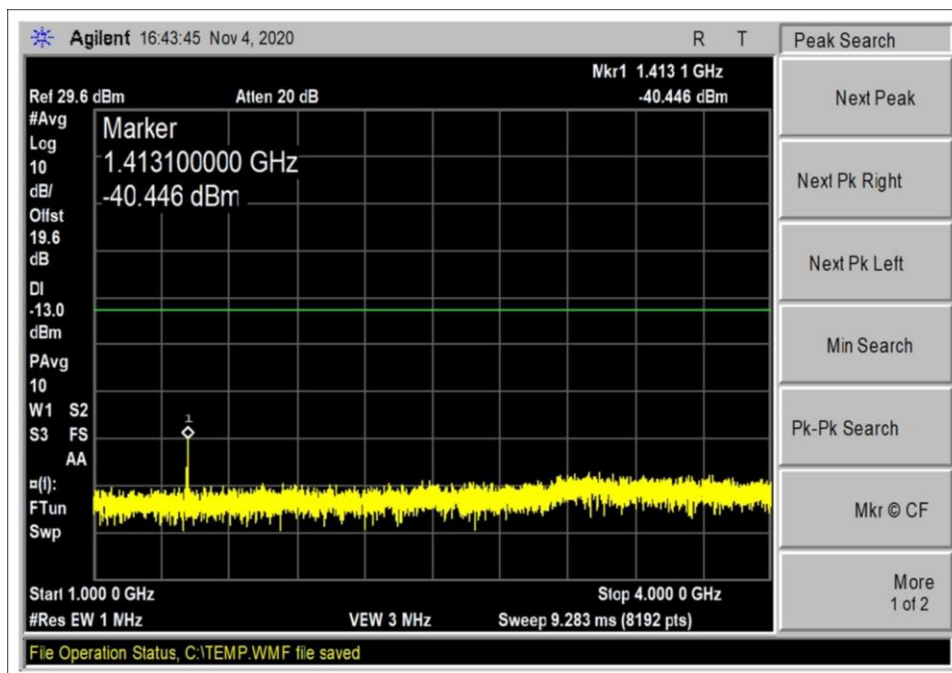
UL 698-716_Middle CH_716.1M-1G



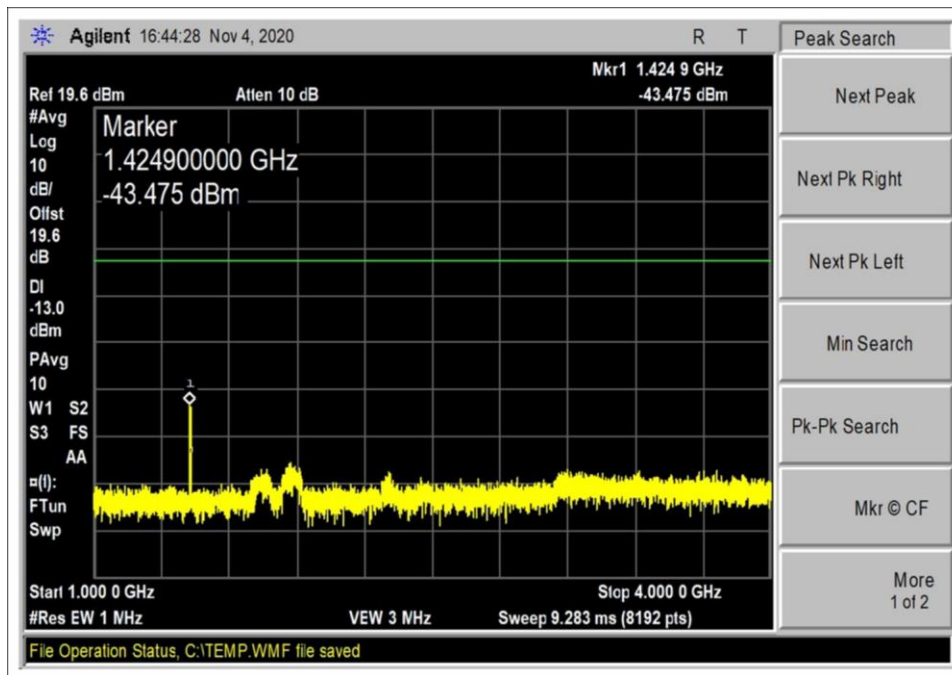
UL 698-716_High CH_716.1M-1G



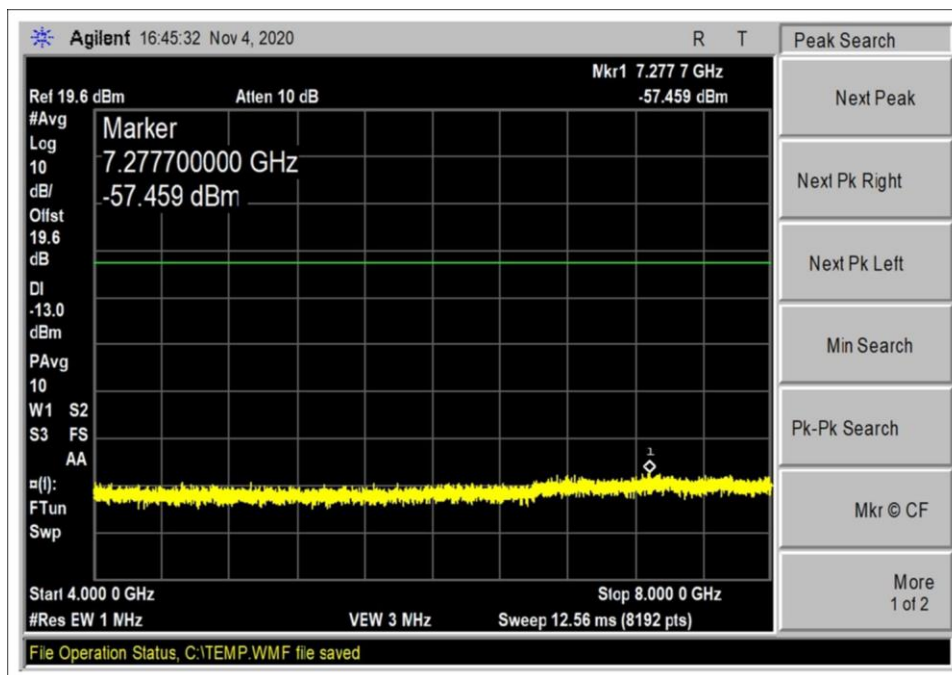
UL 698-716_Low CH_1G-4G



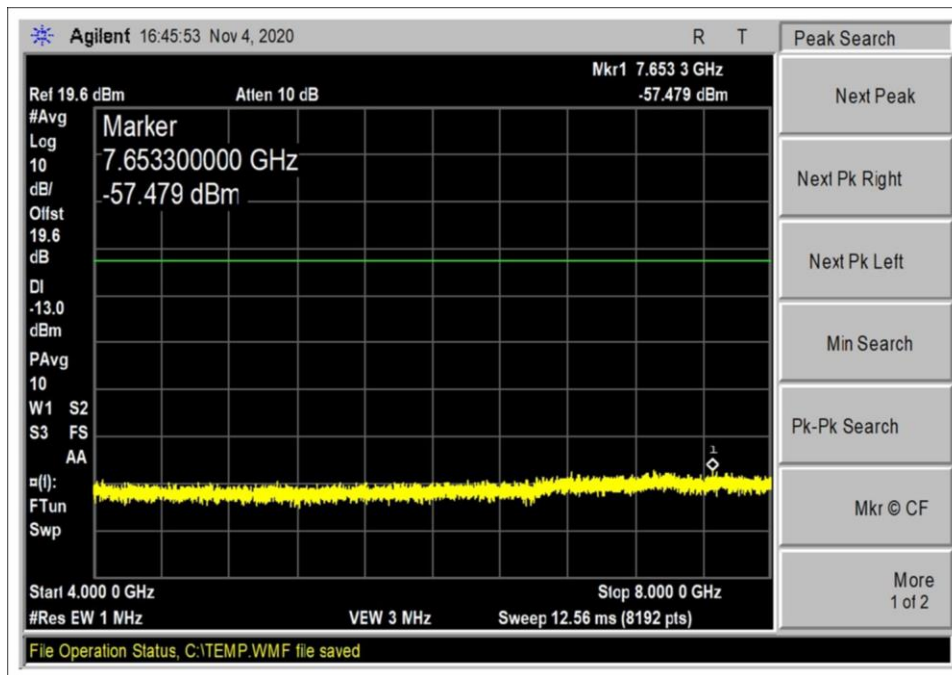
UL 698-716_Middle CH_1G-4G



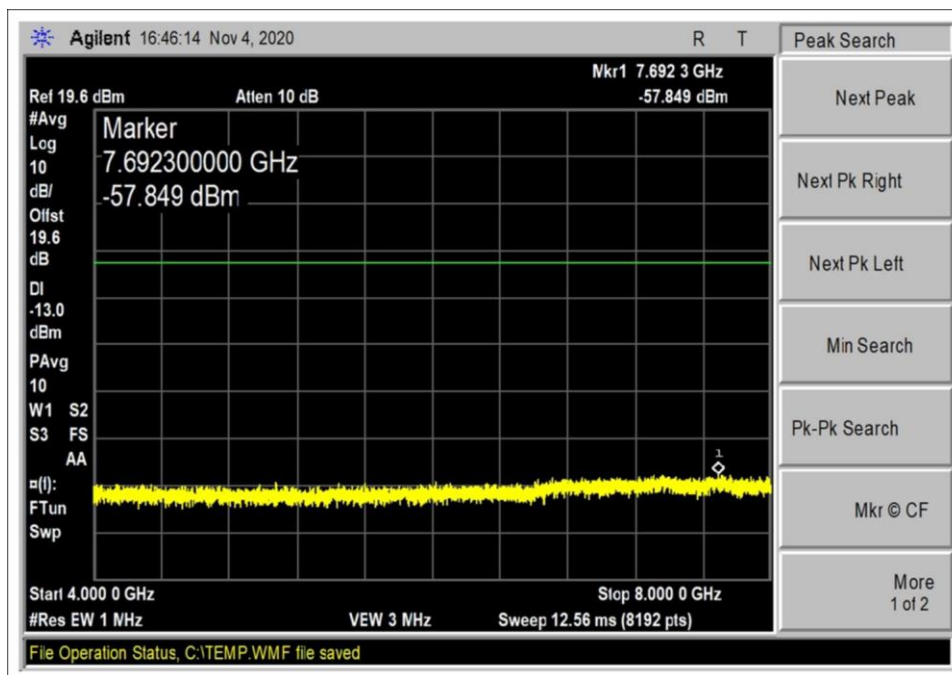
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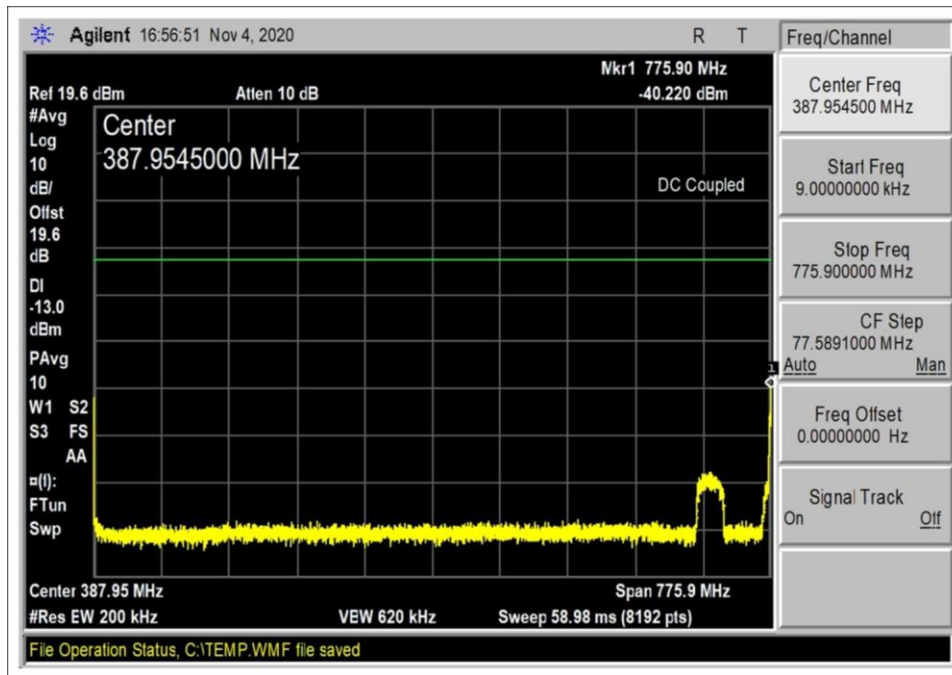
UL 698-716_Low CH_4G-8G



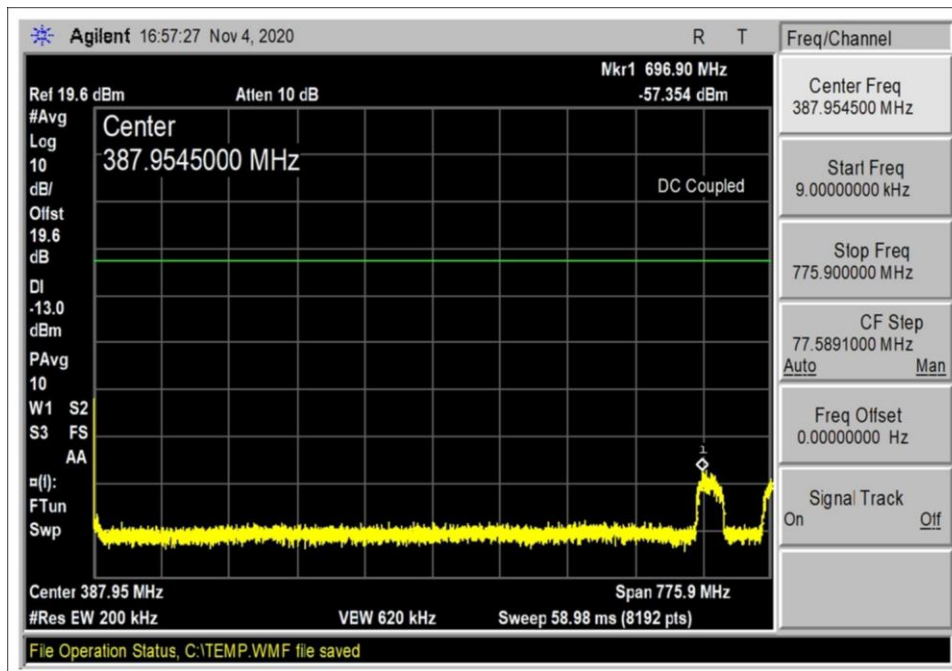
UL 698-716_Middle CH_4G-8G



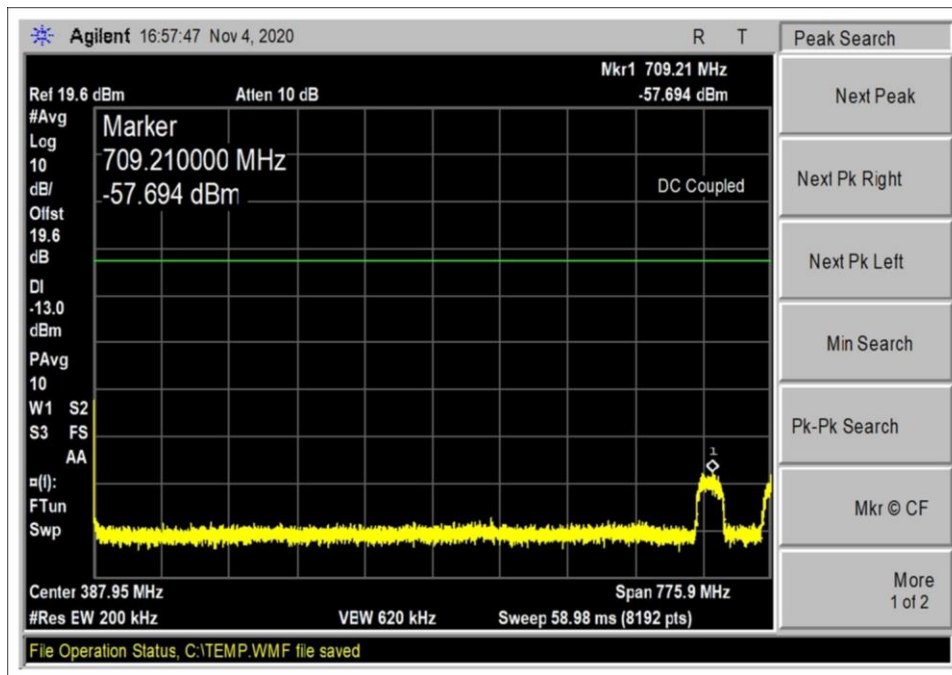
UL 698-716_High CH_4G-8G



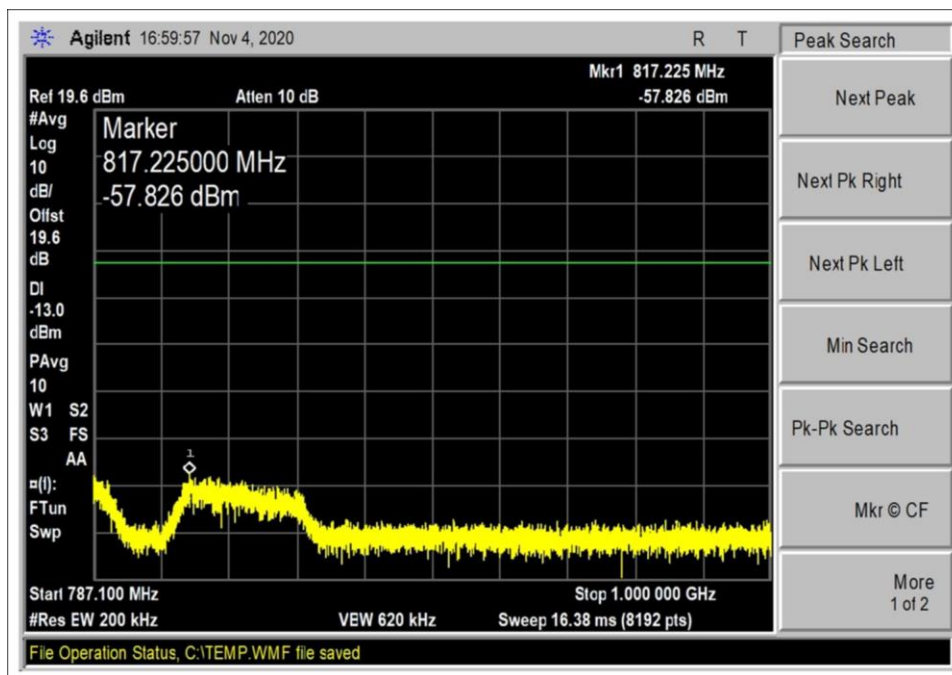
UL 776-787_Low CH_775.7M-775.9M



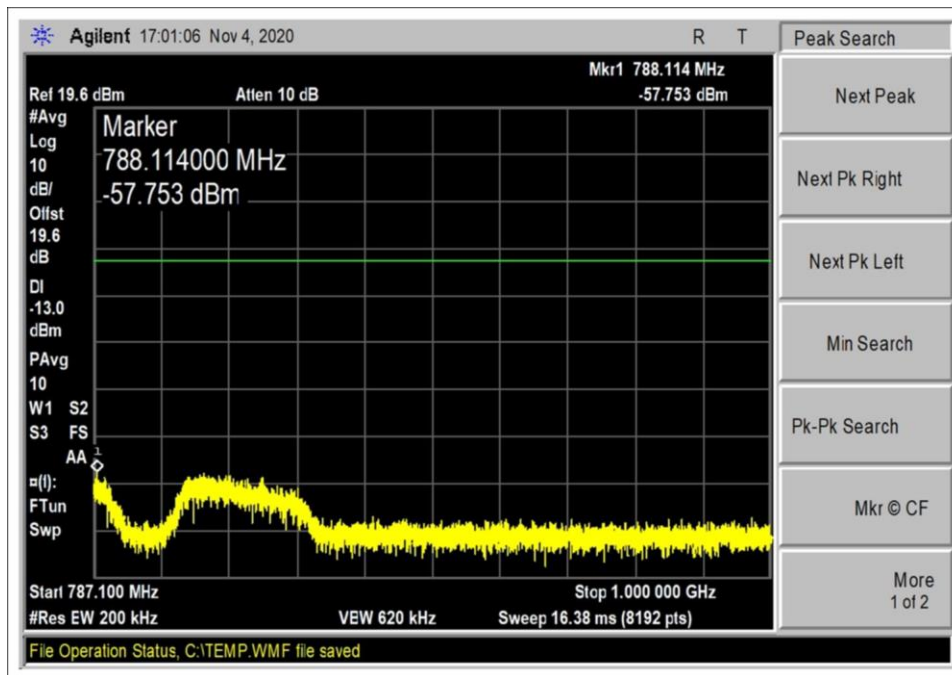
UL 776-787_Middle CH_775.7M-775.9M



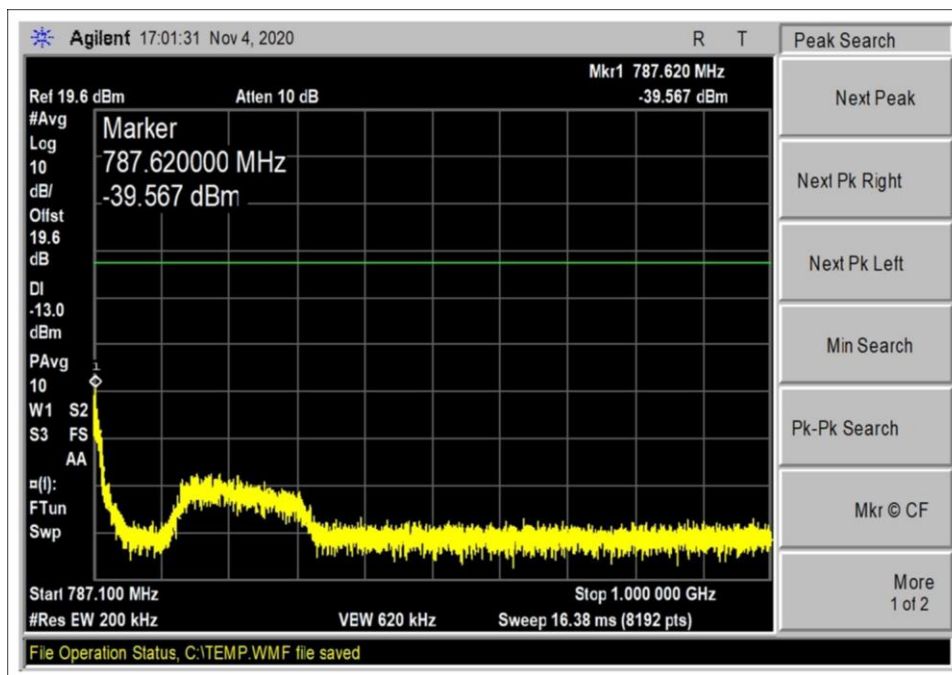
UL 776-787_High CH_775.7M-775.9M



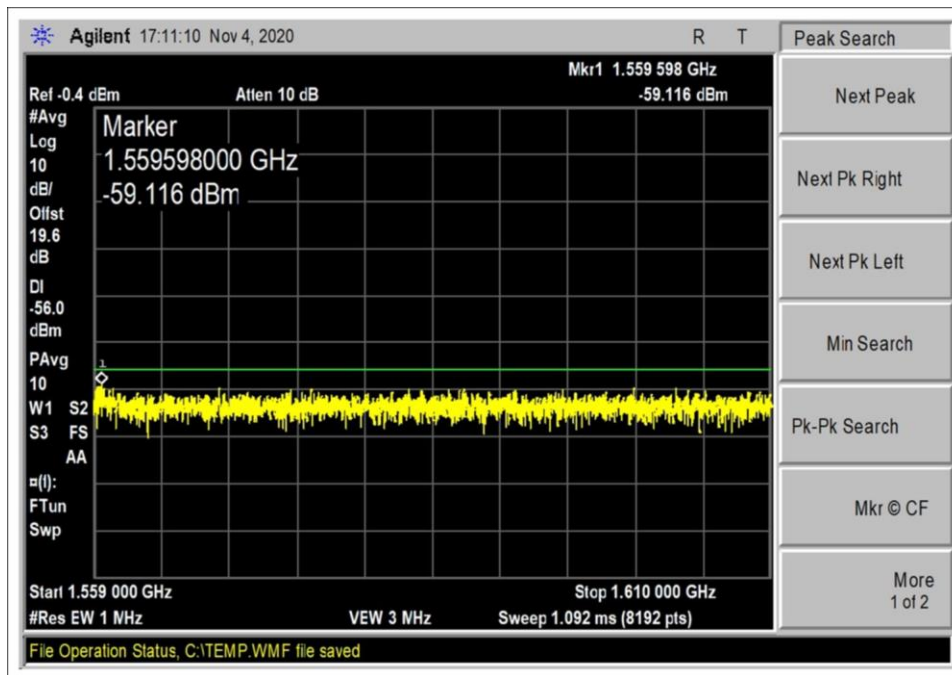
UL 776-787_Low CH_787.1M-1G



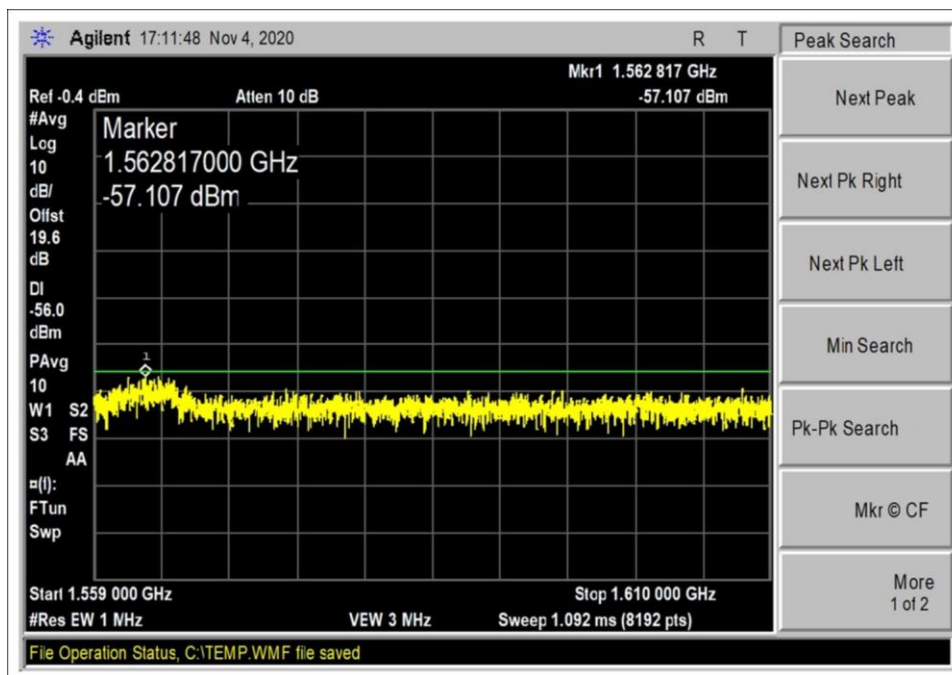
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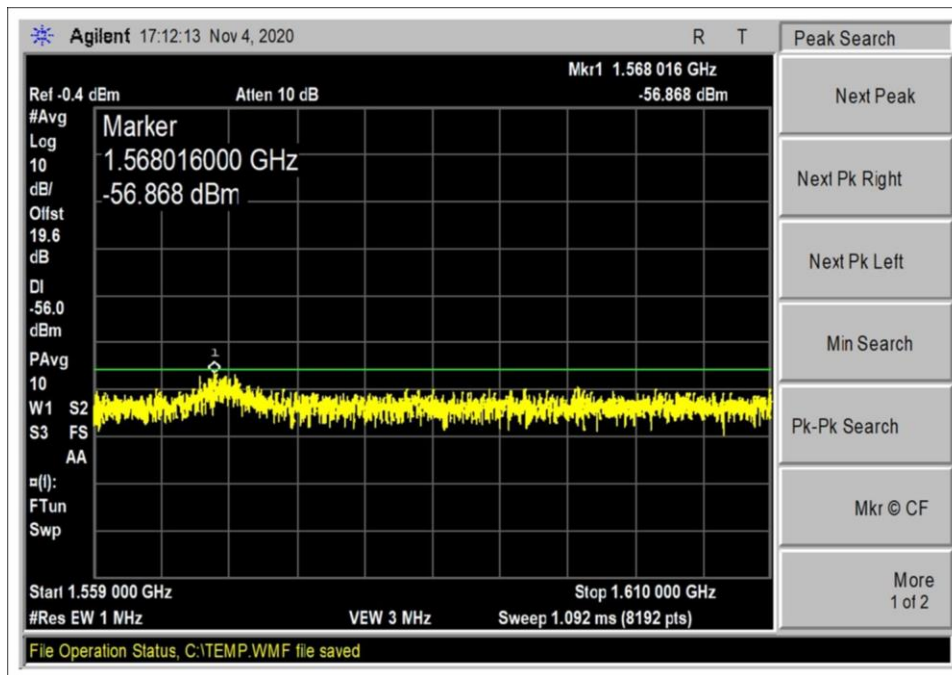
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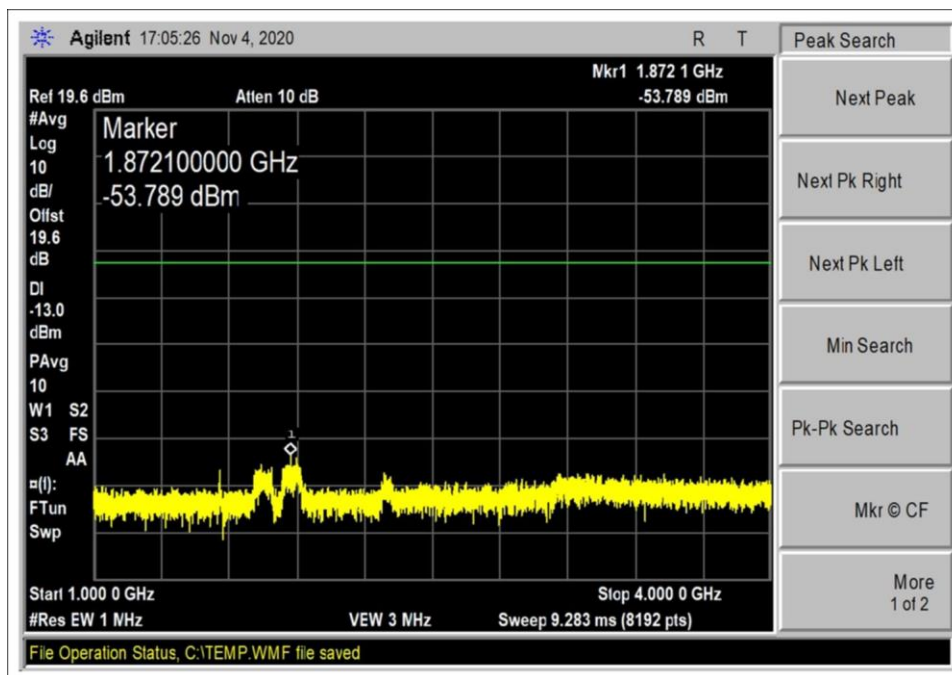
UL 776-787_Low CH_1559M-1610M



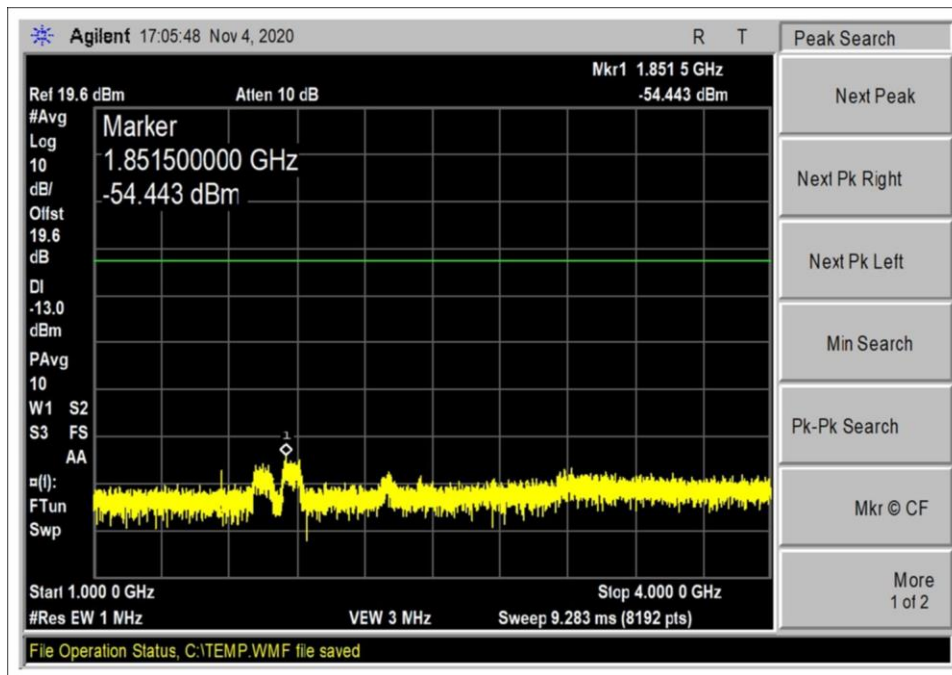
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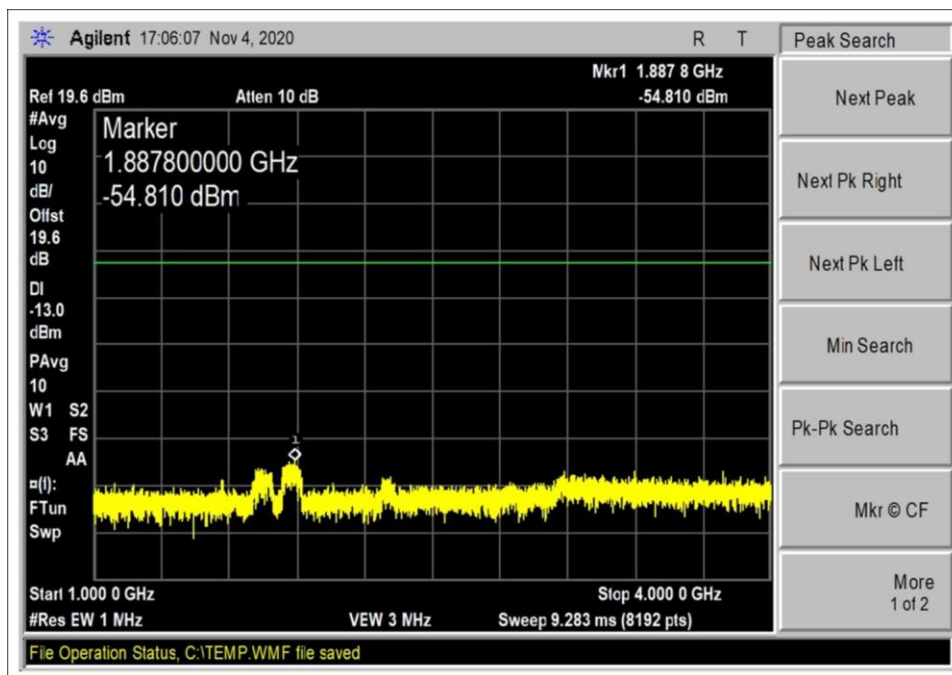
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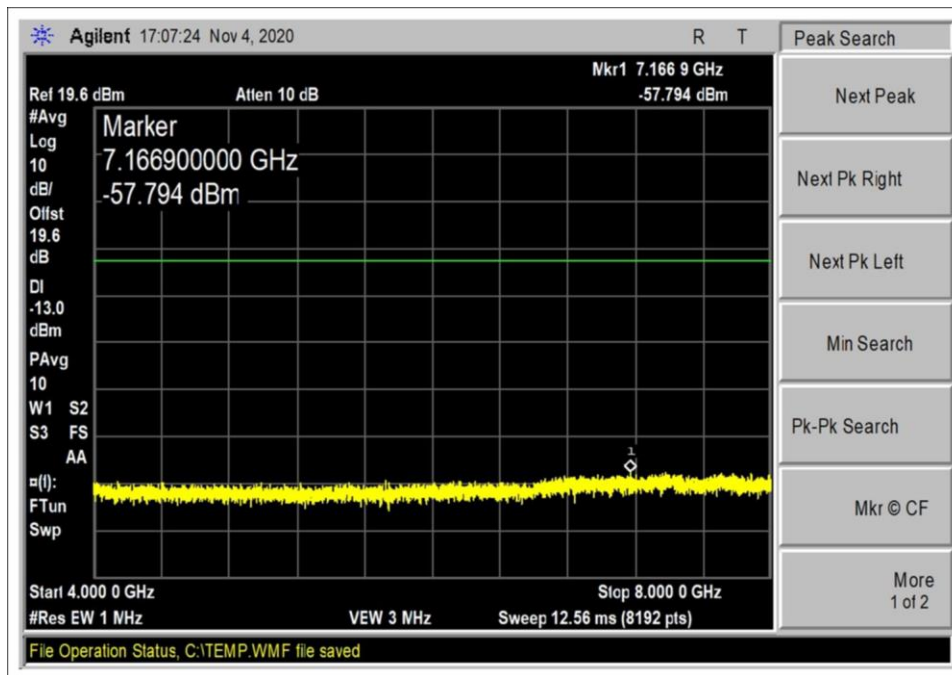
UL 776-787_Low CH_1G-4G



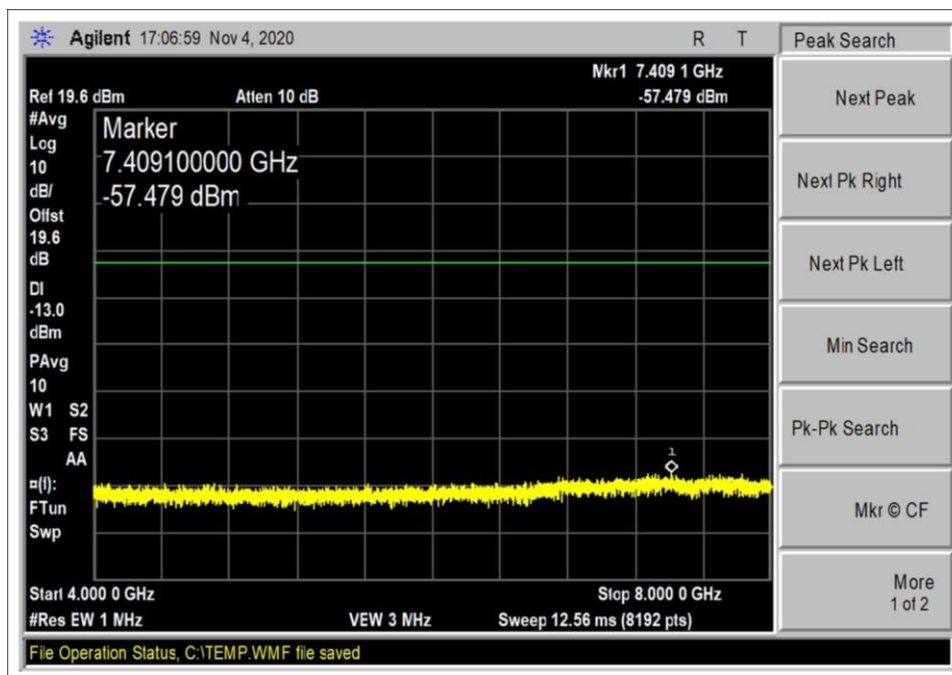
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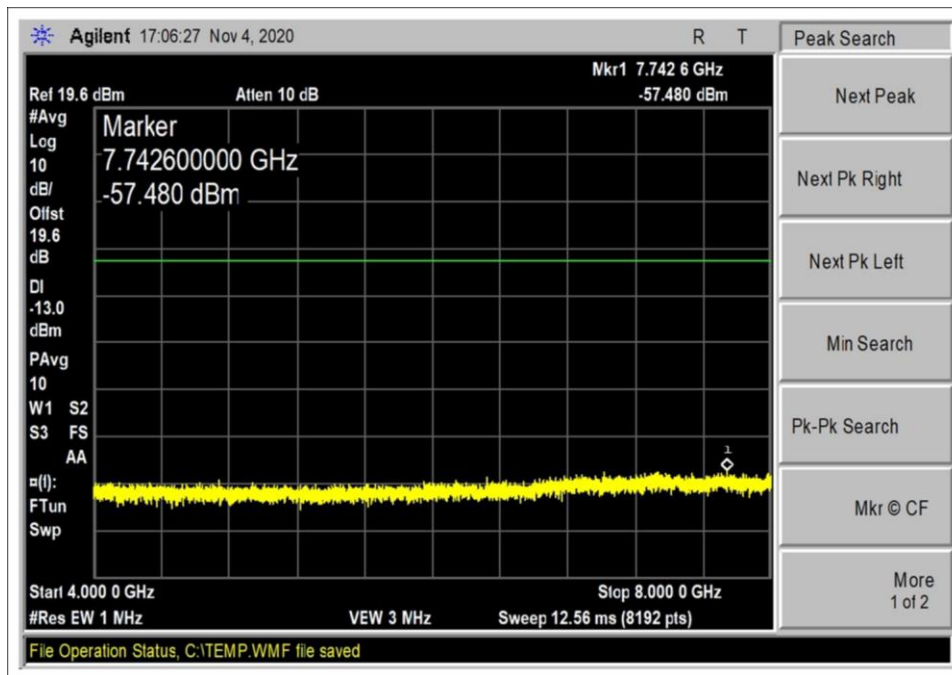
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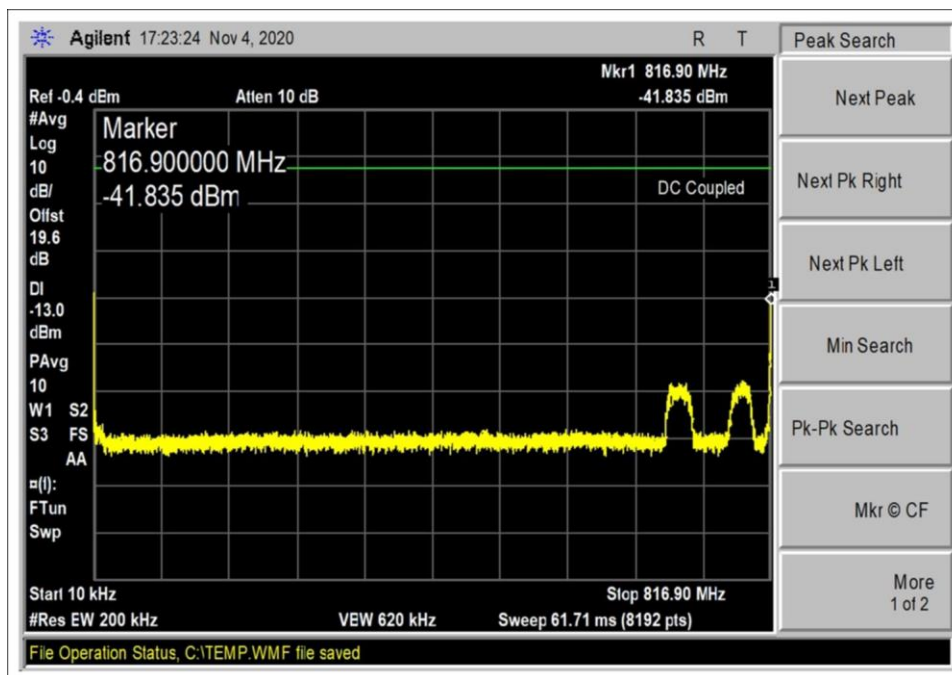
UL 776-787_Low CH_4G-8G



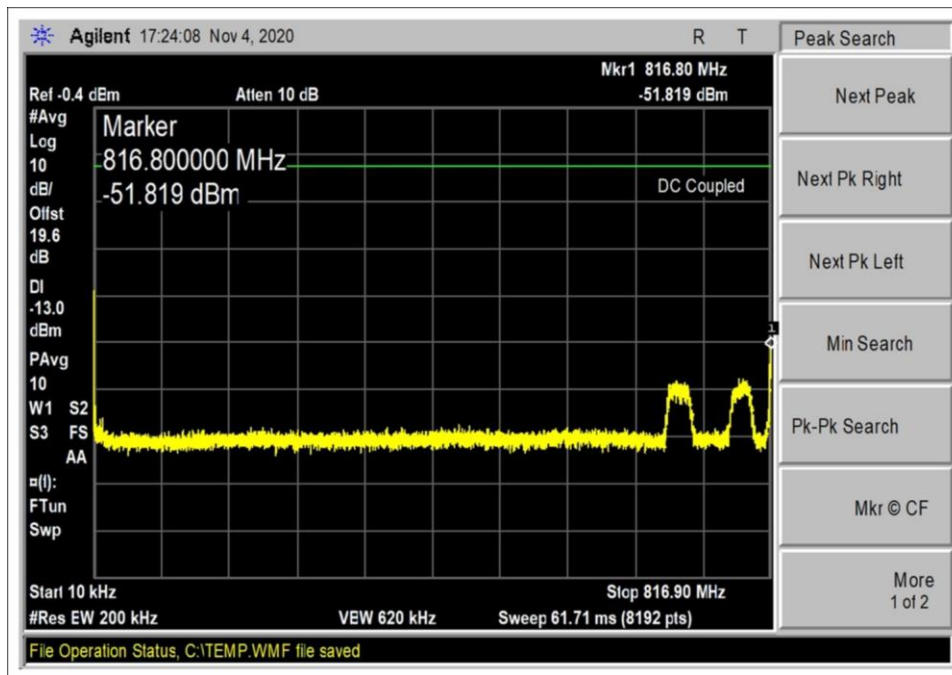
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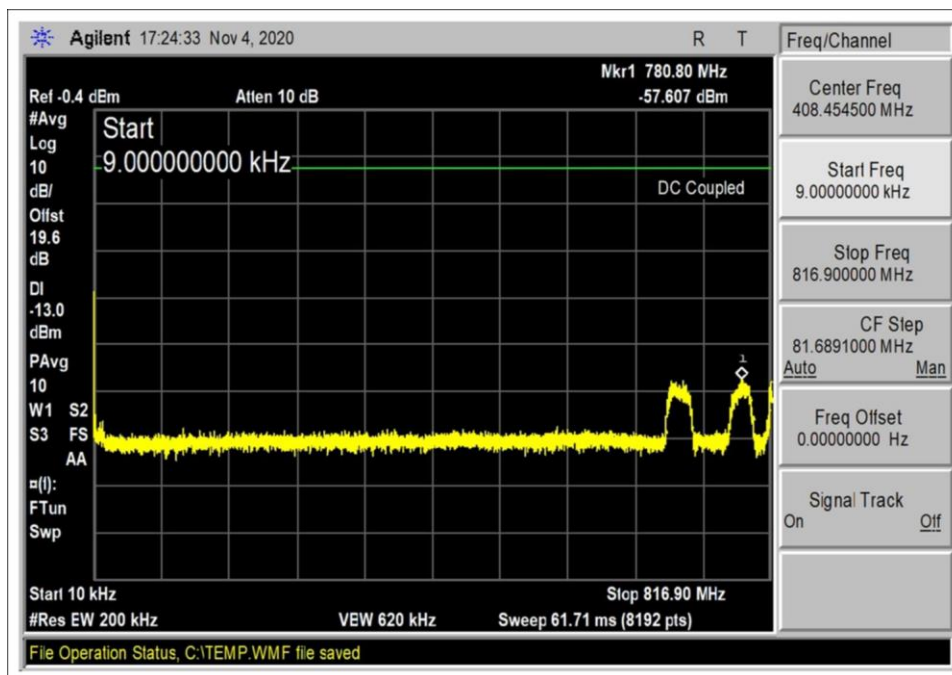
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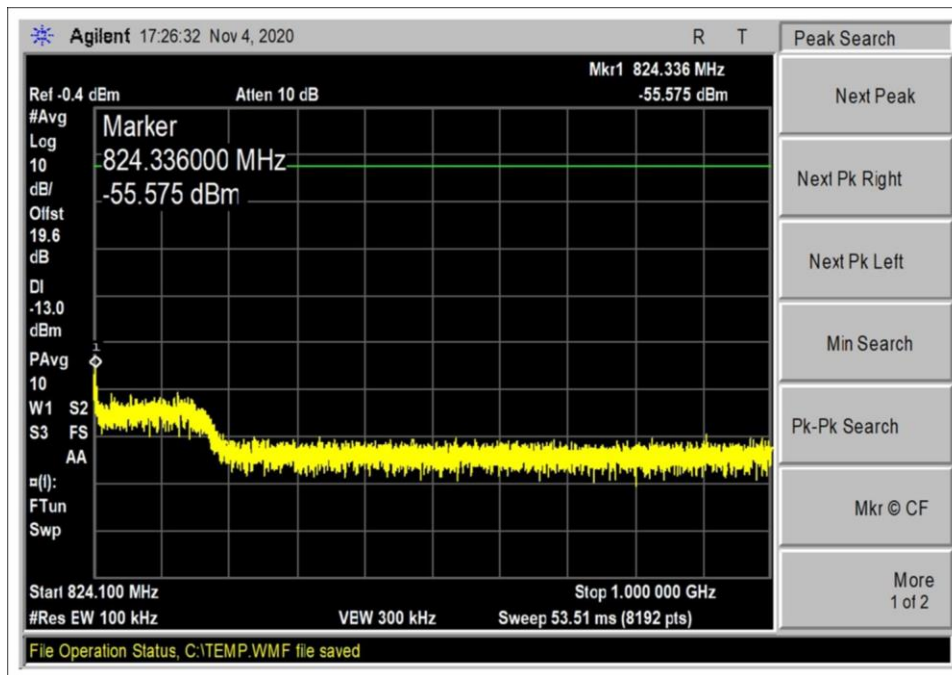
UL 817-824_Low CH_9k-816.9M



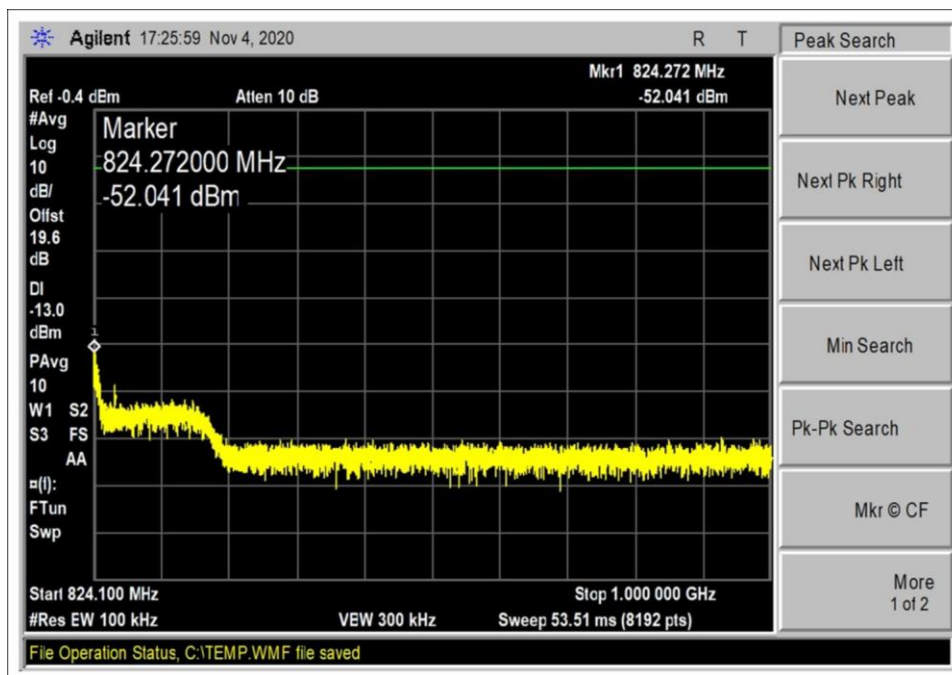
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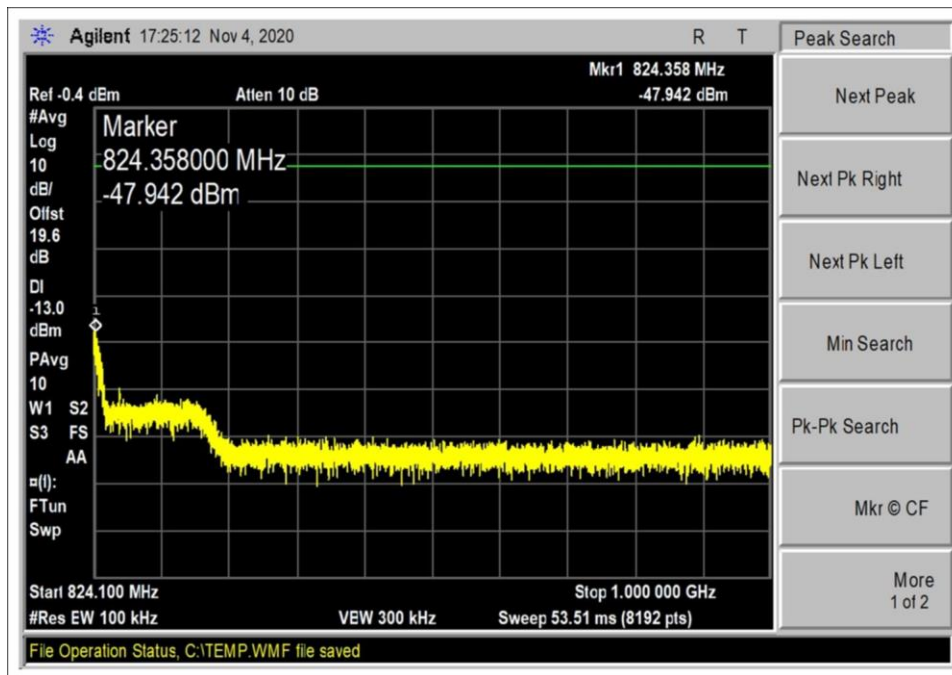
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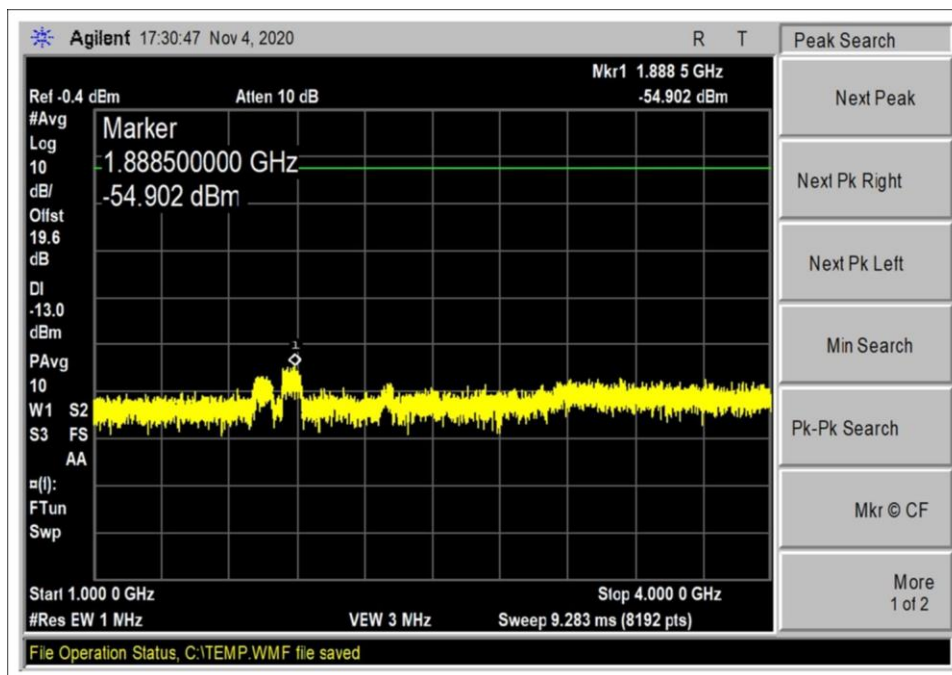
UL 817-824_Low CH_824M-1G



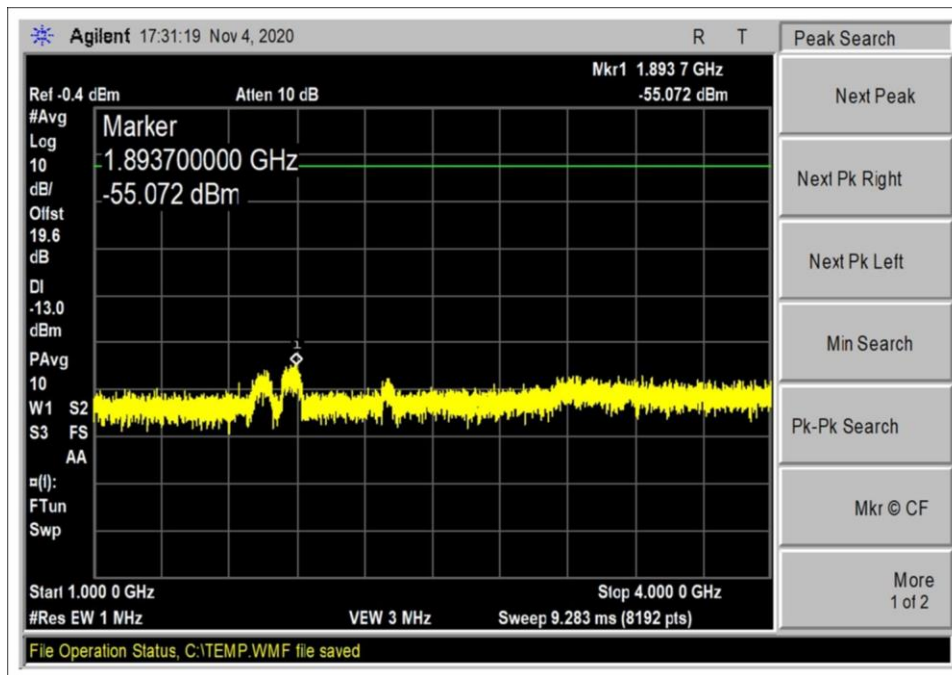
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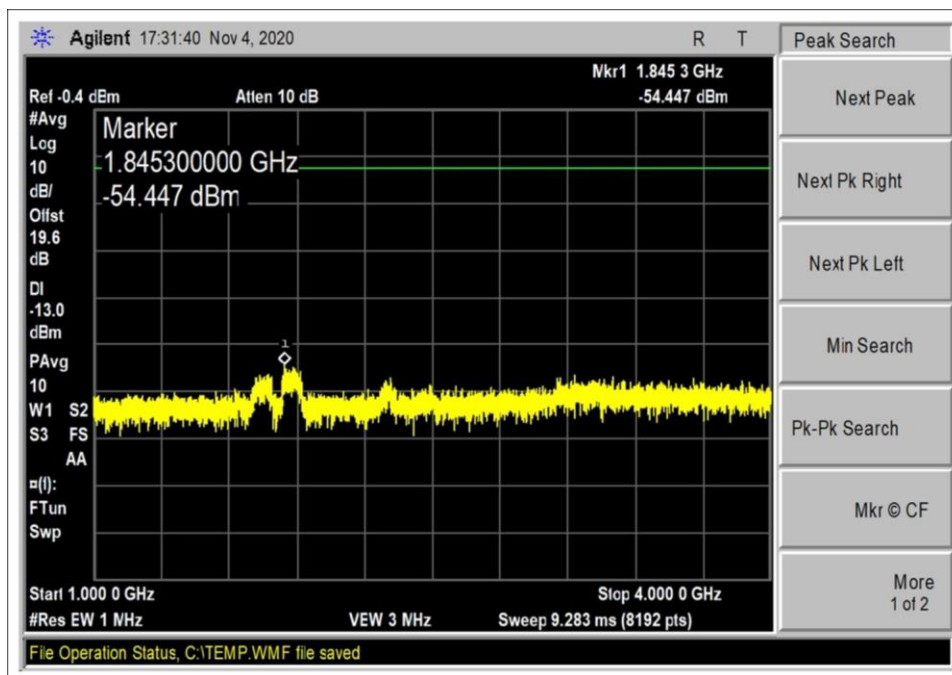
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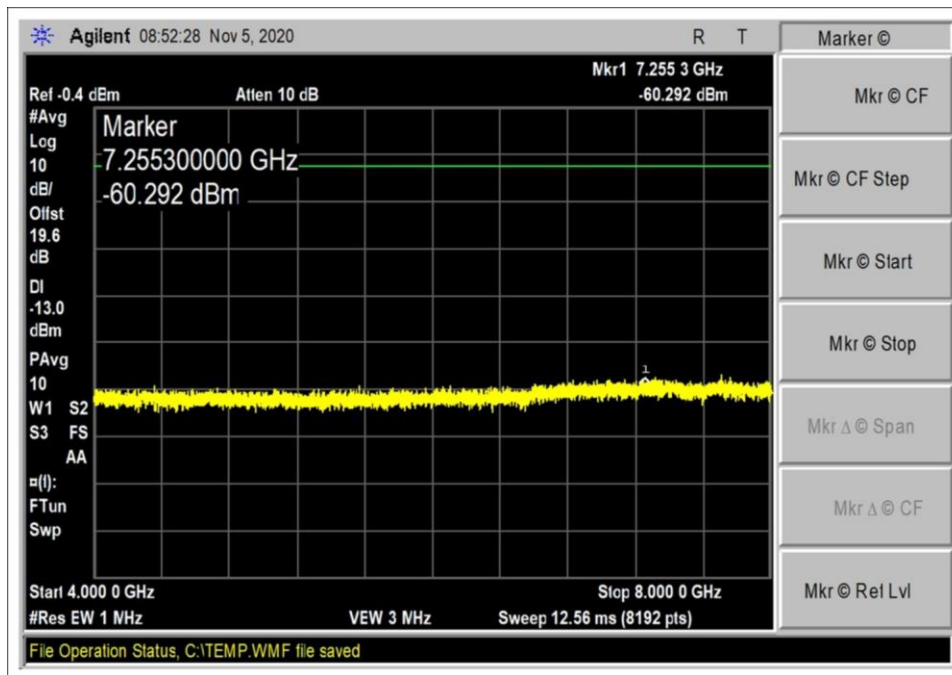
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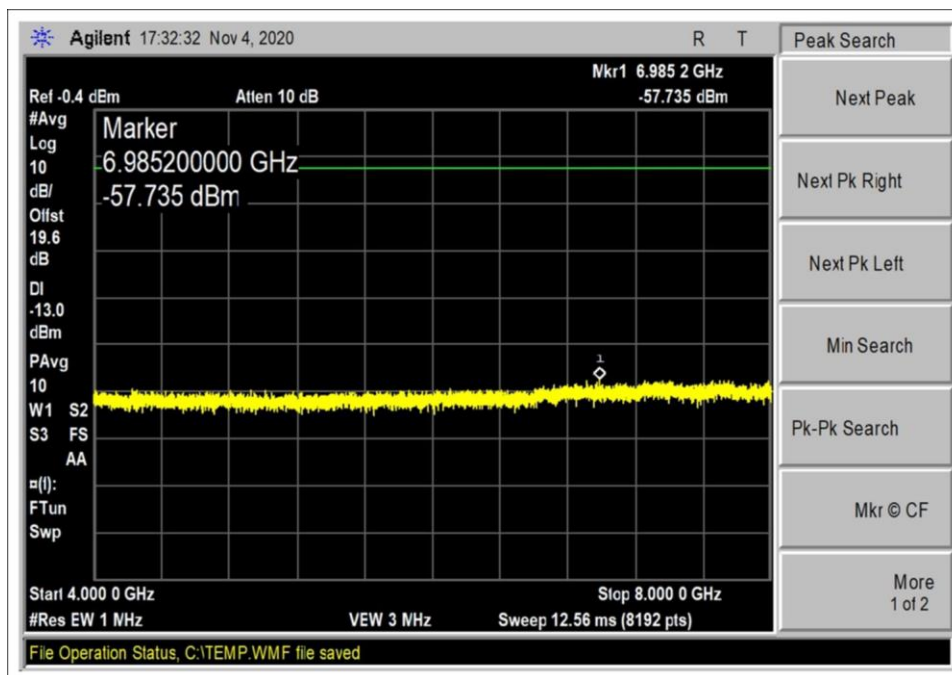
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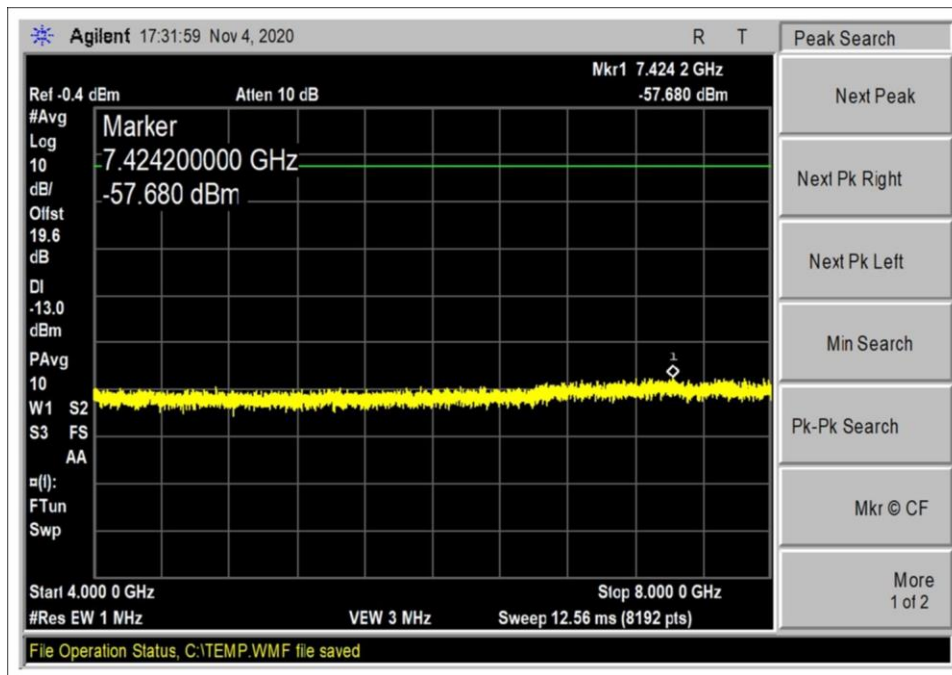
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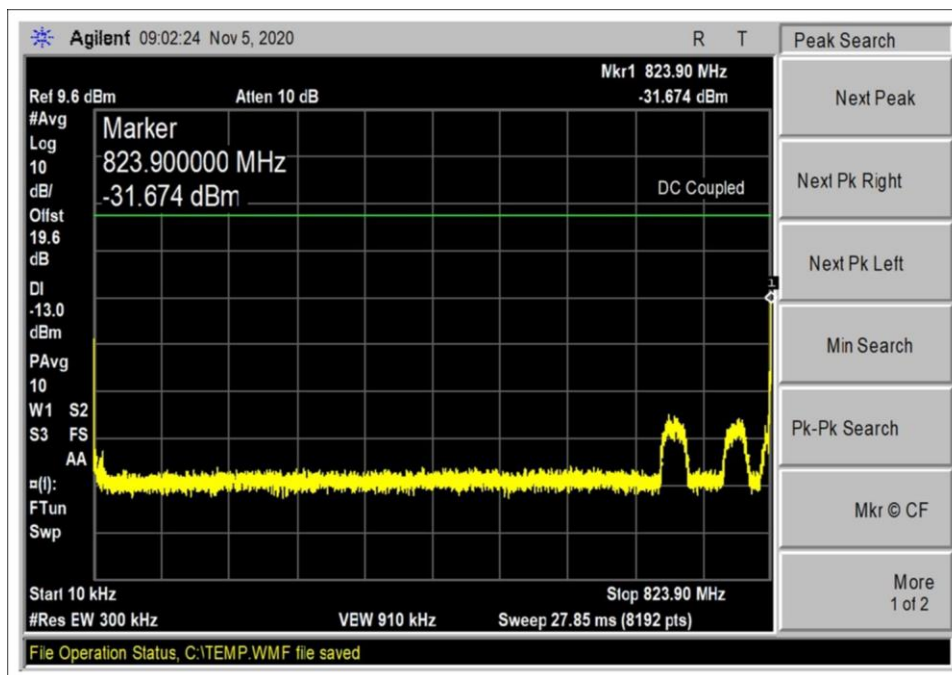
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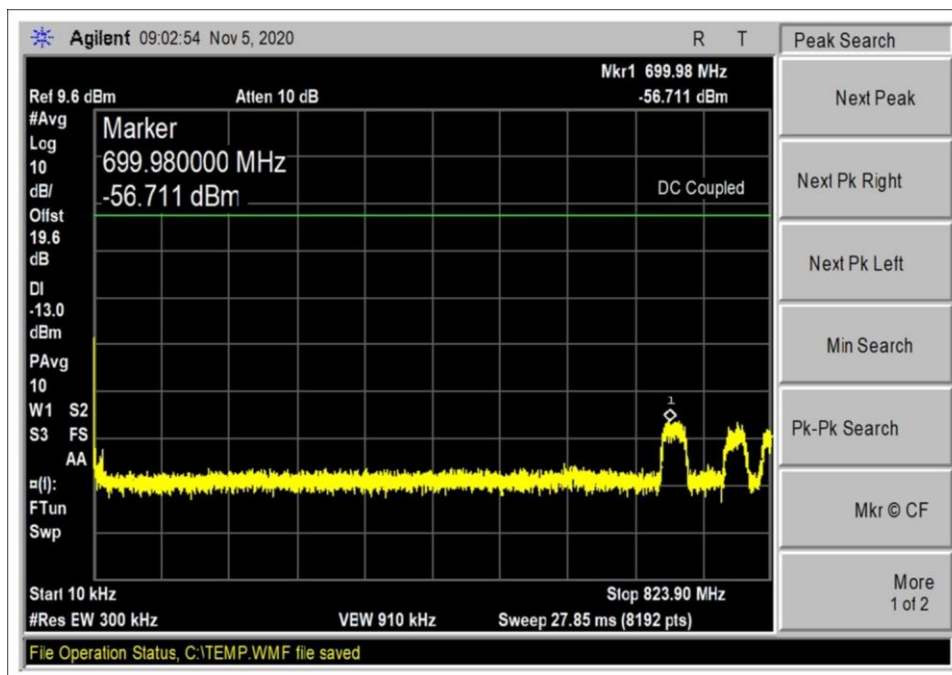
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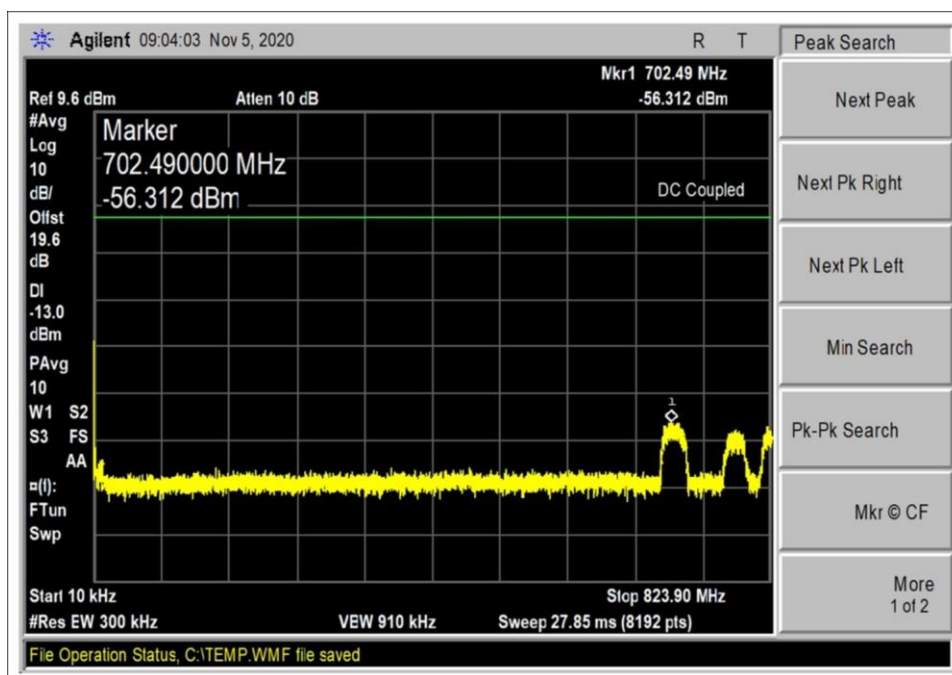
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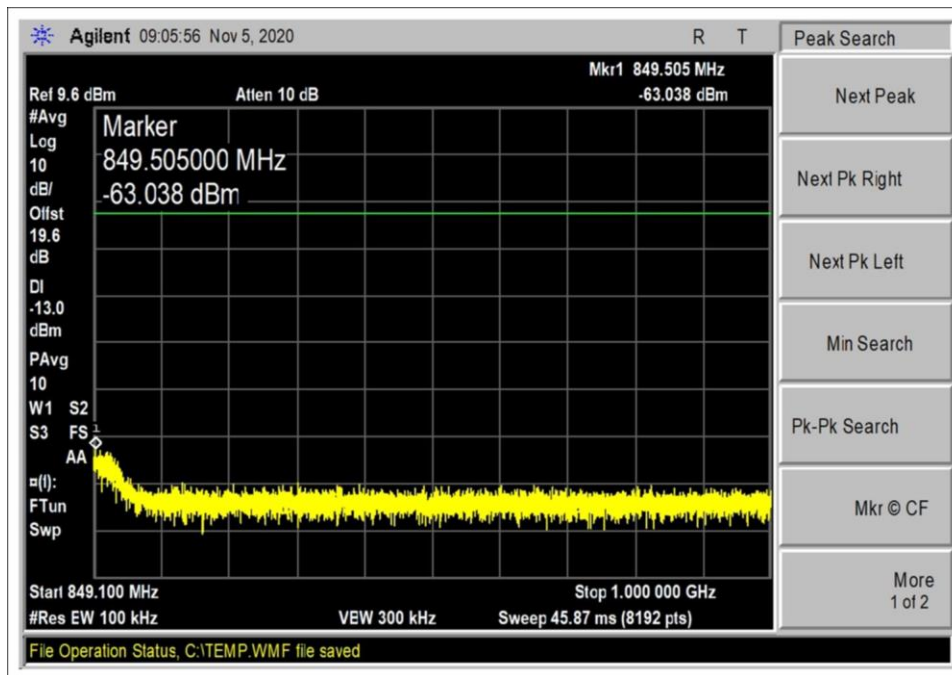
UL 824-849_Low CH_9k-823.9M



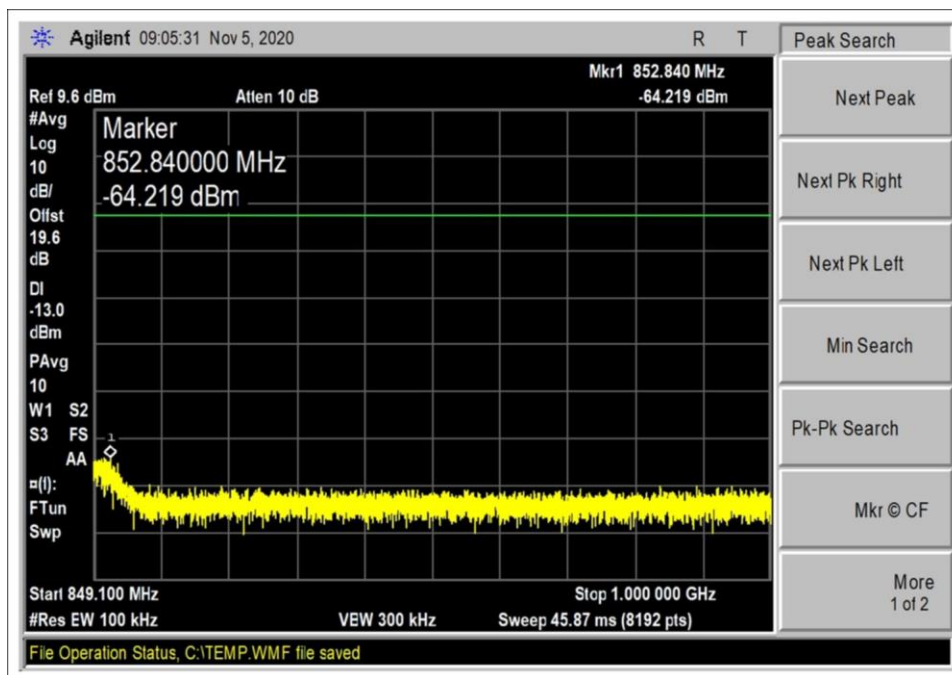
UL 824-849_Middle CH_9k-823.9M



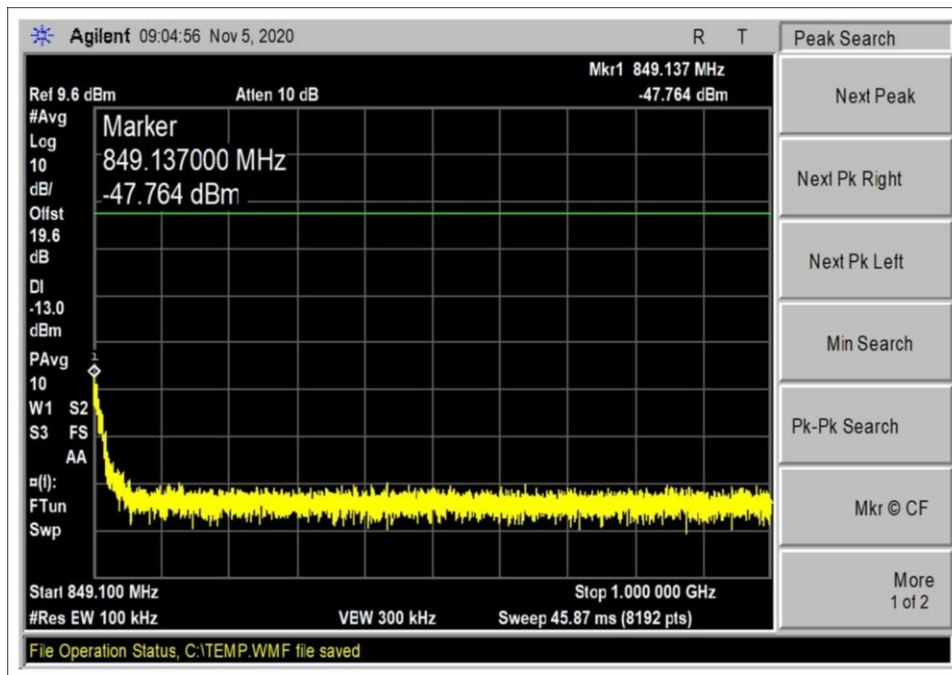
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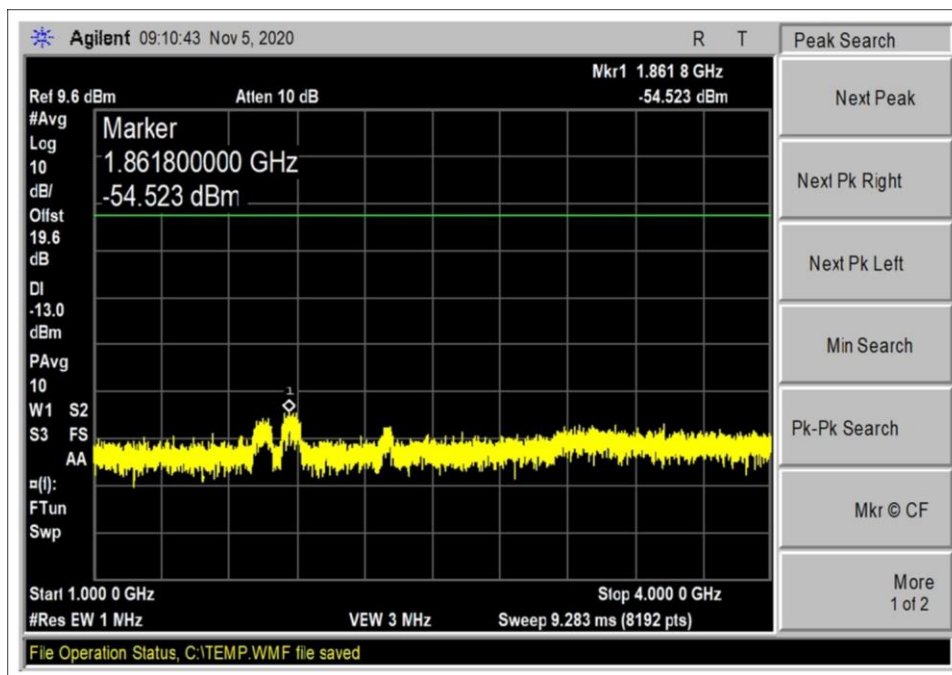
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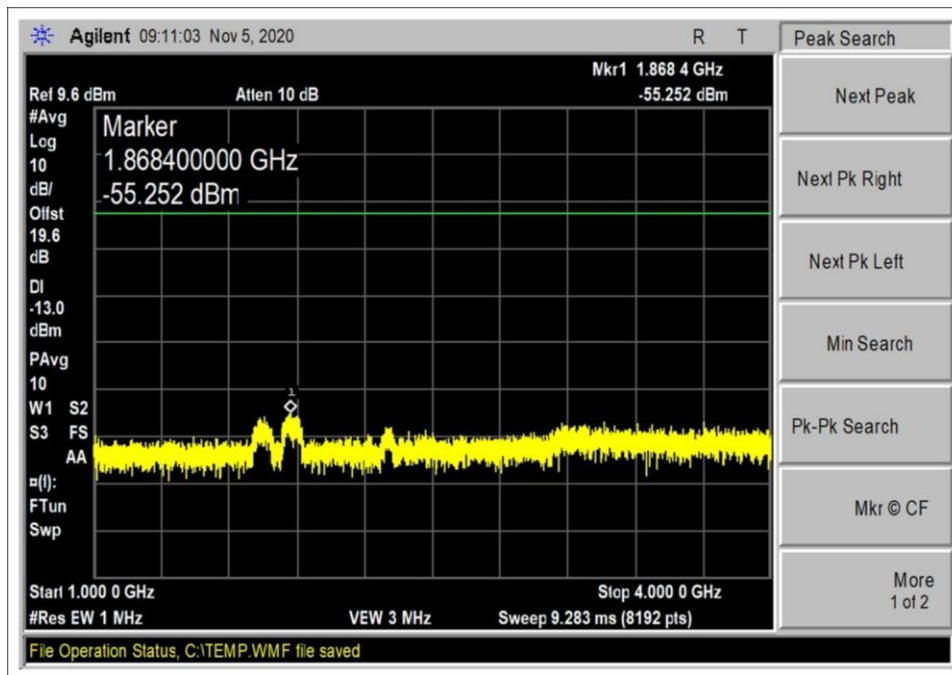
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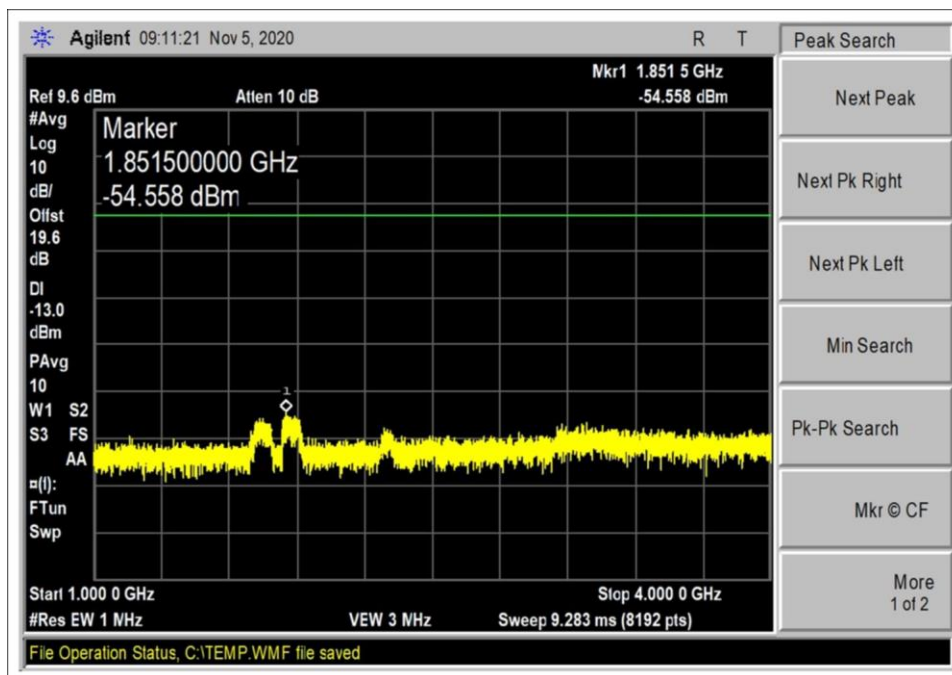
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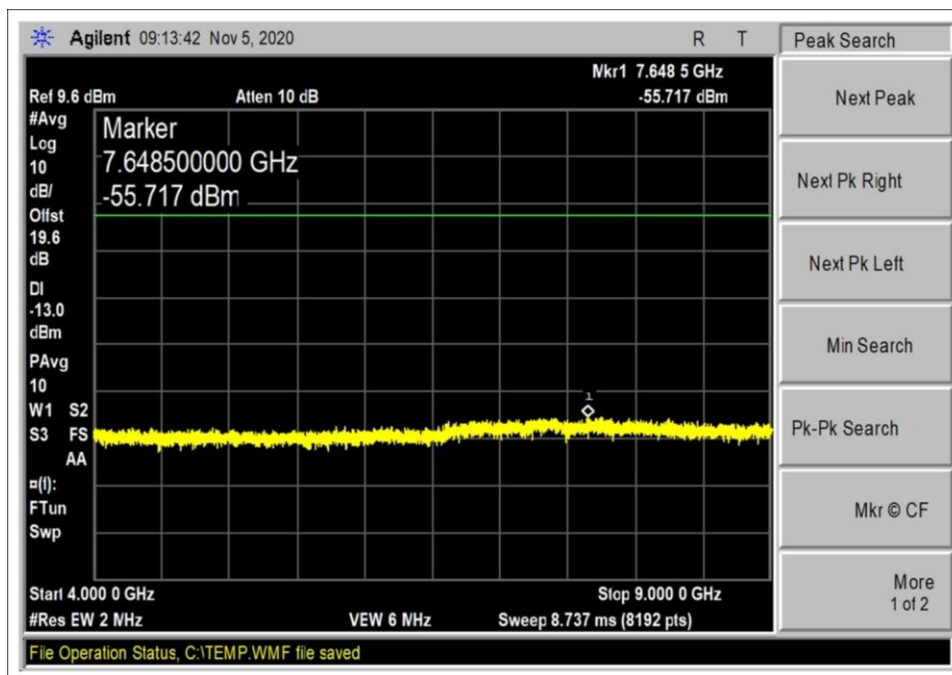
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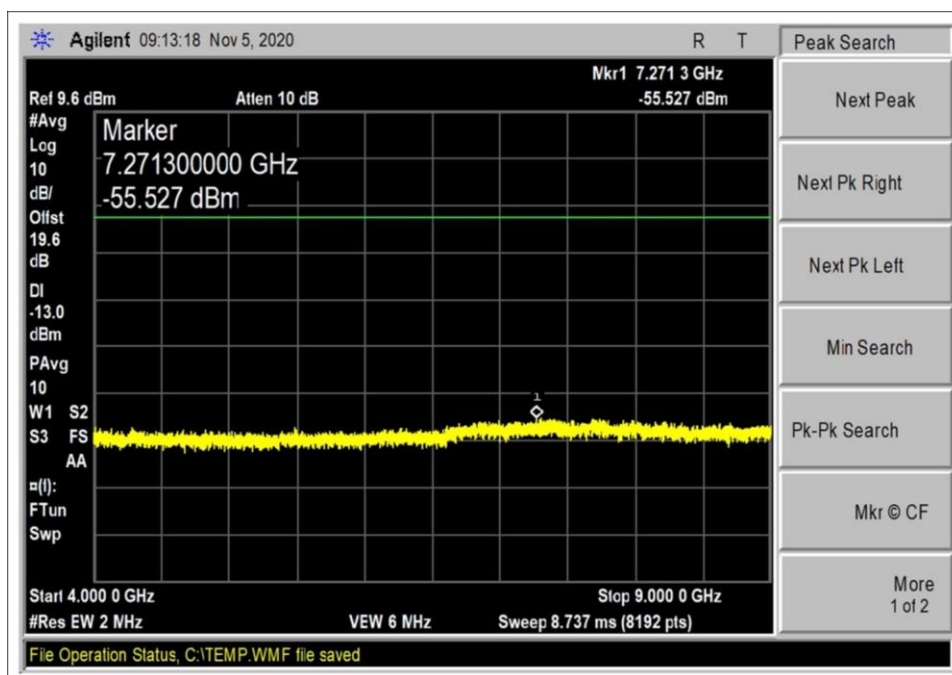
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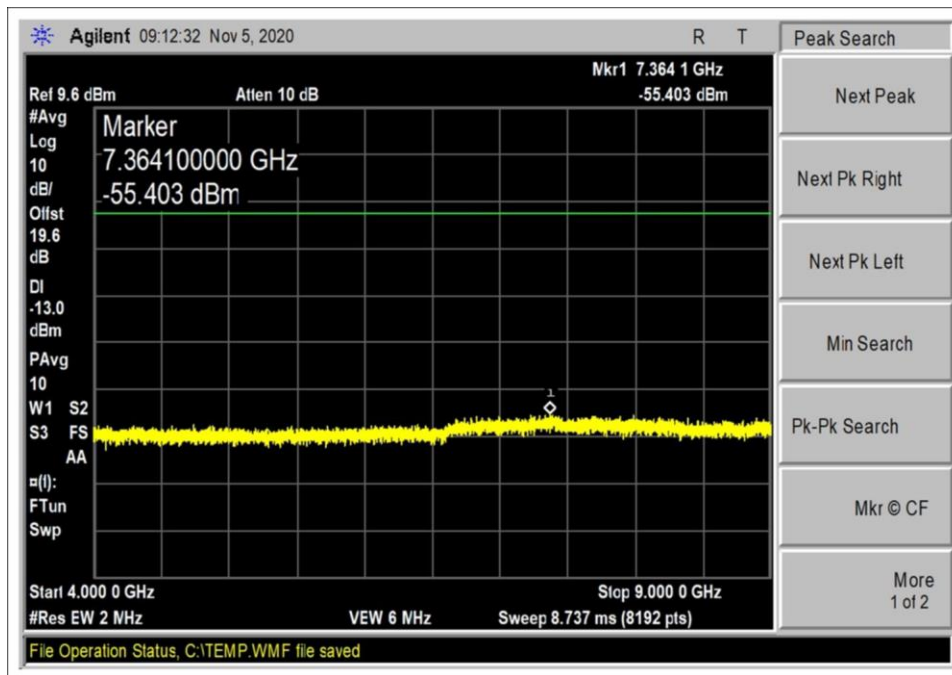
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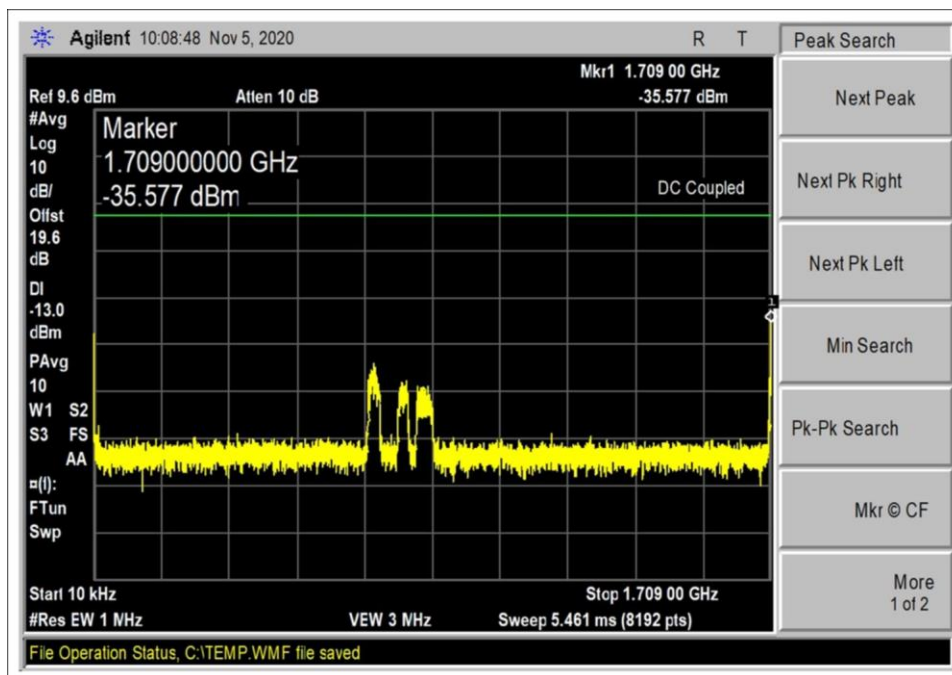
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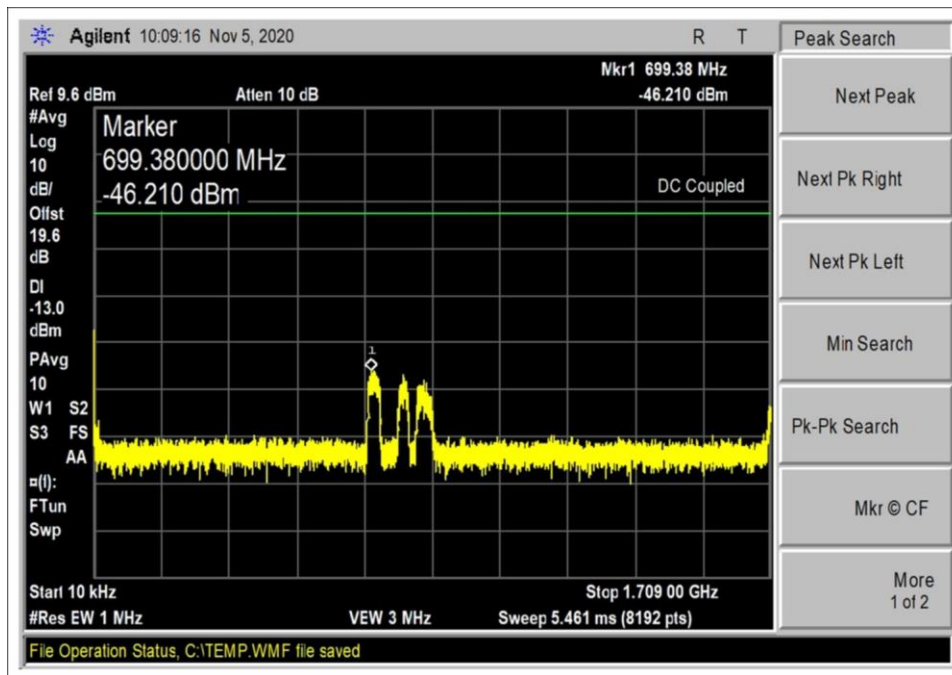
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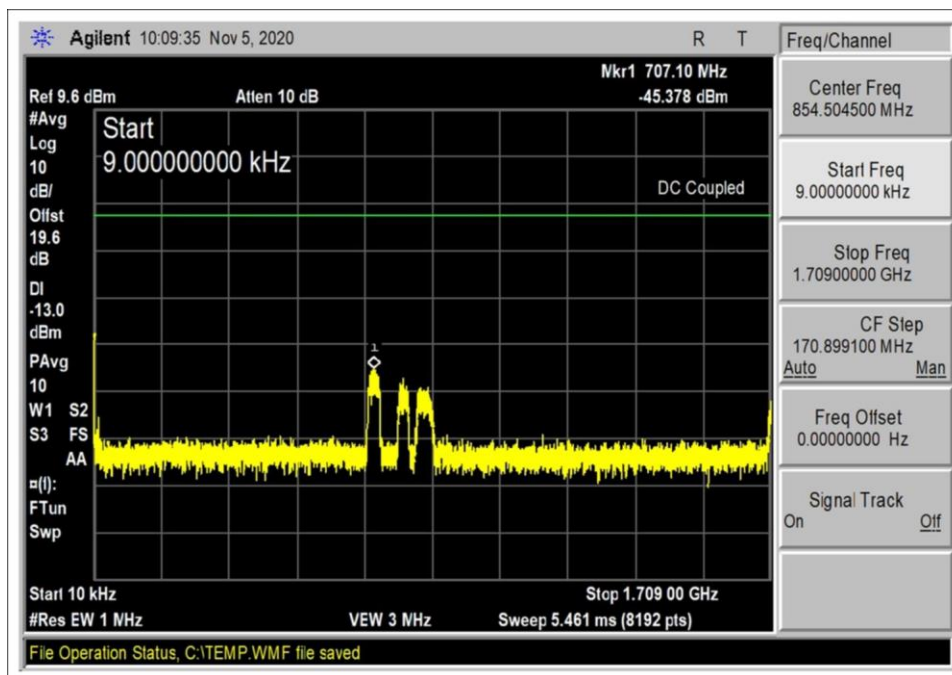
UL 824-849_High CH_4G-9G



UL 1710-1755_Low CH_9k-1709M



UL 1710-1755_Middle CH_9k-1709M



UL 1710-1755_High CH_9k-1709M