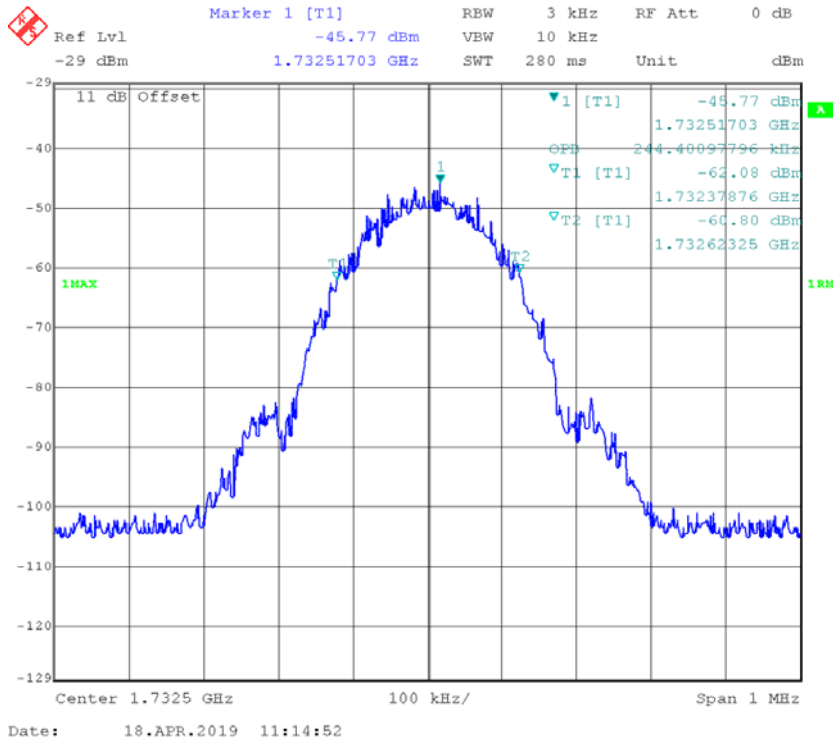
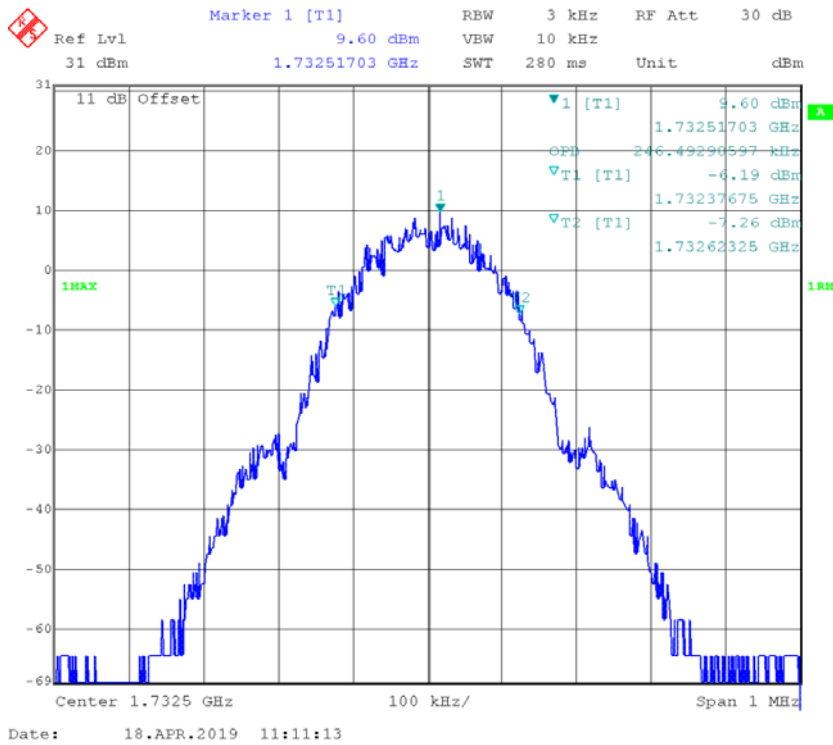


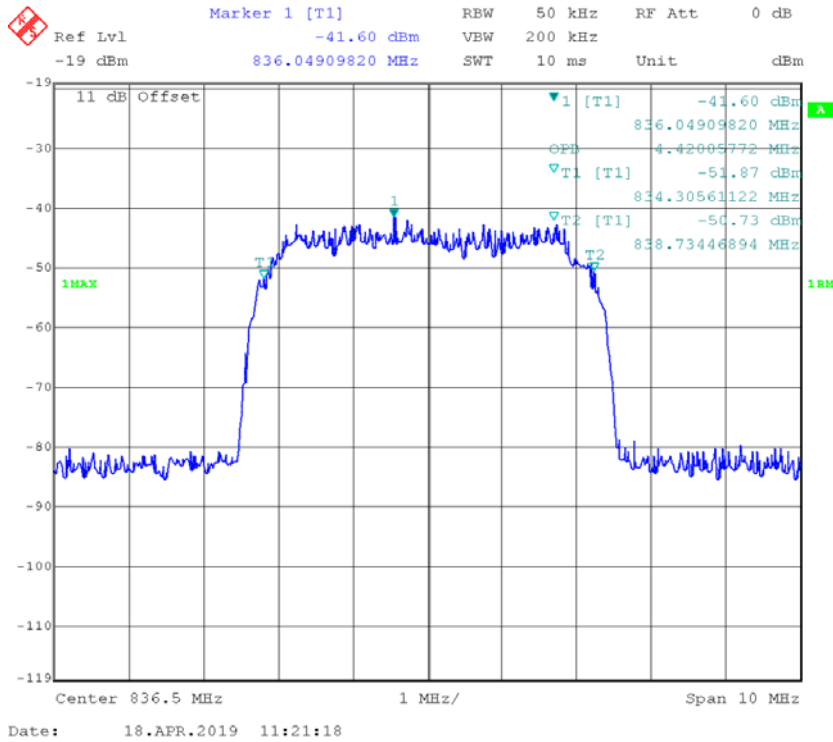
AWS UL-GSM-IN



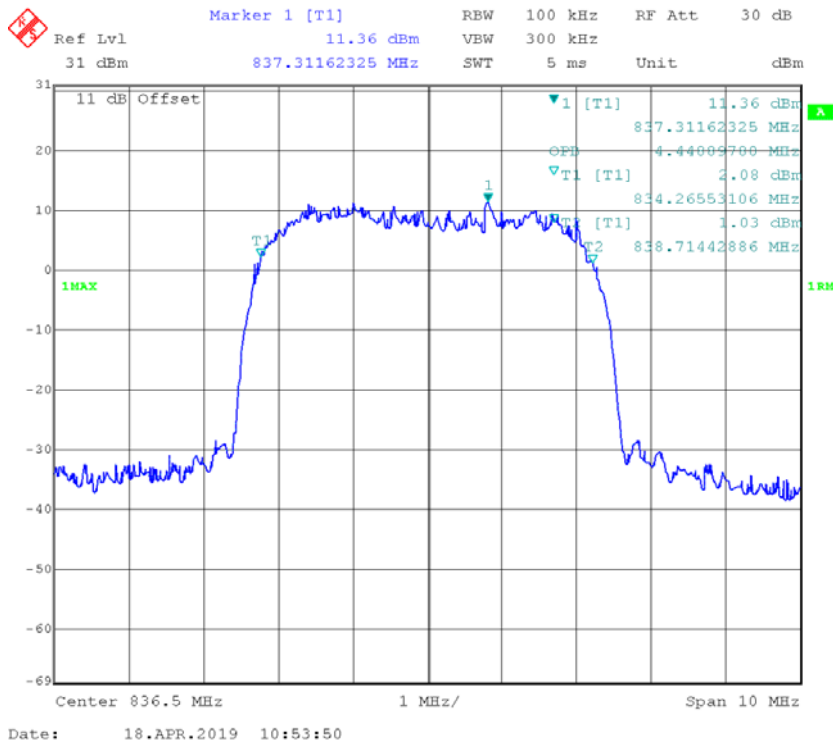
AWS UL-GSM-OUT



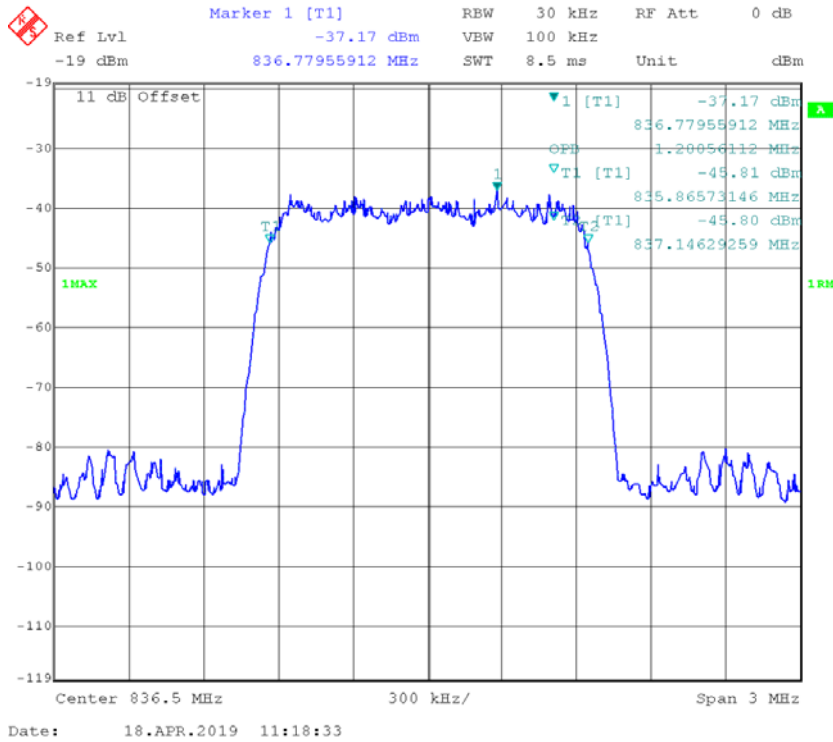
Cellular UL-LTE-IN



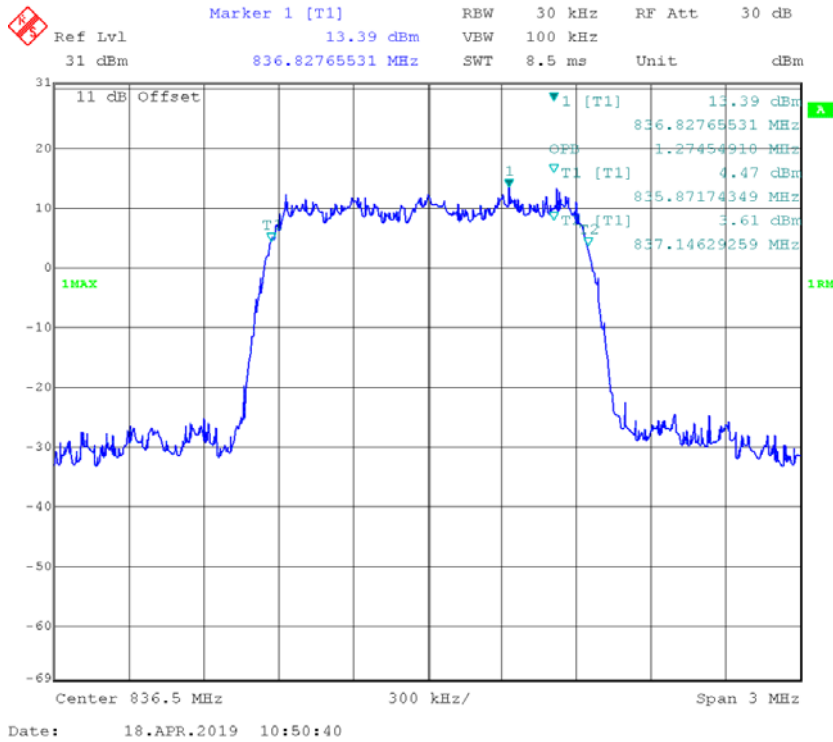
Cellular UL-LTE-OUT



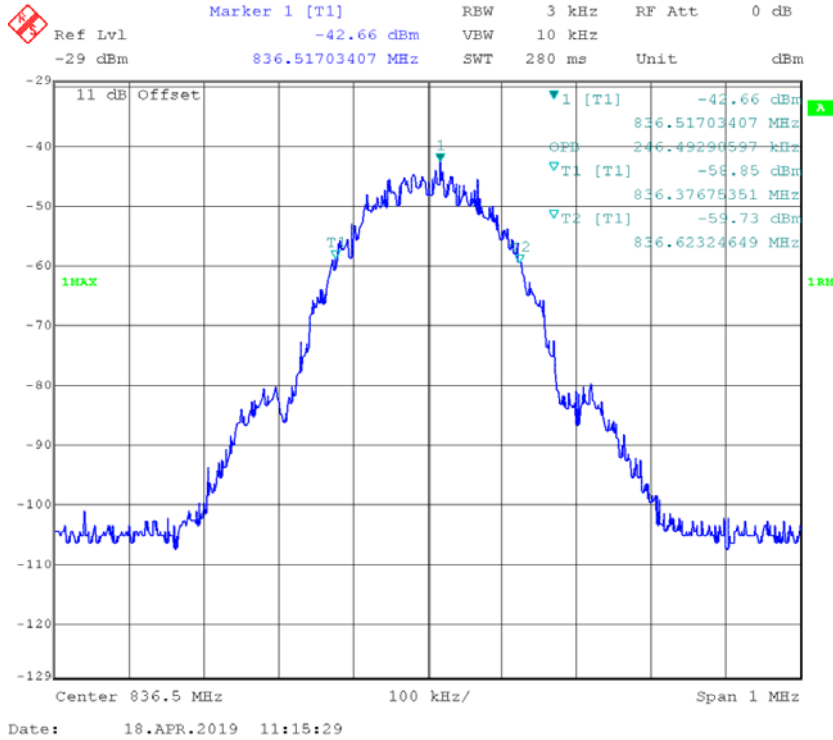
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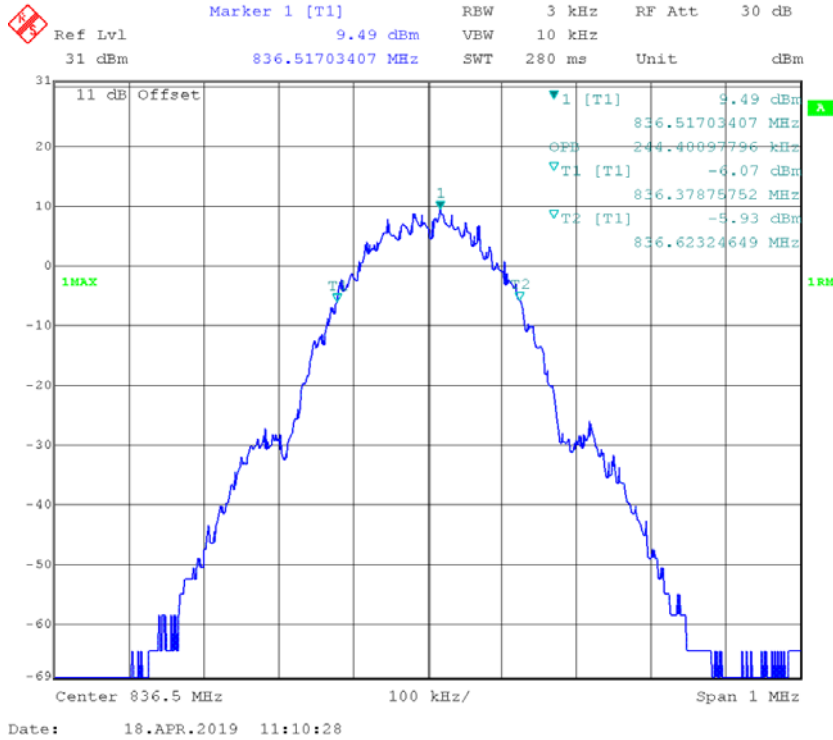
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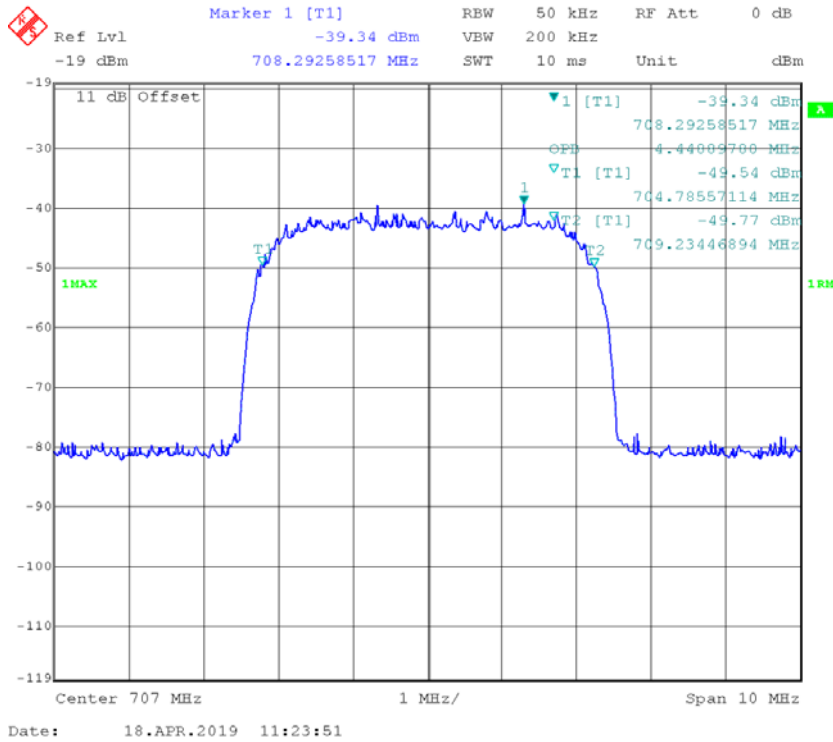
Cellular UL-GSM-IN



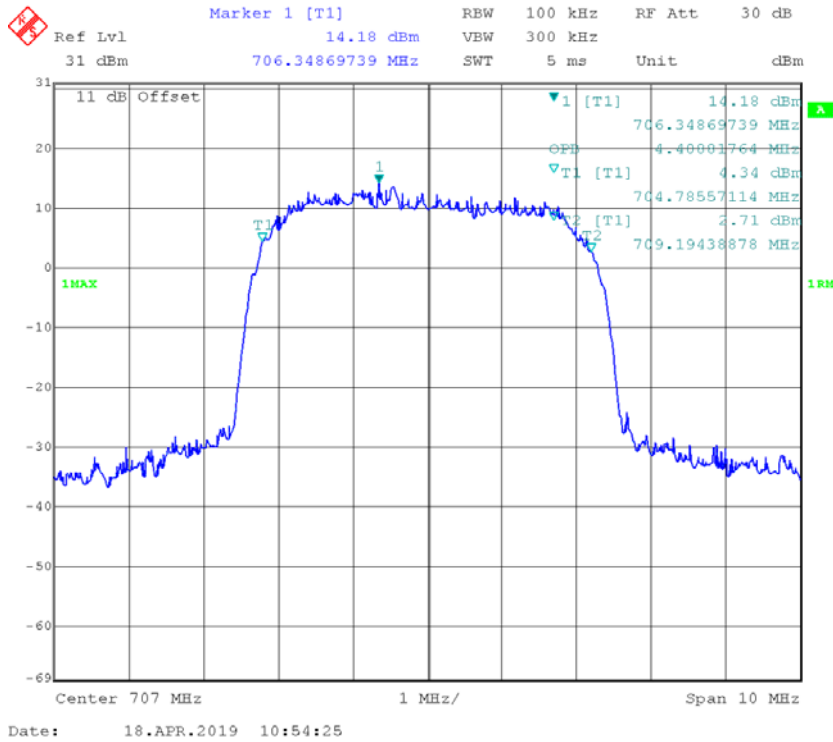
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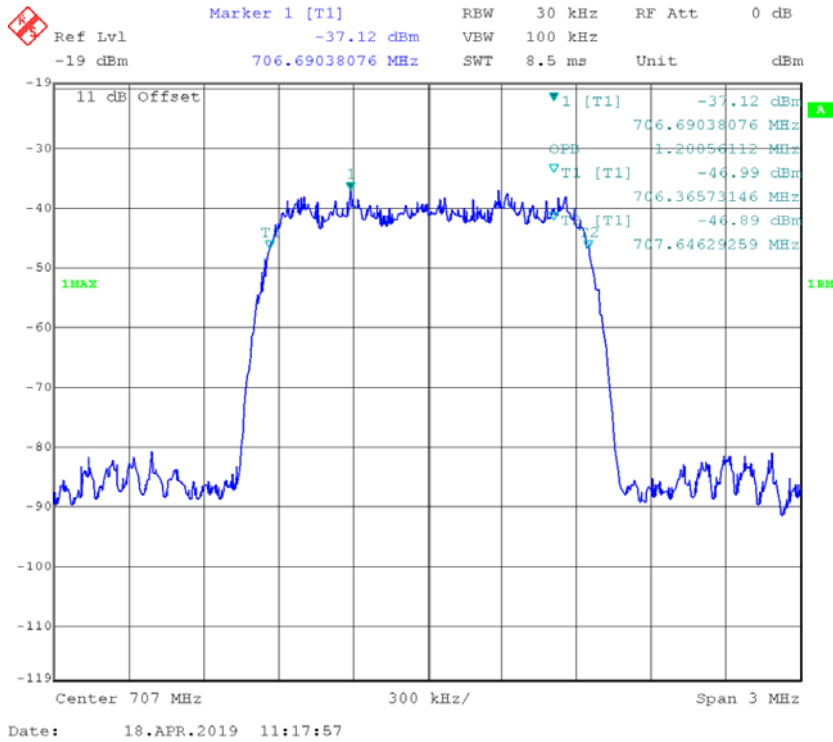
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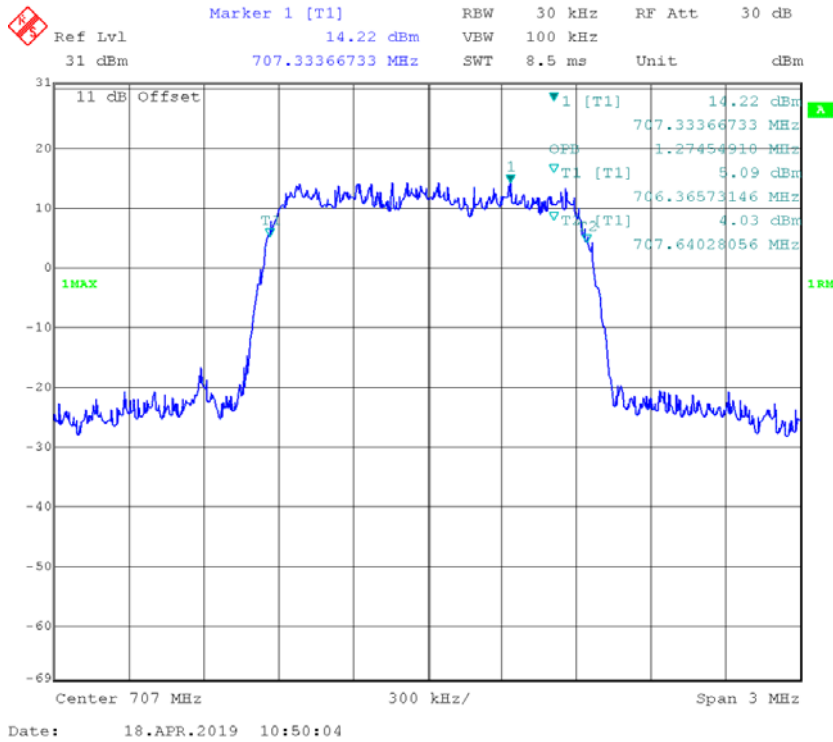
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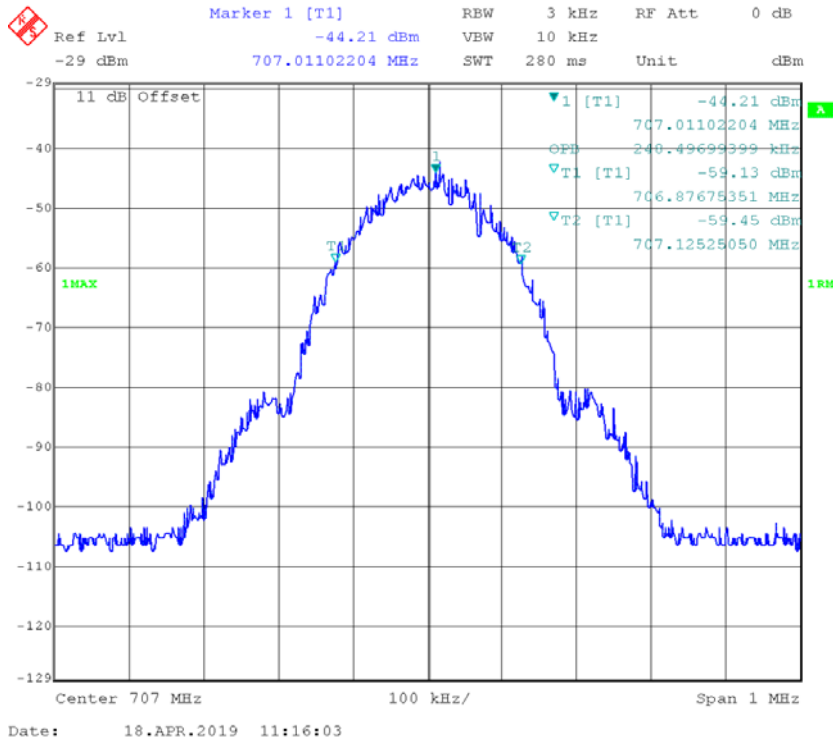
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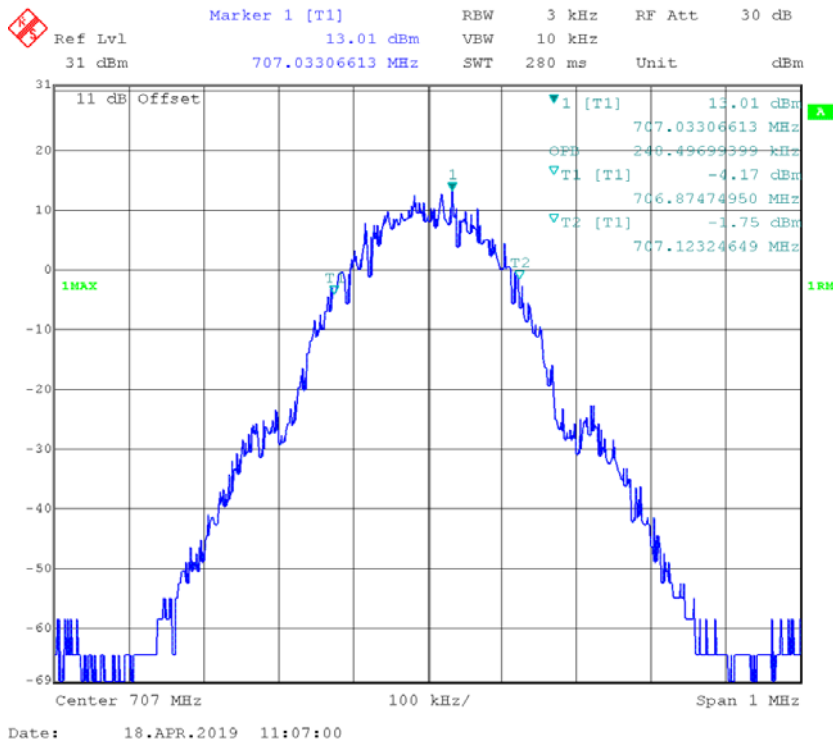
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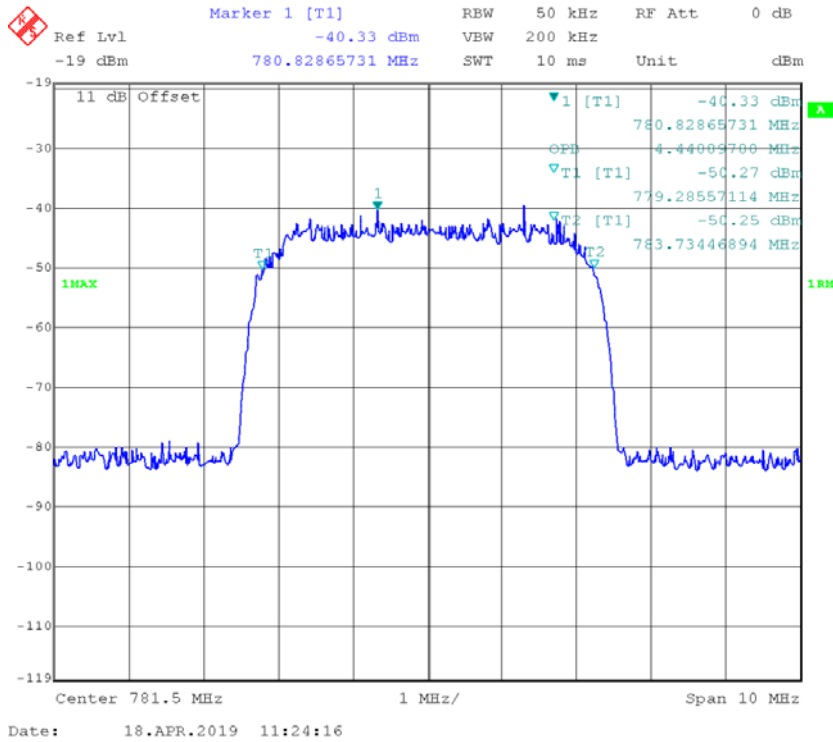
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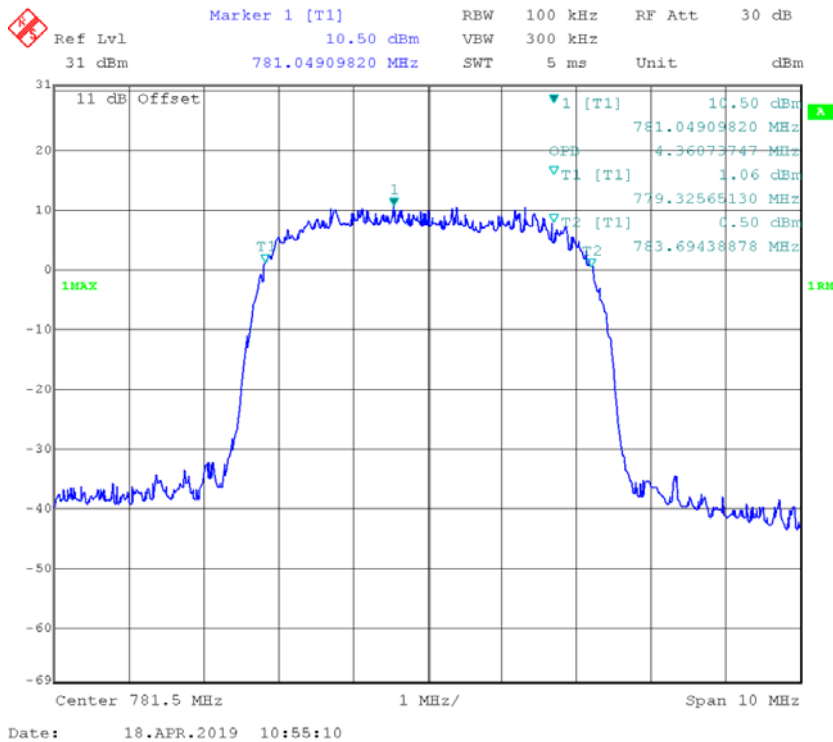
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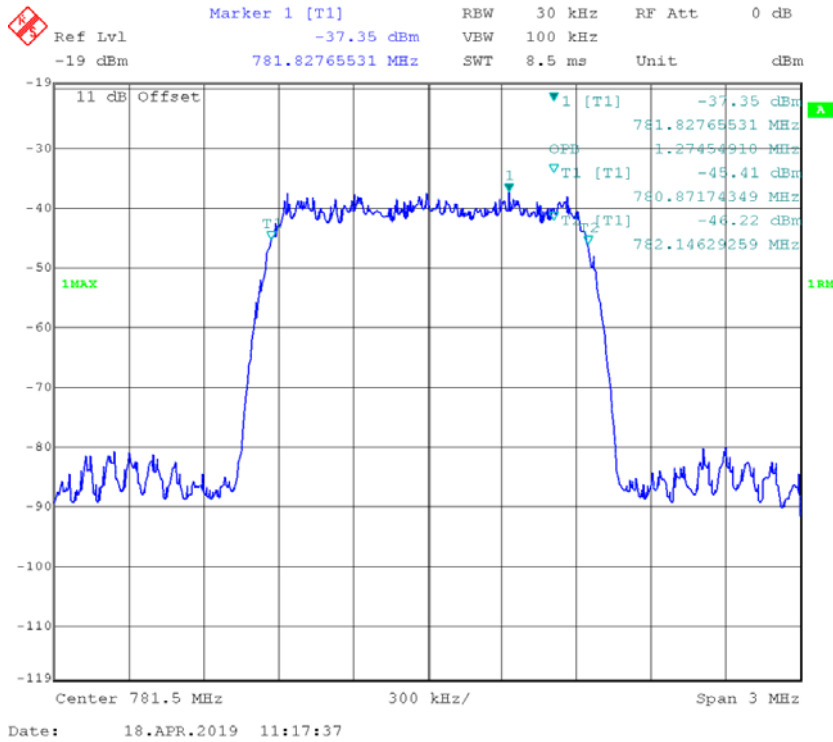
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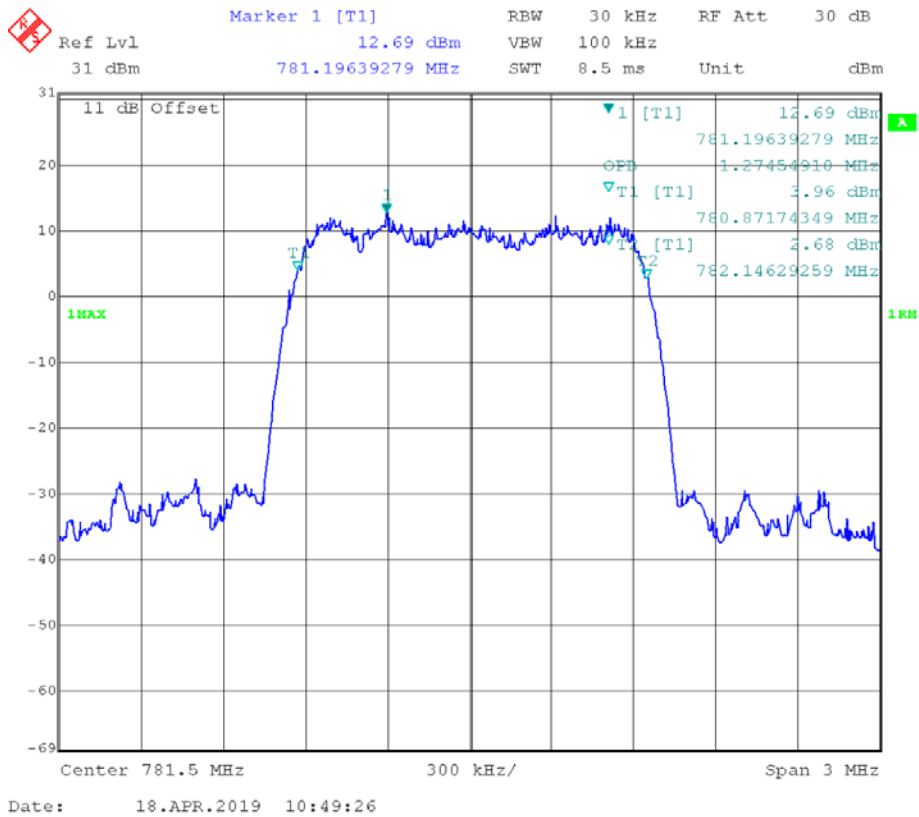
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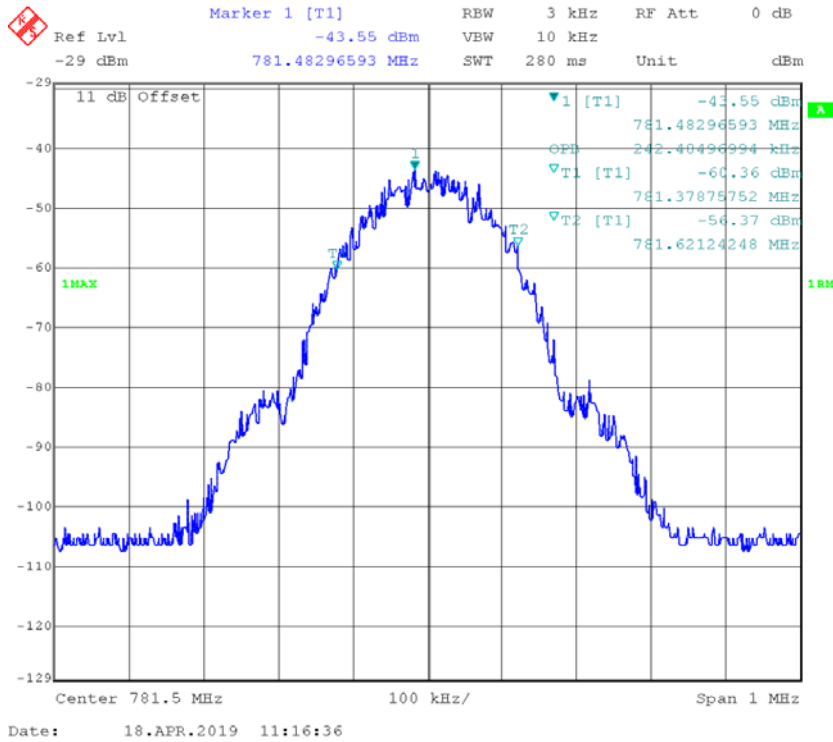
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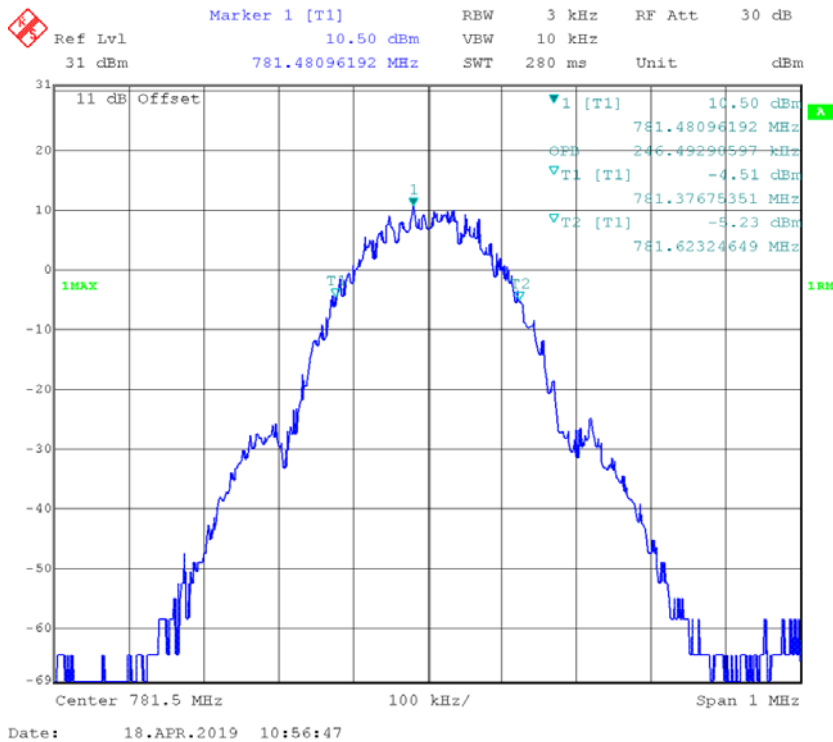
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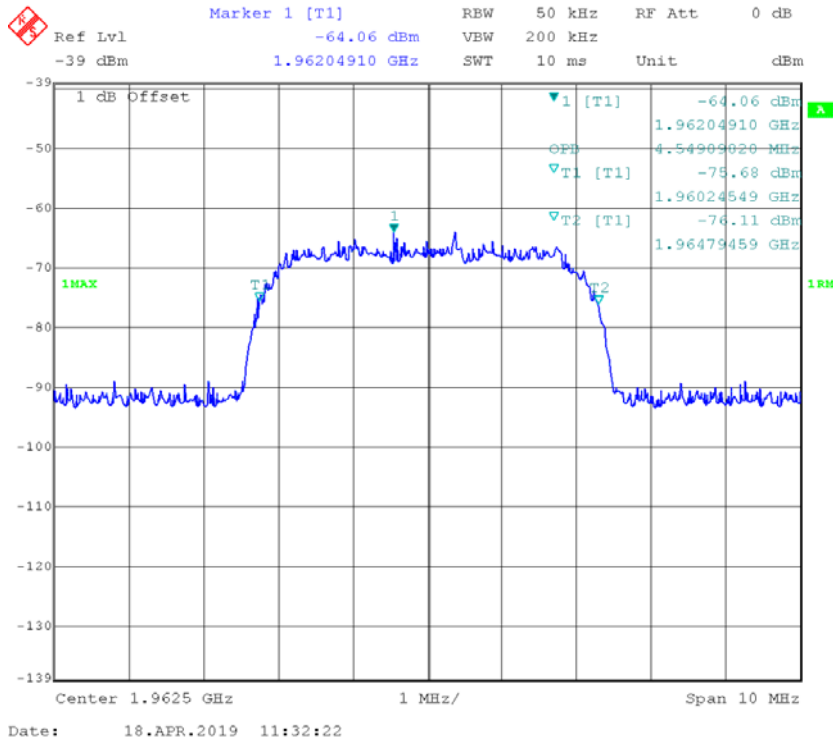
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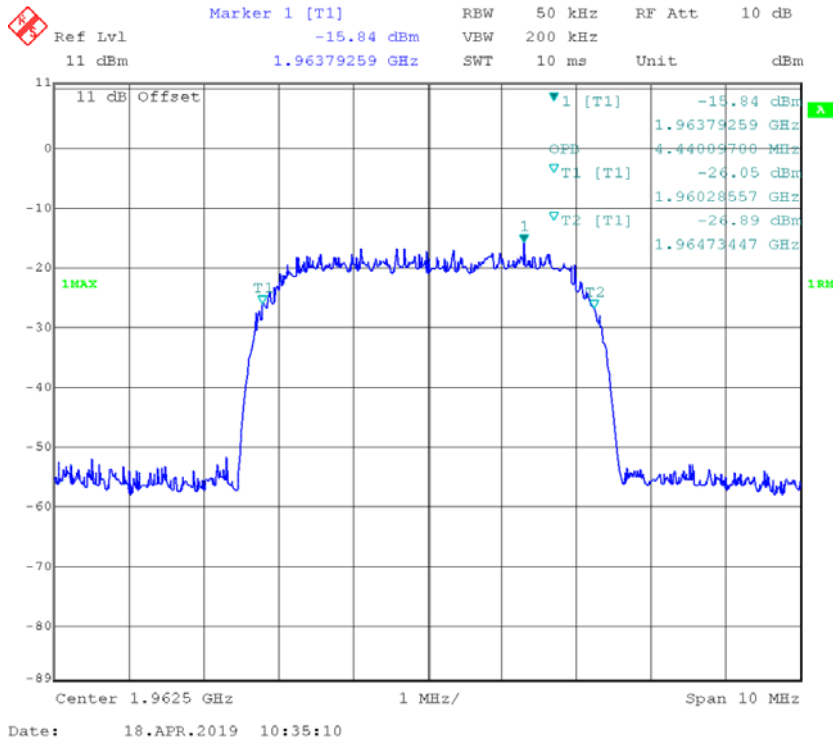
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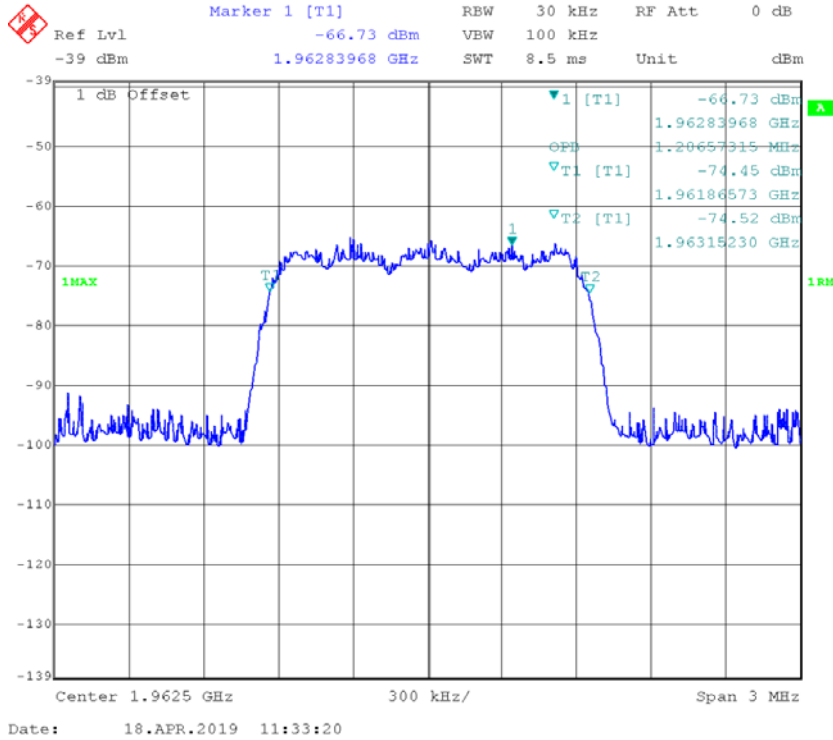
PCS DL-LTE-IN



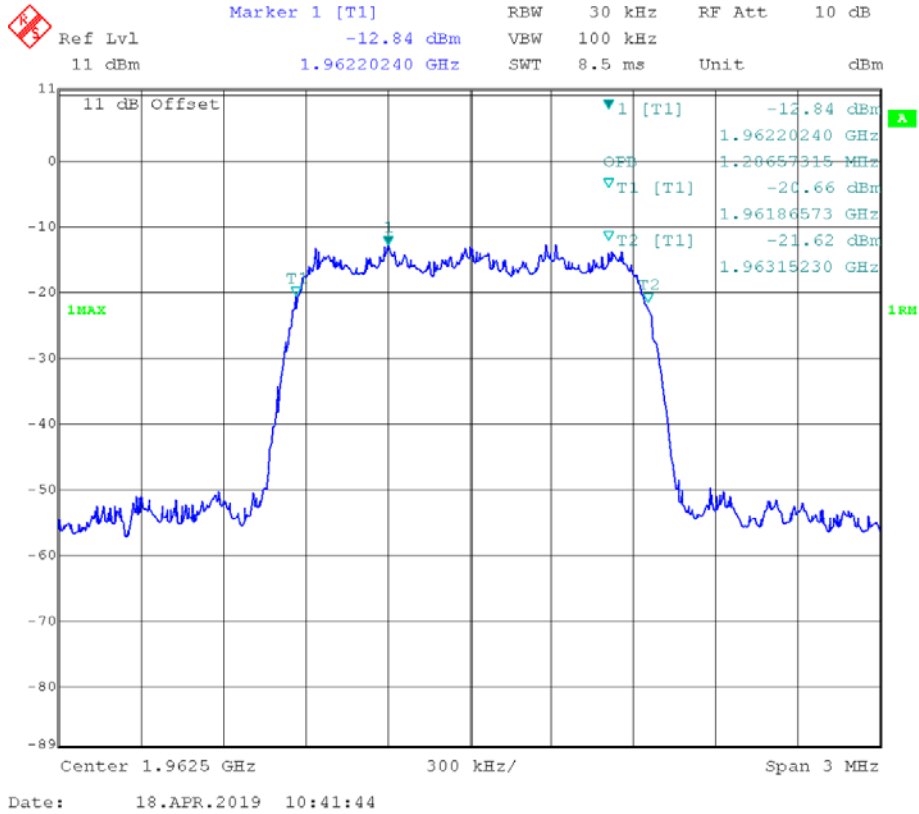
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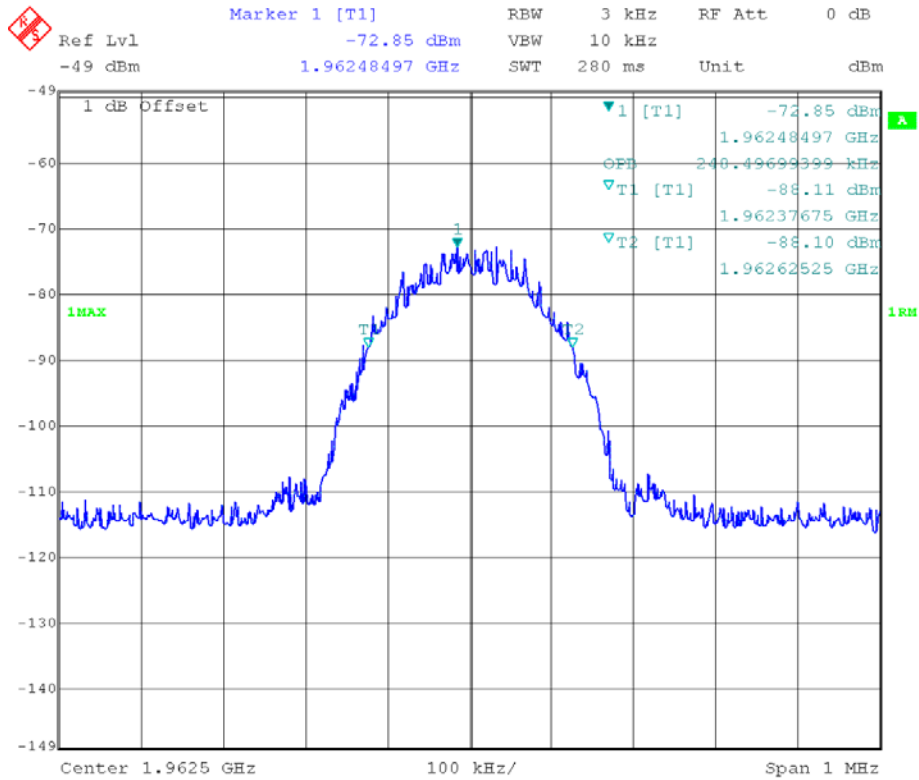
PCS DL-CDMA-IN



PCS DL-CDMA-OUT

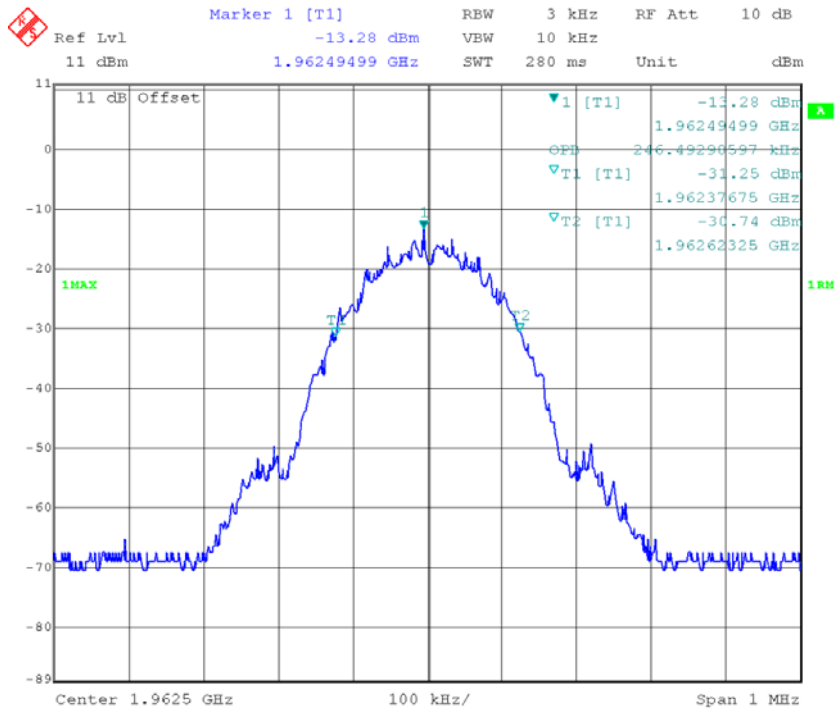


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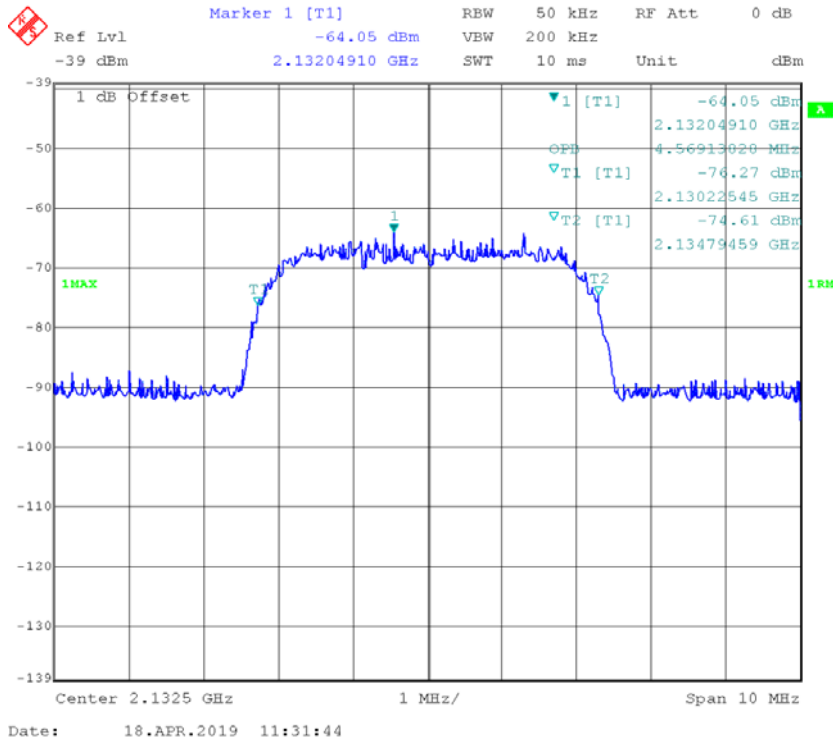
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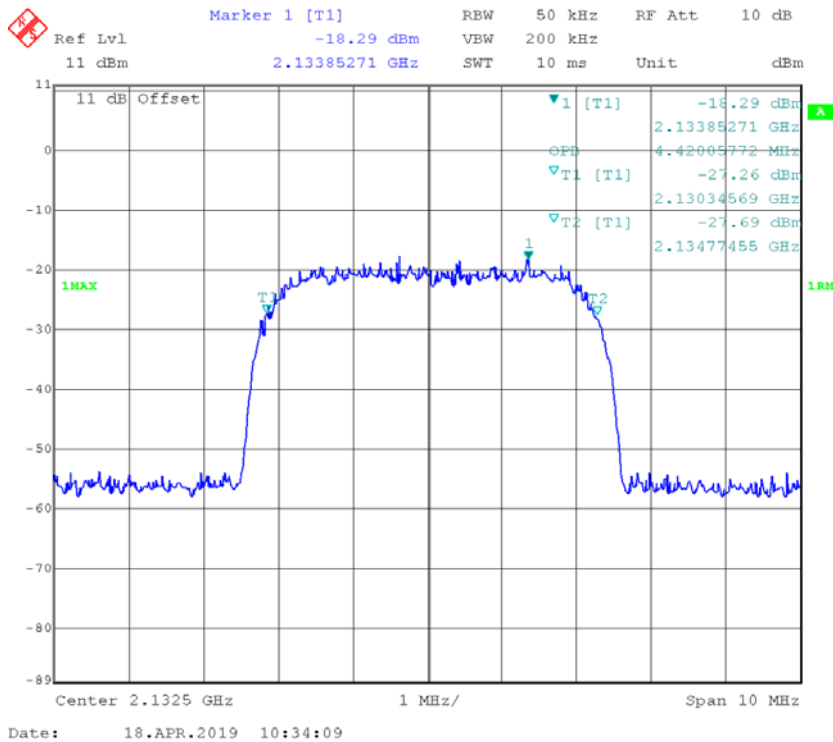


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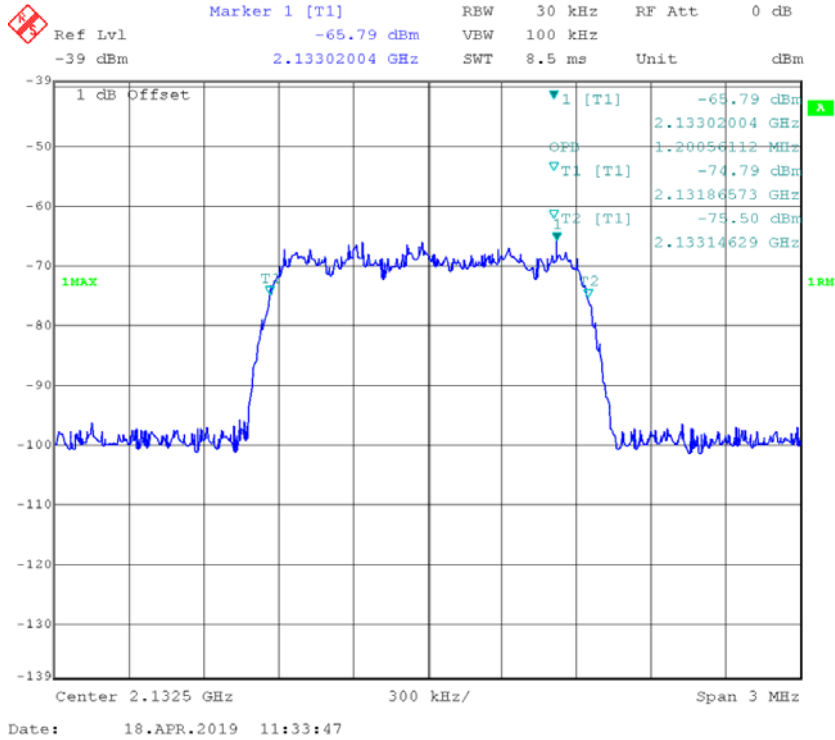
AWS DL-LTE-IN



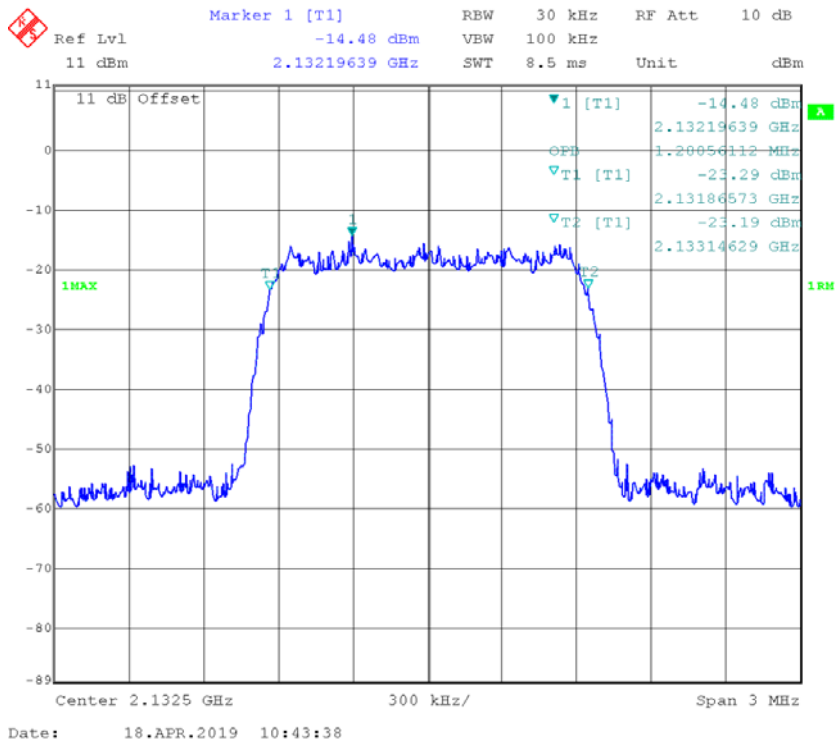
AWS DL-LTE-OUT



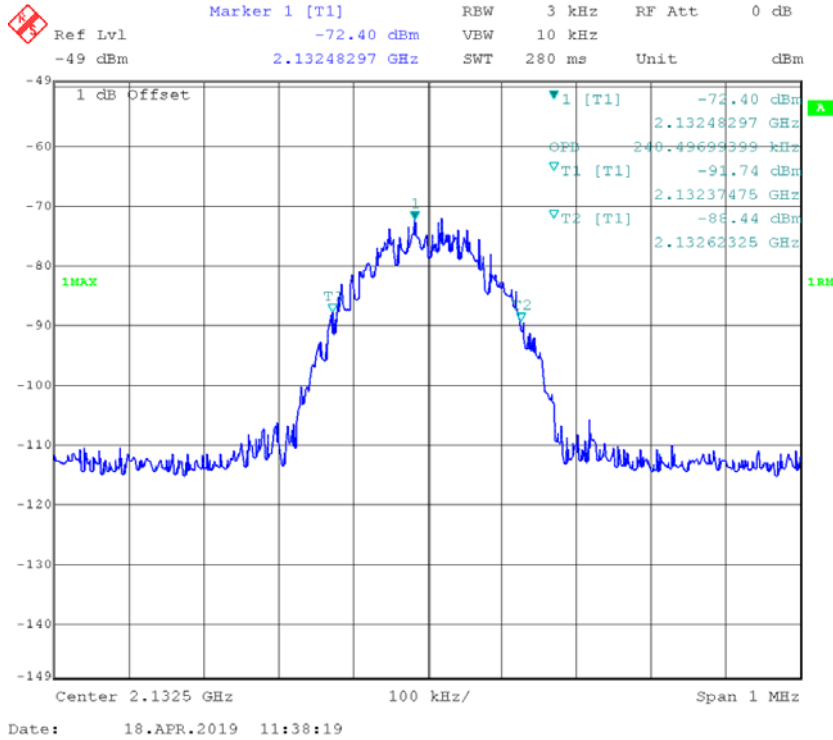
AWS DL-CDMA-IN



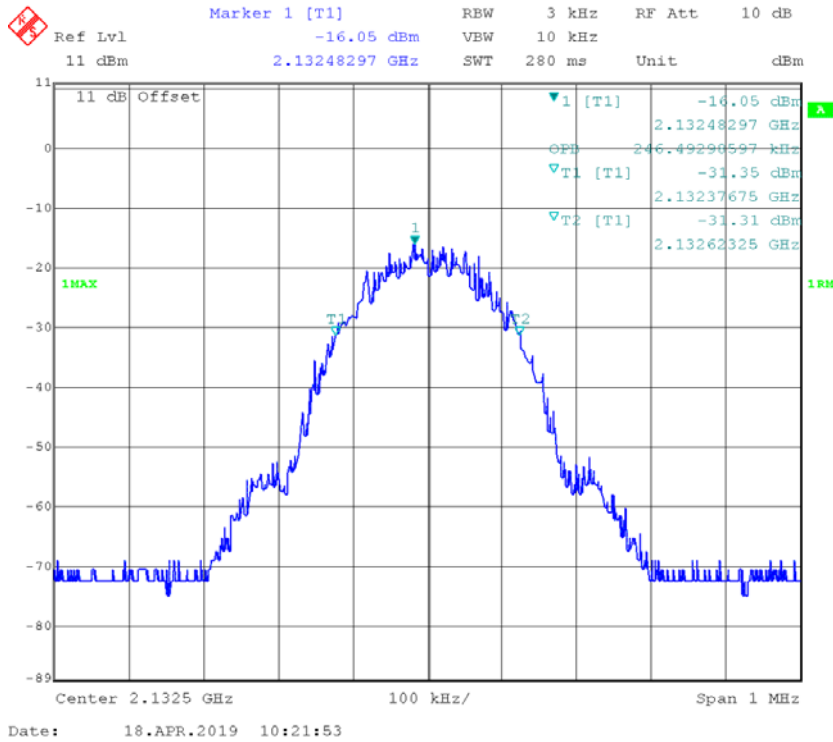
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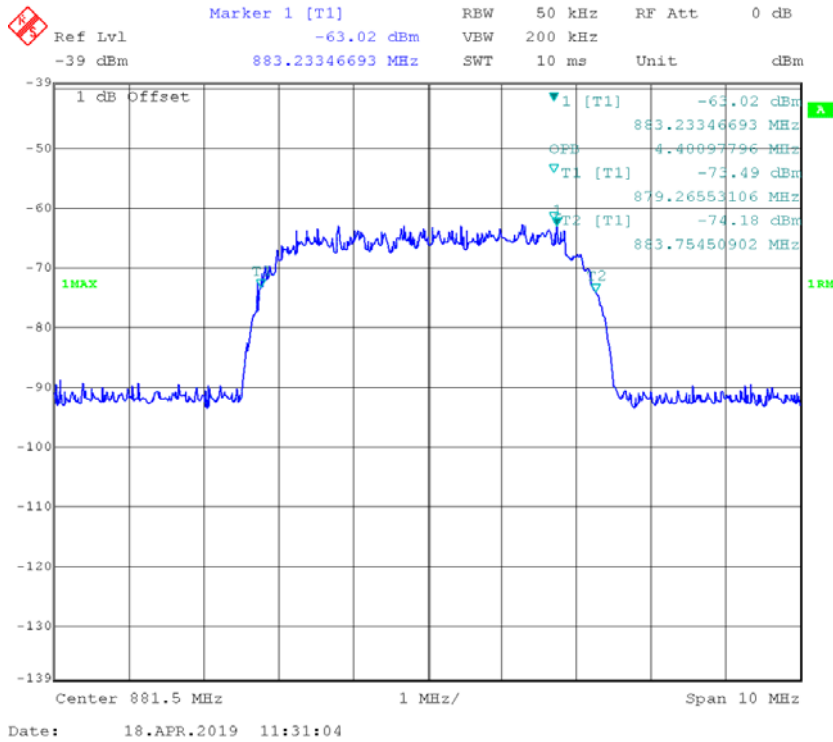
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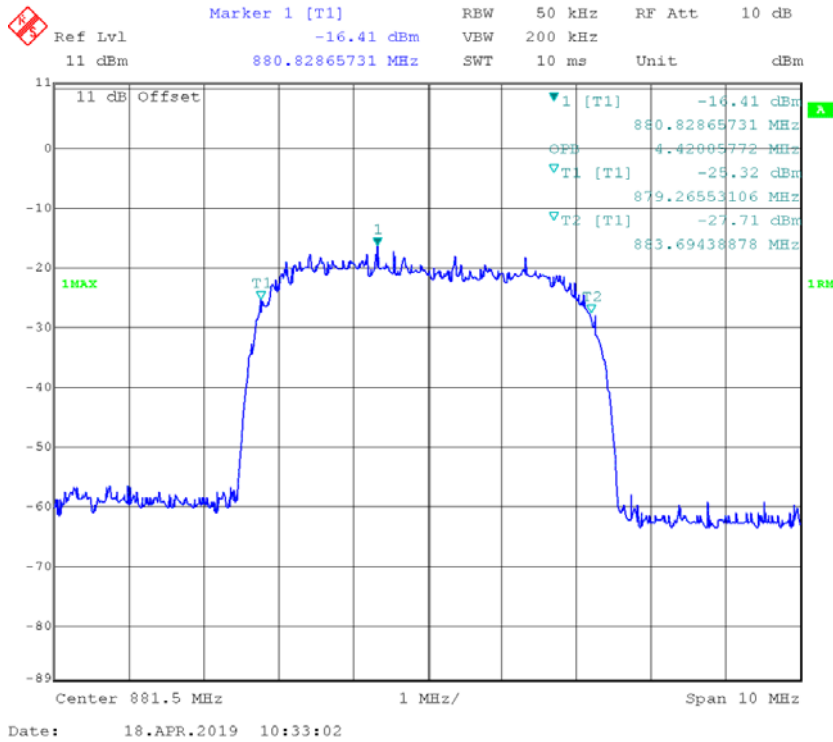
AWS DL-GSM-OUT



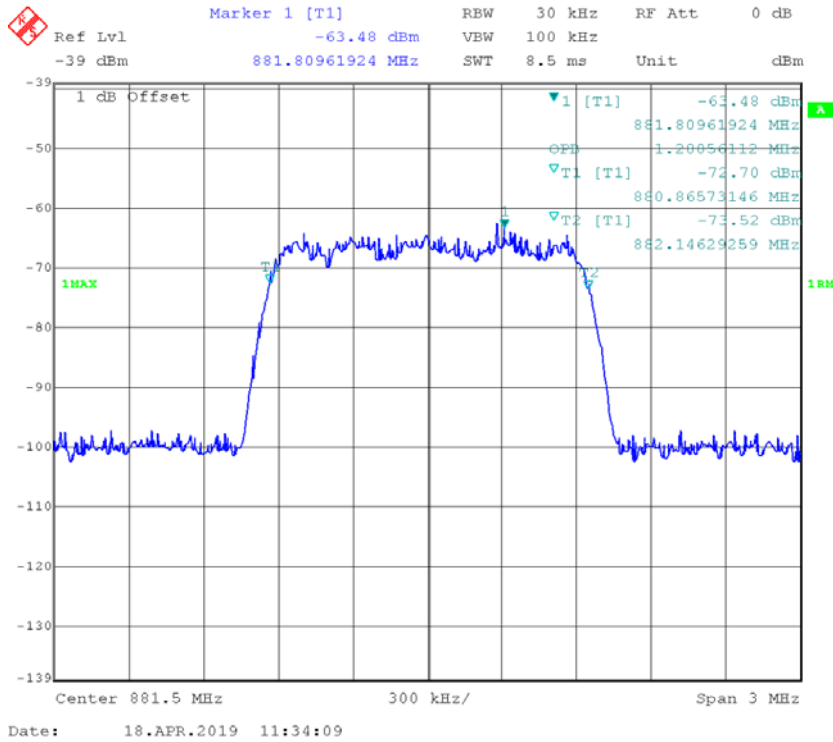
Cellular DL-LTE-IN



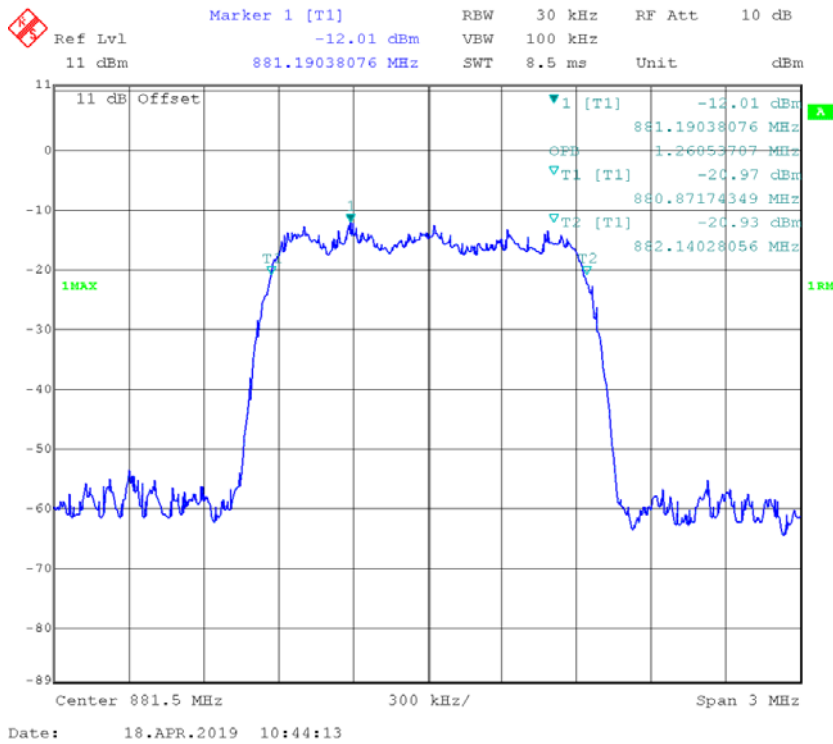
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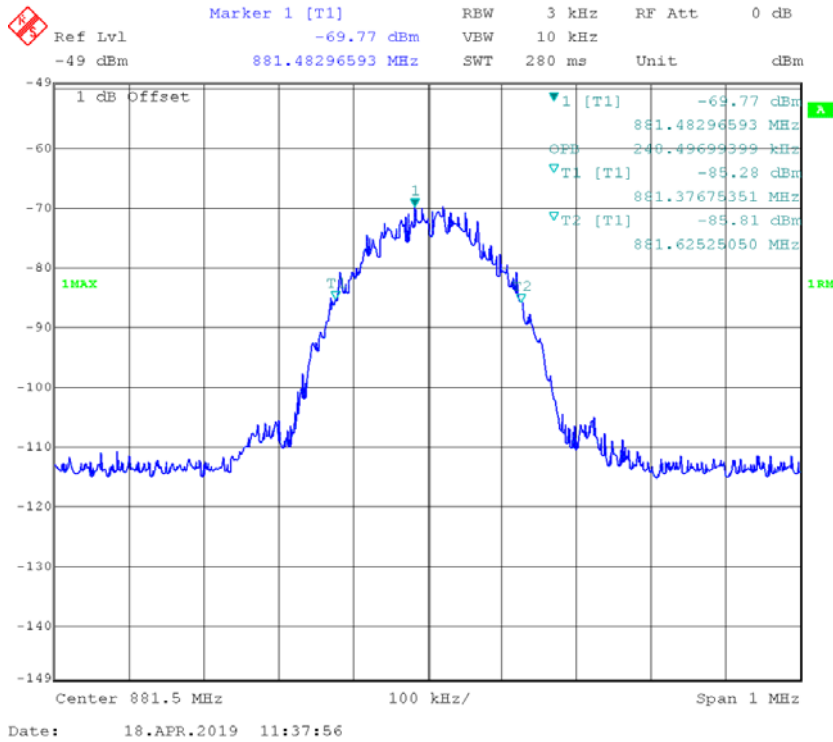
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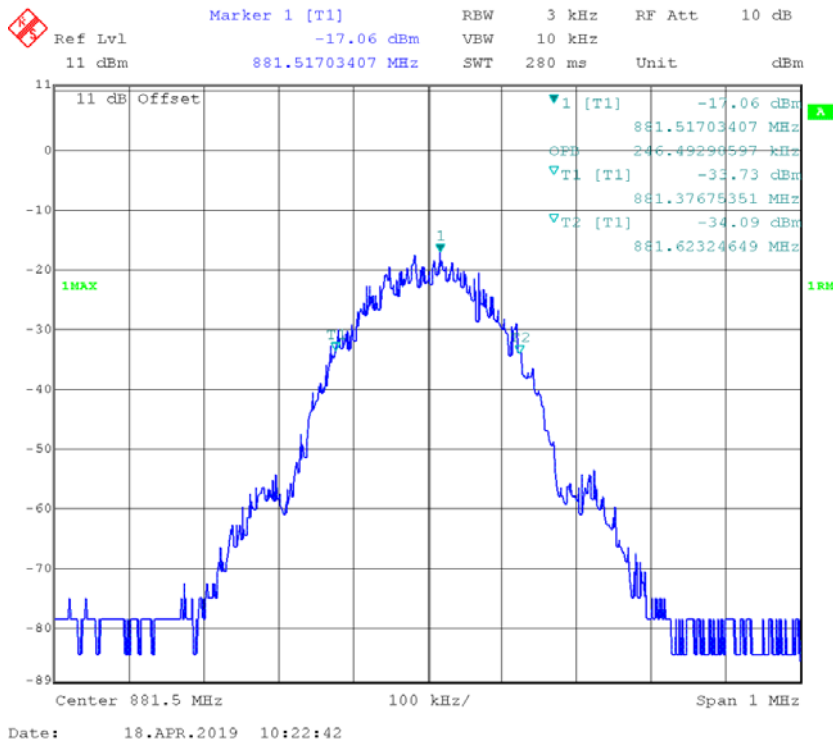
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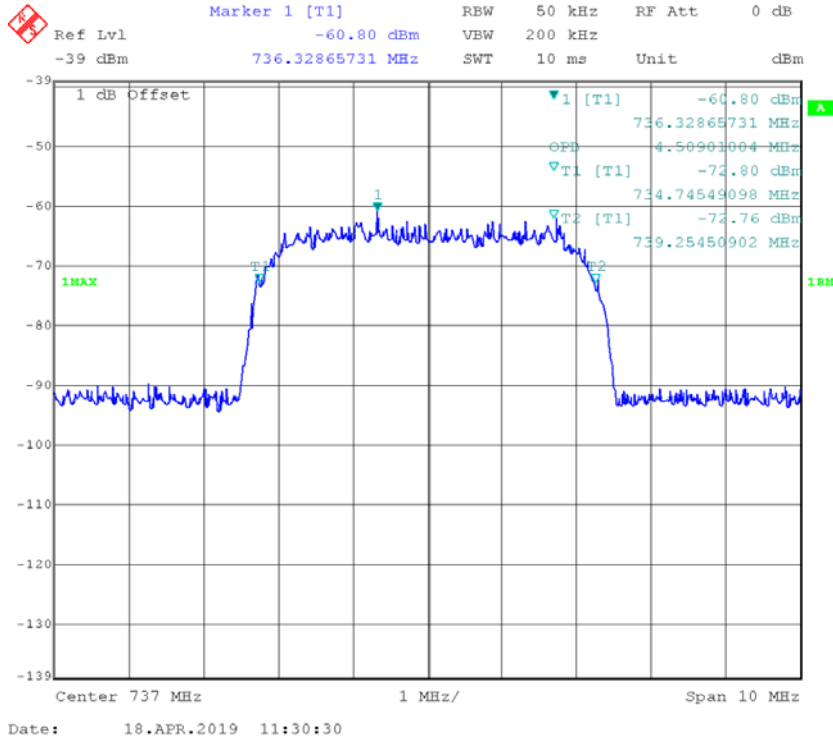
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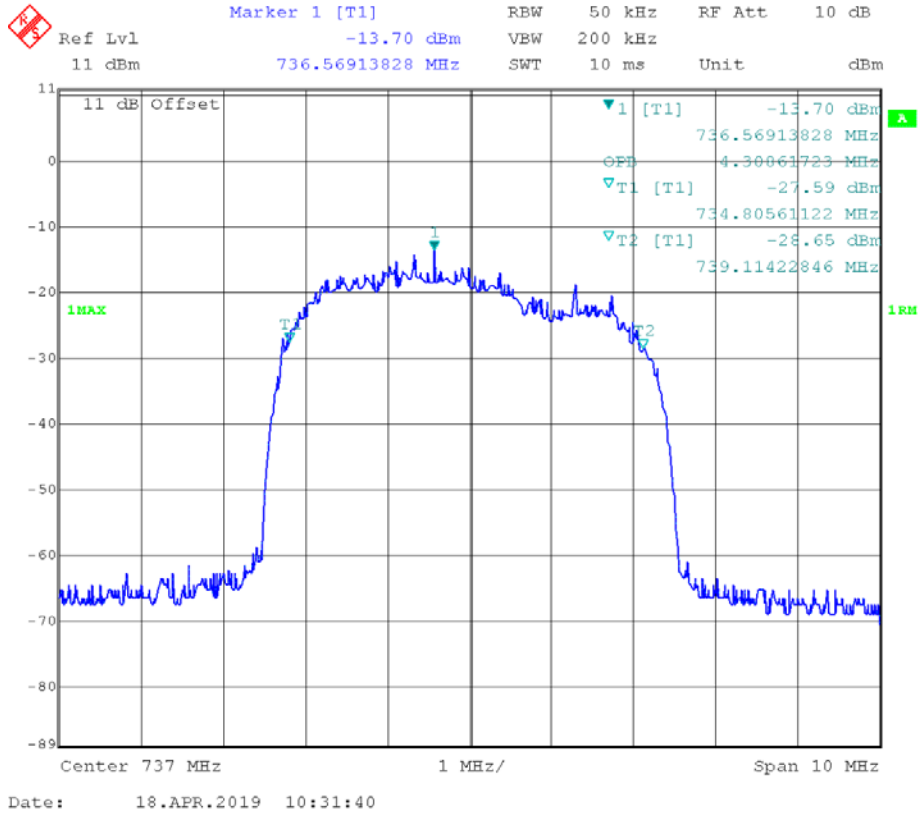
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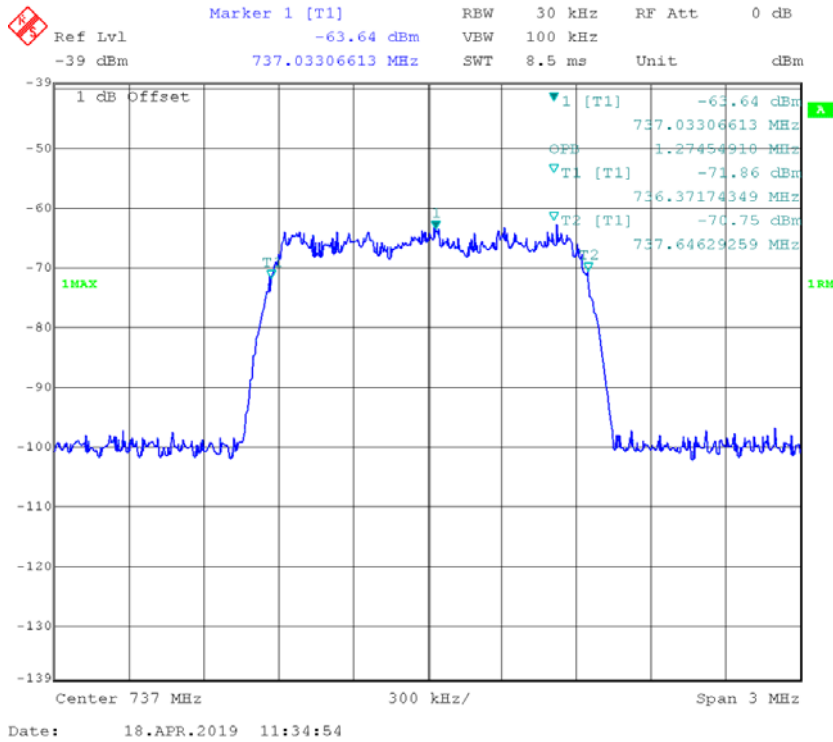
LTE-A DL-LTE-IN



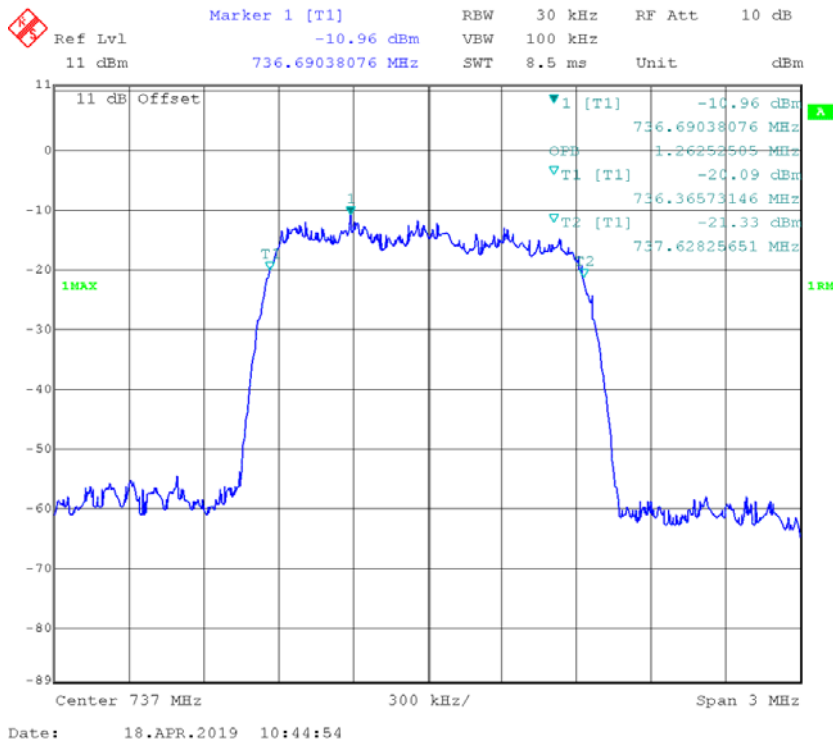
LTE-A DL-LTE-OUT



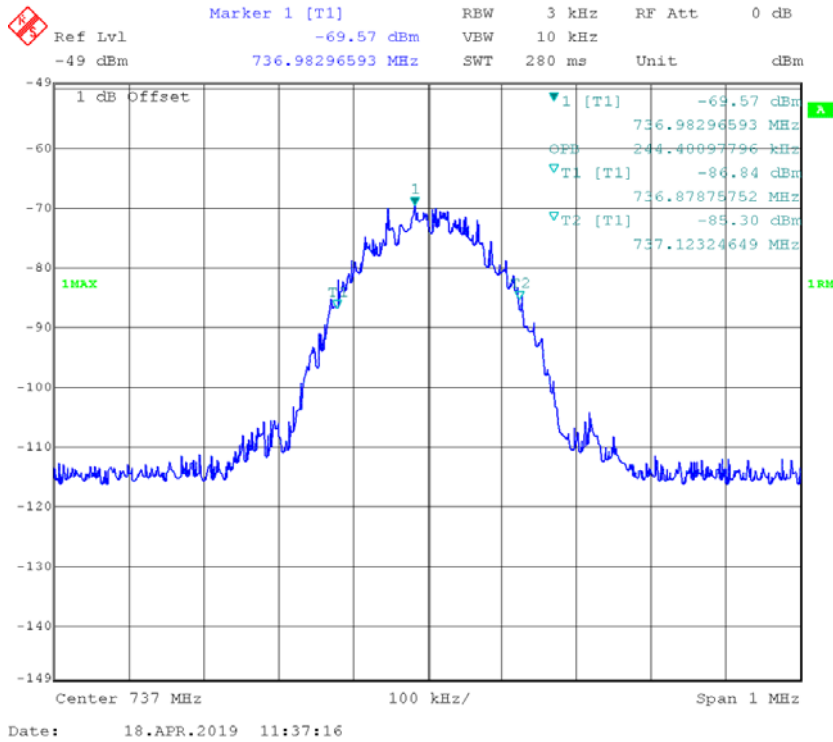
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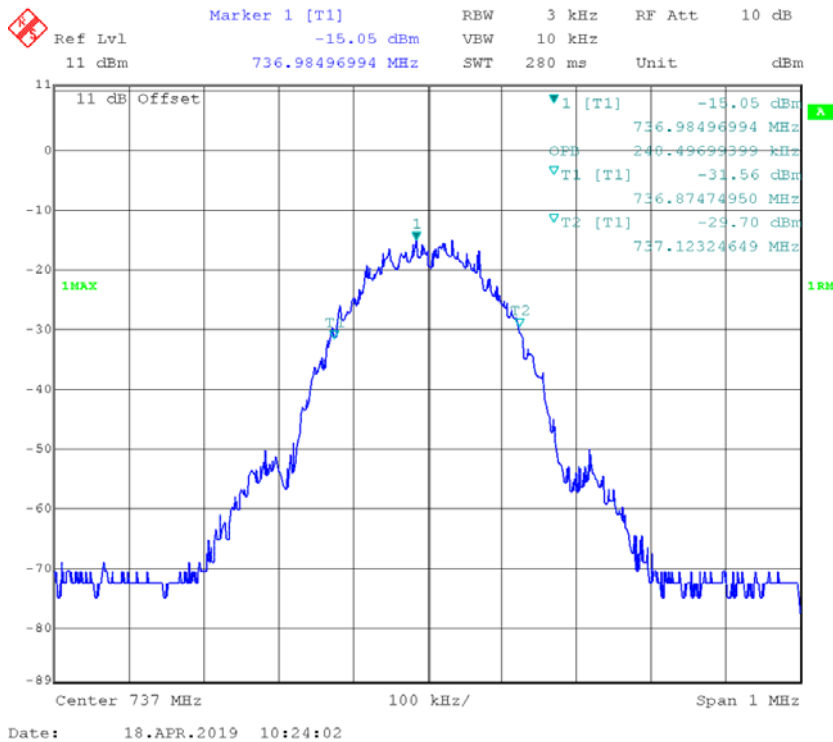
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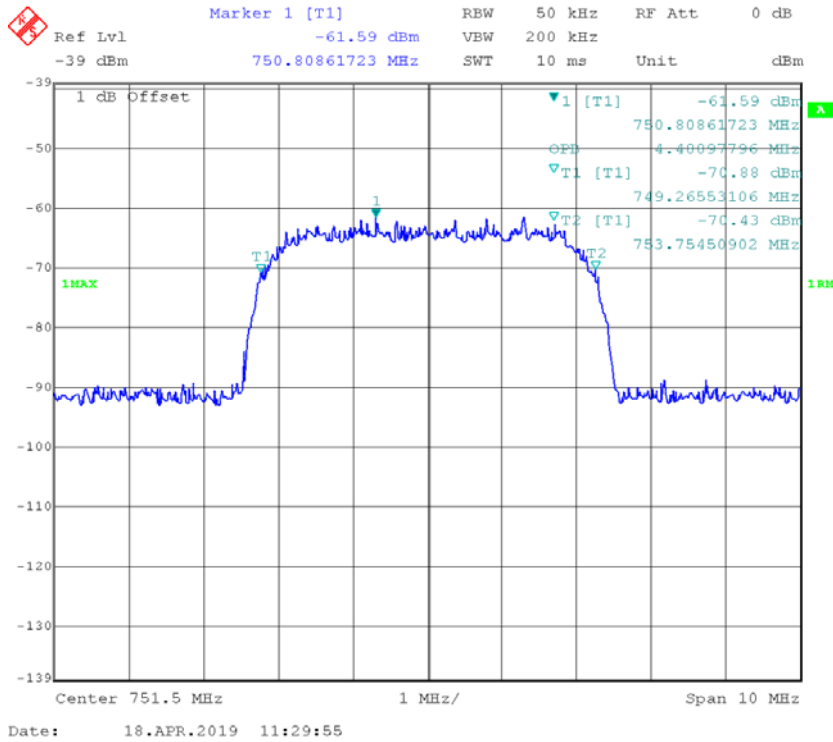
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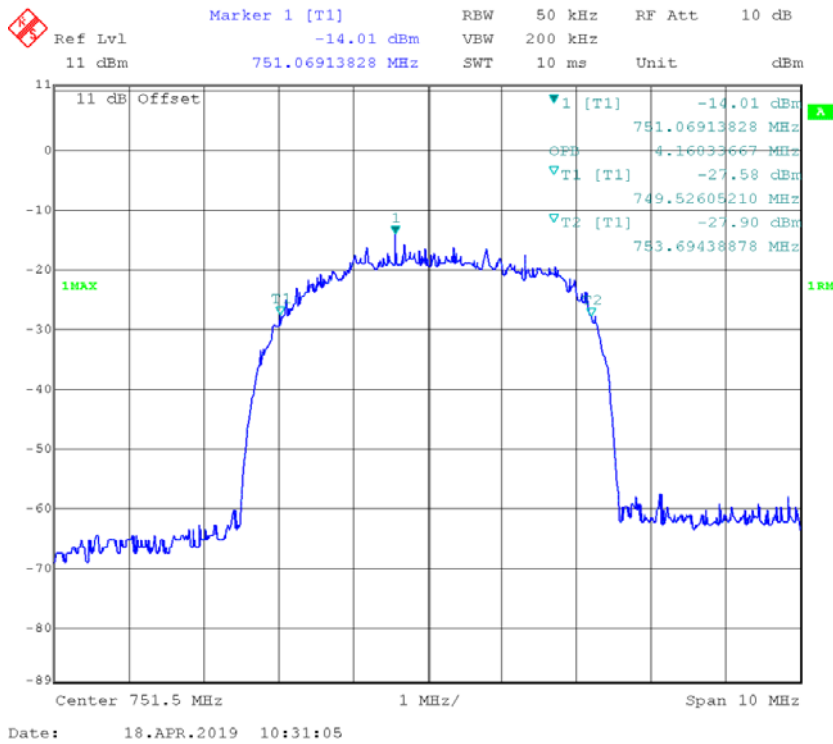
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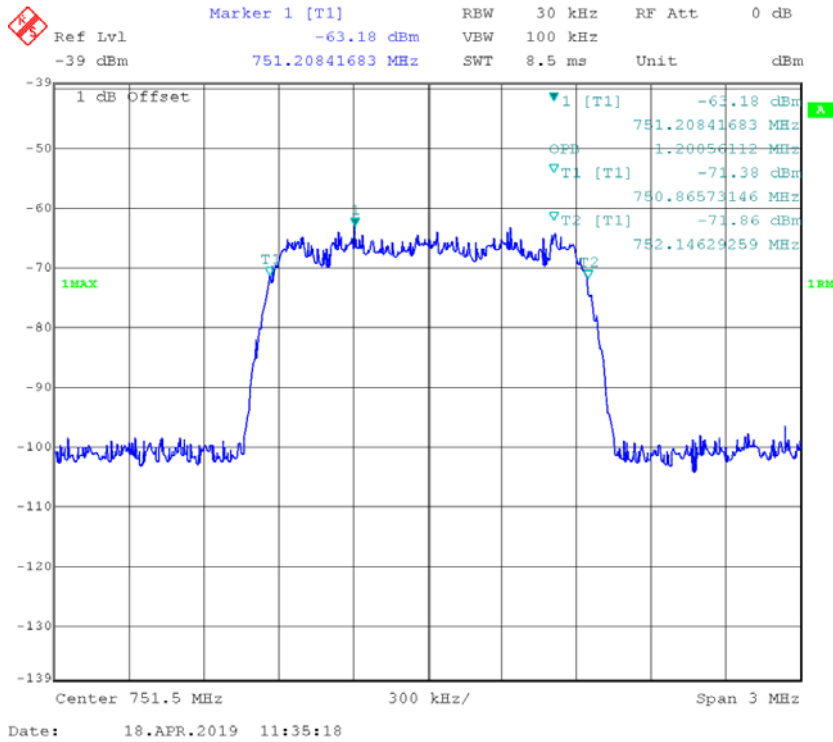
LTE-V DL-LTE-IN



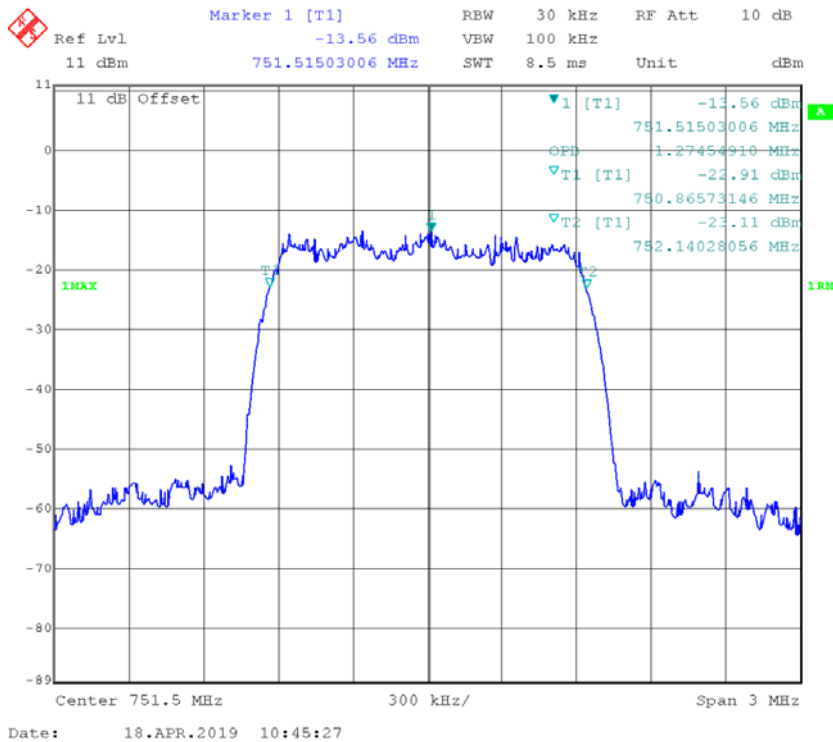
LTE-V DL-LTE-OUT



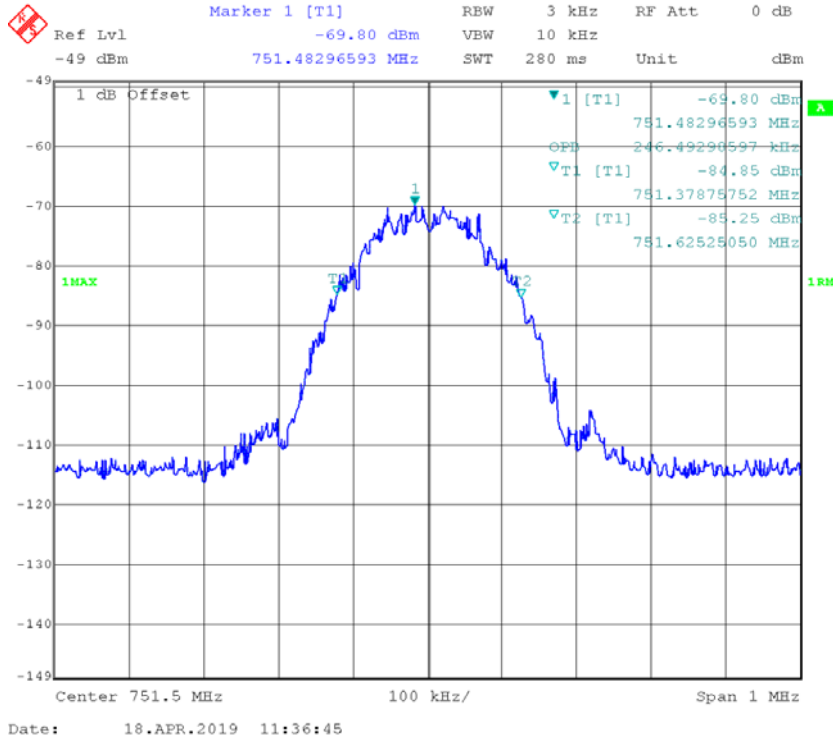
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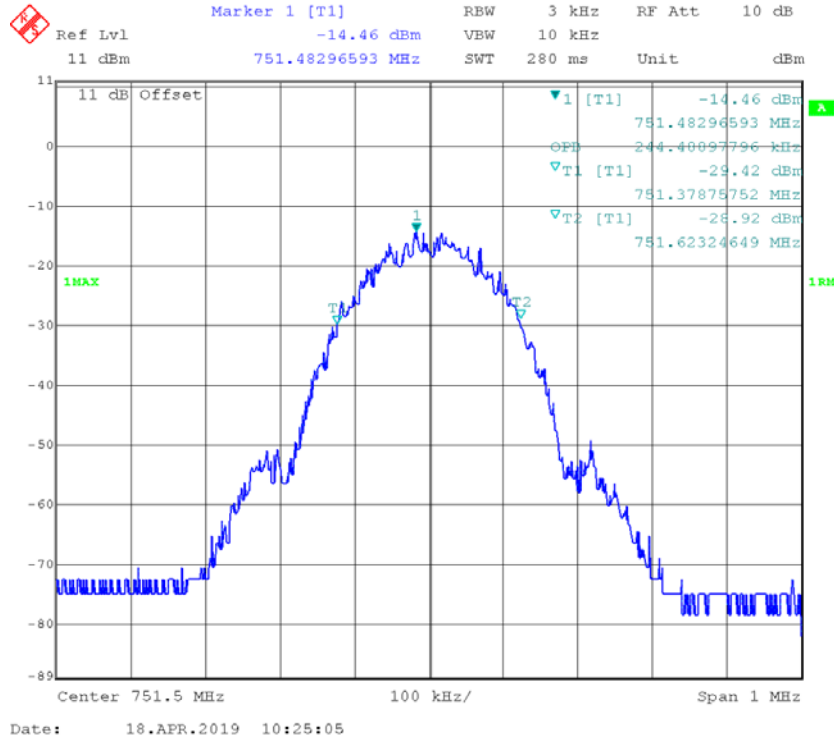
LTE-V DL-CDMA-OUT



LTE-V DL-GSM-IN



LTE-V DL-GSM-OUT



§ 20.21(e)(8)(ii)(A) & §20.21(e)(4) - OSCILLATION DETECTION

Applicable Standards

Rule paragraph(s): § 20.21(e)(8)(ii)(A) Anti-Oscillation, §20.21(e)(4) Self-monitoring

For this measurement two EUTs will be permitted, one operating in a normal mode and the second operating in a test mode that is capable of disabling the uplink inactivity squelching and or a reduction of the time between restarts to 5 seconds. This will greatly decrease the test time required.

NOTE — Consumer boosters certified as direct connection mobile boosters having gain of less than or equal to 15 dB are exempt from compliance to testing procedures in 7.11.3 and 7.11.4.

Test Procedure

According to KDB 935210 D03 Signal Booster Measurements v04r03, §7.11.2 Oscillation restart tests and §7.11.3 Test procedure for measuring oscillation mitigation or shutdown

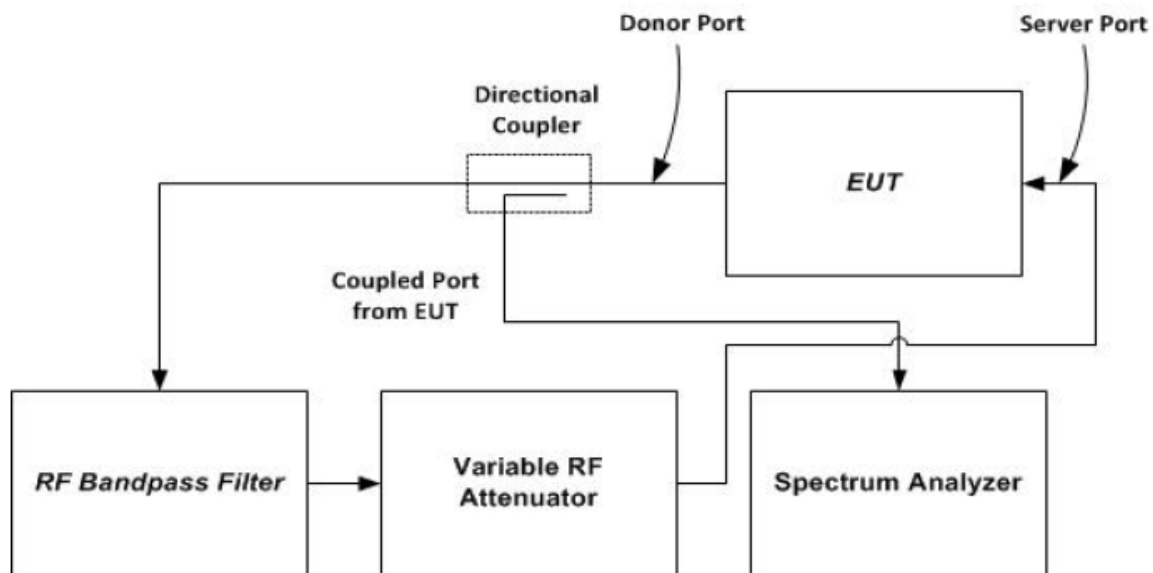


Figure 7 – Oscillation detection instrumentation test setup

Test Data

Environmental Conditions

Temperature:	28.3 °C
Relative Humidity:	59 %
ATM Pressure:	101.3 kPa

The testing was performed by Blake Yang on 2019-04-19 and 2019-04-23.

Test Result: Compliance. Please refer to following table.

Oscillation Restart Time:

Mode	Operation Bands	Detection Time (s)		Power level	Between restart time (s)		Number of restart		Result
		Reading	Limit	dBm	Reading	Limit	Reading	Limit	
Uplink	PCS	0.05	0.3	-17.99	60.52	60	2	5	Compliance
	AWS	0.05		-16.31	65.73		2		Compliance
	Cellular	0.01		-16.59	61.83		2		Compliance
	Lower 700	0.07		-7.32	68.13		2		Compliance
	Upper 700	0.03		-7.84	63.06		2		Compliance
Downlink	PCS	0.09	1	-39.27	63.33	2	5	Compliance	
	AWS	0.03		-38.73	62.31	2	Compliance		
	Cellular	0.14		-26.17	62.71	2	Compliance		
	Lower 700	0.09		-31.79	61.50	2	Compliance		
	Upper 700	0.06		-29.99	60.92	2	Compliance		

Oscillation Mitigation or Shutdown:

Mode	Operation Band	Max gain dB	Isolation dB	Difference dB	Limit dB	Result
Uplink	PCS	55.56	+5	5.75	12	Compliance
			+4	6.84	12	Compliance
			+3	7.85	12	Compliance
			+2	10.34	12	Compliance
			+1	10.62	12	Compliance
			+0	11.43	12	Compliance
			-1	/	12	Compliance*
			-2	/	12	Compliance*
			-3	/	12	Compliance*
			-4	/	12	Compliance*
	-5	/	12	Compliance*		
	AWS	55.82	+5	6.47	12	Compliance
			+4	7.17	12	Compliance
			+3	8.34	12	Compliance
			+2	8.32	12	Compliance
			+1	9.13	12	Compliance
			+0	9.17	12	Compliance
			-1	/	12	Compliance*
			-2	/	12	Compliance*
			-3	/	12	Compliance*
			-4	/	12	Compliance*
	-5	/	12	Compliance		
	Cellular	55.67	+5	6.05	12	Compliance
			+4	6.97	12	Compliance
			+3	7.81	12	Compliance
			+2	8.27	12	Compliance
			+1	10.04	12	Compliance
			+0	11.26	12	Compliance
			-1	/	12	Compliance*
			-2	/	12	Compliance*
			-3	/	12	Compliance*
			-4	/	12	Compliance*
	-5	/	12	Compliance*		
	Lower 700	57.63	+5	6.79	12	Compliance
			+4	7.72	12	Compliance
			+3	8.09	12	Compliance
+2			8.4	12	Compliance	
+1			9.63	12	Compliance	
+0			11.45	12	Compliance	
-1			/	12	Compliance*	
-2			/	12	Compliance*	
-3			/	12	Compliance*	
-4			/	12	Compliance*	
-5	/	12	Compliance*			

Note: Compliance*: The mesured difference exceeds the limit (12dB) for a period of less than 300 seconds before device mitigrare and shut down.

Mode	Operation Band	Max gain	Isolation	Difference	Limit	Result
		dB	dB	dB	dB	
Uplink	Upper 700	57.35	+5	4.94	12	Compliance
			+4	6.28	12	Compliance
			+3	7.45	12	Compliance
			+2	8.11	12	Compliance
			+1	10.09	12	Compliance
			+0	11.73	12	Compliance
			-1	/	12	Compliance*
			-2	/	12	Compliance*
			-3	/	12	Compliance*
			-4	/	12	Compliance*
Downlink	PCS	58.57	+5	6.54	12	Compliance
			+4	8.42	12	Compliance
			+3	8.69	12	Compliance
			+2	10.12	12	Compliance
			+1	10.48	12	Compliance
			+0	11.79	12	Compliance
			-1	/	12	Compliance*
			-2	/	12	Compliance*
			-3	/	12	Compliance*
			-4	/	12	Compliance*
	-5	/	12	Compliance*		
	AWS	59.85	+5	7.07	12	Compliance
			+4	7.29	12	Compliance
			+3	7.94	12	Compliance
			+2	8.31	12	Compliance
			+1	8.69	12	Compliance
			+0	9.71	12	Compliance
			-1	/	12	Compliance*
			-2	/	12	Compliance*
			-3	/	12	Compliance*
			-4	/	12	Compliance*
	-5	/	12	Compliance*		
	Cellular	57.39	+5	6.7	12	Compliance
			+4	6.79	12	Compliance
			+3	7.74	12	Compliance
			+2	8.06	12	Compliance
			+1	9.44	12	Compliance
			+0	10.75	12	Compliance
			-1	/	12	Compliance*
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-4			/	12	Compliance*	
-5	/	12	Compliance*			

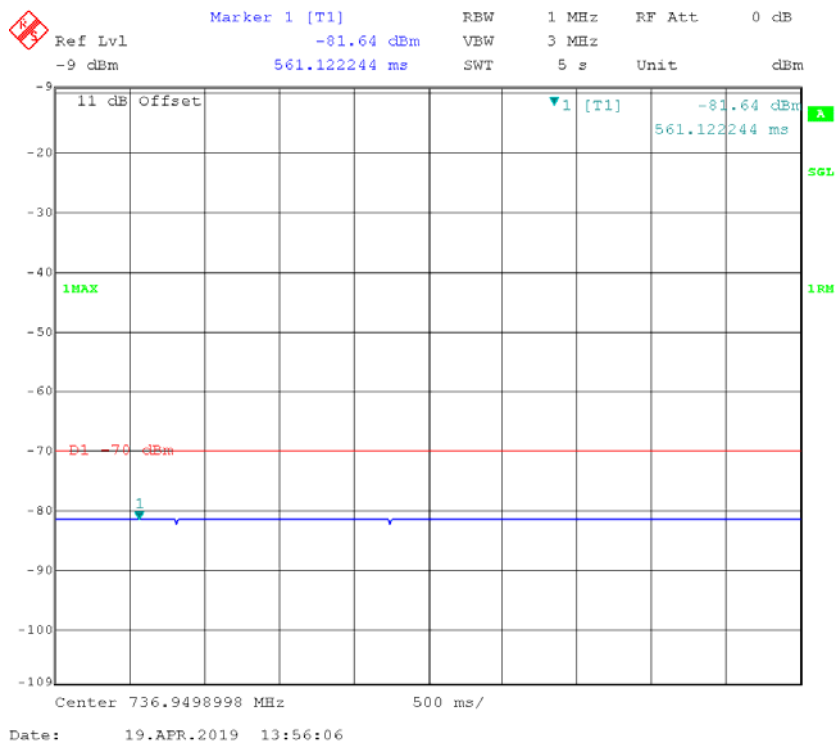
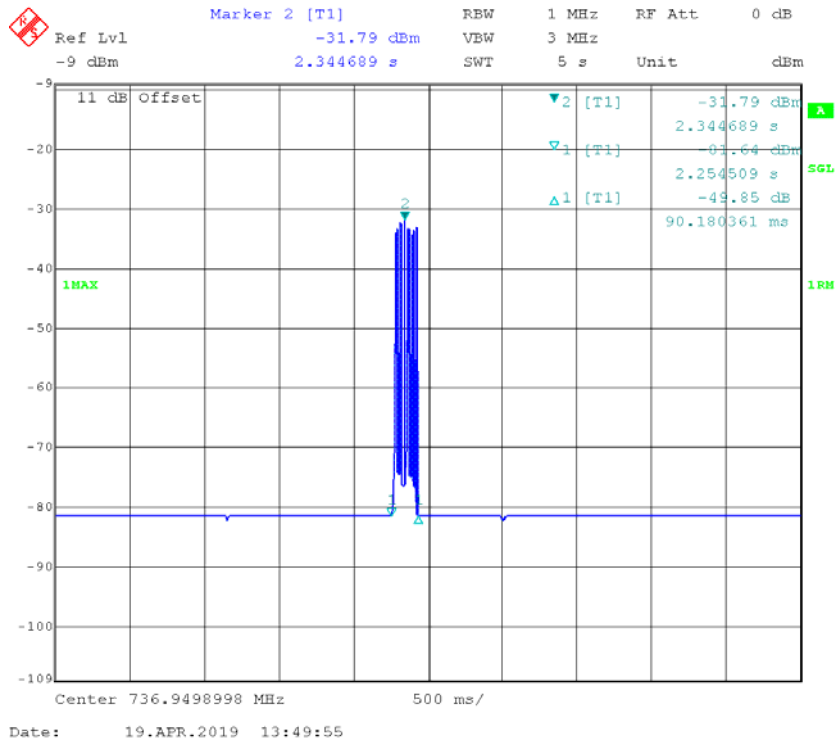
Note: Compliance*: The mesured difference exceeds the limit (12dB) for a period of less than 300 seconds before device mitigrate and shut down.

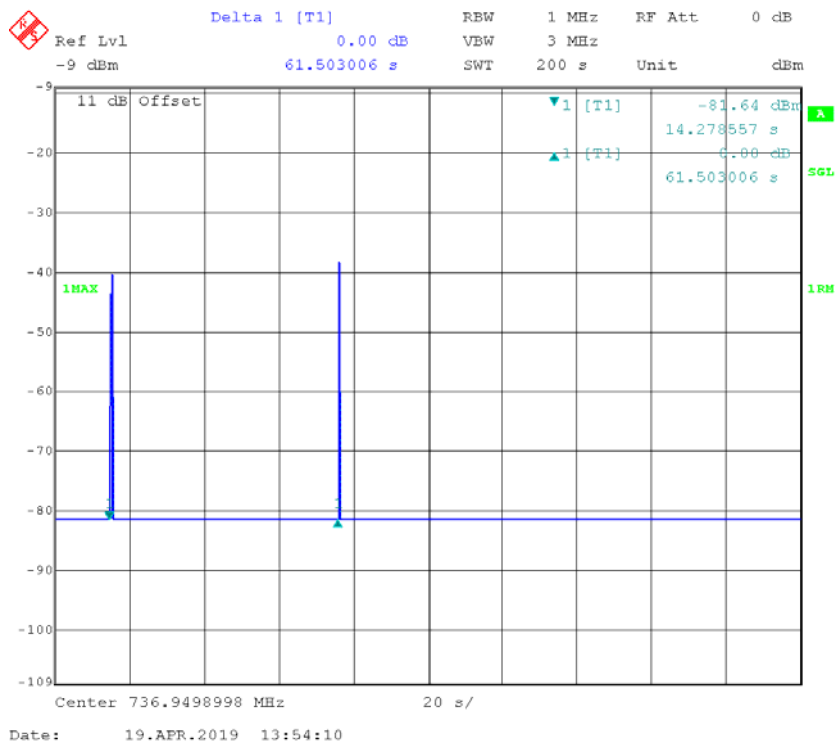
Mode	Operation Band	Max gain	Isolation	Difference	Limit	Result
		dB	dB	dB	dB	
Downlink	Lower 700	58.79	+5	7.02	12	Compliance
			+4	7.99	12	Compliance
			+3	8.62	12	Compliance
			+2	10.23	12	Compliance
			+1	10.34	12	Compliance
			+0	11.73	12	Compliance
			-1	/	12	Compliance*
			-2	/	12	Compliance*
			-3	/	12	Compliance*
			-4	/	12	Compliance*
	Upper 700	56.79	+5	5.07	12	Compliance
			+4	6.82	12	Compliance
			+3	7.44	12	Compliance
			+2	8.70	12	Compliance
			+1	9.63	12	Compliance
			+0	11.09	12	Compliance
			-1	/	12	Compliance*
			-2	/	12	Compliance*
			-3	/	12	Compliance*
			-4	/	12	Compliance*
-5	/	12	Compliance*			

Note: Compliance*: The measured difference exceeds the limit (12dB) for a period of less than 300 seconds before device mitigate and shut down.

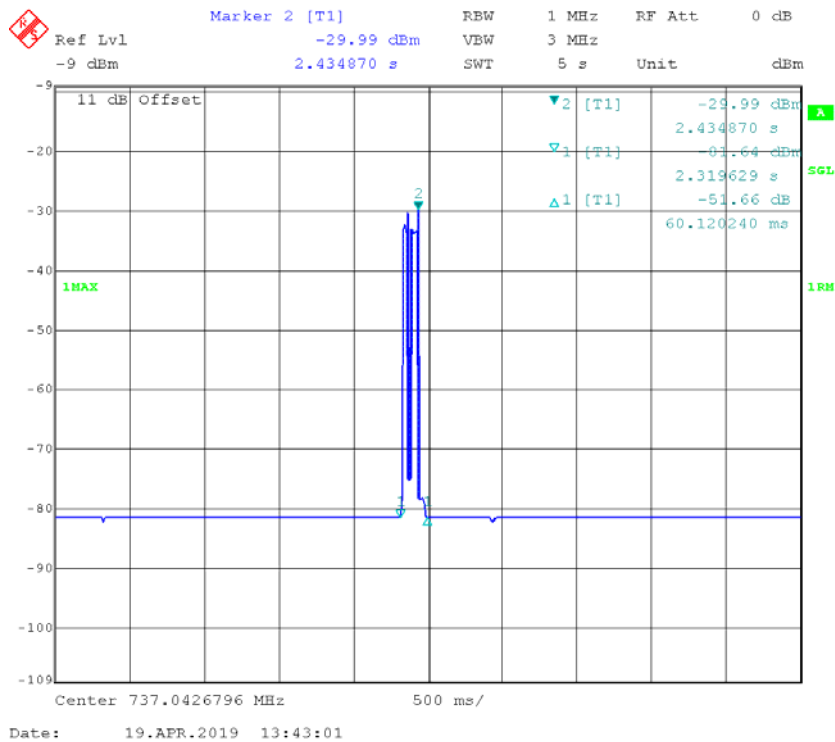
Oscillation restart tests:
Downlink:

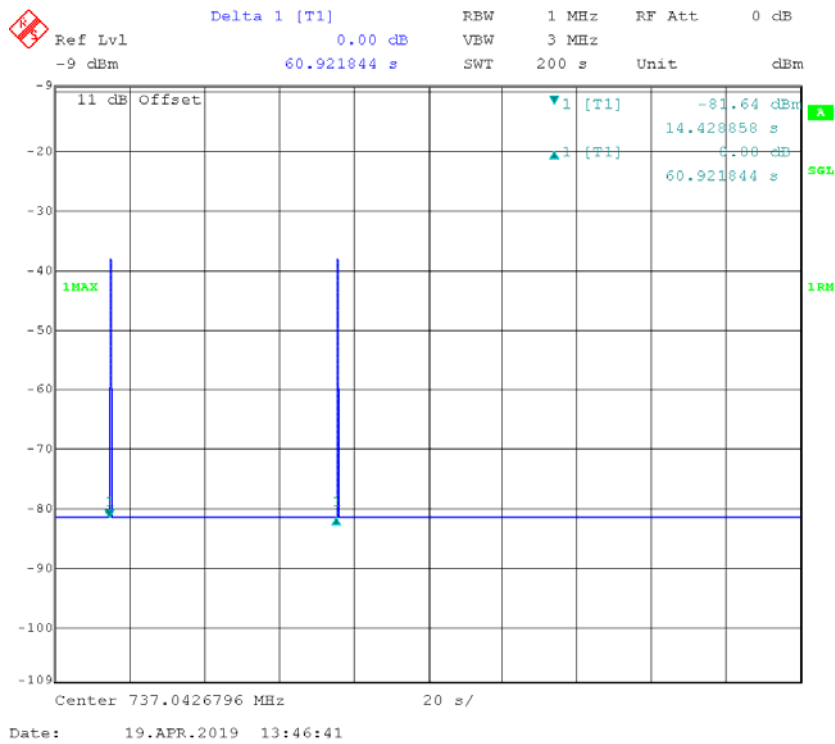
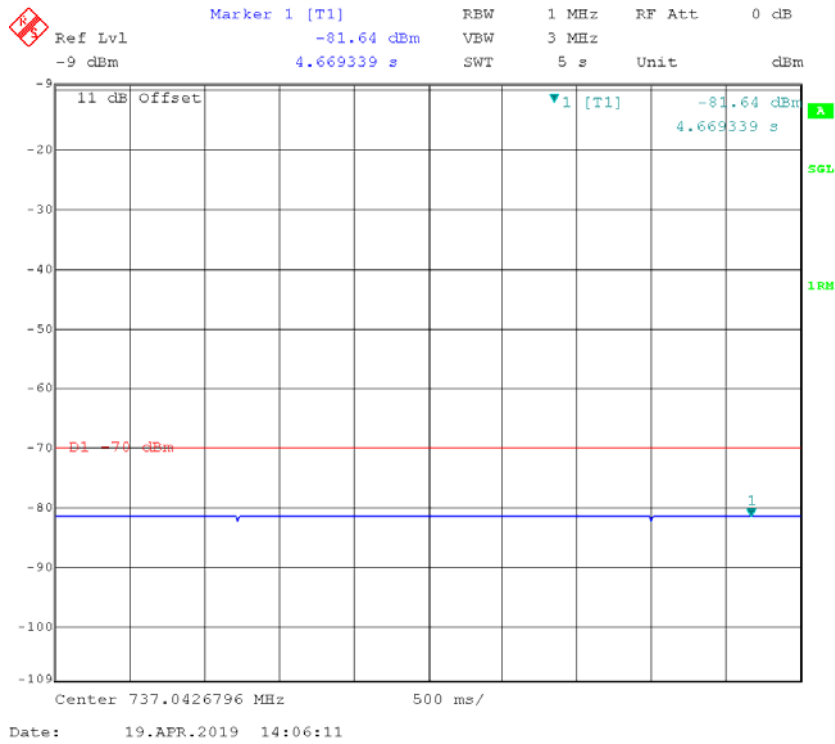
Lower 700MHz Band



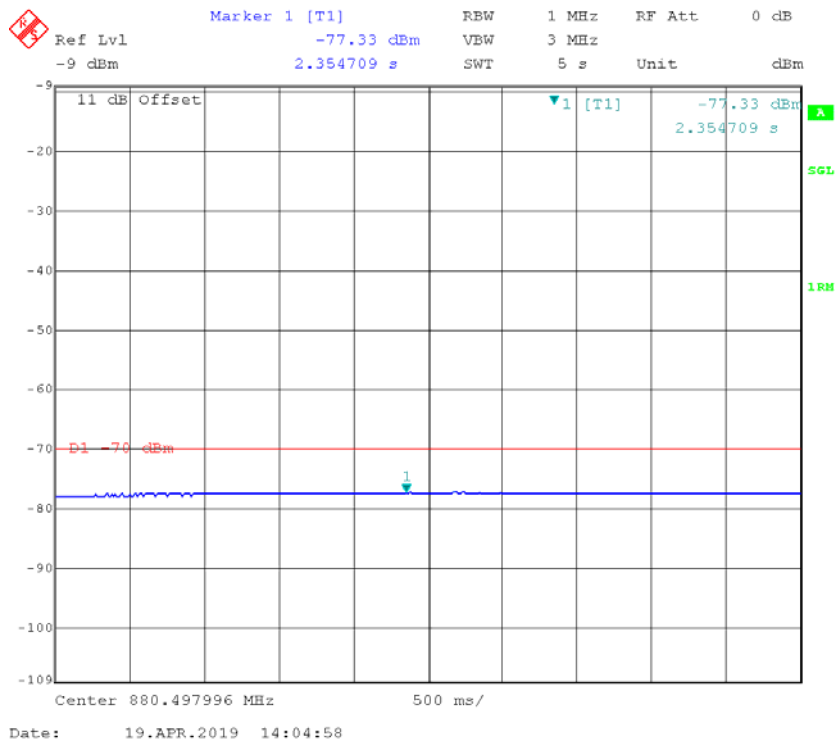
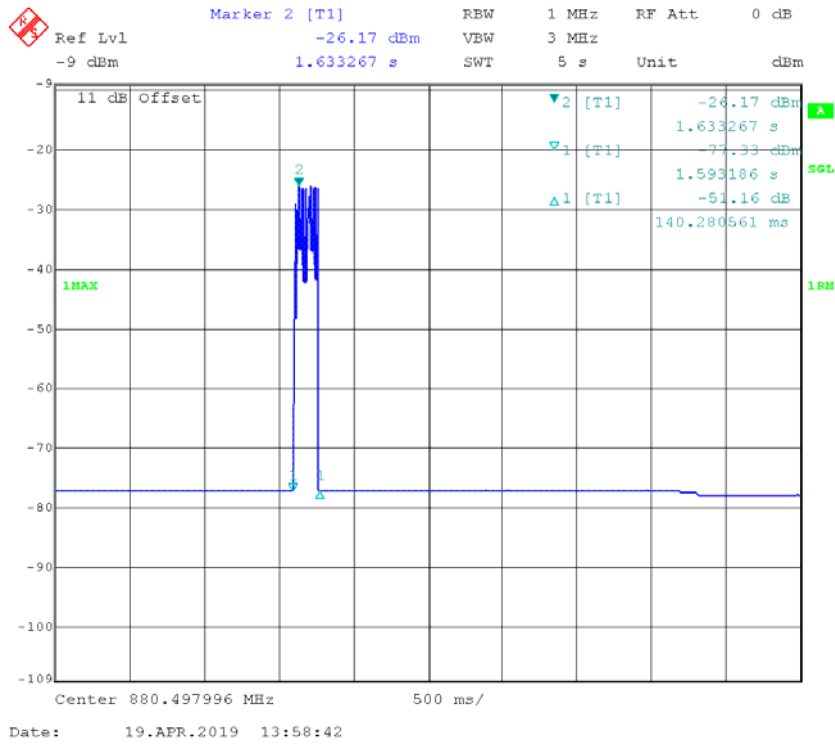


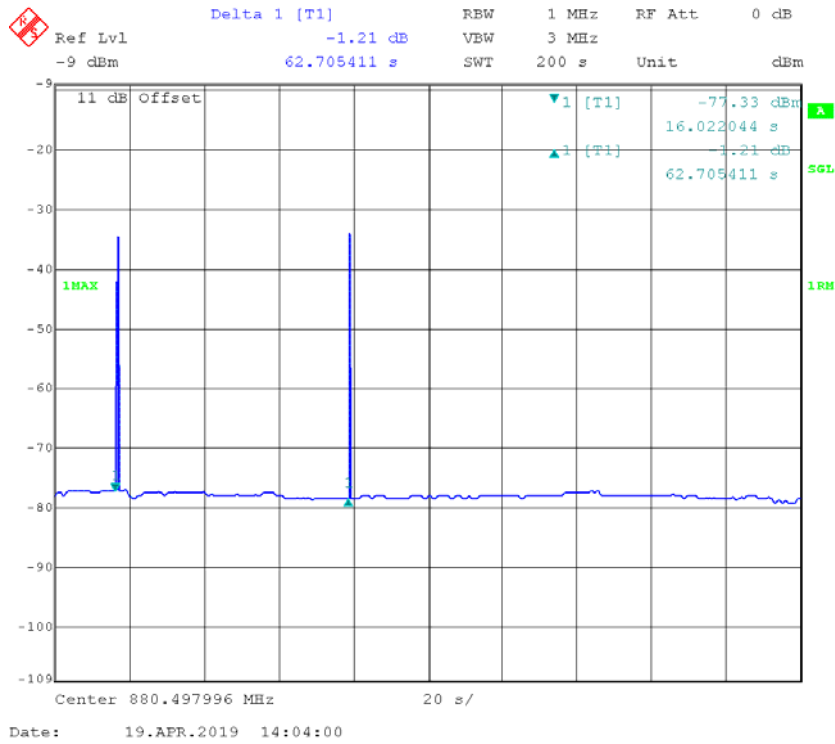
Upper 700MHz Band



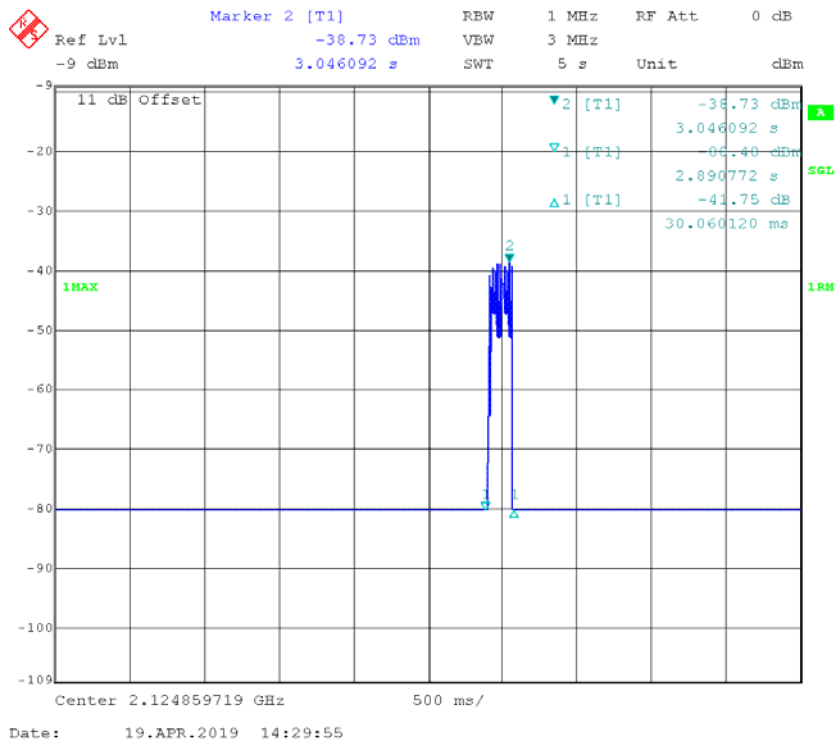


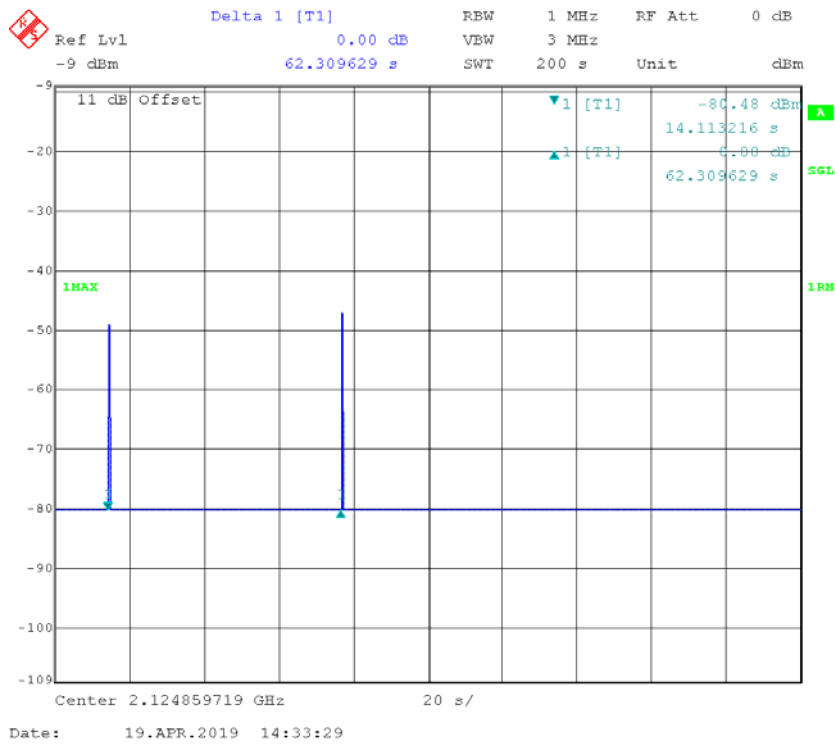
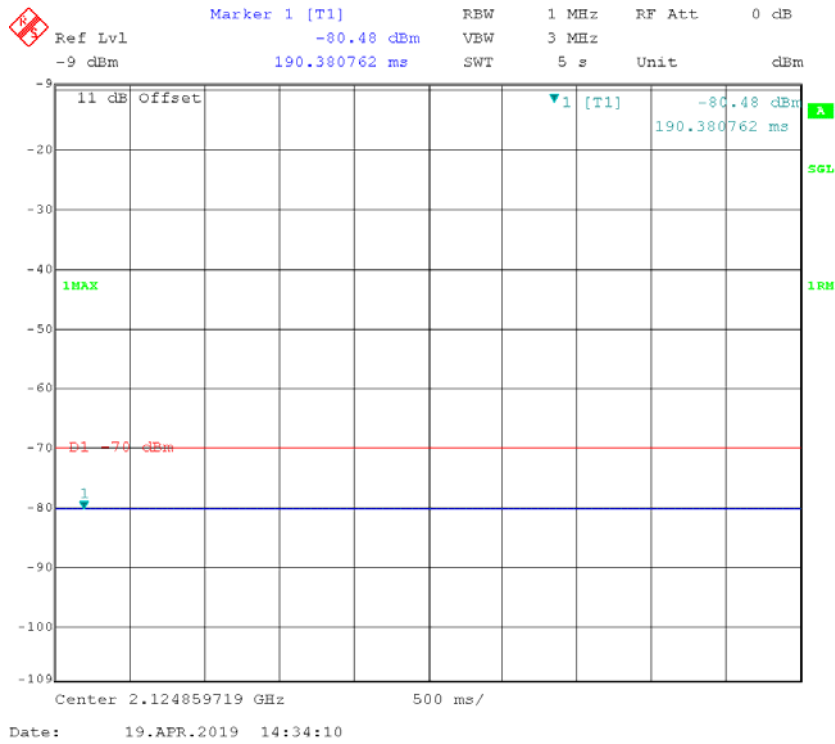
Cellular Band



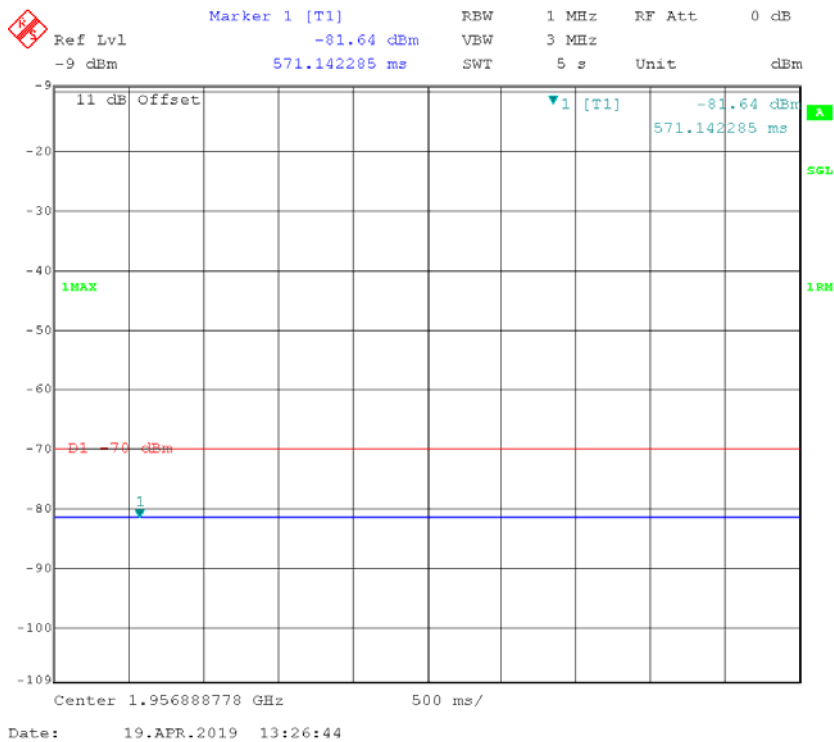
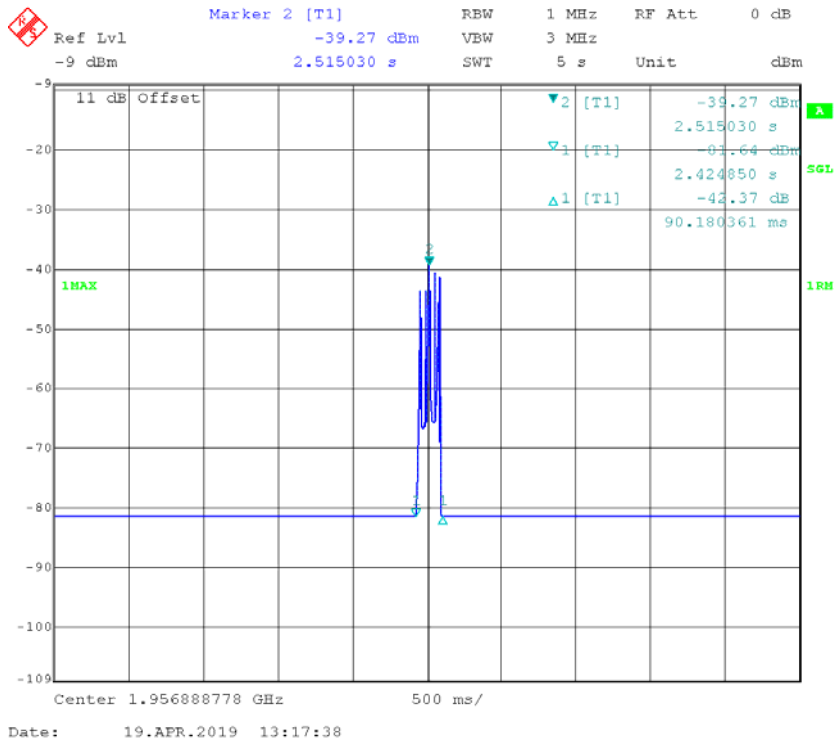


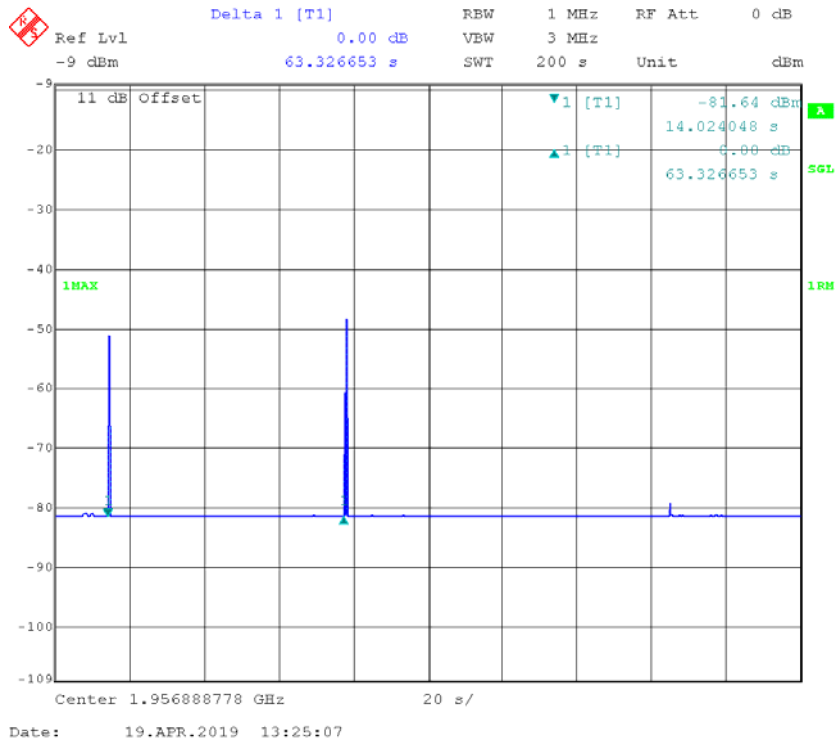
AWS Band





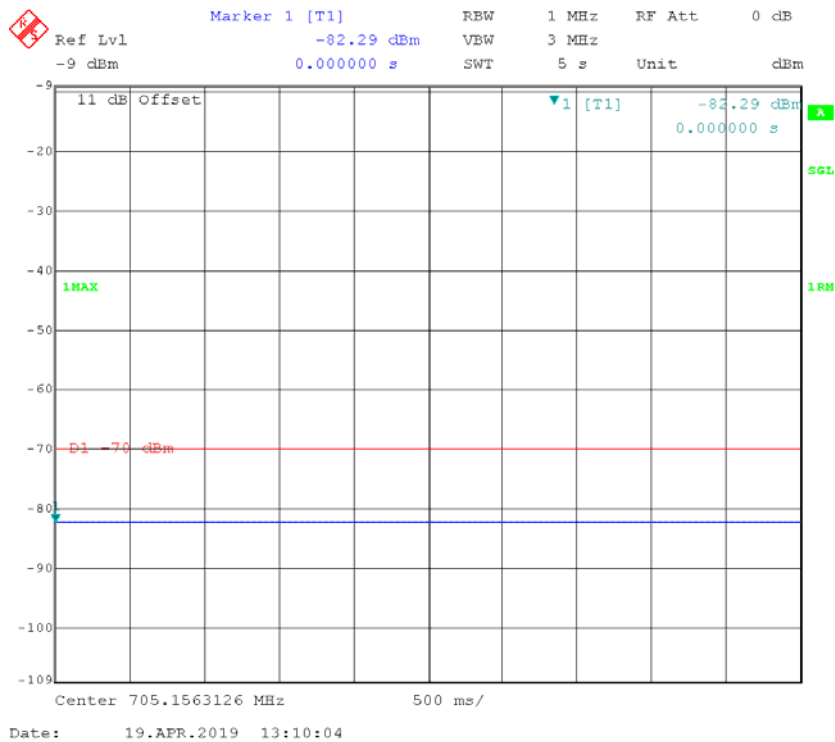
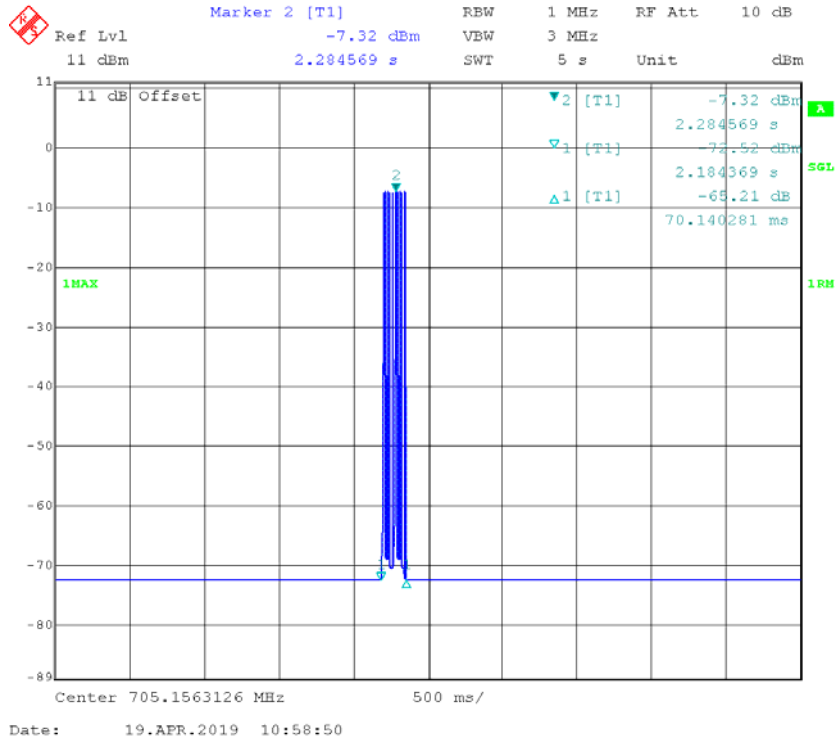
PCS Band

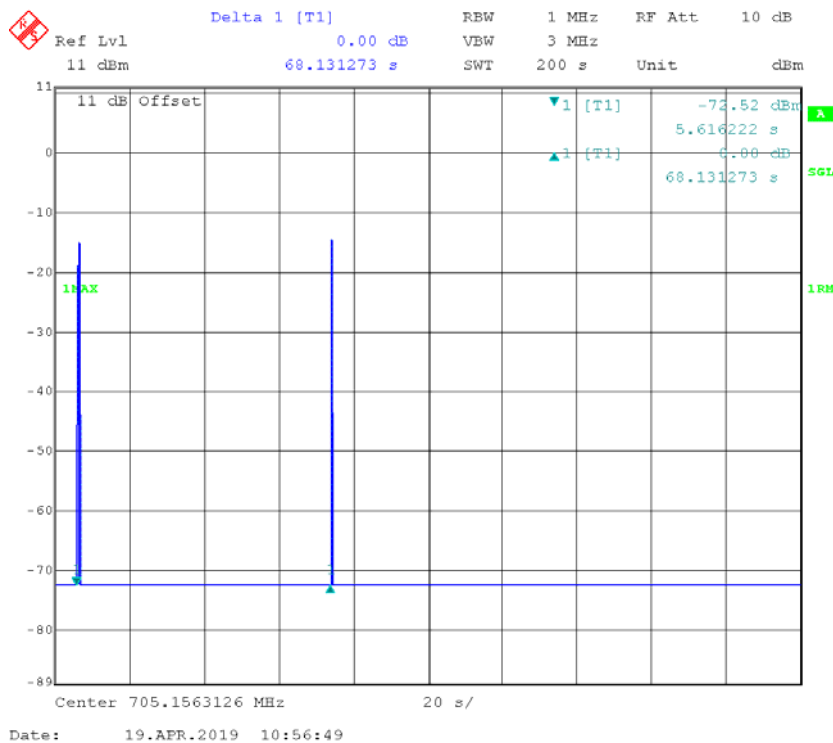




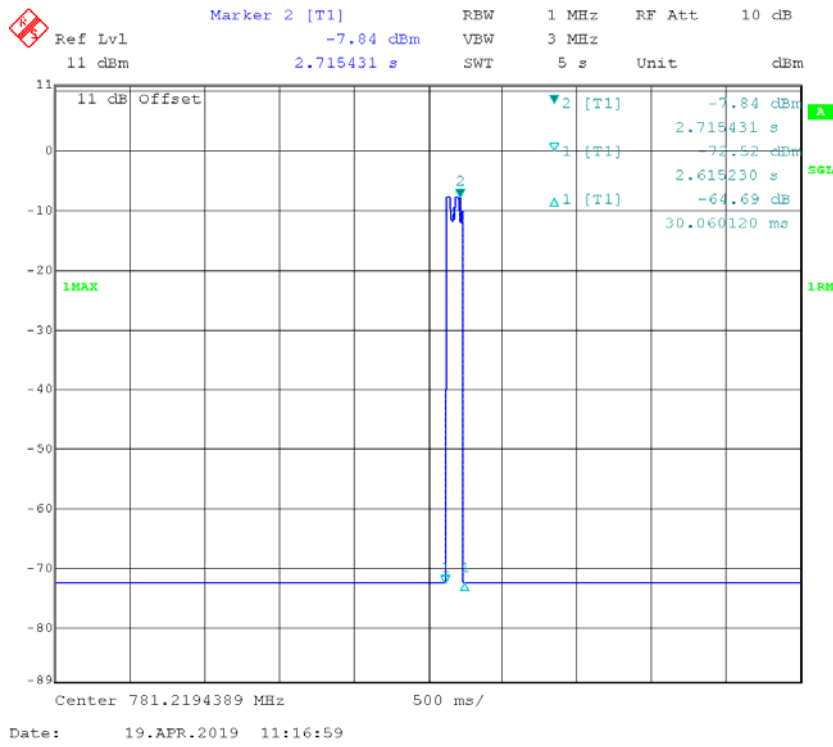
Uplink:

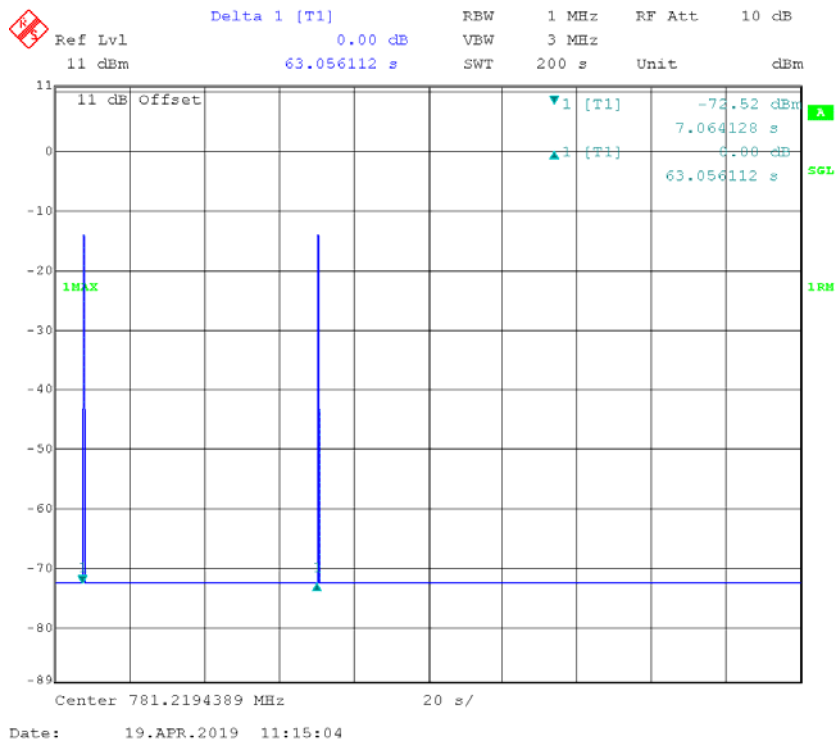
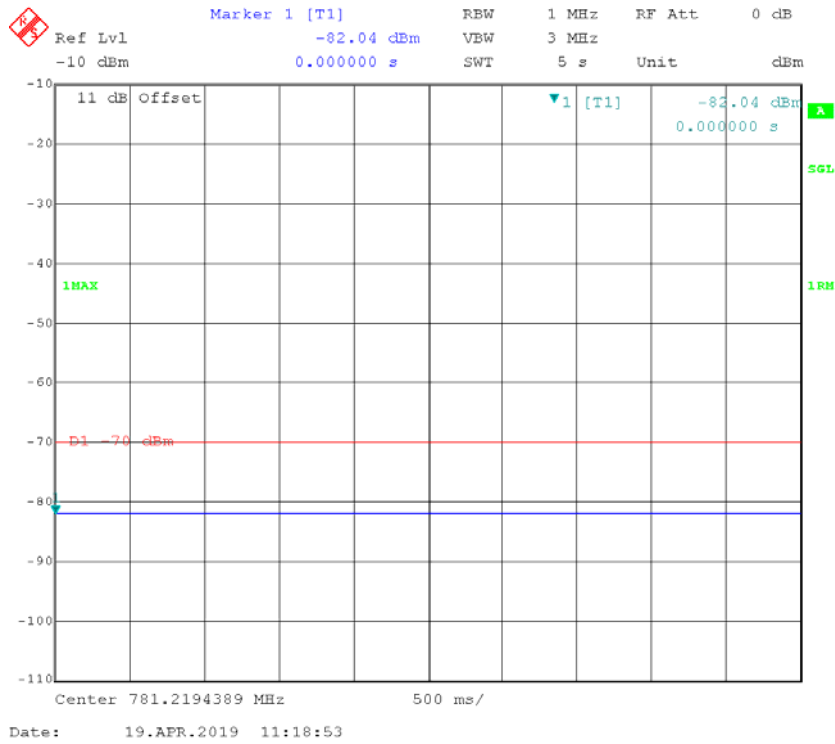
Lower 700MHz Band



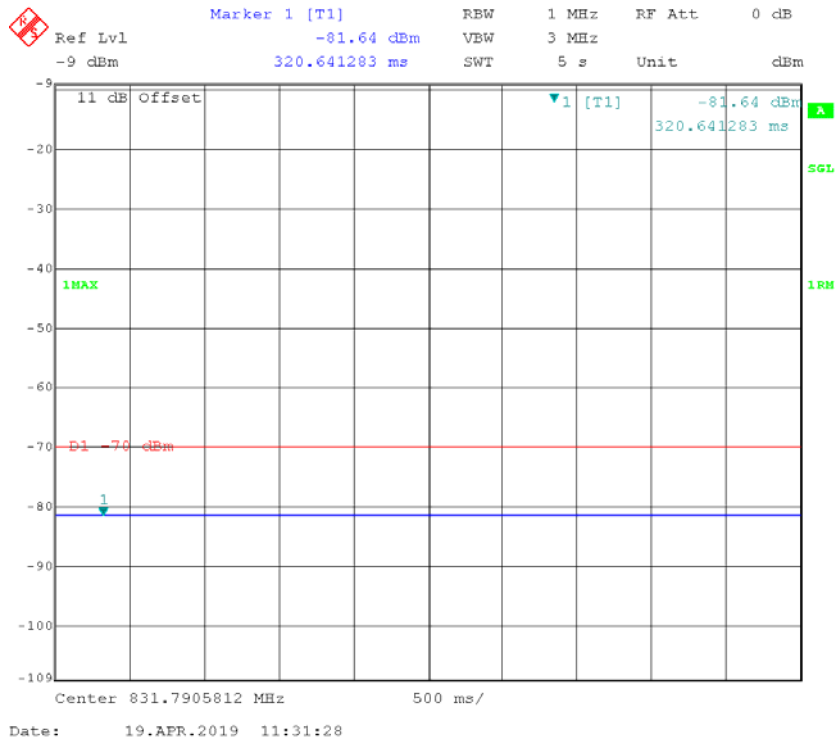
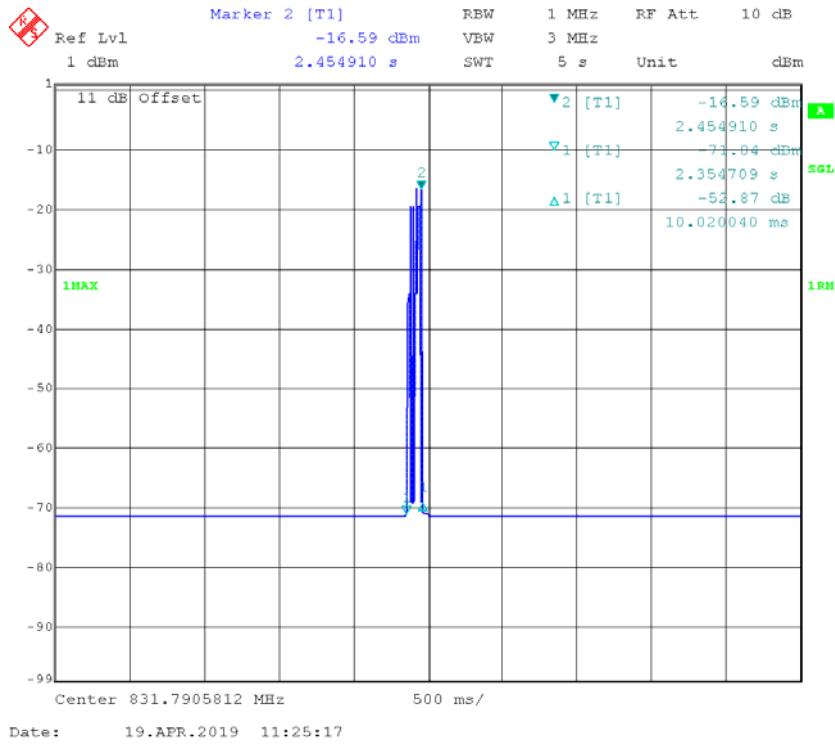


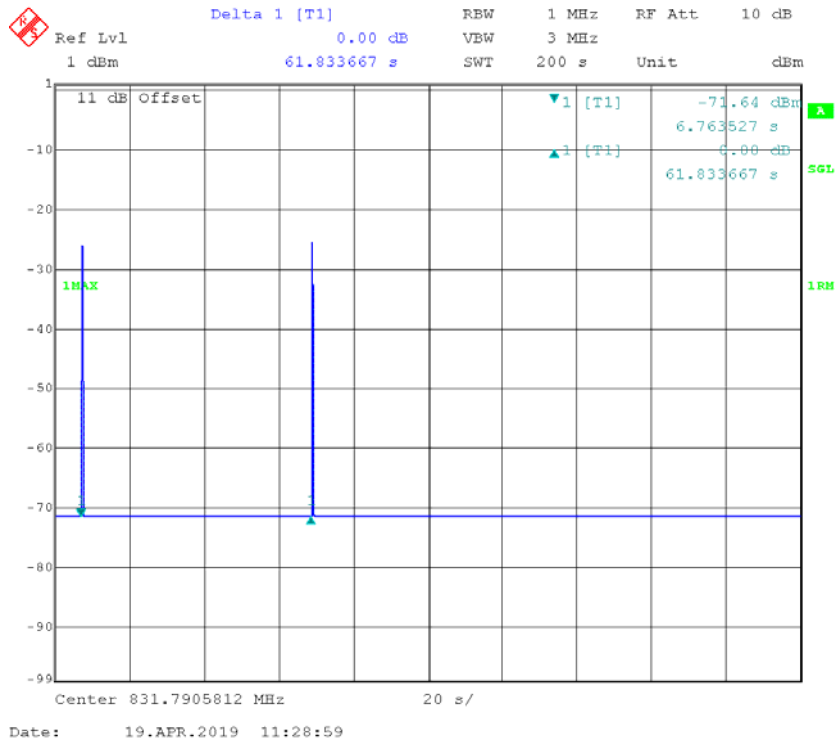
Upper 700MHz Band



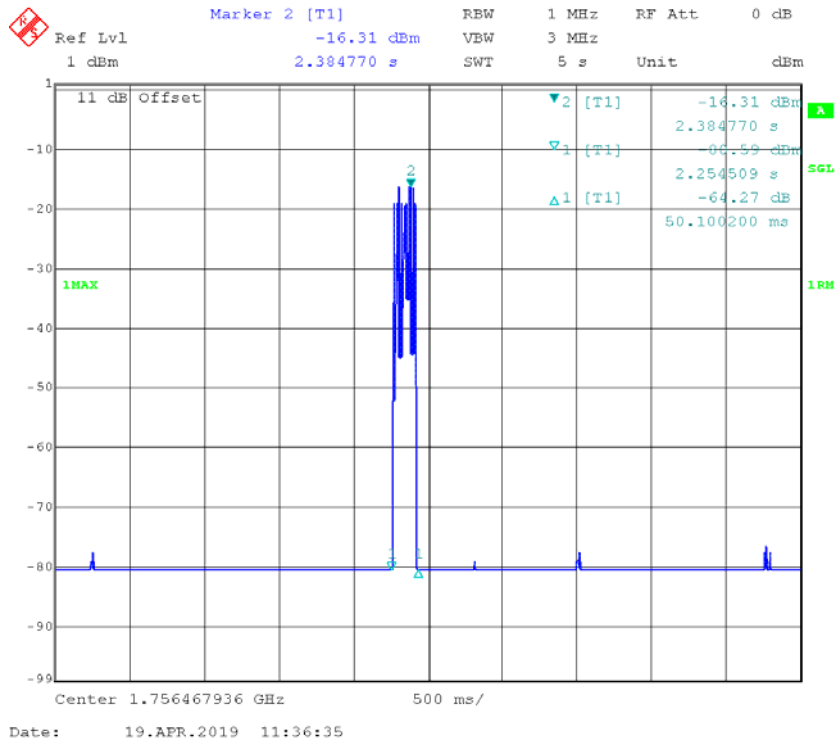


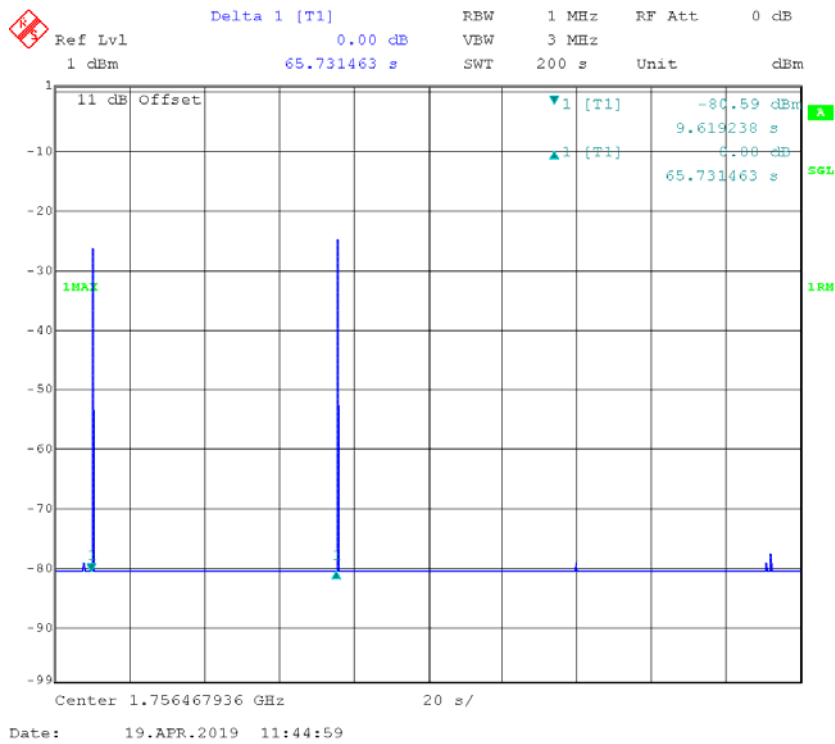
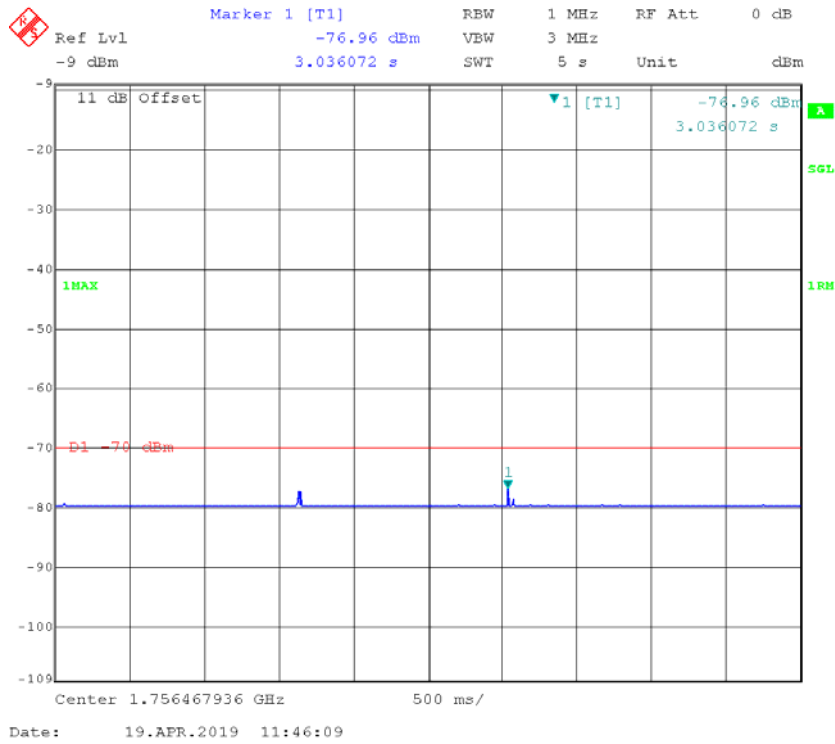
Cellular Band



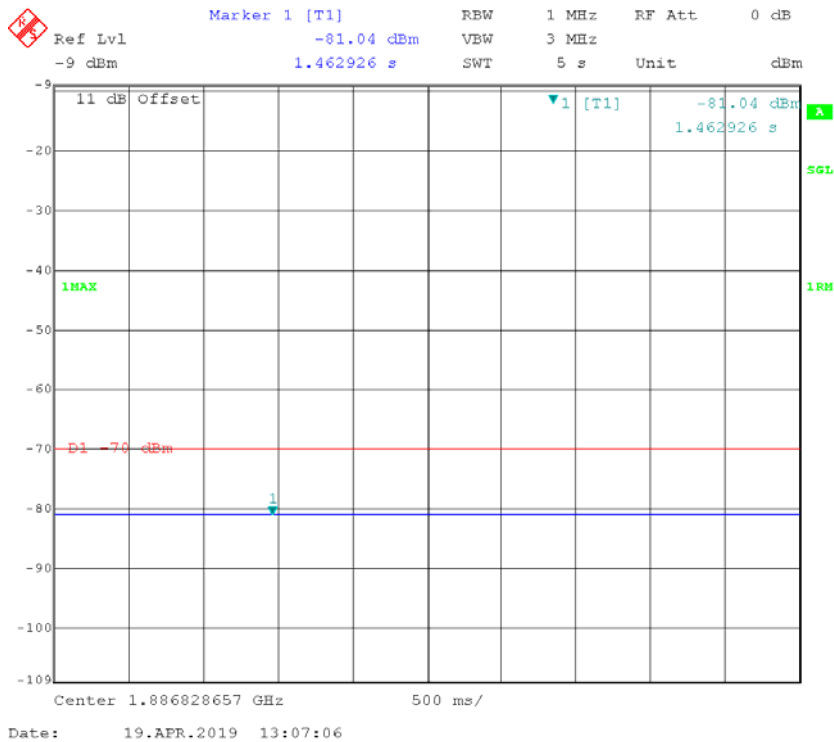
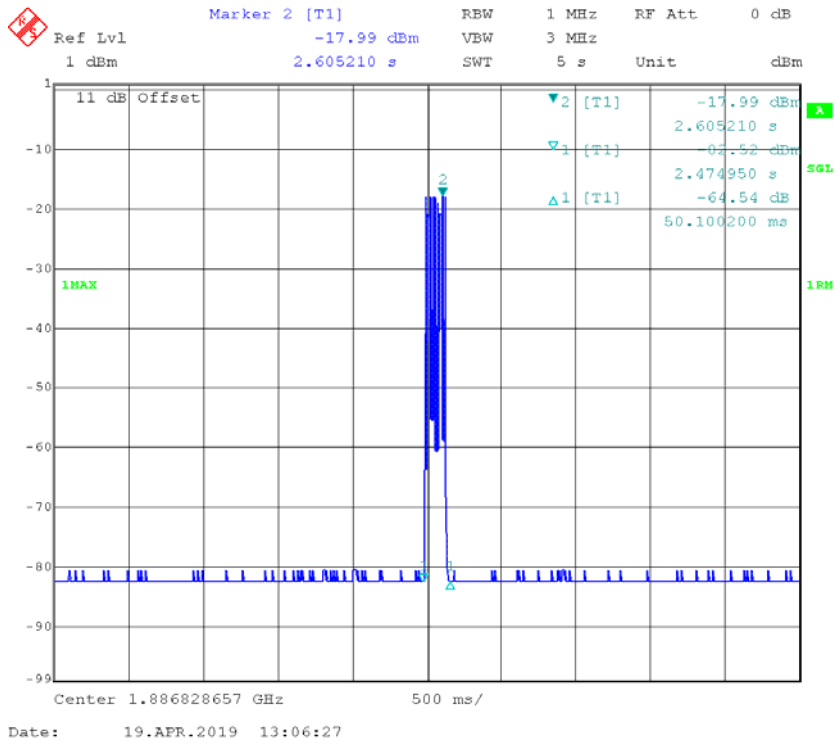


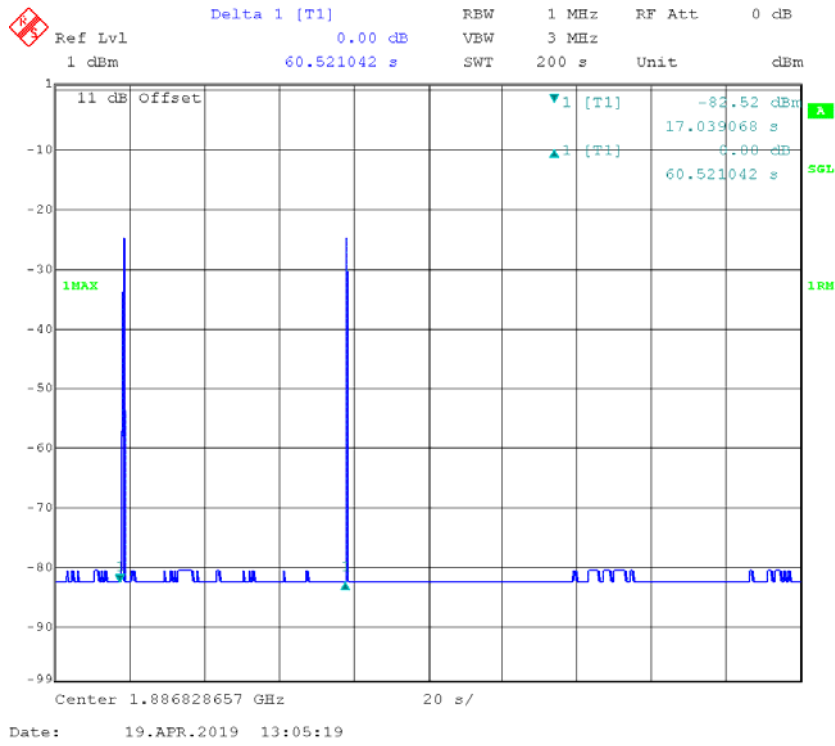
AWS Band





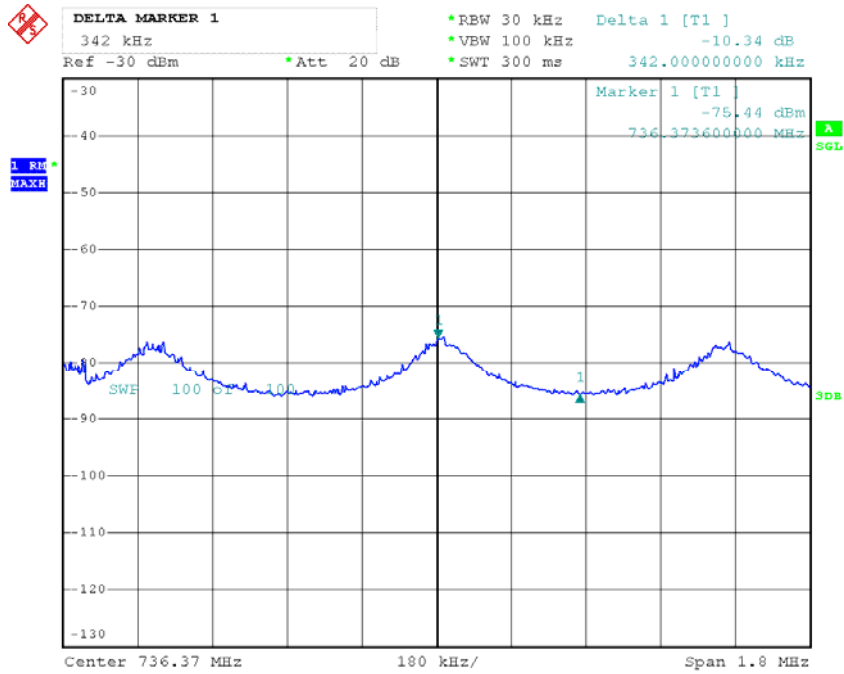
PCS Band



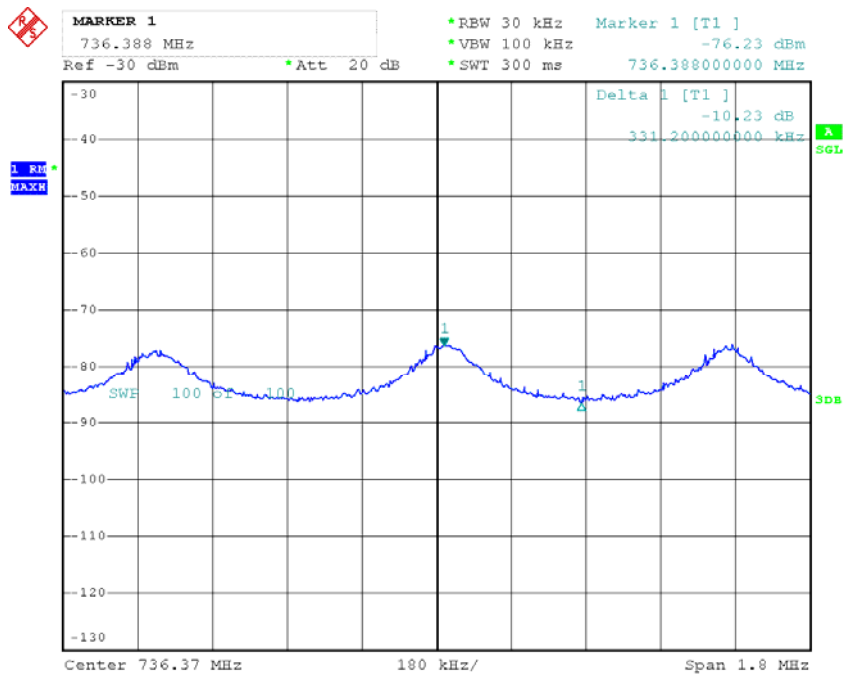


**Oscillation mitigation or shutdown:
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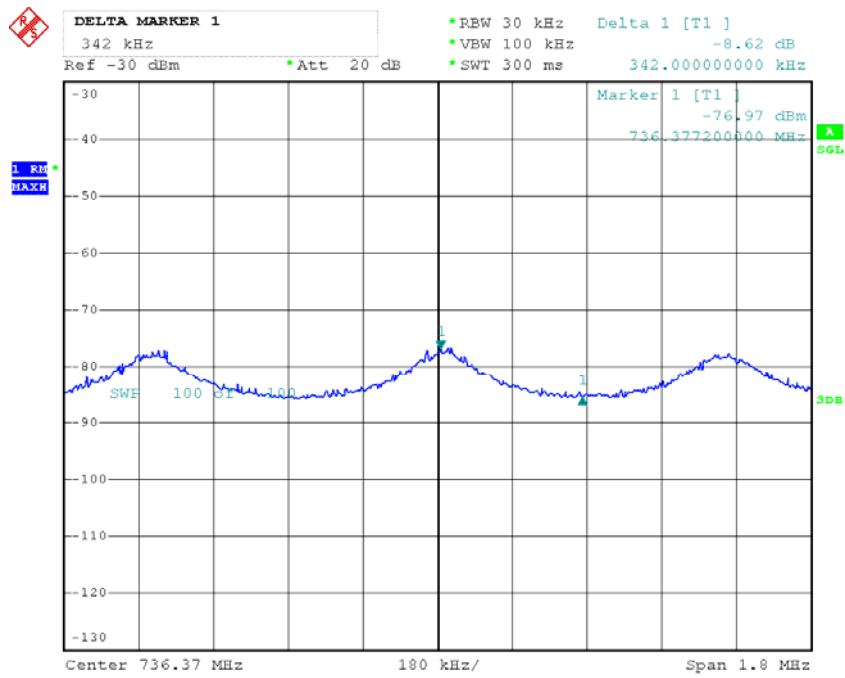
Lower 700MHz Band



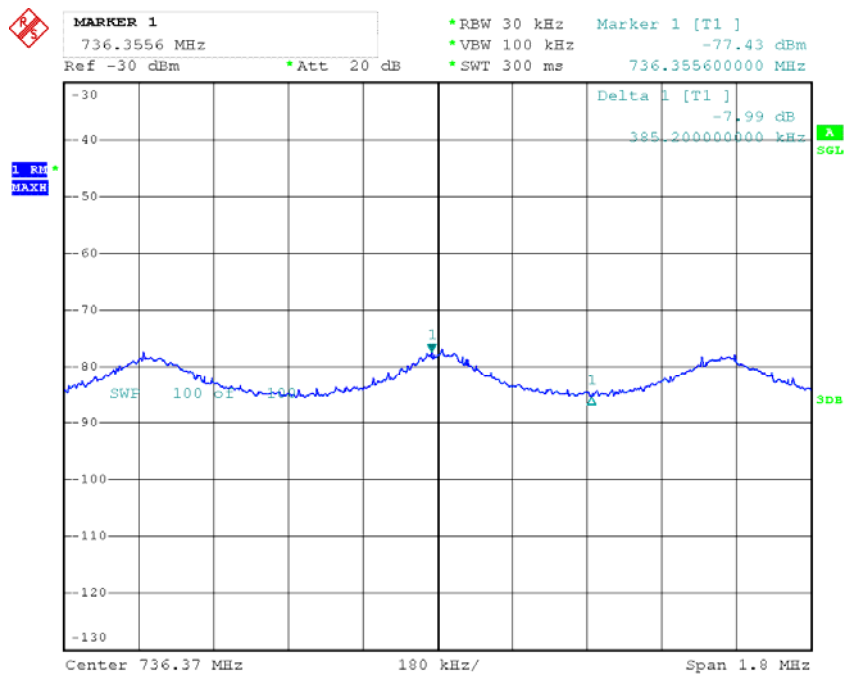
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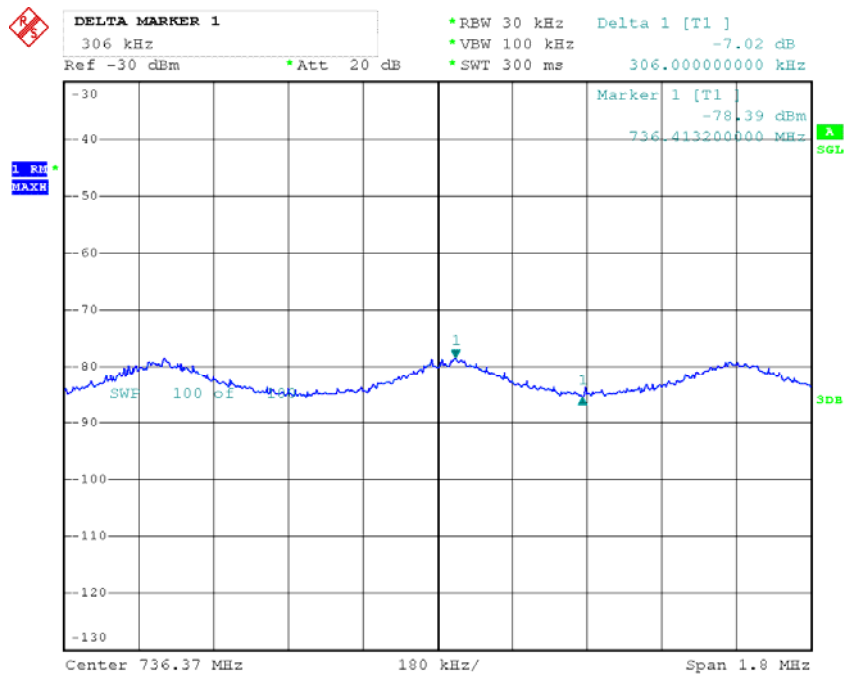
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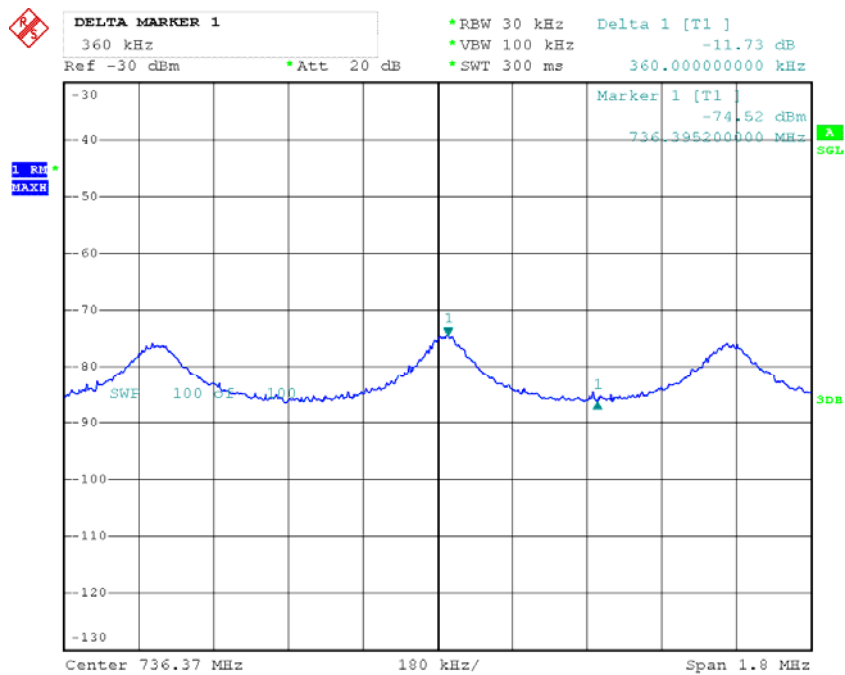
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Date: 23.APR.2019 16:56:39

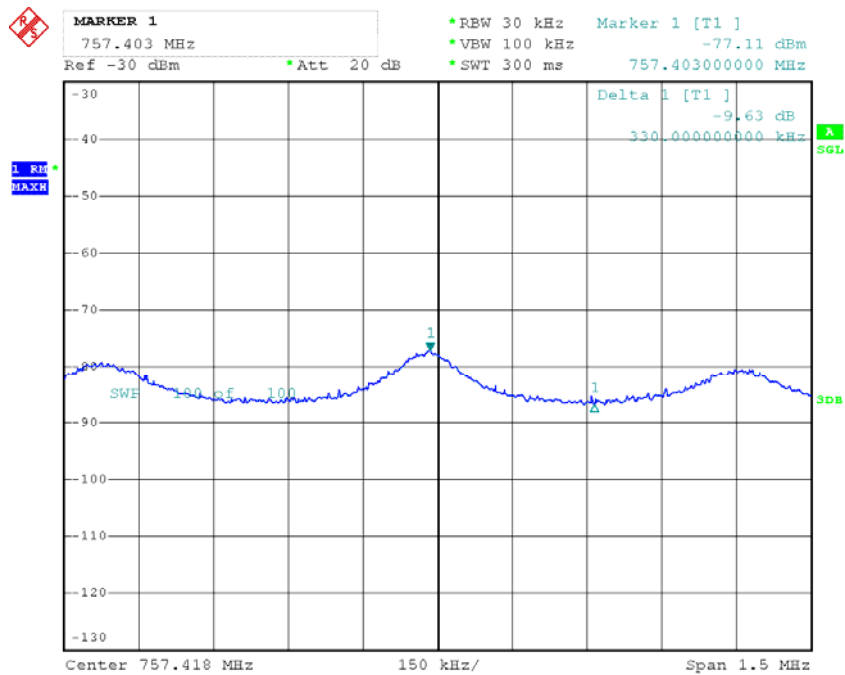


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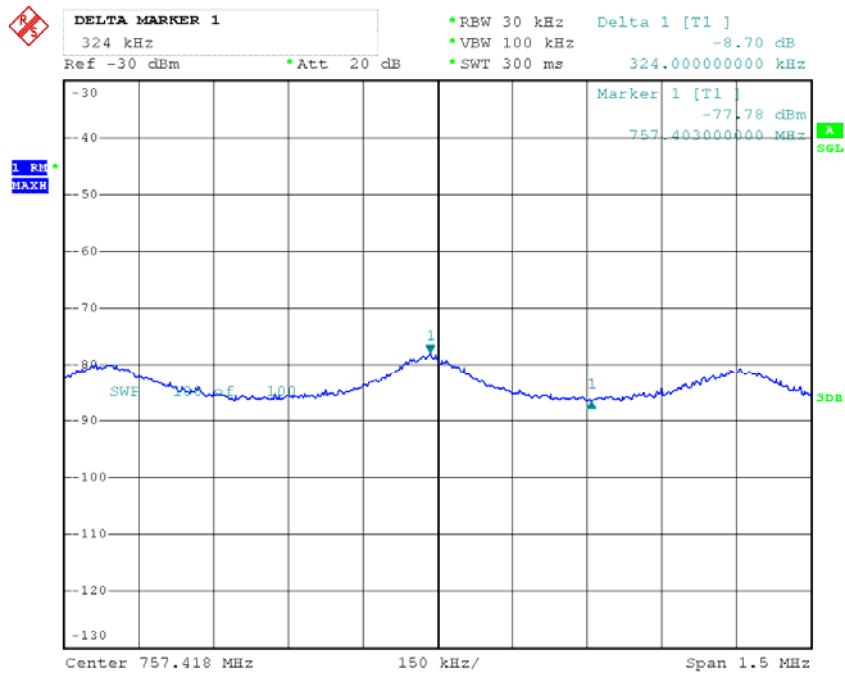


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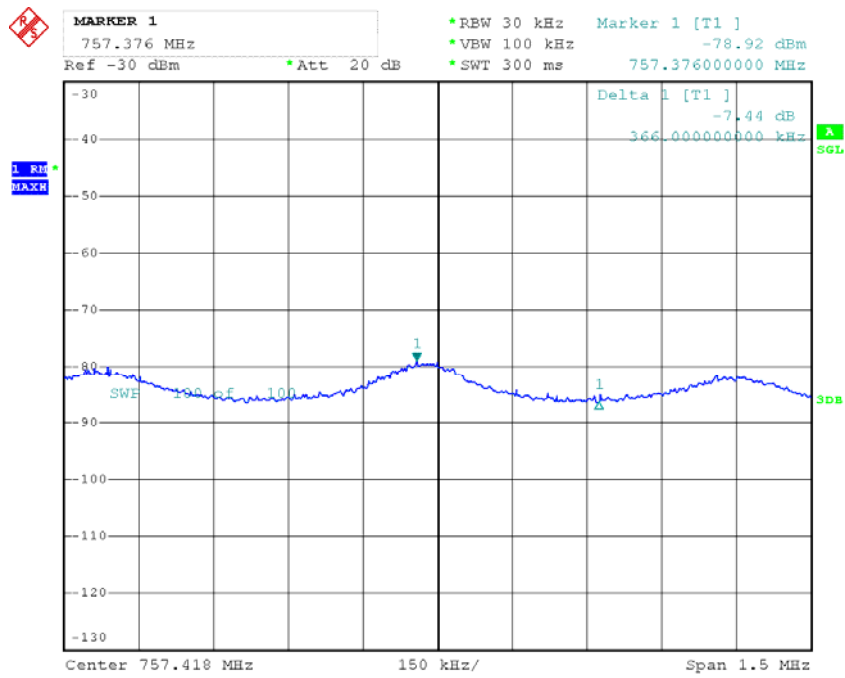
Upper 700MHz Band



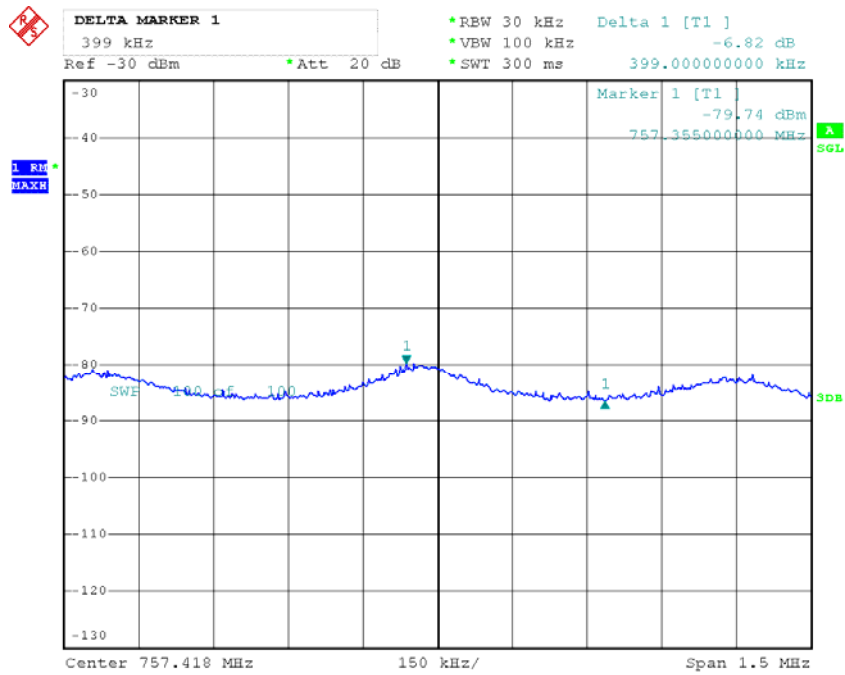
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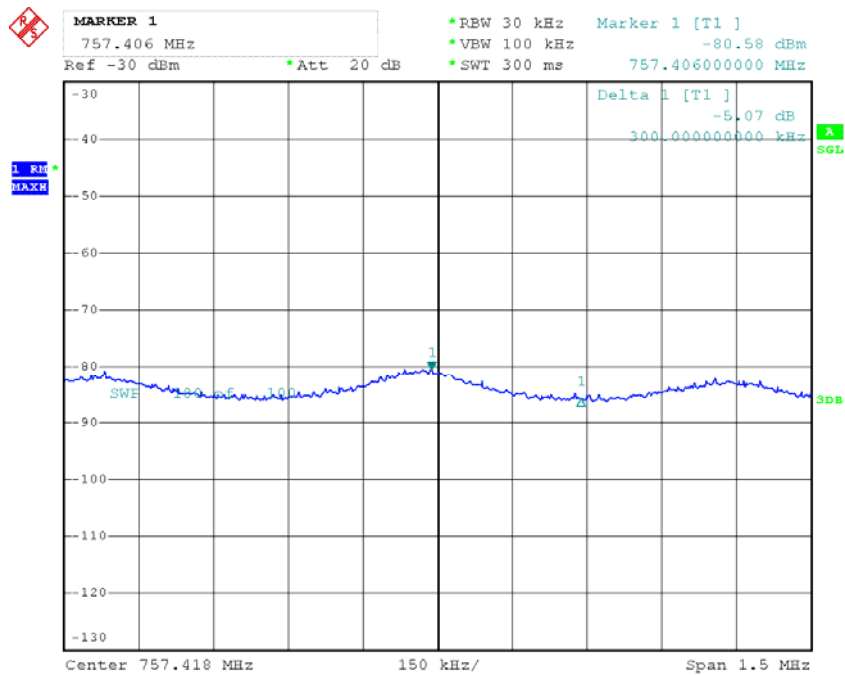
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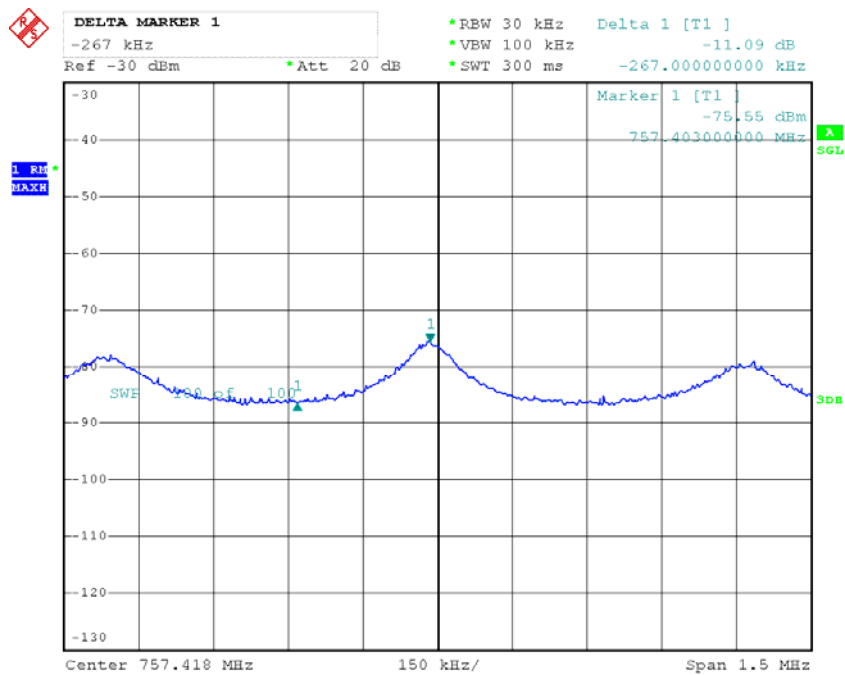
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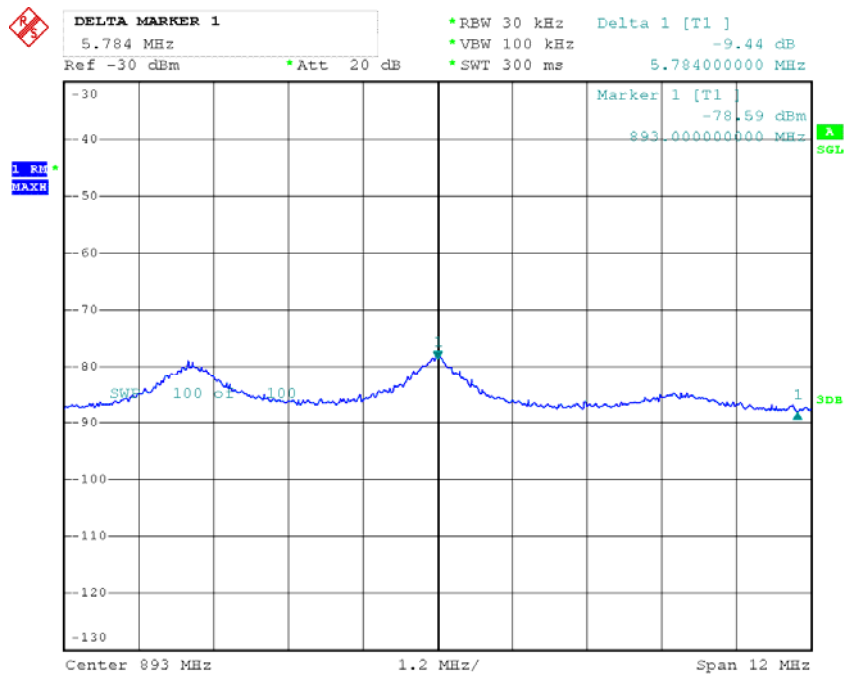


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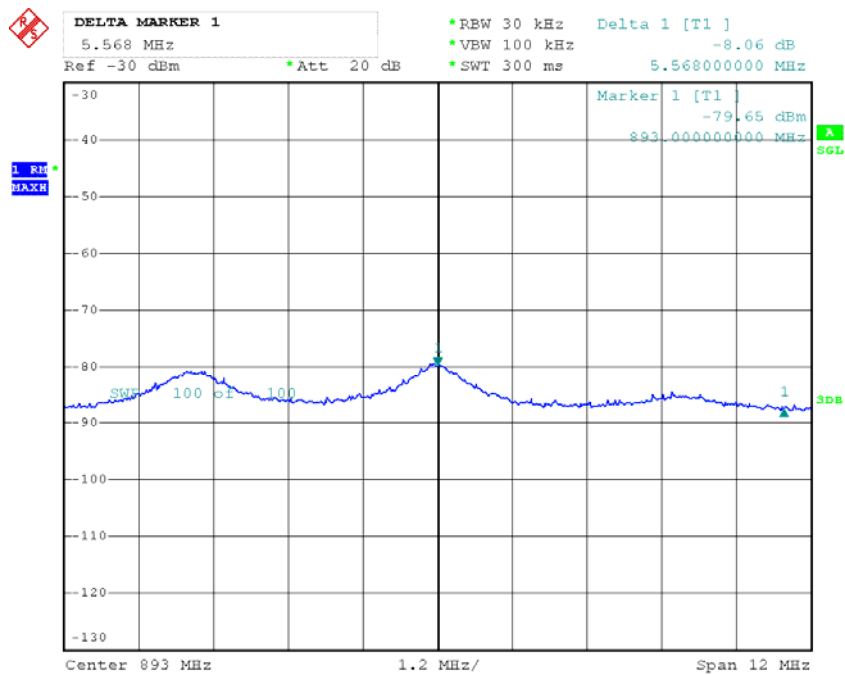


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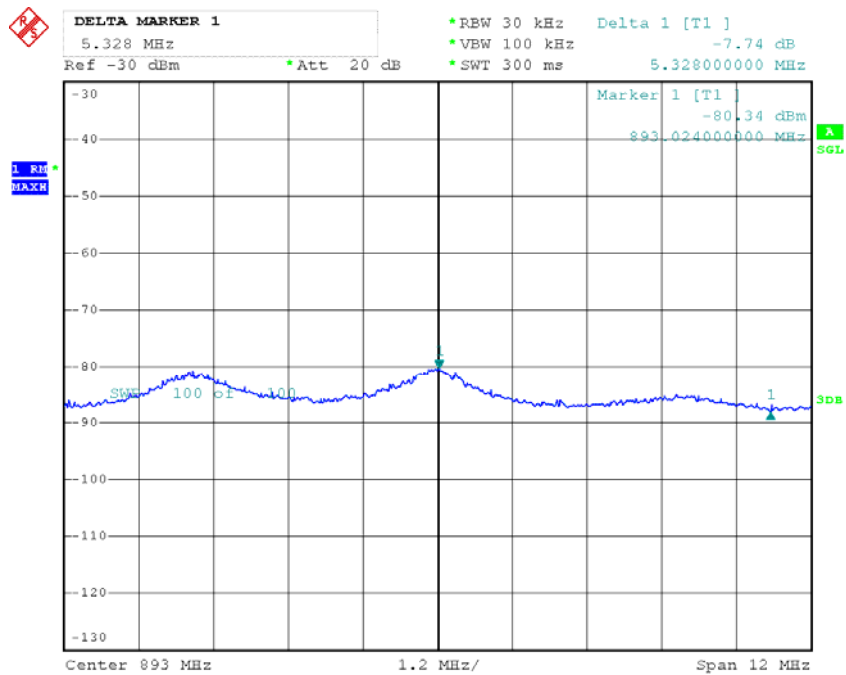
Cellular Band



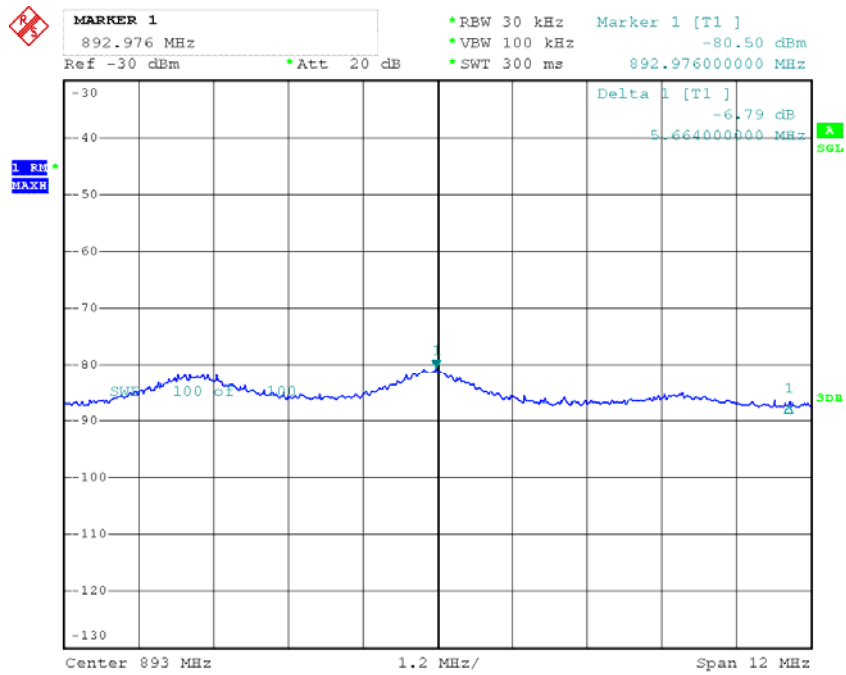
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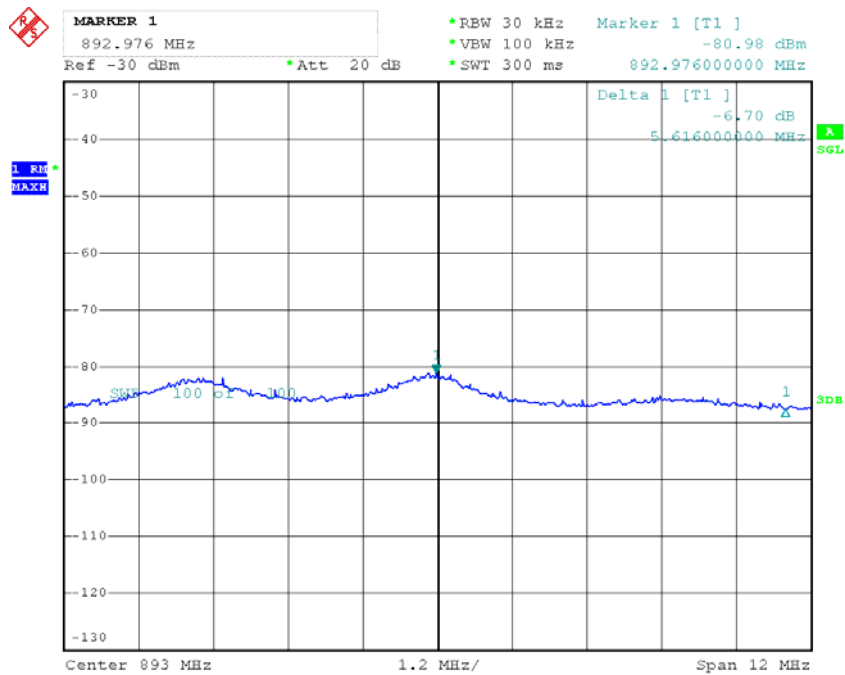
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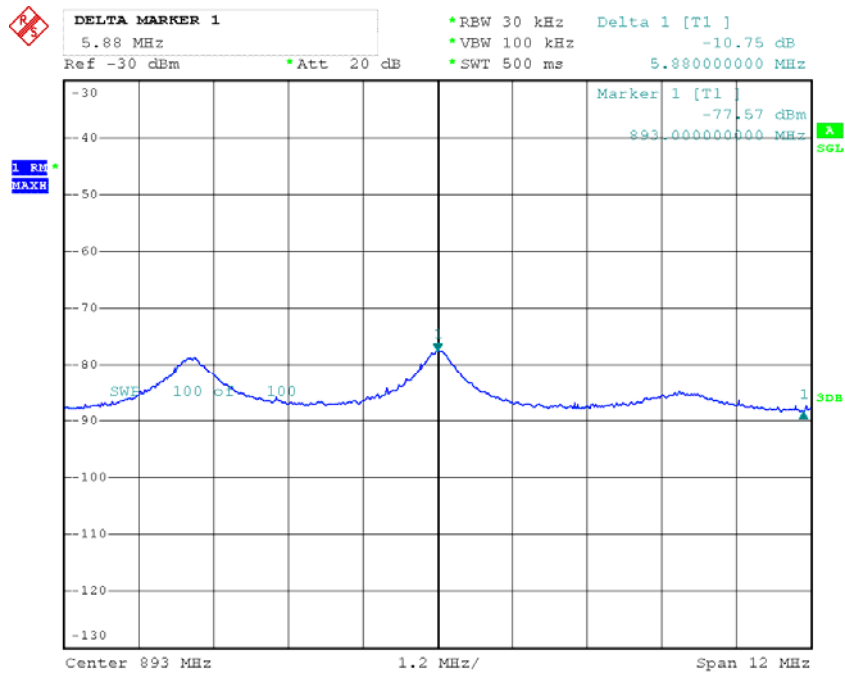
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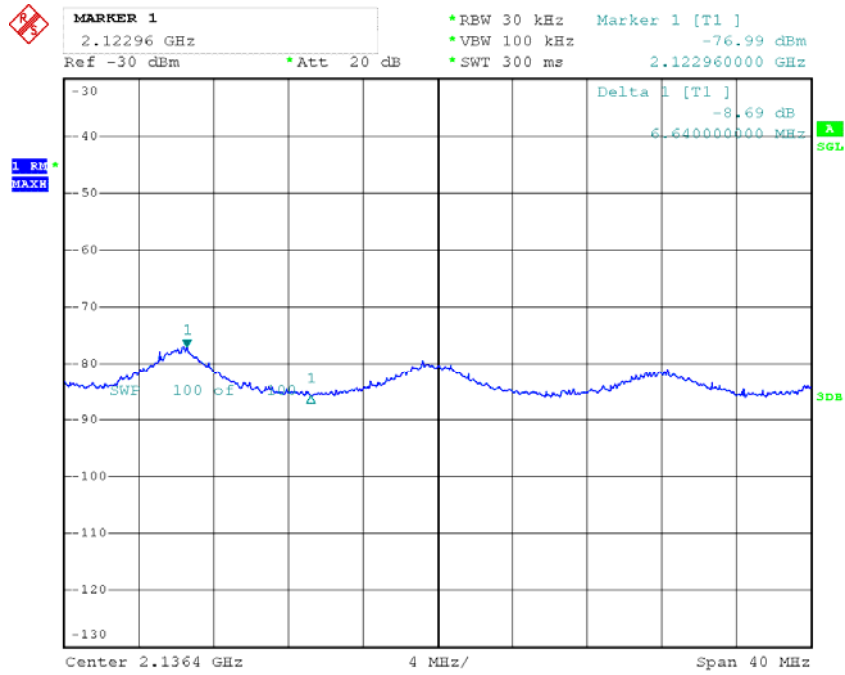


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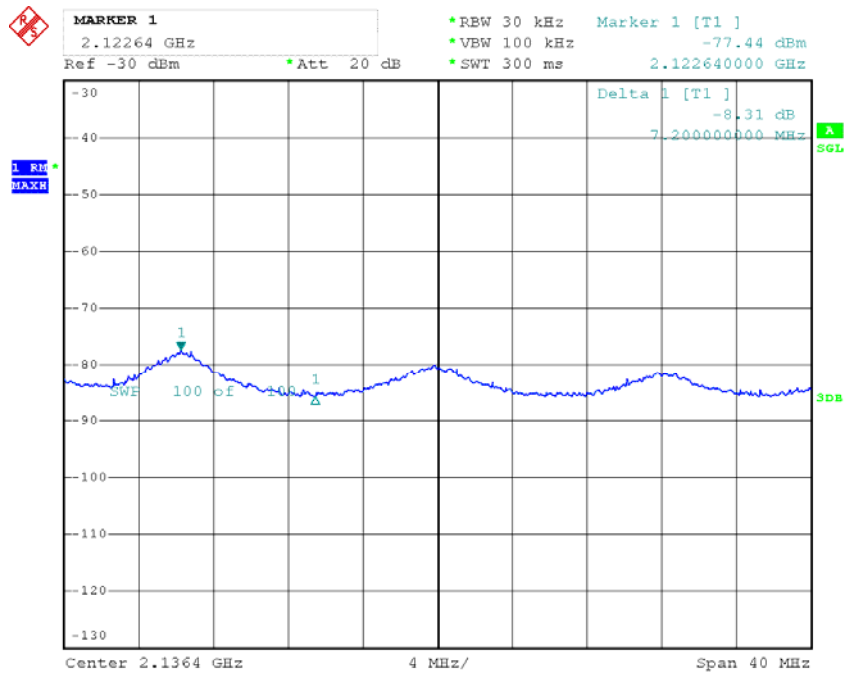


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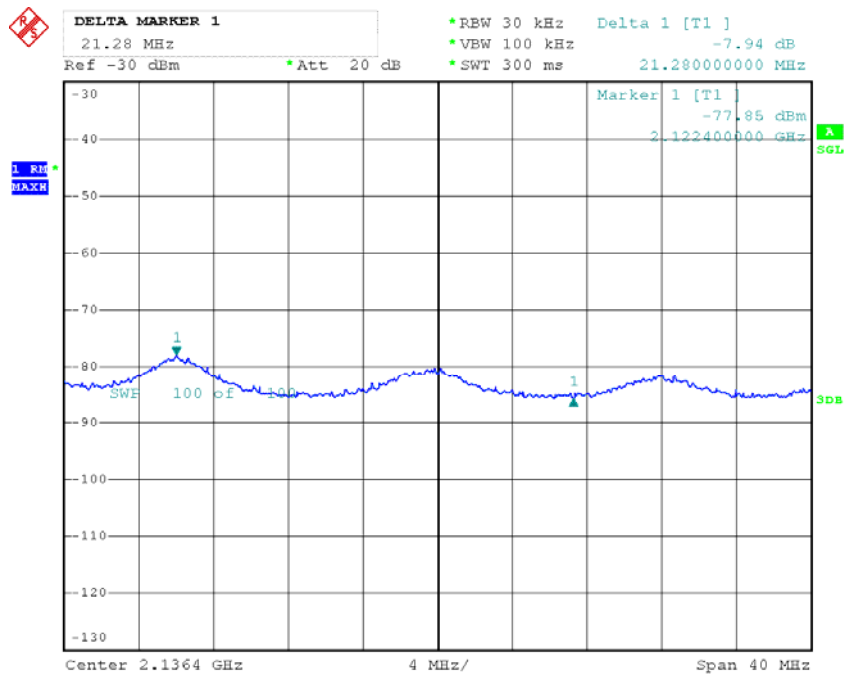
AWS Band



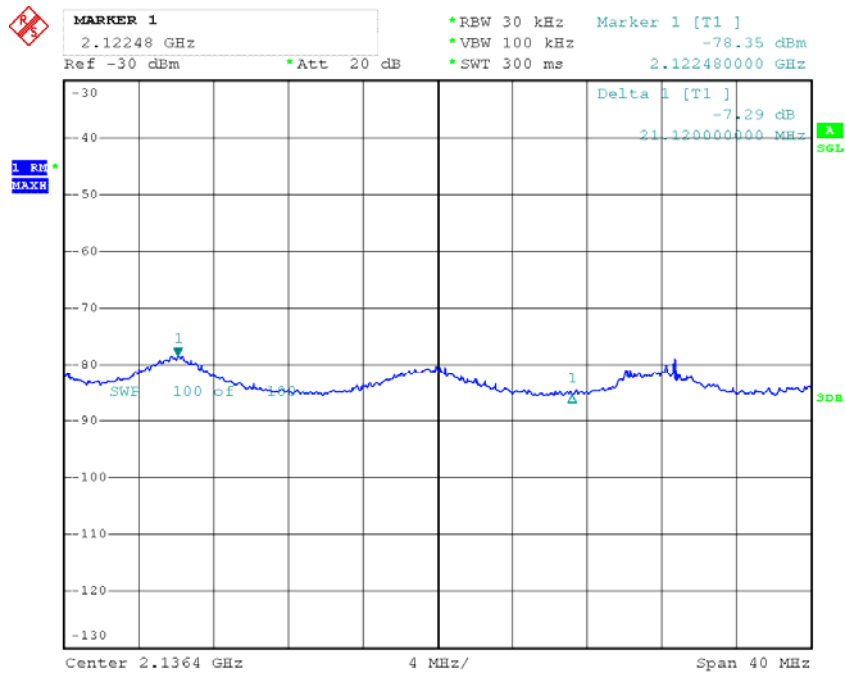
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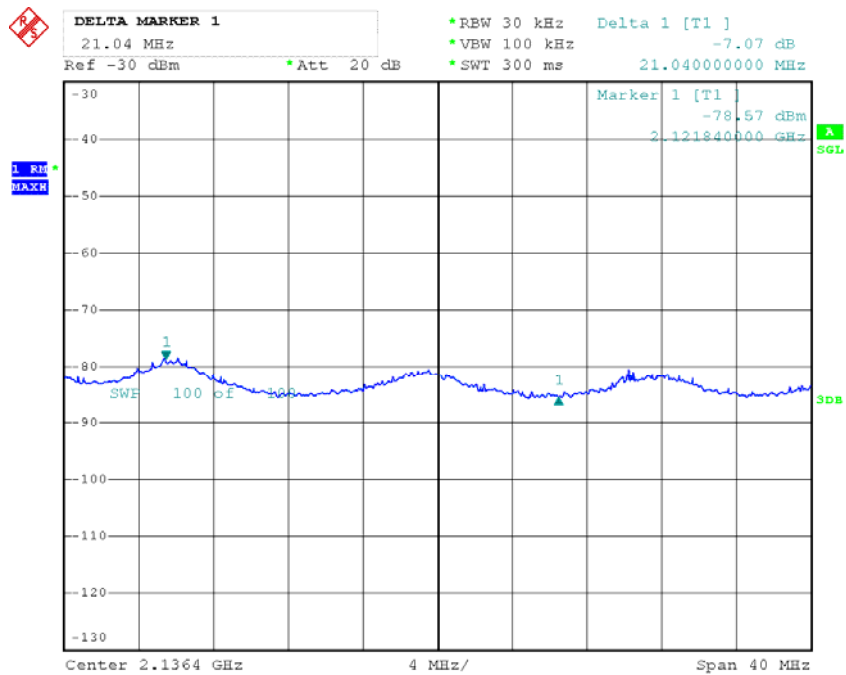
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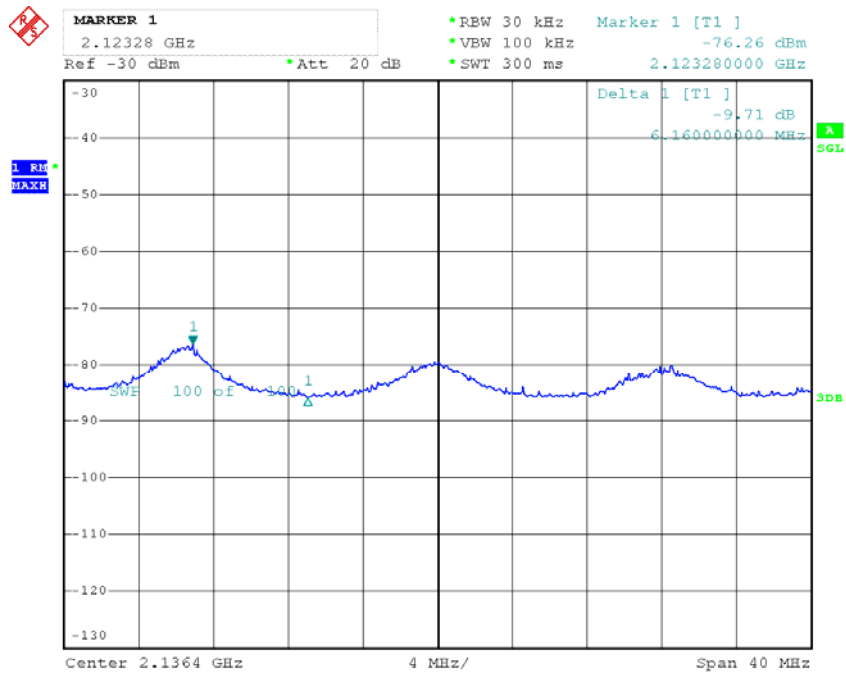
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Date: 23.APR.2019 17:25:19

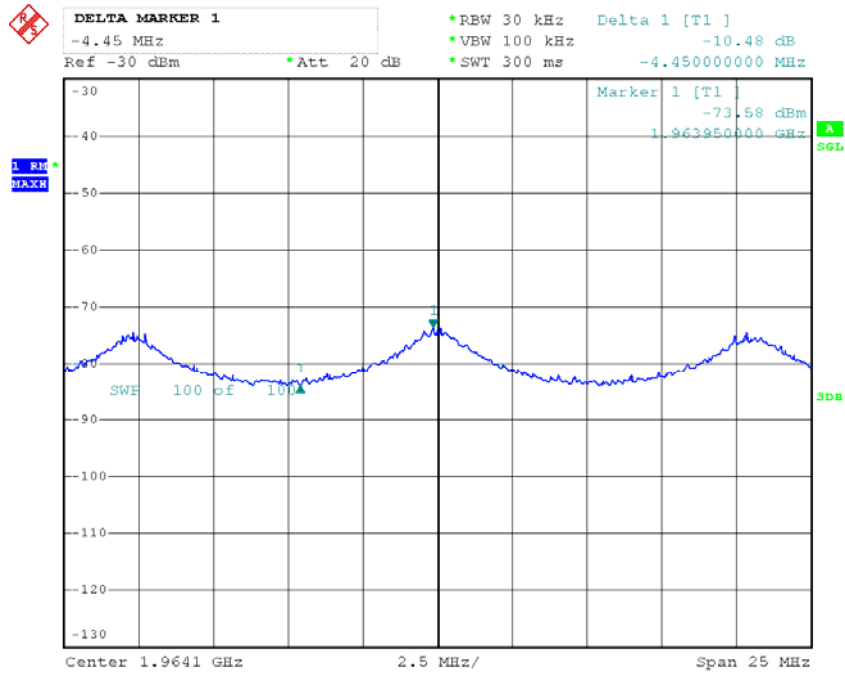


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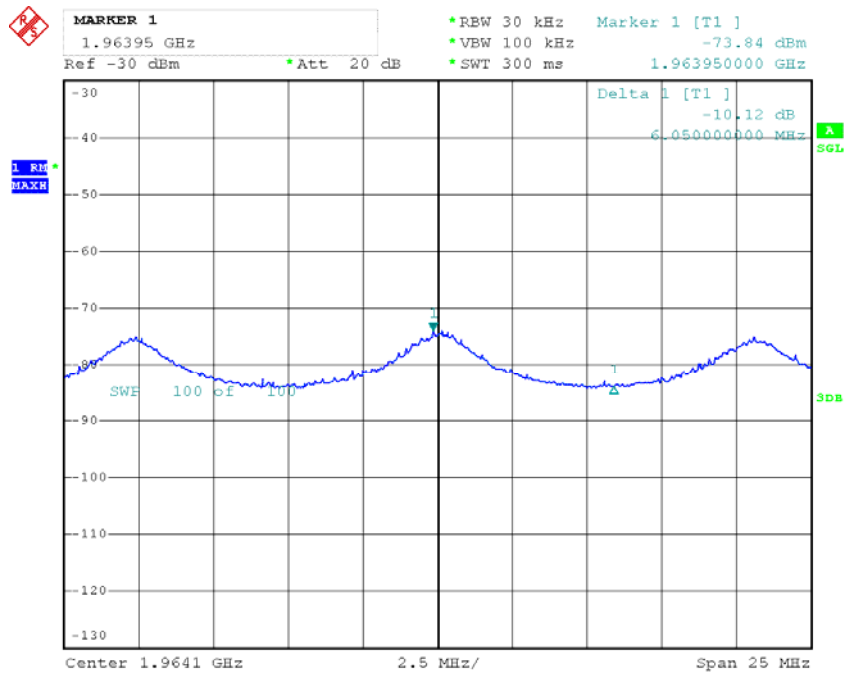


Date: 23.APR.2019 17:20:37

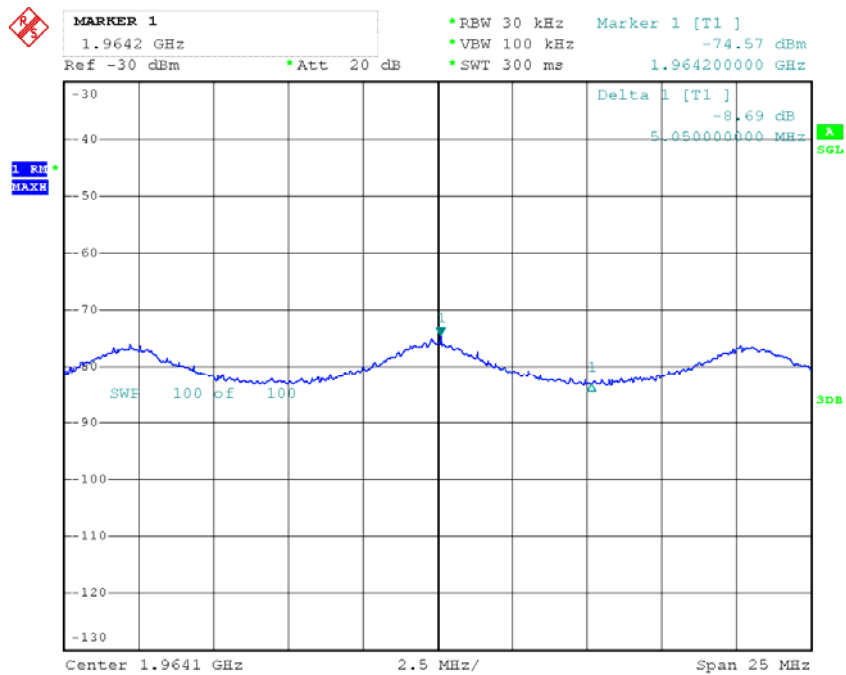
PCS Band



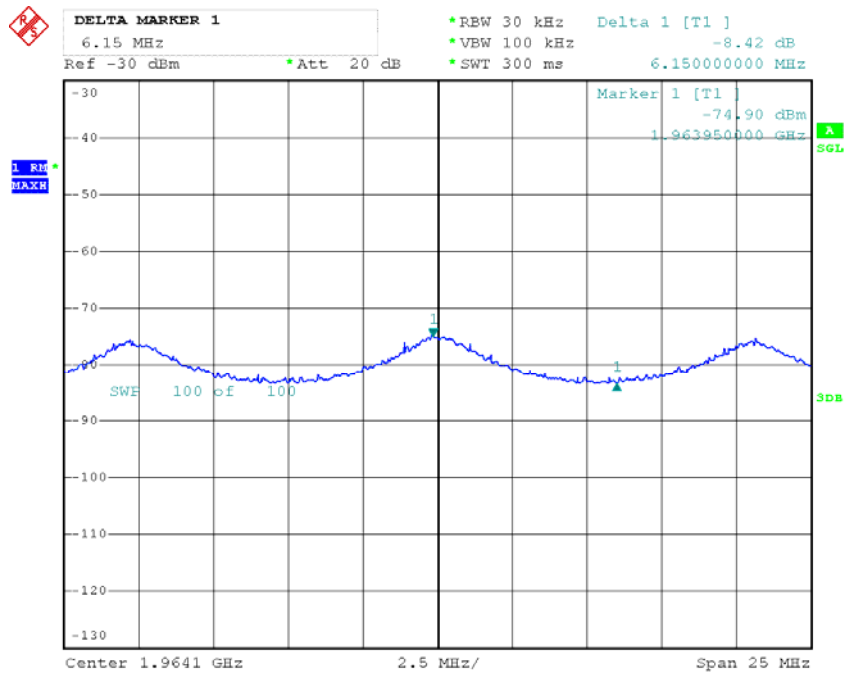
Date: 23.APR.2019 17:34:31



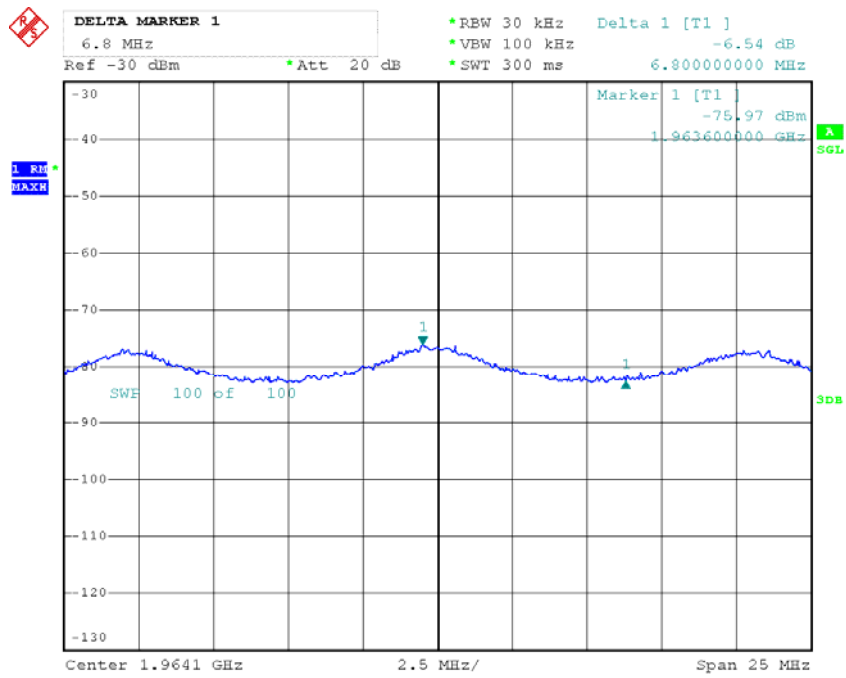
Date: 23.APR.2019 17:33:25



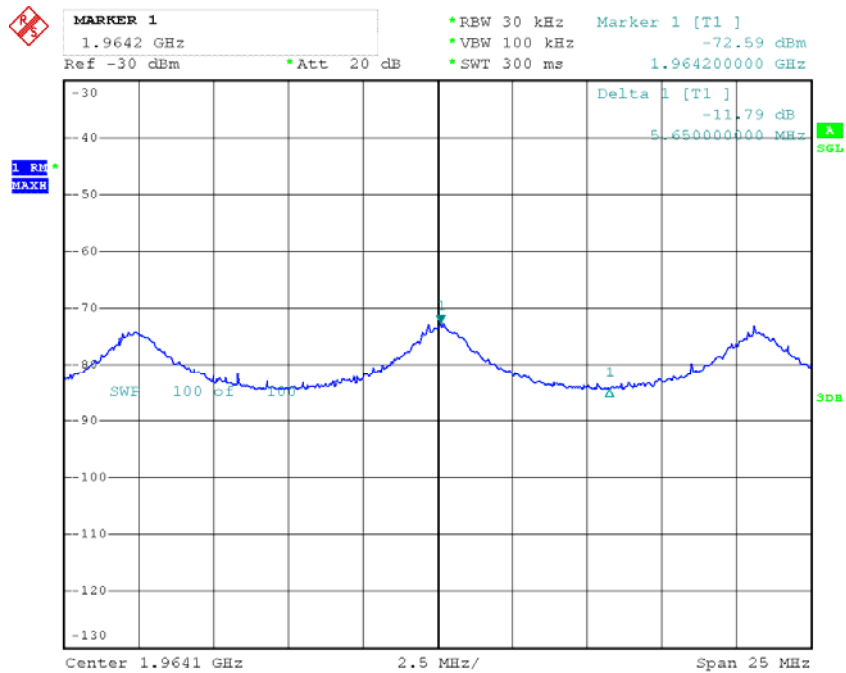
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Date: 23.APR.2019 17:35:15



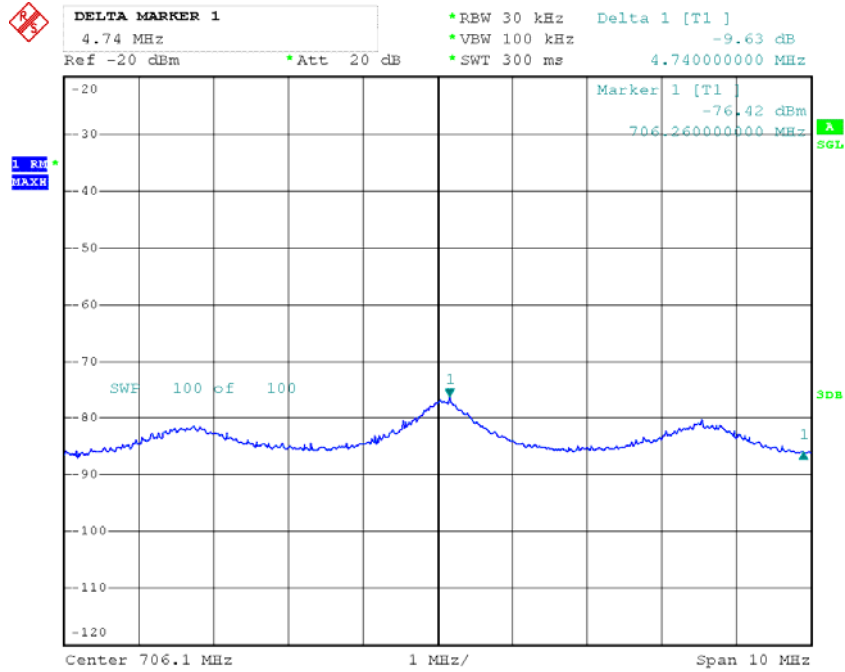
Date: 23.APR.2019 17:37:24



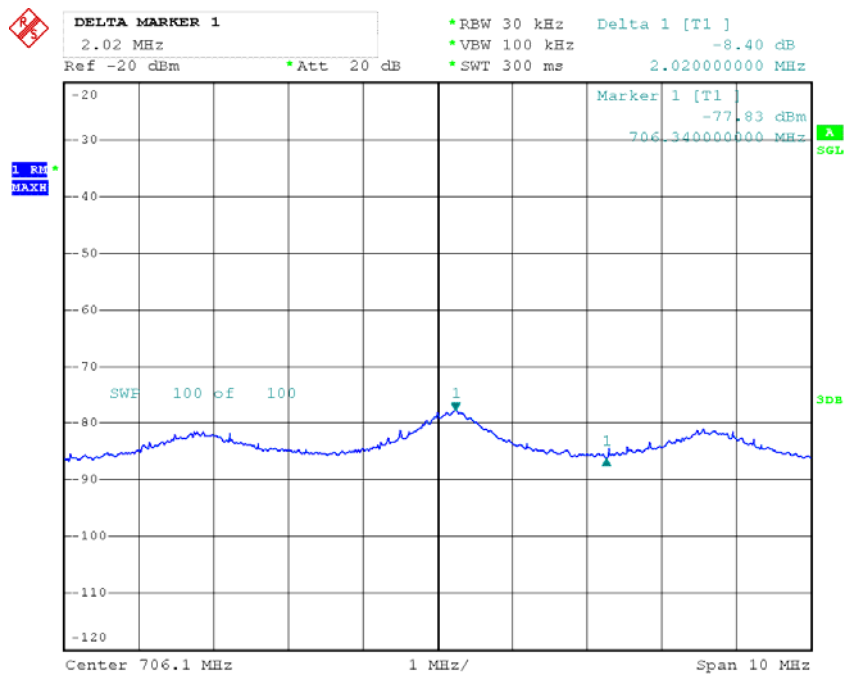
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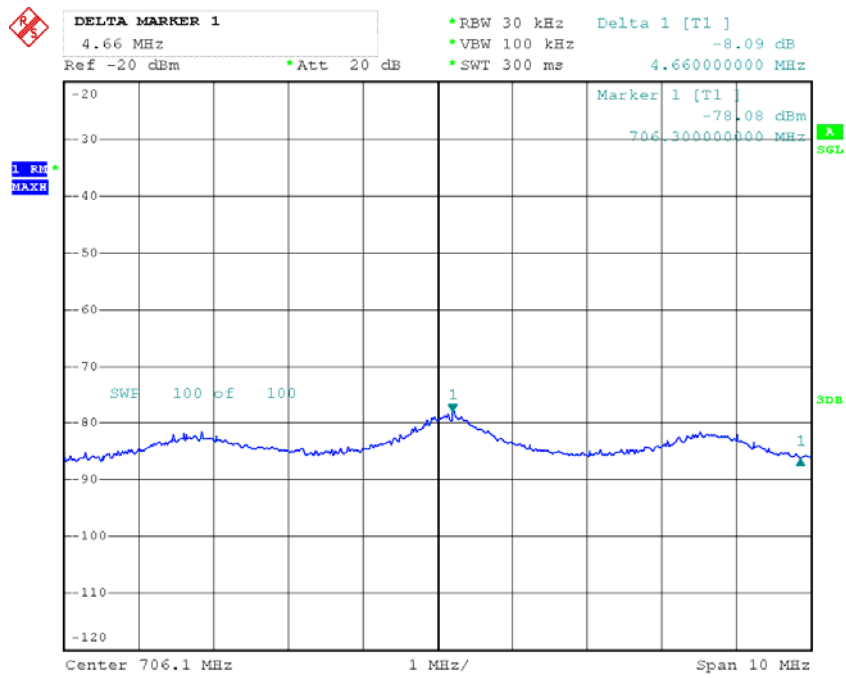
Lower 700MHz Band



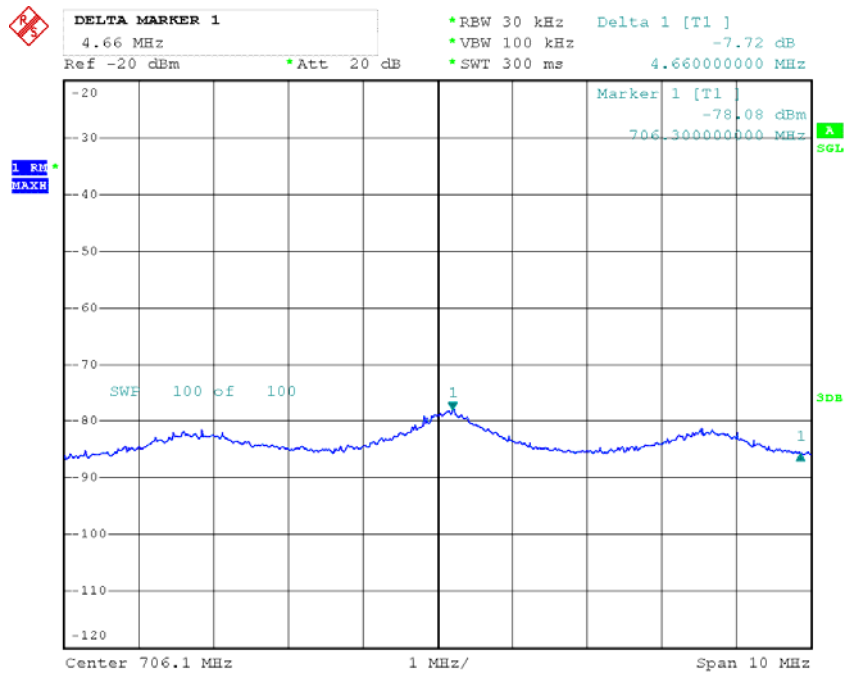
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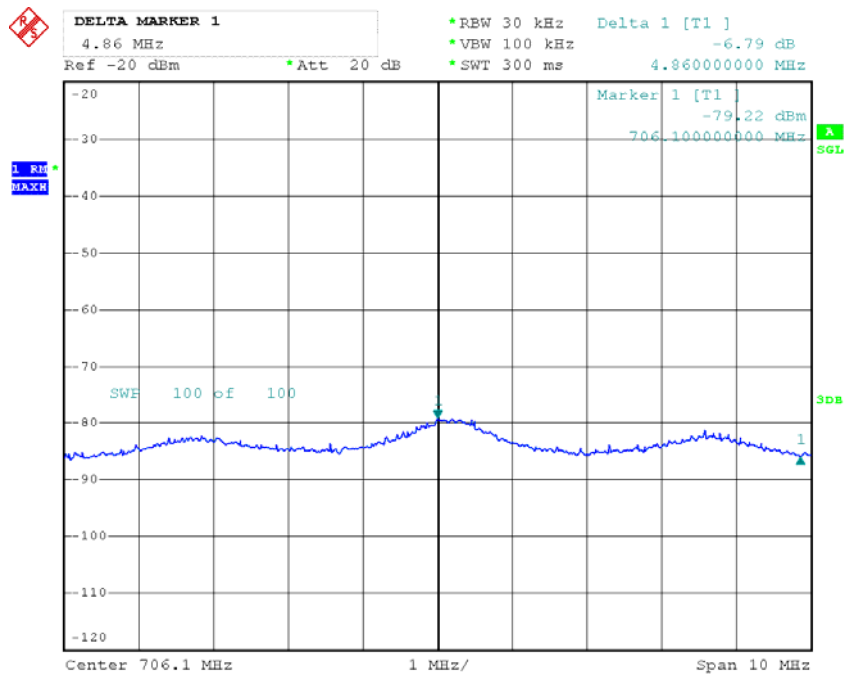
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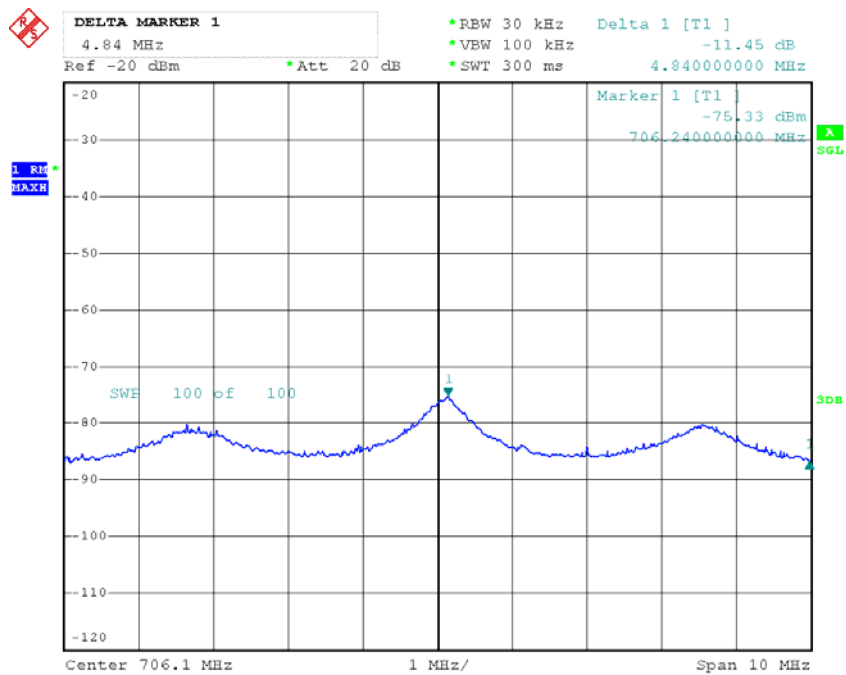
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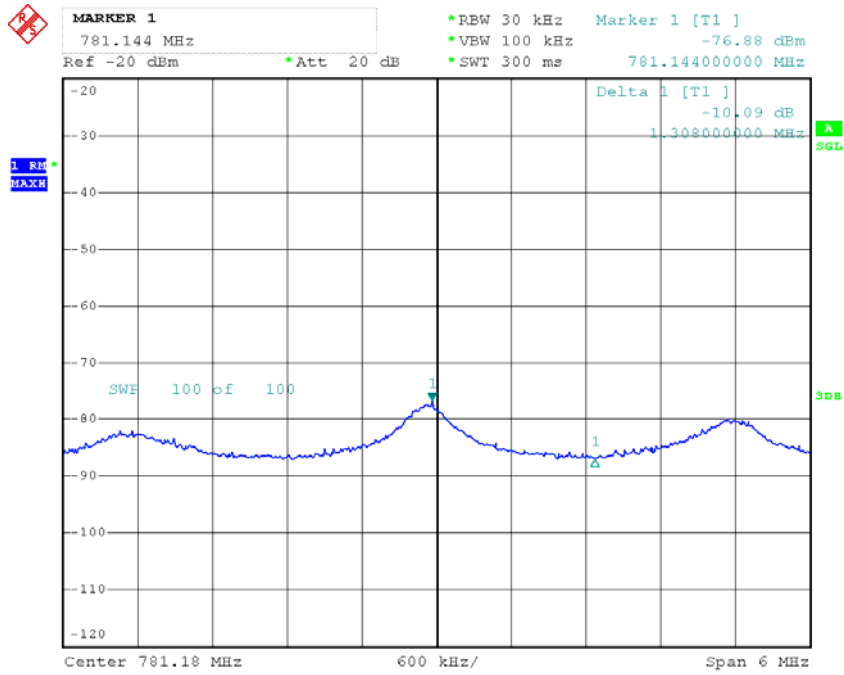


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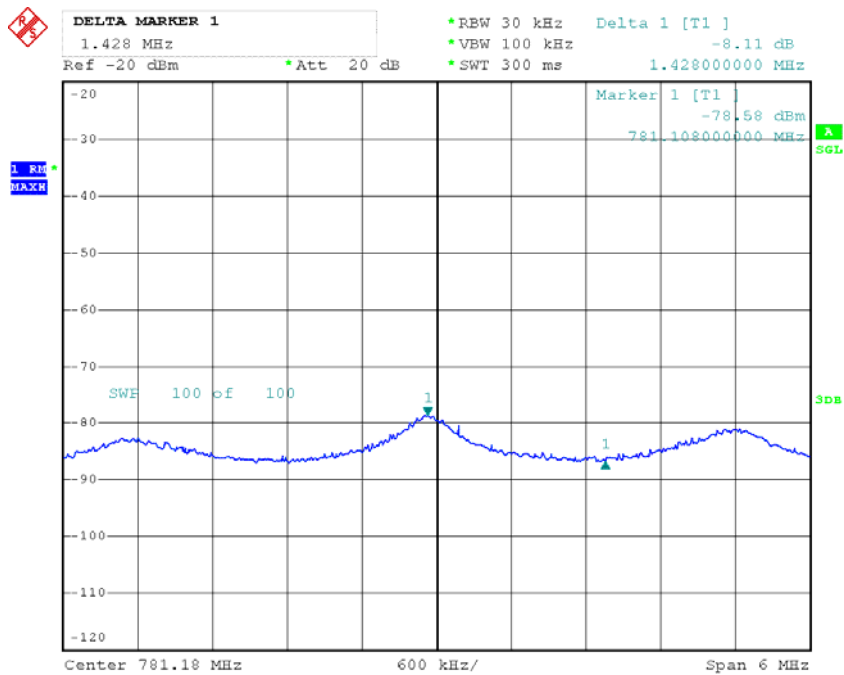


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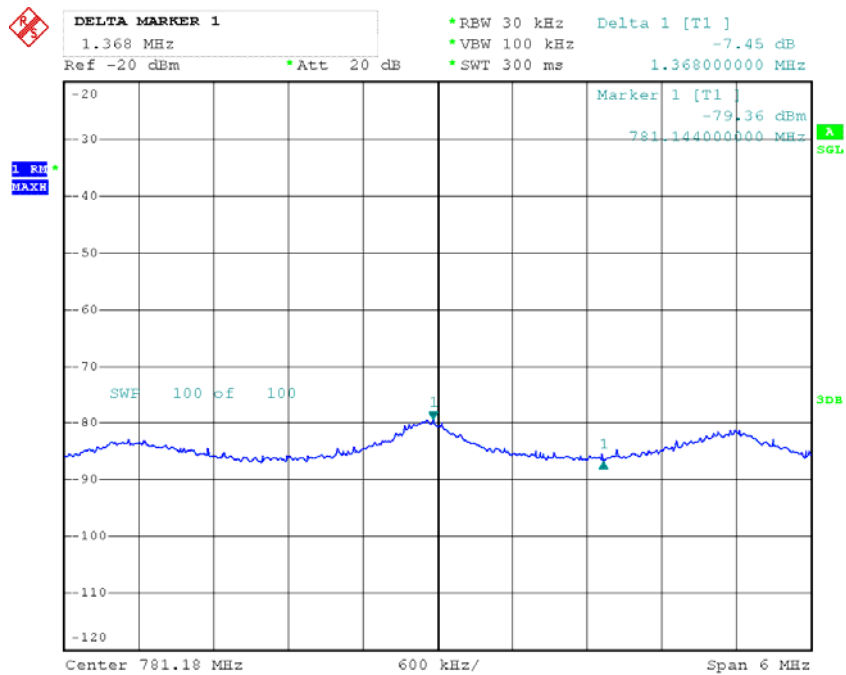
Upper 700MHz Band



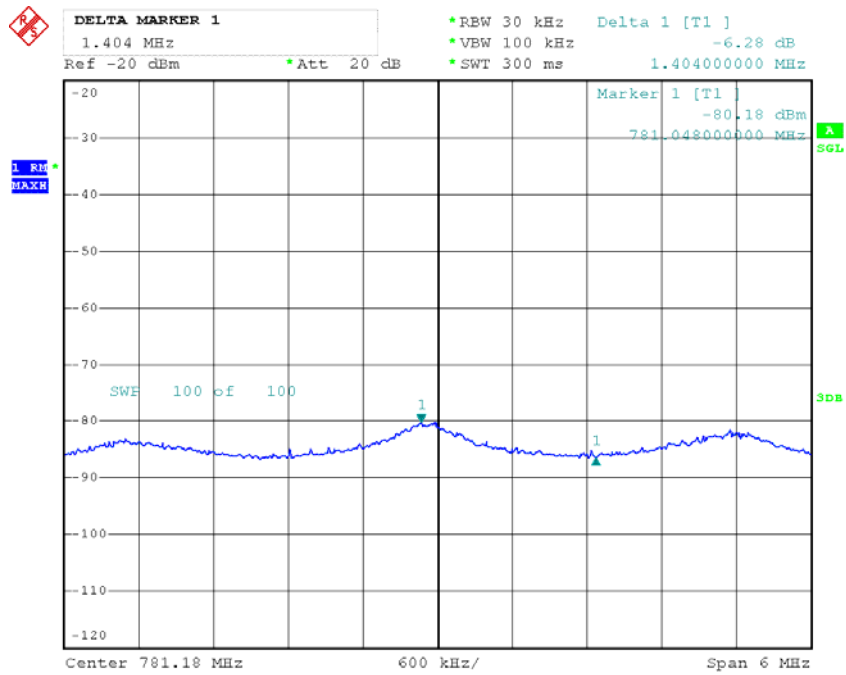
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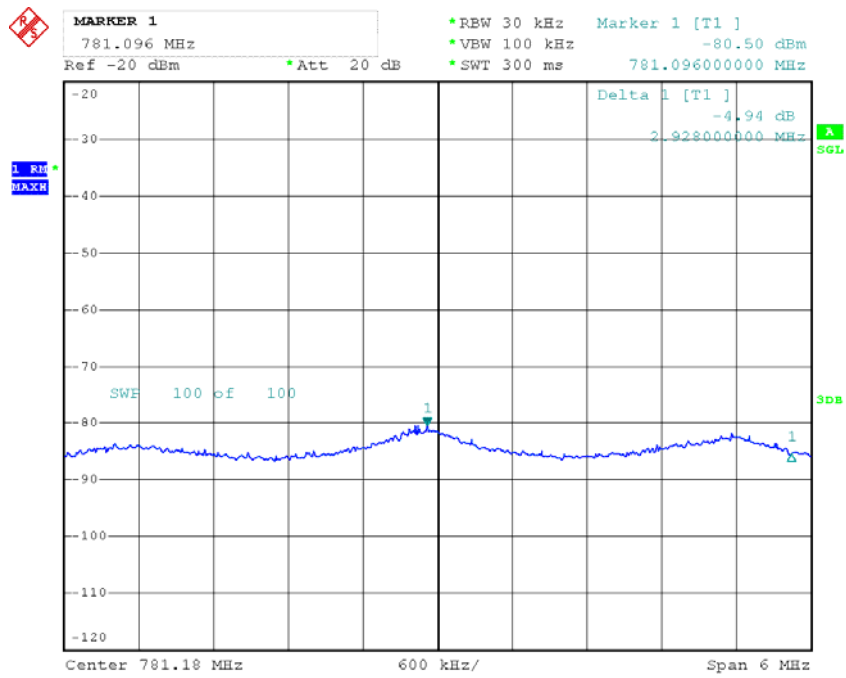
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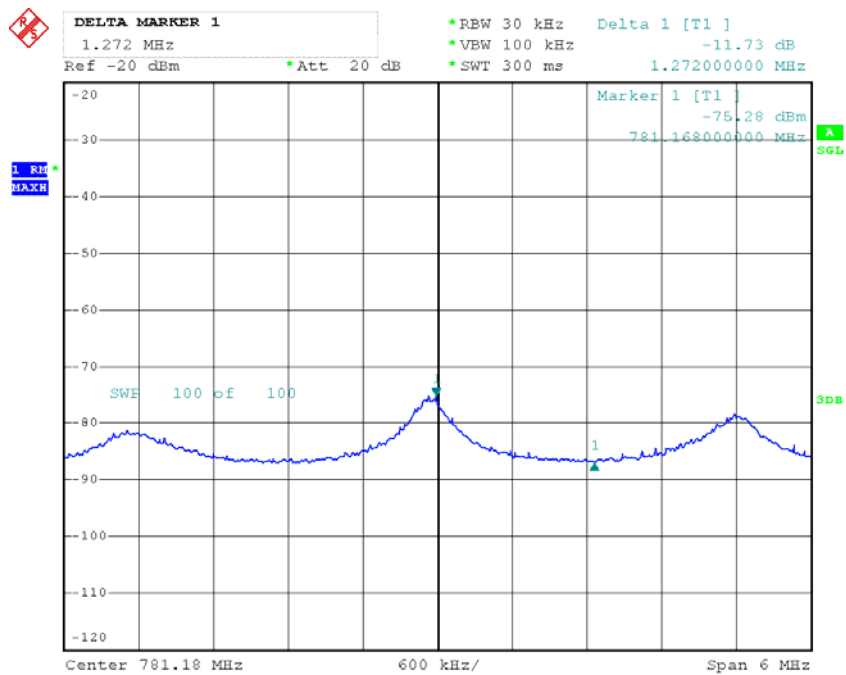
Date: 23.APR.2019 18:36:31



Date: 23.APR.2019 18:37:19

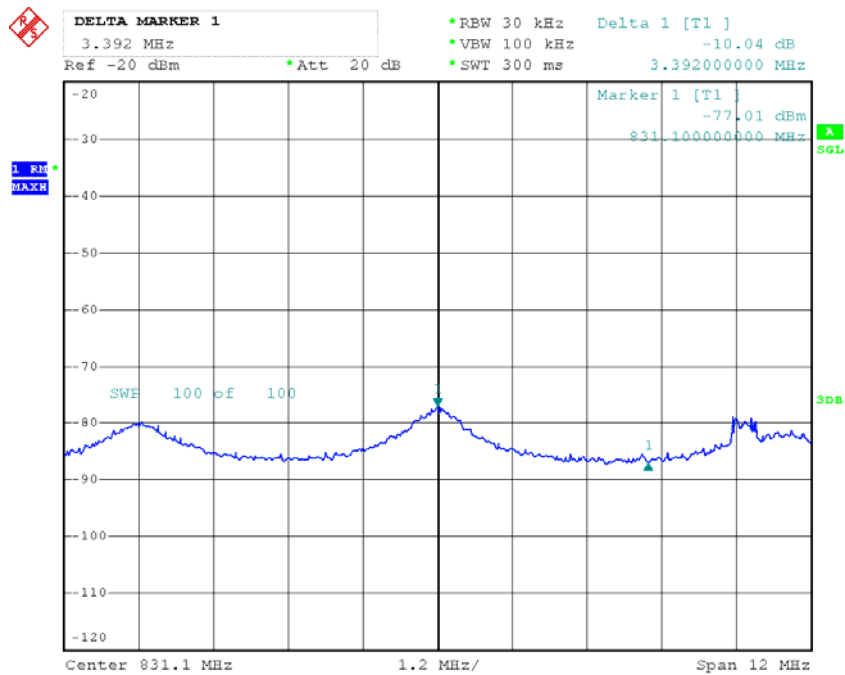


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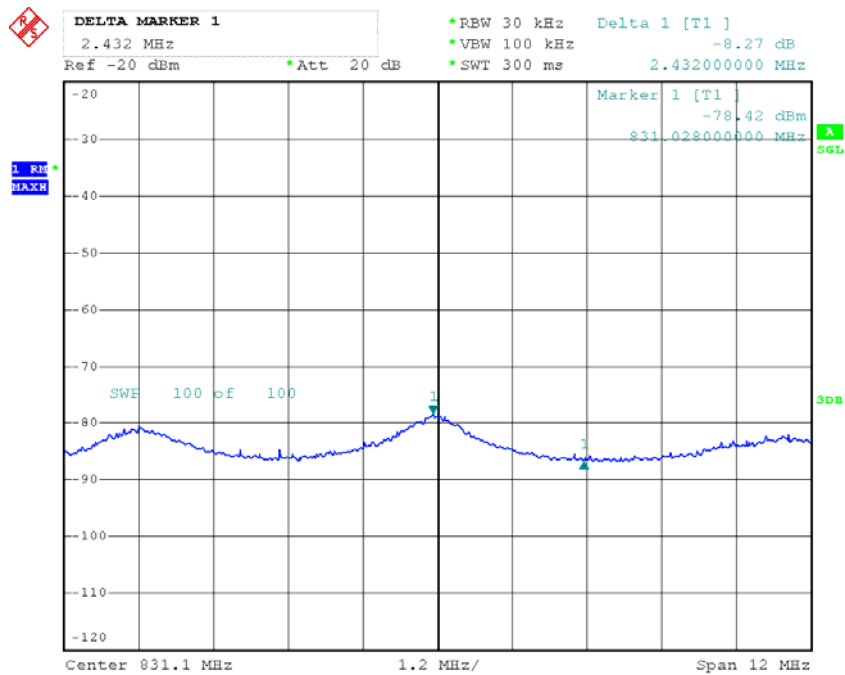


Date: 23.APR.2019 18:33:52

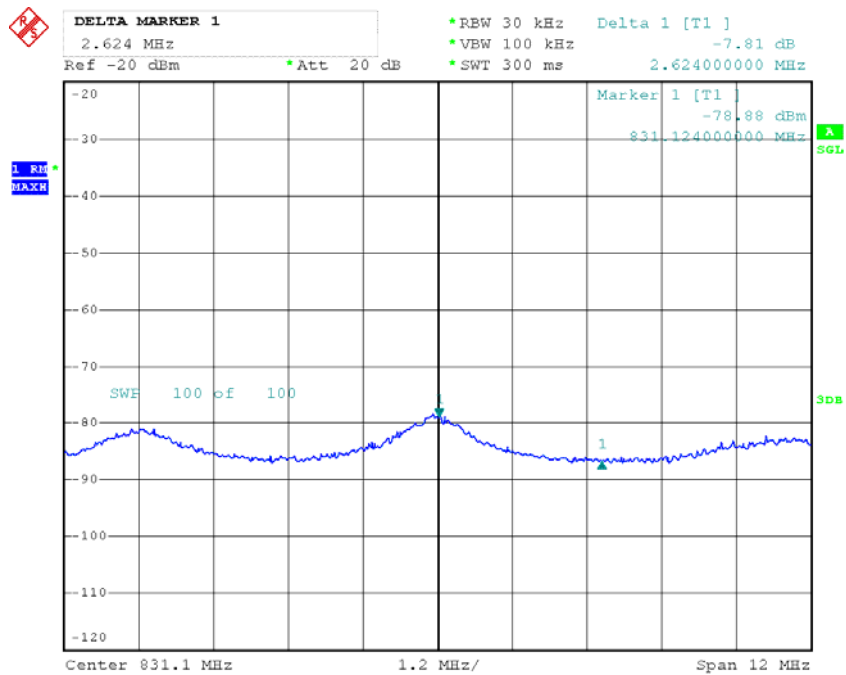
Cellular Band



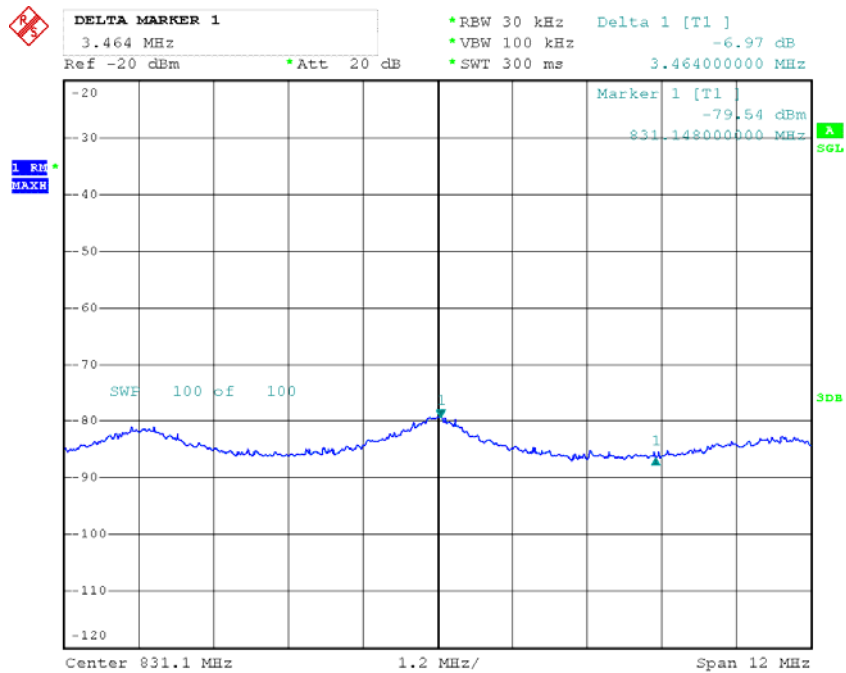
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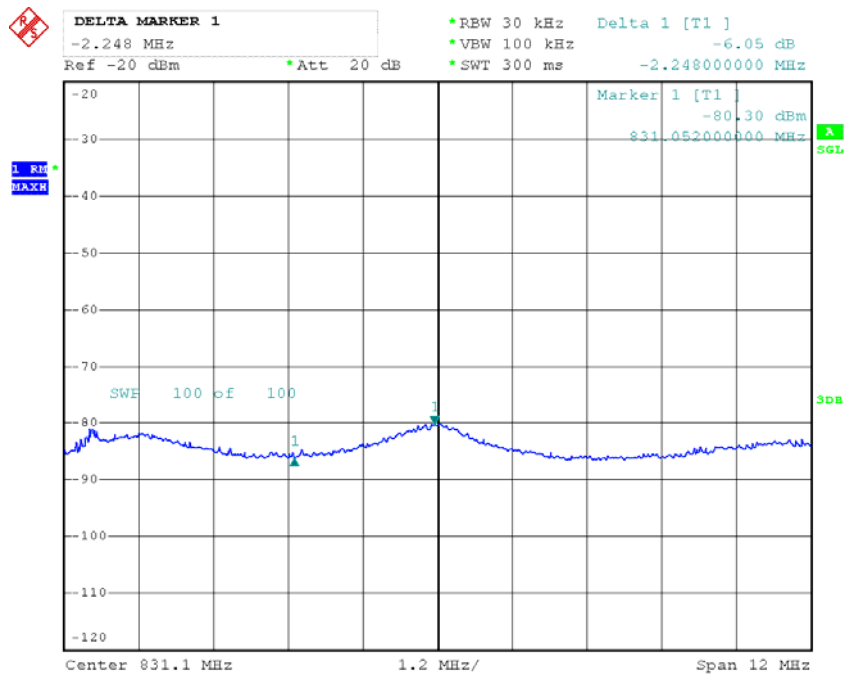
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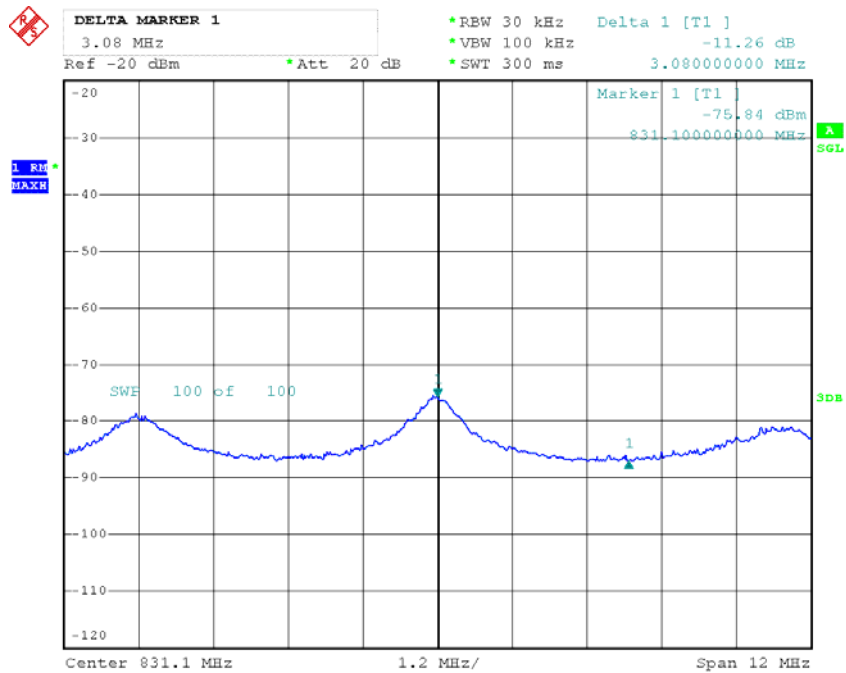
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Date: 23.APR.2019 18:21:31

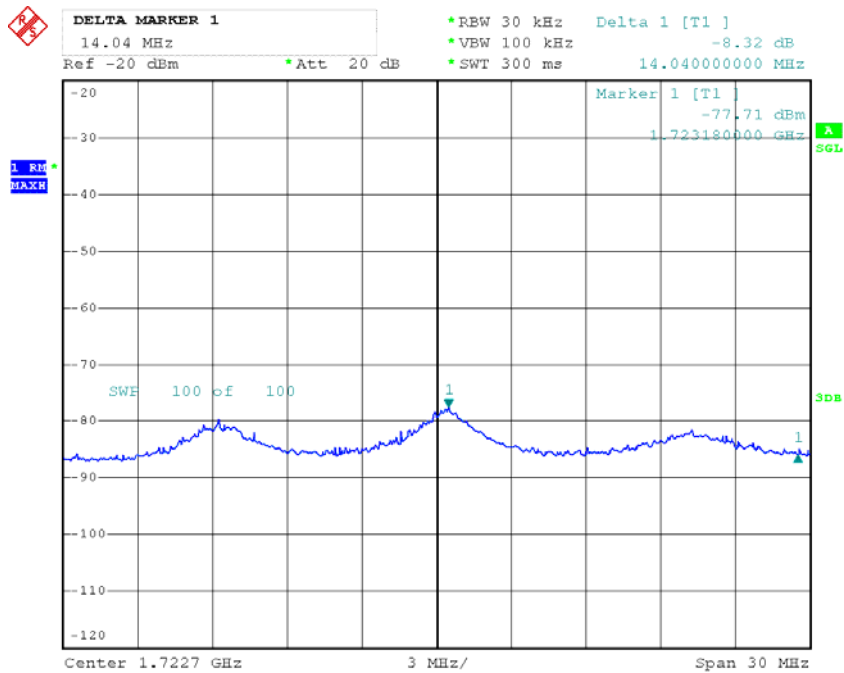
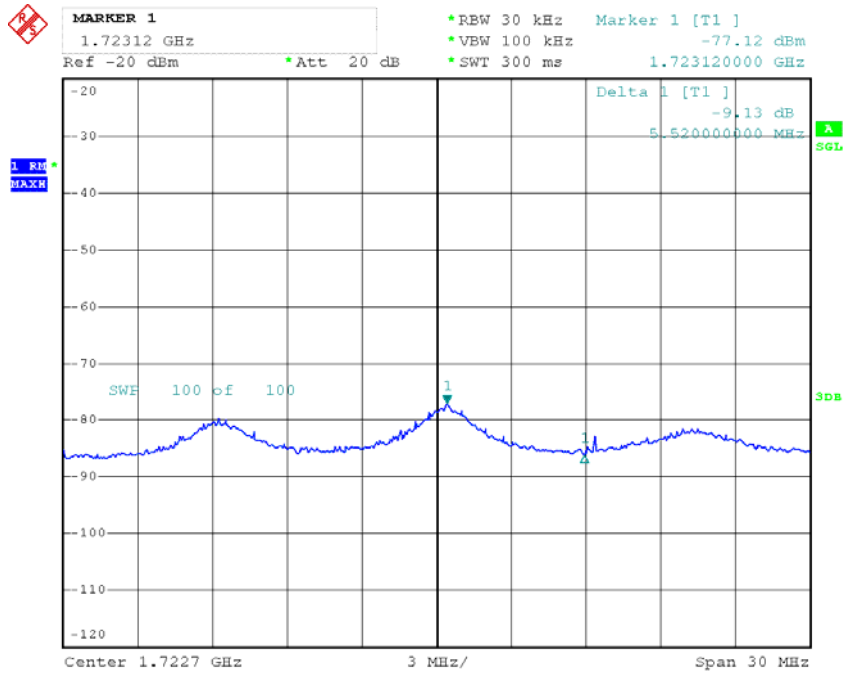


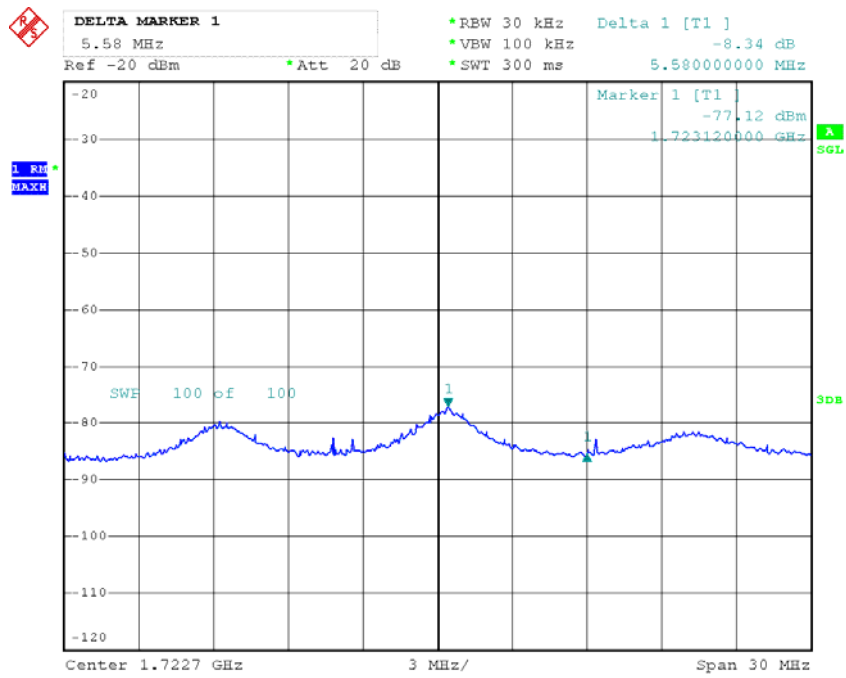
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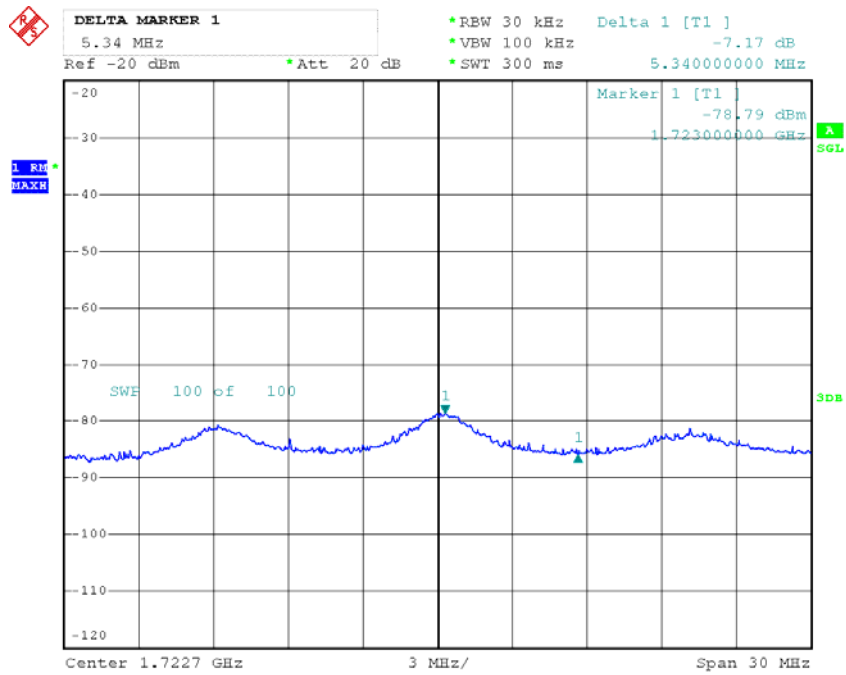
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AWS Band

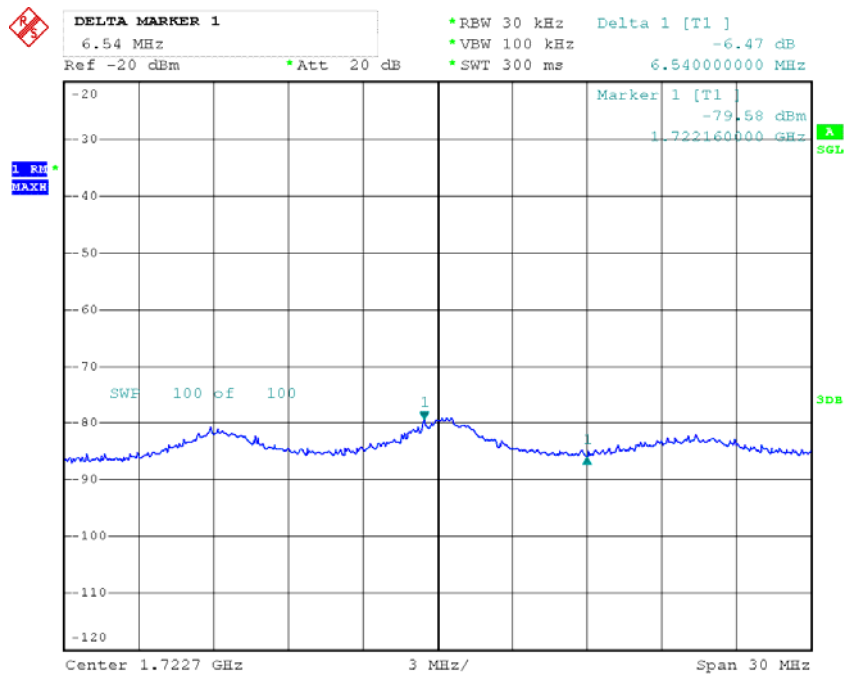




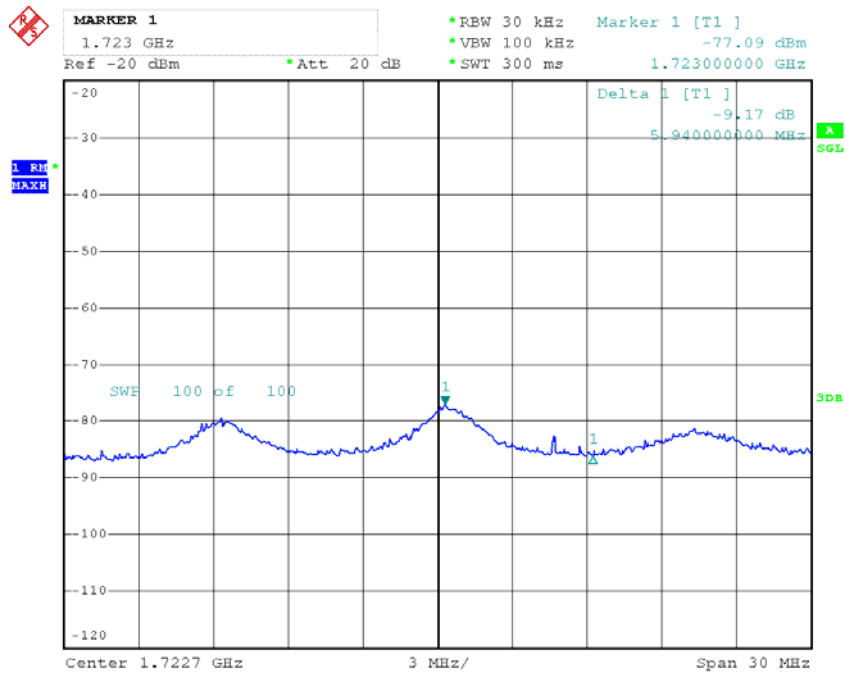
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Date: 23.APR.2019 18:12:29

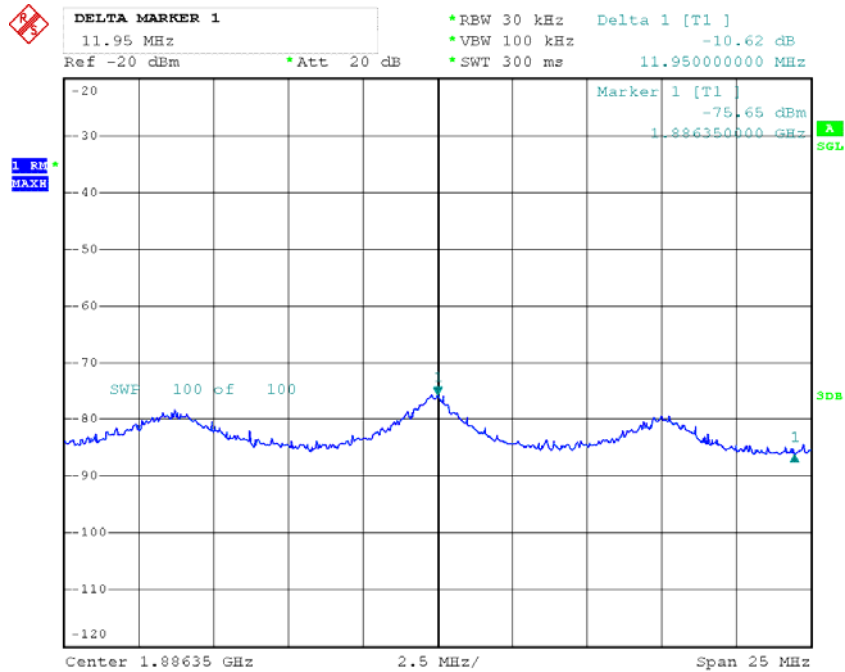


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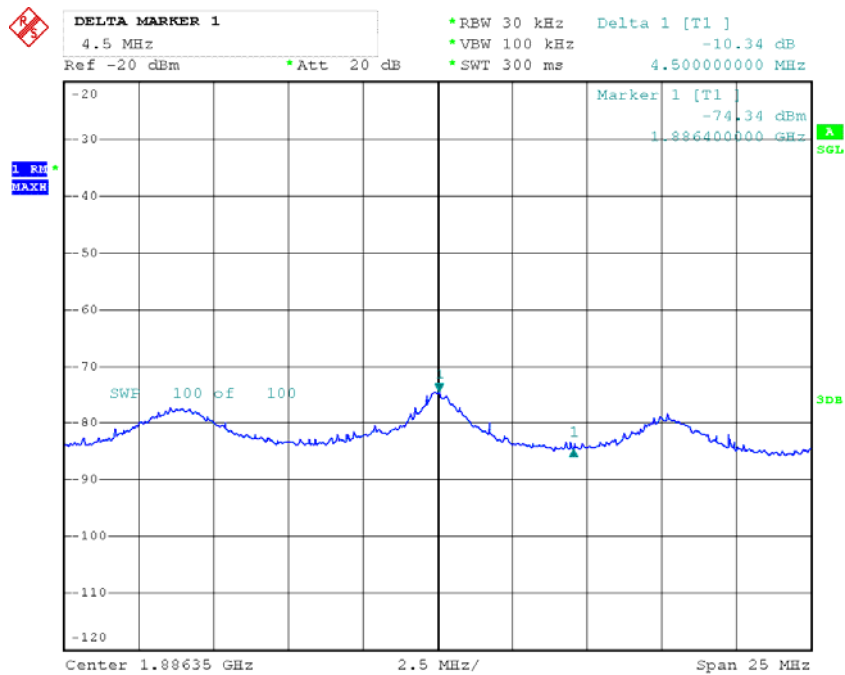


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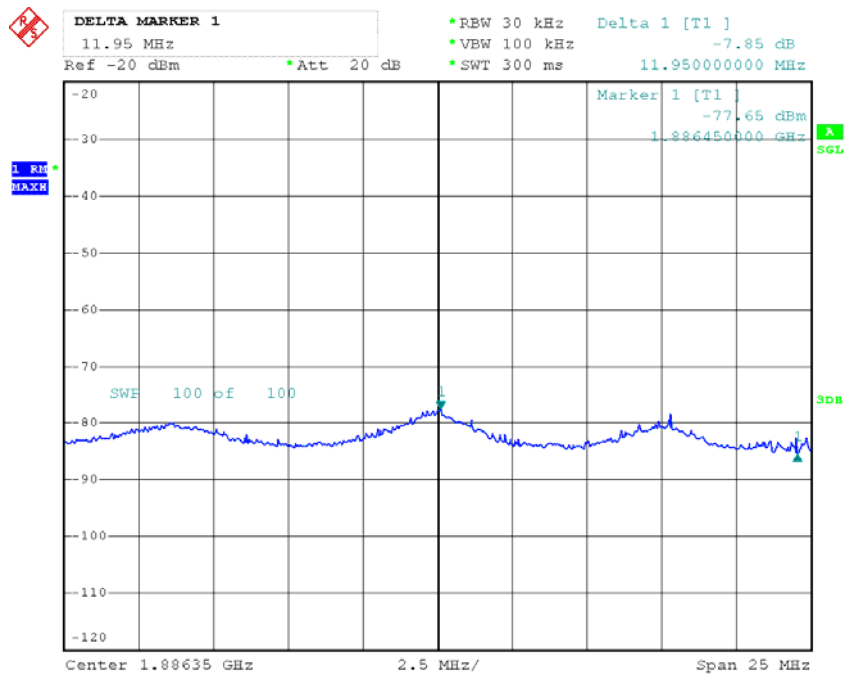
PCS Band



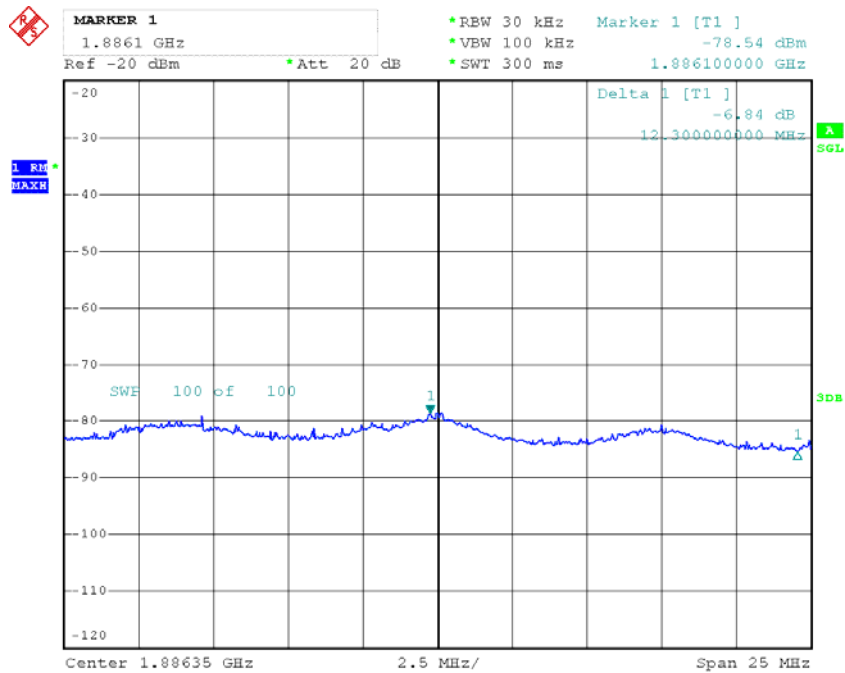
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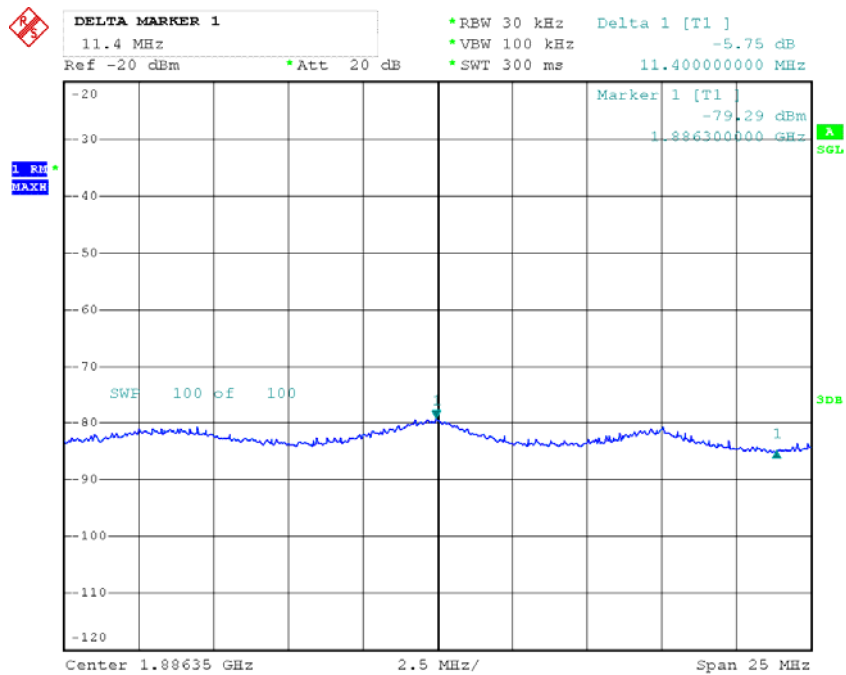
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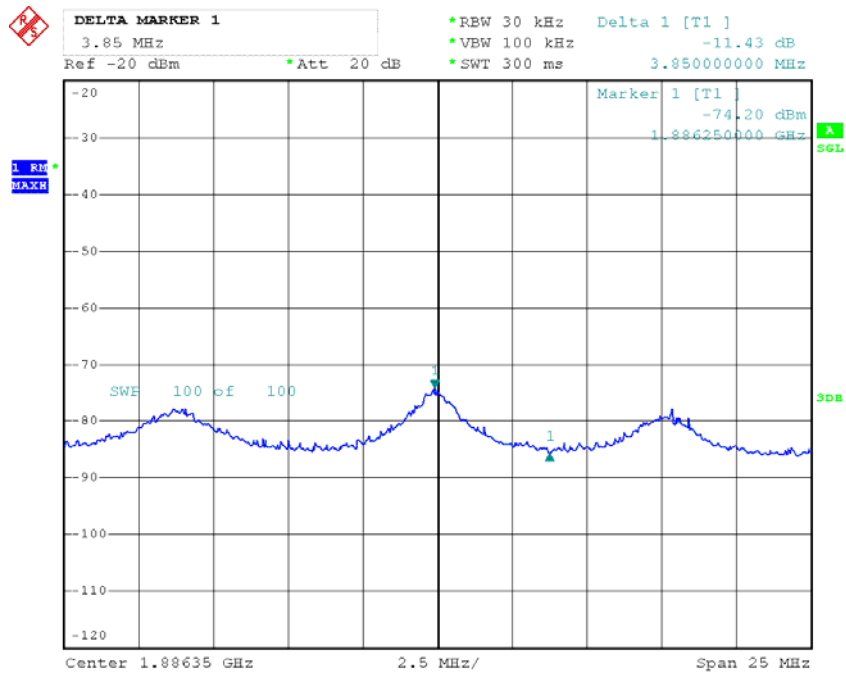
Date: 23.APR.2019 17:58:46



Date: 23.APR.2019 18:01:11



Date: 23.APR.2019 18:03:20



Date: 23.APR.2019 17:44:24

§2.1051- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standards

FCC §2.1051 *Measurements required: Spurious emissions at antenna terminals.*

§20.21(e)(8)(i)(E): Booster out of band emissions (OOBE) shall be at least 6 dB below the FCC's mobile emission limits for the supported bands of operation. Compliance to OOBE limits will utilize high peak-to-average CMRS signal types.

§22.917 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

§24.238 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

§27.53: the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;

Test Procedure

The following procedures shall be used to demonstrate compliance to the applicable conducted spurious emissions limits as per § 2.1051.

Note: *For frequencies below 1 GHz, an RBW of 1 MHz may be used in a preliminary measurement. If non-compliant emissions are detected, a final measurement shall be made with a 100 kHz RBW. Additionally, a peak detector may also be used for the preliminary measurement. If non-compliant emissions are detected then a final measurement of these emissions shall be made with the power averaging (RMS) detector.*

- a) Connect the EUT to the test equipment as shown in **Figure 1**. Begin with the uplink output connected to the spectrum analyzer.
- b) Configure the signal generator for AWGN with a 99% occupied bandwidth of 4.1 MHz with a center frequency corresponding to the center of the CMRS band under test.
- c) Set the signal generator amplitude to the level determined in the power measurement procedure in 7.2.
- d) Turn on the signal generator RF output and measure the spurious emission power levels with an appropriate measurement instrument as follows.
 - 1) Set RBW = measurement bandwidth specified in the applicable rule section for the operational frequency band under consideration (see Annex A for relevant cross-references). Note that many of the individual rule sections permit the use of a narrower RBW (typically $\geq 1\%$ of the emission bandwidth) to enhance measurement accuracy, but the result must then be integrated over the specified measurement bandwidth.
 - 2) Set VBW = $3 \times$ RBW.
 - 3) Select the power averaging (RMS) detector. (See above note regarding the use of a peak detector for preliminary measurements.)
 - 4) Sweep time = auto-couple.
 - 5) Set the analyzer start frequency to the lowest radio frequency signal generated in the equipment, without going below 9 kHz, and the stop frequency to the lower band/block edge frequency minus 100 kHz or 1 MHz, as specified in the applicable rule part. Note that the number of measurement points in each sweep

must be $\geq (2 \times \text{span/RBW})$ which may require that the measurement range defined by the start and stop frequencies above be subdivided, depending on the available number of measurement points provided by the spectrum analyzer. Trace average at least 10 traces in power averaging (i.e., RMS) mode.

6) Use the peak marker function to identify the highest amplitude level over each measured frequency range. Record the frequency and amplitude and capture a plot for inclusion in the test report.

7) Reset the analyzer start frequency to the upper band/block edge frequency plus 100 kHz or 1 MHz, as specified in the applicable rule part, and the analyzer stop frequency to $10 \times$ the highest frequency of the fundamental emission. Note that the number of measurement points in each sweep must be $\geq (2 \times \text{span/RBW})$ which may require that the measurement range defined by the start and stop frequencies above be subdivided, depending on the available number of measurement points provided by the spectrum analyzer.

8) Use the peak marker function to identify the highest amplitude level over each of the measured frequency ranges. Record the frequency and amplitude and capture a plot for inclusion in the test report.

e) Repeat 7.6b) through 7.6d) for each supported frequency band of operation.

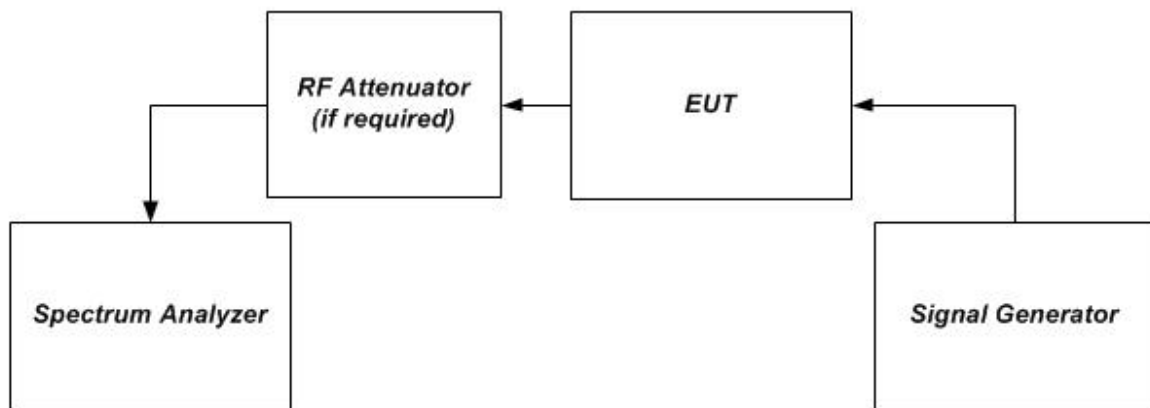


Figure 1 – Band verification test instrumentation setup

Test Data

Environmental Conditions

Temperature:	26.8 °C
Relative Humidity:	61 %
ATM Pressure:	101.5 kPa

The testing was performed by Blake Yang on 2019-04-15.

Test Mode: Transmitting, please refer to the following plots.

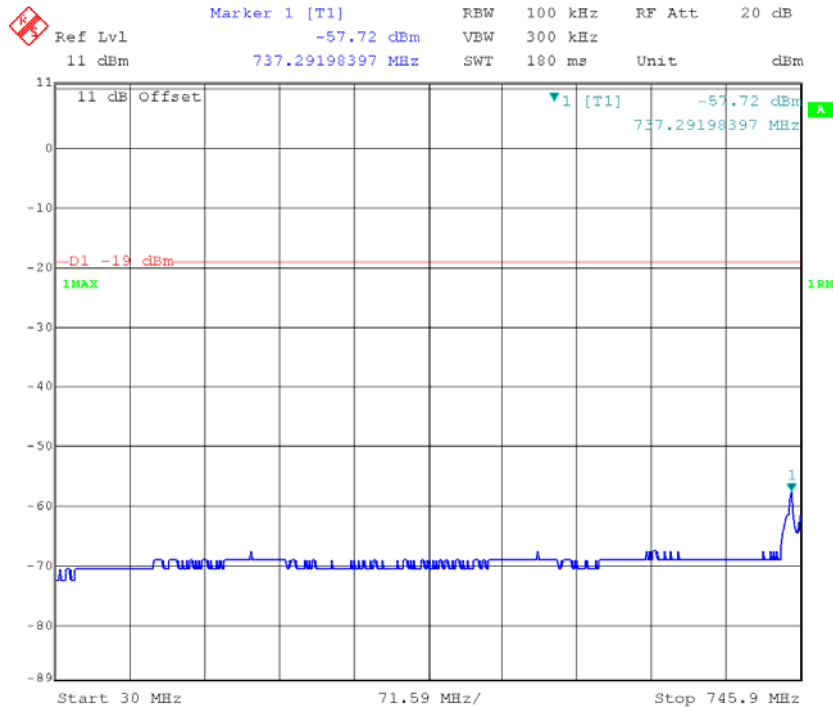
Test Result: Compliance.

Note: mobile emission limits for the supported bands of operation is $43 + 10 \log(P)$ dB=-13dBm, the out of band emissions (OOBE) shall be at least 6 dB below the FCC's mobile emission limits(-19dBm), the emissions compliance the emission limits -19dBm, Please refer to the following plots.

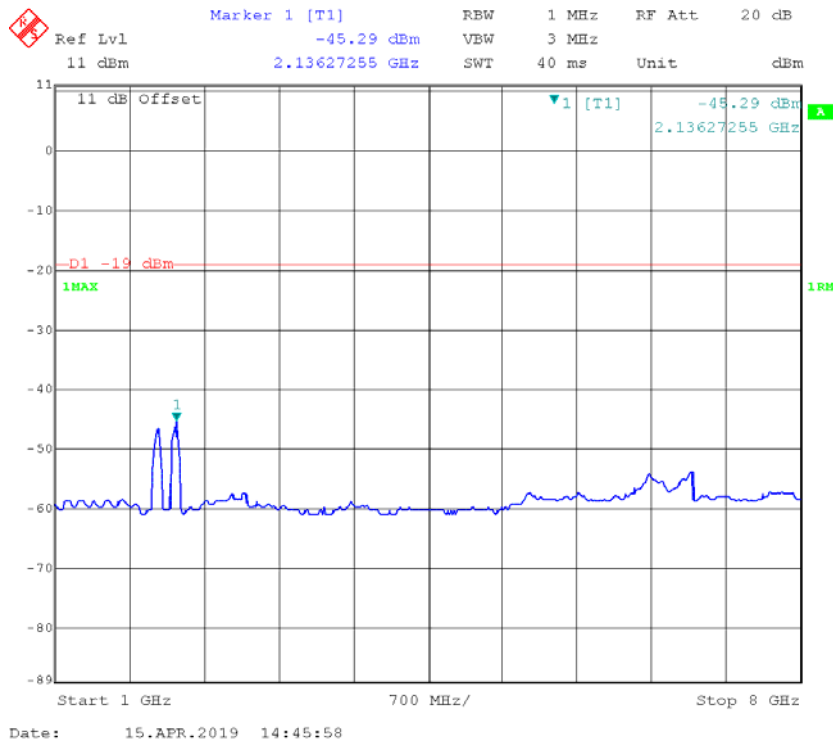
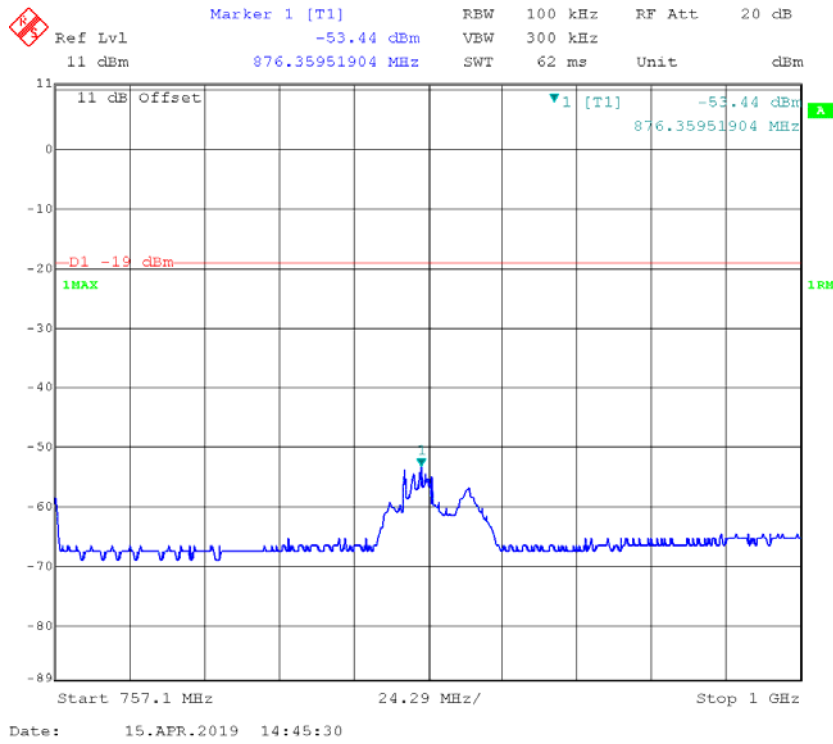


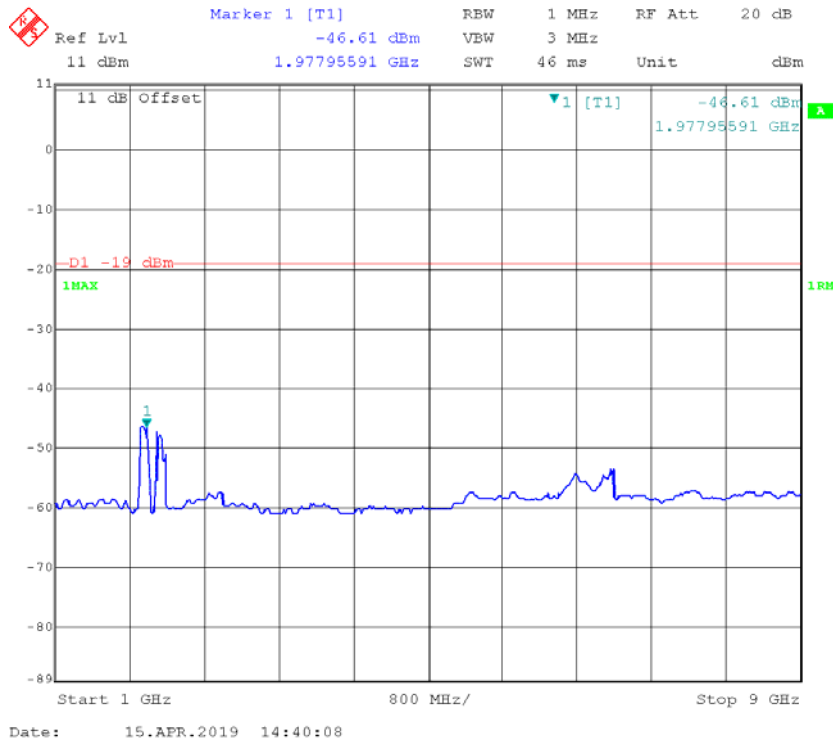
Date: 15.APR.2019 14:41:50

Upper 700MHz Band

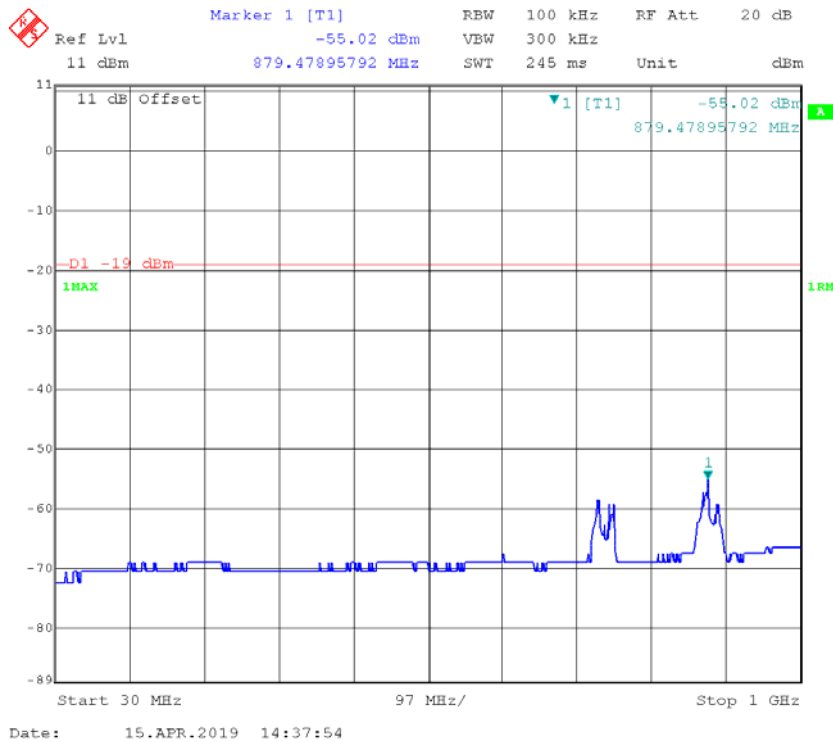


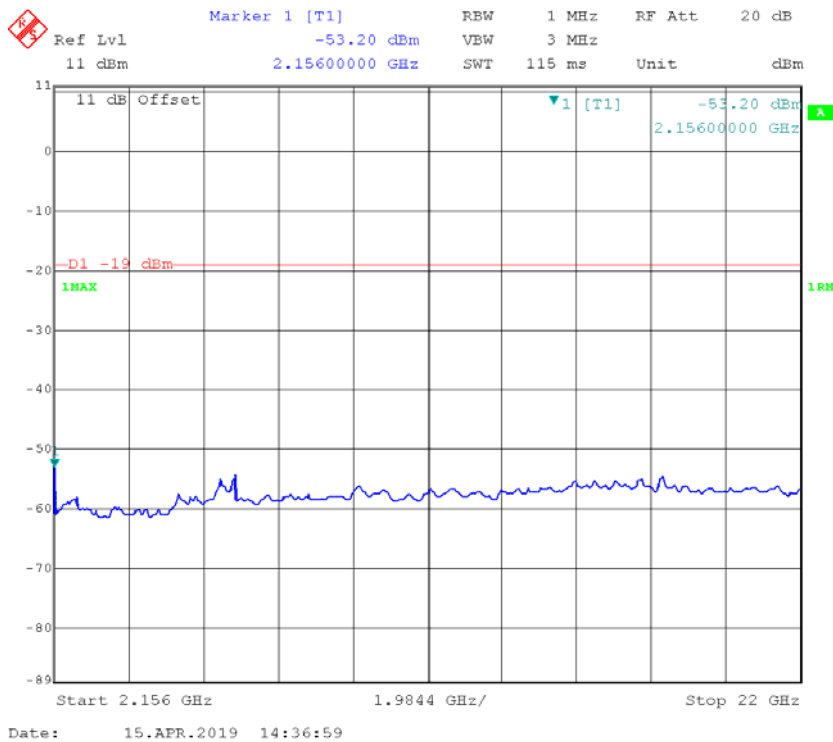
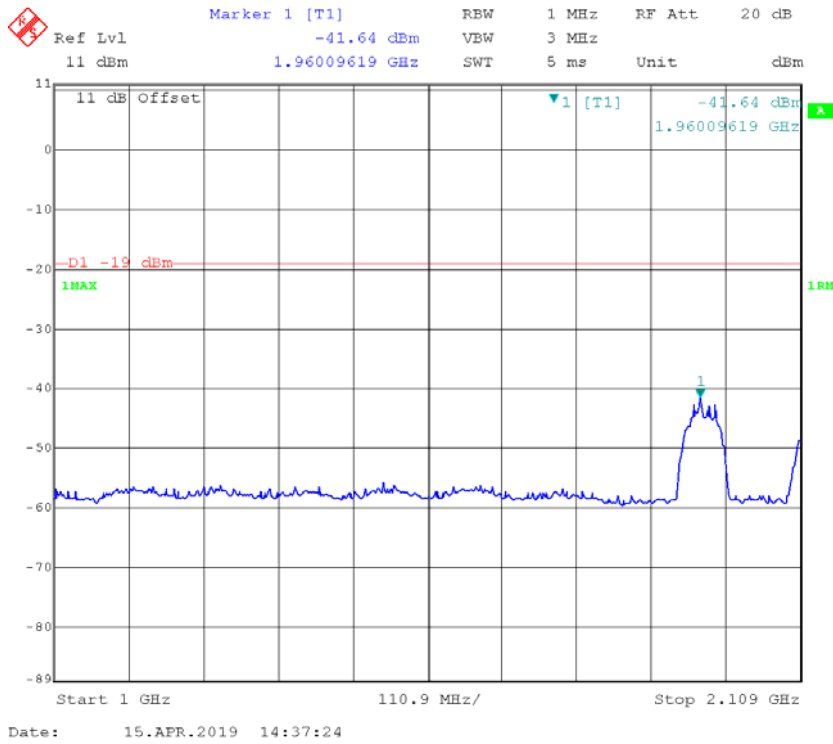
Date: 15.APR.2019 14:44:30



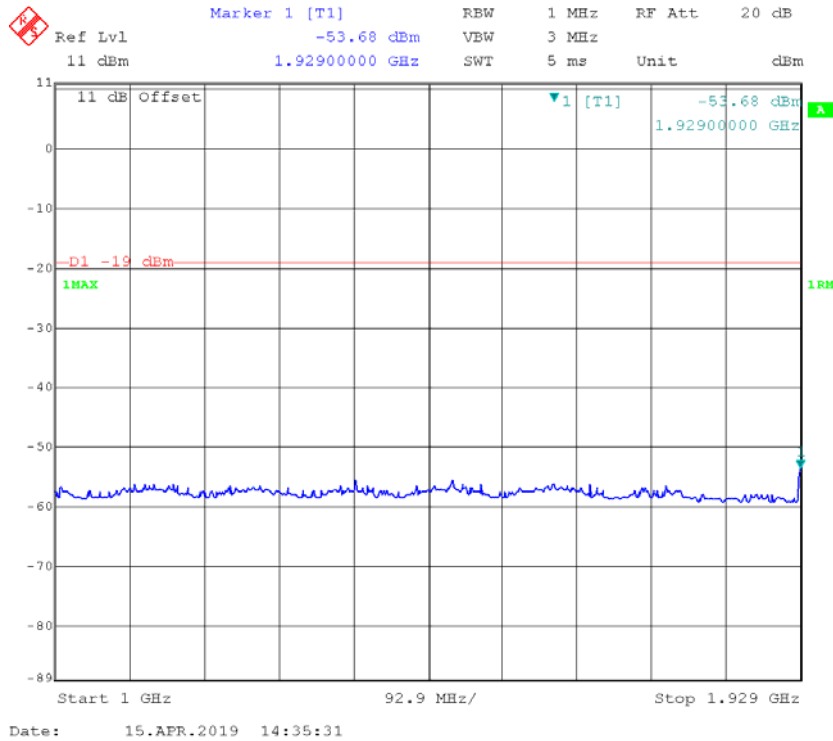
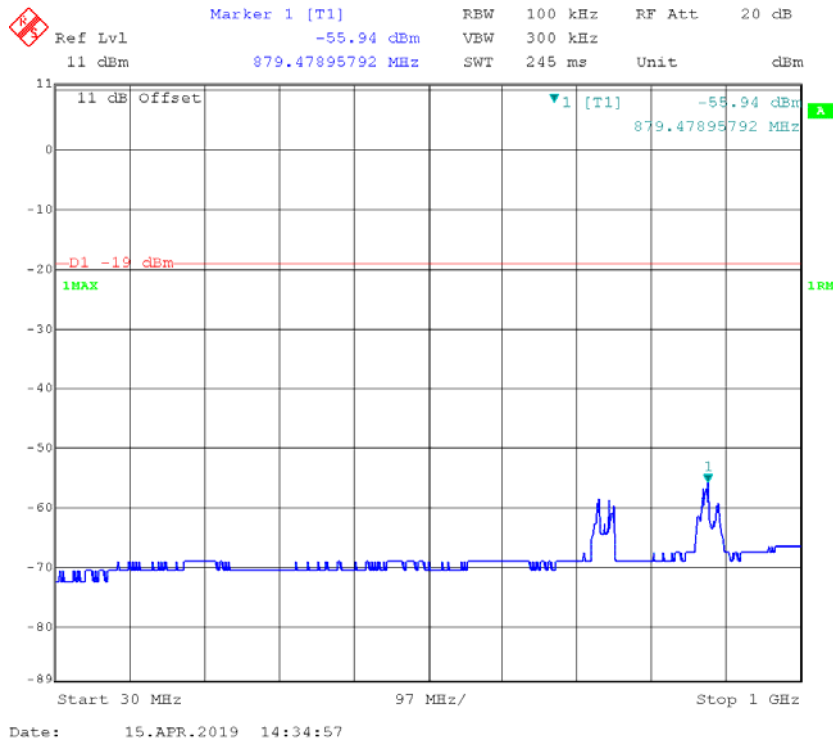


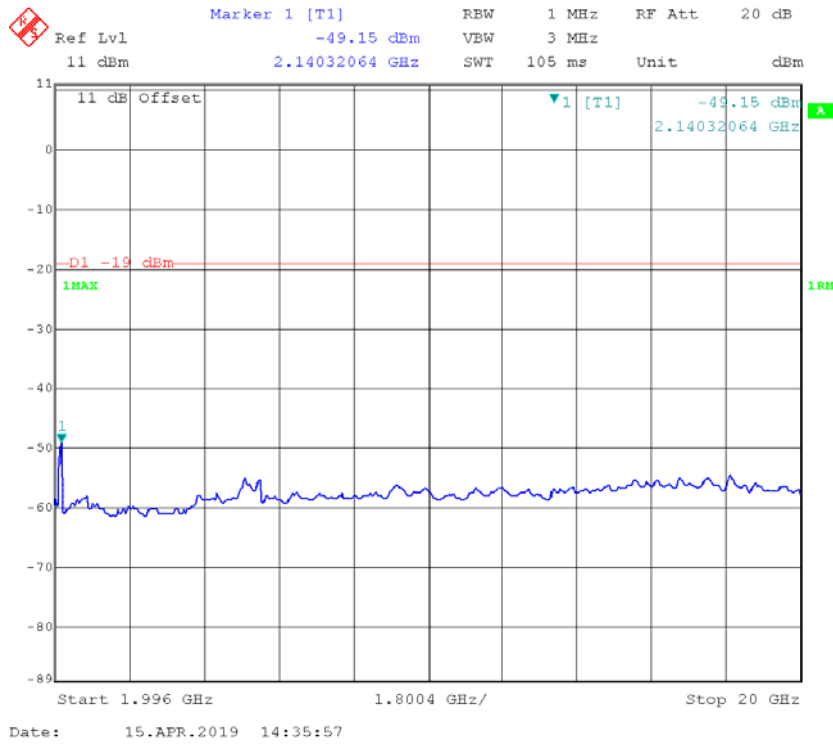
AWS Band





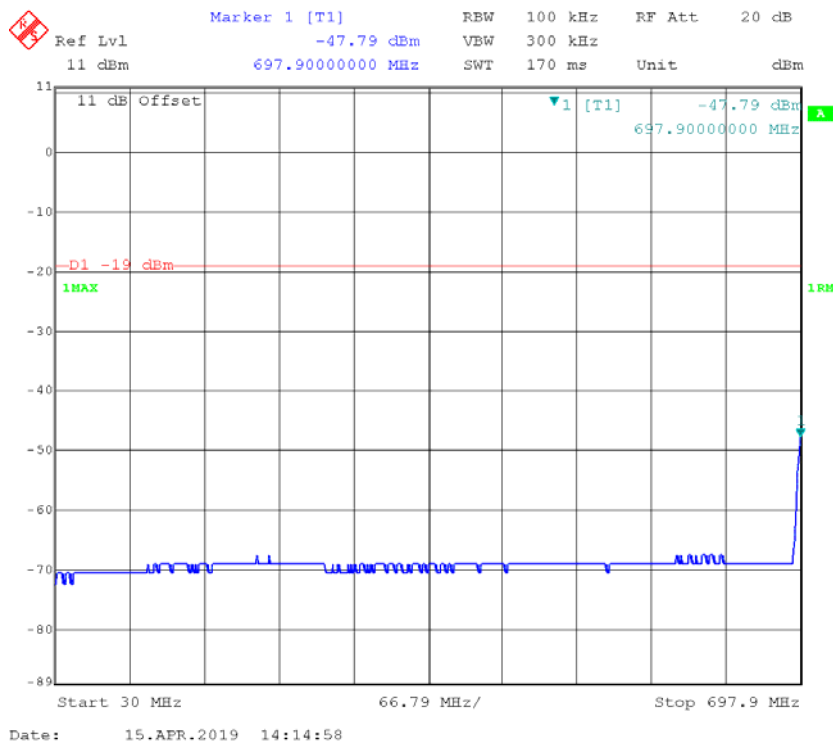
PCS Band

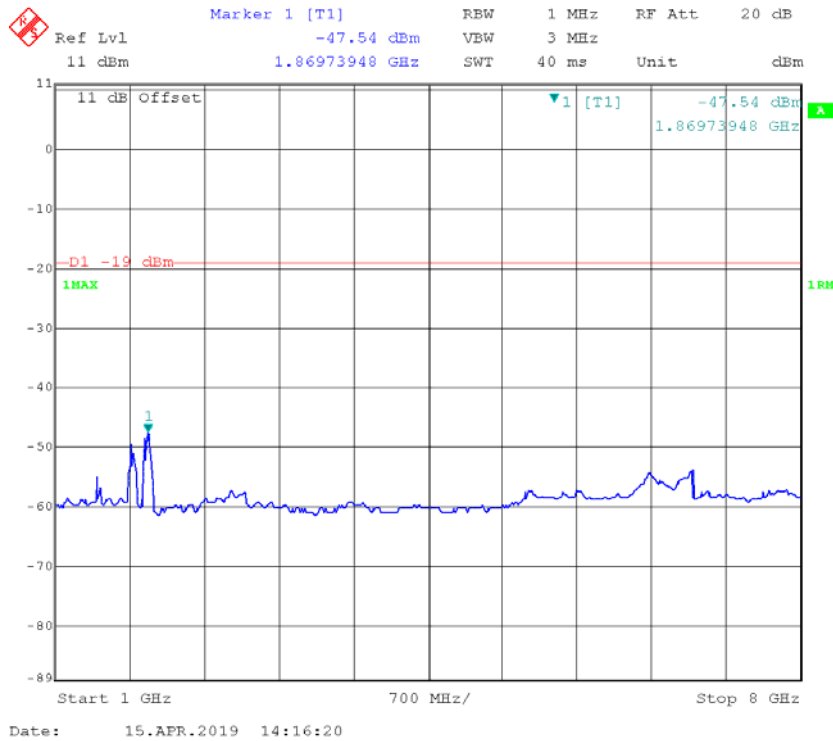
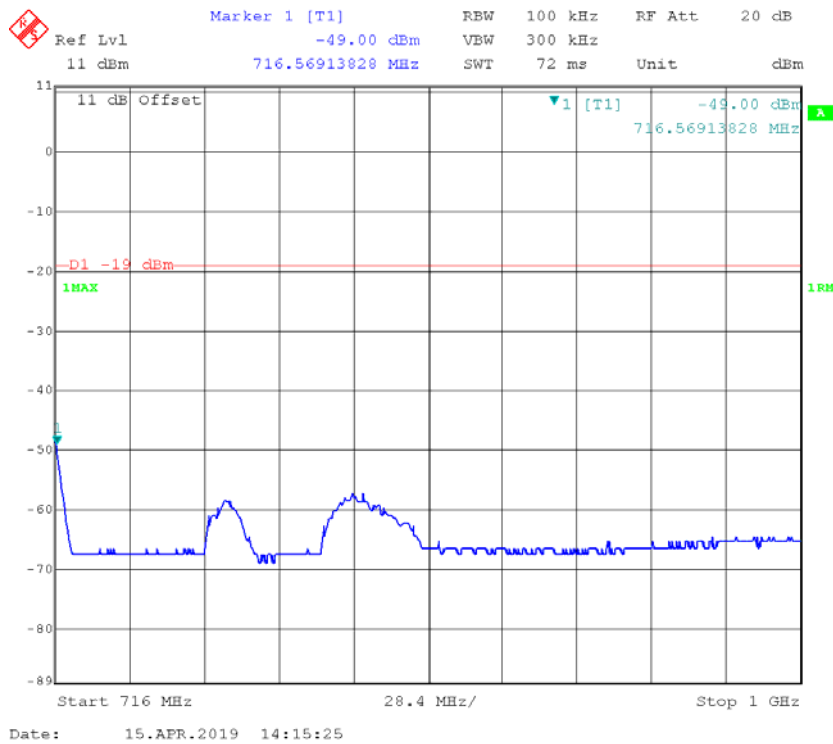




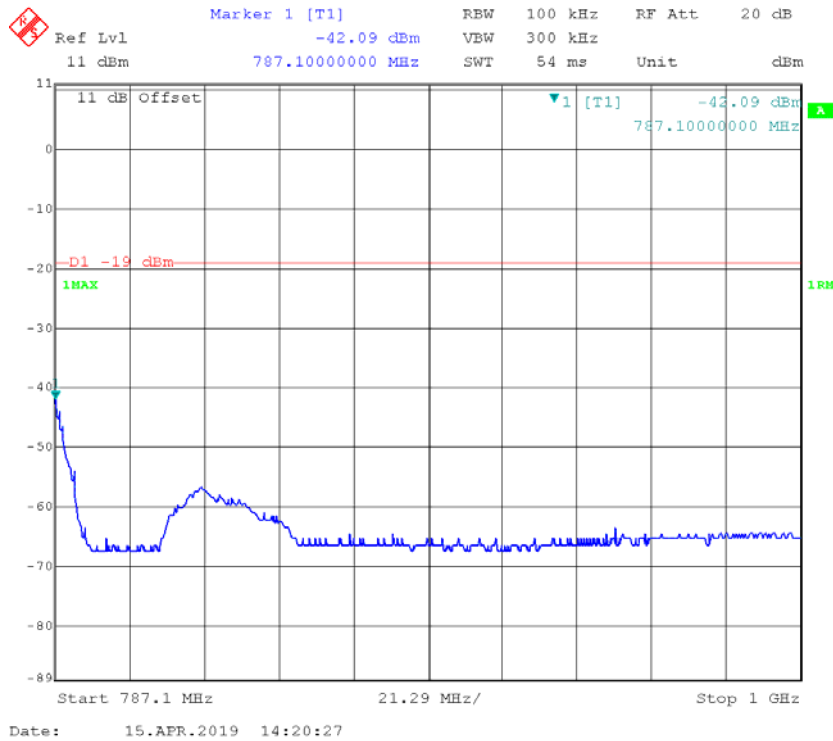
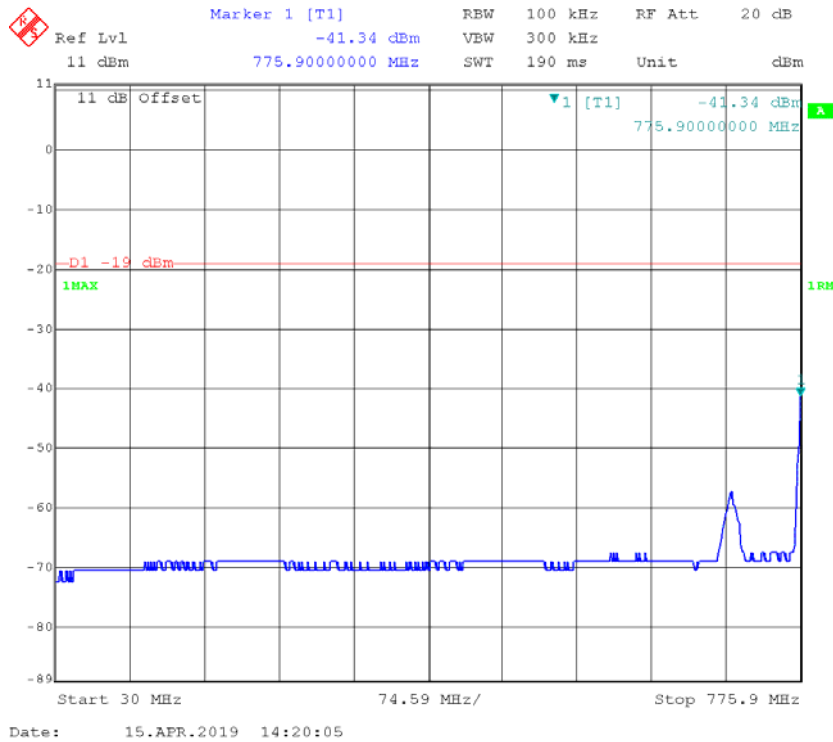
Uplink:

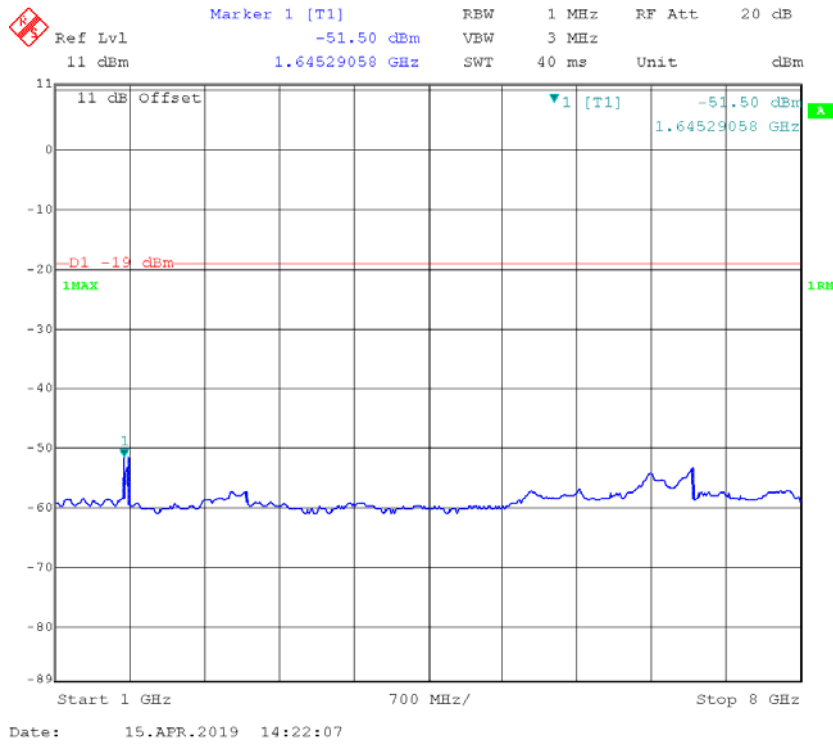
Lower 700MHz Band



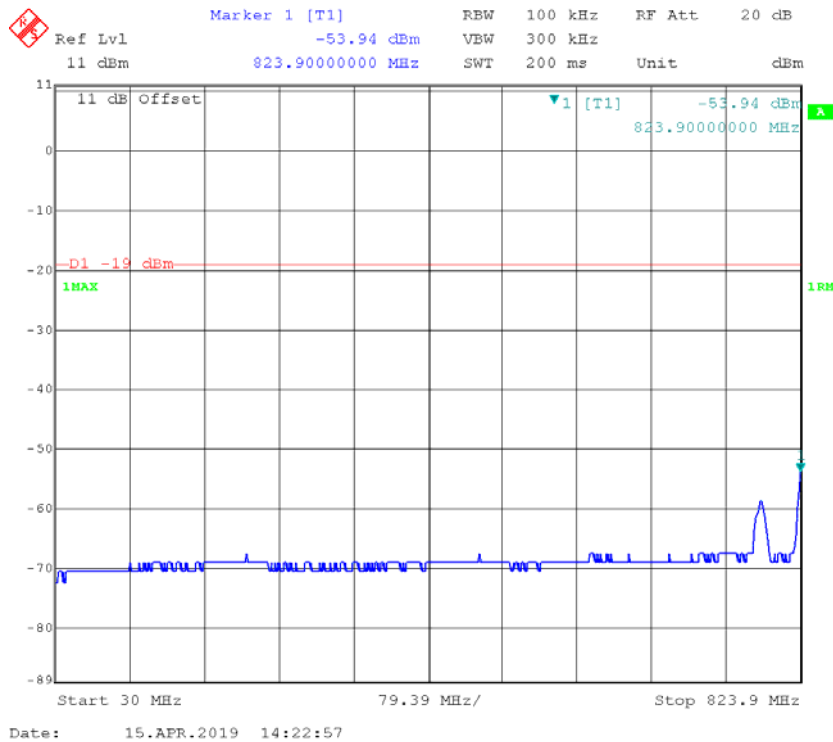


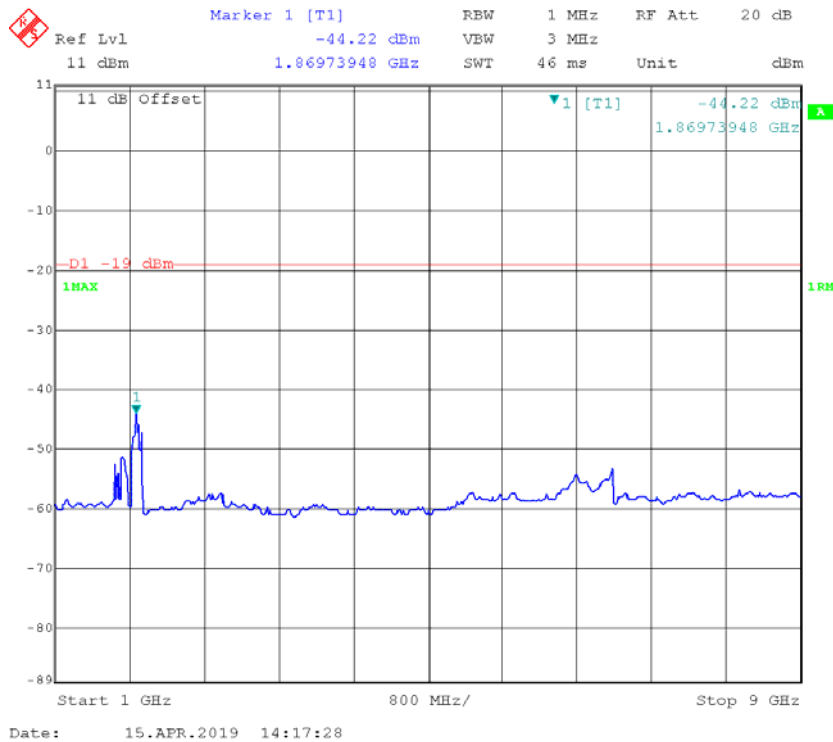
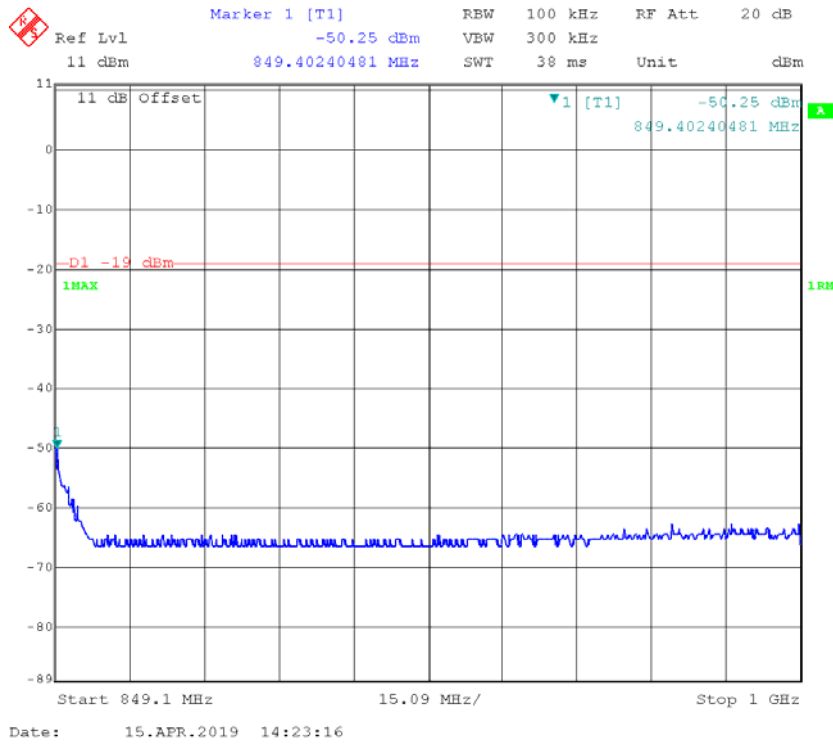
Upper 700MHz Band



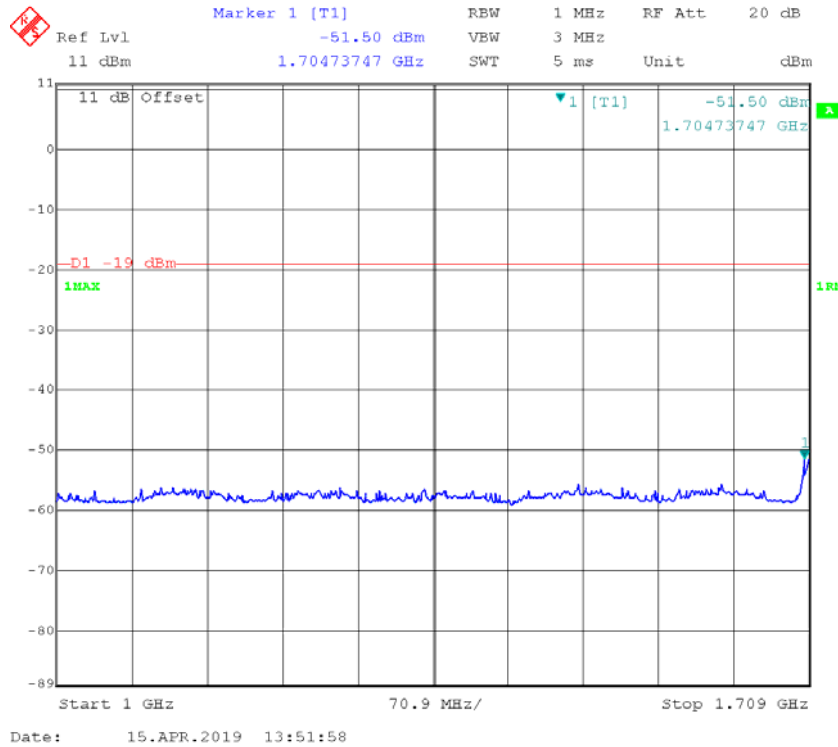
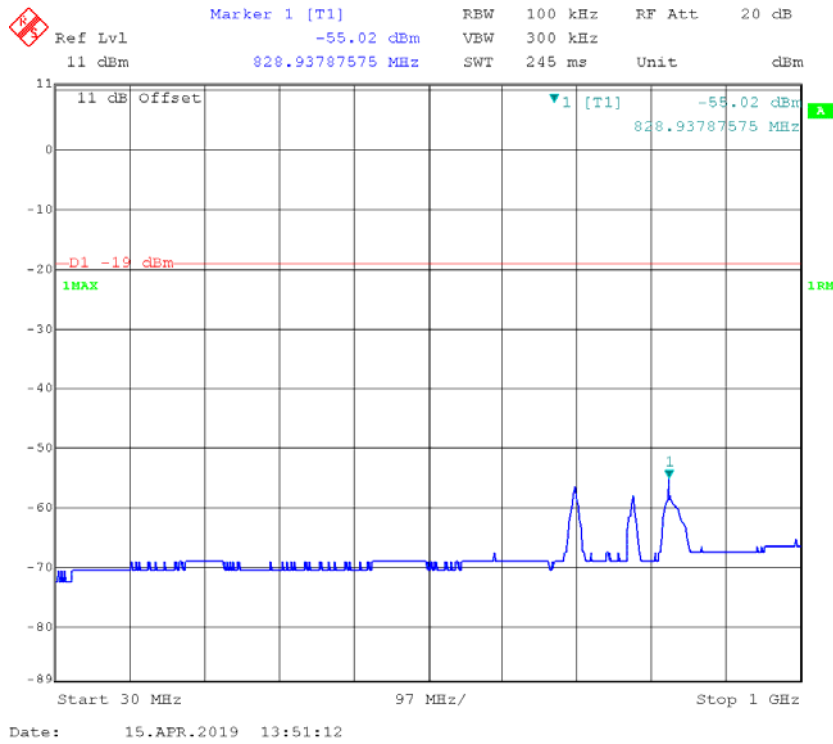


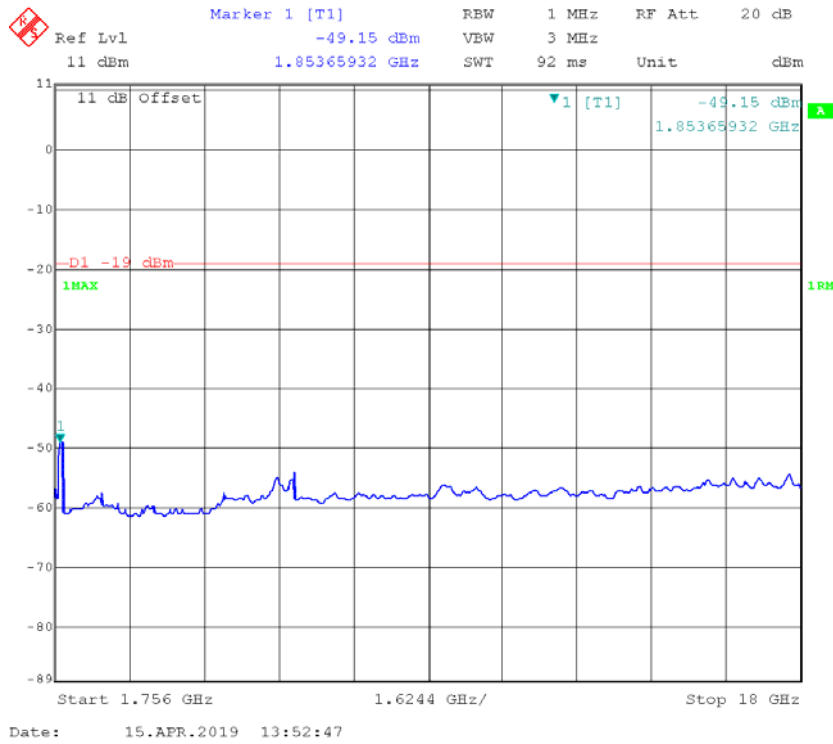
Cellular Band



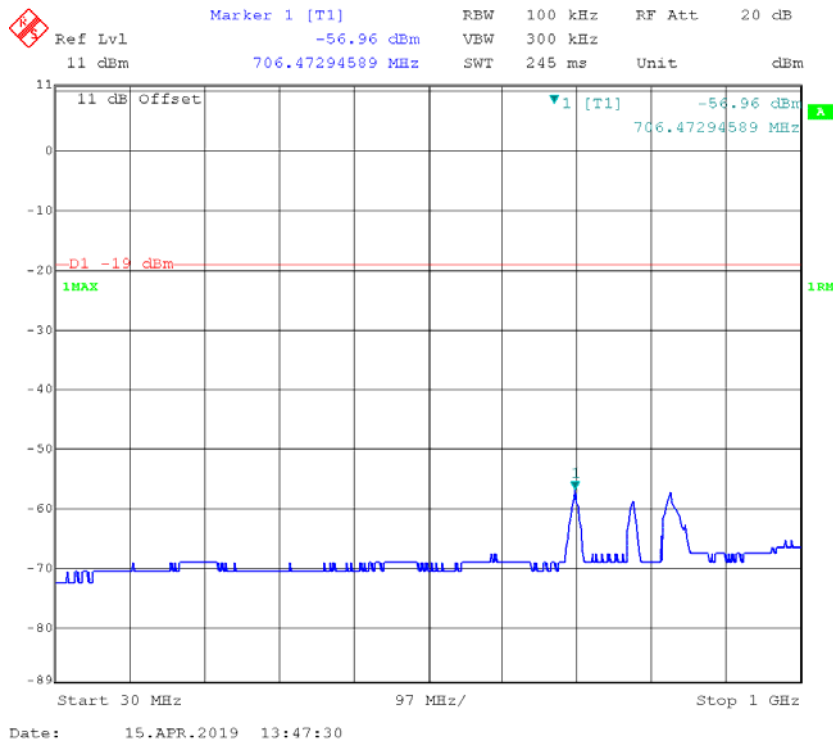


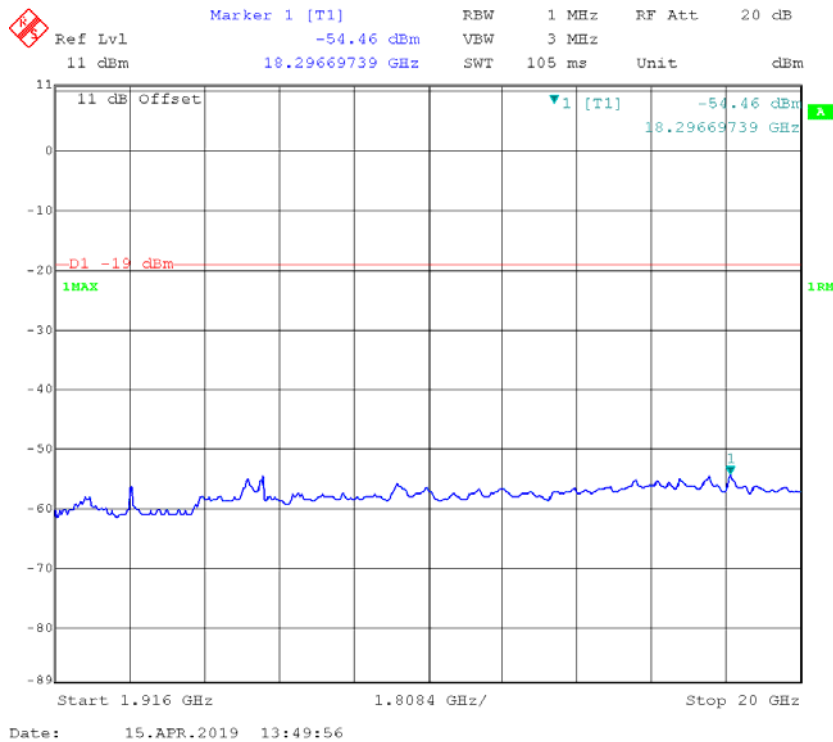
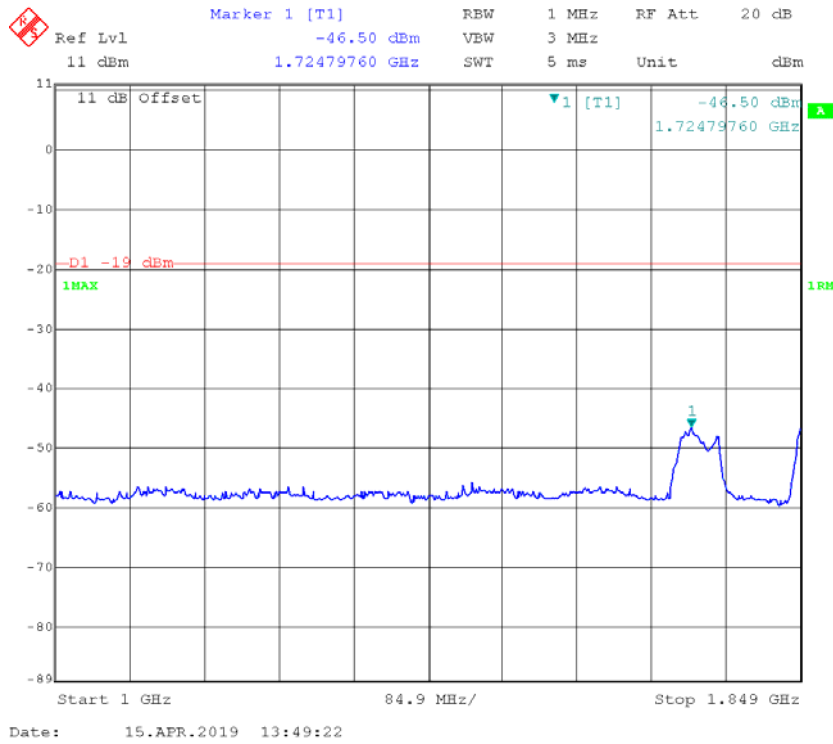
AWS Band





PCS Band





§ 2.1053 - RADIATED SPURIOUS EMISSIONS

Applicable Standards

§ 2.1053 *Measurements required: Field strength of spurious radiation.*

Test Procedure

This procedure is intended to satisfy the requirements specified in § 2.1053. The applicable limits are those specified for mobile emissions in the rule part appropriate to the band of operation (see Annex A).

- Place the EUT on an OATS or semi-anechoic chamber turntable 3 m from the receiving antenna.
- Connect the EUT to the test equipment as shown in **Figure 10** beginning with the uplink output.
- Set the signal generator to produce a CW signal with the frequency set to the center of the operational band under test and the power level set at P_{IN} as determined from 7.2.
- Measure the radiated spurious emissions from the EUT from lowest to the highest frequencies as specified in § 2.1057. Maximize the radiated emissions by utilizing the procedures described in Clause 8 of ANSI C63.4-2014.
- Capture the peak emissions plots using a peak detector with Max-Hold for inclusion in the test report. Tabular data is acceptable in lieu of spectrum analyzer plots.
- Repeat 7.12c) through 7.12e) for all operational bands.

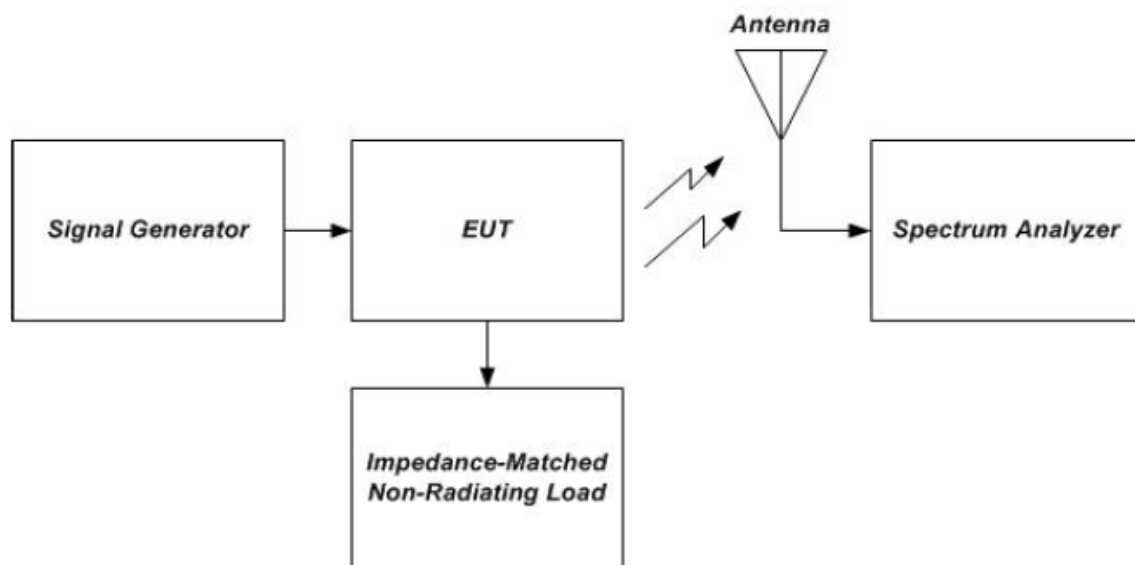


Figure 10 – Radiated spurious emissions test instrumentation setup

Test Data**Environmental Conditions**

Temperature:	25.1 °C
Relative Humidity:	53 %
ATM Pressure:	100.9 kPa

The testing was performed by Sunny Cen and Blake Yang on 2019-04-15.

Test Result: Compliance. Please refer to following table.

Test Mode: Transmitting

For Model TRUE5-A:

Uplink:

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss(dB)			
Lower 700MHz Band, Test Frequency 707 MHz								
1200.00	H	56.91	-55.70	7.30	1.10	-49.50	-19.00	30.50
1200.00	V	53.11	-60.60	7.30	1.10	-54.40	-19.00	35.40
1375.00	H	50.67	-62.60	8.80	1.20	-55.00	-19.00	36.00
1375.00	V	53.69	-60.30	8.80	1.20	-52.70	-19.00	33.70
1500.00	H	59.22	-56.00	9.50	1.40	-47.90	-19.00	28.90
1500.00	V	59.81	-55.50	9.50	1.40	-47.40	-19.00	28.40
2500.00	H	57.03	-56.00	13.10	1.20	-44.10	-19.00	25.10
2500.00	V	58.73	-54.30	13.10	1.20	-42.40	-19.00	23.40
334.00	H	44.22	-63.80	0.00	0.33	-64.13	-19.00	45.13
334.00	V	45.82	-60.20	0.00	0.33	-60.53	-19.00	41.53
Upper 700MHz Band, Test Frequency 781.5 MHz								
1200.00	H	56.17	-56.40	7.30	1.10	-50.20	-19.00	31.20
1200.00	V	52.70	-61.00	7.30	1.10	-54.80	-19.00	35.80
1375.00	H	51.78	-61.50	8.80	1.20	-53.90	-19.00	34.90
1375.00	V	51.82	-62.20	8.80	1.20	-54.60	-19.00	35.60
1500.00	H	58.46	-56.70	9.50	1.40	-48.60	-19.00	29.60
1500.00	V	60.27	-55.00	9.50	1.40	-46.90	-19.00	27.90
2500.00	H	56.69	-56.30	13.10	1.20	-44.40	-19.00	25.40
2500.00	V	59.08	-53.90	13.10	1.20	-42.00	-19.00	23.00
425.00	H	43.34	-63.11	0.00	0.37	-63.48	-19.00	44.48
425.00	V	45.75	-58.03	0.00	0.37	-58.40	-19.00	39.40
Cellular Band, Test Frequency 836.5 MHz								
1200.00	H	57.67	-54.90	7.30	1.10	-48.70	-19.00	29.70
1200.00	V	51.48	-62.20	7.30	1.10	-56.00	-19.00	37.00
1375.00	H	50.60	-62.70	8.80	1.20	-55.10	-19.00	36.10
1375.00	V	53.79	-60.20	8.80	1.20	-52.60	-19.00	33.60
1500.00	H	58.70	-56.50	9.50	1.40	-48.40	-19.00	29.40
1500.00	V	58.91	-56.40	9.50	1.40	-48.30	-19.00	29.30
2500.00	H	56.55	-56.50	13.10	1.20	-44.60	-19.00	25.60
2500.00	V	59.06	-53.90	13.10	1.20	-42.00	-19.00	23.00
348.00	H	45.33	-62.43	0.00	0.34	-62.77	-19.00	43.77
348.00	V	46.87	-58.75	0.00	0.34	-59.09	-19.00	40.09

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss(dB)			
AWS Band, Test Frequency 1732.5 MHz								
1200.00	H	57.81	-54.80	7.30	1.10	-48.60	-19.00	29.60
1200.00	V	53.96	-59.70	7.30	1.10	-53.50	-19.00	34.50
1375.00	H	51.08	-62.20	8.80	1.20	-54.60	-19.00	35.60
1375.00	V	52.46	-61.50	8.80	1.20	-53.90	-19.00	34.90
1500.00	H	58.22	-57.00	9.50	1.40	-48.90	-19.00	29.90
1500.00	V	59.71	-55.60	9.50	1.40	-47.50	-19.00	28.50
2500.00	H	55.01	-58.00	13.10	1.20	-46.10	-19.00	27.10
2500.00	V	59.01	-54.00	13.10	1.20	-42.10	-19.00	23.10
273.00	H	44.14	-64.85	0.00	0.29	-65.14	-19.00	46.14
273.00	V	47.58	-59.94	0.00	0.29	-60.23	-19.00	41.23
PCS Band, Test Frequency 1882.5MHz								
1200.00	H	57.00	-55.60	7.30	1.10	-49.40	-19.00	30.40
1200.00	V	53.08	-60.60	7.30	1.10	-54.40	-19.00	35.40
1375.00	H	50.66	-62.60	8.80	1.20	-55.00	-19.00	36.00
1375.00	V	52.35	-61.60	8.80	1.20	-54.00	-19.00	35.00
1500.00	H	58.04	-57.20	9.50	1.40	-49.10	-19.00	30.10
1500.00	V	60.01	-55.30	9.50	1.40	-47.20	-19.00	28.20
2500.00	H	55.71	-57.30	13.10	1.20	-45.40	-19.00	26.40
2500.00	V	58.93	-54.10	13.10	1.20	-42.20	-19.00	23.20
354.00	H	45.53	-62.12	0.00	0.35	-62.47	-19.00	43.47
354.00	V	46.31	-59.14	0.00	0.35	-59.49	-19.00	40.49

Downlink:

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss(dB)			
Lower 700MHz Band, Test Frequency 737MHz								
1200.00	H	57.46	-55.10	7.30	1.10	-48.90	-19.00	29.90
1200.00	V	53.60	-60.10	7.30	1.10	-53.90	-19.00	34.90
1375.00	H	51.53	-61.80	8.80	1.20	-54.20	-19.00	35.20
1375.00	V	53.41	-60.60	8.80	1.20	-53.00	-19.00	34.00
1500.00	H	58.48	-56.70	9.50	1.40	-48.60	-19.00	29.60
1500.00	V	59.87	-55.40	9.50	1.40	-47.30	-19.00	28.30
2500.00	H	56.55	-56.50	13.10	1.20	-44.60	-19.00	25.60
2500.00	V	58.23	-54.80	13.10	1.20	-42.90	-19.00	23.90
475.00	H	44.68	-61.08	0.00	0.36	-61.44	-19.00	42.44
475.00	V	48.97	-54.10	0.00	0.36	-54.46	-19.00	35.46

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Upper 700MHz Band, Test Frequency 751.5MHz								
1200.00	H	57.65	-55.00	7.30	1.10	-48.80	-19.00	29.80
1200.00	V	53.89	-59.80	7.30	1.10	-53.60	-19.00	34.60
1375.00	H	51.02	-62.30	8.80	1.20	-54.70	-19.00	35.70
1375.00	V	52.89	-61.10	8.80	1.20	-53.50	-19.00	34.50
1500.00	H	58.92	-56.30	9.50	1.40	-48.20	-19.00	29.20
1500.00	V	60.18	-55.10	9.50	1.40	-47.00	-19.00	28.00
2500.00	H	56.48	-56.50	13.10	1.20	-44.60	-19.00	25.60
2500.00	V	58.46	-54.50	13.10	1.20	-42.60	-19.00	23.60
342.00	H	45.56	-62.31	0.00	0.34	-62.65	-19.00	43.65
342.00	V	48.61	-57.18	0.00	0.34	-57.52	-19.00	38.52
Cellular Band, Test Frequency 881.5MHz								
1200.00	H	58.18	-54.40	7.30	1.10	-48.20	-19.00	29.20
1200.00	V	52.64	-61.10	7.30	1.10	-54.90	-19.00	35.90
1375.00	H	51.14	-62.20	8.80	1.20	-54.60	-19.00	35.60
1375.00	V	53.50	-60.50	8.80	1.20	-52.90	-19.00	33.90
1500.00	H	58.56	-56.60	9.50	1.40	-48.50	-19.00	29.50
1500.00	V	60.26	-55.00	9.50	1.40	-46.90	-19.00	27.90
2500.00	H	56.19	-56.80	13.10	1.20	-44.90	-19.00	25.90
2500.00	V	58.63	-54.40	13.10	1.20	-42.50	-19.00	23.50
317.00	H	44.53	-63.80	0.00	0.32	-64.12	-19.00	45.12
317.00	V	46.88	-59.62	0.00	0.32	-59.94	-19.00	40.94
AWS Band, Test Frequency 2132.5MHz								
1200.00	H	57.85	-54.80	7.30	1.10	-48.60	-19.00	29.60
1200.00	V	53.38	-60.30	7.30	1.10	-54.10	-19.00	35.10
1375.00	H	51.69	-61.60	8.80	1.20	-54.00	-19.00	35.00
1375.00	V	53.07	-60.90	8.80	1.20	-53.30	-19.00	34.30
1500.00	H	58.24	-57.00	9.50	1.40	-48.90	-19.00	29.90
1500.00	V	60.08	-55.20	9.50	1.40	-47.10	-19.00	28.10
2500.00	H	55.51	-57.50	13.10	1.20	-45.60	-19.00	26.60
2500.00	V	58.55	-54.50	13.10	1.20	-42.60	-19.00	23.60
435.00	H	45.75	-60.56	0.00	0.37	-60.93	-19.00	41.93
435.00	V	46.84	-56.80	0.00	0.37	-57.17	-19.00	38.17
PCS Band, Test Frequency 1962.5MHz								
1200.00	H	57.77	-54.80	7.30	1.10	-48.60	-19.00	29.60
1200.00	V	53.03	-60.70	7.30	1.10	-54.50	-19.00	35.50
1375.00	H	51.83	-61.50	8.80	1.20	-53.90	-19.00	34.90
1375.00	V	54.78	-59.20	8.80	1.20	-51.60	-19.00	32.60
1500.00	H	58.96	-56.20	9.50	1.40	-48.10	-19.00	29.10
1500.00	V	60.28	-55.00	9.50	1.40	-46.90	-19.00	27.90

2500.00	H	56.55	-56.50	13.10	1.20	-44.60	-19.00	25.60
2500.00	V	58.60	-54.40	13.10	1.20	-42.50	-19.00	23.50
621.00	H	44.68	-57.43	0.00	0.36	-57.79	-19.00	38.79
621.00	V	48.87	-50.62	0.00	0.36	-50.98	-19.00	31.98

For Model TRUE5-B:

Uplink:

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss(dB)			
Lower 700MHz Band, Test Frequency 707 MHz								
1200.00	H	58.13	-54.50	7.30	1.10	-48.30	-19.00	29.30
1200.00	V	54.23	-59.50	7.30	1.10	-53.30	-19.00	34.30
1375.00	H	52.25	-61.10	8.80	1.20	-53.50	-19.00	34.50
1375.00	V	54.40	-59.60	8.80	1.20	-52.00	-19.00	33.00
1500.00	H	60.63	-54.60	9.50	1.40	-46.50	-19.00	27.50
1500.00	V	61.33	-54.00	9.50	1.40	-45.90	-19.00	26.90
2500.00	H	56.85	-56.20	13.10	1.20	-44.30	-19.00	25.30
2500.00	V	58.74	-54.30	13.10	1.20	-42.40	-19.00	23.40
583.00	H	47.85	-55.09	0.00	0.36	-55.45	-19.00	36.45
583.00	V	49.65	-50.82	0.00	0.36	-51.18	-19.00	32.18
Upper 700MHz Band, Test Frequency 781.5 MHz								
1200.00	H	57.65	-55.00	7.30	1.10	-48.80	-19.00	29.80
1200.00	V	53.34	-60.40	7.30	1.10	-54.20	-19.00	35.20
1375.00	H	52.34	-61.00	8.80	1.20	-53.40	-19.00	34.40
1375.00	V	53.77	-60.20	8.80	1.20	-52.60	-19.00	33.60
1500.00	H	59.72	-55.50	9.50	1.40	-47.40	-19.00	28.40
1500.00	V	61.33	-54.00	9.50	1.40	-45.90	-19.00	26.90
2500.00	H	56.67	-56.30	13.10	1.20	-44.40	-19.00	25.40
2500.00	V	58.64	-54.40	13.10	1.20	-42.50	-19.00	23.50
457.00	H	44.83	-61.17	0.00	0.36	-61.53	-19.00	42.53
457.00	V	46.88	-56.45	0.00	0.36	-56.81	-19.00	37.81
Cellular Band, Test Frequency 836.5 MHz								
1200.00	H	58.08	-54.50	7.30	1.10	-48.30	-19.00	29.30
1200.00	V	53.00	-60.70	7.30	1.10	-54.50	-19.00	35.50
1375.00	H	52.52	-60.80	8.80	1.20	-53.20	-19.00	34.20
1375.00	V	53.49	-60.50	8.80	1.20	-52.90	-19.00	33.90
1500.00	H	60.51	-54.70	9.50	1.40	-46.60	-19.00	27.60
1500.00	V	61.35	-54.00	9.50	1.40	-45.90	-19.00	26.90
2500.00	H	56.56	-56.40	13.10	1.20	-44.50	-19.00	25.50
2500.00	V	59.02	-54.00	13.10	1.20	-42.10	-19.00	23.10
473.00	H	44.83	-60.95	0.00	0.36	-61.31	-19.00	42.31
473.00	V	46.31	-56.79	0.00	0.36	-57.15	-19.00	38.15

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss(dB)			
AWS Band, Test Frequency 1732.5 MHz								
1200.00	H	57.43	-55.20	7.30	1.10	-49.00	-19.00	30.00
1200.00	V	54.97	-58.70	7.30	1.10	-52.50	-19.00	33.50
1375.00	H	52.36	-60.90	8.80	1.20	-53.30	-19.00	34.30
1375.00	V	53.91	-60.10	8.80	1.20	-52.50	-19.00	33.50
1500.00	H	60.51	-54.70	9.50	1.40	-46.60	-19.00	27.60
1500.00	V	61.33	-54.00	9.50	1.40	-45.90	-19.00	26.90
2500.00	H	56.66	-56.30	13.10	1.20	-44.40	-19.00	25.40
2500.00	V	58.62	-54.40	13.10	1.20	-42.50	-19.00	23.50
394.00	H	45.42	-61.48	0.00	0.38	-61.86	-19.00	42.86
394.00	V	46.85	-57.45	0.00	0.38	-57.83	-19.00	38.83
PCS Band, Test Frequency 1880MHz								
1200.00	H	57.81	-54.80	7.30	1.10	-48.60	-19.00	29.60
1200.00	V	53.84	-59.90	7.30	1.10	-53.70	-19.00	34.70
1375.00	H	52.24	-61.10	8.80	1.20	-53.50	-19.00	34.50
1375.00	V	54.19	-59.80	8.80	1.20	-52.20	-19.00	33.20
1500.00	H	60.21	-55.00	9.50	1.40	-46.90	-19.00	27.90
1500.00	V	61.81	-53.50	9.50	1.40	-45.40	-19.00	26.40
2500.00	H	55.33	-57.70	13.10	1.20	-45.80	-19.00	26.80
2500.00	V	58.73	-54.30	13.10	1.20	-42.40	-19.00	23.40
242.00	H	44.72	-64.71	0.00	0.26	-64.97	-19.00	45.97
242.00	V	47.52	-60.21	0.00	0.26	-60.47	-19.00	41.47

Downlink:

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss(dB)			
Lower 700MHz Band, Test Frequency 737MHz								
1200.00	H	56.96	-55.60	7.30	1.10	-49.40	-19.00	30.40
1200.00	V	53.34	-60.40	7.30	1.10	-54.20	-19.00	35.20
1375.00	H	51.53	-61.80	8.80	1.20	-54.20	-19.00	35.20
1375.00	V	53.75	-60.20	8.80	1.20	-52.60	-19.00	33.60
1500.00	H	60.19	-55.00	9.50	1.40	-46.90	-19.00	27.90
1500.00	V	60.54	-54.80	9.50	1.40	-46.70	-19.00	27.70
2500.00	H	56.19	-56.80	13.10	1.20	-44.90	-19.00	25.90
2500.00	V	59.70	-53.30	13.10	1.20	-41.40	-19.00	22.40
385.00	H	45.53	-61.54	0.00	0.37	-61.91	-19.00	42.91
385.00	V	47.89	-56.67	0.00	0.37	-57.04	-19.00	38.04

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Upper 700MHz Band, Test Frequency 751.5MHz								
1200.00	H	57.41	-55.20	7.30	1.10	-49.00	-19.00	30.00
1200.00	V	54.18	-59.50	7.30	1.10	-53.30	-19.00	34.30
1375.00	H	53.09	-60.20	8.80	1.20	-52.60	-19.00	33.60
1375.00	V	54.57	-59.40	8.80	1.20	-51.80	-19.00	32.80
1500.00	H	59.91	-55.30	9.50	1.40	-47.20	-19.00	28.20
1500.00	V	60.76	-54.50	9.50	1.40	-46.40	-19.00	27.40
2500.00	H	56.70	-56.30	13.10	1.20	-44.40	-19.00	25.40
2500.00	V	58.07	-54.90	13.10	1.20	-43.00	-19.00	24.00
254.00	H	44.33	-64.90	0.00	0.27	-65.17	-19.00	46.17
254.00	V	47.85	-60.04	0.00	0.27	-60.31	-19.00	41.31
Cellular Band, Test Frequency 881.5MHz								
1200.00	H	56.98	-55.60	7.30	1.10	-49.40	-19.00	30.40
1200.00	V	53.35	-60.40	7.30	1.10	-54.20	-19.00	35.20
1375.00	H	52.69	-60.60	8.80	1.20	-53.00	-19.00	34.00
1375.00	V	54.19	-59.80	8.80	1.20	-52.20	-19.00	33.20
1500.00	H	60.17	-55.00	9.50	1.40	-46.90	-19.00	27.90
1500.00	V	60.94	-54.40	9.50	1.40	-46.30	-19.00	27.30
2500.00	H	56.11	-56.90	13.10	1.20	-45.00	-19.00	26.00
2500.00	V	59.77	-53.20	13.10	1.20	-41.30	-19.00	22.30
385.00	H	45.57	-61.50	0.00	0.37	-61.87	-19.00	42.87
385.00	V	47.58	-56.98	0.00	0.37	-57.35	-19.00	38.35
AWS Band, Test Frequency 2132.5MHz								
1200.00	H	57.26	-55.30	7.30	1.10	-49.10	-19.00	30.10
1200.00	V	52.79	-60.90	7.30	1.10	-54.70	-19.00	35.70
1375.00	H	52.66	-60.60	8.80	1.20	-53.00	-19.00	34.00
1375.00	V	53.41	-60.60	8.80	1.20	-53.00	-19.00	34.00
1500.00	H	59.83	-55.40	9.50	1.40	-47.30	-19.00	28.30
1500.00	V	60.63	-54.70	9.50	1.40	-46.60	-19.00	27.60
2500.00	H	57.01	-56.00	13.10	1.20	-44.10	-19.00	25.10
2500.00	V	59.40	-53.60	13.10	1.20	-41.70	-19.00	22.70
468.00	H	45.68	-60.17	0.00	0.36	-60.53	-19.00	41.53
468.00	V	47.52	-55.65	0.00	0.36	-56.01	-19.00	37.01
PCS Band, Test Frequency 1960MHz								
1200.00	H	57.64	-55.00	7.30	1.10	-48.80	-19.00	29.80
1200.00	V	54.06	-59.60	7.30	1.10	-53.40	-19.00	34.40
1375.00	H	52.68	-60.60	8.80	1.20	-53.00	-19.00	34.00
1375.00	V	53.45	-60.50	8.80	1.20	-52.90	-19.00	33.90
1500.00	H	59.61	-55.60	9.50	1.40	-47.50	-19.00	28.50
1500.00	V	61.51	-53.80	9.50	1.40	-45.70	-19.00	26.70

2500.00	H	56.73	-56.30	13.10	1.20	-44.40	-19.00	25.40
2500.00	V	58.48	-54.50	13.10	1.20	-42.60	-19.00	23.60
262.00	H	43.62	-65.51	0.00	0.28	-65.79	-19.00	46.79
264.00	V	47.82	-59.88	0.00	0.28	-60.16	-19.00	41.16

Note:

- 1) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 2) Margin = Limit- Absolute Level
- 3) The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.

******* END OF REPORT *******