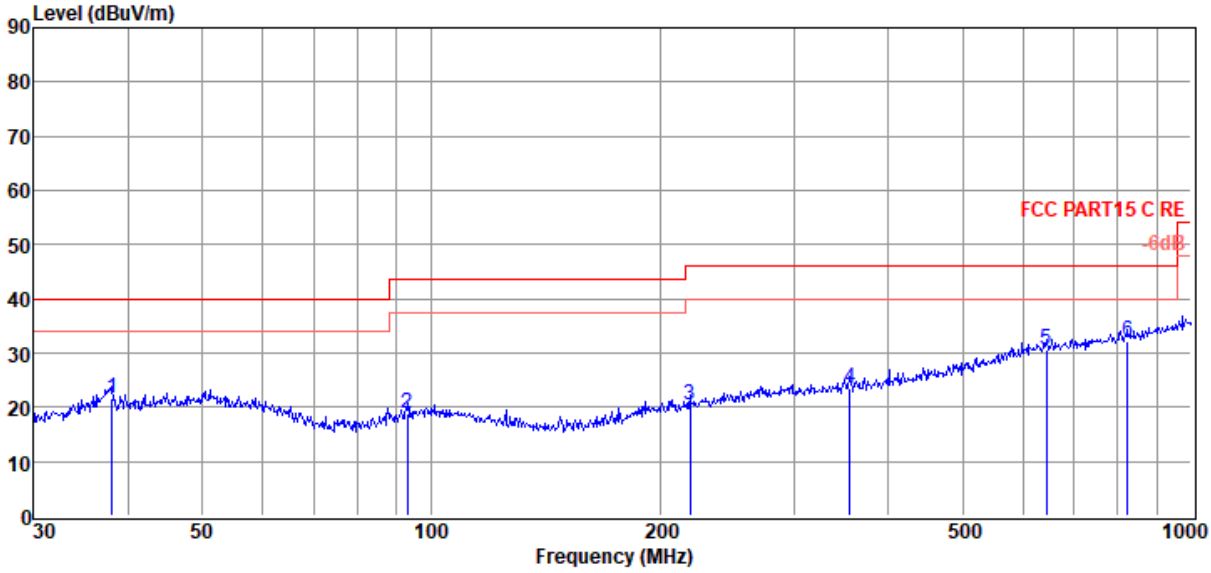
TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC BELOW1G.EM6	
Test Date	: 2019-12-26	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 VULB 9163 1#/3m/VERTICAL
Memo	: Charging IC: XB608712AS		

Data: 1



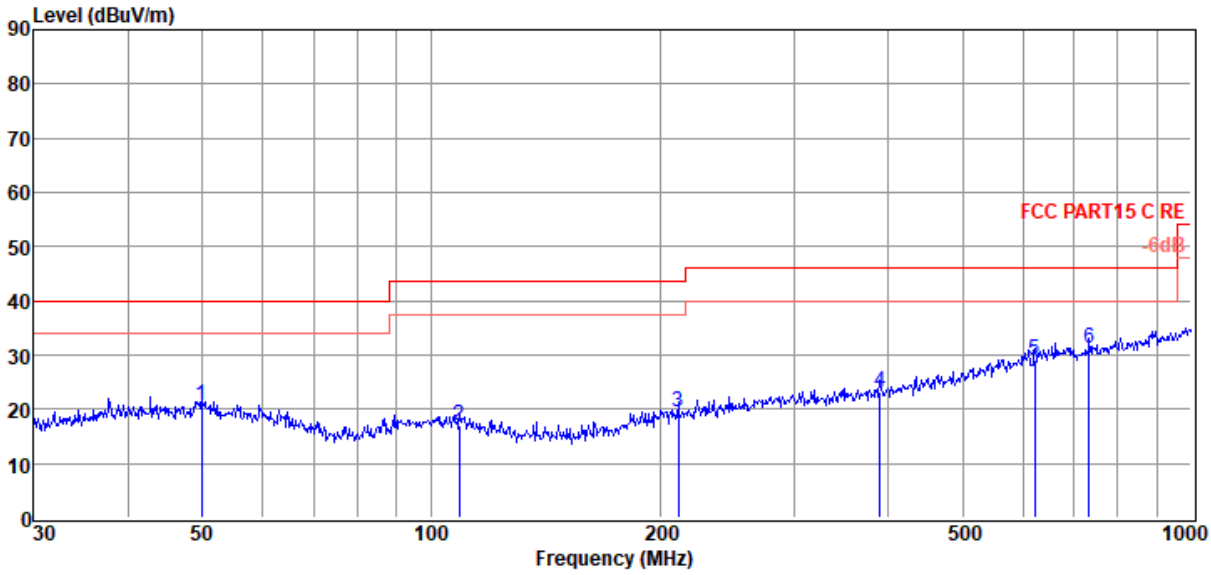
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	38.08	4.56	13.27	3.89	21.72	40.00	-18.28	QP	VERTICAL
2	93.11	3.19	11.22	4.36	18.77	43.50	-24.73	QP	VERTICAL
3	219.08	3.17	12.01	5.13	20.31	46.00	-25.69	QP	VERTICAL
4	355.43	3.03	14.81	5.78	23.62	46.00	-22.38	QP	VERTICAL
5	645.12	4.06	19.53	6.90	30.49	46.00	-15.51	QP	VERTICAL
6	824.60	3.75	20.98	7.45	32.18	46.00	-13.82	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC BELOW1G.EM6	
Test Date	: 2019-12-26	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 VULB 9163 1#/3m/HORIZONTAL
Memo	: Charging IC: XB608712AS		

Data: 2



Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	49.88	2.63	14.19	3.99	20.81	40.00	-19.19	QP	HORIZONTAL
2	109.03	1.31	11.36	4.48	17.15	43.50	-26.35	QP	HORIZONTAL
3	211.53	2.55	11.77	5.09	19.41	43.50	-24.09	QP	HORIZONTAL
4	389.36	2.11	15.19	5.92	23.22	46.00	-22.78	QP	HORIZONTAL
5	622.89	2.94	19.37	6.82	29.13	46.00	-16.87	QP	HORIZONTAL
6	734.49	3.77	20.19	7.18	31.14	46.00	-14.86	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Radiated Emission test (above 1GHz)

Freq. (MHz)	Read level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector type	Polarization
Tx mode 2402MHz									
5726.00	42.01	34.99	43.18	7.42	41.24	74.00	-32.76	Peak	HORIZONTAL
7205.00	43.22	36.07	42.91	8.37	44.75	74.00	-29.25	Peak	HORIZONTAL
9364.00	41.59	37.32	42.52	9.46	45.85	74.00	-28.15	Peak	HORIZONTAL
10894.00	41.14	38.00	42.35	10.44	47.23	74.00	-26.77	Peak	HORIZONTAL
11931.00	43.10	38.37	42.30	10.78	49.95	74.00	-24.05	Peak	HORIZONTAL
14311.00	40.87	40.17	40.27	12.40	53.17	74.00	-20.83	Peak	HORIZONTAL
5454.00	42.37	34.77	43.26	7.23	41.11	74.00	-32.89	Peak	VERTICAL
7120.00	42.92	36.00	42.92	8.30	44.30	74.00	-29.70	Peak	VERTICAL
9296.00	40.82	37.28	42.53	9.41	44.98	74.00	-29.02	Peak	VERTICAL
11574.00	42.13	38.23	42.32	10.68	48.72	74.00	-25.28	Peak	VERTICAL
13121.00	41.94	39.10	41.14	11.61	51.51	74.00	-22.49	Peak	VERTICAL
14515.00	41.22	40.12	40.25	12.40	53.49	74.00	-20.51	Peak	VERTICAL
Tx mode 2441MHz									
5709.00	42.67	34.97	43.19	7.41	41.86	74.00	-32.14	Peak	HORIZONTAL
7868.00	41.60	36.52	42.82	8.90	44.20	74.00	-29.80	Peak	HORIZONTAL
9636.00	42.80	37.51	42.47	9.65	47.49	74.00	-26.51	Peak	HORIZONTAL
11999.00	42.73	38.40	42.30	10.80	49.63	74.00	-24.37	Peak	HORIZONTAL
13206.00	41.41	39.23	41.06	11.69	51.27	74.00	-22.73	Peak	HORIZONTAL
14889.00	40.36	40.49	40.21	12.40	53.04	74.00	-20.96	Peak	HORIZONTAL
6236.00	42.48	35.39	43.06	7.75	42.56	74.00	-31.44	Peak	VERTICAL
8004.00	43.11	36.60	42.80	9.00	45.91	74.00	-28.09	Peak	VERTICAL
10180.00	41.30	37.73	42.39	10.01	46.65	74.00	-27.35	Peak	VERTICAL
11710.00	42.62	38.29	42.31	10.72	49.32	74.00	-24.68	Peak	VERTICAL
13410.00	42.29	39.56	40.86	11.88	52.87	74.00	-21.13	Peak	VERTICAL
14549.00	40.01	40.15	40.24	12.40	52.32	74.00	-21.68	Peak	VERTICAL
Tx mode 2480MHz									
5301.00	42.55	34.68	43.31	7.12	41.04	74.00	-32.96	Peak	HORIZONTAL
6950.00	43.33	35.87	42.95	8.17	44.42	74.00	-29.58	Peak	HORIZONTAL
8905.00	41.62	37.08	42.61	9.18	45.27	74.00	-28.73	Peak	HORIZONTAL
11234.00	42.74	38.15	42.34	10.57	49.12	74.00	-24.88	Peak	HORIZONTAL
12424.00	41.64	38.49	41.85	11.10	49.38	74.00	-24.62	Peak	HORIZONTAL
14226.00	40.25	40.21	40.28	12.40	52.58	74.00	-21.42	Peak	HORIZONTAL
5556.00	42.71	34.85	43.23	7.30	41.63	74.00	-32.37	Peak	VERTICAL
6950.00	42.22	35.87	42.95	8.17	43.31	74.00	-30.69	Peak	VERTICAL
8191.00	41.64	36.76	42.76	9.04	44.68	74.00	-29.32	Peak	VERTICAL
9755.00	42.32	37.61	42.44	9.74	47.23	74.00	-26.77	Peak	VERTICAL
11251.00	41.06	38.15	42.34	10.58	47.45	74.00	-26.55	Peak	VERTICAL
13920.00	40.57	40.21	40.37	12.33	52.74	74.00	-21.26	Peak	VERTICAL
Result: Pass									

Note: 1. 30MHz~25GHz: (Scan with all side GFSK, π/4-DQPSK, 8DPSK, the worst case is left side GFSK Mode)

2. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

3. For emissions above 1GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

11. RF Conducted Spurious Emissions

11.1. Block diagram of test setup

Same as section 4.1

11.2. Limits

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

11.3. Test Procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Establish a reference level by using the following procedure:

Center frequency	Test frequency
RBW:	100 kHz
VBW:	300 kHz
Span	Wide enough to capture the peak level of the in-band emission
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.

(4) Set the spectrum analyzer as follows:

RBW:	100 kHz
VBW:	300 kHz
Span	Encompass frequency range to be measured
Number of measurement points	≥span/RBW
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(5) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude of all unwanted emissions outside of the authorized frequency band

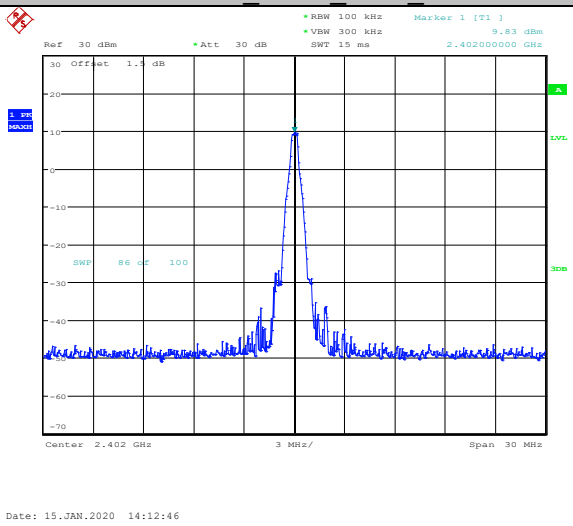
11.4. Test Result

Mode	Freq. (MHz)	Conclusion
GFSK	Hopping off 2402	PASS
	Hopping off 2441	PASS
	Hopping off 2480	PASS
π/4-DQPSK	Hopping off 2402	PASS
	Hopping off 2441	PASS
	Hopping off 2480	PASS
8DPSK	Hopping off 2402	PASS
	Hopping off 2441	PASS
	Hopping off 2480	PASS

11.5. Original test data

Left side:

DH5_ANT1_2402_Ref



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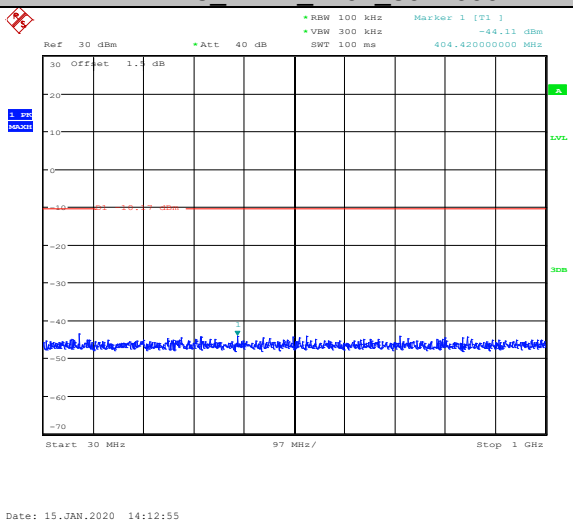

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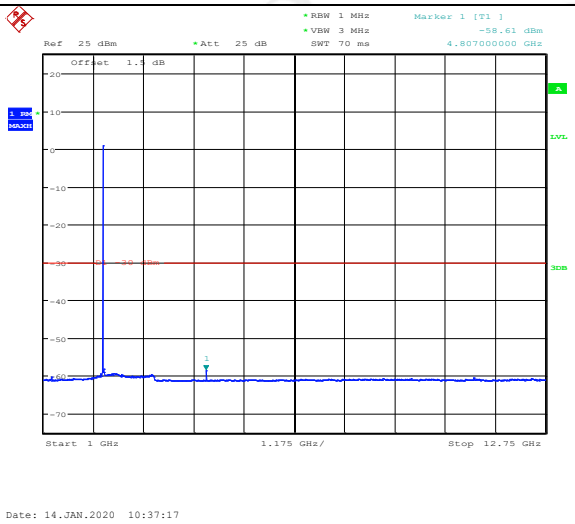

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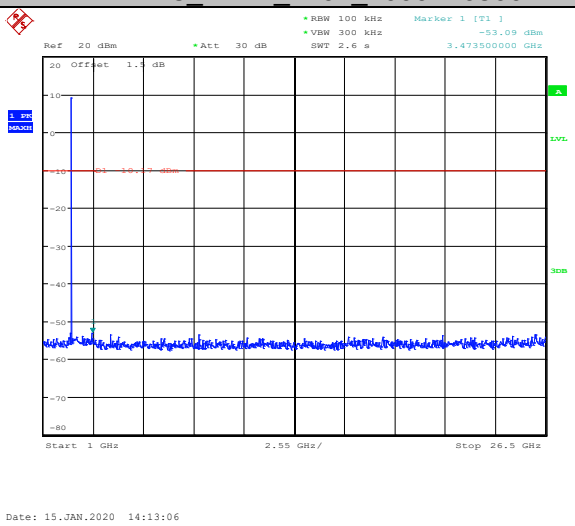

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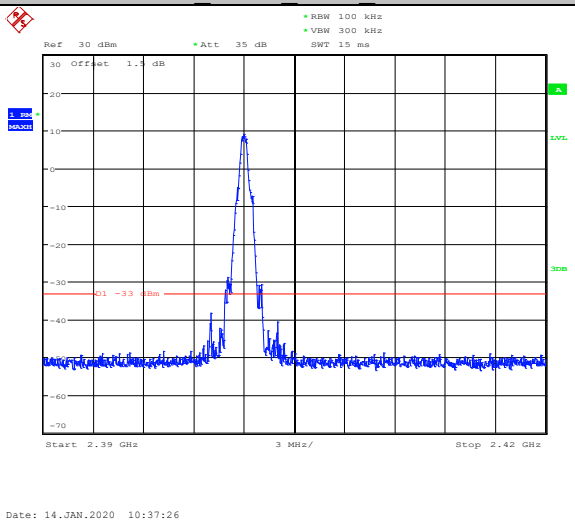

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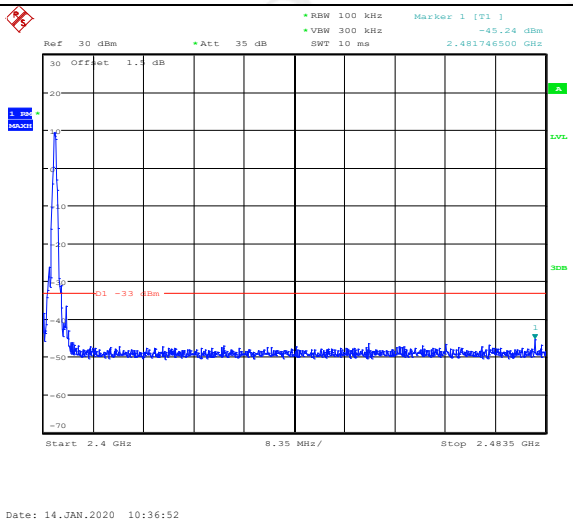

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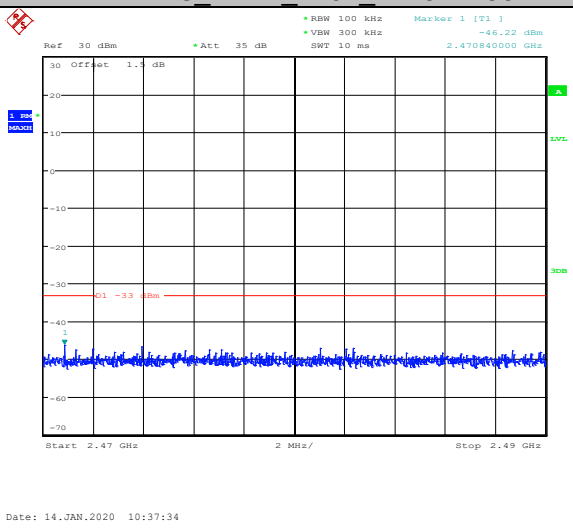

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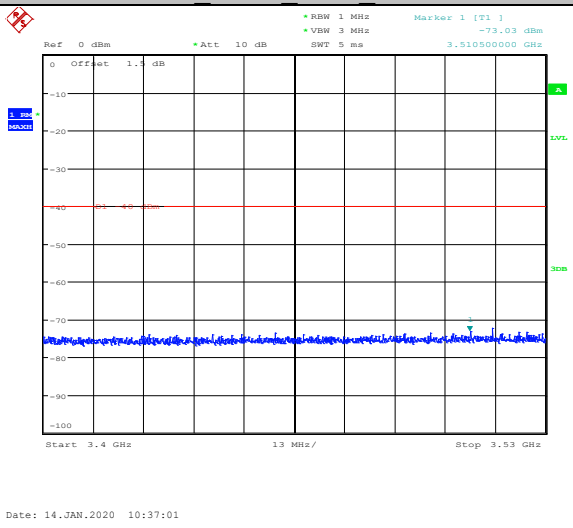

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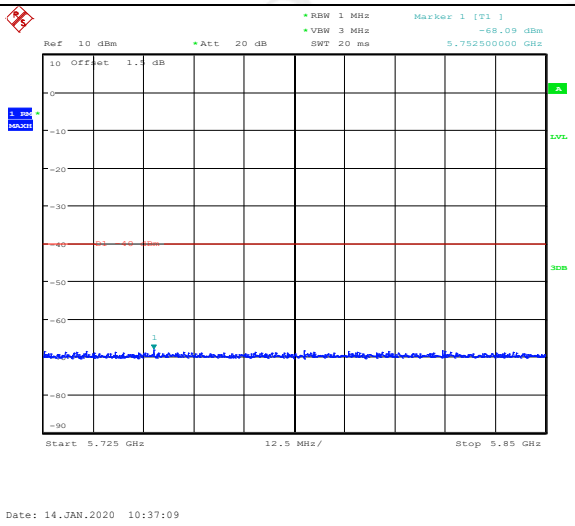

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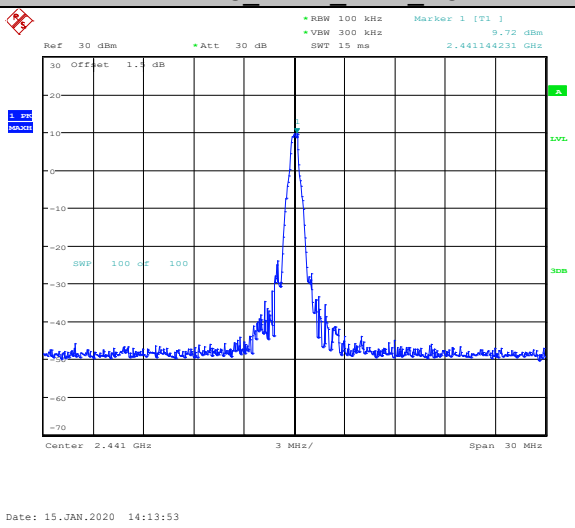

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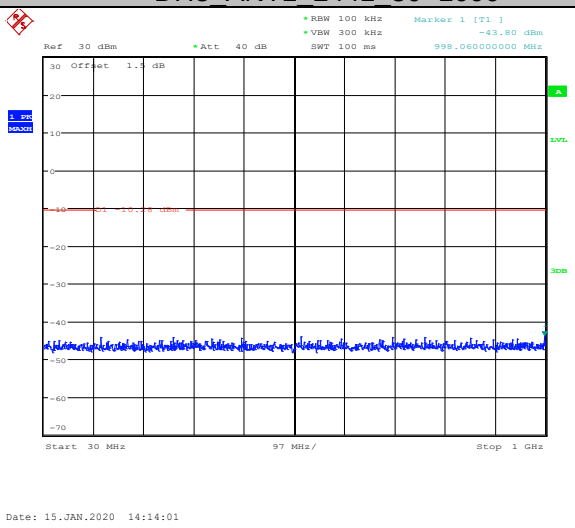

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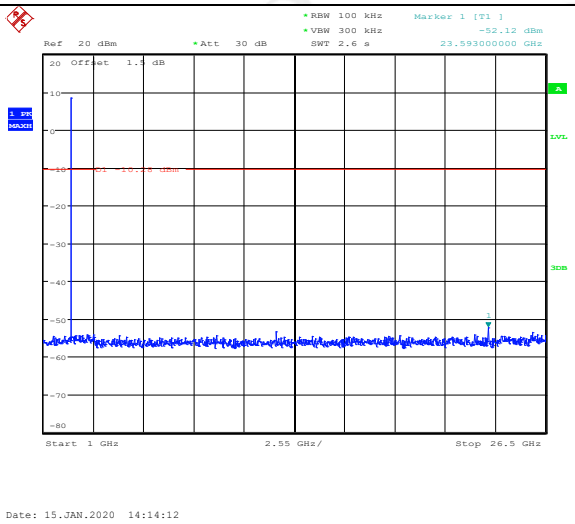

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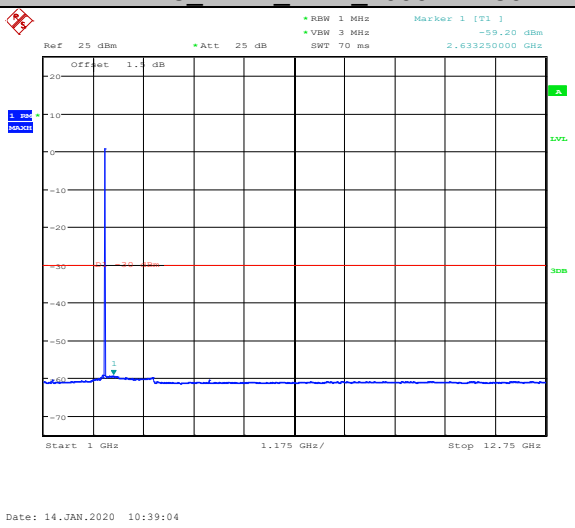

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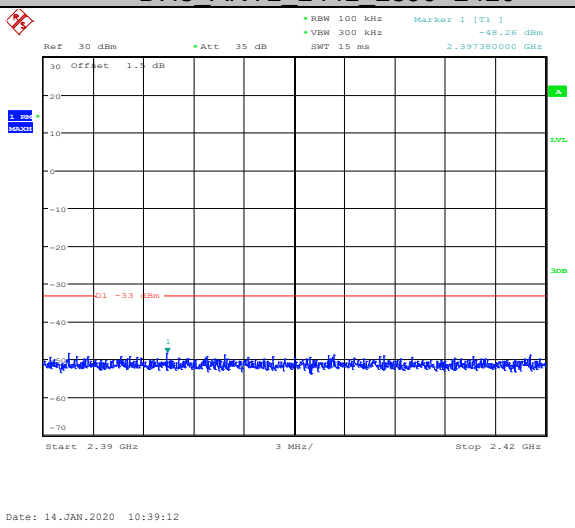

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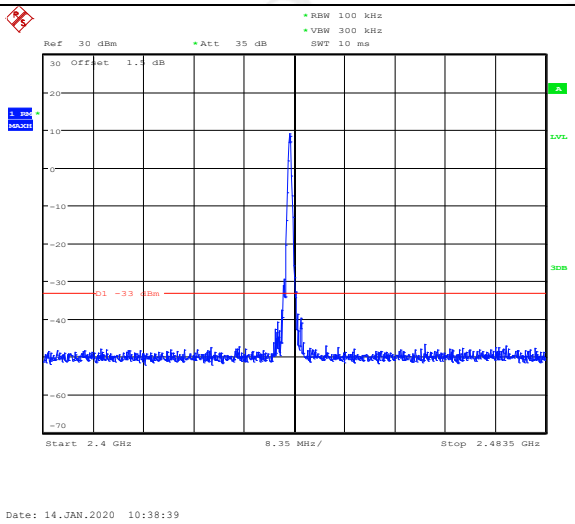

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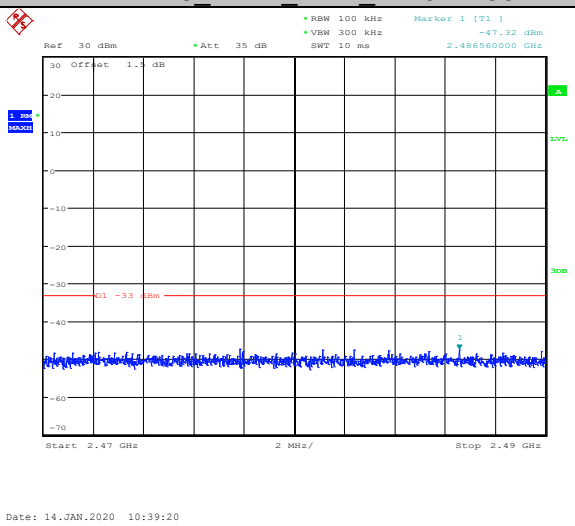

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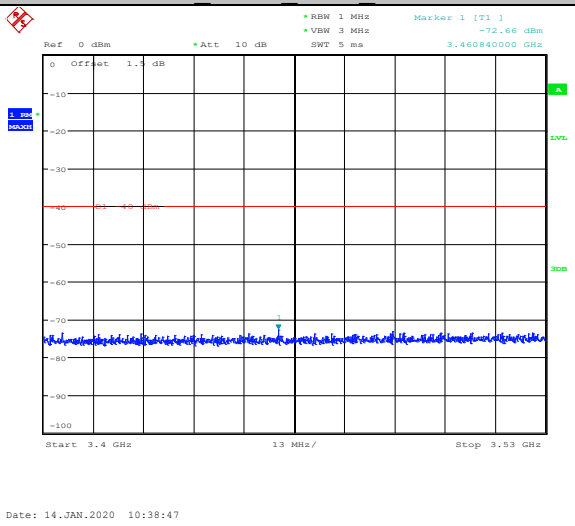

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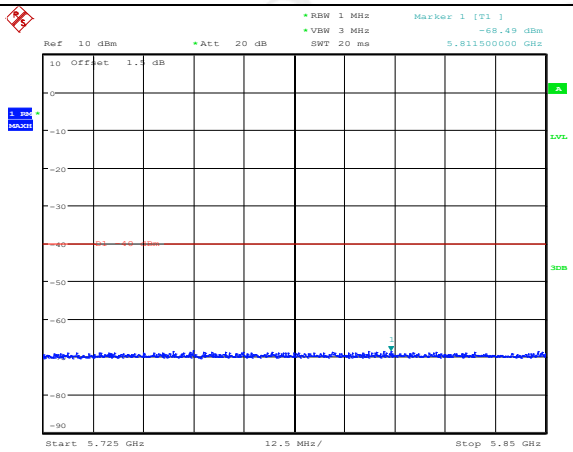

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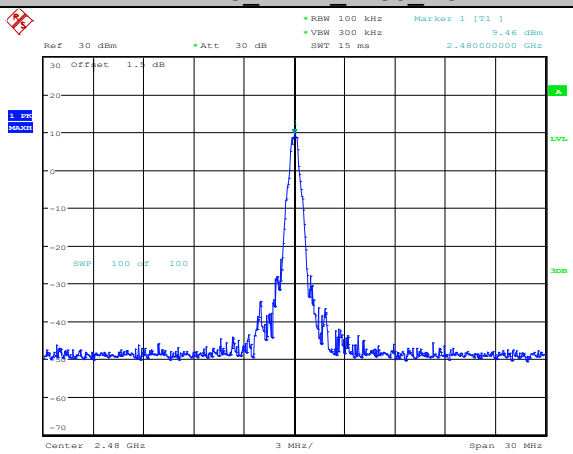

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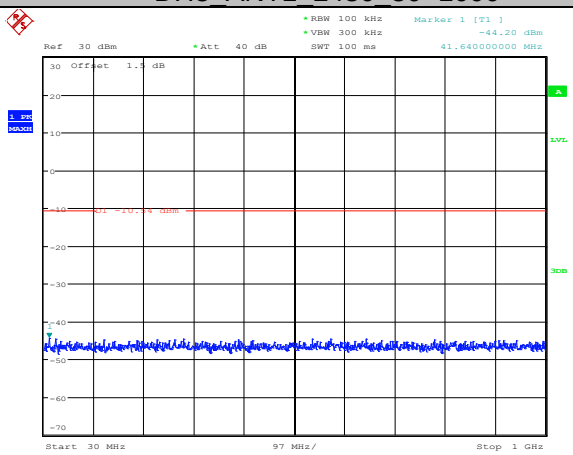

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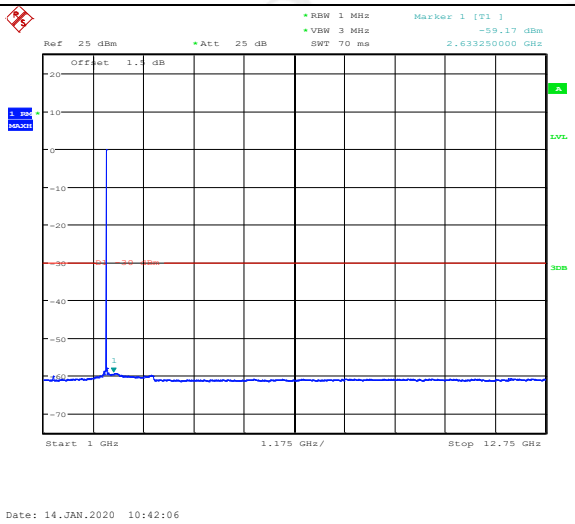

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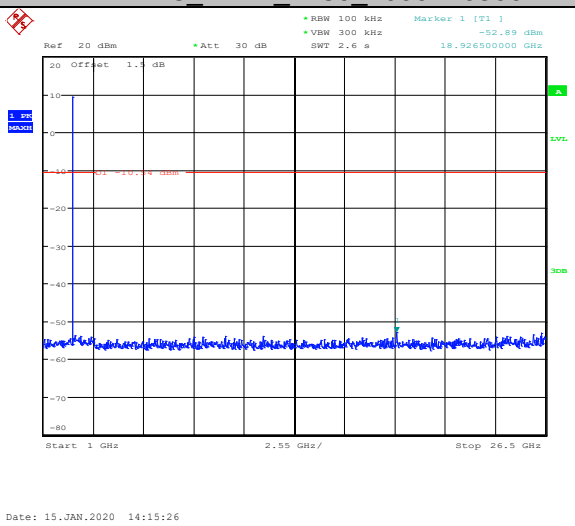

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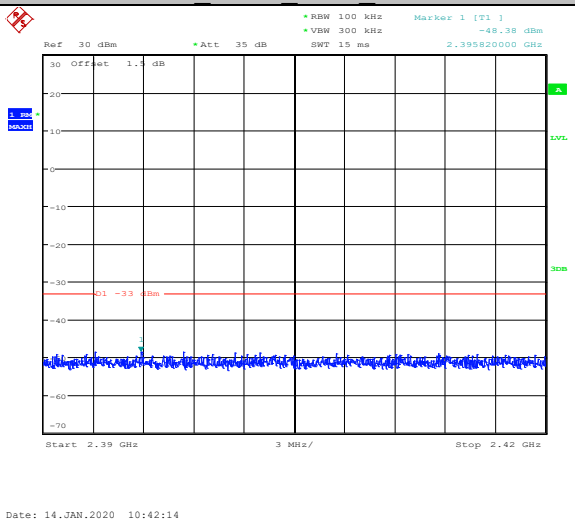

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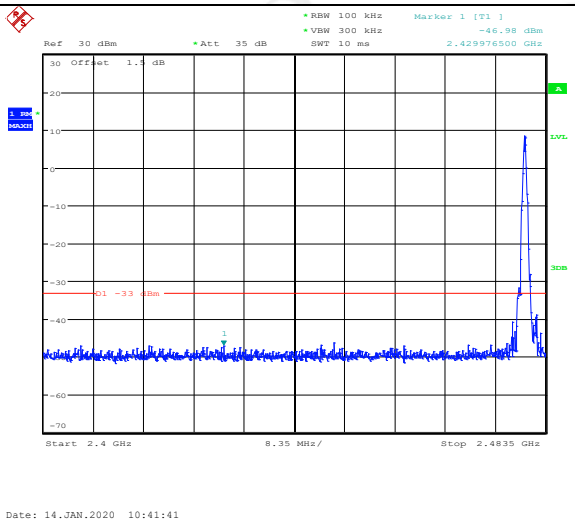

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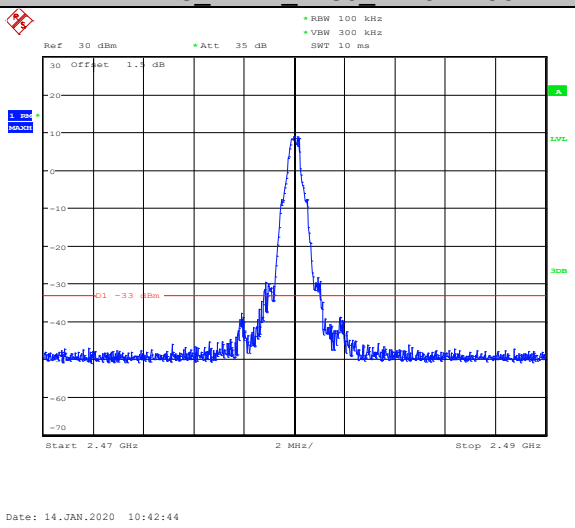

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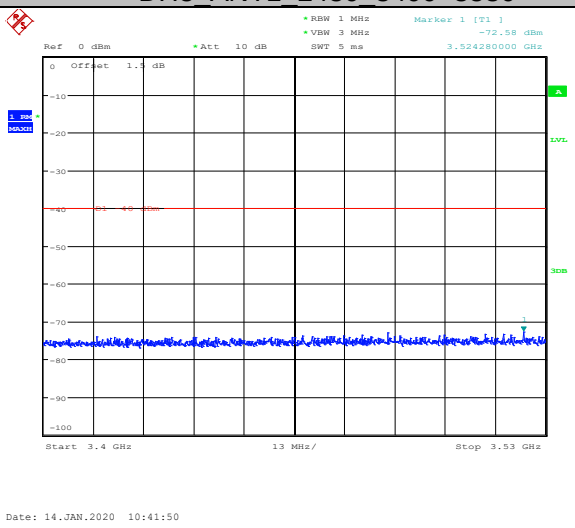

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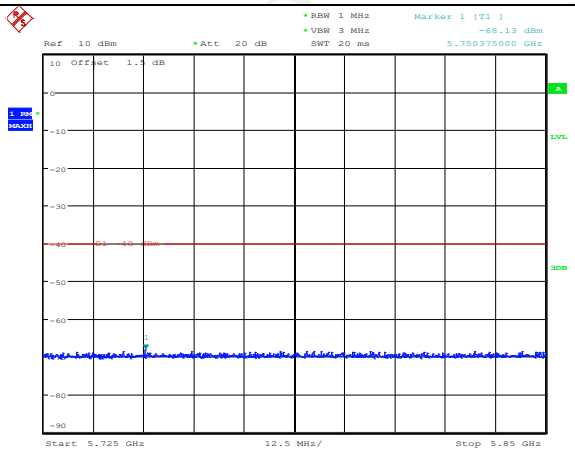

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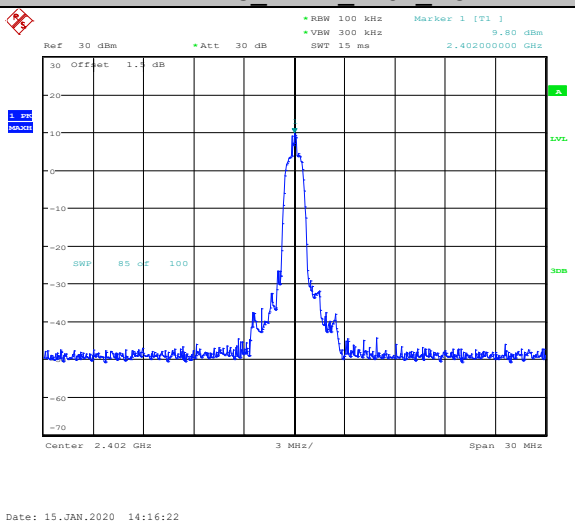

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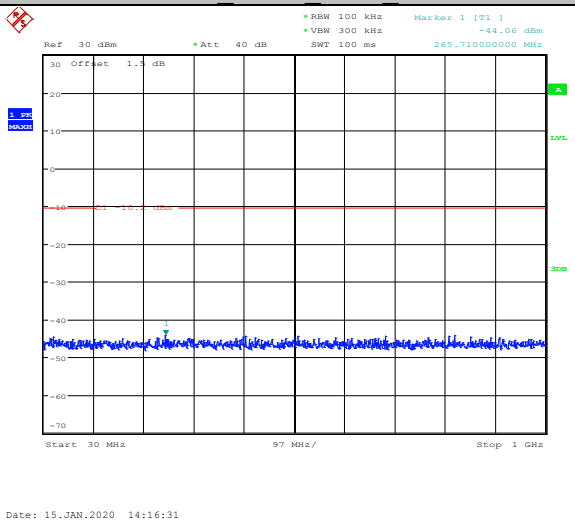
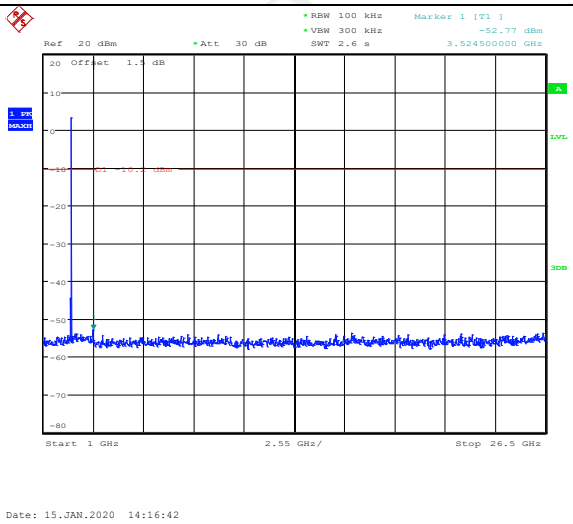
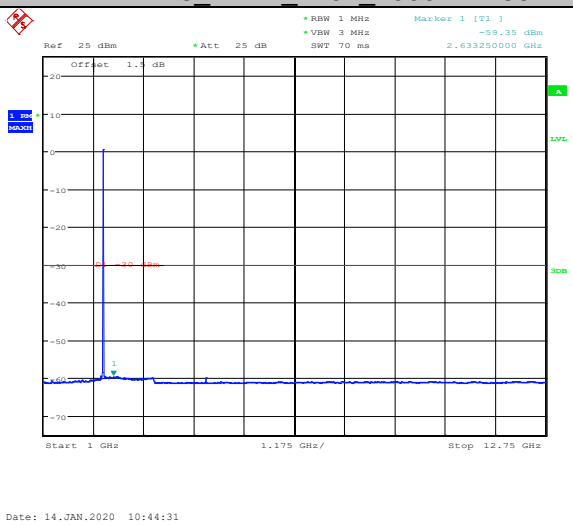


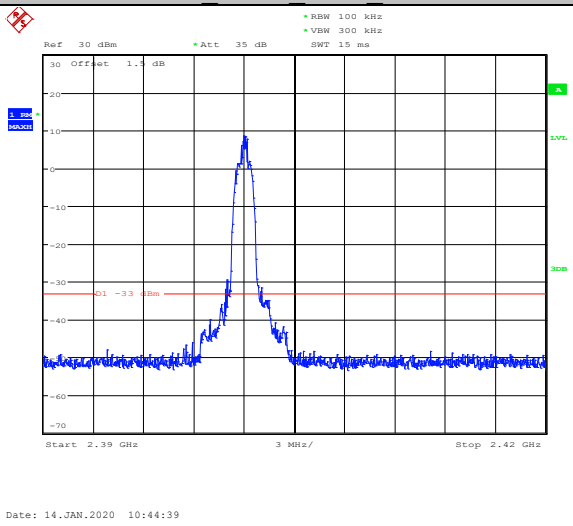
2DH5_ANT1_2402_1000~26500



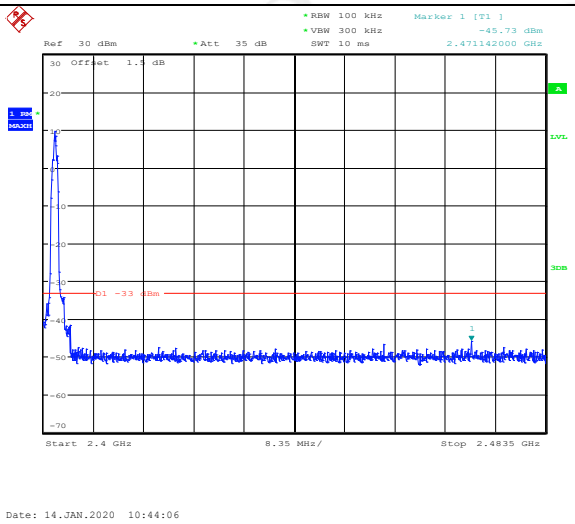
2DH5_ANT1_2402_1000~12750



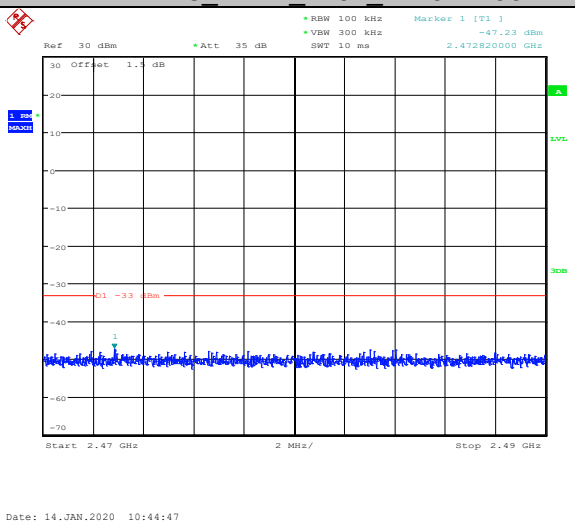
2DH5_ANT1_2402_2390~2420



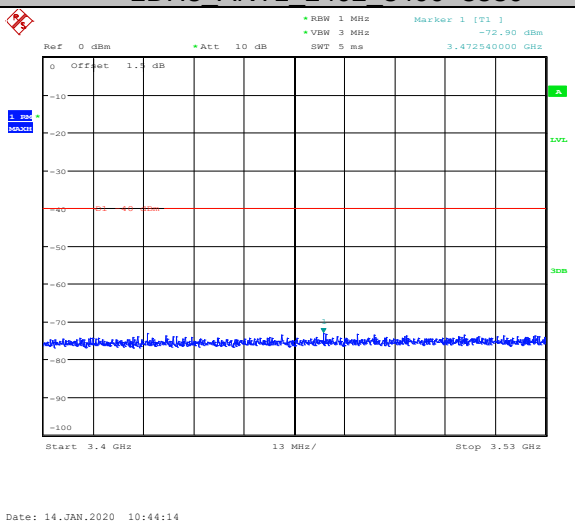
2DH5_ANT1_2402_2400~2483.5



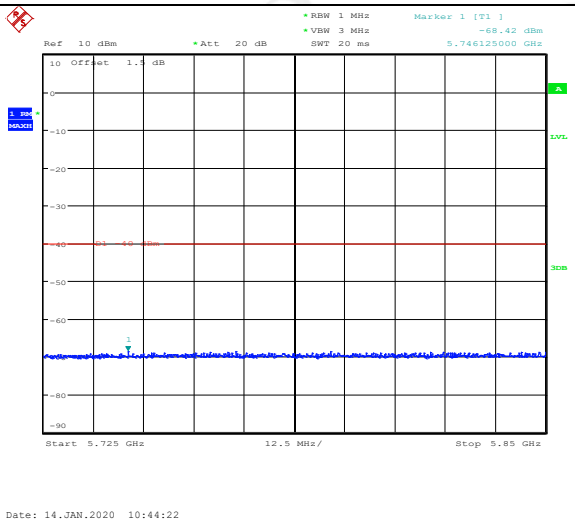
2DH5_ANT1_2402_2470~2490



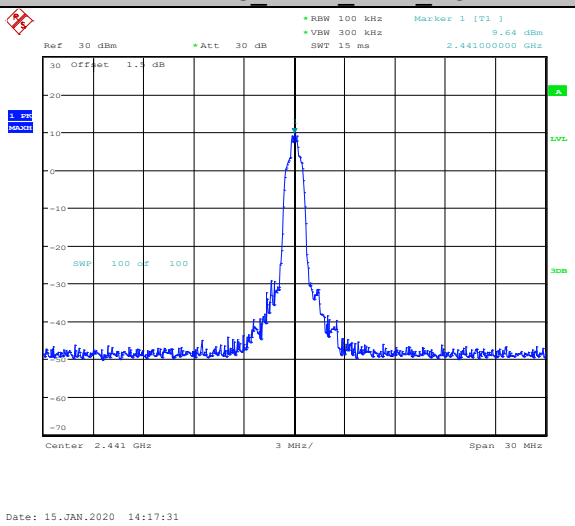
2DH5_ANT1_2402_3400~3530



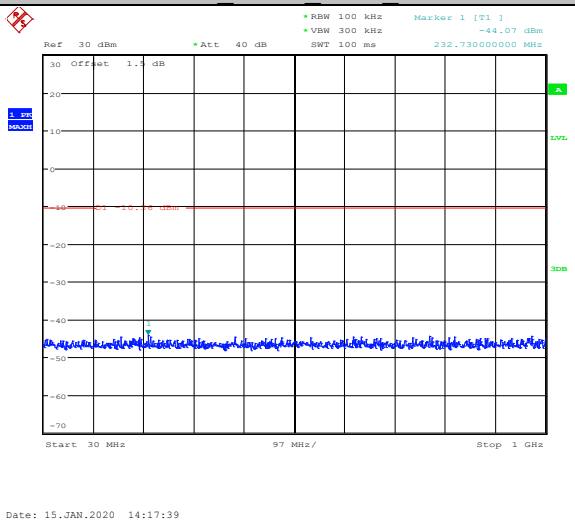
2DH5_ANT1_2402_5725~5850



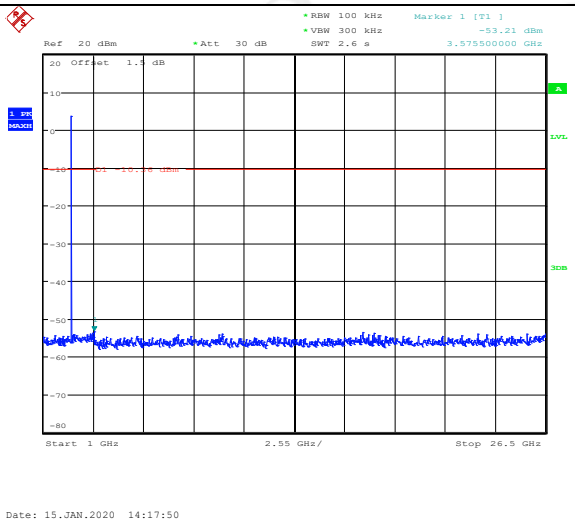
2DH5_ANT1_2441_Ref



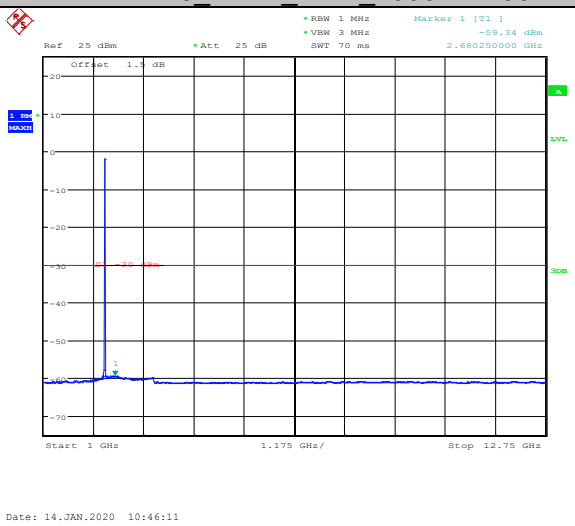
2DH5_ANT1_2441_30~1000



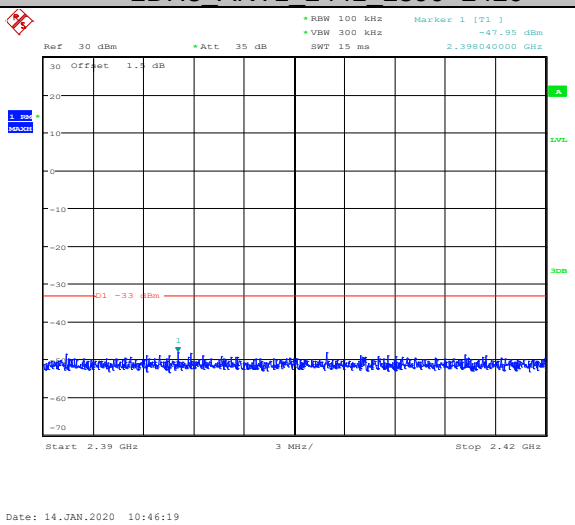
2DH5_ANT1_2441_1000~26500



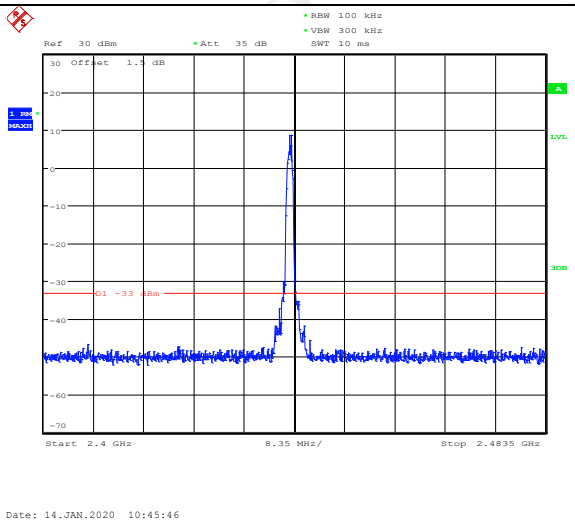
2DH5_ANT1_2441_1000~12750



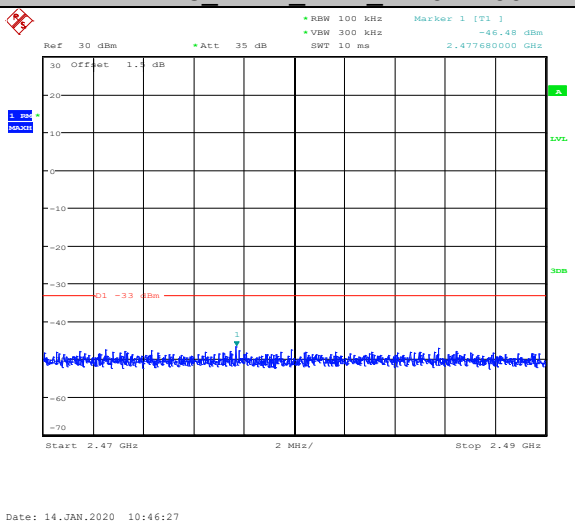
2DH5_ANT1_2441_2390~2420



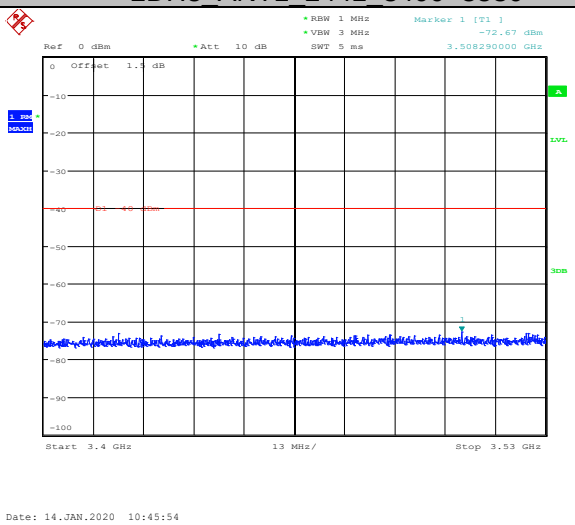
2DH5_ANT1_2441_2400~2483.5



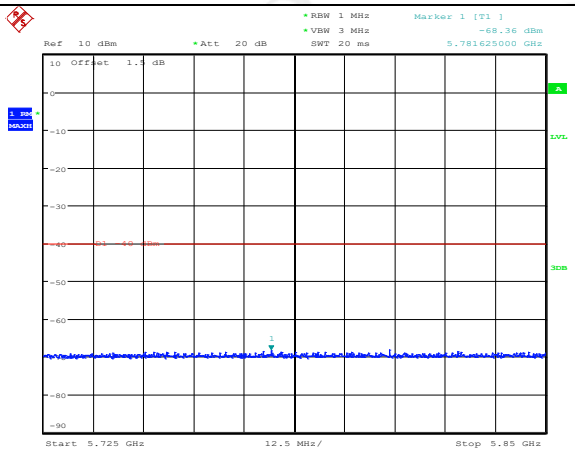
2DH5_ANT1_2441_2470~2490



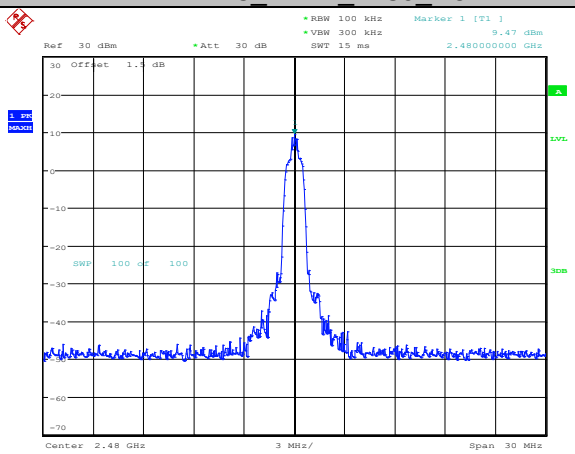
2DH5_ANT1_2441_3400~3530



2DH5_ANT1_2441_5725~5850



2DH5_ANT1_2480_Ref



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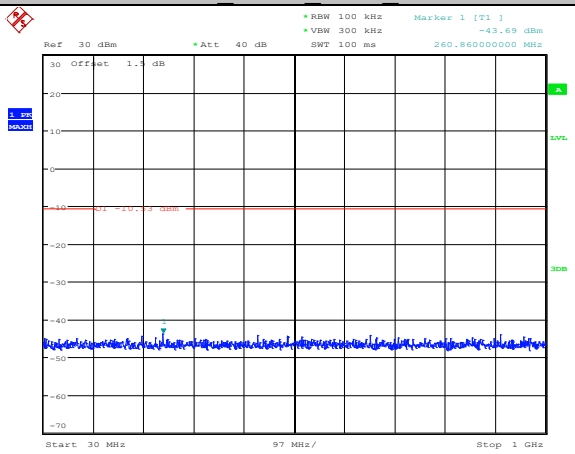
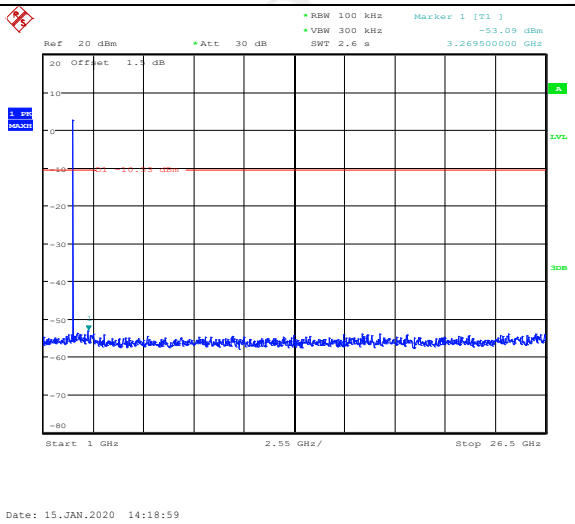
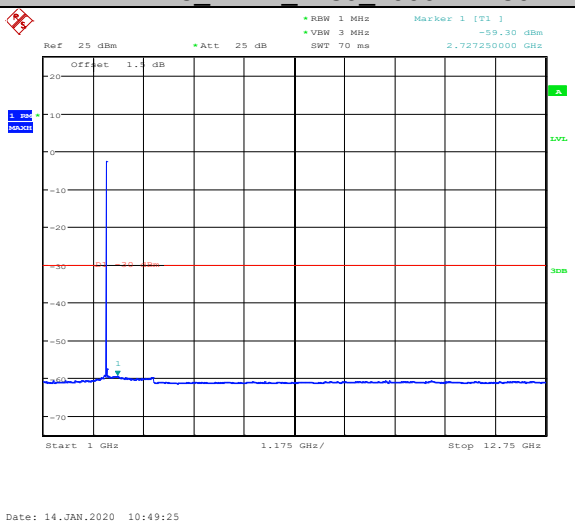


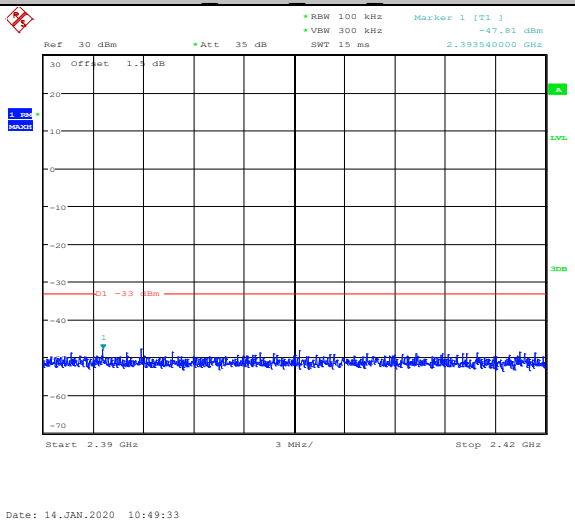
2DH5_ANT1_2480_1000~26500



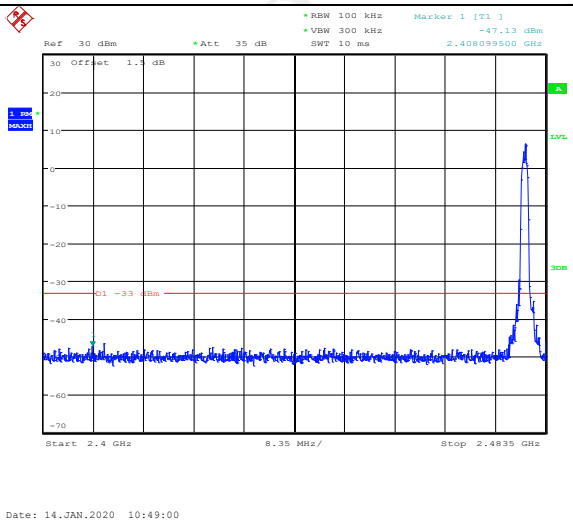
2DH5_ANT1_2480_1000~12750



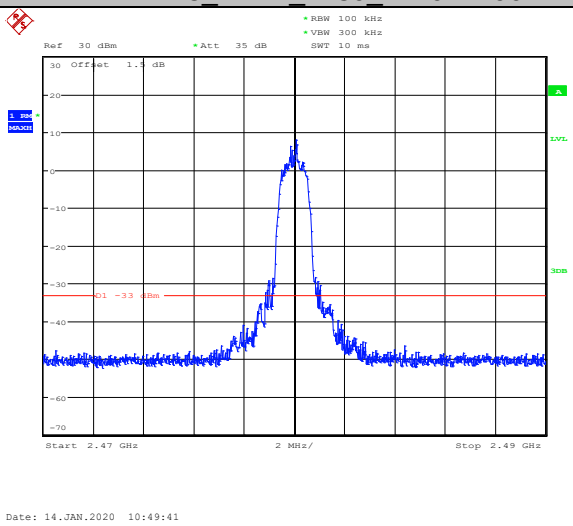
2DH5_ANT1_2480_2390~2420



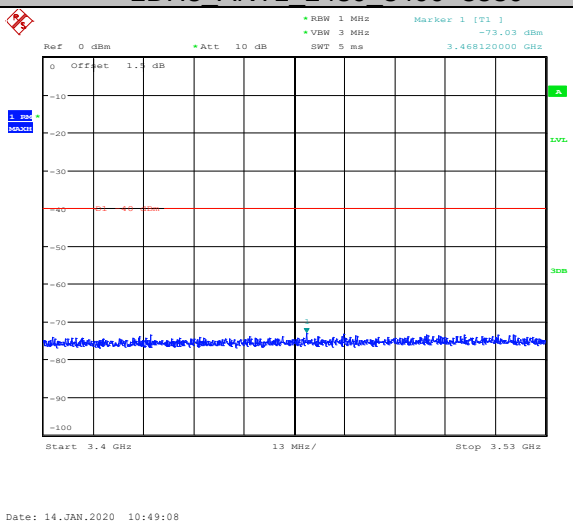
2DH5_ANT1_2480_2400~2483.5



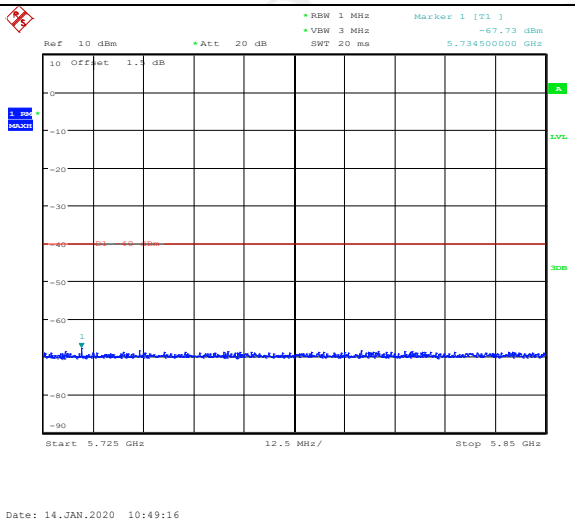
2DH5_ANT1_2480_2470~2490



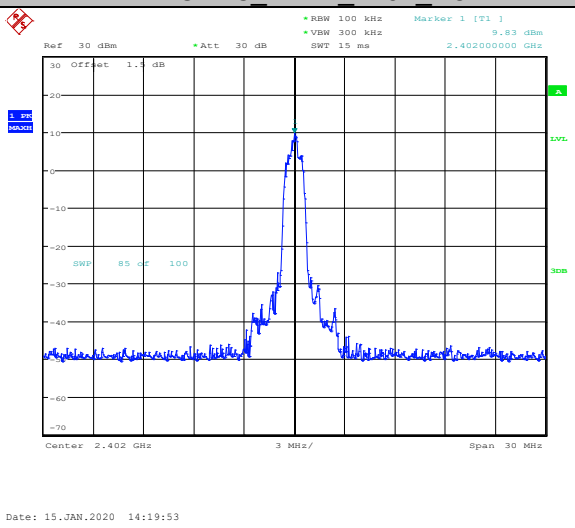
2DH5_ANT1_2480_3400~3530



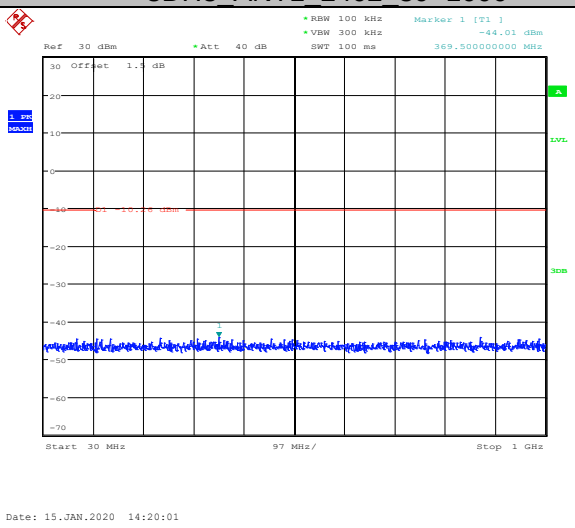
2DH5_ANT1_2480_5725~5850



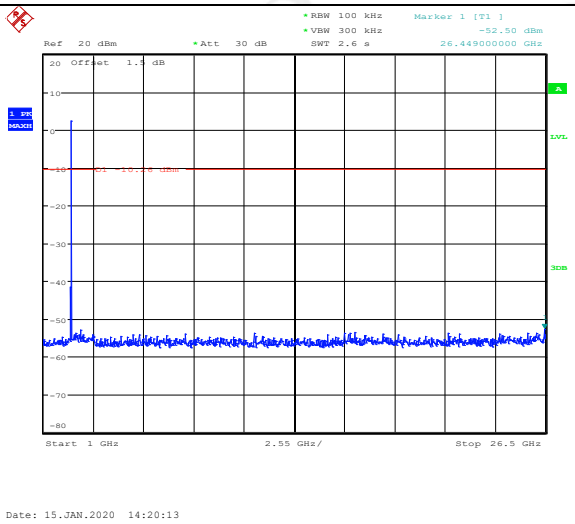
3DH5_ANT1_2402_Ref



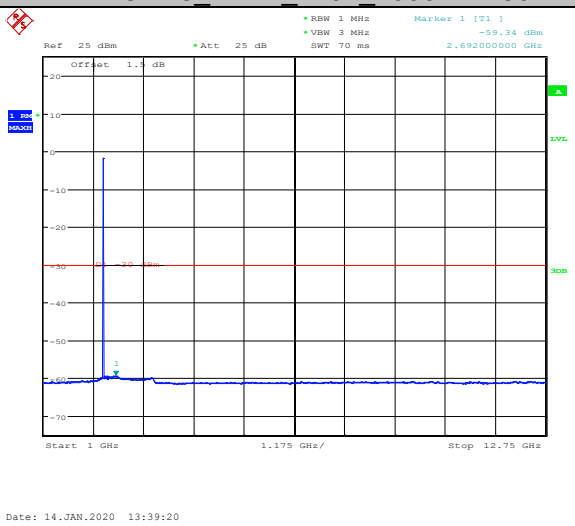
3DH5_ANT1_2402_30~1000



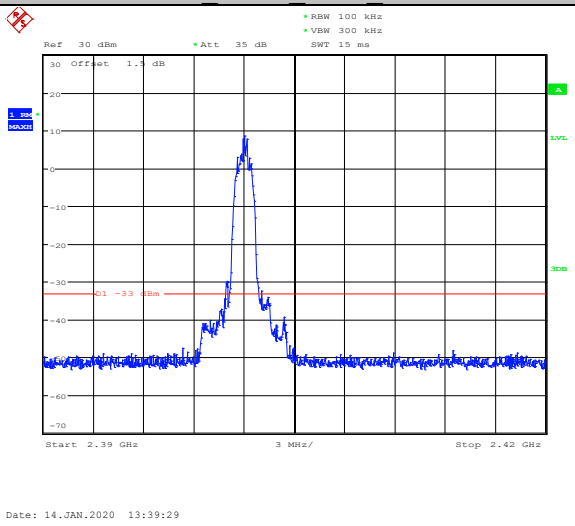
3DH5_ANT1_2402_1000~26500



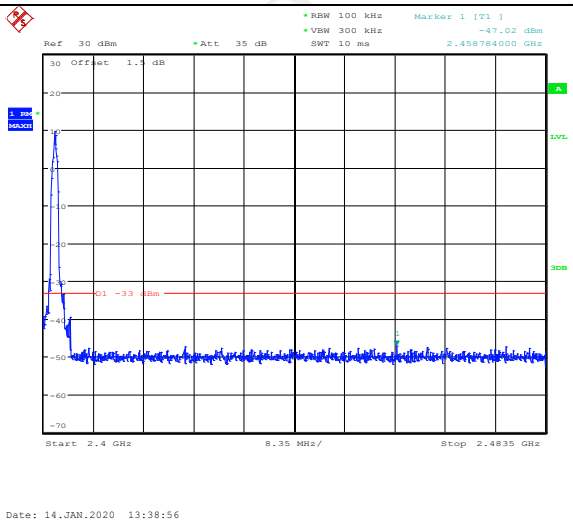
3DH5_ANT1_2402_1000~12750



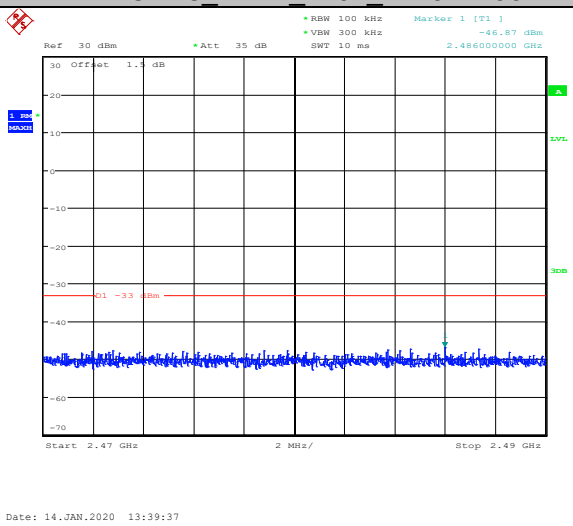
3DH5_ANT1_2402_2390~2420



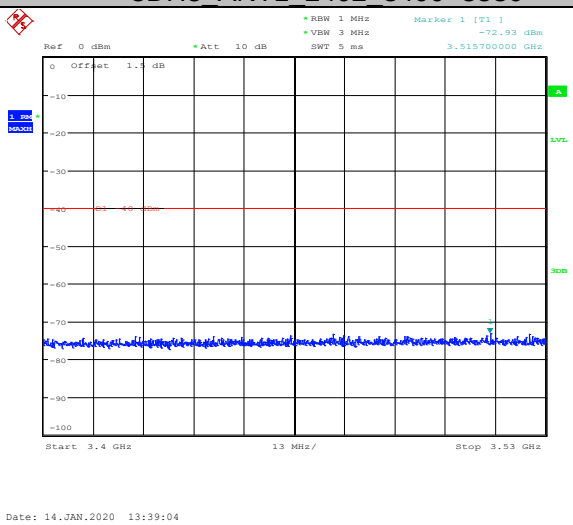
3DH5_ANT1_2402_2400~2483.5



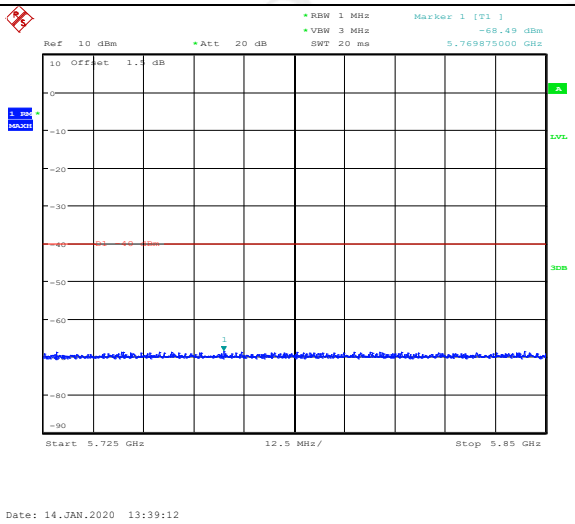
3DH5_ANT1_2402_2470~2490



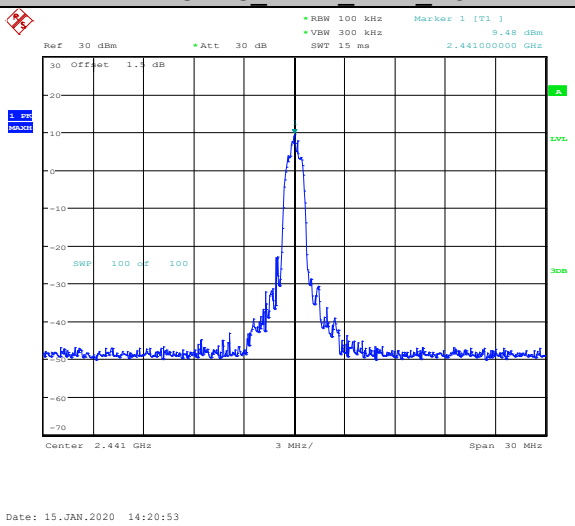
3DH5_ANT1_2402_3400~3530



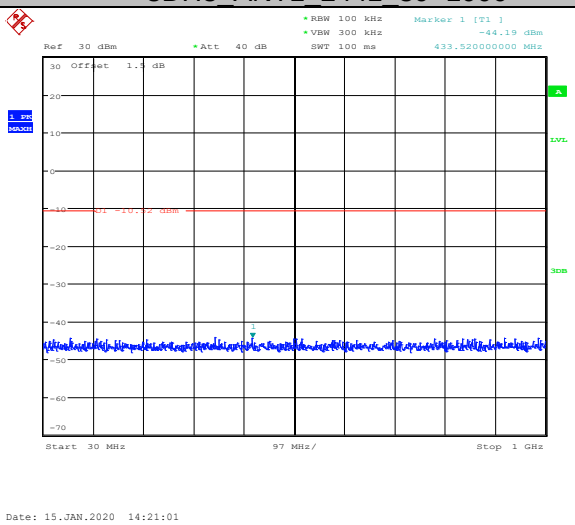
3DH5_ANT1_2402_5725~5850



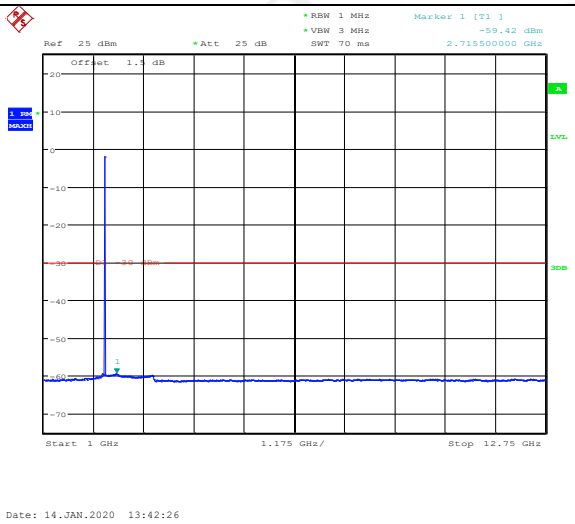
3DH5_ANT1_2441_Ref



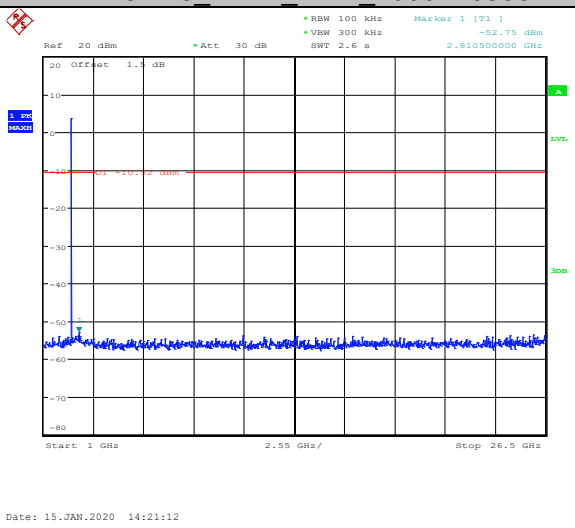
3DH5_ANT1_2441_30~1000



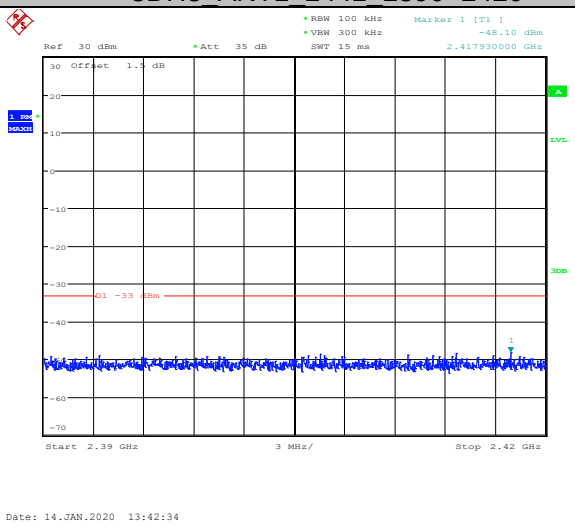
3DH5_ANT1_2441_1000~12750



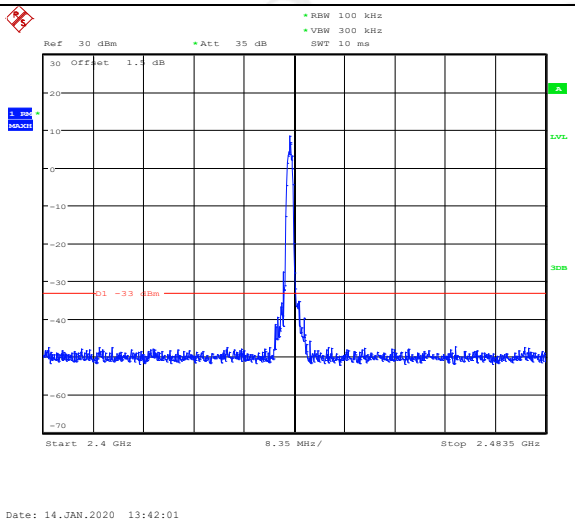
3DH5_ANT1_2441_1000~26500



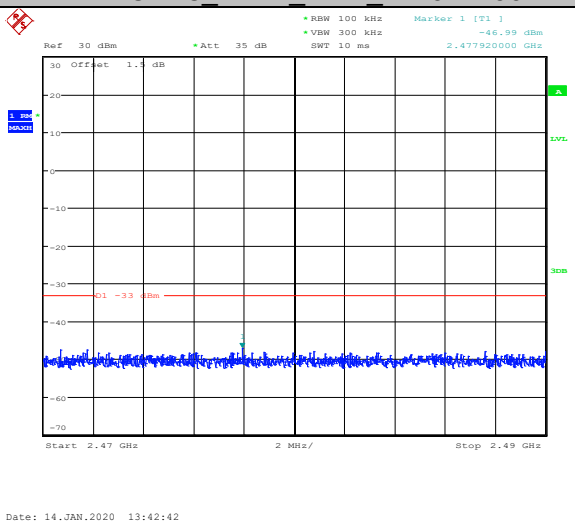
3DH5_ANT1_2441_2390~2420



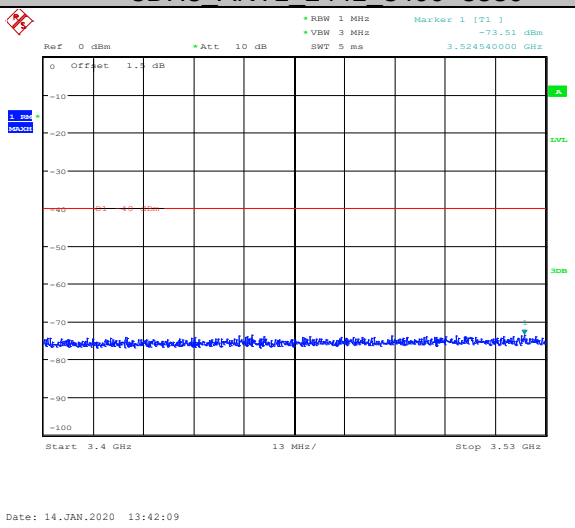
3DH5_ANT1_2441_2400~2483.5



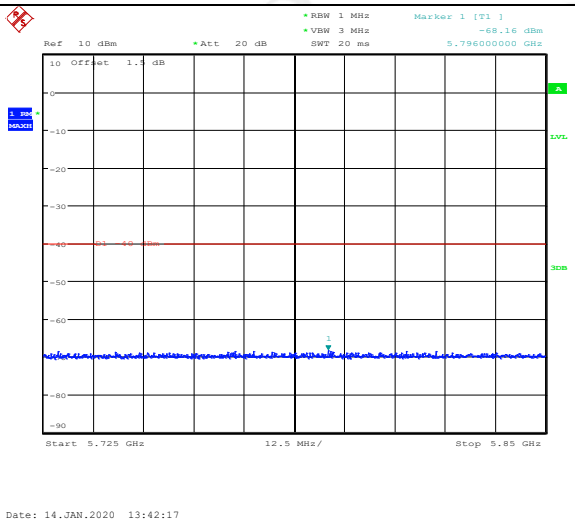
3DH5_ANT1_2441_2470~2490



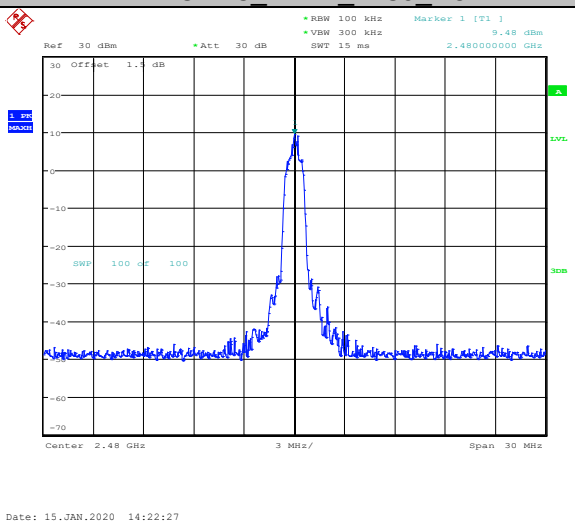
3DH5_ANT1_2441_3400~3530



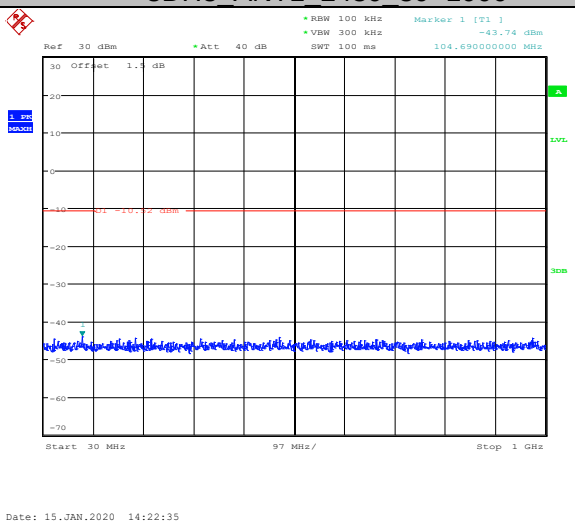
3DH5_ANT1_2441_5725~5850



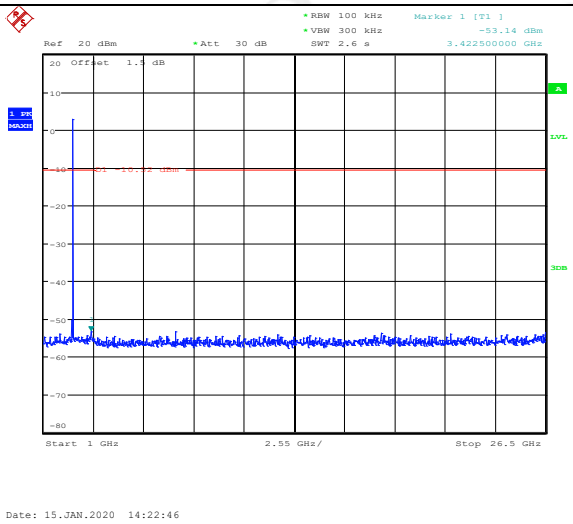
3DH5_ANT1_2480_Ref



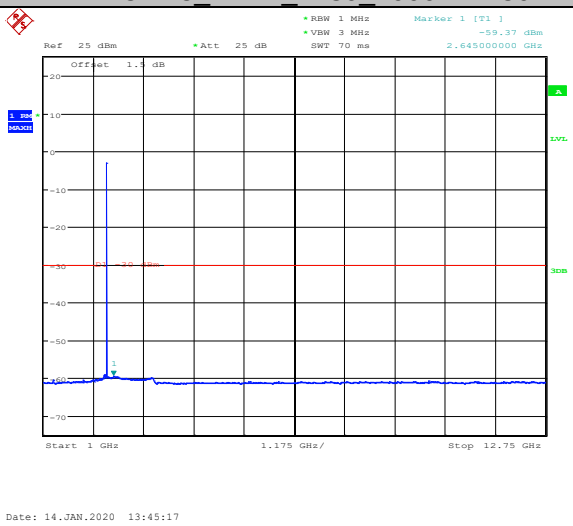
3DH5_ANT1_2480_30~1000



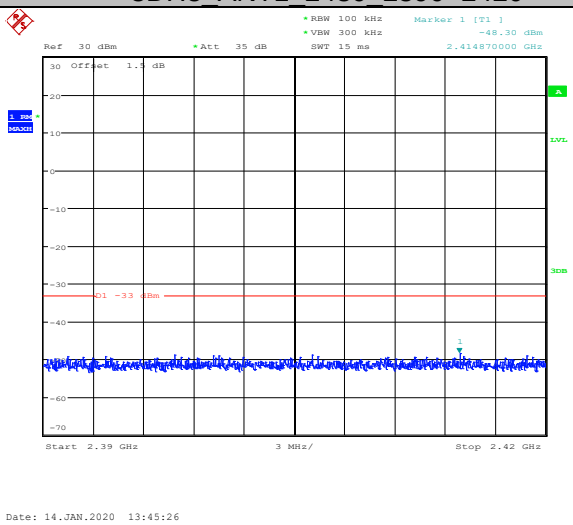
3DH5_ANT1_2480_1000~26500



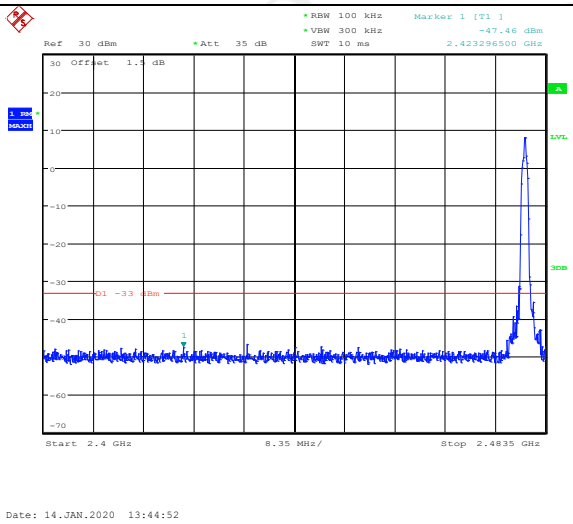
3DH5_ANT1_2480_1000~12750



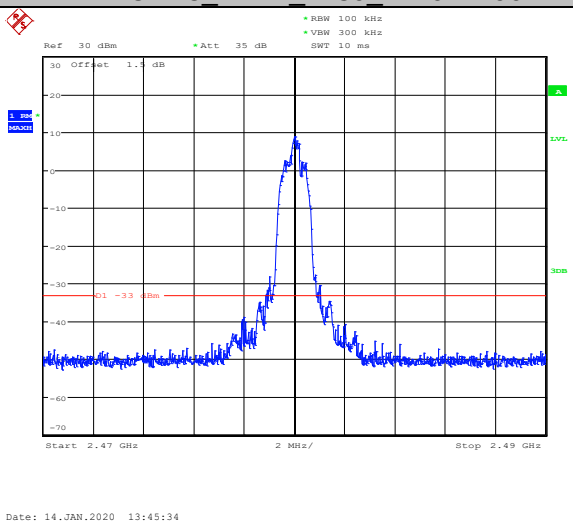
3DH5_ANT1_2480_2390~2420



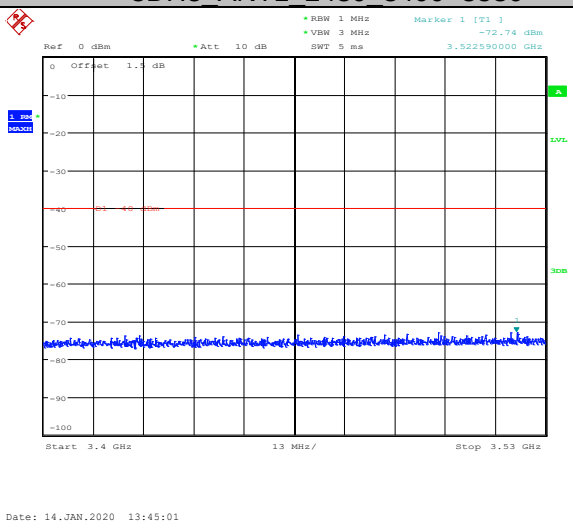
3DH5_ANT1_2480_2400~2483.5



3DH5_ANT1_2480_2470~2490



3DH5_ANT1_2480_3400~3530



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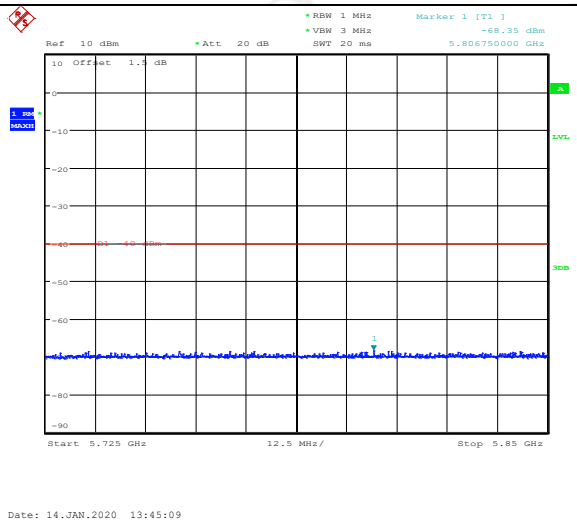
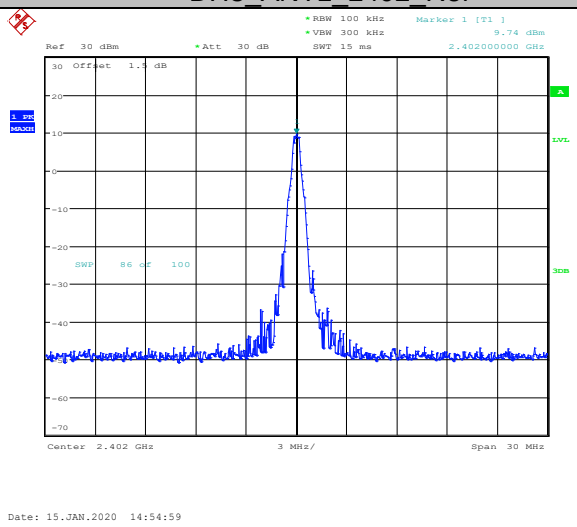
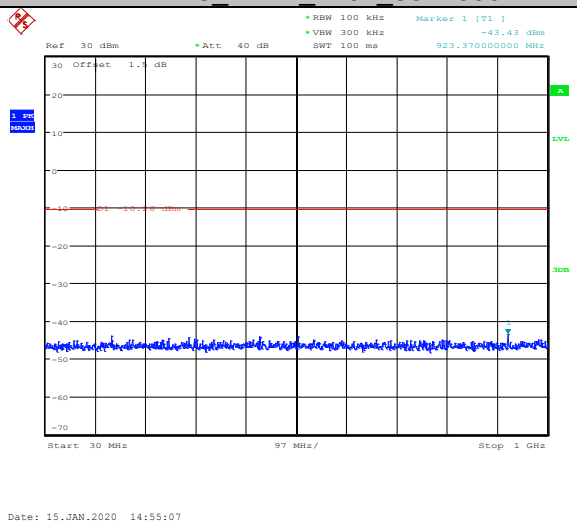


Right side:

DH5_ANT1_2402_Ref



DH5_ANT1_2402_30~1000



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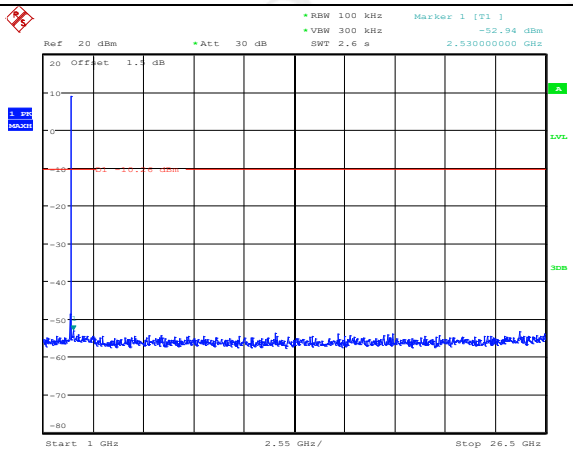
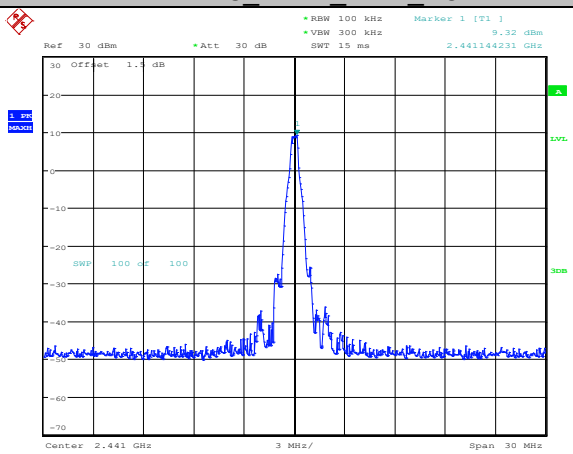


Date: 15.JAN.2020 14:55:19

DH5_ANT1_2441_Ref



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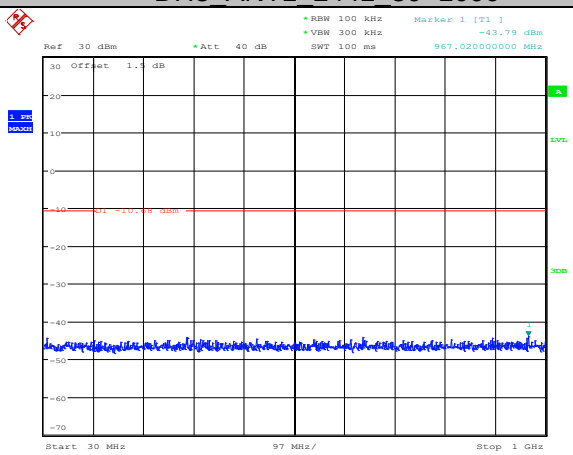
DH5_ANT1_2441_30~1000



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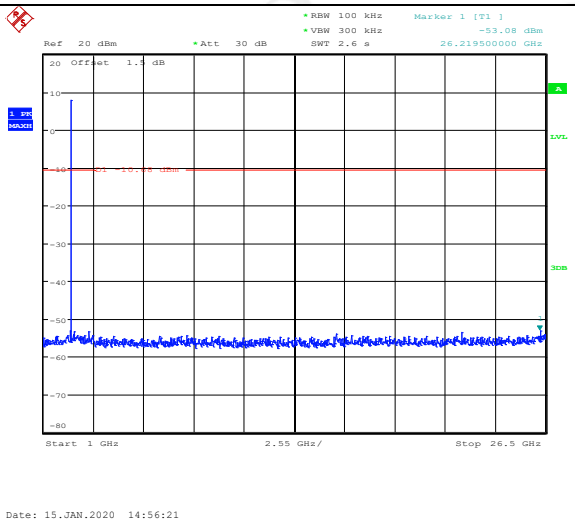
DH5_ANT1_2441_1000~26500



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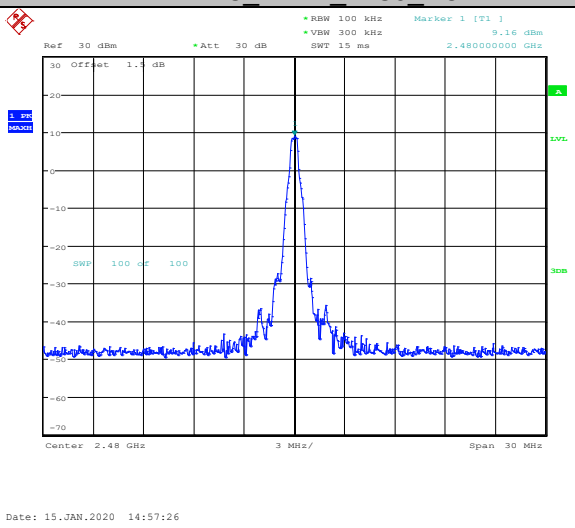

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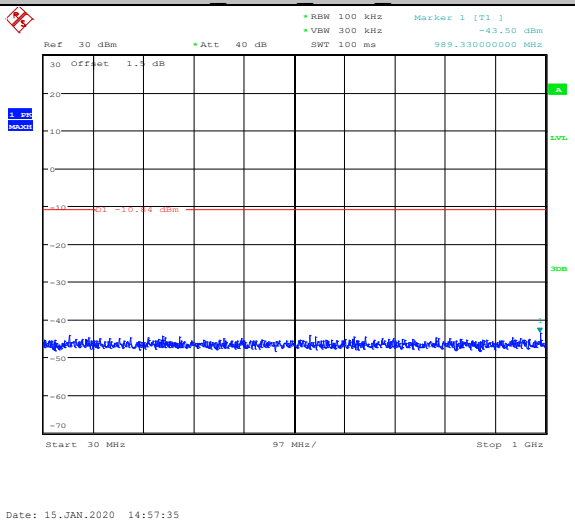
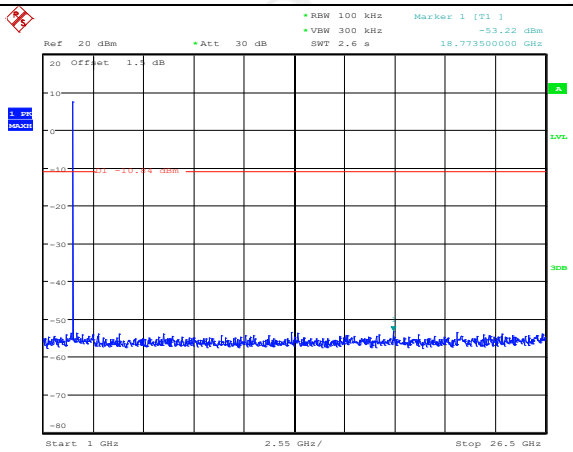


DH5_ANT1_2480_1000~26500



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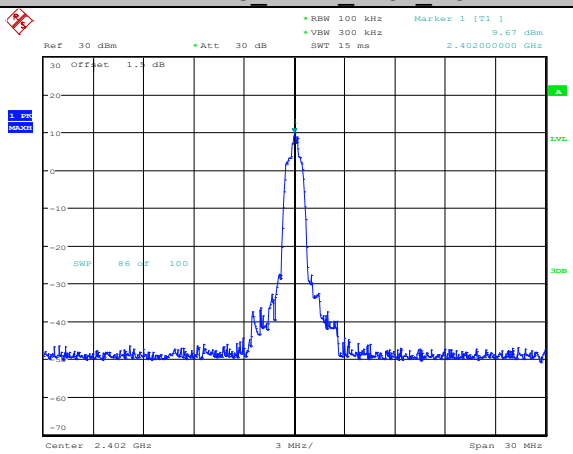

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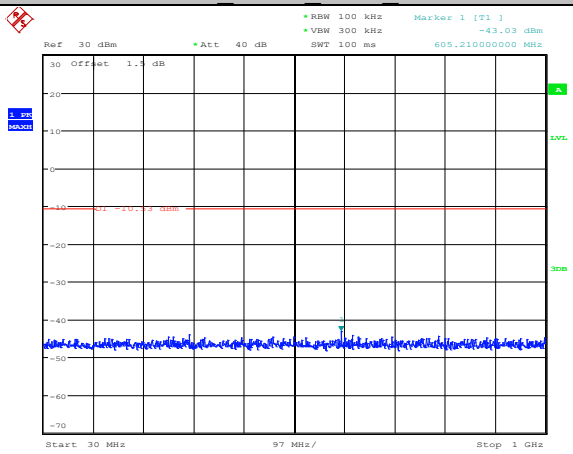

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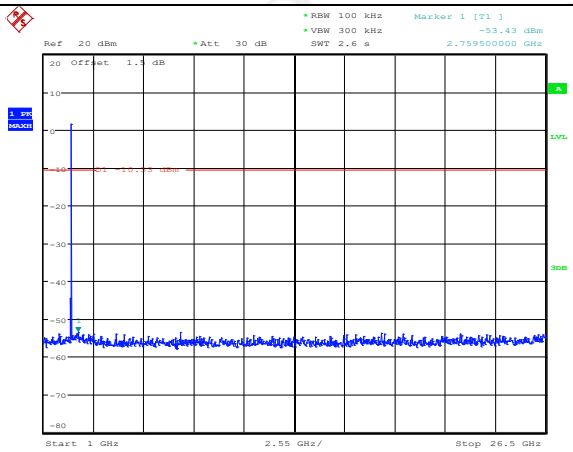
2DH5_ANT1_2402_1000~26500



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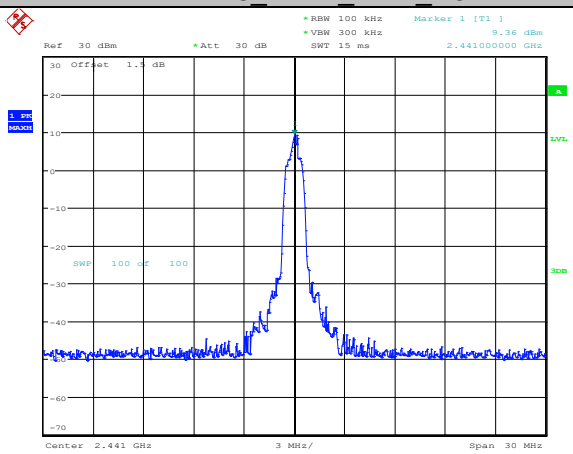
2DH5_ANT1_2441_Ref



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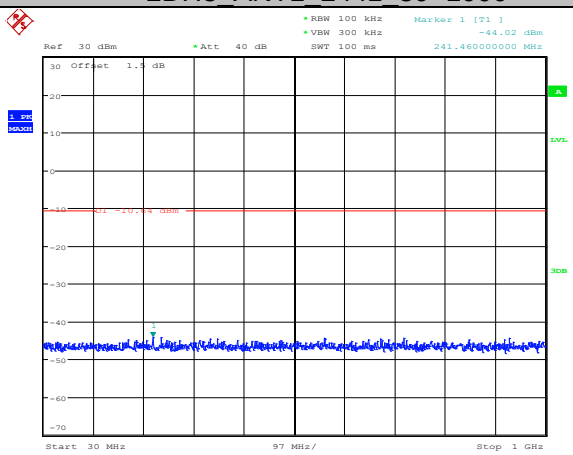

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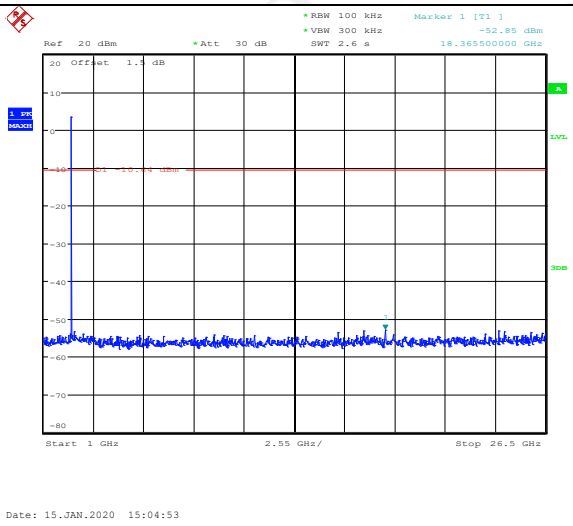

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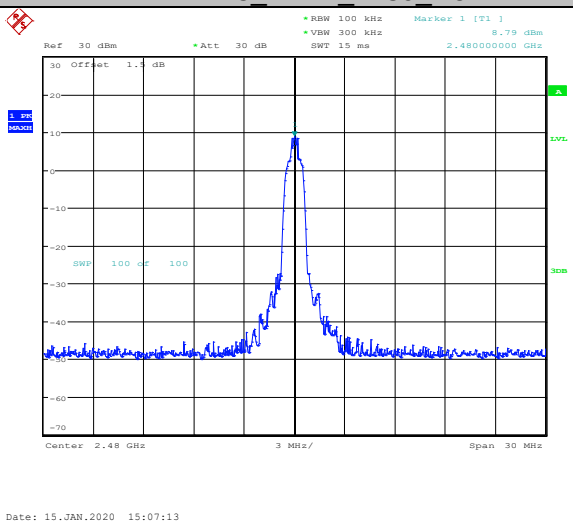

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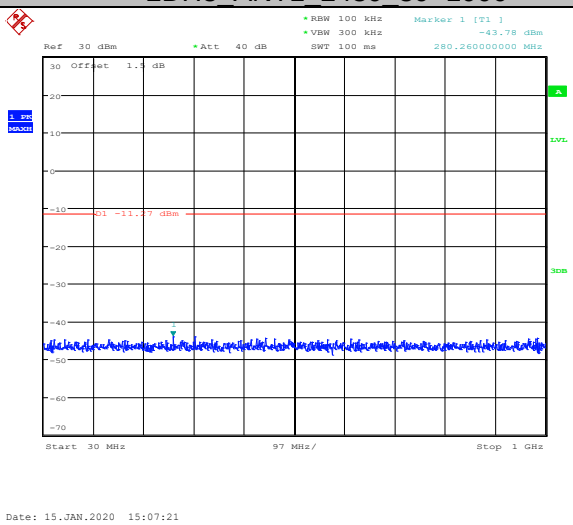

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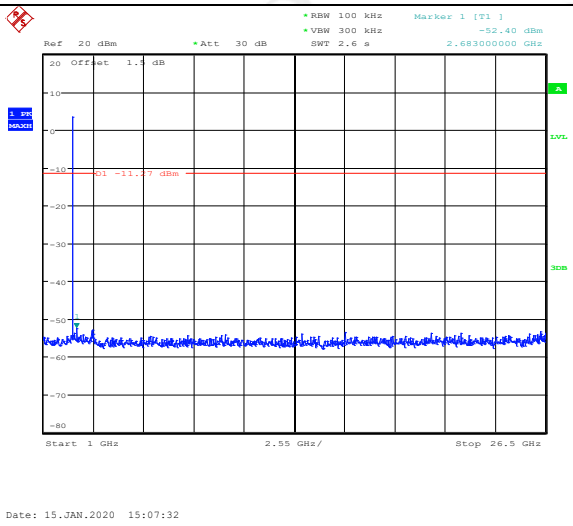

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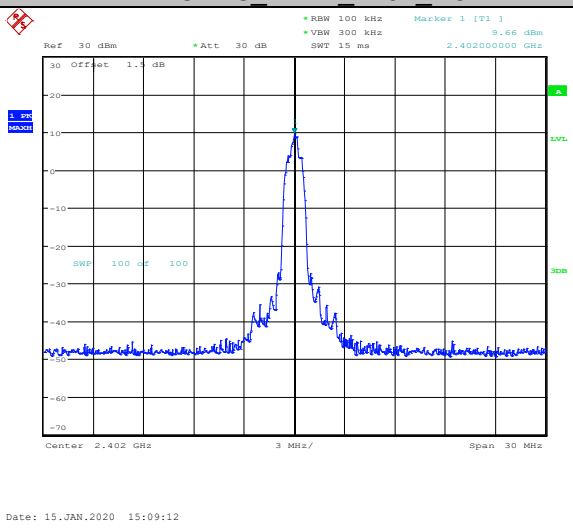

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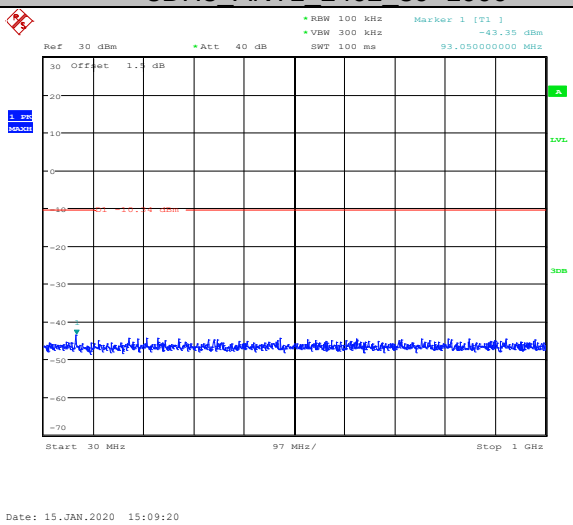

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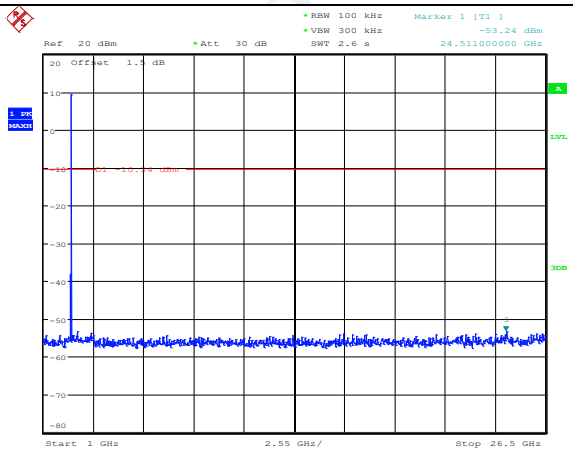

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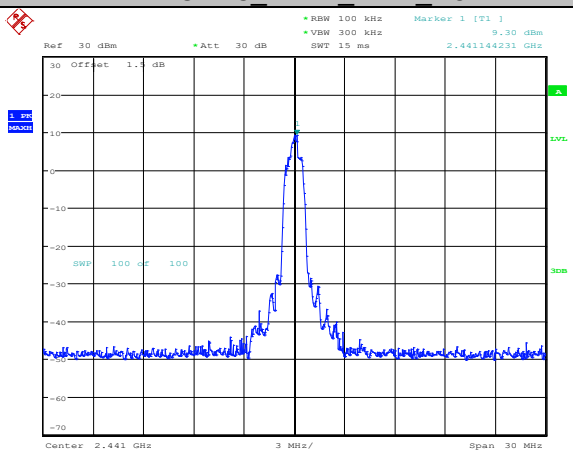
3DH5_ANT1_2441_Ref



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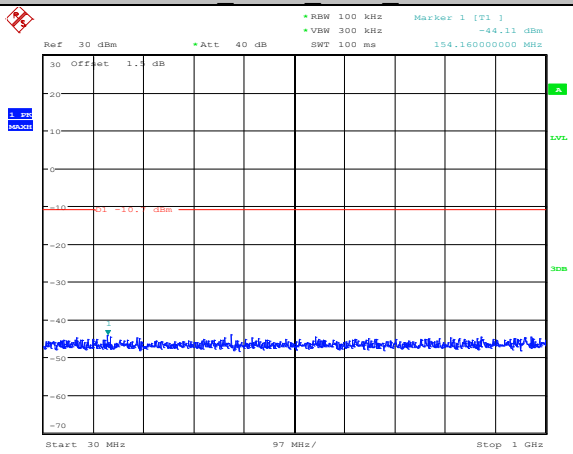

Date: 15.JAN.2020 15:10:18

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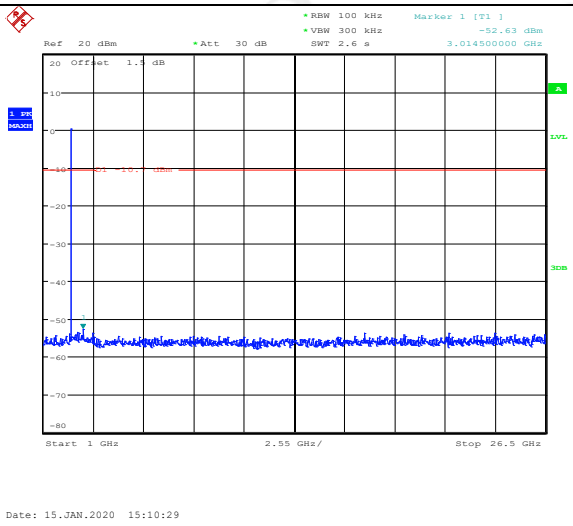

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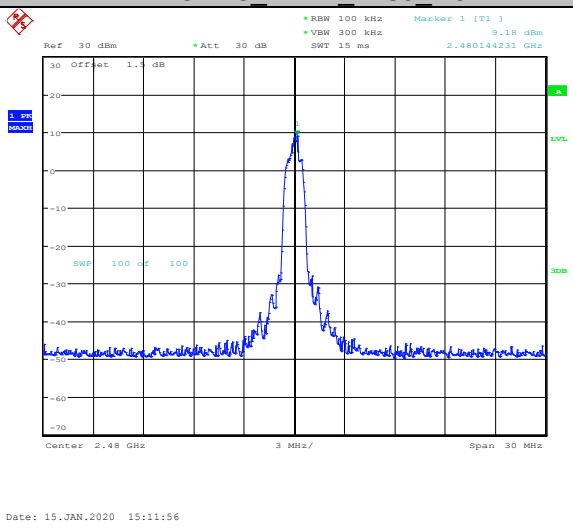

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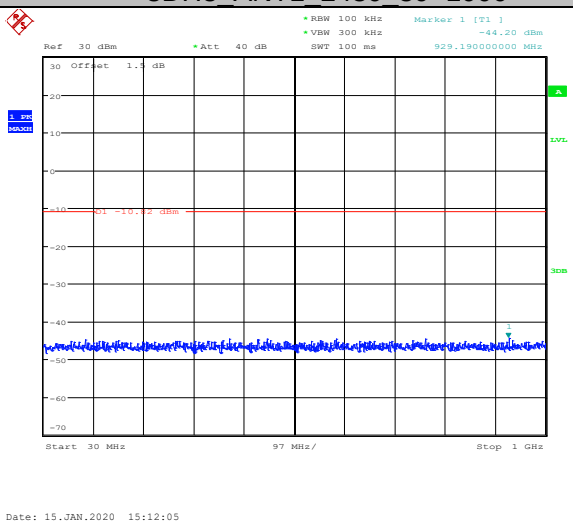
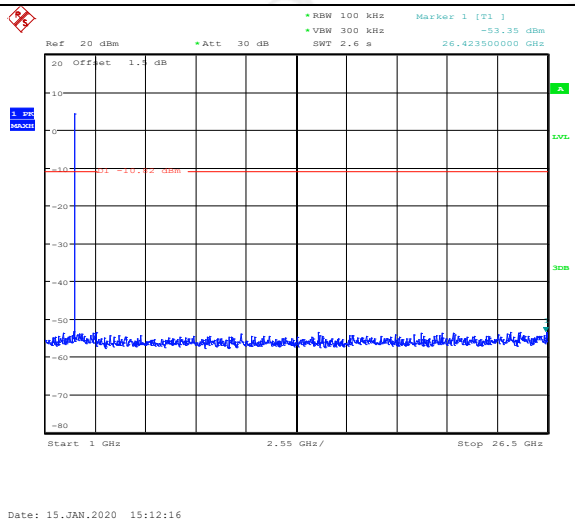
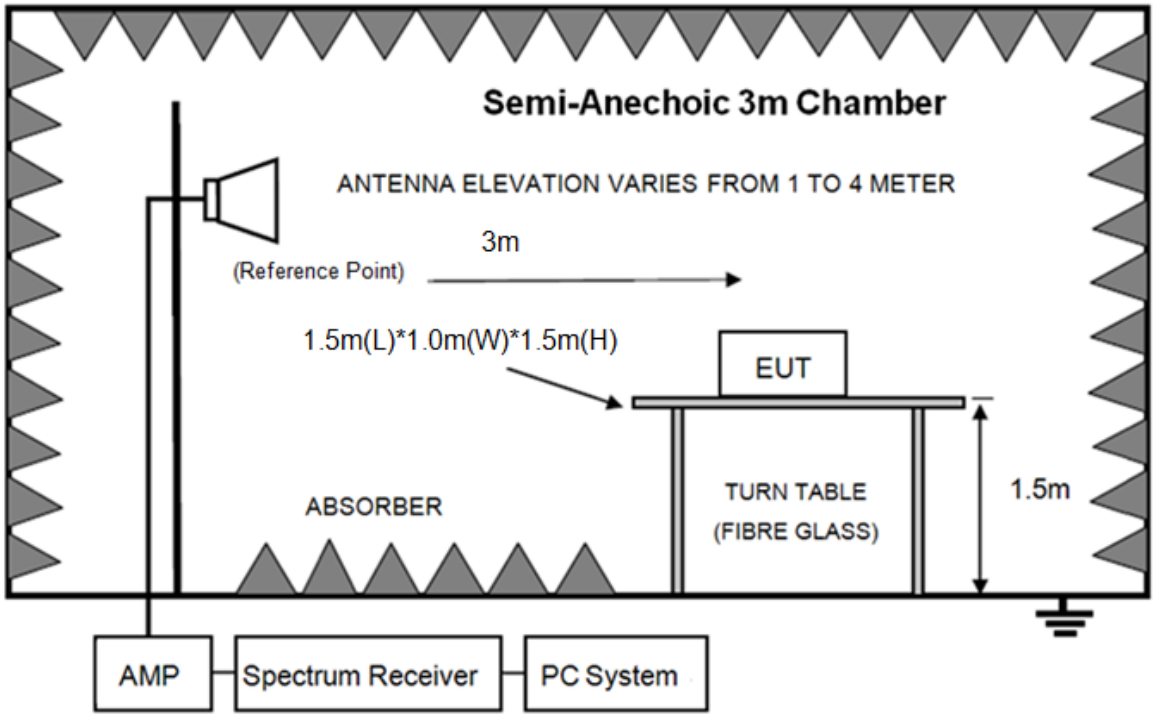


3DH5_ANT1_2480_1000~26500


RBW 100 kHz
VBW 300 kHz
SWT 2.6 s
Marker 1 [T1]
-53.35 dBm
26.423500000 GHz
Ref 20 dBm
Att 30 dB
Offset 1.5 dB
1 PK
MAXH
A
LVL
3DB
Start 1 GHz
2.55 GHz/
Stop 26.5 GHz
Date: 15.JAN.2020 15:12:16

12. Band Edge Compliance (radiated method)

12.1. Block diagram of test setup



12.2. Limit

All restriction band should comply with 15.209, other emission should be at least 20dB below the fundamental.

12.3. Test Procedure

Same with clause 10.3 except change investigated frequency range from 2310 MHz to 2410 MHz and 2470 MHz to 2500 MHz.

Remark: All restriction band have been tested, and only the worst case is shown in report.

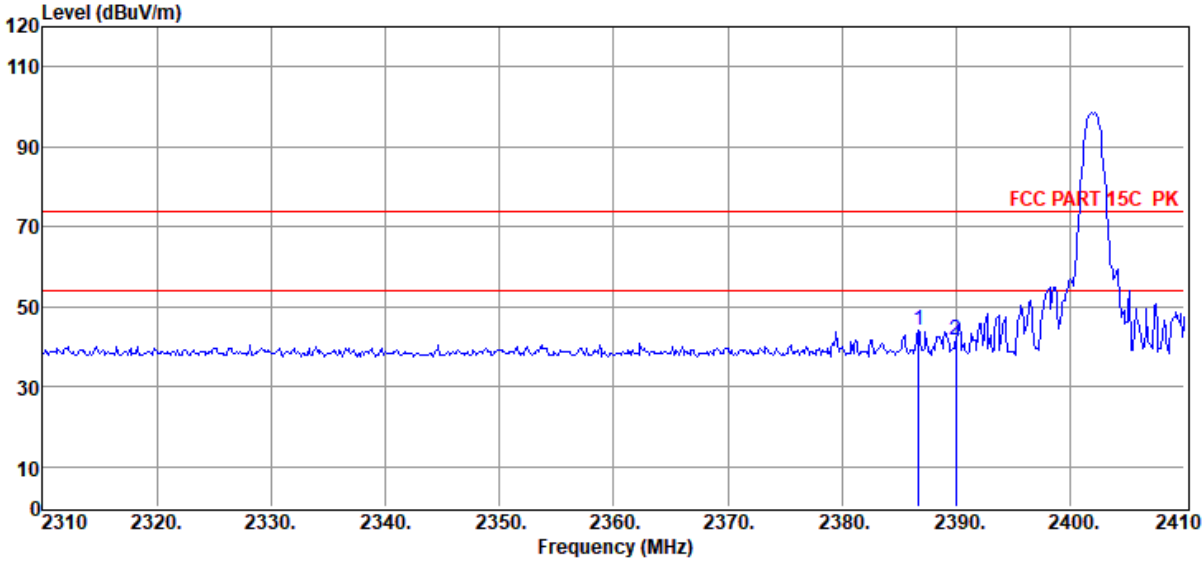
12.4. Test result

PASS. (See below detailed test result)
Remark: hopping on and hopping off mode all have been test, hopping off mode is worse and reported only. Scan with all side, the worst case is left side recorded in this report.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/HORIZONTAL
Memo	: DH5 2402		

Data: 35



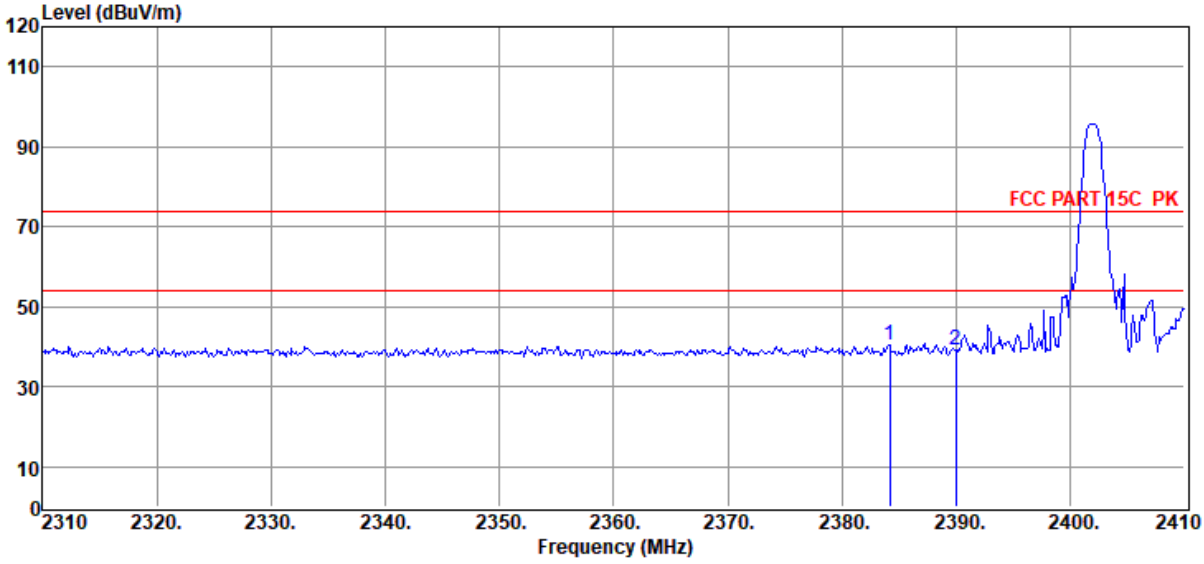
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2386.70	53.61	29.45	43.20	4.34	44.20	74.00	-29.80	Peak	HORIZONTAL
2	2390.00	51.22	29.46	43.21	4.34	41.81	74.00	-32.19	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/VERTICAL
Memo	: DH5 2402		

Data: 36



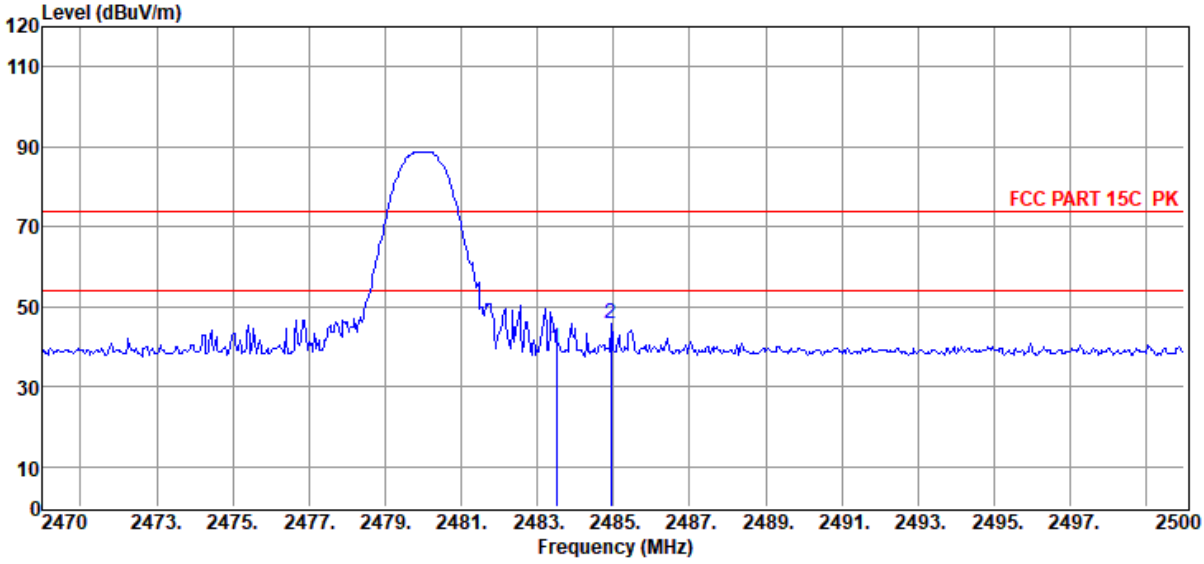
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2384.20	49.96	29.44	43.20	4.33	40.53	74.00	-33.47	Peak	VERTICAL
2	2390.00	48.71	29.46	43.21	4.34	39.30	74.00	-34.70	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/VERTICAL
Memo	: DH5 2480		

Data: 37



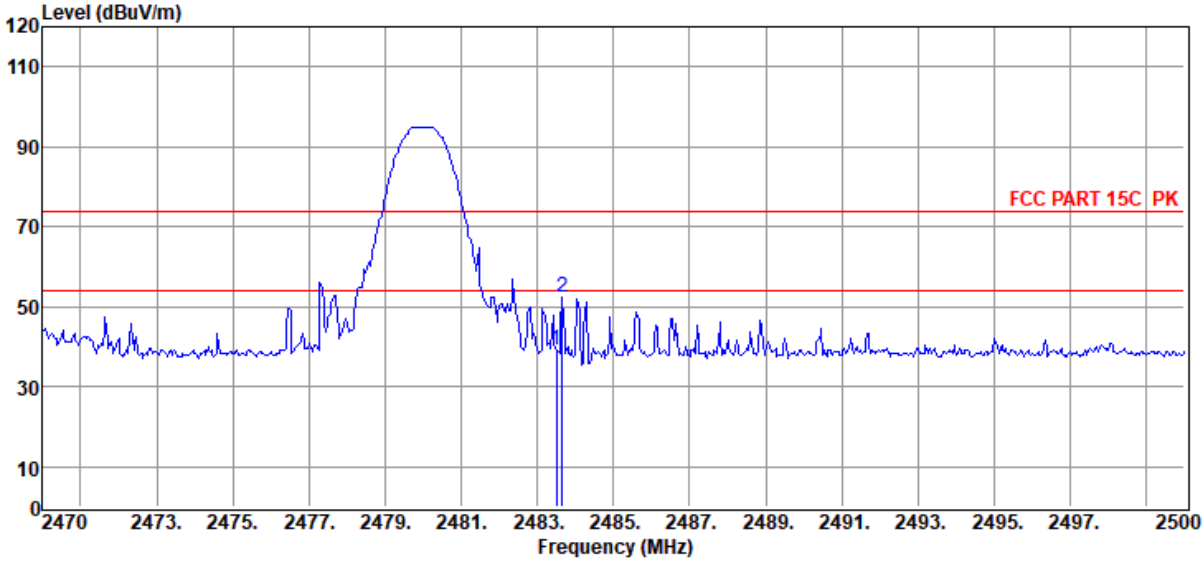
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	48.64	29.66	43.25	4.43	39.48	74.00	-34.52	Peak	VERTICAL
2	2484.94	54.82	29.67	43.25	4.44	45.68	74.00	-28.32	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/HORIZONTAL
Memo	: DH5 2480		

Data: 38



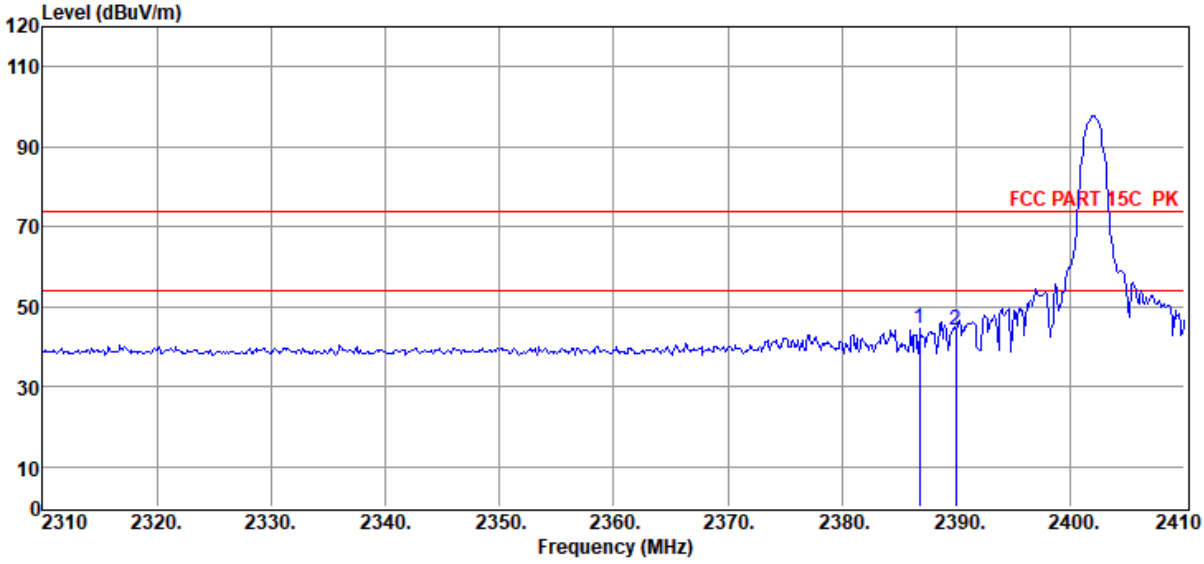
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	48.50	29.66	43.25	4.43	39.34	74.00	-34.66	Peak	HORIZONTAL
2	2483.65	61.56	29.66	43.25	4.43	52.40	74.00	-21.60	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/HORIZONTAL
Memo	: 2DH5 2402		

Data: 39



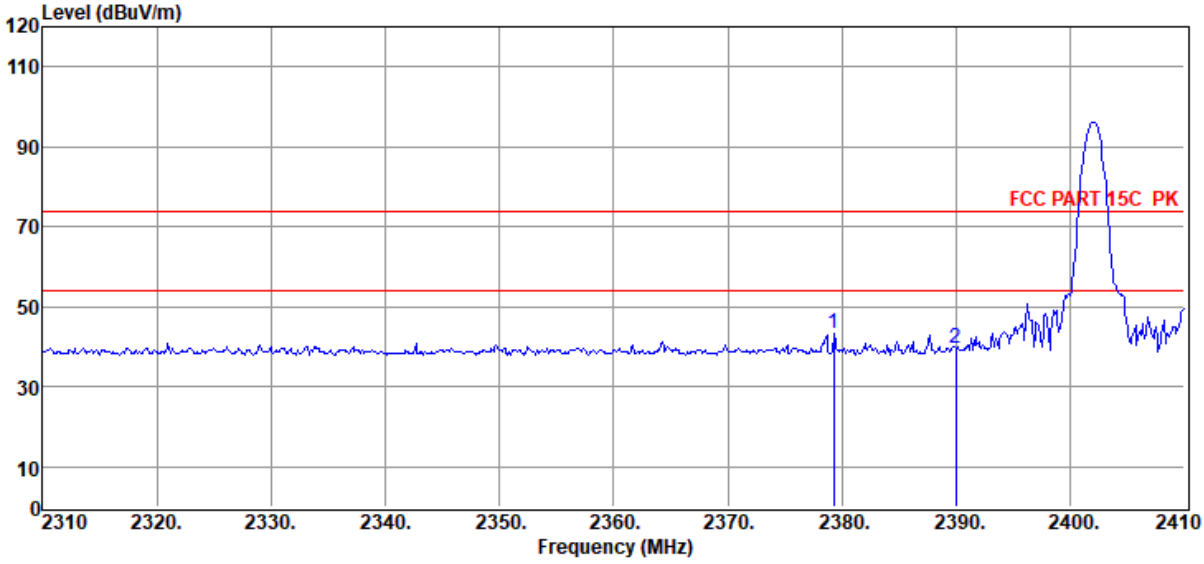
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2386.80	53.89	29.45	43.20	4.34	44.48	74.00	-29.52	Peak	HORIZONTAL
2	2390.00	53.54	29.46	43.21	4.34	44.13	74.00	-29.87	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/VERTICAL
Memo	: 2DH5 2402		

Data: 40



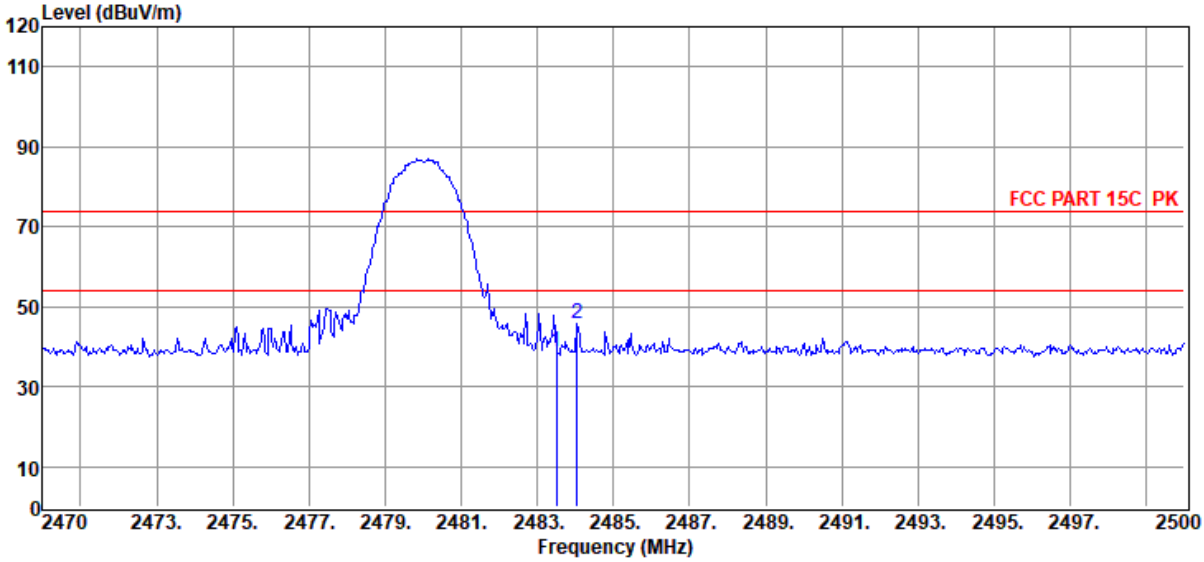
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2379.30	52.68	29.43	43.20	4.33	43.24	74.00	-30.76	Peak	VERTICAL
2	2390.00	49.05	29.46	43.21	4.34	39.64	74.00	-34.36	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/VERTICAL
Memo	: 2DH5 2480		

Data: 41



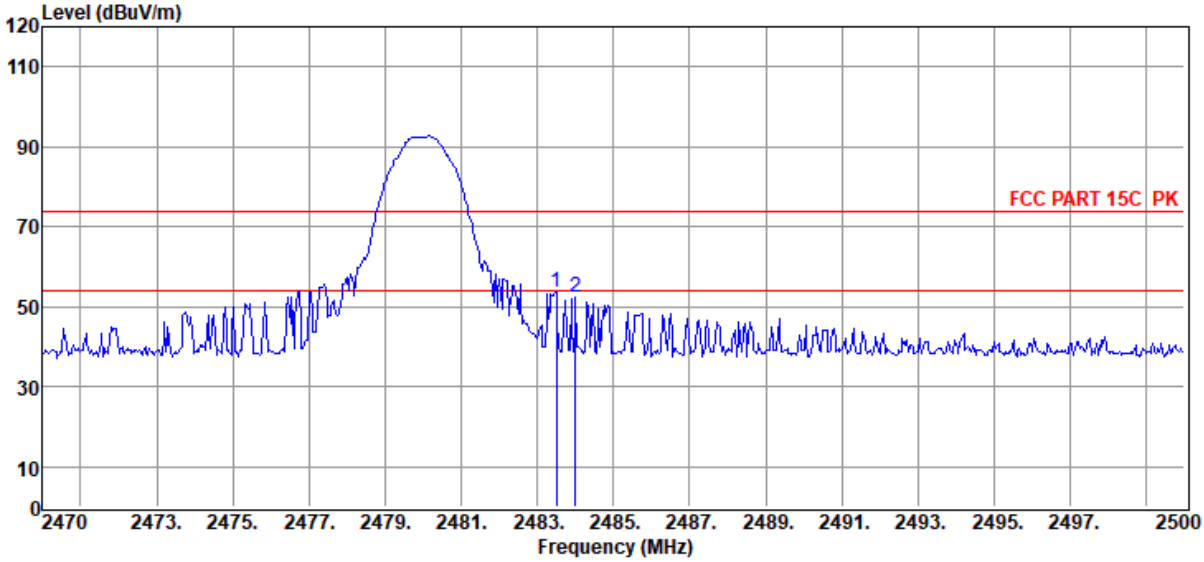
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	47.92	29.66	43.25	4.43	38.76	74.00	-35.24	Peak	VERTICAL
2	2484.04	55.05	29.67	43.25	4.43	45.90	74.00	-28.10	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/HORIZONTAL
Memo	: 2DH5 2480		

Data: 42



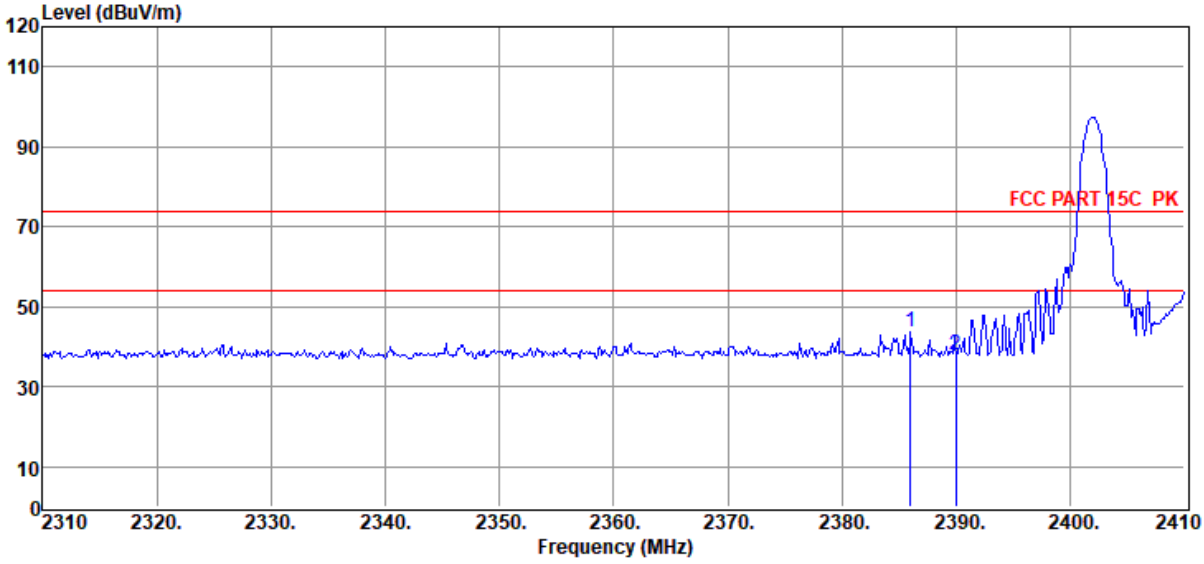
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	62.70	29.66	43.25	4.43	53.54	74.00	-20.46	Peak	HORIZONTAL
2	2484.01	61.63	29.67	43.25	4.43	52.48	74.00	-21.52	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/HORIZONTAL
Memo	: 3DH5 2402		

Data: 43



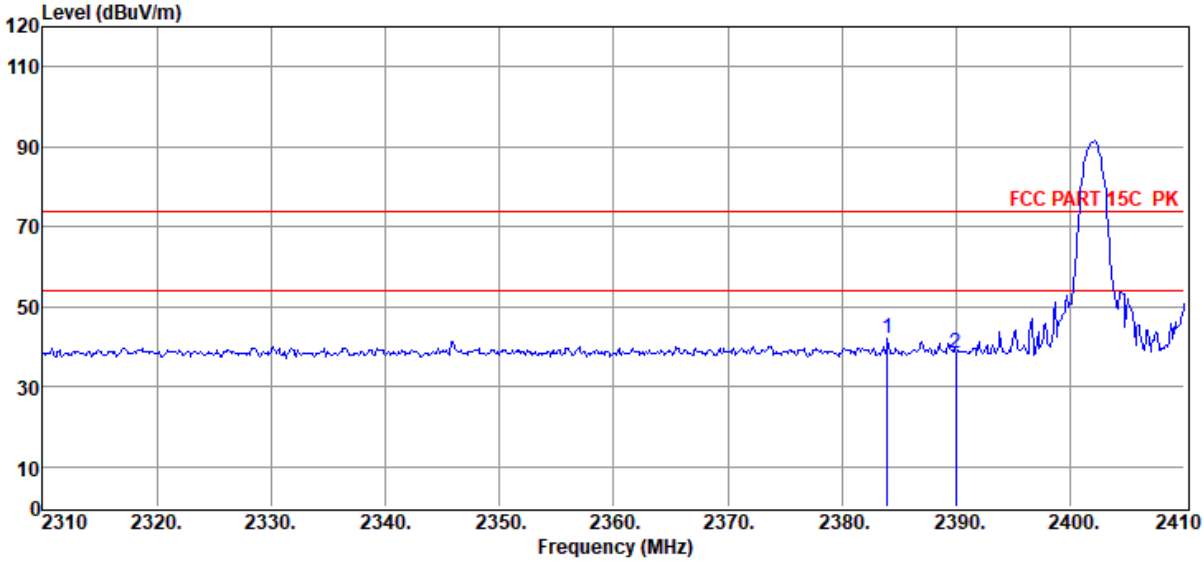
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2386.00	52.93	29.45	43.20	4.34	43.52	74.00	-30.48	Peak	HORIZONTAL
2	2390.00	47.27	29.46	43.21	4.34	37.86	74.00	-36.14	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/VERTICAL
Memo	: 3DH5 2402		

Data: 44



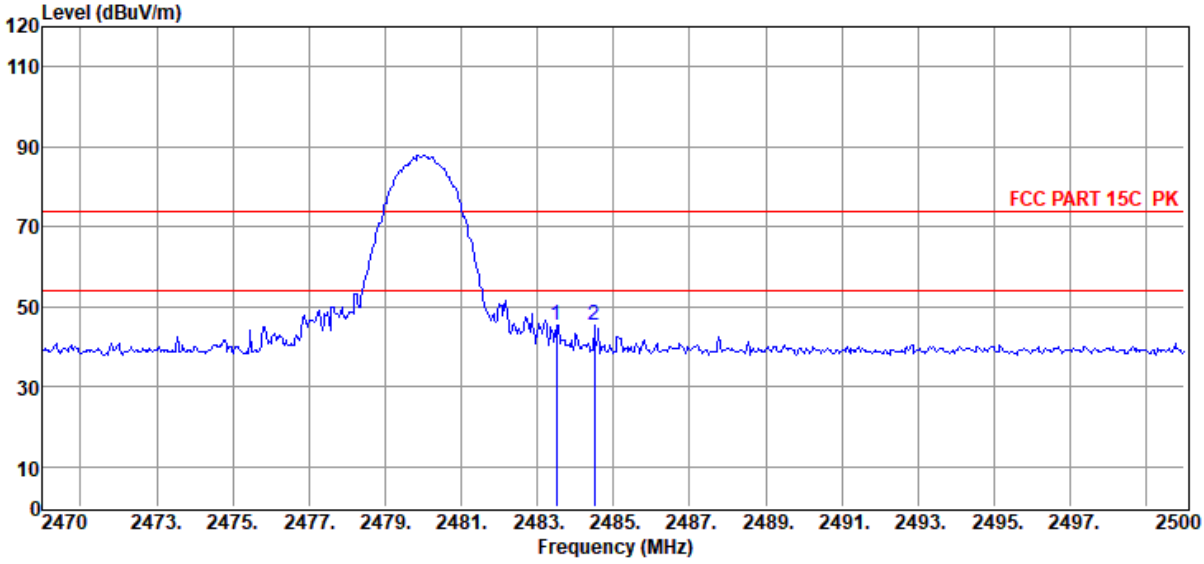
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2384.00	51.41	29.44	43.20	4.33	41.98	74.00	-32.02	Peak	VERTICAL
2	2390.00	47.80	29.46	43.21	4.34	38.39	74.00	-35.61	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/VERTICAL
Memo	: 3DH5 2480		

Data: 45



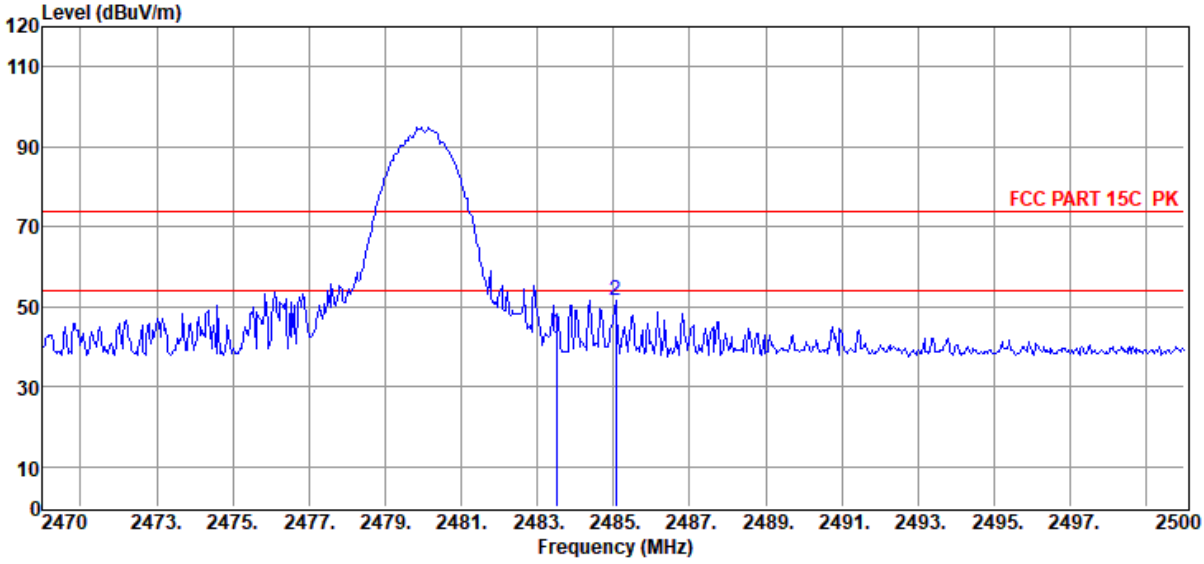
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	54.42	29.66	43.25	4.43	45.26	74.00	-28.74	Peak	VERTICAL
2	2484.49	54.61	29.67	43.25	4.43	45.46	74.00	-28.54	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 1#	D:\2019 RE1# Report Data\Q19121713-1E JBL TUNE125 TWS\FCC ABOVE1G.EM6	
Test Date	: 2020-01-13	**Tested By**	: Talent
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 HF 907/3m/HORIZONTAL
Memo	: 3DH5 2480		

Data: 46

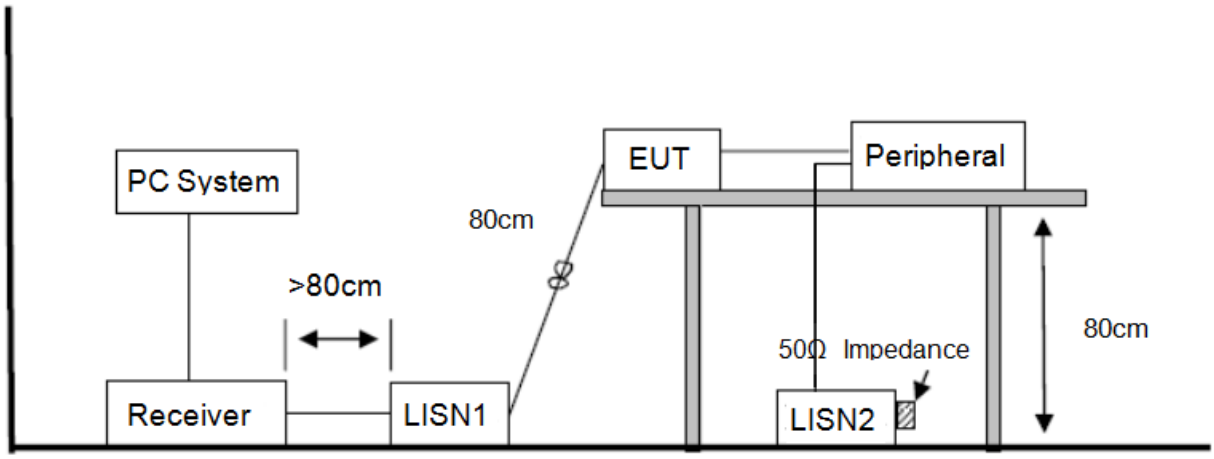


Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	52.30	29.66	43.25	4.43	43.14	74.00	-30.86	Peak	HORIZONTAL
2	2485.06	60.85	29.67	43.25	4.44	51.71	74.00	-22.29	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

13. Power Line Conducted Emission

13.1. Block diagram of test setup



13.2. Power Line Conducted Emission Limits

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

13.3. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

13.4. Test Result

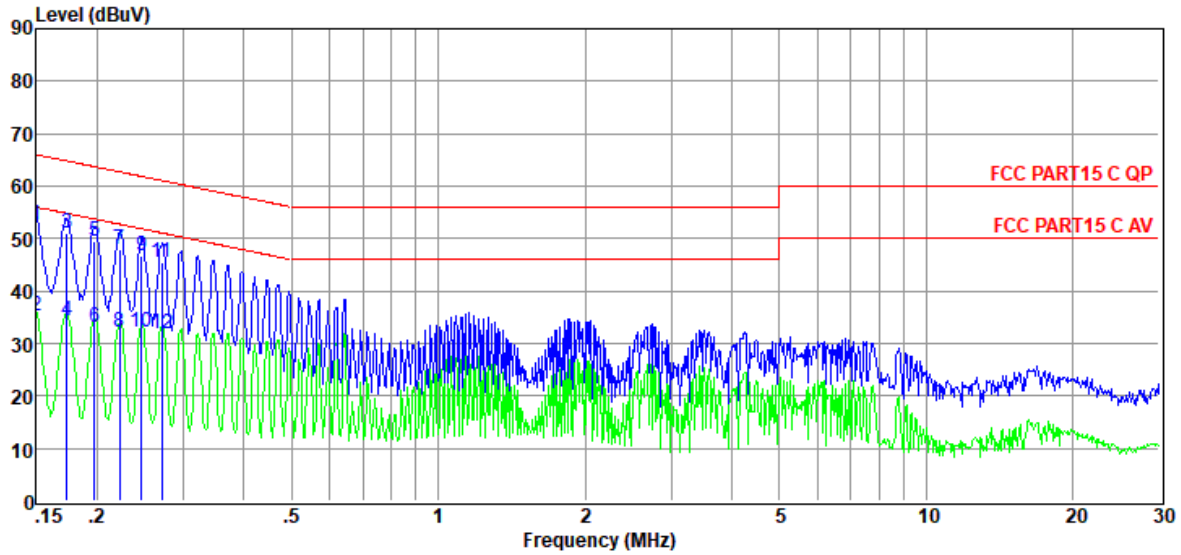
PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.
Note2: "-----" means Peak detection; "-----" means Average detection.
Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worse case.

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	D:\2019 CE report data\Q19121713-1E\20200115 CE.EM6	
Test Date	: 2020-01-15	**Tested By**	: Huang
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: AC120V/60Hz	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C, Humi:55.5%, Press:100.1kPa	**LISN**	: 2019 ENV216 1#/LINE
Memo	: Charging IC: BM-197		

Data: 66



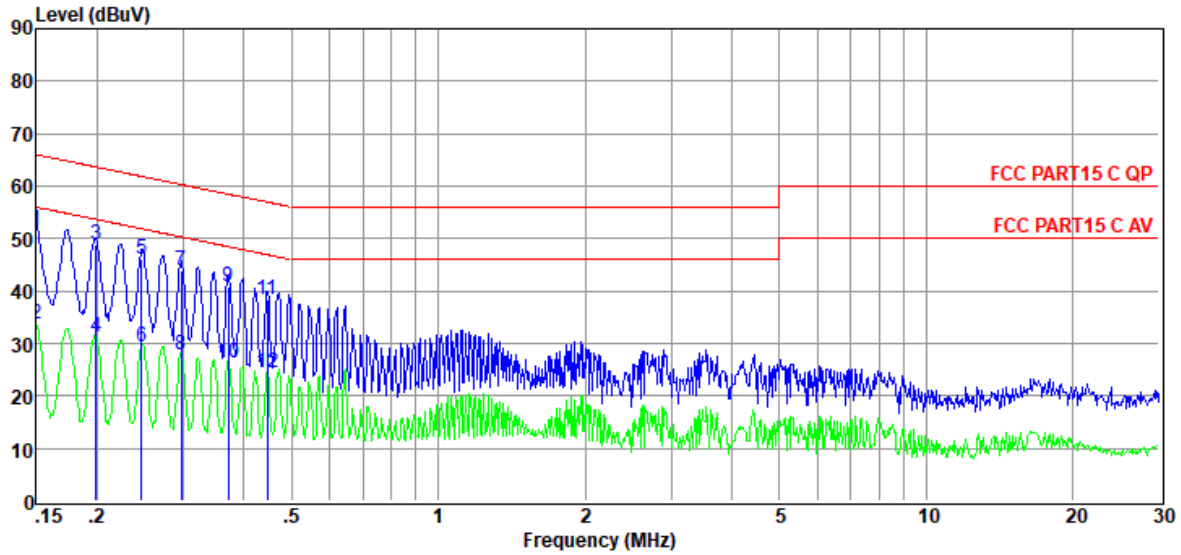
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.15	33.09	9.60	0.01	9.86	52.56	66.00	-13.44	QP	LINE
2	0.15	15.68	9.60	0.01	9.86	35.15	56.00	-20.85	Average	LINE
3	0.17	31.53	9.60	0.01	9.86	51.00	64.81	-13.81	QP	LINE
4	0.17	14.86	9.60	0.01	9.86	34.33	54.81	-20.48	Average	LINE
5	0.20	29.94	9.60	0.02	9.86	49.42	63.71	-14.29	QP	LINE
6	0.20	13.71	9.60	0.02	9.86	33.19	53.71	-20.52	Average	LINE
7	0.22	28.44	9.60	0.02	9.86	47.92	62.74	-14.82	QP	LINE
8	0.22	12.79	9.60	0.02	9.86	32.27	52.74	-20.47	Average	LINE
9	0.25	27.34	9.60	0.02	9.86	46.82	61.86	-15.04	QP	LINE
10	0.25	12.64	9.60	0.02	9.86	32.12	51.86	-19.74	Average	LINE
11	0.27	26.08	9.60	0.02	9.86	45.56	61.07	-15.51	QP	LINE
12	0.27	12.51	9.60	0.02	9.86	31.99	51.07	-19.08	Average	LINE

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	D:\2019 CE report data\Q19121713-1E\20200115 CE.EM6	
Test Date	: 2020-01-15	**Tested By**	: Huang
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: AC120V/60Hz	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C, Humi:55.5%, Press:100.1kPa	**LISN**	: 2019 ENV216 1#/NEUTRAL
Memo	: Charging IC: BM-197		

Data: 68



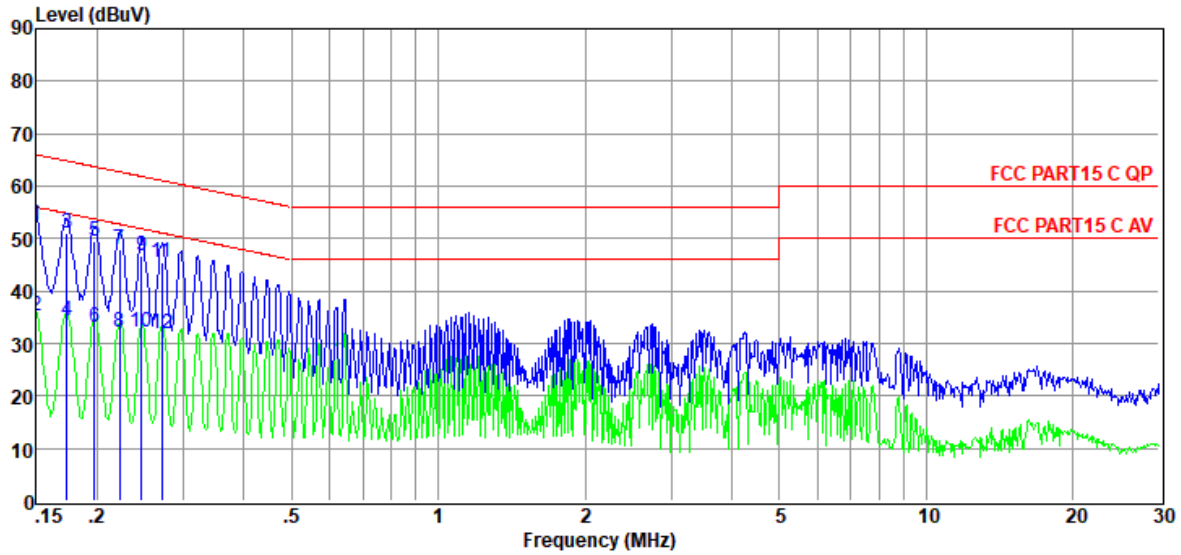
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.15	32.31	9.60	0.01	9.86	51.78	66.00	-14.22	QP	NEUTRAL
2	0.15	14.31	9.60	0.01	9.86	33.78	56.00	-22.22	Average	NEUTRAL
3	0.20	29.40	9.60	0.02	9.86	48.88	63.67	-14.79	QP	NEUTRAL
4	0.20	11.89	9.60	0.02	9.86	31.37	53.67	-22.30	Average	NEUTRAL
5	0.25	26.60	9.60	0.02	9.86	46.08	61.86	-15.78	QP	NEUTRAL
6	0.25	9.76	9.60	0.02	9.86	29.24	51.86	-22.62	Average	NEUTRAL
7	0.30	24.51	9.60	0.02	9.86	43.99	60.32	-16.33	QP	NEUTRAL
8	0.30	8.39	9.60	0.02	9.86	27.87	50.32	-22.45	Average	NEUTRAL
9	0.37	21.36	9.60	0.02	9.86	40.84	58.47	-17.63	QP	NEUTRAL
10	0.37	6.67	9.60	0.02	9.86	26.15	48.47	-22.32	Average	NEUTRAL
11	0.45	18.78	9.60	0.02	9.86	38.26	56.93	-18.67	QP	NEUTRAL
12	0.45	4.97	9.60	0.02	9.86	24.45	46.93	-22.48	Average	NEUTRAL

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	D:\2019 CE report data\Q19121713-1E\20200115 CE.EM6	
Test Date	: 2020-01-15	**Tested By**	: Huang
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: AC120V/60Hz	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C, Humi:55.5%, Press:100.1kPa	**LISN**	: 2019 ENV216 1#/LINE
Memo	: Charging IC: XB608712AS		

Data: 66



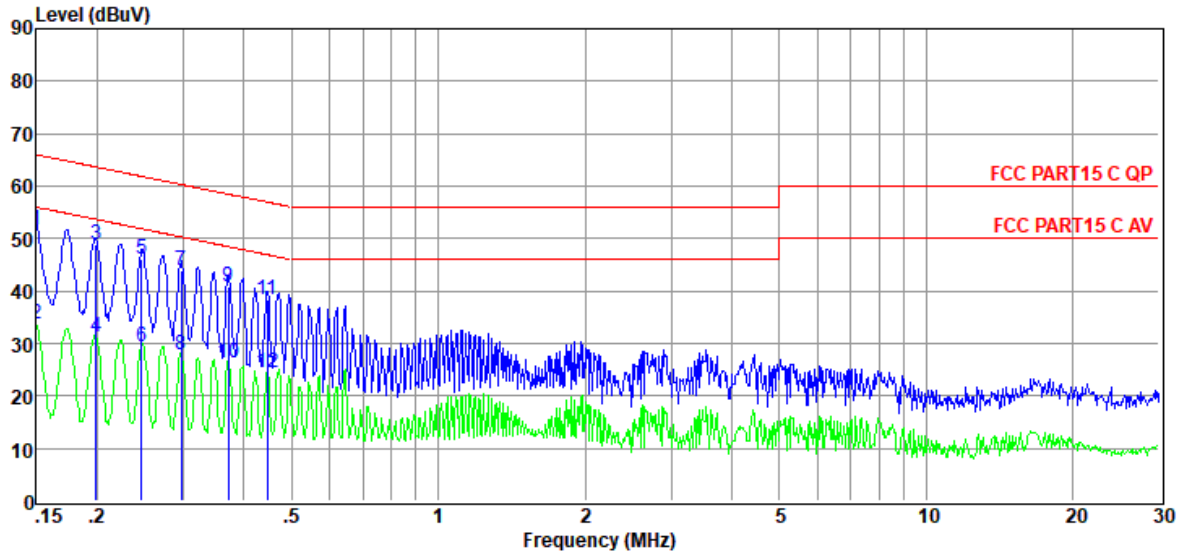
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.15	33.09	9.60	0.01	9.86	52.56	66.00	-13.44	QP	LINE
2	0.15	15.68	9.60	0.01	9.86	35.15	56.00	-20.85	Average	LINE
3	0.17	31.53	9.60	0.01	9.86	51.00	64.81	-13.81	QP	LINE
4	0.17	14.86	9.60	0.01	9.86	34.33	54.81	-20.48	Average	LINE
5	0.20	29.94	9.60	0.02	9.86	49.42	63.71	-14.29	QP	LINE
6	0.20	13.71	9.60	0.02	9.86	33.19	53.71	-20.52	Average	LINE
7	0.22	28.44	9.60	0.02	9.86	47.92	62.74	-14.82	QP	LINE
8	0.22	12.79	9.60	0.02	9.86	32.27	52.74	-20.47	Average	LINE
9	0.25	27.34	9.60	0.02	9.86	46.82	61.86	-15.04	QP	LINE
10	0.25	12.64	9.60	0.02	9.86	32.12	51.86	-19.74	Average	LINE
11	0.27	26.08	9.60	0.02	9.86	45.56	61.07	-15.51	QP	LINE
12	0.27	12.51	9.60	0.02	9.86	31.99	51.07	-19.08	Average	LINE

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	D:\2019 CE report data\Q19121713-1E\20200115 CE.EM6	
Test Date	: 2020-01-15	**Tested By**	: Huang
EUT	: BLUETOOTH HEADSET	**Model Number**	: TUNE125TWS
Power Supply	: AC120V/60Hz	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C, Humi:55.5%, Press:100.1kPa	**LISN**	: 2019 ENV216 1#/NEUTRAL
Memo	: Charging IC: XB608712AS		

Data: 68



Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.15	32.31	9.60	0.01	9.86	51.78	66.00	-14.22	QP	NEUTRAL
2	0.15	14.31	9.60	0.01	9.86	33.78	56.00	-22.22	Average	NEUTRAL
3	0.20	29.40	9.60	0.02	9.86	48.88	63.67	-14.79	QP	NEUTRAL
4	0.20	11.89	9.60	0.02	9.86	31.37	53.67	-22.30	Average	NEUTRAL
5	0.25	26.60	9.60	0.02	9.86	46.08	61.86	-15.78	QP	NEUTRAL
6	0.25	9.76	9.60	0.02	9.86	29.24	51.86	-22.62	Average	NEUTRAL
7	0.30	24.51	9.60	0.02	9.86	43.99	60.32	-16.33	QP	NEUTRAL
8	0.30	8.39	9.60	0.02	9.86	27.87	50.32	-22.45	Average	NEUTRAL
9	0.37	21.36	9.60	0.02	9.86	40.84	58.47	-17.63	QP	NEUTRAL
10	0.37	6.67	9.60	0.02	9.86	26.15	48.47	-22.32	Average	NEUTRAL
11	0.45	18.78	9.60	0.02	9.86	38.26	56.93	-18.67	QP	NEUTRAL
12	0.45	4.97	9.60	0.02	9.86	24.45	46.93	-22.48	Average	NEUTRAL

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

14. Antenna Requirements

14.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

14.2. Result

The antennas used for this product are LDS antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the left side transmit antenna is -1.12 dBi and right side is -0.45 dBi.

END OF REPORT