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Appendix for WCDMA Band 2

Applicant: Howen Technologies Co., Ltd.

**Address: Room 2001 & 2004, Building 2A, Shenzhen International
Innovation Valley, Dashi 1st Road, Nanshan District, Shenzhen,
China**

Product Name: Dashcam

**Model: Hero-ME40-02, Hero-MC30-01, Hero-MC30-02, Hero-MC30-
03, Hero-ME41-02, Hero-ME41-03, Hero-ME40-01, Hero-ME40-03,
Hero-MA90-01, Hero-MA90-02, Hero-MA90-03**

FCC ID: 2AGBD1-HERO-ME40-02

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1. Conducted Output Power

1.1 Test Result

1.1.1 Band2

Band: 2					
ENV	Mode		Frequency (MHz)	Conducted Power (dBm)	Verdict
	Network	Subset			
NTNV	RMC	12.2kbps RMC	1852.4	21.81	Pass
			1880	21.94	Pass
			1907.6	21.19	Pass
	HSDPA	Subtest 1	1852.4	19.93	Pass
		Subtest 2	1852.4	19.96	Pass
		Subtest 3	1852.4	19.91	Pass
		Subtest 4	1852.4	20.00	Pass
		Subtest 1	1880	20.07	Pass
		Subtest 2	1880	20.05	Pass
		Subtest 3	1880	19.96	Pass
		Subtest 4	1880	19.92	Pass
		Subtest 1	1907.6	19.32	Pass
		Subtest 2	1907.6	19.37	Pass
		Subtest 3	1907.6	19.24	Pass
		Subtest 4	1907.6	19.33	Pass
	HSUPA	Subtest 1	1852.4	18.03	Pass
		Subtest 2	1852.4	18.00	Pass
		Subtest 3	1852.4	18.19	Pass
		Subtest 4	1852.4	17.41	Pass
		Subtest 5	1852.4	17.17	Pass
		Subtest 1	1880	17.45	Pass
		Subtest 2	1880	18.40	Pass
		Subtest 3	1880	18.03	Pass
		Subtest 4	1880	16.96	Pass
		Subtest 5	1880	17.48	Pass
		Subtest 1	1907.6	16.93	Pass
		Subtest 2	1907.6	17.38	Pass
		Subtest 3	1907.6	17.77	Pass
		Subtest 4	1907.6	16.51	Pass
		Subtest 5	1907.6	16.48	Pass

2. Frequency Stability

2.1 Test Result

2.1.1 Band2

Band: 2							
Network	Frequency (MHz)	Temp. (°C)	Voltage (VDC)	Freq. Error (Hz)	Freq. vs. Rated (ppm)		Verdict
					Result	Limit	
RMC	1852.4	24	9.0	-0.300	-0.0002	-2.5 to 2.5	Pass
			12.0	-0.937	-0.0005	-2.5 to 2.5	Pass
			36.0	0.029	0.0000	-2.5 to 2.5	Pass
		-40	12.0	-0.007	0.0000	-2.5 to 2.5	Pass

		-30	12.0	0.844	0.0005	-2.5 to 2.5	Pass
		-20	12.0	0.808	0.0004	-2.5 to 2.5	Pass
		-10	12.0	0.916	0.0005	-2.5 to 2.5	Pass
		0	12.0	2.096	0.0011	-2.5 to 2.5	Pass
		10	12.0	1.945	0.0010	-2.5 to 2.5	Pass
		30	12.0	1.159	0.0006	-2.5 to 2.5	Pass
		40	12.0	1.988	0.0011	-2.5 to 2.5	Pass
		50	12.0	1.974	0.0011	-2.5 to 2.5	Pass
		60	12.0	1.302	0.0007	-2.5 to 2.5	Pass
		70	12.0	1.945	0.0010	-2.5 to 2.5	Pass
	1880	24	9.0	0.587	0.0003	-2.5 to 2.5	Pass
			12.0	-0.050	0.0000	-2.5 to 2.5	Pass
			36.0	-0.021	0.0000	-2.5 to 2.5	Pass
		-40	12.0	-1.023	-0.0005	-2.5 to 2.5	Pass
		-30	12.0	0.587	0.0003	-2.5 to 2.5	Pass
		-20	12.0	-1.452	-0.0008	-2.5 to 2.5	Pass
		-10	12.0	-0.715	-0.0004	-2.5 to 2.5	Pass
		0	12.0	-1.051	-0.0006	-2.5 to 2.5	Pass
		10	12.0	-1.302	-0.0007	-2.5 to 2.5	Pass
		30	12.0	-0.129	-0.0001	-2.5 to 2.5	Pass
		40	12.0	-0.336	-0.0002	-2.5 to 2.5	Pass
		50	12.0	-0.143	-0.0001	-2.5 to 2.5	Pass
		60	12.0	0.007	0.0000	-2.5 to 2.5	Pass
		70	12.0	0.007	0.0000	-2.5 to 2.5	Pass
	1907.6	24	9.0	-3.455	-0.0018	-2.5 to 2.5	Pass
			12.0	-4.063	-0.0021	-2.5 to 2.5	Pass
			36.0	-3.698	-0.0019	-2.5 to 2.5	Pass
		-40	12.0	-2.367	-0.0012	-2.5 to 2.5	Pass
		-30	12.0	-3.712	-0.0019	-2.5 to 2.5	Pass
		-20	12.0	-3.426	-0.0018	-2.5 to 2.5	Pass
		-10	12.0	-3.362	-0.0018	-2.5 to 2.5	Pass
		0	12.0	-3.419	-0.0018	-2.5 to 2.5	Pass
		10	12.0	-3.340	-0.0018	-2.5 to 2.5	Pass
		30	12.0	-2.861	-0.0015	-2.5 to 2.5	Pass
		40	12.0	-3.126	-0.0016	-2.5 to 2.5	Pass
		50	12.0	-3.963	-0.0021	-2.5 to 2.5	Pass
HSDPA	1852.4	24	9.0	4.635	0.0025	-2.5 to 2.5	Pass
			12.0	3.476	0.0019	-2.5 to 2.5	Pass
			36.0	2.654	0.0014	-2.5 to 2.5	Pass
		-40	12.0	3.297	0.0018	-2.5 to 2.5	Pass
		-30	12.0	3.362	0.0018	-2.5 to 2.5	Pass
		-20	12.0	2.904	0.0016	-2.5 to 2.5	Pass
		-10	12.0	2.432	0.0013	-2.5 to 2.5	Pass
		0	12.0	3.111	0.0017	-2.5 to 2.5	Pass
		10	12.0	3.233	0.0017	-2.5 to 2.5	Pass
		30	12.0	3.426	0.0018	-2.5 to 2.5	Pass
		40	12.0	3.126	0.0017	-2.5 to 2.5	Pass
		50	12.0	3.161	0.0017	-2.5 to 2.5	Pass
		60	12.0	2.940	0.0016	-2.5 to 2.5	Pass
		70	12.0	3.598	0.0019	-2.5 to 2.5	Pass
	1880	24	9.0	4.985	0.0027	-2.5 to 2.5	Pass
			12.0	3.419	0.0018	-2.5 to 2.5	Pass
			36.0	4.206	0.0022	-2.5 to 2.5	Pass
		-40	12.0	4.377	0.0023	-2.5 to 2.5	Pass
		-30	12.0	3.555	0.0019	-2.5 to 2.5	Pass
		-20	12.0	3.891	0.0021	-2.5 to 2.5	Pass
		-10	12.0	4.735	0.0025	-2.5 to 2.5	Pass

		0	12.0	3.877	0.0021	-2.5 to 2.5	Pass
		10	12.0	4.249	0.0023	-2.5 to 2.5	Pass
		30	12.0	4.420	0.0024	-2.5 to 2.5	Pass
		40	12.0	4.656	0.0025	-2.5 to 2.5	Pass
		50	12.0	3.805	0.0020	-2.5 to 2.5	Pass
		60	12.0	4.148	0.0022	-2.5 to 2.5	Pass
		70	12.0	4.041	0.0021	-2.5 to 2.5	Pass
	1907.6	24	9.0	-1.416	-0.0007	-2.5 to 2.5	Pass
			12.0	-2.418	-0.0013	-2.5 to 2.5	Pass
			36.0	-2.582	-0.0014	-2.5 to 2.5	Pass
		-40	12.0	-2.089	-0.0011	-2.5 to 2.5	Pass
		-30	12.0	-2.253	-0.0012	-2.5 to 2.5	Pass
		-20	12.0	-2.024	-0.0011	-2.5 to 2.5	Pass
		-10	12.0	-2.882	-0.0015	-2.5 to 2.5	Pass
		0	12.0	-1.445	-0.0008	-2.5 to 2.5	Pass
		10	12.0	-2.446	-0.0013	-2.5 to 2.5	Pass
		30	12.0	-2.189	-0.0011	-2.5 to 2.5	Pass
		40	12.0	-1.523	-0.0008	-2.5 to 2.5	Pass
		50	12.0	-1.481	-0.0008	-2.5 to 2.5	Pass
		60	12.0	-2.232	-0.0012	-2.5 to 2.5	Pass
		70	12.0	-2.203	-0.0012	-2.5 to 2.5	Pass
	1852.4	24	9.0	-2.296	-0.0012	-2.5 to 2.5	Pass
			12.0	-3.633	-0.0020	-2.5 to 2.5	Pass
			36.0	-1.352	-0.0007	-2.5 to 2.5	Pass
		-40	12.0	0.429	0.0002	-2.5 to 2.5	Pass
		-30	12.0	1.752	0.0009	-2.5 to 2.5	Pass
		-20	12.0	1.216	0.0007	-2.5 to 2.5	Pass
		-10	12.0	0.279	0.0002	-2.5 to 2.5	Pass
		0	12.0	1.044	0.0006	-2.5 to 2.5	Pass
		10	12.0	1.445	0.0008	-2.5 to 2.5	Pass
		30	12.0	2.224	0.0012	-2.5 to 2.5	Pass
		40	12.0	1.259	0.0007	-2.5 to 2.5	Pass
		50	12.0	1.652	0.0009	-2.5 to 2.5	Pass
		60	12.0	1.073	0.0006	-2.5 to 2.5	Pass
		70	12.0	1.881	0.0010	-2.5 to 2.5	Pass
	1880	24	9.0	1.588	0.0008	-2.5 to 2.5	Pass
			12.0	1.895	0.0010	-2.5 to 2.5	Pass
			36.0	0.257	0.0001	-2.5 to 2.5	Pass
		-40	12.0	2.754	0.0015	-2.5 to 2.5	Pass
		-30	12.0	1.616	0.0009	-2.5 to 2.5	Pass
		-20	12.0	1.588	0.0008	-2.5 to 2.5	Pass
		-10	12.0	1.781	0.0009	-2.5 to 2.5	Pass
		0	12.0	1.316	0.0007	-2.5 to 2.5	Pass
		10	12.0	2.525	0.0013	-2.5 to 2.5	Pass
		30	12.0	0.679	0.0004	-2.5 to 2.5	Pass
		40	12.0	1.881	0.0010	-2.5 to 2.5	Pass
		50	12.0	2.246	0.0012	-2.5 to 2.5	Pass
		60	12.0	1.466	0.0008	-2.5 to 2.5	Pass
		70	12.0	1.659	0.0009	-2.5 to 2.5	Pass
	1907.6	24	9.0	-1.466	-0.0008	-2.5 to 2.5	Pass
			12.0	-3.161	-0.0017	-2.5 to 2.5	Pass
			36.0	-2.589	-0.0014	-2.5 to 2.5	Pass
		-40	12.0	-3.669	-0.0019	-2.5 to 2.5	Pass
		-30	12.0	-3.448	-0.0018	-2.5 to 2.5	Pass
		-20	12.0	-2.074	-0.0011	-2.5 to 2.5	Pass
		-10	12.0	-1.874	-0.0010	-2.5 to 2.5	Pass
		0	12.0	-3.498	-0.0018	-2.5 to 2.5	Pass
		10	12.0	-1.845	-0.0010	-2.5 to 2.5	Pass
		30	12.0	-2.468	-0.0013	-2.5 to 2.5	Pass

		40	12.0	-2.925	-0.0015	-2.5 to 2.5	Pass
		50	12.0	-1.624	-0.0009	-2.5 to 2.5	Pass
		60	12.0	-2.217	-0.0012	-2.5 to 2.5	Pass
		70	12.0	-2.253	-0.0012	-2.5 to 2.5	Pass

3. 99% & 26dB Bandwidth

3.1 Test Result

3.1.1 Band2_OBW

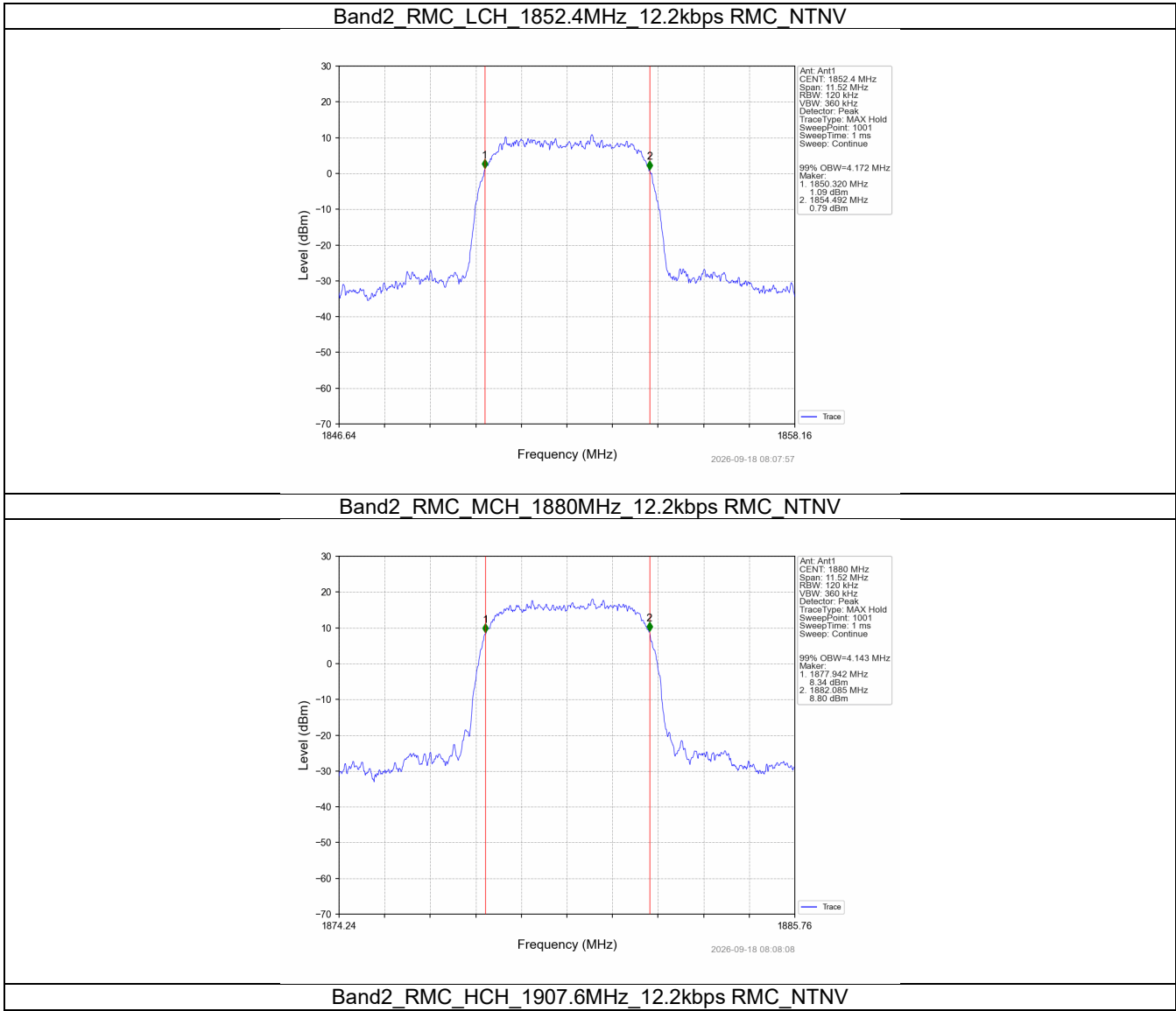
Band: 2						
ENV	Mode		Frequency (MHz)	99% Occupied Bandwidth (MHz)		Verdict
	Network	Subset		Result	Limit	
NTNV	RMC	12.2kbps RMC	1852.4	4.172	/	Pass
			1880	4.143	/	Pass
			1907.6	4.145	/	Pass
	HSDPA	Subtest 1	1852.4	4.192	/	Pass
			1880	4.189	/	Pass
			1907.6	4.204	/	Pass
	HSUPA	Subtest 1	1852.4	4.211	/	Pass
			1880	4.229	/	Pass
			1907.6	4.263	/	Pass

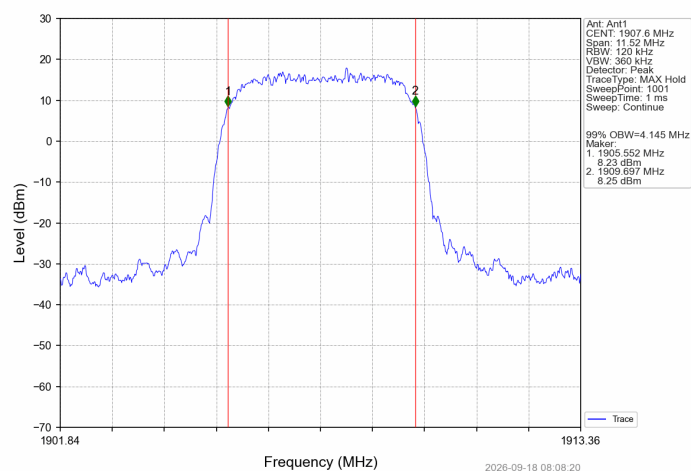
3.1.2 Band2_XDB

Band: 2						
ENV	Mode		Frequency (MHz)	26dB Bandwidth (MHz)		Verdict
	Network	Subset		Result	Limit	
NTNV	RMC	12.2kbps RMC	1852.4	4.767	/	Pass
			1880	4.750	/	Pass
			1907.6	4.715	/	Pass
	HSDPA	Subtest 1	1852.4	5.867	/	Pass
			1880	6.572	/	Pass
			1907.6	5.959	/	Pass
	HSUPA	Subtest 1	1852.4	6.250	/	Pass
			1880	5.809	/	Pass
			1907.6	6.123	/	Pass

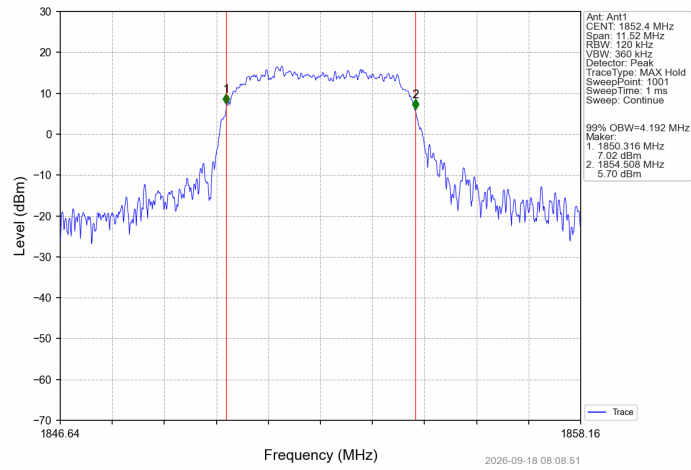
3.2 Test Graph

3.2.1 Band2_OBW

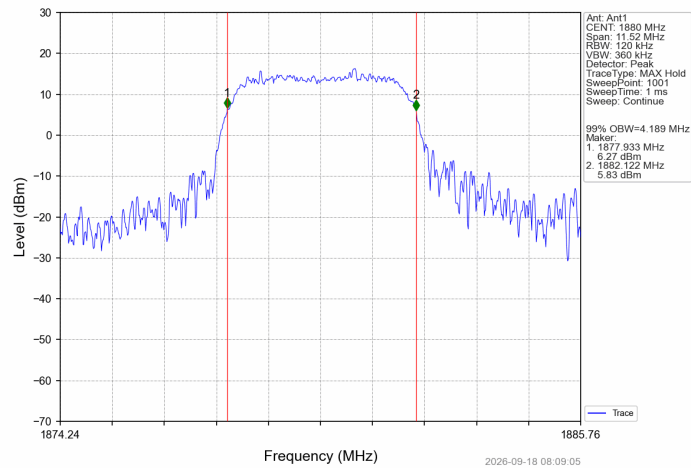




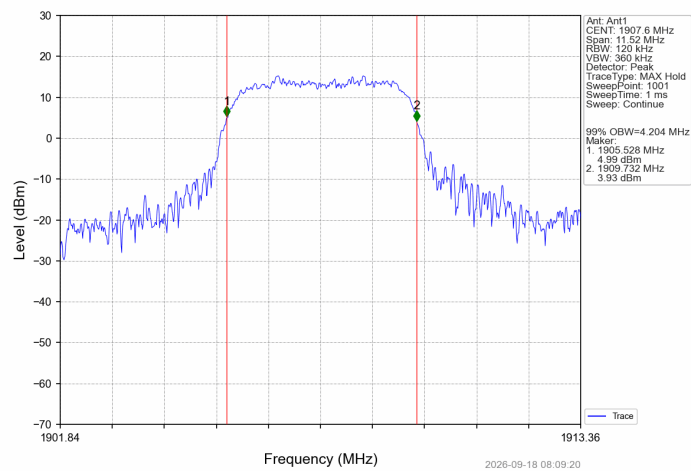
Band2_HSDPA_LCH_1852.4MHz_Subtest 1_NTNV



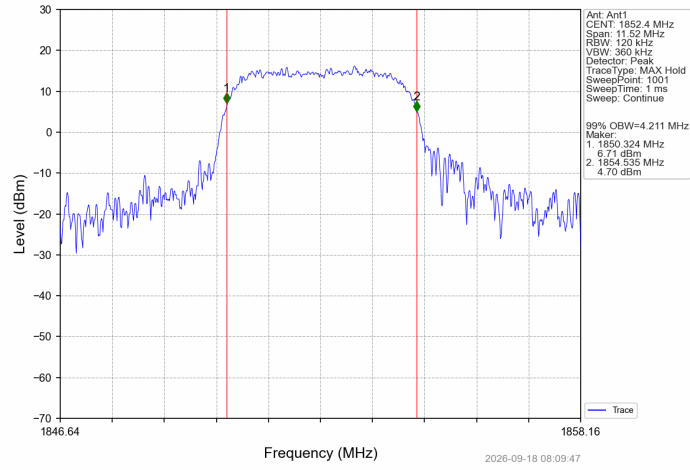
Band2_HSDPA_MCH_1880MHz_Subtest 1_NTNV



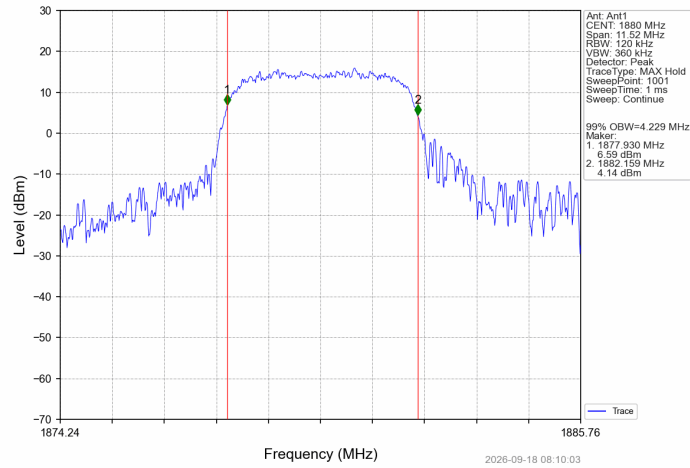
Band2_HSDPA_HCH_1907.6MHz_Subtest 1_NTNV



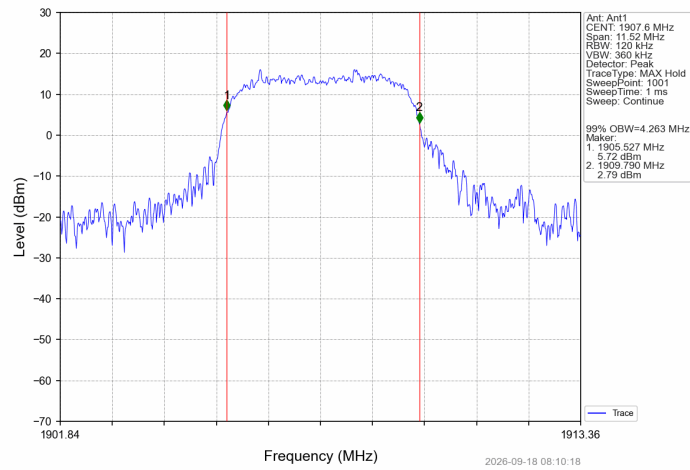
Band2 HSUPA LCH 1852.4MHz Subtest 1 NTN



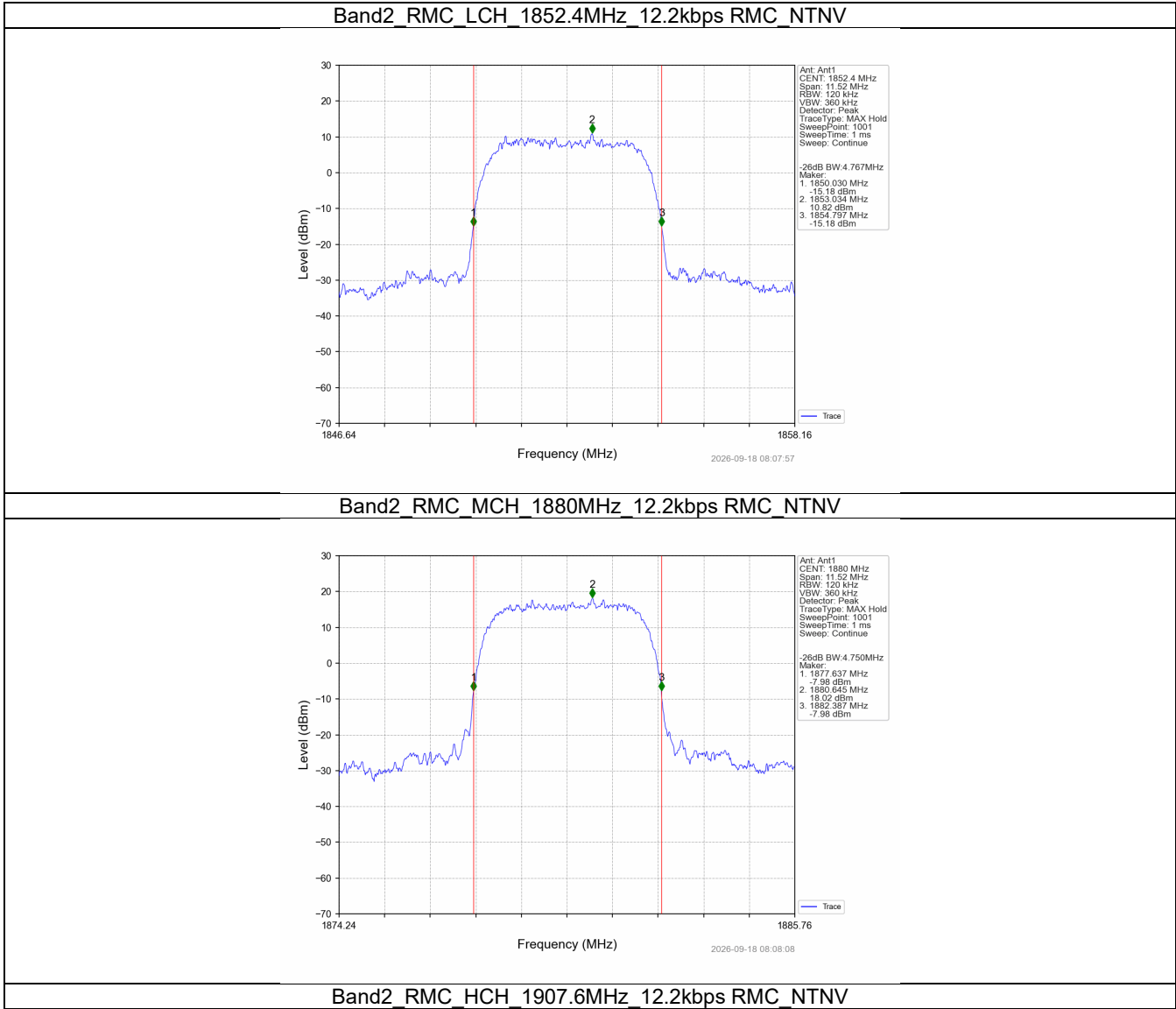
Band2 HSUPA MCH 1880MHz Subtest 1 NTN

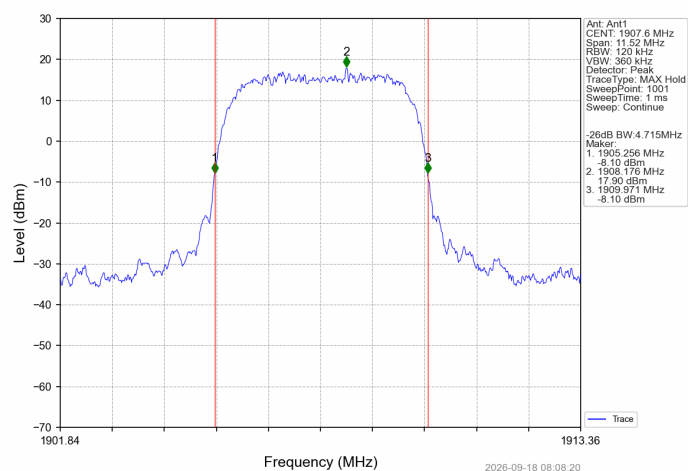


Band2 HSUPA HCH 1907.6MHz Subtest 1 NTN

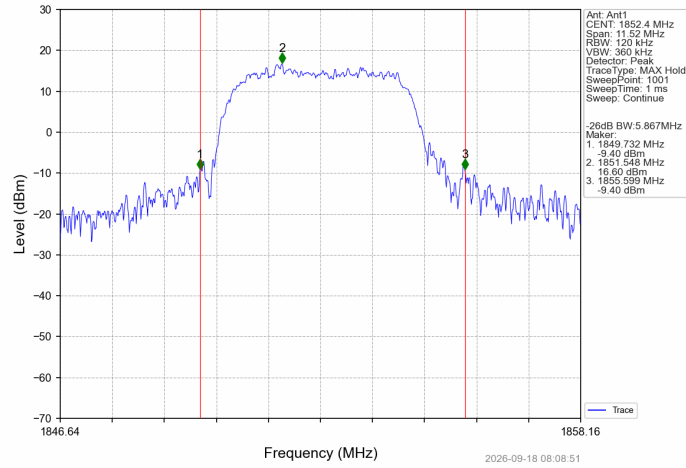


3.2.2 Band2_XDB

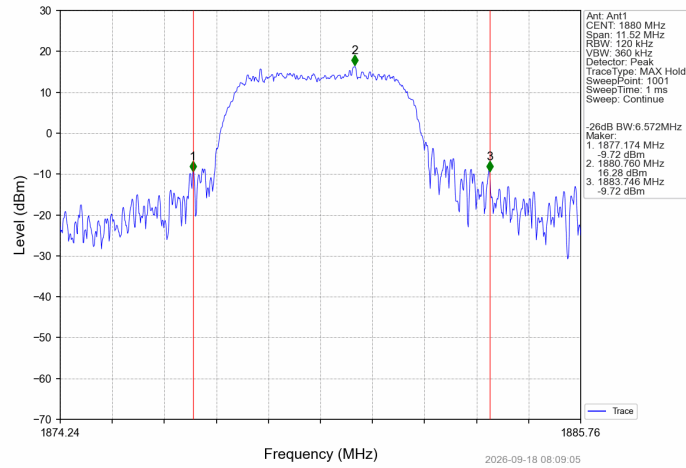




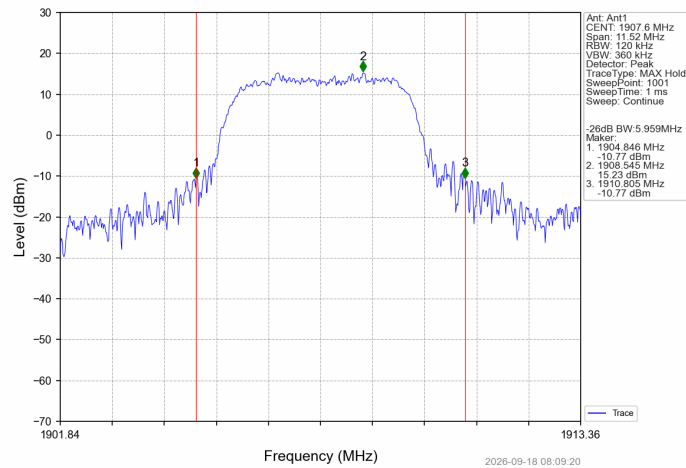
Band2 HSDPA LCH 1852.4MHz Subtest 1 NTN



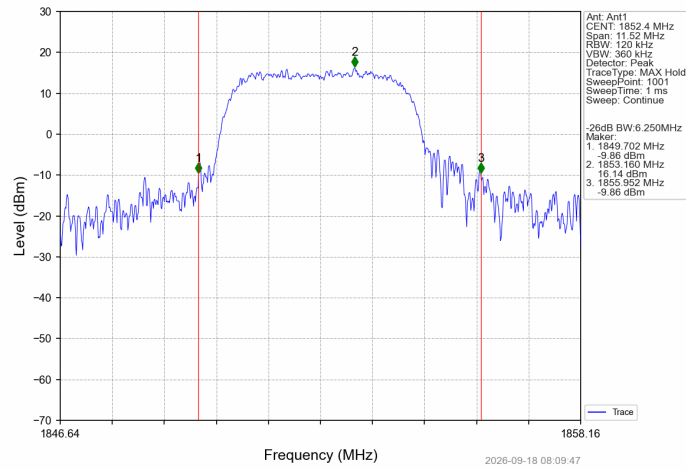
Band2 HSDPA MCH 1880MHz Subtest 1 NTN



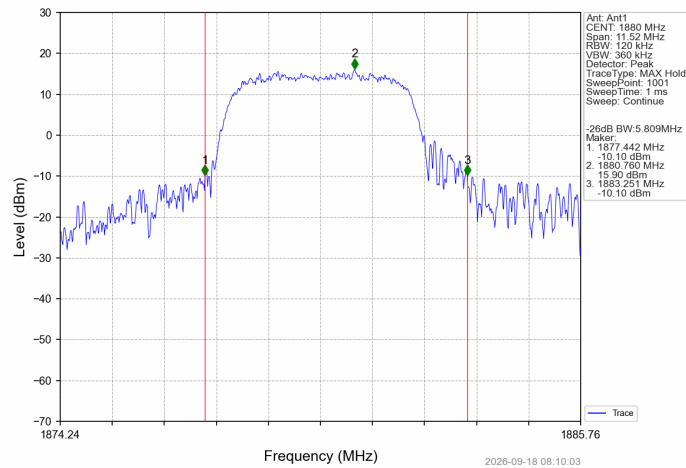
Band2 HSDPA HCH 1907.6MHz Subtest 1 NTN



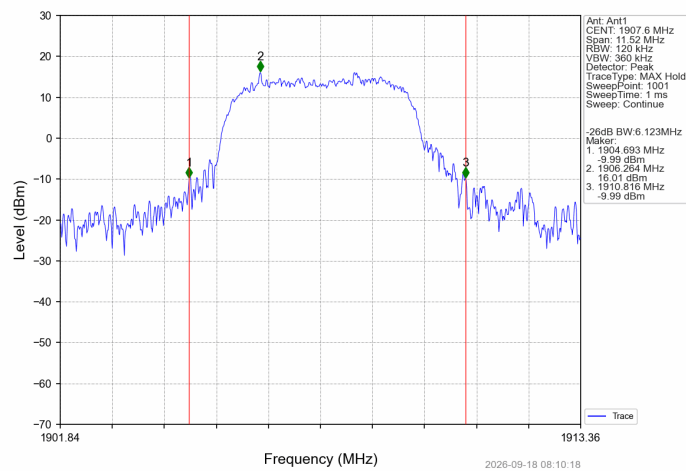
Band2 HSUPA LCH 1852.4MHz Subtest 1 NTN



Band2 HSUPA MCH 1880MHz Subtest 1 NTN



Band2 HSUPA HCH 1907.6MHz Subtest 1 NTN



4. Peak-Average Ratio

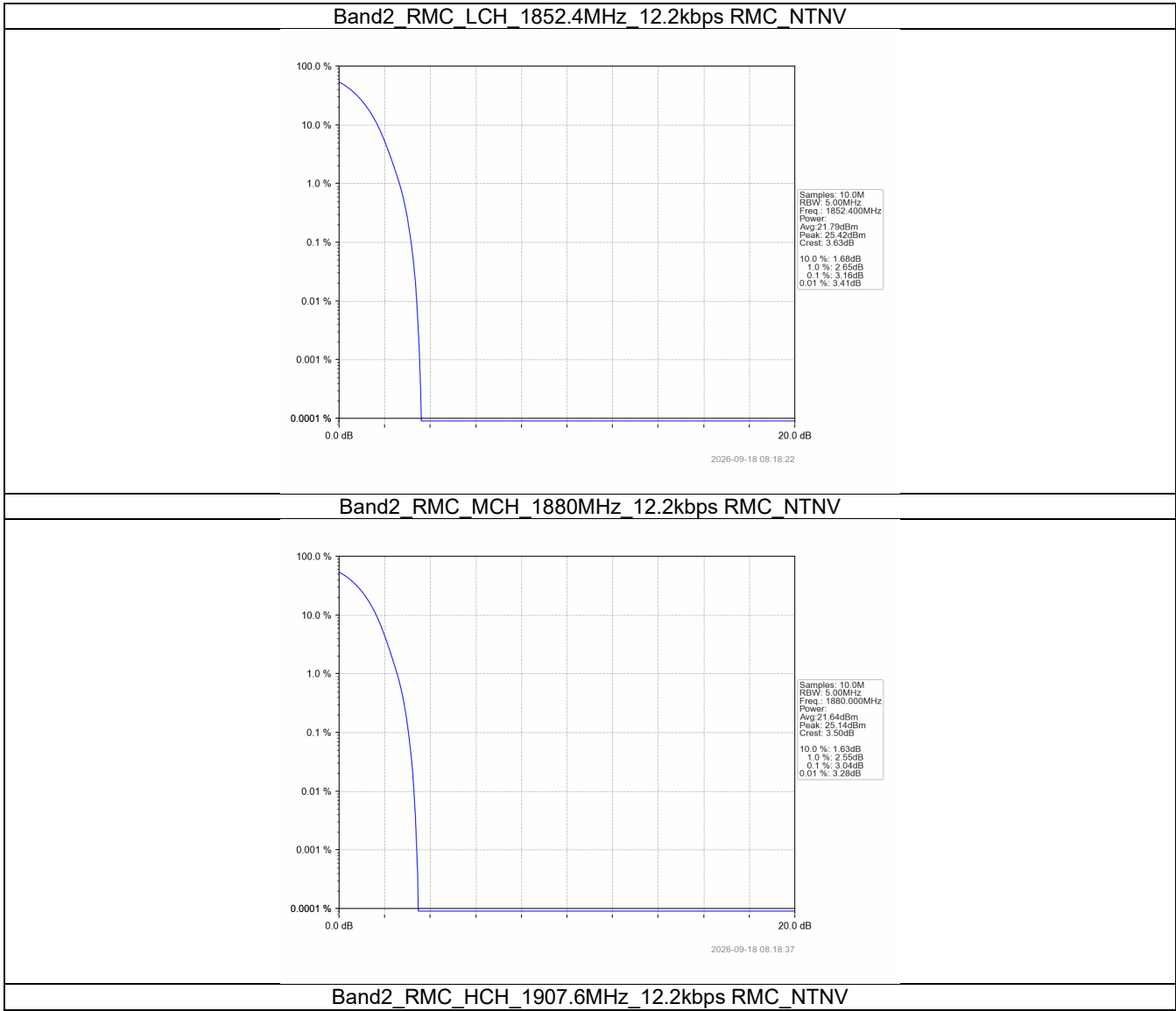
4.1 Test Result

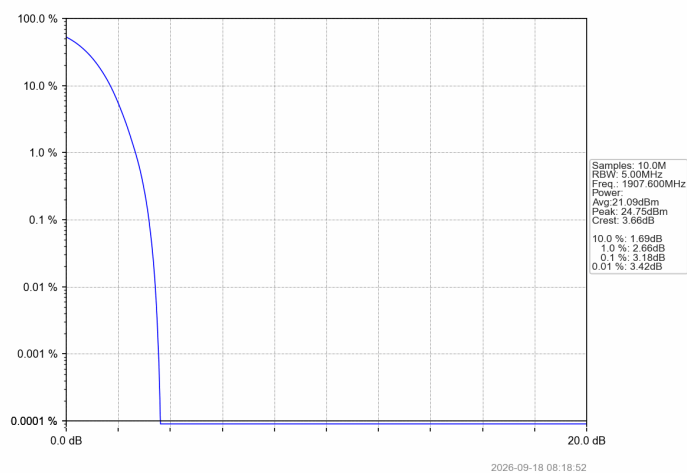
4.1.1 Band2

Band: 2						
ENV	Mode		Frequency (MHz)	Peak-Average Ratio (dB)		Verdict
	Network	Subset		Result	Limit	
NTNV	RMC	12.2kbps RMC	1852.4	3.16	<=13	Pass
			1880	3.04	<=13	Pass
			1907.6	3.18	<=13	Pass
	HSDPA	Subtest 1	1852.4	5.68	<=13	Pass
			1880	5.58	<=13	Pass
			1907.6	5.74	<=13	Pass
	HSUPA	Subtest 1	1852.4	7.11	<=13	Pass
			1880	6.89	<=13	Pass
			1907.6	7.04	<=13	Pass

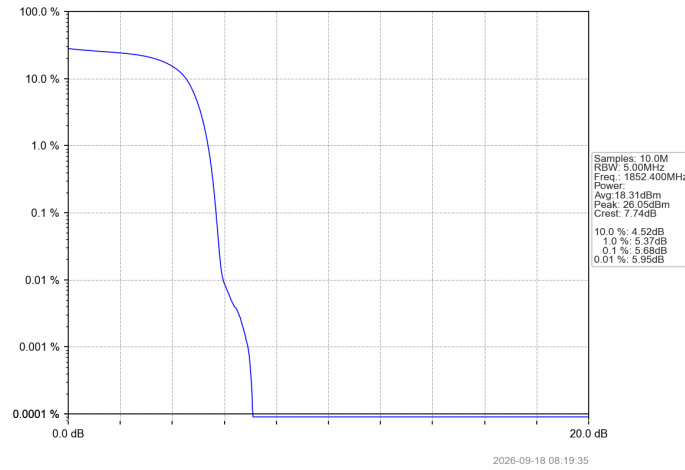
4.2 Test Graph

4.2.1 Band2

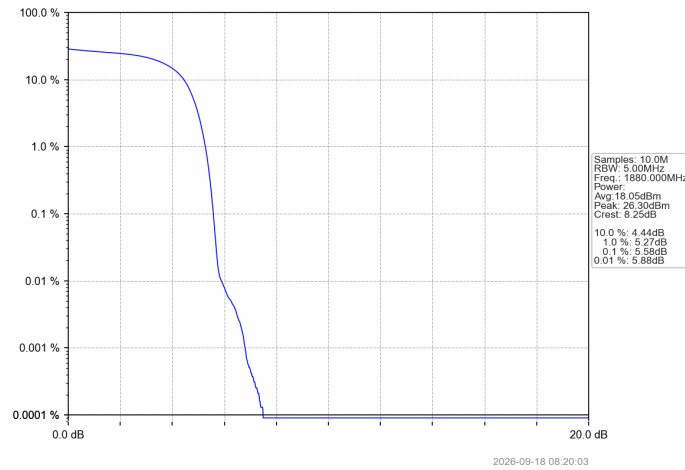




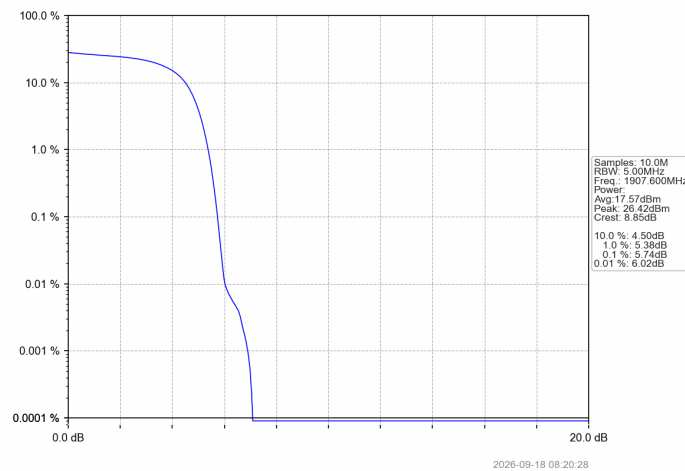
Band2 HSDPA LCH 1852.4MHz Subtest 1 NTNV



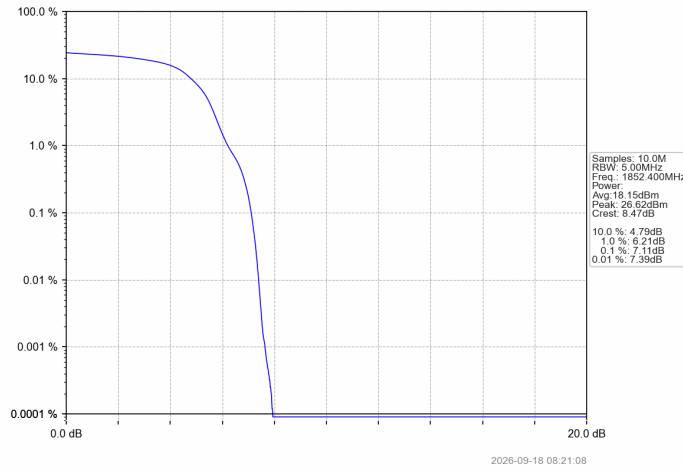
Band2_HSDPA_MCH_1880MHz_Subtest 1_NTNV



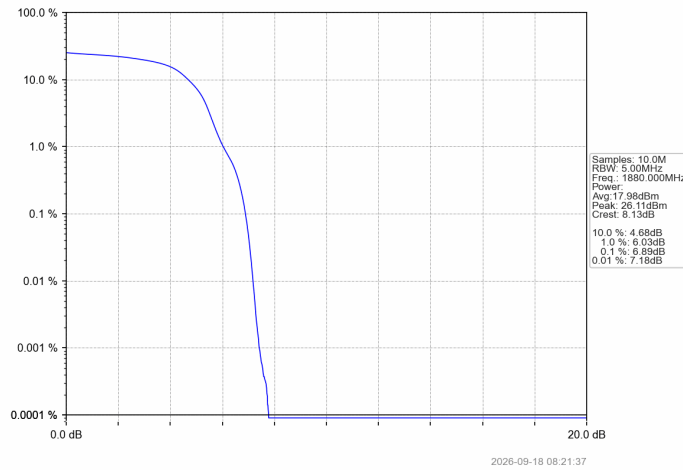
Band2_HSDPA_HCH_1907.6MHz_Subtest 1_NTNV



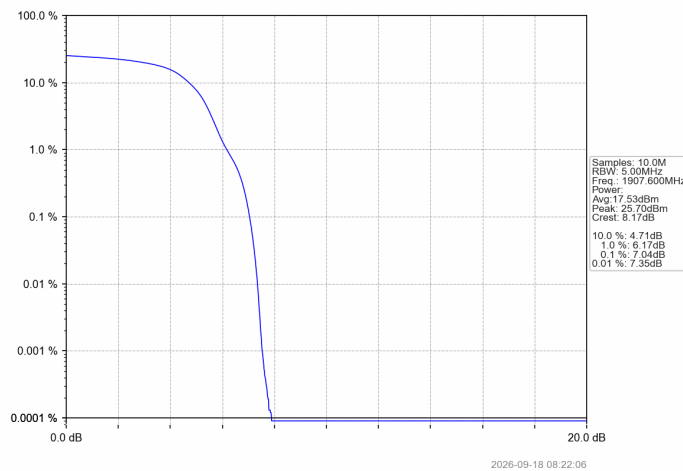
Band2 HSUPA LCH 1852.4MHz Subtest 1 NTNV



Band2 HSUPA MCH 1880MHz Subtest 1 NTNV



Band2 HSUPA HCH 1907.6MHz Subtest 1 NTNV



5. Spurious Emission and Band Edge

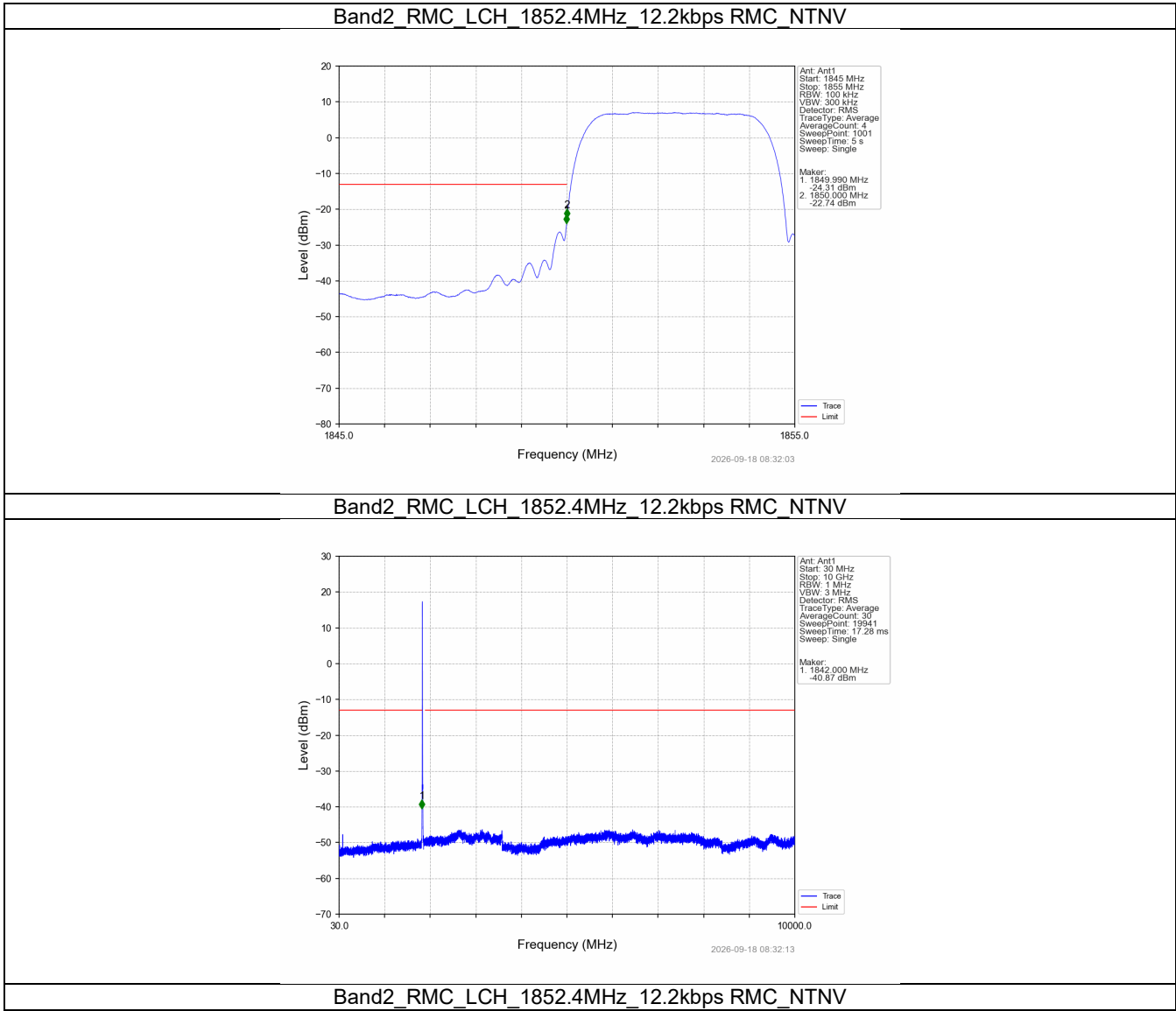
5.1 Test Result

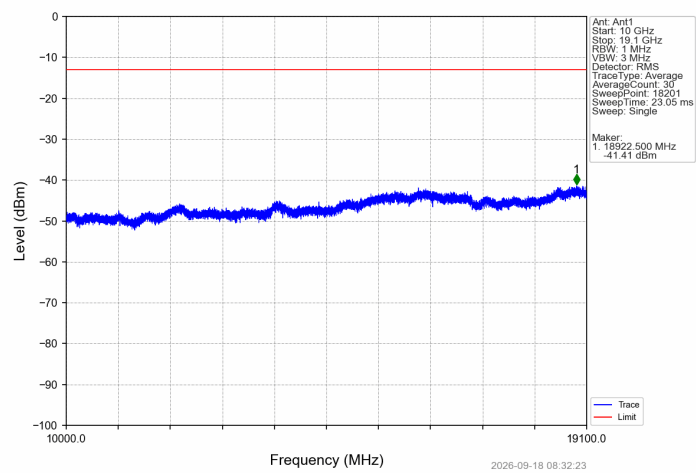
5.1.1 Band2

Band: 2						
ENV	Mode		Frequency (MHz)	Spurious Emission		Verdict
	Network	Subset		Result	Limit	
NTNV	RMC	12.2kbps RMC	1852.4	Refer To Test Graph	Pass	
			1880	Refer To Test Graph	Pass	
			1907.6	Refer To Test Graph	Pass	
	HSDPA	Subtest 1	1852.4	Refer To Test Graph	Pass	
			1880	Refer To Test Graph	Pass	
			1907.6	Refer To Test Graph	Pass	
	HSUPA	Subtest 1	1852.4	Refer To Test Graph	Pass	
			1880	Refer To Test Graph	Pass	
			1907.6	Refer To Test Graph	Pass	

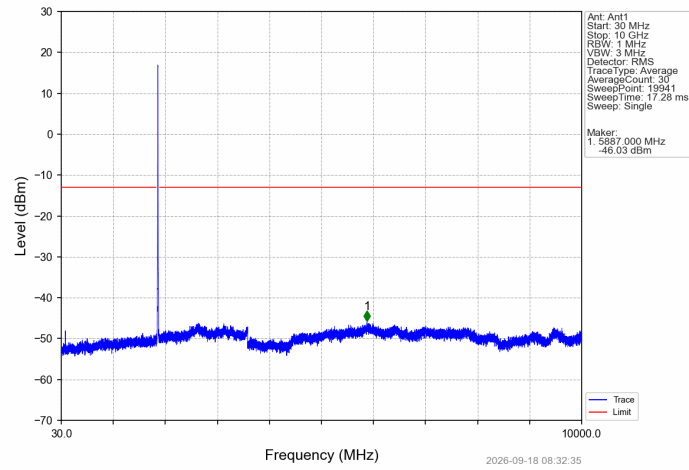
5.2 Test Graph

5.2.1 Band2

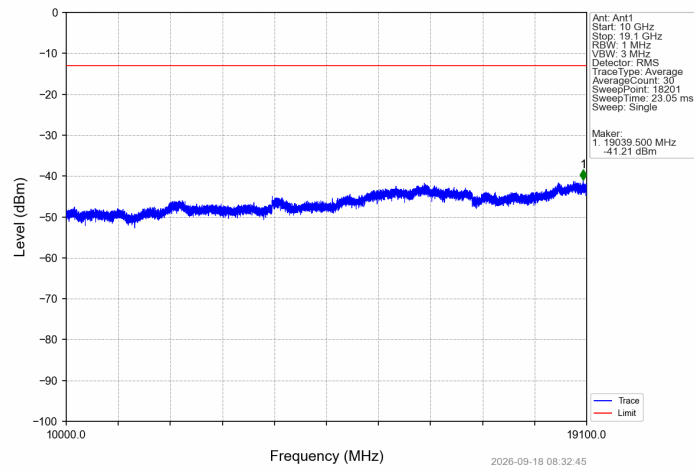




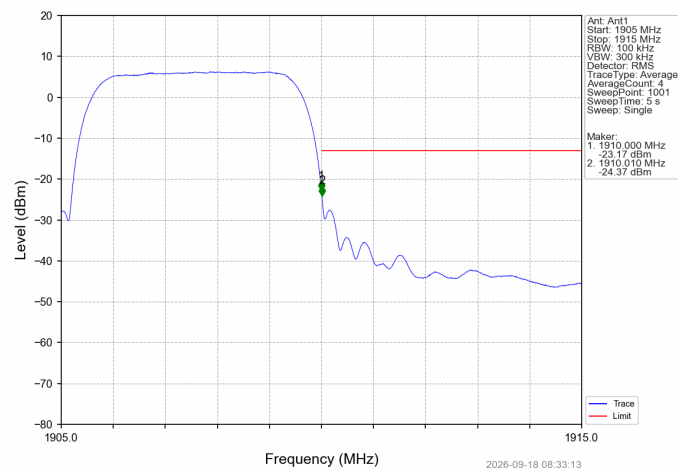
Band2_RMC_MCH_1880MHz_12.2kbps_RMC_NTNV



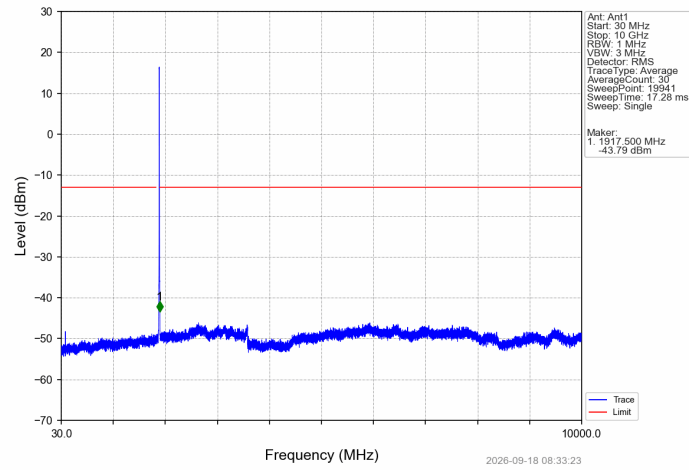
Band2_RMC_MCH_1880MHz_12.2kbps_RMC_NTNV



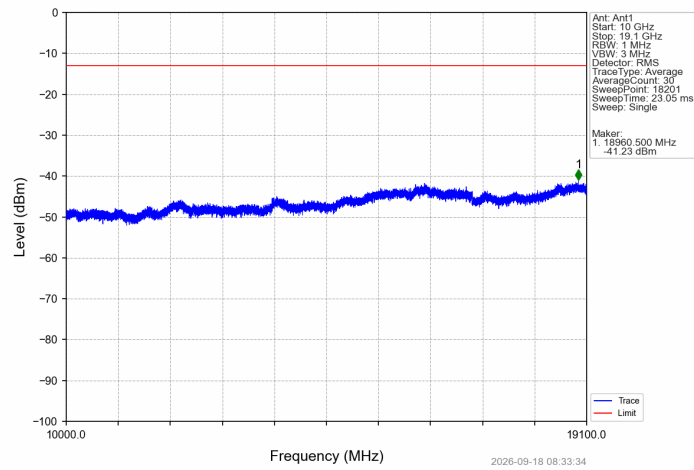
Band2_RMC_HCH_1907.6MHz_12.2kbps_RMC_NTNV



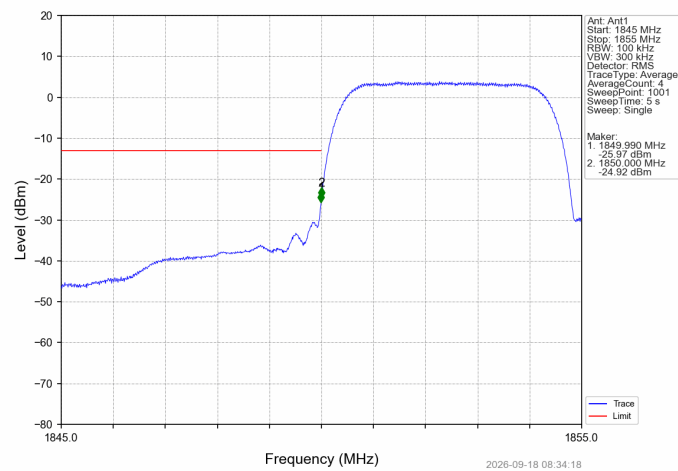
Band2_RMC_HCH_1907.6MHz_12.2kbps_RMC_NTNV



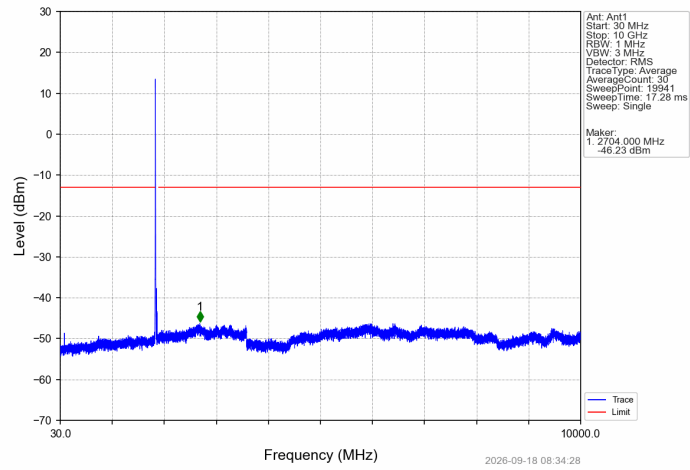
Band2_RMC_HCH_1907.6MHz_12.2kbps_RMC_NTNV



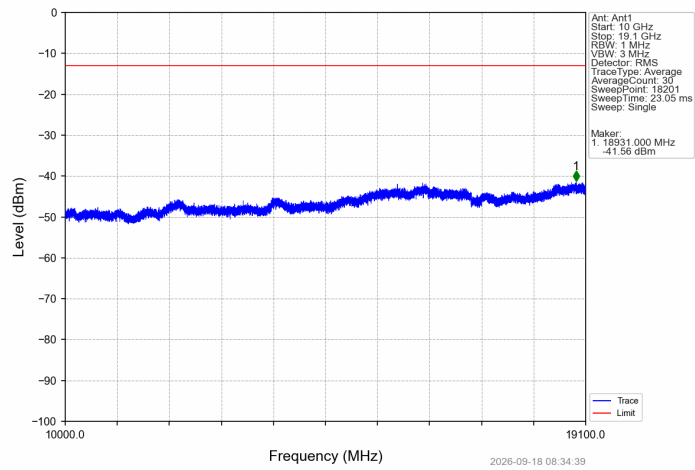
Band2_HSDPA_LCH_1852.4MHz_Subtest 1_NTNV



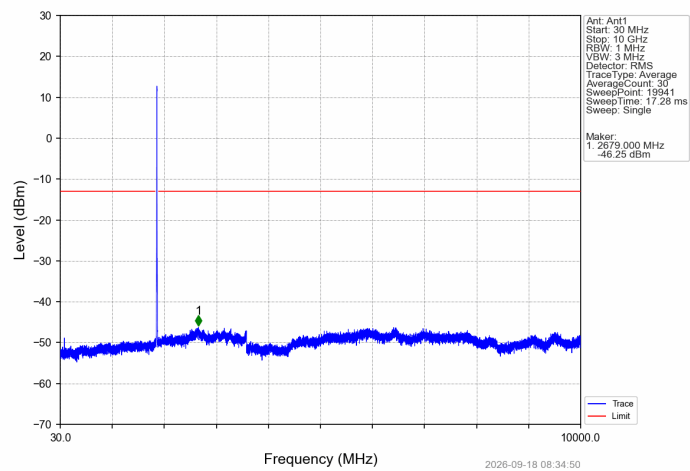
Band2_HSDPA_LCH_1852.4MHz_Subtest 1_NTNV



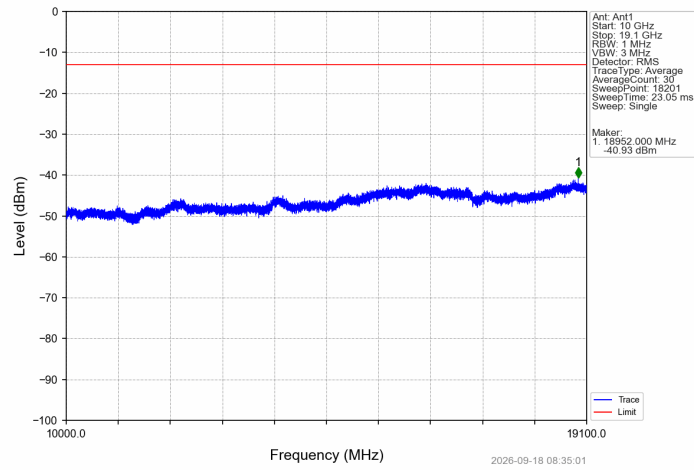
Band2_HSDPA_LCH_1852.4MHz_Subtest 1_NTNV



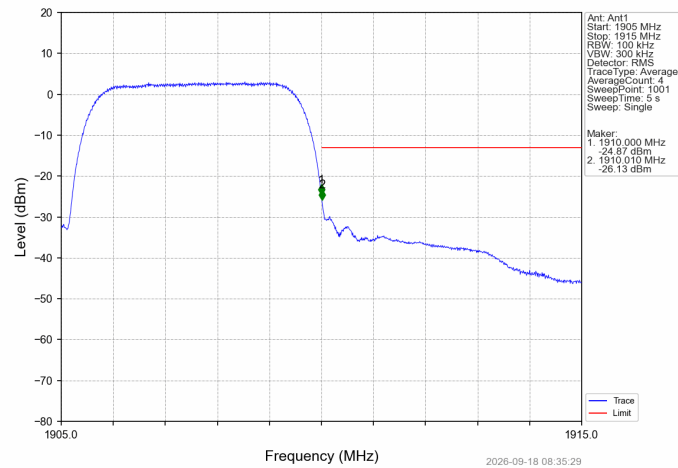
Band2_HSDPA_MCH_1880MHz_Subtest 1_NTNV



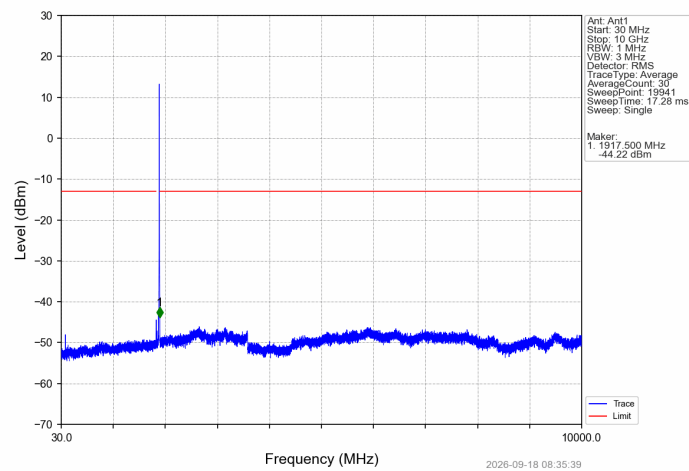
Band2_HSDPA_MCH_1880MHz_Subtest 1_NTNV



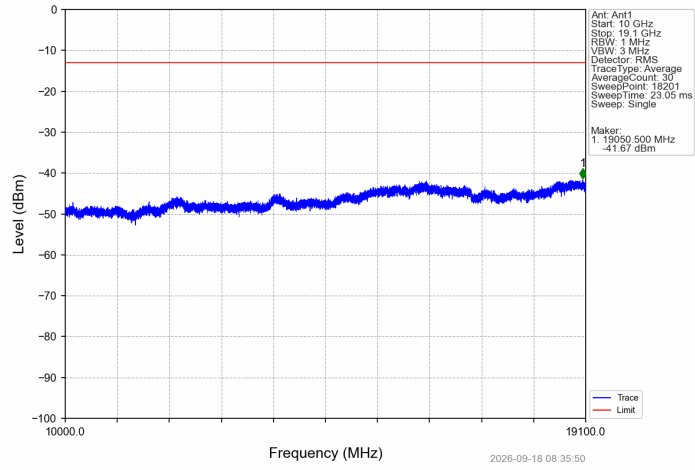
Band2_HSDPA_HCH_1907.6MHz_Subtest 1_NTNV



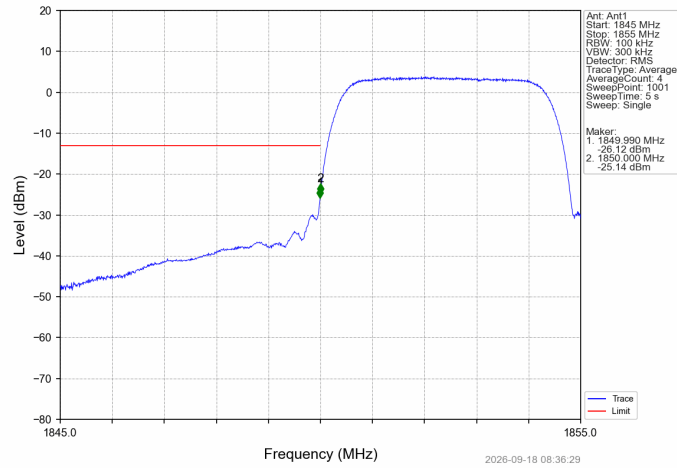
Band2_HSDPA_HCH_1907.6MHz_Subtest 1_NTNV



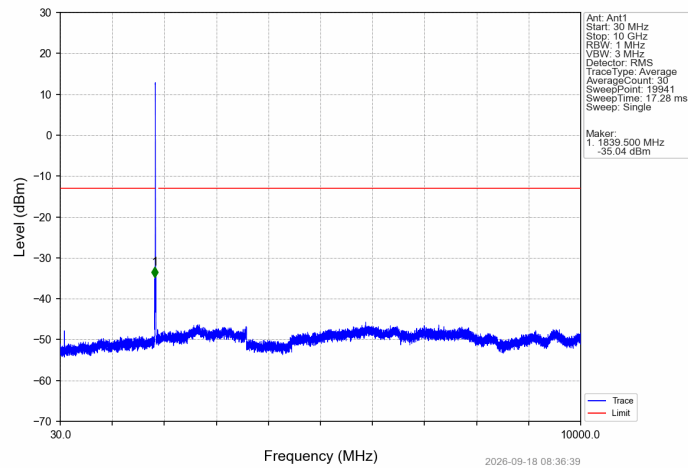
Band2 HSDPA HCH 1907.6MHz Subtest 1 NTN



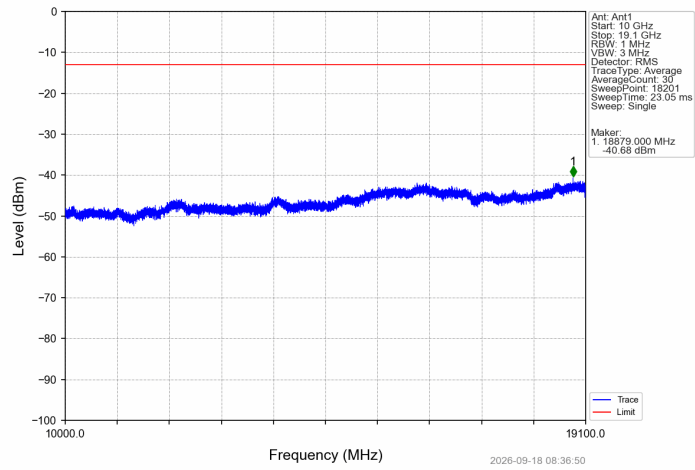
Band2 HSUPA LCH 1852.4MHz Subtest 1 NTN



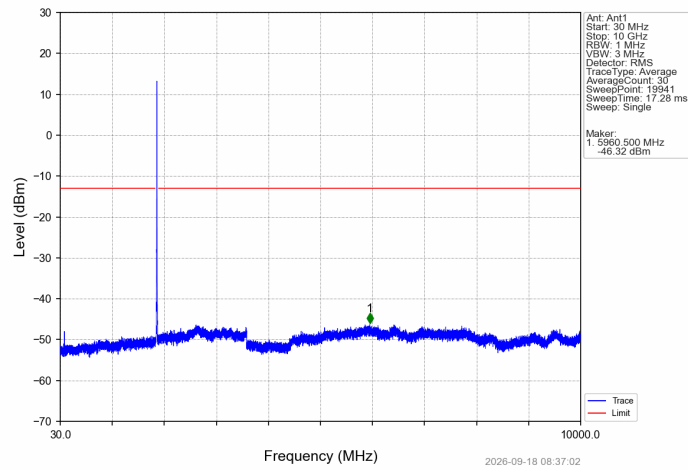
Band2 HSUPA LCH 1852.4MHz Subtest 1 NTN



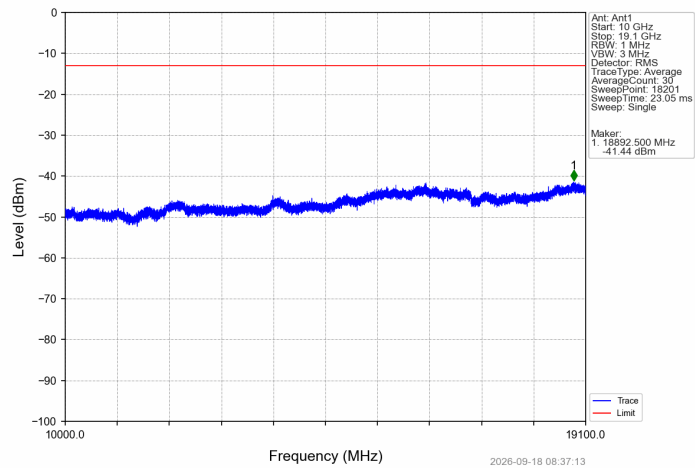
Band2 HSUPA LCH 1852.4MHz Subtest 1 NTN



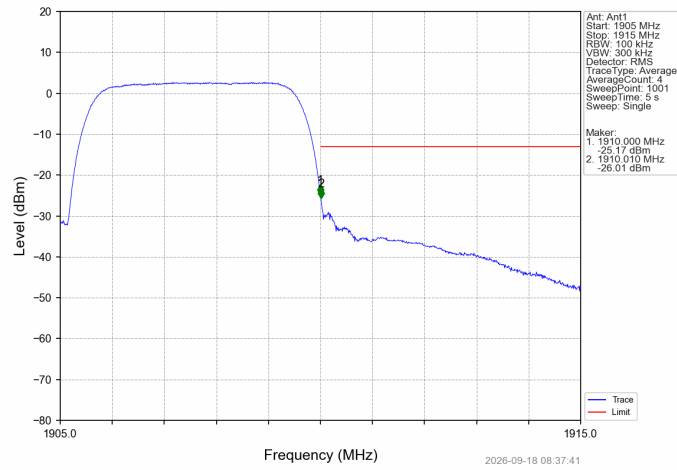
Band2 HSUPA MCH 1880MHz Subtest 1 NTN



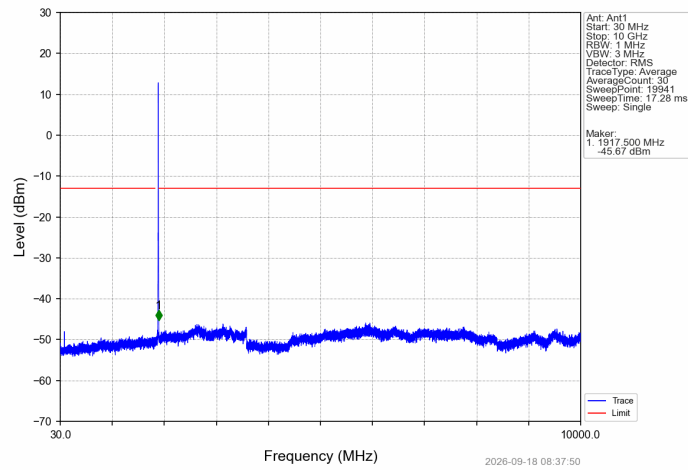
Band2 HSUPA MCH 1880MHz Subtest 1 NTN



Band2 HSUPA HCH 1907.6MHz Subtest 1_NTNV



Band2 HSUPA HCH 1907.6MHz Subtest 1_NTNV



Band2 HSUPA HCH 1907.6MHz Subtest 1_NTNV

