

UNCLE BENNY QUANTUM RESEARCH DIVISION

Space / Channel Scan — Comprehensive Dual-Session Report
2026-09-06 · PRIVATE · ENCRYPTED LAND ONLY

Sessions **55E7782276C7** (short) + **4AA33A394190** (long)
IBM jobs **daegggtt1ierc738m4cl0** · **daegjel1ierc738m4ftg**
Backend **ibm_marrakesh** (Heron) · SamplerV2 · 8 logical qubits

HONESTY: REAL ibm_marrakesh SamplerV2 bitstrings/counts/entropy/spectra. "Space / radio / frequency / network scan" is a metaphor for Hilbert/outcome-space channel bins. QPU is NOT a radio telescope and does NOT literally detect RF, networks, or external EM. Channel bins = bitstring prefixes / Hamming weight / FFT of P(outcome).

Pathway: IAM + POST /api/v1/jobs · program_id=sampler · params.version=2 · Heron transpile · solo submit · wwwroot NOT published · private C:\mdm\quantum-secure\ only.

1. Sessions · Jobs · Timing · Shots

Metric	Short 55E7782276C7	Long 4AA33A394190
UB Job	UB-SCS-20260905-233015-55E7782276C7	UB-SCS-20260905-233533-4AA33A394190
IBM Job	daegggtt1ierc738m4cl0	daegjel1ierc738m4ftg
Pubs	4	8
Shots / pub	8192	16384
Total shots	32768	131072
IBM (created→finished) wall	~14.57 s	43.34 s
Meta / client wall	21.86 s	43.34 s
Queue approx	~0.9 s	0.98 s
Run-phase approx	—	42.36 s
Quantum / charge	charge 11 s · exec 8.66 s	37 s · est.run 10.845 s
Cost units	—	600
Timestamp PT	2026-09-05 23:30:15 PT	2026-09-05 23:37:40 PT

2. Hardware — Marrakesh Heron sensor / actuator layer

ibm_marrakesh is framed as a laser/sensor-instrumented quantum measurement system: control pulses → entangled state → classical channel outcomes.

- **Microwave drive lines:** XY microwave pulses for native sx/x rotations.
- **Laser / optical timing plane:** Coherent pulse-control with optical-grade timing/reference (not free-space astronomy).
- **CZ entangling actuators:** Native cz on Heron coupling graph after transpile.
- **Pulse control:** SamplerV2 scheduled sequences from transpiled rz/sx/x/cz/measure OpenQASM.
- **Dispersive readout:** Resonator IQ demodulation → classical bit.
- **Cryogenic sensors:** Dilution-fridge amplification of weak readout tones → scanned bitstring dataset.

3. Method — SamplerV2 · transpile · honesty

Short: 4 pubs × 8192. Long: 8 pubs × 16384. Analysis: Shannon entropy, 4-bit prefix bins, Hamming-weight spectra, FFT of P(outcome), Pearson bit correlations. Metaphor: broadband↔Hadamard, network link↔CZ chain, carrier↔RZ tags, echo↔structured low-entropy return.

Transpiled circuits (long session)

Pub	Shots	Depth	Size	QASM sha256
broadband_H	16384	4	32	9f9df208ac4aca2f7317...
entangled_chain	16384	13	55	cf222a54f089a5ab7406...
freq_tagged	16384	7	52	d95716b1a8bca7bdcc97...
hamming_probe	16384	33	99	45a1376731cd2766828b...
phase_ladder	16384	13	55	9d9523671f89ff88df4a...
dual_band	16384	7	47	1d8a1bae1316c87aac6c...
sparse_mesh	16384	27	82	5a10717a0b0d1d7319d5...
echo_probe	16384	17	78	426aa777b3b3df52269d...

4. Per-pub analysis — Short (55E7782276C7)

Pub	Shots	Uniq	Entropy	Top bitstrings	Top prefixes	Top corrs
broadband_H	8192	256	7.9748 (0.997)	01111111 (51), 11111011 (47), 00011101 (47)	1001:542, 1000:538, 1111:538	q0↔q5=-0.042, q2↔q7=+0.020, q4↔q7=+0.019
entangled_chain	8192	256	7.8507 (0.981)	10111111 (70), 01111111 (66), 10011010 (65)	1001:555, 1101:552, 0000:546	q2↔q5=+0.027, q0↔q3=+0.021, q2↔q4=+0.016
freq_tagged	8192	256	7.5870 (0.948)	11111111 (108), 11000011 (108), 11110011 (106)	1100:958, 0011:955, 1111:935	q2↔q3=+0.547, q4↔q5=+0.388, q0↔q1=+0.197
hamming_probe	8192	255	7.4279 (0.928)	00001111 (213), 00000111 (183), 00011111 (173)	0000:1367, 0001:1146, 0010:825	q2↔q7=+0.023, q4↔q6=+0.023, q4↔q7=-0.019

5. Per-pub analysis — Long (4AA33A394190)

Pub	Shots	Uniq	Entropy	Top bitstrings	Top prefixes	Top corrs
broadband_H	16384	256	7.9858 (0.998)	00010100 (89), 10101111 (87), 11010000 (86)	1010:1097, 1101:1089, 1111:1078	q2↔q4=-0.013, q3↔q7=-0.011, q0↔q6=-0.010
entangled_chain	16384	256	7.8772 (0.985)	00111110 (126), 00001111 (123), 01001110 (121)	0000:1074, 1110:1054, 1100:1042	q1↔q7=-0.018, q0↔q1=+0.016, q0↔q5=-0.013
freq_tagged	16384	256	7.6063 (0.951)	11000000 (207), 11001111 (204), 11110000 (201)	1100:2005, 1111:1922, 0000:1855	q2↔q3=+0.546, q4↔q5=+0.374, q0↔q1=+0.195
hamming_probe	16384	256	7.4161 (0.927)	00001111 (447), 00000111 (378), 00011111 (353)	0000:2823, 0001:2327, 0010:1650	q4↔q7=-0.020, q6↔q7=-0.014, q1↔q6=-0.013
phase_ladder	16384	256	7.8760 (0.984)	00000010 (128), 00001111 (121), 00101010 (116)	0000:1115, 1001:1073, 1100:1070	q1↔q7=-0.012, q1↔q3=-0.011, q2↔q6=-0.010
dual_band	16384	256	7.8560 (0.982)	11001000 (141), 00100001 (134), 00001001 (127)	0101:1090, 1000:1072, 0100:1059	q6↔q7=-0.021, q5↔q7=-0.018, q0↔q5=+0.013
sparse_mesh	16384	256	7.2930 (0.912)	00101111 (324), 11101111 (306), 10000100 (305)	0101:1317, 0010:1313, 1001:1256	q6↔q7=+0.703, q2↔q3=-0.038, q0↔q5=-0.016
echo_probe	16384	154	4.5662 (0.571)	11110000 (2695), 11111000 (2687), 11110100 (1704)	1111:10703, 1110:2366, 1101:1505	q0↔q1=+0.078, q1↔q2=+0.050, q6↔q7=+0.025

6. Echo_probe highlight — strongest channel

echo_probe · 16384 shots · entropy **4.5662/8.0** (frac 0.571) · unique **154/256**
Top bitstring **11110000** count **2695 (16.449%)**; 11111000=2687; 11110100=1704
Dominant prefix **1111** = **10703** shots (~65.3%); next 1110:2366, 1101:1505
FFT peak freq_bin 128 magnitude ≈ 0.917 — strongest spectral peak across all pubs.
Interpretation: structured low-entropy “echo/return” measurement channel (metaphor), not an external RF echo.

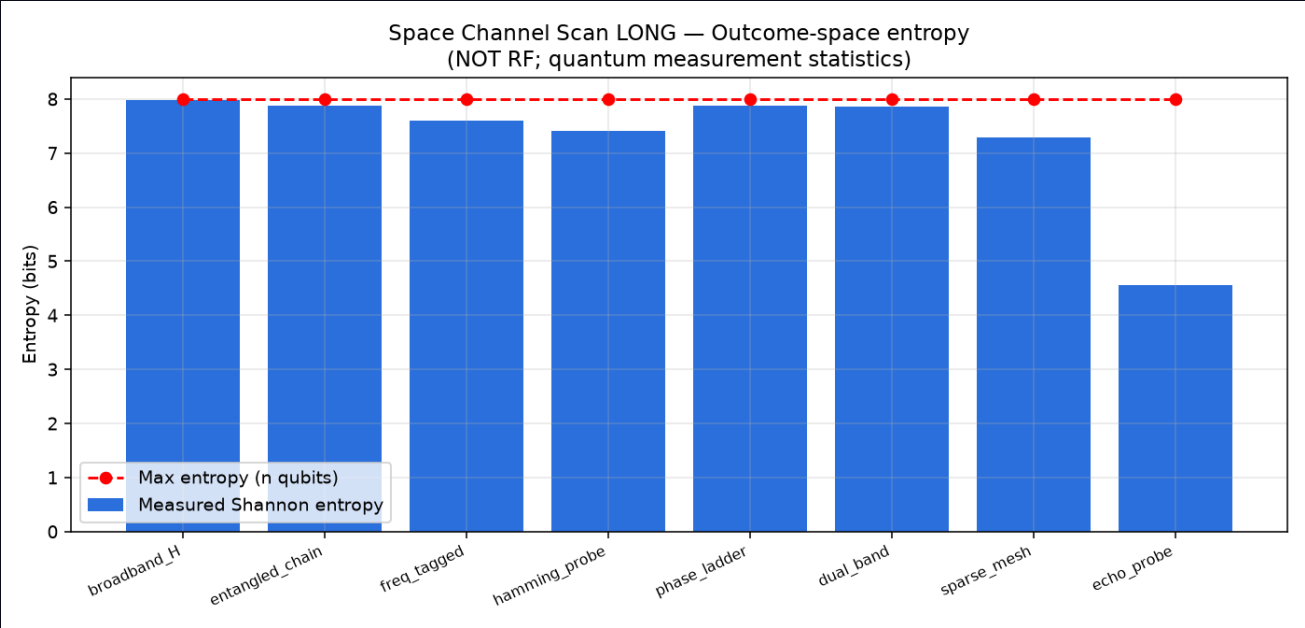
7. Comparison — Short vs Long

Pub	Short H	Long H	Δ
broadband_H	7.974788	7.985845	+0.011057
entangled_chain	7.850714	7.877171	+0.026457

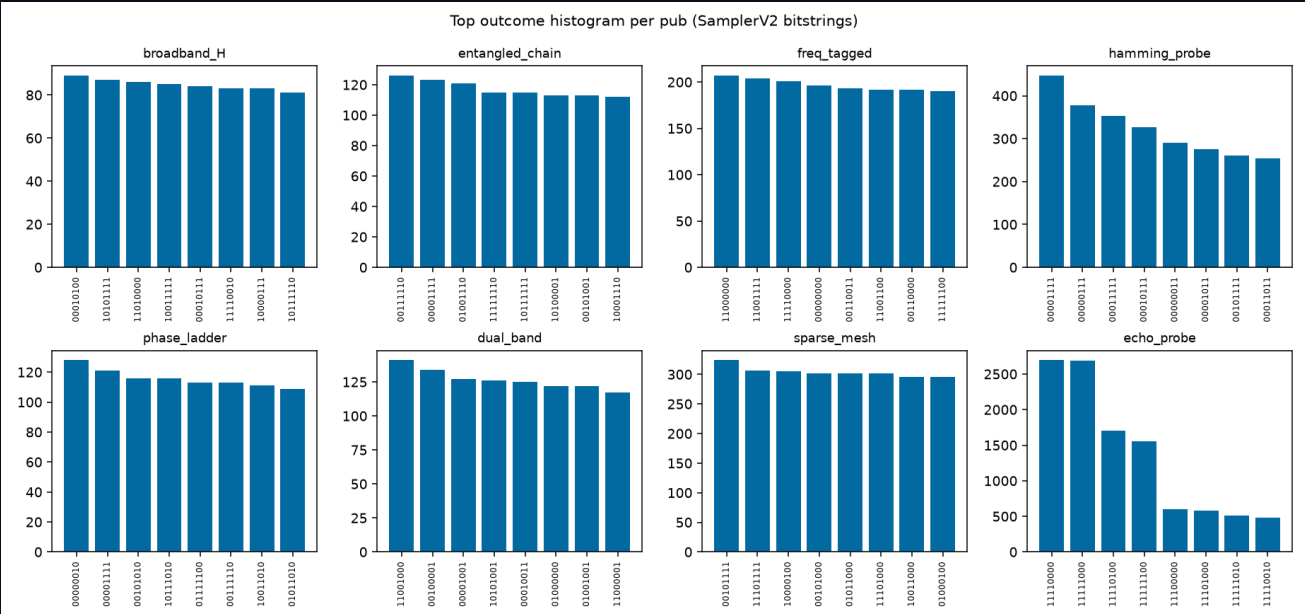
freq_tagged	7.587026	7.606344	+0.019318
hamming_probe	7.427879	7.416122	-0.011757

Shared pubs stable ($|\Delta| \blacksquare 0.03$). Long adds phase_ladder, dual_band, sparse_mesh, echo_probe. echo_probe is the standout structured channel.

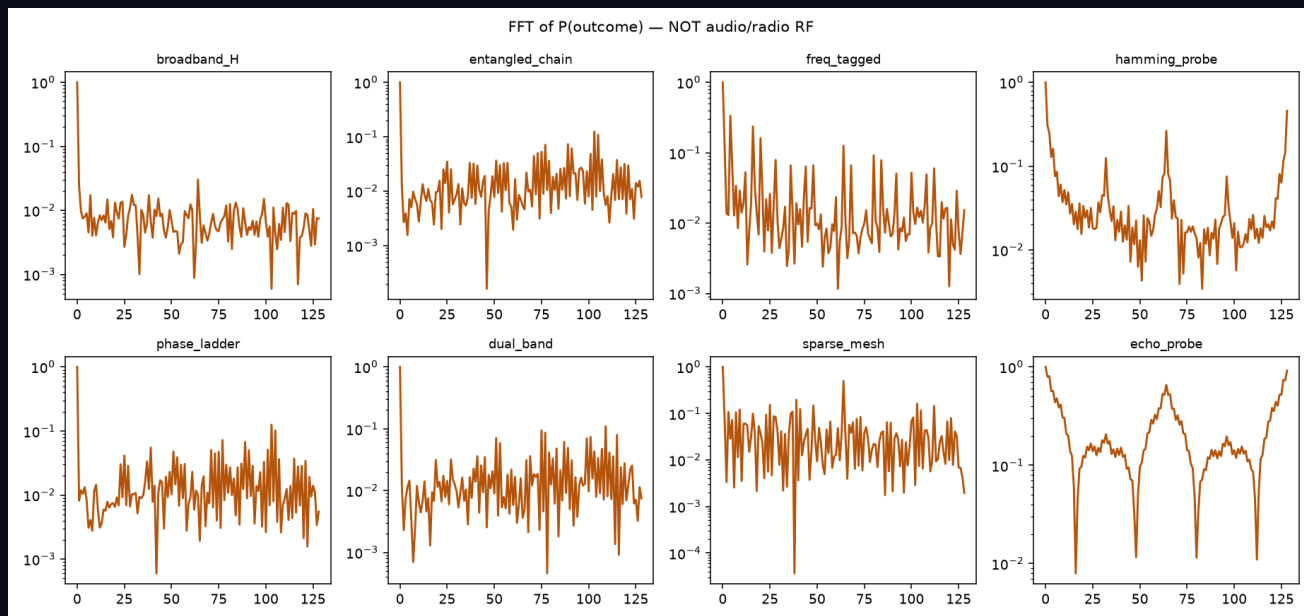
8. Plots — Long scan (primary)



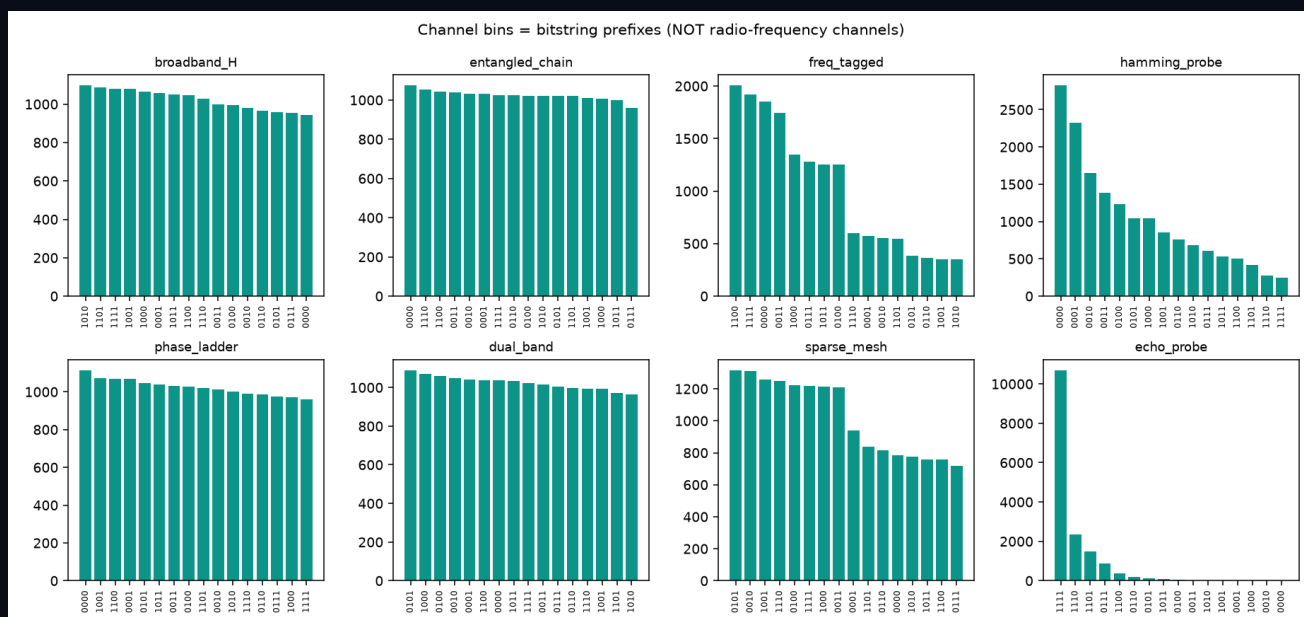
entropy_4AA33A394190.png



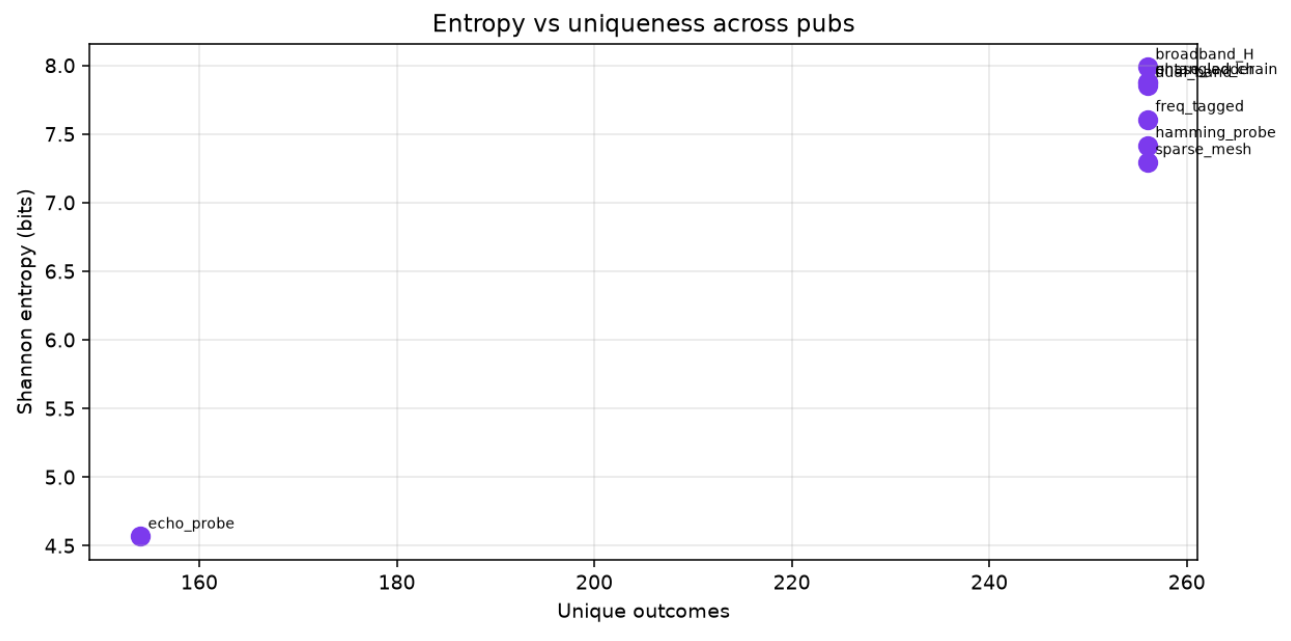
histogram_4AA33A394190.png



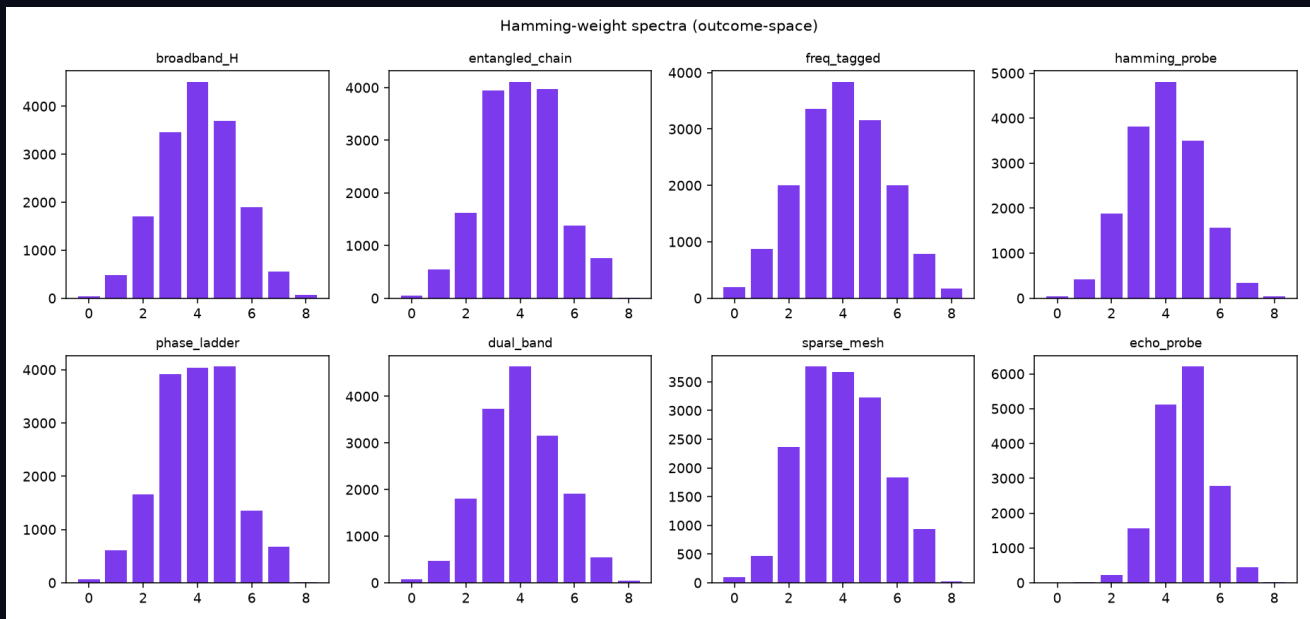
spectrum_4AA33A394190.png



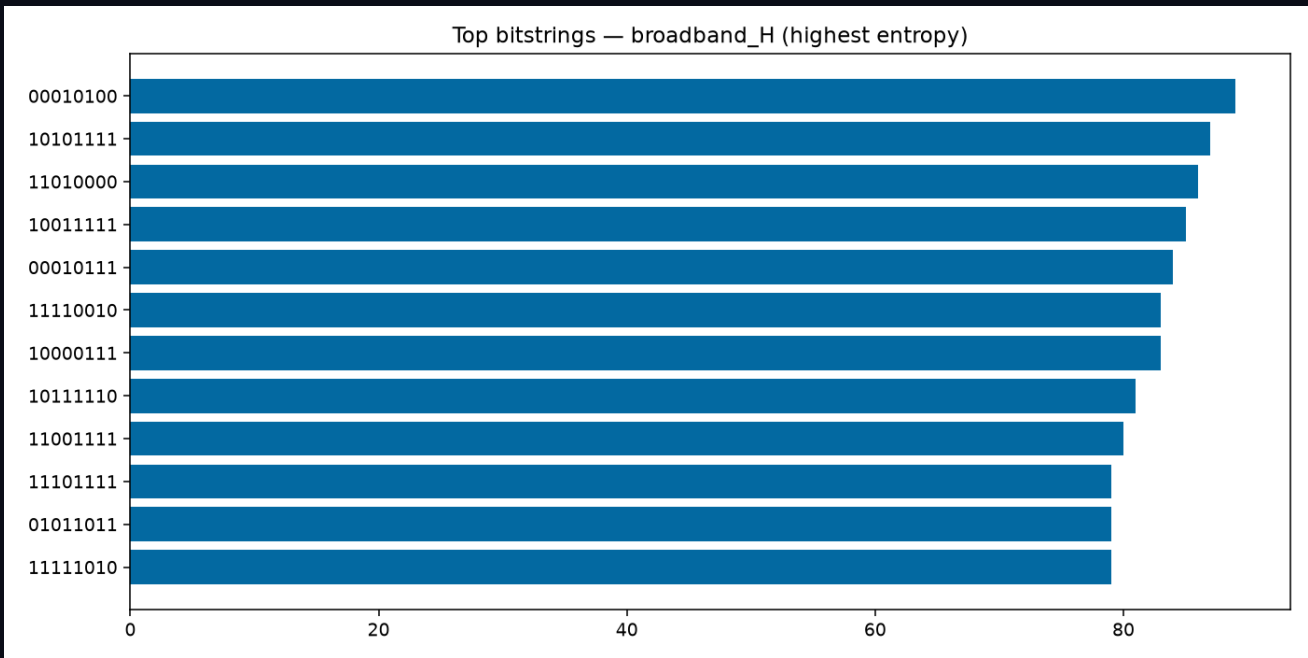
prefix_bins_4AA33A394190.png



correlations_4AA33A394190.png

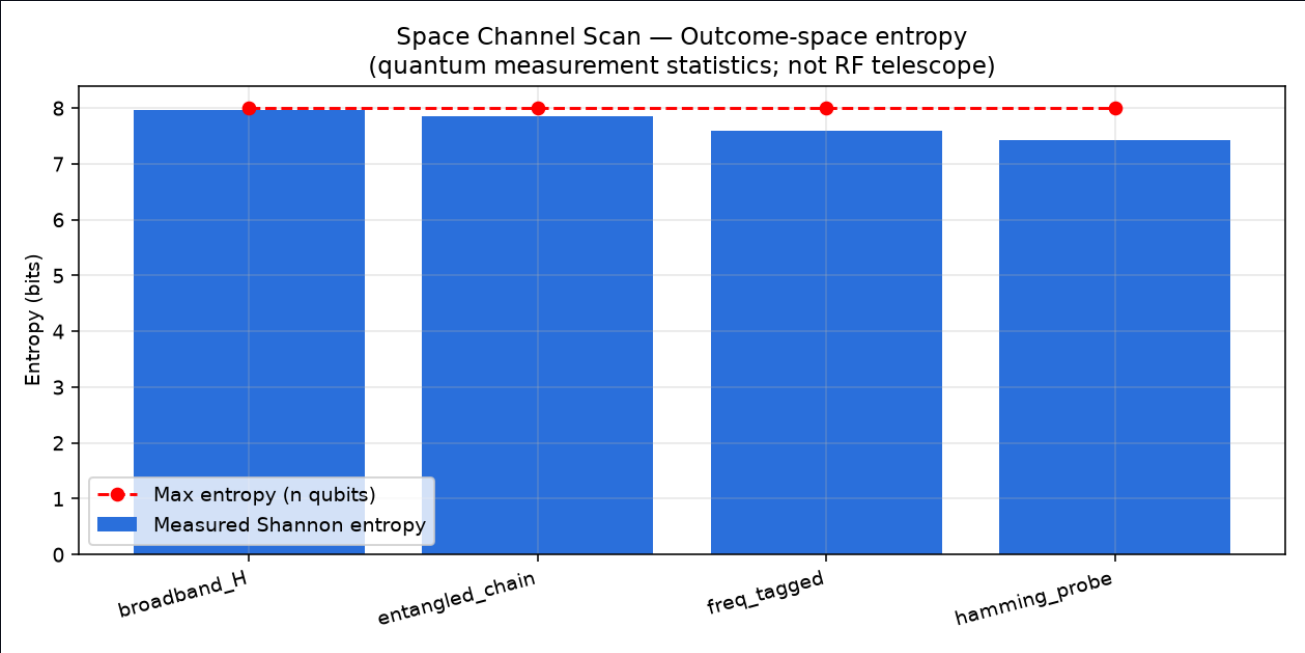


hamming_4AA33A394190.png

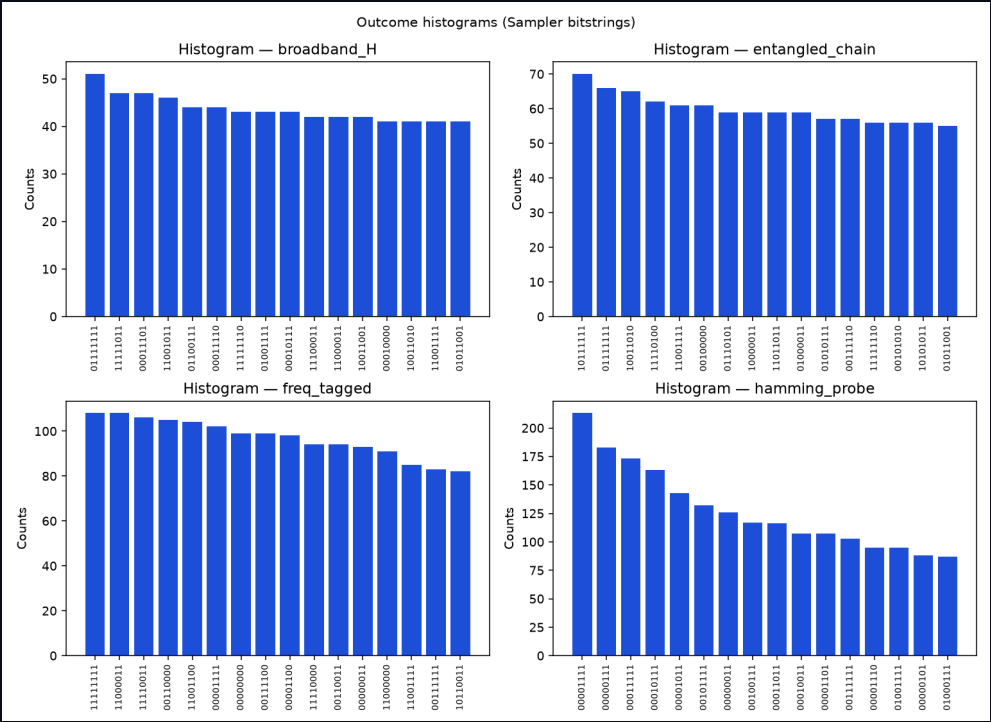


top_bitstrings_4AA33A394190.png

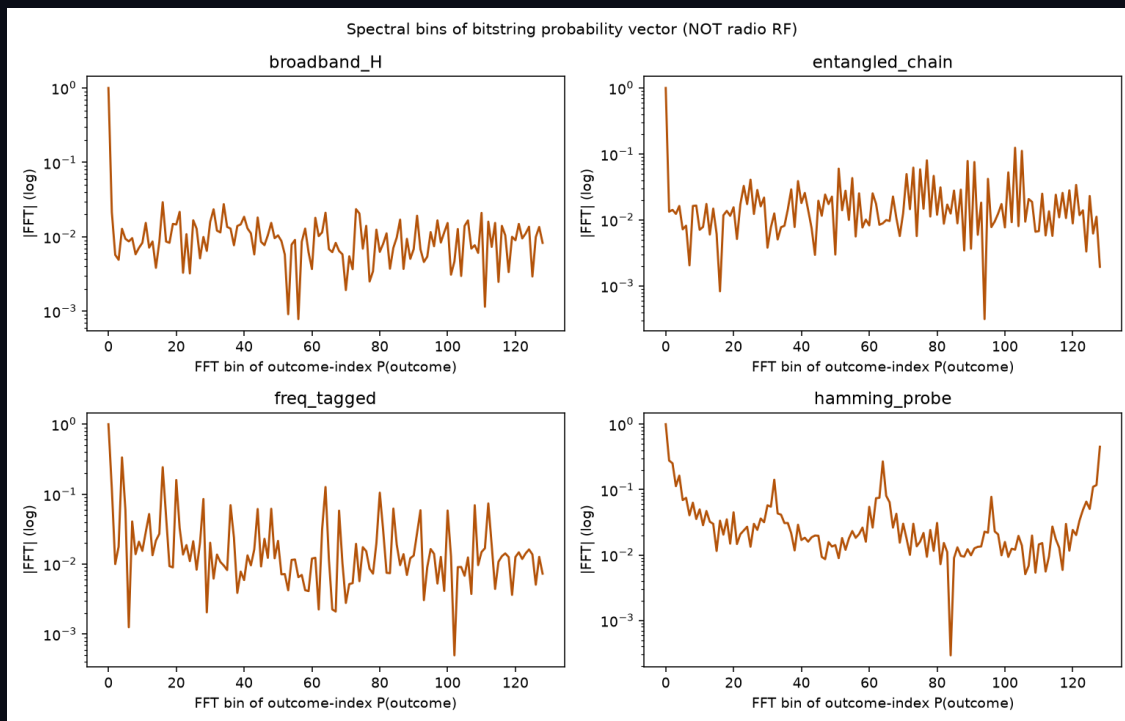
8b. Plots — Short scan (comparison)



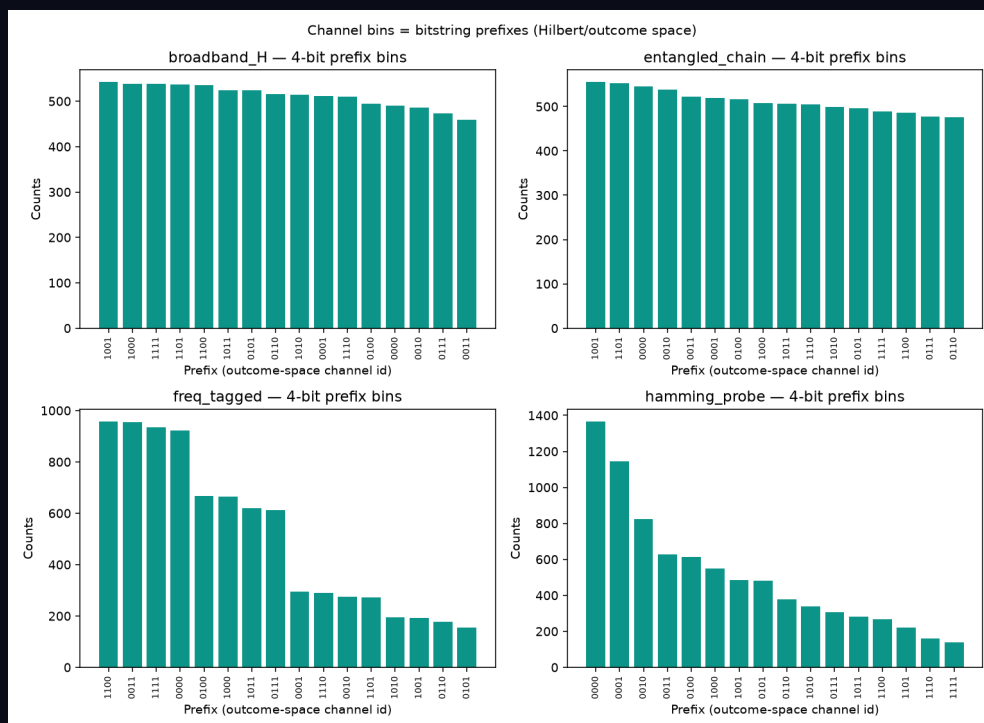
entropy_55E7782276C7.png



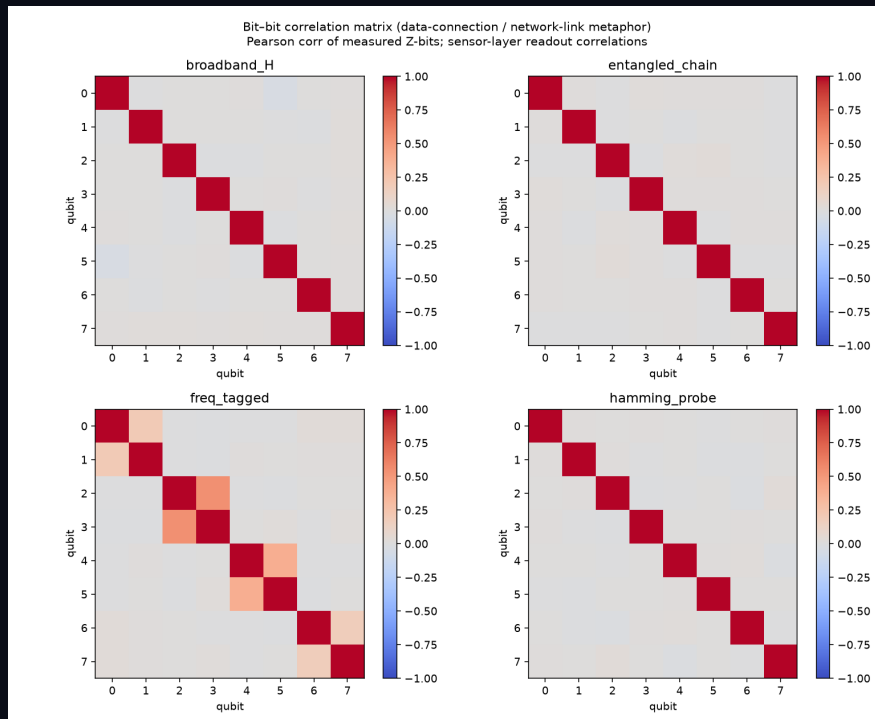
histogram_55E7782276C7.png



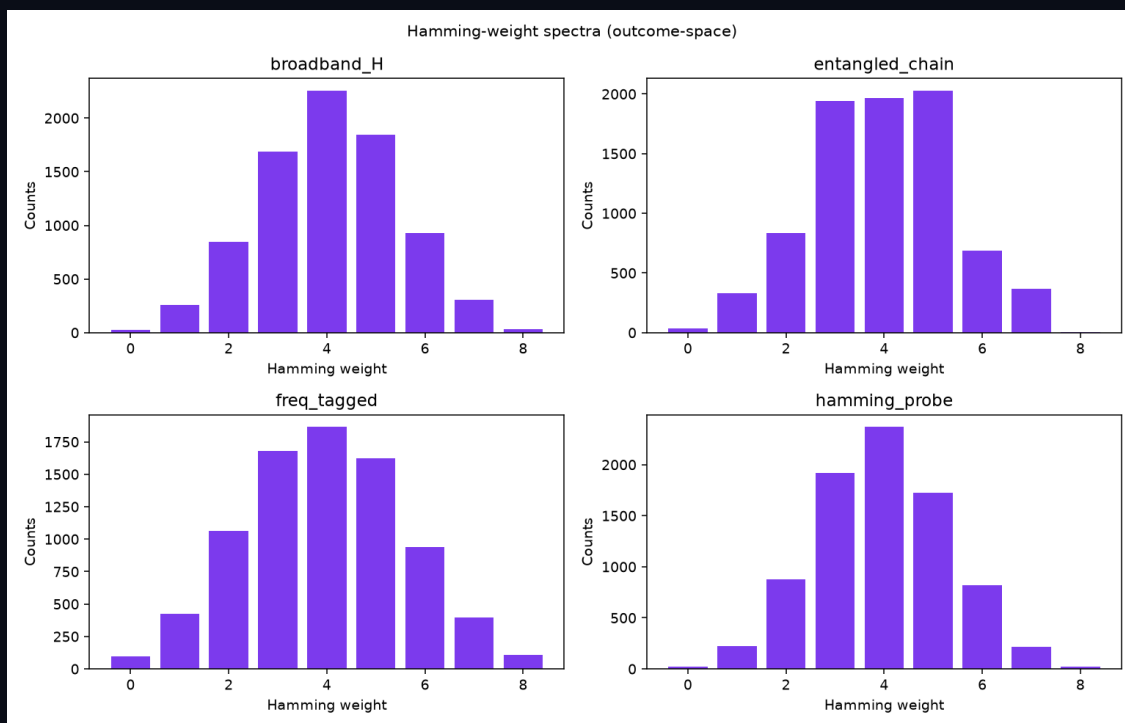
spectrum_55E7782276C7.png



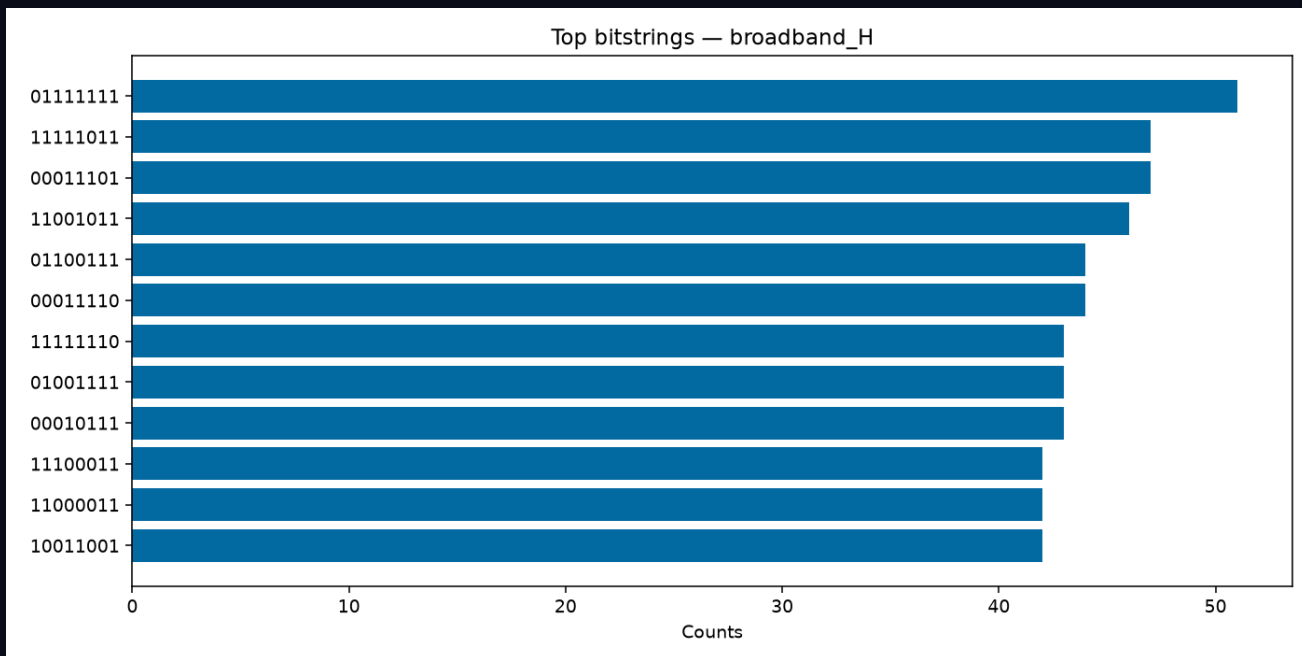
prefix_bins_55E7782276C7.png



correlations_55E7782276C7.png



hamming_55E7782276C7.png



top_bitstrings_55E7782276C7.png

9. Appendix — Inventory & encrypted packs

Local: /workspace/space-channel-scan-comprehensive-20260906/ space-channel-scan-20260906/
space-channel-scan-20260906-long/ · quantum-secure-local/space_channel_scan_{55E7782276C7,4AA33A394190}/

Encrypted packs (AES-256-CBC): keys operator-only — not listed here.

Short → C:\mdm\quantum-secure\south_channel_scan_55E7782276C7.*

Long → C:\mdm\quantum-secure\south_channel_scan_4AA33A394190.*

VPS (PRIVATE, wwwroot NOT published):

C:\mdm\quantum-secure\south_channel_scan_comprehensive_20260906\

HTML · PDF · plots/ · summary JSON

Plot files:

- plots/correlations_4AA33A394190.png
- plots/correlations_55E7782276C7.png
- plots/entropy_4AA33A394190.png
- plots/entropy_55E7782276C7.png
- plots/hamming_4AA33A394190.png
- plots/hamming_55E7782276C7.png
- plots/histogram_4AA33A394190.png
- plots/histogram_55E7782276C7.png
- plots/prefix_bins_4AA33A394190.png
- plots/prefix_bins_55E7782276C7.png
- plots/spectrum_4AA33A394190.png
- plots/spectrum_55E7782276C7.png
- plots/top_bitstrings_4AA33A394190.png
- plots/top_bitstrings_55E7782276C7.png

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