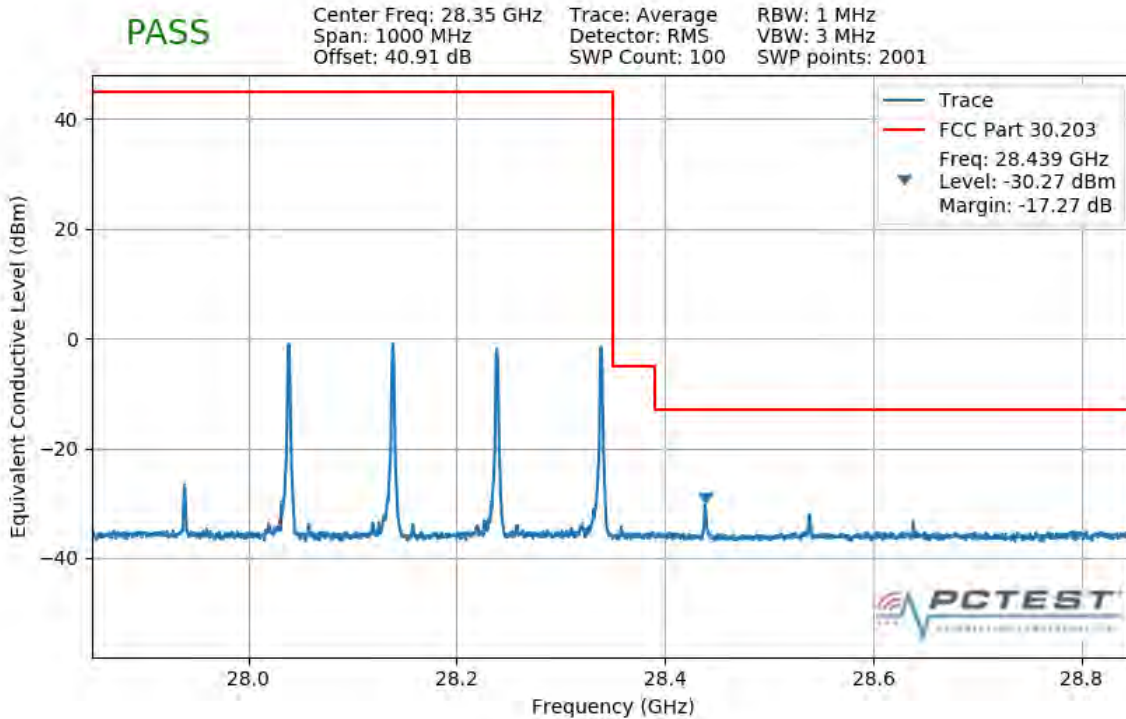
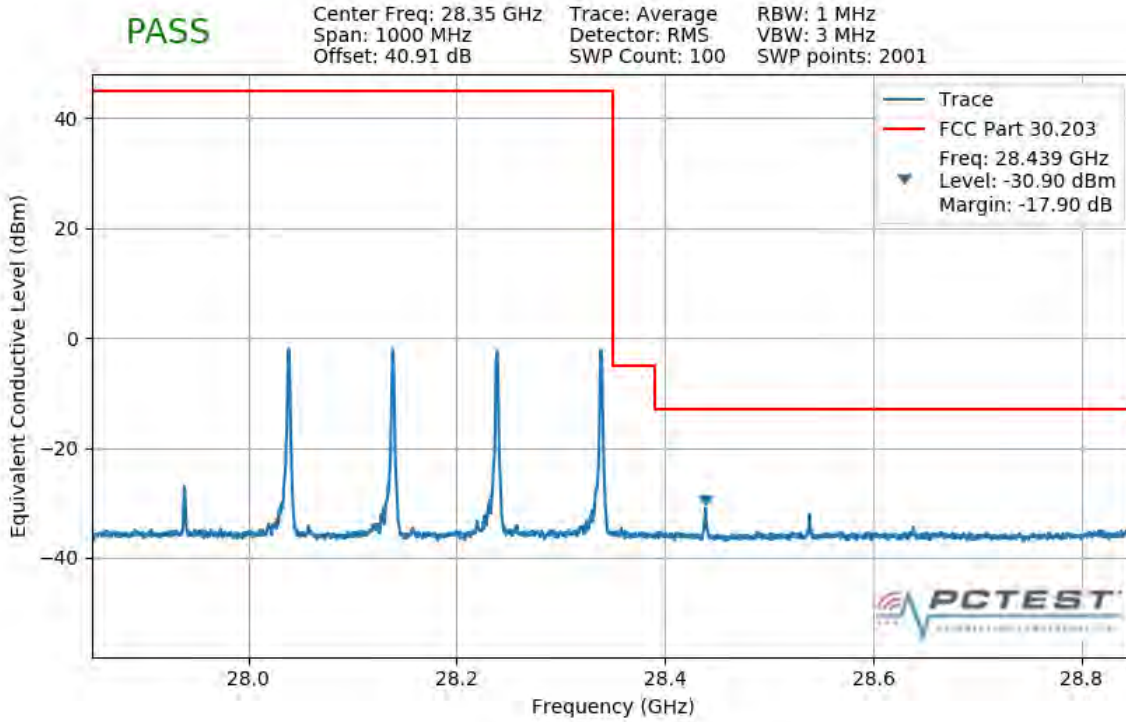


Plot 7-341. Upper Band Edge Plot (4CC 400MHz QPSK Full RB)

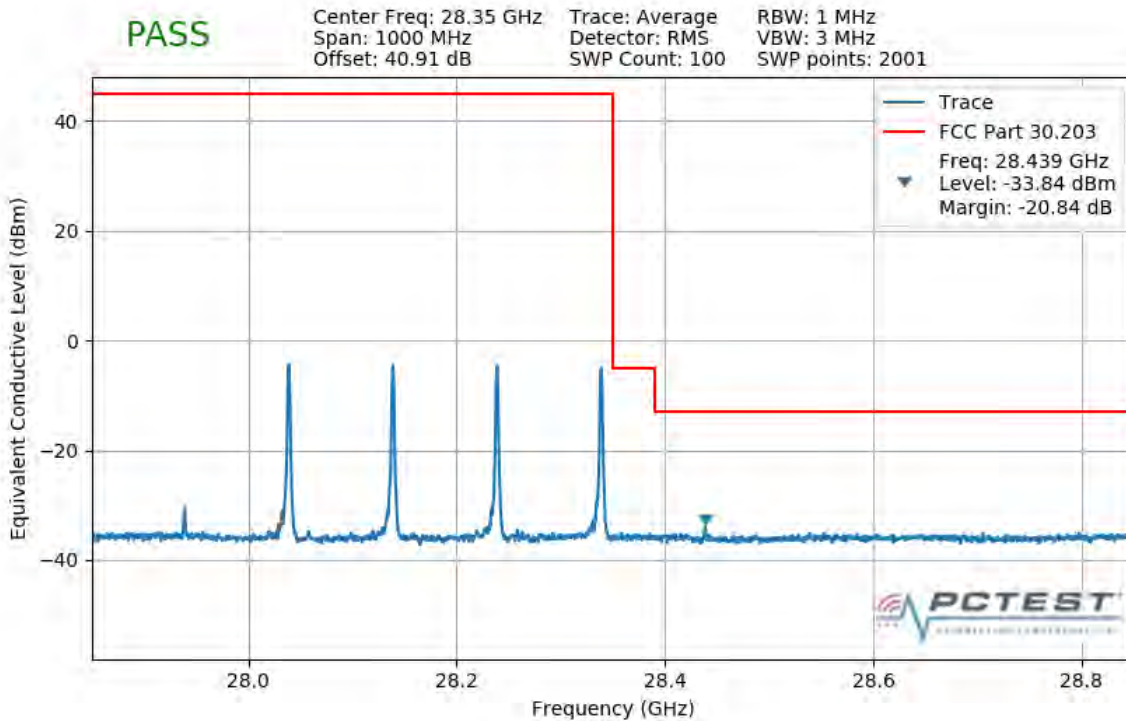


Plot 7-342. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 218 of 337



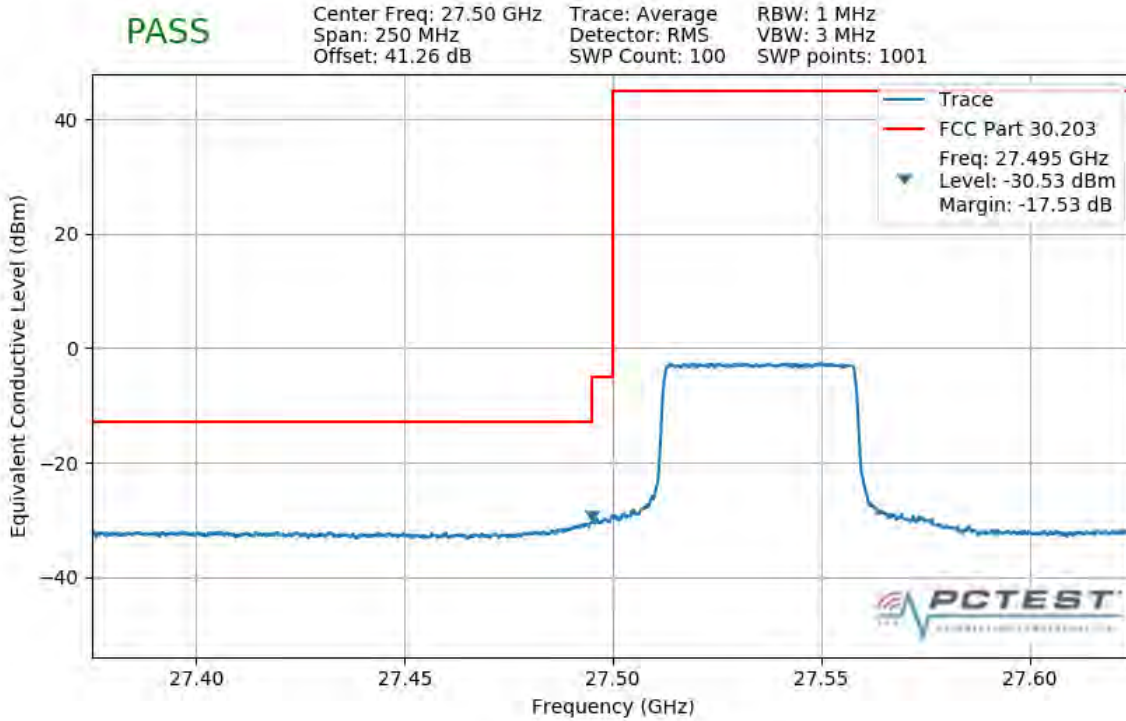
Plot 7-343. Upper Band Edge Plot (4CC 400MHz 16QAM 1 RB)



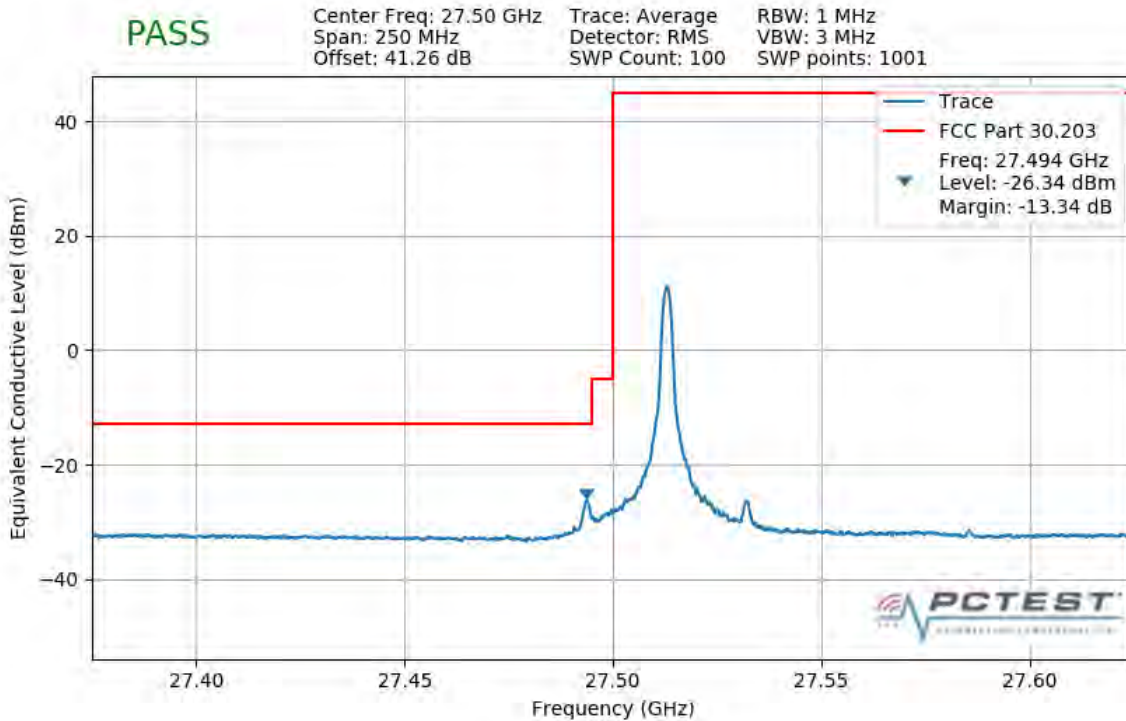
Plot 7-344. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset			Page 219 of 337

MIMO

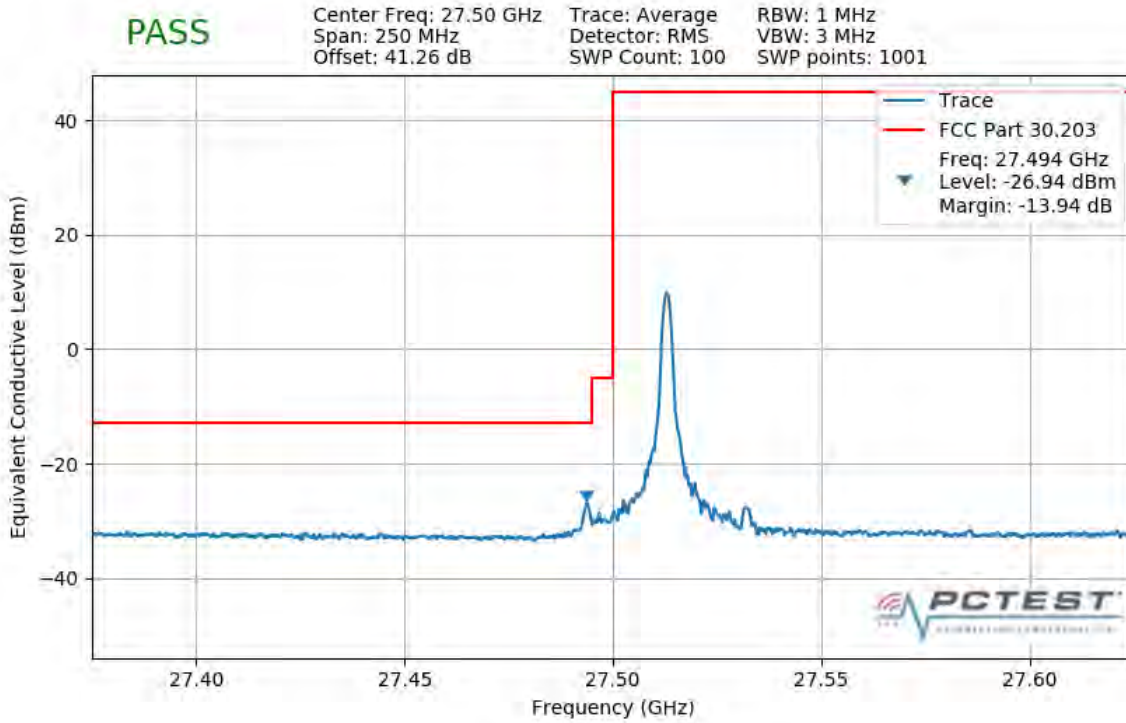


Plot 7-345. Lower Band Edge Plot (1CC 50MHz QPSK Full RB)

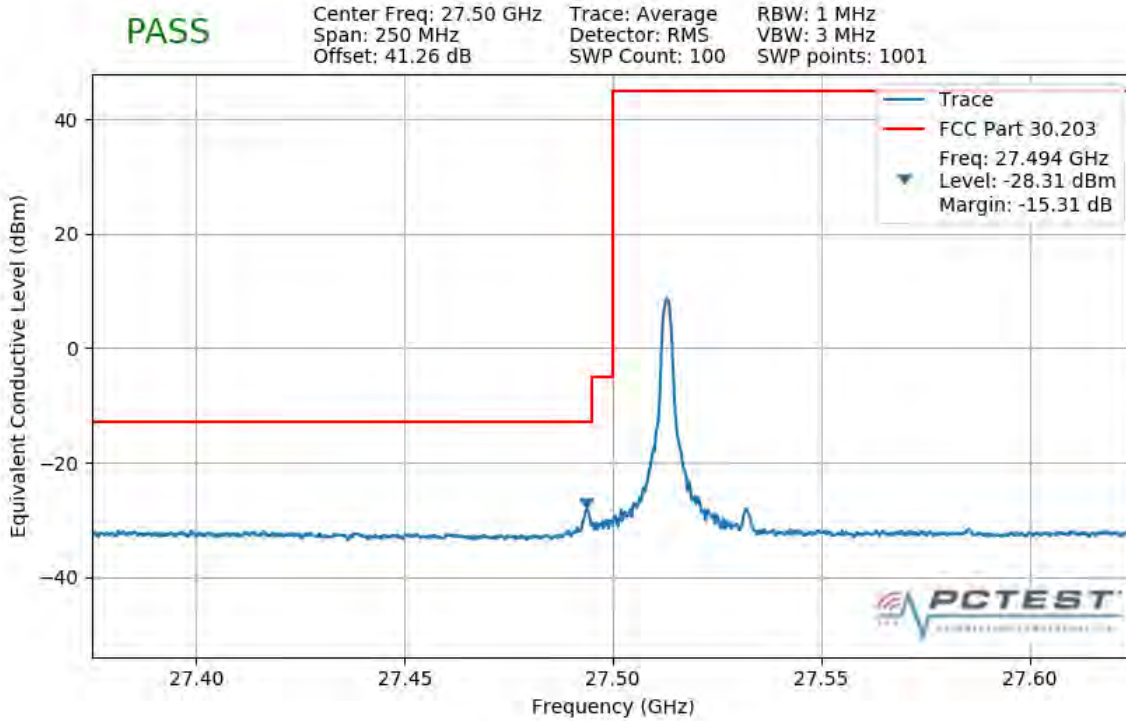


Plot 7-346. Lower Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 220 of 337

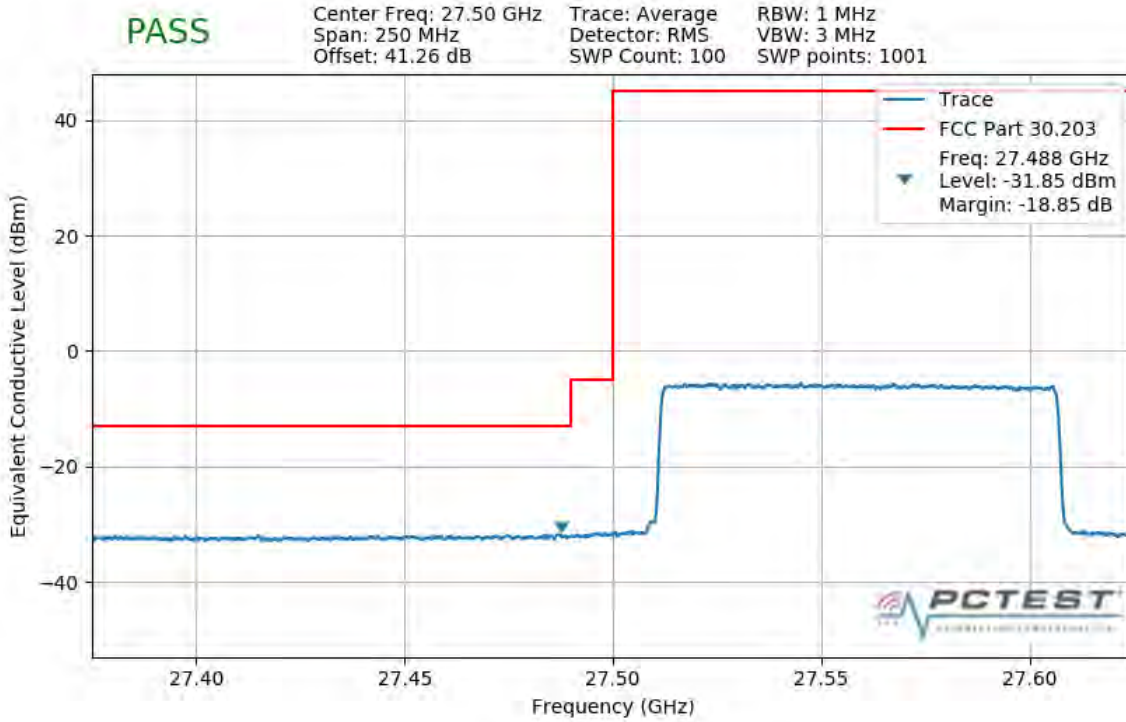


Plot 7-347. Lower Band Edge Plot (1CC 50MHz 16QAM 1 RB)

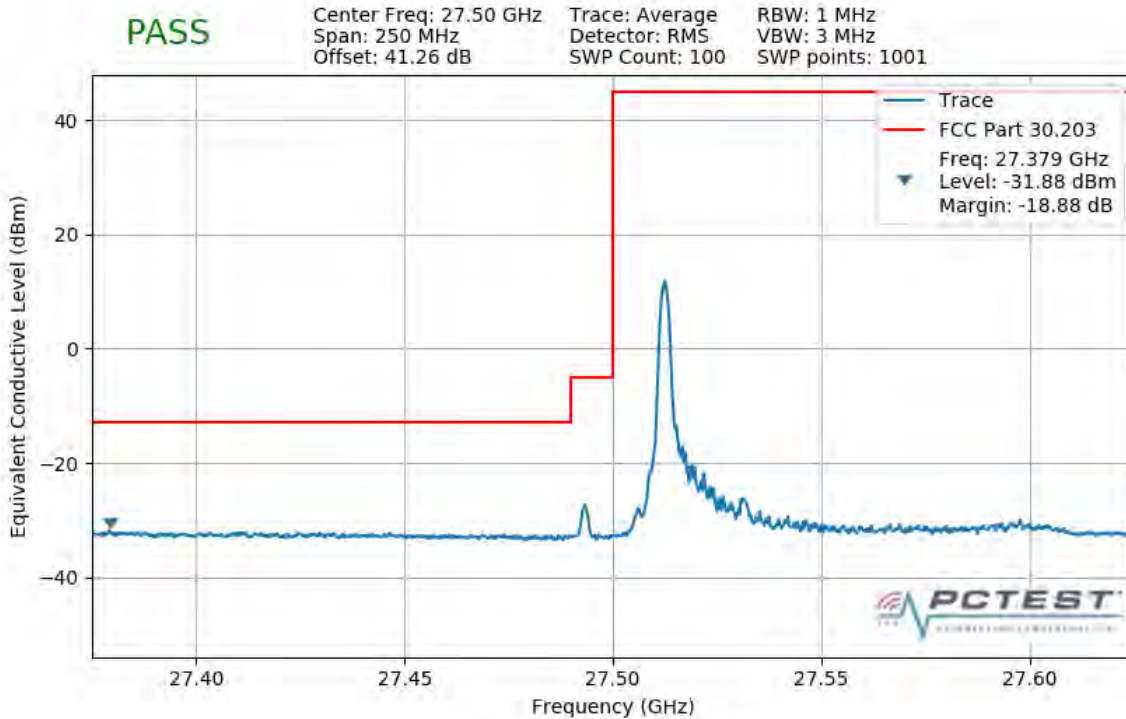


Plot 7-348. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 221 of 337

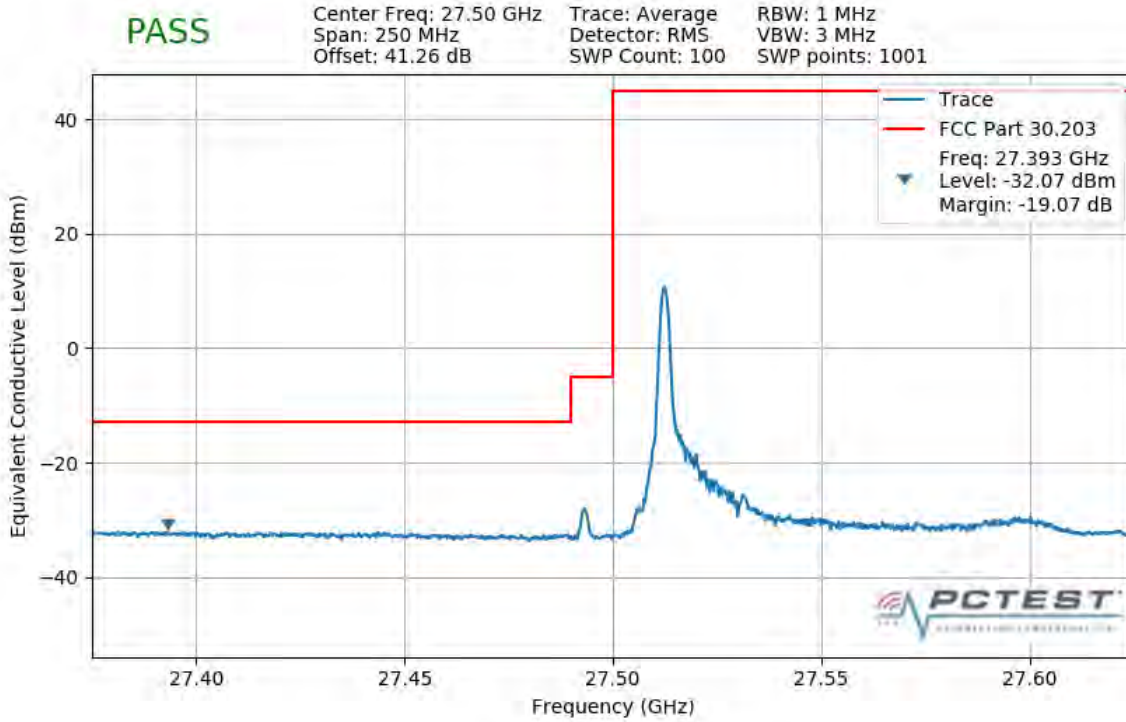


Plot 7-349. Lower Band Edge Plot (1CC 100MHz QPSK Full RB)

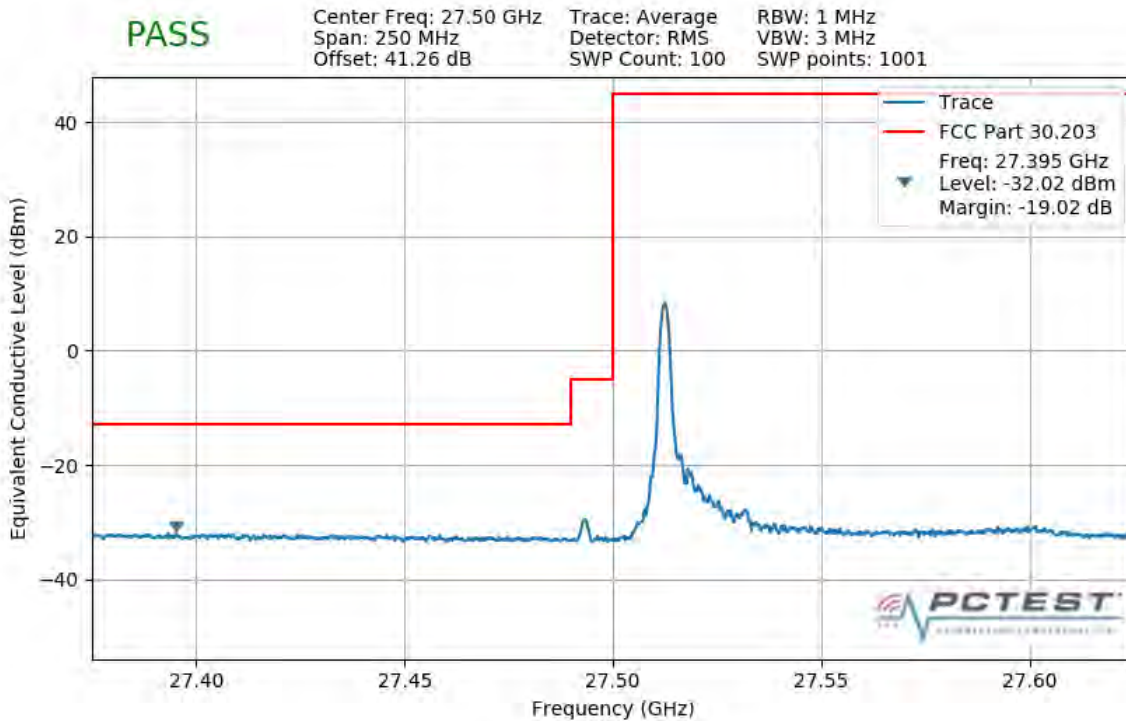


Plot 7-350. Lower Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 222 of 337

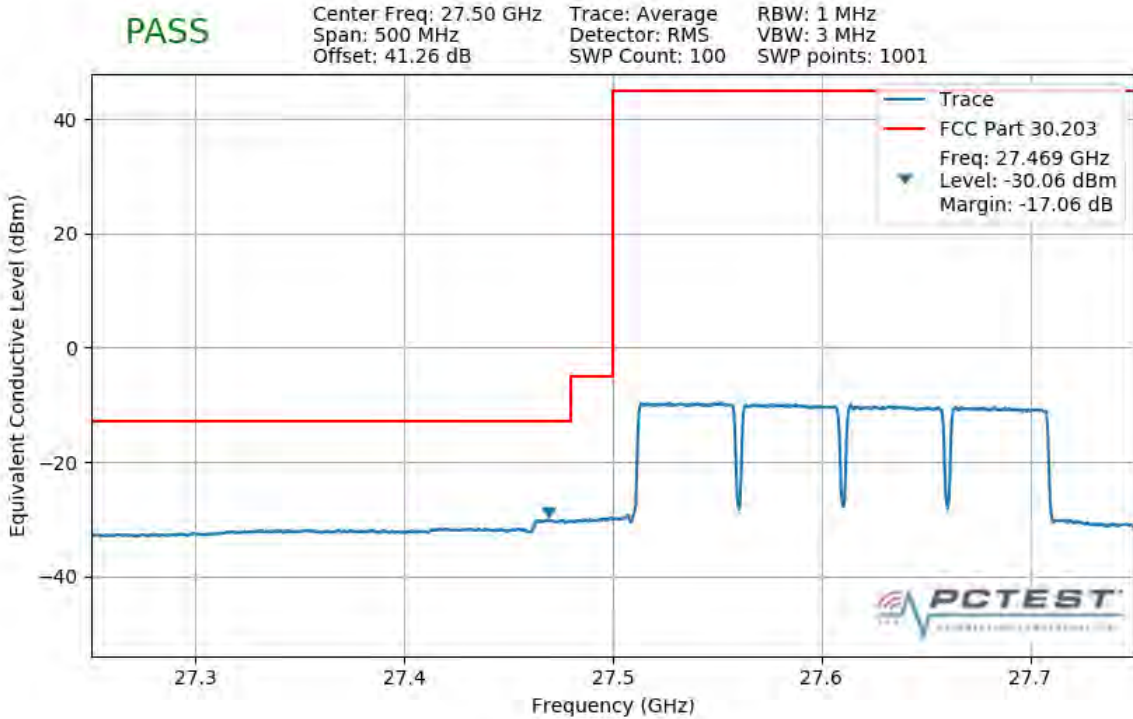


Plot 7-351. Lower Band Edge Plot (1CC 100MHz 16QAM 1 RB)

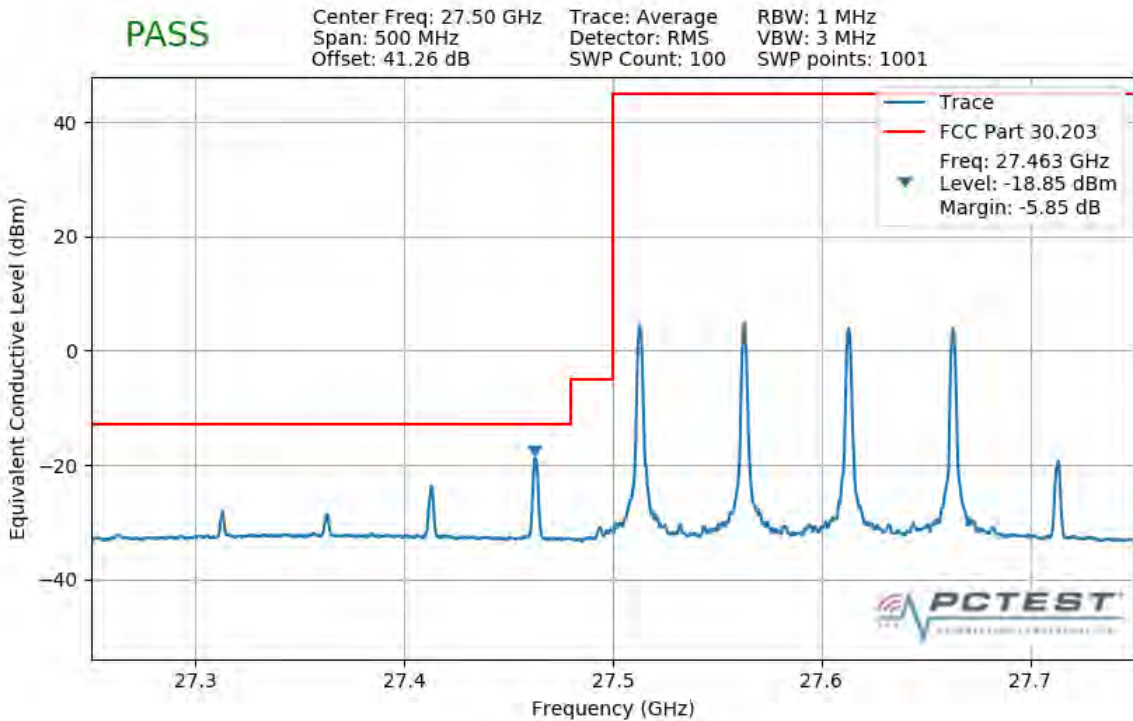


Plot 7-352. Lower Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 223 of 337

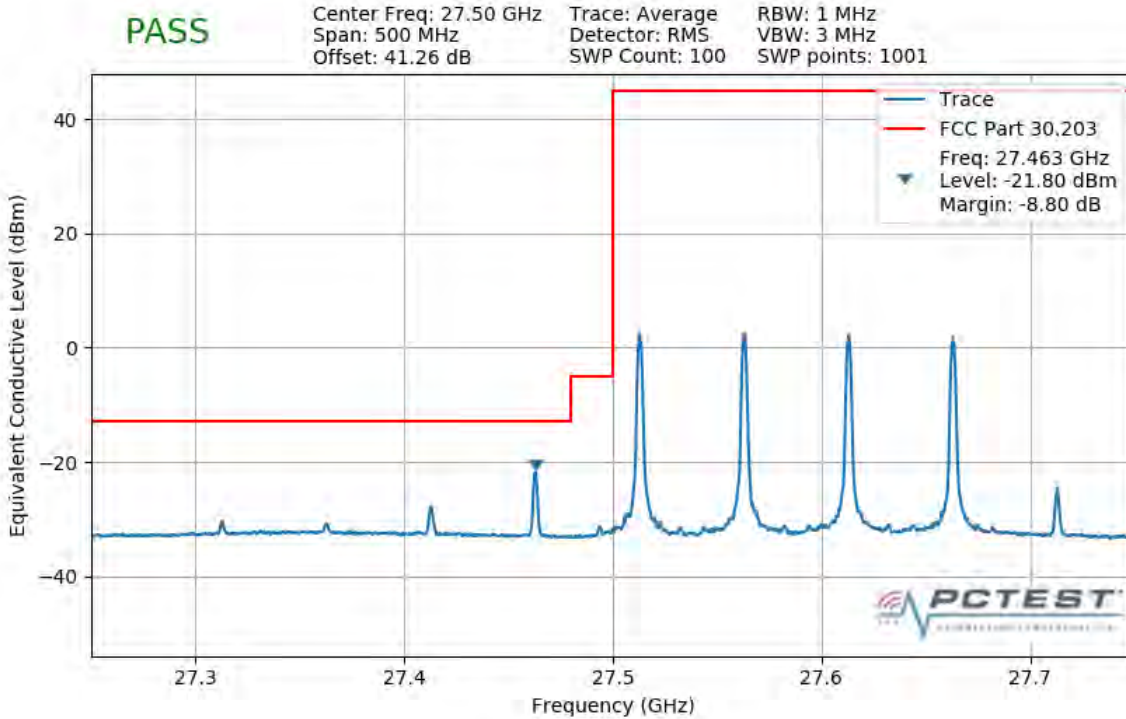


Plot 7-353. Lower Band Edge Plot (4CC 200MHz QPSK Full RB)

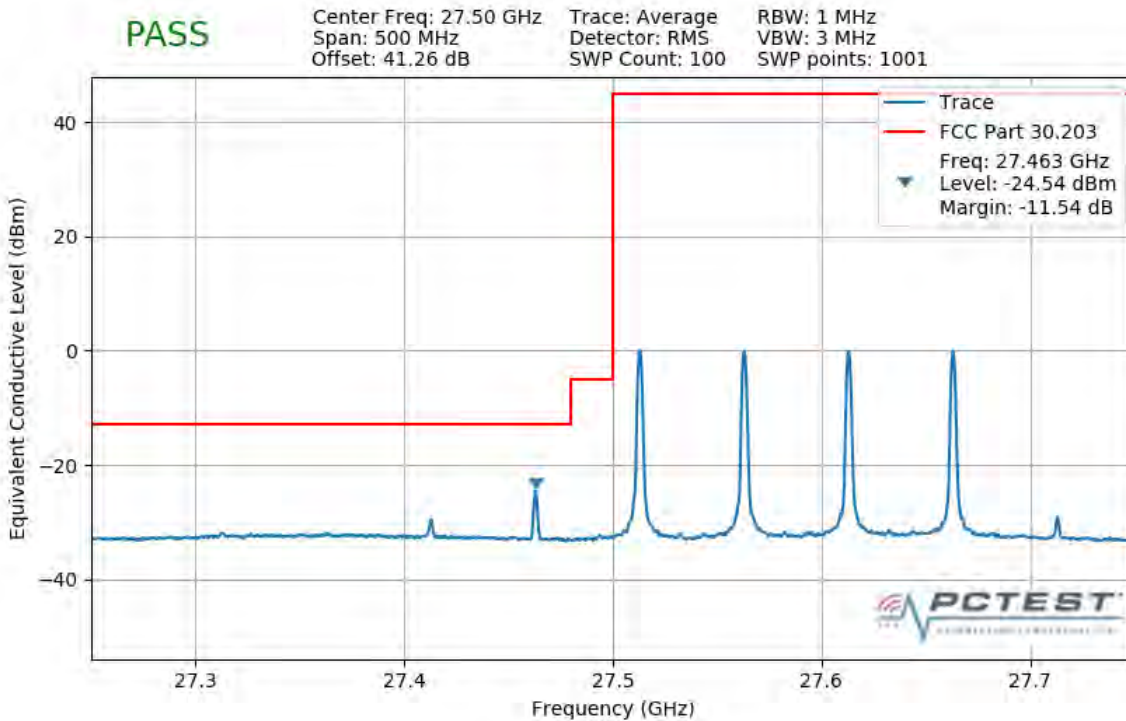


Plot 7-354. Lower Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 224 of 337	

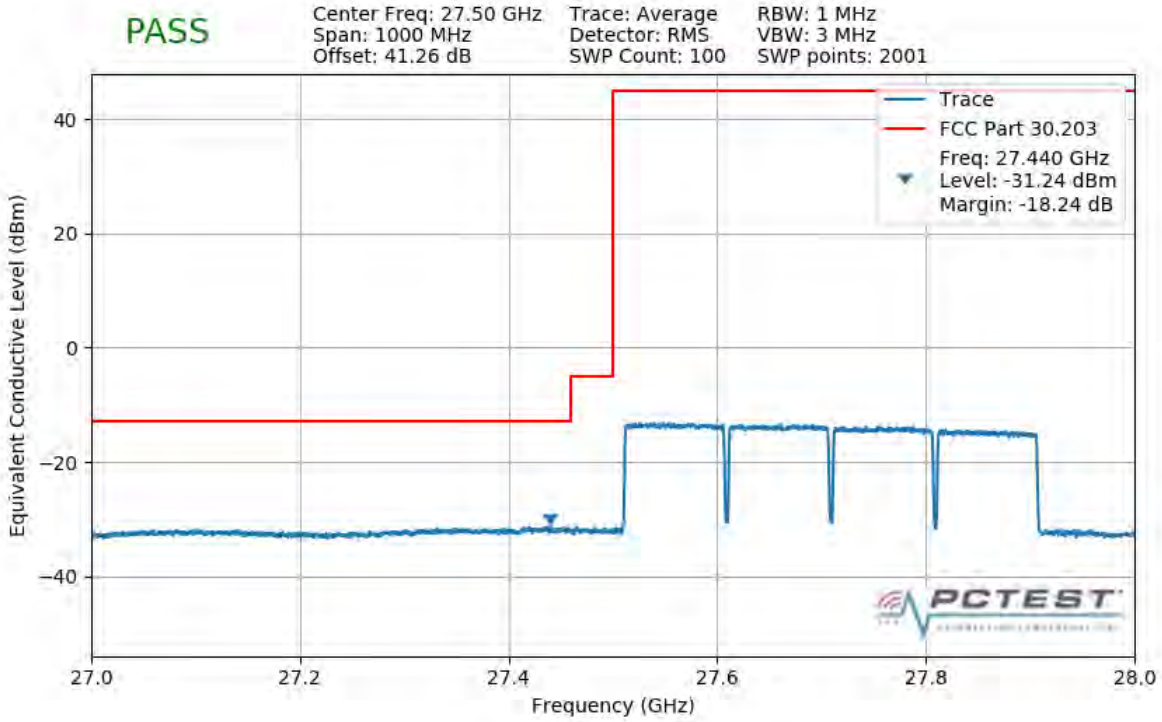


Plot 7-355. Lower Band Edge Plot (4CC 200MHz 16QAM 1 RB)

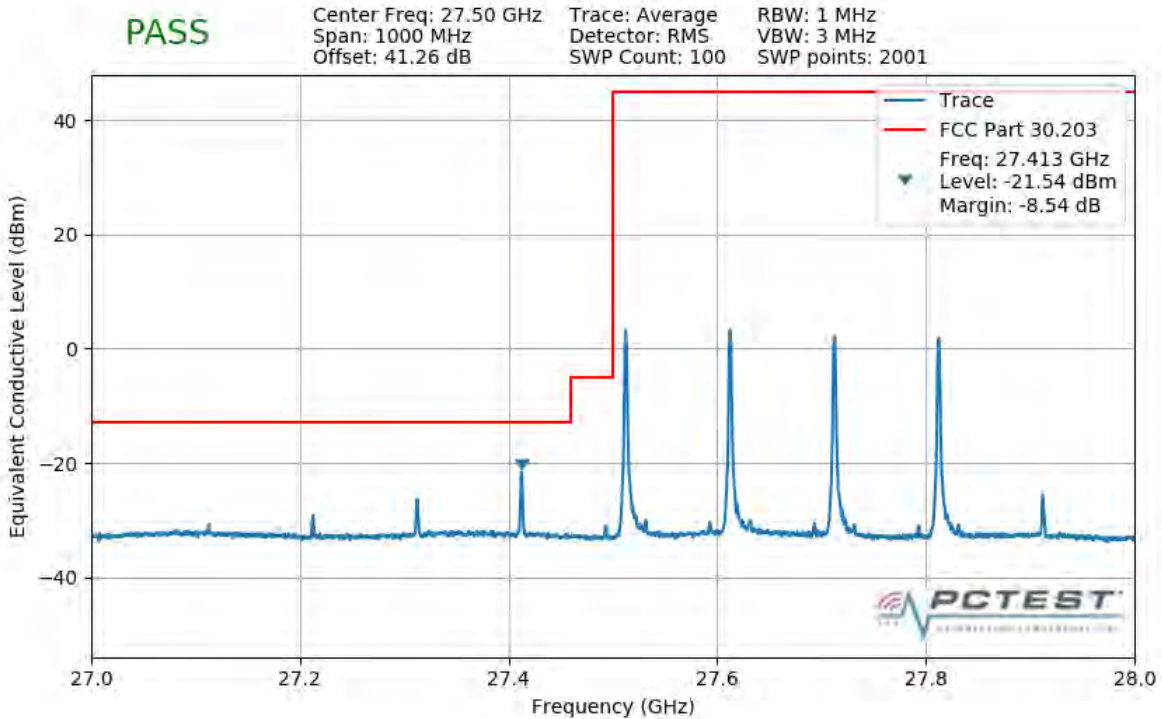


Plot 7-356. Lower Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 225 of 337

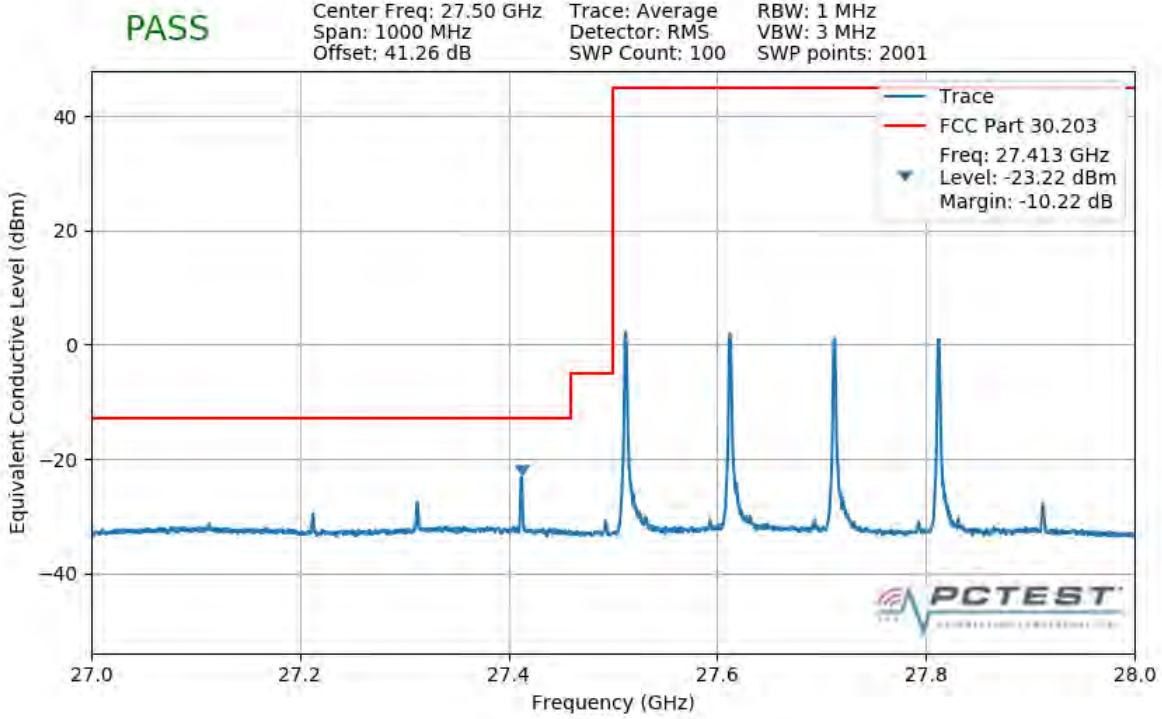


Plot 7-357. Lower Band Edge Plot (4CC 400MHz QPSK Full RB)

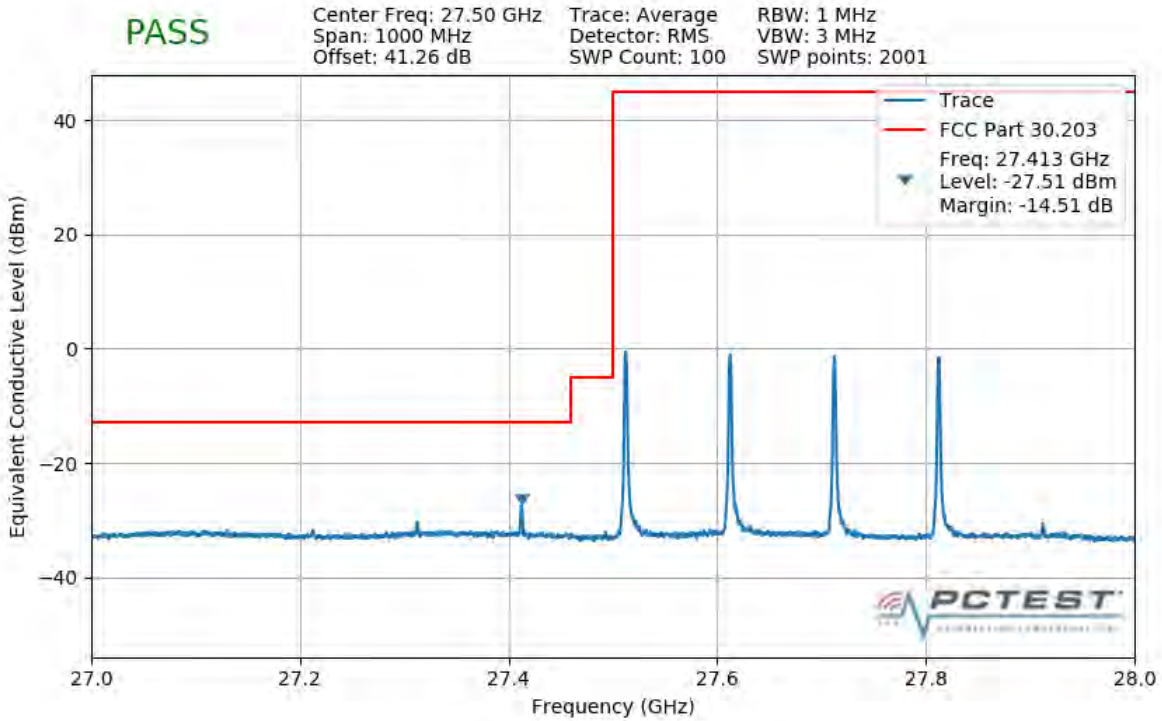


Plot 7-358. Lower Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 226 of 337

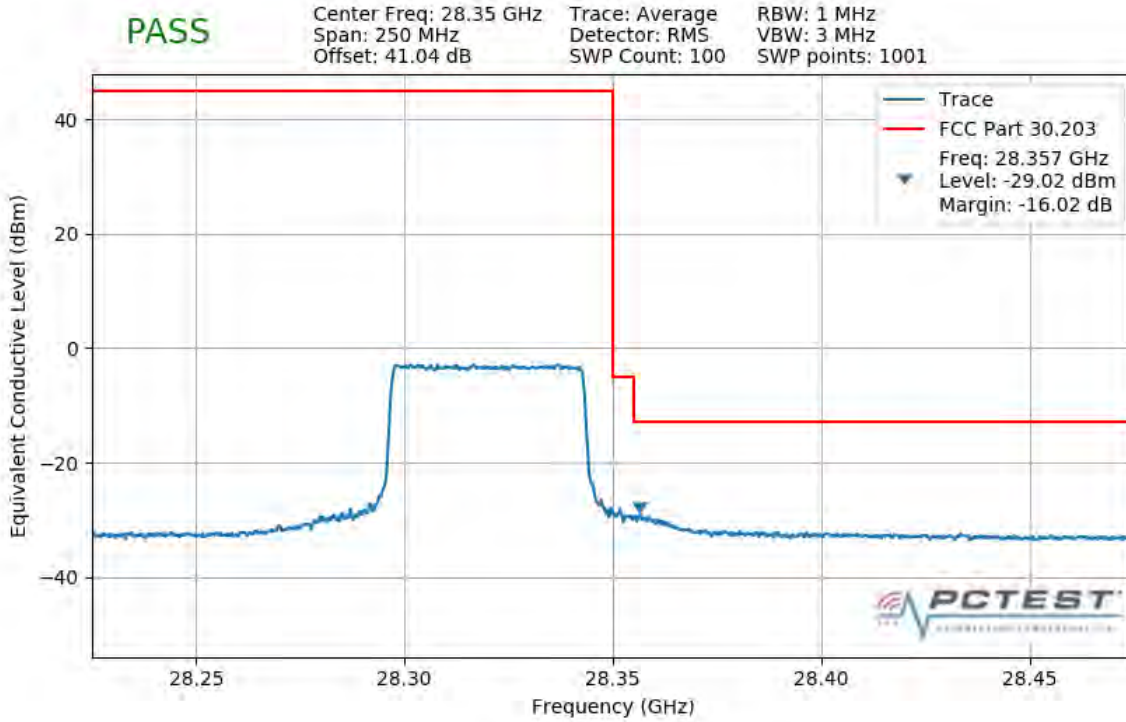


Plot 7-359. Lower Band Edge Plot (4CC 400MHz 16QAM 1 RB)

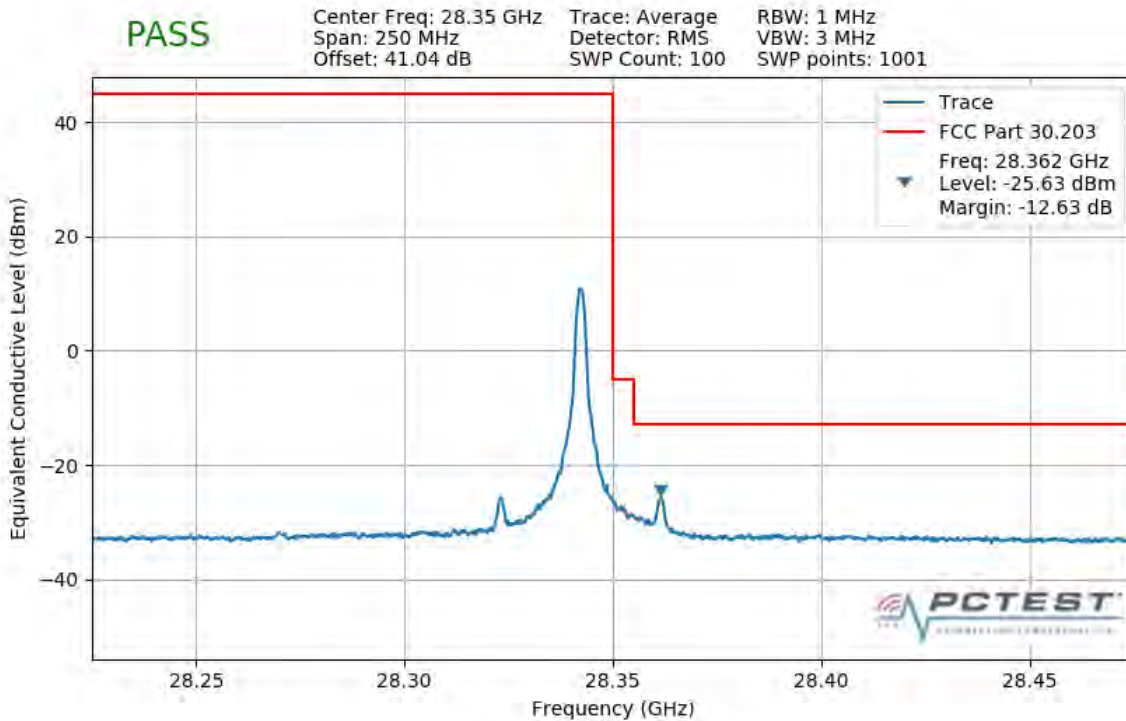


Plot 7-360. Lower Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 227 of 337

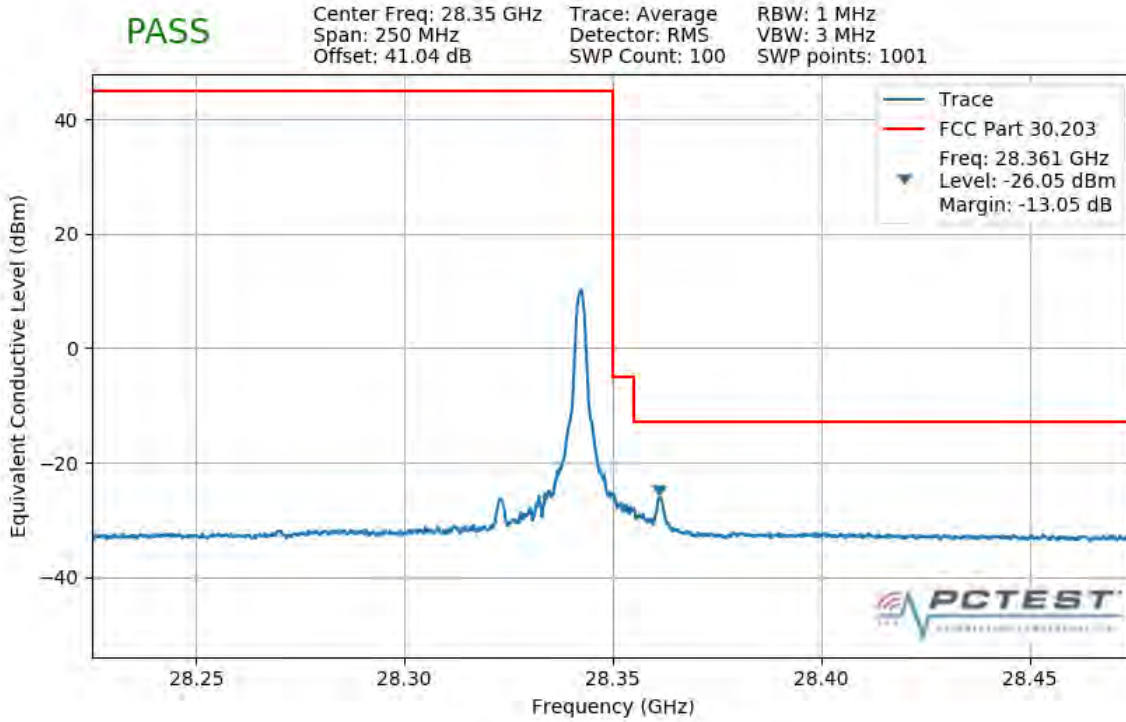


Plot 7-361. Upper Band Edge Plot (1CC 50MHz QPSK Full RB)

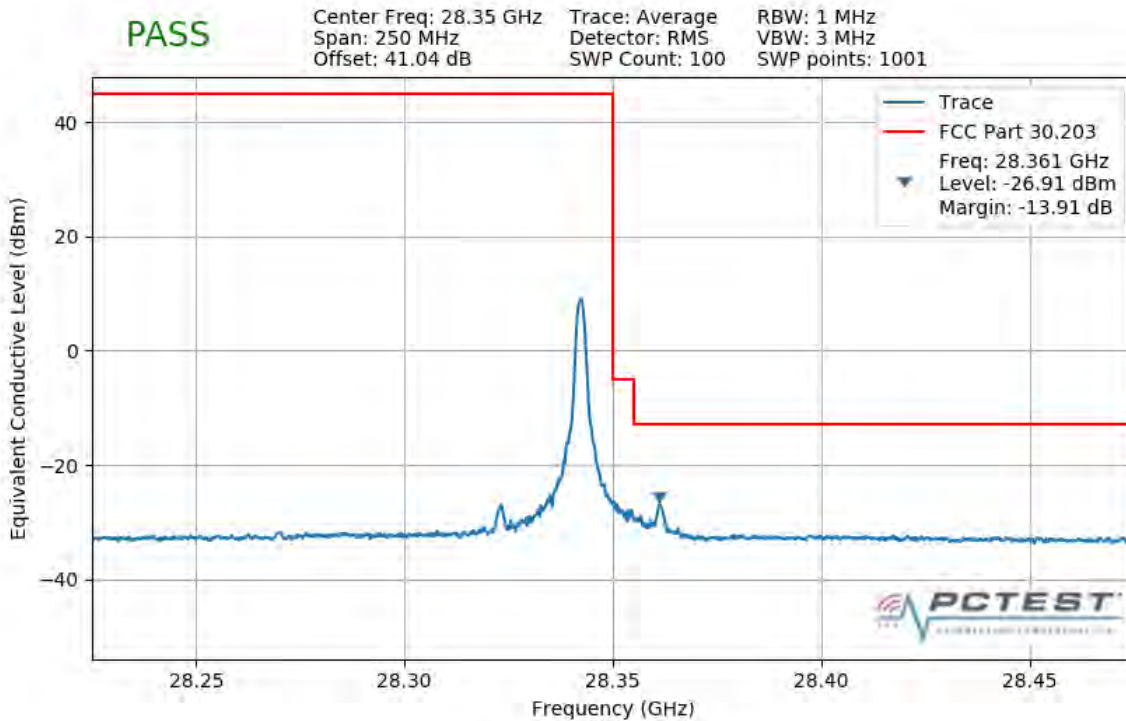


Plot 7-362. Upper Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 228 of 337

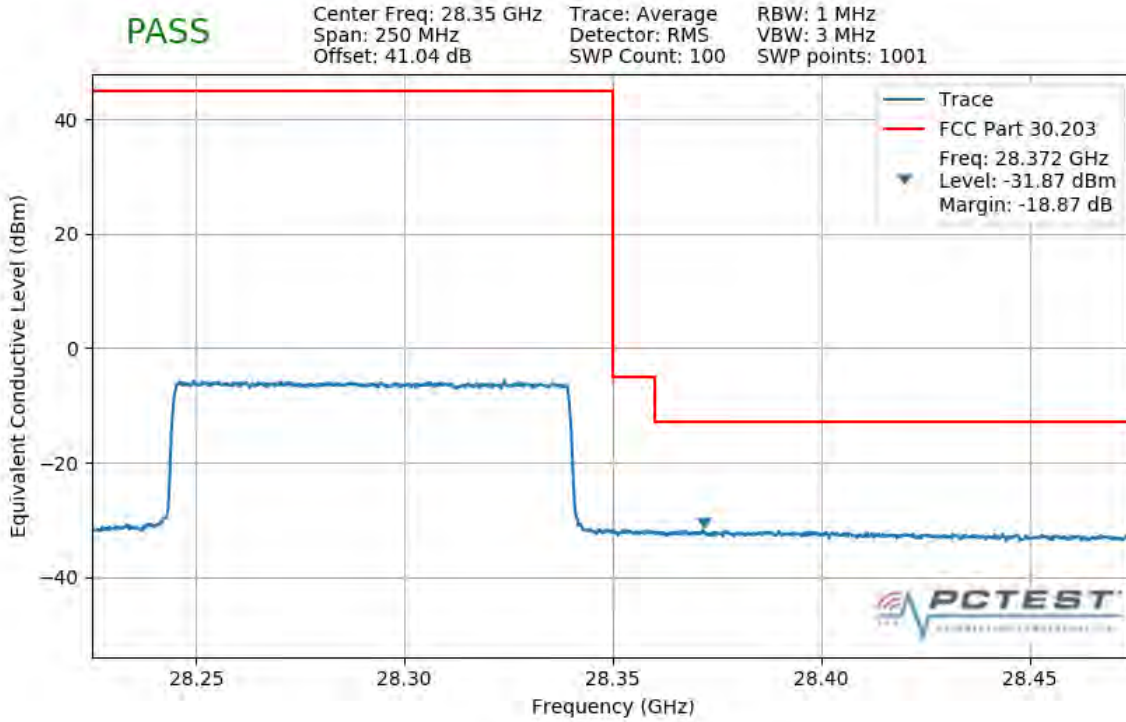


Plot 7-363. Upper Band Edge Plot (1CC 50MHz 16QAM 1 RB)

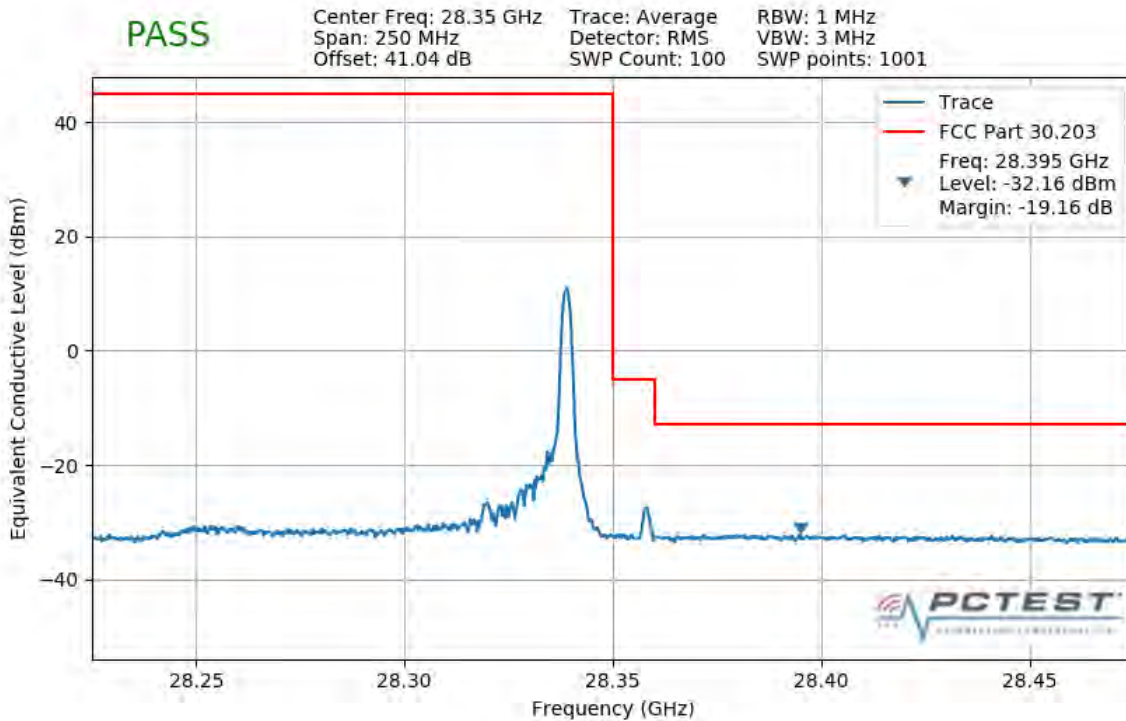


Plot 7-364. Upper Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 229 of 337

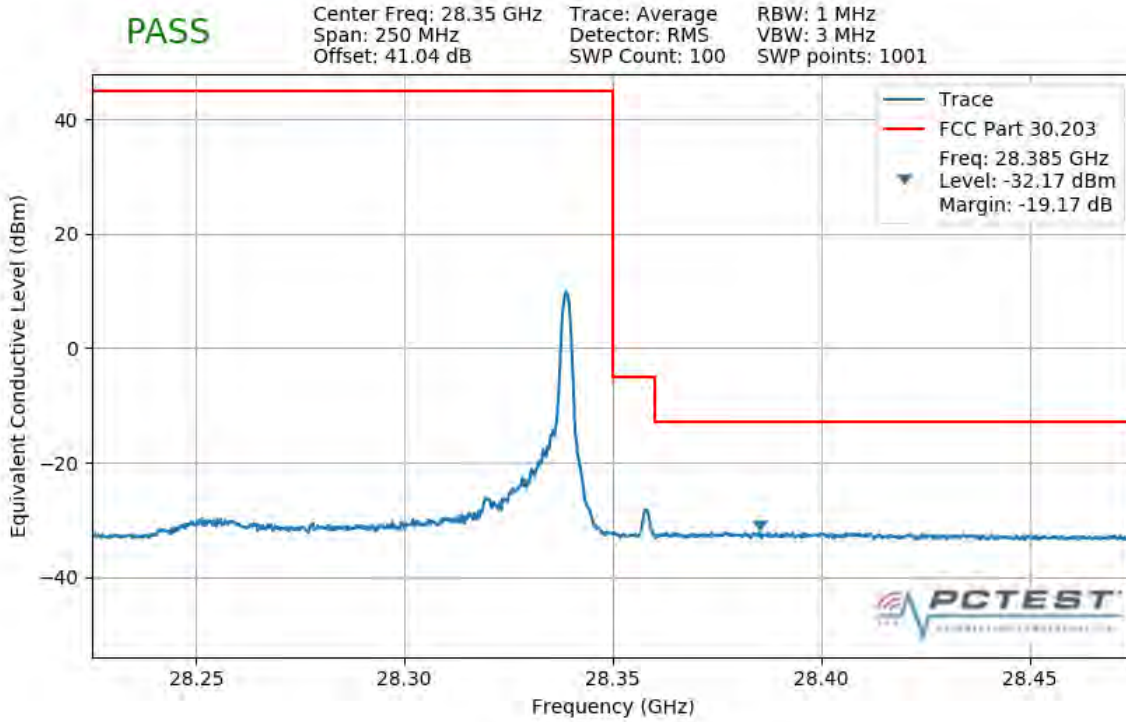


Plot 7-365. Upper Band Edge Plot (1CC 100MHz QPSK Full RB)

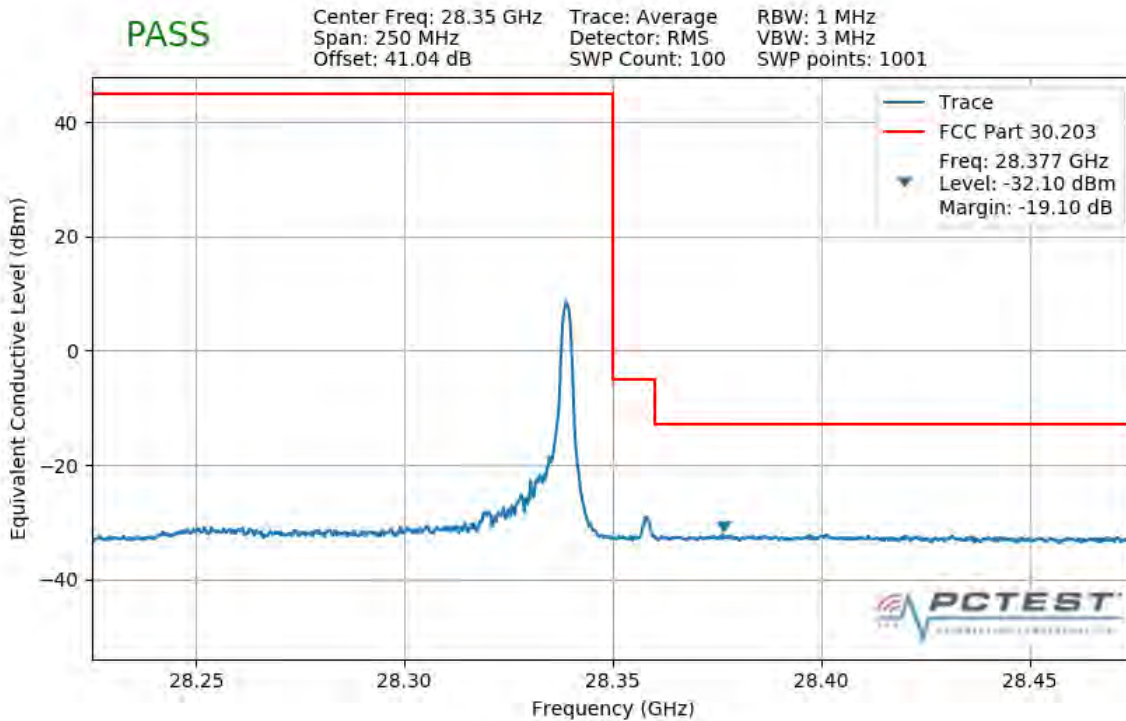


Plot 7-366. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 230 of 337

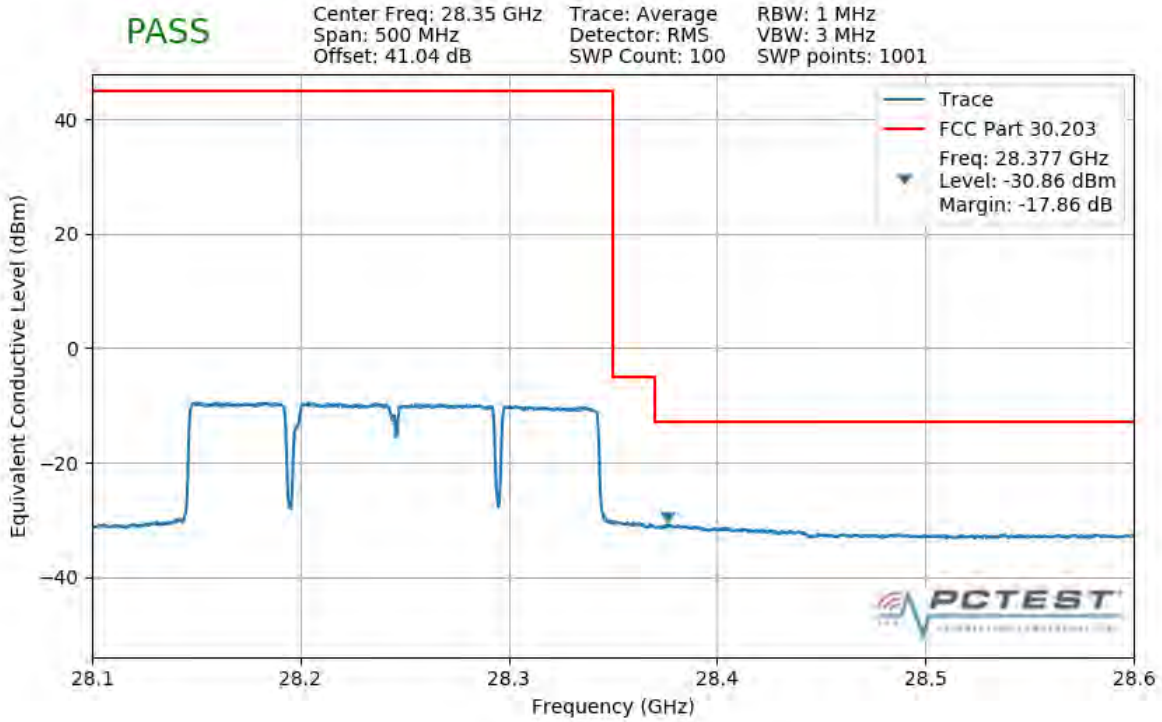


Plot 7-367. Upper Band Edge Plot (1CC 100MHz 16QAM 1 RB)

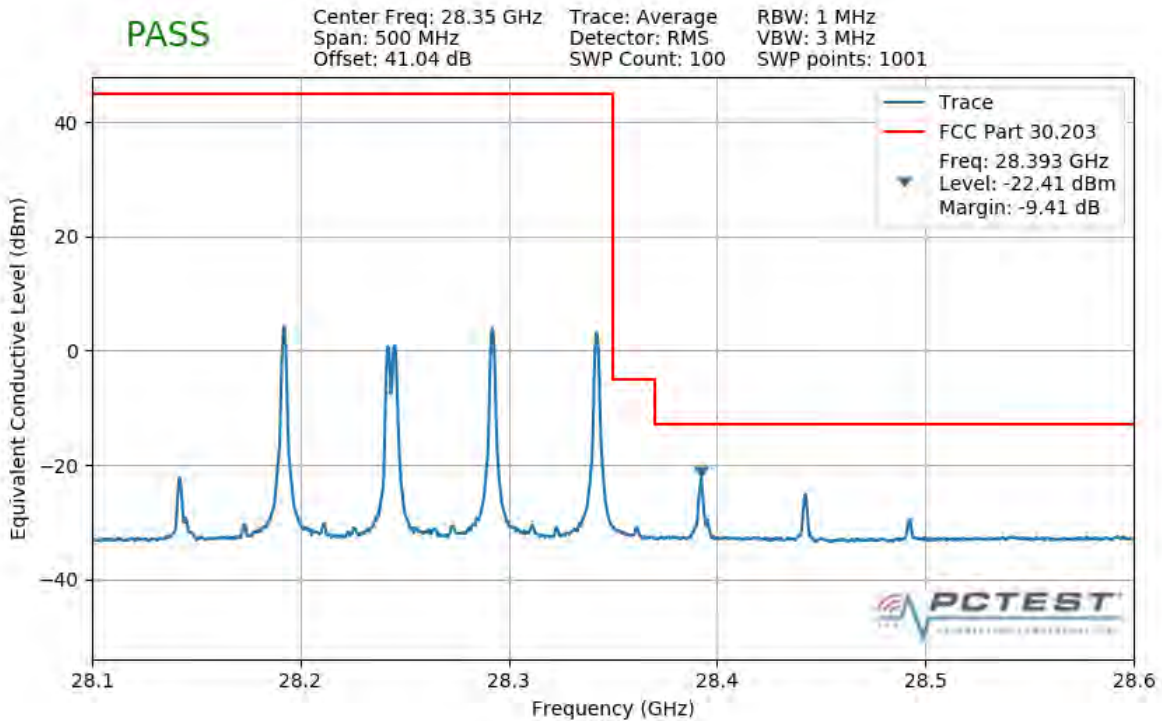


Plot 7-368. Upper Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 231 of 337

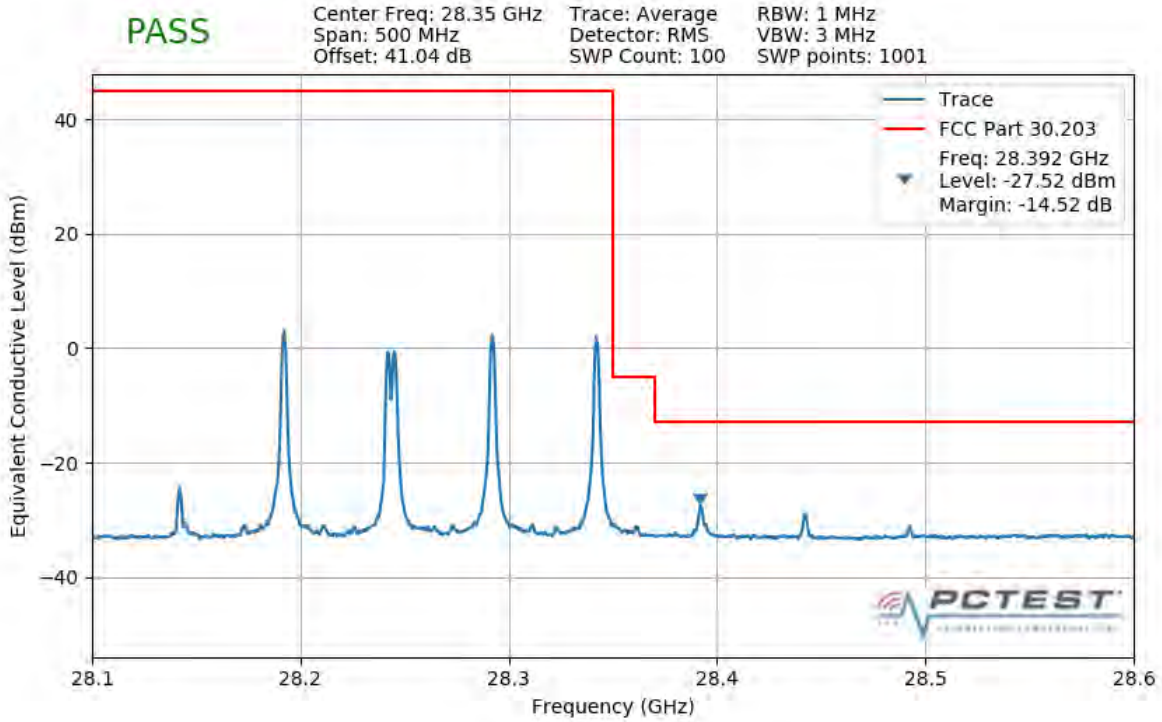


Plot 7-369. Upper Band Edge Plot (4CC 200MHz QPSK Full RB)

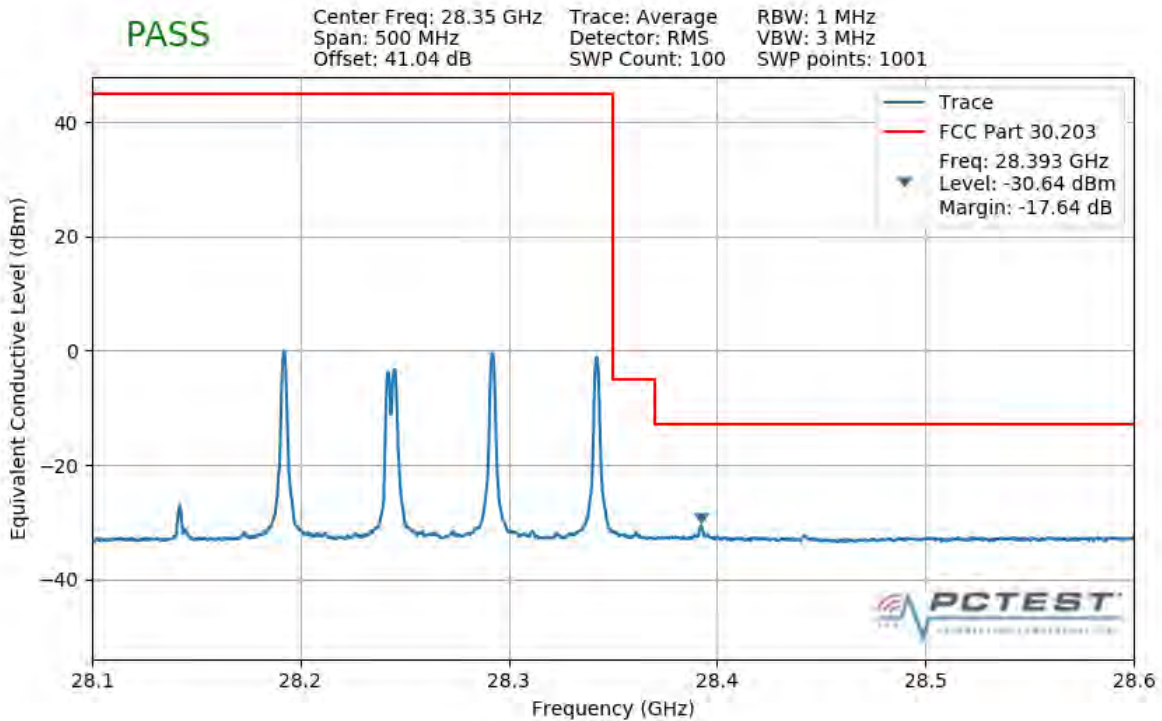


Plot 7-370. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 232 of 337

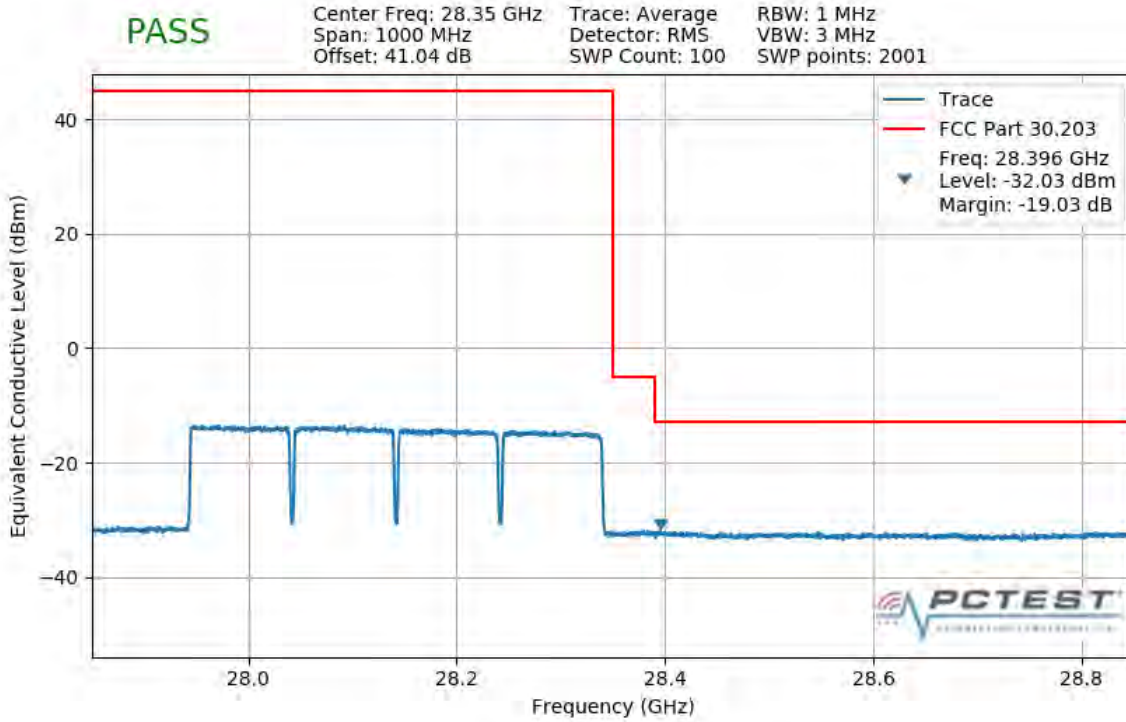


Plot 7-371. Upper Band Edge Plot (4CC 200MHz 16QAM 1 RB)

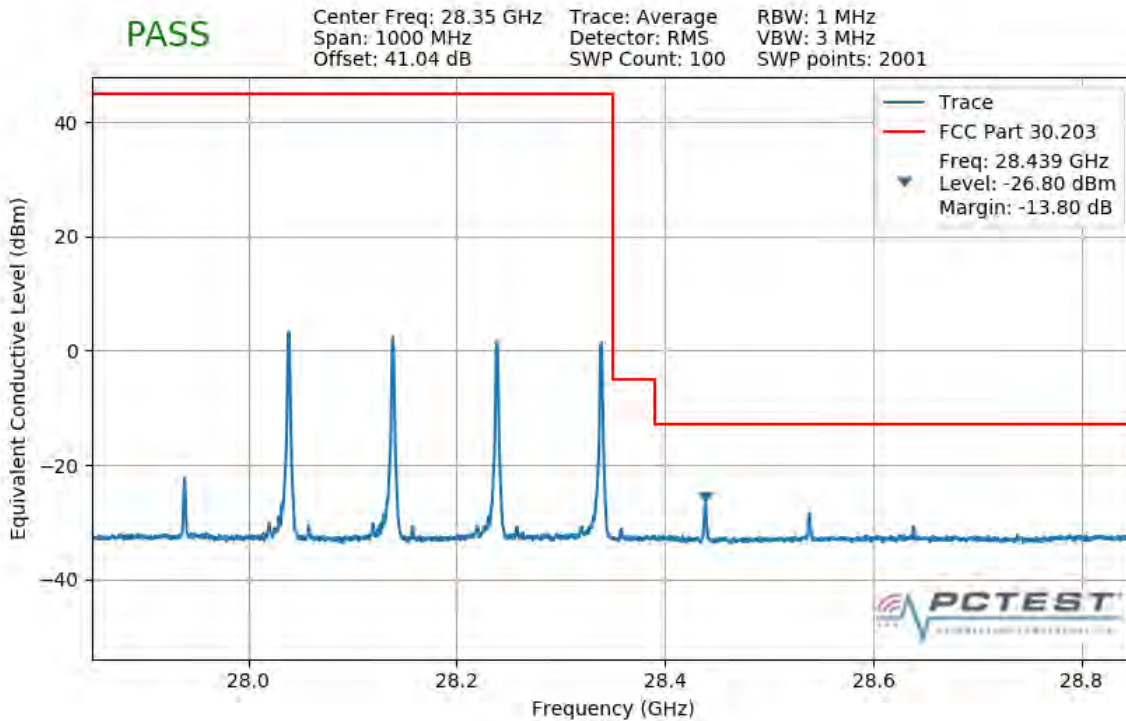


Plot 7-372. Upper Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 233 of 337

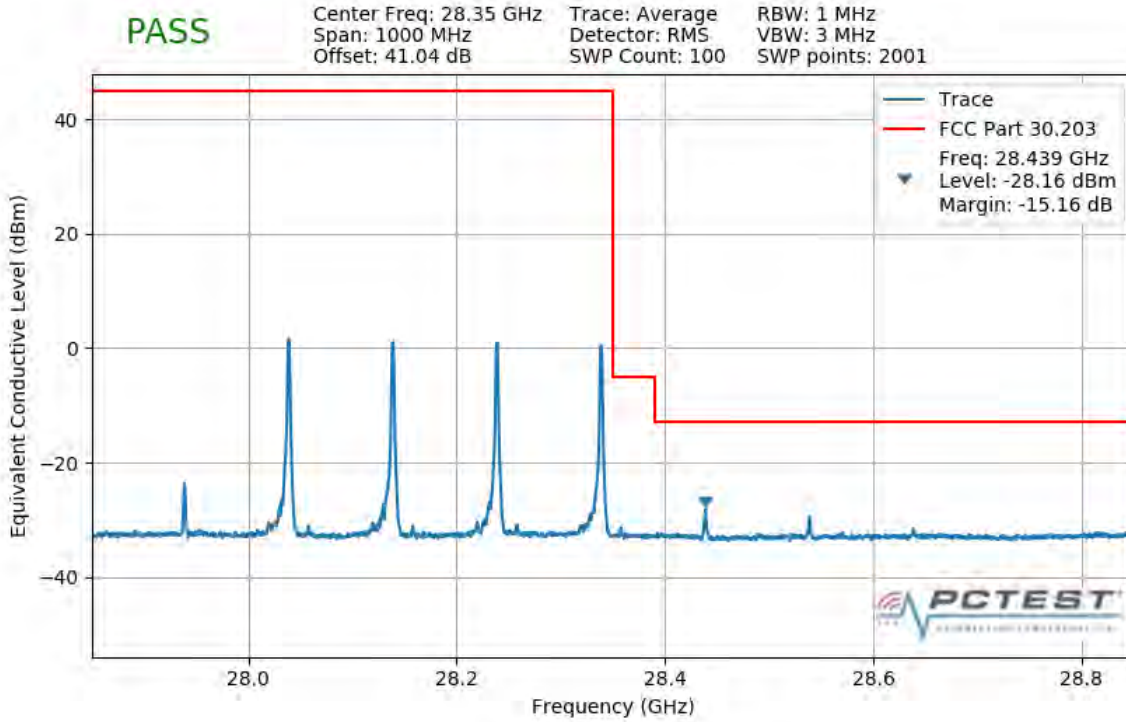


Plot 7-373. Upper Band Edge Plot (4CC 400MHz QPSK Full RB)

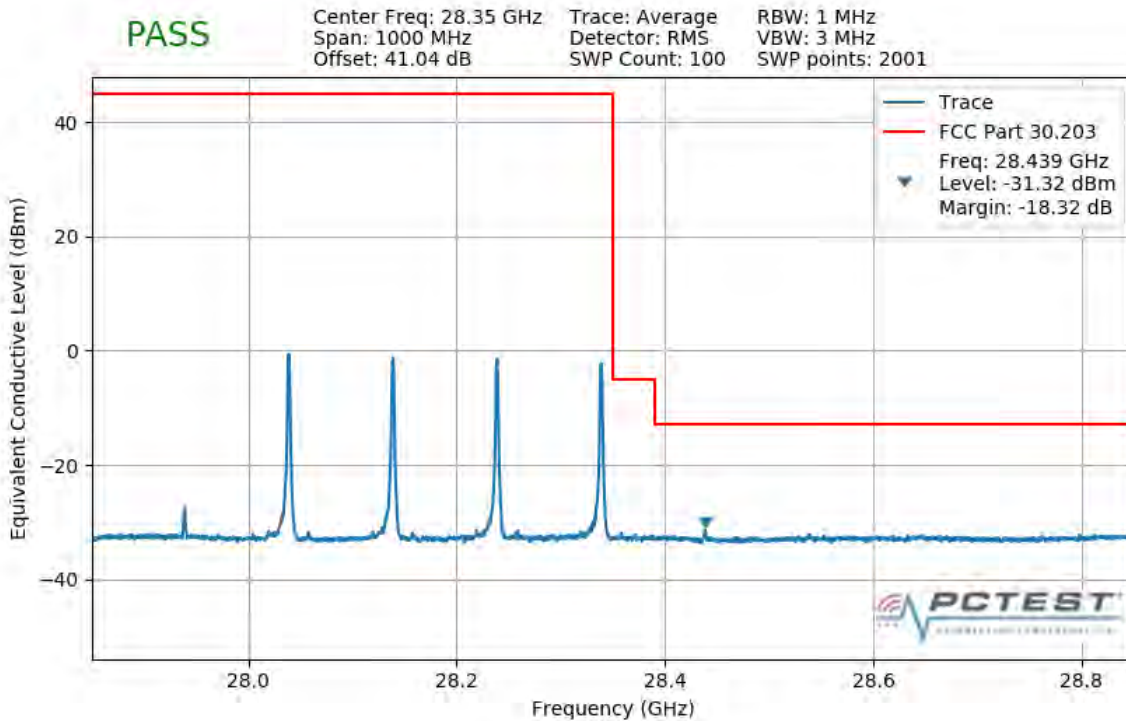


Plot 7-374. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 234 of 337



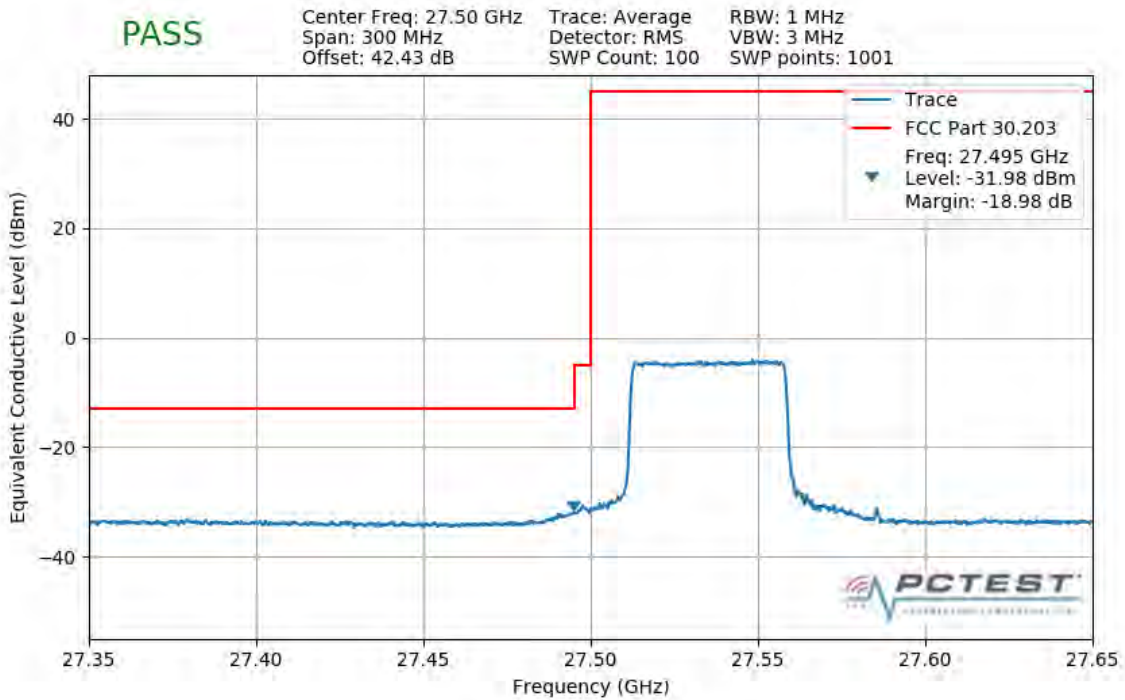
Plot 7-375. Upper Band Edge Plot (4CC 400MHz 16QAM 1 RB)



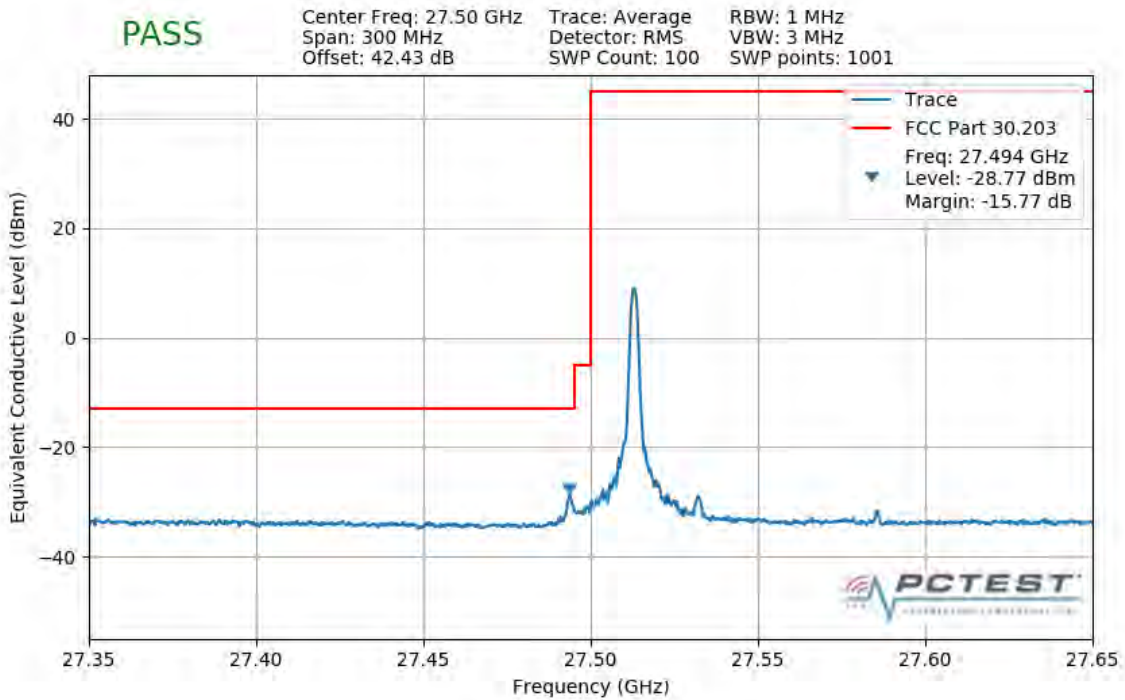
Plot 7-376. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 235 of 337

7.5.4 K Patch Band Edge H Beam

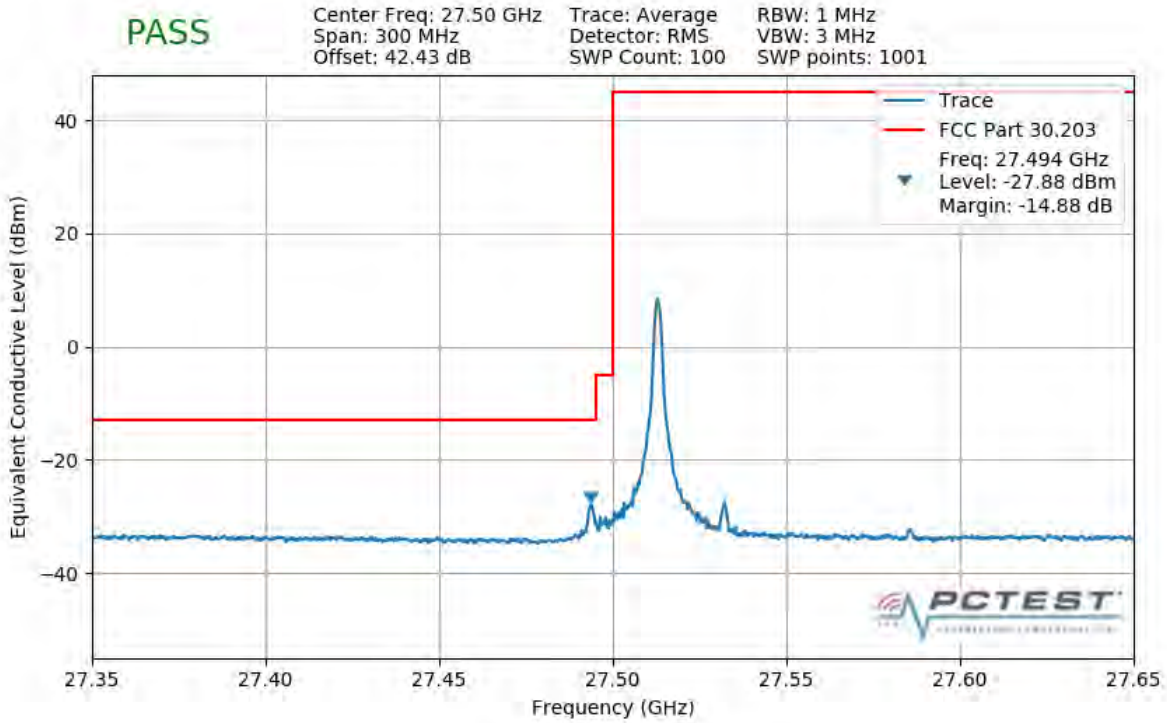


Plot 7-377. Lower Band Edge Plot (1CC 50MHz QPSK Full RB)

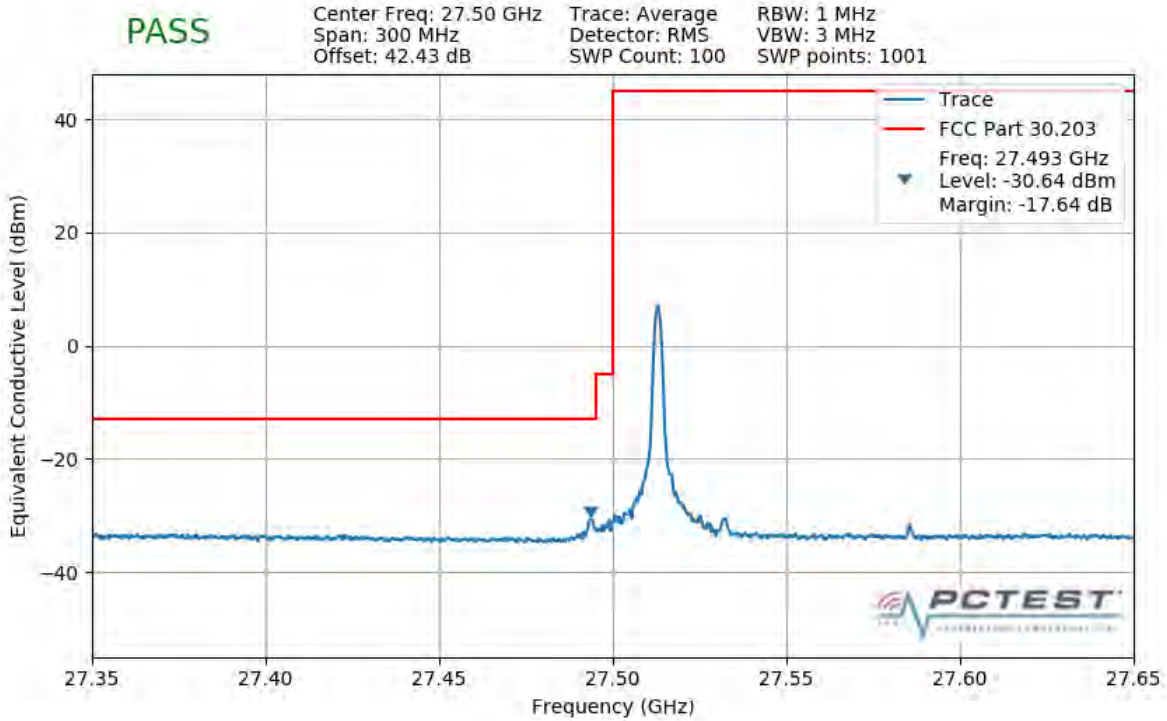


Plot 7-378. Lower Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 236 of 337

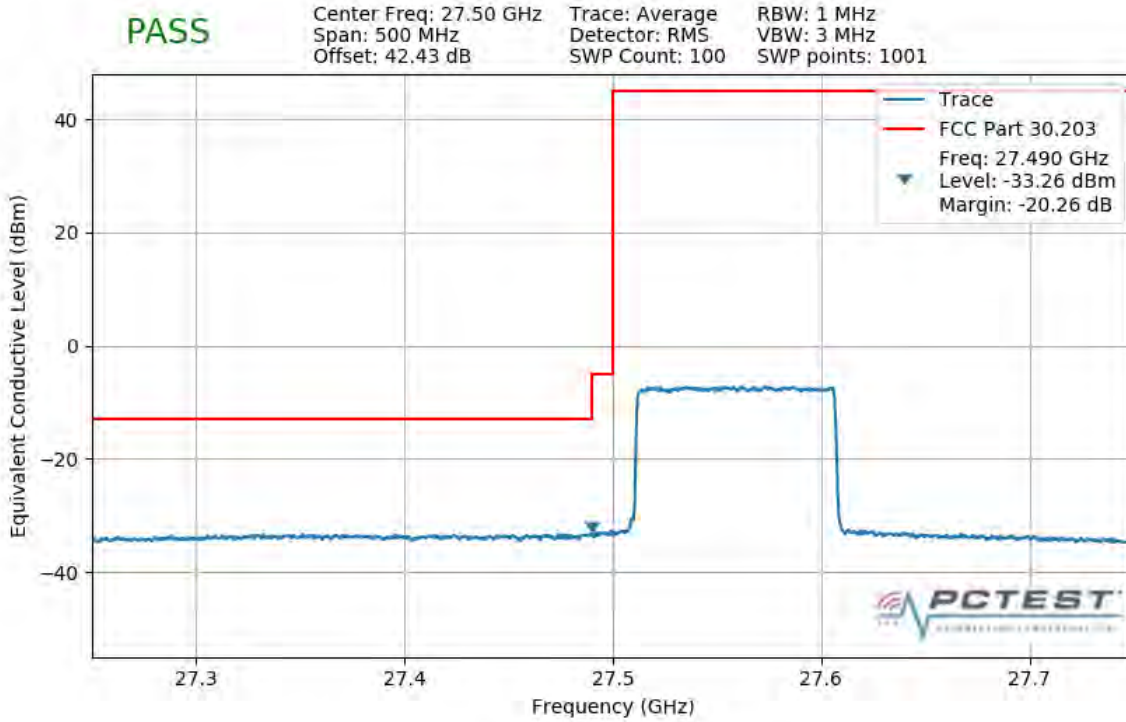


Plot 7-379. Lower Band Edge Plot (1CC 50MHz 16QAM 1 RB)

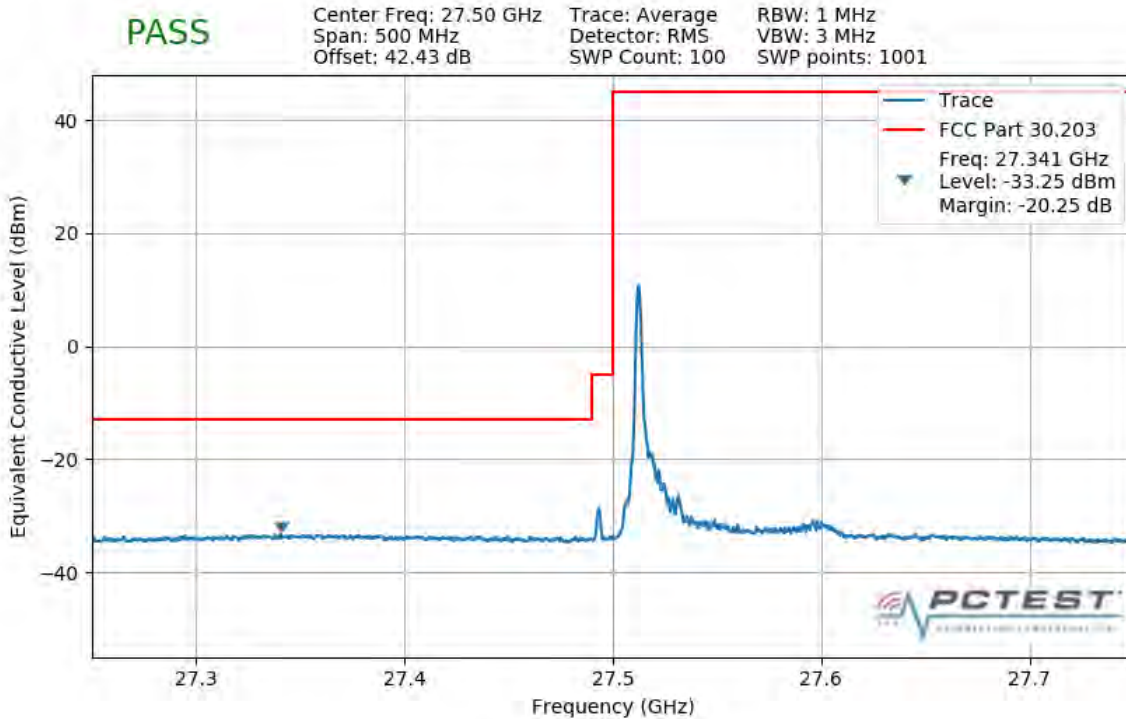


Plot 7-380. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 237 of 337

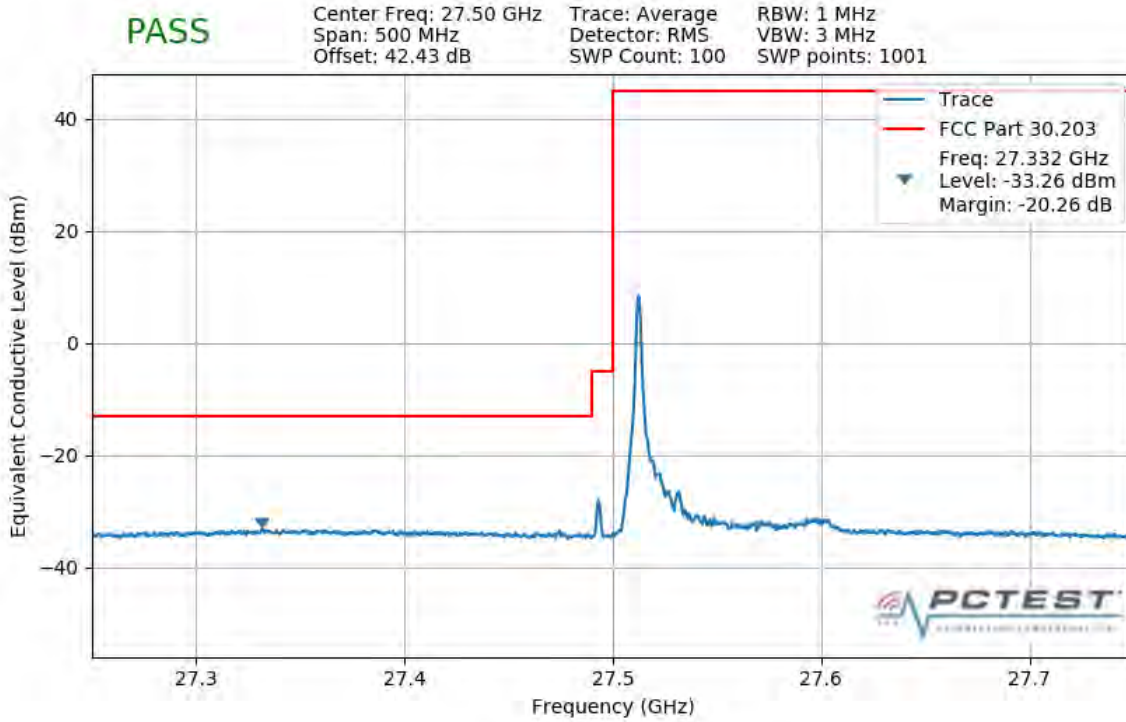


Plot 7-381. Lower Band Edge Plot (1CC 100MHz QPSK Full RB)

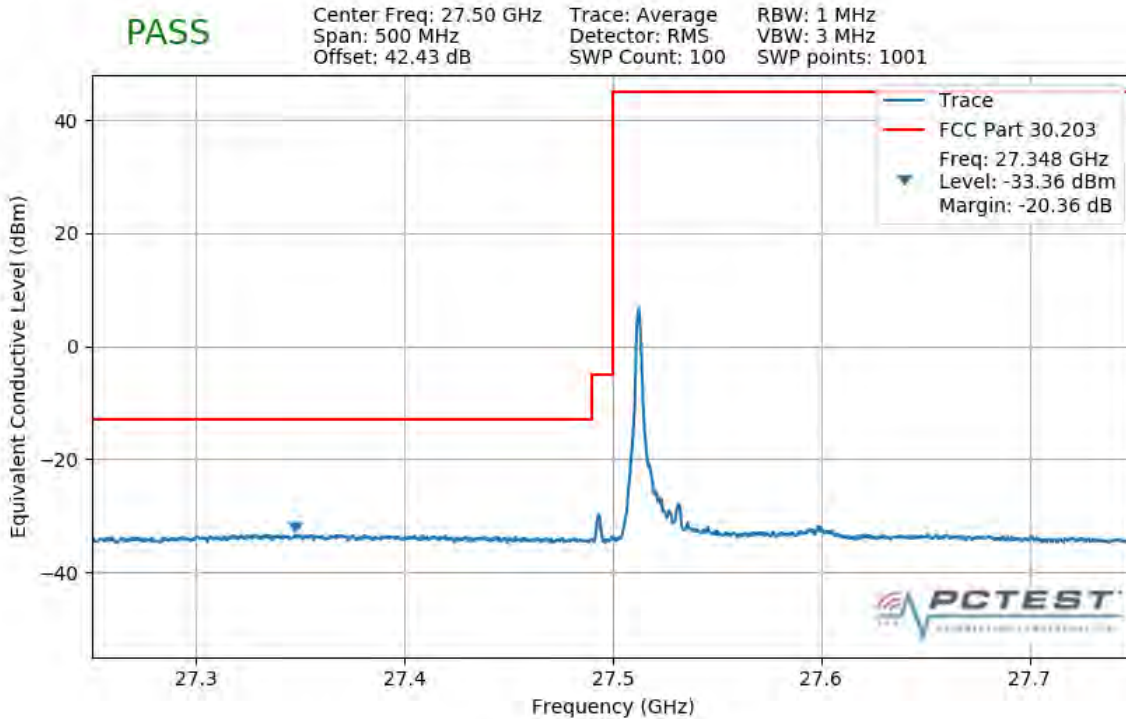


Plot 7-382. Lower Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 238 of 337

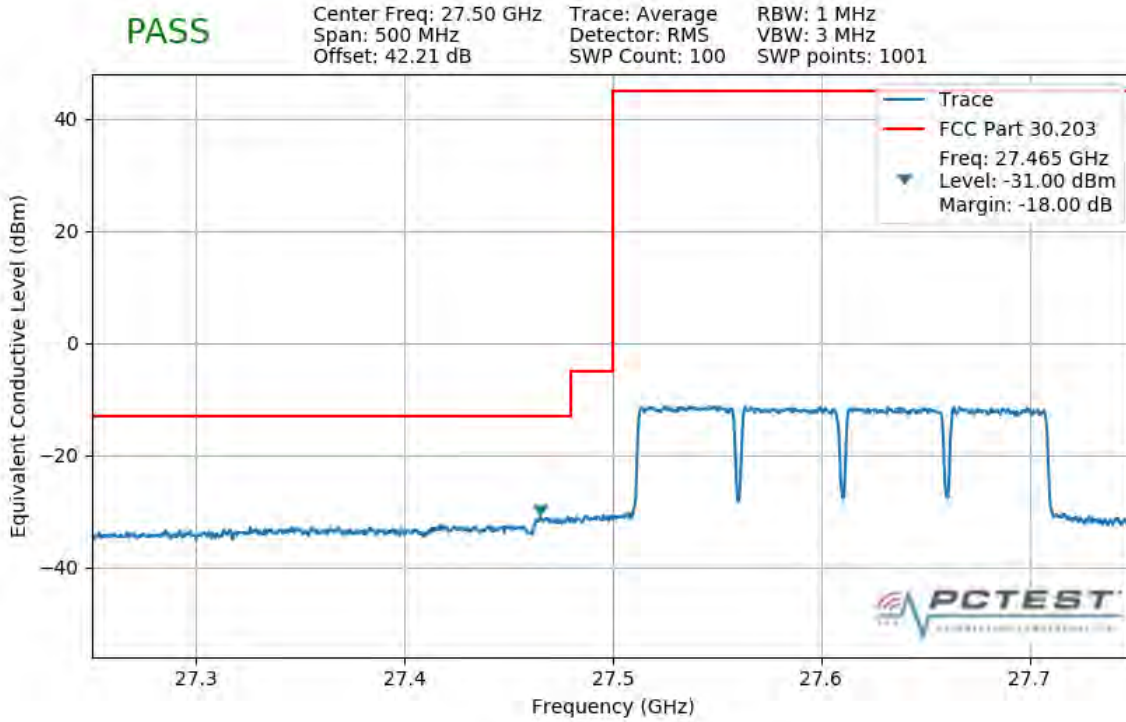


Plot 7-383. Lower Band Edge Plot (1CC 100MHz 16QAM 1 RB)

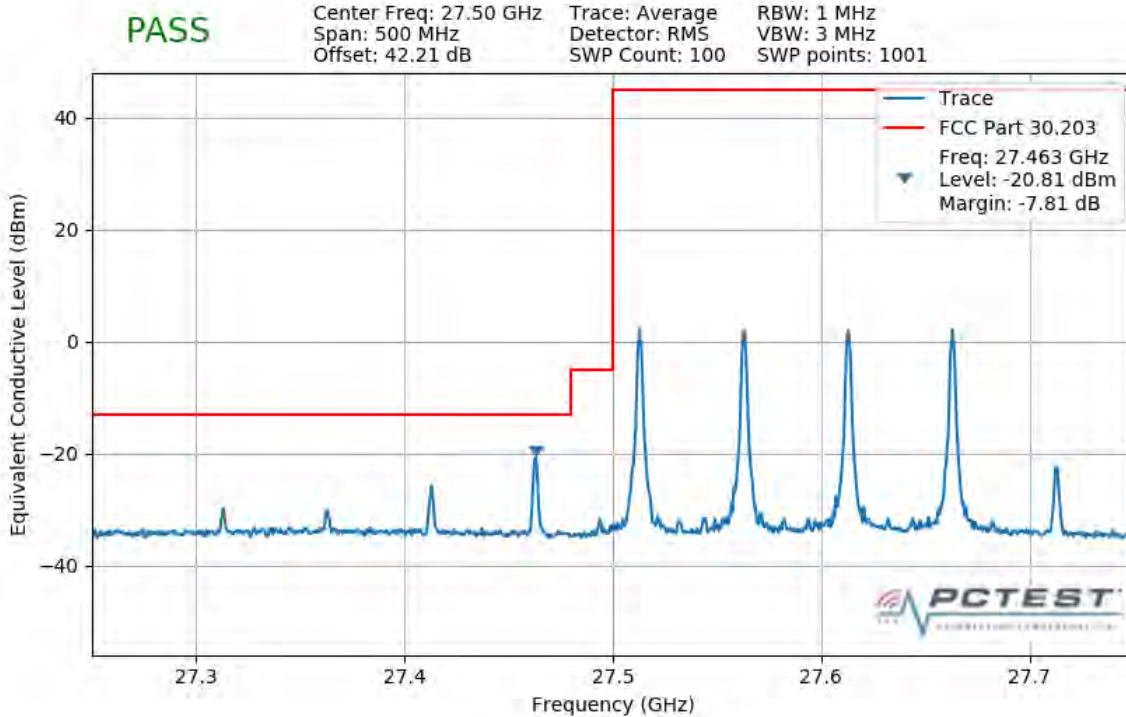


Plot 7-384. Lower Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 239 of 337

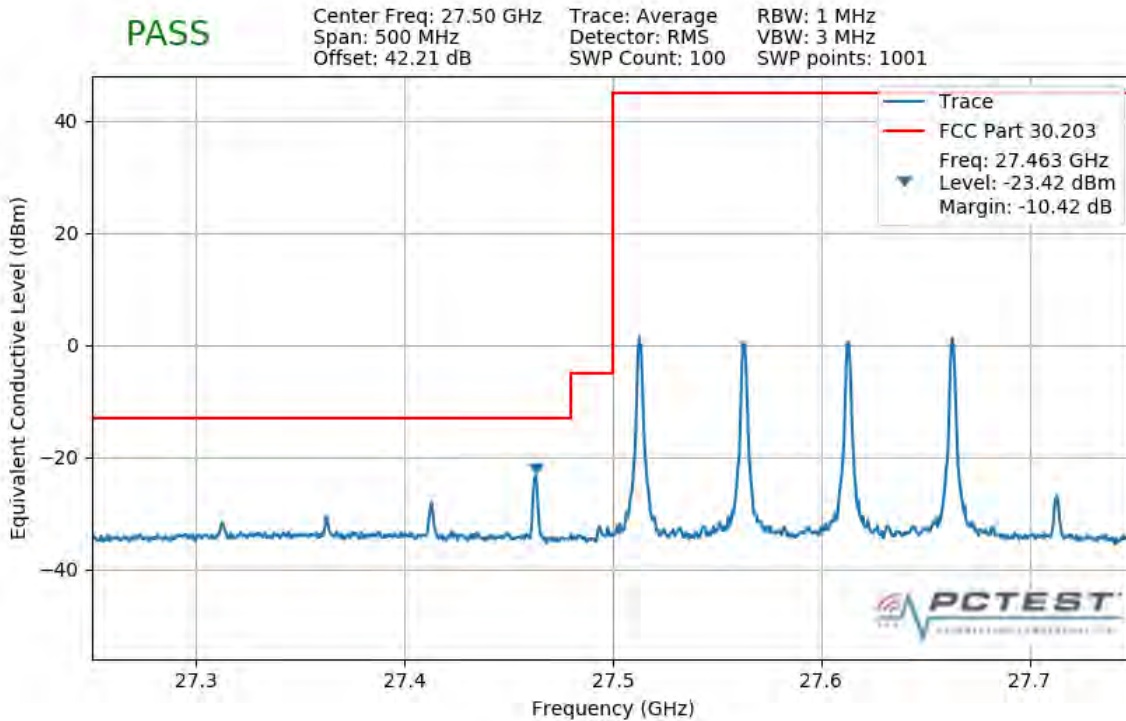


Plot 7-385. Lower Band Edge Plot (4CC 200MHz QPSK Full RB)

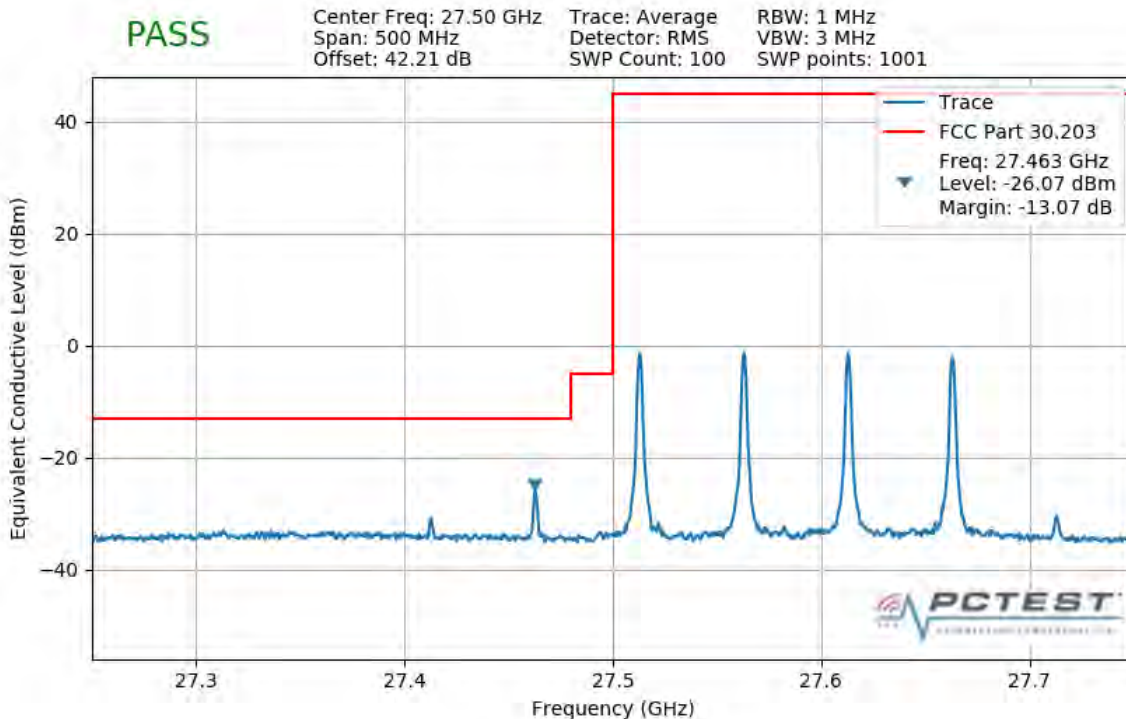


Plot 7-386. Lower Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 240 of 337

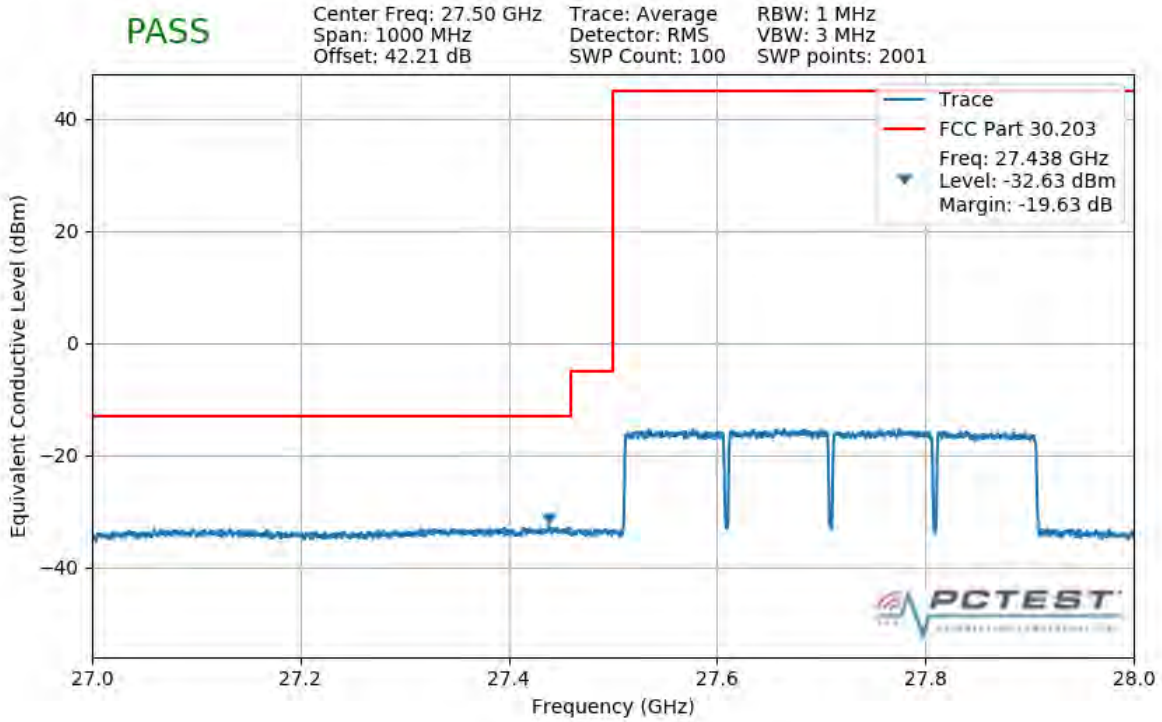


Plot 7-387. Lower Band Edge Plot (4CC 200MHz 16QAM 1 RB)

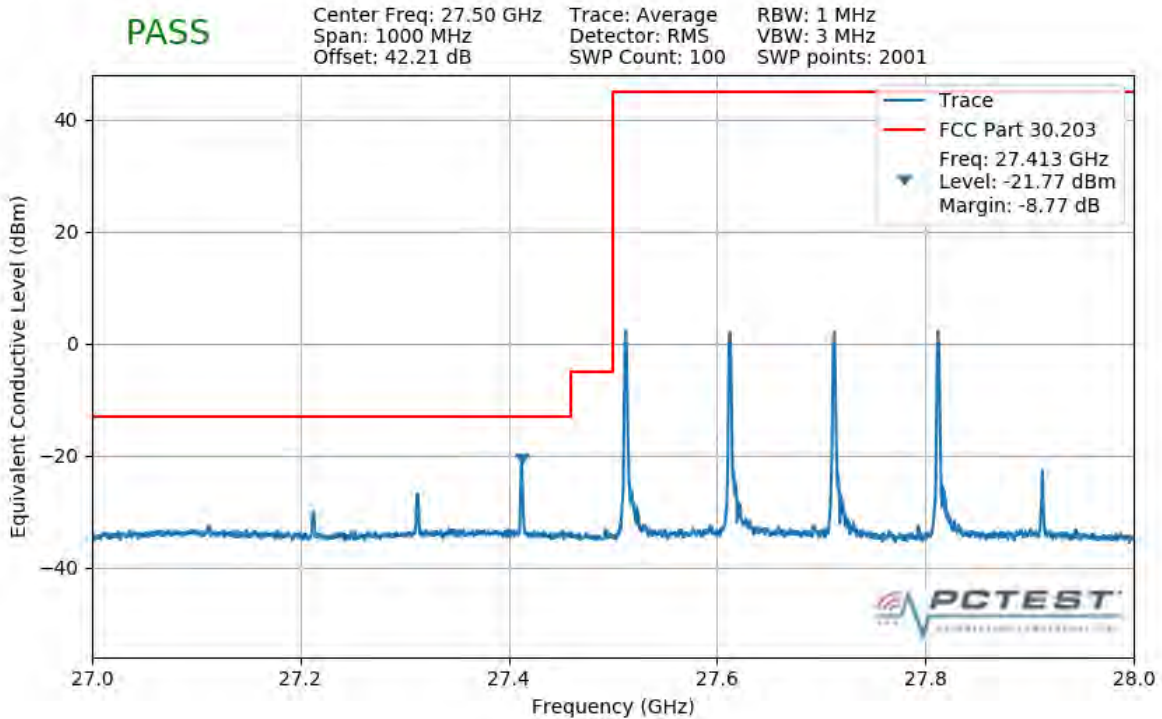


Plot 7-388. Lower Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 241 of 337

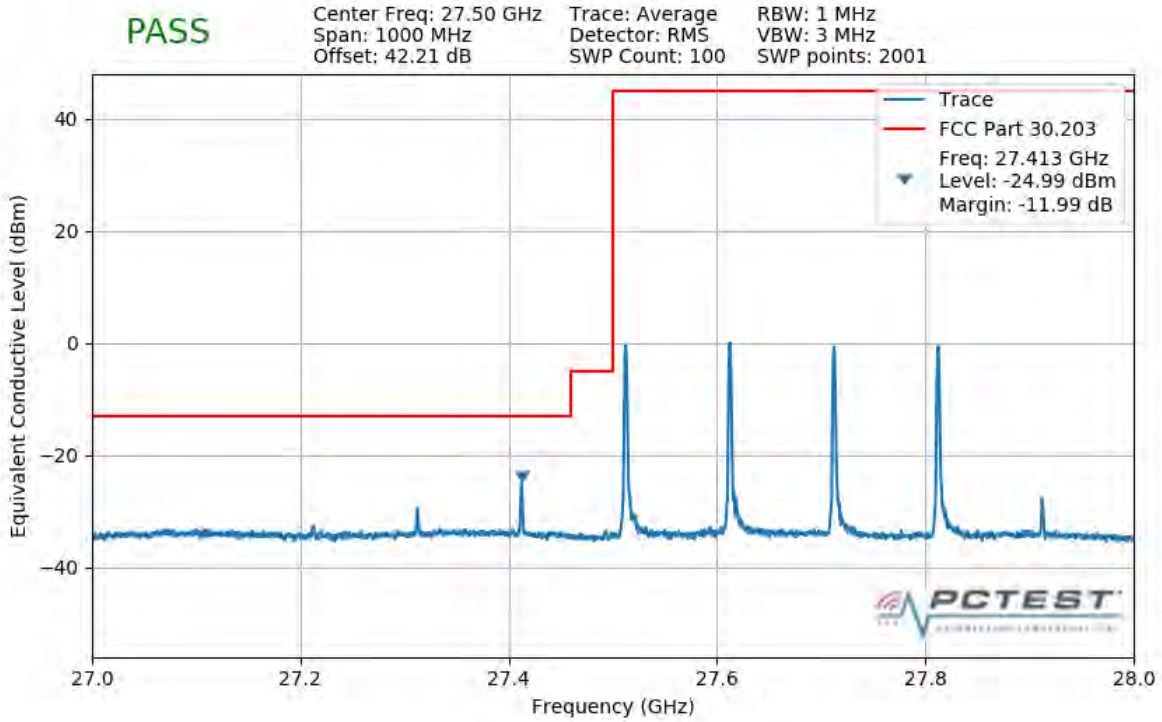


Plot 7-389. Lower Band Edge Plot (4CC 400MHz QPSK Full RB)

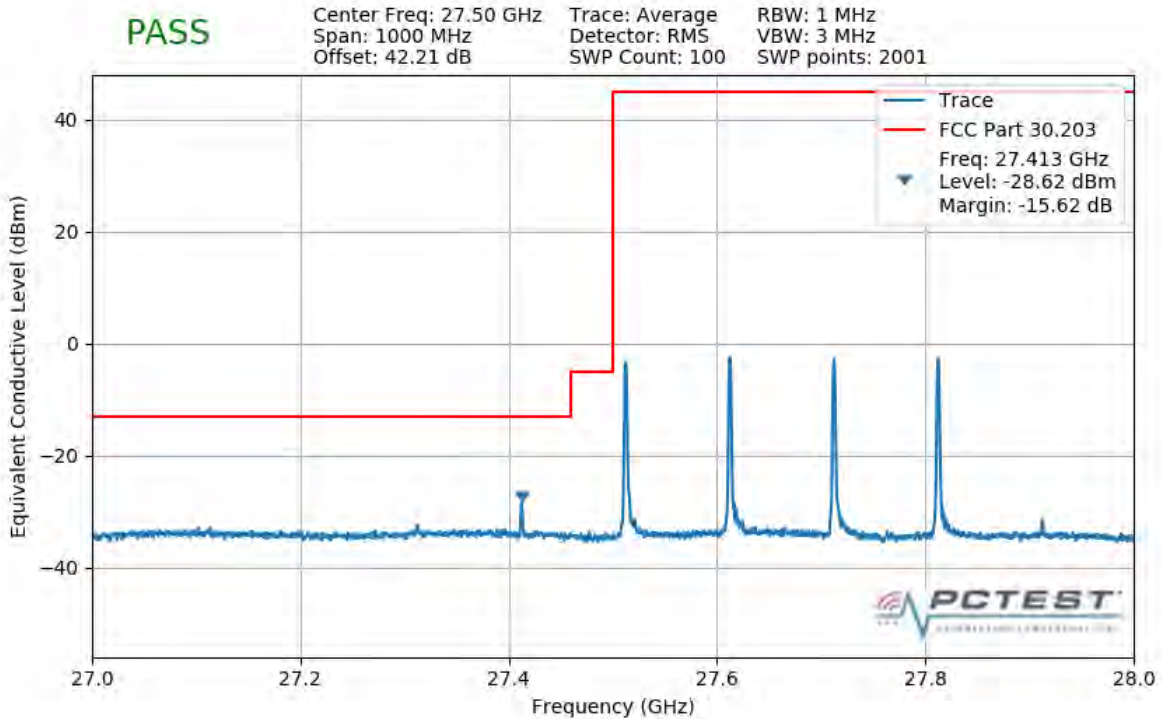


Plot 7-390. Lower Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 242 of 337

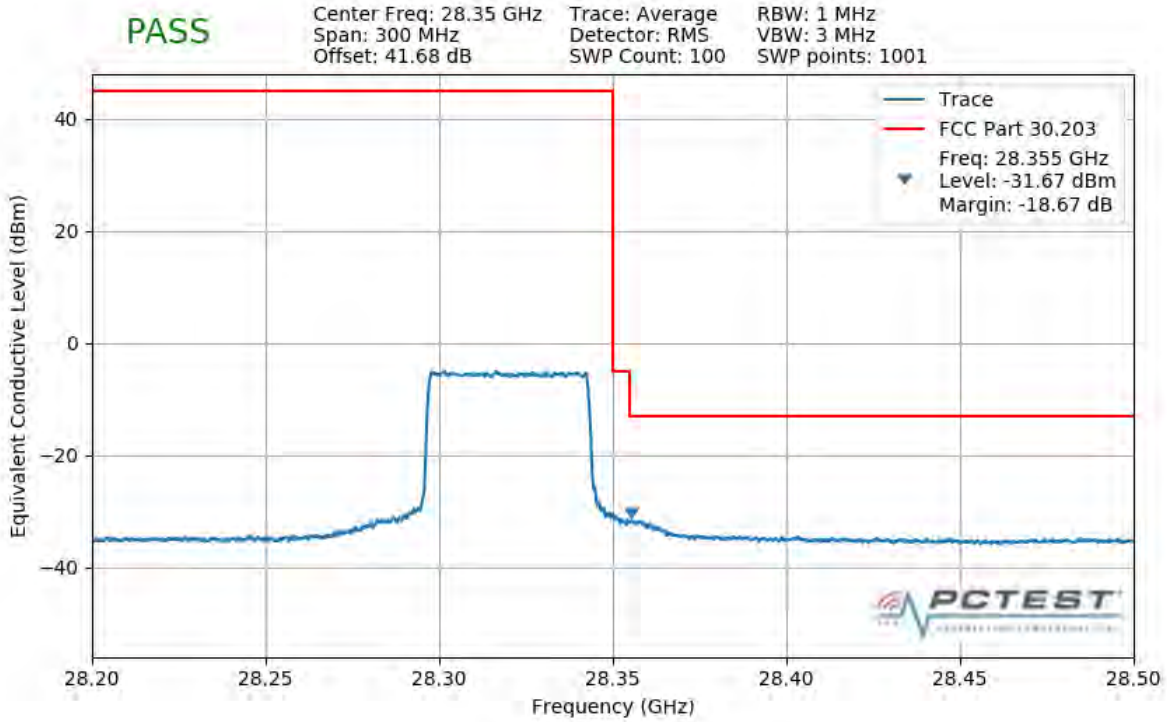


Plot 7-391. Lower Band Edge Plot (4CC 400MHz 16QAM 1 RB)

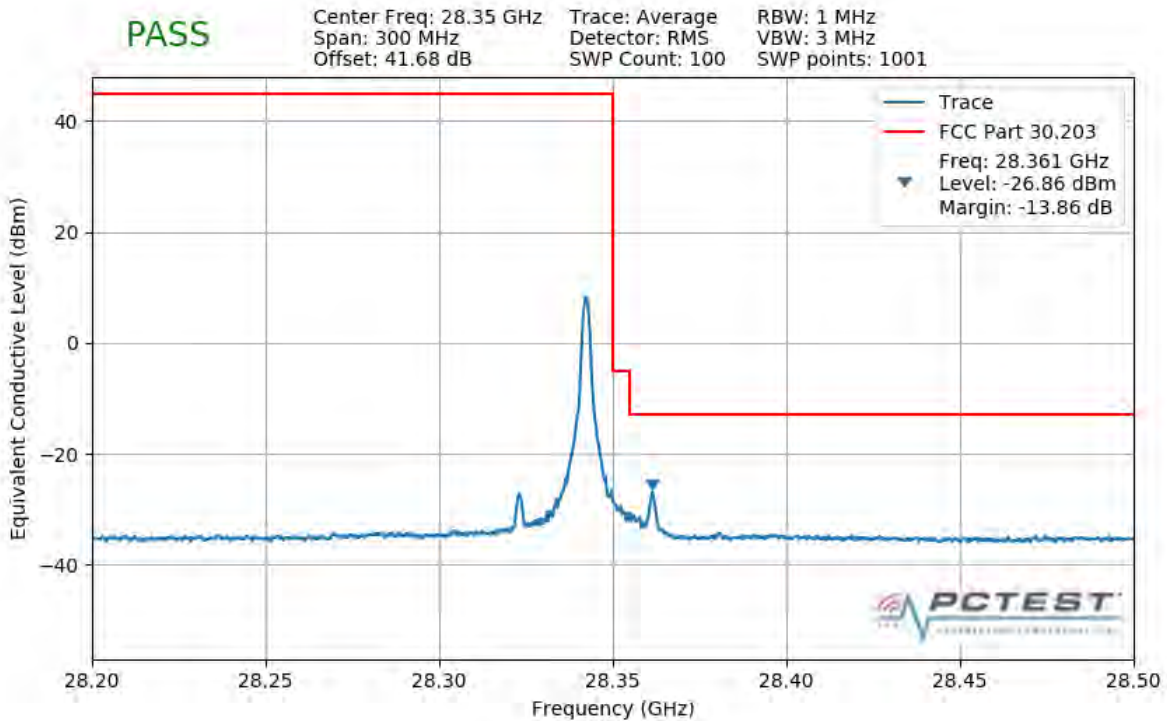


Plot 7-392. Lower Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 243 of 337

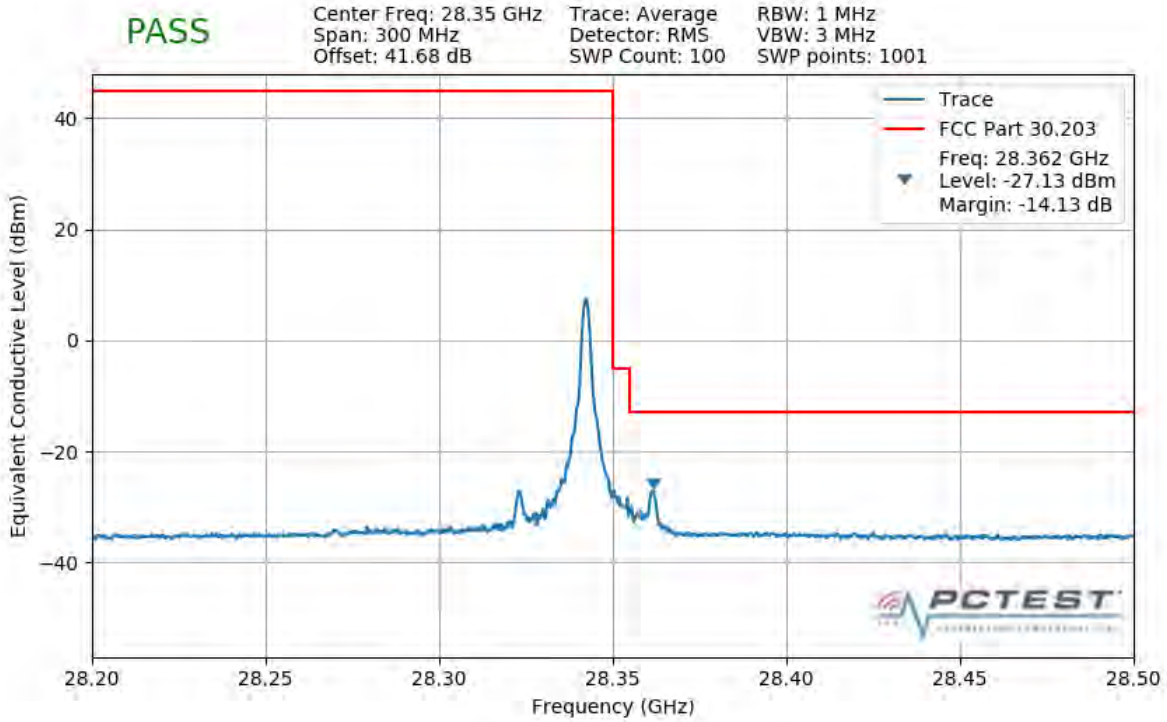


Plot 7-393. Upper Band Edge Plot (1CC 50MHz QPSK Full RB)

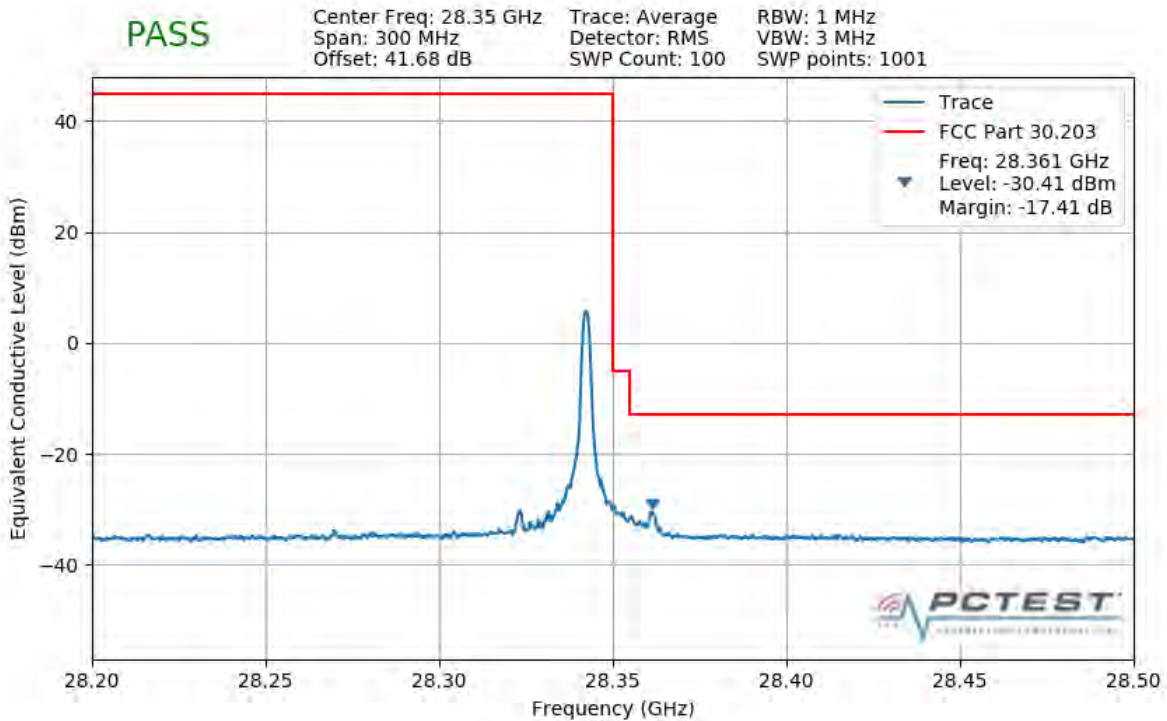


Plot 7-394. Upper Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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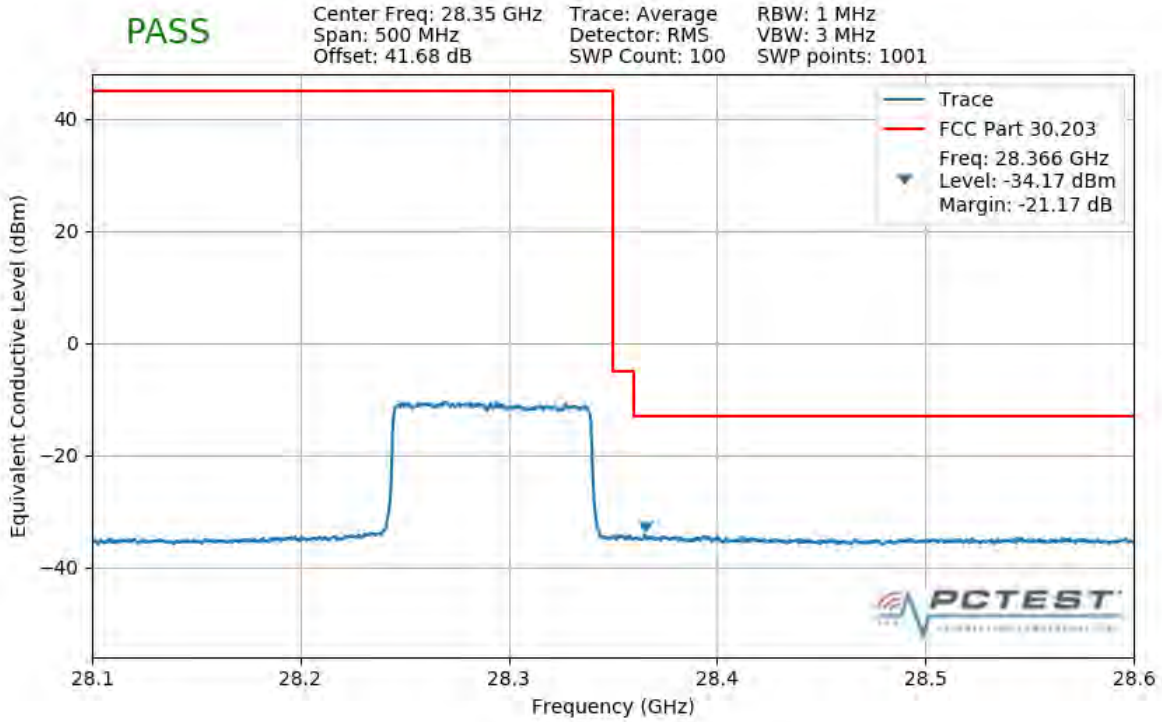


Plot 7-395. Upper Band Edge Plot (1CC 50MHz 16QAM 1 RB)

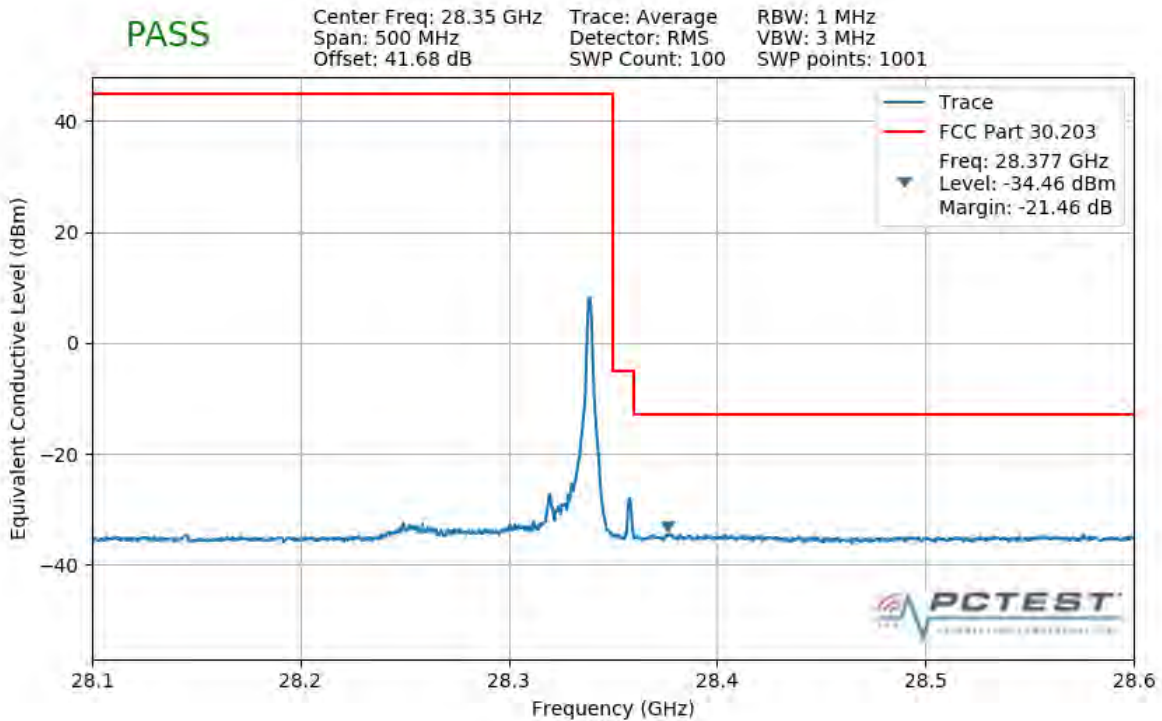


Plot 7-396. Upper Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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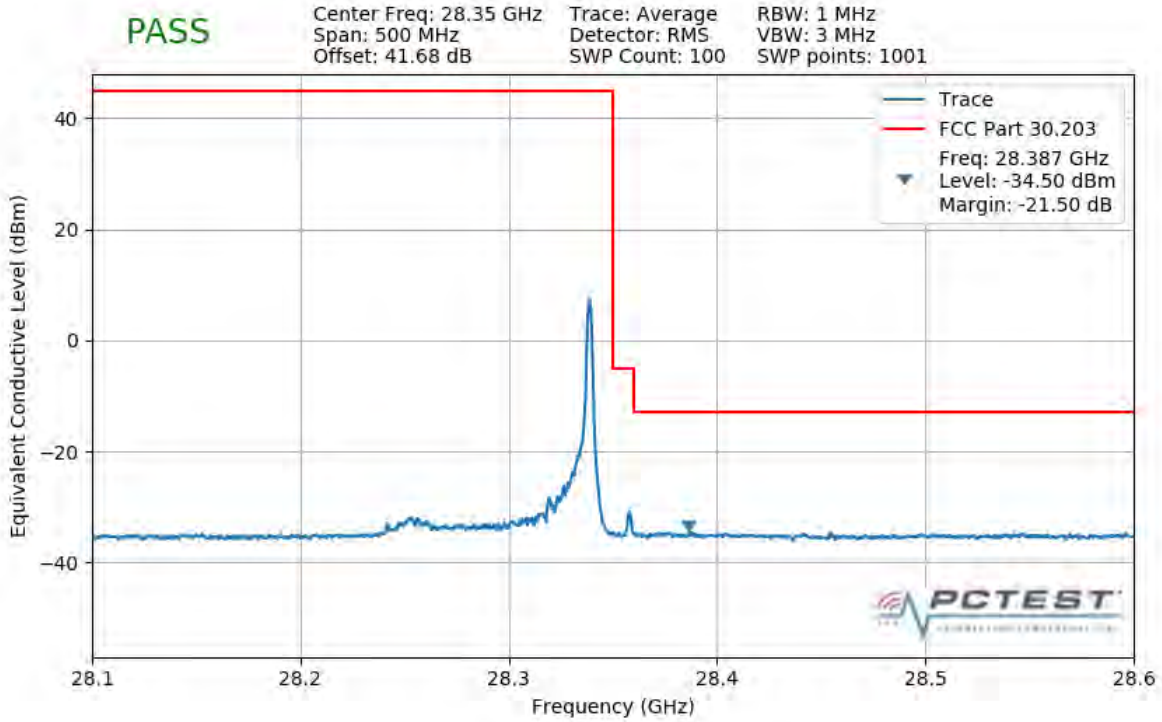


Plot 7-397. Upper Band Edge Plot (1CC 100MHz QPSK Full RB)

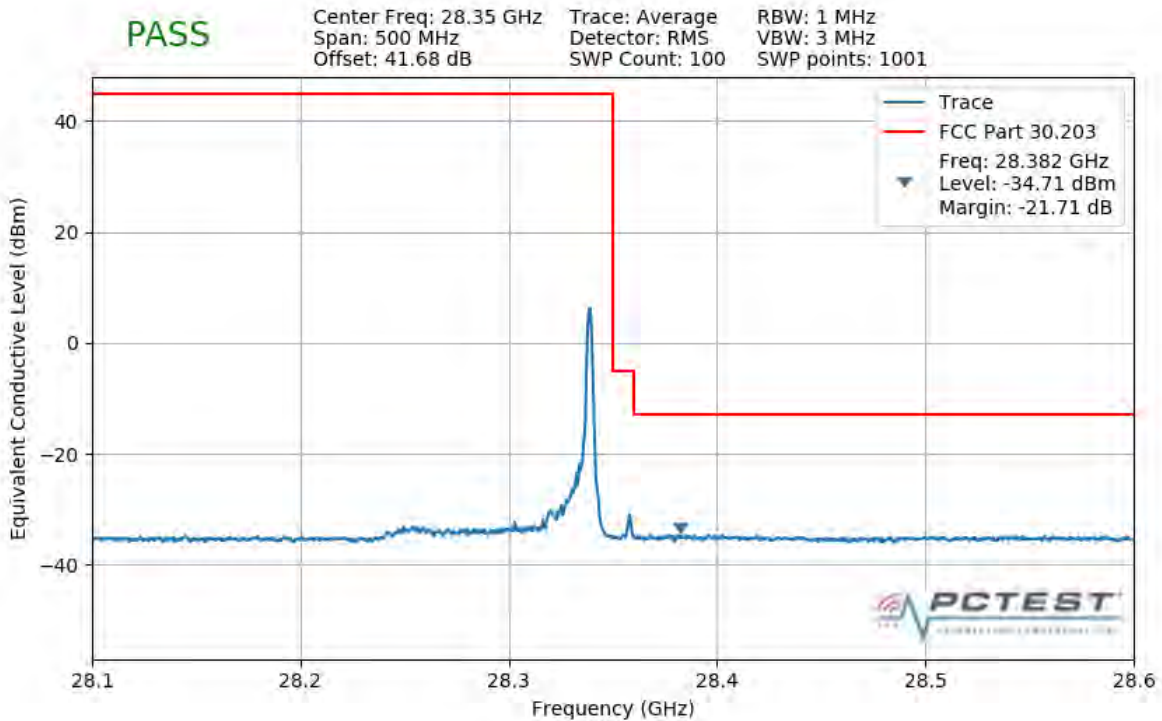


Plot 7-398. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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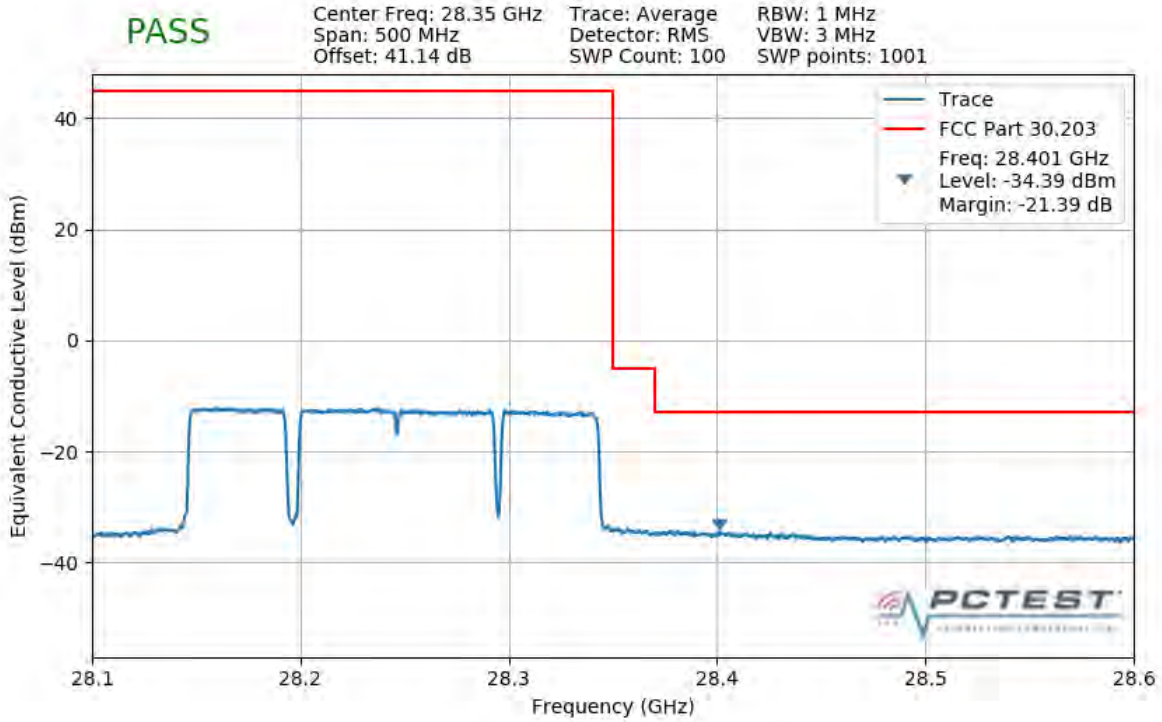


Plot 7-399. Upper Band Edge Plot (1CC 100MHz 16QAM 1 RB)

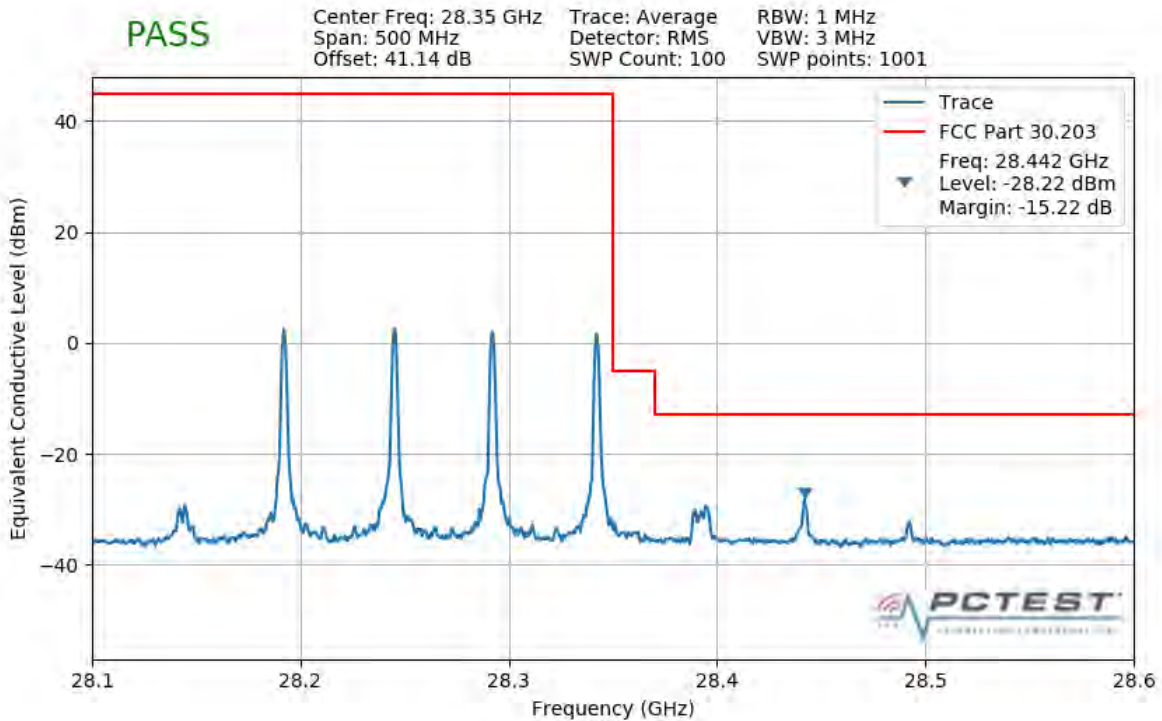


Plot 7-400. Upper Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 247 of 337

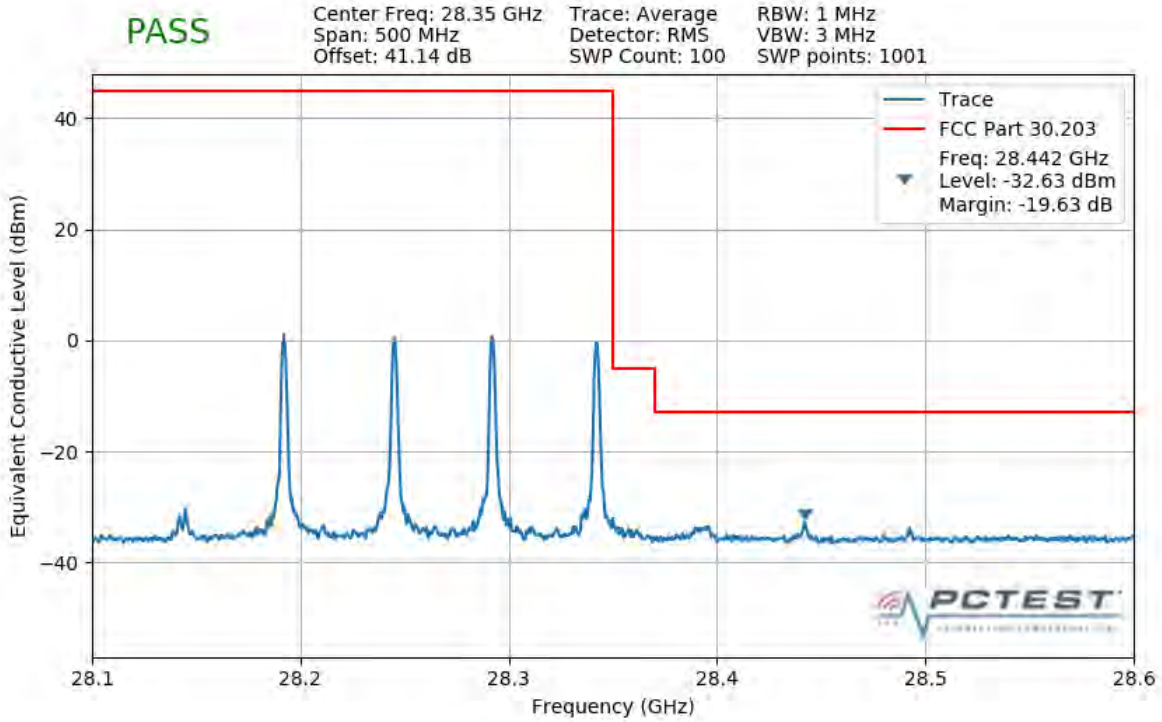


Plot 7-401. Upper Band Edge Plot (4CC 200MHz QPSK Full RB)

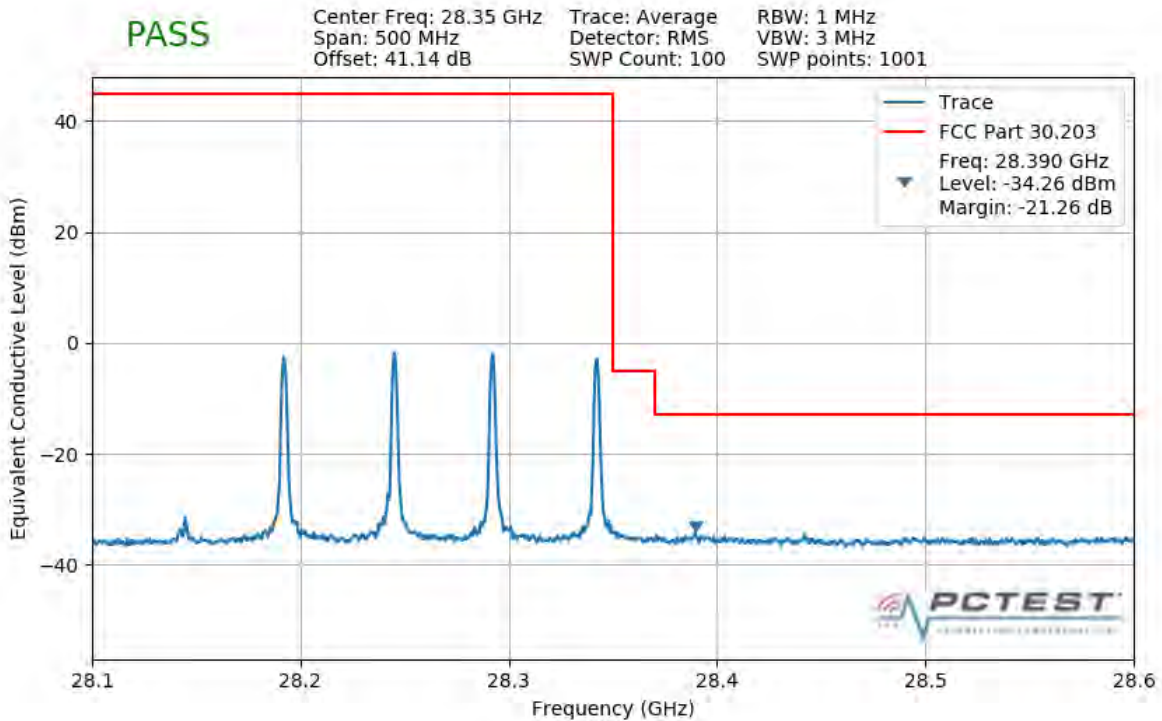


Plot 7-402. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 248 of 337

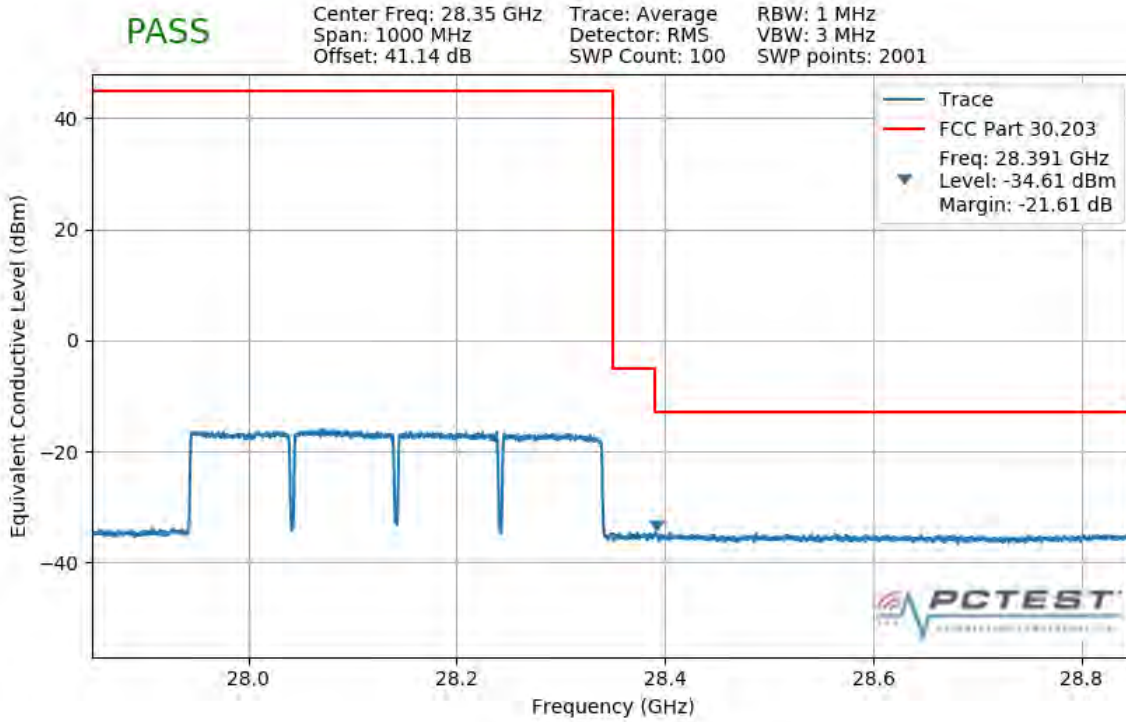


Plot 7-403. Upper Band Edge Plot (4CC 200MHz 16QAM 1 RB)

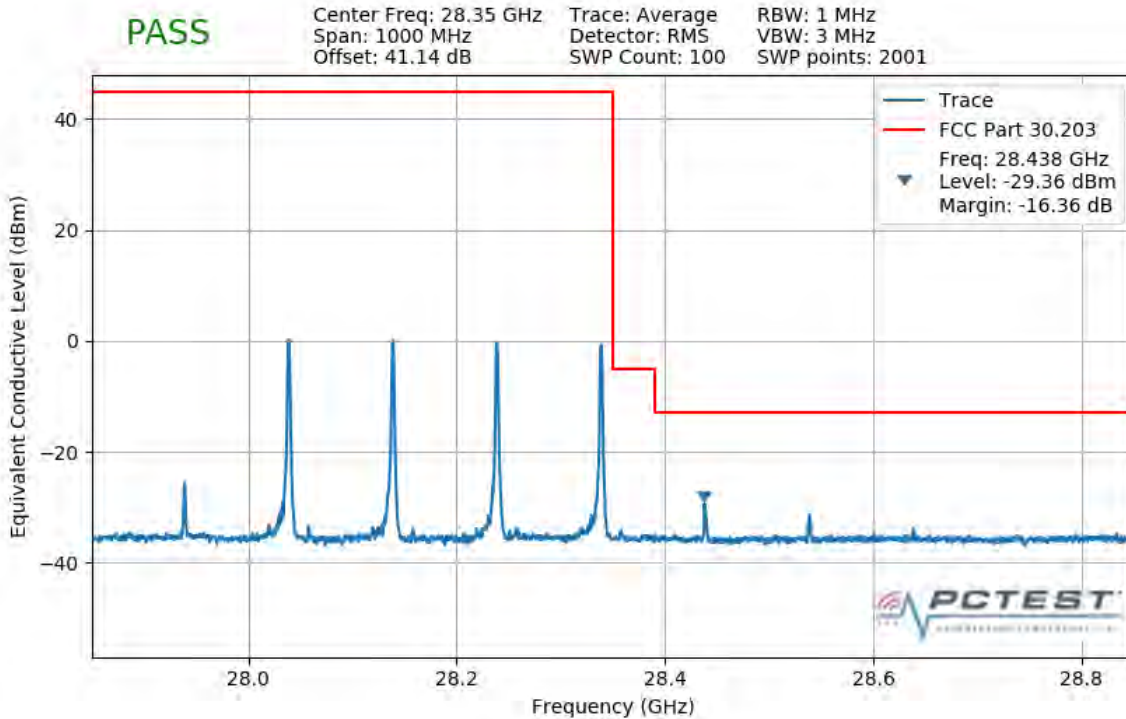


Plot 7-404. Upper Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 249 of 337

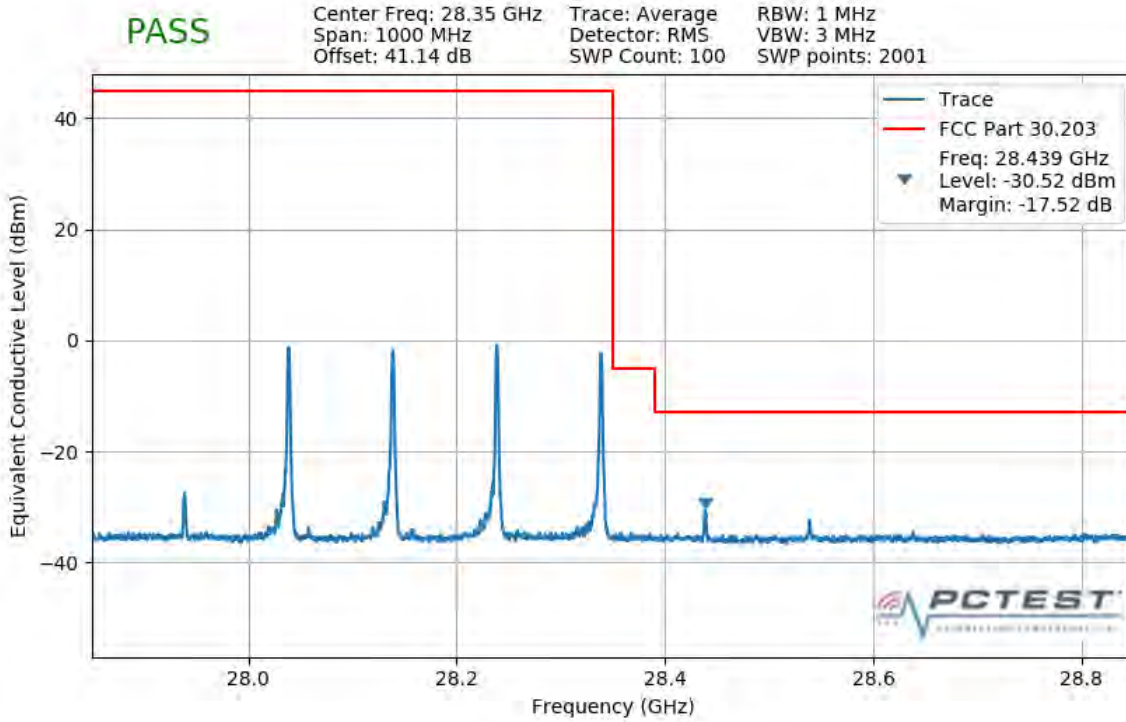


Plot 7-405. Upper Band Edge Plot (4CC 400MHz QPSK Full RB)

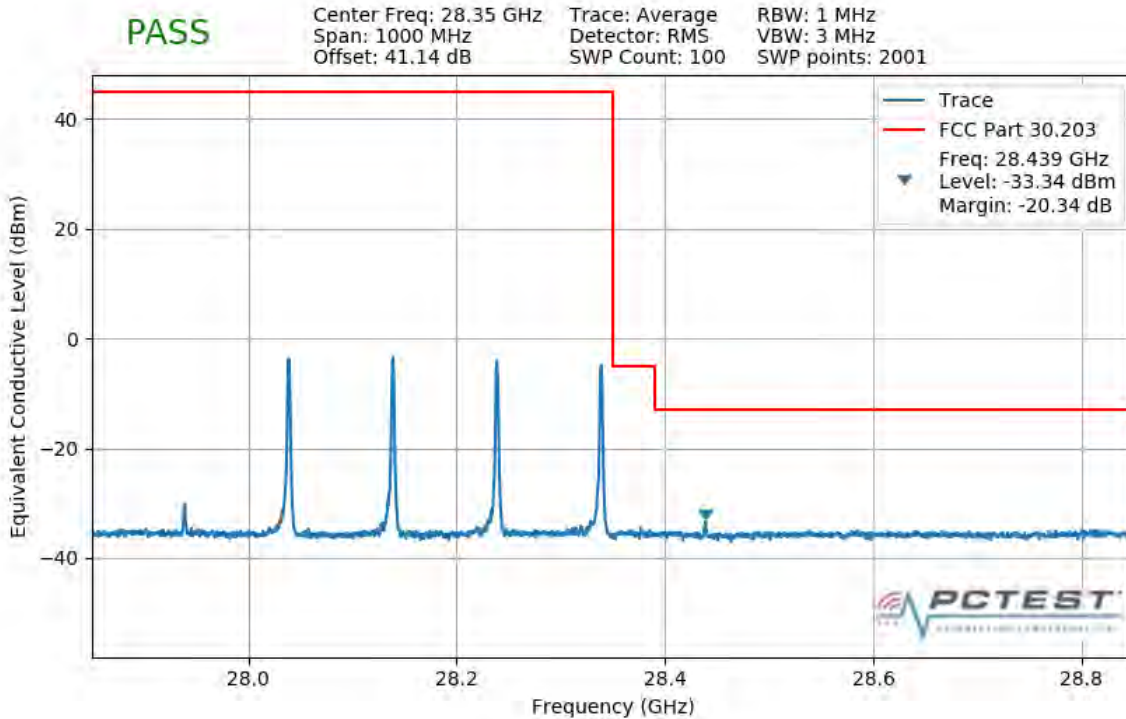


Plot 7-406. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 250 of 337



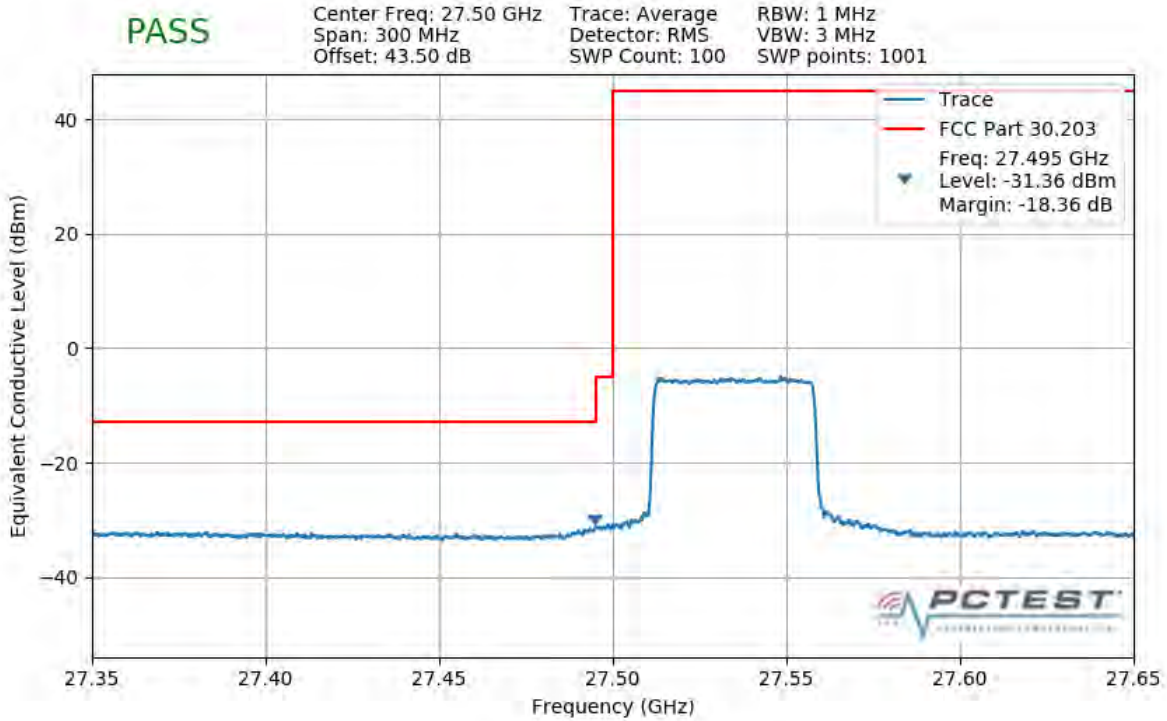
Plot 7-407. Upper Band Edge Plot (4CC 400MHz 16QAM 1 RB)



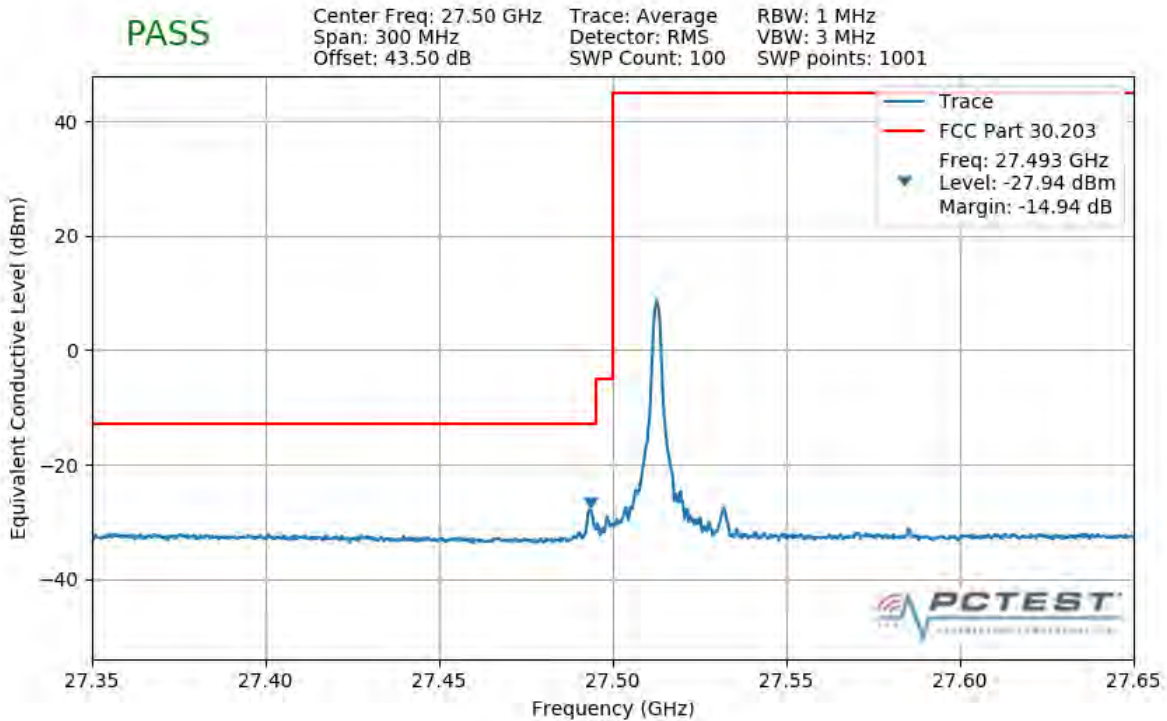
Plot 7-408. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 251 of 337

V Beam

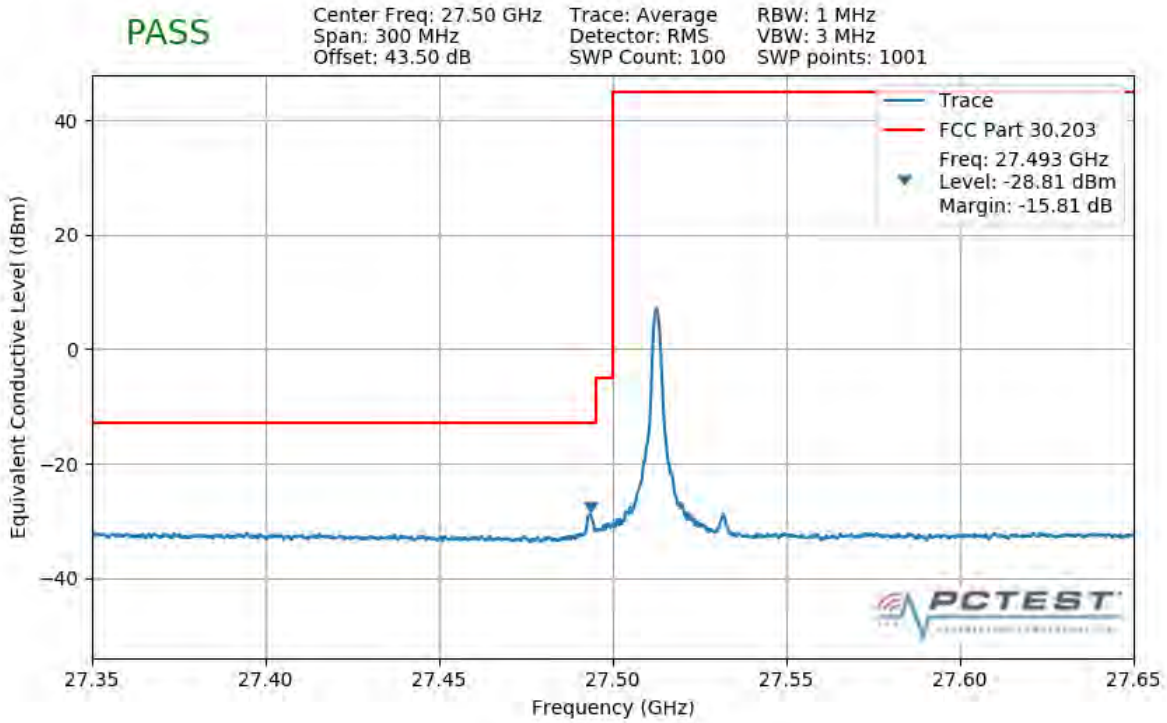


Plot 7-409. Lower Band Edge Plot (1CC 50MHz QPSK Full RB)

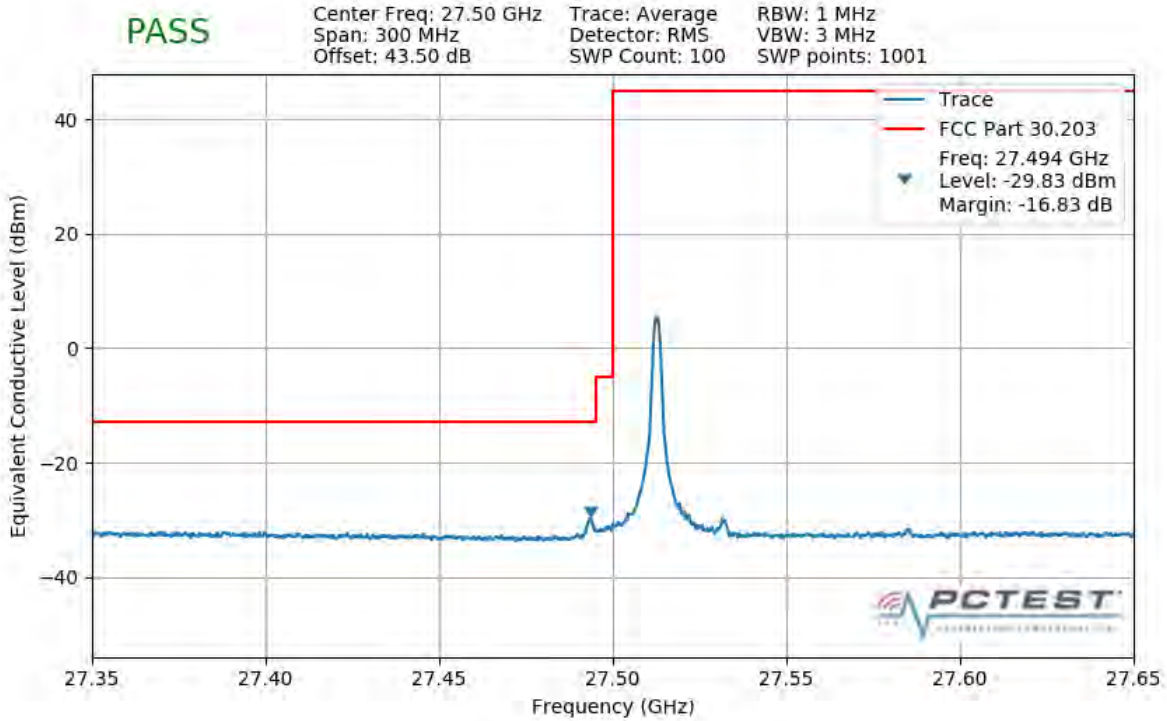


Plot 7-410. Lower Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 252 of 337

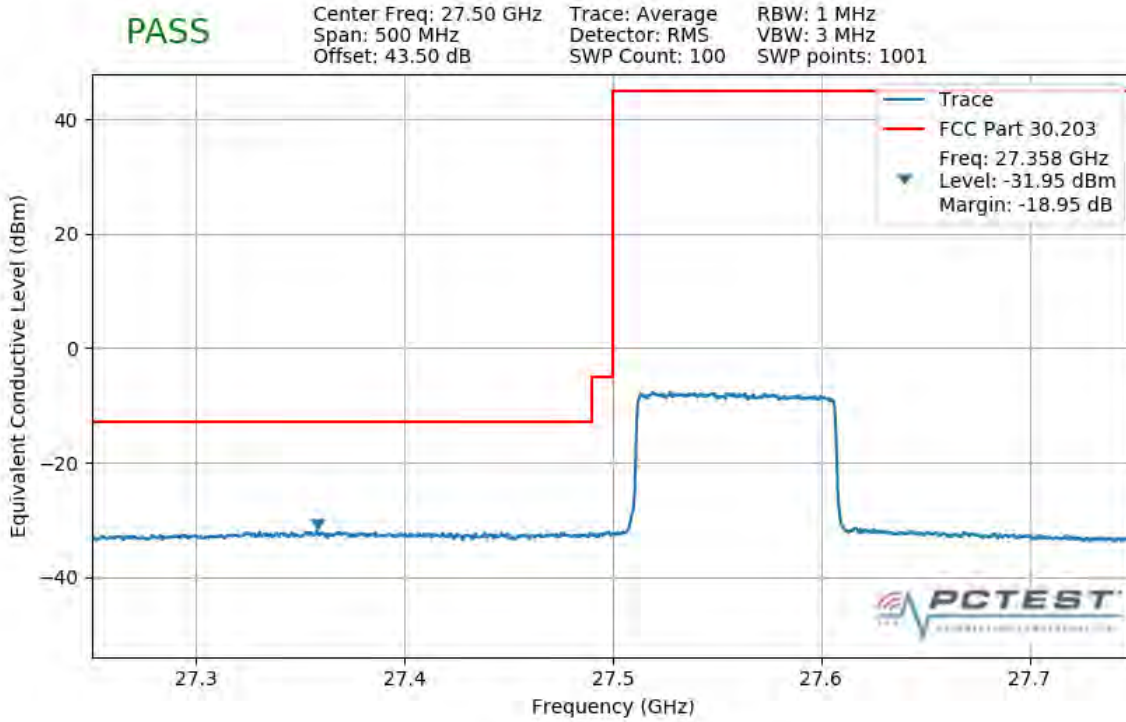


Plot 7-411. Lower Band Edge Plot (1CC 50MHz 16QAM 1 RB)

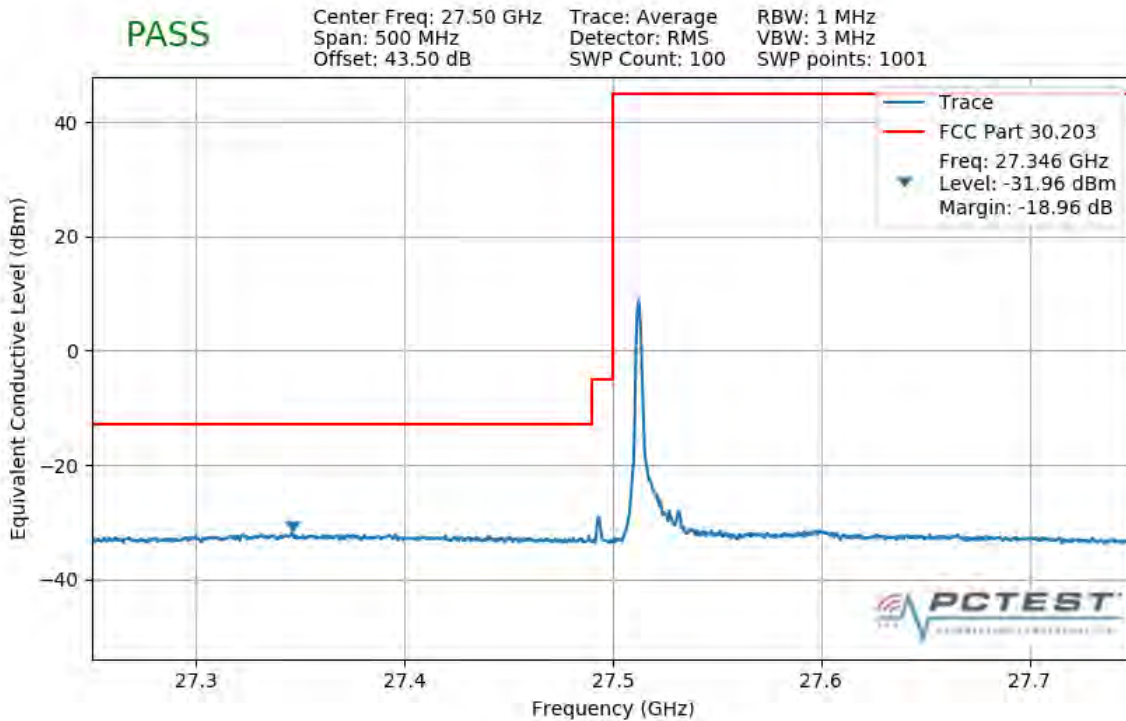


Plot 7-412. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 253 of 337

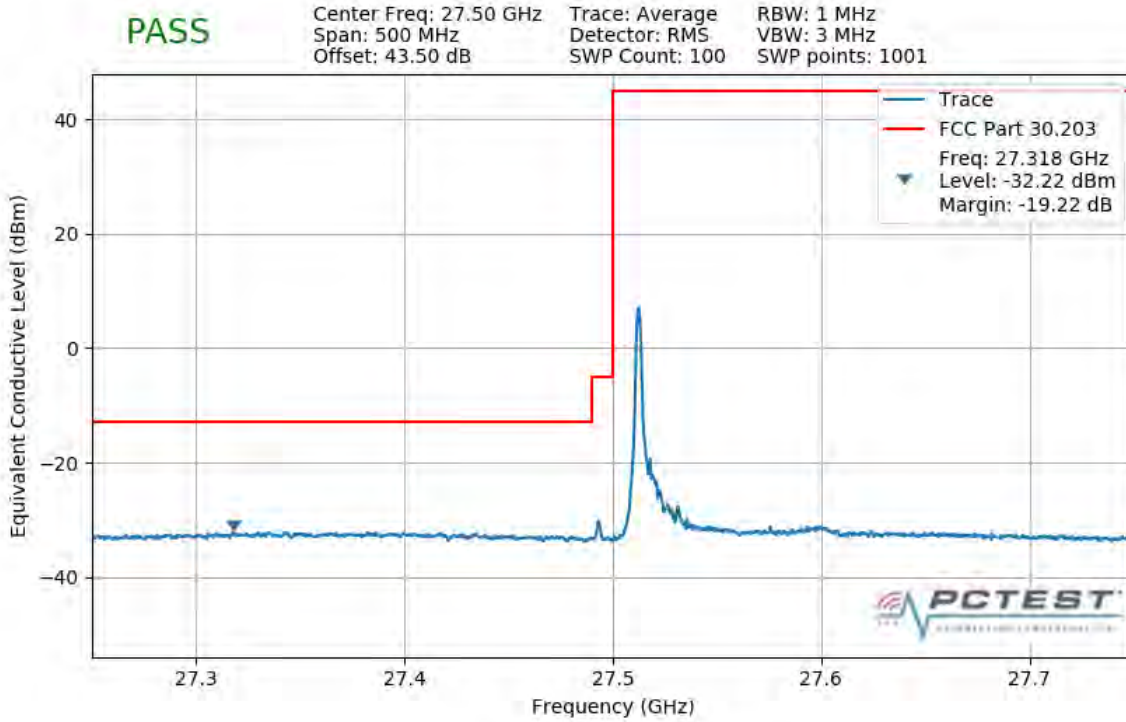


Plot 7-413. Lower Band Edge Plot (1CC 100MHz QPSK Full RB)

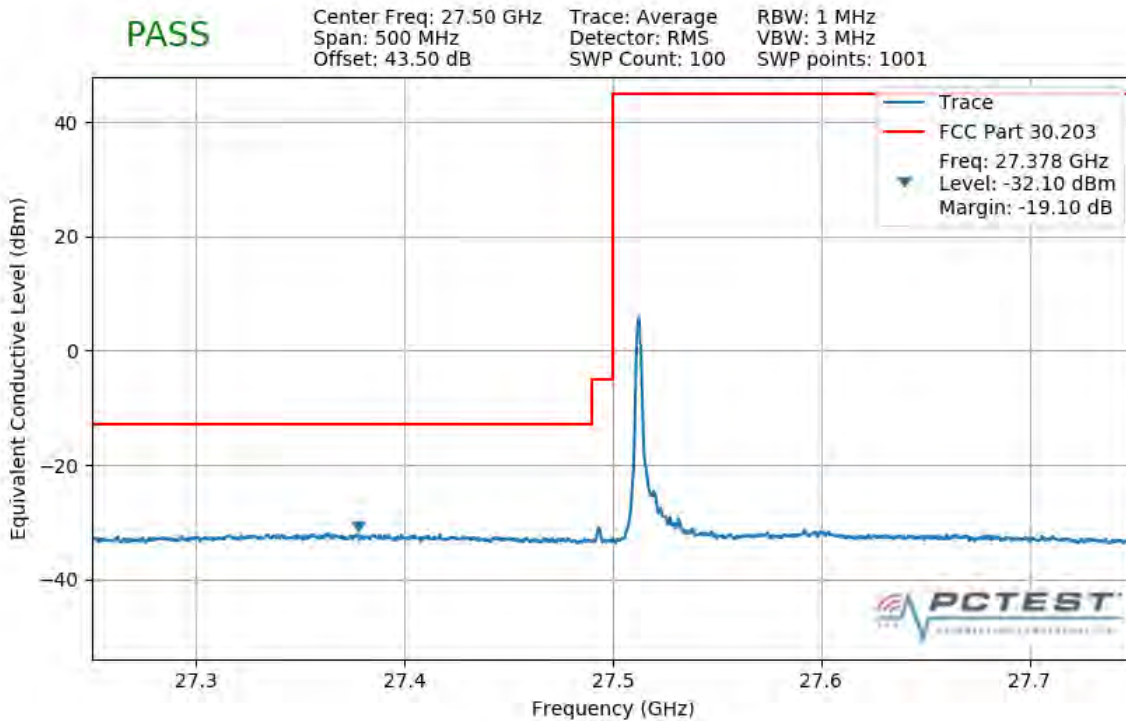


Plot 7-414. Lower Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 254 of 337

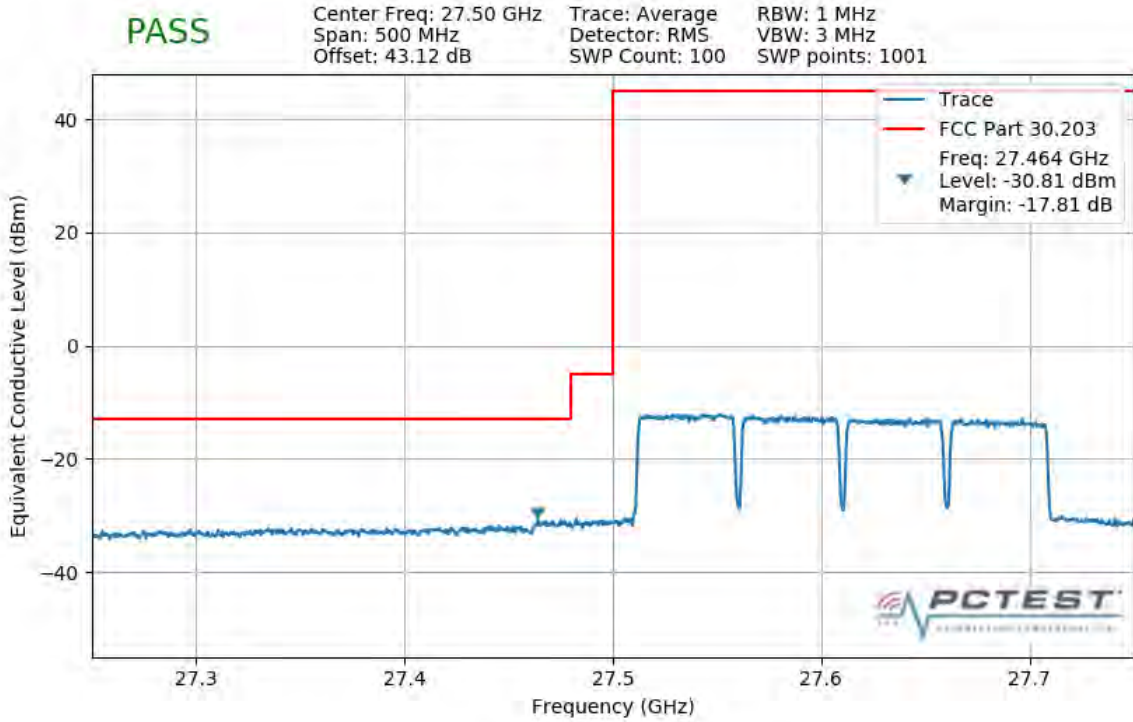


Plot 7-415. Lower Band Edge Plot (1CC 100MHz 16QAM 1 RB)

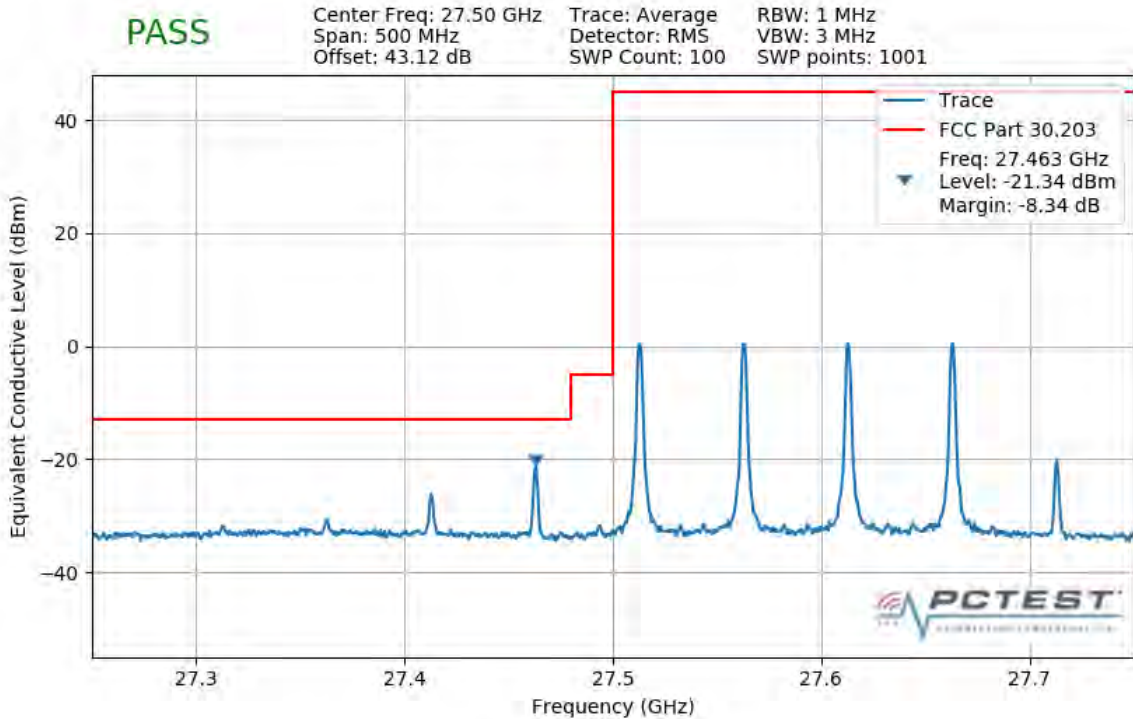


Plot 7-416. Lower Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 255 of 337

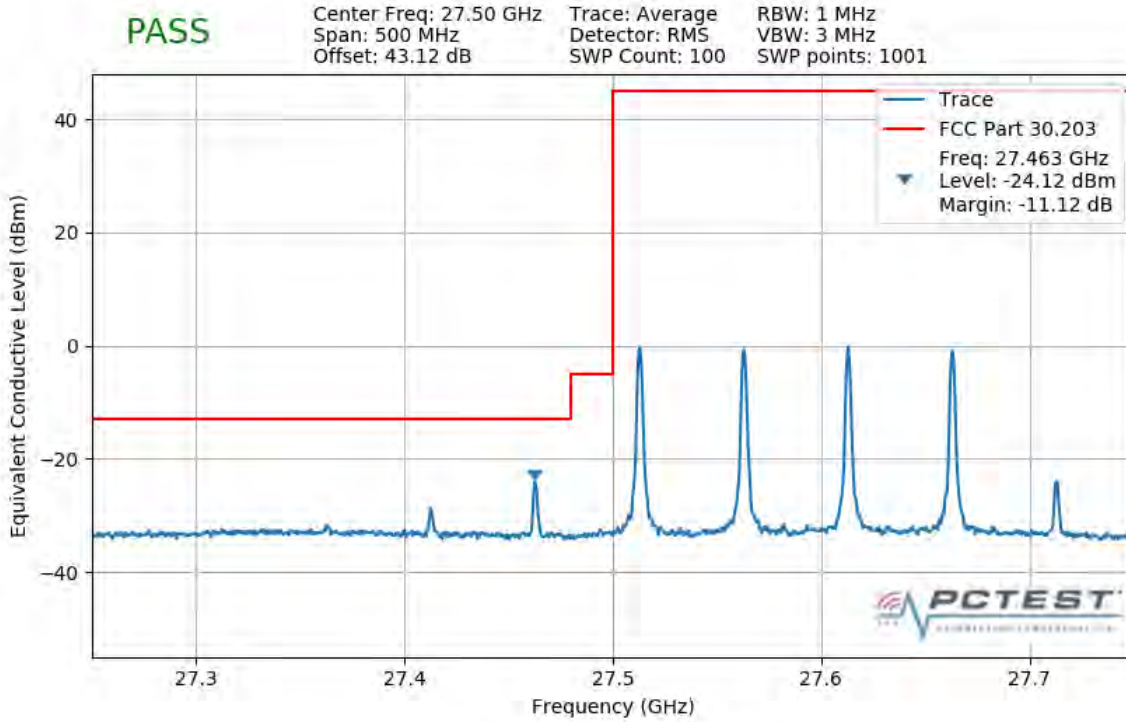


Plot 7-417. Lower Band Edge Plot (4CC 200MHz QPSK Full RB)

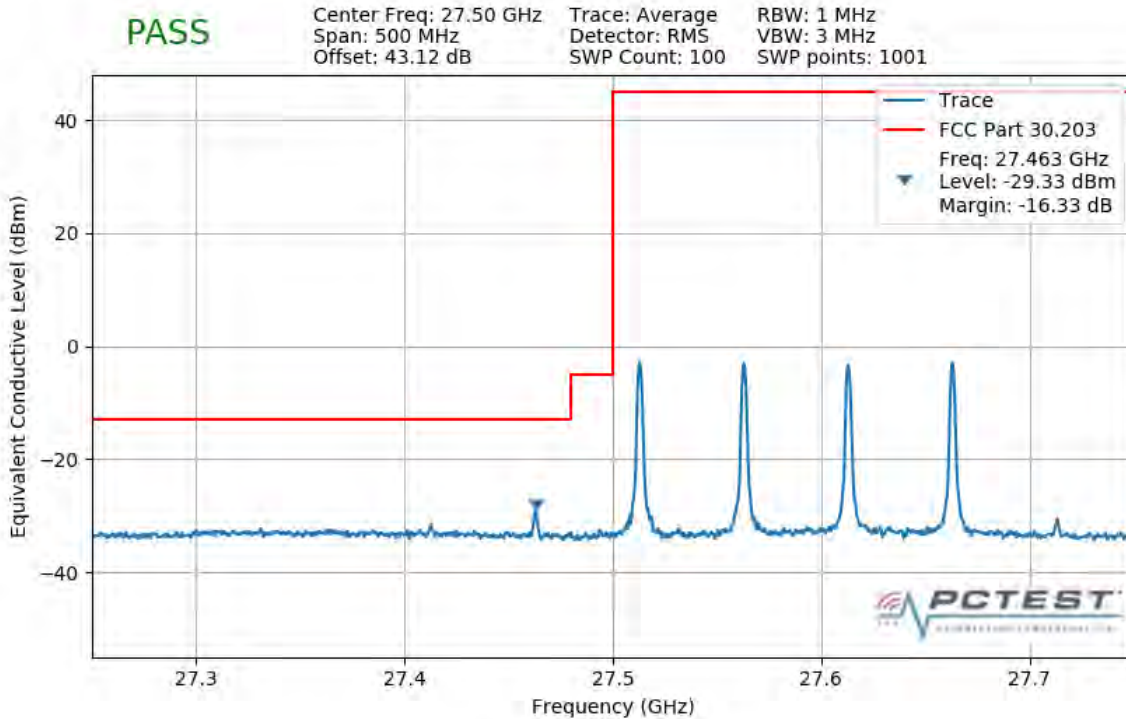


Plot 7-418. Lower Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 256 of 337

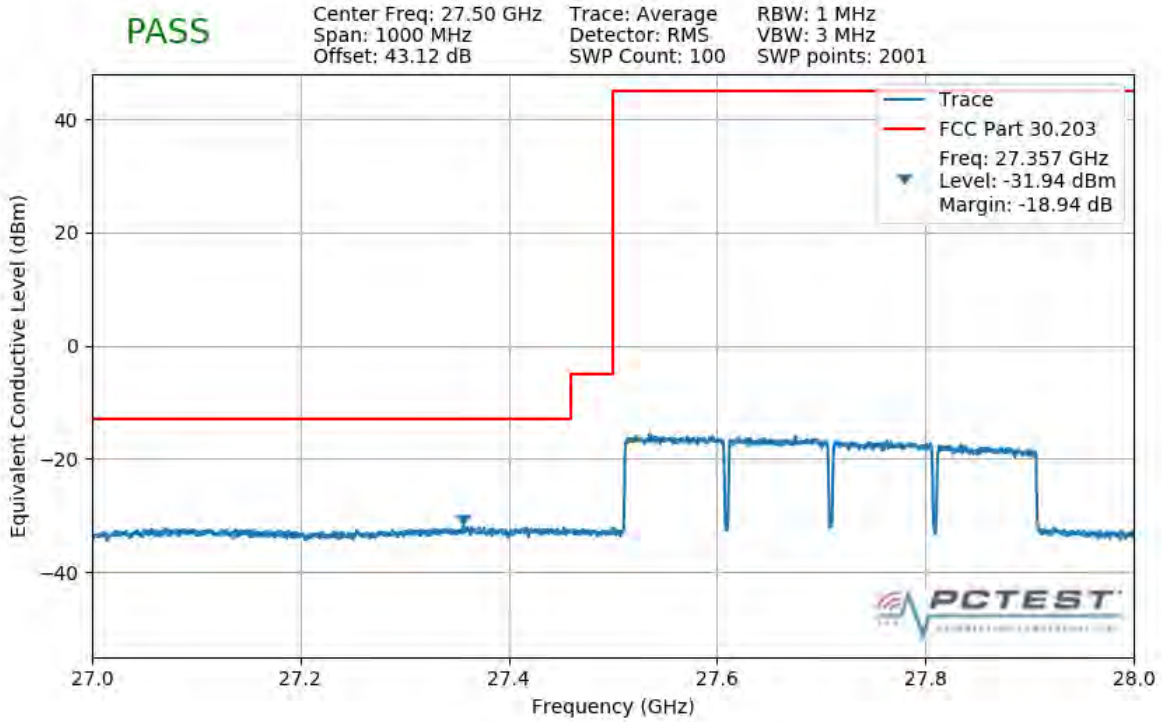


Plot 7-419. Lower Band Edge Plot (4CC 200MHz 16QAM 1 RB)

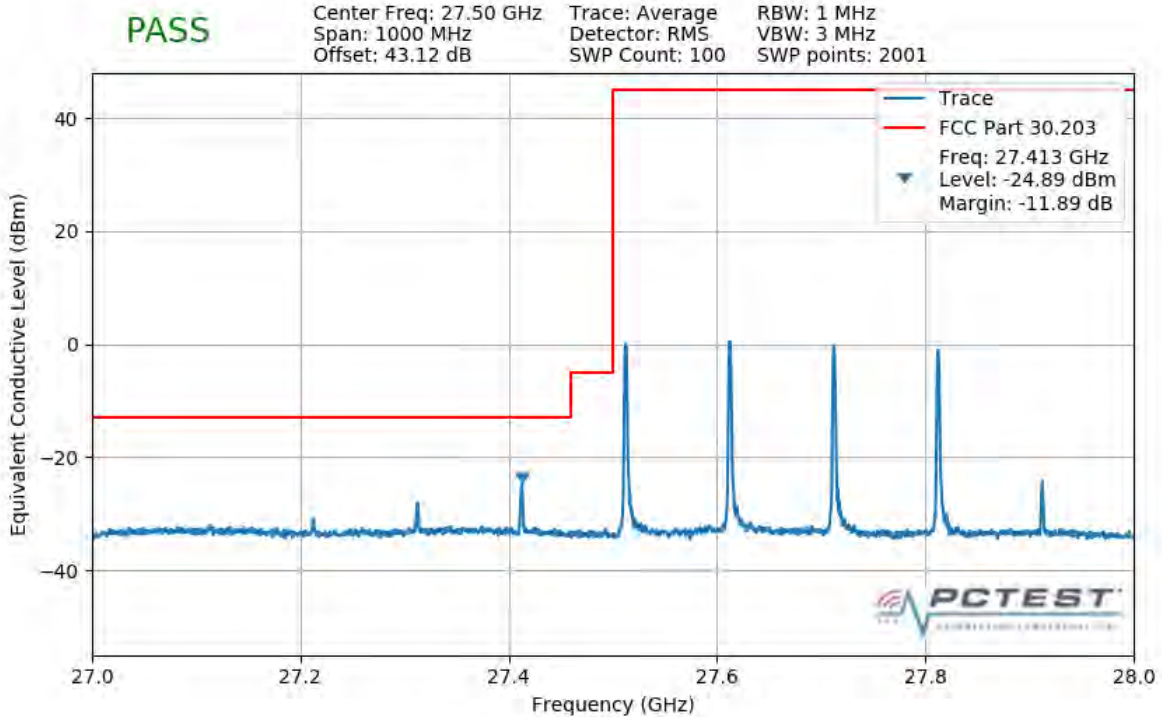


Plot 7-420. Lower Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 257 of 337

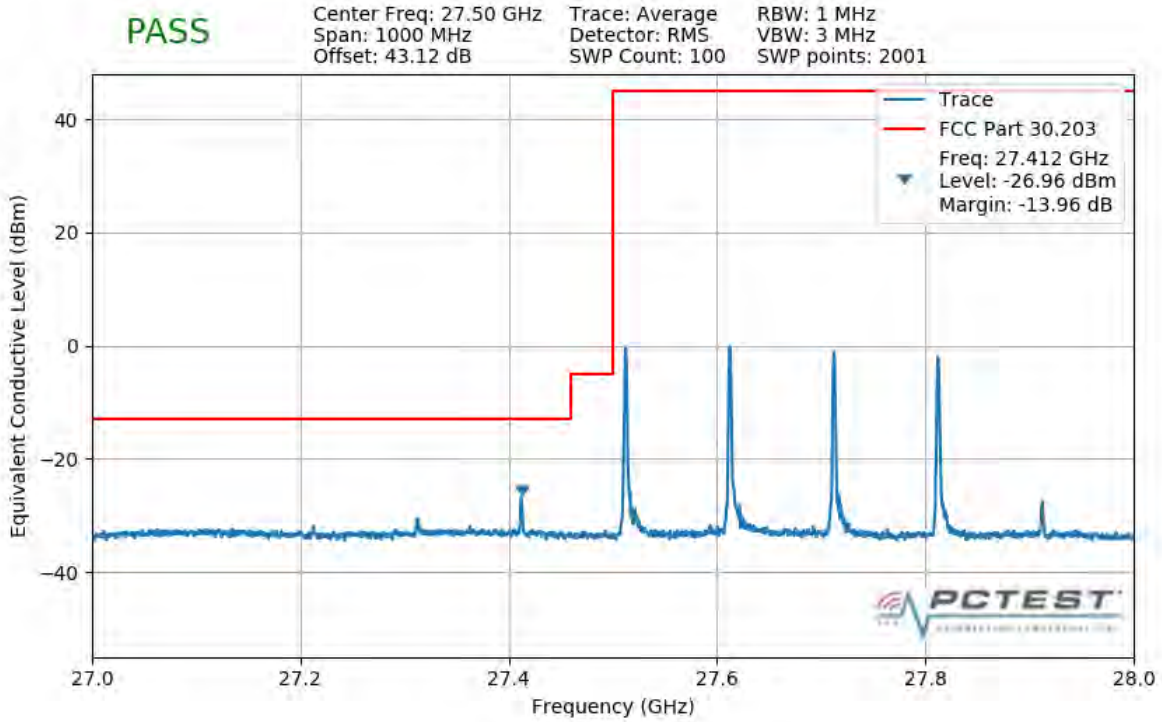


Plot 7-421. Lower Band Edge Plot (4CC 400MHz QPSK Full RB)

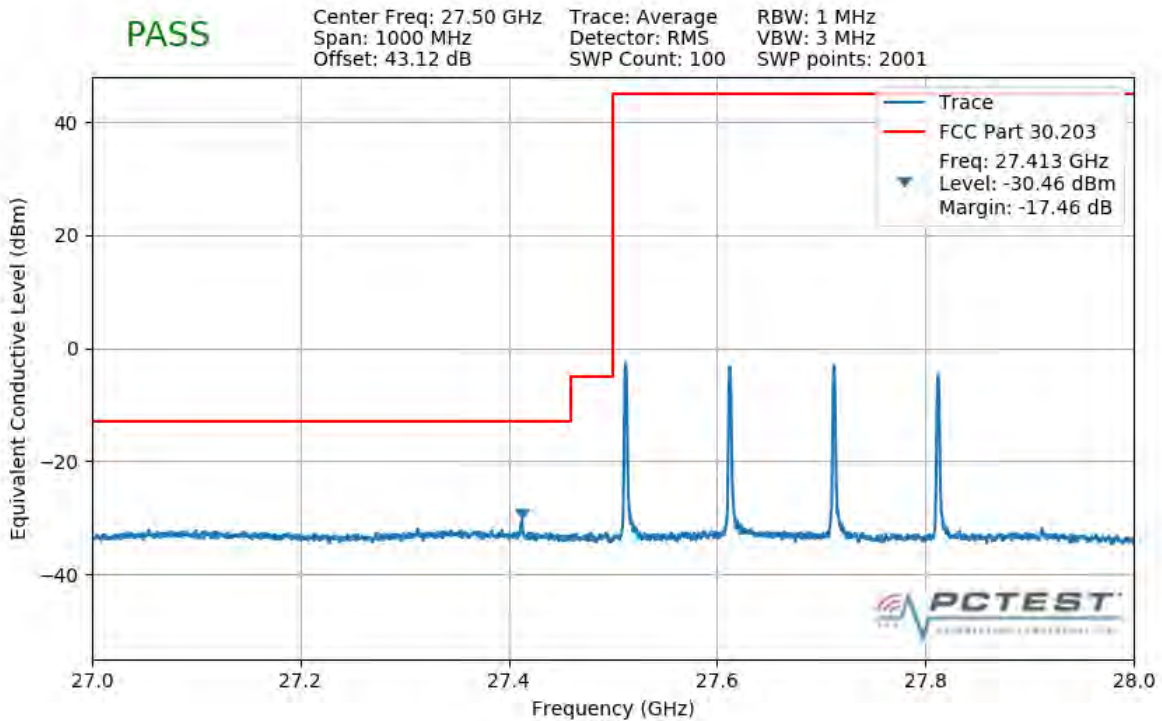


Plot 7-422. Lower Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 258 of 337

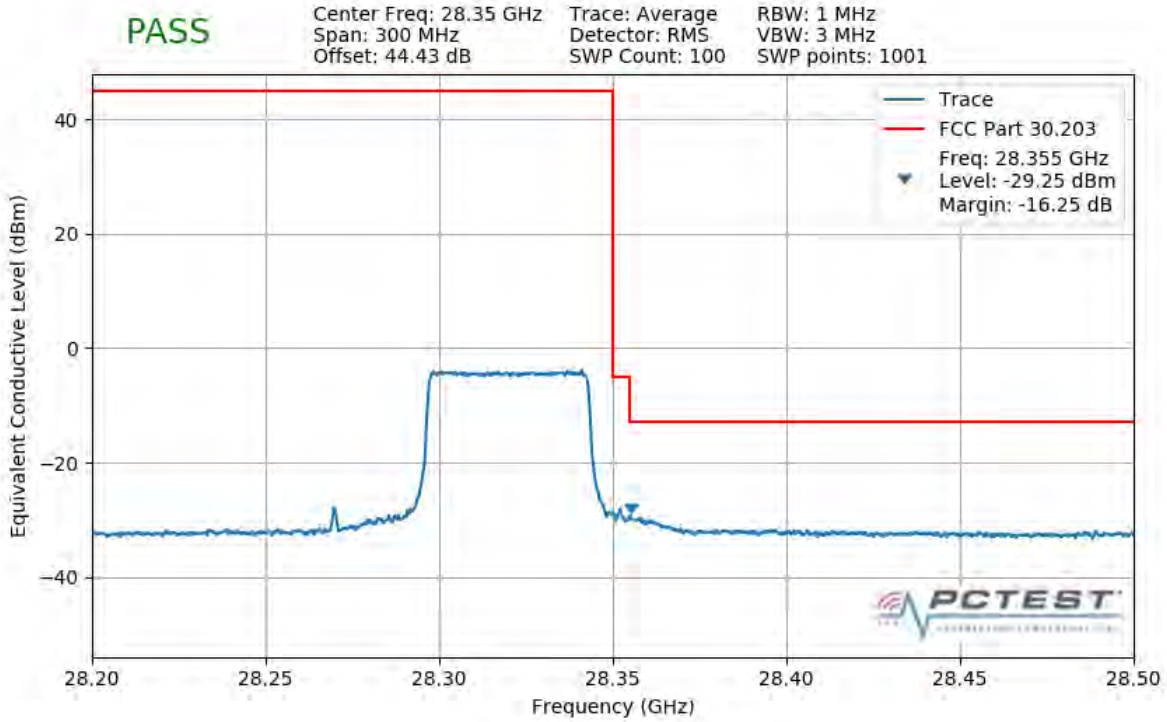


Plot 7-423. Lower Band Edge Plot (4CC 400MHz 16QAM 1 RB)

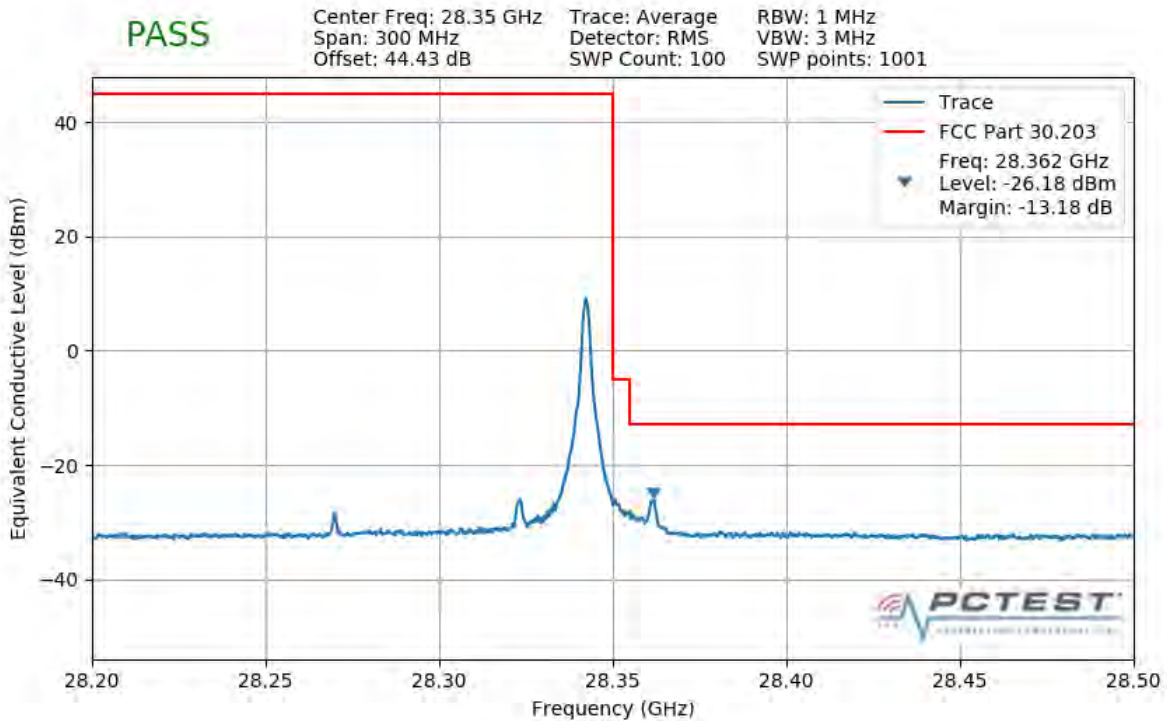


Plot 7-424. Lower Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 259 of 337

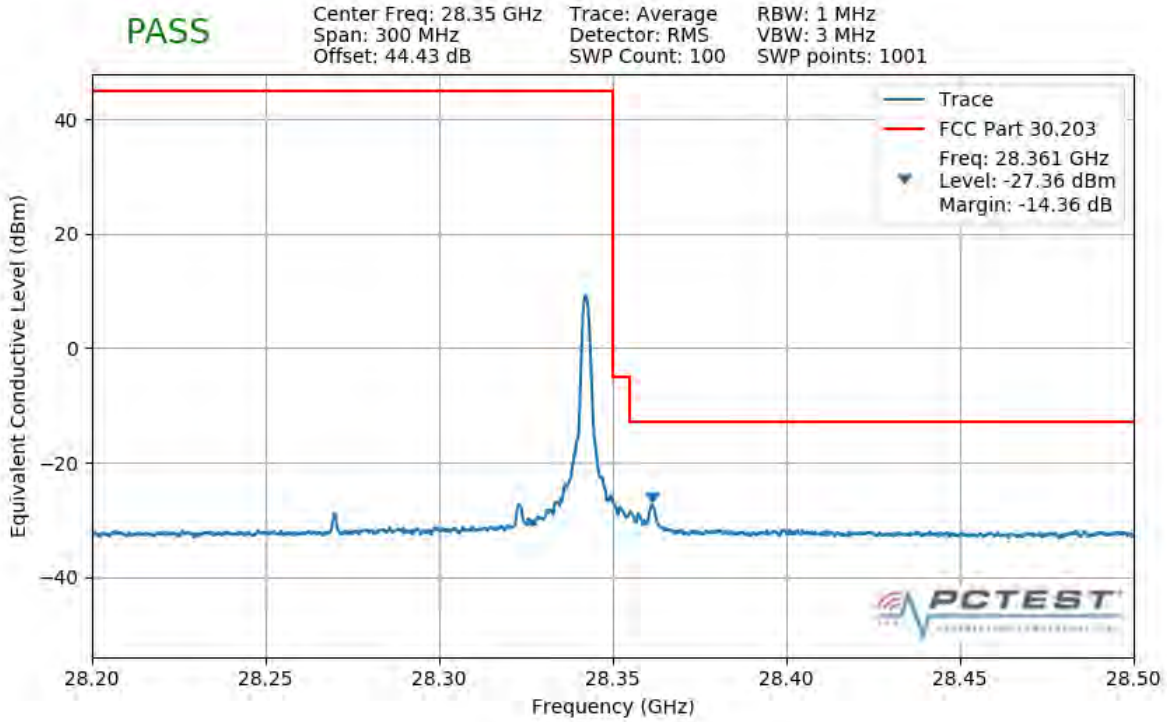


Plot 7-425. Upper Band Edge Plot (1CC 50MHz QPSK Full RB)

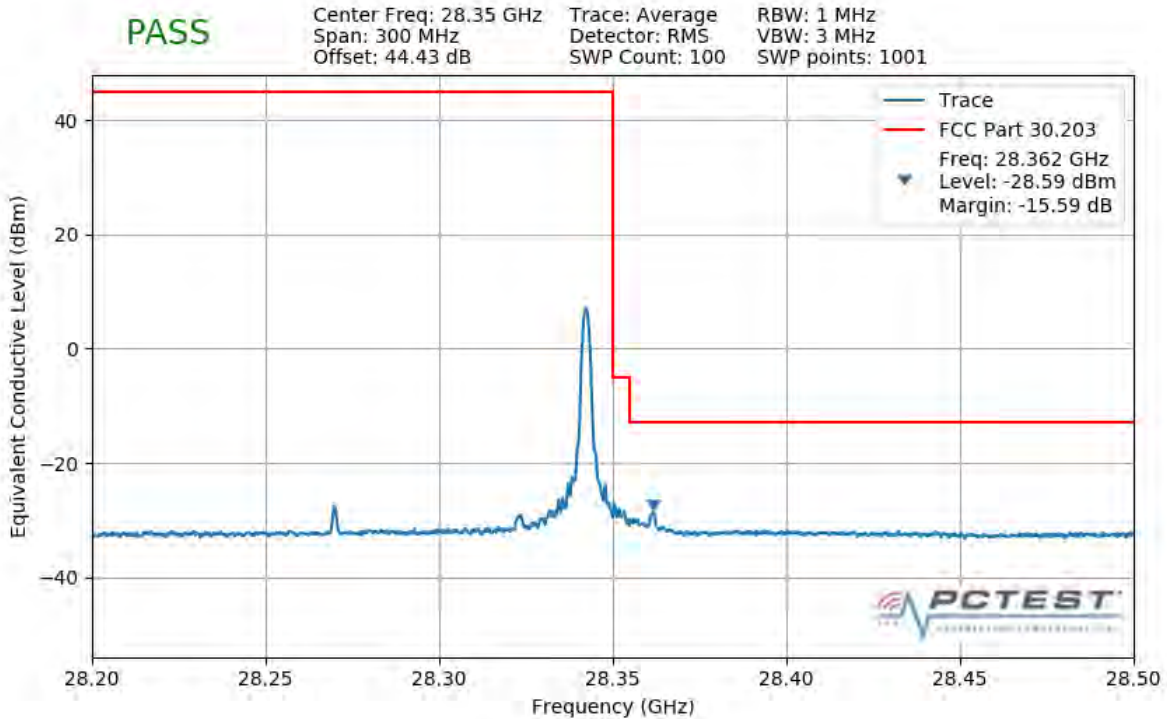


Plot 7-426. Upper Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 260 of 337

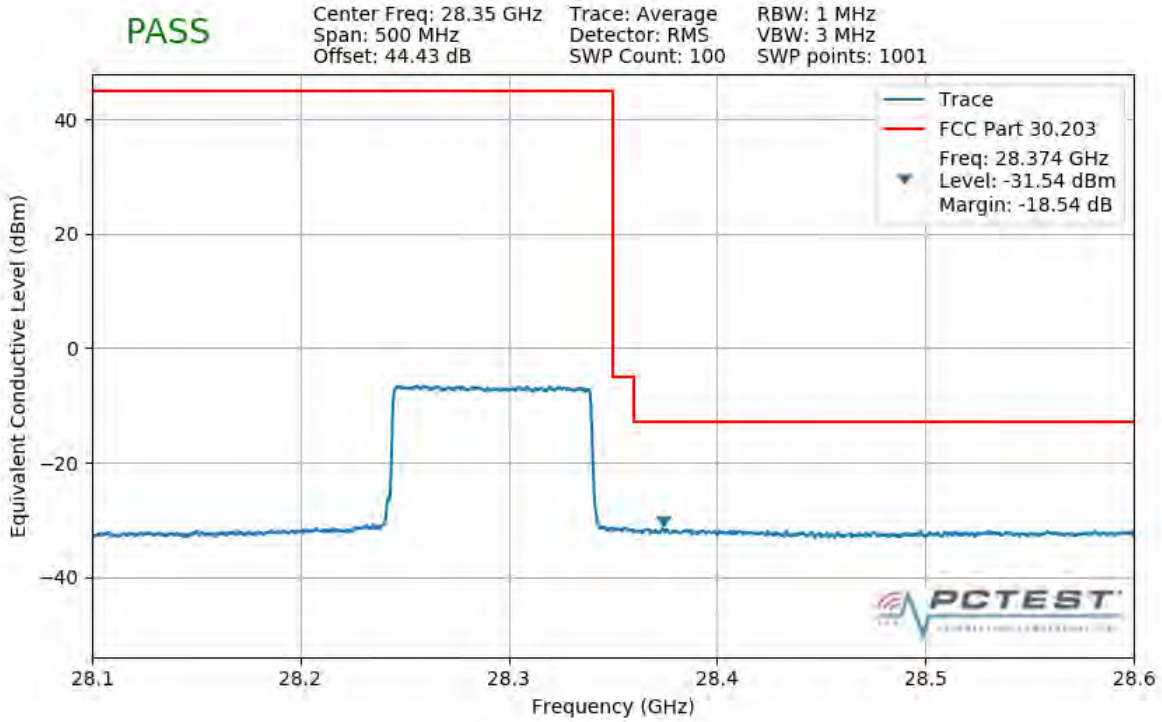


Plot 7-427. Upper Band Edge Plot (1CC 50MHz 16QAM 1 RB)

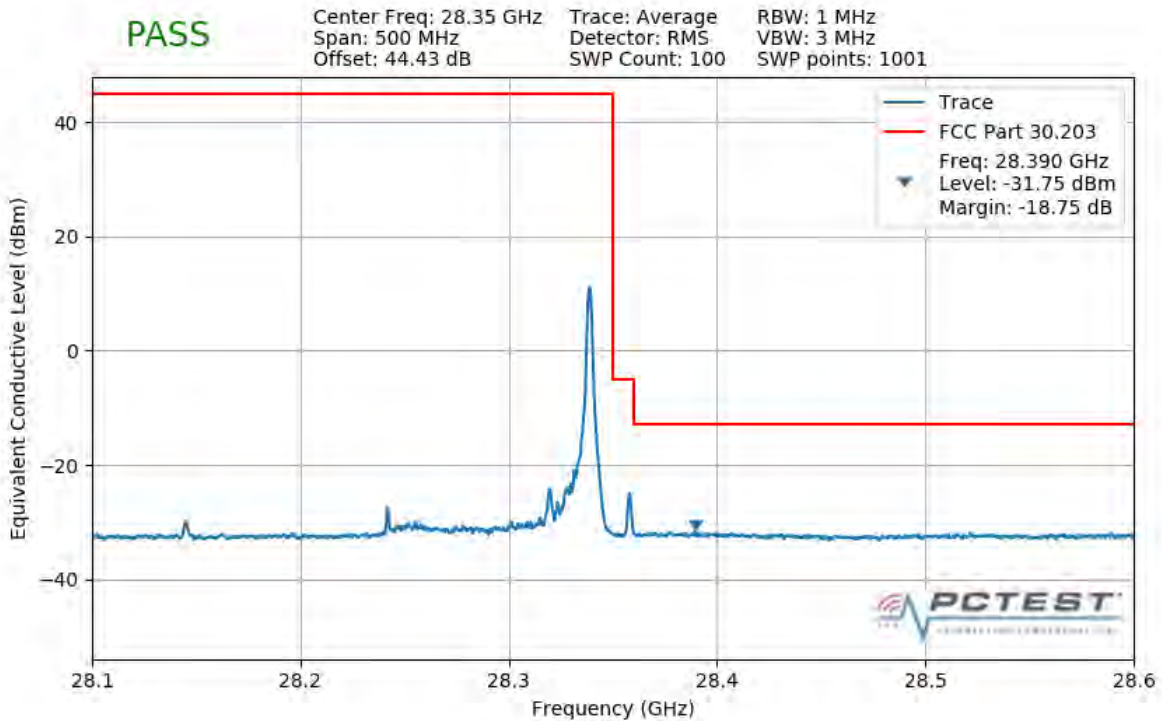


Plot 7-428. Upper Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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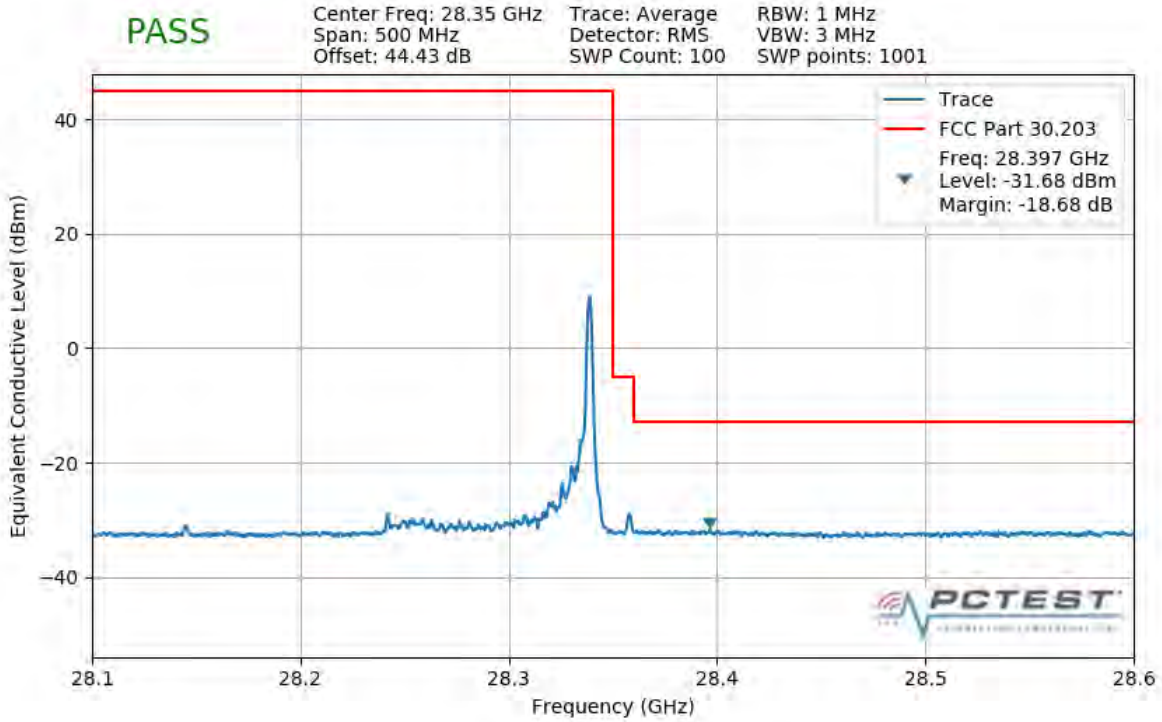


Plot 7-429. Upper Band Edge Plot (1CC 100MHz QPSK Full RB)

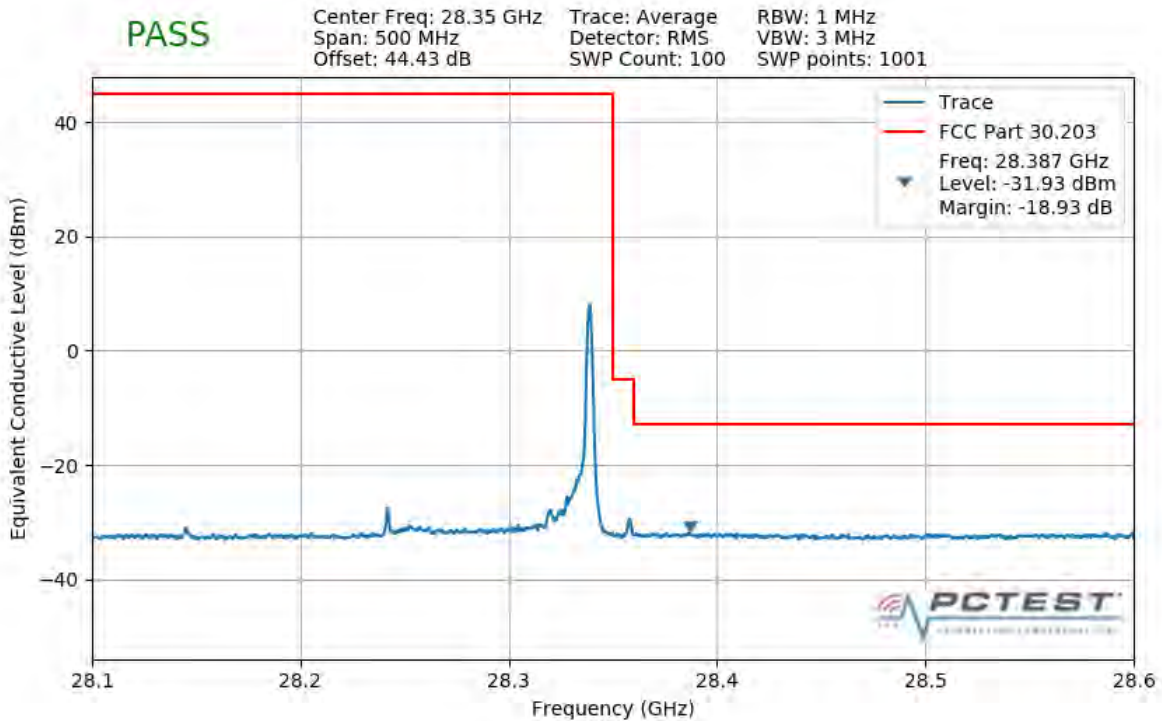


Plot 7-430. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 262 of 337

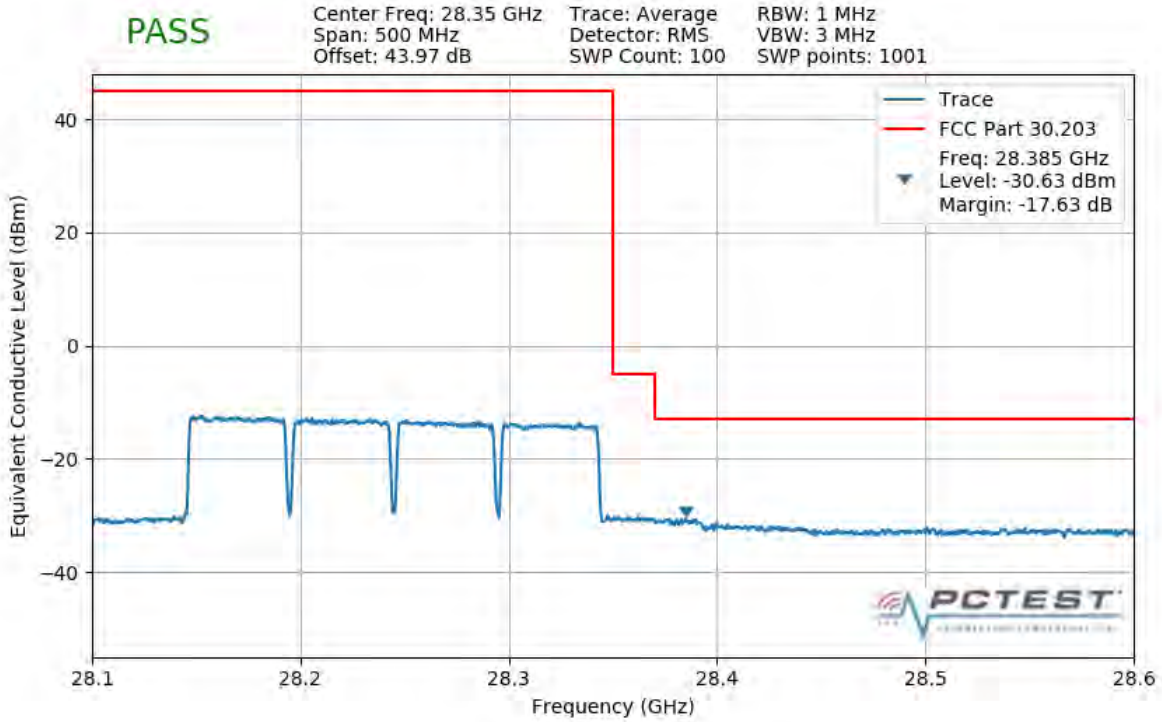


Plot 7-431. Upper Band Edge Plot (1CC 100MHz 16QAM 1 RB)

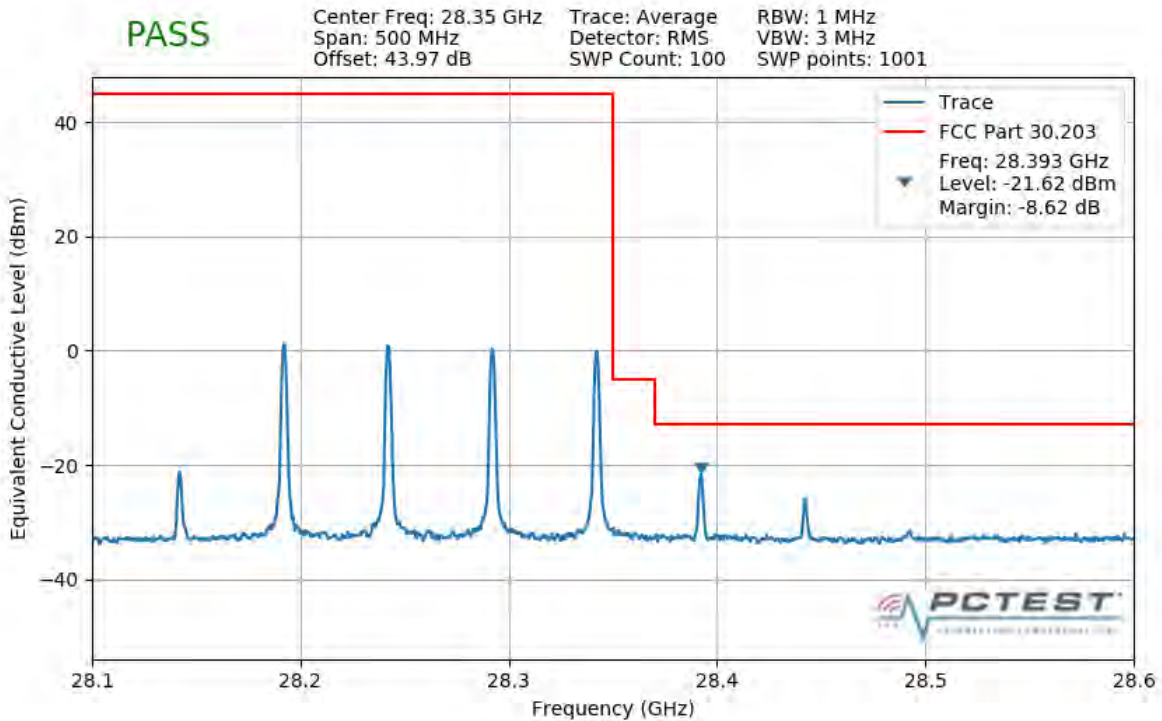


Plot 7-432. Upper Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 263 of 337

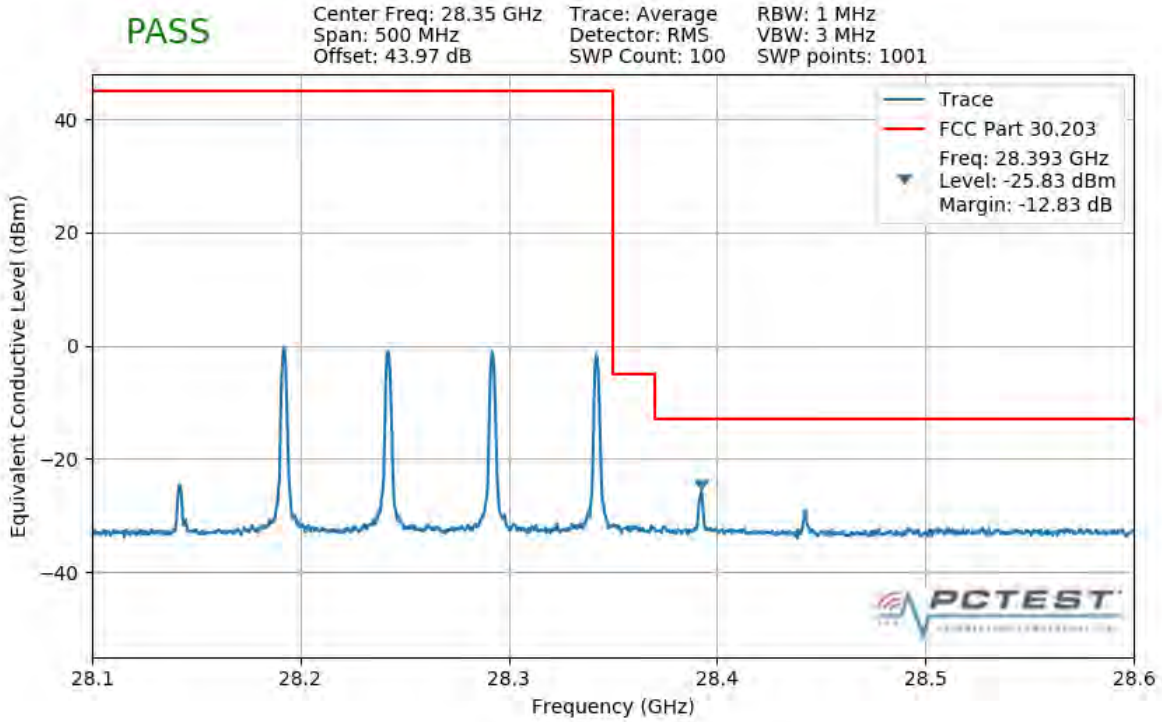


Plot 7-433. Upper Band Edge Plot (4CC 200MHz QPSK Full RB)

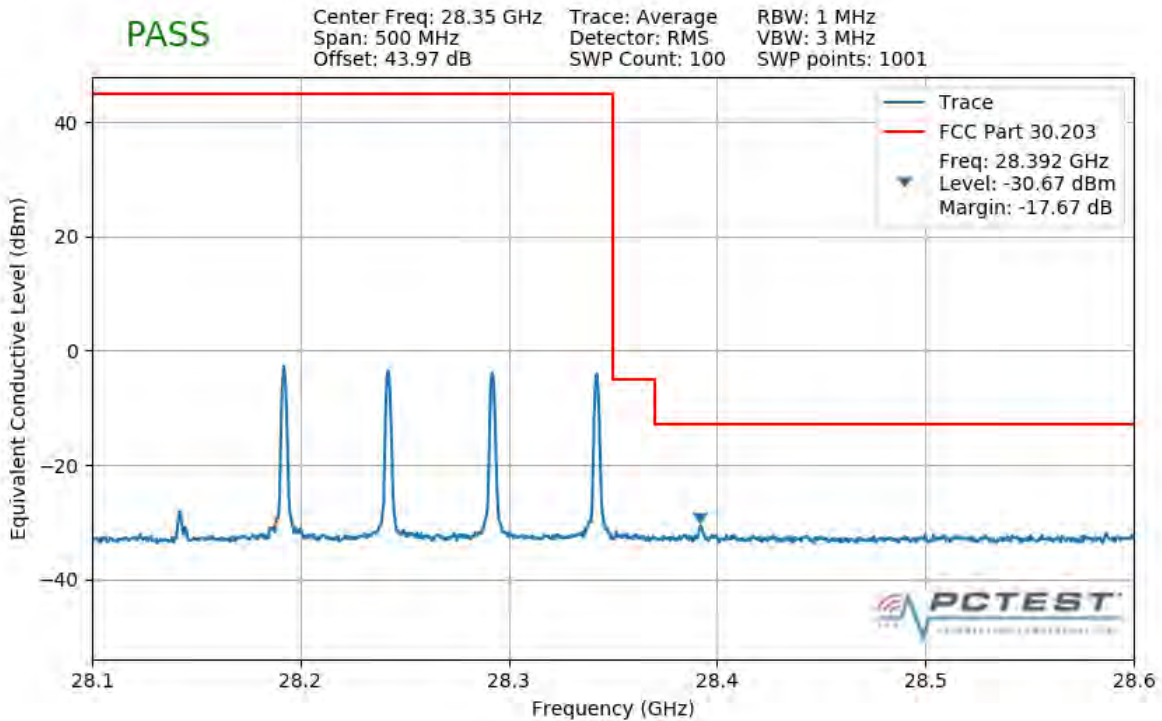


Plot 7-434. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 264 of 337

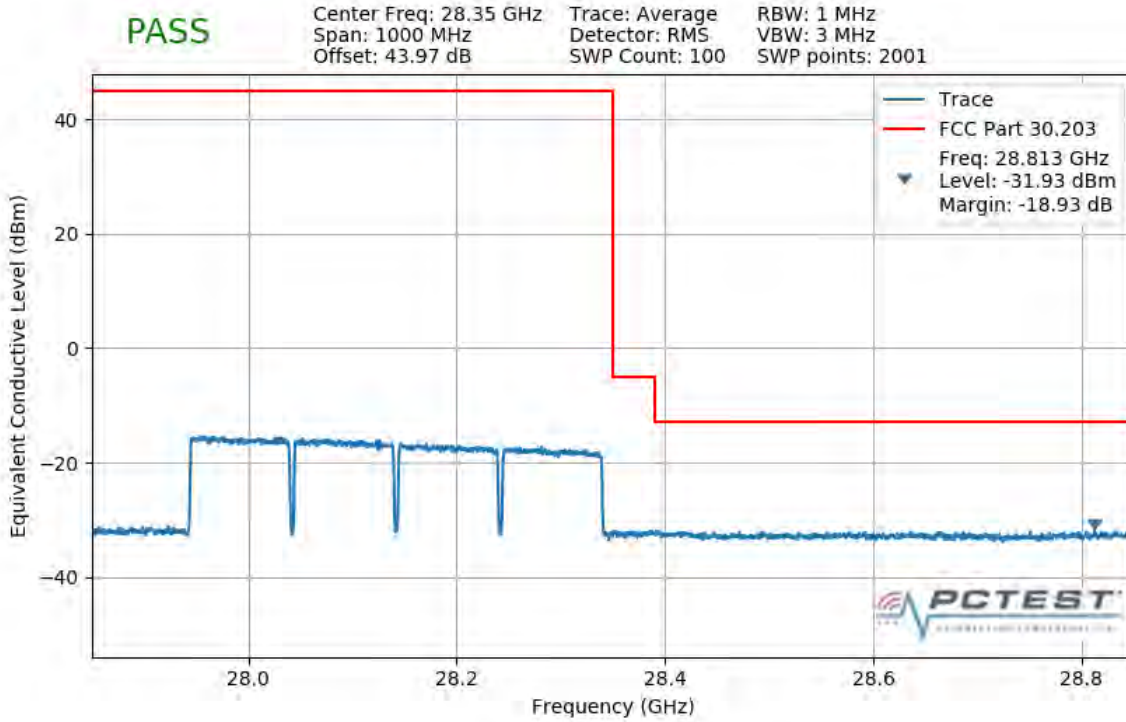


Plot 7-435. Upper Band Edge Plot (4CC 200MHz 16QAM 1 RB)

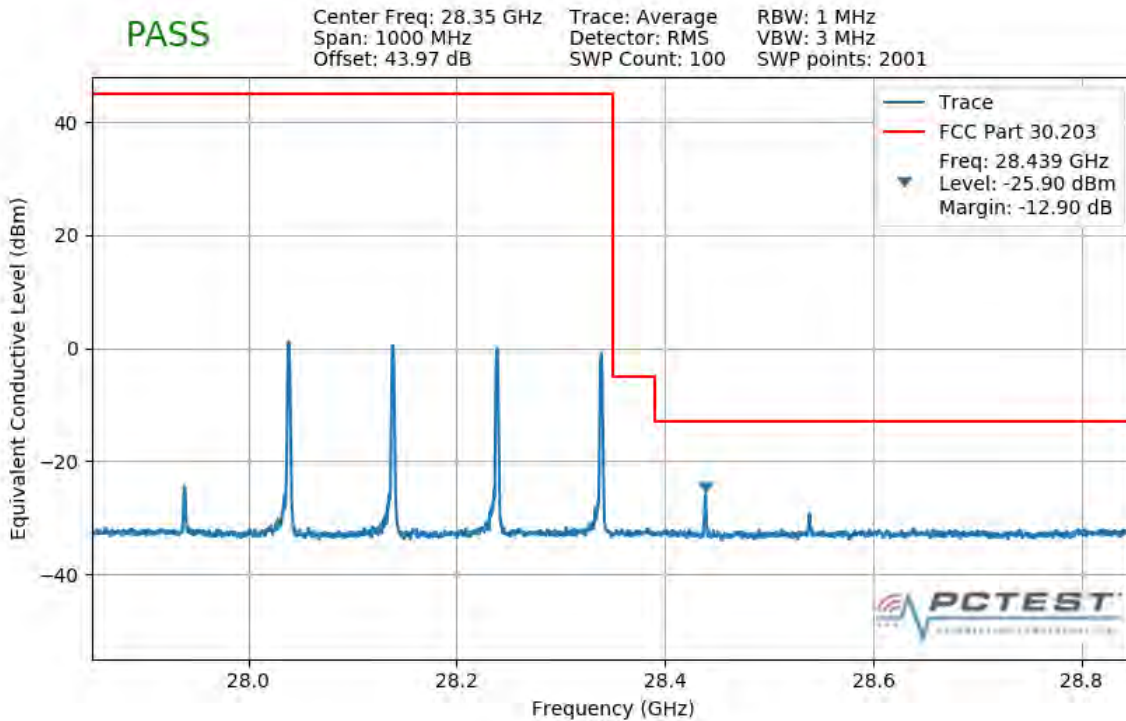


Plot 7-436. Upper Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 265 of 337

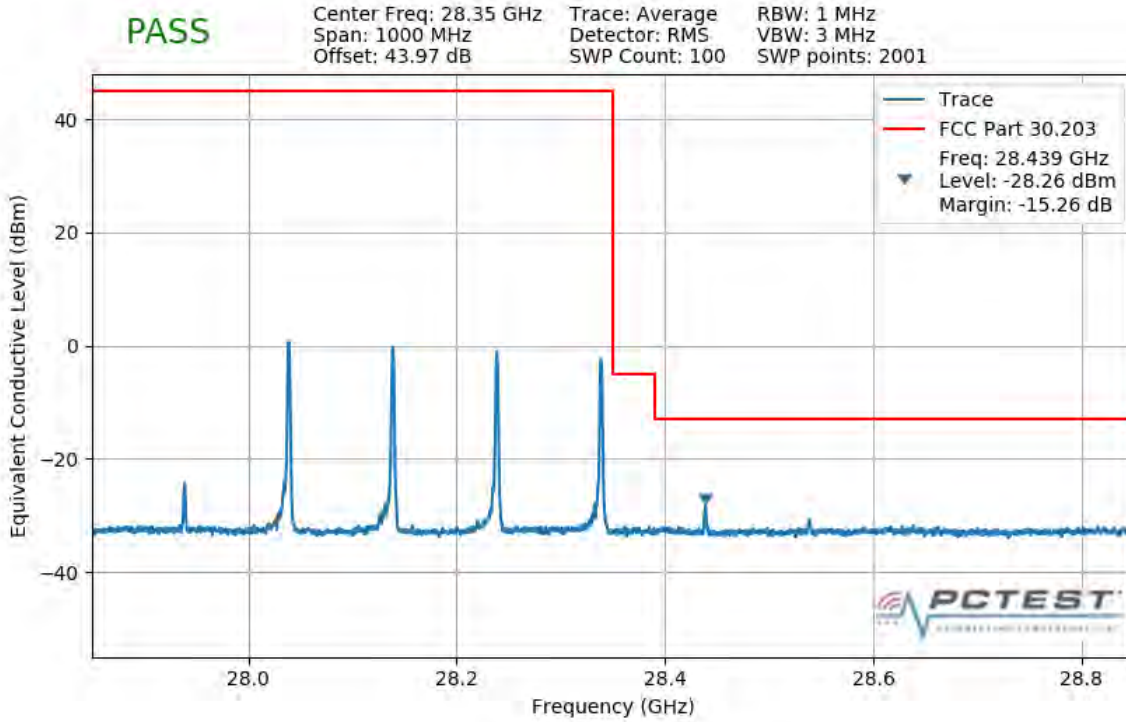


Plot 7-437. Upper Band Edge Plot (4CC 400MHz QPSK Full RB)

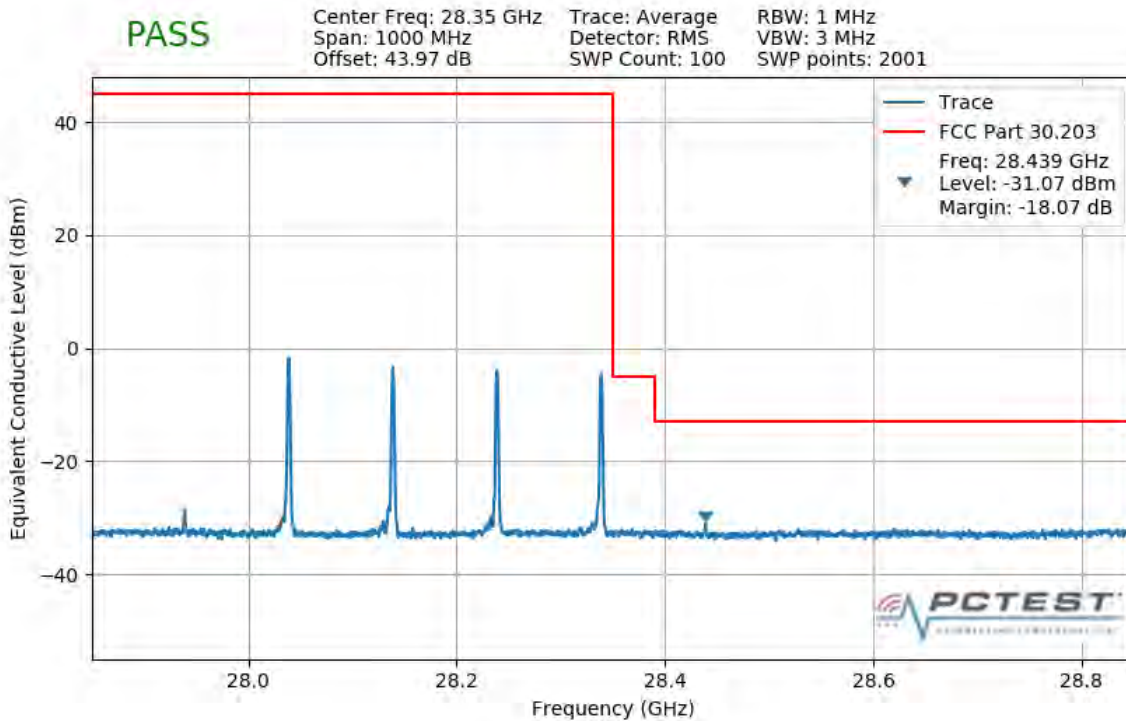


Plot 7-438. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 266 of 337



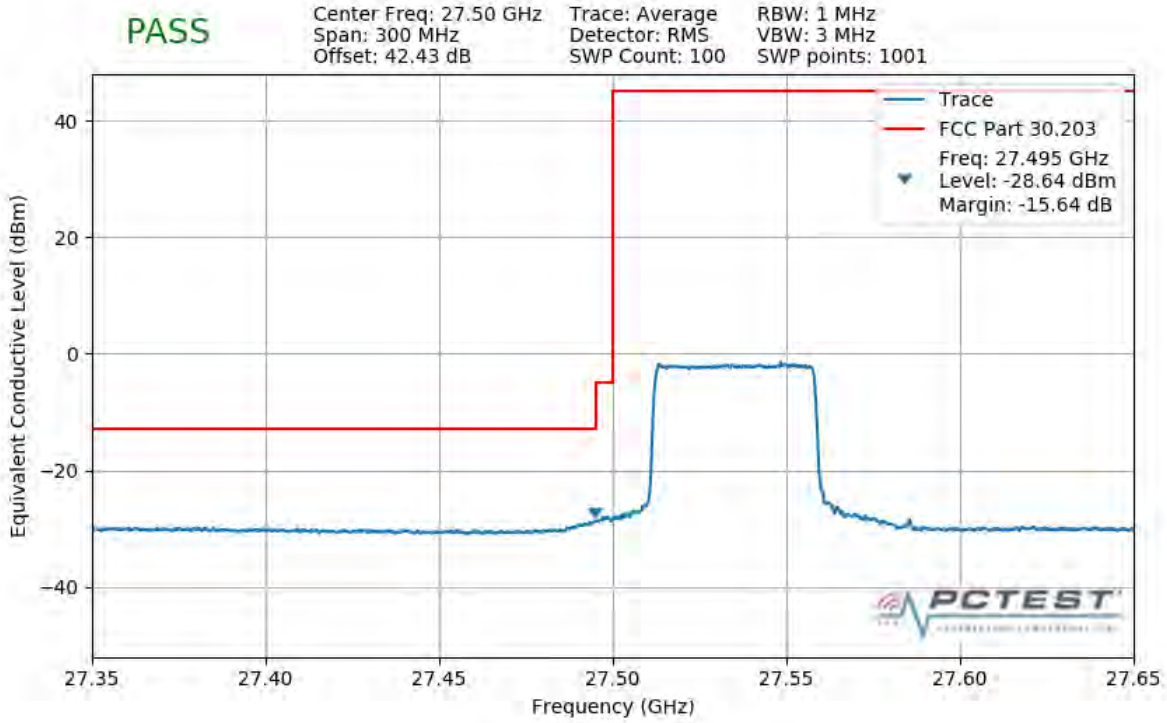
Plot 7-439. Upper Band Edge Plot (4CC 400MHz 16QAM 1 RB)



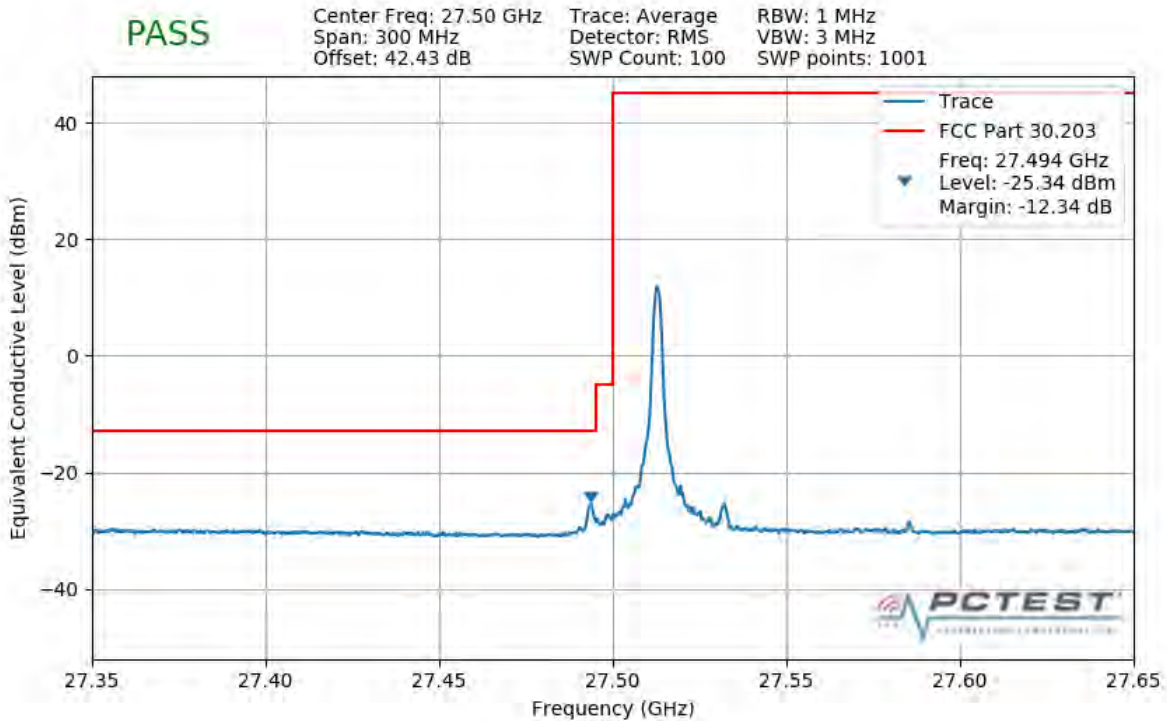
Plot 7-440. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 267 of 337

MIMO

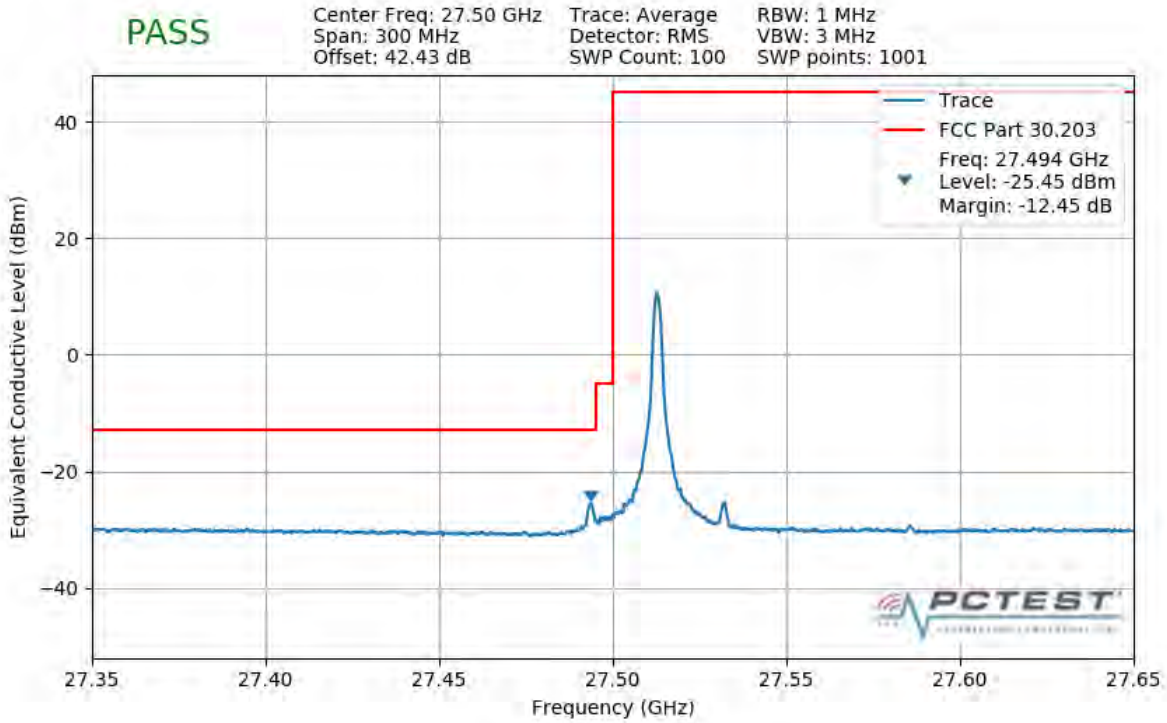


Plot 7-441. Lower Band Edge Plot (1CC 50MHz QPSK Full RB)

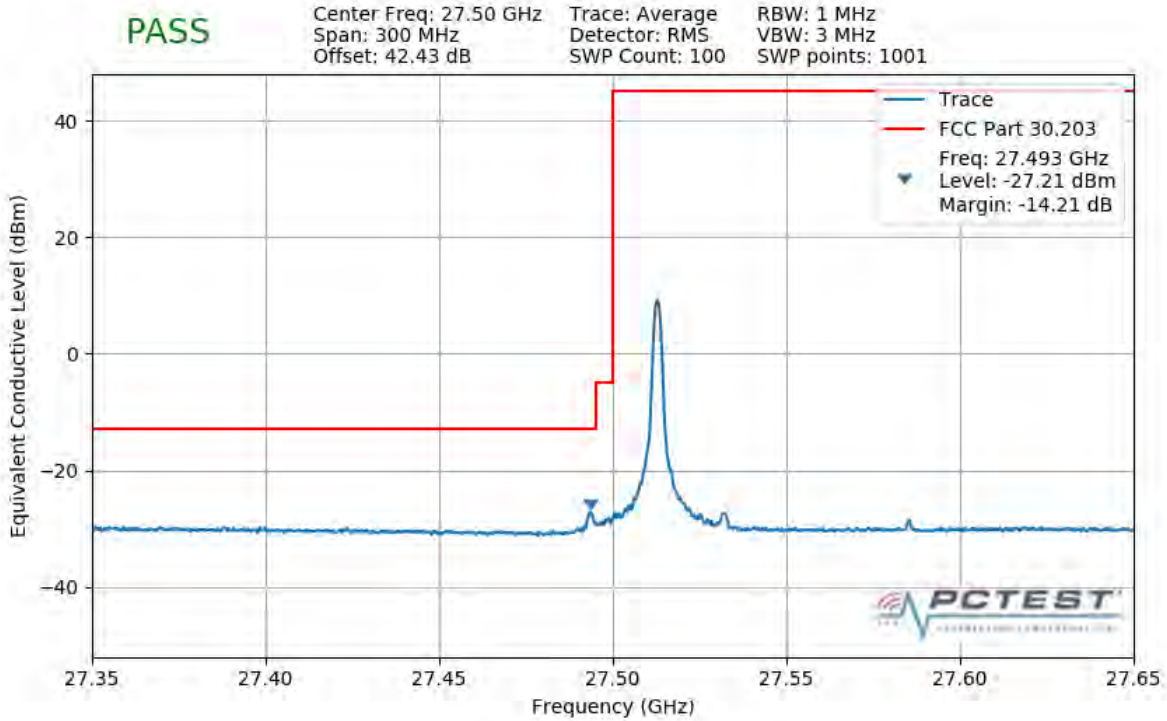


Plot 7-442. Lower Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 268 of 337

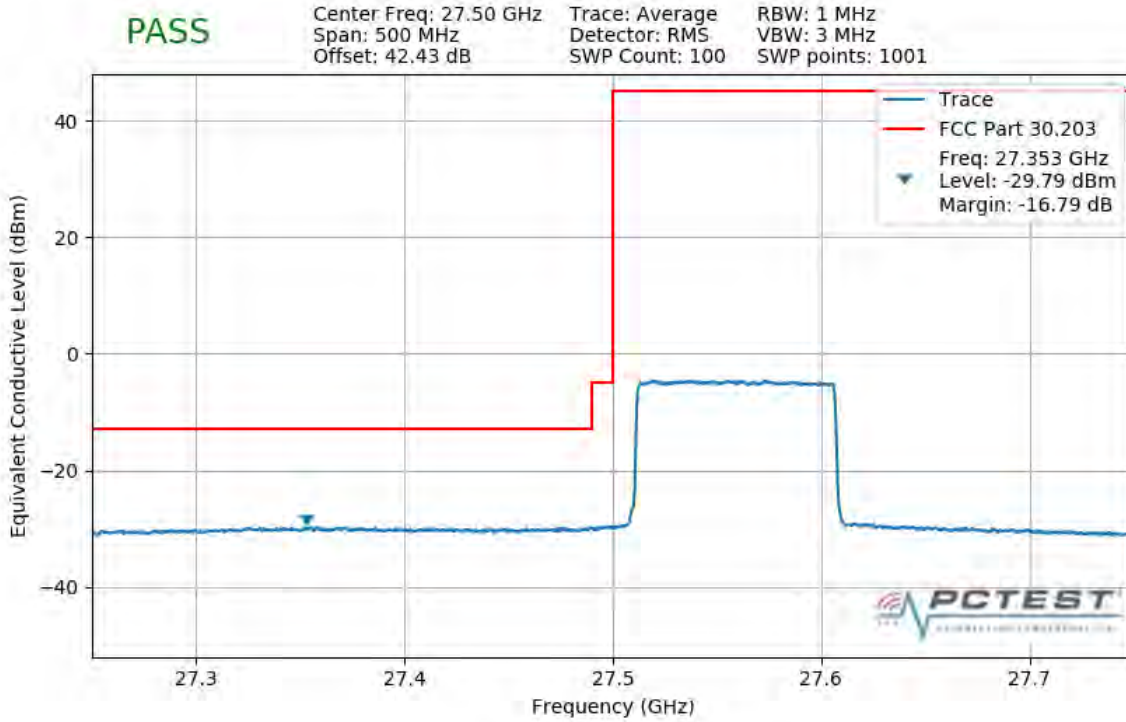


Plot 7-443. Lower Band Edge Plot (1CC 50MHz 16QAM 1 RB)

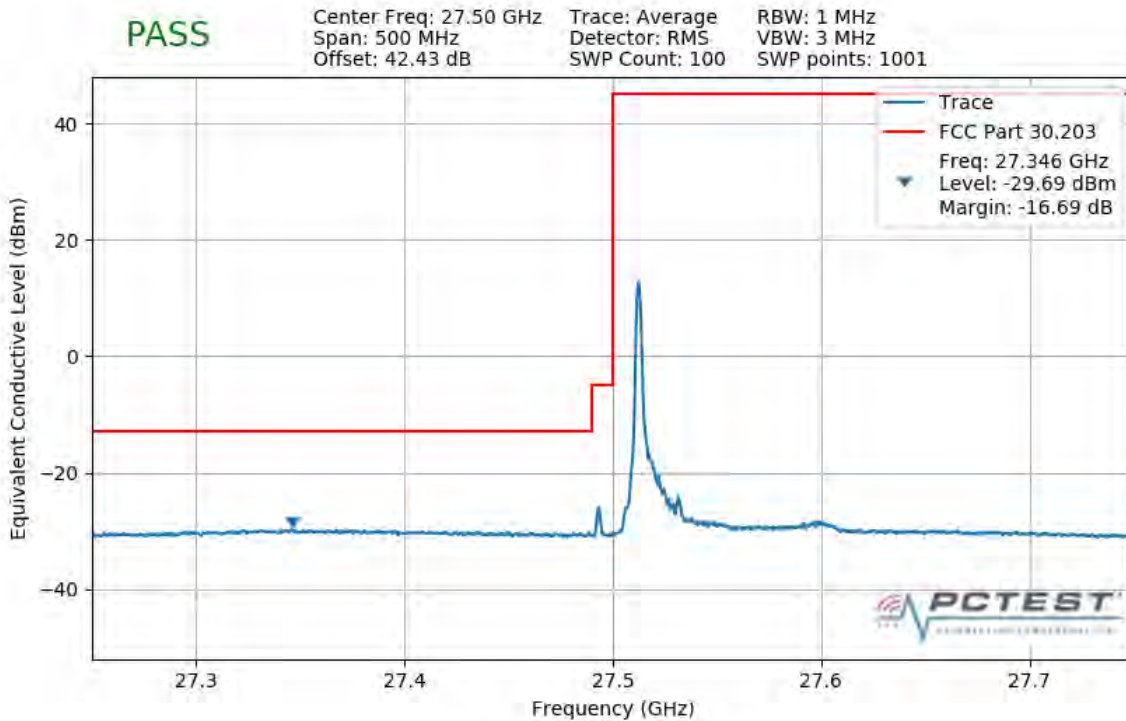


Plot 7-444. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 269 of 337

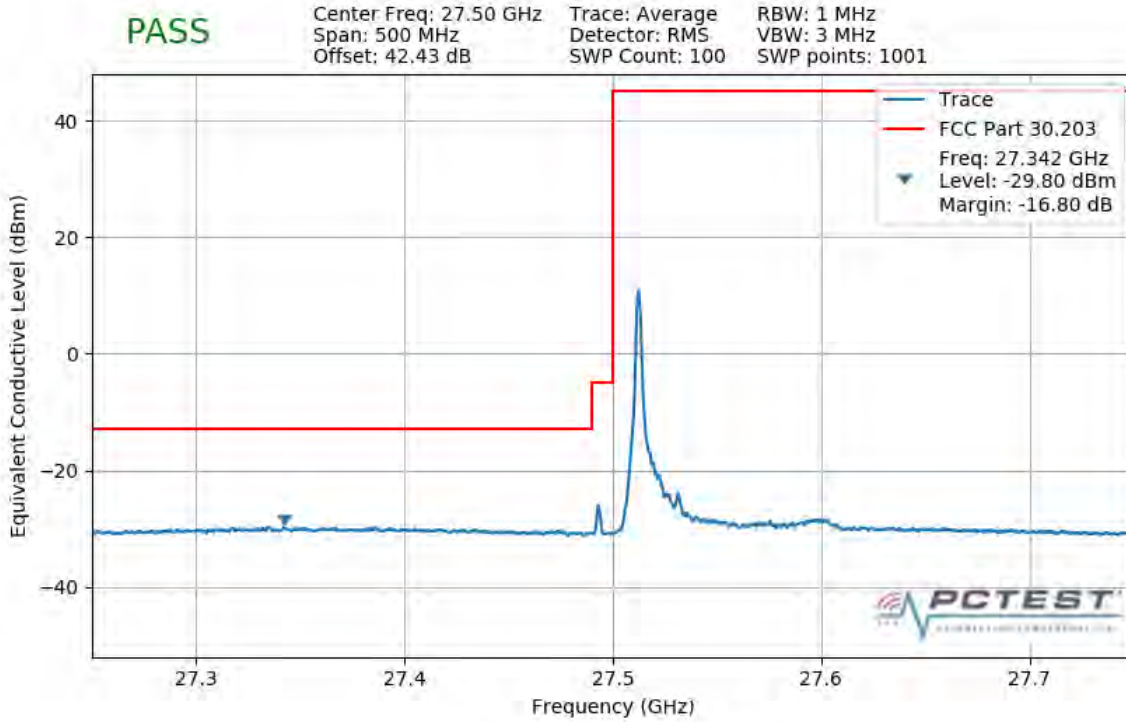


Plot 7-445. Lower Band Edge Plot (1CC 100MHz QPSK Full RB)

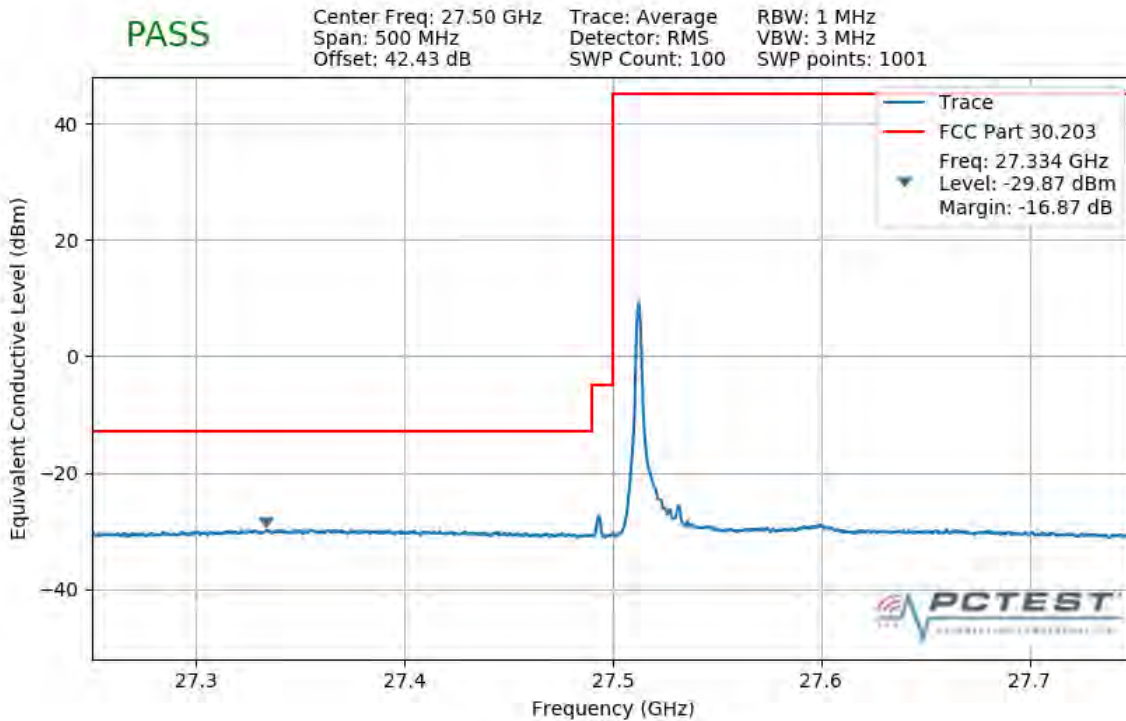


Plot 7-446. Lower Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 270 of 337

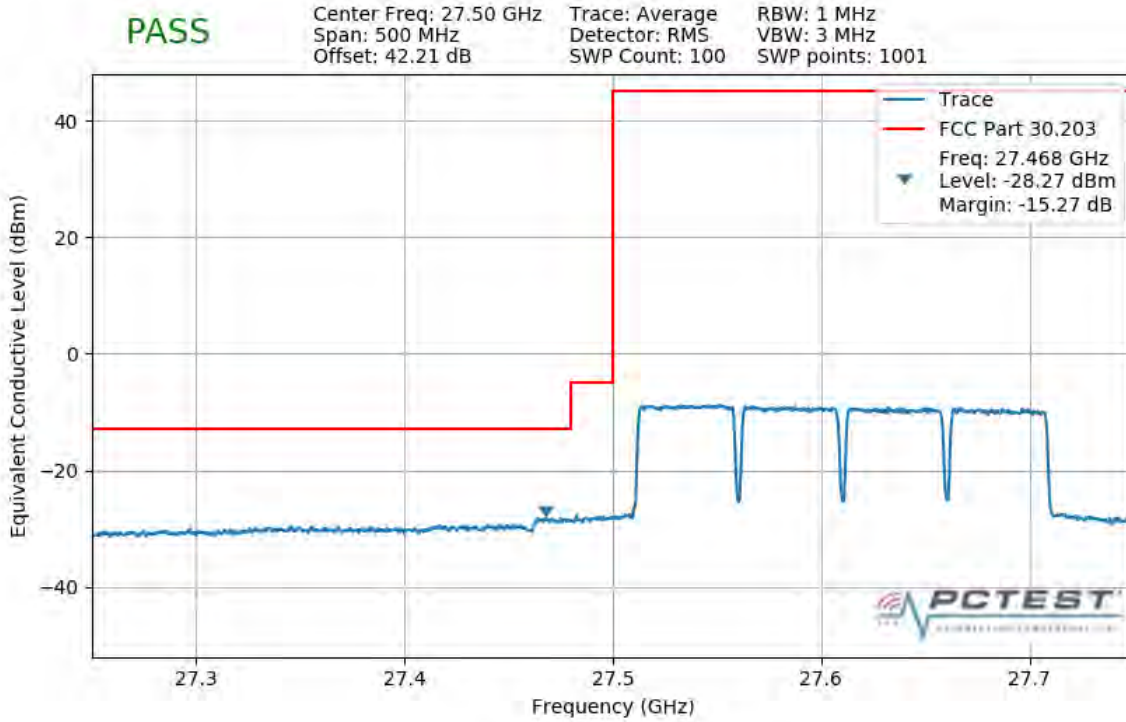


Plot 7-447. Lower Band Edge Plot (1CC 100MHz 16QAM 1 RB)

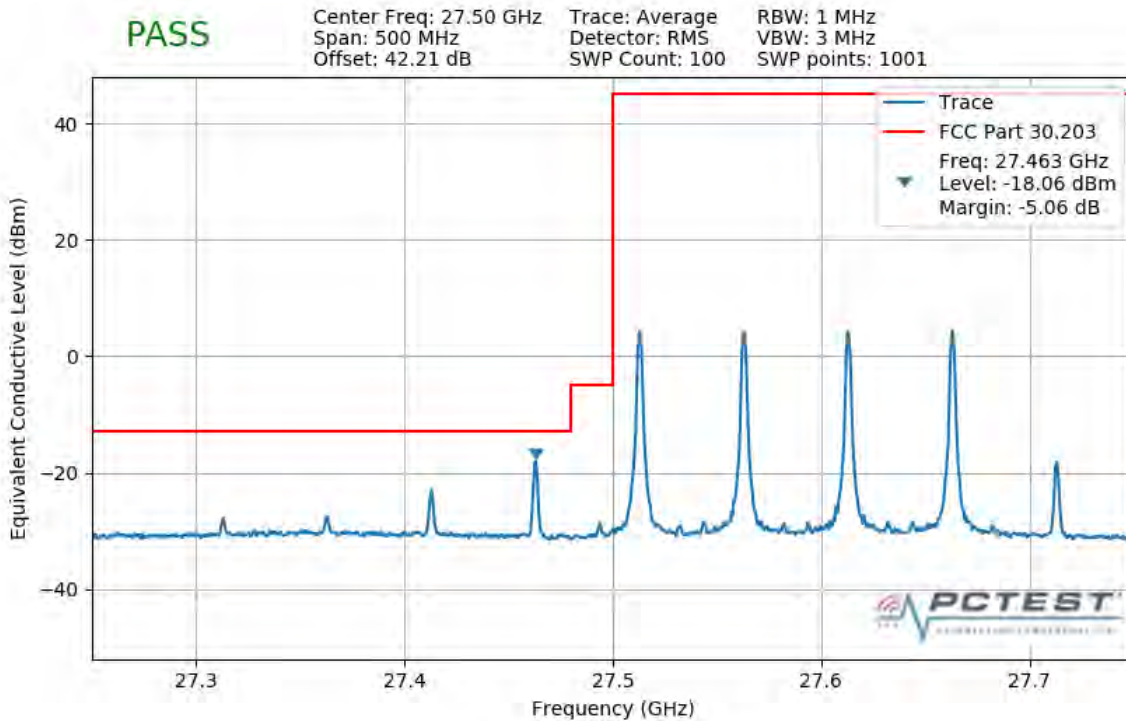


Plot 7-448. Lower Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 271 of 337

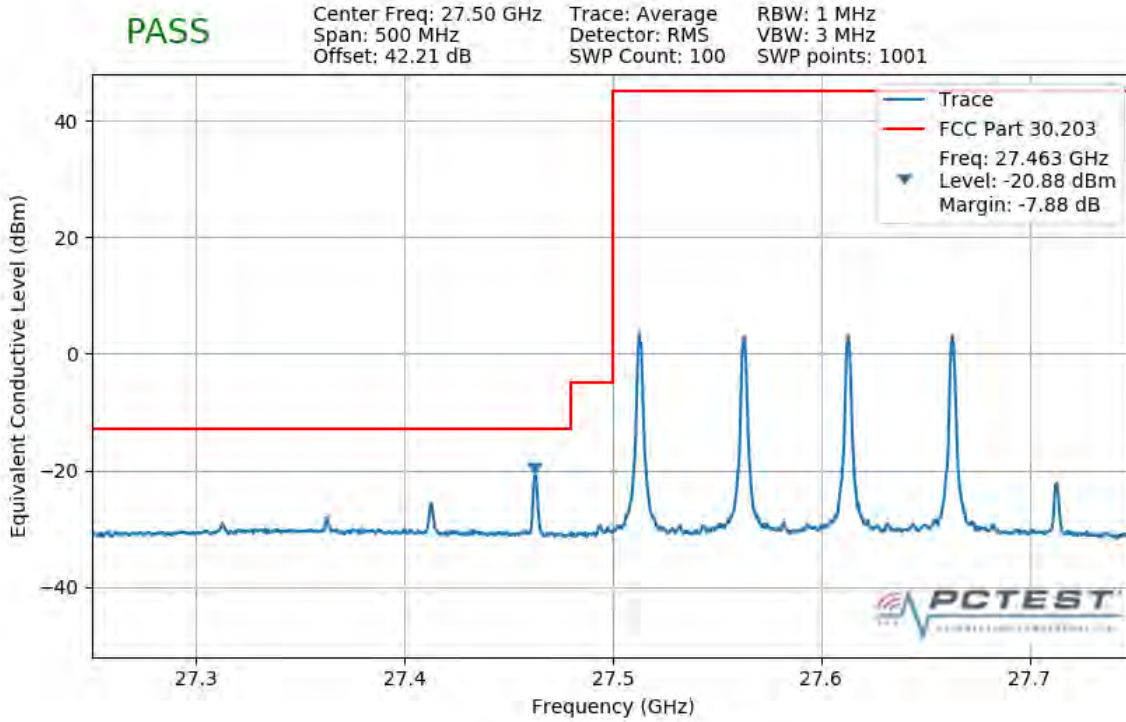


Plot 7-449. Lower Band Edge Plot (4CC 200MHz QPSK Full RB)

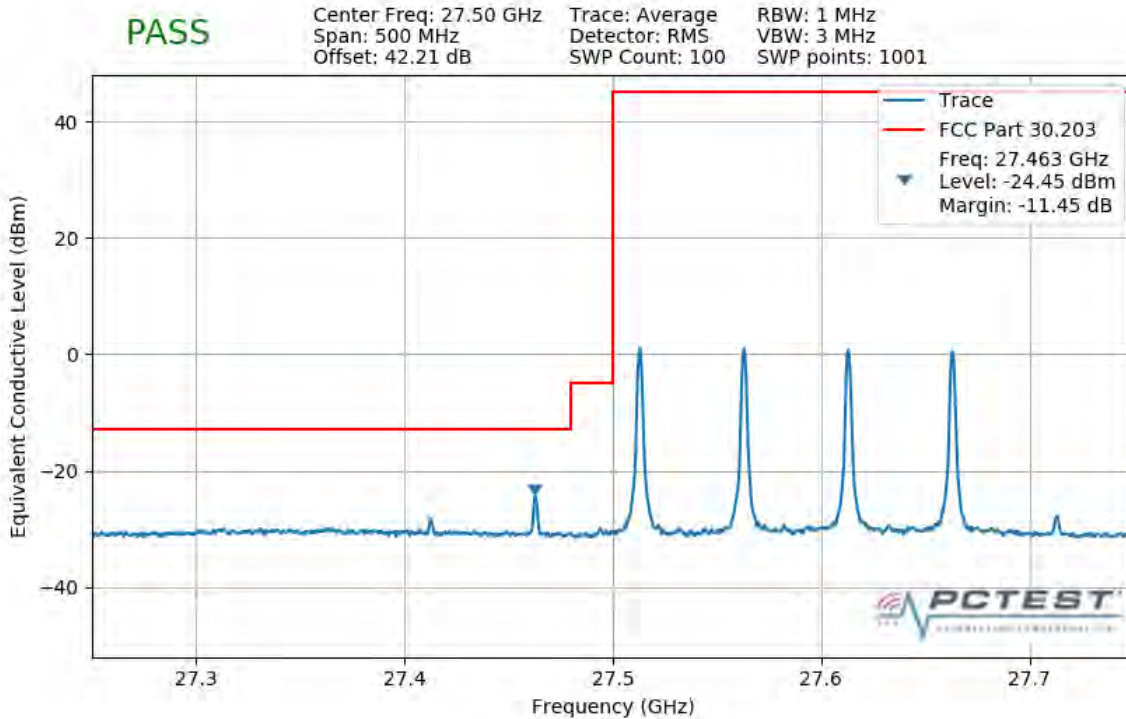


Plot 7-450. Lower Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 272 of 337

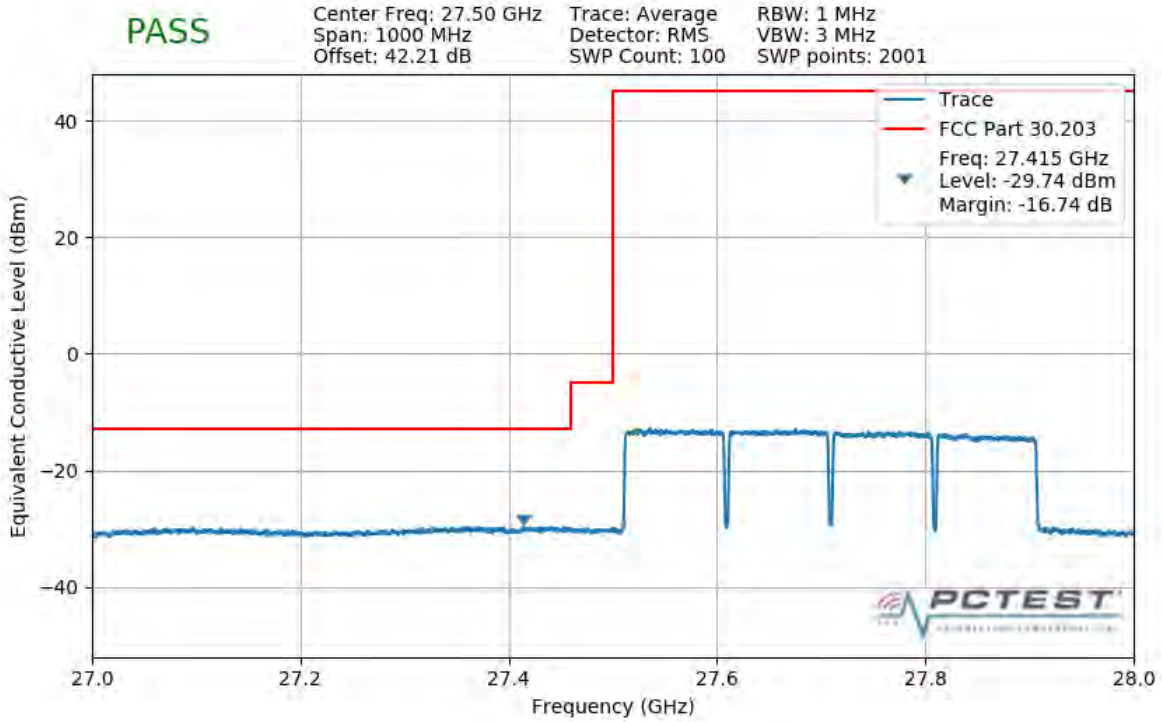


Plot 7-451. Lower Band Edge Plot (4CC 200MHz 16QAM 1 RB)

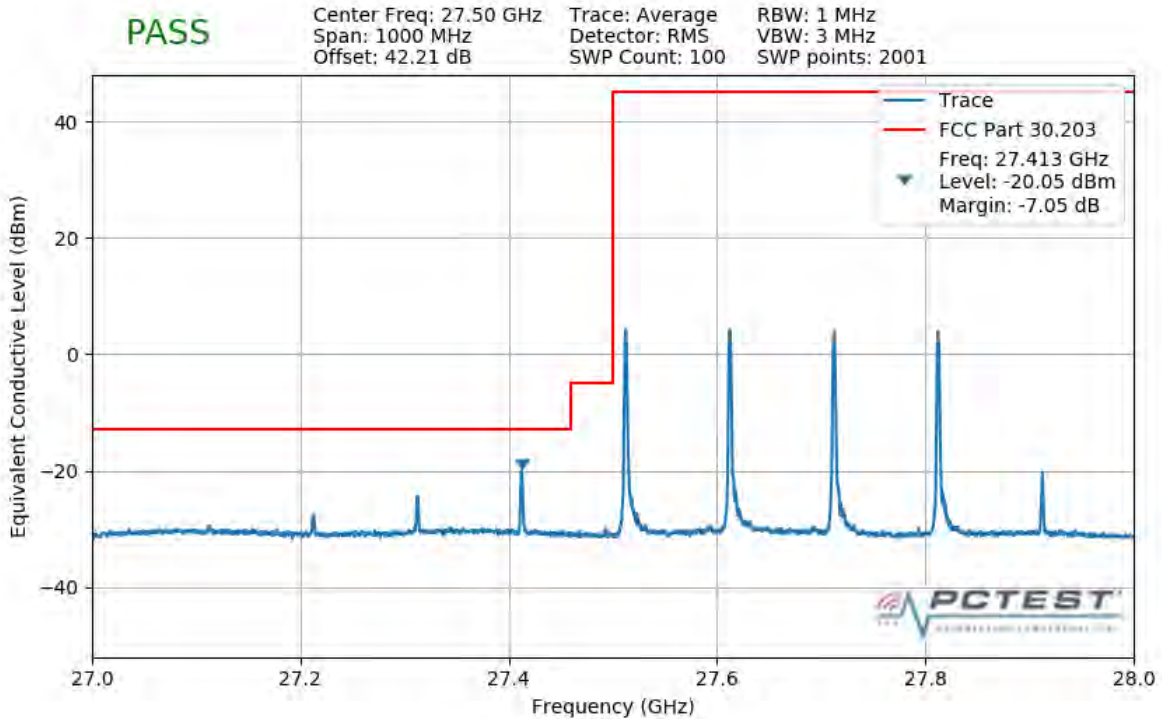


Plot 7-452. Lower Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 273 of 337

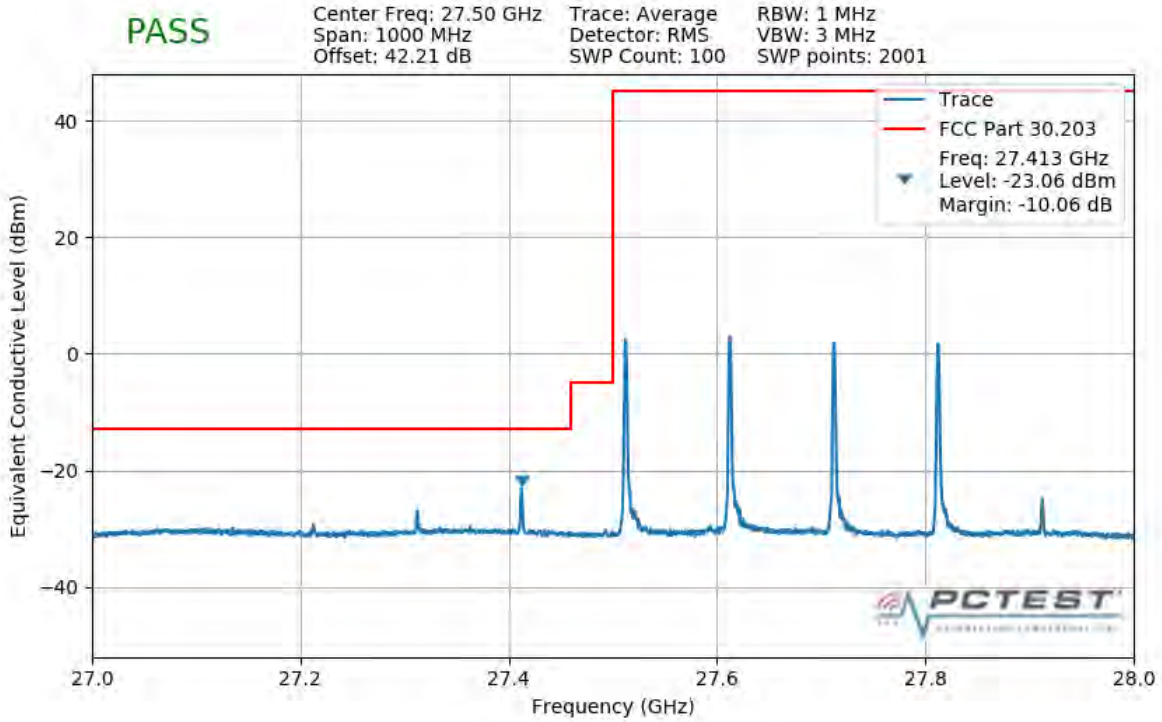


Plot 7-453. Lower Band Edge Plot (4CC 400MHz QPSK Full RB)

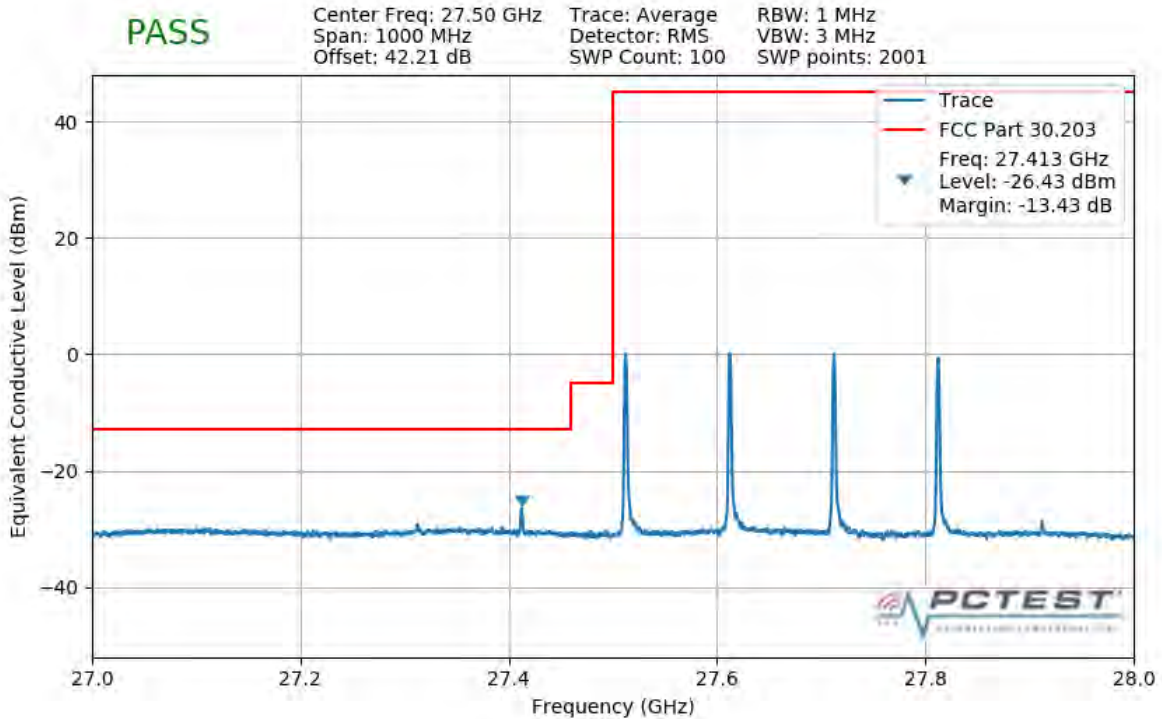


Plot 7-454. Lower Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 274 of 337

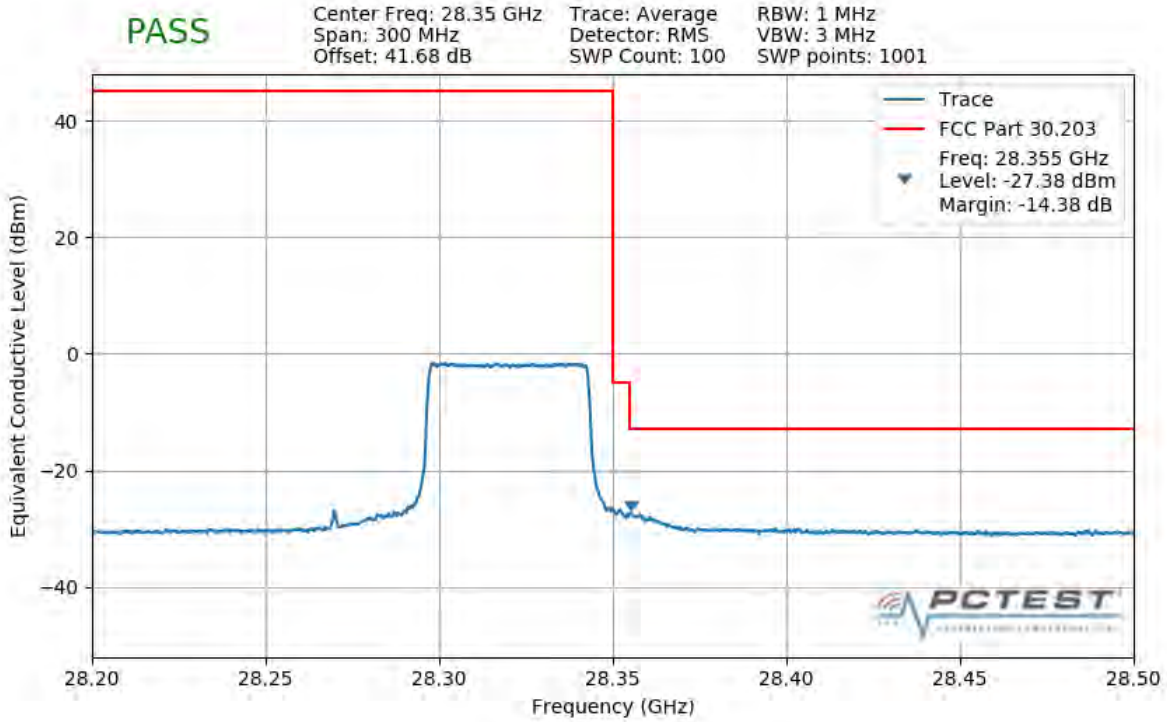


Plot 7-455. Lower Band Edge Plot (4CC 400MHz 16QAM 1 RB)

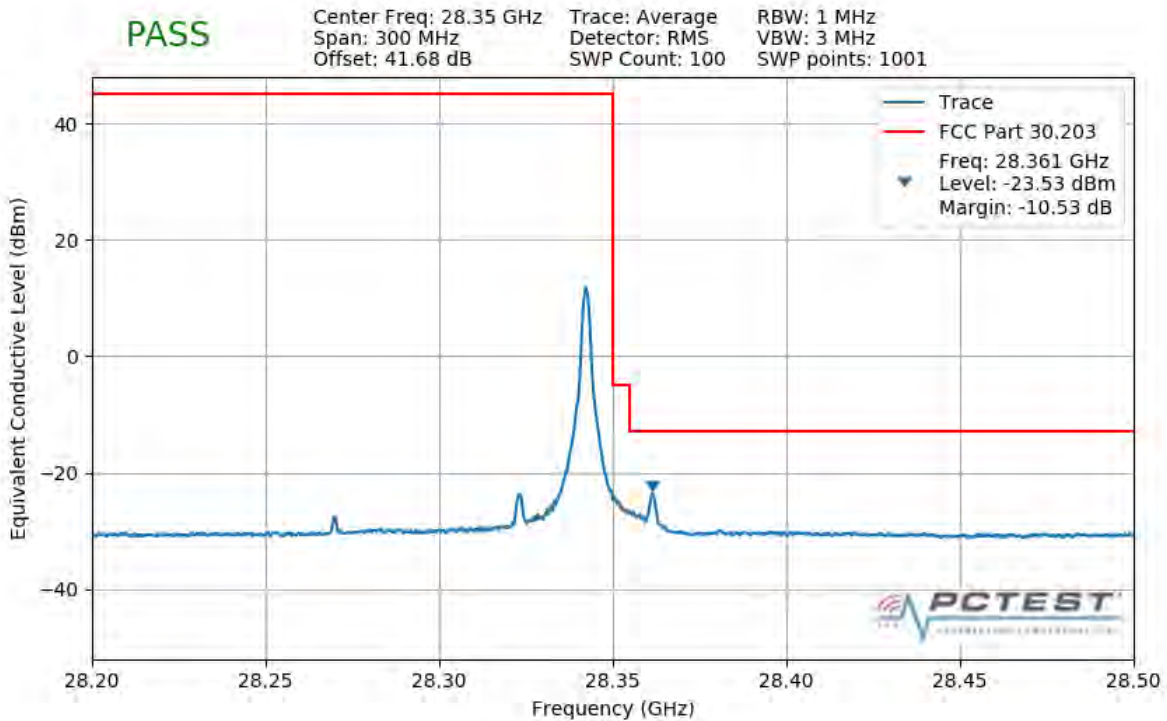


Plot 7-456. Lower Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 275 of 337

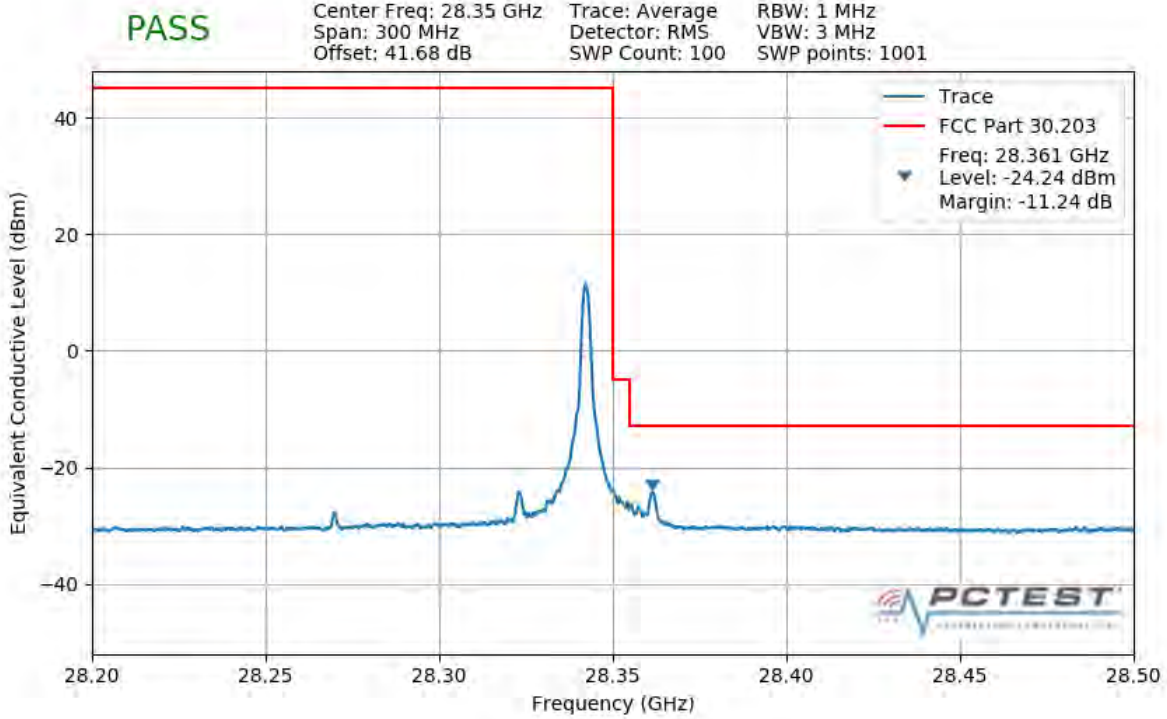


Plot 7-457. Upper Band Edge Plot (1CC 50MHz QPSK Full RB)

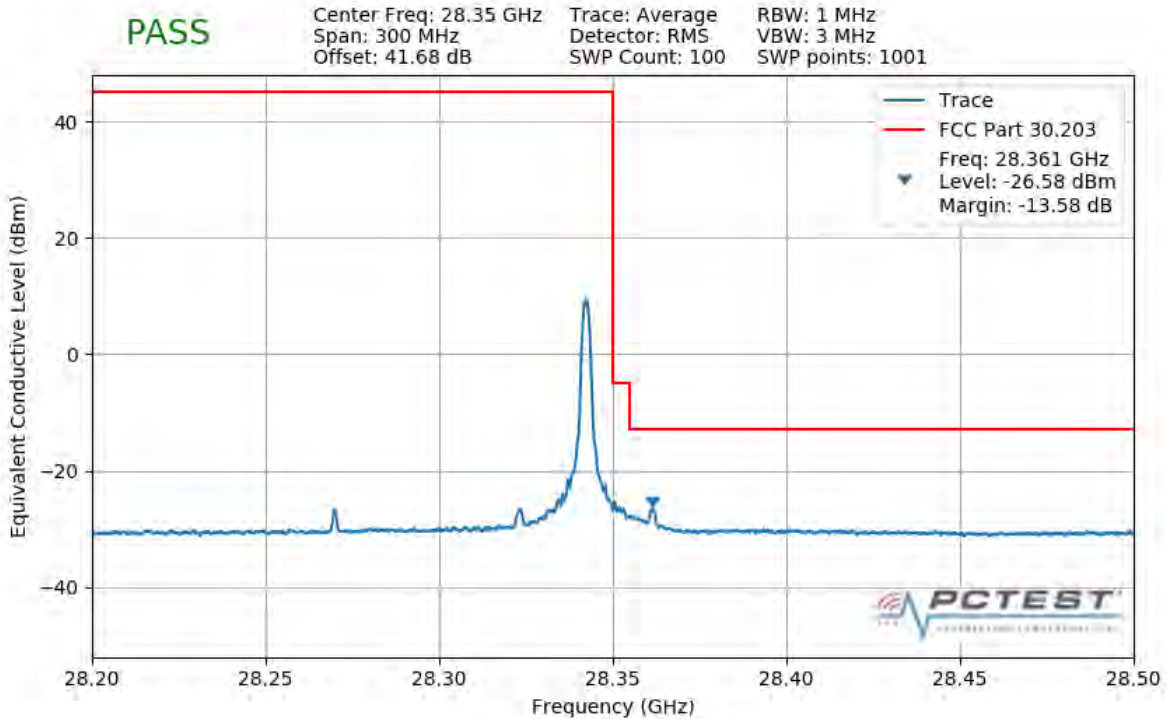


Plot 7-458. Upper Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 276 of 337

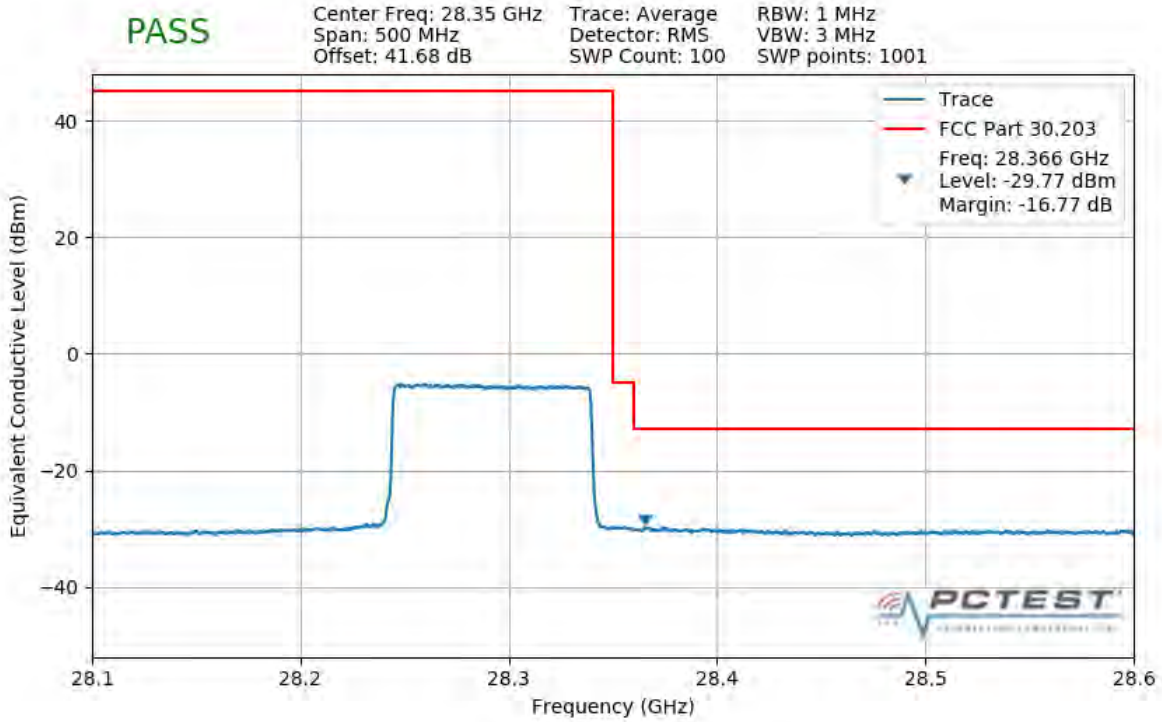


Plot 7-459. Upper Band Edge Plot (1CC 50MHz 16QAM 1 RB)

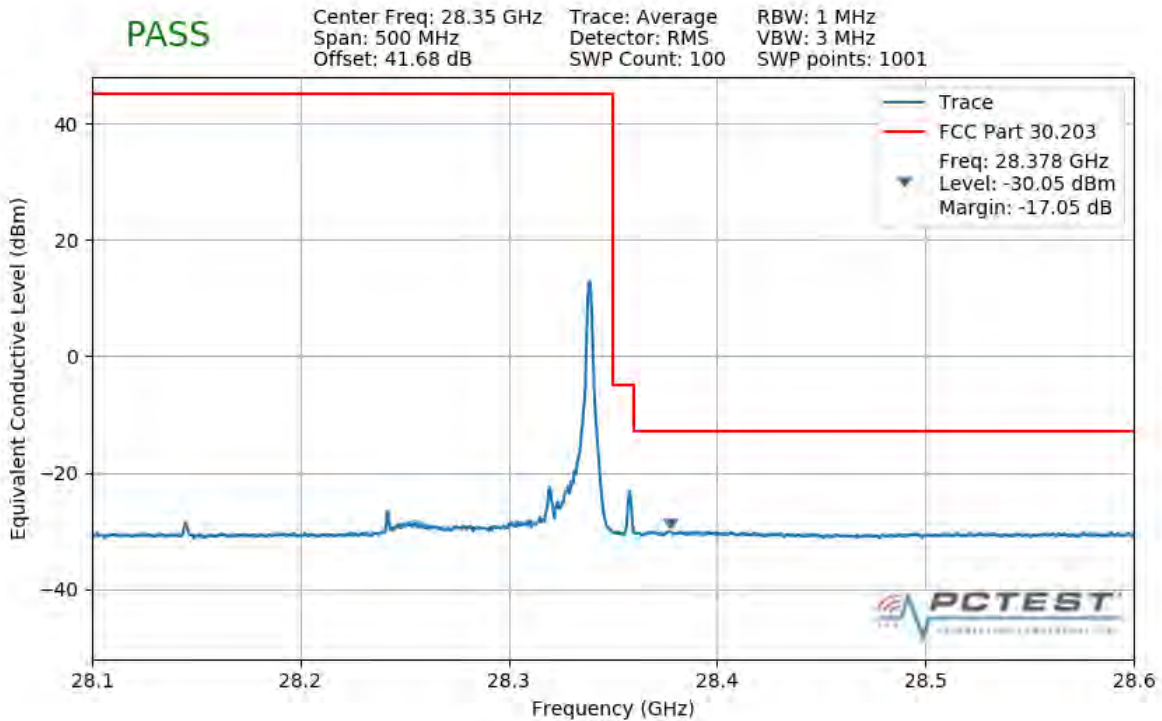


Plot 7-460. Upper Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 277 of 337

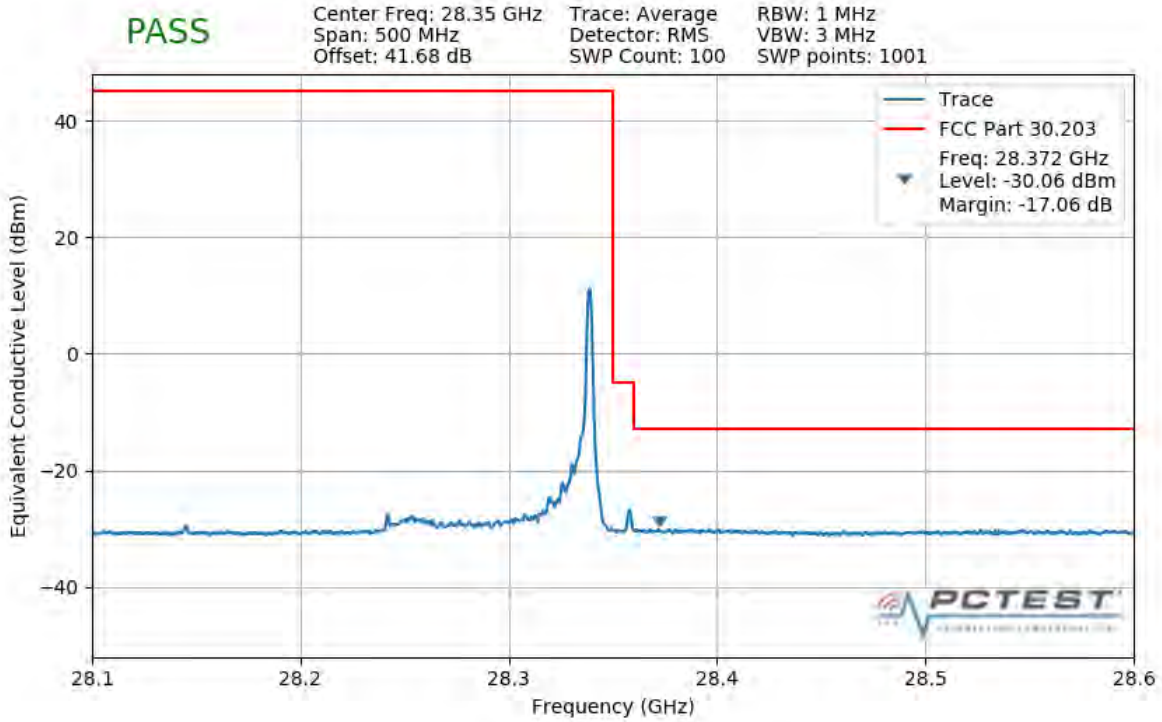


Plot 7-461. Upper Band Edge Plot (1CC 100MHz QPSK Full RB)

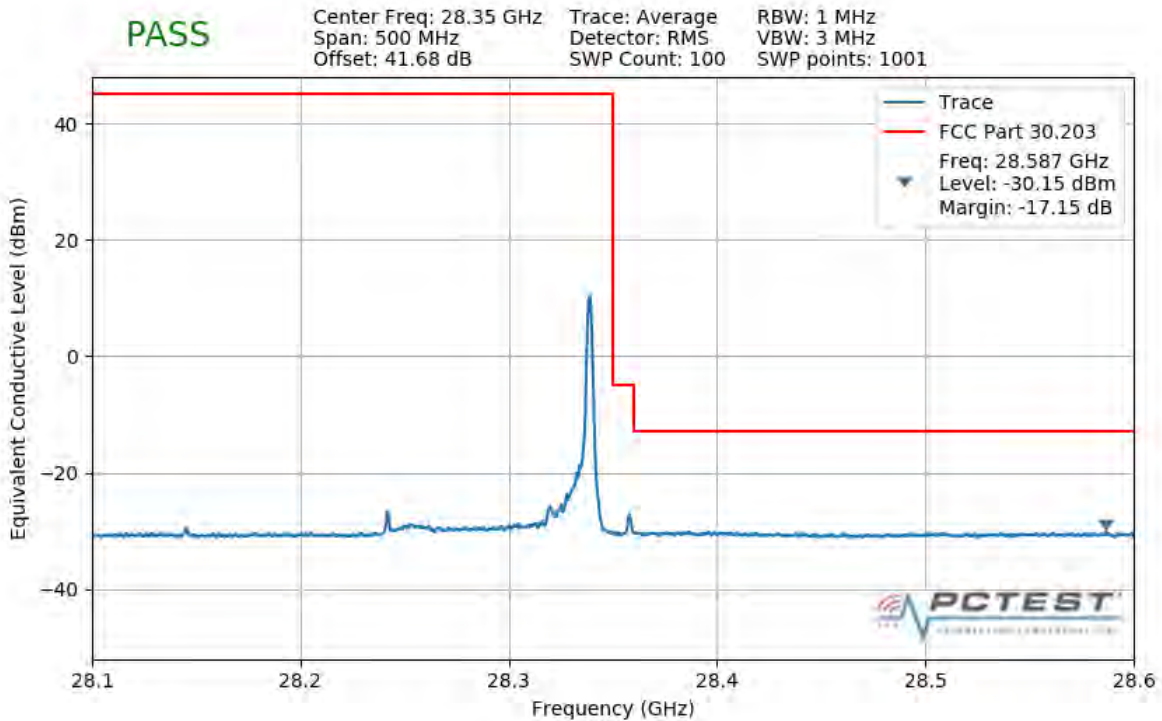


Plot 7-462. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 278 of 337

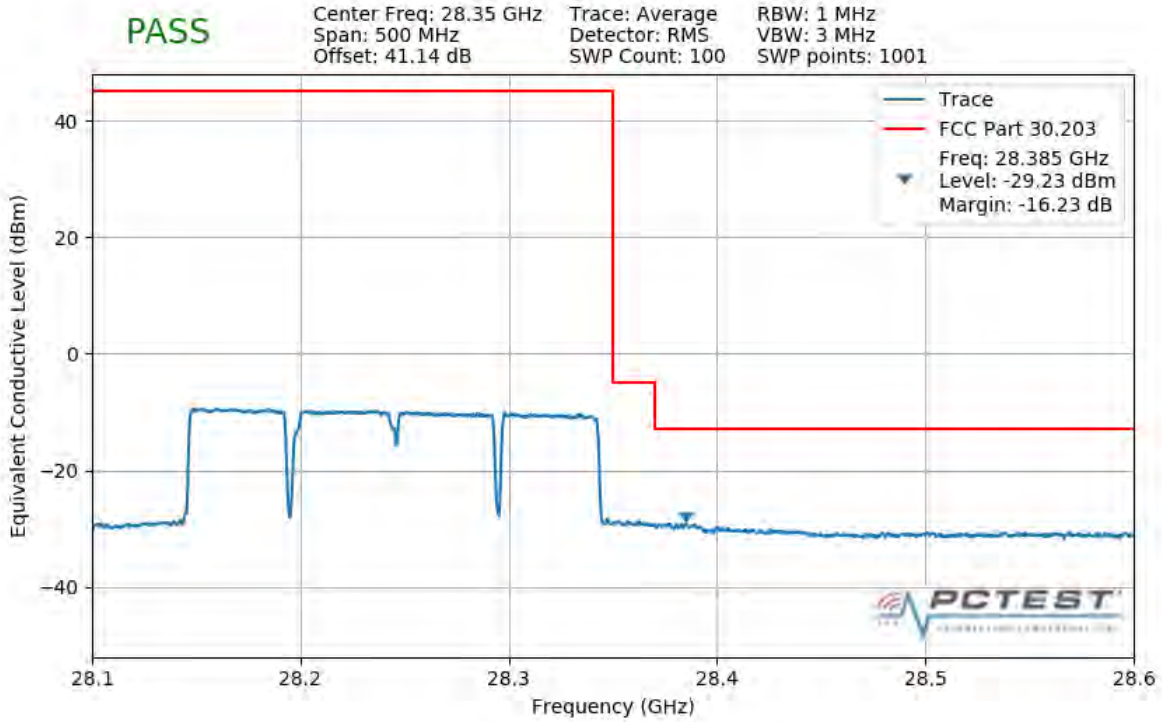


Plot 7-463. Upper Band Edge Plot (1CC 100MHz 16QAM 1 RB)

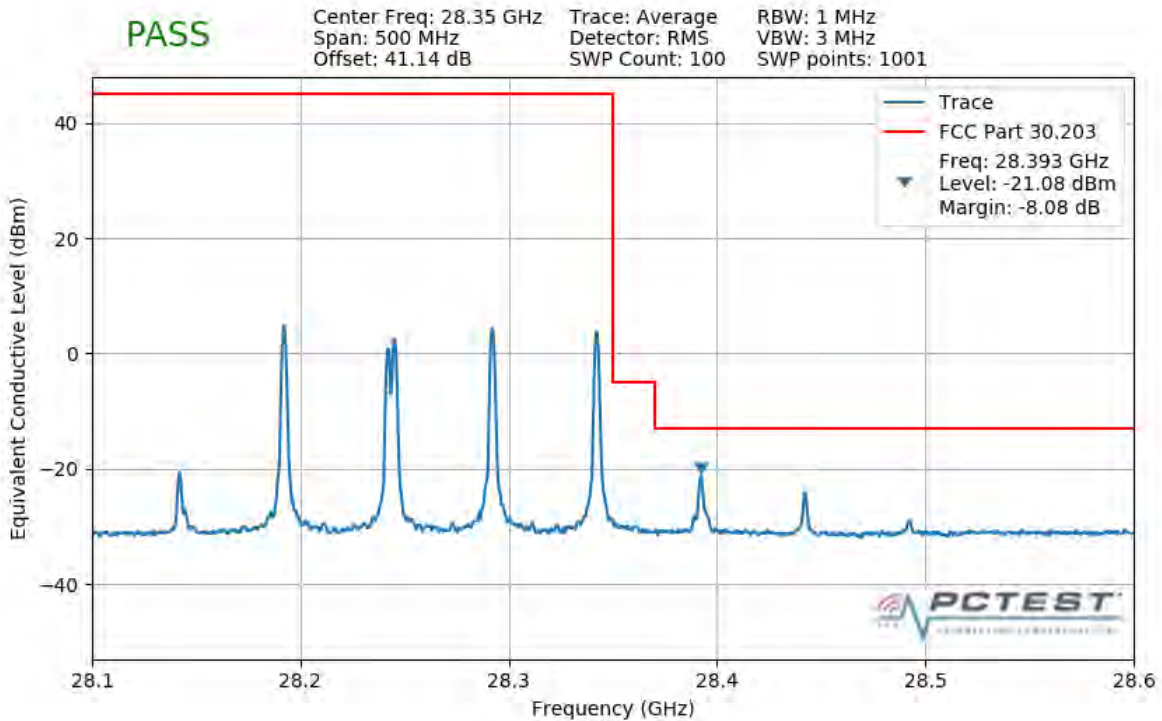


Plot 7-464. Upper Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 279 of 337

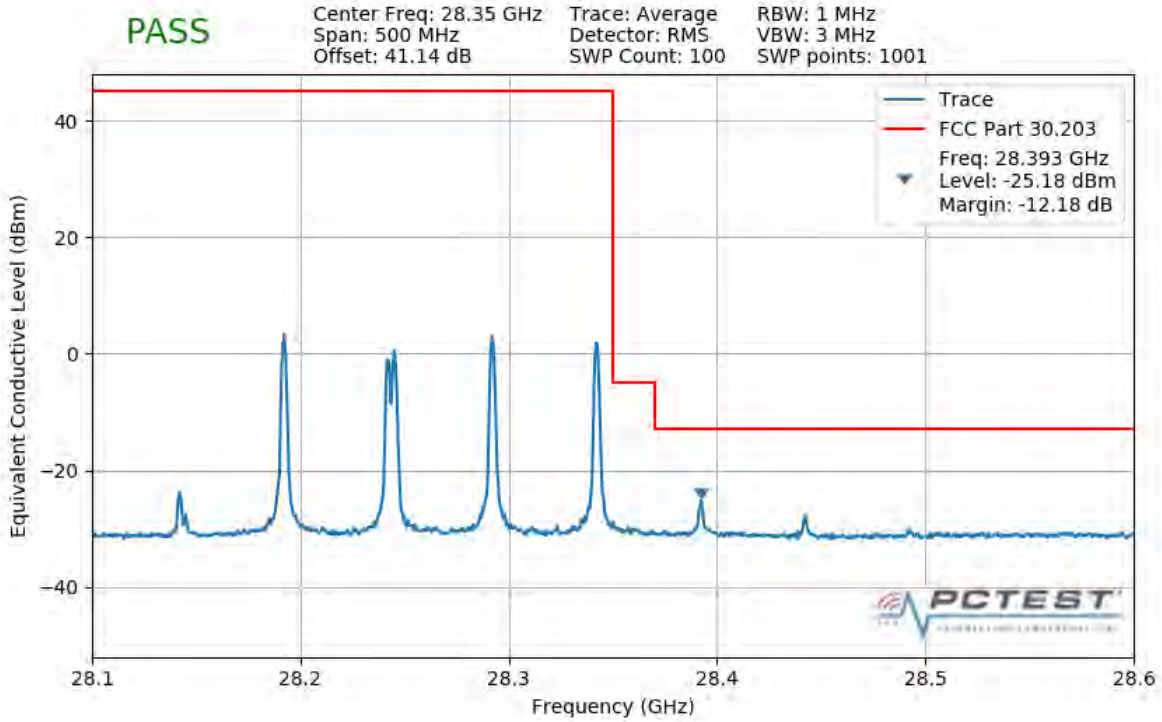


Plot 7-465. Upper Band Edge Plot (4CC 200MHz QPSK Full RB)

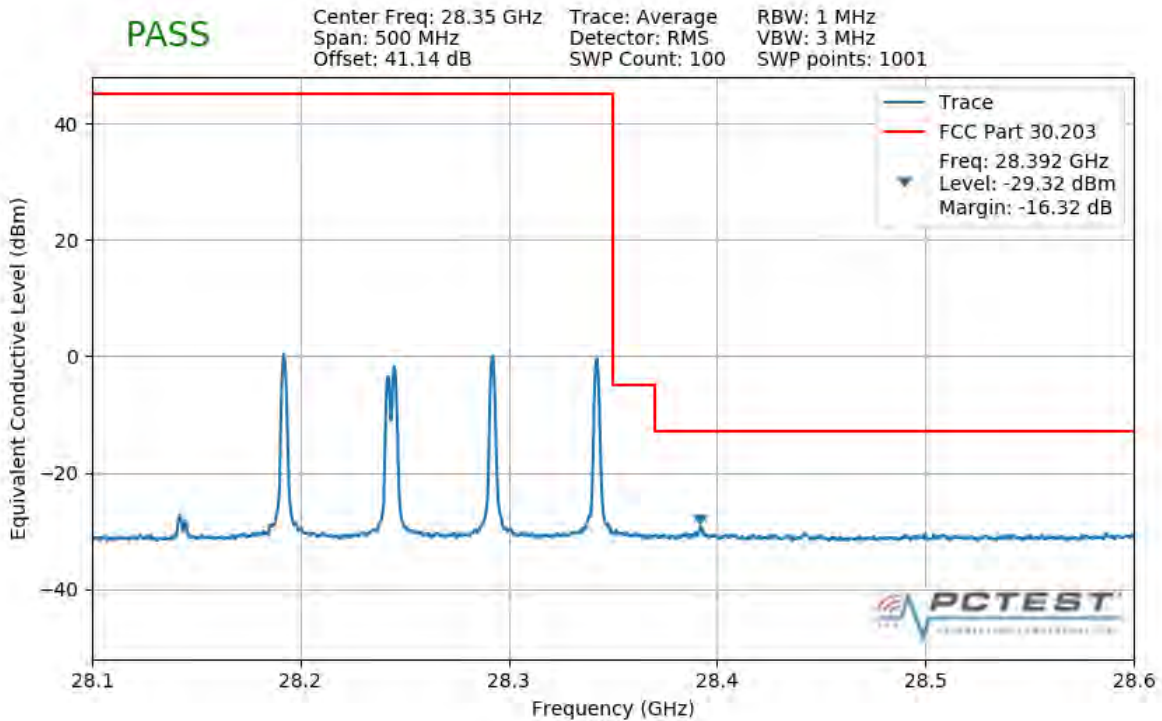


Plot 7-466. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 280 of 337

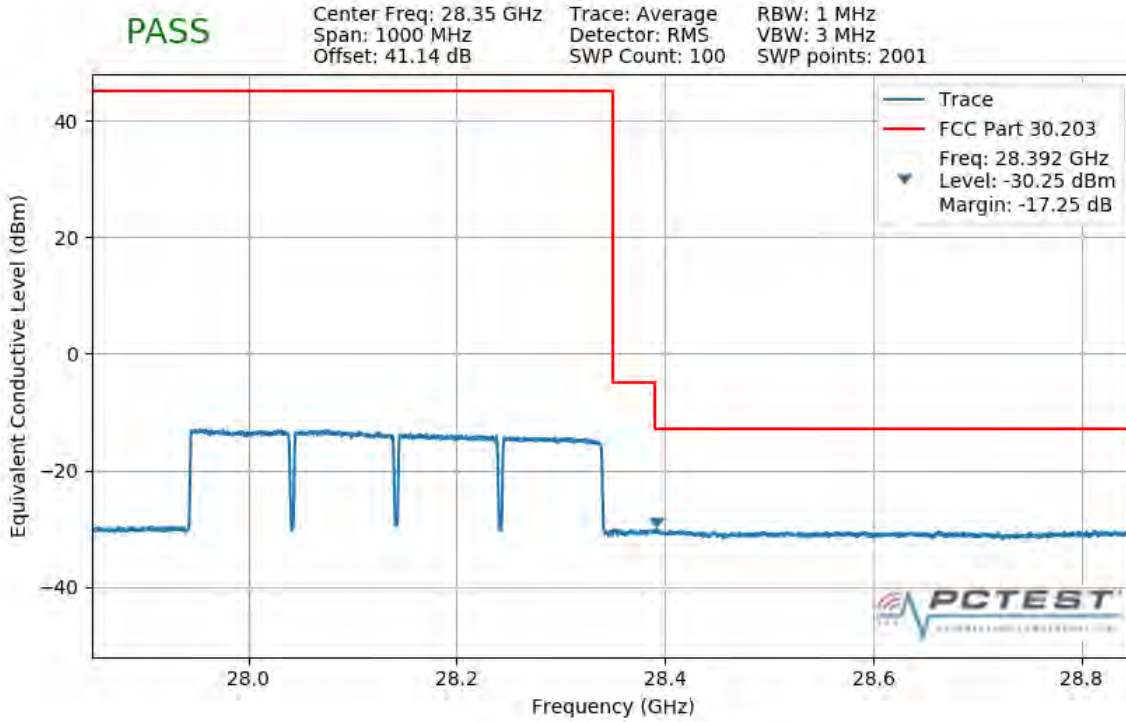


Plot 7-467. Upper Band Edge Plot (4CC 200MHz 16QAM 1 RB)

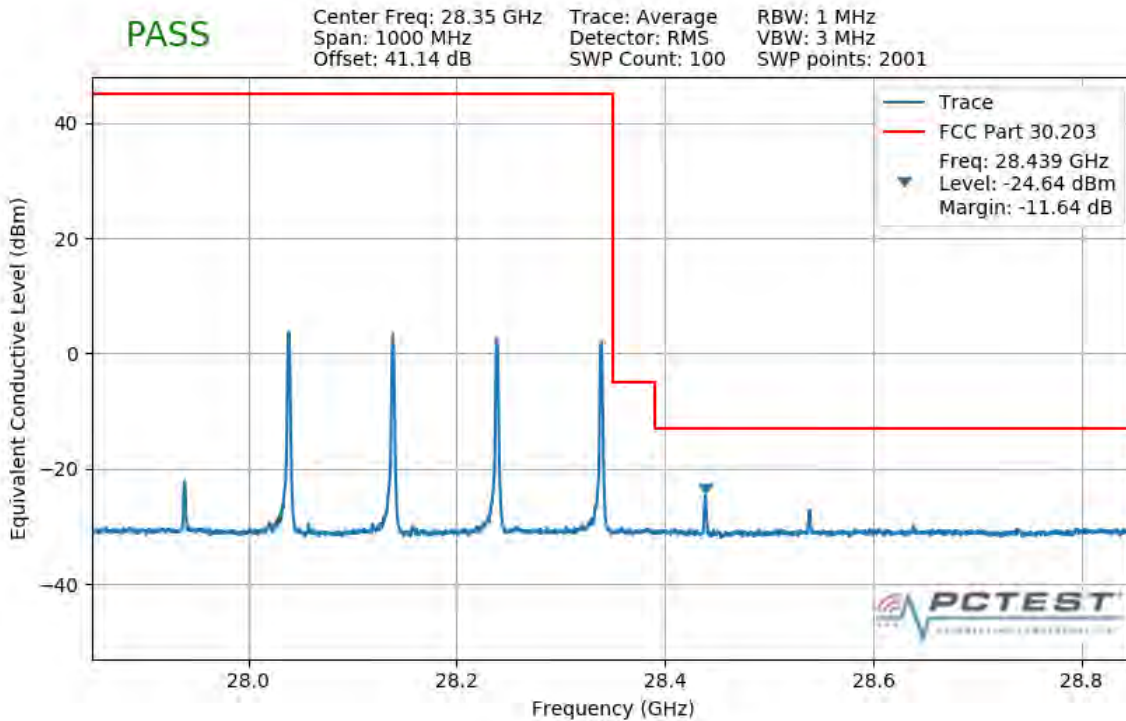


Plot 7-468. Upper Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 281 of 337

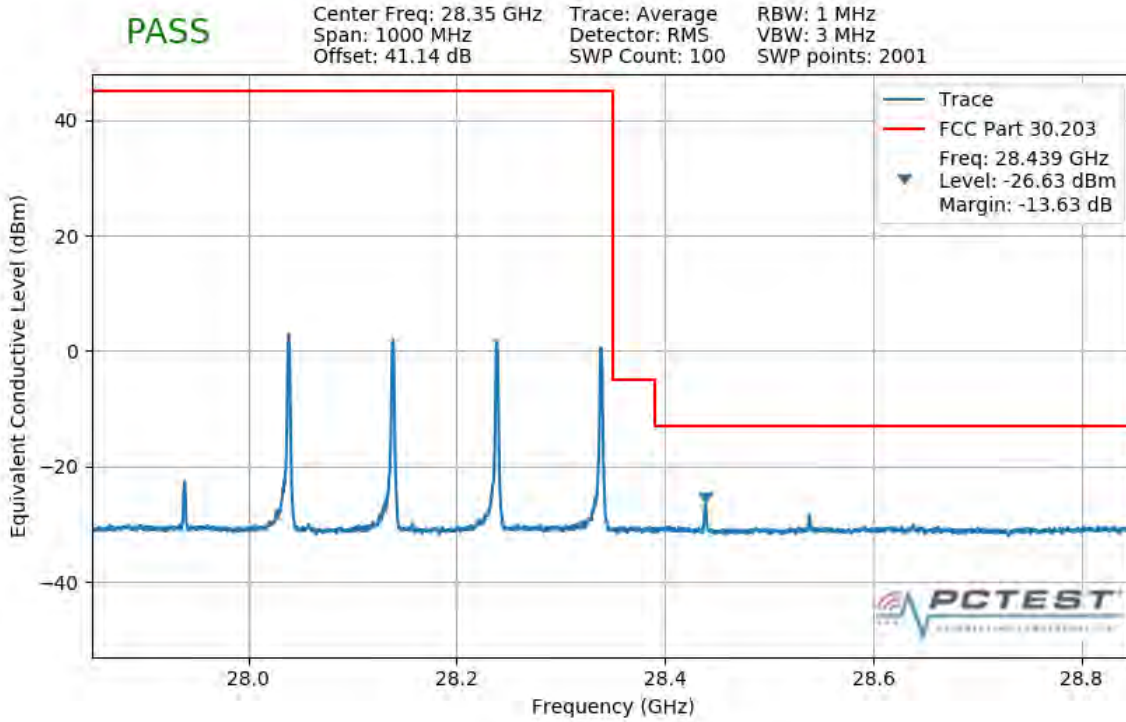


Plot 7-469. Upper Band Edge Plot (4CC 400MHz QPSK Full RB)

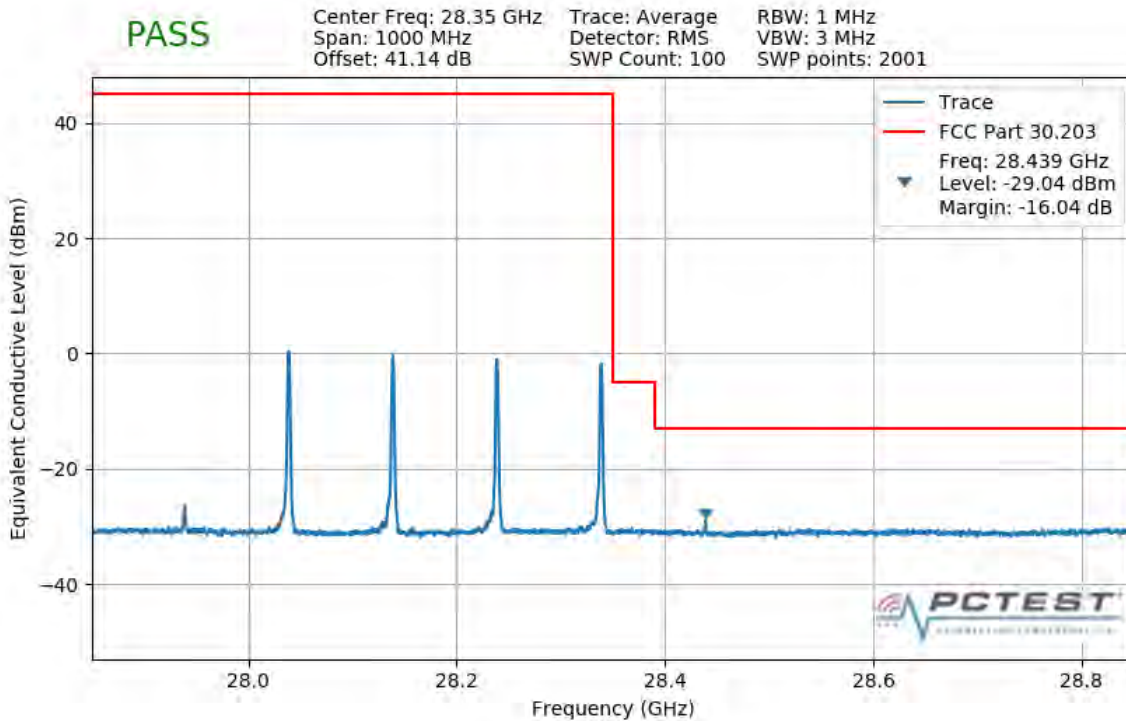


Plot 7-470. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 282 of 337



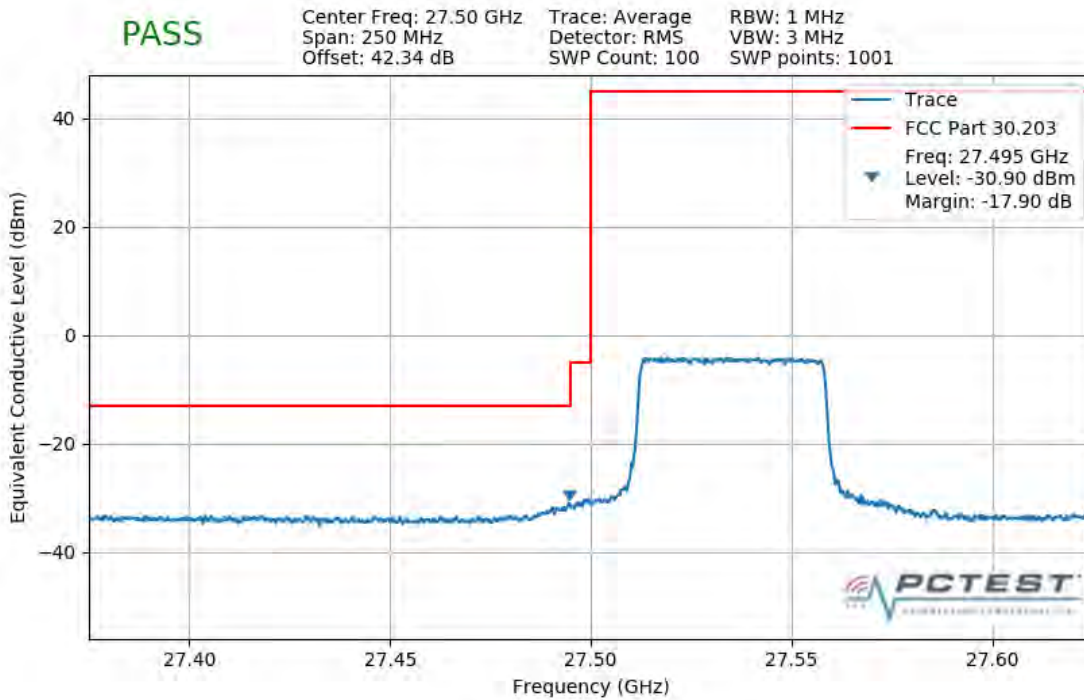
Plot 7-471. Upper Band Edge Plot (4CC 400MHz 16QAM 1 RB)



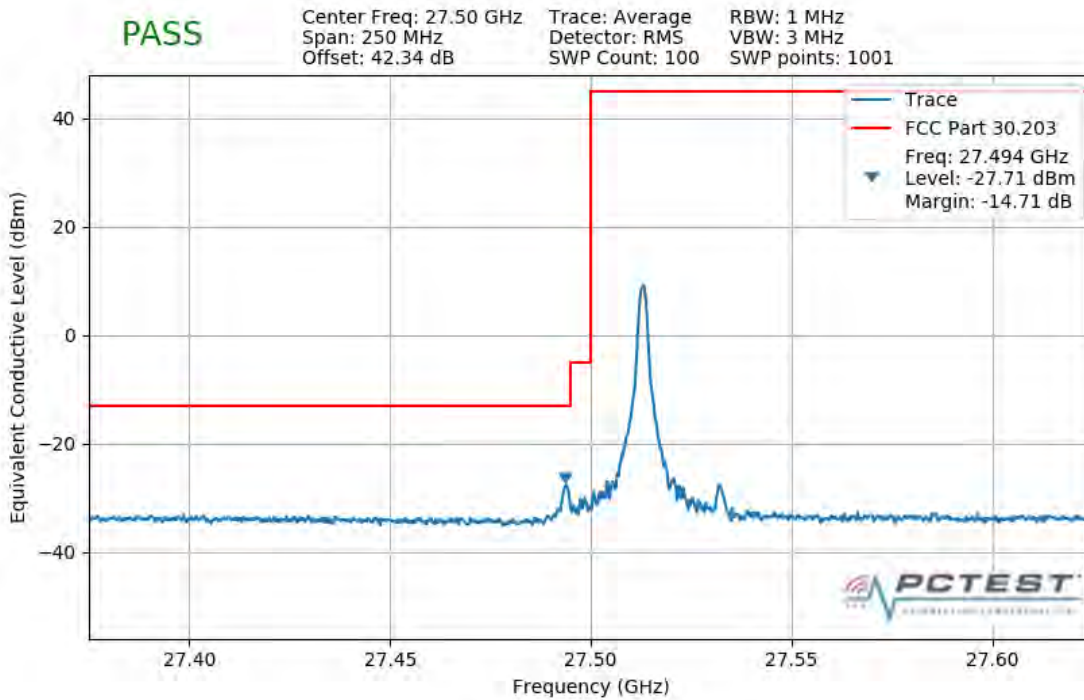
Plot 7-472. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset			Page 283 of 337

7.5.5 L Patch Band Edge H Beam

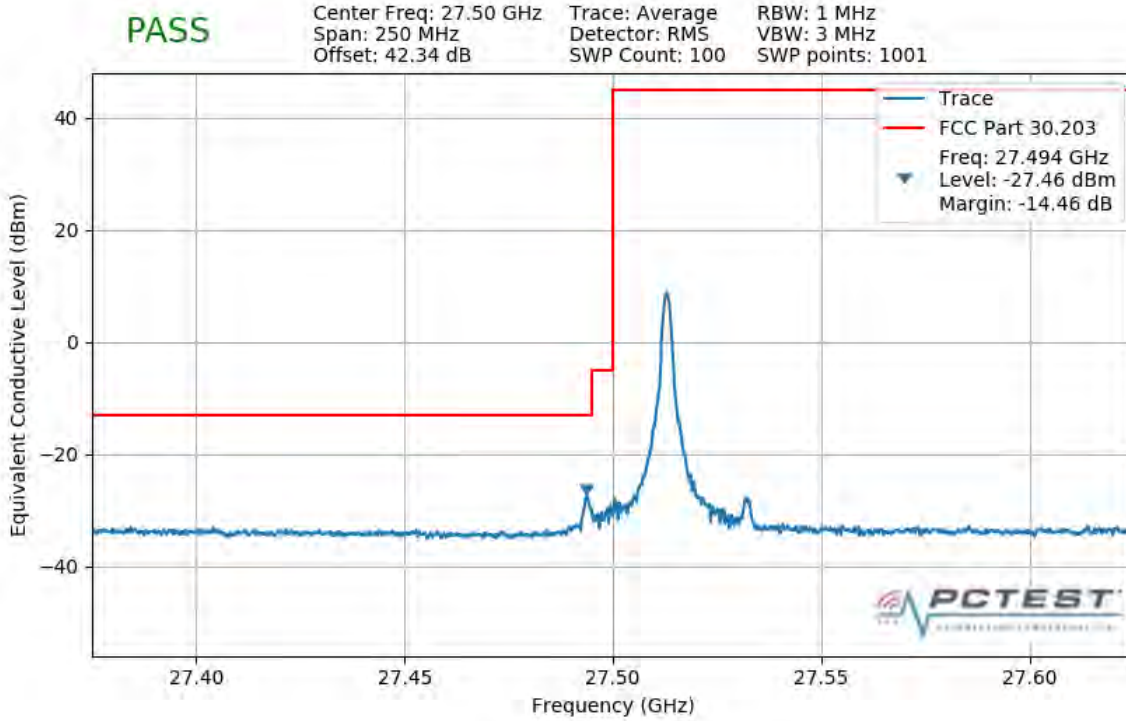


Plot 7-473. Lower Band Edge Plot (1CC 50MHz QPSK Full RB)

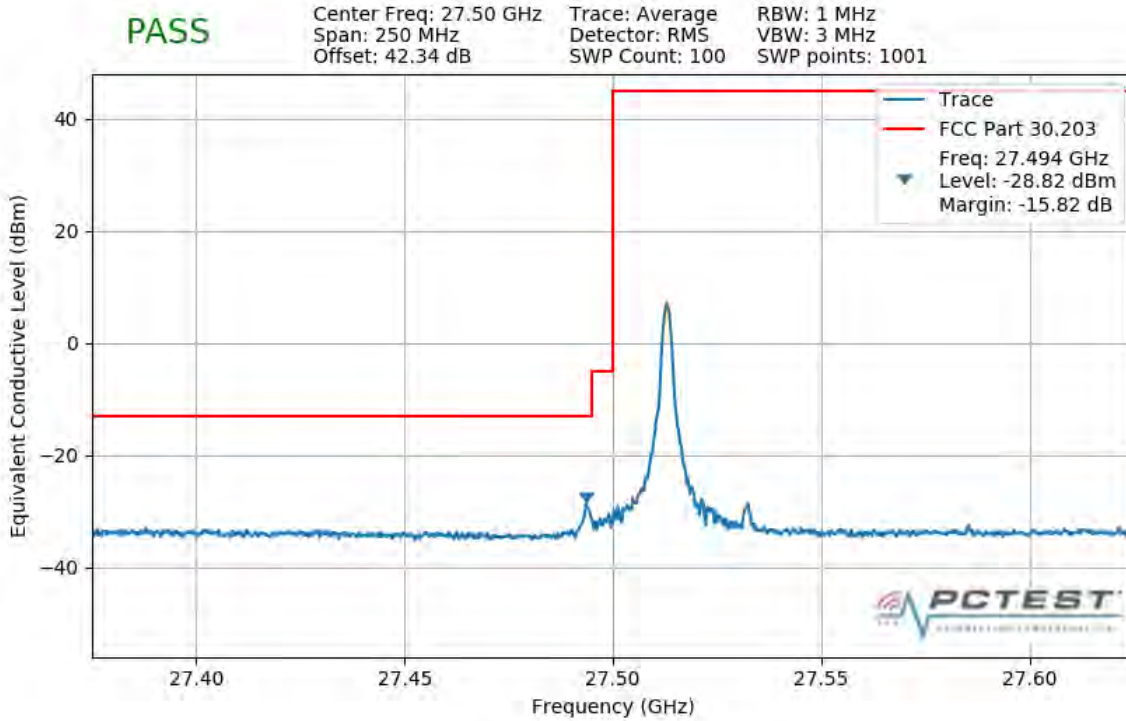


Plot 7-474. Lower Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 284 of 337

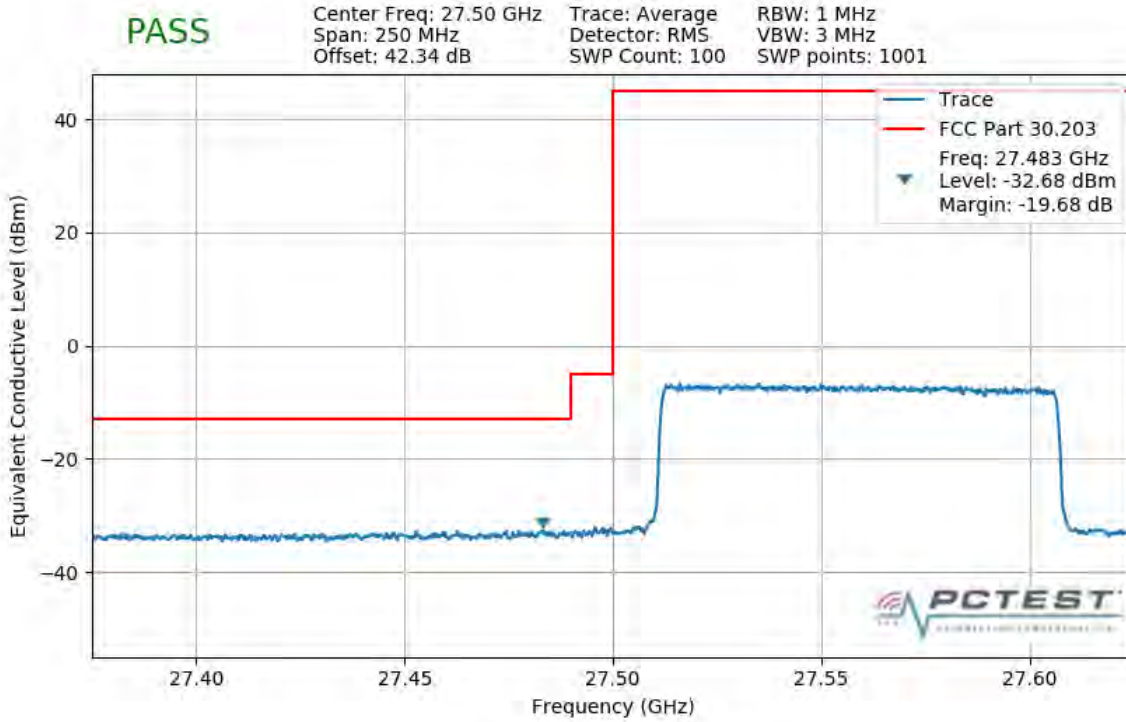


Plot 7-475. Lower Band Edge Plot (1CC 50MHz 16QAM 1 RB)

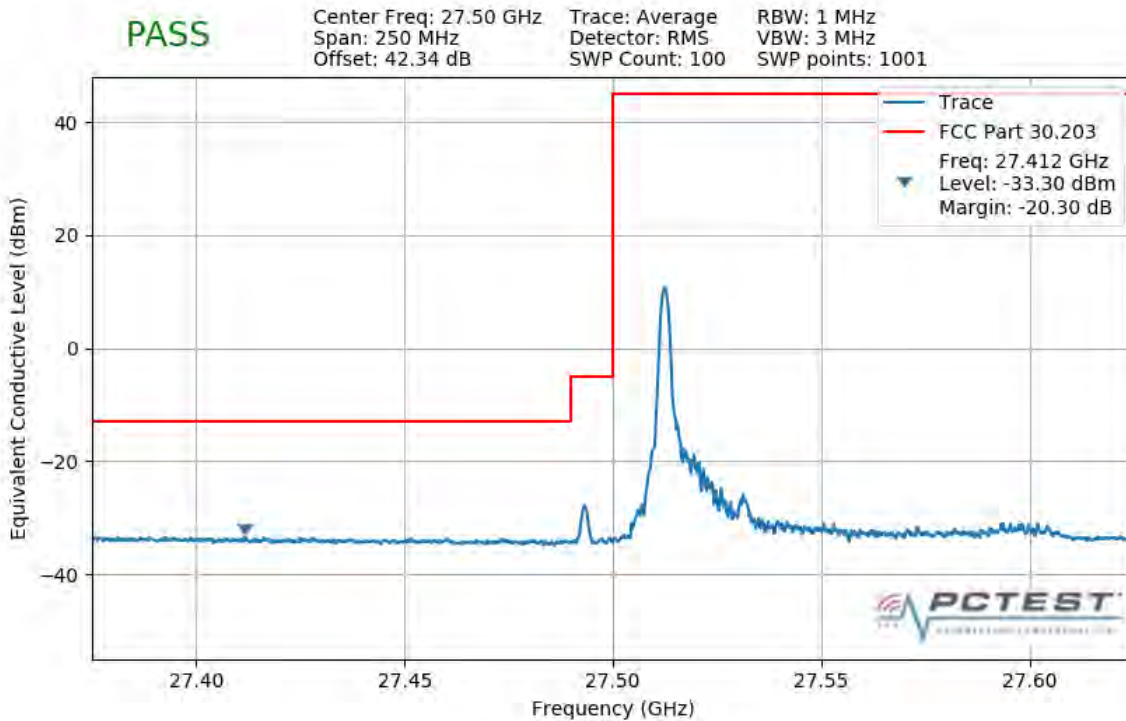


Plot 7-476. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 285 of 337

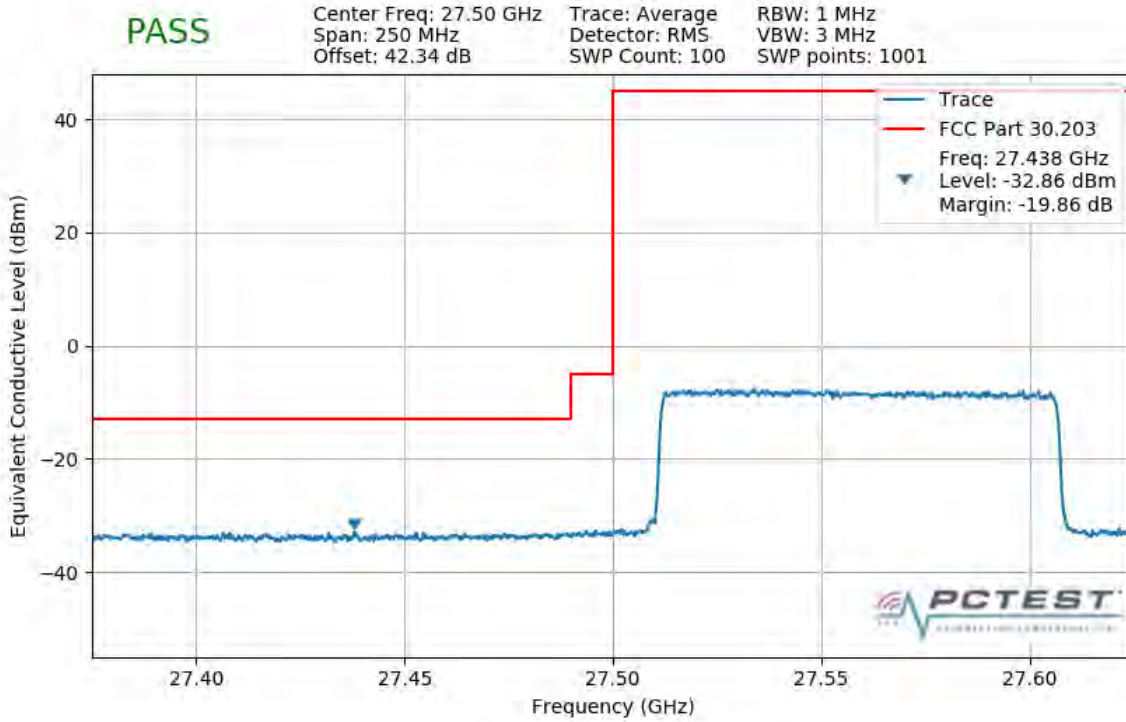


Plot 7-477. Lower Band Edge Plot (1CC 100MHz QPSK Full RB)

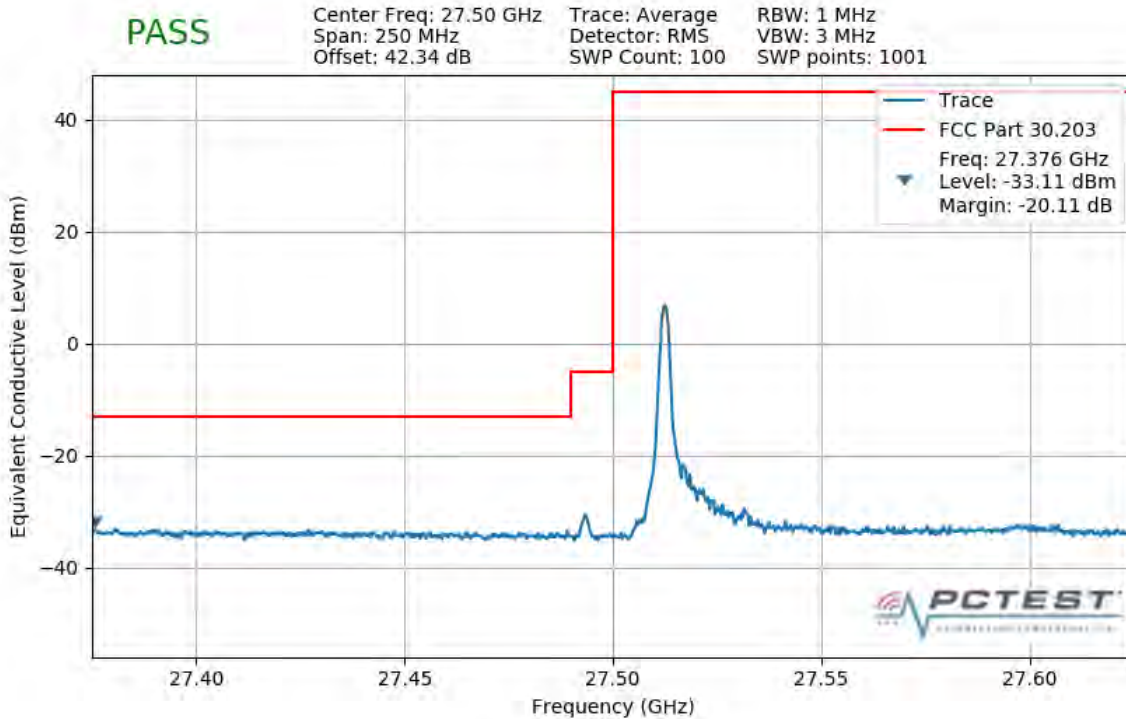


Plot 7-478. Lower Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 286 of 337

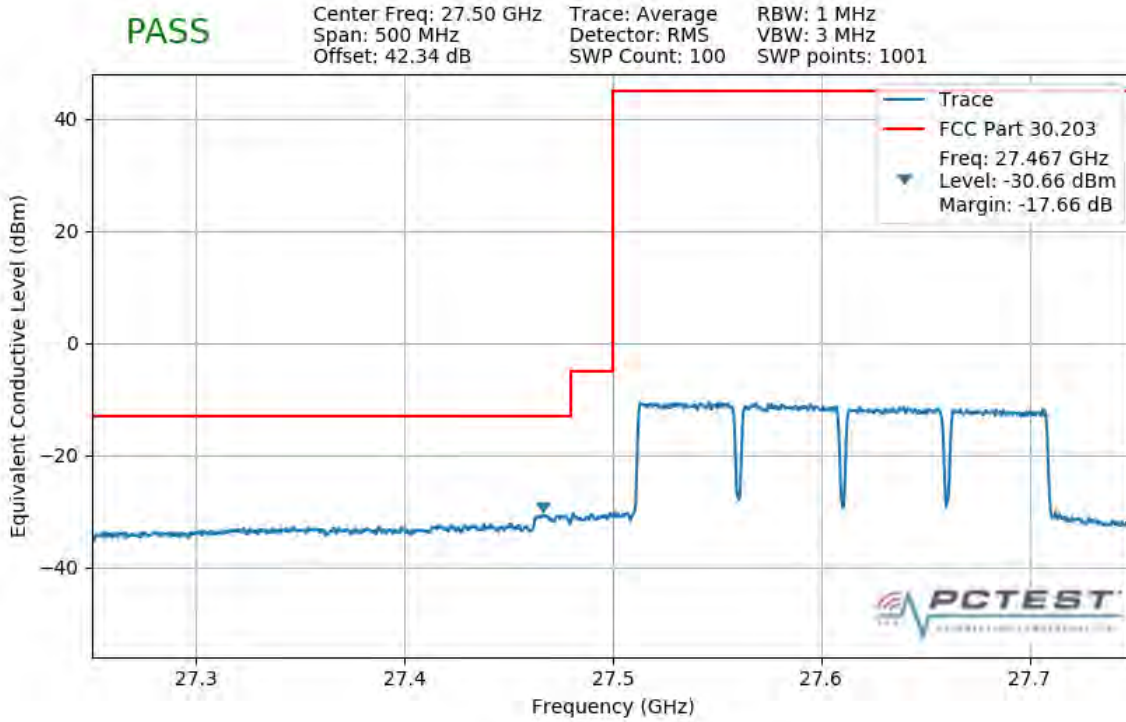


Plot 7-479. Lower Band Edge Plot (1CC 100MHz 16QAM 1 RB)

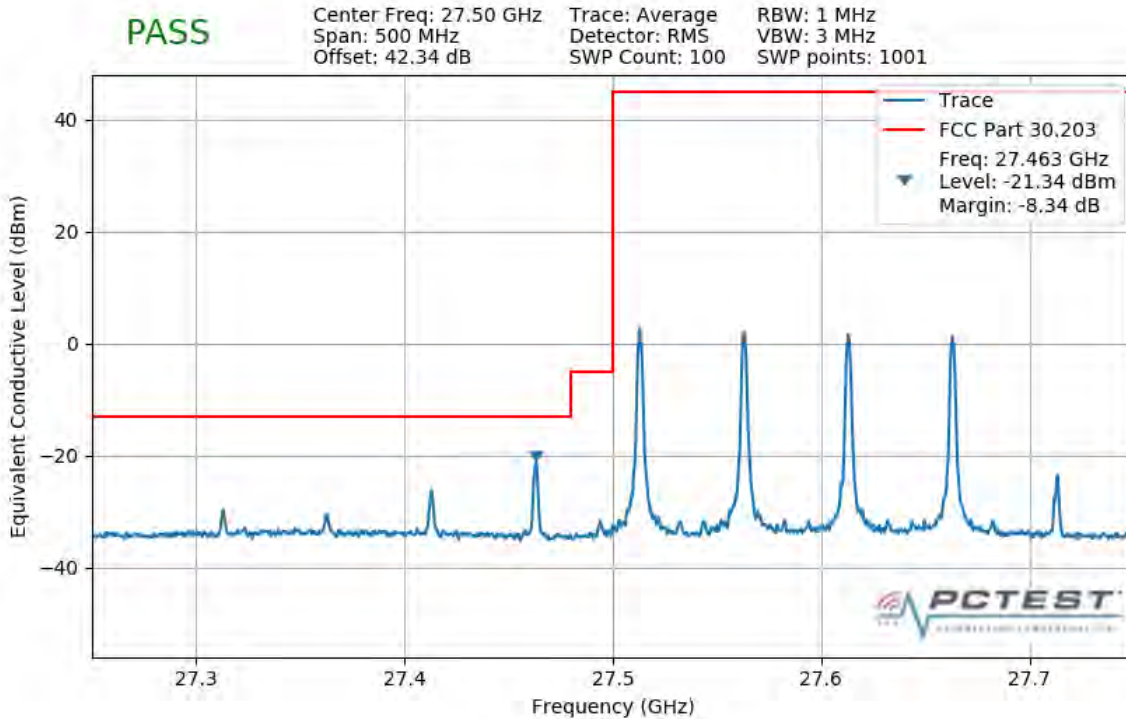


Plot 7-480. Lower Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 287 of 337

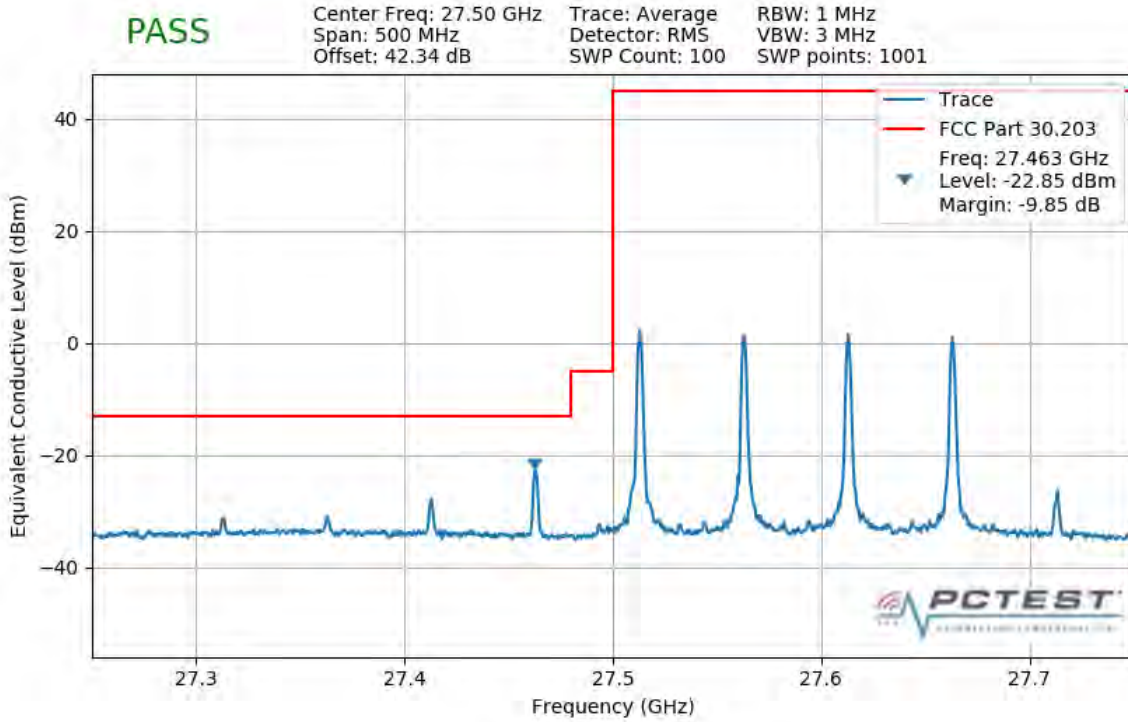


Plot 7-481. Lower Band Edge Plot (4CC 200MHz QPSK Full RB)

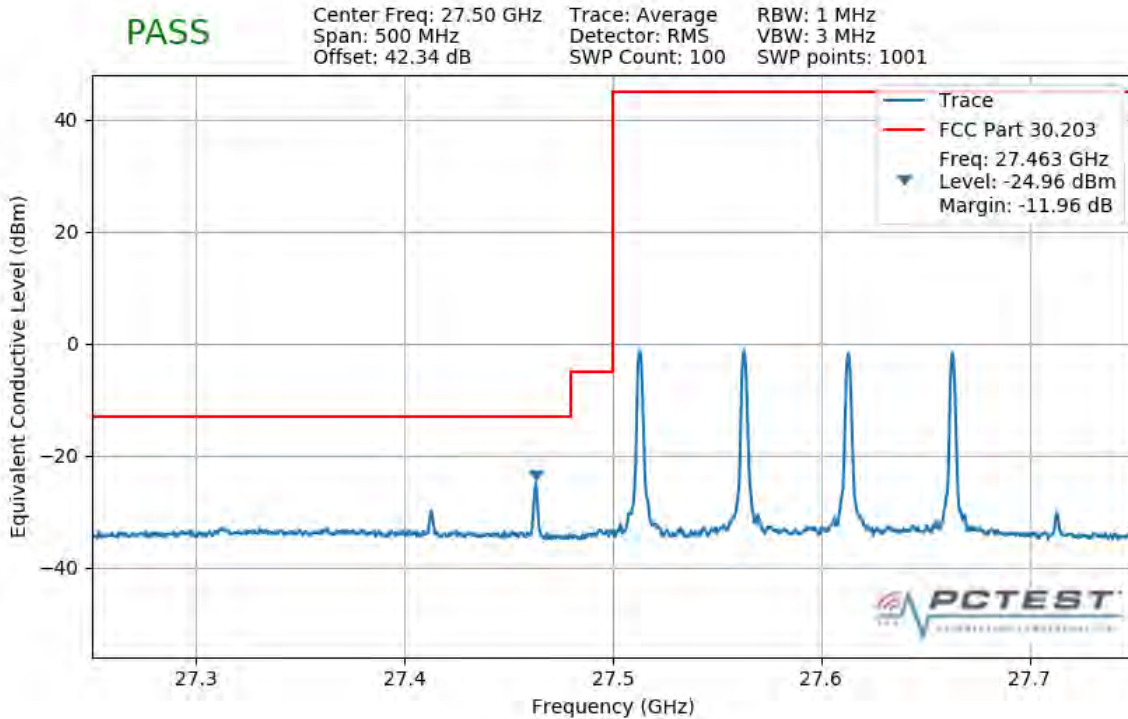


Plot 7-482. Lower Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 288 of 337

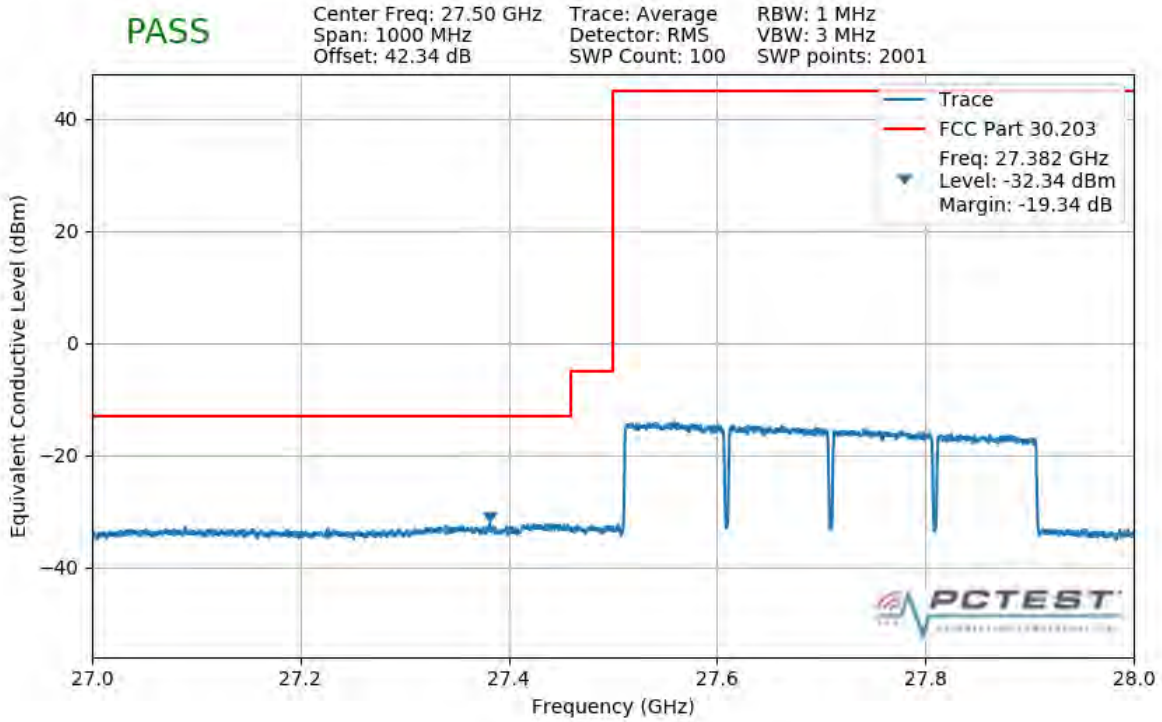


Plot 7-483. Lower Band Edge Plot (4CC 200MHz 16QAM 1 RB)

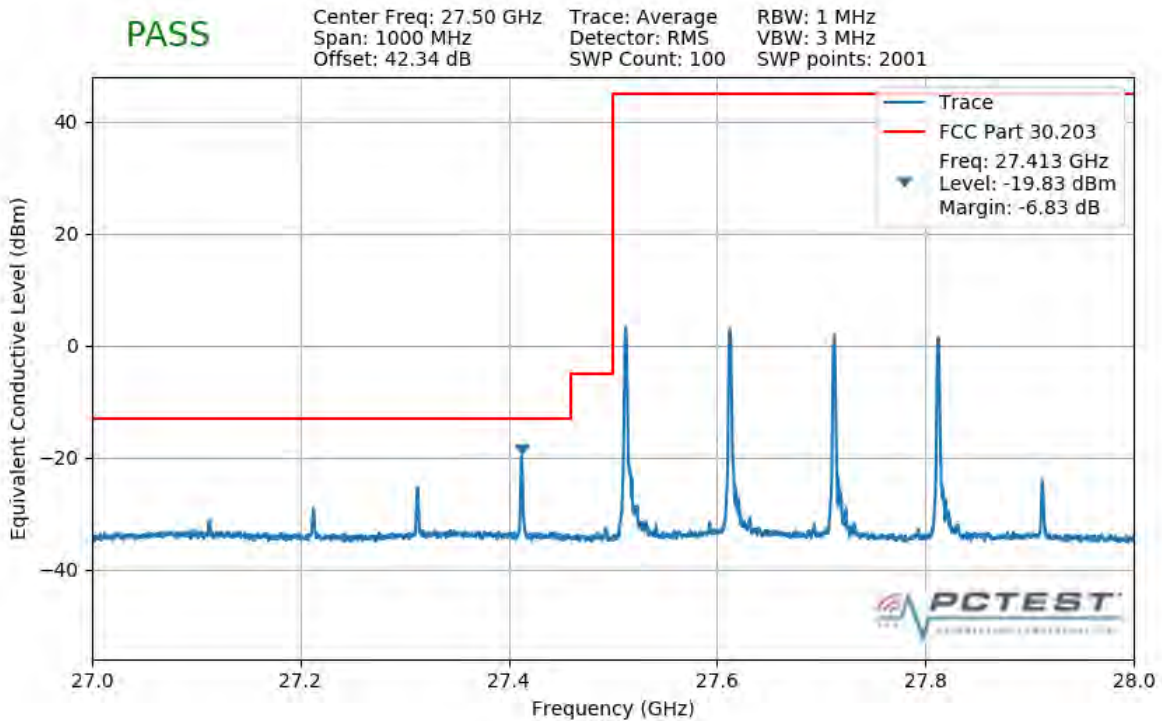


Plot 7-484. Lower Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset			Page 289 of 337

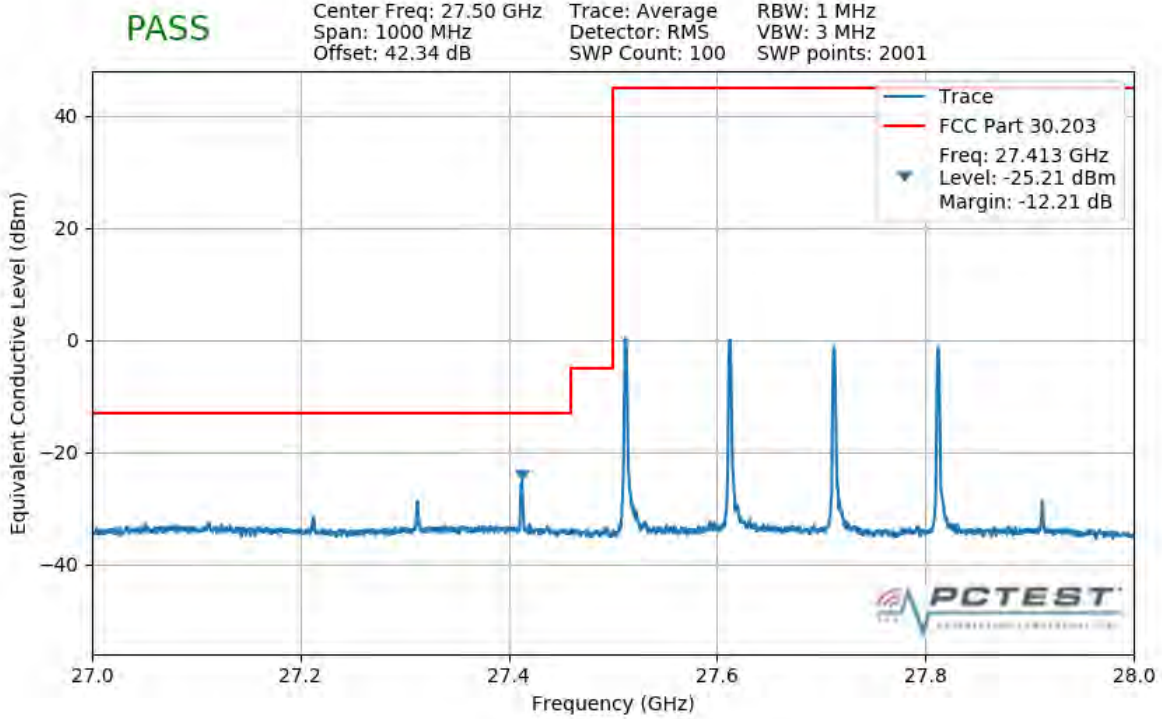


Plot 7-485. Lower Band Edge Plot (4CC 400MHz QPSK Full RB)

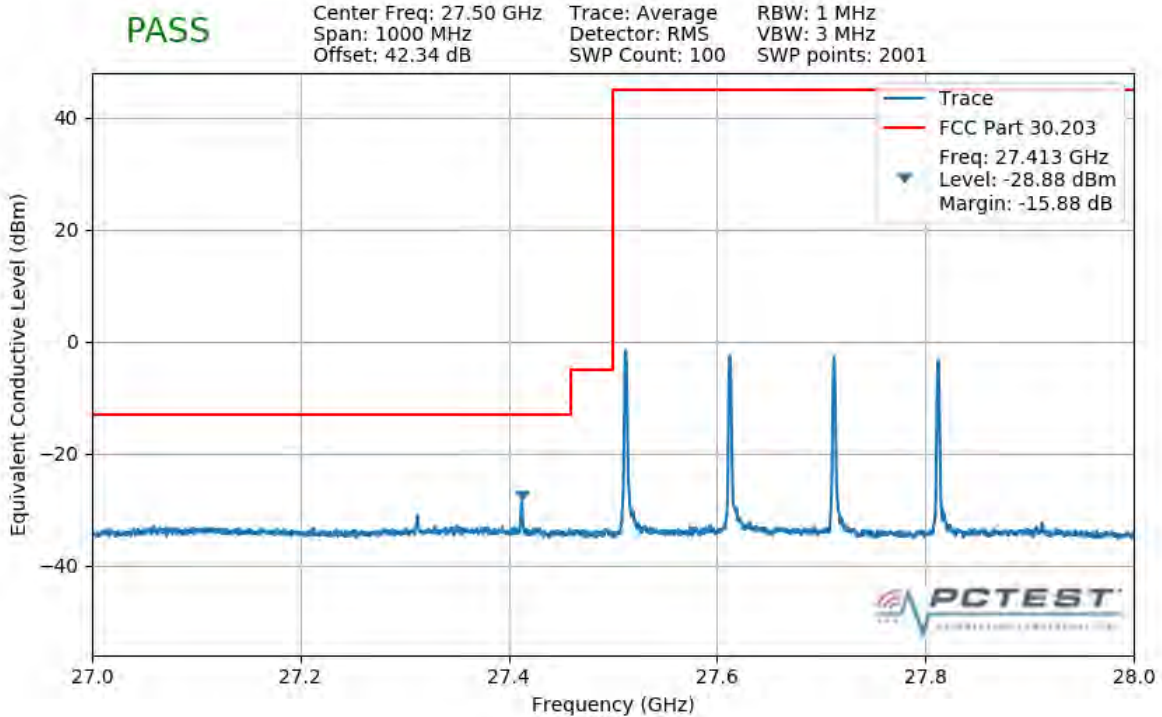


Plot 7-486. Lower Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 290 of 337

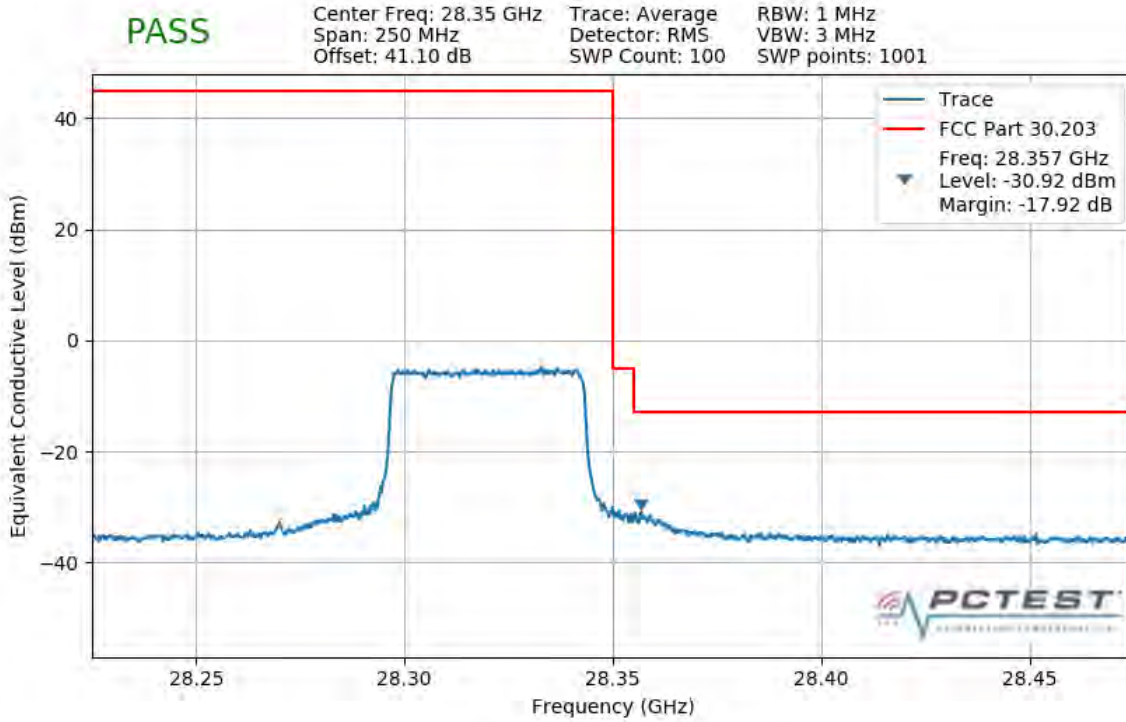


Plot 7-487. Lower Band Edge Plot (4CC 400MHz 16QAM 1 RB)

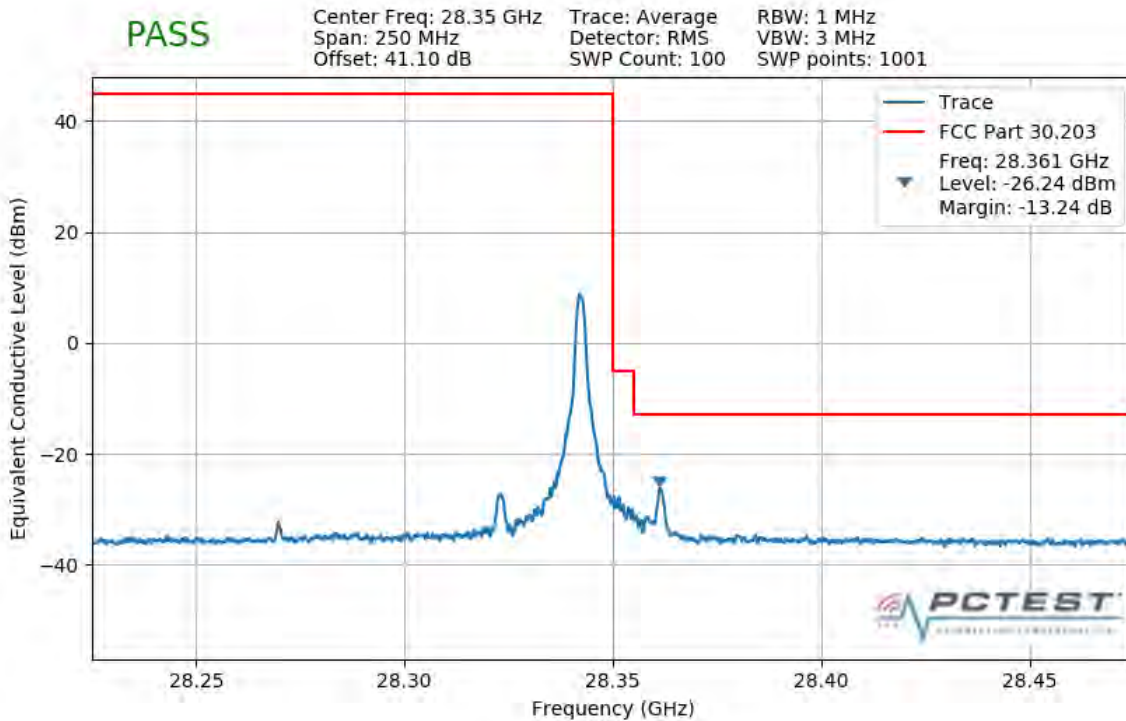


Plot 7-488. Lower Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 291 of 337

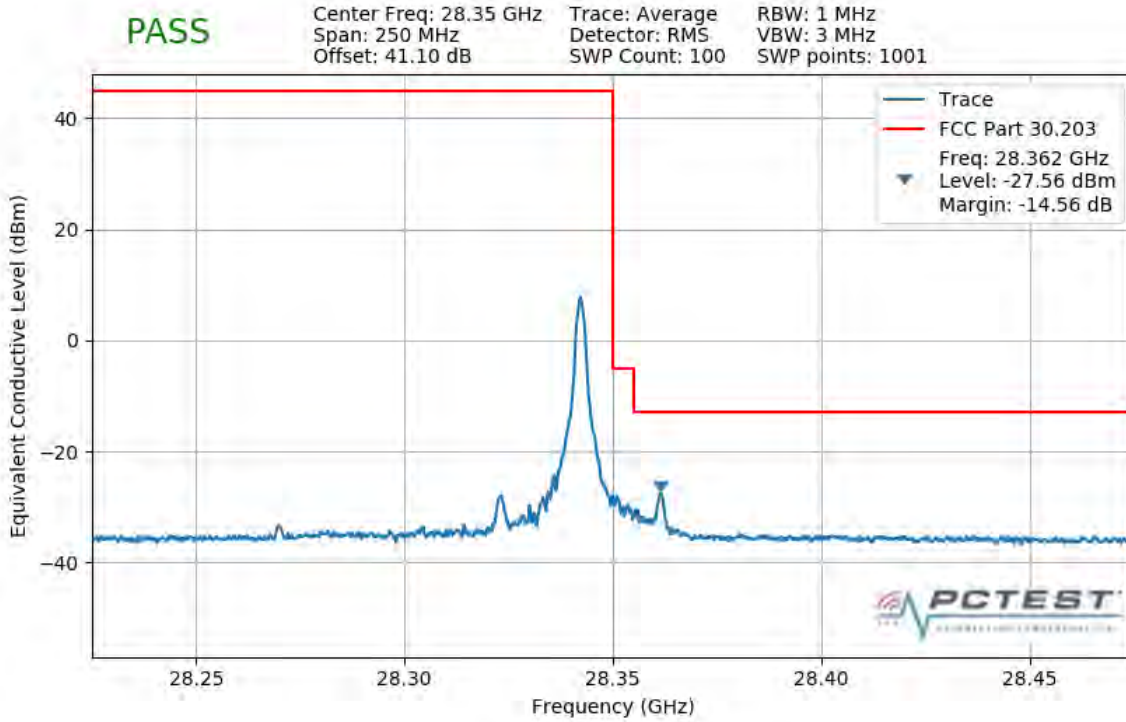


Plot 7-489. Upper Band Edge Plot (1CC 50MHz QPSK Full RB)

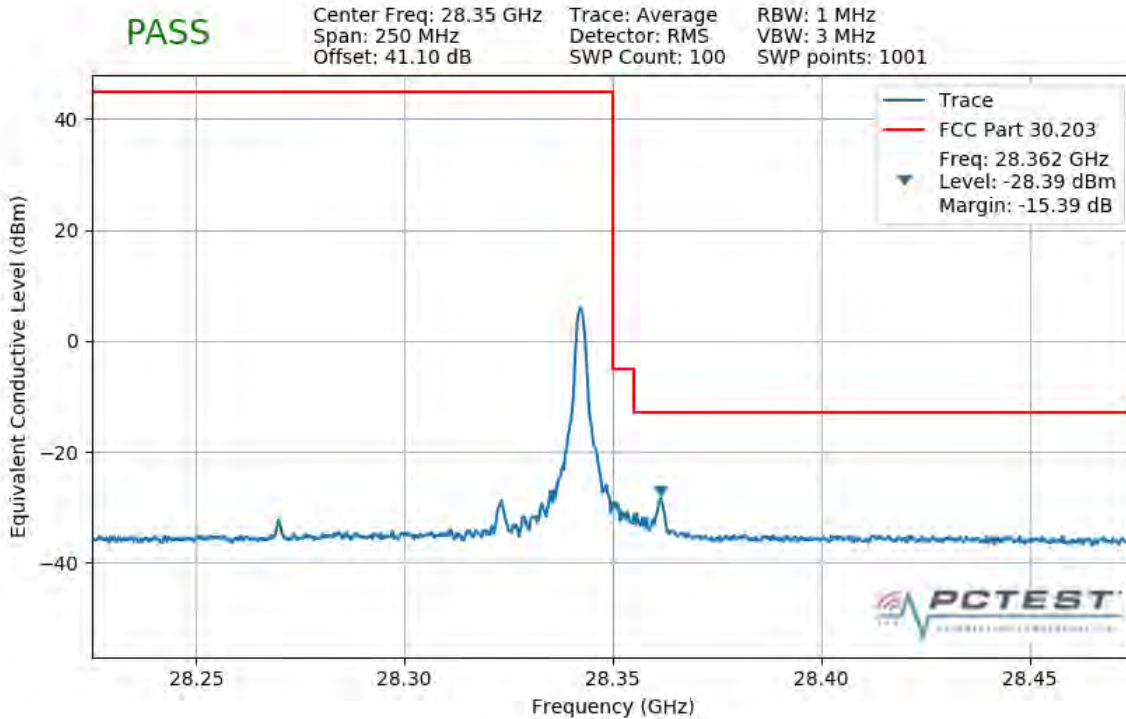


Plot 7-490. Upper Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 292 of 337

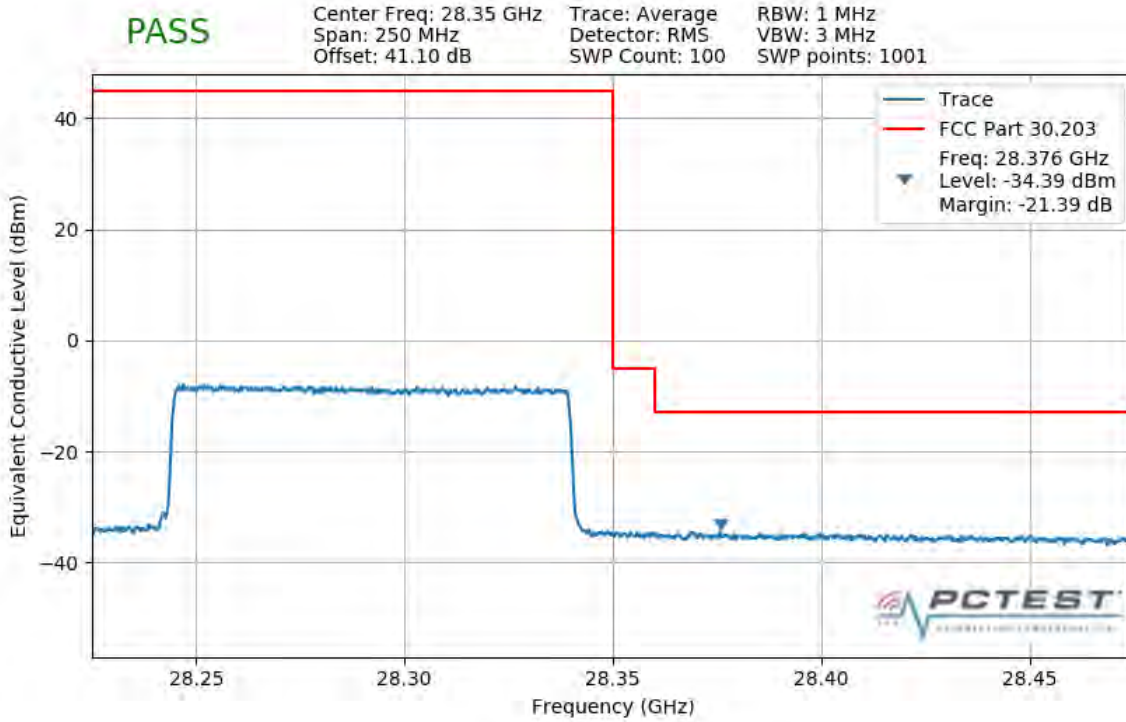


Plot 7-491. Upper Band Edge Plot (1CC 50MHz 16QAM 1 RB)

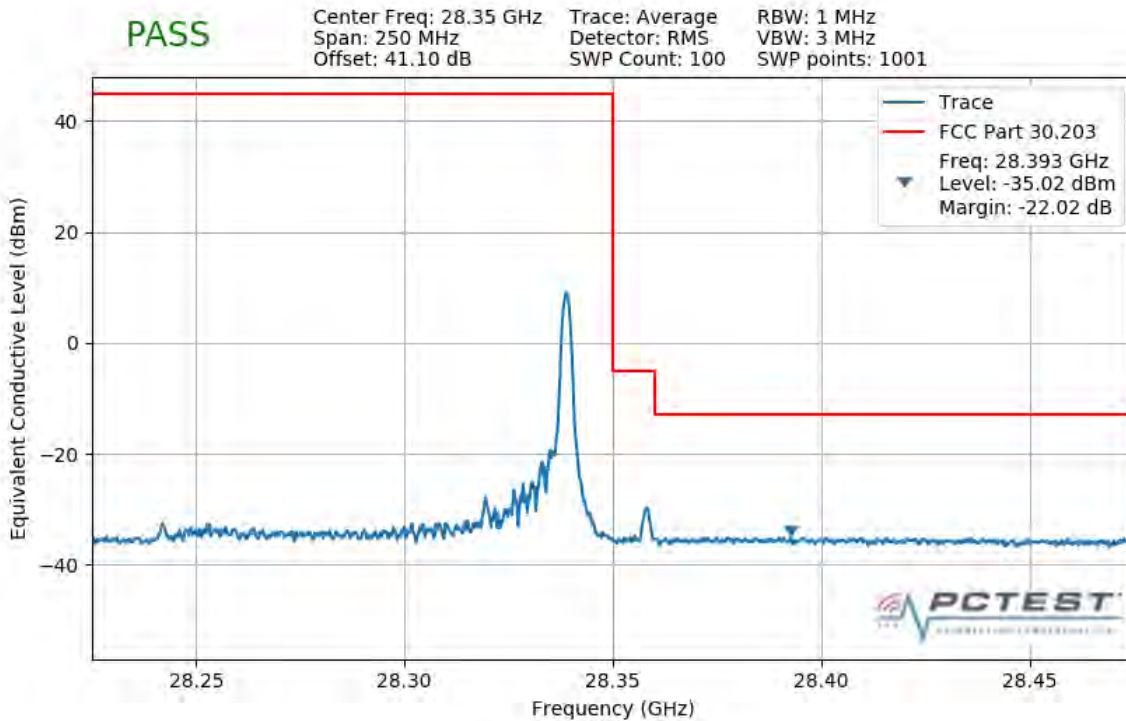


Plot 7-492. Upper Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 293 of 337

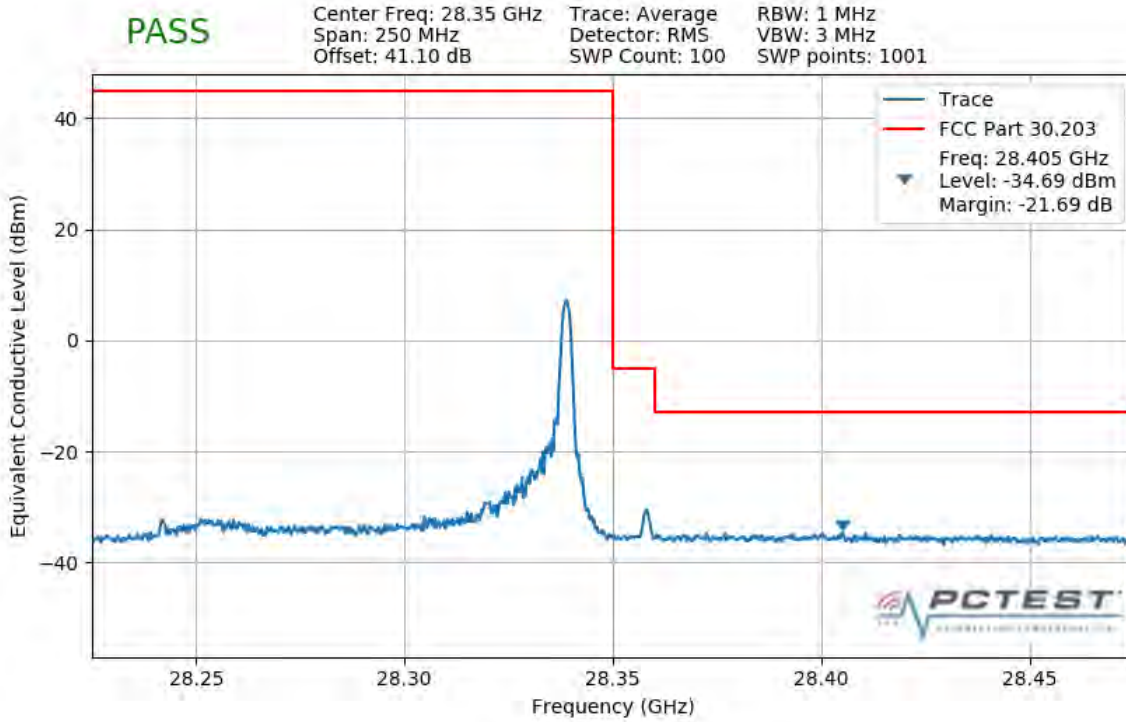


Plot 7-493. Upper Band Edge Plot (1CC 100MHz QPSK Full RB)

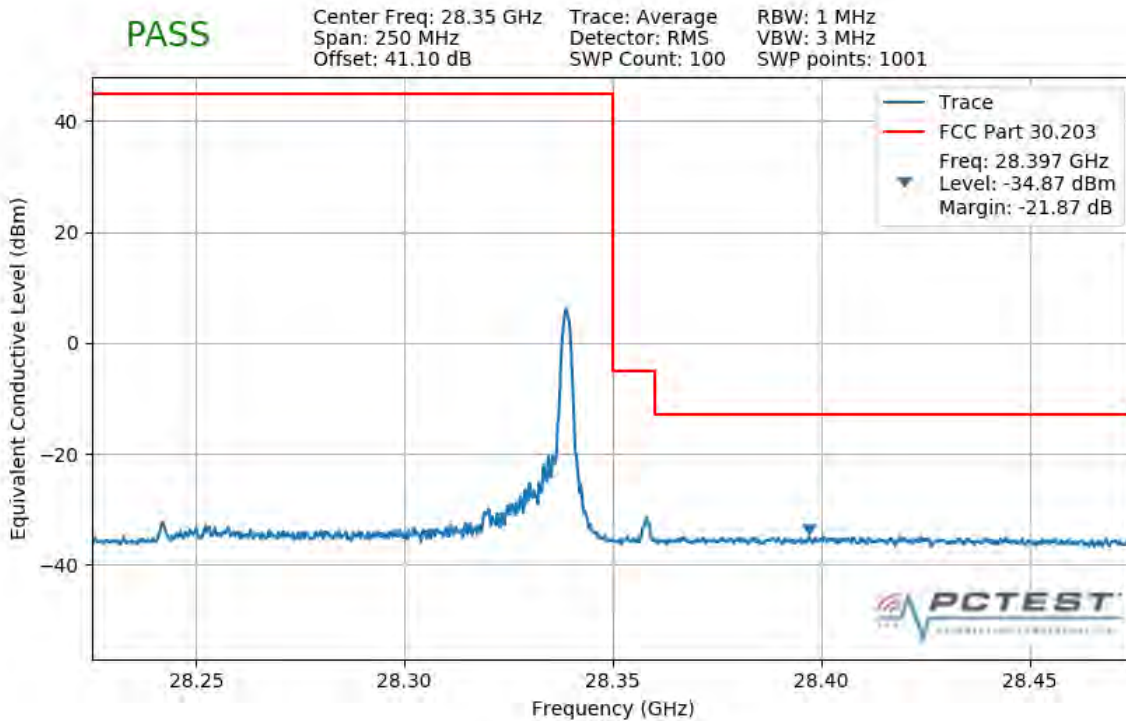


Plot 7-494. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 294 of 337

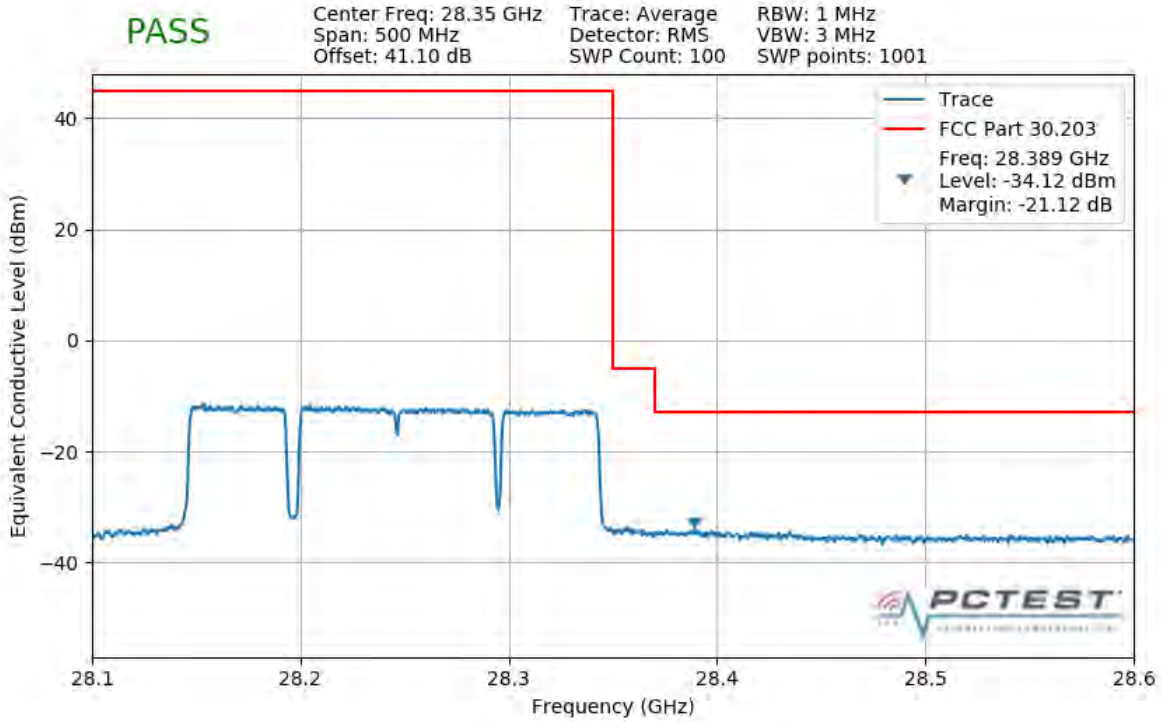


Plot 7-495. Upper Band Edge Plot (1CC 100MHz 16QAM 1 RB)

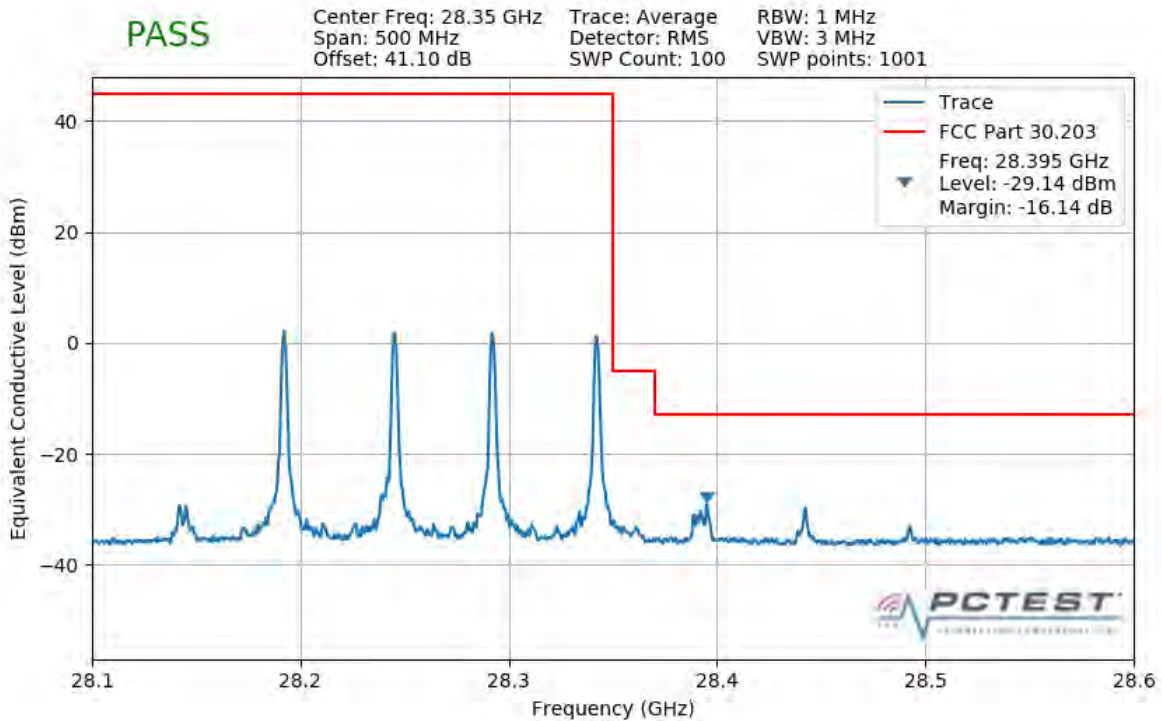


Plot 7-496. Upper Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset			Page 295 of 337

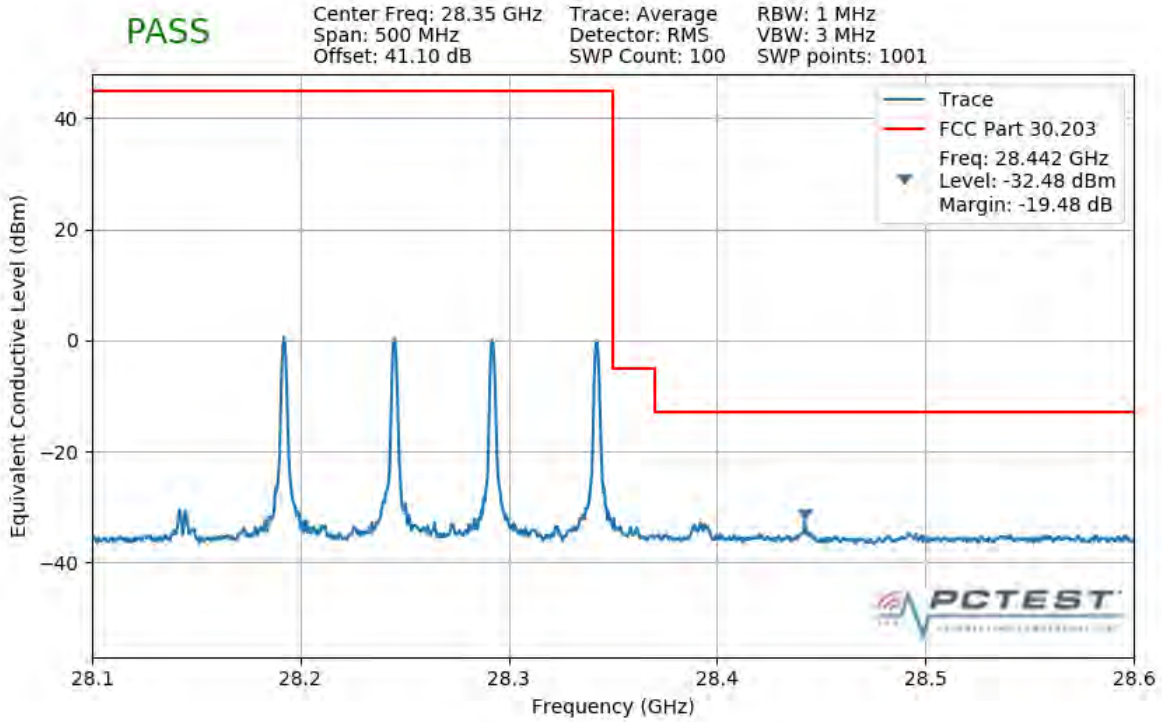


Plot 7-497. Upper Band Edge Plot (4CC 200MHz QPSK Full RB)

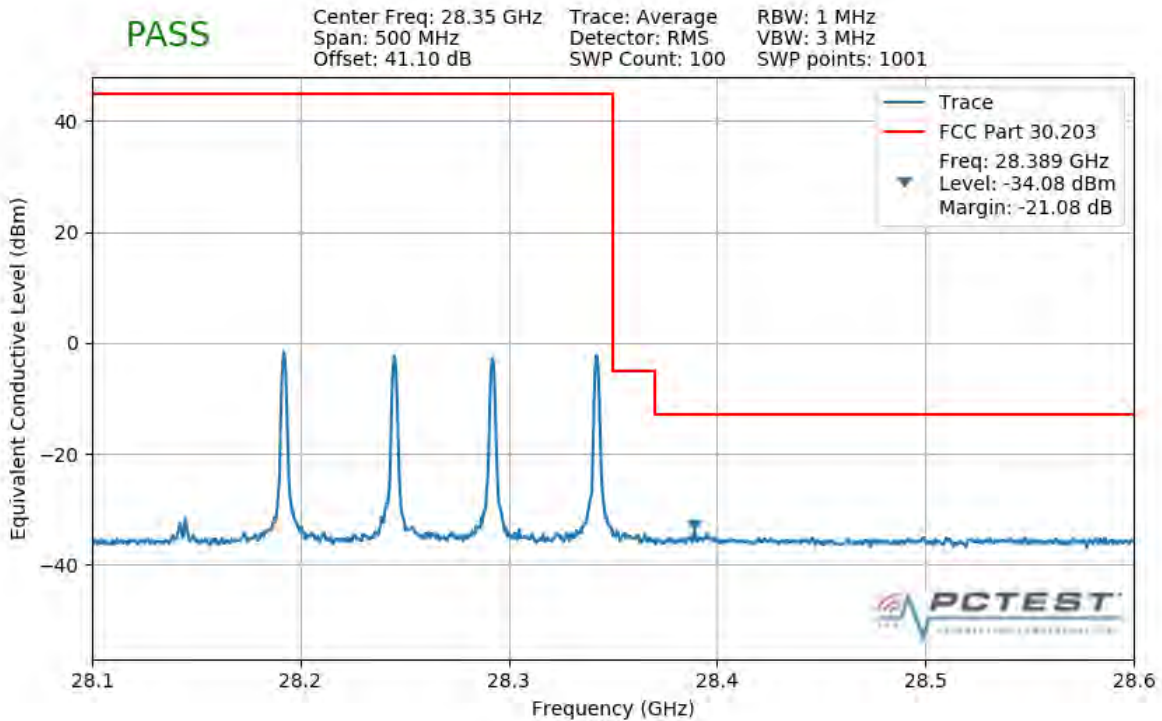


Plot 7-498. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 296 of 337

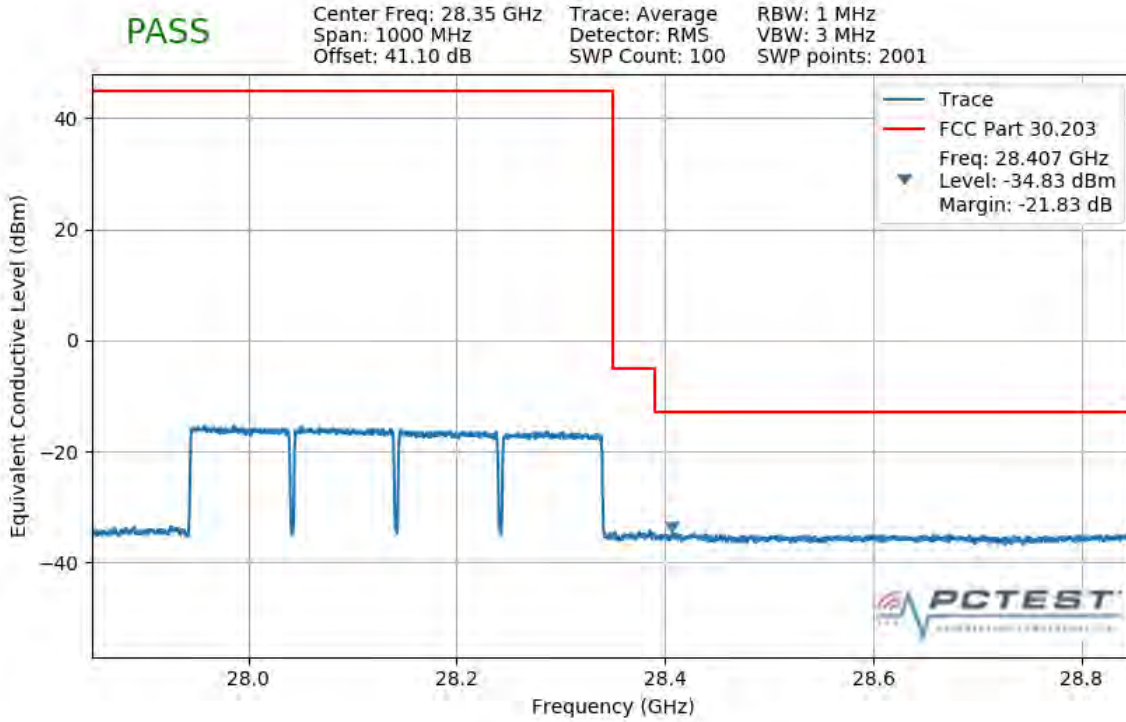


Plot 7-499. Upper Band Edge Plot (4CC 200MHz 16QAM 1 RB)

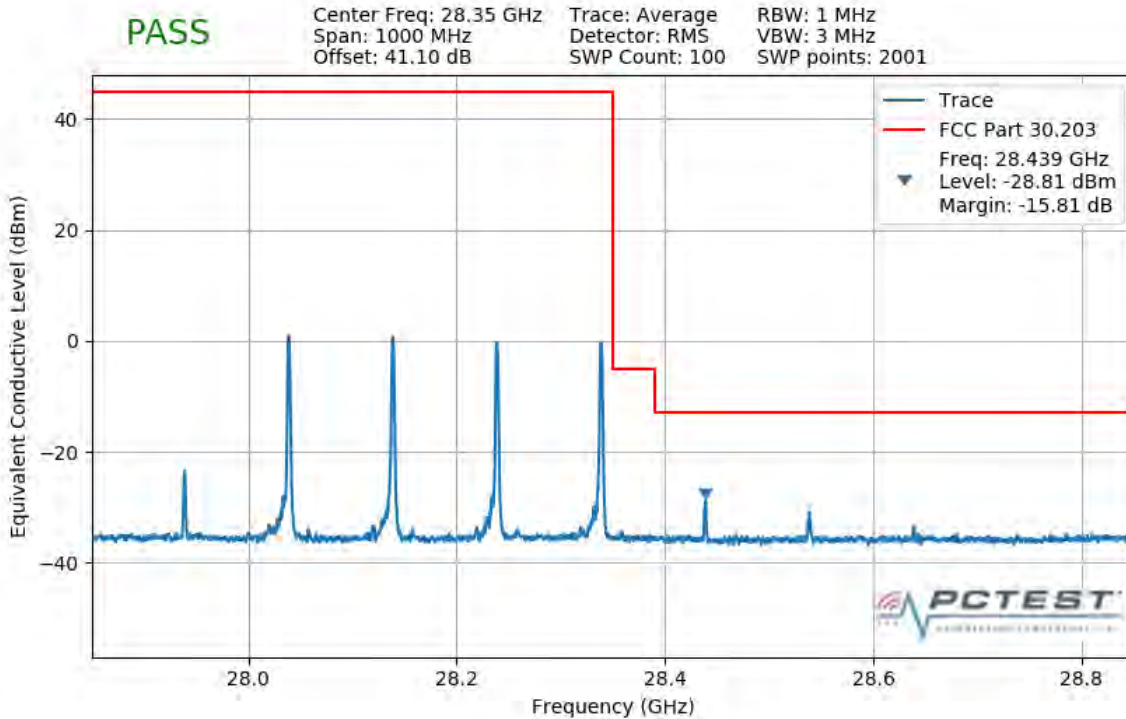


Plot 7-500. Upper Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 297 of 337

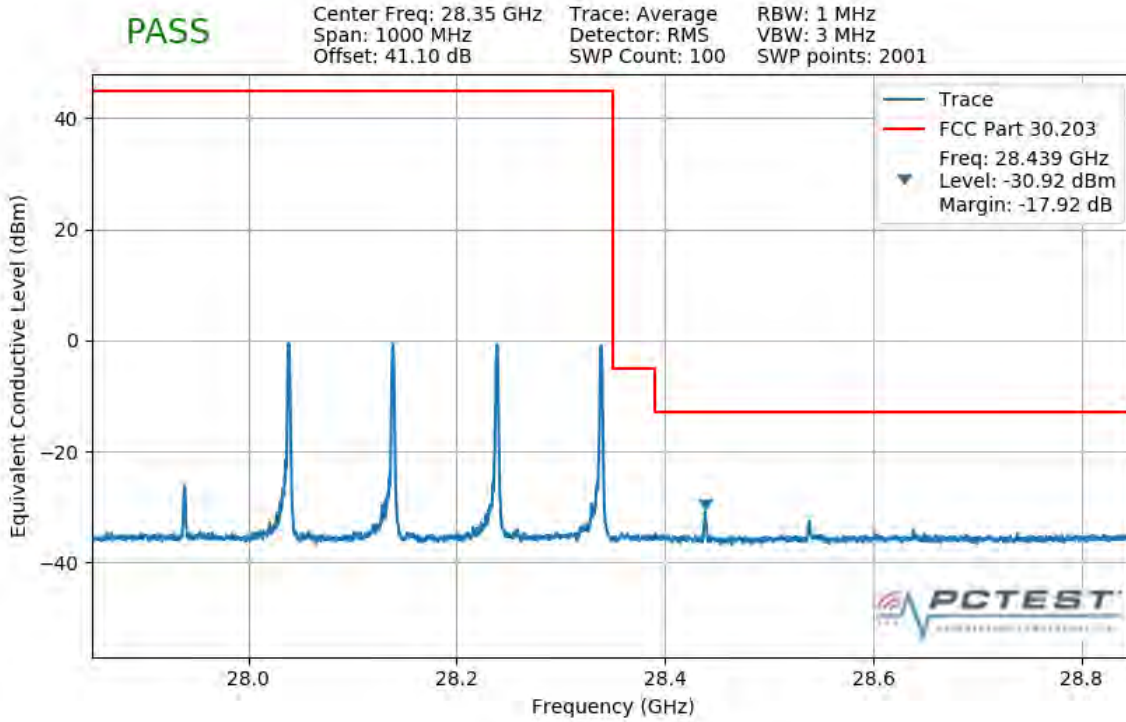


Plot 7-501. Upper Band Edge Plot (4CC 400MHz QPSK Full RB)

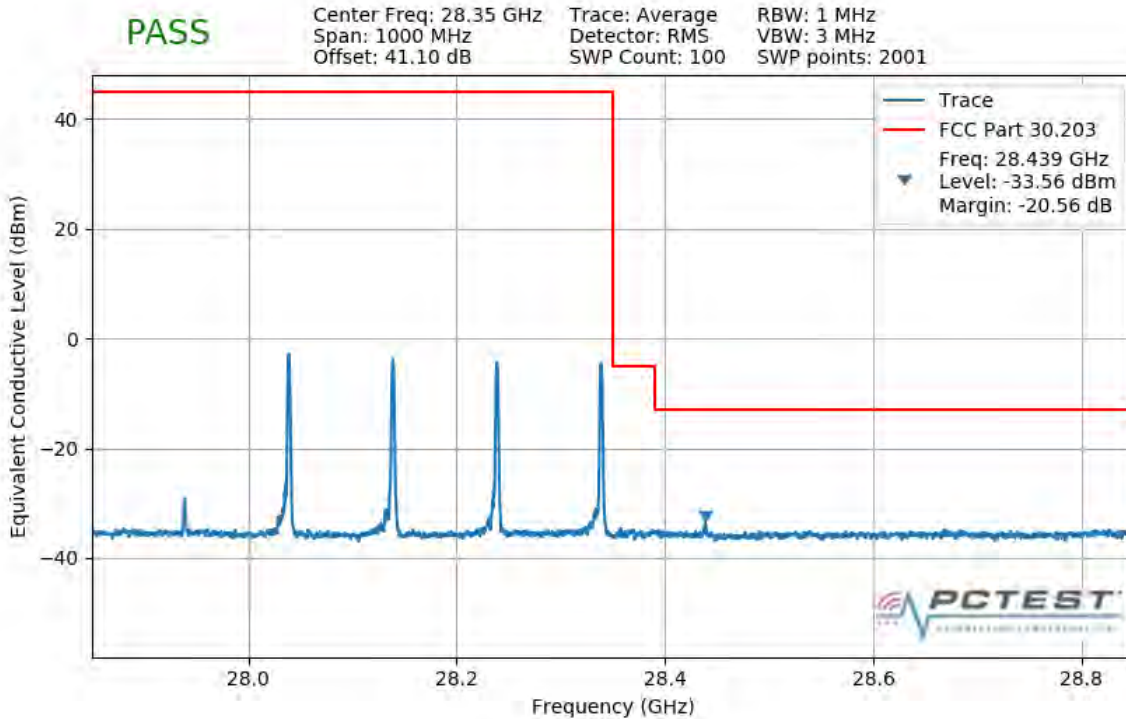


Plot 7-502. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 298 of 337



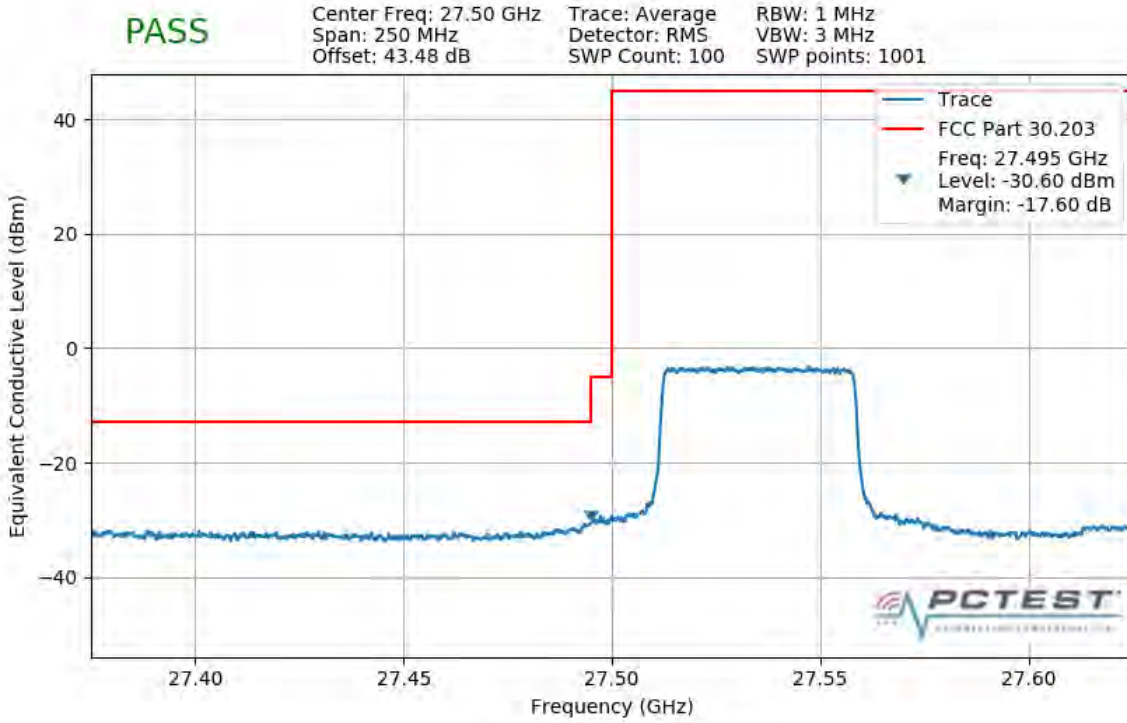
Plot 7-503. Upper Band Edge Plot (4CC 400MHz 16QAM 1 RB)



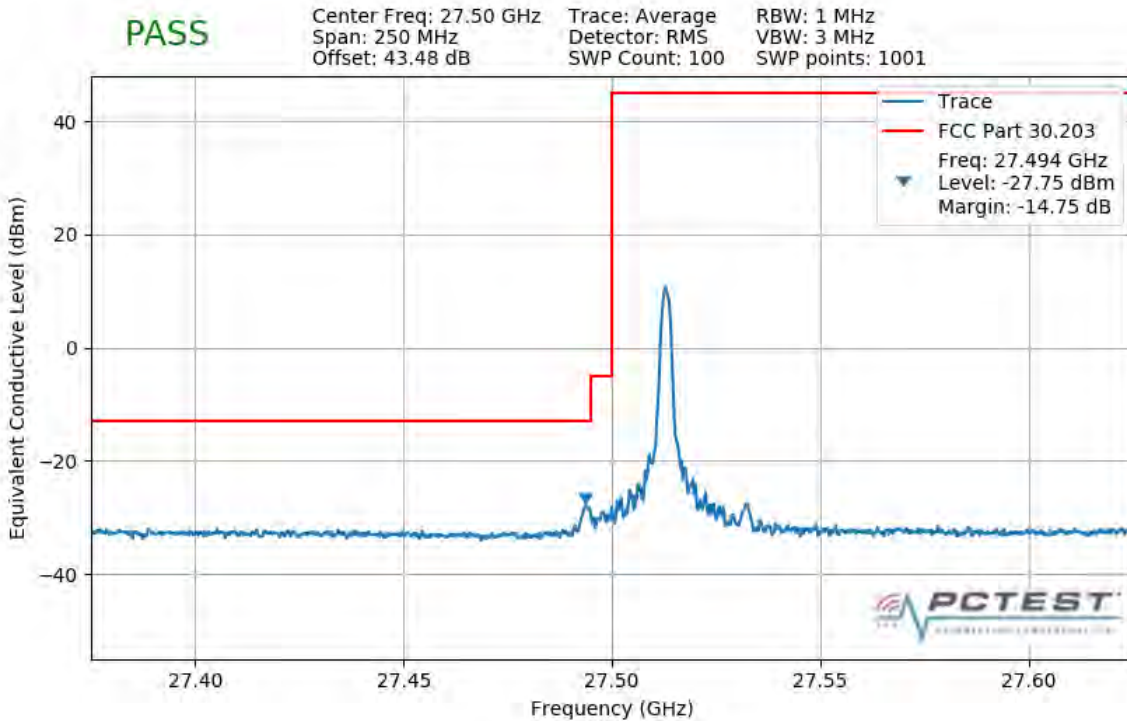
Plot 7-504. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 299 of 337	

V Beam

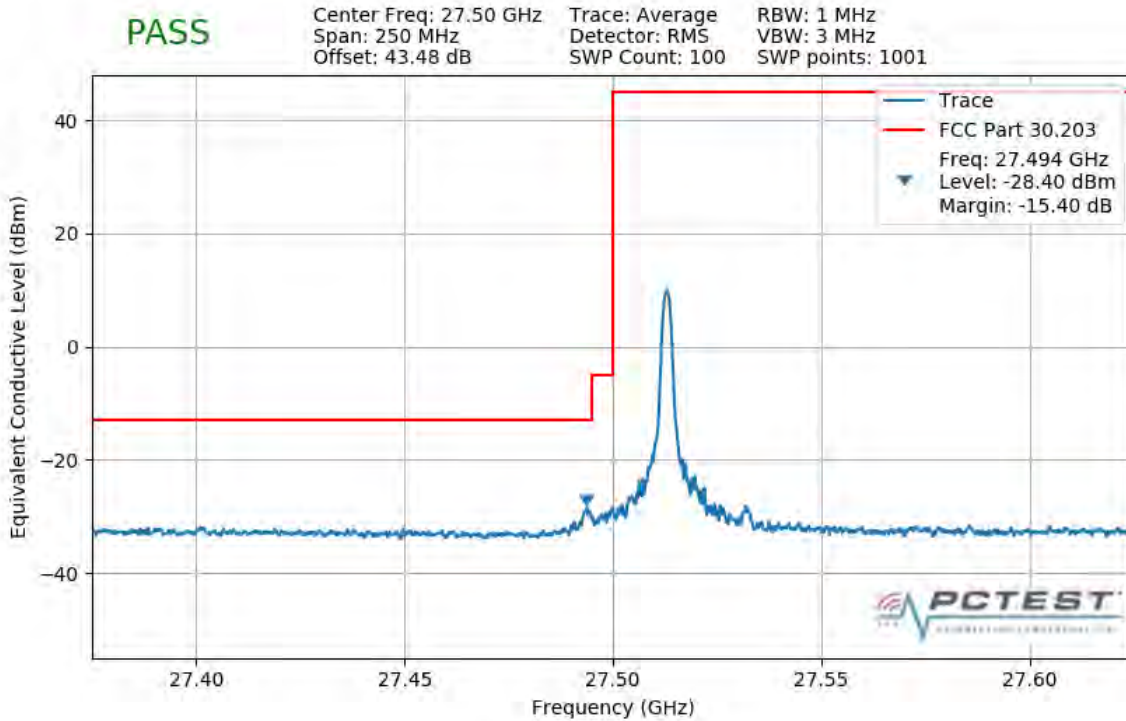


Plot 7-505. Lower Band Edge Plot (1CC 50MHz QPSK Full RB)

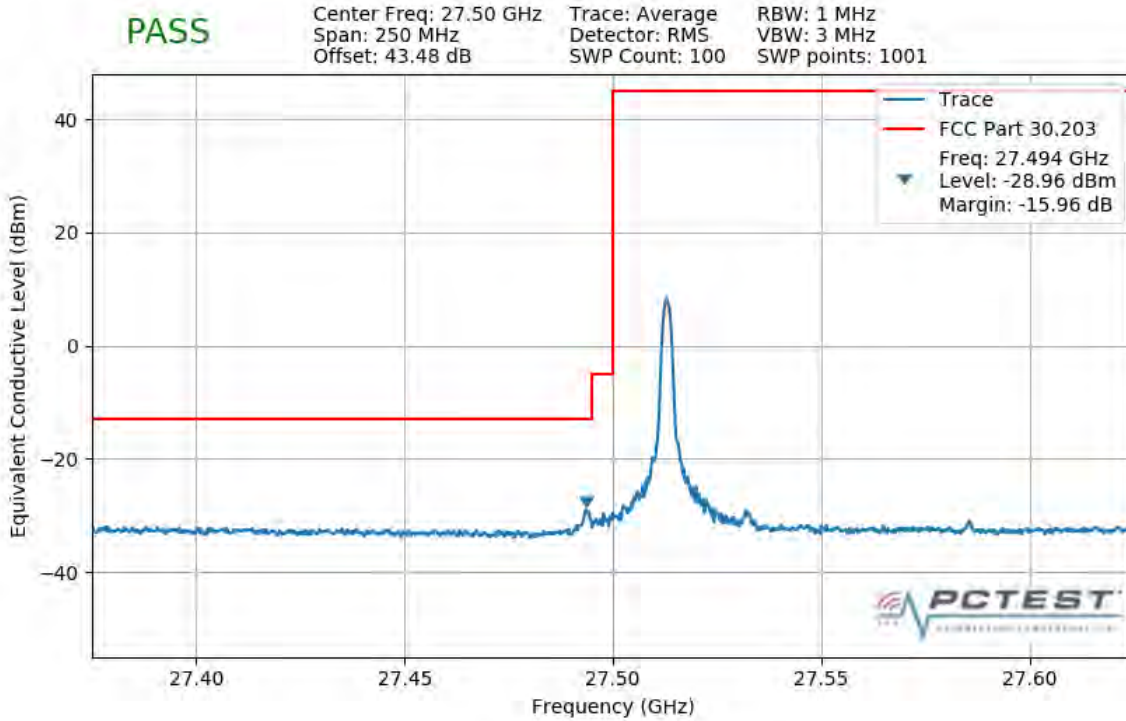


Plot 7-506. Lower Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 300 of 337

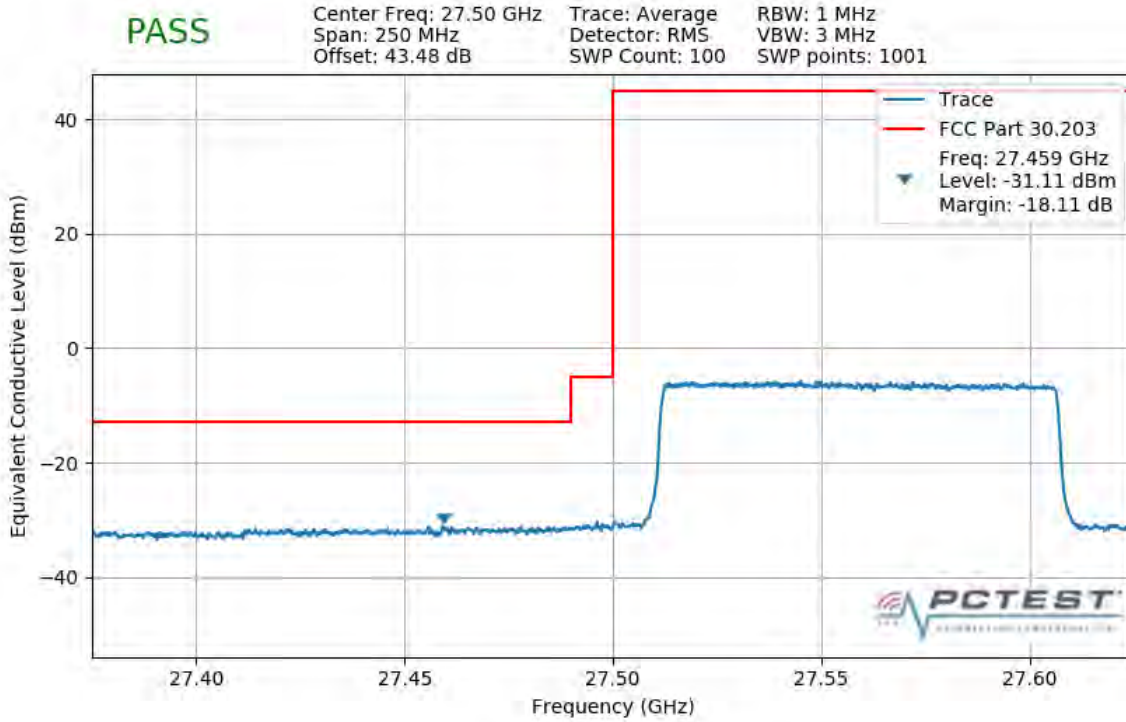


Plot 7-507. Lower Band Edge Plot (1CC 50MHz 16QAM 1 RB)

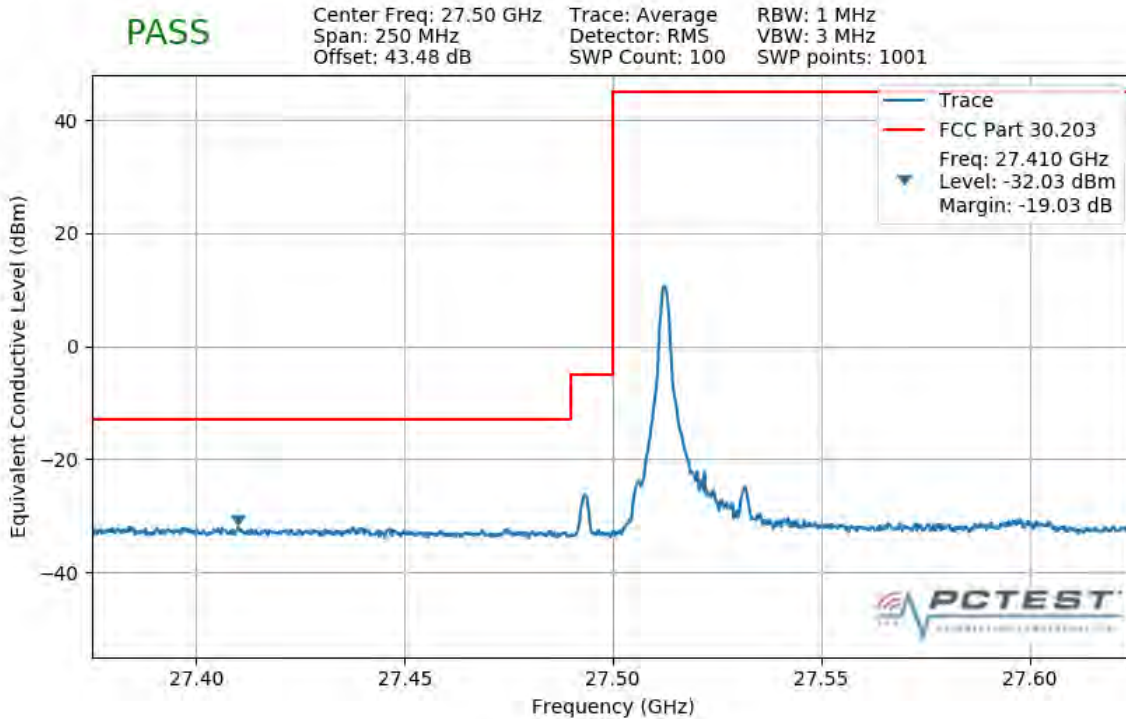


Plot 7-508. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 301 of 337

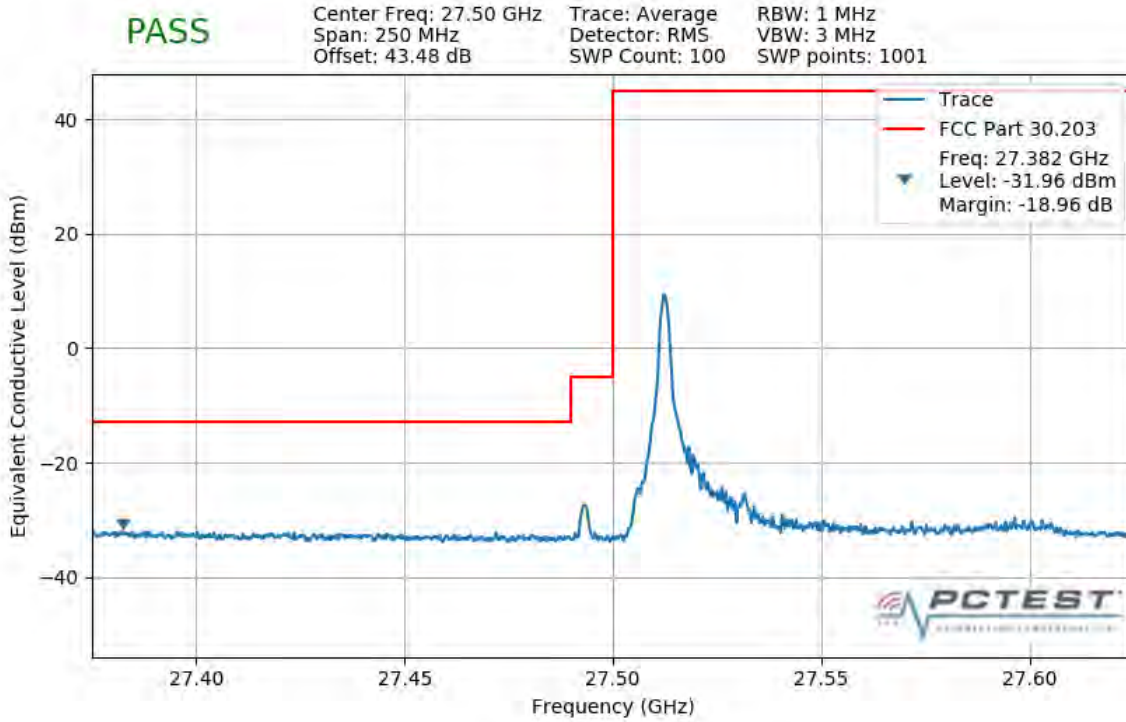


Plot 7-509. Lower Band Edge Plot (1CC 100MHz QPSK Full RB)

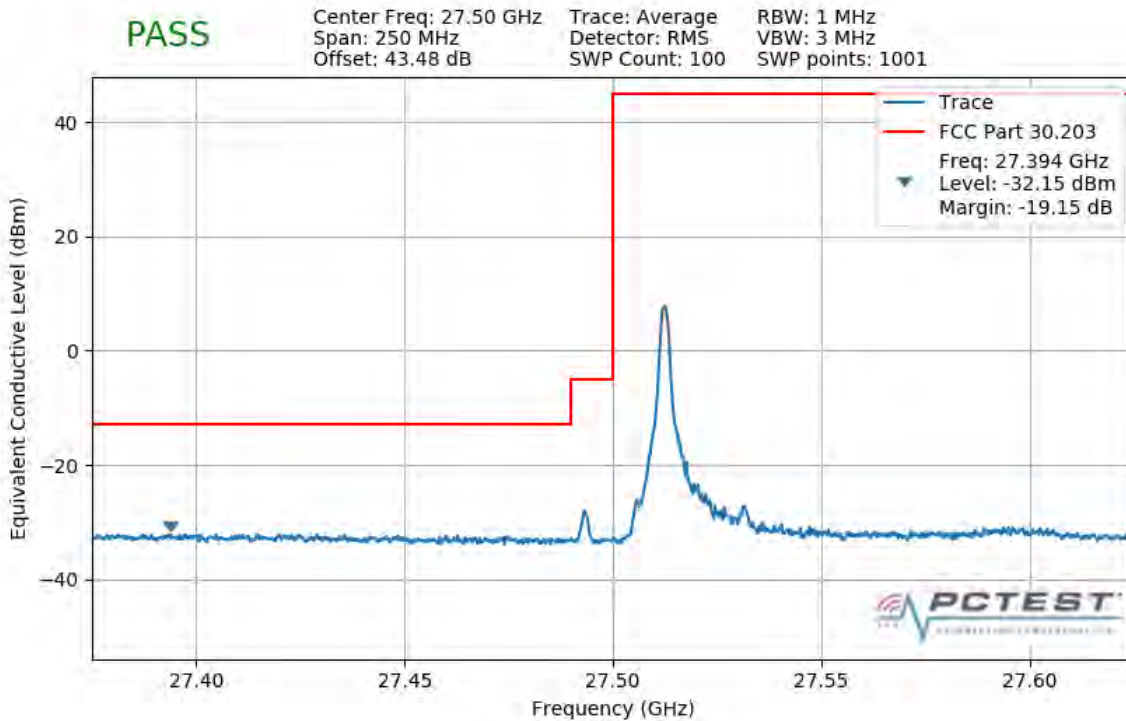


Plot 7-510. Lower Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 302 of 337

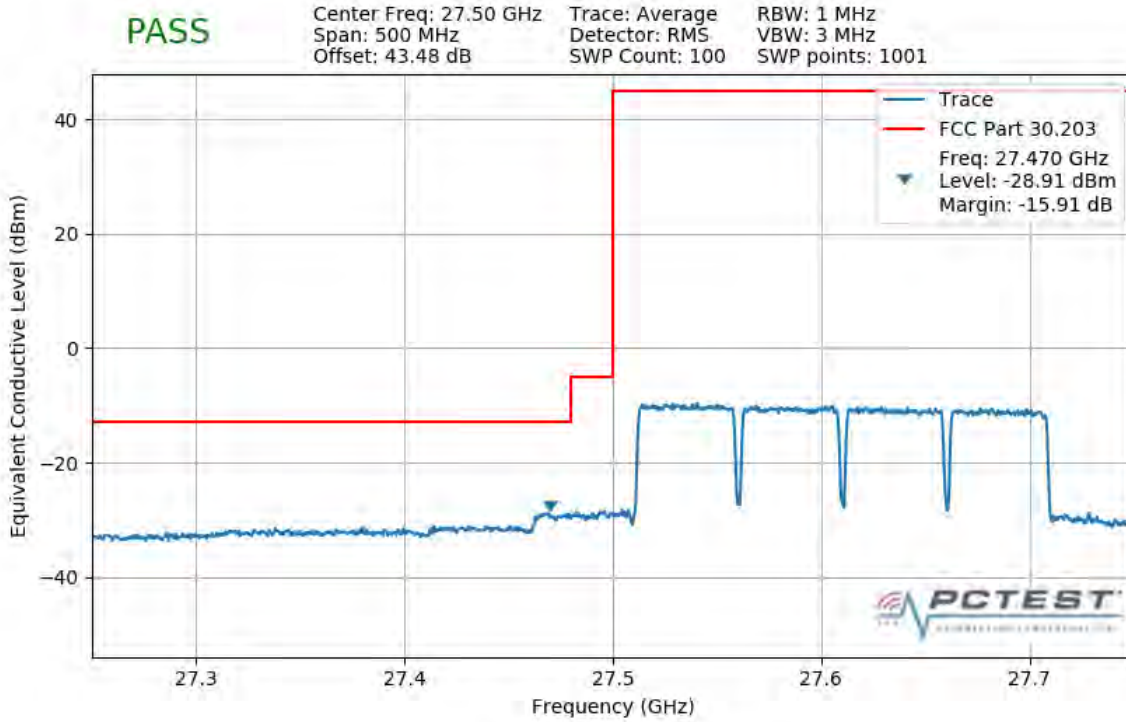


Plot 7-511. Lower Band Edge Plot (1CC 100MHz 16QAM 1 RB)

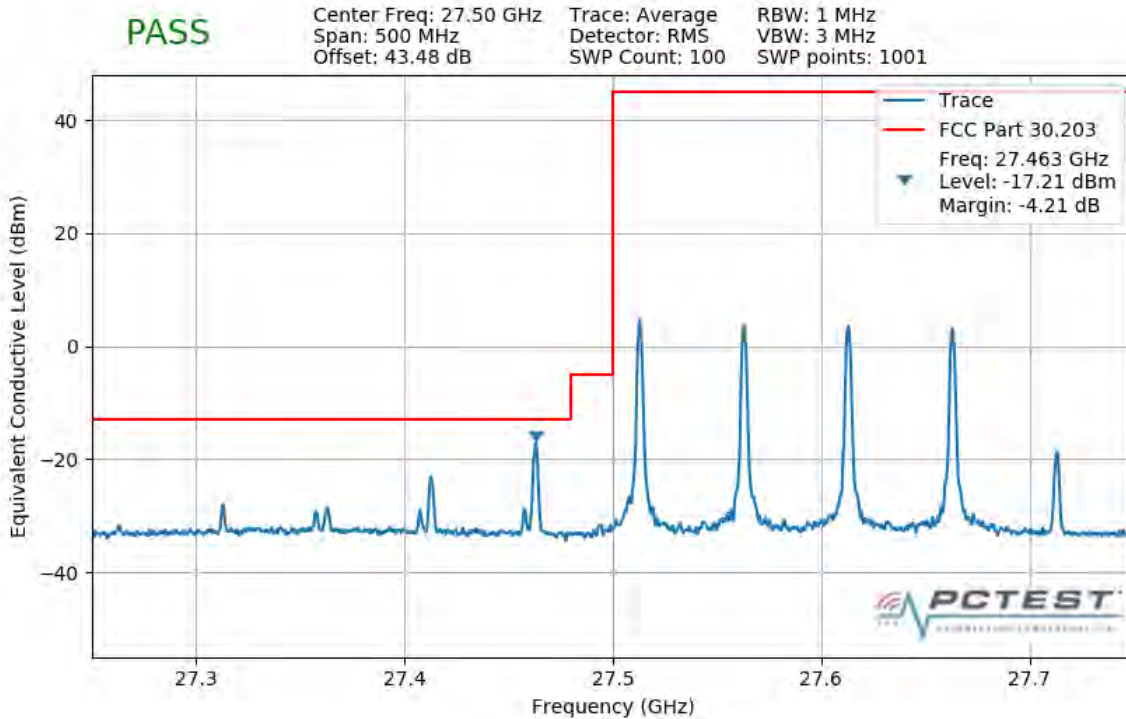


Plot 7-512. Lower Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 303 of 337

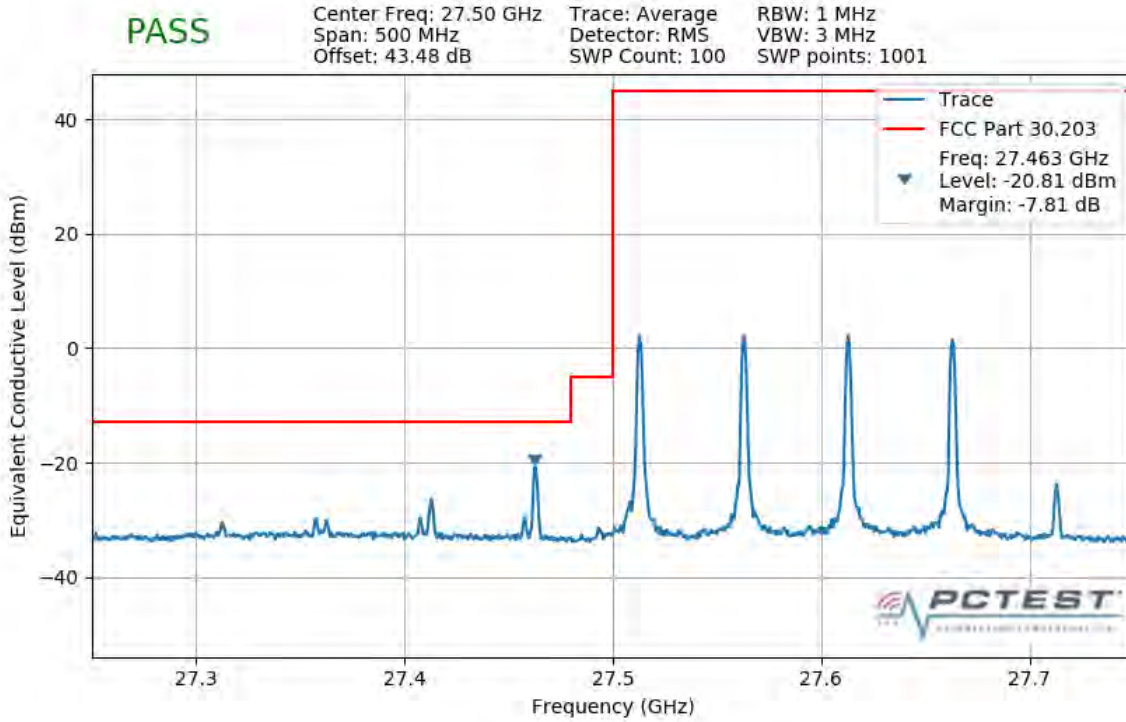


Plot 7-513. Lower Band Edge Plot (4CC 200MHz QPSK Full RB)

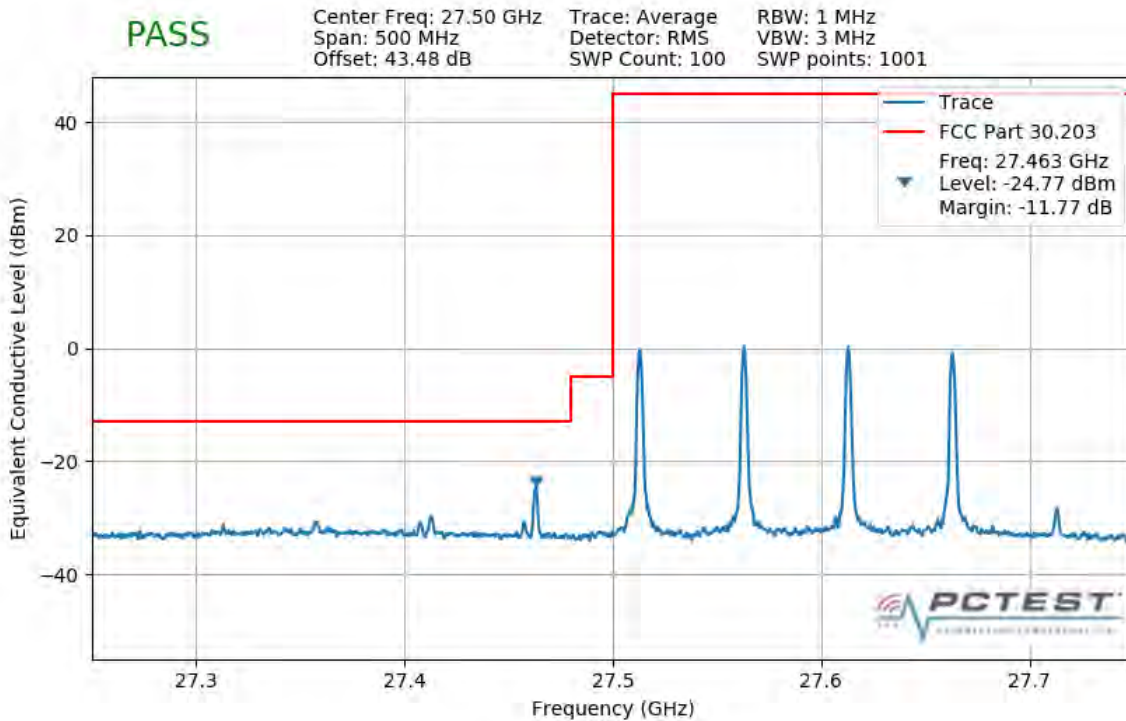


Plot 7-514. Lower Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 304 of 337

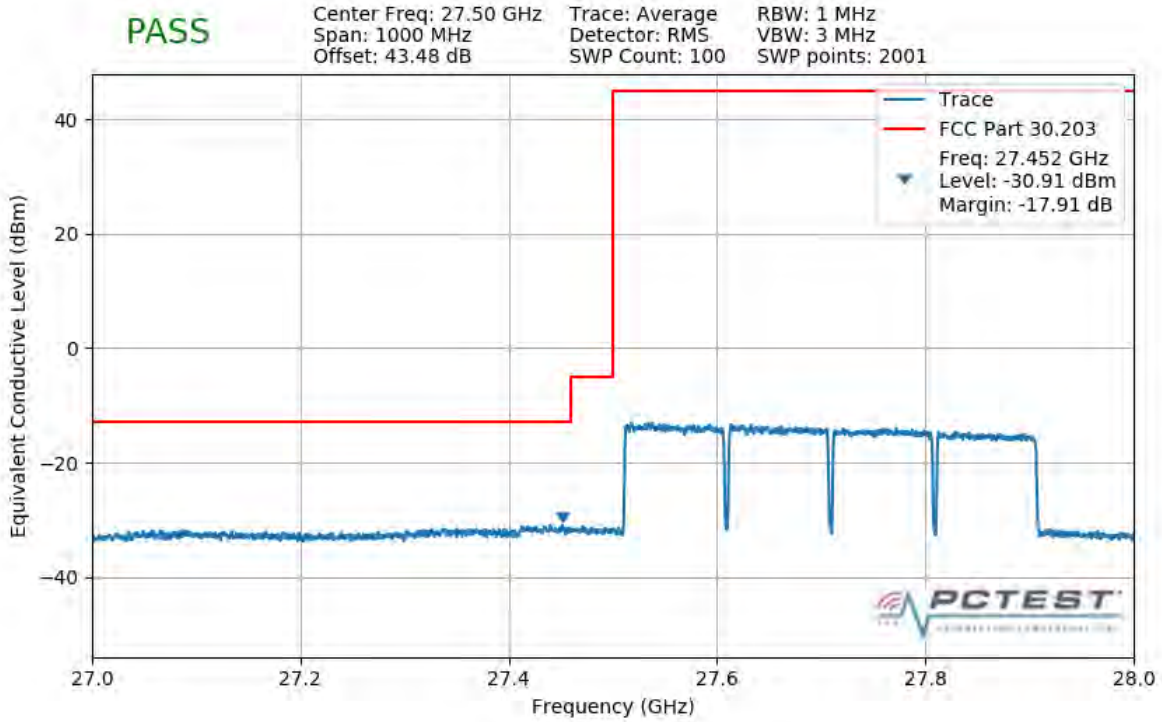


Plot 7-515. Lower Band Edge Plot (4CC 200MHz 16QAM 1 RB)

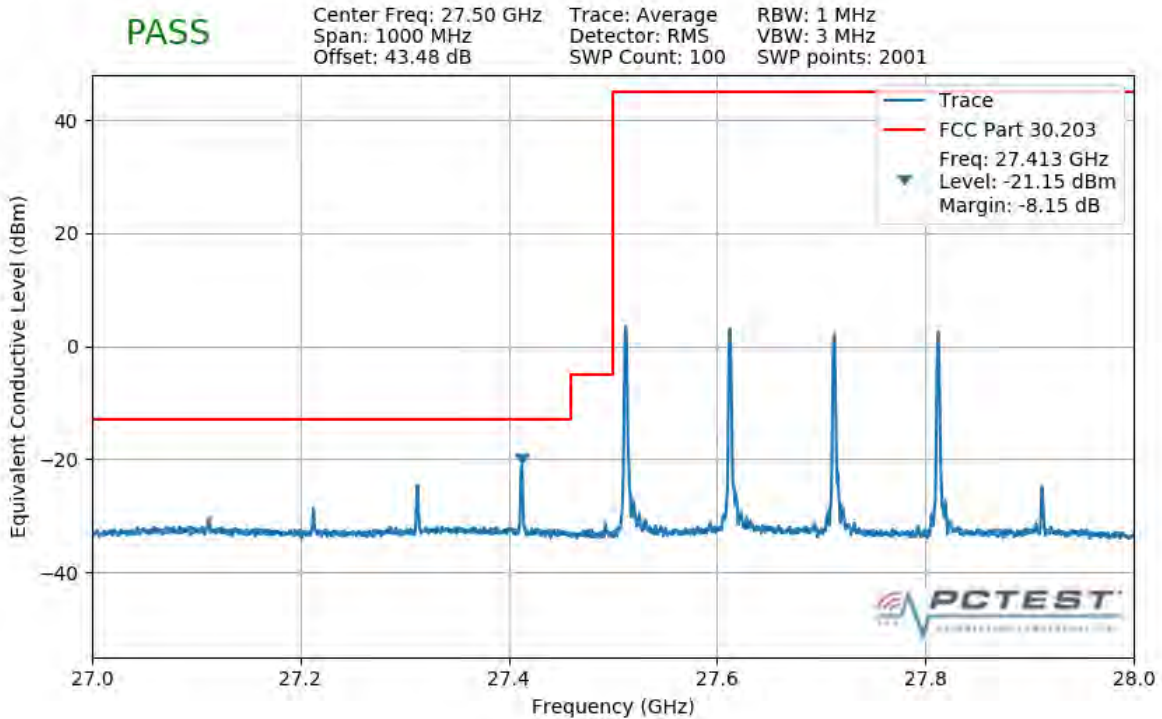


Plot 7-516. Lower Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 305 of 337

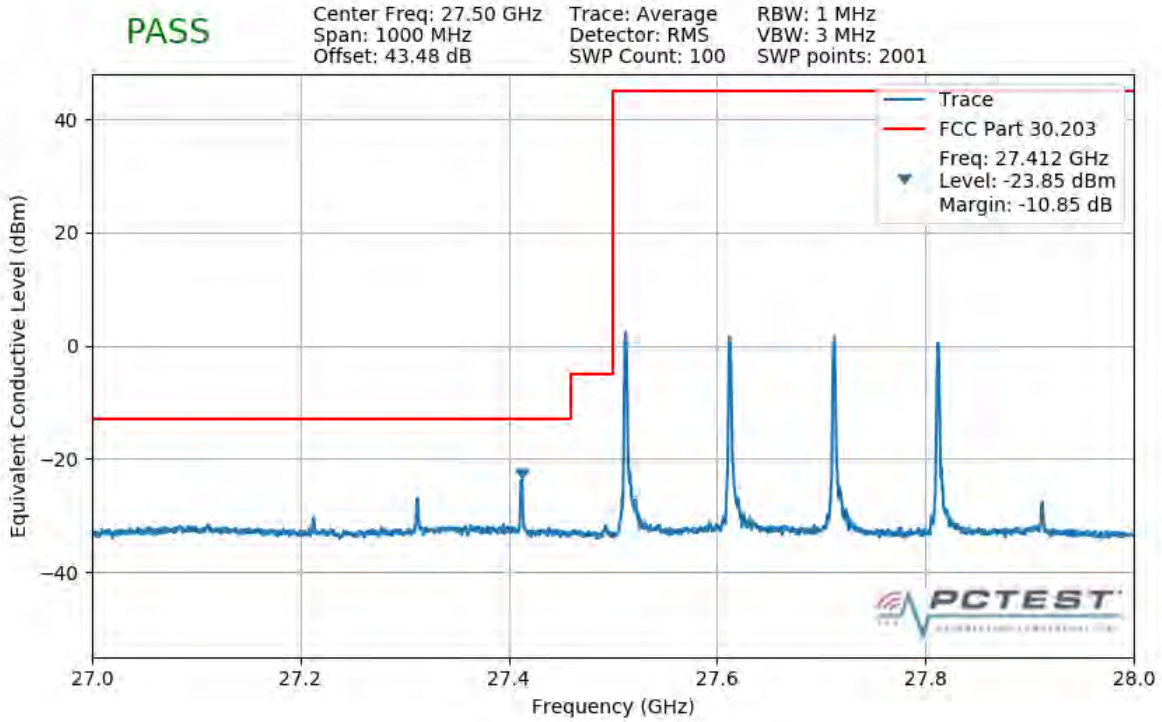


Plot 7-517. Lower Band Edge Plot (4CC 400MHz QPSK Full RB)

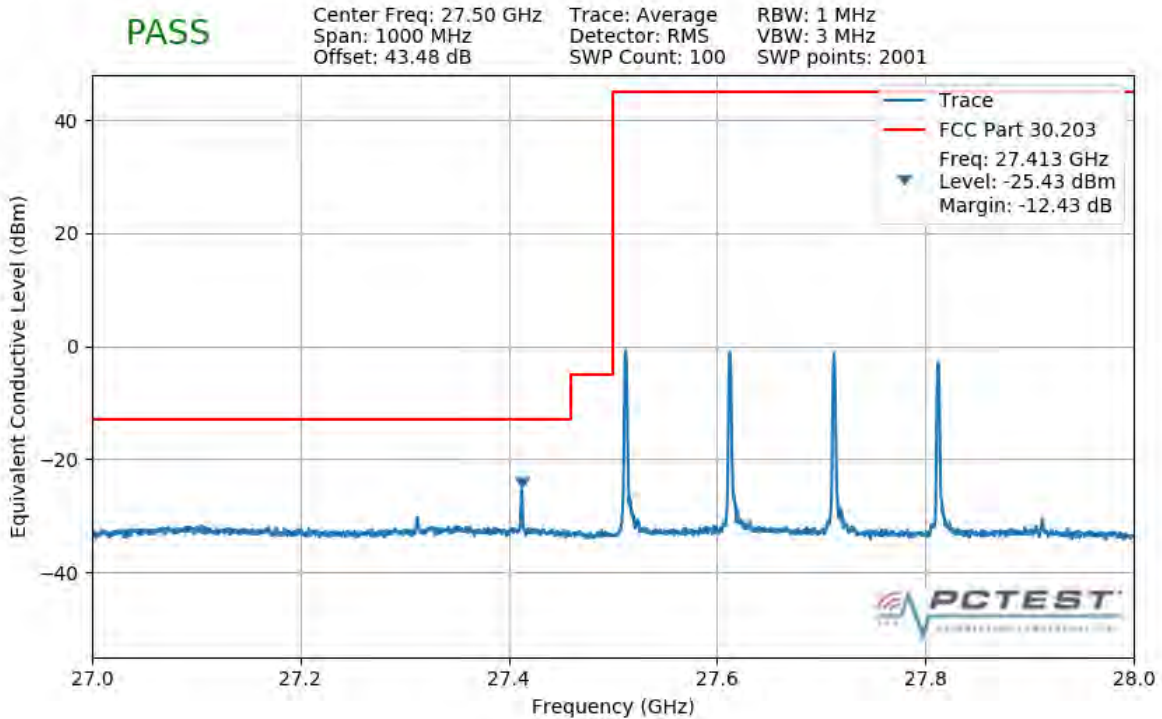


Plot 7-518. Lower Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 306 of 337

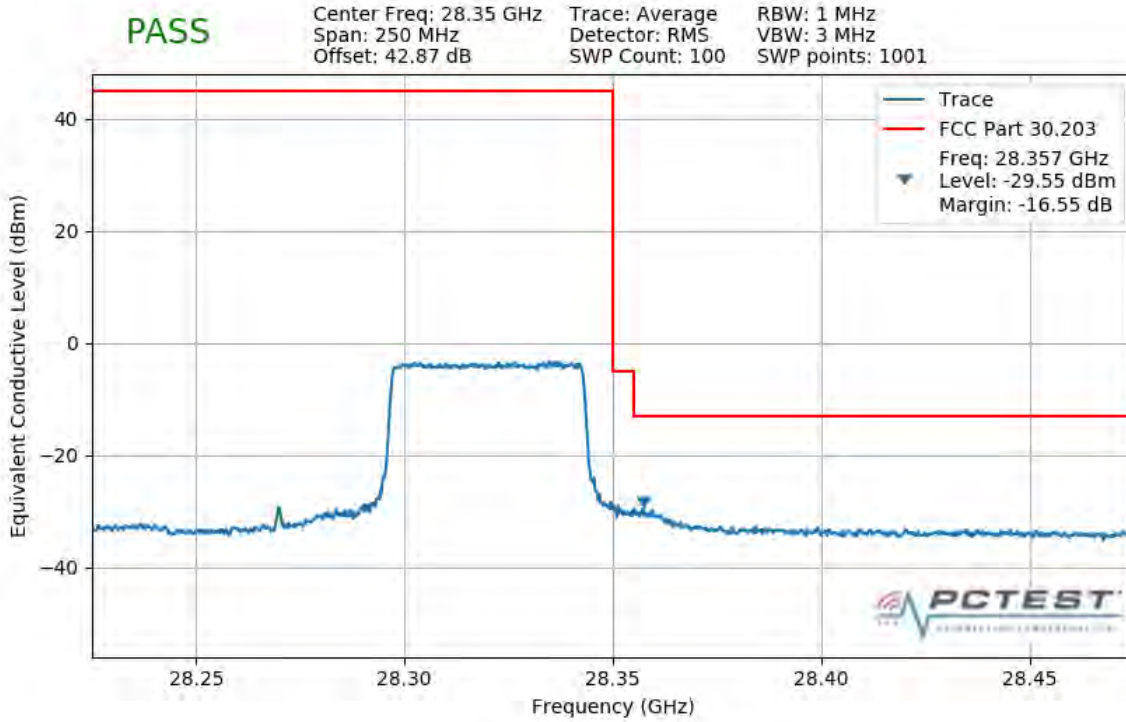


Plot 7-519. Lower Band Edge Plot (4CC 400MHz 16QAM 1 RB)

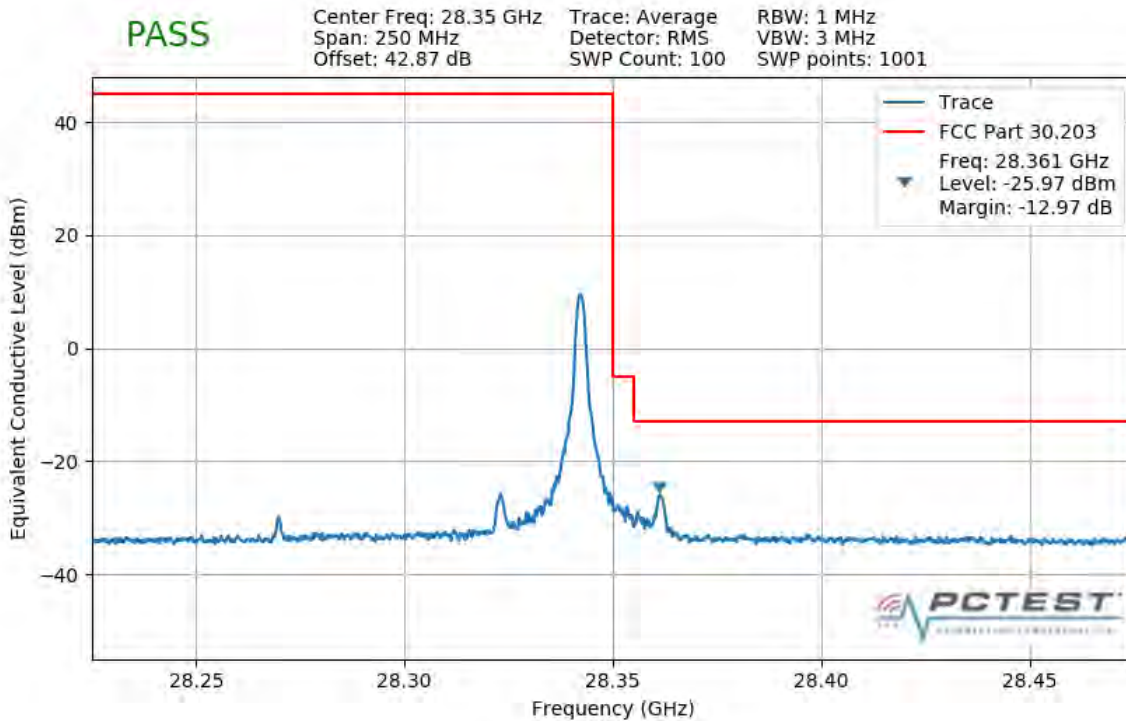


Plot 7-520. Lower Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 307 of 337

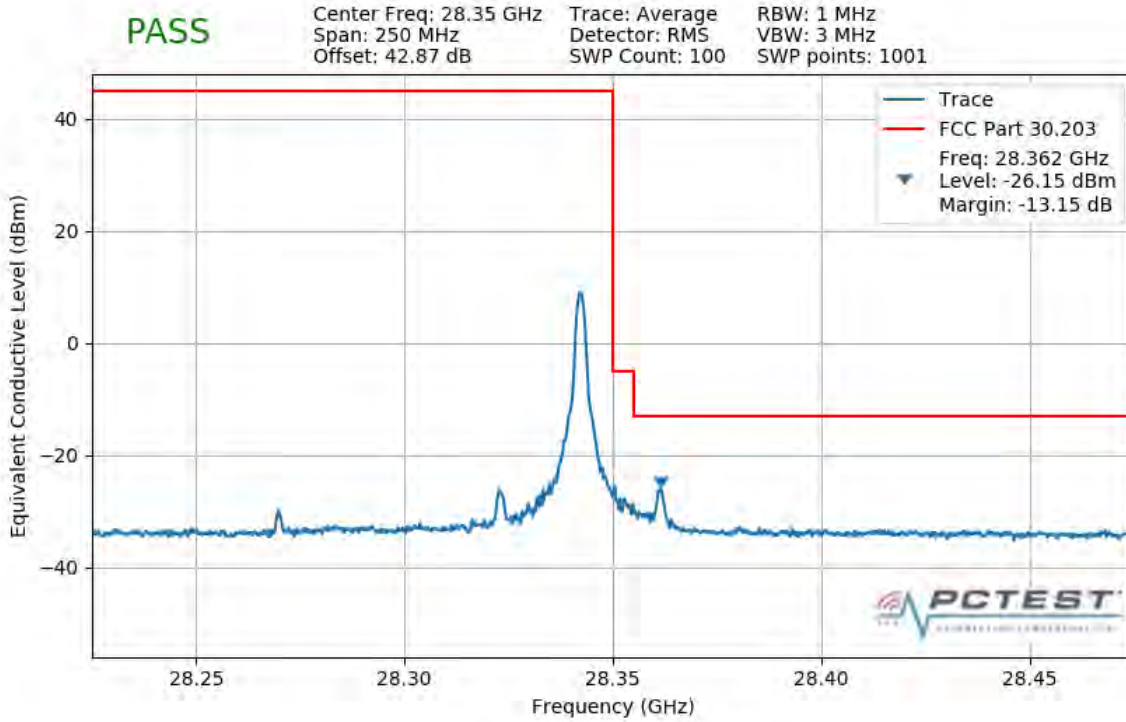


Plot 7-521. Upper Band Edge Plot (1CC 50MHz QPSK Full RB)

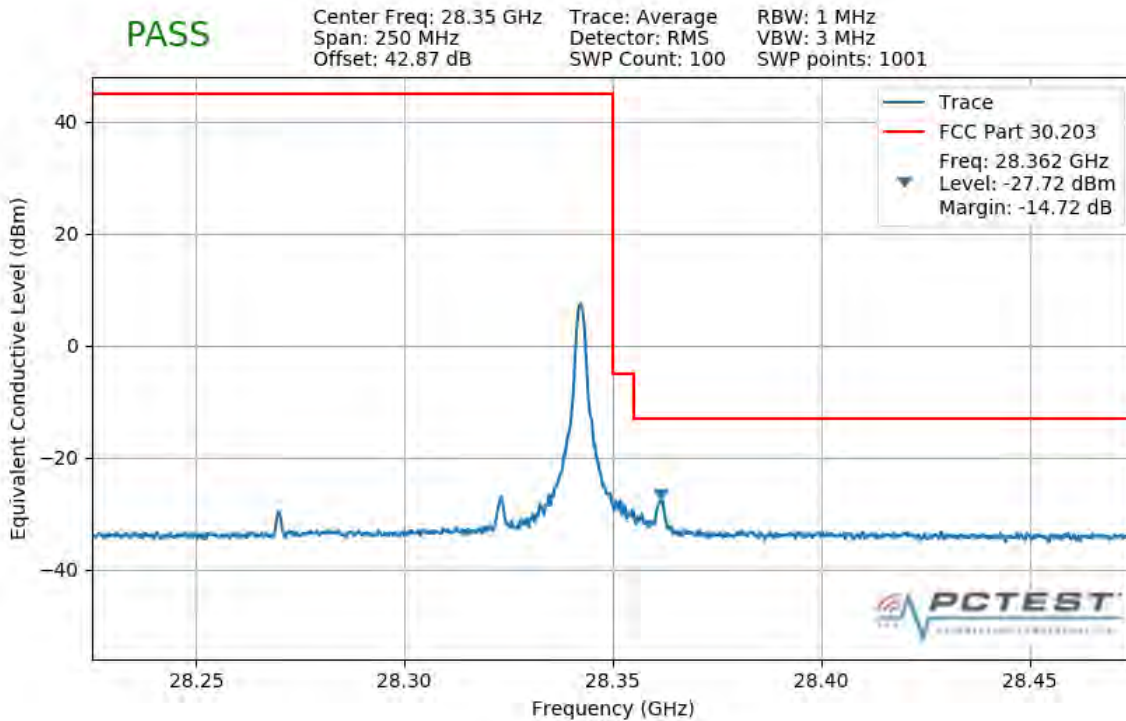


Plot 7-522. Upper Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 308 of 337

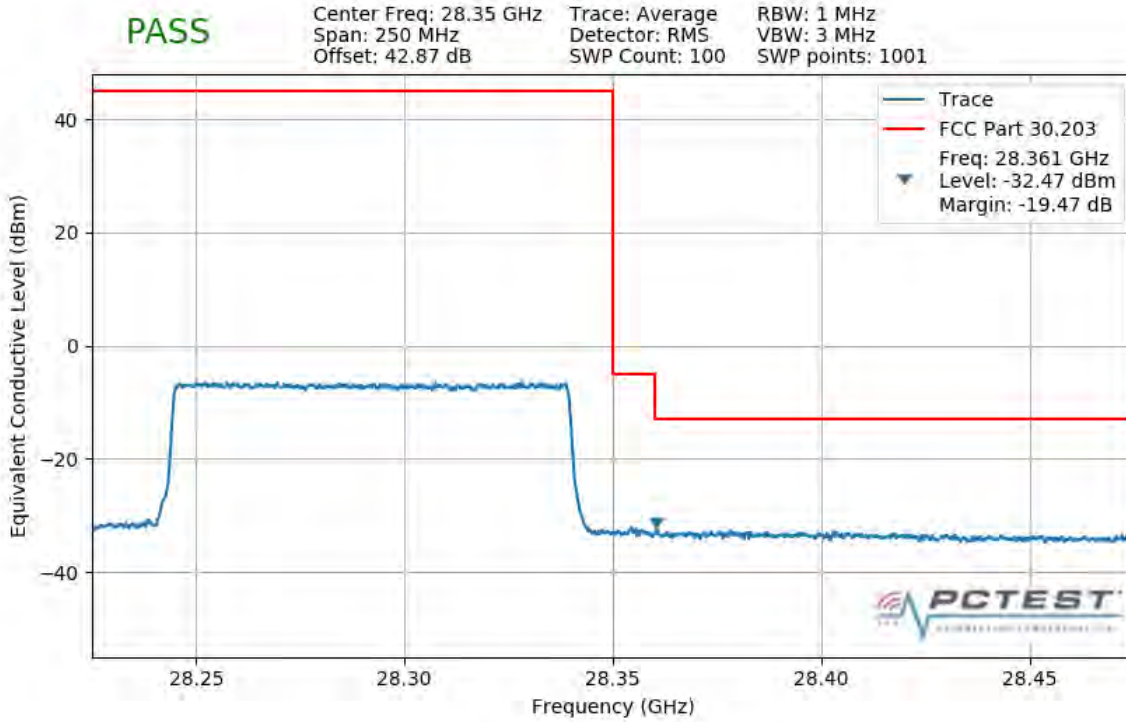


Plot 7-523. Upper Band Edge Plot (1CC 50MHz 16QAM 1 RB)

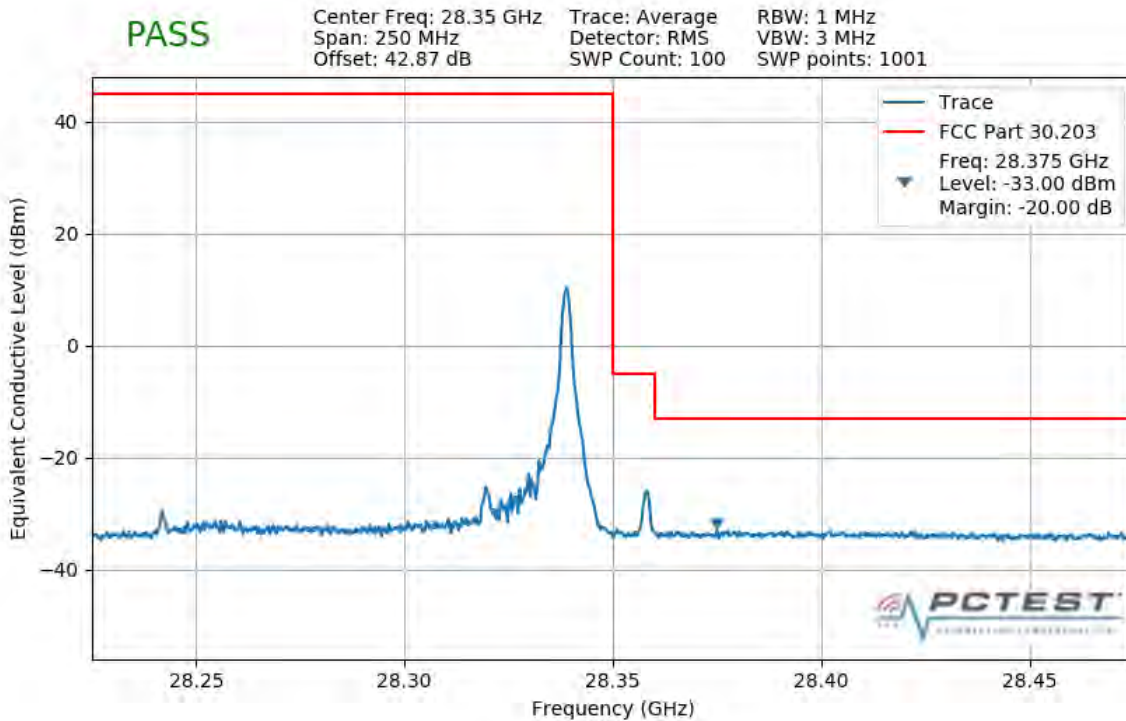


Plot 7-524. Upper Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 309 of 337

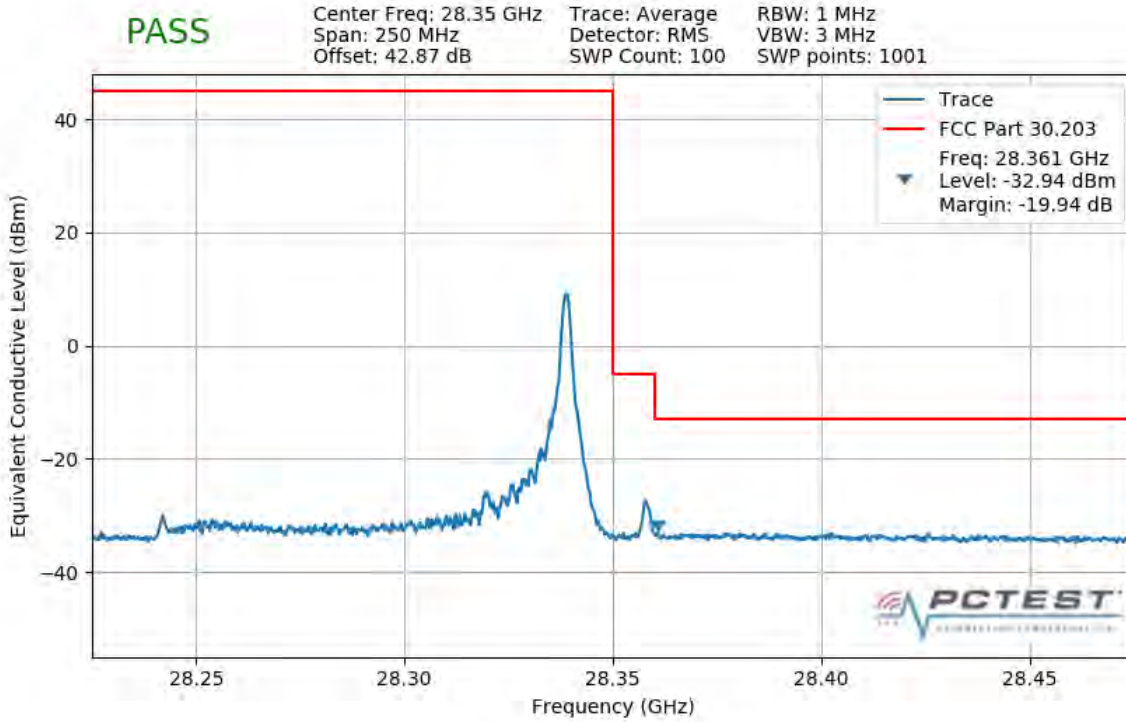


Plot 7-525. Upper Band Edge Plot (1CC 100MHz QPSK Full RB)

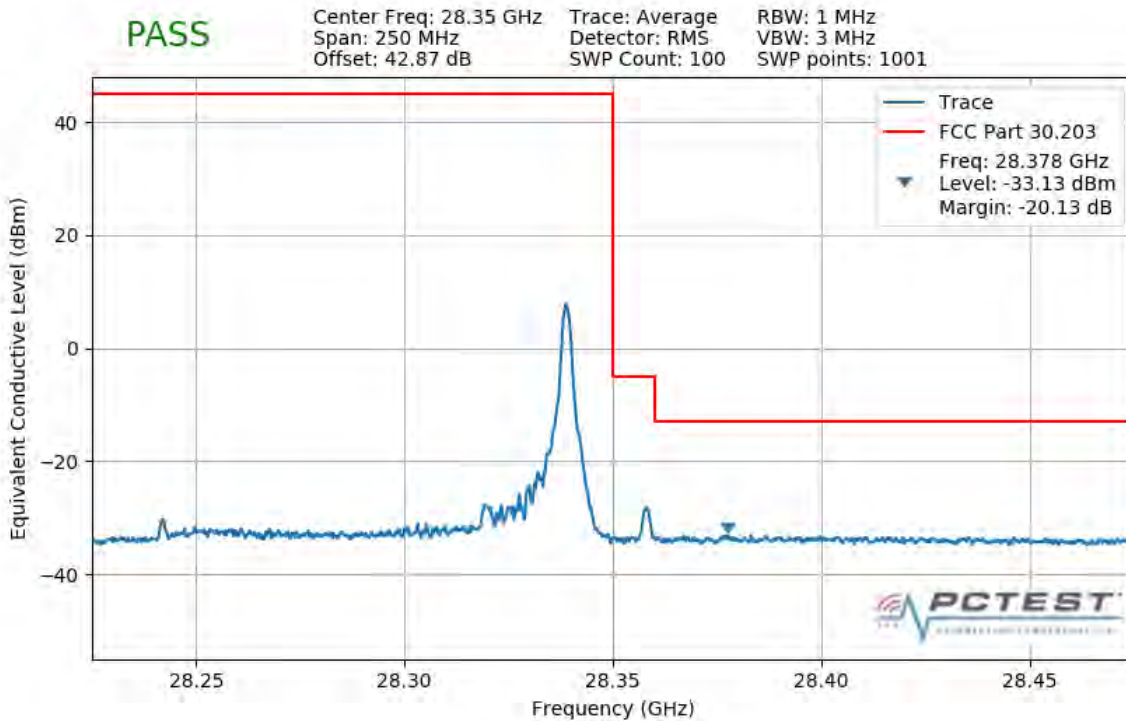


Plot 7-526. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 310 of 337

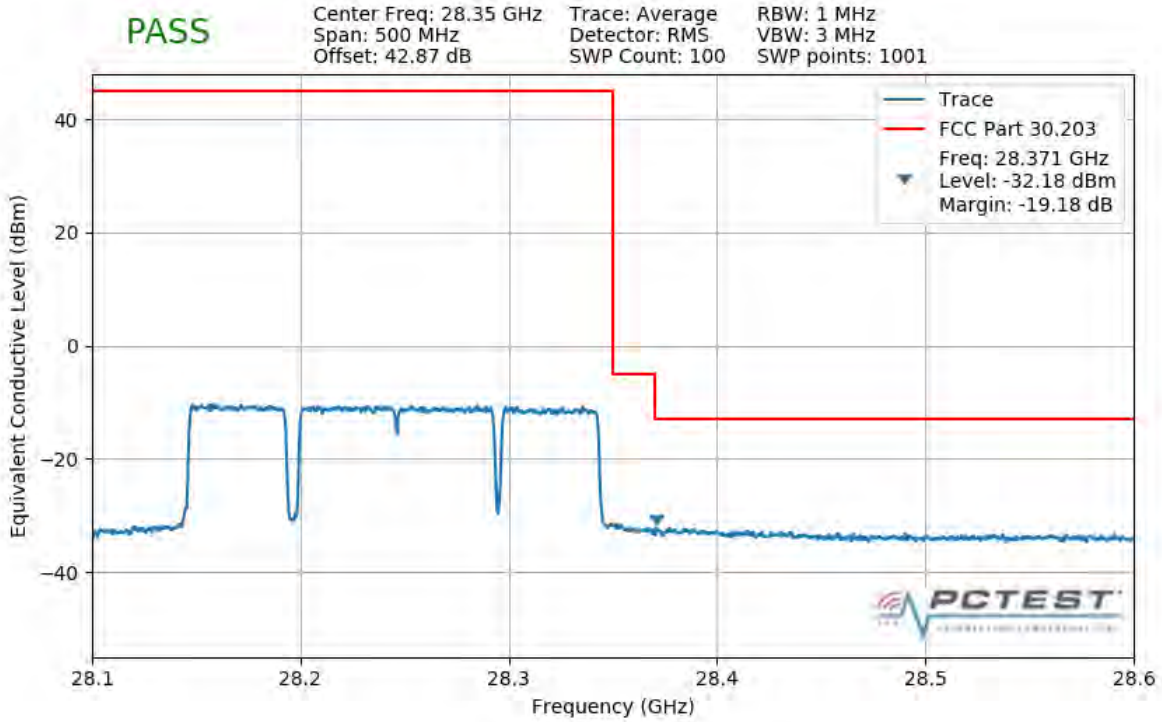


Plot 7-527. Upper Band Edge Plot (1CC 100MHz 16QAM 1 RB)

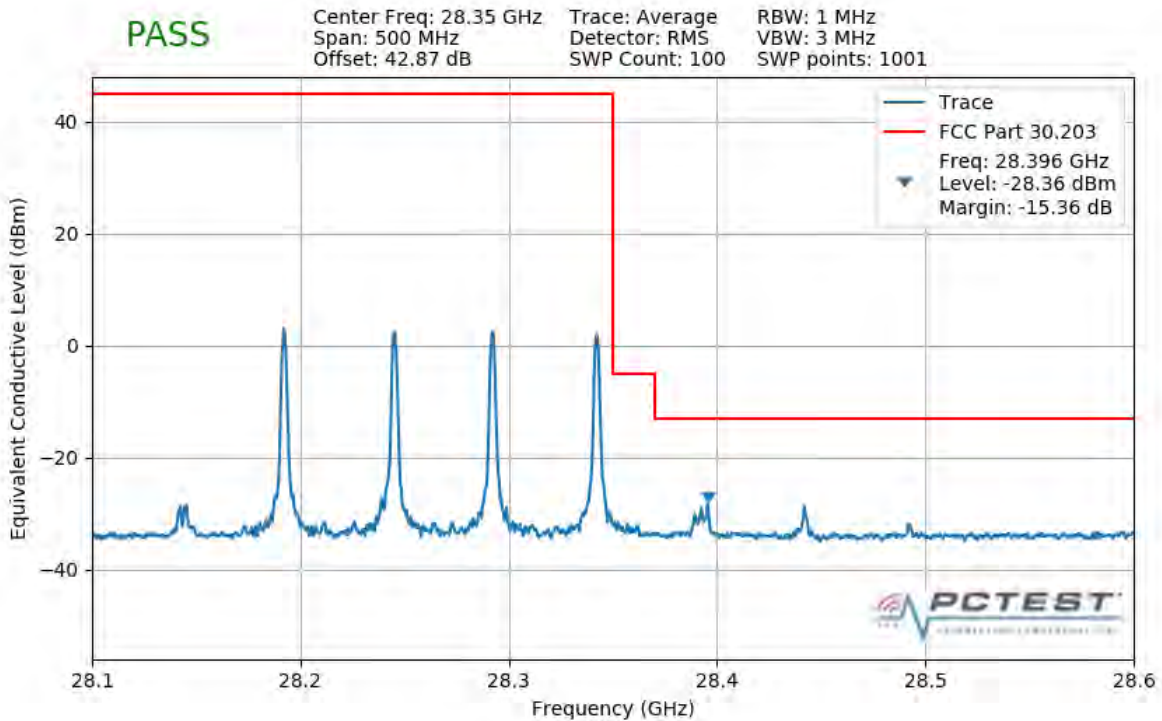


Plot 7-528. Upper Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 311 of 337

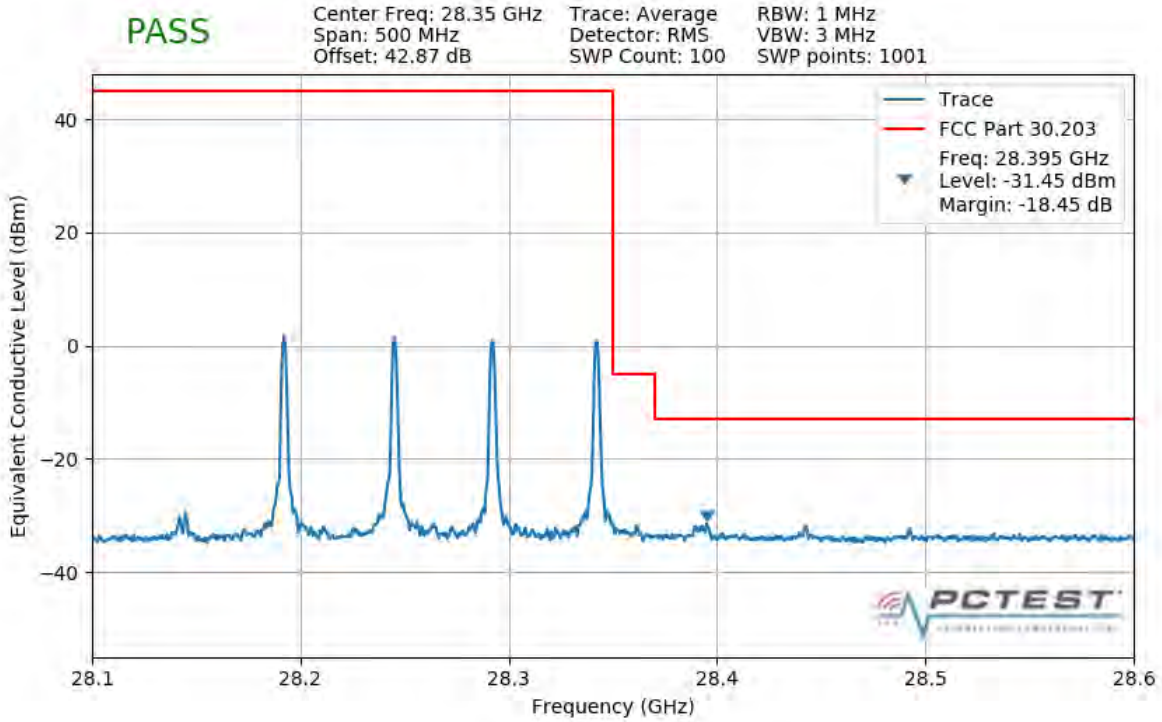


Plot 7-529. Upper Band Edge Plot (4CC 200MHz QPSK Full RB)

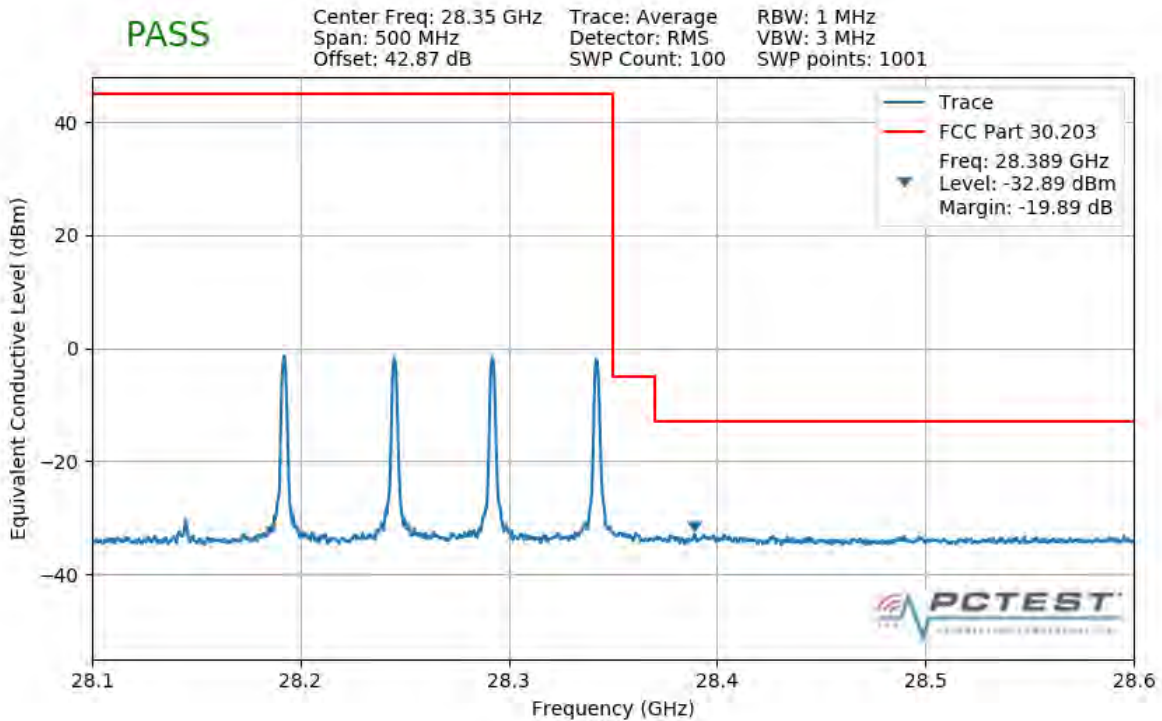


Plot 7-530. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 312 of 337

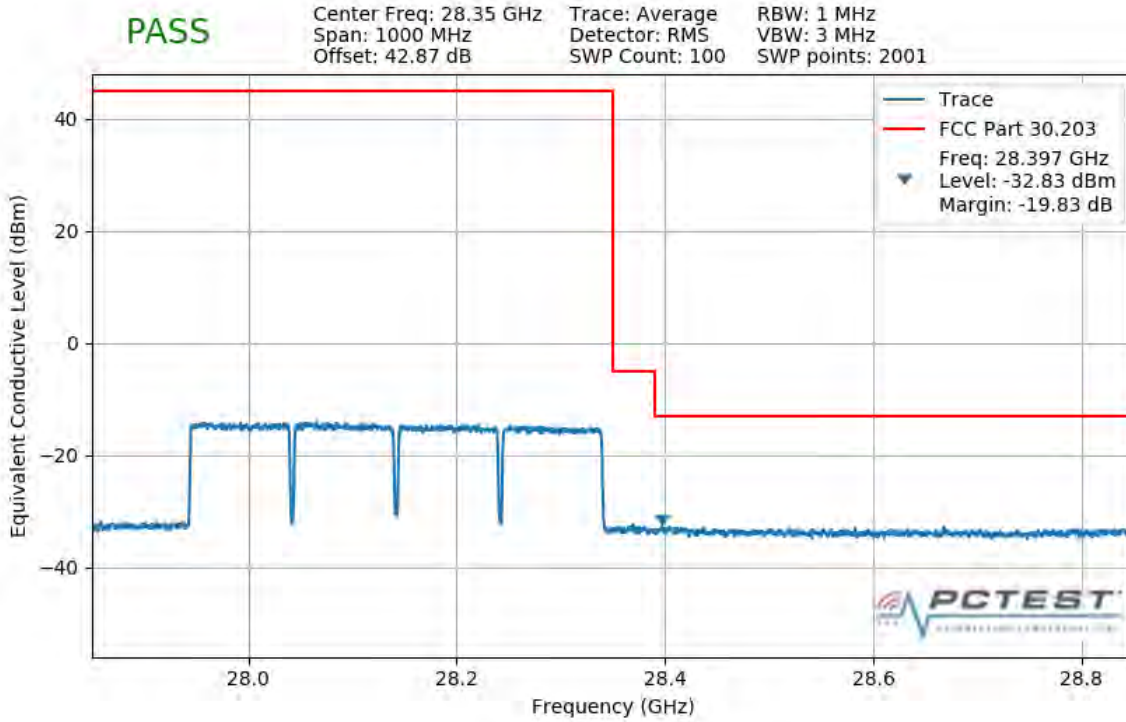


Plot 7-531. Upper Band Edge Plot (4CC 200MHz 16QAM 1 RB)

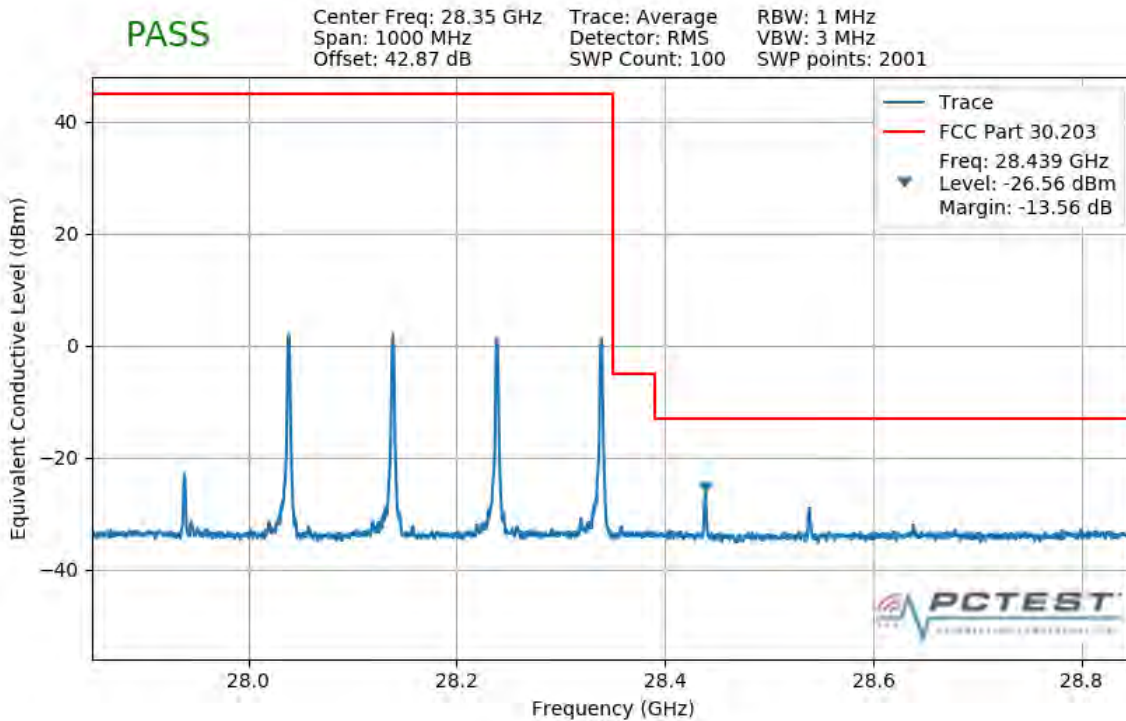


Plot 7-532. Upper Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 313 of 337

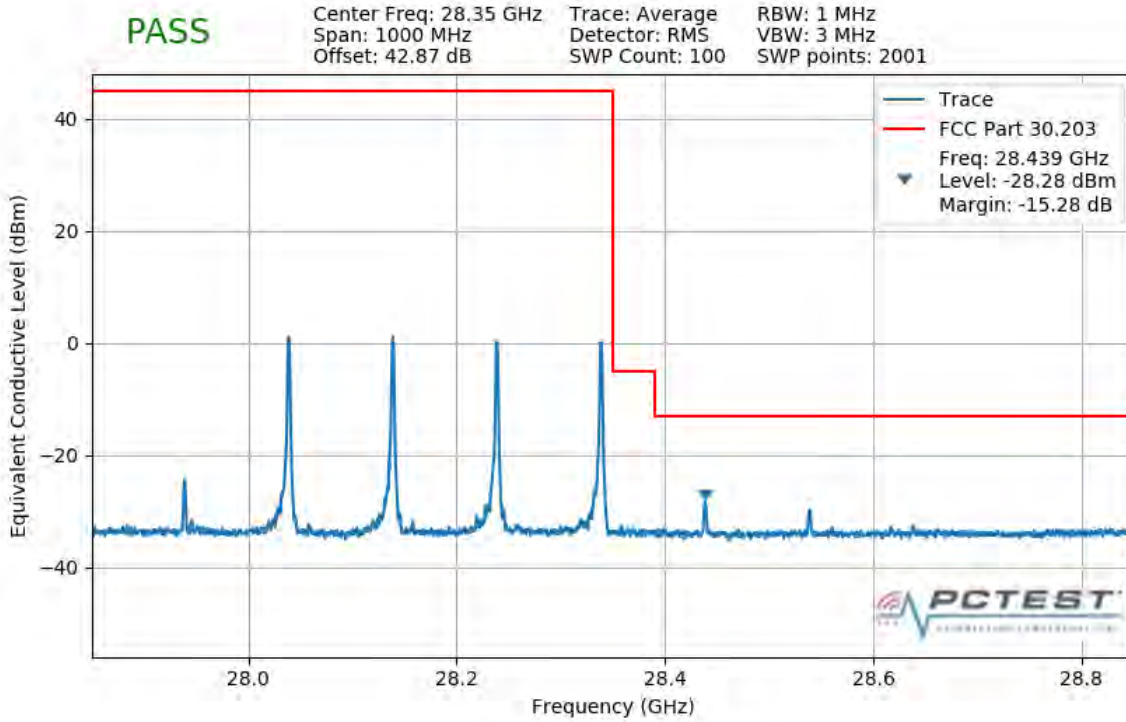


Plot 7-533. Upper Band Edge Plot (4CC 400MHz QPSK Full RB)

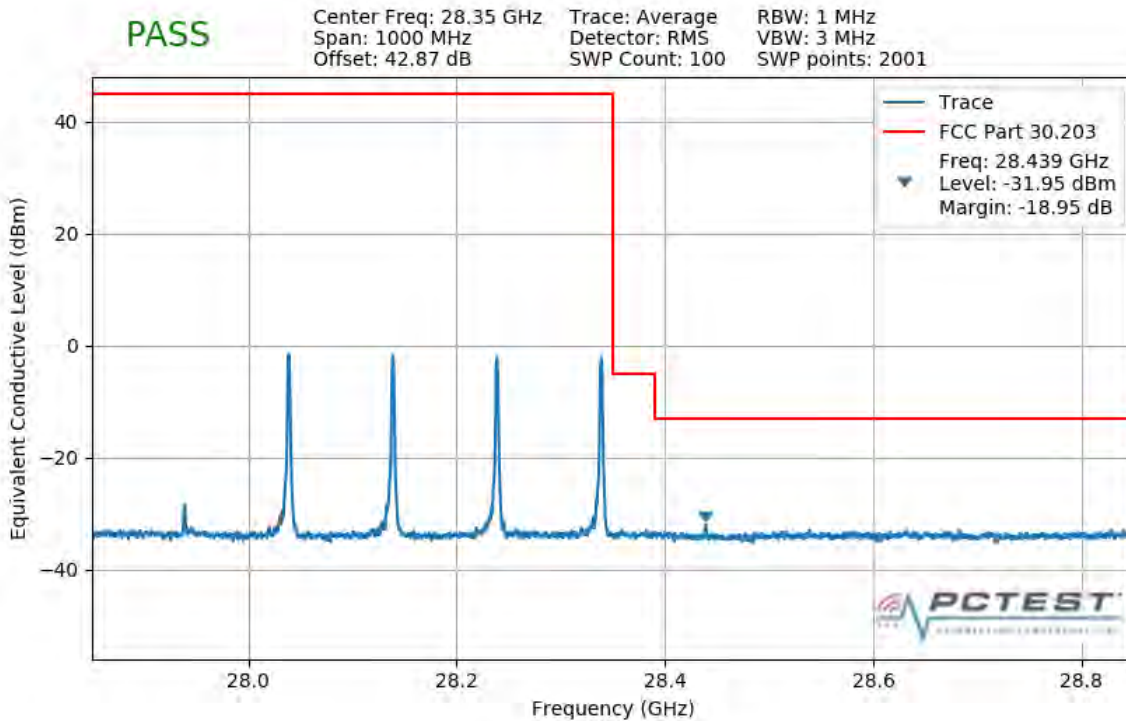


Plot 7-534. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 314 of 337



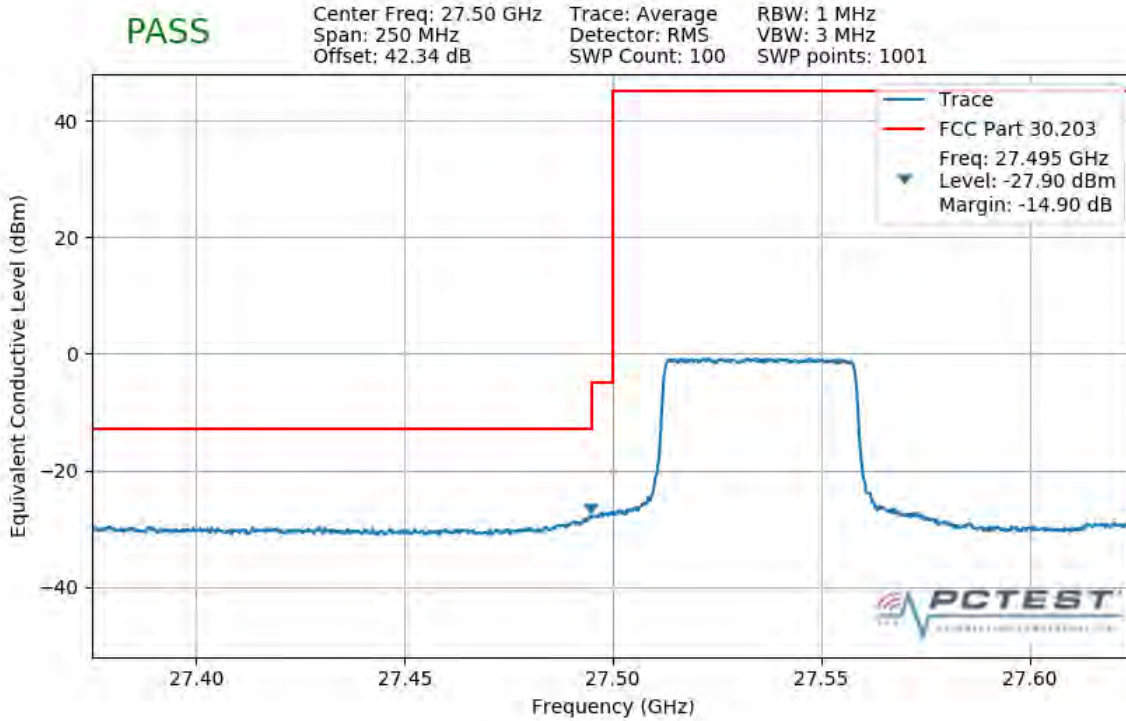
Plot 7-535. Upper Band Edge Plot (4CC 400MHz 16QAM 1 RB)



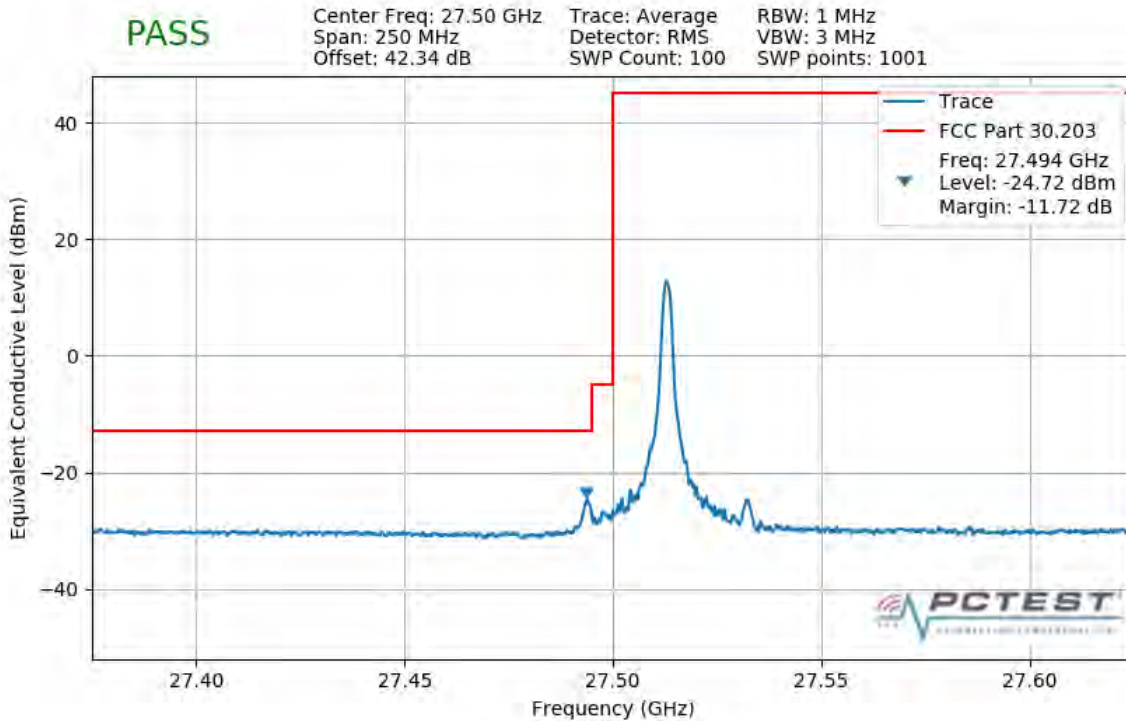
Plot 7-536. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 315 of 337

MIMO

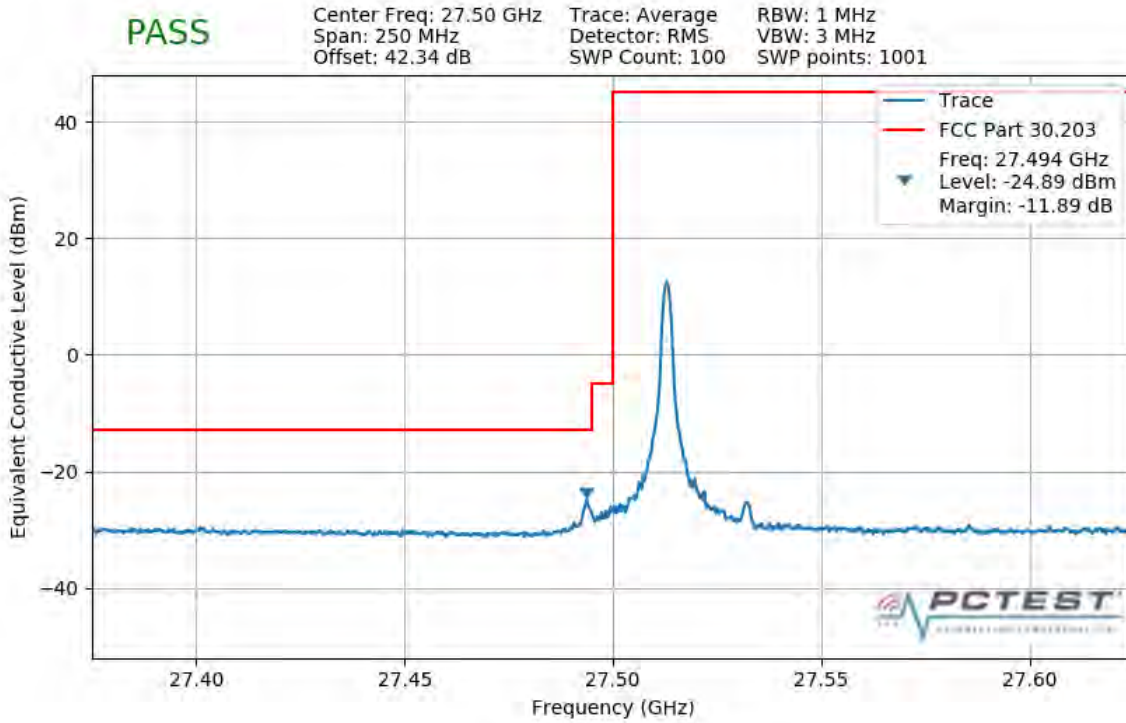


Plot 7-537. Lower Band Edge Plot (1CC 50MHz QPSK Full RB)

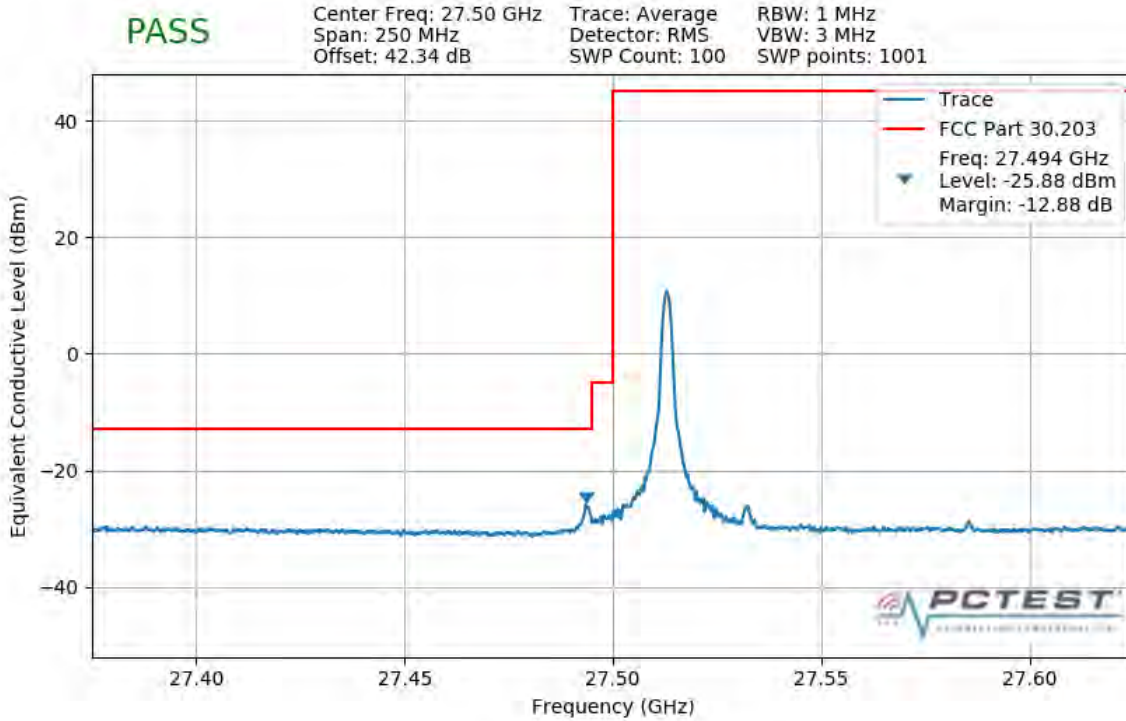


Plot 7-538. Lower Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 316 of 337

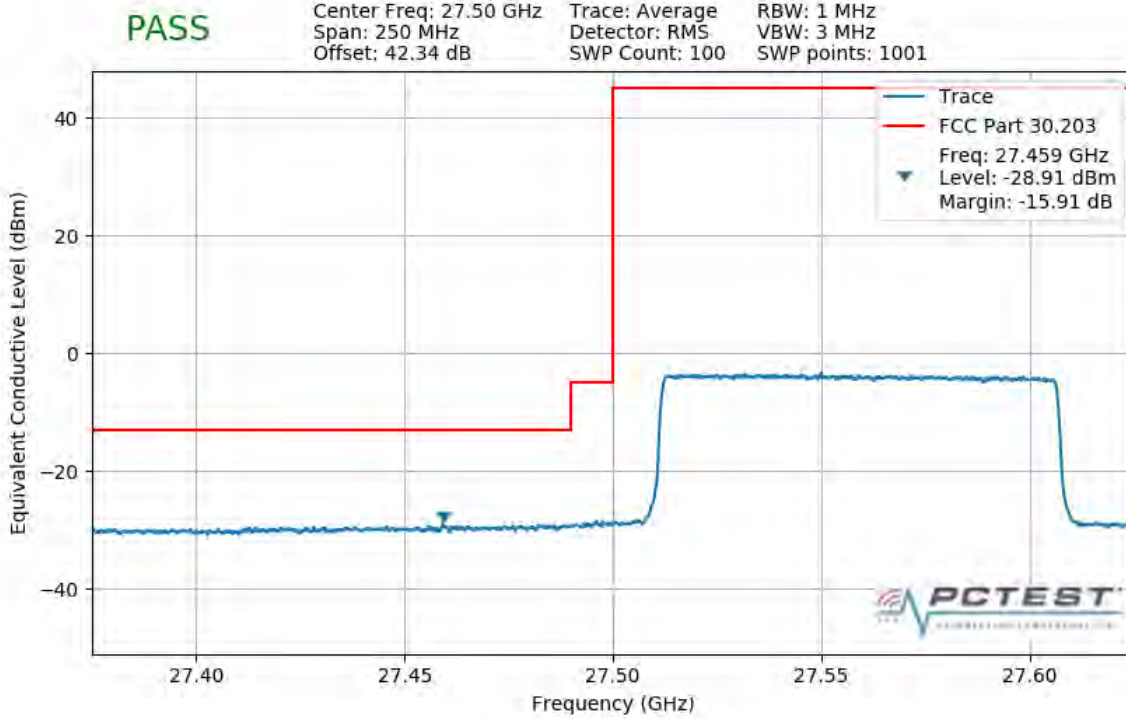


Plot 7-539. Lower Band Edge Plot (1CC 50MHz 16QAM 1 RB)

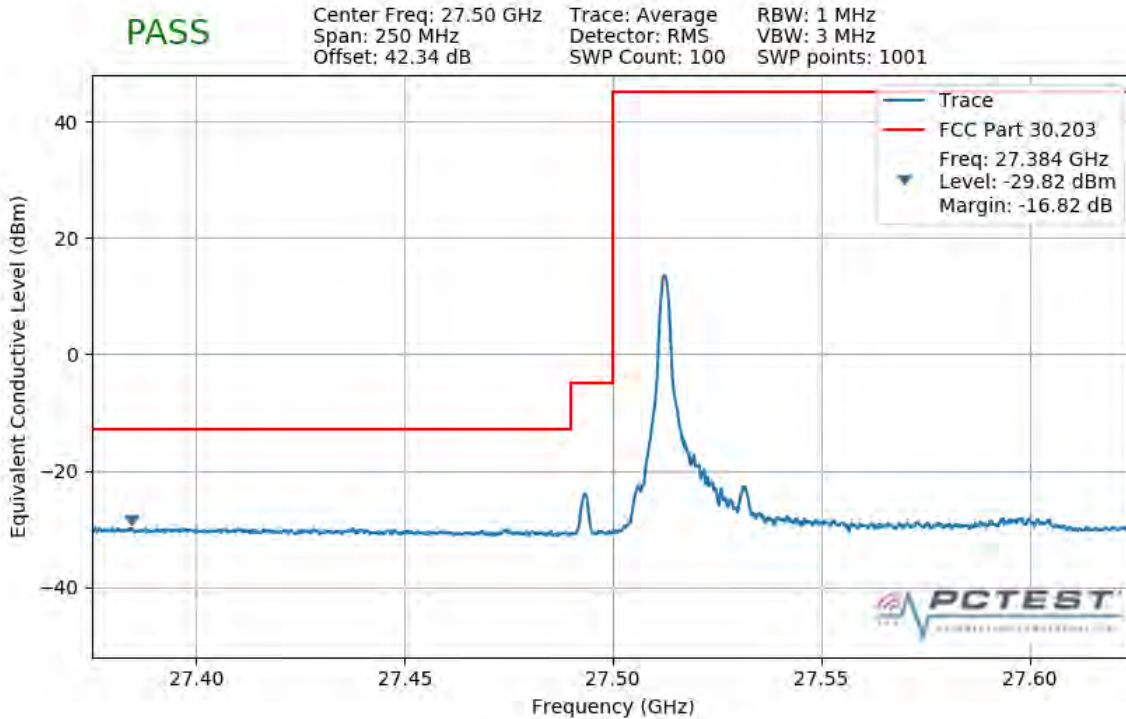


Plot 7-540. Lower Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 317 of 337

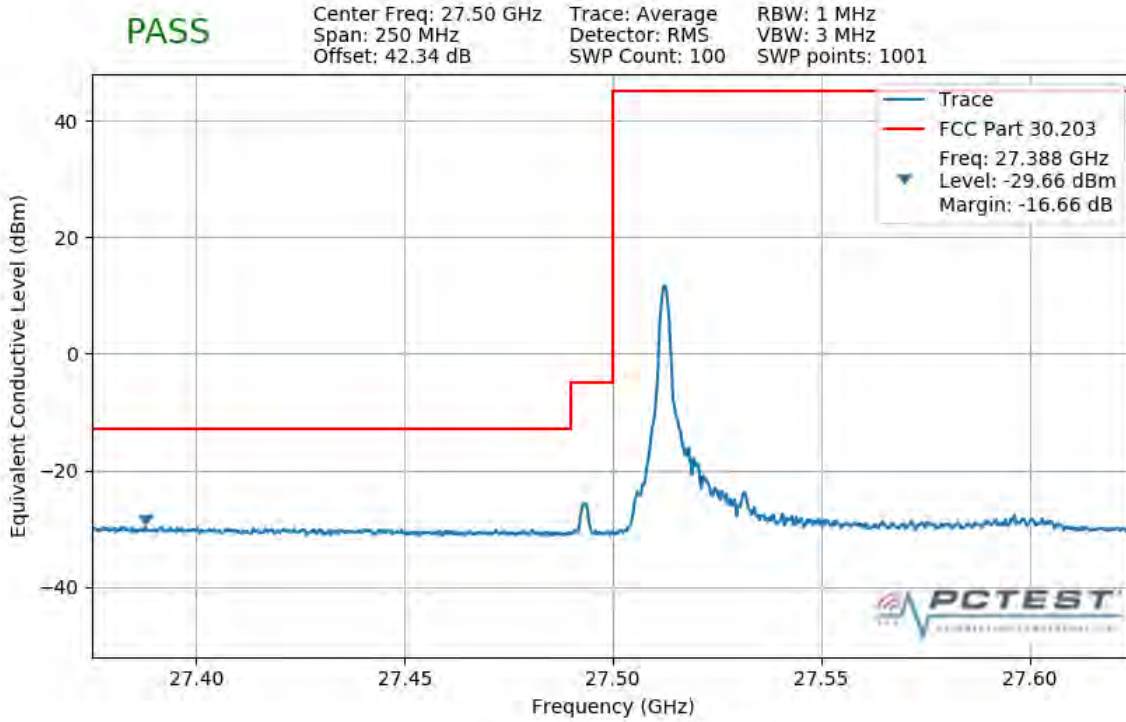


Plot 7-541. Lower Band Edge Plot (1CC 100MHz QPSK Full RB)

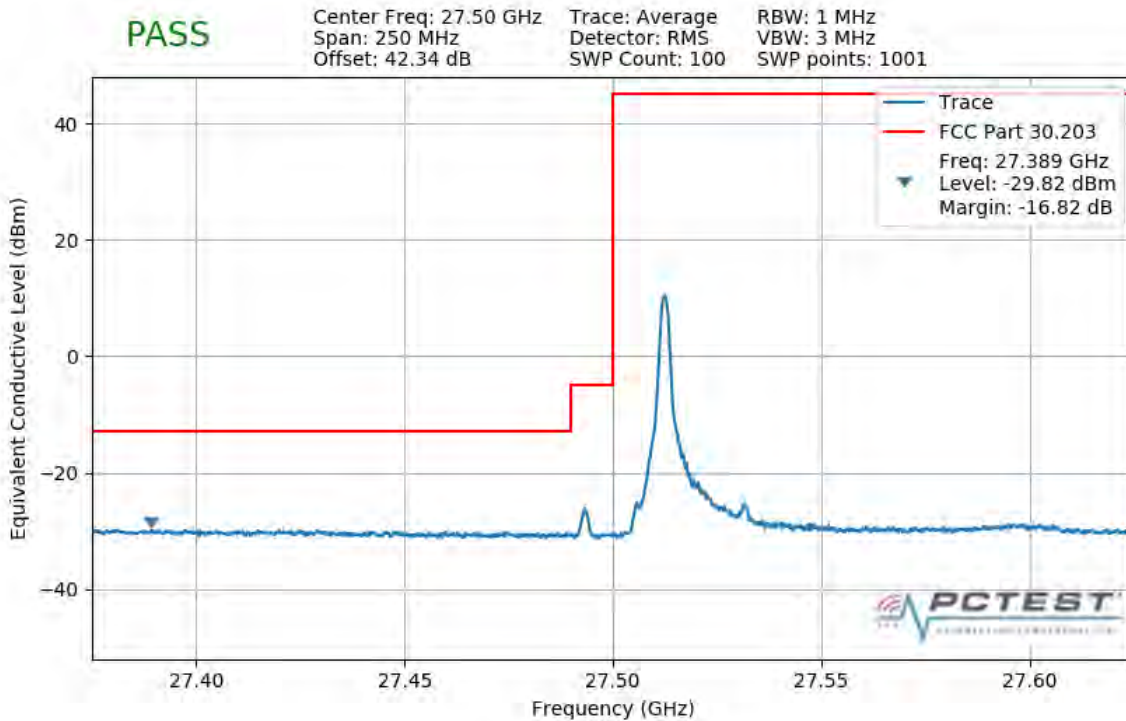


Plot 7-542. Lower Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 318 of 337

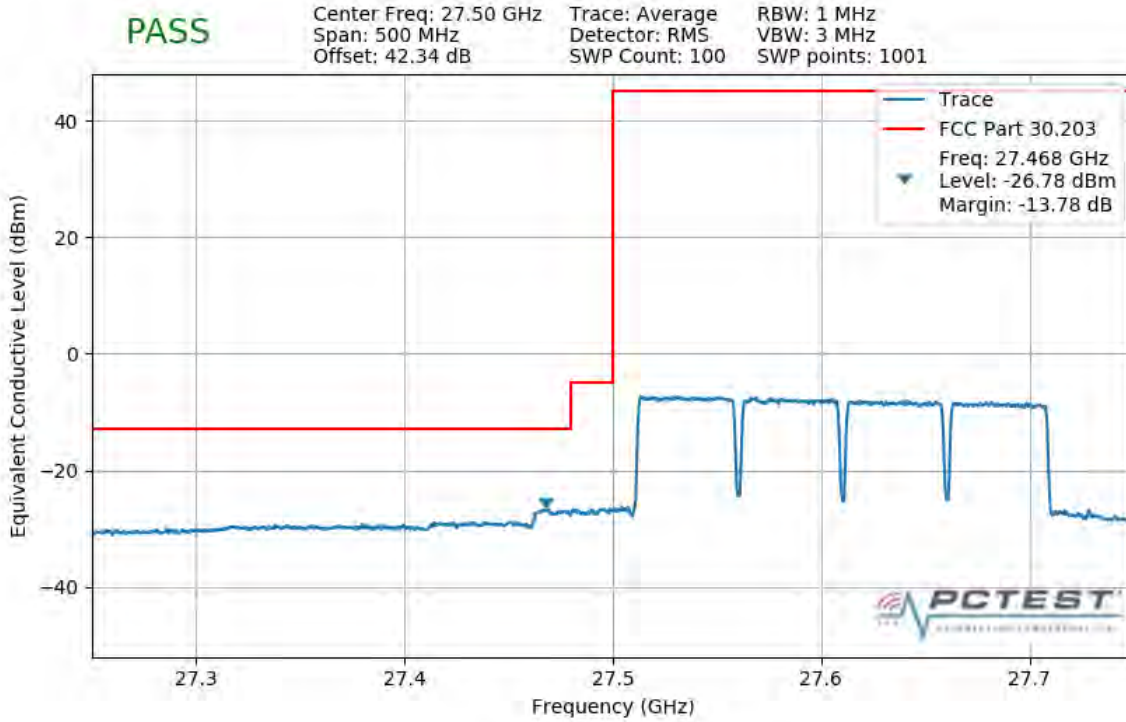


Plot 7-543. Lower Band Edge Plot (1CC 100MHz 16QAM 1 RB)

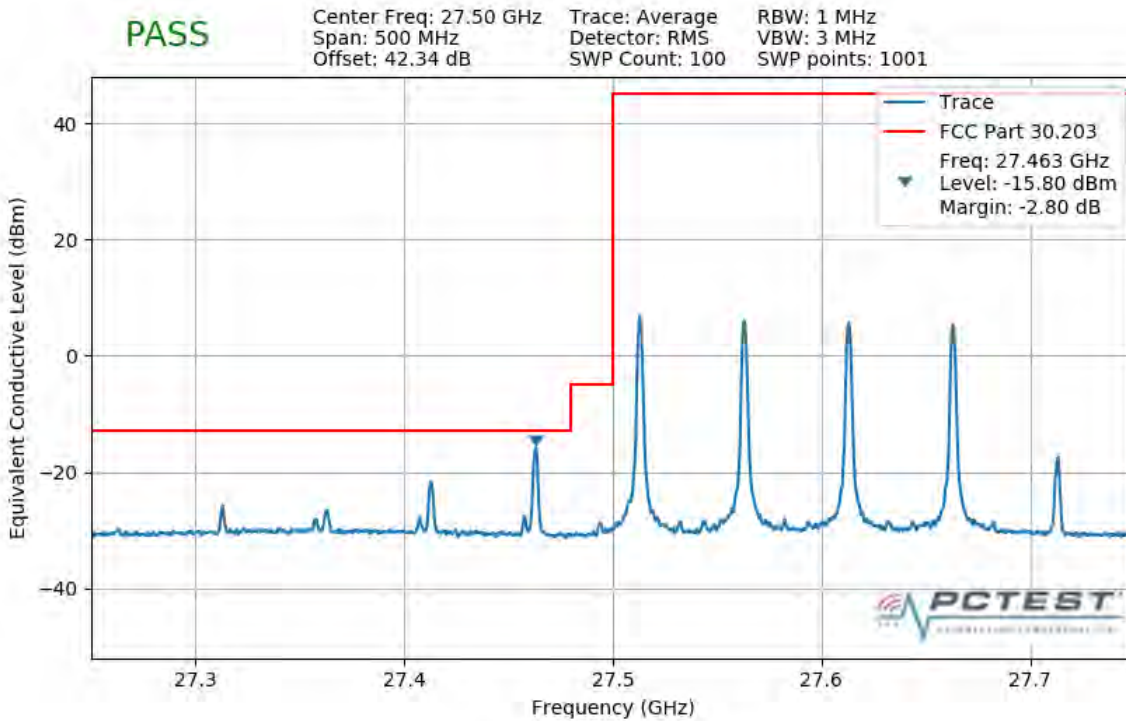


Plot 7-544. Lower Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 319 of 337

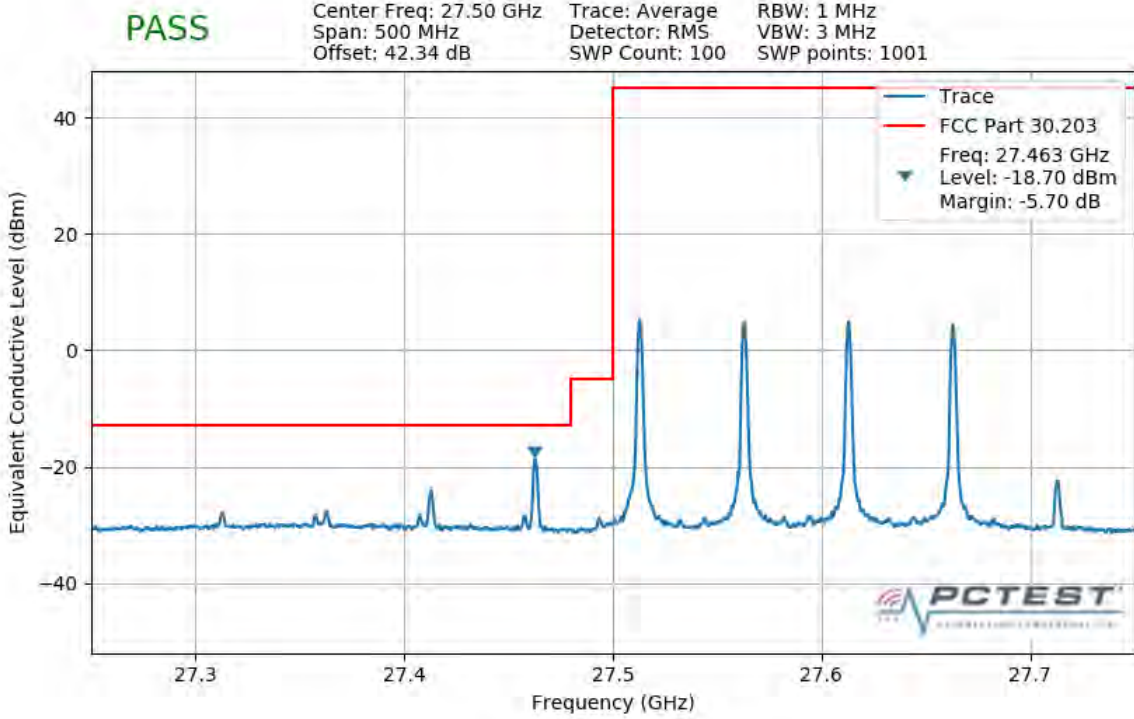


Plot 7-545. Lower Band Edge Plot (4CC 200MHz QPSK Full RB)

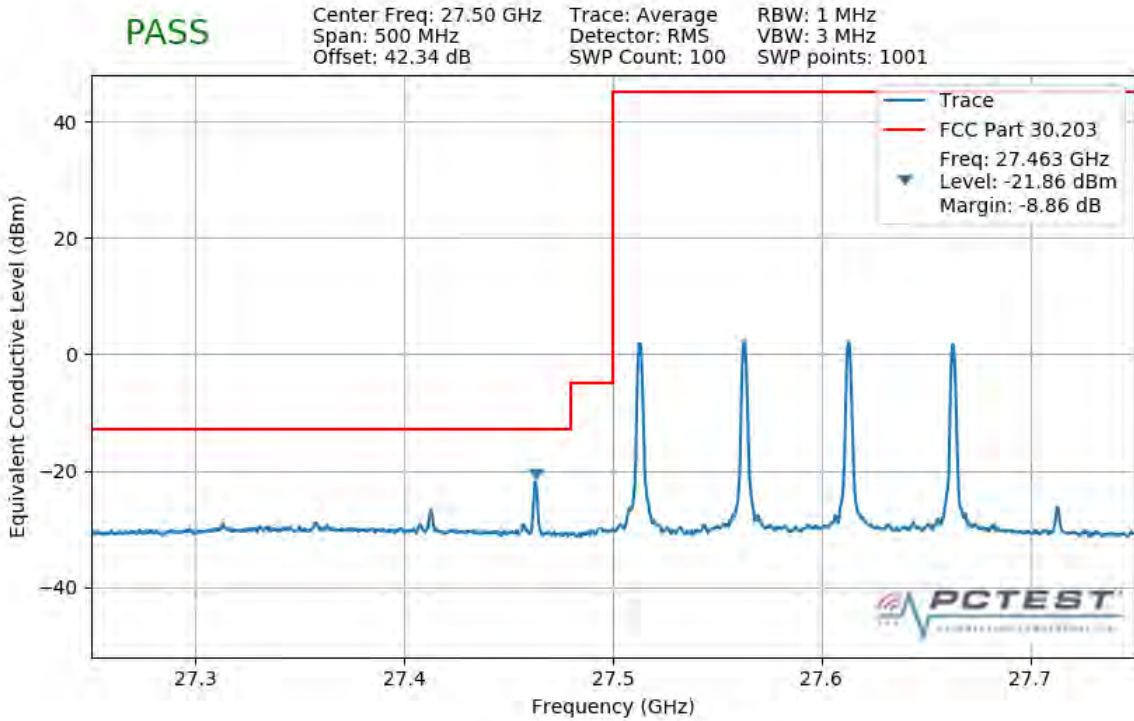


Plot 7-546. Lower Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 320 of 337

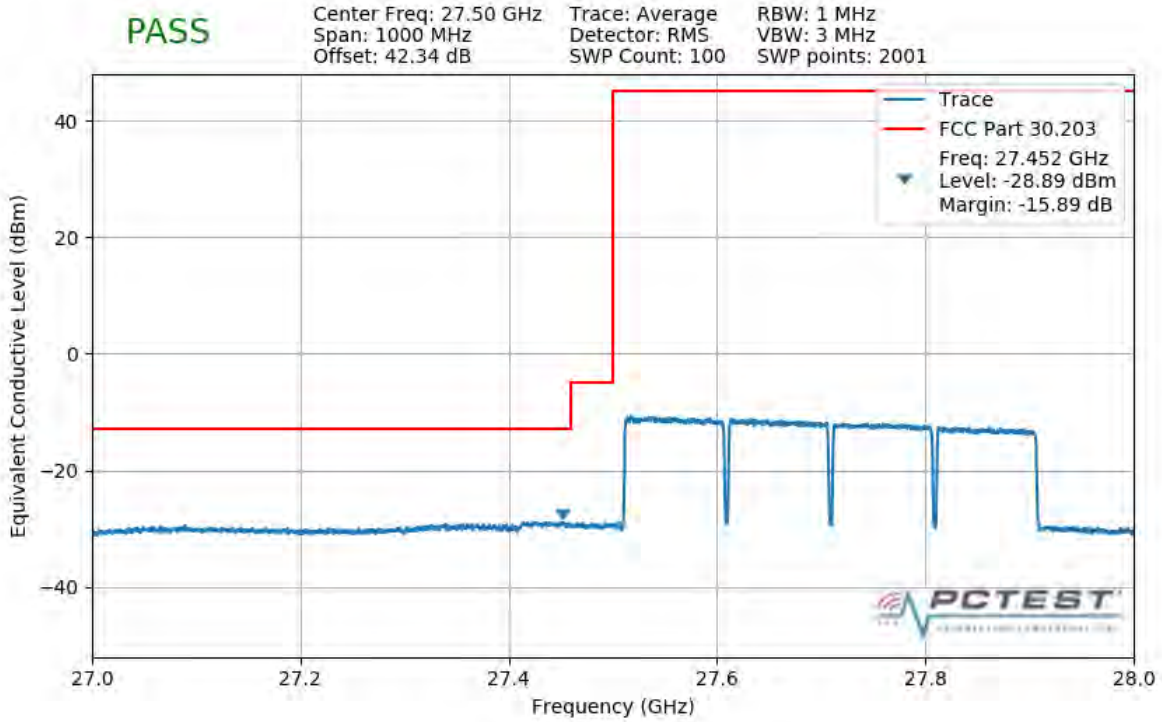


Plot 7-547. Lower Band Edge Plot (4CC 200MHz 16QAM 1 RB)

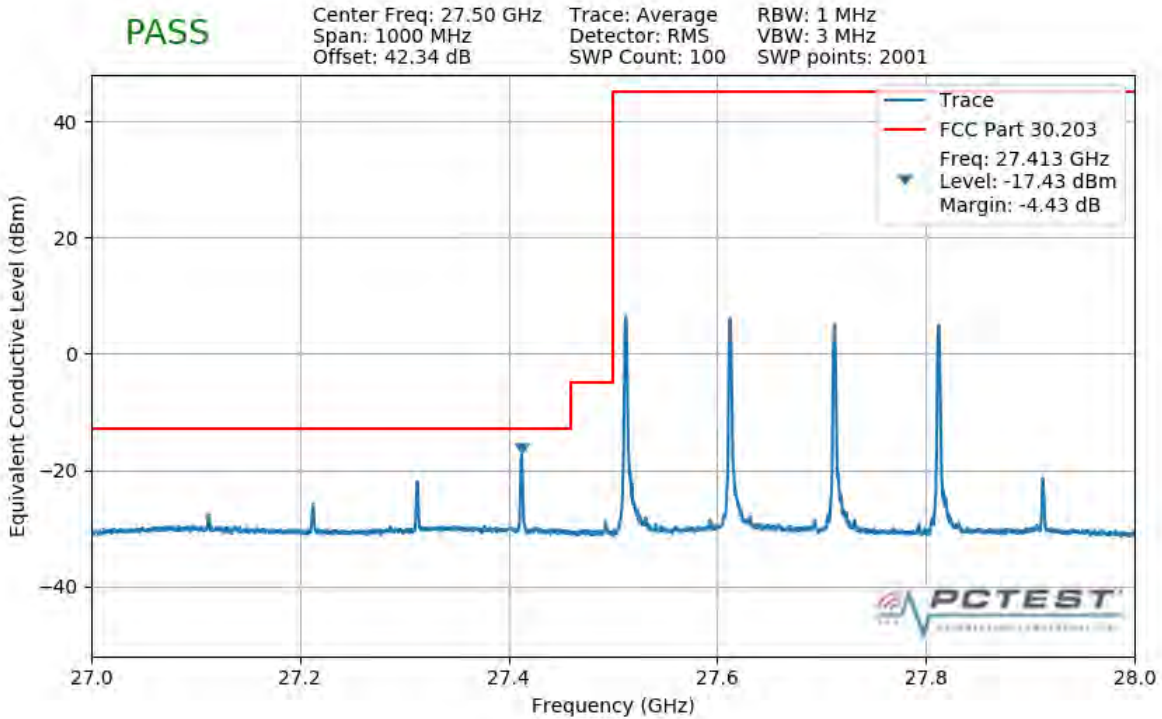


Plot 7-548. Lower Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 321 of 337

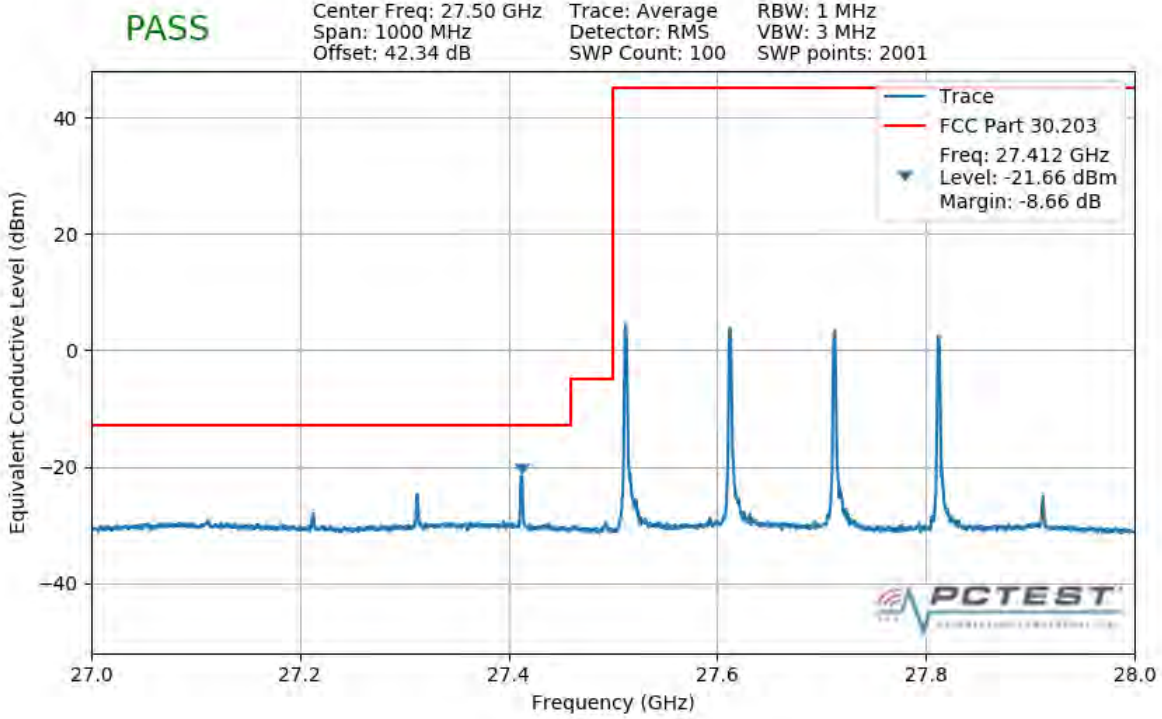


Plot 7-549. Lower Band Edge Plot (4CC 400MHz QPSK Full RB)

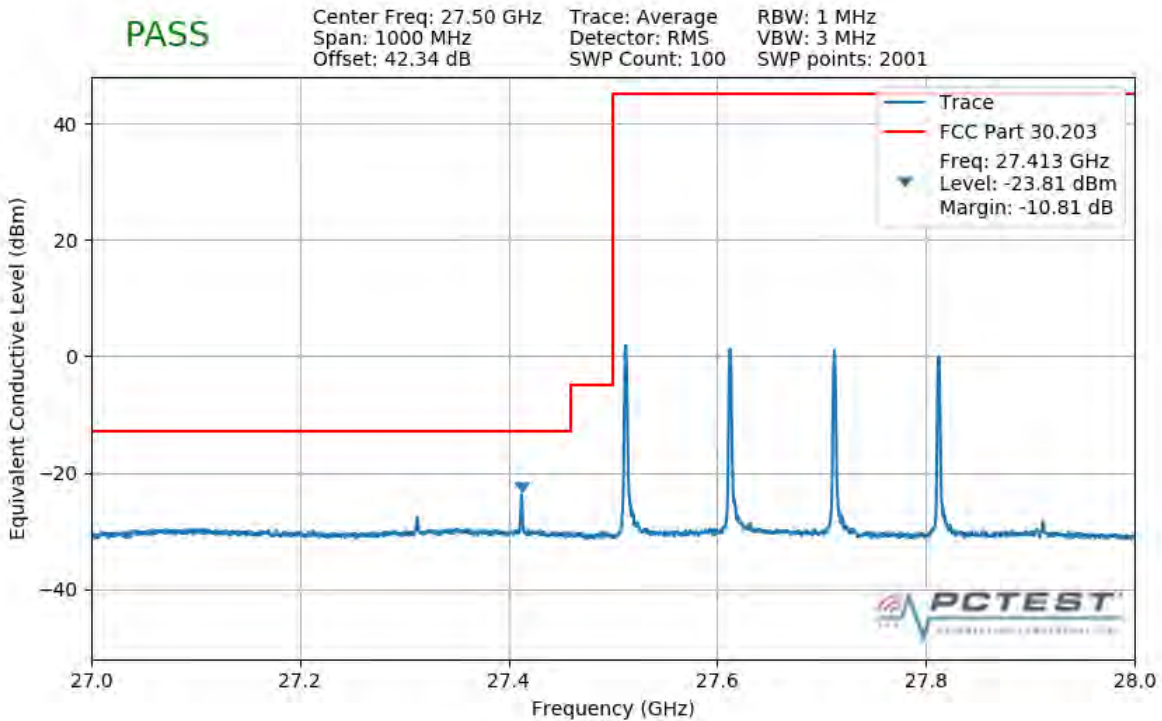


Plot 7-550. Lower Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 322 of 337	

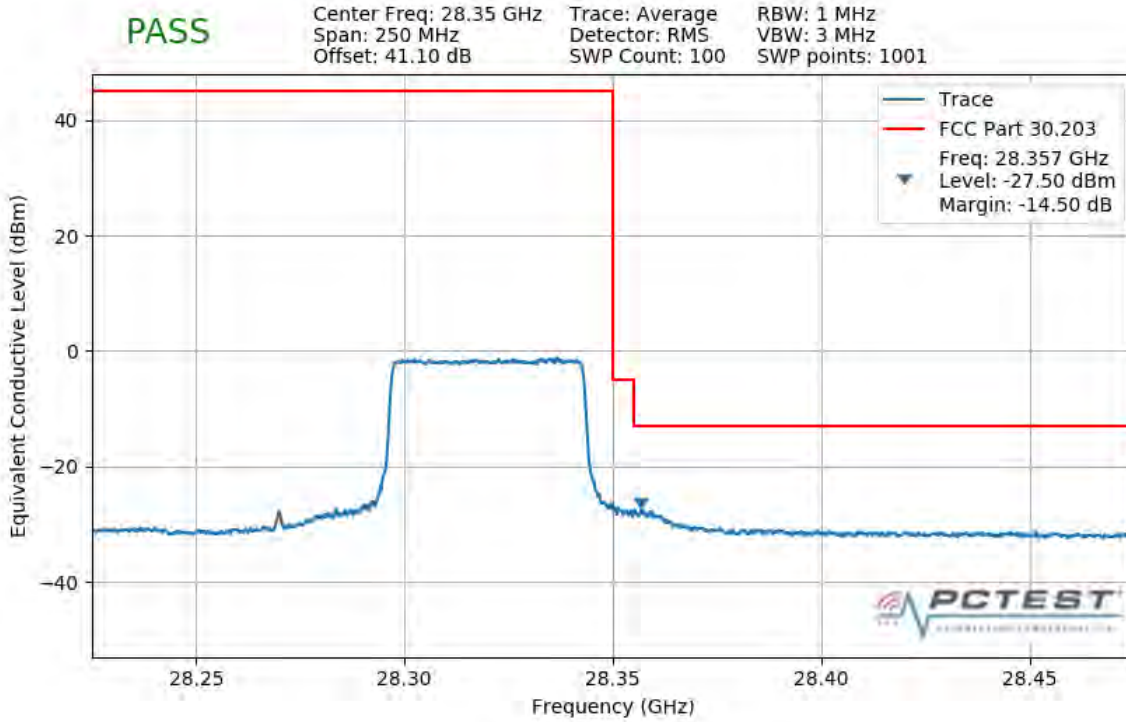


Plot 7-551. Lower Band Edge Plot (4CC 400MHz 16QAM 1 RB)

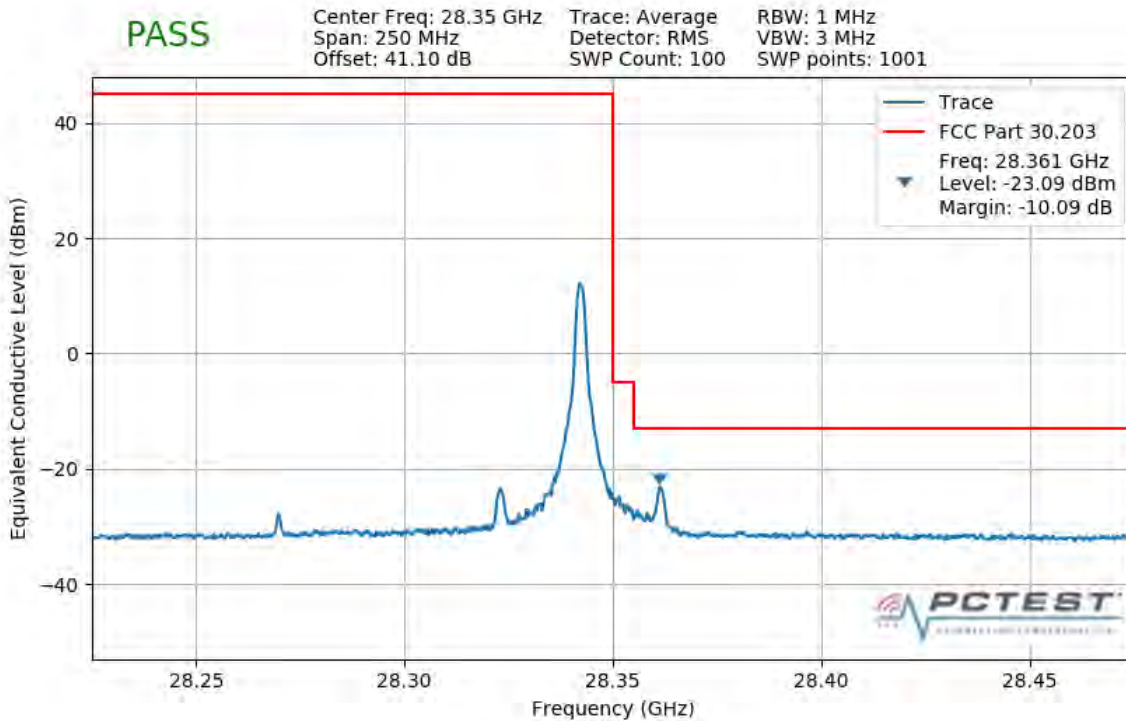


Plot 7-552. Lower Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 323 of 337

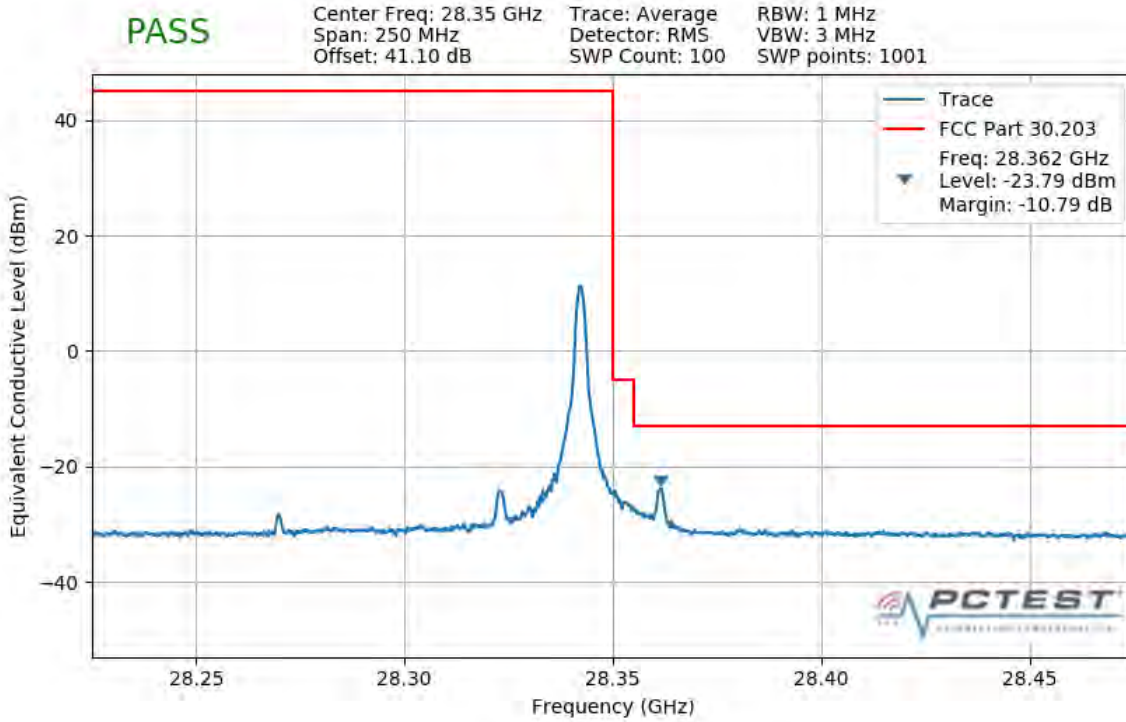


Plot 7-553. Upper Band Edge Plot (1CC 50MHz QPSK Full RB)

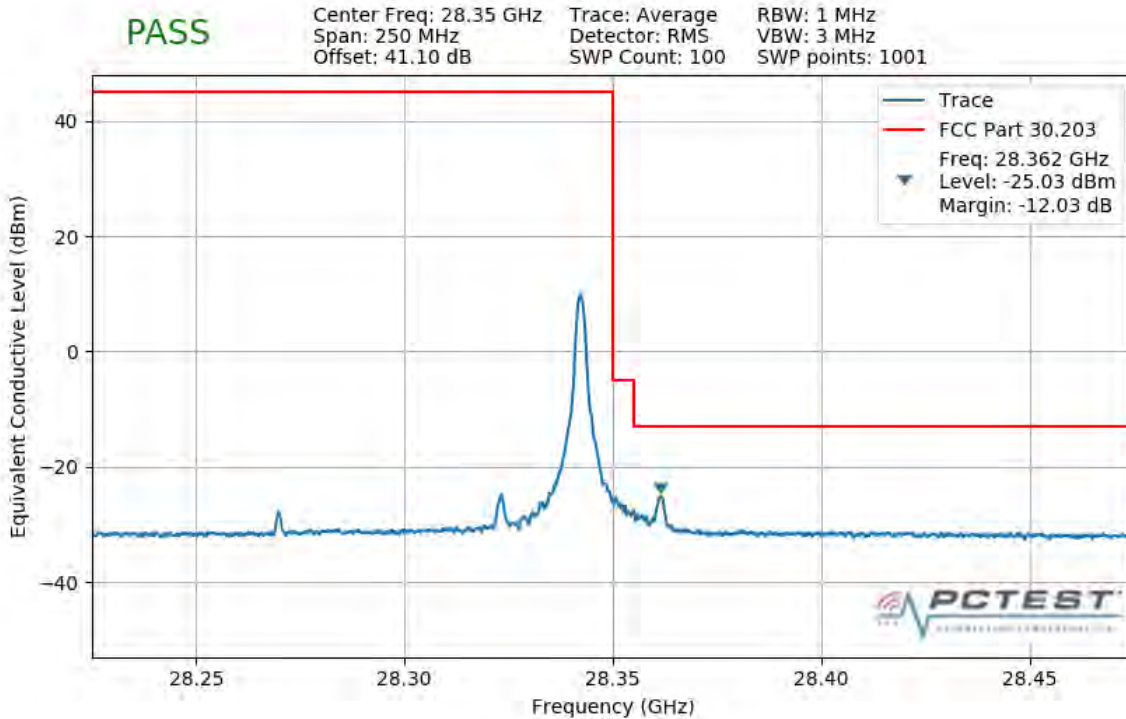


Plot 7-554. Upper Band Edge Plot (1CC 50MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 324 of 337	

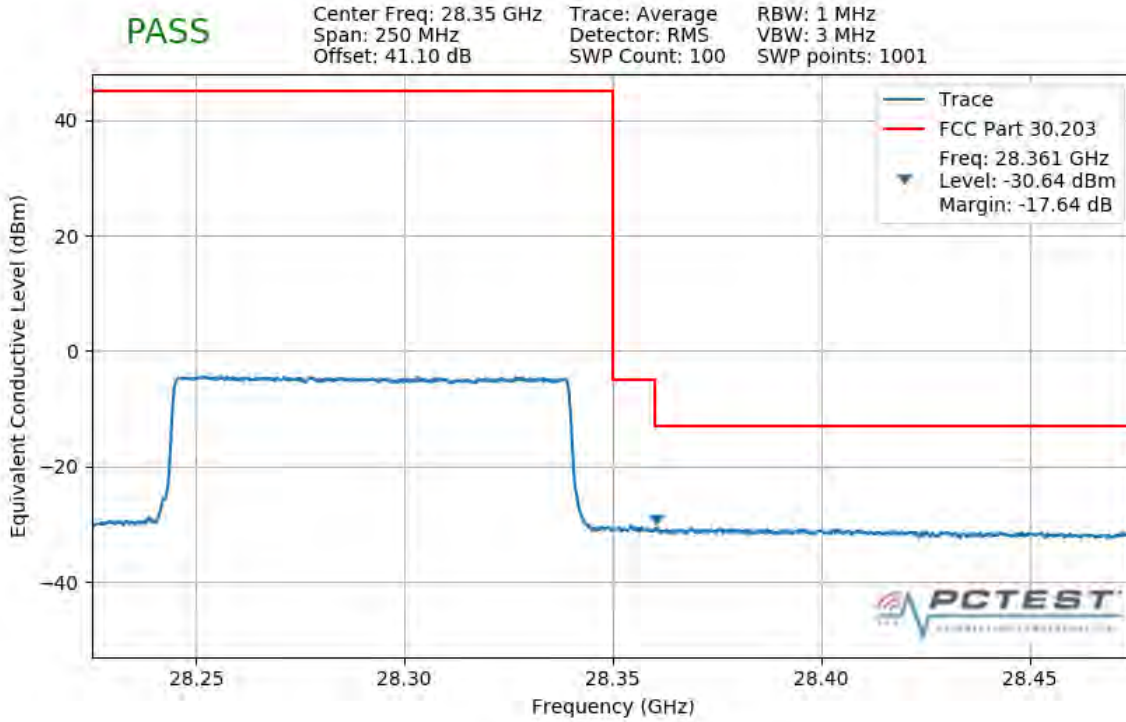


Plot 7-555. Upper Band Edge Plot (1CC 50MHz 16QAM 1 RB)

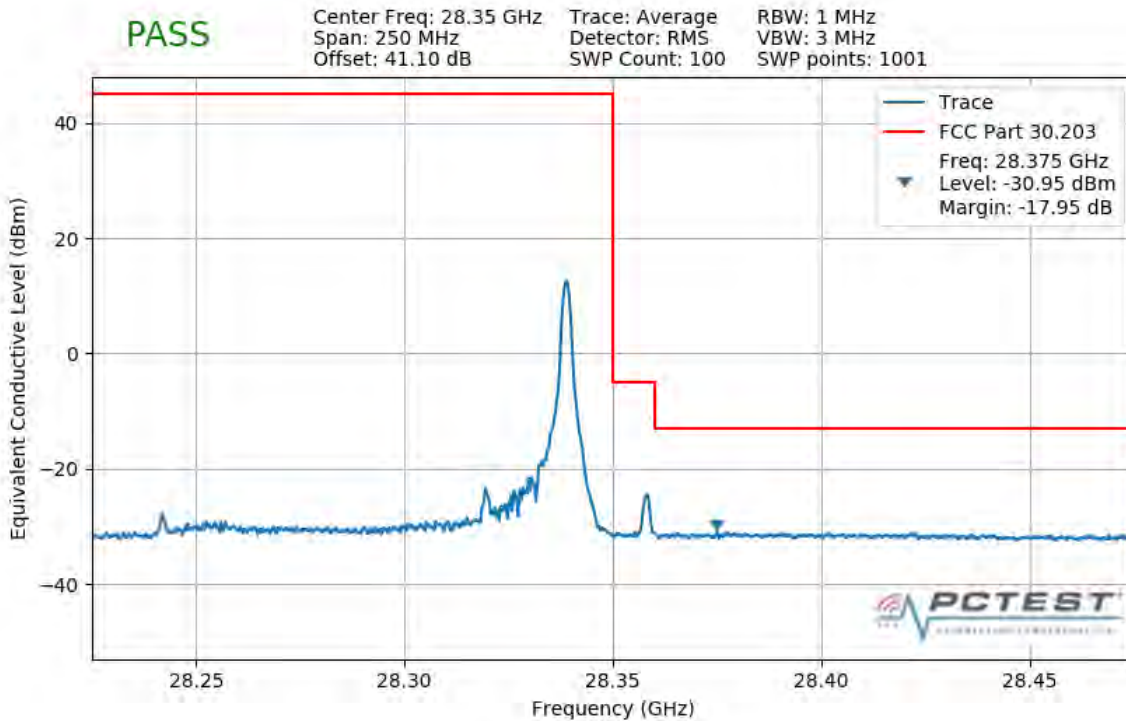


Plot 7-556. Upper Band Edge Plot (1CC 50MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 325 of 337	

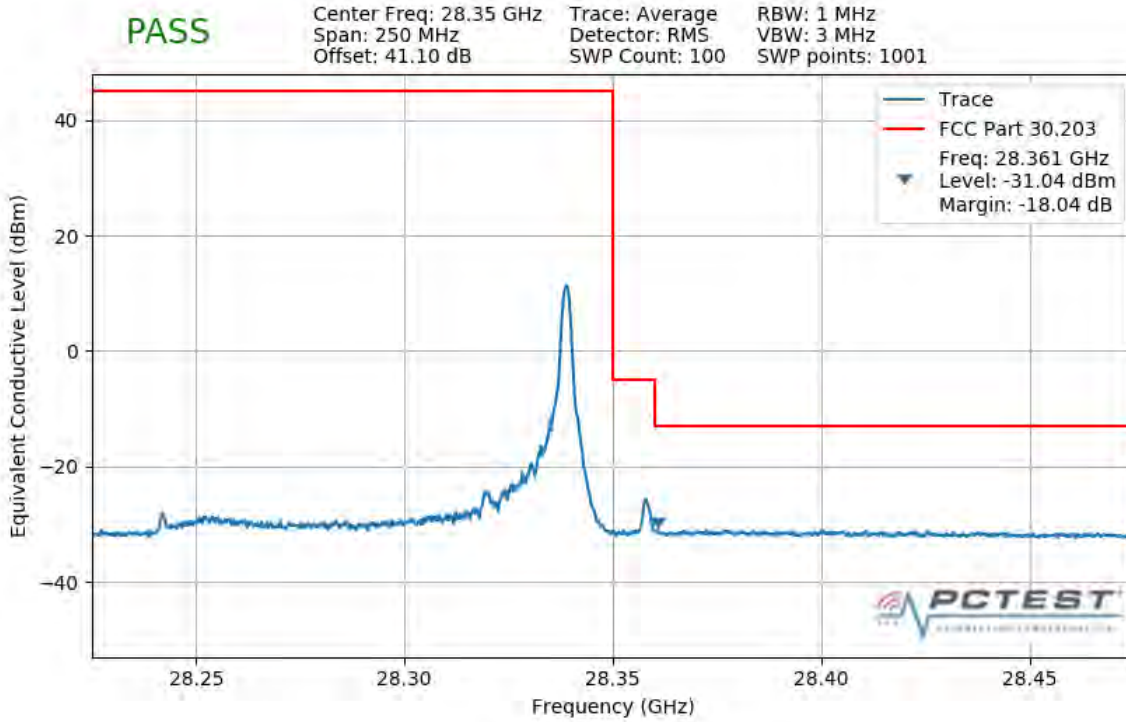


Plot 7-557. Upper Band Edge Plot (1CC 100MHz QPSK Full RB)

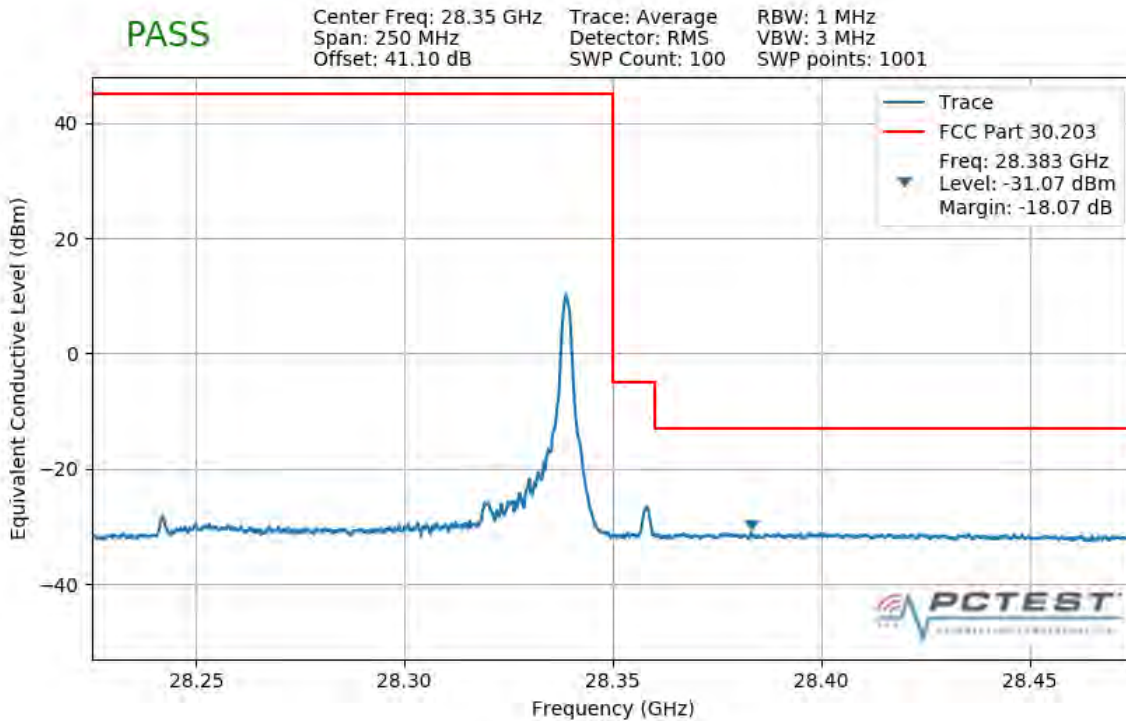


Plot 7-558. Upper Band Edge Plot (1CC 100MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 326 of 337

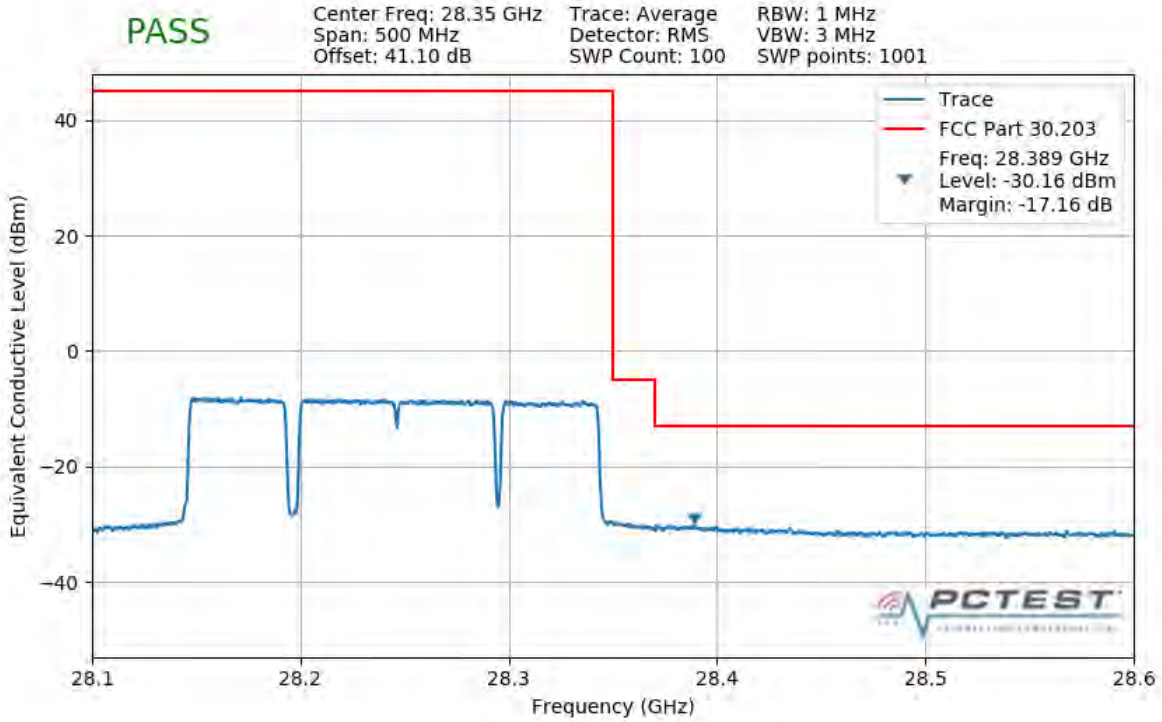


Plot 7-559. Upper Band Edge Plot (1CC 100MHz 16QAM 1 RB)

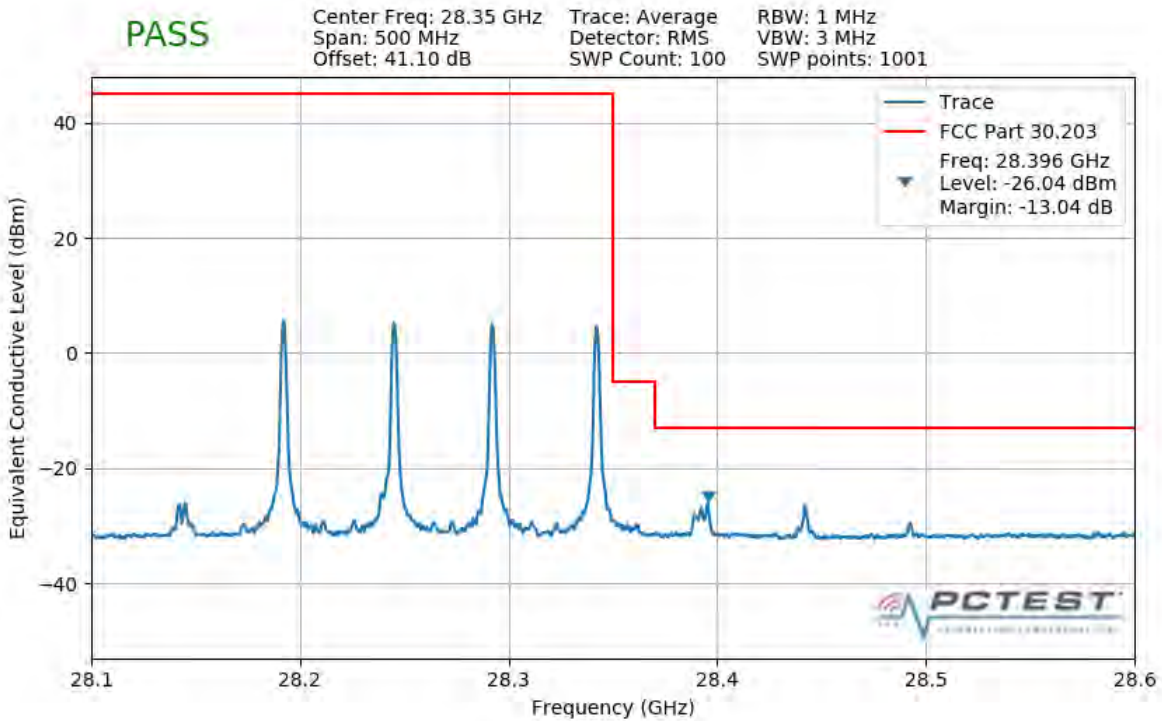


Plot 7-560. Upper Band Edge Plot (1CC 100MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 327 of 337

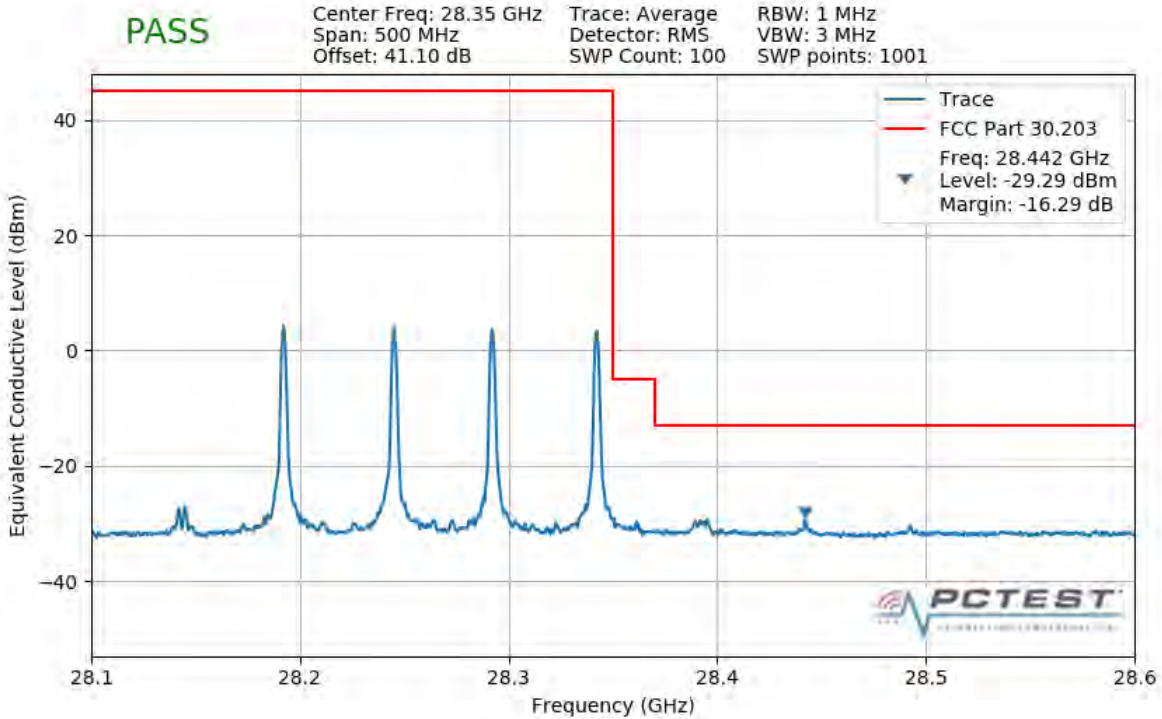


Plot 7-561. Upper Band Edge Plot (4CC 200MHz QPSK Full RB)

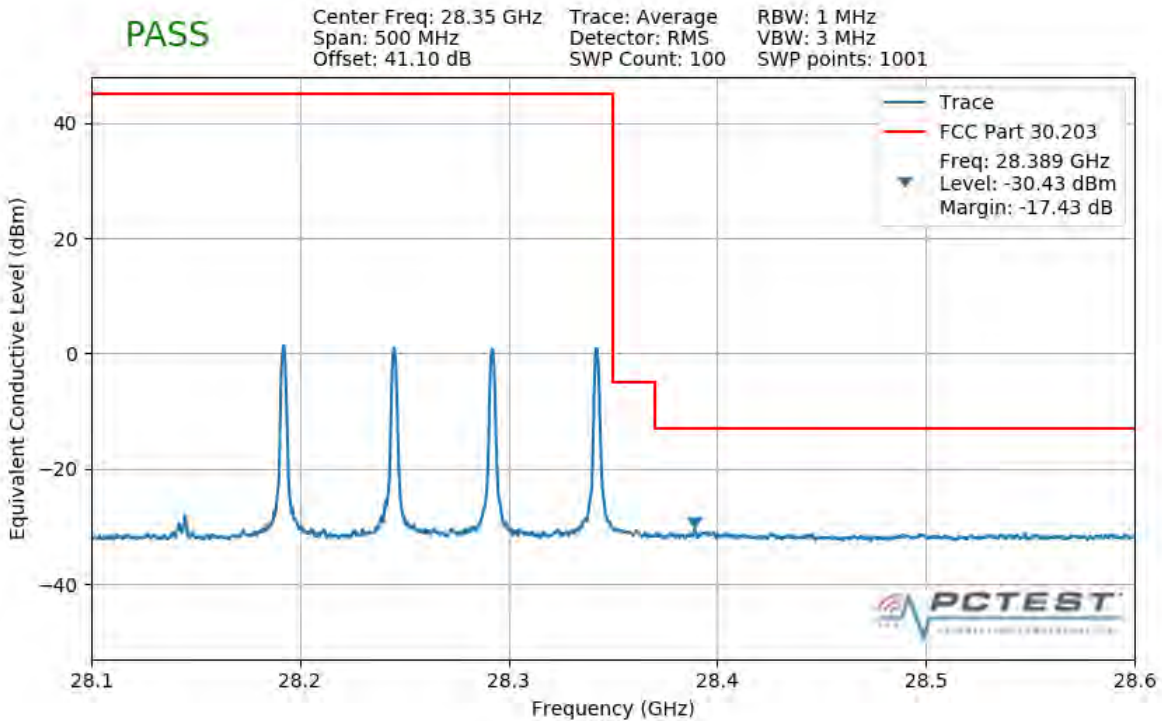


Plot 7-562. Upper Band Edge Plot (4CC 200MHz QPSK 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 328 of 337

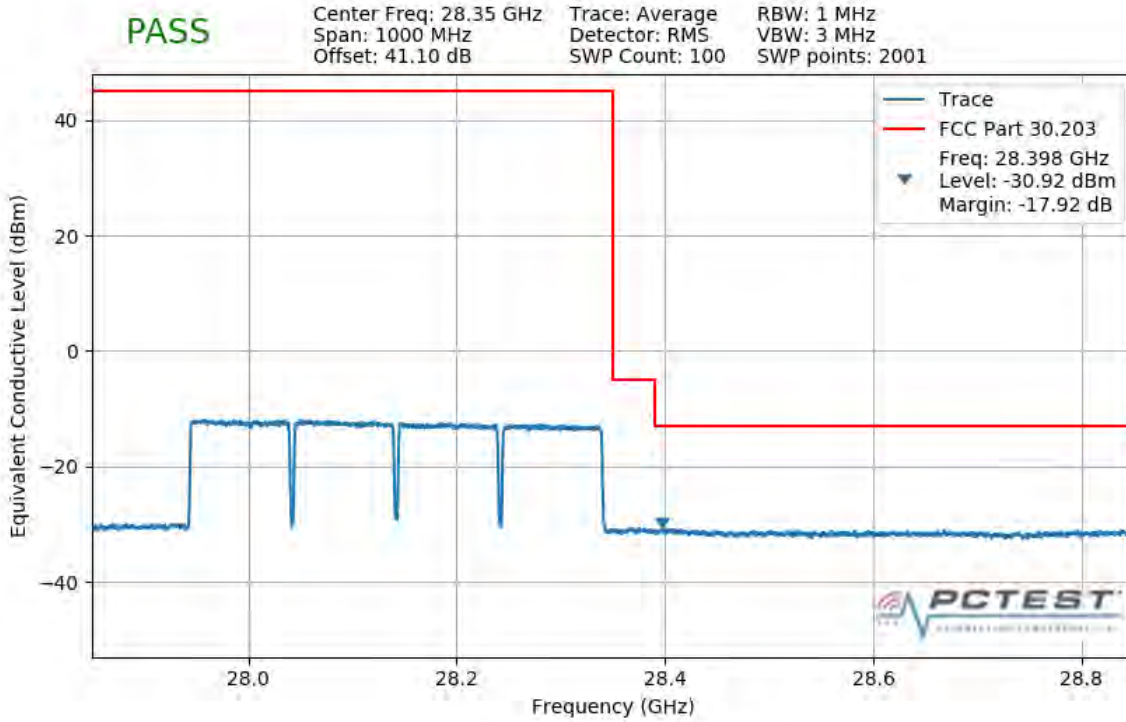


Plot 7-563. Upper Band Edge Plot (4CC 200MHz 16QAM 1 RB)

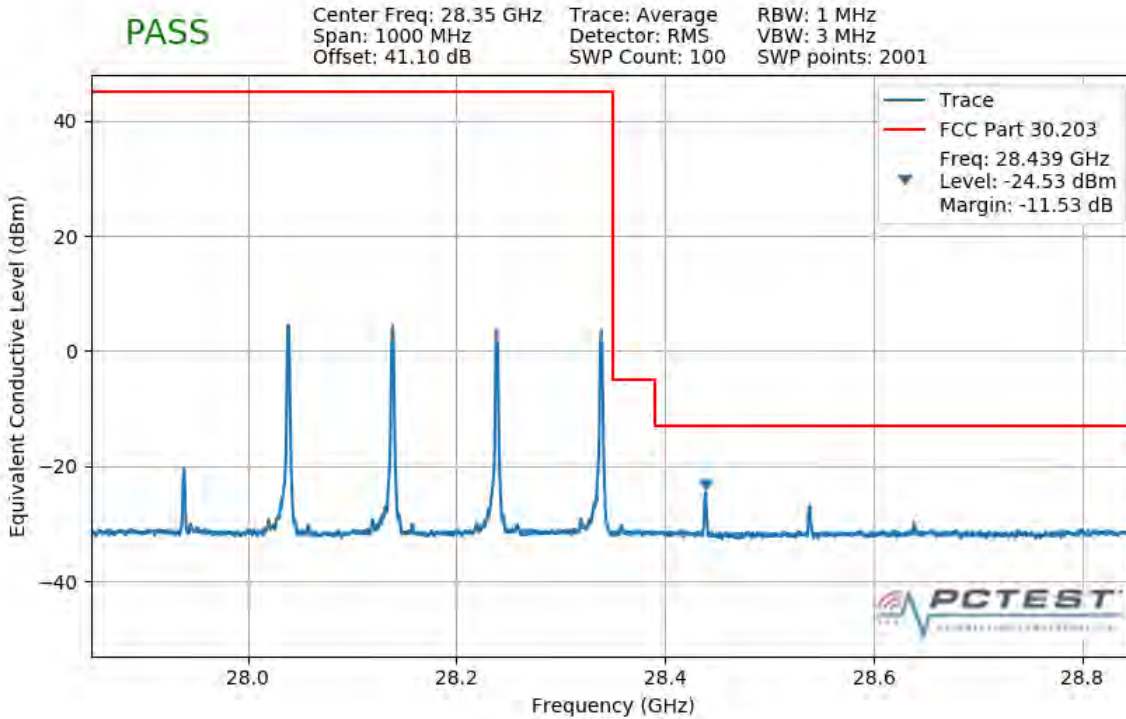


Plot 7-564. Upper Band Edge Plot (4CC 200MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 329 of 337

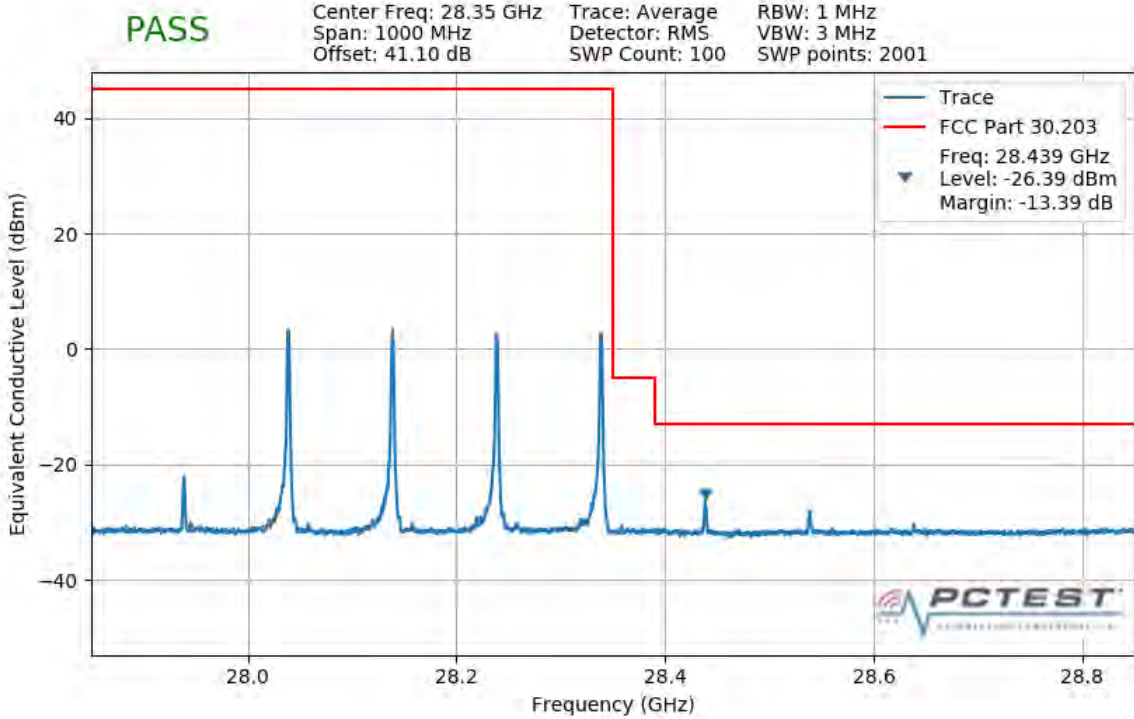


Plot 7-565. Upper Band Edge Plot (4CC 400MHz QPSK Full RB)

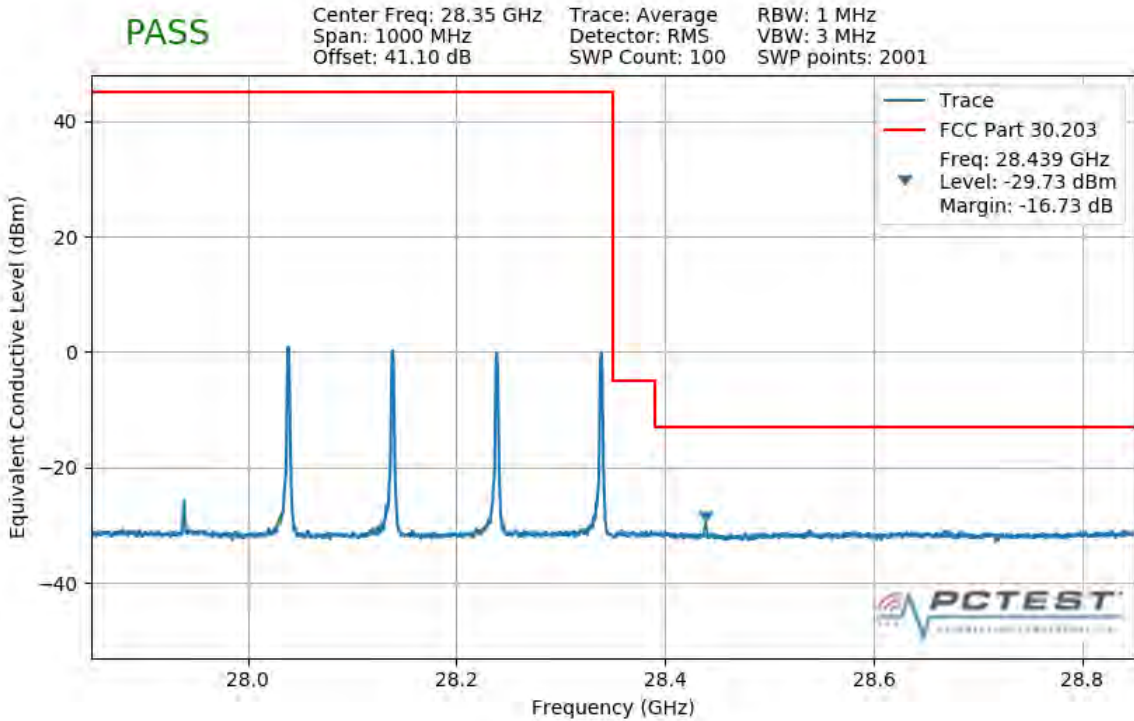


Plot 7-566. Upper Band Edge Plot (4CC 400MHz QPSK 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 330 of 337



Plot 7-567. Upper Band Edge Plot (4CC 400MHz 16QAM 1 RB)



Plot 7-568. Upper Band Edge Plot (4CC 400MHz 64QAM 1 RB)

FCC ID: A3LSMG977T	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 331 of 337

7.6 Frequency Stability / Temperature Variation

§2.1055

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Test Procedure Used

ANSI C63.5-2015 Section 5.6

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was measured using horn antenna connected to a spectrum analyzer. The EUT was placed inside an environmental chamber. Using a foam plug, the horn antenna measured the frequency of the fundamental signal.

Test Notes

The Frequency Deviation column in the table below is the amount of deviation measured from the center frequency of the Reference measurement (first row).

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Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 332 of 337

Frequency Stability Measurements

§2.1055

OPERATING FREQUENCY: 27,923,520,000 Hz
 CHANNEL: 2077100
 REFERENCE VOLTAGE: 4.33 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	27,924,065,329	-545,329	-0.0019529
100 %		- 20	27,924,008,817	-488,817	-0.0017506
100 %		- 10	27,923,927,616	-407,616	-0.0014598
100 %		0	27,924,056,446	-536,446	-0.0019211
100 %		+ 10	27,924,019,969	-499,969	-0.0017905
100 %		+ 20	27,923,873,982	-353,982	-0.0012677
100 %		+ 30	27,923,894,432	-374,432	-0.0013409
100 %		+ 40	27,923,908,788	-388,788	-0.0013923
100 %		+ 50	27,923,931,168	-411,168	-0.0014725
BATT. ENDPOINT		3.46	+ 20	27,923,901,226	-381,226

Table 7-36. Frequency Stability Data

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG977T	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 333 of 337

Frequency Stability Measurements
S2.1055

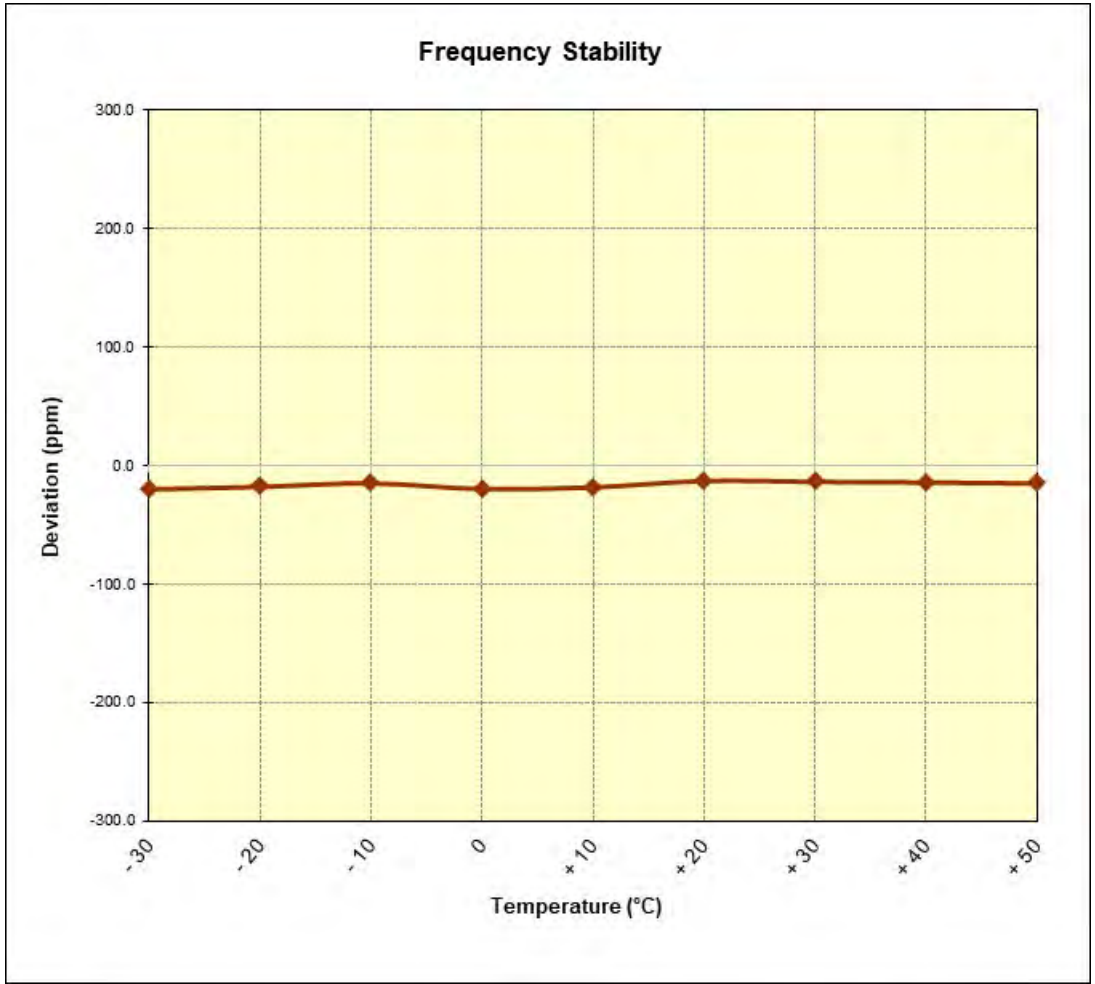


Figure 7-1. Frequency Stability Graph

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 334 of 337	

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG977T** complies with all the requirements of Part 30.

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 335 of 337	

9.0 APPENDIX A

9.1 VDI Mixer Verification Certificate



Virginia Diodes, Inc
 979 2nd St. SE
 Suite 309
 Charlottesville, VA 22902
 Phone: 434-297-3257
 Fax: 434-297-3258

Certificate of Conformance

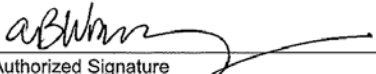
To: PCTEST Engineering Laboratory
 6660-B Dobbin Road
 Columbia, MD 21045
 United States

From: Virginia Diodes, Inc
 979 2nd St. SE
 Suite 309
 Charlottesville, VA 22902

Shipping Date: 05/14/18	Today's Date: 05/14/18
-------------------------	------------------------

Quantity	<u>Shipped</u>	<u>Unit</u>	<u>Description</u>
1	EA		VDIWR12.0SAX WR12SAX - Spectrum Analyzer Extension Module / SN: SAX 252

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).


 Authorized Signature
 Virginia Diodes, Inc

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-05.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 336 of 337	



Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: PCTEST Engineering Laboratory
6660-B Dobbin Road
Columbia, MD 21045
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Shipping Date: 05/08/18 Today's Date: 05/08/18

Quantity	Shipped	Unit	Description
1	EA	VDIWR8.0SAX	WR8.0SAX - Spectrum Analyzer Extension Module; SN: SAX 253.

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).



 Authorized Signature
 Virginia Diodes, Inc

FCC ID: A3LSMG977T	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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