

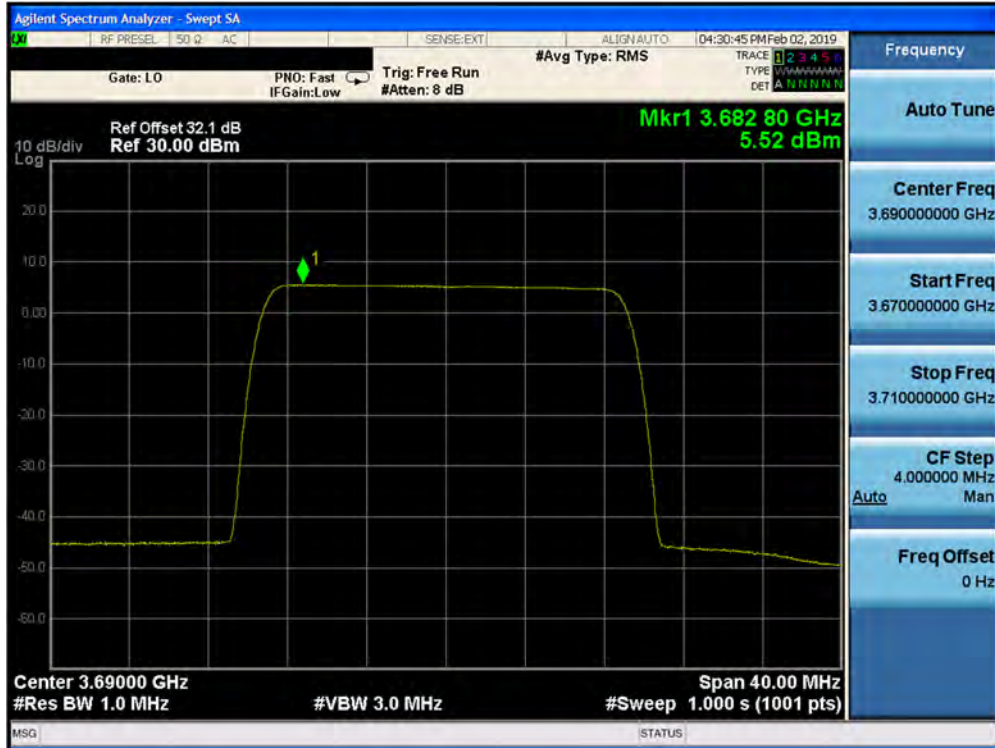


Plot 7-305. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz QPSK- High Channel) Port 15



Plot 7-306. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz QPSK- High Channel) Port 14

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 215 of 313

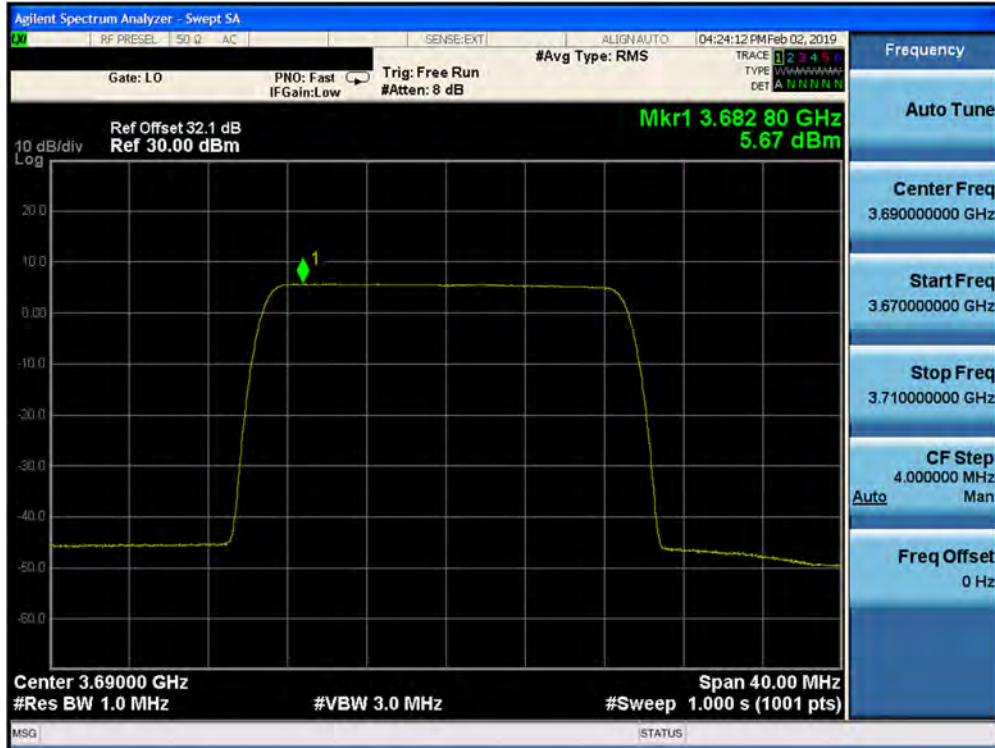


Plot 7-307. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz QPSK- High Channel) Port 13



Plot 7-308. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz QPSK- High Channel) Port 12

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 216 of 313

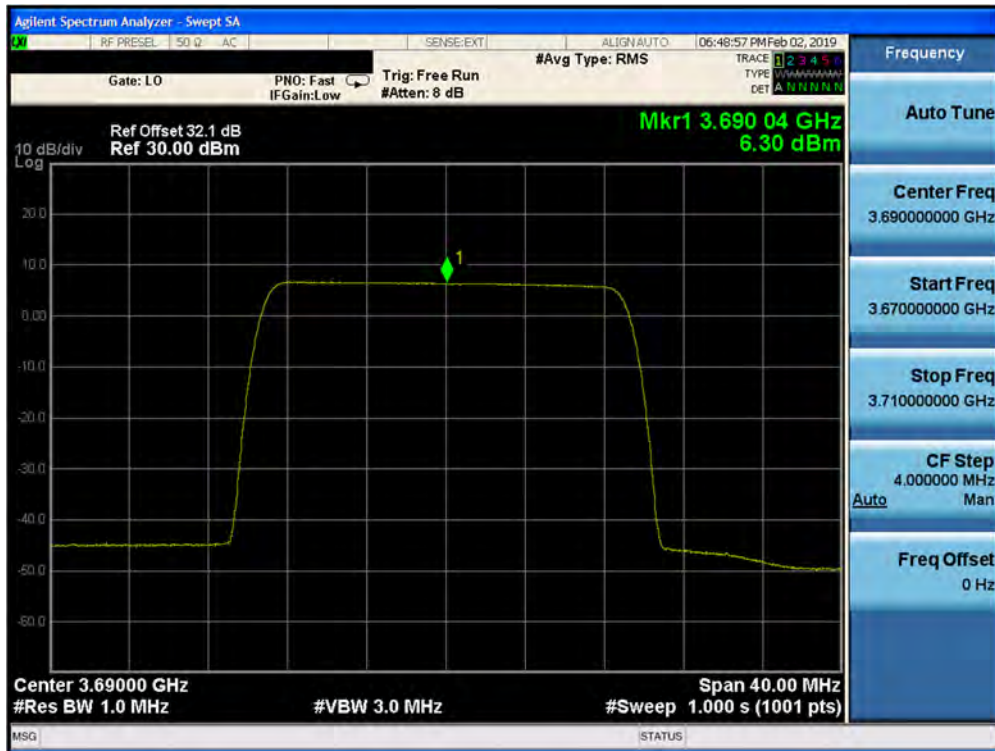


Plot 7-309. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz QPSK- High Channel) Port 28



Plot 7-310. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz QPSK- High Channel) Port 29

FCC ID: A3LMT3204-48A	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 217 of 313



Plot 7-311. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz QPSK- High Channel) Port 30



Plot 7-312. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz QPSK- High Channel) Port 31

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 218 of 313

8-User Beam 1CC High Channel 16-QAM

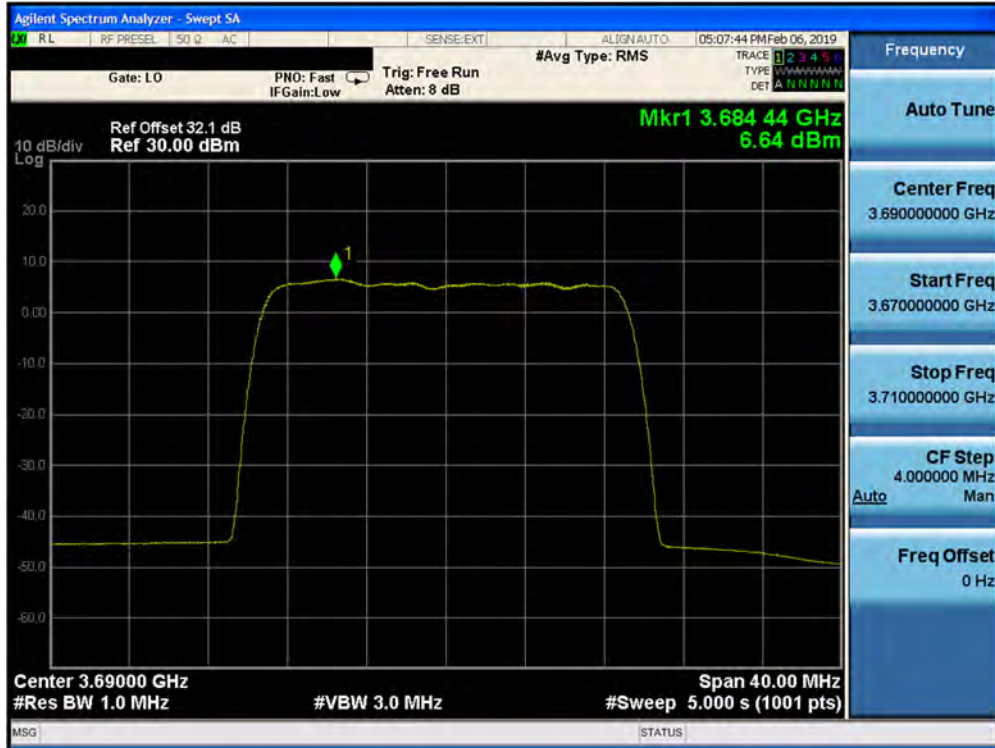


Plot 7-313. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 03



Plot 7-314. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 02

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 219 of 313

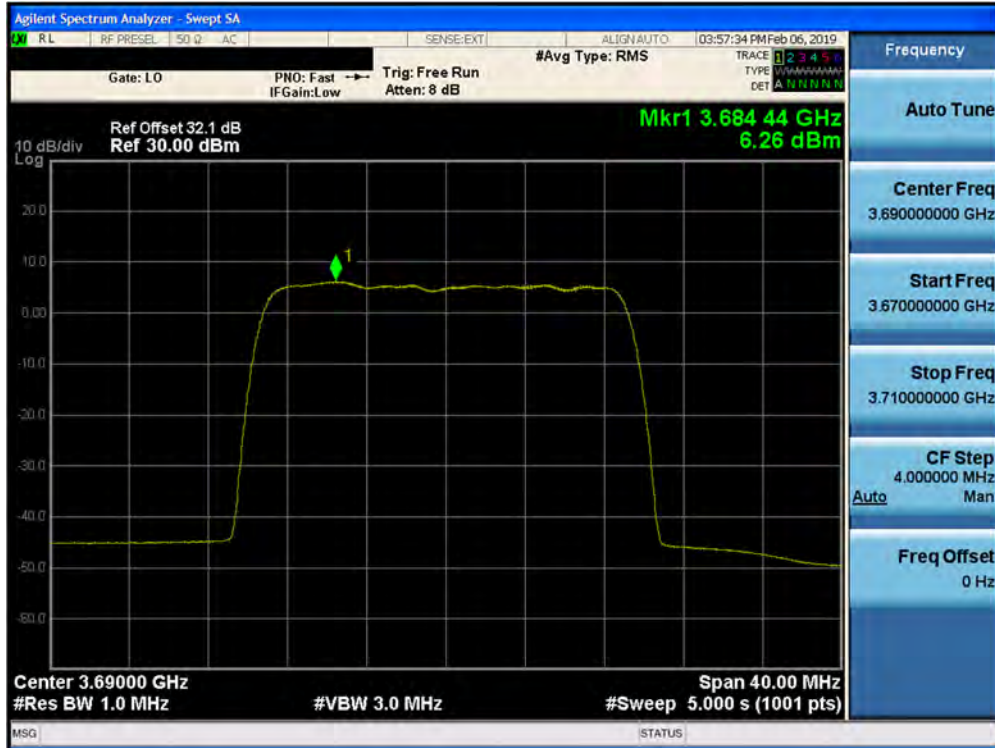


Plot 7-315. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 01



Plot 7-316. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 00

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 220 of 313



Plot 7-317. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 16



Plot 7-318. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 17

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 221 of 313



Plot 7-319. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 18



Plot 7-320. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 19

FCC ID: A3LMT3204-48A			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD			Page 222 of 313



Plot 7-321. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 07



Plot 7-322. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 06

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 223 of 313



Plot 7-323. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 05



Plot 7-324. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 04

FCC ID: A3LMT3204-48A			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD			Page 224 of 313



Plot 7-325. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 20



Plot 7-326. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 21

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 225 of 313



Plot 7-327. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 22



Plot 7-328. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 23

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 226 of 313



Plot 7-329. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 11



Plot 7-330. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 10

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 227 of 313



Plot 7-331. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 09



Plot 7-332. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 08

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 228 of 313



Plot 7-333. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 24



Plot 7-334. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 25

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 229 of 313



Plot 7-335. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 26



Plot 7-336. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 27

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 230 of 313



Plot 7-337. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 15



Plot 7-338. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 14

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 231 of 313



Plot 7-339. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 13



Plot 7-340. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 16QAM- High Channel) Port 12

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 232 of 313



Plot 7-341. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 28



Plot 7-342. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 29

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 233 of 313



Plot 7-343. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 30



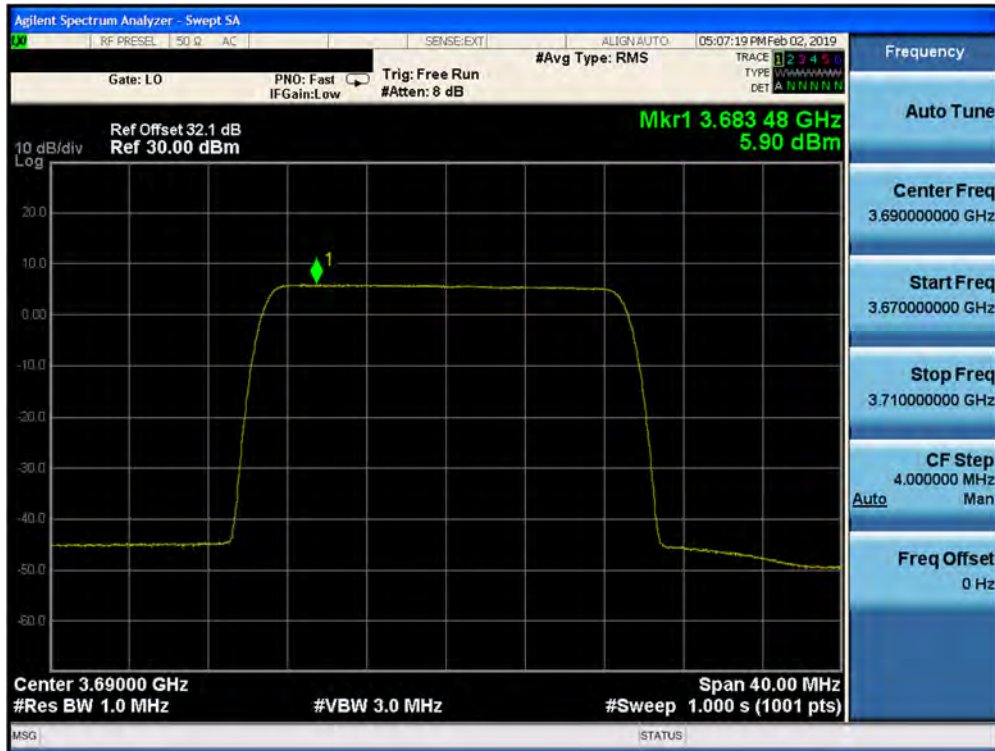
Plot 7-344. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 16QAM- High Channel) Port 31

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 234 of 313

8-User Beam 1CC High Channel 64-QAM

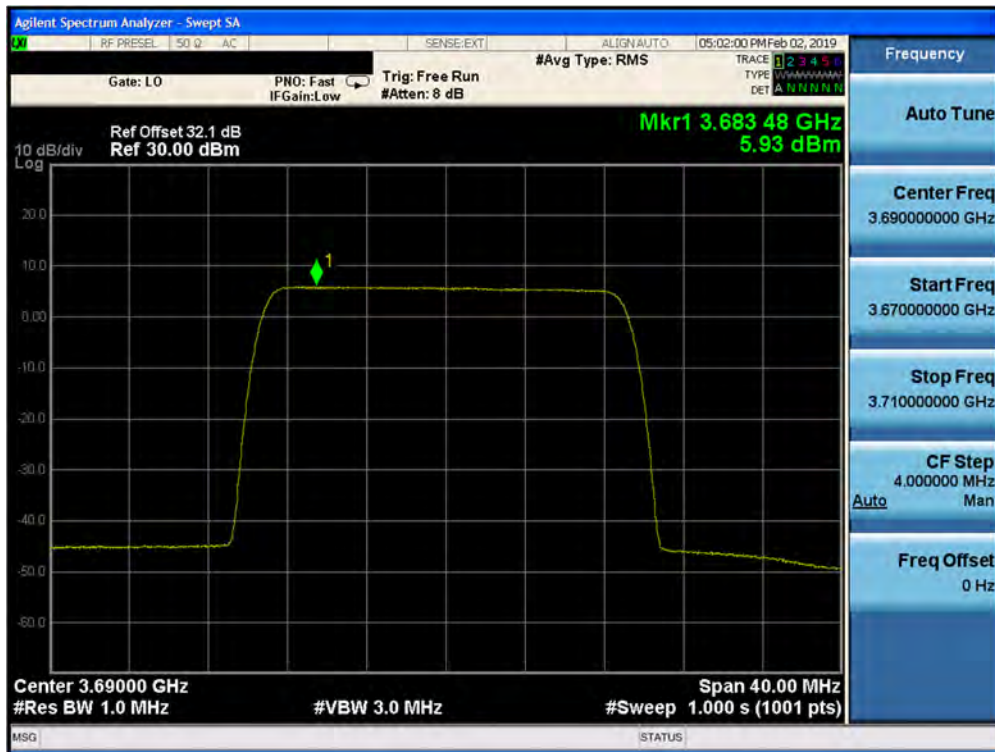


Plot 7-345. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 03

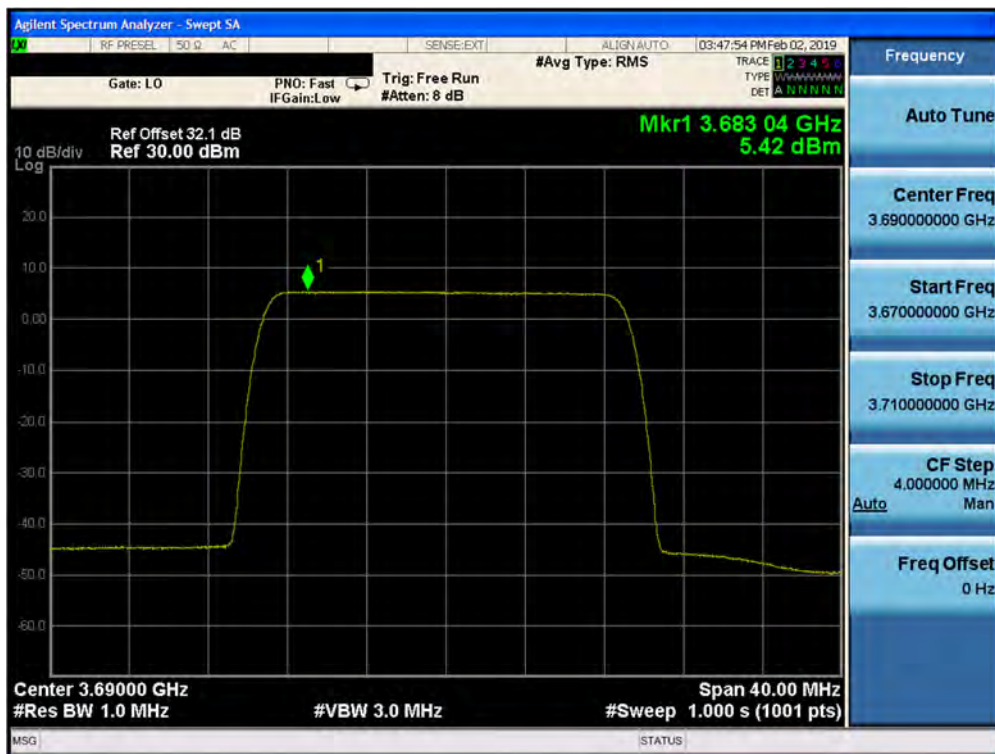


Plot 7-346. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 02

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 235 of 313



Plot 7-347. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 01

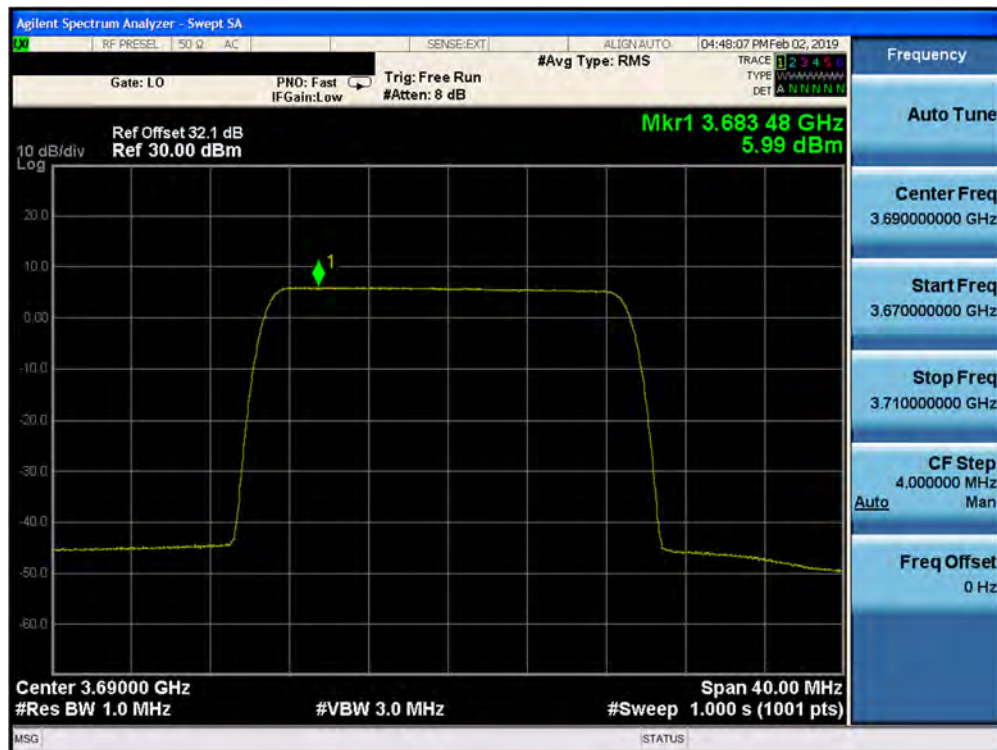


Plot 7-348. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 00

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 236 of 313

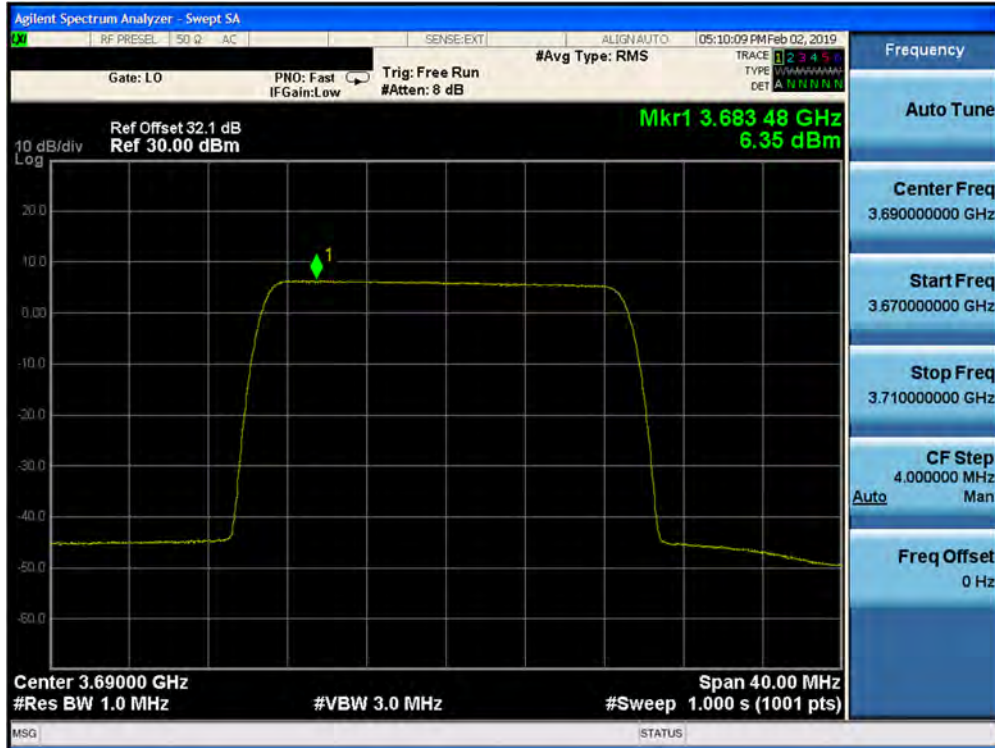


Plot 7-349. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 16



Plot 7-350. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 17

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 237 of 313



Plot 7-351. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 18

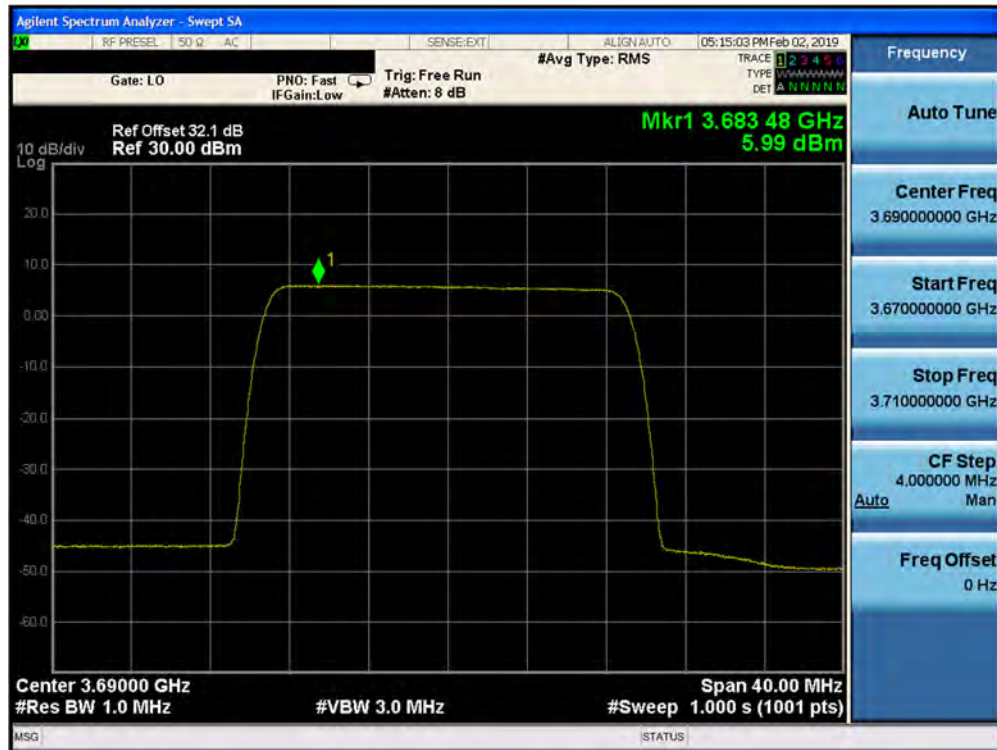


Plot 7-352. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 19

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 238 of 313

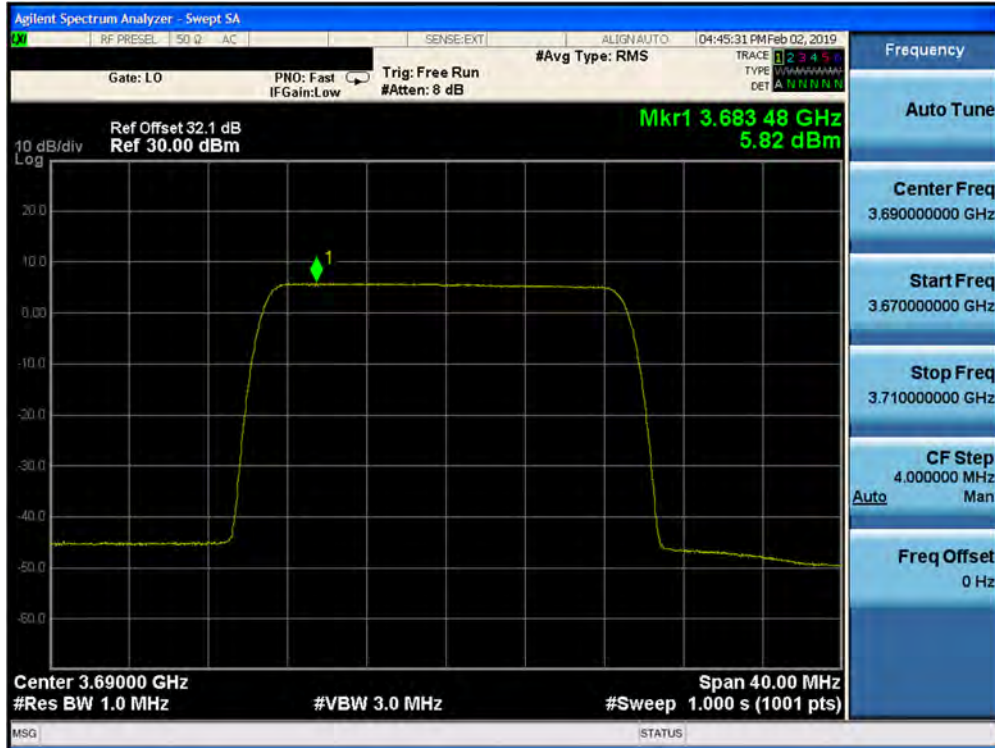


Plot 7-353. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 07

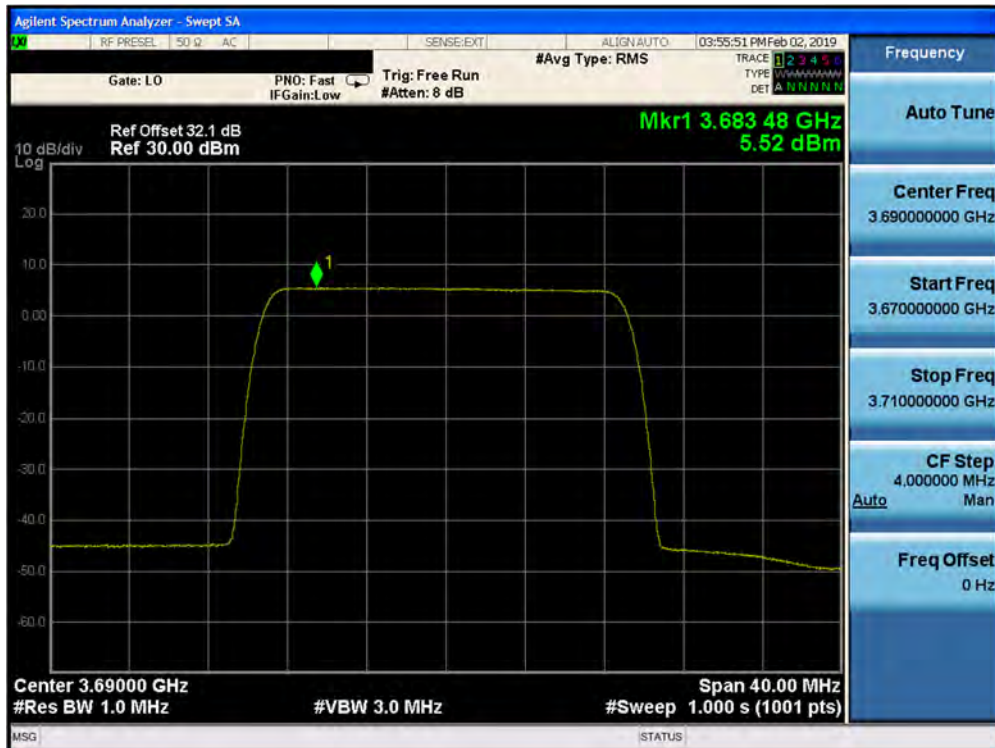


Plot 7-354. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 06

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 239 of 313

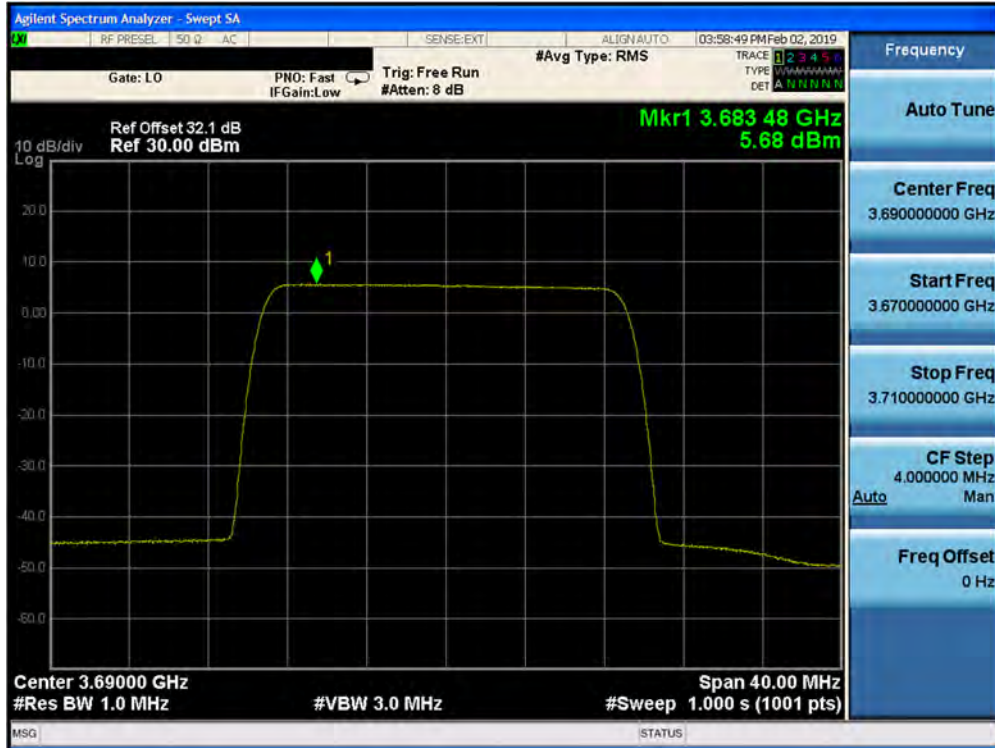


Plot 7-355. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 05

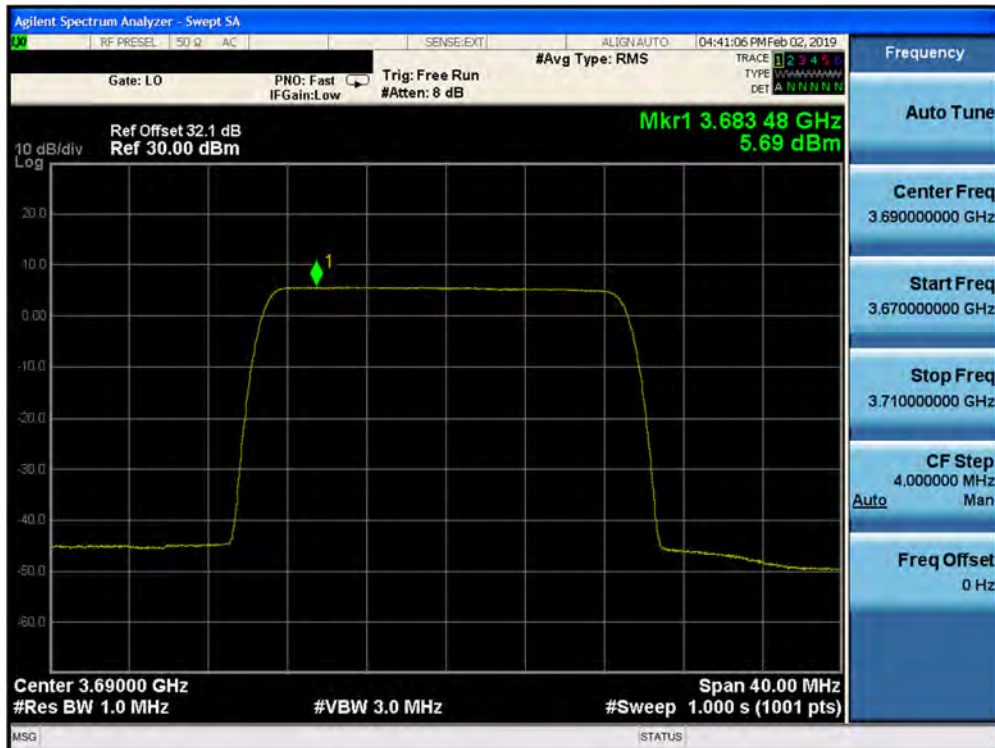


Plot 7-356. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 04

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 240 of 313

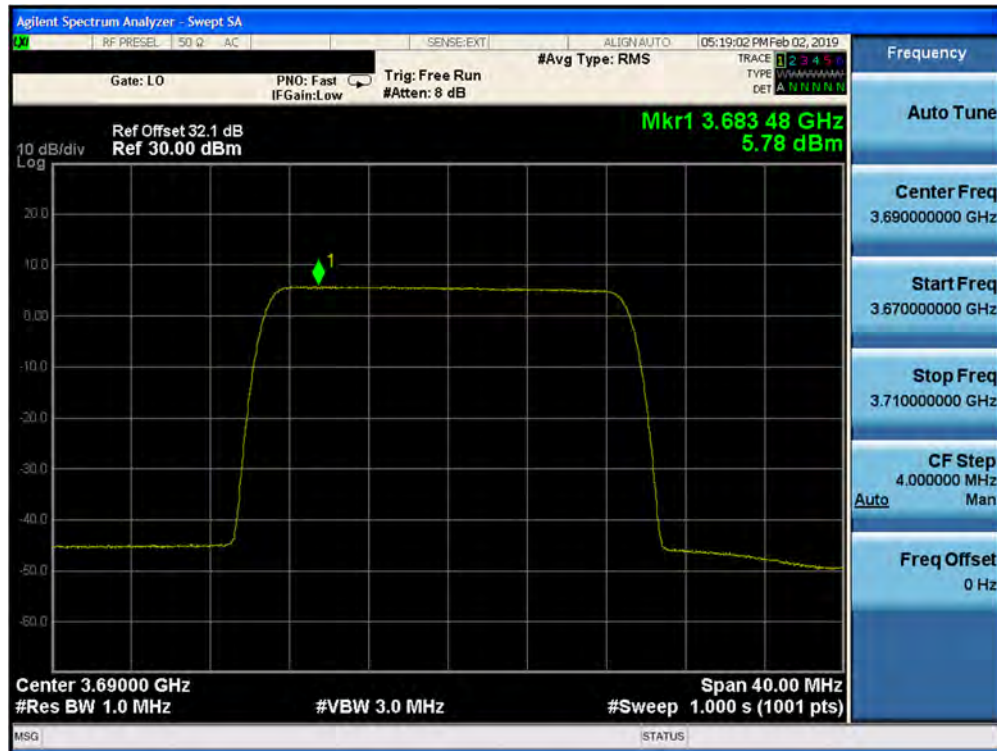


Plot 7-357. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 20



Plot 7-358. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 21

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 241 of 313



Plot 7-359. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 22



Plot 7-360. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 23

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 242 of 313

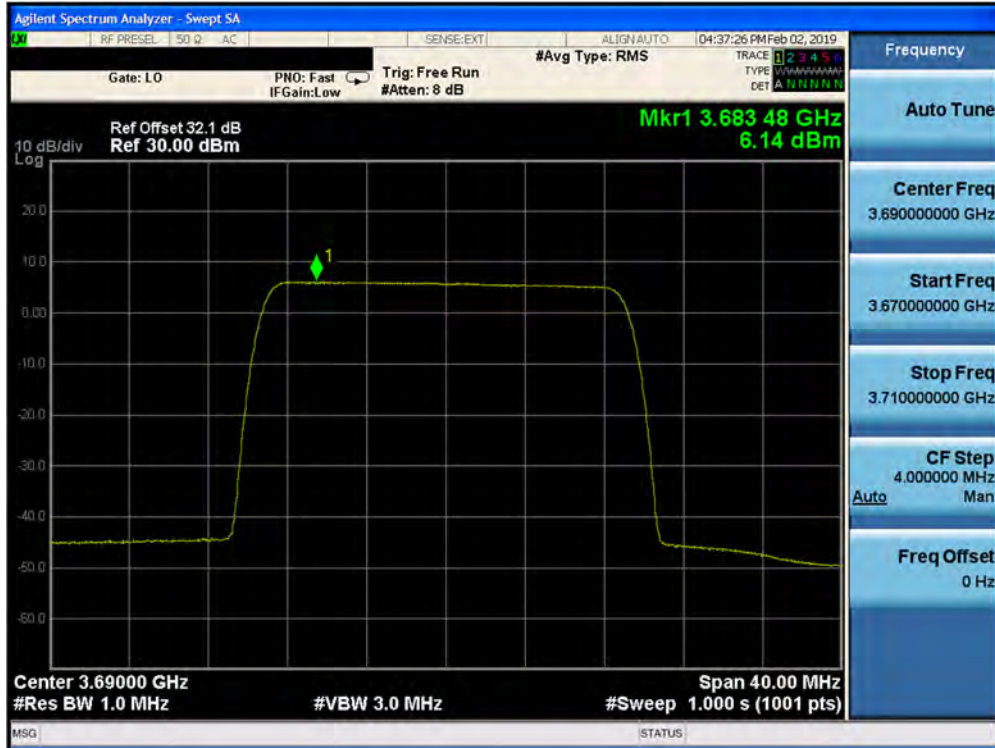


Plot 7-361. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 11

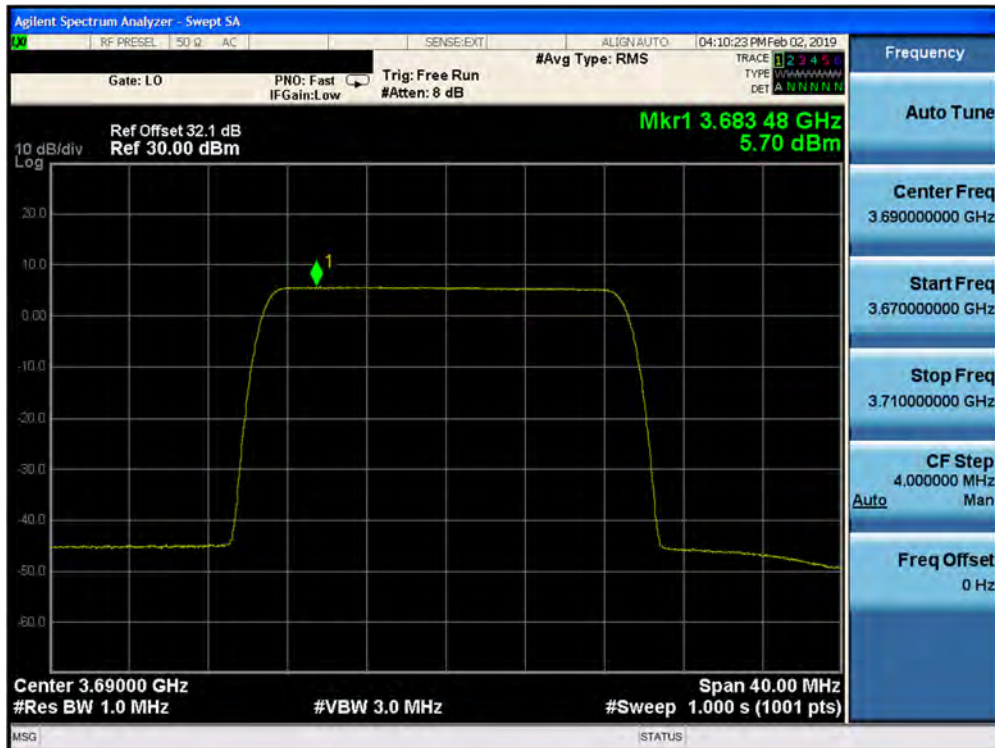


Plot 7-362. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 10

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 243 of 313

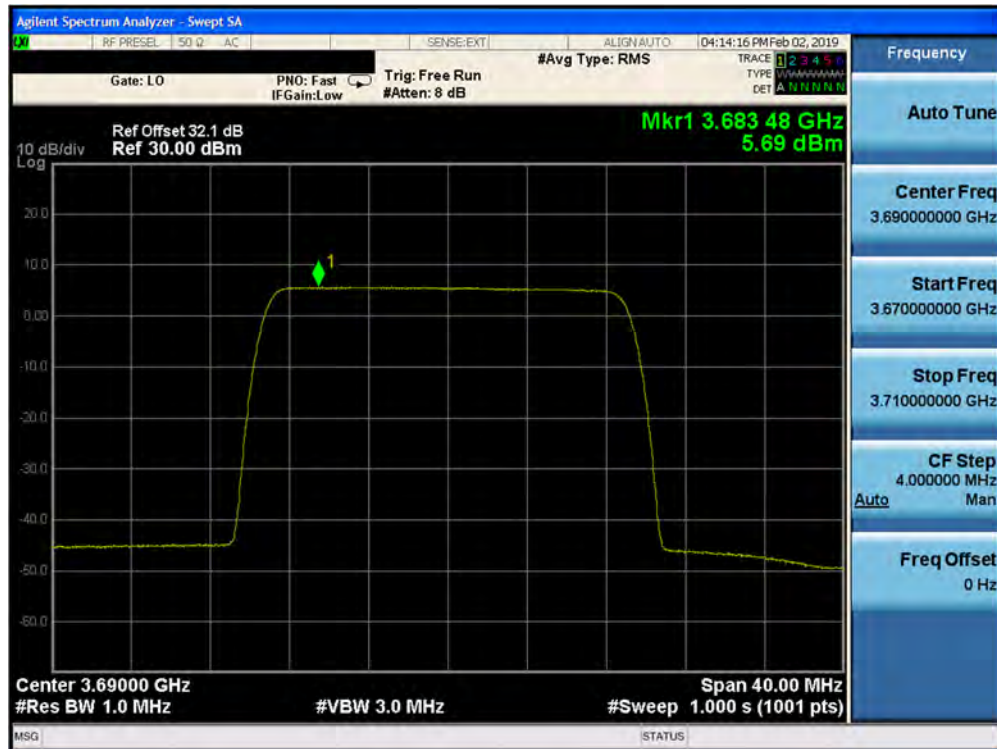


Plot 7-363. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 09

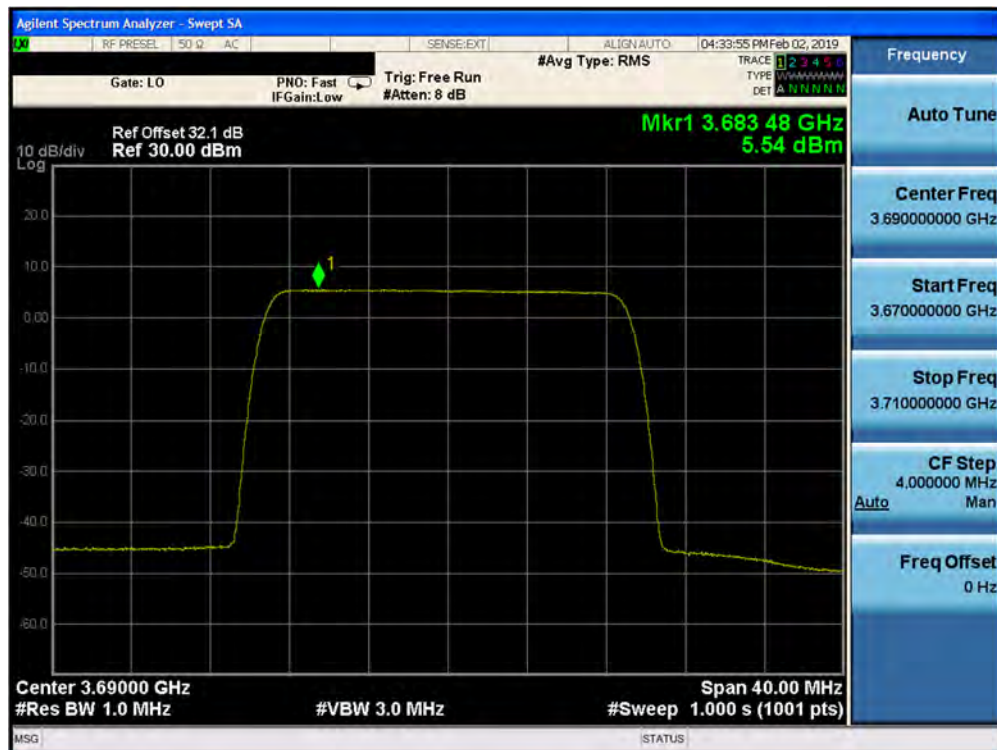


Plot 7-364. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 08

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 244 of 313



Plot 7-365. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 24

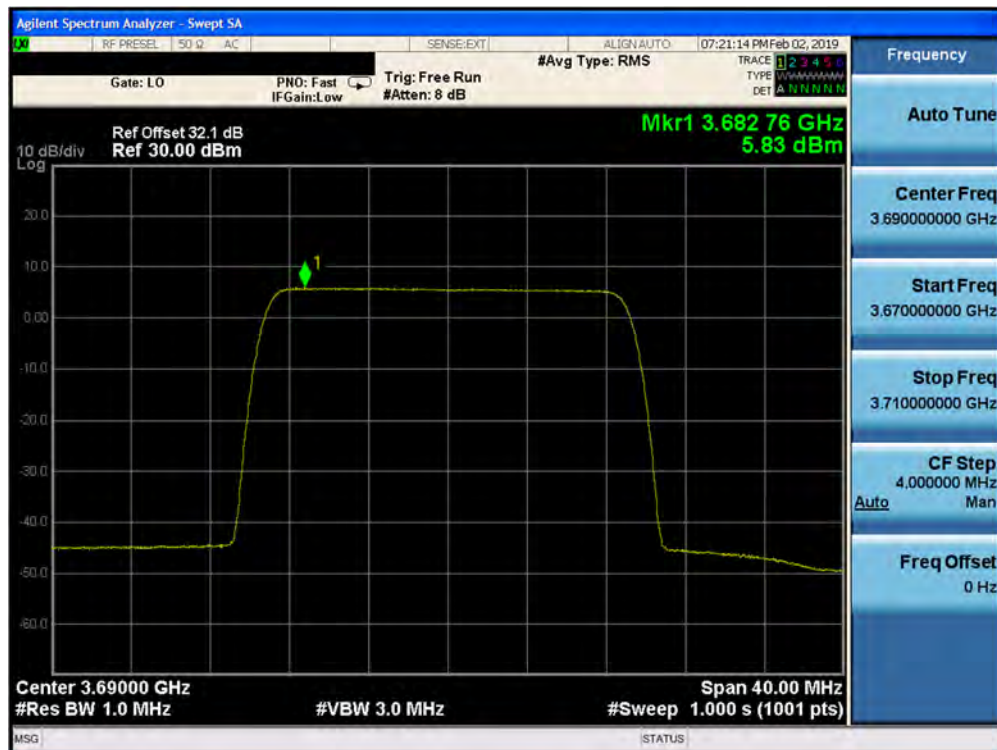


Plot 7-366. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 25

FCC ID: A3LMT3204-48A	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 245 of 313



Plot 7-367. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 26

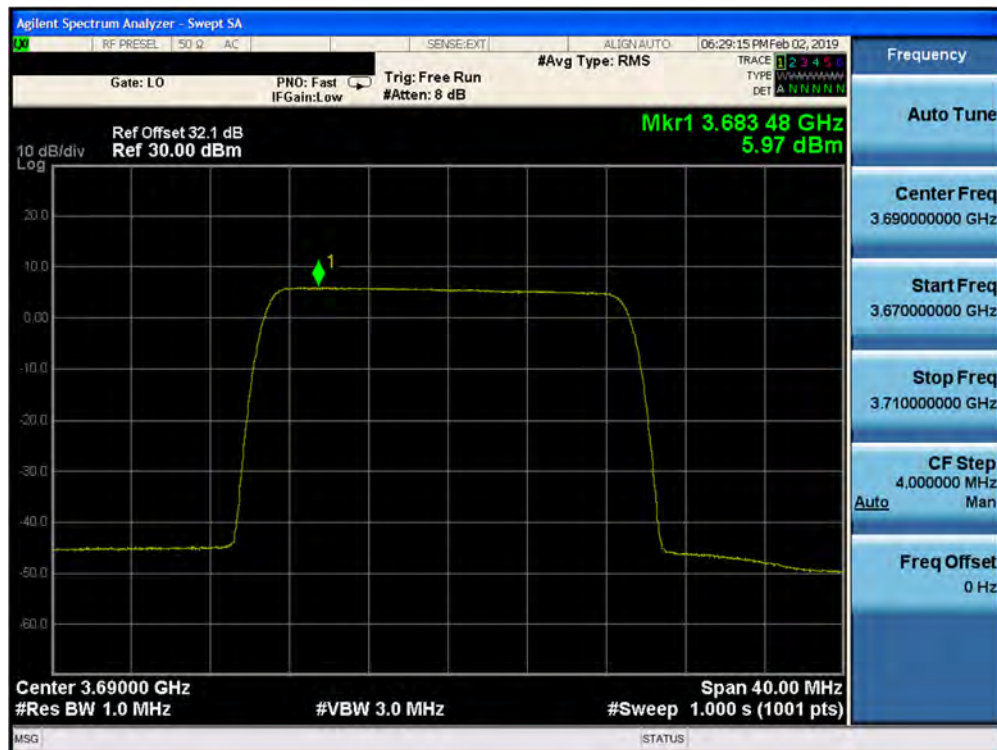


Plot 7-368. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 27

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 246 of 313

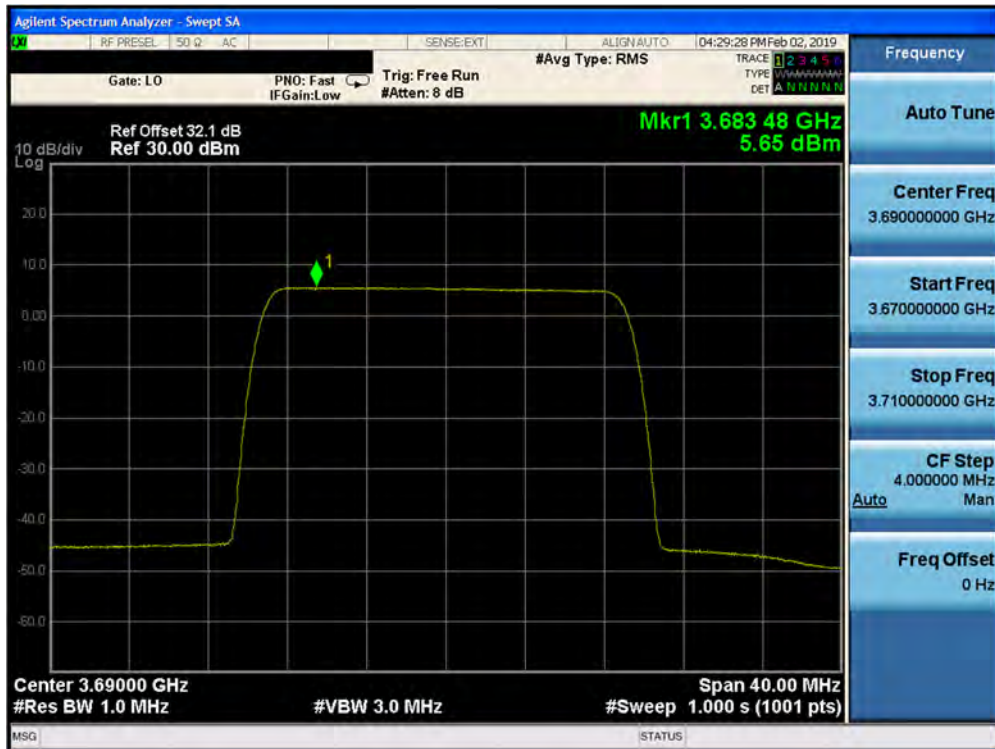


Plot 7-369. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 15

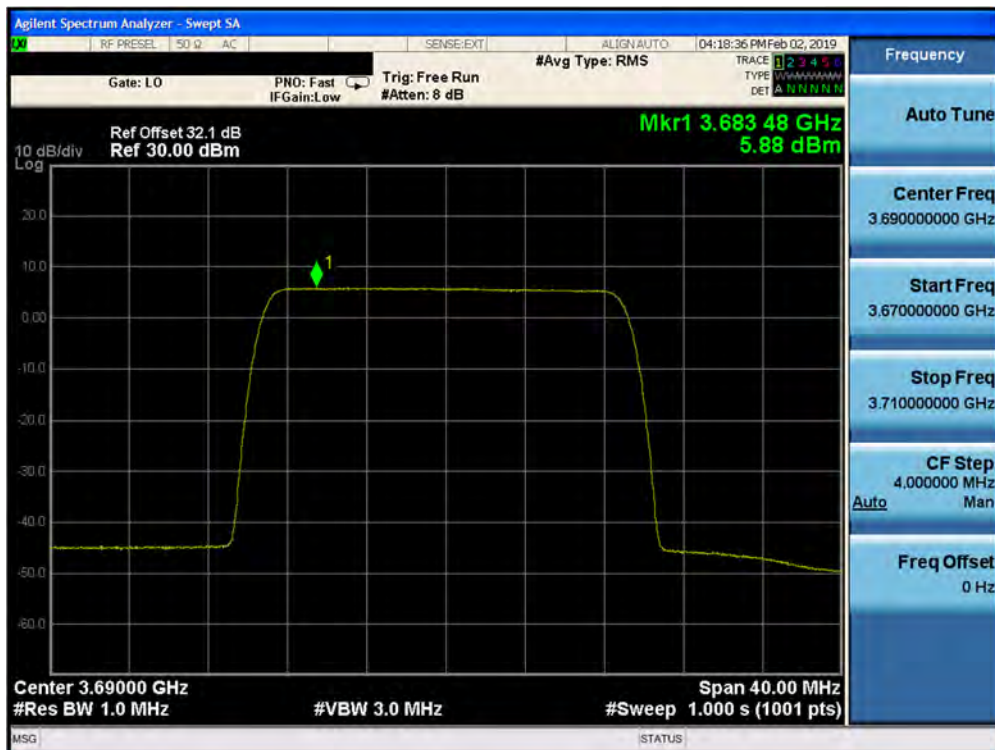


Plot 7-370. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 14

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 247 of 313

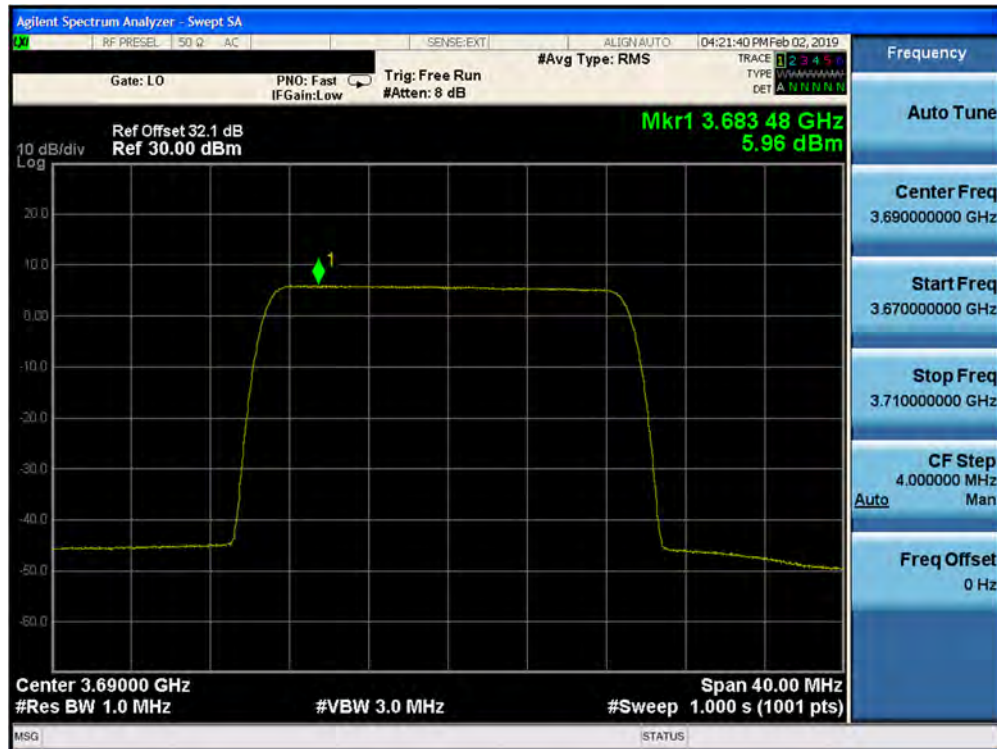


Plot 7-371. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 13

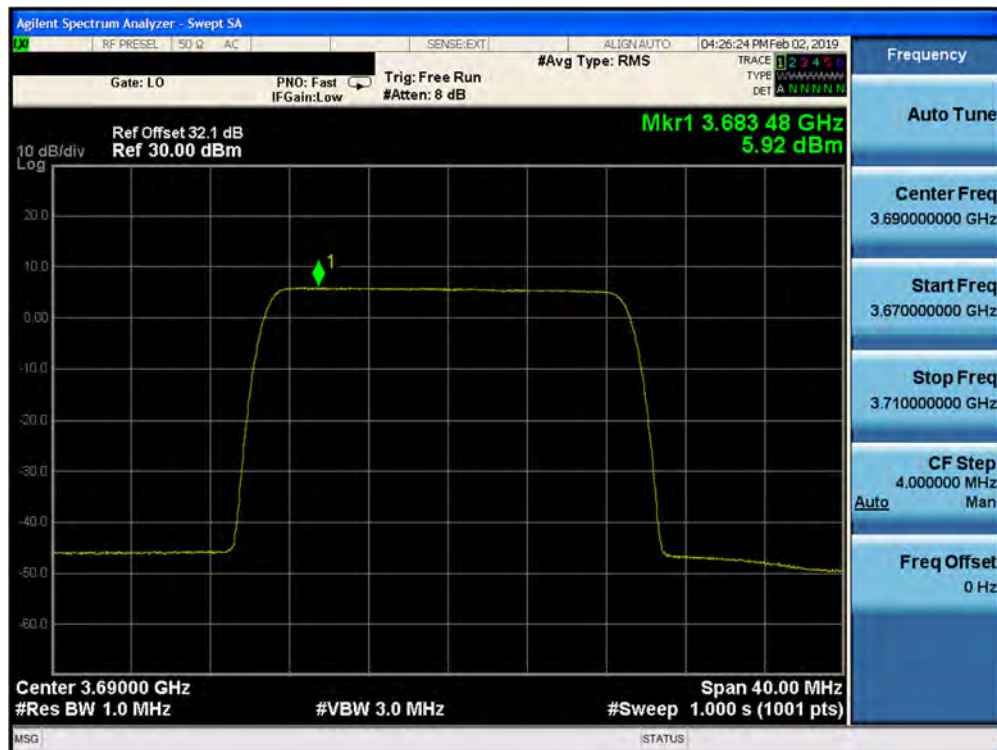


Plot 7-372. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 12

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 248 of 313



Plot 7-373. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 28

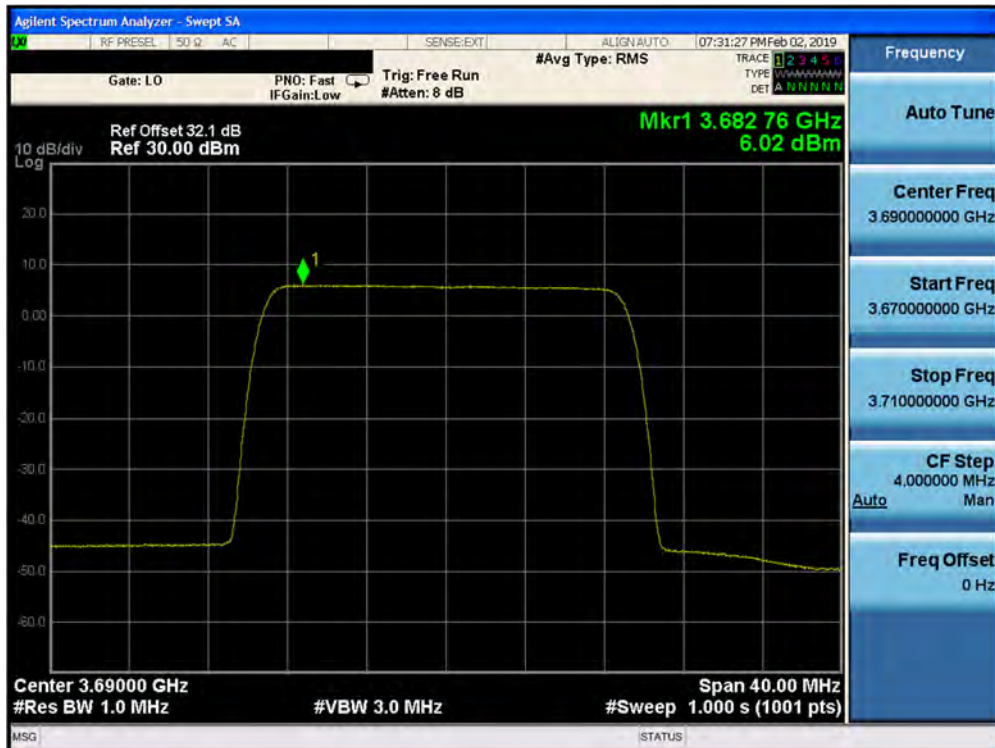


Plot 7-374. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 64QAM- High Channel) Port 29

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 249 of 313



Plot 7-375. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 30



Plot 7-376. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 64QAM- High Channel) Port 31

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 250 of 313

8-User Beam 1CC High Channel 256-QAM

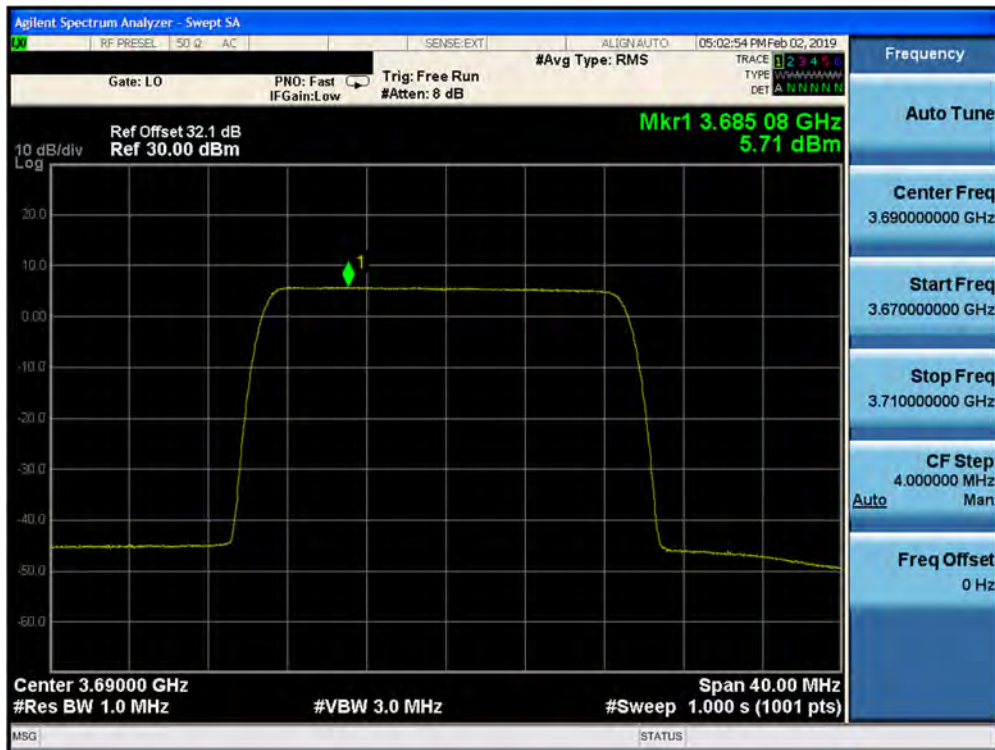


Plot 7-377. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 03



Plot 7-378. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 02

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 251 of 313



Plot 7-379. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 256QAM- High Channel) Port 01



Plot 7-380. Peak Power Spectral Density Plot (1CC- 3690 MHz- 20.0MHz 256QAM- High Channel) Port 00

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 252 of 313



Plot 7-381. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 16



Plot 7-382. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 17

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 253 of 313



Plot 7-383. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 18



Plot 7-384. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 19

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 254 of 313

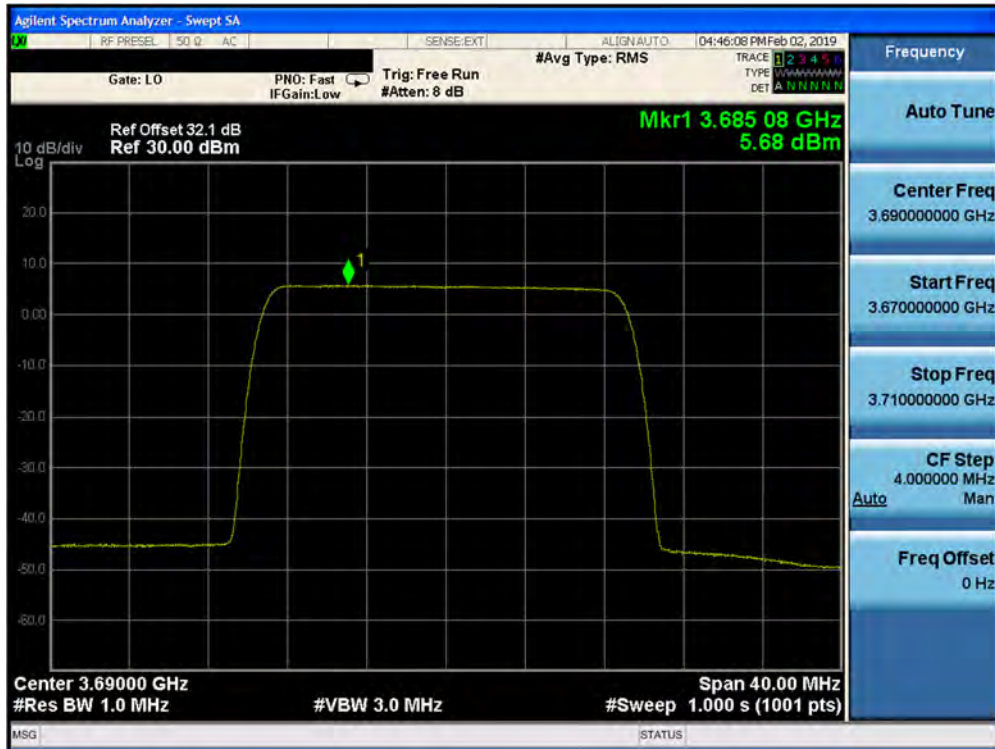


Plot 7-385. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 07



Plot 7-386. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 06

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 255 of 313



Plot 7-387. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 05



Plot 7-388. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 04

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 256 of 313



Plot 7-389. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 20



Plot 7-390. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 21

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 257 of 313



Plot 7-391. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 22

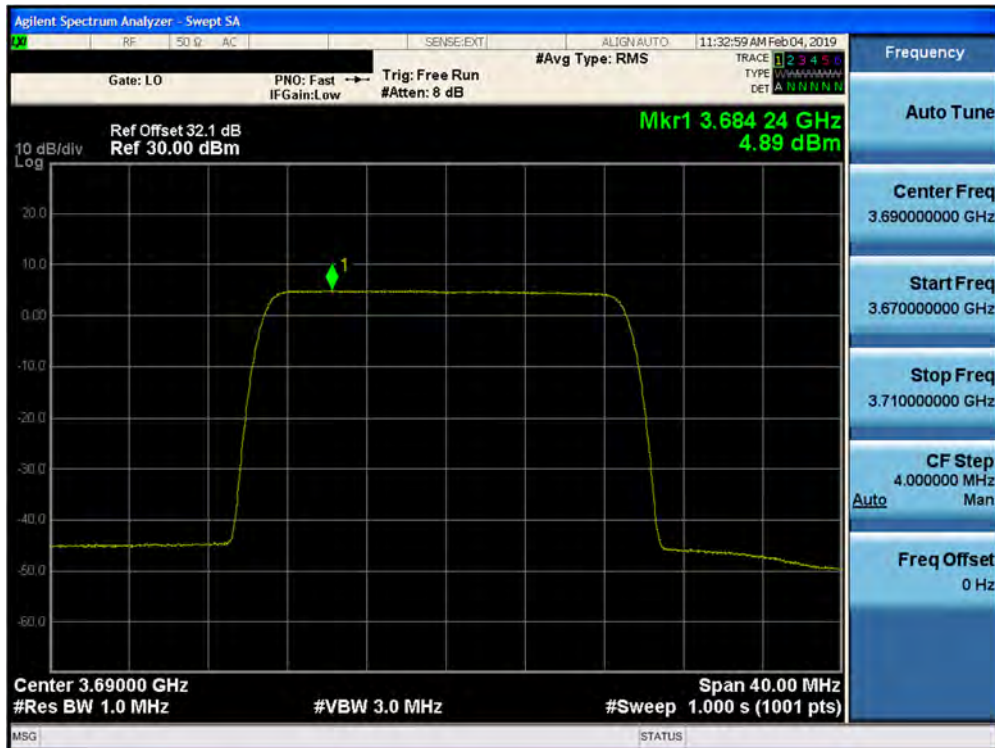


Plot 7-392. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 23

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 258 of 313



Plot 7-393. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 11



Plot 7-394. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 10

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 259 of 313



Plot 7-395. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 09



Plot 7-396. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 08

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 260 of 313



Plot 7-397. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 24



Plot 7-398. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 25

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 261 of 313



Plot 7-399. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 26



Plot 7-400. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 27

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 262 of 313



Plot 7-401. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 15

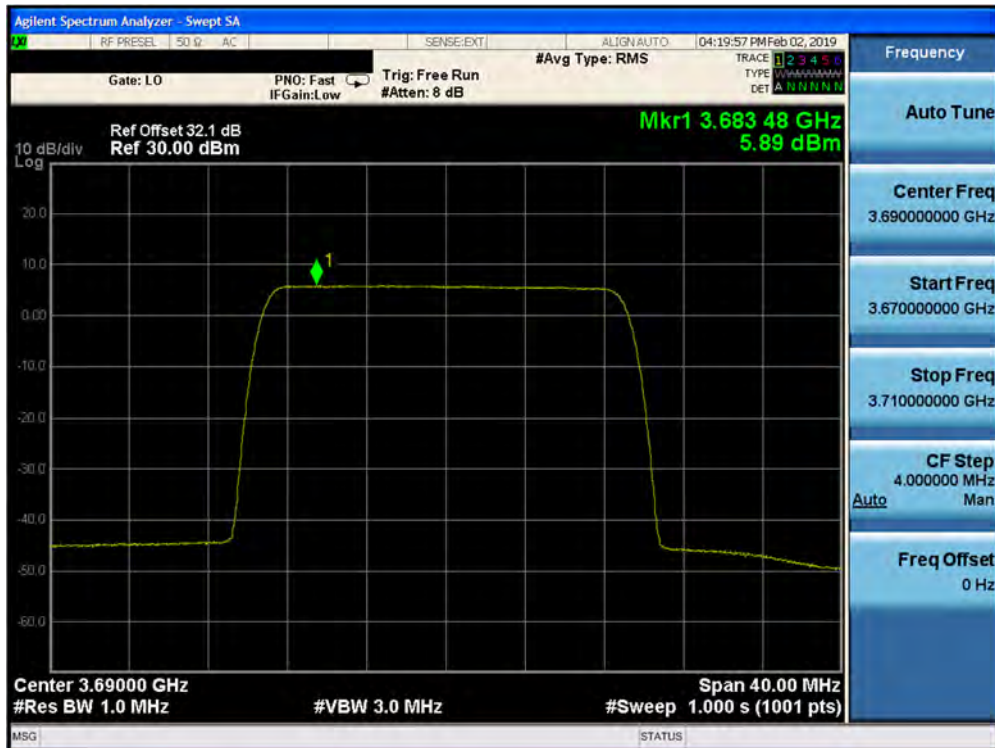


Plot 7-402. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 14

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 263 of 313



Plot 7-403. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 13



Plot 7-404. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 12

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 264 of 313

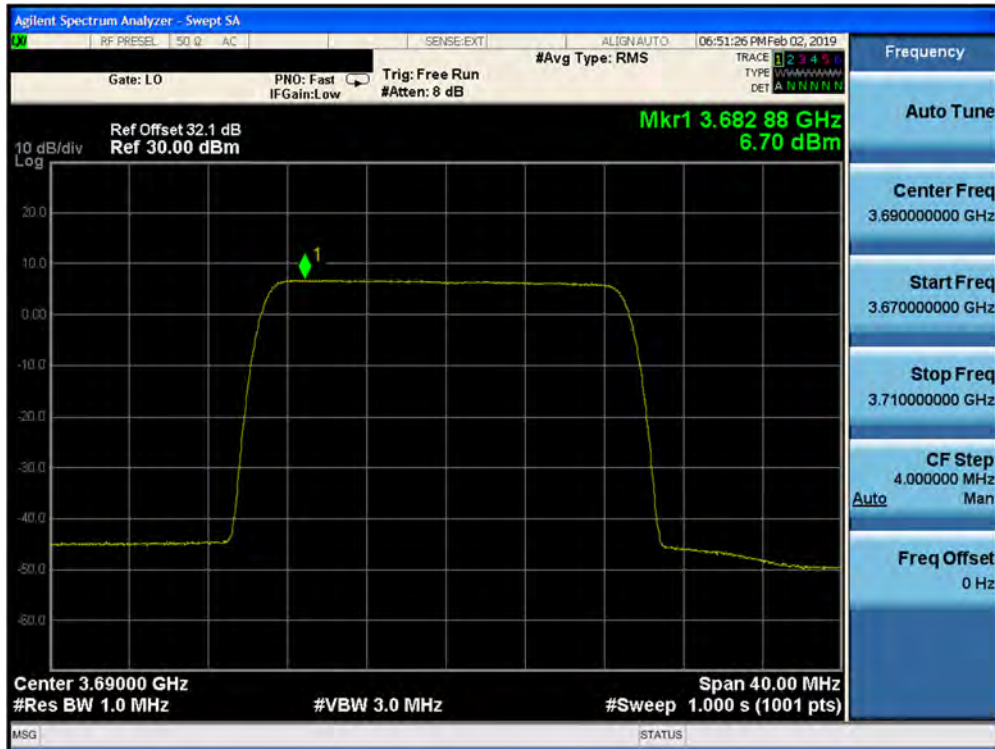


Plot 7-405. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 28

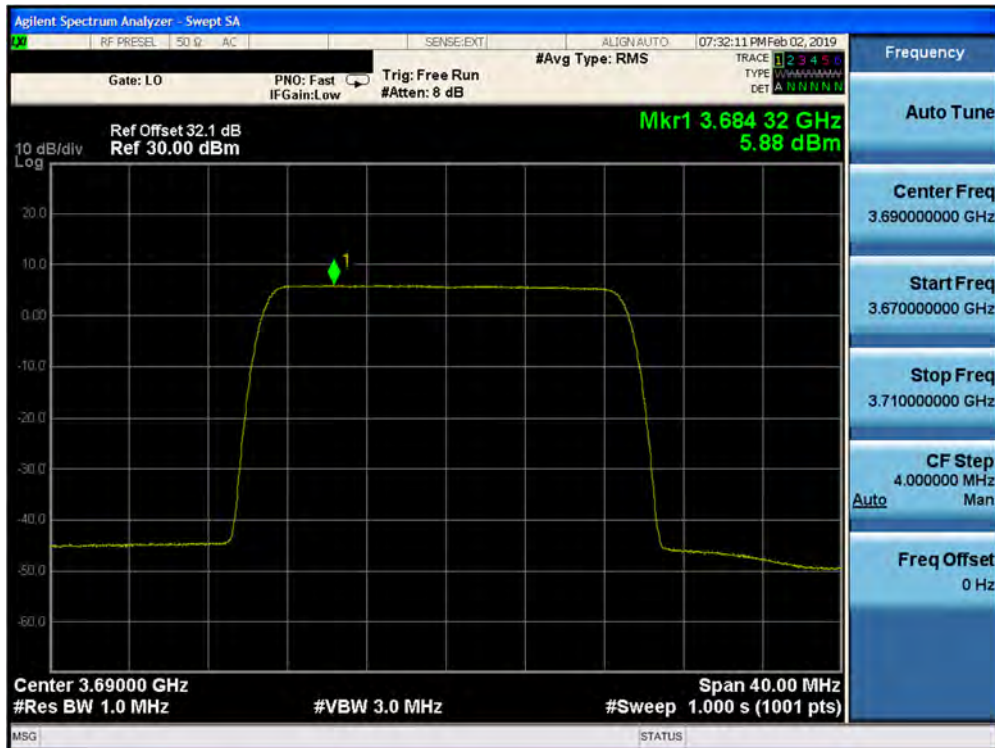


Plot 7-406. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 29

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 265 of 313



Plot 7-407. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 30



Plot 7-408. Peak Power Spectral Density Plot (1CC– 3690 MHz- 20.0MHz 256QAM- High Channel) Port 31

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 266 of 313

7.5 Peak-Average Ratio

\$96.41(g)

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW $\geq$ OBW or specified reference bandwidth
4. The signal analyzer was set to collect two million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed.
6. An RF-Burst triggering method ensured measurement in the on time of the signal.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

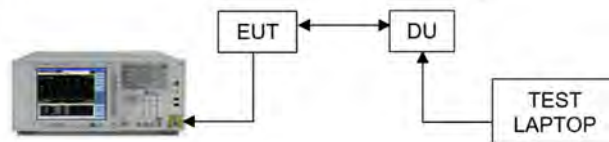
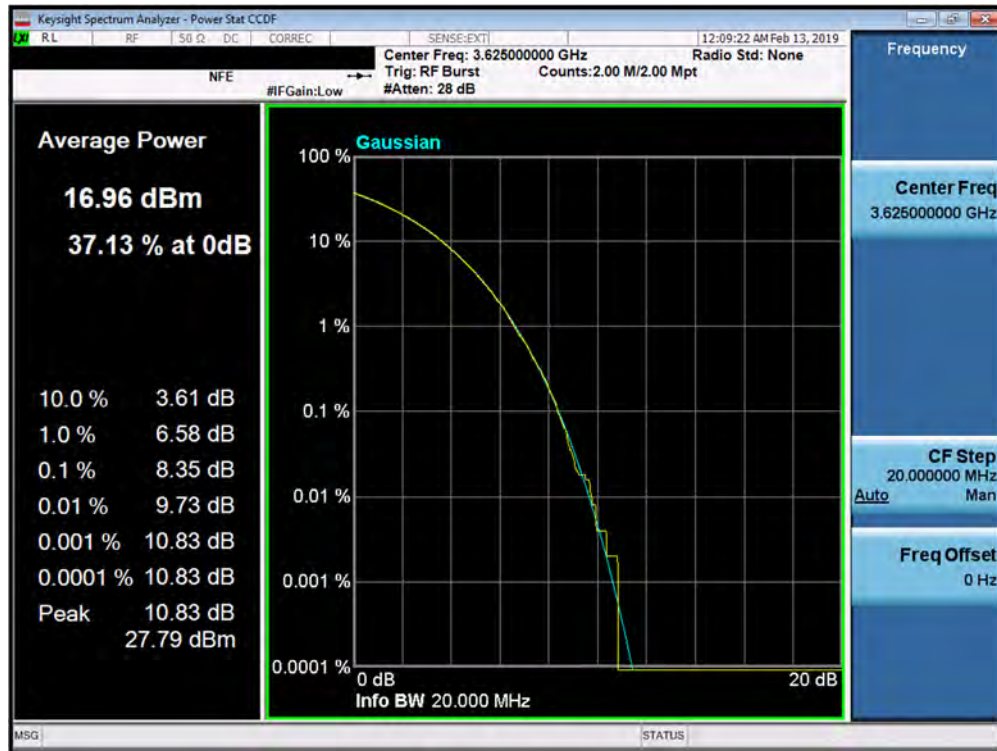


Figure 7-4. Test Instrument & Measurement Setup

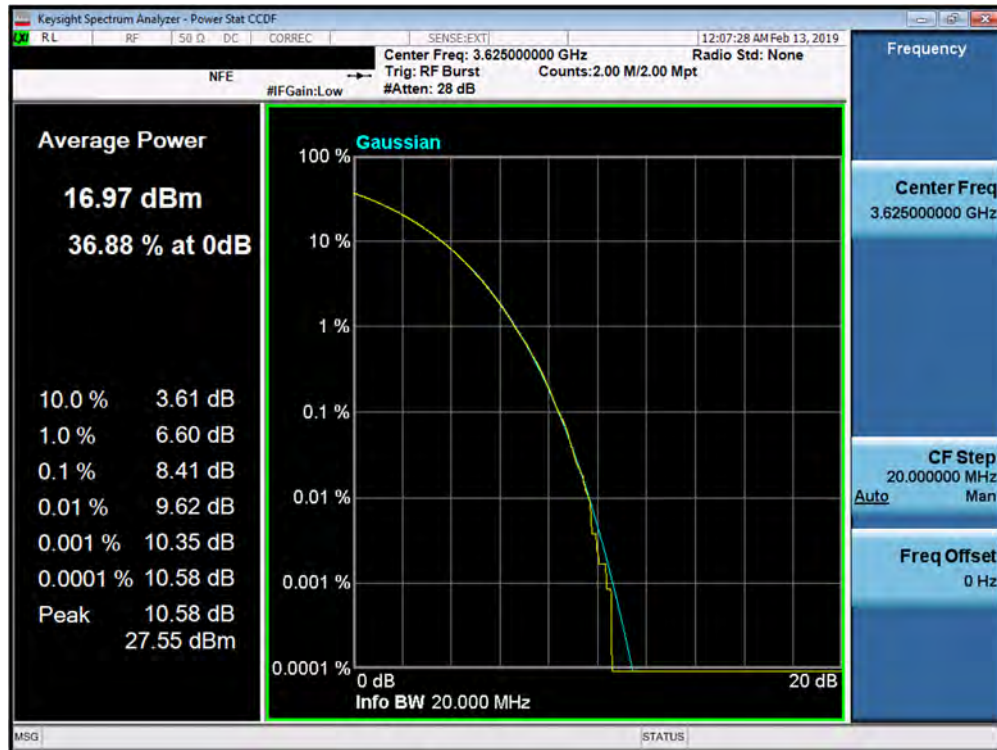
Test Notes

The PAR data is taken from the power with the highest output power on the mid channel. The deviation between peak and average power was found to be higher in 1CC compared to 2CC. Thus, 1CC was determined to be the worst case for PAR.

FCC ID: A3LMT3204-48A	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS	Page 267 of 313

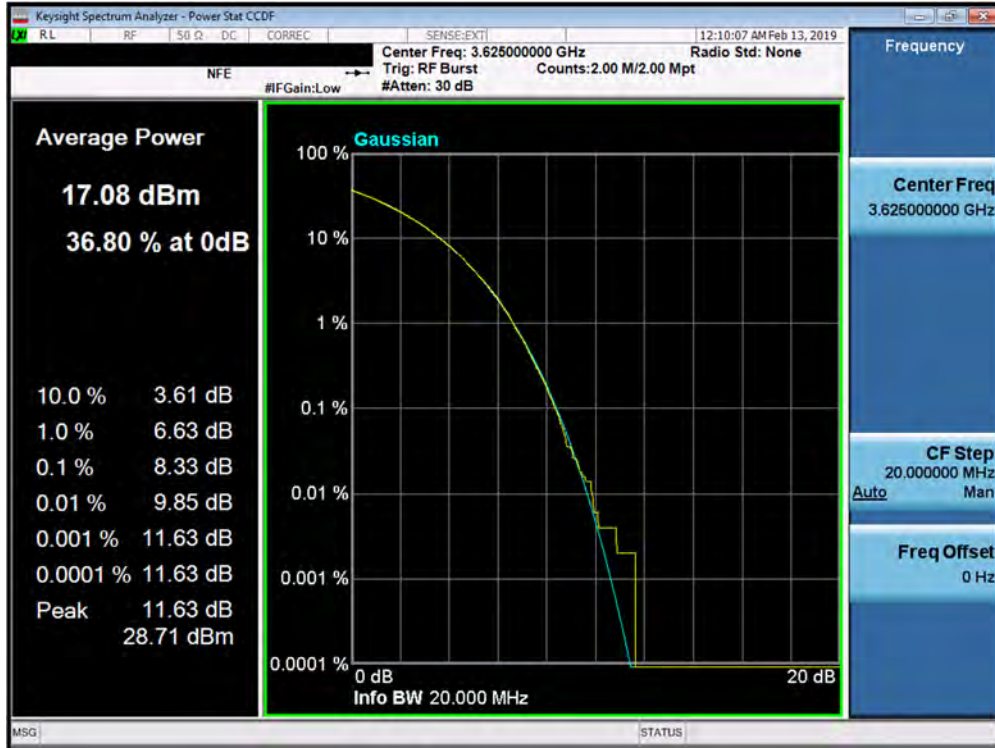


Plot 7-409. PAR Plot (20.0MHz QPSK - Mid Channel-SISO)

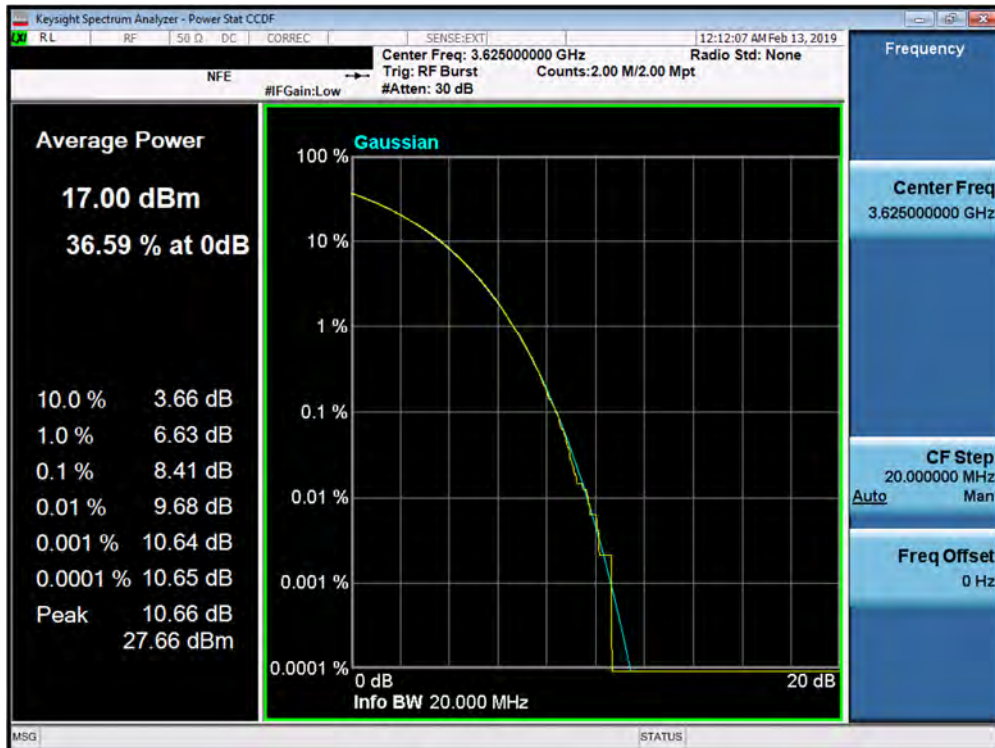


Plot 7-410. PAR Plot (20.0MHz 16QAM - Mid Channel-SISO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 268 of 313



Plot 7-411. PAR Plot (20.0MHz 64QAM - Mid Channel-SISO)



Plot 7-412. PAR Plot (20.0MHz 256QAM - Mid Channel-SISO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 269 of 313

7.6 Spurious and Harmonic Emissions at Antenna Terminal

\$2.1051 \$96.41(e)

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/Mhz.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

KDB 662911 D01 v02r01 – Section E)3) Out-of-Band and Spurious Emission Measurements

- a) Absolute Emission Limits
 - (iii) Measure and add 10 log(NANT) Db

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Trace mode and Detector= RMS
3. Sweep time = auto couple
4. The trace was allowed to stabilize
5. Please see test notes below for RBW and VBW settings

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

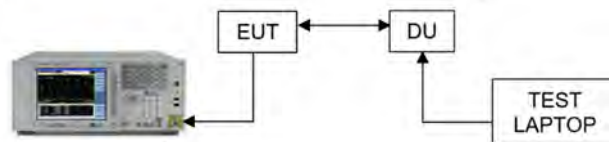


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

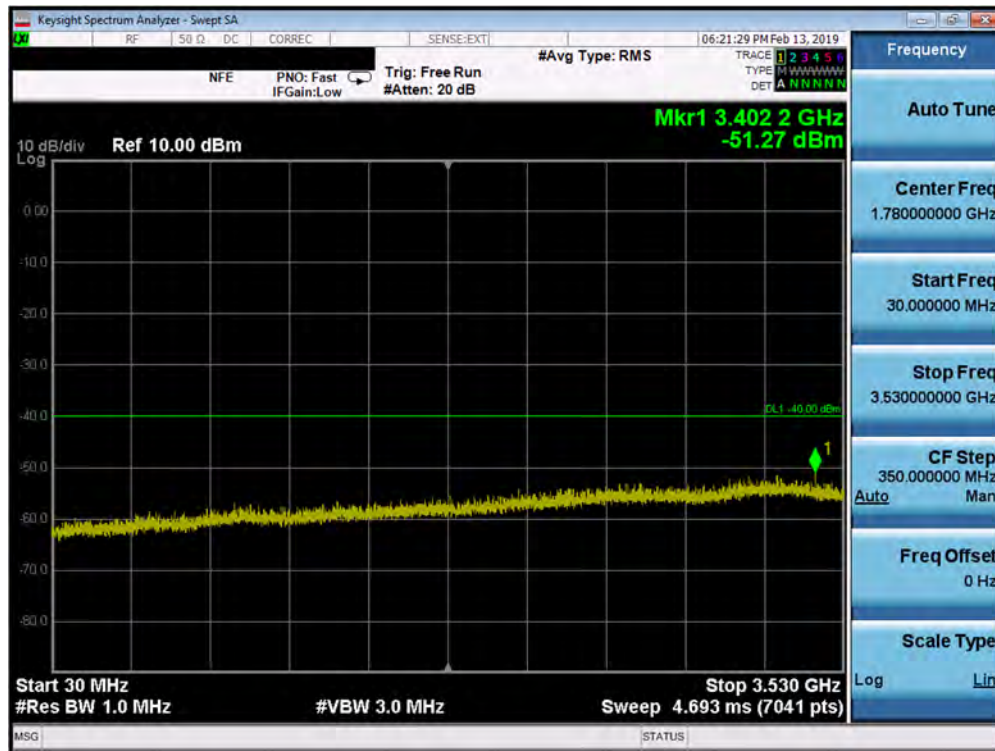
1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

FCC ID: A3LMT3204-48A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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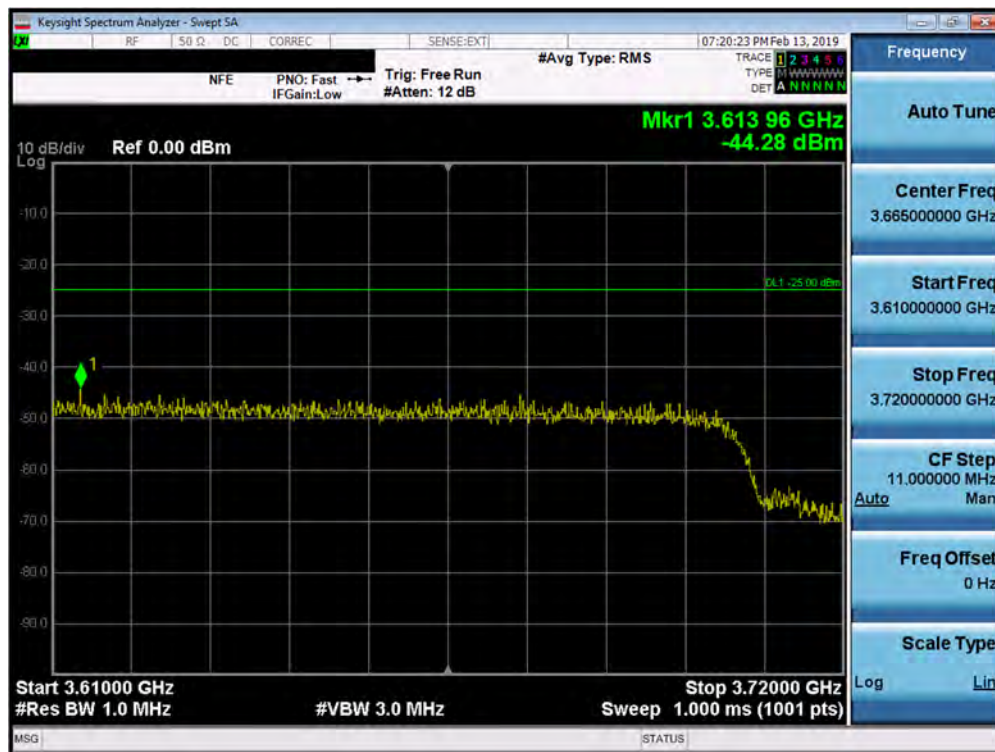
2. 8 user beam mode is the worst case mode and all conducted spurious emissions are measured in this mode.
3. The modulation QPSK for single carrier is the worst case.
4. The 6.5 GHz to 15 GHz range for High Channel QPSK is measured using 6GHz High Pass filter.
5. Mid Channel SISO and MIMO plots are measured.
 - a. MIMO plots show the conducted spurious emissions with all 32 transmit ports combined.
 - b. The offset calculation:
 $10 \cdot \log(32) = 15.05 \text{ dB}$
 This value has been added in the MIMO Plots.
 Refer KDB 662911 D01 v02r01 – Section E)2)c) for details.

FCC ID: A3LMT3204-48A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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1CC Low Channel SISO

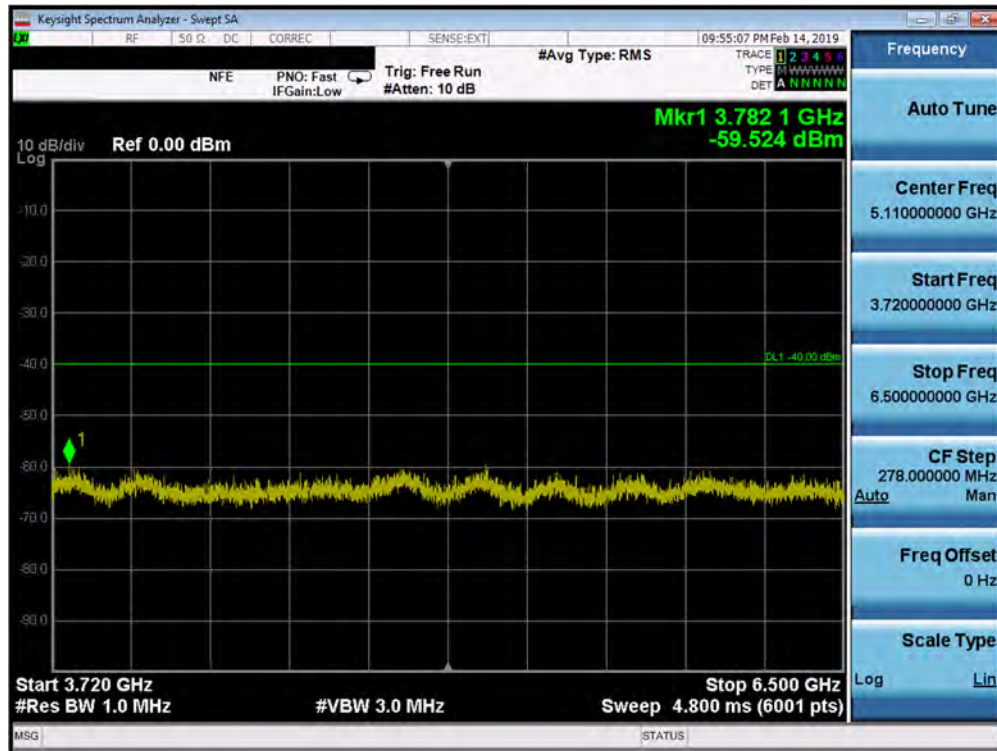


Plot 7-413. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-SISO)

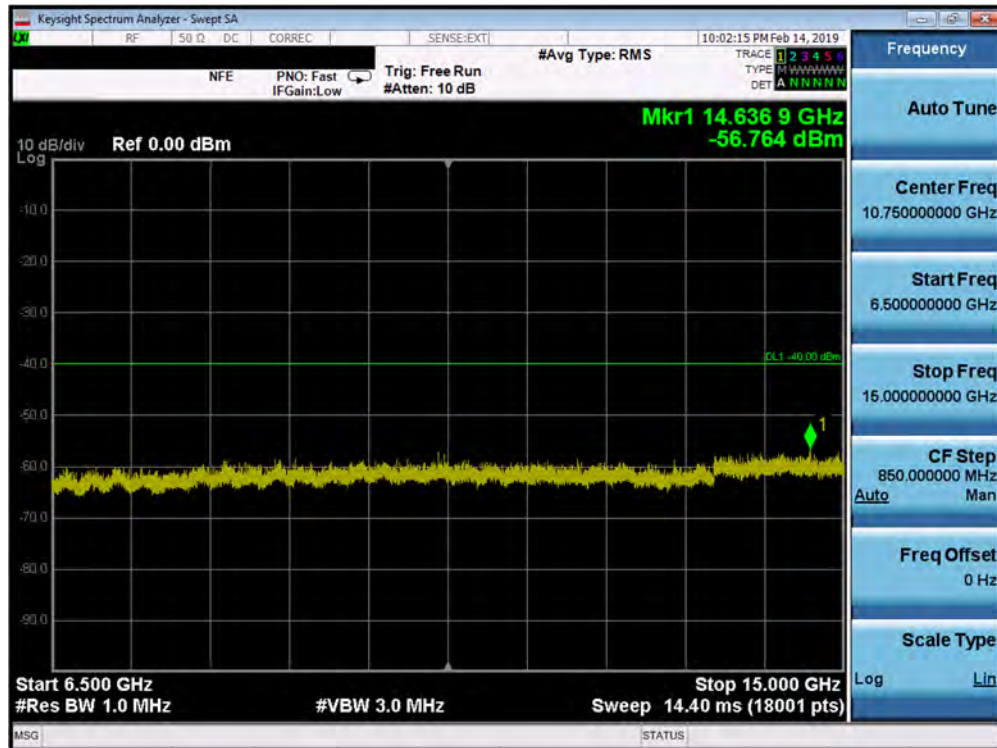


Plot 7-414. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-SISO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 272 of 313

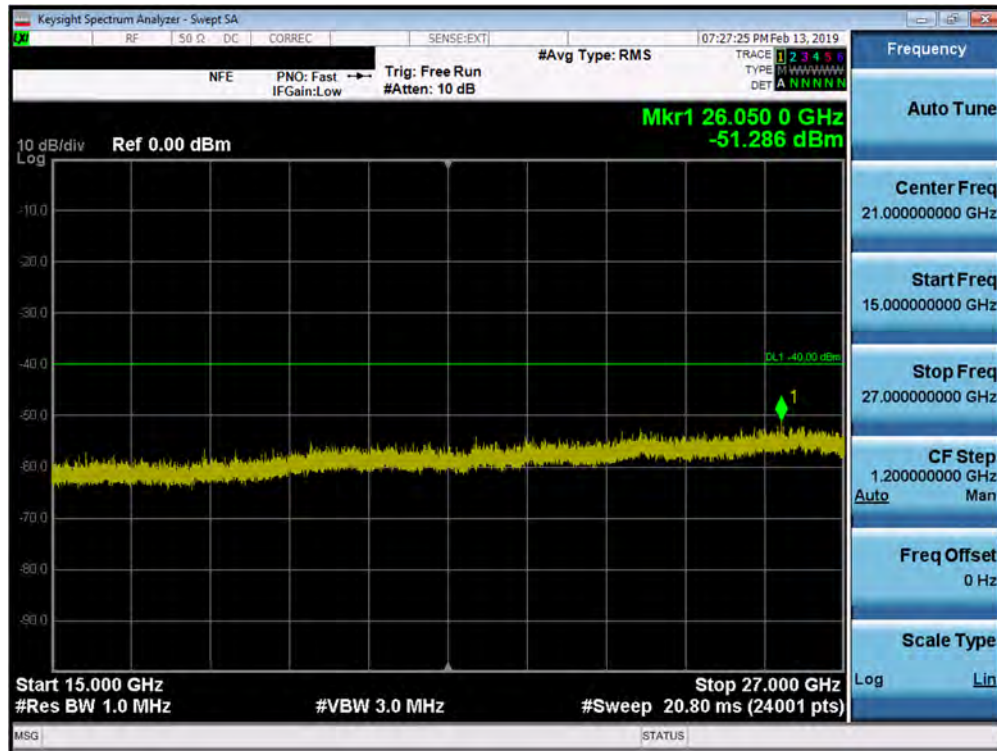


Plot 7-415. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-SISO)

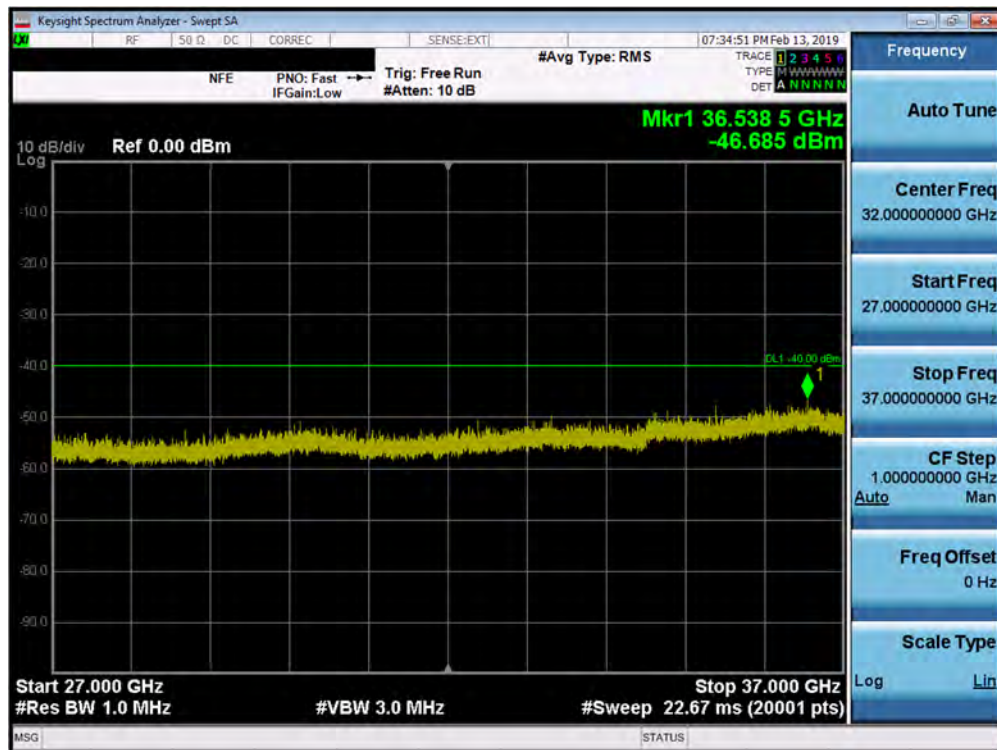


Plot 7-416. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-SISO)

FCC ID: A3LMT3204-48A	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 273 of 313



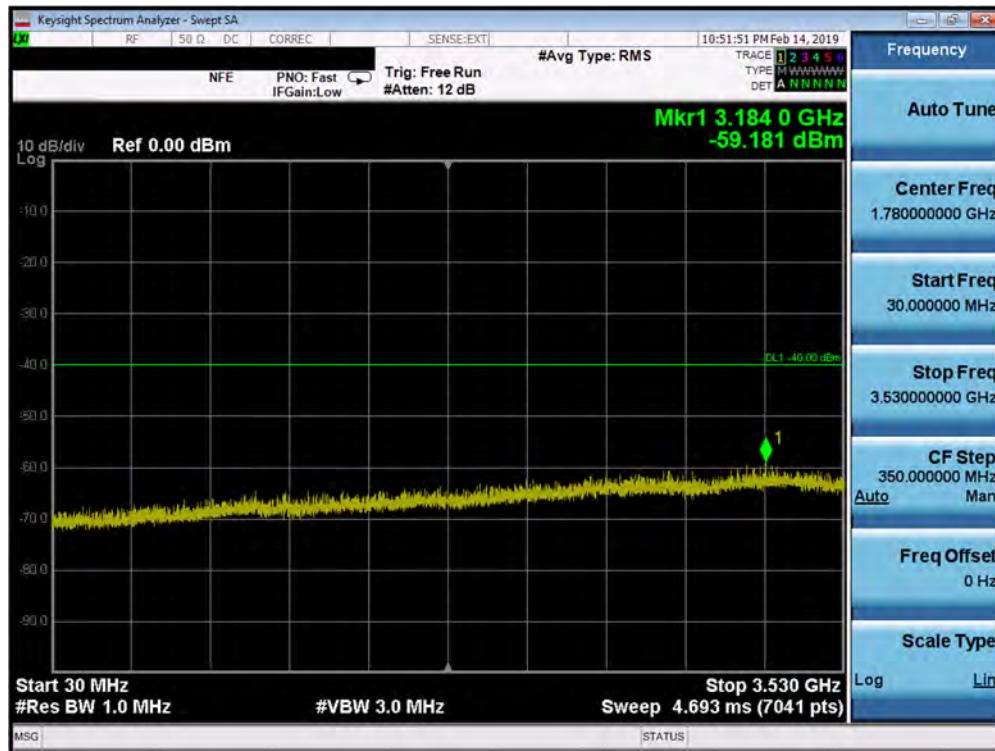
Plot 7-417. Conducted Spurious Plot (20.0MHz QPSK - Low Channe-SISOI)



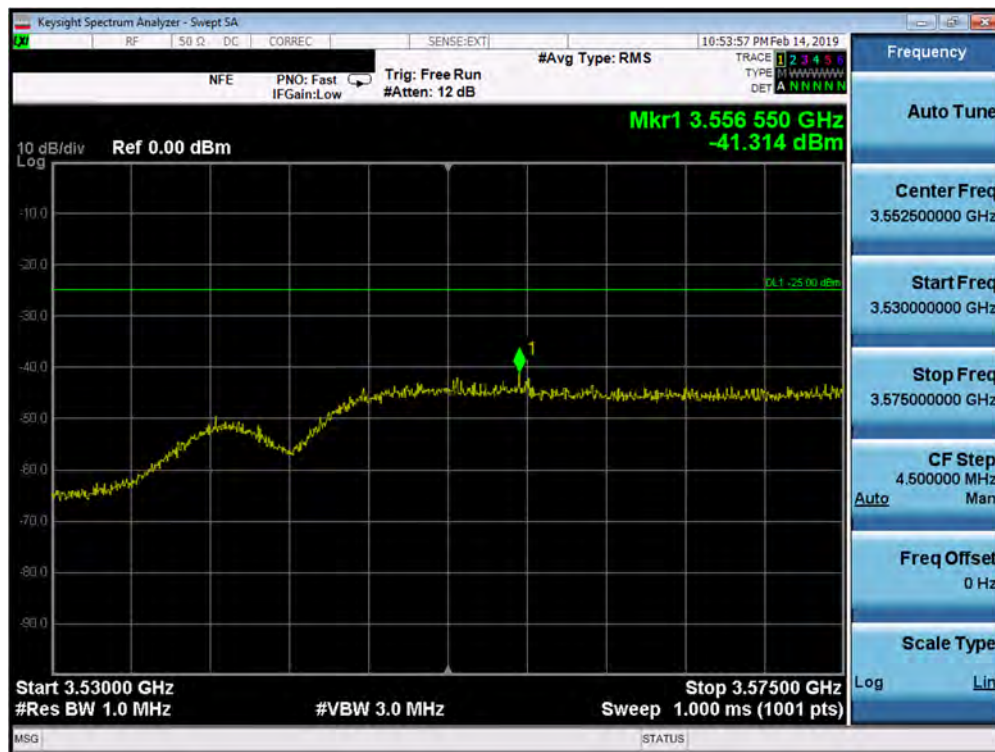
Plot 7-418. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-SISO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 274 of 313

1CC Mid Channel SISO

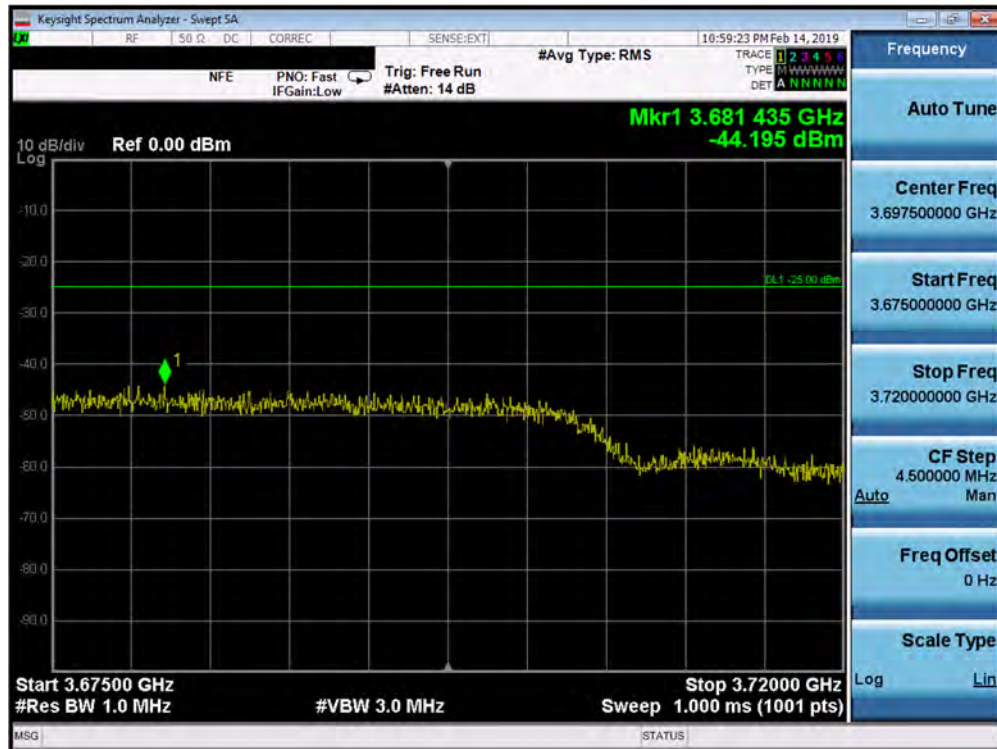


Plot 7-419. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-SISO)

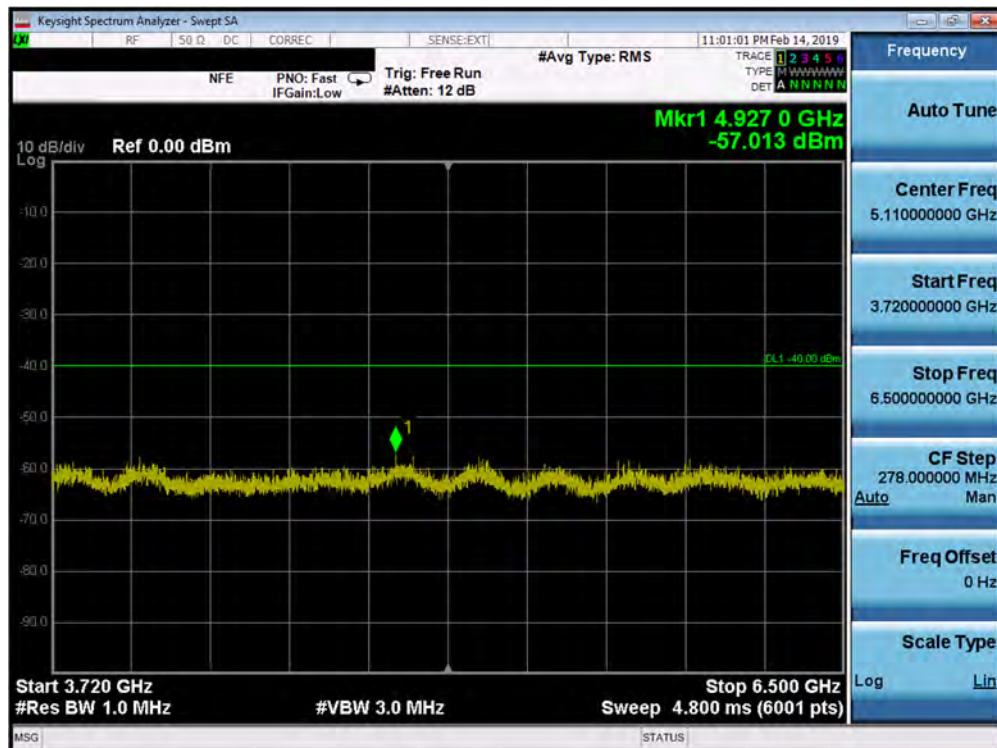


Plot 7-420. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-SISO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 275 of 313

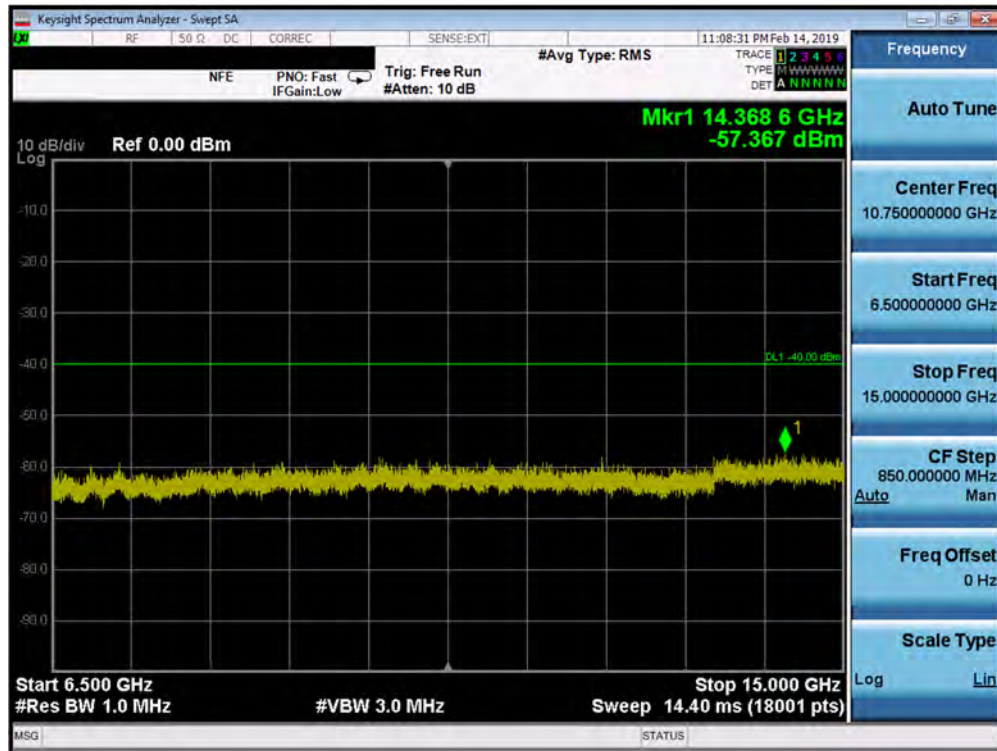


Plot 7-421. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-SISO)

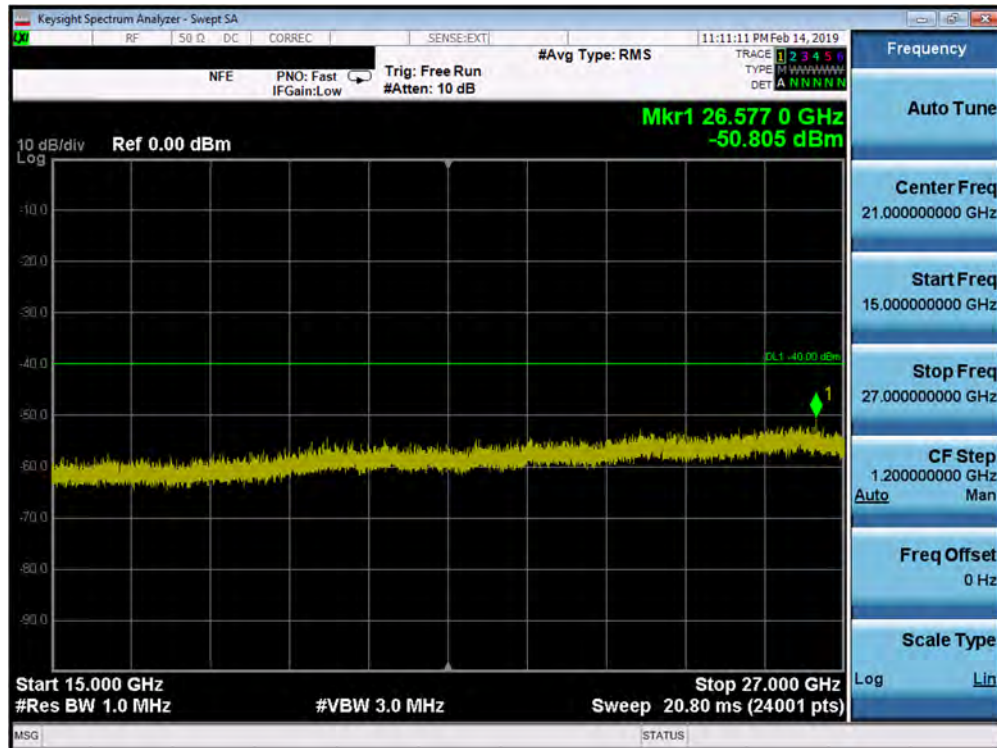


Plot 7-422. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-SISO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 276 of 313

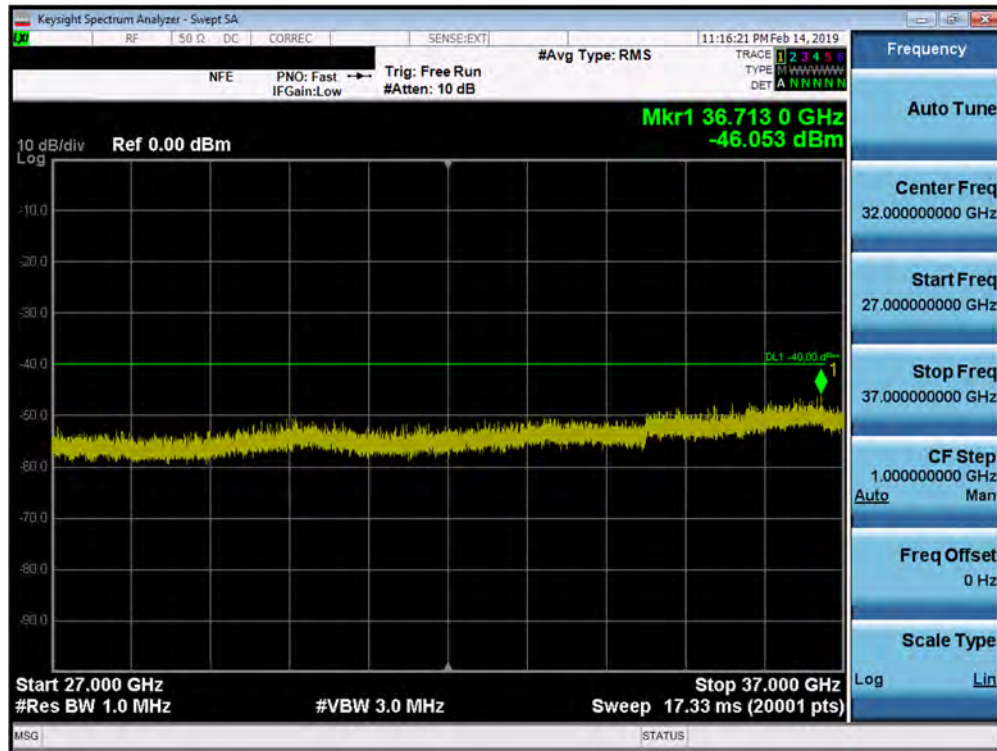


Plot 7-423. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-SISO)



Plot 7-424. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-SISO)

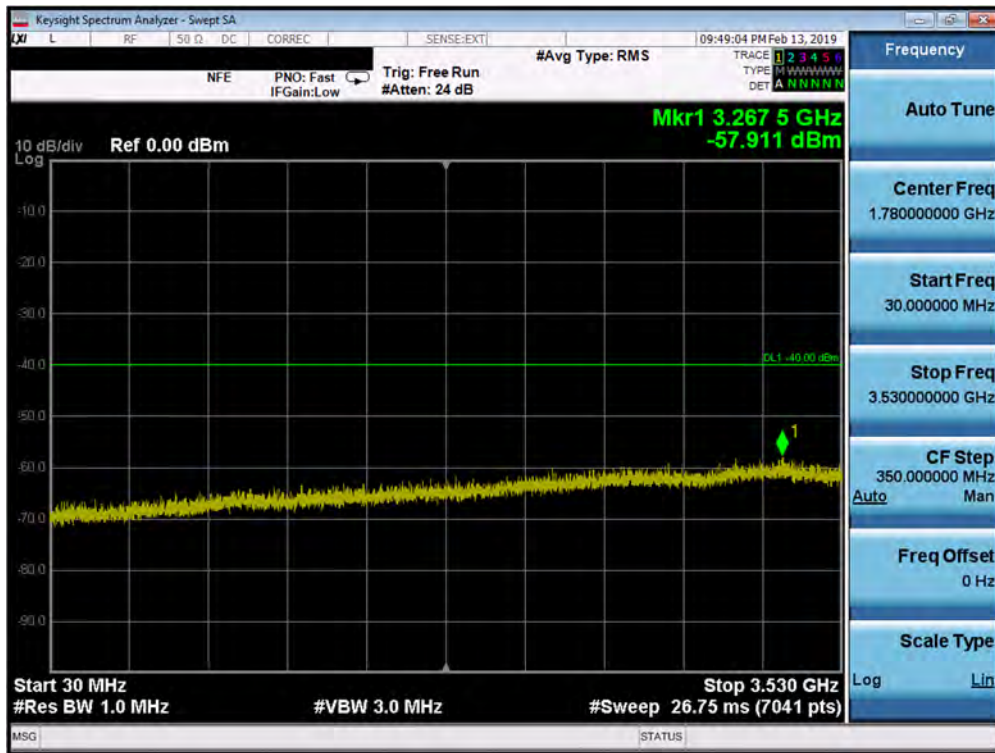
FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 277 of 313



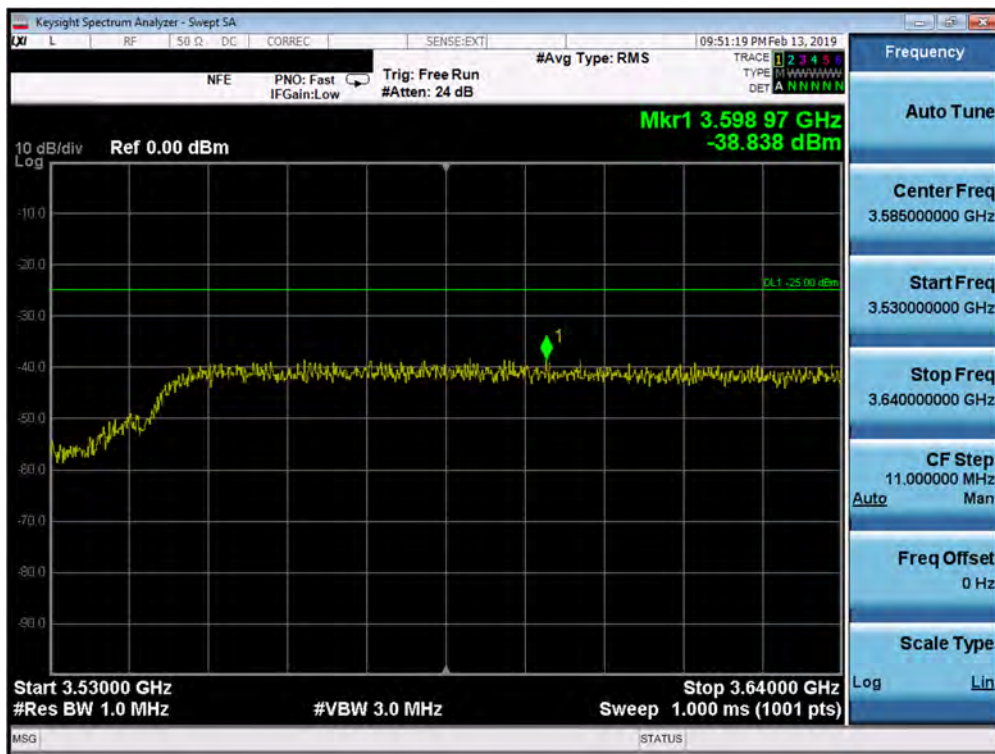
Plot 7-425. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-SISO)

FCC ID: A3LMT3204-48A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 278 of 313

1CC High Channel SISO

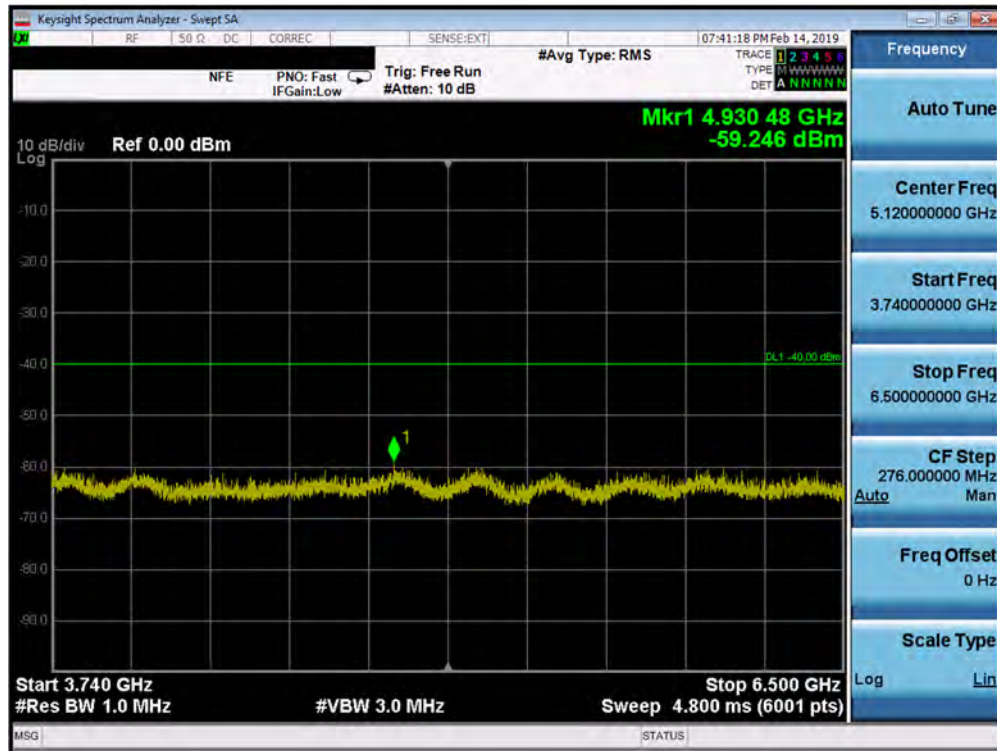


Plot 7-426. Conducted Spurious Plot (20.0MHz QPSK - High Channel-SISO)

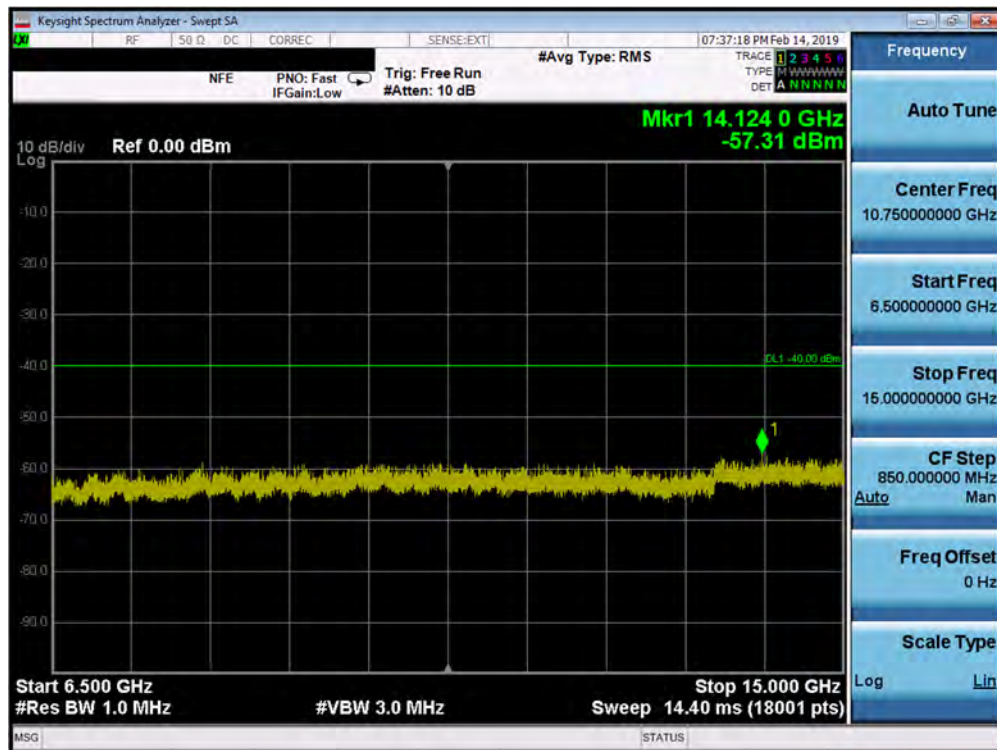


Plot 7-427. Conducted Spurious Plot (20.0MHz QPSK - High Channel-SISO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBS		Page 279 of 313

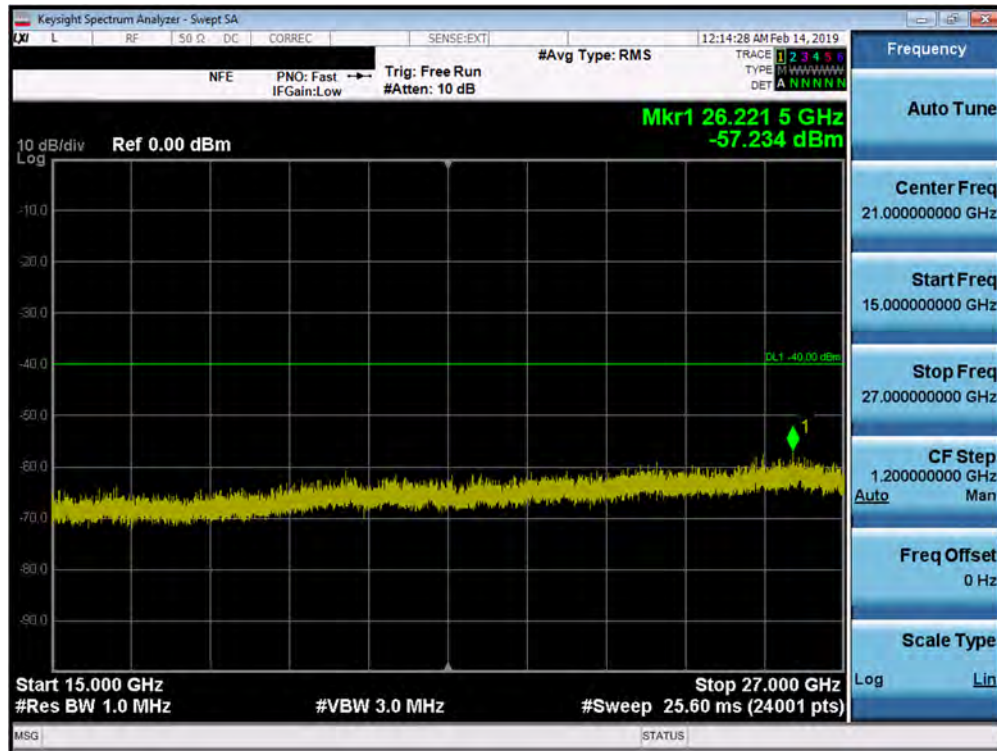


Plot 7-428. Conducted Spurious Plot (20.0MHz QPSK - High Channel-SISO)

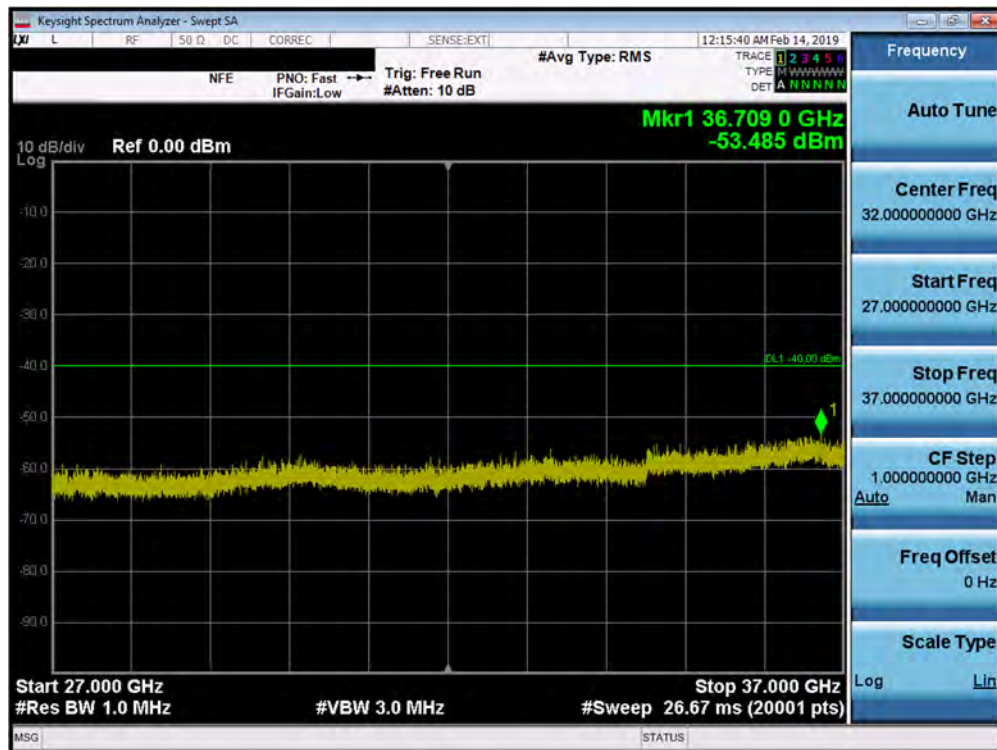


Plot 7-429. Conducted Spurious Plot (20.0MHz QPSK - High Channel-SISO)

FCC ID: A3LMT3204-48A	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD	Page 280 of 313



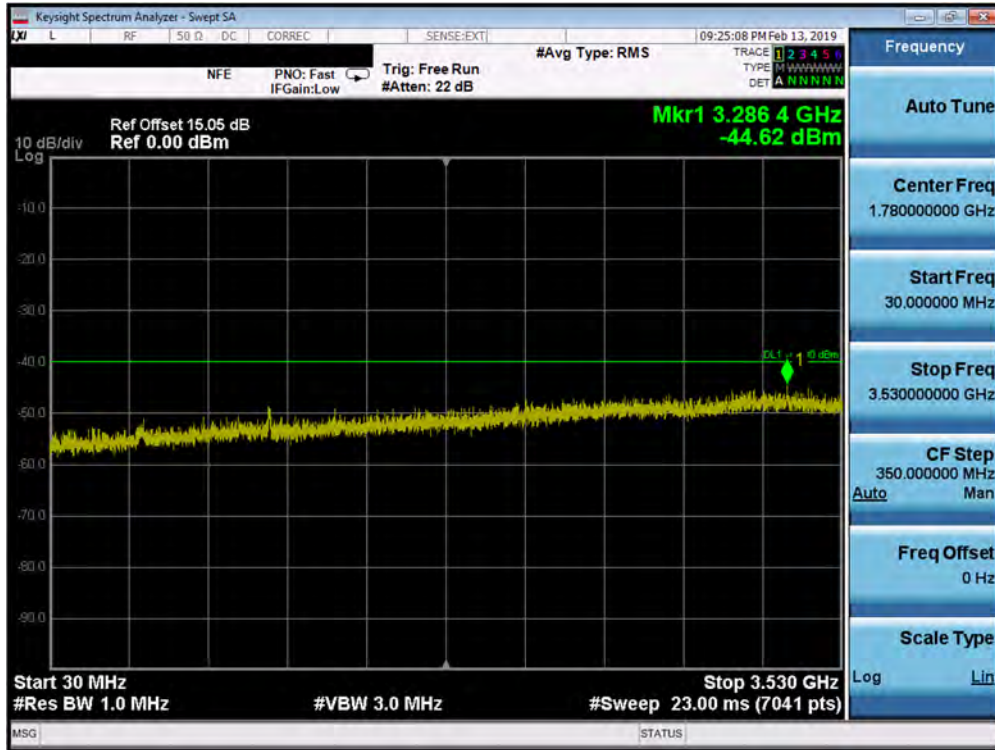
Plot 7-430. Conducted Spurious Plot (20.0MHz QPSK - High Channel-SISO)



Plot 7-431. Conducted Spurious Plot (20.0MHz QPSK - High Channel-SISO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 281 of 313

1CC Low Channel MIMO

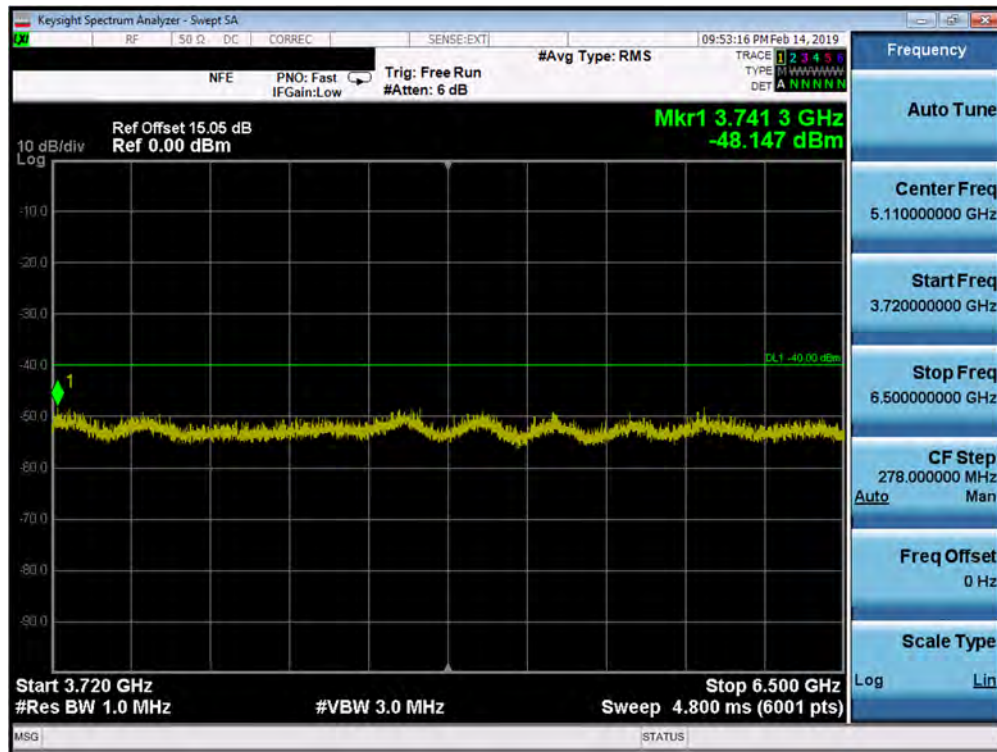


Plot 7-432. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-MIMO)

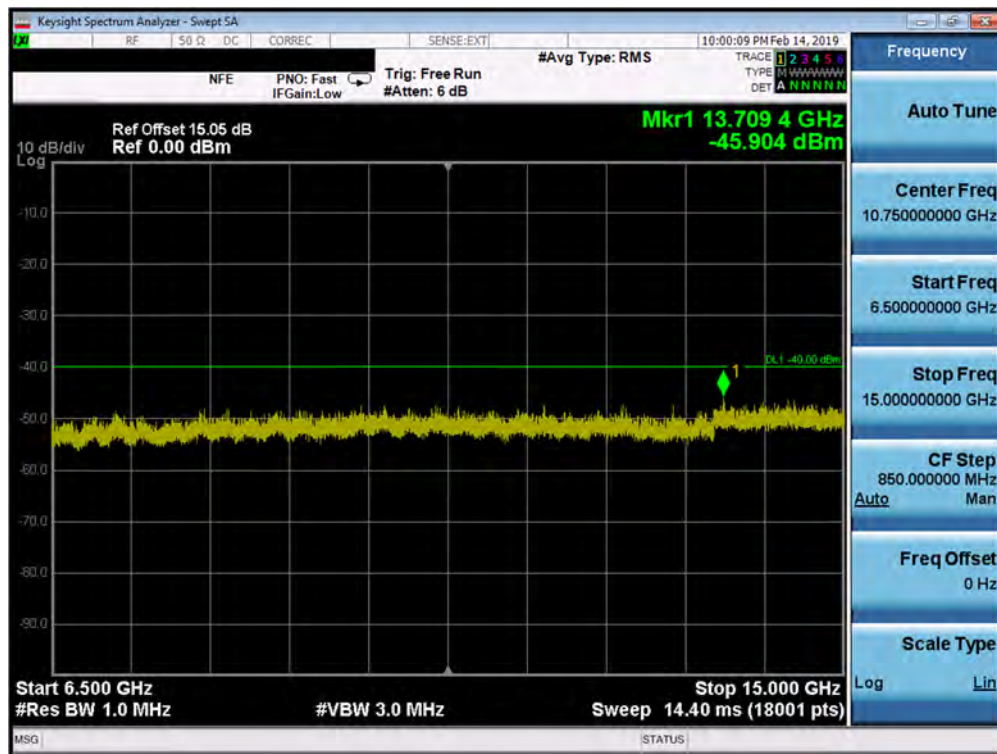


Plot 7-433. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-MIMO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 282 of 313

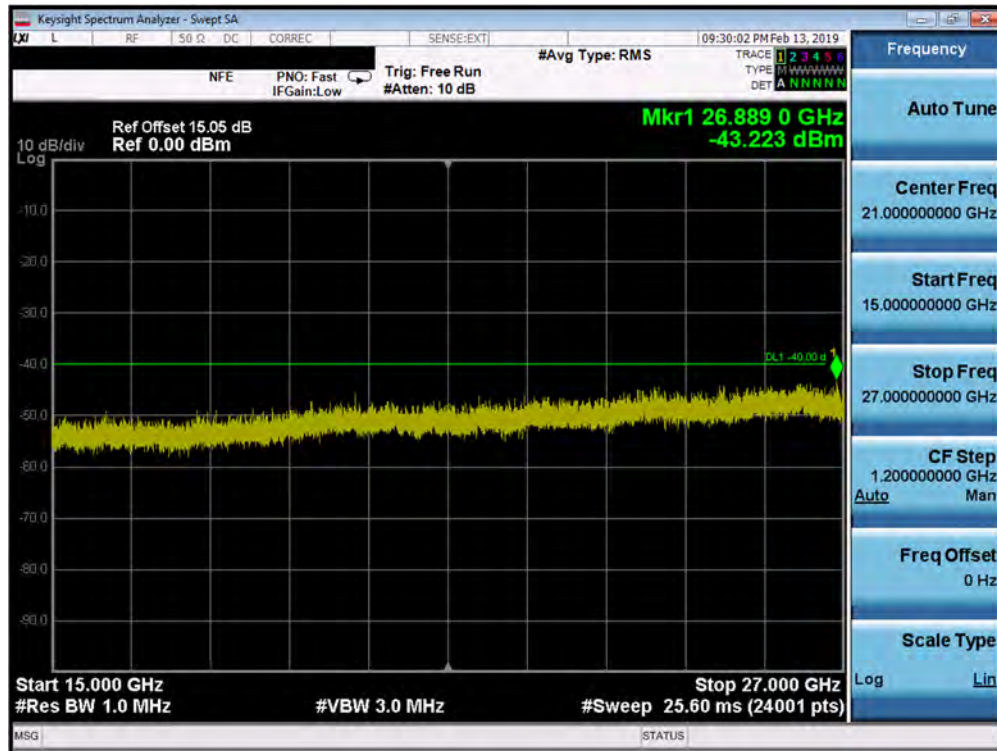


Plot 7-434. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-MIMO)

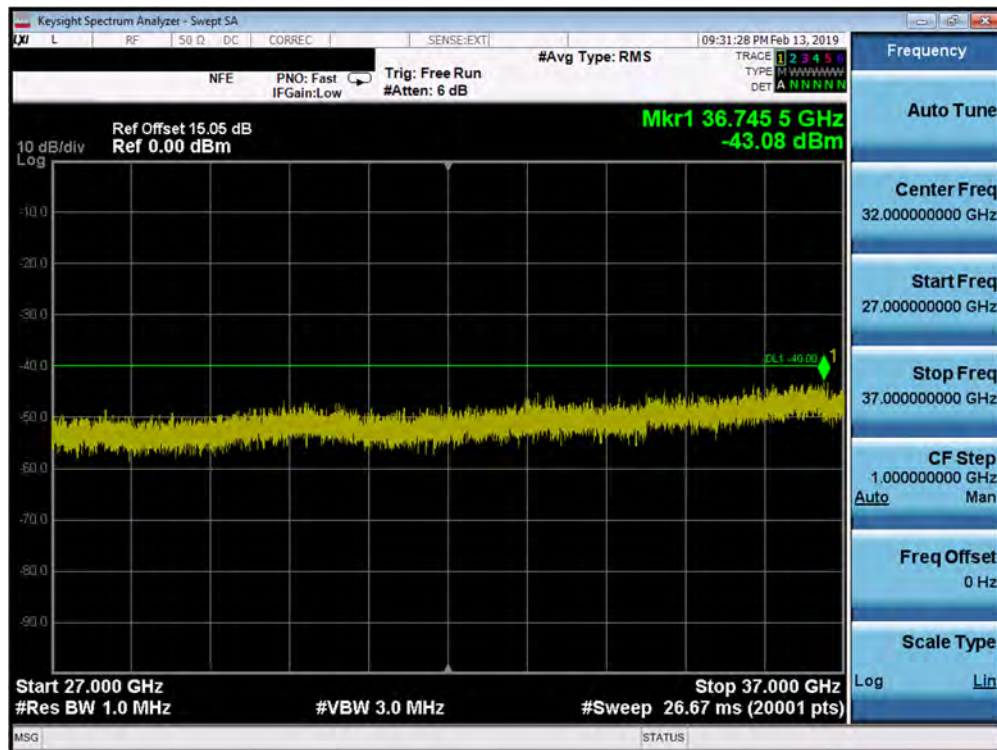


Plot 7-435. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-MIMO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 283 of 313



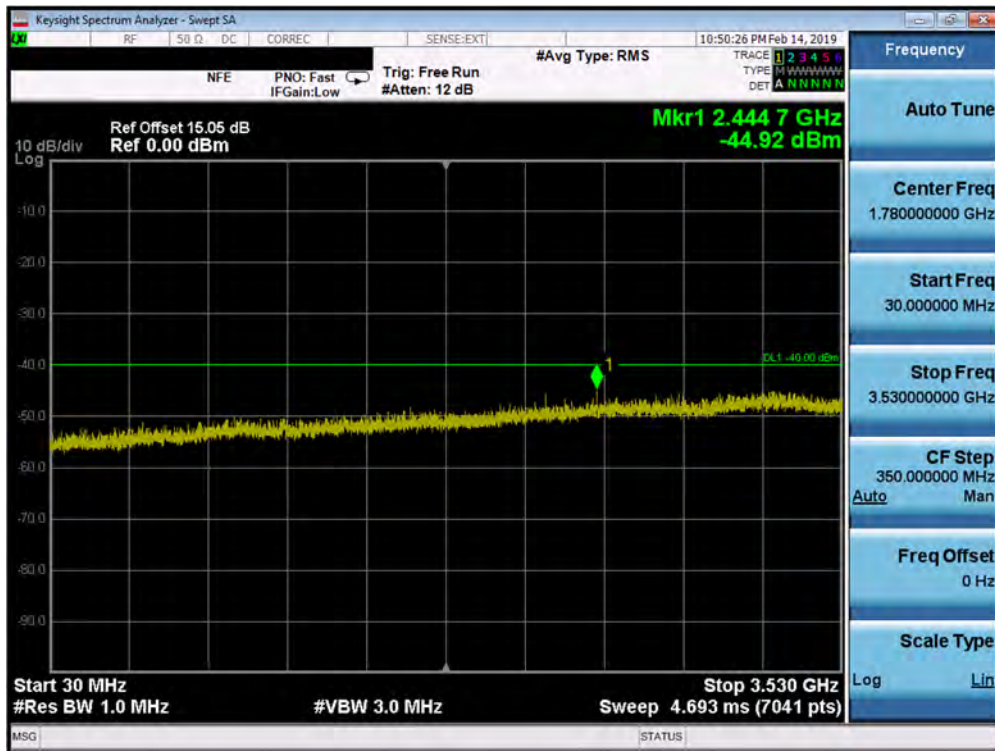
Plot 7-436. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-MIMO)



Plot 7-437. Conducted Spurious Plot (20.0MHz QPSK - Low Channel-MIMO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 284 of 313

1CC Mid Channel MIMO

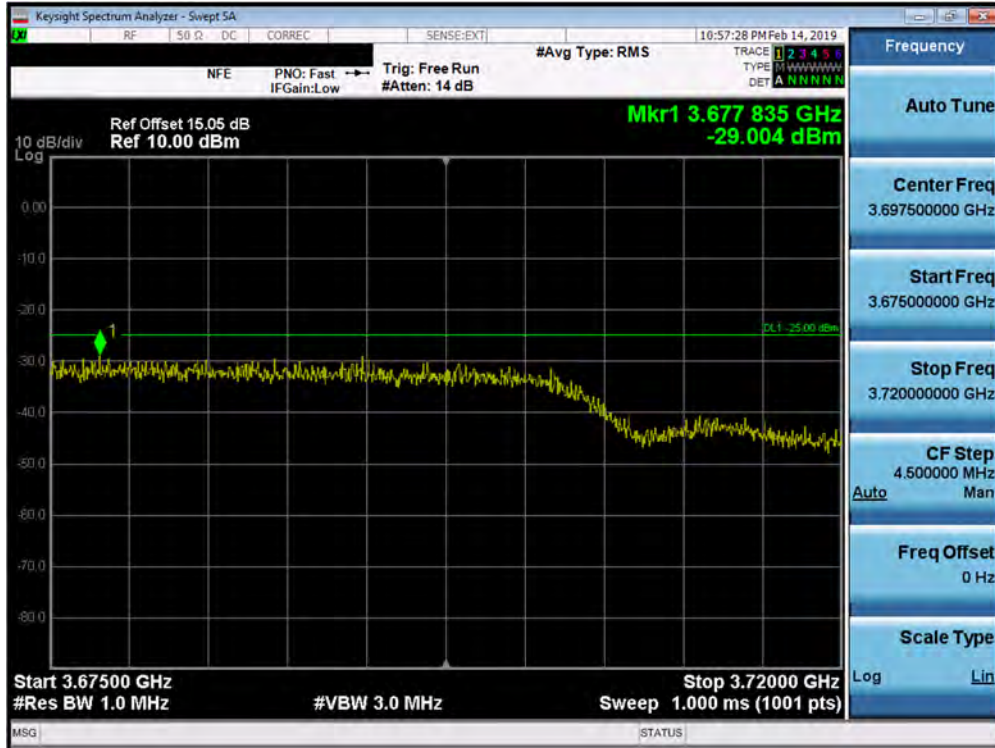


Plot 7-438. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-MIMO)

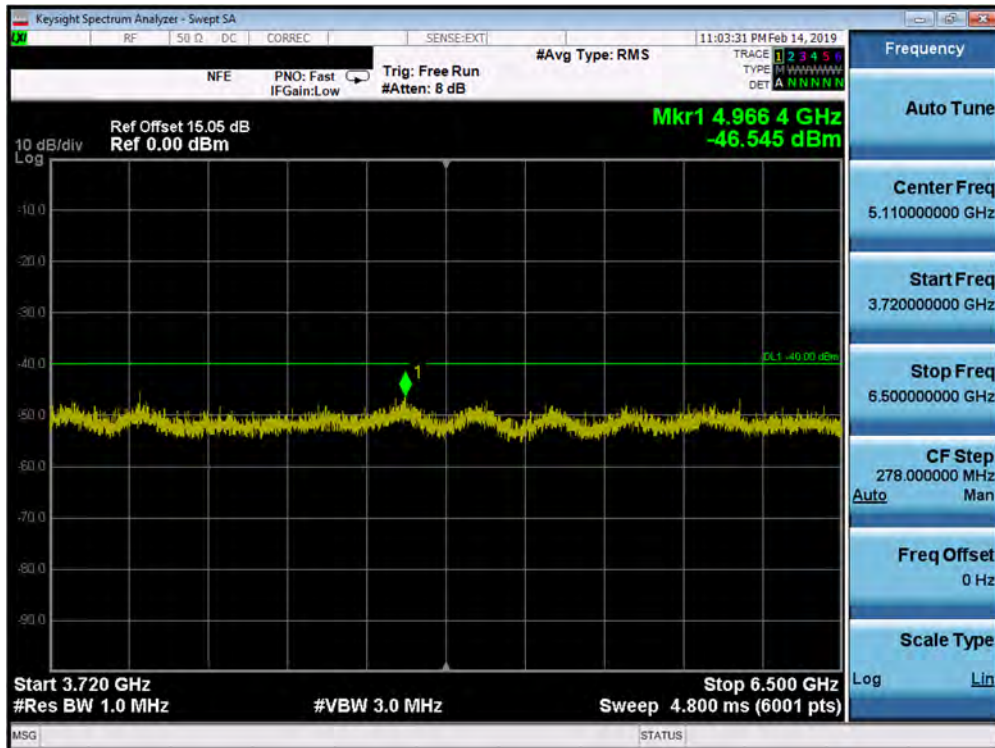


Plot 7-439. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-MIMO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 285 of 313

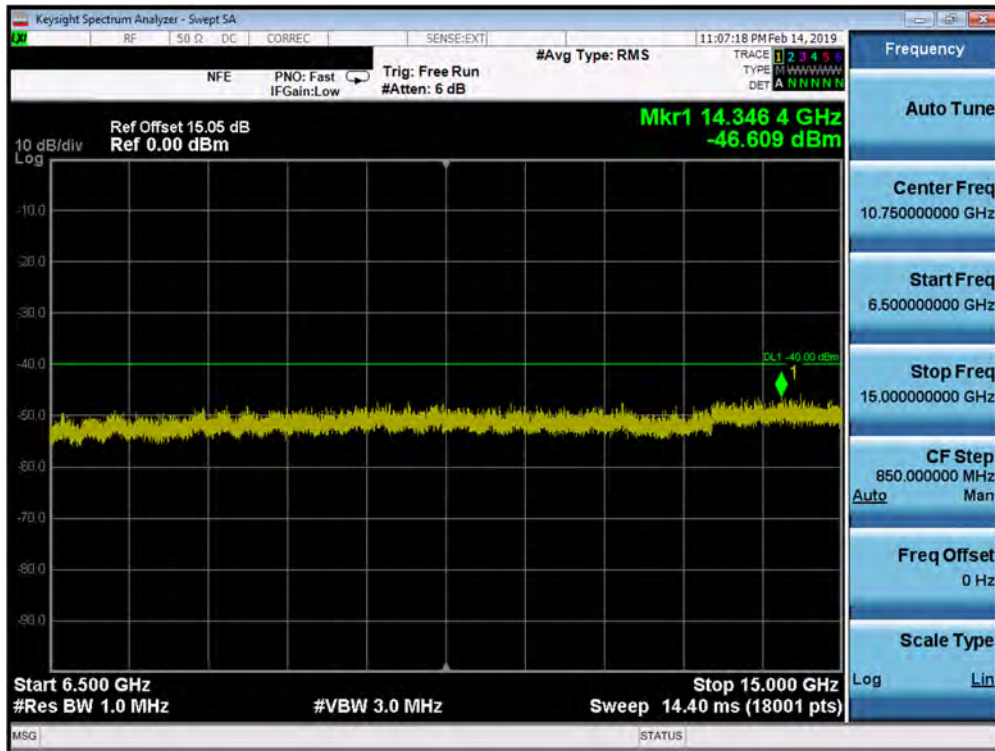


Plot 7-440. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-MIMO)

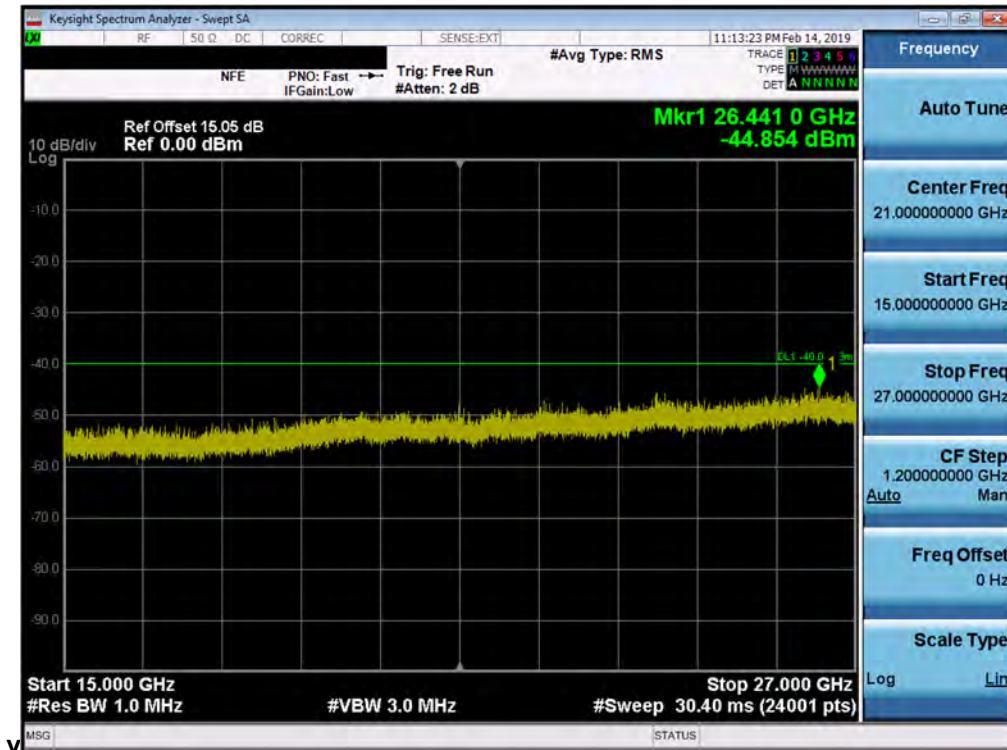


Plot 7-441. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-MIMO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 286 of 313

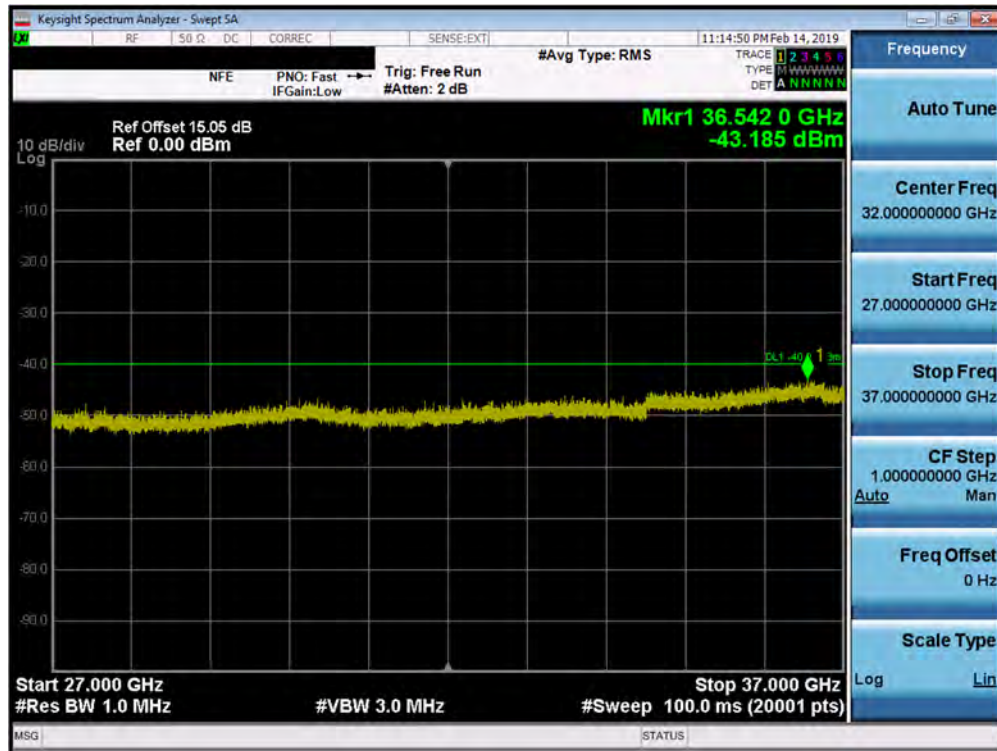


Plot 7-442. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-MIMO)



Plot 7-443. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-MIMO)

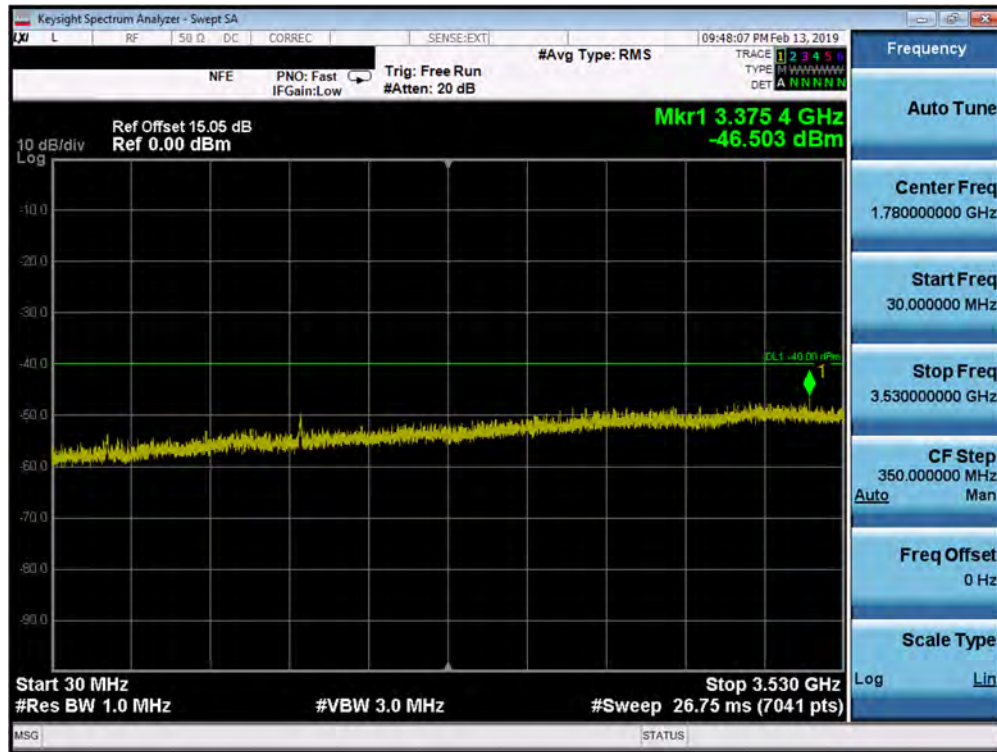
FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 287 of 313



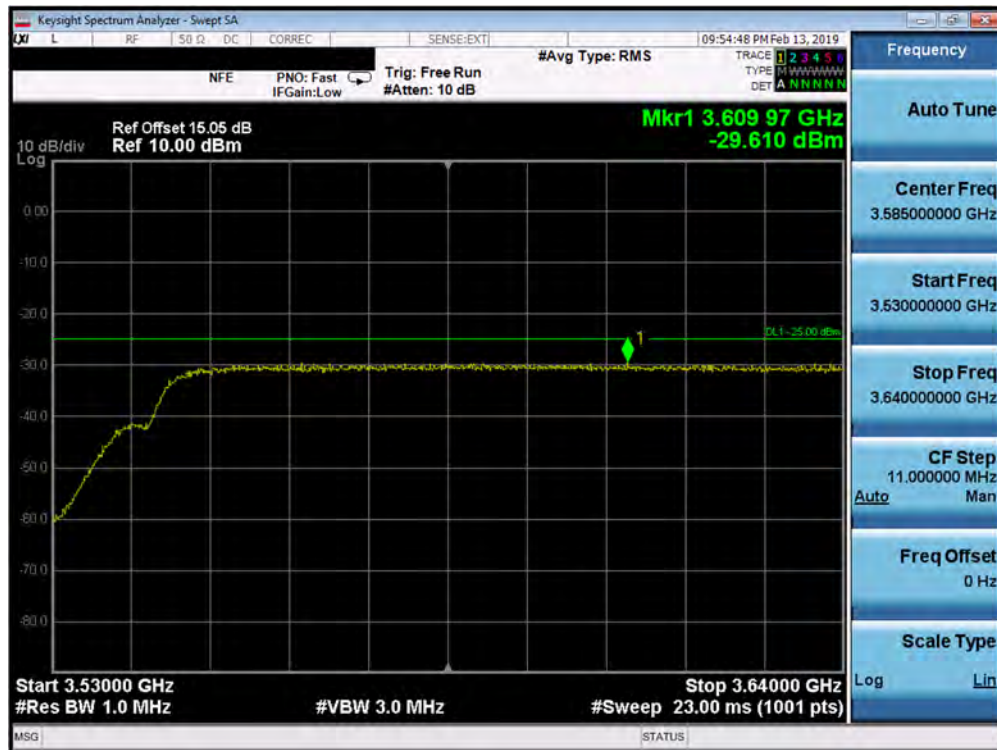
Plot 7-444. Conducted Spurious Plot (20.0MHz QPSK - Mid Channel-MIMO)

FCC ID: A3LMT3204-48A	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD	Page 288 of 313

1CC High Channel MIMO

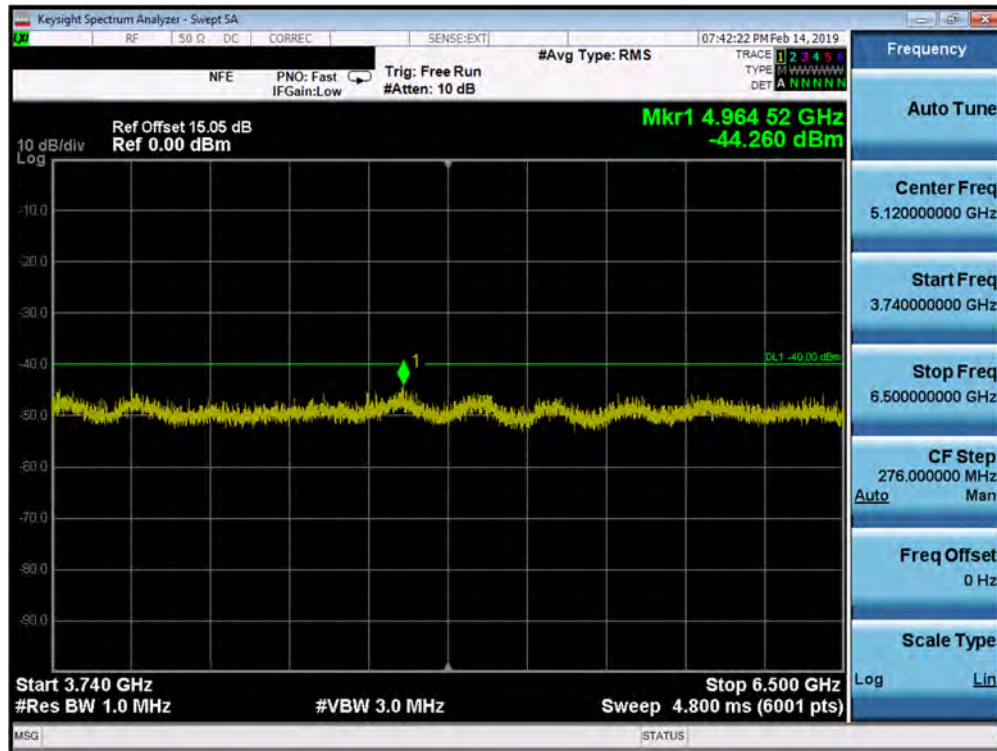


Plot 7-445. Conducted Spurious Plot (20.0MHz QPSK - High Channel-MIMO)

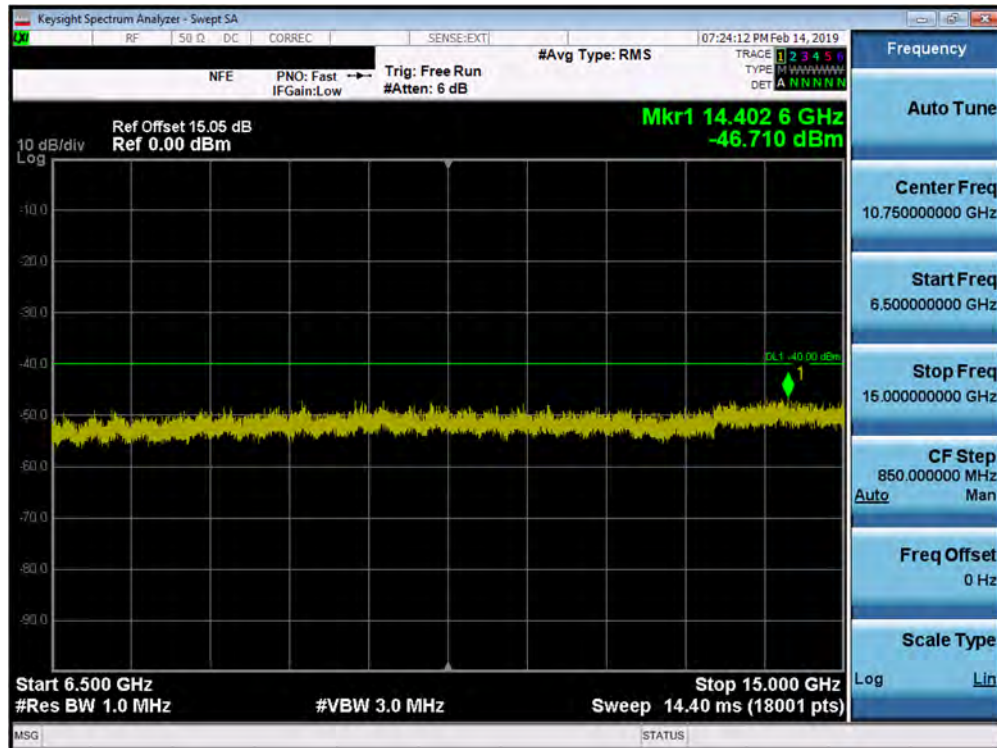


Plot 7-446. Conducted Spurious Plot (20.0MHz QPSK - High Channel-MIMO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 289 of 313

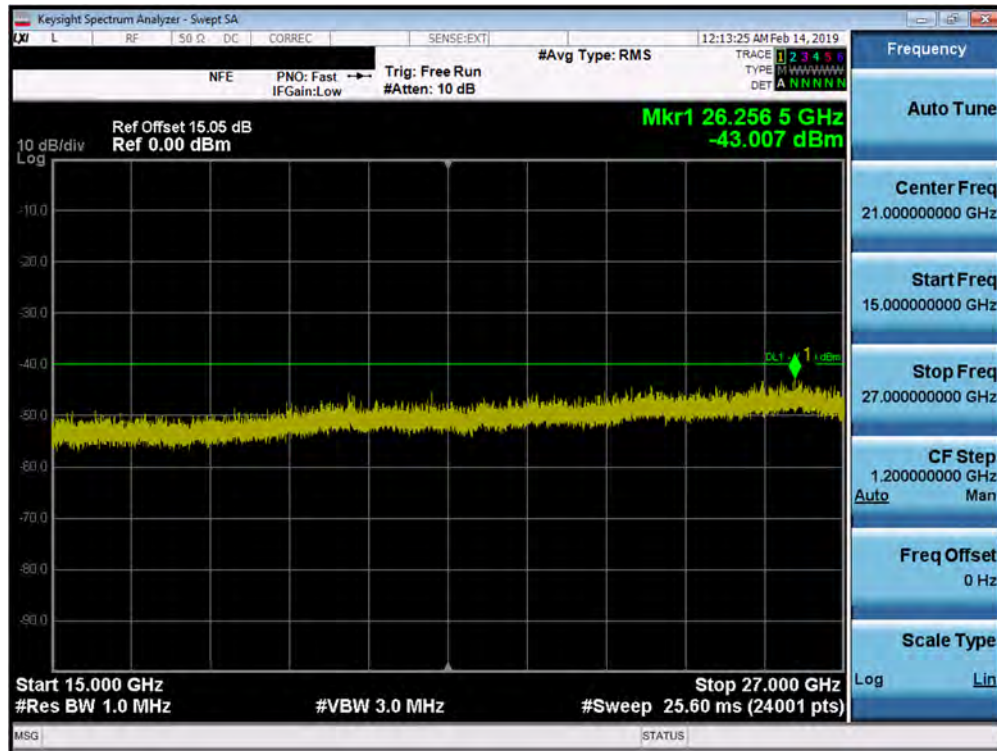


Plot 7-447. Conducted Spurious Plot (20.0MHz QPSK - High Channel-MIMO)

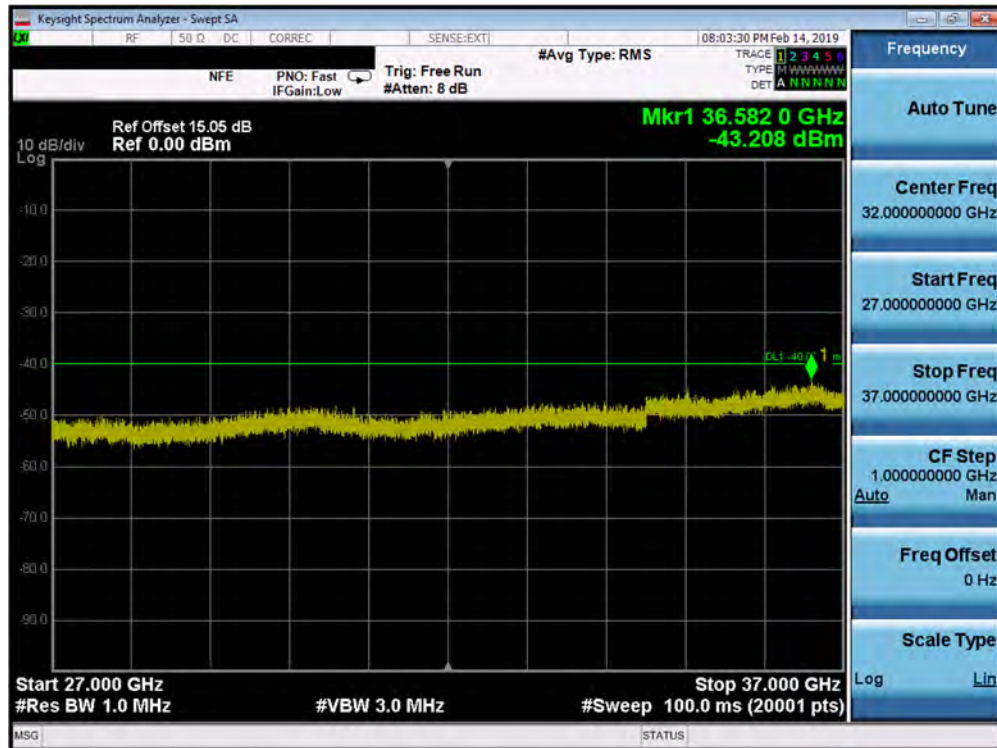


Plot 7-448. Conducted Spurious Plot (20.0MHz QPSK - High Channel-MIMO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 290 of 313



Plot 7-449. Conducted Spurious Plot (20.0MHz QPSK - High Channel-MIMO)



Plot 7-450. Conducted Spurious Plot (20.0MHz QPSK - High Channel-MIMO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2-A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 291 of 313

7.7 Band Edge Emissions at Antenna Terminal

\$2.1051 \$96.41(e)

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed -25 dBm/MHz.

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW $\geq$ 1% of the emission bandwidth
4. VBW $\geq$ 3 x RBW
5. Detector = RMS
6. Number of sweep points $\geq$ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

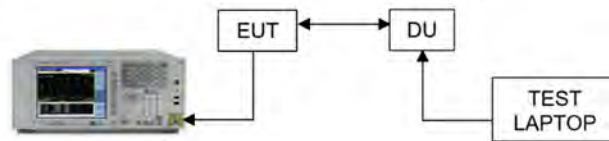


Figure 7-6. Test Instrument & Measurement Setup

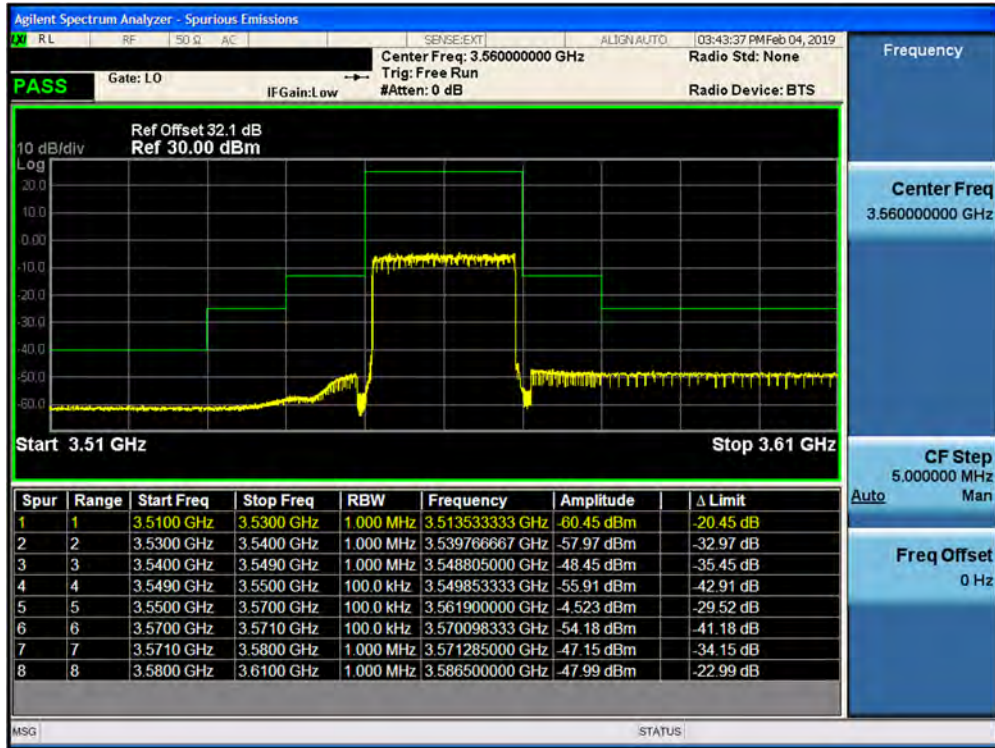
FCC ID: A3LMT3204-48A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 292 of 313

Test Notes

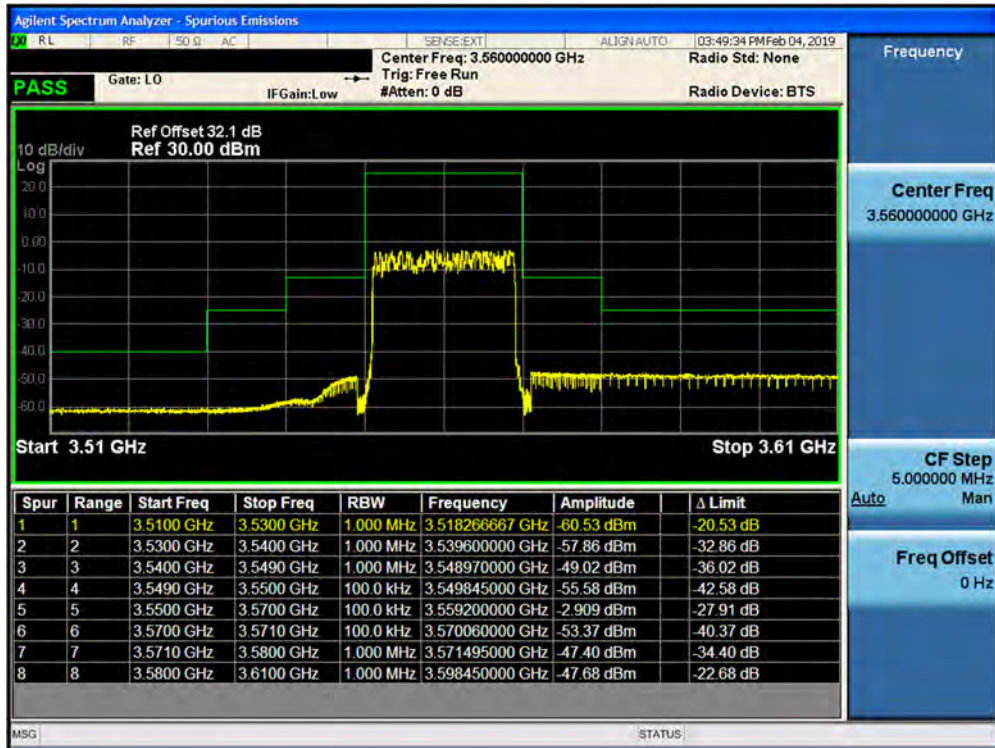
1. The signal was gated with an appropriate sweep time, gate delay and length to capture the on time of the transmission.
2. The conducted band edge measurements are done with a Reference Level offset at 32.1 dB which includes corrections for the cable, connectors and attenuators used in the measurement.
3. MIMO plots show band edge for 32 transmit ports combined. Refer to the following calculation:
 $10 \cdot \log(32) = 15.05 \text{ dB}$
 This offset has been added in the MIMO Plots.

FCC ID: A3LMT3204-48A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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1CC Low Channel SISO

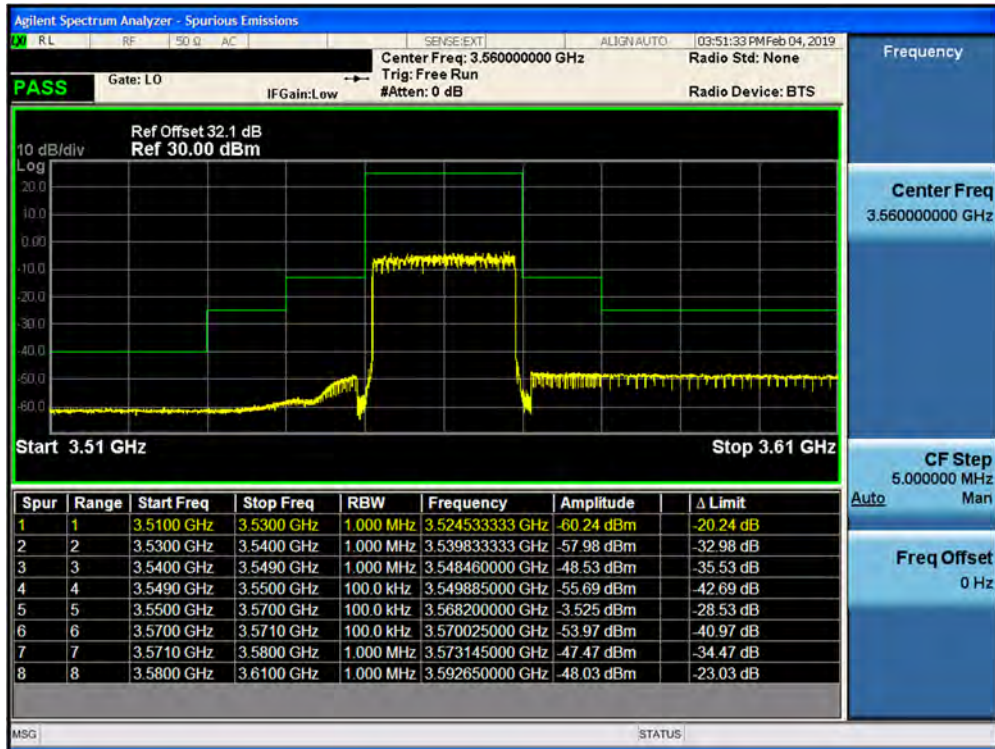


Plot 7-451. Lower Channel Edge Plot (20.0MHz QPSK Low Channel- SISO)

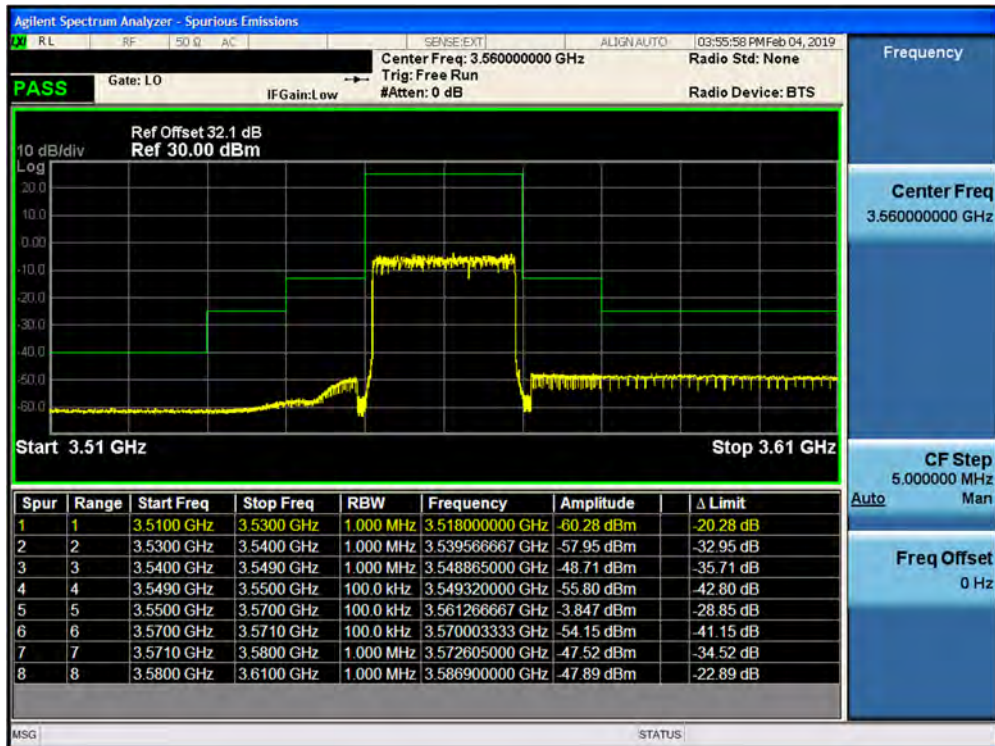


Plot 7-452. Lower Channel Edge Plot (20.0MHz 16QAM Low Channel - SISO)

FCC ID: A3LMT3204-48A	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD	Page 294 of 313



Plot 7-453. Lower Channel Edge Plot (20.0MHz 64QAM Low Channel - SISO)



Plot 7-454. Lower Channel Edge Plot (20.0MHz 256QAM Low Channel - SISO)

FCC ID: A3LMT3204-48A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901240015-01-R2.A3L	Test Dates: 01/23/2019 - 02/28/2019	EUT Type: Massive MIMO CBSD		Page 295 of 313