

U.S. Tech Test Report:
FCC ID:
IC:
Report Number:
Issue Date:
Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

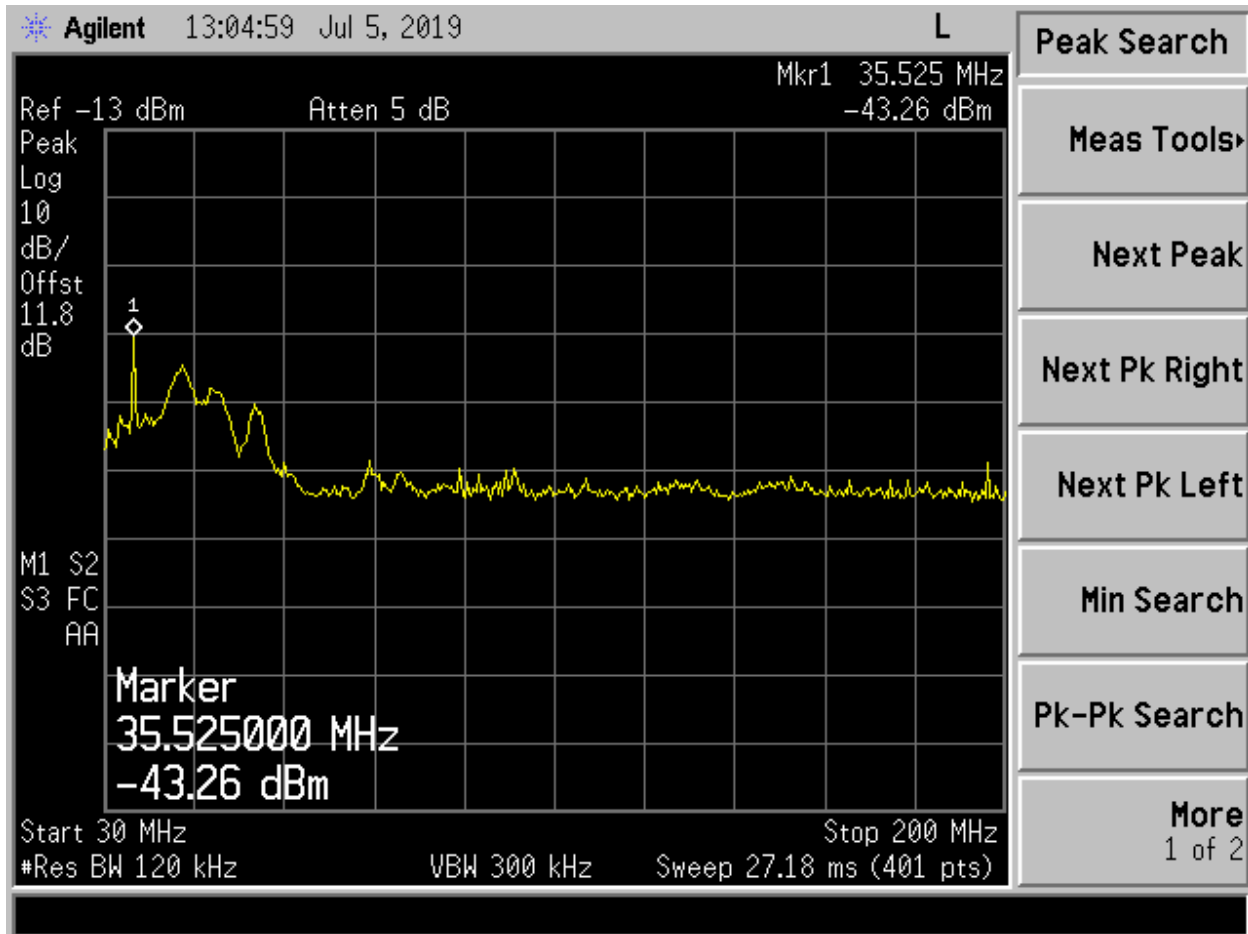


Figure 186. 421 MHz Vertical, 30 - 200 MHz

U.S. Tech Test Report:
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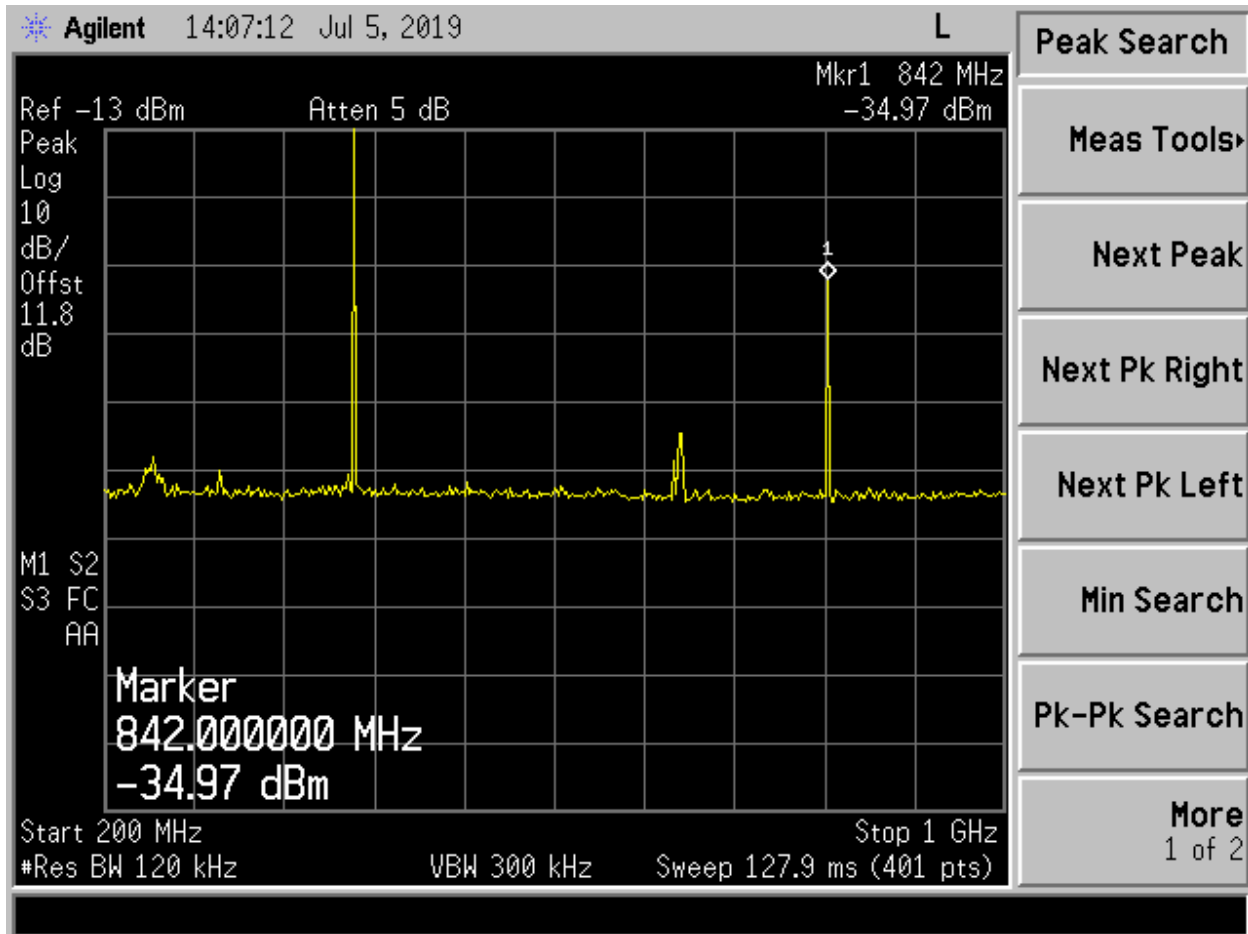


Figure 187. 421 MHz Horizontal, 200 MHz - 1 GHz

U.S. Tech Test Report:
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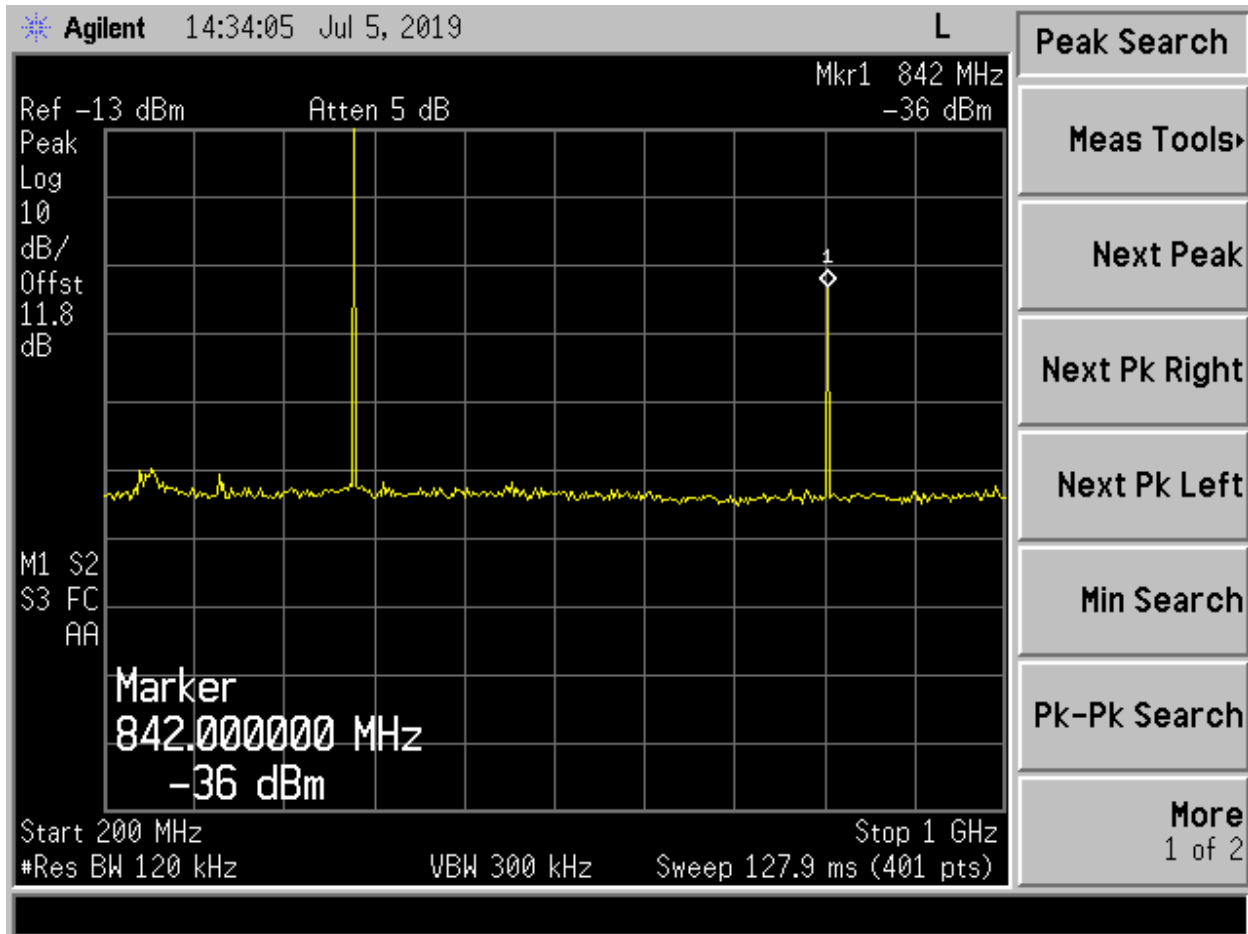


Figure 188. 421 MHz Vertical, 200 MHz - 1 GHz

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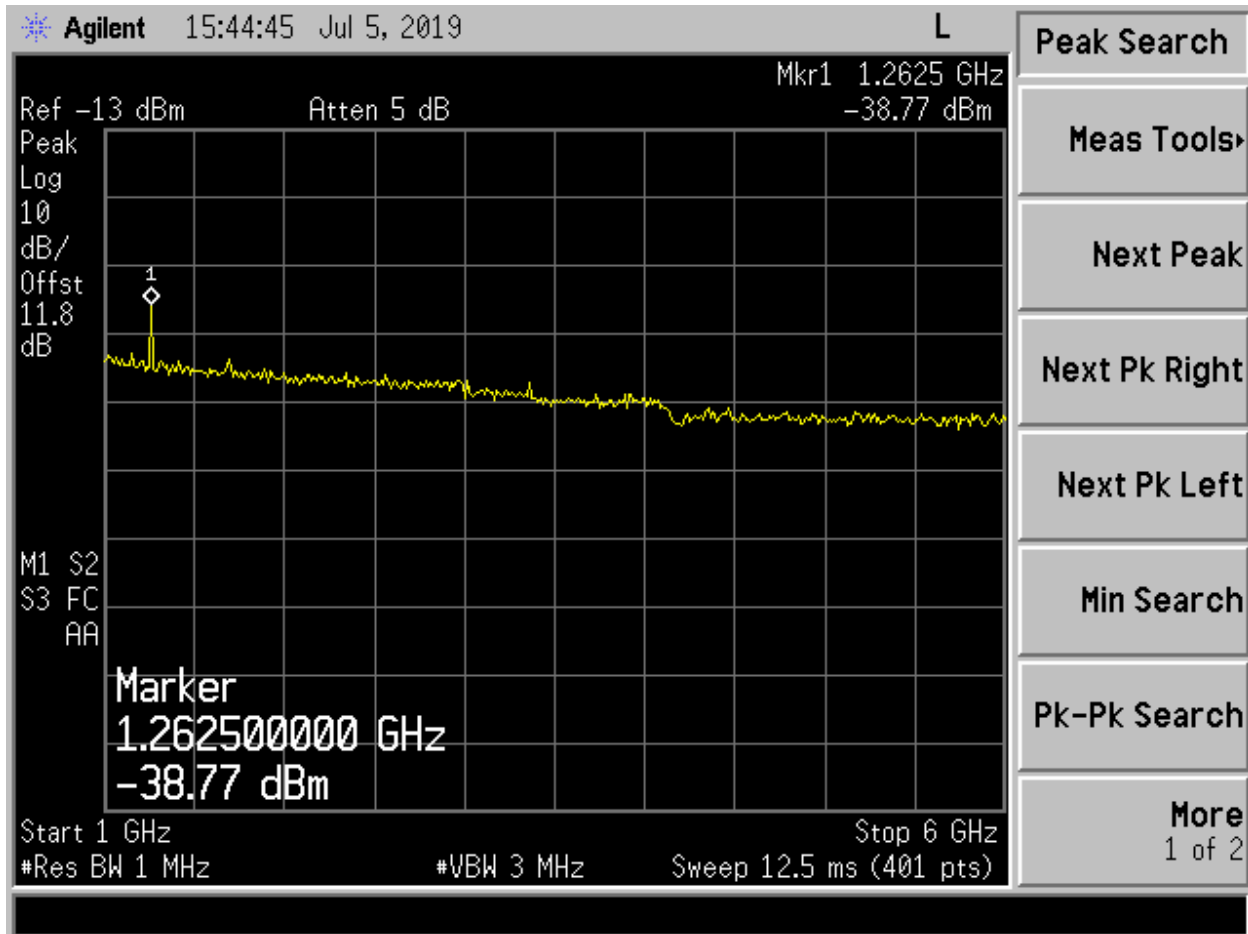


Figure 189. 421 MHz Horizontal, 1 – 6 GHz

U.S. Tech Test Report:
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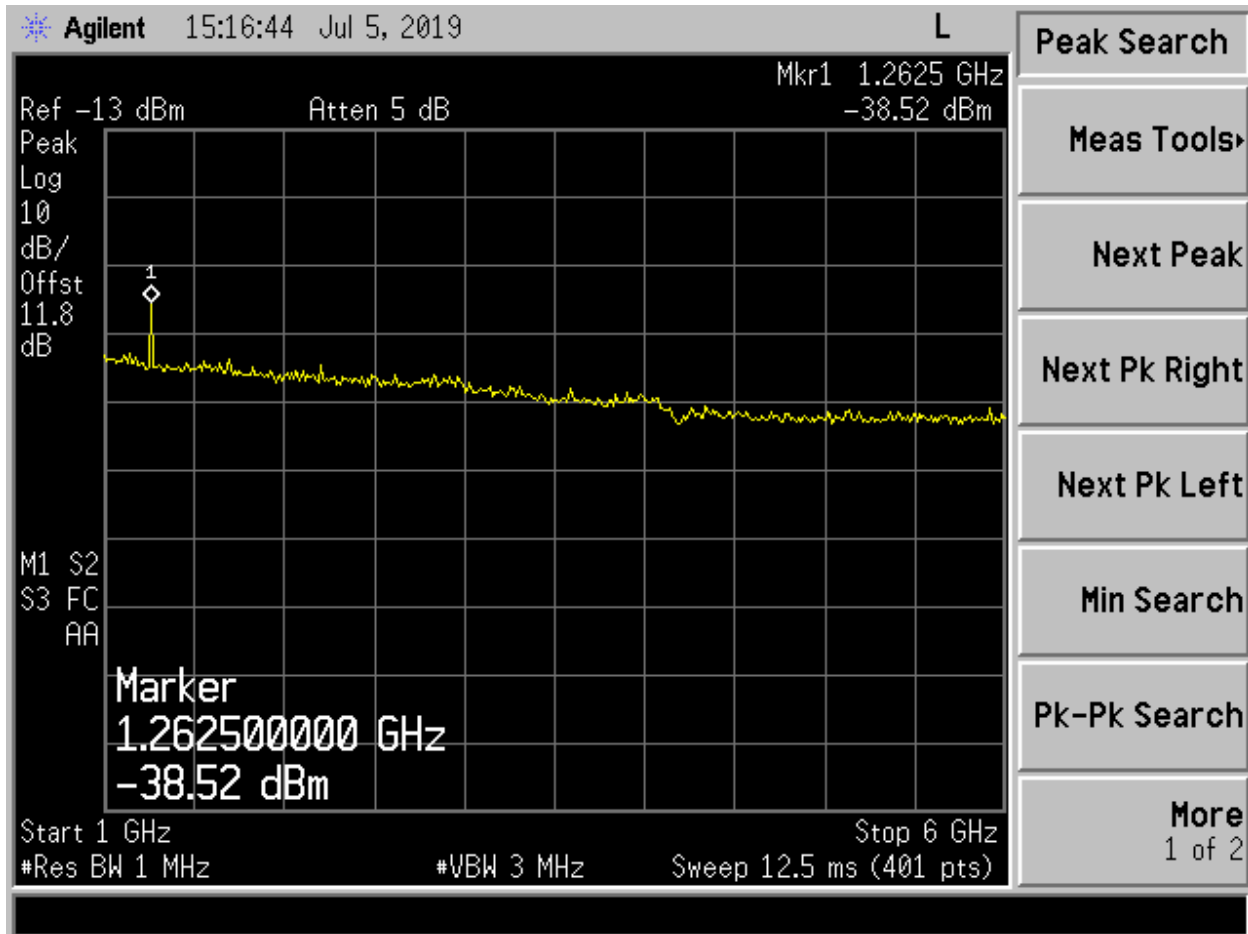


Figure 190. 421 MHz Vertical, 1 – 6 GHz

U.S. Tech Test Report:
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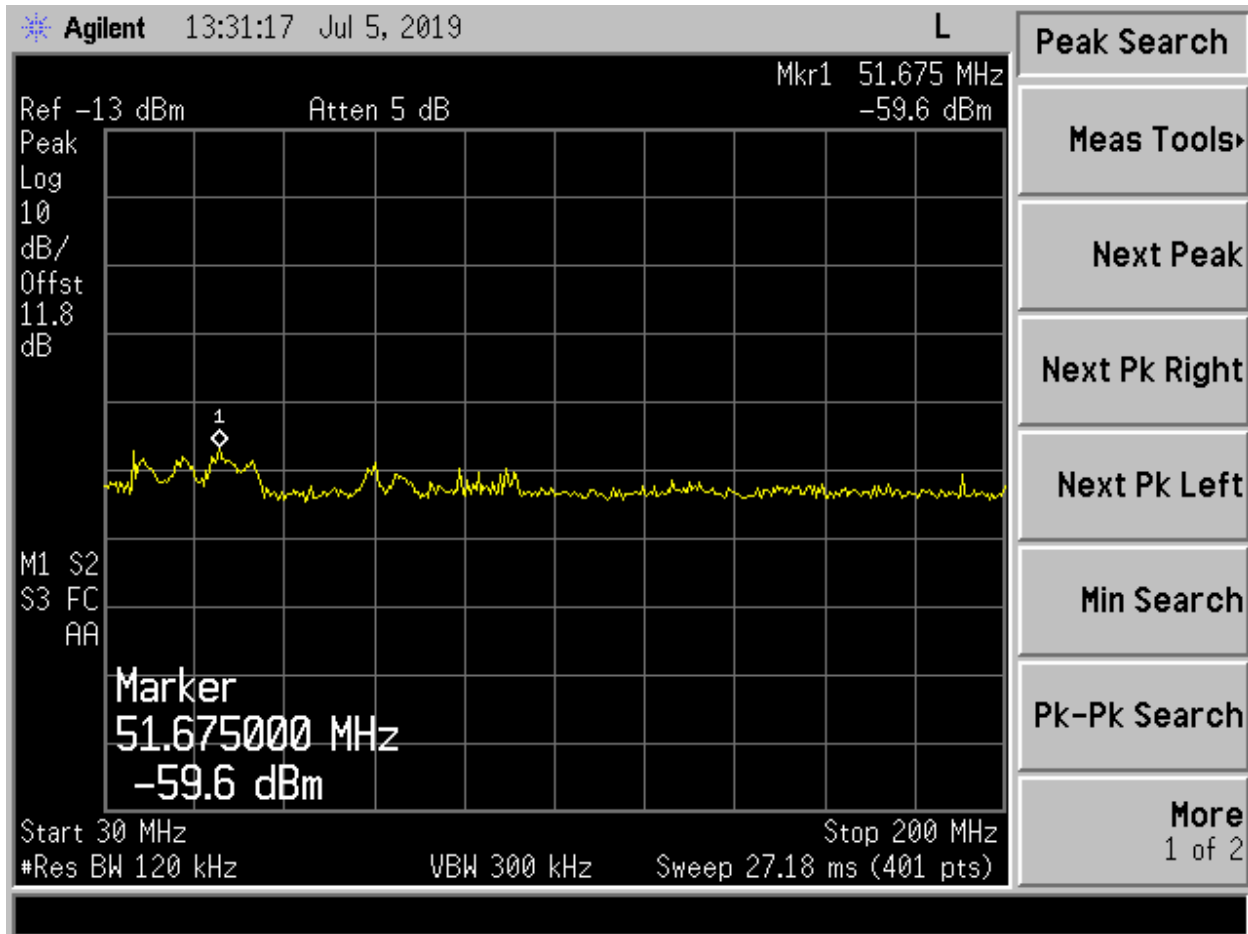


Figure 191. 480 MHz Horizontal, 30 – 200 MHz

U.S. Tech Test Report:
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SAFE-1001

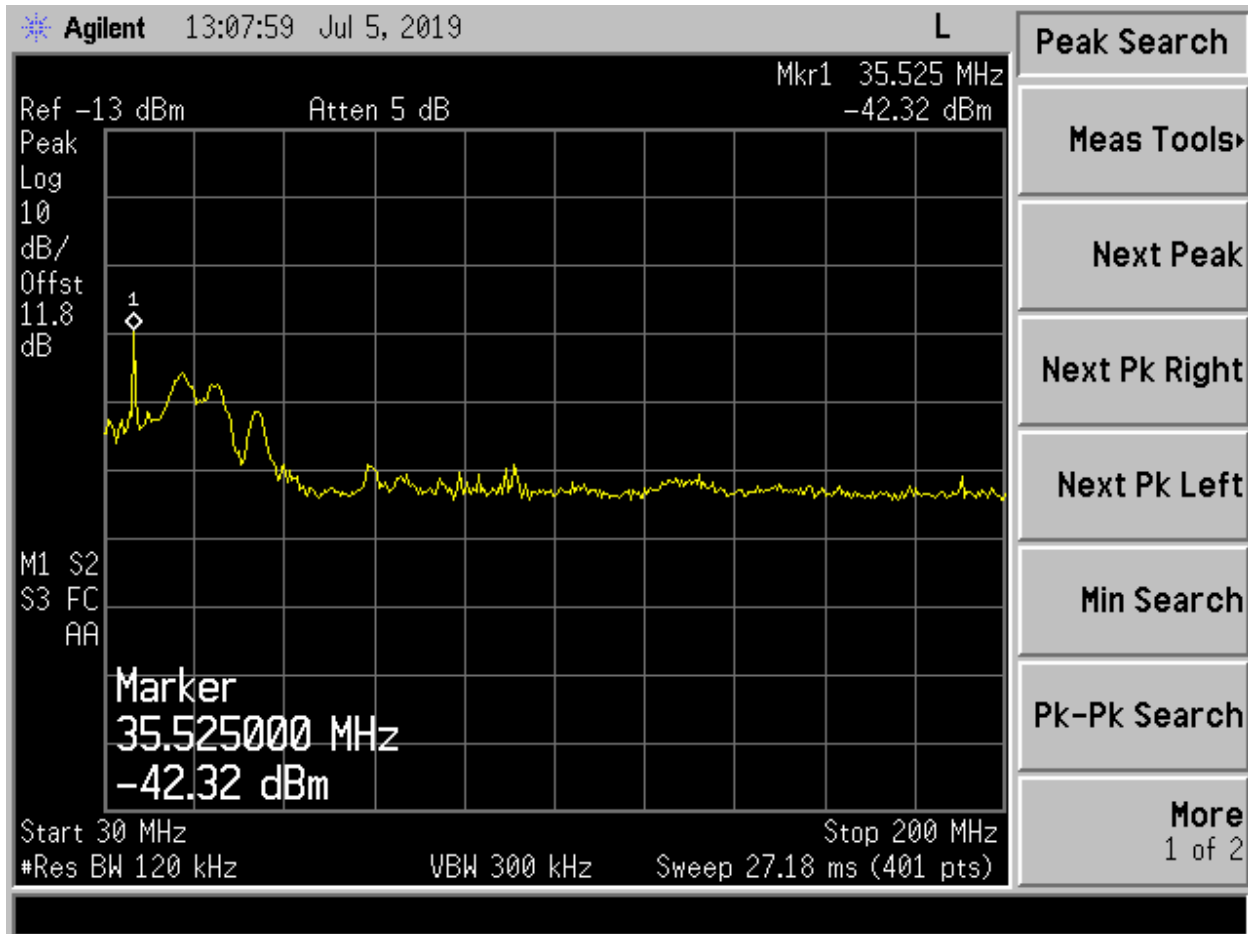


Figure 192. 480 MHz Vertical, 30 – 200 MHz

U.S. Tech Test Report:
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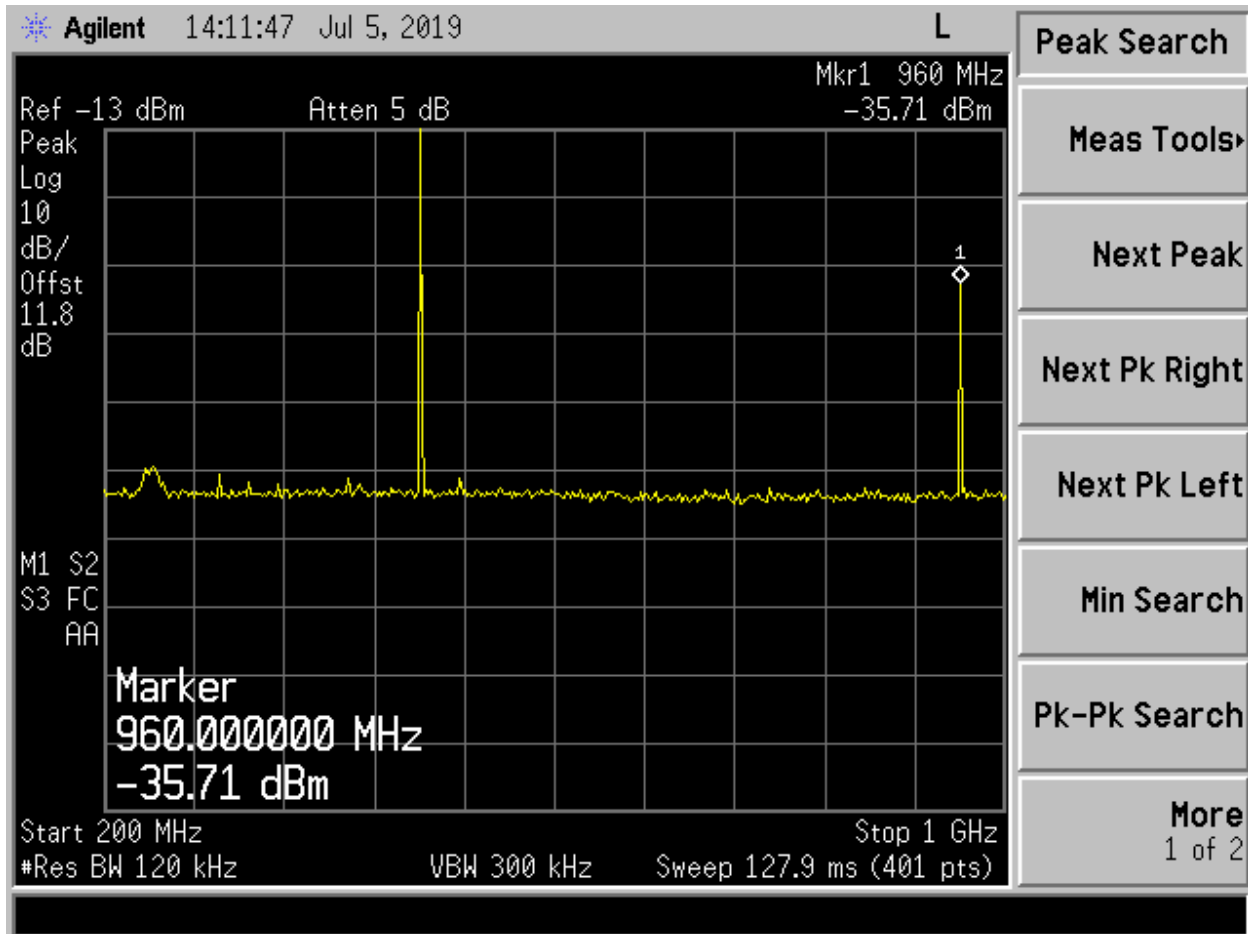


Figure 193. 480 MHz Horizontal, 200 MHz – 1 GHz

U.S. Tech Test Report:
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SAFE-1001

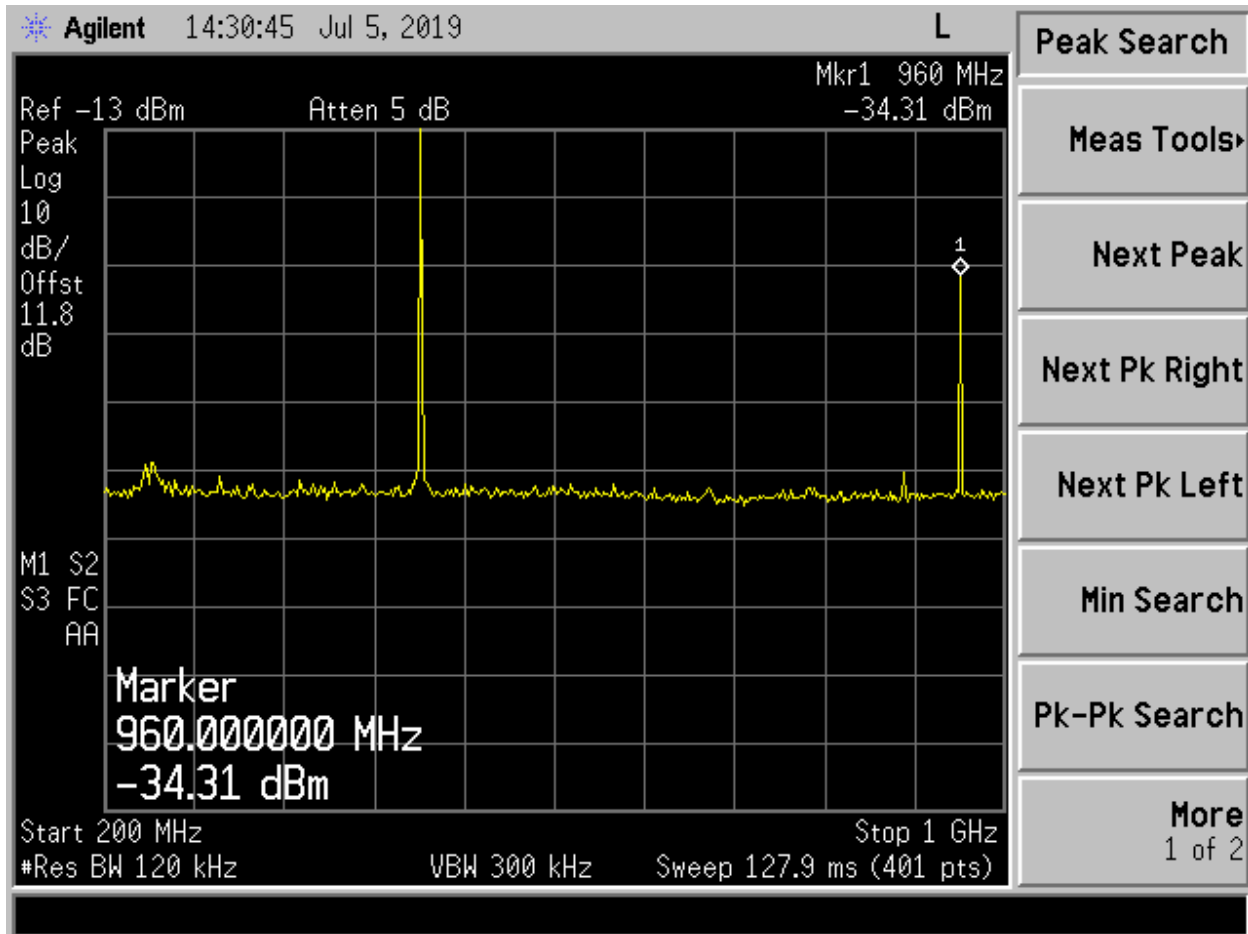


Figure 194. 480 MHz Vertical, 200 MHz – 1 GHz

U.S. Tech Test Report:
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SAFE-1001

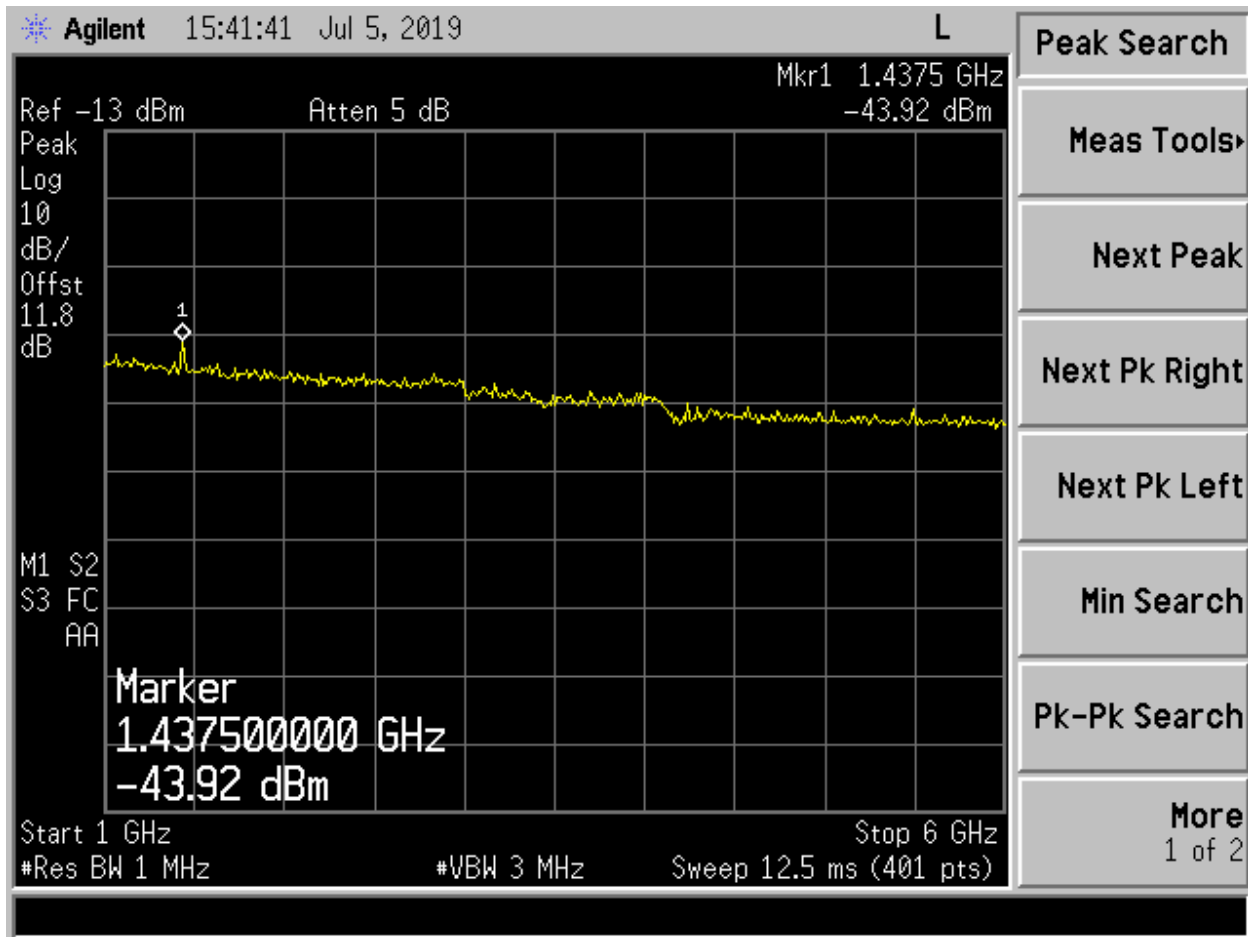


Figure 195. 480 MHz Horizontal, 1 – 6 GHz

U.S. Tech Test Report:
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SAFE-1001

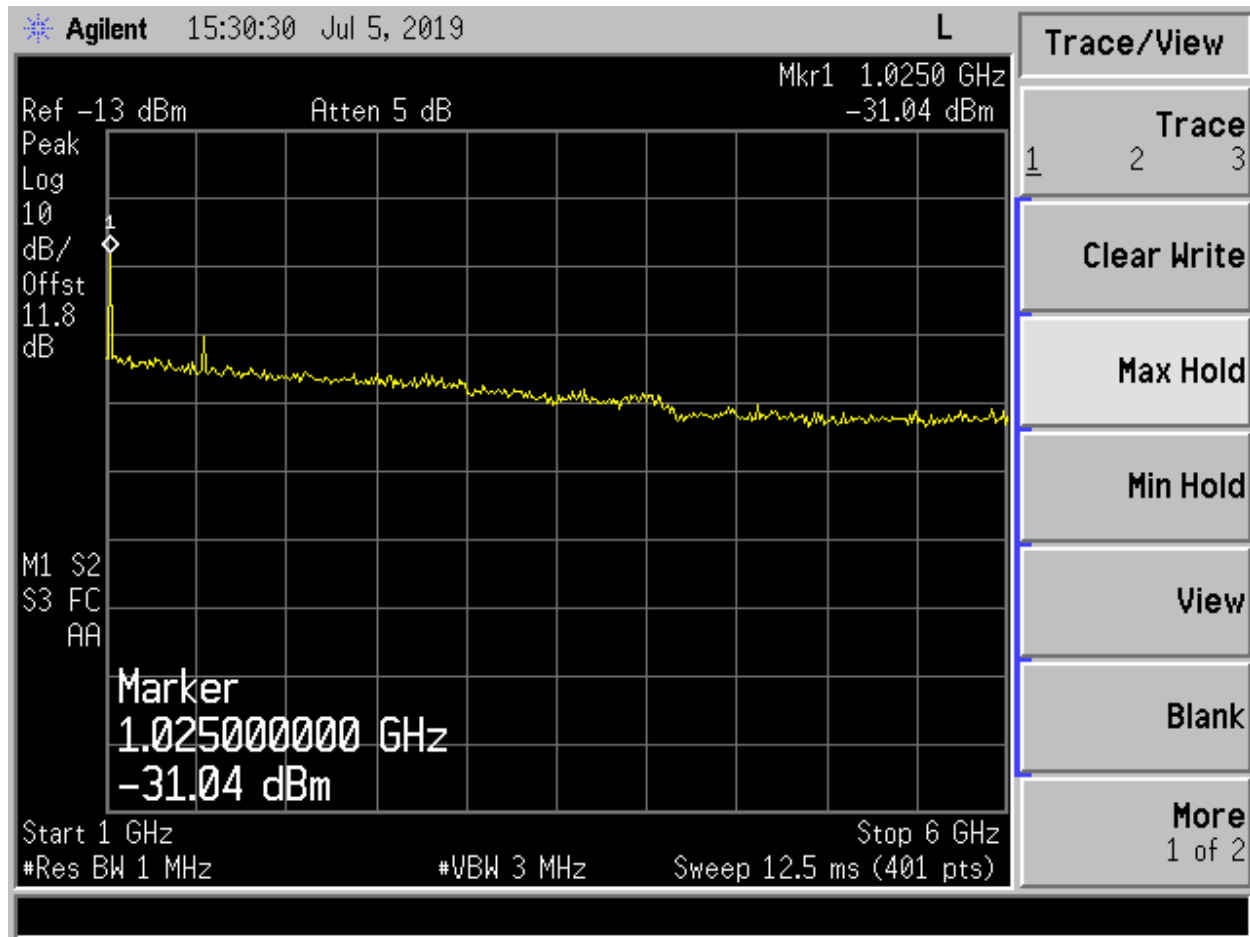


Figure 196. 480 MHz Vertical, 1 – 6 GHz

U.S. Tech Test Report:
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SAFE-1001

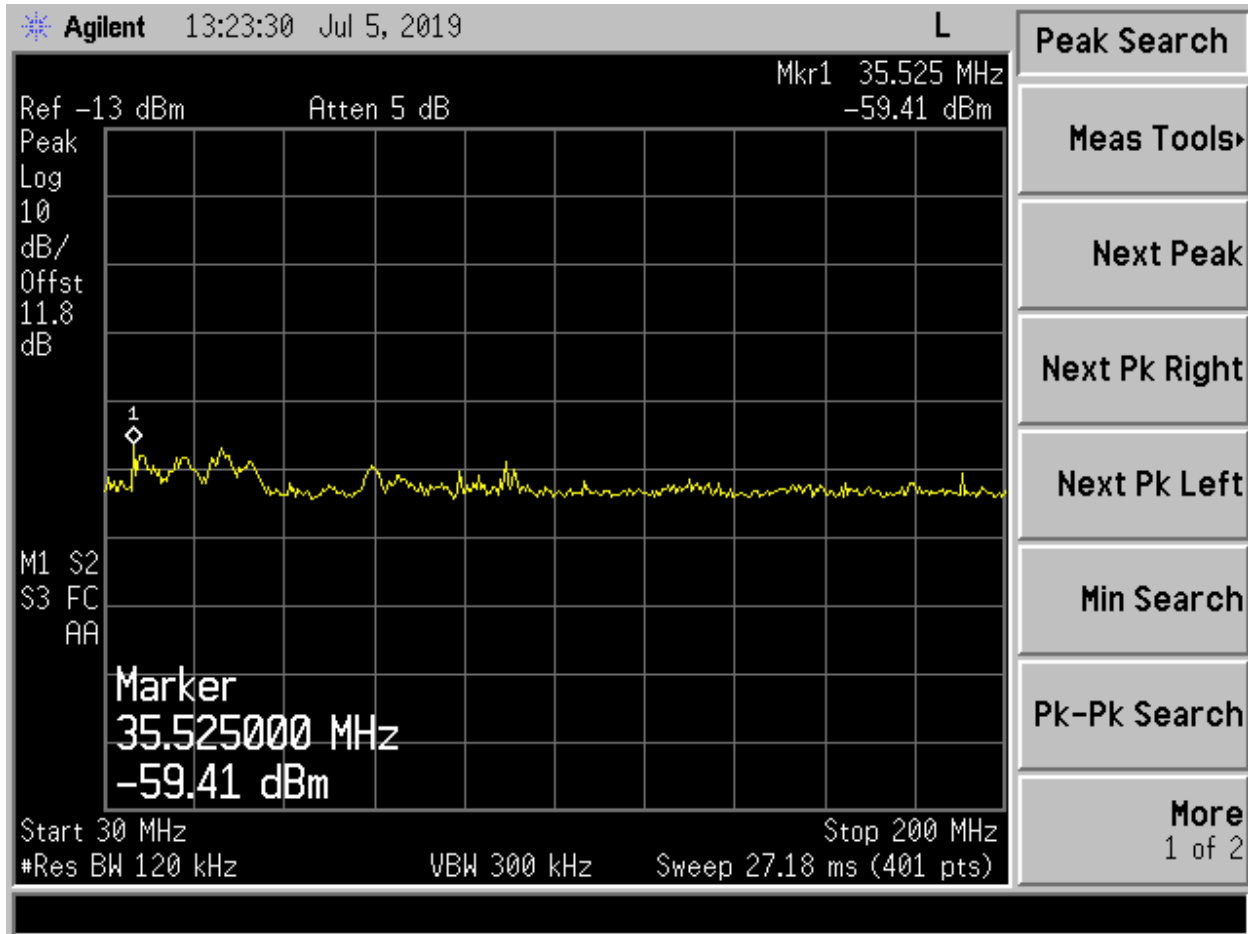


Figure 197. 512 MHz Horizontal, 30 - 200 MHz

U.S. Tech Test Report:
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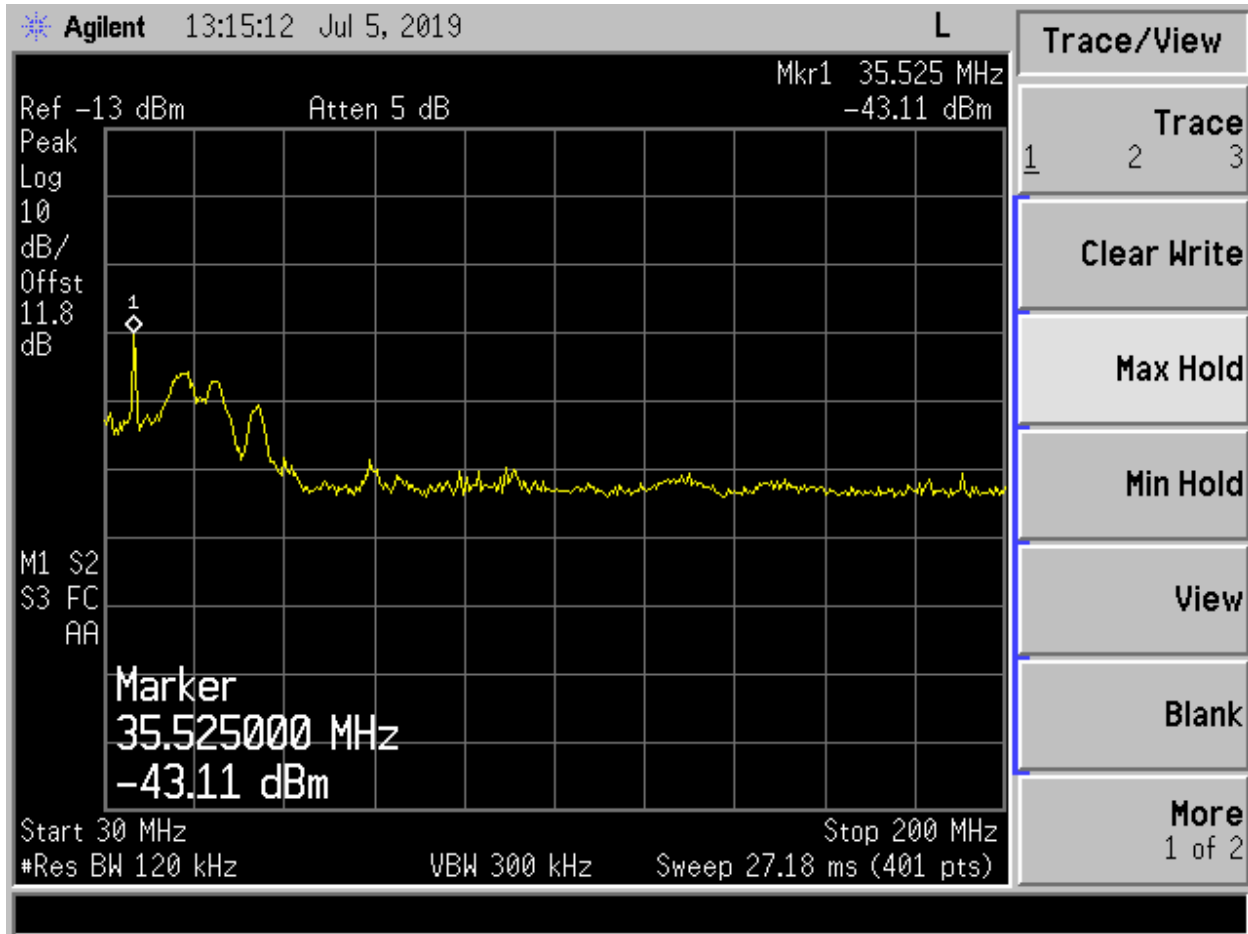


Figure 198. 512 MHz Vertical, 30 - 200 MHz

U.S. Tech Test Report:
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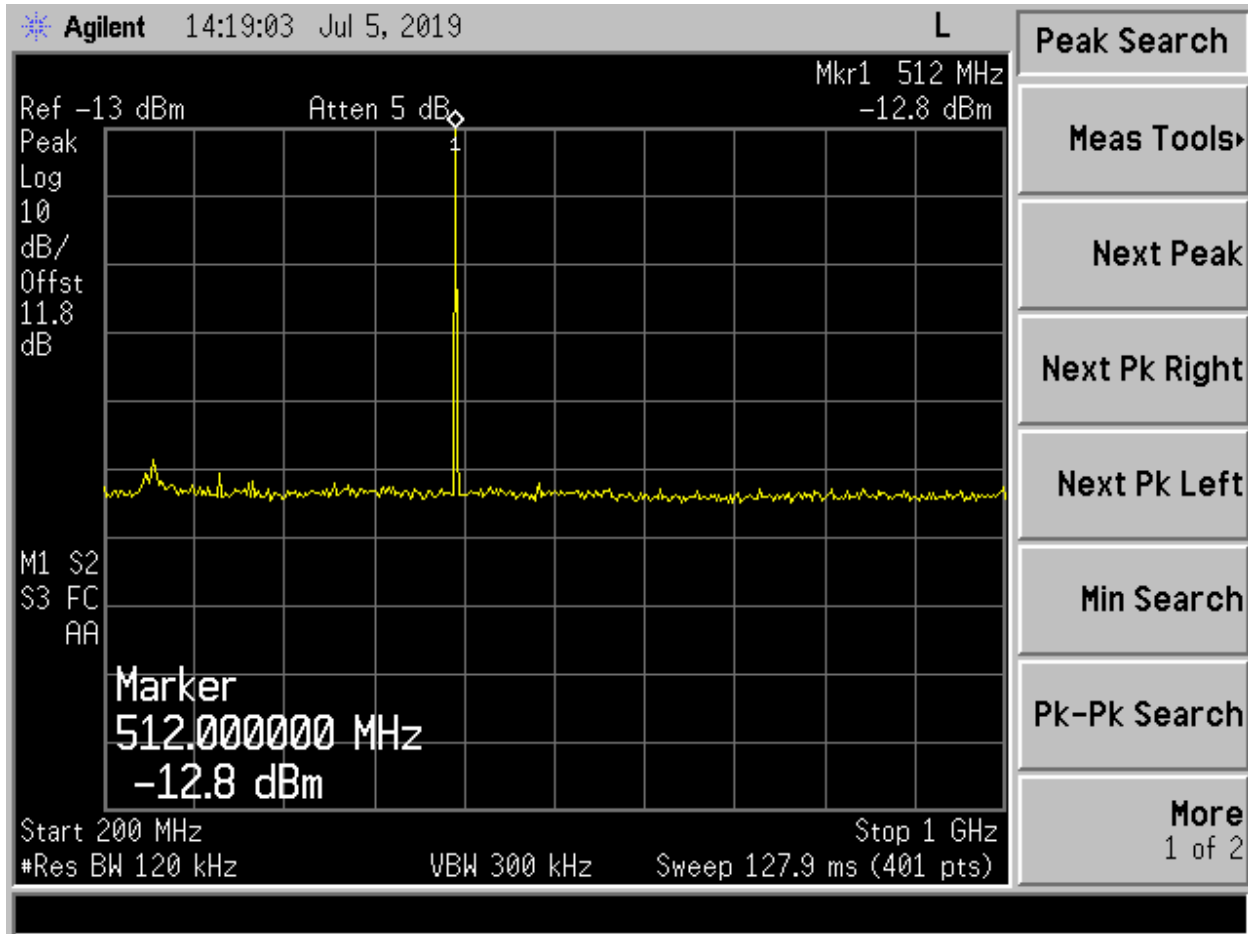


Figure 199. 512 MHz Horizontal, 200 MHz – 1 GHz

U.S. Tech Test Report:
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2AKSM-SAFE3
22303-SAFE3
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August 6, 2019
Safe-Com Wireless
SAFE-1001

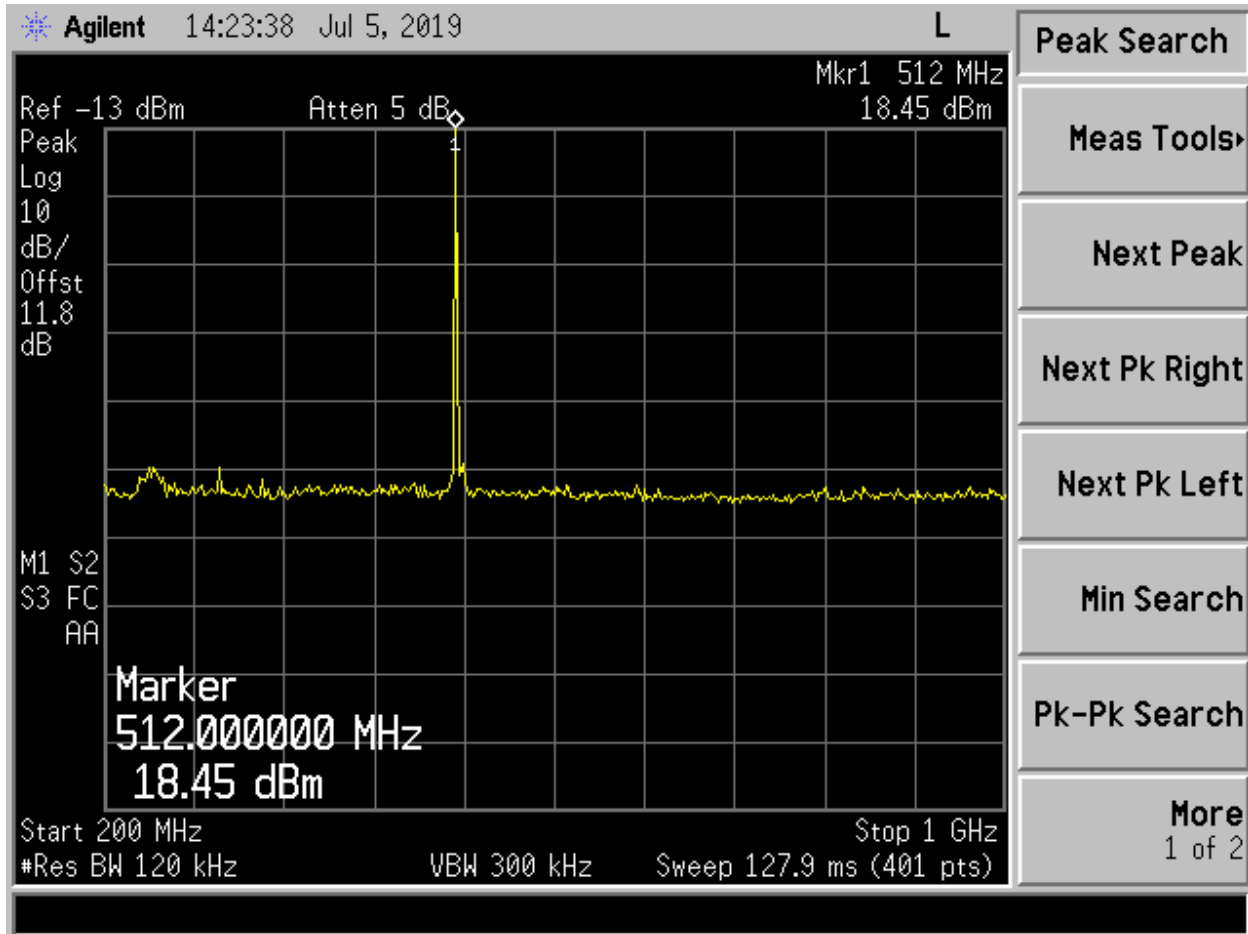


Figure 200. 512 MHz Vertical, 200 MHz – 1 GHz

U.S. Tech Test Report:
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2AKSM-SAFE3
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SAFE-1001

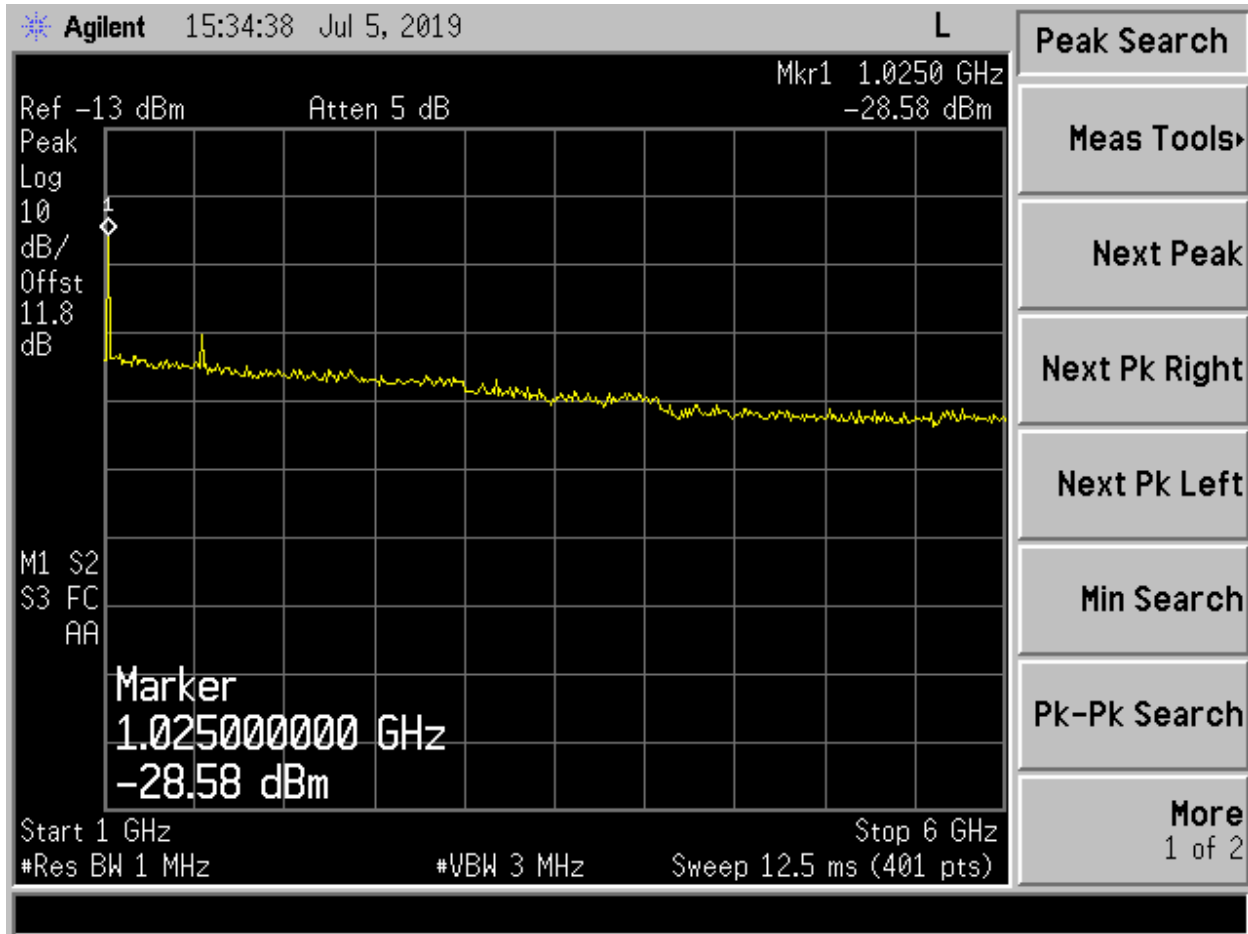


Figure 201. 512 MHz Horizontal, 1 – 6 GHz

U.S. Tech Test Report:
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FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

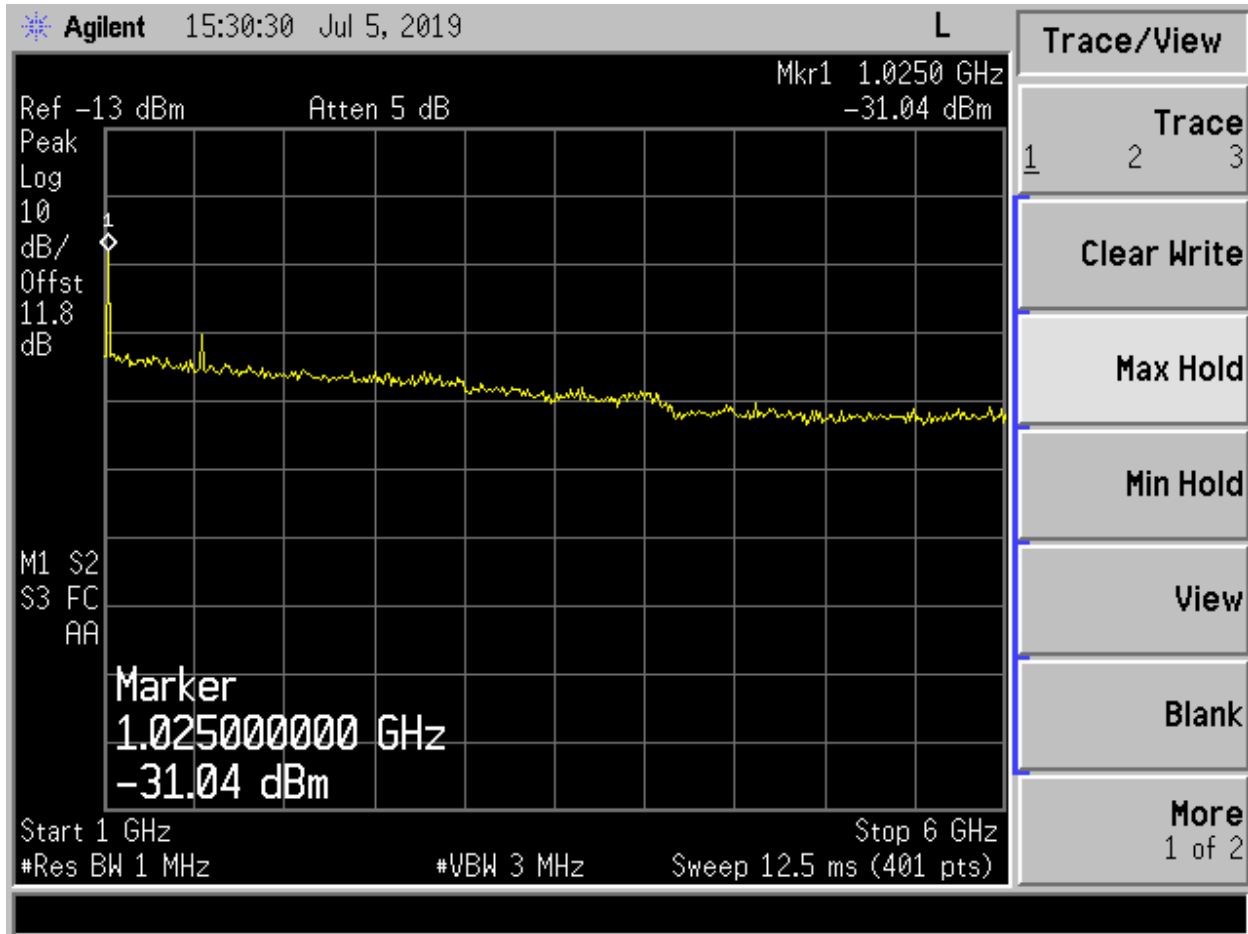


Figure 202. 512 MHz Vertical, 1 – 6 GHz

2.12.1.3 700 MHz Radiated Spurious Emissions Plots

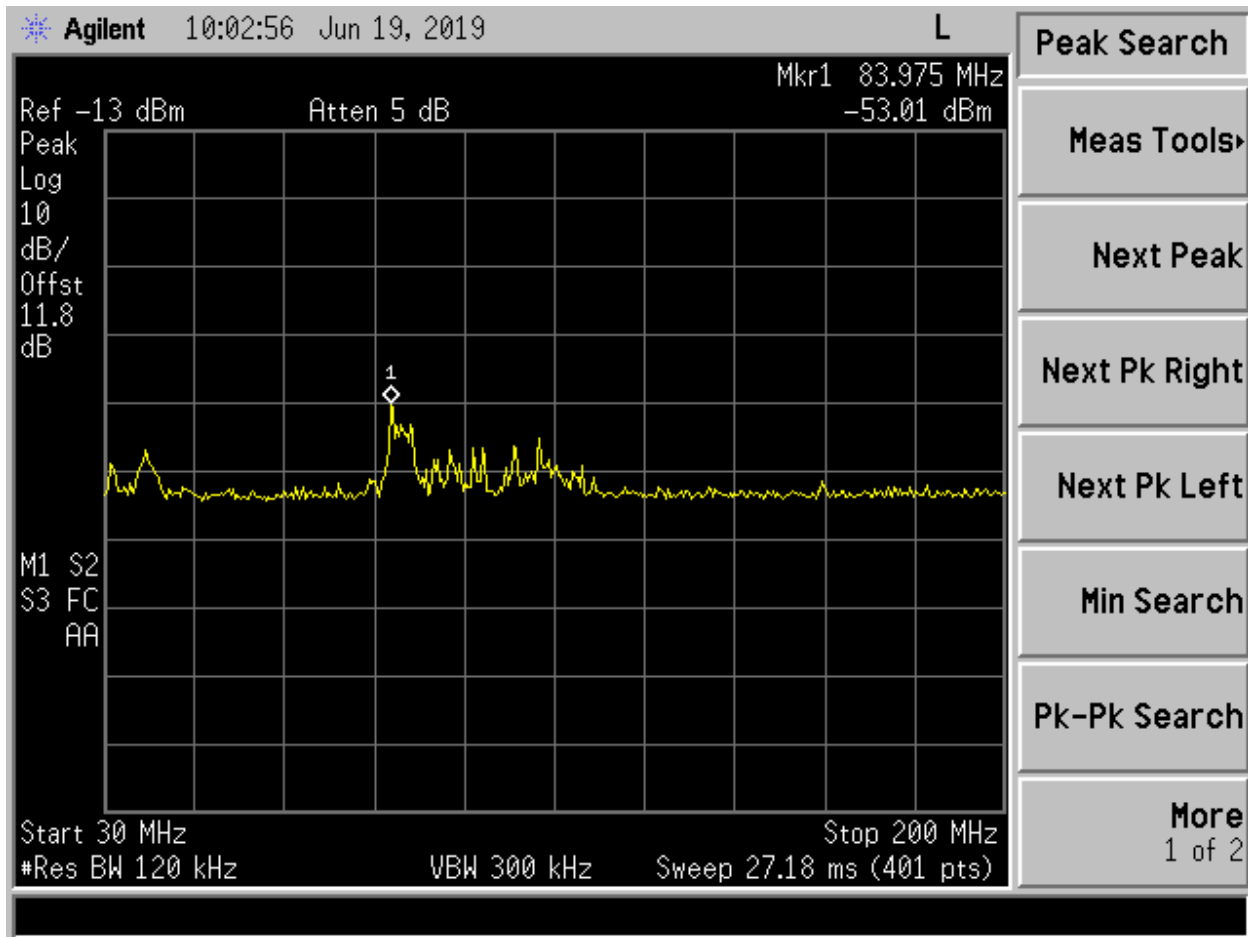


Figure 203. 788 MHz Horizontal, 30 – 200 MHz

U.S. Tech Test Report:
FCC ID:
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FCC Part 90 Certification
2AKSM-SAFE3
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19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

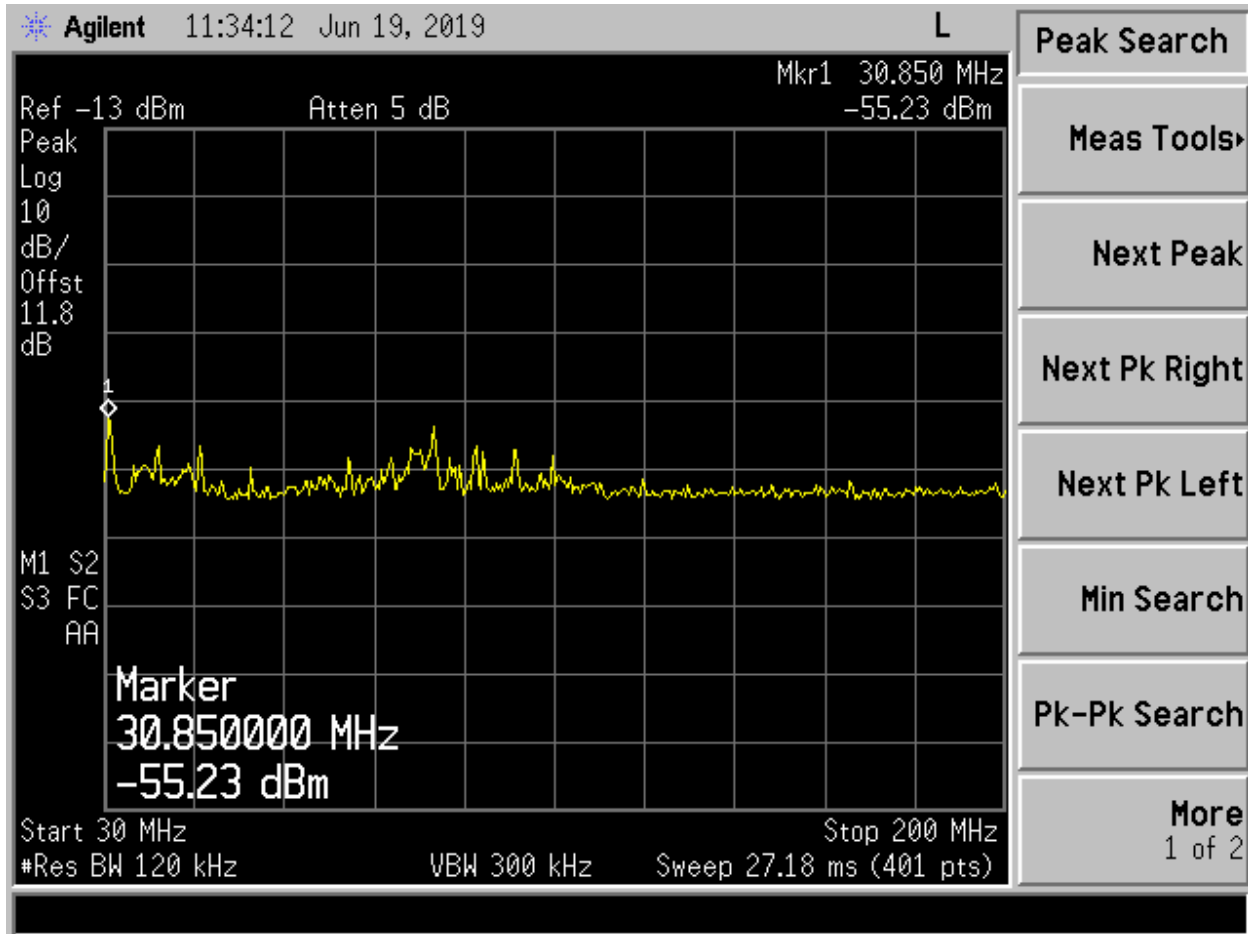


Figure 204. 788 MHz Vertical, 30 - 200 MHz

U.S. Tech Test Report:
FCC ID:
IC:
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Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

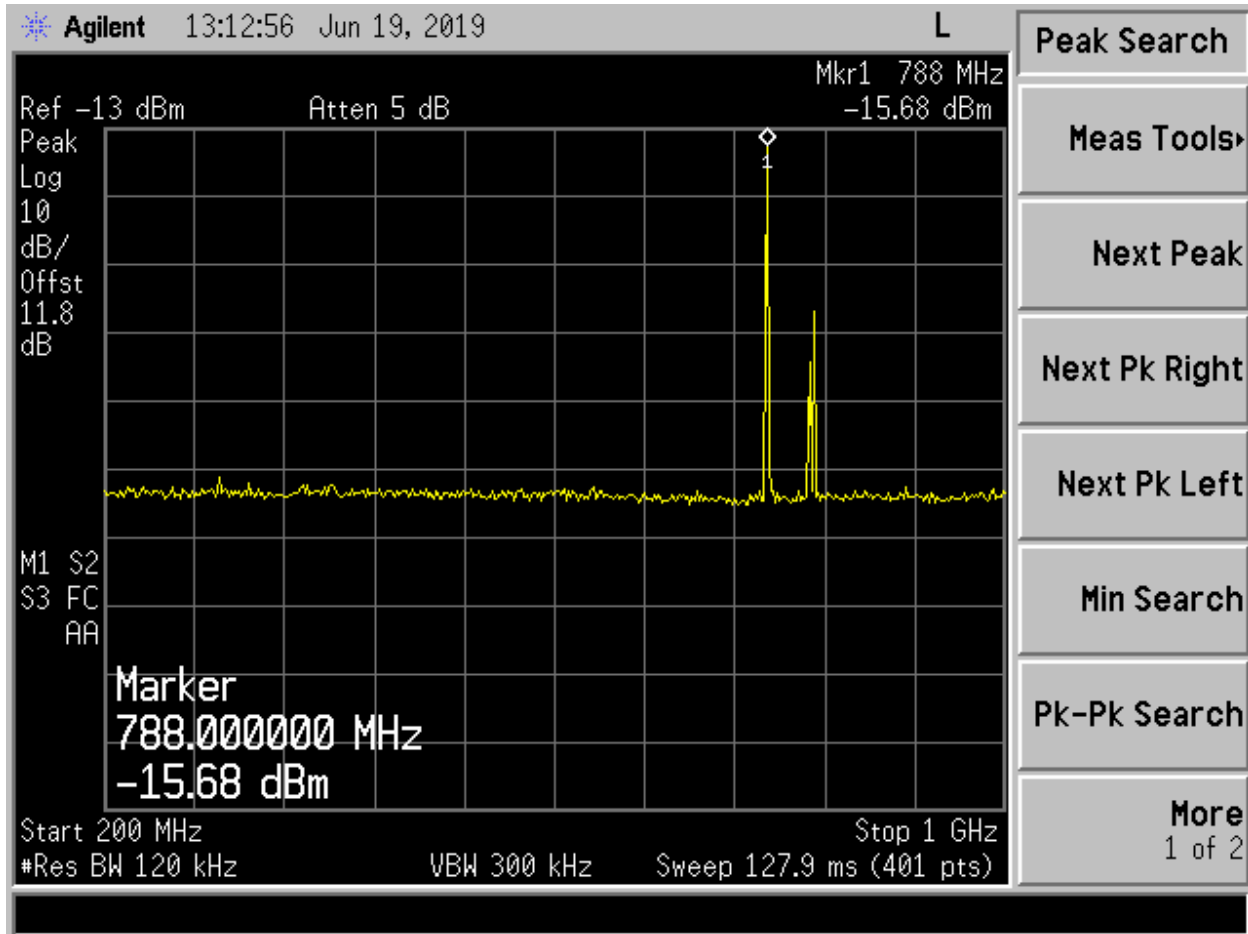


Figure 205. 788 MHz Horizontal, 200 MHz - 1 GHz

U.S. Tech Test Report:
FCC ID:
IC:
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Issue Date:
Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

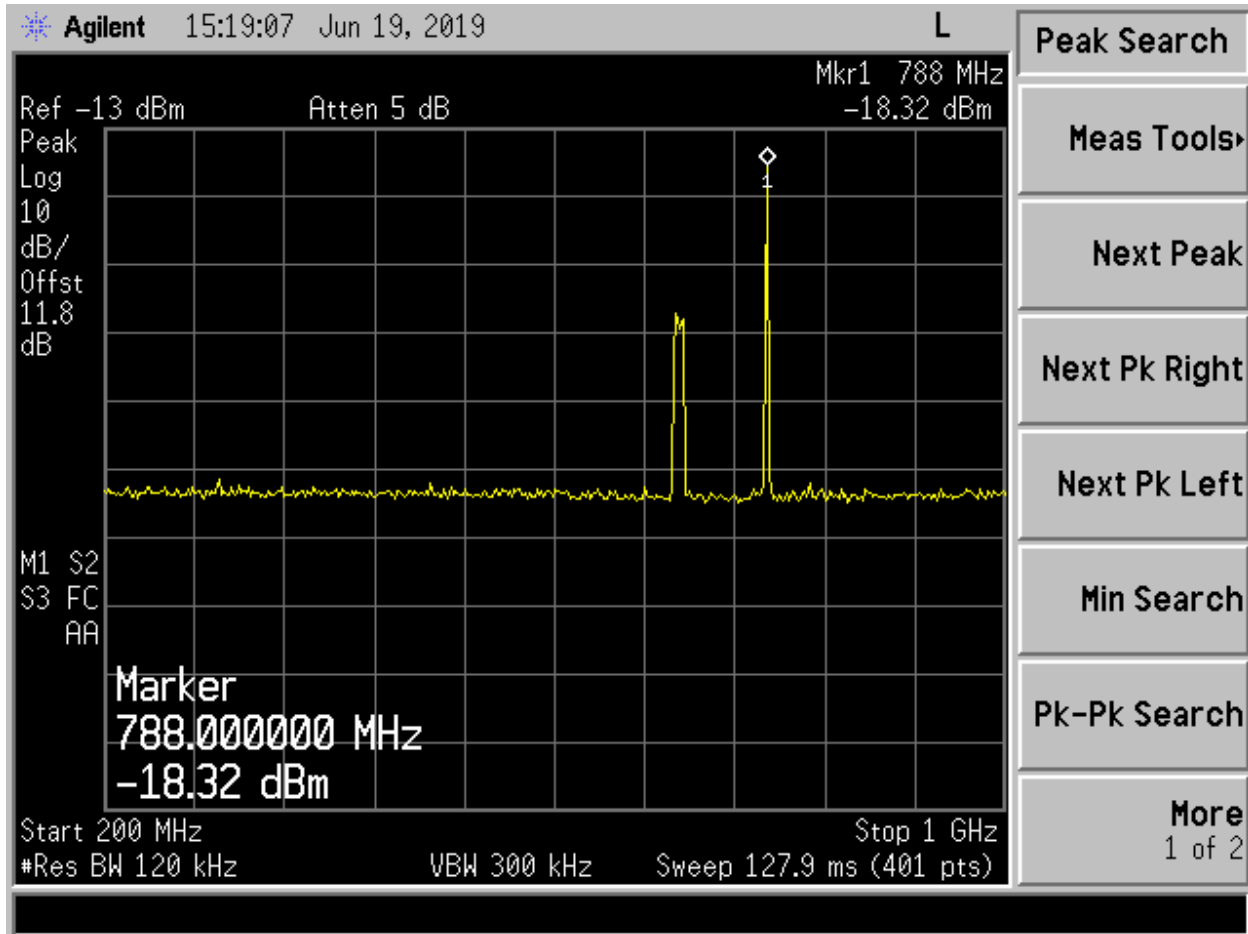


Figure 206. 788 MHz Vertical, 200 MHz - 1 GHz

U.S. Tech Test Report:
FCC ID:
IC:
Report Number:
Issue Date:
Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

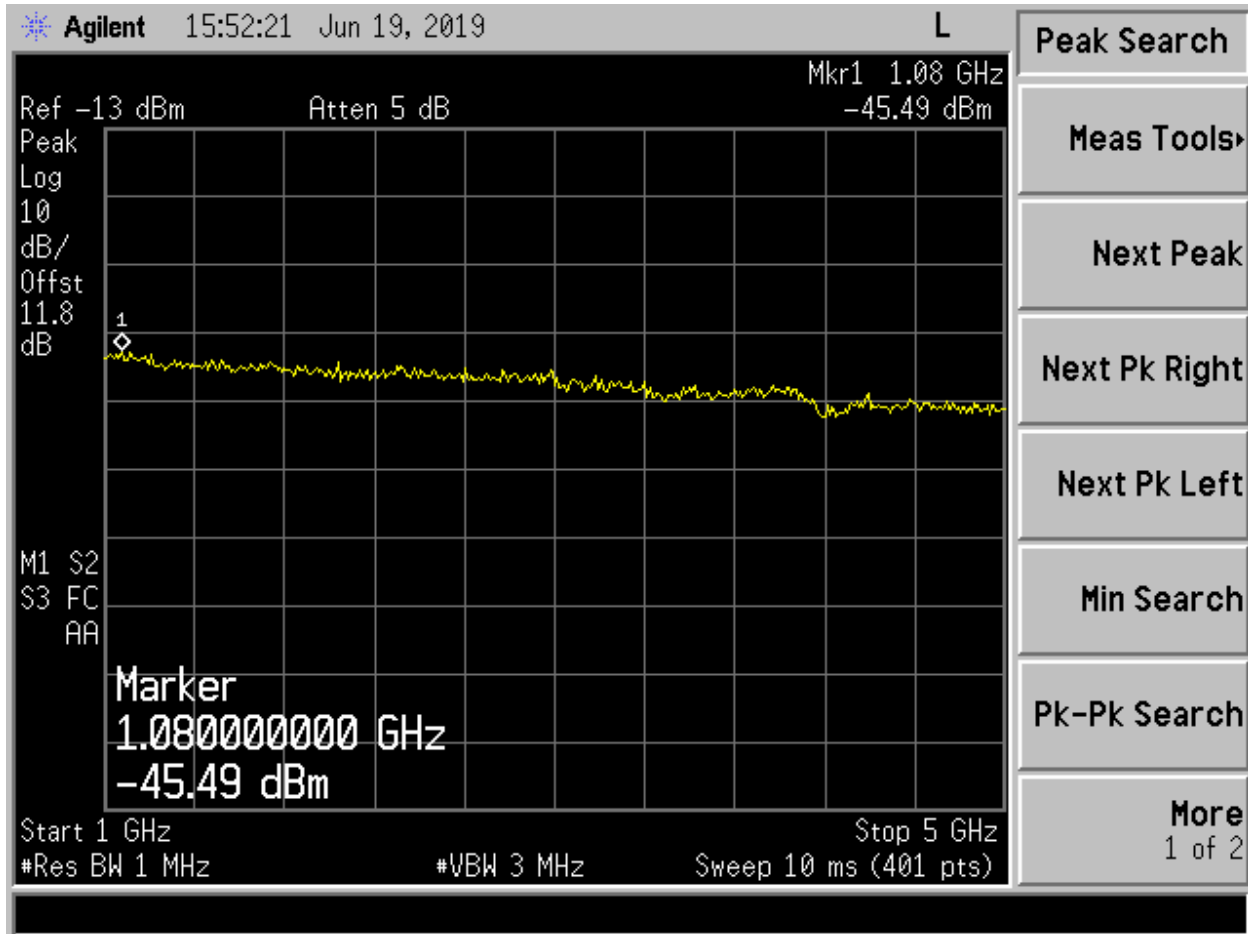


Figure 207. 788 MHz Horizontal, 1 – 5 GHz

U.S. Tech Test Report:
FCC ID:
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Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

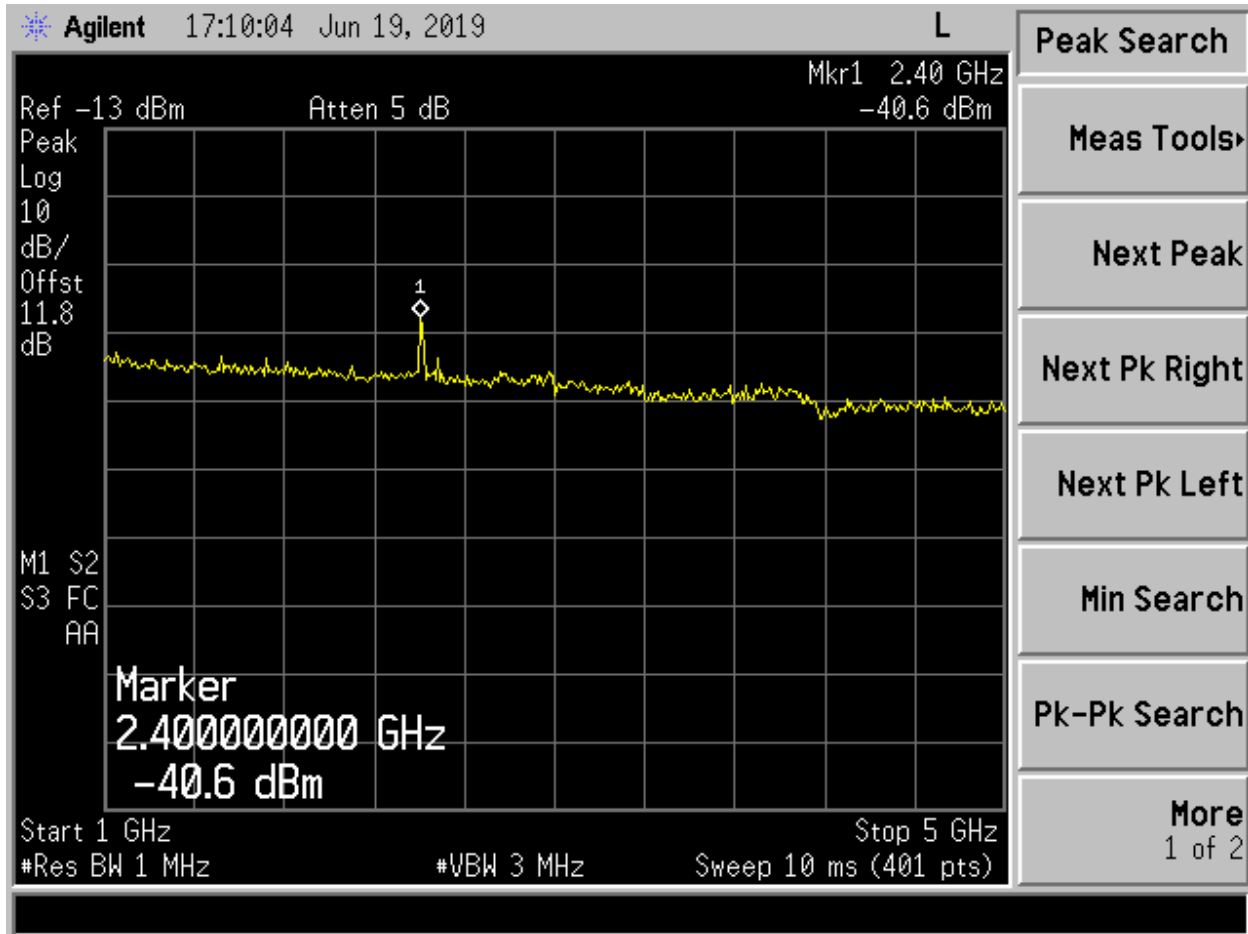


Figure 208. 788 MHz Vertical, 1 – 5 GHz

U.S. Tech Test Report:
FCC ID:
IC:
Report Number:
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Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

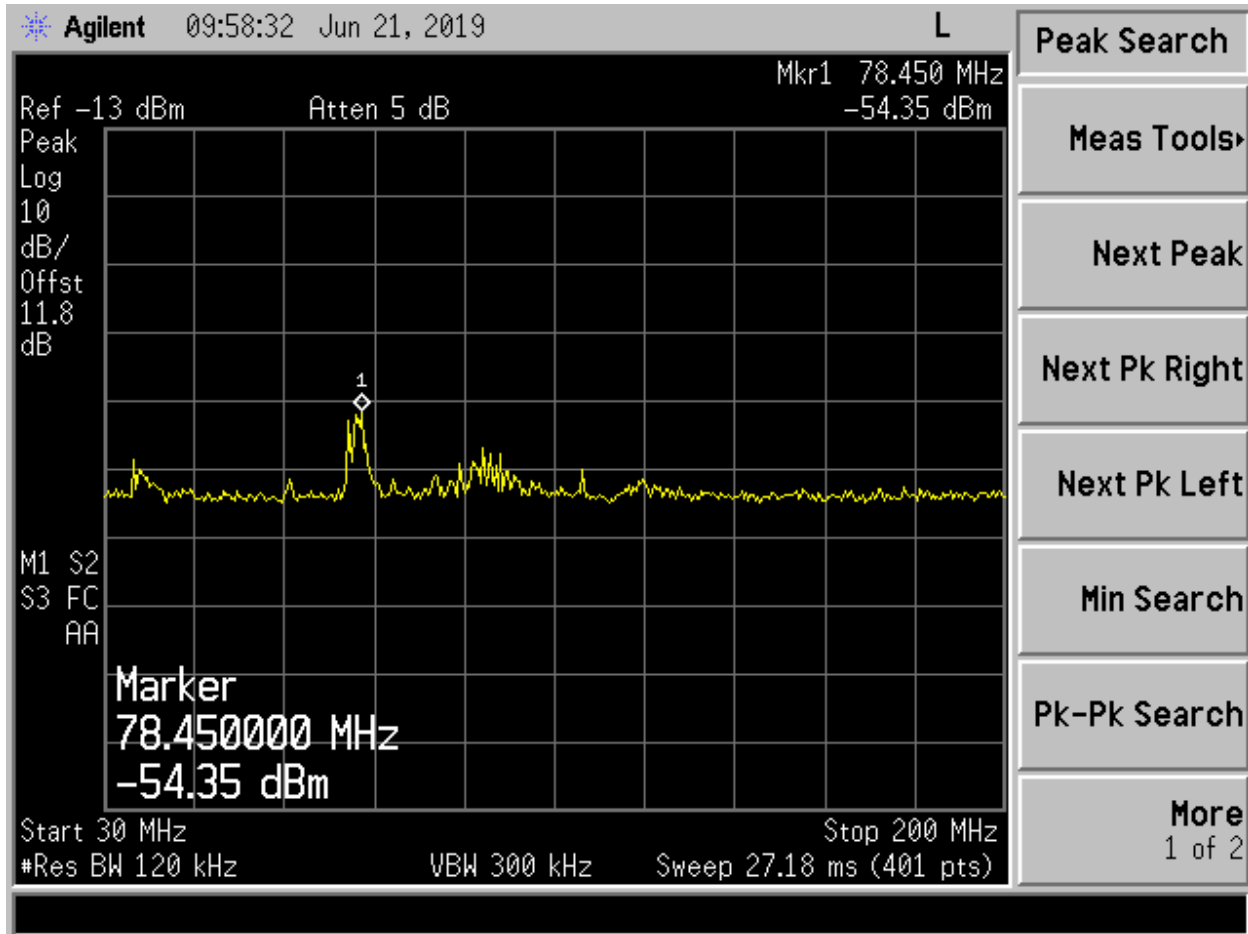


Figure 209. 798 MHz Horizontal, 30 – 200 MHz

U.S. Tech Test Report:
FCC ID:
IC:
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Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

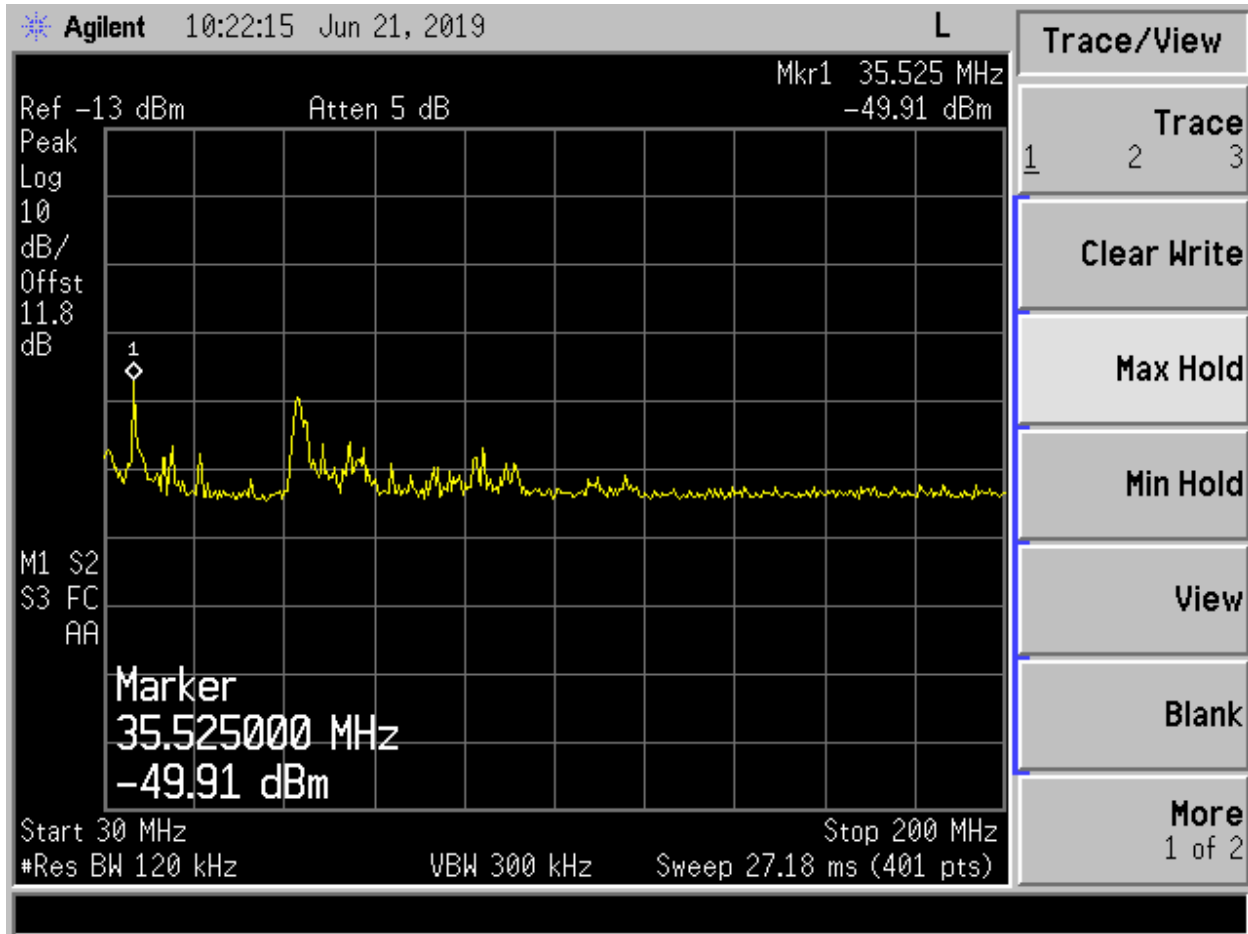


Figure 210. 798 MHz Vertical, 30 – 200 MHz

U.S. Tech Test Report:
FCC ID:
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Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
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SAFE-1001

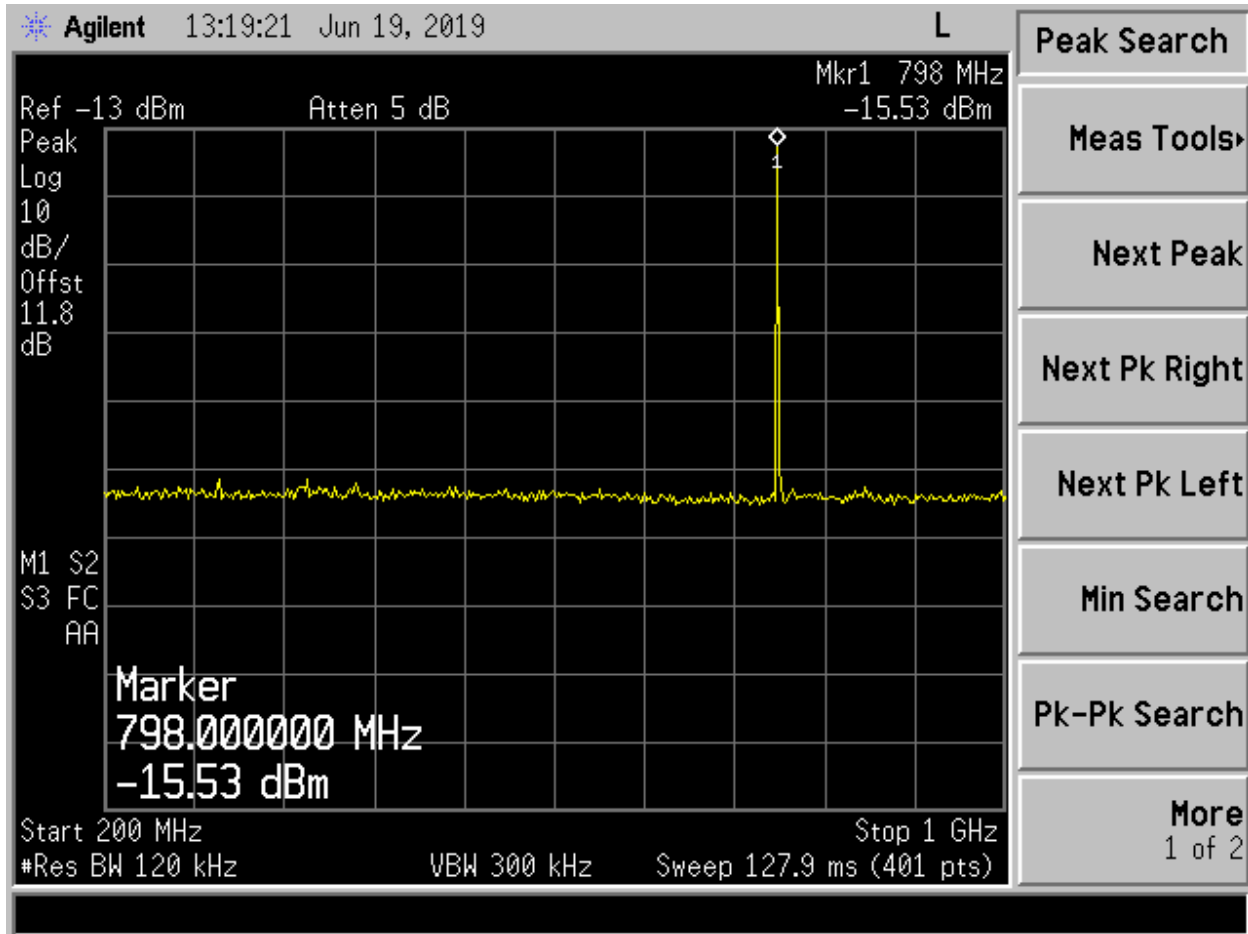


Figure 211. 798 MHz Horizontal, 200 MHz – 1 GHz

U.S. Tech Test Report:
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Customer:
Model:

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2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

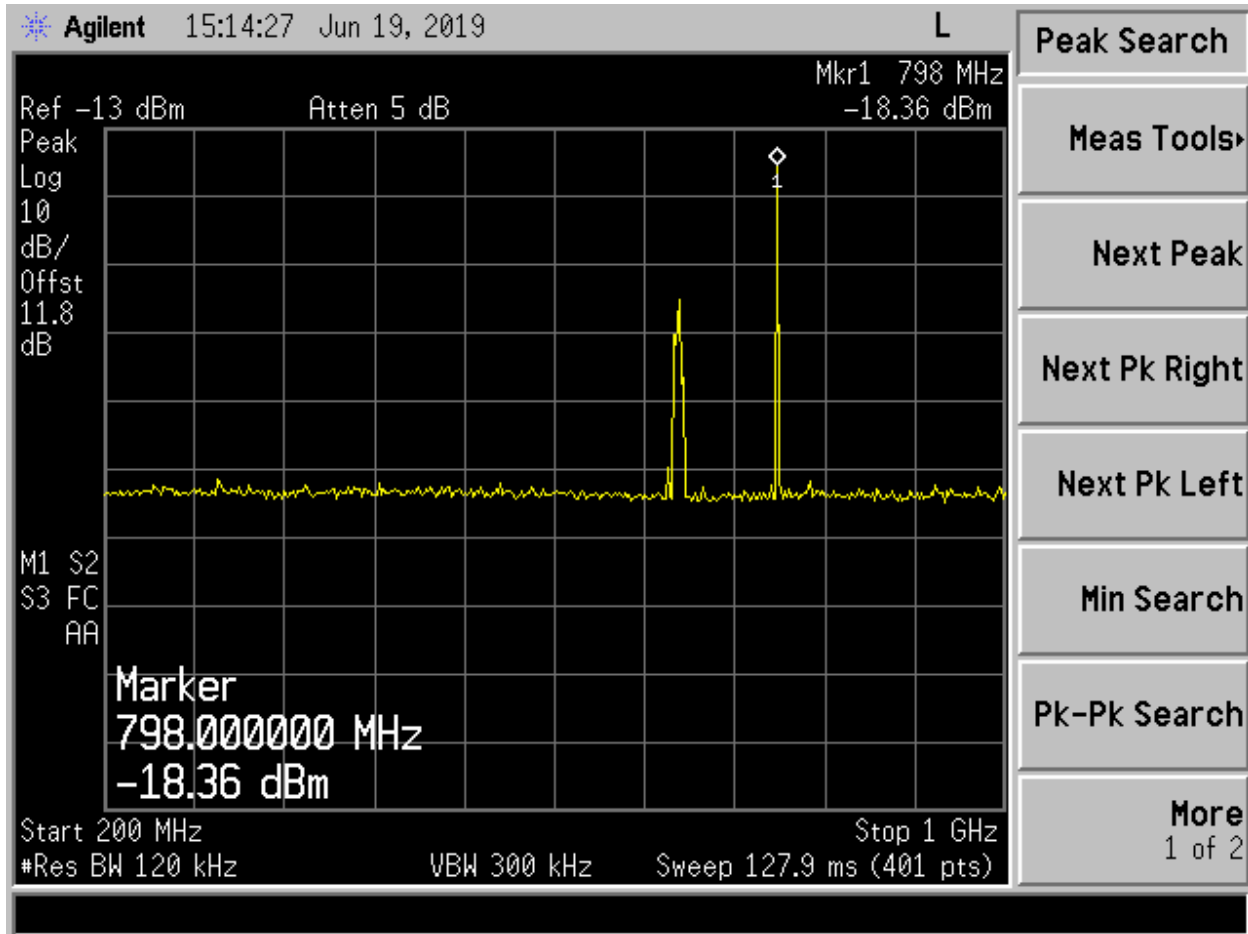


Figure 212. 798 MHz Vertical, 200 MHz – 1 GHz

U.S. Tech Test Report:
FCC ID:
IC:
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Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
August 6, 2019
Safe-Com Wireless
SAFE-1001

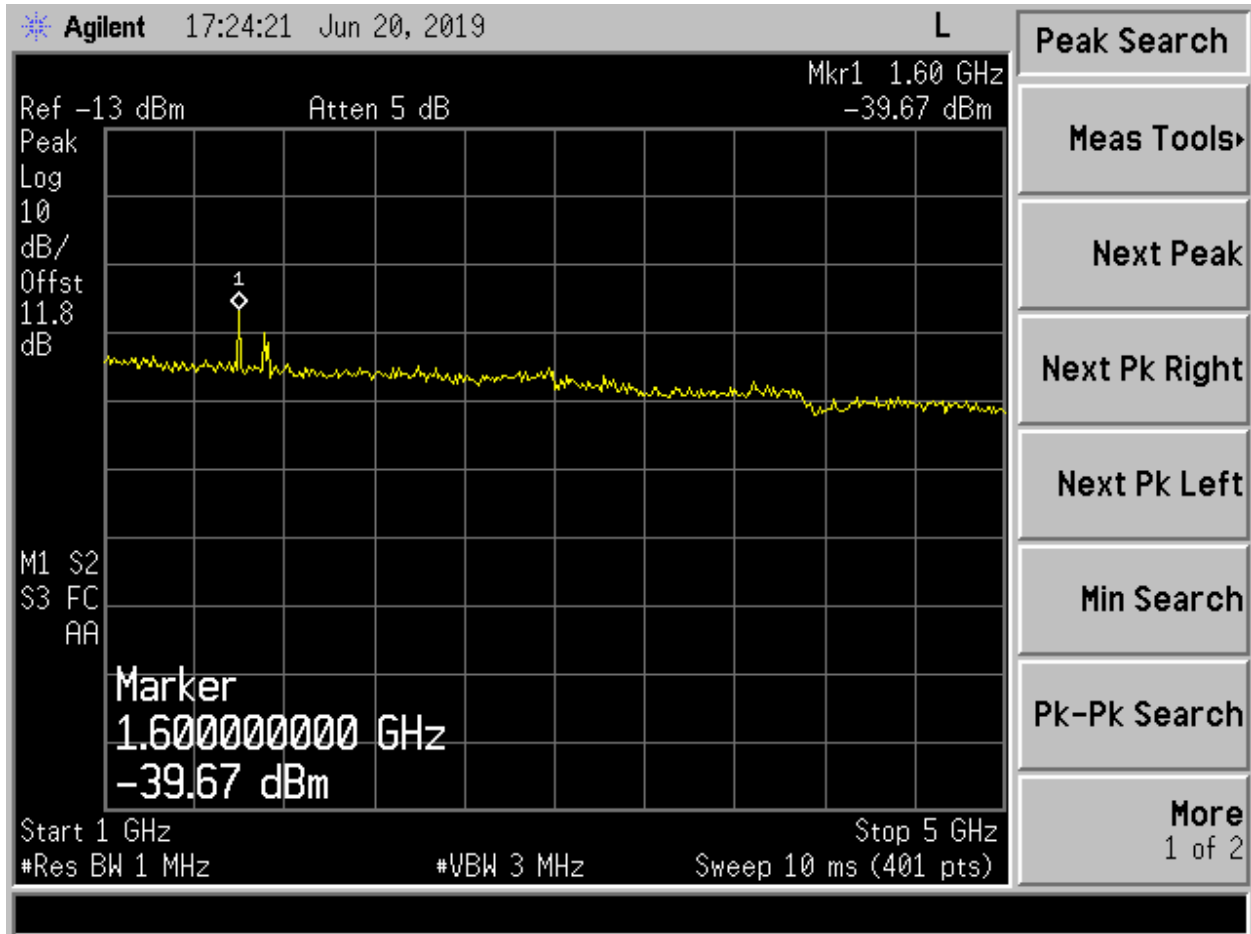


Figure 213. 798 MHz Horizontal, 1 – 5 GHz

U.S. Tech Test Report:
FCC ID:
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Report Number:
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Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
22303-SAFE3
19-0244
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Safe-Com Wireless
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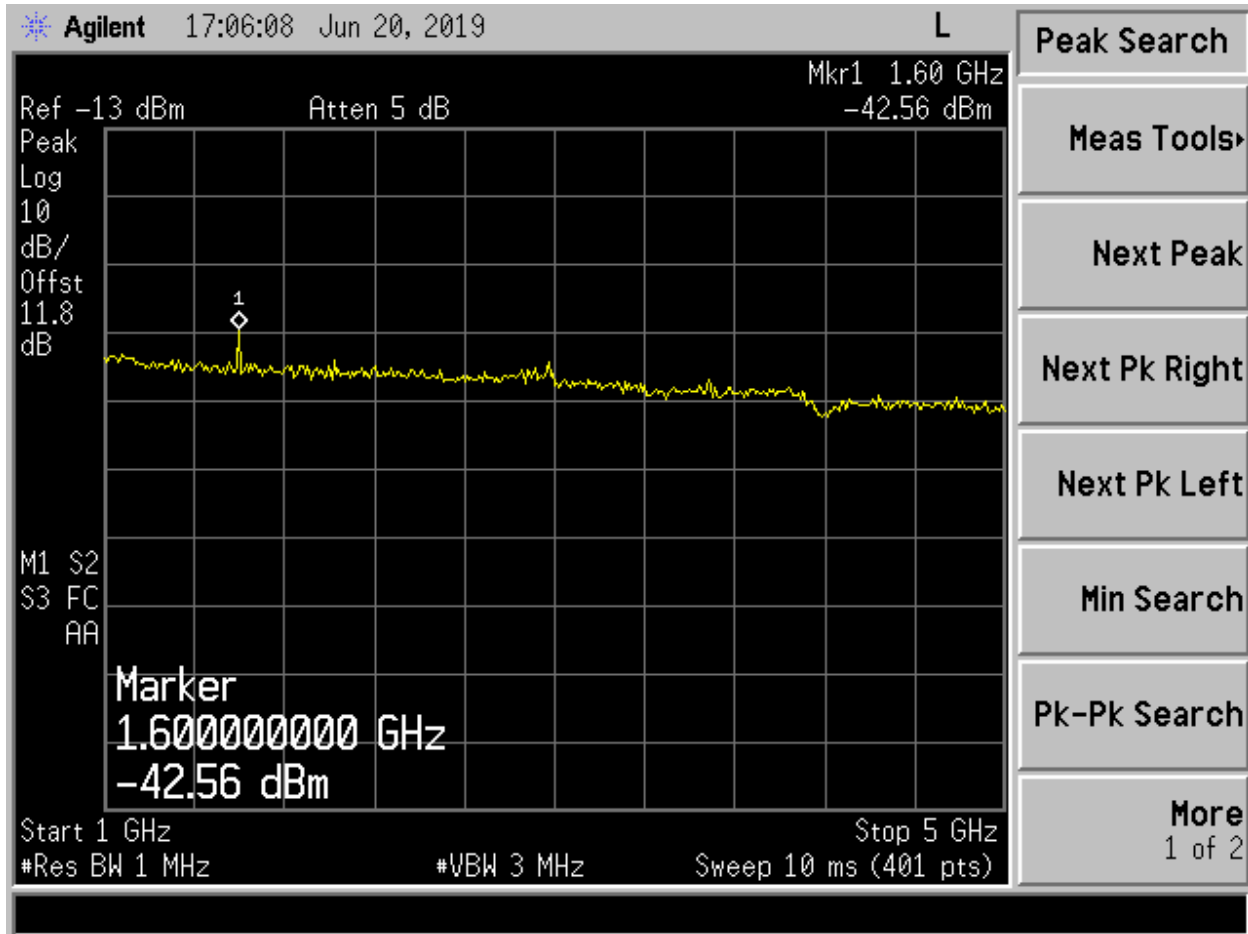


Figure 214. 798 MHz Vertical, 1 – 5 GHz

U.S. Tech Test Report:
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Customer:
Model:

FCC Part 90 Certification
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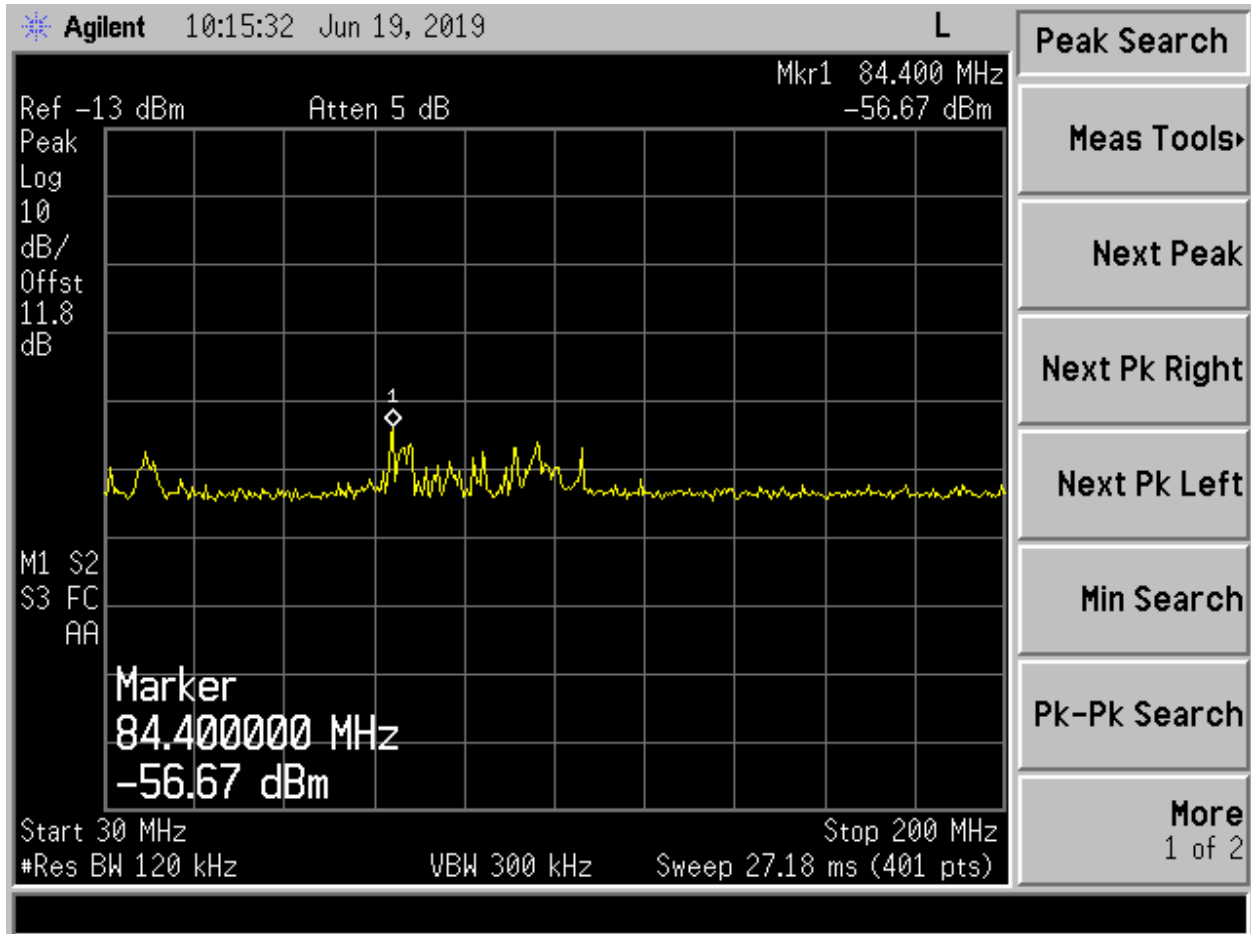


Figure 215. 799 MHz Horizontal, 30 – 200 MHz

U.S. Tech Test Report:
FCC ID:
IC:
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Customer:
Model:

FCC Part 90 Certification
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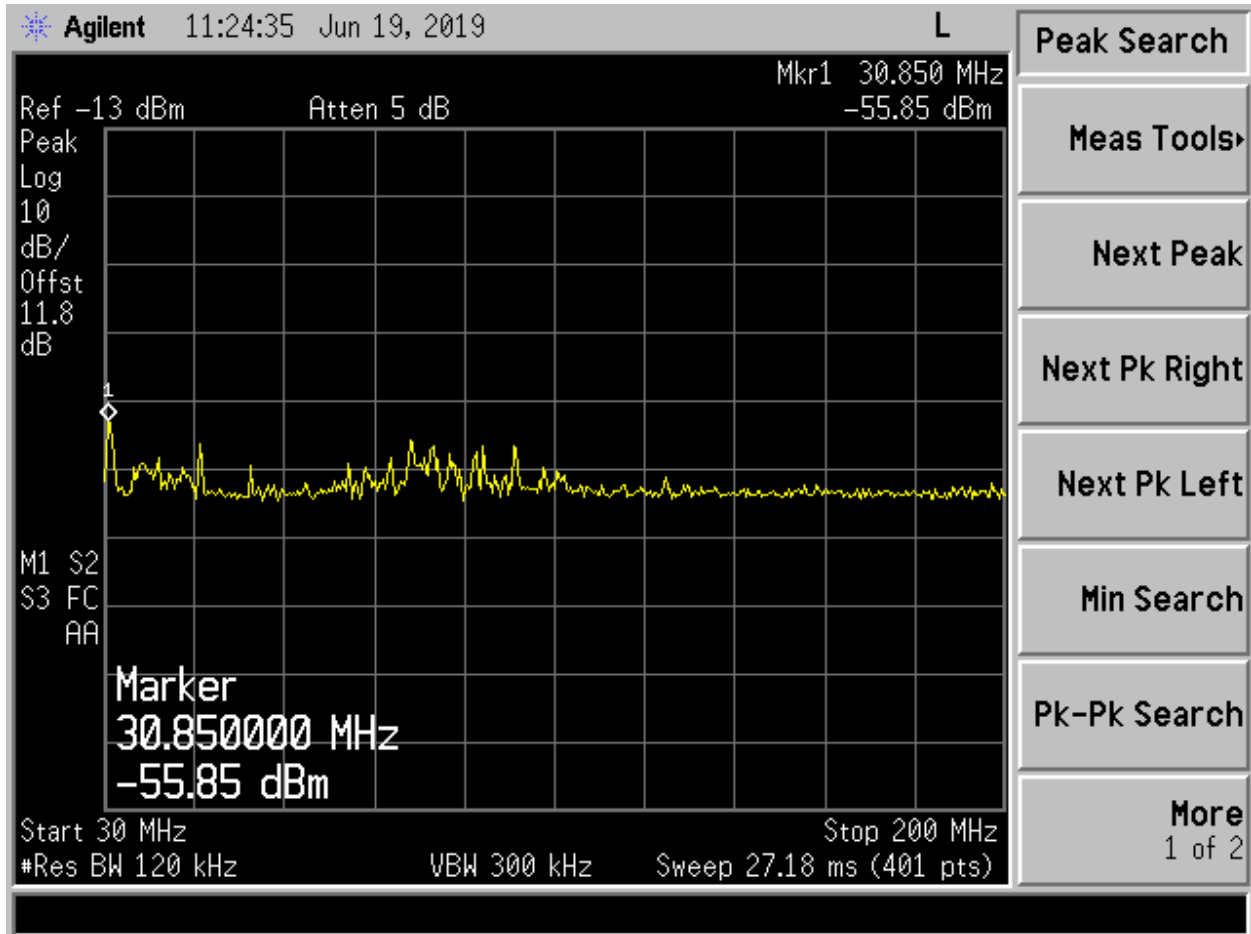


Figure 216. 799 MHz Vertical, 30 – 200 MHz

U.S. Tech Test Report:
FCC ID:
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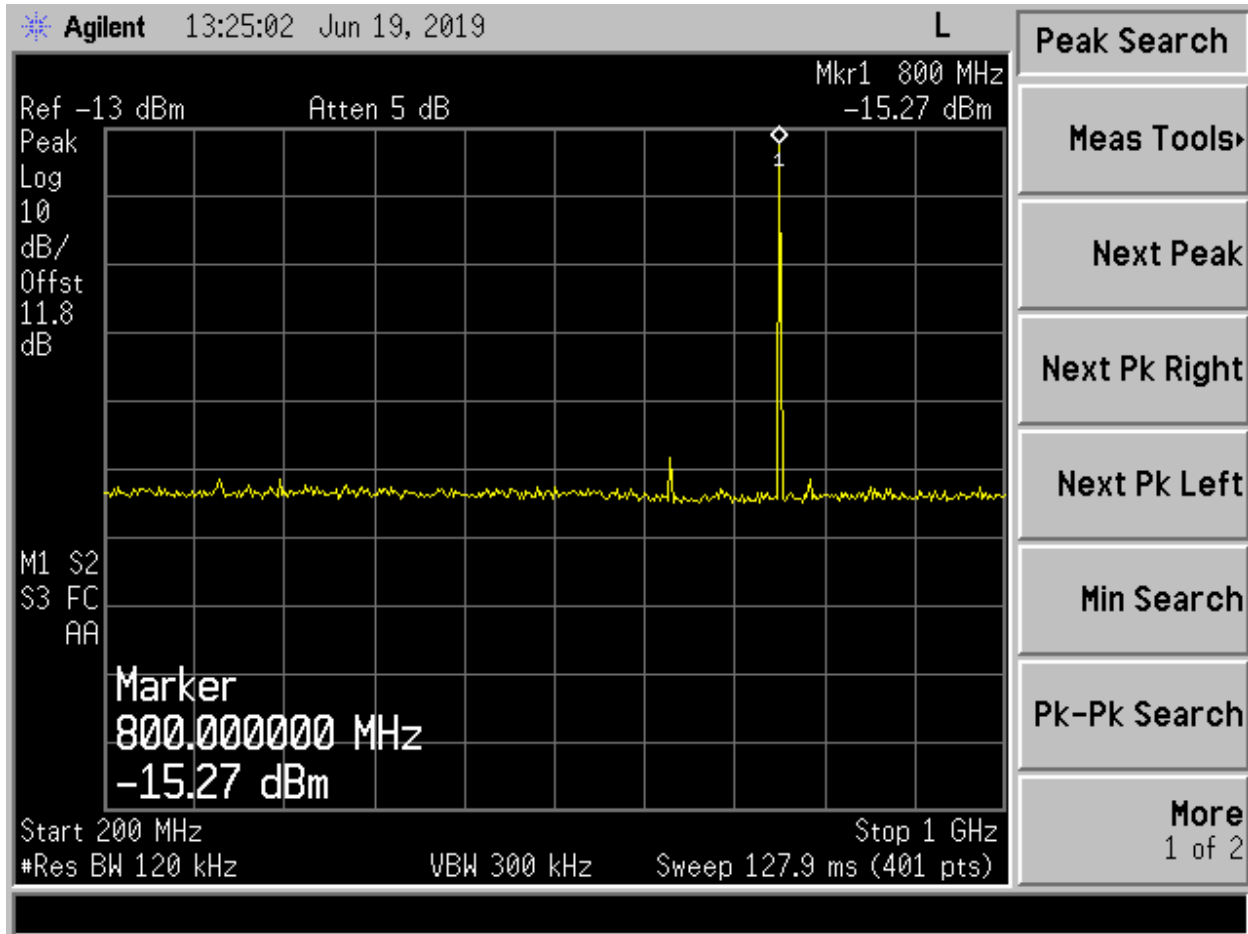


Figure 217. 799 MHz Horizontal, 200 MHz – 1 GHz

U.S. Tech Test Report:
FCC ID:
IC:
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Customer:
Model:

FCC Part 90 Certification
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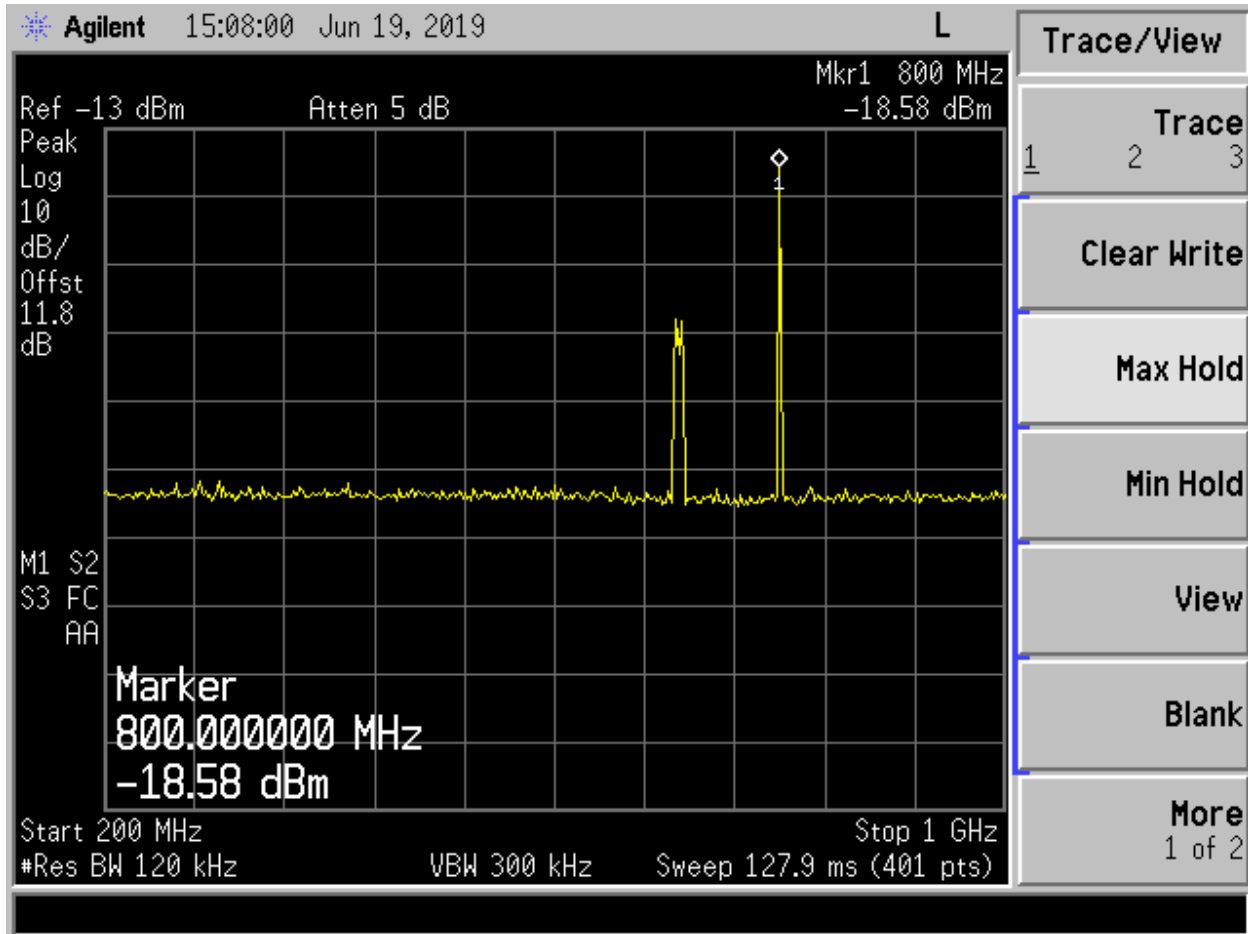


Figure 218. 799 MHz Vertical, 200 MHz – 1 GHz

U.S. Tech Test Report:
FCC ID:
IC:
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Customer:
Model:

FCC Part 90 Certification
2AKSM-SAFE3
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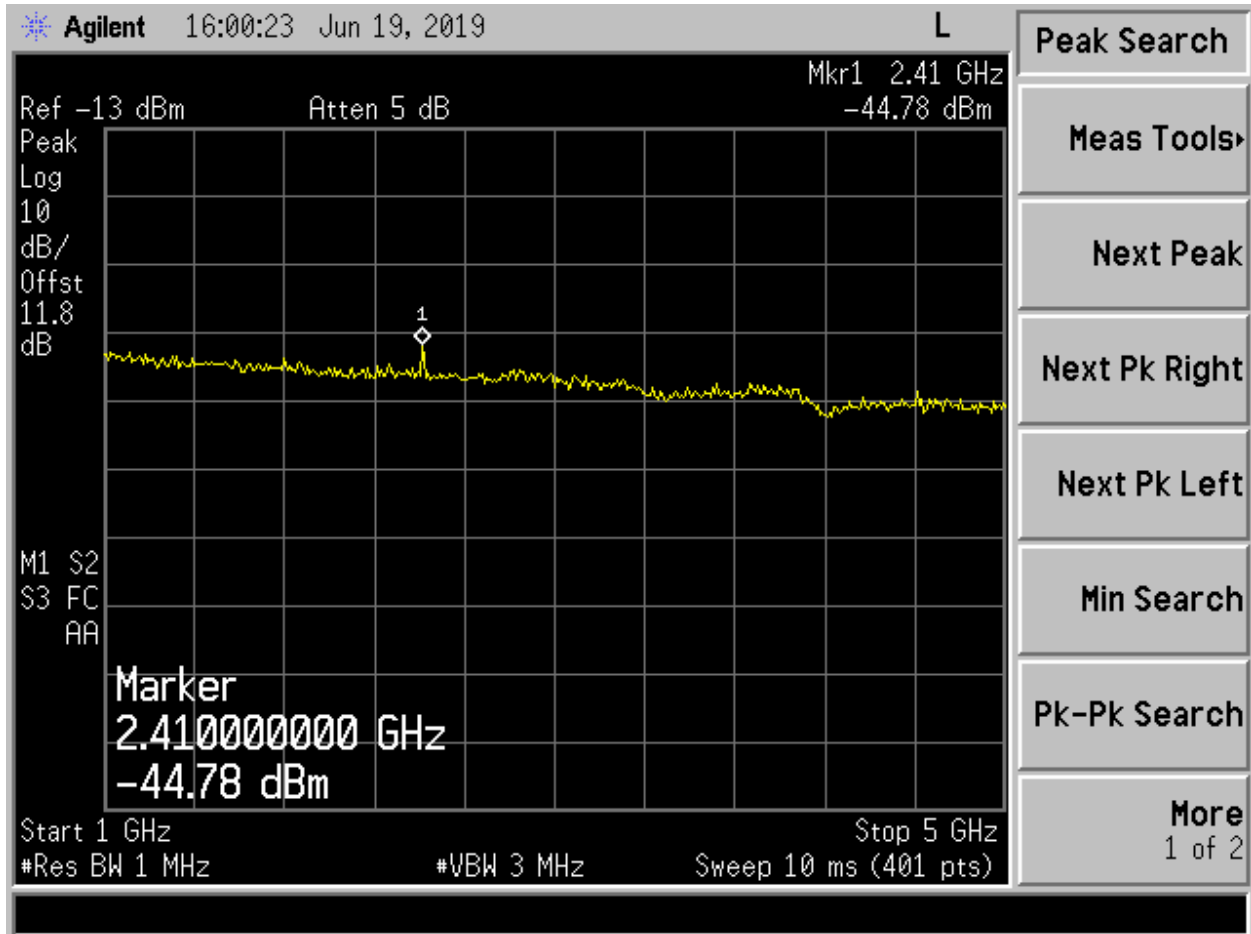


Figure 219. 799 MHz Horizontal, 1 – 5 GHz

U.S. Tech Test Report:
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Customer:
Model:

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22303-SAFE3
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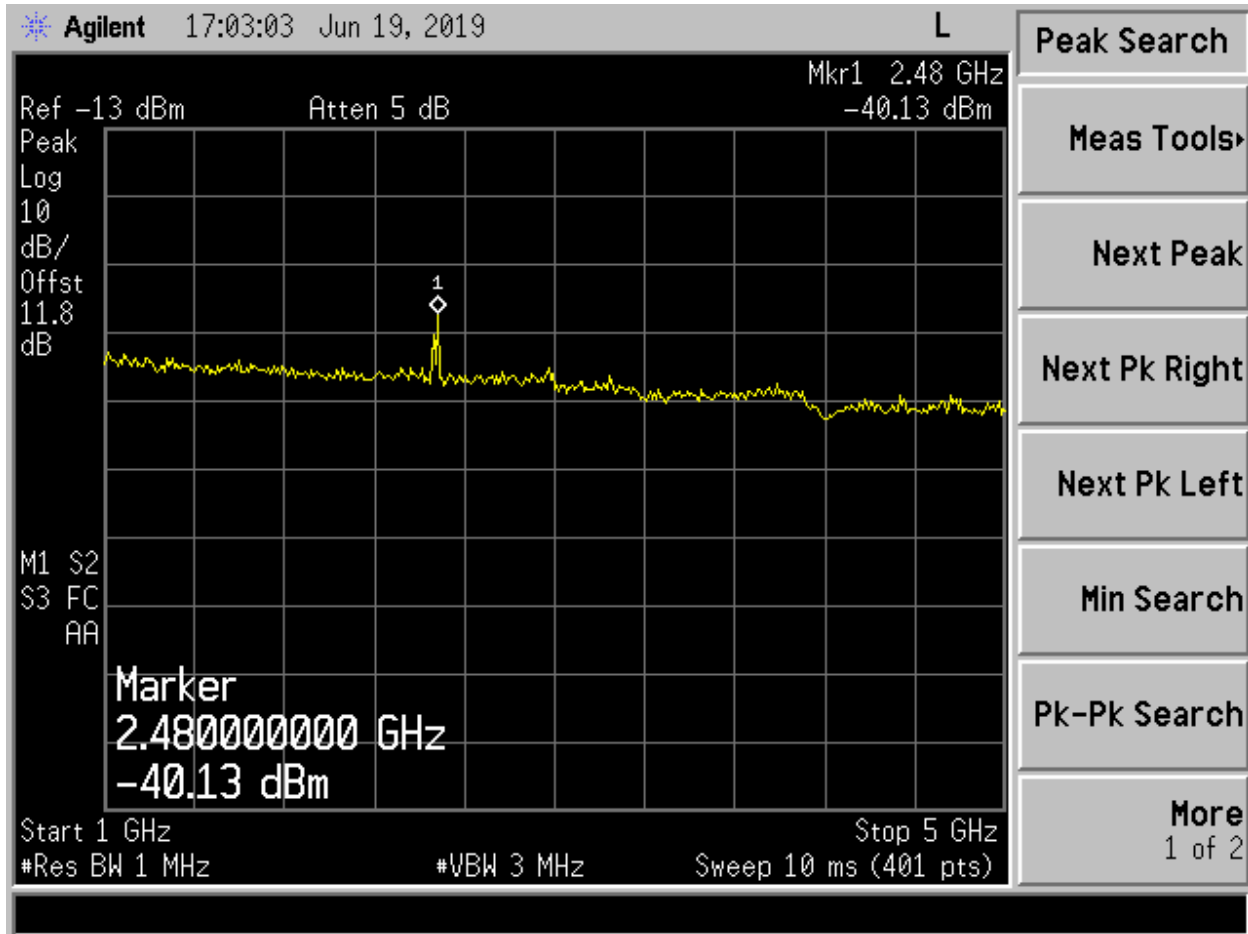


Figure 220. 799 MHz Vertical, 1 – 5 GHz

U.S. Tech Test Report:
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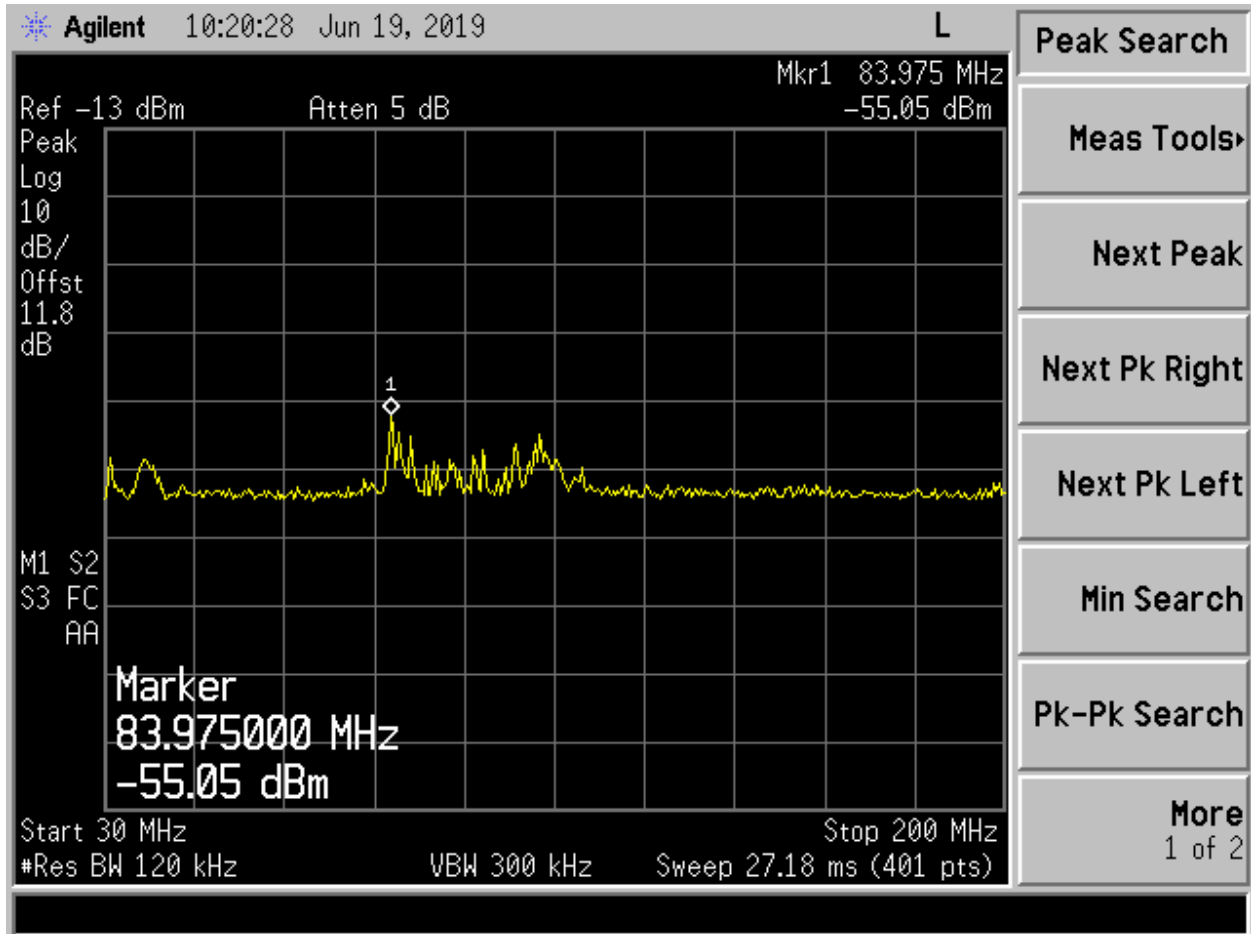


Figure 221. 805 MHz, Horizontal, 30 – 200 MHz

U.S. Tech Test Report:
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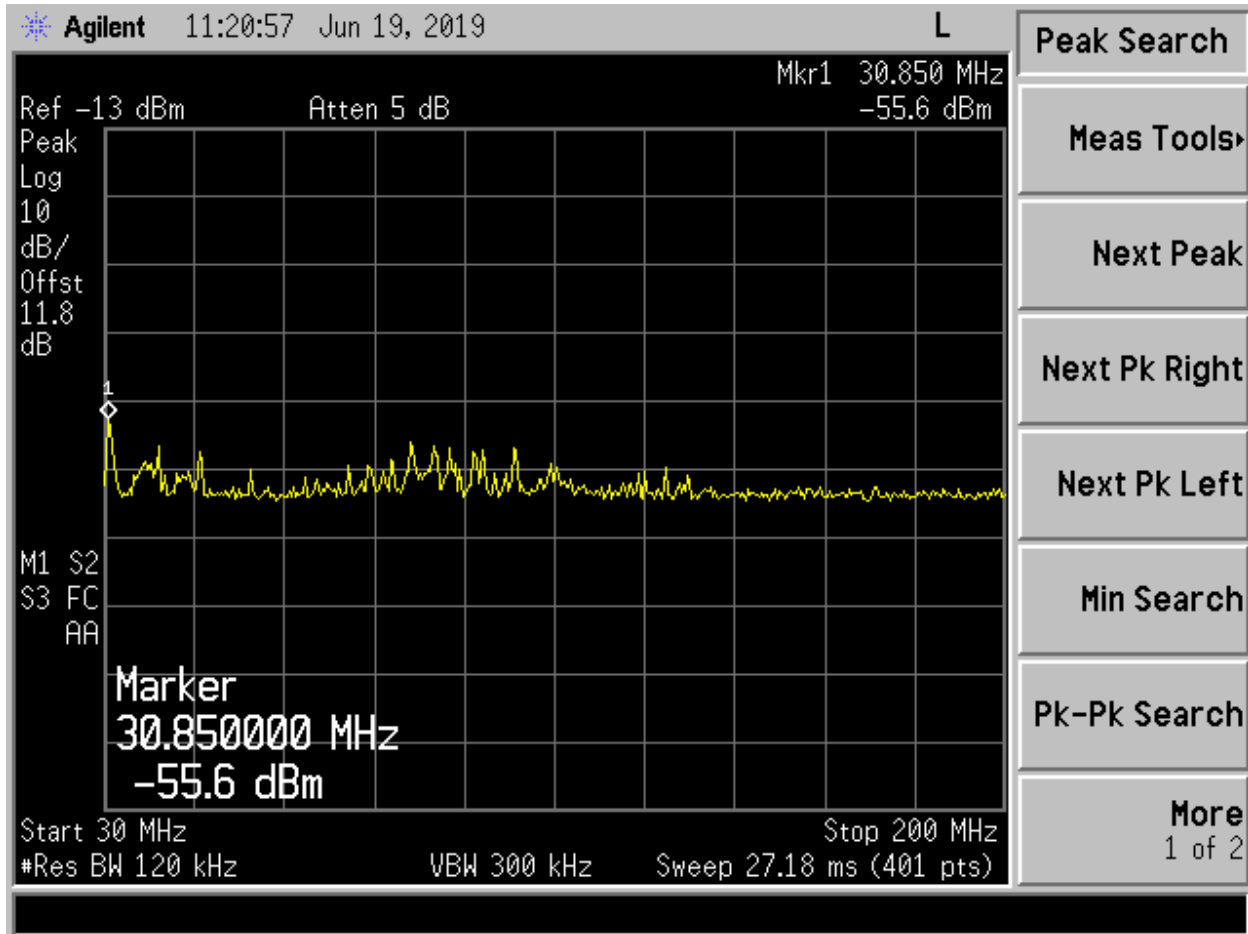


Figure 222. 805 MHz, Vertical, 30 – 200 MHz

U.S. Tech Test Report:
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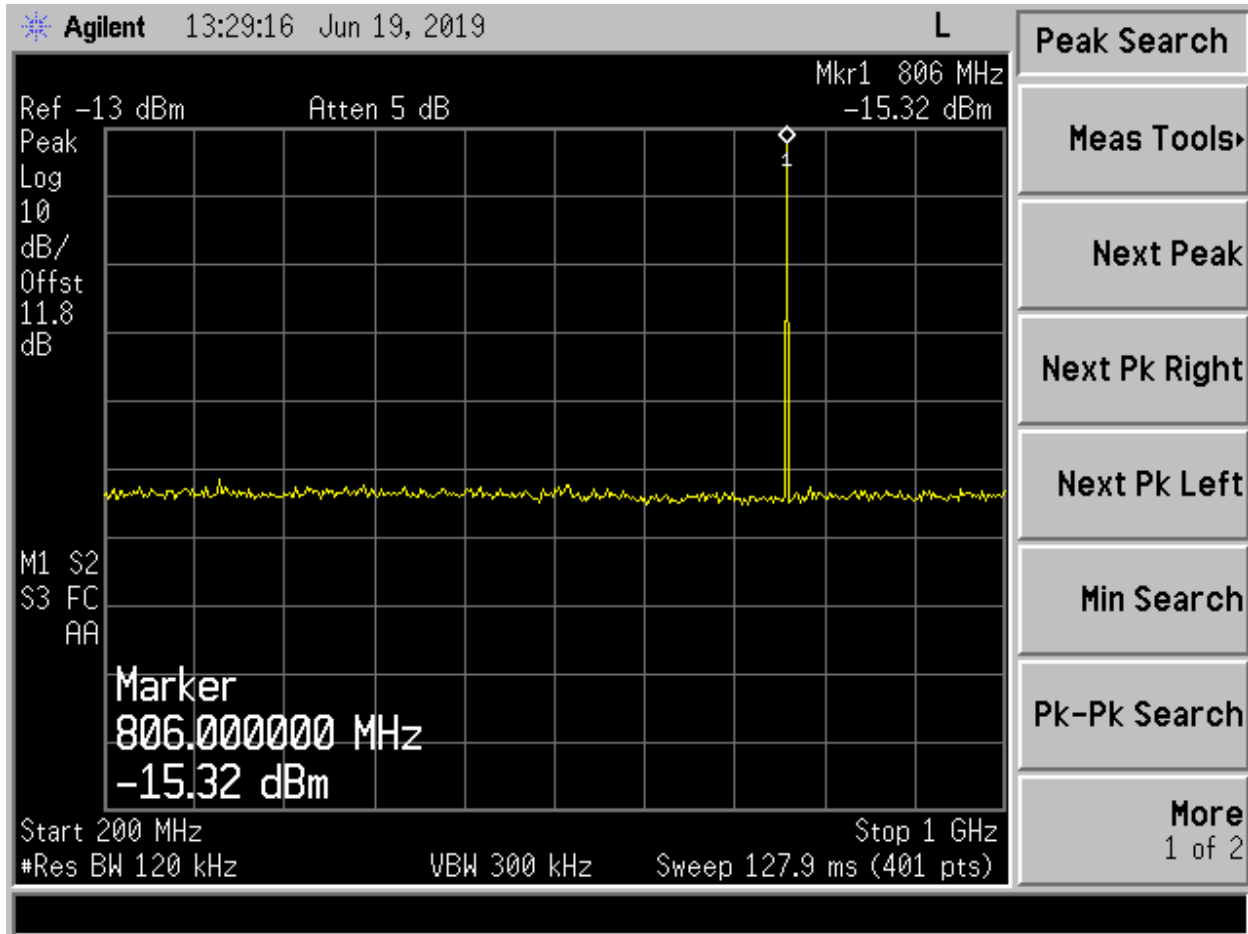


Figure 223. 805 MHz, Horizontal, 200 MHz – 1 GHz

U.S. Tech Test Report:
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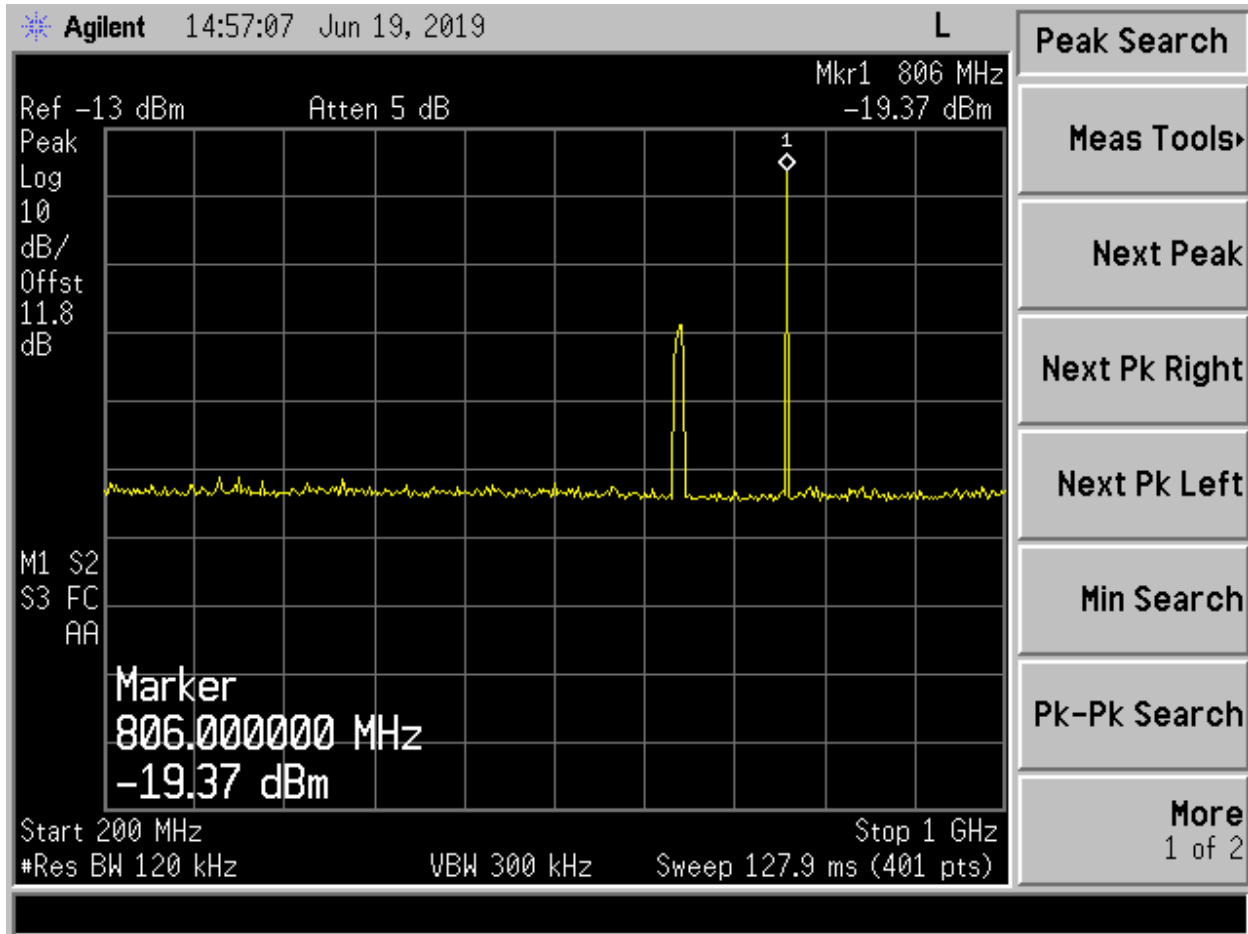


Figure 224. 805 MHz, Vertical, 200 MHz – 1 GHz

U.S. Tech Test Report:
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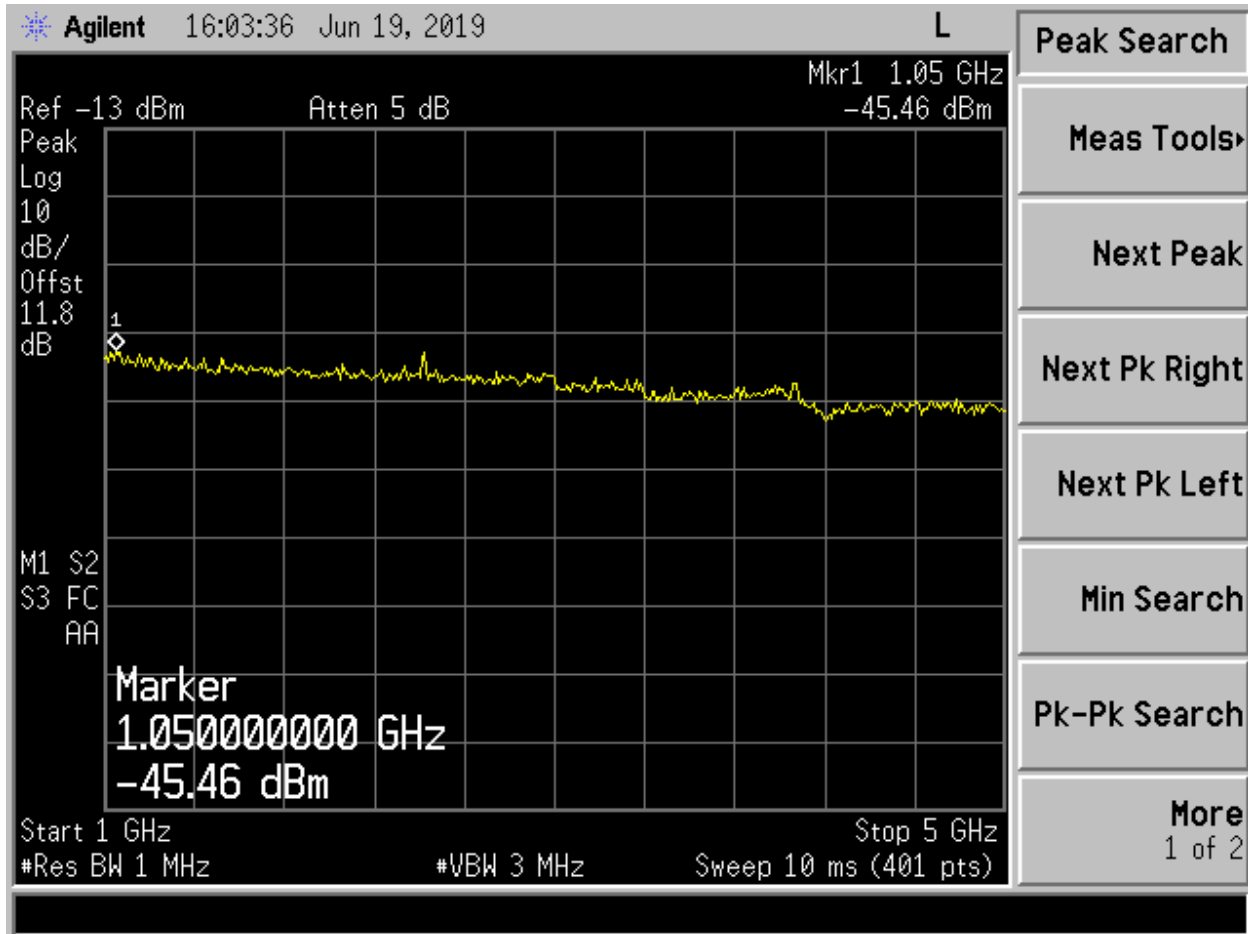


Figure 225. 805 MHz, Horizontal, 1 – 5 GHz

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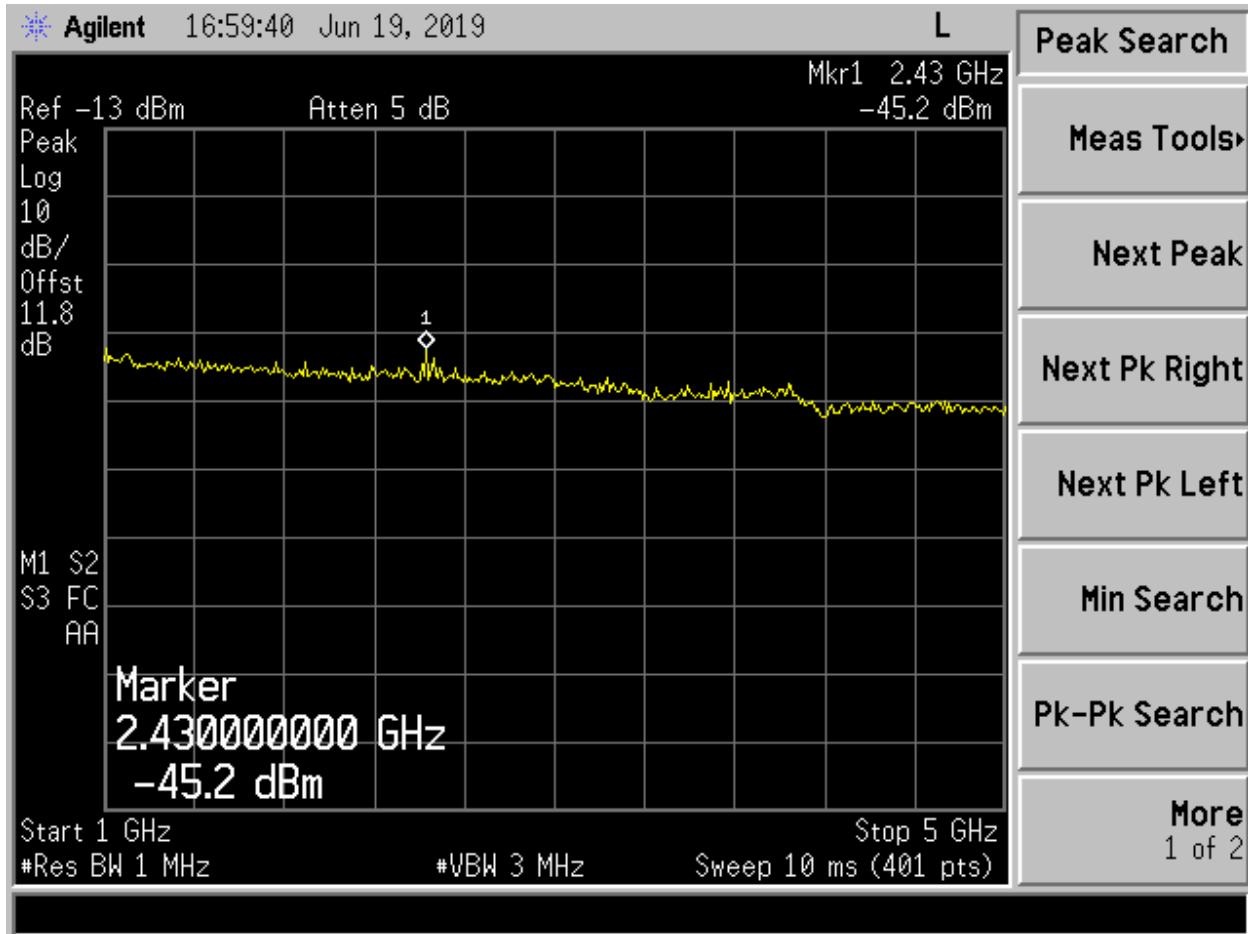


Figure 226. 805 MHz, Vertical, 1 – 5 GHz

2.12.1.4 800 MHz Radiated Spurious Emissions Plots

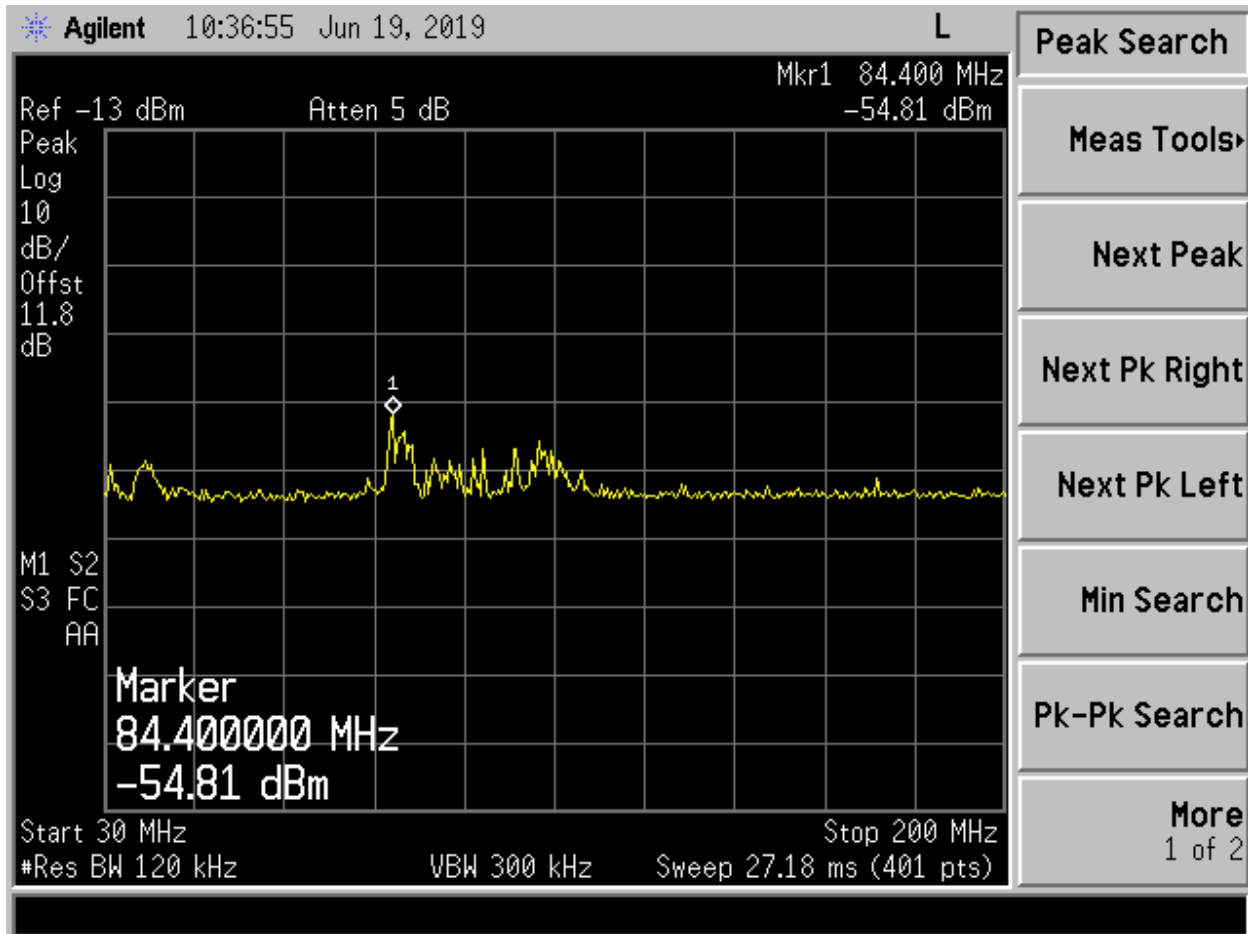


Figure 227. 824 MHz Horizontal, 30 – 200 MHz

U.S. Tech Test Report:
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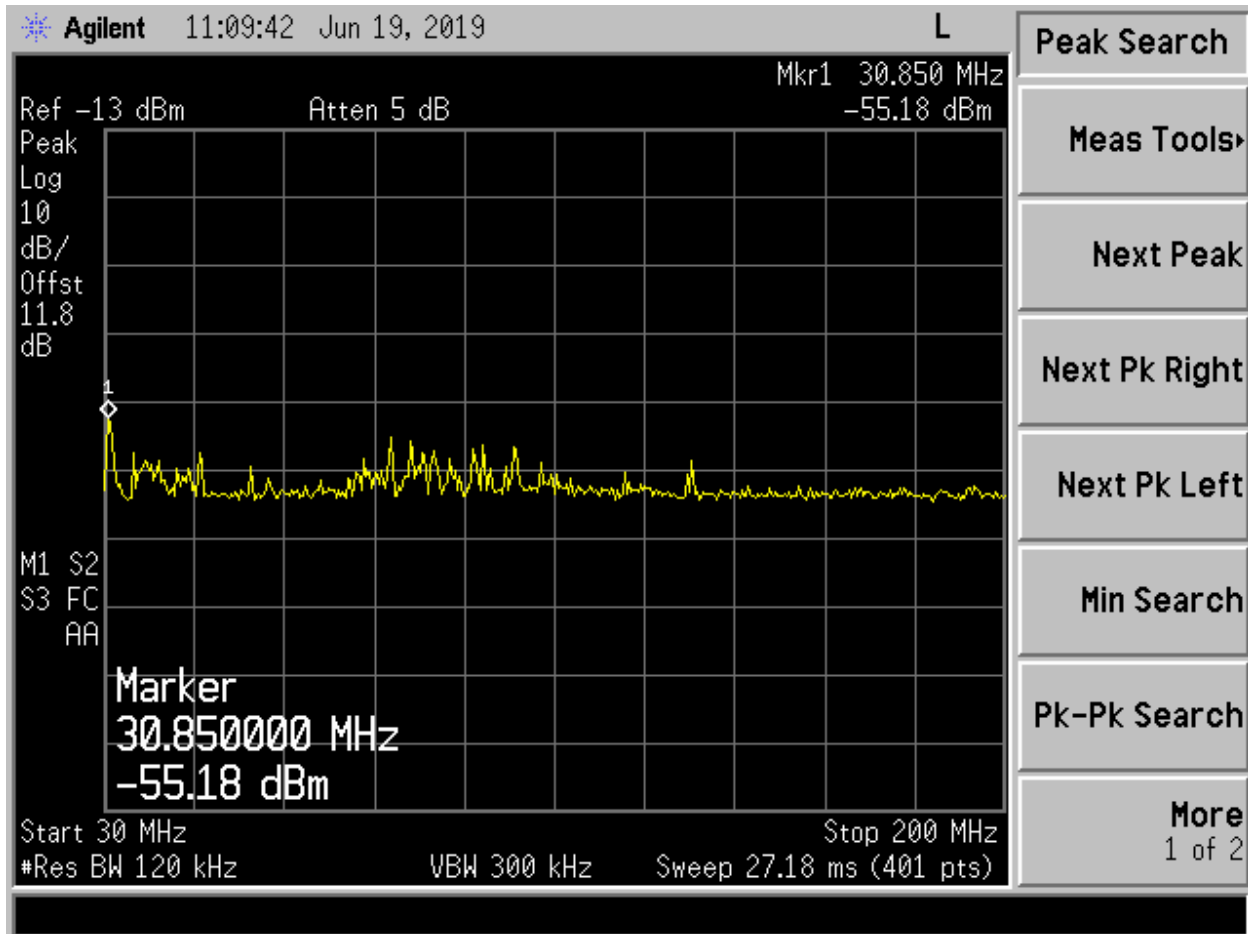


Figure 228. 824 MHz Vertical, 30 - 200 MHz

U.S. Tech Test Report:
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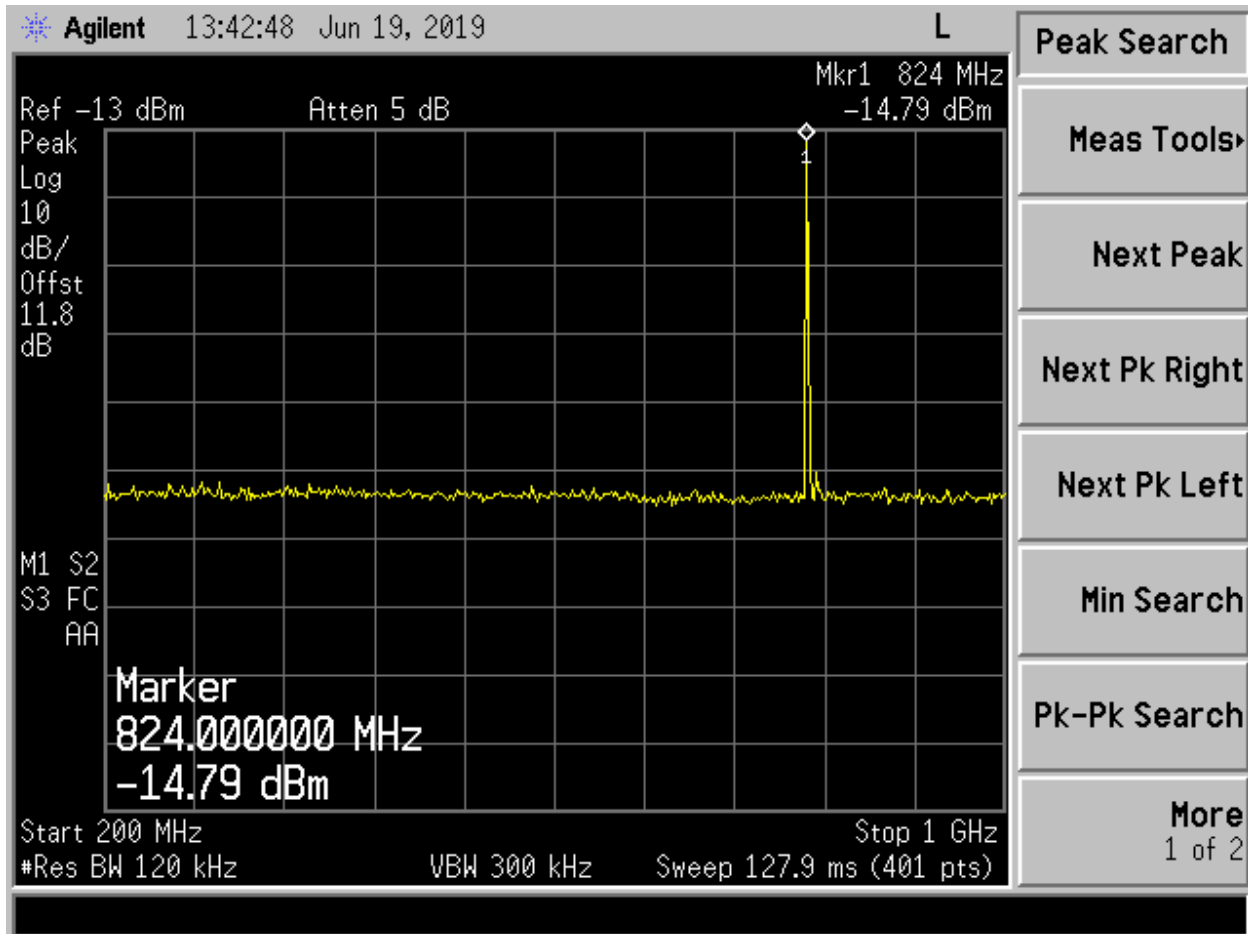


Figure 229. 824 MHz Horizontal 200 MHz - 1 GHz

U.S. Tech Test Report:
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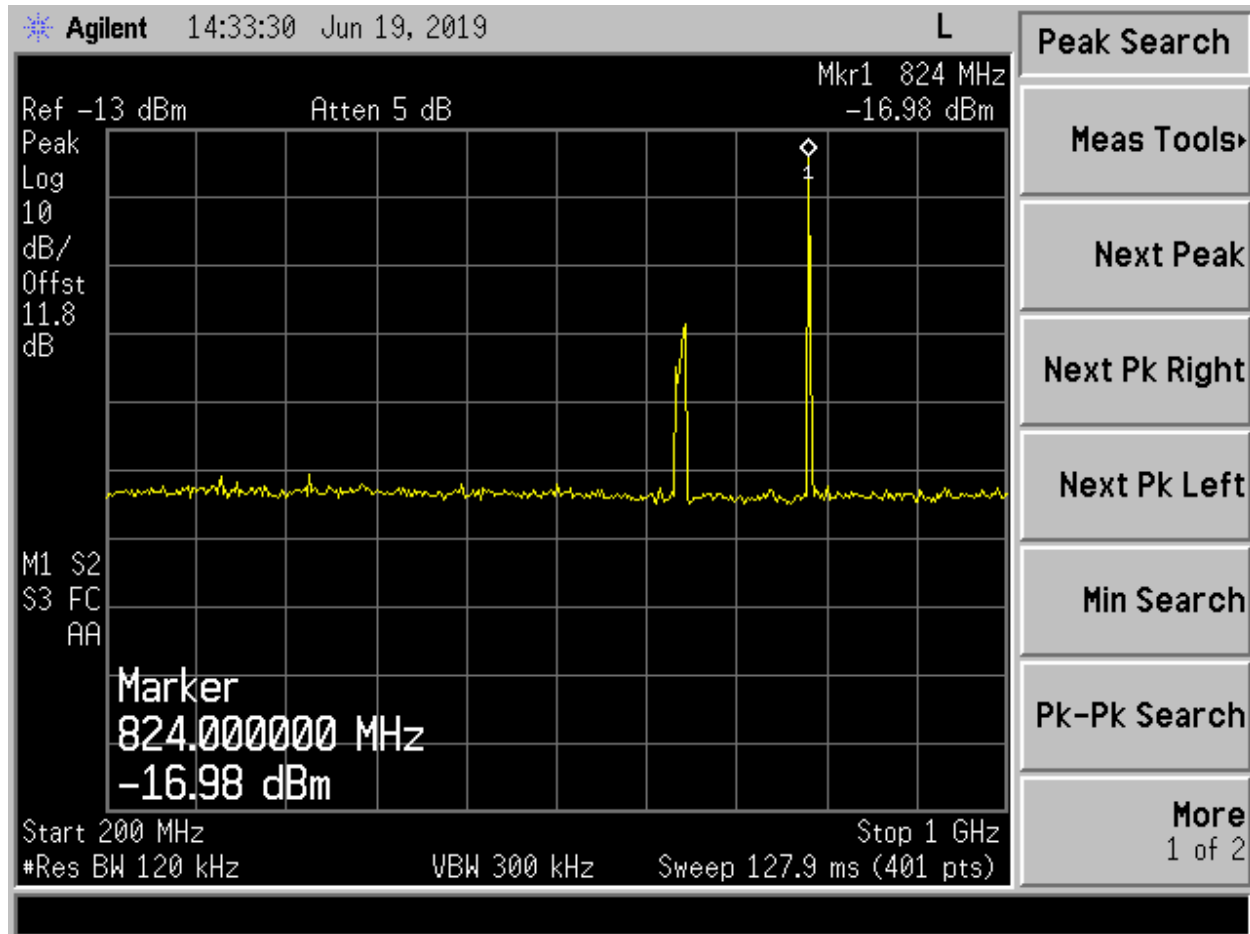


Figure 230. 824 MHz Vertical, 200 MHz – 1 GHz

U.S. Tech Test Report:
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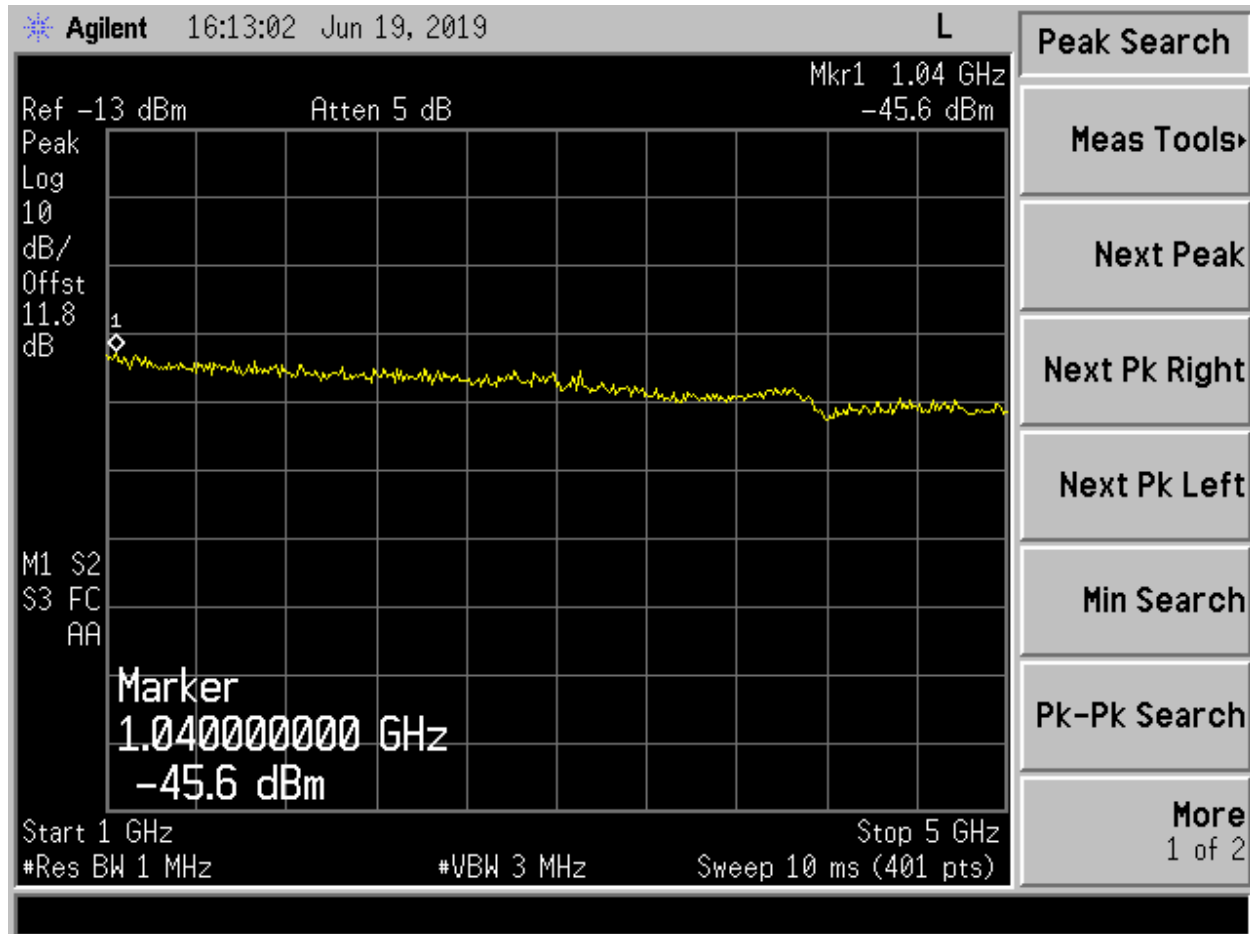


Figure 231. 824 MHz Horizontal, 1 – 5 GHz

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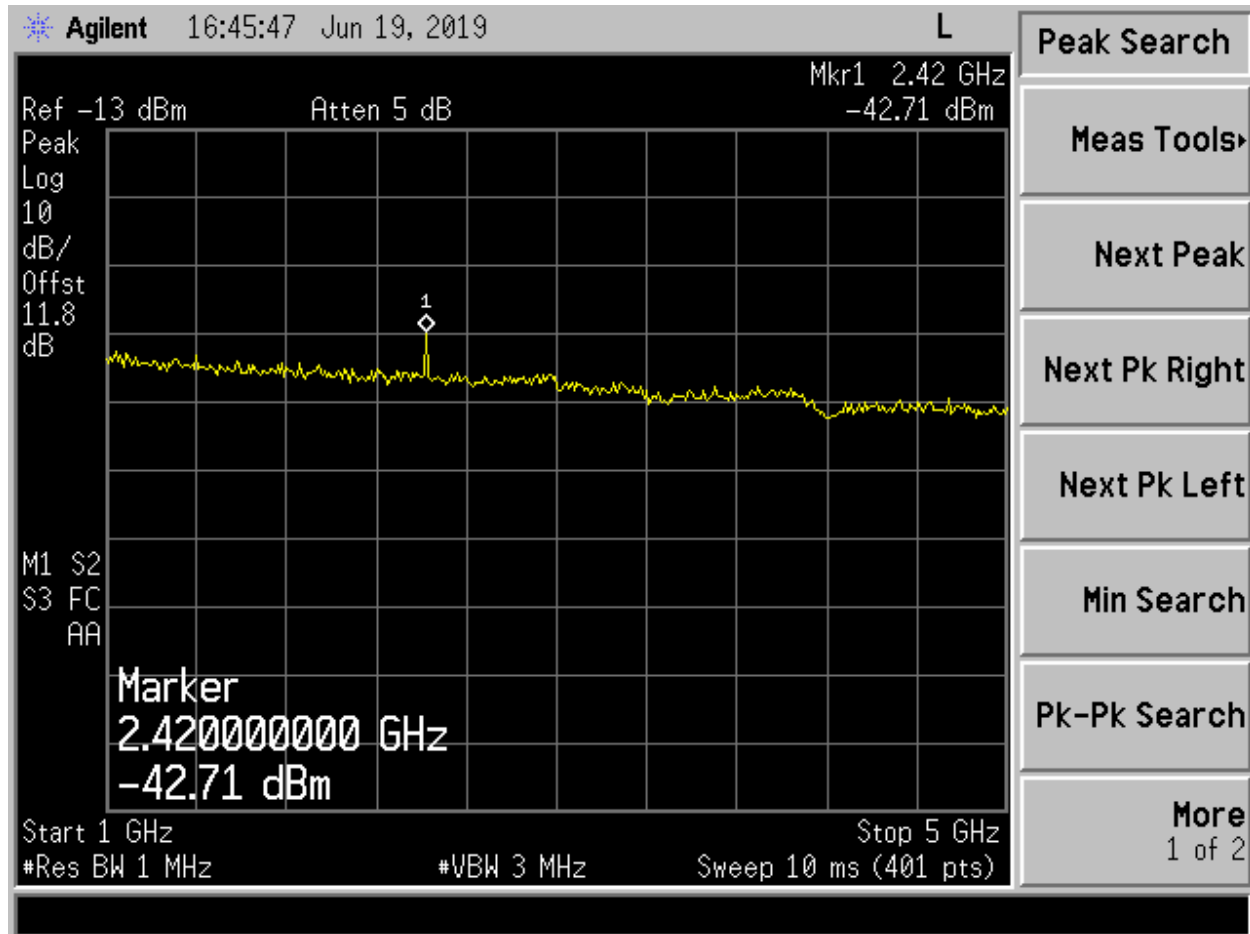


Figure 232. 824 MHz Vertical, 1 – 5 GHz

2.12.2 Conducted Spurious Emissions Measurement (90.219(e)(4), RSS-131, 6.5)

The EUT was connected to a spectrum analyzer through a 20 dB attenuator. All cable and attenuator losses were input into the spectrum analyzer as a combination of reference level offset and correction factors as needed to ensure the accuracy of the readings obtained.

A CW signal was used to set the center frequency of the transmitter. The RF input signal level was set to at least 0.2 dB below the ACG threshold. The RBW was set to 100 KHz for measurements below 1 GHz and 1 MHz for measurements above 1 GHz. The VBW was 3 times the RBW.

Limit = -13 dBm (Display line set to represent the limit)

Emissions were investigated from 30 MHz to the 10th harmonic of the applicable frequency band of concern. The following plots show the worst-case measurements.

2.12.2.1 VHF Conducted Spurious Emissions

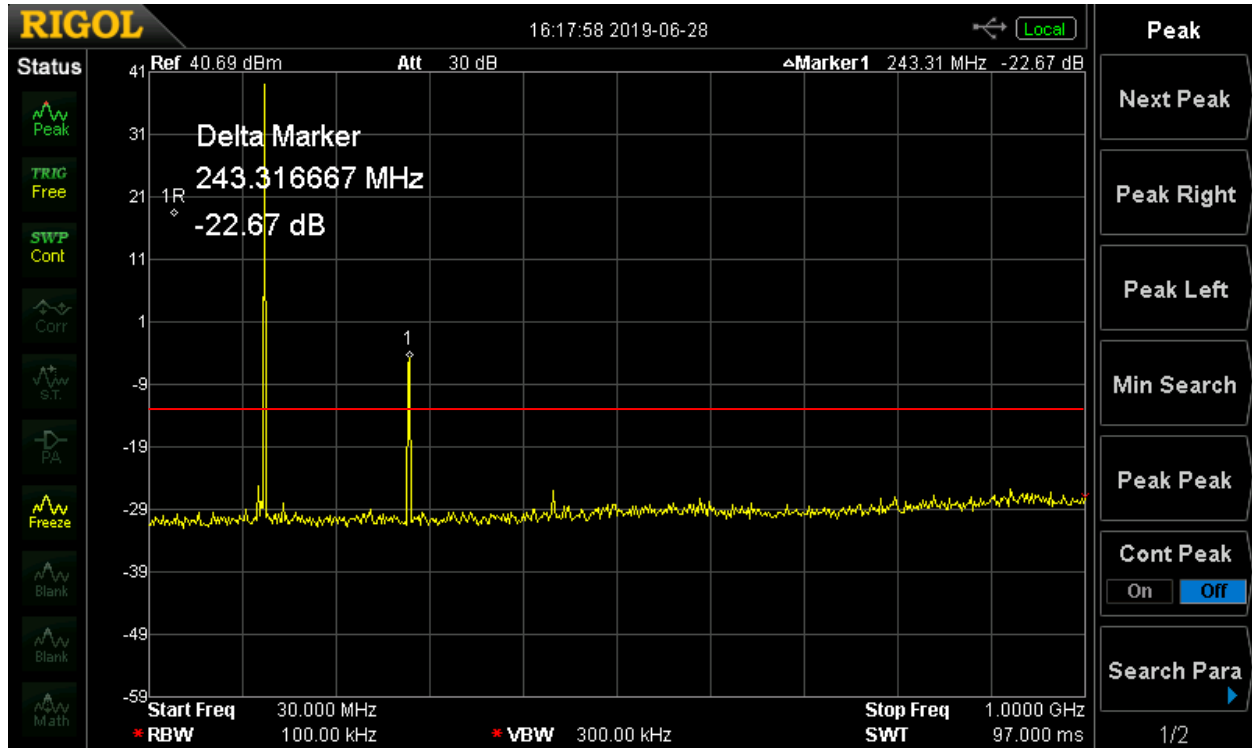


Figure 233. 150 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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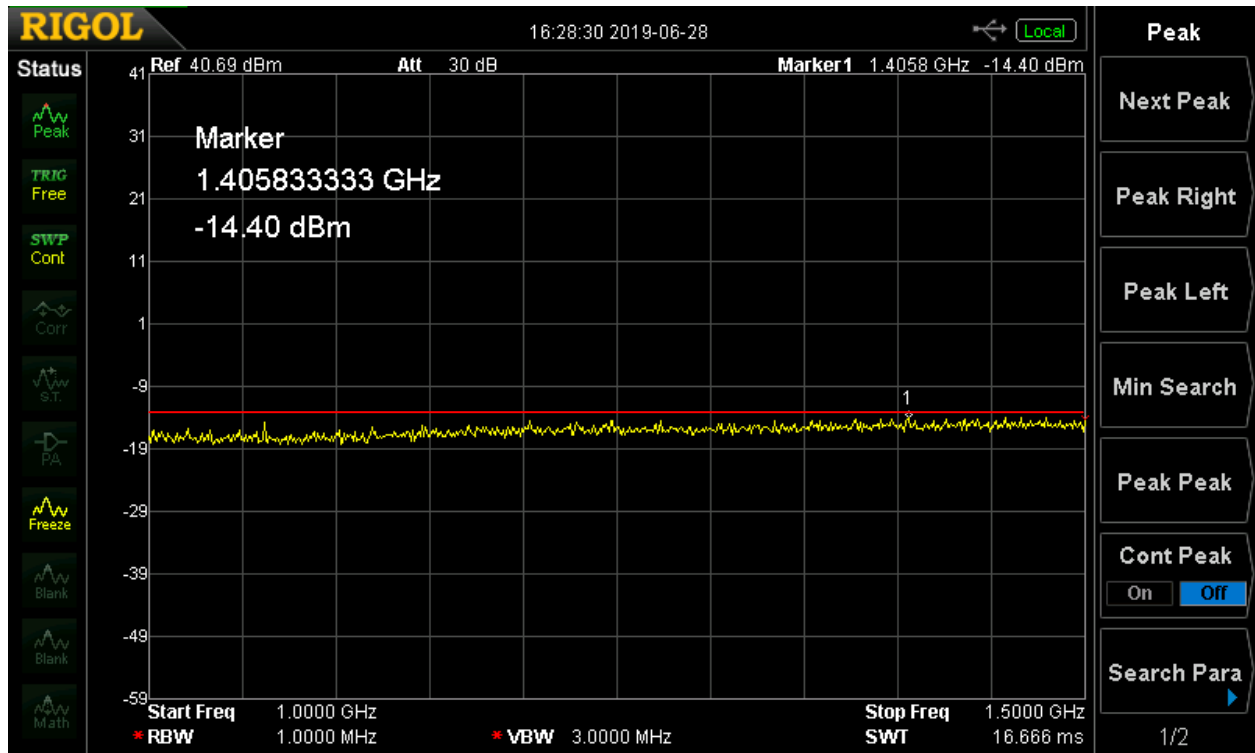


Figure 234. 150 MHz, above 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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FCC ID:
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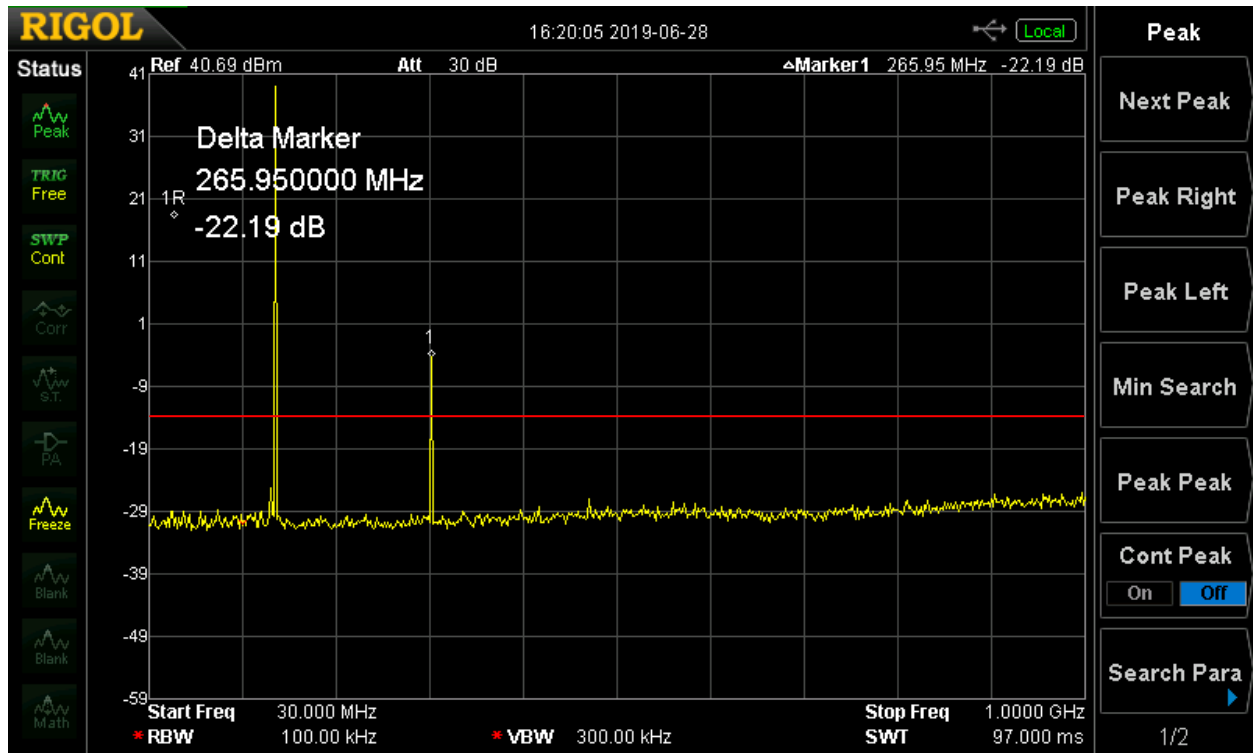


Figure 235. 162 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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FCC ID:
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Customer:
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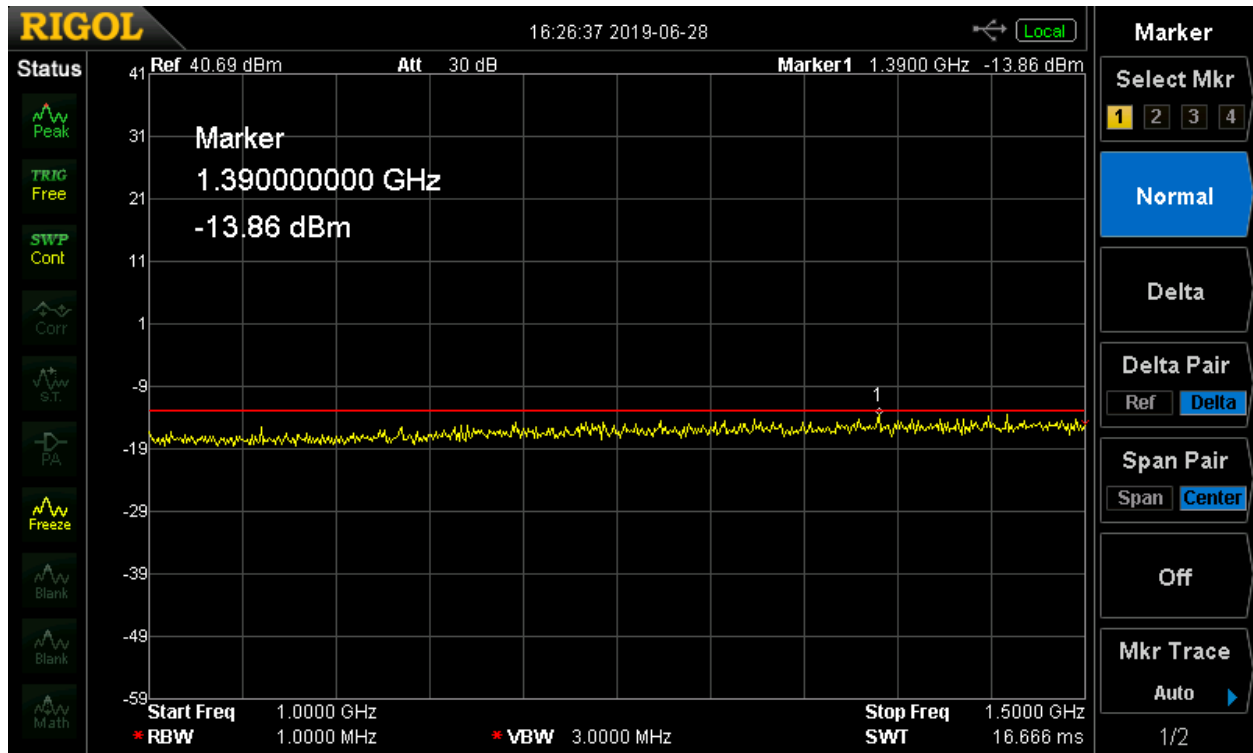


Figure 236. 162 MHz, above 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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FCC ID:
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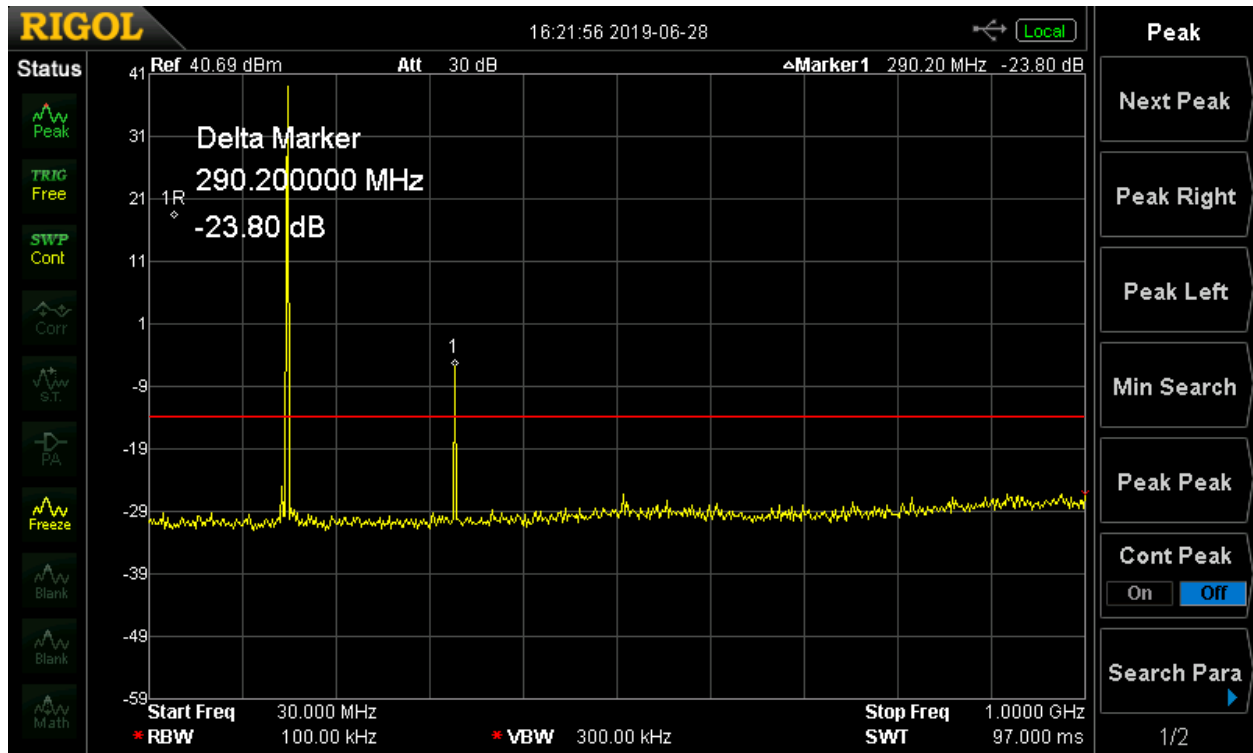


Figure 237. 174 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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FCC ID:
IC:
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Customer:
Model:

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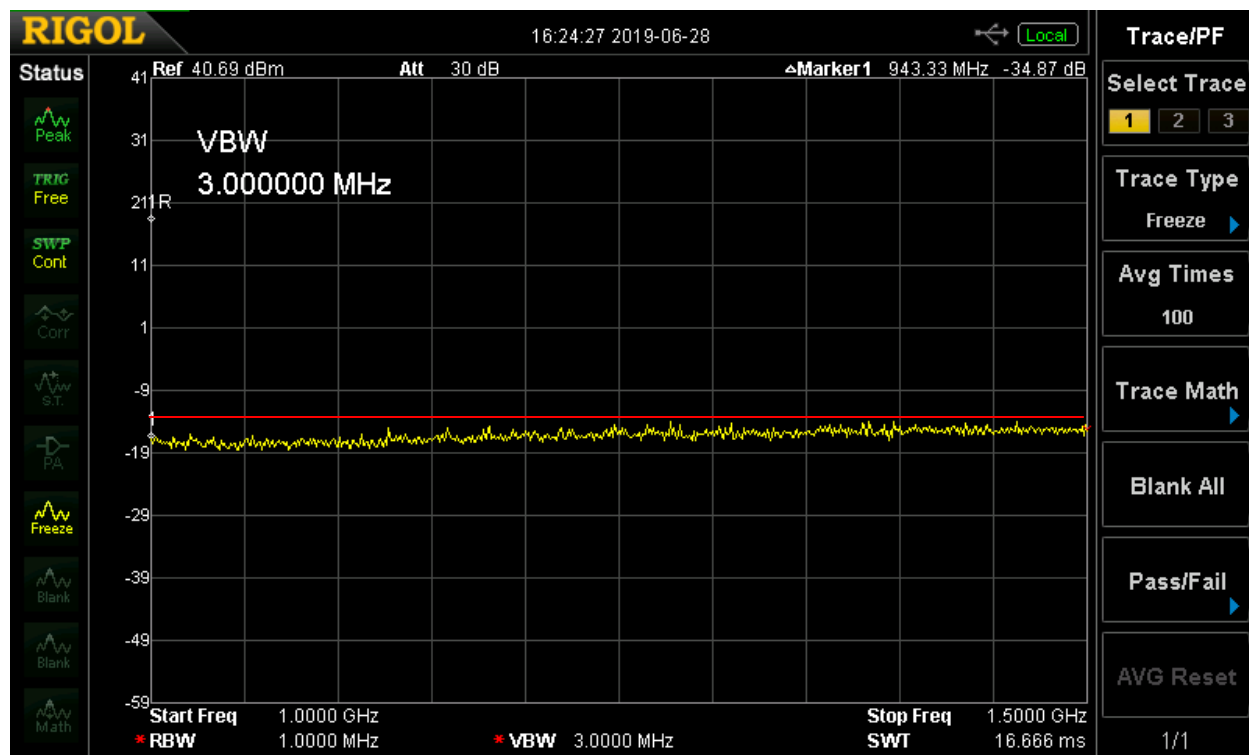


Figure 238. 174 MHz, above 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

2.12.2.2 UHF Conducted Spurious Emissions

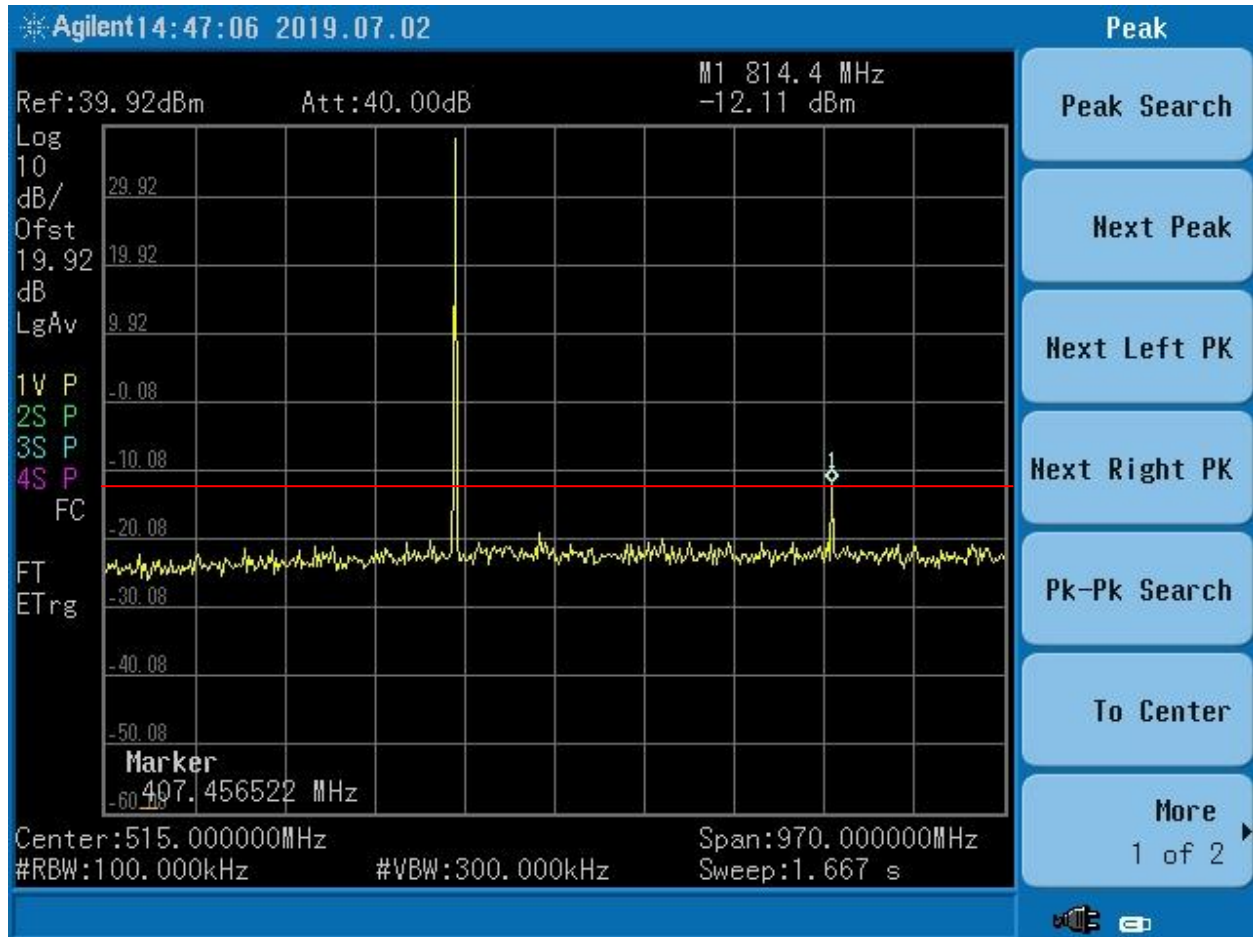


Figure 239. 407 MHz, below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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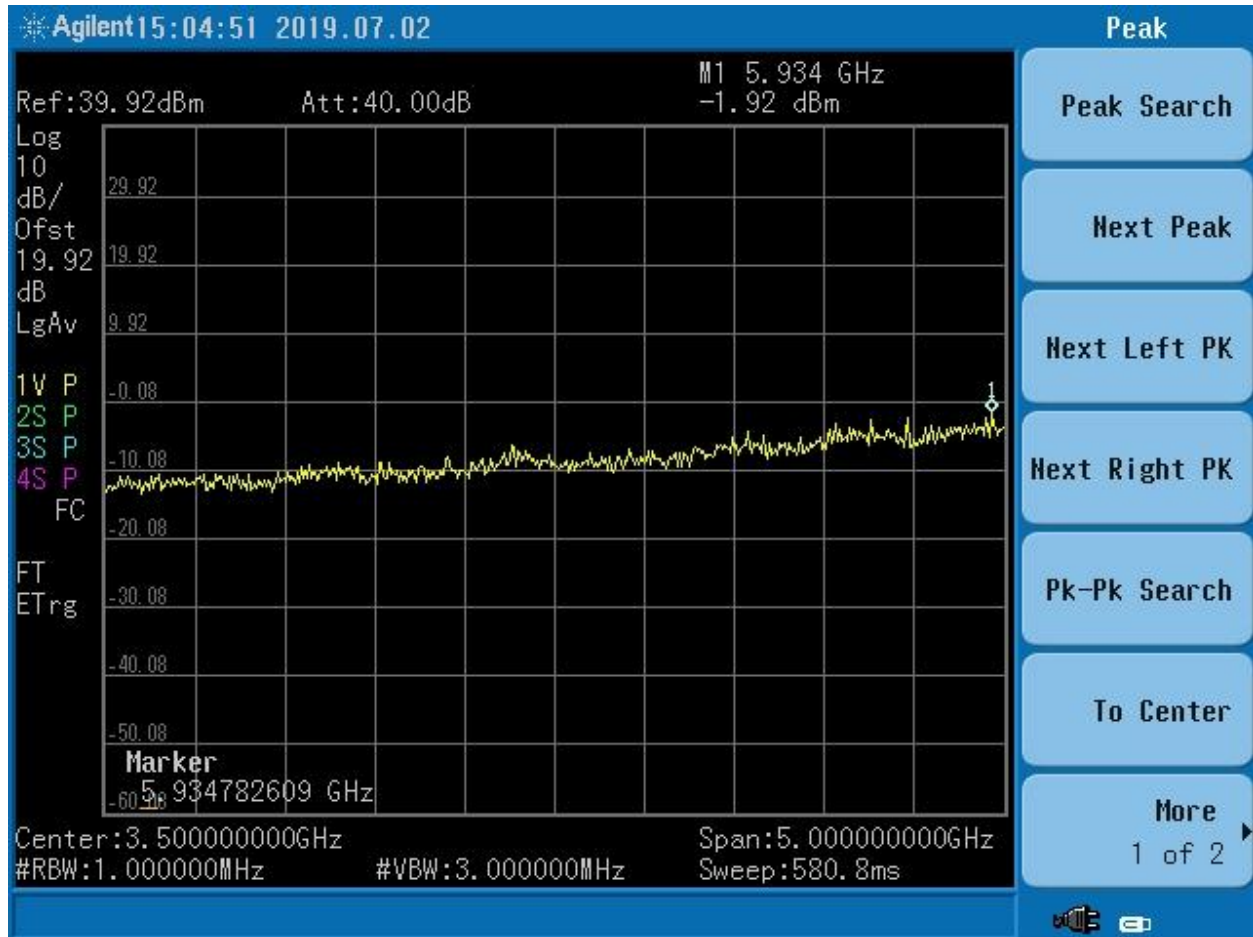


Figure 240. 407 MHz, 1 – 6 GHz

Note: All emissions other than fundamental and harmonics are below the limit.
Note: Noise floor emissions seen only.

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Model:

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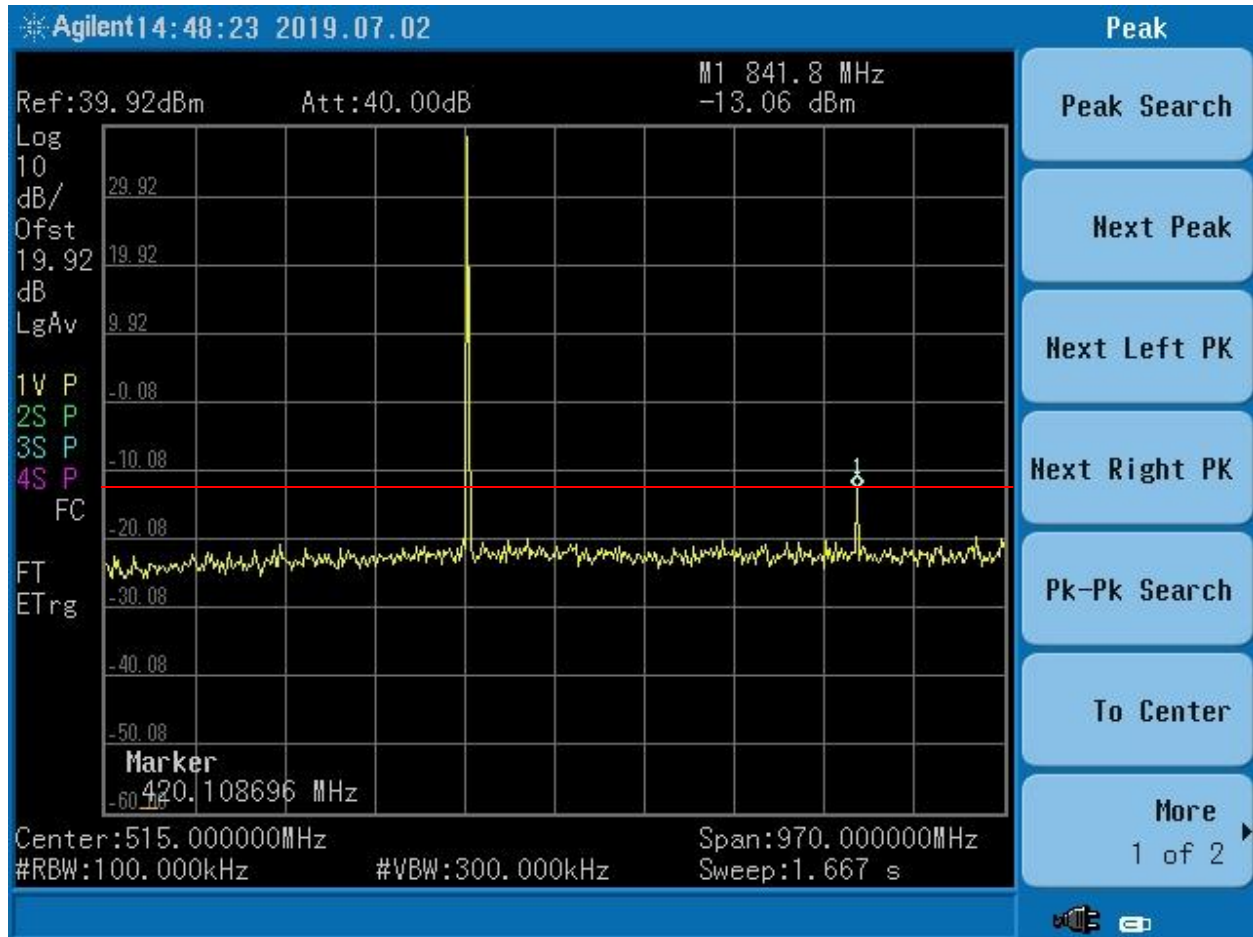


Figure 241. 421 MHz, below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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FCC ID:
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Customer:
Model:

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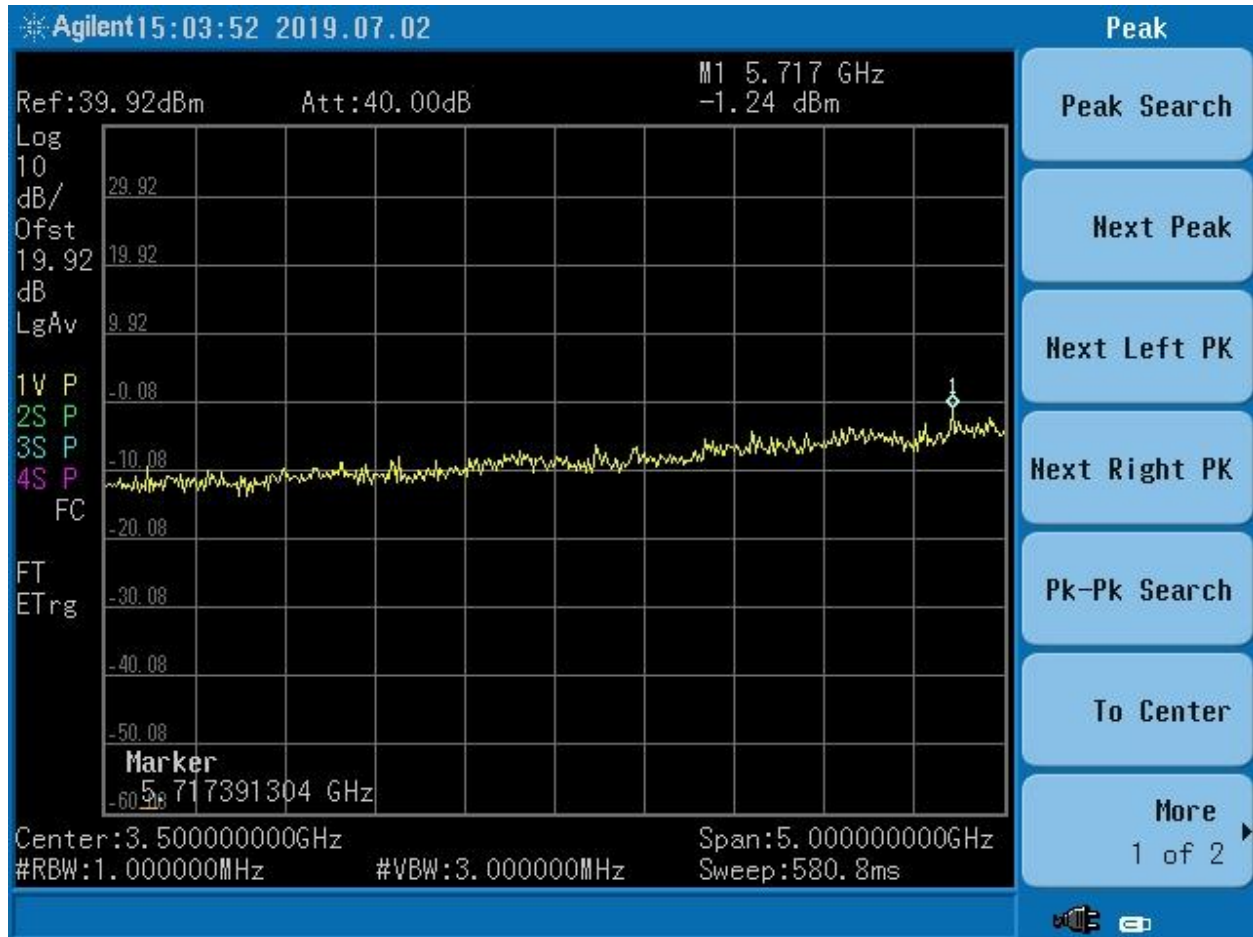


Figure 242. 421 MHz, 1 – 6 GHz

Note: All emissions other than fundamental and harmonics are below the limit.
Note: Noise floor emissions seen only.

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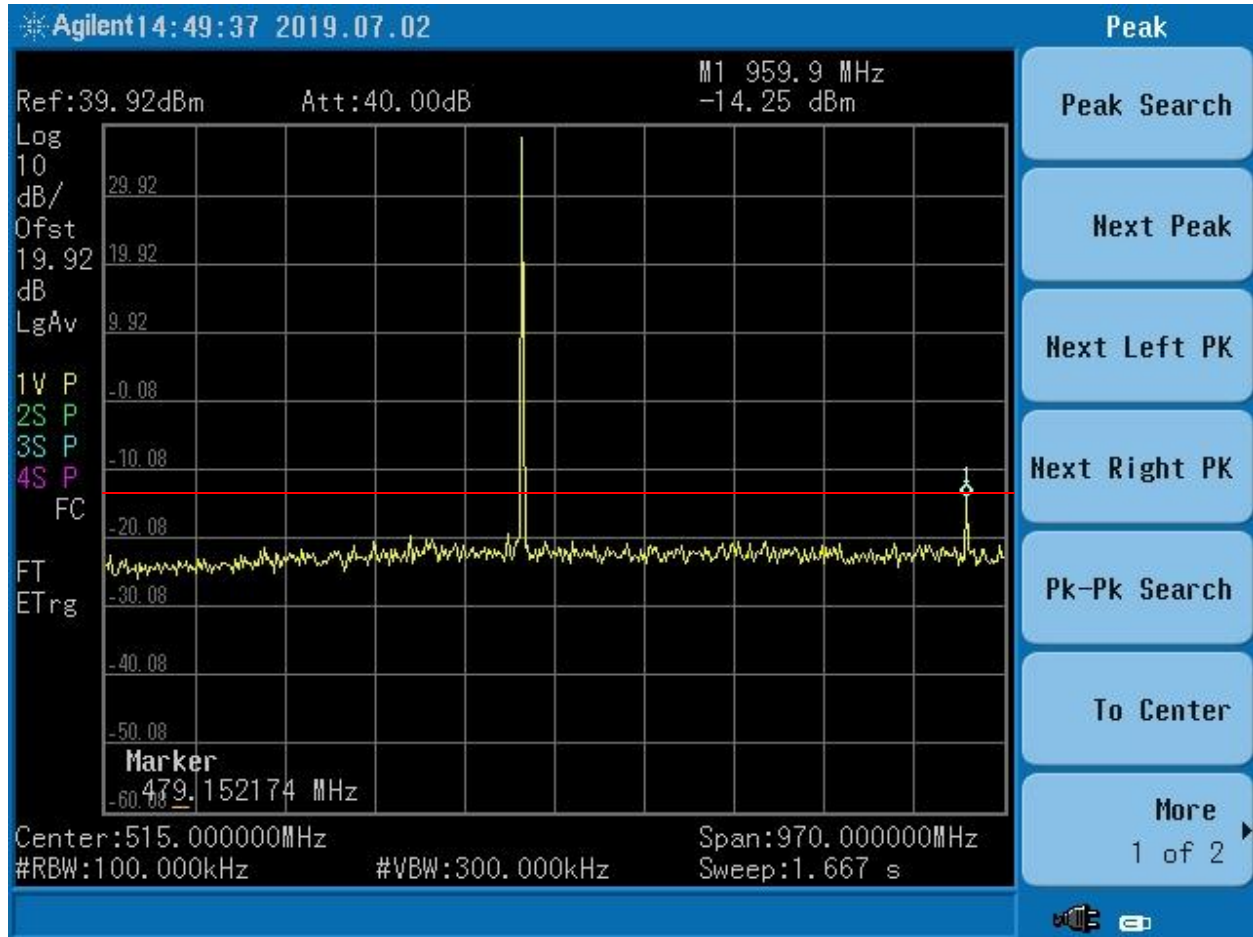


Figure 243. 480 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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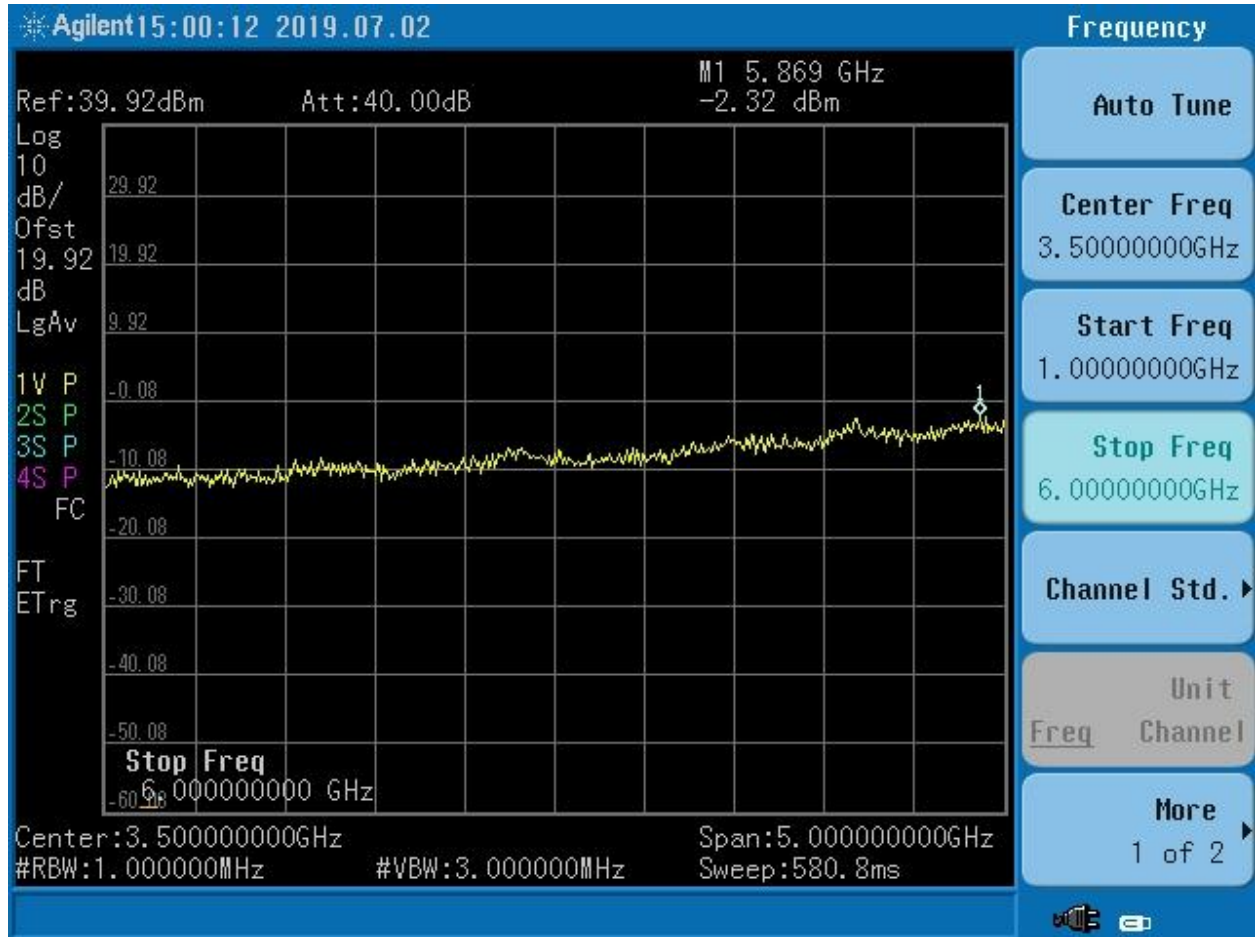


Figure 244. 480 MHz, 1 – 6 GHz

Note: All emissions other than fundamental and harmonics are below the limit.
Note: Noisefloor emissions seen only.

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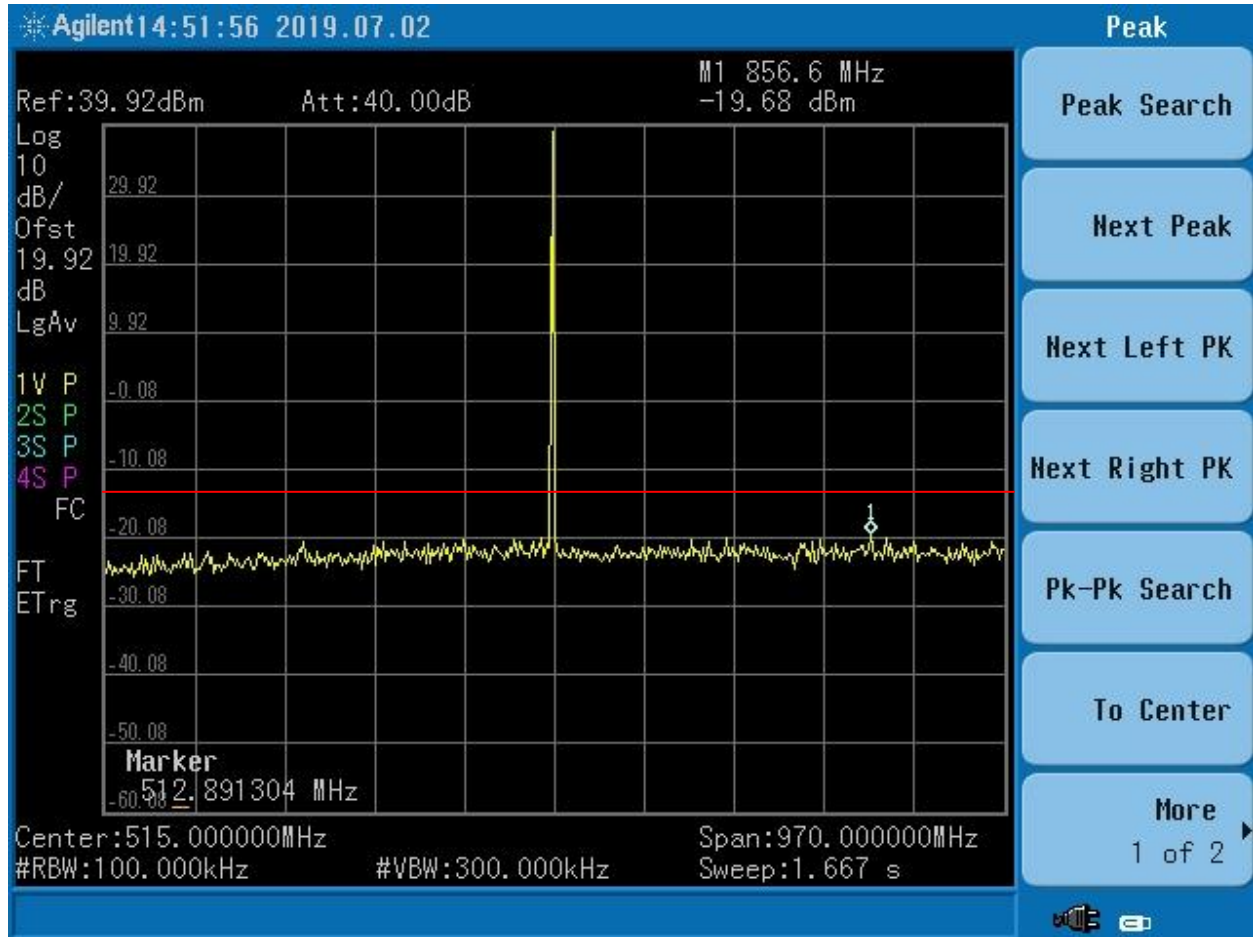


Figure 245. 512 MHz, below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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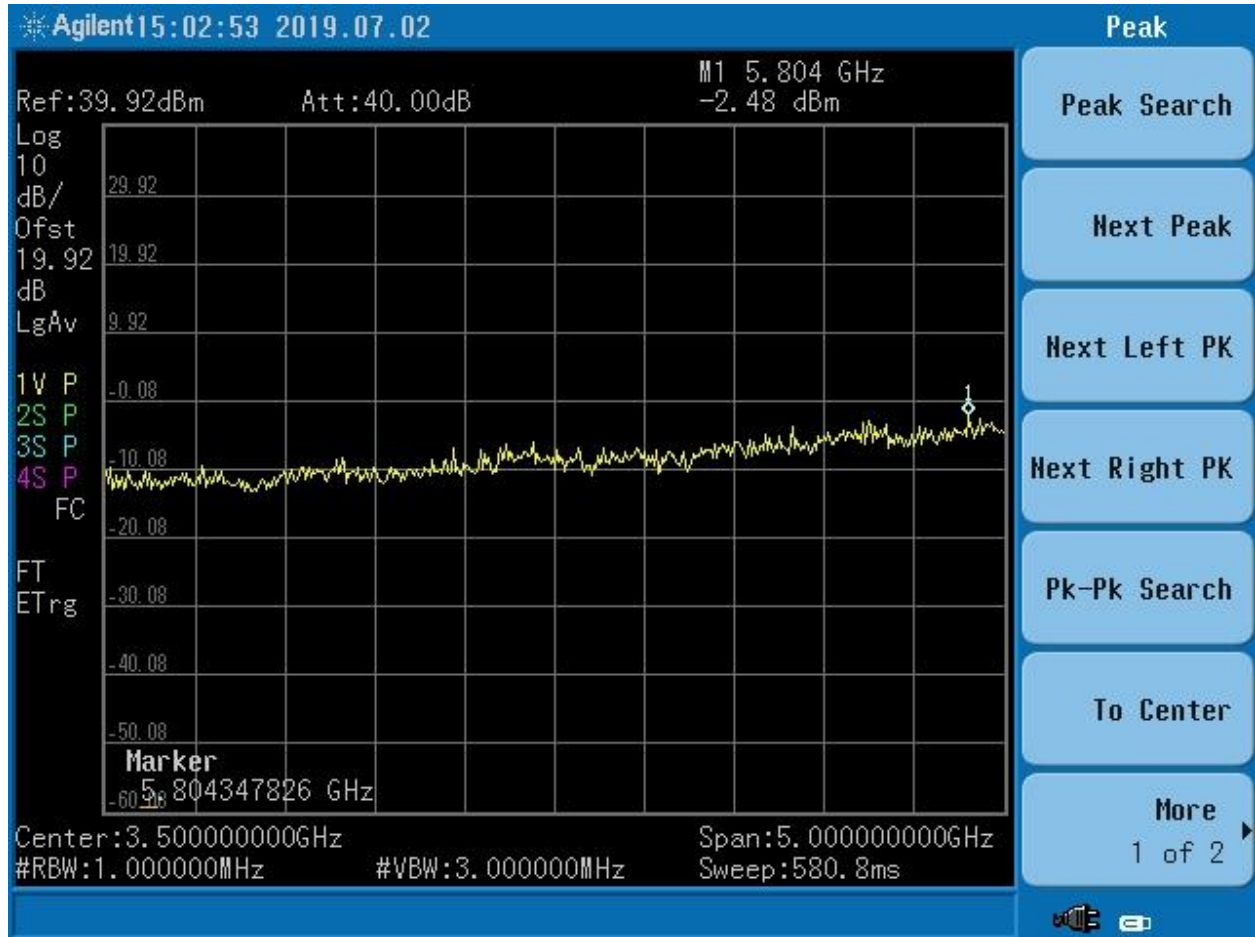


Figure 246. 512 MHz, 1 – 6 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

2.12.2.3 700 MHz Conducted Spurious Emissions

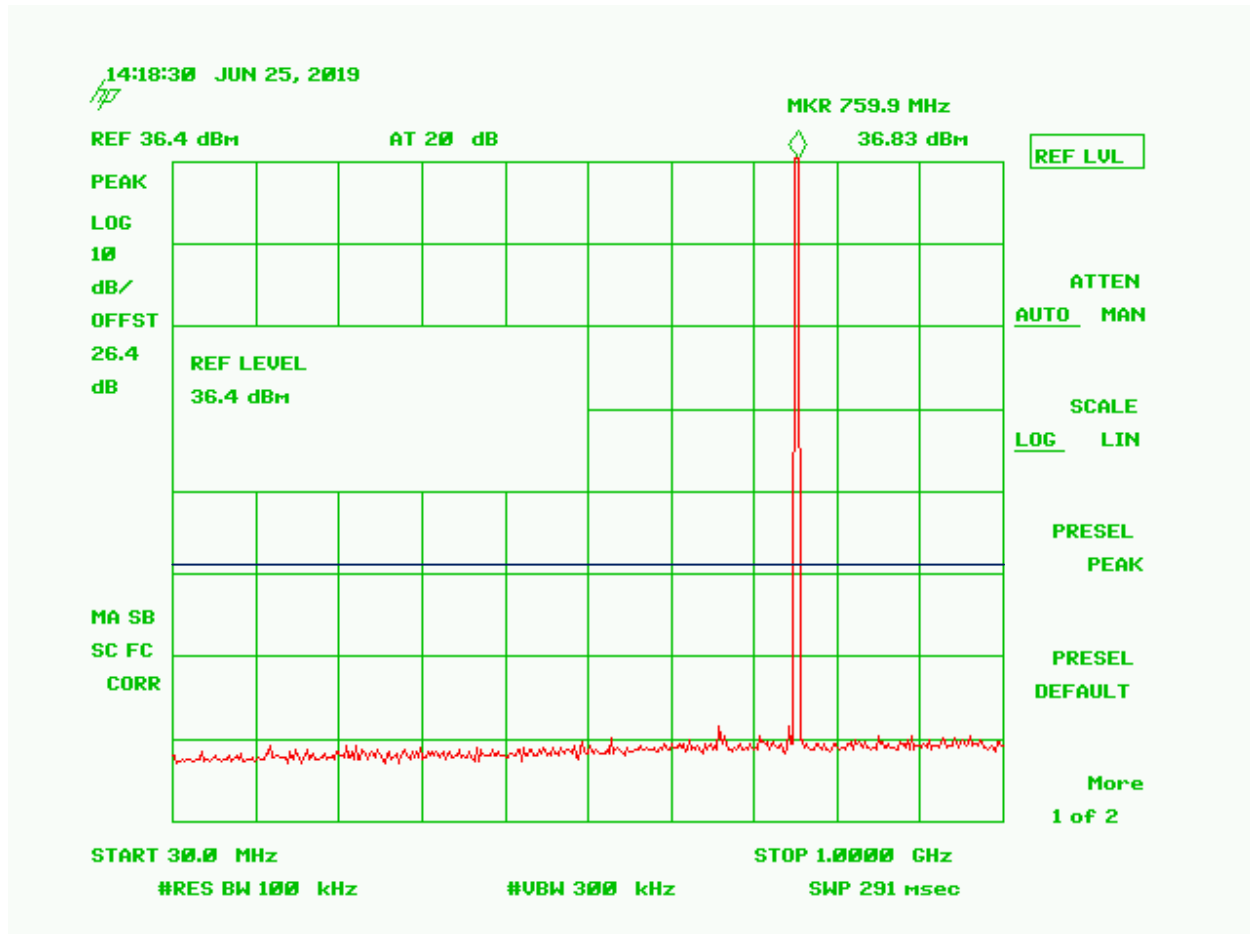


Figure 247. 758 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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Model:

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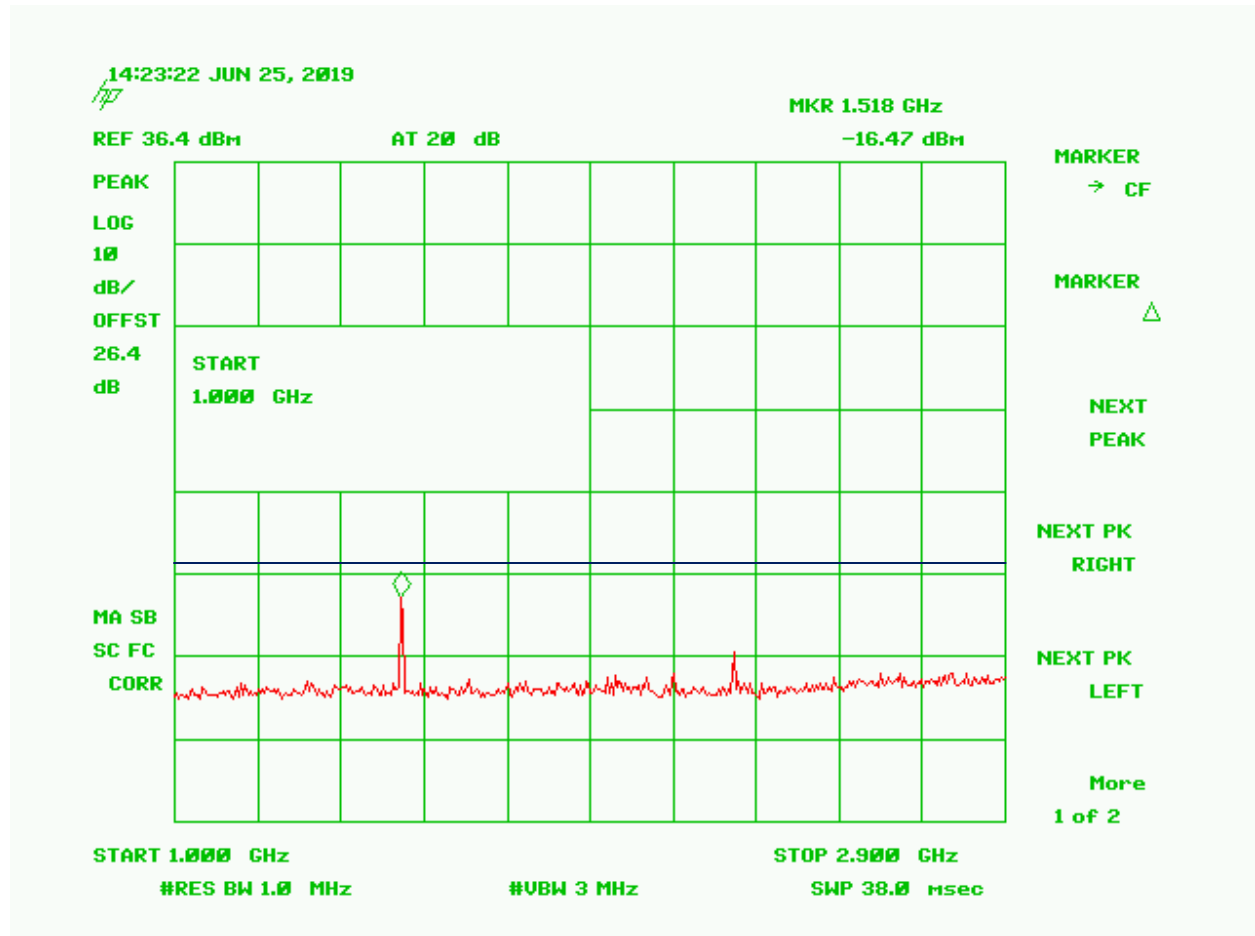


Figure 248. 758 MHz, 1 – 2.9 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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FCC ID:
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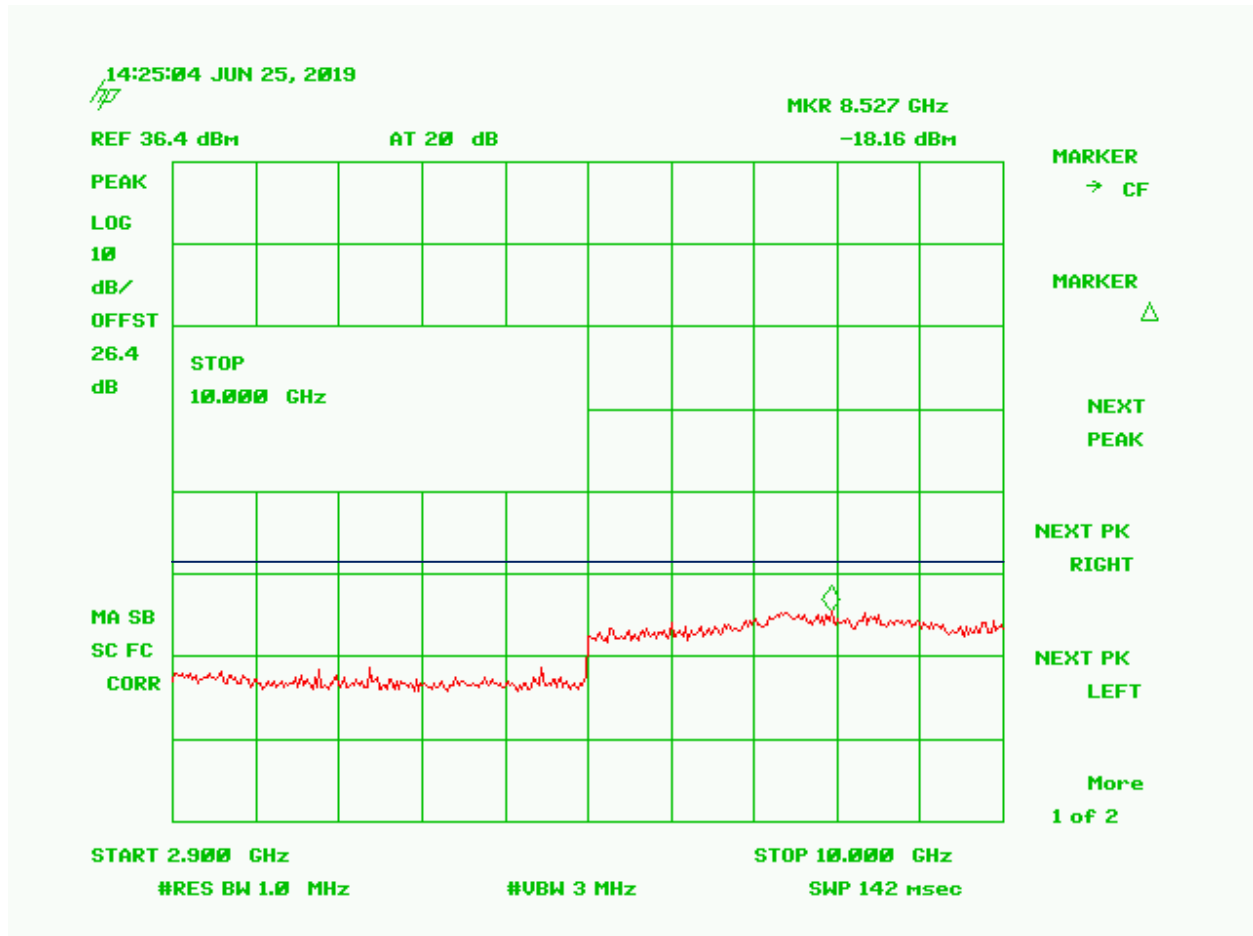


Figure 249. 758 MHz, 2.9 - 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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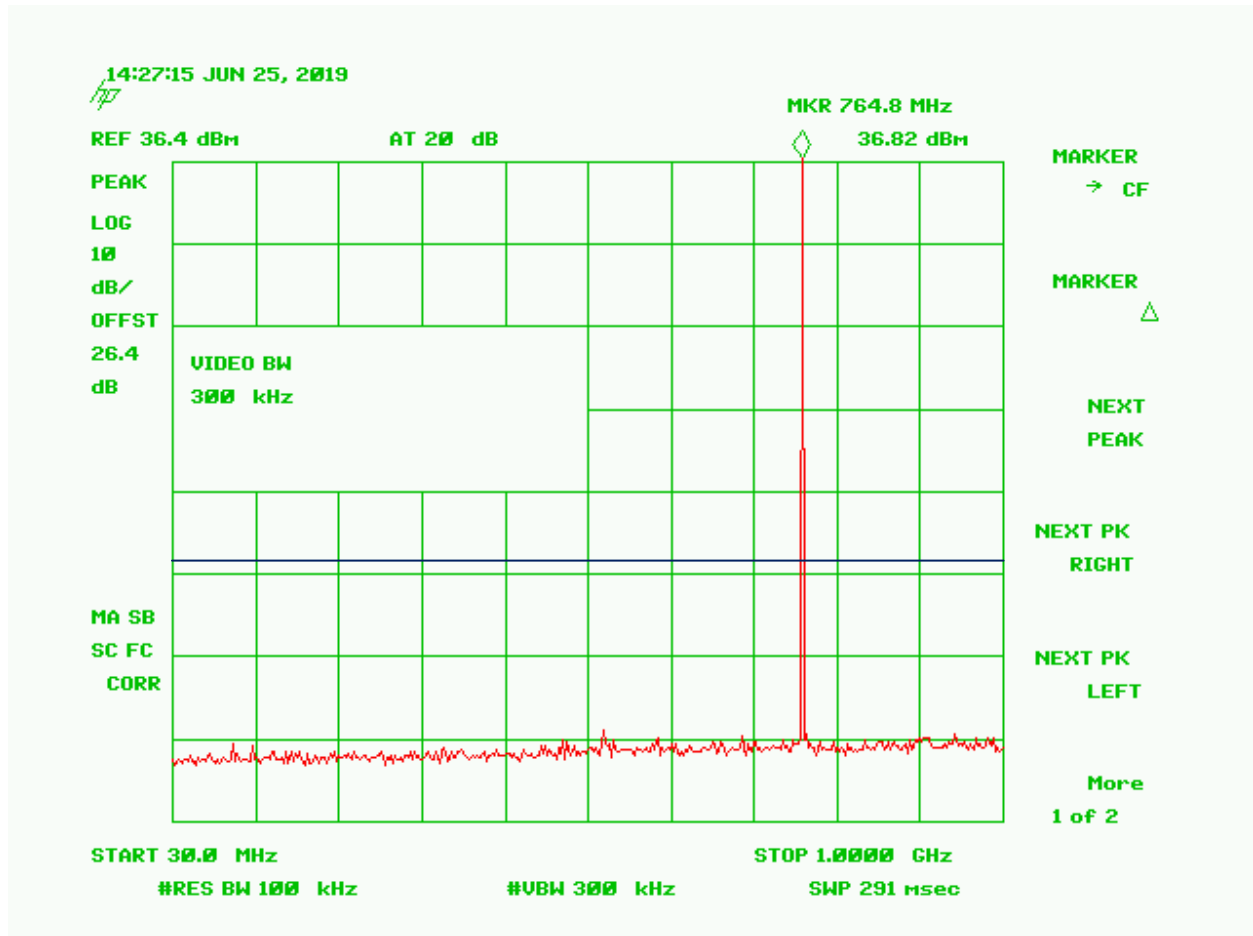
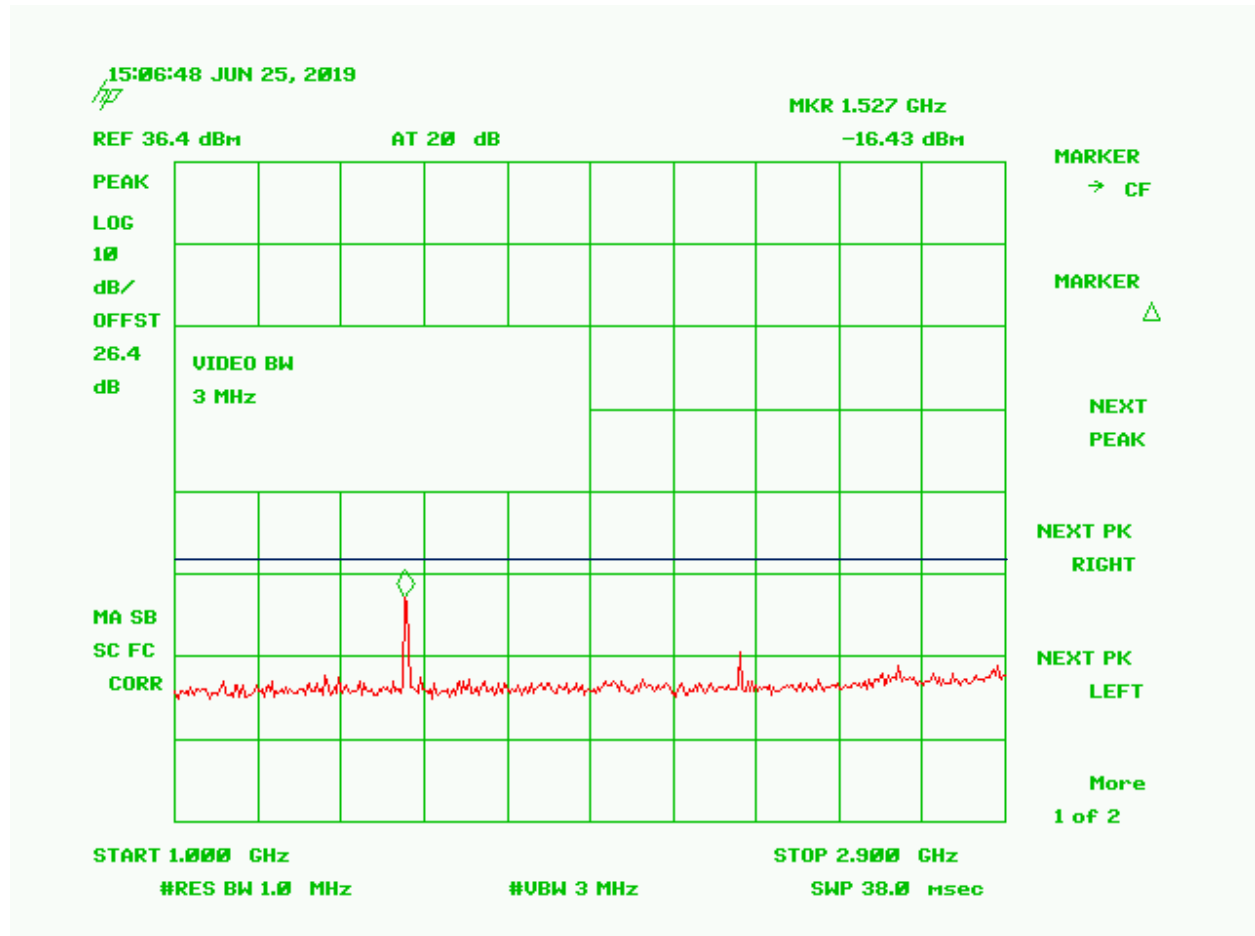


Figure 250. 763 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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Note: All emissions other than fundamental and harmonics are below the limit.

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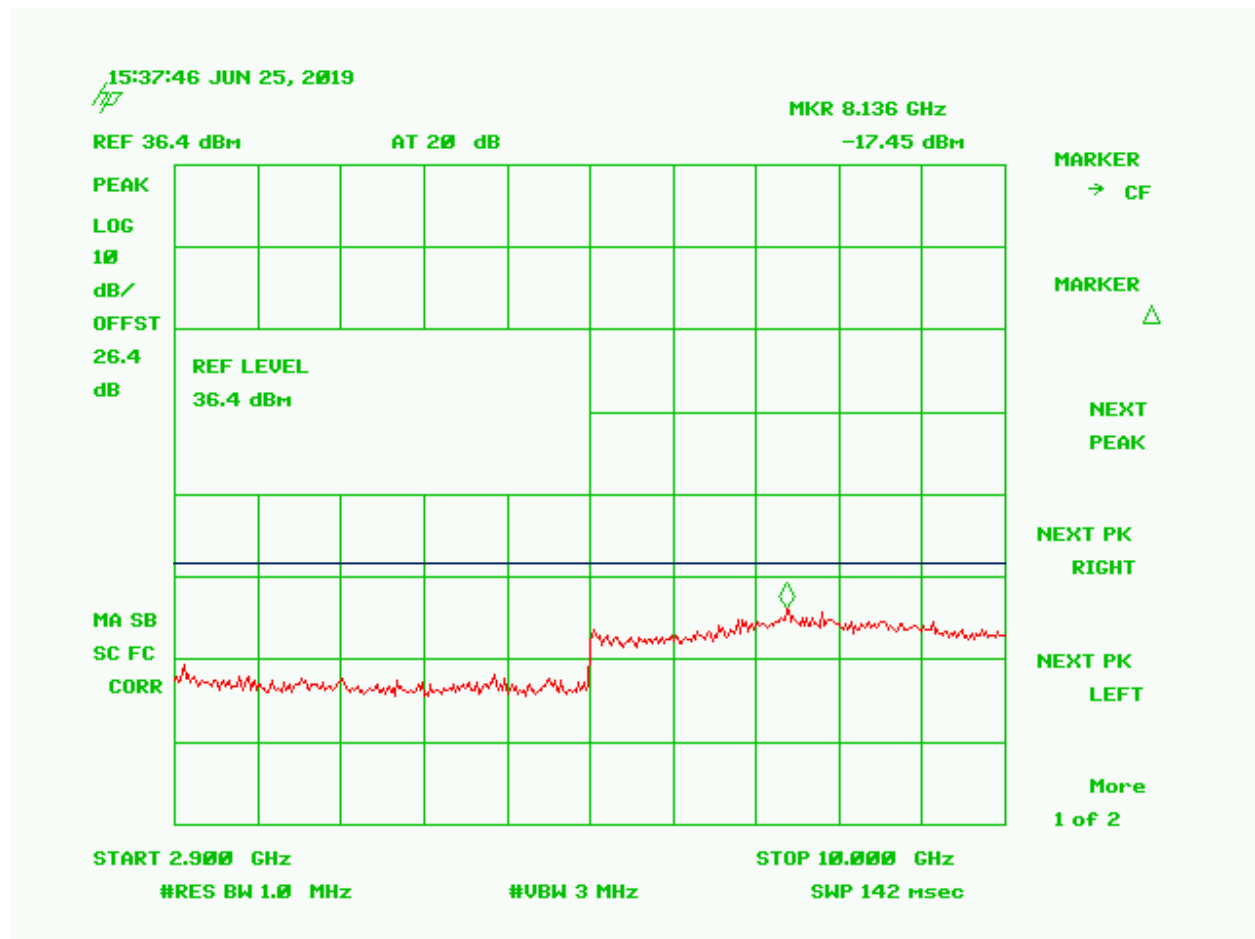


Figure 252. 763 MHz, 2.9 - 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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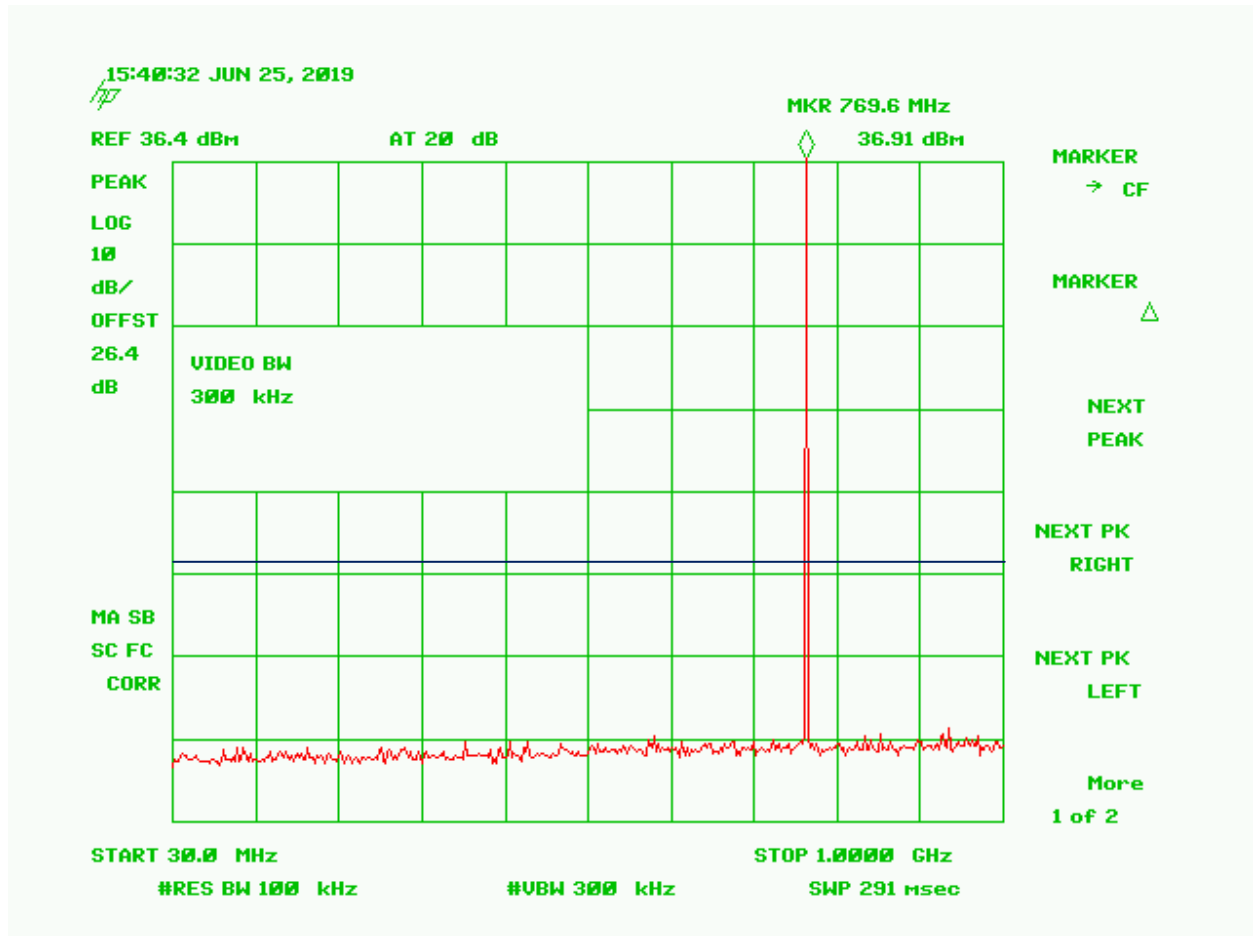


Figure 253. 768 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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FCC ID:
IC:
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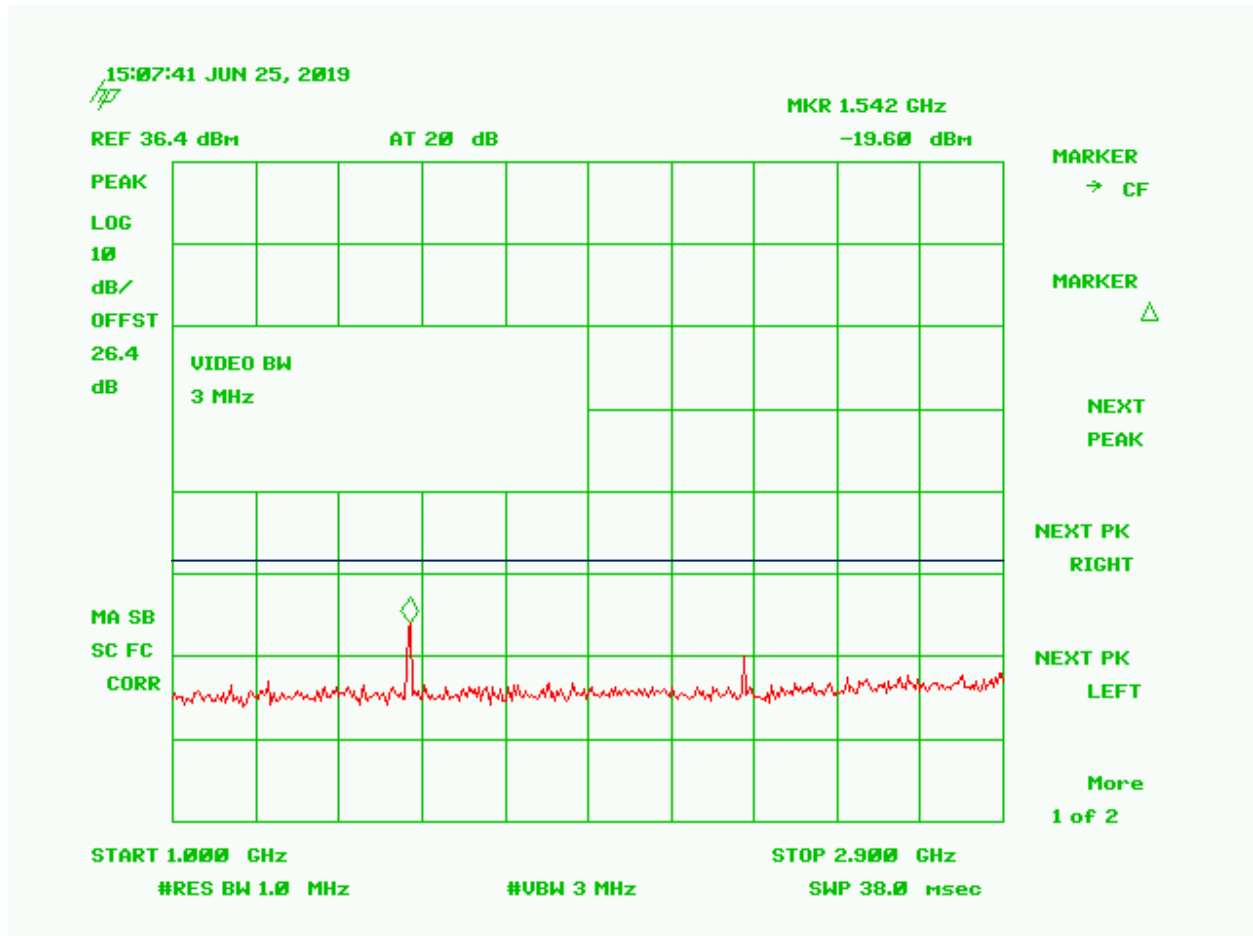


Figure 254. 768 MHz, 1 GHz – 2.9 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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FCC ID:
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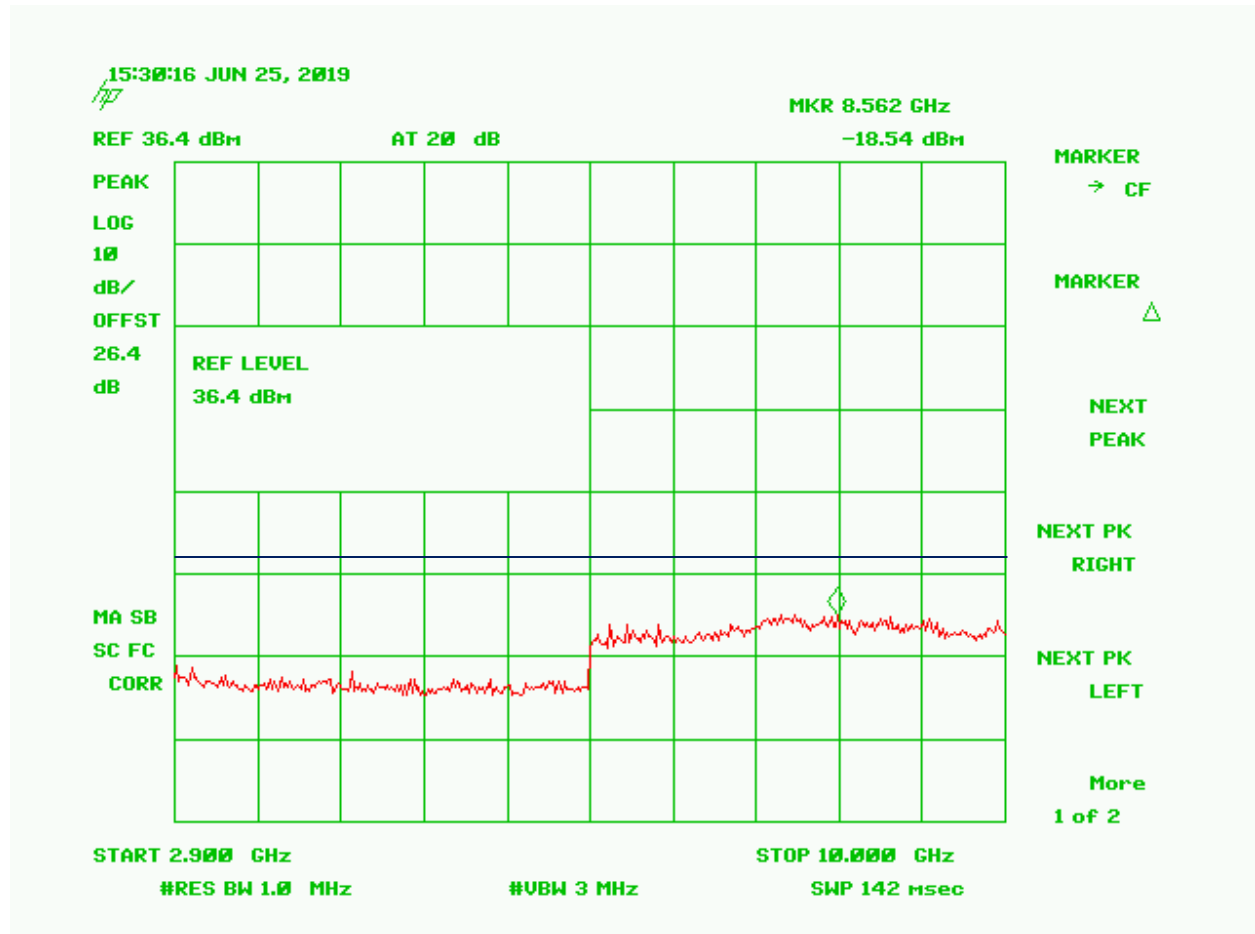


Figure 255. 768 MHz, 2.9 GHZ – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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FCC ID:
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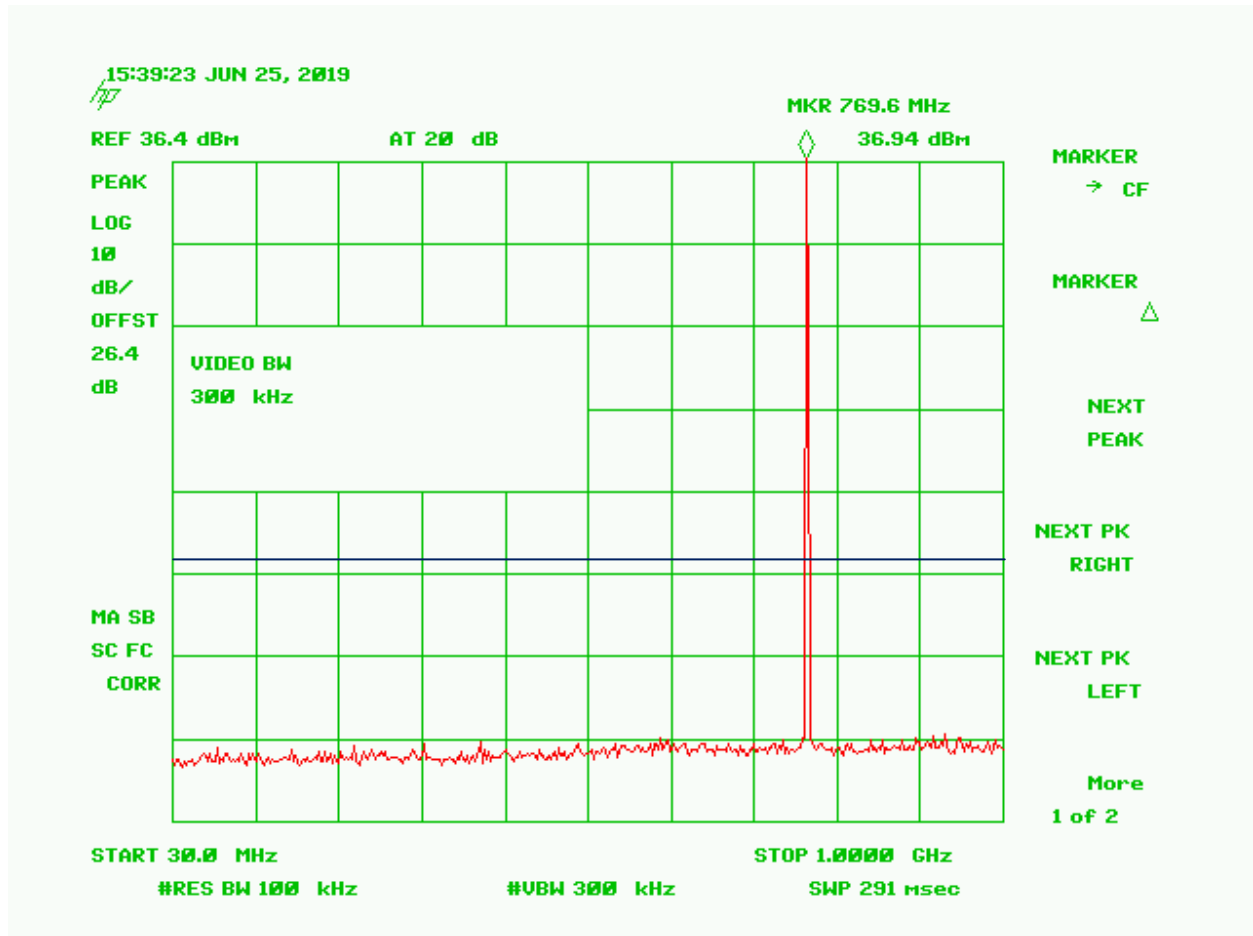


Figure 256. 769 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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 IC:
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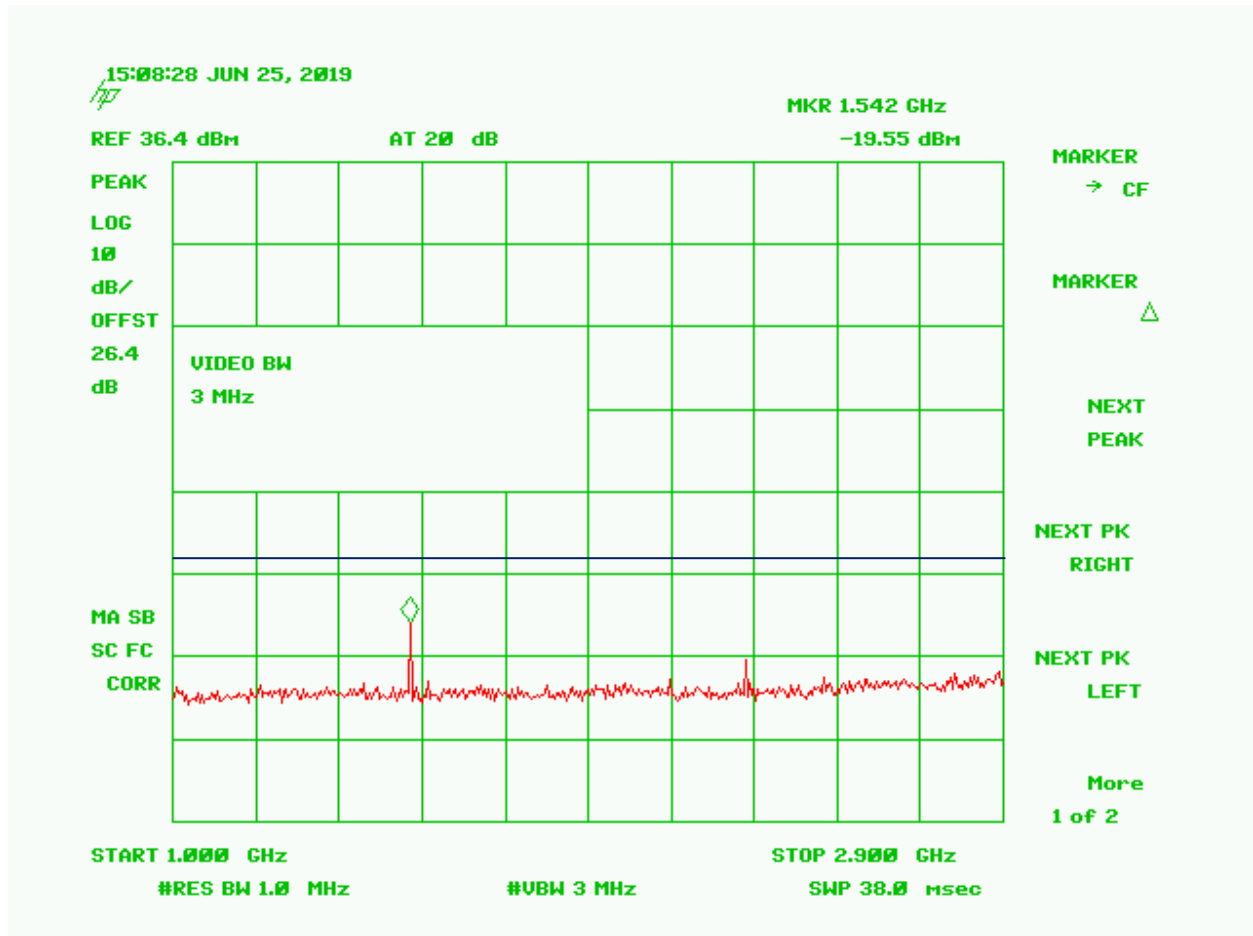


Figure 257. 769 MHz, 1 GHz – 2.9 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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 FCC ID:
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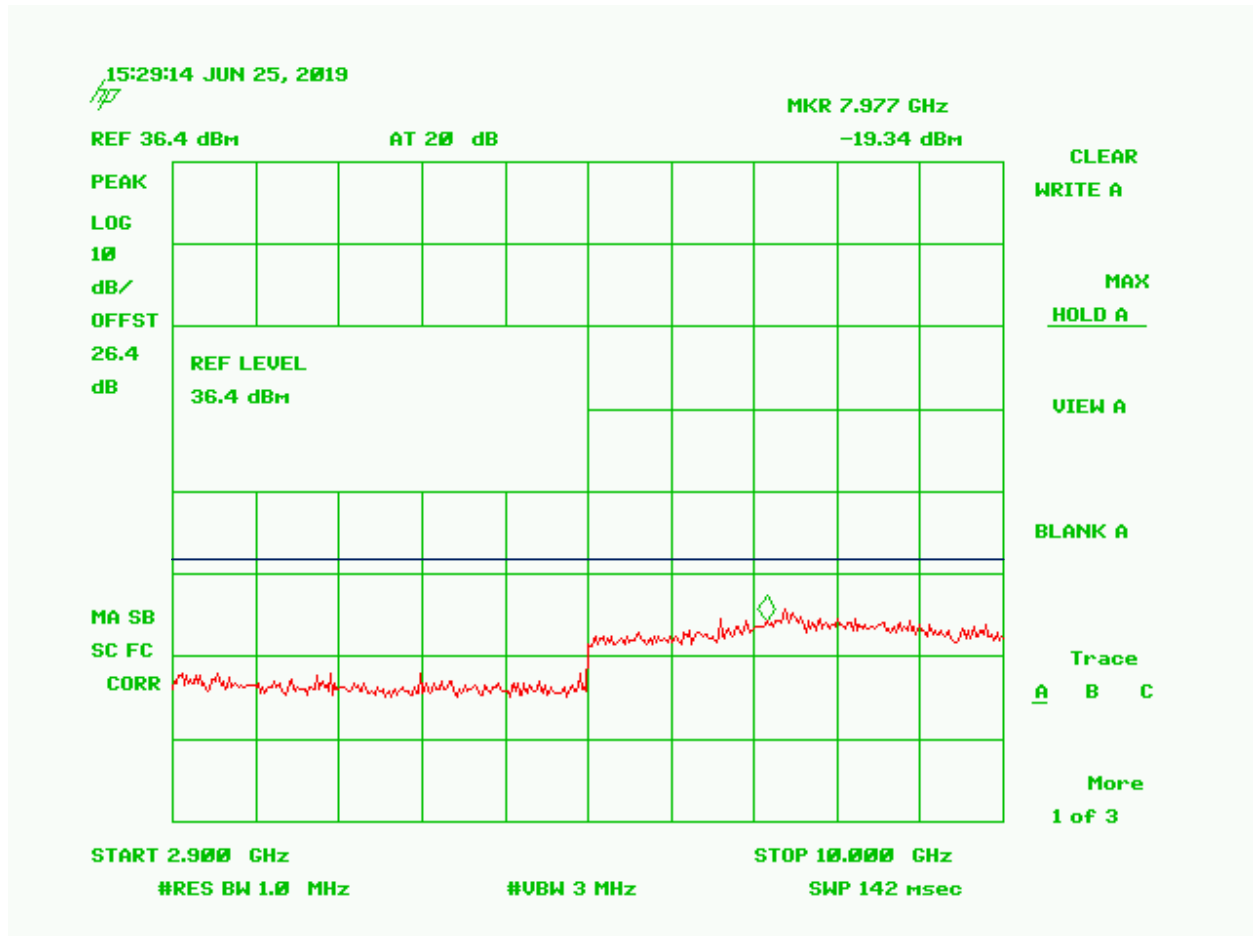


Figure 258. 769 MHz, 2.9 GHz – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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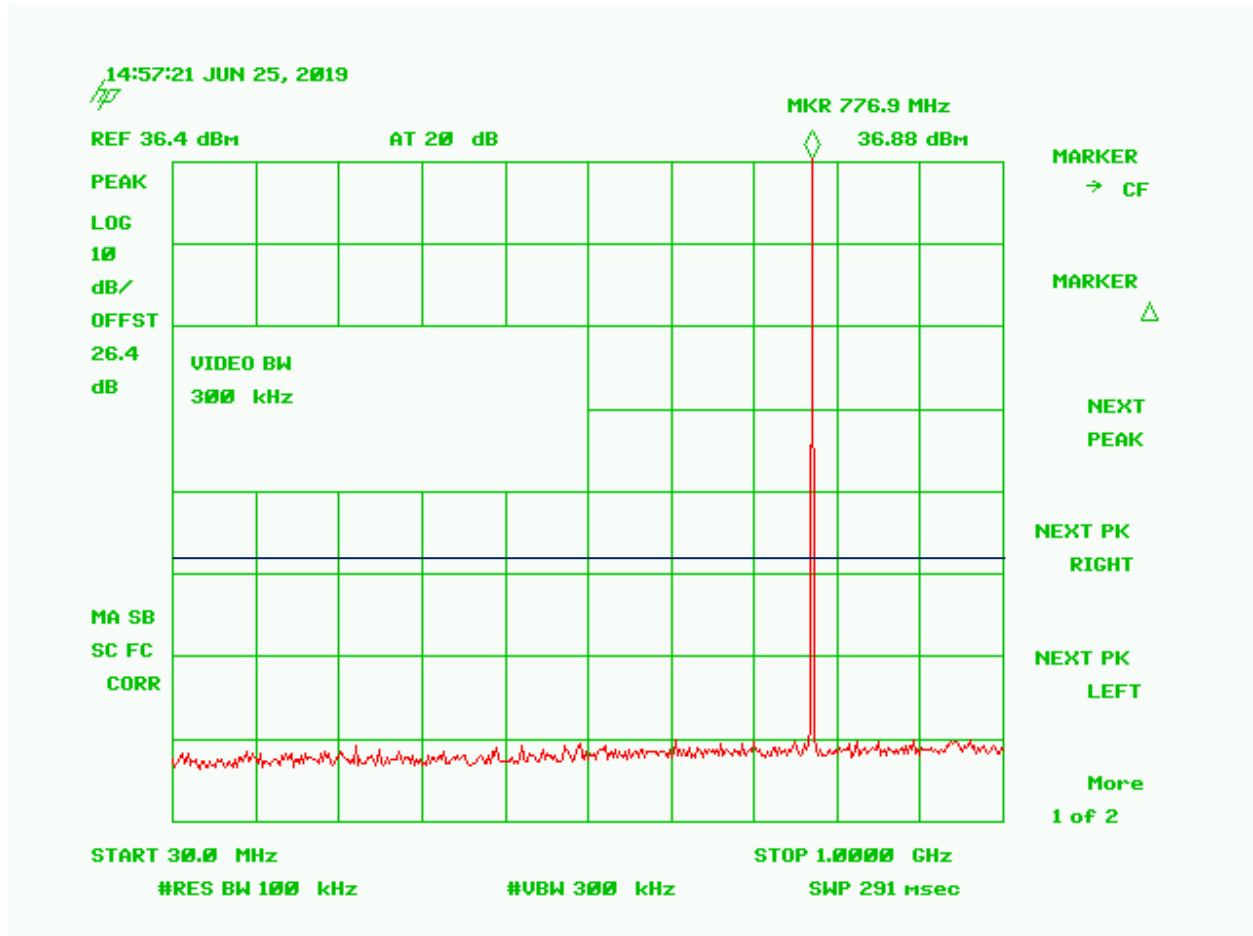


Figure 259. 775 MHz, below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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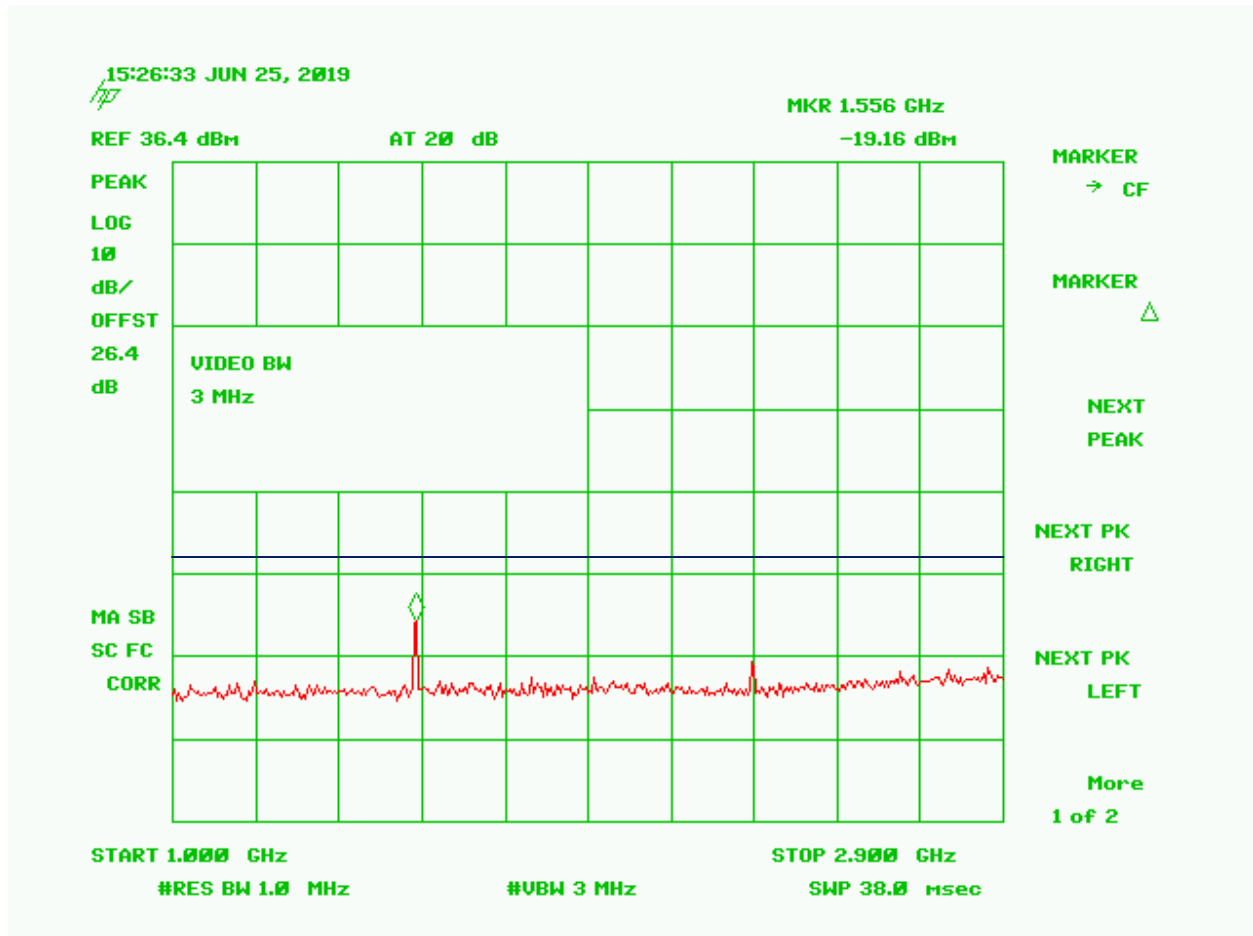


Figure 260. 775 MHz, 1 GHz – 2.9 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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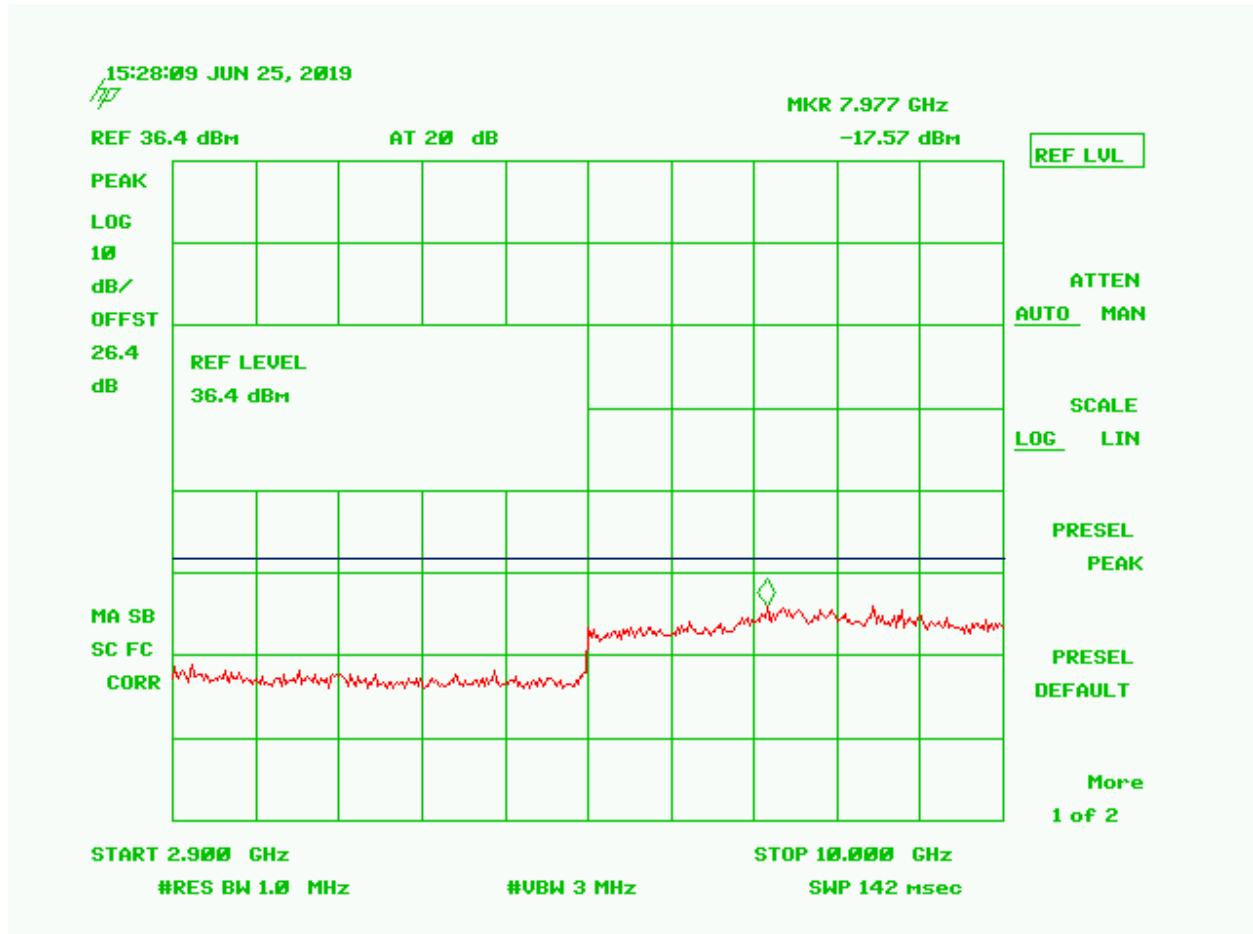


Figure 261. 775 MHz, 2.9 GHz – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

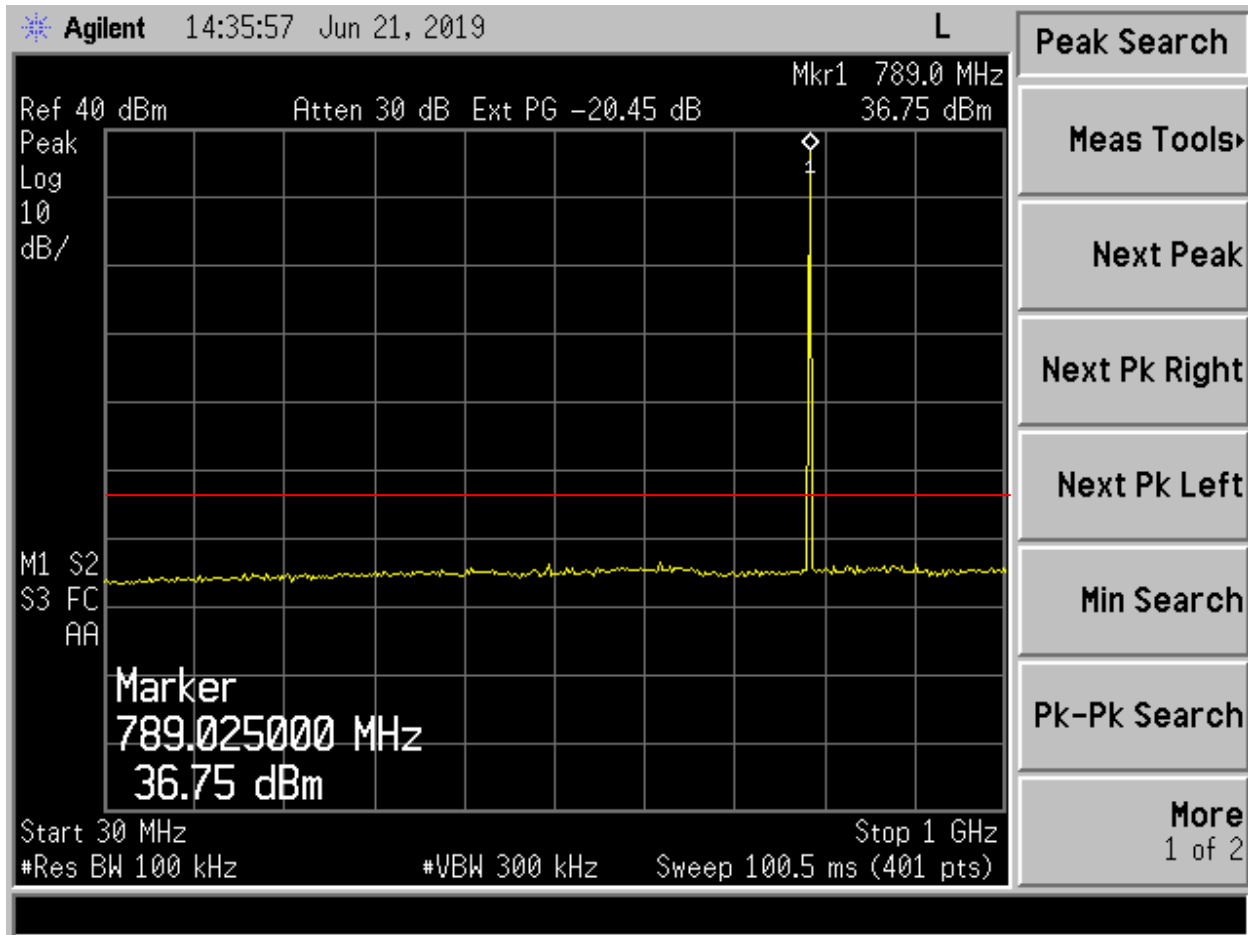


Figure 262. 788 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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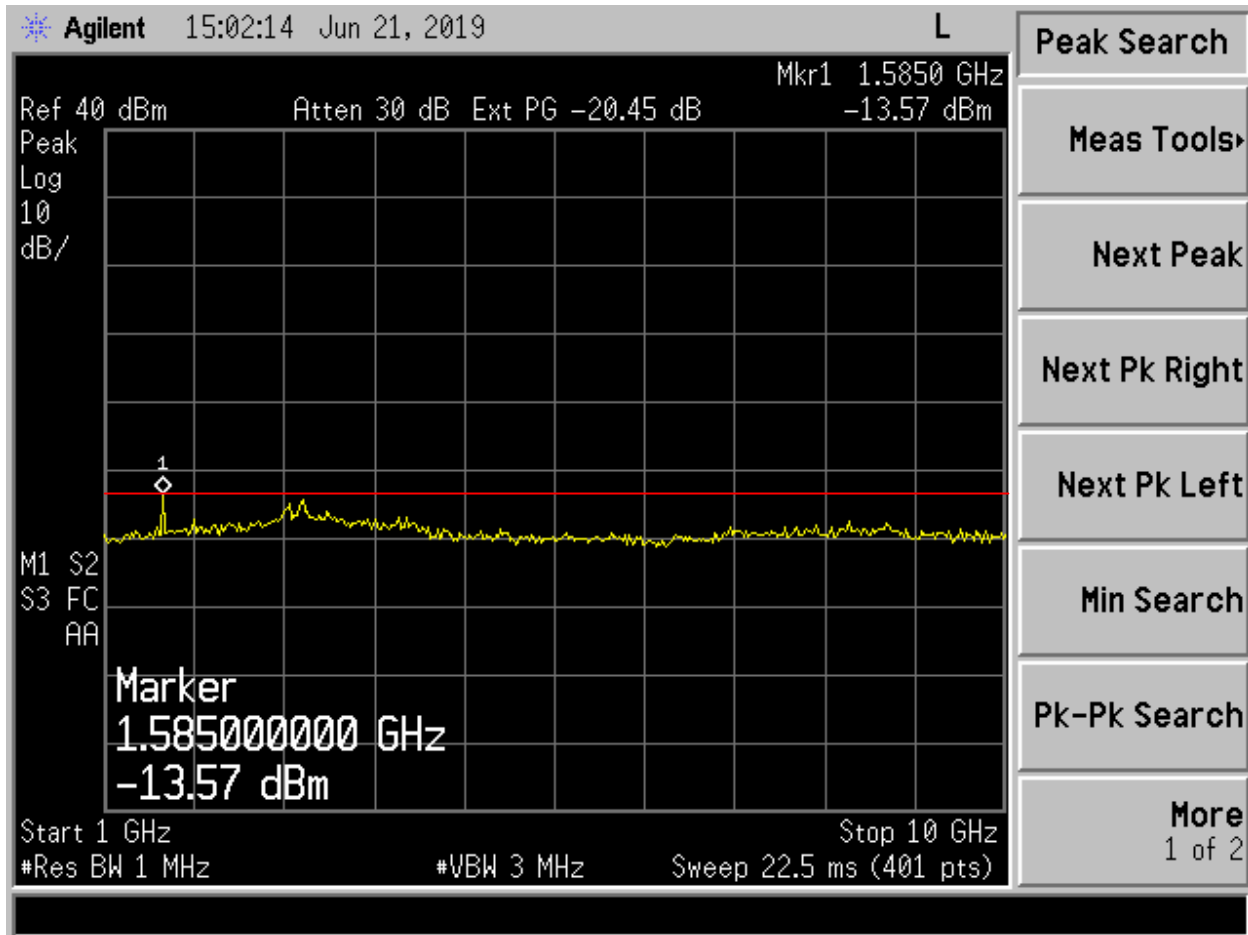


Figure 263. 788 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

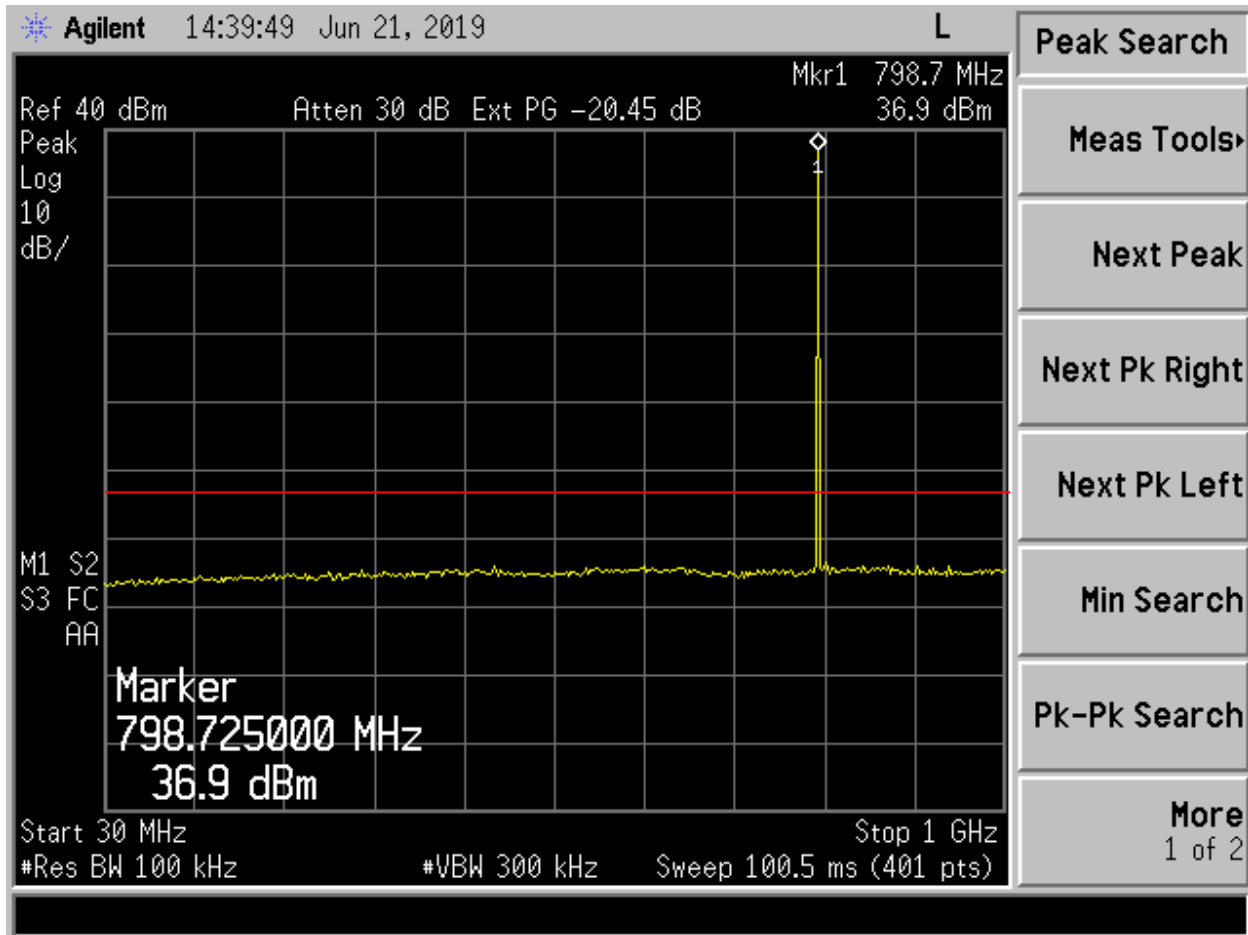


Figure 264. 798 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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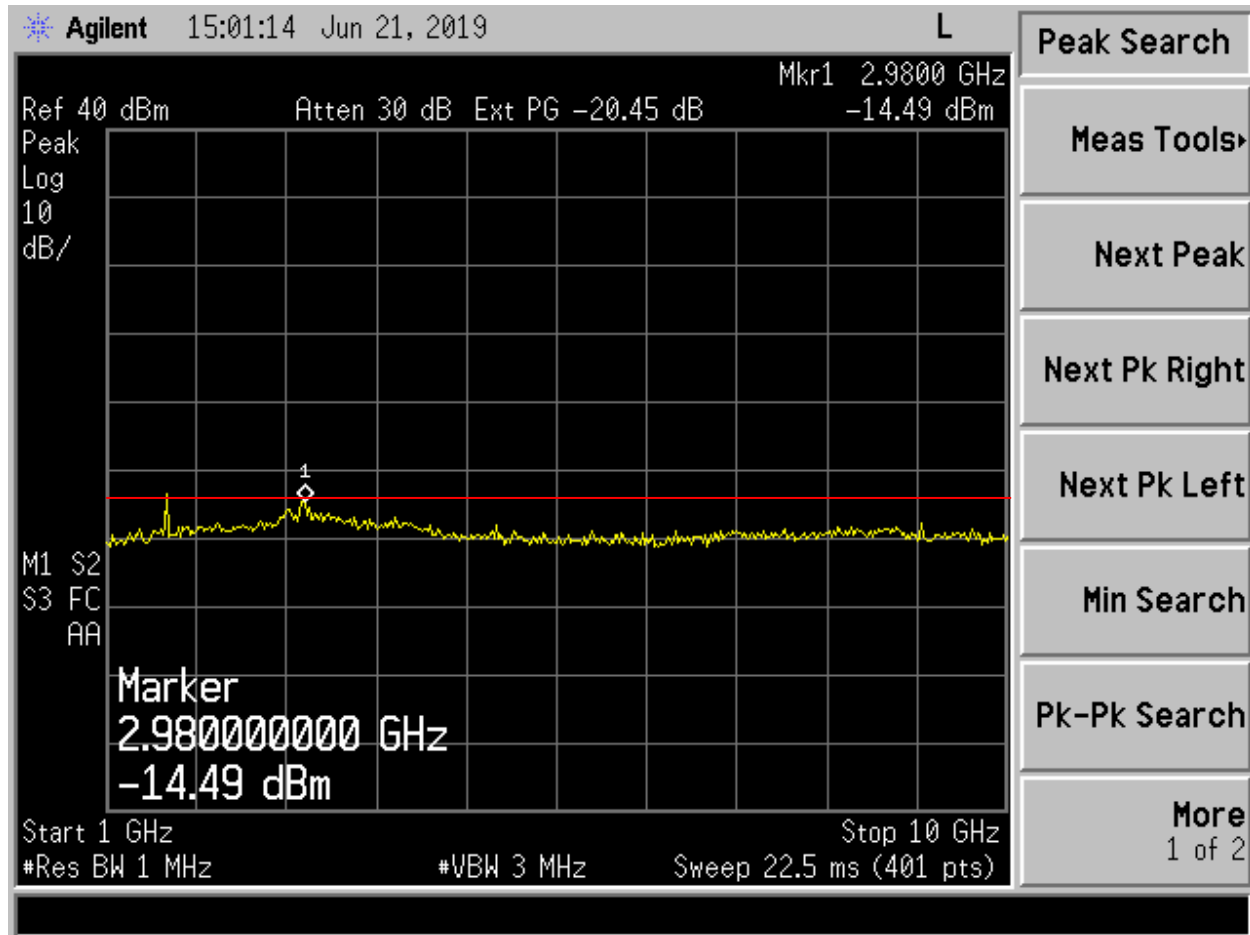


Figure 265. 798 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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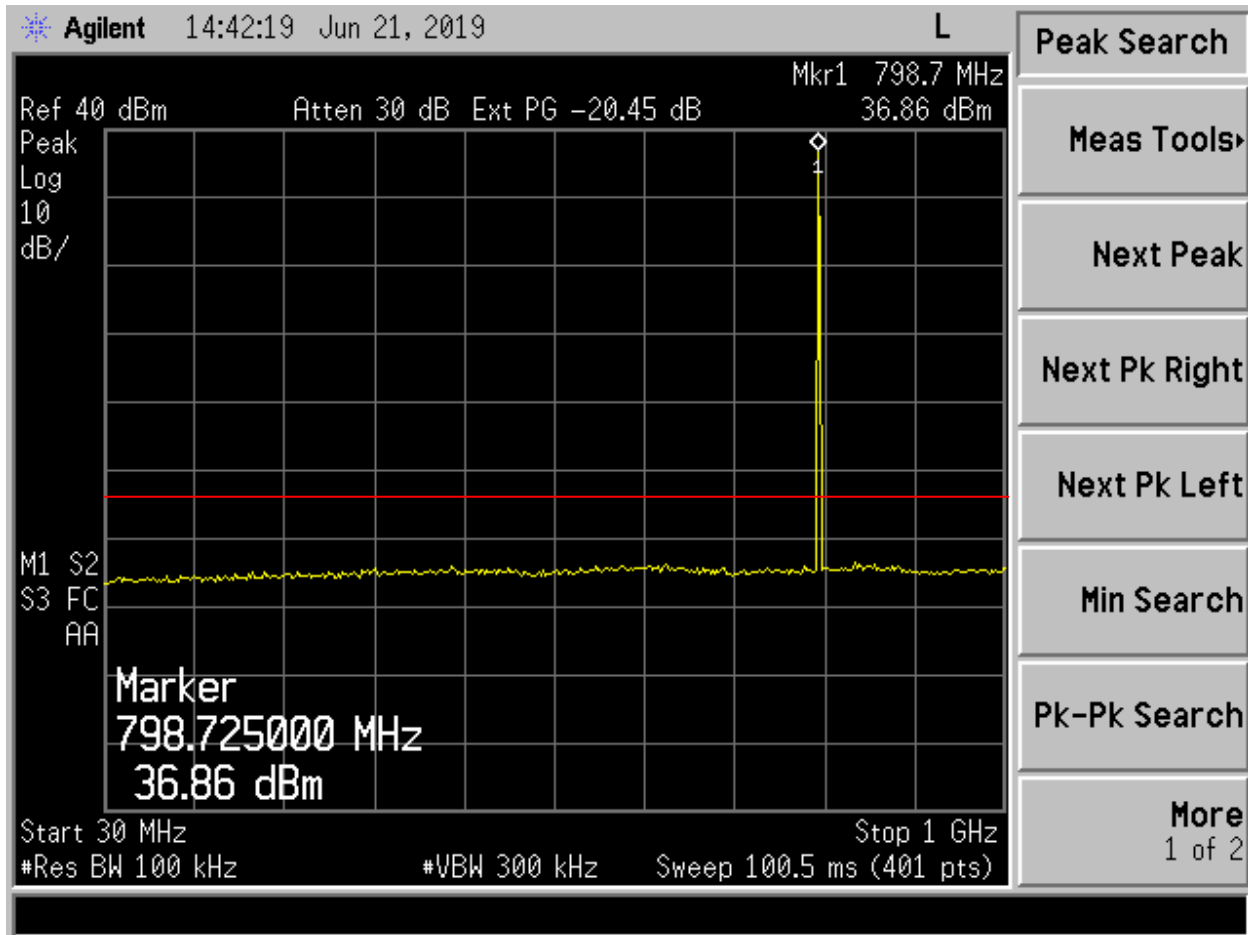


Figure 266. 799 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

U.S. Tech Test Report:
FCC ID:
IC:
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Model:

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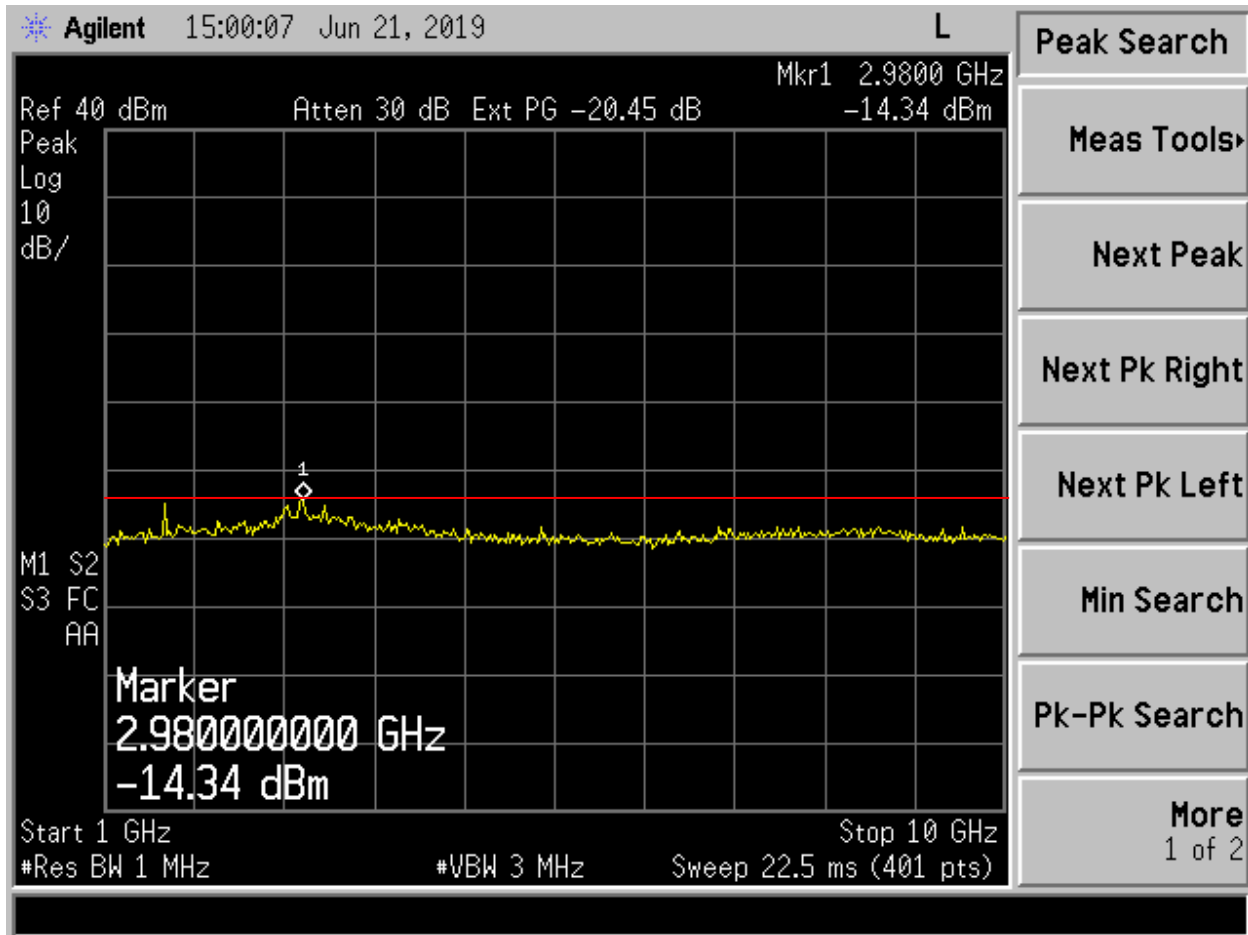


Figure 267. 799 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

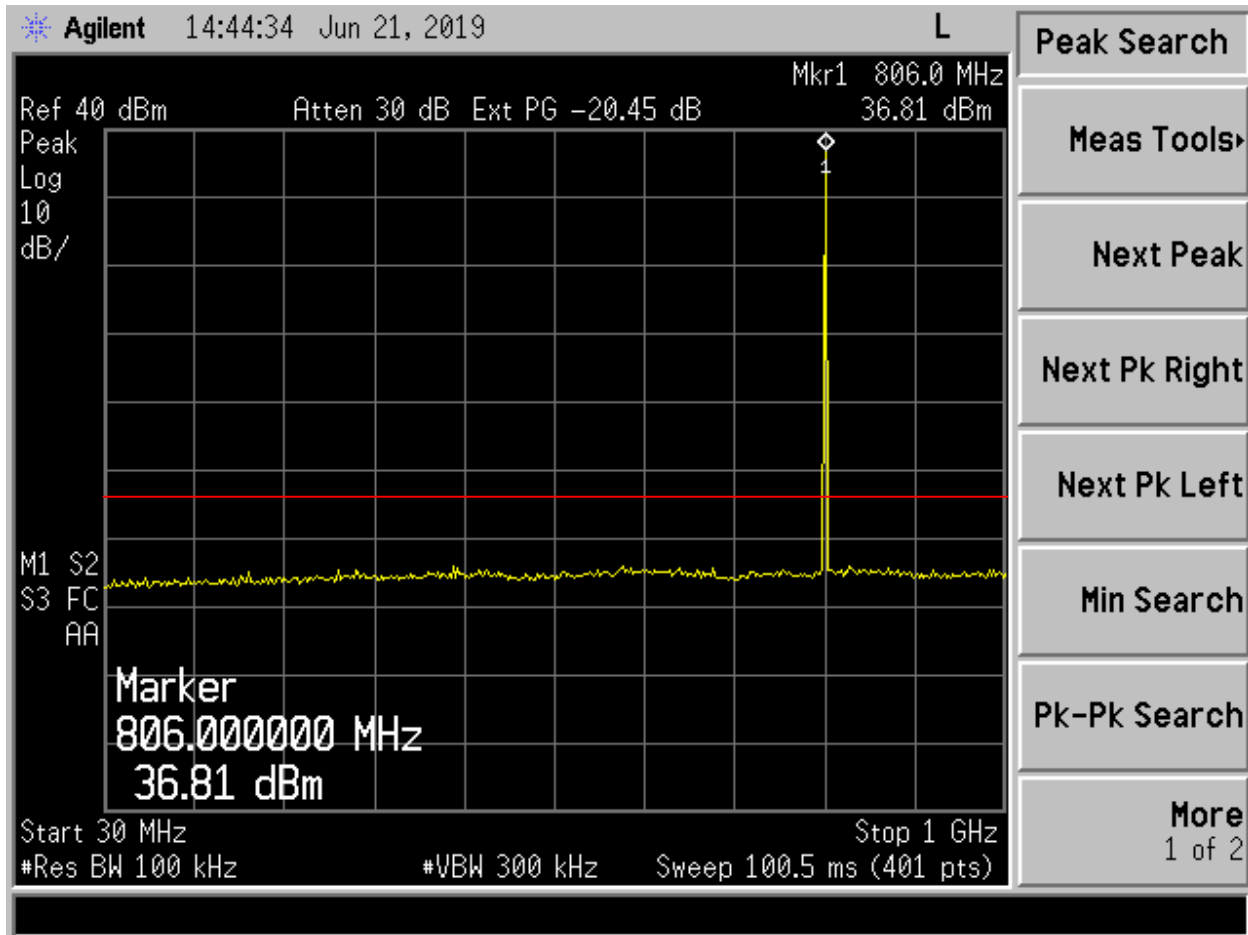


Figure 268. 805 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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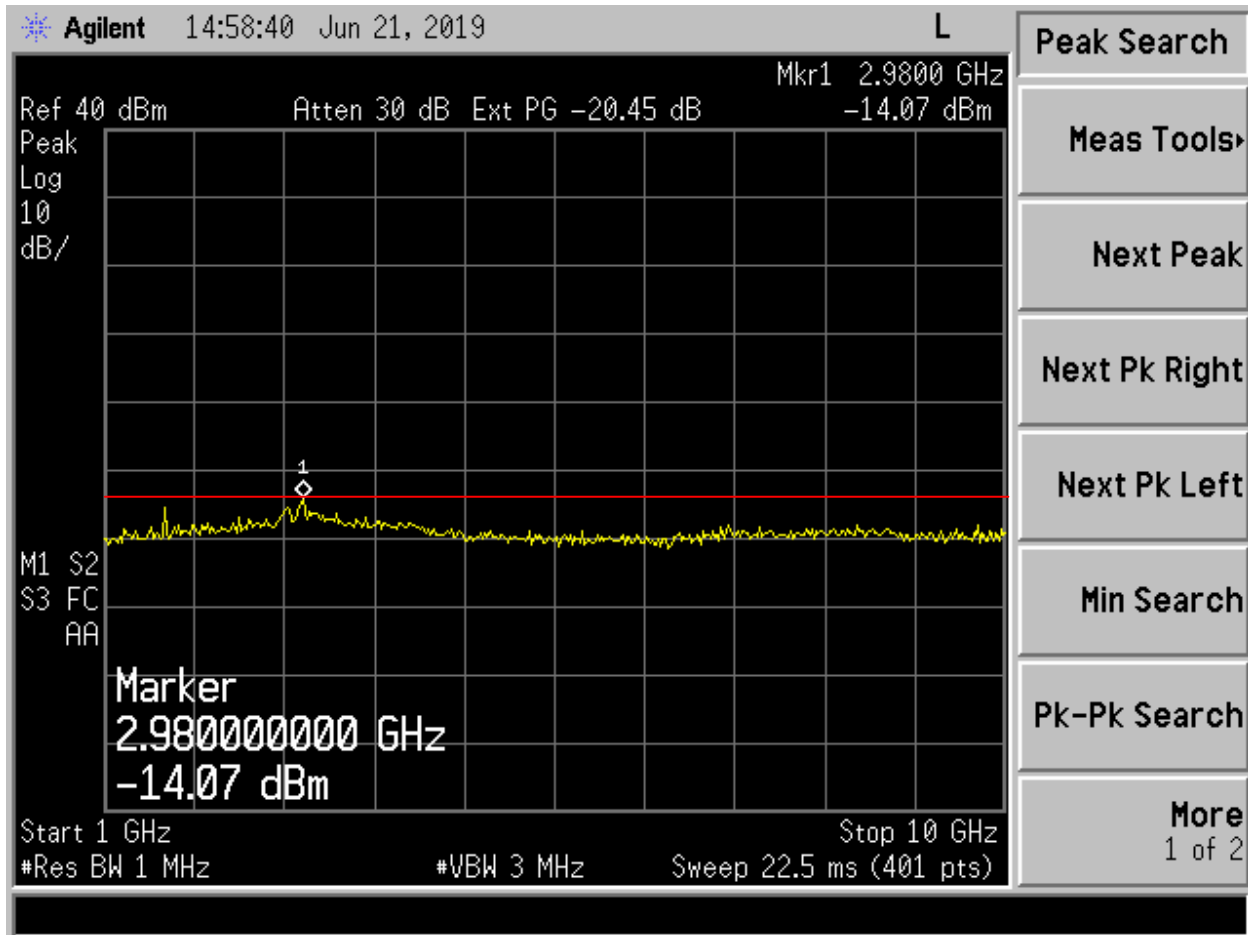


Figure 269. 805 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

2.12.2.4 800 MHz Conducted Spurious Emissions

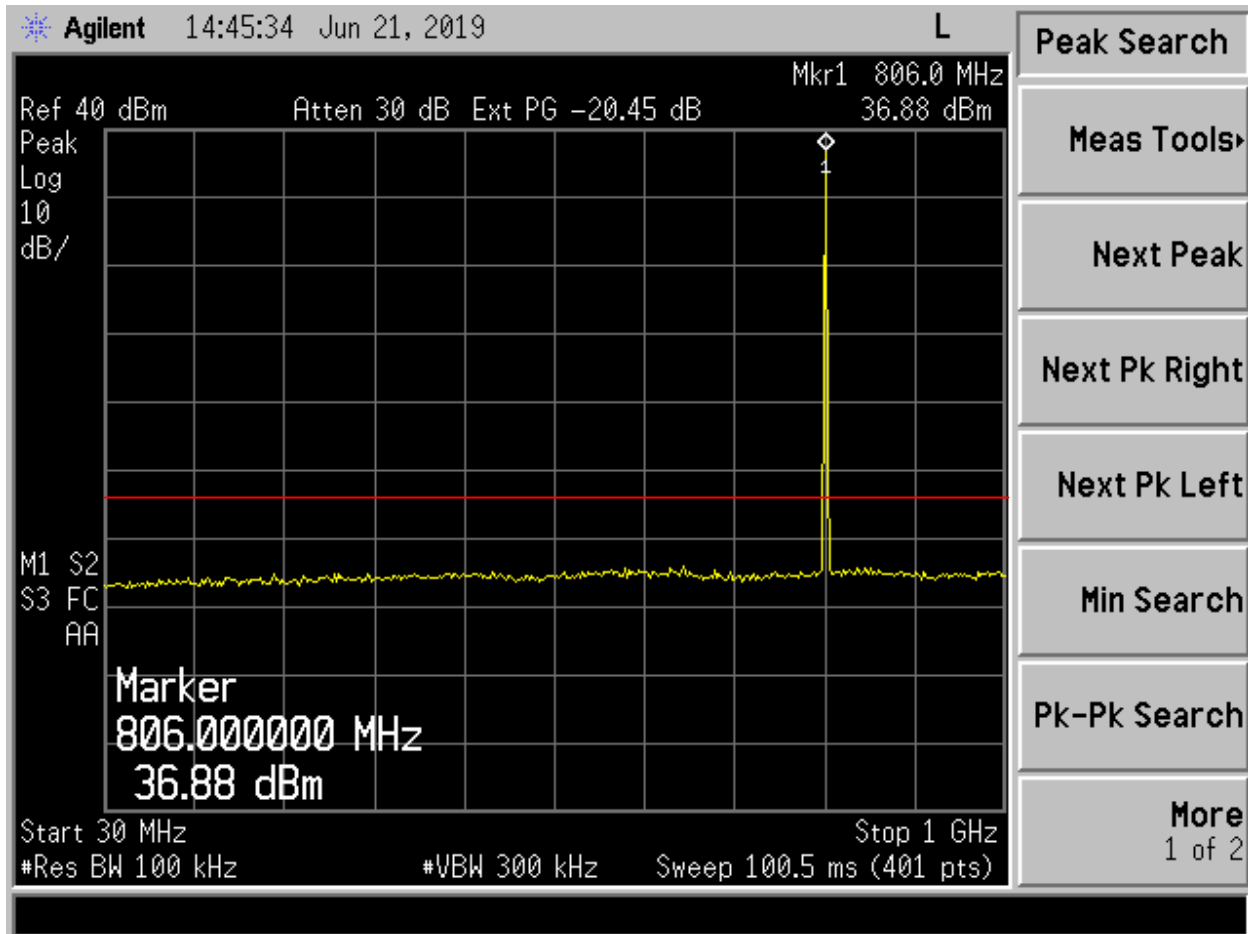


Figure 270. 806 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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IC:
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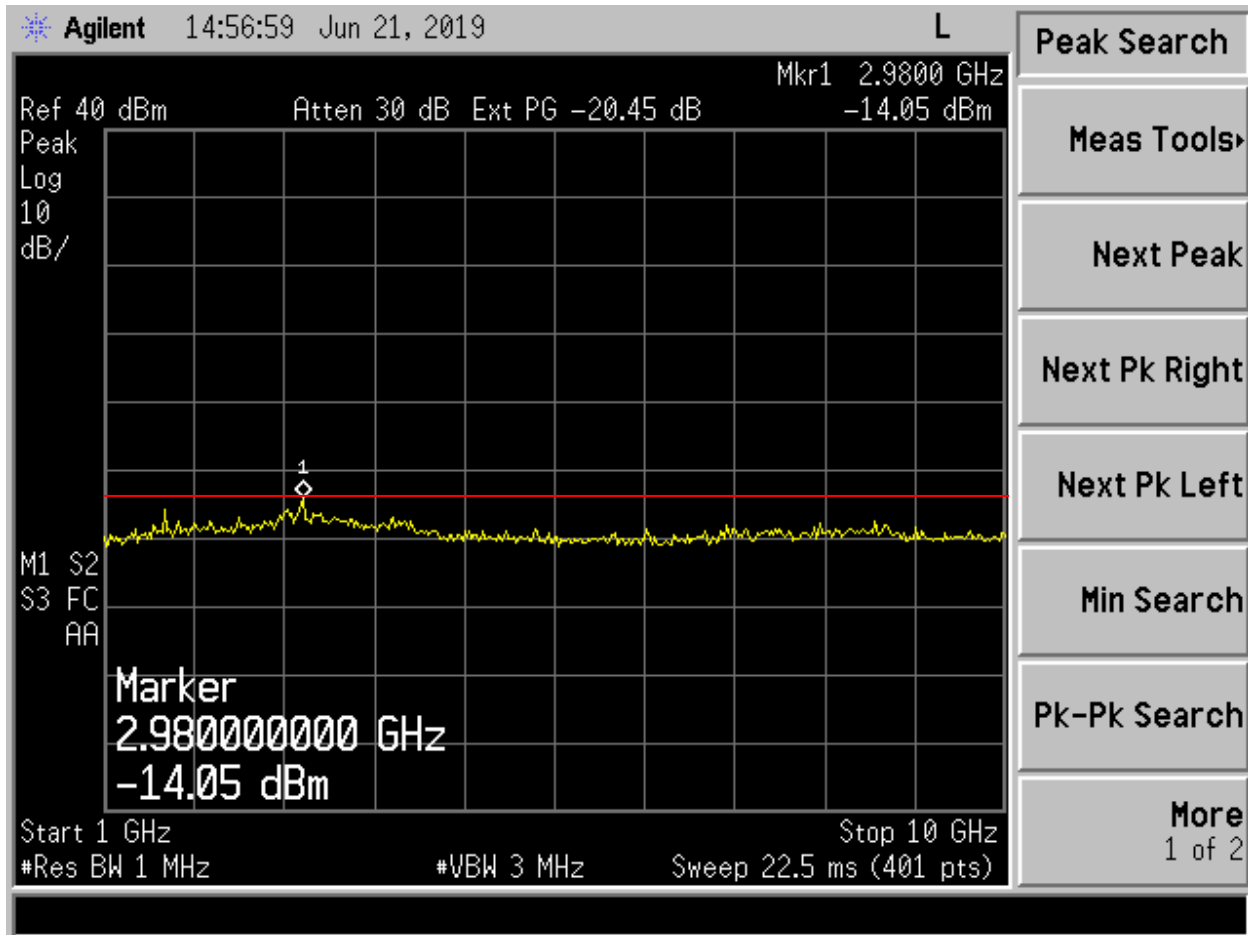


Figure 271. 806 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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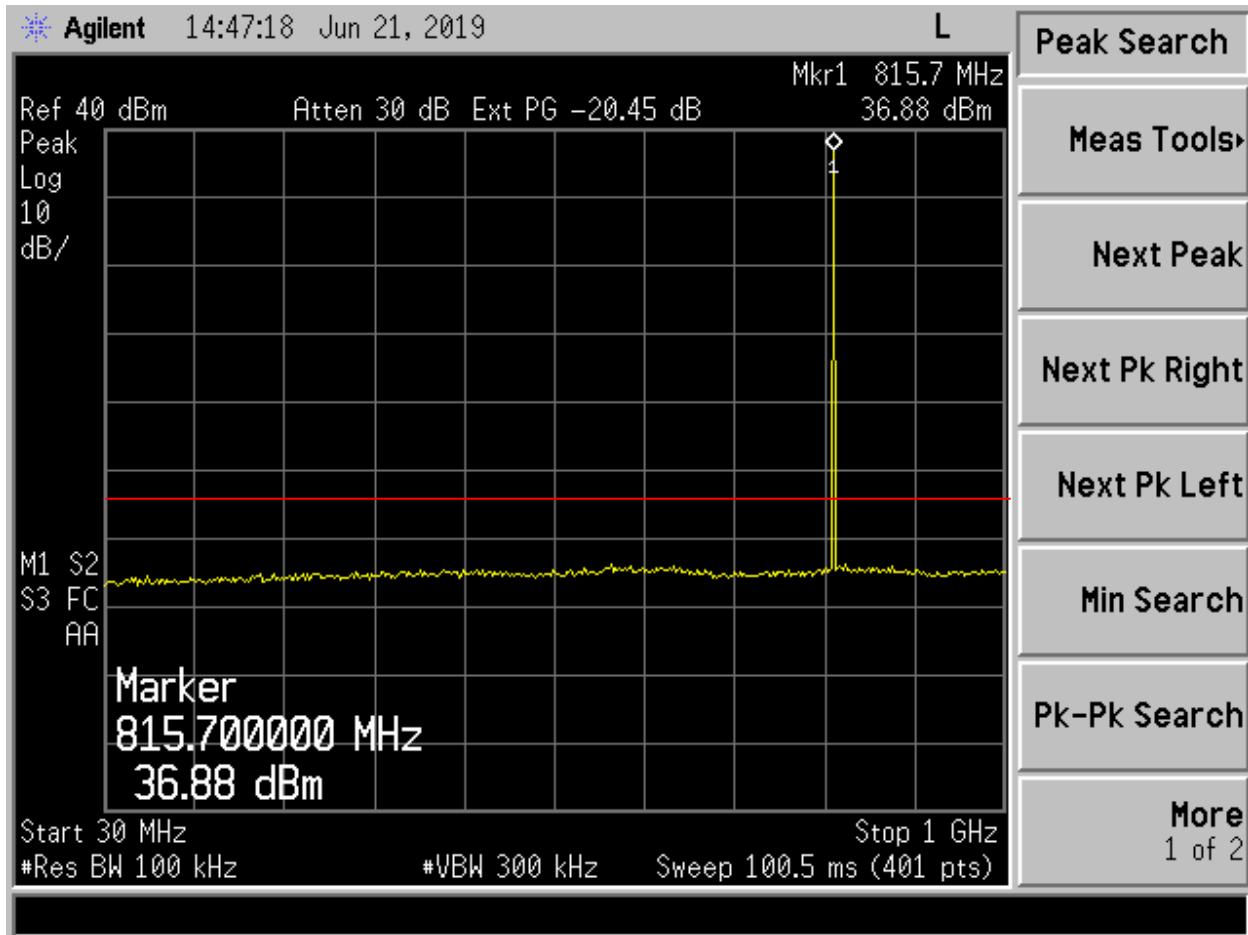


Figure 272. 815 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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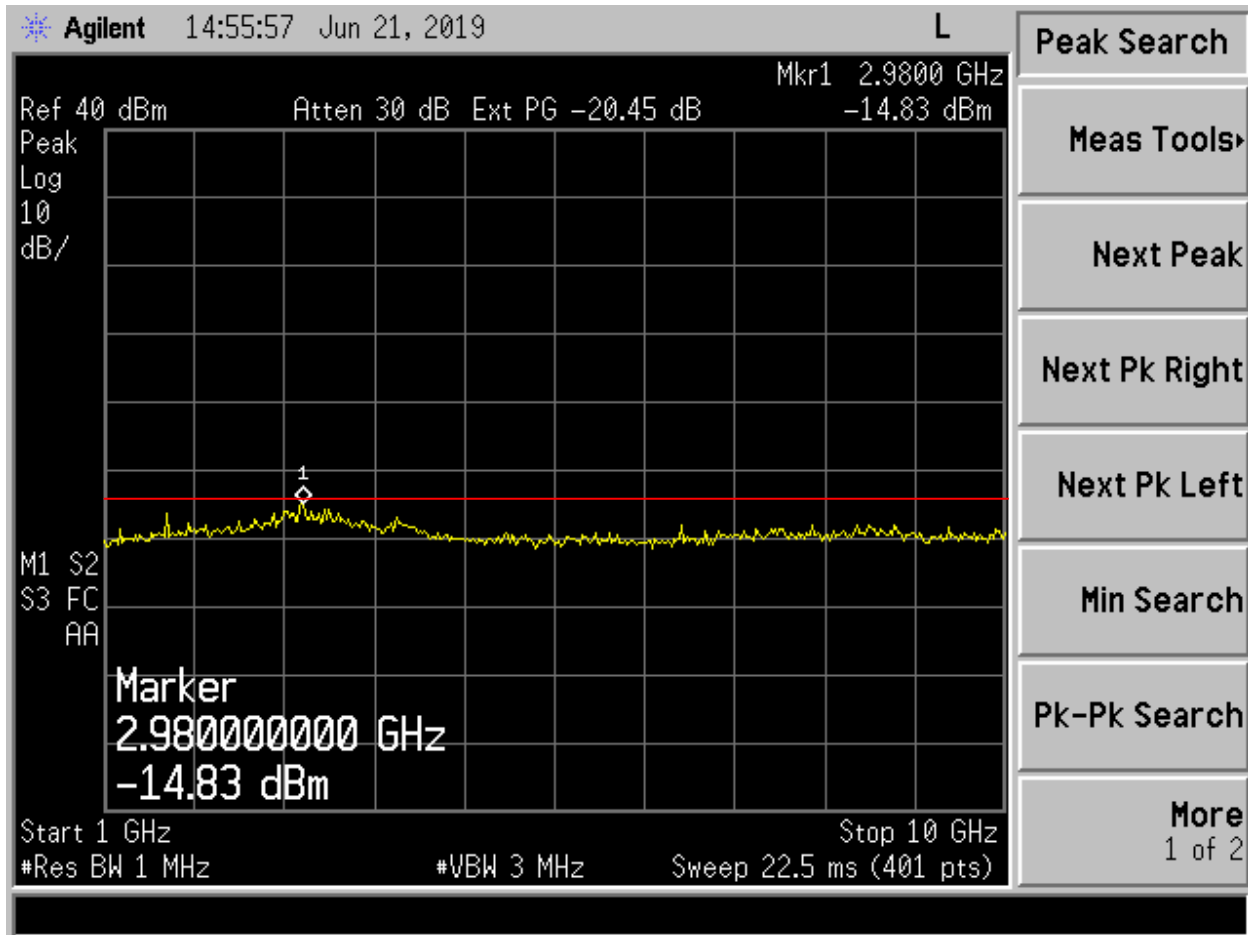


Figure 273. 815 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

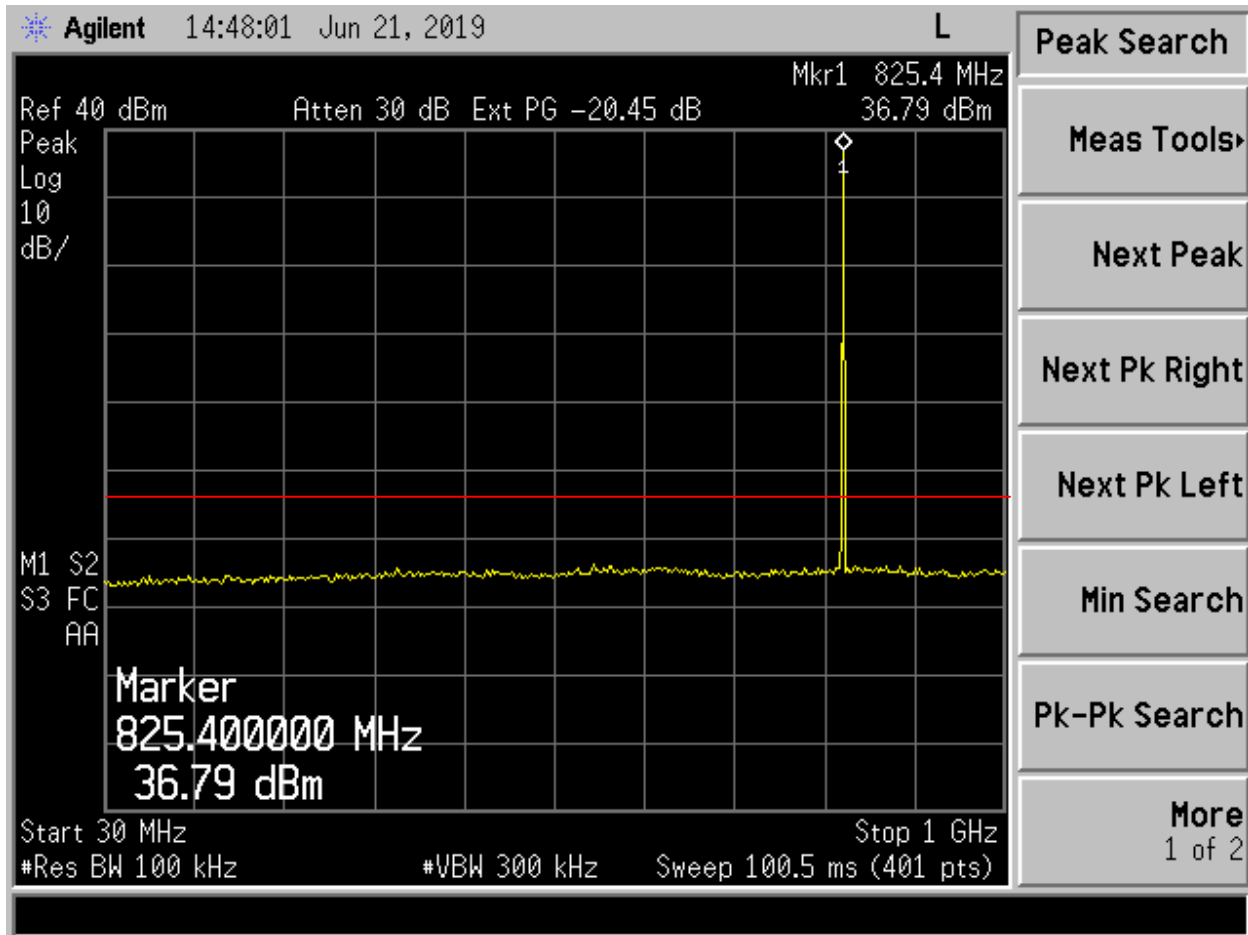


Figure 274. 824 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

U.S. Tech Test Report:
FCC ID:
IC:
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Model:

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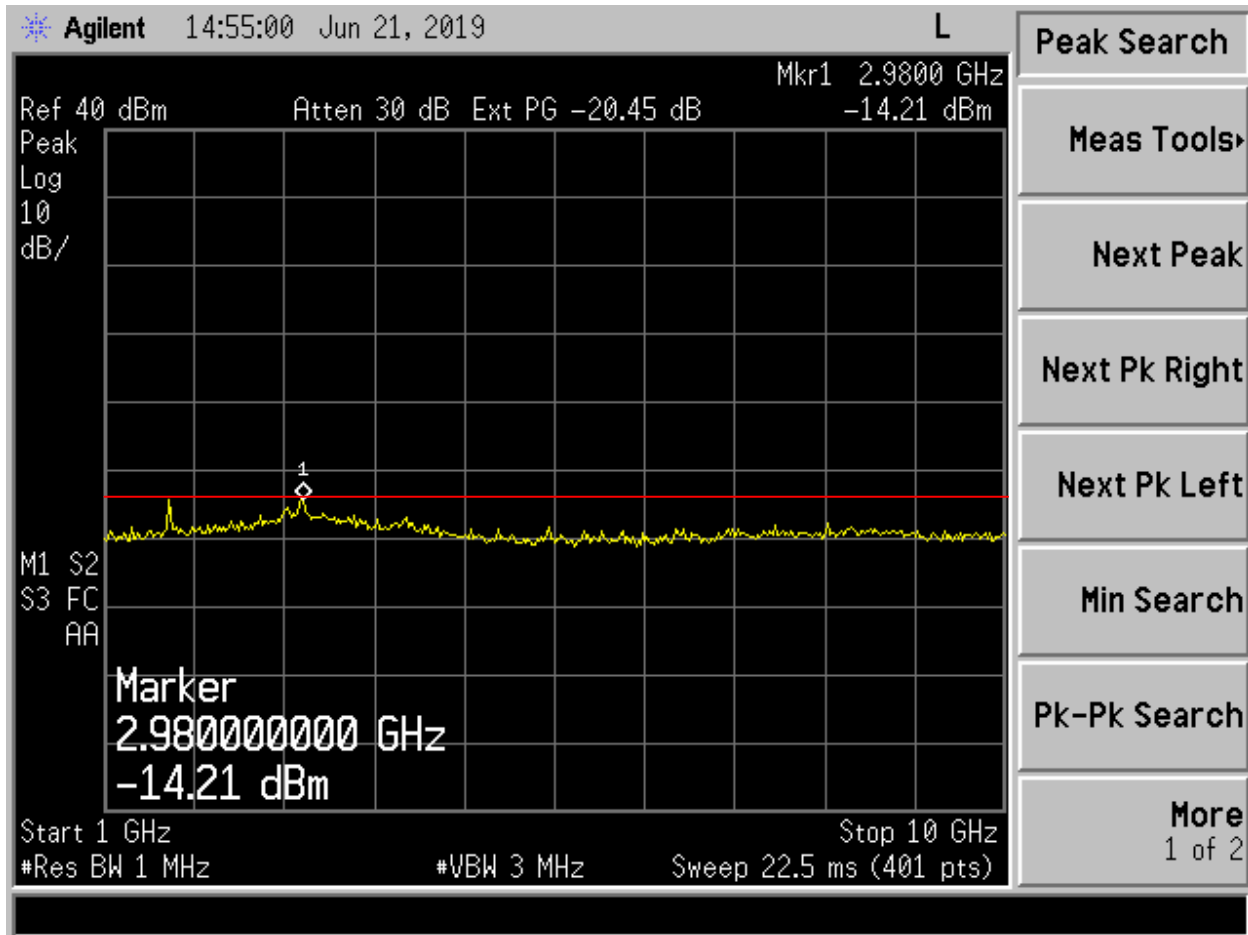


Figure 275. 824 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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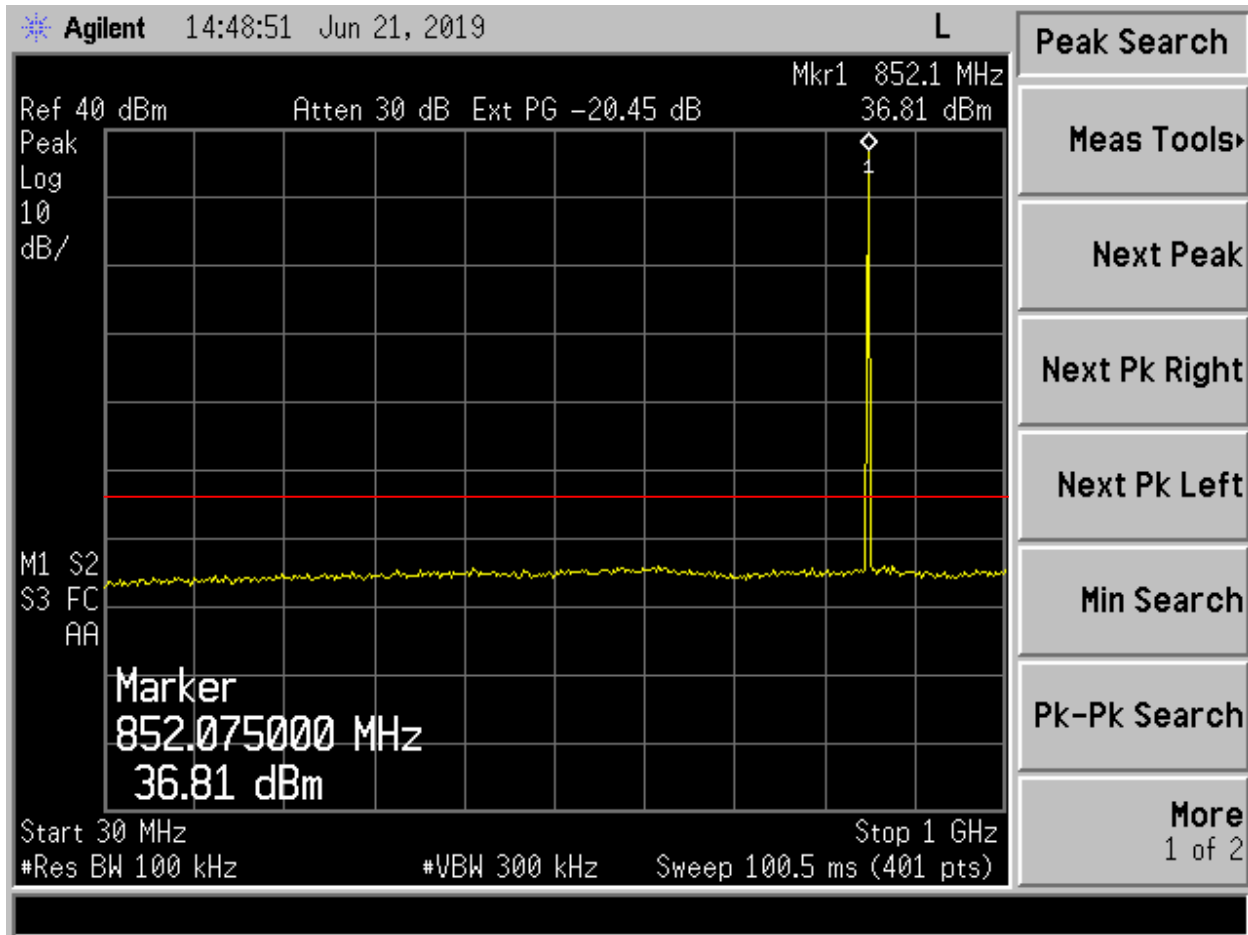


Figure 276. 851 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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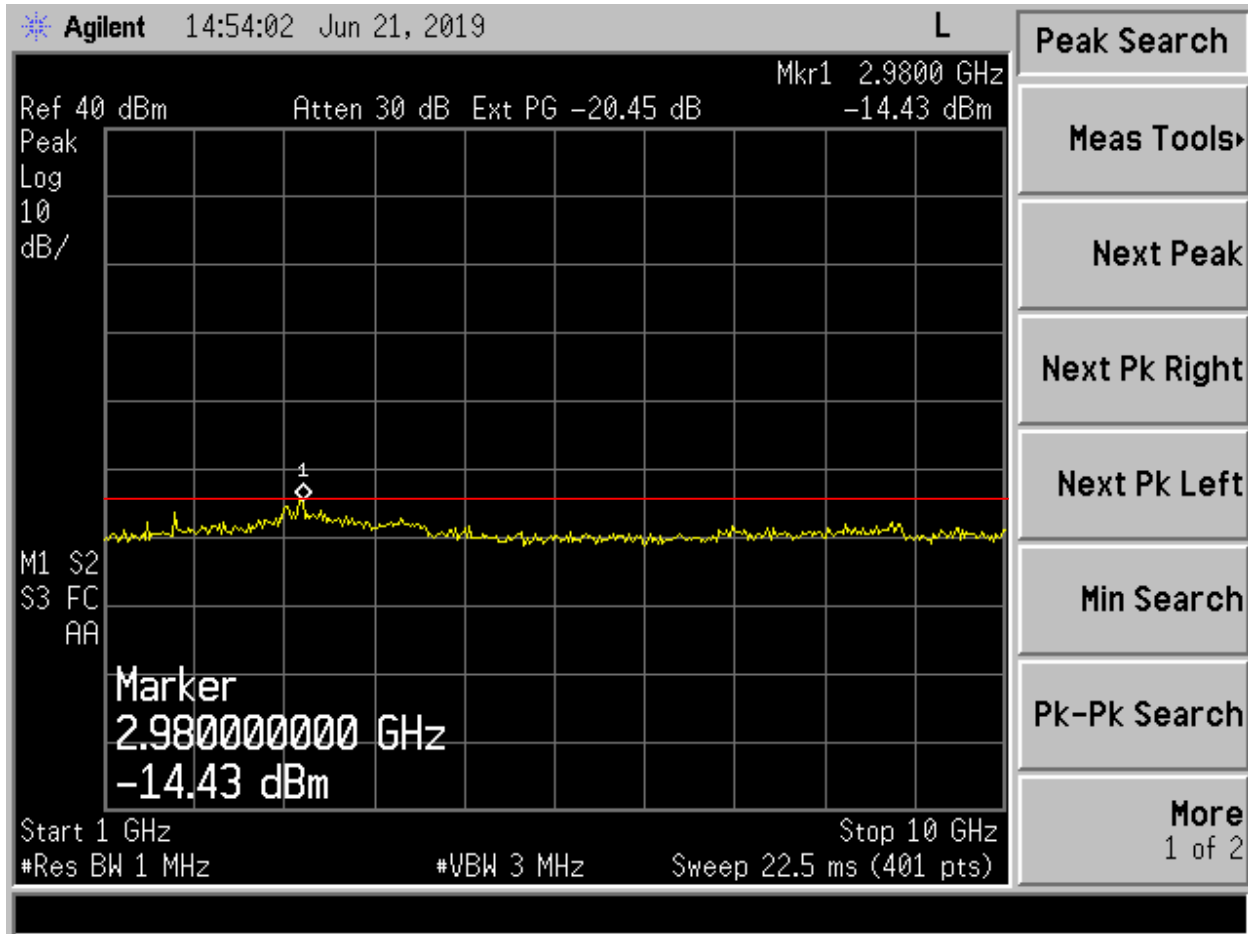


Figure 277. 851 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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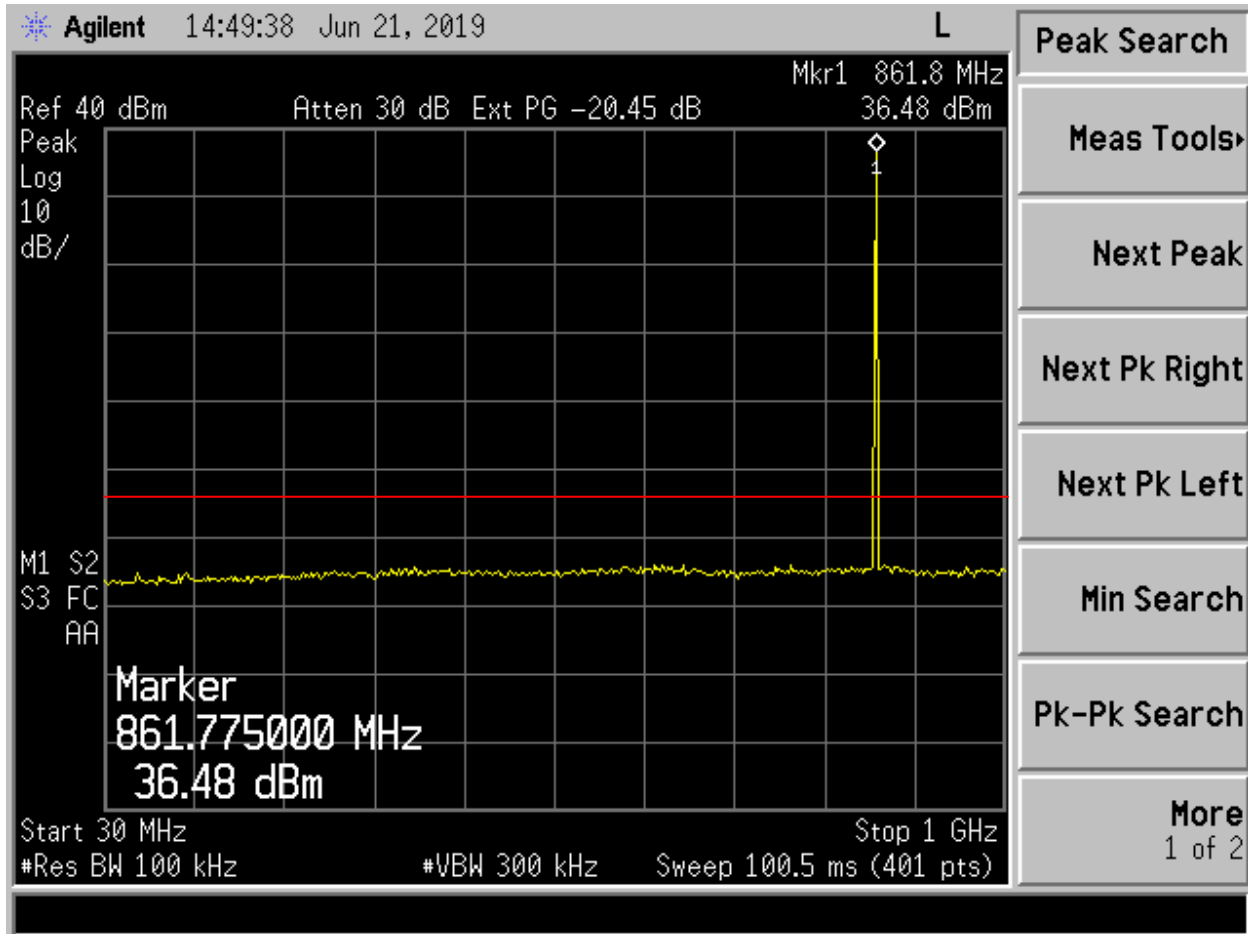


Figure 278. 860 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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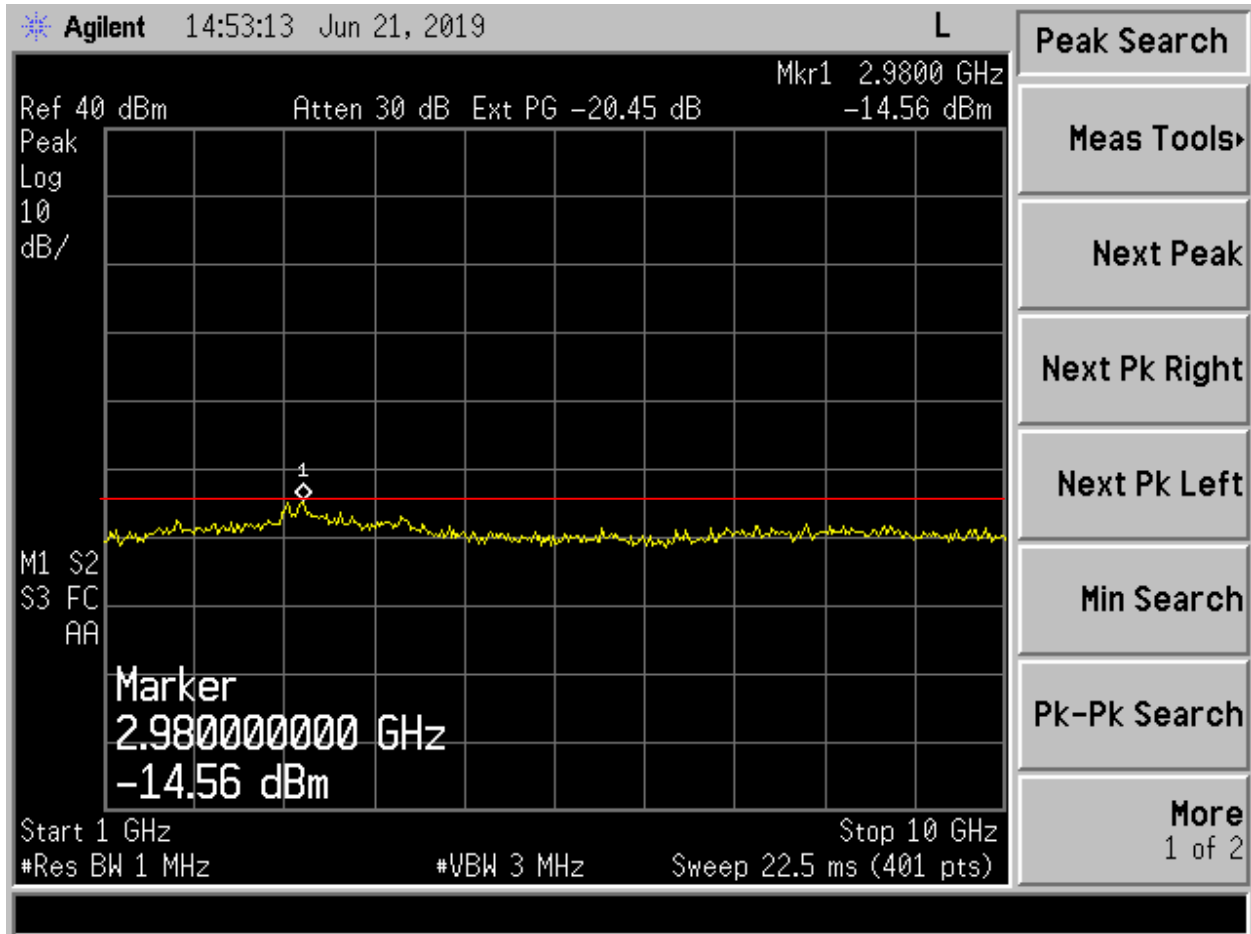


Figure 279. 860 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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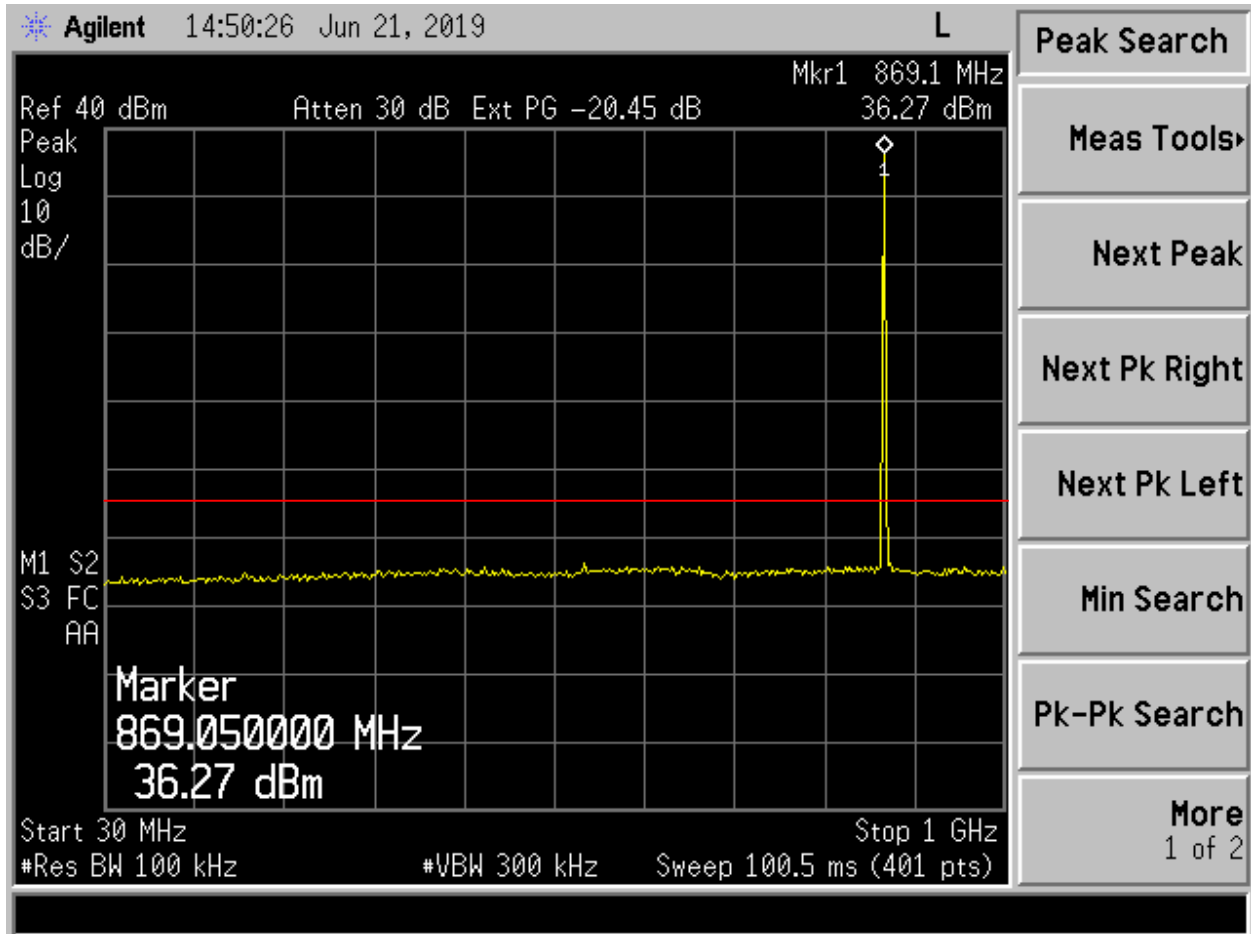


Figure 280. 869 MHz below 1 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

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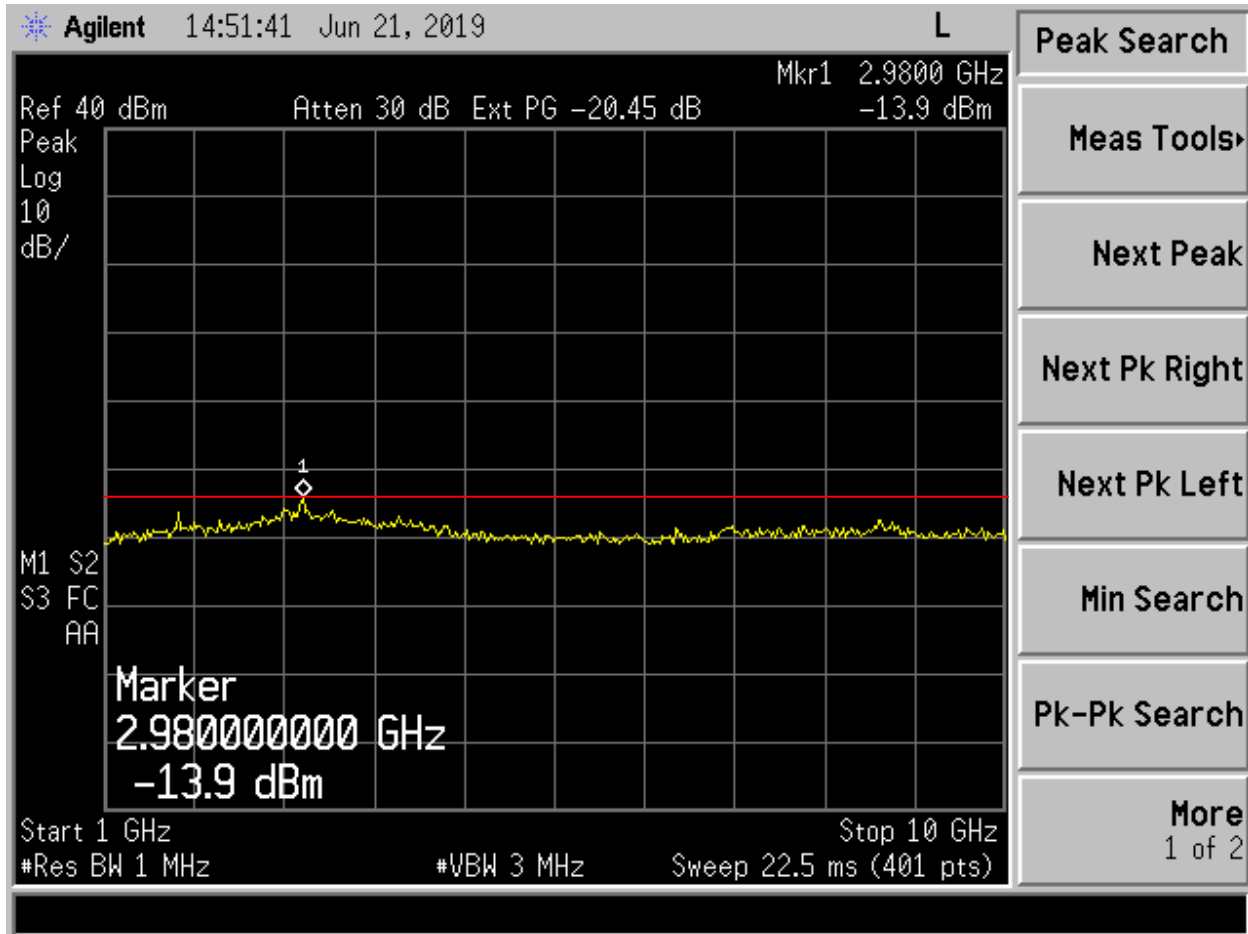


Figure 281. 869 MHz, 1 – 10 GHz

Note: All emissions other than fundamental and harmonics are below the limit.

2.13 AGC Threshold (KDB 935210 D05 v01r03 4.2)

The AGC Threshold data below is provide for recording purpose per KDB 935210.

2.13.1 Measuring AGC threshold

The AGC threshold shall be determined by apply the procedure of 3.2 of KDB 953210 D05 v01r03 but with the signal generator configured to produce a test signal defined in Table 1 of the KDB document, a CW input signal or digitally modulated signal. In this case a CW input signal with no modulation was used.

FREQ (MHz)	AGC Input (dBm)	Measured Output (dBm)	Gain (dB)	BAND
150	13	38.68	25.68	VHF
162	13	38.56	25.56	
174	12	37.93	25.93	
401	14	37.95	23.95	UHF
407	13	38.63	25.63	
421	13	37.50	24.50	
480	13	37.50	24.50	
512	14	37.50	23.50	
758	16	37.68	21.68	700 MHz
763	16	37.76	21.76	
768	16	37.80	21.80	
769	16	37.81	21.81	
775	16	37.86	21.86	
788	16	37.94	21.94	
798	16	37.78	21.78	
799	16	37.91	21.91	
805	16	37.87	21.87	
806	16	37.80	21.80	
815	16	37.52	21.52	800 MHz
824	13	35.96	22.96	
851	13	35.60	22.60	
860	12	34.89	22.89	
869	12	34.72	22.72	

2.14 Out-of-band Rejection (KDB 935210 D05 v01r03 4.3)

The Out of band Rejection data below is provide for recording purpose per KDB 935210.

2.14.1 Out-of-band Rejection measurement

The procedure detailed in 4.3 of the KDB was used to perform these measurements. Plots of the test results are provided below.

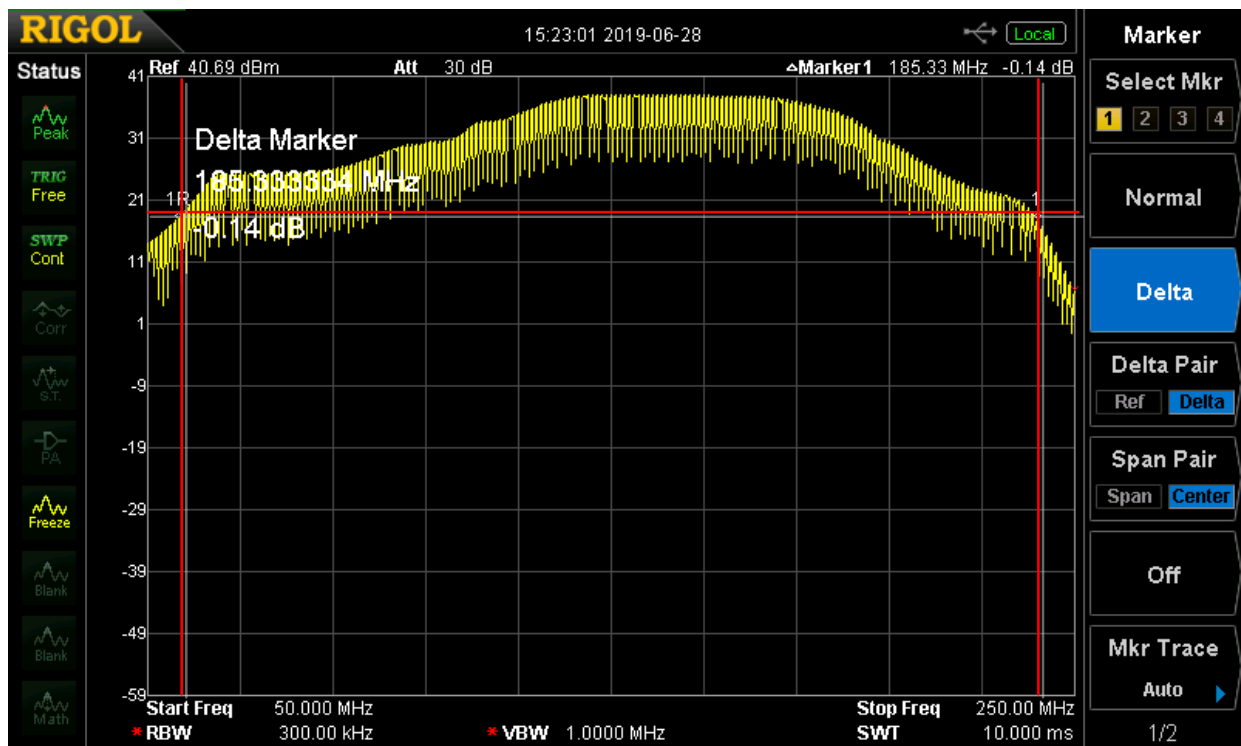


Figure 282. VHF Out of Band Rejection

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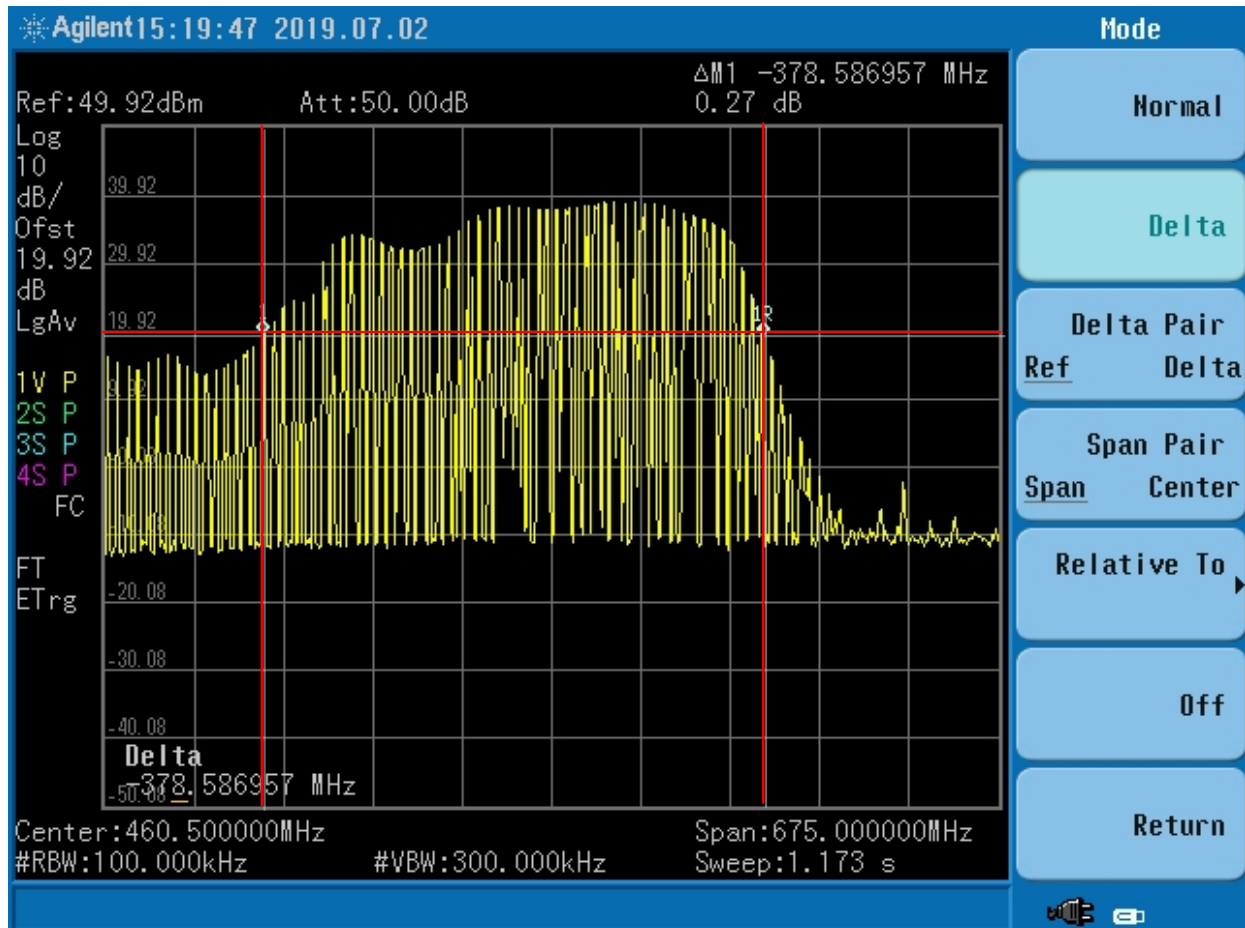


Figure 283. UHF Out of Band Rejection

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Model:

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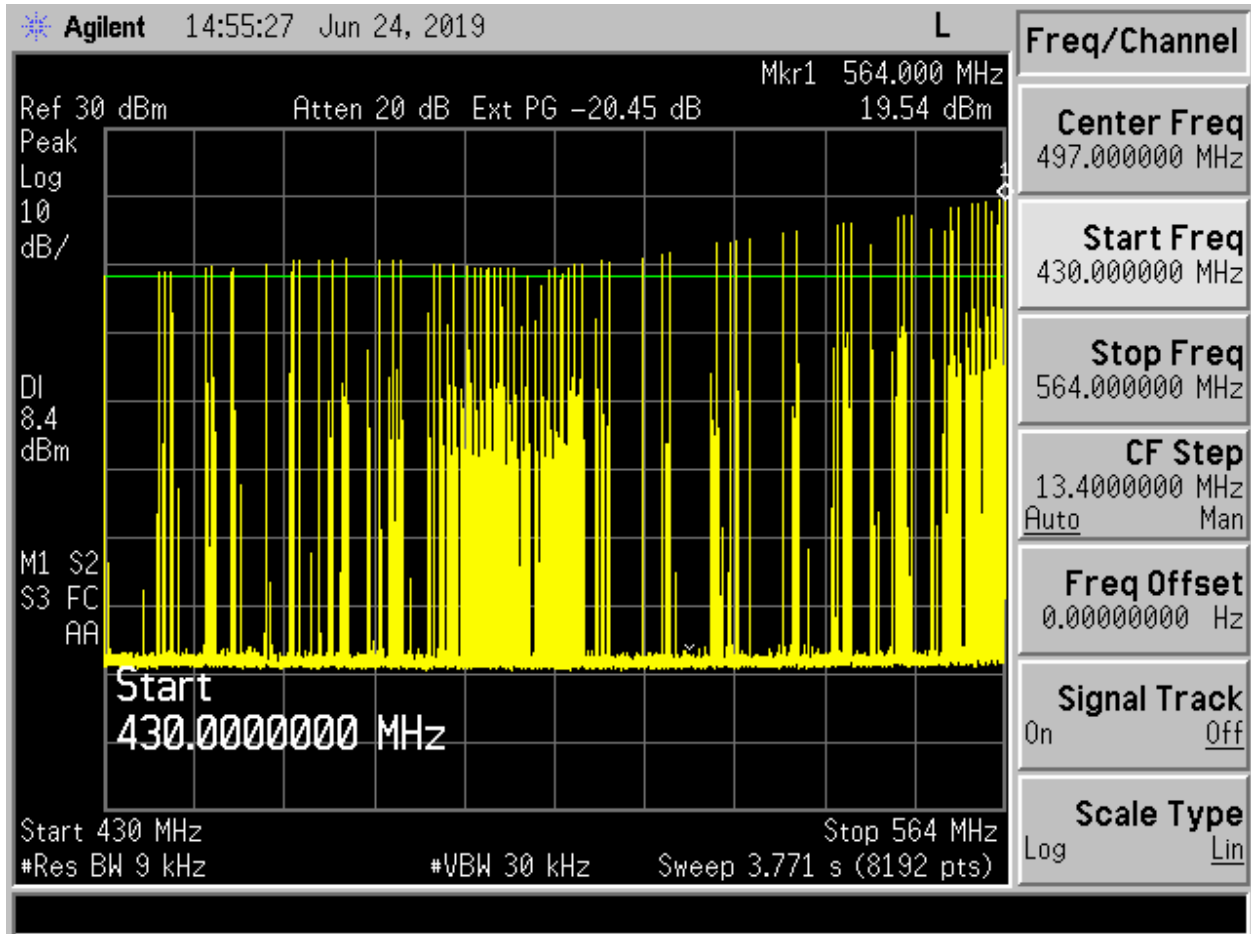


Figure 284. 700/800 MHz Out of band Rejection Plot 1

U.S. Tech Test Report:
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IC:
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Model:

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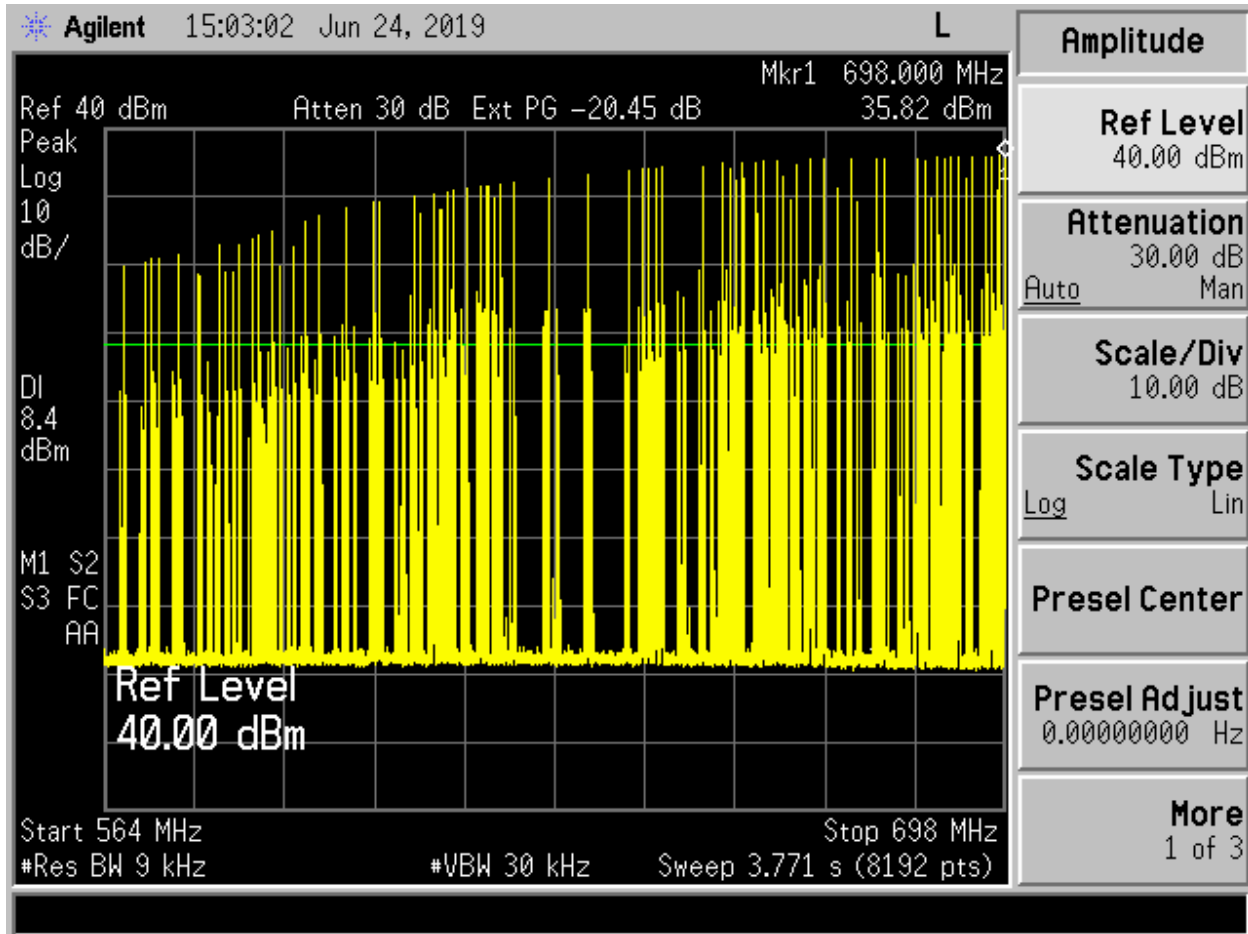


Figure 285. 700/800 MHz Out of band Rejection Plot 2

U.S. Tech Test Report:
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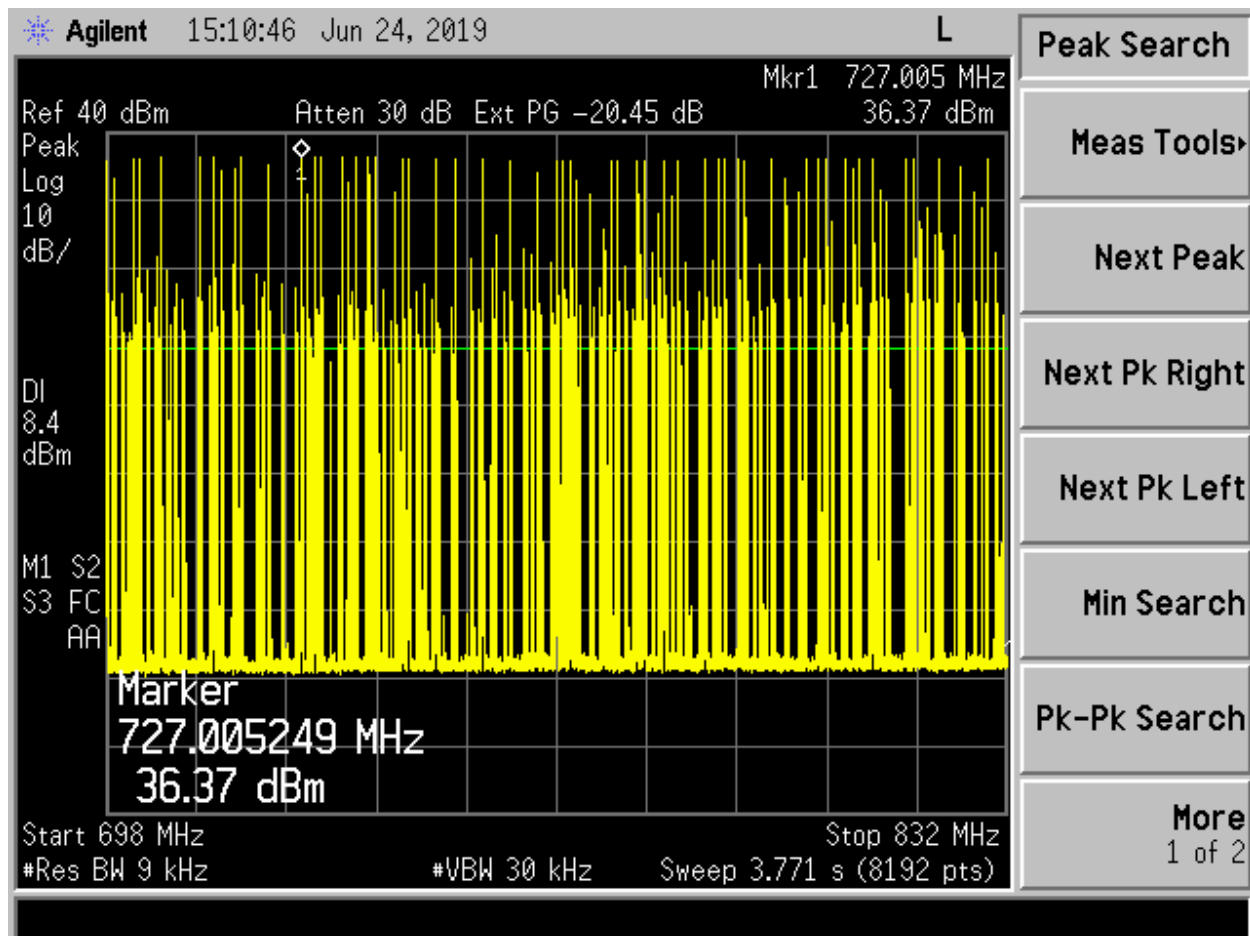
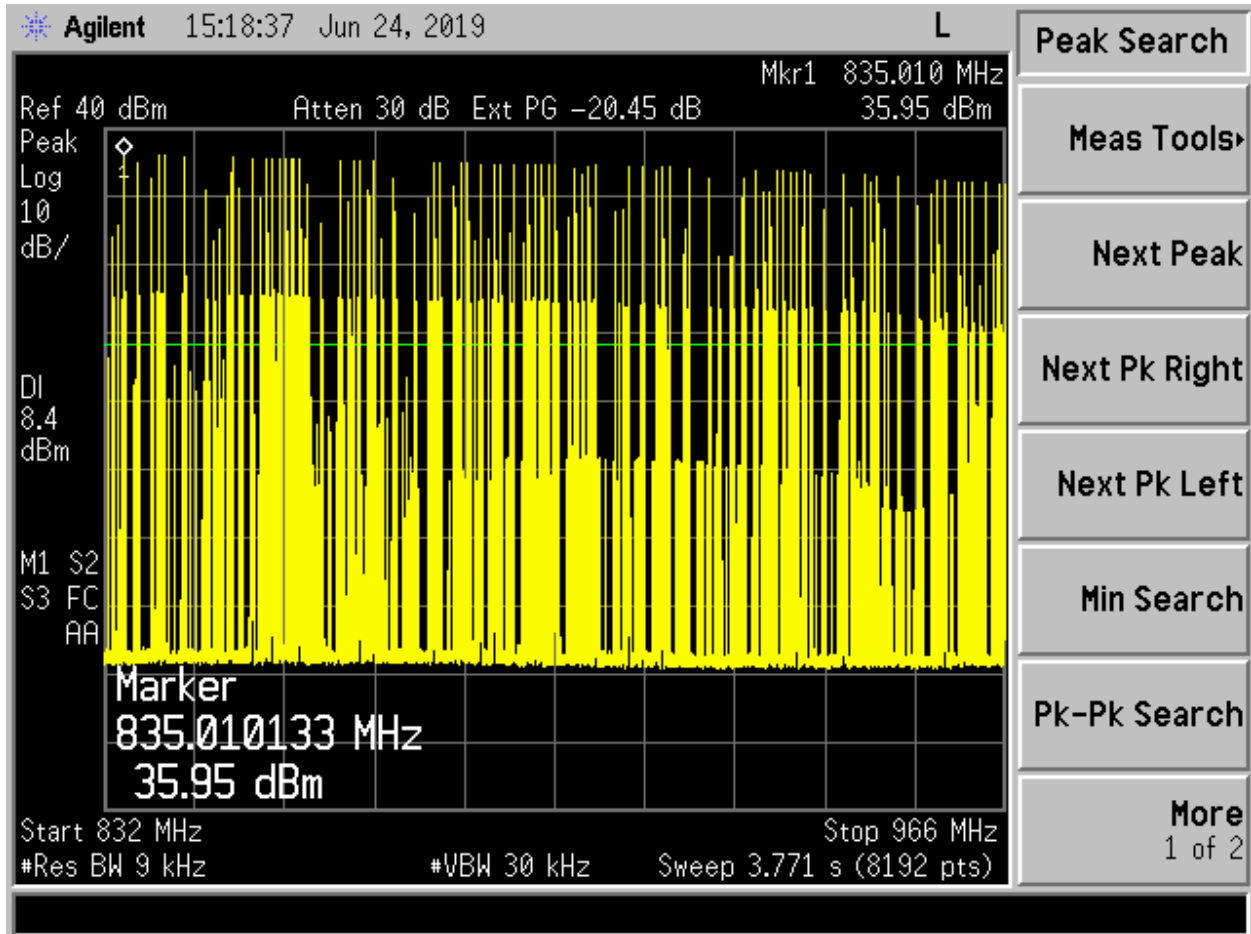


Figure 286. 700/800 MHz Out of Band Rejection Plot 3

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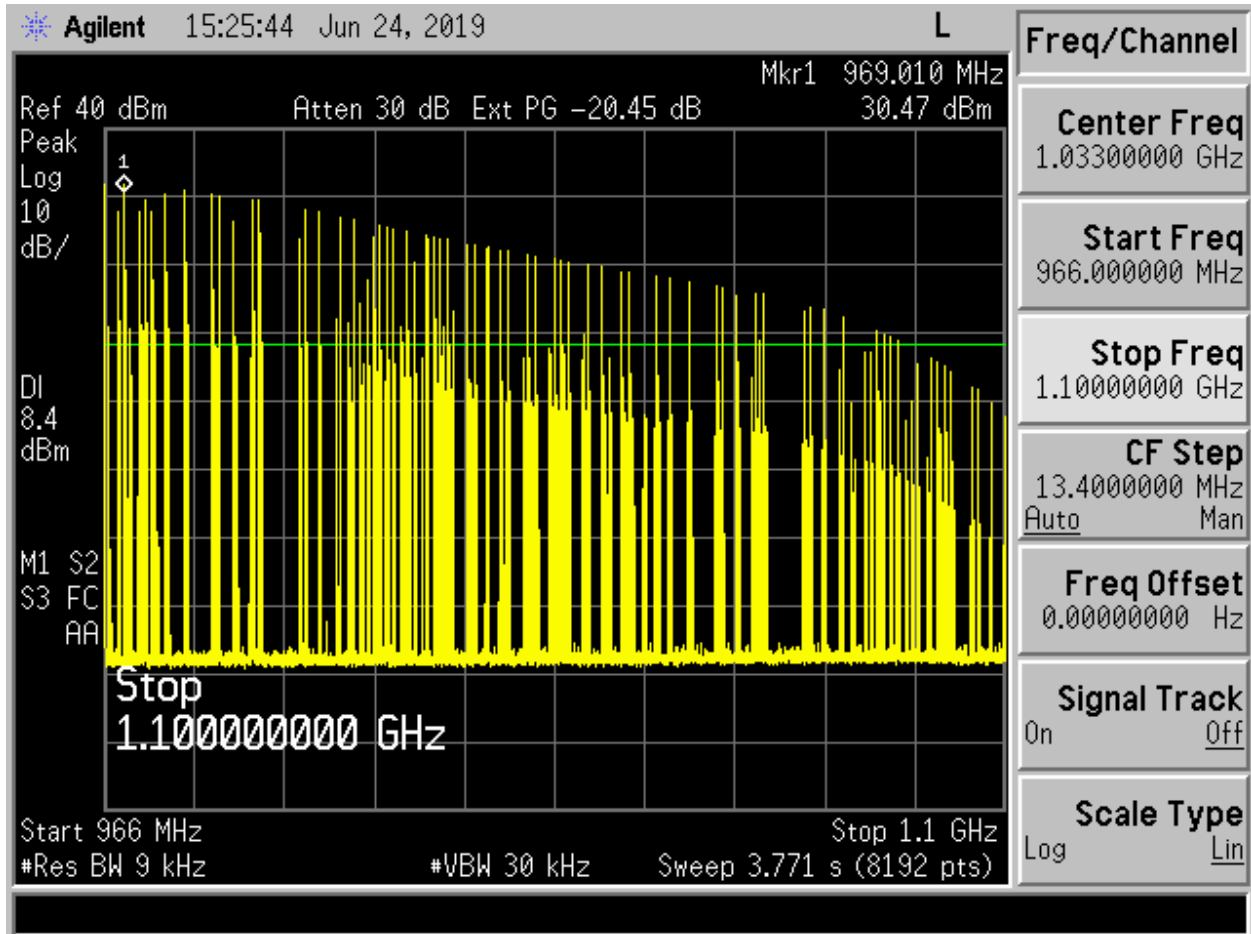


Figure 288. 700/800 MHz Out of Band Rejection Plot 5

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2.15 Measurement Uncertainty

2.15.1 Radiated Spurious Emissions Measurement Uncertainty

For a measurement distance of 3 m, the measurement uncertainty (with a 95% confidence level) for this test using a Biconical Antenna (30 MHz to 200 MHz) is ± 5.39 dB. This value includes all elements of measurement.

The measurement uncertainty (with a 95% confidence level) for this test using a Log Periodic Antenna (200 MHz to 1000 MHz) is ± 5.18 dB

The measurement uncertainty (with a 95% confidence level) for this test using a Horn Antenna is ± 5.21 dB (3 m distance).

2.15.2 Conducted Radio Emissions Measurement uncertainty

Measurement uncertainty (within a 95% confidence level) for this test is ± 1.5 dB.

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3 Conclusions

3.1 Test Outcome

Based on the test results shown above, the EUT is deemed to comply with all relevant requirements for Part 90.219 and RSS-131 Clause 6.