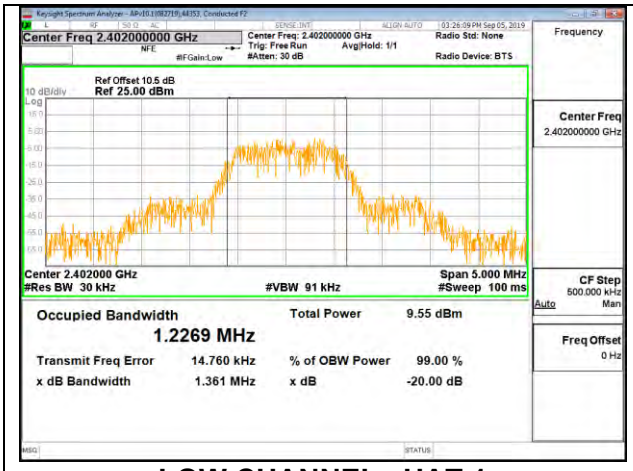
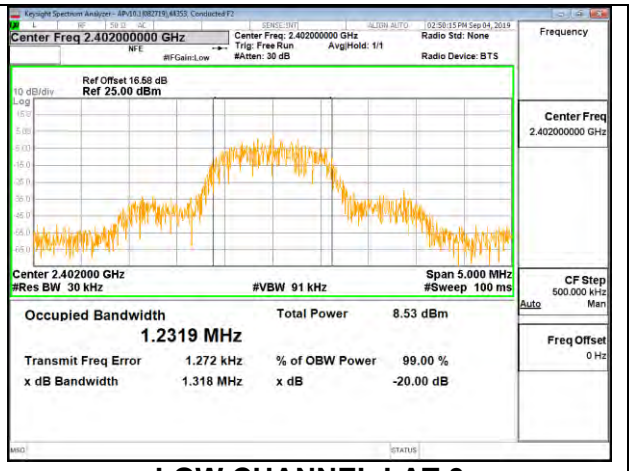
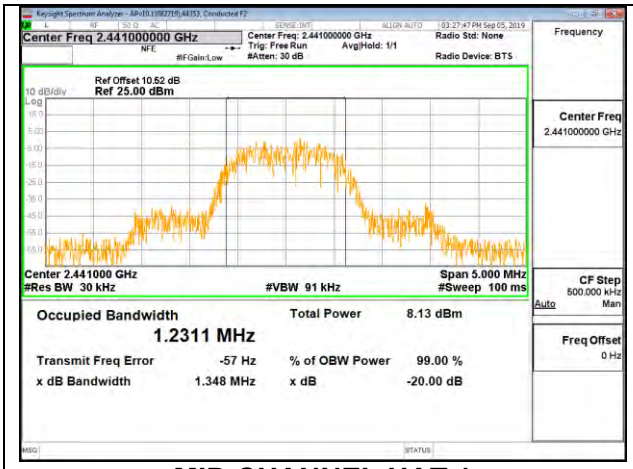


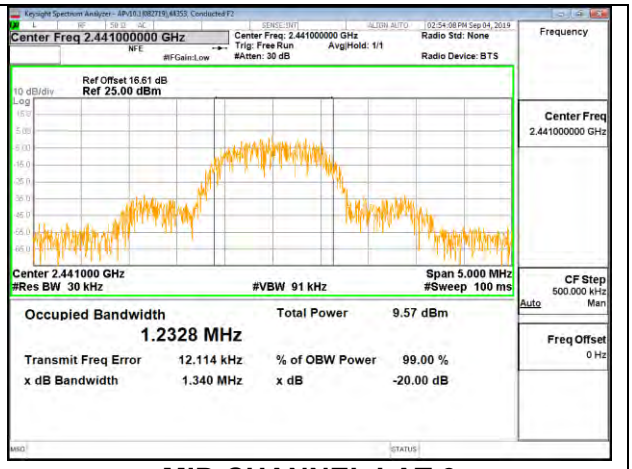
LOW CHANNEL , UAT 1



LOW CHANNEL LAT 3

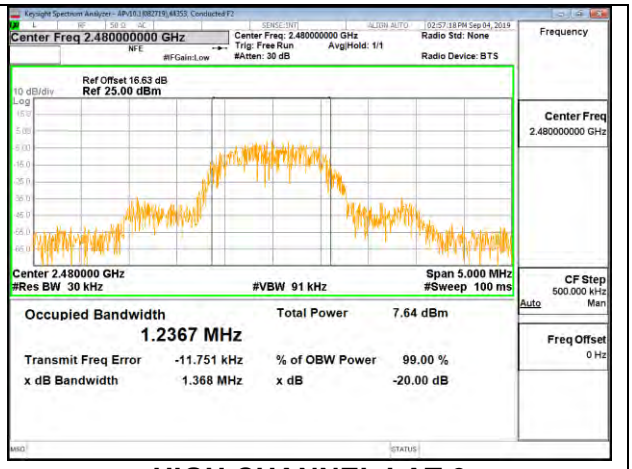


MID CHANNEL UAT 1



MID CHANNEL LAT 3

HIGH CHANNEL UAT 1



HIGH CHANNEL LAT 3

8.10. BEAMFORMING, HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)

RSS-247 (5.1) (b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

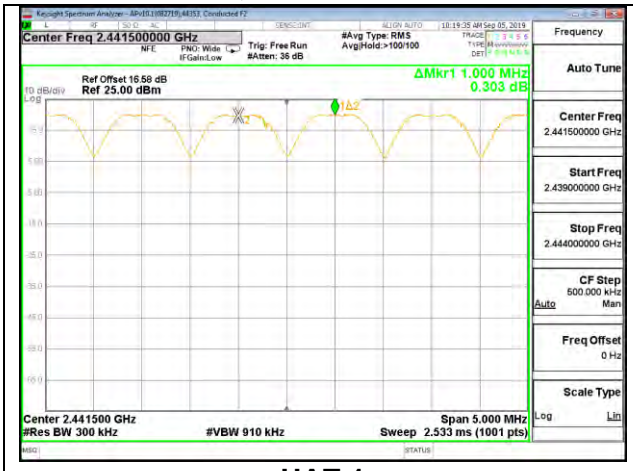
The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to 3x RBW. The sweep time is coupled.

Note: Test procedures and setting on beamforming mode are same as BT basic and EDR mode

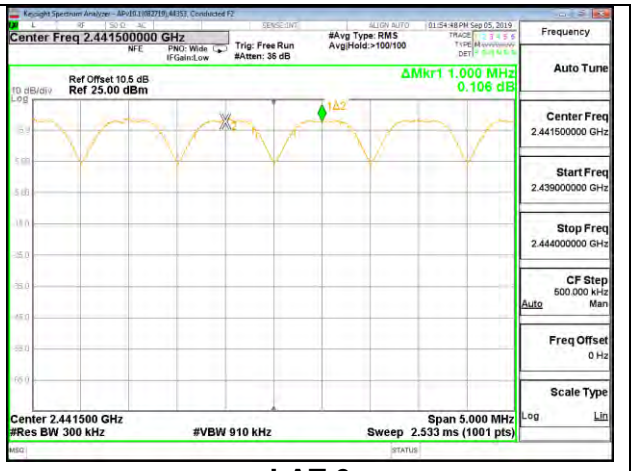
RESULTS

8.10.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

HOPPING FREQUENCY SEPARATION



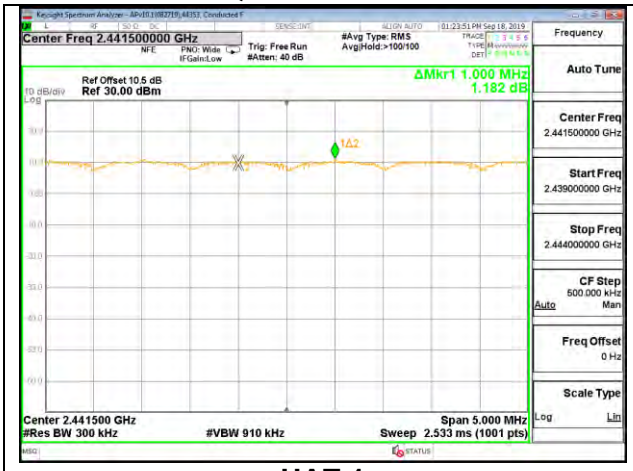
UAT 1



LAT 3

8.10.2. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

HOPPING FREQUENCY SEPARATION

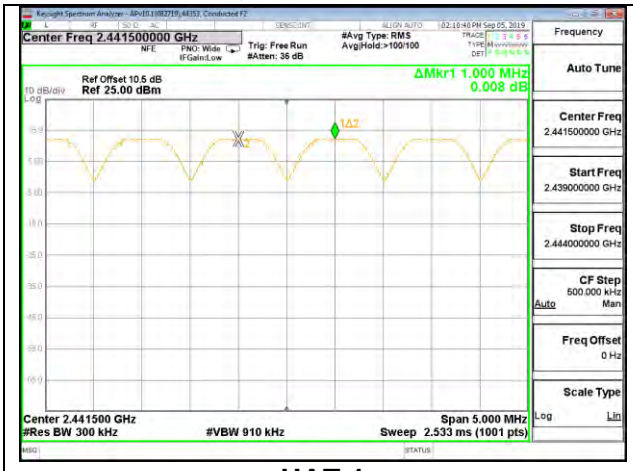


UAT 1

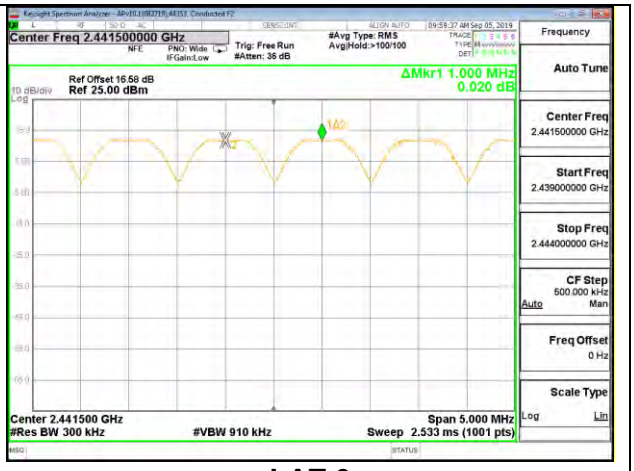
LAT 3

8.10.3. LOW POWER BASIC DATA RATE GFSK MODULATION

HOPPING FREQUENCY SEPARATION



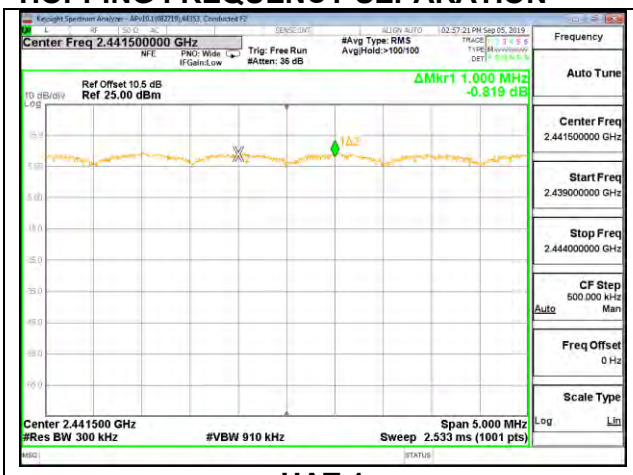
UAT 1



LAT 3

8.10.4. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

HOPPING FREQUENCY SEPARATION



UAT 1

LAT 3

8.11. BEAMFORMING, NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

Note: Test procedures and setting on beamforming mode are same as BT basic and EDR mode

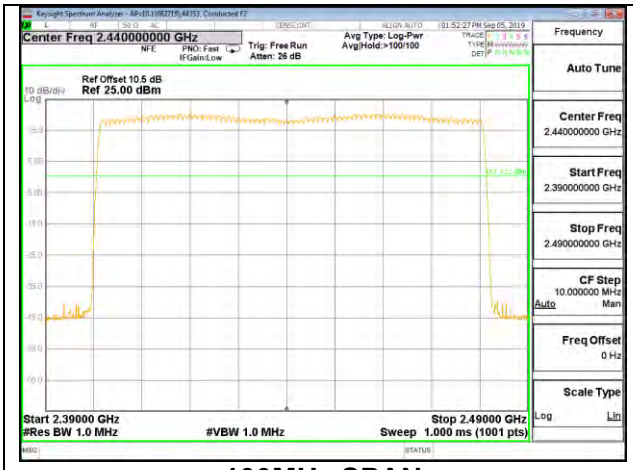
RESULTS

Normal Mode: 79 Channels Observed

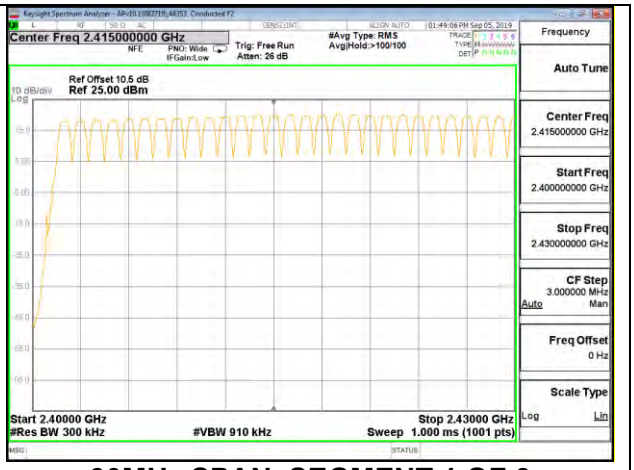
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

8.11.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

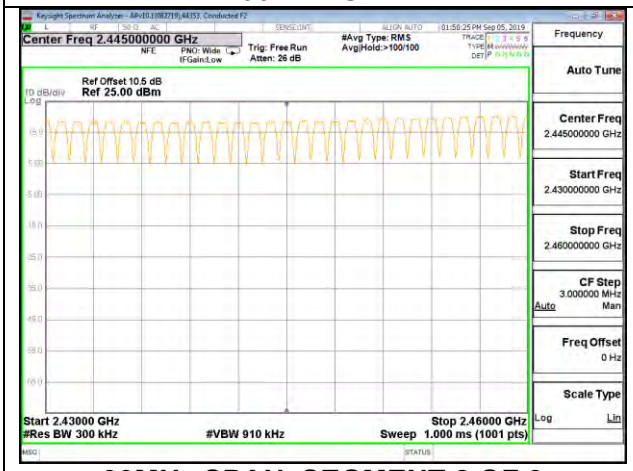
UAT 1



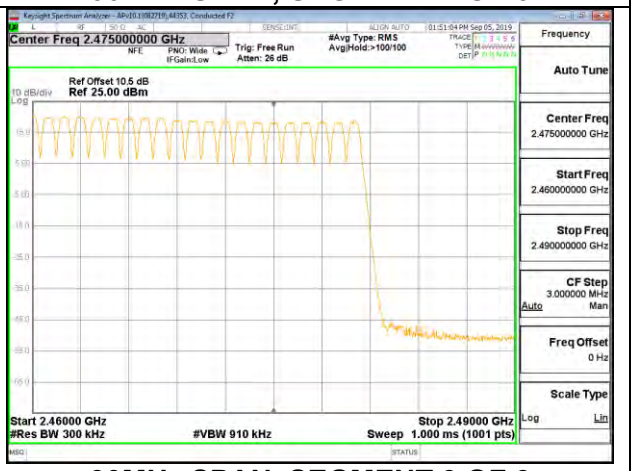
100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3

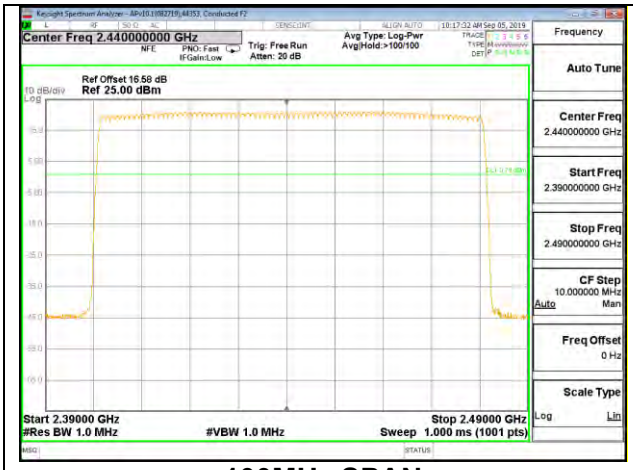


30MHz SPAN, SEGMENT 2 OF 3

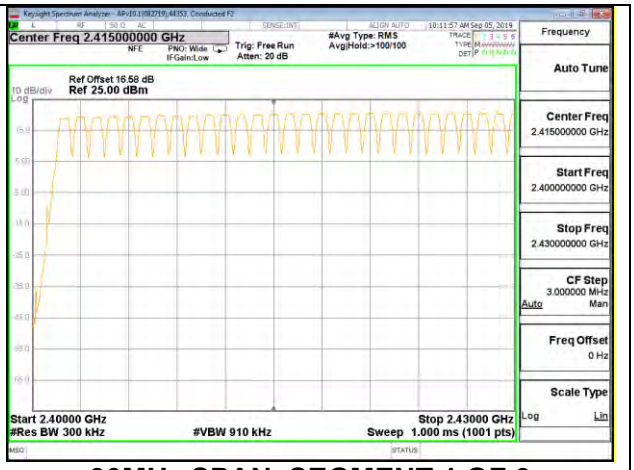


30MHz SPAN, SEGMENT 3 OF 3

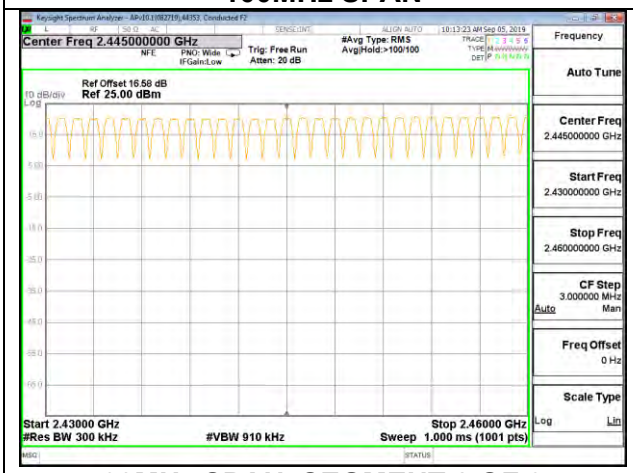
LAT 3



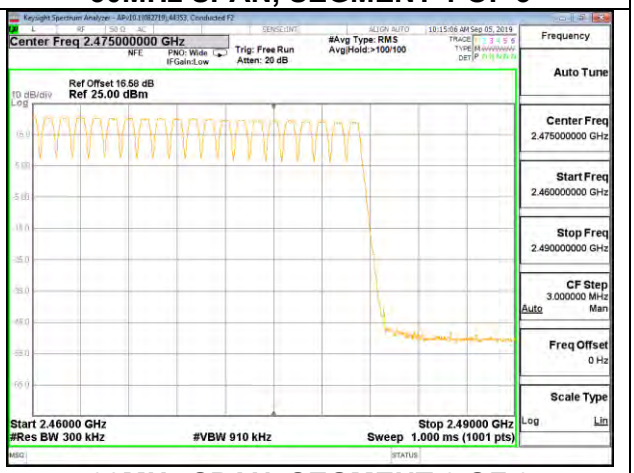
100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3



30MHz SPAN, SEGMENT 2 OF 3

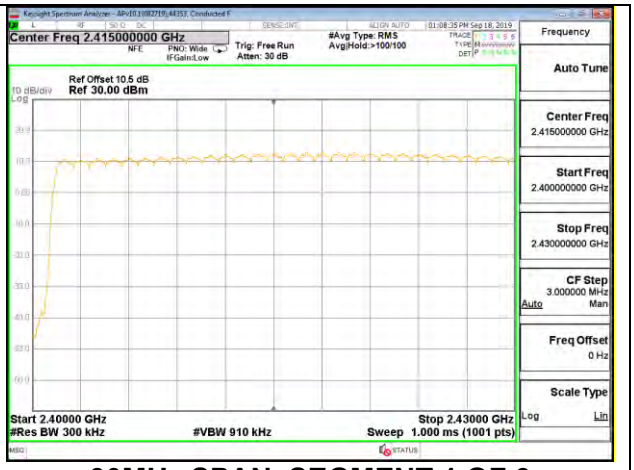


30MHz SPAN, SEGMENT 3 OF 3

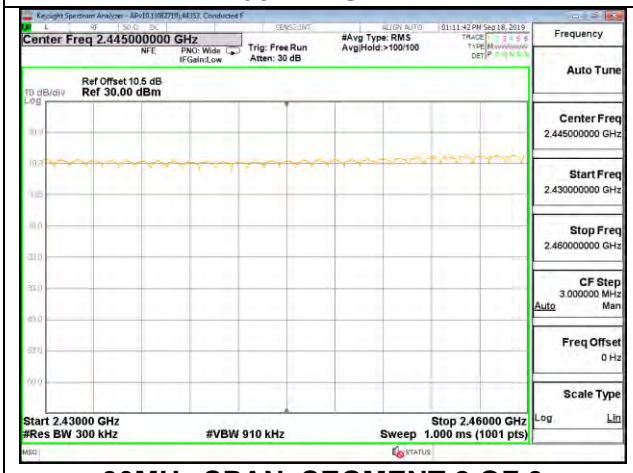
8.11.2. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1

100MHz SPAN



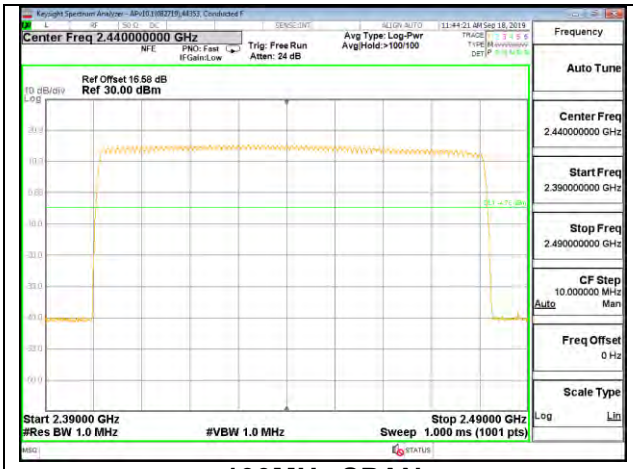
30MHz SPAN, SEGMENT 1 OF 3



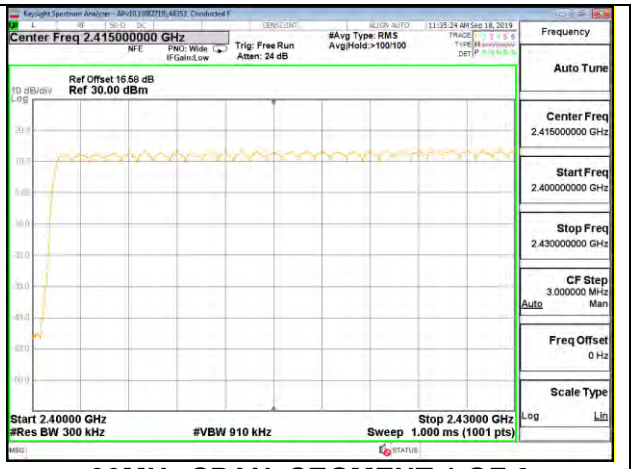
30MHz SPAN, SEGMENT 2 OF 3

30MHz SPAN, SEGMENT 3 OF 3

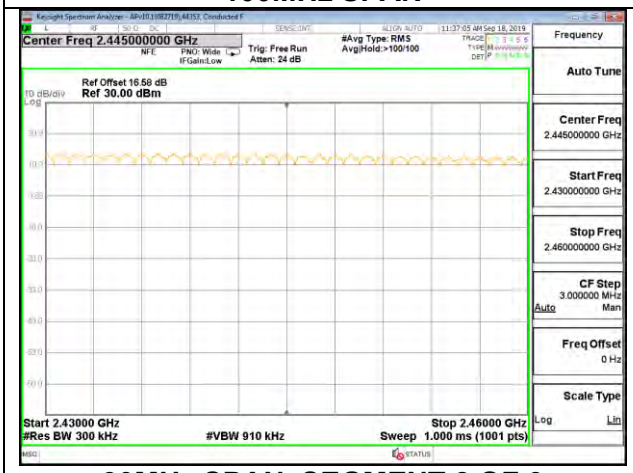
LAT 3



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3

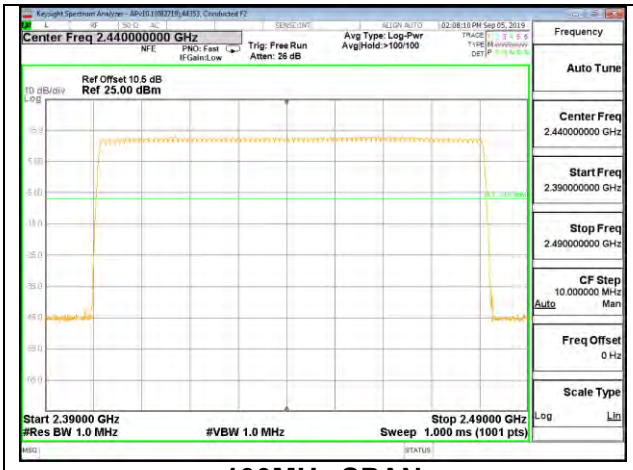


30MHz SPAN, SEGMENT 2 OF 3

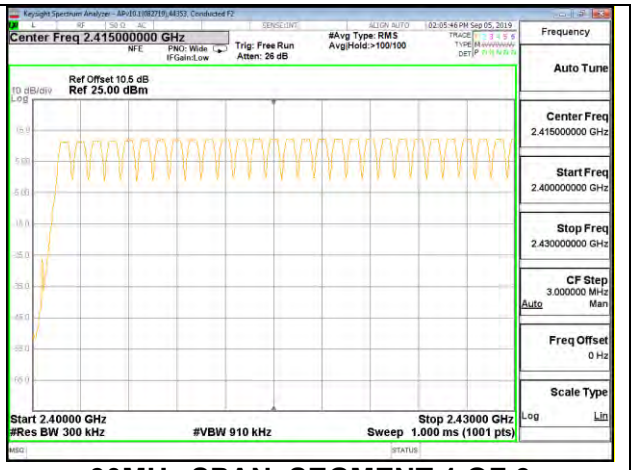
30MHz SPAN, SEGMENT 3 OF 3

8.11.3. LOW POWER BASIC DATA RATE GFSK MODULATION

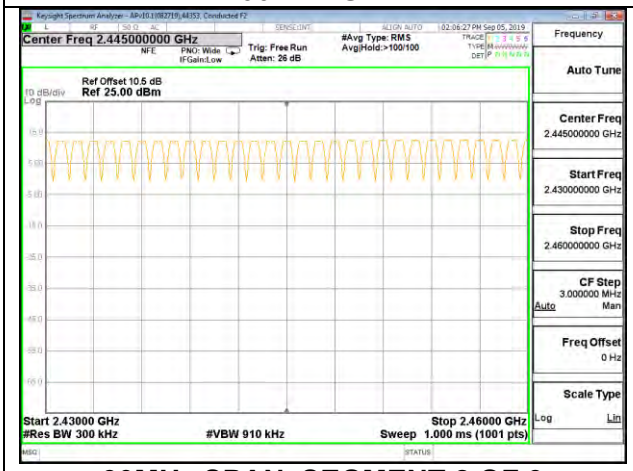
UAT 1



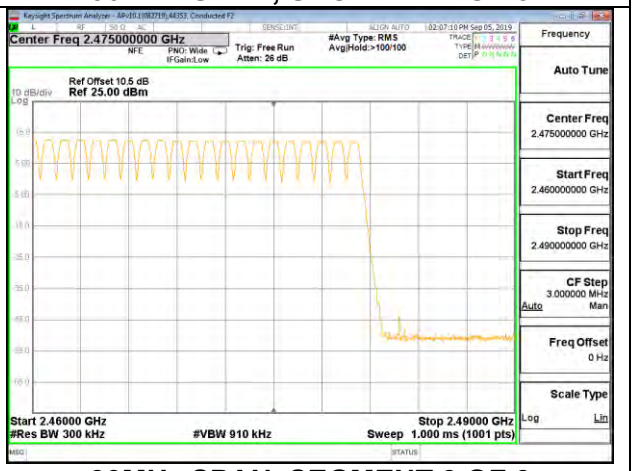
100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3



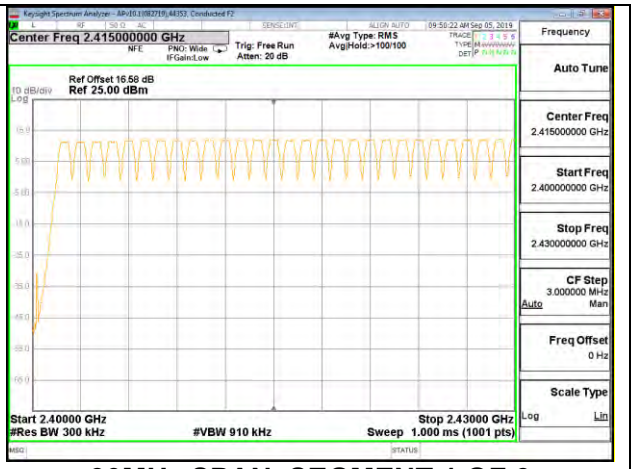
30MHz SPAN, SEGMENT 2 OF 3



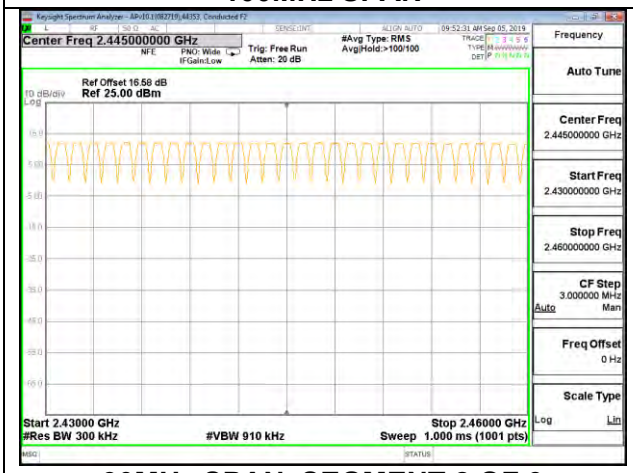
30MHz SPAN, SEGMENT 3 OF 3

LAT 3

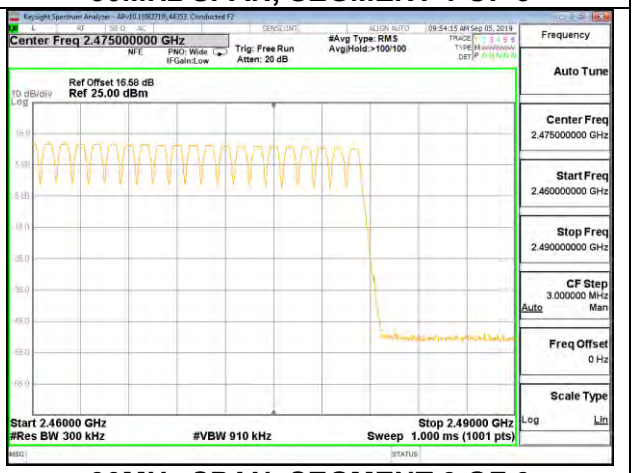
100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3



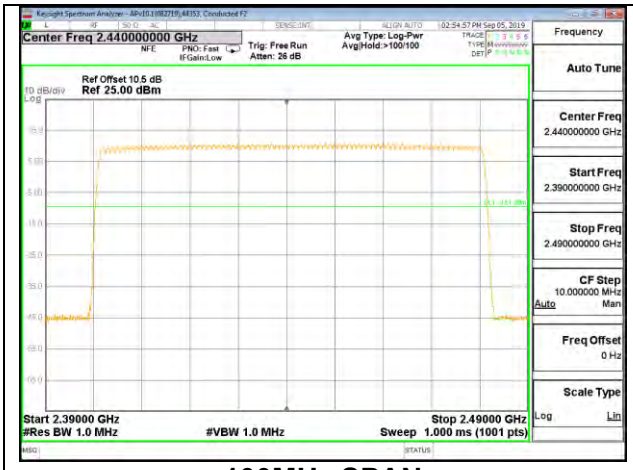
30MHz SPAN, SEGMENT 2 OF 3



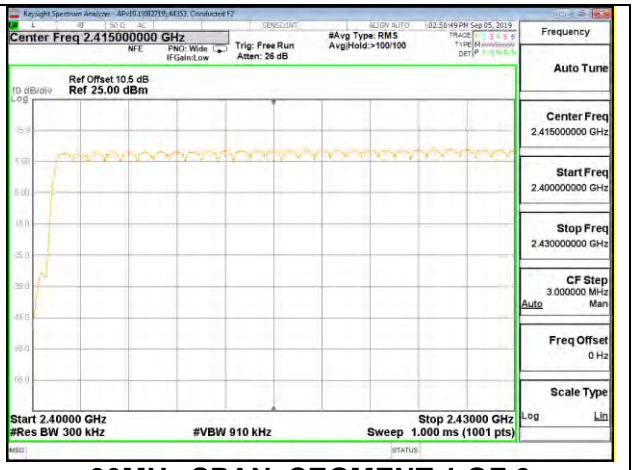
30MHz SPAN, SEGMENT 3 OF 3

8.11.4. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

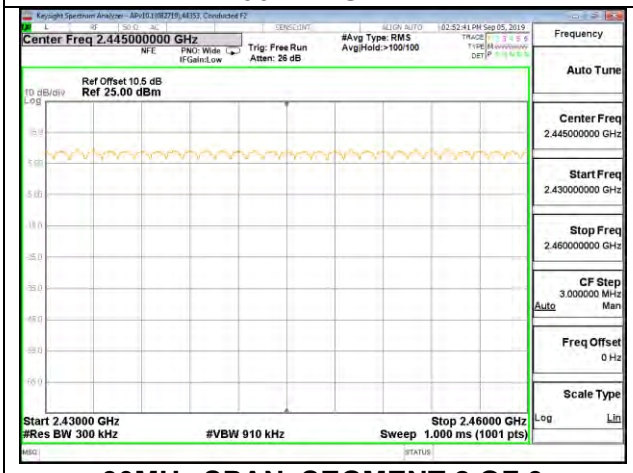
UAT 1



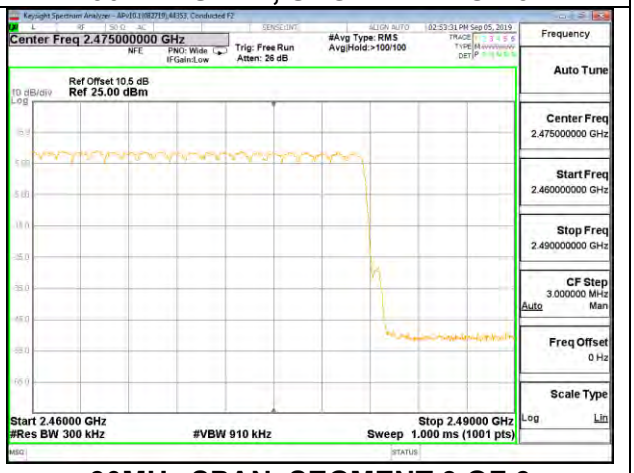
100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3

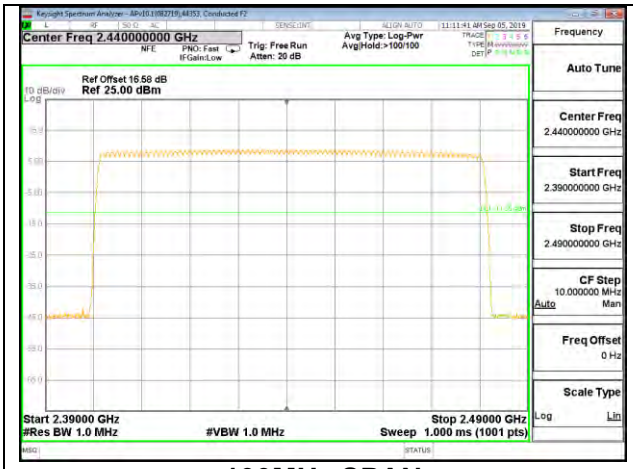


30MHz SPAN, SEGMENT 2 OF 3

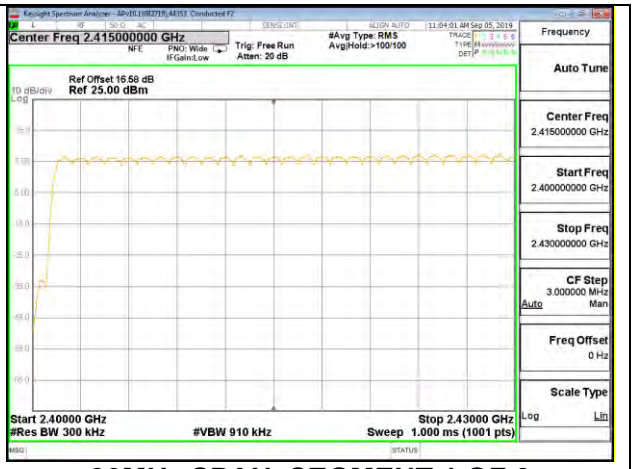


30MHz SPAN, SEGMENT 3 OF 3

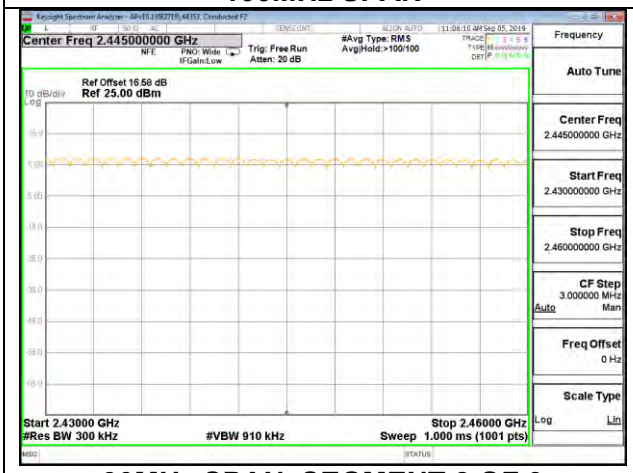
LAT 3



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3



30MHz SPAN, SEGMENT 2 OF 3

30MHz SPAN, SEGMENT 3 OF 3

8.12. BEAMFORMING, AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 3.16 second period (79 channels * 0.4 s) is equal to 10 * (# of pulses in 3.16 s) * pulse width.

For AFH mode, the average time of occupancy in the specified 8 second period (20 channels * 0.4 seconds) is equal to 10 * (# of pulses in 0.8 s) * pulse width.

Note: Test procedures and setting on beamforming mode are same as BT basic and EDR mode

RESULTS

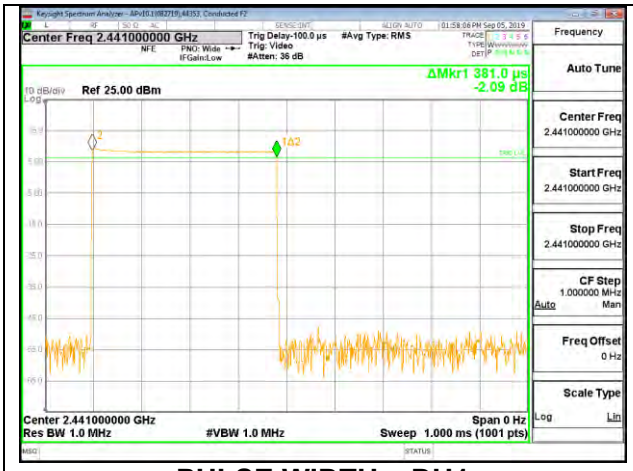
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

8.12.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

UAT 1

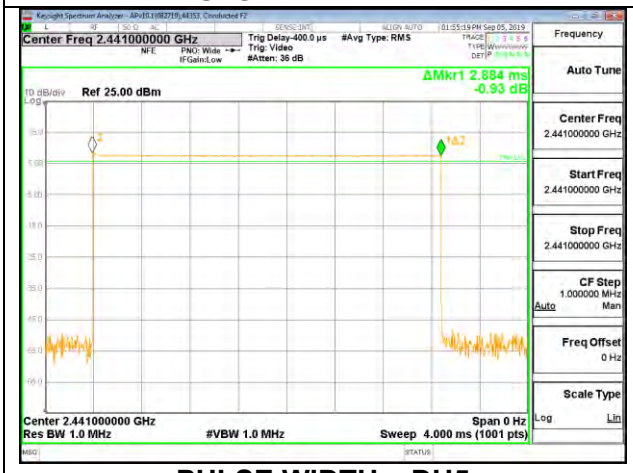
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.381	32	0.122	0.4	-0.278
DH3	1.638	16	0.262	0.4	-0.138
DH5	2.884	10	0.288	0.4	-0.112
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.381	8	0.030	0.4	-0.370
DH3	1.638	4	0.066	0.4	-0.334
DH5	2.884	2.5	0.072	0.4	-0.328

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888



PULSE WIDTH – DH1

PULSE WIDTH – DH3



PULSE WIDTH – DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1

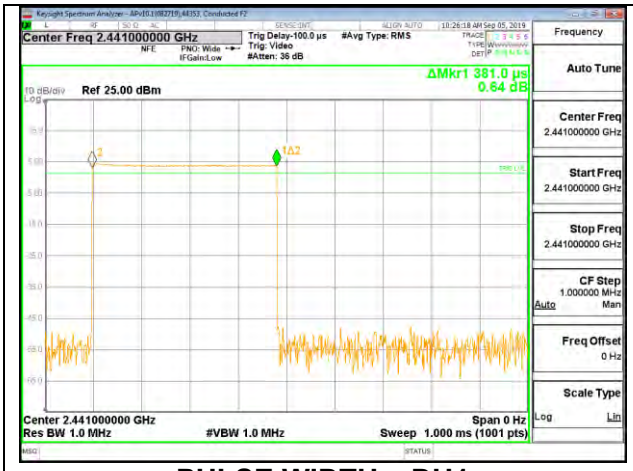
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD –DH3

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD –DH5

LAT 3

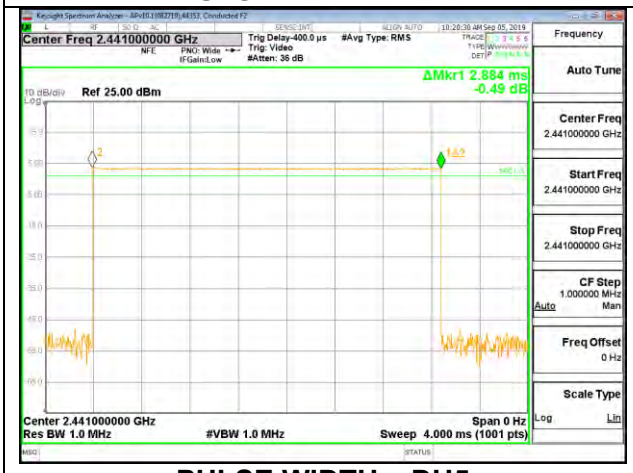
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.381	31	0.118	0.4	-0.282
DH3	1.638	15	0.246	0.4	-0.154
DH5	2.884	10	0.288	0.4	-0.112
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.381	7.75	0.030	0.4	-0.370
DH3	1.638	3.75	0.061	0.4	-0.339
DH5	2.884	2.5	0.072	0.4	-0.328

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888



PULSE WIDTH – DH1

PULSE WIDTH – DH3



PULSE WIDTH – DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3

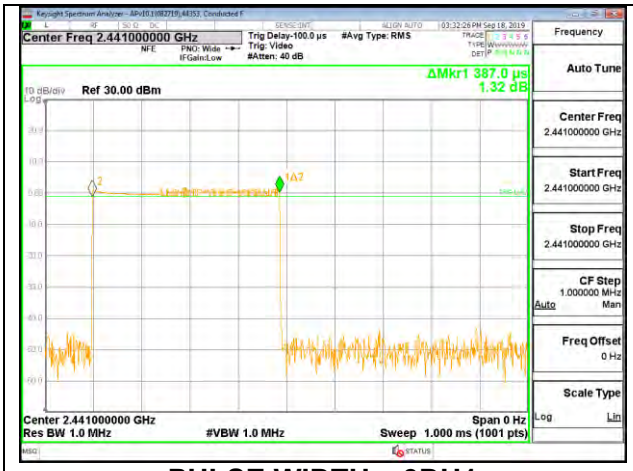
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

8.12.2. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1

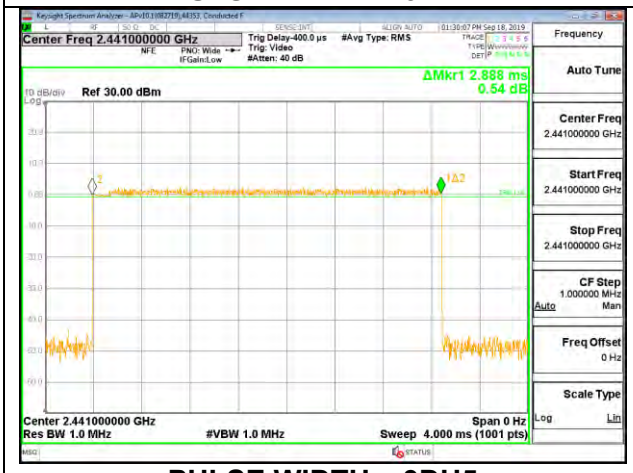
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK Normal Mode					
3DH1	0.387	31	0.120	0.4	-0.280
3DH3	1.638	16	0.262	0.4	-0.138
3DH5	2.888	12	0.347	0.4	-0.053

Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.



PULSE WIDTH – 3DH1

PULSE WIDTH – 3DH3



PULSE WIDTH – 3DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH1

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH3

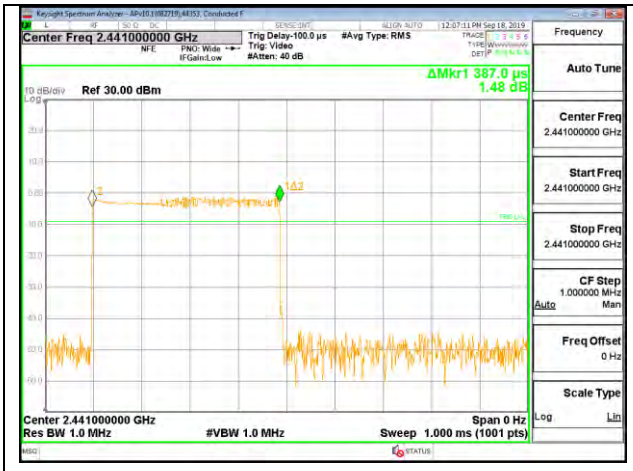
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH5

LAT 3

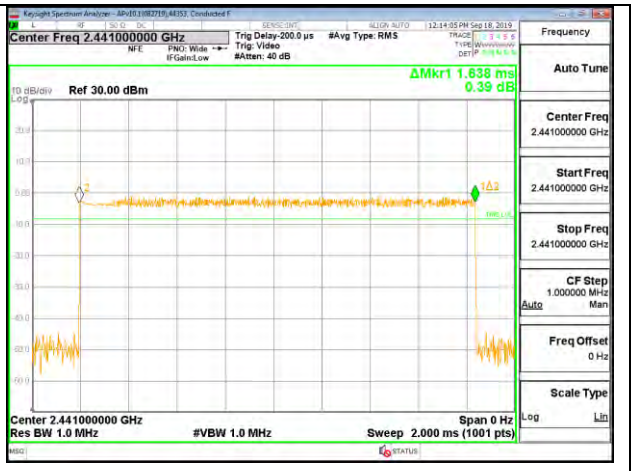
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK Normal Mode					
3DH1	0.387	32	0.124	0.4	-0.276
3DH3	1.638	16	0.262	0.4	-0.138
3DH5	2.888	12	0.347	0.4	-0.053

Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.

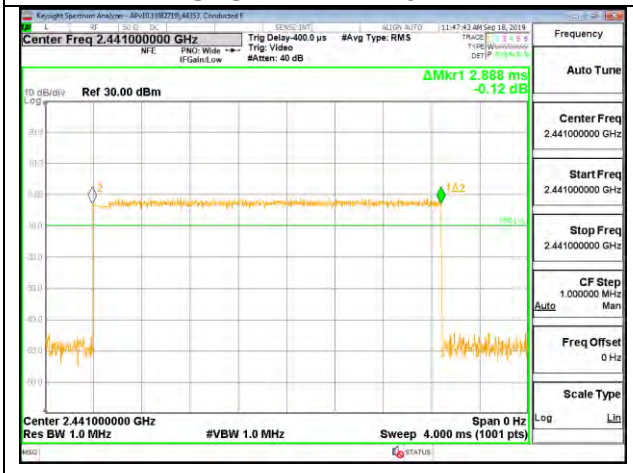
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888



PULSE WIDTH – 3DH1

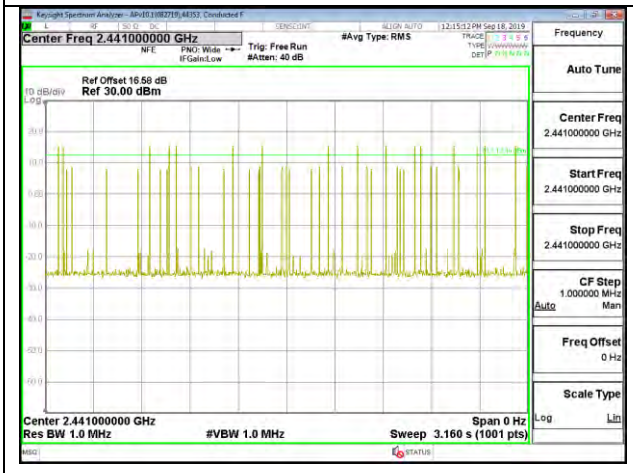


PULSE WIDTH – 3DH3



PULSE WIDTH – 3DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH3

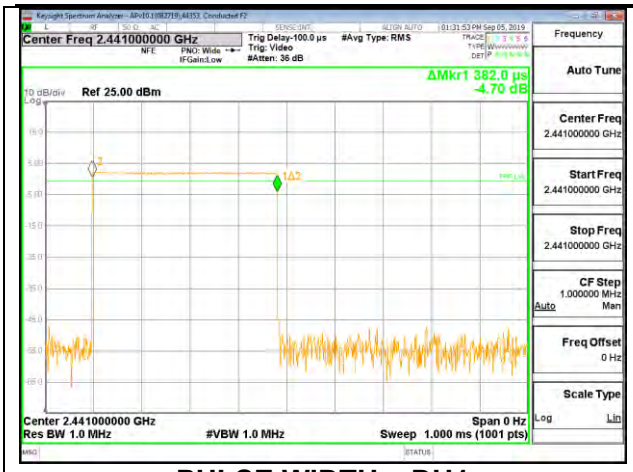
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH5

8.12.3. LOW POWER BASIC DATA RATE GFSK MODULATION

UAT 1

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.382	32	0.122	0.4	-0.278
DH3	1.636	15	0.245	0.4	-0.155
DH5	2.884	10	0.288	0.4	-0.112
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.382	8	0.031	0.4	-0.369
DH3	1.636	3.75	0.061	0.4	-0.339
DH5	2.884	2.5	0.072	0.4	-0.328

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

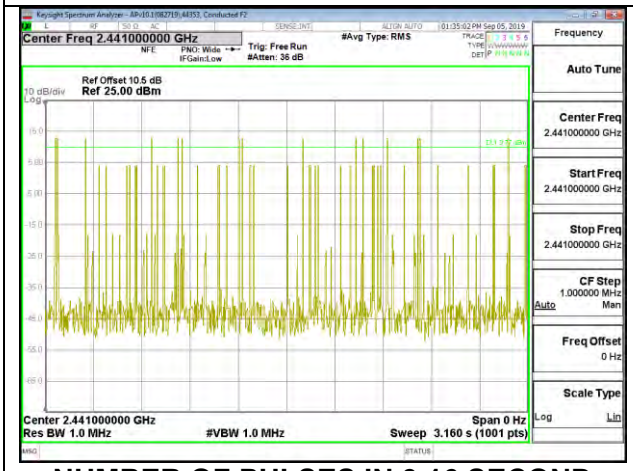


PULSE WIDTH – DH1

PULSE WIDTH – DH3

PULSE WIDTH – DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



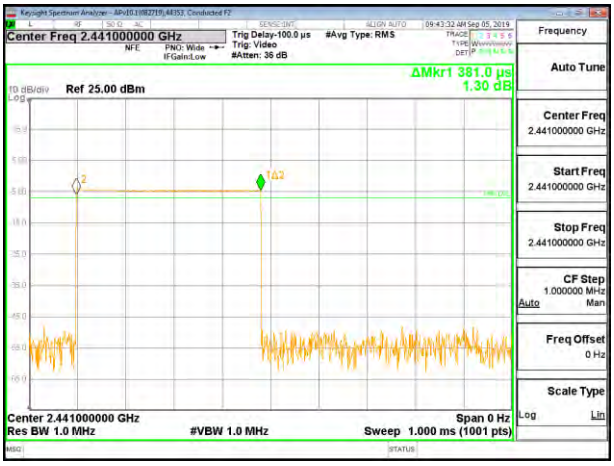
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

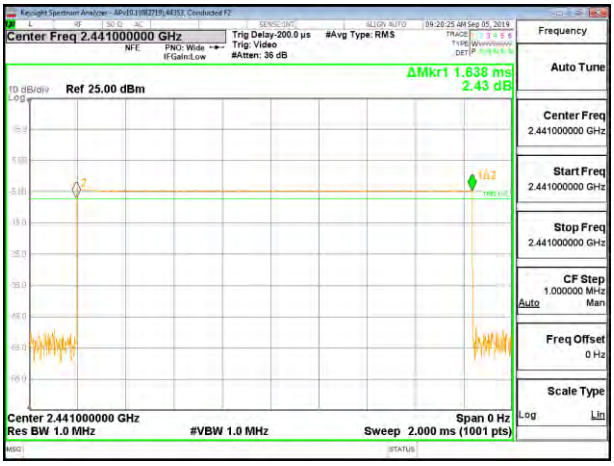
LAT 3

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.381	32	0.122	0.4	-0.278
DH3	1.638	15	0.246	0.4	-0.154
DH5	2.884	10	0.288	0.4	-0.112
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.381	8	0.030	0.4	-0.370
DH3	1.638	3.75	0.061	0.4	-0.339
DH5	2.884	2.5	0.072	0.4	-0.328

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

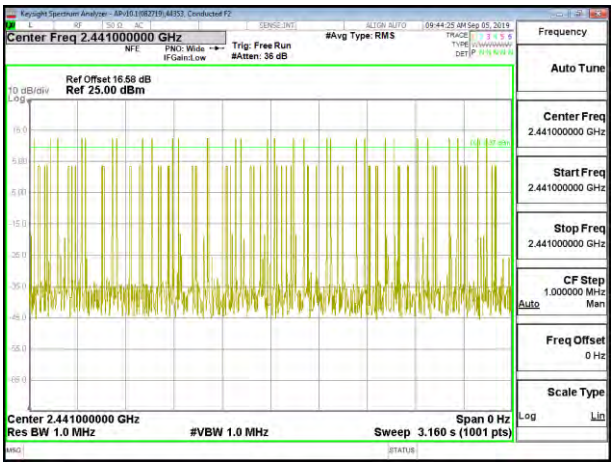


PULSE WIDTH –DH1

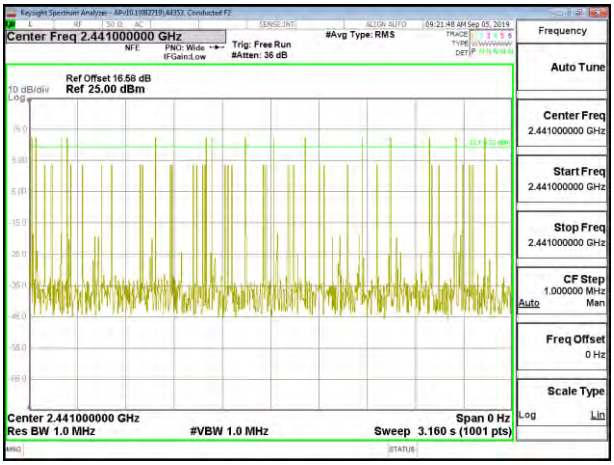


PULSE WIDTH – DH3

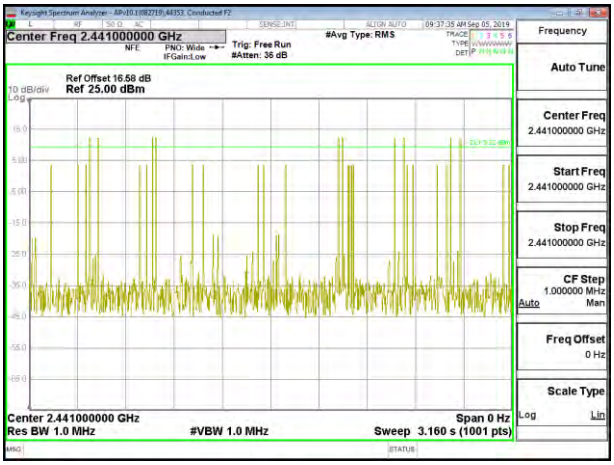
PULSE WIDTH –DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD –DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD –DH3



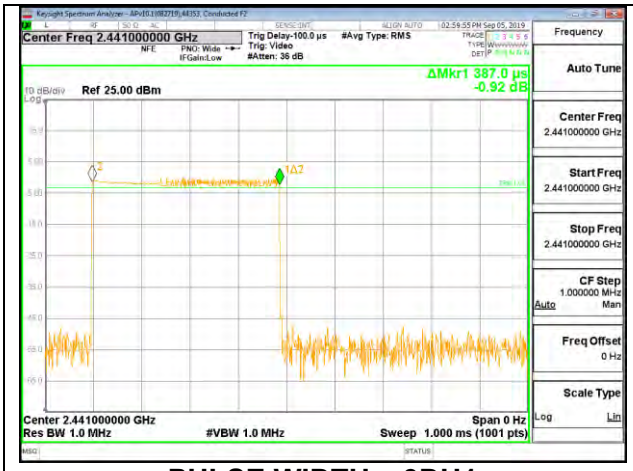
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD –DH5

8.12.4. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1

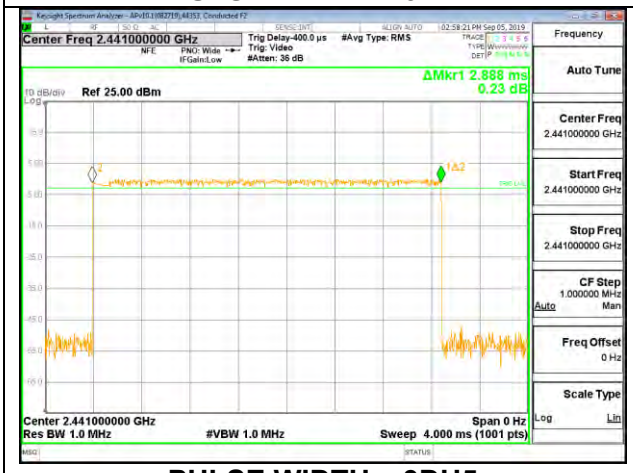
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK Normal Mode					
3DH1	0.387	32	0.124	0.4	-0.276
3DH3	1.638	16	0.262	0.4	-0.138
3DH5	2.888	11	0.318	0.4	-0.082

Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.



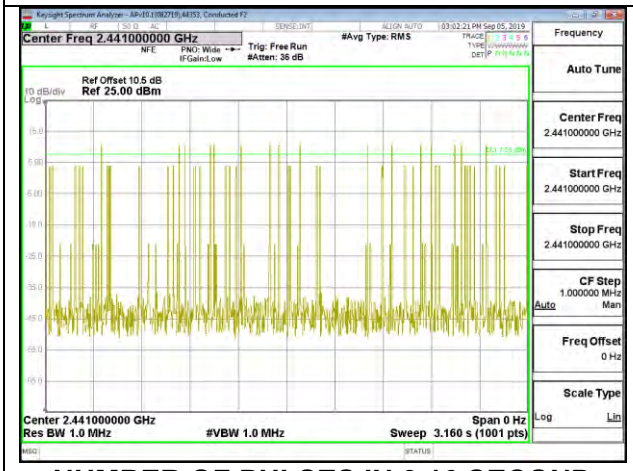
PULSE WIDTH – 3DH1

PULSE WIDTH – 3DH3



PULSE WIDTH – 3DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH3

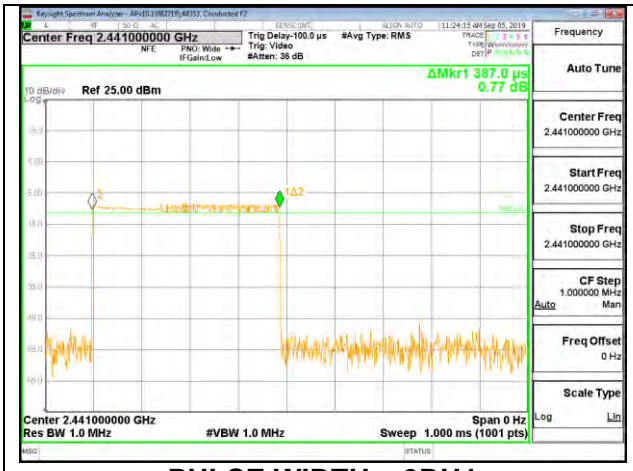
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH5

LAT 3

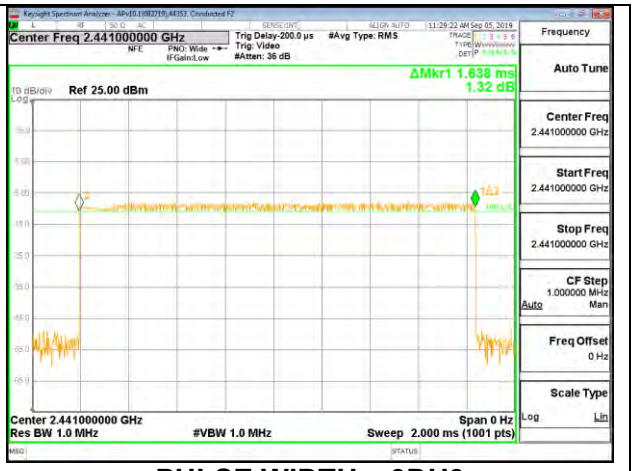
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK Normal Mode					
3DH1	0.387	30	0.116	0.4	-0.284
3DH3	1.638	14	0.229	0.4	-0.171
3DH5	2.888	11	0.318	0.4	-0.082

Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.

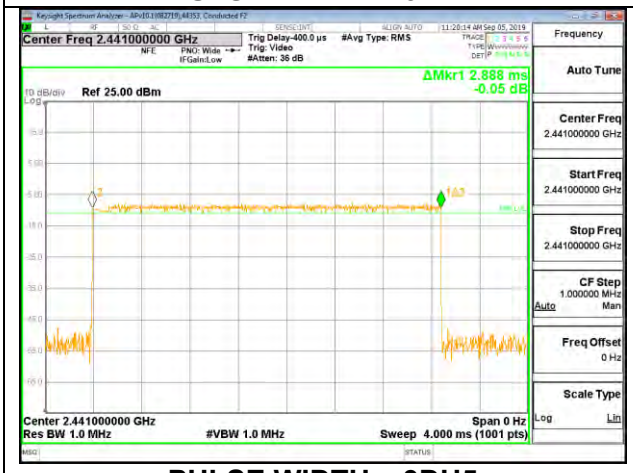
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888



PULSE WIDTH – 3DH1

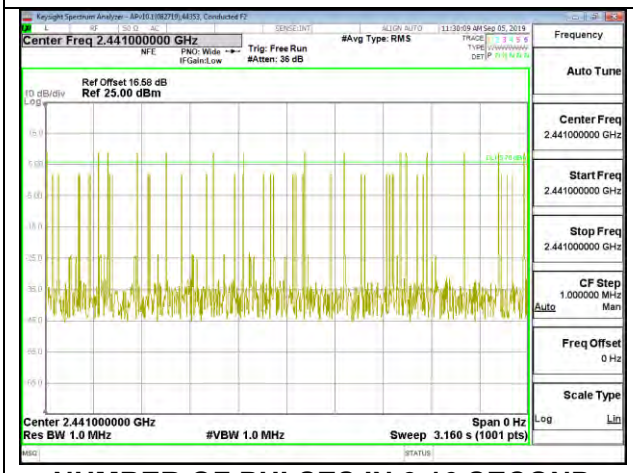


PULSE WIDTH – 3DH3



PULSE WIDTH – 3DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH3

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH5

8.13. BEAMFORMING OUTPUT POWER

8.13.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Output Power UAT 1 (dBm)	Output Power LAT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	17.07	17.16	20.13	21	-0.87
Middle	2441	17.14	17.24	20.20	21	-0.80
High	2480	17.12	17.20	20.17	21	-0.83

8.13.2. HIGH POWER ENHANCED DATA RATE QPSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Output Power UAT 1 (dBm)	Output Power LAT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	16.56	16.55	19.57	21	-1.43
Middle	2441	16.62	16.76	19.70	21	-1.30
High	2480	16.69	16.69	19.70	21	-1.30

8.13.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Output Power UAT 1 (dBm)	Output Power LAT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	16.81	16.80	19.82	21	-1.18
Middle	2441	16.88	17.01	19.96	21	-1.04
High	2480	16.92	16.90	19.92	21	-1.08

8.13.4. LOW POWER BASIC DATA RATE GFSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Output Power UAT 1 (dBm)	Output Power LAT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	14.58	14.58	17.59	21	-3.41
Middle	2441	14.63	14.77	17.71	21	-3.29
High	2480	14.67	14.69	17.69	21	-3.31

8.13.5. LOW POWER ENHANCED DATA RATE QPSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Output Power UAT 1 (dBm)	Output Power LAT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.15	10.16	13.17	21	-7.83
Middle	2441	10.17	10.24	13.22	21	-7.78
High	2480	10.21	10.11	13.17	21	-7.83

8.13.6. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Output Power UAT 1 (dBm)	Output Power LAT 3 (dBm)	Total Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.28	10.42	13.36	21	-7.64
Middle	2441	10.32	10.50	13.42	21	-7.58
High	2480	10.35	10.26	13.32	21	-7.68

8.14. BEAMFORMING AVERAGE POWER

8.14.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Average Power UAT 1 (dBm)	Average Power LAT 3 (dBm)	Total Power (dBm)
Low	2402	16.80	16.91	19.87
Middle	2441	16.87	16.98	19.94
High	2480	16.76	16.92	19.85

8.14.2. HIGH POWER ENHANCED DATA RATE QPSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Average Power UAT 1 (dBm)	Average Power LAT 3 (dBm)	Total Power (dBm)
Low	2402	14.15	14.16	17.17
Middle	2441	14.19	14.24	17.23
High	2480	14.14	14.15	17.16

8.14.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Average Power UAT 1 (dBm)	Average Power LAT 3 (dBm)	Total Power (dBm)
Low	2402	14.29	14.28	17.30
Middle	2441	14.35	14.50	17.44
High	2480	14.40	14.39	17.41

8.14.4. LOW POWER BASIC DATA RATE GFSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Average Power UAT 1 (dBm)	Average Power LAT 3 (dBm)	Total Power (dBm)
Low	2402	12.34	12.32	15.34
Middle	2441	12.45	12.41	15.44
High	2480	12.39	12.26	15.34

8.14.5. LOW POWER ENHANCED DATA RATE QPSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Average Power UAT 1 (dBm)	Average Power LAT 3 (dBm)	Total Power (dBm)
Low	2402	8.74	8.85	11.81
Middle	2441	8.75	8.92	11.85
High	2480	8.78	8.69	11.75

8.14.6. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1 + LAT 3

Tested By:	44353
Date:	1/2/2020

Channel	Frequency (MHz)	Average Power UAT 1 (dBm)	Average Power LAT 3 (dBm)	Total Power (dBm)
Low	2402	8.76	8.88	11.83
Middle	2441	8.79	8.96	11.89
High	2480	8.80	8.75	11.79

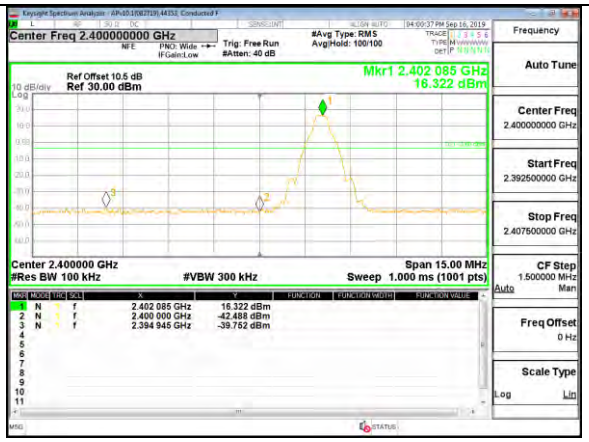
Note: Test procedures and setting on beamforming mode are same as BT basic and EDR mode

8.15. BEAMFORMING, CONDUCTED SPURIOUS

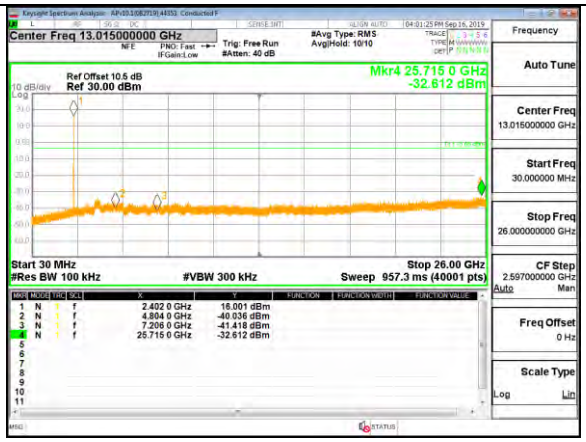
8.15.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

Note: Test procedure on beamforming mode is same as BT basic and EDR mode

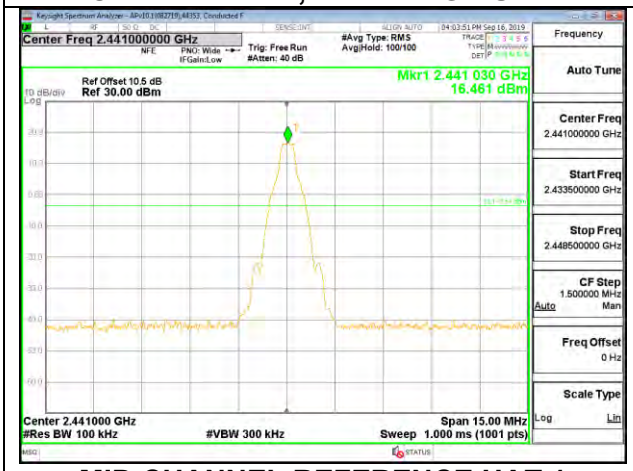
UAT 1



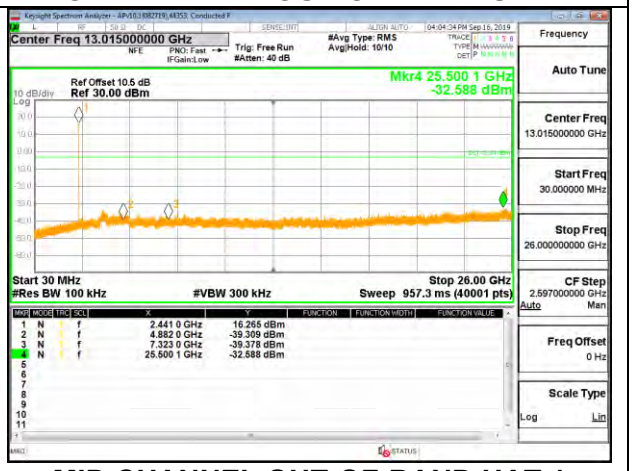
LOW CHANNEL , BANDEDGE UAT 1



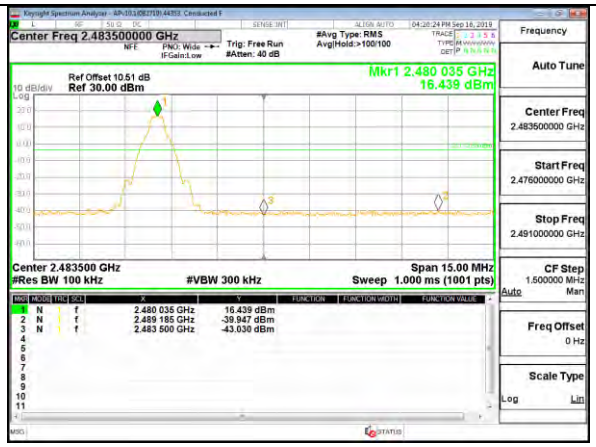
LOW CHANNEL OUT-OF-BAND UAT 1



MID CHANNEL REFERENCE UAT 1



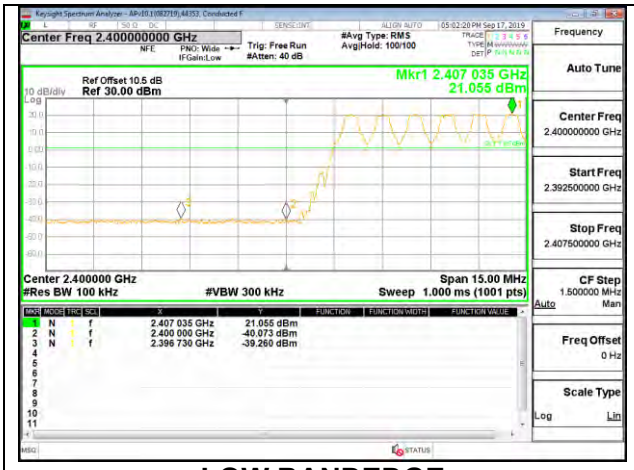
MID CHANNEL OUT-OF-BAND UAT 1



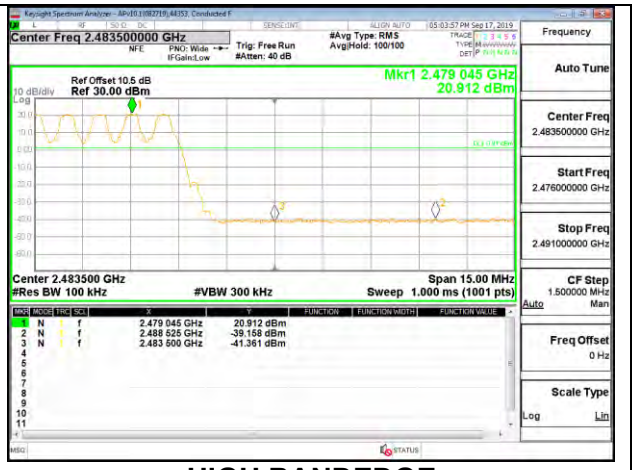
HIGH CHANNEL BANDEDGE UAT 1

HIGH CHANNEL OUT-OF-BAND UAT 1

UAT 1 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

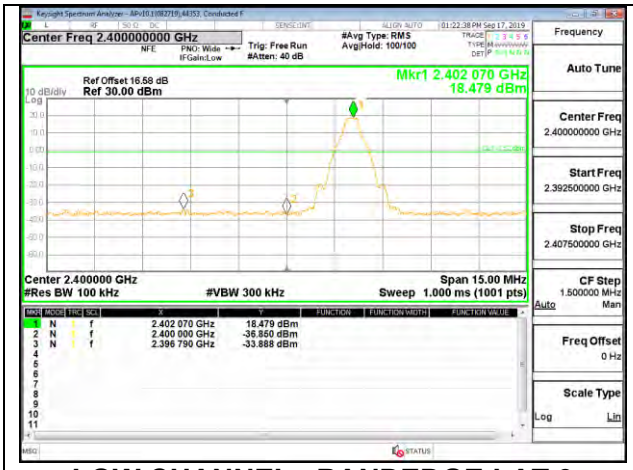


LOW BANDEDGE

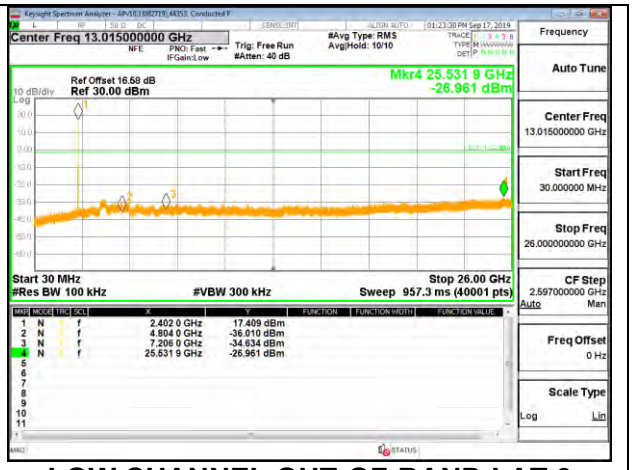


HIGH BANDEDGE

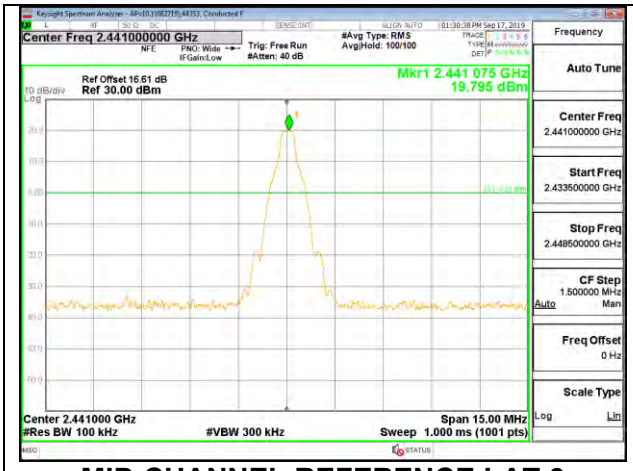
LAT 3



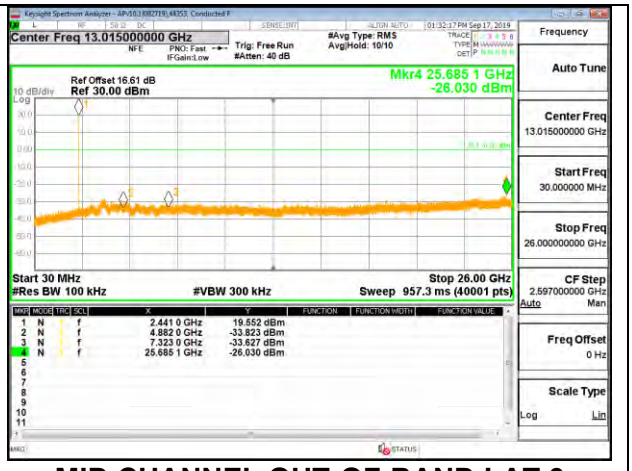
LOW CHANNEL , BANDEDGE LAT 3



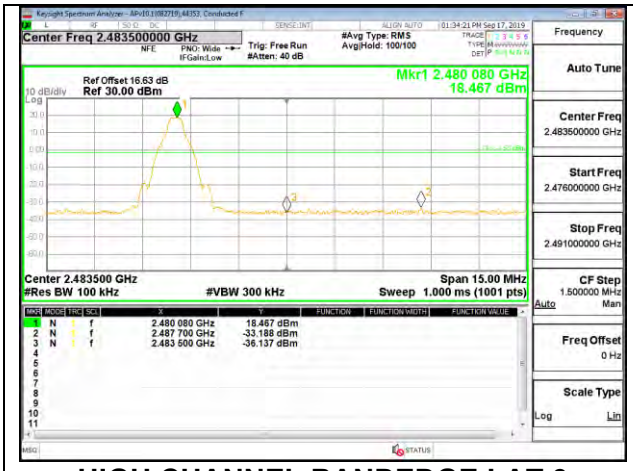
LOW CHANNEL OUT-OF-BAND LAT 3



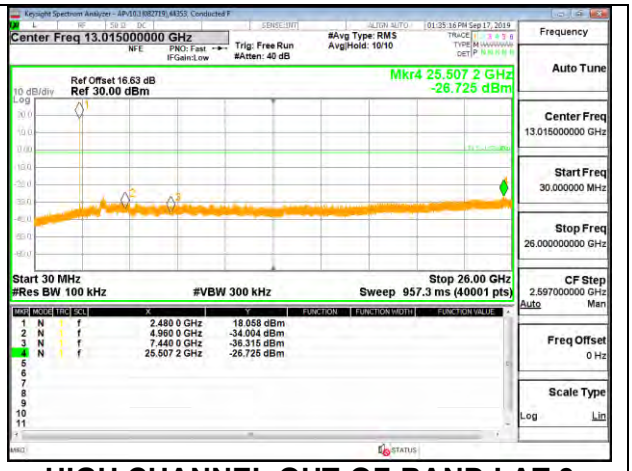
MID CHANNEL REFERENCE LAT 3



MID CHANNEL OUT-OF-BAND LAT 3

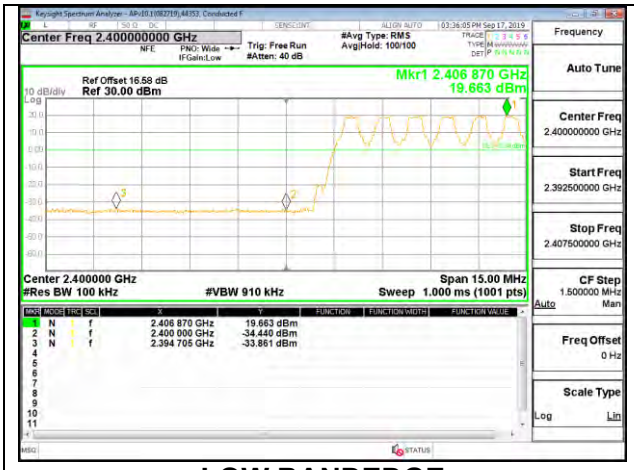


HIGH CHANNEL BANDEDGE LAT 3

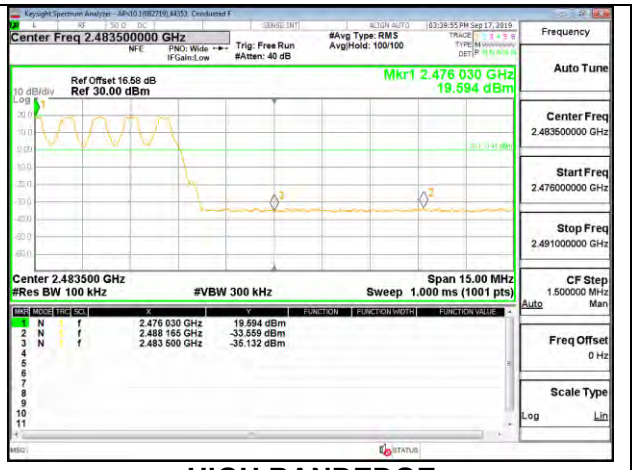


HIGH CHANNEL OUT-OF-BAND LAT 3

LAT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE

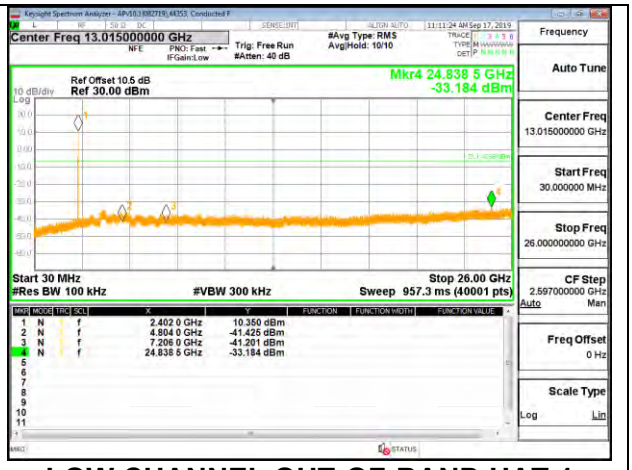


HIGH BANDEDGE

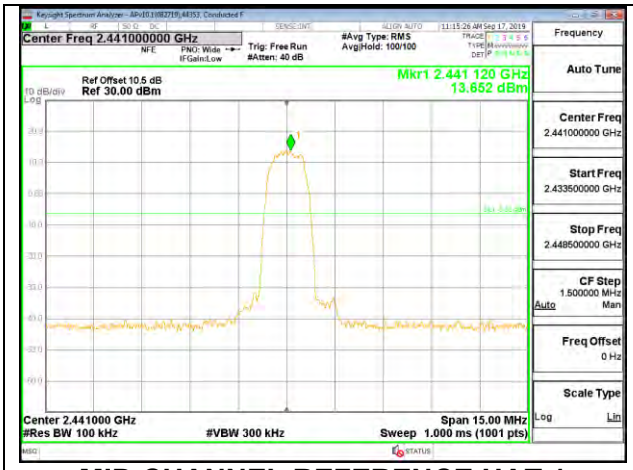
8.15.2. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1

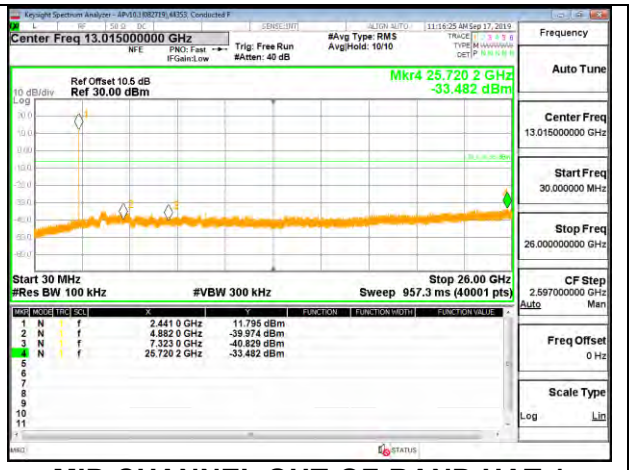
LOW CHANNEL , BANDEDGE UAT 1



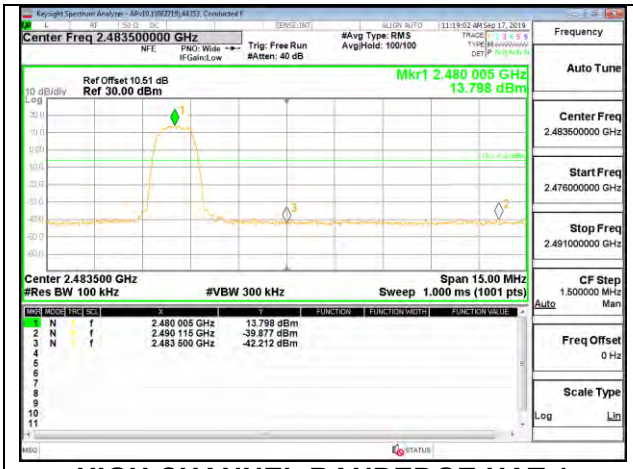
LOW CHANNEL OUT-OF-BAND UAT 1



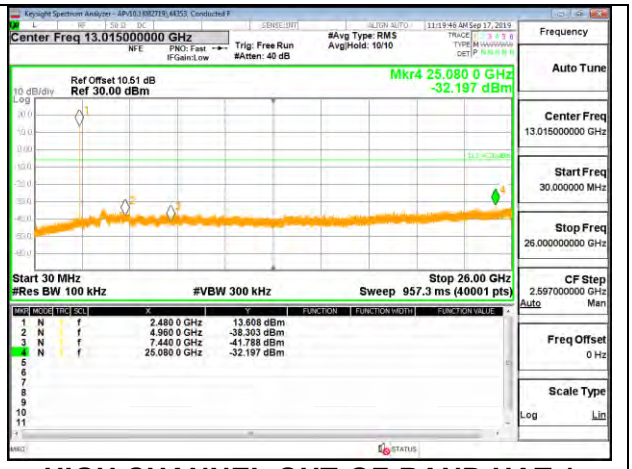
MID CHANNEL REFERENCE UAT 1



MID CHANNEL OUT-OF-BAND UAT 1

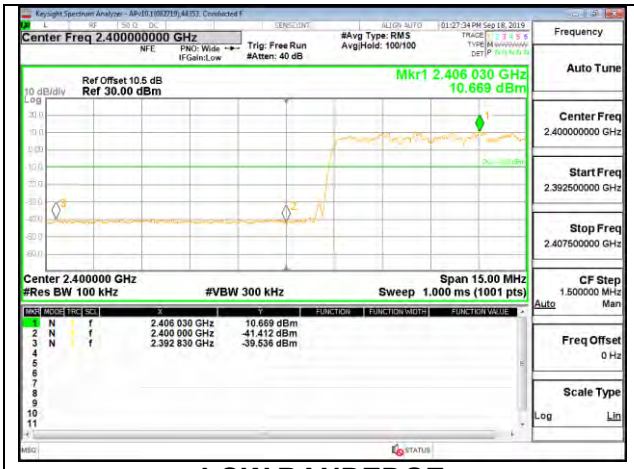


HIGH CHANNEL BANDEDGE UAT 1



HIGH CHANNEL OUT-OF-BAND UAT 1

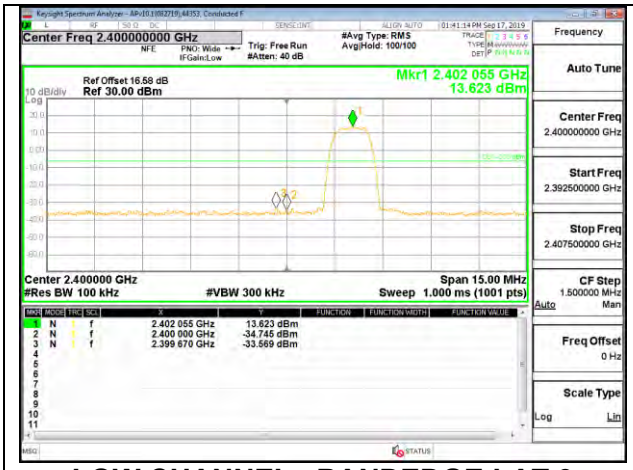
UAT 1 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



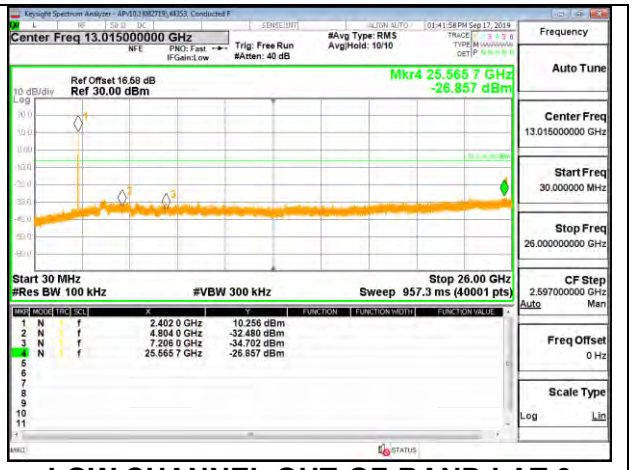
LOW BANDEDGE

HIGH BANDEDGE

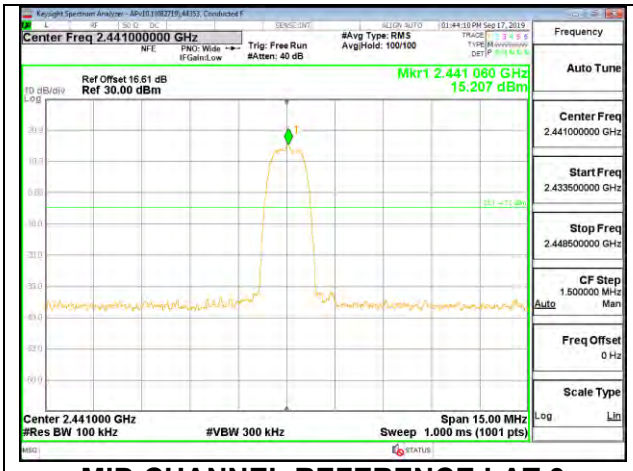
LAT 3



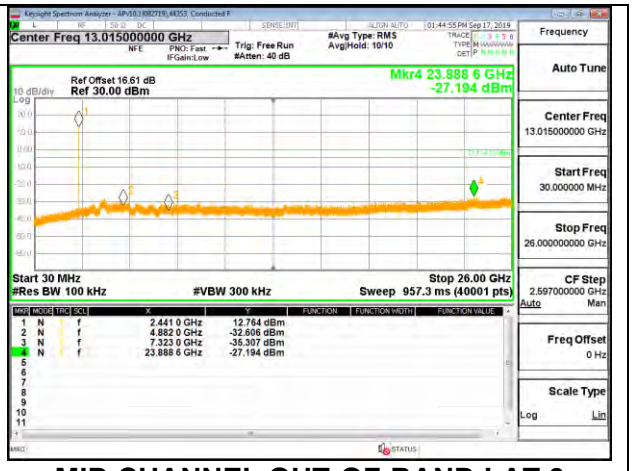
LOW CHANNEL , BANDEDGE LAT 3



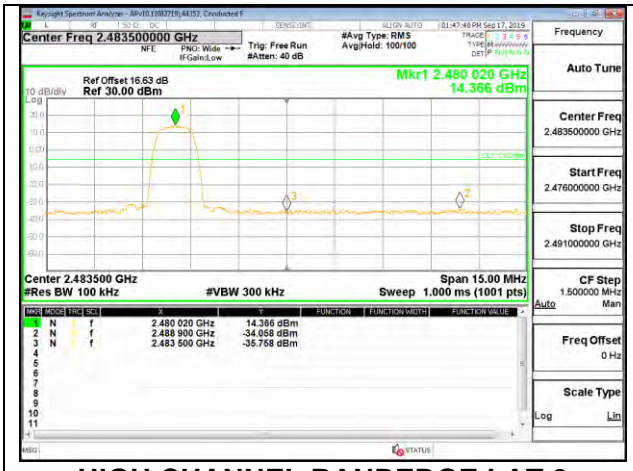
LOW CHANNEL OUT-OF-BAND LAT 3



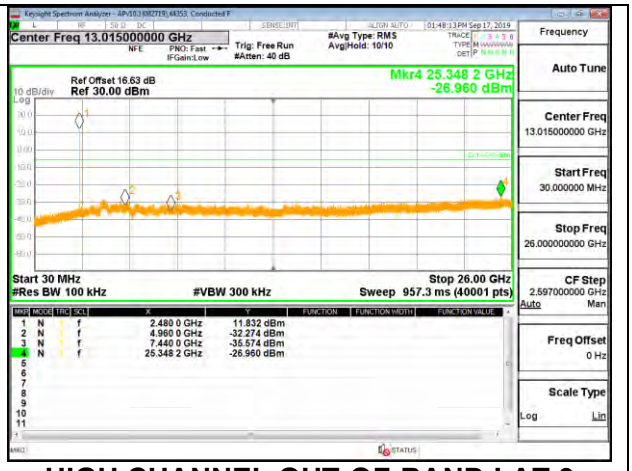
MID CHANNEL REFERENCE LAT 3



MID CHANNEL OUT-OF-BAND LAT 3

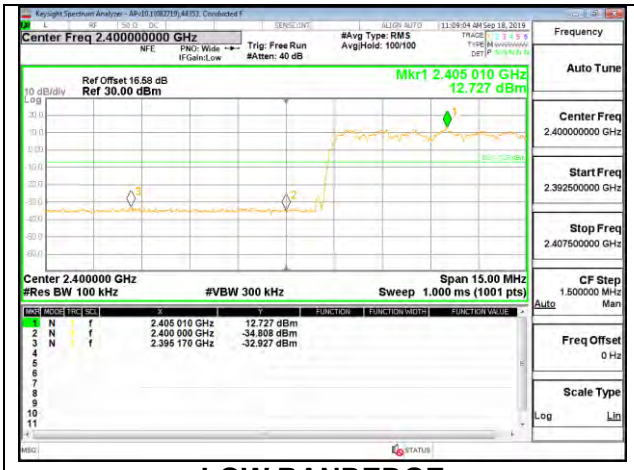


HIGH CHANNEL BANDEDGE LAT 3

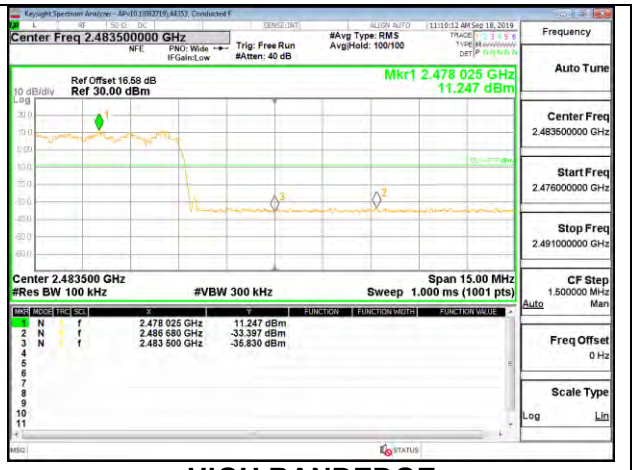


HIGH CHANNEL OUT-OF-BAND LAT 3

LAT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



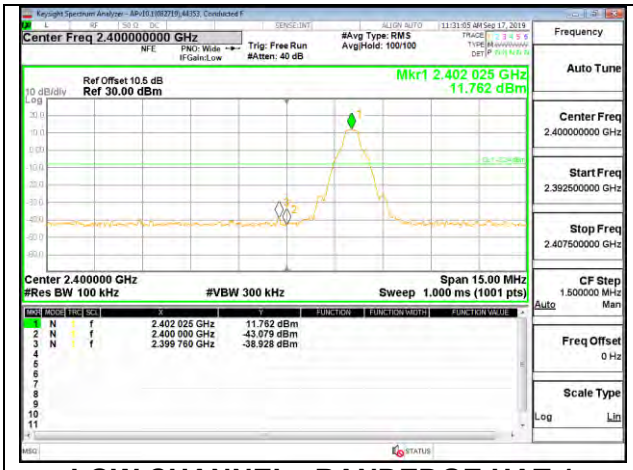
LOW BANDEDGE



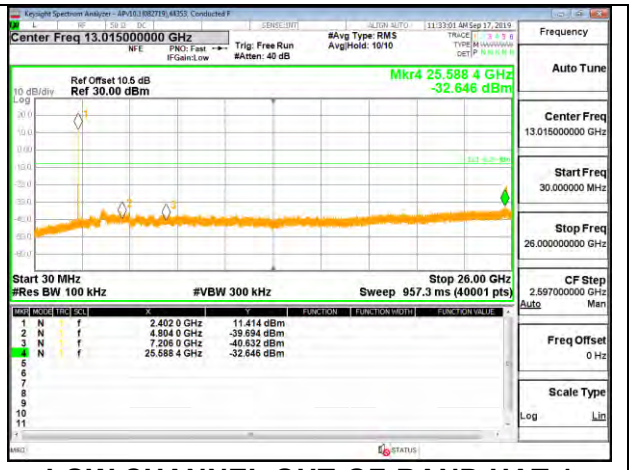
HIGH BANDEDGE

8.15.3. LOW POWER BASIC DATA RATE GFSK MODULATION

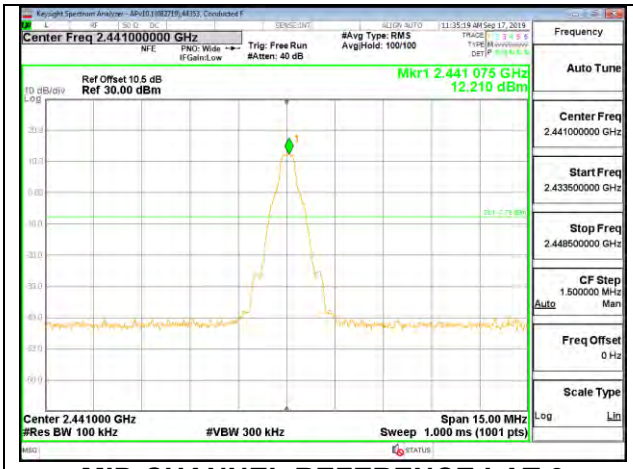
UAT 1



LOW CHANNEL , BANDEDGE UAT 1

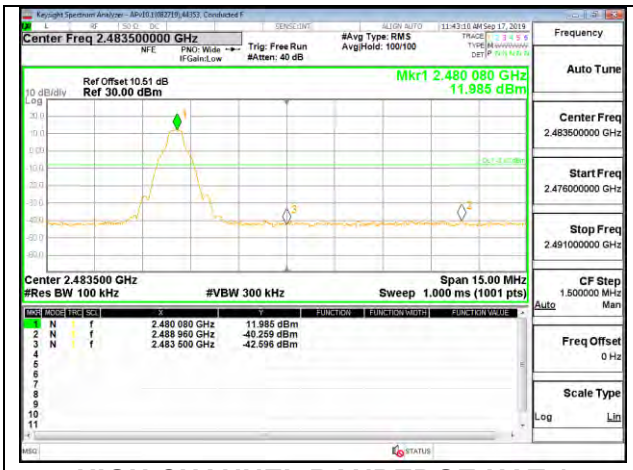


LOW CHANNEL OUT-OF-BAND UAT 1

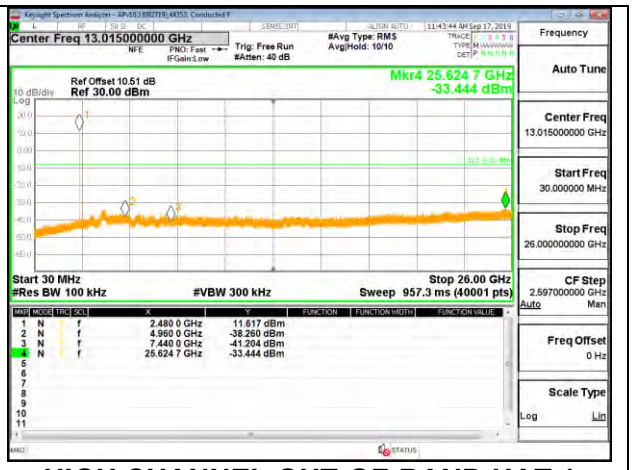


MID CHANNEL REFERENCE LAT 3

MID CHANNEL OUT-OF-BAND UAT 1

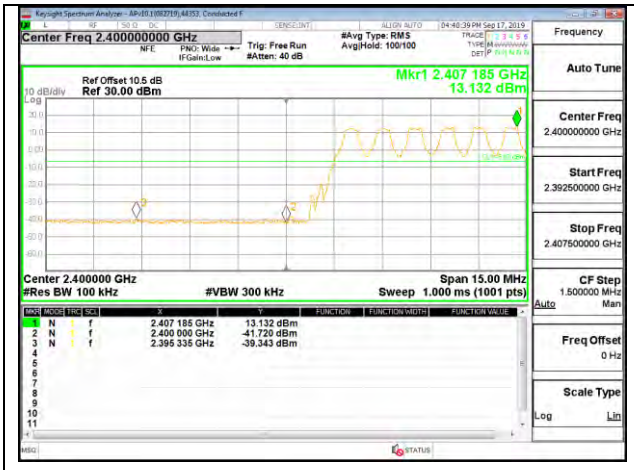


HIGH CHANNEL BANDEDGE UAT 1

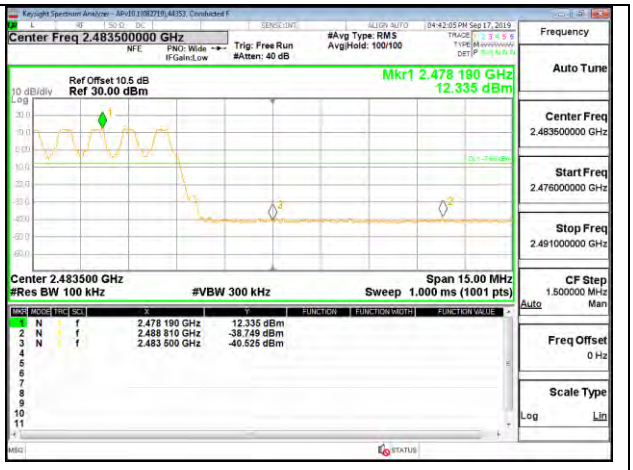


HIGH CHANNEL OUT-OF-BAND UAT 1

UAT 1 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



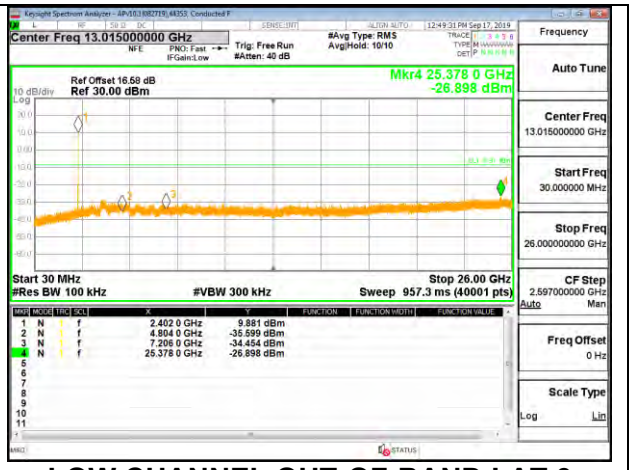
LOW BANDEDGE



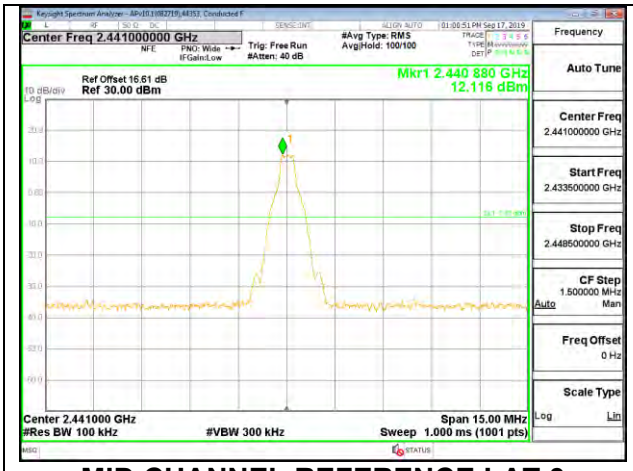
HIGH BANDEDGE

LAT 3

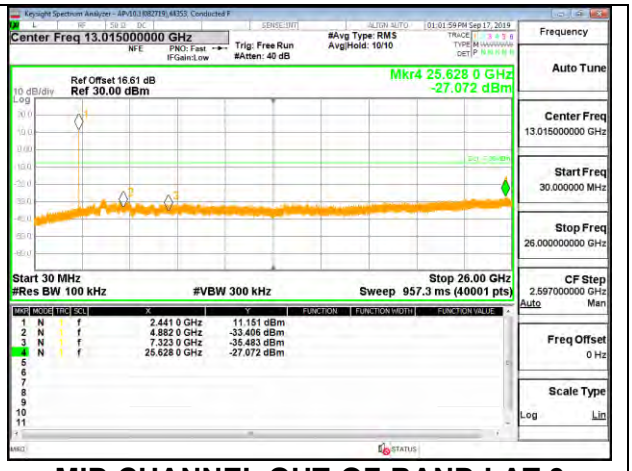
LOW CHANNEL , BANDEDGE LAT 3



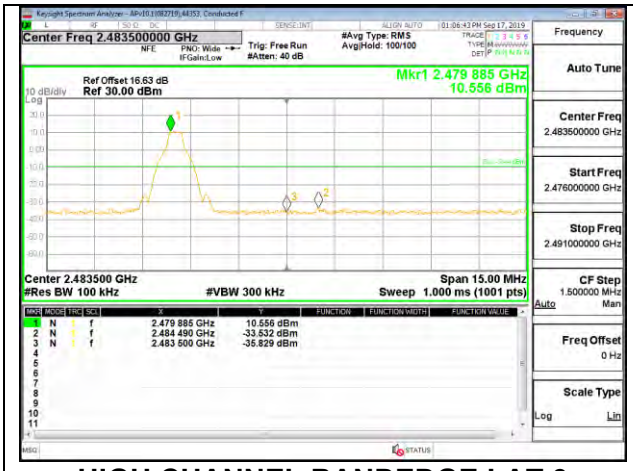
LOW CHANNEL OUT-OF-BAND LAT 3



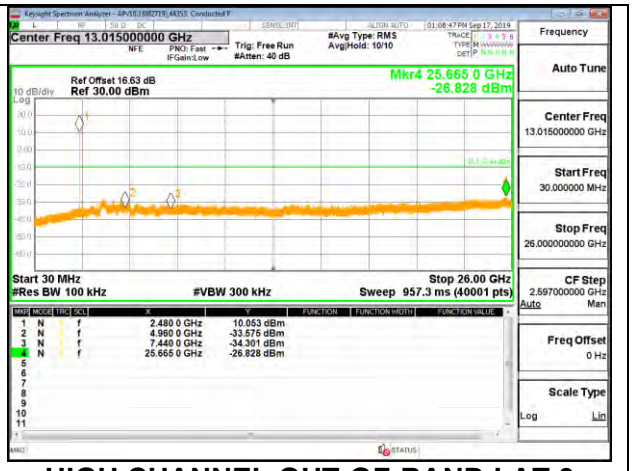
MID CHANNEL REFERENCE LAT 3



MID CHANNEL OUT-OF-BAND LAT 3

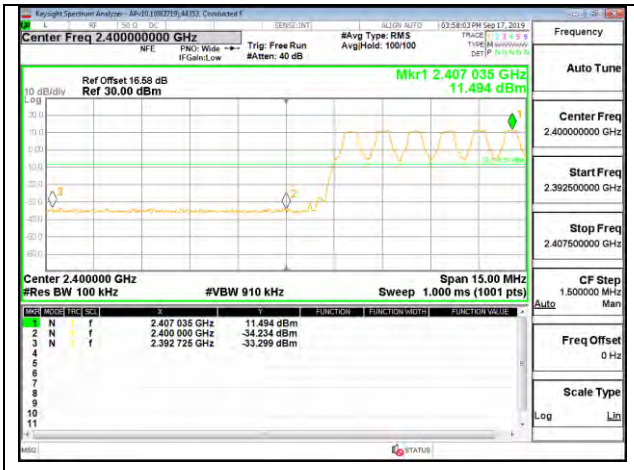


HIGH CHANNEL BANDEDGE LAT 3

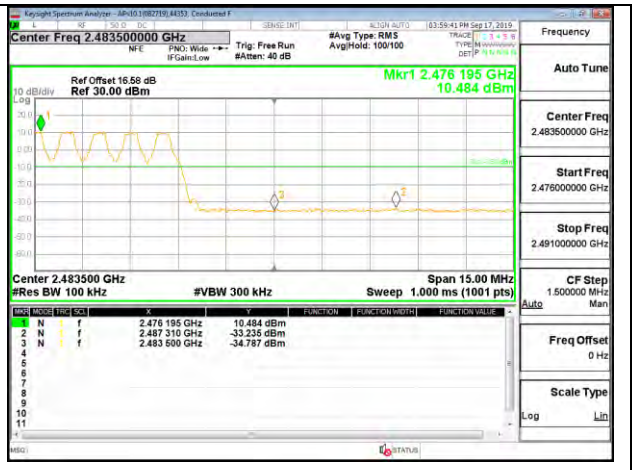


HIGH CHANNEL OUT-OF-BAND LAT 3

LAT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE

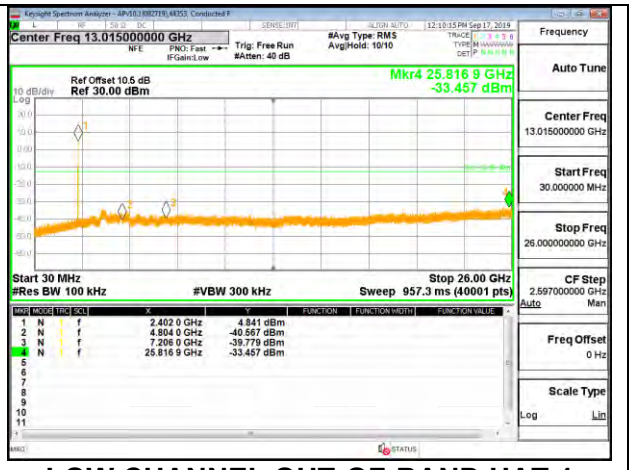


HIGH BANDEDGE

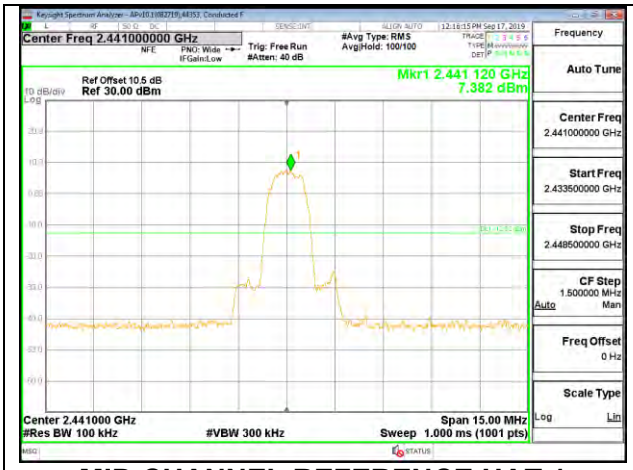
8.15.4. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1

LOW CHANNEL , BANDEDGE UAT 1

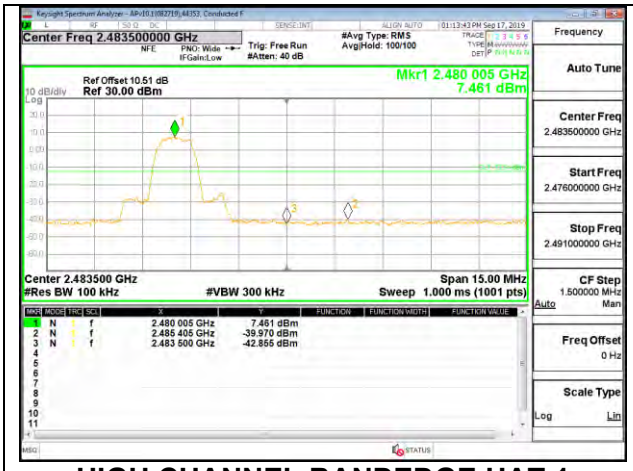


LOW CHANNEL OUT-OF-BAND UAT 1

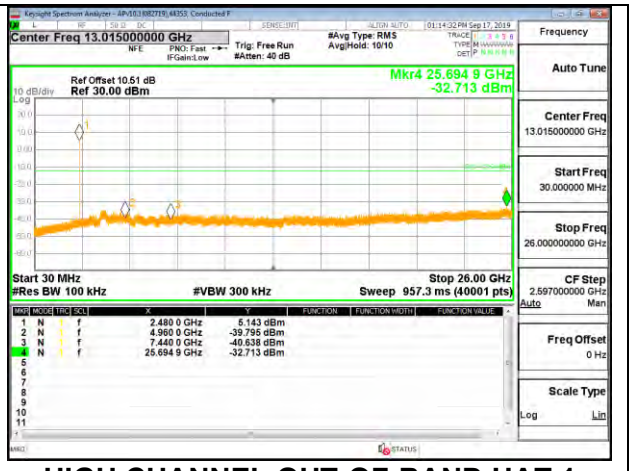


MID CHANNEL REFERENCE UAT 1

MID CHANNEL OUT-OF-BAND UAT 1



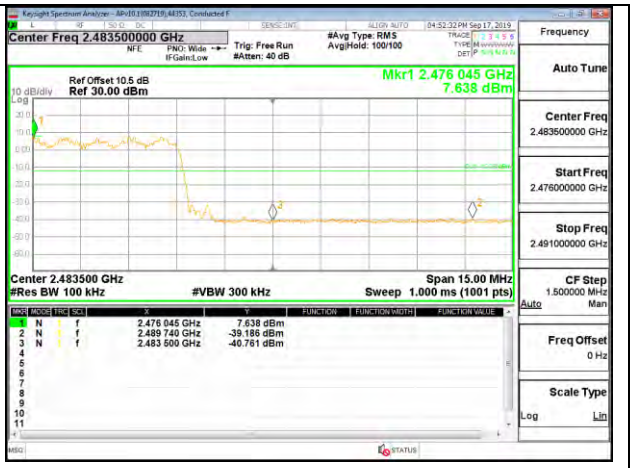
HIGH CHANNEL BANDEDGE UAT 1



HIGH CHANNEL OUT-OF-BAND UAT 1

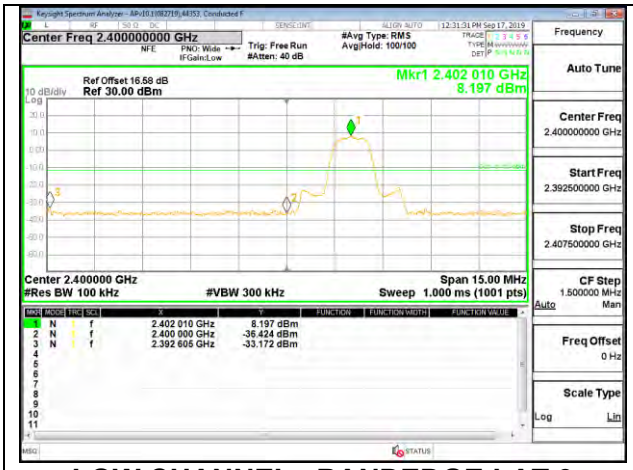
UAT 1 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE

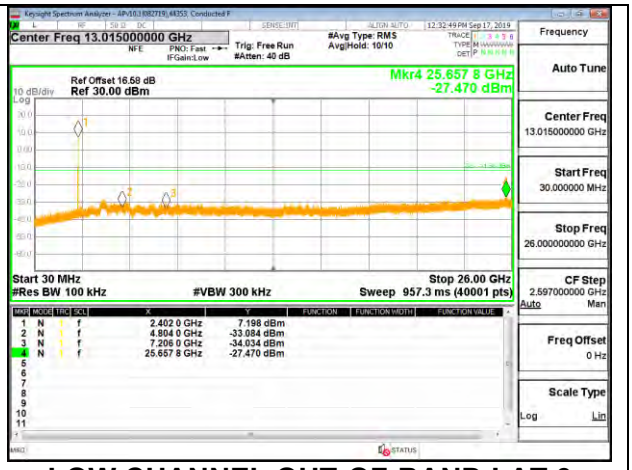


HIGH BANDEDGE

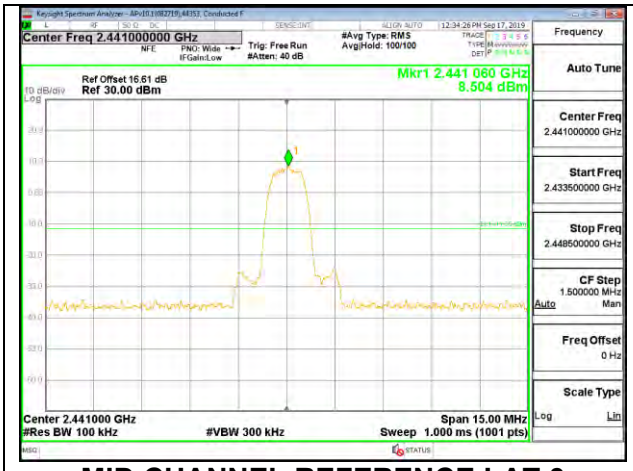
LAT 3



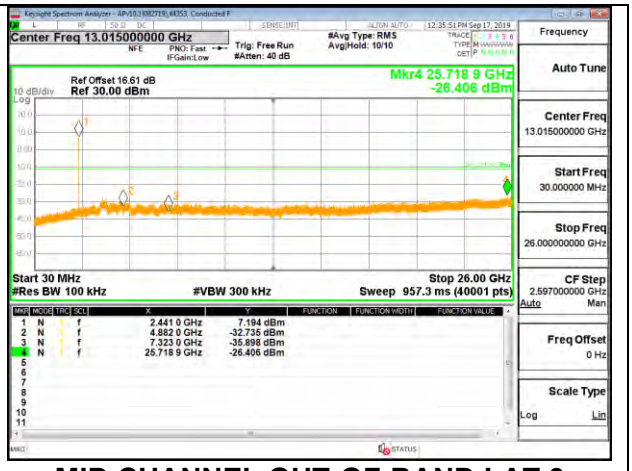
LOW CHANNEL , BANDEDGE LAT 3



LOW CHANNEL OUT-OF-BAND LAT 3

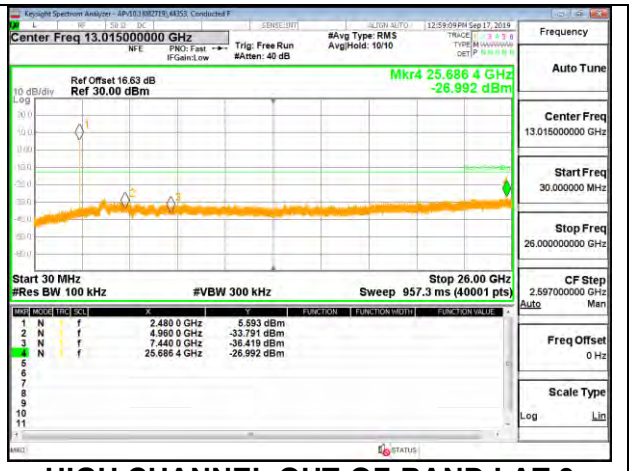


MID CHANNEL REFERENCE LAT 3



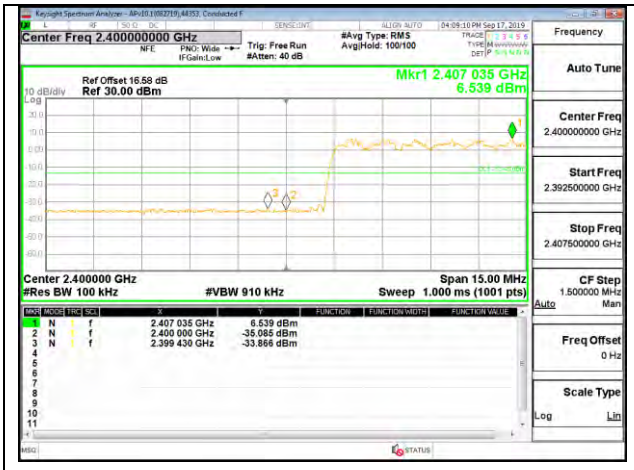
MID CHANNEL OUT-OF-BAND LAT 3

HIGH CHANNEL BANDEDGE LAT 3

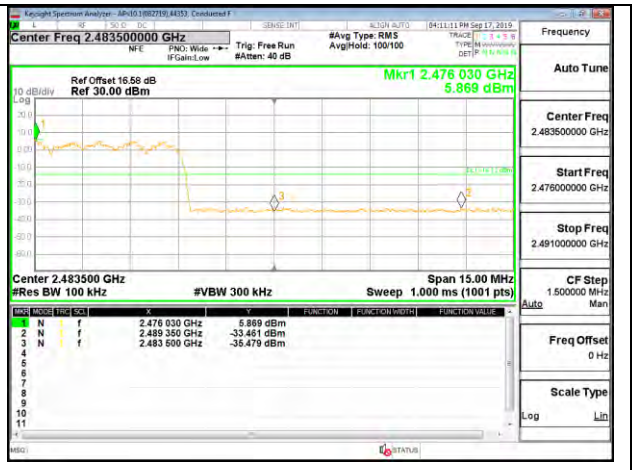


HIGH CHANNEL OUT-OF-BAND LAT 3

LAT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



HIGH BANDEDGE

Note: Test procedures and setting on beamforming mode are same as BT basic and EDR mode

9. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final scans above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T (10 Hz) video bandwidth with peak detector for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

KDB 558074 D01 15.247 Meas Guidance v05r02

Use of a duty cycle correction factor (DCCF) is permitted for calculating average radiated field strength emission levels for an FHSS device in 15.247. This DCCF can be applied when the field strength limit (e.g., within a Government Restricted band) and the conditions specified in Section 15.35(c) can be satisfied. The average radiated field strength is calculated by subtracting the DCCF from the maximum radiated field strength level as determined through measurement. The maximum radiated field strength level represents the worst-case (maximum amplitude) RMS measurement of the emission(s) during continuous transmission (i.e., not including any time intervals during which the transmitter is off or is transmitting at a reduced power level). It is also acceptable to apply the DCCF to a measurement performed with a peak detector instead of the specified RMS power averaging detector. Note that Section 15.35(c) specifies that the DCCF shall represent the worst-case (greatest duty cycle) over any 100 msec transmission period.

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

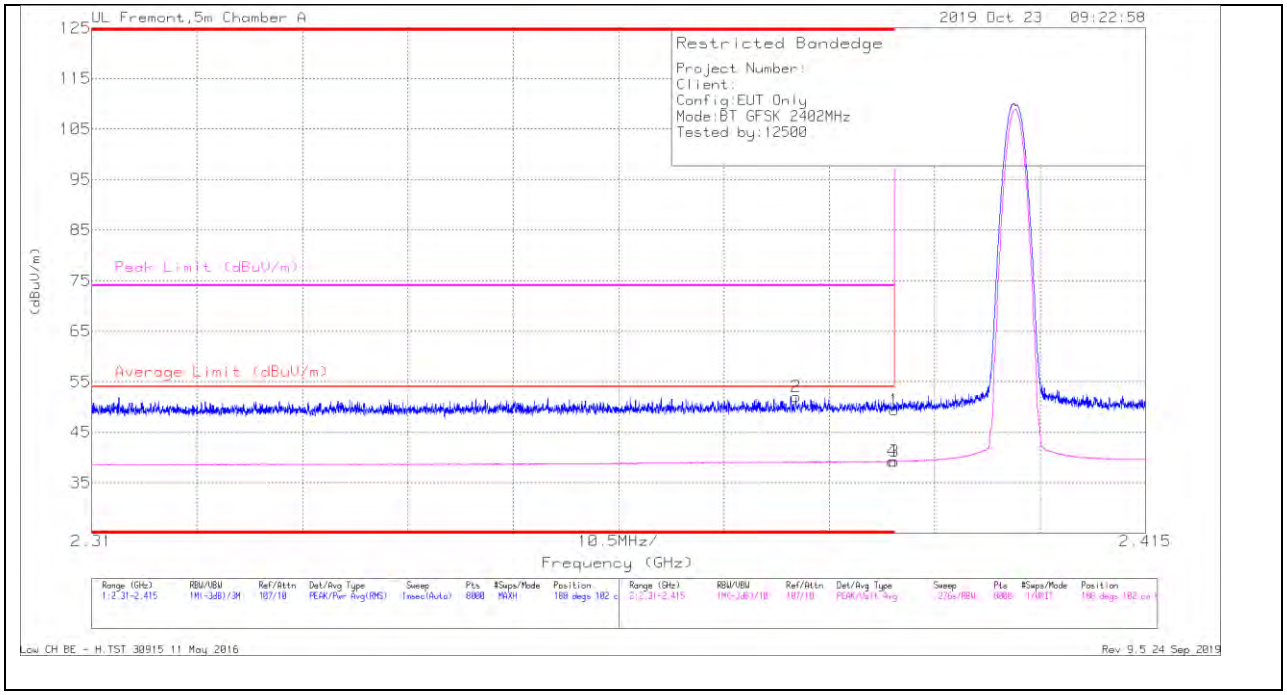
9.1. TRANSMITTER ABOVE 1 GHz

9.1.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

UAT 1

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

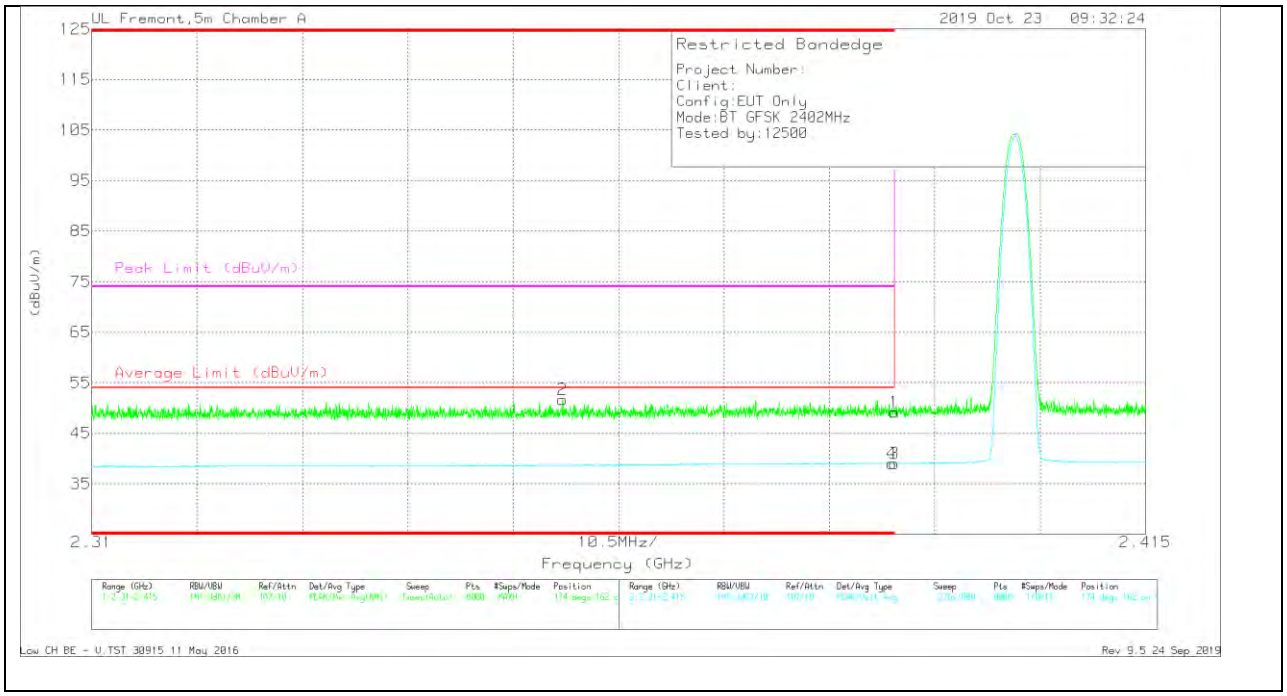


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.47	Pk	32.2	-22.3	49.37	-	-	74	-24.63	188	102	H
2	* 2.38018	42.26	Pk	32.2	-22.4	52.06	-	-	74	-21.94	188	102	H
3	* 2.39	29.31	VA1T	32.2	-22.3	39.21	54	-14.79	-	-	188	102	H
4	* 2.38979	29.36	VA1T	32.2	-22.3	39.26	54	-14.74	-	-	188	102	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low CH BE - H.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

VERTICAL RESULT



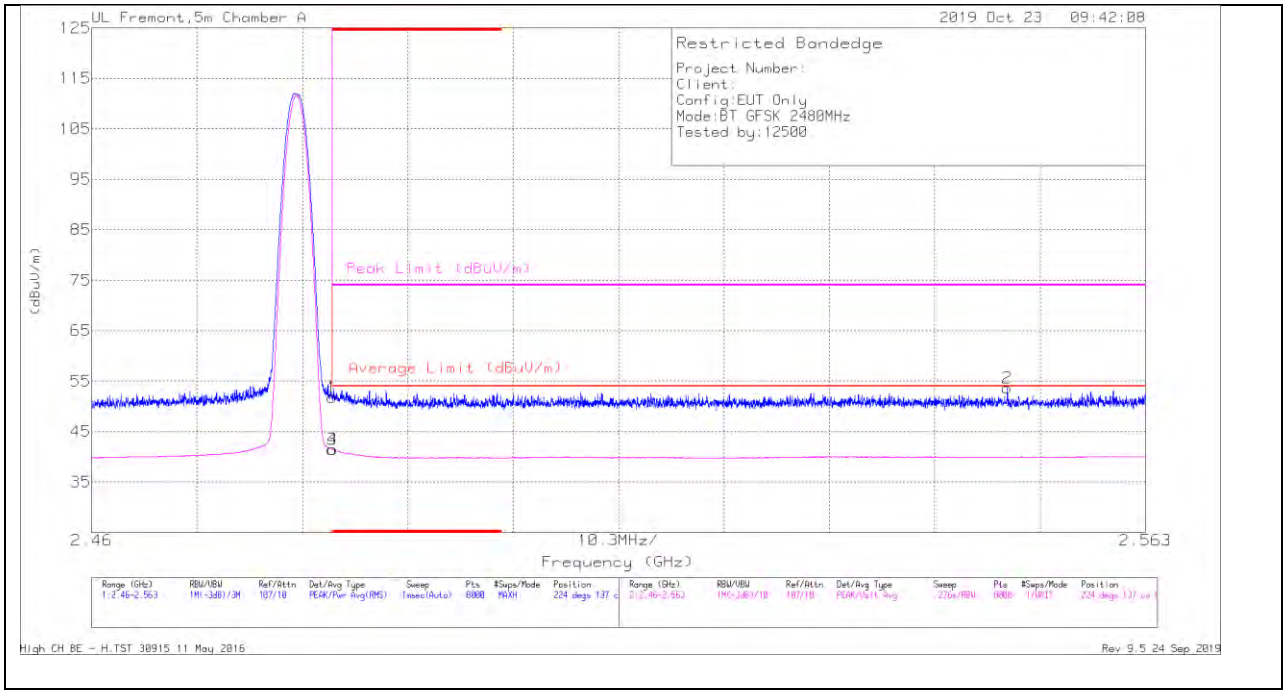
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.28	Pk	32.2	-22.3	49.18	-	-	74	-24.82	174	162	V
2	* 2.35693	42.01	Pk	32	-22.4	51.61	-	-	74	-22.39	174	162	V
3	* 2.39	29.1	VA1T	32.2	-22.3	39	54	-15	-	-	174	162	V
4	* 2.38972	29.14	VA1T	32.2	-22.3	39.04	54	-14.96	-	-	174	162	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low CH BE - V.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	41.27	Pk	32.6	-22.1	51.77	-	-	74	-22.23	224	137	H
3	* 2.4835	30.95	VA1T	32.6	-22.1	41.45	54	-12.55	-	-	224	137	H
4	* 2.48354	30.95	VA1T	32.6	-22.1	41.45	54	-12.55	-	-	224	137	H
2	2.54948	42.9	Pk	32.5	-21.8	53.6	-	-	74	-20.4	224	137	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

High CH BE - H.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

VERTICAL RESULT

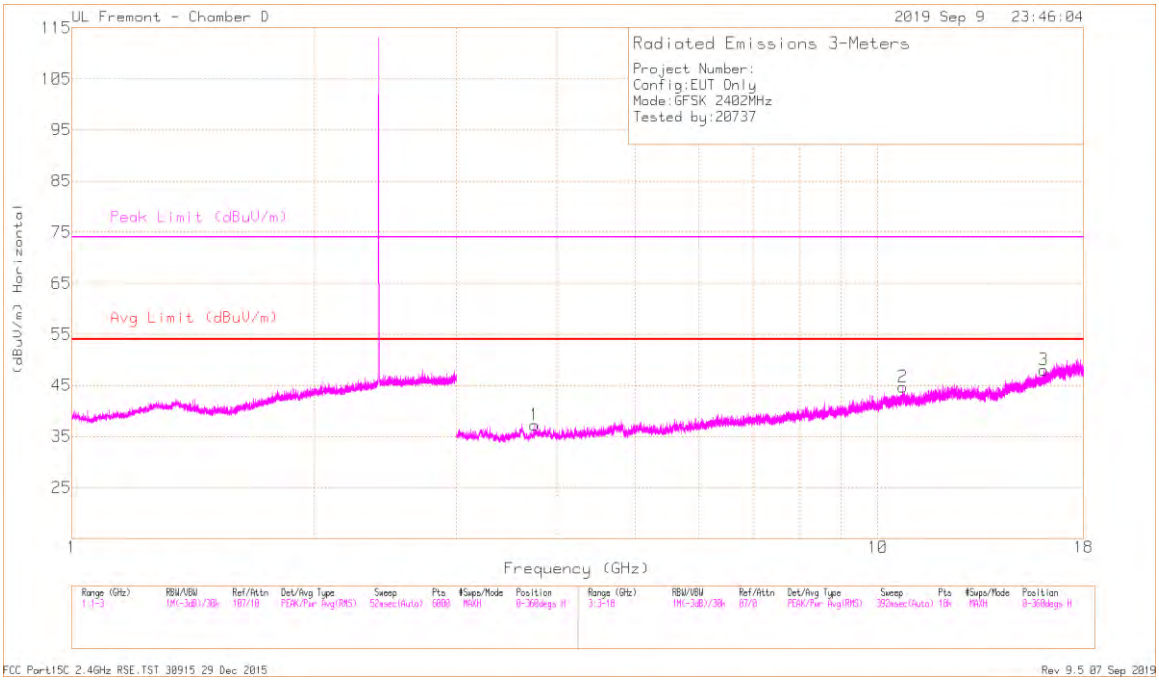
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	39.89	Pk	32.6	-22.1	50.39	-	-	74	-23.61	354	107	V
3	* 2.4835	29.33	VA1T	32.6	-22.1	39.83	54	-14.17	-	-	354	107	V
2	2.53263	42.2	Pk	32.6	-21.8	53	-	-	74	-21	354	107	V
4	2.56047	29.11	VA1T	32.6	-21.7	40.01	54	-13.99	-	-	354	107	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

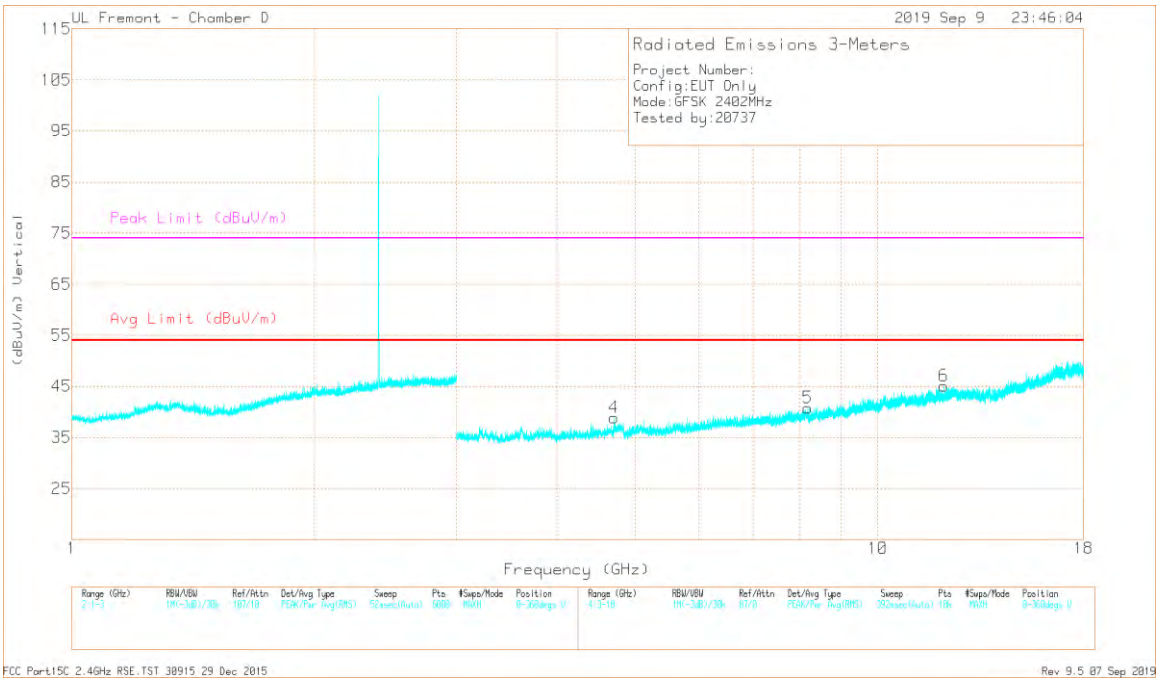
High CH BE - V.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

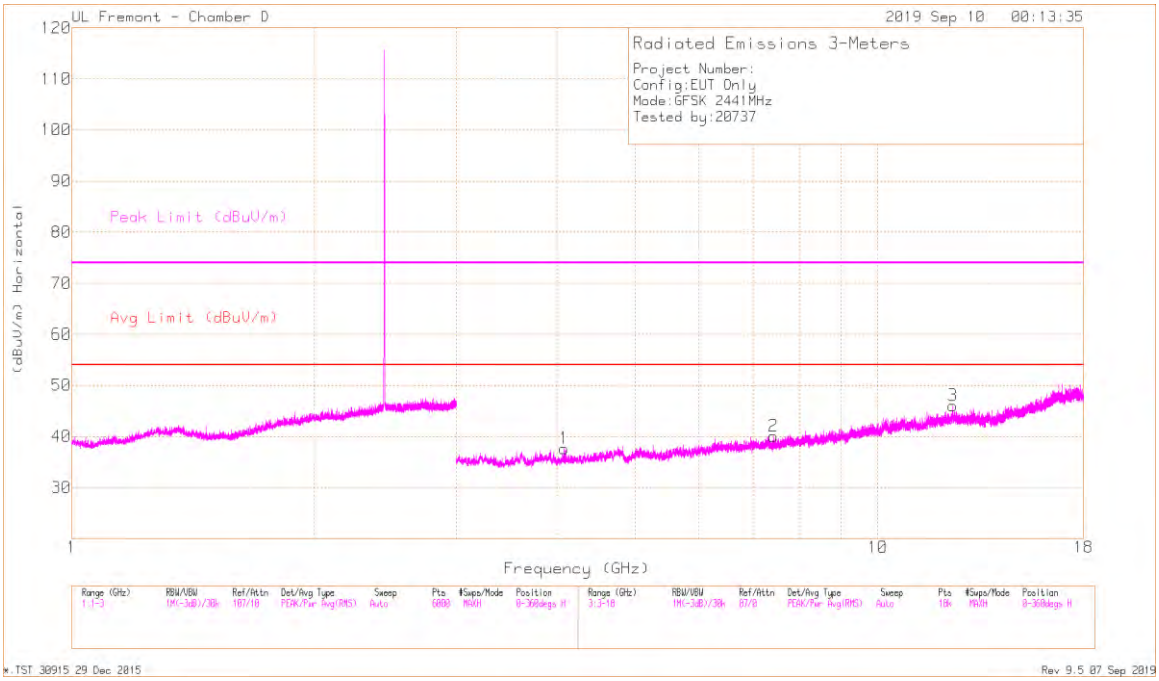
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.75044	38.28	PKFH	33.2	-27.9	43.58	-	-	74	-30.42	83	158	H
	* 3.75165	25.27	VA1T	33.2	-27.9	30.57	54	-23.43	-	-	83	158	H
2	* 10.7419	33.74	PKFH	37.9	-20.5	51.14	-	-	74	-22.86	125	170	H
	* 10.74406	17.65	VA1T	37.8	-20.5	34.95	54	-19.05	-	-	125	170	H
3	* 16.05896	33.52	PKFH	40.6	-20.3	53.82	-	-	74	-20.18	182	237	H
	* 16.05884	18.44	VA1T	40.6	-20.3	38.74	54	-15.26	-	-	182	237	H
4	* 4.70918	36.91	PKFH	33.9	-26.8	44.01	-	-	74	-29.99	237	301	V
	* 4.70926	24.03	VA1T	33.9	-26.8	31.13	54	-22.87	-	-	237	301	V
5	* 8.18772	35.05	PKFH	35.7	-23.3	47.45	-	-	74	-26.55	294	237	V
	* 8.18851	20.62	VA1T	35.7	-23.3	33.02	54	-20.98	-	-	294	237	V
6	* 12.08244	33.29	PKFH	38.7	-21.4	50.59	-	-	74	-23.41	216	283	V
	* 12.08079	18.95	VA1T	38.7	-21.4	36.25	54	-17.75	-	-	216	283	V

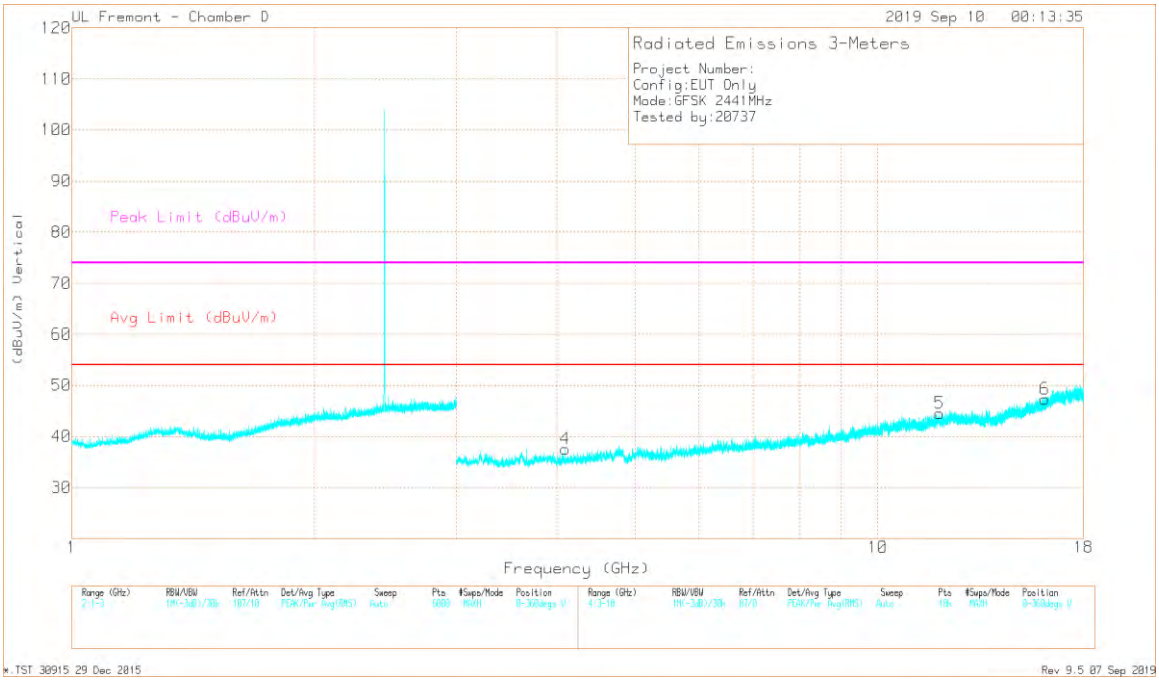
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

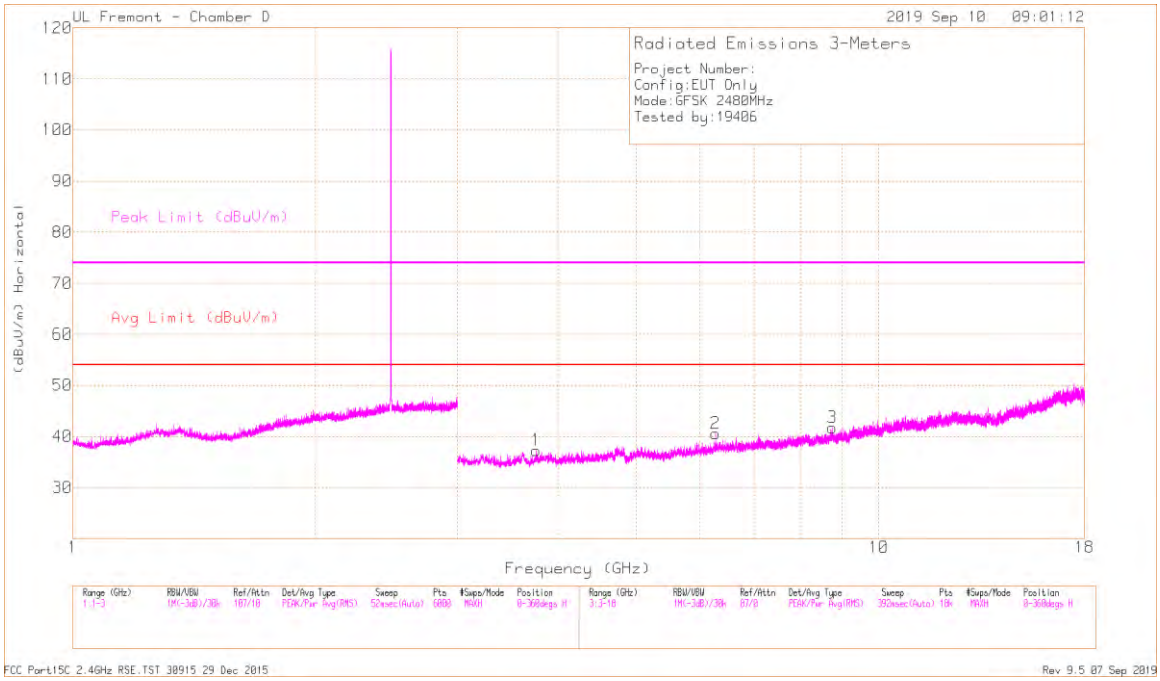
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.08379	36.91	PKFH	33.4	-27.7	42.61	-	-	74	-31.39	277	128	H
	* 4.08539	24.33	VA1T	33.4	-27.7	30.03	54	-23.97	-	-	277	128	H
2	* 7.41901	35.22	PKFH	35.5	-24.8	45.92	-	-	74	-28.08	225	129	H
	* 7.4214	21.78	VA1T	35.5	-24.7	32.58	54	-21.42	-	-	225	129	H
3	* 12.38838	33.34	PKFH	38.9	-20.6	51.64	-	-	74	-22.36	186	169	H
	* 12.38806	19.02	VA1T	38.9	-20.6	37.32	54	-16.68	-	-	186	169	H
4	* 4.09775	36.84	PKFH	33.5	-27.8	42.54	-	-	74	-31.46	254	160	V
	* 4.09772	24.59	VA1T	33.4	-27.8	30.19	54	-23.81	-	-	254	160	V
5	* 11.93459	32.94	PKFH	38.6	-21	50.54	-	-	74	-23.46	175	226	V
	* 11.9373	18.85	VA1T	38.6	-21.1	36.35	54	-17.65	-	-	175	226	V
6	* 16.10804	34.09	PKFH	40.7	-20.3	54.49	-	-	74	-19.51	254	310	V
	* 16.10623	18.36	VA1T	40.7	-20.3	38.76	54	-15.24	-	-	254	310	V

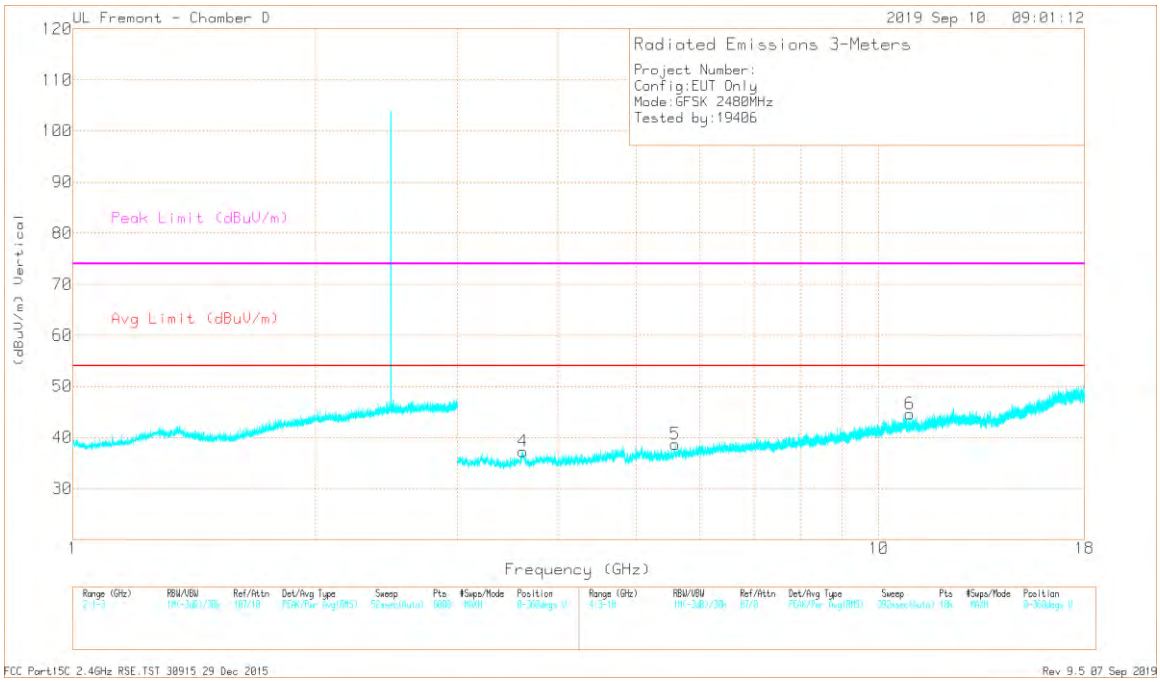
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T712 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.75854	38.13	PKFH	33.3	-27.8	43.63	-	-	74	-30.37	357	113	H
	* 3.75948	25.53	VA1T	33.3	-27.8	31.03	54	-22.97	-	-	357	113	H
4	* 3.62155	38.27	PKFH	33.4	-28.3	43.37	-	-	74	-30.63	76	200	V
	* 3.62003	25.6	VA1T	33.5	-28.2	30.9	54	-23.1	-	-	76	200	V
6	* 10.93133	32.55	PKFH	37.7	-20.6	49.65	-	-	74	-24.35	293	133	V
	* 10.93103	17.6	VA1T	37.7	-20.6	34.7	54	-19.3	-	-	293	133	V
5	5.58853	36.17	PKFH	34.5	-26.4	44.27	-	-	-	-	240	381	V
	5.59001	23.24	VA1T	34.5	-26.3	31.44	-	-	-	-	240	381	V
2	6.27323	35.96	PKFH	35.4	-26	45.36	-	-	-	-	328	359	H
	6.27432	22.52	VA1T	35.4	-26	31.92	-	-	-	-	328	359	H
3	8.75675	33.86	PKFH	35.9	-21.8	47.96	-	-	-	-	108	331	H
	8.75725	19.14	VA1T	35.9	-21.8	33.24	-	-	-	-	108	331	H

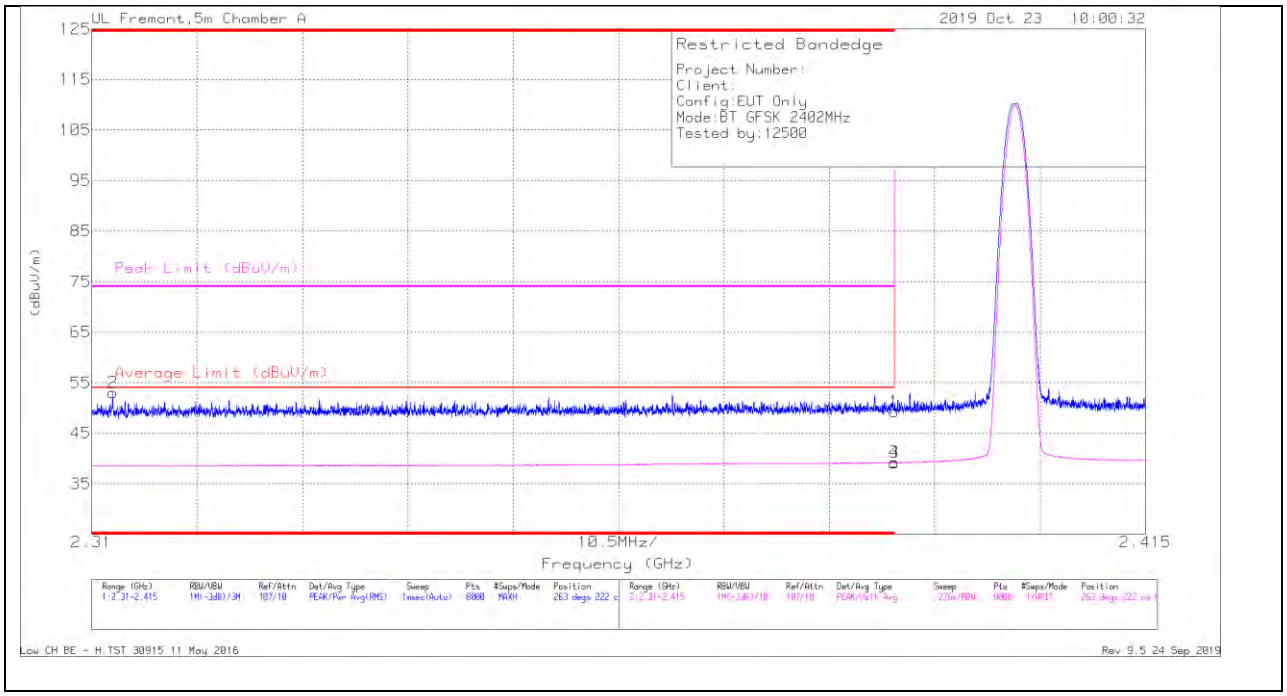
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

LAT 3

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

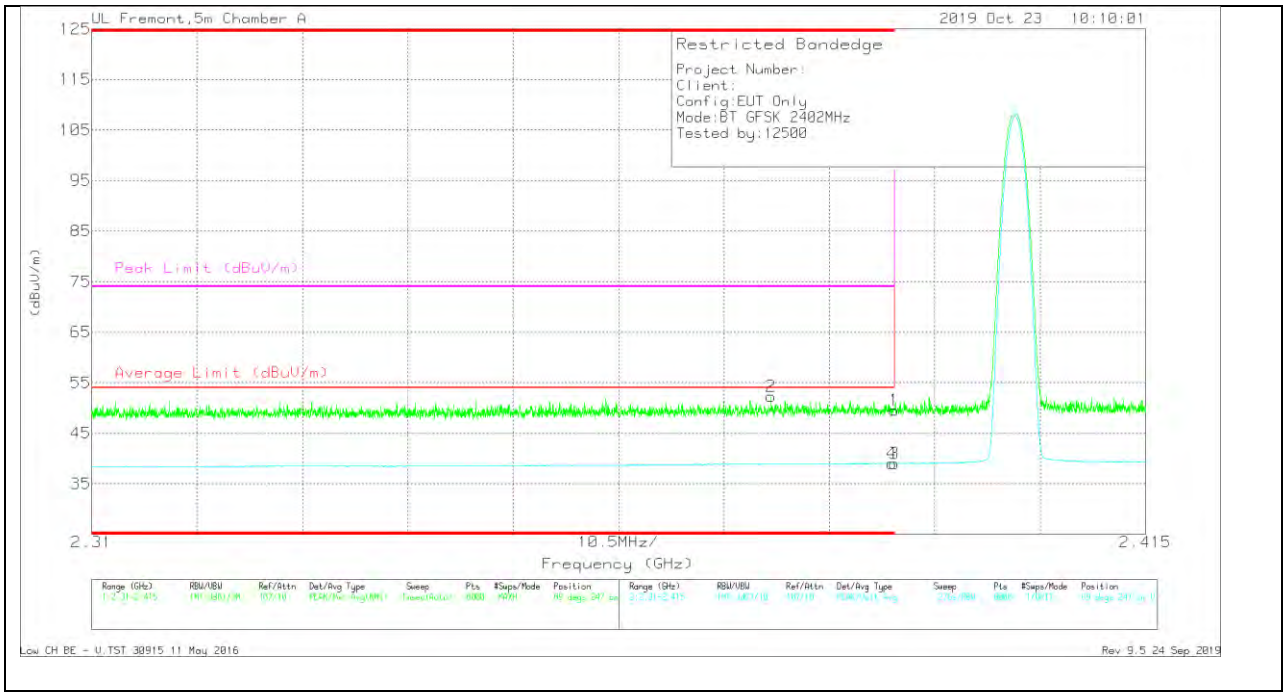


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.45	Pk	32.2	-22.3	49.35	-	-	74	-24.65	263	222	H
2	* 2.3121	43.65	Pk	31.8	-22.4	53.05	-	-	74	-20.95	263	222	H
3	* 2.39	29.28	VA1T	32.2	-22.3	39.18	54	-14.82	-	-	263	222	H
4	* 2.38998	29.29	VA1T	32.2	-22.3	39.19	54	-14.81	-	-	263	222	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low CH BE - H.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

VERTICAL RESULT



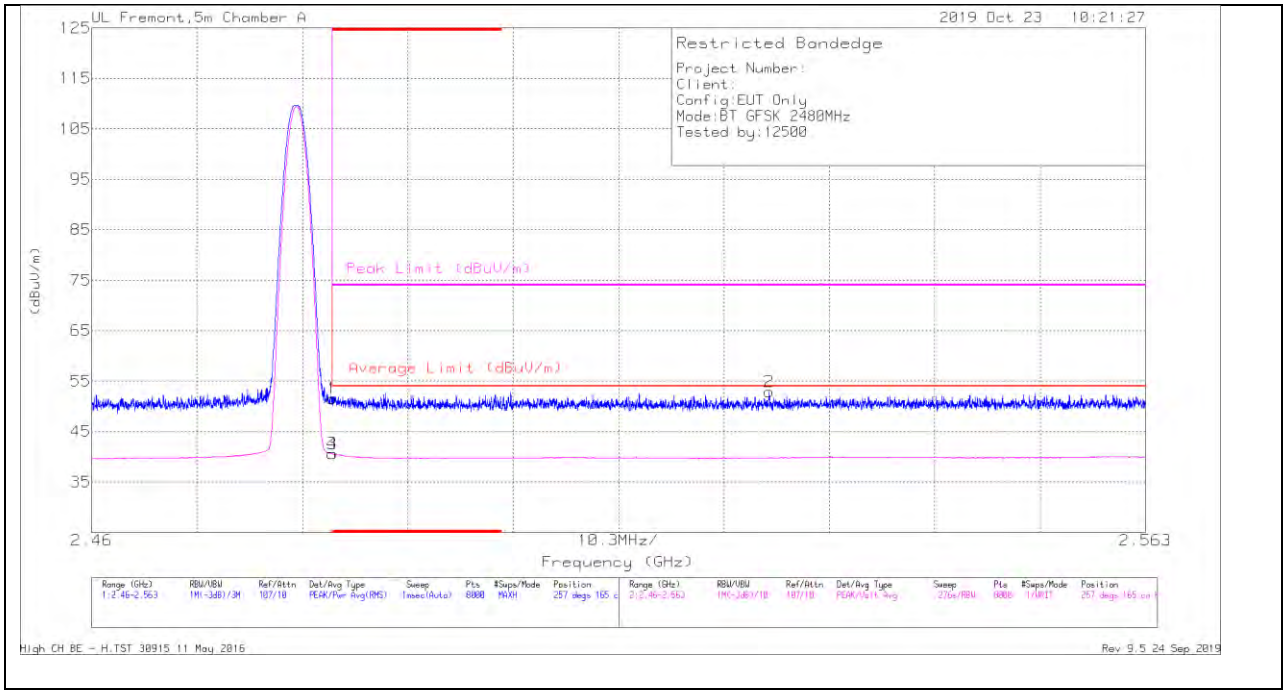
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.66	Pk	32.2	-22.3	49.56	-	-	74	-24.44	89	247	V
2	* 2.3777	42.36	Pk	32.2	-22.3	52.26	-	-	74	-21.74	89	247	V
3	* 2.39	29.08	VA1T	32.2	-22.3	38.98	54	-15.02	-	-	89	247	V
4	* 2.38973	29.15	VA1T	32.2	-22.3	39.05	54	-14.95	-	-	89	247	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low CH BE - V.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

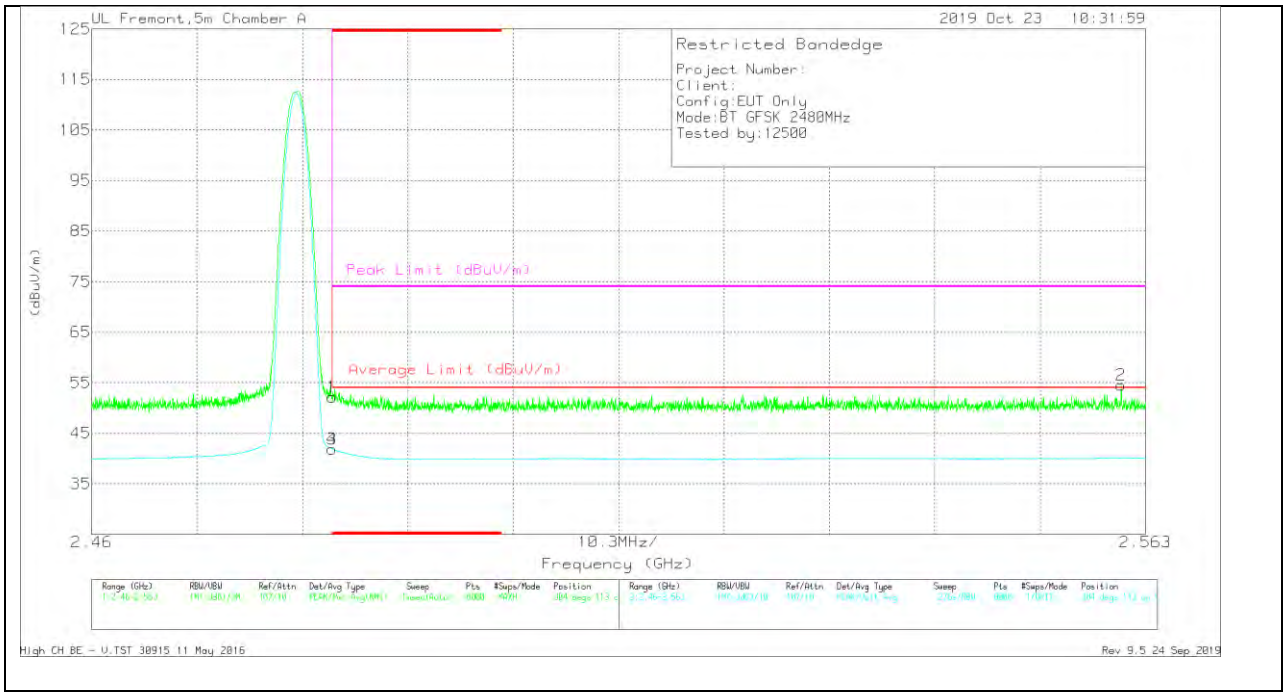


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	41.07	Pk	32.6	-22.1	51.57	-	-	74	-22.43	257	165	H
3	* 2.4835	30.09	VA1T	32.6	-22.1	40.59	54	-13.41	-	-	257	165	H
4	* 2.48353	30.08	VA1T	32.6	-22.1	40.58	54	-13.42	-	-	257	165	H
2	2.52623	42.25	Pk	32.6	-21.9	52.95	-	-	74	-21.05	257	165	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

High CH BE - H.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

VERTICAL RESULT



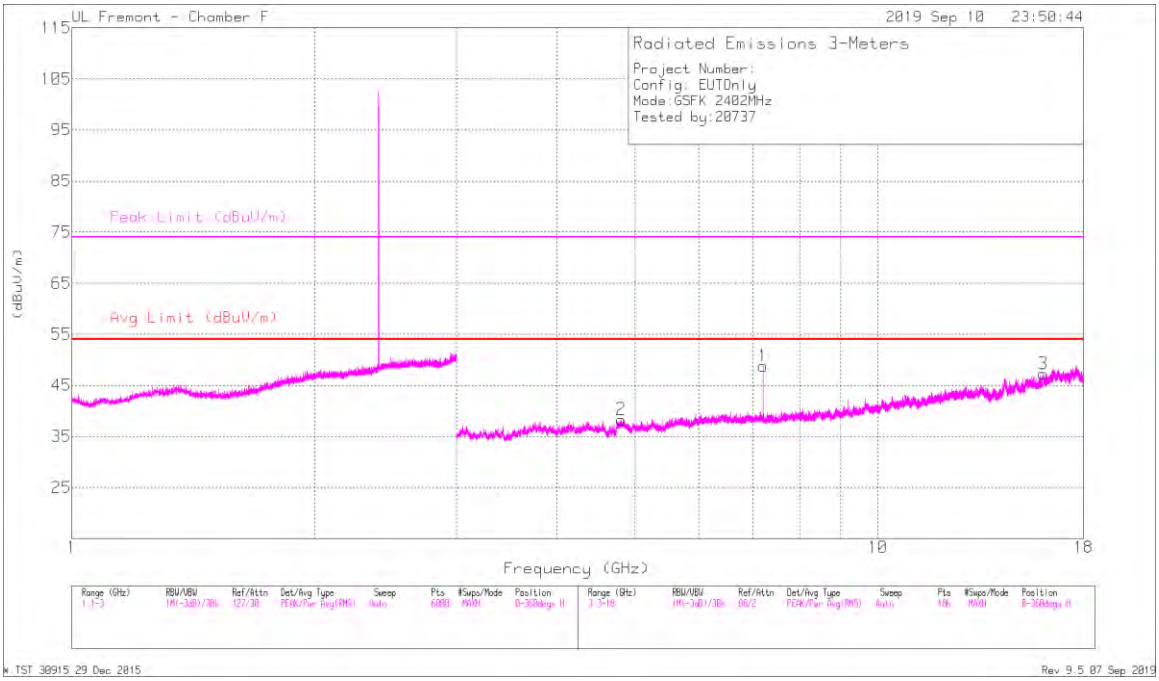
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	41.71	Pk	32.6	-22.1	52.21	-	-	74	-21.79	304	113	V
3	* 2.4835	31.39	VA1T	32.6	-22.1	41.89	54	-12.11	-	-	304	113	V
4	* 2.48351	31.4	VA1T	32.6	-22.1	41.9	54	-12.1	-	-	304	113	V
2	2.56062	43.58	Pk	32.6	-21.7	54.48	-	-	74	-19.52	304	113	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

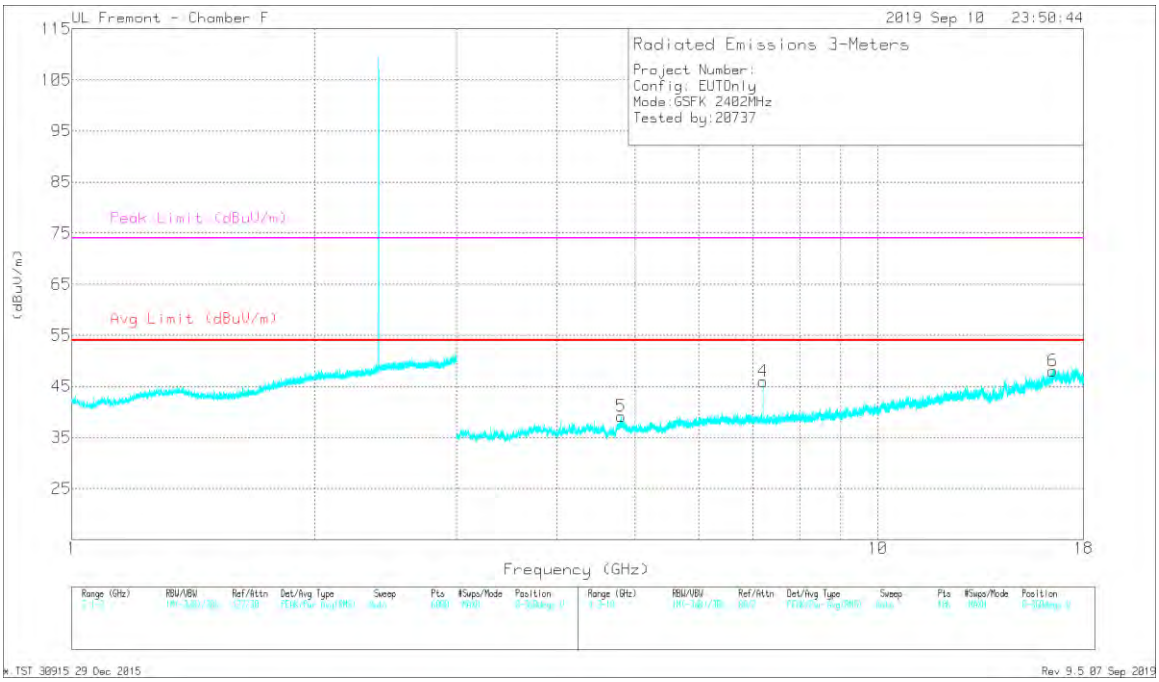
High CH BE - V.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



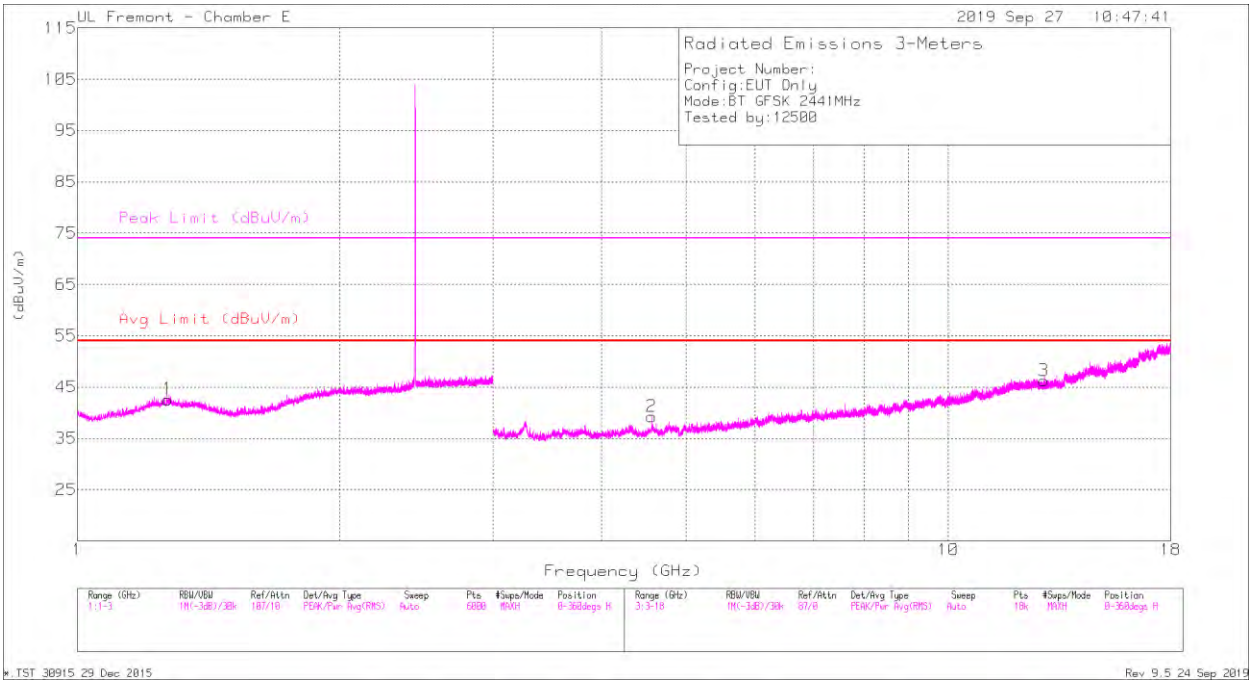
VERTICAL

RADIATED EMISSIONS

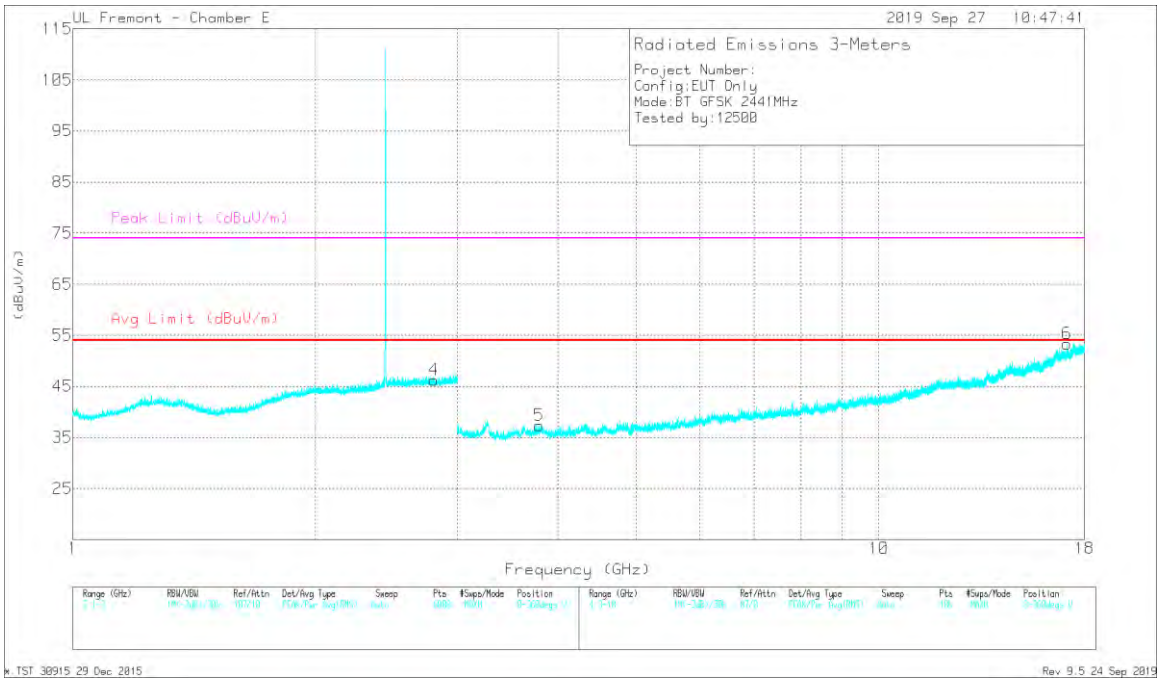
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	7.20544	58.24	PKFH	35.5	-41	52.74	-	-	-	-	145	257	H
	7.20607	53.91	VA1T	35.5	-41	48.41	-	-	-	-	145	257	H
2	* 4.80826	53.2	PKFH	34.2	-44.2	43.2	-	-	74	-30.8	146	153	H
	* 4.80764	41.23	VA1T	34.2	-44.2	31.23	54	-22.77	-	-	146	153	H
3	* 16.04301	50.31	PKFH	40.8	-37.1	54.01	-	-	74	-19.99	237	139	H
	* 16.04418	37.89	VA1T	40.8	-37.1	41.59	54	-12.41	-	-	237	139	H
4	7.2061	55.53	PKFH	35.5	-41	50.03	-	-	-	-	191	233	V
	7.20607	49.67	VA1T	35.5	-41	44.17	-	-	-	-	191	233	V
5	* 4.80724	53.36	PKFH	34.2	-44.2	43.36	-	-	74	-30.64	155	220	V
	* 4.80761	41.26	VA1T	34.2	-44.2	31.26	54	-22.74	-	-	155	220	V
6	16.50416	49.97	PKFH	41.5	-37.5	53.97	-	-	-	-	303	127	V
	16.50249	37.76	VA1T	41.5	-37.5	41.76	-	-	-	-	303	127	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

MID CHANNEL RESULTS



HORIZONTAL



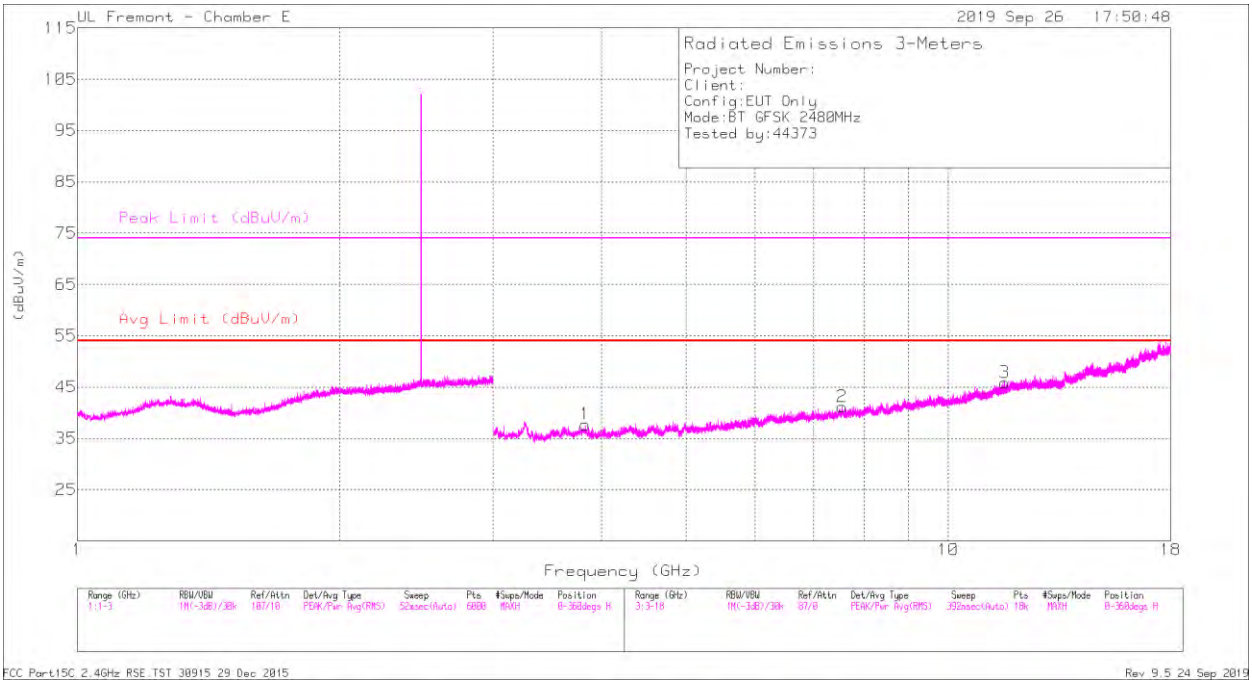
VERTICAL

RADIATED EMISSIONS

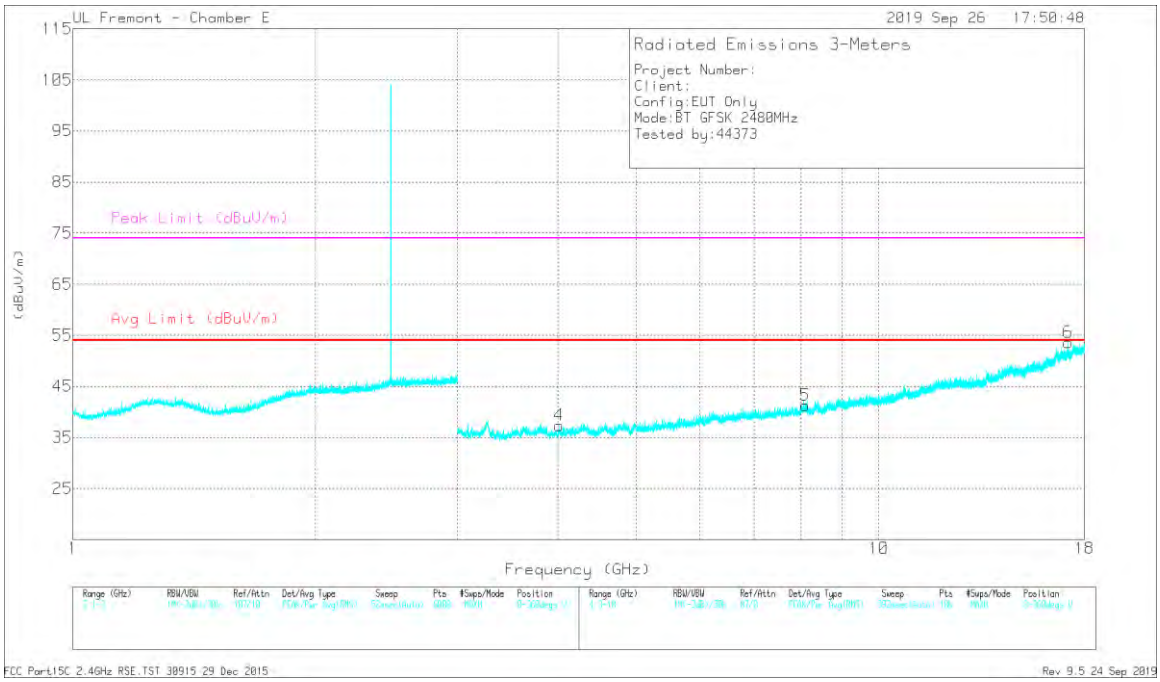
Markre	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.27098	44.62	PKFH	30.1	-26.2	48.52	-	-	74	-25.48	224	233	H
	* 1.27105	32.7	VA1T	30.1	-26.2	36.6	54	-17.4	-	-	224	233	H
4	* 2.80514	45.17	PKFH	33	-26	52.17	-	-	74	-21.83	177	274	V
	* 2.80304	33.38	VA1T	33	-26	40.38	54	-13.62	-	-	177	274	V
2	* 4.56247	40.67	PKFH	34.2	-31.6	43.27	-	-	74	-30.73	271	237	H
	* 4.56541	29.37	VA1T	34.2	-31.6	31.97	54	-22.03	-	-	271	237	H
5	* 3.78999	42.02	PKFH	33.3	-32.8	42.52	-	-	74	-31.48	307	326	V
	* 3.79036	30.4	VA1T	33.3	-32.8	30.9	54	-23.1	-	-	307	326	V
3	12.8746	35.24	PKFH	39.1	-21.8	52.54	-	-	74	-21.46	227	347	H
6	17.12734	34.96	PKFH	41.4	-17.8	58.56	-	-	74	-15.44	191	264	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.8264	42.54	PKFH	33.4	-32.4	43.54	-	-	74	-30.46	20	127	H
* 3.8267	29.98	VA1T	33.4	-32.4	30.98	54	-23.02	-	-	20	127	H
* 7.54611	37.65	PKFH	35.8	-26.6	46.85	-	-	74	-27.15	300	265	H
* 7.5476	25.57	VA1T	35.8	-26.6	34.77	54	-19.23	-	-	300	265	H
* 11.60738	35.52	PKFH	38.6	-22.4	51.72	-	-	74	-22.28	278	135	H
* 11.60753	23.16	VA1T	38.6	-22.4	39.36	54	-14.64	-	-	278	135	H
* 4.01275	41.74	PKFH	33.4	-32.3	42.84	-	-	74	-31.16	305	112	V
* 4.01235	29.77	VA1T	33.4	-32.3	30.87	54	-23.13	-	-	305	112	V
* 8.09511	37.65	PKFH	35.8	-26.4	47.05	-	-	74	-26.95	4	156	V
* 8.09707	25.69	VA1T	35.8	-26.5	34.99	54	-19.01	-	-	4	156	V
17.18362	35.52	PKFH	41.3	-17.9	58.92	-	-	-	-	180	144	V
17.18414	23.2	VA1T	41.3	-17.9	46.6	-	-	-	-	180	144	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

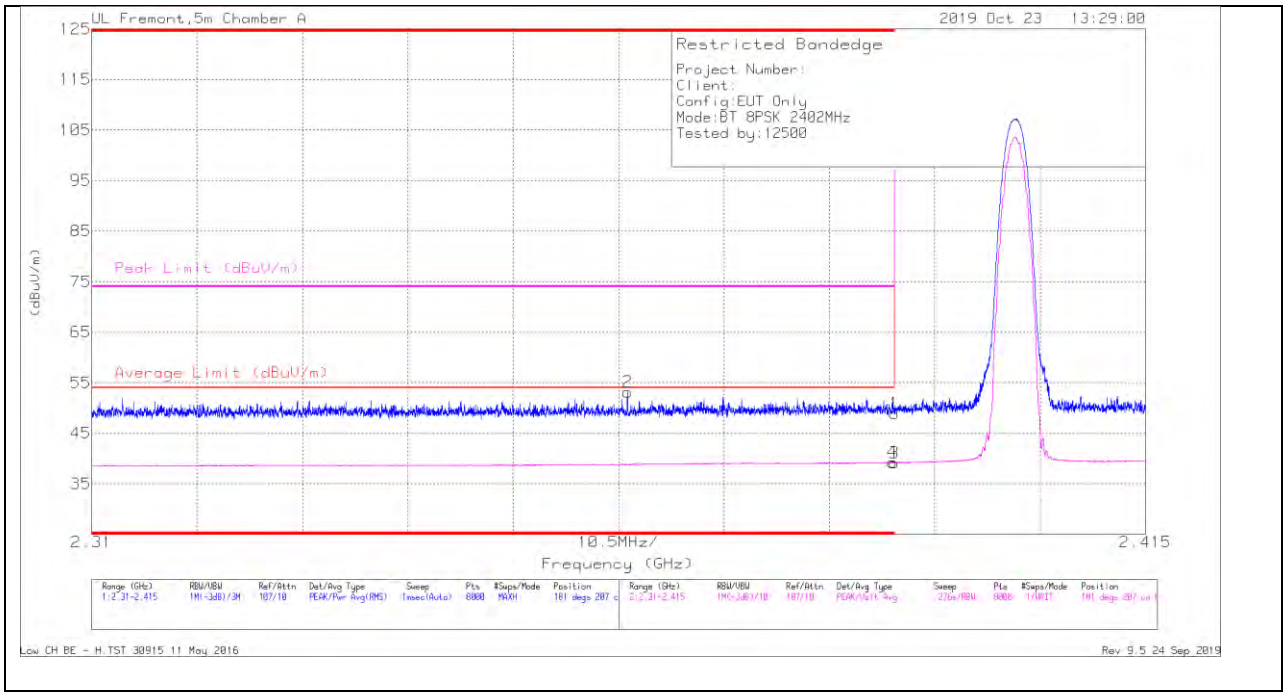
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

9.1.2. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

UAT 1

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

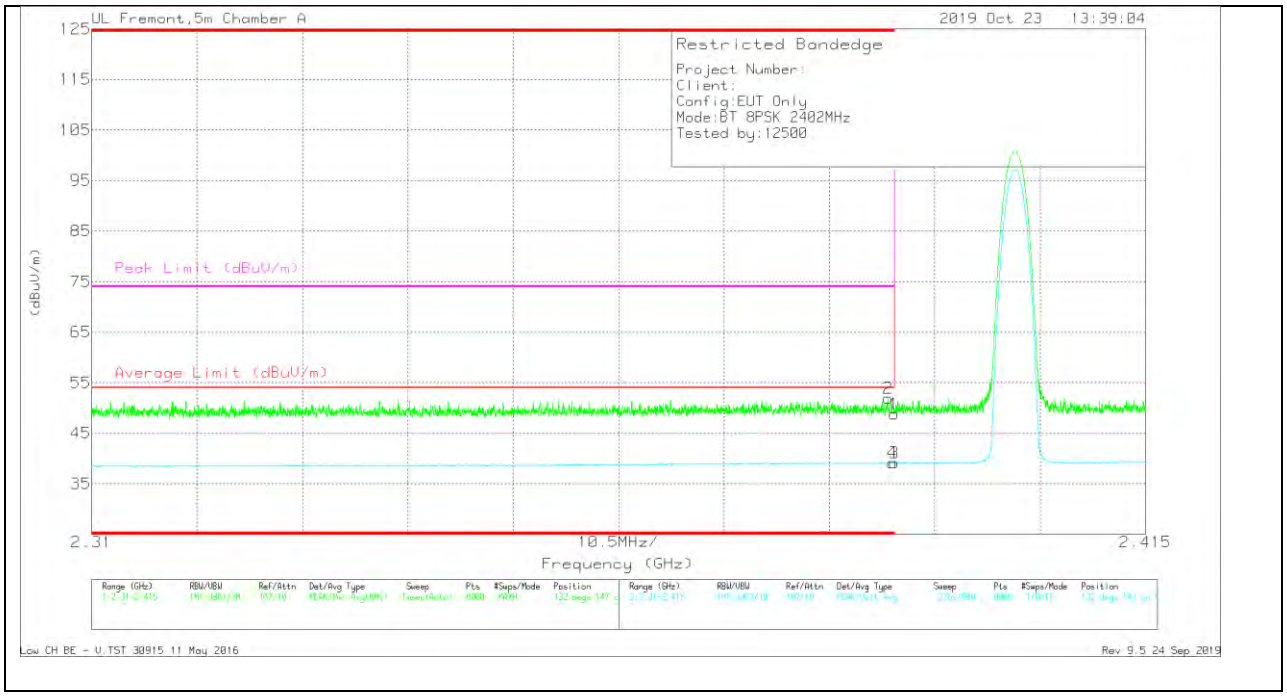


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39	Pk	32.2	-22.3	48.9	-	-	74	-25.1	181	207	H
2	* 2.36339	43.56	Pk	32	-22.4	53.16	-	-	74	-20.84	181	207	H
3	* 2.39	29.26	VA1T	32.2	-22.3	39.16	54	-14.84	-	-	181	207	H
4	* 2.38981	29.3	VA1T	32.2	-22.3	39.2	54	-14.8	-	-	181	207	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low CH BE - H.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

VERTICAL RESULT



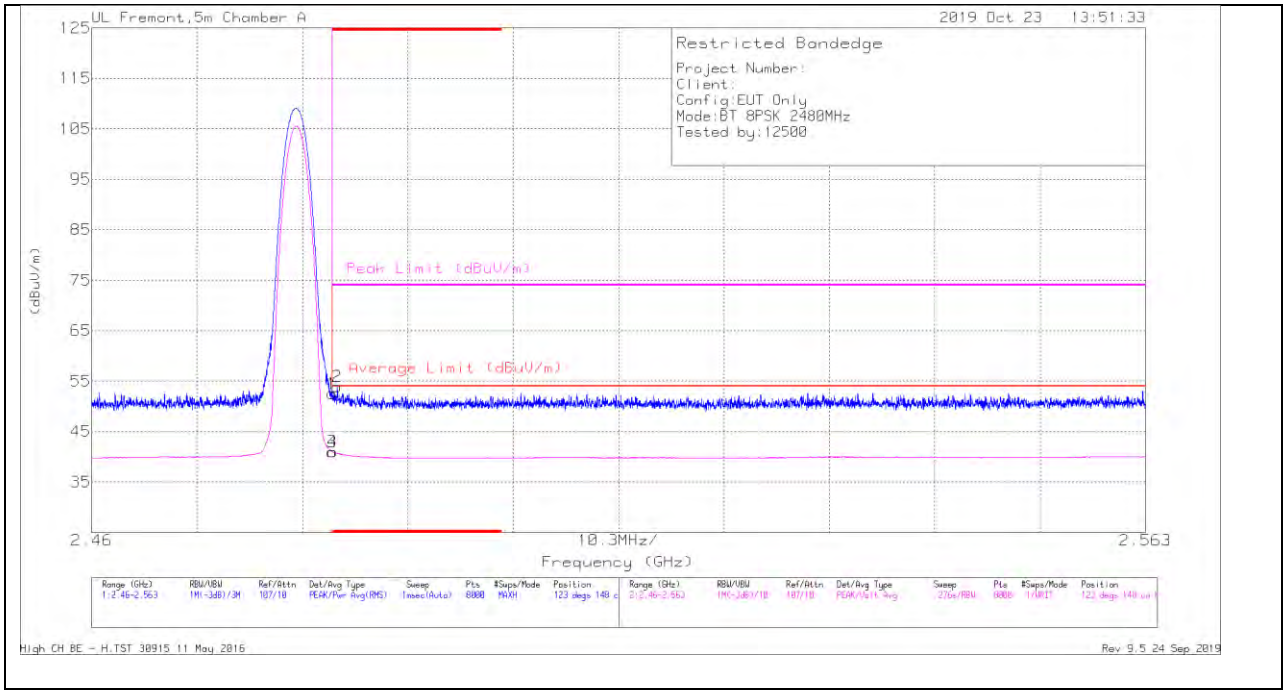
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	38.9	Pk	32.2	-22.3	48.8	-	-	74	-25.2	132	147	V
2	* 2.38934	41.95	Pk	32.2	-22.3	51.85	-	-	74	-22.15	132	147	V
3	* 2.39	29.17	VA1T	32.2	-22.3	39.07	54	-14.93	-	-	132	147	V
4	* 2.38979	29.18	VA1T	32.2	-22.3	39.08	54	-14.92	-	-	132	147	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low CH BE - V.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

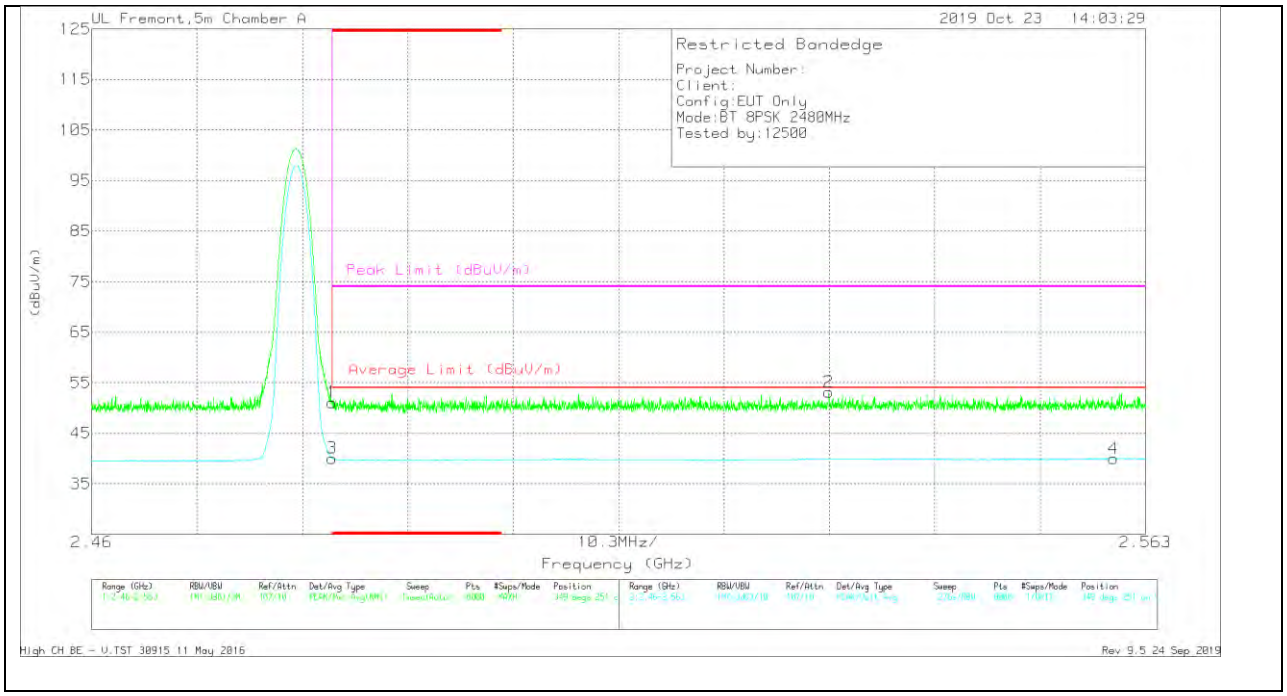


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	42.03	Pk	32.6	-22.1	52.53	-	-	74	-21.47	123	148	H
2	* 2.48399	43.44	Pk	32.6	-22.1	53.94	-	-	74	-20.06	123	148	H
3	* 2.4835	30.53	VA1T	32.6	-22.1	41.03	54	-12.97	-	-	123	148	H
4	* 2.48355	30.46	VA1T	32.6	-22.1	40.96	54	-13.04	-	-	123	148	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

High CH BE - H.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	40.6	Pk	32.6	-22.1	51.1	-	-	74	-22.9	349	251	V
3	* 2.4835	29.55	VA1T	32.6	-22.1	40.05	54	-13.95	-	-	349	251	V
2	2.53202	42.36	Pk	32.6	-21.8	53.16	-	-	74	-20.84	349	251	V
4	2.5599	29.09	VA1T	32.6	-21.7	39.99	54	-14.01	-	-	349	251	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

High CH BE - V.TST 30915 11 May 2016
Rev 9.5 24 Sep 2019