ULCA 66C												
Ch.	PCC					SCC					Power	
	BW [MHz]	Freq. [MHz]	Ch.	RB	RB Offset	BW [MHz]	Freq. [MHz]	Ch.	RB	RB Offset	(dB m)	(W)
Low	10	1 715.3	132025	1	49	15	1 727.3	132145	1	0	23.91	0.246
	15	1 717.5	132047	1	74	10	1 729.5	132167	1	0	23.90	0.245
	10	1 715.5	132027	1	49	20	1 729.9	132171	1	0	23.88	0.244
	20	1 720.0	132072	1	99	10	1 734.4	132216	1	0	23.85	0.243
	15	1 717.5	132047	1	74	15	1 732.5	132197	1	0	23.89	0.245
	15	1 717.8	132050	1	74	20	1 734.9	132221	1	0	23.79	0.239
	20	1 720.0	132072	1	99	15	1 737.1	132243	1	0	23.81	0.240
	20	1 720.0	132072	1	99	5	1 731.7	132189	1	0	23.88	0.244
	5	1 713.3	132005	1	24	20	1 725.0	132122	1	0	23.87	0.244
	20	1 720.0	132072	1	99	20	1 739.8	132270	1	0	**23.92**	**0.247**
Middle	10	1 747.9	132351	1	49	15	1 759.9	132471	1	0	23.87	0.244
	15	1 750.1	132373	1	74	10	1 762.1	132493	1	0	23.85	0.243
	10	1 745.6	132328	1	49	20	1 760.0	132472	1	0	23.81	0.240
	20	1 750.1	132373	1	99	10	1 764.5	132517	1	0	23.86	0.243
	15	1 747.5	132347	1	74	15	1 762.5	132497	1	0	23.84	0.242
	15	1 745.3	132325	1	74	20	1 762.4	132496	1	0	23.80	0.240
	20	1 747.6	132348	1	99	15	1 764.7	132519	1	0	23.79	0.239
	20	1 752.5	132397	1	99	5	1 764.2	132514	1	0	23.77	0.238
	5	1 745.8	132330	1	24	20	1 757.5	132447	1	0	23.82	0.241
	20	1 745.1	132323	1	99	20	1 764.9	132521	1	0	23.88	0.244
High	10	1 760.5	132477	1	49	15	1 772.5	132597	1	0	23.89	0.245
	15	1 762.7	132499	1	74	10	1 774.7	132619	1	0	23.88	0.244
	10	1 755.6	132428	1	49	20	1 770.0	132572	1	0	23.90	0.245
	20	1 760.1	132473	1	99	10	1 774.5	132617	1	0	23.81	0.240
	15	1 757.5	132447	1	74	15	1 772.5	132597	1	0	23.84	0.242
	15	1 752.9	132401	1	74	20	1 770.0	132572	1	0	23.87	0.244
	20	1 755.1	132423	1	99	15	1 772.2	132594	1	0	23.79	0.239
	20	1 765.0	132522	1	99	5	1 776.7	132639	1	0	23.77	0.238
	5	1 758.3	132455	1	24	20	1 770.0	132572	1	0	23.82	0.241
	20	1 750.2	132374	1	99	20	1 770.0	132572	1	0	23.86	0.243

Note;

QPSK Modulation with 1 RB

ULCA 66C												
Ch.	PCC					SCC					Power	
	BW [㎒]	Freq. [㎒]	Ch.	RB	RB Offset	BW [㎒]	Freq. [㎒]	Ch.	RB	RB Offset	(dB m)	(W)
Low	10	1 715.3	132025	1	49	15	1 727.3	132145	1	0	23.02	0.200
	15	1 717.5	132047	1	74	10	1 729.5	132167	1	0	22.80	0.191
	10	1 715.5	132027	1	49	20	1 729.9	132171	1	0	22.89	0.195
	20	1 720.0	132072	1	99	10	1 734.4	132216	1	0	22.84	0.192
	15	1 717.5	132047	1	74	15	1 732.5	132197	1	0	22.91	0.195
	15	1 717.8	132050	1	74	20	1 734.9	132221	1	0	22.96	0.198
	20	1 720.0	132072	1	99	15	1 737.1	132243	1	0	22.95	0.197
	20	1 720.0	132072	1	99	5	1 731.7	132189	1	0	22.89	0.195
	5	1 713.3	132005	1	24	20	1 725.0	132122	1	0	22.87	0.194
	20	1 720.0	132072	1	99	20	1 739.8	132270	1	0	**23.04**	**0.201**
Middle	10	1 747.9	132351	1	49	15	1 759.9	132471	1	0	22.98	0.199
	15	1 750.1	132373	1	74	10	1 762.1	132493	1	0	22.94	0.197
	10	1 745.6	132328	1	49	20	1 760.0	132472	1	0	22.89	0.195
	20	1 750.1	132373	1	99	10	1 764.5	132517	1	0	22.82	0.191
	15	1 747.5	132347	1	74	15	1 762.5	132497	1	0	22.95	0.197
	15	1 745.3	132325	1	74	20	1 762.4	132496	1	0	22.76	0.189
	20	1 747.6	132348	1	99	15	1 764.7	132519	1	0	22.79	0.190
	20	1 752.5	132397	1	99	5	1 764.2	132514	1	0	22.89	0.195
	5	1 745.8	132330	1	24	20	1 757.5	132447	1	0	22.92	0.196
	20	1 745.1	132323	1	99	20	1 764.9	132521	1	0	23.01	0.200
High	10	1 760.5	132477	1	49	15	1 772.5	132597	1	0	23.01	0.200
	15	1 762.7	132499	1	74	10	1 774.7	132619	1	0	22.98	0.199
	10	1 755.6	132428	1	49	20	1 770.0	132572	1	0	22.84	0.192
	20	1 760.1	132473	1	99	10	1 774.5	132617	1	0	22.79	0.190
	15	1 757.5	132447	1	74	15	1 772.5	132597	1	0	22.86	0.193
	15	1 752.9	132401	1	74	20	1 770.0	132572	1	0	22.82	0.191
	20	1 755.1	132423	1	99	15	1 772.2	132594	1	0	22.81	0.191
	20	1 765.0	132522	1	99	5	1 776.7	132639	1	0	22.88	0.194
	5	1 758.3	132455	1	24	20	1 770.0	132572	1	0	22.89	0.195
	20	1 750.2	132374	1	99	20	1 770.0	132572	1	0	23.00	0.200

Note;

16QAM Modulation with 1 RB

ULCA 66C												
Ch.	PCC					SCC					Power	
	BW [MHz]	Freq. [MHz]	Ch.	RB	RB Offset	BW [MHz]	Freq. [MHz]	Ch.	RB	RB Offset	(dB m)	(W)
Low	10	1 715.3	132025	50	0	15	1 727.3	132145	75	0	21.26	0.134
	15	1 717.5	132047	75	0	10	1 729.5	132167	50	0	21.24	0.133
	10	1 715.5	132027	50	0	20	1 729.9	132171	100	0	21.32	0.136
	20	1 720.0	132072	100	0	10	1 734.4	132216	50	0	21.34	0.136
	15	1 717.5	132047	75	0	15	1 732.5	132197	75	0	21.33	0.136
	15	1 717.8	132050	75	0	20	1 734.9	132221	100	0	21.28	0.134
	20	1 720.0	132072	100	0	15	1 737.1	132243	75	0	21.30	0.135
	20	1 720.0	132072	100	0	5	1 731.7	132189	25	0	21.25	0.133
	5	1 713.3	132005	25	0	20	1 725.0	132122	100	0	21.23	0.133
	20	1 720.0	132072	100	0	20	1 739.8	132270	100	0	**21.36**	**0.137**
Middle	10	1 747.9	132351	50	0	15	1 759.9	132471	75	0	21.25	0.133
	15	1 750.1	132373	75	0	10	1 762.1	132493	50	0	21.26	0.134
	10	1 745.6	132328	50	0	20	1 760.0	132472	100	0	21.28	0.134
	20	1 750.1	132373	100	0	10	1 764.5	132517	50	0	21.19	0.132
	15	1 747.5	132347	75	0	15	1 762.5	132497	75	0	21.22	0.132
	15	1 745.3	132325	75	0	20	1 762.4	132496	100	0	21.35	0.136
	20	1 747.6	132348	100	0	15	1 764.7	132519	75	0	21.31	0.135
	20	1 752.5	132397	100	0	5	1 764.2	132514	25	0	21.28	0.134
	5	1 745.8	132330	25	0	20	1 757.5	132447	100	0	21.31	0.135
	20	1 745.1	132323	100	0	20	1 764.9	132521	100	0	21.31	0.135
High	10	1 760.5	132477	50	0	15	1 772.5	132597	75	0	21.21	0.132
	15	1 762.7	132499	75	0	10	1 774.7	132619	50	0	21.19	0.132
	10	1 755.6	132428	50	0	20	1 770.0	132572	100	0	21.25	0.133
	20	1 760.1	132473	100	0	10	1 774.5	132617	50	0	21.20	0.132
	15	1 757.5	132447	75	0	15	1 772.5	132597	75	0	21.31	0.135
	15	1 752.9	132401	75	0	20	1 770.0	132572	100	0	21.28	0.134
	20	1 755.1	132423	100	0	15	1 772.2	132594	75	0	21.26	0.134
	20	1 765.0	132522	100	0	5	1 776.7	132639	25	0	21.23	0.133
	5	1 758.3	132455	25	0	20	1 770.0	132572	100	0	21.22	0.132
	20	1 750.2	132374	100	0	20	1 770.0	132572	100	0	21.28	0.134

Note;

QPSK Modulation with Full RB

ULCA 66C												
Ch.	PCC					SCC					Power	
	BW [MHz]	Freq. [MHz]	Ch.	RB	RB Offset	BW [MHz]	Freq. [MHz]	Ch.	RB	RB Offset	(dB m)	(W)
Low	10	1 715.3	132025	50	0	15	1 727.3	132145	75	0	20.23	0.105
	15	1 717.5	132047	75	0	10	1 729.5	132167	50	0	20.20	0.105
	10	1 715.5	132027	50	0	20	1 729.9	132171	100	0	20.34	0.108
	20	1 720.0	132072	100	0	10	1 734.4	132216	50	0	20.31	0.107
	15	1 717.5	132047	75	0	15	1 732.5	132197	75	0	20.28	0.107
	15	1 717.8	132050	75	0	20	1 734.9	132221	100	0	20.30	0.107
	20	1 720.0	132072	100	0	15	1 737.1	132243	75	0	20.25	0.106
	20	1 720.0	132072	100	0	5	1 731.7	132189	25	0	20.18	0.104
	5	1 713.3	132005	25	0	20	1 725.0	132122	100	0	20.21	0.105
	20	1 720.0	132072	100	0	20	1 739.8	132270	100	0	20.26	0.106
Middle	10	1 747.9	132351	50	0	15	1 759.9	132471	75	0	20.28	0.107
	15	1 750.1	132373	75	0	10	1 762.1	132493	50	0	20.31	0.107
	10	1 745.6	132328	50	0	20	1 760.0	132472	100	0	20.24	0.106
	20	1 750.1	132373	100	0	10	1 764.5	132517	50	0	20.28	0.107
	15	1 747.5	132347	75	0	15	1 762.5	132497	75	0	20.25	0.106
	15	1 745.3	132325	75	0	20	1 762.4	132496	100	0	20.26	0.106
	20	1 747.6	132348	100	0	15	1 764.7	132519	75	0	20.31	0.107
	20	1 752.5	132397	100	0	5	1 764.2	132514	25	0	20.30	0.107
	5	1 745.8	132330	25	0	20	1 757.5	132447	100	0	20.28	0.107
	20	1 745.1	132323	100	0	20	1 764.9	132521	100	0	**20.38**	**0.109**
High	10	1 760.5	132477	50	0	15	1 772.5	132597	75	0	20.31	0.107
	15	1 762.7	132499	75	0	10	1 774.7	132619	50	0	20.20	0.105
	10	1 755.6	132428	50	0	20	1 770.0	132572	100	0	20.30	0.107
	20	1 760.1	132473	100	0	10	1 774.5	132617	50	0	20.25	0.106
	15	1 757.5	132447	75	0	15	1 772.5	132597	75	0	20.22	0.105
	15	1 752.9	132401	75	0	20	1 770.0	132572	100	0	20.24	0.106
	20	1 755.1	132423	100	0	15	1 772.2	132594	75	0	20.23	0.105
	20	1 765.0	132522	100	0	5	1 776.7	132639	25	0	20.32	0.108
	5	1 758.3	132455	25	0	20	1 770.0	132572	100	0	20.29	0.107
	20	1 750.2	132374	100	0	20	1 770.0	132572	100	0	20.32	0.108

Note;

16QAM Modulation with Full RB

4. Occupied Bandwidth

4.1. Limit

CFR 47, Section FCC §2.1049 and IC RSS-Gen Issue 5 6.7.

4.2. Test Procedure

FCC

The test follows section 5.4.4 of ANSI C63.26-2015.

a. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation. products including the emission skirts (typically a span of 1.5 × OBW is sufficient).
b. The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1 % to 5 % of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.
c. Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
d. Set the detection mode to peak, and the trace mode to max-hold.
e. If the instrument does not have a 99 % OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5 % of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5 % of the total is reached and record that frequency as the upper OBW frequency. The 99 % power OBW can be determined by computing the difference these two frequencies.
f. The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

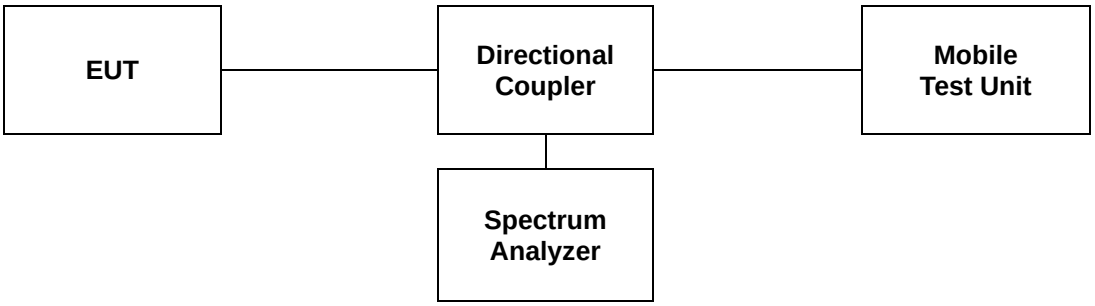
IC

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

• The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
• The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
• The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99 % emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99 % emission bandwidth).



4.3 Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

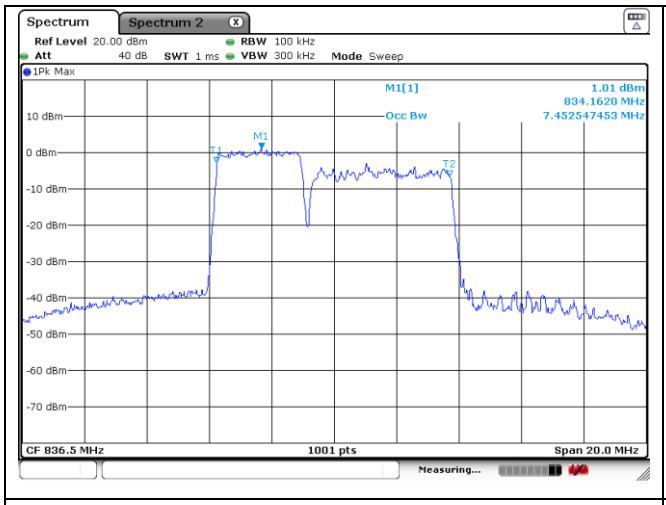
Band	PCC			SCC			Occupied Bandwidth (㎒)	
	BW (㎒)	Frequency (㎒)	Channel	BW (㎒)	Frequency (㎒)	Channel	QPSK	16QAM
5B	3	834.1	20501	5	838.0	20540	7.453	7.453
	5	835.0	20510	3	838.9	20549	7.473	7.453
	5	831.8	20478	10	839.0	20550	13.846	13.846
	10	834.0	20500	5	841.2	20572	13.846	13.846
	10	831.6	20476	10	841.5	20575	18.741	18.741
7C	10	2 525.6	21006	20	2 540.0	21150	27.632	27.632
	20	2 530.1	21051	10	2 544.5	21195	27.692	27.632
	15	2 530.1	21051	15	2 542.1	21171	28.232	28.172
	15	2 530.1	21051	10	2 542.1	21171	23.027	23.077
	15	2 525.3	21003	20	2 542.4	21174	32.657	32.587
	20	2 527.6	21026	15	2 544.7	21197	32.657	32.587
	20	2 525.1	21001	20	2 544.9	21199	37.403	37.483
66B	5	1 752.6	132398	5	1 757.4	132446	9.231	9.211
	5	1 750.3	132375	10	1 757.5	132447	13.936	13.906
	10	1 752.5	132397	5	1 759.7	132469	13.906	13.936
	5	1 748.1	132353	15	1 757.4	132446	18.182	18.102
	15	1 752.6	132398	5	1 761.9	132491	18.222	18.262
	10	1 750.1	132373	10	1 760.0	132472	18.741	18.781
66C	10	1 747.9	132351	15	1 759.9	132471	23.057	23.017
	15	1 750.1	132373	10	1 762.1	132493	23.017	23.097
	10	1 745.6	132328	20	1 760.0	132472	27.632	27.572
	20	1 750.1	132373	10	1 764.5	132517	27.752	27.692
	15	1 747.5	132347	15	1 762.5	132497	28.352	28.232
	15	1 745.3	132325	20	1 762.4	132496	32.657	32.657
	20	1 747.6	132348	15	1 764.7	132519	32.657	32.657
	20	1 752.5	132397	5	1 764.2	132514	22.827	22.877
	5	1 745.8	132330	20	1 757.5	132447	22.727	22.677
	20	1 745.1	132323	20	1 764.9	132521	37.483	37.562

Note;

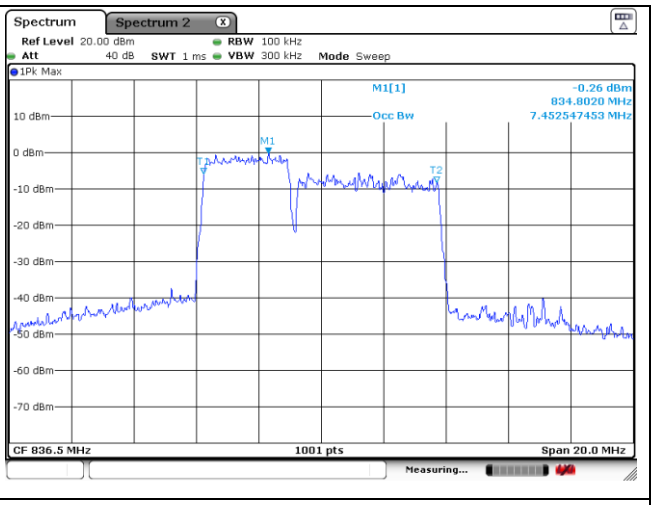
There is no limit required and power is the same for low, middle and high channel; therefore, All channels were tested but only middle was reported.

- Test plots

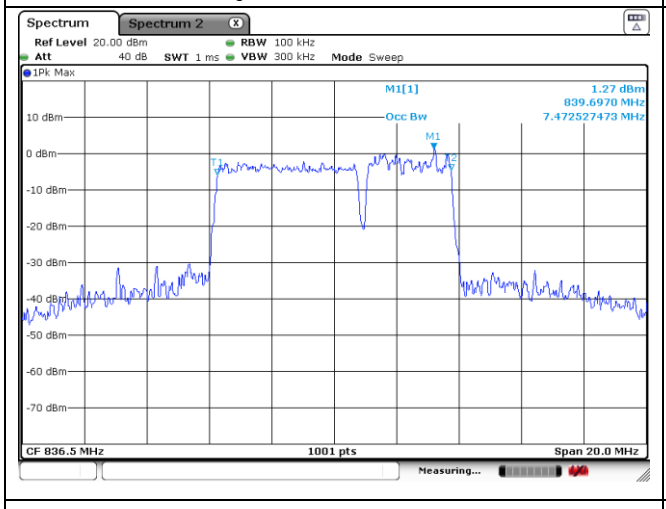
ULCA 5B



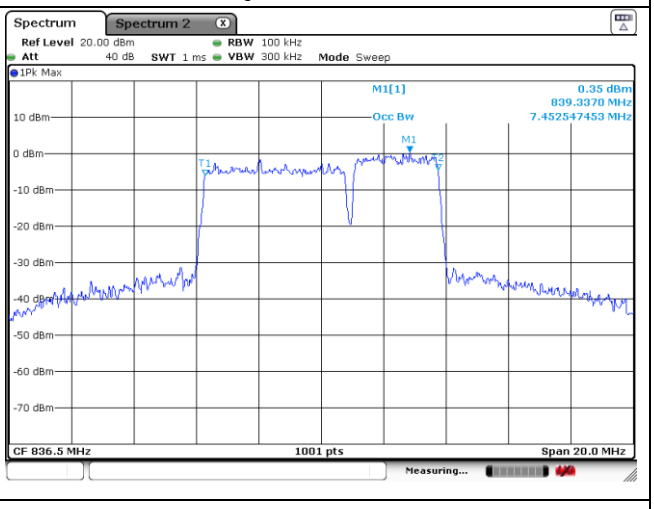
3 ㎒ + 5 ㎒ QPSK Middle Channel - Full RB



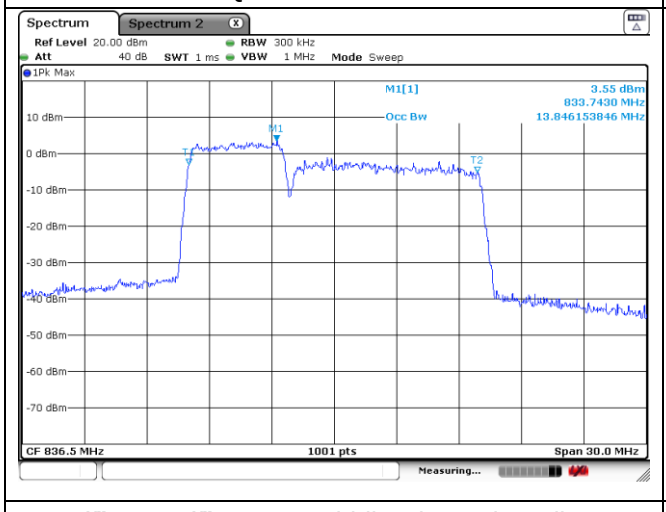
3 ㎒ + 5 ㎒ 16QAM Middle Channel - Full RB



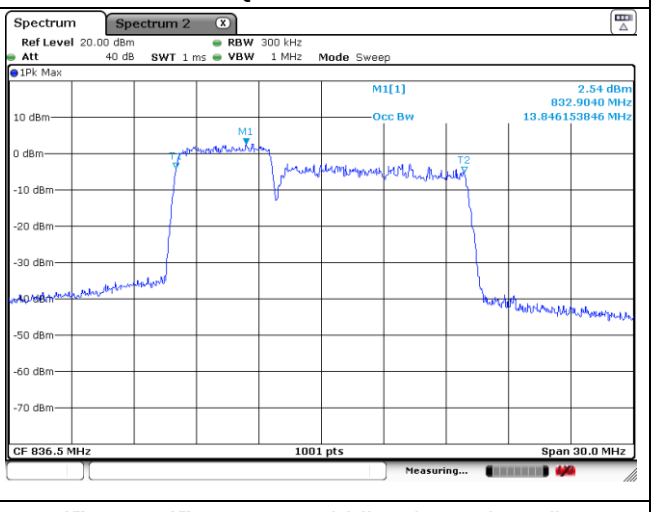
5 ㎒ + 3 ㎒ QPSK Middle Channel - Full RB



5 ㎒ + 3 ㎒ 16QAM Middle Channel - Full RB

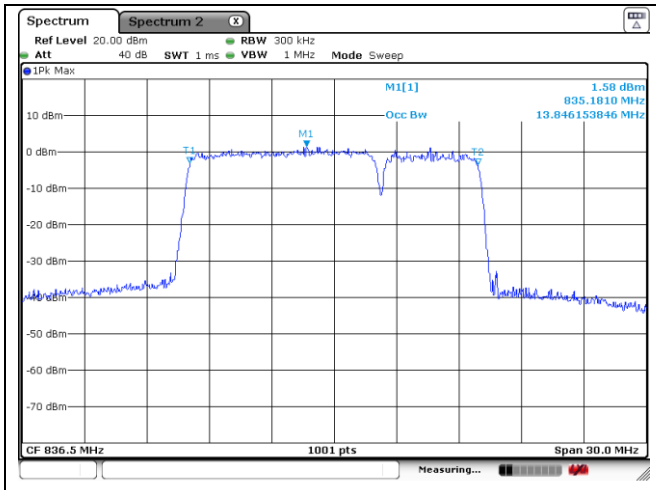


5 ㎒ + 10 ㎒ QPSK Middle Channel - Full RB

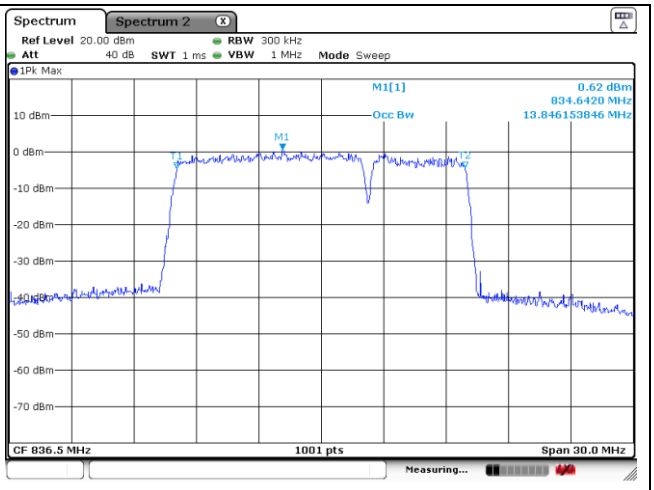


5 ㎒ + 10 ㎒ 16QAM Middle Channel - Full RB

ULCA 5B



10 ㎒ + 5 ㎒ QPSK Middle Channel - Full RB



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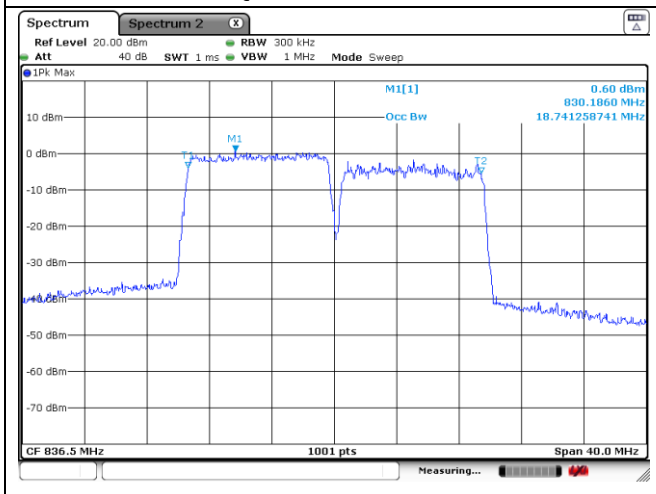

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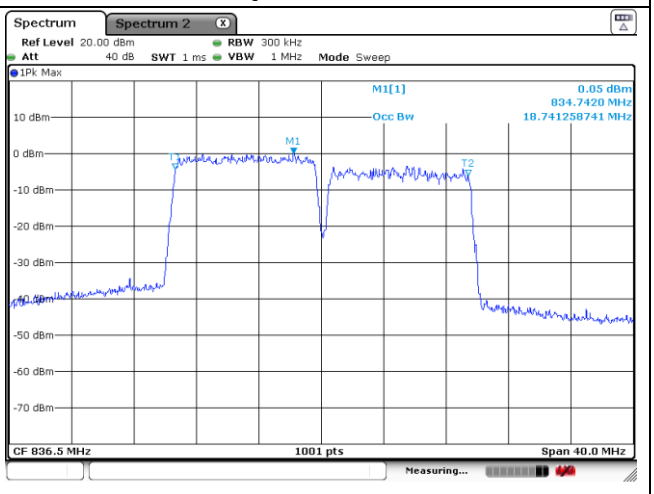
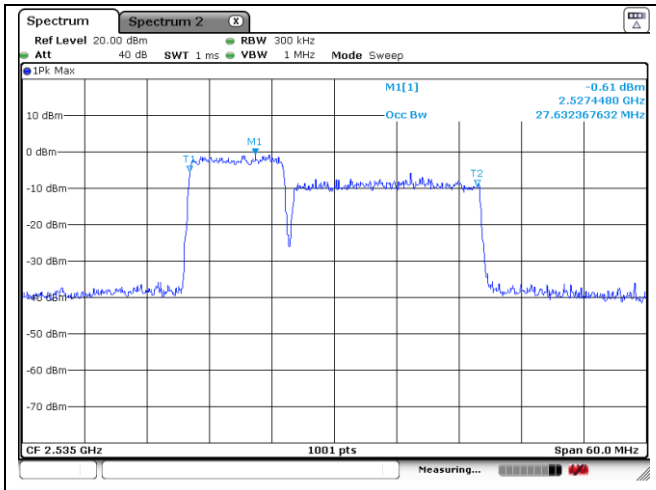
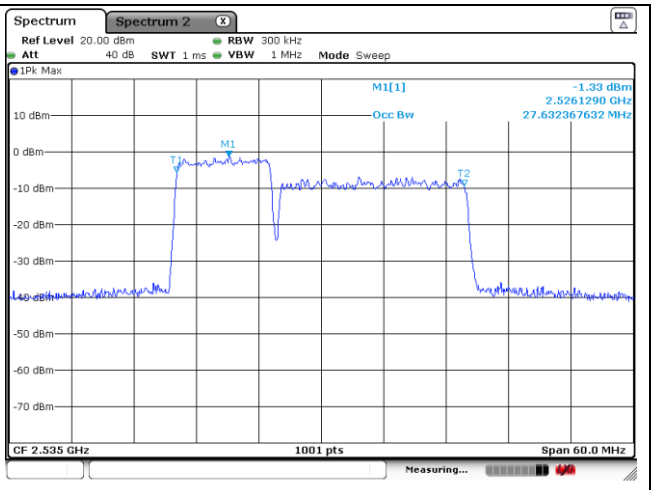


10 ㎒ + 10 ㎒ 16QAM Middle Channel - Full RB

ULCA 7C



10 ㎒ + 20 ㎒ QPSK Middle Channel - Full RB



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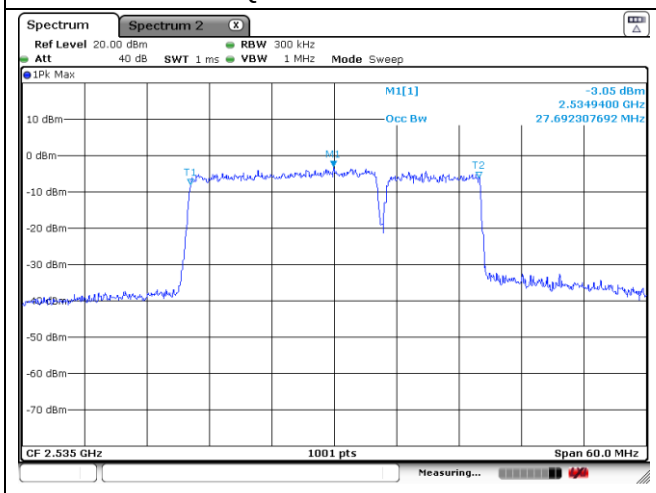

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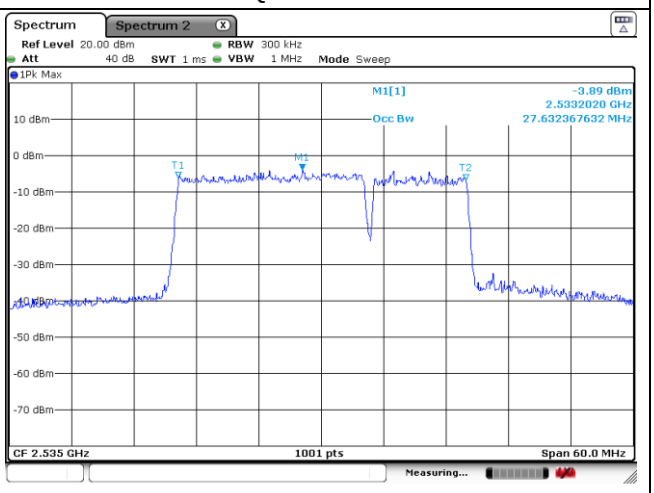

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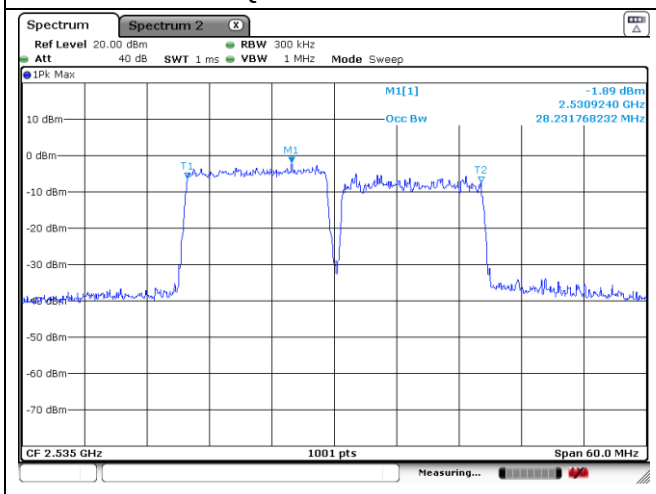
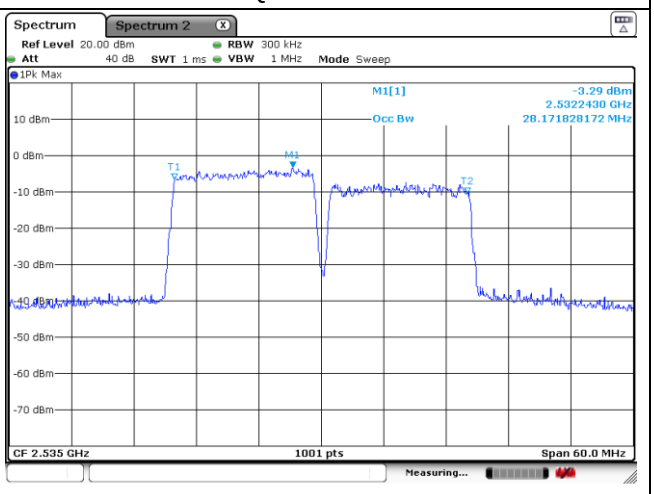
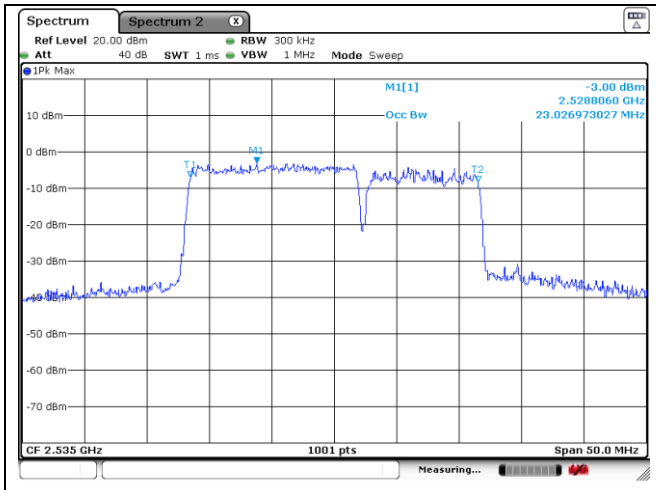


15 ㎒ + 15 ㎒ QPSK Middle Channel - Full RB



15 ㎒ + 15 ㎒ 16QAM Middle Channel - Full RB

ULCA 7C



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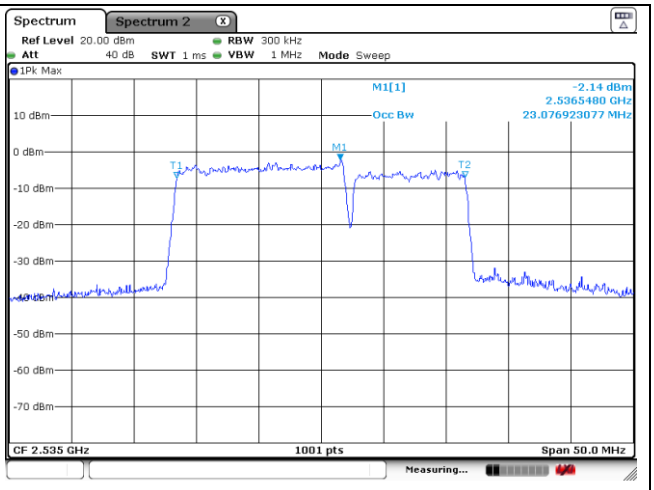
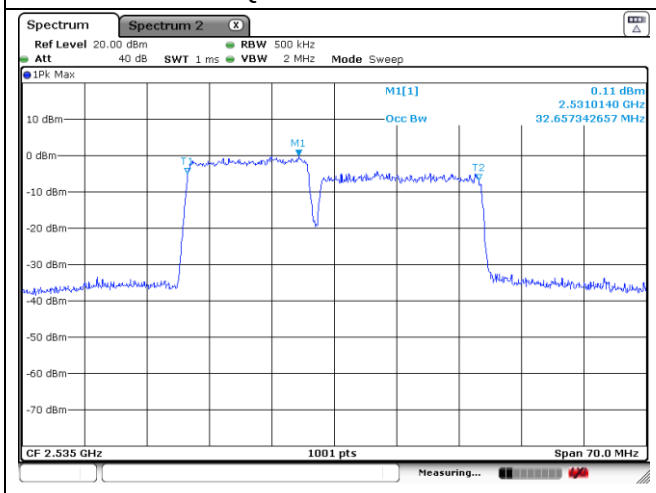
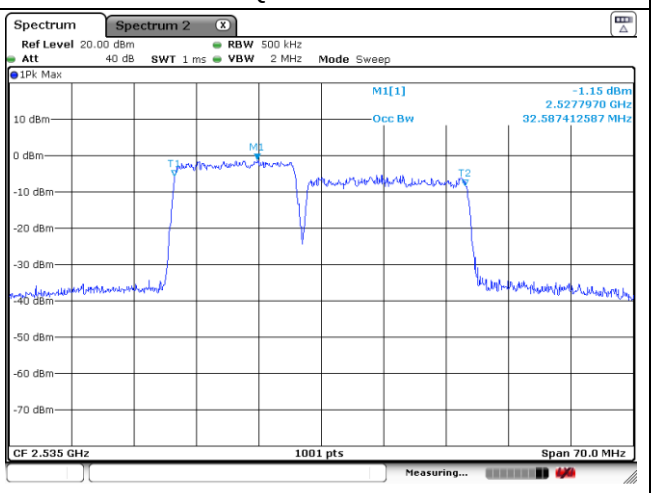


15 ㎒ + 10 ㎒ 16QAM Middle Channel - Full RB

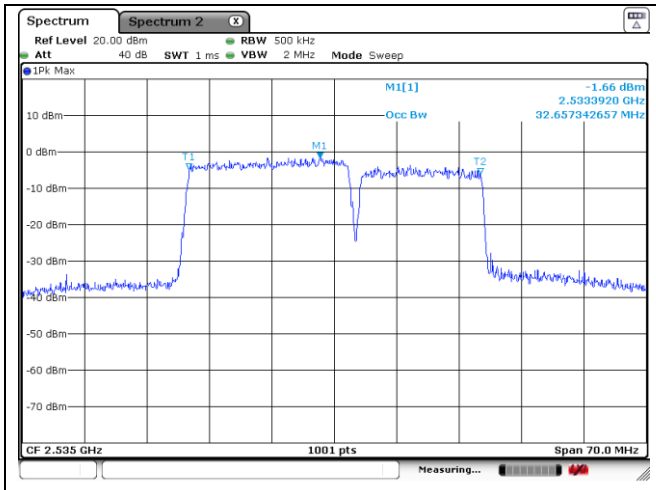


15 ㎒ + 20 ㎒ QPSK Middle Channel - Full RB

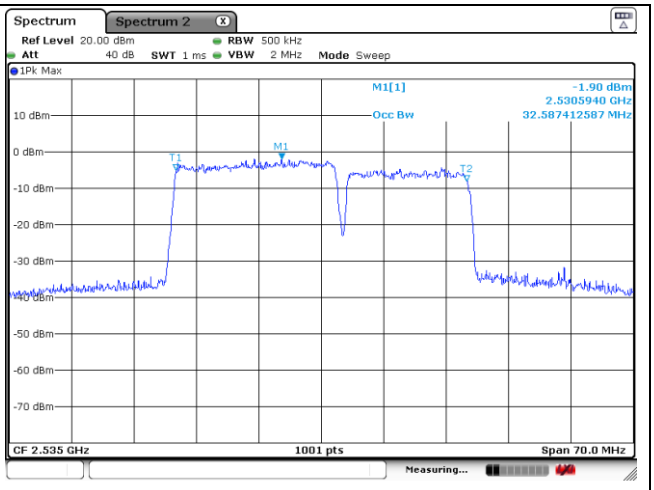


15 ㎒ + 20 ㎒ 16QAM Middle Channel - Full RB

ULCA 7C



20 ㎒ + 15 ㎒ QPSK Middle Channel - Full RB



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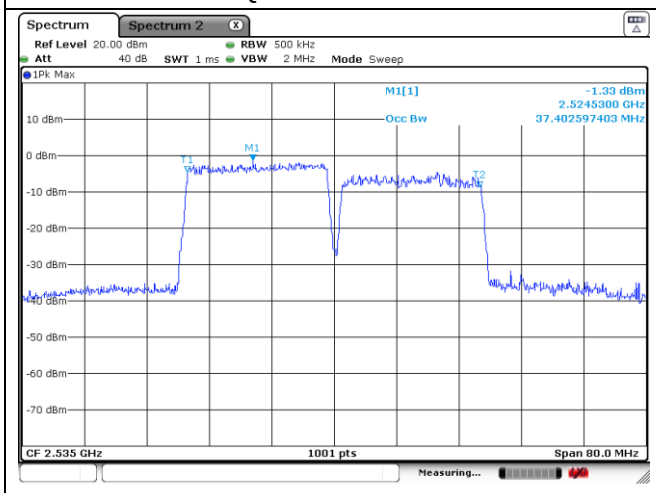
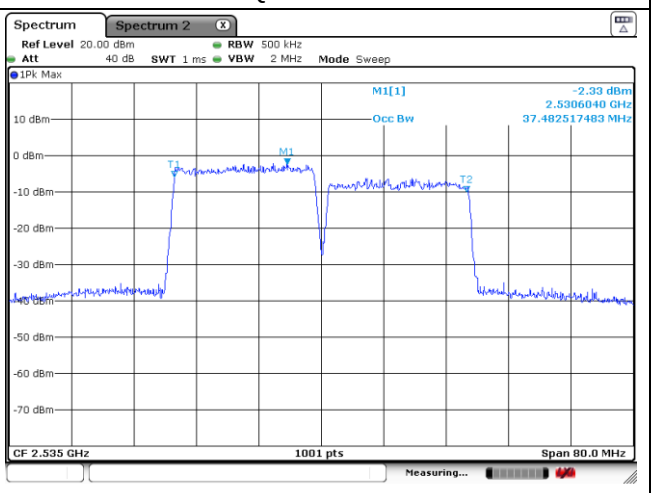
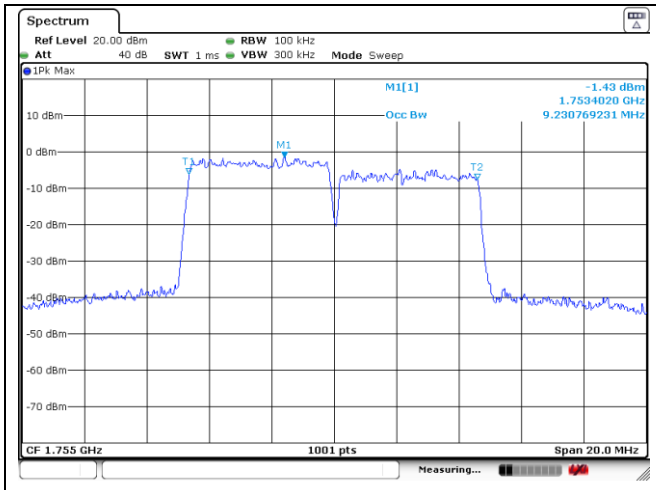


20 ㎒ + 20 ㎒ QPSK Middle Channel - Full RB

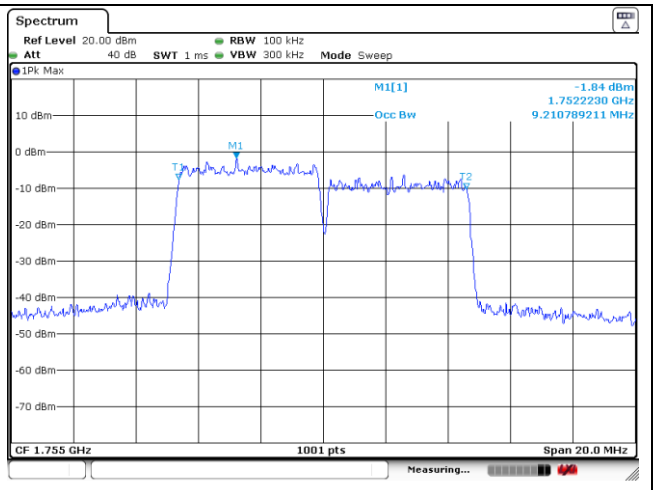


20 ㎒ + 20 ㎒ 16QAM Middle Channel - Full RB

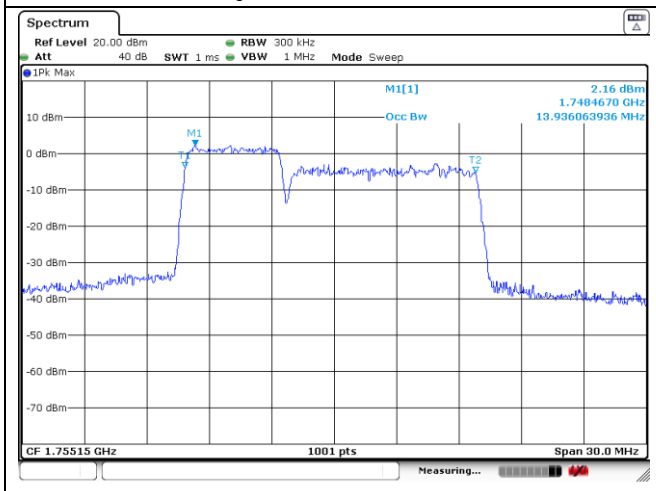
ULCA 66B



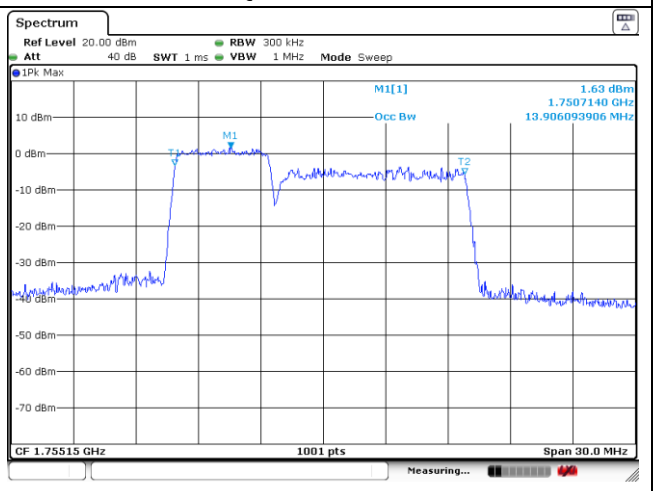
5 ㎒ + 5 ㎒ QPSK Middle Channel - Full RB



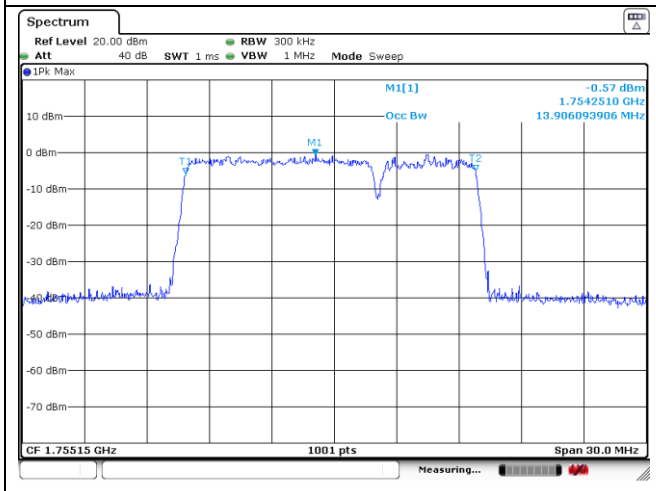
5 ㎒ + 5 ㎒ 16QAM Middle Channel - Full RB



5 ㎒ + 10 ㎒ QPSK Middle Channel - Full RB



5 ㎒ + 10 ㎒ 16QAM Middle Channel - Full RB



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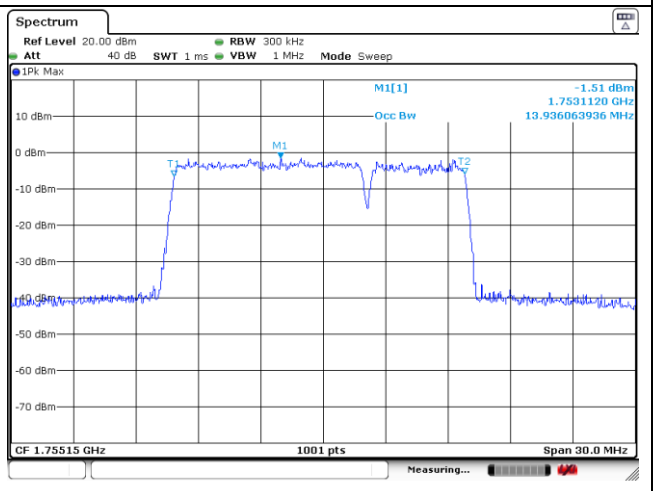
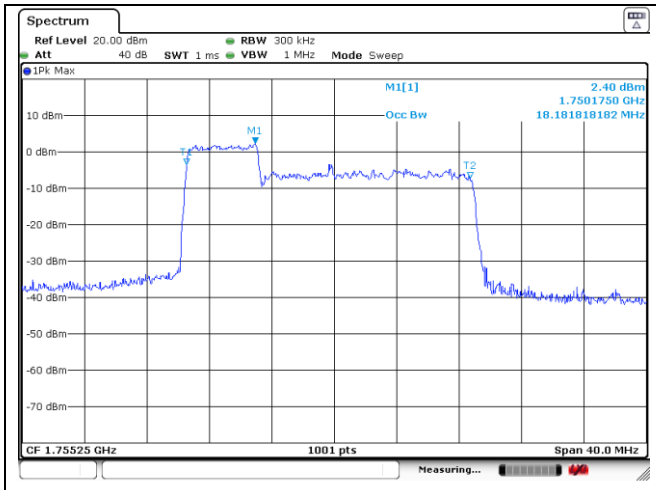
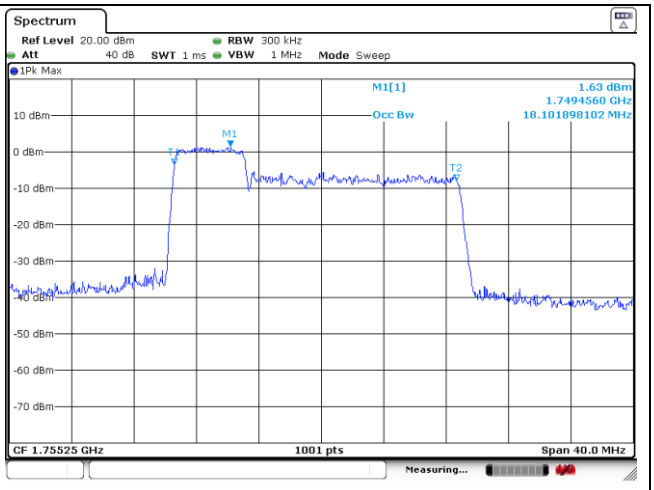


10 ㎒ + 5 ㎒ 16QAM Middle Channel - Full RB

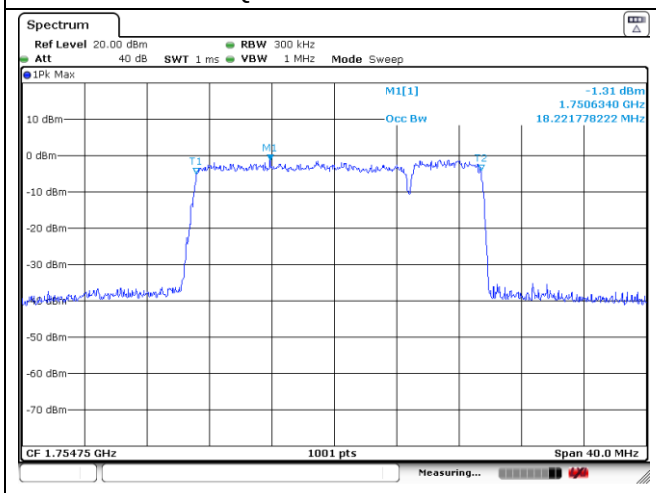
ULCA 66B



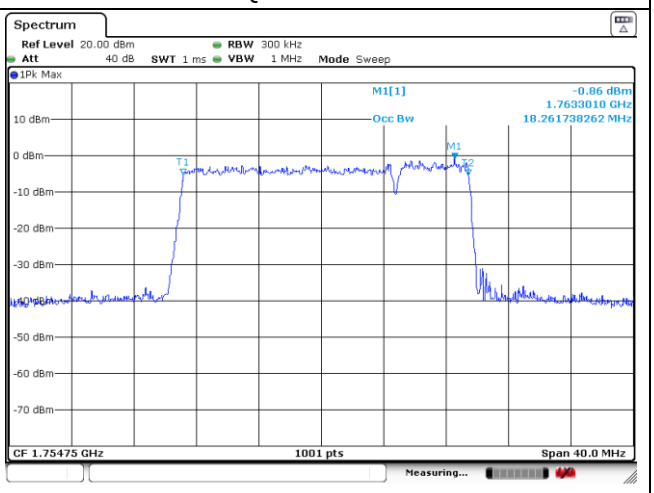
5 ㎒ + 15 ㎒ QPSK Middle Channel - Full RB



5 ㎒ + 15 ㎒ 16QAM Middle Channel - Full RB



15 ㎒ + 5 ㎒ QPSK Middle Channel - Full RB



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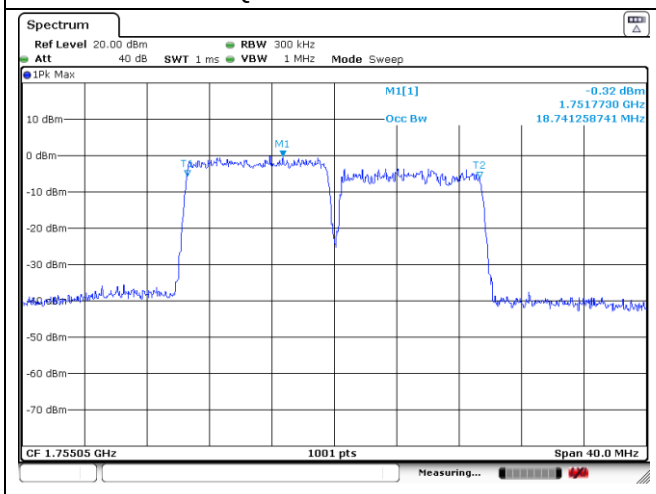
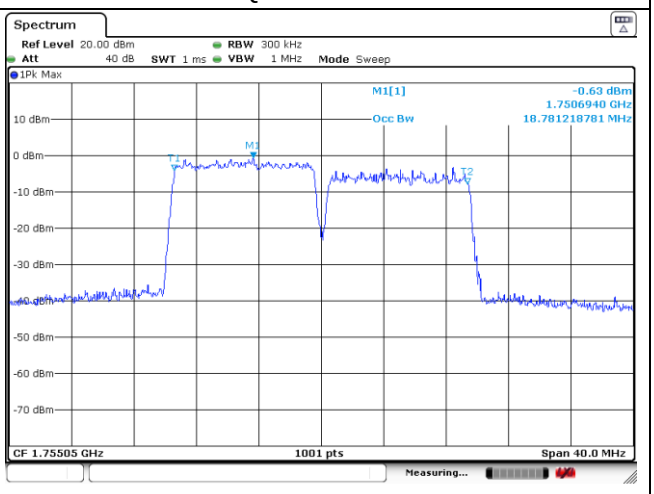
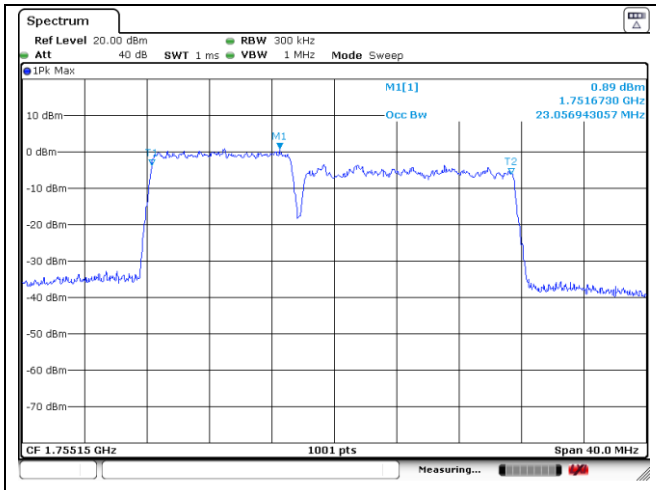


10 ㎒ + 10 ㎒ QPSK Middle Channel - Full RB

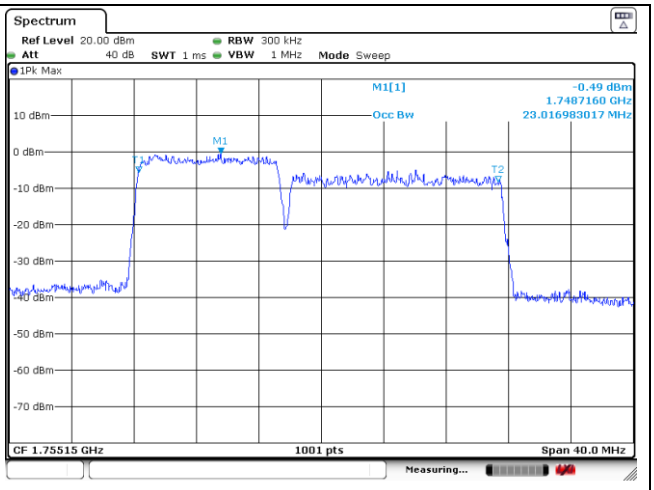


10 ㎒ + 10 ㎒ 16QAM Middle Channel - Full RB

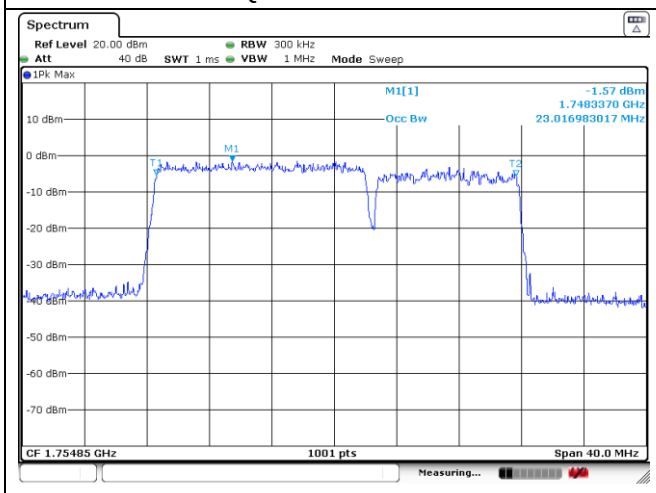
ULCA 66C



10 ㎒ + 15 ㎒ QPSK Middle Channel - Full RB



10 ㎒ + 15 ㎒ 16QAM Middle Channel - Full RB



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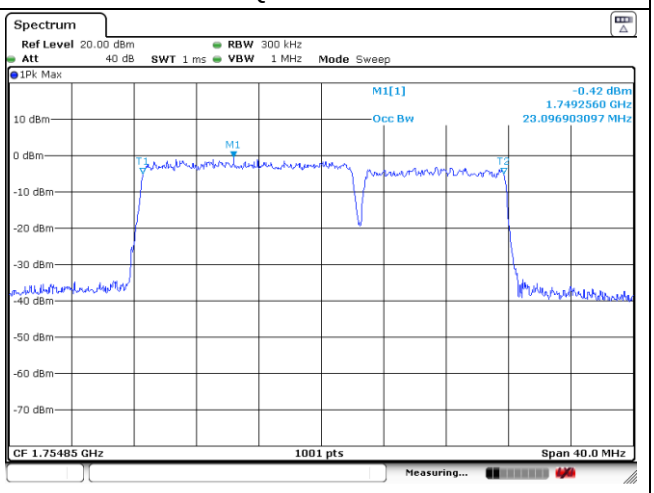
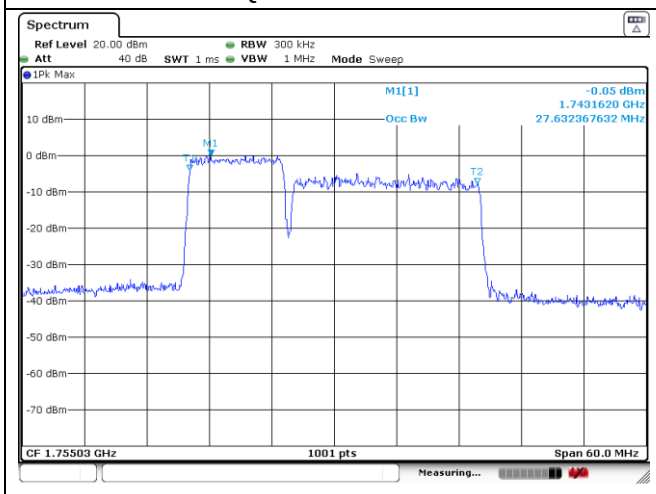
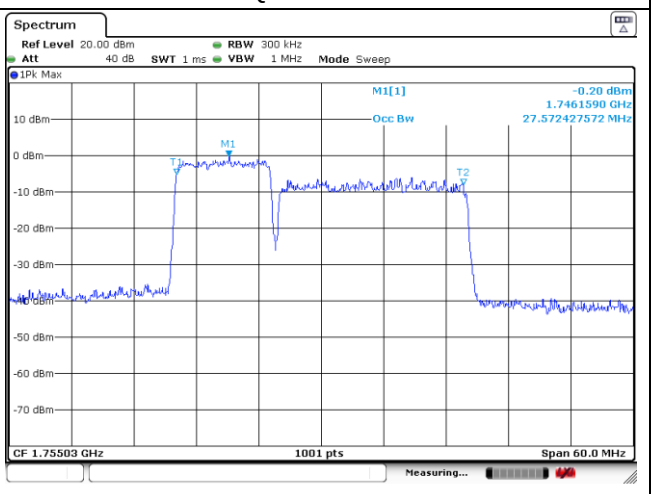


15 ㎒ + 10 ㎒ 16QAM Middle Channel - Full RB

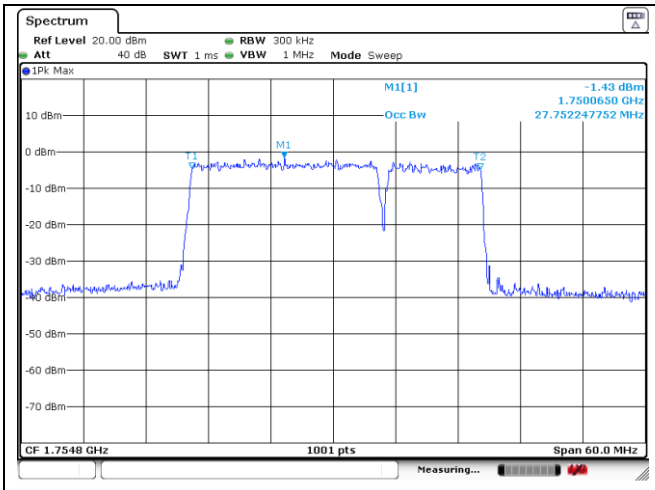


10 ㎒ + 20 ㎒ QPSK Middle Channel - Full RB

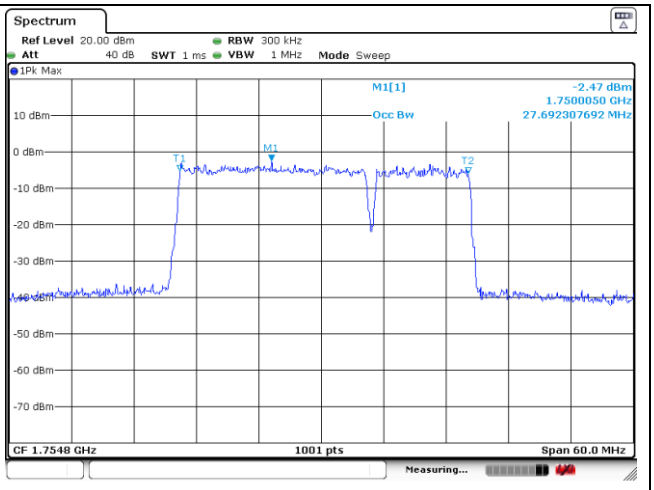


10 ㎒ + 20 ㎒ 16QAM Middle Channel - Full RB

ULCA 66C



20 ㎒ + 10 ㎒ QPSK Middle Channel - Full RB



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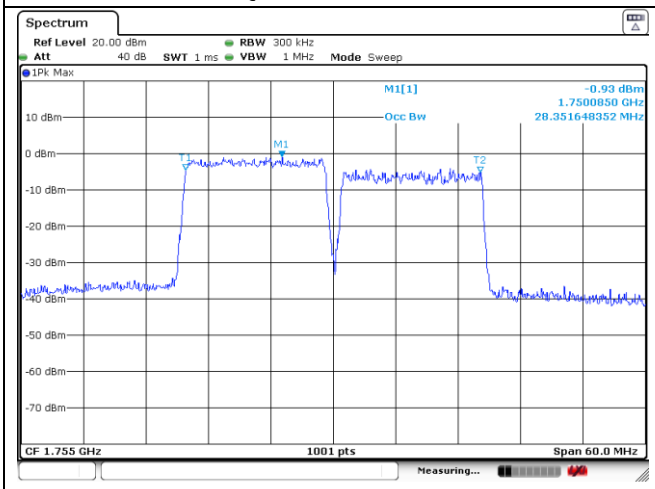

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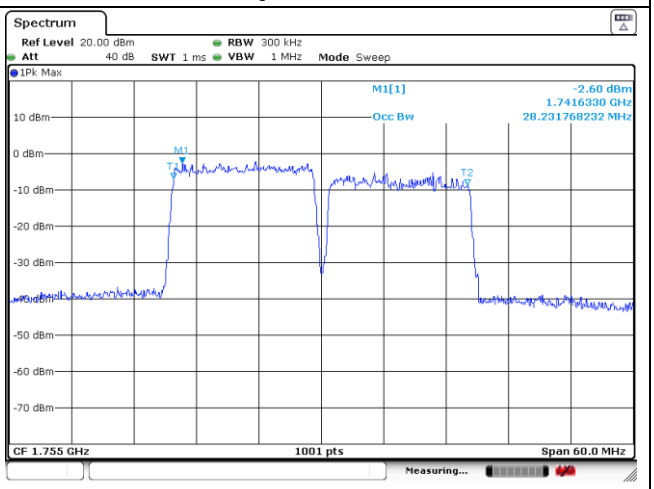

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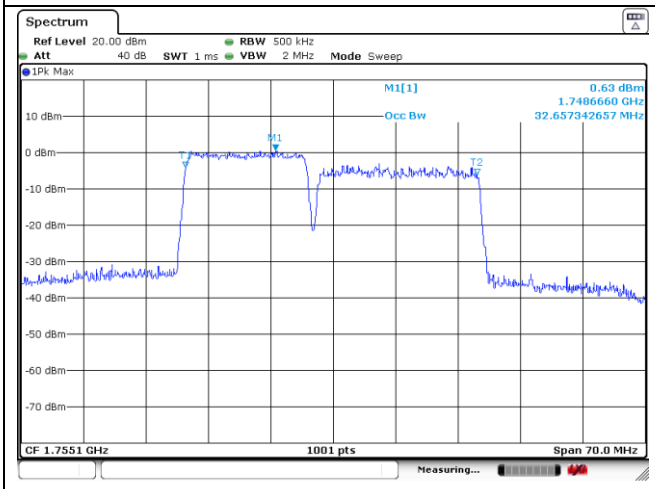

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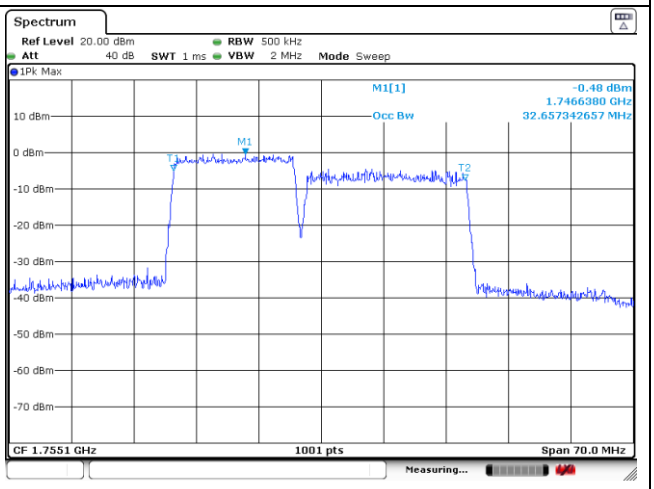
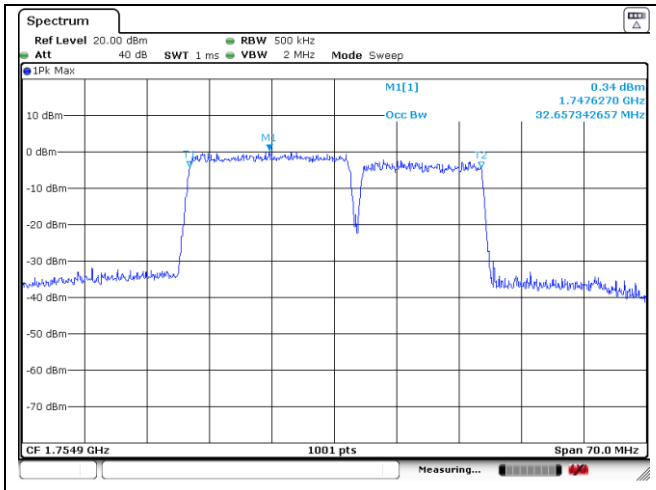
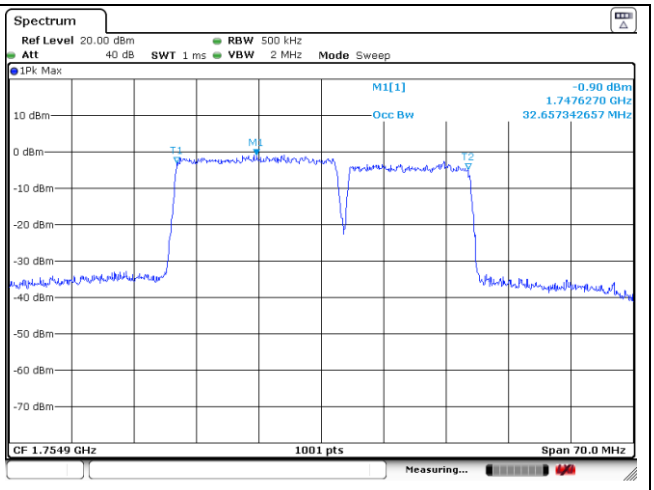


15 ㎒ + 20 ㎒ 16QAM Middle Channel - Full RB

ULCA 66C



20 ㎒ + 15 ㎒ QPSK Middle Channel - Full RB



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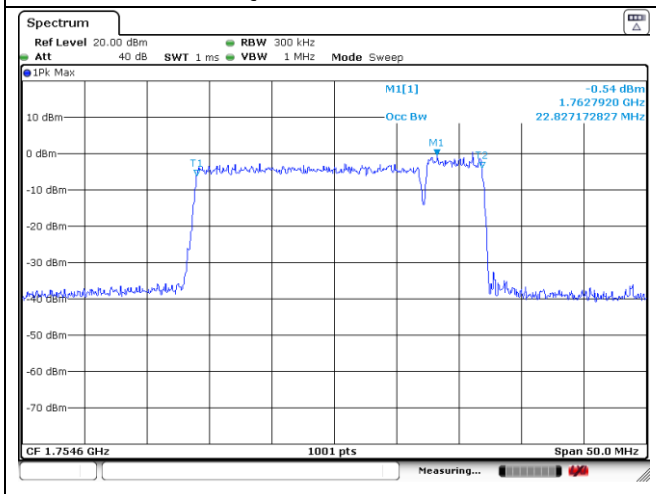

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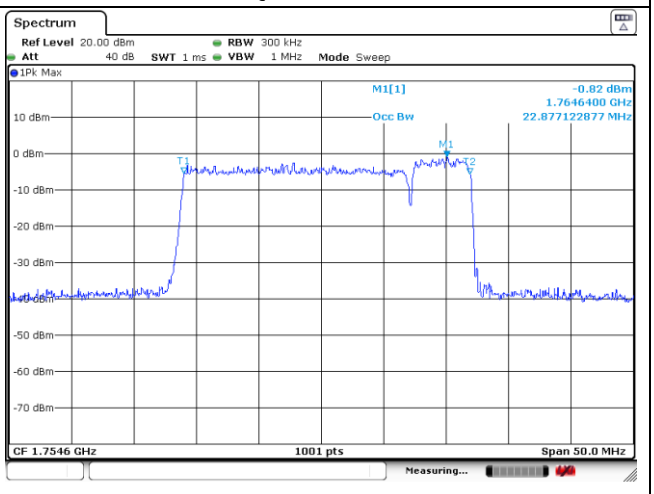

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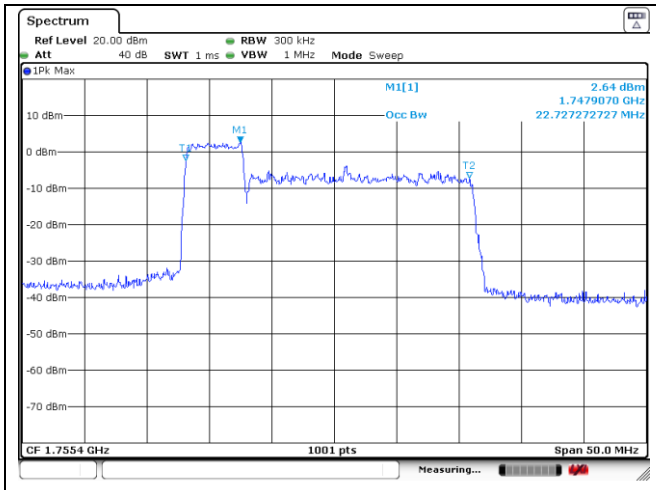
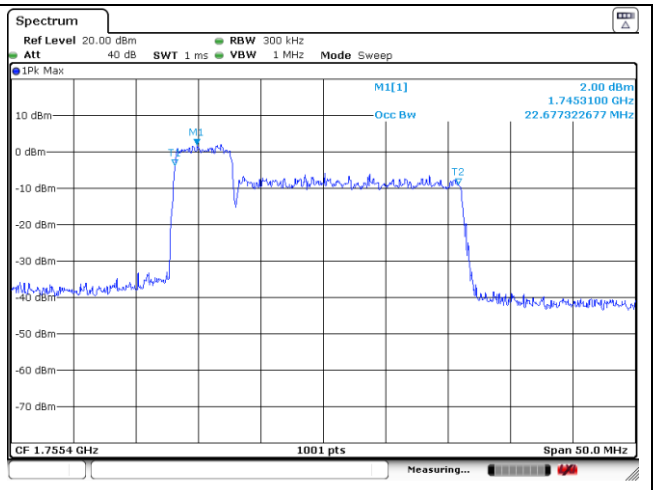
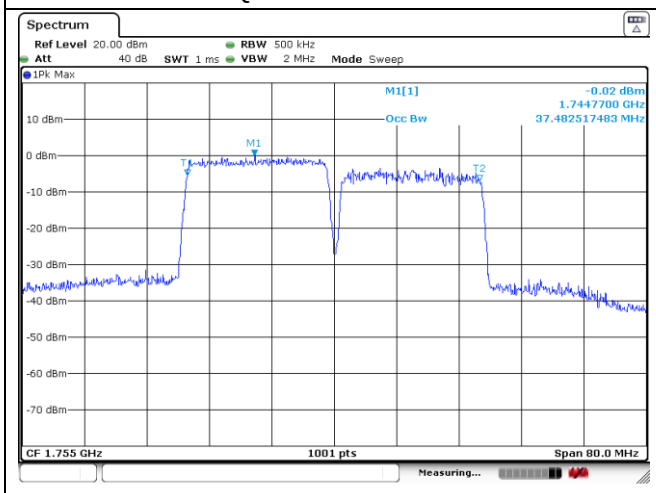
ULCA 66C



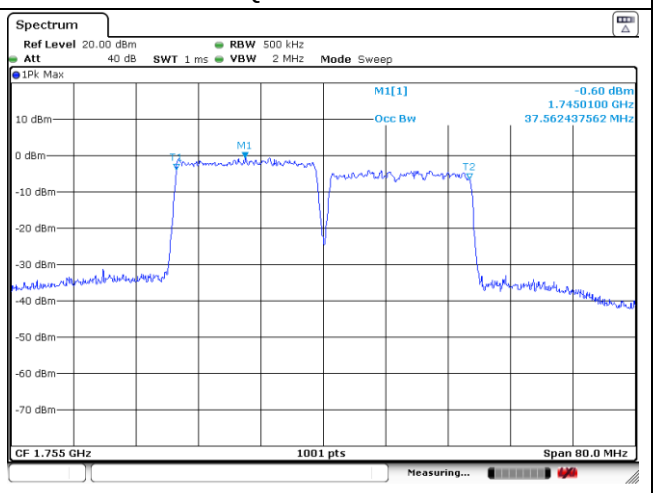
5 ㎒ + 20 ㎒ QPSK Middle Channel - Full RB



5 ㎒ + 20 ㎒ 16QAM Middle Channel - Full RB



20 ㎒ + 20 ㎒ QPSK Middle Channel - Full RB



20 ㎒ + 20 ㎒ 16QAM Middle Channel - Full RB

5. Peak-Average Ratio

5.1. Limit

FCC

- §22.913(d) Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 ㎧.

- §27.50(d)(5), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 ㎧.

IC

- RSS-132 Issue 3

5.4, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 ㎧ for more than 0.1 % of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

- RSS-139 Issue 4

5.5, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 ㎧ for more than 0.1 % of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

- RSS-199 Issue 3

4.4, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 ㎧ for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

5.2. Test Procedure

The test follows section 5.2.3.4 of ANSI C63.26-2015.

See instrumentation-specific application literature for further guidance regarding use of the CCDF capability. The following guidelines are offered for performing a CCDF measurement.

a. Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth.

b. Set the number of counts to a value that stabilizes the measured CCDF curve.

c. Set the measurement interval as follows:

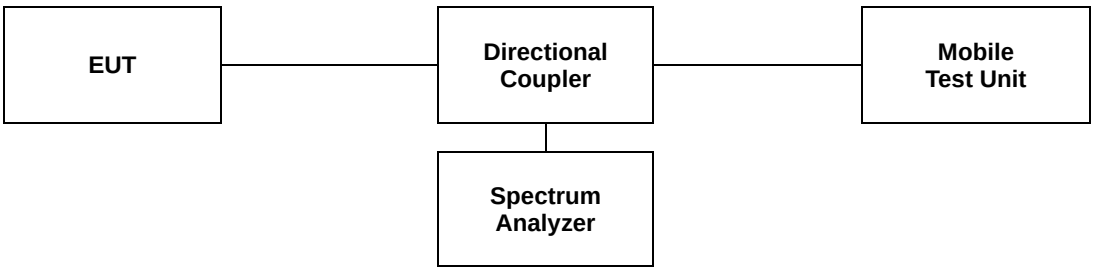
1) For continuous transmissions, set to greater of [10 x (number of points in sweep) x (transmission symbol period)] or 1 ㎳.

2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.

3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.

d. Record the maximum PAPR level associated with a probability of 0.1 %.

e. The peak power level is calculated form the sum of the PAPR value from step d) to the measured average power.



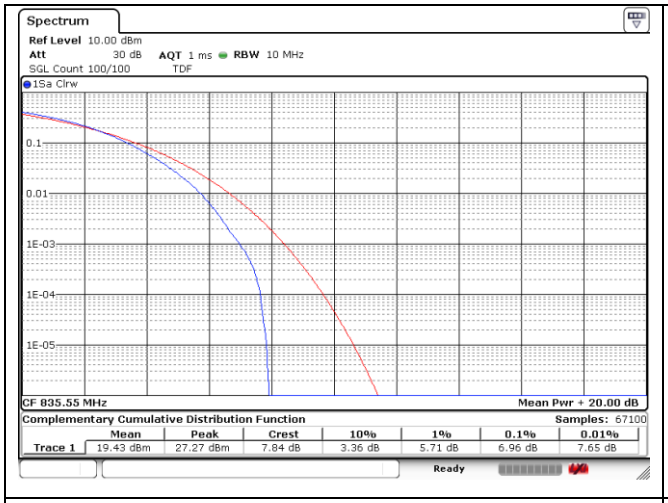
5.3 Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

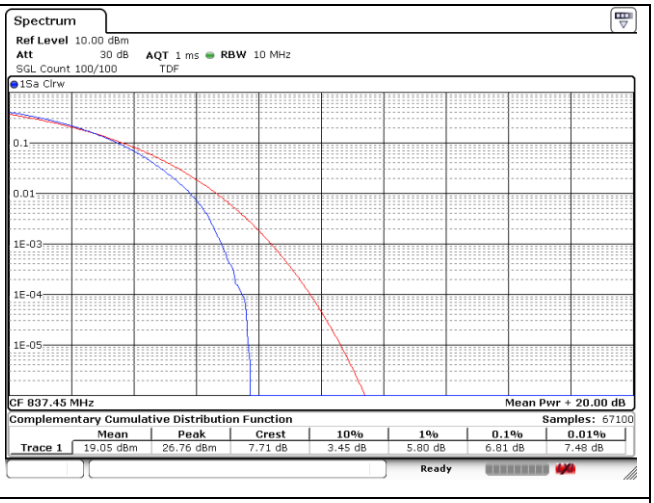
Band	PCC			SCC			PAR (dB)
	BW (MHz)	Frequency (MHz)	Channel	BW (MHz)	Frequency (MHz)	Channel	64QAM
5B	3	834.1	20501	5	838.0	20540	6.96
	5	835.0	20510	3	838.9	20549	6.81
	5	831.8	20478	10	839.0	20550	6.75
	10	834.0	20500	5	841.2	20572	6.87
	10	831.6	20476	10	841.5	20575	6.84
7C	10	2 525.6	21006	20	2 540.0	21150	6.87
	20	2 530.1	21051	10	2 544.5	21195	6.09
	15	2 530.1	21051	15	2 542.1	21171	5.94
	15	2 530.1	21051	10	2 542.1	21171	5.80
	15	2 525.3	21003	20	2 542.4	21174	6.06
	20	2 527.6	21026	15	2 544.7	21197	6.12
	20	2 525.1	21001	20	2 544.9	21199	6.23
66B	5	1 752.6	132398	5	1 757.4	132446	7.07
	5	1 750.3	132375	10	1 757.5	132447	6.43
	10	1 752.5	132397	5	1 759.7	132469	6.61
	5	1 748.1	132353	15	1 757.4	132446	6.58
	15	1 752.6	132398	5	1 761.9	132491	6.75
	10	1 750.1	132373	10	1 760.0	132472	7.13
66C	10	1 747.9	132351	15	1 759.9	132471	6.29
	15	1 750.1	132373	10	1 762.1	132493	6.52
	10	1 745.6	132328	20	1 760.0	132472	6.41
	20	1 750.1	132373	10	1 764.5	132517	6.84
	15	1 747.5	132347	15	1 762.5	132497	7.13
	15	1 745.3	132325	20	1 762.4	132496	6.46
	20	1 747.6	132348	15	1 764.7	132519	6.90
	20	1 752.5	132397	5	1 764.2	132514	7.13
	5	1 745.8	132330	20	1 757.5	132447	6.09
	20	1 745.1	132323	20	1 764.9	132521	6.67

- Test plots

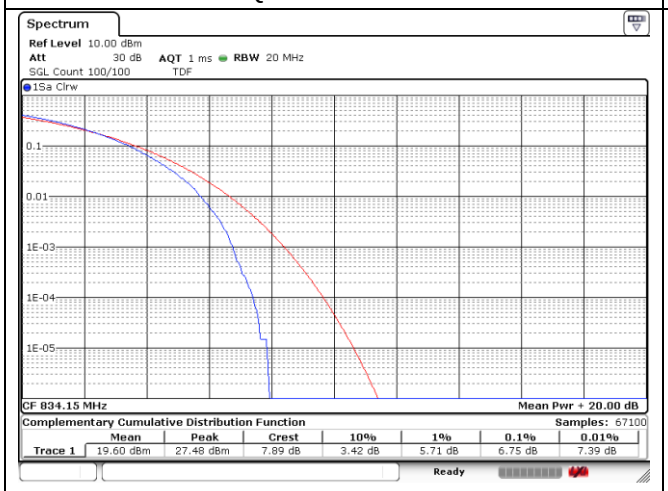
ULCA 5B



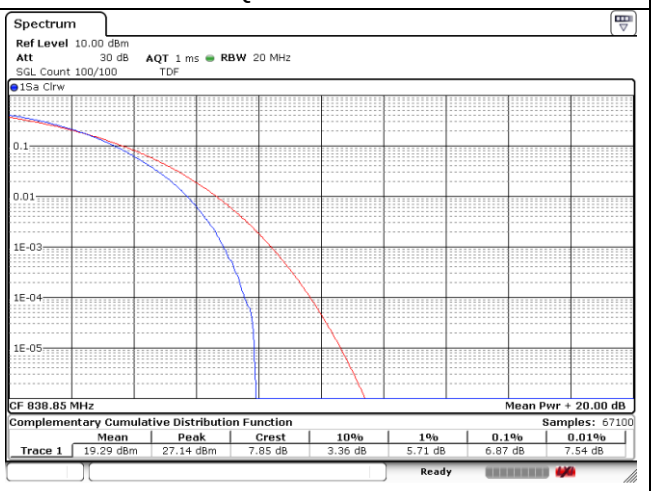
3 ㎒ + 5 ㎒ 64QAM Middle Channel - Full RB



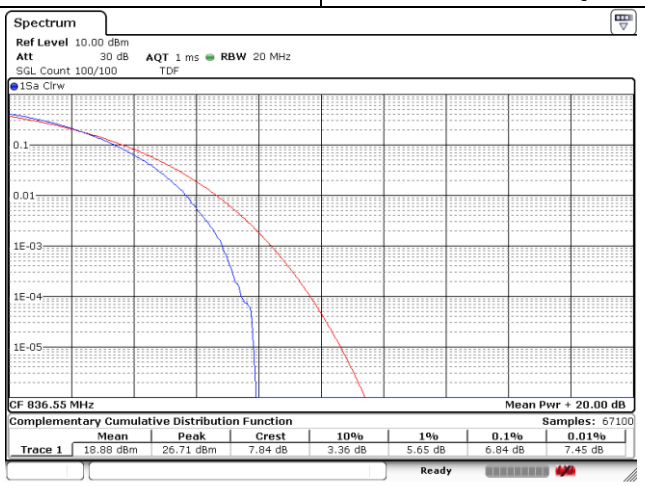
5 ㎒ + 3 ㎒ 64QAM Middle Channel - Full RB



5 ㎒ + 10 ㎒ 64QAM Middle Channel - Full RB

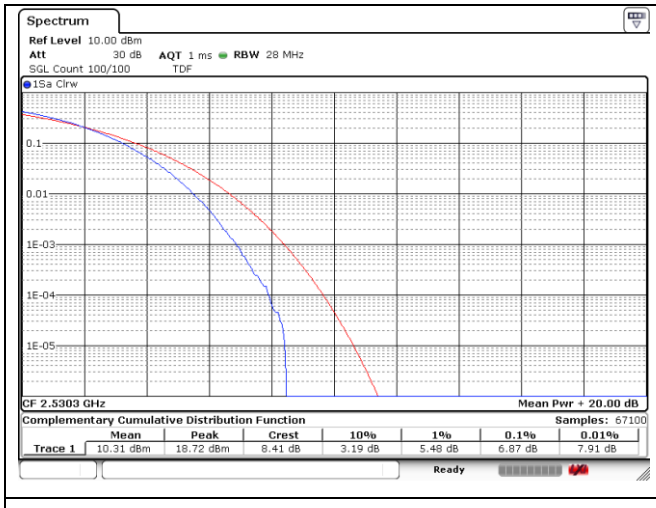


10 ㎒ + 5 ㎒ 64QAM Middle Channel - Full RB

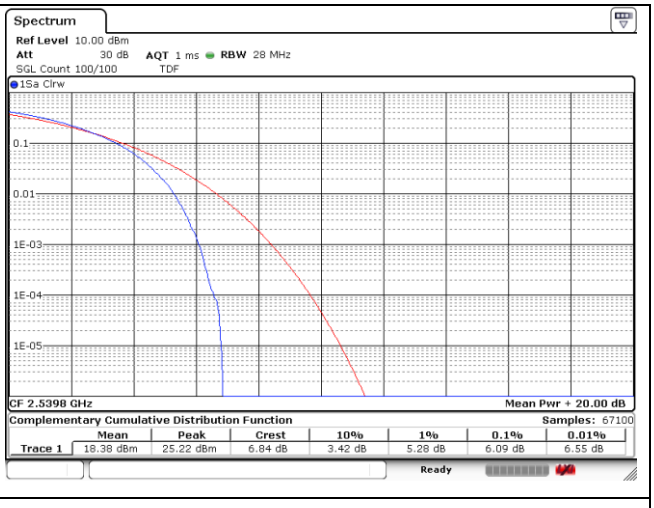


10 ㎒ + 10 ㎒ 64QAM Middle Channel - Full RB

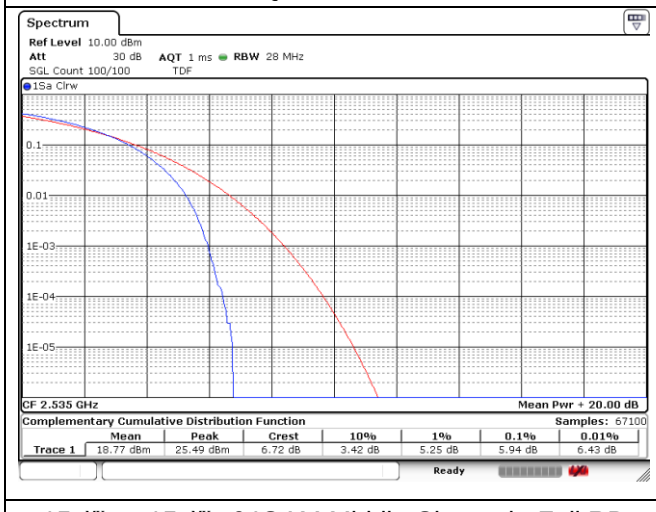
ULCA 7C



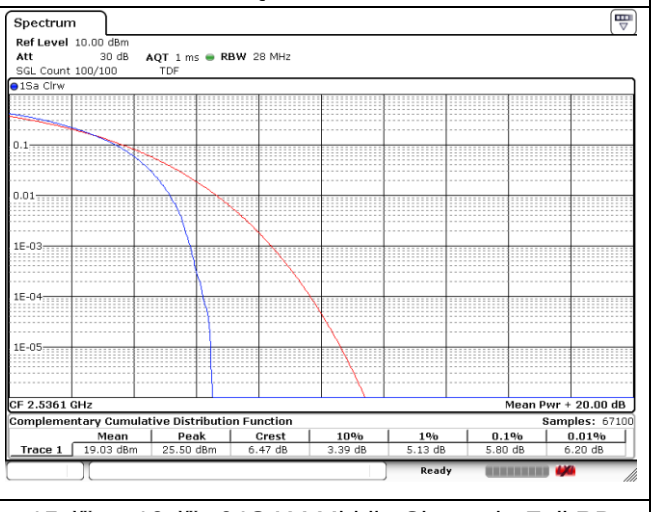
10 ㎒ + 20 ㎒ 64QAM Middle Channel - Full RB



20 ㎒ + 10 ㎒ 64QAM Middle Channel - Full RB

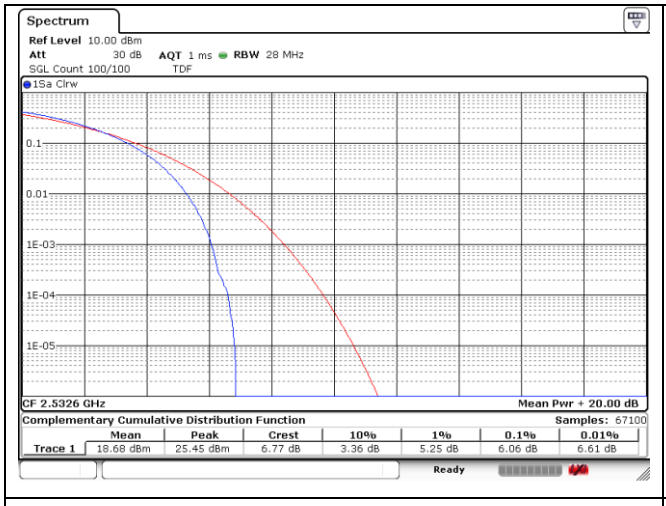


15 ㎒ + 15 ㎒ 64QAM Middle Channel - Full RB

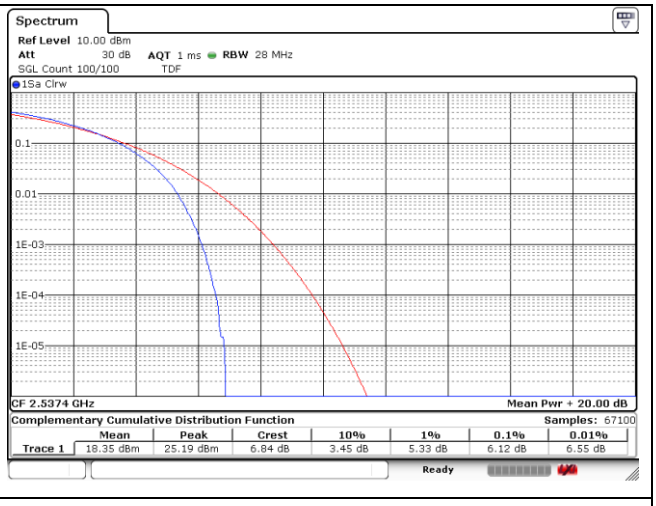


15 ㎒ + 10 ㎒ 64QAM Middle Channel - Full RB

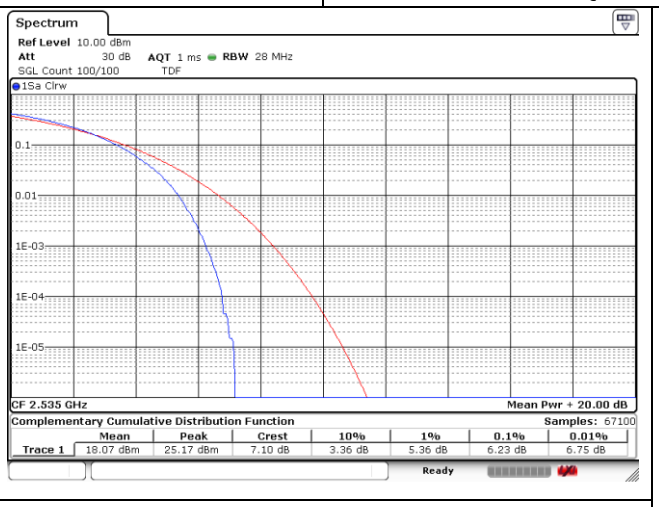
ULCA 7C



15 ㎒ + 20 ㎒ 64QAM Middle Channel - Full RB

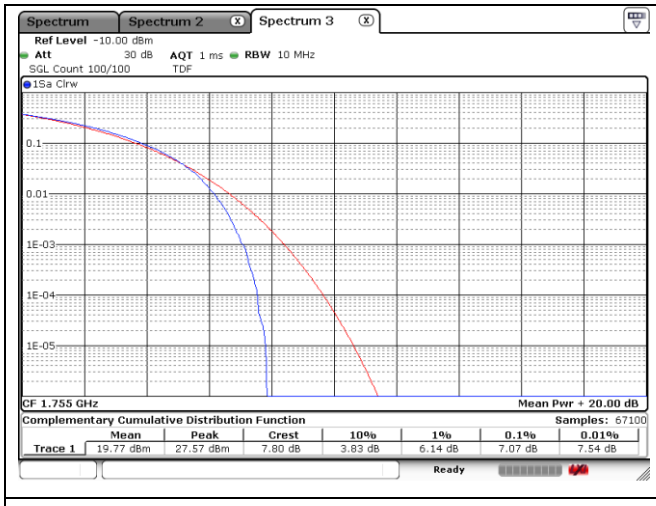


20 ㎒ + 15 ㎒ 64QAM Middle Channel - Full RB

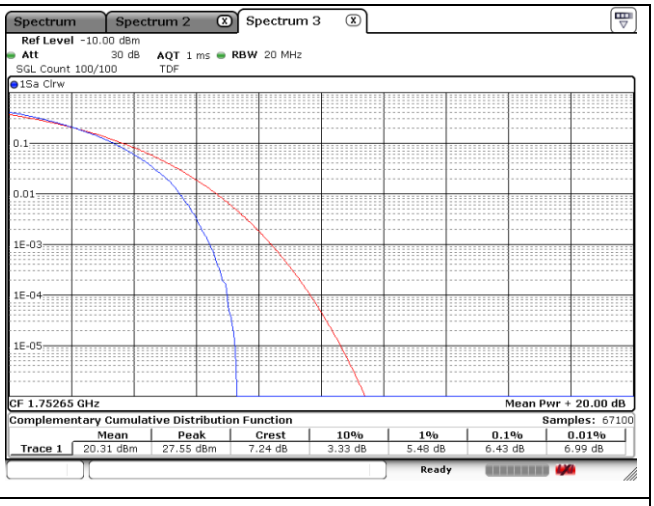


20 ㎒ + 20 ㎒ 64QAM Middle Channel - Full RB

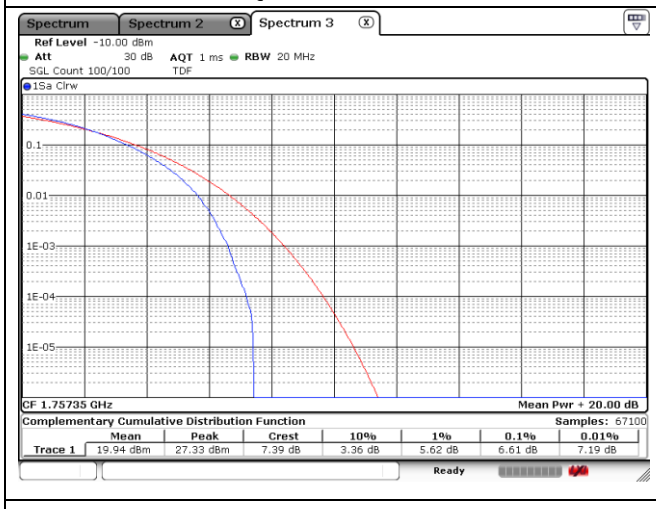
ULCA 66B



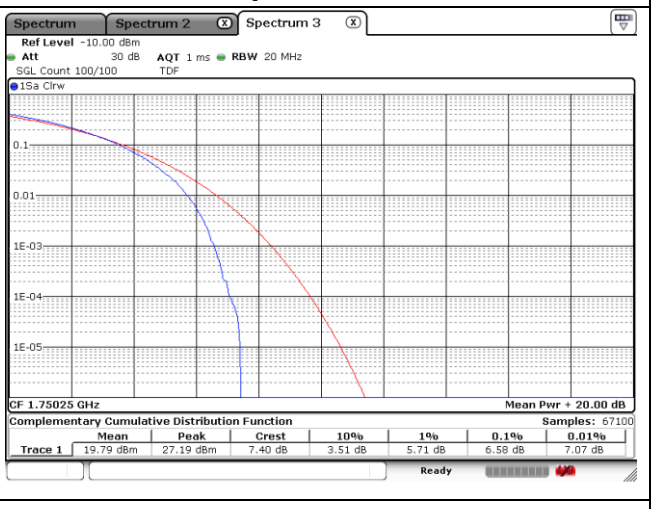
5 ㎒ + 5 ㎒ 64QAM Middle Channel - Full RB



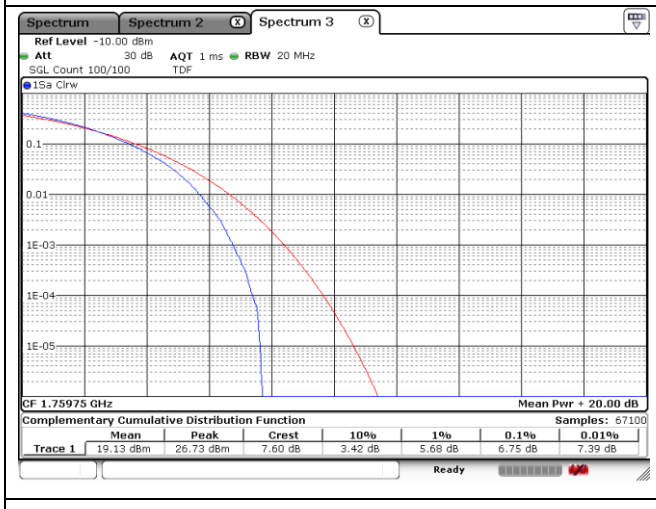
5 ㎒ + 10 ㎒ 64QAM Middle Channel - Full RB



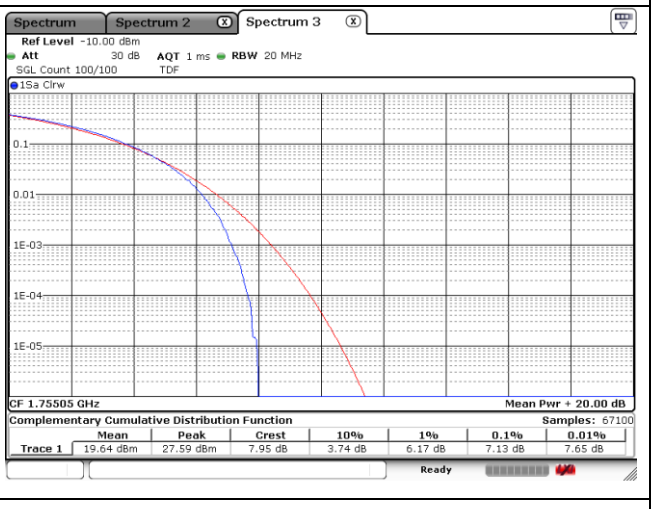
10 ㎒ + 5 ㎒ 64QAM Middle Channel - Full RB



5 ㎒ + 15 ㎒ 64QAM Middle Channel - Full RB

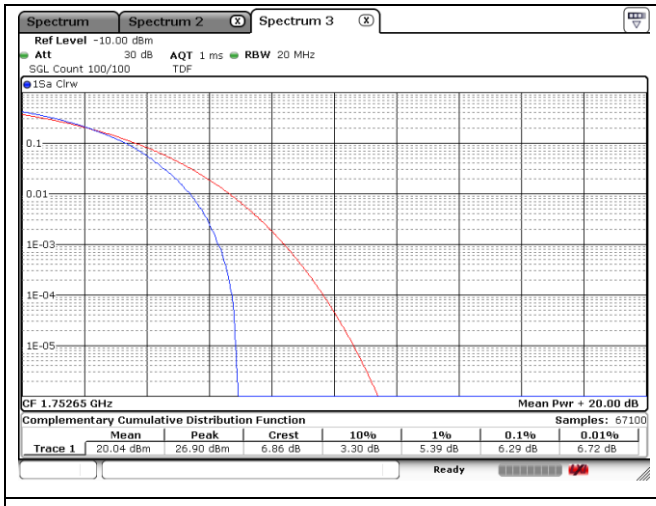


15 ㎒ + 5 ㎒ 64QAM Middle Channel - Full RB

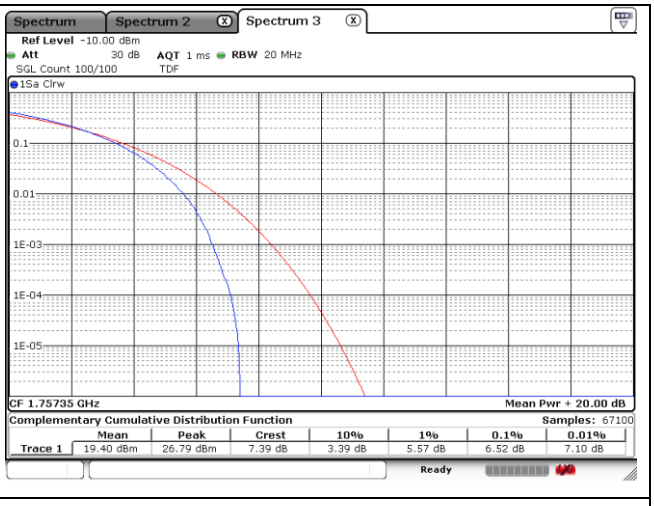


10 ㎒ + 10 ㎒ 64QAM Middle Channel - Full RB

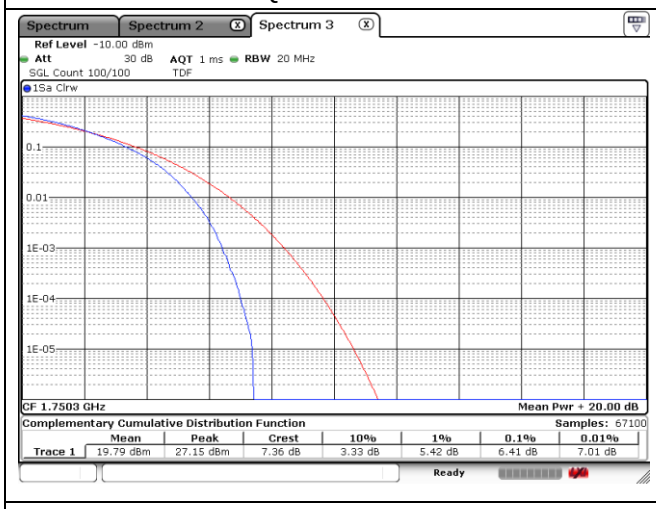
ULCA 66C



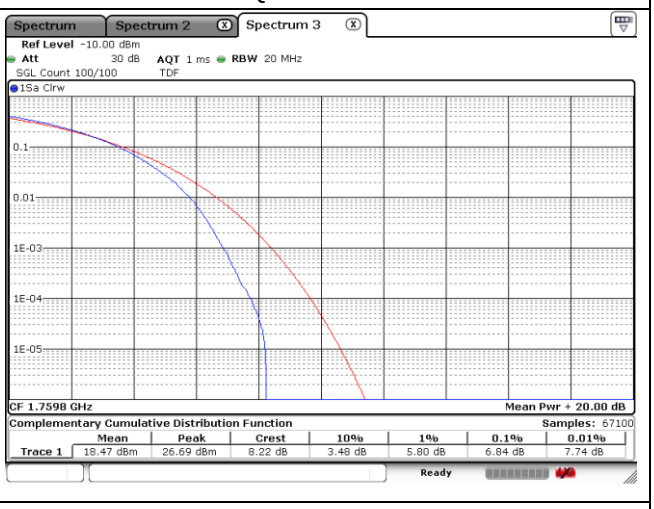
10 ㎒ + 15 ㎒ 64QAM Middle Channel - Full RB



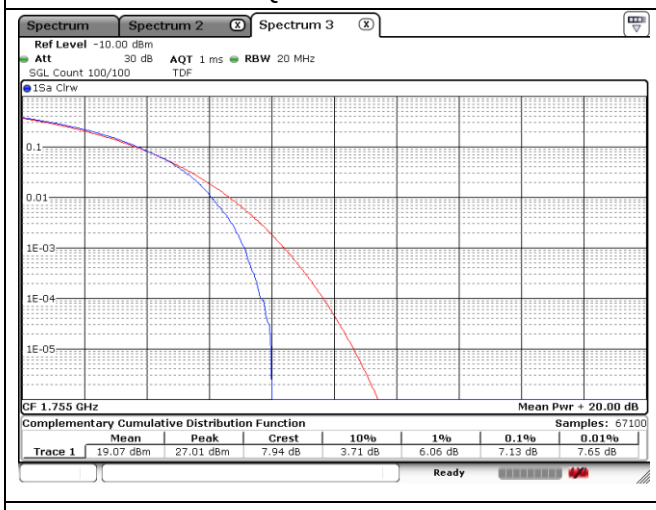
15 ㎒ + 10 ㎒ 64QAM Middle Channel - Full RB



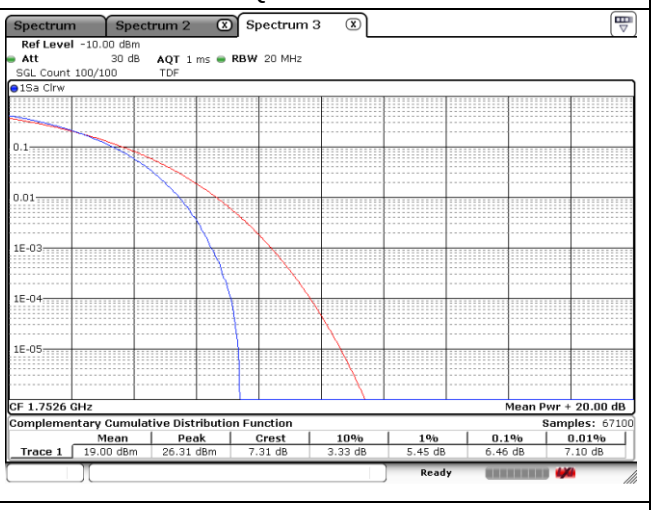
10 ㎒ + 20 ㎒ 64QAM Middle Channel - Full RB



20 ㎒ + 10 ㎒ 64QAM Middle Channel - Full RB

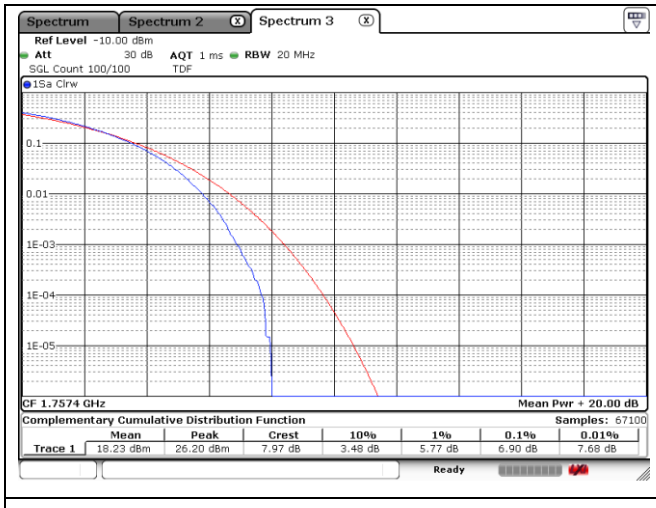


15 ㎒ + 15 ㎒ 64QAM Middle Channel - Full RB

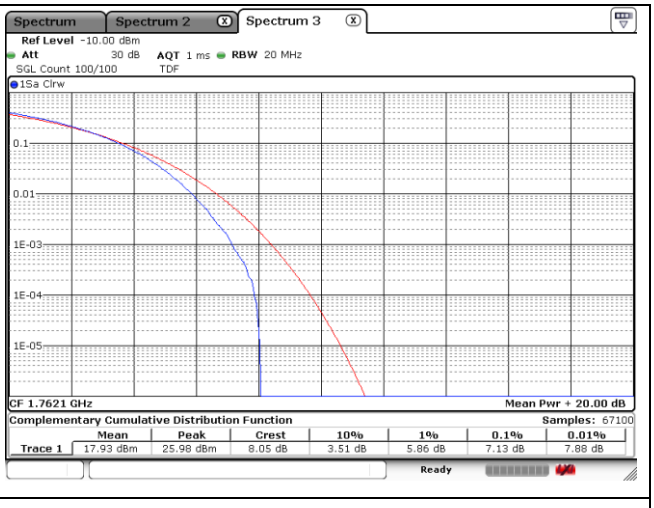


15 ㎒ + 20 ㎒ 64QAM Middle Channel - Full RB

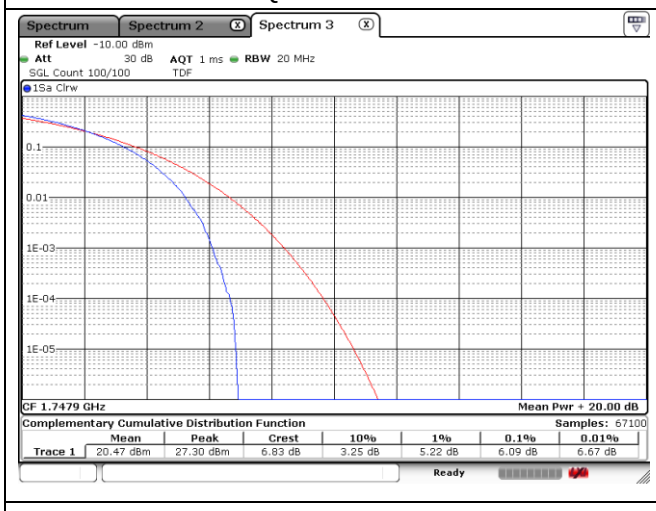
ULCA 66C



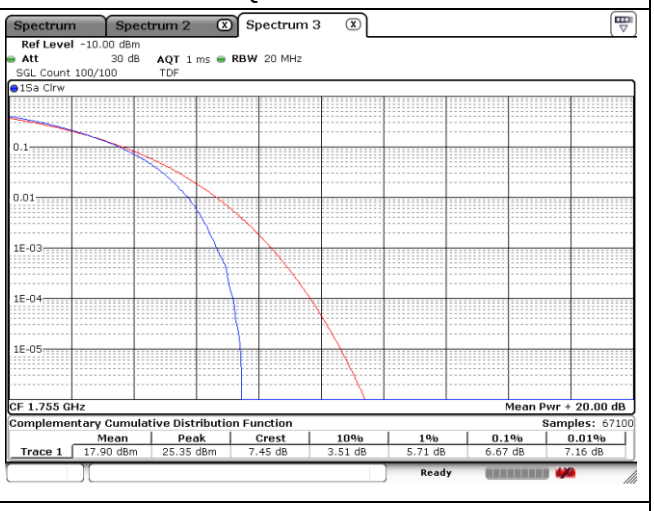
20 ㎒ + 15 ㎒ 64QAM Middle Channel - Full RB



20 ㎒ + 5 ㎒ 64QAM Middle Channel - Full RB



5 ㎒ + 20 ㎒ 64QAM Middle Channel - Full RB



20 ㎒ + 20 ㎒ 64QAM Middle Channel - Full RB

6. Spurious Emissions at Antenna Terminal

6.1. Limit

FCC

- §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) ㎧.

- §27.53(h)(1), for operations in the 1 695-1 710 ㎒, 1 710-1 755 ㎒, 1 755-1 780 ㎒, 1 915-1 920 ㎒, 1 995-2 000 ㎒, 2 000-2 020 ㎒, 2 110-2 155 ㎒, 2 155-2 180 ㎒, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$ (P) ㎧.

- §27.53(m)(4), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 $\log_{10}$ (P) ㎧ on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 $\log_{10}$ (P) ㎧ on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 $\log_{10}$ (P) ㎧ on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 $\log_{10}$ (P) ㎧ on all frequencies between 2 490.5 ㎒ and 2 496 ㎒ and 55 + 10 $\log_{10}$ (P) ㎧ at or below 2 490.5 ㎒. Mobile Satellite Service licensees operating on frequencies below 2 495 ㎒ may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

IC

- RSS-132 Issue 3

5.5, Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) In the first 1.0 ㎒ band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1 % of the occupied bandwidth shall be attenuated (in ㎧) below the transmitter output power P (㎧ W) by at least 43 + 10 $\log_{10}$ p (watts).

(ii) After the first 1.0 ㎒ immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 ㎑ bandwidth shall be attenuated (in ㎧) below the transmitter output power P (㎧ W) by at least 43 + 10 $\log_{10}$ p (watts). If the measurement is performed using 1 % of the occupied bandwidth, power integration over 100 ㎑ is required.

- RSS-139 Issue 4

5.6, Unwanted emissions shall be measured in terms of average values.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors) of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in table 6.

Table 3: Unwanted emission limits

Offset from the edge of the frequency block or frequency block group	Unwanted emission lmit
1 ㎒	-13 ㎧m/(1% of OB)*
>1 ㎒	-13 ㎧m

* OB is the occupied bandwidth

- RSS-199 Issue 3

4.5, In the 1 ㎒ band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 ㎒ band, a resolution bandwidth of 1 ㎒ shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 ㎒, or 1% or 2% of the occupied bandwidth, as applicable.

Equipment shall comply with the following unwanted emission limits:

for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in ㏈) below the transmitter power, P (㏈ W), by at least 43 + 10 log10 p for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in ㏈) below the transmitter power, P (㏈ W), by at least:

i. 40 + 10 log10 p from the channel edges to 5 ㎒ away
ii. 43 + 10 log10 p between 5 ㎒ and X ㎒ from the channel edges, and
iii. 55 + 10 log10 p at X ㎒ and beyond from the channel edges

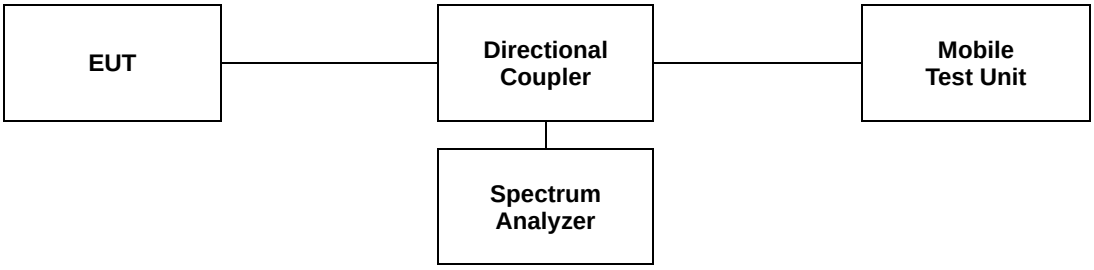
In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2 490.5 ㎒ and 2 496 ㎒, and 55 + 10 log10 p at or below 2 490.5 ㎒.

In (a) and (b), p is the transmitter power measured in watts and X is 6 ㎒ or the equipment occupied bandwidth, whichever is greater.

6.2. Test Procedure

The test follows section 5.7 of ANSI C63.26-2015.

1. Start frequency was set to 9 ㎑ and stop frequency was set to at least 10* the fundamental frequency.
2. Detector = RMS.
3. Trace mode = Max hold.
4. Sweep time = Auto couple.
5. The trace was allowed to stabilize.
6. Please see notes below for RBW and VBW settings.
7. For plots showing conducted spurious emissions from 9 ㎑ to 28 ㎓, all path loss of wide frequency range was investigated and compensated to spectrum analyzer as TDF function.



Note;

Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 ㎑ or greater for frequencies less than 1 ㎓ and frequencies greater than 1 ㎓. However, in the 1 ㎒ bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two point, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 ㏈ below the transmitter power.