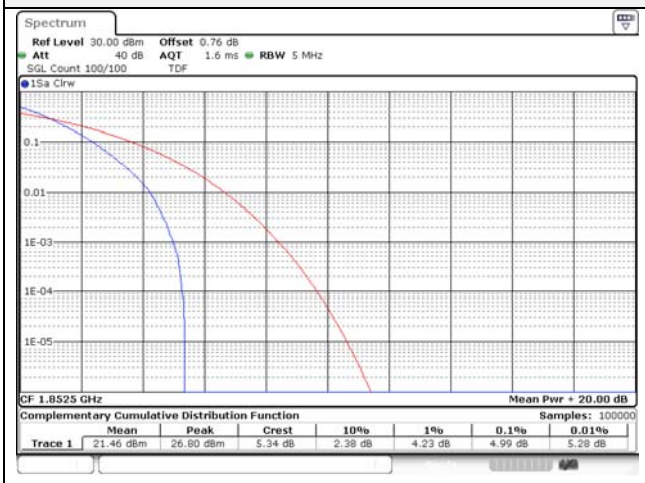
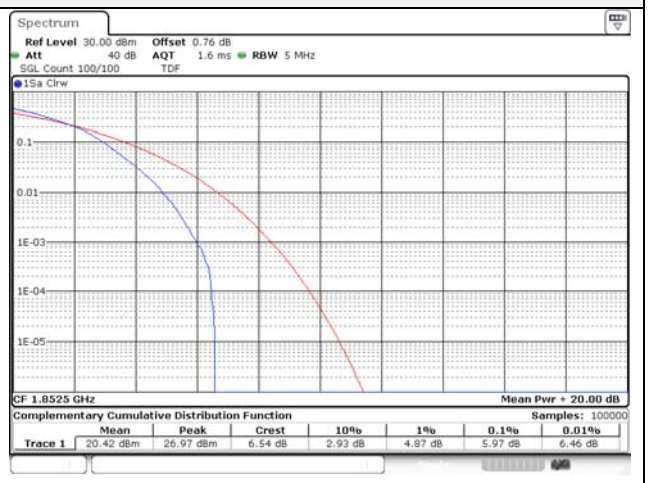
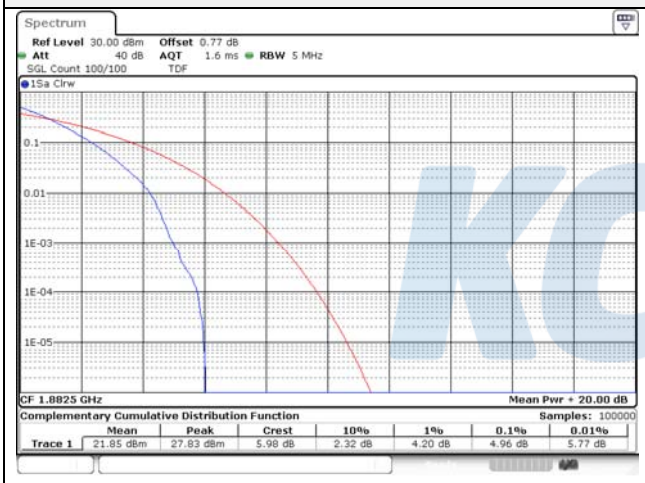
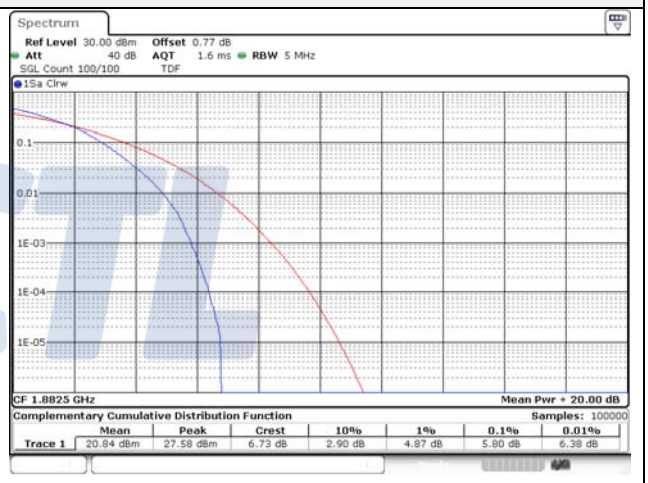
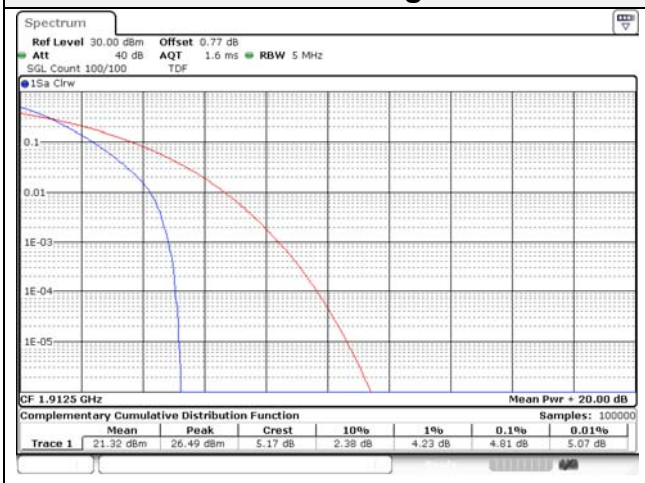
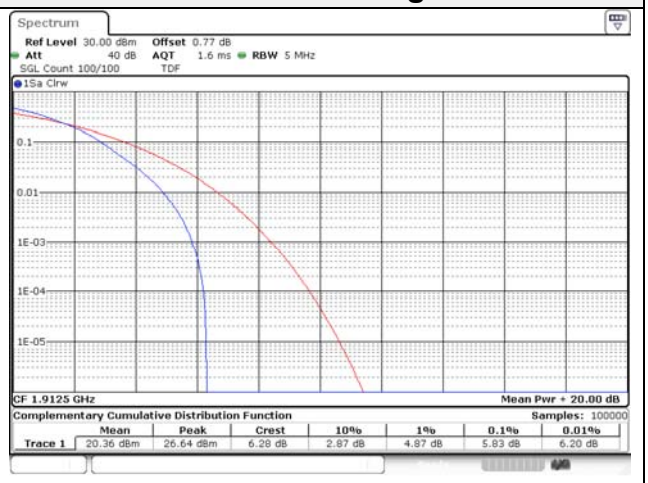
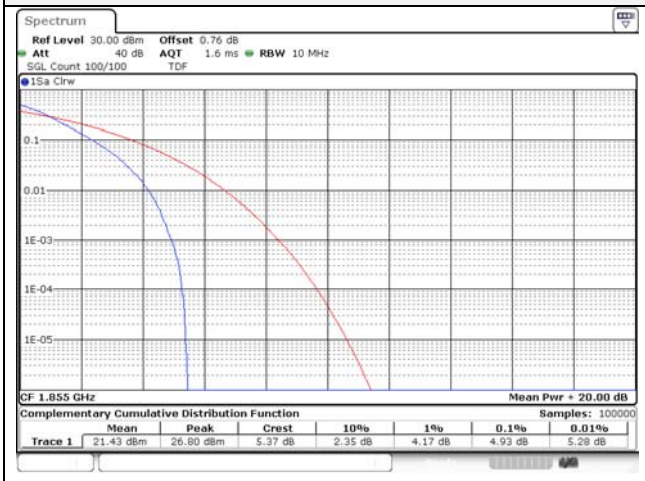
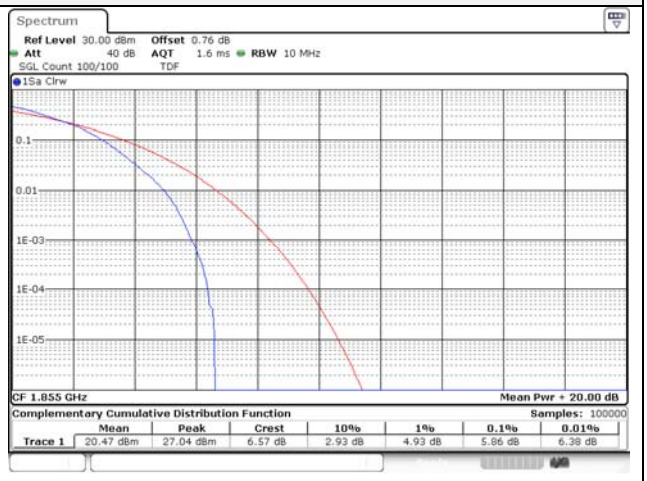
5M BW QPSK Low ch.	5M BW 16QAM Low ch.
	
5M BW QPSK Mid ch.	**5M BW 16QAM Mid ch.**
	
5M BW QPSK High ch.	**5M BW 16QAM High ch.**
	

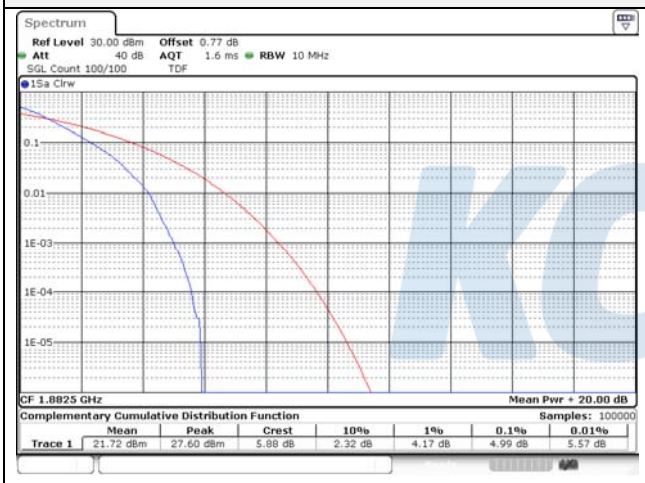
10M BW QPSK Low ch.



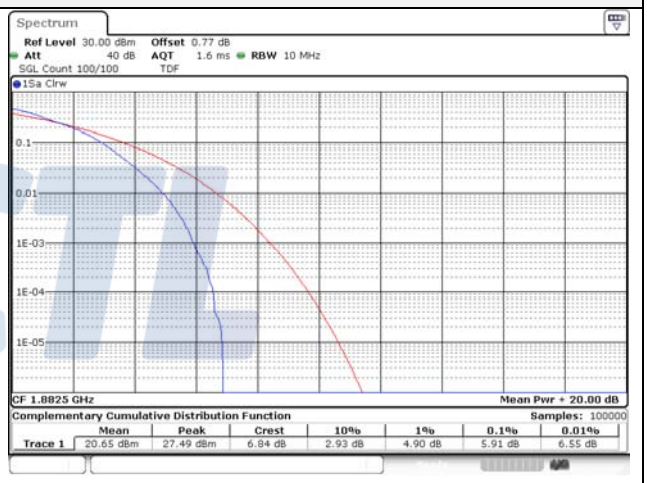
10M BW 16QAM Low ch.



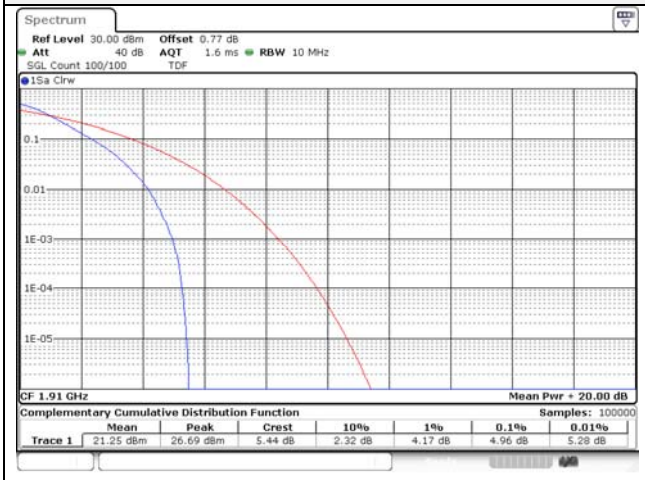
10M BW QPSK Mid ch.



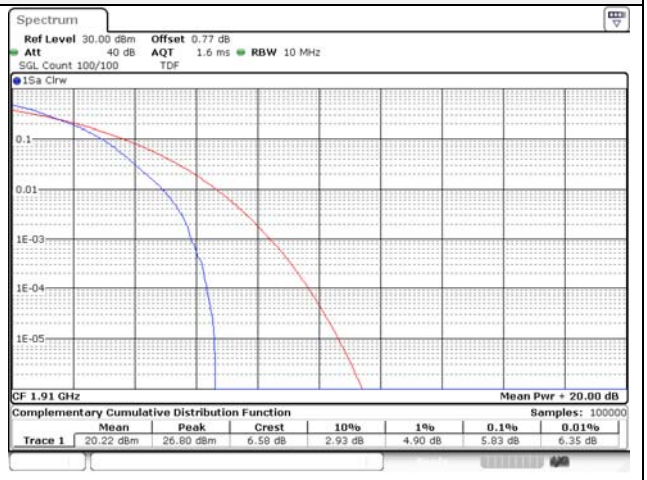
10M BW 16QAM Mid ch.



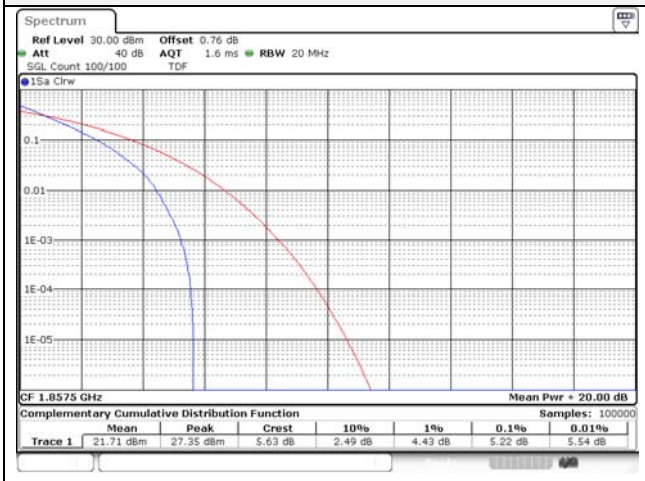
10M BW QPSK High ch.



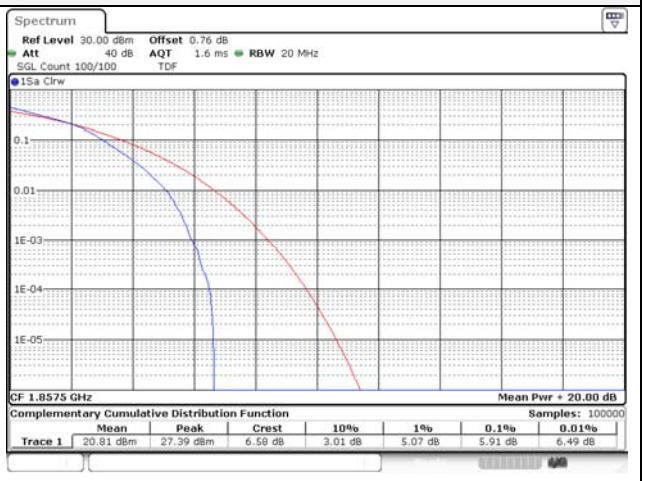
10M BW 16QAM High ch.



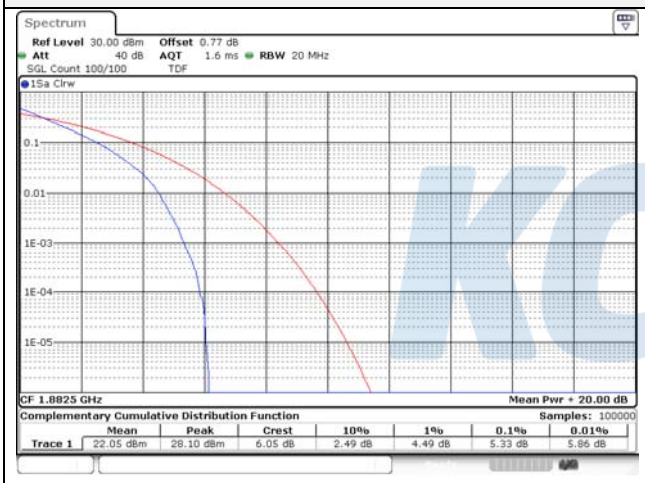
15M BW QPSK Low ch.



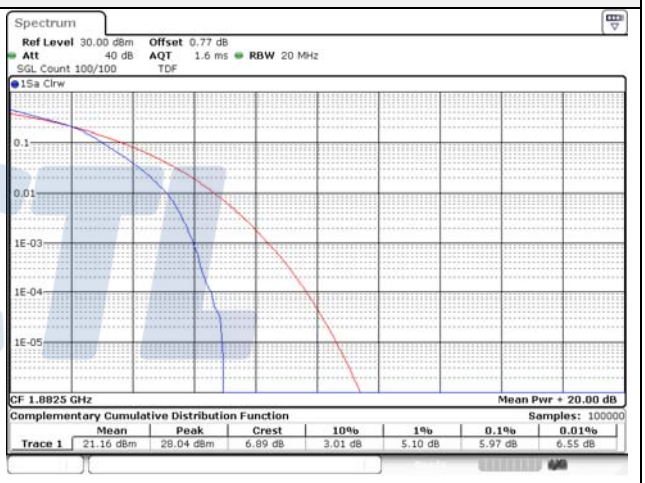
15M BW 16QAM Low ch.



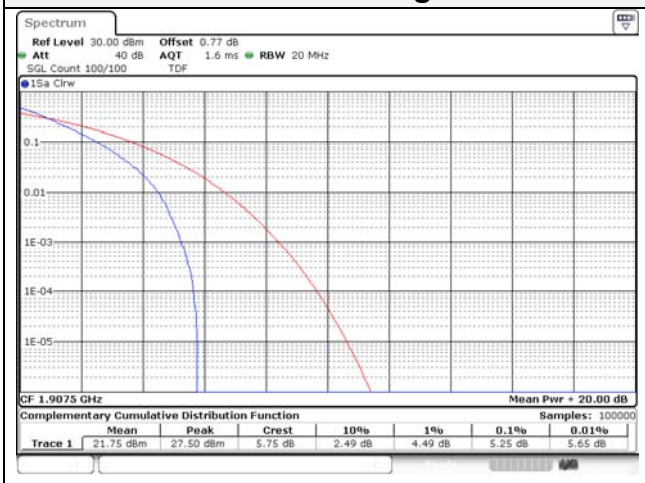
15M BW QPSK Mid ch.



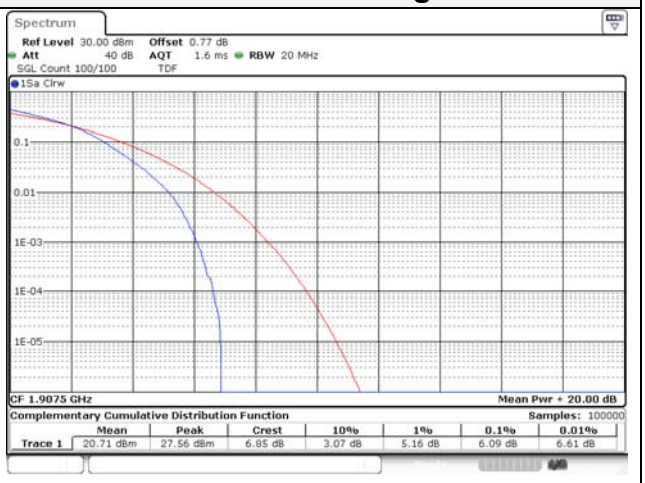
15M BW 16QAM Mid ch.



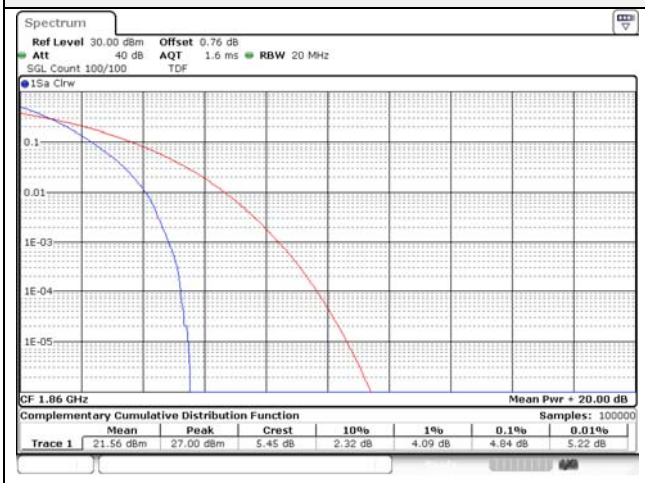
15M BW QPSK High ch.



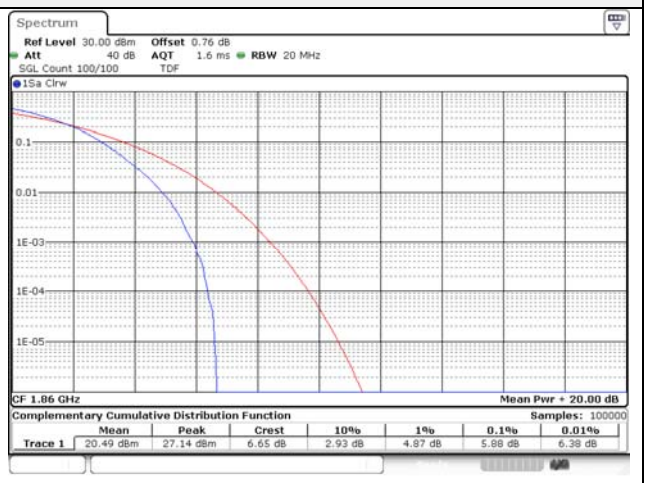
15M BW 16QAM High ch.



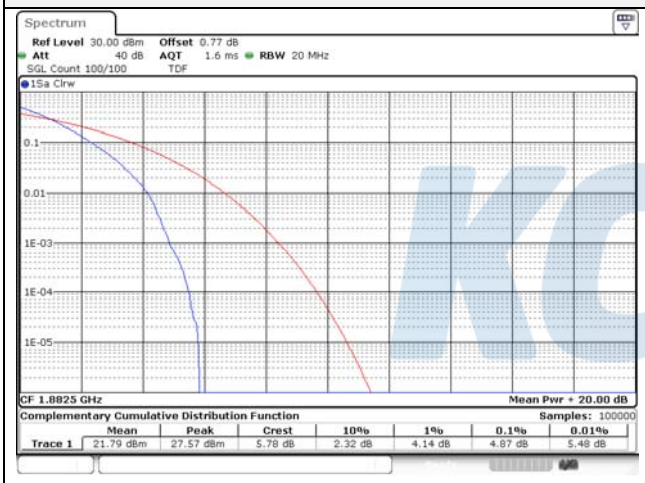
20M BW QPSK Low ch.



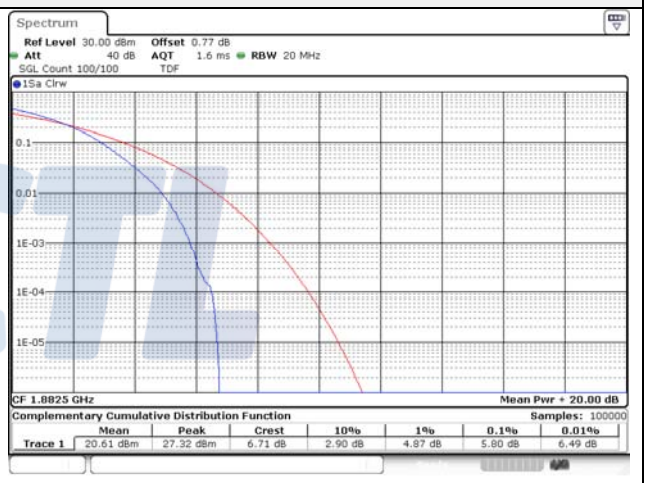
20M BW 16QAM Low ch.



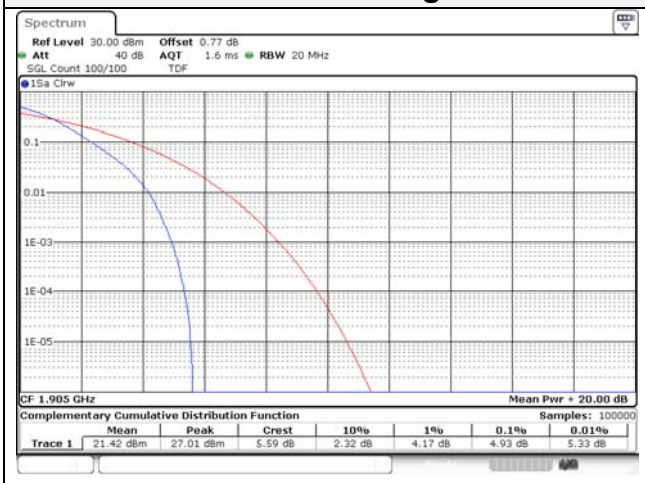
20M BW QPSK / Mid ch.



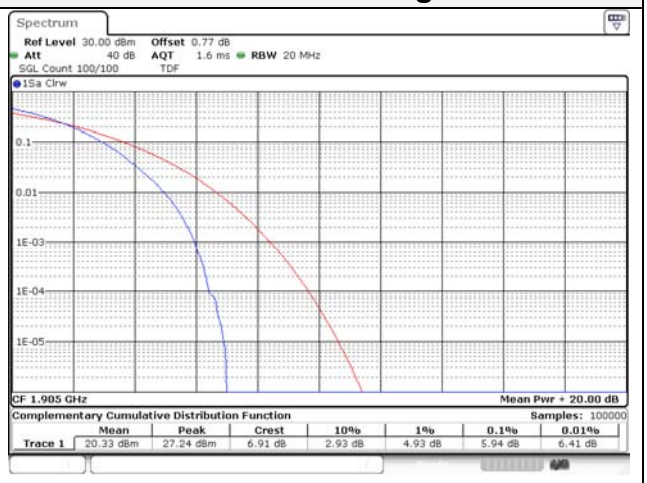
20M BW 16QAM Mid ch.



20M BW QPSK / High ch.

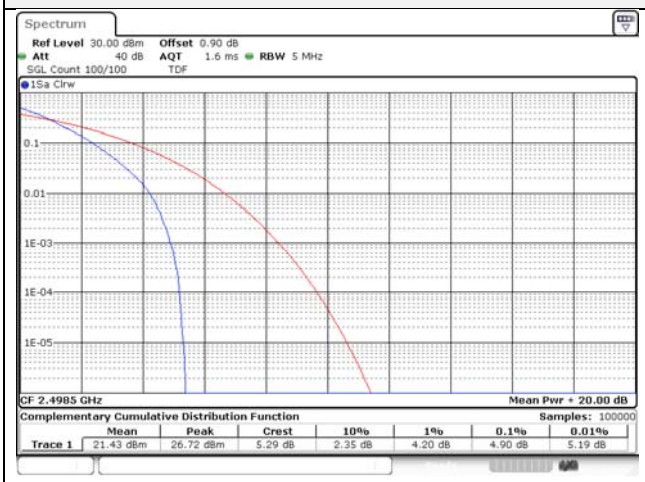


20M BW 16QAM High ch.

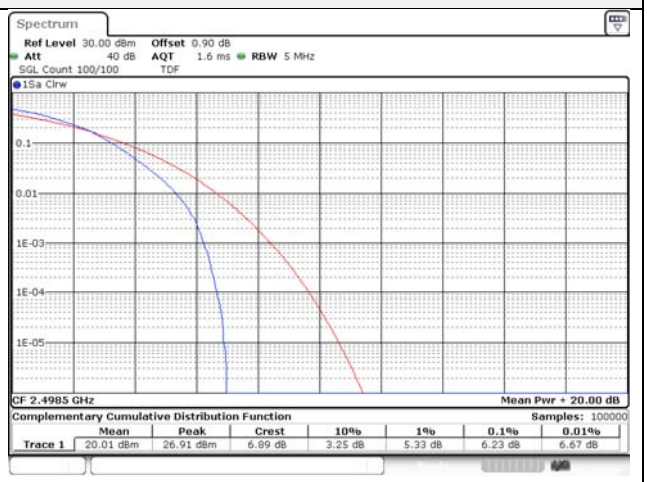


Test mode: LTE Band 41

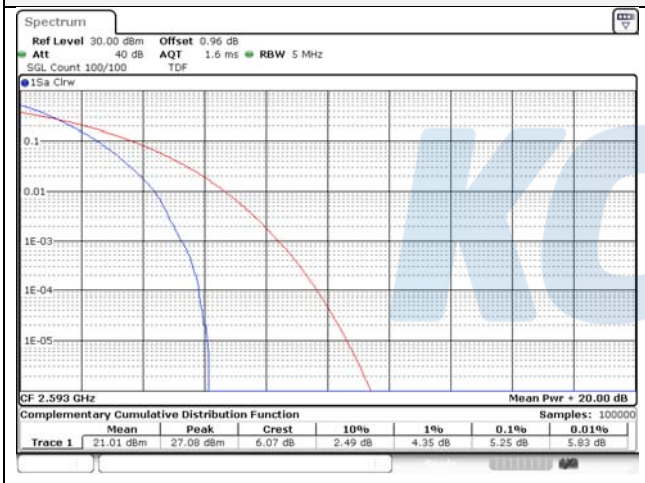
5M BW QPSK Low ch.



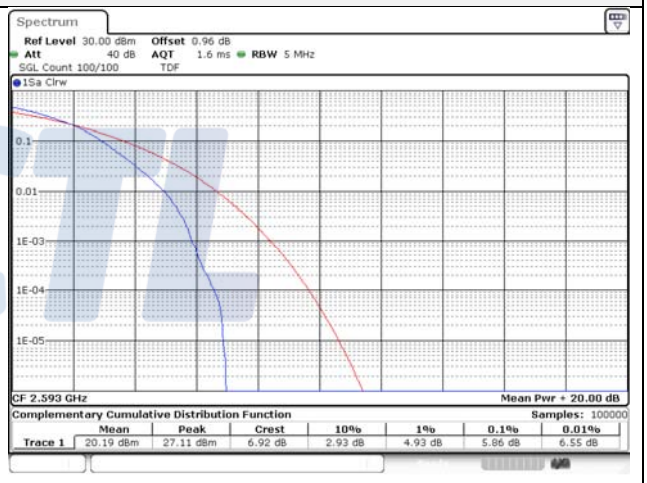
5M BW 16QAM Low ch.



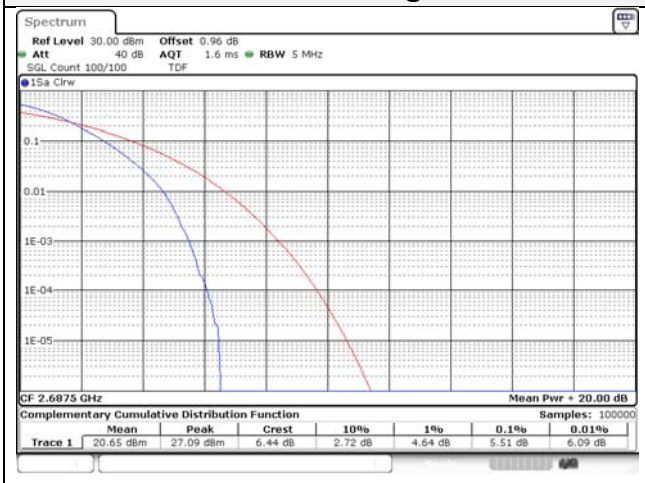
5M BW QPSK Mid ch.



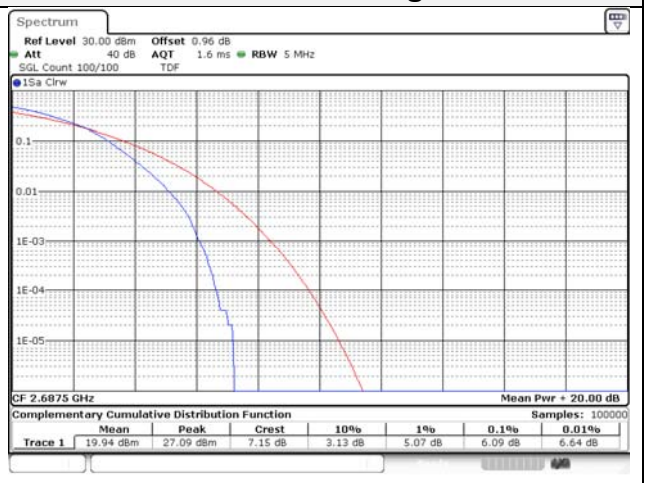
5M BW 16QAM Mid ch.



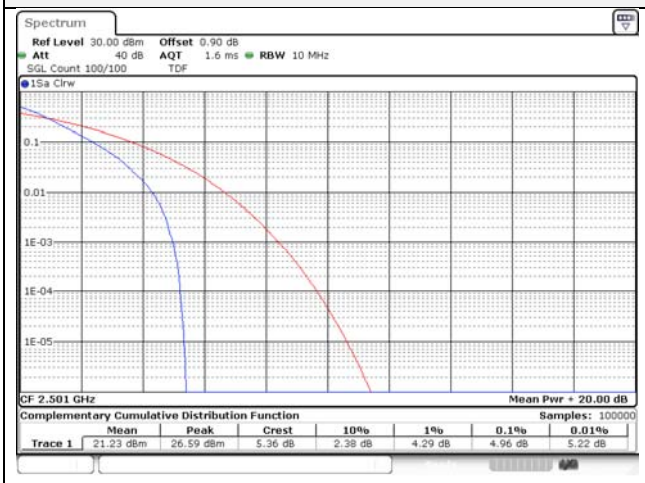
5M BW QPSK High ch.



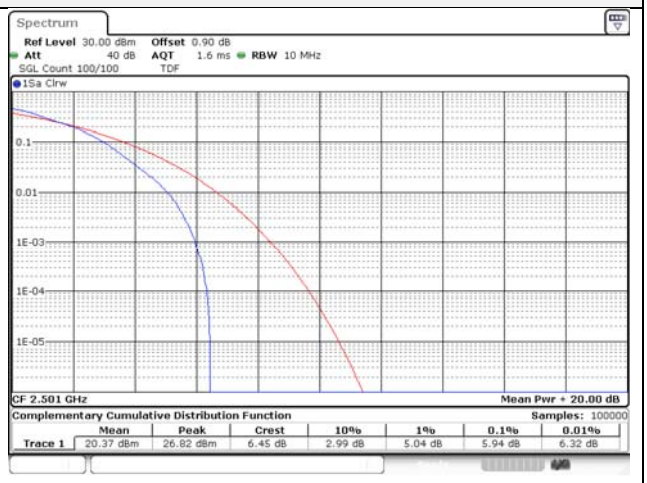
5M BW 16QAM High ch.



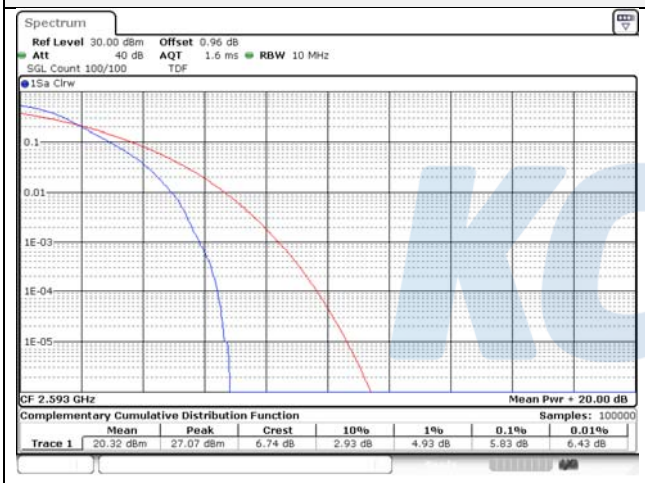
10M BW QPSK Low ch.



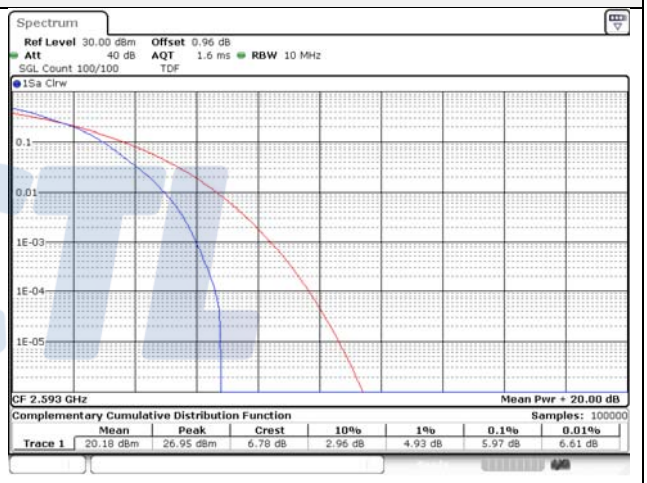
10M BW 16QAM Low ch.



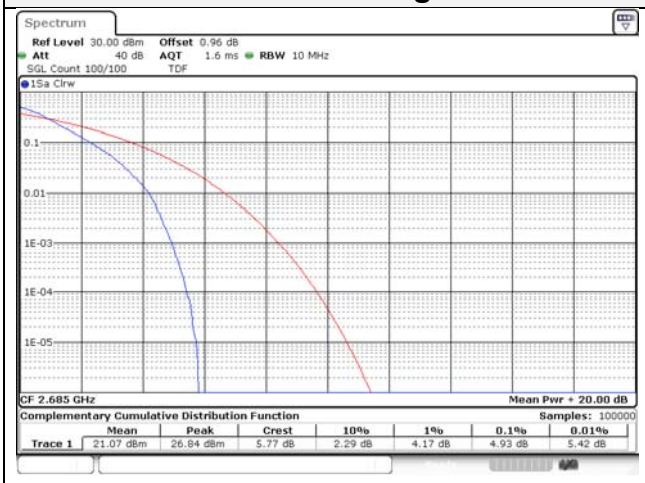
10M BW QPSK Mid ch.



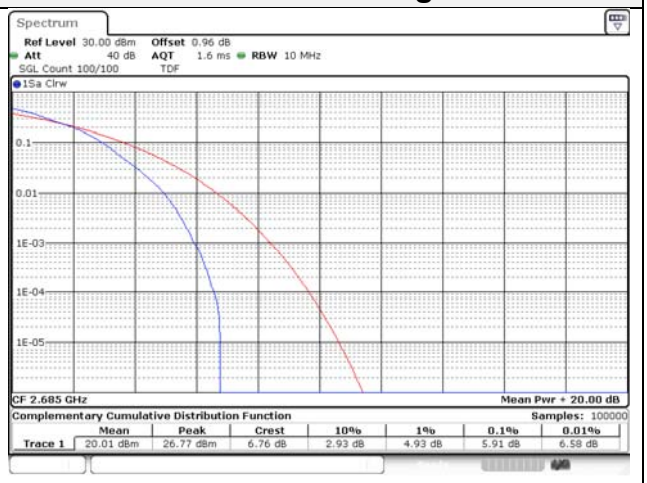
10M BW 16QAM Mid ch.



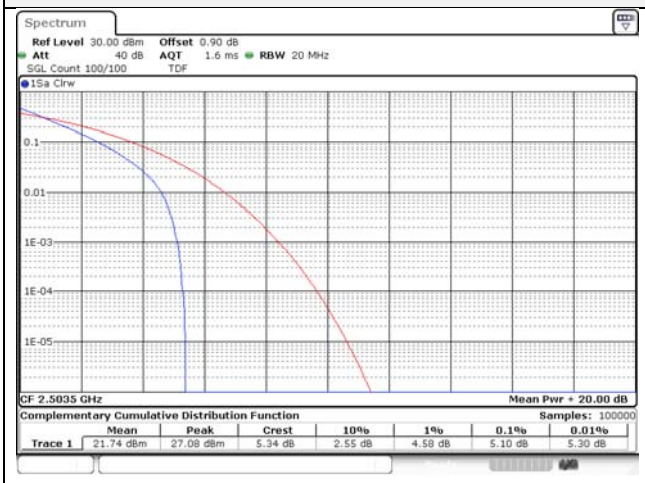
10M BW QPSK High ch.



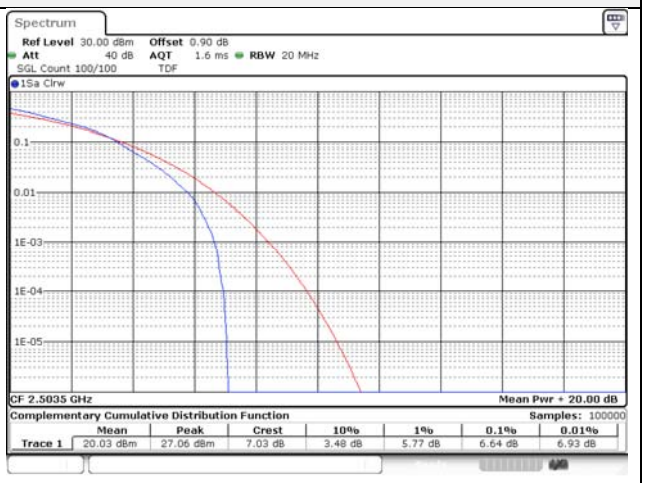
10M BW 16QAM High ch.



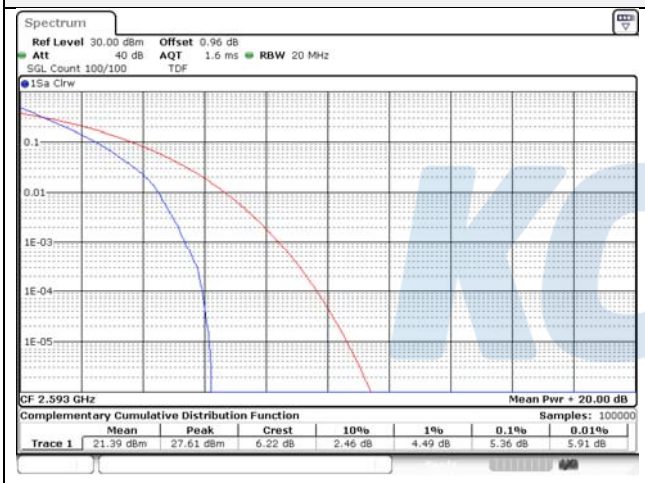
15M BW QPSK Low ch.



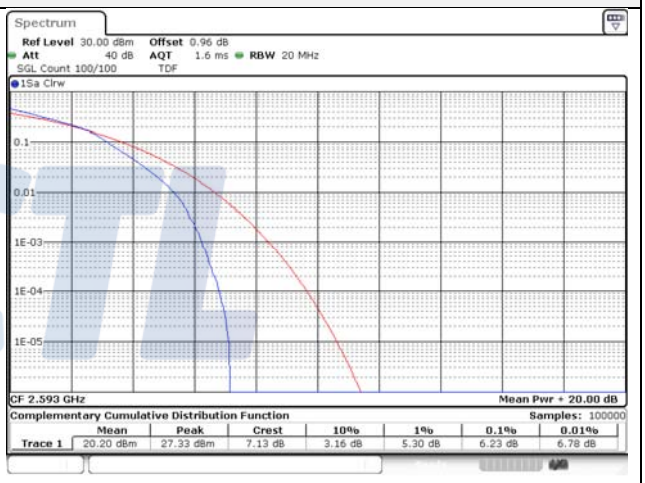
15M BW 16QAM Low ch.



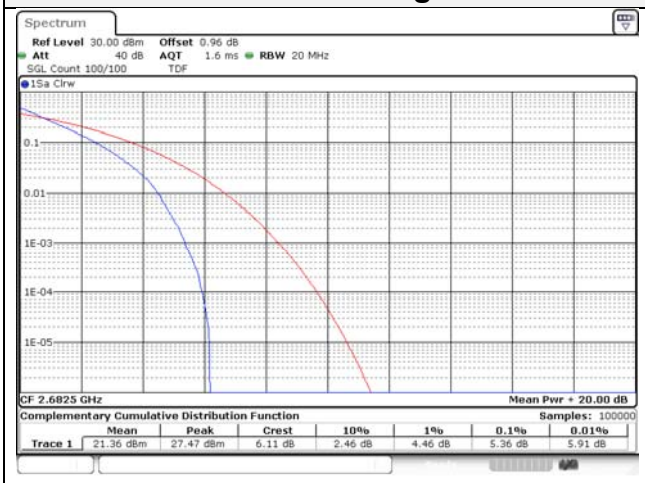
15M BW QPSK Mid ch.



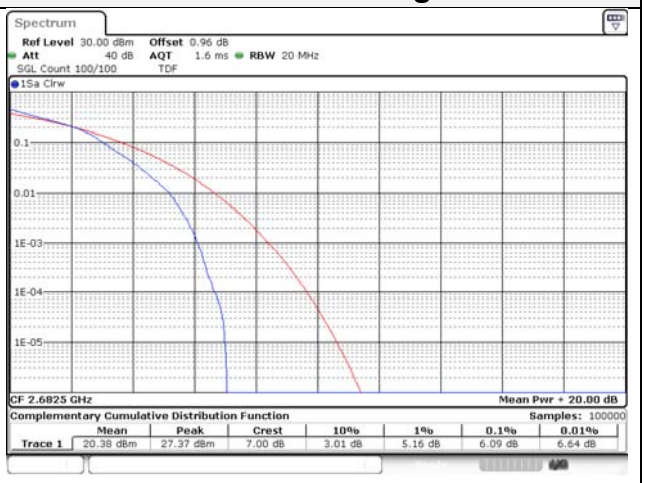
15M BW 16QAM Mid ch.



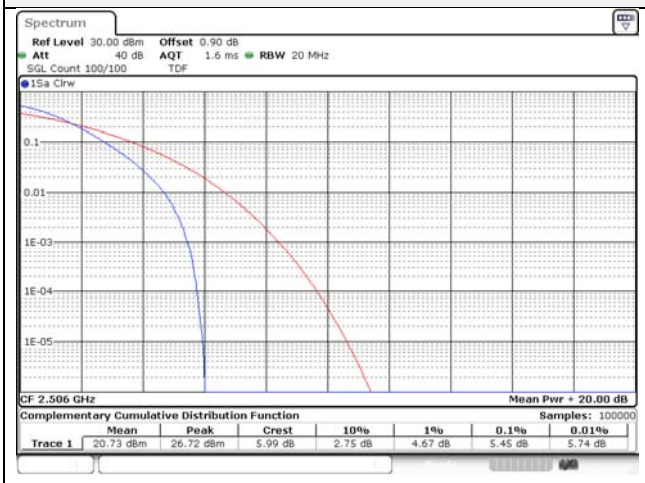
15M BW QPSK High ch.



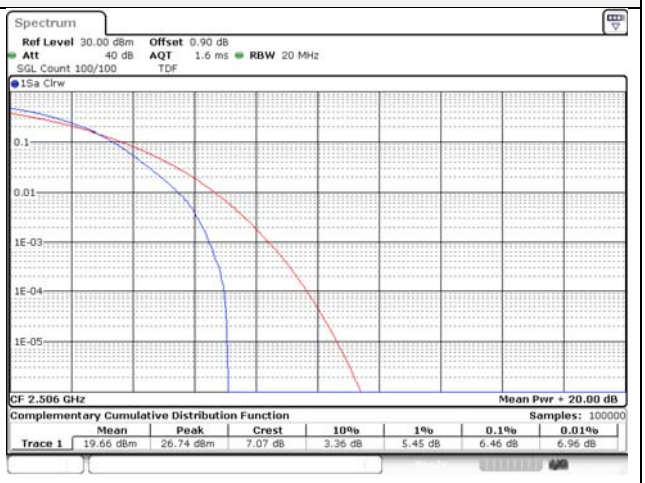
15M BW 16QAM High ch.



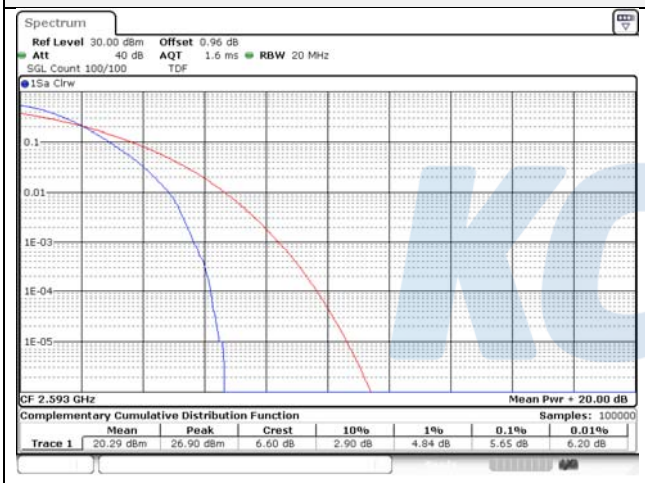
20M BW QPSK Low ch.



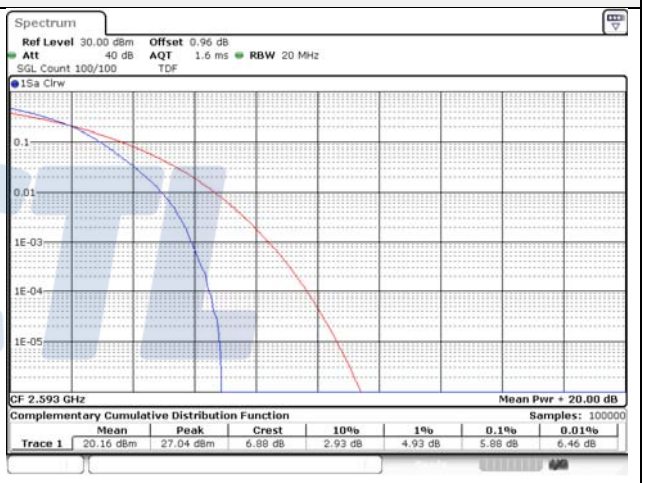
20M BW 16QAM Low ch.



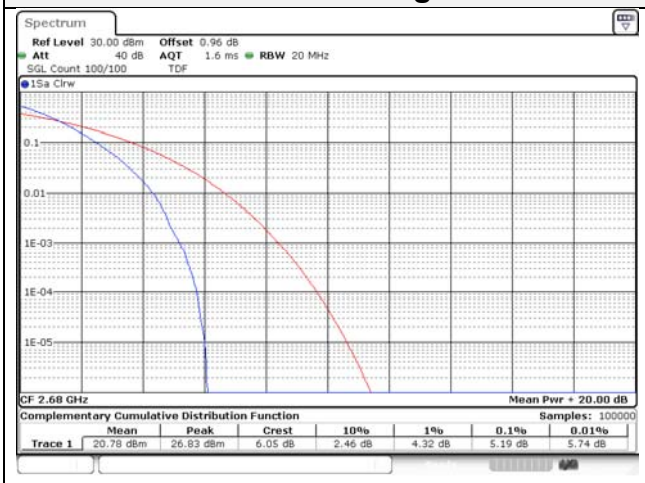
20M BW QPSK Mid ch.



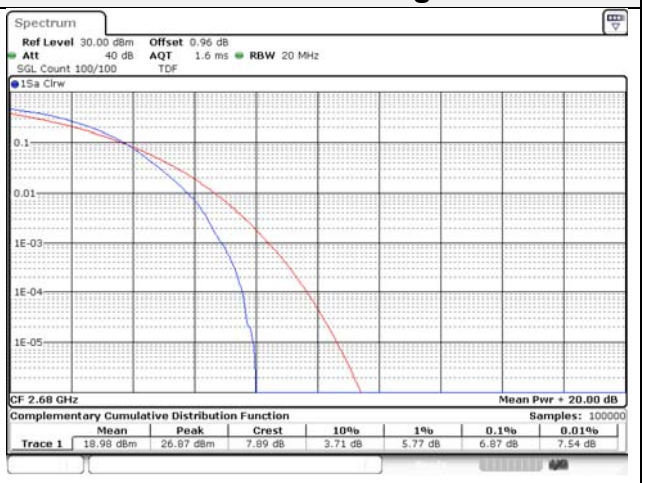
20M BW 16QAM Mid ch.



20M BW QPSK High ch.

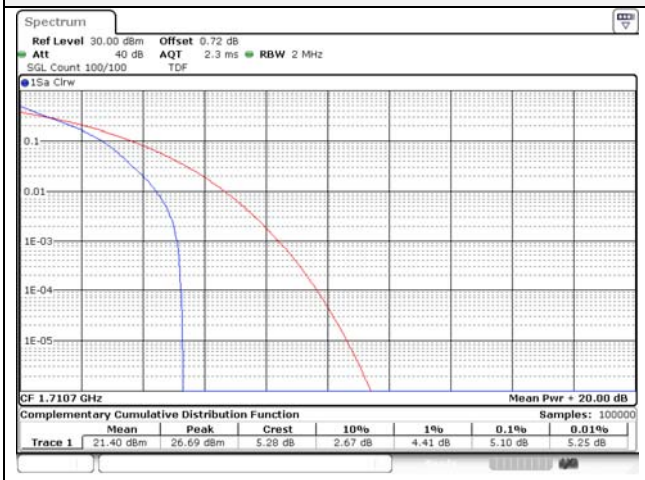


20M BW 16QAM High ch.

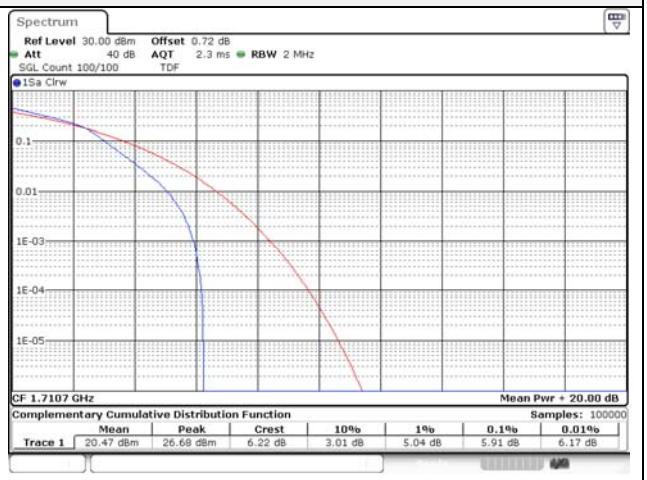


Test mode: LTE Band 66/4

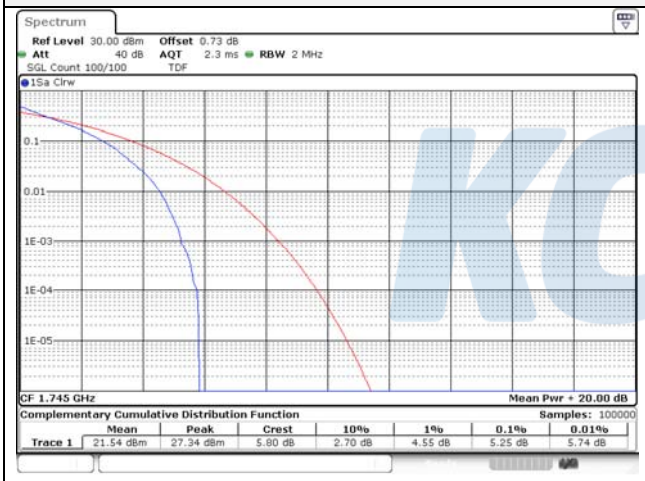
1.4M BW QPSK Low ch.



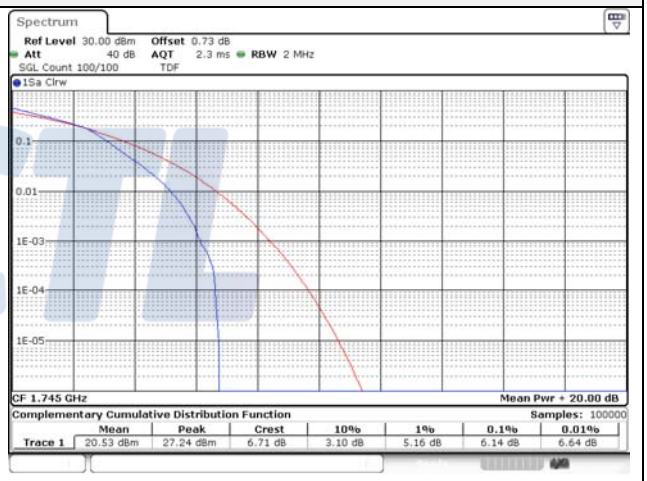
1.4M BW 16QAM Low ch.



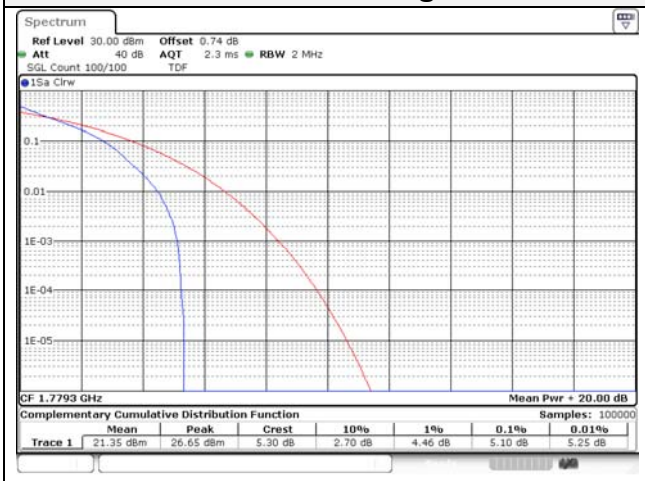
1.4M BW QPSK Mid ch.



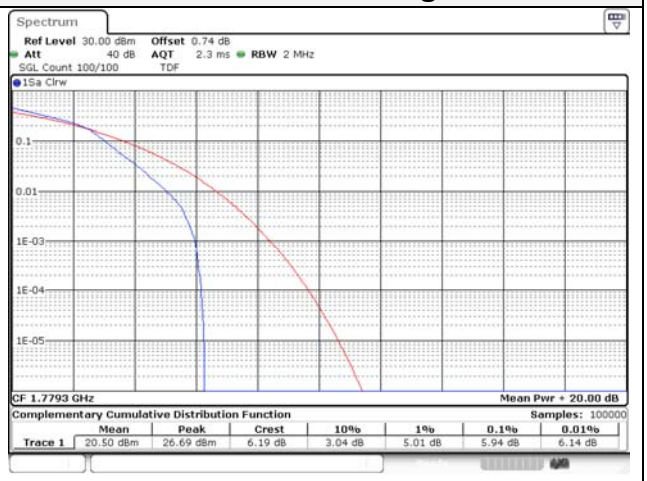
1.4M BW 16QAM Mid ch.



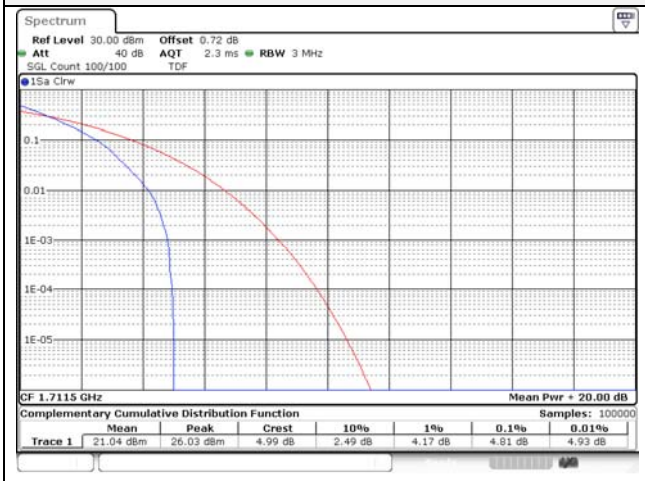
1.4M BW QPSK High ch.



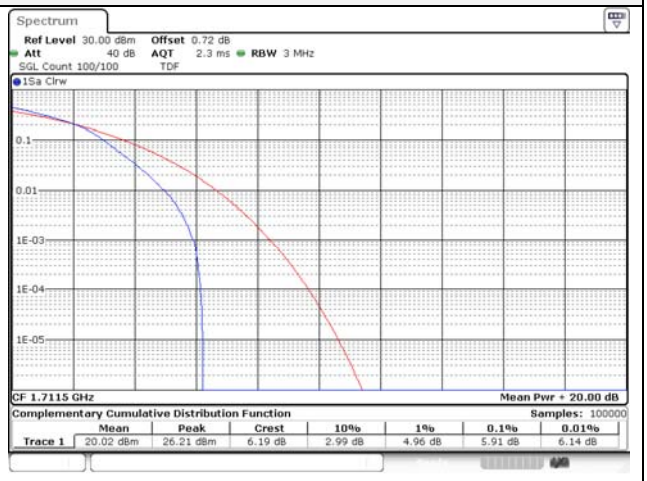
1.4M BW 16QAM High ch.



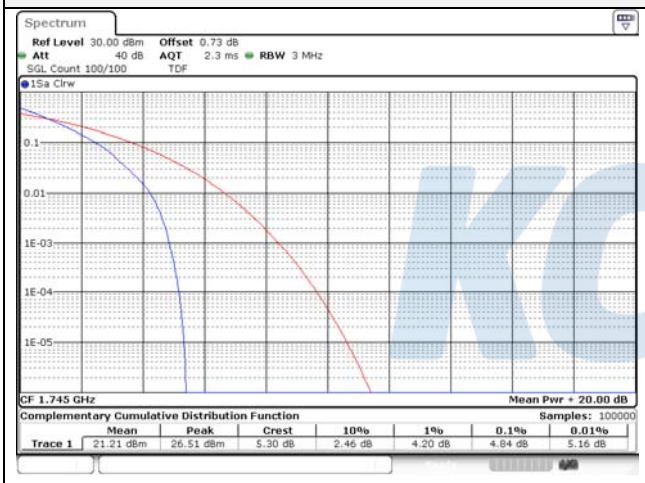
3M BW QPSK Low ch.



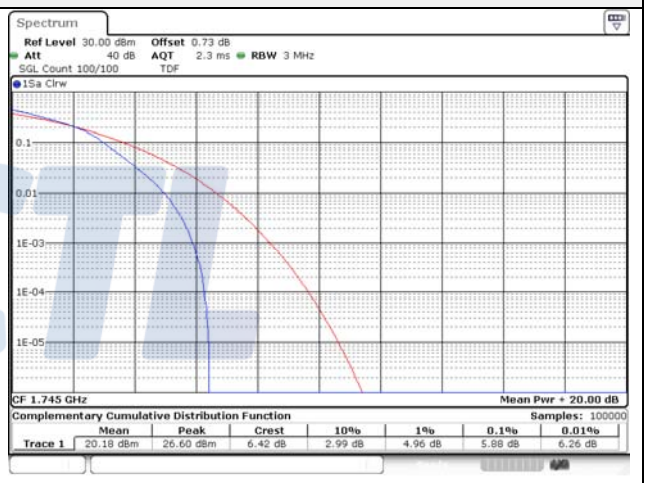
3M BW 16QAM Low ch.



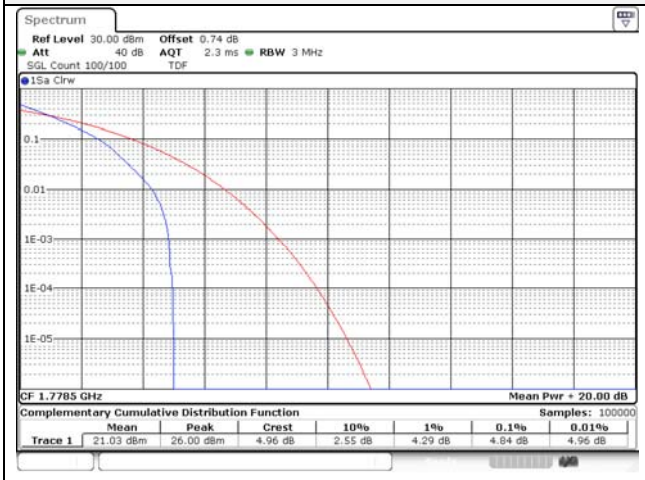
3M BW QPSK Mid ch.



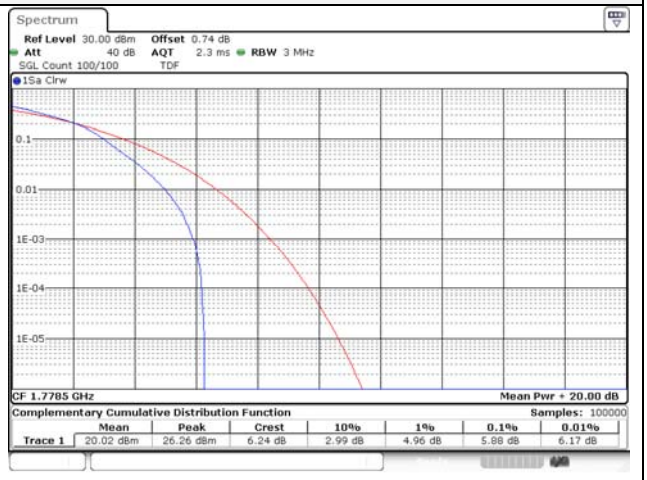
3M BW 16QAM Mid ch.



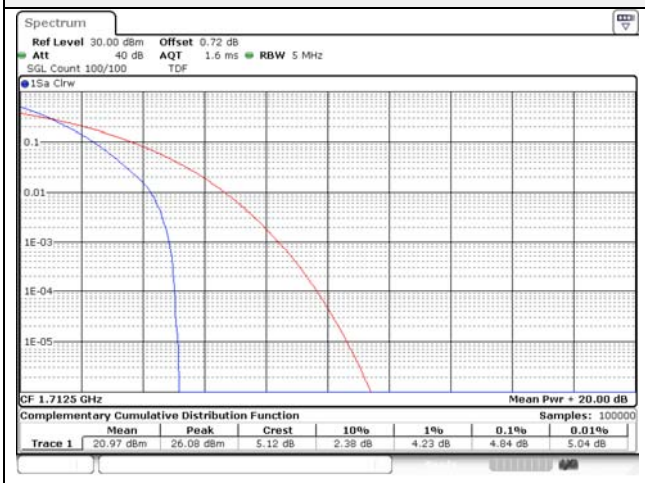
3M BW QPSK High ch.



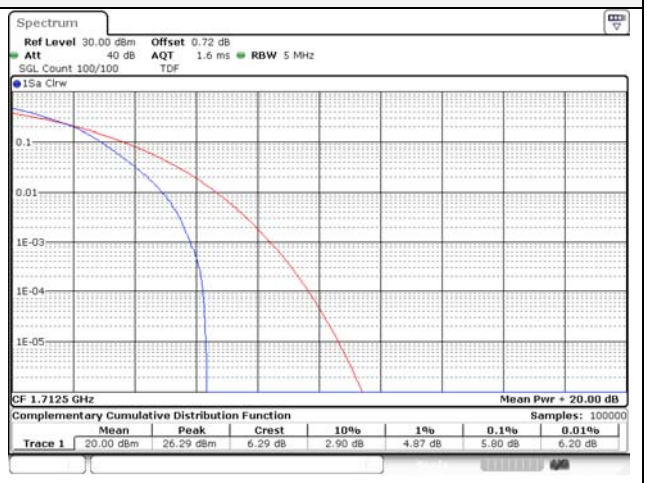
3M BW 16QAM High ch.



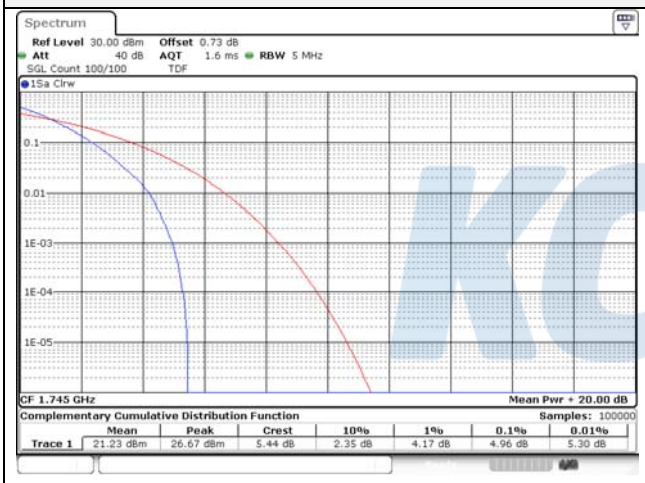
5M BW QPSK Low ch.



5M BW 16QAM Low ch.



5M BW QPSK Mid ch.



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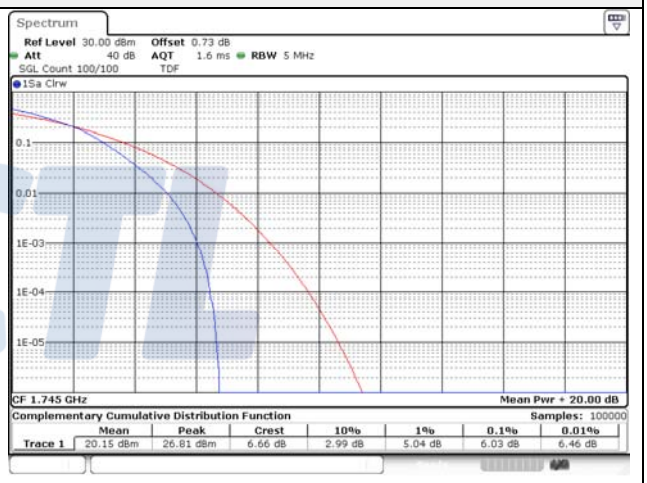

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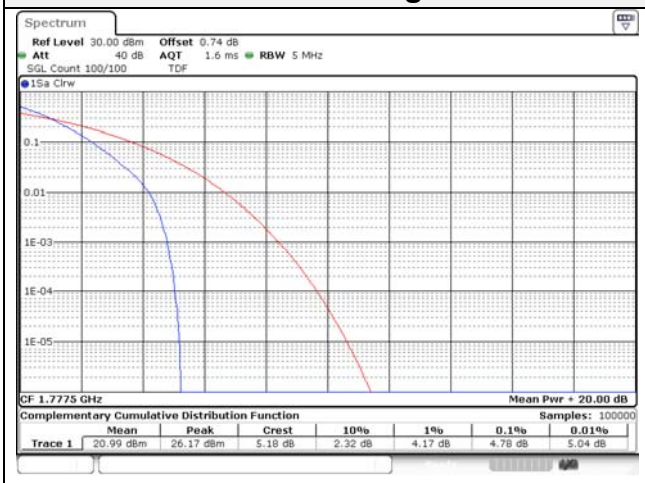
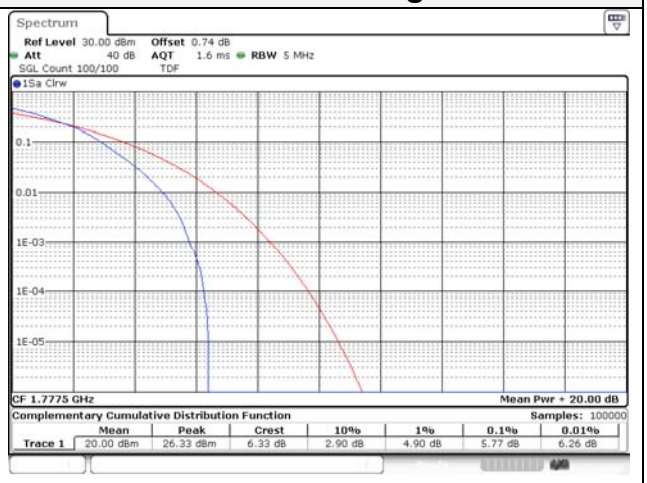


5M BW 16QAM High ch.



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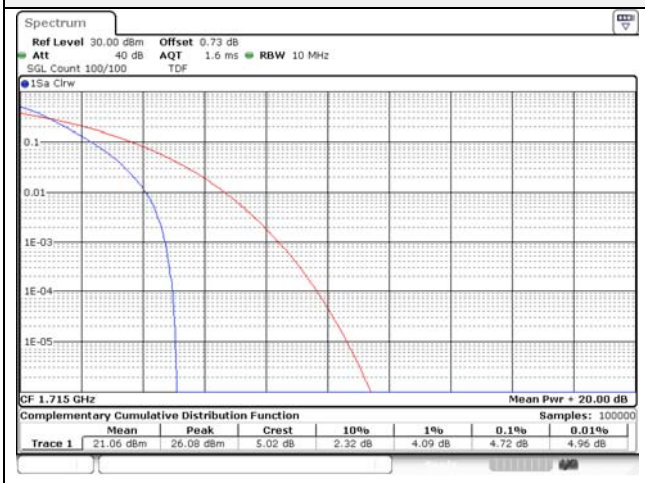

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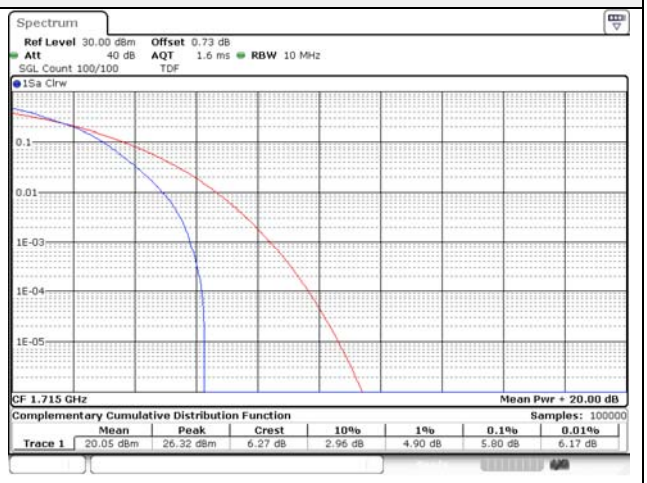
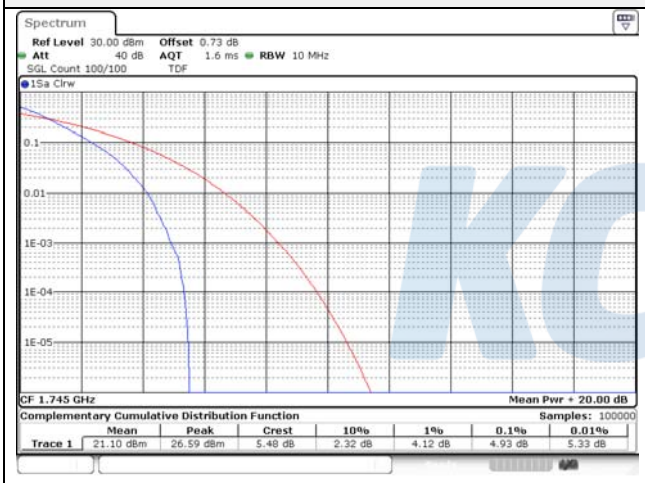
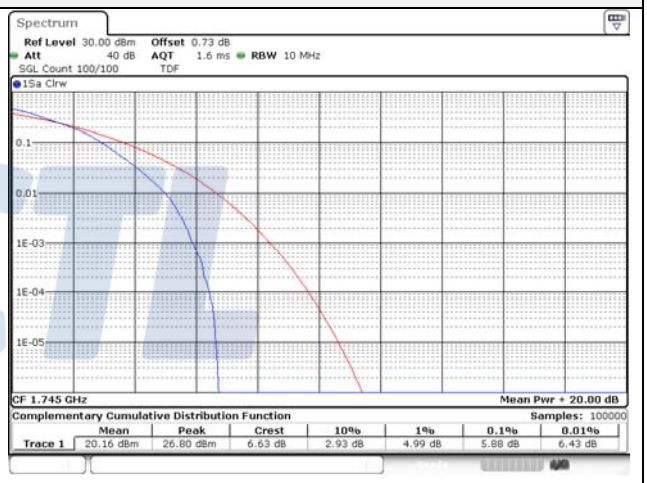


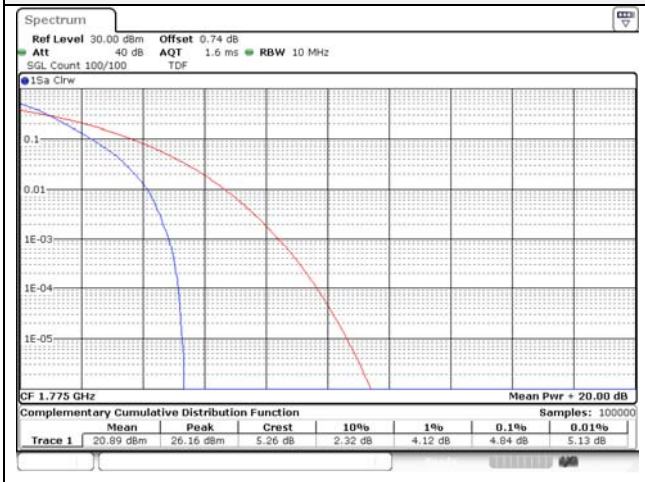
10M BW QPSK Mid ch.



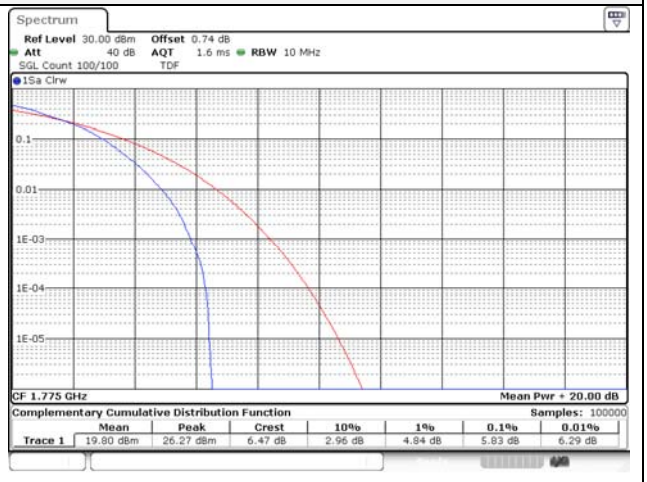
10M BW 16QAM Mid ch.



10M BW QPSK High ch.



10M BW 16QAM High ch.



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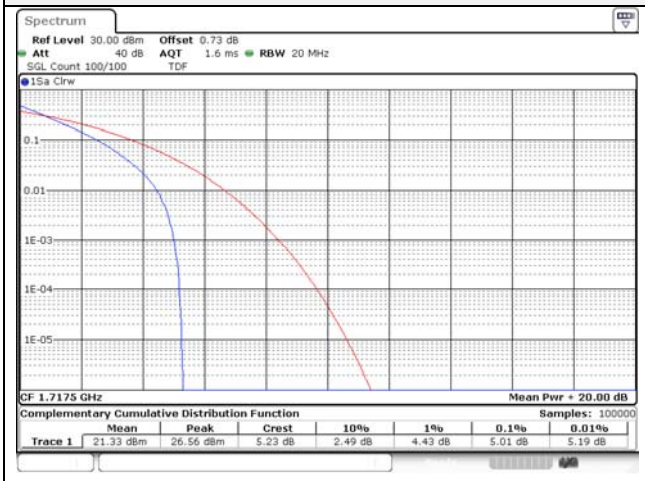

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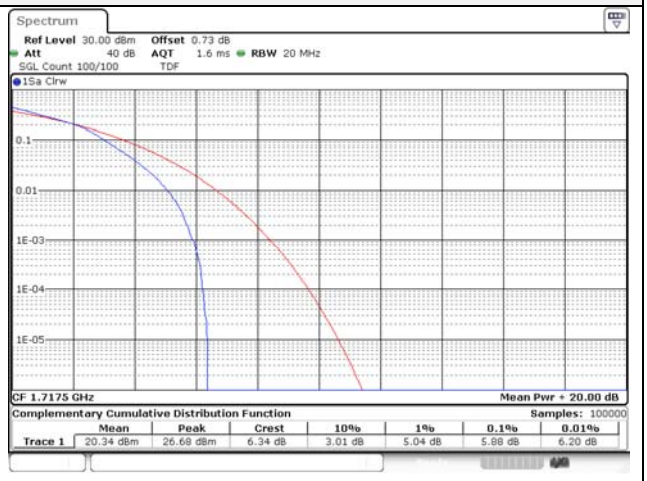
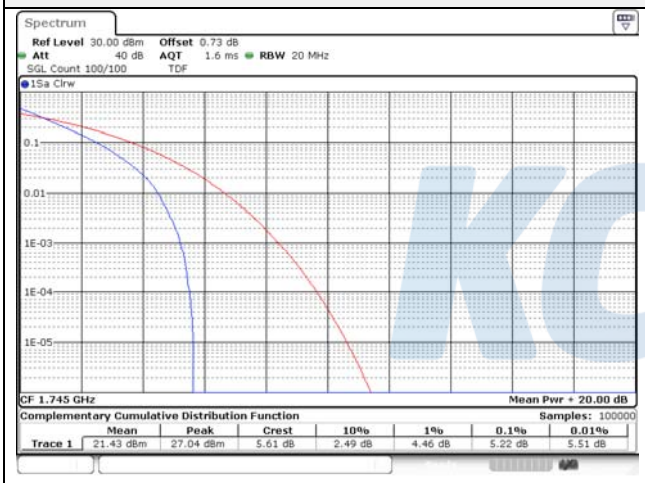


15M BW QPSK Mid ch.



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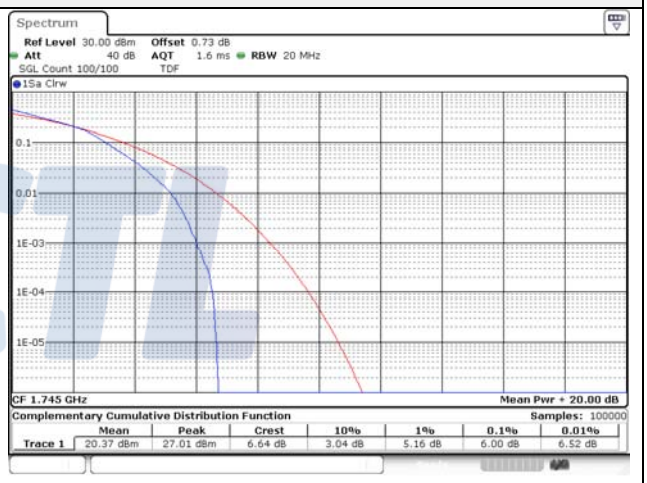
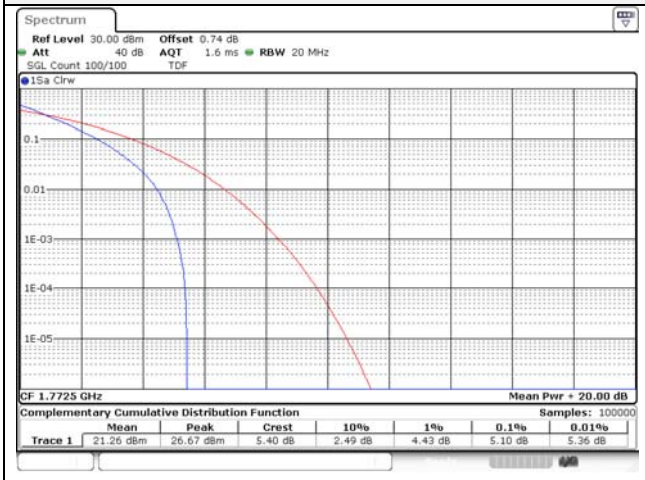
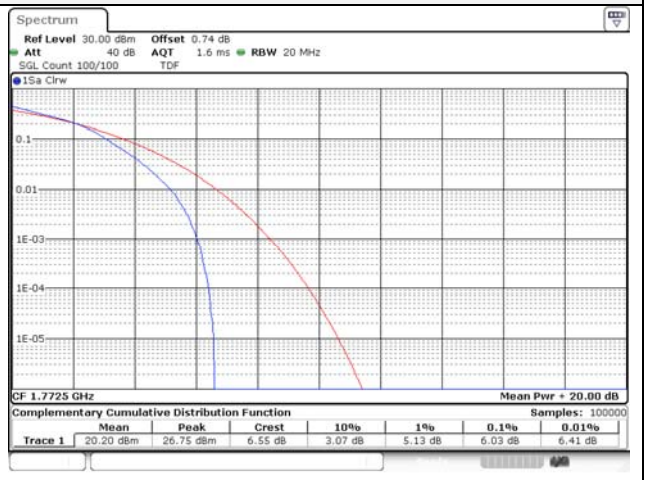


15M BW QPSK High ch.



15M BW 16QAM High ch.



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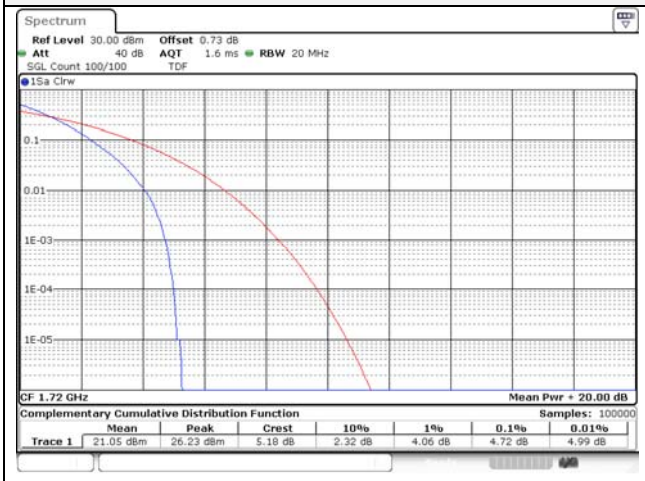

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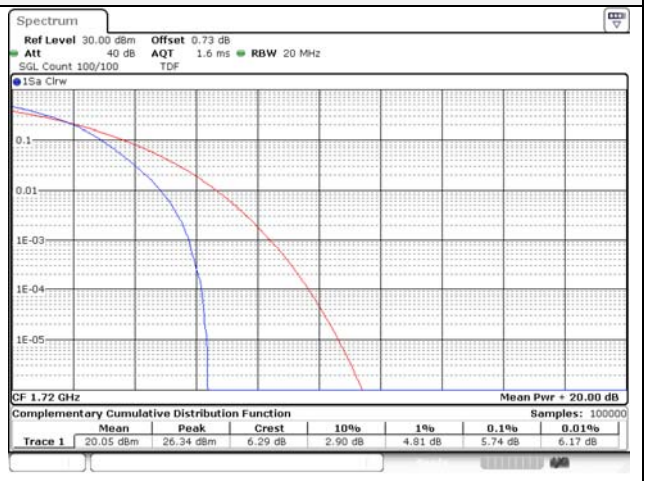

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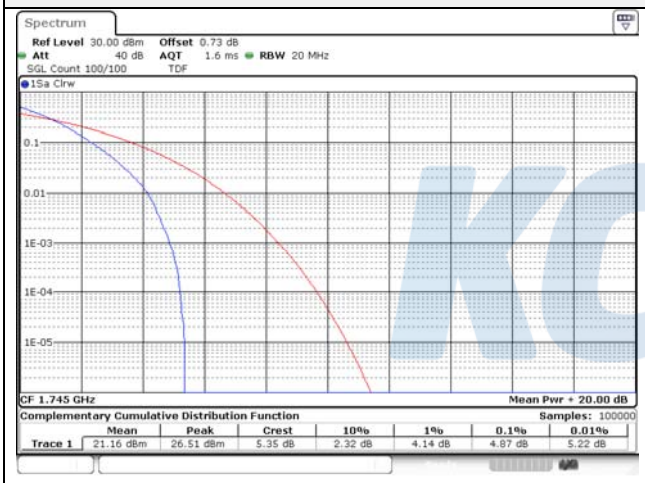

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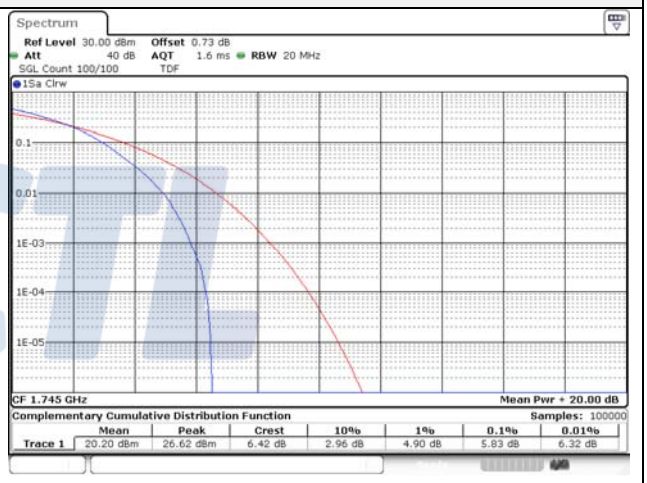
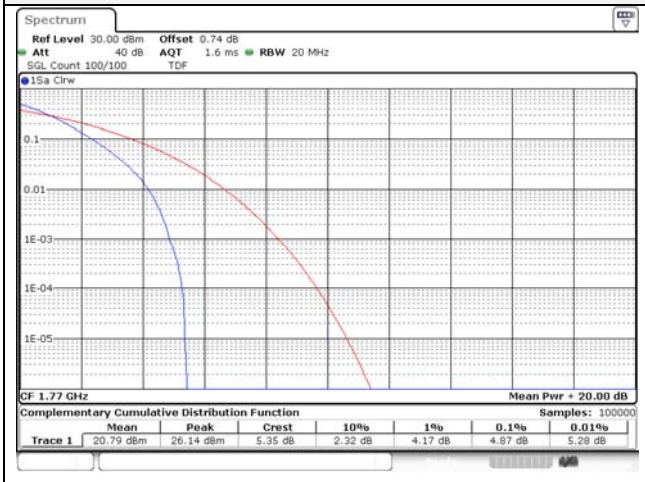


20M BW QPSK High ch.



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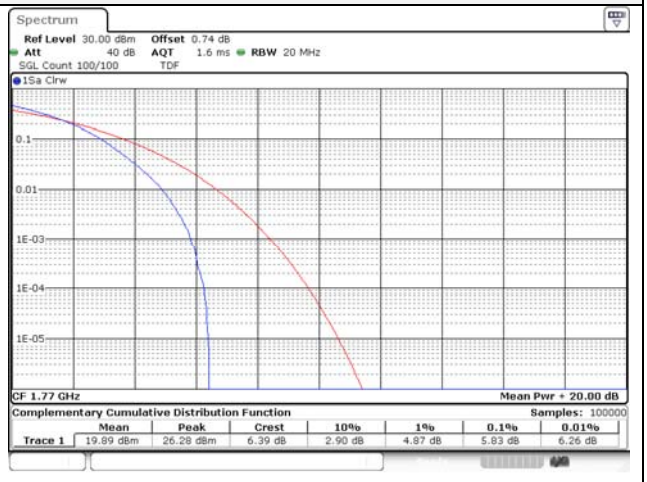
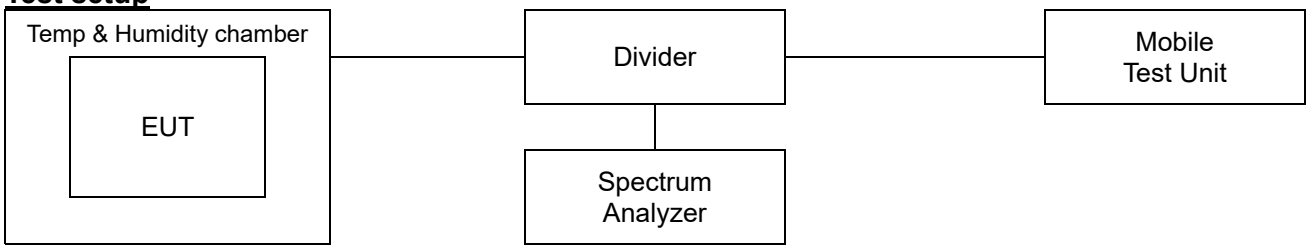


7.6. Frequency stability

Test setup



Limit

According to §2.1055(a),

The frequency stability shall be measured with variation of ambient temperature as follows:

1) From -30° to + 50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.
2) From -20° to + 50° centigrade for equipment to be licensed for use in the maritime services under part 80 of this chapter, except for class A, B, and S emergency position indicating radiobeacons (EPIRBS), and equipment to be licensed for use above 952 ㎒ at operational fixed stations in all services, stations in the local television transmission service and point-to-point microwave radio service under part 21 of this chapter, equipment licensed for use aboard aircraft in the aviation services under part 87 of this chapter, and equipment authorized for use in the family radio service under part 95 of this chapter.
3) From 0° to + 50° centigrade for equipment to be licensed for use in the radio broadcast Services under part 73 of this chapter.

According to §2.1055(d),

The frequency stability shall be measured with variation of primary supply Voltage as follows:

1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating and point which shall be specified by the manufacturer.
3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

According to §22.355,

The carrier frequency of each transmitter in the public mobile services must be maintained within the tolerances given in Table of this section.

For mobile devices operating in the 824 to 849 ㎒ band at a power level than or equal to 3 Watts, the limit specified in Table C-1 is ±2.5 ppm.

According to §24.235,
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.
The carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations and ±1.0 ppm for base stations.

According to §27.54,
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block (bands of operation).

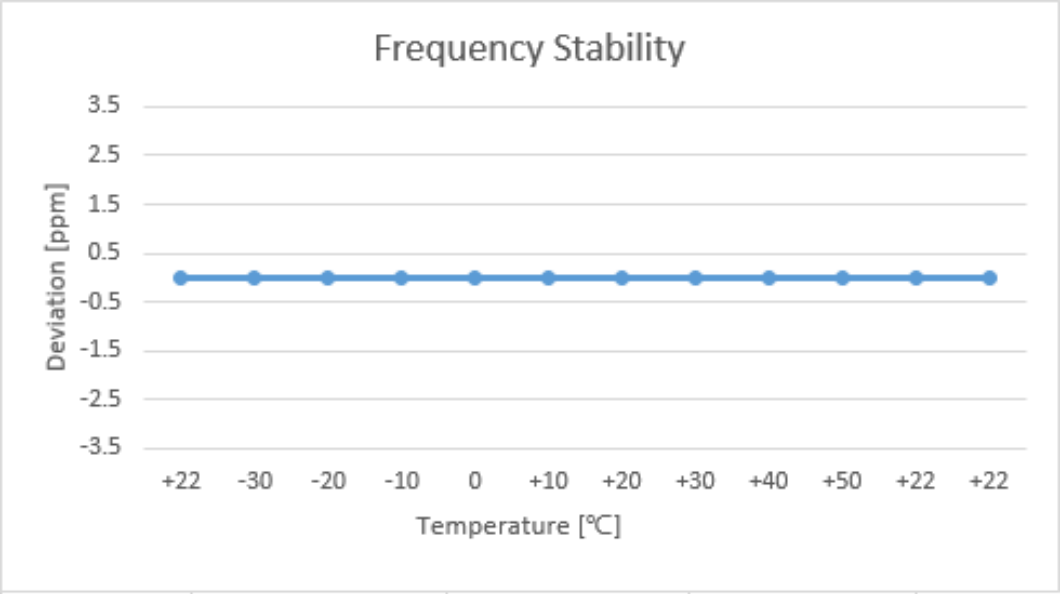
Test procedure
ANSI 63.26-2015 – Section 5.6

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

Test results

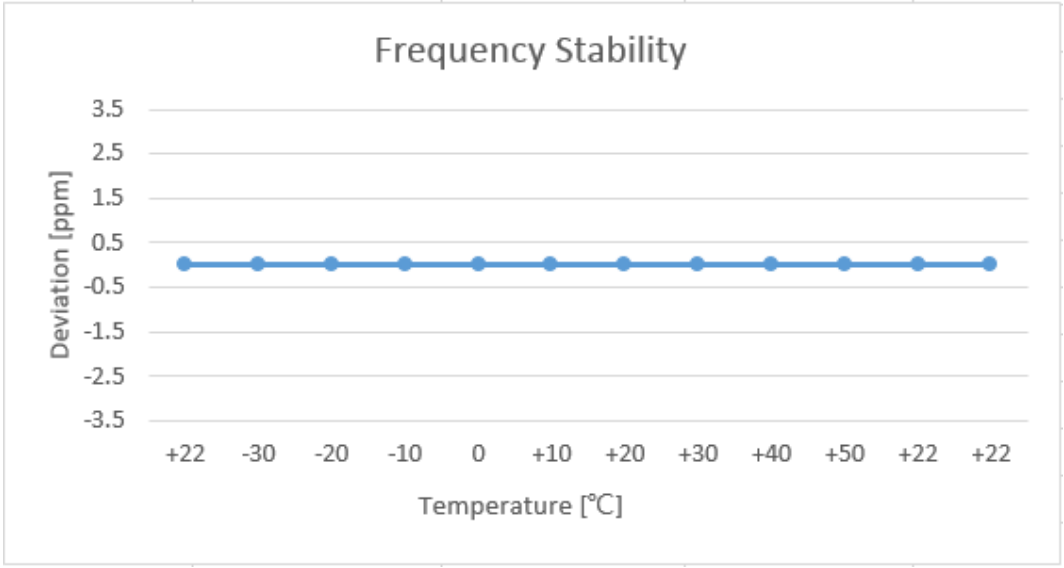
Test mode : LTE Band 12
Frequency (㎐) : 707 500 000
Channel : 23095
Deviation limit(FCC&IC) : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized bands of operation

Voltage (%)	Power (V)	Temp. (°C)	Frequency (㎐)	Frequency error (㎐)	Deviation	
					(ppm)	(%)
100%	3.86	+22(Ref)	707,500,002	2.03	0.0	0.000000
		-30	707,500,002	2.31	0.0	0.000000
		-20	707,500,001	1.15	0.0	0.000000
		-10	707,500,000	0.66	0.0	0.000000
		0	707,500,002	2.38	0.0	0.000000
		+10	707,500,001	1.38	0.0	0.000000
		+20	707,500,003	3.38	0.0	0.000000
		+30	707,500,005	5.08	0.0	0.000001
		+40	707,500,004	4.39	0.0	0.000001
		+50	707,500,004	4.81	0.0	0.000001
115%	4.44	+22(Ref)	707,500,003	3.50	0.0	0.000000
End point	3.40	+22(Ref)	707,500,003	3.10	0.0	0.000000



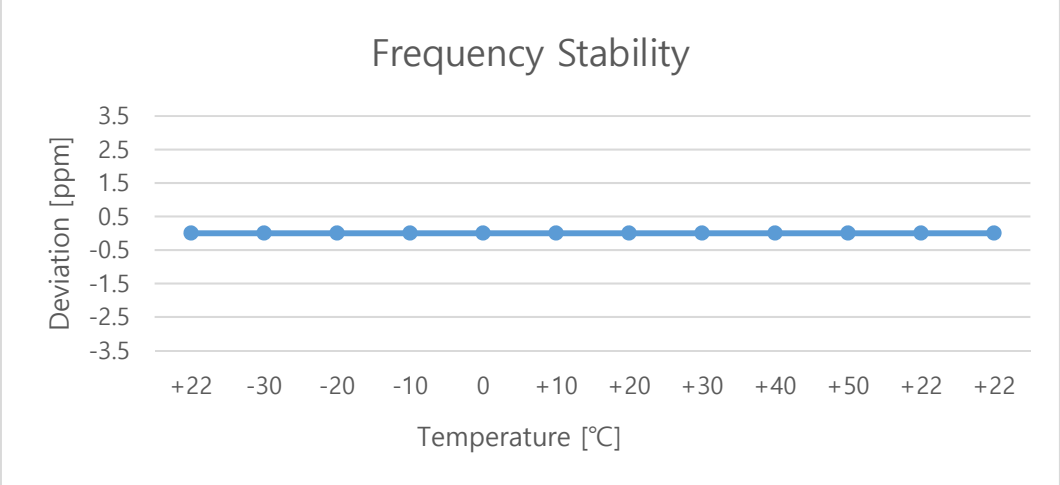
Test mode : LTE Band 13
Frequency (Hz) : 782 000 000
Channel : 23230
Deviation limit(FCC&IC) : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized bands of operation

Voltage (%)	Power (V)	Temp. (°C)	Frequency (Hz)	Frequency error (Hz)	Deviation	
					(ppm)	(%)
100%	3.86	+22(Ref)	782,000,003	3.86	0.0	0.000000
		-30	781,999,997	-2.55	0.0	0.000000
		-20	781,999,997	-2.68	0.0	0.000000
		-10	782,000,001	1.13	0.0	0.000000
		0	782,000,001	1.55	0.0	0.000000
		+10	782,000,002	2.67	0.0	0.000000
		+20	782,000,004	4.01	0.0	0.000001
		+30	782,000,003	3.18	0.0	0.000000
		+40	782,000,002	2.13	0.0	0.000000
		+50	782,000,001	1.68	0.0	0.000000
115%	4.44	+22(Ref)	782,000,004	4.84	0.0	0.000001
End point	3.40	+22(Ref)	782,000,004	4.88	0.0	0.000001



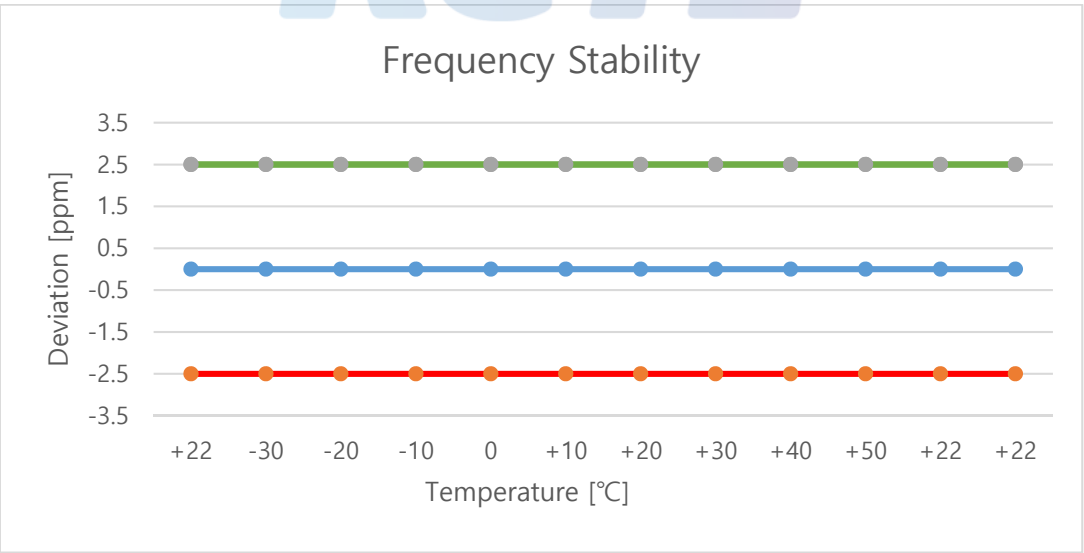
Test mode : LTE Band 25/2
Frequency (㎐) : 1 882 500 000
Channel : 26365
Deviation limit(FCC) : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Voltage (%)	Power (V)	Temp. (°C)	Frequency (㎐)	Frequency error (㎐)	Deviation	
					(ppm)	(%)
100%	3.86	+22(Ref)	1,882,500,005	5.18	0.0	0.000000
		-30	1,882,499,998	-1.99	0.0	0.000000
		-20	1,882,500,001	0.60	0.0	0.000000
		-10	1,882,500,002	1.68	0.0	0.000000
		0	1,882,500,004	3.89	0.0	0.000000
		+10	1,882,500,003	3.18	0.0	0.000000
		+20	1,882,500,003	2.67	0.0	0.000000
		+30	1,882,500,002	2.03	0.0	0.000000
		+40	1,882,500,001	1.31	0.0	0.000000
		+50	1,882,500,001	0.69	0.0	0.000000
115%	4.44	+22(Ref)	1,882,500,004	3.69	0.0	0.000000
End point	3.40	+22(Ref)	1,882,500,005	4.63	0.0	0.000000



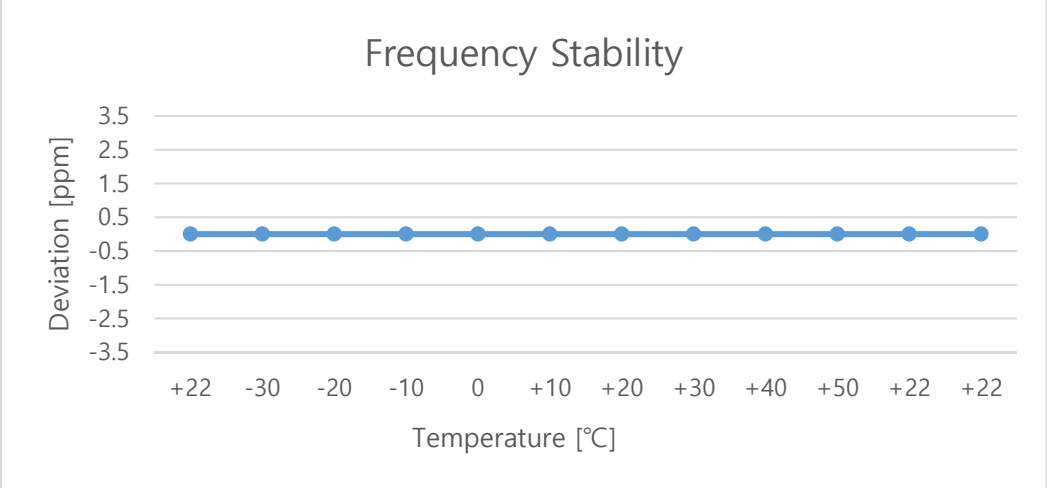
Test mode : LTE Band 26/5
Frequency (㎐) : 836 500 000
Channel : 26915
Deviation limit : ±0.00025% or 2.5ppm

Voltage (%)	Power (V)	Temp. (°C)	Frequency (㎐)	Frequency error (㎐)	Deviation	
					(ppm)	(%)
100%	3.86	+22(Ref)	836,500,003	3.65	0.0	0.000000
		-30	836,499,995	-4.05	0.0	0.000000
		-20	836,499,997	-2.58	0.0	0.000000
		-10	836,499,997	-2.08	0.0	0.000000
		0	836,499,999	-0.49	0.0	0.000000
		+10	836,500,001	1.68	0.0	0.000000
		+20	836,500,003	3.06	0.0	0.000000
		+30	836,500,002	2.18	0.0	0.000000
		+40	836,500,001	1.11	0.0	0.000000
		+50	836,500,001	1.98	0.0	0.000000
115%	4.44	+22(Ref)	836,500,003	3.25	0.0	0.000000
End point	3.40	+22(Ref)	836,500,002	2.82	0.0	0.000000



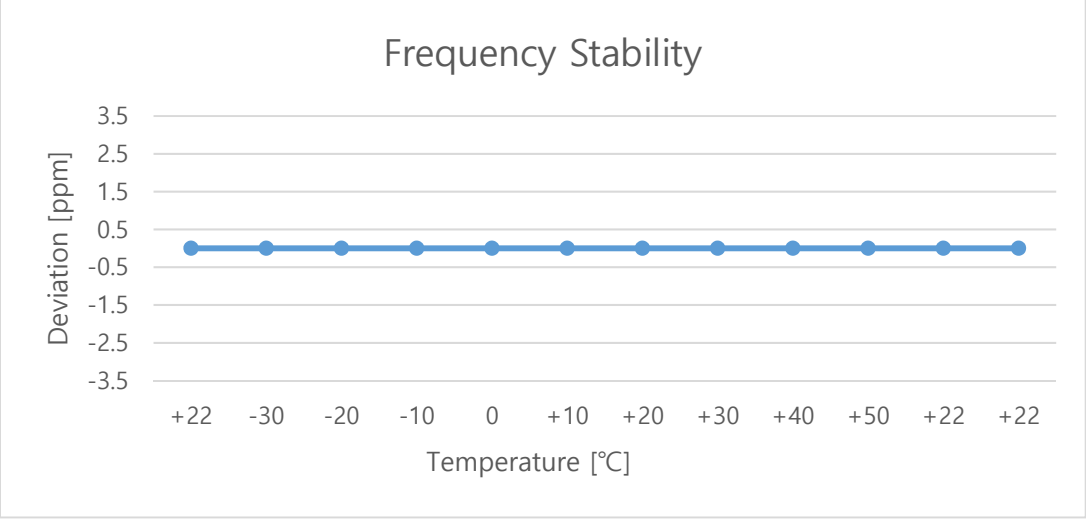
Test mode : LTE Band 41
Frequency (㎐) : 2 593 000 000
Channel : 40620
Deviation limit(FCC&IC) : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized bands of operation.

Voltage (%)	Power (V)	Temp. (°C)	Frequency (㎐)	Frequency error (㎐)	Deviation	
					(ppm)	(%)
100%	3.86	+22(Ref)	2,592,999,998	-2.36	0.0	0.000000
		-30	2,593,000,003	3.36	0.0	0.000000
		-20	2,593,000,003	2.67	0.0	0.000000
		-10	2,593,000,002	1.81	0.0	0.000000
		0	2,592,999,999	-1.17	0.0	0.000000
		+10	2,592,999,998	-2.18	0.0	0.000000
		+20	2,592,999,997	-3.33	0.0	0.000000
		+30	2,592,999,998	-2.18	0.0	0.000000
		+40	2,592,999,998	-2.09	0.0	0.000000
		+50	2,592,999,999	-1.15	0.0	0.000000
115%	4.44	+22	2,592,999,997	-2.69	0.0	0.000000
End point	3.40	+22	2,592,999,998	-1.53	0.0	0.000000



Test mode : LTE Band 66/4
Frequency (㎐) : 1 745 000 000
Channel : 132322
Deviation limit(FCC&IC) : The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized bands of operation.

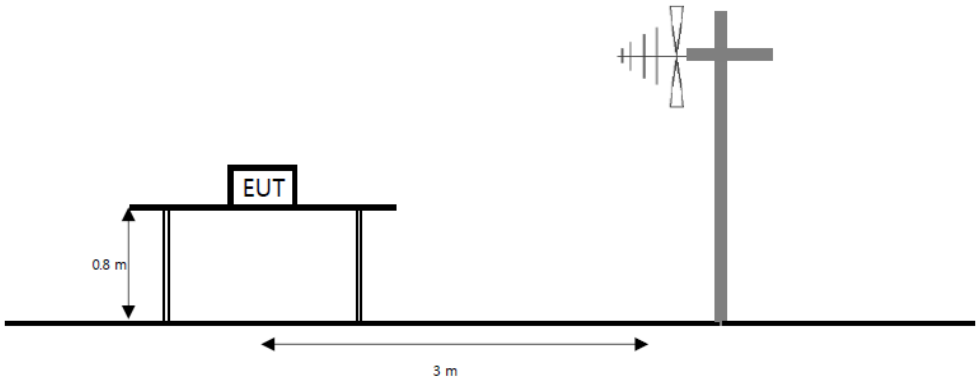
Voltage (%)	Power (V)	Temp. (°C)	Frequency (㎐)	Frequency error (㎐)	Deviation	
					(ppm)	(%)
100%	3.86	+22(Ref)	1,744,999,997	-3.40	0.0	0.000000
		-30	1,745,000,004	4.06	0.0	0.000000
		-20	1,745,000,004	3.64	0.0	0.000000
		-10	1,745,000,003	3.33	0.0	0.000000
		0	1,745,000,003	2.68	0.0	0.000000
		+10	1,744,999,999	-0.91	0.0	0.000000
		+20	1,744,999,997	-2.64	0.0	0.000000
		+30	1,744,999,998	-2.08	0.0	0.000000
		+40	1,744,999,998	-1.61	0.0	0.000000
		+50	1,744,999,998	-2.03	0.0	0.000000
115%	4.44	+22(Ref)	1,744,999,996	-3.91	0.0	0.000000
End point	3.40	+22(Ref)	1,744,999,998	-1.96	0.0	0.000000



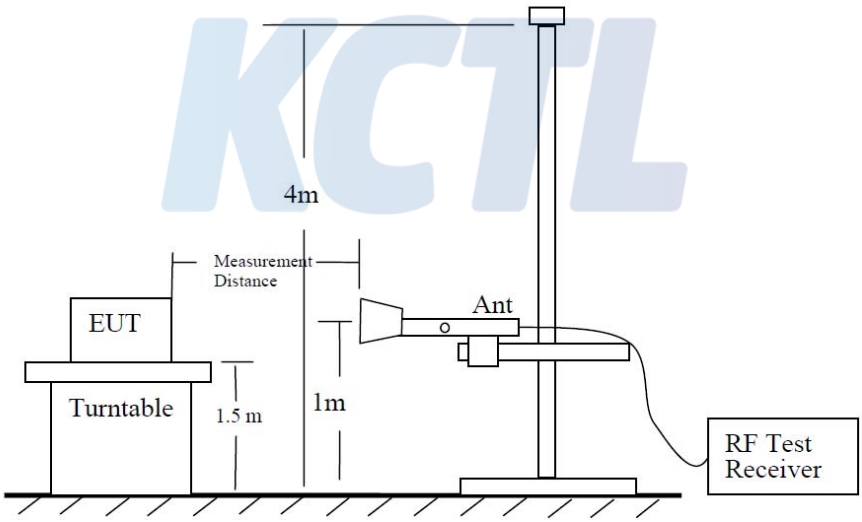
7.7. Radiated Power (ERP/EIRP)

Test setup

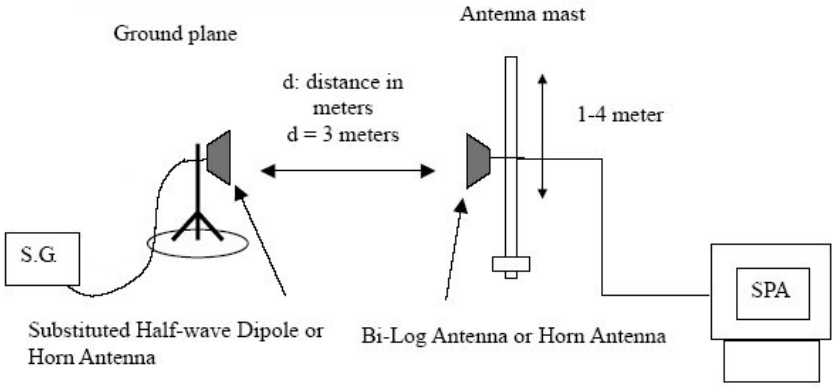
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to the tenth harmonic of the highest fundamental frequency or to 40 ㎓ emissions, whichever is lower.



The diagram below shows the test setup for substituted method.



Limit

According to §22.913(a)(5), the ERP of transmitters in the cellular radiotelephone service must not exceed the limits in this section. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to §24.232(c), Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §27.50(b)(10), 27.50(c)(10), Portable stations (hand-held devices) in the 698 -746 ㎒, 746-757 ㎒, 776-788 ㎒, and 805-806 ㎒ bands are limited 3 watts ERP.

According to §27.50(d)(4), Fixed, mobile and portable (hand-held) stations operating in the 1710-1755 ㎒ and 1755-1780 ㎒ bands are limited to 1 watt EIRP.

According to §27.50(h)(2), Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

Test procedure

971168 D01 v03r01 - Section 5.2 and 5.8, 412172 D01 v01r01
ANSI 63.26-2015 – Section 5.2
ANSI/TIA-603-E-2016 - Section 2.2.17

Test settings

1) RBW = 1 % to 5 % of the OBW.
2) VBW ≥ 3 × RBW.
3) SPAN = 2 × to 3 × the OBW.
4) Number of measurement points in sweep ≥ 2 × span / RBW.
5) Sweep time :
   1) Auto couple, or
   2) ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. Transmission period is the on and off time of the transmitter.
6) Detector = RMS
7) If the EUT can be configured to transmit continuously, then set the trigger to free run.
8) If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints (i.e., configured such that measurement data is collected only during active full -power transmissions).
9) Trace mode = trace averaging (RMS) over 100 sweeps.
10) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
11) Allow trace to fully stabilize.

Notes:

1. On a test site, the EUT shall be placed at 80 cm height on a turn table, and in the position close To normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to Correspond to the fundamental frequency of the transmitter.
3. The turntable is rotated through 360°, and the receiving antenna scans in order to determine the Level of the maximized emission.
4. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
5. The maximum signal level detected by the measuring receiver shall be noted.
6. The EUT was replaced by half-wave dipole (1 ㎓ below) or horn antenna (1 ㎓ above) connected to a signal generator.
   The power is calculated by the following formula;
   Pd(㏈m) = Pg(㏈m) – Cable loss (㏈) + Antenna gain (㏈)
   Note. Pd is the dipole equivalent power and Pg is the generator output power into the substitution antenna.
7. The test antenna shall be raised and lowered through the specified range of height to ensure that The maximum signal is received.
8. The input signal to the substitution antenna shall be adjusted to the level that produces a level Detected by the measuring corrected for the change of input attenuator setting of the measuring Receiver.
9. The input level to the substitution antenna shall be recorded as power level in ㏈m, corrected for Any change of input attenuator setting of the measuring receiver.
10. The measurement shall be repeated with the test antenna and the substitution antenna Orientated for horizontal polarization.

Test results

Test mode: LTE Band 12

Bandwidth	Modulation	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	ERP	
		[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[W]
1.4 M	QPSK	699.7	V	-0.70	4.60	26.53	21.23	0.133
		707.5	V	-0.60	4.66	26.58	21.32	0.136
		715.3	V	-0.80	4.69	27.05	21.56	0.143
	16QAM	699.7	V	-0.70	4.60	25.67	20.37	0.109
		707.5	V	-0.60	4.66	25.47	20.21	0.105
		715.3	V	-0.80	4.69	26.13	20.64	0.116
3 M	QPSK	700.5	V	-0.70	4.60	26.88	21.58	0.144
		707.5	V	-0.60	4.66	26.85	21.59	0.144
		714.5	V	-0.80	4.65	27.18	21.73	0.149
	16QAM	700.5	V	-0.70	4.60	25.83	20.53	0.113
		707.5	V	-0.60	4.66	25.84	20.58	0.114
		714.5	V	-0.80	4.65	25.90	20.45	0.111
5 M	QPSK	701.5	V	-0.70	4.65	26.86	21.51	0.142
		707.5	V	-0.60	4.66	26.57	21.31	0.135
		713.5	V	-0.80	4.66	27.21	**21.75**	**0.150**
	16QAM	701.5	V	-0.70	4.65	26.33	20.98	0.125
		707.5	V	-0.60	4.66	25.87	20.61	0.115
		713.5	V	-0.80	4.66	26.16	20.70	0.117
10 M	QPSK	704.0	V	-0.60	4.69	26.82	21.53	0.142
		707.5	V	-0.60	4.66	26.47	21.21	0.132
		711.0	V	-0.30	4.70	26.33	21.33	0.136
	16QAM	704.0	V	-0.60	4.69	25.80	20.51	0.112
		707.5	V	-0.60	4.66	25.86	20.60	0.115
		711.0	V	-0.30	4.70	25.87	20.87	0.122

Test mode: LTE Band 13

Bandwidth	Modulation	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	ERP	
		[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[W]
5 M	QPSK	779.5	V	0.60	4.84	27.56	**23.32**	**0.215**
		782.0	V	0.60	4.93	27.53	23.20	0.209
		784.5	V	0.10	4.91	28.01	23.20	0.209
	16QAM	779.5	V	0.60	4.84	26.71	22.47	0.177
		782.0	V	0.60	4.93	26.82	22.49	0.177
		784.5	V	0.10	4.91	27.42	22.61	0.182
10 M	QPSK	782.0	V	0.60	4.93	27.31	22.98	0.199
	16QAM	782.0	V	0.60	4.93	26.41	22.08	0.161

Note.
1. E.R.P & E.I.R.P(dBm) = Substitute Level(dB) + Antenna gain(dBi) - C.L(Cable loss) (dB)

Test mode: LTE Band 25/2

Bandwidth	Modulation	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	EIRP	
		[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[W]
1.4 M	QPSK	1 850.7	H	5.55	7.79	25.87	23.63	0.231
		1 882.5	H	5.45	7.86	24.31	21.90	0.155
		1 914.3	H	5.36	7.89	24.64	22.11	0.163
	16QAM	1 850.7	H	5.55	7.79	25.00	22.76	0.189
		1 882.5	H	5.45	7.86	23.27	20.86	0.122
		1 914.3	H	5.36	7.89	23.79	21.26	0.134
3 M	QPSK	1 851.5	H	5.55	7.79	26.01	23.77	0.238
		1 882.5	H	5.45	7.86	24.47	22.06	0.161
		1 913.5	H	5.36	7.89	25.03	22.50	0.178
	16QAM	1 851.5	H	5.55	7.79	25.29	23.05	0.202
		1 882.5	H	5.45	7.86	23.60	21.19	0.132
		1 913.5	H	5.36	7.89	24.04	21.51	0.142
5 M	QPSK	1 852.5	H	5.54	7.79	26.07	**23.82**	**0.241**
		1 882.5	H	5.45	7.86	24.56	22.15	0.164
		1 912.5	H	5.36	7.89	25.00	22.47	0.177
	16QAM	1 852.5	H	5.54	7.79	25.32	23.07	0.203
		1 882.5	H	5.45	7.86	23.77	21.36	0.137
		1 912.5	H	5.36	7.89	24.24	21.71	0.148
10 M	QPSK	1 855.0	H	5.54	7.80	25.74	23.47	0.222
		1 882.5	H	5.45	7.86	24.40	21.99	0.158
		1 910.0	H	5.37	7.89	25.00	22.48	0.177
	16QAM	1 855.0	H	5.54	7.80	24.80	22.53	0.179
		1 882.5	H	5.45	7.86	23.29	20.88	0.122
		1 910.0	H	5.37	7.89	24.26	21.74	0.149
15 M	QPSK	1 857.5	H	5.53	7.80	25.72	23.45	0.221
		1 882.5	H	5.45	7.86	24.51	22.10	0.162
		1 907.5	H	5.38	7.88	24.86	22.36	0.172
	16QAM	1 857.5	H	5.53	7.80	25.02	22.75	0.188
		1 882.5	H	5.45	7.86	23.99	21.58	0.144
		1 907.5	H	5.38	7.88	23.98	21.48	0.141
20 M	QPSK	1 860.0	H	5.52	7.81	25.87	23.58	0.228
		1 882.5	H	5.45	7.86	24.67	22.26	0.168
		1 905.0	H	5.39	7.88	24.73	22.23	0.167
	16QAM	1 860.0	H	5.52	7.81	25.25	22.96	0.198
		1 882.5	H	5.45	7.86	23.93	21.52	0.142
		1 905.0	H	5.39	7.88	24.02	21.52	0.142

Note.
1. E.R.P & E.I.R.P(㏈m) = Substitute Level(㏈) + Antenna gain(㏈i) - C.L(Cable loss) (㏈)

Test mode: LTE Band 26/5

Bandwidth	Modulation	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	ERP	
		[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[W]
1.4 M	QPSK	824.7	V	-0.20	5.06	29.20	23.94	0.248
		836.5	V	-0.20	5.11	29.36	24.05	0.254
		848.3	V	-0.50	5.15	30.59	24.94	0.312
	16QAM	824.7	V	-0.20	5.06	28.32	23.06	0.202
		836.5	V	-0.20	5.11	28.54	23.23	0.210
		848.3	V	-0.50	5.15	29.65	24.00	0.251
3 M	QPSK	825.5	V	-0.20	5.07	29.00	23.73	0.236
		836.5	V	-0.20	5.11	29.32	24.01	0.252
		847.5	V	-0.50	5.15	30.32	24.67	0.293
	16QAM	825.5	V	-0.20	5.07	28.64	23.37	0.217
		836.5	V	-0.20	5.11	28.38	23.07	0.203
		847.5	V	-0.50	5.15	29.67	24.02	0.252
5 M	QPSK	826.5	V	-0.20	5.09	28.96	23.67	0.233
		836.5	V	-0.20	5.11	29.39	24.08	0.256
		846.5	V	-0.50	5.15	30.62	24.97	0.314
	16QAM	826.5	V	-0.20	5.09	28.16	22.87	0.194
		836.5	V	-0.20	5.11	28.54	23.23	0.210
		846.5	V	-0.50	5.15	29.78	24.13	0.259
10 M	QPSK	829.0	V	0.70	5.06	28.47	24.11	0.258
		836.5	V	-0.20	5.11	29.56	24.25	0.266
		844.0	V	-0.50	5.15	30.70	**25.05**	**0.320**
	16QAM	829.0	V	-0.70	5.06	28.91	23.15	0.207
		836.5	V	-0.20	5.11	28.27	22.96	0.198
		844.0	V	-0.50	5.15	29.54	23.89	0.245
15 M	QPSK	831.5	V	0.70	5.09	28.36	23.97	0.249
		836.5	V	-0.20	5.11	29.90	24.59	0.288
		841.5	V	-0.80	5.14	30.64	24.70	0.295
	16QAM	831.5	V	0.70	5.09	27.83	23.44	0.221
		836.5	V	-0.20	5.11	29.01	23.70	0.234
		841.5	V	-0.80	5.14	30.10	24.16	0.261

Note.
1. E.R.P & E.I.R.P(dBm) = Substitute Level(dB) + Antenna gain(dBi) - C.L(Cable loss) (dB)

Test mode: LTE Band 41

Bandwidth	Modulation	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	ERP	
		[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[W]
5 M	QPSK	2 498.50	H	5.40	9.22	30.15	26.33	0.430
		2 593.00	H	5.85	9.33	23.48	20.00	0.100
		2 687.50	H	6.30	9.56	22.26	19.00	0.079
	16QAM	2 498.50	H	5.40	9.22	29.27	25.45	0.351
		2 693.00	H	6.33	9.57	22.34	19.10	0.081
		2 687.50	H	6.30	9.56	20.68	17.42	0.055
10 M	QPSK	2 501.00	H	5.40	9.22	31.26	**27.44**	**0.555**
		2 593.00	H	5.85	9.33	25.98	22.50	0.178
		2 685.00	H	6.29	9.55	22.60	19.34	0.086
	16QAM	2 501.00	H	5.40	9.22	30.04	26.22	0.419
		2 593.00	H	5.85	9.33	23.87	20.39	0.109
		2 685.00	H	6.29	9.55	22.17	18.91	0.078
15 M	QPSK	2 503.50	H	5.42	9.20	29.34	25.56	0.360
		2 593.00	H	5.85	9.33	26.42	22.94	0.197
		2 682.50	H	6.28	9.54	21.97	18.71	0.074
	16QAM	2 503.50	H	5.42	9.20	26.18	22.40	0.174
		2 593.00	H	5.85	9.33	23.86	20.38	0.109
		2 682.50	H	6.28	9.54	22.49	19.23	0.084
20 M	QPSK	2 506.00	H	5.43	9.20	30.50	26.73	0.471
		2 593.00	H	5.85	9.33	26.80	23.32	0.215
		2 680.00	H	6.26	9.54	22.20	18.92	0.078
	16QAM	2 506.00	H	5.43	9.20	29.67	25.90	0.389
		2 593.00	H	5.85	9.33	25.73	22.25	0.168
		2 680.00	H	6.26	9.54	21.35	18.07	0.064

Note.
1. E.R.P & E.I.R.P(dBm) = Substitute Level(dB) + Antenna gain(dBi) - C.L(Cable loss) (dB)

Test mode: LTE Band 66/4

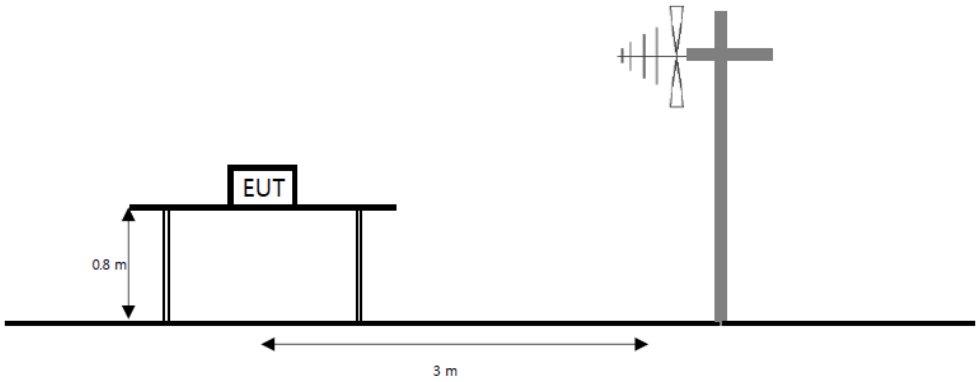
Bandwidth	Modulation	Frequency	Pol.	Antenna Gain	C.L	Substitute Level	EIRP	
		[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[W]
1.4 M	QPSK	1 710.7	H	5.97	7.52	23.80	22.25	0.168
		1 745.0	H	5.87	7.60	23.60	21.86	0.153
		1 779.3	H	5.76	7.70	23.93	21.99	0.158
	16QAM	1 710.7	H	5.97	7.52	22.86	21.31	0.135
		1 745.0	H	5.87	7.60	22.60	20.86	0.122
		1 779.3	H	5.76	7.70	22.88	20.94	0.124
3 M	QPSK	1 711.5	H	5.97	7.53	24.33	**22.77**	**0.189**
		1 745.0	H	5.87	7.60	23.68	21.94	0.156
		1 778.5	H	5.76	7.70	24.05	22.11	0.163
	16QAM	1 711.5	H	5.97	7.53	23.25	21.69	0.148
		1 745.0	H	5.87	7.60	22.73	20.99	0.126
		1 778.5	H	5.76	7.70	23.31	21.37	0.137
5 M	QPSK	1 712.5	H	5.96	7.53	24.29	22.72	0.187
		1 745.0	H	5.87	7.60	23.69	21.95	0.157
		1 777.5	H	5.77	7.68	24.11	22.20	0.166
	16QAM	1 712.5	H	5.96	7.53	23.01	21.44	0.139
		1 745.0	H	5.87	7.60	22.68	20.94	0.124
		1 777.5	H	5.77	7.68	23.25	21.34	0.136
10 M	QPSK	1 715.0	H	5.96	7.52	24.16	22.59	0.182
		1 745.0	H	5.87	7.60	23.68	21.94	0.156
		1 775.0	H	5.78	7.68	24.08	22.17	0.165
	16QAM	1 715.0	H	5.96	7.52	23.30	21.73	0.149
		1 745.0	H	5.87	7.60	22.80	21.06	0.128
		1 775.0	H	5.78	7.68	23.32	21.41	0.138
15 M	QPSK	1 717.5	H	5.95	7.53	24.07	22.49	0.177
		1 745.0	H	5.87	7.60	23.90	22.16	0.164
		1 772.5	H	5.78	7.67	24.42	22.53	0.179
	16QAM	1 717.5	H	5.95	7.53	23.46	21.88	0.154
		1 745.0	H	5.87	7.60	23.14	21.40	0.138
		1 772.5	H	5.78	7.67	23.64	21.75	0.150
20 M	QPSK	1 720.0	H	5.94	7.53	23.97	22.38	0.173
		1 745.0	H	5.87	7.60	23.97	22.23	0.167
		1 770.0	H	5.79	7.66	24.48	22.61	0.182
	16QAM	1 720.0	H	5.94	7.53	23.19	21.60	0.145
		1 745.0	H	5.87	7.60	23.14	21.40	0.138
		1 770.0	H	5.79	7.66	23.73	21.86	0.153

Note.
1. E.R.P & E.I.R.P(㏈m) = Substitute Level(㏈) + Antenna gain(㏈i) - C.L(Cable loss) (㏈)

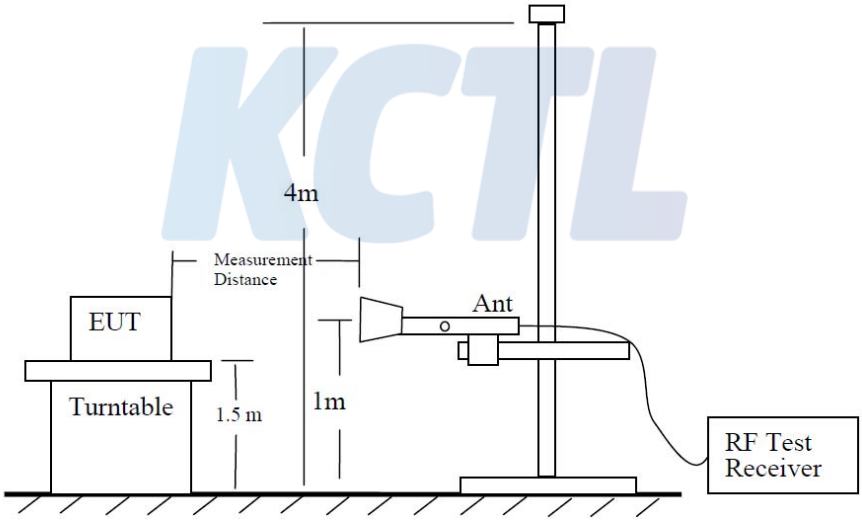
7.8. Radiated Spurious Emissions

Test setup

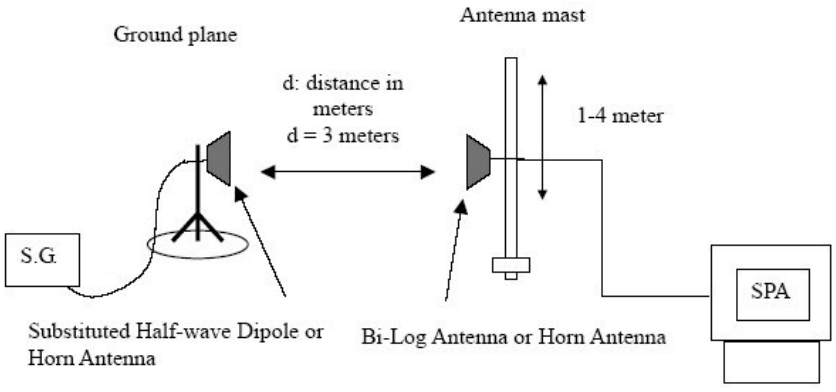
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to the tenth harmonic of the highest fundamental frequency or to 40 ㎓ emissions, whichever is lower.



The diagram below shows the test setup for substituted method.



Limit

According to §22.917(a), §24.238(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($P_{[Watts]}$) ㏈.

According to §27.53(c)(2), on any frequency outside the 776-788 ㎒ band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10log($P_{[Watts]}$) ㏈.
According to §27.53(f), for operations in the 746-758 ㎒, 775-788 ㎒, and 805-806 ㎒ bands, emissions in the band 1559-1610 ㎒ shall be limited to -70 ㏈W/㎒ equivalent isotropically radiated power (EIRP) for wideband signals, and -80 ㏈W EIRP for discrete emissions of less than 700 ㎐ bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

According to §27.53(g), for operations in the 600 ㎒ band and the 698-746 ㎒ band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10log($P_{[Watts]}$) ㏈.

According to §27.53(h), 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 + 10log($P_{[Watts]}$) ㏈.

According to §27.53(m)(4), the minimum permissible attenuation level of any spurious emission is 53 + 10log($P_{[Watts]}$) ㏈.

Test procedure

971168 D01 v03r01 - Section 6.2
ANSI 63.26-2015 – Section 5.5
ANSI/TIA-603-E-2016 - Section 2.2.12

Test settings

1) RBW = 100 ㎑ for below 1 ㎓ and 1 ㎒ for above 1 ㎓.
2) VBW ≥ 3 × RBW.
3) Detector = RMS
4) Trace mode = Max hold
5) Sweep time = Auto couple
6) Number of sweep points ≥ 2 × span / RBW
7) Allow trace to fully stabilize.

For the narrowband spurious settings:

1) RBW = 1 ㎑
2) VBW = 3 ㎑
3) Detector = RMS
4) Trace mode = Max hold
5) Sweep speed slow enough to maintain measurement calibration.

Notes:

1. On a test site, the EUT shall be placed at 80 ㎝ height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The turntable is rotated through 360°, and the receiving antenna scans in order to determine the level of the maximized emission.
4. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
5. The maximum signal level detected by the measuring receiver shall be noted.
6. The EUT was replaced by half-wave dipole (1 ㎓ below) or horn antenna (1 ㎓ above) connected to a signal generator.
7. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
8. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring corrected for the change of input attenuator setting of the measuring receiver.
9. The input level to the substitution antenna shall be recorded as power level in ㏈m, corrected for any change of input attenuator setting of the measuring receiver.
10. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

Test results (Above 1 000 ㎒)

Test mode : LTE Band 12
Frequency(㎒) : 701.5
Channel : 23035
Bandwidth(㎒) : 5

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	1 408.80	V	6.00	5.02	-63.98	-63.00	-13.00	50.00
	2 112.40	H	5.17	6.01	-60.56	-61.40	-13.00	48.40
	2 816.40	V	6.92	6.93	-58.39	-58.40	-13.00	45.40
	3 520.00	V	8.41	7.94	-60.27	-59.80	-13.00	46.80

Test mode : LTE Band 12
Frequency(㎒) : 707.5
Channel : 23095
Bandwidth(㎒) : 5

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	1 415.60	V	6.04	5.03	-63.71	-62.70	-13.00	49.70
	2 122.40	V	5.17	6.02	-60.65	-61.50	-13.00	48.50
	2 830.80	V	6.99	6.95	-60.04	-60.00	-13.00	47.00
	3 537.60	V	8.42	7.97	-59.55	-59.10	-13.00	46.10

Test mode : LTE Band 12
Frequency(㎒) : 713.5
Channel : 23155
Bandwidth(㎒) : 5

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	1 432.40	V	6.15	5.05	-65.60	-64.50	-13.00	51.50
	2 148.80	V	5.19	6.06	-59.13	-60.00	-13.00	47.00
	2 864.40	V	7.15	7.00	-60.95	-60.80	-13.00	47.80
	3 580.80	V	8.43	7.82	-59.71	-59.10	-13.00	46.10

Note.
1. ERP & E.I.R.P(㏈ m)= Substitute Level(㏈) + Antenna gain(㏈i) – Cable Loss(㏈)

Test mode : LTE Band 13
Frequency(㎒) : 779.5
Channel : 23205
Bandwidth(㎒) : 5

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	*1 559.20	V	6.42	5.28	-67.24	-66.10	-50.00	16.10
	2 338.80	V	5.30	6.33	-60.97	-62.00	-13.00	49.00
	3 118.00	V	7.94	7.36	-61.08	-60.50	-13.00	47.50
	3 897.20	V	8.56	8.46	-57.10	-57.00	-13.00	44.00

Test mode : LTE Band 13
Frequency(㎒) : 782.0
Channel : 23230
Bandwidth(㎒) : 5

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	*1 564.40	V	6.41	5.29	-67.02	-65.90	-50.00	15.90
	2 346.40	V	5.31	6.34	-60.17	-61.20	-13.00	48.20
	3 128.40	V	7.95	7.38	-62.07	-61.50	-13.00	48.50
	3 910.80	V	8.56	8.46	-57.10	-57.00	-13.00	44.00

Test mode : LTE Band 13
Frequency(㎒) : 784.5
Channel : 23255
Bandwidth(㎒) : 5

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	*1 569.60	V	6.39	5.29	-64.70	-63.60	-50.00	13.60
	2 353.60	V	5.31	6.34	-60.07	-61.10	-13.00	48.10
	3 138.00	V	7.97	7.39	-60.38	-59.80	-13.00	46.80
	3 922.40	V	8.57	8.48	-57.49	-57.40	-13.00	44.40

Note.
1. Limit Calculation(dBm)= 43 + 10log($P_{[Watts]}$)
   Limit Calculation of wide-band (dBm/㎒) = -70dBW/㎒ (-40 dBm/㎒)
   Limit Calculation of narrow-band (dBm) = -80dBW (-50dBm)
2. ERP & E.I.R.P(dB m)= Substitute Level(dB) + Antenna gain(dBi) – Cable Loss(dB)
3. "*" Narrow-band (1 559 – 1 610 ㎒)

Test mode : LTE Band 25/2
Frequency(㎒) : 1 852.5
Channel : 26065
Bandwidth(㎒) : 5

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	3 705.00	V	8.48	8.21	-56.47	-56.20	-13.00	43.20
	5 557.50	H	10.51	10.34	-57.07	-56.90	-13.00	43.90
	7 410.75	H	11.96	11.73	-53.03	-52.80	-13.00	39.80
	9 262.50	V	13.20	12.99	-51.31	-51.10	-13.00	38.10

Test mode : LTE Band 25/2
Frequency(㎒) : 1 882.5
Channel : 26365
Bandwidth(㎒) : 5

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	3 770.25	V	8.51	8.30	-59.71	-59.50	-13.00	46.50
	5 655.75	V	10.53	10.56	-56.27	-56.30	-13.00	43.30
	7 540.50	V	12.14	11.81	-55.93	-55.60	-13.00	42.60
	9 425.25	V	13.20	13.11	-52.09	-52.00	-13.00	39.00

Test mode : LTE Band 25/2
Frequency(㎒) : 1 912.5
Channel : 26665
Bandwidth(㎒) : 5

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	3 825.00	V	8.53	8.39	-57.74	-57.60	-13.00	44.60
	5 737.50	V	10.55	10.38	-55.77	-55.60	-13.00	42.60
	7 650.75	V	12.25	11.90	-54.55	-54.20	-13.00	41.20
	9 262.50	V	13.20	12.99	-52.21	-52.00	-13.00	39.00

Note.
1. ERP & E.I.R.P(㏈ m)= Substitute Level(㏈) + Antenna gain(㏈i) – Cable Loss(㏈)

Test mode : LTE Band 26/5
Frequency(㎒) : 829.0
Channel : 26840
Bandwidth(㎒) : 10

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	1 668.40	H	6.09	5.35	-65.14	-64.40	-13.00	51.40
	2 502.40	H	5.41	6.53	-59.68	-60.80	-13.00	47.80
	3 336.00	V	8.20	7.68	-60.12	-59.60	-13.00	46.60
	4 170.00	V	8.46	8.78	-56.78	-57.10	-13.00	44.10

Test mode : LTE Band 26/5
Frequency(㎒) : 836.5
Channel : 26915
Bandwidth(㎒) : 10

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	1 683.20	H	6.05	5.36	-65.59	-64.90	-13.00	51.90
	2 524.40	H	5.52	6.57	-58.55	-59.60	-13.00	46.60
	3 366.00	H	8.24	7.72	-61.12	-60.60	-13.00	47.60
	4 207.60	H	8.43	8.87	-57.46	-57.90	-13.00	44.90

Test mode : LTE Band 26/5
Frequency(㎒) : 844.0
Channel : 26990
Bandwidth(㎒) : 10

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	1 688.00	H	6.04	5.36	-66.38	-65.70	-13.00	52.70
	2 532.80	H	5.56	6.57	-59.39	-60.40	-13.00	47.40
	3 376.40	H	8.25	7.73	-61.12	-60.60	-13.00	47.60
	4 220.00	H	8.42	8.88	-56.84	-57.30	-13.00	44.30

Note.
1. ERP & E.I.R.P(㏈m)= Substitute Level(㏈) + Antenna gain(㏈i) – Cable Loss(㏈)

Test mode : LTE Band 41
Frequency(㎒) : 2 501.0
Channel : 39700
Bandwidth(㎒) : 10

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	5 002.50	V	10.20	9.72	-58.48	-58.00	-25.00	33.00
	7 503.00	V	12.10	11.78	-53.12	-52.80	-25.00	27.80
	10 005.00	V	13.00	13.53	-47.77	-48.30	-25.00	23.30
	12 505.50	V	13.20	15.42	-48.18	-50.40	-25.00	25.40

Test mode : LTE Band 41
Frequency(㎒) : 2 593.0
Channel : 40620
Bandwidth(㎒) : 10

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	5 196.00	V	10.32	9.91	-56.91	-56.50	-25.00	31.50
	7 794.75	V	12.39	11.95	-54.54	-54.10	-25.00	29.10
	10 392.75	V	13.00	13.88	-48.82	-49.70	-25.00	24.70
	12 990.75	V	13.40	15.92	-48.48	-51.00	-25.00	26.00

Test mode : LTE Band 41
Frequency(㎒) : 2 685.0
Channel : 41540
Bandwidth(㎒) : 10

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	5 370.75	V	10.42	10.12	-58.90	-58.60	-25.00	33.60
	8 055.00	V	12.66	11.95	-54.01	-53.30	-25.00	28.30
	10 740.75	V	13.05	14.11	-50.44	-51.50	-25.00	26.50
	13 425.75	V	14.08	15.86	-51.92	-53.70	-25.00	28.70

Note.
1. ERP & E.I.R.P(㏈ m)= Substitute Level(㏈) + Antenna gain(㏈i) – Cable Loss(㏈)

Test mode : LTE Band 66/4
Frequency(㎒) : 1 711.5
Channel : 131987
Bandwidth(㎒) : 3

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	3 420.00	H	8.30	7.80	-60.80	-60.30	-13.00	47.30
	5 130.75	H	10.28	9.84	-58.04	-57.60	-13.00	44.60
	6 840.00	H	11.14	11.46	-53.98	-54.30	-13.00	41.30
	8 550.75	H	13.11	12.51	-55.30	-54.70	-13.00	41.70

Test mode : LTE Band 66/4
Frequency(㎒) : 1 745.0
Channel : 132322
Bandwidth(㎒) : 3

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	3 490.50	V	8.39	7.90	-59.19	-58.70	-13.00	45.70
	5 235.00	V	10.34	9.97	-58.87	-58.50	-13.00	45.50
	6 980.25	V	11.28	11.50	-54.98	-55.20	-13.00	42.20
	8 725.50	V	13.15	12.63	-54.42	-53.90	-13.00	40.90

Test mode : LTE Band 66/4
Frequency(㎒) : 1 778.5
Channel : 132657
Bandwidth(㎒) : 3

Mode	Frequency	Pol.	Antenna Gain	Cable loss	Substitute Level	Level	Limit	Margin
	[㎒]	[V/H]	[dBi]	[dB]	[dBm]	[dBm]	[dBm]	[dB]
QPSK	3 554.25	V	8.42	7.80	-60.22	-59.60	-13.00	46.60
	5 331.75	V	10.40	10.08	-59.62	-59.30	-13.00	46.30
	7 108.50	V	11.47	11.43	-53.44	-53.40	-13.00	40.40
	8 885.25	V	13.18	12.68	-51.60	-51.10	-13.00	38.10

Note.
1. ERP & E.I.R.P(㏈m)= Substitute Level(㏈) + Antenna gain(㏈i) – Cable Loss(㏈)

8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSV30	100807	20.07.30
Spectrum Analyzer	AGILENT	N9040B	MY57010132	20.07.31
Vector Signal Generator	R&S	SMBV100A	257566	20.07.16
Signal Generator	R&S	SMR40	100007	21.04.08
Signal Generator	R&S	SMB100A	176206	21.01.21
Wideband Radio Communication Tester	R&S	CMW500	137524	21.05.11*
Wideband Radio Communication Tester	R&S	CMW500	141780	21.04.16
DC Power Supply	AGILENT	E3632A	MY40017108	21.05.11*
Power Divider	AGILENT	11636B	54456	21.01.06
Temp & Humid Chamber	ESPEC CORP.	SH-661	92004048	21.01.03
Biconical VHF-UHF Broadband Antenna	SCHWARZBECK	VUBA9117	275	22.04.09
Bilog Antenna	Teseq GmbH	CBL 6143A	35039	21.05.21*
Horn Antenna	ETS.lindgren	3117	00227509	20.09.25
Horn Antenna	ETS.lindgren	3117	161225	21.05.12*
Horn Antenna	ETS.lindgren	3116	00086632	21.02.17
Horn Antenna	ETS.lindgren	3116	00086635	21.05.12*
High pass Filter	Wainwright Instruments GmbH	WHKX3.0/18G-12SS	44	21.01.21
High pass Filter	Wainwright Instruments GmbH	WHKX1.0/1.5S-10SS	14	21.01.21
Attenuator	Weinschel ENGINEERING	10	AJ1239	21.05.15*
Attenuator	API Inmet	40AH2W-10	12	21.05.12*
Amplifier	SONOMA INSTRUMENT	310N	185799	21.01.21
Amplifier	L-3 Narda-MITEQ	AMF-7D-01001800-22-10P	2031196	21.02.12
Amplifier	L-3 Narda-MITEQ	JS44-18004000-33-8P	2000997	20.08.01
Antenna Mast	MATURO	EAS 1.5	042/8941211	N/A
Antenna Mast	MATURO	EAS 1.5	043/8941211	N/A
Turn Table	MATURO	TT 0.8 PF	041/8941211	N/A

*The equipment was used after finished calibration.

End of test report