

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20425	20525	20625
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	23.12	23.17	23.02
		1	12	23.28	23.37	23.20
		1	24	22.95	23.07	22.91
		12	0	22.11	22.23	22.12
		12	6	22.27	22.38	22.34
		12	13	22.04	22.25	22.29
		25	0	22.06	22.28	22.29
5M	16QAM	1	0	22.56	22.45	22.56
		1	12	22.78	22.86	22.57
		1	24	22.36	22.36	22.52
		12	0	21.26	21.31	21.49
		12	6	21.28	21.43	21.68
		12	13	21.22	21.35	21.61
		25	0	21.13	21.33	21.55
5M	64QAM	1	0	21.58	21.55	21.37
		1	12	21.71	21.77	21.46
		1	24	21.54	21.46	21.21
		12	0	20.22	20.21	20.03
		12	6	20.36	20.43	20.31
		12	13	20.10	20.26	20.21
		25	0	20.20	20.37	20.37

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20415	20525	20635
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	23.32	23.29	23.06
		1	7	23.32	23.35	23.09
		1	14	23.20	23.25	22.95
		8	0	22.24	22.38	22.05
		8	3	22.14	22.40	22.08
		8	7	21.99	22.36	22.11
		15	0	21.73	22.22	22.03
3M	16QAM	1	0	22.37	22.51	22.32
		1	7	22.28	22.52	22.27
		1	14	22.25	22.48	22.44
		8	0	20.99	21.28	21.19
		8	3	21.12	21.46	21.32
		8	7	21.05	21.38	21.34
		15	0	20.97	21.32	21.32
3M	64QAM	1	0	21.54	21.53	21.37
		1	7	21.64	21.66	21.57
		1	14	21.14	21.24	21.19
		8	0	20.09	20.24	20.29
		8	3	20.23	20.42	20.46
		8	7	20.09	20.33	20.31
		15	0	19.99	20.31	20.23

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20407	20525	20643
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	23.24	23.15	23.06
		1	2	23.28	23.34	23.19
		1	5	23.11	23.13	23.04
		3	0	23.18	23.18	23.13
		3	1	23.21	23.25	23.13
		3	3	23.09	23.24	23.22
		6	0	23.06	23.32	23.18
1.4M	16QAM	1	0	22.32	22.45	22.30
		1	2	22.09	22.49	22.22
		1	5	21.99	22.41	22.11
		3	0	21.80	22.34	22.00
		3	1	21.72	22.34	21.99
		3	3	21.63	22.28	22.02
		6	0	20.81	21.44	21.08
1.4M	64QAM	1	0	21.46	21.41	21.34
		1	2	21.30	21.53	21.30
		1	5	21.33	21.43	21.34
		3	0	21.29	21.42	21.35
		3	1	21.36	21.45	21.51
		3	3	21.24	21.45	21.47
		6	0	20.02	20.26	20.21

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26865	26915	26965
		Frequency (MHz)		831.5	836.5	841.5
15M	QPSK	1	0	22.92	23.36	23.44
		1	37	23.54	23.08	23.20
		1	74	22.86	22.82	23.29
		36	0	22.51	22.37	22.15
		36	19	22.26	22.44	22.01
		36	39	21.94	22.19	22.06
		75	0	22.12	22.38	22.06
15M	16QAM	1	0	22.56	22.37	22.58
		1	37	22.90	22.72	22.96
		1	74	22.40	22.09	22.15
		36	0	21.62	21.21	21.39
		36	19	21.02	21.48	21.45
		36	39	21.02	20.98	21.20
		75	0	21.24	21.37	20.99
15M	64QAM	1	0	21.38	21.16	21.53
		1	37	21.59	21.96	21.50
		1	74	21.10	21.26	21.16
		36	0	20.56	20.27	20.34
		36	19	20.02	20.39	19.93
		36	39	20.45	19.92	20.23
		75	0	20.23	20.18	20.46

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26840	26915	26990
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	23.37	23.06	22.89
		1	24	23.51	23.21	23.05
		1	49	23.06	23.16	22.76
		25	0	22.14	21.98	22.22
		25	12	22.58	22.20	22.27
		25	25	22.35	22.38	22.17
		50	0	22.40	22.52	22.16
10M	16QAM	1	0	22.62	22.35	22.47
		1	24	22.60	22.46	22.98
		1	49	22.09	22.64	22.46
		25	0	21.17	21.22	21.39
		25	12	21.33	21.57	21.07
		25	25	21.08	20.93	20.91
		50	0	21.47	21.35	21.11
10M	64QAM	1	0	21.49	21.65	21.11
		1	24	21.51	21.61	21.91
		1	49	21.59	21.58	21.26
		25	0	20.48	20.23	20.39
		25	12	19.93	19.98	20.51
		25	25	20.38	20.13	20.45
		50	0	20.12	20.41	20.29

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26815	26915	27015
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	23.16	23.07	22.95
		1	12	23.32	23.04	23.45
		1	24	23.06	23.29	22.85
		12	0	22.28	22.17	22.14
		12	6	22.31	22.24	22.06
		12	13	22.23	22.12	22.15
		25	0	22.24	22.27	22.32
5M	16QAM	1	0	22.48	22.69	22.78
		1	12	22.70	22.85	22.64
		1	24	22.37	22.24	22.40
		12	0	21.33	21.19	21.60
		12	6	21.31	21.54	21.58
		12	13	21.18	21.22	21.26
		25	0	21.22	21.47	21.05
5M	64QAM	1	0	21.35	21.63	21.53
		1	12	21.67	21.78	21.37
		1	24	21.32	21.15	21.26
		12	0	20.30	20.26	20.30
		12	6	20.23	20.33	20.31
		12	13	20.15	20.07	20.34
		25	0	20.26	19.99	20.11

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26805	26915	27025
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	23.42	22.92	23.29
		1	7	23.15	23.18	23.48
		1	14	23.13	23.01	23.28
		8	0	22.54	22.48	22.16
		8	3	22.10	22.03	22.17
		8	7	22.25	22.00	22.31
		15	0	22.41	22.42	22.32
3M	16QAM	1	0	22.34	22.48	22.19
		1	7	22.92	22.78	22.86
		1	14	22.38	22.66	22.37
		8	0	21.38	21.61	21.07
		8	3	21.45	21.01	21.32
		8	7	21.04	21.16	21.16
		15	0	21.21	21.26	21.28
3M	64QAM	1	0	21.23	21.41	21.15
		1	7	21.56	21.48	21.70
		1	14	21.60	21.61	21.27
		8	0	20.13	20.53	20.18
		8	3	20.53	20.31	20.17
		8	7	20.36	19.93	20.04
		15	0	20.53	20.55	20.55

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26797	26915	27033
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	23.16	23.42	23.11
		1	2	23.05	23.13	23.34
		1	5	23.01	22.81	23.05
		3	0	22.05	22.33	22.21
		3	1	22.51	22.36	22.44
		3	3	22.06	22.40	22.37
		6	0	22.31	22.20	21.97
1.4M	16QAM	1	0	22.51	22.58	22.54
		1	2	22.67	22.64	22.59
		1	5	22.31	22.57	22.51
		3	0	21.59	21.23	21.20
		3	1	21.14	21.20	21.43
		3	3	21.12	21.00	21.32
		6	0	21.40	21.28	21.50
1.4M	64QAM	1	0	21.54	21.29	21.24
		1	2	21.68	21.89	21.50
		1	5	21.23	21.34	21.47
		3	0	20.12	20.01	20.40
		3	1	20.16	20.13	20.33
		3	3	19.94	20.14	20.07
		6	0	20.11	20.48	20.34



### ERP Power (dBm)

Band	GPRS, EDGE 850		
	Channel	128	189
Frequency	824.2	836.4	848.8
GPRS	30.65	30.52	30.32
EDGE	29.60	29.58	29.43

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	23.11	23.03	22.82
		1	24	23.08	23.06	22.94
		1	49	22.71	22.94	22.73
		25	0	21.78	22.06	21.88
		25	12	21.53	21.92	21.69
		25	25	21.46	21.90	21.58
		50	0	21.42	21.98	21.72
10M	16QAM	1	0	22.29	22.26	22.25
		1	24	22.18	22.13	22.11
		1	49	22.05	22.06	22.11
		25	0	20.98	21.04	21.13
		25	12	20.92	21.03	21.09
		25	25	20.71	20.94	21.06
		50	0	20.63	20.91	20.93
10M	64QAM	1	0	21.28	21.26	21.14
		1	24	21.14	21.13	21.01
		1	49	21.02	21.01	20.90
		25	0	19.92	19.99	19.80
		25	12	19.84	20.00	19.90
		25	25	19.69	19.85	19.85
		50	0	19.77	19.91	19.81

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20425	20525	20625
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	22.79	22.84	22.69
		1	12	22.95	23.04	22.87
		1	24	22.62	22.74	22.58
		12	0	21.78	21.90	21.79
		12	6	21.94	22.05	22.01
		12	13	21.71	21.92	21.96
		25	0	21.73	21.95	21.96
5M	16QAM	1	0	22.23	22.12	22.23
		1	12	22.45	22.53	22.24
		1	24	22.03	22.03	22.19
		12	0	20.93	20.98	21.16
		12	6	20.95	21.10	21.35
		12	13	20.89	21.02	21.28
		25	0	20.80	21.00	21.22
5M	64QAM	1	0	21.25	21.22	21.04
		1	12	21.38	21.44	21.13
		1	24	21.21	21.13	20.88
		12	0	19.89	19.88	19.70
		12	6	20.03	20.10	19.98
		12	13	19.77	19.93	19.88
		25	0	19.87	20.04	20.04

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20415	20525	20635
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	22.99	22.96	22.73
		1	7	22.99	23.02	22.76
		1	14	22.87	22.92	22.62
		8	0	21.91	22.05	21.72
		8	3	21.81	22.07	21.75
		8	7	21.66	22.03	21.78
		15	0	21.40	21.89	21.70
3M	16QAM	1	0	22.04	22.18	21.99
		1	7	21.95	22.19	21.94
		1	14	21.92	22.15	22.11
		8	0	20.66	20.95	20.86
		8	3	20.79	21.13	20.99
		8	7	20.72	21.05	21.01
		15	0	20.64	20.99	20.99
3M	64QAM	1	0	21.21	21.20	21.04
		1	7	21.31	21.33	21.24
		1	14	20.81	20.91	20.86
		8	0	19.76	19.91	19.96
		8	3	19.90	20.09	20.13
		8	7	19.76	20.00	19.98
		15	0	19.66	19.98	19.90

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20407	20525	20643
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	22.91	22.82	22.73
		1	2	22.95	23.01	22.86
		1	5	22.78	22.80	22.71
		3	0	22.85	22.85	22.80
		3	1	22.88	22.92	22.80
		3	3	22.76	22.91	22.89
		6	0	22.73	22.99	22.85
1.4M	16QAM	1	0	21.99	22.12	21.97
		1	2	21.76	22.16	21.89
		1	5	21.66	22.08	21.78
		3	0	21.47	22.01	21.67
		3	1	21.39	22.01	21.66
		3	3	21.30	21.95	21.69
		6	0	20.48	21.11	20.75
1.4M	64QAM	1	0	21.13	21.08	21.01
		1	2	20.97	21.20	20.97
		1	5	21.00	21.10	21.01
		3	0	20.96	21.09	21.02
		3	1	21.03	21.12	21.18
		3	3	20.91	21.12	21.14
		6	0	19.69	19.93	19.88

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26865	26915	26965
		Frequency (MHz)		831.5	836.5	841.5
15M	QPSK	1	0	22.59	23.03	23.11
		1	37	23.21	22.75	22.87
		1	74	22.53	22.49	22.96
		36	0	22.18	22.04	21.82
		36	19	21.93	22.11	21.68
		36	39	21.61	21.86	21.73
		75	0	21.79	22.05	21.73
15M	16QAM	1	0	22.23	22.04	22.25
		1	37	22.57	22.39	22.63
		1	74	22.07	21.76	21.82
		36	0	21.29	20.88	21.06
		36	19	20.69	21.15	21.12
		36	39	20.69	20.65	20.87
		75	0	20.91	21.04	20.66
15M	64QAM	1	0	21.05	20.83	21.20
		1	37	21.26	21.63	21.17
		1	74	20.77	20.93	20.83
		36	0	20.23	19.94	20.01
		36	19	19.69	20.06	19.60
		36	39	20.12	19.59	19.90
		75	0	19.90	19.85	20.13

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26840	26915	26990
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	23.04	22.73	22.56
		1	24	23.18	22.88	22.72
		1	49	22.73	22.83	22.43
		25	0	21.81	21.65	21.89
		25	12	22.25	21.87	21.94
		25	25	22.02	22.05	21.84
		50	0	22.07	22.19	21.83
10M	16QAM	1	0	22.29	22.02	22.14
		1	24	22.27	22.13	22.65
		1	49	21.76	22.31	22.13
		25	0	20.84	20.89	21.06
		25	12	21.00	21.24	20.74
		25	25	20.75	20.60	20.58
		50	0	21.14	21.02	20.78
10M	64QAM	1	0	21.16	21.32	20.78
		1	24	21.18	21.28	21.58
		1	49	21.26	21.25	20.93
		25	0	20.15	19.90	20.06
		25	12	19.60	19.65	20.18
		25	25	20.05	19.80	20.12
		50	0	19.79	20.08	19.96

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26815	26915	27015
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	22.83	22.74	22.62
		1	12	22.99	22.71	23.12
		1	24	22.73	22.96	22.52
		12	0	21.95	21.84	21.81
		12	6	21.98	21.91	21.73
		12	13	21.90	21.79	21.82
		25	0	21.91	21.94	21.99
5M	16QAM	1	0	22.15	22.36	22.45
		1	12	22.37	22.52	22.31
		1	24	22.04	21.91	22.07
		12	0	21.00	20.86	21.27
		12	6	20.98	21.21	21.25
		12	13	20.85	20.89	20.93
		25	0	20.89	21.14	20.72
5M	64QAM	1	0	21.02	21.30	21.20
		1	12	21.34	21.45	21.04
		1	24	20.99	20.82	20.93
		12	0	19.97	19.93	19.97
		12	6	19.90	20.00	19.98
		12	13	19.82	19.74	20.01
		25	0	19.93	19.66	19.78

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15



LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26805	26915	27025
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	23.09	22.59	22.96
		1	7	22.82	22.85	23.15
		1	14	22.80	22.68	22.95
		8	0	22.21	22.15	21.83
		8	3	21.77	21.70	21.84
		8	7	21.92	21.67	21.98
		15	0	22.08	22.09	21.99
3M	16QAM	1	0	22.01	22.15	21.86
		1	7	22.59	22.45	22.53
		1	14	22.05	22.33	22.04
		8	0	21.05	21.28	20.74
		8	3	21.12	20.68	20.99
		8	7	20.71	20.83	20.83
		15	0	20.88	20.93	20.95
3M	64QAM	1	0	20.90	21.08	20.82
		1	7	21.23	21.15	21.37
		1	14	21.27	21.28	20.94
		8	0	19.80	20.20	19.85
		8	3	20.20	19.98	19.84
		8	7	20.03	19.60	19.71
		15	0	20.20	20.22	20.22

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26797	26915	27033
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	22.83	23.09	22.78
		1	2	22.72	22.80	23.01
		1	5	22.68	22.48	22.72
		3	0	21.72	22.00	21.88
		3	1	22.18	22.03	22.11
		3	3	21.73	22.07	22.04
		6	0	21.98	21.87	21.64
1.4M	16QAM	1	0	22.18	22.25	22.21
		1	2	22.34	22.31	22.26
		1	5	21.98	22.24	22.18
		3	0	21.26	20.90	20.87
		3	1	20.81	20.87	21.10
		3	3	20.79	20.67	20.99
		6	0	21.07	20.95	21.17
1.4M	64QAM	1	0	21.21	20.96	20.91
		1	2	21.35	21.56	21.17
		1	5	20.90	21.01	21.14
		3	0	19.79	19.68	20.07
		3	1	19.83	19.80	20.00
		3	3	19.61	19.81	19.74
		6	0	19.78	20.15	20.01

\*ERP = Conducted + antenna gain (1.82dBi) - 2.15

## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

N/A

### 4.2.2 Test Procedure

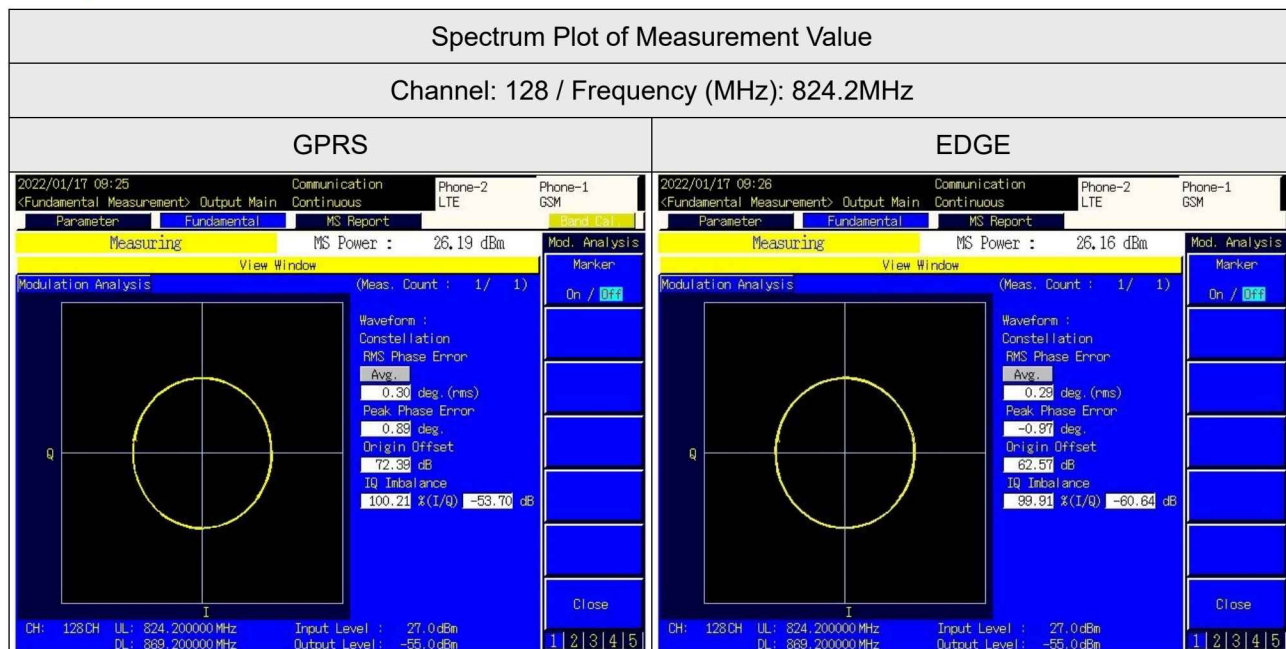
Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

### 4.2.3 Test Setup



### 4.2.4 Test Results

#### GPRS, EDGE

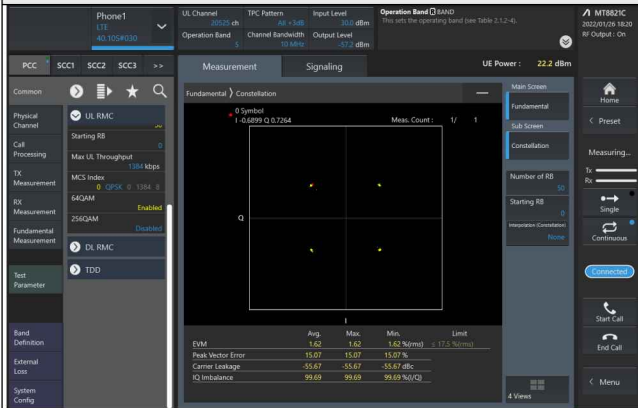


LTE Band 5

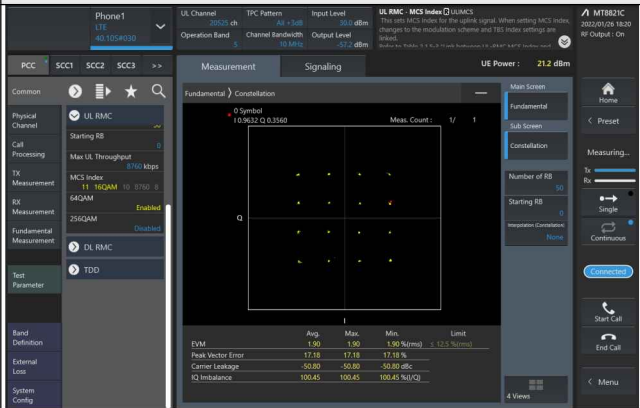
Spectrum Plot of Measurement Value

Channel: 20525 / Frequency (MHz): 836.5MHz

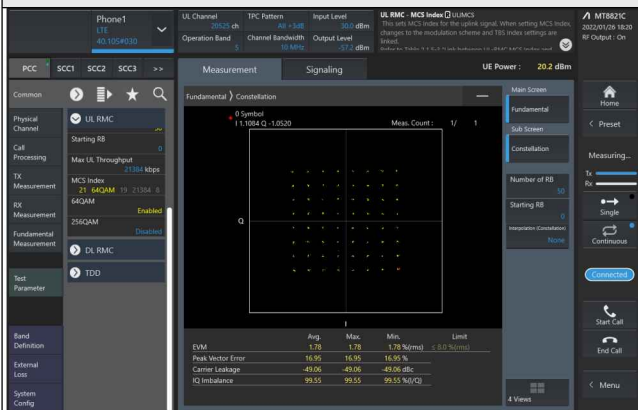
QPSK



16QAM



64QAM

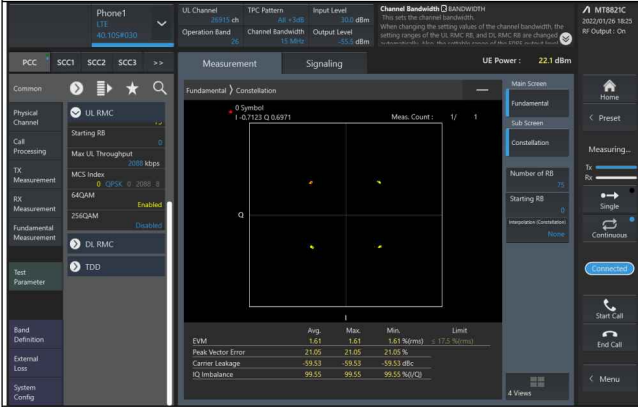


LTE Band 26

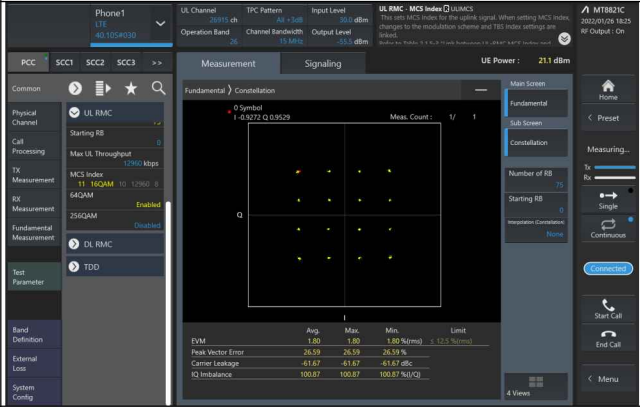
Spectrum Plot of Measurement Value

Channel: 26915 / Frequency (MHz): 836.5MHz

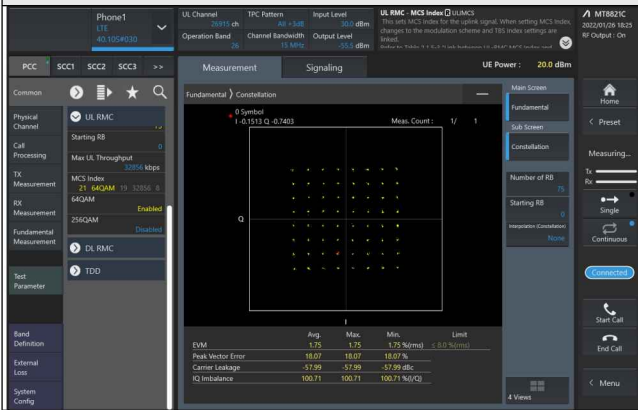
QPSK



16QAM



64QAM



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

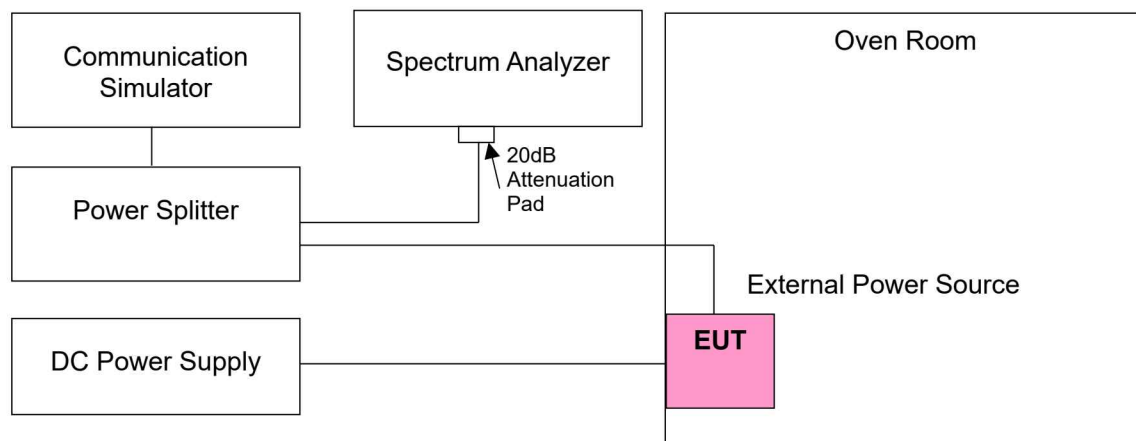
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

#### 4.3.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5$  °C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

Note: The frequency error was recorded frequency error from the communication simulator.

#### 4.3.3 Test Setup



#### 4.3.4 Test Results

##### Frequency Error vs. Voltage

Voltage (Vdc)	GPRS			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	824.200003	0.004	848.800001	0.001
3.4	824.200001	0.001	848.800001	0.001
4.6	824.200002	0.002	848.800004	0.005

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

##### Frequency Error vs. Temperature

Temp. (°C)	GPRS			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-40	824.200001	0.001	848.800001	0.001
-30	824.200003	0.004	848.800003	0.004
-20	824.200001	0.001	848.800002	0.002
-10	824.200002	0.002	848.800004	0.005
0	824.200001	0.001	848.800002	0.002
10	824.200002	0.002	848.800003	0.004
20	824.199998	-0.002	848.799996	-0.005
30	824.199996	-0.005	848.799999	-0.001
40	824.199998	-0.002	848.799996	-0.005
50	824.199998	-0.002	848.799997	-0.004
60	824.199998	-0.002	848.799997	-0.004
70	824.199999	-0.001	848.799997	-0.004
80	824.199997	-0.004	848.799997	-0.004
85	824.199996	-0.005	848.799998	-0.002



**Frequency Error vs. Voltage**

Voltage (Vdc)	EDGE			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.0	824.200002	0.002	848.800001	0.001
3.4	824.200004	0.005	848.800004	0.005
4.6	824.200003	0.004	848.800004	0.005

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.6Vdc.

**Frequency Error vs. Temperature**

Temp. (°C)	EDGE			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-40	824.200002	0.002	848.800001	0.001
-30	824.200003	0.004	848.800002	0.002
-20	824.200004	0.005	848.800003	0.004
-10	824.200003	0.004	848.800003	0.004
0	824.200001	0.001	848.800001	0.001
10	824.200003	0.004	848.800003	0.004
20	824.199997	-0.004	848.799997	-0.004
30	824.199996	-0.005	848.799997	-0.004
40	824.199998	-0.002	848.799997	-0.004
50	824.199999	-0.001	848.799999	-0.001
60	824.199997	-0.004	848.799996	-0.005
70	824.199996	-0.005	848.799998	-0.002
80	824.199996	-0.005	848.799998	-0.002
85	824.199999	-0.001	848.799996	-0.005