

Adjustment Description**Required Test Instrument**

Radio communication test set	1 set
Scanner	1 set
3A/10V power supply	1 set
Digital voltmeter	1 set
3A Ammeter	1 set

Preparation

Open the programming software in PC and operate as the following instructions.

1. Programme Download:

Connect the radio with the computer via programming cable. And then turn the power on. LED glows red. Click “Programme” → “Download” on the interface to choose programme. Click “Open” to begin download and LED flashes red. When download is complete, click “End” and turn the power off. And then disconnect the programming cable.

2. Initialization:

Turn the power on while holding down [PTT] and [A] key simultaneously. LED glows orange and a BEEP sounds. Radio channel frequency and setting data are initialized.

3. Destination Set:

Connect the radio with the computer via programming cable. And then turn the power on. LED glows red. Set “frequency range” on the programming software interface. And then click “Programme” → “Writing”.

4. Factory Setting

The compander is open. Squelch level 2. Adjustment mode is disabled.

Adjustment**VCO**

Item	Condition	Measurement		Adjustment		Specification/ Remarks
		Test Instrument	Terminal	Part	Method	
1. Setting	Power supply 7.5V					
2. Transmit VCO lock voltage	1. Turn to CH1. Press PTT. TX High	Digital Voltmeter	CV	TC350 TC351	Check	3.3V±0.2V
	2. Press PTT again. TX Low				Check	1.0V±0.4V
3. Receiving VCO lock voltage	1. Turn to CH2. Press PTT. TX High				Check	3.1V±0.2V
	2. Press PTT again. TX Low				Check	1.0V±0.4V

Transmitter

Item		Condition	Measurement		Adjustment		Specification
			Test Instrument	Terminal	Part	Method	Remarks
1. Transmit frequency		Turn to CH3. Press PTT.	Radio Communication Test Set	ANT	[B] (up) [C] (down)	Adjust to center frequency. Press [A] to save.	Error ≤ 150Hz
2. Power	High	1. Turn to CH4. Press PTT. Center frequency	Radio Communication Test Set Ammeter	ANT	[B] (up) [C] (down)	Adjust to 4.0 W, $I \leq 1.6A$. Press [A] to save.	32.0+/-1.0dBm
		2. Press PTT. Frequency changes to low frequency.				Adjust to 4.0 W, $I \leq 1.6A$. Press [A] to save.	32.0+/-1.0dBm
		3. Press PTT again. Frequency changes to high frequency.				Adjust to 4.0 W, $I \leq 1.6A$. Press [A] to save.	
	Low	1. Turn to CH5. Press PTT. Center frequency.				Adjust to 1.0 W, $I \leq 0.7A$. Press [A] to save.	30.0+/-1.0dBm
		2. Press PTT. Frequency changes to low frequency.				Adjust to 1.0 W, $I \leq 0.7A$. Press [A] to save.	
		3. Press PTT again. Frequency changes to high frequency.				Adjust to 1.0 W, $I \leq 0.7A$. Press [A] to save.	
3. CDCSS balance	Wideband	1. Turn to CH6. Press PTT. The radio operates with wideband. Center frequency.	Radio Communication Test Set LPF: 15KHz	ANT	[B] (up) [C] (down)	Rectify the waveform to square wave. Press [A] to save.	
	Narrowband	2. Press PTT. Frequency changes to low frequency.					
		3. Press PTT again. Frequency changes to high frequency.					

		4. Press [A] for two seconds. LED flashes indicating that the radio operates with narrowband. Center frequency. Adjust narrowband following the above steps.					
4. Maximum frequency deviation	Wideband	1. Turn to CH7. Press PTT. The radio operates with wideband. Center frequency.	Radio Communication Test Set LPF: 15KHz AF: 1KHz 1V	ANT MIC Jack	[B] (up) [C] (down)	Adjust it to 4.0KHz±100Hz. Press [A] to save.	
	Narrowband	2. Press [A] for two seconds. LED flashes indicating that the radio operates with narrowband. Center frequency.				Adjust it to 2.0KHz±100Hz. Press [A] to save.	
5. MIC Sensitivity		Turn to CH8. Press PTT. The radio operates with wideband. Center frequency.	Radio Communication Test Set LPF: 15KHz AF: 1KHz 24mV	ANT MIC Jack	[B] (up) [C] (down)	Check frequency deviation 2.9±0.1KHz. Press [A] to save.	Adjust as wideband.
6. CTCSS deviation	Wideband	1. Turn to CH9. Press PTT. The radio operates with wideband. Center frequency. 2. Press PTT. Frequency changes to low frequency. 3. Press PTT again, frequency changes to high frequency.	Radio Communication Test Set LPF: 3KHz	ANT	[B] (up) [C] (down)	Adjust deviation to 0.70KHz ± 50Hz. Press [A] to save.	
	Narrowband	4. Press [A] for two seconds. LED flashes indicating that the radio operates with narrowband. High frequency.				Adjust deviation to 0.35KHz ± 50Hz. Press [A] to save.	

		5. Press PTT. Frequency changes to center frequency.					
		6. Press PTT. Frequency changes to low frequency.					
7. CDCSS deviation	Wideband	Turn to CH10. See CTCSS deviation adjustment.	Radio Communication Test Set LPF: 3KHz	ANT	[B] (up) [C] (down)	Adjust deviation to 0.70KHz ± 50Hz. Press [A] to save.	
	Narrowband	See CTCSS deviation adjustment.				Adjust deviation to 0.35KHz ± 50Hz. Press [A] to save.	
8.FFSK deviation	Wideband	Turn to CH11. See CTCSS deviation adjustment.	Radio Communication Test Set LPF: 3KHz	ANT	[B] (up) [C] (down)	Adjust deviation to 3KHz ± 0.1KHz. Press [A] to save.	
	Narrowband	See CTCSS deviation adjustment.				Adjust deviation to 1.45KHz ± 0.05KHz Press [A] to save.	
9.TONE deviation	Wideband	Turn to CH12. See CTCSS deviation adjustment.	Radio Communication Test Set LPF: 3KHz	ANT	[B] (up) [C] (down)	Adjust it to 3KHz ± 0.1KHz. Press [A] to save.	
	Narrowband	See CTCSS deviation adjustment.				Adjust it to 1.45KHz ± 0.05KHz Press [A] to save.	
10. Low battery alert level		Turn to CH15. Adjust voltage to 6.2V.	Digital Voltmeter			Press [A] to save.	
11.VOX Sensitivity		Turn to CH16.	Radio Communication Test Set LPF:15KHz AF:1KHz 3mV	ANT MIC Jack		Press [A] to save.	

Receiver

Item		Condition	Measurement		Adjustment		Specification/
			Test Instrument	Terminal	Part	Method	Remarks
Sensitivity		1. Turn to CH13. Press PTT. Center frequency.	Scanner	ANT T1	[B] (up) [C] (down)	Adjust the waveform. Press [A] to save.	
		2. Press PTT. Frequency changes to low frequency.					
		3. Press PTT. Frequency changes to high frequency.					
Squelch	Wideband	1. Turn to CH14. Press PTT. The radio operates with wideband. Center frequency.	Radio Communication Test Set SSG output: -118dBm MOD: 1KHz DEV: ±3KHz FILTER: 0.3-3.4KHz	ANT Speaker Jack		Adjust radio communication test set. SSG output: SINAD: 12dB Press [A] to save.	
		2. Press PTT. Frequency changes to low frequency.					
		3. Press PTT. Frequency changes to high frequency.					
	Narrowband	4. Press [A] for two seconds. LED flashes indicating that the radio operates with narrowband. High frequency.	Radio Communication Test Set SSG output: -118dBm MOD:1KHz DEV:±1.5KHz FILTER: 0.3-3.4KHz			Adjust radio communication test set. SSG output: SINAD: 12dB Press [A] to save.	
		5. Press PTT. Frequency changes to center frequency.					
		6. Press PTT. Frequency changes to low frequency.					

GSM/WCDMA/LTE TEST

Measurement Procedure:

GSMWCDMA/LTE

1.Connect EUT with CMU200(E5515C)/CMW500/MT8000A, through RF cable. Make a call from CMU200(E5515C)/CMW500/MT8000A;

2.Measure the Output Power Average value;

3.Remarks: All Output Power are tested in Average Value specification.

For WIFI/BT

1: Connect to Power meter (NRVD) through RF cable and let the EUT Continuously transmit

2: Measure the Output Power Average value

Manufacturing tolerance

1.1. GSM Conducted Power

Band GSM850	Burst-Averaged output Power (dBm)				Factor	Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	128	189	251		Tune-up	128	189	251
Frequency (MHz)		824.2	836.4	848.8			824.2	836.4	848.8
GSM (GMSK)	33.00	32.68	32.69	32.64	/	/	/	/	/
GPRS(GMSK,1 Tx slot)	33.00	32.52	32.55	32.54	-9.03	23.97	23.49	23.52	23.51
GPRS(GMSK,2 Tx slot)	31.50	31.01	31.02	30.99	-6.02	25.48	24.99	25.00	24.97
GPRS(GMSK,3 Tx slot)	30.00	29.47	29.52	29.45	-4.26	25.74	25.21	25.26	25.19
GPRS(GMSK,4 Tx slot)	28.50	27.98	28.02	27.95	-3.01	25.49	24.97	25.01	24.94
GPRS(EDGE,1 Tx slot)	26.50	25.97	26.02	25.93	-9.03	17.47	16.94	16.99	16.90
GPRS(EDGE,2 Tx slot)	24.50	24.46	24.48	24.44	-6.02	18.48	18.44	18.46	18.42
GPRS(EDGE,3 Tx slot)	23.50	23.00	23.02	22.98	-4.26	19.24	18.74	18.76	18.72
GPRS(EDGE,4 Tx slot)	22.00	21.47	21.53	21.47	-3.01	18.99	18.46	18.52	18.46

Band GSM1900	Burst-Averaged output Power (dBm)				Factor	Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	512	661	810		Tune-up	512	661	810
Frequency (MHz)		1850.2	1880	1909.8			1850.2	1880	1909.8
GSM (GMSK)	30.00	29.65	29.70	29.67	/	/	/	/	/
GPRS(GMSK,1 Tx slot)	30.00	29.51	29.54	29.52	-9.03	20.97	20.48	20.51	20.49
GPRS(GMSK,2 Tx slot)	28.00	27.97	27.98	27.94	-6.02	21.98	21.95	21.96	21.92
GPRS(GMSK,3 Tx slot)	26.50	26.47	26.49	26.42	-4.26	22.24	22.21	22.23	22.16
GPRS(GMSK,4 Tx slot)	25.50	24.96	25.01	24.95	-3.01	22.49	21.95	22.00	21.94
GPRS(EDGE,1 Tx slot)	26.00	25.48	25.50	25.43	-9.03	16.97	16.45	16.47	16.40
GPRS(EDGE,2 Tx slot)	24.50	23.97	24.02	23.95	-6.02	18.48	17.95	18.00	17.93
GPRS(EDGE,3 Tx slot)	23.00	22.49	22.51	22.43	-4.26	18.74	18.23	18.25	18.17
GPRS(EDGE,4 Tx slot)	21.50	20.95	21.02	20.92	-3.01	18.49	17.94	18.01	17.91

WCDMA Band II	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	9262	9400	9538
Frequency (MHz)		1852.4	1880	1907.6
RMC12.2K	23.50	23.34	23.28	23.22
HSDPA Sub 1	23.00	22.64	22.79	22.61
HSDPA Sub 2	23.00	22.64	22.64	22.56
HSDPA Sub 3	23.00	22.62	22.44	22.57
HSDPA Sub 4	22.50	22.41	22.48	22.40
HSUPA Sub 1	23.00	22.53	22.61	22.62
HSUPA Sub 2	23.00	22.58	22.64	22.24
HSUPA Sub 3	23.00	22.60	22.63	22.51
HSUPA Sub 4	22.50	22.32	22.31	22.46
HSUPA Sub 5	22.00	21.50	21.57	21.51

WCDMA Band IV	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	1312	1413	1513
Frequency (MHz)		1712.4	1732.6	1752.6
RMC12.2K	23.50	23.04	23.16	23.33
HSDPA Sub 1	23.00	22.48	22.73	22.45
HSDPA Sub 2	23.00	22.68	22.62	22.48
HSDPA Sub 3	23.00	22.66	22.83	22.43
HSDPA Sub 4	23.00	22.48	22.52	22.71
HSUPA Sub 1	23.00	22.38	22.49	22.61
HSUPA Sub 2	23.00	22.35	22.86	22.65
HSUPA Sub 3	23.00	22.46	22.56	22.55
HSUPA Sub 4	23.00	22.54	22.60	22.60
HSUPA Sub 5	22.00	21.21	21.61	21.43

WCDMA Band V	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	4132	4182	4233
Frequency (MHz)		826.4	836.4	846.6
RMC12.2K	23.00	22.69	22.91	22.62
HSDPA Sub 1	23.00	22.53	22.77	22.68
HSDPA Sub 2	23.00	22.64	22.74	22.65
HSDPA Sub 3	23.00	22.59	22.71	22.57
HSDPA Sub 4	23.00	22.60	22.61	22.71
HSUPA Sub 1	23.00	22.56	22.57	22.41
HSUPA Sub 2	23.00	22.50	22.76	22.65
HSUPA Sub 3	23.00	22.52	22.51	22.57
HSUPA Sub 4	22.00	21.52	21.68	21.54
HSUPA Sub 5	22.00	21.69	21.01	21.64

LTE output list

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18607/1850.7	18900/1880	19193/1909.3
LTE Band 2	1.4MHz	QPSK	1	0	24/22/23	23.01	21.50	22.54
			1	2	24/22/23	23.01	21.46	22.53
			1	5	24/22/23	23.11	21.65	22.63
			3	0	23.50	23.10	21.59	22.74
			3	1	23.50	23.04	21.63	22.62
			3	2	23.50	22.95	21.70	22.67
		16QAM	6	0	22.50	22.08	20.69	21.71
			1	0	23.00	21.51	21.22	21.99
			1	2	23.00	21.48	21.31	22.55
			1	5	23.00	22.37	21.58	22.50
			3	0	23/21/22	22.17	20.61	21.58
			3	1	23/21/22	22.21	20.60	21.36
			3	2	23/21/22	22.15	20.49	21.43
			6	0	21.50	21.28	19.90	20.89
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18615/1851.5	18900/1880	19185/1908.5
LTE Band 2	3MHz	QPSK	1	0	23.00	21.21	21.51	22.55
			1	7	23.00	21.22	21.67	22.58
			1	14	23.00	21.23	21.57	22.54
			8	0	22.00	20.29	20.65	21.67
			8	4	22.00	20.29	20.65	21.67
			8	7	22.00	20.36	20.70	21.63
			15	0	22.00	20.29	20.68	21.65
		16QAM	1	0	22.00	20.46	20.72	21.71
			1	7	22.00	20.28	20.85	21.78
			1	14	22.00	20.45	20.82	21.71
			8	0	21.00	19.62	19.98	20.95
			8	4	21.00	19.62	19.98	20.94
			8	7	21.00	19.69	20.03	20.90
			15	0	21.00	19.54	19.90	20.85
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18625/1852.5	18900/1880	19175/1907.5

LTE Band 2	5MHz	QPSK	1	0	23.00	21.36	21.73	22.68
			1	12	23.00	21.44	21.82	22.75
			1	24	23.00	21.40	21.98	22.78
			12	0	22.00	20.43	20.75	21.79
			12	6	22.00	20.39	20.76	21.84
			12	11	22.00	20.38	20.83	21.86
			25	0	22.00	20.35	20.71	21.84
		16QAM	1	0	21.50	20.07	20.32	21.33
			1	12	21.50	19.99	20.39	21.40
			1	24	21.50	20.01	20.44	21.33
			12	0	21.00	19.55	19.93	20.88
			12	6	21.00	19.56	19.82	20.91
			12	11	21.00	19.47	19.99	20.93
			25	0	21.00	19.66	20.01	20.93
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18650/1855	18900/1880	19150/1905
LTE Band 2	10MHz	QPSK	1	0	23.00	21.34	21.51	22.28
			1	24	23.00	21.31	21.64	22.53
			1	49	23.00	21.39	21.81	22.65
			25	0	22.00	20.45	20.64	21.62
			25	12	22.00	20.45	20.64	21.50
			25	24	22.00	20.46	20.75	21.83
			50	0	22.00	20.46	20.76	21.72
		16QAM	1	0	22.00	20.63	20.99	21.55
			1	24	22.00	20.59	21.09	21.78
			1	49	22.00	20.60	21.15	21.88
			25	0	21.00	19.48	19.83	20.65
			25	12	21.00	19.48	19.83	20.66
			25	24	21.00	19.50	19.98	20.89
			50	0	21.00	19.52	19.90	20.83
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18675/1857.5	18900/1880	19125/1902.5
LTE Band 2	15MHz	QPSK	1	0	23.00	21.44	21.48	22.26
			1	37	23.00	21.35	21.72	22.43
			1	74	23.00	21.31	21.96	22.67
			36	0	22.00	20.46	20.85	21.65
			36	18	22.00	20.46	20.85	21.65
			36	37	22.00	20.45	20.85	21.62
			75	0	22.00	20.45	20.85	21.62
		16QAM	1	0	22.00	20.55	20.89	21.43
			1	37	22.00	20.56	20.80	21.69
			1	74	22.00	20.65	21.11	21.86
			36	0	22.00	20.46	20.85	21.65

			36	18	22.00	20.45	20.85	21.65
			36	37	22.00	20.45	20.85	21.63
			75	0	21.00	19.62	20.00	20.72
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18700/1860	18900/1880	19100/1900
LTE Band 2	20MHz	QPSK	1	0	23.00	21.84	21.68	22.26
			1	49	23.00	21.91	21.89	22.52
			1	99	23.00	21.36	21.98	22.88
			50	0	22.00	20.39	20.70	21.29
			50	24	22.00	20.55	20.70	21.43
			50	49	22.00	20.40	20.95	21.66
			100	0	22.00	20.53	20.84	21.55
		16QAM	1	0	21/21/22	20.59	20.89	21.53
			1	49	21/22/22	20.36	21.01	21.78
			1	99	21/22/23	20.44	21.31	22.05
			50	0	21.00	19.71	19.90	20.60
			50	24	21.00	19.71	19.90	20.60
			50	49	21.00	19.72	20.14	20.92
			100	0	21.00	19.62	19.97	20.73

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		19957/1710.7	20175/1732.5	20393/1754.3
LTE Band 4	1.4MHz	QPSK	1	0	21.50	20.15	20.82	21.21
			1	2	21.50	20.09	20.62	21.24
			1	5	21.50	20.22	20.65	21.25
			3	0	21.50	20.39	20.64	21.41
			3	1	21.50	20.38	20.43	21.42
			3	2	21.50	20.38	20.62	21.40
			6	0	21.00	19.54	19.87	20.50
		16QAM	1	0	21.00	19.86	19.37	20.72
			1	2	21.00	19.91	19.34	20.77
			1	5	21.00	20.47	20.09	20.86
			3	0	20.50	19.45	20.07	20.42
			3	1	20.50	19.45	19.66	20.38
			3	2	20.50	19.27	19.73	20.28
			6	0	20.00	19.11	19.38	19.86
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offs		19965/1711.5	20175/1732.5	20385/1753.5

			e	et				
LTE Band 4	3MHz	QPSK	1	0	23.00	22.57	22.49	22.45
			1	7	23.00	22.51	22.56	22.49
			1	14	23.00	22.48	22.48	22.43
			8	0	22.00	21.83	21.76	21.73
			8	4	22.00	21.83	21.75	21.75
			8	7	22.00	21.78	21.77	21.79
			15	0	22.00	21.78	21.71	21.73
		16QAM	1	0	22.50	21.87	21.20	22.00
			1	7	22.50	21.87	21.18	22.20
			1	14	22.50	21.93	21.20	22.19
			8	0	21.50	21.25	21.26	21.18
			8	4	21.50	21.25	21.26	21.19
			8	7	21.50	21.31	21.30	21.10
			15	0	21.50	21.14	20.96	21.09
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		19975/1712.5	20175/1732.5	20375/1752.5
LTE Band 4	5MHz	QPSK	1	0	23.00	22.55	22.45	22.53
			1	12	23.00	22.52	22.41	22.56
			1	24	23.00	22.60	22.73	22.56
			12	0	22.00	21.85	21.88	21.84
			12	6	22.00	21.85	21.80	21.85
			12	11	22.00	21.85	21.83	21.86
			25	0	22.00	21.83	21.82	21.81
		16QAM	1	0	22.50	21.45	22.23	21.45
			1	12	22.50	21.43	21.78	21.60
			1	24	22.50	21.36	21.79	21.48
			12	0	21.50	21.11	21.14	20.96
			12	6	21.50	21.11	21.21	21.04
			12	11	21.50	21.09	21.23	21.08
			25	0	21.50	21.19	21.00	21.14
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20000/1715	20175/1732.5	20350/1750
LTE Band 4	10MHz	QPSK	1	0	23.00	22.53	22.70	22.34
			1	24	23.00	22.45	22.64	22.30
			1	49	23.00	22.52	22.51	22.37
			25	0	22.00	21.76	21.84	21.72
			25	12	22.00	21.77	21.83	21.73
			25	24	22.00	21.72	21.80	21.79
			50	0	22.00	21.82	21.78	21.78
		16QAM	1	0	22.50	21.95	21.98	22.36
			1	24	22.50	21.86	21.16	22.37

			1	49	22.50	21.92	21.12	22.42
			25	0	21.50	21.03	21.28	21.16
			25	12	21.50	21.03	21.27	21.16
			25	24	21.50	20.99	21.21	21.10
			50	0	21.50	21.04	21.12	21.10
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20025/1717.5	20175/1732.5	20325/1747.5
LTE Band 4	15MHz	QPSK	1	0	23.00	22.53	22.13	22.35
			1	37	23.00	22.46	22.10	22.27
			1	74	23.00	22.47	22.78	22.48
			36	0	22.00	21.74	21.75	21.80
			36	18	22.00	21.74	21.73	21.81
			36	37	22.00	21.84	21.73	21.82
			75	0	22.00	21.83	21.72	21.73
		16QAM	1	0	22.50	21.94	21.90	22.20
			1	37	22.50	21.86	22.14	21.94
			1	74	22.50	21.86	22.10	22.03
			36	0	22.00	21.74	21.74	21.81
			36	18	22.00	21.73	21.73	21.81
			36	37	22.00	21.83	21.72	21.82
			75	0	21.50	21.05	21.20	21.06
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20050/1720	20175/1732.5	20300/1745
LTE Band 4	20MHz	QPSK	1	0	23.00	22.54	22.59	22.69
			1	49	23.00	22.46	22.54	22.65
			1	99	23.00	22.90	22.56	22.48
			50	0	22.00	21.85	21.85	21.80
			50	24	22.00	21.86	21.84	21.79
			50	49	22.00	21.78	21.85	21.86
			100	0	22.00	21.82	21.81	21.89
		16QAM	1	0	23.00	21.77	22.57	21.46
			1	49	23.00	21.98	22.53	22.00
			1	99	23.00	21.95	22.39	21.89
			50	0	21.50	21.21	21.20	21.23
			50	24	21.50	21.22	21.20	21.13
			50	49	21.50	21.16	21.16	21.16
			100	0	21.50	21.19	21.25	21.10

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20407/824.7	20525/836.5	20643/848.3

LTE Band 5	1.4MHz	QPSK	1	0	24.00	23.51	23.48	23.21
			1	2	24.00	23.57	23.30	23.07
			1	5	24.00	23.56	23.73	22.75
			3	0	24.00	23.52	23.51	23.24
			3	1	24.00	23.61	23.39	23.23
			3	2	24.00	23.60	23.36	22.96
			6	0	24.00	23.60	22.50	22.56
		16QAM	1	0	24.00	23.59	22.30	23.53
			1	2	24.00	23.56	23.14	23.22
			1	5	24.00	23.52	23.25	22.64
			3	0	24.00	23.54	23.00	22.55
			3	1	24.00	23.61	22.88	22.54
			3	2	24.00	23.60	22.83	22.61
			6	0	24.00	23.54	22.29	22.11
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20415/825.5	20525/836.5	20635/847.5
LTE Band 5	3MHz	QPSK	1	0	23.50	23.20	23.17	23.15
			1	7	23.50	22.82	23.27	22.98
			1	14	23.50	23.04	23.29	22.58
			8	0	22.50	22.44	22.34	22.39
			8	4	22.50	22.46	22.34	22.40
			8	7	22.50	22.37	22.27	22.18
			15	0	22.50	22.27	22.37	22.34
		16QAM	1	0	24.00	22.91	22.20	23.58
			1	7	24.00	22.47	22.17	23.32
			1	14	24.00	22.40	22.26	22.67
			8	0	22.50	22.11	21.93	22.01
			8	4	22.50	22.02	22.09	21.94
			8	7	22.50	22.03	22.04	21.88
			15	0	22.00	21.76	21.64	21.87
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20425/826.5	20525/836.5	20625/846.5
LTE Band 5	5MHz	QPSK	1	0	23.50	23.26	22.96	23.25
			1	12	23.50	23.26	22.92	23.22
			1	24	23.50	23.31	23.21	22.85
			12	0	23.00	22.41	22.29	22.35
			12	6	23.00	22.42	22.30	22.50
			12	11	23.00	22.33	22.41	22.42
			25	0	22.50	22.20	22.43	22.44
		16QAM	1	0	23.50	22.17	23.20	22.75
			1	12	23.50	22.16	23.30	22.76
			1	24	23.50	22.25	23.24	22.60
			12	0	22.00	21.87	21.95	21.98

			12	6	22.00	21.90	21.96	21.94
			12	11	22.00	21.79	21.95	21.67
			25	0	22.50	22.09	21.89	22.04
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20450/829	20525/836.5	20600/844
LTE Band 5	10MHz	QPSK	1	0	23.50	23.22	23.16	23.31
			1	24	23.50	23.16	23.26	23.20
			1	49	23.50	23.17	23.26	22.97
			25	0	23.00	22.03	22.34	22.46
			25	12	23.00	22.21	22.34	22.54
			25	24	23.00	22.23	22.33	22.43
			50	0	22.50	22.28	22.34	22.42
		16QAM	1	0	23.50	22.79	22.92	23.34
			1	24	23.50	22.87	22.08	23.34
			1	49	23.50	23.03	22.19	23.00
			25	0	22.50	21.81	21.93	22.11
			25	12	22.50	21.81	21.91	22.11
			25	24	22.50	21.81	21.97	22.02
			50	0	22.50	21.57	21.86	22.03

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20775/2502.5	21100/2535	21425/2567.5
LTE Band 7	5MHz	QPSK	1	0	22.00	21.46	21.12	21.27
			1	12	22.00	21.27	21.14	21.76
			1	24	22.00	21.21	21.26	21.46
			12	0	21.50	21.18	20.42	21.32
			12	6	21.50	21.15	20.39	21.31
			12	11	21.50	21.15	20.31	21.31
			25	0	21.50	21.14	20.26	21.33
		16QAM	1	0	21.50	21.32	19.95	20.93
			1	12	21.50	21.23	20.12	21.06
			1	24	21.50	21.19	20.19	21.02
			12	0	22/20/21	21.16	19.51	20.58
			12	6	22/20/21	21.14	19.52	20.57
			12	11	22/20/21	21.14	19.32	20.56
			25	0	21.50	21.13	19.53	20.74
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20800/2505	21100/2535	21400/2565

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LTE Band 7	10MHz	QPSK	1	0	22.50	21.07	22.09	20.94
			1	24	22.50	21.12	21.96	21.40
			1	49	22.50	21.19	22.01	21.77
			25	0	21.50	21.13	21.24	21.24
			25	12	21.50	21.14	21.14	21.23
			25	24	21.50	21.23	21.15	21.38
			50	0	21.50	21.17	21.01	21.35
		16QAM	1	0	21.50	21.05	21.15	20.94
			1	24	21.50	21.14	21.08	21.37
			1	49	21.50	21.11	21.16	21.46
			25	0	21.00	20.41	20.39	20.64
			25	12	21.00	20.40	20.41	20.61
			25	24	21.00	20.52	20.62	20.62
			50	0	21.00	20.60	20.34	20.63
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20825/2507.5	21100/2535	21375/2562.5
LTE Band 7	15MHz	QPSK	1	0	22.00	21.06	21.59	21.08
			1	37	22.00	21.03	21.60	21.20
			1	74	22.00	21.00	21.57	21.43
			36	0	21.50	21.09	21.20	21.26
			36	18	21.50	21.08	21.15	21.24
			36	37	21.50	21.07	21.15	21.23
			75	0	21.50	21.07	21.16	21.22
		16QAM	1	0	21.50	21.05	21.32	20.85
			1	37	21.50	21.05	21.24	20.99
			1	74	21.50	21.04	21.30	21.21
			36	0	21.50	21.08	21.15	21.25
			36	18	21.50	21.08	21.15	21.24
			36	37	21.50	21.07	21.16	21.22
			75	0	21.00	20.49	20.24	20.65
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20850/2510	21100/2535	21350/2560
LTE Band 7	20MHz	QPSK	1	0	22.50	21.10	22.15	21.27
			1	49	22.50	21.03	21.95	20.99
			1	99	22.50	21.88	22.12	21.83
			50	0	21.50	20.91	21.22	21.07
			50	24	21.50	20.91	21.11	21.07
			50	49	21.50	21.25	21.07	21.43
			100	0	21.50	21.13	21.19	21.24
		16QAM	1	0	22.00	20.86	21.75	21.12
			1	49	22.00	20.93	21.72	20.87

			1	99	22.00	20.94	21.73	21.29
			50	0	21.00	20.62	20.37	20.63
			50	24	21.00	20.62	20.47	20.62
			50	49	21.00	20.59	20.38	20.66
			100	0	21.00	20.45	20.49	20.54

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23755/706.5	23790/710	23825/713.5
LTE Band 17	5MHz	QPSK	1	0	24.00	23.50	23.29	23.43
			1	12	24.00	23.43	23.30	23.34
			1	24	24.00	23.47	23.31	23.40
			12	0	23.00	22.82	22.66	22.59
			12	6	23.00	22.82	22.67	22.64
			12	11	23.00	22.75	22.62	22.65
			25	0	23.00	22.81	22.68	22.57
		16QAM	1	0	23.00	22.30	22.87	22.45
			1	12	23.00	22.37	22.87	22.37
			1	24	23.00	22.19	22.48	22.52
			12	0	22.00	21.88	21.79	21.82
			12	6	22.00	21.90	21.80	21.84
			12	11	22.00	21.88	21.91	21.68
			25	0	22.00	21.90	21.85	21.84
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23780/709	23790/710	23800/711
LTE Band 17	10MHz	QPSK	1	0	24.00	23.24	23.57	23.26
			1	24	24.00	23.10	23.40	23.16
			1	49	24.00	23.18	23.26	23.18
			25	0	23.00	22.41	22.45	22.31
			25	12	23.00	22.41	22.55	22.29
			25	24	23.00	22.48	22.50	22.35
			50	0	22.50	22.38	22.37	22.38
		16QAM	1	0	23.50	22.64	22.54	23.20
			1	24	23.50	22.55	21.89	22.58
			1	49	23.50	22.63	21.79	22.64
			25	0	22.00	21.60	21.73	21.66
			25	12	22.00	21.60	21.79	21.66
			25	24	22.00	21.55	21.72	21.68
			50	0	22.00	21.55	21.66	21.67

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		37775/2572.5	38000/2595	38225/2617.5

LTE Band 38	5MHz	QPSK	1	0	22.00	21.38	20.73	21.67
			1	12	22.00	21.30	20.78	21.58
			1	24	22.00	21.43	20.78	21.71
			12	0	21.00	20.33	19.91	20.68
			12	6	21.00	20.29	20.10	20.68
			12	11	21.00	20.42	20.03	20.60
			25	0	21.00	20.47	20.07	20.58
		16QAM	1	0	21.50	21.17	20.73	21.25
			1	12	21.50	21.42	20.66	21.47
			1	24	21.50	21.15	20.59	21.06
			12	0	20.00	19.70	19.21	19.85
			12	6	20.00	19.70	19.48	19.85
			12	11	20.00	19.70	19.41	19.79
			25	0	20.50	19.85	19.18	20.03
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		37800/2575	38000/2595	38200/2615
LTE Band 38	10MHz	QPSK	1	0	23.00	22.61	21.85	21.97
			1	24	23.00	22.54	21.92	21.95
			1	49	23.00	22.45	21.89	21.91
			25	0	21.50	21.36	21.07	20.91
			25	12	21.50	21.34	21.07	20.92
			25	24	21.50	21.16	21.02	20.82
			50	0	21.50	21.27	21.09	20.74
		16QAM	1	0	22.50	22.38	21.70	21.82
			1	24	22.50	22.33	21.61	21.77
			1	49	22.50	22.16	21.55	21.69
			25	0	21.00	20.62	20.66	20.14
			25	12	21.00	20.63	20.66	20.14
			25	24	21.00	20.54	20.67	20.10
			50	0	21.00	20.63	20.44	20.16
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		37825/2577.5	38000/2595	38175/2615
LTE Band 38	15MHz	QPSK	1	0	23.00	22.69	22.84	22.12
			1	37	23.00	22.45	22.68	22.05
			1	74	23.00	22.37	22.50	21.84
			36	0	21.50	21.25	21.09	20.92
			36	18	21.50	21.00	20.99	20.92
			36	37	21.50	21.00	20.98	20.68
			75	0	21.50	21.04	20.98	20.69
		16QAM	1	0	22.50	22.44	21.14	21.95
			1	37	22.50	22.24	20.71	21.81
			1	74	22.50	22.28	20.84	21.79
			36	0	21.50	21.01	20.98	20.92
			36	18	21.50	21.00	20.98	20.68
			36	37	21.50	21.01	20.99	20.68
			75	0	21.00	20.59	20.30	20.07
Band	Band	Modulation	RB Configuration		Tune-up	Channel/Frequency(MHz)		

	Width		RB Size	RB Offset	(dBm)	37850/2580	38000/2595	38150/2610
LTE Band 38	20MHz	QPSK	1	0	22.50	22.00	22.40	21.86
			1	49	22.50	21.93	22.14	21.69
			1	99	22.50	21.89	22.11	21.51
			50	0	21.50	21.29	21.16	20.88
			50	24	21.50	21.29	21.11	20.89
			50	49	21.50	21.19	21.05	20.76
			100	0	21.50	21.20	21.05	20.95
		16QAM	1	0	22.50	21.55	21.42	22.16
			1	49	22.50	21.42	21.36	21.92
			1	99	22.50	21.52	21.26	21.77
			50	0	21.00	20.79	20.53	20.35
			50	24	21.00	20.80	20.53	20.36
			50	49	21.00	20.62	20.44	20.32
			100	0	21.00	20.54	20.45	20.22

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		39675/2498.5	40620/2593	41565/2687.5
LTE Band 41	5MHz	QPSK	1	0	22.50	21.36	22.07	21.43
			1	12	22.50	21.39	21.98	21.36
			1	24	22.50	21.34	22.05	21.39
			12	0	21.00	20.53	20.93	20.53
			12	6	21.00	20.46	20.94	20.56
			12	11	21.00	20.53	20.90	20.46
			25	0	21.00	20.52	20.95	20.54
		16QAM	1	0	22.50	21.20	22.08	21.23
			1	12	22.50	22.44	21.85	21.13
			1	24	22.50	21.30	21.30	21.23
			12	0	20.50	19.83	20.27	19.80
			12	6	20.50	19.83	20.27	19.80
			12	11	20.50	19.88	20.21	19.75
			25	0	21.00	19.79	20.54	19.84
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		39700/2501	40620/2593	41540/2685
LTE Band 41	10MHz	QPSK	1	0	22.50	21.82	22.33	21.64
			1	24	22.50	21.79	22.22	21.56
			1	49	22.50	21.84	22.20	21.65
			25	0	21.50	21.02	21.13	20.38
			25	12	21.50	21.02	21.14	20.39
			25	24	21.50	21.09	21.12	20.27
			50	0	21.00	20.99	20.93	20.35
		16QAM	1	0	22.50	21.17	22.16	21.40

			1	24	22.50	21.31	22.12	21.40
			1	49	22.50	21.32	22.13	21.36
			25	0	20.50	20.35	20.41	19.68
			25	12	20.50	20.40	20.41	19.65
			25	24	20.50	20.40	20.41	19.68
			50	0	20.50	20.46	20.27	19.68
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		39725/2503.5	40620/2593	41515/2682.5
LTE Band 41	15MHz	QPSK	1	0	22.50	22.07	22.26	21.67
			1	37	22.50	22.15	22.26	21.69
			1	74	22.50	22.19	21.86	21.57
			36	0	21.00	20.73	20.97	20.48
			36	18	21.00	20.73	20.98	20.48
			36	37	21.00	20.73	20.98	20.49
		16QAM	75	0	21.50	20.73	21.05	20.49
			1	0	22.50	22.10	22.29	21.48
			1	37	22.50	22.07	21.44	21.46
			1	74	22.50	21.23	21.36	21.38
			36	0	21.00	20.73	20.97	20.48
			36	18	21.00	20.73	20.98	20.48
			36	37	21.00	20.73	20.98	20.49
			75	0	21.00	20.18	20.52	19.83
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		39750/2506	40620/2593	41490/2680
LTE Band 41	20MHz	QPSK	1	0	22.00	21.69	21.89	21.35
			1	49	22.00	21.73	21.78	21.29
			1	99	22.00	21.70	21.77	21.33
			50	0	21.50	21.15	21.19	20.48
			50	24	21.50	21.15	21.20	20.49
			50	49	21.50	21.06	21.14	20.41
			100	0	21.50	21.04	20.94	20.39
		16QAM	1	0	22.50	21.28	22.15	21.54
			1	49	22.50	21.22	21.99	21.49
			1	99	22.50	21.42	21.75	21.49
			50	0	21.00	20.51	20.67	19.94
			50	24	21.00	20.51	20.67	19.78
			50	49	21.00	20.61	20.55	19.83
			100	0	20.50	20.44	20.29	19.63

1.2. Wi-Fi & BT Output Power

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11b	1	2412	15.50	14.84
	6	2437	15.50	15.37
	11	2462	15.50	14.98
802.11g	1	2412	15.00	14.05
	6	2437	15.00	14.83
	11	2462	15.00	14.52
802.11n (HT20)	1	2412	14.00	13.55
	6	2437	14.00	13.04
	11	2462	14.00	13.78

Mode	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11A	5180	13.00	12.77
	5200	13.00	12.32
	5240	13.00	11.41
802.11N20SISO	5180	12.00	11.82
	5200	12.00	11.47
	5240	12.00	11.10
802.11N40SISO	5190	11.00	10.61
	5230	11.00	10.55
802.11AC20SISO	5180	12.50	12.28
	5200	12.50	11.67
	5240	12.50	11.08
802.11AC40SISO	5190	11.00	10.67
	5230	11.00	10.95

BR+EDR	Output Power (dBm)			
	Channel	Tune-up (dBm)	Data Rates	
			1M	2M
	0CH	0.00/0.50	-0.24	0.26
	39CH	0.00/1.00	-0.20	0.58
	78CH	-1.00/0.00	-1.43	-0.57

Tune Up Procedure

1. RX Gain Calibration
 - a. Put DUT in test mode
 - b. Put DUT in BCH mode
 - c. Put DUT in selected channel band
 - d. Total gain chain calibration at center ARFCN
 - e. Frequency Ripple calibration
 - f. Complete RX_AGC Gain table
2. TX Power Calibration
 - a. Put DUT in test mode
 - b. Put DUT in BCH mode
 - c. Put DUT in selected channel band
 - d. Total gain chain calibration at center ARFCN
 - e. Frequency Ripple calibration
 - f. Complete TX_APC Gain table
3. AFC Calibration
 - a. Put DUT in test mode
 - b. Put DUT in selected channel mode
 - c. Calibration AFC at center ARFCN
 - d. Complete AFC result table