

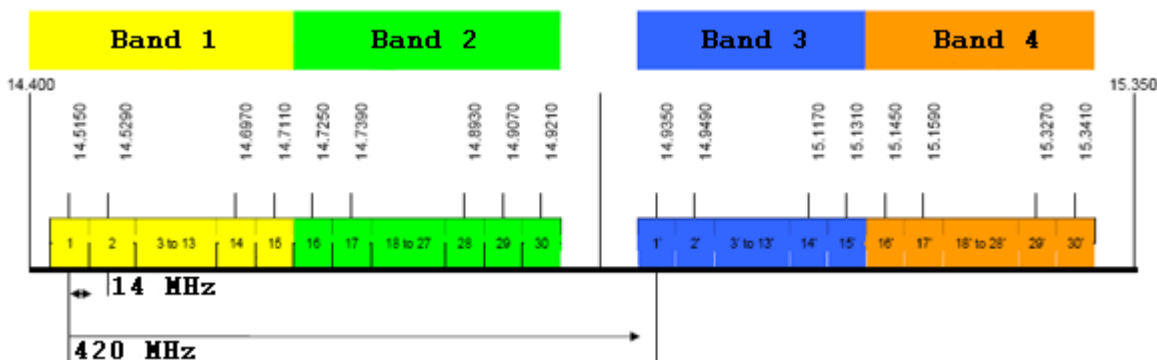
## CODAN 8800 DMR Frequency Allocations and Band Plans

### Frequency Band Theory

Both FCC and ETSI radio standards define Transmit (Tx), and Receive (Rx) frequencies. The spacing between the Tx and Rx frequencies is known as the duplex frequency and may vary depending on the frequency range and the applicable standards.

Most frequency ranges are comprised of four frequency sub bands. A Codan Model 8800 Digital Microwave Radio that transmits on band 1 receives a signal transmitted in band 3 from the remote terminal. By the same token, a terminal that transmits in band 4 receives a signal transmitted in band 2.

Shown below is an example of the 15 GHz band with a 420 MHz Duplex Frequency.



### ETSI – 7 GHz (Duplex Frequency = 154 MHz [1])

#### General

Radio: 7128 – 7268 MHz and 7282 – 7422 MHz

Standard: CEPT/ERC/REC 12-08E, ITU-R F.386-6, ETSI EN 301 216

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	7131.5	7208.5	7285.5	7362.5	7215.5	7264.5	7369.5	7418.5
14	7135	7205	7289	7359	7219	7261	7373	7415
28	7142	7198	7296	7352	7226	7254	7380	7408

ODU BAND 1	ODU BAND 3
Tx: 7128 – 7212	Tx: 7282 - 7366
Rx: 7282 – 7366	Rx: 7128 - 7212
ODU BAND 2	ODU BAND 4

	
Tx: 7212 - 7268	Tx: 7366 - 7422
Rx: 7366 - 7422	Rx: 7212 - 7268

### ETSI – 7 GHz (Duplex Frequency = 154 MHz [2])

#### General

Radio: 7428 – 7568 MHz and 7582 – 7722 MHz

Standard: CEPT/ERC/REC 12-08E, ITU-R F.386-6, ETSI EN 301 216

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	7431.5	7508.5	7585.5	7662.5	7515.5	7564.5	7669.5	7718.5
14	7435	7505	7589	7659	7519	7561	7673	7715
28	7442	7498	7596	7652	7526	7554	7680	7708

<b>ODU BAND 1</b>	<b>ODU BAND 3</b>
	
Tx: 7428 - 7512	Tx: 7582 - 7666
Rx: 7582 - 7666	Rx: 7428 - 7512
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 7512 - 7568	Tx: 7666 - 7722
Rx: 7666 - 7722	Rx: 7512 - 7568

### ETSI – 7 GHz (Duplex Frequency = 245 MHz)

#### General

Radio: 7428 – 7652 MHz and 7673 – 7897 MHz

Standard: CEPT/ERC/REC 12-08E, ITU-R F.386-6, ETSI EN 301 216

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	7431.5	7536.5	7676.5	7781.5	7543.5	7648.5	7788.5	7893.5
14	7435	7533	7680	7778	7547	7645	7792	7890
28	7442	7526	7687	7771	7554	7638	7799	7883

ODU BAND 1	ODU BAND 3
	
Tx: 7428 - 7540	Tx: 7673 - 7785
Rx: 7673 - 7785	Rx: 7428 - 7540
ODU BAND 2	ODU BAND 4
	
Tx: 7540 - 7652	Tx: 7785 - 7897
Rx: 7785 - 7897	Rx: 7540 - 7652

### ETSI – 7 GHz (Duplex Frequency = 161 MHz [1])


#### General

Radio: 7124.5 – 7264.5 MHz and 7285.5 – 7425.5 MHz

Standard: CEPT/ERC/REC 12-08E, ITU-R F.386-6, ETSI EN 301 216

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	7128	7205	7289	7366	7212	7261	7373	7422
14	7131.5	7201.5	7292.5	7362.5	7215.5	7257.5	7376.5	7418.5
28	7138.5	7194.5	7299.5	7355.5	7222.5	7250.5	7383.5	7411.5

ODU BAND 1	ODU BAND 3
	

Tx: 7124.5 - 7208.5	Tx: 7285.5 - 7369.5
Rx: 7285.5 - 7369.5	Rx: 7124.5 - 7208.5
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 7208.5 - 7264.5	Tx: 7369.5 - 7425.5
Rx: 7369.5 - 7425.5	Rx: 7208.5 - 7264.5

**ETSI – 7 GHz (Duplex Frequency = 161 MHz [2])**

**General**

Radio: 7249.5 – 7414 MHz and 7379 – 7554 MHz  
 Standard: CEPT/ERC/REC 12-08E, ITU-R F.386-6, ETSI EN 301 216

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 – 3			
	ODU BAND 1		ODU BAND 3	
	First Channel	Last Channel	First Channel	Last Channel
7	7253	7386	7414	7547
14	7260	7372	7421	7533
28	7267	7379	7428	7540

<b>ODU BAND 1</b>	<b>ODU BAND 3</b>
	
Tx: 7249.5 - 7414	Tx: 7379 - 7554
Rx: 7379 - 7554	Rx: 7249.5 - 7414

**ETSI – 7 GHz (Duplex Frequency = 161 MHz [3])**

**General**

Radio: 7424.5 – 7564.5 MHz and 7585.5 – 7725.5 MHz  
 Standard: CEPT/ERC/REC 12-08E, ITU-R F.386-6, ETSI EN 301 216

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First	Last	First	Last	First	Last	First	Last

	Channel	Channel	Channel	Channel	Channel	Channel	Channel	Channel
7	7428	7505	7589	7666	7512	7561	7673	7722
14	7431.5	7501.5	7592.5	7662.5	7515.5	7557.5	7676.5	7718.5
28	7438.5	7494.5	7599.5	7655.5	7522.5	7550.5	7683.5	7711.5

ODU BAND 1	ODU BAND 3
	
Tx: 7424.5 - 7508.5	Tx: 7585.5 - 7669.5
Rx: 7585.5 - 7669.5	Rx: 7424.5 - 7508.5
ODU BAND 2	ODU BAND 4
	
Tx: 7508.5 - 7564.5	Tx: 7669.5 - 7725.5
Rx: 7669.5 - 7725.5	Rx: 7508.5 - 7564.5

### ETSI – 8 GHz (Duplex Frequency = 311.32 MHz)

#### General


Radio: 7725 – 8971 MHz and 8036.25 – 8282.25 MHz

Standard: CEPT/ERC/REC 12-08E, ITU-R F.386-6, ETSI EN 301 216

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	7728.5	7848.5	8039.75	8159.75	7847.5	7967.5	8158.75	8278.75
14	7732	7845	8043.25	8156.25	7851	7964	8162.25	8275.25
28	7739	7838	8050.25	8149.25	7858	7957	8169.25	8268.25

ODU BAND 1	ODU BAND 3
	
Tx: 7725 - 7852	Tx: 8036.25 - 8163.25
Rx: 8036.25 - 8163.25	Rx: 7725 - 7852
ODU BAND 2	ODU BAND 4

	
Tx: 7844 - 7971	Tx: 8155.25 - 8282.25
Rx: 8155.25 - 8282.25	Rx: 7844 - 7971

### ETSI – 8 GHz (Duplex Frequency = 126 MHz)

#### General

Radio: 8279 – 8370 MHz and 8405 – 8496 MHz

Standard: CEPT/ERC/REC 12-08E, ITU-R F.386-6, ETSI EN 301 216

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	8282.5	8324.5	8408.5	8450.5	8324.5	8366.5	8450.5	8492.5
14	8286	8321	8412	8447	8328	8363	8454	8489
28	8293	8314	8419	8440	8335	8356	8461	8482

ODU BAND 1	ODU BAND 3
	
Tx: 8279 - 8328	Tx: 8405 - 8454
Rx: 8405 - 8454	Rx: 8279 - 8328
ODU BAND 2	ODU BAND 4
	
Tx: 8321 - 8370	Tx: 8447 - 8496
Rx: 8447 - 8496	Rx: 8321 - 8370

### ETSI – 8 GHz (Duplex Frequency = 119 MHz)

#### General

Radio: 8279 – 8337 MHz and 8398 – 8496 MHz

Standard: CEPT/ERC/REC 12-08E, ITU-R F.386-6, ETSI EN 301 216

#### Channel Frequencies

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Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	8282.5	8331.5	8401.5	8450.5	8324.5	8373.5	8443.5	8492.5
14	8286	8328	8405	8447	8328	8370	8447	8489
28	8293	8321	8412	8440	8335	8363	8454	8482

ODU BAND 1	ODU BAND 3
	
Tx: 8279 - 8335	Tx: 8398 - 8454
Rx: 8398 - 8454	Rx: 8279 - 8335
ODU BAND 2	ODU BAND 4
	
Tx: 8321 - 8377	Tx: 8440 - 8496
Rx: 8440 - 8496	Rx: 8321 - 8377

### ETSI – 10.5 GHz (Duplex Frequency = 65 MHz [1])

This set of ODUs covers the lower half of the Australian 10.5 GHz frequency allocation (7 MHz channels 1-4 and 14 MHz channels 1-2).

#### General

Radio: 10.5545 – 10.6195 GHz and 10.6175 – 10.6755 GHz  
Standard: RALI-FX03

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	10558	10565	10623	10630	10572	10579	10637	10644
14	10561.5	-	10626.5	-	10575.5	-	10640.5	-

ODU BAND 1	ODU BAND 3

	
Tx: 10554.5 - 10568.5	Tx: 10619.5 - 10633.5
Rx: 10619.5 - 10633.5	Rx: 10554.5 - 10568.5
ODU BAND 2	ODU BAND 4
	
Tx: 10568.5 - 10582.5	Tx: 10633.5 - 10647.5
Rx: 10633.5 - 10647.5	Rx: 10568.5 - 10582.5

### ETSI – 10.5 GHz (Duplex Frequency = 65 MHz [2])

This set of ODUs covers the upper half of the Australian 10.5 GHz frequency allocation (7 MHz channels 5-8 and 14 MHz channels 3-4).

#### General

Radio: 10.5545 – 10.6195 GHz and 10.6175 – 10.6755 GHz  
Standard: RALI-FX03

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	10586	10593	10651	10658	10600	10607	10665	10672
14	10589.5	-	10654.5	-	10603.5	-	10668.5	-

<b>ODU BAND 1</b>	<b>ODU BAND 3</b>
	
Tx: 10582.5 - 10596.5	Tx: 10647.5 - 10661.5
Rx: 10647.5 - 10661.5	Rx: 10582.5 - 10596.5
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 10596.5 - 10610.5	Tx: 10661.5 - 10675.5
Rx: 10661.5 - 10675.5	Rx: 10596.5 - 10610.5

**ETSI – 10.5 GHz (Duplex Frequency = 91 MHz [1])**


This set of ODUs covers channels 7-11 (7MHz) and 4-5 (14 MHz), as used by Vodafone Egypt.

**General**

Radio: 10.5005 – 10.5845 GHz and 10.5915 – 10.6755 GHz  
Standard: CEPT/ERC/REC 12-02E, ITU-R F.747, ETSI EN 301 128

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 – 3			
	ODU BAND 1		ODU BAND 3	
	First Channel	Last Channel	First Channel	Last Channel
7	10546	10574	10637	10665
14	10549.5	10563.5	10640.5	10654.5

ODU BAND 1	ODU BAND 3
	
Tx: 10542.5-10577.5	Tx: 10633.5 - 10672
Rx: 10633.5 - 10672	Rx: 10542.5-10577.5

**ETSI – 10.5 GHz (Duplex Frequency = 91 MHz [2])**

This set of ODUs covers the lower half of the ITU-R F.747 Annexe 1 10.5 GHz frequency allocation (7 MHz channels 1-6).

**General**

Radio: 10.5005 – 10.5845 GHz and 10.5915 – 10.6755 GHz  
Standard: CEPT/ERC/REC 12-02E, ITU-R F.747, ETSI EN 301 128

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 - 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	10504	10518	10595	10609	10525	10539	10616	10630

ODU BAND 1	ODU BAND 3
	

Tx: 10500.5-10521.5	Tx: 10591.5-10612.5
Rx: 10591.5-10612.5	Rx: 10500.5-10521.5
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 10521.5-10542.5	Tx: 10612.5-10633.5
Rx: 10612.5-10633.5	Rx: 10521.5-10542.5

### ETSI – 10.5 GHz (Duplex Frequency = 91 MHz [3])

This set of ODUs covers the upper half of the ITU-R F.747 Annexe 1 10.5 GHz frequency allocation (7 MHz channels 7-12).

#### General

Radio: 10.5005 – 10.5845 GHz and 10.5915 – 10.6755 GHz  
Standard: CEPT/ERC/REC 12-02E, ITU-R F.747, ETSI EN 301 128

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 - 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	10546	10560	10637	10651	10567	10581	10658	10672

<b>ODU BAND 1</b>	<b>ODU BAND 3</b>
	
Tx: 10542.5-10563.5	Tx: 10633.5-10654.5
Rx: 10633.5-10654.5	Rx: 10542.5-10563.5
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 10563.5-10584.5	Tx: 10654.5-10675.5
Rx: 10654.5-10675.5	Rx: 10563.5-10584.5

### ETSI – 13 GHz (Duplex Frequency = 266 MHz)

#### General

Radio: 12.751 – 12.975 GHz and 13.017 – 13.241 GHz

Standard: CEPT/ERC/REC 12-02E, ITU-R F497-5, ETSI EN 301 128

### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	12754.5	12859.5	13020.5	13125.5	12866.5	12971.5	13132.5	13237.5
14	12758	12856	13024	13122	12870	12968	13136	13234
28	12765	12849	13031	13115	12877	12961	13143	13227

ODU BAND 1	ODU BAND 3
	
Tx: 12751-12863	Tx: 13017-13129
Rx: 13017-13129	Rx: 12751-12863
ODU BAND 2	ODU BAND 4
	
Tx: 12863-12975	Tx: 13129-13241
Rx: 13129-13241	Rx: 12863-12975

### ETSI – 15 GHz (Duplex Frequency = 315 MHz)

#### General

Radio: 14.628 – 14.911 GHz and 14.943 – 15.226 GHz  
Standard: ETSI EN 301 128

### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	14634	14760	14949	15075	14767	14907	15082	15222
14	14648	14746	14963	15061	14774	14900	15089	15215
28	14662	14746	14977	15061	14774	14886	15089	15201

ODU BAND 1	ODU BAND 3

	
Tx: 14628-14767	Tx: 14943-15082
Rx: 14943-15082	Rx: 14628-14767
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 14760-14911	Tx: 15075-15226
Rx: 15075-15226	Rx: 14760-14911

### ETSI – 15 GHz (Duplex Frequency = 322 MHz)

#### General

Radio: 14.6305 – 14.9105 GHz and 14.9525 – 15.2325 GHz

Standard: ITU-R F.636-3 ETSI EN 301 128

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	14634	14760	14956	15082	14767	14907	15089	15229
14	14648	14746	14963	15061	14774	14900	15096	15222
28	14662	14746	14984	15068	14774	14886	15096	15208

<b>ODU BAND 1</b>	<b>ODU BAND 3</b>
	
Tx: 14631.5-14763.5	Tx: 14953.5-15085.5
Rx: 14953.5-15085.5	Rx: 14631.5-14763.5
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 14763.5-14910.5	Tx: 15085.5-15232.5
Rx: 15085.5-15232.5	Rx: 14763.5-14910.5


**ETSI – 15 GHz (Duplex Frequency = 420 MHz)****General**

Radio: 14.501 – 14.928 GHz and 14.921 – 15.348 GHz

Standard: ITU-R F.636-3, ETSI EN 301 128

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	14504.5	14714.5	14924.5	15134.5	14721.5	14917.5	15141.5	15337.5
14	14515	14711	14935	15131	14725	14921	15145	15341
28	14515	14711	14935	15131	14739	14907	15159	15327

ODU BAND 1	ODU BAND 3
	
Tx: 14501-14725	Tx: 14921-15145
Rx: 14921-15145	Rx: 14501-14725
ODU BAND 2	ODU BAND 4
	
Tx: 14718 - 14928	Tx: 15138 - 15348
Rx: 15138 -15348	Rx: 14718 - 14928

**ETSI – 15 GHz (Duplex Frequency = 490 MHz)****General**


Radio: 14.403 – 14.858 GHz and 14.893 – 15.348 GHz

Standard: ITU-R F.636-3, ETSI EN 301 128

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	14406.5	14623.5	14896.5	15113.5	14630.5	14847.5	15120.5	15337.5
14	14417	14627	14907	15117	14641	14851	15131	15341

28	14417	14613	14907	15103	14641	14837	15131	15327
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ODU BAND 1	ODU BAND 3
	
Tx: 14403 -14627	Tx: 14893 -15117
Rx: 14893 -15117	Rx: 14403-14627
ODU BAND 2	ODU BAND 4
	
Tx: 14627 - 14858	Tx: 15117 - 15348
Rx: 15117 - 15348	Rx: 14627 - 14858

### ETSI – 15 GHz (Duplex Frequency = 644 MHz)

#### General

Radio: 14.501 – 14.697 GHz and 15.145 – 15.341 GHz  
Standard: RALI-FX03, ITU-R F.636-3

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3			
	ODU BAND 1		ODU BAND 3	
	First Channel	Last Channel	First Channel	Last Channel
7	14504.5	14539.5	15148.5	15183.5
14	14550	14606	15194	15250
28	14627	14683	15271	15327

ODU BAND 1	ODU BAND 3
	
Tx: 14501-14697	Tx: 15145-15341
Rx: 15145-15341	Rx: 14501-14697

### ETSI – 15 GHz (Duplex Frequency = 728 MHz)

#### General

Radio: 14.501 – 14.620 GHz and 15.229 – 15.348 GHz

Standard: CEPT/ERC/REC/12-07E, ETSI EN 301 128

### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3			
	ODU BAND 1		ODU BAND 3	
	First Channel	Last Channel	First Channel	Last Channel
7	14504.5	14609.5	15232.5	15337.5
14	14515	14613	15243	15341
28	14515	14599	15243	15327

ODU BAND 1	ODU BAND 3
	
Tx: 14501-14620	Tx: 15229-15348
Rx: 15229-15348	Rx: 14501-14620

### FCC – 18 GHz (Duplex Frequency = 1560 MHz)

#### General

Radio: 17.700 – 18.140 GHz and 19.260 – 19.700 GHz  
Standard: FCC Part 101 & Part 15/B & Part 2

### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3			
	ODU BAND 1		ODU BAND 3	
	First Channel	Last Channel	First Channel	Last Channel
5	17702.5	18137.5	19262.5	19697.5
10	17705	18135	19265	19695
20	17710	18130	19270	19690
40	17720	18120	19280	19680

ODU BAND 1	ODU BAND 3
	
Tx: 17700-18140	Tx: 19260-19700
Rx: 19260-19700	Rx: 17700-18140

**ETSI – 18 GHz (Duplex Frequency = 1010 MHz)****General**

Radio: 17.700 – 18.690 GHz and 18710 – 19.700 GHz  
 Standard: CEPT/REC/ 12-03E, ITU-R F.595-6, ETSI EN 301 128

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 - 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
27.5	17727.5	18195	18737.5	19205	18222.5	18662.5	19232.5	19672.7

ODU BAND 1	ODU BAND 3
	
Tx: 17700.0-18222.5	Tx: 18710.0-19232.5
Rx: 18710.0-19232.5	Rx: 17700.0-18222.5
ODU BAND 2	ODU BAND 4
	
Tx: 18208.75-18690.0	Tx: 19218.75-19700.0
Rx: 19218.75-19700.0	Rx: 18208.75-18690.0

**ETSI – 18 GHz (Duplex Frequency = 1008 MHz)****General**

Radio: 17.7205 – 18.6725 GHz and 18.7285 – 19.6805 GHz  
 Standard: CEPT/REC/ 12-03E, ITU-R F.595-8, ETSI EN 301 128

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 - 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
3.5	17722.25	18208.75	18730.25	19216.75	18212.25	18670.75	19220.25	19678.75

ODU BAND 1	ODU BAND 3

	
Tx: 17720.5-18210.5	Tx: 18728.5-19218.5
Rx: 18728.5-19218.5	Rx: 17720.5-18210.5
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 18210.5-18672.5	Tx: 19218.5-19680.5
Rx: 19218.5-19680.5	Rx: 18210.5-18672.5

**FCC – 23 GHz (Duplex Frequency = 1200 MHz)**

**General**

Radio: 21.200 – 22.400 GHz and 22.400 – 23.600 GHz  
 Standard: FCC Part 101 & Part15/B & Part 2

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
12.5	21206.25	21793.75	22406.25	22993.75	21806.25	22393.75	23006.25	23593.75
25	21212.5	21787.5	22412.5	22987.5	21812.5	22387.5	23012.5	23587.5
50	21225	21775	22425	22975	21825	22375	23025	23575

<b>ODU BAND 1</b>	<b>ODU BAND 3</b>
	
Tx: 21200-21800	Tx: 22400-23300
Rx: 22400-23000	Rx: 21200-21800
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 21800-22400	Tx: 23000-23600
Rx: 23000-23600	Rx: 21800-22400

**ETSI – 23 GHz (Duplex Frequency = 1008 MHz)****General**

Radio: 22.000 – 22.592 GHz and 23.008 – 23.600 GHz

Standard: T/R 13-02E, ETSI EN 301 128

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 – 3			
	ODU BAND 1		ODU BAND 3	
	First Channel	Last Channel	First Channel	Last Channel
7	22011.5	22585.5	23019.5	23593.5
14	22015	22575	23023	23583
28	22022	22554	23030	23562

ODU BAND 1	ODU BAND 3
	
Tx: 22000-22592	Tx: 23008-23600
Rx: 23008-23600	Rx: 22000-22592

**ETSI – 23 GHz (Duplex Frequency = 1200 MHz)****General**

Radio: 21.2 – 22.4 GHz and 22.4 – 23.6 GHz

Standard: REC ITU-R F.637-3, ETSI EN 301 128

**Channel Frequencies**

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7								
14								
28								

ODU BAND 1	ODU BAND 3
	

Tx: 21200-21800	Tx: 22400-23000
Rx: 22400-23000	Rx: 21200-21800
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 21800-22400	Tx: 23000-23600
Rx: 23000-23600	Rx: 21800-22400

### ETSI – 23 GHz (Duplex Frequency = 1232 MHz)

#### General

Radio: 21.224 – 22.344 GHz and 22.456 – 23.576 GHz

Standard: REC ITU-R F.637-3, ETSI EN 301 128

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	21227.5	21780.5	22459.5	23012.5	21787.5	22340.5	23019.5	23572.5
14	21231	21777	22463	23009	21791	22337	23023	23569
28	21238	21770	22470	23002	21798	22330	23030	23562

<b>ODU BAND 1</b>	<b>ODU BAND 3</b>
	
Tx: 21224-21784	Tx: 22456-23016
Rx: 22456-23016	Rx: 21224-21784
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 21784-22344	Tx: 23016-23576
Rx: 23016-23576	Rx: 21784-22344

### ETSI – 26 GHz (Duplex Frequency = 1008 MHz)

#### General

Radio: 24.549 – 24.445 GHz and 25.557 – 26.453 GHz  
Standard: T/R 13-02E, ETSI EN 301 128

### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	24552.5	24993.5	25560.5	26001.5	25000.5	25441.5	26008.5	26449.5
14	24556	24990	25564	25998	25004	25438	26012	26446
28	24563	24983	25571	25991	25011	25431	26019	26439

ODU BAND 1	ODU BAND 3
	
Tx: 24549-24997	Tx: 25557-26005
Rx: 25557-26005	Rx: 24549-24997
ODU BAND 2	ODU BAND 4
	
Tx: 24997-25445	Tx: 26005-26453
Rx: 26005-26453	Rx: 24997-25445

### FCC – 38 GHz (Duplex Frequency = 700 MHz)

#### General

Radio: 38.600 – 39.300 GHz and 39.300 – 40.000 GHz  
Standard: FCC Part 101 & Part15/B & Part 2

### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
12.5	38606.25	38943.75	39306.25	39643.75	38956.25	39293.75	39656.25	39993.75
25	38612.5	38937.5	39312.5	39637.5	38962.5	39287.5	39662.5	39987.5
50	38625	38925	39325	39625	38975	39275	39675	39975

ODU BAND 1	ODU BAND 3

	
Tx: 38600-38950	Tx: 39300-39650
Rx: 39300-39650	Rx: 38600-38950
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 38950-39300	Tx: 39650-40000
Rx: 39650-40000	Rx: 38950-39300

### ETSI – 38 GHz (Duplex Frequency = 1260 MHz)

#### General

Radio: 37.058 – 38.178 GHz and 38.318 – 39.438 GHz  
 Standard: T/R 12-01/ITU-R F.749-1, ETSI EN 301 128

#### Channel Frequencies

Channel Spacing (MHz)	BANDS 1 – 3				BANDS 2 - 4			
	ODU BAND 1		ODU BAND 3		ODU BAND 2		ODU BAND 4	
	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel	First Channel	Last Channel
7	37061.5	37614.5	38321.5	38874.5	37621.5	38174.5	38881.5	39434.5
14	37065	37611	38325	38871	37625	38171	38885	39431
28	37072	37604	38332	38864	37632	38164	38892	39424

<b>ODU BAND 1</b>	<b>ODU BAND 3</b>
	
Tx: 37058-37618	Tx: 38318-38878
Rx: 38318-38878	Rx: 37058-37618
<b>ODU BAND 2</b>	<b>ODU BAND 4</b>
	
Tx: 37618-38178	Tx: 38878-39438
Rx: 38878-39438	Rx: 37618-38178

**CODAN 8800 DMR Frequency Allocations and Band Plans**

[http://digital-microwave-radio.at-communication.com/en/at/digital\\_microwave\\_radio\\_8800\\_band\\_plan.html](http://digital-microwave-radio.at-communication.com/en/at/digital_microwave_radio_8800_band_plan.html)