

Guide to Wedding Reception Sound Systems

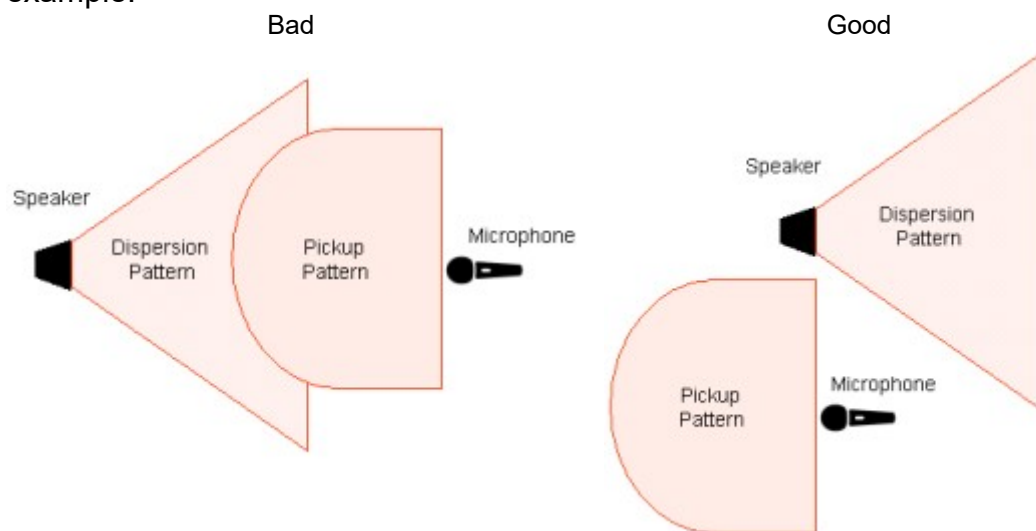


Hi. I'm Lee & I've provided sound for hundreds of weddings over the years. Based on that experience I've put together this guide to help you avoid some common mistakes & have hassle-free, top notch audio on your special day.

So who should read this report? I'd suggest couples looking to get married, venue owners & wedding planners.

A Note About Microphone Feedback

In this report you'll hear me talk about "Feedback" a lot. Feedback is most commonly that high pitched squealing noise you hear when a microphone is turned up too high. What's happening is that the microphone is picking up some of the sound from the speakers & amplifying it over & over. Feedback can be a big problem at weddings. It's very annoying to guests, can damage speakers & can really limit the volume achievable for speech. It's made worse at weddings when you often have people giving speeches that don't always have good public speaking skills. So how do we avoid feedback? Well basically we have to prevent sound from the speakers being picked up by the microphone. The simplest & sometimes overlooked method is to make sure microphones aren't in front of or very close to the speakers. Here's an example:



The 4 Main Purposes of a Wedding Sound System

With many events the sound system has to fulfil only 1 or 2 different purposes for the whole event. With a wedding reception system however, there are generally 4 main purposes which are:

- Speeches
- Background music (e.g. low volume, recorded music from say an iPod)
- Multimedia (i.e. sound to go with any video presentation) &
- Dance music (e.g. high volume music from DJ or iPod)

Not only are there different purposes, but this changes throughout the event as does the required coverage throughout the room. That's why getting good sound through the whole reception to every seat can be so challenging.

So What Do We Really Want in Wedding Sound System?

The ideal attributes of a reception sound system vary according to the purpose it's used for throughout the reception. As mentioned, there are 4 common purposes. So what's the ideal for each purpose?

PURPOSE	IDEAL FEATURES & ATTRIBUTES
Speeches	<ul style="list-style-type: none">• Feedback resistance.• Even coverage of sound throughout the room• Good speech clarity, level & consistency• For larger receptions say more than 100 guests, a good equalizer is essential for speech clarity.• Minimal bass response (too much bass makes speech hard to understand).
Background Music	<ul style="list-style-type: none">• Even coverage of sound throughout the room• High fidelity.• Modest bass response
Multimedia	<ul style="list-style-type: none">• Even coverage of sound throughout the room• Modest bass response
Dance Music	<ul style="list-style-type: none">• High fidelity.• Sound confined to the dance floor so that non-dancing guests can still talk & you don't blow granma away sitting up the back• High power handling• Plenty of bass response

If your background or dance music is live i.e. band, duet, soloist etc then there's more considerations. Primarily you may need some type of monitor speakers so the performers can hear themselves well (very important). You'll also need to allow extra space – people often underestimate how much space a band & their equipment takes up.

As you can see, some of these requirements do compete with each other. For example, for speeches you want even coverage throughout the venue but for dance you want it localised to the dance floor. You could come to a compromise & get a system that does an OK job for all of these. That's entirely possible & indeed often done. There are however a few more options you may not have considered. For example:

-Use any in-house sound system for speeches, background music & multimedia as it probably has the coverage you want & then use a separate portable system aimed at the dance floor for dance music or live music.

-If you're having a portable system brought in, you could point the speakers forward for the background music & speeches then turn them in to face the dance floor at dance time.

-Again for a portable system you could employ multiple speakers. For example you might use 2 larger speakers to cover the dance floor & then 2 smaller speakers positioned to cover the rest of the room for speeches. The smaller speakers can be turned off during the dance time.

The “6 Star” Wedding Sound System

A great wedding sound system should have the following attributes:

1. Feedback resistance
2. Even sound coverage for speech, background music & multimedia
3. Good speech clarity, level & consistency
4. High fidelity music up to dance level
5. Some isolation of dance music to the dance floor
6. Visually attractive

Feedback Resistance

Why is this so critical in a wedding system? Well here's the thing. At most events the speaking is done by people with good experience in public speaking. They're usually confident, can project their voice well & have good microphone technique. This is not the case with weddings. In fact I can't think of any other event where you'll see a worse example of presentation skills than during the speeches. You have to remember that for some people this is one of the few times they do public speaking, they're often nervous & emotional etc. The biggest problem is poor microphone technique. They



won't be close enough to the microphone or they'll be moving side to side & therefore going off axis – a big problem for today's popular super-cardioid directional microphones. Whilst writing this report I thought it would be great to get a picture to illustrate this. I didn't have to wait too long. The very next wedding I did we had this poor father of the groom. This is how he held his mic for the first 1/3 of his speech. You could hardly hear him. Fortunately one of the

bridesmaids tapped him on the shoulder & reminded him to hold his mic closer. The bottom line is that with poor mic technique & a soft voice you may need to turn the mic up a lot without risk of feedback so you need good feedback resistance.

Even Sound Coverage for Speech, Background Music & Multimedia

This simply means that everyone in the room can hear equally. Generally, as you move further away from a speaker the volume drops off. Since speakers are often placed at the front of the room, guests seated at the back may have a lot less volume than at the front. Also, since speakers are directional, anyone behind or beside them may get less volume. A common oversight is the bridal table. They may well be located behind the speakers & not be able to hear speeches & background music clearly.

Here's some ways you can get better coverage:

- Use more speakers. An example might be to have 2 larger speakers near the front that can handle dance music then a couple of smaller ones at the back or sides to help with speeches, background music & multimedia.
- Give thought to where in the room you put your speakers.

- Use speakers with wider dispersion.
- Get speakers up high on stands (be safety conscious though).
- Use speakers with better throw (e.g. line array columns).

Speech clarity, suitable level & consistency

Speech clarity or “intelligibility” refers to how easy it is to understand speech through the sound system. It can actually be quite loud yet hard to understand. A big factor is “Equalisation” or EQ. This refers to the



tone of the speech i.e. how much high (treble) or low (bass) frequency sounds are present. It depends how advanced your system is as to how well it does this but in general too much bass or low mid frequency really kills speech clarity so you want a system that can filter that out. The size of your room or number of guests can make a big difference to how critical EQ is. In a wedding of say 60 people it may not matter that much. For example you could plug a microphone straight into the back of a powered speaker with little or no EQ & get an OK result. If you had 300 guests in a reverberant hall, you'd be in real trouble.

As well as clarity we also want suitable speech volume. We could have nice even room coverage, crystal clear speech yet it's too soft to hear. Incidentally, one thing I've noticed is that when people can't hear a speech they quit listening & start talking amongst themselves which makes the room even noisier & harder to hear the speech so more people start talking & within about 10 minutes virtually nobody can hear at all.

The other extreme, which can be even more annoying, is when the microphone is too loud. For example if have an MC who loves the sound of their own voice & you get blasted all night.

One last thing we want is consistency. It's a problem if the groom's speech is too loud but you can barely hear the bridesmaid's speech. So how do you get consistent level?

- Have someone operate the sound desk during the speeches so they can turn the mic up or down as needed.
- Email everyone who is giving speeches & get them to watch this video: <https://www.youtube.com/watch?v=-tVaRXqDe7U> as a guide to good mic technique.

Finally another way to get consistent volume is to use a “gooseneck” or lectern mic. These mics are used big time in the business & political world but not as much for weddings yet they are actually a great choice for weddings also. If your reception is in one of the large hotels that also cater for the business market then they will likely have a lectern & gooseneck mic option but you'll probably need to ask for it as the default is to supply a wireless hand held which is easier for them to set up.



What I like about gooseneck mics are that:

- They're so easy to adjust the height, people actually will adjust them to suit their height. With a hand held mic on a stand they have to adjust the clutch & pull it down & re-tighten it – they just won't do it but with a gooseneck you just effortlessly push it up or down.
- They keep hands free to handle notes.
- They are normally "Condenser" type microphones so they are more sensitive & pick up better than typically "Dynamic" hand held microphones.
- They're visually more discreet.

Are there any downsides to gooseneck mics? A few:

- Being a cabled mic you do have to run the cable safely so it's not a tripping hazard & find a route back to your mixer.
- They mostly require "Phantom Power". That means the mixer needs to send power to them. Any mixer you'd want to use at a wedding should have phantom power.
- Being more sensitive they can be more feedback prone.
- Speaking too close to this type of mic can cause popping noises.

High fidelity music up to dance level

Music clarity or "fidelity" refers to how accurately the system reproduces music. It needs to do this from low volume background music right up to



dance volume. Some speakers work well for background music but don't handle louder music. The result can be distortion. At best the music just sounds bad, at worst the speakers will burn out. Speakers are rated in watts. This can be peak or continuous (RMS). Only look at the continuous rating. A very rough rule of thumb is that we want at least 7 watts per person on the dancefloor so if you've got 100 people up & dancing then you'd want the pair

of speakers to add up to 700 watts.

Dance Floor Isolation

This isn't critical or always practical but it's very nice if music to the dance floor can be kept there. It depends on your particular guest preferences but in general only around 40% of people will be dancing at any one time. That means the majority of people won't. It's not nice when you can't even talk to anyone because the dance music is so loud in the rest of the room. I often notice that people will move outside if they can in order to talk. That may not always be an option or practical. So how can we isolate music to the dance floor? Here's some ideas:

- If the speakers are facing away they can be turned to face in towards the dance floor.
- Locate the main speakers near the dance floor if practical.
- Have separate speakers just for the dance floor

Visually Attractive



A lot of time & care is put into getting a reception room looking perfect so I'm sometimes surprised how little care some audio providers take in the appearance of their set-up. Some of the problems include:

- Messy cabling
- No tablecloth
- Oversized equipment
- Beat up equipment

Practical Example

So let's put some of our theory into practice & evaluate a specific wedding layout to see how it stacks up against our "6 Star" ideal.

Guests: Approx 200

Speakers: 2 x 15 inch, 700 watts each

Speaker location: On stands, next to bridal table, in front of dance floor

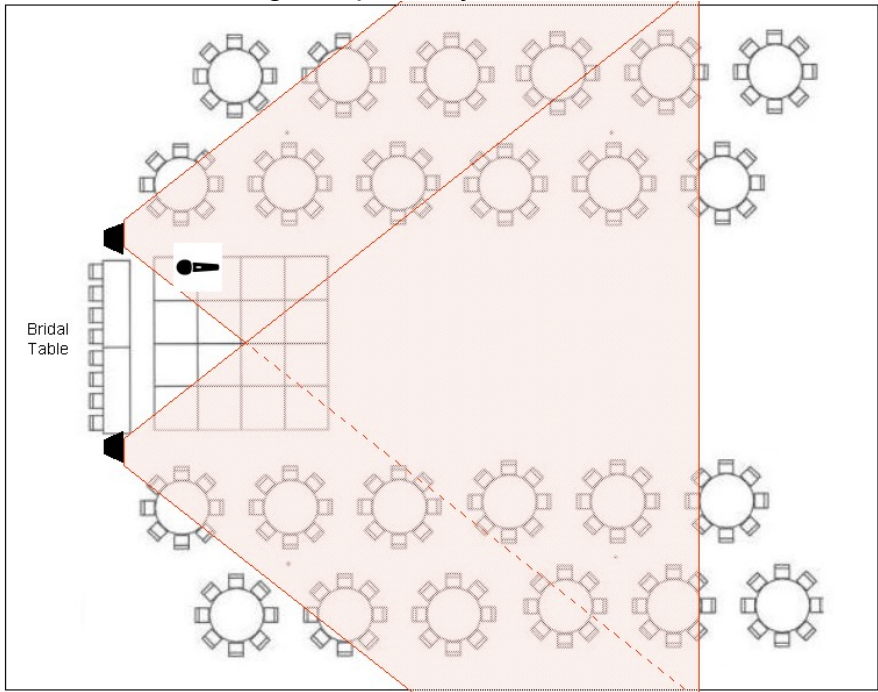
Microphone: Hand held

Equalisation: None (plugged directly into speakers)

Here's what a typical pair of 15 inch speakers look like so you get an idea of the size & appearance.



Theoretical wedding reception layout:

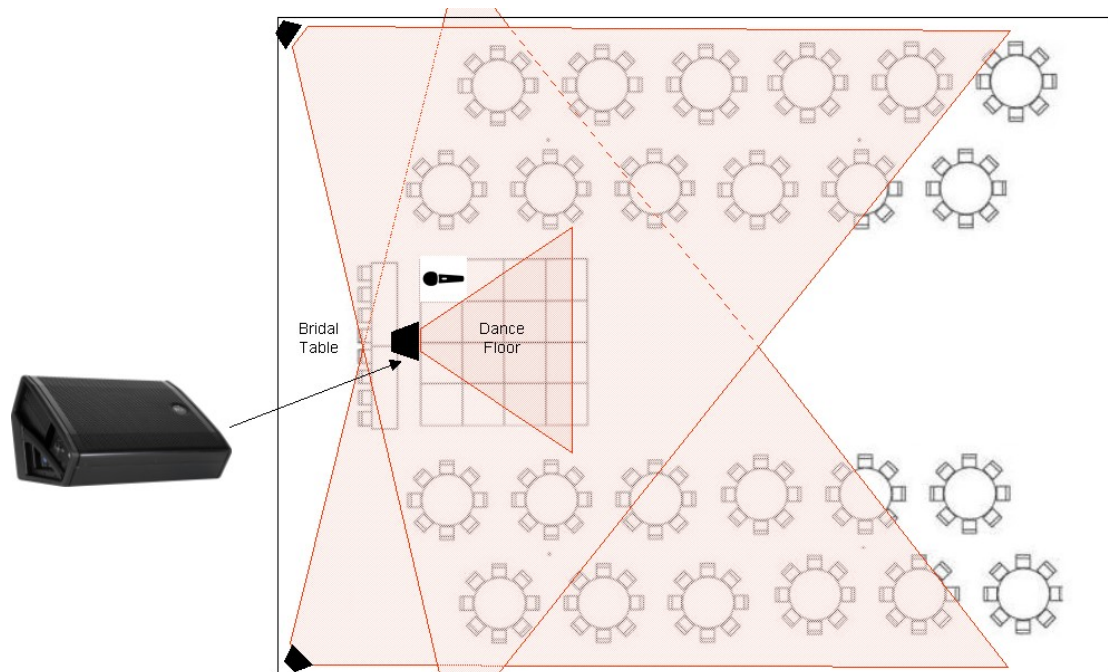


The pink shading represents the sound dispersion of the speakers. Most speakers have a dispersion pattern between 70 to 90 degrees. Some of the line array column type speakers like the Bose L1 or JBL EON One can go up to 180 degrees. Being outside the dispersion pattern doesn't mean you won't hear the speaker, it just means you won't hear them clearly as the high frequency sounds will be greatly reduced. So let's see if this example is a "6 Star" system:







1. Feedback resistance		Poor. The microphone is right in front of & close to the speaker & will be prone to feedback.
2. Even coverage for speech, background music & multimedia		The bridal table is out of the speakers sound field. Also feedback will limit our volume meaning it will be hard to hear at the back.
3. Speech clarity, adequate level & consistency		With 200 guests & no real EQ facility we're going to be struggling with speech clarity. Also per above the bridal table will have poor clarity.
4. High fidelity music up to dance level		The 15 inch speakers right next to the dance floor should give good performance to the dance floor but with the bridal table being behind the speakers they're not going to get clear background music.
5. Some isolation of dance music to the dance floor		Good. The speakers are close to the dance floor & could easily be turned to face further inwards to the dance
6. Visually attractive		No. You're going to have some large speakers next to the bridal table all in the photo shots.
SCORE	1/6	

So the above system scores a rather ordinary 1 out 6 stars. So is there some way we could get a system that would tick all the boxes for this type of room set-up? Can we have our wedding cake & eat it too? Yes! We just have to think outside the box a little. The following set-up will work:

Instead of 2 x 15 inch speakers we could instead use 2 x smaller 8 or 10" speakers located in the far rear corners on high stands. These are to handle the speeches & background music only. A larger 12 or 15 inch speaker can be placed on the floor in front of the dance floor just to handle the dance music. Instead of plugging the mic directly into the speakers we'll add a small mixer with some basic EQ facility. Just during the speeches, we could get a friend to stand by the mixer & turn the mic up or down as needed. Here's how that would look:



So let's see how it would rate now:

1. Feedback resistance		Good. The microphone is in the sound field of the speakers but is quite a long distance away.
2. Even coverage for speech, background music & multimedia		The bridal table can hear & with less risk of feedback we should have enough volume to reach the back of the room.
3. Speech clarity, adequate level & consistency		Being in front of the speakers the bridal table will also have good clarity. Having speakers on high stands will even out the sound across the room giving everyone adequate level. Having someone man the mixer to turn the mic up or down will give consistent level.
4. High fidelity music up to dance level		The larger floor speaker will easily handle dance level music & even gets a bass boost from being floor mounted.
5. Some isolation of dance music to the dance floor		Good. The dance music speaker is close to the dance floor & facing it.
6. Visually attractive		Yes. The main speakers are out of frame for bridal table photos. Being smaller they are even less conspicuous. Being floor mounted the dance speaker is less noticeable.
SCORE	6/6	

1 star to 6 stars is a pretty dramatic turnaround. So did we have to do anything dramatic or spend a lot more money? Not really, in summary all we did was:

- Add a small mixer
- Add 1 extra speaker
- Use slightly higher speaker stands
- Assigned someone to control the mic level just during speeches.

To me that sounds like a pretty good return on effort.

Outdoor or Marquee Receptions

Getting reliable, safe power can sometimes be an issue with outdoor/marquee weddings. If you're running a long power cable to the marquee, watch out for voltage drop. Some speakers don't handle low voltage & will cut out at high volume. Also be careful what else you run from that cable. A standard power socket only handles 2,400 watts. It's easy to overload if you're using cooking equipment, electric urns or jugs or incandescent lighting. If you're using a generator, make sure it's a silenced one – there's nothing worse than having a noisy generator roaring away all night. Make sure the generator has enough capacity. One event we did they hired a large generator but they were running a large amount of cooking equipment that when it cut in it really affected the sound system.

My Venue Already Has a Sound system

Great. That might save you the hassle of setting up your own but make sure in advance that it will suit your needs. We've seen some pretty ordinary in-house sound systems. Many, particularly ceiling type, are only designed for speech & light music & not dance or live music. When you inspect the venue ask if you can hear what their sound system sounds like by plugging in your iPod or phone & playing your favourite song or trying the microphone. That might sound overly fussy but crappy sound can really put a dampener on your celebration. If you're wanting run a video presentation from your laptop & it needs sound, then make sure they can accommodate that. Especially think about how you're going to get the sound from your laptop into the sound system. If you have a projector at the front of the room but the sound system input is at the back of the room then that can be a problem. In house systems are often good for speeches & background music as they tend to have multiple speakers distributed around the room which gives even coverage.

Should I DIY?

You can do it yourself but depending on the size of the wedding it gets increasingly tricky as the number of guests increases or the complexity of what you want to do increases. For up to say 100 guests it can be practical. You need to have a friend or relative who is willing to looking after the whole process for you & do a bit of preparation work. Here's what not to do: If you're reception's on a Saturday night, don't hire the equipment Saturday morning, hire it Friday or even earlier. Some hire companies will let you do that at no extra charge or reduced charge. Even if you have to pay full price it's worth it to have the gear well in advance. That will give you a chance to test the gear & make sure you know how to operate it in advance. If you're able to set it up in the venue in advance that's even better.

Wireless or Cabled Microphones?

Everyone loves wireless microphones but here's the thing. They're expensive & can be tricky to setup & use. A decent wireless microphone costs around \$500-\$700 whereas an equally good cabled microphone costs around \$150, requires no batteries & is pretty reliable & foolproof. If you're not going to be moving around a lot then just go for a cabled mic & make sure you tape down or cover the cable so nobody trips.

How to Play Your Own Music Playlist Properly

Devices

You can use a number of different playback devices including CD players, iPods, iPads, laptops, DJ decks, phones etc. CD's are really not used that much these days & some CD players won't play CD's that have been created using a computer. Many laptops don't even have a CD drive. I would steer away from CD's. I would also avoid using your phone. If you must then at least put it in "Airplane Mode" & "Do Not Disturb" mode to avoid interruptions to playback. The problem of course is that a wedding is a time when you really need your phone for making & receiving calls. I think it's better to have a dedicated playback device. My choice is an iPad or laptop. Your phone could be a good backup device. Also make sure you bring a charger for your device.

Media / Streaming Services

You can use CD's, MP3's, iTunes or a streaming service like Spotify or Pandora. USB sticks can be good media as they can be moved between laptops of any brand or operating system easily. iTunes, Spotify, Pandora etc. all allow music to be organised into playlists which is very helpful. For example you might have playlists for pre-dinner music, bridal waltz & then dance music. That's a good way to go. With streaming services like Spotify or Pandora, make sure you set them in advance to play in offline mode to download the music to your device otherwise they may stop if Internet access is interrupted. We've seen this happen before.

My best advice with your playlist is to **MAKE A BACKUP!** It can be on CD, USB or iPod, phone etc.

"(Lee)insisted we back up our music on CD as well as iPod and as it turned out it was our saving grace as I had put many hours of thought into the playlists and the iPod died in the second set!"
Ben Rosen, Wedding, Quay Restaurant, Sydney

How to Connect a Laptop or iPod Properly

Firstly, don't use a cable like this one pictured to the right. There's a number of reasons why but the most compelling is that it may fry the output of your ipod/phone/laptop. The reason is that many mixers send out 48 volts of power to run devices like DI boxes & some microphones. This is called "Phantom" power. Devices like iPods etc are not designed to handle such high voltages



The type cable to use is one of these as pictured to the right. You may need to remove your iPod / iPad / Phone cover get to a reliable connection.



The iPhone 7 doesn't have a headphone socket so you may need an adapter. Remember you can't charge & play music through the adapter at the same time.



Audio for Multimedia

It's become increasingly popular to use video at receptions. This might be video of the happy couple, messages from friends or relatives who can't be there or even showing of a video of the day's proceedings produced on-the-fly & shown at the end of the night. This might be displayed using a projector &

screen or on large LED screens. The video is usually played from a laptop. Quite often the laptop won't be near the sound system so you need a way to get the audio into the sound system. Think carefully about how you can route the cable especially if you have to traverse doorways. Running a standard iPod/Laptop cable over more than about 10 metres can result in bad hum. To avoid this you'll need a device called a DI Box that lets you run the cable long distances.

-If you have background music to the video clip, keep it very soft. I'm constantly surprised how you can't hear what people are saying on the video because the backing music is so overpowering.

-When interviewing people outdoors be careful of wind noise. This may not be noticeable when you replay it on your phone or camera but when played back through a full range sound system it can be very noticeable. If your video camera has an external microphone with a foam windshield this can be very effective. If you still have rumbling from wind noise then use the High Pass Filter on your mixer to reduce it.

Live Music

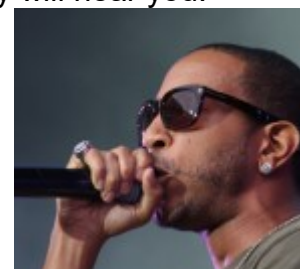
The most common problem I see is oversimplification of the requirements for live music. For example, if there's any type of singing, you really need to have a monitor speaker so the singer can hear themselves. Even a skilled performer will go off key if they can't hear their own voice clearly. Don't rely on them being able to hear the main speakers especially if they're behind them.

“But my DJ is looking after the sound”

In my experience DJ systems are designed for just that i.e. DJ'ing to the dance floor & not necessarily for speeches from rookie presenters that everyone in the room needs to hear. For a smaller weddings it may not be a problem but for 100-300 people then it may be worth adding a couple of extra speakers strategically located to distribute the speeches to the far ends of the room. Another limitation of a typical DJ system is that they don't usually have a lot of equalization options. For example a DJ mixer doesn't have 3 band EQ with sweepable mids or a High Pass Filter. They don't normally have a 31 band equalizer - all things that could be really useful for improving the quality of speech for mid to larger weddings.

Top 5 Wedding Audio Don'ts

1. Don't stand in front of the speakers when doing speeches. It may cause squealing feedback.
2. Don't hold the microphone down at waist level – nobody will hear you.
3. Don't pretend you're a rapper & hold your hand over the top of the microphone, ~~it may look cool~~ but it won't sound good.
4. Don't play your music from your phone. See above
5. Don't forget your music playback device charger



(iPod, laptop etc)

Top 5 Wedding Audio Do's

1. Do your homework. Work out in advance how your sound system compares to a "6 Star" system & if it's going to do all the things that are important to you.
2. Email everyone who is giving speeches & get them to watch this video: <https://www.youtube.com/watch?v=-tVaRXqDe7U> as a guide to good mic technique.
3. Set your Spotify/Pandora etc playlist to "offline mode" so it works even if there's no internet.
4. Make a backup of any music playlist.
5. If you've put a lot of work into getting everything sounding great & something still doesn't go quite right, then don't stress. You're among friends & relatives. If you've been following this guide there's probably a lot more things that went right that you didn't even notice.

Conclusion

Thanks for taking the time to read this report. I hope it helps you have a great wedding reception.

Lee Wright

PS: If you need a sound system for your wedding in Sydney (or even some areas out of Sydney) then drop me an email at lee@sydneypahire.com or visit our website <http://www.sydneypahire.com.au/>